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# BONNER ZOOLOGISCHE MONOGRAPHIEN

Nr. **58**  
2011

Herausgeber: Zoologisches Forschungsmuseum Alexander Koenig, Bonn



*Bernhard A. Huber*

REVISION AND  
CLADISTIC  
ANALYSIS OF  
*PHOLCUS* AND  
CLOSELY  
RELATED TAXA  
(ARANEAE,  
PHOLCIDAE)

# BONNER ZOOLOGISCHE MONOGRAPHIEN

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Author of this issue: Bernhard A. Huber

Published: November 2011

Bonner zoologische Monographien Nr. 58, 509 pp.

This issue was financially supported by Sparkasse KölnBonn.

Editorial assistants: Alexandra Schuh and Brian Hillcoat.

Cover: Mating pair of the cosmopolitan *Pholcus phalangioides*, the best-studied daddylongleg spider; background: male pedipalp of *Pholcus gombak*, a newly described relative from Malaysia. Photograph and drawing by Bernhard A. Huber.

Price: EUR 155,-



*Bernhard A. Huber*

REVISION AND CLADISTIC ANALYSIS OF  
*PHOLCUS* AND CLOSELY RELATED TAXA  
(ARANEAE, PHOLCIDAE)





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## ABSTRACT

The genus *Pholcus* Walckenaer and nine other pholcid genera are characterized by a simplified type of comb-hair on the fourth tarsi. This supposedly monophyletic group (*Pholcus* group of genera) is herein revised, with special emphasis on *Pholcus*, the largest genus in the family Pholcidae. The group is largely restricted to the Old World, with a few exceptions of presumably relict and newly introduced species in the New World. As revised here, the group includes 320 species, most of which (254) belong to the genus *Pholcus*. Eighty three previously described species are redescribed; some are illustrated for the first time. A first cladistic analysis based on morphological data is presented for the group. The new genus *Sihala* is proposed for *Pholcus ceylonicus* from Sri Lanka and a newly described Indian species. Further new genera are indicated by the cladistic analysis, but a conservative approach is adopted due to weak support and poor diagnosability of the respective clades. 112 species are newly described: in *Calapnita*: *C. deelemanae*, *C. saluang*, *C. semengob*; in *Leptopholcus*: *L. budongo*, *L. debakkeri*, *L. dschang*, *L. griswoldi*, *L. gurnabi*, *L. huongson*, *L. kandy*, *L. lokobe*, *L. ngazidja*, *L. obo*, *L. talatakely*; in *Micromerys*: *Mm. baiteta*, *Mm. papua*; in *Panjange*: *Pa. bako*, *Pa. iban*, *Pa. madang*; in *Pebrforsskalia*: *Pe. bilene*, *Pe. shambaa*; in *Pholcus*: *Ph. agadir*, *Ph. amani*, *Ph. andulau*, *Ph. arayay*, *Ph. arkit*, *Ph. attuleb*, *Ph. baka*, *Ph. bakweri*, *Ph. bamboutos*, *Ph. bangfai*, *Ph. batepa*, *Ph. bikilai*, *Ph. boborok*, *Ph. bolikhamsai*, *Ph. camba*, *Ph. cheaha*, *Ph. chiangdao*, *Ph. choctaw*, *Ph. cibodas*, *Ph. dade*, *Ph. dixie*, *Ph. doucki*, *Ph. erawan*, *Ph. ethagala*, *Ph. gombak*, *Ph. halabala*, *Ph. hoyo*, *Ph. hurau*, *Ph. jaegeri*, *Ph. jusabi*, *Ph. kamkaly*, *Ph. karawari*, *Ph. kerinci*, *Ph. khene*, *Ph. kibansi*, *Ph. kinabalu*, *Ph. kindia*, *Ph. kingi*, *Ph. koasati*, *Ph. kobi*, *Ph. kribi*, *Ph. kwamgumi*, *Ph. kyondo*, *Ph. laksao*, *Ph. lanieri*, *Ph. ledang*, *Ph. lilangai*, *Ph. lualaba*, *Ph. luki*, *Ph. lupanga*, *Ph. maturata*, *Ph. mazumbai*, *Ph. mbuti*, *Ph. mecheria*, *Ph. mentawir*, *Ph. minang*, *Ph. moca*, *Ph. nodong*, *Ph. namkhan*, *Ph. namou*, *Ph. negara*, *Ph. nkoetye*, *Ph. okgye*, *Ph. otomi*, *Ph. pagbilao*, *Ph. pakse*, *Ph. phui*, *Ph. pyu*, *Ph. reevesi*, *Ph. ruteng*, *Ph. sabah*, *Ph. satun*, *Ph. schwendingeri*, *Ph. sepaku*, *Ph. simbok*, *Ph. singalang*, *Ph. soukous*, *Ph. steineri*, *Ph. sudhami*, *Ph. taarab*, *Ph. tahai*, *Ph. taita*, *Ph. thakek*, *Ph. twa*, *Ph. varirata*, *Ph. wabehe*, *Ph. woongil*, *Ph. yeongwol*, *Ph. youngae*; in *Sihala*: *S. alagarkoil*; in *Uthina*: *U. ratchaburi*. The following taxa are newly synonymized: *Spermophora longiventris* Simon, 1893 and *Pholcus tagoman* Huber, 2001 with *Uthina luzonica* Simon, 1893; *Pholcus claviger* Simon, 1877 with *Physocyclus globosus* (Taczanowski, 1874); *Pholcus lucifugus* Simon & Fage, 1922 with *Pholcus lamperti* Strand, 1907; *Pholcus dentifrons* Thorell, 1898 with *Pholcus quinquenotatus* Thorell, 1878; *Pholcus donensis* Ponomarev, 2005 with *Pholcus opilionoides* (Schrank, 1781); *Pholcus xinjiangensis* Hu & Wu, 1989 with *Pholcus ponticus* Thorell, 1875; *Pholcus vachoni* Dimitrov & Ribera, 2005 with *Pholcus fuerteventurensis* Wunderlich, 1992; *Pholcus lambertoni* Millot, 1946 with *Pholcus phalangioides* (Fuesslin, 1775); *Pholcus okinawaensis* Irie, 2002 with *Pholcus fragillimus* Strand, 1907. *Pholcus zichyi* Kulczyński, 1901 is re-established and removed from its synonymy with *Pholcus crypticolens*. Seven species are transferred to other genera; to *Leptopholcus*: *Pholcus podophthalmus* Simon, 1893; to *Pholcus*: *Uthina atrigularis* Simon, 1901, *Spermophora faveauxi* Lawrence, 1967, *Leptopholcus debilis* (Thorell, 1899); to *Panjange*: *Spermophora dubia* Kulczyński, 1911; to *Sihala* n. gen.: *Pholcus ceylonicus* O. Pickard-Cambridge, 1869; to *Smeringopus*: *Pholcus excavatus* Simon, 1877.

*Key words*: Pholcidae, *Pholcus*, taxonomy, new species, systematics, cladistic analysis.

## ACKNOWLEDGMENTS

I am most grateful to the many people who kindly sent specimens used in this study: J. Altmann, D. de Bakker, L. Baert, J. Beccaloni, S.P. Benjamin, J.W. Berry, R. Bosmans, S. Buchholz, J. Coddington, D.J. Court, B. Cutler, T. Danisman, H. Dastych, C.L. Deeleman-Reinhold, D. Dimitrov, A. Dippenaar-Schoeman, J. Dunlop, S. Esyunin, Z. Falin, M. Fedoriak, C. Fischer, J. Godwin, T. Gonsalves, C. Grismado, C.E. Griswold, J. Gruber, H.J. Guarisco, C. Haddad, A. Hänggi, M. Harvey, T. Huflejt, Y. Ihara, P. Jäger, R. Jocqué, B.-W. Kim, B. Knoflach-Thaler, J.K.H. Koh, M. Kovblyuk, T. Kronestedt, S. Larcher, E.-A. Leguin, L. Leibensperger, S. Li, D. Logunov, L. Lotz, J. Martens, Yu.M. Marusik, K.G. Mikhailov, J. Murphy, E. Nieukerken, H. Ono, A. Pérez G., N.I. Platnick, M. Ramírez, R. Raven, W. Reeves, C. Ribera, C. Rollard, A. Russell-Smith, M. Saaristo, N. Scharff, J. Schmidt, P. Schwendinger, A. Senglet, L. Sorkin, H. Tanaka, A. Tanikawa, C. Warui, S. Whitman, J. Wunderlich, F. Zhang, and M. Zhu. Several people helped with locality data and coordinates: R. Bosmans, B.-W. Kim, D.J. Court, C.L. Deeleman-Reinhold, B. Knoflach, D. Logunov, P. Schwendinger, R. Jocqué, and A. Gromov; D. Logunov also translated many Russian labels for me, C.L. Deeleman-Reinhold allowed access to unpublished information, and J. Murphy made available to me his large collection of slides. Four colleagues kindly read the manuscript and made numerous helpful suggestions for improvement: F. Álvarez-Padilla, D. Dimitrov, J. Miller, and C. Rheims. During my collection trips to Africa, I counted on the assistance of numerous people, and I thank them for their help in acquiring collection and export permits and/or for being great guides and companions in the field: R. Duncan and M. Sidibe (Guinea); P. LeGall, R. Kamba, F.J. Muafor, and my daughter Janina (Cameroon); C. Warui and R. Mwakodi (Kenya); G. Eilu and A. Kushemererwa (Uganda). The German Science Foundation provided financial support (DFG, HU 980/9-1).

## ABBREVIATIONS

a	appendix	NCP	National Collection, Pretoria
ALE	anterior lateral eye	NHMB	Naturhistorisches Museum, Basel
ALS	anterior lateral spinneret	NHMW	Naturhistorisches Museum Wien, Vienna
AME	anterior median eye	NHRS	Naturhistoriska riksmuseet, Stockholm
AMNH	American Museum of Natural History, New York	NMBA	National Museum, Bloemfontein
BMKB	Brunei Museum, Kota Baru, Brunei	NMKE	National Museum of Kenya, Nairobi
BMNH	Natural History Museum, London	NSMT	National Science Museum (Natural History), Tokyo
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii	p	procurus
<i>C</i>	<i>Calapnita</i>	<i>Pa</i>	<i>Panjange</i>
CAS	California Academy of Sciences, San Francisco	<i>Pe</i>	<i>Pebrforsskalia</i>
CJFM	Collection John and Frances Murphy, Middlesex, England	<i>Ph</i>	<i>Pholcus</i>
CRB	Collection R. Bosmans, Gent	PME	posterior median eye
CRBA	Collection C. Ribera, Barcelona	PMS	posterior median spinneret
CTH	Collection Thaler and Knoflach, Innsbruck	PSU	Perm State University, Perm
e	embolus	QMB	Queensland Museum, Brisbane
hp	hinged process	RMBR	Raffles Museum of Biodiversity Research, Singapore
IRSB	Institut Royal des Sciences Naturelles de Belgique, Brussels	RMNH	Netherlands Centre for Biodiversity Naturalis, Leiden
IZCAS	Institute of Zoology, Chinese Academy of Sciences, Beijing	<i>S</i>	<i>Sihala</i>
<i>L</i>	<i>Leptopholcus</i>	SEMK	Lawrence, University of Kansas, Snow Entomological Museum, Kansas
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires	SMF	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt
MCZ	Museum of Comparative Zoology, Cambridge	u	uncus
MHBU	Museum of Hebei University, Baoding	<i>U</i>	<i>Uthina</i>
MHNG	Muséum d'histoire naturelle, Genève	USNM	National Museum of Natural History, Washington D.C.
<i>Mm</i>	<i>Micromerys</i>	WAM	Western Australian Museum, Perth
MNHN	Muséum national d'Histoire naturelle, Paris	XTC	Xi'an Teacher's College, Shaanxi
MNRJ	Museu Nacional do Rio de Janeiro, Rio de Janeiro	ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn
<i>Mp</i>	<i>Micropholcus</i>	ZIN	Zoological Institute, Russian Academy of Sciences, St. Petersburg
MRAC	Musée royal de l'Afrique Centrale, Tervuren	ZMB	Museum für Naturkunde, Berlin
MZF	Museo Zoologico de "la Specola", Firenze	ZMH	Zoologisches Institut und Zoologisches Museum, Hamburg
MZPW	Museum of the Institute of Zoology, Polish Academy of Science, Warsaw	ZMMU	Moscow State University, Moscow
		ZMT	Museum of Zoology, Turku
		ZMUC	Zoological Museum, University of Copenhagen, Copenhagen

## 1. INTRODUCTION

With about 1100 described species in currently 84 genera, Pholcidae are among the most species-rich spider families (Platnick 2010). The family has a worldwide distribution, but most of the biodiversity is concentrated in the tropics and subtropics, often in geographic areas and habitats that are severely threatened by human impact (Huber 2005a). At the same time, our knowledge about some of the major clades remains rudimentary. This is especially true of the nominotypical genus *Pholcus*. It is the largest genus in Pholcidae in terms of species, but it has never been revised and many species are named but are basically unknown and not identifiable with the existing literature. In some cases, all we have is a short text in any of nine different languages ranging from Latin to German and Korean, and a few poor drawings or no illustrations at all.

The basic aim of this monograph was thus to create an overview of *Pholcus*, to redescribe as many of the “old species” as possible, to provide a first working hypothesis regarding their phylogenetic relationships, and to outline the major gaps of knowledge. At such a scope, many details necessarily remain unsolved. For example, in several cases the type material could not be located and the assignment of new material to old names is thus preliminary. In about 35 species, genital variation is tentatively interpreted as being intraspecific, but denser sampling and more in-depth study may reveal cases of unjustified lumping. In some taxa, including entire genera, the homology of bulbal processes is difficult to establish and requires further study. Finally, the cladistic analysis is limited to morphological data and the results are likely to change when molecular data are added.

Initially, the emphasis was on African taxa, and several expeditions were conducted to collect new material and to gain some insight into distribution patterns across the African continent. However, it soon became clear that neither African *Pholcus* nor *Leptopholcus* are likely to be monophyletic, requiring the addition of Asian (and New World) material. When preliminary cladistic analyses revealed that even these genera as such might not be monophyletic, the scope was further expanded to include all the genera of a large monophylum characterized by simplified comb-hairs on the fourth tarsi (Huber & Fleckenstein 2008). As a result, the present paper deals with a total of ten genera, here called the *Pholcus* group of genera.

Together with 16 further genera, most of which have been revised recently (Huber 2003a, b, c; 2005a, c; 2007; Huber & Benjamin 2005), the *Pholcus* group of genera constitutes the subfamily Pholcinae (Huber in press). Two morphological characters support this subfamily: (1) lateral apophyses on the male chelicerae, and (2) tarsal comb-hairs arranged in a single row. Except for the genus *Metagonia* and a few probable relict species (Huber *et al.* 2005a; herein), the entire subfamily is largely restricted to the Old World, with highest diversity in the humid tropics and subtropics. Relationships within Pholcinae are only partly resolved; the current view is that *Belisana* (an Asian genus) and *Quamtana* (an African genus) are the closest relatives of the *Pholcus* group of genera (Huber in press). These three taxa share a distinctive sclerite connecting the genital bulb to the tarsus.

Both ecologically and morphologically, there is considerable variation in the pholcids treated herein: they occupy a wide range of microhabitats (details below) and this is reflected in their body shape and coloration. Species in the leaf-litter and under objects on the ground tend to be small and compact, with relatively short legs and rather dark coloration (e.g., *Pholcus kribi*, Fig. 18; see also Huber *et al.* 2005b). Species adapted to life on the underside of living leaves tend to have long and slender bodies and legs and to be pale greenish (e.g., *Leptopholcus*, *Micromerys*, *Calapnita*, some species of *Pholcus*; Figs. 4-12; Deeleman-Reinhold 1986a, b; Huber 2009b). Species among vegetation and in protected spaces close to the ground are morphologically intermediate but often larger than leaf-dwelling species, reaching leg spans of 10 cm or more. Several genera in Pholcidae include representatives that are mainly found on protected rock walls or in caves, and this may in part explain the high number of synanthropic species included in the family. Eleven species are either cosmopolitan (most notably *Pholcus phalangioides*) or pantropical (e.g., *Micropolcus fauroti*) or have extended their ranges to continents not originally home to the respective genus or species (e.g., *Pholcus manueli*). Several further species have attained wide distributional ranges apparently as a result of their anthropophilic nature (*Ph. opilionoides*, *Ph. ponticus*, *Ph. alriceps*, *Ph. quinquenotatus*, *Ph. ancoralis*, *Ph. ornatus*, *Ph. fragillimus*). Few other spider families have comparable numbers of synanthropic species (Kobelt & Nentwig 2007).



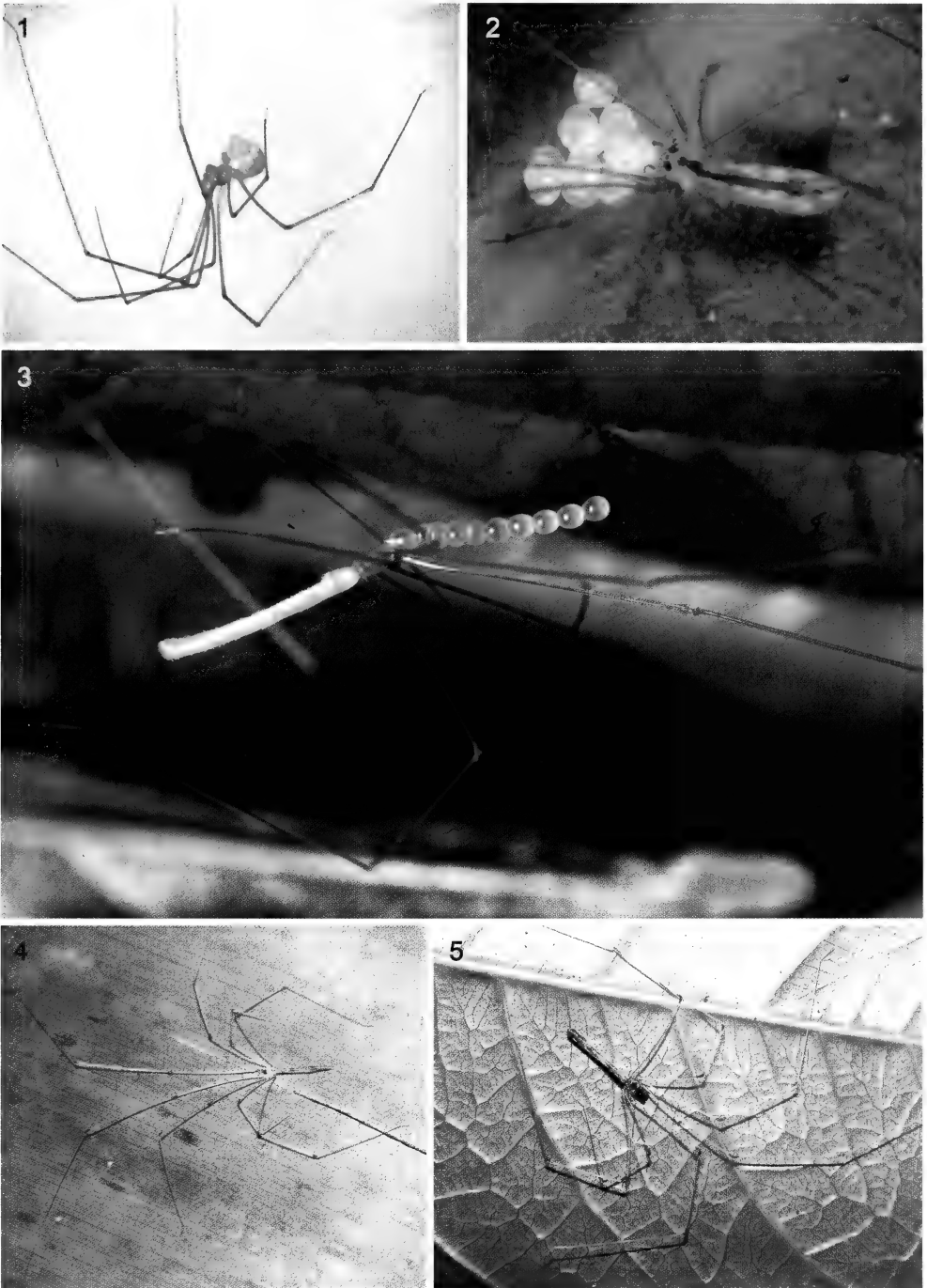


FIG. 1-5. 1. *Micropholcus fauroti*, female from Haiti. 2. *Pebrforsskalia conopyga*, female with egg sac, Bamenda, Cameroon. 3. *Calapnita deelemanae*, female with egg sac, Sabah, Malaysia (photo courtesy F. & J. Murphy). 4. *Leptopholcus baoruco*, male, Dominican Republic. 5. *Leptopholcus guineensis*, male, Kindia, Guinea.

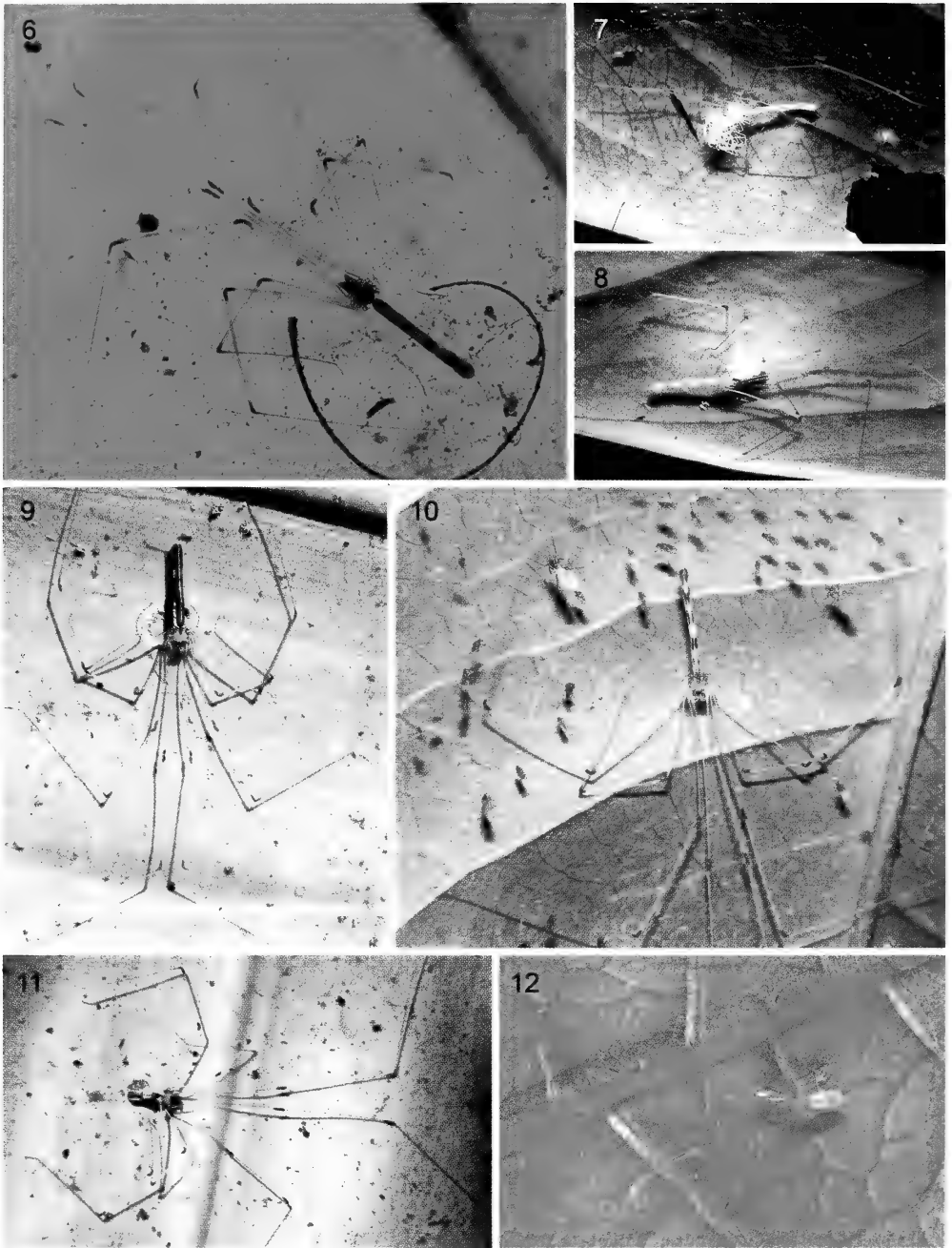


FIG. 6-12. 6. *Leptopholcus guineensis*, male, Dalaba, Guinea. 7. 8. *Leptopholcus tipula*, females with juveniles and egg sac, Ziama, Guinea. 9. *Leptopholcus dschang*, male, Attuleh, Cameroon. 10. *Leptopholcus gracilis*, male sharing web with Cecidomyiidae, Gedi, Kenya. 11. *Pholcus attuleh*, male, Attuleh, Cameroon. 12. *Pholcus baka*, female, Kribi, Cameroon.

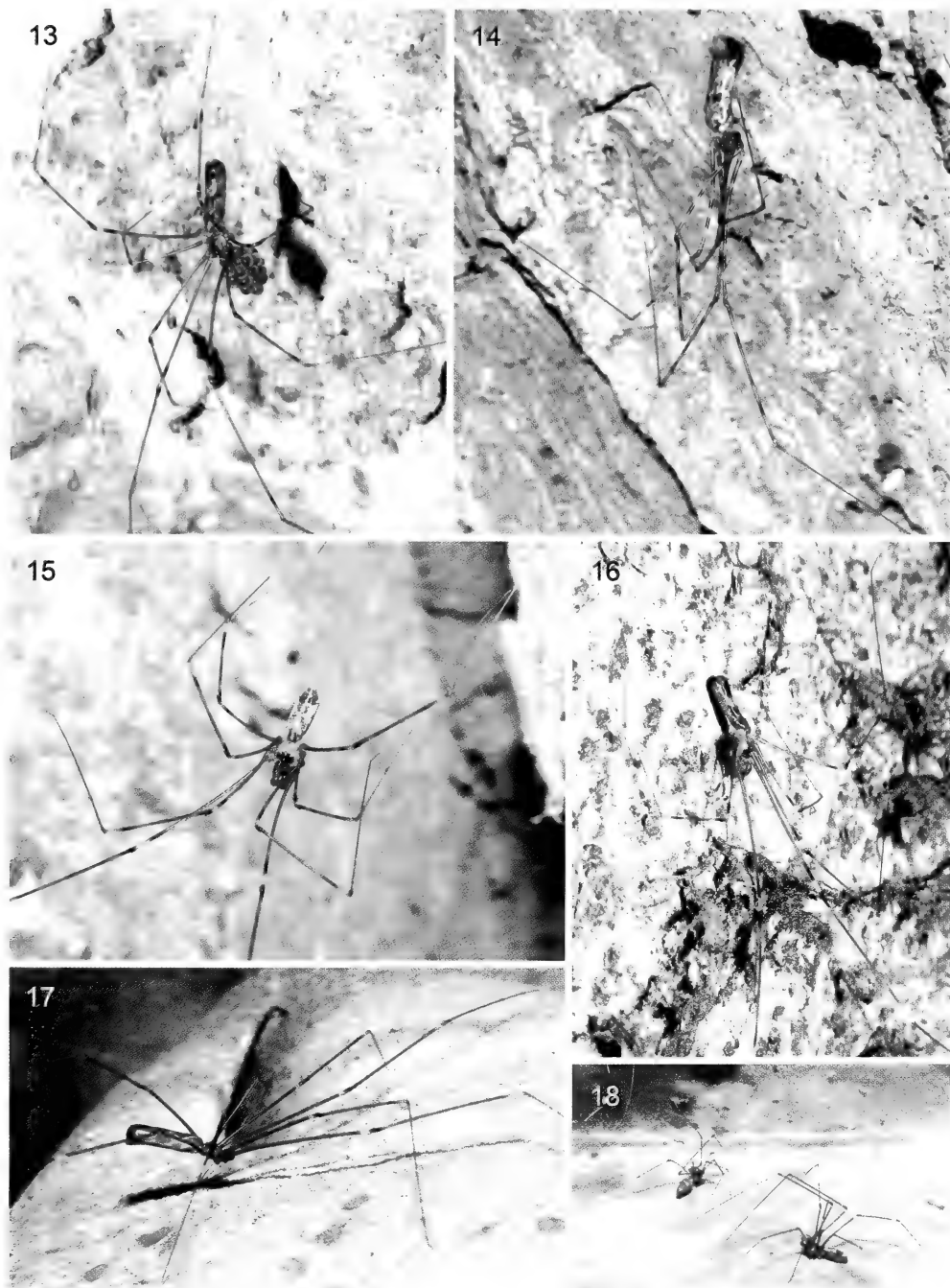


FIG. 13-18. 13. *Pholcus chappuisi*, male, Mau Mau cave, Kenya. 14. *Pholcus bamboutos*, male on tree bark, Lake Oku, Cameroon. 15, 16. *Pholcus leruthi*, male at night (hanging in web) and during the day (pressed against tree bark), Kakamega, Kenya. 17. *Pholcus doucki*, male, Doucki, Guinea. 18. *Pholcus kribi*, male and female under dead leaf on ground, between Kribi and Campo, Cameroon.

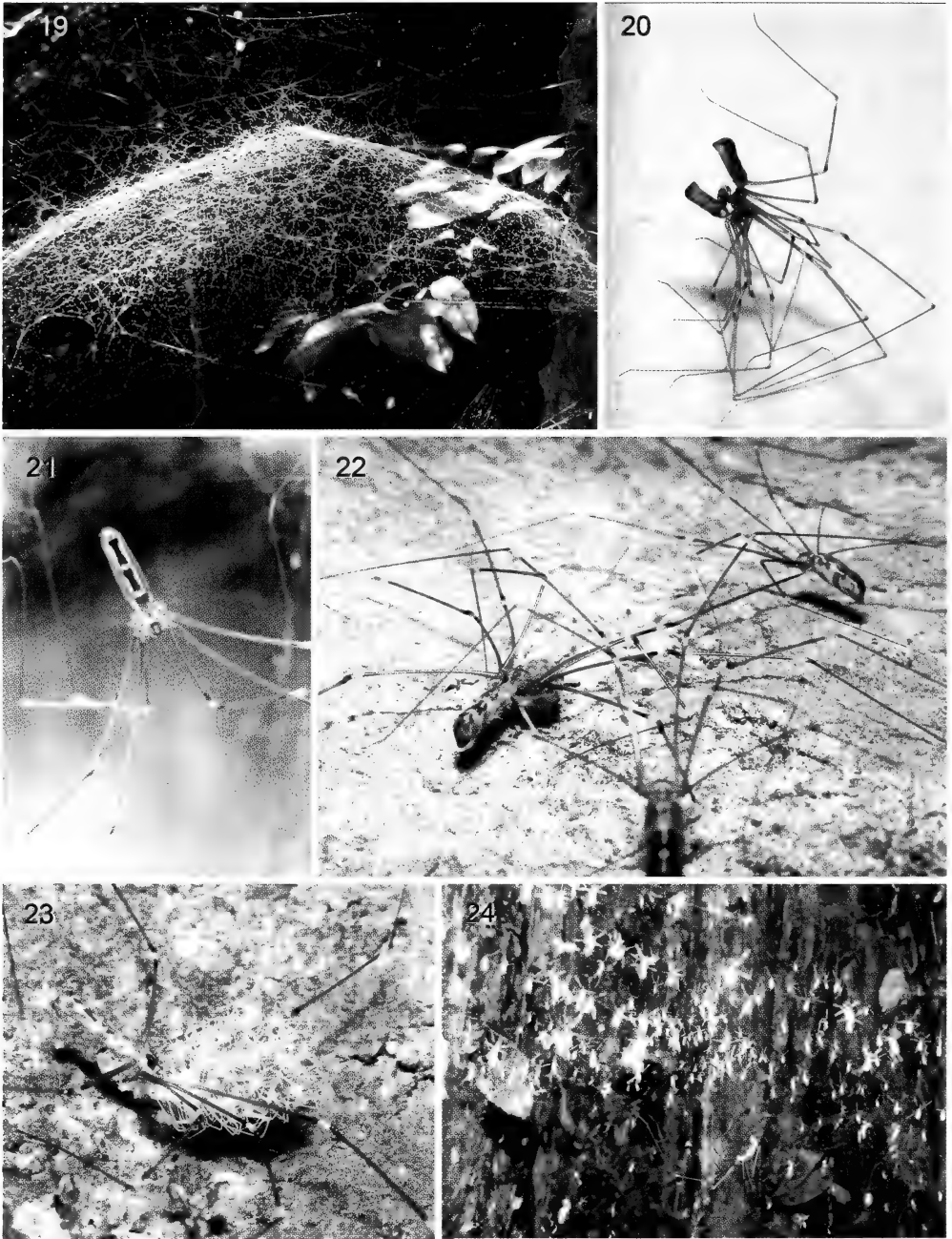


FIG. 19-24. 19. *Pholcus kindia*, web, about 60 cm diameter, Koumbaya, Guinea. 20. *Pholcus phalangioides*, mating pair, Bonn, Germany. 21. *Pholcus fagei*, showing ventral pattern, Shimba Hills, Kenya. 22. *Pholcus taita*, adult specimens in close contact, Macha, Taita Hills, Kenya. 23. *Pholcus taita*, female with juveniles, Ngangao, Taita Hills, Kenya. 24. *Pholcus fagei* (at bottom) sharing web with Cecidomyiidae, Makadera Forest, Shimba Hills, Kenya.

Despite the diversity of body size, shape, and color, pholcids are mostly easily distinguished from other spider families (Huber 2000, in press). The entire male pedipalp is modified in a unique way, and especially a process on the palpal tarsus (traditionally called 'procurus') is characteristic, often complex, and easily studied. Other diagnostic characters that occur in the large majority of species are (1) modified male chelicerae (extremely diverse, with apophyses, modified hairs, cones, spines, etc.); (2) a very high clypeus (the area between chelicerae and ocular region is about as high as the chelicerae); (3) the general arrangement of eyes (two triads and one median pair; the latter may be absent); (4) pseudosegmented tarsi; (5) a more or less sclerotized and often sculptured plate covering the female internal genitalia (an epigynum, otherwise common in entelegyne but very rare in haplogyne spiders such as Pholcidae). One character that is not unique to Pholcidae but nevertheless very useful to distinguish pholcids from many other families (but not from Ochyroceratidae) in the field is the female behavior of carrying the egg sac in her chelicerae (Figs. 2, 3). Extremely long and thin legs also hint at the family, but some pholcids have relatively short legs, including an entire subfamily (Ninetinae).

As indicated above, pholcids can be found in a wide variety of microhabitats. What most of them have in common is a certain degree of 'protectedness'. Collecting pholcids usually means searching diligently *under* objects (such as dead leaves, rocks, logs on the ground), in dark spaces like those between buttresses, in little holes or caves, or on the underside of living leaves. It is not quite clear though what the spider needs to protect itself from. The widespread cryptic coloration mentioned above indicates that visually hunting predators may play a role, but other factors like desiccation and wetness may be involved too.

While most diversity is concentrated in the humid tropics, some taxa are fairly tolerant to arid conditions, especially in the subfamilies Ninetinae, Arteminae, and Smeringopinae (Huber 2001, in press, Huber & Brescovit 2003). However, even among *Pholcus*, some species occur in low precipitation areas (e.g., Figs. 1636, 1817). As for altitude, pholcids occur in a wide range from sea level up to over 3500 m (Huber 2000).

Pholcids are commonly regarded as sedentary web-building spiders, and the majority of species do indeed seem to build a more or less domed sheet (Fig.

19), with the spider hanging from the apex of the dome (Eberhard 1992, B. Huber unpublished). However, other types of webs exist (e.g., Deeleman-Reinhold 1986a, Sedey & Jakob 1998, Huber 2005a, 2009b, Huber & Schütte 2009), and some leaf-litter species do not seem to be confined to any silk structure. In some cases, character mapping suggests that the domed sheet-web has been reduced, as for example in many or most of the leaf-dwelling pholcids treated herein.

Most or all pholcids are sedentary predators, and they use predatory techniques that are otherwise only known from the distantly related theridioids (cobweb spiders plus nesticids): gumfoot lines and sticky silk wrap attack. Silk lines that are provided with glue near their contact with the substrate (gumfoot lines) have been found in representatives of Arteminae, Smeringopinae and Pholcinae (Japyassú & Macagnan 2004). Sticky silk wrap attack (as opposed to wrapping with dry silk) is apparently an extremely efficient way to subdue oversized or strong prey, but it requires a means to manipulate sticky silk without getting ones own legs stuck to the glue. This is presumably accomplished by comb-hairs on the fourth tarsi, which are thus a morphological correlate of sticky silk wrap attack (Kirchner & Opderbeck 1990). With the possible exception of some ninetines, all pholcids have such comb-hairs (Huber & Fleckenstein 2008). The genera treated herein are primarily united by a derived type of these comb-hairs (see appendix 3, character 12; e.g., Figs. 96, 168).

Little is known about pholcids' enemies, but widespread cryptic coloration (Figs. 6-18) suggests they regularly fall prey to visually hunting predators. Certain defensive behaviors point in the same direction. First, long-legged species often start to vibrate or whirl their entire body vigorously as soon as an object (e.g., a collector's hand; probably also a bird, wasp, salticid, etc.) gets near the spider. This blurs the contours of the spider, it may confuse the predator, and it makes it difficult to focus on the spider (Jackson *et al.* 1992, 1993). Secondly, some pholcids (e.g., *Pholcus leruthi*) are extremely cryptic during the day, for example by pressing their body against the tree bark (Fig. 16), but during the night they hang in their webs (and are thus easy to find with a torch; Fig. 15). Other common defensive behaviors (that do not imply visually hunting enemies) include running away (the main tactic of short-legged species) and leg autotomy.

Pholcid sexual behavior has been studied intensively in several species, including courtship, palpal movements and other ways of communication during mating, sperm precedence, genital mechanics, and cohabitation (Eberhard *et al.* 1993, Uhl 1993, 1998, Uhl *et al.* 1995, 2004, Huber 1994, 1995, 1997a, 1998a, Huber & Eberhard 1997, Kaster & Jakob 1997, Senglet 2001, Schäfer & Uhl 2002, Schaefer & Uhl 2003, Peretti *et al.* 2006, Schäfer *et al.* 2008). During mating, both male palps are inserted simultaneously, and the frontal face of the male is in close contact with the female. This is probably the explanation for the wide variety of male cheliceral modifications, and also for the existence of an epigynum that acts as counterpart of the male chelicerae (in contrast to the entelegyne epigynum that is a counterpart of the male palp) (Huber 1999). In some groups, additional structures like the clypeus and the ocular area may become involved in copulatory courtship. In at least one case, gustatorial courtship occurs (the male offers secretions from glands in the ocular area that are presumably taken

up by the female during mating; Huber 1997b). In most cases, the significance of ocular modifications, such as those described herein for certain *Panjange* and *Pholcus* species (e.g., Figs. 441, 589-592, 632, 680, 701, 798, 1451, 1493, 1565, 2002), remains unknown.

Pholcid females carry their egg sacs in their chelicerae (Figs. 2, 3, 8, 13). The egg sac may be shortly suspended in the web while the female attacks or eats prey, but it is generally quickly taken up again. This brood-care probably explains why pholcids do not need to cover their egg sacs with protective layers of silk but just hold them together with a few lines that by themselves would not seem to deter any egg parasite. In at least one case, tiny *Baeus* wasps whose body size and shape apparently evolved as a means to burrow through silk covers of spider cocoons (Austin 1985) have succeeded in parasitizing pholcid eggs (Hispaniolan '*Leptopholcus*' species). The pholcid female continues to protect 'her' egg sac until her enemies eclose (fully developed) from her eggs (Huber & Wunderlich 2006).

## 2. MATERIAL AND METHODS

This review is based on the study of about 5600 specimens in 1700 vials deposited in the 43 collections listed above. Methods and terminology are as in Huber (2000, 2005a). Measurements are in mm (+/- 0.02 mm if two decimals are given) unless otherwise noted. Eye measurements are +/- 5 µm. Drawings were done with a camera lucida on a Leitz Dialux 20 compound microscope. Cleared epigyna were stained with chlorazol black. Photos were made with a Nikon Coolpix 995 digital camera (2048 x 1536 pixels) mounted on a Nikon SMZ 1500 dissecting microscope. For SEM photos, specimens were dried in HMDS (Brown 1993), and photographed with a Hitachi S-2460 scanning electron microscope. SEM data are often not based on the specimen described (e.g., in the case of holotypes).

Diagnoses are meant to be differential, but it is often only the combination of characters rather than single characters that differentiate a given taxon from closely related taxa. Reference to figures is often preferred to lengthy descriptions of diagnostic details. Locality coordinates are in round brackets when copied from labels and original publications

or when received directly from collectors, in square brackets when originating from some other source (such as online gazetteers, Google Earth, etc.). Distribution maps were generated with Arc View GIS 3.2. Geographic origins of illustrated specimens are only given in cases of intraspecific variation of the respective structures. The numerical cladistic analyses were done using NONA, version 2 (Goloboff 1993), Pee-Wee, version 2.8 (Goloboff 1997), and TNT, version 1.1 (Goloboff *et al.* 2004, 2008). The matrix (100 taxa, 70 characters) is given in Appendix 1; terminal taxa and characters scored are given in Appendices 2 and 3. Two species were chosen as outgroups: *Smeringopina* sp., representing Smeringopinae, the subfamily presumably most closely related to Pholcinae (Huber in press); and *Quamtana merwei*, representing eight-eyed Pholcinae outside the *Pholcus* group of genera. The final matrix can be downloaded at <http://www.uni-bonn.de/~bhuber1/matrices.html>. Cladogram analysis was done with Winclada, version 1.00.08 (Nixon 2002). See Cladistic analysis section below for details of the analysis.

3. CLADISTIC ANALYSIS

Using NONA with hold/100, mult\*200 (or hold/10, mult\*10.000) and amb- for the matrix in Appendix 1 results in four most parsimonious cladograms with a length of 113 (CI = 66; RI = 90). The strict consensus of these four cladograms is shown in Figs. 25 and 26. Using TNT with various parameters in the New Technology search strategies results (after deleting suboptimal trees) in the same four most parsimoni-

ous cladograms. Successive weighting in NONA (with the consistency index as weighting function) results in four very similar most parsimonious cladograms. The strict consensus of these successive weighting cladograms differs only with respect to the clade including *Leptopholcus*, *Micromerys*, *Panjange*, and two species groups tentatively assigned to *Pholcus*. Only this clade is thus shown in Fig. 27 (with

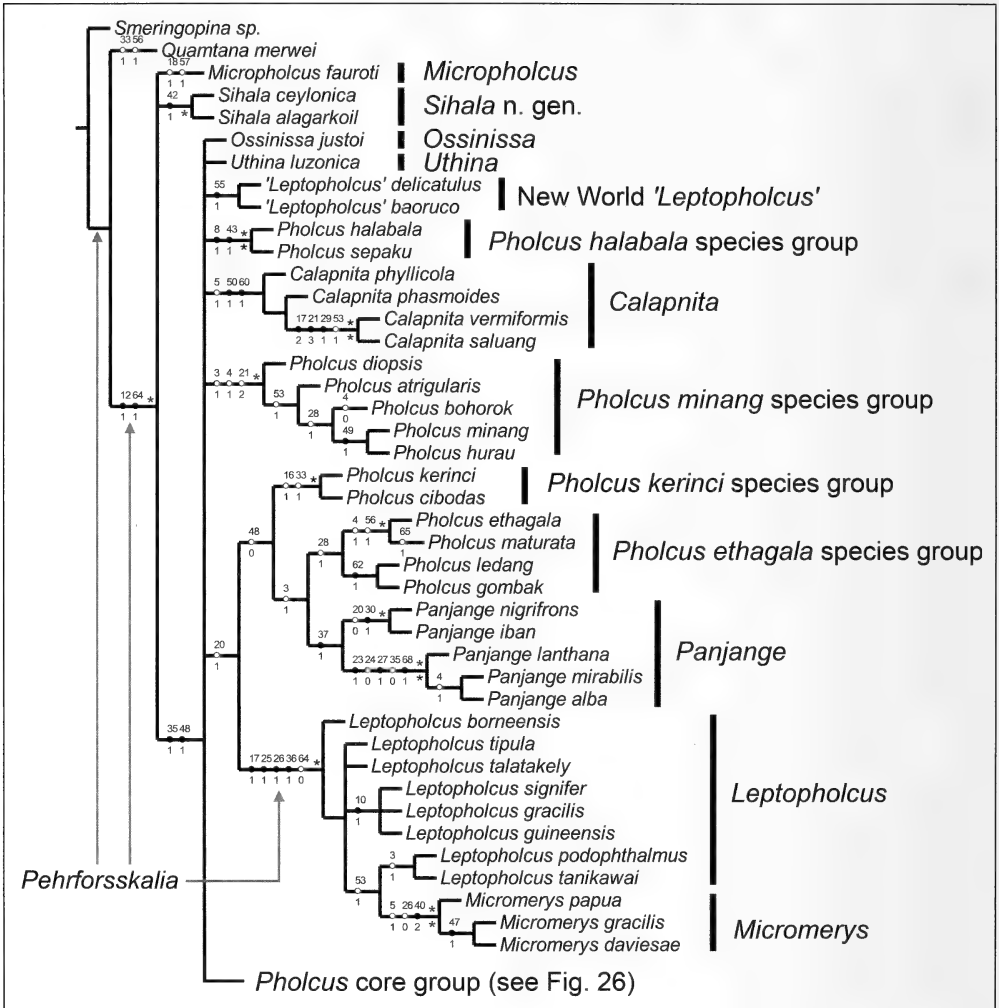


FIG. 25. Strict consensus cladogram of the four most parsimonious cladograms found by NONA using the data matrix in Appendix 1 under equal weighting of characters. See Appendix 3 for characters (above hashmarks) and character states (below hashmarks). Asterisks mark clades with absolute Bremer support  $\geq 2$  (above node) and with relative Bremer support  $> 70\%$  (below node). Genera and species groups are indicated on the right. The cladogram is continued in Figure 26.



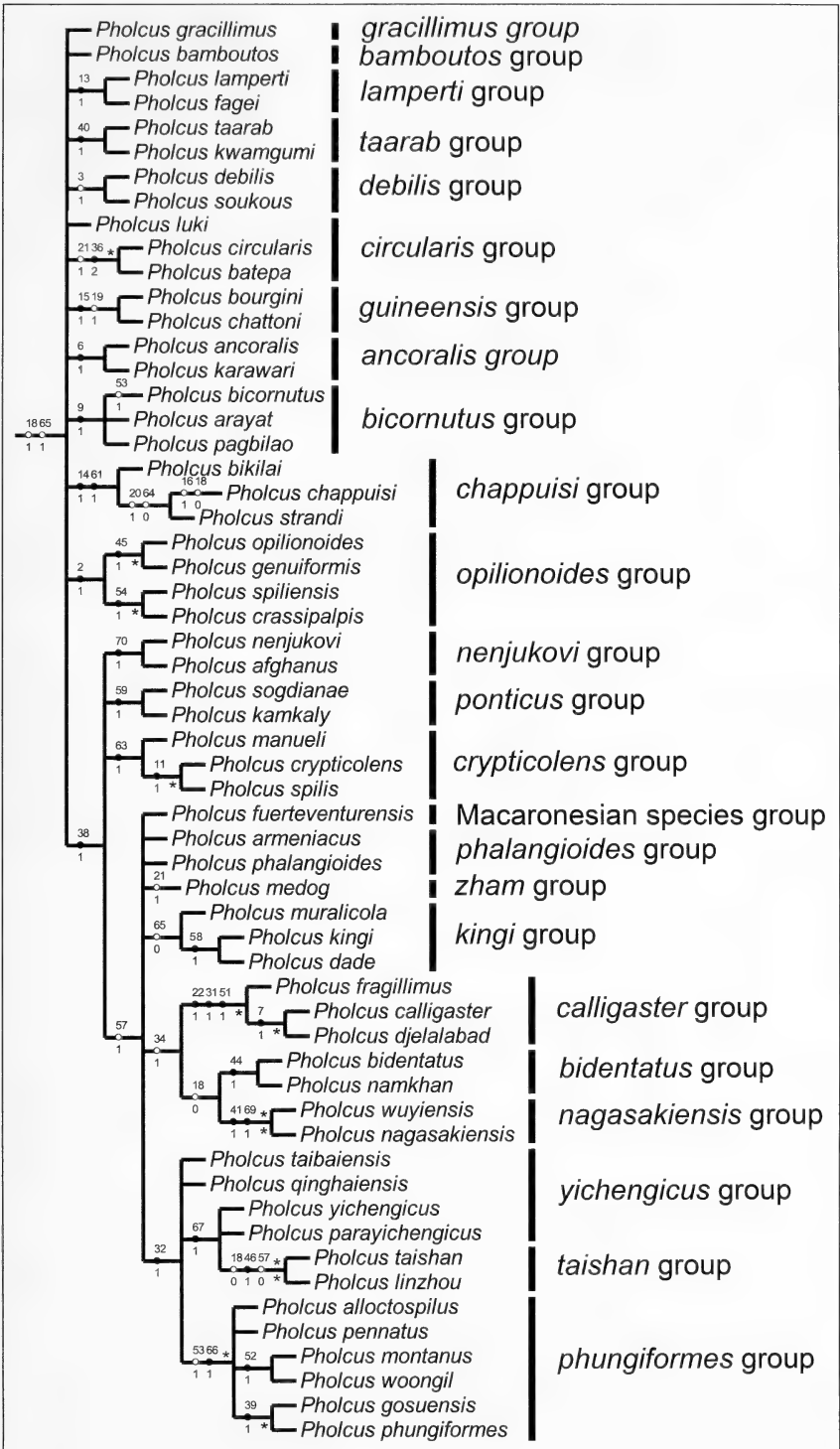


FIG. 26. Continuation of the cladogram from Fig. 25, showing the core group of *Pholcus*.

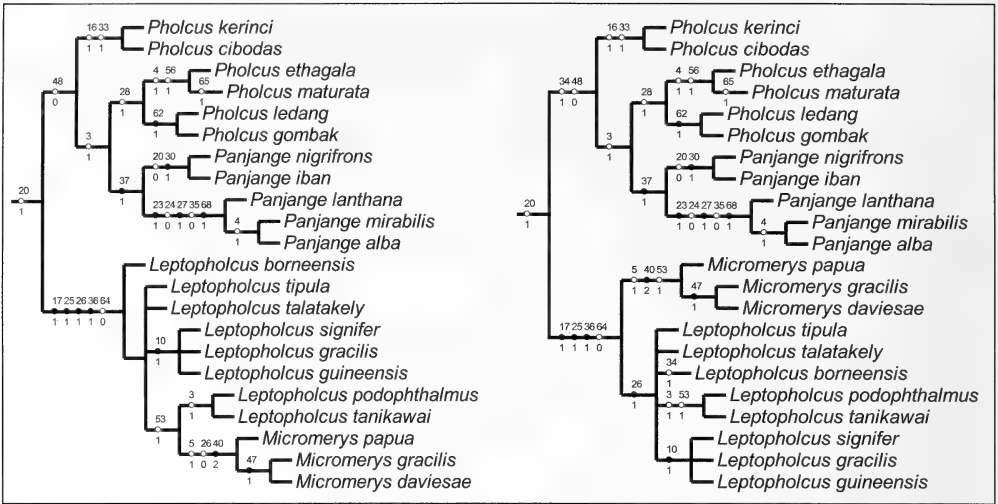


FIG. 27. Differences in the cladograms obtained under equal weighting of characters (left) and successive weighting in NONA (right). Note that under successive weighting, the genus *Leptopholcus* (excluding New World '*Leptopholcus*') is monophyletic.

equally weighted characters and under successive weighting). Adding *Pehrforsskalia* to the matrix resulted in a higher number of cladograms (32) and a much worse resolution of the strict consensus cladogram. This was due to the fact that *Pehrforsskalia* adopted three very different positions in these trees (indicated in Fig. 25): in most (24) it was sister to *Leptopholcus* + *Micromerys*, based on the male chelicerae (lateral apophyses in a distal position and pointing upwards; char. 17), but in some (4) it was sister to the entire ingroup (the *Pholcus* group of genera) or (in 4) sister to the ingroup + *Quamtana*.

In addition, implied weighting (which resolves character conflict in favor of the characters that have less homoplasy) was used with all possible settings of the constant of concavity K (1-6) to explore the stability of different clades under different weighting regimes. Some clades were entirely unaffected (e.g., a large group of *Pholcus* characterized by spines on the procurus; char. 38), others tended to shift positions and/or internal relationships. This is discussed in detail in the respective sections under each genus and species group description.

Absolute and relative Bremer supports were calculated using NONA. As expected from the relatively low number of characters (relative to terminal taxa), absolute Bremer support tended to be low. From the 62 nodes in Figs. 25 and 26, only 14

received absolute support values of 2 or higher (2: *Pholcus* group of genera; *Ph. halabala* species group; *Ph. minang* species group; *Ph. kerinci* species group; *Ph. ethagala* + *Ph. maturata*; *Pa. nigrifrons* + *Pa. iban*; *Ph. circularis* + *Ph. batepa*; *Ph. wuyiensis* + *Ph. nagasakiensis*; *Ph. phungiformes* species group; 3: *Micromerys*; *Pholcus taishan* species group; 4: *Calapnita vermiformis* + *C. saluang*; *Leptopholcus* + *Micromerys*; 6: *Panjange lanthana* + *Pa. cavicola* group). A relative Bremer support above 70% was equally rare (13 nodes) (72%: *Calapnita vermiformis* + *C. saluang*; *Ph. calligaster* species group; *Ph. gosuenis* + *Ph. phungiformes*; 75%: *Micromerys*; *Ph. opilionoides* + *Ph. genuiformis*; *Ph. spiliensis* + *Ph. crassipalpis*; *Ph. calligaster* + *Ph. djelalabad*; 80%: *Sihala*; *Pholcus halabala* species group; *Pholcus crypticolens* + *Ph. spilis*; 86%: *Pholcus nagasakiensis* species group; *Pholcus taishan* species group; 100%: *Panjange lanthana* + *Pa. cavicola* group). Large polytomies and numerous clades that are supported by a single (sometimes homoplastic) character further indicate that this analysis must be considered a first working hypothesis. It is for this reason that most of the formal nomenclatural changes following from the analyses were not implemented. For example, four species groups are kept in or assigned to *Pholcus* even though the cladistic analyses suggest new genera (Fig. 25: *Pholcus halabala*, *Ph. minang*, *Ph. kerinci*, and *Ph. ethagala*

species groups). New World '*Leptopholcus*' are kept in *Leptopholcus* even though they also seem to represent a new genus. Only *Pholcus ceylonicus* and a closely related new species are assigned to a new genus (*Sihala*) based on the cladistic analysis, but this change has been suggested before (Brignoli 1972b, Huber & Benjamin 2005).

As suggested previously (Huber & Fleckenstein 2008), the simplified type of tarsal comb-hair (char. 12, see Appendix 2) supports the monophyly of all ten genera treated herein (only implied weights with  $K=1-2$  resulted in the exclusion of the *Pholcus kerinci* species group from the *Pholcus* group of genera, placing it as sister to *Quamtana*). A knob-shaped structure on the epigynum (char. 64) may be another synapomorphy of this clade, but in the analysis including *Pehrforsskalia* a knob-shaped structure is originally absent (versus secondarily reduced) in the genera *Leptopholcus*, *Micromerys*, and *Pehrforsskalia*.

The following discussion refers to the results obtained from equal and successive weighting as shown in Figs. 25-27. Two characters support the monophyly of eight genera (all except *Micropolcus* and *Sihala*): a knee-shaped structure ventrally on the procurus (char. 35), and the origin of a new process (the 'uncus') on the genital bulb (char. 48). A large polytomy originates from this clade, including the monotypic genus *Ossinissa*, the genera *Uthina* and *Calapnita*, New World '*Leptopholcus*', two species groups tentatively assigned to *Pholcus*, a clade in-

cluding *Leptopholcus*, *Micromerys*, *Panjange* and two further species groups assigned to *Pholcus*, and finally the core-group of *Pholcus*. The monophyly of the clade including *Leptopholcus*, *Micromerys*, *Panjange* and two species groups assigned to *Pholcus* appears dubious: it is based on the reduction of distal male cheliceral apophyses (char. 20), but such apophyses are present in certain species of *Panjange* (which is considered a regain in these analyses). Implied weighting analyses shed further doubt on this topology (see respective sections under each genus and species group description). The monophyly of Old World ('true') *Leptopholcus* + *Micromerys* is strongly supported by several characters, but whether *Micromerys* is nested within *Leptopholcus* (as in the analysis using equally weighted characters) or sister to *Leptopholcus* (as in the analyses using successive and implied weighting) remains an open question. The core-group of *Pholcus* is supported by the presence of proximal frontal apophyses on the male chelicerae (char. 18) and by a strongly sclerotized epigynum (char. 65). Within *Pholcus*, many species groups can be identified with reasonable support, but their interrelationships largely remain unresolved. Characters that seem to support large clades within *Pholcus* that are stable under all weighting regimes are small spines dorsally or prolaterally on the procurus (char. 38), a branched appendix (char. 57), a dorsal elongation of the male palpal tarsus (char. 34), and a ventrally modified male palpal tibia (char. 32).

4. TAXONOMY

*Pebrforsskalia* Deeleman-Reinhold & van Harten, 2001

*Pebrforsskalia* Deeleman-Reinhold & van Harten 2001: 203-204. Type species by original designation: *Pebrforsskalia conopyga* Deeleman-Reinhold & van Harten, 2001.

*Diagnosis.* Small, long-legged, pale colored spiders (body length 2-3, leg 1:~20); distinguished from

other genera of the *Pholcus* group by combination of the following characters: cylindrical abdomen drawn into cone dorso-posteriorly (Figs. 28, 29), eight eyes, eye triads in males accompanied by small pointed processes, male chelicerae with pair of lateral apophyses distally (Fig. 78), male palp with massive trochanter apophysis (Figs. 77, 81), bulb with appendix, without uncus, epigynum barely sclerotized.

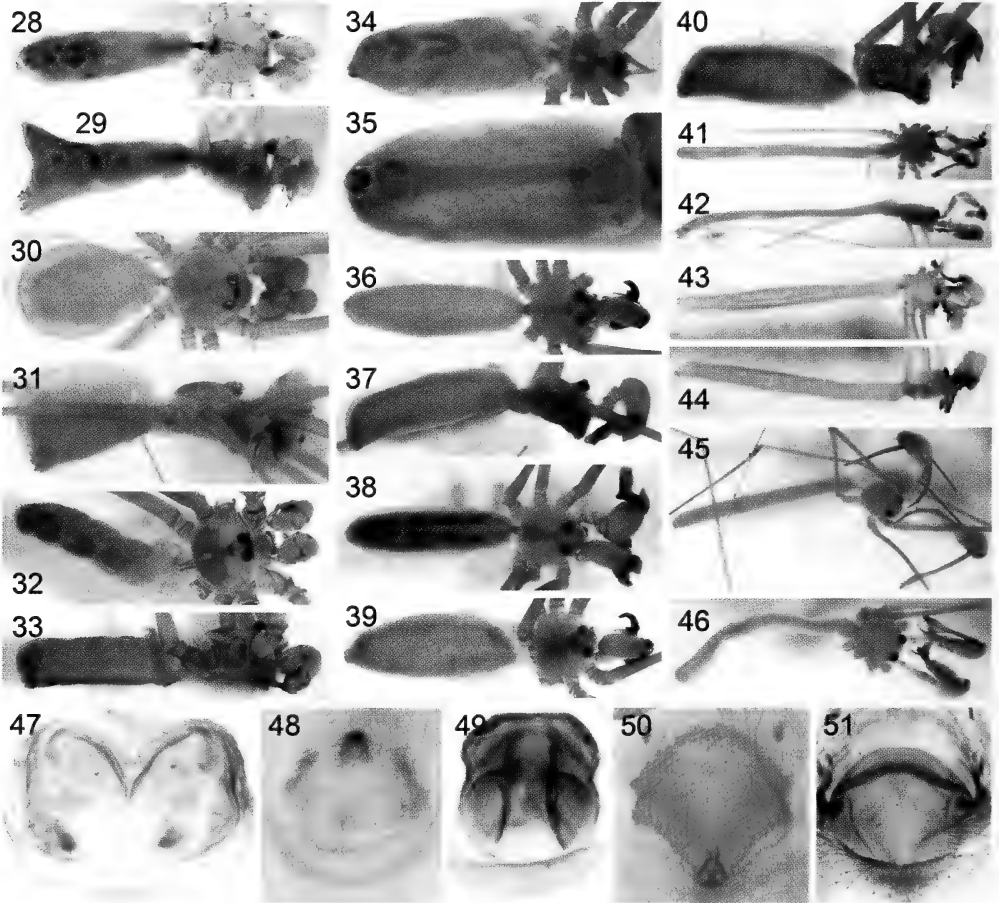


FIG. 28-51. Photographs of habitus and female genitalia. 28, 29. *Pebrforsskalia bilene*, male, dorsal and lateral views. 30, 31. *Micropholcus fauroti*, male, dorsal and lateral views. 32-35. *Sihala alagarkoil*, male, dorsal and lateral views; female, dorsal view; female abdomen, ventral view. 36-38. *Urbina luzonica*, male from Australia, dorsal and lateral views; male from Fiji, dorsal view. 39, 40. *Urbina ratchaburi*, male, dorsal and lateral views. 41, 42. *Calapnita vermiformis*, male, dorsal and lateral views. 43, 44. *Calapnita saluang*, male, dorsal and lateral views. 45. *Calapnita semengoh*, male, dorsal view. 46. *Calapnita phyllicola*, male, dorsal view. 47. *Pebrforsskalia shambaa*, cleared female genitalia, dorsal view. 48, 49. *Micropholcus fauroti*, epigynum, ventral view, and cleared female genitalia, dorsal view. 50, 51. *Sihala alagarkoil*, epigynum, ventral view, and cleared female genitalia, dorsal view.

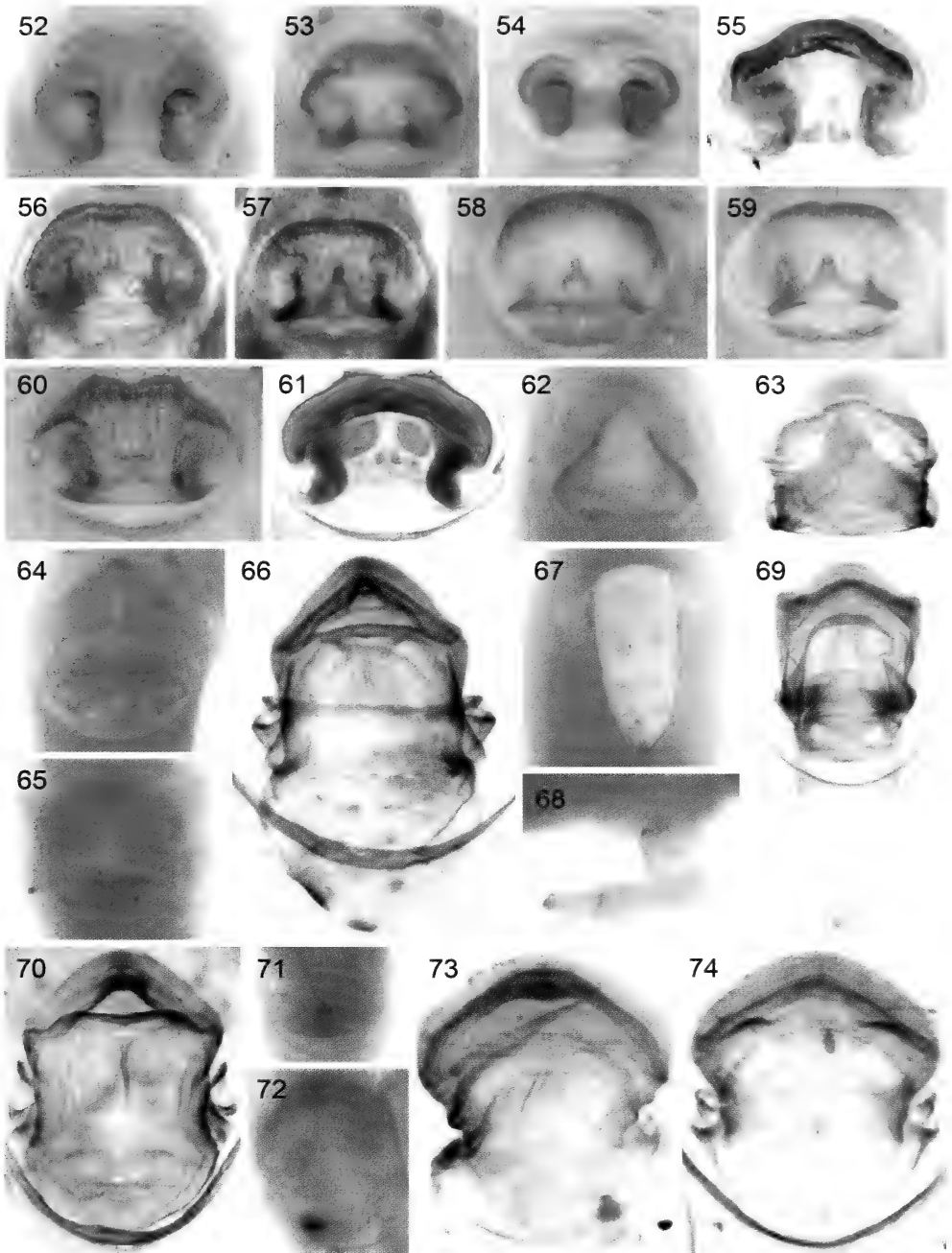


FIG. 52-74. Epigyna in ventral views and cleared female genitalia in dorsal views. 52-55. *Uthina luzonica*, syntypes (52-55), and females from Sumatra (56, 57), Australia (58), and Sulawesi (59). 60, 61. *Uthina ratchaburi*. 62, 63. *Calapnita vermiformis*. 64, 66. *Calapnita phyllicola*. 65. *Calapnita subphyllicola*. 67-69. *Calapnita semengoh* (68: scape, lateral view). 70, 71. *Calapnita phasmoides*. 72, 73. *Calapnita deelemanae*. 74. *Calapnita subphyllicola*.

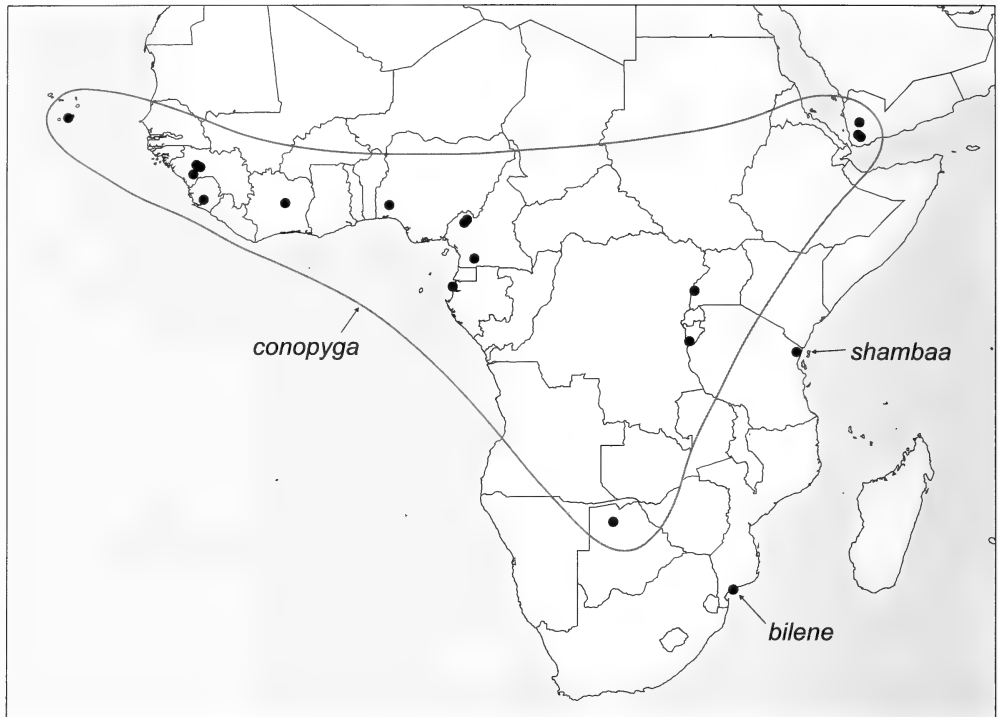


FIG. 75. Known distribution of *Pehrforskalia*. Data for *Pe. conopyga* are from Huber (2009b).

*Description.* Body length 2-3, carapace width 0.6-0.7. Carapace without thoracic furrow, AME small, eye triads in males on short stalks, each with small pointed process (figs. 135, 138 in Huber 2009b), clypeus and sternum unmodified, male chelicerae with pair of lateral apophyses distally (Fig. 78). Male palpal coxa with small retrolateral process, trochanter with massive apophysis, femur thickened but otherwise unmodified, tarsus without dorsal elongation, tarsal organ capsulate, procurus large and complex, without ventral 'knee', without dorsal spines, bulb with single apophysis (considered a homologue of the *Pholcus* appendix judging from its position), transparent embolus, without uncus. Legs long, tibia 1 in males ~4.5-6.5, tibia 1 L/d ~80-100, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4-5%, tarsus 4 with single row of comb-hairs (fig. 146 in Huber 2009b). Abdomen cylindrical, drawn into cone dorso-posteriorly, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped

spigots, PMS with two small spigots (SEM photos in Huber 2009b).

Sexual dimorphism slight, female eye triads closer together, not on stalks, without pointed processes, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~4.0-5.0). Epigynum very simple, barely sclerotized, without 'knob', internal genitalia with pair of round to oval pore-plates. *Monophyly.* *Pehrforskalia* was excluded from the cladistic analysis because it consistently turned up in different parts of the cladogram (see Cladistic analysis section above), increasing the number of most parsimonious solutions and leading to highly unresolved consensus cladograms. Putative synapomorphies are the small pointed processes on the male eye triads, the massive trochanter apophyses, and possibly the abdomen shape (dorso-posterior cone).

*Generic relationships.* While the inclusion of *Pehrforskalia* in the *Pholcus*-group of genera appears well supported (*Pholcus*-type of tarsal comb-hairs), its detailed relationships with other genera remain obscure. The armature of the male chelicerae reminds strongly of *Leptopholcus* and *Micromerys*, but cladistic

analyses did not consistently resolve such a grouping (see Cladistic analysis section above).

*Natural history.* The widespread *Pe. conopyga* seems to be common in low vegetation even in highly disturbed habitats. It has mostly been collected from the underside of green leaves, but also occurs under dead leaves or other flat objects on the ground (Huber 2009b). It does not build a domed web but apparently attaches only some irregular silk lines to the substrate. Nothing is known about the biology of the two other species.

*Distribution.* The type species is widely distributed from Cape Verde to Botswana and Yemen (Huber 2009b); the MNHN and USNM have two females from Madagascar (Sambirano and Ranomafana respectively) that seem to belong to this species); the same is true of two females from Israel (Tiberias) in AMNH, and one female and two juvenile specimens

from South Africa (Ndumo Game Reserve and Empangeni) in ZFMK and NCP. The two new species below are only known from their type localities in Tanzania and Mozambique respectively (Fig. 75).

*Composition.* The genus now includes three species: *Pe. conopyga* Deeleman-Reinhold & van Harten, 2001; *Pe. shambaa* n. sp.; *Pe. bilene* n. sp. For *Pe. conopyga*, see Huber (2009b). No further undescribed species are known to me.

*Pebrforsskalia shambaa* n. sp.

Figs. 47, 76-79

*Type.* Male holotype from Tanzania, Tanga Region, Muheza Dist., Kwangumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 25.vii.1995 ("Fog 11-BB"), in ZMUC.

*Etymology.* Named for the Shambaa (also called the Smbaa, Shambala, Sambala, or Sambara), an ethnic

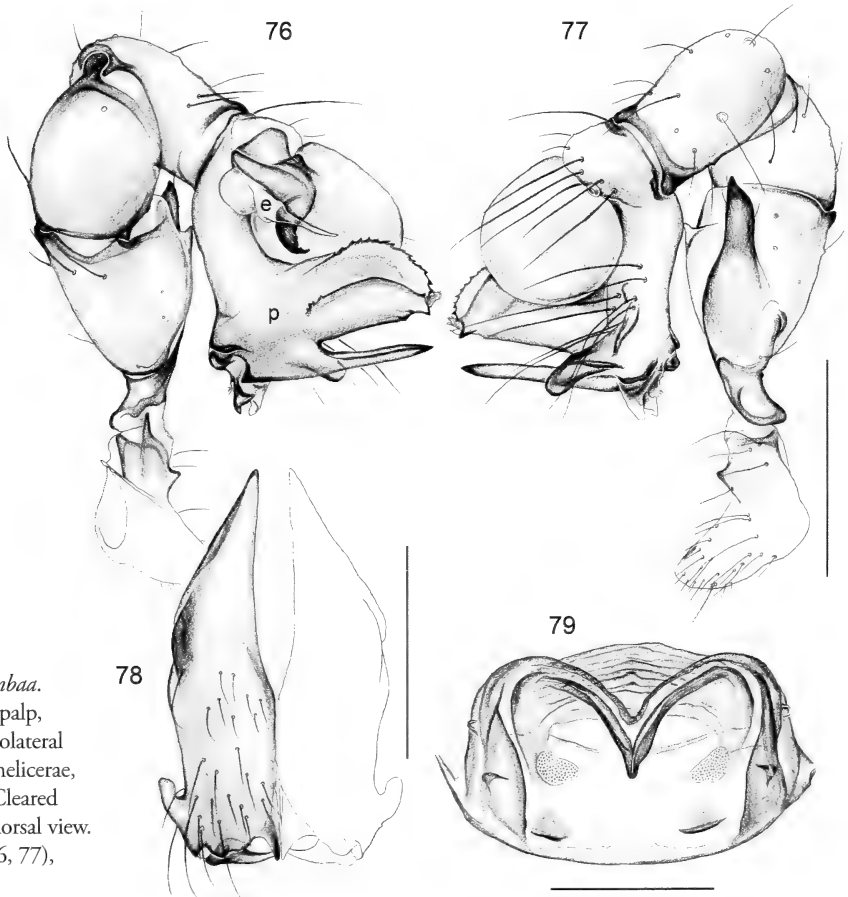


FIG. 76-79. *Pebrforsskalia shambaa*. 76, 77. Left male palp, prolateral and retrolateral views. 78. Male chelicerae, frontal view. 79. Cleared female genitalia, dorsal view. Scale lines: 0.3 (76, 77), 0.2 (78, 79).

and linguistic group based in the Usambara Mountains of northeastern Tanzania; noun in apposition. *Diagnosis.* Easily distinguished from known congeners by shapes of procurus and bulbal processes (Figs. 76, 77); from *Pe. bilene* also by distally straight trochanter apophysis (Fig. 77).

*Male* (holotype). Total body length 2.4, carapace width 0.65. Leg 1: 23.7 (6.0 + 0.3 + 5.6 + 10.5 + 1.3), tibia 2: 3.4, tibia 3: 2.1, tibia 4: 2.9; tibia 1 L/d: 97. Habitus as in *Pe. bilene* (cf. Figs. 28, 29). Entire spider pale ochre-yellow, only patellae and tibiametatarsus joints slightly darker. Distance PME-PME 265  $\mu\text{m}$ , diameter PME 70  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , AME tiny (diameter  $\sim$ 15  $\mu\text{m}$ ) lenses not clearly visible, close together (distance  $\sim$ 25  $\mu\text{m}$ ). Ocular area barely elevated but each triad on distinct stalk with pointed process near PME. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 78. Sternum wider than long (0.45/0.40), unmodified. Palps as in Figs. 76 and 77, coxa with small retrolatero-ventral apophysis, trochanter with large apophysis, femur barely modified, tibia rather small, procurus large and complex, with several distinctive processes, bulb with small hooked appendix (with semitransparent process proximally), transparent embolus, without uncus. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct (only distally a few barely visible in dissecting microscope). *Variation.* Other male with small triangular mark posteriorly on carapace, dorso-posterior projection on abdomen less prominent; tibia 1 missing.

*Female.* In general similar to male but triads not on stalks, closer together (distance PME-PME 170  $\mu\text{m}$ ); tibia 1 missing. Epigynum very simple externally, internal genitalia as in Figs. 47 and 79.

*Distribution.* Known from type locality only (Fig. 75). *Material examined.* TANZANIA: *Tanga Region:* Muheza Dist., Kwagumi Forest Reserve: ♂ holotype above; same data but 20.vii.1995 ("Fog 8-AL"), 1♂ in ZMUC; 23.vii.1995 ("Fog 10-FM"), 1♀ in ZMUC.

*Pehrforsskalia bilene* n. sp.

Figs. 28, 29, 80, 81

*Type.* Male holotype from Mozambique, Bilene (25°15.6'S, 33°17.7'E), Praia do Bilene, 30 m a.s.l., leaf litter, coastal forest, 20.xii.2007 (C. Haddad, R. Lyle, R. Fourie), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by shapes of procurus and bulbal processes (Figs. 80, 81); from *Pe. shambaa* also by distally curved trochanter apophysis (Fig. 81).

*Male* (holotype). Total body length 2.3, carapace width 0.65. Leg 1: 5.0 + 0.2 + 4.5 + 7.9, tarsus missing, tibia 2: 2.8, tibia 3: 1.6, tibia 4: 2.4; tibia 1 L/d: 85. Habitus as in Figs. 28 and 29. Carapace pale ochre-gray with some small darker marks posteriorly, ocular area and clypeus not darkened, sternum whitish, legs pale ochre-gray, abdomen pale gray, some darker and some whitish spots dorsally and laterally, ventrally monochromous. Distance PME-PME 345  $\mu\text{m}$ , diameter PME 70  $\mu\text{m}$ , distance PME-ALE 25  $\mu\text{m}$ , AME tiny (diameter  $\sim$ 25  $\mu\text{m}$ ) possibly without lenses, close together (distance  $\sim$ 10  $\mu\text{m}$ ). Ocular area elevated, each triad on distinct stalk with cone-shaped process near PME. No thoracic furrow; clypeus unmodified. Chelicerae as in *Pe. shambaa* (cf. Fig. 78). Sternum wider than long (0.45/0.35), unmodified. Palps as in Figs. 80 and 81, coxa with small retrolateral apophysis, trochanter with distinctive hooked apophysis, femur barely modified, procurus complex, with long slender apophysis distally, long prolateral process, and several ventral processes, bulb with simple, weakly sclerotized embolus, large appendix, without uncus. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 75).

*Material examined.* MOZAMBIQUE: Bilene: ♂ holotype above.

*Micropholcus* Deeleman-Reinhold & Prinsen, 1987

*Micropholcus* Deeleman-Reinhold & Prinsen 1987: 73-77; Deeleman-Reinhold & van Harten 2001: 199. Type species by original designation: *Pholcus fauroti* Simon, 1887.

*Mariguitaia* González-Sponga 2004: 66. Type species by original designation: *Mariguitaia divergentis* González-Sponga, 2004; synonymized in Huber (2009a).

*Diagnosis.* Small, long-legged, pale colored spiders (body length 2.0-2.5, leg 1:  $\sim$ 25); distinguished from other genera of the *Pholcus* group by combination of the following characters: globular to oval abdomen



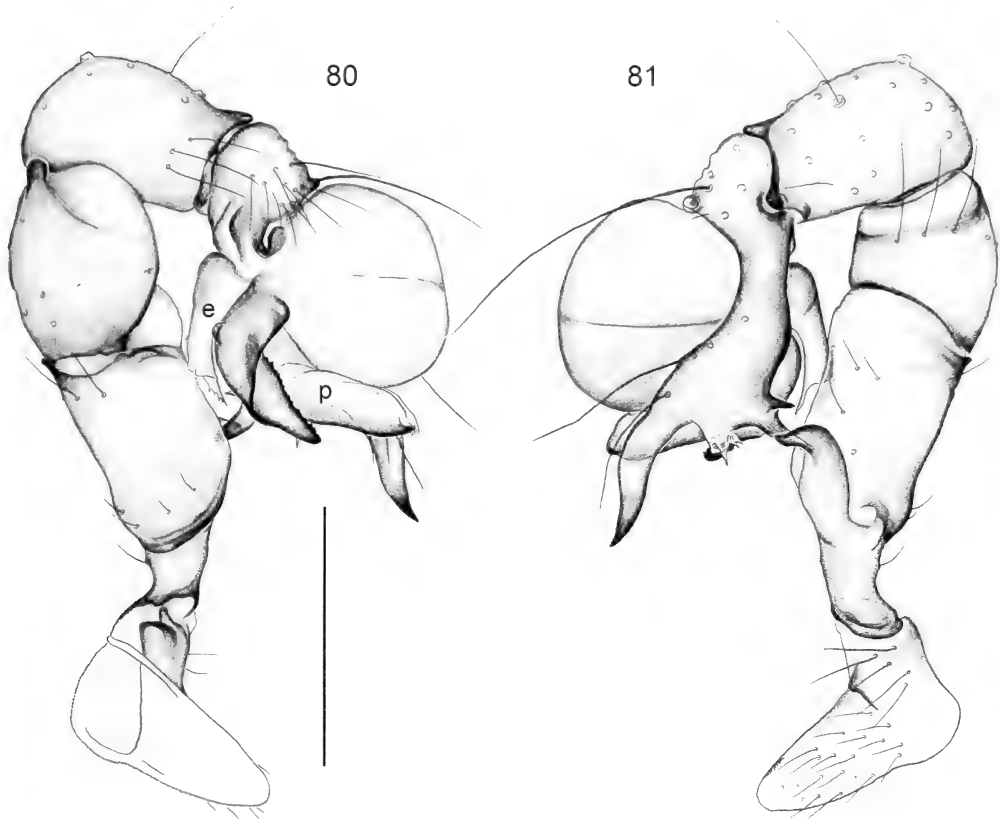


FIG. 80, 81. *Pebrforsskalia bilene*, left male palp in prolateral and retrolateral views. Scale line: 0.3.

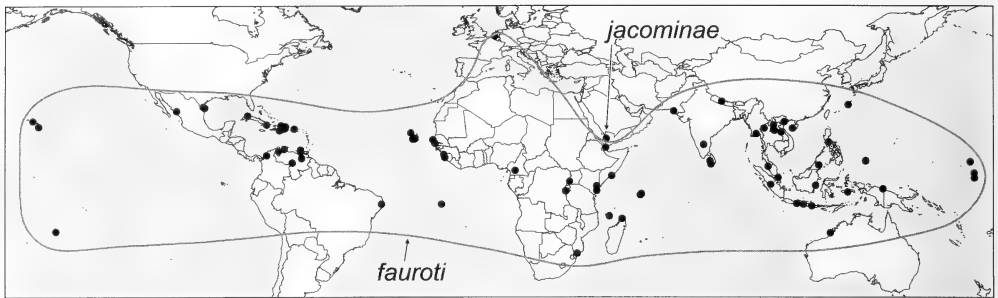
(Fig. 1), eight eyes, male chelicerae with three pairs of apophyses (Fig. 85), procurus with distinctive dorsal hinged process (Fig. 84), bulb with appendix, without uncus, epigynum barely sclerotized (Fig. 48). *Description.* See description of *Mp. fauroti* below. I have not seen the only other known species, *Mp. jacominiae* Deeleman-Reinhold & van Harten, 2001.

*Monophyly.* The most convincing synapomorphy known is the dorsal hinged process on the procurus. Among the taxa included in the cladistic analysis, this was an autapomorphy of *Mp. fauroti* and the character was thus not coded.

*Generic relationships.* The inclusion of *Micropholcus* in the *Pholcus*-group of genera appears well supported (char. 12: *Pholcus*-type of tarsal comb-hairs, char 64: epigynal 'knob'), but its detailed relationships with other genera remain obscure. The armature of the male chelicerae (especially the presence of proximal frontal apophyses; char. 18) reminds strong-

ly of some unambiguous *Pholcus* species, but this may result from convergent evolution. Other characters apparently derived in true *Pholcus* (and close relatives) are absent in *Micropholcus* (procurus 'knee', uncus, sclerotized epigynum; chars. 35, 48, 65). Thus, all analyses agree in placing *Micropholcus* in a 'basal' trichotomy together with *Sibala* and a clade including all other genera of the *Pholcus* group. The distinctive modified hair on the tip of the male trochanter apophysis (Fig. 95) reminds of New World '*Leptopholcus*' (fig. 105 in Huber 2000); this is probably convergent.

*Natural history.* The widespread *Mp. fauroti* is a common house spider in the tropics. It occupies much the same microhabitat as most other synanthropics (edges and corners) but runs more easily on walls than larger species. It has also been collected from vegetation around buildings. *Micropholcus jacominiae* was collected from dry plant debris (Deeleman-Reinhold & van Harten 2001).

FIG. 82. Known distribution of *Micropholcus*.

*Distribution.* The type species has a pantropical distribution (see below); *Mp. jacominiae* is known from its type locality in Yemen only (Fig. 82).

*Composition.* The genus includes two species: *Mp. fauroti* (Simon, 1887); *Mp. jacominiae* Deeleman-Reinhold & van Harten, 2001. No further undescribed species are known to me.

*Micropholcus fauroti* (Simon, 1887)

Figs. 1, 30, 31, 48, 49, 83-101

*Pholcus fauroti* Simon 1887: 453-454. Roth 1985: B33-1.

*Pholcus infirmus* Thorell 1895: 72-73. Synonymized by Deeleman-Reinhold & Prinsen (1987).

*Leptopholcus occidentalis* Mello-Leitão 1929: 95, fig. 6. Synonymized by Huber (2000).

*Micromerys occidentalis*: Mello-Leitão 1946: 75.

*Pholcus unicolor* Petrunkevitch 1929: 147-150, figs. 139-143. Gertsch 1937: 1. Gertsch & Mulaik 1940: 319. Gertsch & Davis 1942: 7. Synonymized by Roth (1985).

*Pholcus senegalensis* Millot 1941: 14-15, figs. 5bis a-b. Synonymized by Deeleman-Reinhold & Prinsen (1987).

*Pholcus chavanei* Millot 1946: 130-131, figs. 2a-b. Synonymized by Deeleman-Reinhold & Prinsen (1987).

*Mariguitaia divergentis, museorum, neoespartana, sucrensis* González-Sponga 2004: 64-75, pl. 1-4. Synonymized by Huber (2009a).

*Micropholcus fauroti*: Deeleman-Reinhold & Prinsen 1987: 73-77, figs. f 1-9. Pérez González 1995: 11. Song *et al.* 1999: 52, figs. 22T-Y. Huber 2000: 55, 342, figs. 26, 47, 106, 123, 158-159. Irie 2000: 215-217, figs. 1-4. Huber 2001: 136. Saaristo 2001: 12-15, figs. 7-15. Deeleman-Reinhold & van Harten 2001: 200, figs. 19-20. van Keer & van Keer 2001: 82. Penney 2004:

184. Colmenares 2008: 89. Beatty *et al.* 2008: 12-13, figs. 21, 22, 56, 57, 63. Huber 2009a: 66. Irie 2009: 106, figs. (2-2-13) 6-8.

*Types.* *Pholcus fauroti*: 1♂1♀ syntypes from Djibouti, Obock [11°58'N, 43°17'E], 1886 (L. Faurot), with Simon's handwritten label "8722 Ph. Fauroti E.S., Obok (...)" (last part unreadable), in MNHN (AR 10195), examined.

*Pholcus infirmus*: ♀ holotype from Myanmar, "Rangoon" [Yangon, 16°48'N, 96°09'E], not examined.

*Leptopholcus occidentalis*: ♀ holotype from Brazil, Pernambuco, Tapera [8°00.7'S, 35°25.7'W?], date and collector not given, in MNRJ (examined, see Huber 2000).

*Pholcus unicolor*: 1♂1♀ syntypes from Puerto Rico, Rio Piedras [-18°28'N, 66°07'W], "inside an incubator in the University Building", 5.xii.1925 (A. Petrunkevitch), not examined.

*Pholcus senegalensis*: 2♀ syntypes from Senegal, Dakar [14°41.6'N, 17°26.8'W], ix.1937 (L. Berland) (the label erroneously says "*Ph. senegalensis*, J. Millot rec. et det. 37, Dakar C. d'Iv. IX"), in MNHN, examined.

*Pholcus chavanei*: ♂ holotype from Madagascar, Ankarana Sud [-13°00'S, 49°04'E?], inside building, no date (M.A. Chavane), not examined.

*Mariguitaia* spp.: types from various localities in Venezuela (see González-Sponga 2004), not examined.

*Diagnosis.* Easily distinguished by shape of dorsal hinged process on procurus (Fig. 84), shapes of bulbal processes (Figs. 86, 87), and by hood-like internal structure of female genitalia (Fig. 48).

*Male* (Puerto Plata). Total body length 2.3, carapace width 0.95. Leg 1: 25.2 (6.3 + 0.4 + 6.3 + 11.2 + 1.0), tibia 2: 4.0, tibia 3: 2.6, tibia 4: 3.7, tibia 1L/d: 71. Habitus as in Figs. 30 and 31. Carapace ochre-yellow with large but indistinct darker mark medially, sternum whitish, legs monochromous ochre-

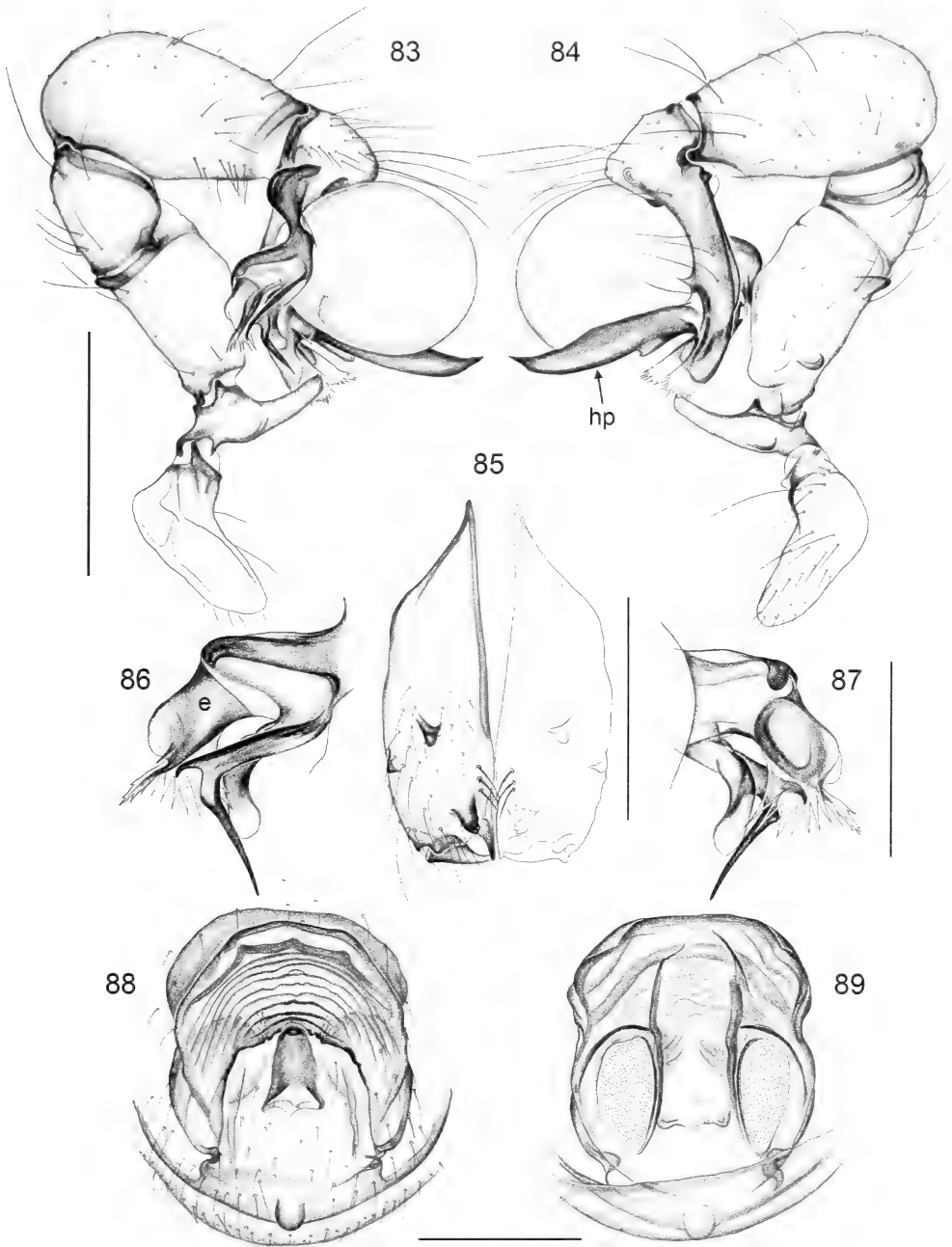


FIG. 83-89. *Micropholcus fauroti*. 83, 84. Left male palp, prolateral and retrolateral views. 86, 87. Processes of left bulb, prolateral and retrolateral views. 85. Male chelicerae, frontal view. 88, 89. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (83, 84), 0.2 (86, 87), 0.3 (85, 88, 89).

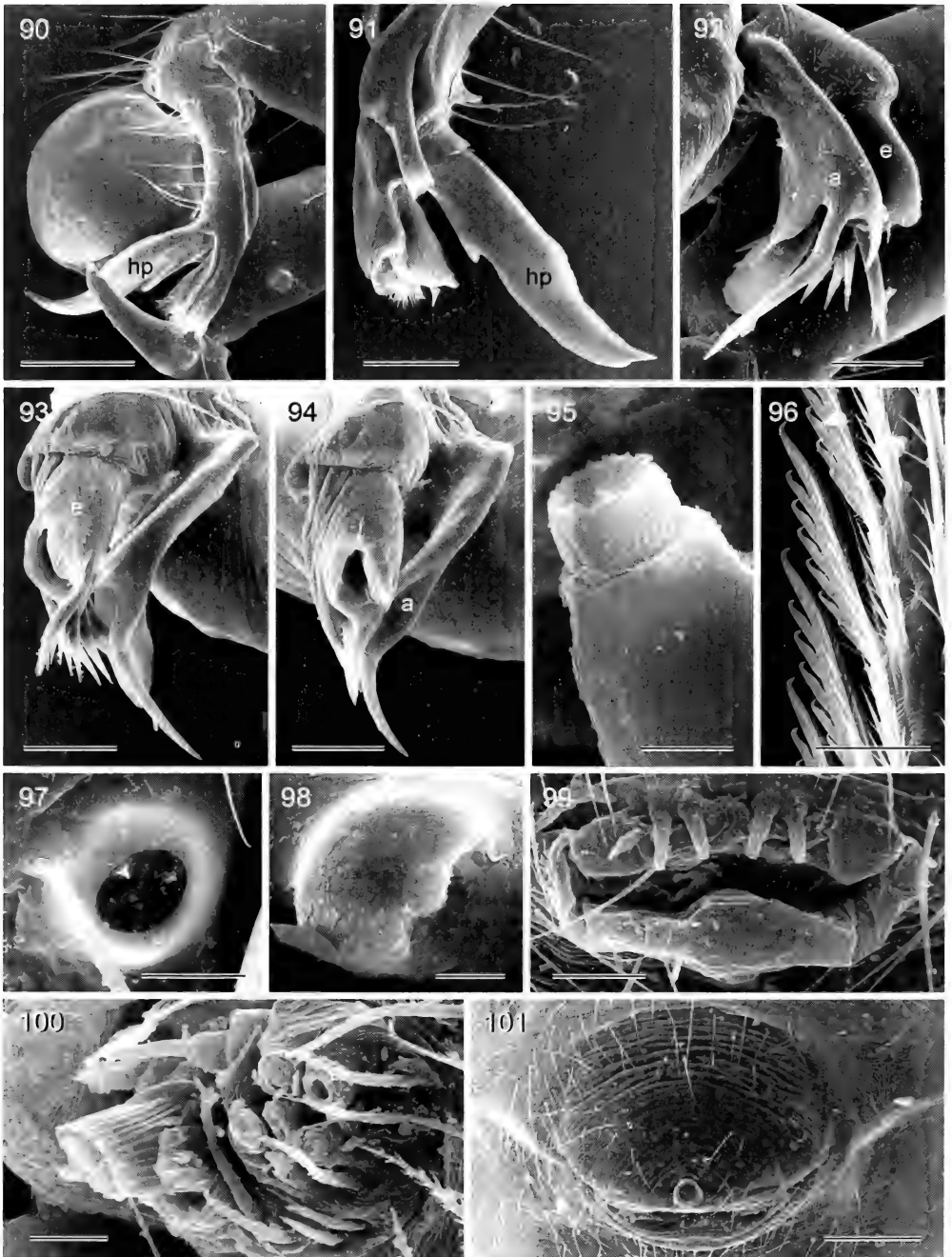


FIG. 90-101. *Micropholcus fauroti*. 90. Left palp, retrolateral view. 91. Left procurus, prolateral view. 92. Processes of right bulb, prolateral view. 93, 94. Processes of left bulb, dorsal views (arrow points at sperm duct opening). 95. Tip of palpal trochanter apophysis. 96. Comb-hairs on right male tarsus 4. 97. Male palpal tarsal organ. 98. Modified hairs on distal male cheliceral apophysis. 99. Male gonopore. 100. Female ALS. 101. Epigynum. Scale lines: 200µm (90, 101), 100µm (91), 60µm (92-94), 40µm (99), 20µm (96, 97), 10µm (98, 100), 8µm (95).

yellow, abdomen monochromous pale ochre-gray. Distance PME-PME 170  $\mu\text{m}$ , diameter PME 60  $\mu\text{m}$ , distance PME-ALE 25  $\mu\text{m}$ , distance AME-AME 35  $\mu\text{m}$ , diameter AME 45  $\mu\text{m}$ . Ocular area barely elevated, each triad on low hump, several longer hairs on posterior side of ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 85, two modified hairs in each distal apophysis (Fig. 98), several stronger hairs medially and two pairs of distinctive apophyses proximally. Sternum wider than long (0.60/0.55), unmodified. Palps as in Figs. 83 and 84, coxa unmodified, trochanter with small retrolateral bulge and long ventral apophysis with distinctive modified hair on tip (Fig. 95), femur with retrolateral apophysis proximally, procurus with distinctive dorsal hinged process, basal part with membranous tip and complex prolateral structures (Fig. 91); tarsal organ capsulate (Fig. 97); bulb large, apparently hinged process dorsally (putative embolus), bifid appendix ventrally (Figs. 86, 87, 92-94). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 8%, prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 pseudosegments indistinct, only distally a few visible in dissecting microscope. Tarsus 4 with single row of comb-hairs (Fig. 96). Gonopore with four epiandrous spigots (Fig. 99).

*Variation.* In some specimens roughly triangular mark posteriorly on carapace fairly distinct; no appreciable genital variation seen. Tibia 1 in 22 other males: 5.0-7.0 (mean 6.1). Measurements of male syntype from Obock: tibia 1: 5.3, tibia 2: 3.7, tibia 3: 2.4, tibia 4: 3.2.

*Female.* In general similar to male, triads at almost same distance (distance PME-PME 150  $\mu\text{m}$ ); few hairs posteriorly on ocular area. Tibia 1 in 39 females: 4.4-5.6 (mean 4.8). Epigynum barely sclerotized protruding area with posterior 'knob' (Figs. 88, 101), anterior and lateral internal structures visible through cuticle (Fig. 48); internal genitalia as in Fig. 89, with unique large (expandable?) frontal bursa. Anterior lateral spinnerets with eight spigots each (Fig. 100). *Distribution.* Widely distributed between about 25°S and 30°N [only the Antwerp record in van Keer & van Keer (2001) falls far out of this range; Fig. 82]. The species is here newly recorded for Ascension Island, The Gambia, Guinea, Sierra Leone, Cameroon, Congo Dem. Rep., Uganda, Mozambique, Somalia, Comoros, Pakistan, India, Laos, Singapore, Sumatra, and Palau. The MNHN has further speci-

mens not listed below from Zanzibar, Egypt, Vietnam, Djibouti, Yemen, India, and Thailand.

*Material examined.* USA: Texas: Edinburg [26°18.2'N, 98°09.9'W], 20.iii.1936 (Mulaik), 1♀ in AMNH. CUBA: La Habana [-23°06'N, 82°24'W], in house, iii.2001 (A. Pérez G.), 4♂2♀ in pure ethanol, in ZFMK.

DOMINICAN REPUBLIC: *Barahona Prov.*: S of Barahona (18°06.5'N, 71°04.5'W), in hotel room, 15 m a.s.l., 19.xi.2005 (B.A. Huber), 2♀ in ZFMK; *Paraiso*, in hotel (17°59'N, 71°10'W), -10 m a.s.l., 8.xii.2007 (B.A. Huber), 3♀ in pure ethanol, in ZFMK. *Samaná Prov.*: Las Galeras (19°17.5'N, 69°11.9'W), hotel room, 10 m a.s.l., 12.xi.2005 (B.A. Huber), 1♀ (+3♂2♀ in pure ethanol) in ZFMK. *Puerto Plata Prov.*: Puerto Plata, hotel room (-19°47'N, 70°42'W), 10 m a.s.l., 15.xi.2005 (B.A. Huber), 1♂1♀ in ZFMK. *Monte Plata Prov.*: Monte Plata (18°48.7'N, 69°47.1'W), in hotel room, 60 m a.s.l., 20.xi.2005 (B.A. Huber), 2♂6♀ in ZFMK. *Hato Mayor Prov.*: Hato Mayor (18°45.8'N, 69°15.4'W), in hotel room, 120 m a.s.l., 22.xi.2005 (B.A. Huber), 1♀ in ZFMK. *Distrito Nacional*: Santo Domingo (18°28.3'N, 69°53.4'W), in hotel room, 40 m a.s.l., 26.xi.2005 (B.A. Huber), 1♂1♀ in ZFMK. VENEZUELA: *Falcón*: Coro [11°24'N, 69°40'W], city, "in Mauerwinkelnetzen", 25.xii.1997 (P. Naba-vi), 1♂ in NHMB.

ASCENSION ISLAND [-7°56'S, 14°22'W]: iii.1990 (P. Ashmole), 3♂3♀ in CJFM (21817).

CAPE VERDE: *Santiago Island*: Tarrafal [15°16.6'N, 23°45.1'W], in house, 3.xi.1998 (W. Tavernier), 1♀ in MRAC (208430). *Fogo Island*: São Filipe [14°53.7'N, 24°29.9'W], in house, 6.xi.1998 (W. Tavernier), 2♂ in MRAC (208390). "Cabo Verde, 343", no further data, 1♂2♀ in RMNH.

SENEGAL: Dakar: 2♀ syntypes of *Ph. senegalensis* above; Dakar, "terrain vague", 16.xi.1983 (E. Tybaert), 1♀ in MRAC (161816); Dakar, in house, 14.xi.1983 (E. Tybaert), 2♂ in MRAC (161826).

THE GAMBIA: Bakau [13°28.7'N, 16°40.7'W], under palm leaves, no date (J. Wunderlich), 1♂1♀ in SME.

GUINEA: Conakry, in building and on banana leaf (9°31-34'N, 13°39-41'W), -50 m a.s.l., 18.xi.2008 (B.A. Huber), 2♀ in pure ethanol, in ZFMK.

SIERRA LEONE: Freetown, Fourah Bay College, Mount Aureol [8°29.0'N, 13°13.2'W], botanical garden, v.-vi.1977 (D. Olu-Pitt), 1♀ in MRAC (separated from 159145); Mount Aureol, ix.1976 (D. Olu-Pitt), 11♂15♀ in MRAC (148459).

- CAMEROON: *Centre Region*: Yaoundé, hotel (3°53.0'N, 11°31.4'E), 700 m a.s.l., 14.iv.2009 (B.A. Huber), 2♂2♀ in pure ethanol, in ZFMK.
- CONGO DEM. REP.: Kivu: Uvira [3°21'S, 29°10'E], "entre Kalundu et Kavimvira", vi.1961 (R. Kiss), 3♀ in MRAC (119887).
- UGANDA: *Bushenyi District*: near Katunguru, in building (0°08.9'S, 30°03.9'E), 950 m a.s.l., 29.xi.2010 (B.A. Huber), 3♂4♀ in ZFMK.
- MOZAMBIQUE: Bilene: Praia do Bilene (25°15.6'S, 33°17.7'E), 30 m a.s.l., leaf litter, coastal forest, 20.xii.2007 (C. Haddad, R. Lyle, R. Fourie), 1♂ in ZFMK.
- SOMALIA: Mogadishu [-2°05'N, 45°20'E], 1946 (R. Accigliaro), 1♀ in MRAC (131162).
- KENYA: *Coast Prov.*: Malindi, in hotel (3°13.0'S, 40°07.8'E), 10 m a.s.l., 21.i.2010 (B.A. Huber), 3♂2♀ and 2 juvs. in pure ethanol, in ZFMK.
- DJIBOUTI: Obock: 1♂1♀ syntypes of *Pholcus fauroti* above.
- COMOROS: Anjouan: Mutsamudu [12°10'S, 44°24'E], in house, 19.v.2003 (R. Jocqué, D. van den Spiegel), 1♂ in pure ethanol, in ZFMK (from MRAC 213464).
- MADAGASCAR: "Ankara" [-13°S, 49.1°E?], "maison Chavane" (type locality of *Ph. chavane!*), 1946 (J. Millot), 4♂3♀ in MNHN.
- PAKISTAN: Karachi [24°52'N, 67°02'E], 20.x.1976 (M.U. Shadab), 3♂4♀ in AMNH.
- INDIA: *Karnataka*: "Bangalore" [Bengaluru, 12°58'N, 77°35'E], "rice", xii.1987 (Murphy), 2♂2♀ in CJFM (15832).
- SRI LANKA: Galle district, Dodanduwa [6°06.2'N, 80°07.6'E], Katudampe, 2.-3.iii.1973 (M. Saaristo), 1♂1♀ in ZMT (AA 3444). Colombo District, Negombo [7°13'N, 79°52'E], in cultural habitats, 24.-27.xi.1972 (P. Lehtinen, I. Oksala), 1♂1♀ 2 juvs. in ZMT (AA 3443).
- LAOS: *Luang Prabang Prov.*: Tham Sieng Mang (19°54.1'N, 102°08.5'E), 270 m a.s.l., cave and surroundings, by hand, 12.xi.2004 (P. Jäger, V. Vedel), 1♀ in SMF. *Khammouan Prov.*: Thakek (17°23.8'N, 104°48.2'E), ca. 160 m a.s.l., hotel and surrounding garden, wall, by hand, 28.x.2004 (P. Jäger, V. Vedel), 4♀ in SMF; same locality, city, in and around houses, tree logs, 17.ii.2003 (P. Jäger), 1♂1♀ in SMF. *Vientiane Prov.*: Vientiane (17°58.1'N, 102°36.4'E), ~190 m a.s.l., by hand, 30.xi.2009 (P. Jäger), 1♂ in SMF.
- SINGAPORE: Bukit Timah [1°20'N, 103°46'E], no date (J. Wunderlich), 1♂1♀ in SMF. Boon Lay, 27.vi.1991 (D.J. Court), 1♂ in RMBR. Kent Ridge, 25.ix.1991 (H.K. Lua), 1♂ in RMBR; Kent Ridge, ZRC compound, 14.v.1988 (H.K. Lua), 1♀ in RMBR; Jurang, "0032", 27.x.1983 (H.K. Lua), 1♂ in RMBR. Raffles Institution, Bishan, 20.iii.1991 (C.L. Tan), 1♂1♀ in RMBR.
- INDONESIA-SUMATRA: "Fort de Kock" [=Bukittinggi: 0°18'S, 100°23'E], 920 m a.s.l., xi.1920 (E. Jacobson), 2♂2♀ in MCZ.
- INDONESIA-JAVA: Malang [7°58'S, 112°38'E], in hotel, 18.vii.1982, collector not given, 1♂ in RMNH.
- INDONESIA-LESSER SUNDA ISLANDS: Bali, Negara [-8°20'S, 114°37'E], 500 m a.s.l., 20.xi.1997 (J. Murphy), 1♂ in CJFM (23175).
- INDONESIA-MALUKU ISLANDS: Ambon, Ambon city [3°42'S, 128°10'E], in hotel room, 23.viii.1992 (C.L. & P.R. Deeleman), 1♀ in RMNH.
- PALAU: Koror [7°20'N, 134°28'E], vi.1981 and ii.-iii.1982 (R.A. Lewin), 2♂ (2 vials) in MCZ.
- KIRIBATI: Tarawa, Betio [1°21.3'N, 172°55.7'E], 14.viii.1956 (E.G. Brown), 1♀ in BPBM.
- SOCIETY ISLANDS: Moorea, Paopao [17°30.6'S, 149°49.3'W], in house, 13.i.1987 (J.W. & E.R. Berry), 1♂2♀ in BPBM.

#### *Sihala* new genus

*Type species*: *Pholcus ceylonicus* O. Pickard-Cambridge, 1869.

*Etymology*. *Sihala* was a Pali name of Sri Lanka. Gender feminine.

*Diagnosis*. Large, long-legged spiders (body length ~6-7, leg 1 > 50); distinguished from other genera of the *Pholcus* group by combination of the following characters: cylindrical abdomen, eight eyes, male chelicerae with two pairs of apophyses (Fig. 105; proximal-lateral and distal-frontal), male palp (Figs. 103, 104) with massive trochanter apophysis with thick modified hair on tip, massive femur, small and simple procurus without 'knee' and dorsal spines, large and complex bulbal apophysis, small short embolus, epigynum weakly sclerotized, with small 'knob' (Figs. 50, 106).

*Description*. Body length ~6-7, carapace width ~2.0. Carapace without thoracic furrow, AME present, eye triads in males on short elevations, clypeus and sternum unmodified, male chelicerae with pair of lateral apophyses proximally and distal apophyses frontally, the latter provided with two modified hairs each (fig. 4b in Huber & Benjamin 2005). Male palpal coxa unmodified, trochanter with massive

apophysis provided with short but thick modified hair at tip (figs. 3e, f in Huber & Benjamin 2005), femur very large, with small proximal process dorsally, tarsus without dorsal elongation, tarsal organ capsulate (fig. 4c in Huber & Benjamin 2005), procurus small and simple, without ventral 'knee', without dorsal spines, bulb with single apophysis (considered a homologue of the *Pholcus* appendix judging from its position), small weakly sclerotized embolus. Legs long, tibia 1 in males -11-16, tibia 1 L/d -60, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4-5%, tarsus 4 with single row of comb-hairs (Fig. 145). Abdomen cylindrical, male gonopore with epiandrous spigots (number unclear, fig. 4a in Huber & Benjamin 2005), ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots (figs. 4e, f in Huber & Benjamin 2005).

Sexual dimorphism slight, female eye triads closer together, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: -9-13). Epigynum weakly sclerotized, with 'knob', internal genitalia with pair of oval pore-plates.

*Monophyly.* The only synapomorphy suggested by the cladistic analyses is the small and simplified procurus (char. 42; Fig. 104). Further potential synapomorphies are the complex and large bulbal apophysis, the large palpal femur (in relation to the tibia), and the massive male palpal trochanter apophysis with modified hair on tip.

*Generic relationships.* While the inclusion of *Sihala* in the *Pholcus*-group of genera appears well supported (char. 12: *Pholcus*-type of tarsal comb-hairs; char. 64: epigynal 'knob'), its detailed relationships with other genera remain obscure. The absence of a procurus 'knee' (char. 35) and an unculus (char. 48) suggest the genus is 'basal' within the *Pholcus* group.

*Natural history.* Label data suggest that *S. alagarkoil* is a communal spider (see below). Group-living is rare in Pholcidae but has apparently evolved repeatedly (*Holocnemus plucheii*: Jakob 1991, 1994, 2004; *Smeringopus* sp. in Kenya, B.A. Huber unpublished data; *Ph. taita*, see below).

*Distribution.* The genus is known from southern India and Sri Lanka only (Fig. 102). The single Malaysian record is dubious (see below).

*Composition.* The genus includes two species: *Sihala ceylonica* (O. Pickard-Cambridge, 1869) n. comb. (redescription in Huber & Benjamin 2005); *S. alagarkoil* n.sp. No further species are known to me.

*Sihala ceylonica* (O. Pickard-Cambridge, 1869) n. comb.

Fig. 145

*Pholcus ceylonicus* O. Pickard-Cambridge 1869: 378-379, pl. 11, figs. 13, 21-27. Brignoli 1972b: 909-911, figs. 1-2, 4-7. Brignoli 1975: 36, fig. 2f (copied from Brignoli 1972b). Huber & Benjamin 2005: 3306-3311, figs. 1-4.

*New records.* SRI LANKA: Kandy District, Namadegalla (Meda Maha Nuwara) [7°18'N, 80°51'E], in



FIG. 102. Known distribution of *Sihala*. The question mark denotes a *S. ceylonica* specimen that may be mislabeled (see text).

litter and grass by a brook, 23.xi.1972 (P. Lehtinen, I. Oksala), 1 ♀ in ZMT (AA 3519). Kandy [7°17'N, 80°38'E], 600 m a.s.l., waterworks forest, in hollow tree, 7.-11.viii.1981 (C.L. Deeleman-Reinhold), 2 ♀ 2 juvs. in RMNH. Ratnapura District, Belihul Oya [6°41'N, 80°46'E], on walls, 18.i.1969 (P. Lehtinen), 2 ♀ 3 juvs. in ZMT (AA 3516-17). Moneragala District, Diyagama Falls [6°44'N, 81°02'E], in litter, 19.xi.1972 (P. Lehtinen), 1 ♀ in ZMT (AA 3518). Badulla District, Istrapura cave, Hanguranketa, x.1980 (collector not given), 2 ♀ 3 juvs. in RMNH. MALAYSIA: Genting Highlands [3°24.5'N, 101°45.9'E], no date (C.L. & P.R. Deeleman), 1 ♂ 1 ♀ in RMNH.

*Note.* The Malaysian specimens are in all details indistinguishable from Sri Lankan specimens. The possibility that this is a case of mislabeling should be considered since no further specimens have ever been collected outside Sri Lanka.

*Sihala alagarkoil* n. sp.

Figs. 32-35, 50, 51, 103-107

*Type.* Male holotype from India, Tamil Nadu, 21 km NE Madurai, Alagarkoil [-10°04'N, 78°13'E], 27.-28.xii.1989 (V. & B. Roth), in CAS.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from its only known congener by shapes of procurus (wider and shorter), bulbal processes, and epigynum (scape-like elongation) (Figs. 103, 104, 106).

*Male* (holotype). Total body length 7.1, carapace width 2.2. Leg 1: 14.1 + 1.0 + 15.1, metatarsus and tarsus missing, tibia 2: 10.5, tibia 3: 7.2, tibia 4: 9.7, tibia 1L/d: 60. Habitus as in Figs. 32 and 33. Carapace pale ochre with large brown mark posteriorly, ocular area with median brown line, clypeus not darkened, sternum medially slightly darkened (light brown), legs pale ochre, tips of femora and tibiae whitish, subdistally slightly darkened, also patellae and tibiae proximally darker, abdomen pale ochre-gray with four distinctive light brown marks dorsally, ventrally with light brown band (cf. female, Fig. 35), genital area brown. Distance PME-PME 325 µm, diameter PME 175 µm, distance PME-ALE 60 µm, distance AME-AME 45 µm, diameter AME 95 µm. Ocular area elevated, each triad on low hump, apparently without longer hairs. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 105, distal apophyses with two modified hairs each, proximal apophyses conservative. Sternum wider than long

(1.4/1.1), unmodified. Palps as in Figs. 103 and 104, coxa unmodified, trochanter with strong apophysis with large modified hair distally, femur very wide, with proximal apophysis ventrally and low hump dorsally, procurus very small and simple, bulb with rounded apophysis retrolaterally (Fig. 104) and two prolateral processes: one small and pointed (putative embolus), one very large and complex (putative appendix). Legs without spines and curved hairs, few vertical hairs (many hairs missing). Retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation.* Tibia 1 in 2 other males: 15.5, 16.1.

*Female.* In general similar to male (Fig. 34) but triads closer together (distance PME-PME 210 µm). Tibia 1 in 3 females: 12.5, 12.7, 12.9. Epigynum pointed posteriorly, with distinctive pair of distal ridges and small 'knob' (Figs. 50, 106); internal genitalia as in Figs. 51 and 107.

*Natural history.* The specimens are accompanied by a label saying "communal pholcids, about 30 ♂♀ and large immatures in about 1' x 1' x 2' long". This is an extremely high and unusual density for pholcids. In addition, they were accompanied by 1 ♂ 1 ♀ of another pholcid species, *Crossopriza byoni* (Blackwall, 1867).

*Distribution.* Known from two localities in Tamil Nadu, southern India (Fig. 102).

*Material examined.* INDIA: *Tamil Nadu*: 21 km NE Madurai, Alagarkoil: ♂ holotype above; same data, 3 ♂ 3 ♀ in CAS. 5 km W Rajapalayam, Ayyanar Falls [-9°30'N, 77°27'E], 350 m a.s.l., xi.1979 (W. Eberhard), 1 ♀ in MCZ.

*Uthina* Simon, 1893

*Uthina* Simon 1893a: 476. Deeleman-Reinhold 1986a: 46-47. Type species by original designation: *Uthina luzonica* Simon, 1893.

*Diagnosis.* Medium-sized, long-legged spiders (body length 3.5-5.0, leg 1:-40-50); distinguished from other genera of the *Pholcus* group by combination of the following characters: cylindrical abdomen, six eyes, male chelicerae with lateral apophyses proximally and frontal apophyses distally, male procurus with 'knee', without dorsal spines, bulb with curved uncus and slender appendix (Figs. 109-113, 126), epigynum barely sclerotized, with 'knob'.

*Description.* Body length 3.5-5.0, carapace width 1.1-1.4. Carapace without thoracic furrow, AME absent, eye triads on low humps, clypeus and ster-



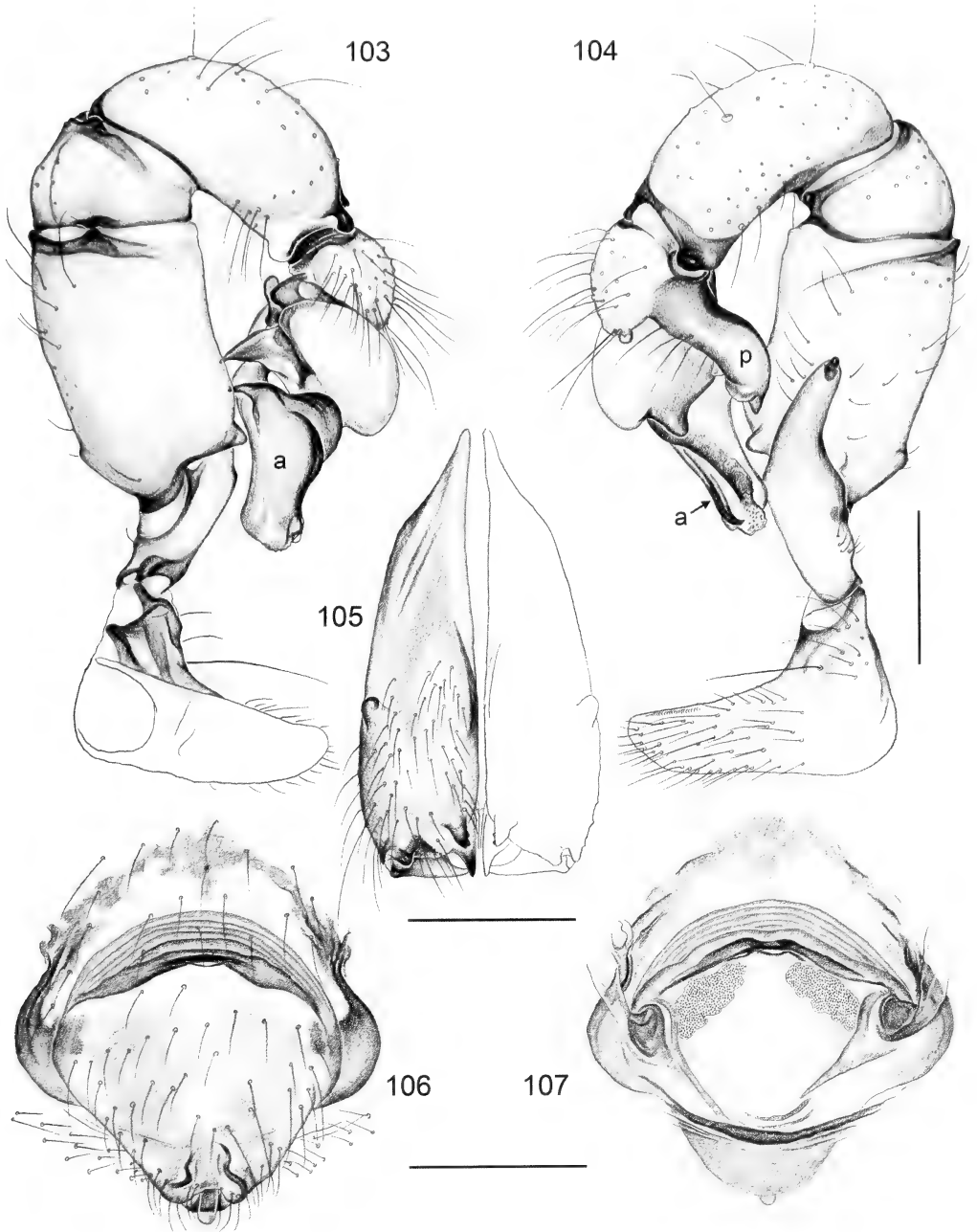
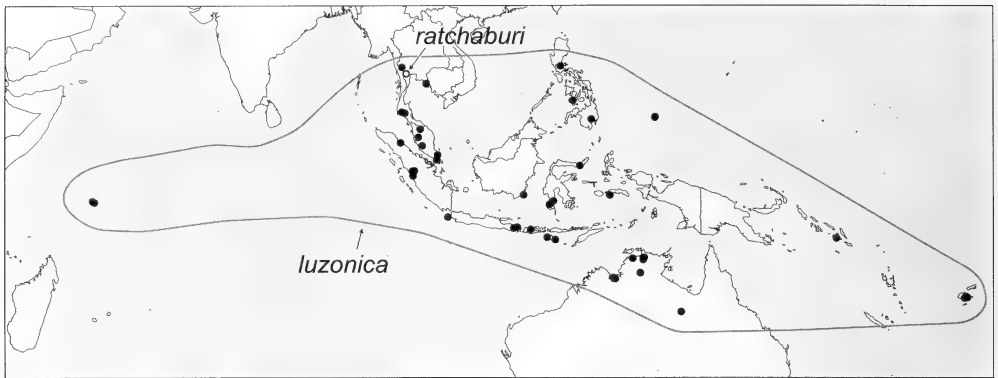


FIG. 103-107. *Sibala alagarkoil*. 103, 104. Left male palp, prolateral and retrolateral views. 105. Male chelicerae, frontal view. 106, 107. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

FIG. 108. Known distribution of *Uthina*.

num unmodified, male chelicerae with pair of lateral apophyses proximally and frontal apophyses distally without modified hairs. Male palpal coxa unmodified, trochanter with small retrolatero-ventral apophysis, femur with retrolateral hump, tibia very large relative to femur, tarsus with conical dorsal elongation carrying capsulate tarsal organ, procurus with ventral 'knee', without dorsal spines, bulb with uncus and appendix, transparent embolus. Legs long, tibia 1 in males ~6-12, tibia 1 L/d ~80-100, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-3%, tarsus 4 with single row of comb-hairs. Abdomen cylindrical, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, less elevated, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~5-11). Epigynum simple, barely sclerotized, with 'knob', internal genitalia with pair of round to oval pore-plates.

*Monophyly.* The two species share the shapes of several male and female characters, some of which are likely synapomorphic (e.g., widely curved uncus, slender hooked appendix, general shape of female genitalia with pair of internal lateral structures).

*Generic relationships.* Several characters seem to point at a close relationship with *Pholcus* (morphology of the male palp, especially the bulb), but some of these characters may be plesiomorphic and the cladistic analysis does not unambiguously support synonymization of *Uthina*. All analyses place *Uthina* in large

polytomies including both *Pholcus* and other genera like *Ossinissa*, *Calapnita*, *Panjange*, *Leptopholcus*, and *Micromerys*.

*Natural history.* The widespread *U. luzonica* is common in various protected microhabitats (under objects on the ground, including leaf litter, in bamboo internodes, in holes and caves, under bridges) even in rather disturbed areas. It has also been shaken from webs in the vegetation but no details about its web are known. *Uthina ratchaburi* n. sp. has only been found in a cave.

*Distribution.* The type species is widely distributed in Southeast Asia, *U. ratchaburi* n. sp. is known from its type locality in Thailand only (Fig. 108).

*Composition.* The genus includes two species: *U. luzonica* Simon, 1893; *U. ratchaburi* n. sp. *Uthina atrigularis* Simon, 1901 is transferred to *Pholcus* (see below).

*Uthina luzonica* Simon, 1893

Figs. 36-38, 52-59, 109-125, 146

*Uthina luzonica* Simon 1893a: 476. Murphy & Murphy 2000: 254, fig. 47.10.

*Spermophora longiventris* Simon 1893c: 321. Kritscher 1957: 263-264, figs. 15, 16. New synonymy.

*Pholcus longiventris*: Saaristo 2001: 10-12, figs. 1-6.

*Pholcus tagoman* Huber 2001: 116-118, figs. 363-377, map 17. New synonymy.

*Pholcus* sp. A, sp. B: Beatty, Berry & Huber 2008: 19, figs. 29-31, 51, 52.

*Types.* *Uthina luzonica*: 3♀ syntypes from Philip-pines, Rizal Prov., "Quingna" (?), Antipolo [14°36'N, 121°11'E], no date (E. Simon), with Simon's original label "13694 *Uthina luzonica* ES, Quingna, Anti-polo!", in MNHN (10534), examined.

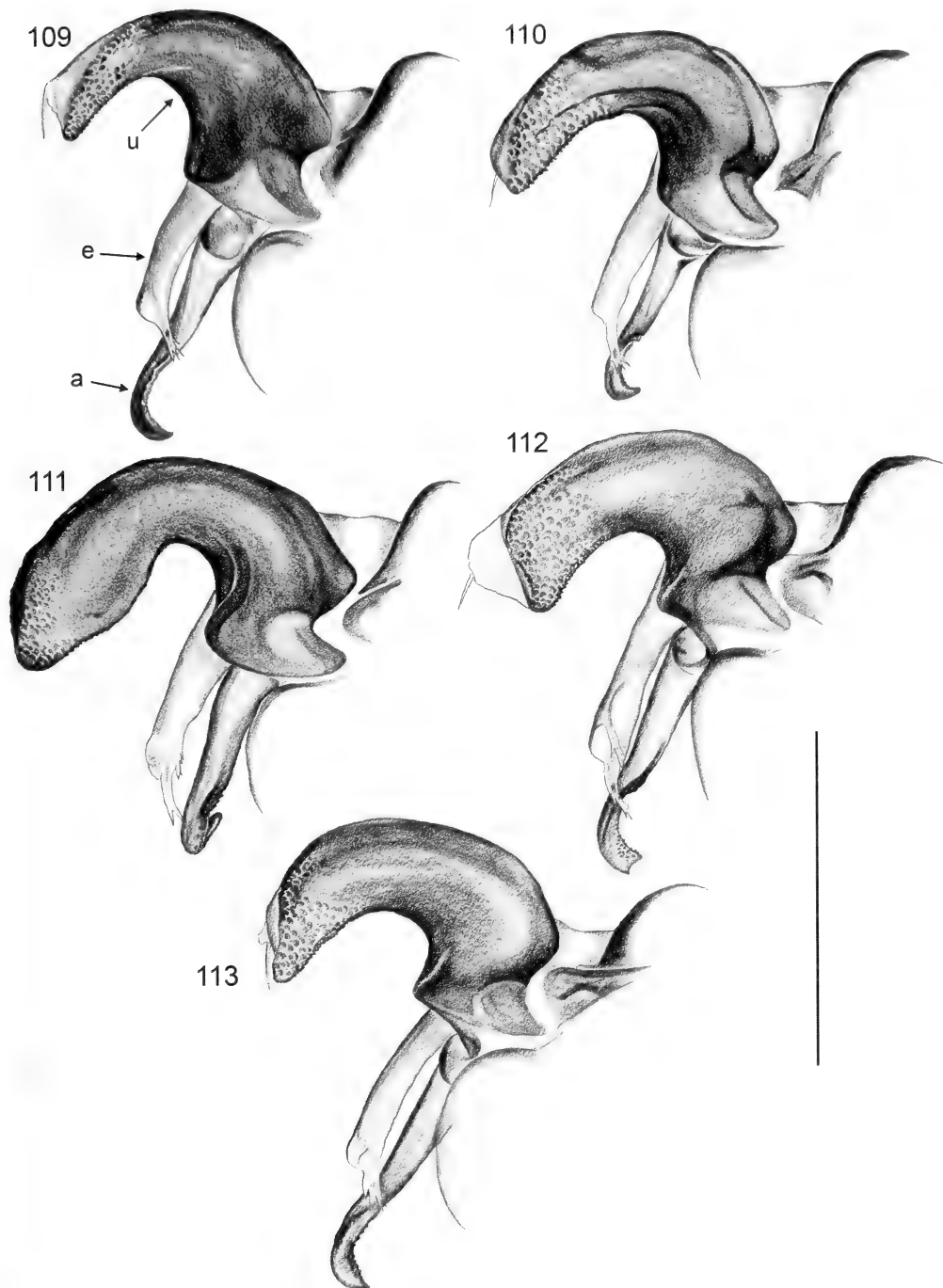


FIG. 109-113. *Utbina luzonica*. Processes of left male genital bulb, prolateral views; males from Australia (109), Sumatra (110), Fiji (111), Sulawesi (112), and Palau (113). Scale line (for all): 0.5.

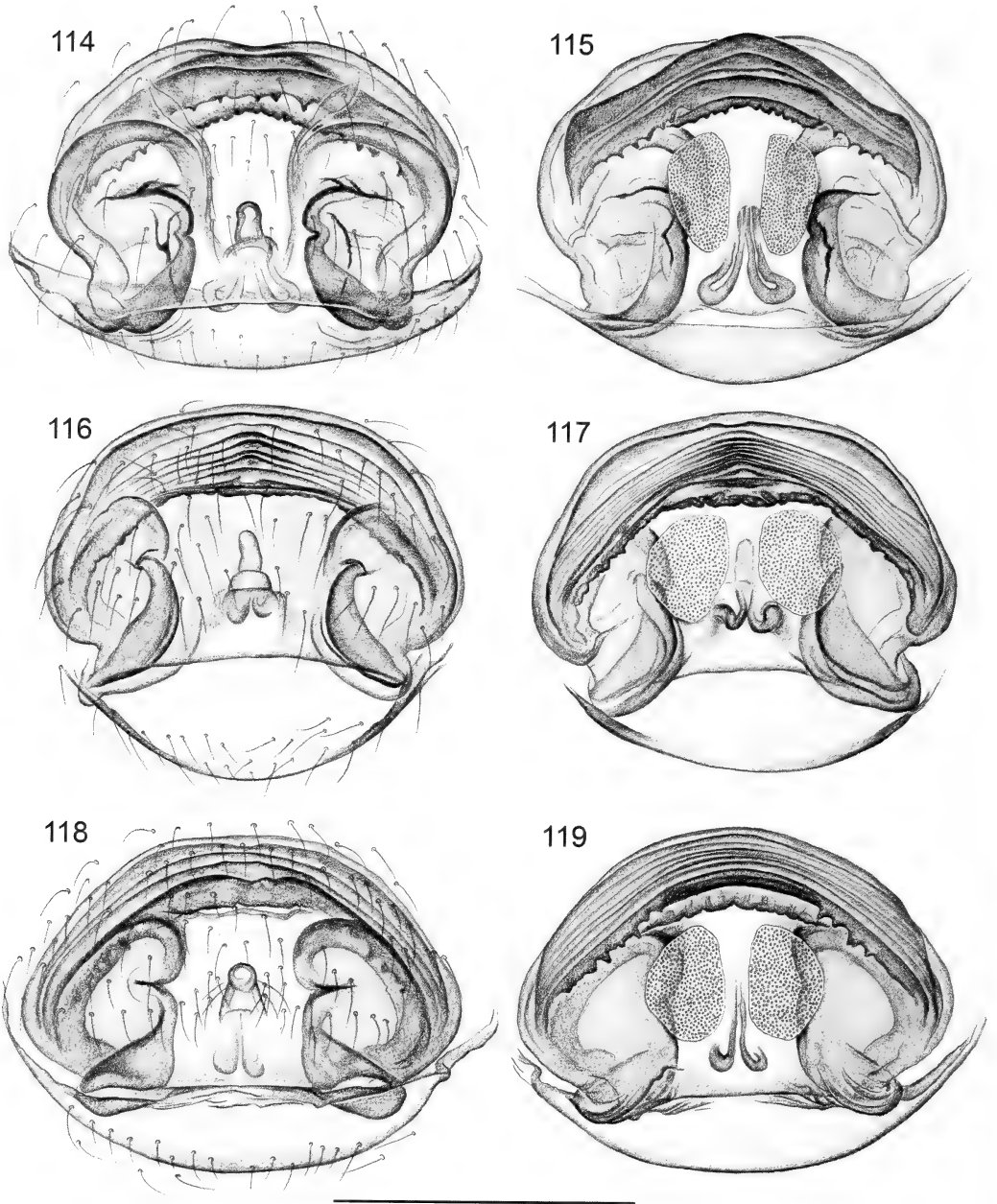


FIG. 114-119. *Uthina luzonica*. Cleared female genitalia, ventral and dorsal views; females from Philippines (syntype) (114, 115), Australia (116, 117), and Sumatra (118, 119). Scale line (for all): 0.5.

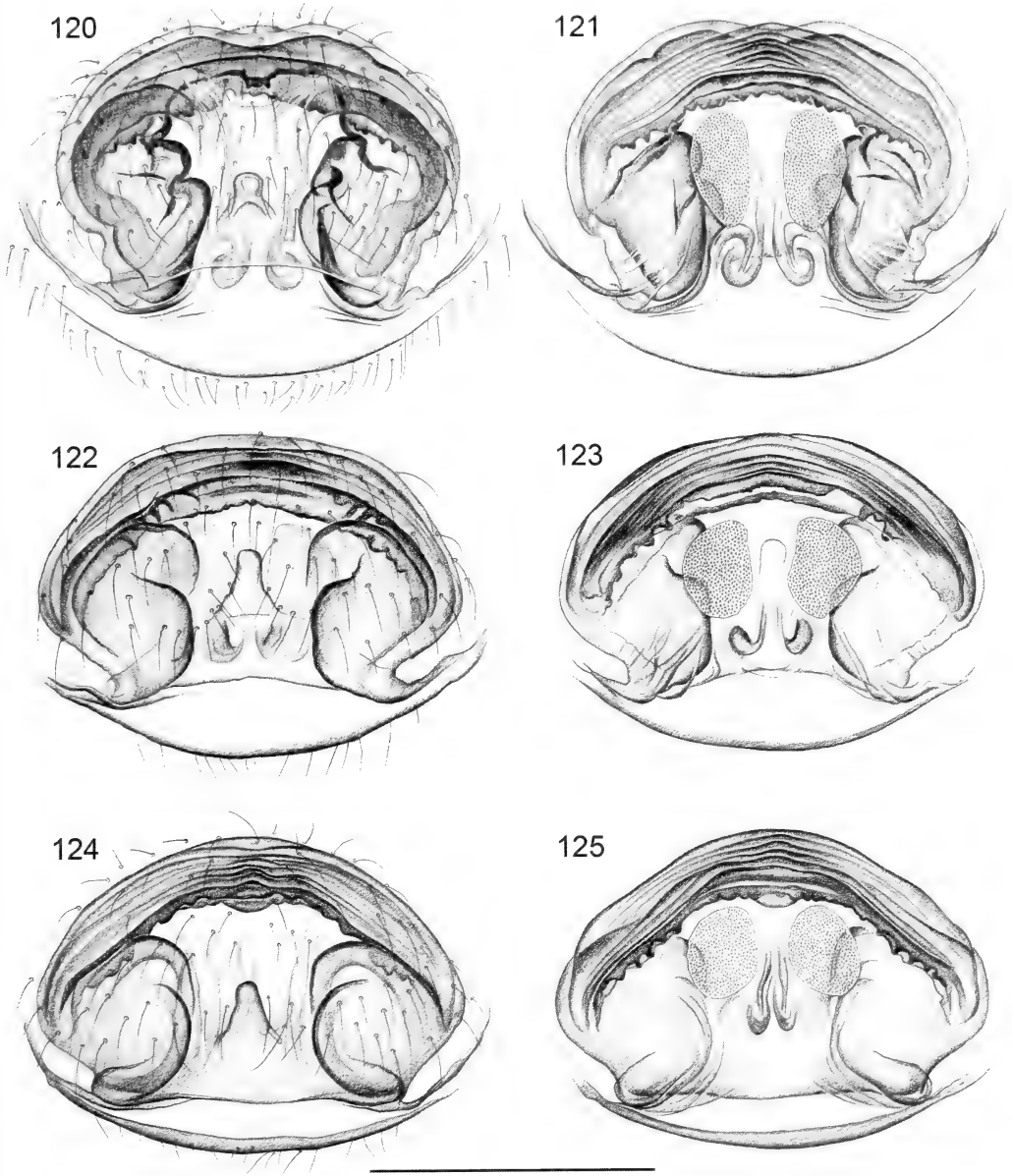


FIG. 120-125. *Urbina luzonica*. Cleared female genitalia, ventral and dorsal views; females from Fiji (120, 121), Sulawesi (122, 123), and Palau (124, 125). Scale line (for all): 0.5.

*Spermophora longiventris*: one juvenile specimen from Indonesia, Sumatra, "Deli" [=Labuhandeli?, 3°45'N, 98°41'E], no further data, not found in MNHN.

*Pholcus tagoman*: male holotype from Western Australia, Ningbing Cave, cave KNI-19 (15°18'S, 128°37'E), 10.v.1994 (R.D. Brooks), in WAM (99/2062), examined (see Huber 2001).

*Justification of synonymies.* At an earlier stage of this study I considered the different 'morphs' present in this species to warrant species status. However, with the accumulation of material from more localities, species boundaries became increasingly ambiguous due to intermediates. In a few cases, individuals of different 'morphs' were found to co-occur at one locality, in a pattern suggesting variation within species rather than divergent evolution of reproductively isolated lineages. Finally, in a few cases males were found to differ between right and left sides in a way originally considered distinctive for species. Taken together, the available evidence makes 'lumping' seem the preferable option, but future studies should aim at a denser sampling and the inclusion of molecular data to support or reject this solution.

*Diagnosis.* Easily distinguished from the closely related *U. ratchaburi* by smaller size (body length, leg length, genitalia), uncus shape (wider), and simple epigynal knob (i.e. not bifid).

*Male* (Palau). Total body length 3.8, carapace width 1.1. Leg 1: 7.3 + 0.5 + 7.8, metatarsus and tarsus missing, tibia 2: 5.0, tibia 3: 3.2, tibia 4: 4.8; tibia 1 L/d: 80. Habitus as in Fig. 38. Carapace ochre-yellow with darker band medially, ocular area with light brown pattern posteriorly, anterior side and clypeus not darkened, sternum monochromous brown, legs ochre-yellow, tips of femora and tibiae lighter, abdomen ochre-gray with many darker spots dorsally and laterally. Distance PME-PME 255 µm, diameter PME 125 µm, distance PME-ALE 60 µm, no trace of AME. Ocular area elevated, triads slightly projecting sideways, many stronger hairs posteriorly. No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae with distal apophyses serrated medially but without modified hairs, proximal apophyses laterally (figs. 369, 376 in Huber 2001). Sternum wider than long (0.75/0.60), unmodified. Palps as shown in Huber (2001: figs. 365, 366), coxa unmodified, trochanter with retrolateral apophysis, femur with indistinct retrolateral hump, tibia very large, tarsal organ on conical projection, procurus rather simple except distally, without spines, tarsal organ capsulate (fig. 377 in Huber 2001), bulb with

strong curved uncus with thin distal transparent process, weakly sclerotized long embolus, distally curved appendix (Fig. 113). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation.* Uncus and appendix are quite variable in shape (Figs. 109-113). The membranous part at the tip of the uncus may be large (N-Sulawesi; Fig. 112), small (Australia, Palau; Figs. 109, 113), or absent (most other localities); the uncus itself may be quite slender (Australia; Fig. 109), widened subdistally (Fiji, Seychelles, Ambon, Sumba, S-Sulawesi, Malaysia, Thailand; Fig. 111), or intermediate (Palau, Sumatra, N-Sulawesi); the appendix may be simply curved at its tip (Australia, Palau; Figs. 109, 113), have a subdistal pointed projection to make it appear bifid (N-Sulawesi, Ambon, Sumba, part of material from Malaysia, Fiji; Fig. 112), and/or be strongly hooked distally (Fiji, Ambon, Sumba, S-Sulawesi, Malaysia; Fig. 111). The pattern on the abdomen is variably distinct and is absent in some specimens (Figs. 36, 37). Some males with darker rings on legs (subdistally on femora, proximally and subdistally on tibiae). Tibia 1 in 23 other males: 6.3-9.9 (mean 7.9). *Female.* In general similar to male, triads closer together (distance PME-PME 195 µm), abdomen pattern variable as in males, clypeus often with brown pattern. Tibia 1 in 54 females: 5.3-8.4 (mean 6.5). Epigynum weakly sclerotized but with distinctive anterior arc and other internal structures visible through cuticle (Figs. 52-54, 56-59), with simple 'knob' (Fig. 114); internal genitalia as in Fig. 115. External variation often conspicuous even among specimens from a single locality, variation in cleared epigyna much less conspicuous (Figs. 114-125) and apparently not indicating species boundaries. The two cleared specimens from the Philippines and Fiji have longer pore plates (Figs. 115, 121), but clearing of many specimens would be necessary to evaluate this character appropriately.

*Distribution.* Widely distributed in Southeast Asia and northern Australia (Fig. 108). For records not listed below, see Saaristo (2001) (Seychelles) and Huber (2001) (Australia).

*Material examined.* SEYCHELLES: *Silhouette*: La Passe [-4°29'S, 55°14'E], Pandanus & Coconut leaves, 11.i.1999 (M. Saaristo), 1♀ in ZMT.

THAILAND: *Krabi Prov.*: Krabi Distr., limestone hill near Ban Chong Phlie (8°04.8'N, 98°49.8'E),

-13 km W of Krabi city, 80 m a.s.l., remnant of semi-evergreen rainforest, 13.vi.2009 (P. Schwendinger), 1♂ in MHNG. Khlong Thom Distr., Khao Pra-Bang Khrum Wildlife Sanctuary (7°54.6'N, 99°16.7'E), 80 m a.s.l., semi-evergreen rainforest, 2./3.vi.2009 (P. Schwendinger), 1♂ in MHNG. *Kanchanaburi Prov.*: Sai Yok N.P. [14°27'N, 98°51'E], cave Kaew, 18.iii.1986 (C.L. & P.R. Deeleman), 3♀ in RMNH. Lawa cave, river Kwai area, 19.iii.1986 (C.L. & P.R. Deeleman), 2♀ in RMNH (2 vials). *Trat Prov.*: Ko Chang, Hat Sai Kao (12°06.8'N, 102°16.3'E), 50 m a.s.l., forest, at stream in foliage, fern, bushes, by hand, 30.x.2009 (P. Jäger, S. Bayer), 1♂2♀ in SMF; 3 km S Hat Sai Kao (12°04.8'N, 102°16.8'E), 40 m a.s.l., partly empty river bed, sec. forest, by hand, at night, 2.xi.2009 (P. Jäger, S. Bayer), 2♀ in SMF.

**MALAYSIA:** *Selangor*: Gombak field station [-3°14'S, 101°44'E], no date (D. Kovac), 1♀ in RMNH; same locality, bamboo internode, 19. ix.1991 (D. Kovac), 2♂12♀ (3 vials) in RMNH; same locality, below internode, 19.ix.1991 (D. Kovac), 2♂1♀ in RMNH; same locality, various dates in one vial (ix.-xi.1991) (D. Kovac), 4♂5♀ in RMNH; same locality, 5.vii.1991 (D. Kovac), 1♂ in RMNH. Belum Expedition, Ridge Trail [-5°40'N, 101°25'E], 12.ii.1994 (Murphy), 1♀ in CJFM (23664). Perak, Gunung Lanno [4°31.3'N, 101°08.5'E], 13.xi.2001 (J. Segl), 1♀ in MHNG. Johore, Sangei Ampat along Kota Tinggi to Mersing Highway [-1°45'-2°25'N, 103°52'E], oil palm estate, 15.x.1992 (J.M. Waldock), 1♀ in WAM (99/1494). Johore, Sangei Mupur along Kota Tinggi to Mersing Highway, under concrete trunk road bridge, 15.x.1992 (J.M. Waldock), 1♂ in WAM (99/1495).

**SINGAPORE:** Malcolm Road [1°19'N, 103°49'E], inside opened manhole in garden, 18.xi.1985 (J.K.H. Koh), 1♂1♀ in RMNH. Bukit Timah [1°21'N, 103°46'E], Hindhede Drive, 19.iii.1989 (H.K. Lua), 1♀ in RMBR; same data but 9.iv.1989, 1♀ in RMBR; same data but 11.vi.1988, 1♂2♀ in RMBR; Bukit Timah, 3.iii.1986, no further data, 1♂1♀ in RMBR.

**INDONESIA-SUMATRA:** Ngalau Baso [-0°18'S, 100°23'E?], 13.iii.1988 (P. Strinati, C. Hug), 1♂2♀ in MHNG. Balige [-2°20'N, 99°04'E], "Liang Sip-eggeh", 14.viii.1984 ("I.D., C.S.E."), 1♀ in RMNH. "Fort de Kock" [=Bukittinggi: 0°18'S, 100°23'E], no date (E. Jacobson), 1♂ in NHMW. Grotte Ngalau Indah, near Pakan Sinayan, 2 km from Payakumbuh [0°14.6'S, 100°35.4'E], 530 m a.s.l., 24.xi.1985 (C.

Lienhard), 1♀ in MHNG. Padang [-0°55'S, 100°25'E], "A.D.", 15.x.1938 (E. Jacobson), 1♂ in NHMW.

**INDONESIA-JAVA:** *Jawa Barat Prov.*: Ujung [=Ujung] Kulon Reserve [-6°45'S, 105°20'E], leaf litter, 14.-25.xi.1986 (S. Djojosedharmo), 2♀ in RMNH (2 vials). Gunung Kapur, cave Guajati Yayar, 5.vii.1979 (C.L. & P.R. Deeleman), 1♂ in poor condition, in RMNH.

**INDONESIA-BORNEO:** *South Kalimantan*: Pagatan Beach (3°36.8'S, 115°58.1'E), 1 m a.s.l., under scattered trees, 20.x.2008 (P. Schwendinger), 1♂ in MHNG.

**INDONESIA-LESSER SUNDA ISL.:** *Bali*: West Bali, above Negara [-8°20'S, 114°37'E], disturbed rainforest, leaf litter, 22.xi.1997 (C.L. Deeleman-Reinhold), 1♂ in RMNH. "Isl. N. past Ambengan N Par" [-8°10'S, 115°06'E], secondary forest litter, 20.-30.i.1990 (S. Djojosedharmo), 1♂ in RMNH. *West Nusa Tenggara*: Semokat, 20 km from Sumbawa Besar [-8.5°S, 117°E], 3.ii.1990 (S. Djojosedharmo), secondary forest, 5♀ in RMNH. *East Nusa Tenggara*: Sumba: W-Sumba, 10 km W of Waingabubak [=Waikabubak; 9°38'S, 119°19'E], near stream, 2. ii.2001 (C.L. & P.R. Deeleman), 1♀ in RMNH. E-Sumba, Lukemelolo forest [9°57'S, 120°30'E], 5.ii.2001 (C.L. Deeleman-Reinhold), 2♂4♀ in RMNH.

**INDONESIA-SULAWESI:** *North Sulawesi*: Dumoga, near Doloduo [-0°31'N, 123°55'E], primary forest, in large dead leaves on ground, 27.-30. vii.1982 (C.L. & P.R. Deeleman), 4♂5♀ in RMNH. *South Sulawesi*: Bantimurung [4°59'S, 119°41'E], viii.1985 (B. Lebreton), 2♂ in RMNH. Bantimurung, Maros, Gua Baharuddin cave, 7.vii.1986 (L. Deharveng), 1♀ in RMNH. Leang Assuloang, Balocci, Pangkadjene, viii. 1976 (P. Leclerc), 2♀ in RMNH. "Gua Salopanyi - Lapalawa", Tacipi [-4°30'S, 120°12'E], 29.vii.1989 (P. Leclerc), 1♀ in RMNH.

**INDONESIA-MALUKU ISL.:** *Ambon* [-3°40'S, 128°10'E]: in garage, 5.xi.1994 (R.G. Holmberg), 1♀ in BPBM; Ambon Isl., garage, 1994 (R.G. Holmberg), 1♂ in BPBM.

**PHILIPPINES:** Rizal Prov., Antipolo: 3♀ syntypes above. Negros, Cave, Mabinay [-9°45'N, 123°00'E], 31.xii.1989 (T. van Es), 1♀ in RMNH. Mindanao: Davao, Langub limestone cave [-7°05'N, 125°35'E], 25.iv.1982 (P.R. Deeleman), 4♀ in RMNH.

**PALAU:** *Babelthnap Isl.*: lowland tropical forest N of airstrip [-7°24'N, 134°33'E], 27.iii.1973 (J.W. Ber-

ry, J.A. Beatty), 1♂2♀ in BPBM; Ngaremlengui, in beached boat, 21.iv.1973 (J.W. Berry, J.A. Beatty), 1♀ in BPBM; Airai village, tree shaking, forest below SDA School, 11.iii.1973 (J.W. Berry, J.A. Beatty), 2♀ 2 juvs. in BPBM. *Koror Isl.* [-7°20'N, 134°30'E], in cave entrance, 17.iii.1973 (J.W. Berry, J.A. Beatty), 5♂6♀ in BPBM; same data but in cave (old Japanese tunnel), 3.iv.1973, 1♂ in BPBM. *Koror Isl.*, banana litter and compost pile at Entomology Lab., 20 & 24.iii.1973 (J.W. Berry, J.A. Beatty), 1♂2♀ + juvs. (2 vials) in BPBM. *Malakal Isl.* [7°20'N, 134°27'E], in cave, 17.iii.1973 (J.A. Beatty, J.W. Berry), 1♂1♀ in BPBM.

AUSTRALIA: *Western Australia*: Jeremiah Hills, cave KJ-8 (15°26'S, 128°44'E), 17.v.1994 (W.F. Humphreys), 1♂1♀ in WAM (99/2068-9).

SOLOMON ISLANDS: Guadalcanal [-9°37'S, 160°11'E], 9.vii.1988 (T. Iliffe, S. Sarbu), caves, 1♀ in RMNH.

FIJI: *Viti Levu*: Colo-i-Suva [18°04'S, 178°27'E], park, webs on forest vegetation, 6.v.1987 (J.A. Beatty), 1♂ in BPBM; Colo-i-Suva Forest Reserve, about 5 mi N of Nausori, 15.v.1980 (J.A. Beatty), 1♀ in BPBM; Nausori [18°02'S, 178°34'E], shaking banana leaves, 18.v.1987 (J.W. & E.R. Berry), 2♂6♀ in BPBM; Nausori, Koronivia Research Station, tree shaking, 18.v.1987 (J.A. Beatty, J.W. Berry), 1♀ in BPBM; same data but sweeping and shaking trees, 8.v.1987 (E.R. Berry), 1♀ in BPBM; 9 km W of Suva [18°06'S, 178°21'E], on soil bank, 23.v.1987 (J.W. & E.R. Berry), 1♂ in BPBM; 22.4 km W of Suva [18°10'S, 178°13'E], forest litter, 5.v.1987 (J.W. Berry), 1♂1♀ in BPBM; same data but in webs on shrubs in forest (J.A. Beatty), 2♂1♀ in BPBM; same data but sweeping and shaking in forest (J.W. & E.R. Berry), 1♀ in BPBM; 1.7 km S of Nainsorembore (near Nausori), 8.v.1987 (J.A. Beatty), 1♀ in BPBM; same data but sweeping (J.W. & E.R. Berry), 1♀ in BPBM; ca 3 mi S of Serea [17°56'S, 178°19'E], picked from forest trees, 30.v.1987 (J.W. & E.R. Berry), 1♀ in BPBM; Tholo-i-Suva [=Colo-i-Suva], forest park, near WaISula Falls, forest litter, 6.v.1987 (J.W. Berry), 1♀ in BPBM; same data but sweeping and shaking trees (E.R. Berry), 1♀ in BPBM; Namosi Rd. 3.4 km N of Queen's Road, scrub forest, 7.v.1987 (J.W. & E.R. Berry), 1♀ in BPBM; same data but 3 km N of Queen's Road (J.A. Beatty, J.W. & E.R. Berry), 1♀ in BPBM; about 16 mi by Queen's Road W of Suva, hill forest, 16.v.1980 (J.A. Beatty), 1♀ in BPBM; 8 mi NE of Navua [-18°05'S, 178°15'E],

on dirt bank, 2.v.1987 (J.A. Beatty), 2♂ in BPBM. Fiji, no further data, 1♀ in BPBM.

*Unidentified localities*: "Cel. 055", 4♂4♀ in IRBS. "BES: 5746", 2♂ (2 vials) in RMNH.

*Uthina ratchaburi* n. sp.

Figs. 39, 40, 60, 61, 126-136

*Type*. Male holotype from Thailand, Ratchaburi Prov., Phraya Prap Cave [-13°35'N, 99°45'E], 10. iii.1986 (C.L. & P.R. Deeleman), in RMNH.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Easily distinguished from the closely related *U. luzonica* by larger size (body length, leg length, genitalia), uncus shape (more slender), and bifid epigynal knob (Figs. 126, 127).

*Male* (holotype). Total body length 4.9, carapace width 1.4. Leg 1: 48.6 (11.5 + 0.7 + 11.9 + 22.0 + 2.5), tibia 2: 7.7, tibia 3: 4.9, tibia 4: 6.4; tibia 1 L/d: 93. Habitus as in Figs. 39 and 40. Carapace ochre-yellow with median star-shaped brown mark, ocular area also mostly brown, clypeus not darkened, sternum monochromous dark brown, smooth and shiny, legs light brown, tips of femora and tibiae slightly lighter, abdomen monochromous ochre-gray. Distance PME-PME 405 µm, diameter PME 105 µm, distance PME-ALE 45 µm, no trace of AME. Ocular area elevated, triads slightly projecting sideways, many stronger hairs posteriorly. No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae very similar to *U. luzonica* but distal apophyses slightly bifid. Sternum wider than long (0.9/0.7), unmodified. Palps in general as in *U. luzonica* (cf. Huber 2001: figs. 365, 366), coxa unmodified, trochanter with retrolateral apophysis, femur with indistinct retrolateral hump, tibia very large, tarsal organ on conical projection, procurus as in *U. luzonica* but without pointed process prolaterally, without dorsal spines, tarsal organ capsulate (Fig. 132), bulb with distinctive strong curved uncus with thin distal transparent process (Figs. 126, 129), weakly sclerotized long embolus (Fig. 131), distally curved appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium absent on tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few poorly visible in dissecting microscope. *Variation*. Tibia 1 in 2 other males: 10.7, 11.7.

*Female*. In general similar to male, triads closer together (distance PME-PME 250 µm), proximal half



of clypeus brown. Tibia 1 in 20 females: 8.4-10.9 (mean 10.0). Epigynum weakly sclerotized but with distinctive anterior arc and other internal structures visible through cuticle (Fig. 60), very similar to *U. luzonica* but with distinctive bifid 'knob' (Figs. 127, 136); internal genitalia as in Figs. 61 and 128.

*Distribution.* Known from type locality only (Fig. 108); the single female specimen from Kanchanaburi is assigned tentatively.

*Material examined.* THAILAND: *Ratchaburi*: Phraya Prap Cave: ♂ holotype above; same data, 3♂14♀ (2 vials) in RMNH; same data but 20.iii.1986, 2♂11♀ in RMNH; same locality, 26.viii.1981 (E.D. Stone), 1♀ in RMNH.

*Assigned tentatively:* THAILAND: *Kanchanaburi*: Ban Nam Tok, Tham Rawa, 16.vi.1986 (P. Leclerc), 1♀ in RMNH.

### *Calapnita* Simon, 1892

*Calapnita* Simon 1892: 42. Type species by monotypy: *Calapnita vermiformis* Simon, 1892. Simon 1893a: 473-474 (synonymized with *Micromerys*). Deeleman-Reinhold 1986b: 205, 212 (removed from synonymy with *Micromerys*). Deeleman-Reinhold 1986a: fig. 3.

*Diagnosis.* Long but very slender, long-legged, pale colored spiders (body length 5-6, leg 1:~30-40); distinguished from other genera of the *Pholcus* group by combination of the following characters: worm-shaped abdomen (Fig. 3), six eyes, eye triads barely elevated, male chelicerae with pair of lateral humps and pair of frontal apophyses distally (in contrast to *Leptopholcus* and *Micromerys*), male bulb either with only one process apart from embolus (Figs. 140, 153), or with large serrated appendix and membranous worm-shaped uncus (Figs. 170, 189, 194), epigynum barely sclerotized, with 'knob'.

*Description.* Body length 5-6, carapace width 0.75-0.95. Carapace without thoracic furrow, no trace of AME, eye triads in males on very low humps, clypeus and sternum unmodified, male chelicerae with pair of lateral apophyses at varying position (see Specific relationships below) and pair of frontal apophyses distally, sometimes bipartite, without modified hairs. Male palpal coxa unmodified, trochanter with apophysis of variable shape (see Specific relationships below), femur either ventrally serrated or unmodified, tarsal organ capsulate (very low capsule in male but not female *C. phyllicola*), sometimes on stalk, procurus mostly long and slender, only distally complex, with ventral 'knee' very

proximal, without dorsal spines, bulb either with only one process apart from embolus (in the cladistic analysis tentatively considered a homologue of the *Pholcus uncus*), or with large serrated appendix and membranous worm-shaped uncus, long embolus either transparent or weakly sclerotized, sometimes with fine serration. Legs long, tibia 1 in males ~5.5-9.5, tibia 1 L/d ~80-115, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 1.5-3.5%, tarsus 4 with single row of comb-hairs. Abdomen worm-shaped, male gonopore with four epiandrous spigots, ALS with variable number of spigots (see Specific relationships below), PMS with two small spigots.

Sexual dimorphism slight, female body size as in males, legs slightly shorter (tibia 1: ~5.5-7.5). Epigynum very simple, barely sclerotized, with 'knob', internal genitalia with pair of round to oval or drop-shaped pore-plates.

*Monophyly.* The genus includes two distinct species groups (see below), but the monophyly of the entire genus is weakly supported. The cladistic analyses using equal and successive weighting identify three putative synapomorphies, none of them convincing: the flat ocular area (char. 5; also in *Micromerys* and some *Leptopholcus* species); the weakly sclerotized and simple uncus (char. 50; the homology of the structures is uncertain); the serrated appendix (char. 60; however, one species group lacks an appendix). The analyses using implied weighting suggest two further dubious synapomorphies: secondary absence of proximal frontal apophyses on the male chelicerae (char. 18), and secondarily weakly sclerotized basis of the epigynal 'knob' (char. 65). The worm-shaped abdomen might constitute another synapomorphy, in case it is indeed derived independently from *Leptopholcus* and *Micromerys*.

*Generic relationships.* The inclusion of *Calapnita* in the *Pholcus*-group of genera appears well supported (char. 12: *Pholcus*-type of tarsal comb-hairs; char. 64: epigynal 'knob'). However, its detailed relationships with these genera remain obscure. It is consistently placed in large polytomies including *Pholcus* and several other genera like *Ossinissa*, *Uthina*, *Panjange*, *Leptopholcus*, and *Micromerys*.

*Specific relationships.* Two species groups can be identified (as already recognized by Deeleman-Reinhold 1986b), but only the first is well supported by several putative synapomorphies in all analyses: (1) the

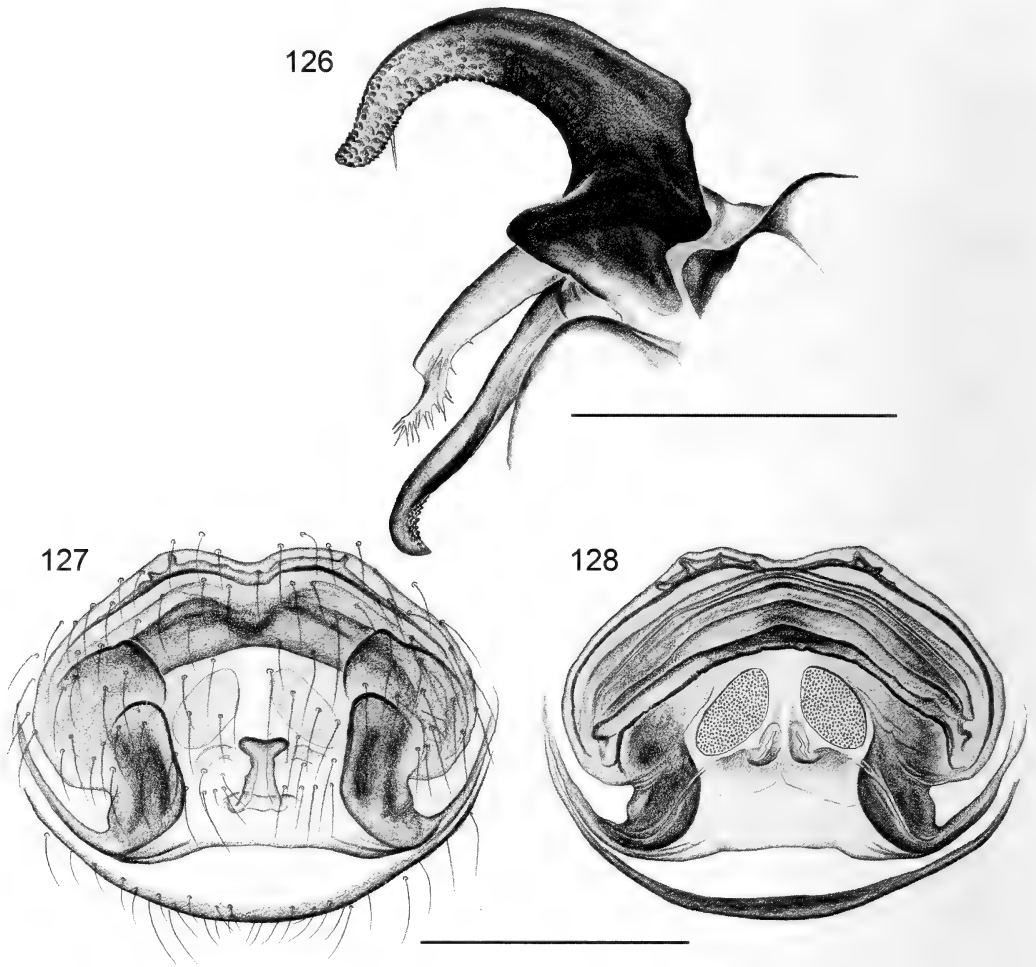
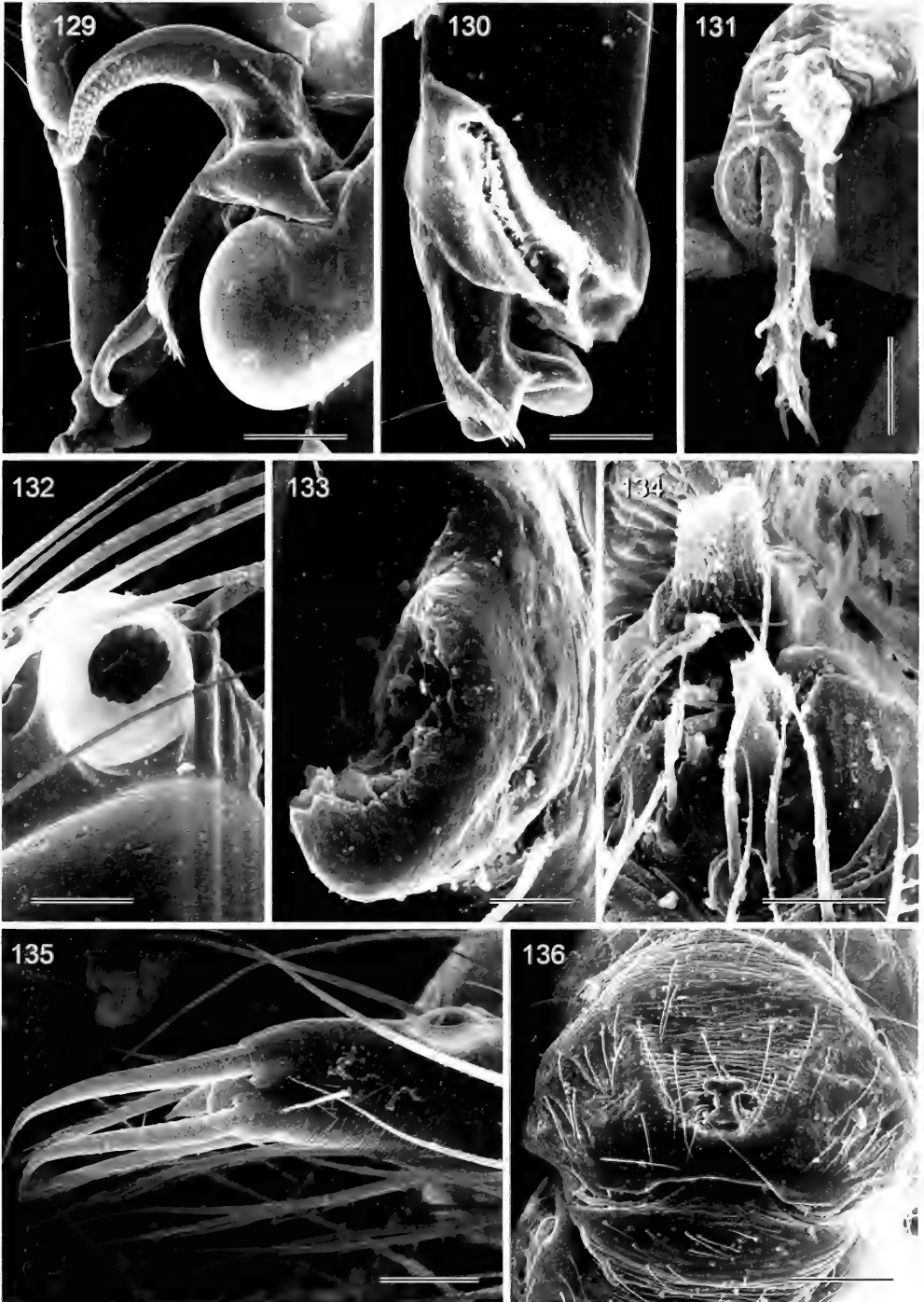


FIG. 126-128. *Uthina ratchaburi*. 126. Processes of left male genital bulb, prolateral view. 127, 128. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

FIG. 129-136. *Uthina ratchaburi*. 129. Processes of left male genital bulb, prolateral view. 130. Tip of left procurus, prolateral view. 131. Tip of embolus (arrow points at sperm duct opening). 132. Male palpal tarsal organ. 133. Distal male cheliceral apophysis. 134. Female ALS. 135. Tip of right female palpal tarsus. 136. Epigynum. Scale lines: 200  $\mu\text{m}$  (129, 136), 100  $\mu\text{m}$  (130), 40  $\mu\text{m}$  (131), 30  $\mu\text{m}$  (135), 20  $\mu\text{m}$  (132, 134), 10  $\mu\text{m}$  (133).



*vermiformis* group (*C. vermiformis* + *C. saluang*), with strong curved male palpal trochanter apophysis (Figs. 140, 154), divided distal cheliceral apophyses (char. 21), ventrally serrated male palpal femur (char. 29), distal position of lateral male cheliceral humps (char. 17), bulb with only one process apart from embolus (char. 53), reduced number of ALS spigots (Figs. 152, 166), triangular epigynum with anterior 'knob' (Figs. 143, 156); (2) the *phyllicola* group (*C. phyllicola*, *C. semengoh* n. sp., *C. phasmoides*, *C. deelemanae* n. sp., *C. subphyllicola*) is considered paraphyletic in the cladistic analyses, but the worm-shaped bulbal process (putative uncus; Figs. 170, 189, 194) and the serrated bulbal apophysis (putative appendix; Figs. 170, 189, 194) from which the embolus arises basally may both be synapomorphic. Within this group, *C. phyllicola* and *C. semengoh* share the position of the male palpal tarsal organ on a stalk (Figs. 171, 190) and the fine serration on the embolus (Figs. 170, 189).

*Natural history.* All species seem to be adapted to cryptic leaf-dwelling, and published and unpublished

observations (Deeleman-Reinhold 1986a, b; J. & F. Murphy, pers. comm.) as well as label data support this notion. The spiders seem to build very flimsy webs closely attached to the leaves on which they rest. Females build elongate egg sacs sometimes consisting of a single row of eggs that is carried like an elongation of the body (Fig. 3; Deeleman-Reinhold 1986b). *Distribution.* The genus is widely distributed in Southeast Asia, from Thailand and Sumatra to the Philippines and Sulawesi (Figs. 137, 138). The MHNG and SMF have unidentified female specimens from northern Thailand (Chiang Mai Prov., Doi Suthep) and Laos (Champasak Prov., Muang Bachieng).

*Composition.* The genus now includes seven species, three of which are newly described below: *C. vermiformis* Simon, 1892; *C. saluang* n. sp.; *C. phyllicola* Deeleman-Reinhold, 1986; *C. semengoh* n. sp.; *C. phasmoides* Deeleman-Reinhold, 1986; *C. deelemanae* n. sp.; *C. subphyllicola* Deeleman-Reinhold, 1986. No further species are known to me.

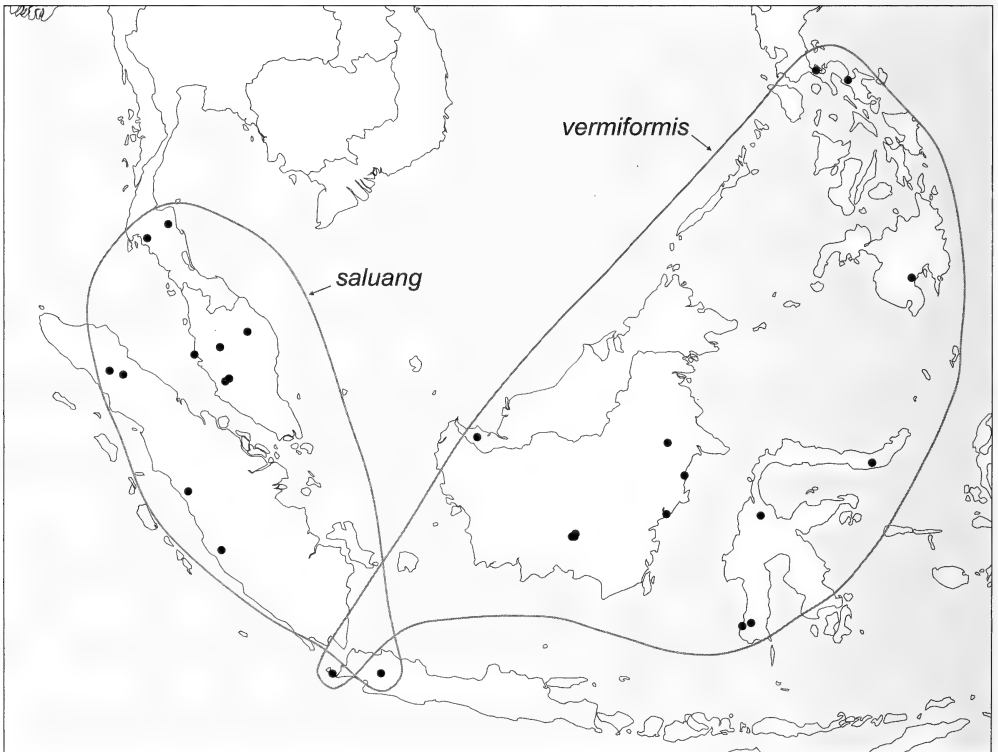


FIG. 137. Known distribution of *Calpnita*, part 1.

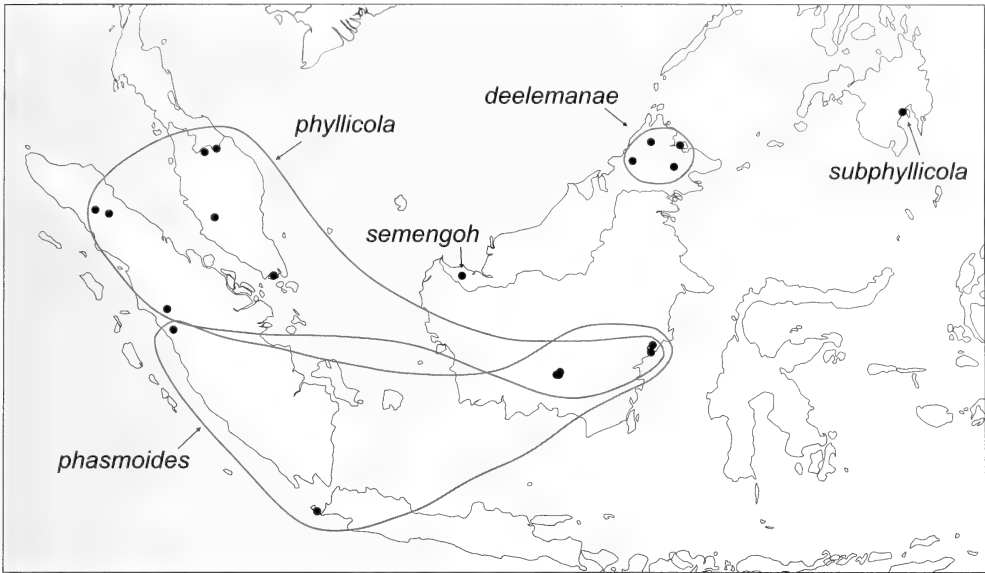


FIG. 138. Known distribution of *Calapnita*, part 2.

*Calapnita vermiformis* Simon, 1892

Figs. 41, 42, 62, 63, 139-144, 147-152

*Calapnita vermiformis* Simon 1892: 42-43, pl. 2, figs. 5-6. Deeleman-Reinhold 1986b: 212-213, figs. 26-31, 59a. Huber 1998a: fig. 8p (copied from Deeleman-Reinhold 1986b). Huber 2000: figs. 34, 69, 124, 177. [Murphy & Murphy 2000 and Huber 1998b: see *C. saluang*].

*Micromerys vermiformis*: Simon 1893a: 472-473, fig. 463 (copied from Simon 1892). [Simon 1901: see *C. saluang*].

*Type*. Male holotype from Philippines, Luzon, Camarines Sur, Calapnitan cave [-13°41'N, 123°04'E], with Simon's original label "14791 Mic. vermiformis E.S., Cueva de Calapnitan", no further data, in MNHN (Ar 10504), examined.

*Diagnosis*. Easily distinguished from most congeners by strong curved trochanter apophysis (Fig. 140), ventral modifications on male palpal femur (Fig. 139), and triangular epigynum (Figs. 62, 143); from the very similar *C. saluang* by much longer and more slender procurus (Fig. 140), simple embolus tip (Fig. 139), and round pore plates (Fig. 144).

*Male* (Quezon N.P.). Carapace width 0.75, abdomen partly missing. Legs 1 and 2 missing, tibia 3: 3.0, tibia 4: 5.5. Habitus as in Figs. 41 and 42. Prosoma

and abdomen pale ochre-yellow, legs whitish, patella area and tibia-metatarsus joints light brown. Distance PME-PME 220  $\mu$ m, diameter PME 80  $\mu$ m, distance PME-ALE 25  $\mu$ m, no trace of AME. Ocular area not elevated, each triad on very low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 142, frontal apophyses divided into two parts each, lateral apophyses also very distal. Sternum longer than wide (0.55/0.50), unmodified. Palps as in Figs. 139 and 140, coxa unmodified, trochanter with strong retrolatero-ventral apophysis curving clockwise distally, femur with three distinctive proximo-ventral apophyses directed proximally, procurus long but simple, only tip more complex (Fig. 147), almost straight, tarsal organ capsulate (Fig. 150), bulb (turned away from natural position in Fig. 139) elongated, with long pale embolus and sclerite (putative unculus) that tapers strongly into fine transparent process (Fig. 149). Legs without spines and curved hairs, few vertical hairs (most hairs missing). Gonopore with four epiandrous spigots (Fig. 151); ALS with only two spigots each (Fig. 152). Further data from a male from Borneo: tibia 1: 6.2, tibia 4: 5.2; retrolateral trichobothrium on tibia 1 at 1.5%, tibia 1 L/d: 117; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 4; pseudosegments not visible in dissecting microscope.

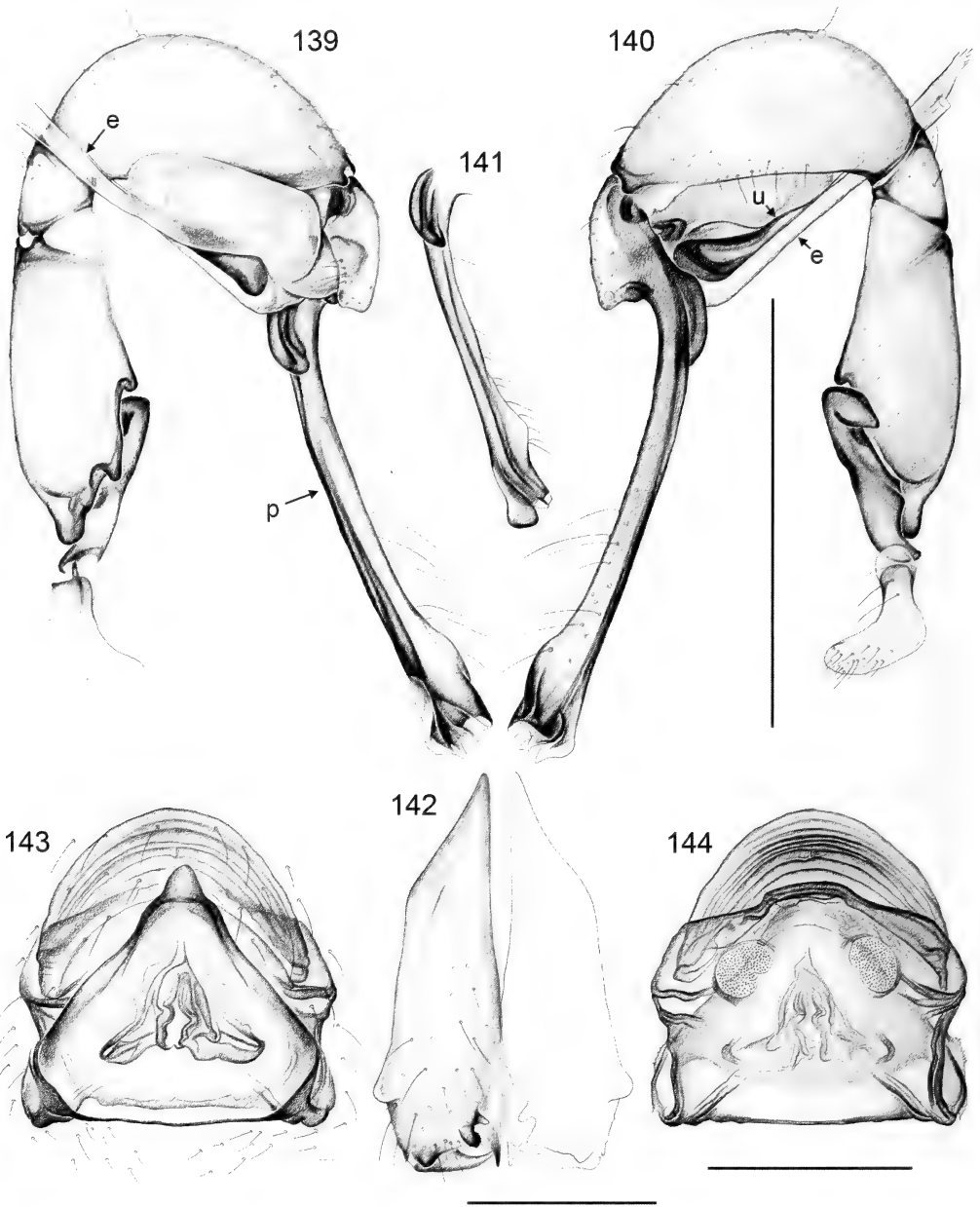


FIG. 139-144. *Calapnita vermiformis*. 139, 140. Left male palp, prolateral and retrolateral views, male from Philippines. 141. Left procurus of male from Sulawesi at same scale. 142. Male chelicerae, frontal view. 143, 144. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (139-141), 0.3 (143, 144), 0.2 (142).

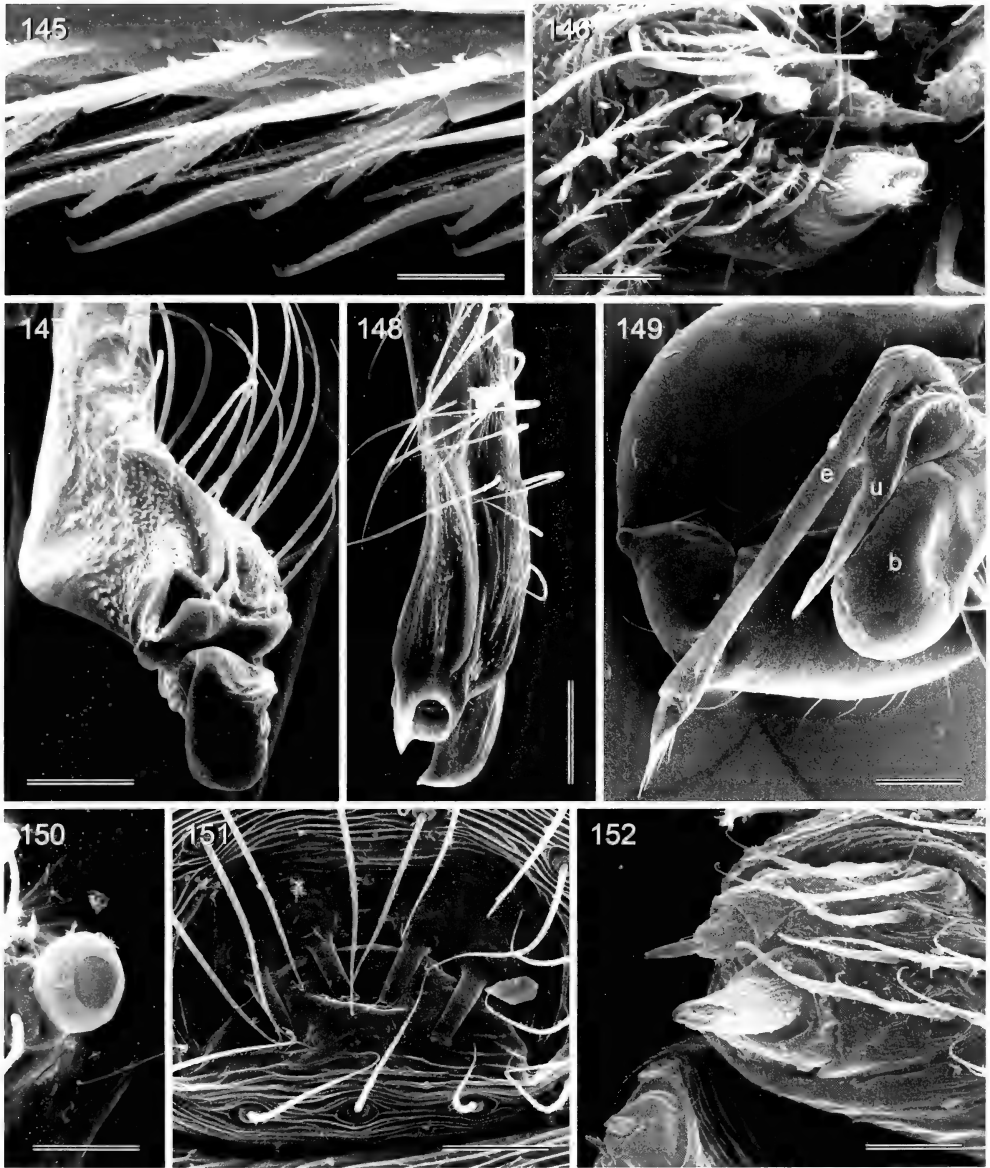


FIG. 145-152. 145. *Sihala ceylonica*, comb-hairs on female tarsus 4. 146. *Utbina luzonica*, female ALS. 147-152. *Calapnita vermiformis*. 147, 148. Left procurrus, dorso-distal and retrolateral views. 149. Processes of left bulb. 150. Male palpal tarsal organ. 151. Male gonopore. 152. Male ALS. Scale lines: 100  $\mu\text{m}$  (149), 60  $\mu\text{m}$  (148), 50  $\mu\text{m}$  (147), 20  $\mu\text{m}$  (145, 146, 150, 151), 10  $\mu\text{m}$  (152).

*Variation.* The holotype is in fair condition but most legs are missing (tibia 4: 6.5), total body length: ~6.0 (not 4.0 as in Simon 1892). All material from outside the Philippines is here assigned tentatively due to minor differences: males from Sulawesi have a smaller procurus with a slightly different tip (Fig. 141), stronger fringes distally on the embolus, and a slightly thinner trochanter apophysis; males from Borneo are more variable: the procurus is mostly like in males from Sulawesi but sometimes thicker, the thickness of the trochanter apophysis varies, the frontal cheliceral apophyses may be undivided or even more distinctly divided (as in *C. saluang*, cf. Fig. 155); in the male from Java the procurus is like in males from Sulawesi. Tibia 1 in 14 males from Borneo and Sulawesi: 5.5-7.9 (mean 6.7).

*Female.* In general similar to male; triads at about same distance (distance PME-PME 210  $\mu$ m). Tibia 1 in females from Philippines: 5.9, 6.8 (missing in others); in 12 females from Borneo, Sulawesi and Java: 5.5-6.7 (mean 6.1). Epigynum with distinctive triangular fold directed anteriorly, with 'knob' at tip (Figs. 62, 143); internal genitalia as in Figs. 63 and 144.

*Distribution.* Possibly widely distributed in Southeast Asia, but all records from outside the Philippines are from specimens here assigned tentatively (see above) (Fig. 137). The specimens from Sumatra in Deeleman-Reinhold (1986b) are here considered to belong to a different species (*C. saluang*, see below).

*Material examined.* PHILIPPINES: *Luzon*: Camarines Sur, Cueva de Calapnitan: ♂ holotype above; Quezon National Park, Atimonan (14°00'N, 121°52'E), 200 m a.s.l., under leaf, 12.-13.x.1979 (P.R. Deeleman), 1♂3♀ in RMNH. *Mindanao*: Davao Nature Reserve, Mt. Apo (6°53'N, 125°16'E), 800 m a.s.l., under leaves in secondary forest, 26. iv.1982 (P.R. Deeleman), 3♀ in RMNH.

*Assigned tentatively.* MALAYSIA-BORNEO: *Sarawak*: Semengoh Arboretum [1°24'N, 110°19'E], lower track, 23.iii.-6.iv.1985 (C.L. & P.R. Deeleman), 3♂5♀ in RMNH.

INDONESIA-BORNEO: *Central Kalimantan*: Kaharian (2°02'N, 113°40'E), swampy primary forest, in foliage, 2.-16.ix.1985 (S. Djojosedharmo), 1♂1♀ in RMNH; same data, 1♀ in RMNH; Tumbang Tahai (2°02'N, 113°35'E), primary marshy forest, from leaves, 3.-13.ix.1985 (S. Djojosedharmo), 3♂1♀ in RMNH. *East Kalimantan*: Santan (0°03'N, 117°28'E), near sea level, 3.vii.1976 (J.R. Thomson), 1♂2♀ in RMNH; Russian road km 5 (1°12'N,

116°52'E), near sea level, 15.ii.1976 (J.R. Thomson), 1♂ in RMNH. Balikpapan [-1°15'S, 116°50'E], primary forest, 20.vii.1982 (Murphy, 11872), 1♂2♀ in ZFMK. 40 km N Balikpapan, Sepaku [1°00'S, 116°54'E], degraded primary forest, underside of leaf, 16.vii.1979 (P.R. Deeleman), 2♀ in RMNH. *South Kalimantan*: 40 km NW of Palangkaraya [-1°56'S, 113°42'E], secondary forest, from leaves, ix.1985 (S. Djojosedharmo), 1♂2♀ in RMNH.

INDONESIA-SULAWESI: *South Sulawesi*: 55 km from Ujung Pandang, 23 km from Camba [-5°S, 119.75°E], under leaves in karst forest, 9.viii.1980 (C.L. & P.R. Deeleman), 1♂1♀ in RMNH; same data but 9. & 13.-14.viii.1980, 4♂5♀ in RMNH; probably same locality ("Ujung Pandang, Camba, karst forest"), 19.viii.1980 (Deeleman), 1♂1♀ in AMNH; Ujung Pandang [-5°07'S, 119°27'E], specimen died 10.x.1980, no further data, 1♀ in RMNH. *Central Sulawesi*: Palu, Marena, Lore Lindu Reserve [-1°18'S, 120°05'E], "dark little stream valley, from leaves", 24.vii.1982 (collector not given), 2♂2♀ in RMNH. *North Sulawesi*: Dumoga, near Doloduo [-0°31'N, 123°55'E], primary forest, from leaves, 27.-30.vii.1982 (collector not given), 2♂3♀ in RMNH.

INDONESIA-JAVA: *Jawa Barat Prov.*: Ujung [=Ujung] Kulon Reserve [-6°45'S, 105°20'E], from leaves, 17.-19.xi.1986 (S. Djojosedharmo), 1♂2♀ in RMNH.

*Calapnita saluang* n. sp.

Figs. 43, 44, 153-169

"*Micromerys vermiformis*" (misidentification): Simon 1901: 51.

"*Calapnita vermiformis*" (misidentification): Murphy & Murphy 2000: fig. 47.8. Huber 1998b: 42, fig. 2F.

*Type.* Male holotype from Indonesia, Sumatra, Kerinci National Park [-2°30'S, 101°30'E], 800 m a.s.l., near river, from leaves, 20.-30.vii.1988 (S. Djojosedharmo), in RMNH.

*Etymology.* The saluang is a traditional musical instrument of the Minangkabau people of West Sumatra; noun in apposition.

*Diagnosis.* Easily distinguished from most congeners by strong curved trochanter apophysis (Fig. 154), ventral modifications on male palpal femur (Fig. 153), and triangular epigynum (Fig. 156); from the very similar *C. vermiformis* by shape of procurus (Fig. 154), embolus tip with strong spines (Figs. 153, 160, 163), and elongated pore plates (Fig. 157).



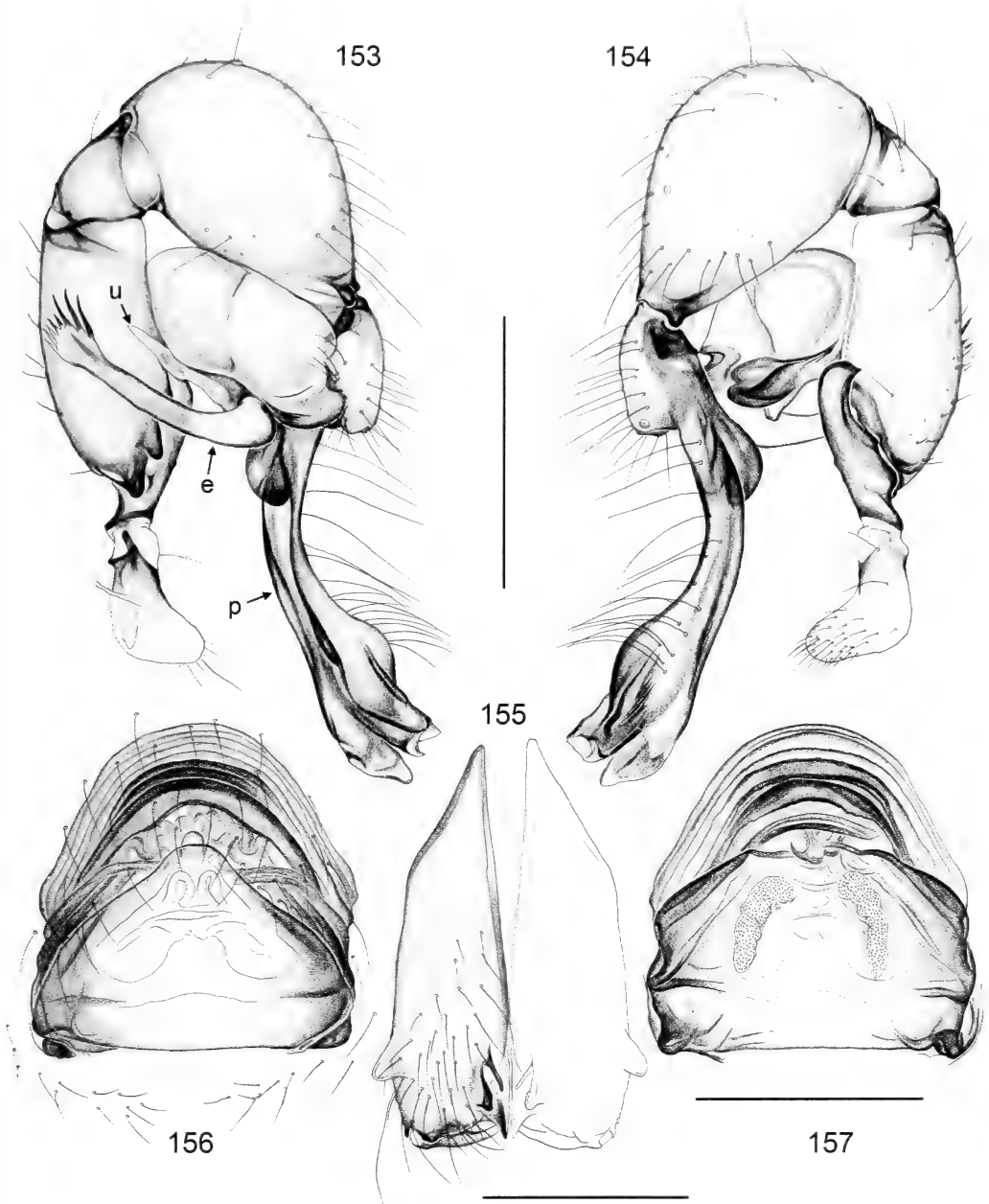


FIG. 153-157. *Calapnita saluang*. 153, 154. Left male palp, prolateral and retrolateral views. 155. Male chelicerae, frontal view. 156, 157. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (153, 154), 0.3 (156, 157), 0.2 (155).

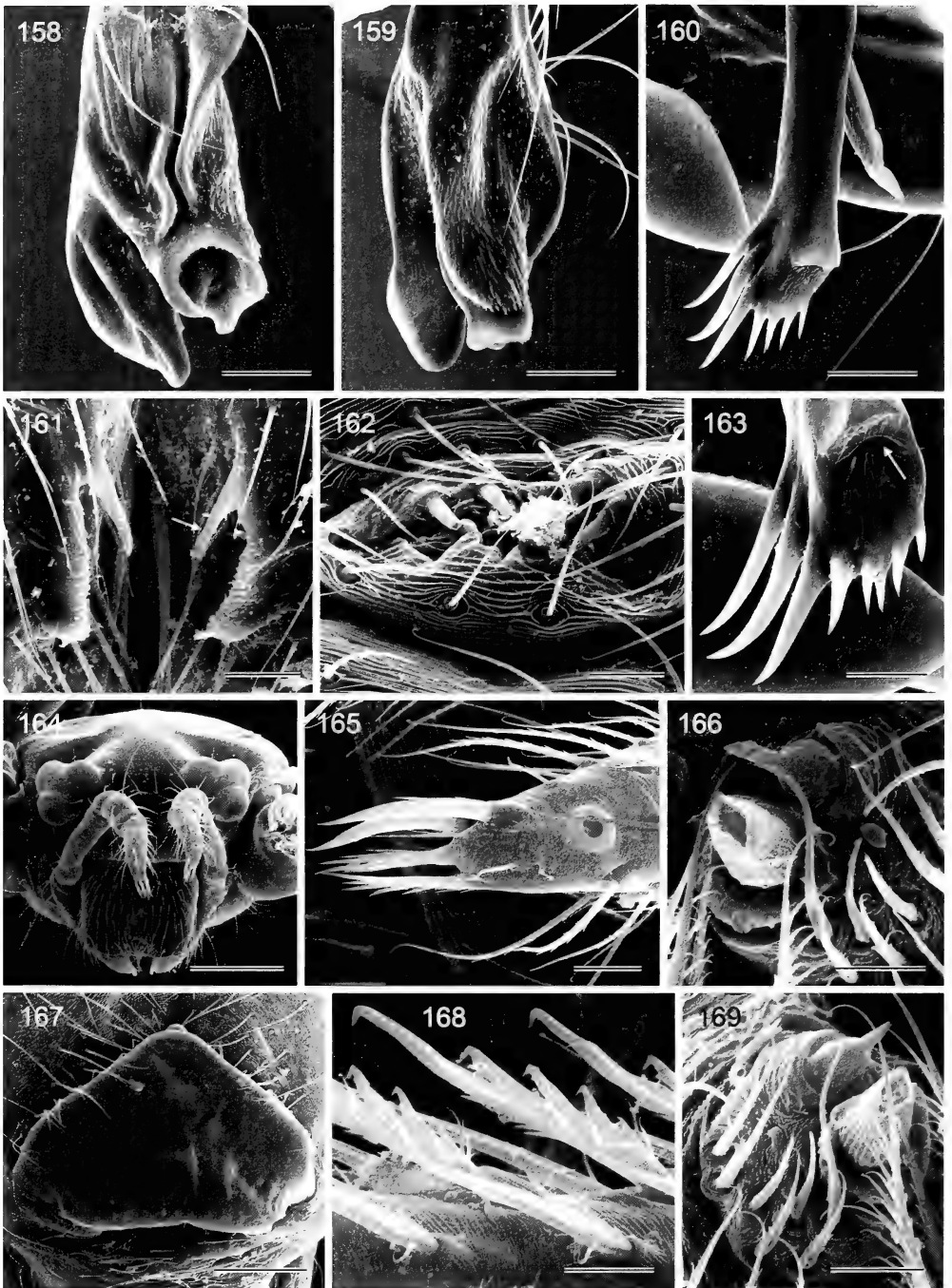


FIG. 158-169. *Calapnita saluang*. 158. Tip of right procurus, retrolatero-dorsal view. 159. Tip of left procurus, ventral view. 160. Left embolus. 161. Distal male cheliceral apophyses (arrow points at semitransparent branch). 162. Male gonopore. 163. Tip of left embolus (arrow points at sperm duct opening). 164. Female prosoma, frontal view. 165. Tip of female left palpal tarsus. 166. Male ALS. 167. Epigynum. 168. Comb hairs on left female tarsus 4. 169. Female ALS. Scale lines: 200  $\mu\text{m}$  (164), 100  $\mu\text{m}$  (167), 80  $\mu\text{m}$  (159), 60  $\mu\text{m}$  (158, 160), 30  $\mu\text{m}$  (163), 20  $\mu\text{m}$  (161, 162, 165), 10  $\mu\text{m}$  (169), 8  $\mu\text{m}$  (166, 168).

*Male* (holotype). Total body length 4.9, carapace width 0.75. Leg 1: 32.2 (8.1 + 0.4 + 7.1 + 13.9 + 2.7), tibia 2: 5.6, tibia 3: 3.4, tibia 4: 5.9; tibia 1 L/d: 115. Habitus as in Figs. 43 and 44. Prosoma and legs pale ochre-yellow, patella area and tibia-metatarsus joints light brown, abdomen pale ochre-gray. Distance PME-PME 215  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 25  $\mu$ m, no trace of AME. Ocular area not elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 155, frontal apophyses divided into two parts each (Fig. 161), proximal part thin and weakly sclerotized; lateral apophyses very distal. Sternum as long as wide (0.50), unmodified. Palps as in Figs. 153 and 154, coxa unmodified, trochanter with strong retrolatero-ventral apophysis curving clockwise distally, femur with three distinctive proximo-ventral apophyses directed proximally, procurus similar to *C. vermiformis* but not as straight and distally much wider, complex distally (Fig. 158), bulb (turned away from natural position in Fig. 153) also similar to *C. vermiformis* but spines on embolus tip much stronger, partly sclerotized (Figs. 153, 160). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 1.5%, prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 162); ALS with only two spigots each (Fig. 166). *Variation*. Tibia 1 in 21 other males: 6.1-7.5 (mean 6.9). *Female*. In general similar to male; triads at about same distance (distance PME-PME 195  $\mu$ m). Tibia 1 in 32 females: 5.5-6.5 (mean 6.1); tarsus 4 with single row of comb-hairs (Fig. 168). Epigynum similar to *C. vermiformis* but laterally more sclerotized and clearly darker than medially, with 'knob' at anterior tip of triangular fold (Figs. 156, 167); internal genitalia as in Fig. 157.

*Distribution*. Widely distributed in Southeast Asia (southern Thailand to western Java, Fig. 137).

*Material examined*. INDONESIA-SUMATRA: Kerinci National Park: ♂ holotype above together with 1♀; same data, 1♂5♀ in RMNH; same data but 21.-30.vii.1988, 14♂17♀ in RMNH. *North Sumatra*: Bohorok [3°32.6'N, 98°07.2'E], 30.v.1983 (Suharto), 1♀ in RMNH; same locality, untouched forest, 7.iii.1983 (C.L. Deeleman-Reinhold), 2♀ in RMNH; same locality, 1983 (various dates, 4 vials), collector not given, 8♀ in RMNH; same locality, above bamboo, 10.iii.1983, collector not given, 1♂ in RMNH; same locality, from leaves, 8.iii.1983,

collector not given, 1♀ in RMNH; same locality, no further data, 1♀ in RMNH. *Aceh*: Gunung Leuser, Ketambe [3°40'N, 97°39'E], trail 1, 17.ii.1985 (Sudiro), 2♂ in RMNH; same locality, no date and collector, 2♂3♀ (2 vials) in RMNH; same locality, 1400 m a.s.l., foliage, 17.vii.1985 (Bugama, Yono), 1♂ in RMNH; same locality, trail 4.2, 3.v.1986 (Suharto), 1♀ in RMNH; same locality, trail 8.6, 4.i.1985 (Suyono), 3♀ in RMNH; same locality, 15.ii.1985 (Suyono), 2♂1♀ in RMNH; same locality, several dates on label (1984-1985, collector not given), 2♂2♀ in RMNH; same locality, several dates on label (1984-1985, C.L. & P.R. Deeleman), 1♂3♀ in RMNH; same locality, trail 9/10, 27.viii.1984, collector not given, 3♂3♀ in RMNH. *West Sumatra*: Mt. Singalang, Anai [-0°28.6'S, 100°21.2'E], 400-520 m a.s.l., secondary forest, from leaves, 10.-22. vi.1994 (S. Djojosedharmo), 7♂21♀ in RMNH; same data, 1♀ in RMNH; same data but 480-520 m a.s.l., 2♂5♀ in RMNH.

INDONESIA-JAVA: *Jawa Barat Prov.*: Cibodas [-6°44'S, 107°00'E], 1450-1550 m a.s.l., from leaves, 7.-8.xii.1986 (S. Djojosedharmo), 1♂3♀ in RMNH.

MALAYSIA: *Selangor*: Templer's Park, "Kuala Lumpur" [3°18.3'N, 101°38.1'E], slope along river, 21.iii.1985 (C.L. & P.R. Deeleman), 1♂ in RMNH. *Pahang*: Cameron Highlands (4°29'N, 101°27'E), 14.-21.iv.1990 (V. & B. Roth), 1♂ in CAS; Genting [3°24.5'N, 101°45.9'E], 600 m a.s.l., secondary jungle, 3.xii.1990 (Murphy), 1♀ in CJFM (19104); same locality but 700 m a.s.l., garden, 1.ii.1988 (Murphy), 1♂ in CJFM (15260). *Perak*: Pangkor Island [-4°14'N, 100°34'E], 30-150 m a.s.l., 15.-16. xii.1997 (P. Schwendinger), 1♂ in MHNG.

THAILAND: *Nakhon Si Thammarat Prov.*: Khao Luang National Park (8°43.4'N, 99°40.1'E), 350 m a.s.l., 10.-12.x.2003 (ATOL Expedition 2003), 2♂ in MACN. *Krabi Prov.*: Khao Phanom Bencha National Park [-8°14'N, 98°56'E], primary forest, 5.-6. xii.1990 (C.L. & P.R. Deeleman), 1♂1♀ in RMNH. *Naratiwat Prov.*: Waeng Distr., Hala Bala W.S., research station (5°47.7'N, 101°50.1'E), 13.-14.x.2003 (ATOL Expedition 2003), 1♀ in MACN.

*Calapnita phyllicola* Deeleman-Reinhold, 1986

Figs. 46, 64, 66, 170-188

*Calapnita phyllicola* Deeleman-Reinhold 1986b: 213-217, figs. 32-39, 59c. Huber 2000: fig. 42.

*Types*. Male holotype from Indonesia, East Kalimantan, 40 km N Balikpapan, Sepaku (1°00'S, 116°54'E),

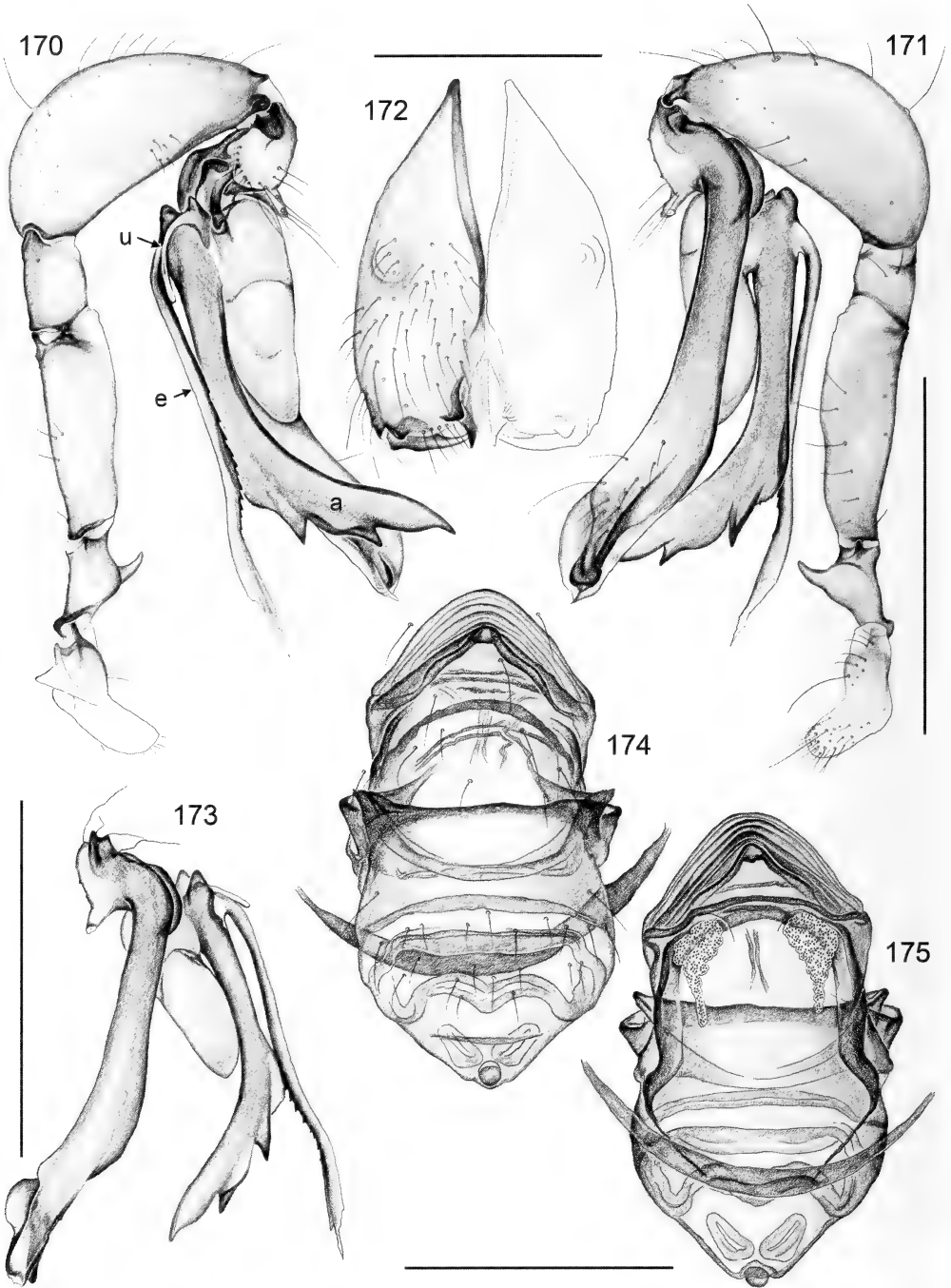


FIG. 170-175. *Calapnita phyllicola*. 170, 171. Left male palp, prolateral and retrolateral views, male from type locality (East Kalimantan). 172. Male chelicerae, frontal view. 173. Procursus and bulb of male from Central Kalimantan (same scale as Fig. 171). 174, 175. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (170, 171, 173), 0.5 (174, 175), 0.3 (172).

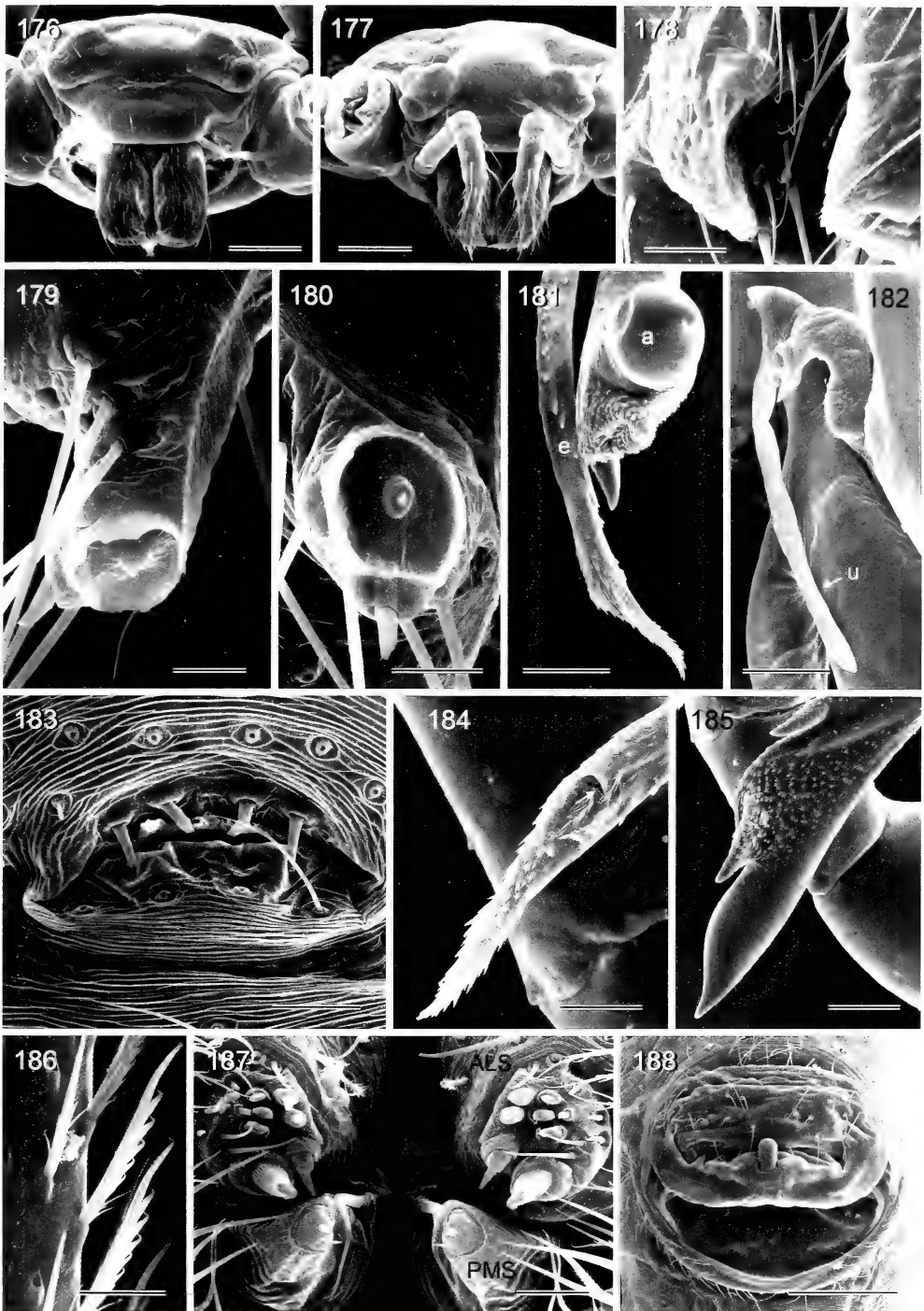


FIG. 176-188. *Calapnita phyllicola*. 176, 177. Male (palps removed) and female prosomata, frontal views. 178. Male distal cheliceral apophyses. 179, 180. Male palpal tarsal organ. 181. Tips of appendix and embolus, dorso-distal view. 182. Uncus of left bulb, prolateral view. 183. Male gonopore. 184. Tip of right embolus (arrow points at sperm duct opening). 185. Tip of right appendix, retrolateral view. 186. Comb hairs on left female tarsus 4. 187. Female ALS and PMS. 188. Epigynum. Scale lines: 200  $\mu\text{m}$  (176, 177, 188), 100  $\mu\text{m}$  (185), 80  $\mu\text{m}$  (181), 60  $\mu\text{m}$  (182), 50  $\mu\text{m}$  (184), 30  $\mu\text{m}$  (183), 20  $\mu\text{m}$  (178-180, 186, 187).

“primary lowland dipterocarp rainforest, on the underside of large green leaves (mostly palm leaves) in dark sheltered places, part of series collected 14-16. vii.1979, 5-8.viii.1980 and 21-22.vii.1982” (P.R. & C.L. Deeleman), in RMNH (9573), not examined. 14♂30♀ paratypes from same locality, 2./3./5. viii.1980, in RMNH (7 vials), examined.

*Note.* Deeleman-Reinhold (1986b) reports only 5♂7♀ paratypes; however, all the material above is labeled as paratypes (original handwriting), originates from the type locality, and was collected during one of the collection events that yielded the holotype.

*Diagnosis.* Easily distinguished from congeners by shapes of procurus (Fig. 171), bulbal processes (Fig. 170), and short trochanter apophysis (Fig. 171); from *C. vermiformis* and *C. saluang* also by simple male palpal femur (Fig. 171) and epigynum not triangular (Fig. 188).

*Male* (paratype). Total body length 5.3, carapace width 0.95. Leg 1: 35.9 (8.2 + 0.5 + 8.5 + 16.8 + 1.9), tibia 2: 5.7, tibia 3: 3.5, tibia 4: 5.4; tibia 1 L/d: 96. Habitus as in Fig. 46. Entire spider mostly pale ochre-yellow, only patella area and tibia-metatarsus joints (and palpal structures) brown. Distance PME-PME 240 µm, diameter PME 90 µm, distance PME-ALE 45 µm, no trace of AME. Ocular area not elevated, each triad on very low hump (Fig. 176). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 172, frontal apophyses simple (Fig. 178), low humps proximally. Sternum longer than wide (0.60/0.55), unmodified. Palps as in Figs. 170 and 171, coxa unmodified, trochanter with small retro-latero-ventral apophysis, femur long and slender, barely modified, tarsal organ on elevation (Figs. 179, 180), procurus rather simple, bulb very elongated, with large serrated process (putative appendix; Figs. 170, 181, 185) from which slender serrated embolus originates proximally (Figs. 170, 181, 184), small transparent worm-shaped process (putative uncus) only proximally sclerotized (Figs. 170, 182). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 183); ALS with eight spigots each (cf. female). *Variation.* Males from all localities other than the type locality are assigned tentatively because all differ slightly in the shape of the dorso-distal structure of the procurus which is more distinct (Fig. 173); also, the procurus in these males is mostly smaller, some-

times more slender; in most, the large serrated bulbal apophysis is more slender. Tibia 1 in 27 other males (all localities): 7.0-9.0 (mean 8.0).

*Female.* In general similar to male; triads slightly closer together (Fig. 177; distance PME-PME 205 µm). Tibia 1 in 63 females: 5.6-7.4 (mean 6.6); tarsus 4 with single row of comb-hairs (Fig. 186). Epigynum protruding, weakly sclerotized, distinctive internal structures visible through cuticle (Fig. 64), with ‘knob’ on extensible lobe (Figs. 174, 188); internal genitalia as in Figs. 66 and 175. ALS with eight spigots each (Fig. 187).

*Distribution.* Possibly widely distributed in Southeast Asia (Fig. 138), but all records other than those from East Kalimantan are from specimens here assigned tentatively (see above).

*Material examined.* INDONESIA-BORNEO: *East Kalimantan:* Sepaku: 14♂30♀ paratypes above; same data, several juveniles, in RMNH; same data, 3. viii.1980, 1♂2♀ in AMNH; same locality, 20.-21. vii.1982 (P.R. & C.L. Deeleman), 25♂41♀ (2 vials) in RMNH. Balikpapan [-1°15'S, 116°50'E], 20. vii.1982 (Murphy, 11873), 1♂2♀ in ZFMK.

*Assigned tentatively.* INDONESIA-BORNEO: *Central Kalimantan:* Kaharian (2°02'S, 113°40'E), swampy primary forest, foliage, 2.-16.ix.1985 (S. Djojosedharmo), 10♂25♀ (2 vials) in RMNH. Tumbang Tahai (2°02'S, 113°35'E), primary marshy forest, 3./13.ix.1985 (S. Djojosedharmo), 7♂12♀ (2 vials) in RMNH. *South Kalimantan:* 40 km NW of Palangkaraya [-1°56'S, 113°42'E], from leaves in secondary forest, 1.x.1985 (S. Djojosedharmo), 3♂11♀ in RMNH.

MALAYSIA-BORNEO: *Sarawak:* Semengoh Arboretum [1°24'N, 110°19'E], lower track, 23.iii.-6. iv.1985 (C.L. & P.R. Deeleman), 2♀ in RMNH.

INDONESIA-SUMATRA: *Aceh:* Gunung Leuser, Ketambe [3°40'N, 97°39'E], 17.ii.1985 (Sudiro), 1♀ in RMNH; same locality, 15.ii.1985 (Suyono), 1♂1♀ in RMNH; same locality, 3.v.1986 (Suharto), 1♂2♀ in RMNH; same locality, 4.i.1985 (Suyono), 1♂1♀ in RMNH; same locality, 25.viii.1984 (Sudiro, Suyono), 3♂4♀ in RMNH; same locality, ii.1985, collector not given, 1♂2♀ in RMNH; same locality, submontane, 1400 m a.s.l., 29.xi.1984, collector not given, 1♀ in RMNH; same locality, various dates combined (viii.1984-ii.1985) (C.L. & P.R. Deeleman), 3♂6♀ in RMNH. *North Sumatra:* Gunung Leuser, Bohorok [3°32.6'N, 98°07.2'E], 3.i.1984 (P.R. Deeleman), 1♂ in RMNH; same locality, 17.ii.1983 and 2.i.1984 (2 vials), collector not

given, 2♀ in RMNH. *West Sumatra*: Rimba Panti Reserve [-0°14'N, 100°08'E], lowland rainforest, from leaves, 3.-4.viii.1982 (C.L. & P.R. Deeleman), 1♂1♀ in RMNH.

SINGAPORE: Nee Soon [-1°24'N, 103°49'E], swamp forest, 14.xi.1990 (P.K.L. Ng), 2♀ in RMBR. MALAYSIA: *Pahang*: Genting Heights "Kuala Lumpur" [-3°24.5'N, 101°45.9'E], 29.vii.1980, collector not given, 1♂2♀ in RMNH. *Perak*: Belum Expedition, Ridge Trail [-5°40'N, 101°25'E], 12.ii.1994 (Murphy, 23663), 1♂ in ZFMK. *Selangor*: Gombak Field Station [-3°14'N, 101°44'E], 6.vii.1992 (C.L. & P.R. Deeleman), 1♀ in RMNH.

THAILAND: *Naratiwat Prov.*: Waeng Distr., Hala Bala W.S., research station (5°47.7'N, 101°50.1'E), 13.-14.x.2003 (ATOL Expedition 2003), 1♂1♀ (2 vials) in MACN.

*Calapnita semengoh* n. sp.

Figs. 45, 67-69, 189-193

*Type*. Male holotype from Malaysia-Borneo, Sarawak, Semengoh Arboretum [1°24'N, 110°19'E], lower track, 23.iii.-6.iv.1985 (C.L. & P.R. Deeleman), with label "Malarchia antilope n. sp. Deeleman, 4♂ paratypes", in RMNH.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Easily distinguished from congeners by extremely elongated palpal segments, shapes of procurus (Fig. 190), bulbal processes (Fig. 189), and short trochanter apophysis (Fig. 190); from *C. vermiformis* and *C. saluang* also by simple male palpal femur and epigynum with 'knob' on long scape (Figs. 67, 68, 192).

*Male* (paratype). Total body length 5.3, carapace width 0.85. Leg 1: 37.9 (8.8 + 0.4 + 8.8 + 18.1 + 1.8), tibia 2: 6.3, tibia 3 missing, tibia 4: 5.4; tibia 1 L/d: 110. Habitus as in Fig. 45. Prosoma and legs mostly pale ochre-yellow, patella area and tibia-metatarsus joints brown, abdomen ochre-gray. Distance PME-PME 255 µm, diameter PME 100 µm, distance PME-ALE 45 µm, no trace of AME. Ocular area not elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 191, frontal apophyses simple, prominent humps proximally. Sternum as long as wide (0.55), unmodified. Palps as in Figs. 189 and 190, very similar to *C. phyllicola* but all elements more elongated, tarsal organ also on elevation. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2%; prolateral

trichobothrium absent on tibia 1, seen on tibiae 2 and 4; pseudosegments not visible in dissecting microscope.

*Variation*. Tibia 1 in 2 other males: 8.9, 9.3.

*Female*. In general similar to male, also triads almost same distance (PME-PME 250 µm). Tibia 1 in 4 females: 6.3, 6.9, 7.0, 7.3. Epigynum with long membranous folded process ('scape') first directed forwards then turning backwards, with long 'knob' on tip (Fig. 192); internal genitalia as in Figs. 69 and 193.

*Distribution*. Known from type locality only (Fig. 138).

*Material examined*. MALAYSIA-BORNEO: *Sarawak*: Semengoh Arboretum: ♂ holotype above, together with 3♂ in RMNH; same data, primary forest, 4♀ in RMNH; same locality, under palm leaf near water, 23.iii.1985 (P.R. & C.L. Deeleman), 1♂1♀ in RMNH.

*Calapnita phasmoides* Deeleman-Reinhold, 1986

Figs. 70, 71, 194-197

*Calapnita phasmoides* Deeleman-Reinhold 1986b: 217-220, figs. 46-51, 59e.

*Types*. Male holotype and 1♀ paratype from Indonesia (Borneo), East Kalimantan, 40 km N Balikpapan, Sepaku (1°00'S, 116°54'E), primary lowland dipterocarp rainforest, on underside of large leaves, 14.-16.vii.1979 (P.R. Deeleman), in RMNH (9574), not examined. 2♂1♀ paratypes, same data but 13.vii.1979, in RMNH, examined.

*Note*. Deeleman-Reinhold (1986b) reports only 1♀ paratype; however, the other material above is also labeled as paratypes (original handwriting), originates from the type locality, and was collected the same week as the holotype.

*Diagnosis*. Easily distinguished from congeners by shapes of procurus (Fig. 195) and bulbal processes (Fig. 194); from *C. vermiformis* and *C. saluang* also by simple male palpal femur (Fig. 195) and epigynum not triangular (Figs. 71, 196).

*Male* (Tumbang Tahai). Total body length 4.7, carapace width 0.8. Leg 1: 27.9 (6.7 + 0.4 + 6.7 + 12.5 + 1.6), tibia 2: 4.7, tibia 3: 2.7, tibia 4: 4.4; tibia 1 L/d: 95. Habitus similar to *C. saluang* (cf. Figs. 43, 44). Entire spider mostly pale ochre-yellow, only patellae and tibia-metatarsus joints and distal palpal structures darker. Distance PME-PME 255 µm, diameter PME 80 µm, distance PME-ALE 35 µm, no trace of AME. Ocular area not elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in



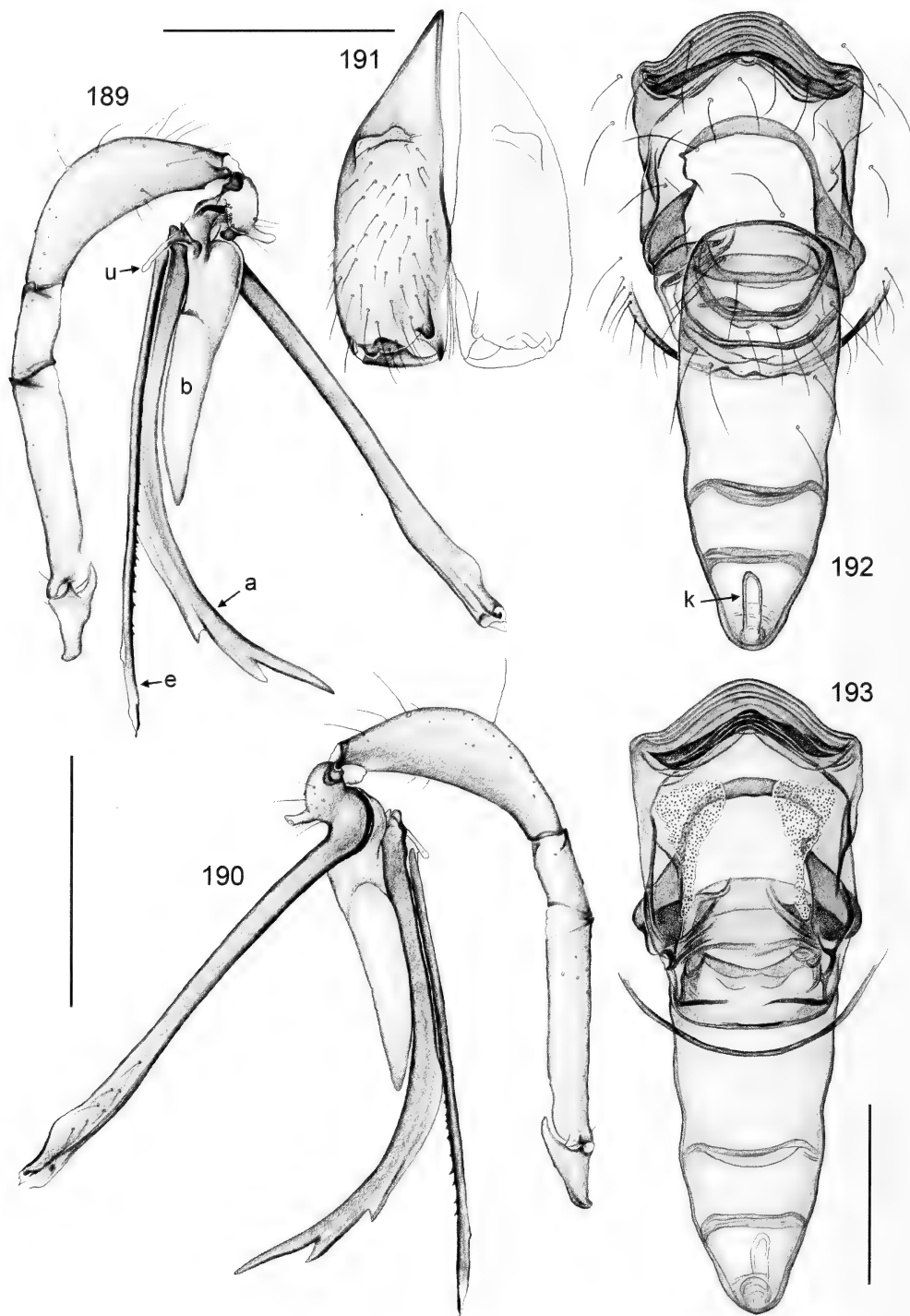


FIG. 189-193. *Calapnita semengoh*. 189, 190. Left male palp, prolateral and retrolateral views. 191. Male chelicerae, frontal view. 192, 193. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (189, 190), 0.3 (191-193).



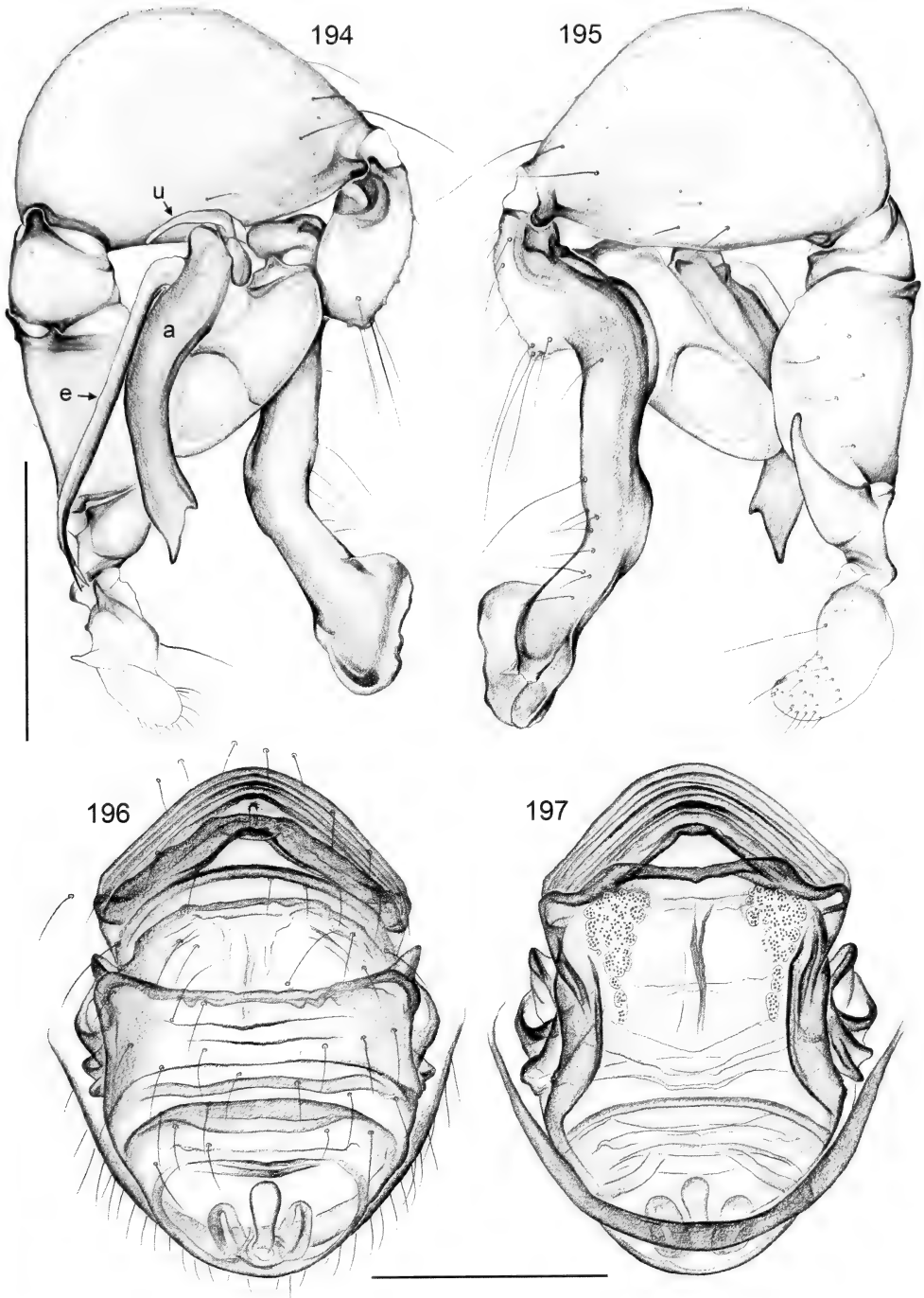


FIG. 194-197. *Calapnita phasmoides*. 194, 195. Left male palp, prolateral and retrolateral views. 196, 197. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (194, 195), 0.3 (196, 197).

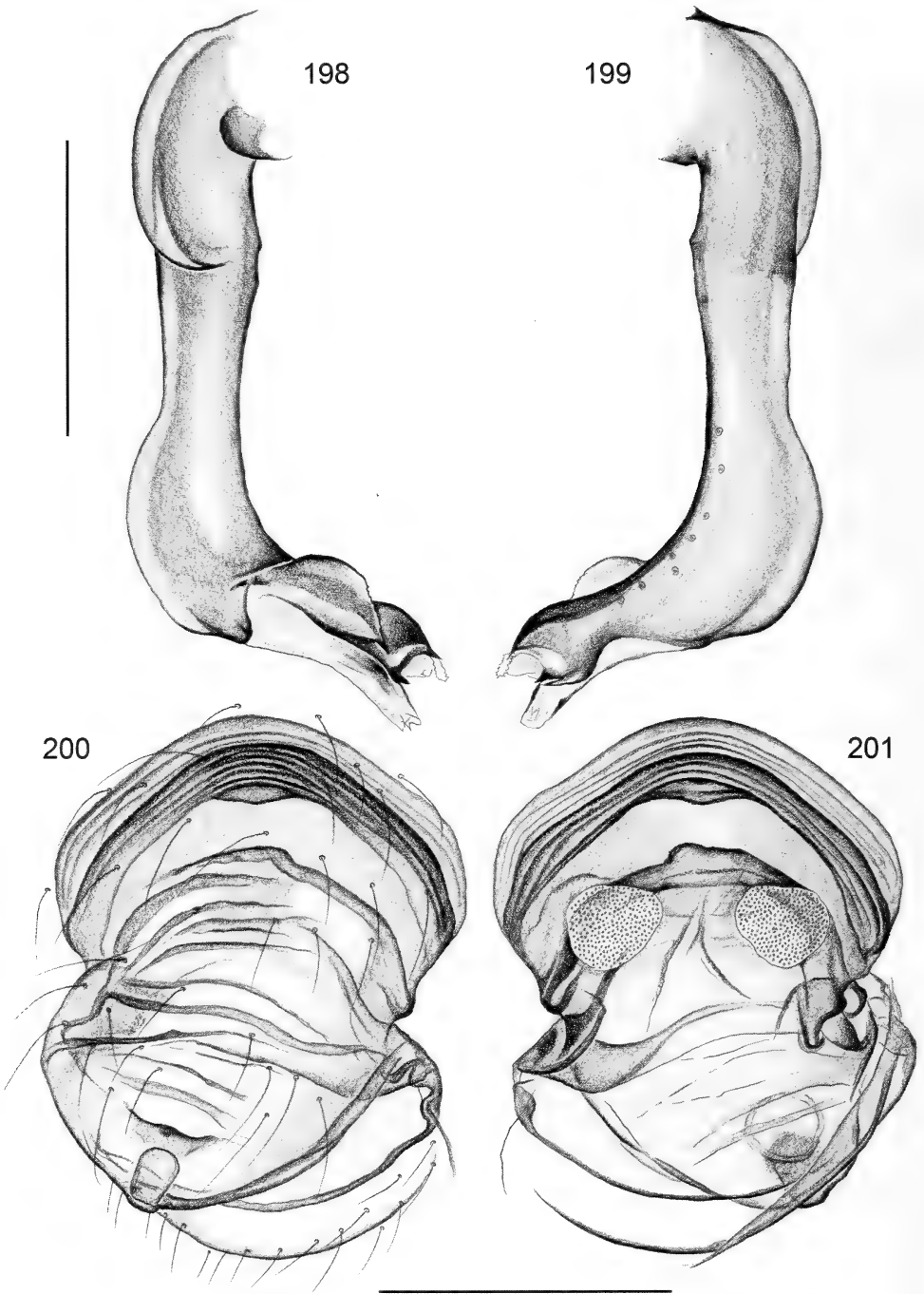


FIG. 198-201. *Calapnita deelemanae*. 198, 199. Left procurus, prolateral and retrolateral views. 200, 201. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.3.

*C. subphyllicola* (cf. Fig. 204). Sternum slightly longer than wide (0.50/0.45), unmodified. Palps as in Figs. 194 and 195 (mostly similar to *C. subphyllicola*), coxa unmodified, trochanter with medium-sized retrolatero-ventral apophysis, femur barely modified, tarsal organ on low conical elevation, procurus rather simple, distinctively widened distally, bulb with distinctive large apophysis. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope.

*Variation.* Males from Sumatra are assigned tentatively because the palp is slightly longer, the procurus tip is slightly different in prolateral view, and the trochanter apophysis is distally more curved. Tibia 1 in male from Sumatra: 8.6 (missing in other males).

*Female.* In general similar to male; triads slightly closer together (distance PME-PME 220  $\mu$ m). Tibia 1 in 9 females: 5.9-7.2 (mean 6.6). Epigynum protruding, mostly weakly sclerotized, with darker median area posteriorly (Fig. 71), with club-shaped 'knob' (Fig. 196); internal genitalia as in Fig. 197. The female from Java is assigned tentatively because it appears indistinguishable from *C. deelemanae* and no male specimen is available from Java.

*Distribution.* Possibly widely distributed in Indonesia, but specimens from Java and Sumatra are assigned tentatively (Fig. 138).

*Material examined.* INDONESIA-BORNEO: *East Kalimantan:* Sepaku, 40 km N Balikpapan: 2♂1♀ paratypes above; same data but 20.vii.1986, 1♀ in RMNH. *Central Kalimantan:* Tumbang Tahai (2°02'S, 113°35'E), primary marsh forest, 3./13.ix.1981 (S. Djojosedharmo), 1♂2♀ in RMNH; Kaharian (2°02'S, 113°40'E), swampy primary forest, foliage, 2./16.ix.1985 (S. Djojosedharmo), 1♀ in RMNH.

*Assigned tentatively:* INDONESIA-JAVA: *Jawa Barat Prov.:* Udjung [=Ujung] Kulon Reserve [-6°45'S, 105°20'E], from leaves, 17.-19.xi.1986 (S. Djojosedharmo), 1♀ in RMNH.

INDONESIA-SUMATRA: *Sumatera Barat:* Mt. Singalang, Anai [-0°28.6'S, 100°21.2'E], 480-520 m a.s.l., from leaves in secondary forest, 10.-22.vi.1994 (S. Djojosedharmo), 1♂2♀ in RMNH; same data but 400-520 m a.s.l., 2♂8♀ in RMNH.

*Calapnita deelemanae* n. sp.

Figs. 72, 73, 198-201

*Type.* Male holotype from Malaysia (Borneo), Sabah, Danum Valley F.C. [-5°10'N, 117°38'E], primary forest, 6.-16.v.1991 (C.L. Deeleman-Reinhold), in RMNH.

*Etymology.* The species is named for Christa L. Deeleman-Reinhold who kindly allowed me to study the immense material she had collected in Southeast Asia.

*Diagnosis.* Easily distinguished from most congeners by shapes of procurus (Figs. 198, 199) and bulbal processes (as in *C. phasmoides*, cf. Fig. 194); from *C. vermiformis* and *C. saluang* also by simple male palpal femur (cf. Fig. 195) and epigynum not triangular (Figs. 72, 200); from the very similar *C. phasmoides* only by shape of procurus (Figs. 198, 199).

*Male* (holotype). Total body length 4.9, carapace width 0.85. Leg 1 missing, tibia 2: 5.5, tibia 3: 3.2, tibia 4: 5.0. Habitus similar to *C. saluang* (cf. Figs. 43, 44). Entire spider mostly pale ochre-yellow, only patellae and tibia-metatarsus joints and distal palpal structures darker. Distance PME-PME 255  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Ocular area not elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in *C. subphyllicola* (cf. Fig. 204). Sternum as long as wide (0.50), unmodified. Palps in general very similar to *C. phasmoides* (cf. Figs. 194, 195), only procurus clearly different shape (Figs. 198, 199), large bulbal apophysis distally slightly wider. Legs without spines and curved hairs, few vertical hairs.

*Variation.* Leg 1 in male from Poring Hot Springs: 30.8 (7.4 + 0.4 + 7.3 + 14.0 + 1.7); tibia 1 L/d: 79; retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope. Procurus in this male identical to that of holotype, but subdistal branch of bulbal apophysis slightly longer and tip of embolus not so clearly bifid.

*Female.* In general similar to male; triads slightly closer together (distance PME-PME 240  $\mu$ m). Tibia 1 in 2 females: 6.7, 7.1. Epigynum externally apparently not distinguishable from *C. phasmoides*, protruding, mostly weakly sclerotized, with darker median area posteriorly (Fig. 72), with club-shaped 'knob' (Fig. 200); internal genitalia as in Figs. 73 and 201, with round pore plates.

*Distribution.* Known from Borneo, Sabah, only (Fig. 138).

*Material examined.* MALAYSIA-BORNEO: *Sabah:* Danum Valley: ♂ holotype above. Mt. Kinabalu National Park, Poring Hot Springs (6°02'N, 116°50'E), 500-700 m a.s.l., canopy fogging *Xanthophyllum affine* (Polygalaceae), primary forest, 21.iv.-12.v.1992 (A. Floren), 1♂ in RMNH; same locality,

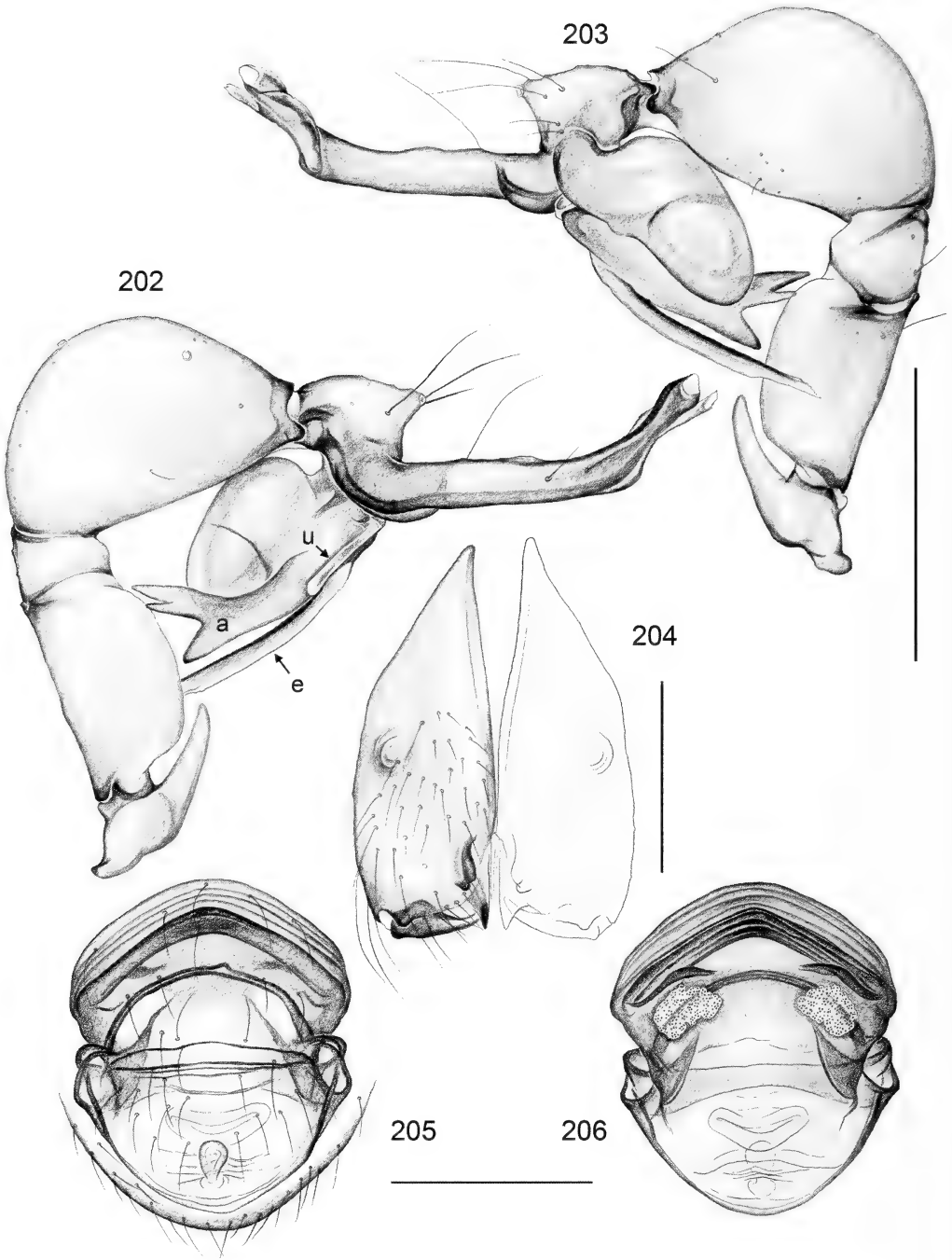


FIG. 202-206. *Calapnita subphyllicola*. 202, 203. Right male palp, retrolateral and prolatral views. 204. Male chelicerae, frontal view. 205, 206. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (202, 203), 0.3 (205, 206), 0.2 (204).

500 m a.s.l., 11.iv.1998 (C.L. Deeleman-Reinhold), 1♀ in RMNH. Ulu Dusun [-5°55'N, 117°50'E], 100 m a.s.l., jungle edge, 6.viii.1979 (Murphy, 8129), 1♀ in ZFMK. Forest concession "Mandalom-Patikang" S of Keningau, 600 m a.s.l., 15.iii.1983 (B. Hauser), 1♂ in MHNG.

*Calapnita subphylicola* Deeleman-Reinhold, 1986

Figs. 65, 74, 202-206

*Calapnita subphylicola* Deeleman-Reinhold 1986b: 217, figs. 40-44.

*Types.* Male holotype from Philippines, Mindanao, Davao, outside Langub cave (7°05'N, 125°32'E), "in woodland, on underside of large palmate leaves", 25.iv.1982 (P.R. Deeleman), in RMNH (9575), not examined. 5♂11♀ paratypes, same data, females "with elongate egg cocoon", in RMNH (2 vials), examined. *Note.* Deeleman-Reinhold (1986b) reports only 2♂3♀ paratypes; however, all the material above is labeled as paratypes (original handwriting), originates from the type locality, and was collected the same day as the holotype.

*Diagnosis.* Easily distinguished from most congeners by shapes of procurus and bulbal processes (Figs. 202, 203); from *C. vermiformis* and *C. saluang* also by simple male palpal femur and epigynum not triangular (Figs. 65, 205).

*Male* (paratype). Total body length 5.0, carapace width 0.9. Leg 1: 33.8 (8.3 + 0.4 + 8.0 + 15.3 + 1.8), tibia 2: 5.8, tibia 3: 3.3, tibia 4: 5.3; tibia 1 L/d: 100. Habitus similar to *C. saluang* (cf. Figs. 43, 44). Entire spider mostly pale ochre-yellow, even legs without darker rings, only distal palpal structures darker. Distance PME-PME 310 µm, diameter PME 60 µm, distance PME-ALE 45 µm, no trace of AME. Ocular area not elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 204, frontal apophyses divided, low humps proximally. Sternum longer than wide (0.45/0.40), unmodified. Palps as in Figs. 202 and 203, coxa unmodified, trochanter with medium-sized retro-latero-ventral apophysis, femur barely modified, tarsal organ on low conical elevation, procurus rather simple, widened distally (dorsal view), bulb with distinctive apophysis. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 8.1 (missing in three males).

*Female.* In general similar to male; triads slightly closer together (distance PME-PME 250 µm). Tibia 1 in 4 females: 6.6, 6.7, 6.8, 7.2. Epigynum very simple, barely elevated, with darker median area posteriorly (Fig. 65), with club-shaped 'knob' (Fig. 205); internal genitalia as in Figs. 74 and 206.

*Distribution.* Known from type locality only (Fig. 138).

*Material examined.* PHILIPPINES: *Mindanao*: Davao, outside Langub cave: 5♂11♀ paratypes above; same data but not labeled as paratypes, 3♀ (all adult?), in RMNH.

*Leptopholcus* Simon, 1893

*Leptopholcus* Simon 1893a: 474. Type species by original designation: *Leptopholcus signifer* Simon, 1893. Brignoli 1980: 651-654. Huber 1997a: 357-358. Huber 2000: 76. Deeleman-Reinhold & van Harten 2001: 201-202.

*Diagnosis.* Long but very slender, long-legged, pale colored spiders (body length usually ~5-7, leg 1: ~25-45); distinguished from other genera of the *Pholcus* group by combination of the following characters: worm-shaped or long cylindrical abdomen (Figs. 4-10), six or eight eyes, eye triads variably on low humps or on stalks, male chelicerae in Old World ('true') *Leptopholcus* with pair of small lateral apophyses distally (e.g., Fig. 285; as in *Micromerys*; similar to *Pehrforsskalia*), male palpal trochanter apophysis with serrated tip (Fig. 294; as in *Micromerys*), procurus 'knee' with transparent process (e.g., Figs. 284, 302; as in *Micromerys*), procurus without dorsal spines, without hinged process (in contrast to *Micromerys*), bulb usually with uncus and appendix (appendix rarely absent), epigynum barely sclerotized, without 'knob'.

New World '*Leptopholcus*' are superficially similar (Fig. 4) but have the plesiomorphic male cheliceral armature (lateral apophyses proximally, frontal apophyses distally provided with modified hairs), palpal trochanter tip not serrated but provided with distinct modified hair, procurus 'knee' without transparent process, and epigynum mostly with 'knob' (except Brazilian species).

*Description.* Body length usually ~5-7, carapace width 0.8-1.3. Carapace without thoracic furrow, AME either present, reduced to pigment spots, or entirely absent, eye triads in males either on low humps or on stalks, clypeus and sternum usually unmodified, in some African species clypeus with median process, male chelicerae with pair of lateral apophyses dis-

tally (in New World '*Leptopholcus*' with lateral apophyses proximally and frontal apophyses distally). Male palpal coxa unmodified, trochanter with small retrolateral apophysis arising from joint to femur (not in New World '*Leptopholcus*') and larger ventral apophysis with serrated tip (in New World '*Leptopholcus*' with distinct modified hair), femur with retrolateral apophysis proximally, ventrally usually enlarged, tarsus usually without dorsal elongation (except *L. borneensis*), tarsal organ capsulate, procurus with ventral 'knee' (sometimes indistinct) with transparent process (except New World '*Leptopholcus*'), without dorsal spines, bulb usually with uncus and appendix (appendix absent in *L. podophthalmus* and *L. tanikawai*), embolus usually transparent (partly sclerotized in *L. podophthalmus* and *L. tanikawai*). Legs long, tibia 1 in males ~6-11, tibia 1 L/d ~85-120, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-4%, tarsus 4 with single row of comb-hairs. Abdomen usually worm-shaped (shorter in *L. podophthalmus* and *L. tanikawai*), male gonopore with four epiandrous spigots, ALS spigot number variable, some species with one widened, one pointed, and five cylindrical-shaped spigots, others with fewer or no cylindrical-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, never on stalks, clypeus and chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~5.5-9.5). Epigynum very simple, barely sclerotized, without 'knob' (except most New World '*Leptopholcus*'), internal genitalia with pair of round to elongate pore-plates.

*Monophyly.* The cladistic analyses suggest that *Leptopholcus* as currently construed is either paraphyletic or polyphyletic. New and Old World *Leptopholcus* may not be closely related, and *Micromerys* may be nested within *Leptopholcus*. However, the evidence for both of these hypotheses is not considered strong enough to justify formal changes: (1) the character change uniting Old World *Leptopholcus* with *Panjanje* and related species in the cladogram in Fig. 25 (reduction of male distal cheliceral apophyses; char. 20) is highly homoplasious, suggesting that Old and New World *Leptopholcus* should rather be seen as branching off from the same large polytomy; (2) in the analysis using equally weighted characters, *Leptopholcus podophthalmus* and *L. tanikawai* are considered more closely related to *Micromerys* than to

other *Leptopholcus* based on the absence of an appendix (char. 53) (they also share a partly sclerotized embolus), but the homology of bulbal processes in *Micromerys* requires further analysis. In all other analyses (using successive and implied weighting), Old World *Leptopholcus* are monophyletic (based on char. 26) and sister to *Micromerys*.

*Generic relationships.* Old World ('true') *Leptopholcus* are clearly closely related to *Micromerys*. Synapomorphies supporting this group in all analyses are (1) male chelicerae with pair of lateral apophyses distally (char. 17); (2) trochanter ventral apophysis with serrated tip (char. 25); (3) procurus ventral 'knee' with transparent process (char. 36); (4) reduction of epigynal 'knob' (char. 64). In the analyses using implied weights, two further synapomorphies support this group: secondary absence of proximal frontal apophyses (char. 18) and of distal apophyses (char. 20) on the male chelicerae. Other than that, the position of *Leptopholcus* (and *Micromerys*) within the *Pholcus* group of genera remains unclear.

*Specific relationships.* Within Old World ('true') *Leptopholcus*, several species groups appear well supported: (1) an African group characterized by a median process on the male clypeus (char. 10) (including the type species, *L. signifer*, and *L. debakkeri* n. sp., *L. gracilis*, *L. guineensis*, *L. dschang* n. sp., *L. budongo* n. sp.); (2) the Malagasy and Comorian species with forked appendix (Figs. 338-340, 349, 350) (*L. lokobe* n. sp., *L. sakalavensis*, *L. ngazidja* n. sp.); (3) the two Asian species *L. tanikawai* and *L. podophthalmus* are very close relatives, with eyes on stalks (char. 3) and almost identical palpal morphology; (4) the three Asian species with rod-shaped appendix (Figs. 369, 373, 378) (*L. borneensis*, *L. kandy* n. sp., *L. huongson* n. sp.).

Within New World '*Leptopholcus*', the Caribbean species share a spine on the appendix (figs. 293, 298, 300, 304 in Huber 2000) that is absent in South American species. It is not clear whether New World '*Leptopholcus*' are monophyletic or not.

*Natural history.* Most species seem to be adapted to cryptic leaf-dwelling (Figs. 4-10), and published observations (Brignoli 1980, Deeleman-Reinhold 1986a, Huber & Wunderlich 2006, Huber 2009b, Zhang & Zhu 2009a) as well as label data (below) support this notion. Brazilian '*Leptopholcus*' may be an exception, as *L. pataxo* was collected from the underside of large rocks (Huber *et al.* 2005a). Leaf-dwelling species build barely visible webs closely attached to the leaf. Females build elongate egg sacs

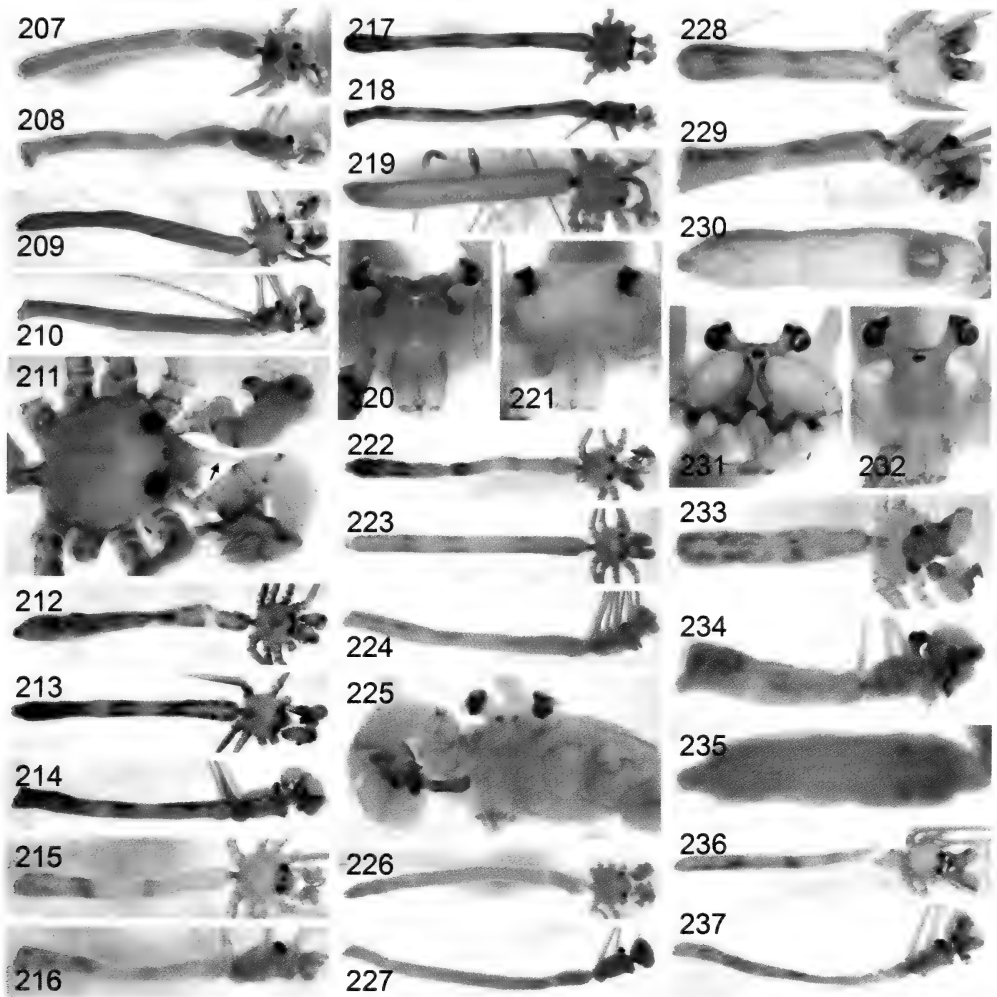


FIG. 207-237. Photographs of habitus, *Leptopholcus* and *Micromerys*. 207, 208. *L. signifer*, male, dorsal and lateral views. 209-211. *L. debakkeri*, male, dorsal and lateral views; male prosoma, dorsal view (arrow points at clypeus process). 212. *L. gracilis*, male, dorsal view. 213, 214. *L. dschang*, male, dorsal and lateral views. 215, 216. *L. obo*, male, dorsal and lateral views. 217, 218. *L. gurnahi*, male, dorsal and lateral views. 219. *L. dioscoridis*, male holotype, dorsal view. 220. *L. lokobe*, male prosoma, frontal view. 221. *L. griswoldi*, male prosoma, frontal view. 222. *L. ngazidja*, male, dorsal view. 223, 224. *L. talatakely*, male, dorsal and lateral views. 225-227. *L. borneensis*, male prosoma and male, dorsal and lateral views. 228-231. *L. tanikawai*, male dorsal and lateral views; female abdomen, ventral view; male prosoma with palps, frontal view. 232-235. *L. podophthalmus*, male prosoma, frontal view; male, dorsal and lateral views; female abdomen, ventral view. 236, 237. *Mm. papua*, male, dorsal and lateral views.

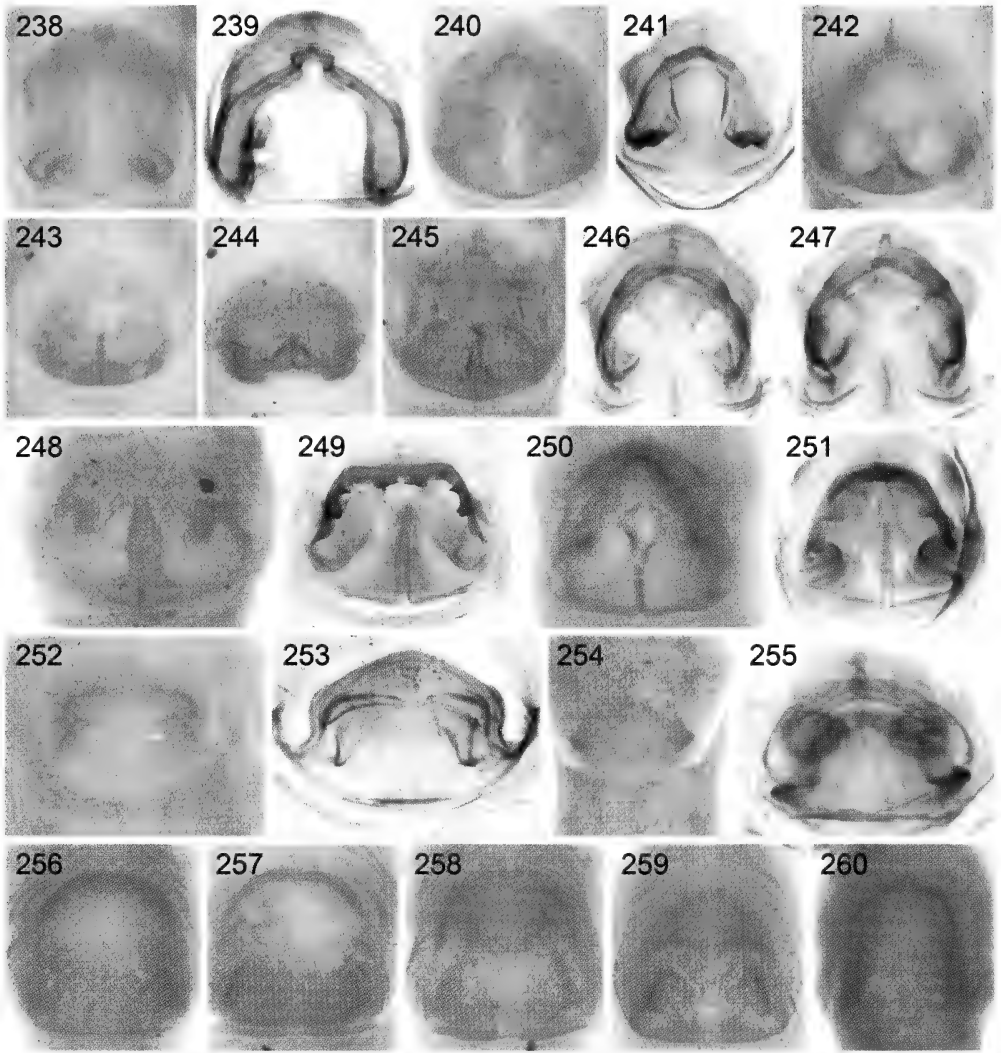


FIG. 238-260. Photographs of epigyna, ventral views, and cleared female genitalia, dorsal views, *Leptopholcus*. 238, 239. *L. debakkeri*. 240-247. *L. gracilis*, Kenya (240, 241), South Africa: Bonamanzi (242), Pufuri (243), Rochdale (244, 246), Kosi Bay (245), False Bay (247). 248, 249. *L. dschang*. 250, 251. *L. budongo*. 252, 253. *L. obo*. 254, 255. *L. gurnahi*. 256. *L. sakalavensis*, paratype. 257-260. *L. lokobe*, "Nossi Mamoka" (257-259) and Lokobe (260).



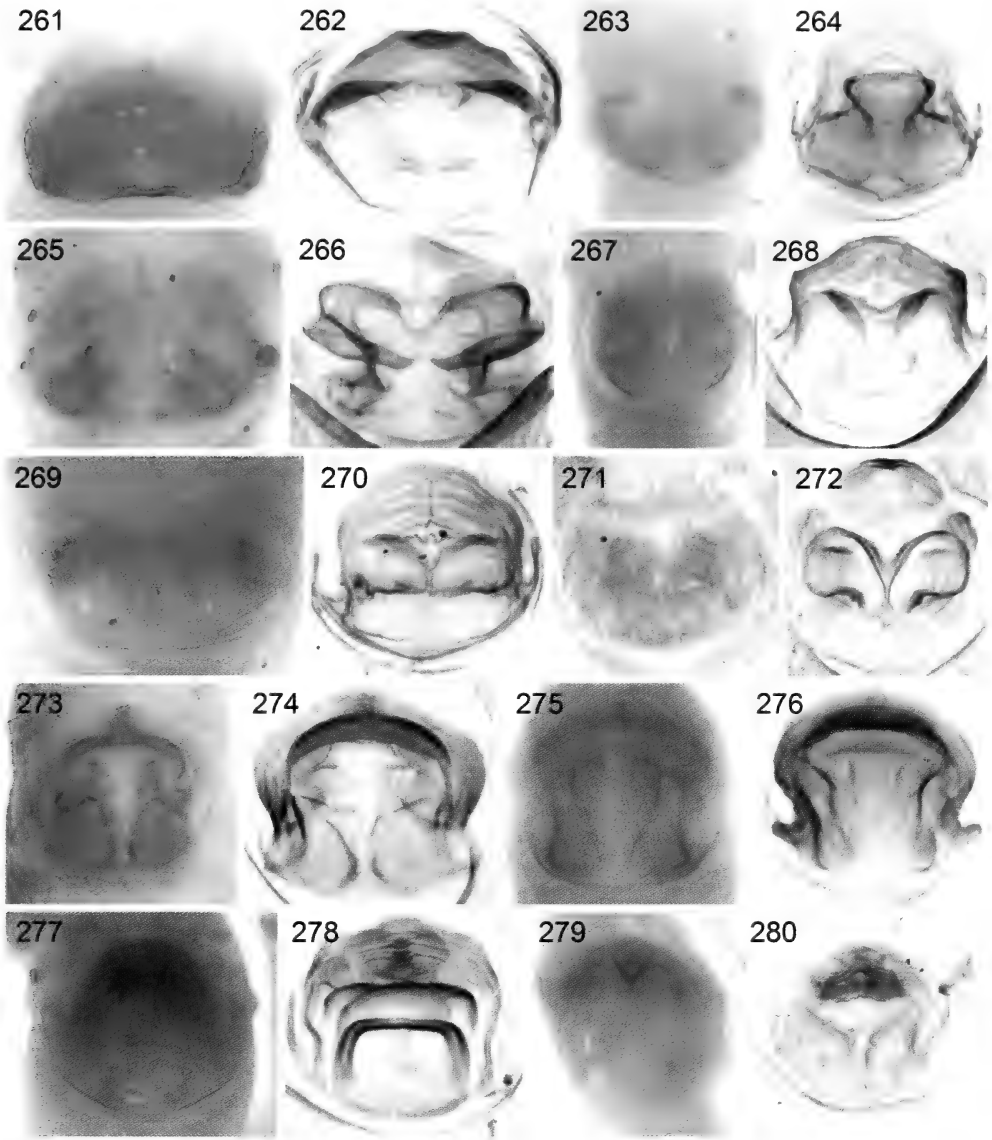
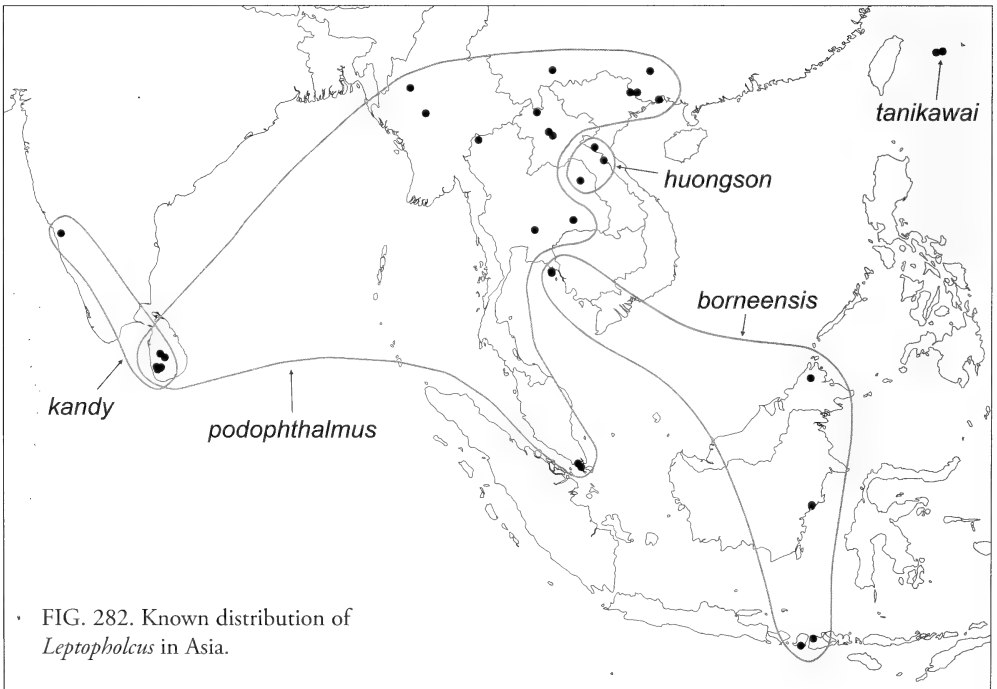
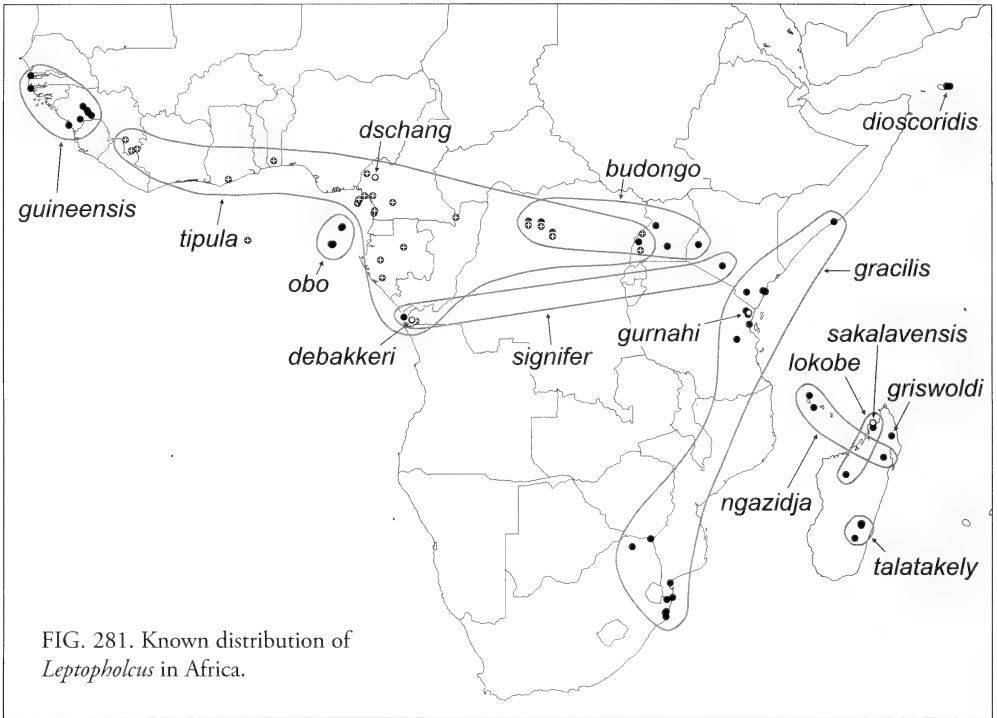


FIG. 261-280. Photographs of epigyna, ventral views, and cleared female genitalia, dorsal views, *Leptopholcus* and *Micromerys*. 261, 262. *L. lokobe*, from Lokobe. 263, 264. *L. talatakely*. 265, 266. *L. griswoldi*. 267, 268. *L. borneensis*. 269, 270. *L. kandy*. 271, 272. *L. huongson*. 273, 274. *L. tanikawai*. 275, 276. *L. podophthalmus*. 277, 278. *Mm. papua*. 279, 280. *Mm. baiteta*.



(Fig. 8), though never as extreme as in *Calapnita* (above). In Caribbean species, eggs get parasitized by *Baeus* wasps (Huber & Wunderlich 2006). In Kenya, cecidomyiid flies have been observed in the webs of *L. gracilis* (Fig. 10).

**Distribution.** Old World ('true') *Leptopholcus* are widely distributed in Sub-Saharan Africa including Madagascar and Socotra (15 species, Fig. 281), and in South and Southeast Asia (five species; Fig. 282). New World '*Leptopholcus*' are diverse and common in the Caribbean (six extant and one Dominican amber species) but extremely rare in South America (three species) (Huber *et al.* 2005a). New World '*Leptopholcus*' have been regarded as relicts that have been largely replaced by *Metagonia* (Huber *et al.* 2005a).

**Composition.** Old World ('true') *Leptopholcus* now include 20 species; eleven of them are newly described below, six are redescribed, two have been redescribed recently (Huber 2009b), the identity of *L. sakalavensis* remains unclear (see Notes under *L. lokobe*). A few further undescribed species seem to exist on Madagascar, Sumatra, Borneo, New Guinea, and in Thailand. New World '*Leptopholcus*' currently include ten species; they have all been revised recently (Huber & Pérez 1998, Huber 2000, Huber *et al.* 2005a, Huber & Wunderlich 2006) and are not treated below.

*Leptopholcus signifer* Simon, 1893

Figs. 207, 208, 283-285

*Leptopholcus signifer* Simon 1893b: 319. Simon 1893a: 472-473, figs. 459-461, 464. Simon 1907: 248. Timm 1976: 72, figs. 11, 12.

**Types.** Male and female syntype(-s?) from Angola, Cabinda Prov., Landana [5°13'S, 12°09'E], no further data, not examined. According to O. Kraus (pers. comm.), the drawings in Timm (1976) were prepared based on a type specimen, and the types were returned to the MNHN. However, the material could not be found at the MNHN.

**Note.** The single male specimen described below is tentatively assigned to this species based on Timm's (1976) quite good drawings. All relevant characters (procurus: distal strong pointed prolateral sclerite; uncus: shape of tip and of dorsal process; appendix: general shape) show strong similarities between the Kenyan specimen below and Timm's drawings, rather than with the newly described *L. debakkeri* from nearby Luki Forest Reserve in Congo Democratic Republic. However, the possibility remains that Timm's specimens were not the real types from Landana. Only new material from the type locality can possibly solve this problem. In any case, the type

species *L. signifer* is part of an African species group that is characterized by a median process on the male clypeus.

The absence of a retrolateral femur apophysis in Timm's figure 11 is almost certainly a lapsus because all known congeners have this apophysis.

**Diagnosis.** Distinguished from similar species with clypeus process (*L. debakkeri*, *L. gracilis*, *L. guineensis*, *L. dschang*, *L. budongo*) by shapes of uncus and appendix (Fig. 283).

**Male** (Langata). Total body length 6.1, carapace width -0.9 (slightly damaged). Leg 1 missing, tibia 2: 7.4 (detached), tibia 3: 4.5, tibia 4 missing. Habitus as in Figs. 207 and 208. Carapace ochre-yellow with large brown mark posteriorly, ocular area also brown, sternum and legs pale ochre-yellow, patella-area and tibia-metatarsus joints brown, abdomen monochromous pale ochre-gray. Distance PME-PME 320 µm, diameter PME 105 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 25 µm. Ocular area weakly raised, each triad on short elevation directed laterally. No thoracic furrow; clypeus with median process (~95 µm long). Chelicerae as typical for the genus (Fig. 285), with pair of small lateral apophyses distally. Sternum slightly wider than long (0.65/0.60), unmodified. Palps as in Figs. 283 and 284, coxa unmodified, trochanter with retrolatero-ventral apophysis with serrated tip, femur with small retrolateral apophysis, widened ventrally, procurus with distinctive membranous and sclerotized processes, uncus with dorsal membranous process, appendix large and strongly bent, embolus almost transparent.

**Female.** Simon (1893b) briefly described the female, but none of the few traits mentioned serves to distinguish females in the genus *Leptopholcus*. I thus consider the female unknown.

**Distribution.** Known from type locality in Cabinda Prov., Angola, and from Kenya (Fig. 281). Simon (1907) mentioned additional material from "Congo Français: Fernand Vaz" [now Gabon, Ogooué-Maritime Prov., Fernand Vaz: ~1.5°S, 9.25°E].

**Material examined.** KENYA: *Nairobi Area*: Langata [1°21'S, 36°42'E], "T.n.3", i.-ii.1999 (T. Wagner), 1♂ in ZFMK.

*Leptopholcus debakkeri* n. sp.

Figs. 209-211, 238, 239, 286-300

**Type.** Male holotype from Congo Dem. Rep., Kongo Centrale Prov. ("Bas-Congo"), Mayombe, Luki Forest Reserve (5°37.3'S, 13°05.9'E), primary rainforest,

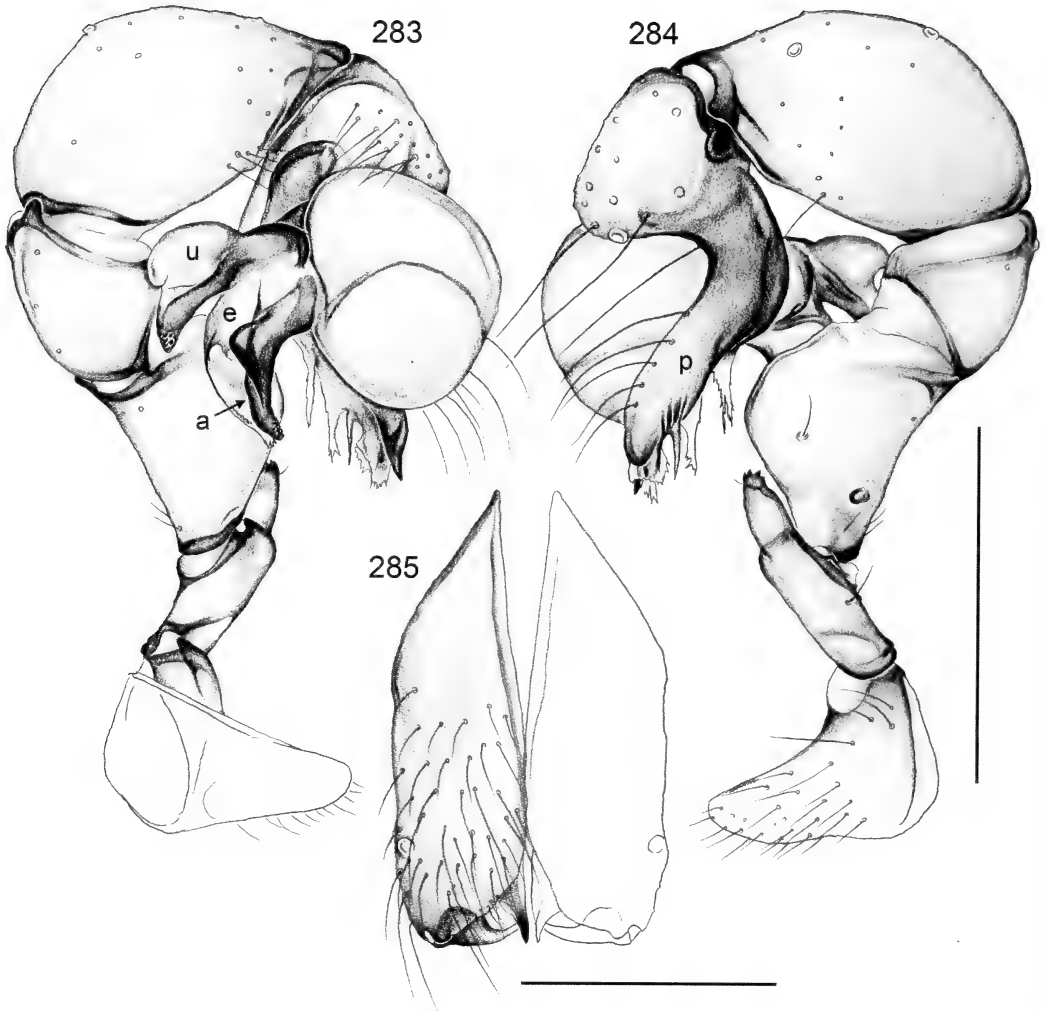


FIG. 283-285. *Leptopholcus signifer*. 283, 284. Left male palp, prolateral and retrolateral views. 285. Male chelicerae, frontal view. Scale lines: 0.5 (283, 284), 0.3 (285).

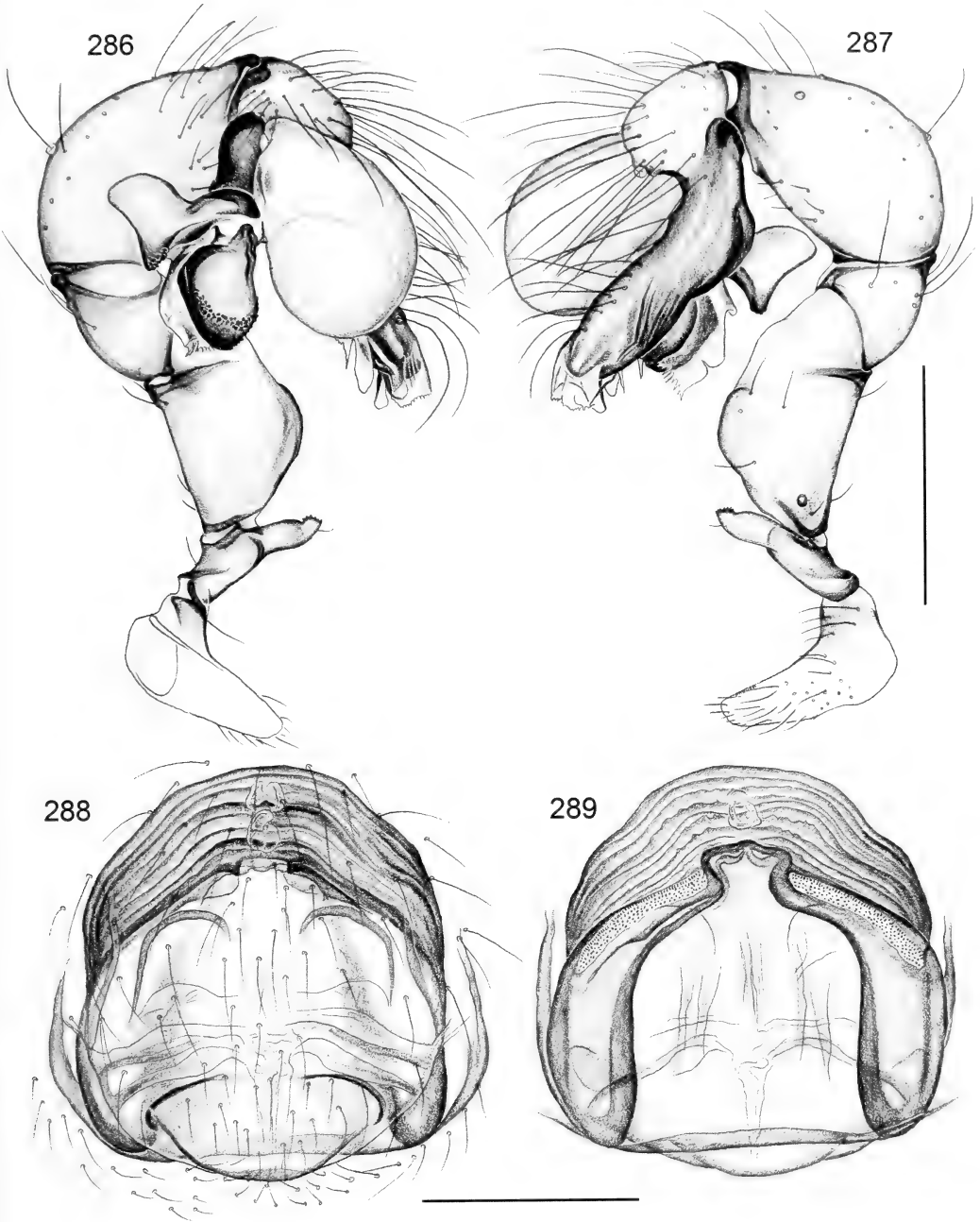


FIG. 286-289. *Leptopholcus debakkeri*. 286, 287. Left male palp, prolateral and retrolateral views. 288, 289. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (286, 287), 0.3 (288, 289).

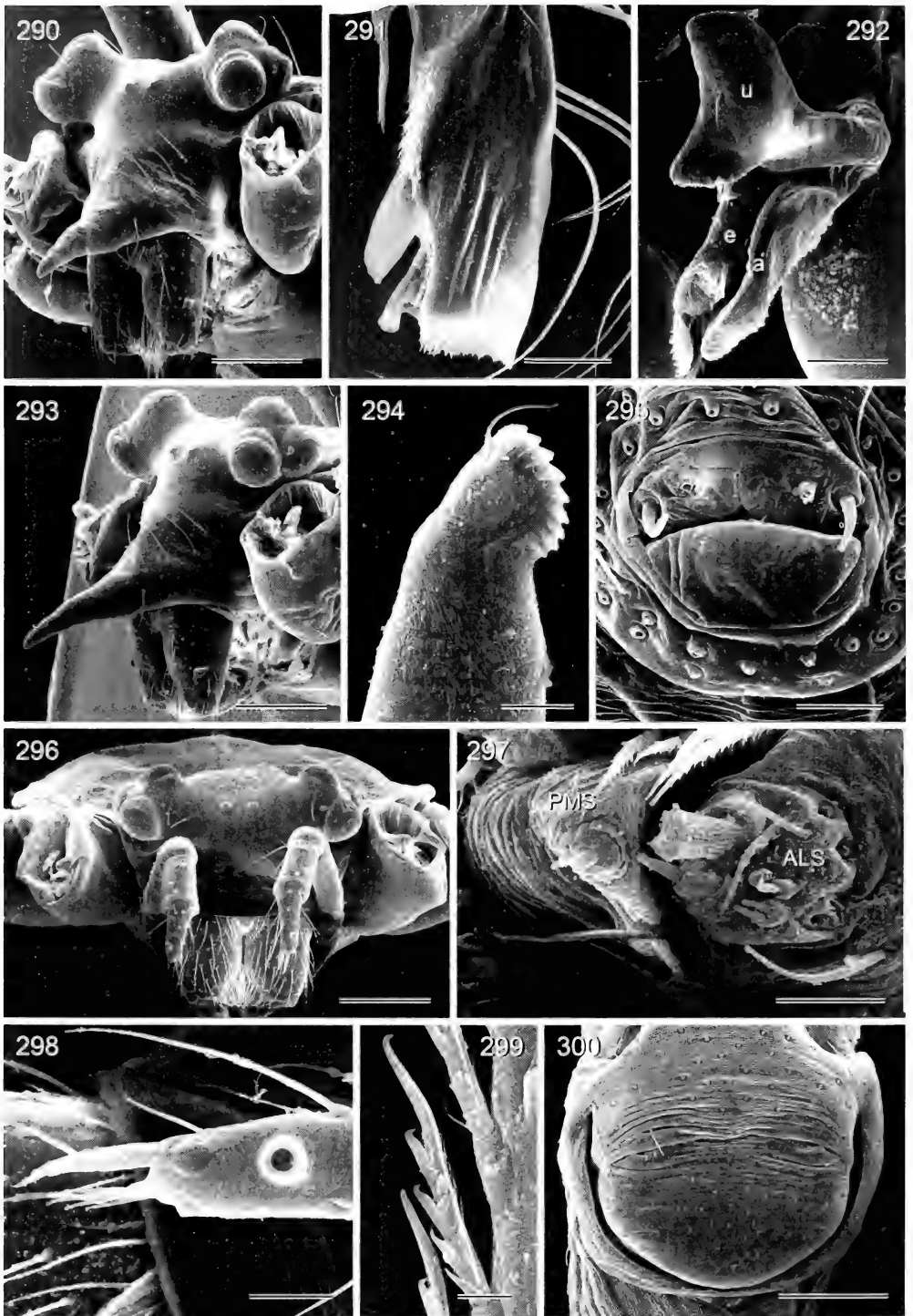


FIG. 290-300. *Leptopholcus debakkeri*. 290, 293. Male prosoma, oblique views (note clypeus process). 291. Left procurus, prolateral view. 292. Left bulbous processes, prolatero-ventral view. 294. Tip of male palpal trochanter apophysis. 295. Male gonopore (two spigots damaged). 296. Female prosoma, frontal view. 297. Female ALS and PMS. 298. Tip of female tarsus, dorsal view. 299. Comb-hairs on female right tarsus 4. 300. Epigynum. Scale lines: 200  $\mu$ m (290, 293, 296, 300), 80  $\mu$ m (292), 60  $\mu$ m (291), 40  $\mu$ m (295), 30  $\mu$ m (298), 20  $\mu$ m (294, 297), 10  $\mu$ m (299).

fogging, 7.xi.2006 (D. de Bakker & J.P. Michiels), in MRAC (219852).

*Etyymology.* The species is named for Domir de Bakker who contributed large amounts of material from his fogging expeditions to various countries.

*Diagnosis.* Distinguished from similar species with clypeus process (*L. signifer*, *L. gracilis*, *L. guineensis*, *L. dschang*, *L. budongo*) by shapes of uncus and appendix (Fig. 286). From those with females known also by female internal genitalia (narrow pore plates in anterior position, Fig. 289).

*Male* (holotype). Total body length 6.6, carapace width 1.1. Leg 1: 38.1 (9.1 + 0.4 + 8.6 + 16.9 + 3.1), tibia 2 missing, tibia 3: 4.2, tibia 4: 6.5; tibia 1 L/d: 97. Habitus as in Figs. 209 and 210. Carapace and ocular area ochre-yellow, clypeus dorsally light brown, sternum whitish, legs pale ochre-yellow to whitish, femora proximally with darker dorsal band, patellae and tibia-metatarsus joints darker, abdomen monochromous ochre-yellow. Distance PME-PME 300  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 35  $\mu$ m, apparently no AME. Ocular area not elevated, apparently without stronger hairs, triads on very low humps. No thoracic furrow, clypeus with long median process (-0.35 long) (Figs. 290, 293). Chelicerae as in *L. signifer* (cf. Fig. 285). Sternum wider than long (0.70/0.55), unmodified. Palps as in Figs. 286 and 287, coxa unmodified, trochanter with short ventral apophysis with serrated tip (Fig. 294), femur with retrolateral apophysis proximally, widened and darkened ventrally, procurus simple except distally, with prolatero-ventral transparent processes, bulb with simple uncus with large dorsal process, weakly sclerotized embolus distally widened, large massive appendix set with small scales (Fig. 292). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; tarsal pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 295); ALS spigots as in female (see below).

*Variation.* Some males with tiny AME (Figs. 211, 290, 293), lenses not visible in dissecting microscope; tibia 2/4 in one male: 6.0/6.2. Tibia 1 in 9 other males: 7.5-8.9 (mean 8.4).

*Female.* In general similar to male, triads only slightly closer together (Fig. 296; PME-PME distance 285  $\mu$ m); AME lenses visible in most females but distances variable (1♀: distance AME-AME 35  $\mu$ m, diameter AME 20  $\mu$ m). Tibia 1 in 15 females: 6.3-7.7 (mean 7.1); tarsus 4 with single row of comb-

hairs (Fig. 299). Epigynum a simple, barely sclerotized plate (Fig. 300), anterior internal arc and distinctive posterior lateral structures visible through cuticle (Figs. 238, 288); internal genitalia as in Figs. 239 and 289. ALS with usual wide and conical spigots posteriorly plus three or four slender spigots anteriorly (Fig. 297).

*Distribution.* Known from type locality only (Fig. 281).

*Material examined.* CONGO DEM. REP.: *Kongo Centrale Prov.*: Mayombe, Luki Forest Reserve: ♂ holotype above together with 1♀; same data but 4.-13.xi.2006, 26.ix.-4.x.2007, 9♂17♀ in MRAC (parts of 219850, 851, 853-855, 224312-314, 316, 318, 319); same locality but old secondary rainforest, fogging, 17.-28.ix.2007 (D. de Bakker & J.P. Michiels), 17♂13♀ in MRAC (parts of 224303-308, 310, 311); old secondary rainforest, beating, 21.ix.2007, 1♂ in MRAC (223678); young secondary rainforest, fogging, 16.ix.2007, 1♂ in MRAC (224302); young secondary rainforest, 16.ix.2007, 1♀ in MRAC (222960).

*Leptopholcus gracilis* Berland, 1920

Figs. 10, 212, 240-247, 301-315

*Leptopholcus gracilis* Berland 1920: 131-133, figs. 150-153. Brignoli 1980: 649-651, figs. 1-5.

*Leptopholcus* sp.: Huber 2003c: 480.

*Type.* Female holotype from Kenya, Coast Prov., Voi [3°23'S, 38°34'E], "st. no 60, pays Taïta", 600 m a.s.l., iii.1912 (C. Allaud, R. Jeannel), in MNHN (10503), examined.

*Diagnosis.* Distinguished from similar species with male clypeus process (*L. signifer*, *L. debakkeri*, *L. guineensis*, *L. dschang*, *L. budongo*) by shapes of uncus and appendix (Figs. 301, 306).

*Male* (Arabuko). Total body length 6.8, carapace width 1.0. Leg 1: 9.6 + 0.5 + 9.0, metatarsus damaged, tarsus missing, tibia 2: 6.6, tibia 3: 4.2, tibia 4: 6.2; tibia 1 L/d: 102. Habitus as in Fig. 212. Carapace ochre-yellow with small median brown mark, ocular area and upper part of clypeus brown, sternum pale, only margins slightly darkened, legs ochre-yellow, with many brown spots on femora, especially proximally and dorsally, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with many dark spots dorsally. Distance PME-PME 380  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 80  $\mu$ m, diameter AME 20  $\mu$ m. Ocular area slightly elevated, triads on additional low humps directed laterally. No thoracic furrow, clypeus with short median process (-0.08 long). Chelicerae

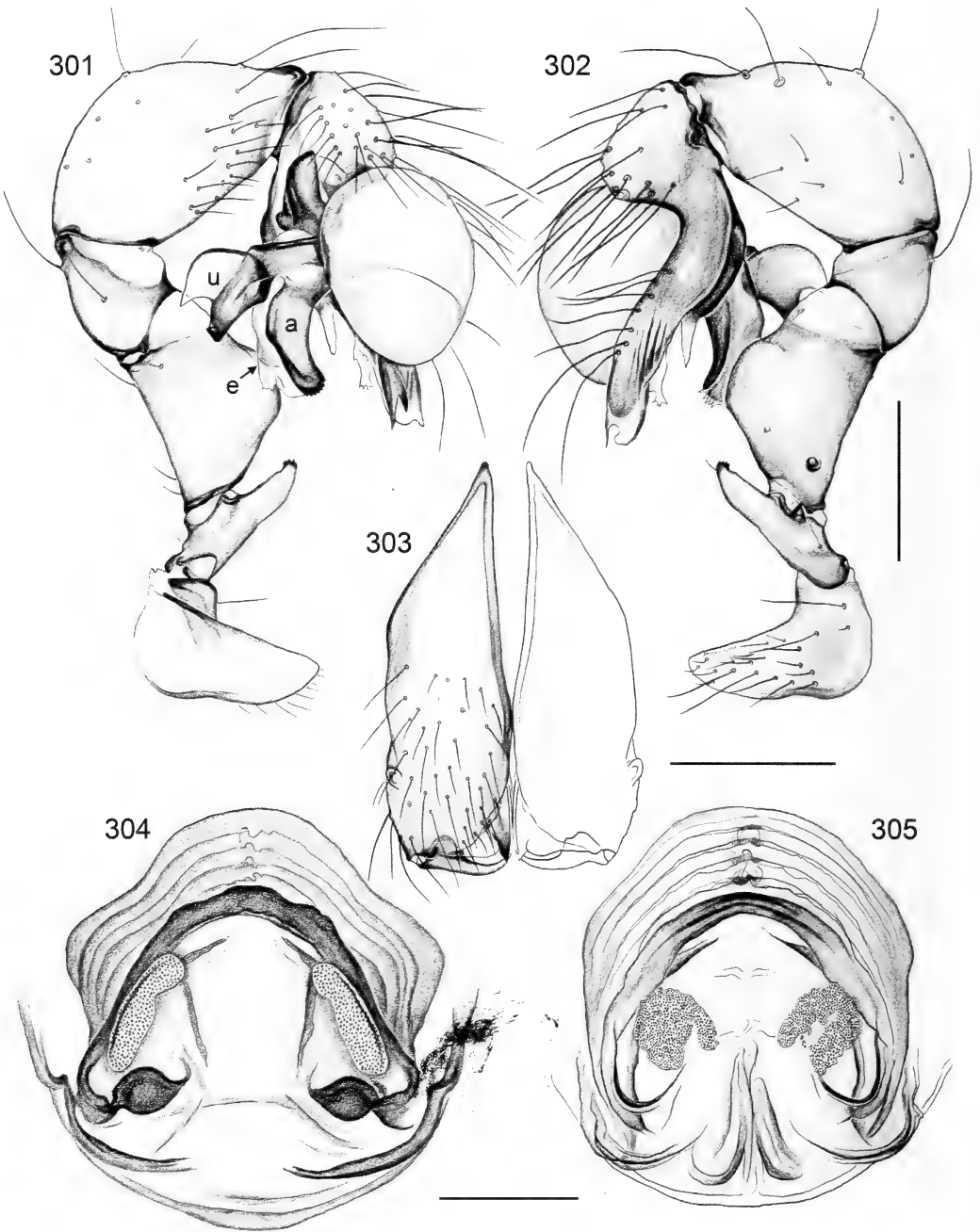


FIG. 301-305. *Leptopholcus gracilis*. 301, 302. Left male palp, prolateral and retrolateral views (South Africa). 303. Male chelicerae, frontal view. 304, 305. Cleared female genitalia, dorsal views, Kenya (304), South Africa (305). Scale lines: 0.3 (301, 302), 0.2 (303-305).



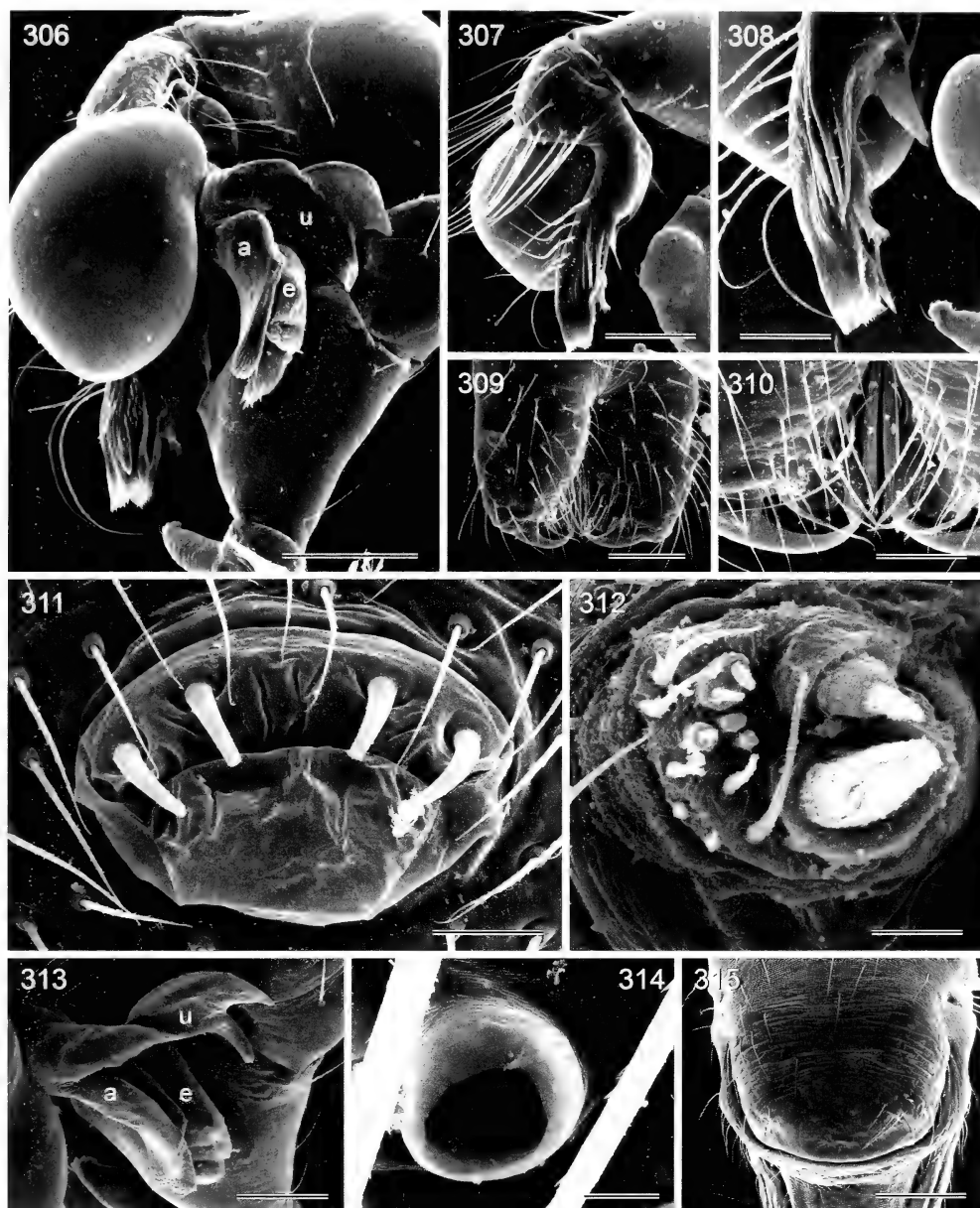


FIG. 306-315. *Leptopholcus gracilis*, South Africa. 306. Right male palp, prolateral view. 307, 308. Left procurus, retrolateral views. 309, 310. Male chelicerae. 311. Male gonopore. 312. Male ALS. 313. Processes of right bulb. 314. Male palpal tarsal organ. 315. Epigynum. Scale lines: 200  $\mu\text{m}$  (306, 307, 315), 100  $\mu\text{m}$  (308, 309, 313), 50  $\mu\text{m}$  (310), 30  $\mu\text{m}$  (311), 10  $\mu\text{m}$  (312, 314).

as in Fig. 303, with small weakly sclerotized apophyses laterally. Sternum wider than long (0.65/0.60), unmodified. Palps as illustrated by Brignoli (1980: figs. 1-4), coxa unmodified, trochanter with short ventral apophysis with serrated tip, femur with retro-lateral apophysis proximally (not shown by Brignoli 1980: fig. 2), widened ventrally, palpal tarsal organ capsulate (Fig. 314), procurus simple except distally, with transparent ventral processes, uncus with short triangular main part and dorsal semitransparent flap, weakly sclerotized embolus, large simple appendix set with small scales. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Gonopore with four epian-drous spigots (Fig. 311); ALS with usual wide and conical spigots posteriorly plus five small slender spigots anteriorly (Fig. 312).

*Variation.* Spots on abdomen variably distinct. Specimens from Tanzania without mark on carapace, spots on legs less distinct. South African specimens with trochanter apophysis minimally shorter, procurus tip distally less widened, uncus main process longer and slightly more complex (Figs. 301, 302); spots on legs less distinct, sometimes even absent. Tibia 1 in 9 other males (all localities combined): 8.3-12.0 (mean 9.9).

*Female.* In general similar to male but clypeus without process, triads closer together (PME-PME distance 290  $\mu$ m) and less elevated, ocular area not darkened, pattern on abdomen variably distinct; sternum rarely with weak pattern (cf. Berland 1920, fig. 152), mostly monochromous. Epigynum simple externally (Figs. 240, 315), internal view as in Figs. 241 and 304. Southern African specimens have different epigyna (Figs. 242-247, 305), and are therefore assigned tentatively; like males, they also have fewer spots on the leg femora. Tibia 1 in 18 females (all localities combined): 5.6-8.9 (mean 7.8). The female type is in fair condition, the epigynum has been dissected; tibia 1: 8.4, tibia 2: 6.2, tibia 3: 4.3, tibia 4: 6.7. ALS spigots as in male (see above).

*Distribution.* Known from Kenya, Tanzania, and Somalia; also from specimens assigned tentatively from Mozambique and South Africa (Fig. 281).

*Material examined.* KENYA: *Coast Prov.*: Voï: ♀ holotype above. Arabuko-Sokoke Forest near road (3°18.3'S, 39°59.2'E), 20 m a.s.l., on underside of leaves, 21.i.2010 (B.A. Huber), 3♂2♀ in ZFMK and 1♂1♀ in NMKE; same data, 5 juveniles in pure ethanol, in ZFMK. Arabuko-Sokoke N.P. (3°17.0'S,

39°58.0'E), 10 m a.s.l., on underside of leaf, 22.i.2010 (B.A. Huber), 1♀ in pure ethanol, in ZFMK. Arabuko (near Malindi) [-3°16'S, 39°49'E], 7.v.1977 (P. Brignoli), 1♂1♀ in MRAC (152007). Watamu [3°21'S, 40°01'E], Soko Forest, 20 m a.s.l., broad leaves, 20.ix.1984 (J. & F. Murphy), 1♀ in CJFM (12490). Watamu, Jilore Forest, 20 m a.s.l., shrubs, 11.ix.1977 (J. & F. Murphy), 1♀ in CJFM (6659). Gedi Forest near Gedi ruins (3°18.5'S, 40°01.1'E), 30 m a.s.l., on underside of leaf, 22.i.2010 (B.A. Huber), 1♂ in ZFMK; same data, 2♀ 2 juveniles in pure ethanol, in ZFMK. Gedi [3°18'S, 40°01'E], 10 m a.s.l., forest shrubs, 14. ix.1984 (J. & F. Murphy), 1♀ in CJFM (12413).

TANZANIA: *Tanga Region*: Muheza Distr., Kwamgumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 18.-26.vii.1995, 31.x.-9.xi.1995, and 4.xii.1995 ("Fog 7-14, 16-18, 31"), 8♂ 16♀ in ZMUC; same locality at 4°57'S, 38°45'E, 430 m a.s.l., 15.xi.1995 ("Fog 22"), 1♂ in ZMUC. Muheza Dist., Segoma Forest (4°59'S, 38°44'E), 210 m a.s.l., 11.xi.1995 ("Fog 20"), 2♀ in ZMUC. East Usambara Mts., 12 km SE Amani, Kihuhwi-Zigi Forest Reserve (5°06.3'S, 38°40.6'E), 400-450 m a.s.l., 2.-4.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 1♀ in ZMUC. Pangani Dist., Mkwaga Ranch (5°52'S, 38°47'E), dry coastal forest, 19. viii.-18.ix.1991 (Frontier), 1♀ in ZMUC. *Morogoro Region*: Uluguru Mts., Kimboza Forest [7°00'-02'S, 37°48'-49'E], 250 m a.s.l., 18.vii.1981 (M. Stoltze, N. Scharff), 1♂ in ZMUC.

SOMALIA: Mogadishu [-2°05'N, 45°20'E], 1946 (R. Accighiaro), 1♀ in MRAC (131163).

*Assigned tentatively:* MOZAMBIQUE: near Marracuene, Marracuene Lodge (25°46.4'S, 32°41.0'E), 12 m a.s.l., beating shrubs, riverine forest, 1.xii.2007 (R. Lyle, R. Fourie), 1♂ in ZFMK.

SOUTH AFRICA: *KwaZulu-Natal*: False Bay Park (27°58'S, 32°22'E), 26.i.2004 (collector not given), 1♂ in NCP (2004/1155); same locality, 2.ii.2004, 1♂ in NCP (2004/1153); 9.ii.2004, 1♂ in NCP (2004/1152); 8.xii.2003, 1♂ in NCP (2004/1151); 27.x.2003, 1♂ in NCP (2004/1150). Bonamanzi Reserve (28°04'S, 32°18'E), underside of palm leaves, 2.iv.2001 (B.A. Huber), 1♀ with egg sac, 2 juvs. in ZFMK. DukuDuku State Forest, Hlabisa (28°22'S, 32°21'E), 11.xii.1994 (L. Lotz), 1 juv. in NMBA (7239). Kosi Bay [26°54'S, 32°52'E], 31.[sic!] iv.1989 (M. Filmer), sweep & grass, 1♀ in NCP (89/606); Kosi Bay, coastal bush, 6.x.1977 (P. Reavell) 1 penult. ♂ in NCP (78/198); Sihangwana

(Tembe Elephant Park) [27°03'S, 32°25'E], +/- 40 km from Kosi Bay, 18.xi.1988 (R. Harris), 1♀ in NCP (94/819). Ndumo Game Reserve [-27°S, 32.3°E], sand forest, SE boundary fence, beating foliage, 9.ii.2005 (C. Haddad), 1♀ 1 juv. in NCP (2005/3). *Limpopo*: Pufuri Picnic site, Kruger Nat. Park [-22°23'S, 31°10'E], 5.x.1988 (J. le Roy), "web in grass, LR 292 P", 1♀ in NCP (89/750); Rochdale Farm between Waterpoort and Louis Trichardt, N slope of Soutpansberg [-23°00'S, 29°45'E], 16. ix.1998 (W. Croucamp), "WC 149", 1♀ in NCP (2000/44).

*Dubious locality* (see Note below): "C.P." (*Cape Province*): False Bay, 6.xi.1983 (P. Reavell) 1♀ in NCP (92/346).

*Note*. The record of the single female specimen from Western Cape Province needs confirmation. The

facts that (1) no further specimens have been collected west of KwaZulu-Natal, and (2) the name False Bay is used for localities both in Western Cape Province [34.2°S, 18.5°E] and KwaZulu-Natal [28°S, 32.3°E] suggest the possibility that the "C.P." on the label was added erroneously or does not mean Cape Province (nor Cape Peninsula or Cape Point).

*Leptopholcus dschang* n. sp.

Figs. 9, 213, 214, 248, 249, 316-318

*Type*. Male holotype from Cameroon, Southwest Region, near Dschang, Attuleh "site 2" (5°27.9'N, 9°56.5'E), 1800 m a.s.l., underside of leaf, 20.iv.2009 (B.A. & J.C. Huber), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

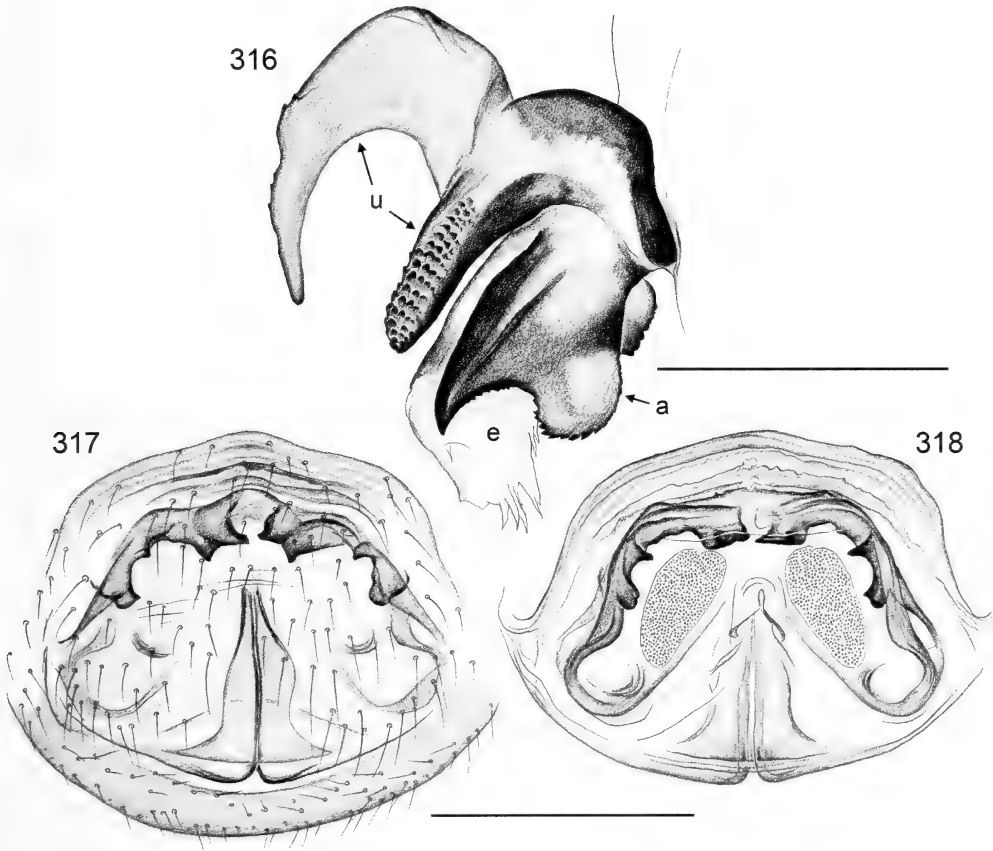


FIG. 316-318. *Leptopholcus dschang*. 316. Processes of left male bulb. 317, 318. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (317, 318), 0.3 (316).

*Diagnosis.* Distinguished from similar species with clypeus process (*L. signifer*, *L. debakkeri*, *L. guineensis*, *L. gracilis*, *L. budongo*) by shapes of uncus and appendix (Fig. 316).

*Male* (holotype). Total body length 7.0, carapace width 1.2. Leg 1: 34.6 (8.7 + 0.5 + 8.1 + 13.7 + 3.6), tibia 2: 6.2, tibia 3: 4.3, tibia 4: 6.5; tibia 1L/d: 83. Habitus as in Figs. 213 and 214. Carapace pale ochre with small weak median mark, clypeus and ocular area frontally dark, sternum whitish, legs pale ochre, patella-area and tibia-metatarsus joints black, femora proximally also darkened (dorsally and ventrally), abdomen ochre-gray with dark marks dorsally and laterally, ventrally monochromous. Distance PME-PME 470 µm, diameter PME 115 µm, distance PME-ALE 45 µm, distance AME-AME 140 µm, diameter AME 25 µm. Ocular area slightly elevated, each triad on low hump directed laterally. No thoracic furrow, clypeus with long (-0.3) median process at rim. Chelicerae as in *L. signifer* (cf. Fig. 285). Sternum slightly wider than long (0.70/0.65), unmodified. Palps in general as in *L. budongo* (cf. Figs. 319, 320) but slightly larger, procurus very similar but with small prolateral tooth distally, uncus and appendix different (compare Figs. 316 and 321). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments barely visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 8.4 (missing in third male examined).

*Female.* In general similar to male but paler, without dark marks on abdomen, triads not on humps and closer together (distance PME-PME 365 µm). Tibia 1: 7.3. Epigynum a simple weakly sclerotized plate, distinctive internal structures visible through cuticle (Figs. 248, 317); internal genitalia as in Figs. 249 and 318.

*Distribution.* Known from type locality only (Fig. 281).

*Material examined.* CAMEROON: *Southwest Region*: near Dschang, Attuleh: ♂ holotype above; same data, 2♂1♀ in ZFMK.

*Leptopholcus budongo* n. sp.

Figs. 250, 251, 319-323

*Type.* Male holotype from Uganda, Masindi Distr., Budongo Forest near Sonso (1°45'N, 31°35'E), 11.-20.vii.1995 (T. Wagner), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species with clypeus process (*L. signifer*, *L. debakkeri*, *L. guineensis*, *L. gracilis*, *L. dschang*), by shapes of uncus and appendix (Figs. 319, 321).

*Male* (holotype). Total body length 6.0, carapace width 0.9. Femur 1: 9.1 (other segments missing), tibia 2: 6.0, tibia 3: 3.7, tibia 4: 6.1. Habitus similar to *L. debakkeri* (cf. Figs. 209, 210). Entire spider mostly pale ochre-yellow, patellae and tibia-metatarsus joints slightly darker. Distance PME-PME 320 µm, diameter PME 95 µm, distance PME-ALE 35 µm, distance AME-AME 55 µm, diameter AME 30 µm. Ocular area slightly elevated, each triad on low hump. No thoracic furrow, clypeus with indistinct median process. Chelicerae as in *L. signifer* (cf. Fig. 285). Sternum wider than long (0.55/0.50), unmodified. Palps as in Figs. 319 and 320, coxa unmodified, trochanter with short ventral apophysis with serrated tip, femur with retrolateral apophysis proximally, widened ventrally, procurus simple except distally, with transparent ventral processes, uncus with pointed sclerite set with scales and large sclerotized flap with serrated tip. Legs without spines and curved hairs, few vertical hairs.

*Variation.* Many specimens appear artificially darkened. Tibia 1 in 8 males from Uganda: 7.8-8.9 (mean 8.5). Males from Congo Dem. Rep. with small pointed projection on appendix (arrow in Fig. 321) and longer clypeus process. They are thus similar (and geographically close) to the Cameroonian *L. dschang*; tibia 1 in male from Mbangi: 7.9.

*Female.* In general similar to male but triads closer together (distance PME-PME 275 µm). Tibia 1 in 16 females: 6.5-7.5 (mean 6.9). Epigynum a simple weakly sclerotized plate, distinctive internal structures visible through cuticle (Figs. 250, 322); internal genitalia as in Figs. 251 and 323.

*Distribution.* Known from Uganda, northwestern Kenya, and Congo Dem. Rep. (Fig. 281).

*Material examined.* UGANDA: *Masindi District*: Budongo Forest: ♂ holotype above; same data, 3♂8♀ 4 juvs. in ZFMK (6 vials); same data but 01.-10.vii.1995, 2♂3♀ 1 juv. in ZFMK (3 vials); 21.-31.vii.1995, 2♂4♀ 1 juv. in ZFMK (4 vials); 19.-30.vi.1995, 1♂8♀ 3 juvs. in ZFMK (6 vials); 5.-15.i.1997, 2♂10♀ 14 juvs. in ZFMK (8 vials); 15.-25.i.1997, 9♂9♀ 14 juvs. in ZFMK (12 vials). Budongo Forest Reserve (1°42.5-43.5'N, 31°31.6-32.7'E), -1100 m a.s.l., 9.xii.2010 (B.A. Huber),

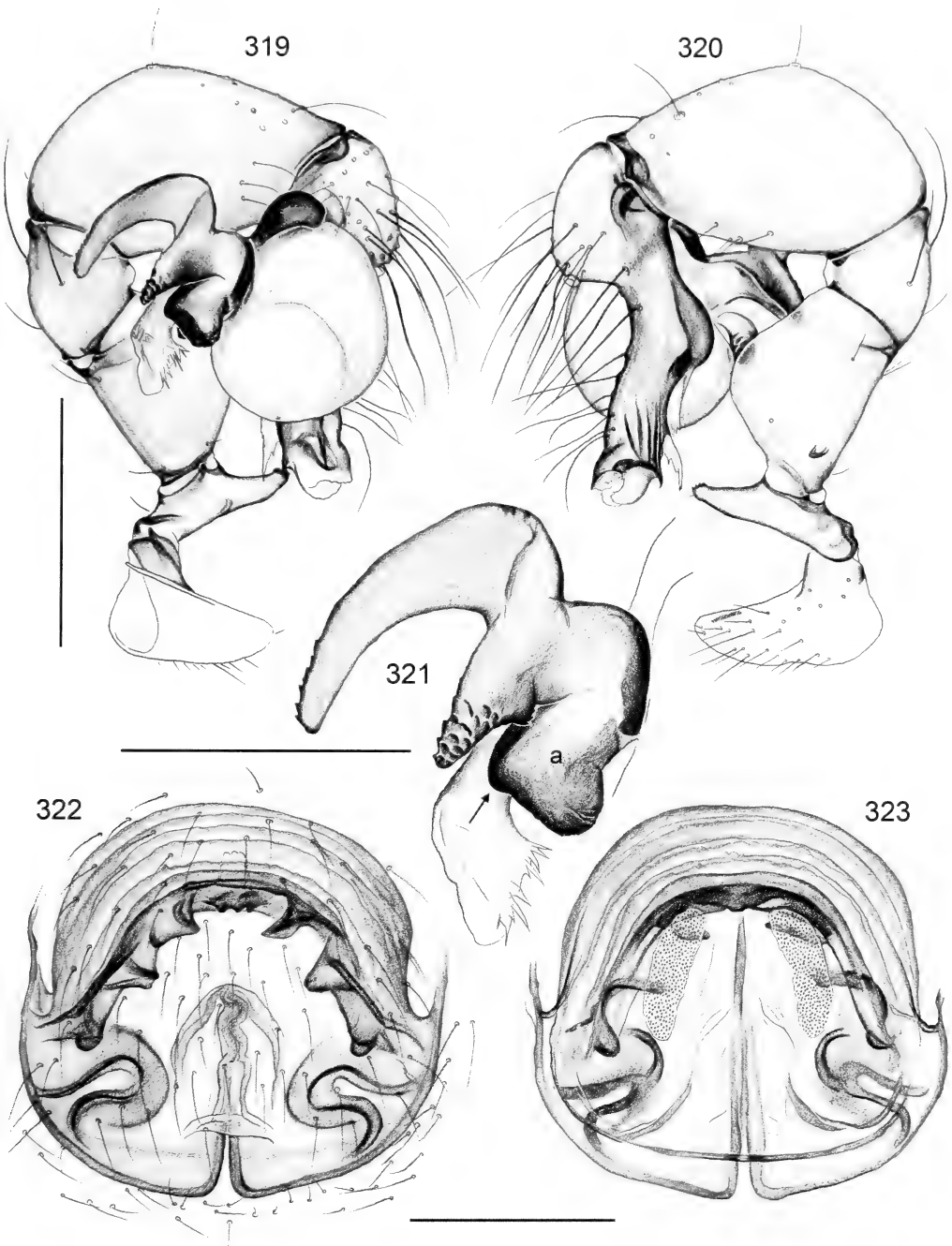


FIG. 319-323. *Leptopholcus budongo*. 319, 320. Left male palp, prolateral and retrolateral views. 321. Processes of left male bulb (arrow points at area where males from Congo Dem. Rep. have a small pointed projection). 322, 323. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (319, 320), 0.3 (321-323).

2♂1♀ in ZFMK; same data, 3♀ 1 juv. in pure ethanol, in ZFMK. *Kasese District*: Ruwenzori area, Kibale Forest, Kanyward forest station (0°30'N, 30°15'E), 1500 m a.s.l., pine forest (*Pinus caribbea*), age 15 years, sweep, 8.x.1983 (M. Nummelin), 1♀ in ZMT (AA 3531). *Kabarole and Kamwenge Districts*: Kibale Forest N.P., near Kanyanchu (0°27.5-28.0'N, 30°22.3-22.8'E), 1250 m a.s.l., 7.xii.2010 (B.A. Huber), 1♂2♀ in ZFMK; same data, 3 juvs. in pure ethanol, in ZFMK. *Mpigi District*: Mpanga Forest Reserve (0°12.4'N, 32°18.1'E), 1200 m a.s.l., 22.xi.2010 (B.A. Huber), 5♂2♀ (2 vials) in ZFMK; same data, 3♀ 1 juv. in pure ethanol, in ZFMK.

KENYA: *Western Prov.*: Kakamega Forest [-0°17'N, 34°51'E], ix.2001-i.2003 (W. Freund), 3♂8♀ (8 vials) (ZFMK).

CONGO DEM. REP.: Mbangi (2°07'N, 21°44'E), fogging in old secondary forest, 23.-25.vi.2009 (D. de Bakker), 3♂8♀ (6 vials) in MRAC. Monzé (Engengele) (2°02'N, 22°44'E), fogging in old secondary forest (periodically inundated), 29.-30.vi.2009 (D. de Bakker), 4♂2♀ (3 vials) in MRAC. Basoko (Bokungu) (1°14'N, 23°36'E), fogging in old palm plantation (60 years old), 7.iii.2009 (D. de Bakker), 2♀ (2 vials) in MRAC.

*Leptopholcus tipula* (Simon, 1907)

*Micromerys tipula* Simon 1907: 248-249.

*Leptopholcus tipula*: Brignoli 1980: 653. Deeleman-Reinhold 1986b: 206. Huber 2009b: 2506-2510, figs. 8, 9, 26, 27, 30, 31, 82-100, 149.

*New records*. BENIN: Niaouli (6°44'N, 2°08'E), 20.xi.2008 (S. Tchibozo), 1♂ in ZFMK.

CONGO DEM. REP.: Mbangi (2°07'N, 21°44'E), fogging in old secondary forest, 23.-25.vi.2009 (D. de Bakker), 1♂7♀ (4 vials) in MRAC. Monzé (Engengele) (2°02'N, 22°44'E), fogging in old secondary forest (periodically inundated), 29.-30.vi.2009 (D. de Bakker), 3♂7♀ (4 vials) in MRAC. Basoko (Bokungu) (1°14'N, 23°36'E), fogging in old palm plantation (60 years old), 7.iii.2009 (D. de Bakker), 2♂1♀ (2 vials) in MRAC.

UGANDA: *Bushenyi District*: Kyambura River Gorge, (-0°10.7'S, 30°05.8'E), 900 m a.s.l., 29. xi.2010 (B.A. Huber), 1♂2♀ in ZFMK; same data, 2♀ in pure ethanol, in ZFMK. *Bundibugyo District*: Semuliki N.P., between Sempaya and Bumaga (-0°49.3'N, 30°09.5'E), ~700 m a.s.l., 4.xii.2010 (B.A. Huber), 2♂ in ZFMK; same data, 1♂ in pure ethanol, in ZFMK.

*Leptopholcus obo* n. sp.

Figs. 215, 216, 252, 253, 324-327

*Type*. Male holotype from São Tomé and Príncipe, Ilha São Tomé, P. N. Ôbó, forest near radio tower, 1.63 air km WSW Bom Sucesso (0°16.6'N, 6°36.3'E), 1350 m a.s.l., pitfall traps, 9.-16.iv.2001 (C.E. Griswold), in CAS.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from congeners by morphology of male palp (Figs. 324, 325; long male palpal trochanter apophysis, shapes of procurus, uncus, and appendix), and female internal genitalia (Figs. 253, 327).

*Male* (holotype). Total body length 4.3, carapace width 0.9. Leg 1: 26.1 (5.8 + 0.4 + 6.2 + 11.2 + 2.5), tibia 2: 4.9, tibia 3: 3.2, tibia 4: 5.2; tibia 1L/d: 88. Habitus as in Figs. 215 and 216. Carapace pale ochre-yellow, ocular area and clypeus light brown, sternum whitish, legs pale ochre-yellow to whitish, patellae and tibia-metatarsus joints light brown, abdomen dorsally with some light brown marks, ventrally monochromous pale ochre-yellow. Distance PME-PME 250 µm, diameter PME 70 µm, distance PME-ALE 35 µm, distance AME-AME 25 µm, diameter AME 20 µm. Ocular area not elevated, apparently without stronger hairs, triads on very low humps. No thoracic furrow; clypeus unmodified. Chelicerae as in *L. signifer* (cf. Fig. 285). Sternum wider than long (0.55/0.50), unmodified. Palps as in Figs. 324 and 325, very small relative to prosoma, coxa unmodified, trochanter with long ventral apophysis with serrated tip and prominent retrolateral apophysis, femur with retrolateral apophysis proximally, widened ventrally, procurus simple except distally, bulb with simple uncus, weakly sclerotized embolus, long curved appendix. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments not visible in dissecting microscope.

*Variation*. Tibia 1 in 10 other males: 6.3-7.3 (mean 6.7).

*Female*. In general similar to male, even triads at same distance; abdomen sometimes monochromous. Tibia 1 in 15 females: 5.9-6.7 (mean 6.2). Epigynum a simple barely sclerotized plate (Figs. 252, 326); internal genitalia as in Figs. 253 and 327.

*Distribution*. Known from São Tomé and Príncipe (both islands) (Fig. 281).

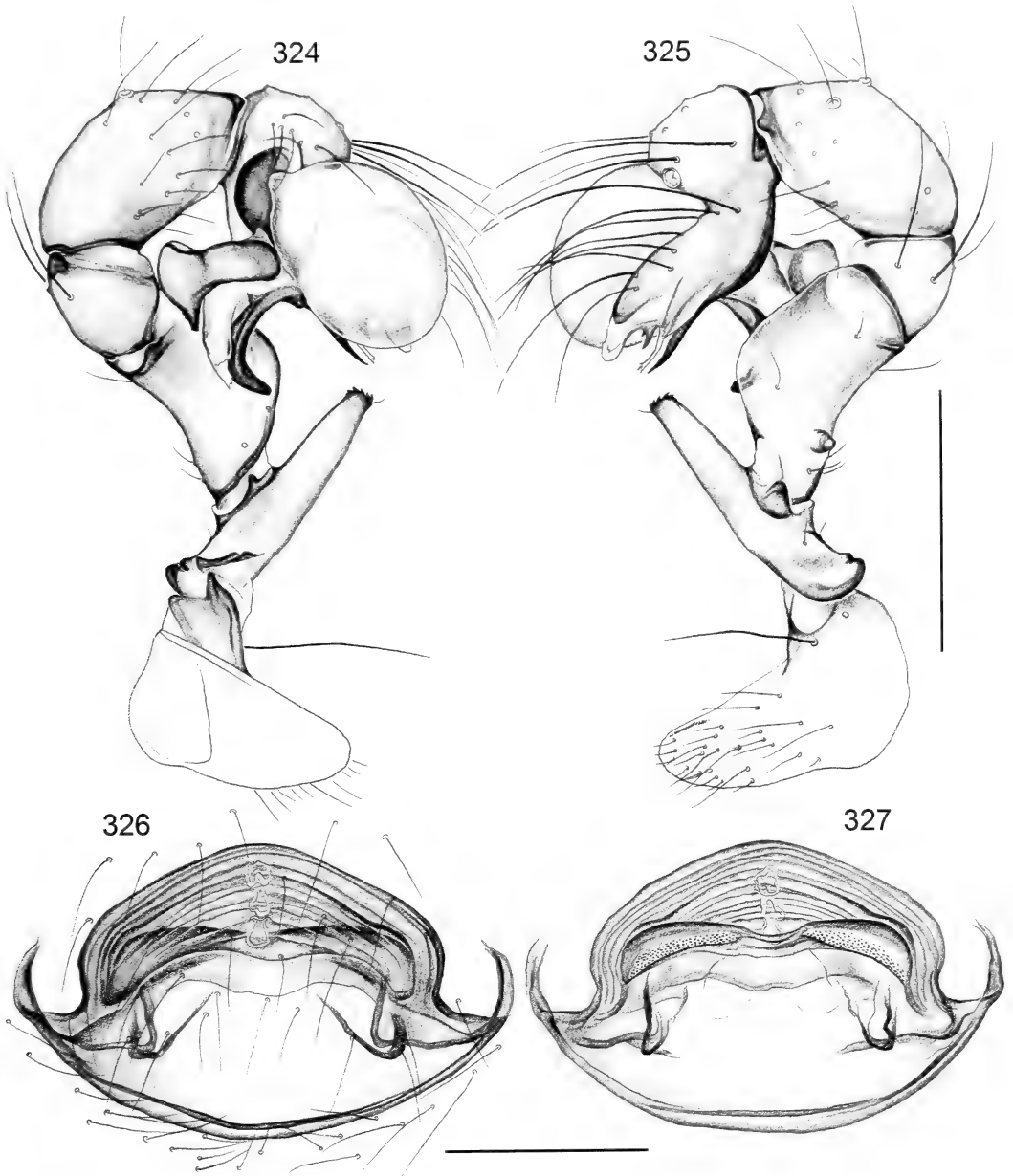


FIG. 324-327. *Leptopholcus obo*. 324, 325. Left male palp, prolateral and retrolateral views. 326, 327. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.3 (324, 325), 0.2 (326, 327).

*Material examined.* SÃO TOMÉ AND PRÍNCIPE: *Ilha São Tomé*: P. N. Ôbó: ♂ holotype above; same data, 3♂5♀ (2 vials) in CAS; same data but “general collecting”, 1♂1♀ and juvs. in CAS; same data but 5.-8.v.2001 (J. Ledford), 1♂ and juvs. in CAS. P. N. Ôbó, forest at Lagoa Amelia (0°16.8'N, 6°35.5'E), 1500 m a.s.l., beating and sweeping understory vegetation, 14.iv.2001 (C.E. Griswold), 5♀ and juvs. (2 vials) in CAS. Ôbó National Park, malaise trap, 9.-25.v.2001 (N.D. Penny), 1♂ in CAS. Palha Plantation near São Tomé town (0°18.8'N, 6°42.4'E), 12.iv.2001 (C.E. Griswold), 1♂ in CAS. Java Plantation (0°15.7'N, 6°39.1'E), 620 m a.s.l., 11.iv.2001 (C.E. Griswold), 1♀ in CAS. Rio Contador Valley, along aqueduct in forest (0°18.8'N, 6°33.0'E), 600 m a.s.l., 8.iv.2001 (C.E. Griswold), 1 juv. in CAS. *Ilha Príncipe*: Agua Doctor, degraded forest north of Santo Antonio de Príncipe on road to airport (1°39.3'N, 7°25.0'E), 19.iv.2001 (C.E. Griswold), 2♂1♀ and juvs. in CAS. Forest on road to Sundi Plantation (1°39.6'N, 7°23.7'E), 195 m a.s.l., at night, 18.v.2001 (J.M. Ledford), 1♂2♀ in CAS. Road to Sundi Plantation, Ponte de Ministro (1°39.5'N, 7°23.3'E), at night, 19.v.2001 (J.M. Ledford), 1♂2♀ in CAS. Forest on road to Sundi Plantation, 3.55 air km NW Santo Antonio de Príncipe (1°39.6'N, 7°23.7'E), 195 m a.s.l., night collecting, 21.iv.2001 (C.E. Griswold), 1 juv. in CAS; same data but “beating/sweeping forest understory”, 2 juvs. in CAS. West coast near Maria Correia Plantation, 8.65 air km WSW Santo Antonio de Príncipe, near beach (1°36.0'N, 7°21.2'E), 22.-24.iv.2001 (C.E. Griswold), 1♂ in CAS.

*Leptopholcus gurnahi*, n. sp.

Figs. 217, 218, 254, 255, 328-330

*Type.* Male holotype from Tanzania, Tanga Region, Muheza Dist., Kwamgumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 31.x.1995 (“Fog 13-AD”), in ZMUC.

*Etymology.* Named for the Tanzanian novelist Abdulrazak Gurnah.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 328, 329; shapes of procurus, uncus, and appendix), and female internal genitalia (curved pore plates) (Figs. 255, 330).

*Male* (holotype). Total body length 5.5, carapace width 0.75. Leg 1: 34.5 (8.7 + 0.3 + 8.1 + 14.6 + 2.8), tibia 2: 5.6, tibia 3: 3.6, tibia 4: 5.3; tibia 1 L/d: 114. Habitus as in Figs. 217 and 218. Carapace ochre-yellow with pair of small light brown marks

near median line, clypeus partly darkened, sternum whitish, legs ochre-yellow, patella-area and tibia-metatarsus joints slightly darker, femora proximally with darker dorsal band, abdomen ochre-gray with some indistinct darker marks dorsally. Distance PME-PME 240 µm, diameter PME 90 µm, distance PME-ALE 25 µm, distance AME-AME 25 µm, diameter AME 45 µm. Ocular area slightly elevated, each triad on low hump directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in *L. gracilis* (cf. Fig. 303), with small weakly sclerotized apophyses laterally. Sternum wider than long (0.55/0.45), unmodified. Palps as in Figs. 328 and 329, coxa unmodified, trochanter with small retro-lateral apophysis and long ventral apophysis with serrated tip, femur with retrolateral apophysis proximally and large ventral protrusion, procurus rather simple, with transparent ventral processes, uncus and appendix distinctive, embolus weakly sclerotized, simple. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments barely visible in dissecting microscope.

*Variation.* Some males with darker margins on carapace; some with rather distinct dorsal marks on abdomen. Tibia 1 in 6 other males: 7.5-8.5 (mean 7.9).

*Female.* In general similar to male but triads slightly closer together (PME-PME distance 205 µm), clypeus not darkened. Epigynum very simple externally, with distinctive internal sclerites visible through cuticle (Fig. 254); internal view as in Figs. 255 and 330. Tibia 1 in 9 females from Kwamgumi: 6.3-7.3 (mean 6.8). The single female from Mazumbai has longer legs (tibia 1: 7.8) and is therefore assigned tentatively.

*Distribution.* Known from Kwamgumi Forest Reserve, Tanzania, and from tentatively assigned specimens from nearby Mazumbai Forest Reserve (Fig. 281).

*Material examined.* TANZANIA: *Tanga Region*: Muheza Dist., Kwamgumi Forest Reserve: ♂ holotype above; same data but 18.vii.1995 (“Fog 7”), 1♂1♀ (2 vials); 20.vii.1995 (“Fog 8”), 1♂1♀ (2 vials); 23.vii.1995 (“Fog 10”), 7♂5♀ (12 vials); 25.vii.1995 (“Fog 11”), 1♂; 26.vii.1995 (“Fog 12”), 2♀ (2 vials); 31.x.1995 (“Fog 13”) 2♀ (2 vials); 2.xi.1995 (“Fog 14”), 1♂4♀ (5 vials); 6.xi.1995 (“Fog 17”), 1♂; 9.xi.1995 (“Fog 18”), 2♀ (2 vials); 10.xi.1995 (“Fog 19”), 2♂ (2 vials), all in ZMUC.

*Assigned tentatively:* TANZANIA: *Tanga Region*: Lushoto Dist., Mazumbai Forest Reserve (4°49'S, 38°31'E), 1370-1435 m a.s.l., 4.xii.1995 (“Fog 31-CP”), 1♀ in ZMUC.



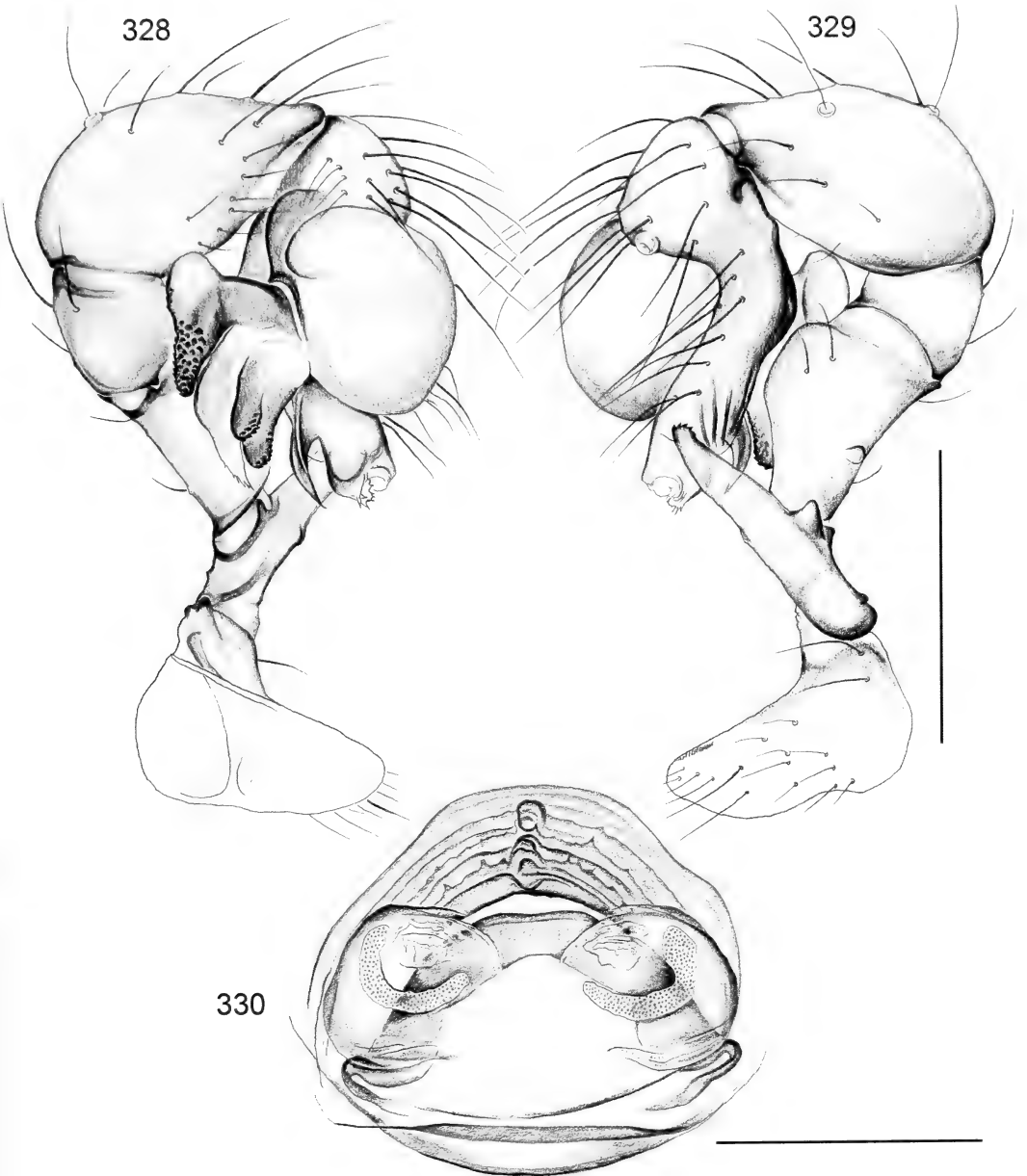


FIG. 328-330. *Leptopholcus gurnabi*. 328, 329. Left male palp, prolateral and retrolateral views. 330. Cleared female genitalia, dorsal view. Scale lines: 0.3 (328, 329), 0.2 (330).

*Leptopholcus dioscoridis* Deeleman-Reinhold & van Harten, 2001

Figs. 219, 331, 332

*Leptopholcus dioscoridis* Deeleman-Reinhold & van Harten 2001: 202-203, figs. 27-29.

*Types.* Male holotype and 1 juvenile paratype from Yemen, Socotra Island, Homhil [12°34'N, 54°18'E], 500 m a.s.l., 8.ii.1999 (H. Pohl), in RMNH, examined; four juvenile paratypes from Wadi Daneghan (12°36'N, 54°03'E), 4.x.1998, in RMNH, not examined.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 331, 332; distinctively

curved trochanter apophysis; shapes of procurus, uncus, and appendix).

*Male* (holotype). Total body length 5.7, carapace width 1.1. Leg 1: 41.7 (10.3 + 0.5 + 10.0 + 18.7 + 2.2), tibia 2: 7.2, tibia 3: 4.2, tibia 4: 6.2; tibia 1 L/d: 94. Habitus as in Fig. 219. Prosoma and legs pale ochre-yellow, light brown pair of marks medially on carapace, patella area and tibia-metatarsus joints also darkened, abdomen pale whitish. Distance PME-PME 370 µm, diameter PME 95 µm, distance PME-ALE 25 µm, distance AME-AME 25 µm, diameter AME 20 µm. Ocular area barely elevated, triads on very low humps. No thoracic furrow; clypeus un-

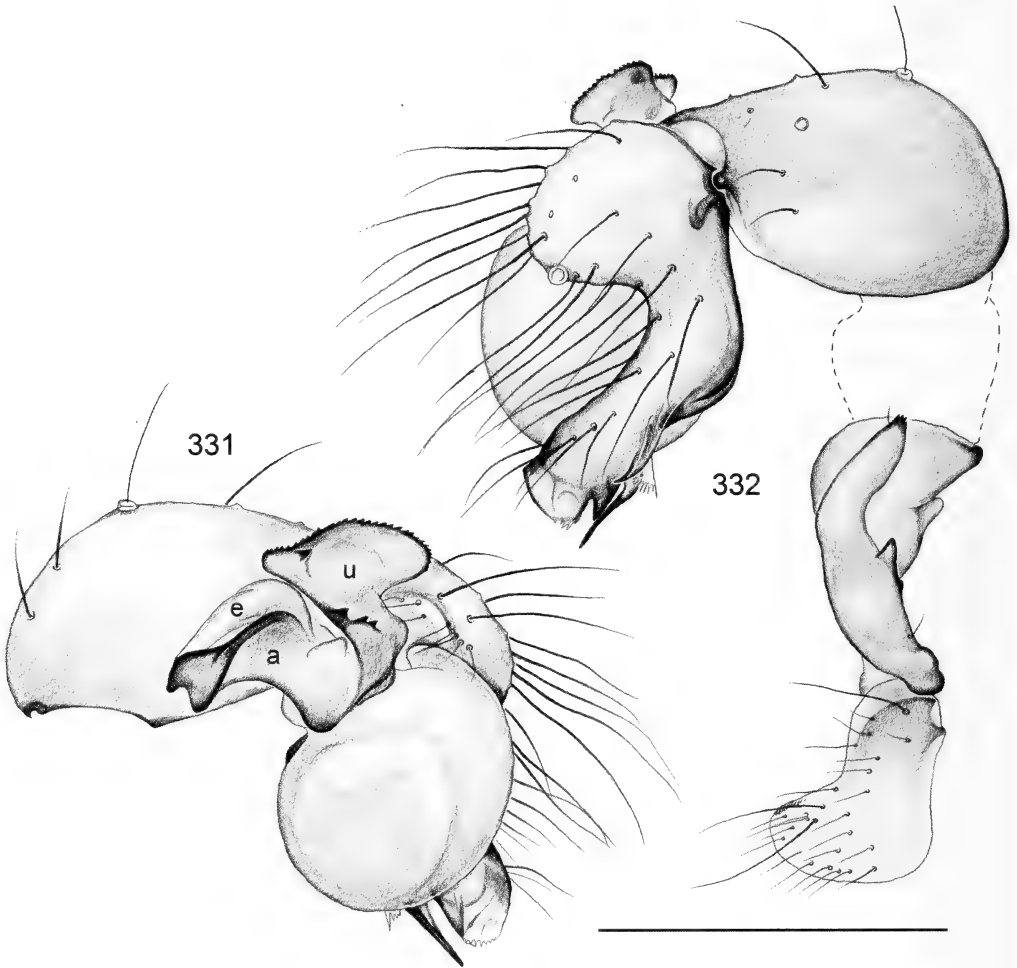


FIG. 331, 332. *Leptopholcus dioscoridis*, male holotype, left male palp (damaged), prolateral and retrolateral views. Scale line: 0.5.

modified. Chelicerae as in *L. gracilis* (cf. Fig. 303), with small weakly sclerotized apophyses laterally. Sternum distorted, unmodified. Palps as in Figs. 331 and 332, coxa unmodified, trochanter with small retrolateral apophysis and long distinctively curved ventral apophysis with serrated tip, femur with dorsal apophysis proximally and smaller retrolateral apophysis (hidden by trochanter apophysis in Fig. 332), procurus simple except distally, with distinctive ventral processes, uncus with distinctive teeth and serrated edge, weakly sclerotized embolus, distinctive appendix. Legs without spines and curved hairs, few ventral hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%.

*Female*. Unknown.

*Distribution*. Known from Socotra Island only (Fig. 281).

*Material examined*. YEMEN: Socotra Island: Homhil: ♂ holotype and 1 juv. paratype above; same data, 3 juveniles in RMNH.

*Leptopholcus sakalavensis* Millot, 1946

Fig. 256

*Leptopholcus sakalavensis* Millot 1946: 147-150, figs. 22-24.

*Types*. Male holotype and female "gynotype" from Madagascar, Antsiranana Prov., Nossi-Komba [-13°28'S, 48°20'E], ix.1945 (J. Millot), female in MNHN, examined; male apparently lost.

*Notes*. This species is difficult to separate from *L. lokobe*, but Millot's figure 23A seems to show a clearly different procurus, without the ventral process characteristic of *L. lokobe* (cf. Figs. 341-343). If there is indeed more than one species in the area, the female paratype ("gynotype") above may turn out to be a different species than the holotype.

Millot's (1946) female from Bas Sambirano [-13°48'S, 48°20'E], ("var. *nigrifrons*") is apparently lost.

*Female* "gynotype". PME-PME 320 µm; with tiny AME pigment spots; tibia 1: 7.3. Epigynum as in Fig. 256.

*Material examined*. MADAGASCAR: *Antsiranana Prov.*: Nossi-Komba, 1♀ paratype above.

*Leptopholcus lokobe* n. sp.

Figs. 220, 257-262, 333-346

*Type*. Male holotype from Madagascar, Antsiranana Prov., Nosy Be, Lokobe Forest (13°25.0'S, 48°18.4'E), 11.-14.viii.1992 (V. & B. Roth), in CAS.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Notes*. As indicated above, this species is difficult to separate from *L. sakalavensis* Millot. In addition, the genital variation that is here interpreted as intraspecific may in fact be interspecific. This is especially true of females: some of the females below may actually be conspecific with the lost male holotype of *L. sakalavensis*. Finally, the female paratype of *L. sakalavensis* may in fact be conspecific with the male holotype of *L. lokobe*. Only further collecting can resolve these problems.

*Diagnosis*. Distinguished from most African and Malagasy congeners by presence of male eye turrets (Fig. 220), from the similar *L. sakalavensis* by procurus with ventral curved pointed process (Figs. 341-343); genitalia otherwise confusingly variable, including details of procurus (Figs. 341-343), bulbal apophyses (Figs. 338-340), trochanter apophyses (Figs. 344-346), and female genitalia (Figs. 335, 337). From *L. ngazidja* which shows a comparable variation in genital bulb morphology, this species is easily distinguished by the male eye turrets (ocular area in *L. ngazidja* as in *L. griswoldi*, cf. Fig. 221).

*Male* (holotype). Total body length 6.7, carapace width 1.0. Leg 1: 11.1 + 0.4 + 10.4 + 20.0, tarsus missing, tibia 2: 7.5, tibia 3: 4.5, tibia 4: 7.6; tibia 1 L/d: 117. Habitus similar to *L. ngazidja* (cf. Fig. 222). Carapace ochre-yellow, ocular area brown, clypeus not darkened, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with dark marks dorsally. Distance PME-PME 540 µm, diameter PME 95 µm, distance PME-ALE 35 µm, no trace of AME. Ocular area elevated, with stronger hairs on posterior side, triads on long stalks directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in *L. gracilis* (cf. Fig. 303). Sternum wider than long (0.70/0.65), unmodified. Palps as in Figs. 333 and 334, coxa unmodified, trochanter with long ventral apophysis with serrated tip (Fig. 346), femur with retrolateral apophysis proximally, procurus with ventral curved pointed process, distally whitish enlarged area, several sclerotized and transparent processes prolaterally (Fig. 343), bulb with uncus, weakly sclerotized embolus and appendix as in Fig. 340. Legs without spines and curved hairs, few ventral hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation*. If the other males from the type locality listed below are indeed the same species, then this species shows an extreme form of intraspecific genital

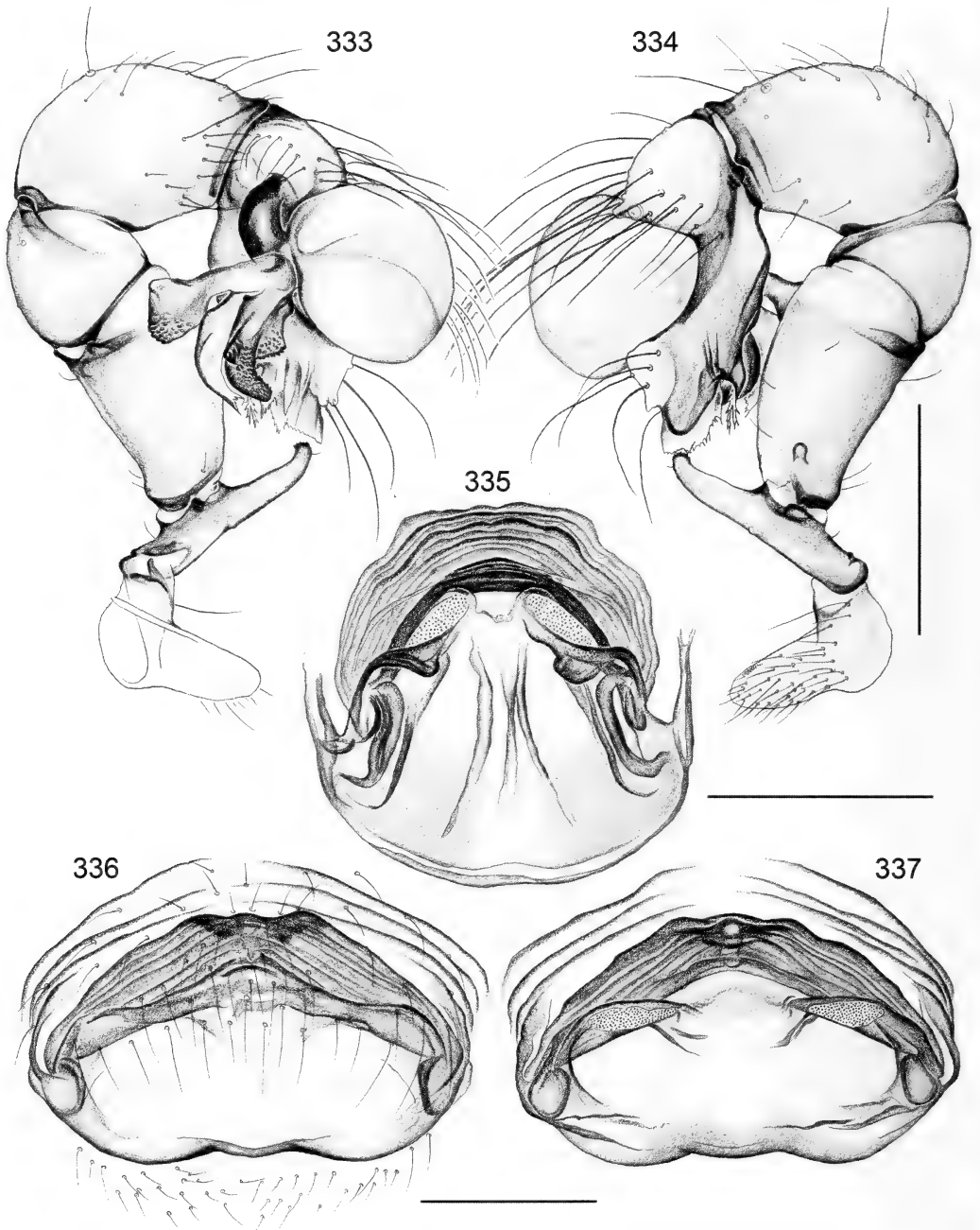


FIG. 333-337. *Leptopholcus lokobe*. 333, 334. Left male palp, prolateral and retrolateral views. 335-337. Cleared female genitalia, different morphs, dorsal (335, 337) and ventral (336) views. Scale lines: 0.5 (333, 334), 0.3 (335-337).

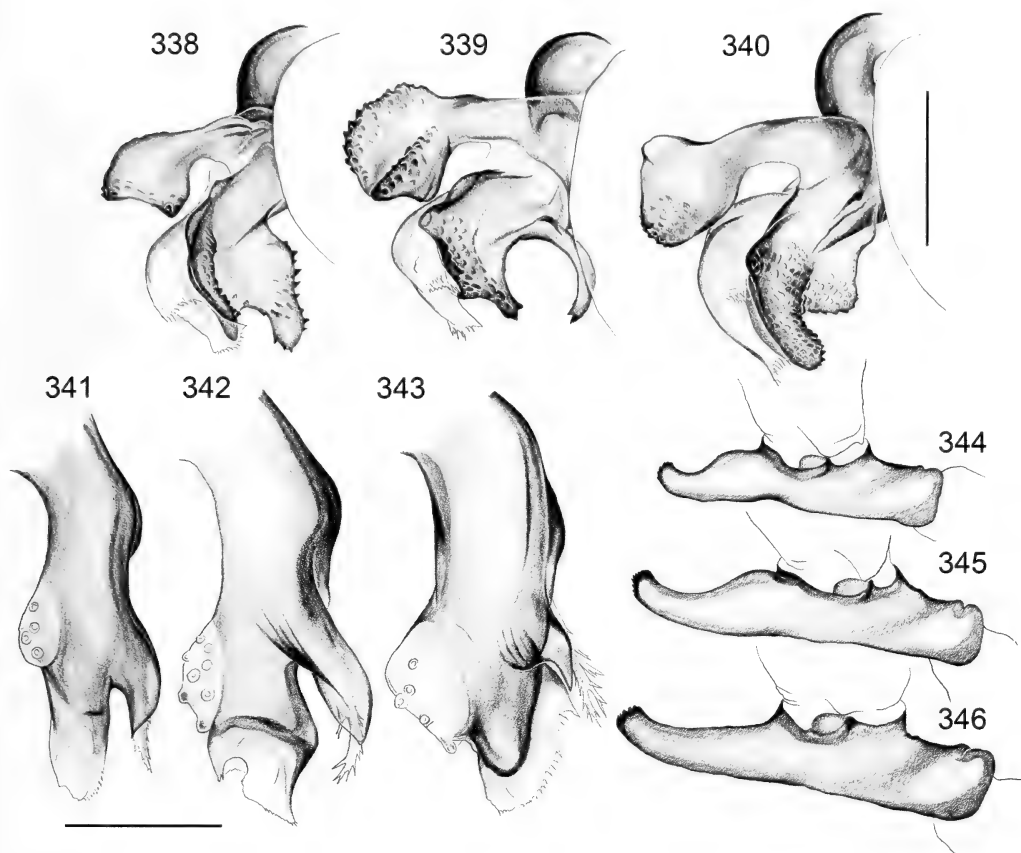


FIG. 338-346. *Leptropholcus lokobe*. Variable male genital morphology, males from Nosy Be, Lokobe Forest. 338-340. Processes of left bulbs prolateral views. 341-343. Left procursi, retrolateral views. 344-346. Left trochanters, retrolateral views. [morph a: 338, 341, 344; morph b: 339, 342, 345; morph c: 340, 343, 346]. Scale lines: 0.2.

variation. However, there seem to be three morphs (a, b, c, in Material examined below) rather than continuous variation. The most obvious difference concerns the bulbal apophyses, i.e. uncus and appendix (Figs. 338-340); further variation occurs in the tip of the procursus and in the trochanter apophysis (Figs. 341-346). The male from "Lokobe Is." has AME pigment but apparently no lenses. Tibia 1 in 4 other males: 8.3, 8.3, 8.5, 8.9.

**Female.** In general similar to male but ocular area not darkened, triads not on stalks and closer together (PME-PME distance 355  $\mu$ m); abdomen monochromatic. Tibia 1 in 7 females: 6.9-7.7 (mean 7.4). Two types of epigyna occur at the type locality: one longer

than wide (Figs. 260, 335), very similar to paratype of *L. sakalavensis* (cf. Fig. 256); the other wider than long, posterior margin medially sclerotized (Figs. 261, 336); internal genitalia as in Figs. 262 and 337.

Females from "Nossi-Mamoka" with AME pigment. Epigyna in these females very similar to *L. sakalavensis* paratype (Figs. 257-259), but accompanying male clearly conspecific with males from Lokobe Forest.

**Distribution.** Known from Nosy Be Island, an unidentified island ("Nossi-Mamoka"), and possibly from Mahajanga Prov., Madagascar (the locality on the original label is followed by a question mark) (Fig. 281).

*Material examined.* MADAGASCAR: *Antsiranana Prov.*, Nosy Be, Lokobe Forest: ♂ holotype above, together with 1♀; same data, 1♂ morph a, 1♂ morph b, 1♀ in CAS; same data, one apparently malformed male and some juveniles, in CAS. Lokobe Is., ix.1947, no further data, 1♂ morph b in MNHN. Lokobe, "septembre", J. Millot, no further data, 1♀ and 6 juvs. in MNHN. Lokobe, "battage", no further data, 1♂ morph a, 1♀ in MNHN; same data, 1♀ in MNHN. "Nossi-Mamoka, arbustes", collector not given, 27.ii.1947, 1♂ morph b, 5♀ and juvs. in MNHN. *Mahajanga Prov.*: "Ankaranfantsika (?)" [-17°25'S, 46°13'E], no further data, 1♂ morph b, 1♀ in MNHN.

*Leptopholcus ngazidja* n. sp.

Figs. 222, 347-350

*Type.* Male holotype from Comoro Islands, Grande Comore, Kourani [11°21'S, 43°24'E], 1050 m a.s.l., 17.x.1983 (L. Jansen), in MRAC (161164).

*Etymology.* Ngazidja is the official name of Grande Comore, the largest island in the Comoros nation; noun in apposition.

*Diagnosis.* Distinguished from most African and Malagasy congeners by pincer-shaped appendix (Figs. 349, 350); from *L. sakalavensis* and *L. lokobe* by male triads not on turrets (similar to *L. griswoldi*, cf. Fig. 221).

*Male* (holotype). Total body length 6.2, carapace width 1.0. Leg 1: 36.0 (8.8 + 0.5 + 8.4 + 15.2 + 3.1), tibia 2: 6.2, tibia 3: 4.2, tibia 4: 6.5; tibia 1 L/d: 95. Habitus as in Fig. 222. Prosoma and abdomen pale ochre-yellow, legs with brown patellae and tibia-metatarsus joints, and brown marks proximo-dorsally on femora 3 and 4. Distance PME-PME 370 µm, diameter PME 80 µm, distance PME-ALE 35 µm, no trace of AME. Ocular area barely elevated, few stronger hairs on posterior side, triads on low elevations. No thoracic furrow; clypeus unmodified. Chelicerae as in *L. talatakely* (cf. Fig. 357). Sternum wider than long (0.65/0.60), unmodified. Palps as in Figs. 347 and 348, very similar to *L. lokobe*, only procurus smaller and different in shape distally and ventrally, with different processes prolaterally, bulb also similar to *L. lokobe*, with similar degree of variation (see below). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope.

*Variation.* This species may show a similar polymorphism as *L. lokobe* above, but only two morphs are

known (Figs. 349, 350). Since the three known male specimens were all taken at different localities (see below), they may eventually turn out to represent different species. The male from Vohibe has an appendix almost identical to that of the holotype while the uncus resembles closely that of the male from Mohéli. Tibia 1 in two other males: 7.9, 8.7. The males from Mohéli and Vohibe have a pattern on the abdomen (similar to *L. lokobe*).

*Female.* The MRAC has two female *Leptopholcus* specimens from the Comoro Islands, with remarkably different epigyna. Since none of them originates from the type locality (Mayotte MRAC 208255; Grande Comore, Moroni: MRAC 143033), the female is here considered unknown.

*Distribution.* Known from Grande Comore and from specimens assigned tentatively from Mohéli and Madagascar (Fig. 281).

*Material examined.* COMORO ISLANDS: *Grande Comore*: Kourani: ♂ holotype above.

*Assigned tentatively:* COMORO ISLANDS: *Mohéli*: Ikoni River [12°15'S, 43°45'E], near bridge, river bed and plantations, 25.v.2003 (R. Jocqué, D. van den Spiegel), 1♂ in MRAC (213146).

MADAGASCAR: Vohibe (16°06'S, 49°08'E), vii.1970 (A. Lambillon), 1♂ in MRAC (142765).

*Leptopholcus griswoldi* n. sp.

Figs. 221, 265, 266, 351-354

*Type.* Male holotype from Madagascar, Antsiranana Prov., Marojejy Res., 8.4 km NNW Manantenina (14°26'S, 49°45'E), 700 m a.s.l., 10.-16.xi.1993 (C.E. Griswold, J. Coddington, N. Scharff, S. Larcher, R. Andriamasimanana), in CAS.

*Etymology.* The species is named for Charles E. Griswold who contributed large amounts of material from his expeditions to various African and Asian countries.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 351, 352; shapes of procurus, uncus, and appendix), and female internal genitalia (Figs. 265, 353).

*Male* (holotype). Total body length 6.9, carapace width 1.0. Leg 1: 42.3 (10.8 + 0.5 + 10.1 + 17.5 + 3.4), tibia 2: 7.7, tibia 3: 4.6, tibia 4: 7.4; tibia 1 L/d: 120. Habitus similar to *L. talatakely* (cf. Figs. 223, 224). Prosoma pale ochre-yellow, legs ochre-yellow, femora proximo-dorsally brown, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with barely visible darker marks dorsally. Distance PME-PME 505 µm, diameter PME 90 µm, distance PME-

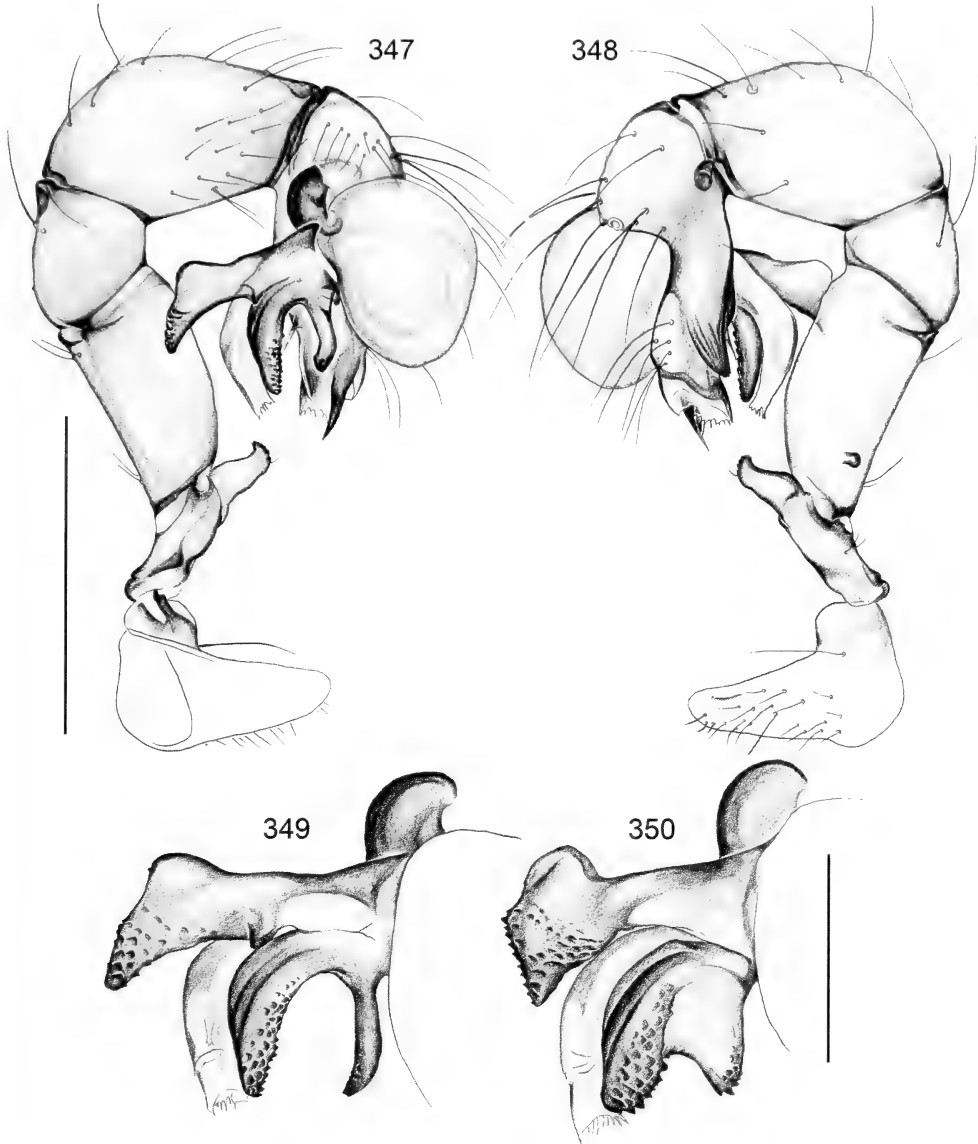


FIG. 347-350. *Leptopholcus ngazidja*. 347, 348. Left male palp, prolateral and retrolateral views. 349, 350. Processes of left bulb in two specimens, prolateral views. Scale lines: 0.5 (347, 348), 0.2 (349, 350).

ALE 25  $\mu$ m, no trace of AME. Ocular area not elevated, triads on low elevations (Fig. 221). No thoracic furrow; clypeus unmodified. Chelicerae as in *L. talatakely* (cf. Fig. 357). Sternum as wide as long (0.60), unmodified. Palps as in Figs. 351 and 352, coxa unmodified, trochanter with long ventral apophysis with serrated tip, femur with retrolateral apophysis proximally, procurus quite simple, with

transparent ventral process, shapes of uncus and appendix distinctive, embolus weakly sclerotized. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 10.5.

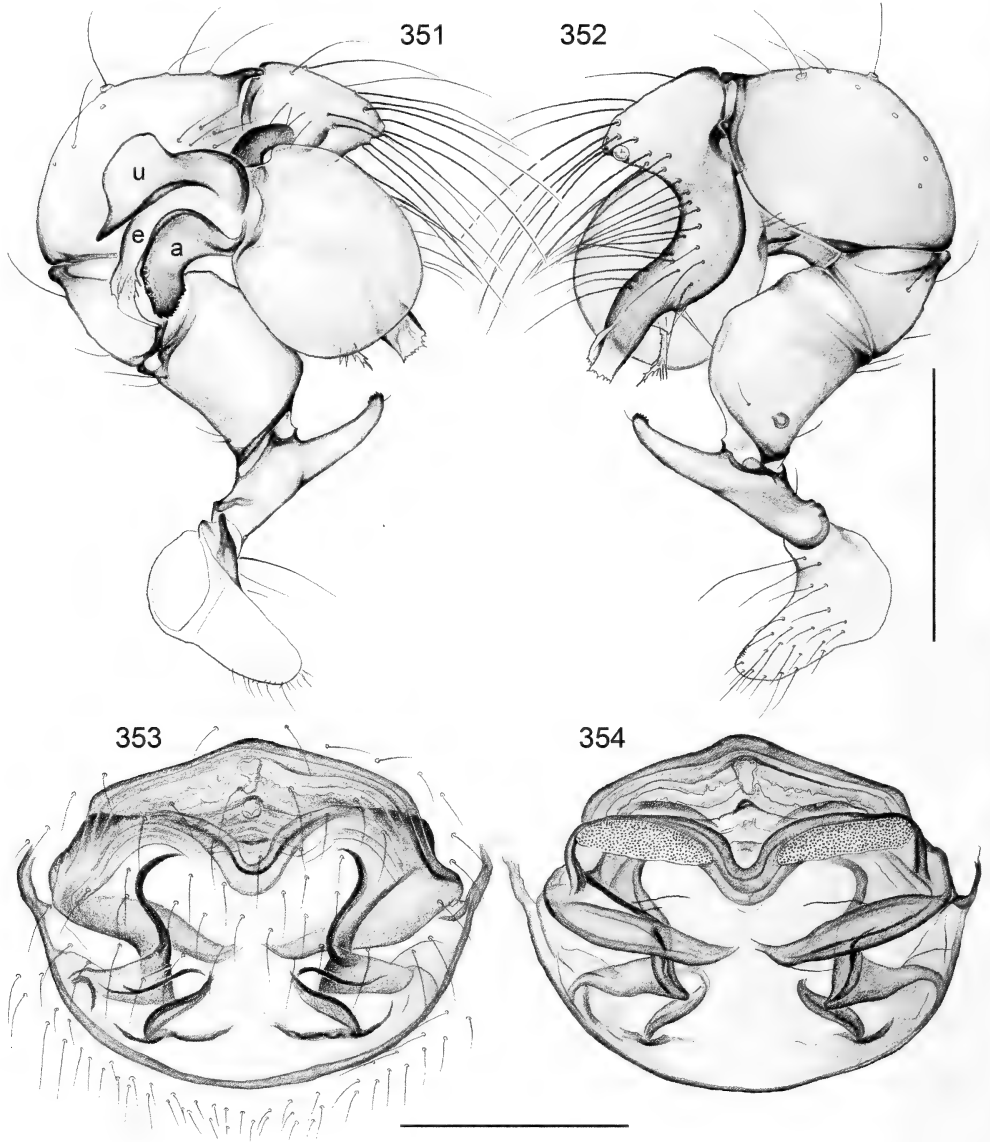


FIG. 351-354. *Leptopholcus griswoldi*. 351, 352. Left male palp, prolateral and retrolateral views. 353, 354. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (351, 352), 0.3 (353, 354).

*Female*. In general similar to male, triads closer together (PME-PME distance 400  $\mu$ m), not elevated. Tibia 1: 7.9. Epigynum a simple oval late, with distinctive internal structures visible through cuticle (Figs. 265, 353); internal genitalia as in Figs. 266 and 354. *Distribution*. Known from type locality only (Fig. 281). *Material examined*. MADAGASCAR: Antsiranana Prov.: 8.4 km NNW Manantenina: ♂ holotype above; same data, 1♂1♀ in CAS.

*Leptopholcus talatakely* n. sp.

Figs. 223, 224, 263, 264, 355-368

*Type*. Male holotype from Madagascar, Fianarantsoa Prov., P.N. Ranomafana, Talatakely (21°14.9'S, 47°25.6'E), 5.-18.iv.1998 (C.E. Griswold *et al.*), in CAS.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.



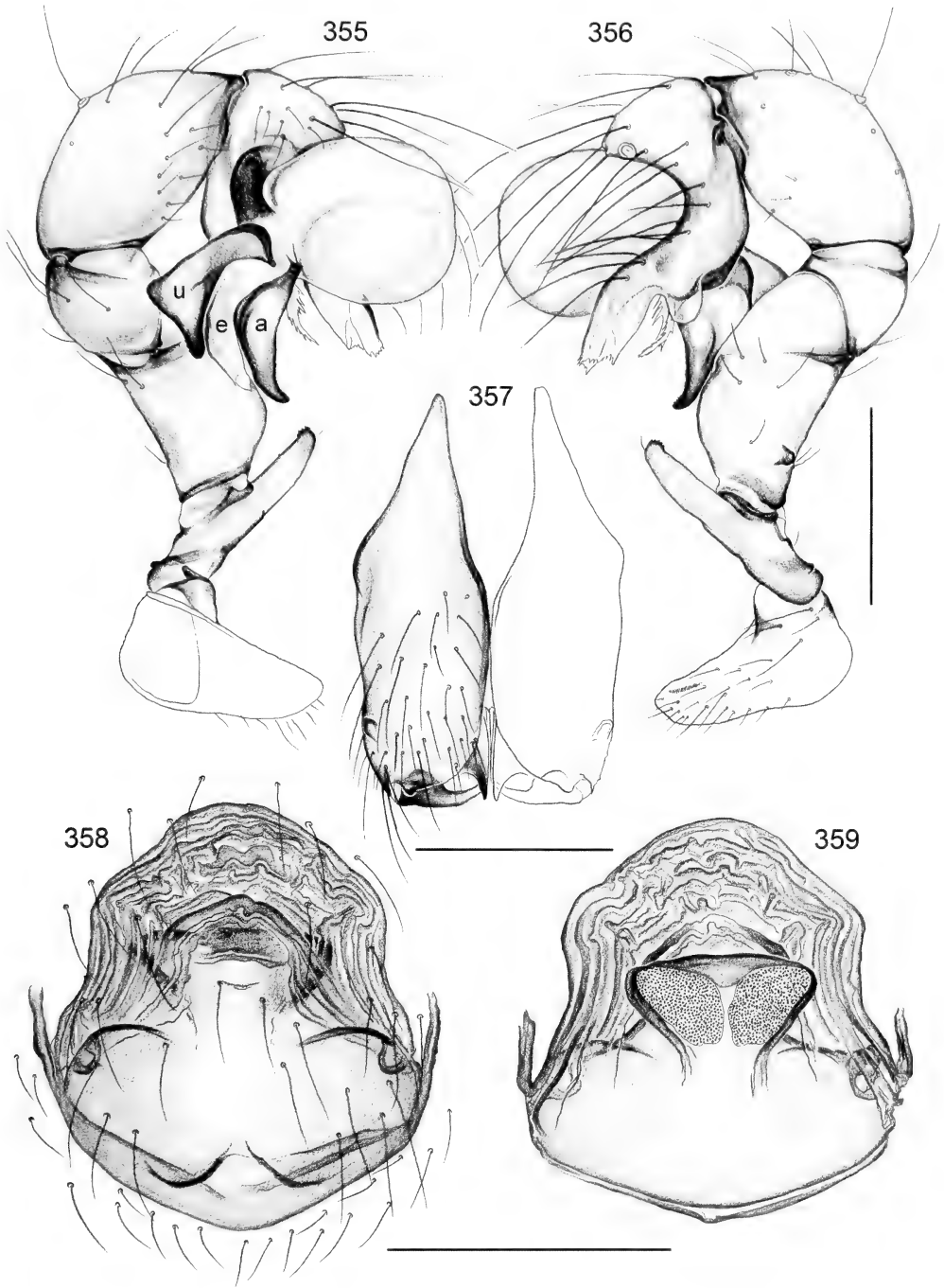


FIG. 355-359. *Leptopholcus talatakeyi*. 355, 356. Left male palp, prolateral and retrolateral views. 357. Male chelicerae, frontal view. 358, 359. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.3 (355, 356, 358, 359), 0.2 (357).

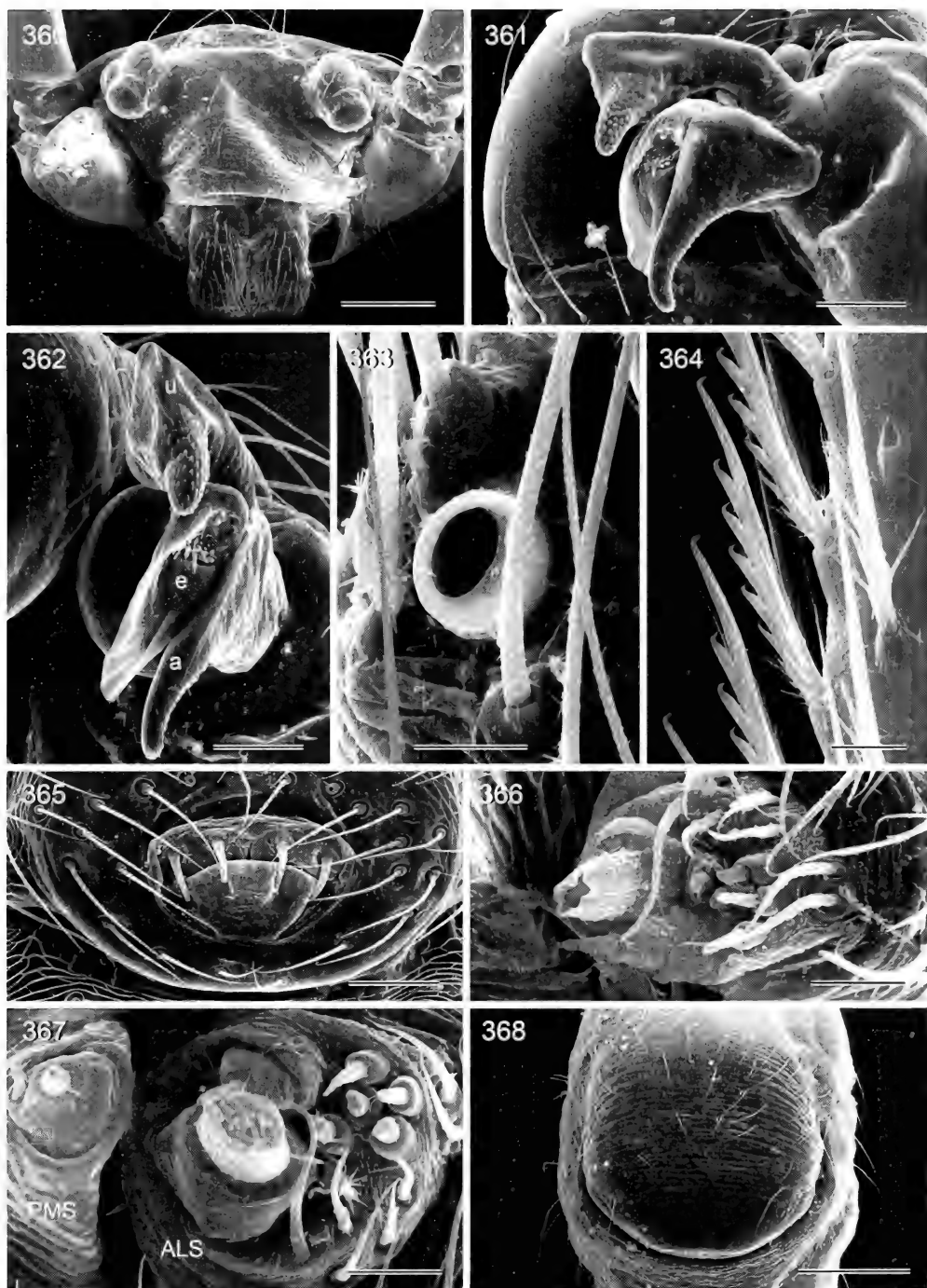


FIG. 360-368. *Leptopholcus talatakely*. 360. Male prosoma (palps removed), frontal view. 361, 362. Processes of left bulb, prolateral and dorsal views. 363. Male palpal tarsal organ. 364. Comb-hairs on right male tarsus 4. 365. Male gonopore. 366. Male ALS. 367. Female ALS and PMS. 368. Epigynum. Scale lines: 200  $\mu\text{m}$  (360, 368), 80  $\mu\text{m}$  (361), 60  $\mu\text{m}$  (362), 40  $\mu\text{m}$  (365), 20  $\mu\text{m}$  (363), 10  $\mu\text{m}$  (364, 366, 367).

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 355, 356; shapes of procurus, uncus, and appendix), and female internal genitalia (Figs. 263, 358).

*Male* (holotype). Total body length 6.0, carapace width 0.8. Leg 1: 32.3 (8.2 + 0.4 + 7.2 + 13.4 + 3.1), tibia 2: 5.3, tibia 3: 3.3, tibia 4: 5.8; tibia 1 L/d: 108. Habitus as in Figs. 223 and 224. Prosoma pale ochre-yellow, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with indistinct darker marks dorsally. Distance PME-PME 370  $\mu$ m, diameter PME 80  $\mu$ m, distance PME-ALE 25  $\mu$ m, no trace of AME. Ocular area barely elevated (Fig. 360), few stronger hairs on posterior side, triads on low additional elevations. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 357, with small weakly sclerotized lateral apophyses distally. Sternum wider than long (0.55/0.50), unmodified. Palps as in Figs. 355 and 356, coxa unmodified, trochanter with long ventral apophysis with serrated tip, femur with retrolateral apophysis proximally, palpal tarsal organ capsulate (Fig. 363), procurus quite simple, with transparent ventral process, shapes of uncus and appendix simple (Figs. 355, 361, 362), embolus weakly sclerotized, distally transparent. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope; tarsus 4 with single row of comb-hairs (Fig. 364). Gonopore with four epiaudrous spigots (Fig. 365); ALS with seven spigots each (Fig. 366).

*Variation.* Pattern on abdomen variably distinct, present in most specimens. Tibia 1 in 35 males: 6.6-8.7 (mean 7.6).

*Female.* In general similar to male, triads barely closer together (PME-PME distance 355  $\mu$ m); abdomen consistently monochromous. Tibia 1 in 34 females: 5.7-7.3 (mean 6.6). Epigynum a simple oval plate (Fig. 368), with distinctive internal circular structures visible through cuticle (Figs. 263, 358); internal genitalia as in Figs. 264 and 359. ALS with seven spigots each (Fig. 367).

*Distribution.* Known from Ranomafana N.P. and Massif Andringitra, Mahasoa (both Fianarantsoa Prov.), Madagascar (Fig. 281).

*Material examined.* MADAGASCAR: *Fianarantsoa Prov.*: P.N. Ranomafana, Talatakely: ♂ holotype above; same data but at night, 1♀ in CAS; 19.-30. iv.1998, at night, 4♂ 1 juv. in CAS; 19.-30. iv.1998,

1♀ in CAS; Talatakely (21°15'S, 47°25'E), 900 m a.s.l., 5.-7. xii.1993 (N. Scharff, S. Larcher, C.E. Griswold, R. Andriamasimanana), 4♂ 8♀ in CAS; Talatakely (21°15'S, 47°26'E), 915-1000 m a.s.l., 30. x.-20. xi.1998 (V.F. Lee, K.J. Ribardo), 1♂ in CAS; P.N. Ranomafana (ca. 21°12'S, 47°27'E), forest, from foliage, iv.1992 (V. & B. Roth, S. Kariko), 1♂ 3♀ in CAS; P.N. Ranomafana, iv.-v.1992 (V. & B. Roth), 1♂ 4♀ in MCZ (33986); P.N. Ranomafana, Vohiparara (21°14'S, 47°24'E), 900 m a.s.l., 5.-7. xii.1993 (N. Scharff, S. Larcher, C.E. Griswold, R. Andriamasimanana), 1♂ 4♀ in CAS; 2.3 km N Vohiparara village (21°12.8'S, 47°23.0'E), ca. 1100 m a.s.l., 18. iv.1998 (C.E. Griswold *et al.*), 1♂ in CAS; same data but 24.-25. iv.1998, 1♂ in CAS; Vohiparara, Piste Touristique (21°13.6'S, 47°24.0'E), ca. 1000 m a.s.l., 26.-27. iv.1998 (C.E. Griswold *et al.*), 3♂ 2♀ in CAS; same data but 19. iv.1998, 2♀ 2 juvs. in CAS. P.N. Ranomafana, Maharira [21°20.1'S, 47°24.8'E], night, forest, 10. iv.1992 (V. Roth), 1♂ in MCZ (33953); same data but B. Roth, 1♀ in MCZ (33983); same data but 11. iv.1992 (B. Roth), 1♂ 1♀ in MCZ (33970); Maharira, trail at base camp, night collecting, 7. iv.1992 (V. Roth), 1♂ in MCZ (33962); Maharira, at camp, by river, night, 10. iv.1992 ("Emile for Kariko/Roth"), 1♂ in MCZ (33965); Maharira, camp, 9. iv.1992 (S.J. Kariko), 1♂ in MCZ (33952); 7 km W Ranomafana (ca. 21°12'S, 47°27'E), 900 m a.s.l., 1.-7. iii.1990 (W.E. Steiner), 7♂ 1♀ in USNM; same data but 1.-9. ii.1990, 1♂ 1♀ and juvs. in USNM; 24.-27. ii.1990, 2♂ in USNM; 8.-13. iii.1990, 3♂ 1♀ in USNM; 20.-24. iii.1990, 1♂ in USNM; same data but 1100 m a.s.l., 1.-7. xi.1988 (W.E. Steiner), 4♂ 7♀ in USNM; 7 km W Ranomafana (21°16'S, 47°25'E), 1000 m a.s.l., x.1993 (M. Stebbins), 1♀ in USNM; same data but montane rainforest, on low foliage and saplings at night, 11. ix.1993 (W.E. Steiner), 3♂ 2♀ in USNM. Massif Andringitra, Mahasoa [MRAC database: 22°20'S, 46°55'E], 2100 m a.s.l., x.1971 (B. Ranson), 2♂ 2♀ in MRAC (142884).

*Leptopholcus kandy* n. sp.

Figs. 269, 270, 369-372

*Type.* Male holotype from Sri Lanka, Central Prov., Kandy [7°17'N, 80°38'E], 600 m a.s.l., waterworks forest, cocoa plantation, on leaves ("mostly of cocoa trees"), 7.-11. viii.1981 (C.L. Deeleman-Reinhold), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

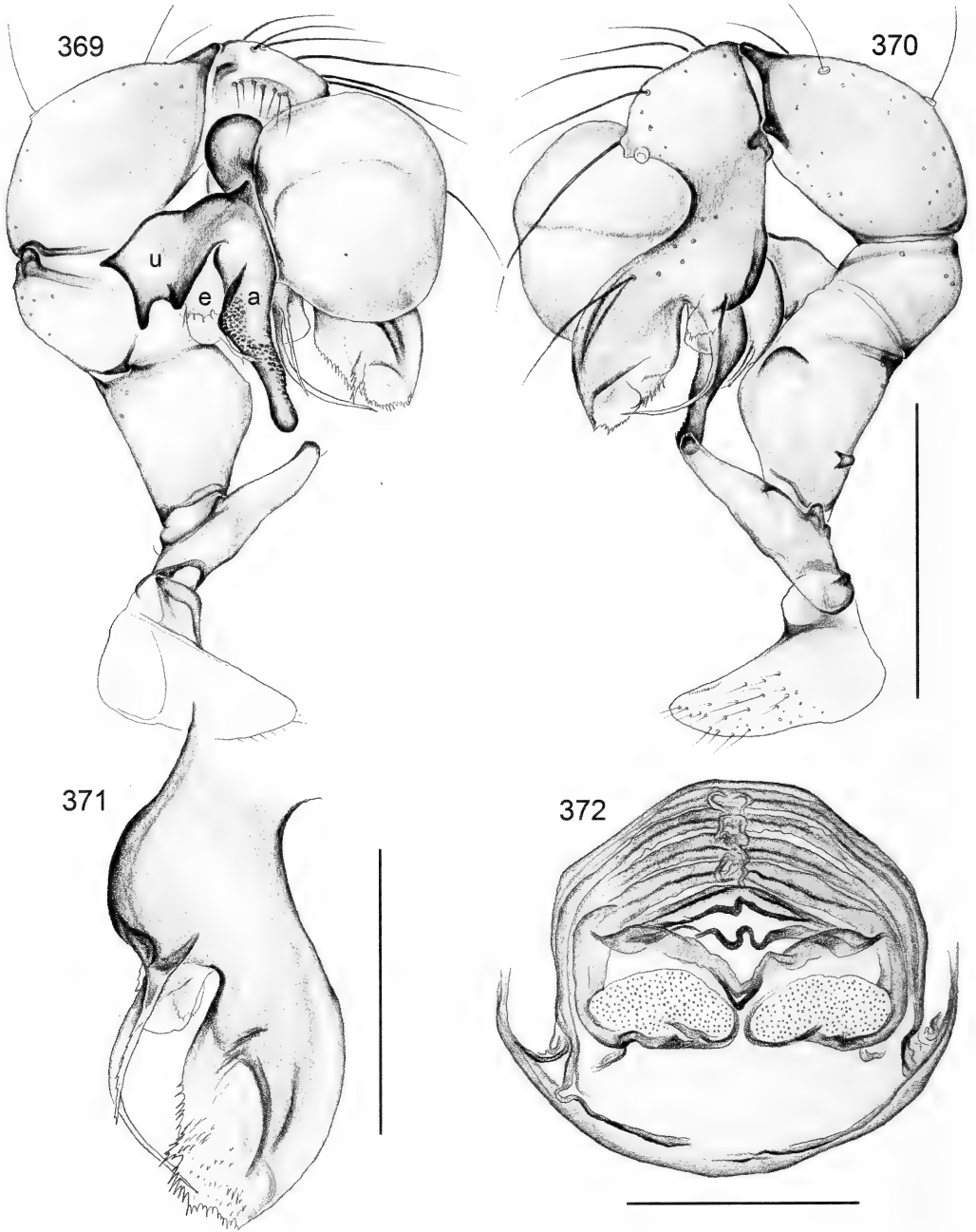


FIG. 369-372. *Leptopholcus kandy*. 369, 370. Left male palp, prolateral and retrolateral views. 371. Left procurus, prolateral view. 372. Cleared female genitalia, dorsal view. Scale lines: 0.5 (369, 370), 0.3 (371, 372)

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 369, 370; shapes of procurus, uncus, and appendix), and female genitalia (Fig. 269; transversal oval plate; shapes of pore plates).

*Male* (holotype). Total body length 6.1, carapace width 1.0. Leg 1: 7.9 + 0.4 + 7.7, metatarsus and tarsus missing, tibia 2 missing, tibia 3: 3.9, tibia 4: 6.6; tibia 1 L/d: 87. Habitus as in *L. borneensis* (cf. Figs. 226, 227). Entire spider pale ochre-yellow to whitish, only patella area and tibia metatarsus joints slightly darker. Distance PME-PME 380  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 25  $\mu$ m. Ocular area slightly elevated, each triad on distinct stalk slightly directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in *L. huongson* (cf. Fig. 375). Sternum as wide as long (0.60), unmodified. Palps as in Figs. 369 and 370, in general very similar to *L. huongson* (cf. Figs. 373, 374), femur ventral bulge less prominent, procurus slightly different, only bulbous processes (especially uncus and appendix) clearly different. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4.

*Variation.* Tibia 1 in other male: 7.5 (missing in third male).

*Female.* In general similar to male, triads not on stalks and slightly closer together (PME-PME distance 355  $\mu$ m); some females with many light brown spots on leg femora. Tibia 1 in 7 females: 6.6-8.0 (mean 7.2). Epigynum very simple transversal oval plate (Fig. 269); internal genitalia as in Figs. 270 and 372.

*Distribution.* Known from Sri Lanka and southern India (Fig. 282). However, the Indian record is based on a single female specimen and should be checked by collecting males.

*Material examined.* SRI LANKA: *Central Prov.*: Kandy: ♂ holotype above, together with 1♀; same data, 2♀ and some juveniles, in RMNH. *Sabaragamawa Prov.*: Ratnapura [6°41'N, 80°23'E], forest and lake below tennis club, 21.-22.viii.1981 (C.L. & P.R. Deeleman), 2♂ and some juveniles in RMNH. Ratnapura District, Gilimale forest reserve [-6°44'N, 80°26'E], hand collecting, 11.xi.2007 (S.P. Benjamin, Z. Jaleel), 2♀ and some juveniles in ZFMK. Kitulgala [6°36'N, 80°15'E], degraded lowland rainforest, 14.xi.2007 (Z. Jaleel), 1♀ and some juveniles in ZFMK.

*Assigned tentatively.* INDIA: *Karnataka*: Jog Falls [14°13.7'N, 74°48.7'E], 525 m a.s.l., 17.xi.1962 (E.S. Ross, D.Q. Cavagnaro), 1♀ in CAS.

*Leptopholcus huongson* n. sp.

Figs. 271, 272, 373-377

*Type.* Male holotype from Vietnam, Ha Tinh Province, Huong Son Distr., Huong Son forest [18°22'N, 105°13'E], main trail, ~300 m a.s.l., night, 20.v.1998 (D. Silva), in AMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 373, 374; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 271, 377).

*Male* (holotype). Total body length 7.5, carapace width 1.0. Leg 1: 35.7 (9.0 + 0.5 + 8.5 + 13.7 + 4.0), tibia 2: 6.5, tibia 3: 4.2, tibia 4: 6.6; tibia 1 L/d: 87. Habitus as in *L. borneensis* (cf. Figs. 226, 227). Carapace ochre-orange with brown median mark, ocular area medially brown, sternum with brown sprinkles, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen monochromous. Distance PME-PME 440  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 115  $\mu$ m, diameter AME 10  $\mu$ m. Ocular area elevated, triads on additional short stalks (-0.28 long). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 375. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 373 and 374, coxa unmodified, trochanter with long ventral apophysis with serrated tip, femur with retrolateral apophysis proximally and distinct ventral protrusion, procurus S-shaped with complex transparent processes, bulb with rather small uncus, short wide embolus, massive appendix set with numerous scales. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Female.* The females below are not from the type locality and may in fact represent a different species. They are in general similar to male, triads closer together (PME-PME distance 345  $\mu$ m), not elevated; carapace without brown mark, femora with many indistinct light brown small marks; tibia 1: 6.6, 6.8. Epigynum very simple outside (Fig. 271); internal genitalia as in Figs. 272 and 377.

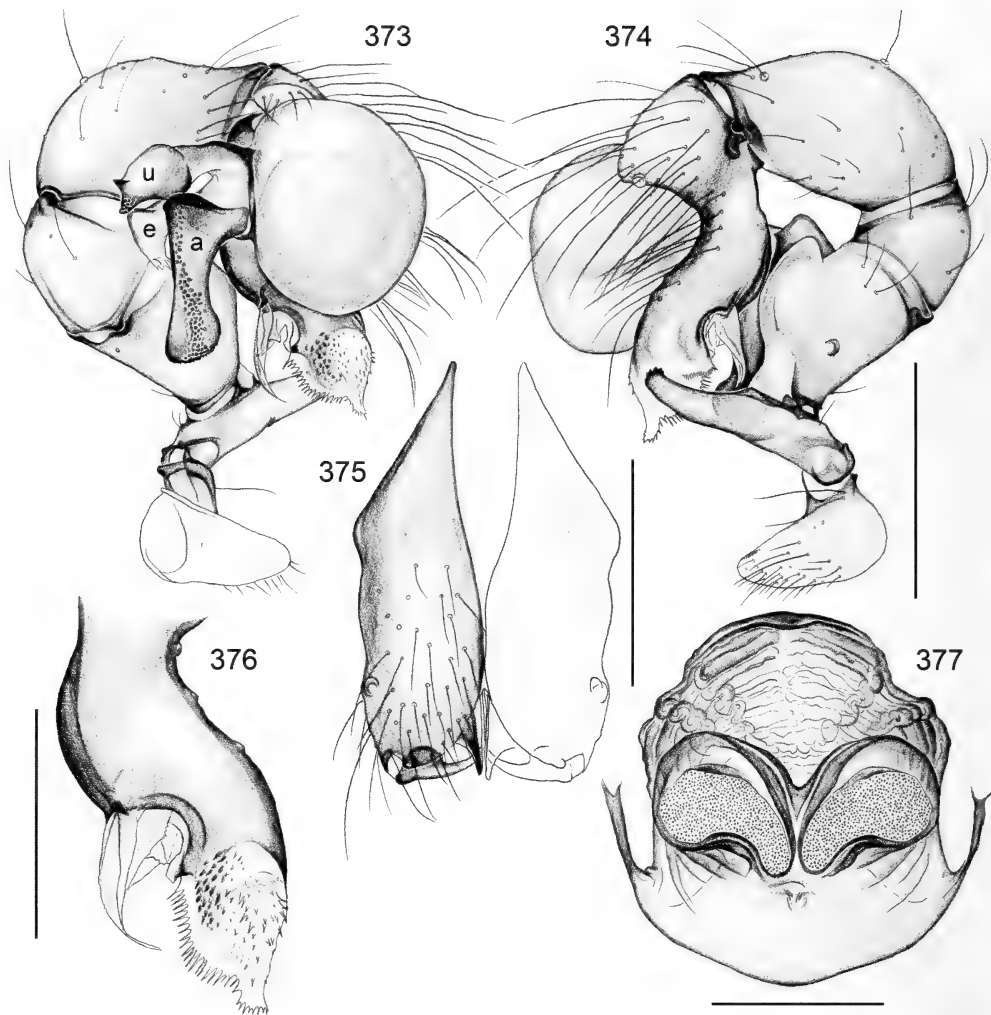


FIG. 373-377. *Leptopholcus huongson*. 373, 374. Left male palp, prolateral and retrolateral views. 375. Male chelicerae, frontal view. 376. Left procursus, prolateral view. 377. Cleared female genitalia, dorsal view. Scale lines: 0.5 (373, 374), 0.3 (375-377).

*Distribution.* Known from type locality and from two tentative localities in Vietnam and northeastern Thailand respectively (Fig. 282).

*Material examined.* VIETNAM: *Ha Tinh Prov.*: Huong Son: ♂ holotype above.

*Assigned tentatively.* VIETNAM: *Nghè An Prov.*: Con Cuong District, Pumat Reserve [19°02'N, 104°42'E], night, 29.iv.1998 (D. Silva), 1♀ in AMNH.

THAILAND: *Sakon Nakhon Prov.*: King's Palace Forest [-17°10'N, 103°55'E], 7.i.1989 (C.L. & P.R. Deeleman), 1♀ in RMNH.

*Leptopholcus borneensis* Deeleman-Reinhold, 1986  
Figs. 225-227, 267, 268, 378-394

*Leptopholcus borneensis* Deeleman-Reinhold 1986b:  
211, figs. 18-23.

*Type.* Female holotype from Indonesia, East Kalimantan, 40 km N Balikpapan, Sepaku (1°00'S, 116°54'E), primary lowland dipterocarp rainforest, on underside of leaf, 16.vii.1979 (P.R. Deeleman), in RMNH (9576), not examined.

*Note.* The material below is assigned to this species with some hesitation since the female genitalia are

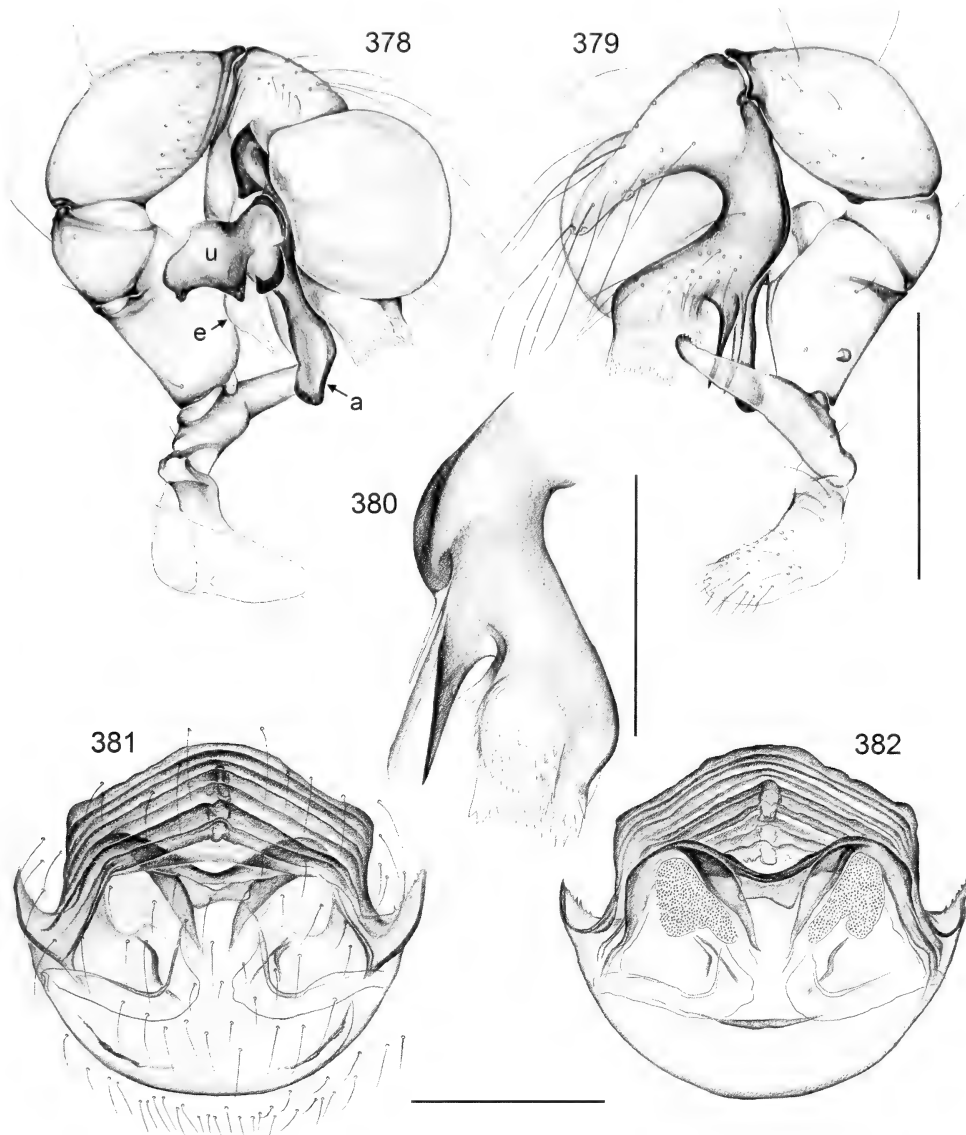


FIG. 378-382. *Leptopholcus borneensis*. 378, 379. Left male palp, prolateral and retrolateral views. 380. Left procurrus, prolateral view. 381, 382. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (378, 379), 0.3 (380-382).

extremely simple and no male specimen is known from the type locality. However, the type locality is geographically situated between two areas from which males are known (Sabah and Lesser Sunda Islands), and no other *Leptopholcus* species is known from this region (Fig. 282) (except for an undescribed

species similar to *L. tanikawai* and *L. podophthalmus*, which has a much shorter abdomen; see diagnosis of *L. tanikawai* below).

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 378, 379; shapes of procurrus, uncus, and appendix), and female genitalia (Figs. 381, 382).



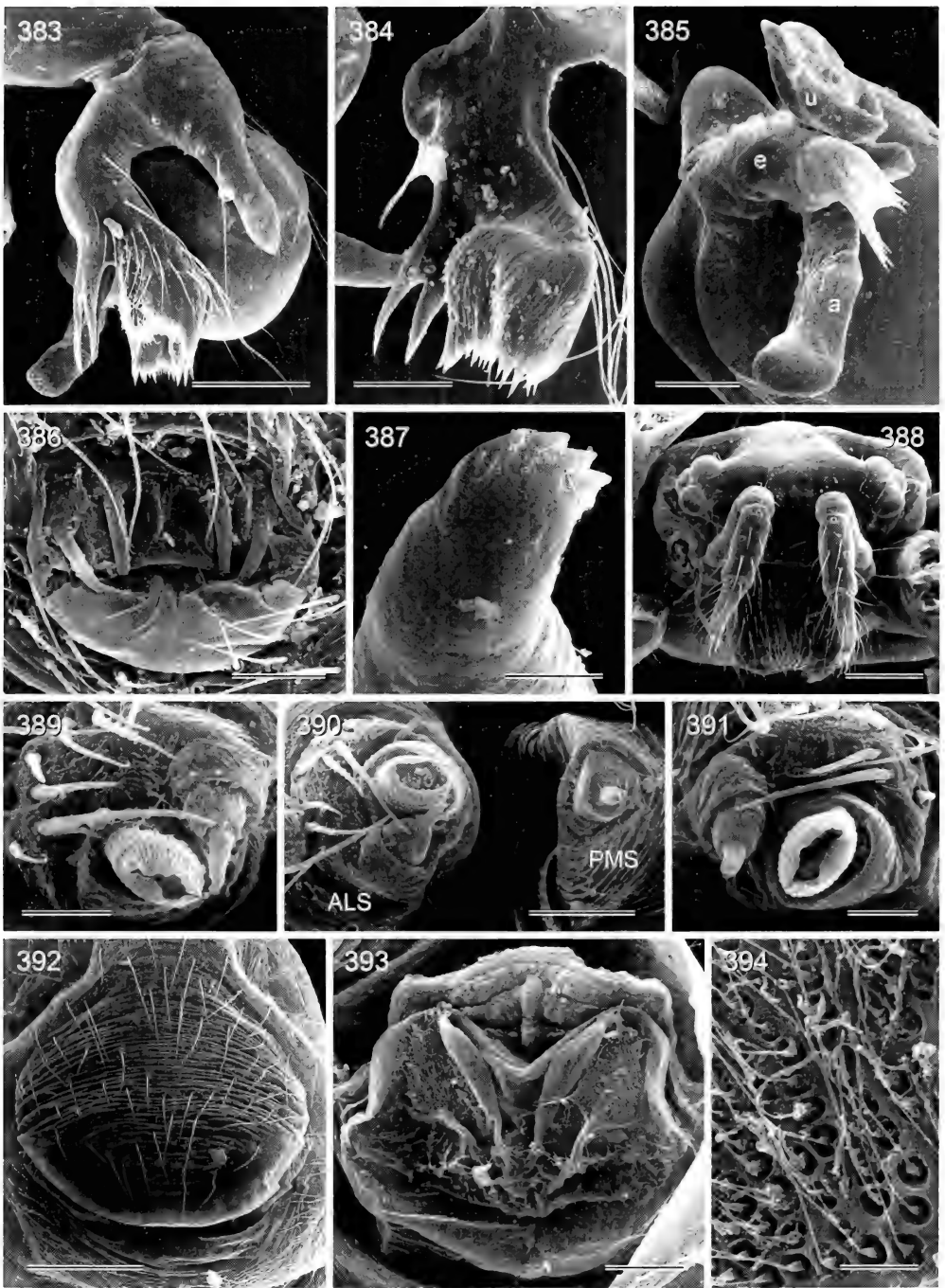


FIG. 383-394. *Leptopholcus borneensis*. 383. Right tarsus and procurus, retrolateral view. 384. Left procurus, prolateral view. 385. Processes of left bulb, dorso-distal view. 386. Male gonopore. 387. Tip of male palpal trochanter apophysis. 388. Female prosoma, frontal view. 389. Male ALS. 390. Female ALS and PMS. 391. Female ALS. 392. Epigynum. 393. Cleared female genitalia, dorsal view. 394. Detail of pore plate. Scale lines: 200  $\mu\text{m}$  (383, 388, 392), 100  $\mu\text{m}$  (384, 393), 80  $\mu\text{m}$  (385), 30  $\mu\text{m}$  (386), 20  $\mu\text{m}$  (387, 390), 10  $\mu\text{m}$  (389, 391, 394).



*Male* (Semokat). Total body length 7.1, carapace width 0.85. Leg 1: 31.1 (7.9 + 0.4 + 7.7 + 11.6 + 3.4), tibia 2: 5.8, tibia 3: 3.9, tibia 4: 6.2; tibia 1 L/d: 97. Habitus as in Figs. 226 and 227. Entire spider mostly pale ochre-yellow, patellae and tibia-metatarsus joints brown. Distance PME-PME 425  $\mu$ m, diameter PME 80  $\mu$ m, distance PME-ALE 25  $\mu$ m, AME pigment spots (Fig. 225) but apparently no lenses. Ocular area barely elevated but each triad on short stalk directed laterally (Fig. 225). No thoracic furrow; clypeus unmodified. Chelicerae as in *L. hungsoni* (cf. Fig. 375). Sternum wider than long (0.56/0.52), unmodified. Palps as in Figs. 378 and 379, coxa unmodified, trochanter with long ventral apophysis with serrated tip (Fig. 387), femur with retrolateral apophysis proximally, ventrally widened, tarsus with long dorsal elongation, procurus S-shaped, with ventral sclerotized and membranous processes (Figs. 380, 383, 384), bulb with distinctive uncus, short membranous embolus, large massive appendix (Fig. 385). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 386); ALS with only two spigots each (Fig. 389).

*Variation*. Tibia 1 in 4 other males: 6.8, 7.1, 7.5, 7.6.

*Female*. In general similar to male, triads not on stalks, closer together (Fig. 388; PME-PME distance 335  $\mu$ m). Tibia 1 in 14 females: 5.8-7.3 (mean 6.8). Epigynum very simple weakly sclerotized plate (Figs. 267, 392), slightly protruding; internal genitalia as in Figs. 268, 382, and 393. ALS with only two spigots each (Figs. 390, 391).

*Distribution*. Known from Borneo, Lesser Sunda Islands, and Thailand (Fig. 282).

*Material examined*. INDONESIA-LESSER SUNDA ISL.: *Sumbawa*: Semokat, 20 km from Sumbawa Besar [-8.5°S, 117°E], 480 m a.s.l., secondary forest, 3.i.1990 (S. Djojosedharmo), 5♂11♀ in RMNH. *Lombok*: Kute [8°54'S, 116°18'E], secondary forest, foliage, 10.-18.i.1990 (S. Djojosedharmo), 1♂1♀ in RMNH; same data, 2♂5♀ in RMNH.

MALAYSIA-BORNEO: *Sabah*: Mt. Kinabalu N.P. (6°06'N, 116°50'E), 15 year old secondary forest, 500-700 m a.s.l., fogging canopy *Vinex pinnata*, 27.ii.1997 (A. Floren), 1♂ in RMNH; same data but 40 year old secondary forest, 8.iii.1997, 1♀ in RMNH.

THAILAND: *Trat Prov.*: Ko Chang Island [-12°N, 102.3°E], 10.-13.v.1937 (H. Deignan), 1♂ in USNM.

*Leptopholcus tanikawai* Irie, 1999

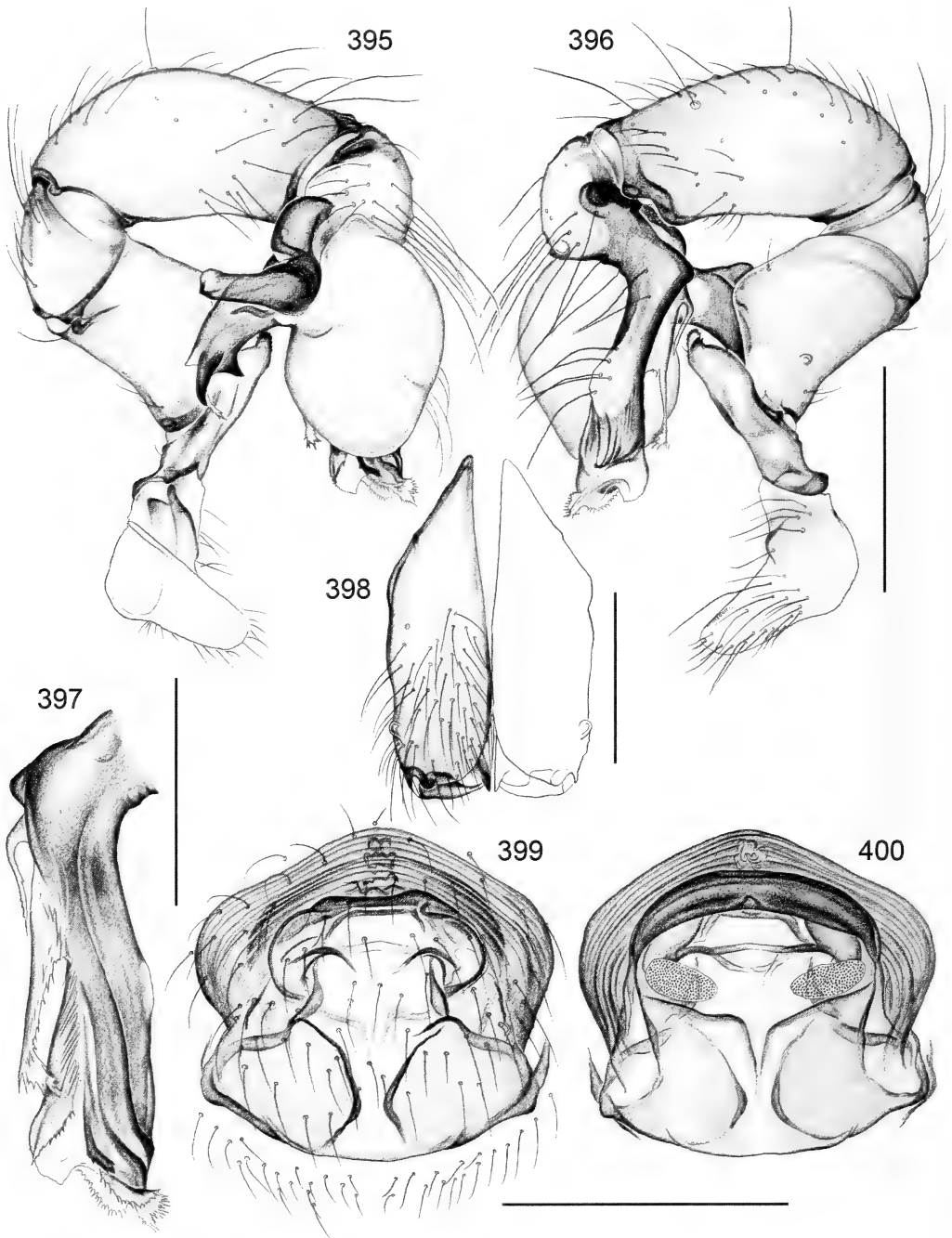
Figs. 228-231, 273, 274, 395-401, 426, 427

*Leptopholcus tanikawai* Irie 1999: 37-39, figs. 1-5. Irie 2009: 108, figs. (2-2-13) 9-11 (10 and 11 copied from Irie 1999), pl. 4, fig. 5.

*Types*. Male holotype from Japan, Okinawa, Iriomotejima Island [-24°20'N, 123°50'E], Furumi (Irie 1999: Komi!), 27.iii.1987 (A. Tanikawa), in NSMT (Ar 3847), examined. Female "allotype" from Iriomotejima Island, Ohara, 12.viii.1985 (A. Tanikawa), in NSMT (Ar 3848), examined.

*Diagnosis*. Distinguished from most congeners by relatively short abdomen (Figs. 228, 229), male eyes on stalks (Fig. 231), and procurus shape (Fig. 396); from very similar *L. podophthalmus* only by morphology of bulbar processes (compare Figs. 401 and 402), and by female genitalia (Figs. 273, 399). Up to three further similar species seem to exist on New Guinea (Madang; Baiteta; in IRSB), Borneo (Sabah: Poring Hot Springs; in RMNH), and Sumatra (Gunung Leuser, Bohorok and Kerinci N.P.; in RMNH), but the available specimens are either poorly preserved or no males are available.

*Male* (Otomi). Total body length 5.0, carapace width 1.3. Leg 1: 45.3 (10.9 + 0.6 + 10.9 + 20.9 + 2.0), tibia 2: 7.4, tibia 3: 4.3, tibia 4: 6.4; tibia 1 L/d: 103. Habitus as in Figs. 228 and 229. Carapace pale ochre-yellow, ocular area light brown, clypeus also slightly darker, sternum pale whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints dark, abdomen ochre-gray with some darker spots dorsally, ventrally monochromous (cf. female, Fig. 230). Distance PME-PME 445  $\mu$ m, diameter PME 140  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 20  $\mu$ m. Ocular area elevated, triads on additional stalks (-0.34 long; Fig. 231), some longer hairs posteriorly on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 398, with small lateral apophyses distally (missing in original drawing; Irie 1999: fig. 2). Sternum wider than long (0.75/0.60), unmodified. Palps as in Figs. 395 and 396, very similar to *L. podophthalmus*, coxa with low retrolateral hump, trochanter with long ventral apophysis with two tips, one serrated, one pointed, femur short and wide, with retrolateral apophysis proximally (missing in original



Figures 395-400. *Leptopholcus tanikawai*. 395, 396. Left male palp, prolateral and retrolateral views. 397. Left procurus, prolateral view. 398. Male chelicerae, frontal view. 399, 400. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (395, 396, 399, 400), 0.3 (397, 398).

drawing; Irie 1999: fig. 3), ventrally widened, procurus strongly bent proximally, distally complex with mostly membranous processes (Fig. 397; in the original drawings these processes erroneously originate from the bulb; Irie 1999: fig. 3), bulb with rather small unculus(?) ("embolus" of Irie 1999), embolus partly sclerotized (or fused to appendix?), with distinctive pointed projection (Fig. 401). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 427); ALS with only two spigots each (Fig. 426).

*Variation.* Marks on abdomen variably distinct. Tibia 1 in 6 other males: 9.6-10.7 (mean 10.3). The holotype is very pale (probably bleached) but otherwise in fair condition; tibia 1: 10.7.

*Female.* In general similar to male, triads not on stalks, closer together (PME-PME distance 230  $\mu$ m), ocular area not darkened, pair of small marks on carapace, abdomen mostly monochromous. Tibia 1 in 8 females: 8.1-9.5 (mean 8.5). Epigynum simple plate, distinctive internal structures visible through cuticle (Figs. 273, 399); internal genitalia as in Figs. 274 and 400.

*Distribution.* Only known from Iriomotejima Island (Fig. 282); Irie (1999) lists 2 juvenile specimens from nearby Ishigakijima Island [ $-24^{\circ}24'N$ ,  $124^{\circ}12'E$ ].

*Material examined* (all collected by A. Tanikawa). JAPAN: *Okinawa*: Iriomotejima Island, Furumi, ♂ holotype above; Ohara, 1♀ "allotype" above; same data but 30.iv.1990, 12.viii.1992, 1♂1♀ (2 vials) in ZFMK; Otomi, 24.vii.1991, 1♂2♀ in ZFMK, same data but 25.vii.1988, 2.i.1989, 16.viii.1992, 3♂2♀ (3 vials) in ZFMK; Sonai, 30.iii.1988, 1♀ in ZFMK; Funaura, 29.xii.1988, 1♂1♀ (2 vials) in ZFMK; Shirahama, 31.xii.1986, 1♀ in ZFMK; Mouth of Geda river, 29.xii.1991, 1♂ in ZFMK; Urauchi, 31.xii.1988, 1♂ in ZFMK.

*Leptopholcus podophthalmus* (Simon, 1893), n. comb. Figs. 232-235, 275, 276, 402-417

*Pholcus podophthalmus* Simon 1893a: 460, 466, 468, 469, fig. 456. Simon 1901: 50. Song *et al.* 1999: 58-59, figs. 24P-T (male only). Zhang & Zhu 2009a: 71-72, figs. 39A-D (copied from Song *et al.* 1999).

*Types.* One male and one female syntypes (with 2 juveniles) from Sri Lanka, Central Prov., Kandy

[ $7^{\circ}17'N$ ,  $80^{\circ}38'E$ ], no further data, in MNHN (Ar 10216) (Simon collection number 15152), examined. One palp is detached and kept in a separate vial (MNHN, Ar 10244).

*Diagnosis.* Distinguished from most congeners by relatively short abdomen (Figs. 233, 234), male eyes on stalks (Figs. 232, 405), and procurus shape (as in *L. tanikawai*; cf. Fig. 396); from the very similar *L. tanikawai* only by morphology of bulbal processes (compare Figs. 401 and 402), and apparently by female genitalia (Figs. 275, 403). For further undescribed similar species see diagnosis of *L. tanikawai* above.

*Male* (type locality). Total body length 4.3, carapace width 1.1. Leg 1: 41.3 (10.2 + 0.5 + 9.8 + 18.8 + 2.0), tibia 2: 6.4, tibia 3: 3.9, tibia 4: 5.5; tibia 1 L/d: 105. Habitus as in Figs. 233 and 234. Carapace pale ochre-yellow, ocular area and clypeus brown, sternum pale whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints dark, abdomen ochre-gray with some darker spots dorsally, ventrally monochromous (cf. female, Fig. 235). Distance PME-PME 440  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 20  $\mu$ m, diameter AME 25  $\mu$ m (lenses apparently present). Ocular area elevated, triads on additional stalks (-0.34 long, Figs. 232, 405). No thoracic furrow; clypeus unmodified. Chelicerae as in *L. tanikawai* (cf. Fig. 398). Sternum wider than long (0.65/0.55), unmodified. Palps mostly as in *L. tanikawai* (cf. Figs. 395, 396), tarsal organ capsulate (Fig. 413), procurus slightly larger than in *L. tanikawai* but identical in shape, complex distally (Figs. 406-409), bulb with distinctive processes (Figs. 402, 410), rounded process on putative embolus. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 412); ALS with only two spigots each (Fig. 415).

*Variation.* Marks on abdomen variably distinct. Tibia 1 in 6 other males: 8.9-11.3 (mean 9.8). Eye-stalk length in male with longest legs: 0.44. The male syntype is in fairly good condition; tibia 1 missing, tibia 2: 6.0, tibia 3: 3.6, tibia 4: 5.2. Note that the unculus in Fig. 402 is in slightly dorsal view; in perfect prolateral view it appears more slender and slightly pointed.

*Female.* In general similar to male but ocular area barely elevated, triads not on stalks, closer together

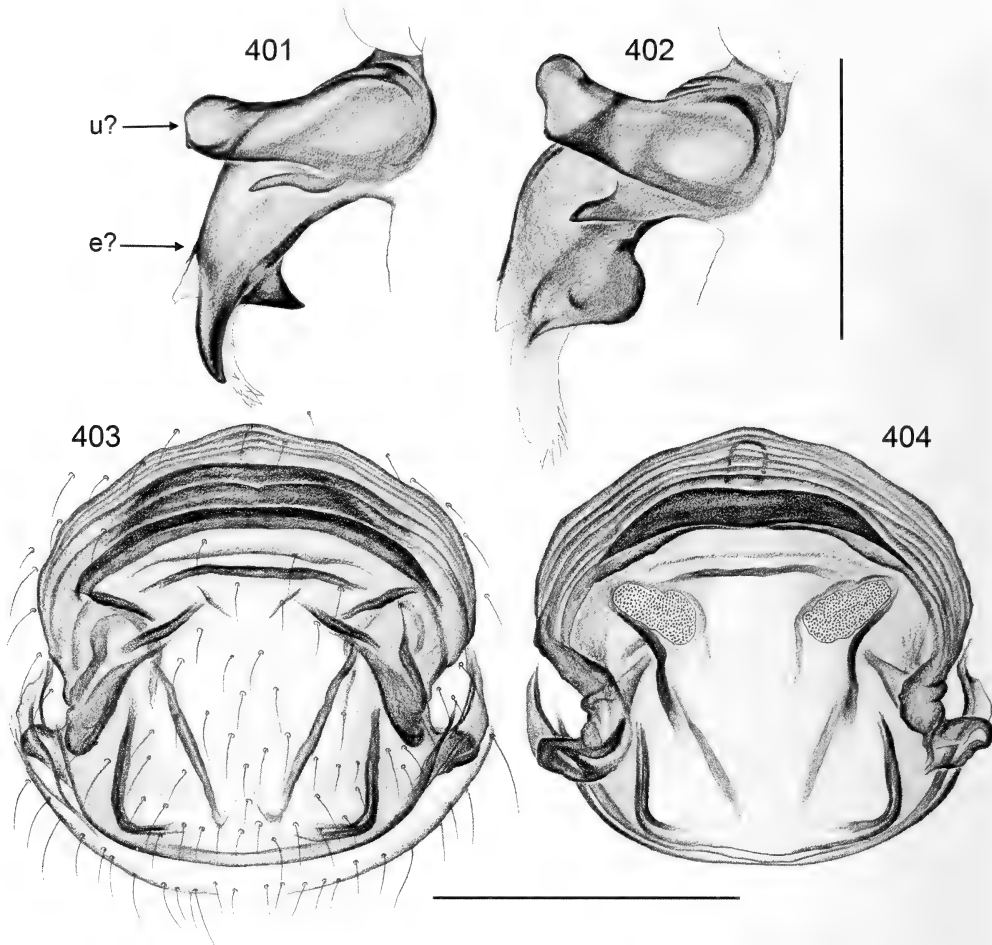


FIG. 401-404. *Leptopholcus tanikawai* (401) and *L. podophthalmus* (402-404). 401, 402. Processes of left bulbs, prolatateral views. 403, 404. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (403, 404), 0.3 (401, 402).

(PME-PME distance 205  $\mu$ m), ocular area and clypeus not darkened. Tibia 1 in 3 females: 6.8 (syntype), 7.3, 7.6 (missing in others); tarsus 4 with single row of comb-hairs (Fig. 414). Epigynum simple plate, distinctive internal structures visible through cuticle (Figs. 275, 403); internal genitalia as in Figs. 276 and 404. ALS with only two spigots each (Fig. 416). *Distribution*. Known from Sri Lanka, Myanmar, Thailand, Laos, Singapore, and southern China (Chinese records in Zhang & Zhu 2009a) (Fig. 282). *Material examined*. SRI LANKA: *Central Prov.*: Kandy: 1♂1♀ syntypes above; Kandy, on coffee trees under leaves, viii.1981 (C.L. & P.R. Deeleman), 7♂4♀ in RMNH; Kandy, waterworks forest, on

leaves, 600 m a.s.l., 7.-11.viii.1981 (C.L. Deeleman-Reinhold), 1♂ (without abdomen), in RMNH. *Western Prov.*: Kalutara Distr., Ingiriya [ $-6^{\circ}45'N$ ,  $80^{\circ}10'E$ ], Bodinagala Forest Reserve, hand collecting, 10.xi.2007 (S.P. Benjamin, Z. Jaleel), 1♂ in ZFMK. *North Western Prov.*: Kurunegala Distr., Kurunegala Nikaravatiya [ $-7^{\circ}29'N$ ,  $80^{\circ}22'E$ ], hand collecting, 1.-9.xi.2007 (Z. Jaleel), 1♂ in ZFMK. Kurunegala Distr., Kurunegala, Ethagala mountain [ $7^{\circ}29.1'N$ ,  $80^{\circ}22.2'E$ ], ca. 300 m a.s.l., hand collecting, 1.-28. xi.2007 (Z. Jaleel), 1♀ in ZFMK. MYANMAR: *Mandalay Division*: Mt. Popa Wildlife Reservation, 4.63 km  $90^{\circ}E$  PoPaMyo ( $20^{\circ}55.7'N$ ,  $95^{\circ}15.3'E$ ), 2000' a.s.l., ravine in rainforest, 23.

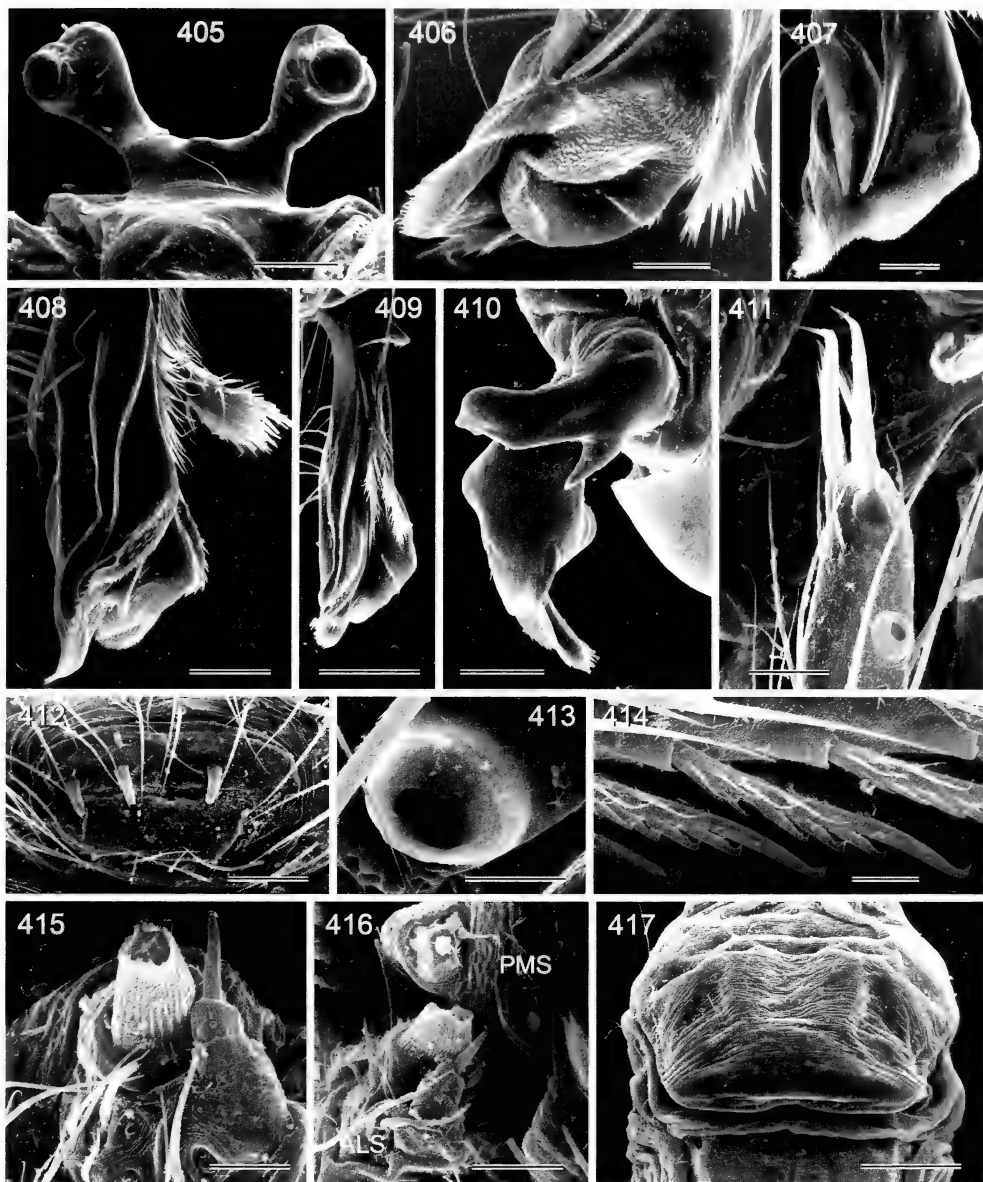


FIG. 405-417. *Leptopholcus podophthalmus*. 405. Male eye stalks, frontal view. 406, 407. Left procurus, distal and retrolateral views. 408, 409. Right procurus, prolateral and ventral views. 410. Processes of left bulb. 411. Tip of female palpal tarsus. 412. Male gonopore (one spigot damaged). 413. Male palpal tarsal organ. 414. Comb-hairs on female tarsus 4. 415. Male ALS. 416. Female ALS and PMS. 417. Epigynum. Scale lines: 200  $\mu$ m (405, 409, 417), 100  $\mu$ m (410), 80  $\mu$ m (408), 60  $\mu$ m (406, 407), 40  $\mu$ m (412), 30  $\mu$ m (411), 20  $\mu$ m (413, 416), 10  $\mu$ m (414, 415).

ix.2003 (D. Ubick, C.E. Griswold), 1♂ in CAS. *Sagaing Division*: Alaungdaw Kathapa N.P. (22°19.1'N, 94°28.5'E), log, cabin, night, 20.-25.x.1998 (J. Codrington, R. Baptista), 2♀ in USNM.

THAILAND: *Nakhon Nayok Prov.*: Khao Yai N.P. [-14°24'N, 101°22'E], waterfalls, 26.xii.1988 (C.L. & P.R. Deeleman), 1♂ in RMNH; same data but 25.x.1985 (P.R. Deeleman), 1♂ in RMNH; same locality, 4.xi.1987 (C.L. & P.R. Deeleman), 1♀ in RMNH; same locality, 6.xi.1987 (C.L. & P.R. Deeleman), 1♀ in RMNH. *Surin Prov.*: Surin Distr., behind Ramkamhaeng University campus (14°54.9'N, 103°27.1'E), 150 m a.s.l., earth banks along canal, 6.x.2010 (P. Schwendinger), 1♂ in MHNG. *Tiat Prov.*: north side of Ko Chang, Khlong Chao Luam (12°06.5'N, 102°18.0'E), 30-150 m a.s.l., secondary forest, along stream, vegetation, at day, by hand, 3.xi.2009 (P. Jäger, S. Bayer), 1♂ in SMF; Ko Chang, 3 km S Hat Sai Kao (12°04.8'N, 102°16.8'E), 40 m a.s.l., partly empty river bed, sec. forest, by hand, at night, 2.xi.2009 (P. Jäger, S. Bayer), 1♀ in SMF. *Mae Hong Son Prov.*: between Sopping Mae Song Pong Wilderness Lodge and Tham Nam Lang [-19°32'N, 98°16'E], 11.-14.iii.1990 (V. & B. Roth), 1♀ in CAS. LAOS: *Luang Prabang Prov.*: SE Luang Prabang, Nam Khan, Ban Nong Di (19°41.1'N, 102°21.5'E), 280 m a.s.l., along stream, vegetation, leaf litter, stones, by hand, at night, 21.iii.2007 (P. Jäger), 1♂ in SMF. Phou Si (19°53.4'N, 102°08.1'E), 300 m a.s.l., dry secondary forest in town, at vegetation, at night, by hand, 14.xi.2009 (P. Jäger, S. Bayer), 2♂ in SMF. *Luang Nam Tha Prov.*: Luang Nam Tha, Ban Tavan (1) (20°58.7'N, 101°28.7'E), 580 m a.s.l., valley with stream, vegetation, at night, by hand, 18.xi.2009 (P. Jäger, S. Bayer), 1♀ in SMF; same locality, small secondary forest, leaf litter, close to stream, sieving, 2.iii.2008 (P. Jäger), 1♀ in SMF. SINGAPORE: Pulau Ubin [1°08.7'N, 103°58.1'E], roadside vegetation, 18.ii.1988 (J. & F. Murphy), 1♂ in CJFM (15411). Bukit Timah [1°20.6'N, 103°46.5'E], Hindhede Drive, 26.vi.1988 (H.K. Lua), 1♀ in RMBR. Clementi Rd. near Clementi Neighbourhood Park [-1°19.6'N, 103°46.7'E], 7.i.2011 (D.J. Court), 1♂ in pure ethanol, in RMBR.

*Micromerys* Bradley, 1877

*Micromerys* Bradley 1877: 119. Type species by monotypy: *Mm. gracilis* Bradley, 1877. Simon 1893a: 474. Deeleman-Reinhold 1986b: 205-224. Huber 1997a: 358. Huber 2001: 95-98.

*Diagnosis.* Long but very slender, long-legged, pale colored spiders (body length ~6-8, leg 1: ~25-35); distinguished from other genera of the *Pholcus* group by combination of the following characters: worm-shaped abdomen, six eyes, usually with pigment in place of AME but no AME lenses, eye triads barely elevated, male chelicerae with pair of lateral apophyses distally (as in *Pebrforskskalia* and 'true' Old World *Leptopholcus*), male palpal trochanter apophysis with serrated tip (as in 'true' *Leptopholcus*), procurus 'knee' with transparent process (as in 'true' *Leptopholcus*), procurus without dorsal spines, with hinged process (e.g., Figs. 421, 432; in contrast to 'true' *Leptopholcus*), bulb with two processes of uncertain homology; epigynum barely sclerotized, without 'knob', tibia 4 always longer than tibia 2 (tibia 2/4: 0.85-0.90) (similar to *Leptopholcus*, in contrast to *Calapnita* and *Panjange*). *Description.* Body length usually ~6-8, carapace width 0.7-1.2. Carapace without thoracic furrow, AME reduced to pigment spots (without lenses) or entirely absent, eye triads barely elevated, clypeus and sternum unmodified, male chelicerae with pair of lateral apophyses distally (e.g., Fig. 423). Male palpal coxa unmodified, trochanter with ventral apophysis with serrated tip, femur with retrolateral apophysis proximally, ventrally usually enlarged, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee' (sometimes indistinct) with transparent process, without dorsal spines, with hinged process (e.g., Figs. 421, 432), bulb usually with two processes of uncertain homology (they are here considered homologues of the *Pholcus* embolus and uncus). Legs long, tibia 1 in males ~5.5-8.5, tibia 1 L/d ~70-95, tibia 4 always longer than tibia 2 (tibia 2/4: 0.85-0.90), legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-4%, tarsus 4 with single row of comb-hairs. Abdomen worm-shaped, male gonopore with four epandrous spigots, ALS with only two spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads slightly closer together. Body size as in males, legs slightly shorter (tibia 1: ~5.0-7.5). Epigynum very simple, barely sclerotized, without 'knob', internal genitalia with pair of round to elongate pore-plates. *Monophyly.* The cladistic analysis using equally weighted characters suggests three synapomorphies for *Micromerys* (Fig. 27, left cladogram) the first is weak (char. 5; very flat ocular area; also in *Calapnita*); the second is dubious (char. 26; absence of retrolateral palpal trochanter apophysis arising from joint to femur; it is a reversal and depends on *Micromerys*

being nested within Old World *Leptopholcus*); the third appears to be strong (char. 40; procurus with ventral hinged process; apparently independently derived in the New World genus *Metagonia*). In the analyses using successive (Fig. 27, right cladogram) and implied character weighting, the absence of the appendix (char. 53) is also considered a synapomorphy of *Micromerys*. A further potential synapomorphy (absence of tarsal pseudosegmentation, see Huber 2001) requires a detailed analysis of tarsus ultrastructure in *Micromerys* and *Leptopholcus*. Several other derived characters are shared with some but not all *Leptopholcus* (see Generic relationships below).

*Generic relationships.* *Micromerys* is clearly closely related to Old World ('true') *Leptopholcus* (see *Leptopholcus*, above). The cladistic analysis using equally weighted characters interprets the absence of the appendix (char. 53) as a synapomorphy uniting *Micromerys* with *L. tanikawai* and *podophthalmus*. A partly sclerotized embolus and ALS with only two

spigots may also point in this direction. The analyses using successive and implied character weighting resolve *Micromerys* and Old World *Leptopholcus* as sister taxa. A relatively long tibia 4 (relative to tibia 2) may be a further character to suggest a close relationship with *Leptopholcus*. Beyond that, the relationships of *Micromerys* with other genera in the *Pholcus* group of genera remain unsolved.

*Specific relationships.* Australian representatives (see Huber 2001) are united by a large, flat, and partly sclerotized embolus (char 47). Further potential synapomorphies are: (1) uncus small and triangular; (2) transparent process arising from procurus 'knee' with fringes.

*Natural history.* All species seem to be adapted to cryptic leaf-dwelling, but apart from some casual observations (Deeleman-Reinhold & Deeleman 1983, Deeleman-Reinhold 1986a) and label data (Huber 2001) no species has been studied in any detail.

*Distribution.* *Micromerys* seems to be restricted to New Guinea and tropical Australia (Fig. 418). It is

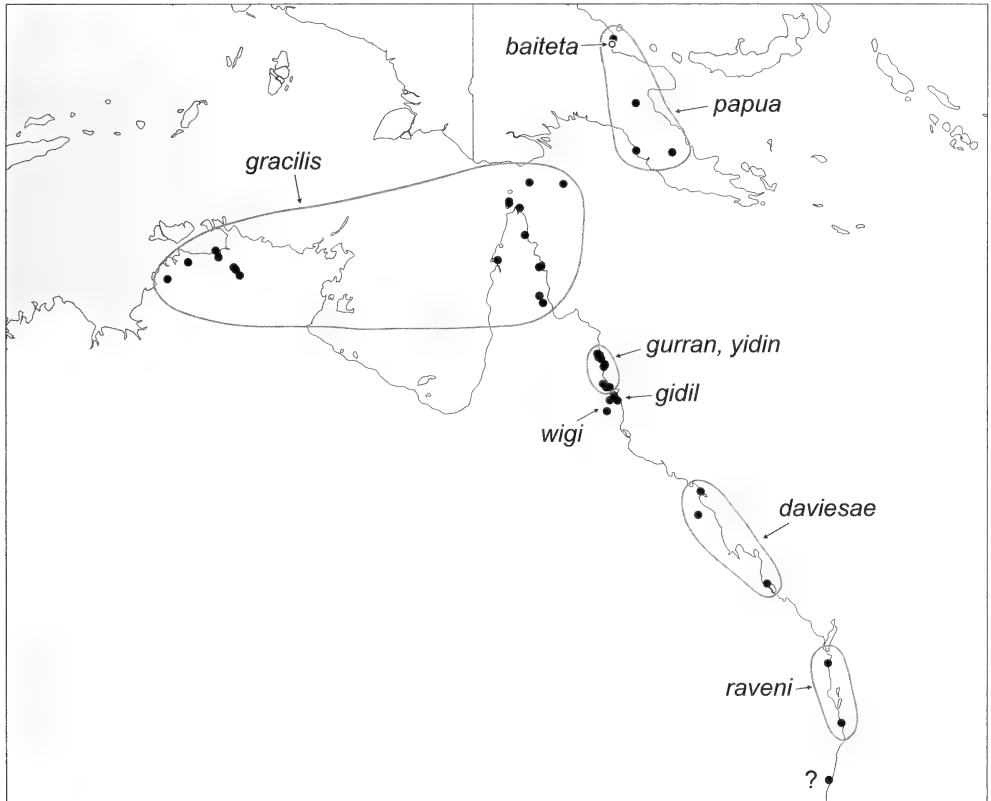


FIG. 418. Known distribution of *Micromerys*. Australian records are mostly from Huber (2001). The question mark denotes a *Mm. yidin* male that may be mislabeled (see Huber 2001).

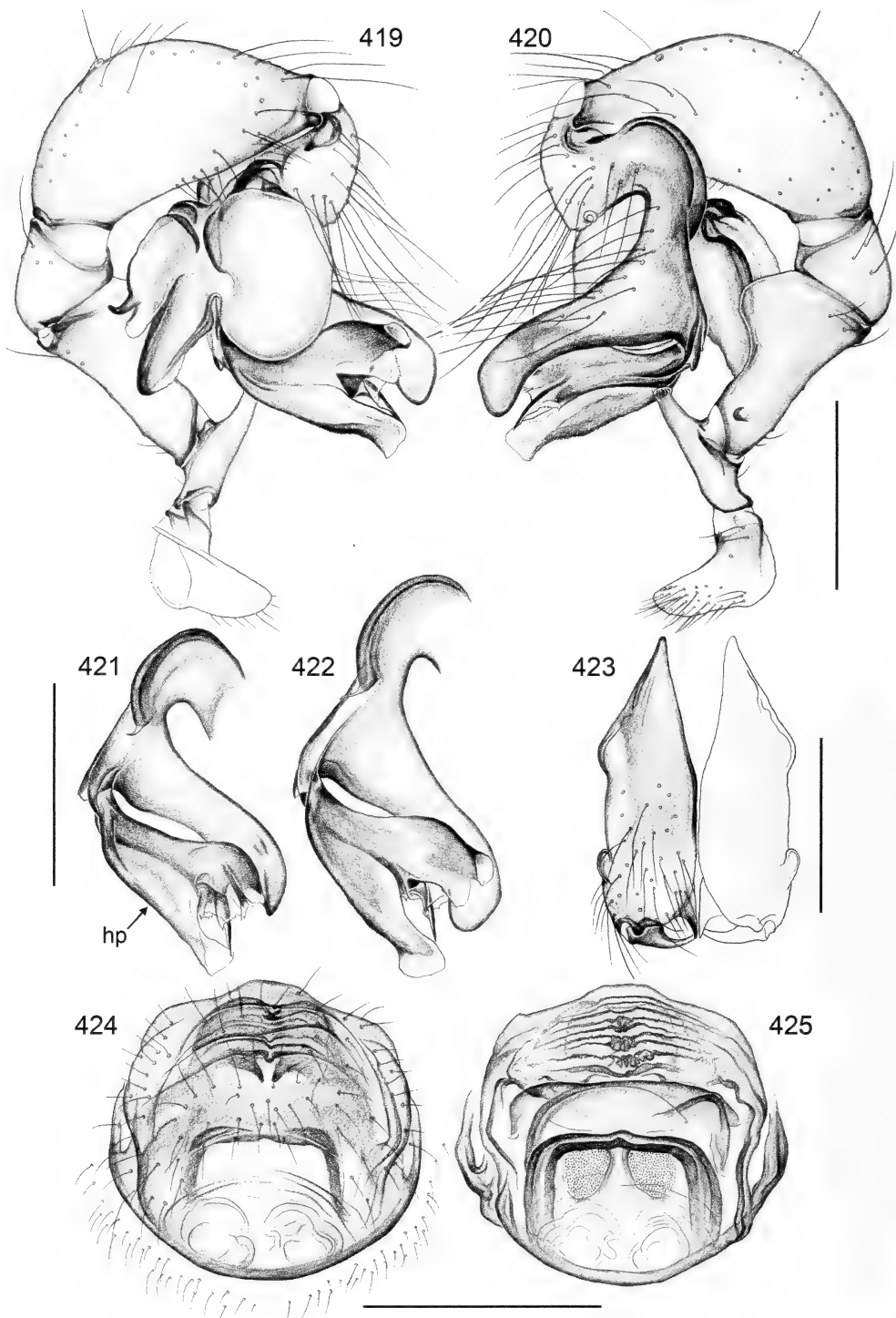


FIG. 419-425. *Micromerys papua*. 419, 420. Left male palp, prolateral and retrolateral views. 421, 422. Left procrusi, prolateral views, Yule Island (421) and Baiteta (422). 423. Male chelicerae, frontal view. 424, 425. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (419-422, 424, 425), 0.3 (423).



remarkable that *Leptopholcus* appears to be absent from this area.

**Composition.** The genus now includes nine species. Of these, seven occur in Australia and have been revised recently (Huber 2001); they are not treated below (except for some new records). Two species from Papua New Guinea are newly described.

*Micromerys papua* n. sp.

Figs. 236, 237, 277, 278, 419-425, 428, 429

**Type.** Male holotype from Papua New Guinea, Madang Province, Baiteta [5°01'S, 145°45'E], "canopy mission, AR64", no further data, in IRSB.

**Etymology.** The specific name is a noun in apposition, derived from the type locality.

**Diagnosis.** Distinguished from congeners by morphology of male palp (Figs. 419, 420; shapes of procurus and bulbal processes), and female internal genitalia (Figs. 278, 424, 425; shapes of pore plates and other internal structures).

**Male (holotype).** Total body length 7.2, carapace width 1.05. Leg 1: 9.6 + 0.5 + 8.5 + 15.0, tarsus missing, tibia 2: 6.6, tibia 3: 4.1, tibia 4: 7.8, tibia 2/4: 0.85, tibia 1L/d: 96. Habitus as in Figs. 236 and 237. Carapace ochre-yellow, ocular area and clypeus light brown, sternum ochre-yellow, legs pale ochre-yellow with brown patella area and tibia-metatarsus joints, abdomen monochromous whitish ochre. Distance PME-PME 400 µm, diameter PME 95 µm, distance PME-ALE 45 µm, no AME (some irregular pigment but no lenses). Ocular area barely elevated, each triad on low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 423, with pair of lateral apophyses very distally. Sternum about as wide as long (0.65), unmodified. Palps as in Figs. 419 and 420, coxa unmodified, trochanter with long ventral apophysis with fine distal ridges, femur proximally slender with retrolateral apophysis, distally with large ventral protrusion, procurus without spines, with complex hinged ventral process (Fig.

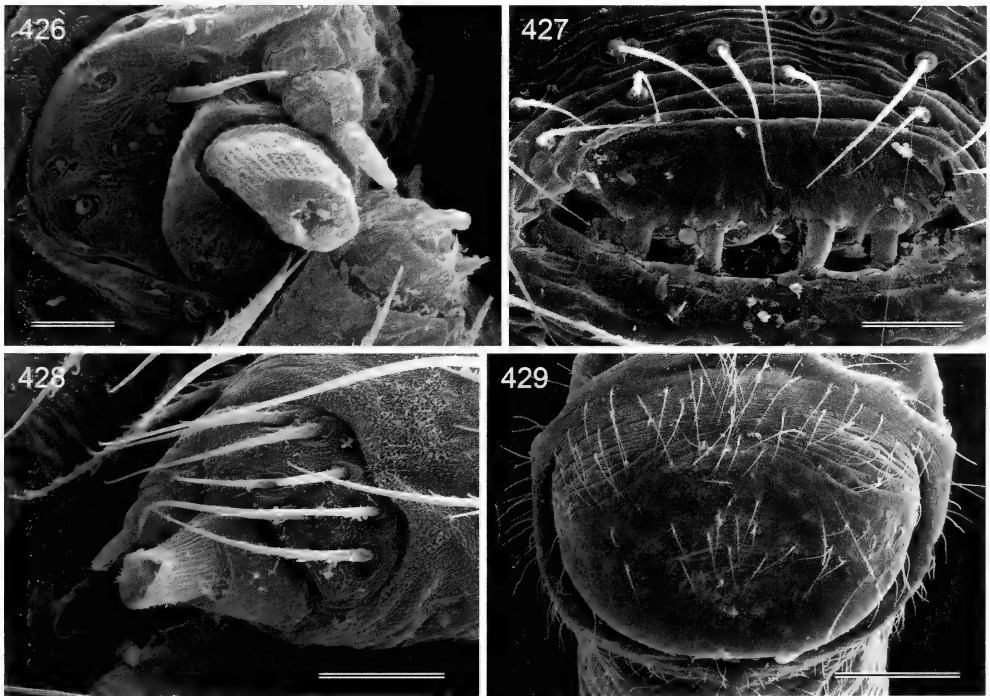


FIG. 426-429. *Leptopholcus tanikawai* (426, 427) and *Micromerys papua* (428, 429). 426. Male ALS. 427. Male gonopore. 428. Female ALS. 429. Epigynum. Scale lines: 200 µm (429), 30 µm (427), 20 µm (428), 10 µm (426).

422), bulb with two processes of uncertain homology. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not seen.

*Variation.* Some specimens appear generally artificially darkened; some with indistinct darker marks dorsally on abdomen. AME pigment absent to quite distinct, but apparently never with lenses. Tibia 1 in two other males: 8.3, 8.1. The males from Mt. Kainoi and from Yule Island differ slightly in the shape of the procurus (Fig. 421) and both bulbal processes are slightly shorter; they are therefore assigned tentatively; tibia 1: 7.1.

*Female.* In general similar to male but triads slightly closer together (distance PME-PME 355  $\mu\text{m}$ ); some females with darker marks prolaterally and retrolaterally on anterior femora (1 and 2). Tibia 1 in 4 females: 7.0-7.5. Epigynum very simple externally (Fig. 429), slightly protruding, weakly sclerotized internal arc visible through cuticle anteriorly (Figs. 277, 424); internal genitalia as in Figs. 278 and 425. Tibia 1 in the 3 females from Yule Island: 6.1 (all same length); in female from Northern Prov.: 6.5. ALS with only two spigots each (Fig. 428).

*Distribution.* Known from Madang, Morobe, Central and Northern Provinces, Papua New Guinea (Fig. 418).

*Material examined.* PAPUA NEW GUINEA: *Madang Province:* Baiteta: ♂ holotype above; same locality, 7♂14♀ (14 vials in IRSB ("AR2", "AR5", "AR7", "AR25-14", "AR 28", "AR49-12", "AR54", "AR62", "AR60", "T1", "T5", "T9").

*Assigned tentatively.* PAPUA NEW GUINEA: *Morobe:* Mt. Kainoi [-7°27'S, 146°40'E], 2300 m a.s.l., 1.i.1965 (J.L. Gressitt), 1♂ in BPBM. *Central Province:* Yule Island, Bereina [-8°48.8'S, 146°31.8'E], 9.iii.1986 (D.J. Court), 1♂2♀ in RMNH; same locality, 18.viii.1985 (D.J. Court), 1♀ in RMNH. *Northern (=Oro) Prov.:* Iora Creek [8°52'S, 147°45'E], in forest adjacent Myola Guest House, 2080 m a.s.l., 1.vii.1987 (D.J. Court), 1♀ in RMNH.

#### *Micromerys baiteta* n. sp.

Figs. 279, 280, 430-434

*Type.* Male holotype from Papua New Guinea, Madang Province, Baiteta [5°01'S, 145°45'E], "canopy mission, AR48-1", no further data, in IRSB.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 430, 431; shapes of

procurus and bulbal processes), and female internal genitalia (Figs. 280, 433, 434).

*Male* (holotype). Total body length 5.9, carapace width 0.75. Leg 1 missing, tibia 2: 5.2, tibia 3: 3.1, tibia 4: 5.9, tibia 2/4: 0.88. Habitus as in *Mm. papua* (cf. Figs. 236, 237). Prosoma and legs mostly pale ochre-yellow, patella area and tibia-metatarsus joints light brown, abdomen ochre to light brown, with indistinct darker marks dorsally. Distance PME-PME 250  $\mu\text{m}$ , diameter PME 90  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , no AME (some irregular pigment but no lenses). Ocular area not elevated, each triad on very low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in *Mm. papua* (cf. Fig. 423), with pair of lateral apophyses very distally. Sternum slightly wider than long (0.50/0.45), unmodified. Palps as in Figs. 430 and 431, coxa unmodified, trochanter with ventral apophysis with fine distal ridges, femur proximally slender with retrolateral apophysis, distally with large ventral protrusion, procurus without spines, with long transparent process arising from 'knee', with complex hinged ventral process (Fig. 432), bulb with two processes of uncertain homology. Legs without spines and curved hairs, few vertical hairs.

*Female.* In general similar to male but triads slightly closer together (distance PME-PME 220  $\mu\text{m}$ ); tibia 1: 5.7 (missing in other females). Epigynum very simple externally, slightly protruding, sclerotized internal structures visible through cuticle anteriorly (Figs. 279, 433); internal genitalia as in Figs. 280 and 434.

*Distribution.* Known from type locality only (Fig. 418).

*Material examined.* PAPUA NEW GUINEA: *Madang Province:* Baiteta: ♂ holotype above; same locality, 2♂3♀ (3 vials) in IRSB ("AR 47", "AR62", "AR64").

#### *Micromerys yidin* Huber, 2001

*Micromerys yidin* Huber 2001: 102-103, figs. 310-315.

*New records.* AUSTRALIA: *Queensland:* Cape Tribulation National Park (16°04'S, 145°28'E), sea level, rainforest, 24.-25.vii.1992 (C.E. Griswold), 4♂3♀ in CAS (9027152); Marradja Botanical Walk (16°08'S, 145°26'E), sea level, rainforest, 26.vii.1992 (C.E. Griswold), 1♂1♀ in CAS (9027182); Em-magen Creek [16°02.5'S, 145°27.7'E], rainforest, sea level, 26.vii.1992 (C.E. Griswold), 1♂ in CAS (9027178). Cape Tribulation, rainforest, 5 m a.s.l., 24.vii.1992 (J. & F. Murphy), 3♂3♀ in CJFM (21053). Cape Tribulation, rainforest, from leaves,

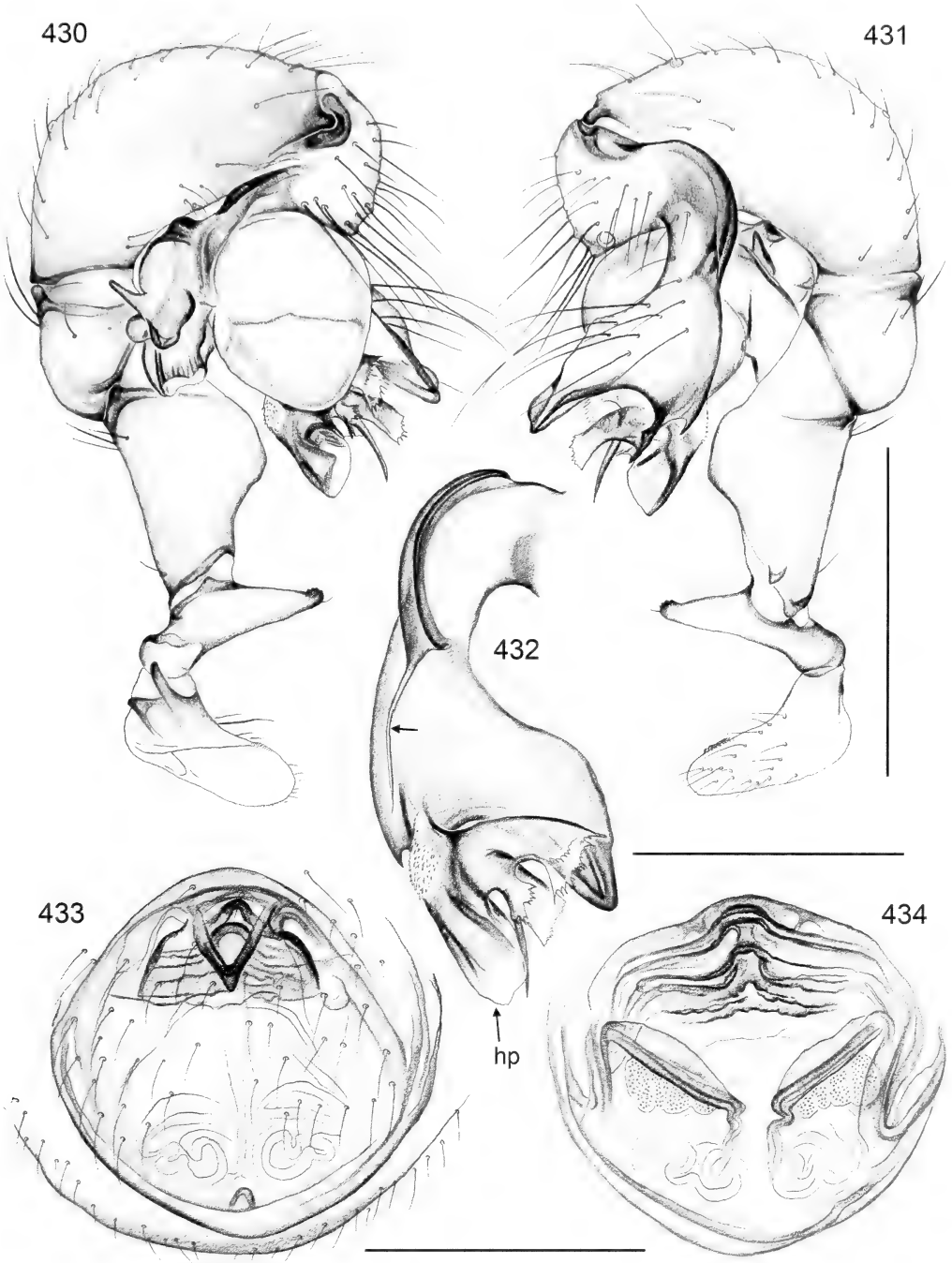


FIG. 430-434. *Micromerys baiteta*. 430, 431. Left male palp, prolateral and retrolateral views. 432. Left procurus, prolateral view (arrow points at transparent process arising from 'knee'). 433, 434. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (430, 431), 0.3 (432-434).

20.-22.vii.1992 (C.L. & P.R. Deeleman), 3♂2♀ in RMNH. Kuranda [16°49'S, 145°38'E], 500 m a.s.l., dry bush, 19.x.1997 (J. & F. Murphy), 1♂ in CJFM (22611).

*Micromerys wigi* Huber, 2001

*Micromerys wigi* Huber 2001: 105, figs. 319-321.

*New record.* AUSTRALIA: *Queensland*: Lake Barrine [17°15'S, 145°38'E], remnant rainforest, 1000 m a.s.l., 8.viii.1992 (J. & F. Murphy), 1♂ in CJFM (21404).

*Micromerys daviesae* Deeleman-Reinhold, 1986

*Micromerys daviesae* Deeleman-Reinhold 1986b: 209-210, figs. 10-17, 24, 59d, 60. Huber 2001: 107, figs. 325-333.

*New record.* AUSTRALIA: *Queensland*: Mt. Elliott N. Park S of Townsville [-19°24'S, 146°58'E], without date (J. Wunderlich), 1♂ in RMNH.

*Panjange* Deeleman-Reinhold & Deeleman, 1983

*Panjange* Deeleman-Reinhold & Deeleman 1983: 123-124. Type species by original designation: *Panjange lanthana* Deeleman-Reinhold & Deeleman 1983. Deeleman-Reinhold 1986a: 47, fig. 6. Deeleman-Reinhold 1986b: 220. Huber 2001: 118-119.

*Diagnosis.* Medium-sized, long-legged, pale colored spiders (body length ~3.5-5.5, leg 1: ~35-45); distinguished from other genera of the *Pholcus* group by combination of the following characters: cylindrical abdomen drawn into small cone dorso-posteriorly, eye triads on stalks, male chelicerae either with frontal apophyses divided into two parts (Figs. 472, 476) or without frontal (distal) apophyses (Figs. 438, 461, 468), procurus with distinctive series of ridges (e.g., Figs. 436, 479), bulb with appendix, without uncus, epigynum weakly sclerotized, with 'knob' on variably long scape (e.g., Figs. 439, 462, 473).

*Description.* Body length ~3.5-5.5, carapace width 0.9-1.2. Carapace without thoracic furrow, AME usually absent, rarely present (*Pa. lanthana*, *Pa. alba*) or reduced to pigment spots (*Pa. bako*), eye triads in males on stalks, sometimes with hook- or spine-like processes. Clypeus and sternum unmodified. Male chelicerae with pair of lateral apophyses, distal apophyses either present and divided into two parts (*Pa. nigrifrons* group; e.g., Fig. 476) or absent (*Pa. lanthana* and *Pa. cavicola* group). Male palpal coxa unmodified, trochanter with apophysis in variable position, femur either with distinctive finger-shaped

ventral apophysis (*Pa. nigrifrons* group) or barely modified, tarsus with variably long dorsal elongation, tarsal organ capsulate, procurus long, with distinctive series of ridges, without ventral 'knee', without dorsal spines, bulb with single apophysis (considered a homologue of the *Pholcus* appendix judging from its position), transparent embolus, without uncus. Legs long, tibia 1 in males ~8-11, tibia 1 L/d ~90-105, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-3%, tarsus 4 with single row of comb-hairs. Abdomen cylindrical, drawn into cone dorso-posteriorly, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, not on stalks, without or with tiny processes, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~6-10). Epigynum weakly sclerotized, with 'knob' on variably long scape, internal genitalia with pair of round to oval pore-plates.

*Monophyly.* All known *Panjange* species share the series of distinctive ridges on the procurus (char. 37). The analyses using implied weighting with K=1-2 suggest an additional synapomorphy: the secondary absence of an uncus (char. 48).

*Generic relationships.* The cladistic analyses using equal and successive character weighting suggest a close relationship between *Panjange* and a group of Southeast Asian and Sri Lankan species provisionally assigned to *Pholcus* (*Ph. ethagala* group) (Fig. 27). Both share male eye triads on stalks (char. 3). Both together are considered sister to another group of species assigned to *Pholcus* (*Ph. kerinci* group), based on the absence of an uncus (char. 48) (and on the dorsal elongation of the palpal tarsus in the analysis using successive character weighting: Fig. 27, char. 34). These analyses further suggest that all the groups above share with *Leptopholcus* and *Micromerys* the absence of distal cheliceral apophyses (char. 20). Since such apophyses are present in some *Panjange* species (*Pa. nigrifrons* group), I consider this node dubious. Instead, *Panjange* and the two *Pholcus* species groups above may be closer to the *Pholcus minang* species group, which shares male eye triads on stalks (char. 3) and has distal cheliceral apophyses divided as in the *Pa. nigrifrons* group of *Panjange* (char. 21). Such a close relationship between *Panjange* and the

*Ph. minang* and *Ph. ethagala* species groups is indeed supported by all the analyses using implied character weighting.

**Specific relationships.** Three species groups have been identified within *Panjange* by Deeleman-Reinhold & Platnick (1986), and I agree with their proposal. The *Pa. nigrifrons* group seems to be the most plesiomorphic. Its monophyly is supported by a finger-shaped ventral apophysis on the male palpal femur (char. 30) (e.g., Figs. 470, 490). In the cladistic analyses using equal and successive character weighting, the presence of distal cheliceral apophyses on the male chelicerae (char. 20) is also considered a synapomorphy but this is a dubious regain (see above) that is not supported under implied weighting. The other two species groups (*Pa. lanthana* and the *Pa. cavicola* group) share several derived characters: strongly elongated palps (char. 23), trochanter apophysis in retrolatero-dorsal position (chars. 24, 27), strongly elongated palpal tarsus (e.g., Figs. 437, 460), procurus 'knee' secondarily lost (char. 35), and epigynum with concertina-like scape (char. 68); they may also share the loss of

distal cheliceral apophyses on the male chelicerae (char. 20; only under implied weighting). *Panjange lanthana* appears to be sister to the *Pa. cavicola* group and could in theory be assigned to it, but its unique bulb (embolus appears to project in both directions; Fig. 436) justifies keeping it separate. Finally, the *Pa. cavicola* group is characterized by hook-like processes arising from the male eye stalks (char. 4), and possibly also by the low number of ridges on the male procurus (Figs. 460, 464, 465; only 2-3, versus >15 in *Pa. lanthana* and the *Pa. nigrifrons* group), but this character is unknown in *Pa. cavicola*.

**Natural history.** All species seem to be adapted to cryptic leaf-dwelling (Deeleman-Reinhold 1986a, Deeleman-Reinhold & Deeleman 1983).

**Distribution.** *Panjange* is widely distributed in insular Southeast Asia and northern Australia. The three species groups are also geographically separate: *Pa. lanthana* is the only species known from the Philippines; the *nigrifrons* group is the only group found on Borneo; the *Pa. cavicola* group is the only group found between Sulawesi and northern Australia (Fig. 435).

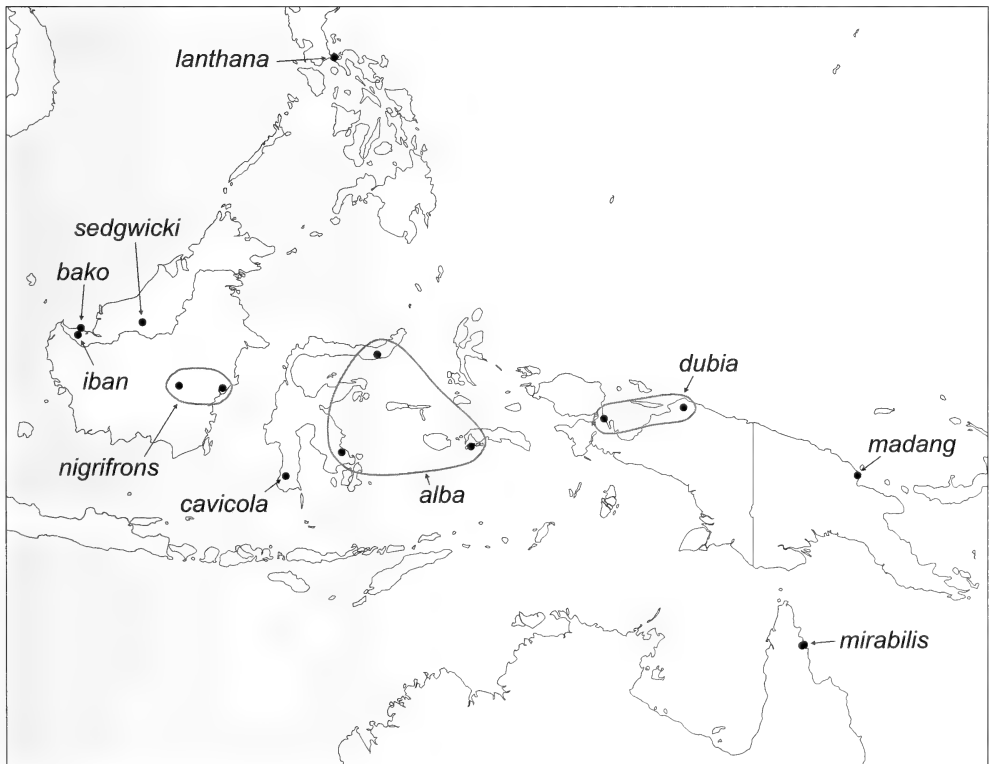


FIG. 435. Known distribution of *Panjange*.

*Composition.* The genus now includes ten species. Of these, six have been described in *Panjange* before (two of them are redescribed below), one is transferred from *Spermophora* (and redescribed), three are newly described. *Pa. lanthana* group: *Pa. lanthana* Deeleman-Reinhold & Deeleman, 1983; *Pa. cavicola* group: *Pa. cavicola* Deeleman-Reinhold & Deele-

man, 1983; *Pa. alba* Deeleman-Reinhold & Deeleman, 1983; *Pa. mirabilis* Deeleman-Reinhold, 1986; *Pa. madang* n. sp.; *Pa. dubia* (Kulczyński, 1911) n. comb.; *Pa. nigrifrons* group: *Pa. nigrifrons* Deeleman-Reinhold & Deeleman, 1983; *Pa. iban* n. sp.; *Pa. bako* n. sp.; *Pa. segdwicki* Deeleman-Reinhold & Platnick, 1986.

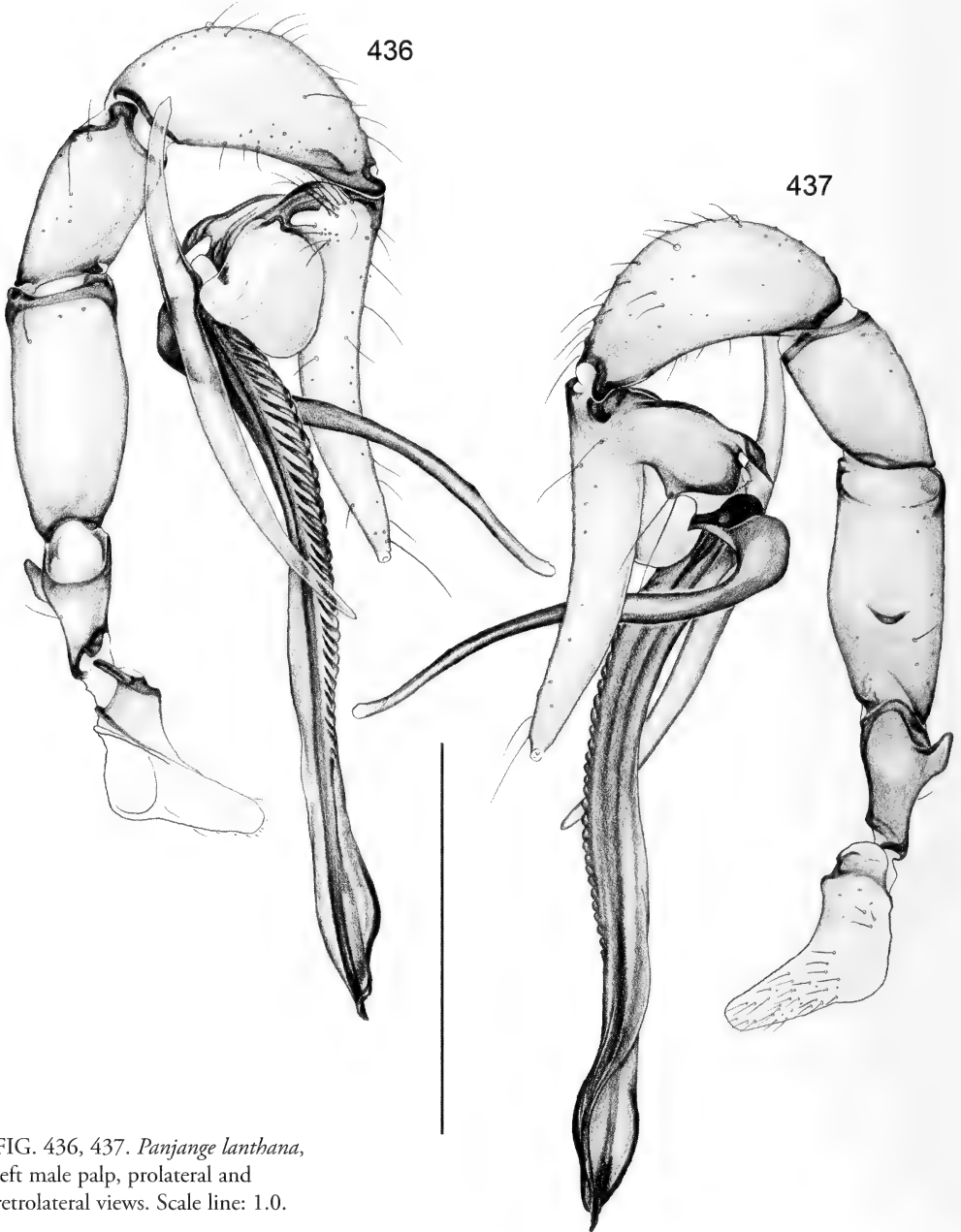


FIG. 436, 437. *Panjange lanthana*, left male palp, prolatateral and retrolateral views. Scale line: 1.0.

*Panjange lanthana* Deeleman-Reinhold & Deeleman, 1983

Figs. 436-458, 765, 766, 786, 788

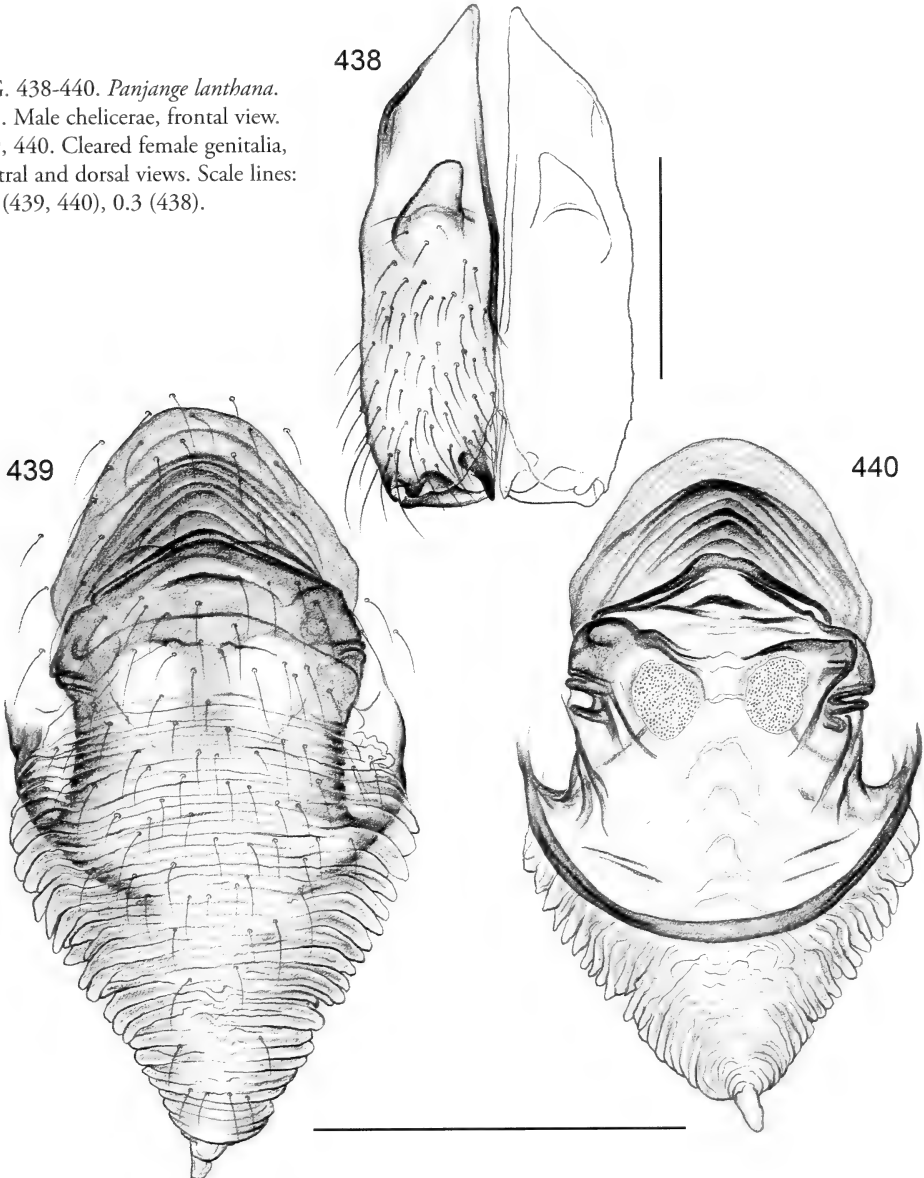
*Panjange lanthana* Deeleman-Reinhold & Deeleman 1983: 124-126, figs. 1-9.

*Types.* Female holotype and 6♂5♀ paratypes (see Note below) from Philippines, Luzon, Quezon National Park, "near Antimona" [Atimonan, -13°59'N,

121°58'E], 200 m a.s.l., under spotted leaves of Araceae and under large hairy leaves, 12./13.x.1979 (P.R. Deeleman), in RMNH (6♂5♀ paratypes examined).

*Note.* The original publication lists only 5♂2♀ paratypes. Since the specimens examined below are labeled with the type data, I assume the number of types in the original publication is either mistaken or specimens were added later.

FIG. 438-440. *Panjange lanthana*.  
438. Male chelicerae, frontal view.  
439, 440. Cleared female genitalia,  
ventral and dorsal views. Scale lines:  
0.5 (439, 440), 0.3 (438).



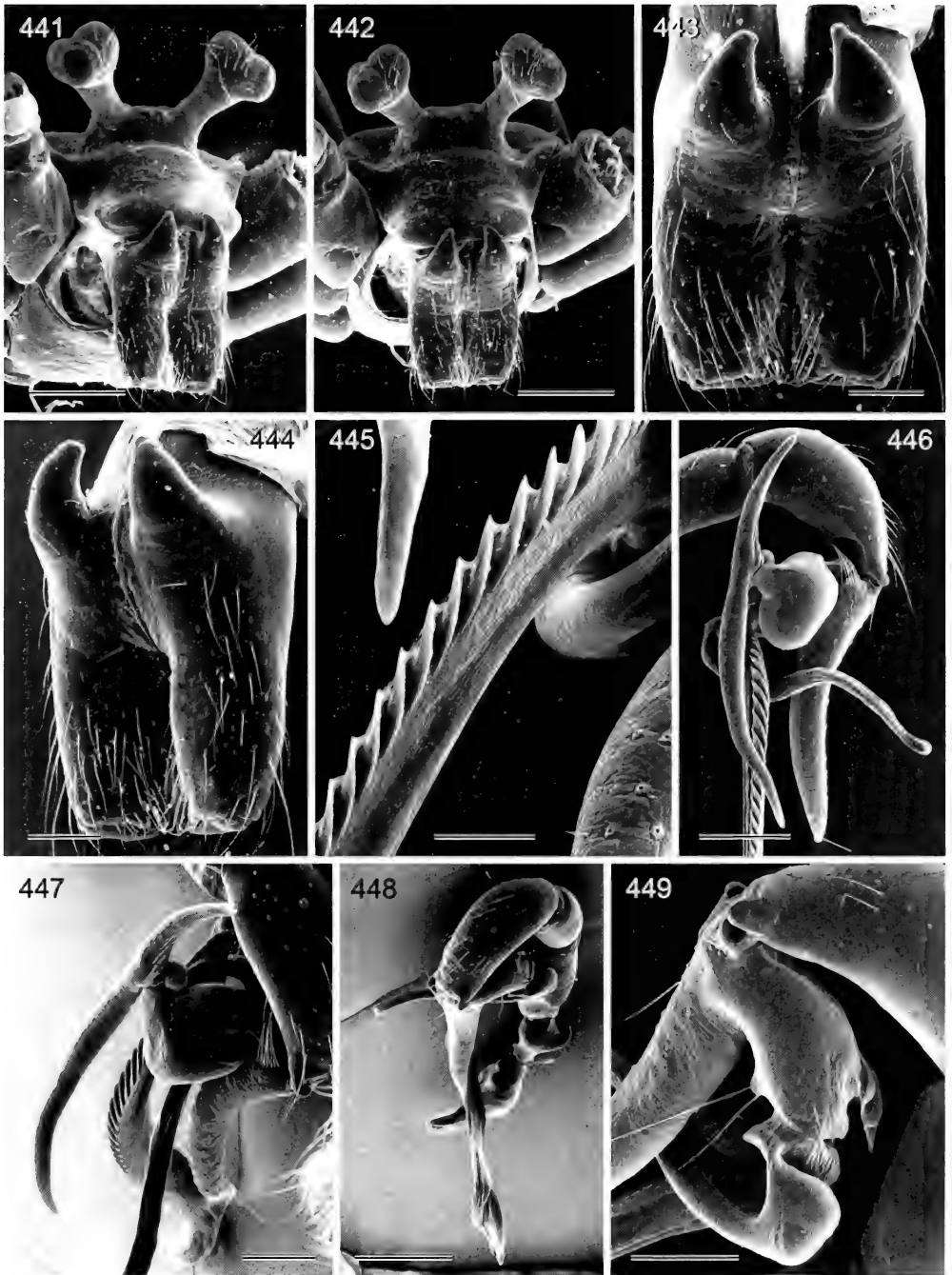


FIG. 441-449. *Panjange lanthana*. 441, 442. Male prosoma, oblique and frontal views. 443, 444. Male chelicerae, frontal and oblique views. 445. Left procurrus, prolatero-dorsal view. 446, 447. Left bulbal processes, prolateral and proximo-ventral views. 448. Left palp, retrolatero-dorsal view. 449. Left palpal tarsus, retrolateral view. Scale lines: 500  $\mu\text{m}$  (448), 300  $\mu\text{m}$  (441, 442, 446), 200  $\mu\text{m}$  (447, 449), 100  $\mu\text{m}$  (443-445).



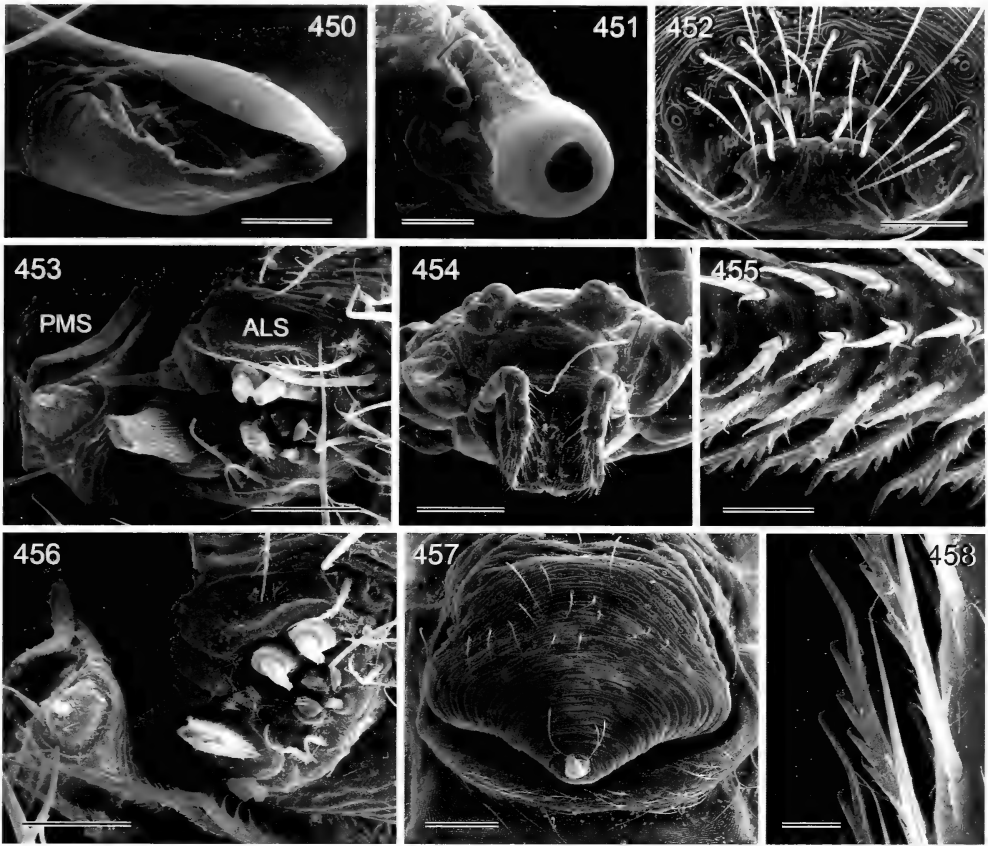


FIG. 450-458. *Panjange lanthana*. 450. Tip of putative embolus. 451. Palpal tarsal organ. 452. Male gonopore. 453. Male ALS and PMS. 454. Female prosoma, frontal view. 455, 458. Comb-hairs on right female tarsus 4. 456. Female ALS and PMS. 457. Epigynum. Scale lines: 300  $\mu\text{m}$  (454), 100  $\mu\text{m}$  (457), 40  $\mu\text{m}$  (452), 20  $\mu\text{m}$  (450, 451, 453, 455, 456), 10  $\mu\text{m}$  (458).

**Diagnosis.** Easily distinguished from congeners by combination of male eye stalks (Fig. 441), male palpal morphology (Figs. 436, 437; dorsal trochanter apophysis, procurus, bulbal process extending in two directions), male cheliceral armature (Fig. 438; only proximal apophyses in frontal position), and female genitalia (Figs. 439, 457, 786; distinctive conical protrusion with distal 'knob').

**Male** (paratype). Total body length 4.7, carapace width 0.95. Leg 1: 43.5 (10.0 + 0.5 + 10.1 + 20.9 + 2.0), tibia 2: 6.3, tibia 3: 3.3, tibia 4: 5.1; tibia 1 L/d: 104. Habitus as in Figs. 765 and 766. Carapace ochre-yellow, anteriorly beside ocular area brown, ocular area slightly darkened except eye-stalks, upper part of clypeus also darkened, sternum whitish, legs

whitish, patella area and tibia-metatarsus joints brown, abdomen pale ochre-gray with some indistinct darker marks dorsally and laterally, ventrally monochromous. Distance PME-PME 380  $\mu\text{m}$ , diameter PME 105  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 25  $\mu\text{m}$ , diameter AME 20  $\mu\text{m}$ . Each triad on long stalk, without pointed process (Figs. 441, 442), no special hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Figs. 438, 443, 444, with pair of large modifications proximally, no distal frontal apophyses. Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 436 and 437, coxa unmodified, trochanter with retrolatero-dorsal apophysis, femur with indistinct retrolateral bulge, patella long, tibia long but

not cylindrical, tarsus strongly elongated dorsally, tarsal organ capsulate (Fig. 451), procurus consisting of two long sclerites, both appear hinged to tarsus very proximally, one of them with many regular ridges (Fig. 445), bulb rather small with unique structure projecting in opposing directions (Fig. 446; the dorsal part is probably the embolus: Fig. 450). Legs without spines and curved hairs, few vertical hairs (many hairs missing). Trichobothria and pseudosegments not seen. Gonopore with four epiaudrous spigots (Fig. 452); ALS with eight spigots each (Fig. 453).

*Variation.* No variation seen in genitalia. Legs 1 missing in all other paratypes.

*Female.* In general similar to male but triads barely elevated, closer together (Fig. 454; distance PME-PME 255  $\mu$ m). Legs 1 missing in all females; tarsus 4 with single row of comb-hairs (Figs. 455, 458). Epigynum with strongly folded conical protrusion with distal 'knob' (Figs. 439, 457), only laterally slightly stronger sclerotized (Fig. 786); internal genitalia as in Figs. 440 and 788. ALS with eight spigots each (Fig. 456).

*Distribution.* Known from type locality only (Fig. 435).

*Material examined.* PHILIPPINES: Luzon: Quezon National Park: 6♂5♀ paratypes above.

*Panjange alba* Deeleman-Reinhold & Deeleman, 1983

Figs. 459-463, 769, 790

*Panjange alba* Deeleman-Reinhold & Deeleman 1983: 129-130, figs. 22-26. Murphy & Murphy 2000: 254, fig. 47.9.

*Types.* Female holotype and 3♀ paratypes from Indonesia, Sulawesi, Sulawesi Tenggara, 40 km W of Kendari, near Sampara [ $-3^{\circ}55'S$ ,  $122^{\circ}18'E$ ], edge of woodland, on underside of leaves of shrub, 12.vii.1980 (P.R. Deeleman), in RMNH (2 paratypes examined).

*Diagnosis.* Distinguished from similar species with hooked processes on male eye stalks (Fig. 769) and extremely long palpal tarsus elongations (*Pa. mirabilis*, *Pa. madang*, *Pa. dubia*) by details of procurus (Figs. 459, 460; ridges very proximal, distal structures) and presence of AME.

*Male* (Ambon). Total body length 5.0, carapace width 1.0. Leg 1 missing, tibia 2: 6.4, tibia 3: 3.5, tibia 4: 5.2. Habitus as in *Pa. dubia* (cf. Figs. 767, 768). Carapace ochre-yellow with weak V-mark

posteriorly, ocular area and eye-stalks brown, upper part of clypeus also darkened, sternum whitish, legs pale ochre-yellow, patella area and tibia-metatarsus joints brown, abdomen ochre-gray with some indistinct darker marks dorsally and laterally, ventrally monochromous. Distance PME-PME 425  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 10  $\mu$ m. Each triad on long stalk, each stalk with hooked process (Fig. 769) and additional small pointed projection anterior of PME, no special hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 461, with pair of large lateral modifications, no frontal distal apophyses. Sternum wider than long (0.6/0.5), unmodified. Palps as in Figs. 459 and 460, coxa unmodified, trochanter with retrolatero-dorsal apophysis, femur cylindrical with small dorsal bulge proximally, patella and tibia cylindrical, tarsus extremely elongated dorsally, procurus long, with two distinctive ventral ridges in very proximal position, distally complex, bulb elongated with two long processes, one slightly tapering (putative embolus), the other widened distally with small hook (putative appendix). Legs without spines and curved hairs, few vertical hairs.

*Variation.* In male from Dumoga small projections anterior of PME absent, but palpal structures appear identical. Tibia 1 in this male: 8.8, tibia 2: 5.9, tibia 1 L/d: 99, retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium apparently absent on tibia 1, present on other tibiae; tarsus 1 missing. The second male from Ambon lacks both legs 1.

*Female.* In general similar to male but triads barely elevated, closer together (distance PME-PME 320  $\mu$ m); tibia 1 in 5 females: 7.0-8.0 (mean 7.7). Epigynum with strongly folded, weakly sclerotized scape (Fig. 462), only laterally slightly darkened (Fig. 790); internal genitalia as in Fig. 463.

*Distribution.* Known from Sulawesi and Ambon Island (Fig. 435). The BPBM has an unidentified female specimen from Seram Island that may also belong to this species.

*Material examined.* INDONESIA-SULAWESI: Sulawesi Tenggara: 40 km W of Kendari, near Sampara, 2♀ paratypes above. Sulawesi Utara: Dumoga, near Doloduo [ $-0^{\circ}31'N$ ,  $123^{\circ}55'E$ ], primary forest, from leaves, 27.-30.vii.1982 (C.L. & P.R. Deeleman), 1♂2♀ in RMNH.

INDONESIA-MALUKU ISLANDS: Maluku: Ambon Island [ $-3^{\circ}40'S$ ,  $128^{\circ}10'E$ ], "Hila", forest, 29.-31.i.1995 (C.L. & P.R. Deeleman), 1♂4♀ in

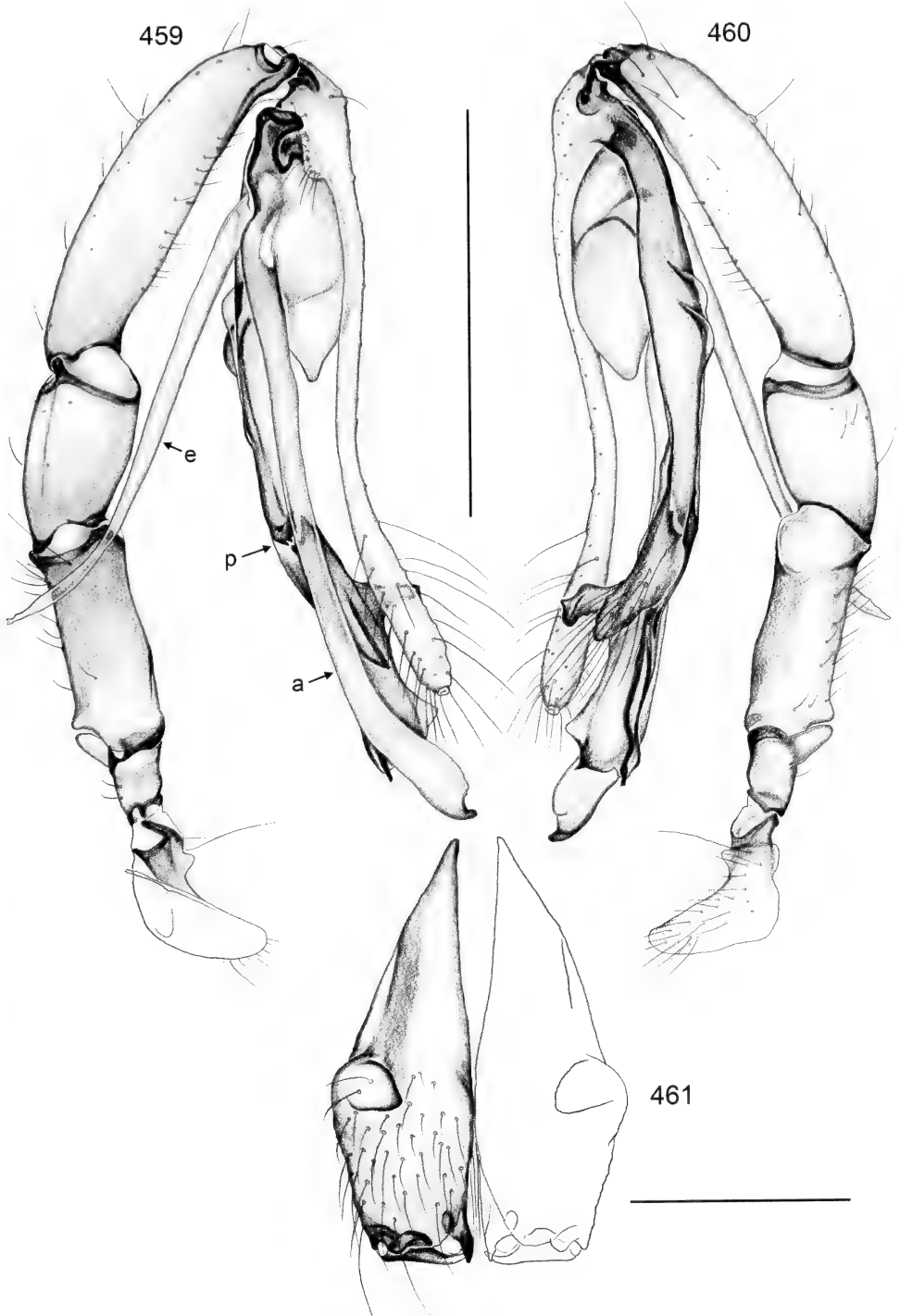


FIG. 459-461. *Panjange alba*. 459, 460. Left male palp, prolateral and retrolateral views. 461. Male chelicerae, frontal view. Scale lines: 1.0 (459, 460), 0.3 (461).

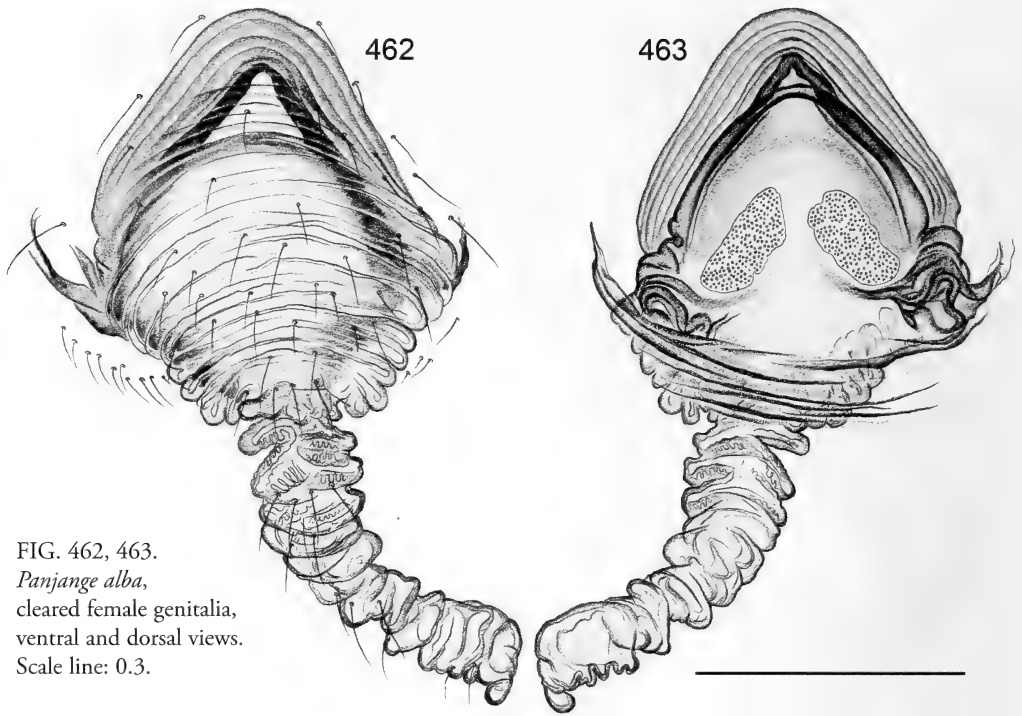


FIG. 462, 463.  
*Panjange alba*,  
cleared female genitalia,  
ventral and dorsal views.  
Scale line: 0.3.

RMNH; Ambon Island, "Amahusa", trees, from leaves, 1.ii.1995 (C.L. & P.R. Deeleman), 1♂3♀ in RMNH.

*Panjange madang* n. sp.

Figs. 464, 466-468, 787, 789

*Type.* Male holotype from Papua New Guinea, Madang Province, Baiteta [5°01'S, 145°45'E], "canopy mission, XC", no further data, in IRSB.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species with hooked processes on male eye stalks and extremely long palpal tarsus elongations (*Pa. alba*, *Pa. mirabilis*, *Pa. dubia*) by details of procurus (Fig. 464, distal structures); from *Pa. alba* also by absence of AME; from *Pa. dubia* also by shorter palpal segments (compare Figs. 464 and 465).

*Male* (holotype). Total body length 2.9, carapace width 0.9. Legs 1 and 2 missing, tibia 3: 2.8, tibia 4: 4.3. Habitus as in *Pa. dubia* (cf. Figs. 767, 768). Carapace ochre-yellow with distinctive pattern of radiating brown marks, ocular area with median

brown mark, clypeus only upper part slightly darkened, sternum homogeneously brown, legs whitish, patella area and tibia-metatarsus joints brown, abdomen ochre-gray with many dark marks dorsally, ventrally monochromous. Distance PME-PME 290 µm, diameter PME 115 µm, distance PME-ALE 35 µm, no trace of AME. Each triad on long stalk, each stalk with hooked process, no special hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 468, with pair of large lateral modifications, no frontal distal apophyses. Sternum wider than long (0.55/0.50), unmodified. Palps as in Fig. 464, coxa unmodified, trochanter with retro-latero-dorsal apophysis, femur cylindrical with small dorsal bulge proximally, patella and tibia cylindrical, tarsus extremely elongated dorsally, procurus long, with three distinctive ventral ridges more distally than in *Pa. alba*, distally complex, bulb elongated with two long processes, one slightly tapering (putative embolus), the other widened distally with small hook (putative appendix).

*Variation.* In the two other males the legs are also heavily fragmented and/or missing. Femur 1 in one male: 7.6.

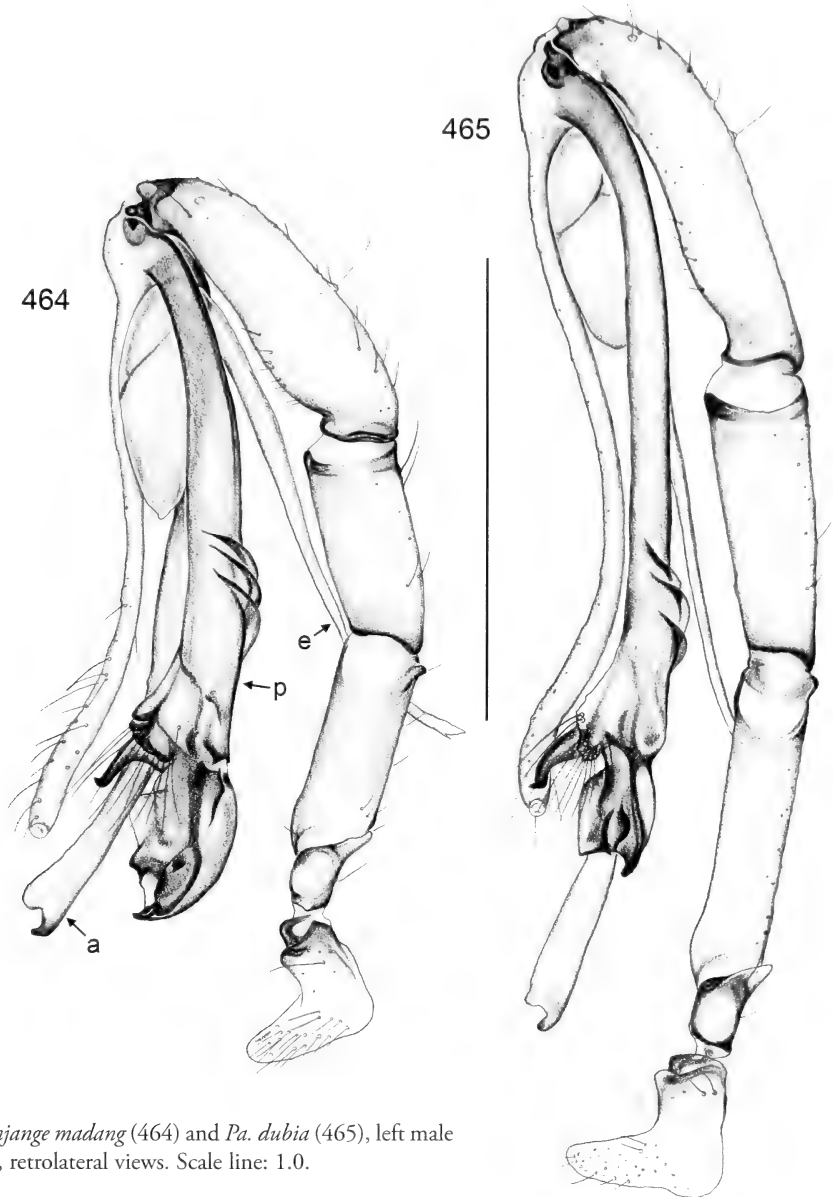


FIG. 464, 465. *Panjange madang* (464) and *Pa. dubia* (465), left male palps at same scale, retrolateral views. Scale line: 1.0.

*Female.* In general similar to male but triads barely elevated, closer together (distance PME-PME 140  $\mu$ m); tibia 1: 6.1 (missing in other females). Epigynum with strongly folded, weakly sclerotized scape (Fig. 466), only laterally slightly darkened (Fig. 787); internal genitalia as in Figs. 467 and 789.

*Distribution.* Known from type locality only (Fig. 435).

*Material examined.* PAPUA NEW GUINEA: *Madang Prov.*: Baiteta: ♂ holotype above; same data, 1♂1♀ in IRSB; same data but "XF", "XG", "AR4", "AR32", 1♂4♀ (4 vials) in IRSB.

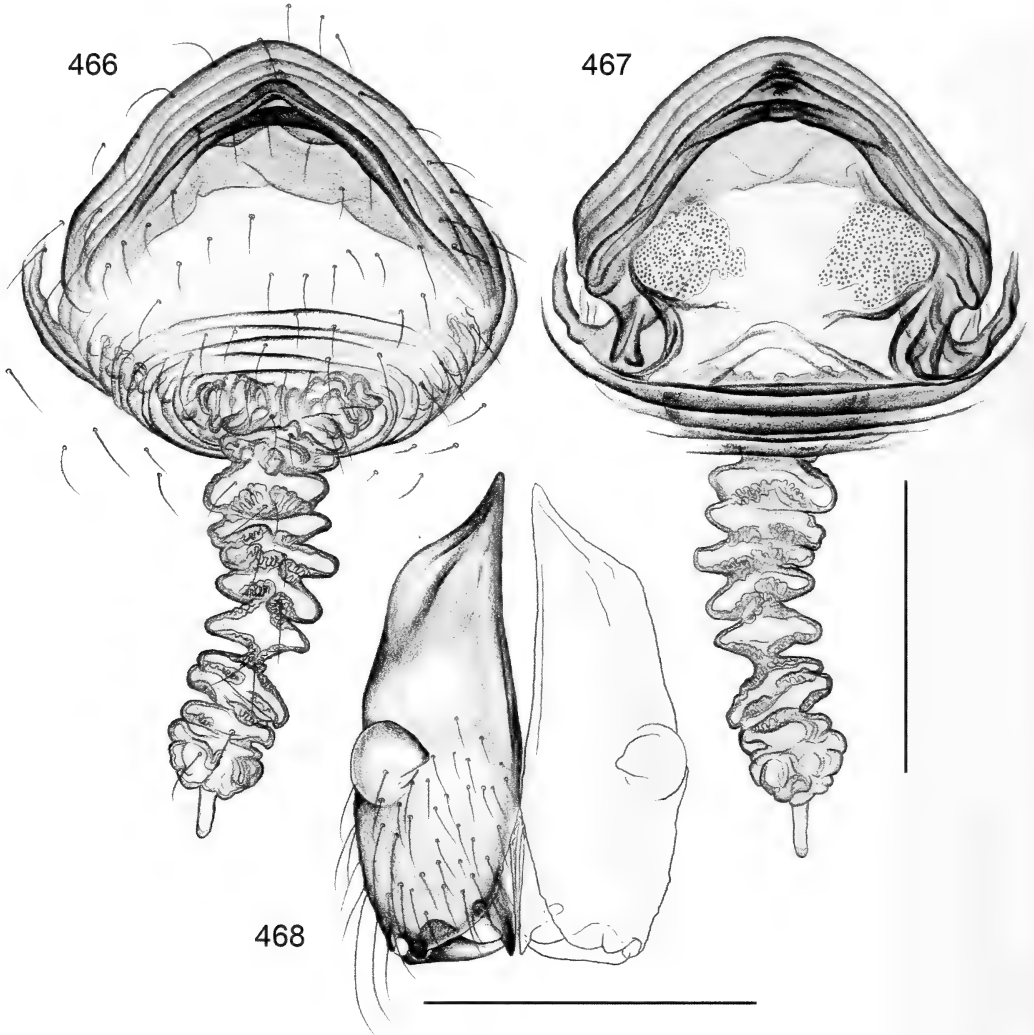


FIG. 466-468. *Panjange madang*. 466, 467. Cleared female genitalia, ventral and dorsal views. 468. Male chelicerae, frontal view. Scale lines: 0.3.

*Panjange dubia* (Kulczyński, 1911) n. comb.

Figs. 465, 767, 768

*Spermophora* (?) *dubia* Kulczyński 1911: 435-436, pl. 289, fig. 11.

*Type*. Female holotype from Indonesia, Western New Guinea, Irian Jaya Barat, Wendesi [2°25'S, 134°13'E], 20.-30.vii.1903, collector not given, in MZPW, examined.

*Note*. The male specimen below is tentatively considered conspecific with the female described by Kulczyński (1911), based on general similarity and geographic closeness. Further collecting in Western New Guinea is necessary to test this assumption.

*Diagnosis*. Distinguished from similar species with hooked processes on male eye stalks and extremely long palpal tarsus elongations (*Pa. alba*, *Pa. mirabilis*, *Pa. madang*) by details of procurus (Fig. 465, distal

structures); from *Pa. alba* also by absence of AME; from *Pa. madang* also by longer palpal segments (compare Figs. 464 and 465).

*Male* (Bagusa). Total body length 4.0, carapace width 0.95. Legs 1 and 2 missing, tibia 3: 3.4, tibia 4 missing. Habitus as in Figs. 767 and 768. Carapace ochre-yellow with distinctive pattern of radiating brown marks (similar to *Pa. madang* but less extensive), ocular area with median brown mark, clypeus only upper part slightly darkened, sternum brown with some light marks, leg 3 whitish, patella area and tibia-metatarsus joint brown, abdomen ochre-gray with some darker marks dorsally and laterally, ventrally monochromous. Distance PME-PME 380  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Each triad on long stalk, each stalk with hooked process, no special hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in *Pa. madang* (cf. Fig. 468). Sternum wider than long (0.65/0.50), unmodified. Palps as in Fig. 465, coxa unmodified, trochanter with retrolatero-dorsal apophysis, femur, patella and tibia very long, cylindrical, tarsus extremely elongated dorsally, procurus long, with three distinctive ventral ridges in very distal position, distally complex, bulb elongated with two long processes, one slightly tapering (putative embolus), the other widened distally with small hook (putative appendix).

*Female*. In general similar to male but triads barely elevated, closer together (distance PME-PME 205  $\mu$ m); tibia 1: 8.9. Epigynum with strongly folded, weakly sclerotized scape, only laterally slightly darkened; very similar to *Pa. alba* and *Pa. madang* (cf. Figs. 462, 466, 787, 790). The epigynum of the holotype was not cleared.

*Distribution*. Known from two localities in Western New Guinea (Fig. 435).

*Material examined*. INDONESIA-WESTERN NEW GUINEA: *Irian Jaya Barat*: Wendesi: ♀ holotype above. *Papua Barat*: Bagusa, along Mamberano River, SW of Rombebai Lake [-1°55'S, 137°50'E], -x.1982 (Y. Laumonier), 1♂ in RMNH.

*Panjange iban* n. sp.

Figs. 469-488, 770-772, 791, 792

*Type*. Male holotype from Malaysia-Borneo, Sarawak, Kuching, Semengoh Arboretum [-1°24.1'N, 110°19.0'E, 60 m a.s.l.], from leaves, 23.iii.-2. iv.1985 (C.L. & P.R. Deeleman), in RMNH.

*Etymology*. Named for the Iban, a branch of the Dayak peoples of Borneo whose population is con-

centrated in Sarawak, Brunei, and in West Kalimantan; noun in apposition.

*Diagnosis*. Distinguished from similar species with finger-shaped apophysis on male palpal femur (*Pa. nigrifrons*, *Pa. sedgwicki*, *Pa. bako*) by morphology of procurus (Figs. 470, 471); from *Pa. sedgwicki* and *Pa. bako* also by male eye turrets without pointed process (Fig. 475).

*Male* (holotype). Total body length 4.3, carapace width 0.95. Leg 1: 42.9 (9.2 + 0.5 + 9.5 + 21.0 + 2.7), tibia 2 damaged, tibiae 3 and 4 missing, tibia 1L/d: 98. Habitus as in Figs. 770 and 771. Carapace ochre-yellow, ocular area and clypeus brown, sternum pale ochre-yellow, legs pale ochre-yellow with brown patella area and tibia-metatarsus joints, abdomen ochre-gray with some indistinct darker marks dorsally and laterally, ventrally monochromous (cf. female, Fig. 772). Distance PME-PME not measured (one eye-stalk slightly damaged), diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Each triad on short stalk (Fig. 475), without pointed process but with tiny cone close to PME, no special hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 472, distal frontal apophyses divided, apparently without modified hairs (Fig. 476), some stronger hairs medially, lateral apophyses proximally, weakly sclerotized. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 469 and 470, coxa unmodified, trochanter with low retrolateral hump and long ventral apophysis, femur with distinctive ventral apophysis, procurus with many regular ventral ridges, without spines, entire distal part apparently hinged, complex (Figs. 477-479), tarsal organ capsulate (Fig. 481), bulb slightly elongate with long weakly sclerotized tubular embolus with distal fringes (Fig. 480) and sclerotized process (putative appendix). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, seen on tibia 2; tarsus 1 apparently with >30 pseudosegments, barely visible in dissecting microscope. Gonopore with epiandrous spigots (Fig. 482); ALS with eight spigots each (Fig. 484).

*Variation*. Marks on abdomen variably distinct. Measurements of another male: distance PME-PME 355  $\mu$ m; tibia 1: 9.9, tibia 2: 6.1, tibia 3: 3.4, tibia 4: 5.3. Tibia 1 in 3 other males: 9.3, 10.2, 10.5.

*Female*. In general similar to male but triads not on stalks, closer together (distance PME-PME 230  $\mu$ m); clypeus almost black. Tibia 1 in 9 females: 7.2-8.3 (mean 7.8). Epigynum weakly sclerotized, complex

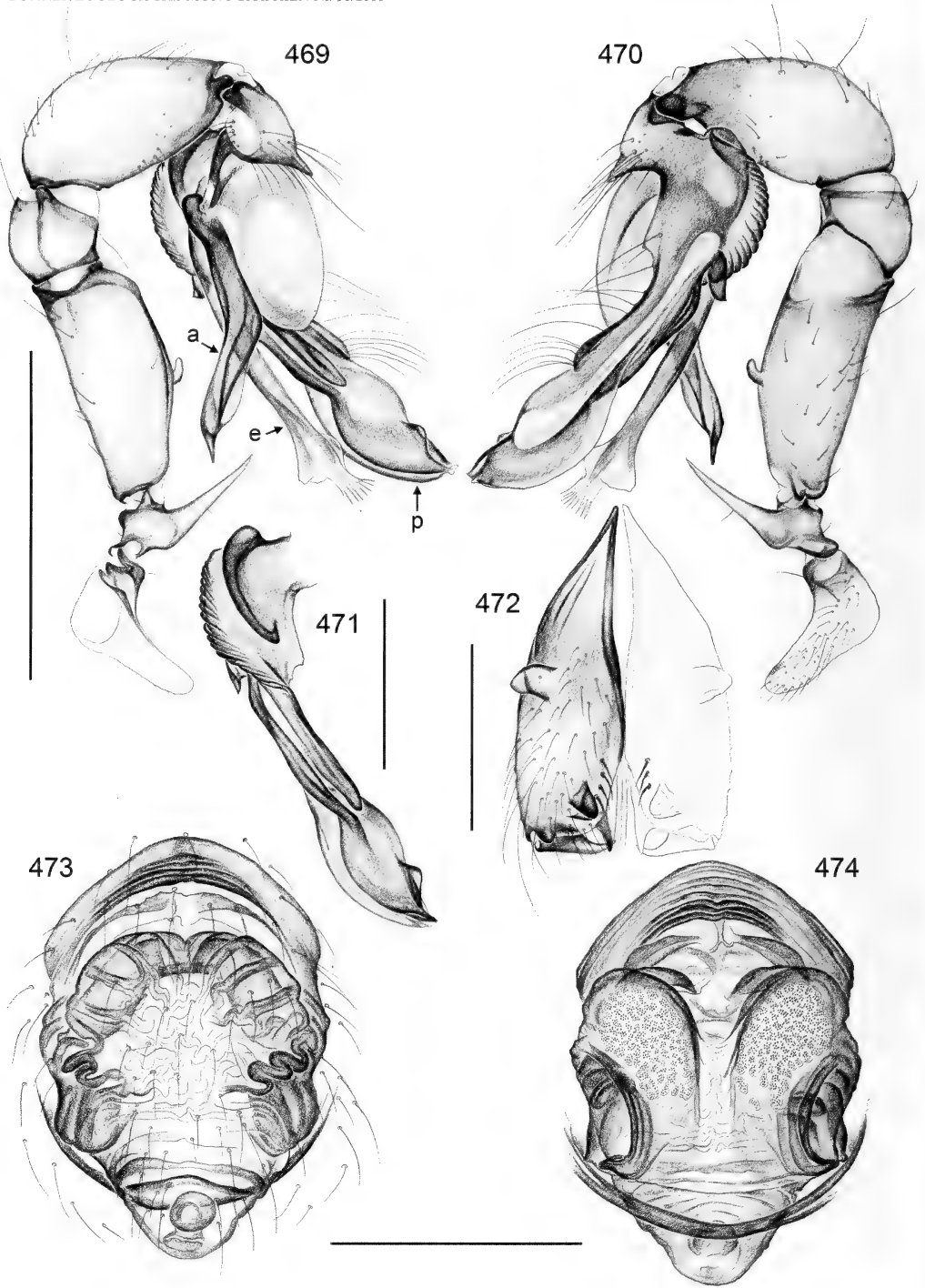


FIG. 469-474. *Panjange iban*. 469, 470. Left male palp, prolateral and retrolateral views. 471. Left procurus, prolateral view. 472. Male chelicerae, frontal view. 473, 474. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (469, 470), 0.5 (471, 473, 474), 0.3 (472).



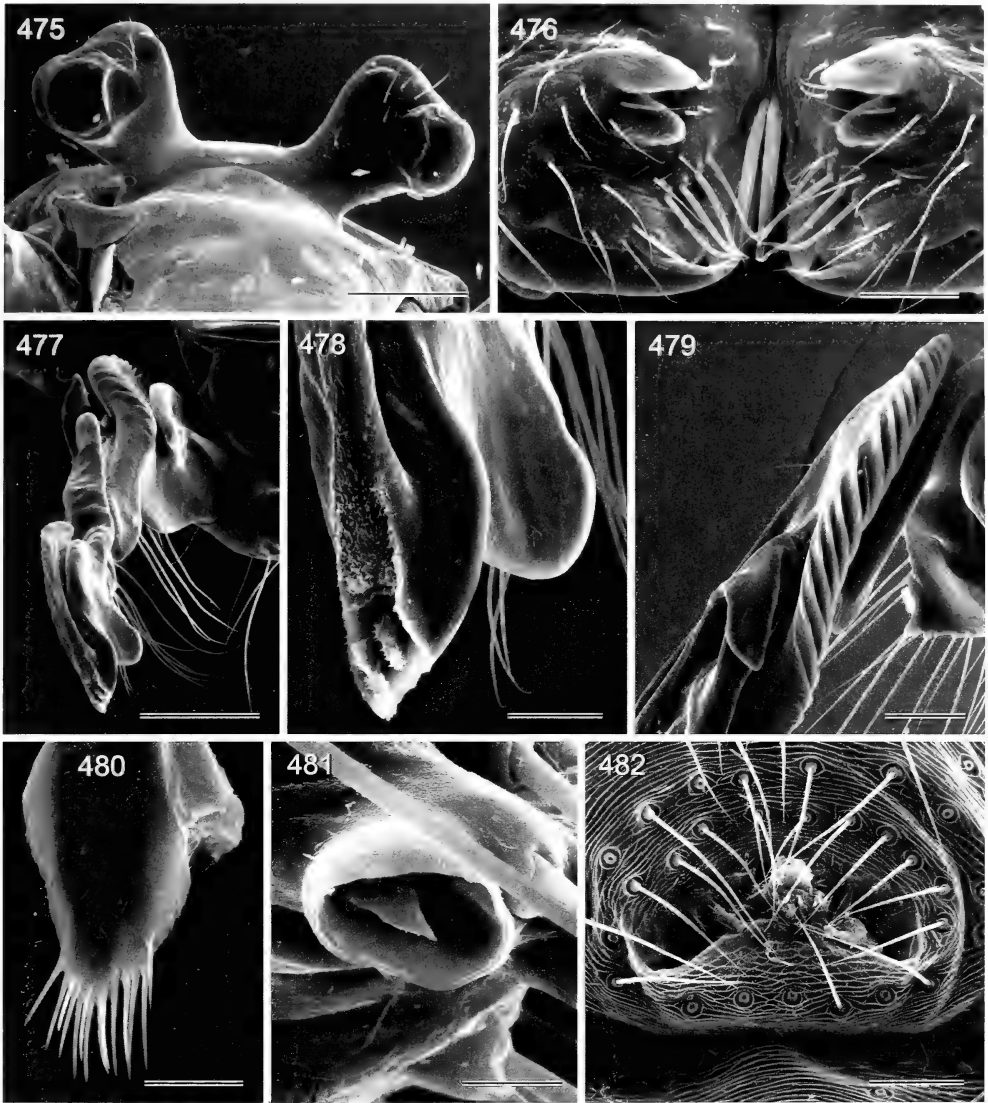


FIG. 475-482. *Panjange iban*. 475. Male eye stalks, frontal view. 476. Distal male cheliceral apophyses. 477. Left procurus, ventro-distal view. 478. Left procurus tip, ventro-distal view. 479. Left procurus, ventral view. 480. Right embolus tip, retrolateral view. 481. Male palpal tarsal organ. 482. Male gonopore. Scale lines: 200  $\mu$ m (475, 477), 100  $\mu$ m (479), 50  $\mu$ m (476, 480), 40  $\mu$ m (478, 482), 10  $\mu$ m (481).

internal structures partly visible through cuticle (Fig. 791), with posterior 'knob' (Figs. 473, 486); internal genitalia as in Figs. 474, 487, and 792. ALS with eight spigots each (Fig. 483).

*Distribution.* Known from type locality only (Fig. 435).

*Material examined.* MALAYSIA-BORNEO: *Sarawak*: Kuching, Semengoh Arboretum: ♂ holotype above; same collection data, 6♂15♀ in RMNH; same locality, 6.-10.i.1984 (P.R. & C.L. Deeleman), from webs between leaves, 1♂1♀ in AMNH.

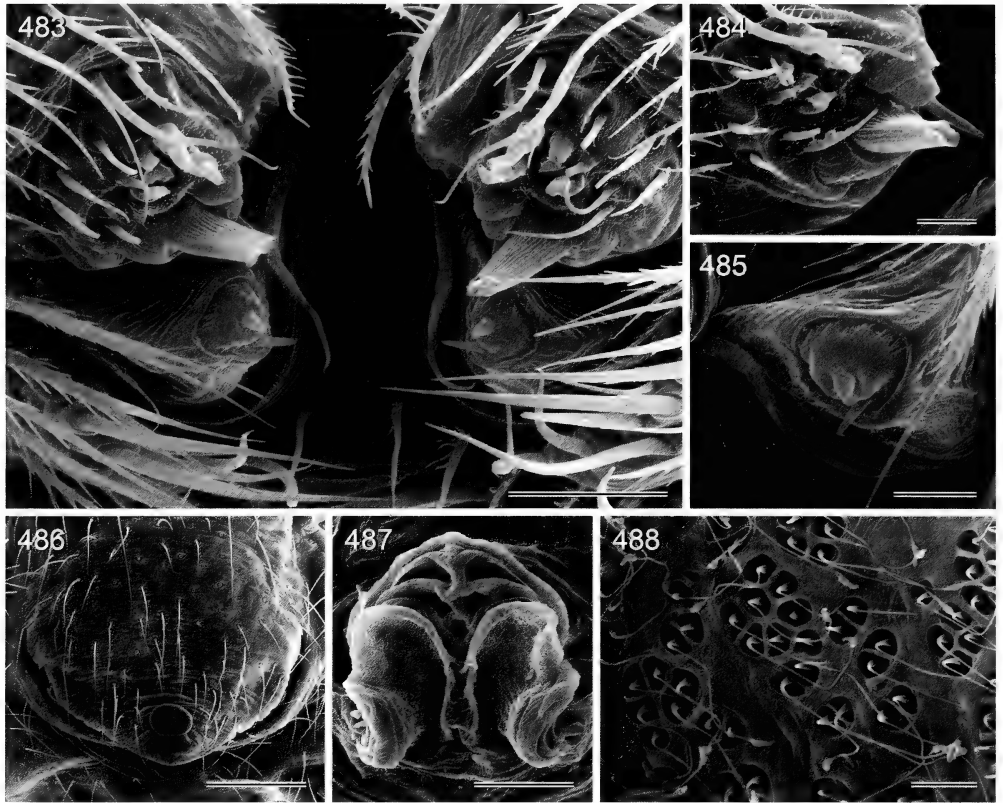


FIG. 483-488. *Panjange iban*. 483. Female spinnerets. 484. Male ALS. 485. Male PMS. 486. Epigynum. 487. Cleared female genitalia, dorsal view. 488. Detail of pore plate. Scale lines: 200  $\mu\text{m}$  (486, 487), 30  $\mu\text{m}$  (483), 10  $\mu\text{m}$  (484, 485, 488).

*Panjange bako* n. sp.

Figs. 489-493, 764, 773, 774

*Type*. Male holotype from Malaysia-Borneo, Sarawak, Bako National Park [ $-1^{\circ}43'N$ ,  $110^{\circ}27'E$ ], swampy forest, 30.iii.1983 (P.R. Deeleman), in RMNH.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from similar species with finger-shaped apophysis on male palpal femur (*Pa. nigrifrons*, *Pa. sedgwicki*, *Pa. iban*) by morphology of procurus (Figs. 490, 491); from *Pa. nigrifrons* and *Pa. iban* also by male eye turrets with pointed processes (Fig. 764). Female genitalia similar to *Pa. iban* but shorter (Fig. 492) (female of *Pa. sedgwicki* unknown).

*Male* (holotype). Total body length 3.9, carapace width 0.95. Leg 1 missing, tibia 2: 5.6, tibia 3: 3.2,

tibia 4: 5.3. Habitus as in Figs. 773 and 774. Carapace ochre-yellow, ocular area and clypeus brown, sternum pale ochre-yellow, legs pale ochre-yellow with brown patella area and tibia-metatarsus joints, abdomen ochre-gray with some indistinct darker marks dorsally and laterally, ventrally monochromatic. Distance PME-PME 440  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , no AME (some irregular pigment but no lenses). Each triad on long stalk, with additional long pointed process (0.46 long; Fig. 764), no special hairs on ocular area, small cone-shaped projection in place of AME. No thoracic furrow; clypeus unmodified. Chelicerae very similar to *Pa. iban* (cf. Fig. 472), but proximal apophyses minimally larger. Sternum wider than long (0.65/0.55), unmodified. Palps as in Figs. 489 and 490, coxa unmodified, trochanter with low retrolat-

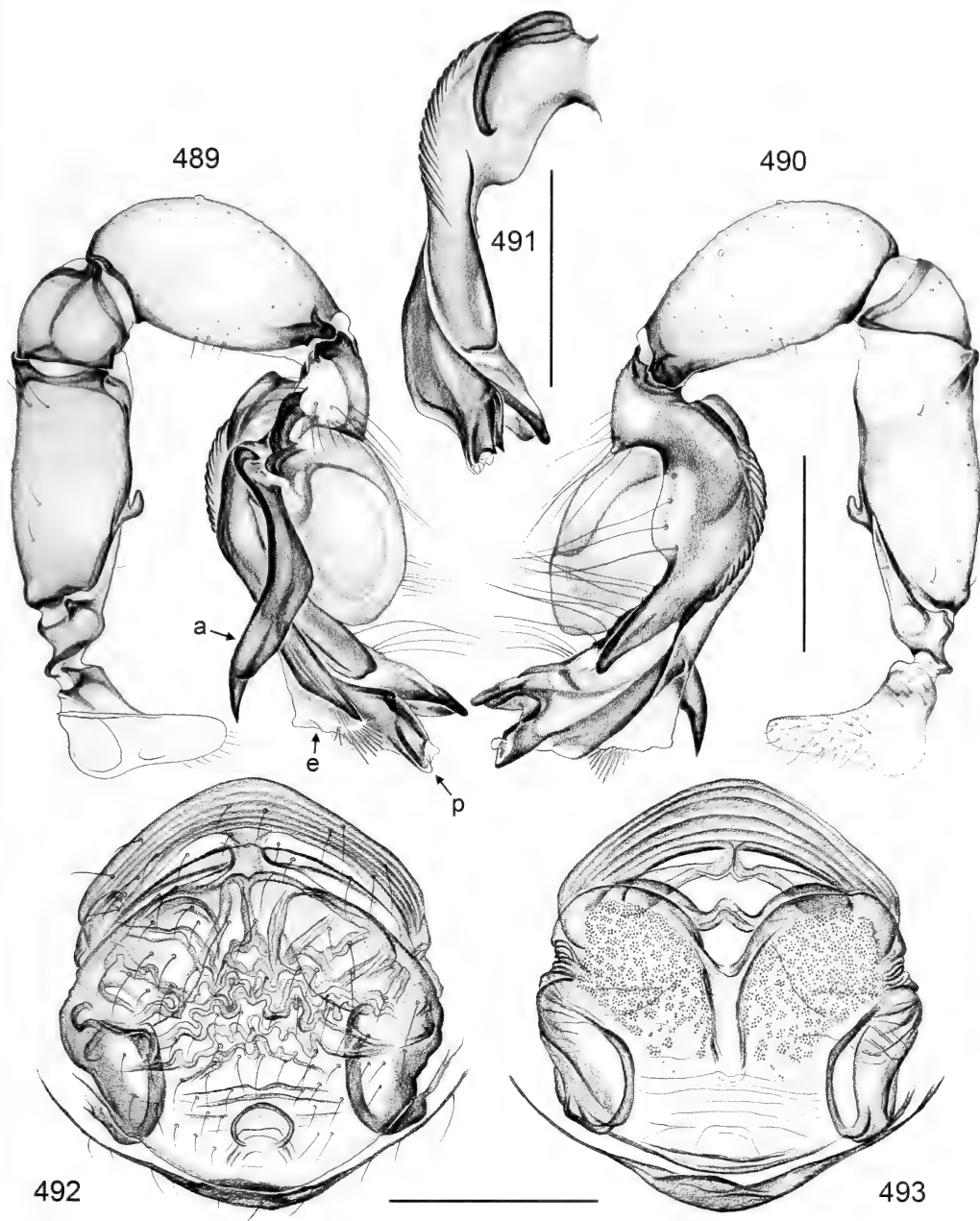


FIG. 489-493. *Panjange bako*. 489, 490. Left male palp, prolateral and retrolateral views. 491. Left procurcus, prolateral view. 492, 493. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (489-491), 0.3 (492, 493).

eral hump and long ventral apophysis, femur with distinctive ventral apophysis, procurus with many regular ventral ridges, without spines, entire distal part apparently hinged, complex, bulb slightly elongate with long weakly sclerotized tubular embolus and sclerotized process (putative appendix). Legs without spines and curved hairs, few vertical hairs.

*Variation.* No variation seen in genitalia. Legs 1 missing in other males. Measurements of a loose leg 1:  $8.6 + 0.5 + 8.7$ , metatarsus and tarsus missing, retrolateral trichobothrium at 2%, tibia 1 L/d: 94, prolateral trichobothrium absent.

*Female.* In general similar to male (including brown ocular area and clypeus) but eyes barely elevated and closer together (PME-PME 220  $\mu$ m). Legs 1 missing, tibia 2: 4.4. Epigynum weakly sclerotized, complex internal structures visible through cuticle (Fig. 492), internal genitalia as in Fig. 493.

*Distribution.* Known from type locality only (Fig. 435).

*Material examined.* MALAYSIA–BORNEO: Sarawak: Bako N.P.: ♂ holotype above, together with 2♂ in RMNH; same data but 29.iii.1985, iii./iv.1985 and 22.iv.1985 (3 vials) (C.L. & P.R. Deeleman), 3♀ in RMNH.

*Pholcus* Walckenaer, 1805

*Pholcus* Walckenaer 1805: 80. Type species by (assumed) monotypy: *Aranea phalangioides* Fuesslin, 1775. Simon 1893a: 470–471. Huber 2000: 77; 2001: 108–111. Zhang & Zhu 2009a: 6–8.

*Diagnosis.* Most representatives of the core group of *Pholcus* as identified by the cladistic analysis (Fig. 26) can be distinguished from other genera of the *Pholcus* group by the combination of the following two characters: male chelicerae with pair of proximal frontal apophyses, and epigynum sclerotized with ‘knob’. However, apparent reversals occur in both characters, and the genus appears extremely variable in other aspects too. It includes mostly fairly large and long-legged spiders (body length usually ~4–7, leg 1: ~30–60), but some species are much smaller (e.g., *Ph. kribi*). Most species are rather dark and have elongate abdomens, but again, some are pale (e.g., *Ph. debilis* group, *Ph. taarab* group) and some have rather short oval abdomens (e.g., some species in the *Ph. opilionoides* group). Most species have eight eyes, but the AME are absent in some species (*Ph. moca*, *Ph. kribi*, *Ph. lualaba*, *Ph. faveauxi*, *Ph. mentawir*, *Ph. youngae*). Ocular region in males usually with many stronger hairs posteriorly, rarely with median or

paired modifications (*Ph. quinquenotatus*; *Ph. ancoralis*, *Ph. bicornutus*, and *Ph. calligaster* groups), rarely eyes on long stalks (*Ph. youngae*). Male chelicerae usually with three pairs of apophyses: proximal lateral, proximal frontal, and distal frontal (e.g., Figs. 1241, 1448, 1857). Male bulb usually with uncus and appendix, either one rarely absent. Epigynum usually strongly sclerotized with ‘knob’.

*Note.* As indicated above (Cladistic analysis section), a reliable and stable delimitation of *Pholcus* appears impossible at the current state of knowledge. I have thus opted to formally keep several ‘basal’ species groups in *Pholcus*, emphasizing that their placement needs further investigation. The fact that the cladistic analyses using equal and successive character weighting place them outside the core group of *Pholcus* (Fig. 25) does not by itself justify the creation of several new genera. Some of these species groups may have lost the relevant characters, others may eventually be assigned to other genera or elevated to genus rank (e.g., *Ph. ethagala* and *Ph. minang* groups, see *Panjange*). The preliminary diagnosis for these groups is that they all share the simplified tarsus 4 comb-hairs but do not share any of the synapomorphies of the other named genera in the *Pholcus* group.

*Description* (core group). Body length usually ~4–7, carapace width usually ~1.0–2.0. Carapace without thoracic furrow, AME smaller than other eyes, rarely absent (*Ph. moca*, *Ph. kribi*, *Ph. lualaba*, *Ph. faveauxi*, *Ph. mentawir*, *Ph. youngae*), ocular region in males usually with many stronger hairs posteriorly, rarely with median or paired modifications (*Ph. quinquenotatus*, *Ph. ancoralis* group, *Ph. bicornutus* group, *Ph. calligaster* group), triads usually on short stalks directed laterally, very rarely on long stalks (*Ph. youngae*). Clypeus and sternum usually unmodified (clypeus modified in *Ph. schwendingeri*, *Ph. nkoetye*, *Ph. debilis*, *Ph. gui*). Male chelicerae usually with three pairs of apophyses: proximal lateral, proximal frontal, and distal frontal (e.g., Figs. 1241, 1448, 1857), some species with very deviant cheliceral armature (e.g., *Ph. mbuti*, *Ph. nkoetye*, *Ph. taita*, *Ph. mecheria*, *Ph. jaegeri*, *Ph. bolikhamsai*, *Ph. bangfai*). Male palpal coxa unmodified, trochanter with retro-latero-ventral apophysis, femur variably provided with proximo-dorsal and ventral modifications, tarsus usually without dorsal elongation (except *Ph. erawan*, *Ph. calligaster*, *Ph. bidentatus* and *Ph. nagsakiensis* groups), tarsal organ capsulate, procurus often complex, with ventral ‘knee’, sometimes with dorsal spines. Male bulb usually with uncus and ap-

pendix, either one rarely absent (appendix absent in *Ph. nkoetye*, *Ph. sudhami* + *Ph. pakse*, *Ph. bicornutus*, *Ph. phungiformes* group; uncus absent in *Ph. leruthi*, *Ph. guineensis* and close relatives). Legs usually long, tibia 1 in males usually ~5-14, tibia 1 L/d usually ~50-90, tibia 2 usually longer than tibia 4 (except *Ph. opilionoides* group and a few other exceptional species), legs without spines, usually without curved hairs (present in *Ph. circularis*, *Ph. batepa*, *Ph. taita*, several species in the *Ph. yichengicus* and *Ph. phungiformes* groups), few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3-8% (12% in *Ph. mecheria*), tarsus 4 with single row of comb-hairs. Abdomen usually cylindrical, sometimes rather short and oval (e.g., some species in the *Ph. opilionoides* group), rarely vermiform (*Ph. taarab* group) or drawn into cone dorso-posteriorly (*Ph. quinquenotatus*, *Ph. erawan*), male gonopore with four epiandrous spigots, ALS usually with one widened, one pointed, and several cylindrically-shaped spigots, the latter may be entirely absent (*Ph. debilis*, *Ph. soukous*) or reduced to two (*Ph. leruthi*, *Ph. doucki*, *Ph. chattoni*). PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, less elevated, without stronger hairs on ocular area, chelicerae unmodified. Body size as in males, legs usually slightly shorter, very rarely longer (*Ph. fragillimus*). Epigynum usually strongly sclerotized, with 'knob' of variable shape, sometimes developed into long scape (*Ph. taishan* group), internal genitalia with pair of pore-plates of variable shape. *Monophyly*. The core group of *Pholcus* as shown in Fig. 26 is supported by two synapomorphies: a strongly sclerotized epigynum (char. 65) and the presence of frontal proximal apophyses (or just bulges) on the male chelicerae (char. 18). None of these characters is particularly strong. The degree of sclerotization is difficult to assess objectively and in some species groups either the area (*Ph. lamperti* and *Ph. circularis* groups) or the degree of sclerotization (*Ph. kingi* group) seem to have been reduced secondarily. Frontal proximal apophyses on the male chelicerae have apparently evolved independently outside *Pholcus* (e.g., *Micropholcus*) and have been reduced within *Pholcus* (e.g., *Ph. bidentatus* group + *Ph. nagasakiensis* group, *Ph. taishan* group). Finally, analyses using implied character weighting do not support this group but result in an even larger polytomy including *Ossinissa*, *Uthina*, *Calapnita*, New World

'*Leptopholcus*', and Old World *Leptopholcus* + *Micromerys*.

*Generic relationships*. The large polytomy in the cladogram including the core group of *Pholcus* plus six other named genera (Fig. 25) clearly indicates that the detailed relationships among these genera remain obscure. On the other hand, a close relationship with the other nine genera of the *Pholcus* group appears well supported, both by morphological data (tarsus 4 simplified comb-hairs: Huber & Fleckenstein 2008; epigynal 'knob': herein) and molecular data (Bruvo-Madarić *et al.* 2005: 28S, total evidence; Astrin *et al.* 2007: 16S+CO1, 28S).

*Specific relationships*. The genus *Pholcus* is here divided into 29 operational species groups. Of these, 25 belong to the core group, four are provisionally assigned to or kept in *Pholcus*. Within the core group, four characters may be synapomorphies for larger clades that are supported by all types of analyses used: (1) spines (very short hairs) dorsally on the male procurus (char. 38); (2) a branched appendix (char. 57); (3) a dorsal elongation of the male palpal tarsus (char. 34); (4) a small bulge or projection ventrally on the male palpal tibia (char. 32). For further details, see descriptions of individual species groups below.

*Natural history*. The type species *Ph. phalangioides* is in many respects the best known pholcid spider. This includes its natural history, in particular web and prey capture (Kirchner 1986, Kirchner & Operbeck 1990), and sexual biology (Uhl 1993, 1998, Uhl *et al.* 1995, 2004, Schäfer & Uhl 2002, Schäfer *et al.* 2008, Schaefer & Uhl 2003). This may obscure the fact that even the core group of *Pholcus* is extremely variable both morphologically and ecologically and that almost nothing is known about the biology of most species. For the few exceptions known to me, see Natural history sections under *Ph. beijingensis*, *Ph. circularis* group, *Ph. lamperti* group, and *Ph. opilionoides* group. Some of the sexual dimorphisms present in *Ph. phalangioides* and many other species have been known for a long time, but none of the recent studies on sexual behavior focused on the function of these characteristics: long hairs on male ocular area (e.g., Figs. 1004, 1130, 1169, 1681, 2002; first noted by L. Koch 1872); male anterior femora darkened (first noted by C.L. Koch 1837).

In general, the core group of *Pholcus* includes species from all habitats known to be potentially available to pholcid spiders. While most species seem to occur in larger protected spaces (between buttresses, in small holes or caves, among and under

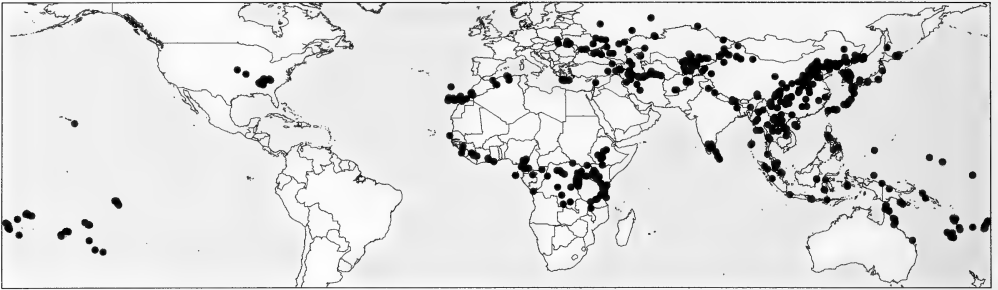


FIG. 494. Distribution of the core group of *Pholcus* (cf. Fig. 26). Three widespread taxa are excluded from this map: the cosmopolitan *Ph. phalangioides*, *Ph. opilionoides* (see Fig. 1585), and *Ph. manueli* (see Figs. 1707, 1708).

large rocks; Figs. 13-17), some species live in the leaf litter (e.g., *Ph. kribi*; Fig. 18), and some are adapted to life on the underside of green leaves (*Ph. taarab* group, *Ph. debilis* group, some representatives of the *Ph. quinquenotatus* group; Figs. 11, 12).

Several species are synanthropic to various degrees, and some have as a result spread over the entire globe (*Ph. phalangioides*), to another continent (*Ph. manueli*), or over areas that are probably much larger than their original distributions (*Ph. opilionoides*, *Ph. ponticus*, *Ph. alticeps*, *Ph. quinquenotatus*, *Ph. ancoralis*, *Ph. ornatus*, *Ph. fragillimus*).

**Distribution.** The core group of *Pholcus* is largely restricted to the Old World (Fig. 494). It is notably absent from Madagascar. The only exception to its Old World distribution (excluding synanthropic species) is the *Ph. kingi* species group with several endemic species mainly in the TGA-area (Tennessee, Georgia, Alabama). Another New World species group that is traditionally assigned to *Leptopholcus* may also eventually end up in *Pholcus* (or in a new genus).

**Composition.** *Pholcus* continues to be the largest genus in Pholcidae. The core group alone currently includes 219 species, of which 64 are newly described and 63 are redescribed below. Another 35 species are assigned tentatively to *Pholcus* (25 new species, 5 redescribed; of these, two are transferred to *Pholcus*: *Ph. atrigularis* and *Ph. debilis*) or are kept in the genus for lack of a better solution. Available collections suggest that dozens of undescribed species exist, primarily in central Africa and Southeast Asia.

**Misplaced species.** Two species need to be removed from *Pholcus*: *Pholcus claviger* Simon, 1877 is considered a synonym of *Physocyclus globosus* (Taczanowski, 1874) (new synonymy), based on the following

characters: carapace with median depression (fovea) and lateral marks, high globular abdomen, and body size (3 mm). *Pholcus excavatus* Simon, 1877 is tentatively moved to *Smeringopus*, based on the carapace with median depression, elongate abdomen, and bulb with divided apophysis: *Smeringopus excavatus* (Simon, 1877) new combination. In both species, the single male type specimens could not be found at the MNHN and are probably lost.

#### *Pholcus halabala* species group

**Diagnosis.** The core group includes medium-sized, long-legged spiders (body length ~4.0, leg 1:~40); distinguished from other species groups in *Pholcus* by the combination of the following characters: elongate abdomen that is pointed dorso-posteriorly, eight eyes, male chelicerae with proximal and distal apophyses, male bulb with uncus and appendix, procurus with distinctive dorsal flap (Figs. 531, 538), epigynum weakly sclerotized, with 'knob'.

**Description** (core group). Body length ~4.0, carapace width ~1.0-1.2. AME present (55 µm), ocular region in males with stronger hairs posteriorly, in two species with brushes of short spines on each side. Clypeus and sternum unmodified. Male chelicerae with proximal and distal apophyses, in *Ph. sabah* also with indistinct frontal humps proximally. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur smaller than tibia, tarsus with conical dorsal elongation, procurus complex, with distinctive dorsal flap, with ventral 'knee', without dorsal spines. Male bulb with uncus and appendix, simple membranous embolus. Legs long, tibia 1 in males ~9, tibia 1 L/d ~80, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral

trichobothrium absent), retrolateral trichobothrium on tibia 1 at 5-7%. Abdomen cylindrical, dorso-posteriorly with pointed elevation. No species has been studied with SEM.

Sexual dimorphism slight, female eye triads closer together, less elevated, without stronger hairs and spines, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1:-7-8). Epigynum weakly sclerotized, with 'knob', internal genitalia with pair of round pore-plates.

*Monophyly.* The core group is supported by the dorsal flap on the procurus (char. 43; Figs. 531, 538). Further potential synapomorphies (only suggested by the analyses using implied character weighting) are the conical elongation of the male palpal tarsus (e.g., Figs. 531, 538, 543), and the secondary absence of proximal frontal apophyses on the male chelicerae (char. 18).

*Relationships.* The *Ph. halabala* group is here considered outside the core group of *Pholcus*, but the weak sclerotization of the epigynum (char. 65) may turn out to be derived rather than plesiomorphic, and *Ph. sabab* (which was not included in the data matrix) has indistinct frontal humps proximally on the male chelicerae (Fig. 539), supporting a closer relationship with the core group of *Pholcus* than suggested by the cladogram in Fig. 25.

Within the core group, *Ph. halabala* and *Ph. sepaku* are extremely similar in most characters, and they share a pair of unique brushes of short spines on the ocular area (char. 8).

Among the eight species that are assigned tentatively, three (*Ph. chiangdao*, *Ph. kbene*, *Ph. kinabalu*) share a unique orange-red mark on the male carapace and a color dimorphism in the female (orange-red like male or brown; Figs. 509, 510, 513, 514). These

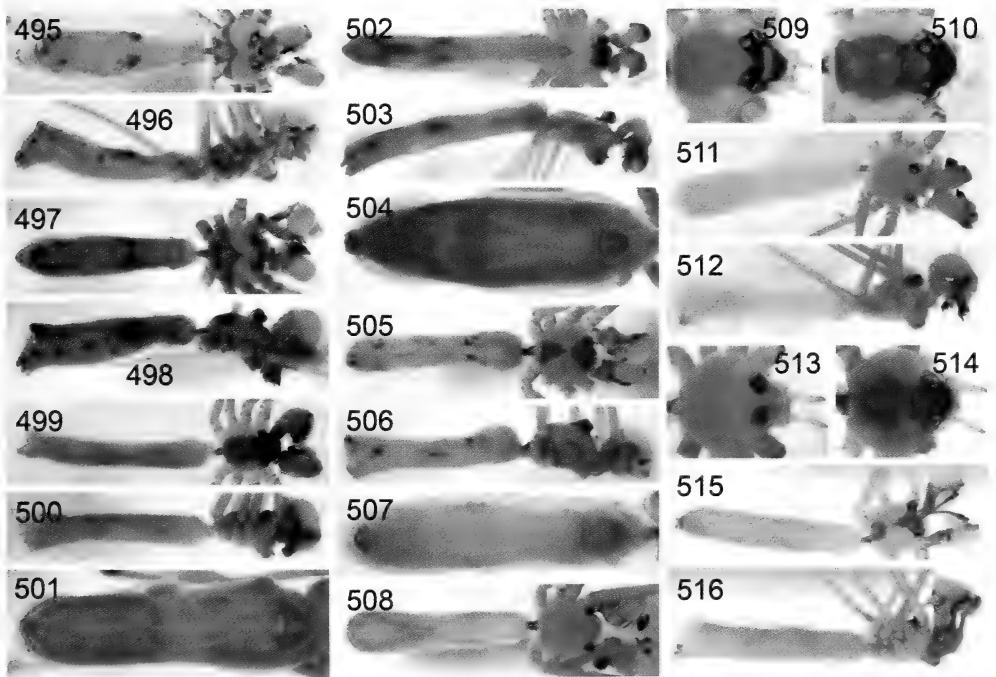


FIG. 495-516. *Pholcus halabala* species group, habitus. 495, 496. *Ph. halabala*, male, dorsal and lateral views. 497, 498. *Ph. sabab*, male, dorsal and lateral views. 499-501. *Ph. elongatus*, male, dorsal and lateral views; female abdomen, ventral view. 502-504. *Ph. andulau*, male, dorsal and lateral views; female abdomen, ventral view. 505-507. *Ph. pyu*, male, dorsal and lateral views; female abdomen, ventral view. 508-510. *Ph. chiangdao*, male dorsal view; female prosomata, orange and brown color morphs. 511-514. *Ph. kinabalu*, male, dorsal and lateral views; female prosomata, orange and brown color morphs. 515, 516. *Ph. satun*, male, dorsal and lateral views.



three species are superficially similar to those of the *Ph. halabala* core group, but they lack AME and a tarsal dorsal elongation and may thus not be closely related to the *Ph. halabala* group.

The other five species appear highly isolated in their morphology. *Ph. elongatus* and *Ph. exceptus* have dorsally elongated male palpal tarsi and may indeed be close to the *Ph. halabala* group. The other three species are highly apomorphic and may eventually end up in other or new genera.

*Natural history.* Judging from the sparse information on labels, the species occur in caves, among low vegetation, and on leaves.

*Distribution.* The *Ph. halabala* group is restricted to Southeast Asia, from Myanmar and southern China to Sumatra and Borneo (Fig. 529).

*Composition.* The *Ph. halabala* group includes eleven species, ten of which are treated below; for *Ph. exceptus*, see Tong & Li (2009). Core group: *Ph. halabala* n. sp.; *Ph. sepaku* n. sp.; *Ph. sabah* n. sp.; assigned tentatively: *Ph. chiangdao* n. sp.; *Ph. khene* n. sp.; *Ph. kinabalu* n. sp.; *Ph. elongatus* (Yin & Wang, 1981); *Ph. exceptus* Tong & Li, 2009; *Ph. andulau* n. sp.; *Ph. pyu* n. sp.; *Ph. satun* n. sp.

*Pholcus halabala* n. sp.

Figs. 495, 496, 517, 518, 530-535

*Type.* Male holotype from Thailand, Naratiwat Prov., Waeng Distr., Hala Bala Wildlife Reserve (5°47.7'N, 101°50.1'E), research station, 190-200 m a.s.l., 13.-14.x.2003 (ATOL Expedition), in MACN.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by pair of hair brushes (short spine-shaped hairs) between male PME; from very similar *Ph. sepaku* only by shape of procurus (compare Figs. 535 and 536).

*Male* (holotype). Total body length 4.3, carapace width 1.1. Leg 1: 39.4 (9.2 + 0.5 + 9.2 + 18.6 + 1.9), tibia 2: 5.7, tibia 3: 3.4, tibia 4: 4.9; tibia 1 L/d: 83. Habitus as in Figs. 495 and 496. Carapace pale ochre-yellow with distinctive brown pattern posteriorly, ocular area with pair of brown marks (carrying spines, see below), clypeus with pair of indistinct darker marks, sternum pale, posteriorly with narrow dark margin, legs pale, patellae and tibia-metatarsus joints light brown, femora proximally with brown

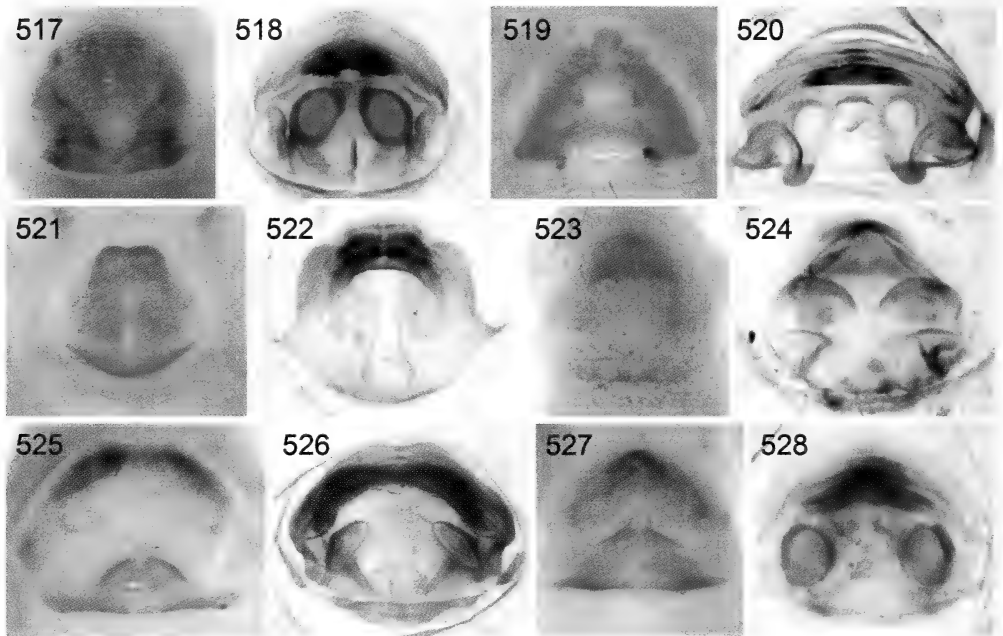


FIG. 517-528. *Pholcus halabala* species group, epigyna, ventral views, and cleared female genitalia, dorsal views. 517, 518. *Ph. halabala*. 519, 520. *Ph. elongatus*. 521, 522. *Ph. andulau*. 523, 524. *Ph. pyu*. 525, 526. *Ph. chiangdao*. 527, 528. *Ph. kinabalu*.



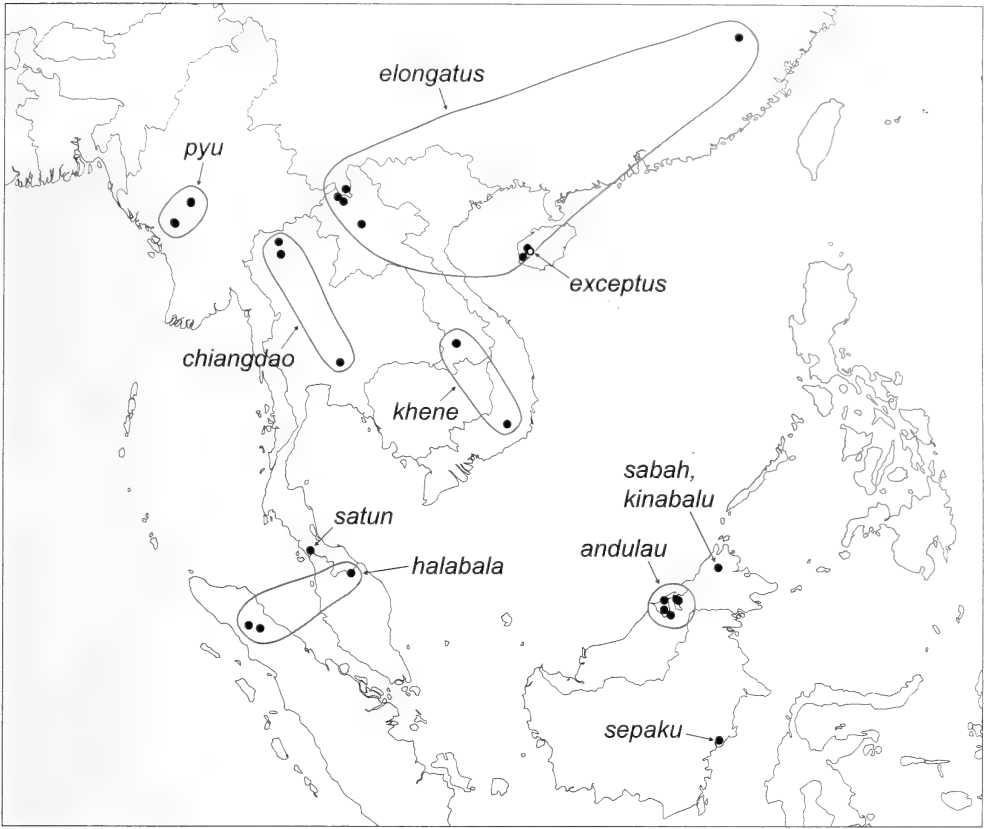


FIG. 529. Known distribution of the *Pholcus halabala* species group.

marks ventrally and dorsally, abdomen with black marks dorsally and laterally, ventrally monochromatic. Distance PME-PME 335  $\mu\text{m}$ , diameter PME 140  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 35  $\mu\text{m}$ , diameter AME 55  $\mu\text{m}$ . Ocular area elevated, each triad slightly projecting laterally, dorsally with pair of humps carrying  $\sim 4$  thick curved spines each. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 532, distal apophyses with modified hairs and stronger hairs close to apophyses, one pair of lateral apophyses, indistinct frontal humps proximally. Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 530 and 531, coxa unmodified, trochanter with slender retrolatero-ventral apophysis pointed and curved distally, femur with small retrolatero-dorsal apophysis proximally, tarsus with large conical elongation carrying tarsal organ, procurus complex, with distinctive dorsal process and distal sclerotized and membranous ele-

ments, no spines, bulb with distinctive uncus, short weakly sclerotized embolus, simple appendix with spoon-shaped tip provided with small sclerotized teeth. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally  $\sim 10$  fairly visible in dissecting microscope.

*Variation.* The procurus of males from Sumatra differs slightly: dorsal process slightly wider, ventral spine shorter; these males are therefore assigned tentatively. Tibia 1 in 4 other males (all Sumatra): 7.9, 8.3, 8.4, 8.5.

*Female.* In general similar to male but triads closer together (distance PME-PME 230  $\mu\text{m}$ ), no spines on ocular area, sternum posteriorly darkened (not just margin). Tibia 1: 7.8 (missing in other females). Epigynum slightly elevated, mostly weakly sclerotized

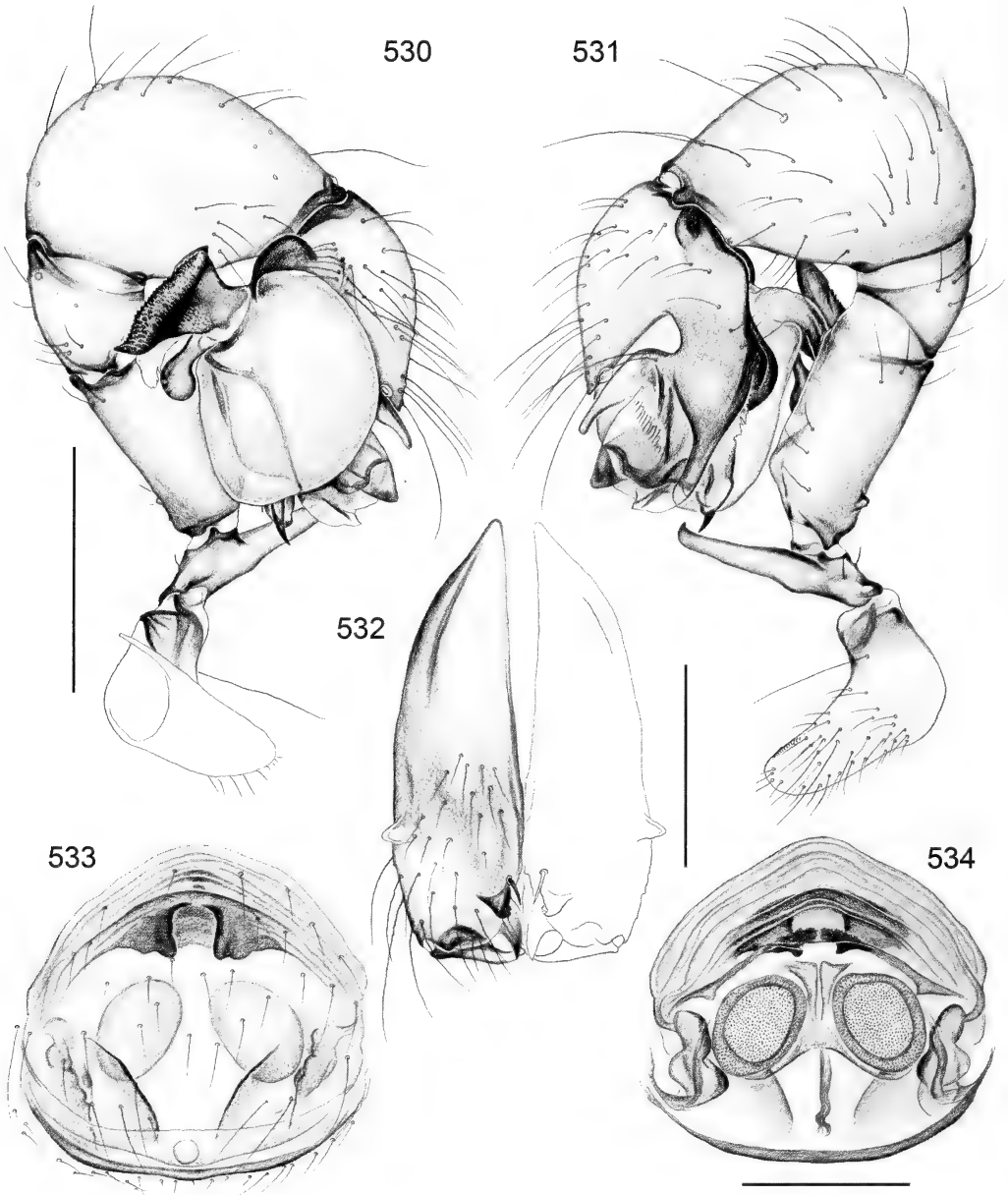


FIG. 530-534. *Pholcus halabala*. 530, 531. Left male palp, prolateral and retrolateral views. 532. Male chelicerae, frontal view. 533, 534. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (530, 531), 0.3 (532-534).

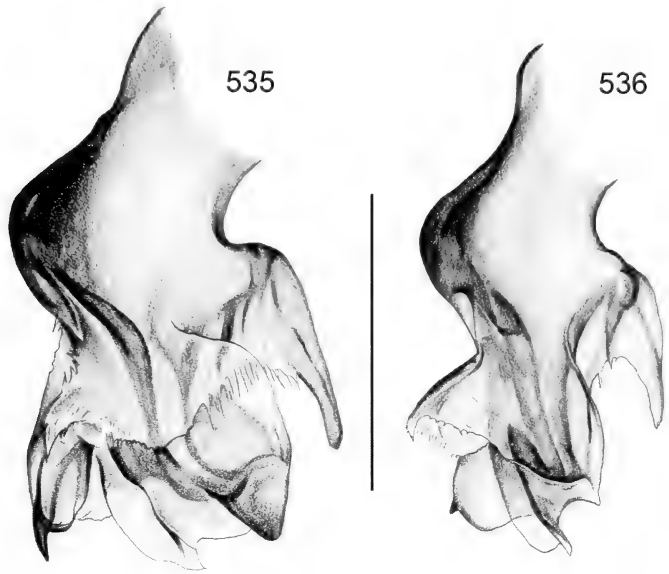


FIG. 535, 536.  
*Pholcus halabala* (535)  
and *Ph. sepaku* (536),  
left procuri, prolateral views,  
at same scale. Scale line: 0.3.

with internal structures visible through cuticle (Fig. 517), posterior narrow sclerotized plate with simple 'knob' (Fig. 533); internal genitalia as in Figs. 518 and 534.

*Distribution.* Known from southern Thailand and from tentatively assigned specimens from northern Sumatra (Fig. 529).

*Material examined.* THAILAND: *Naratiwat Prov.*: Waeng Distr., Hala Bala Wildlife Reserve: ♂ holotype above; same data, several juveniles, in MACN. *Assigned tentatively.* INDONESIA-SUMATRA: *North Sumatra*: Bohorok [3°32.6'N, 98°07.2'E], along river, 31.v.1983 (Suharto), 1♂ in RMNH; Bohorok, 16.ii./8.iii./15.xi.1983 (C.L. & P.R. Deeleman), 2♂2♀ (3 vials) in RMNH. Bohorok, riverside, 15.xii.1983, collector not given, 1♂ in RMNH. Bohorok, trail 3, 13.vii.1983 (Suharto *et al.*), 1♀ in RMNH. Bohorok, 30.v.1983 (Suharto), 1♀ in RMNH. *Aceh*: Gunung Leuser, Ketambe [3°40'N, 97°39'E], 17.ii.1985 (Sudiro), 1♂ in RMNH; same locality, 5.ii.1985 (Suyono), 2♂ in RMNH.

*Pholcus sepaku* n. sp.

Fig. 536

*Type.* Male holotype from Indonesia, East Kalimantan, 40 km N Balikpapan, Sepaku [1°00'S, 116°54'E], primary dipterocarp forest, 20.vii.1982 (C.L. & P.R. Deeleman), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by pair of hair brushes (short spine-shaped hairs) between male PME; from very similar *Ph. halabala* only by shape of procurus (compare Figs. 535 and 536).

*Male* (holotype). Total body length 3.9, carapace width 1.0. Leg 1 missing, tibia 2: 5.2, tibia 3: 3.1, tibia 4: 4.4. Habitus and coloration mostly as in *Ph. halabala* (cf. Figs. 495, 496), sternum posteriorly with wider brown margin. Distance PME-PME 300 µm, diameter PME 135 µm, distance PME-ALE 45 µm, distance AME-AME 45 µm, diameter AME 55 µm. Ocular area as in *Ph. halabala*, also dorsally with pair of humps carrying curved spines. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. halabala* (cf. Fig. 532). Sternum wider than long (0.70/0.55), unmodified. Palps mostly as in *Ph. halabala* (cf. Figs. 530, 531), procurus distally clearly different (Fig. 536). Legs without spines and curved hairs, few vertical hairs.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 529).

*Material examined.* INDONESIA-BORNEO: *East Kalimantan*: Sepaku: ♂ holotype above.

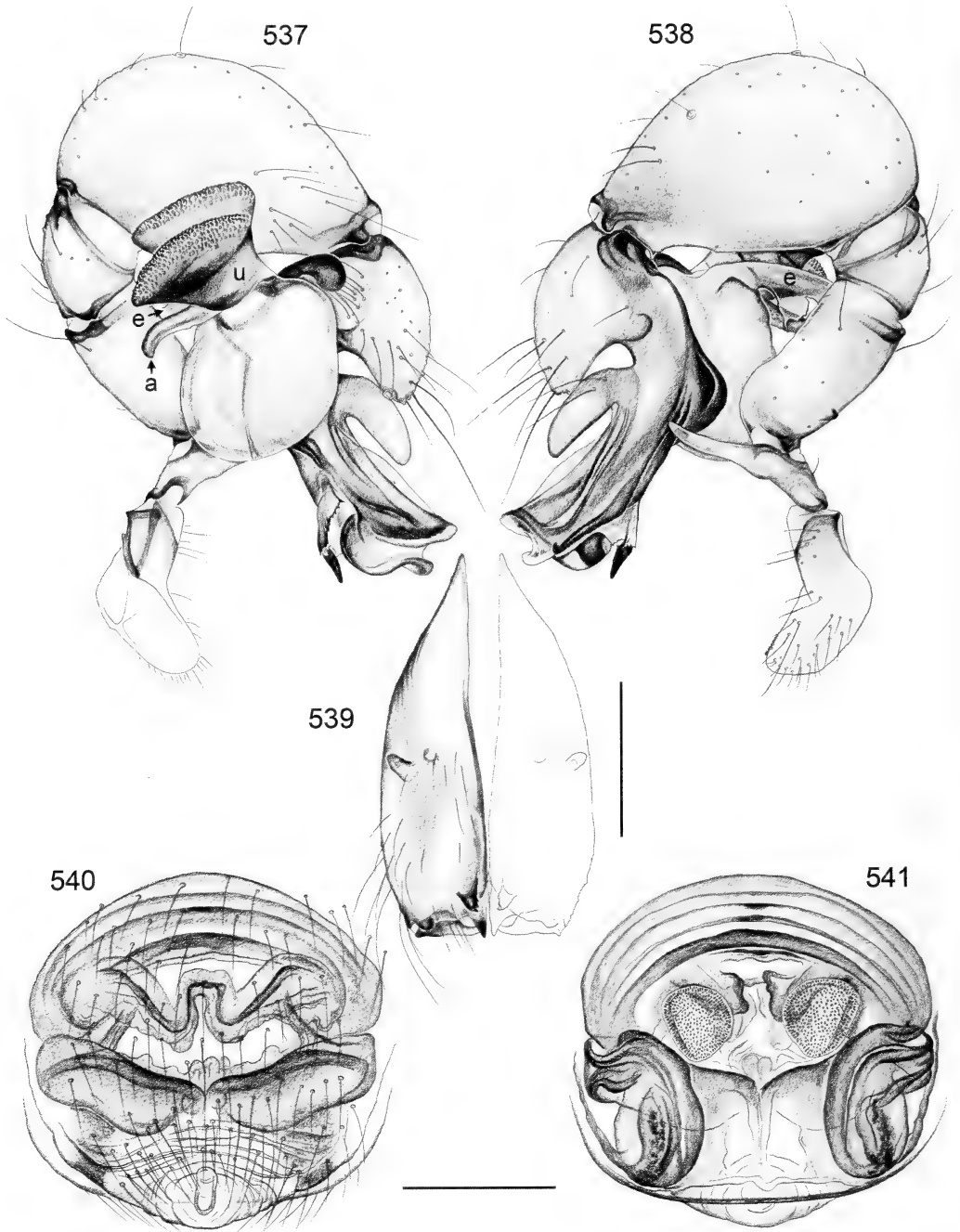


FIG. 537-541. *Pholcus sabah*. 537, 538. Left male palp, prolateral and retrolateral views. 539. Male chelicerae, frontal view. 540, 541. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.3.

*Pholcus sabah* n. sp.

Figs. 497, 498, 537-541

*Type.* Male holotype from Malaysia–Borneo, Sabah, Mt. Kinabalu, Poring Hot Springs (6°02'N, 116°50'E), 500-700 m a.s.l., primary forest, night fogging of *Aporusa* sp. (Euphorbiaceae) canopy, 26.-27.ii.1996 (A. Floren), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from other *Pholcus* by 'double' uncus and large rounded flap dorsally on procurus (Figs. 537, 538); from putative close relatives (*Ph. halabala*, *Ph. sepaku*) also by absence of brushes of short spines between eye triads and shape of female internal genitalia (Fig. 541).

*Male* (holotype). Total body length 4.3, carapace width 1.2. Leg 1: 8.7 + 0.5 + 8.9, metatarsus and tarsus missing, tibia 2: 5.8, tibia 3: 3.5, tibia 4 missing, tibia 1L/d: 84. Habitus as in Figs. 497 and 498. Carapace pale ochre with distinctive brown pattern posteriorly, ocular area not darkened, clypeus upper part slightly darkened, sternum pale ochre with dark brown margins (except anteriorly) and triangular mark posteriorly, legs pale ochre to whitish, each femur proximally with one dorsal and one ventral mark, patella area and tibia-metatarsus joints darker brown, abdomen ochre-gray with black marks dorsally and laterally, ventrally monochromous. Distance PME-PME 335  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 70  $\mu$ m, diameter AME 55  $\mu$ m. Ocular area elevated, some stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 539, each distal apophysis with two (or three?) modified hairs, proximally with lateral apophyses and indistinct frontal humps. Sternum wider than long (0.75/0.55), unmodified. Palps as in Figs. 537 and 538, coxa unmodified, trochanter with long retrolatero-ventral apophysis, femur relatively small, with proximal ventral bulge and small retrolatero-dorsal apophysis, tibia large, tarsus enlarged dorsally, procurus complex, with distinctive dorsal flap, uncus distinctively 'doubled', appendix simple rod, embolus short and mostly weakly sclerotized. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium of tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not seen.

*Female.* In general similar to male, eye triads closer together (distance PME-PME 220  $\mu$ m), tibia 1 in 2

females: 7.5, 7.7. One female with different prosoma pattern (entire sternum brown, posterior half of carapace brown). Epigynum weakly sclerotized, with distinctive internal structures visible through cuticle, with slender 'knob' (Fig. 540), internal genitalia as in Fig. 541.

*Distribution.* Known from type locality only (Fig. 529).

*Material examined.* MALAYSIA–BORNEO: Sabah: Mt. Kinabalu, Poring Hot Springs: ♂ holotype above. Same data but fogging of *Xanthophyllum affine* (Polygalaceae), 23.i.1992 and 10.iii.1993 (2 vials), 2♀ in RMNH. Same locality, canopy fogging at 700 m a.s.l., date not given (Uni Würzburg), 1♀ in RMNH.

*Pholcus elongatus* (Yin & Wang, 1981)

Figs. 499-501, 519, 520, 542-546

*Spermophora elongata* Yin & Wang 1981: 380-382, figs. 2, 2a-g. Hu 1984: 80-81, figs. 73, 73.1-7 (figures copied from Yin & Wang 1981). Song 1987: 112-113, figs. 75a-d (figures copied from Yin & Wang 1981). Song *et al.* 1999: 65-66, figs. 26p-w. Huber 2001: 109 (transfer to *Pholcus* suggested).

*Pholcus elongatus*: Zhang & Zhu 2009a: 25-28, figs. 10a-h (figures copied from Song *et al.* 1999).

*Types.* Male holotype and female "allotype" from China, Yunnan Prov., Mengla [21°29'N, 101°35'E], 23.iii.1979 (J.F. Wang), in Hunan Normal University, Changsha, China; not examined.

*Diagnosis.* Distinguished from congeners by the combination of absence of AME, shape of male palp (Figs. 542, 543; long trochanter apophysis, ventral modification on femur, shapes of bulbal apophyses and procurus), and long extensible scape on female epigynum (Fig. 545).

*Male* (Luang Nam Tha). Total body length 4.5, carapace width 0.9. Leg 1: 33.6 (8.5 + 0.5 + 8.7 + 13.9 + 2.0), tibia 2: 5.1, tibia 3: 2.9, tibia 4: 4.8; tibia 1 L/d: 82. Habitus as in Figs. 499 and 500. Carapace laterally pale ochre-yellow, medially a wide brown band including ocular area and clypeus, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen monochromous pale gray (cf. female, Fig. 501). Distance PME-PME 405  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area slightly elevated, each triad on short stalk, some stronger hairs on posterior side. No thoracic furrow (only dark median line anteriorly); clypeus unmodified. Chelicerae as in Fig. 544, strong distal apophyses apparently without

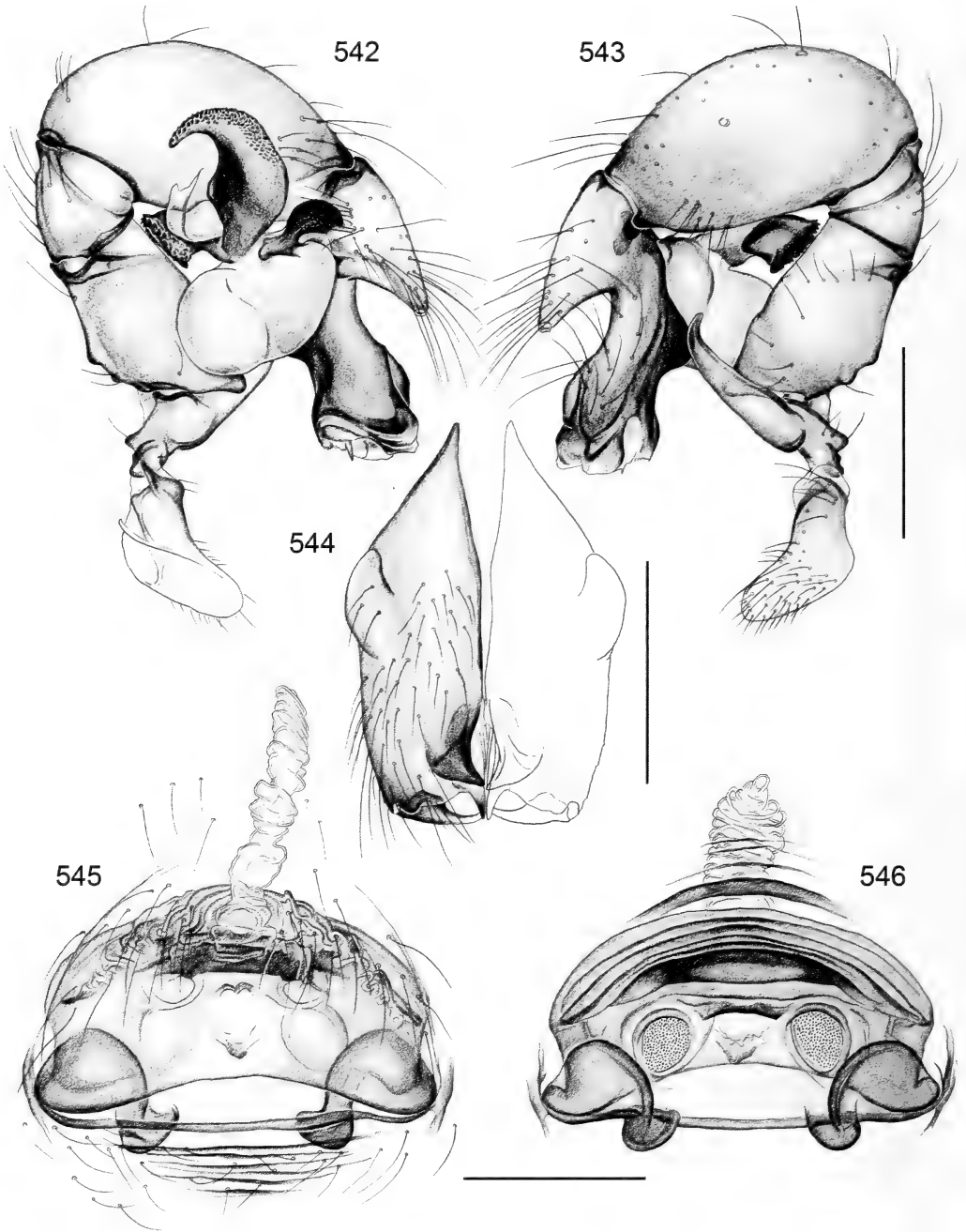


FIG. 542-546. *Pholcus elongatus*. 542, 543. Left male palp, prolateral and retrolateral views. 544. Male chelicerae, frontal view. 545, 546. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (542, 543), 0.3 (544-546).

modified hairs, proximally with one pair of large lateral apophyses. Sternum wider than long (0.70/0.55), unmodified. Palps as in Figs. 542 and 543, coxa unmodified, trochanter with long ventral apophysis curved distally and small dorsal bulge, femur with large ventral protuberance directed proximally and two low humps dorsally, procurus rather simple, very wide in dorsal view, bulb with distally hooked unculus, short transparent embolus, short but wide appendix set with scales. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments only distally fairly distinct.

*Variation.* Tibia 1 in one other male: 8.6. Apparently with variation in carapace pattern but this needs to be checked: the original description illustrates a male with monochromous dark carapace. Zhang & Zhu (2009a: fig. 10d) illustrate a "male" carapace with a pair of bands (as is typical for females of this species, see below), but their figure is a copy of fig. 26p in Song *et al.* (1999) which may be from a female rather than a male.

*Female.* In general similar to male but with different pattern on carapace: two brown bands behind eye triads, entire or 'broken'; triads closer together (distance PME-PME 225  $\mu$ m). Tibia 1 in 2 females: 7.1, 7.7. Epigynum a slightly sclerotized semicircular area with long, extensible scape (Figs. 519, 545); internal genitalia as in Figs. 520 and 546.

*Distribution.* Known from southern China (Yunnan, Fujian, Hainan) (Yin & Wang 1981, Zhang & Zhu 2009a), and northern Laos (Fig. 529).

*Material examined.* LAOS: *Luang Nam Tha Prov.*: Luang Nam Tha, between Ban Tavan 1 (580 m a.s.l.) and Ban Tavan 2 (660 m a.s.l.) (-20°58.7'N, 101°28.8'E), valley with stream, disturbed primary forest, by hand, sieving, sweep net, 9.i.2004 (P. Jäger, V. Vedel), 1♂2♀ 3 juvs. in SMF; Muang Sing, Nam Det (21°10.0'-10.2'N, 101°14.4'-14.7'E), 820-1100 m a.s.l., secondary forest, along path, soil and vegetation, hand, sweep net, sieving, 6.xi.2004 (P. Jäger, V. Vedel), 1♀ in SMF. *Luang Prabang Prov.*: Pak Ou [20°03'N, 102°13'E], jungle, outside caves, by hand, 12.xi.2004 (P. Jäger, V. Vedel), 1♂1♀ in SMF.

*Pholcus chiangdao* n. sp.

Figs. 508-510, 525, 526, 547-551

*Type.* Male holotype from Thailand, Chiang Mai Prov., Doi Chiang Dao Wildlife Sanctuary, Amphem Chiangdao (19°19.2'N, 98°49.8'E), ca. 1500 m a.s.l.,

below guest house along road, 2.x.2003 (ATOL Expedition 2003), in MACN.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from most congeners by combination of absence of AME, orange mark on male carapace (Fig. 508), and male cheliceral morphology (Fig. 549); from very similar *Ph. kbene* and *Ph. kinabalu* by male palpal morphology (shapes of procurus and appendix; Figs. 547, 548) and female internal genitalia (elongate pore plates, Figs. 526, 551).

*Male* (holotype). Total body length 4.1, carapace width 1.1. Leg 1: 36.7 (8.5 + 0.5 + 8.5 + 17.1 + 2.1), tibia 2: 5.1, tibia 3: 2.9, tibia 4: 4.5; tibia 1 L/d: 80. Habitus as in Fig. 508. Carapace pale ochre-yellow with orange median mark including ocular area, clypeus ochre-yellow, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale ochre-gray. Distance PME-PME 495  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, triads on short stalks directed laterally. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 549, distal apophyses apparently without modified hairs, proximally with one pair of light frontal apophyses. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 547 and 548, coxa unmodified, trochanter with distinctively bent retrolatero-ventral apophysis, femur barely modified, procurus with strong ventral apophysis distally, bulb with unculus, short weakly sclerotized embolus, small and simple curved appendix. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 9.3, 9.5.

*Female.* In general similar to male but triads closer together (distance PME-PME 250  $\mu$ m). Females appear to be dimorphic in coloration (Figs. 509, 510): morph a, with orange carapace like males, clypeus with brown transverse band below light field under ocular area; morph b, with brown mark on carapace and brown clypeus. Of the five females collected with the male type, three are morph a, two morph b. Tibia 1 in 5 females: 6.4-7.5 (mean 6.8). Epigynum slightly to strongly protruding, dark internal arc visible through cuticle anteriorly (Fig. 525), posteriorly with narrow sclerite with

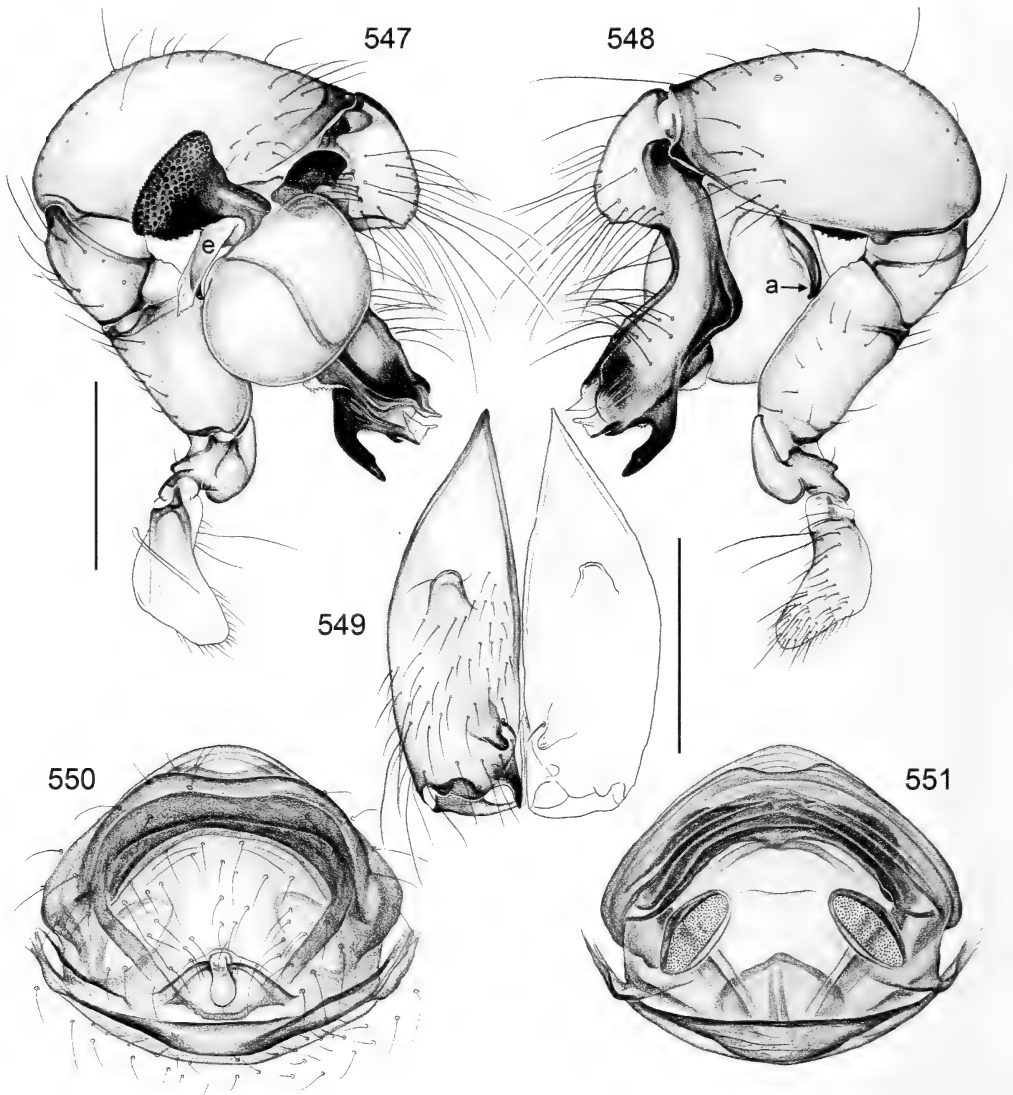


FIG. 547-551. *Pholcus chiangdao*. 547, 548. Left male palp, prolateral and retrolateral views. 549. Male chelicerae, frontal view. 550, 551. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (547, 548), 0.3 (549).

'knob' (Fig. 550); internal genitalia as in Figs. 526 and 551.

*Distribution.* Known from Thailand, Chiang Mai Prov., and from specimens assigned tentatively (because no males available) from Nakhon Nayok Prov. (Fig. 529).

*Material examined.* THAILAND: *Chiang Mai Prov.*: Doi Chiang Dao Wildlife Sanctuary, Amphem Chiangdao: ♂ holotype above; same data, 5 ♀ in MACN.

Chiang Mai Distr., Doi Suthep near Monthathan waterfalls [18°49.0'N, 98°55.5'E], 750 m a.s.l., 11.ii.1997 (P. Schwendinger), 2♂ in MHNG; Doi Suthep [18°48.3'N, 98°55.3'E], 1150 m a.s.l., 17.xi.1990 (P. Schwendinger), 1♀ in MHNG.

*Assigned tentatively:* THAILAND: *Nakhon Nayok Prov.*: Khao Yai N. P. [-14°24'N, 101°22'E], primary forest near water, 5.xi.1987 (C.L. & P.R. Deeleman), 1♀ in RMNH.



*Pholcus khene* n. sp.

Figs. 552-555

*Type.* Male holotype from Laos, Champasak Prov., Muang Bachieng, Ban Lak 38, That Fane (15°11.0'N, 106°07.6'E), 950 m a.s.l., plateau, coffee plantation, leaf litter and vegetation, at night, by hand, 19. iii.2010 (P. Jäger, J. Martens), in SMF.

*Etymology.* The khene (also khaen, kaen and khen) is a mouth organ of Lao origin that creates a sound similar to that of the violin; noun in apposition.

*Diagnosis.* Distinguished from most congeners by combination of absence of AME, orange mark on male carapace, and male cheliceral morphology (similar to *Ph. chiangdao*, cf. Fig. 549); from very similar *Ph. chiangdao* and *Ph. kinabalu* by male

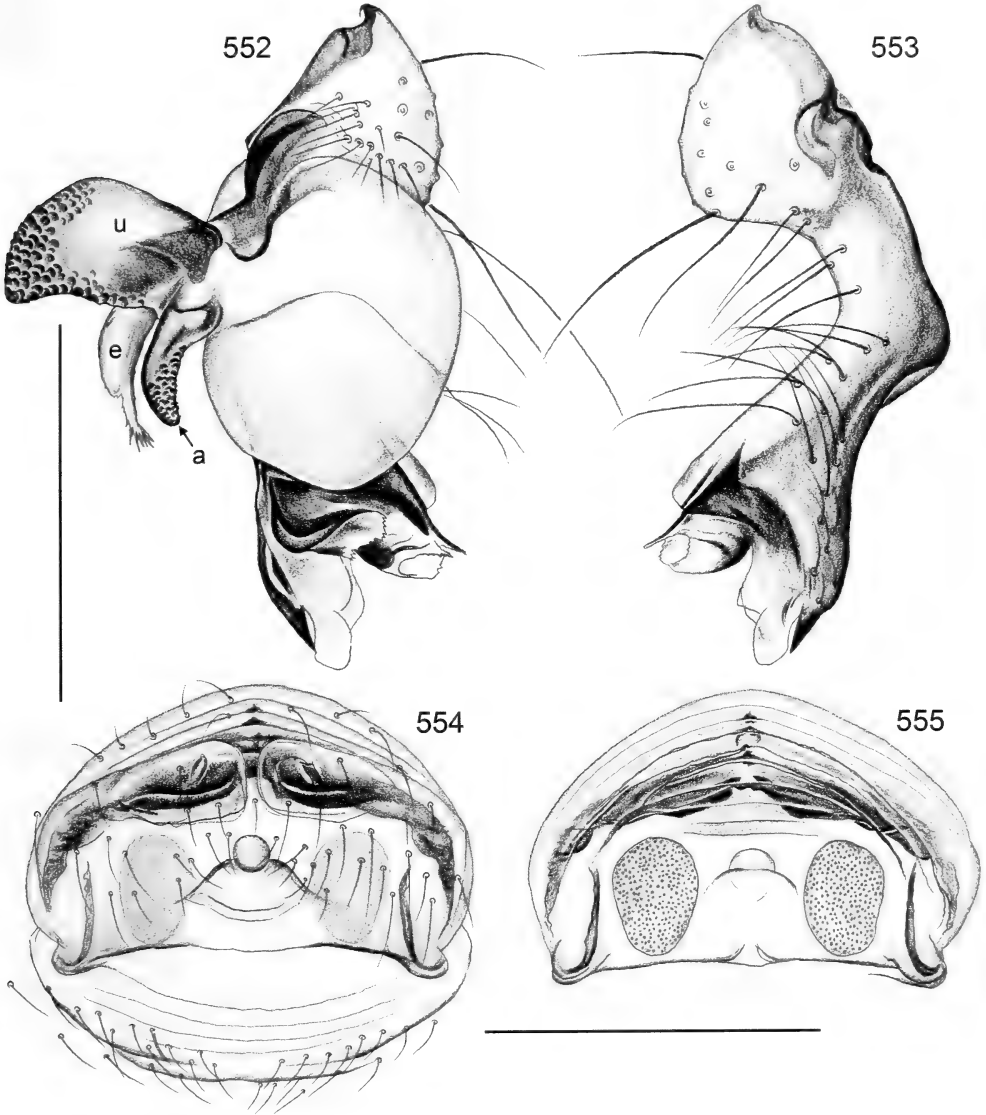


FIG. 552-555. *Pholcus khene*. 552. Left genital bulb and procurus, prolateral view. 553. Left procurus, retrolateral view. 554, 555. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

palpal morphology (shapes of procurus, uncus, and appendix; Figs. 552, 553) and female internal genitalia (oval pore plates, Figs. 555).

*Male* (holotype). Total body length 4.2, carapace width 1.0. Leg 1: 34.8 (8.2 + 0.4 + 8.2 + 15.9 + 2.1), tibia 2: 4.8, tibia 3: 2.6, tibia 4: 4.2; tibia 1 L/d: 77. Habitus similar to *Ph. chiangdao* (cf. Fig. 508). Carapace pale ochre-yellow with orange median mark, ocular area and clypeus pale ochre-yellow, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen monochromous pale ochre-gray. Distance PME-PME 365  $\mu\text{m}$ , diameter PME 125  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , no trace of AME. Ocular area barely elevated, triads on short stalks directed laterally. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae similar to *Ph. chiangdao* (cf. Fig. 549) but slightly smaller and distal apophyses slightly longer. Sternum wider than long (0.68/0.56), unmodified. Palps in general very similar to *Ph. chiangdao* (cf. Figs. 547, 548) including distinctive shape of trochanter apophysis, but smaller (size rather as in *Ph. kinabalu*); procurus with different processes distally (Fig. 553), bulb with uncus, short weakly sclerotized embolus, small and simple curved appendix (Fig. 552). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally -15 visible in dissecting microscope.

*Variation*. Tibia 1 in three other males: 8.2, 8.2, 8.3.

*Female*. In general similar to male but triads closer together (distance PME-PME 205  $\mu\text{m}$ ), clypeus dark brown. Females may be dimorphic in coloration like in *Ph. chiangdao* and *Ph. kinabalu* but only one female specimen is known. Tibia 1: 7.1. Epigynum slightly protruding, dark internal arc visible through cuticle anteriorly, posteriorly with small sclerite with 'knob' (Fig. 554); internal genitalia as in Fig. 555.

*Distribution*. Known from Laos and Vietnam (Fig. 529).

*Material examined*. LAOS: *Champasak Prov.*: Muang Bachieng, Ban Lak 38, That Fane: ♂ holotype above; same data but 16.iii.2010, 1♂ in SMF; same data but coffee plantation and primary forest, 12.iii.2010, 1♂ in SMF; same data but plateau, small waterfall, stream, leaf litter, vegetation, at day, by hand, sieving, 27.xi.2009 (P. Jäger, S. Bayer), 1♀ in SMF. Muang Bachieng, Ban Lak 35, That Itou (15°11.6'N, 106°06.1'E), 810 m a.s.l., secondary forest, close to river, vegetation, at night, by hand, 26.xi.2009 (P. Jäger, S. Bayer), 1♂ in SMF.

VIETNAM: *Lam Dong*: Fyan [11°53'N, 108°12'E], 900-1000 m a.s.l., 11.vii.-9.viii.1961 (N.R. Spencer), 2♂ in BPBM.

*Pholcus kinabalu* n. sp.

Figs. 511-514, 527, 528, 556-569

*Type*. Male holotype from Malaysia-Borneo, Sabah, Mt. Kinabalu N.P., Poring Hot Springs (6°02'N, 116°50'E), primary forest, 500-700 m a.s.l., canopy fogging *Aporusa* sp. (Euphorbiaceae), 26.-27.ii.1996 (A. Floren), in RMNH.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from most congeners by combination of absence of AME, orange mark on male carapace, and male cheliceral morphology (as in *Ph. chiangdao*, cf. Fig. 549); from very similar *Ph. chiangdao* and *Ph. khene* by male palpal morphology (shapes of procurus, appendix, trochanter apophysis; Figs. 556, 557) and female internal genitalia (round pore plates, Fig. 559).

*Male* (holotype). Total body length 3.8, carapace width 0.9. Leg 1: 7.9 + 0.4 + 7.8, metatarsus and tarsus missing, tibia 2: 4.8, tibia 3: 2.5, tibia 4: 4.3; tibia 1 L/d: 80. Habitus as in Figs. 511 and 512. Carapace pale ochre-yellow with orange median mark including ocular area, clypeus ochre-yellow, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale ochre-gray. Distance PME-PME 370  $\mu\text{m}$ , diameter PME 105  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , no trace of AME. Ocular area elevated, triads on short stalks directed laterally (Fig. 560). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in *Ph. chiangdao* (cf. Fig. 549), just slightly smaller. Sternum wider than long (0.6/0.5), unmodified. Palps as in Figs. 556 and 557, coxa unmodified, trochanter with short retrolateral protuberance and longer ventral apophysis, femur barely modified, procurus similar to *Ph. chiangdao* but different distally (especially ventral apophysis), bulb with uncus, short weakly sclerotized embolus, distinctive appendix set with scales. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Gonopore with four epandrous spigots (Fig. 567). ALS with only two spigots each (Fig. 566).

*Variation*. Tibia 1 in 2 other males: 7.5, 7.8. Leg 1 in other male: 32.1 (7.7 + 0.4 + 7.8 + 14.2 + 2.0),

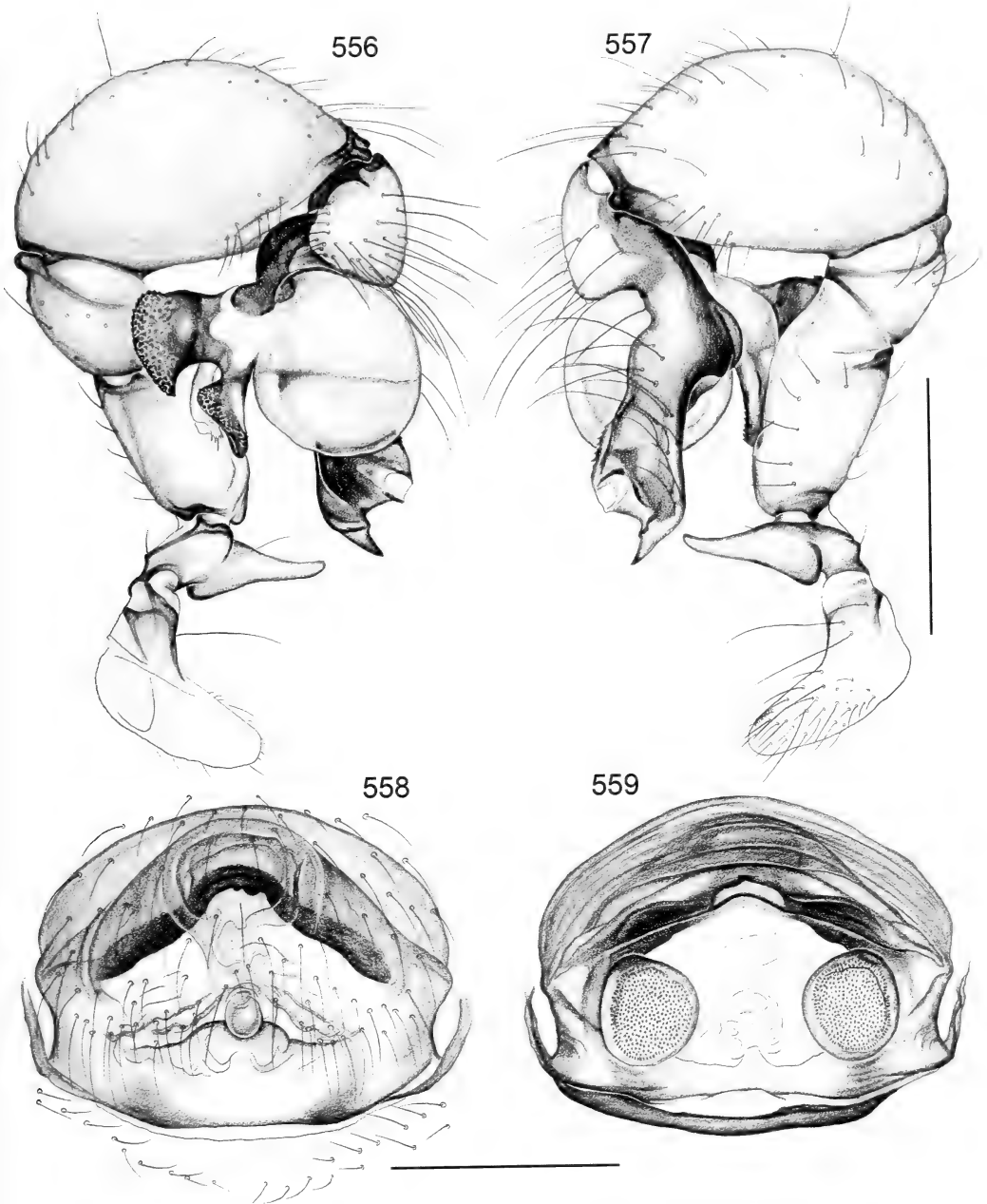


FIG. 556-559. *Pholcus kinabalu*. 556, 557. Left male palp, prolateral and retrolateral views. 558, 559. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (556, 557), 0.3 (558, 559).

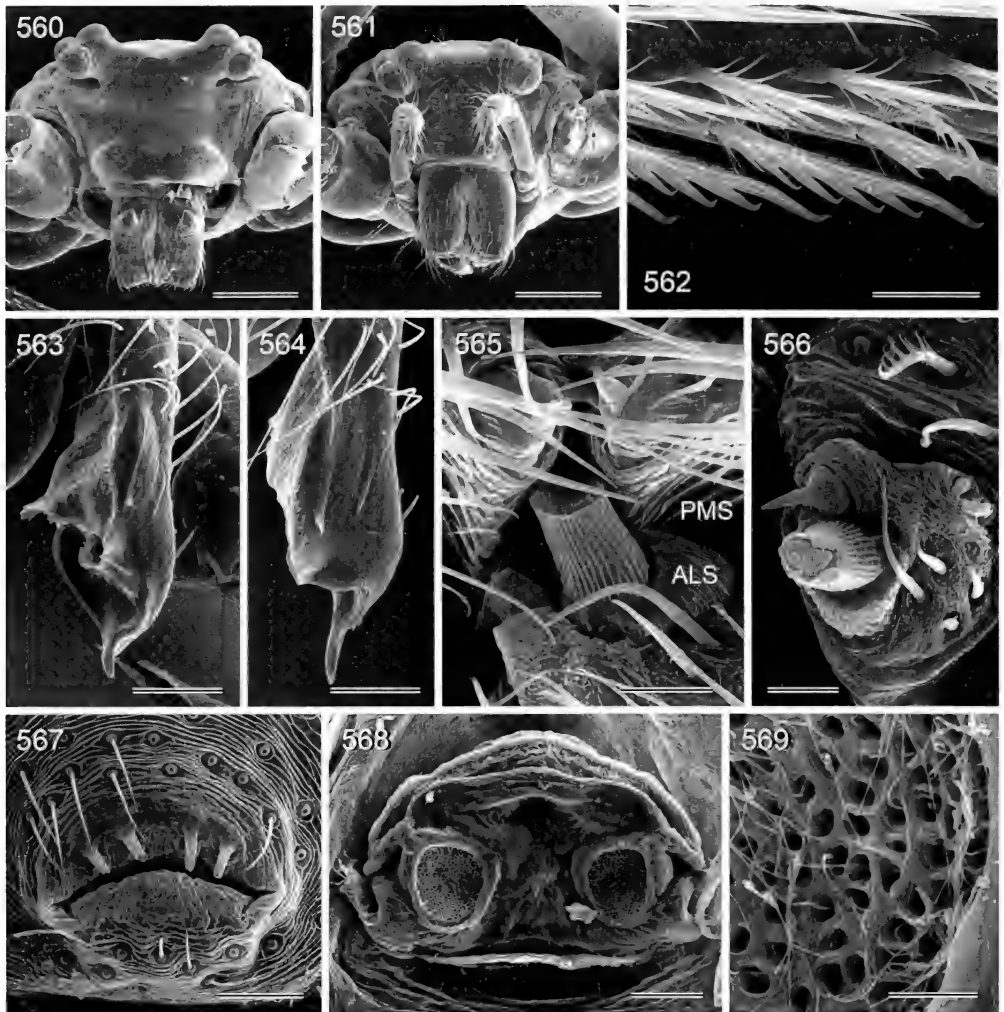


FIG. 560-569. *Pholcus kinabalu*. 560, 561. Male and female prosomata, frontal views. 562. Comb-hairs on female left tarsus 4. 563, 564. Left procurrus, dorsal and retrolatero-dorsal views. 565. Female ALS and PMS. 566. Male ALS. 567. Male gonopore. 568. Cleared female genitalia, dorsal view. 569. Detail of pore plate. Scale lines: 300  $\mu\text{m}$  (560, 561), 100  $\mu\text{m}$  (563, 564, 568), 40  $\mu\text{m}$  (567), 20  $\mu\text{m}$  (562), 10  $\mu\text{m}$  (565, 566, 569).

many tarsal pseudosegments, only distally visible in dissecting microscope.

*Female.* In general similar to male but triads less elevated and closer together (Fig. 561; distance PME-PME 240  $\mu\text{m}$ ). Females appear to be dimorphic in coloration (Figs. 513, 514): morph a, with orange carapace like males; morph b, with brown mark on carapace and mostly brown clypeus. Of the 36 females below, 17 are morph a, 16 morph b (3 females are artificially darkened and cannot be assigned to a color morph). Tibia 1 in 12 females: 6.0-6.7 (mean

6.3). Tarsus 4 with single row of comb-hairs (Fig. 562). Epigynum mostly slightly protruding, dark internal arc visible through cuticle anteriorly (Fig. 527), posteriorly with triangular sclerite with 'knob' (Figs. 527, 558); internal genitalia as in Figs. 528, 559, and 568. Spinnerets and spigots as in male (Fig. 565).

*Distribution.* Known from Mt. Kinabalu N.P., northern Borneo, only (Fig. 529).

*Material examined.* MALAYSIA-BORNEO: Sabah: Mt. Kinabalu N.P., Poring Hot Springs: ♂ holotype

above; same data, 4♀ (2 vials) in RMNH; same data but 19.ii.1996, 1♂2♀ (2 vials) in RMNH; same data but 19.ii.-26.iii.1996, 2♂1♀ in RMNH; same data but *Aglaia* sp. (Meliaceae) and *Aporusa lajeme*, 28.-30.iii.1998, night, 5♂13♀ in RMNH; same data but *Barringtonia*, 27.iii.1998, 7♀ in RMNH; same data but *Xanthophyllum affine* (Polygalaceae), 20.-23.i.1992, 21.iv.-12.v.1992 and 26.-27.ii.1996 (3 vials), 3♀ in RMNH. Poring Hot Springs, 28.-31.iii.1998 (C.L. Deeleman-Reinhold, P. Zborowski), 1♀

in RMNH; same data but primary forest, "no web", 31.iii.1998, 1♂ in RMNH. Poring, night fogging, 26.ii.1996 (collector not given), 1♂5♀ in RMNH.

*Pholcus andulau* n. sp.

Figs. 502-504, 521, 522, 570-574

*Type*. Male holotype from Brunei, Tutong District, Andulau Forest Reserve, Bukit Udal, Jalan Kechil Bukit Kubok (4°42.6'N, 114°37.6'E), 22.iv.2006 (J.K.H. Koh, 06.04.22.1011), in BMKB.

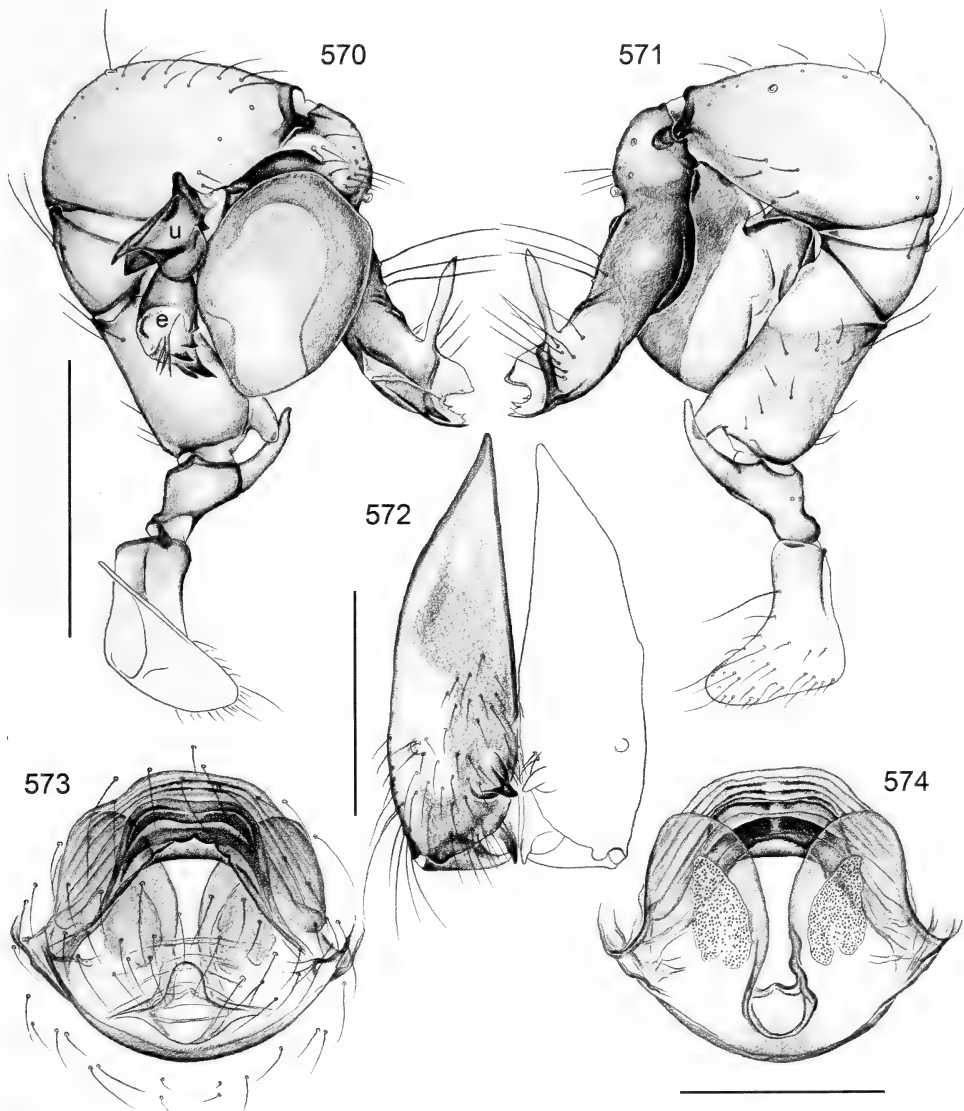


FIG. 570-574. *Pholcus andulau*. 570, 571. Left male palp, prolateral and retrolateral views. 572. Male chelicerae, frontal view. 573, 574. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (570, 571), 0.3 (572-574).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by dorsal process on procurus (Fig. 571), shapes of bulbal processes (especially embolus with sclerotized pointed teeth, Fig. 570), male cheliceral armature (Fig. 572), and female internal genitalia (Fig. 574).

*Male* (holotype). Total body length 4.4, carapace width 1.1. Leg 1: 45.1 (10.3 + 0.5 + 10.5 + 21.6 + 2.2), tibia 2: 6.5, tibia 3: 3.6, tibia 4: 5.8, tibia 1L/d: 103. Habitus as in Figs. 502 and 503. Carapace pale ochre-yellow with indistinct V-mark posteriorly, ocular area and clypeus darker brown, sternum whitish, legs pale ochre-yellow, patella area and tibia-metatarsus joints brown, abdomen ochre-gray with dark dorsal spots posteriorly, ventrally monochromous (cf. female, Fig. 504). Distance PME-PME, 250  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 35  $\mu$ m, AME absent, only some pigment on elevated AME-area, no lenses. Ocular area without longer hairs posteriorly, each triad on short stalk. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 572, distal apophyses without modified hairs, proximal apophyses very indistinct. Sternum wider than long (0.65/0.60), unmodified. Palps as in Figs. 570 and 571, coxa unmodified, trochanter with long retrolatero-ventral apophysis, femur with very distinctive protuberance directed proximally, procurus with distinctive semitransparent dorsal process, bulb with two processes: complex embolus, partly sclerotized with strong teeth, and small but complex uncus; without appendix. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments not visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 10.9 (missing in third male). The male from Sarawak is paler, has no mark on the carapace, and a monochromous abdomen, but has almost identical palpal structures (only teeth on embolus slightly more regular). The male from Lakiun Camp differs more in palpal structures: prolatero-distal spine on procurus stronger, dorsal process on procurus stronger, and teeth on embolus stronger and more regular.

*Female.* In general similar to male but eyes not on stalks, triads closer together (distance PME-PME 195  $\mu$ m). Tibia 1 in 2 females: 7.2, 7.6. One female with very dark clypeus. Epigynum a simple flat plate, very small relative to abdomen (Fig. 504), anterior

internal arc visible through cuticle (Figs. 521, 573), internal genitalia as in Figs. 522 and 574.

*Distribution.* Known from Brunei and one neighboring locality in Sarawak (Fig. 529).

*Material examined.* BRUNEI: *Tutong District:* Andulau Forest Reserve: ♂ holotype above. *Belait District:* Kampong Sukang (4°18.6'N, 114°37.7'E), secondary forest foliage, 6.vii.2006 (J.K.H. Koh, 06.07.06.0002), 1♀ in BMKB. *Temburong District:* Lakiun Camp [-4°45'N, 115°08'E], 5.ii.2005 (J.K.H. Koh, 05.02.05.0101), 1♂ in ZFMK; *Temburong, Kampong Selapong* [-4°41'N, 115°12.5'E], secondary forest, 15.iv.2006 (J.K.H. Koh, 06.04.15.1008), 1♀ in ZFMK.

MALAYSIA-BORNEO: *Sarawak:* "Mulu-Expedition" [Gunung Mulu N.P., -4°06'N, 114°54'E], "Karangas slopes", shrub layer, 8.v.1978 ("F.W."), 1♂1♀ in RMNH.

*Pholcus pyu* n. sp.

Figs. 505-507, 523, 524, 575-579

*Type.* Male holotype from Myanmar, Magway Division, Shwe Settaw Wildlife Reservation (20°03.6'N, 94°35.7'E), deciduous forest, at night, 28.ix.2003 (C.E. Griswold, P. Sierwald, D. Ubick, Aye Aye Cho, Tin Mya Soe), in CAS (9019786).

*Etymology.* Named for the Pyu (also Pyyu or Pyus; in Chinese records Pyao), a tibeto-birmanian people who lived in the central and northern regions of modern-day Myanmar from about 100 BCE to 840 CE. The Pyu were one of the first high cultures in Southeast Asia; noun in apposition.

*Diagnosis.* Easily distinguished from known congeners by male palpal morphology (long trochanter apophysis, tiny femur and large tibia, shapes of procurus and appendix; Figs. 575, 576), and by female internal genitalia (Fig. 579). The USNM has several males and females (4 vials) of a closely related undescribed species from Alaungdaw Kathapa N.P. in Sagaing Division, Myanmar that differs by appendix and procurus shapes.

*Male* (holotype). Total body length 3.1, carapace width 0.9. Leg 1: 28.2 (7.0 + 0.4 + 6.8 + 12.7 + 1.3), tibia 2: 4.4, tibia 3 missing, tibia 4: 3.8, tibia 1L/d: 90. Habitus as in Figs. 505 and 506. Carapace pale ochre-yellow with brown mark posteriorly, ocular area also brown, clypeus slightly darkened except medially, sternum whitish, legs pale ochre-yellow, patella area and tibia-metatarsus joints brown, abdomen pale ochre-gray with dark spots dorsally and laterally, no ventral marks (cf. female, Fig. 507).

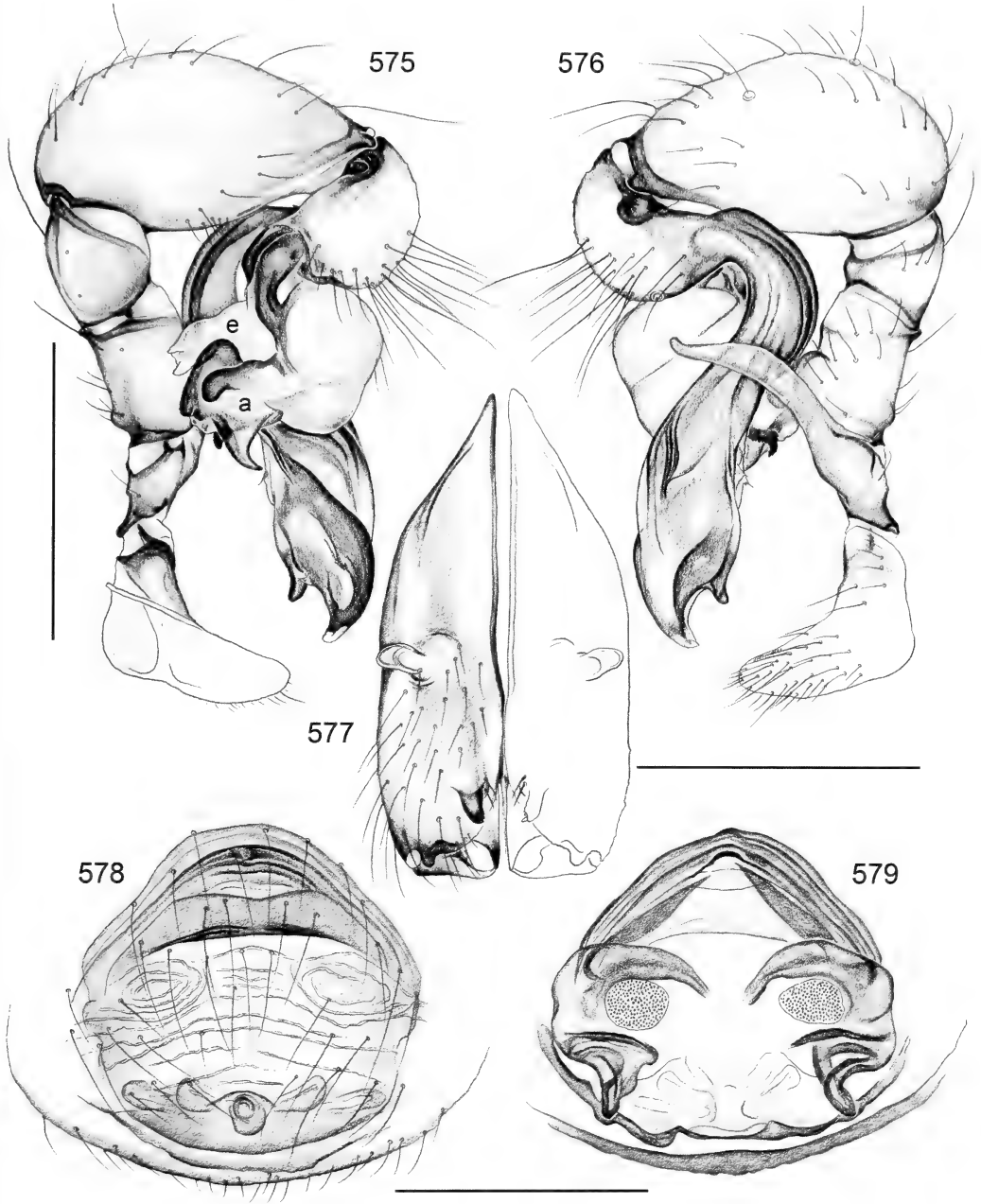


FIG. 575-579. *Pholcus pyu*. 575, 576. Left male palp, prolateral and retrolateral views. 577. Male chelicerae, frontal view. 578, 579. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (575, 576), 0.3 (577-579).

Distance PME-PME 230  $\mu\text{m}$ , diameter PME 90  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 20  $\mu\text{m}$ , diameter AME 45  $\mu\text{m}$ . Ocular area slightly elevated, with many longer hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 577, distal apophyses with two(?) modified hairs each, proximal apophyses relatively long. Sternum wider than long (0.6/0.5), unmodified. Palps as in Figs. 575 and 576, coxa unmodified, trochanter with very long retrolatero-ventral apophysis, femur very small in relation to tibia, with rounded ventral protrusion, procurus long and strongly curved, apparently without dorsal spines, bulb without uncus, with complex appendix, embolus wide, short, and weakly sclerotized. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 4; tarsus 1 with ~20 pseudosegments, only distally ~10 fairly distinct.

*Variation.* Tibia 1 in other male: 7.2.

*Female.* In general similar to male but ocular area light and triads slightly closer together (distance PME-PME 195  $\mu\text{m}$ ). Tibia 1 in 6 females: 4.8-6.3 (mean 5.4). Pigmentation on abdomen extremely variable, from monochromous to covered with many black spots; some females also with more pigment posteriorly on carapace and on sternum near leg coxae. Epigynum very simple externally, with small pale 'knob' posteriorly (Fig. 578), dark internal structures visible through cuticle anteriorly (Fig. 523); internal genitalia as in Figs. 524 and 579.

*Distribution.* Known from two localities in Myanmar (Fig. 529).

*Material examined.* MYANMAR: *Magway Division:* Shwe Settaw Wildlife Reservation: ♂ holotype above; same locality but deciduous forest at 20°05.9'N, 94°33.4'E, general collecting, 28.-29.ix.2003 (C.E. Griswold), 1♂2♀ in CAS (9019347, 9019386, 9019472). *Mandalay Division:* Mt. Popa Wildlife Reservation, ca 4 km E PoPaMyo (20°54.1'N, 95°13.9'E), 2♀ in CAS (9019545); same locality but 4.09 km 62° NNE PoPaMyo (20°57.0'N, 95°14.4'E), 1900' a.s.l., along road cuts near village, night, 25.ix.2003 (D. Ubick, C.E. Griswold), 3♀ in CAS (9011079-80).

*Pholcus satun* n. sp.

Figs. 515, 516, 580-582

*Type.* Male holotype from Thailand, Satun Prov., Thale Ban National Park (6°42.6'N, 100°10.2'E),

270 m a.s.l., 15.-18.x.2003 (ATOL Expedition 2003), in MACN.

*Erymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by unmodified male chelicerae (Fig. 582); also by long sickle-shaped bulbal process (Fig. 580) and shape of procurus (Fig. 581).

*Male* (holotype). Total body length 3.3, carapace width 0.8. Leg 1: 33.9 (8.1 + 0.3 + 8.1 + 15.7 + 1.7), tibia 2: 5.1, tibia 3: 3.0, tibia 4: 4.7; tibia 1 L/d: 114. Habitus as in Figs. 515 and 516. Carapace ochre-yellow with brown V-mark posteriorly, ocular area brown, clypeus not darkened, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale ochre-gray, with very indistinct darker marks latero-dorsally, ventrally monochromous. Distance PME-PME 320  $\mu\text{m}$ , diameter PME 90  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 25  $\mu\text{m}$ , diameter AME 15  $\mu\text{m}$ . Ocular area slightly elevated, each triad on short stalk. No thoracic furrow; clypeus unmodified. Chelicerae unmodified (Fig. 582). Sternum wider than long (0.6/0.5), unmodified. Palps as in Figs. 580 and 581, coxa unmodified, trochanter with long, terminally bifid ventral apophysis, femur only slightly widened, procurus long, S-shaped, with ventral pointed process but rather simple, bulb with only one process (embolus?), sclerotized and dorsally provided with small scales. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments fairly distinct distally.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 529).

*Material examined.* THAILAND: *Satun Prov.:* Thale Ban National Park: ♂ holotype above; same data, 1♂ in MACN.

*Pholcus minang* species group

*Diagnosis.* The core group includes medium-sized, long-legged spiders (body length ~3.5-4.5, leg 1: ~40-45); distinguished from other species groups in *Pholcus* by the combination of the following characters: elongate abdomen, six eyes, eye triads on stalks, male chelicerae with proximal and distal apophyses, distal apophyses 'divided' (consisting of two parts; e.g., Figs. 640, 664), male palpal femur proximally-ventrally enlarged (e.g., Figs. 628, 650), bulb with



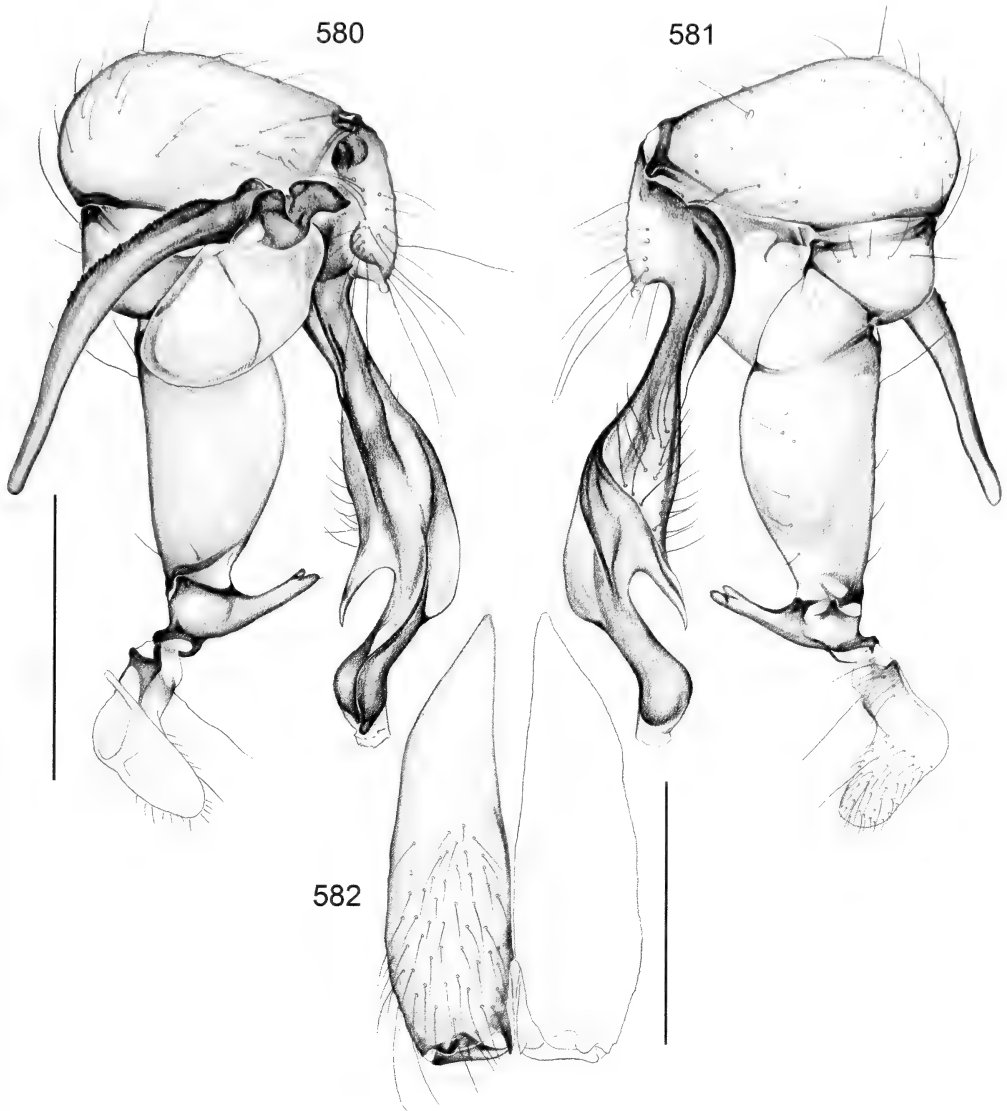


FIG. 580-582. *Pholcus satun*. 580, 581. Left male palp, prolateral and retrolateral views. 582. Male chelicerae, frontal view. Scale lines: 0.5 (580, 581), 0.3 (582).

uncus, with complex sclerotized embolus, without appendix, epigynum weakly sclerotized, with small 'knob'.

*Description* (core group). Body length ~3.5-4.5, carapace width ~1.0-1.3. AME absent, triads on long stalks, each stalk with pointed elongation (except *Ph. bohorok*). Clypeus and sternum unmodified. Male chelicerae with proximal and distal apophyses, distal apophyses consisting of two parts (e.g., Figs. 640,

664). Male palpal coxa unmodified, trochanter with small retrolateral apophysis, femur with distinctive enlargement proximo-ventrally, tarsus with conical dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines. Male bulb with uncus, complex sclerotized embolus, without appendix. Legs long, tibia 1 in males ~8-12, tibia 1 L/d ~105-115, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each

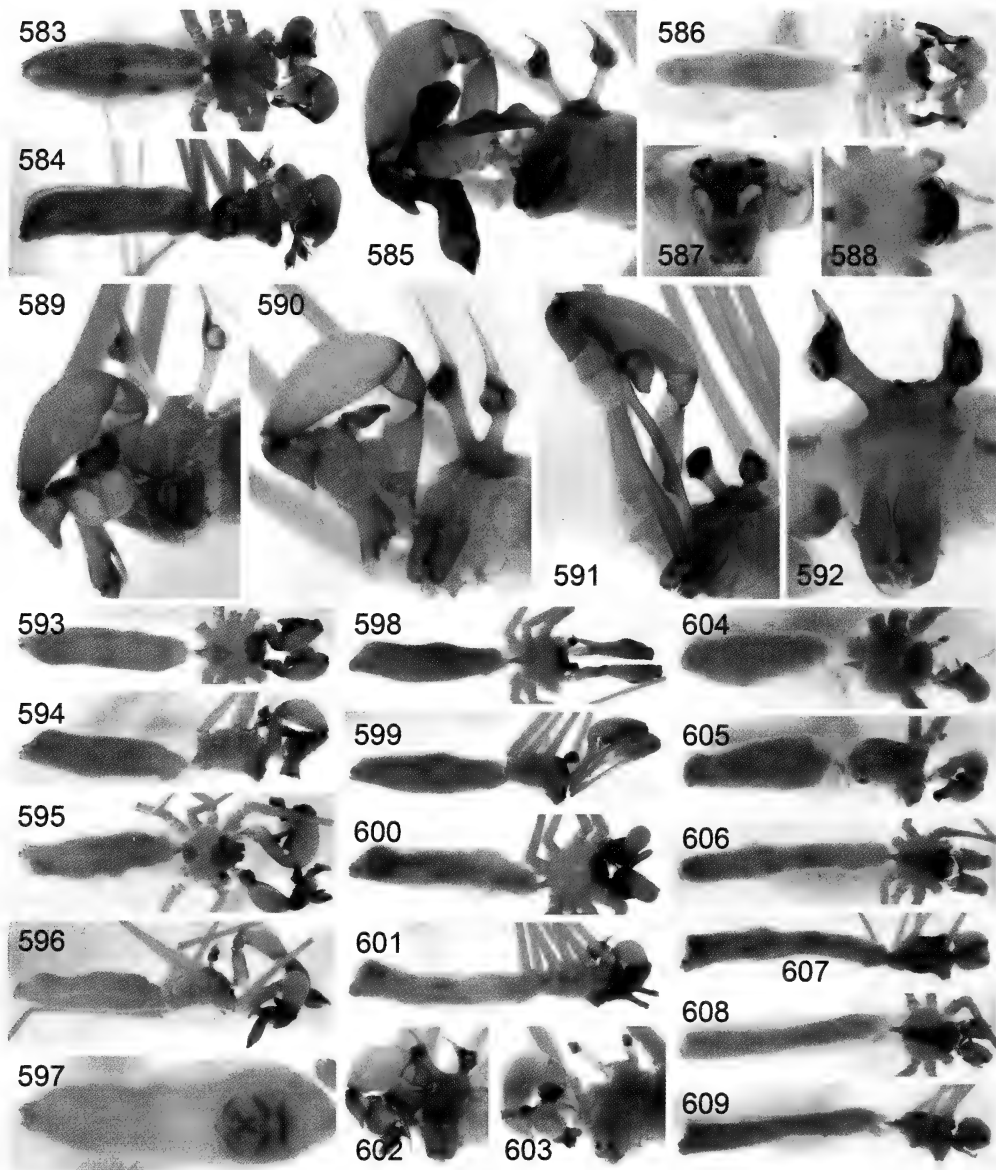


FIG. 583-609. *Pholcus minang* and *kerinci* species groups, habitus. 583, 584, 589. *Ph. burau*, male, dorsal and lateral views; male prosoma, frontal view. 585, 595-597. *Ph. singalang*, male prosoma, oblique view; male, dorsal and lateral views; female abdomen, ventral view. 586-588, 592. *Ph. atrigularis*, male dorsal view; female prosoma, frontal and dorsal views; male prosoma, frontal view. 590, 593, 594. *Ph. minang*, male prosoma, oblique view; male, dorsal and lateral views. 591, 598, 599. *Ph. boborok*, male prosoma, oblique view; male, dorsal and lateral views. 600-602. *Ph. tahai*, male, dorsal and lateral views; male prosoma, frontal view. 603-605. *Ph. diopsis*, male syntype, prosoma, oblique view; habitus, dorsal and lateral views. 606, 607. *Ph. kerinci*, male, dorsal and lateral views. 608, 609. *Ph. cibodas*, male, dorsal and lateral views.

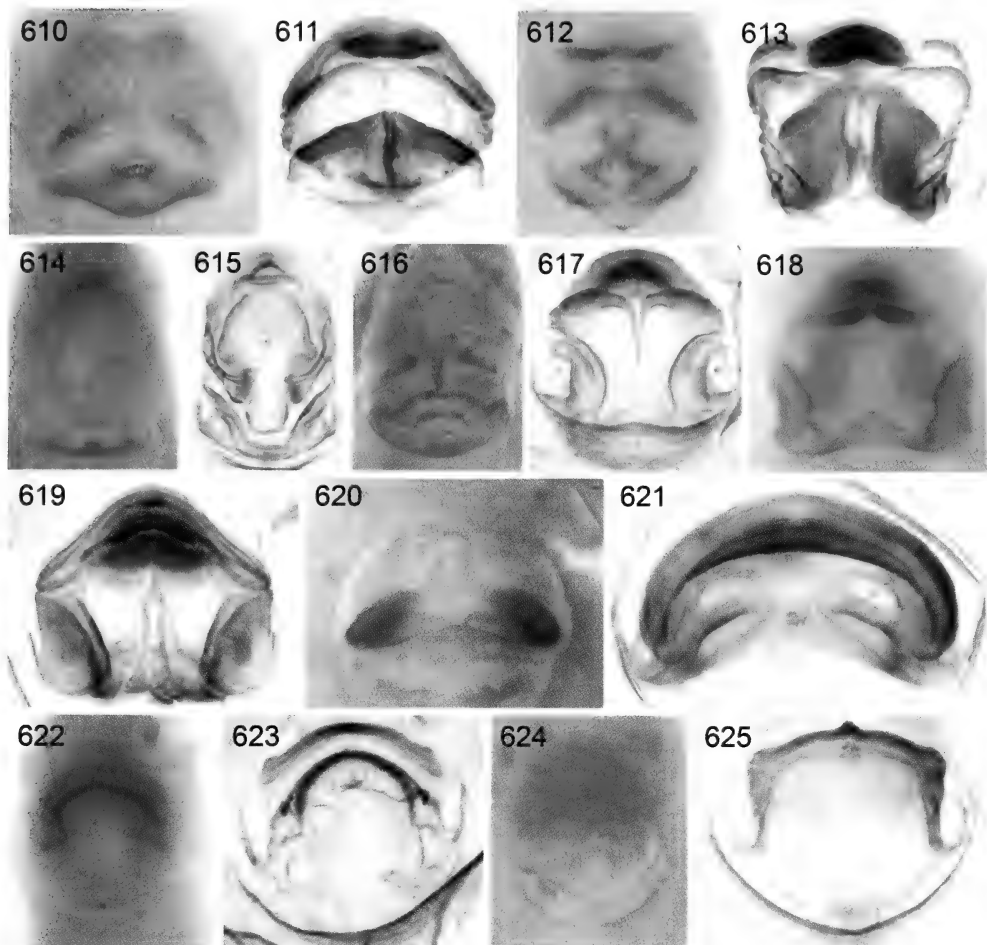


FIG. 610–625. *Pholcus minang* and *kerinci* species groups, epigyna, ventral views and cleared female genitalia, dorsal views. 610, 611. *Ph. minang*. 612, 613. *Ph. singalang*. 614, 615. *Ph. bohorok*. 616, 617. *Ph. tabai*. 618, 619. *Ph. atrigularis*. 620, 621. *Ph. diopsis*. 622, 623. *Ph. kerinci*. 624, 625. *Ph. cibodas*.

except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3–5%. Abdomen cylindrical, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads not on stalks, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~6–8). Epigynum weakly sclerotized, with ‘knob’, internal genitalia with pair of very large pore-plates.

*Monophyly.* In the analyses using equal and successive character weighting, the core group is supported by the proximo-ventral enlargement of the male palpal femur (char. 28) and possibly by the sclerotized embolus (Figs. 628, 649, 654, 657). As for the entire species group, these analyses identify three synapomorphies (chars. 3, 4, 21). Using implied character weighting with  $K=3-6$  still resolves the *Ph. minang* group as monophyletic, but based on different characters (chars. 48, 53); with  $K=1-2$ , the group becomes paraphyletic with respect to the *Ph. ethagala* group.

*Relationships.* The cladistic analyses using equal and successive character weighting (Fig. 25) place the *Ph. minang* group in a large polytomy. However, the group shows some intriguing similarities with *Panjange* and all analyses using implied weights support a close relationship with the *Ph. ethagala* group that in turn is close to *Panjange*. These three groups share long eye stalks (char. 3), often with pointed processes (char. 4); absence of proximal frontal apophyses on the male chelicerae (char. 18); divided distal cheliceral apophyses (char. 21); dorsal tarsal elongations (char. 34); and an unsclerotized epigynum (char. 65). Further details point in the same direction: (1) *Panjange iban* and *Pholcus tahai* (both from Borneo!) share a very distinctive structure at the tip of the procurus (Figs. 478, 683), but it does not seem to be present in other species (e.g., *Ph. minang*, Fig. 636); (2) the hooked retrolateral apophysis on the male palpal trochanter of some species reminds of a very similar apophysis in species of the *Pholcus ethagala* group, a group that is considered sister to *Panjange* in all analyses; (3) a femur with enlargement proximoventrally (char. 28) also occurs in the *Ph. ethagala* species group. Despite all these suggestive similarities, it is supposedly the uncus that is absent in *Panjange* while in the *Ph. minang* group it is the appendix.

Within the *Ph. minang* group, three species (*Ph. minang*, *Ph. singalang*, *Ph. hurau*) share a distinctive light branch on the uncus (char. 49; e.g., Fig. 637)

and a short hooked apophysis retrolaterally on the male palpal trochanter (e.g., Fig. 628). However, implied weighting with  $K=1-2$  fails to resolve this monophyly.

Among the three species that are assigned tentatively, two share a reduced appendix: *Ph. tahai* and *Ph. atrigularis*. *Pholcus diopsis* has a rather conservative bulb (uncus and appendix present, weakly sclerotized embolus), but pointed eye stalks and divided distal cheliceral apophyses suggest a close relationship with the *Ph. minang* core group.

*Natural history.* Judging from the sparse information on labels, most species seem to live on leaves in well preserved forests.

*Distribution.* The *Ph. minang* core group is restricted to Sumatra. The three species assigned tentatively occur on Borneo and the Malayan Peninsula (Fig. 626).

*Composition.* The *Ph. minang* group includes seven species; of these, five are newly described below, the other two are redescribed. Core group: *Ph. minang* n. sp.; *Ph. singalang* n. sp.; *Ph. hurau* n. sp.; *Ph. bohorok* n. sp.; assigned tentatively: *Ph. tahai* n. sp.; *Ph. atrigularis* (Simon, 1901), n. comb.; *Ph. diopsis* Simon, 1901.

*Pholcus minang* n. sp.

Figs. 590, 593, 594, 610, 611, 627-648

*Type.* Male holotype from Indonesia, Sumatra, Kerinci National Park [ $-2^{\circ}30'S$ ,  $101^{\circ}30'E$ ], 800 m

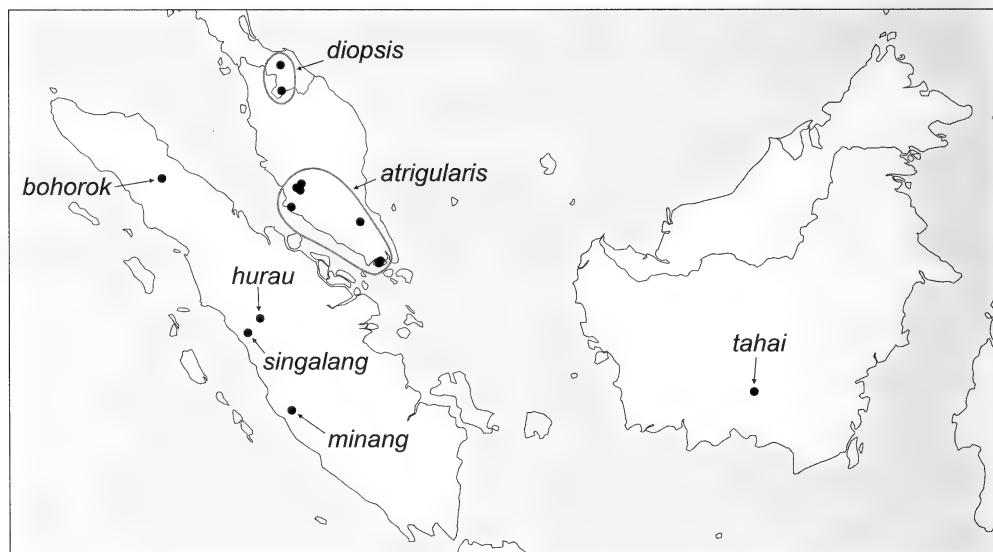


FIG. 626. Known distribution of the *Pholcus minang* species group.

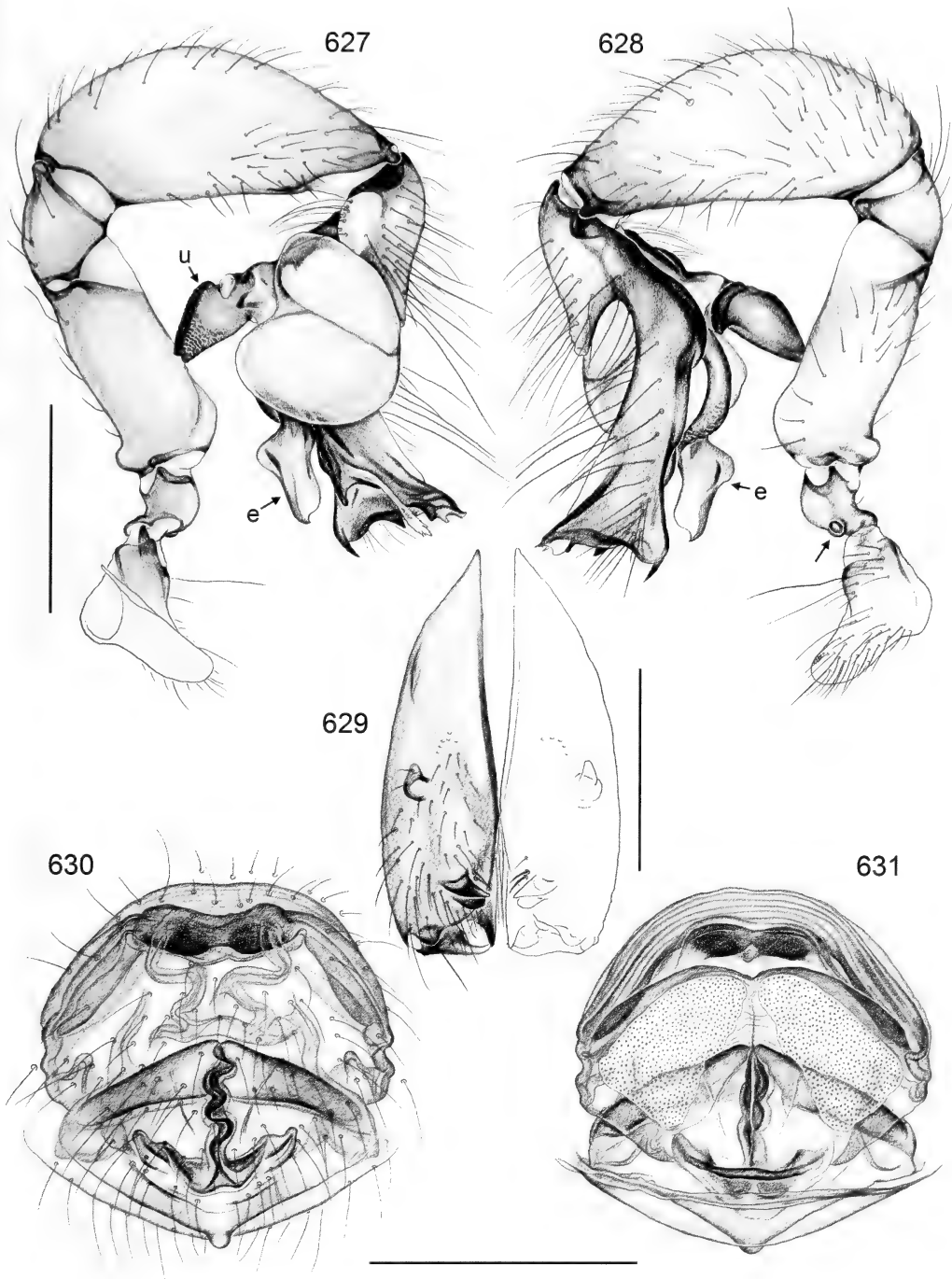


FIG. 627-631. *Pholcus minang*. 627, 628. Left male palp, prolateral and retrolateral views (arrow points at retrolateral trochanter apophysis). 629. Male chelicerae, frontal view. 630, 631. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (627, 628, 630, 631), 0.3 (629).

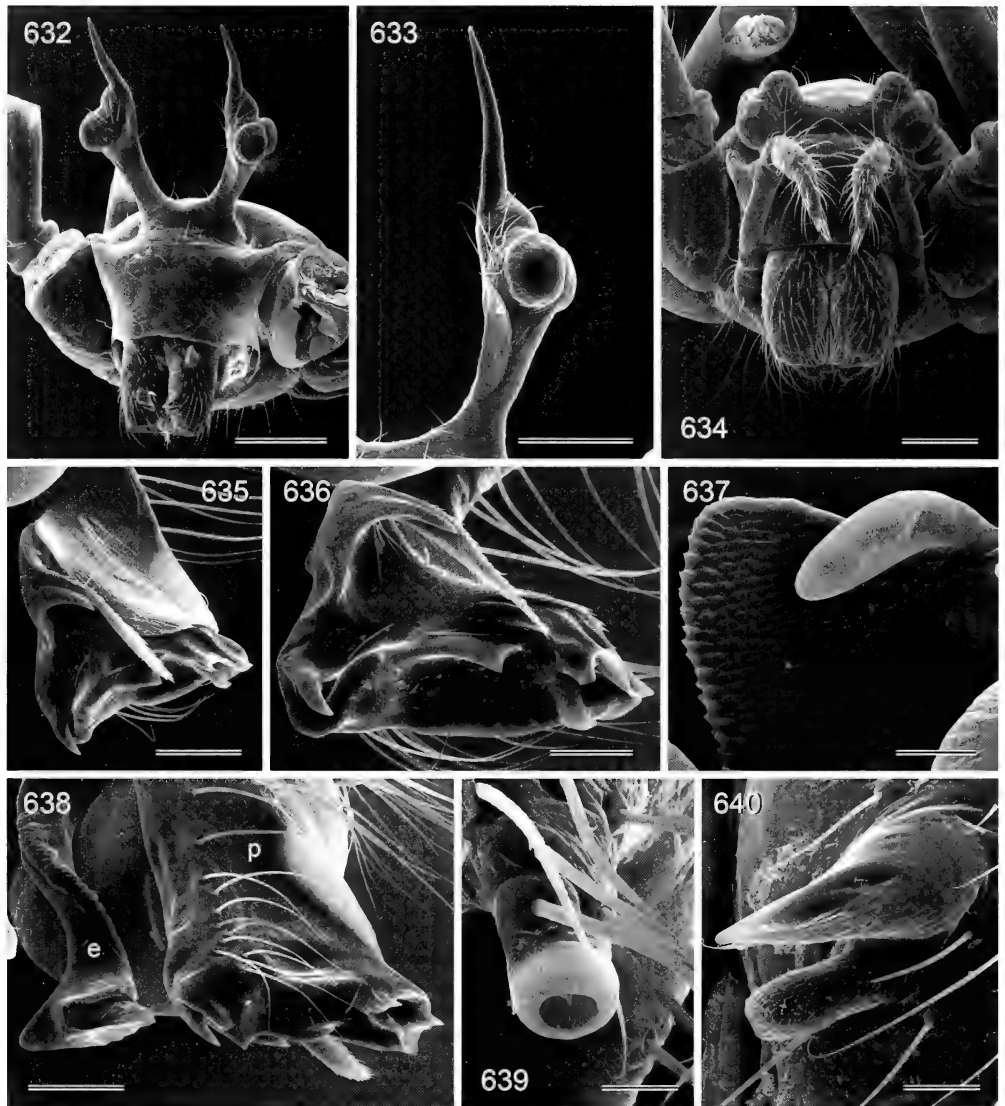


FIG. 632-640. *Pholcus minang*. 632. Male prosoma, frontal view (palps removed). 633. Left eye stalk, frontal view. 634. Female prosoma, frontal view. 635, 636. Left procurus, prolateral and prolatero-distal views. 637. Left uncus with proximal light branch, prolateral view. 638. Right procurus and embolus, retrolatero-distal view. 639. Male palpal tarsal organ. 640. Divided distal male cheliceral apophysis. Scale lines: 300  $\mu$ m (632), 200  $\mu$ m (633, 634), 100  $\mu$ m (635, 638), 60  $\mu$ m (636), 40  $\mu$ m (637), 20  $\mu$ m (639, 640).

a.s.l., near river from leaves, 21.-30.vii.1988 (S. Djojosudharmo), in RMNH.

*Etymology.* Named for the Minangkabau (also known as Minang or Padang), an ethnic group indigenous to the highlands of West Sumatra; noun in apposition.

*Diagnosis.* Distinguished from most congeners by combination of pointed male eye-stalks (Fig. 590), large sclerotized embolus (Figs. 627, 628), absence of appendix, and hooked apophysis retrolaterally on male palpal trochanter (Fig. 628); from similar species (*Ph. hurau*, *Ph. singalang*) by shapes of procurus

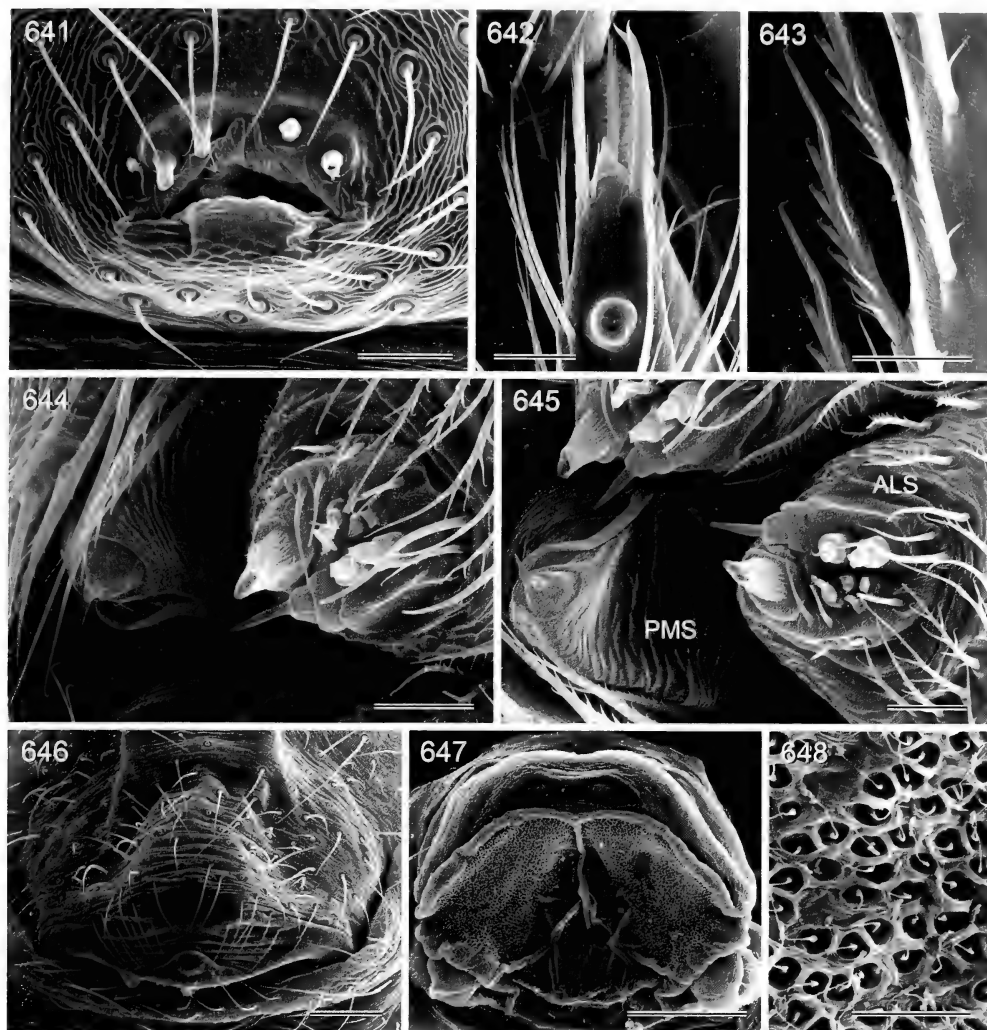


FIG. 641-648. *Pholcus minang*. 641. Male gonopore. 642. Tip of female palpal tarsus. 643. Comb-hairs on male tarsus 4. 644, 645. Male (644) and female (645) ALS and PMS. 646. Epigynum. 647. Cleared female genitalia, dorsal view. 648. Detail of pore plate. Scale lines: 200  $\mu$ m (647), 100  $\mu$ m (646), 30  $\mu$ m (641, 642), 20  $\mu$ m (643-645, 648).

and uncus (Figs. 627, 628); from *Ph. singalang* also by morphology of female internal genitalia (Figs. 611, 631).

*Male* (holotype). Total body length 3.8, carapace width 1.0. Leg 1: 38.5 (9.1 + 0.4 + 9.3 + 17.5 + 2.2), tibia 2: 5.6, tibia 3: 3.4, tibia 4: 5.1; tibia 1 L/d: 105. Habitus as in Figs. 593 and 594. Carapace ochre-yellow with brown triangular mark posteriorly, ocular area and clypeus brown, sternum whitish, legs ochre-

yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray, with some indistinct dark marks dorsally and laterally, ventrally monochromatic. Distance PME-PME 470  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, each triad on long stalk with additional long pointed process (Figs. 590, 632, 633). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 629, with divided distal apophyses



(Fig. 640) and one pair of proximal apophyses. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 627 and 628, coxa unmodified, trochanter with small retrolateral hooked apophysis, ventrally only indistinct hump, femur with distinct dorsal apophysis and larger ventral protuberance proximally, tibia very long, tarsus slightly elongated dorsally, tarsal organ capsulate (Fig. 639), procurus simple except distally, with transparent prolateral branch (Figs. 635, 636), bulb with small uncus with proximal light branch (Fig. 637), partly sclerotized long embolus widened distally, without appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseudosegments (>30 on tarsus 1), only distally visible in dissecting microscope; tarsus 4 with single row of comb-hairs (Fig. 643). Gonopore with four epiandrous spigots (Fig. 641); ALS with eight spigots each (Fig. 644).

*Variation.* Tibia 1 in 4 other males: 8.2, 8.4, 9.0, 9.4. One male without pattern on abdomen.

*Female.* In general similar to male but ocular area only slightly elevated, triads not on stalks, closer together (Fig. 634; distance PME-PME 240  $\mu$ m), pattern on abdomen variably distinct, sometimes absent. Tibia 1 in 12 females: 6.0-7.2 (mean 6.7). Epigynum slightly to strongly protruding, with distinctive anchor-shaped internal structure and anterior arc visible through cuticle (Fig. 610), small 'knob' (Figs. 630, 646); internal genitalia as in Figs. 611, 631, and 647. Spinnerets as in male (Fig. 645).

*Distribution.* Known from type locality only (Fig. 626).

*Material examined.* INDONESIA: Sumatra: Kerinci National Park, ♂ holotype above; same data, 5♂15♀ in RMNH; same data, 1♂ in RMNH.

*Pholcus singalang* n. sp.

Figs. 585, 595-597, 612, 613, 649-653

*Type.* Male holotype from Indonesia, Sumatra, Sumatera Barat, Mt. Singalang, Anai [-0°28.6'S, 100°21.2'E], 450-500 m a.s.l., secondary forest, from leaves, 20.-22.vi.1994 (S. Djojusudharmo), in RMNH.

*Eymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from most congeners by combination of pointed male eye-stalks (Fig. 585), large sclerotized embolus (Fig. 649), absence of appendix, and hooked apophysis retrolaterally on male

palpal trochanter (Fig. 650); from similar species (*Ph. hurau*, *Ph. minang*) by shapes of procurus and uncus (Figs. 649, 650); from *Ph. minang* also by morphology of female internal genitalia (Figs. 613, 653).

*Male* (holotype). Total body length 3.7, carapace width 1.0. Leg 1 missing, tibia 2: 5.7, tibia 3: 3.3, tibia 4: 5.0. Habitus as in Figs. 595 and 596. Carapace ochre-yellow with brown triangular mark posteriorly, ocular area brown, clypeus only slightly darkened, sternum and legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen monochromous ochre-gray, no ventral pattern (cf. female, Fig. 597). Distance PME-PME 575  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, each triad on long stalk with additional pointed process (Fig. 585). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 651, with divided distal apophyses and one pair of weakly sclerotized proximal apophyses. Sternum wider than long (0.75/0.60), unmodified. Palps as in Figs. 649 and 650, coxa unmodified, trochanter with retrolateral apophysis (longer than appears in Fig. 650), femur with distinct proximo-dorsal apophysis and larger ventral protuberance proximally, tibia very long, tarsus slightly elongated dorsally, procurus quite simple, with slender prolateral branch, bulb with large uncus with small, weakly sclerotized latero-dorsal branch, partly sclerotized long and complex embolus, without appendix. Legs without spines and curved hairs, few vertical hairs.

*Variation.* Other male with some indistinct darker marks dorsally on abdomen.

*Female.* In general similar to male but ocular area only slightly elevated, triads not on stalks, much closer together (distance PME-PME 250  $\mu$ m), clypeus dark brown. Tibia 1 in 5 females: 6.5-7.3 (mean 7.0). Epigynum externally simple and weakly sclerotized, complex internal structures visible through cuticle (Fig. 612), posteriorly with small 'knob' on triangular projection (Fig. 652); internal genitalia as in Figs. 613 and 653.

*Distribution.* Known from type locality only (Fig. 626).

*Material examined.* INDONESIA: Sumatra: Sumatera Barat: Mt. Singalang, Anai: ♂ holotype above; same data, 1♂9♀ in RMNH.

*Pholcus hurau* n. sp.

Figs. 583, 584, 589, 654-656

*Type.* Male holotype from Indonesia, Sumatra, West Sumatra Prov., N of Payakumbuh, cave above Hurau



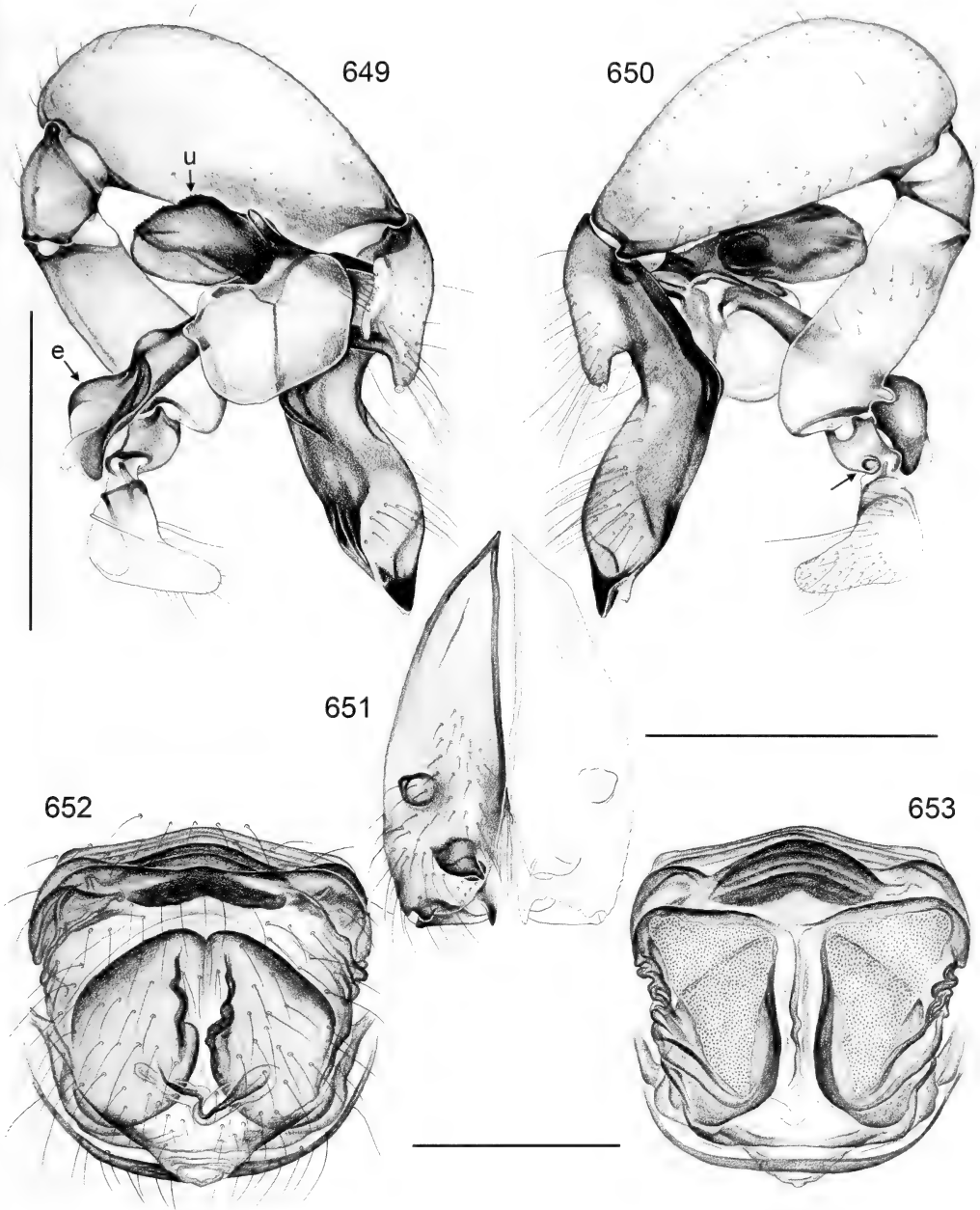


FIG. 649-653. *Pholcus singalang*. 649, 650. Left male palp, prolateral and retrolateral views (arrow points at retrolateral trochanter apophysis). 651. Male chelicerae, frontal view. 652, 653. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (649, 650), 0.5 (651-653).

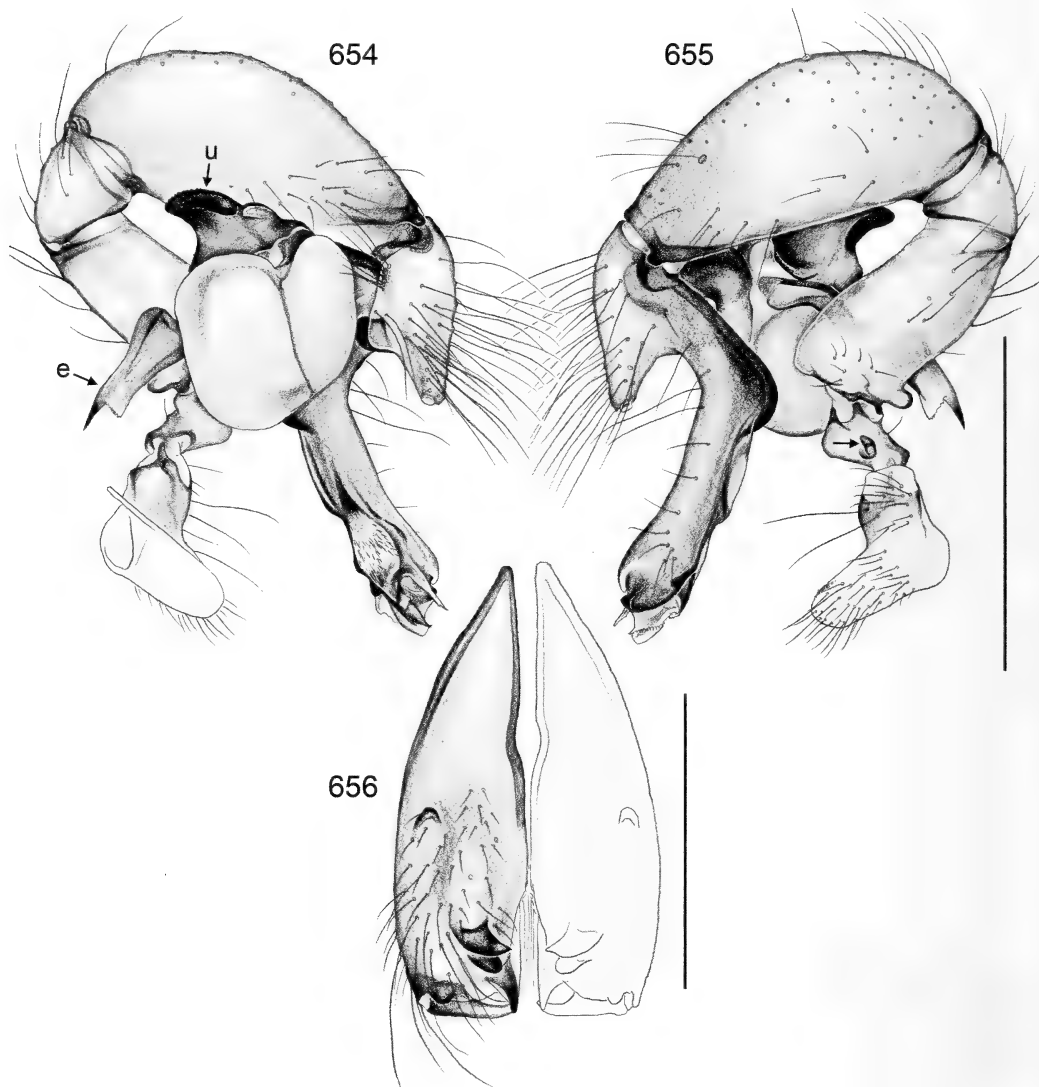


FIG. 654-656. *Pholcus burau*. 654, 655. Left male palp, prolateral and retrolateral views (arrow points at retrolateral trochanter apophysis). 656. Male chelicerae, frontal view. Scale lines: 1.0 (654, 655), 0.5 (656).

Canyon (0°06.4'S, 100°40.6'E), limestone and granite, entrance to 100 m, 700 m a.s.l., 9.vi.2006 (P. Schwendinger), in MHNG.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from most congeners by combination of pointed male eye-stalks (Fig. 589), large sclerotized embolus (Fig. 654), absence of appendix, and hooked apophysis retrolaterally on male

palpal trochanter (Fig. 655); from similar species (*Ph. minang*, *Ph. singalang*) by shapes of procurus and uncus (Figs. 654, 655).

*Male* (holotype). Total body length 4.4, carapace width 1.3. Leg 1: 12.2 + 0.6 + 12.3, metatarsus and tarsus missing, tibia 2: 7.9, tibia 3: 4.7, tibia 4: 6.7; tibia 1 L/d: 107. Habitus as in Figs. 583 and 584. Carapace light brown, slightly darker medially, ocular area with median brown stripe, clypeus not darkened,

sternum light brown near coxae, lighter medially, legs light brown, patellae and tibia-metatarsus joints darker brown, abdomen ochre-gray with two pairs of indistinct darker marks dorsally, ventrally monochromatic. Distance PME-PME 710  $\mu\text{m}$ , diameter PME 90  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , no trace of AME. Ocular area elevated, few hairs on posterior side, each triad on long stalk with additional pointed process (Fig. 589). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 656, with divided distal apophyses (apparently without modified hairs) and one pair of smaller proximal apophyses. Sternum wider than long (0.80/0.55), unmodified. Palps as in Figs. 654 and 655, coxa unmodified, trochanter with retrolateral apophysis, ventrally only indistinct hump, femur with distinct dorsal apophysis and larger ventral protuberance proximally, tarsus slightly elongated dorsally, procurus simple except distally, with large prolateral branch, bulb with complex unculus with light proximal branch, partly sclerotized long embolus with distal pointed process, without appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 626).

*Material examined.* INDONESIA: Sumatra: *West Sumatra Prov.*: N of Payakumbuh: ♂ holotype above.

*Pholcus bohorok* n. sp.

Figs. 591, 598, 599, 614, 615, 657-672

*Type.* Male holotype from Indonesia, Sumatra, Sumatera Utara, Gunung Leuser, Bohorok [3°32.6'N, 98°07.2'E], vii.-xii.1983 (collector not given), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from close relatives by combination of male eye-stalks without pointed processes (Figs. 662, 665), long sclerotized embolus (Fig. 657), male palpal femur with distinctive ventral process (Fig. 658), long slender procurus (Fig. 658), small unculus (Figs. 657, 669), absence of appendix, and very elongated female internal genitalia (Figs. 615, 661).

*Male* (holotype). Total body length 4.0, carapace width 1.0. Leg 1: 42.6 (9.9 + 0.5 + 10.0 + 19.7 + 2.5), tibia 2: 6.0, tibia 3: 3.4, tibia 4: 5.4; tibia 1 L/D

113. Habitus as in Figs. 598 and 599. Carapace ochre-yellow with light brown mark posteriorly, ocular area and clypeus brown, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with few indistinct darker spots dorsally. Distance PME-PME 400  $\mu\text{m}$ , diameter PME 95  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , no trace of AME. Ocular area elevated, each triad on long stalk (Figs. 662, 665). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 659, with divided distal apophyses (Fig. 664) and one pair of weakly sclerotized proximal apophyses. Sternum wider than long (0.70/0.55), unmodified. Palps as in Figs. 657 and 658, coxa unmodified, trochanter with short retrolateral apophysis, femur with distinctive ventral process proximally, femur and tibia very long, procurus very long but simple, with ventral apophysis, tarsal organ capsulate (Fig. 666), bulb with simple unculus, very long sclerotized embolus, without appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseudosegments, only distally fairly distinct. Gonopore with four epiandrous spigots (Fig. 667).

*Variation.* Tibia 1 in 20 other males: 9.0-10.9 (mean 9.9).

*Female.* In general similar to male but triads not on stalks, much closer together (Fig. 663; distance PME-PME 240  $\mu\text{m}$ ). Tibia 1 in 20 females: 7.0-8.0 (mean 7.5). Epigynum simple, weakly sclerotized elongated area, internal anterior arc visible through cuticle (Fig. 614), narrow posterior sclerite with small 'knob' (Figs. 660, 672); internal genitalia as in Figs. 615 and 661. ALS with eight spigots each (Fig. 671).

*Distribution.* Known from type locality only (Fig. 626).

*Material examined.* INDONESIA: Sumatra: *Sumatera Utara*: Gunung Leuser, Bohorok: ♂ holotype above; same data, 57♂-60♀ in RMNH; same locality, along river, 12.iii.1983 (collector not given), ~15♂15♀ in RMNH; same locality, trail 2, 2.i.1984 (C.L. Deeleman-Reinhold), 1♀ in RMNH; same locality, above rehabilitation centre, 25.iv.1983 (S. Djojosedharmo), 4♀ in RMNH; same locality, riverside, 12.ii.1983, 4♂14♀ in RMNH; same locality, untouched forest, 7.iii.1983, 1♂ in RMNH; same locality, bamboo behind centre, 3.i.1984 (P.R. Deeleman), 1♂ in RMNH; same locality, "sink", 1.iii.1983, collector not given, 1♀ in RMNH. Bohorok A, along river, 31.v.1983 (Suharto), ~15♂15♀

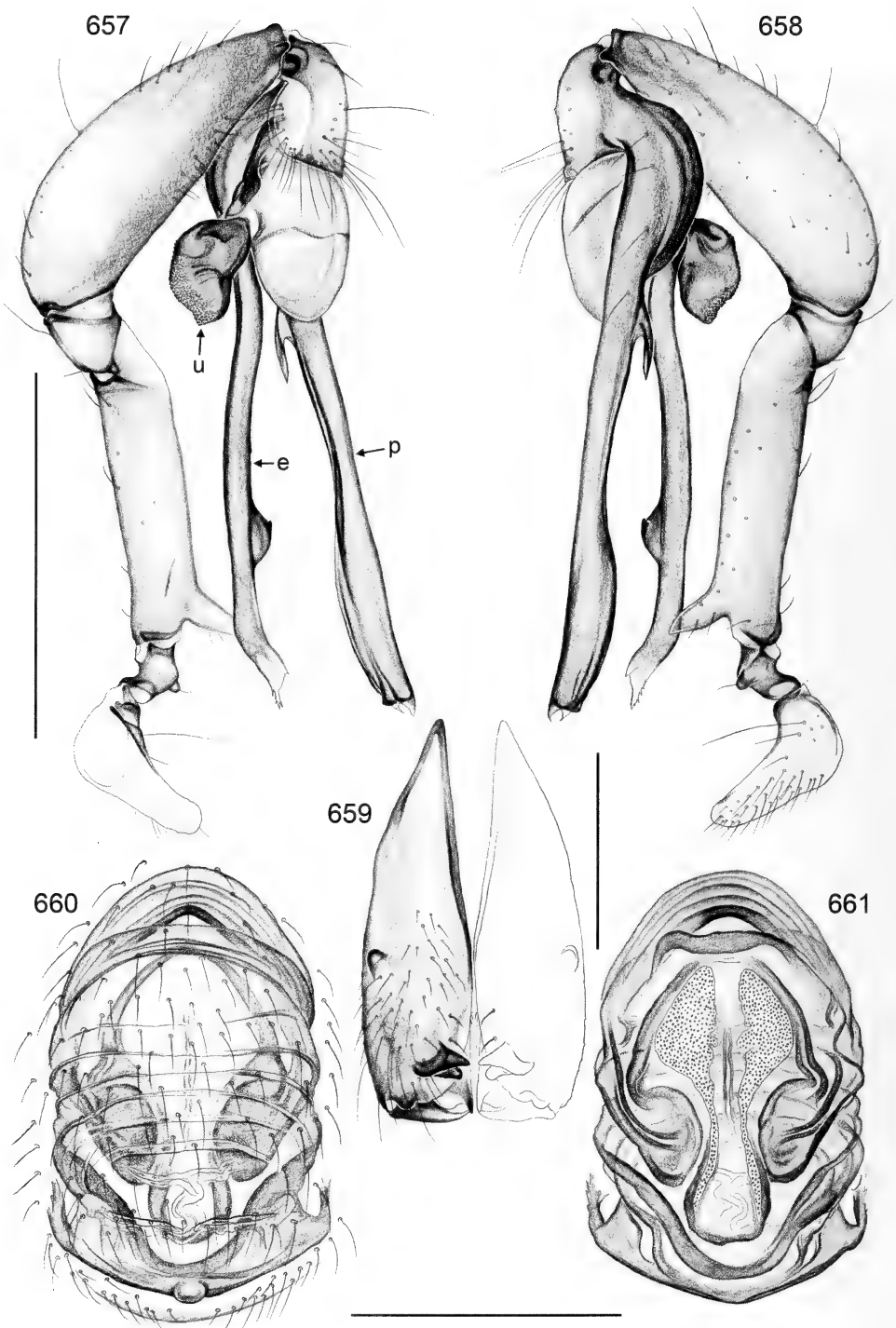


FIG. 657-661. *Pholcus boborok*. 657, 658. Left male palp, prolateral and retrolateral views. 659. Male chelicerae, frontal view. 660, 661. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (657, 658), 0.5 (660, 661), 0.3 (659).

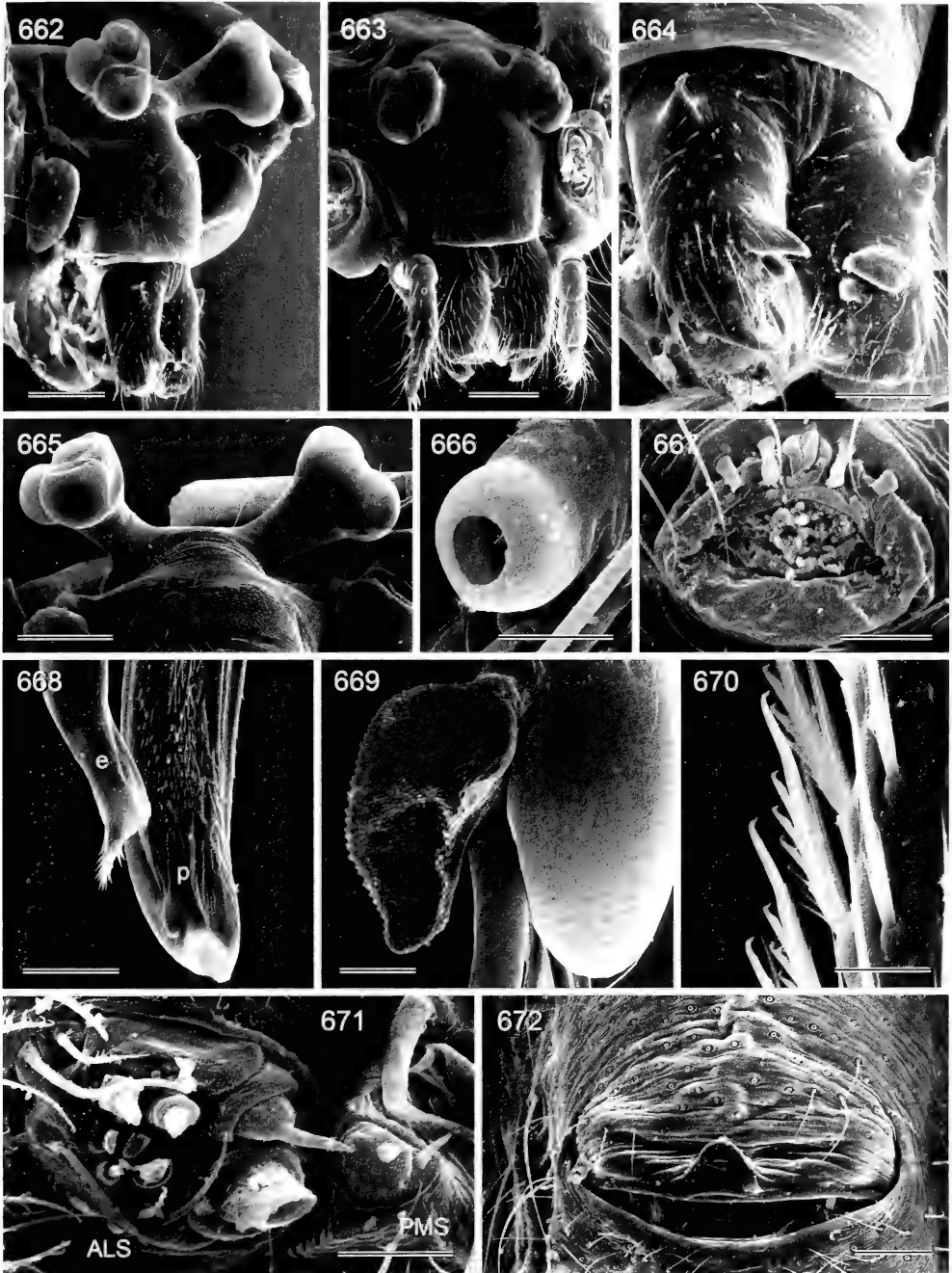


FIG. 662-672. *Pholcus boborok*. 662, 663. Male (662) and female (663) prosomata, oblique views. 664. Male chelicerae, oblique view. 665. Male eye stalks, frontal view. 666. Male palpal tarsal organ. 667. Male gonopore. 668. Tips of left embolus and procurrus, prolateral view. 669. Left bulb and uncus, prolateral view. 670. Comb-hairs on tarsus 4. 671. Female ALS and PMS. 672. Epigynum. Scale lines: 200  $\mu$ m (662, 663, 665), 100  $\mu$ m (664, 668, 669, 672), 30  $\mu$ m (667), 20  $\mu$ m (666, 670, 671).

in RMNH; same data, ~9♂8♀ in RMNH; Bohorok B, sink, 26.iv.1983 (C.L. Deeleman-Reinhold), 1♂1♀ in RMNH; Bohorok D, above bamboo, from leaves, 25.iv.1983 (S. Djojosedharmo), 2♂4♀ in RMNH.

*Pholcus tahai* n. sp.

Figs. 600-602, 616, 617, 673-695

*Type.* Male holotype from Indonesia (Borneo), Central Kalimantan, Tumbang Tahai (2°02'S, 113°35'E), primary marshy forest, 3./13.ix.1985 (S. Djojosedharmo), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by shape of procurus (pointed proximal sclerites and long hinged distal sclerite; Figs. 673-675), shapes of apophyses on male palpal trochanter and femur (Fig. 674), and female genitalia (Figs. 616, 677, 678); from putative close relatives above also by very long and slender embolus (Fig. 673).

*Male* (holotype). Total body length 4.2, carapace width 1.0. Leg 1: 38.8 (8.6 + 0.5 + 8.8 + 18.4 + 2.5), tibia 2: 5.4, tibia 3: 3.1, tibia 4: 5.1; tibia 1 L/d: 95. Habitus as in Figs. 600 and 601. Carapace ochre-yellow, ocular area and clypeus brown, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray, with some indistinct darker marks dorsally, especially on posterior half, ventrally monochromous. Distance PME-PME 450 µm, diameter PME 105 µm, distance PME-ALE 35 µm, AME reduced to small pigment spots. Ocular area elevated, each triad on long stalk with additional long pointed process (Figs. 602, 679-681). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 676, with divided distal apophyses (Fig. 690) and one pair of proximal apophyses. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 673 and 674, coxa unmodified, trochanter with strongly sclerotized ventral apophysis, femur with distinctive sclerotized retrolatero-ventral apophysis, strongly widened ventrally, tarsus slightly elongated dorsally, tarsal organ capsulate with low rim (Figs. 685, 686), procurus extremely long, with three distinctive prolatero-dorsal processes and long distal hinged part with complex tip (Figs. 675, 683, 684), bulb with uncus, long weakly sclerotized embolus with complex tip (Fig. 689), without appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on

tibia 1, present on other tibiae. Many tarsal pseudosegments (>30 on tarsus 1), only distally fairly distinct. Gonopore with four epiandrous spigots (Fig. 691); ALS with eight spigots each (Fig. 692).

*Variation.* Tibia 1 in 5 other males: 7.8-8.9 (mean 8.3). Pattern on abdomen variably distinct.

*Female.* In general similar to male but triads not on stalks, closer together (Fig. 682; distance PME-PME 220 µm). Tibia 1 in 5 females: 6.1-7.1 (mean 6.7); tarsus 4 with single row of comb-hairs (Fig. 693). Epigynum posteriorly protruding, with distinctive internal structures visible through cuticle (Fig. 616), posterior narrow sclerite with wide 'knob' (Figs. 677, 695); internal genitalia as in Figs. 617 and 678. Spinnerets as in male (Fig. 694).

*Distribution.* Known from type locality only (Fig. 626).

*Material examined.* INDONESIA-BORNEO: *Central Kalimantan*: Tumbang Tahai: ♂ holotype above; same data, 6♂5♀ in RMNH.

*Pholcus atrigularis* (Simon, 1901), n. comb.

Figs. 586-588, 592, 618, 619, 696-712

*Uthina atrigularis* Simon 1901: 51.

*Type.* Female holotype (or syntypes?) from "Malay Peninsula" (see Notes below), no further locality data, Skeat Expedition 1899-1900, apparently lost (not found in MNHN).

*Notes.* In the absence of the type(s), the material below is assigned to this species with some hesitation. The original description seems to fit the present material well, but it is superficial, without illustration, and mentions stalked eye triads in the female ("oculi utrinque valde prominuli et pediculati"), a description that fits the male but not the female material below (Fig. 703) (and would seem quite unusual in pholcid females anyway).

The type locality is not specified but according to Skeat's (1901) list of places visited by the Skeat Expedition it is either in southern Thailand or northern Malaysia, between about 5° and 9°N.

*Diagnosis.* Easily distinguished from most congeners by combination of male eye triads on stalks with pointed processes (Figs. 592, 701, 702), and absence of AME and appendix; from putative close relatives above by shapes of procurus and uncus (Figs. 696, 697) and by morphology of female genitalia (Figs. 618, 699).

*Male* (Genting). Total body length 3.9, carapace width 1.0. Leg 1: 40.1 (9.3 + 0.4 + 9.3 + 18.9 + 2.2),

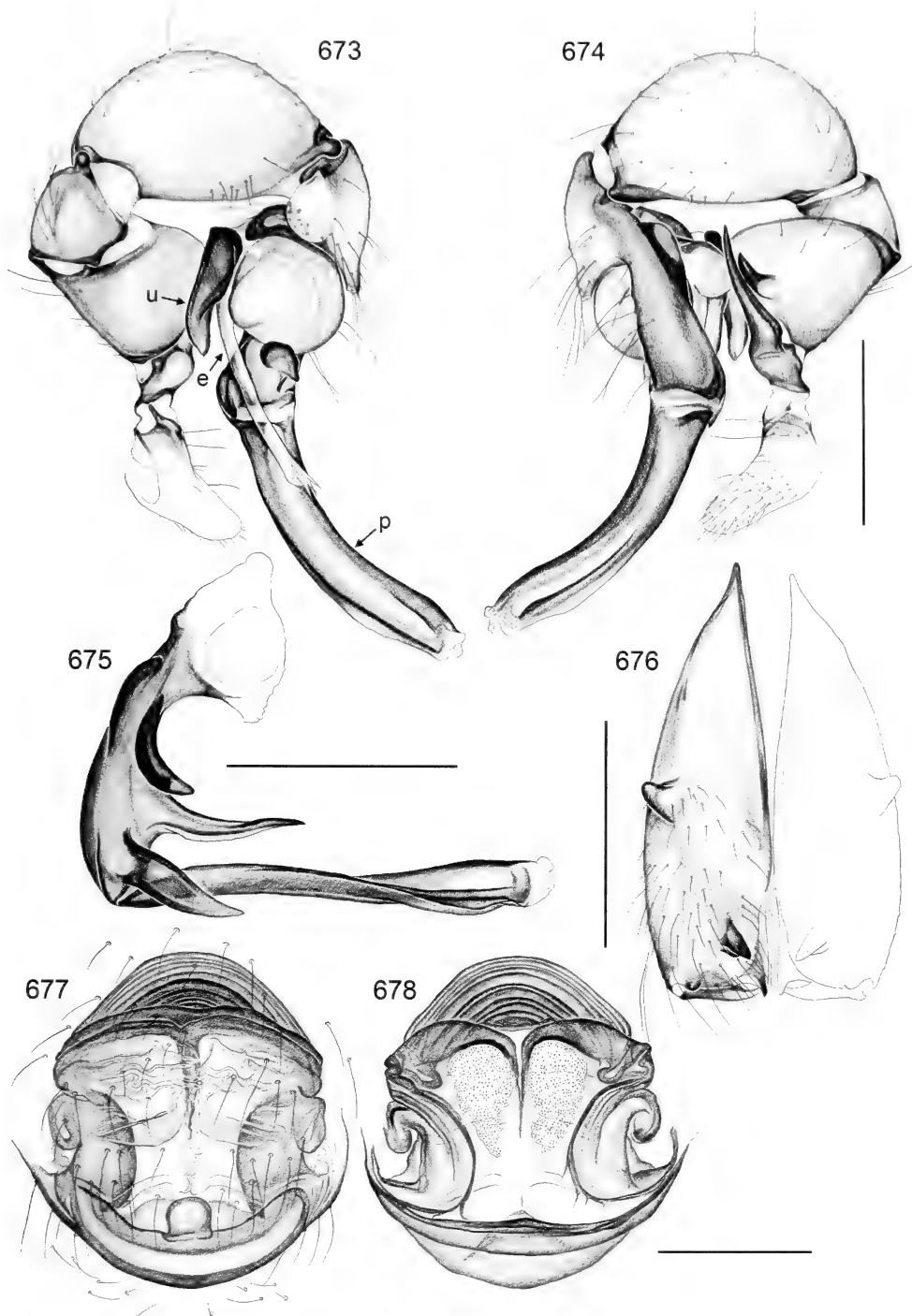


FIG. 673-678. *Pholcus tahai*. 673, 674. Left male palp, prolateral and retrolateral views. 675. Left procurus, prolatero-ventral view. 676. Male chelicerae, frontal view. 677, 678. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (673-675), 0.3 (676-678).



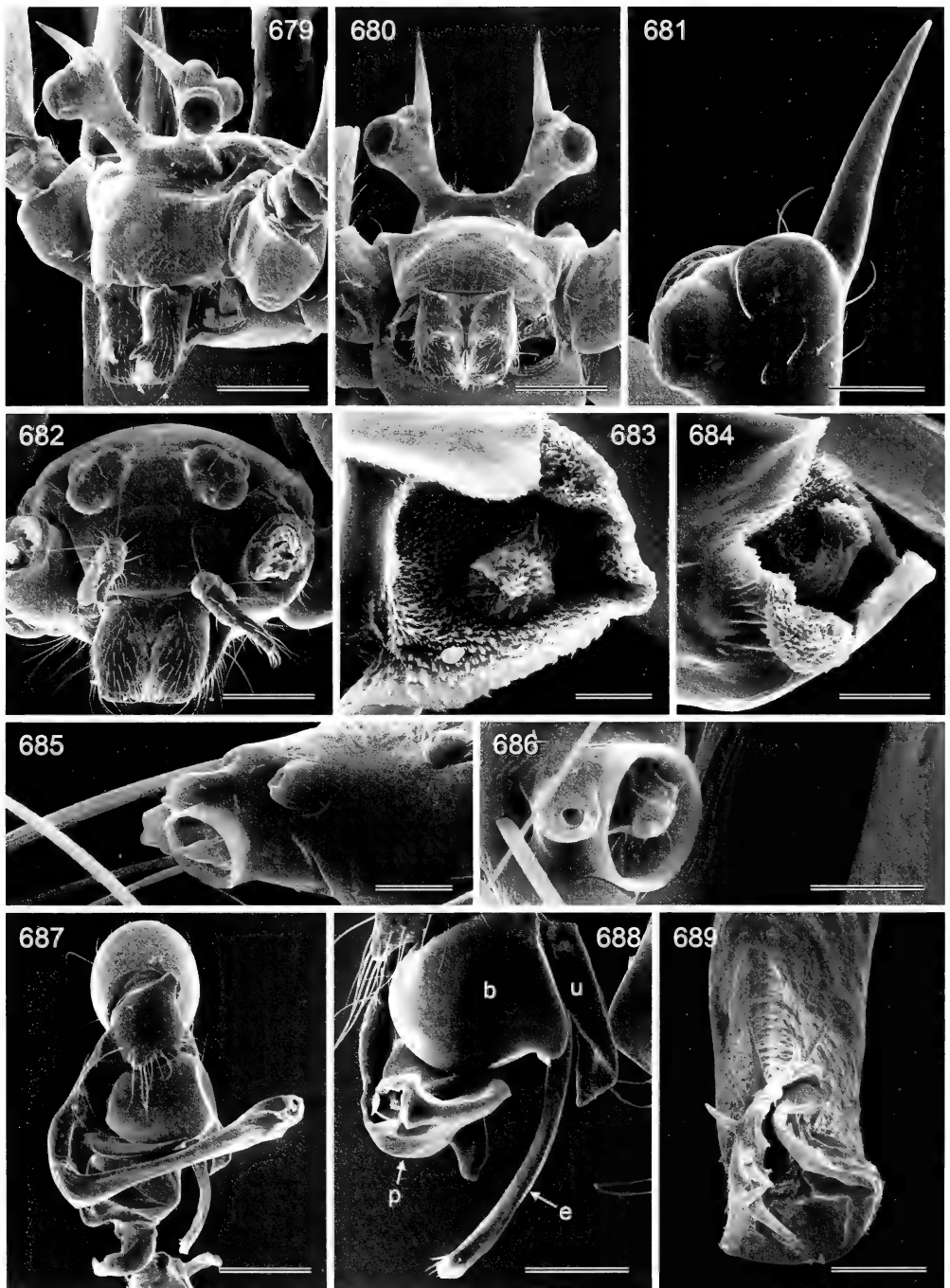


FIG. 679-689. *Pholcus tabai*. 679, 680. Male prosoma, oblique and frontal views. 681. Tip of right eye stalk, frontal view. 682. Female prosoma, frontal view. 683, 684. Tip of right procurus. 685, 686. Male palpal tarsal organ. 687. Right palp, dorsal view. 688. Right procurus and bulb, with uncus and embolus. 689. Tip of left embolus. Scale lines: 300  $\mu$ m (679, 680, 682, 687), 200  $\mu$ m (688), 100  $\mu$ m (681), 30  $\mu$ m (684), 20  $\mu$ m (683, 685, 686, 689).



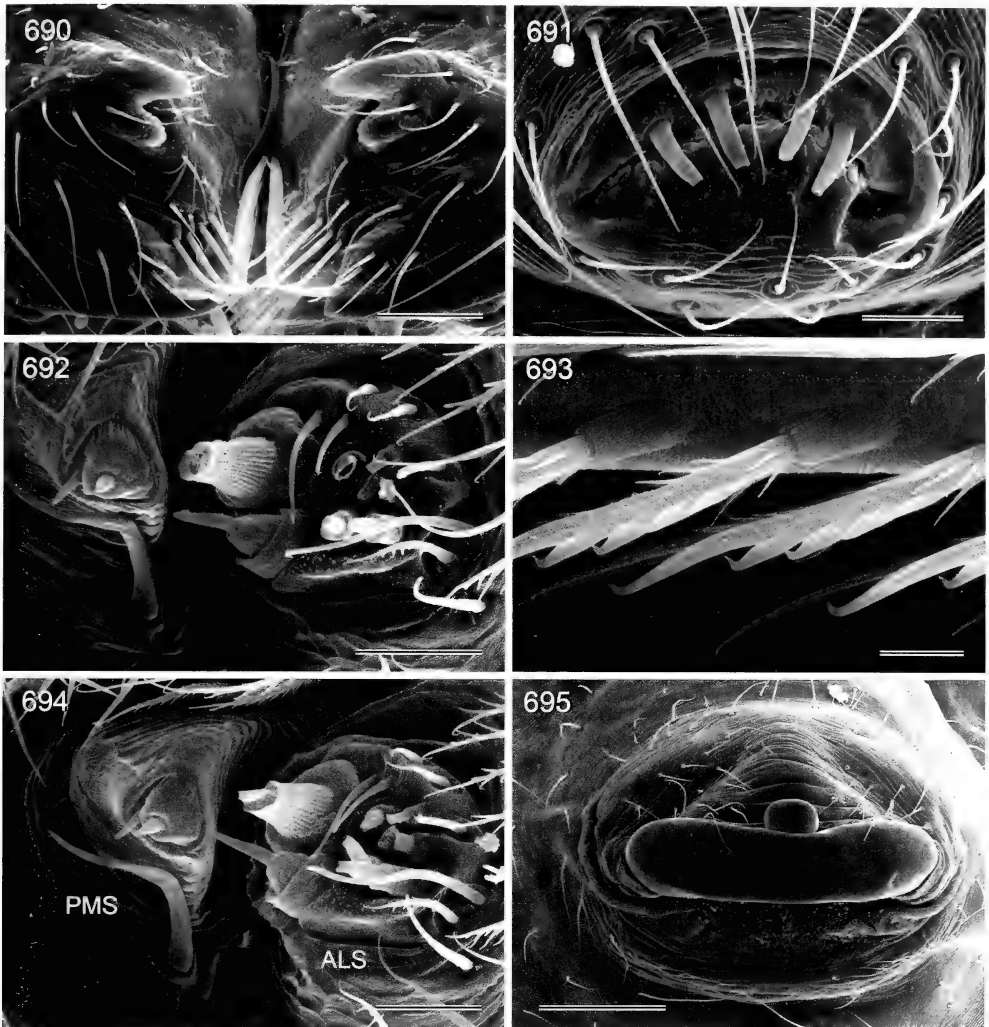


FIG. 690-695. *Pholcus tahai*. 690. Distal male cheliceral apophyses. 691. Male gonopore. 692, 694. Male (692) and female (694) ALS and PMS. 693. Comb-hairs on right female tarsus 4. 695. Epigynum. Scale lines: 200  $\mu\text{m}$  (695), 50  $\mu\text{m}$  (690), 30  $\mu\text{m}$  (691), 20  $\mu\text{m}$  (692, 694), 10  $\mu\text{m}$  (693).

tibia 2: 6.0, tibia 3: 3.3, tibia 4: 5.2; tibia 1 L/d: 111. Habitus as in Fig. 586. Carapace pale ochre-yellow with pair of light brown marks posteriorly, ocular area and clypeus brown, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale ochre-gray, a few indistinct darker marks dorsally and laterally, ventrally monochromous. Distance PME-PME 530  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , no trace

of AME. Ocular area elevated, each triad on long stalk with additional pointed process (Figs. 592, 701, 702). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 698, with divided distal apophyses (Fig. 707) and one pair of proximal apophyses laterally. Sternum wider than long (0.65/0.45), unmodified. Palps as in Figs. 696 and 697, coxa unmodified, trochanter with retrolateral apophysis (longer than appears in Fig. 697), femur with retrolatero-ventral

apophysis, tibia very large, procurus simple except distally (Fig. 705), with transparent prolateral process, tarsal organ capsulate (Fig. 708), bulb with large uncus, weakly sclerotized long embolus, without appendix (Fig. 706). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral

trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments barely visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 709); ALS with seven spigots each (cf. female).

*Variation.* Tibia 1 in 5 other males: 9.1-10.0 (mean 9.5).

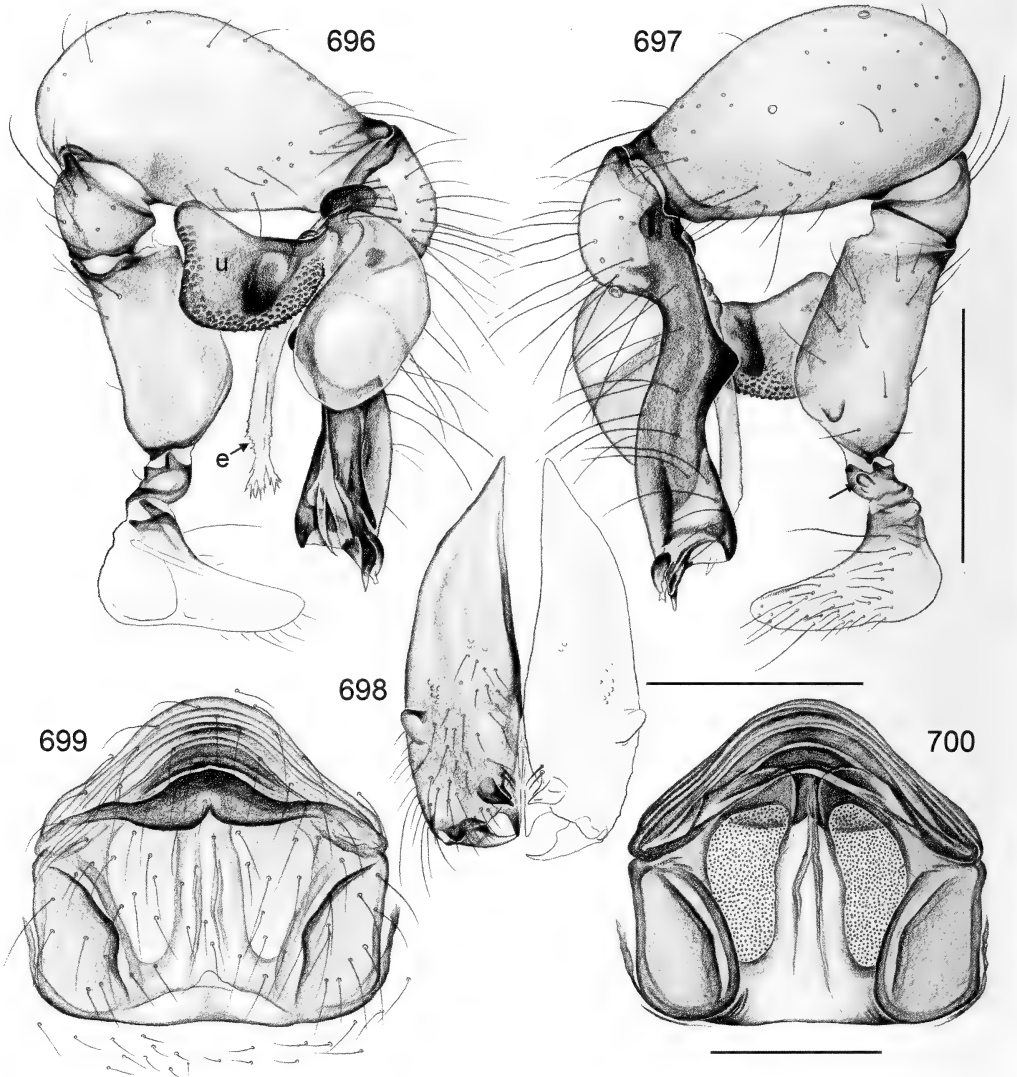


FIG. 696-700. *Pholcus atrigularis*. 696, 697. Left male palp, prolateral and retrolateral views (arrow points at retrolateral trochanter apophysis). 698. Male chelicerae, frontal view. 699, 700. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (696, 697), 0.3 (698-700).

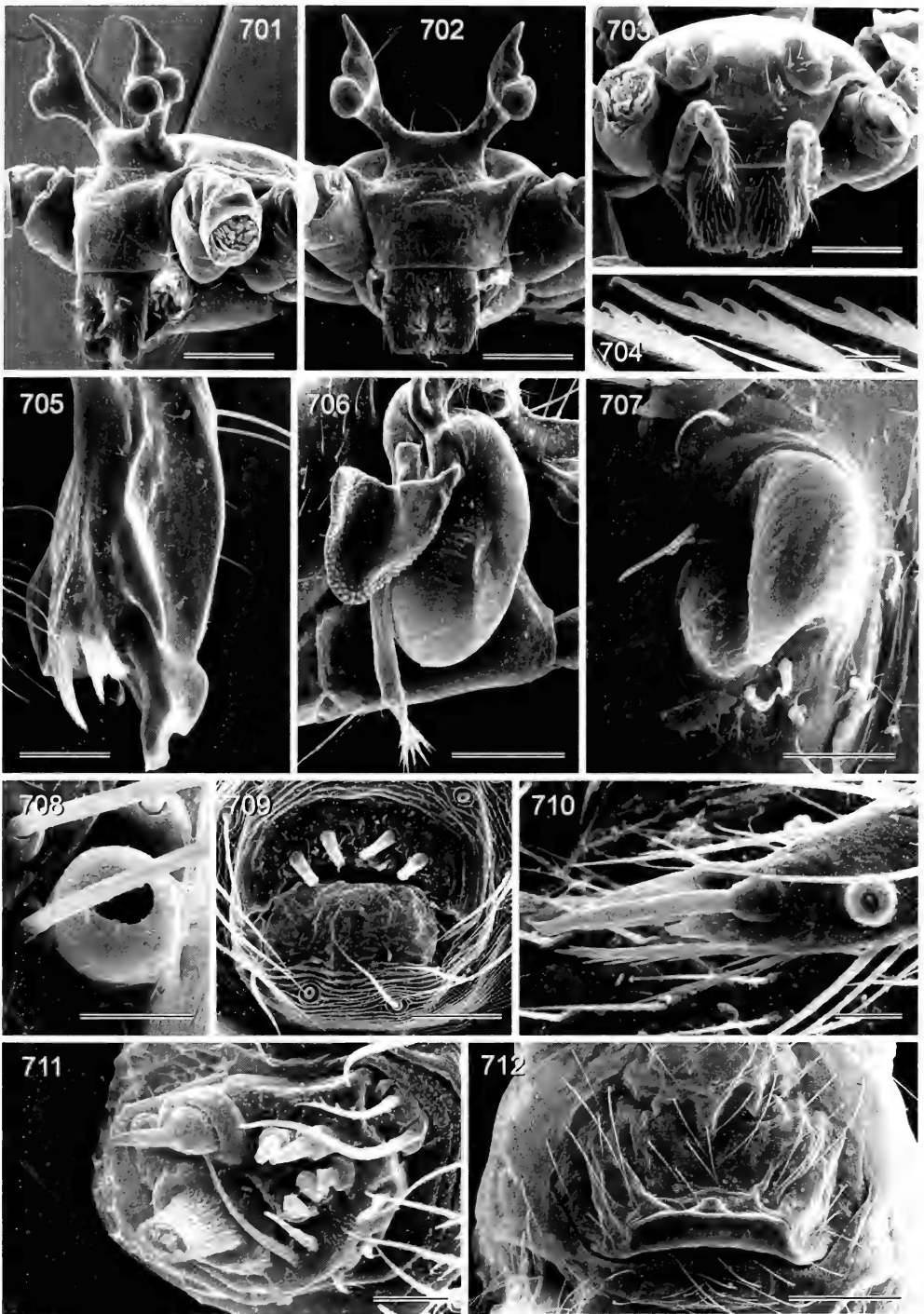


FIG. 701-712. *Pholcus atrigularis*. 701, 702. Male prosoma, oblique and frontal views. 703. Female prosoma, frontal view. 704. Comb-hairs on tarsus 4. 705. Left procurus, prolateral view. 706. Left bulb, prolatero-dorsal view. 707. Divided distal male cheliceral apophysis. 708. Male palpal tarsal organ. 709. Male gonopore. 710. Tip of female palpal tarsus. 711. Female ALS. 712. Epigynum. Scale lines: 300  $\mu\text{m}$  (701-703), 200  $\mu\text{m}$  (706, 712), 80  $\mu\text{m}$  (705), 40  $\mu\text{m}$  (709), 20  $\mu\text{m}$  (707, 708, 710), 10  $\mu\text{m}$  (704, 711).

*Female.* In general similar to male but triads not on stalks, closer together (Fig. 703; distance PME-PME 220  $\mu\text{m}$ ), only anterior half of ocular area brown. Tibia 1 in 8 females: 6.7-8.0 (mean 7.2); tarsus 4 with single row of comb-hairs (Fig. 704). Epigynum with distinctive anterior and lateral internal structures visible through cuticle (Fig. 618), indistinct posterior sclerite with small 'knob' (Figs. 699, 712); internal genitalia as in Figs. 619 and 700. ALS with seven spigots each (Fig. 711).

*Distribution.* Known from mainland Malaysia and Singapore (Fig. 626). The type locality is not indicated on the map but probably lies further north (see Notes above). The MHNG has juvenile specimens from Singkep and Lingga Islands (Indonesia) that appear to belong to this species.

*Material examined.* MALAYSIA: *Pahang:* Genting [3°24.5'N, 101°45.9'E], 600 m a.s.l., 1.-15.ii.1988 (Murphy), 4♂4♀ in CJFM (15108); same locality, 27.xi.1990 (Murphy), 1♀ in CJFM (18980). *Selangor:* Templer's Park [3°18.3'N, 101°38.1'E], slope above river, 21.iii.1985 (C.L. & P.R. Deeleman), 1♂1♀ in RMNH. Gombak F.C. [-3°14'N, 101°44'E], forest, night, 3.vii.1992 (C.L. & P.R. Deeleman), 1♀ in RMNH. Banting [2°48'N, 101°30'E], 100 m a.s.l., garden, iii.1981 (W. Corley), 1♀ in CJFM (9395). *Johor:* Endau-Rompin National Park, between Kuala Jasin and Kuala Marong (2°31.7'N, 103°22.0'E), 40 m a.s.l., rain forest along stream, 3.-5.vii.2001 (P. Schwendinger), 1♀ in MHNG.

SINGAPORE: Bukit Timah [1°20.5'N, 103°46.5'E], shrubs near primary forest, 20.-21.i.1986 (Murphy), 1♂3♀ in CJFM (13264); same locality, secondary rainforest, 100 m a.s.l., 30.i.1991 (Murphy), 1♂ in CJFM (19286); same locality, 9.iv.1987 (J.K.H. Koh, 87.04.09.02), 1♂ in RMNH; same locality, 21.i.1986 (J.K.H. Koh, 86.01.21.11), 1♀ in RMNH; same locality, primary rainforest, foliage, 8.xi.1990 (J.K.H. Koh, 90.11.08.0011), 1♂ in ZFMK; same locality, 13./16.ix.2010 (D.J. Court), 1♂1♀ 2 juvs. in pure ethanol (4 vials), in RMBR; same locality, Taban Loop, foliage, 8.ii.2005 (J.K.H. Koh, 05.02.08.0024), 1♀ in ZFMK; same locality, foliage, 28.xi.1987 (J.K.H. Koh, 87.11.28.01), 1♀ in USNM. Nee Son [1°24'N, 103°49'E], water catchment forest, 30.i.1991 (H.K. Lua), 1♀ in RMBR. Upper Peirce Reservoir [1°22'N, 103°48'E], forest foliage, 1.i.1991 (J.K.H. Koh, 91.01.01.14), 1♂ in USNM.

*Pholcus diopsis* Simon, 1901

Figs. 603-605, 620, 621, 713-717

*Pholcus diopsis* Simon 1901: 49-50.

*Types.* One male and 2♀ syntypes from Thailand, Jalor [=Yala], Biserat [-5°50'N, 101°15'E], Gua Galap (Gua G'lap, "Dark Cave"), Skeat Expedition 1899-1900, with Simon's original label "9429 *Ph. diopsis* E.S., pen. Malayana (Cb.m)" no further data, in MNHN, examined.

*Diagnosis.* Distinguished from most known congeners by combination of long male eye stalks with short pointed process (Fig. 603) and male cheliceral armature (divided distal apophyses, Fig. 715); from putative close relatives above by shapes of procurus and uncus (Figs. 713, 714), by presence of appendix (Fig. 713), and by distinctive female genitalia (wide pale 'knob' projecting anteriorly, Figs. 620, 716).

*Male* (syntype). Total body length 4.2, carapace width 1.4. Leg 1: 53.5 (12.4 + 0.7 + 12.7 + 25.2 + 2.5), tibia 2: 8.5, tibiae 3 and 4 missing; tibia 1 L/d: 103. Habitus as in Figs. 604 and 605. Carapace and legs pale ochre-yellow, apparently bleached, sternum whitish, abdomen monochromous pale gray. Distance PME-PME 750  $\mu\text{m}$ , diameter PME 70  $\mu\text{m}$ , distance PME-ALE 25  $\mu\text{m}$ , no trace of AME. Ocular area elevated, each triad on long stalk with additional small pointed process, small median projection frontally between stalks, long hairs on posterior side of ocular area. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 715, with divided distal apophyses and one pair of proximal apophyses laterally. Sternum wider than long (0.95/0.60), unmodified. Palps as in Figs. 713 and 714, coxa unmodified, trochanter with simple apophysis originating retrolaterally but directed ventrally, femur with dorsal hump proximally, slightly widened ventrally, procurus relatively simple, with distinctive membranous process distally (prolatero-ventral side), bulb with uncus, weakly sclerotized pale embolus, weakly curved simple appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, seen on tibia 2. Tarsal pseudosegments not seen in dissecting microscope.

*Female.* In general similar to male but triads not on stalks, closer together (distance PME-PME 300  $\mu\text{m}$ ), both females with tiny AME lenses (about 20  $\mu\text{m}$  diameter). Tibia 1 in 5 females: 10.5-11.9 (mean 11.2). Epigynum weakly sclerotized except posteri-

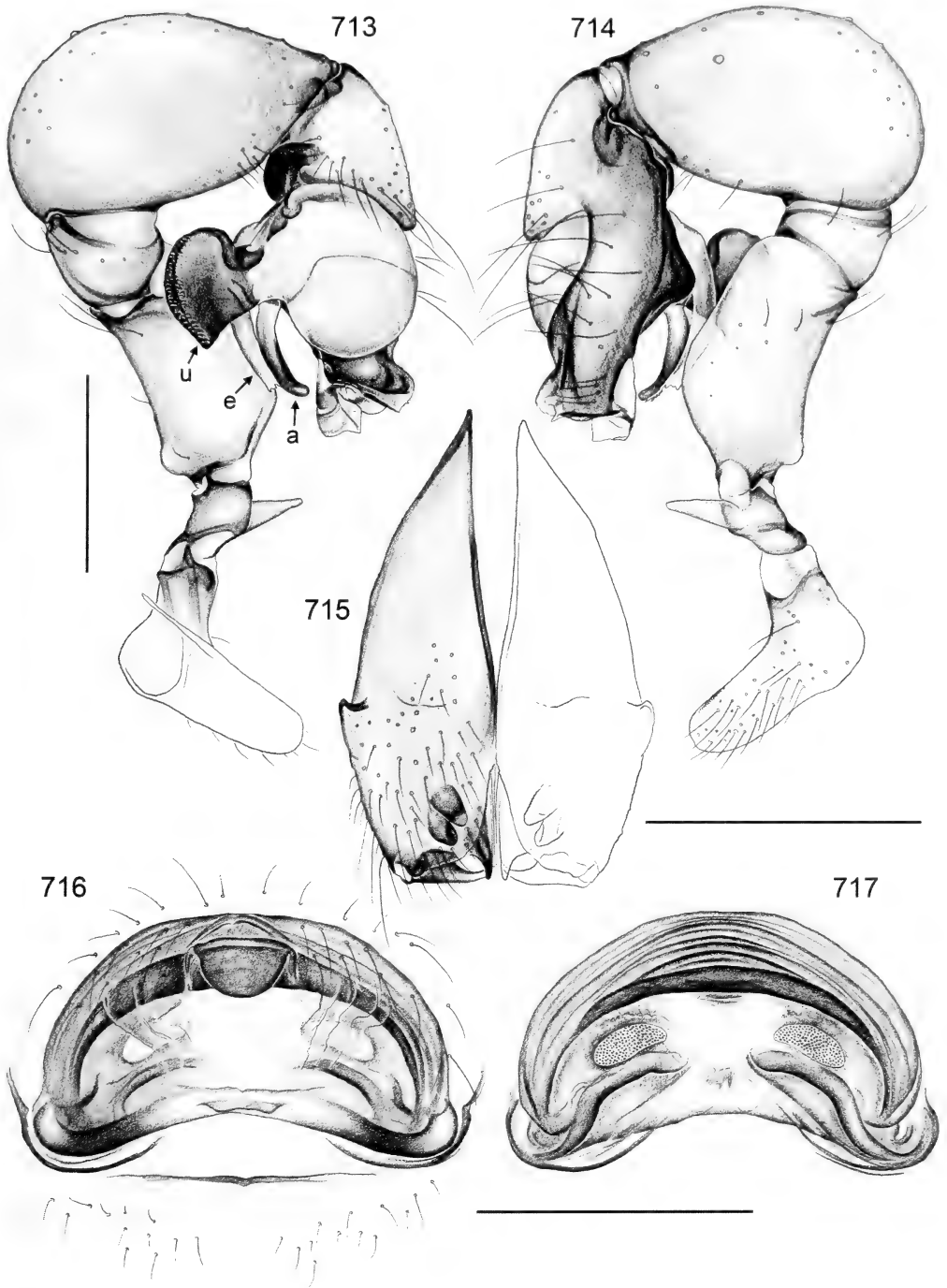


FIG. 713-717. *Pholcus diopsis*. 713, 714. Left male palp, prolatral and retrolateral views. 715. Male chelicerae, frontal view. 716, 717. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

only laterally (Fig. 620), with wide pale 'knob' projecting anteriorly (Fig. 716); internal genitalia as in Figs. 621 and 717.

*Distribution.* Known from two localities in Thailand, Yala Prov. (Fig. 626).

*Material examined.* THAILAND: *Yala:* Biserat, Gua Galap: 1♂2♀ syntypes above. Ban Na Tham [-6°30'N, 101°13'E], Tham Sam Pao To, 12.vii.1987 and 14.vii.1991 (2 vials) (P. Leclerc), 4♀ in RMNH. Ban Na Tham, Tham Meud, 15.vii.1991 (P. Leclerc), 1♀ in RMNH.

#### *Pholcus kerinci* species group

*Diagnosis.* Medium-sized, long-legged spiders (body length ~3.5-4.5, leg 1:~30-40); distinguished from other species groups in *Pholcus* by the combination of the following characters: slender elongate abdomen that is slightly elevated posteriorly (Figs. 606-609), eight eyes, triads slightly elevated, male chelicerae entirely unmodified (Fig. 722), male palpal trochanter with long ventral apophysis (Figs. 719, 736), procurus with distal spine-like process (Figs. 720, 737), bulb without uncus, with massive but simple appendix (Figs. 719, 736), epigynum weakly sclerotized, with 'knob'.

*Description.* Body length ~3.5-4.5, carapace width 0.8-0.9. AME present, triads on low elevations. Clypeus, sternum, and male chelicerae unmodified. Male palpal coxa unmodified, trochanter with small retrolateral and long ventral apophyses, femur short in relation to tibia, dorsal trichobothrium on tibia relatively distal, tarsus with conical dorsal elongation, tarsal organ capsulate, procurus with indistinct ventral 'knee', without dorsal spines, with distal spine-like process, bulb without uncus, with massive but simple appendix. Legs long, tibia 1 in males ~7.5-9.0, tibia 1 L/d ~100-110, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-4%. Abdomen cylindrical, slightly elevated posteriorly, male gonopore with four epandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female body size as in males, legs slightly shorter (tibia 1:~6-7). Epigynum weakly sclerotized, with 'knob', internal genitalia with pair of pore-plates 'dissolved' into groups of pores.

*Monophyly.* The two species share unmodified male chelicerae (Fig. 722; in particular the absence of

proximal lateral apophyses, char. 16; the absence of distal apophyses is possibly plesiomorphic and shared with the *Ph. ethagala* group, char. 20), and an unusually distal position of the dorsal trichobothrium on the male palpal tibia (char. 33; Figs. 720, 737). The analyses using implied weights with K=1-2 suggest two further synapomorphies: dorsal elongation of the male palpal tarsus (char. 34), and procurus with ventral 'knee' (char. 35).

*Relationships.* The cladistic analysis using equally weighted characters places the *Ph. kerinci* group as sister to *Panjange* + *Ph. ethagala* group based on the absence of an uncus (char. 48). In the analysis using successive character weighting a palpal tarsus elongation is interpreted as an additional synapomorphy of this node (Fig. 27, char. 34). The taxa included also share a rather large appendix (e.g., Figs. 469, 719, 805). All analyses using implied character weighting place the *Ph. kerinci* group much more 'basal', either (at K=3-6) in a trichotomy together with *Panjange* + close relatives and *Pholcus* + close relatives, or (at K=1-2) even outside the *Pholcus* group of genera as sister to *Quamtana*.

*Natural history.* Judging from the sparse information on labels, both species seem to live on leaves in well preserved forests.

*Distribution.* The two species are only known from Sumatra and Java (Fig. 718).

*Composition.* The *Ph. kerinci* group includes two species, both of which are newly described below: *Ph. kerinci* n. sp.; *Ph. cibodas* n. sp.

#### *Pholcus kerinci* n. sp.

Figs. 606, 607, 622, 623, 719-735

*Type.* Male holotype from Indonesia, Sumatra, Kerinci N.P. [-2.5°S, 101.5°E], 800 m a.s.l., near river, from leaves, 21.-30.vii.1988 (S. Djojosedharmo), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from most congeners by unmodified male chelicerae (Fig. 722); from similar *Ph. cibodas* by shapes of trochanter apophysis, appendix, and procurus (Figs. 719, 720).

*Male* (holotype). Total body length 3.7, carapace width 0.8. Leg 1: 32.8 (7.9 + 0.4 + 7.7 + 15.2 + 1.6), tibia 2: 4.8, tibia 3: 3.0, tibia 4: 4.3; tibia 1 L/d: 109. Habitus as in Figs. 606 and 607. Carapace pale ochre-yellow with brown median mark including ocular area and clypeus, sternum light brown with darker margins and small light spots, legs pale ochre-

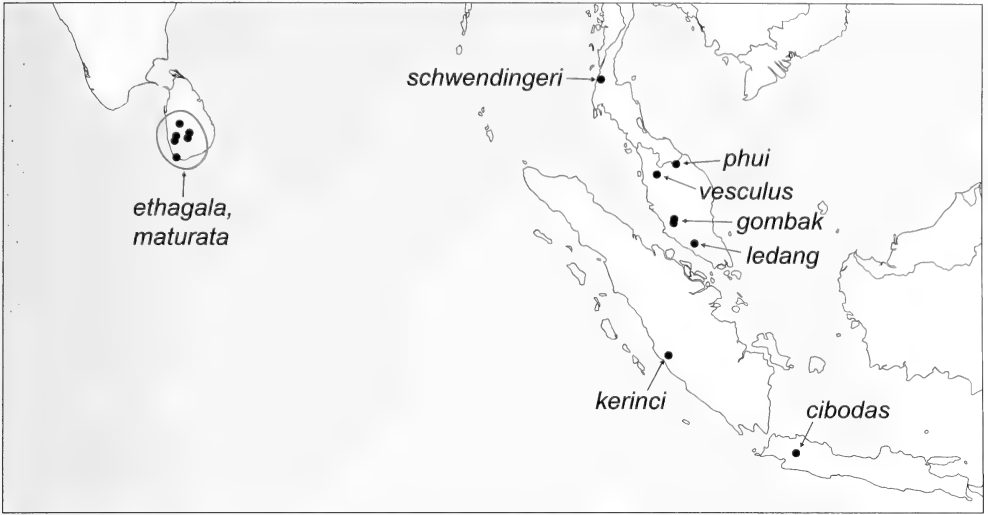


FIG. 718. Known distributions of the *Pholcus kerinci* and *Ph. ethagala* species groups.

yellow, patella area and tibia-metatarsus joints brown, abdomen ochre-gray, with dark marks dorsally and laterally, ventrally monochromous. Distance PME-PME 220  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 20  $\mu$ m, distance AME-AME 20  $\mu$ m, diameter AME 35  $\mu$ m. Ocular area slightly elevated, triads on additional low elevations. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 722, unmodified. Sternum wider than long (0.5/0.4), unmodified. Palps as in Figs. 719 and 720, coxa unmodified, trochanter with short retrolateral and long ventral apophysis, femur with proximal hump dorsally, tibia very long, procurus rather simple proximally, with distinctive spine-like apophysis and complex membranous structures distally (Figs. 721, 725, 726), bulb without uncus, weakly sclerotized embolus, massive but simple appendix (Fig. 727). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments barely visible in dissecting microscope; tarsus 4 with single row of comb-hairs (Fig. 730). Gonopore with four epiandrous spigots (Fig. 728). ALS with eight spigots each (cf. female).

*Variation.* Tibia 1 in three other males: 7.6, 8.1, 8.1. Lateral extensions of dark mark on carapace more distinct in some specimens.

*Female.* In general similar to male but brown mark on carapace smaller, not extending to ocular area,

with dark brown band anteriorly between triads, triads closer together (Fig. 731; distance PME-PME 205  $\mu$ m). Tibia 1 in 5 females: 5.8-7.0 (mean 6.4). Epigynum simple and weakly sclerotized, with many fine transversal ridges (Fig. 733), internal arc visible through cuticle anteriorly (Fig. 622), with thin 'knob' (Figs. 723, 733); internal genitalia as in Figs. 623, 724, and 734. ALS with eight spigots each (Fig. 732). *Distribution.* Known from type locality only (Fig. 718).

*Material examined.* INDONESIA: Sumatra: Kerinci N.P.: ♂ holotype above; same data, 5♂7♀ (3 vials) in RMNH.

*Pholcus cibodas* n. sp.

Figs. 608, 609, 624, 625, 736-740

*Type.* Male holotype from Indonesia, Java, Jawa Barat, Cibodas [ $-6^{\circ}44'S$ ,  $107^{\circ}00'E$ ], 1450-1550 m a.s.l., from leaves, 6.-8.xii.1986 (S. Djojosedharmo), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from most congeners by unmodified male chelicerae (as in *Ph. kerinci*; cf. Fig. 722); from similar *Ph. kerinci* by shapes of trochanter apophysis, appendix, and procurus (Figs. 736-738).

*Male* (holotype). Total body length 4.5, carapace width 0.9. Leg 1: 37.2 (8.8 + 0.4 + 9.0 + 17.2 + 1.8), tibia 2: 5.8, tibia 3: 3.6, tibia 4: 5.2; tibia 1 L/d: 102.



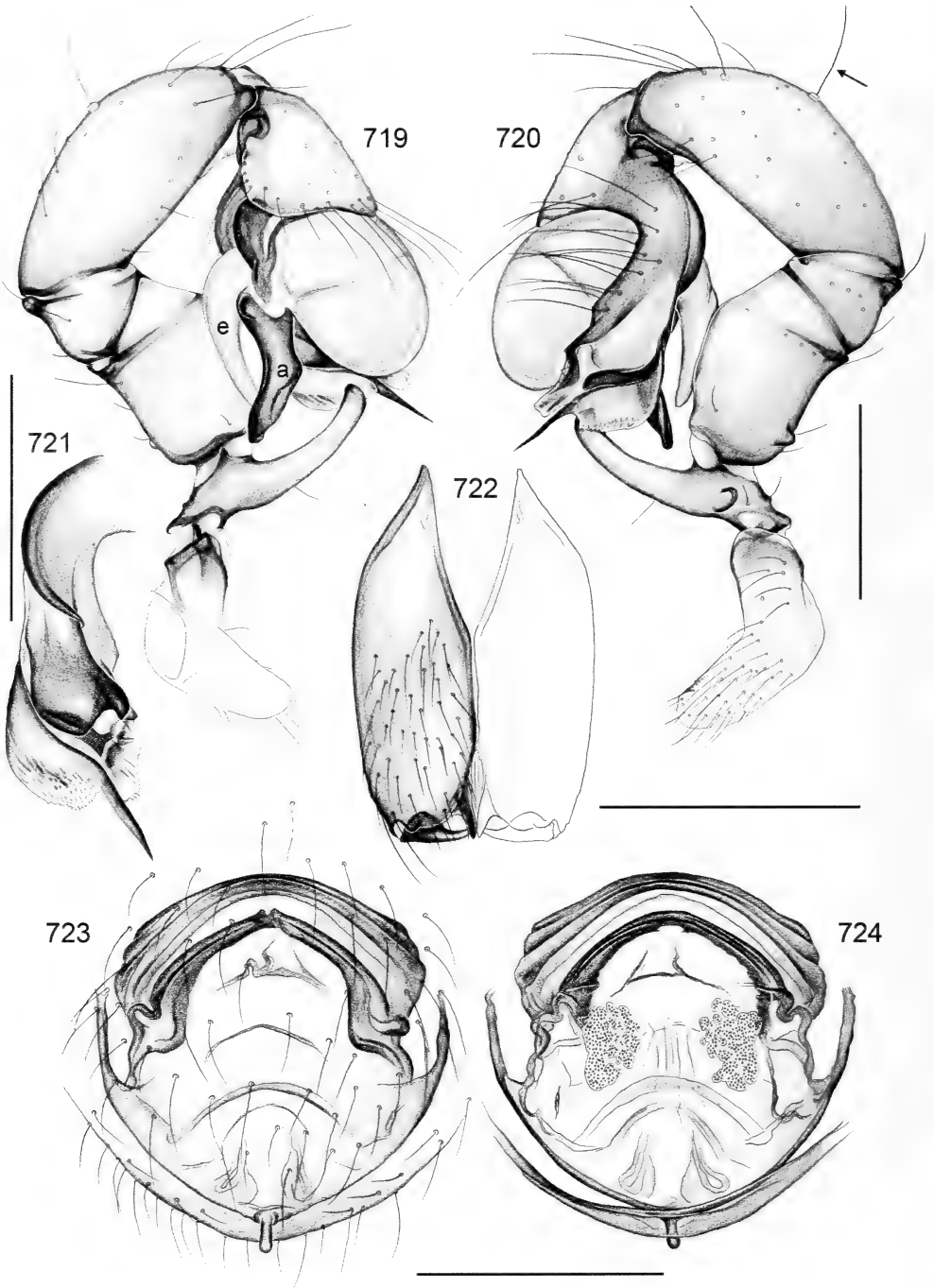


FIG. 719-724. *Pholcus kerinci*. 719, 720. Left male palp, prolateral and retrolateral views (arrow points at dorsal trichobothrium). 721. Left procurus, prolateral view. 722. Male chelicerae, frontal view. 723, 724. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.3.



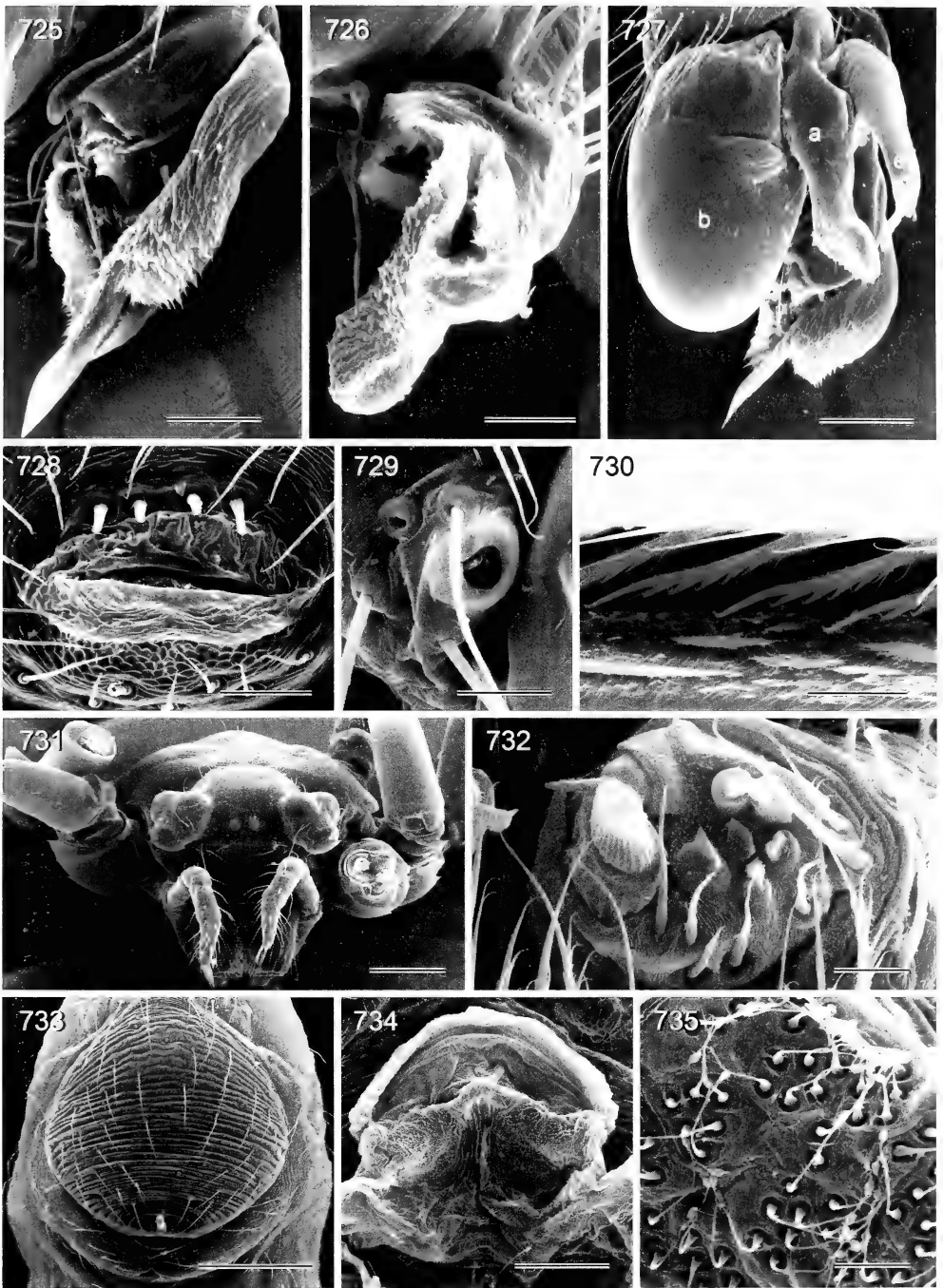


FIG. 725-735. *Pholcus kerinci*. 725, 726. Right procurus, prolatero-distal and distal views. 727. Right bulb with appendix and embolus. 728. Male gonopore. 729. Male palpal tarsal organ. 730. Comb-hairs on male tarsus 4. 731. Female prosoma, frontal view. 732. Female ALS. 733. Epigynum. 734. Cleared female genitalia, dorsal view. 735. Detail of pore-plate. Scale lines: 200  $\mu\text{m}$  (731, 733), 100  $\mu\text{m}$  (727, 734), 50  $\mu\text{m}$  (725), 40  $\mu\text{m}$  (726), 30  $\mu\text{m}$  (728), 20  $\mu\text{m}$  (729, 730), 10  $\mu\text{m}$  (732, 735).

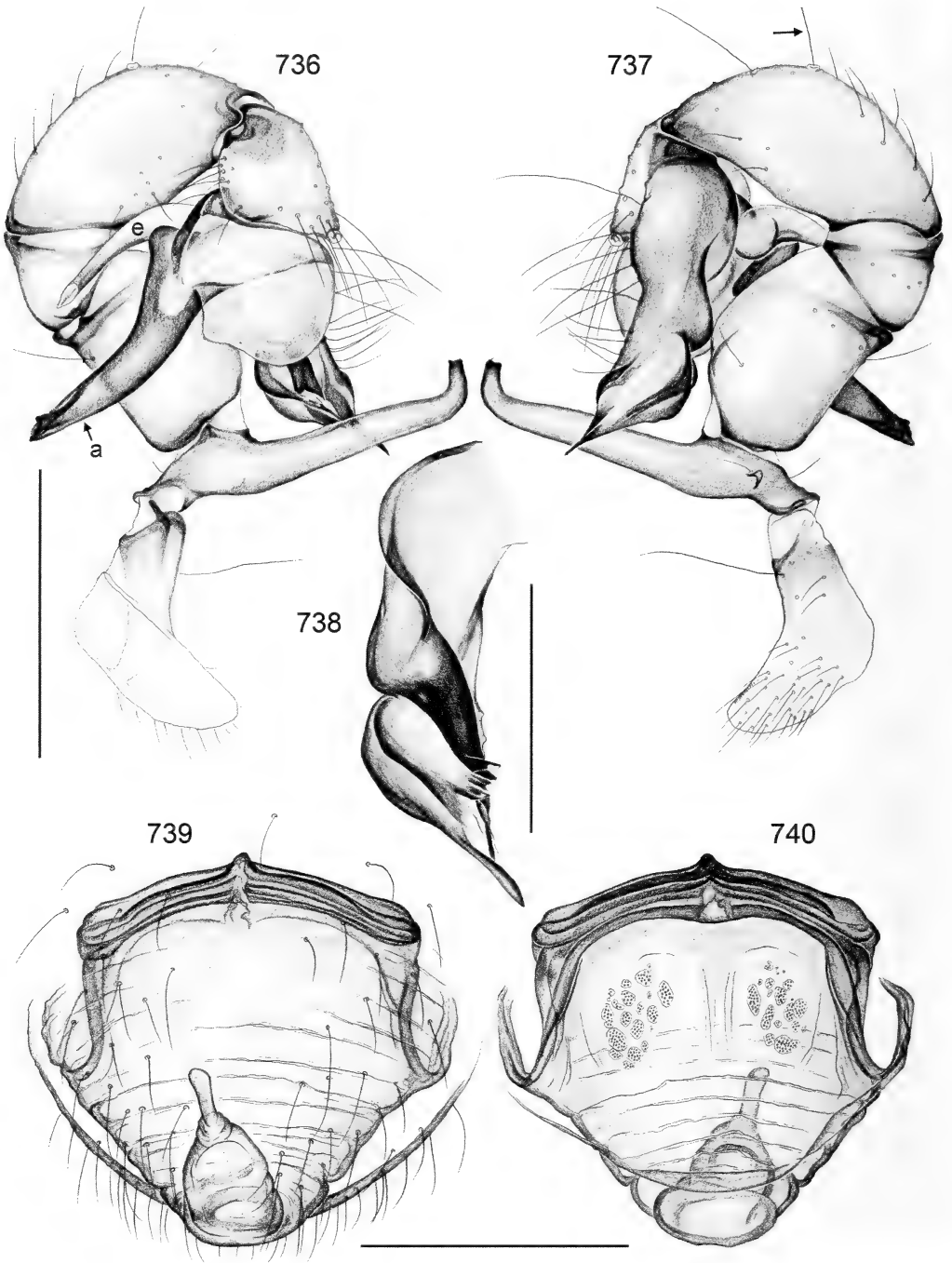


FIG. 736-740. *Pholcus cibodas*. 736, 737. Left male palp, prolateral and retrolateral views (arrow points at dorsal trichobothrium). 738. Left procurus, prolateral view. 739, 740. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (736, 737), 0.3 (738-740).

Habitus as in Figs. 608 and 609. Carapace ochre-yellow with dark brown median band including ocular area and clypeus (except distal rim), sternum whitish, legs ochre-yellow, patella area and tibia-metatarsus joints brown, abdomen ochre-gray, with very indistinct darker marks dorsally, ventrally monochromous. Distance PME-PME 265  $\mu\text{m}$ , diameter PME 105  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 25  $\mu\text{m}$ , diameter AME 35  $\mu\text{m}$ . Ocular area slightly elevated, many stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae unmodified as in *Ph. kerinci* (cf. Fig. 722). Sternum wider than long (0.65/0.50), unmodified. Palps as in Figs. 736 and 737, coxa unmodified, trochanter with small retrolateral and very long ventral apophysis, femur barely modified, dorsal trichobothrium on tibia very distal, procurus rather simple, with distinctive spine-like apophysis distally (Fig. 738), bulb without unculus, weakly sclerotized embolus, massive but simple appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not seen in dissecting microscope.

*Variation.* Tibia 1 in other male: 9.1.

*Female.* In general similar to male but carapace with pair of light brown marks not extending to ocular area, clypeus not darkened; triads slightly closer together (distance PME-PME 210  $\mu\text{m}$ ). Tibia 1: 7.2 (missing in other female). Epigynum simple and weakly sclerotized (Fig. 624), with long (extensible?) scape posteriorly carrying 'knob' (Fig. 739); internal genitalia as in Figs. 625 and 740.

*Distribution.* Known from type locality only (Fig. 718).

*Material examined.* INDONESIA: Java: *Jawa Barat*: Cibodas: ♂ holotype above, together with 1♂2♀ in RMNH.

#### *Pholcus ethagala* species group

*Diagnosis.* The core group includes medium-sized, long-legged spiders (body length ~3.5-4.5, leg 1: ~30-35); distinguished from other species groups in *Pholcus* by the combination of the following characters: elongate abdomen that is slightly pointed or elevated dorso-posteriorly, six eyes, eye triads on stalks, male chelicerae with proximal apophyses in frontal position, without distal apophyses (Figs. 795, 811, 816), male palpal trochanter with short retrolateral and longer ventral apophyses, palpal tarsus

with dorsal elongation (except *Ph. phui*), bulb with large and complex appendix and weakly sclerotized embolus, without unculus, procurus highly complex, epigynum weakly sclerotized, with 'knob'.

*Description* (core group). Body length ~3.5-4.5, carapace width ~0.9-1.1. AME absent (some pigment in *Ph. phui*), eye triads on short to long stalks, with or without pointed processes. Clypeus and sternum unmodified. Male chelicerae with proximal apophyses in very frontal position (these are considered homologues of the proximal lateral apophyses of the *Pholcus* core group and not of the proximal frontal apophyses because a shift of position appears more parsimonious than a reduction of one pair and independent gain of the other one). Male palpal coxa unmodified (except in *Ph. ethagala* and *Ph. maturata*), trochanter with small retrolateral and longer ventral apophyses, femur with distinctive ventral apophysis pointing proximally (except in *Ph. maturata*), tarsus with dorsal elongation, procurus very complex, with ventral 'knee', without dorsal spines. Male bulb with large and complex appendix and weakly sclerotized embolus, without unculus. Legs long, tibia 1 in males 7.0-8.5, tibia 1 L/d ~80-95, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3-4%. Abdomen cylindrical, dorso-posteriorly with pointed or indistinct elevation, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, not on stalks, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~5.0-7.5). Epigynum weakly sclerotized, with 'knob', internal genitalia with pair of round or elongate pore-plates.

*Monophyly.* The species in the core group share several rare similarities (male eye stalks with pointed processes, two palpal trochanter apophyses, shape of palpal femur and male chelicerae, absence of unculus, large complex appendix) but most of them appear to be plesiomorphies (similar character states occur in *Panjange* and in the *Pholcus minang* and *Ph. kerinci* species groups). This is also true of the ventral femur protuberance (char. 28) that the cladistic analyses using equal and successive character weighting identify as synapomorphic (a similar protuberance occurs in the *Ph. minang* species group). The analyses using

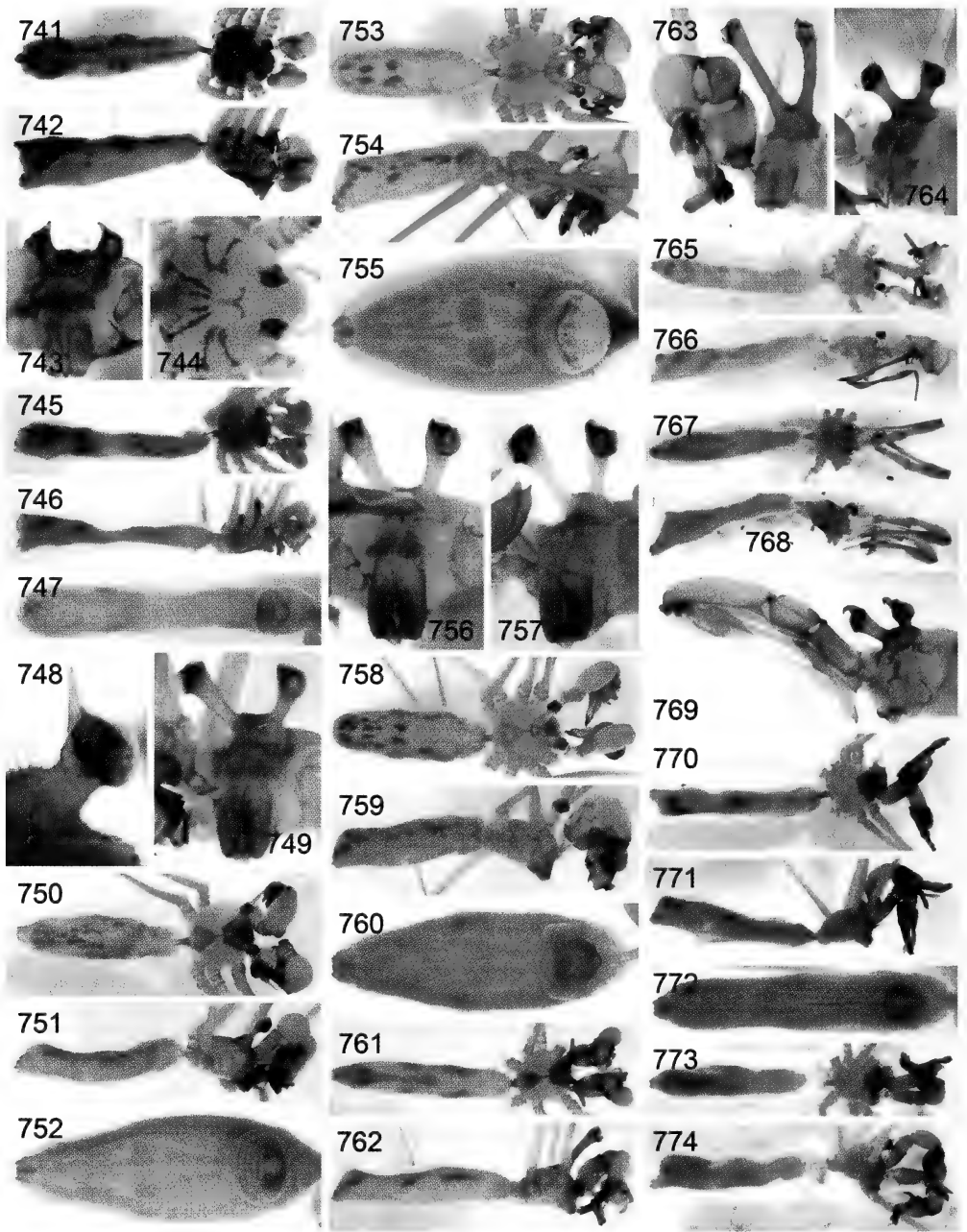


FIG. 741-774. *Pholcus ethagala* species group and *Panjange*, habitus. 741-744. *Ph. ethagala*, male, dorsal and lateral views; male prosoma, frontal view; female prosoma, dorsal view. 745-748. *Ph. maturata*, male, dorsal and lateral views; female abdomen, ventral view; male eye stalk. 749-752. *Ph. phui*, male prosoma, frontal view; male, dorsal and lateral views; female abdomen, ventral view. 753-756. *Ph. ledang*, male, dorsal and lateral views; female abdomen, ventral view; male prosoma, frontal view. 757-760. *Ph. gombak*, male prosoma, oblique view; male, dorsal and lateral views; female abdomen, ventral view. 761-763. *Ph. schwendingeri*, male dorsal and lateral views; male prosoma, oblique view. 765, 766. *Pa. lanthana*, male, dorsal and lateral views. 767, 768. *Pa. dubia*, male, dorsal and lateral views. 769. *Pa. alba*, male prosoma, oblique view. 770-772. *Pa. iban*, male, dorsal and lateral views; female abdomen, ventral view. 764, 773, 774. *Pa. bako*, male prosoma, oblique view; male, dorsal and lateral views.

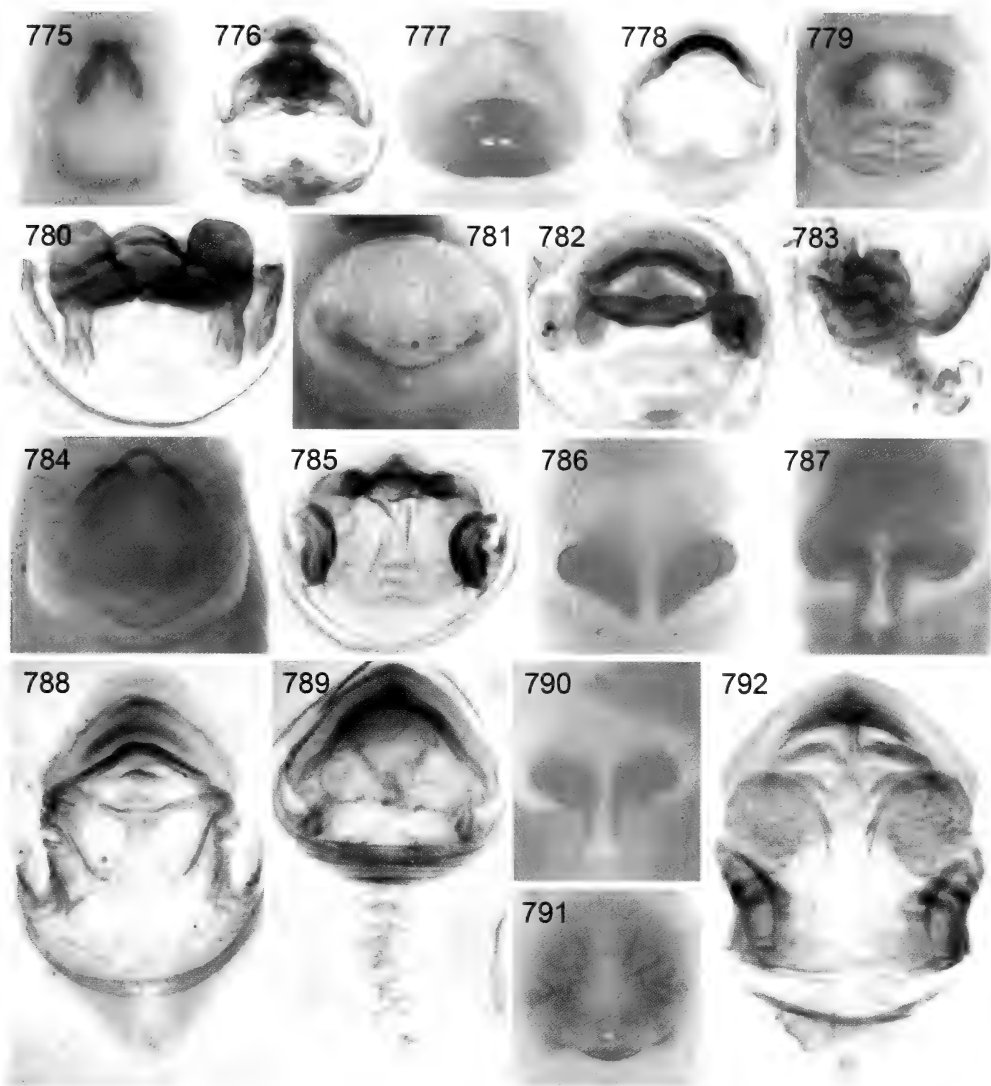


FIG. 775-792. *Pholcus ethagala* species group and *Panjange*; epigyna, ventral views and cleared female genitalia, dorsal (and lateral: 783) views. 775, 776. *Ph. ethagala*. 777, 778. *Ph. maturata*. 779, 780. *Ph. phui*. 781-783. *Ph. ledang*. 784, 785. *Ph. gombak*. 786, 788. *Pa. lanthana*. 787, 789. *Pa. madang*. 790. *Pa. alba*. 791, 792. *Pa. iban*.

implied character weighting either resolve the *Ph. ethagala* group as paraphyletic (in a trichotomy including the *Ph. minang* species group) or as monophyletic but based on different characters (loss of distal cheliceral apophyses: char. 20; loss of uncus: char. 48; regain of appendix: char. 53).

*Relationships.* The *Ph. ethagala* group is consistently considered closely related to *Panjange*, either (1) as sister taxon of *Panjange*, based on the male eye stalks (char. 3; equal and successive character weighting), or (2) together with the *Ph. minang* group as sister taxon of *Panjange*, based in addition on the divided

distal male cheliceral apophyses (char. 21; implied character weighting with  $K=3-6$ ), or (3) as sister to some but not all species of the *Ph. minang* group, based on the ventral femur protuberance (char. 28) and the regain of the appendix (char. 53) (implied character weighting with  $K=1-2$ ).

Within the core group, the two Sri Lankan species (*Ph. ethagala*, *Ph. maturata*) share a slender palpal tarsus elongation (char. 34; Figs. 794, 806), a slender epigynal 'knob' (Figs. 796, 807), pointed eye stalks (char. 4), and a forked appendix (char. 56). Only the latter two or only the last are considered synapomorphies in the cladistic analyses. The three Malayan species of the core group (*Ph. phui*, *Ph. ledang*, *Ph. gombak*) share a very thick palpal tarsus elongation (Figs. 815, 820; except *Ph. phui*), an extremely long ventral trochanter apophysis (Figs. 810, 815; except *Ph. gombak*), a huge semicircular appendix (char. 62; Figs. 814, 819; except *Ph. phui*), eye stalks without pointed processes (char. 4; considered plesiomorphic by most cladistic analyses except using implied character weighting at  $K=1-2$ ; Figs. 749, 756, 757), and large membranous structures in the internal female genitalia (Figs. 813, 818, 822).

*Pholcus schwendingeri* is tentatively assigned to this group based on the male eye stalks but it is characterized by several highly autapomorphic features (shape of trochanter apophysis, twisted palp, unique procurus) and may eventually be placed in another or new genus. *Pholcus vesculus* is only known from the female type specimen from Malaysia, Perak, Gunong Inas [ $-5^{\circ}20'N$ ,  $101^{\circ}00'E$ ] (in MNHN, examined). The species is assigned to this group because the epigynum strongly reminds of *Ph. ledang*, but *Ph. vesculus* has eight eyes and there seems to be no epigynal 'knob'.

*Natural history.* The Sri Lankan species appear to live on green leaves (S.P. Benjamin, unpubl. photographs).

*Distribution.* The *Ph. ethagala* group is restricted to Sri Lanka and the Malayan Peninsula (Fig. 718).

*Composition.* The *Ph. ethagala* group includes seven species; of these, six are newly described below. *Pholcus vesculus* Simon, 1901 cannot be redescribed and placed properly without the availability of male specimens. Core group: *Ph. ethagala* n. sp.; *Ph. maturata* n. sp.; *Ph. phui* n. sp.; *Ph. ledang* n. sp.; *Ph. gombak* n. sp.; assigned tentatively: *Ph. schwendingeri* n. sp.; *Ph. vesculus* Simon, 1901.

*Pholcus ethagala* n. sp.

Figs. 741-744, 775, 776, 793-804

*Type.* Male holotype from Sri Lanka, North Western Prov., Kurunegala Distr., Kurunegala, Ethagala mountain [ $7^{\circ}29.1'N$ ,  $80^{\circ}22.2'E$ ], ca. 300 m a.s.l., hand collecting, 1.-28.xi.2007 (Z. Jaleel), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by combination of male palpal morphology (Figs. 793, 794; coxa apophysis, trochanter apophyses, ventral femur modification, procurus shape, appendix shape, absence of uncus), and female genitalia (Figs. 775, 796; long slender 'knob', round pore plates).

*Male* (holotype). Total body length 3.4, carapace width 1.0. Leg 1: 34.5 (8.4 + 0.4 + 8.2 + 15.9 + 1.6), tibia 2: 5.2, tibia 3: 2.8, tibia 4: 4.7; tibia 1 L/d: 93. Habitus as in Figs. 741 and 742. Carapace mostly dark brown, only laterally anteriorly ochre-yellow, ocular area and clypeus brown, sternum brown with many tiny light spots, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray, with dark marks dorsally, ventrally monochromous. Distance PME-PME 415  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 25  $\mu$ m, no trace of AME. Ocular area elevated, many long hairs on posterior side, triads on stalks with pointed processes near PME (Figs. 743, 798, 799). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 795, with only one pair of light proximal frontal projections. Sternum wider than long (0.60/0.45), unmodified. Palps as in Figs. 793 and 794, coxa with long ventral apophysis, trochanter with retrolateral and ventral apophyses, femur with small dorsal apophysis and larger ventral protuberance pointing proximally, tarsus elongated dorsally, procurus complex, with numerous sclerotized and transparent processes, tarsal organ capsulate (Fig. 800), bulb without uncus, weakly sclerotized embolus, large appendix consisting of two branches (Figs. 801, 802). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseudosegments (>30 on tarsus 1), only distally visible in dissecting microscope. Gonopore with epiandrous spigots (Fig. 803); AMS with eight spigots each (Fig. 804).

*Variation.* Tibia 1 in 6 other males: 7.0-8.5 (mean 7.5).

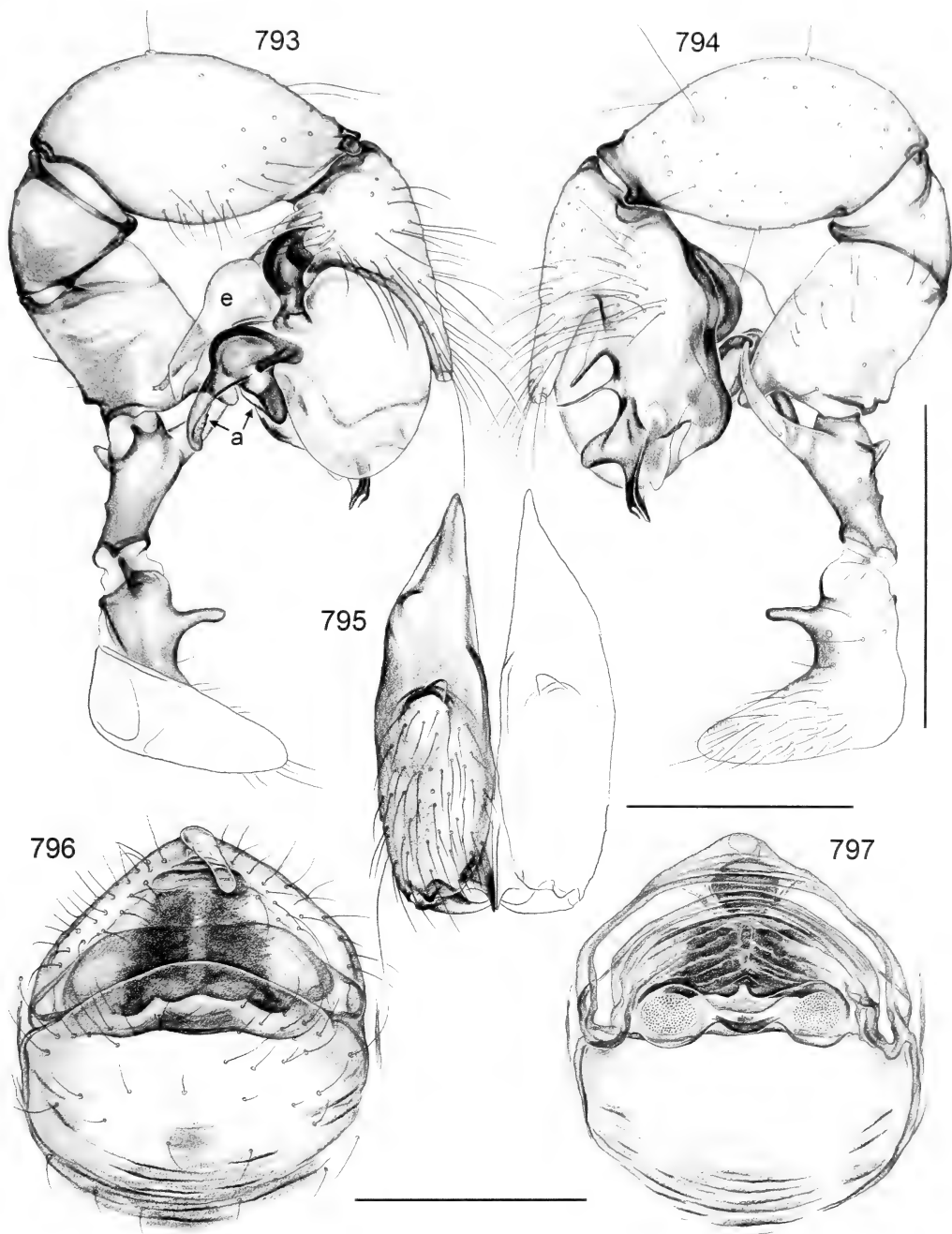


FIG. 793-797. *Pholcus ethagala*. 793, 794. Left male palp, prolateral and retrolateral views. 795. Male chelicerae, frontal view. 796, 797. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (793, 794), 0.3 (795-797).



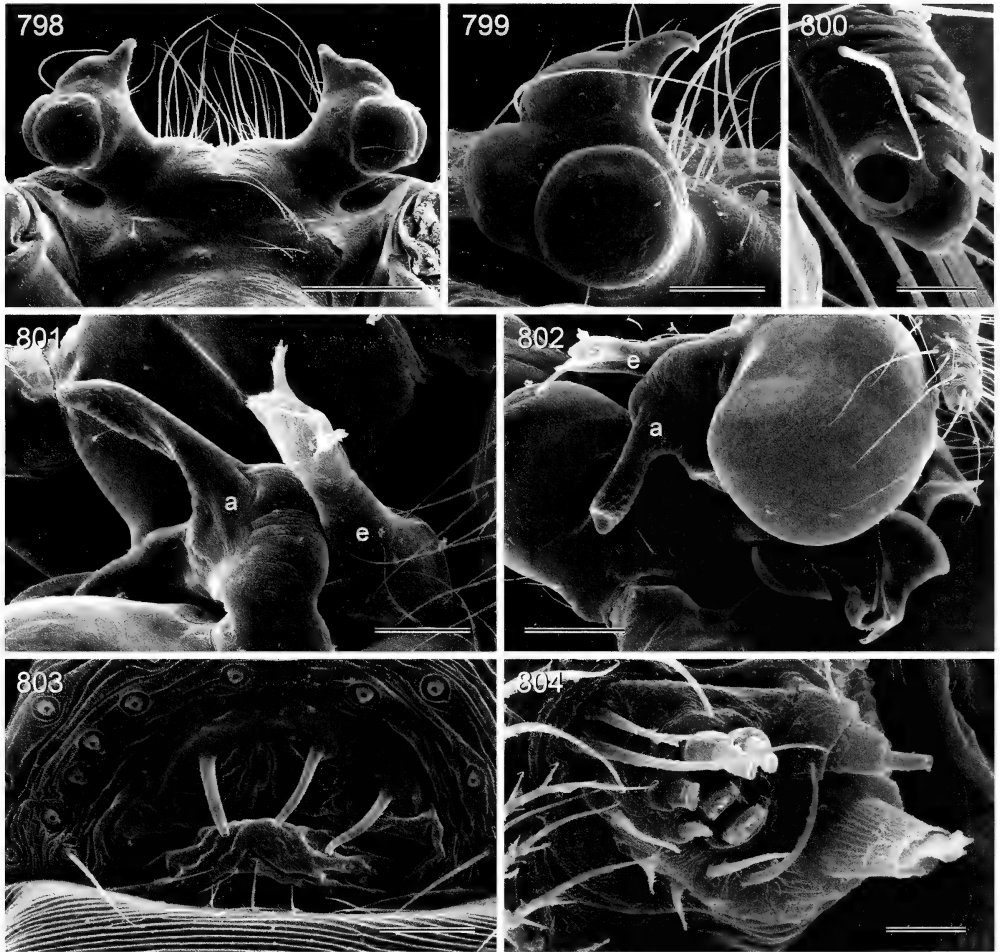


FIG. 798-804. *Pholcus ethagala*. 798. Male ocular area, frontal view. 799. Right male eye stalk, fronto-dorsal view. 800. Male palpal tarsal organ. 801. Left bulbal processes, prolateral view. 802. Left bulb, prolatero-ventral view. 803. Male gonopore. 804. Male ALS. Scale lines: 200  $\mu\text{m}$  (798), 100  $\mu\text{m}$  (802), 80  $\mu\text{m}$  (799), 60  $\mu\text{m}$  (801), 30  $\mu\text{m}$  (803), 20  $\mu\text{m}$  (800), 10  $\mu\text{m}$  (804).

*Female*. In general similar to male but triads barely elevated, closer together (distance PME-PME 205  $\mu\text{m}$ ), without pointed process; most females with carapace ochre-yellow with light brown pattern (Fig. 744), ocular area and clypeus not darkened; two of the ten females from type locality with entire posterior half of carapace darkened. Tibia 1 in 16 females: 5.3-6.7 (mean 6.0). Epigynum largely weakly sclerotized, anterior part with V-shaped brown mark (Fig. 775), long transparent 'knob' (Fig. 796); internal genitalia as in Figs. 776 and 797.

*Distribution*. Known from Sri Lanka only (Fig. 718). *Material examined*. SRI LANKA: *North Western Prov.*: Kurunegala Distr., Kurunegala, Ethagala: ♂ holotype above, together with 2♀ 2 juveniles; same data, 4♂8♀ (2 vials), in ZFMK; Kurunegala Nikaravatiya, hand collecting, 1.-9.xi.2007 (Z. Jaleel), 2♀ in ZFMK. *Western Prov.*: Kalutara Distr., Ingiriya [-6°45'N, 80°10'E], Bodinagala Forest Reserve, hand collecting, 10.xi.2007 (S.P. Benjamin, Z. Jaleel), 1♂ in ZFMK. *Central Prov.*: Peradeniya Botanical Gardens [7°16'N, 80°36'E], on leaves, 23.x.1982, collec-



tor not given, 1♀ in RMNH. Badulla District, Inginiyagala [7°13'N, 81°32'E], lower vegetation of jungle, 21.xi.1972 (I. Oksala), 1♀ in ZMT (AA3447). *Southern Prov.*: Galle [-6°02'N, 80°14'E], with E. Simon's handwritten label "9628 Mic. Galle!", 1♂5♀ in MNHN.

*Pholcus maturata* n. sp.

Figs. 745-748, 777, 778, 805-808

*Type*. Male holotype from Sri Lanka, Central Province, Nuwara Eliya District, Maturata [7°05'N, 80°48'E], no date (E. Simon), with Simon's hand-

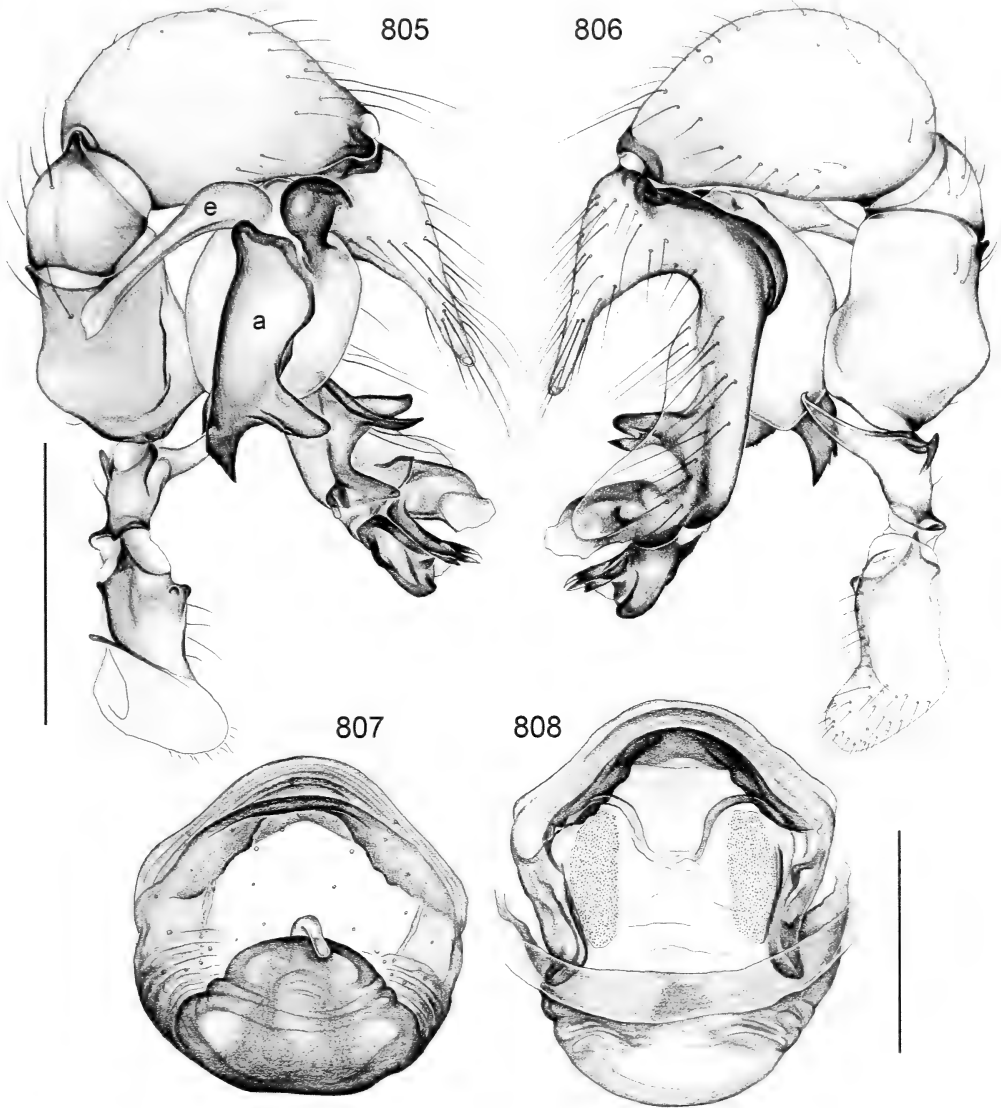


FIG. 805-808. *Pholcus maturata*. 805, 806. Left male palp, prolateral and retrolateral views. 807, 808. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (805, 806), 0.3 (807, 808).

written label "2400 Mic. Maturata!", in MNHN.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by combination of male palpal morphology (Figs. 805, 806; trochanter apophyses, procurus shape, appendix shape, absence of uncus), and female genitalia (Figs. 777, 807; long slender 'knob', elongate pore plates).

*Male* (holotype). Total body length 4.3, carapace width 0.95. Leg 1: 8.4 + 0.5 + 8.6 + 16.2, tarsus missing, tibia 2: 5.8, tibia 3: 3.5, tibia 4: 5.5, tibia 1L/d: 88. Habitus as in Figs. 745 and 746. Carapace mostly light brown, posteriorly a median light mark and anteriorly light lateral areas behind eye triads, ocular area, clypeus, and sternum light brown, legs whitish with brown patella area and tibia-metatarsus joints, abdomen ochre-yellow with dark marks dorsally and laterally, ventrally monochromous (cf. female, Fig. 747). Distance PME-PME 450  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, each triad on stalk with additional pointed process (Fig. 748), with small median conical projection in place of AME, longer and stronger hairs posteriorly on ocular area. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. ethagala* (cf. Fig. 795), proximal apophyses slightly more curved inwards. Sternum wider than long (0.65/0.50), unmodified. Palps as in Figs. 805 and 806, coxa with small retrolatero-ventral apophysis, trochanter with retrolateral and ventral apophyses, femur widened proximally, tarsus with dorsal elongation carrying tarsal organ at tip, procurus long and highly complex, without spines, bulb with long, weakly sclerotized embolus, very large appendix, no uncus. Legs without spines and curved hairs, few vertical hairs. Leg trichobothria and pseudosegments not seen.

*Variation.* Tibia 1 in other male from Maturata: 7.9; this male has a monochromous abdomen; in both males from Agraphathana the eye stalks (and most legs) are broken and missing.

*Female.* In general similar to male but dark area on carapace much smaller, one female with indistinct V-mark only; eyes not on stalks, triads closer together (distance PME-PME 255  $\mu$ m); without conical projection in place of AME; dark marks on abdomen very variable (almost absent to very distinct). Tibia 1 in female from Eastern Sinharaia: 6.1. Epigynum a weakly sclerotized oval plate with anterior 'knob' (Figs. 777, 807); internal arc visible

through cuticle anteriorly; internal genitalia as in Figs. 778 and 808.

*Distribution.* Known from Sri Lanka only (Fig. 718).

*Material examined.* SRI LANKA: *Central Prov.*: Nuwara Eliya District, Maturata: ♂ holotype above, together with 1♂ in MNHN; Agraphathana, Agraphath Forest Reserve [6°52'N, 80°43'E], beating, vi.2003 (S.P. Benjamin), 2♂4♀ in ZFMK. *Western Prov.*: Awisawela [=Avisawella, 6°57.2'N, 80°13.1'E], 3.viii.1996 (S.P. Benjamin), 1♀ in ZFMK. *Sabaragamuwa Prov.*: Ratnapura District, Eastern Sinharaia, Morningside section [6°25'N, 80°41'E], 23.xi.2007 (S.P. Benjamin, Z. Jaleel), 1♀ in ZFMK.

*Pholcus phui* n. sp.

Figs. 749-752, 779, 780, 809-813

*Type.* Male holotype from Thailand, Naratiwat Prov., Waeng Distr., Hala Bala Wildlife Reserve (5°47.7'N, 101°50.1'E), research station, 190-200 m a.s.l., 13-14.x.2003 (ATOL Expedition 2003), in MACN.

*Etymology.* Named for Phra Sunthorn Vohara, known as Sunthorn Phu (1786-1855), Thailand's best-known royal poet whose epic poetry (Nirat) is popular in Thailand to the present day.

*Diagnosis.* Easily distinguished from congeners by combination of long male eye stalks (Fig. 749), male palpal morphology (Figs. 809, 810; long trochanter apophysis, complex procurus, appendix shape), male cheliceral armature (Fig. 811; only proximal apophyses in frontal position), and female genitalia (Figs. 779, 812; small 'knob', shapes of internal structures).

*Male* (holotype). Total body length 3.8, carapace width 1.1. Leg 1: 8.6 + 0.5 + 8.7, metatarsus broken, tarsus missing, tibia 2 missing, tibia 3: 3.2, tibia 4: 4.7; tibia 1 L/d: 94. Habitus as in Figs. 750 and 751. Carapace pale ochre-yellow with triangular brown mark posteriorly, ocular area and clypeus brown, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, femora 1 proximally dorsally reddish, abdomen ochre-gray, with dark marks dorsally, ventrally monochromous (cf. female, Fig. 752). Distance PME-PME 565  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 45  $\mu$ m, tiny pigment spots in place of AME, apparently no lenses. Ocular area elevated, many longer hairs posteriorly, triads on long stalks (Fig. 749). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 811, with only one pair of light proximal frontal apophyses. Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 809 and 810, coxa unmodified, trochanter with short retrolateral

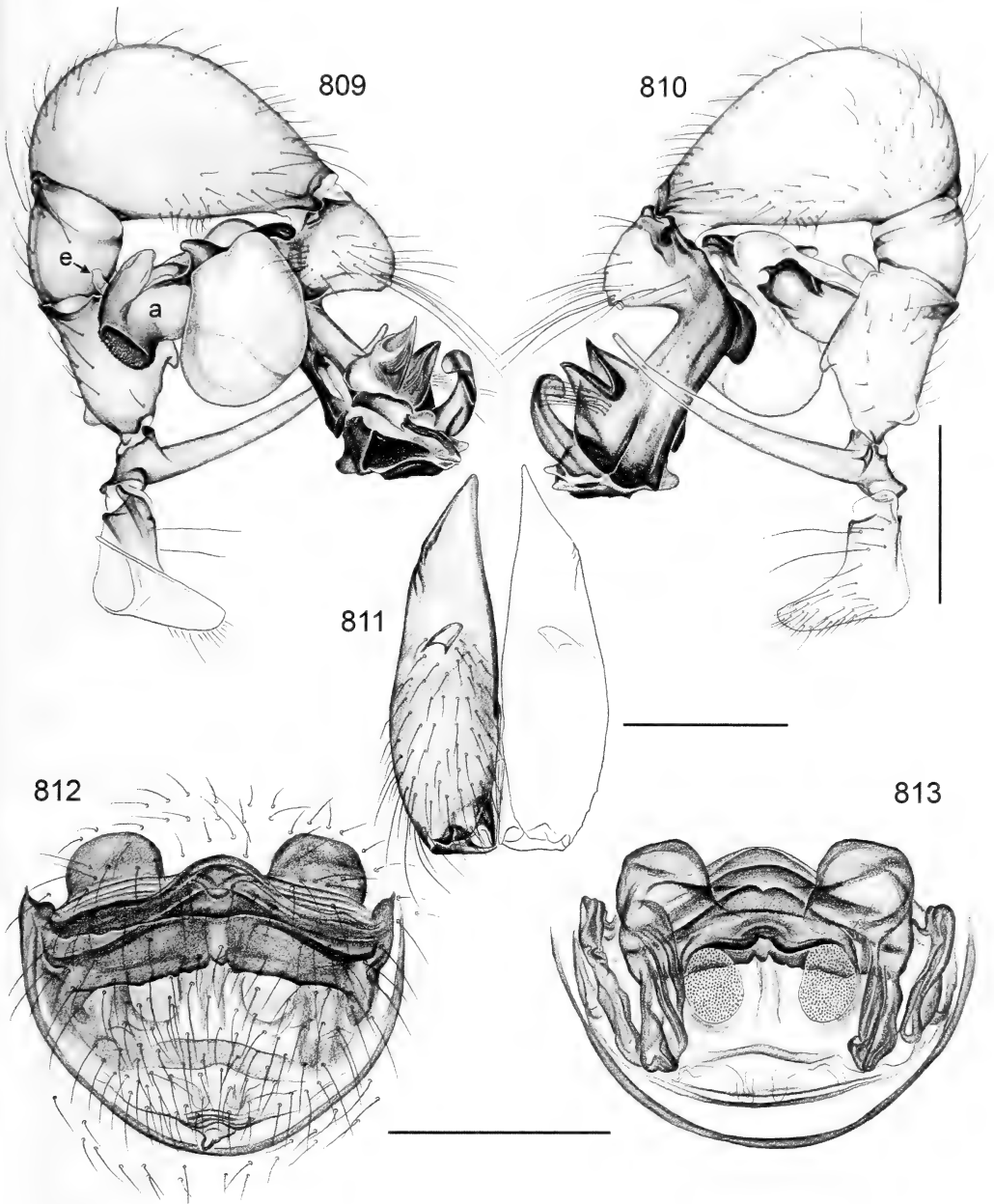


FIG. 809-813. *Pholcus phui*. 809, 810. Left male palp, prolateral and retrolateral views. 811. Male chelicerae, frontal view. 812, 813. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (809, 810, 812, 813), 0.3 (811).

apophysis and extremely long ventral apophysis, femur with proximal hump dorsally and ventral apophysis pointing proximally, tibia very large, procurus extremely complex distally, bulb with relatively long and slender embolus, distinctive large appendix, uncus absent (or reduced to small process?). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4.

*Female.* In general similar to male but triads not on stalks, closer together (distance PME-PME 230  $\mu$ m). Tibia 1: 7.5. Epigynum slightly protruding, internal structures partly visible through cuticle (Fig. 779), small 'knob' on narrow posterior sclerite (Fig. 812); internal genitalia as in Figs. 780 and 813.

*Distribution.* Known from type locality only (Fig. 718).

*Material examined.* THAILAND: *Naratiwat Prov.*: Waeng Distr., Hala Bala Wildlife Reserve: ♂ holotype above, together with 1 ♀.

*Pholcus ledang* n. sp.

Figs. 753-756, 781-783, 814-818

*Type.* Male holotype from Malaysia, Johor, Gunung Ledang (=Mt. Ophir), Puteri Waterfalls (2°21.4'N, 102°37.8'E), rain forest near stream, 80-130 m a.s.l., 21./22.v.2004 (P. Schwendinger), in MHNG.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by combination of long male eye stalks (Fig. 756), male palpal morphology (Figs. 814, 815; long trochanter apophysis, complex procurus, appendix shape), male cheliceral armature (Fig. 816; only proximal apophyses in frontal position), and female genitalia (Figs. 781, 817, 818; 'knob' on folded scape, pore plates wide apart).

*Male* (holotype). Total body length 3.4, carapace width 1.1. Leg 1: 30.6 (7.2 + 0.5 + 7.2 + 14.0 + 1.7), tibia 2: 4.2, tibia 3: 2.7, tibia 4: 4.0; tibia 1 L/d: 81. Habitus as in Figs. 753 and 754. Carapace ochre-yellow with light brow V-mark posteriorly, ocular area and clypeus medially light brown, sternum whitish except margins, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora 1 and 2 proximally dorsally reddish, abdomen ochre-gray, with dark marks dorsally and laterally, ventrally monochromous (cf. female, Fig. 755). Distance PME-PME 440  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Ocular area

elevated, triads on long stalks (Fig. 756). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 816, with only one pair of light proximal frontal apophyses. Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 814 and 815, coxa unmodified, trochanter with short retrolateral apophysis and extremely long ventral apophysis, femur with indistinct proximal hump dorsally and large ventral apophysis pointing proximally, tibia very large, tarsus with massive dorsal elongation, procurus extremely complex distally, bulb with relatively long and slender embolus, extremely large appendix, uncus absent (or reduced to small process?). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many indistinct tarsal pseudosegments.

*Female.* In general similar to male but triads not on stalks, closer together (distance PME-PME 185  $\mu$ m), clypeus darker brown, sternum anteriorly light brown. Tibia 1: 6.1. Epigynum strongly protruding (Fig. 783), largely weakly sclerotized, 'knob' on folded scape (Fig. 817); internal genitalia as in Figs. 782 and 818.

*Distribution.* Known from type locality only (Fig. 718).

*Material examined.* MALAYSIA: *Johor*: Gunung Ledang, Puteri Waterfalls, ♂ holotype above, together with 1 ♀.

*Pholcus gombak* n. sp.

Figs. 757-760, 784, 785, 819-822

*Type.* Male holotype from Malaysia, Selangor, Gombak Experimental Station [-3°14'N, 101°44'E], bamboo internodes, 19.ix.1991 (D. Kovac), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by combination of long male eye stalks (Fig. 757), male palpal morphology (Figs. 819, 820; short trochanter apophyses, complex procurus, appendix shape), male cheliceral armature (cf. *Ph. ledang*, Fig. 816; only proximal apophyses in frontal position), and female genitalia (Figs. 784, 821, 822; small 'knob', large pore plates, shapes of internal structures).

*Male* (holotype). Total body length 3.2, carapace width 1.1. Leg 1: 33.7 (7.7 + 0.4 + 8.2 + 15.7 + 1.7), tibia 2: 4.5, tibia 3: 2.7, tibia 4: 4.3; tibia 1 L/d: 93. Habitus as in Figs. 758 and 759. Carapace ochre-

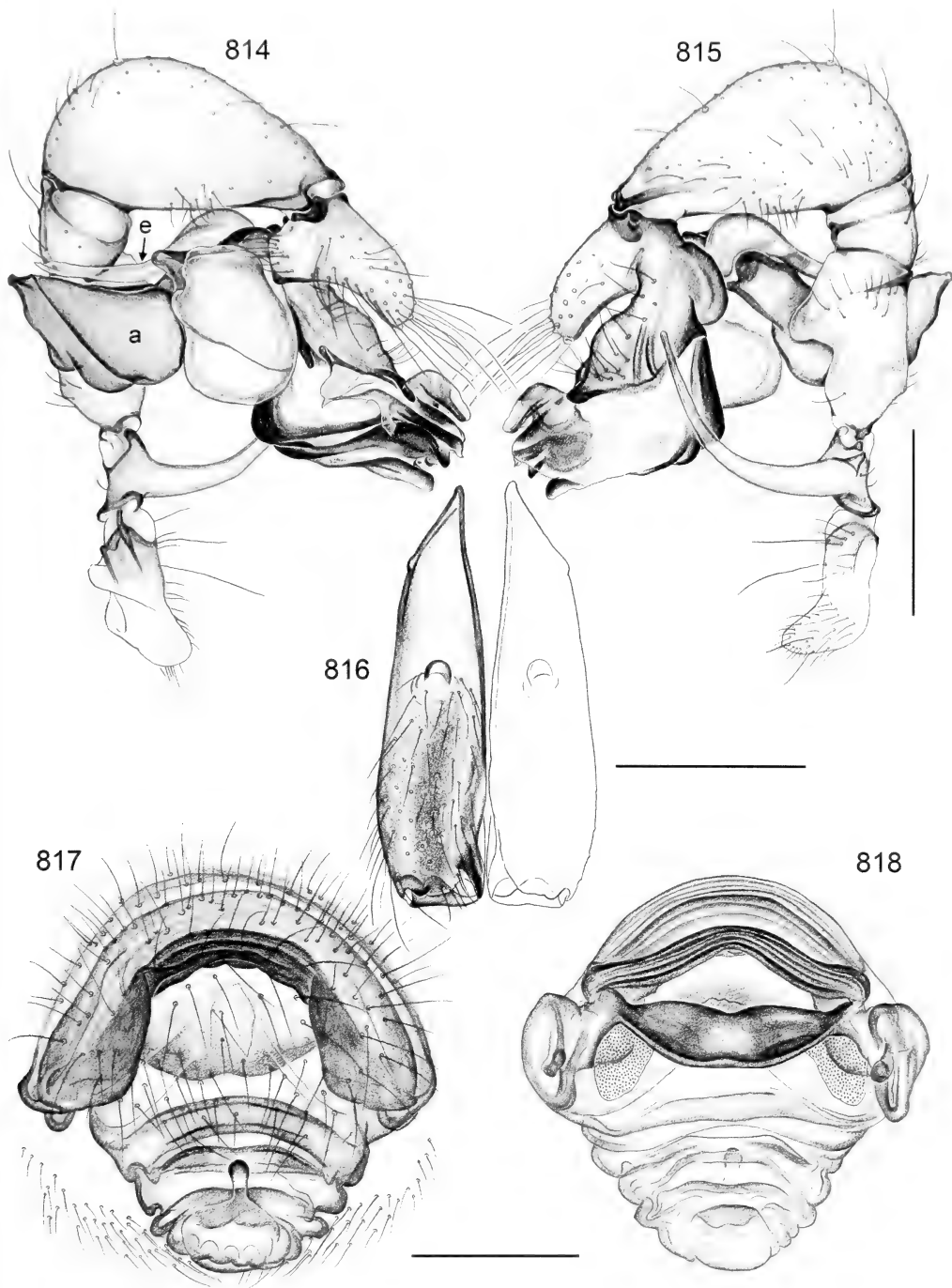


FIG. 814-818. *Pholcus ledang*. 814, 815. Left male palp, prolateral and retrolateral views. 816. Male chelicerae, frontal view. 817, 818. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (814, 815), 0.3 (816-818).

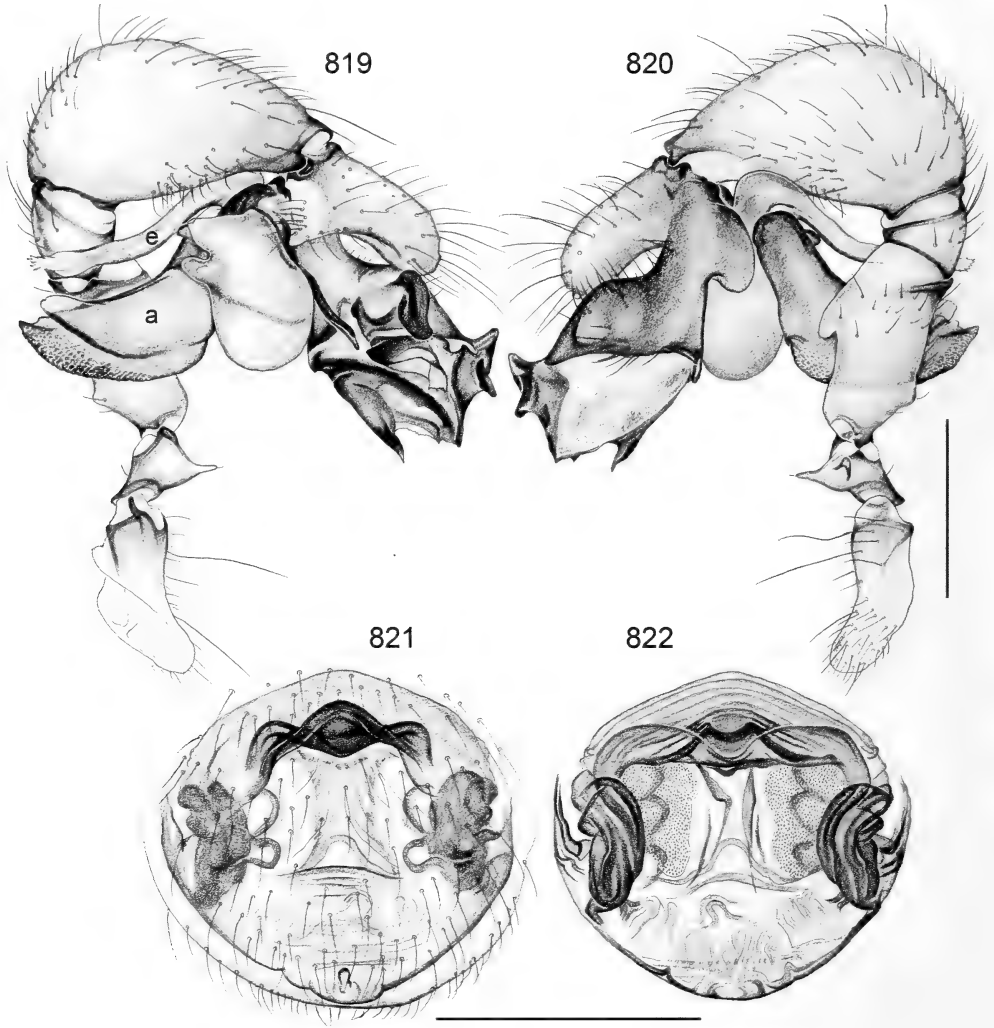


FIG. 819-822. *Pholcus gombak*. 819, 820. Left male palp, prolateral and retrolateral views. 821, 822. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

yellow with light brown V-mark posteriorly, ocular area with triangular mark posteriorly, clypeus proximally light brown, sternum pale ochre-yellow, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray, with dark marks dorsally (posterior half) and laterally, ventrally monochromous (cf. female, Fig. 760). Distance PME-PME 450  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, triads on long stalks (Fig. 757). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in *Ph. ledang* (cf. Fig. 816), with only one pair of light proximal frontal apophyses. Sternum wider than

long (0.75/0.55), unmodified. Palps as in Figs. 819 and 820, coxa unmodified, trochanter with short retrolateral and ventral apophyses, femur with indistinct dorsal hump and larger ventral apophysis pointing proximally, tibia very large, tarsus with massive dorsal elongation, procurus extremely complex distally, distal part apparently hinged against proximal part, bulb with long and slender embolus, extremely large appendix, uncus absent (or reduced to small process?). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseu-

dosegments (>20 on tarsus 1), distally fairly distinct.  
*Variation.* Tibia 1 in other male: 8.1.

*Female.* In general similar to male but triads not on stalks, closer together (distance PME-PME 185  $\mu$ m), clypeus dark brown, sternum anteriorly light brown. Tibia 1 in 2 females: 6.0, 6.5 (missing in others). Epigynum in some females strongly protruding, largely weakly sclerotized, complex internal structures visible through cuticle (Fig. 784), with small posterior 'knob' (Fig. 821); internal genitalia as in Figs. 785 and 822.

*Distribution.* Known from mainland Malaysia only (Fig. 718).

*Material examined.* MALAYSIA: *Selangor.* Gombak Experimental Station: ♂ holotype above; same data

but 29.x.1991, 1♀ in RMNH; Gombak Field Station, in dead *Ficus* leaf, 4.vii.1992 (C.L. & P.R. Deeleman), 1♂ in RMNH; same locality, no date (D. Kovac), 1♂1♀ in RMNH. *Pahang.* Genting [3°24.5'N, 101°45.9'E], secondary jungle, 600 m a.s.l., 4.xii.1990 (Murphy, 19133), 1♂3♀ in ZFMK; same data but 27.xi.1990 (18979), 4♀ in ZFMK.

*Pholcus schwendingeri* n. sp.

Figs. 761-763, 823-825

*Type.* Male holotype from Thailand, Ranong Prov., Kapoe Distr., Khlong Nakha Wildlife Sanctuary [9°26'N, 98°35'E], 30 m a.s.l., 29.i.1991 (P. Schwendinger), in MHNG.

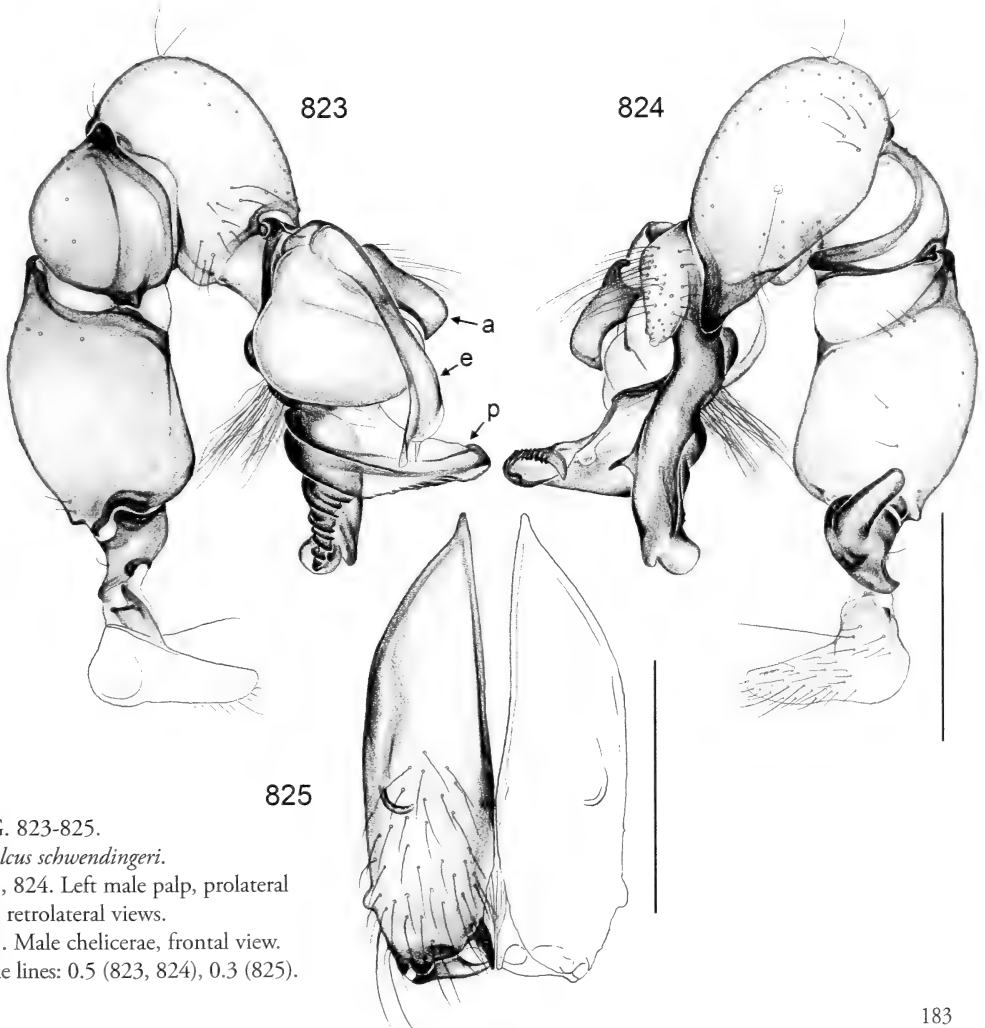


FIG. 823-825.

*Pholcus schwendingeri.*

823, 824. Left male palp, prolateral and retrolateral views.

825. Male chelicerae, frontal view.

Scale lines: 0.5 (823, 824), 0.3 (825).

*Etymology.* The species is named for Peter Schwendinger who contributed a large part of the Thai pholcids treated in this study.

*Diagnosis.* Easily distinguished from congeners by combination of very long male eye stalks (Fig. 763), male palpal morphology (Figs. 823, 824; twisted segments, strong trochanter apophysis, complex procurus, appendix shape), and male cheliceral armature (Fig. 825).

*Male* (holotype). Total body length 3.6, carapace width 0.9. Leg 1: 33.5 (7.8 + 0.4 + 7.9 + 15.7 + 1.7), tibia 2: 4.8, tibia 3: 2.8, tibia 4 missing; tibia 1 L/d: 105. Habitus as in Figs. 761 and 762. Carapace ochre-yellow with brown median mark posteriorly, ocular area and eye stalks brown, clypeus brown proximally, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale gray, dorsally and laterally with some dark marks. Distance PME-PME 495  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Ocular area elevated, triads on very long stalks (Fig. 763), small frontal projection in place of AME. No thoracic furrow, clypeus with light median projection (0.13 long) at rim. Chelicerae as in Fig. 825, with two pairs of light humps. Sternum wider than long (0.60/0.45), unmodified. Palps as in Figs. 823 and 824, coxa unmodified, trochanter with long heavily sclerotized apophysis retrolaterally and additional smaller apophysis more proximally, femur with small proximal apophysis dorsally, palpal segments appear twisted due to unusual arrangement of joints between femur and tarsus, bulb with long weakly sclerotized embolus and simple sclerite (putative appendix). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 3; tarsal pseudosegments not visible in dissecting microscope.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 718).

*Material examined.* THAILAND: Ranong Prov.: Kapoe Distr., Khlong Nakha Wildlife Sanctuary, ♂ holotype above.

#### *Pholcus chappuisi* species group

*Diagnosis.* The core group includes medium-sized, long-legged spiders (body length ~4-6, leg 1: ~35-45); distinguished from other species groups in *Pholcus* by the combination of the following characters: elongate abdomen with distinctive dorsal pattern of rectangu-

lar elements (Figs. 826, 827, 830, 831, 833), eight eyes, triads in male on low elevations, male chelicerae variable, with proximal and distal apophyses (Fig. 889) or entirely unmodified (Fig. 861), male bulb with conservative uncus, appendix reduced to membranous lobe or thin flap (Figs. 859, 874, 879, 886), epigynum weakly sclerotized, with or without 'knob'.

*Description* (core group). Body length ~4-6, carapace width ~1.0-1.5. AME relatively large (80-90  $\mu$ m), ocular region in males with many stronger hairs posteriorly, triads on low elevations. Clypeus and sternum unmodified. Male chelicerae either with proximal and distal apophyses (*Ph. bikilai*), with only one pair of frontal apophyses (*Ph. strandi*), or entirely unmodified (*Ph. chappuisi*, *Ph. twa*, *Ph. kyondo*). Male palpal coxa unmodified, trochanter with strong retrolatero-ventral apophysis, femur with retrolateral and ventral modifications, tarsus without dorsal elongation, tarsal organ capsulate, procurus usually complex, simpler in *Ph. strandi*, with indistinct ventral 'knee' (distinct in *Ph. strandi*), without dorsal spines. Male bulb with conservative uncus, appendix reduced to membranous lobe or thin flap (e.g., Figs. 854, 869, 886). Legs long, tibia 1 in males ~9-12, tibia 1 L/d ~65-75, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4-5%, tarsus 4 with single row of comb-hairs. Abdomen cylindrical, with distinctive dorsal pattern of rectangular elements (Figs. 826, 827, 830, 831, 833), male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female eye triads closer together, less elevated, without stronger hairs on ocular area, chelicerae unmodified. Body size as in males, legs slightly shorter (tibia 1: ~6-11). Epigynum weakly sclerotized, with 'knob' in *Ph. bikilai*, without 'knob' in other species, internal genitalia with pair of pore-plates of variable shape.

*Monophyly.* The core group is supported by two synapomorphies in all analyses: (1) appendix reduced to a membranous lobe or thin flap (char. 61; Figs. 859, 869, 879, 886); and (2) distinctive dorsal abdominal pattern (char. 14; Figs. 826, 827, 830, 831, 833).

*Relationships.* The sclerotized epigynum in the supposedly most plesiomorphic species *Ph. bikilai* suggests that this species group is part of the core group



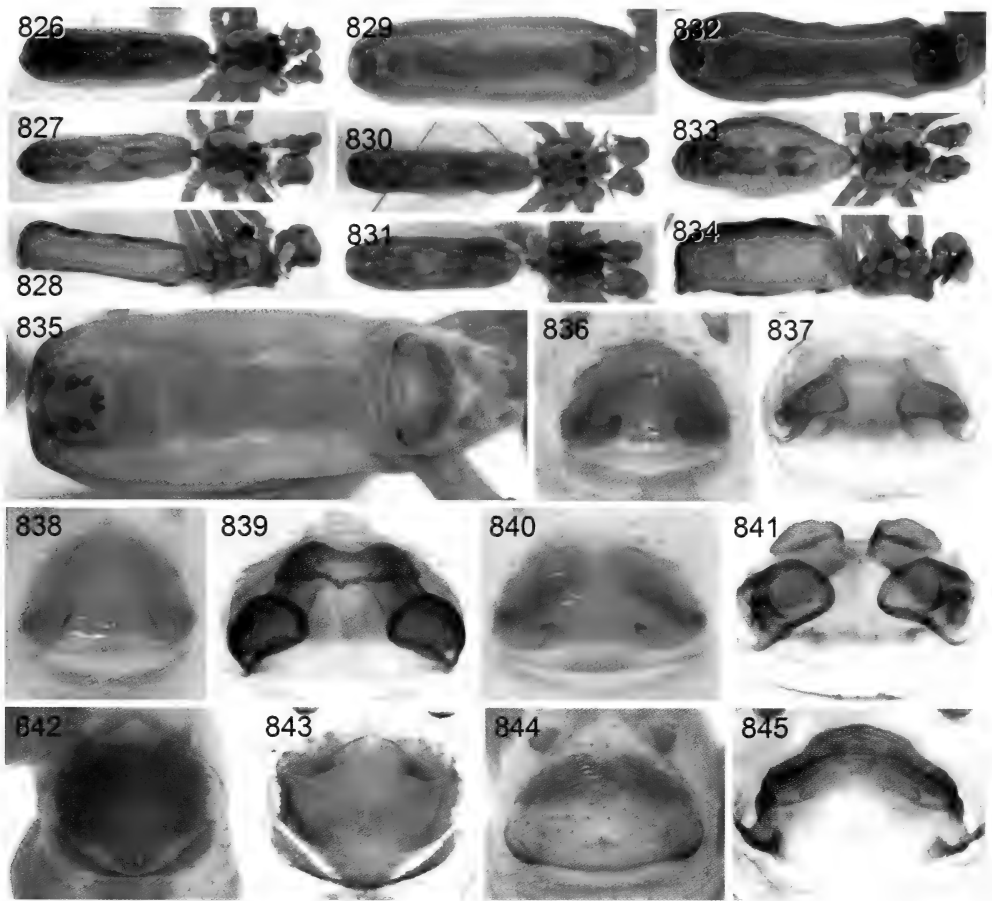


FIG. 826-845. *Pholcus chappuisi* species group, habitus and female genitalia (epigyna, ventral views; cleared genitalia, dorsal views). 826. *Ph. chappuisi*, male, dorsal view. 827-829. *Ph. twa*, male, dorsal and lateral views; female abdomen, ventral view. 830. *Ph. kyondo*, male, dorsal view. 831, 832. *Ph. strandi*, male, dorsal view; female abdomen, ventral view. 833-835. *Ph. bikilai*, male, dorsal and lateral views; female abdomen, ventral view. 836, 837. *Ph. chappuisi*. 838, 839. *Ph. twa*. 840, 841. *Ph. kyondo*. 842, 843. *Ph. strandi*. 844, 845. *Ph. bikilai*.

of *Pholcus* (Fig. 26), but no characters are known that link it to any particular species group.

Within the species group, the three southern species (*Ph. chappuisi*, *Ph. twa*, *Ph. kyondo*) share the unmodified male chelicerae (in particular the absence of lateral and proximal frontal apophyses; chars. 16, 18), the complex procurus with various membranous elements (Figs. 849, 862, 876), the shape of the epigynum with pair of pockets (Figs. 850, 863, 877), and the appendix reduced to an almost invisible small membranous flap (Figs. 854, 859, 874).

Three species are assigned tentatively based on a similar trochanter apophysis (*Ph. taibeli*, *Ph. vatovae*), and apparently similar color patterns (*Ph. hieroglyphicus*). The types of these species could not be located (in particular, they could not be found in MZF: L. Bartolozzi, pers. comm. Feb. 2007), and no new material is available.

*Natural history.* *Pholcus chappuisi* seems to tolerate a wide range of environmental conditions. It was found in fairly well preserved forest fragments (e.g., Nyahururu), in caves (Mt. Elgon, Mt. Kenya), at trees

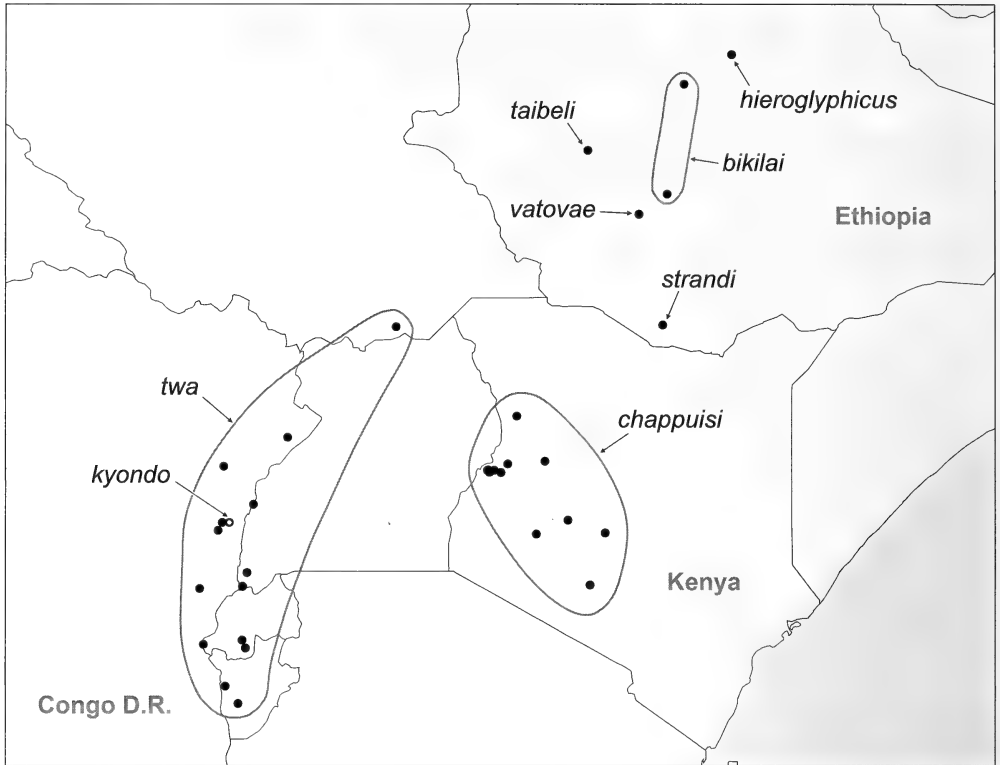


FIG. 846. Known distribution of the *Pholcus chappuisi* species group.

up to 2870 m a.s.l. (Mt. Elgon), and even in gardens and within buildings (see label data below). *Pholcus twa* seems to occupy a similar wide range of habitats. *Distribution.* The *Ph. chappuisi* group is restricted to eastern Africa (Fig. 846).

*Composition.* The *Ph. chappuisi* group includes eight species; of these, three are newly described below, two are redescribed. Core group: *Ph. chappuisi* Fage, 1936; *Ph. twa* n. sp.; *Ph. kyondo* n. sp.; *Ph. strandi* Caporiacco, 1941; *Ph. bikilai* n. sp.; assigned tentatively: *Ph. taibeli* Caporiacco, 1949; *Ph. hieroglyphicus* Pavesi, 1883; *Ph. vatovae* Caporiacco, 1940.

*Pholcus chappuisi* Fage, 1936

Figs. 13, 826, 836, 837, 847-858

*Pholcus Chappuis* [sic] Fage in Fage & Simon 1936: 315-316, figs. 8a-c. [*Chappuis* in the title is considered a lapsus since it is "*Chappuisi*" in figure legend and text]

*Types.* Three male syntypes from Kenya, Rift Valley, Mt. Elgon [-1°00'N, 34°45'E], "St. no 15, Camp

II", xii.1932 ("Mission de l'Omo"), in MNHN (10239), examined. Three juvenile syntypes from Mt. Elgon ("Stn. no 13: Grotte Shimo Kapseta, zone inférieur du mont Elgon"), 14.xii.1932 ("Mission de l'Omo"), in MNHN (10231), examined.

*Diagnosis.* Easily distinguished from most African pholcids by unmodified male chelicerae (as in *Ph. twa*; cf. Fig. 861), by appendix reduced to membranous lobe (Figs. 847, 854) and simple epigynum with pair of pockets but without 'knob' (Figs. 850, 858); from close relatives (*Ph. twa*, *Ph. kyondo*) by shape of procurus (Fig. 849) and shape of internal arc in female genitalia (Figs. 850, 851).

*Male* (syntype). Total body length ~4.6 (abdomen deformed), carapace width 1.3. Leg 1: 37.9 (9.3 + 0.6 + 9.4 + 16.2 + 2.4), tibia 2 missing, tibia 3: 4.2, tibia 4: 5.4; tibia 1 L/d: 71. Habitus as in Fig. 826. Carapace ochre-yellow with distinctive brown pattern medially extending to ocular area and brown lateral marginal marks, clypeus with some darker spots, sternum monochromous pale ochre-yellow,

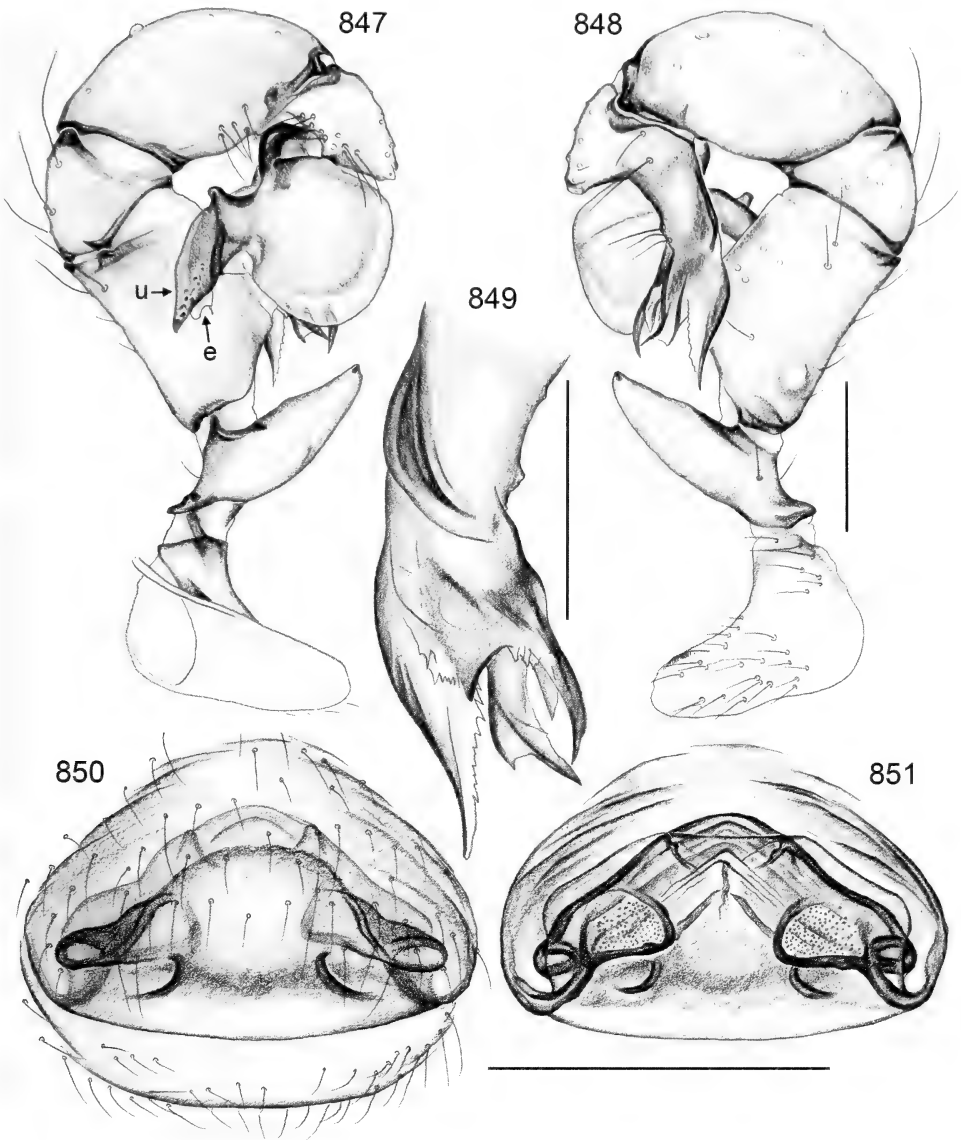


FIG. 847-851. *Pholcus chappuisi*. 847, 848. Left male palp, prolateral and retrolateral views. 849. Left procursor, prolateral view. 850, 851. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (850, 851), 0.3 (847, 848), 0.2 (849).

legs ochre-yellow, patellae and tibiae proximally brown, femora and tibiae with subdistal darker rings and whitish tips, abdomen ochre-gray with distinctive brown pattern dorsally, ventrally with wide brown band (cf. female of *Ph. twa*, Fig. 829). Distance PME-PME 370  $\mu$ m, diameter PME 115  $\mu$ m,

distance PME-ALE 45  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area elevated, triads on additional low elevations directed laterally, many stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae unmodified, as in *Ph. twa* (cf. Fig. 861). Sternum wider than long

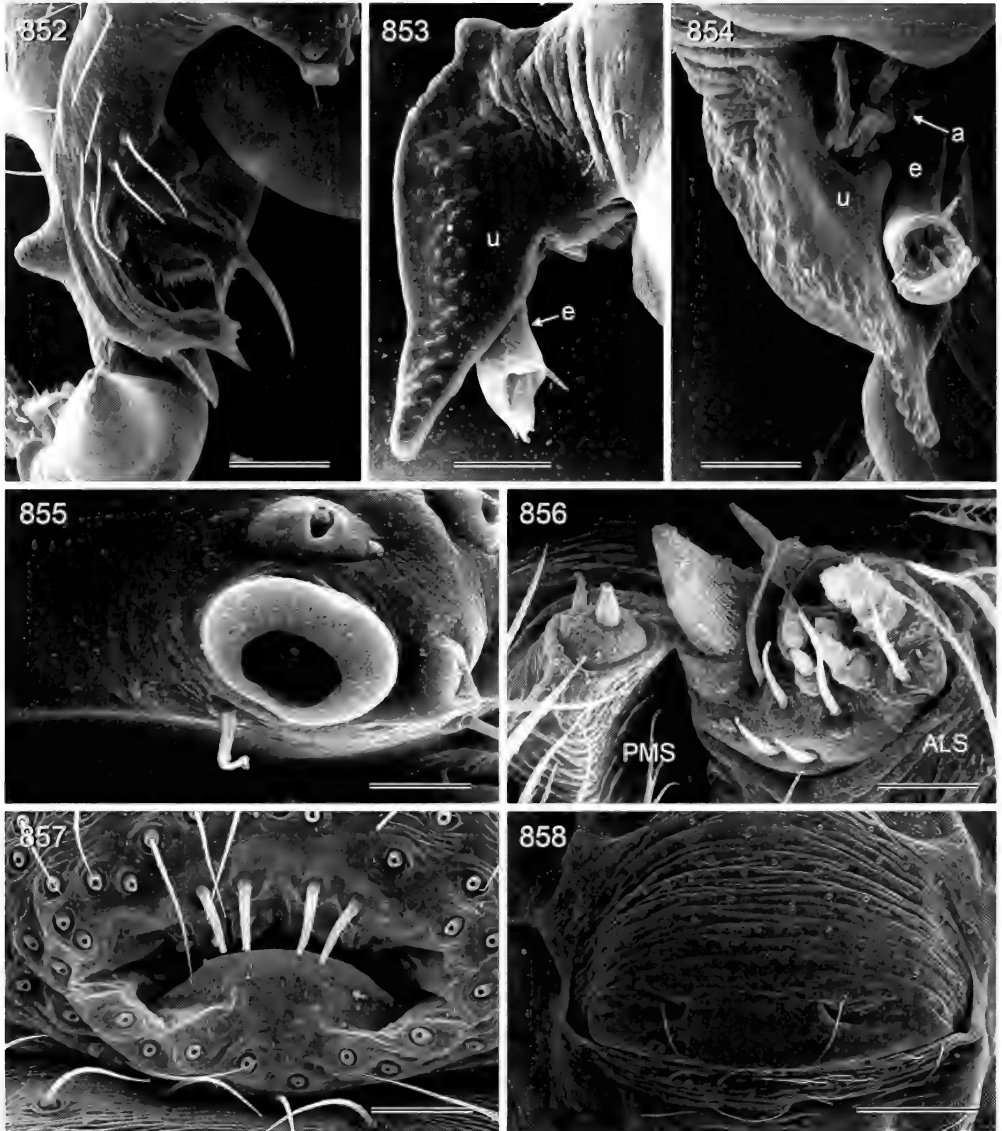


FIG. 852-858. *Pholcus chappuisi*. 852. Right procurus, retrolateral view. 853, 854. Left uncus and embolus, prolateral and distal views. 855. Male palpal tarsal organ. 856. Male ALS and PMS. 857. Male gonopore. 858. Epigynum. Scale lines: 200  $\mu$ m (858), 100  $\mu$ m (852), 60  $\mu$ m (853), 50  $\mu$ m (854, 857), 20  $\mu$ m (855, 856).

(0.90/0.65), unmodified. Palps as in Figs. 847 and 848, coxa unmodified, trochanter with strong retrolatero-ventral apophysis, tip apparently with small modified hair, femur with retrolateral bulge proximally, widened ventrally, tarsal organ capsulate (Fig. 855), procurus relatively short, distally complex (Figs. 849, 852), with relatively short hairs retrolater-

ally, bulb with uncus, largely transparent short embolus, appendix apparently reduced to transparent flap (Figs. 853, 854). All hairs on legs missing; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; tarsal pseudosegments not visible in dissecting microscope. Gonopore with four epiandrous spigots

(Fig. 857); spinnerets as in Fig. 856, with eight spigots on ALS.

*Variation.* Tibia 1 missing in other syntypes; tibia 2: 6.7/6.6, tibia 3: 4.4/4.6, tibia 4: 5.7/5.8. The syntypes are in fairly good condition but slightly bleached. The new material has a darker coloration, the sternum has a distinct star-shaped light brown mark with a light spot medially; legs without curved hairs and spines, few vertical hairs; tibia 1 in 32 other males: 8.8-10.8 (mean 9.8); tarsal pseudosegments fairly distinct distally. Distance PME-PME in male with longest legs: 415  $\mu$ m.

*Female.* In general similar to male but ocular area less elevated, triads not on additional elevation, few normal hairs on ocular area, triads closer together (distance PME-PME 240  $\mu$ m). Tibia 1 in 45 females: 7.2-10.8 (mean 8.6); in one exceptional female from Nairobi: 4.7. Epigynum a simple sclerotized plate with pair of pockets (Figs. 850, 858), internal structures visible through cuticle (Fig. 836), without 'knob'; internal genitalia as in Figs. 837 and 851.

*Distribution.* Known from several localities in western Kenya (Fig. 846).

*Material examined.* KENYA: *Rift Valley*: Mt. Elgon: 3♂ and 3 juvenile syntypes above. Mt. Elgon N.P., Kitum Cave (1°01.8'N, 34°45.4'E), 2410 m a.s.l., cave entrance, 31.i.2010 (B.A. Huber), 2♂5♀ in ZFMK; same data, 1♂2♀ in pure ethanol, in ZFMK. Mt. Elgon N.P., along Kimothon River (1°04.6'N, 34°43.5'E), 2510 m a.s.l., 31.i.2010 (B.A. Huber), 1♂1♀ in ZFMK; Mt. Elgon N.P., at large trees near road (1°03.8'N, 34°42.7'E), 2870 m a.s.l., 1.ii.2010 (B.A. Huber), 1♂ in ZFMK; same data, 1♂1♀ in pure ethanol, in ZFMK. Kwaisagat [2°11'N, 35°19'E], stony hillside, 2600 m a.s.l., 1.ix.1984 (Murphy), 1♂1♀ in CJFM (12208). Kitale Museum Forest (-1°01.3'N, 34°59.7'E), 1880 m a.s.l., 2.ii.2010 (B.A. Huber), 11♂7♀ in ZFMK and NMKE; same data, 1♂3♀ in pure ethanol, in ZFMK. Kitale, Kaibos [1°12'N, 35°08'E], 2000 m a.s.l., garden litter, 19.viii.1984 (Murphy), 2♂ in CJFM (11956); same locality, stones in grass, 20.viii.1972 (Murphy), 1♀ in CJFM (2032); same locality, rock garden, 15.viii.1972 (Murphy), 1♀ in CJFM (1914); same locality, garden, shrubs, 20.vii.1974 (Murphy), 1♀ in CJFM (3576); Kitale [1°01'N, 35°00'E], forest, shrubs and litter, 2000 m a.s.l., 22.vii.1974 (Murphy), 1♂ in CJFM (3636); Kitale, Monroe Farms, roadside verges, 9.viii.1972 (Murphy), 1♀ in CJFM (1703); Endeless [1°04'N, 34°51'E], "R. Suam", riverine forest, 2000 m a.s.l.,

7.viii.1972 (Murphy), 1♂ in CJFM (1656); Cherangani Hills [1°15'N, 35°27'E], roadside, scrub, 2200 m a.s.l., 21.viii.1972 (Murphy), 1♀ in CJFM (2056). Thompson Falls near Nyahururu, (0°02.7'N, 36°22.1'E), 2350 m a.s.l., 30.i.2010 (B.A. Huber), 12♂32♀ in ZFMK and NMKE; same data, 2♂3♀ in pure ethanol, in ZFMK. Molo, at plants and buildings in hotel garden (0°14.5'S, 35°43.3'E), 2510 m a.s.l., 4.ii.2010 (B.A. Huber), 3♂5♀ in ZFMK; same data, 3♀ and 2 juvs. in pure ethanol, in ZFMK. *Central Prov.*: Mt. Kenya, Mau Mau Cave (0°13.0'S, 37°08.2'E), 2230 m a.s.l., 28.i.2010 (B.A. Huber), 6♂7♀ in ZFMK; same data, 2♂6♀ and 2 juvs. in pure ethanol, in ZFMK. North of Castle Forest Lodge [-0°23'S, 37°19'E], ruins of old brick huts, by hand, 2370 m a.s.l., 21.iv.2004 (R. Jocqué, C. Warui, van den Spiegel), 1♀ in MRAC (215149). *Nairobi Area*: Nairobi, Ruiru [1°08.9'S, 36°57.4'E], kei apple hedge, 1600 m a.s.l., 17.viii.1984 (Murphy), 1♀ in CJFM (11878); same locality, garden, 12.ix.1980 (Murphy), 1♀ in CJFM (9343); Nairobi, house, 1600 m a.s.l., x.1975 (Murphy), 1♂3♀ in CJFM (5532).

*Pholcus twa* n. sp.

Figs. 827-829, 838, 839, 859-873

*Type.* Male holotype from Uganda, Kabale Distr., Bwindi Impenetrable National Park, "Ruhizha" [Ruhija], (1°02'S, 29°46'E), ca. 2300 m a.s.l., on buildings and road cut, 12.-16.ix.1996 (C.E. Griswold), in CAS.

*Etymology.* Named for the Twa, also known as Batwa, a pygmy people who were the oldest recorded inhabitants of the Great Lakes region of central Africa; noun in apposition.

*Diagnosis.* Easily distinguished from most African pholcids by unmodified male chelicerae (Fig. 861); also by appendix reduced to membranous lobe (Figs. 859, 869) and simple epigynum with pair of pockets but without 'knob' (Figs. 863, 873); from close relatives (*Ph. chappuisi*, *Ph. kyondo*) by shape of procurus (Fig. 862) and shape of internal arc in female genitalia (Fig. 864).

*Male* (holotype). Total body length 5.5, carapace width 1.3. Leg 1: 42.6 (10.4 + 0.7 + 10.5 + 18.3 + 2.7), tibia 2: 7.3, tibia 3: 4.9, tibia 4: 6.5; tibia 1 L/d: 70. Habitus as in Figs. 827 and 828. Carapace light ochre with distinctive brown pattern extending to ocular area, clypeus with pair of light brown stripes, sternum light brown with some yellowish spots, legs ochre-yellow, patellae and tibia-metatarsus joints

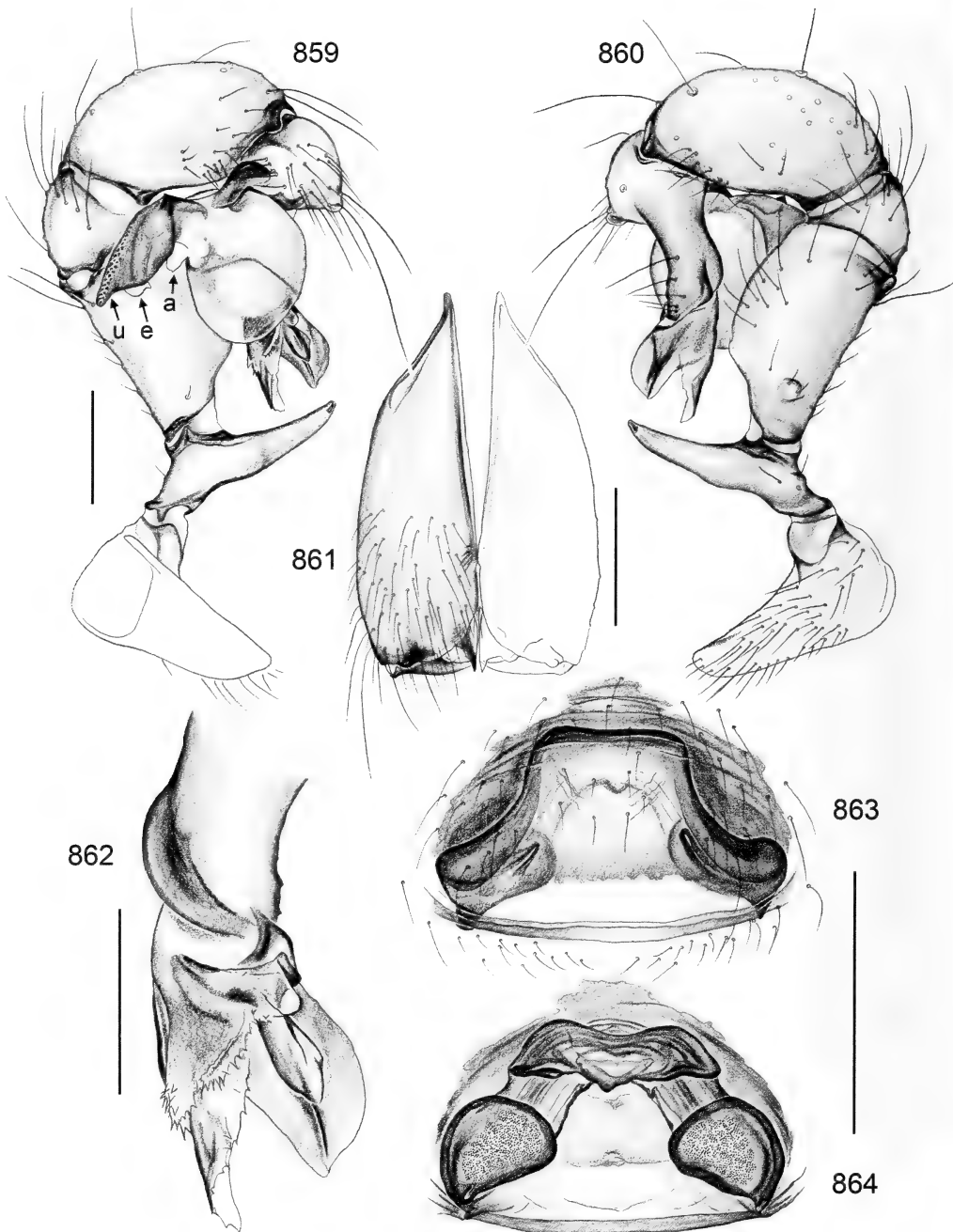


FIG. 859-864. *Pholcus twa*. 859, 860. Left male palp, prolateral and retrolateral views. 861. Male chelicerae, frontal view. 862. Left procursus, prolateral view. 863, 864. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (863, 864), 0.3 (859-861), 0.2 (862).

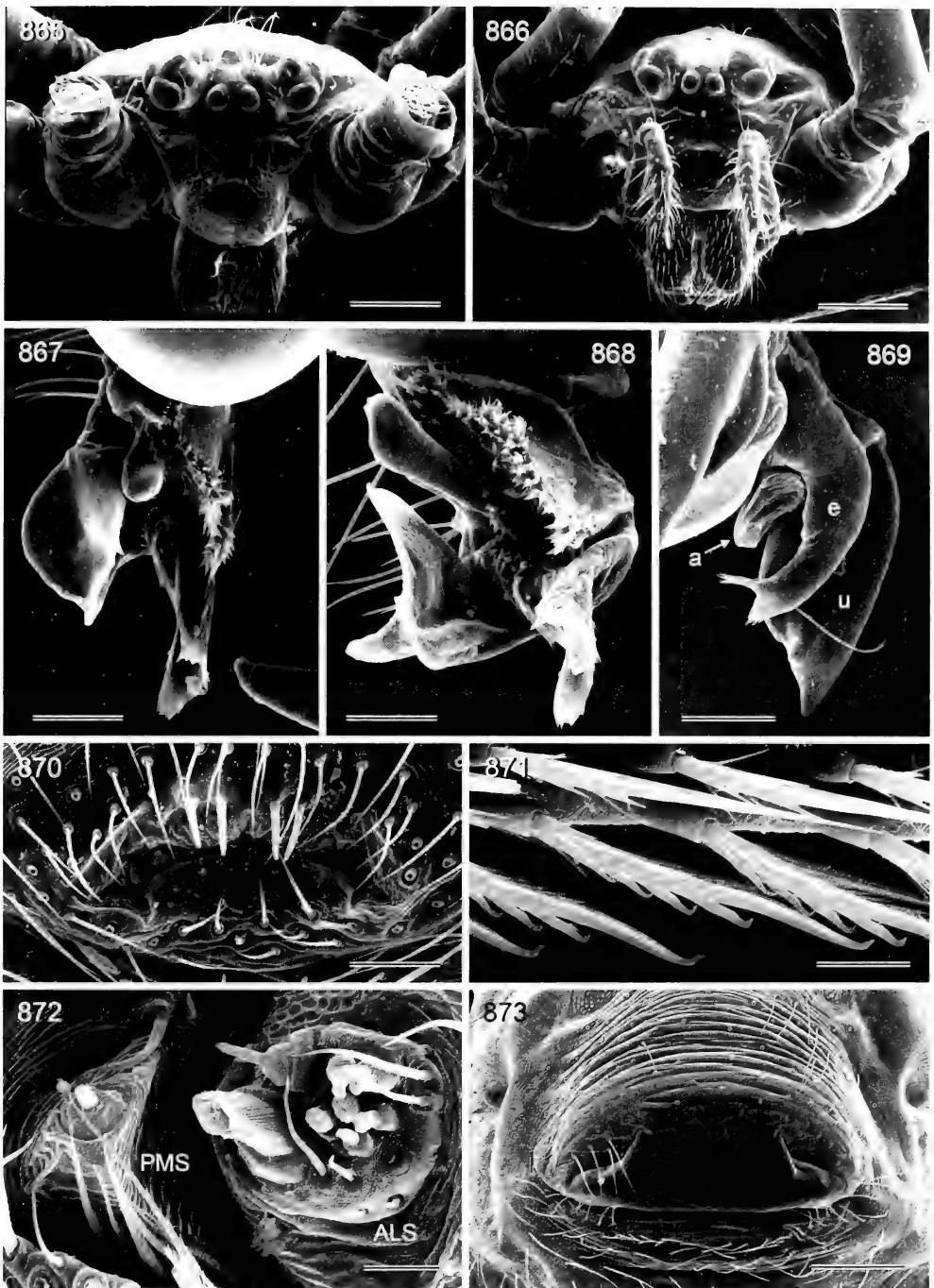


FIG. 865-873. *Pholcus tva*. 865, 866. Male and female prosomata, frontal views. 867, 868. Right procurus, prolateral and distal views. 869. Left bulb processes, retrolateral view. 870. Male gonopore. 871. Comb-hairs on left male tarsus 4. 872. Female ALS and PMS. 873. Epigynum. Scale lines: 400  $\mu\text{m}$  (865, 866), 200  $\mu\text{m}$  (873), 100  $\mu\text{m}$  (869), 80  $\mu\text{m}$  (867), 60  $\mu\text{m}$  (868, 870), 20  $\mu\text{m}$  (871, 872).

brown, femora and tibiae with subdistal darker rings, abdomen ochre-gray with distinctive brown pattern dorsally, ventrally with wide brown band (cf. female, Fig. 829). Distance PME-PME 400  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 80  $\mu\text{m}$ . Ocular area elevated, each triad on additional low elevation directed laterally, many stronger hairs on posterior side (Fig. 865). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 861, unmodified. Sternum wider than long (1.05/0.80), unmodified. Palps as in Figs. 859 and 860, coxa unmodified, trochanter with long tapering ventral apophysis, tip apparently with small modified hair, femur with distinct retrolateral bulge proximally, widened ventrally, procurus relatively small, with rather short hairs, very complex distally (Figs. 862, 867, 868), bulb with uncus, largely transparent short embolus, appendix apparently reduced to transparent flap (Fig. 869). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few fairly distinct. Tarsus 4 with single row of comb-hairs (Fig. 871). Gonopore with four epiandrous spigots (Fig. 870).

*Variation.* The trochanter apophysis is slightly shorter and thicker in some specimens. Tibia 1 in 21 other males: 8.2-12.2 (mean 9.7).

*Female.* In general similar to male but triads closer together (distance PME-PME 240  $\mu\text{m}$ ; Fig. 866), sternum mostly darker brown, especially medially, rarely only anteriorly at labium. Tibia 1 in 52 females: 6.1-10.1 (mean 8.7). Epigynum a trapezoidal plate with pair of pockets, without 'knob' (Figs. 838, 873); internal genitalia as in Figs. 839 and 864. Spinnerets as in Fig. 872.

*Distribution.* Widely distributed in eastern Congo Dem. Rep., Burundi, Rwanda, Uganda, and southern Sudan (Fig. 846).

*Material examined.* UGANDA: *Kabale District:* Bwindi Impenetrable N.P., Ruhija: ♂ holotype above; same data, 7♂16♀ in CAS; same data but 25.ix.1996, on road cut at night, 2♂9♀ in CAS. *Kisoro District:* Mgahinga Gorilla N.P., at building (-1°21.2'S, 29°37.1'E), 2350 m a.s.l., 24.xi.2010 (B.A. Huber), 7♂7♀ (2 vials) in ZFMK; same data, 2♀ 1 juv. in pure ethanol, in ZFMK. Mgahinga Gorilla N.P., Garama Cave, at entrance (1°21.4'S, 29°37.9'E), 2500 m a.s.l., 25.xi.2010 (B.A. Huber), 1♂4♀ in ZFMK; same data, 2♀ in pure ethanol, in

ZFMK. *Kasese District:* Ruwenzori Mts., between N.P. gate and Nyabitaba Hut (-0°21.8'N, 29°59.7'E), ~2260 m a.s.l., in hollow tree, 1.xii.2010 (B.A. Huber), 1♂3♀ in ZFMK; same data, 1♂ in pure ethanol, in ZFMK; same data, but at ~2000 m a.s.l., at rock, 1♀ 2 juvs. in pure ethanol, in ZFMK. Ruwenzori Mts., N.P. gate, in building (-0°21.3'N, 30°01.6'E), 1725 m a.s.l., 1.xii.2010 (B.A. Huber), 2♂2♀ in ZFMK. Ruwenzori [-0°22'N, 30°E], 1952 (G.O. Evans), 3♀ 3 juvs. (2 vials) in BMNH.

RWANDA: Butare [2°35'S, 29°44'E], vi./vii.1971 (P. Nyalugaka), 5♂12♀ in MRAC (separated from 140658); same data but vi.1971, 1♀ in MRAC (separated from 141206); same data but x./xi.1970, 2♂3♀ in MRAC (2 vials, separated from 137762 and 137783); same data, 4♂5♀ in MRAC (2 vials: 137778, 137789); Nyanza, Astrida [2°25'S, 29°40'E], 1939 (Lestrade), 1♂1♀ in MRAC (26913).

BURUNDI: Bujumbura [3°22'S, 29°19'E], 1939 (Lestrade), 2♂ in MRAC (separated from 3551-64); same data, 1♂ in MRAC (separated from 3340-59); Rusarenda [3°43'S, 29°35'E], Miombo woodland, by hand, 27.v.2002 (N. Benoit), 1♂ in MRAC (213784).

CONGO DEM. REP.: Butembo [1°09'N, 29°17'E], 1750 m a.s.l., iii.1975 (M. Lejeune), 2♂4♀ in MRAC (separated from 161140); same locality, 1740 m a.s.l., iv.1964 (R.P.M.J. Gelis), 1♂1♀ 3 juvs. in MRAC (2 vials: 126453, 126454); Region de Lukanga, route Lubero-Butembo [0°09'S-0°07'N, 29°13'-17'E], ~2000 m a.s.l., xii.1974/i.1975 (M. Lejeune), 1♂4♀ in MRAC (168123); "Kashusha (Costermansville)" [=Bukavu, 2°30'S, 28°52'E], 1937 (Vandelannoite), 1♀ in MRAC (26898); "Vallée de la Loashi" [Loashi, 1°21'S, 28°47'E], viii.1937 (J. Ghesquière), 1♀ in MRAC (26907); Kivu, Kambaila, vallée Tantaliriritanda [0°10'S, 29°10'E], vi.1973 (M. Lejeune), 1♀ in MRAC (145786); Blukwa [1°45'N, 30°36'E], iii.1929 (A. Collart), 1♂1♀ in MRAC (13017/13019).

SUDAN: *Eastern Equatoria:* Imatong Mts., Gilo [-4°01'N, 32°50'E], 1900 m a.s.l., in *Cupressus lusitanica*, 11.xi.1980 ("E.W., F.P.J."), 1♂ in ZMUC.

*Pholcus kyondo* n. sp.

Figs. 830, 840, 841, 874-878

*Type.* Male holotype from Congo Dem. Rep., Kivu, Kyondo [0°00'N, 29°24'E], 2250 m a.s.l., v.1964 (R.P.M.J. Gelis), in MRAC (126808).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.



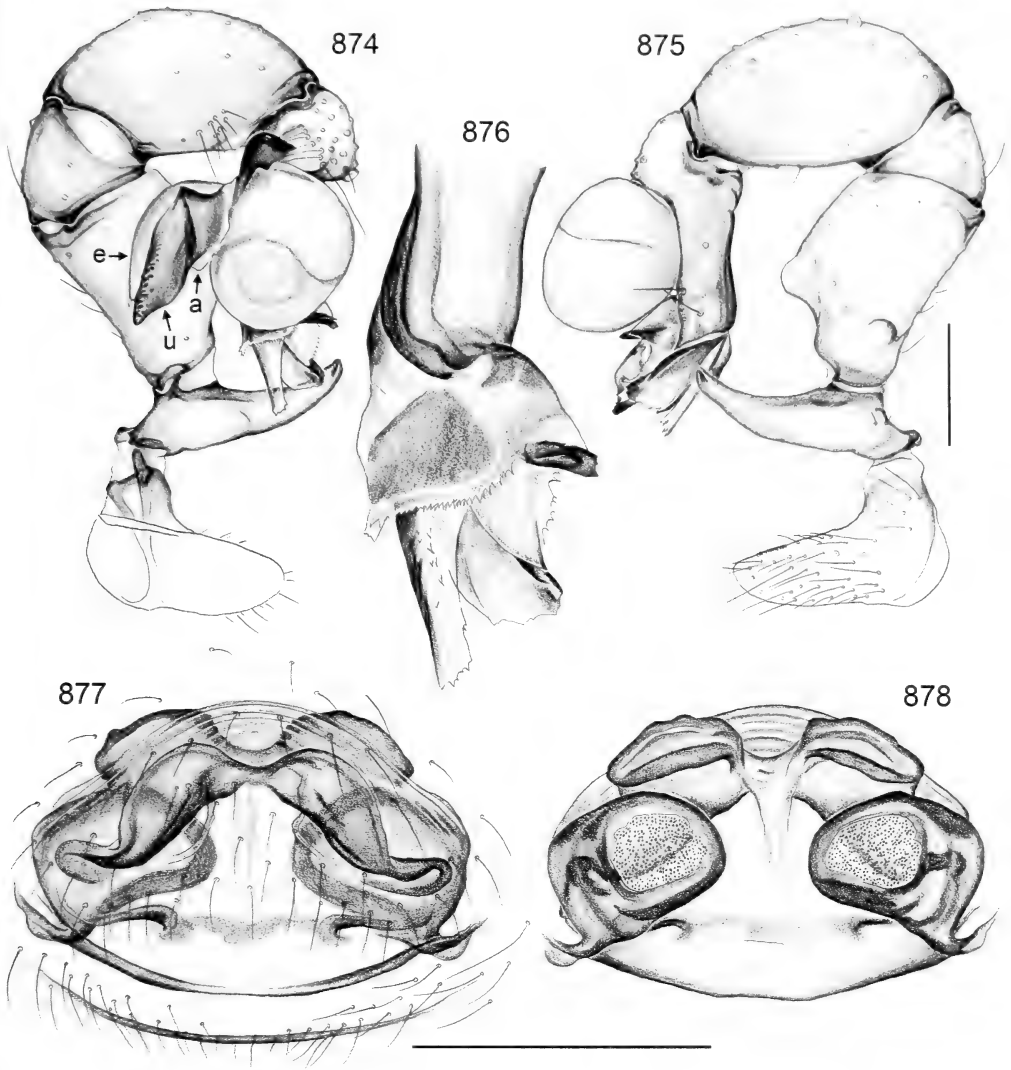


FIG. 874-878. *Pholcus kyondo*. 874, 875. Left male palp, prolateral and retrolateral views. 876. Left procurus, prolateral view. 877, 878. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (877, 878), 0.3 (874, 875).

*Diagnosis.* Easily distinguished from most African pholcids by unmodified male chelicerae (as in *Ph. twa*; cf. Fig. 861); also by appendix reduced to membranous lobe (Fig. 874) and simple epigynum with pair of pockets but without 'knob' (Figs. 840, 877); from close relatives (*Ph. chappuisi*, *Ph. twa*) by shape of procurus (Fig. 876) and shape of internal arc in female genitalia (clearly divided; Fig. 878).

*Male* (holotype). Total body length 5.5, carapace width 1.2. Leg 1: 11.3 + 0.7 + 11.2 + 19.0, tarsus missing, tibia 2: 7.5, tibia 3: 4.9, tibia 4: 6.5; tibia 1 L/d: 74. Habitus as in Fig. 830. Carapace light ochre with distinctive brown pattern extending to ocular area, clypeus with some brown spots, sternum with brown star-shaped pattern, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora and tibiae

with subdistal darker rings, abdomen ochre-gray with distinctive brown pattern dorsally, ventrally with wide brown band. Distance PME-PME 425  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 85  $\mu\text{m}$ . Ocular area elevated, each triad on additional low elevation directed laterally, many stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae unmodified, as in *Ph. twa* (cf. Fig. 861). Sternum wider than long (0.9/0.8), unmodified. Palps as in Figs. 874 and 875, coxa unmodified, trochanter with long tapering ventral apophysis slightly more curved than in *Ph. twa*, tip apparently with small modified hair, femur with distinct retro-lateral bulge proximally, ventral protuberance more distinct than in *Ph. twa*, procurus relatively small, with rather short hairs, complex distally (Fig. 876), bulb very similar to *Ph. twa*, with uncus, largely transparent embolus, appendix apparently reduced to transparent flap. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation.* Mark on sternum less distinct in other male specimen.

*Female.* In general similar to male but triads closer together (distance PME-PME 230–240  $\mu\text{m}$ ), Tibia 1 in 2 females: 8.8, 10.1. Epigynum similar to *Ph. twa* but internal anterior structures more clearly divided (Fig. 840); internal genitalia as in Figs. 841 and 878.

*Distribution.* Known from type locality and an unidentified locality only (Fig. 846).

*Material examined.* CONGO DEM. REP.: Kivu, Kyondo: ♂ holotype above; same data, 1♂3♀ in MRAC (126808, 126812). “Lukanga”, 2000 m a.s.l., ii-iii.1975 (M. Lejeune), 1♀ in MRAC (161391).

*Pholcus strandi* Caporiatto, 1941

Figs. 831, 832, 842, 843, 879–885

*Pholcus strandi* Caporiatto 1941: 33–34, figs. 5a–c.

*Types.* The specimens below originate from the type locality (Ethiopia: Mega), and one vial even carries the label “syntypi”, but the collection date (18. iv.1939) does not agree with the date given in the original publication (10. ix.1938). Therefore, I do not consider them to be part of the type series (which may be lost), but their correct assignment to this species is beyond doubt.

*Diagnosis.* Easily distinguished from other *Pholcus* species by male cheliceral armature (Figs. 882, 883),

by appendix reduced to thin transparent process (Fig. 879), long and slender procurus (Fig. 881), and simple sclerotized epigynum without ‘knob’ (Figs. 842, 884).

*Male* (“syntype”). Total body length 5.5, carapace width 1.5. Leg 1: 39.5 (10.0 + 0.7 + 10.3 + 16.0 + 2.5), tibia 2: 6.8, tibia 3: 4.8, tibia 4: 6.3; tibia 1 L/d: 65. Habitus as in Fig. 831. Carapace ochre-yellow with distinctive brown pattern, ocular area and clypeus also darkened, sternum ochre-yellow, anteriorly slightly darker spot, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora and tibiae with subdistal darker rings, abdomen ochre-gray with distinctive brown pattern dorsally, ventrally with wide brown band (cf. female, Fig. 832). Distance PME-PME 550  $\mu\text{m}$ , diameter PME 105  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 35  $\mu\text{m}$ , diameter AME 95  $\mu\text{m}$ . Ocular area elevated, many stronger hairs on posterior side, each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Figs. 882 and 883, with distinctive pair of large frontal apophyses, lateral pair of transparent protuberances. Sternum wider than long (1.05/0.80), unmodified. Palps as in Figs. 879 and 880, coxa unmodified, trochanter with long ventral apophysis, tip apparently with modified hair, femur with prominent ventral protrusion, procurus very slender and simple, ending distally in two sclerotized tips and membranous structure (Fig. 881), bulb slightly elongate, with large uncus, weakly sclerotized short embolus, appendix apparently reduced to thin transparent process. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Other male with less distinct pattern on abdomen; tibia 4: 6.5.

*Female.* In general similar to male but triads closer together (distance PME-PME 320  $\mu\text{m}$ ), tibia 1 missing in “syntype”, tibia 2: 5.5, tibia 3: 3.8, tibia 4: 5.3. Epigynum consisting of large anterior plate tapering posteriorly and narrow posterior plate (Fig. 842); without ‘knob’ (Fig. 884); internal genitalia as in Figs. 843 and 885.

*Distribution.* Known from type locality only (Fig. 846).

*Material examined.* ETHIOPIA: Mega [4°03'N, 38°19'E], 18. iv.1939 (Zavattari), with label “syntypi”, 1♂1♀ in MZF; same data, 1♂ 3 juvs. in MZF.

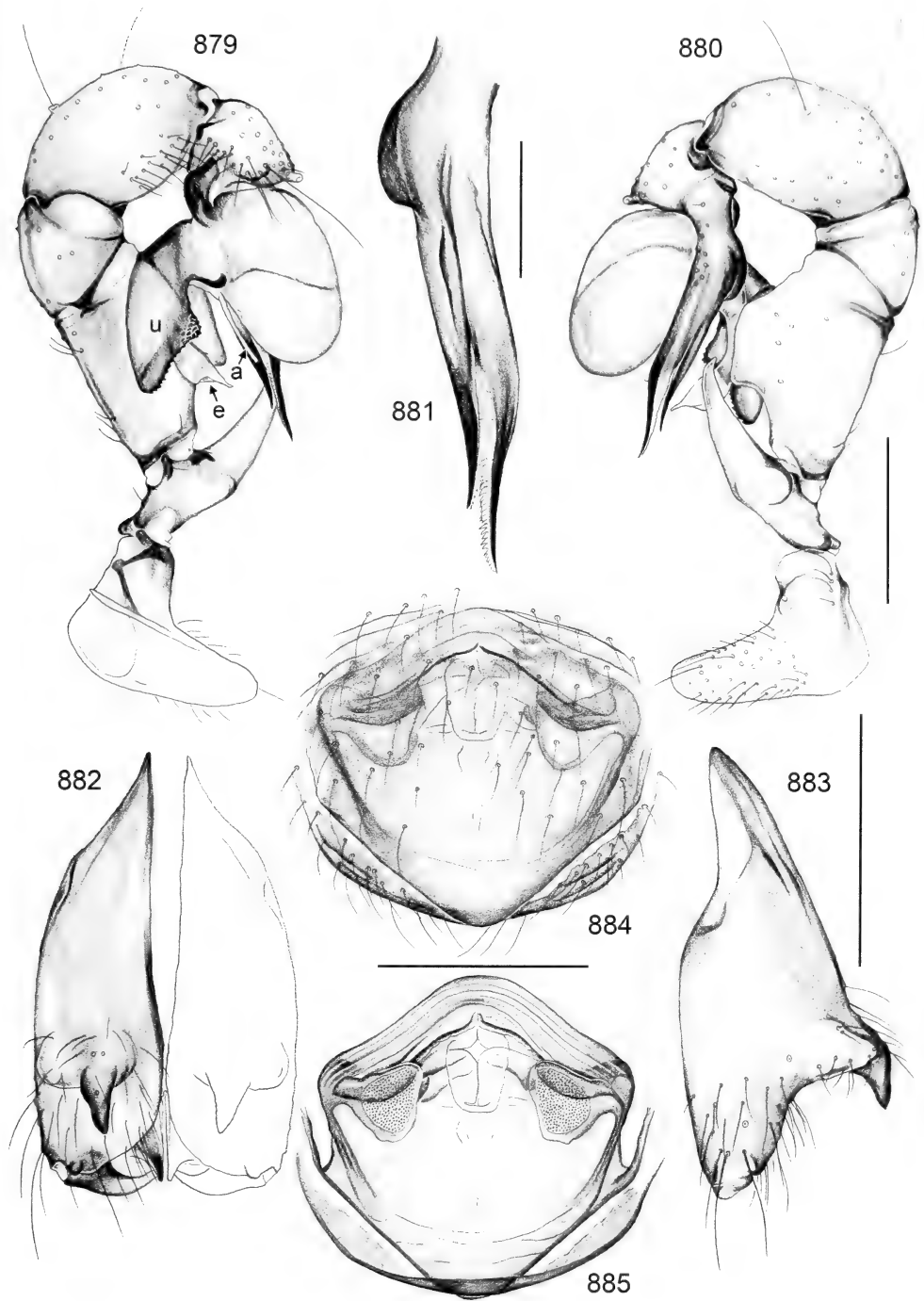


FIG. 879-885. *Pholcus strandi*. 879, 880. Left male palp, prolateral and retrolateral views. 881. Left procurus, prolateral view. 882, 883. Male chelicerae, frontal and lateral views. 884, 885. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (879, 880, 882-885), 0.2 (881).

*Pholcus bikilai* n. sp.

Figs. 833-835, 844, 845, 886-891

*Type.* Male holotype from Ethiopia, Addis Ababa [ $-9^{\circ}01'N$ ,  $38^{\circ}46'E$ ], web in bathroom, 4.vii.1996 (T. Steyn), in MRAC (207328).

*Etymology.* Named for Abebe Bikila, two-time Olympic marathon champion from Ethiopia.

*Diagnosis.* Distinguished from putatively closest known relative (*Ph. strandi*) by male cheliceral armature (rather conservative, Fig. 889), from other (poorly known) Ethiopian *Pholcus* species (*Ph. hieroglyphicus*, *Ph. taibeli*, *Ph. vatovae*) by shape of procurus (Fig. 888) and oval epigynum (Figs. 844, 890).

*Male* (holotype). Total body length 5.7, carapace width 1.7. Leg 1: 44.7 (11.6 + 0.7 + 11.8 + 17.8 + 2.8), tibia 2: 7.3, tibia 3: 5.1, tibia 4: 6.8; tibia 1 L/d: 74. Habit as in Figs. 833 and 834. Carapace ochre-yellow with distinctive brown pattern, ocular area and clypeus also with brown markings, sternum light brown with lighter areas near coxae 2-4, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora and tibiae with subdistal darker rings, abdomen ochre-gray with distinctive brown pattern dorsally, ventrally with wide brown band (cf. female, Fig. 835). Distance PME-PME 345  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area elevated, many stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 889, with pair of distal frontal apophyses with modified hairs, proximally with small frontal and larger lateral apophyses. Sternum wider than long (1.15/0.85), unmodified. Palps as in Figs. 886 and 887, coxa unmodified, trochanter with long pointed apophysis, tip apparently with small modified hair, femur with small dorsal hump proximally and large ventral protrusion, procurus rather simple, dorsally with several unusually short hairs, with distinctive black sclerite distally on prolateral side (Fig. 888), bulb globular, with simple uncus, weakly sclerotized embolus, appendix apparently reduced to small transparent process. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 10.5 (missing in other males).

*Female.* In general similar to male but triads closer together (distance PME-PME 285  $\mu$ m); tibia 1: 11.1,

11.2. Epigynum large oval area, sclerotized anteriorly, posteriorly a narrow plate with small 'knob' (Figs. 844, 890); internal genitalia as in Figs. 845 and 891.

*Distribution.* Known from central Ethiopia only (Fig. 846).

*Material examined.* ETHIOPIA: Addis Ababa: ♂ holotype above. Oromia, Bale Mountains, Dinsho [ $7^{\circ}05'N$ ,  $39^{\circ}46'E$ ], 3200 m a.s.l., National Park headquarter, in toilet, by hand, 6.i.2009 (J. Altmann, J. Meier), 1♂ in SMF. "Sidamo, Serga Alem" [Sidama Zone, Irgalem=Yirga Alem:  $6^{\circ}45'N$ ,  $38^{\circ}25'E$ ], ix.1935 (U. Cambier), 1♂2♀ in MRAC (26868/26870); "Sidamo" [Sidama Zone], no further locality data, 27.x.1935 (U. Cambier), 1♂ in MRAC (26867).

*Pholcus bamboutos* species group

*Diagnosis.* This certainly non-monophyletic 'waste basket-group' includes African *Pholcus* species without procurus spines (except *Ph. kakum*, *Ph. lualaba*) and without the characters that define the other six African species groups (see *Ph. chappuisi* group, *Ph. circularis* group, *Ph. lamperti* group, *Ph. guineensis* group, *Ph. taarab* group, *Ph. debilis* group). It includes small to medium-sized, long-legged spiders (body length ~3-5, leg 1: ~30-40; *Ph. kribi* is exceptionally small and short legged: 2.2/16) with elongate abdomens, six or eight eyes, male chelicerae with proximal and distal apophyses (highly derived in *Ph. mbuti*). Male bulb with uncus and appendix, weakly sclerotized embolus. Epigynum sclerotized, with 'knob'.

*Description.* See descriptions of individual species below.

*Monophyly.* As indicated above, this is a 'waste basket-group' that is not monophyletic.

*Relationships.* The sclerotized epigynum (char. 65) suggests that these species are part of the core group of *Pholcus* (Fig. 26), but no characters are known that link them to any particular species group.

*Natural history.* *Pholcus bamboutos* was collected from domed webs among large rocks in a forest. *Pholcus kribi* is a rare example of leaf litter dwelling *Pholcus*. It was collected from the underside of leaves on the forest floor which were bent in a way that they formed a small dome. *Pholcus kakum* was collected from the underside of green leaves (Huber 2009b).

*Distribution.* The eight species are known from western and central Africa (Fig. 940).

*Composition.* The *Ph. bamboutos* group includes eight species, six of which are newly described below. *Ph.*

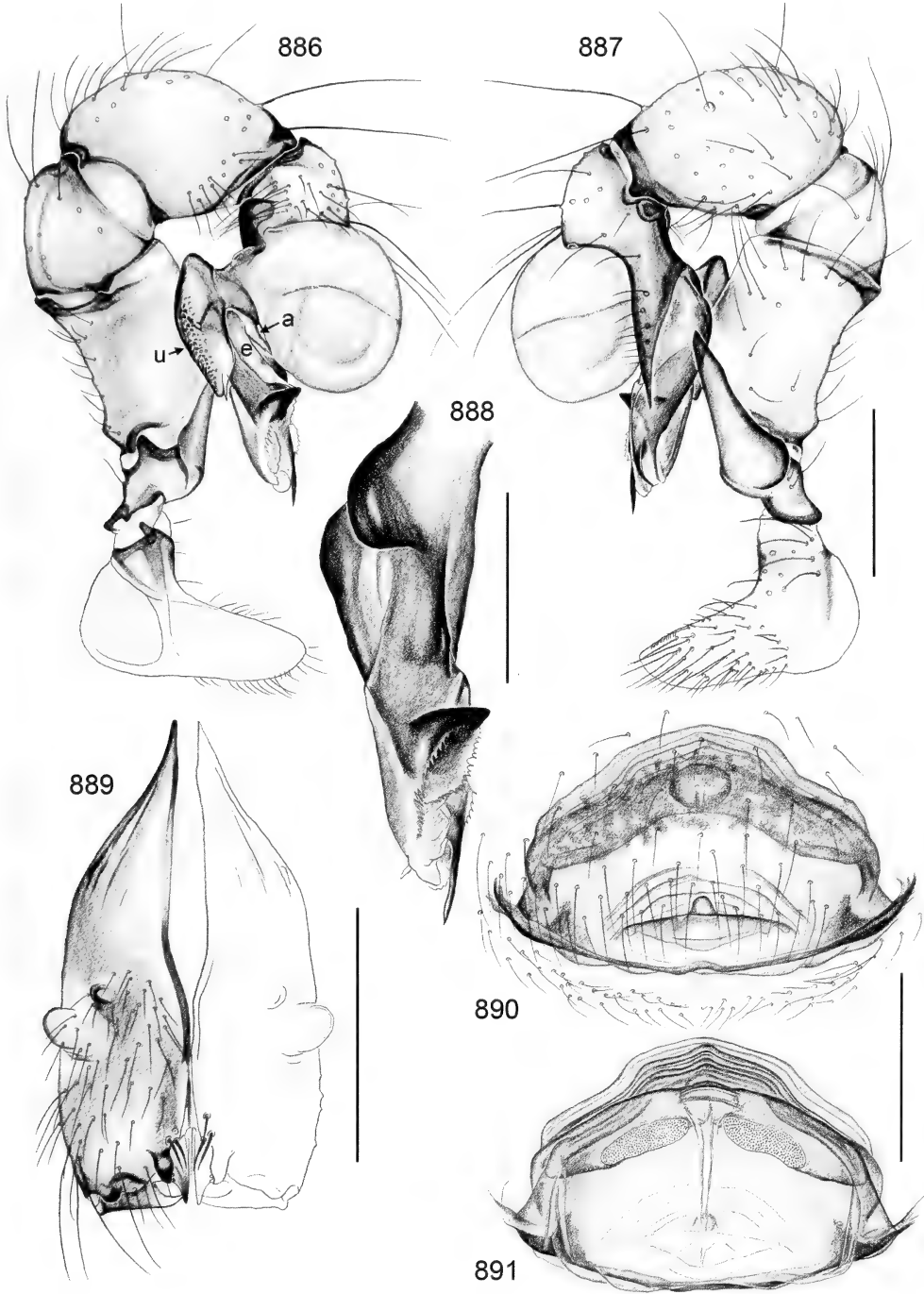


FIG. 886-891. *Pholcus bikilai*. 886, 887. Left male palp, prolateral and retrolateral views. 888. Left procurus, prolateral view. 889. Male chelicerae, frontal view. 890, 891. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (886, 887, 889-891), 0.3 (888).

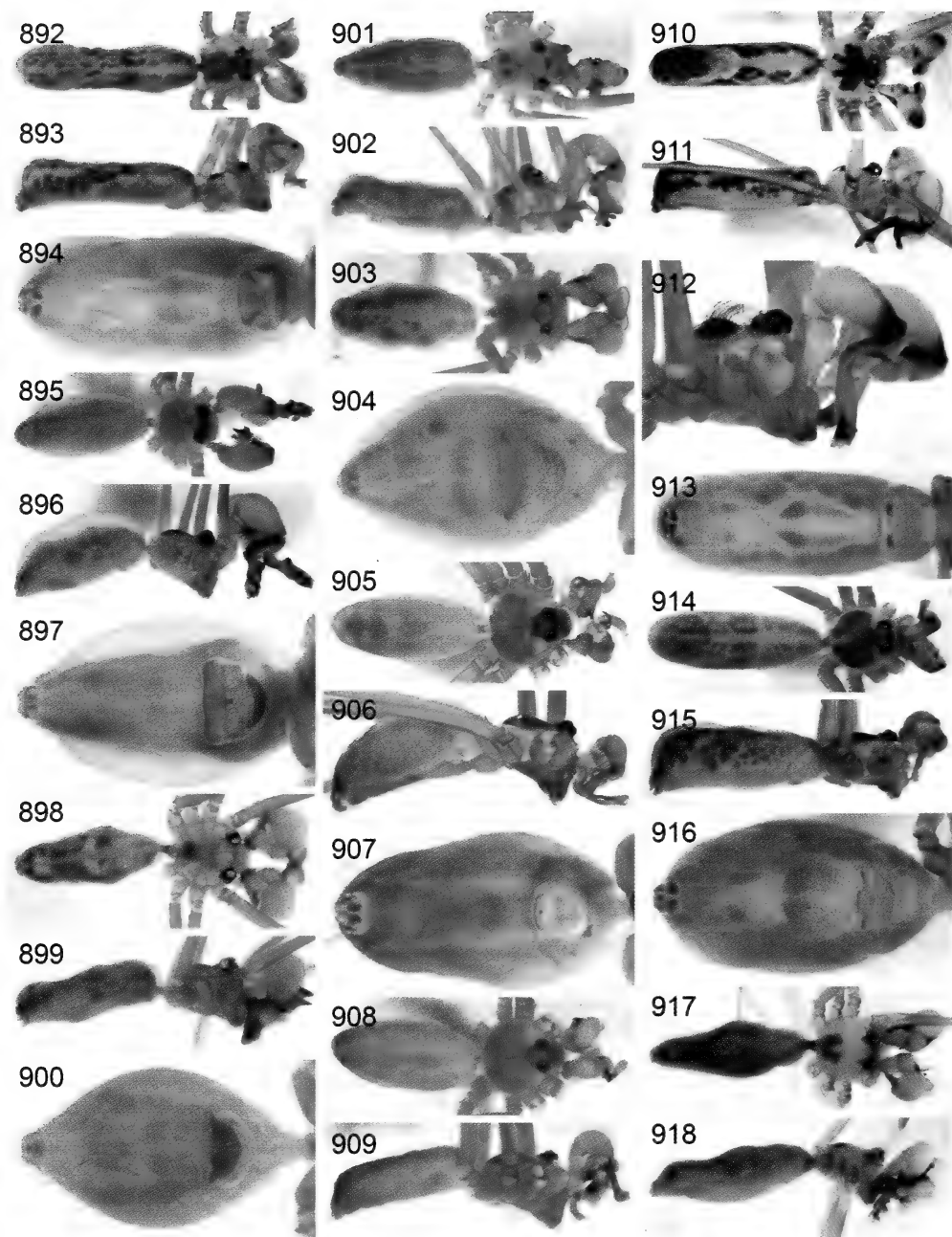


FIG. 892-918. *Pholcus bamboutos* and *Ph. circularis* species groups, habitus. 892-894. *Ph. bamboutos*, male, dorsal and lateral views; female abdomen, ventral view. 895-897. *Ph. moca*, male, dorsal and lateral views; female abdomen, ventral view. 898-900. *Ph. kribi*, male, dorsal and lateral views; female abdomen, ventral view. 901, 902. *Ph. mbuti*, male, dorsal and lateral views. 903, 904. *Ph. hoyo*, male, dorsal view; female abdomen, ventral view. 905-907. *Ph. circularis*, male, dorsal and lateral views; female abdomen, ventral view. 908, 909. *Ph. batepa*, male, dorsal and lateral views. 910, 911. *Ph. leruthi*, male, dorsal and lateral views. 912, 913. *Ph. luki*, male prosoma, lateral view; female abdomen, ventral view. 914-916. *Ph. bakweri*, male, dorsal and lateral views; female abdomen, ventral view. 917, 918. *Ph. nkoetye*, male, dorsal and lateral views.

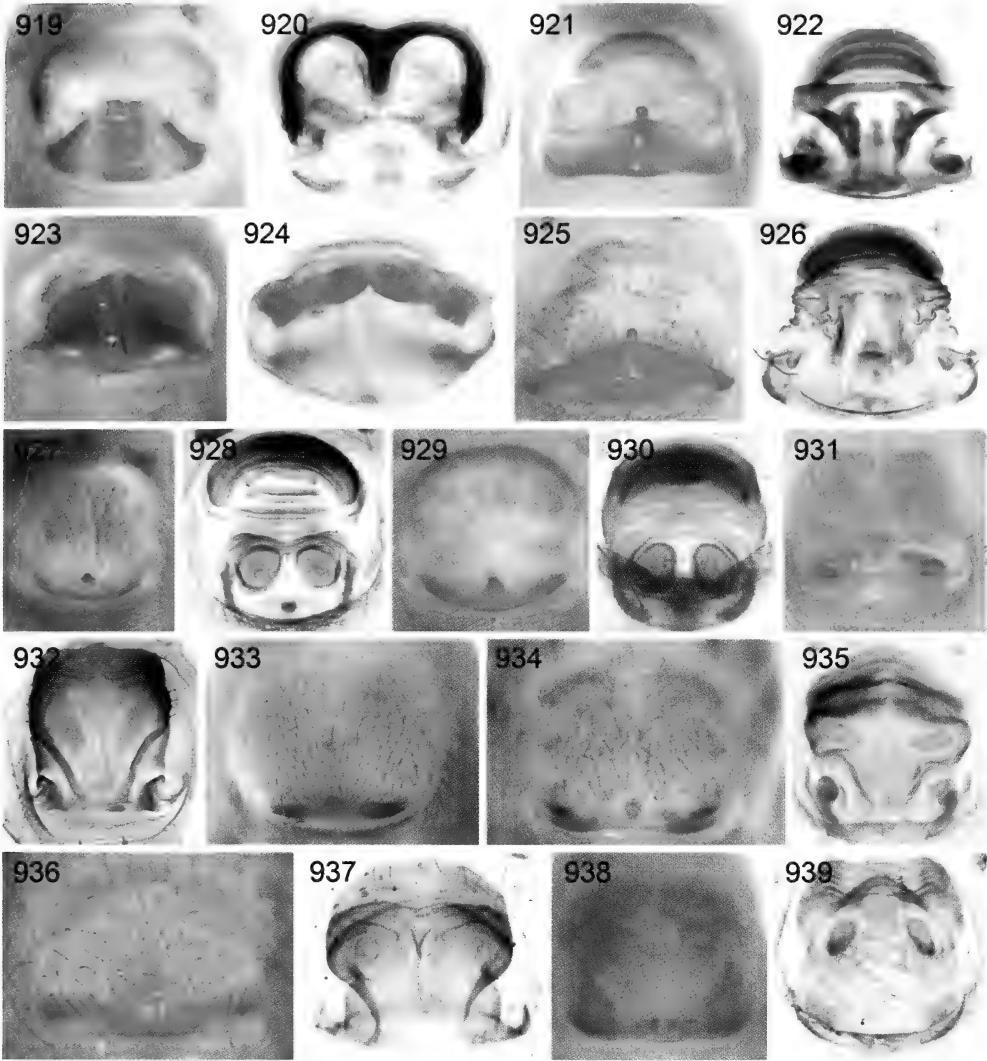


FIG. 919-939. *Pholcus bamboutos* and *Ph. circularis* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 919, 920. *Ph. bamboutos*. 921, 922. *Ph. moca*. 923, 924. *Ph. kribi*. 925, 926. *Ph. hoyo*. 927, 928. *Ph. circularis*. 929, 930. *Ph. batepa*. 931-933. *Ph. leruthi*, Gangala (931, 932), Kakamega (933). 934, 935. *Ph. luki*. 936, 937. *Ph. bakweri*. 938, 939. *Ph. nkoetye*.

*bamboutos* n. sp.; *Ph. moca* n. sp.; *Ph. kribi* n. sp.; *Ph. mbuti* n. sp.; *Ph. hoyo* n. sp.; *Ph. kakum* Huber, 2009; *Ph. lualaba* n. sp.; *Ph. faveauxi* (Lawrence, 1967) n. comb. For *Ph. kakum* see Huber (2009b) and new records below; for *Ph. faveauxi* see Note below.

*Note.* The male type of *Ph. faveauxi* seems to be lost. It could neither be found in MHNG (P. Schwendinger pers. comm.), nor in MNHN. Only one female

(probably the “cotype”) is deposited in MHNG (examined). The type locality is Congo Dem. Rep., Upemba National Park, Grotte Kasoma [9°25’S, 26°37’E]. A further female specimen from Congo Dem. Rep., Kamakonde, Lubudi [9°56’S, 25°59’E] is deposited in MRAC (114799). I previously considered this species close to *Ph. circularis* based on the widely curved procurus (Huber 2001), but the shape

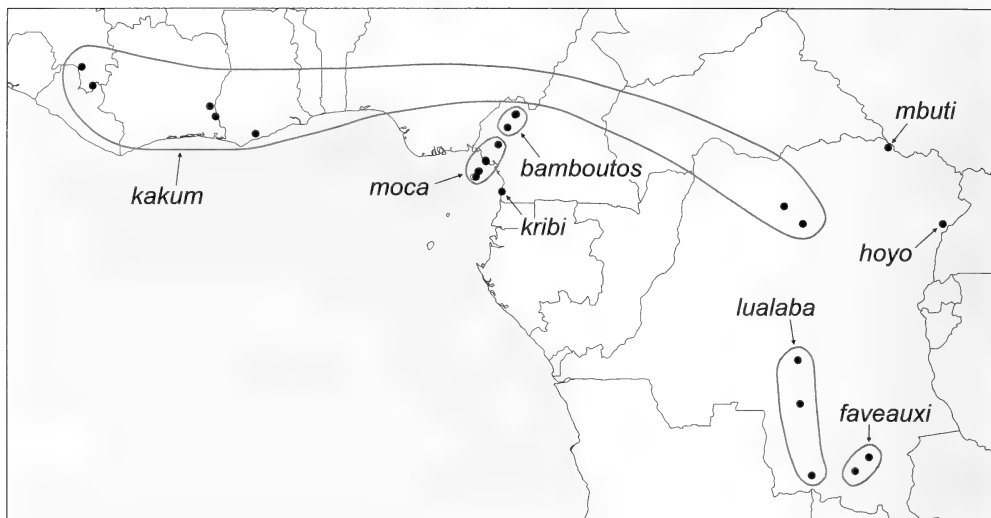


FIG. 940. Known distribution of the *Pholcus bamboutos* species group.

of the large uncus and the absence of AME suggests it may in fact be closer to *Ph. lualaba*. It is here formally transferred from *Spermophora*: *Pholcus faveauxi* (Lawrence, 1967) n. comb. The MCZ has a male specimen from Cameroon (Ebolowa) that might be close to *Ph. circularis* or *Ph. faveauxi* (or both).

*Pholcus bamboutos* n. sp.

Figs. 14, 892-894, 919, 920, 941-944

*Type*. Male holotype from Cameroon, West Region, near Mbouda, Bamboutos (5°37.3'N, 10°06.7'E), 2100 m a.s.l., among rocks, 19.iv.2009 (B.A. Huber) in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from congeners by morphology of male palp (Figs. 941, 942; shapes of procurus, uncus, appendix) and female genitalia (Figs. 919, 943).

*Male* (holotype). Total body length 4.8, carapace width 1.8. Leg 1: 42.2 (9.7 + 0.5 + 10.1 + 19.1 + 2.8), tibia 2: 7.0, tibia 3: 4.7, tibia 4: 6.1; tibia 1 L/d: 76. Habitus as in Figs. 892 and 893. Carapace pale ochre with large brown median mark including ocular area, clypeus light, sternum light, slightly darker medially and on labium, legs pale ochre with numerous brown rings (-5 on each femur and tibia, patella also dark), abdomen ochre-gray with many black and some white spots dorsally and laterally, ventrally

only genital area slightly darker (cf. female, Fig. 894). Distance PME-PME 325  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area elevated, with brush of stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae similar to *Ph. kakum* (cf. fig. 103 in Huber 2009b), but larger (490  $\mu$ m wide), frontal apophyses in lateral view more rounded and less distinct, and lateral apophyses relatively smaller. Sternum wider than long (0.90/0.75), unmodified. Palps as in Figs. 941 and 942, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with distinct ventral protuberance, procurus distally complex, without prolatero-dorsal spines, bulb with large uncus, weakly sclerotized embolus, pointed bifid appendix (one branch not visible in prolateral view). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation*. Tibia 1 in 9 other males from type locality: 9.3-11.4 (mean 10.5); males from Lake Oku area with shorter legs (tibia 1: 8.5, 8.7, 8.7, 9.2), but otherwise apparently identical; one male from Lake Oku area with monochromous abdomen.

*Female*. In general similar to male but ocular area less elevated, triads closer together (distance PME-PME 265  $\mu$ m), without brush of hairs on ocular area;



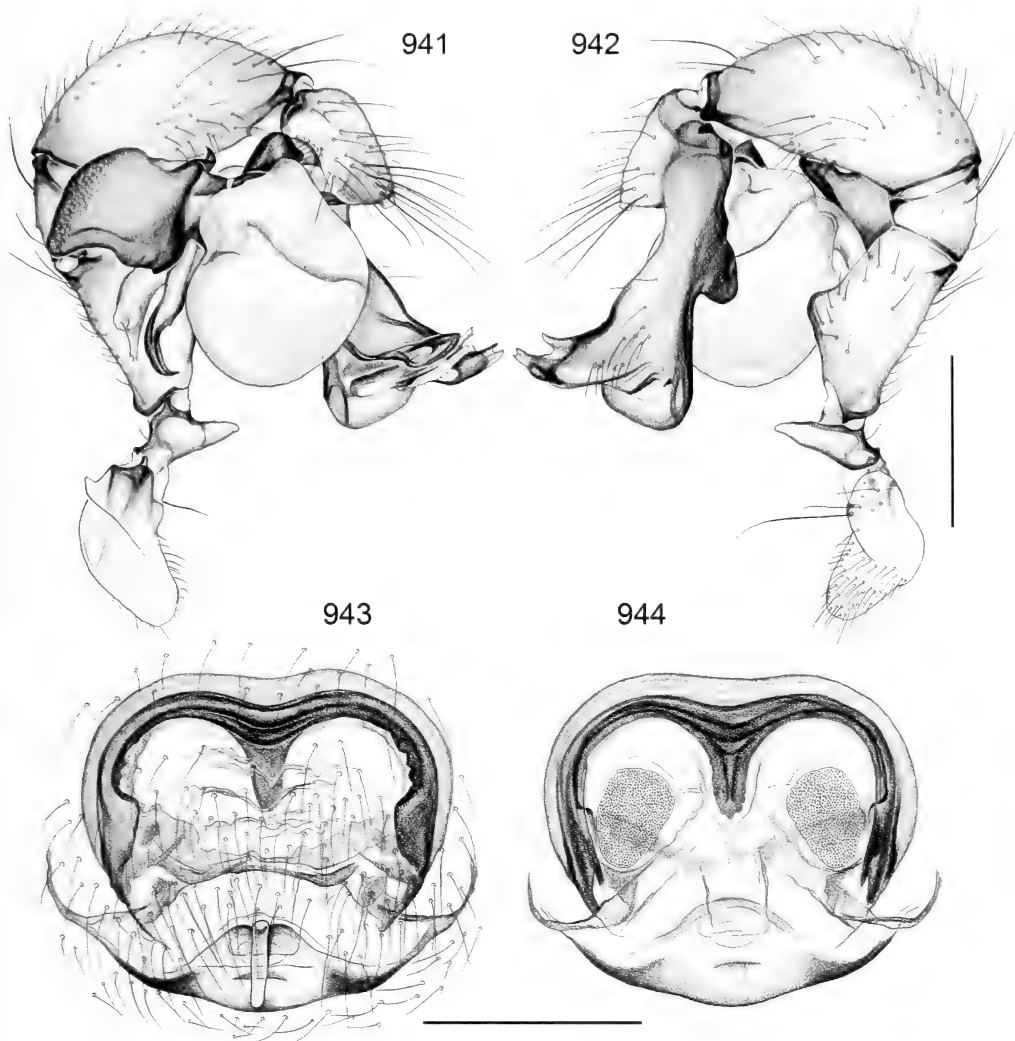


FIG. 941-944. *Pholcus bamboutos*. 941, 942. Left male palp, prolateral and retrolateral views. 943, 944. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

dorsal mark on carapace posteriorly divided. Tibia 1 in 13 females from type locality: 7.4-9.0 (mean 8.1), 6 females from Lake Oku area: 6.5-7.1 (mean 6.8). Epigynum with distinctive pattern of dark lateral and median bands (Fig. 919), long transparent 'knob' (Fig. 943) barely visible in dissecting microscope; internal genitalia as in Figs. 920 and 944.

*Distribution*. Known from two localities in West and Northwest Regions, Cameroon (Fig. 940).

*Material examined*. CAMEROON: *West Region*: near Mbouda, Bamboutos: ♂ holotype above; same data,

11♂ 14♀ in ZFMK. *Northwest Region*: Menchum Div.: forest near Lake Oku (6°12'N, 10°27'E), ca. 2150 m a.s.l., 7.-13.ii.1992 (C.E. Griswold, S. Larcher, N. Scharff, C. Wanzie), 2♂2♀ in CAS; same collection data, 1♀ in CAS; same collection data, 4♀ in USNM; Mount Oku, forest of *Podocarpus/Arundinaria* (6°12.9'N, 10°29.9'E), 2450 m a.s.l., 14. ii.1992 (C.E. Griswold, N. Scharff, S. Larcher, Menzepoh, Tame), 1♂ in USMN; at Lake Oku (6°12.1'N, 10°27.6'E), 2300 m a.s.l., at bark, 16. iv.2009 (B.A. Huber), 1♂ in ZFMK.

*Pholcus moca* n. sp.

Figs. 895-897, 921, 922, 945-949

*Type.* Male holotype from Equatorial Guinea, Bioko, Moca (3°22'N, 8°40'E), ca. 1400 m a.s.l., at night, 4.-9.x.1998 (D.K. Dabney, D. Ubick), in CAS.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 945, 946; shapes of procurus, uncus, appendix) and female genitalia (Figs. 921, 948; similar to *Ph. hoyo*, cf. Fig. 925).

*Male* (holotype). Total body length 3.2, carapace width 1.1. Leg 1: 32.7 (7.7 + 0.4 + 8.0 + 14.1 + 2.5), tibia 2: 5.1, tibia 3: 3.2, tibia 4: 4.7; tibia 1 L/d: 86. Habitus as in Figs. 895 and 896. Carapace ochre-yellow with large brown mark including ocular area but not clypeus, sternum ochre-yellow, only labium light brown, legs light brown, femora and tibiae with darker subdistal rings, patellae and tibiae proximally also darker, abdomen ochre-gray with some indistinct darker spots dorsally, ventrally monochromous (cf. female, Fig. 897). Distance PME-PME 285  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Ocular area elevated, each triad slightly overhanging carapace laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 947, distal frontal apophyses with modified hairs, with lateral apophyses, without proximal frontal apophyses. Sternum wider than long (0.75/0.65), unmodified. Palps as in Figs. 945 and 946, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur relatively small and slender, with low ventral protuberance, tibia very large, procurus large and very complex distally, bulb with distinctive uncus, short pale embolus, simple curved appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally visible in dissecting microscope.

*Variation.* Tibia 1 in male from Pico Basilé: 9.8, male from Mt. Koupé: 7.8.

*Female.* In general similar to male but triads closer together (distance PME-PME 210  $\mu$ m). Tibia 1 in 12 females: 6.2-7.1 (mean 6.5); in female from Pico Basilé: 8.7. Epigynum largely weakly sclerotized, with orange-brown plate darker medially (Fig. 921), small anterior 'knob' (Fig. 948); internal genitalia as in Figs. 922 and 949.

*Distribution.* Known from Bioko (Equatorial Guinea) and southwestern Cameroon (Fig. 940).

*Material examined.* EQUATORIAL GUINEA: *Bioko*: Moca: ♂ holotype above, together with 1♀; same locality, on trees, 1.-11.x.1998 (M. Boko, D.K. Dabney, R.C. Drewes, L. Henwood, M.P. Ndung, R.W. Tomos, D. Ubick, J.V. Vindum), 1♀ in CAS; same locality, ca. 1500 m a.s.l., 6.x.1998 (D.K. Dabney, D. Ubick), 1♀ in CAS; Pico Basilé (3°37.6'N, 8°48.3'E), ca. 1750 m a.s.l., at night, 27.-29.ix.1998 (D.K. Dabney, D. Ubick), 1♂1♀ 1 juv. in CAS.

CAMEROON: *Southwest Prov.*: Mt. Koupé above Nyasoso (4°49.6'N, 9°41.1'E), ~1600 m a.s.l., underside of large rock, 22.iv.2009 (B.A. Huber), 1♂ in ZFMK. Fako Div., Limbe Subdiv.: 1.4 km NE of Etome (4°03.0'N, 9°07.5'E), ca. 400 m a.s.l., 13.-19.i.1992 (S. Larcher, G. Hormiga, J. Coddington, C.E. Griswold, C. Wanzie), 4♀ in CAS; same data, 1♂8♀ in USNM; Mt. Cameroon, south side (4°06.5'N, 9°07.2'E), mist forest, 1425 m a.s.l., 26.-28.i.1992 (J. Coddington, C.E. Griswold, S. Larcher, G. Hormiga), 1♀ in USNM.

*Pholcus kribi* n. sp.

Figs. 18, 898-900, 923, 924, 950-963

*Type.* Male holotype from Cameroon, South Region, forest between Kribi and Campo, "site 2" (2°40.4'N, 9°51.4'E), 15 m a.s.l., under dead leaves on ground, 10.iv.2009 (B.A. Huber), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Small litter-dwelling species, distinguished from most congeners by small size and short legs; also by morphology of male palp (Figs. 950, 951; shapes of procurus, uncus, appendix) and female genitalia (Figs. 923, 953).

*Male* (holotype). Total body length 2.2, carapace width 0.8. Leg 1: 16.2 (3.9 + 0.3 + 4.0 + 6.6 + 1.4), tibia 2: 2.5, tibia 3: 1.7, tibia 4: 2.7; tibia 1 L/d: 56. Habitus as in Figs. 898 and 899. Carapace ochre-yellow, slightly darker medially, ocular area only frontally with some brown marks, clypeus not darkened, sternum and legs ochre-yellow, patellae and tibia-metatarsus joints light brown, abdomen ochre-gray, with some darker marks dorsally and laterally, ventrally without pattern (cf. female, Fig. 900). Distance PME-PME 285  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, with ~16 longer and stronger hairs posteriorly, each triad on short stalk directed laterally (Fig. 955). No thoracic furrow, clypeus with distinctive pair of small horns near rim (0.2 mm

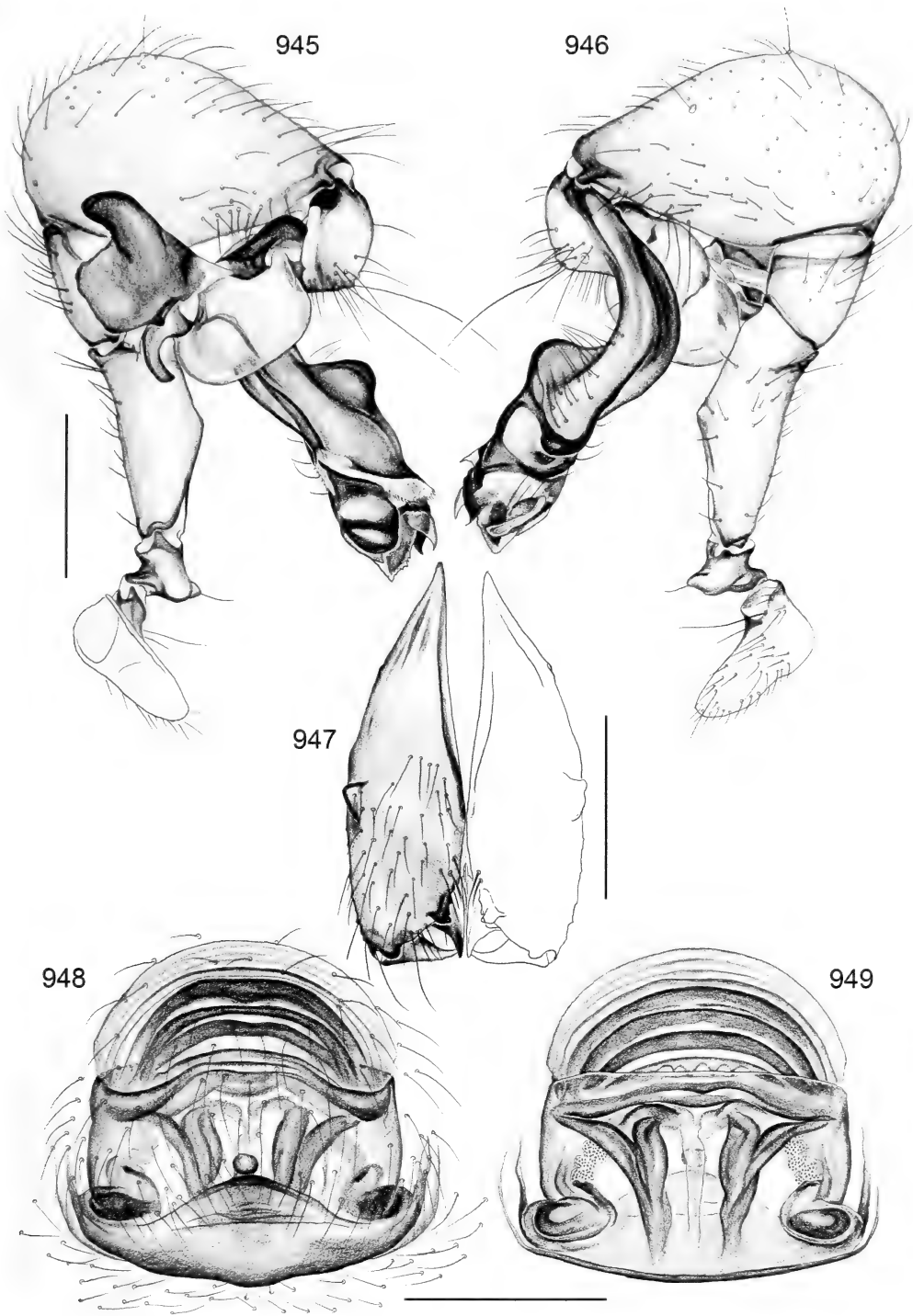


FIG. 945-949. *Pholcus moca*. 945, 946. Left male palp, prolateral and retrolateral views. 947. Male chelicerae, frontal view. 948, 949. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (945, 946, 948, 949), 0.3 (947).

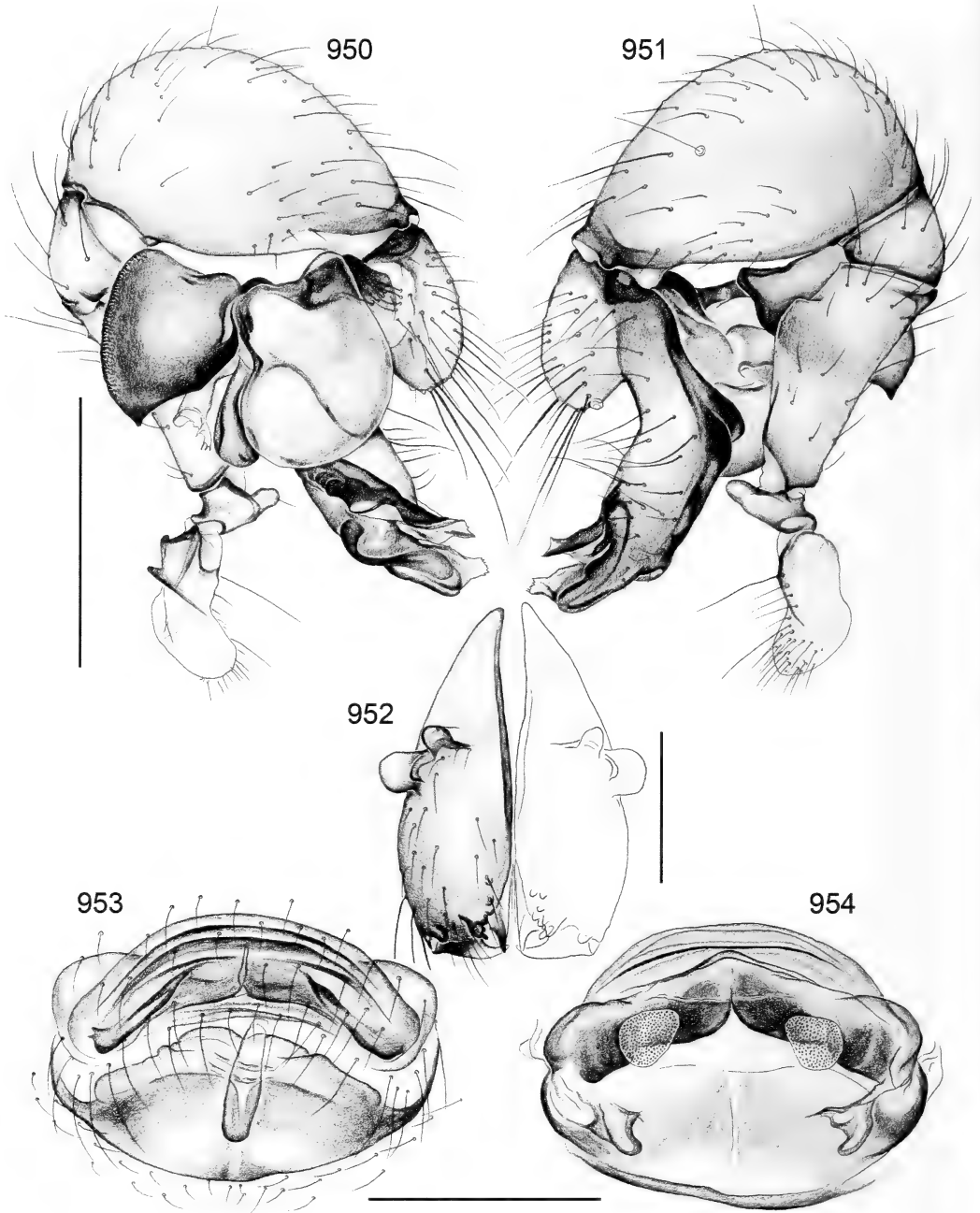


FIG. 950-954. *Pholcus kribi*. 950, 951. Left male palp, prolateral and retrolateral views. 952. Male chelicerae, frontal view. 953, 954. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (950, 951), 0.3 (953, 954), 0.2 (952).

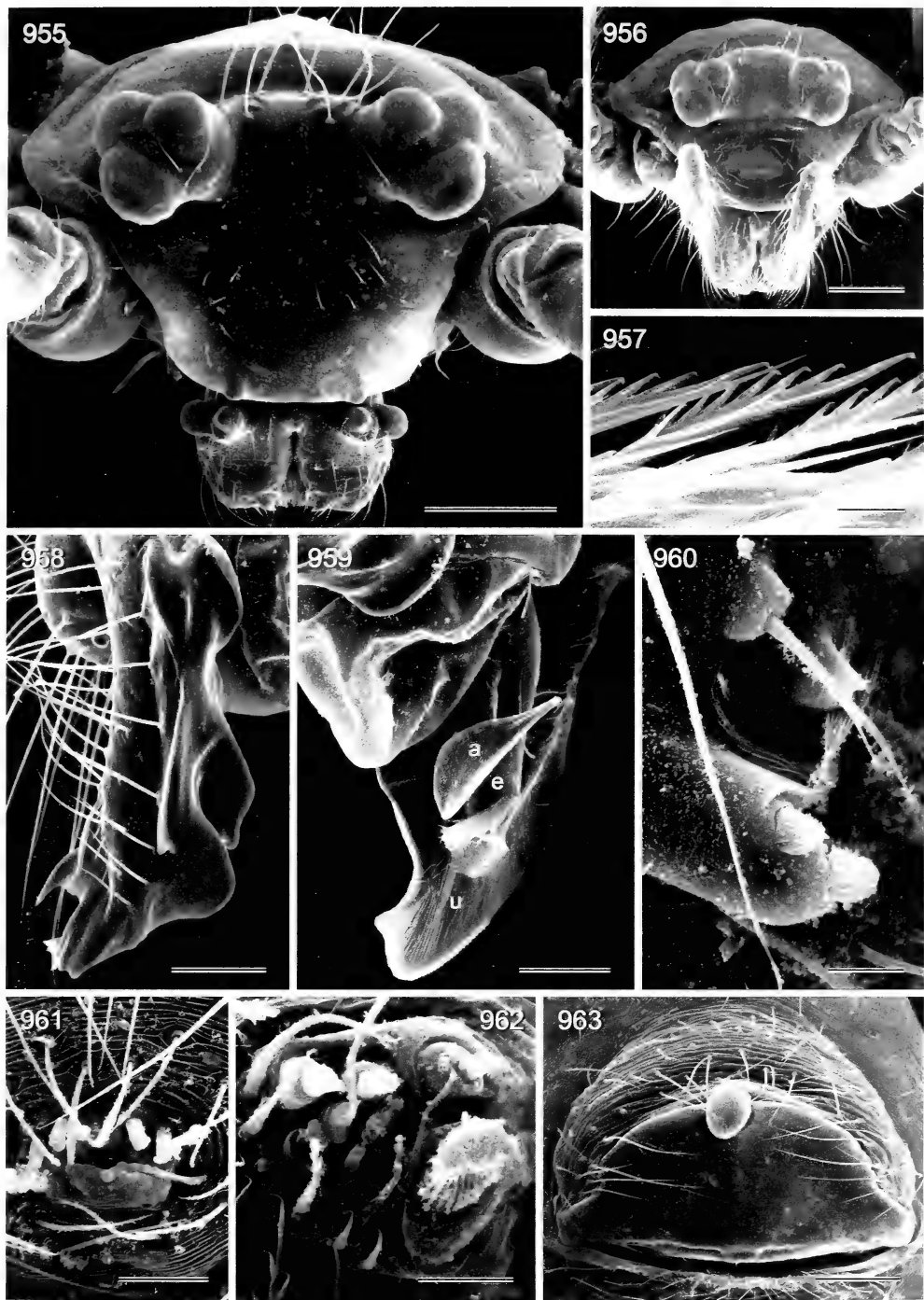


FIG. 955-963. *Pholcus kribi*. 955, 956. Male and female prosomata, frontal views. 957. Comb-hairs on male right tarsus 4. 958. Left procurtus, retrolatero-ventral view. 959. Left bulb, retrolateral view. 960. Distal male cheliceral apophysis. 961. Male gonopore. 962. Male ALS. 963. Epigynum. Scale lines: 200  $\mu$ m (955, 956), 100  $\mu$ m (958, 963), 80  $\mu$ m (959), 30  $\mu$ m (961), 10  $\mu$ m (957, 960, 962).

apart). Chelicerae as in Fig. 952, distal frontal apophyses with modified hairs (Fig. 960), with distinctive proximal apophyses. Sternum wider than long (0.55/0.45), unmodified. Palps as in Figs. 950 and 951, coxa unmodified, trochanter with retro-latero-ventral apophysis, femur with indistinct ventral protuberance, tibia very large, procurus complex distally, without modified hairs, bulb with large uncus, weakly sclerotized embolus, L-shaped appendix (Fig. 959; distal part of appendix pointing in retrolateral direction, not visible in Fig. 950). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few visible in dissecting microscope; tarsus 4 with single row of comb-hairs (Fig. 957). Gonopore with four epiandrous spigots (Fig. 961); ALS with eight spigots each (Fig. 962).

*Variation.* Tibia 1 in 5 other males: 3.7-4.2 (mean 4.0). Some males with one or more of the following: black pigment in area of AME; carapace also laterally slightly darkened; darker sternum; whitish spots on abdomen.

*Female.* In general similar to male but ocular area less elevated and triads closer together (Fig. 956, distance PME-PME 170  $\mu$ m). Tibia 1 in 15 females: 3.0-3.5 (mean 3.2). Epigynum a brown plate distinctively lighter medially (Fig. 923), with anterior 'knob' (Fig. 963), internal arc visible through cuticle anteriorly (Fig. 953); internal genitalia as in Figs. 924 and 954.

*Distribution.* Known from type locality only (Fig. 940).

*Material examined.* CAMEROON: *South Region:* forest between Kribi and Campo: ♂ holotype above; same data, 5♂15♀ and 5♀ in pure ethanol (ZFMK).

*Pholcus mbuti* n. sp.

Figs. 901, 902, 964-967

*Type.* Male holotype from Congo Dem. Rep., Haut-Uele Prov., "Gangala, à 20 km W Doruma" [4°44'N, 27°30'E], 1959 (D.A. Stam), in MRAC (separated from 114271).

*Etymology.* Named for the Mbuti (or Bambuti), pygmy hunter-gatherers, who are one of the oldest indigenous people of the Congo region of Africa; noun in apposition.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 964, 965; shapes of procurus, uncus, appendix, and trochanter apophyses) and male chelicerae (Figs. 966, 967).

*Male* (holotype). Total body length 3.2, carapace width 1.2. Leg 1: 7.5 + 0.6 + 7.5, metatarsus and tarsus missing, tibia 2: 5.0, tibia 3: 3.3, tibia 4: 4.8; tibia 1 L/d: 77. Habitus as in Figs. 901 and 902. Carapace ochre-yellow with large median brown mark, ocular area also brown, clypeus slightly darkened, especially laterally, sternum with light brown mark medio-posteriorly, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora and tibiae subdistally with whitish rings, tibiae also proximally with whitish rings, abdomen ochre-gray, with many indistinct darker spots dorsally and laterally visible through cuticle. Distance PME-PME 515  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 60  $\mu$ m, diameter AME 20  $\mu$ m. Ocular area elevated, with many long hairs on posterior side, each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae with distinctive apophyses laterally and frontally (Figs. 966, 967), without modified hairs. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 964 and 965, coxa unmodified, trochanter with distinctively curved ventral apophysis and shorter retrolateral apophysis, femur with simple hump ventro-distally, procurus distally very complex, bulb with very small uncus, slender weakly sclerotized embolus, and appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 940).

*Material examined.* CONGO DEM. REP.: *Haut-Uele Prov.:* Gangala, 20 km W Doruma: ♂ holotype above.

*Pholcus hoyo* n. sp.

Figs. 903, 904, 925, 926, 968-972

*Type.* Male holotype from Congo Dem. Rep., Ituri Prov., "Terr. Bunia, Mt. Hoyo, grotte Maugegere (B. 7), dans humus, alt 1100 m" [-1°15'N, 30°00'E], 11.iii.1952 (M. Leleup), in MRAC (92497 part).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 968, 969; shapes of procurus, uncus, appendix) and female genitalia (Figs. 925; similar to *Ph. moca*, cf. Fig. 921).

*Male* (holotype). Total body length 4.2, carapace width 1.3. Leg 1: 40.6 (9.6 + 0.6 + 10.2 + 17.6 +

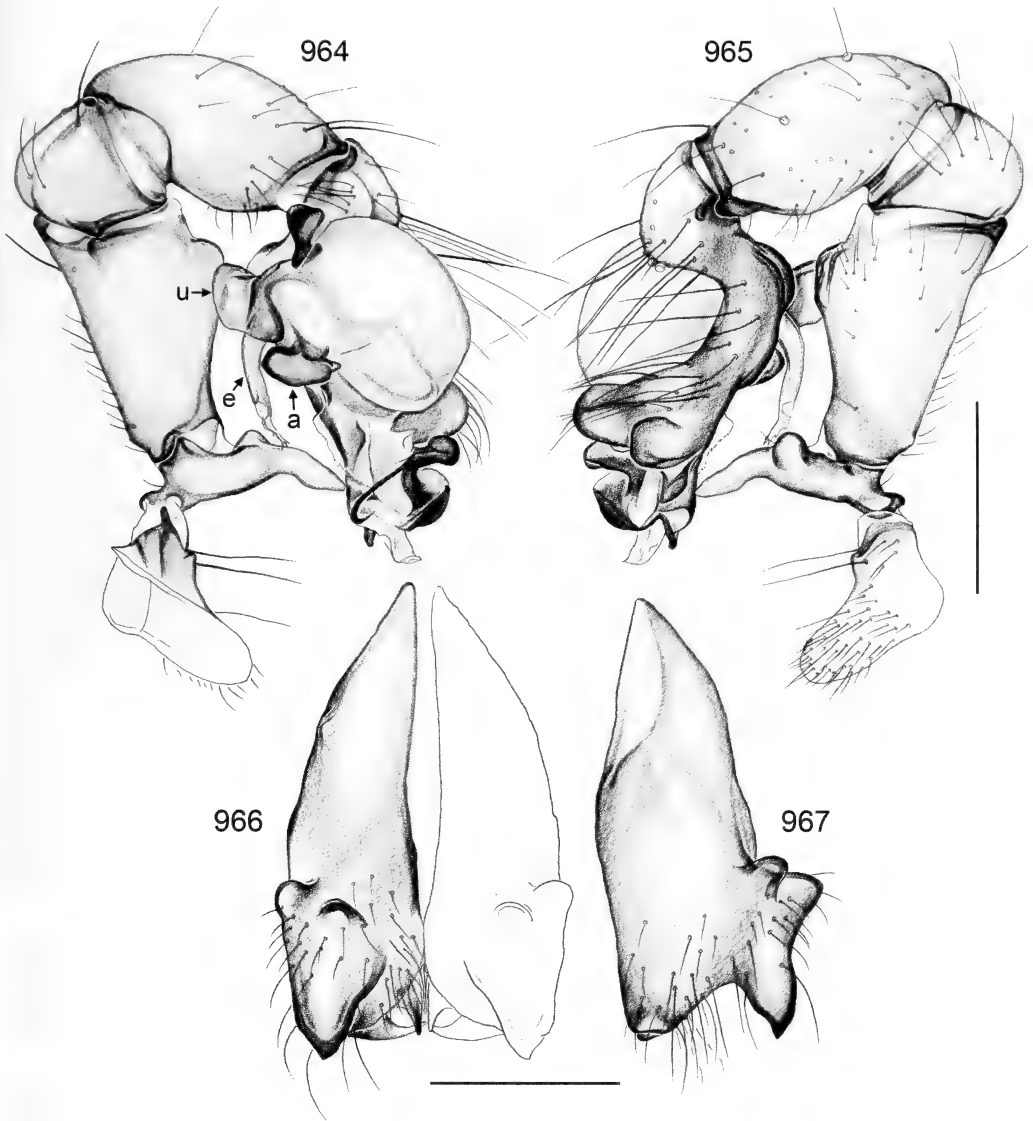


FIG. 964-967. *Pholcus mbuti*. 964, 965. Left male palp, prolateral and retrolateral views. 966, 967. Male chelicerae, frontal and lateral views. Scale lines: 0.5 (964, 965), 0.3 (966, 967).

2.6), tibia 2: 7.3, tibia 3: 4.7, tibia 4: 6.5; tibia 1 L/d: 82. Habitus as in Fig. 903. Carapace ochre-yellow with large brown mark widening posteriorly, ocular area also brown, clypeus not darkened, sternum pale ochre-yellow, posteriorly slightly darker, legs ochre-yellow to light brown, patellae and tibia-metatarsus joints brown, abdomen pale ochre-gray with many dark spots dorsally and laterally, ventrally without

pattern (cf. female, Fig. 904). Distance PME-PME 470  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 55  $\mu\text{m}$ , distance AME-AME 80  $\mu\text{m}$ , diameter AME 25  $\mu\text{m}$ . Ocular area elevated, many stronger hairs on posterior side, each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae with pair of distal apophyses carrying two modified hairs each, small frontal apophyses proxi-

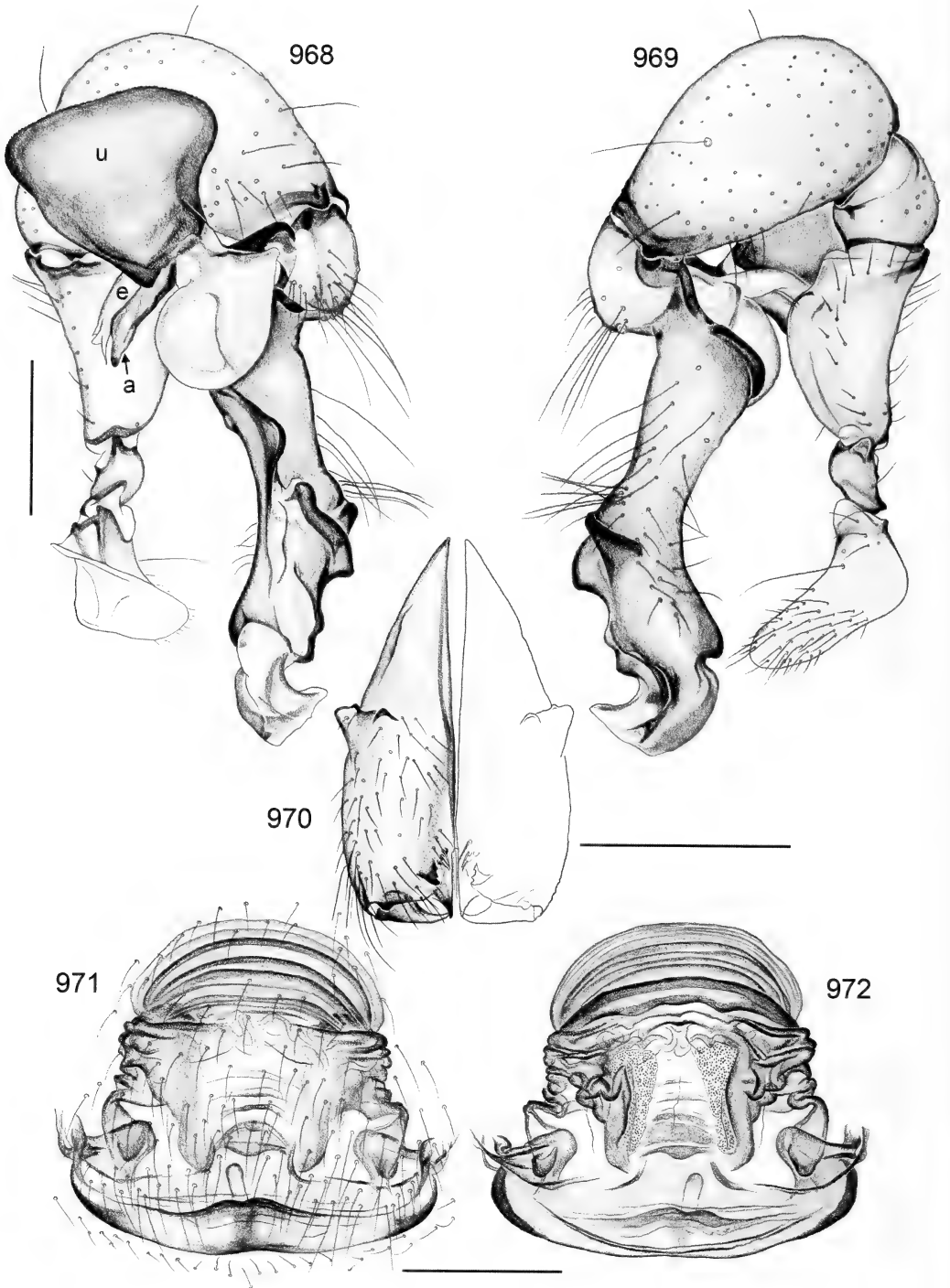


FIG. 968-972. *Pholcus hoyo*. 968, 969. Left male palp, prolateral and retrolateral views. 970. Male chelicerae, frontal view. 971, 972. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



mally and lateral apophyses with small dorsal hump (Fig. 970). Sternum wider than long (1.0/0.7), unmodified. Palps as in Figs. 968 and 969, coxa unmodified, trochanter with small retrolateral apophysis, femur widened ventrally, procurus very long, complex distally, bulb small, with very large uncus, weakly sclerotized embolus, appendix with small terminal hook. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudo-segments barely visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 11.4.

*Female.* In general similar to male but triads closer together (distance PME-PME 265  $\mu$ m), with slightly darker rings subdistally on femora and tibiae; tibia 1 in 2 females: 9.2, 9.3. Epigynum with narrow plate and small 'knob', large anterior area weakly sclerotized (Figs. 925, 971); internal genitalia as in Figs. 926 and 972.

*Distribution.* Known from type locality only (Fig. 940).

*Material examined.* CONGO DEM. REP.: *Ituri Prov.*: Bunia, Mt. Hoyo: ♂ holotype above; same data, 2♂2♀ in MRAC (92497 part). "Bunia, Mt. Hoyo, dans humus, alt 1200 m", 18.iii.1952 (N. Leleup), 1♀ in MRAC (92369).

#### *Pholcus kakum* Huber, 2009

*Pholcus kakum* Huber 2009b: 2510-2514, figs.10, 11, 32-35, 101-123, 150.

*New records* (MRAC Congostream Expedition 2009). CONGO DEM. REP.: Monzé (Engengele) (02°02'N, 22°44'E), "FOG07", 29.vi.2009, old secondary forest (periodically inundated), 2♀ in MRAC; same data but "FOG08", 2♂3♀ in MRAC; same data but "FOG09", 30.vi.2009, 4♂2♀ in MRAC; same data but "FOG10", 2♀ in MRAC. Basoko (Bokungu), 1°14'N, 23°36'E, "FOG11", 7.iii.2009, old palm plantation (60 years old), 2♂3♀ in MRAC; same data but "FOG12", 7♂10♀ in MRAC.

#### *Pholcus lualaba* n. sp.

Figs. 973-986

*Type.* Male holotype from Congo Dem. Rep., Lualaba Prov., "grot von Tshienda" [10°15'S, 24°00'E], x.1939 (M. Bequaert), in MRAC (26969/26982).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 973, 974; shape of procurus, small bulb and large uncus) and female genitalia (Figs. 976, 977).

*Male* (holotype). Total body length 3.9, carapace width 1.4. Leg 1: 10.0 + 0.6 + 10.1, metatarsus and tarsus missing, tibia 2: 6.6, tibia 3 missing, tibia 4: 6.1; tibia 1 L/d: 88. Habitus similar to *Ph. nkoetye* (cf. Figs. 917, 918). Carapace pale ochre-yellow with brown mark posteriorly, ocular area with brown pattern, clypeus brown laterally under eye triads, sternum pale ochre, legs ochre-yellow, patellae and tibio-metatarsus joints darker, slightly darker additional rings on femora and tibiae subdistally, abdomen monochromous ochre-gray. Distance PME-PME 460  $\mu$ m, diameter PME 80  $\mu$ m, distance PME-ALE 35  $\mu$ m, AME absent, only a small pigment spot. Ocular area elevated, few stronger hairs on posterior side, each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 975, with pair of distal apophyses carrying two modified hairs each (Fig. 982), prominent frontal apophyses proximally and very indistinct lateral humps proximally. Sternum wider than long (0.85/0.65), unmodified. Palps as in Figs. 973 and 974, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur slender, widened distally with indistinct ventral hump, tarsal organ capsulate (Fig. 981), procurus very long, medium-complex distally, apparently with pair of modified hairs dorsally (Fig. 980; damaged normal hairs?), bulb small with very large uncus, weakly sclerotized embolus, distally widened appendix (Fig. 978). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 4. Gonopore with four epiandrous spigots (Fig. 983); ALS with eight spigots each (Fig. 984).

*Variation.* Tibia 1 in three other males: 8.7, 9.2, 10.1.

*Female.* In general similar to male but triads closer together (distance PME-PME 290  $\mu$ m); tibia 1 in 6 females: 6.9-7.8 (mean 7.35). Epigynum protruding, with distinctively shaped plate and long anterior 'knob' (Figs. 976, 986); internal genitalia as in Fig. 977. ALS with eight spigots each (Fig. 985).

*Distribution.* Known from three localities in Congo Dem. Rep. (Fig. 940).

*Material examined.* CONGO DEM. REP.: *Lualaba Prov.*: Tshienda: ♂ holotype above; same data, 4♂7♀ in MRAC (26969/26982). *Kasai Oriental*: "Grot von

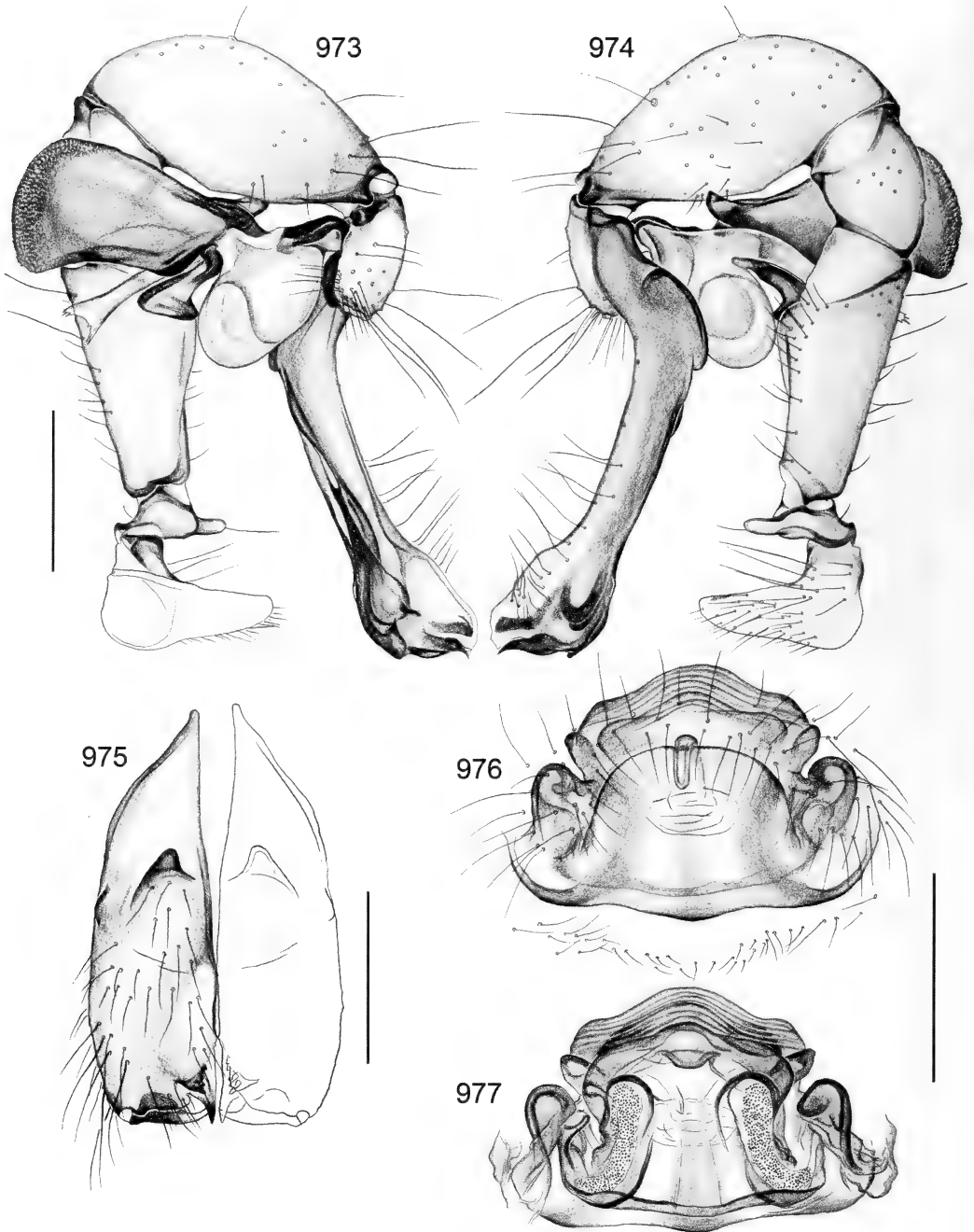


FIG. 973-977. *Pholcus lualaba*. 973, 974. Left male palp, prolateral and retrolateral views. 975. Male chelicerae, frontal view. 976, 977. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (973, 974, 976, 977), 0.3 (975).

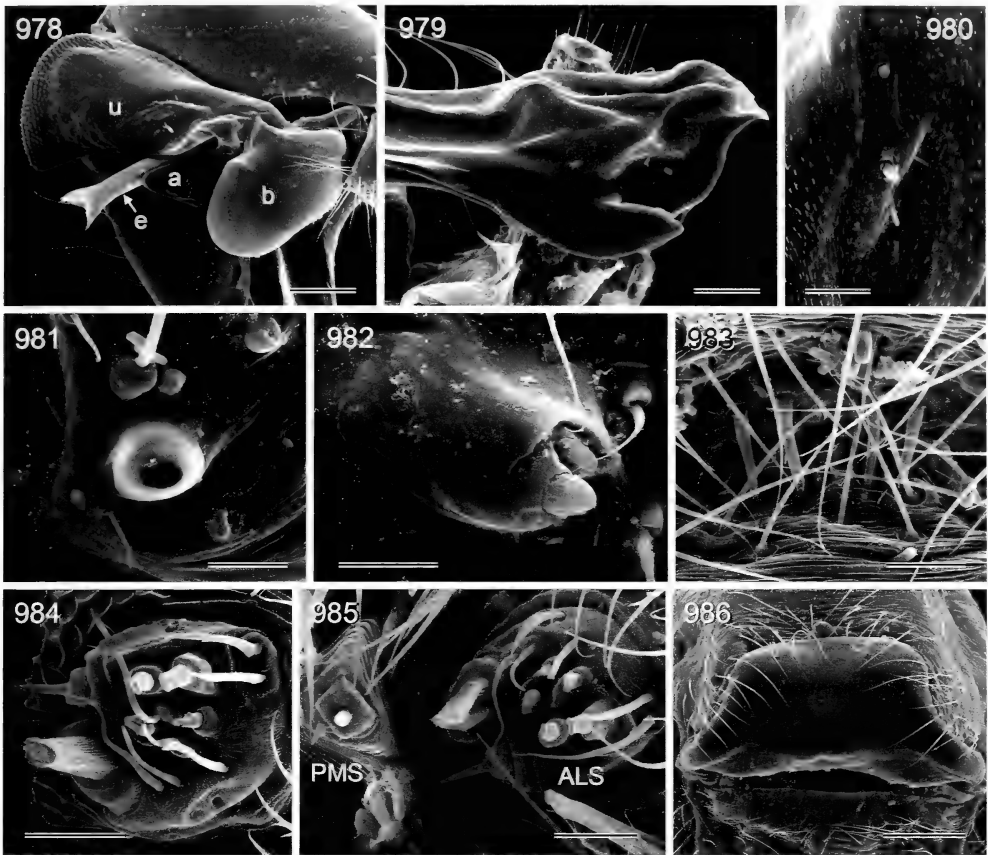


FIG. 978-986. *Pholcus lualaba*. 978. Left genital bulb, prolateral view. 979. Left procurus, prolateral view. 980. Possible modified hairs dorsally on procurus. 981. Male palpal tarsal organ. 982. Distal male cheliceral apophysis. 983. Male gonopore. 984. Male ALS. 985. Female ALS and PMS. 986. Epigynum. Scale lines: 200  $\mu$ m (978, 986), 100  $\mu$ m (979), 30  $\mu$ m (981, 983), 20  $\mu$ m (980, 982, 984, 985).

Lukusa" [Lukusa: 6°59'S, 23°28'E], 31.x.1939 (M. Bequaert), 1♂2♀ in MRAC (25675-25680; with 1 scytodid and 1 opilionid). *Sankuru Prov.*: Lusambo [4°58'S, 23°26'E], xii.1935 (R.F. Allser), 1♀ in MRAC (26863).

*Pholcus circularis* species group

Diagnosis. Medium-sized to large, long-legged African *Pholcus* (body length ~3.5-6.5, leg 1:~30-55); distinguished from other species groups in *Pholcus* by the combination of the following characters: elongate abdomen (but never vermiform as in *Ph. taarab* group), without ventral and dorsal cuticular color patterns on abdomen (only internal pattern; in con-

trast to *Ph. guineensis*, *Ph. chappuisi*, and *Ph. lamperti* groups), eight eyes (in contrast to *Ph. debilis* group), male chelicerae with proximal and distal apophyses, procurus without dorsal spines, without hinged process (in contrast to *Ph. taarab* group), with sclerotized part of epigynum confined to narrow posterior sclerite (similar to *Ph. lamperti* group), with 'knob'.

Description. Body length ~3.5-6.5, carapace width ~1.0-2.1. AME always present, triads on low elevations. Clypeus and sternum usually unmodified, only *Ph. nkoetye* with modified male clypeus. Male chelicerae with proximal and distal apophyses, distal apophyses provided with modified hairs. Male palpal coxa unmodified, trochanter with short retrolatero-

ventral apophysis, femur variable, without dorsal bulge, tarsus without dorsal elongation, tarsal organ capsulate, procurtus with ventral 'knee', without dorsal spines. Male bulb usually with uncus and appendix (uncus absent in *Ph. leruthi*, appendix absent in *Ph. nkoetye*), weakly sclerotized embolus. Legs long, tibia 1 in males ~6.5-13, tibia 1 L/d ~60-80, legs without spines, usually without curved hairs (present in *Ph. circularis* and *Ph. batepa*), few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3-6%. Abdomen cylindrical, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and variable number of cylindrically-shaped spigots (two in *Ph. leruthi*, five in *Ph. bakweri*, six in *Ph. batepa*, not known in other species), PMS with two small spigots.

Sexual dimorphism slight, female chelicerae unmodified, body size as in males, legs slightly shorter (tibia 1: ~5-13). Sclerotized part of epigynum confined to narrow posterior sclerite, with 'knob', internal genitalia with pair of pore-plates of variable shape.

*Monophyly.* This species group shares with the *Ph. lamperti* group a narrow epigynal sclerite (e.g. Figs. 929, 933), but lacks the cuticular color pattern on the abdomen distinctive of the *Ph. lamperti* group (internal marks are often present). The *Ph. circularis* group is thus probably not monophyletic but paraphyletic with respect to the *Ph. lamperti* group.

*Relationships.* As indicated above, the *Ph. circularis* group may be paraphyletic and contain the monophyletic *Ph. lamperti* group. Within the *Ph. circularis* group, two species pairs can be identified: (1) *Ph. circularis* and *Ph. batepa* share a sclerotized process

arising from the procurtus 'knee' (char. 36), a small apophysis just proximal of the distal cheliceral apophysis (char. 21), and curved hairs on the legs; (2) *Ph. leruthi* and *Ph. luki* share a very long proximal bulbal sclerite and a largely or completely reduced uncus (Figs. 999, 1017). The other two species are assigned tentatively to this group. *Pholcus nkoetye* in particular appears very isolated with its modified clypeus and the unusual cheliceral armature.

*Natural history.* Most or all of the species of this group seem to occur in the lower vegetation layers of well preserved forests. In Kakamega Forest, Kenya, *Pholcus leruthi* was observed between the buttresses of various species of trees. During the day, the spiders tightly pressed their bodies and legs against the tree bark making themselves essentially invisible (Fig. 16). Their response to approaching danger was a quick series of vigorous jumps to the forest floor and among the leaf litter and then absolute stillness (thanatosis). It was thus almost impossible to collect any specimens during the day. In the night, the spiders moved into their domed sheets (Fig. 15) where they were observed to feed and mate, and from where they are easily collected. At various Ugandan localities, this day-night difference seemed less distinct. *Pholcus leruthi* webs are often occupied by large numbers of cecidomyiid and mycetophilid flies (cf. van Lenteren & Schettino 2003). *Pholcus nkoetye* was collected from the underside of green leaves.

*Distribution.* Most species of the *circularis* group are known from São Tomé, Bioko, Cameroon, and western Congo Dem. Rep.; only *Ph. leruthi* is widely distributed from central Congo Dem. Rep. to western Kenya (Fig. 987).

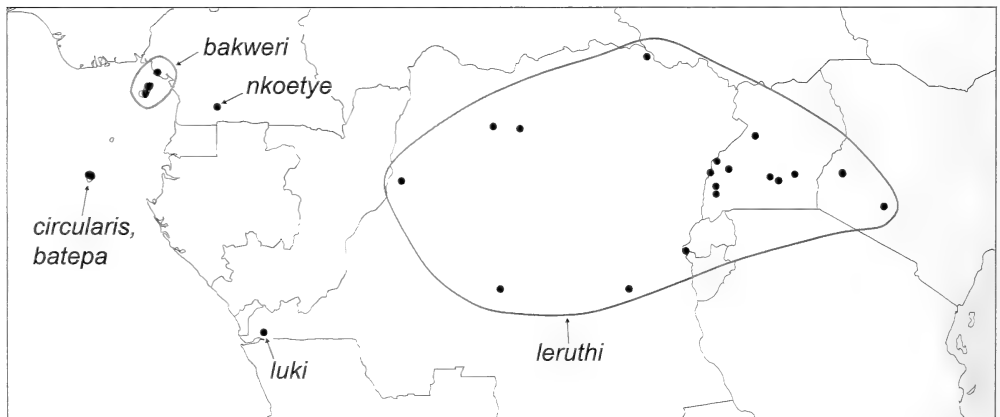


FIG. 987. Known distribution of the *Pholcus circularis* species group.

*Composition.* The *Ph. circularis* group includes six species; of these, four are newly described below, the other two are redescribed: *Ph. circularis* Kraus, 1960; *Ph. batepa* n. sp.; *Ph. leruthi* Lessert, 1935; *Ph. luki* n. sp.; *Ph. bakwari* n. sp.; *Ph. nkoetye* n. sp.

*Pholcus circularis* Kraus, 1960

Figs. 905-907, 927, 928, 988-993

*Pholcus circularis* Kraus 1960: 93-94, figs. 1-5; [except male from Traz-os-Montes, Bombaim; see *Ph. batepa* below].

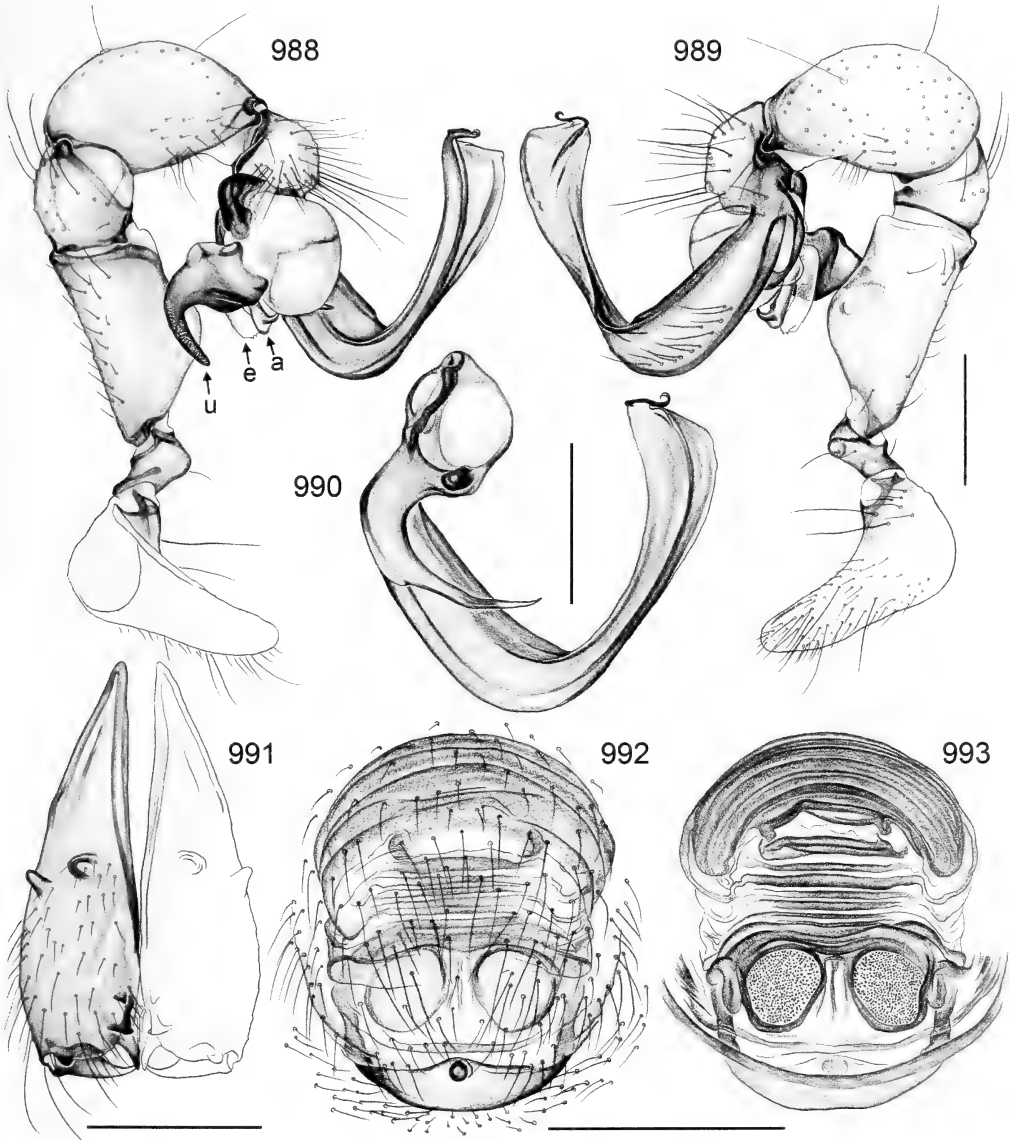


FIG. 988-993. *Pholcus circularis*. 988, 989. Left male palp, prolateral and retrolateral views. 990. Left pro-cursus, prolatero-ventral view. 991. Male chelicerae, frontal view. 992, 993. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Types.* Male holotype from São Tomé and Príncipe, São Tomé, Monte das Quinas [0°18'N, 6°31'E], Diogo Vaz, 1500 m a.s.l., 15.vi.1956 (P. Viette), in MNHN (AR 10220), examined; one male paratype, same data, in SMF (11.216/1), examined.

*Note.* The second paratype assigned tentatively to *Ph. circularis* by Kraus (1960) is here assigned to a different species (see *Ph. batepa* below).

*Diagnosis.* Easily distinguished from congeners by long curved procurus (Figs. 988-990), from most (except *Ph. batepa*) also by spine-like process on procurus (Fig. 990), by shapes of uncus and appendix, by male cheliceral armature (Fig. 991; two pairs of distal apophyses), and female genitalia (Figs. 927, 992). The MCZ has a male from Cameroon (Eb-olowa) with a very similar procurus but without AME, with a second process arising proximally from the procurus, and a wider uncus.

*Male* (P.N. Ôbó). Total body length 5.3, carapace width 1.8. Leg 1: 44.8 (10.6 + 0.7 + 10.8 + 19.1 + 3.6), tibia 2: 7.9, tibia 3: 5.5, tibia 4: 7.5; tibia 1 L/d: 61. Habitus as in Figs. 905 and 906. Carapace, ocular area and clypeus light brown, only lateral of ocular area and margins ochre-yellow, sternum brown, legs light brown, abdomen ochre-gray with indistinct pattern of light brown marks dorso-posteriorly, ventrally with very indistinct brown band posteriorly (cf. female, Fig. 907). Distance PME-PME 265 µm, diameter PME 160 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 55 µm. Ocular area slightly elevated, triads not on stalks. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 991, two pairs of distal frontal apophyses, with proximal lateral and frontal apophyses. Sternum wider than long (1.15/0.95), unmodified. Palps as in Figs. 988 and 989, coxa unmodified, trochanter with rounded retrolateral apophysis (longer than appears in Fig. 989), femur with large ventral hump, procurus distinctively long and strongly curved, with spine-like process proximally on prolateral side (Fig. 990), small hooked sclerite distally, bulb with slender curved uncus, short pale embolus, roughly T-shaped appendix. Legs without spines, few vertical hairs, with curved hairs on tibiae and metatarsi 1-3; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 3 other males from P.N. Ôbó: 10.8, 10.9, 11.5; pattern on abdomen variably dis-

tinct. The holotype is in fair condition, carapace width: 1.55, tibia 1: 10.5; the paratype is a very pale but large specimen, carapace width: 2.0, tibia 1 missing.

*Female.* In general similar to male, also with curved hairs on legs, triads only slightly closer together (distance PME-PME 240 µm). Tibia 1 in 13 females: 9.2-11.8 (mean 10.7). Epigynum mostly weakly sclerotized and pale gray, with narrow plate with small sclerotized 'knob' (Figs. 927, 992); internal genitalia as in Figs. 928 and 993.

*Distribution.* Known from São Tomé only (Fig. 987). *Material examined.* SÃO TOMÉ AND PRÍNCIPE: São Tomé: Diogo Vaz, Monte das Quinas: ♂ holotype and 1♂ paratype above; Parque Nacional Ôbó, forest near radio tower, 1.63 air km WSW Bom Sucesso (0°16.6'N, 6°36.3'E), 1350 m a.s.l., general collecting, 9.-16.iv.2001 (C.E. Griswold), 6♂13♀ (2 vials) in CAS; same data but beating forest understorey, 1♂ 2 juvs. in CAS.

*Pholcus batepa* n. sp.

Figs. 908, 909, 929, 930, 994-998, 1114-1118

"*Pholcus circularis*" (misidentification) Kraus 1960: 93-94; only male from Traz-os-Montes, Bombaim.

*Type.* Male holotype from São Tomé and Príncipe, São Tomé, Rio Contador Valley (0°18.8'N, 6°33.0'E), in tunnels, 600 m a.s.l., 8.iv.2001 (C.E. Griswold), in CAS.

*Etymology.* The name remembers the Batepá massacre on 3 February 1953 in São Tomé when Portuguese landowners unleashed a wave of violence against the native creoles. More than 1000 people were killed in the violence. Noun in apposition.

*Diagnosis.* Distinguished from most congeners (except *Ph. circularis*) by spine-like process on procurus (Fig. 996), by shapes of uncus and appendix (Fig. 994), by male cheliceral armature (similar to *Ph. circularis*, cf. Fig. 991; two pairs of distal apophyses), and female genitalia (Figs. 929, 997); from very similar *Ph. circularis* by much shorter procurus and wider uncus (Figs. 994-996).

*Male* (holotype). Total body length 5.6, carapace width 2.1. Leg 1: 56.0 (13.3 + 0.9 + 13.6 + 23.8 + 4.4), tibia 2: 10.0, tibia 3: 7.2, tibia 4: 9.6; tibia 1 L/d: 68. Habitus as in Figs. 908 and 909. Coloration and color patterns as in *Ph. circularis* (see above), pattern on abdomen indistinct in holotype. Distance PME-PME 275 µm, diameter PME 170 µm, distance PME-ALE 55 µm, distance AME-AME 55

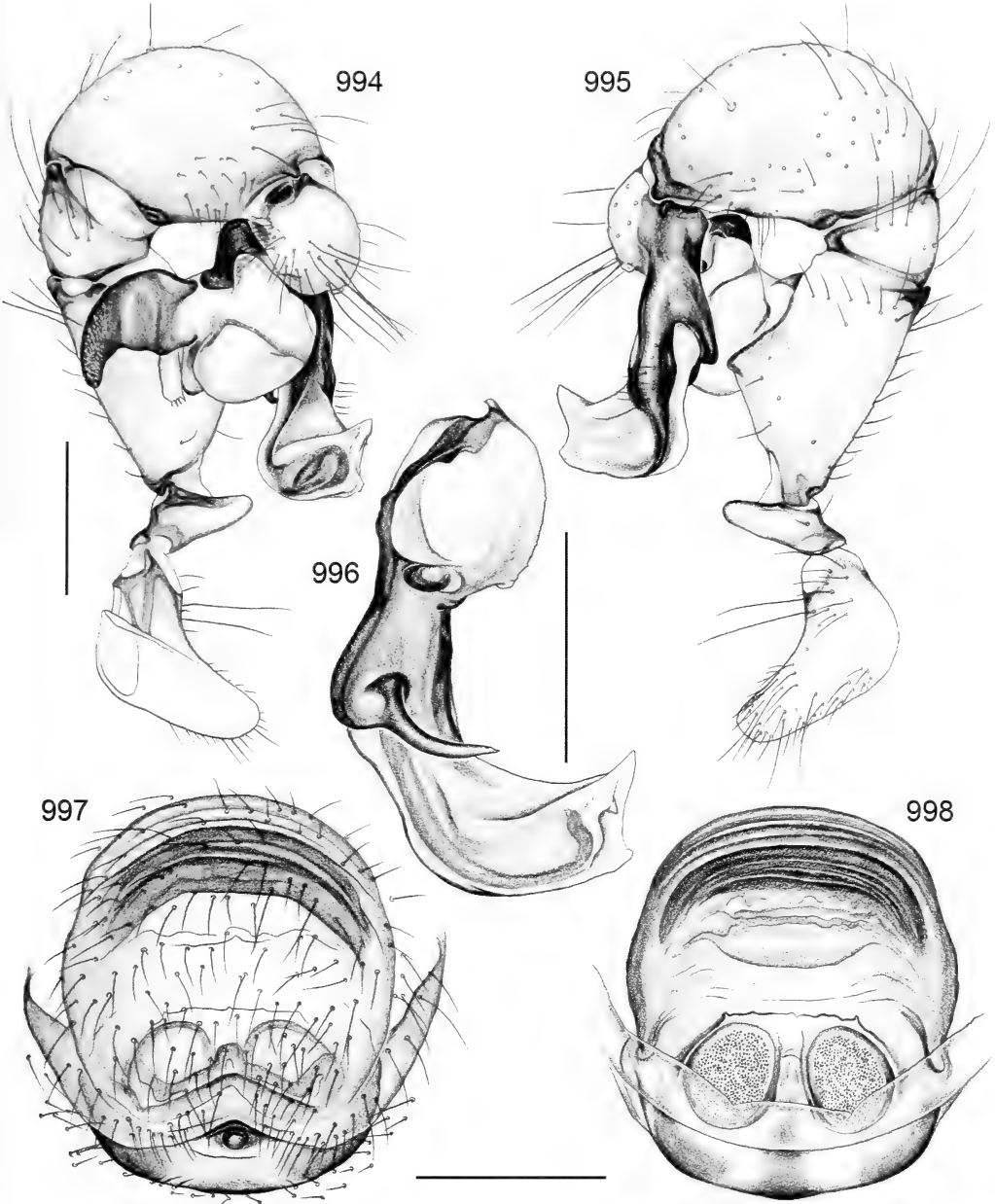


FIG. 994-998. *Pholcus batepa*. 994, 995. Left male palp, prolateral and retrolateral views. 996. Left procurus, prolatero-ventral view. 997, 998. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

$\mu\text{m}$ , diameter AME 70  $\mu\text{m}$ . Ocular area slightly elevated, triads not on stalks. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae very similar to *Ph. circularis* (cf. Fig. 991),

slightly smaller, small distal apophysis slightly larger, frontal proximal apophysis slightly longer. Sternum wider than long (1.35/1.10), unmodified. Palps as in Figs. 994 and 995, coxa unmodified, trochanter with

rounded retrolatero-ventral apophysis, femur very similar to *Ph. circularis* (drawn in slightly different views), procurus similar to *Ph. circularis*, with spine-like process proximally on prolateral side (Fig. 996), but much shorter, without distal hooked sclerite, tarsal organ capsulate (Fig. 1115), bulb with curved uncus wider than in *Ph. circularis*, short pale embolus, simple curved appendix (not T-shaped; Fig. 1117). Legs without spines, few vertical hairs, with many curved hairs on tibiae and metatarsi 1-3, few on legs 4; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1118); ALS with eight spigots each (Fig. 1116).

*Variation.* Tibia 1 in 6 other males from type locality: 11.8-13.2 (mean 12.3); pattern on abdomen variably distinct. Other specimens are slightly smaller: Roca Zampalma, tibia 1: 9.3 (missing in other males); Traz-os-Montes, Bombaim, tibia 1: 10.2.

*Female.* In general similar to male, triads slightly closer together (distance PME-PME 230  $\mu$ m). Tibia 1 in 10 females from type locality: 10.2-12.9 (mean 11.8). Females from Roca Zampalma are slightly smaller: tibia 1: 7.9, 8.9, 10.3. Epigynum as in Fig. 929, very similar to *Ph. circularis*; internal genitalia as in Figs. 930 and 998.

*Distribution.* Known from São Tomé only (Fig. 987).

*Material examined.* SÃO TOMÉ AND PRÍNCIPE: São Tomé: Rio Contador Valley: ♂ holotype above; same data, 5♂15♀ in CAS. Roca Zampalma [-0°16'N, 6°37'E], 2500' a.s.l., 5.-14.viii.1949 (B. Malkin), 2♂2♀ in CAS; same data but 2500' a.s.l., viii.1949, 1♂2♀ in CAS. Traz-os-Montes, Bombaim [-0°15'N, 6°38'E], 450-750 m a.s.l., 7.vi.1956 (P. Viette), 1♂ (misidentified paratype of *Ph. circularis*) in MNHN (10228).

*Pholcus leruthi* Lessert, 1935

Figs. 15, 16, 910, 911, 931-933, 999-1016

*Pholcus leruthi* Lessert 1935: 330-332, figs. 4-6.

*Types.* Male and female syntypes (number of specimens unknown) from Congo Dem. Rep., Sankuru Prov., "Grotte de Tscheko Saka, territoire du Sankuru" [-4°S, 22°E], date unknown (N. Creppe), depository unknown. One paratype is supposed to be at the MNHN, Paris, but could not be found.

*Diagnosis.* Distinguished from congeners by shapes of procurus and appendix, by absence of uncus (Fig.

999), male cheliceral armature (Fig. 1001), and female genitalia (Figs. 931, 933); from similar *Ph. luki* by relatively much smaller male palpal femur (Fig. 1000) and absence of hair brush medially on carapace (cf. Fig. 912).

*Male* (Gangala). Total body length 5.6, carapace width 1.5. Leg 1: 44.2 (10.6 + 0.7 + 10.6 + 19.6 + 2.7), tibia 2: 7.0, tibia 3: 4.8, tibia 4: 6.7; tibia 1 L/d: 68. Habitus as in Figs. 910 and 911. Carapace ochre-yellow with large brown median mark including ocular area but not clypeus, sternum pale ochre-yellow, legs ochre-yellow, femora and tibiae with whitish tips and subdistal brown rings, patellae and tibia-metatarsus joints also darkened, abdomen pale ochre-gray with many indistinct darker spots dorsally and laterally, ventrally without pattern. Distance PME-PME 380  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area elevated, many stronger hairs on posterior side and anteriorly on carapace near median line (Fig. 1004), each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1001, distal frontal apophyses with two modified hairs each (Fig. 1005), with proximal lateral apophyses. Sternum wider than long (0.95/0.75), unmodified. Palps as in Figs. 999 and 1000, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur very slender, barely modified, tibia relatively large, procurus mostly simple, only tip complex (Figs. 1008-1012), tarsal organ capsulate (Fig. 1006), bulb slightly elongate, without uncus, embolus long with distal transparent fringed process, appendix short, with retrolateral hook visible in ventral view (Fig. 1007; see also fig. 6 in Lessert 1935). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1014); ALS with only four spigots each (Fig. 1013).

*Variation.* Tibia 1 in 39 other males: 8.4-12.1 (mean 10.1); tibia 1 in syntype: 10.5 (Lessert 1935); spots on abdomen sometimes distinct (Figs. 910, 911), sometimes indistinct or absent.

*Female.* In general similar to male but sternum anteriorly with light brown mark, triads closer together (distance PME-PME 230  $\mu$ m), mark on carapace usually divided into two parts by narrow median light line. Tibia 1 in 37 females: 7.5-9.9 (mean 8.8); tibia



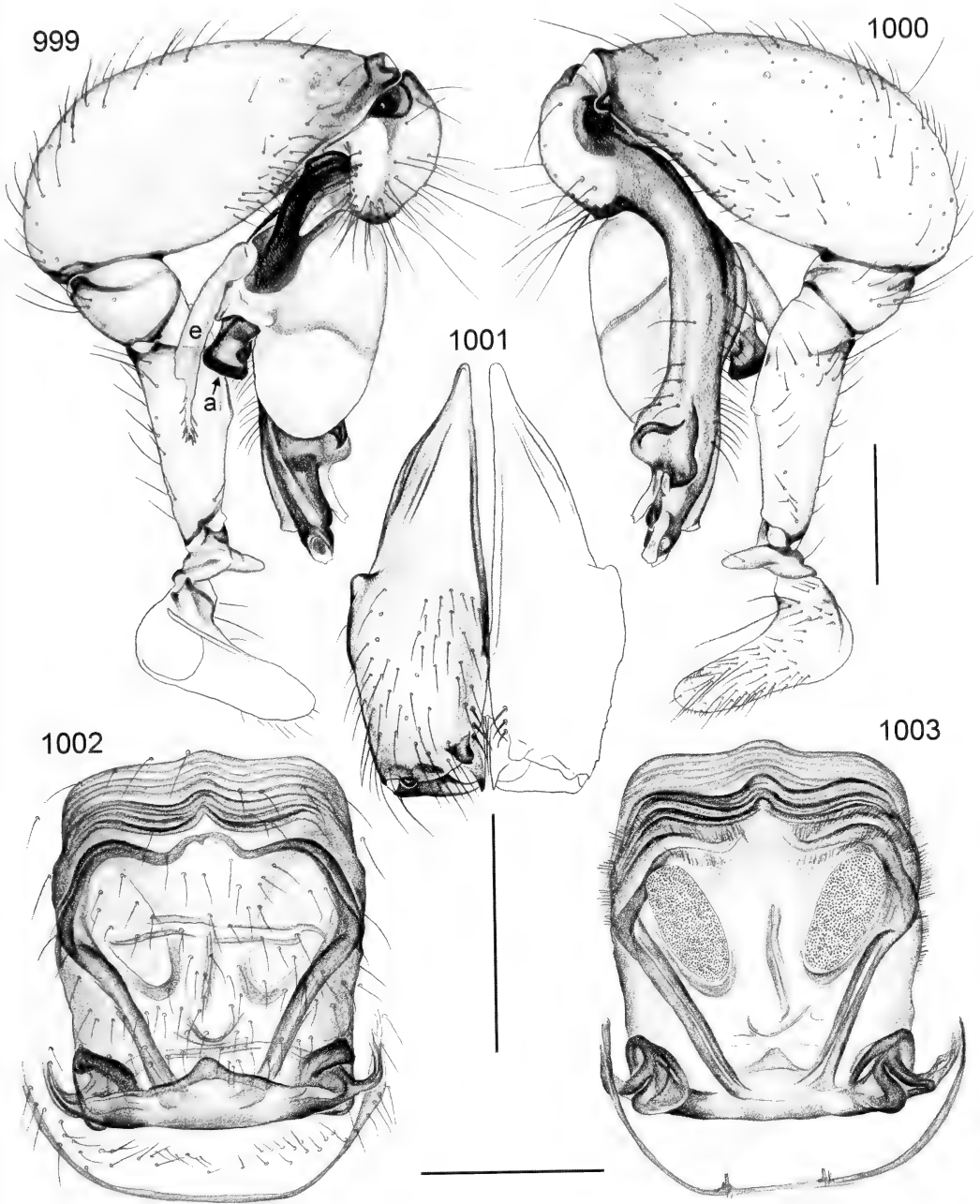


FIG. 999-1003. *Pholcus leruthi*. 999, 1000. Left male palp, prolateral and retrolateral views. 1001. Male chelicerae, frontal view. 1002, 1003. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

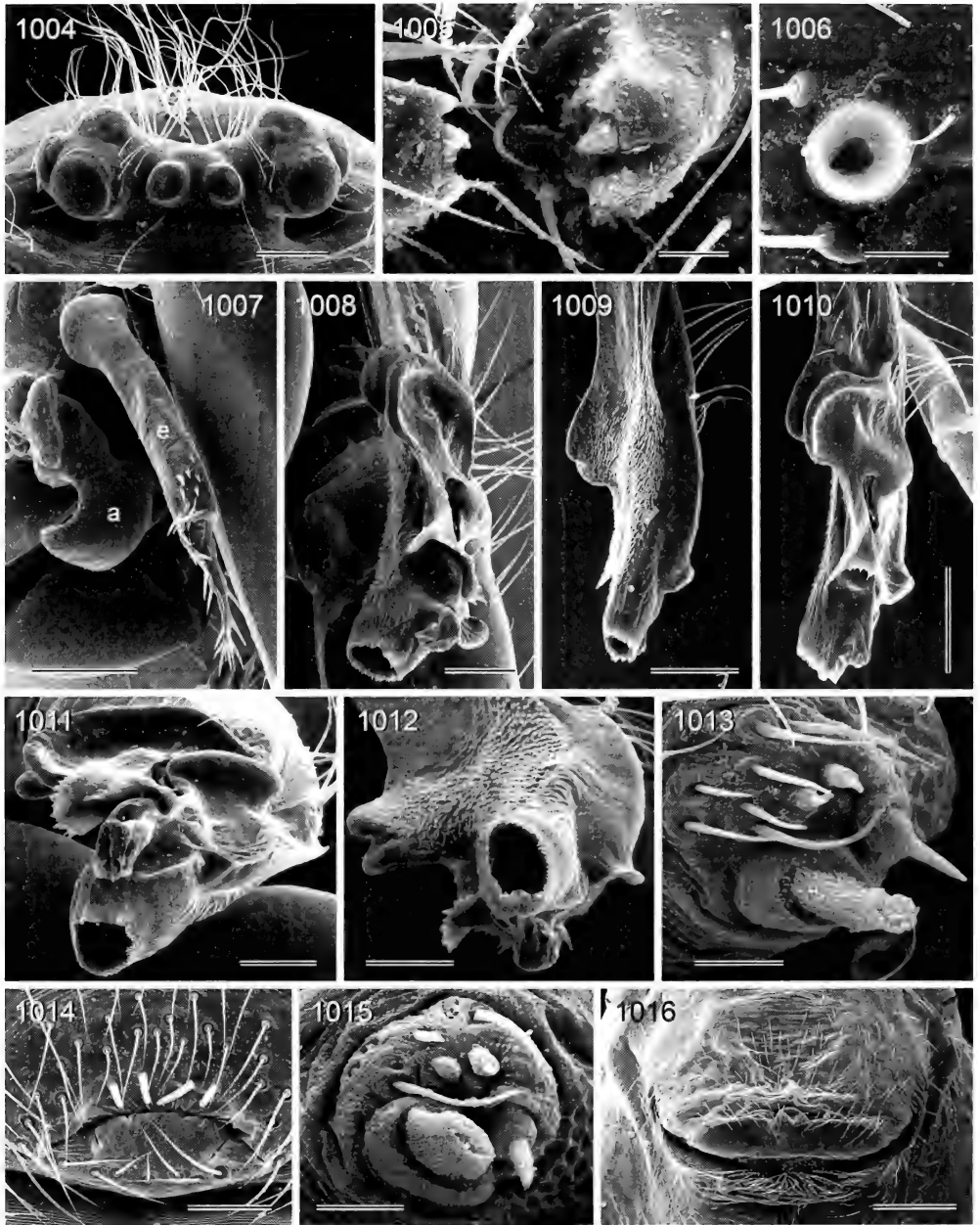


FIG. 1004-1016. *Pholcus leruthi*. 1004. Male ocular area, frontal view. 1005. Male distal cheliceral apophyses. 1006. Male palpal tarsal organ. 1007. Appendix and embolus of right genital bulb. 1008. Left procurus, retrolatero-dorsal view. 1009. Right procurus, prolateral view. 1010. Left procurus, retrolateral view. 1011. Left procurus tip, retrolatero-distal view. 1012. Right procurus, prolatero-distal view. 1013. Male ALS. 1014. Male gonopore. 1015. Female ALS. 1016. Epigynum. Scale lines: 300  $\mu\text{m}$  (1016), 200  $\mu\text{m}$  (1004, 1007, 1009, 1010), 100  $\mu\text{m}$  (1008, 1012), 80  $\mu\text{m}$  (1011, 1014), 40  $\mu\text{m}$  (1006), 20  $\mu\text{m}$  (1005, 1013, 1015).

1 in syntype: 9.5 (Lessert 1935). ALS with only four spigots each (Fig. 1015). Epigynum mostly weakly sclerotized, with narrow plate with pair of sclerotized areas and indistinct 'knob' (Figs. 931, 1002); internal genitalia as in Figs. 932 and 1003. In some females, the sclerotized areas are closer together (Fig. 933). Females from northwestern Congo Dem. Rep. (Eala, Mbangi, Monzé) are assigned tentatively because females of *Ph. luki* are very similar and no males are known from these localities.

*Distribution.* Known from several localities in Congo Dem. Rep., Uganda, Kenya, and Rwanda (Fig. 987).

*Material examined.* CONGO DEM. REP.: *Haut-Uele Prov.*: "Gangala, à 20 km W Doruma" [4°44'N, 27°30'E], 1959 (D.A. Stam), 3♂4♀ in MRAC (114271). *Maniema Prov.*: "62 mi E of Kibombo" [-4°S, 26°15'E], 14.viii.1957 (E.S. Ross, R.E. Leech), 1♂ in CAS.

UGANDA: *Bundibugyo District*: between Sempaya and Itajo (-0°50.4'N, 30°11.5'E), 1095 m a.s.l., degraded forest, 5.xii.2010 (B.A. Huber), 8♂9♀ (2 vials) in ZFMK; between Sempaya and Itajo (-0°50.3'N, 30°10.4'E), 800 m a.s.l., roadside forest, 5.xii.2010 (B.A. Huber), 4♂8♀ in ZFMK. *Semuliki N.P.*, between Sempaya and Bumaga (-0°49.3'N, 30°09.5'E), -700 m a.s.l., 4.xii.2010 (B.A. Huber), 6♂3♀ in ZFMK. *Kabarole District*: Kibale Forest N.P., forest near Makerere Univ. Research Station (0°33.2'N, 30°21.4'E), -1500 m a.s.l., 6.xii.2010 (B.A. Huber), 6♂3♀ in ZFMK. *Kabarole and Kamwenge Districts*: Kibale Forest N.P., near Kanyanchu (0°27.5-28.0'N, 30°22.3-22.8'E), 1250 m a.s.l., 7.xii.2010 (B.A. Huber), 3♂1♀ in ZFMK. Kibale Forest, Ngogo Camp (0°30'N, 30°35'E), 1500-1800 m a.s.l., 30.-31.x.1992 (V. & B. Roth), 1♀ in CAS. *Bushenyi District*: Kyambura River Gorge (-0°10.7'S, 30°05.8'E), 900 m a.s.l., 29.xi.2010 (B.A. Huber), 5♂3♀ in ZFMK. Kalinzu Forest Reserve (0°22.5'S, 30°06.9'E), 1500 m a.s.l., 28.xi.2010 (B.A. Huber), 1♂2♀ (plus 2♀ 1 juv. in pure ethanol) in ZFMK. Kasyoha-Kitomi Forest Reserve (0°16.1'S, 30°09.1'E), 1280 m a.s.l., 29.xi.2010 (B.A. Huber), 2♂2♀ (plus 3 juvs. in pure ethanol) in ZFMK. *Kasese District*: Ruwenzori (-0°22'N, 30°E), 1952 (G.O. Evans), 4♂2♀ 1 juv. in BMNH. *Masindi District*: Budongo Forest Reserve (1°42.5-43.5'N, 31°31.6-32.7'E), -1100 m a.s.l., 9.xii.2010 (B.A. Huber), 6♂6♀ in ZFMK; Budongo Forest near Sonso (1°45'N, 31°35'E), 1.-10.vii.1995 (T. Wagner), 1♀ in ZFMK. Budongo Forest Reserve, Kaniyo Pabidi (1°55.1'N, 31°43.2'E), -1000 m a.s.l., 9.

xii.2010 (B.A. Huber), 5♂5♀ (plus 1 juv. in pure ethanol) in ZFMK. *Mpigi District*: Mpanga Forest Reserve (0°12.4'N, 32°18.1'E), 1200 m a.s.l., 22. xi.2010 (B.A. Huber), 8♂2♀ (2 vials) (plus 1♂1♀ in pure ethanol) in ZFMK. *Wakiso District*: Entebbe [-0°04'N, 32°28'E], 6.iii.1928 (E. Degen), 3♂ in BMNH (have been dry); "Bugarios", near Entebbe, 6.iii.1928 (E. Degen), 3♂4♀ in BMNH. *Mukono District*: Mabira Forest Reserve (0°23.6'N, 32°59.4'E), 1200 m a.s.l., 11.xii.2010 (B.A. Huber), 9♂10♀ (2 vials) in ZFMK.

KENYA: *Western Prov.*: Kakamega Forest N.P., along Isiukhu River (0°19.1'-19.7'N, 34°52.5'-52.8'E), -1550-1580 m a.s.l., 3.ii.2010 (B.A. Huber), 2♂3♀ in ZFMK; Kakamega Forest N.P., Arboretum trail (0°21.3'N, 34°51.5'E), 1620 m a.s.l., 2.-3.ii.2010 (B.A. Huber), 27♂26♀ in ZFMK and NMKE; same data, 3♀ 6 juvs. in pure ethanol, in ZFMK. Kakamega Forest, 12.viii.1972 (J. & F. Murphy), 1♂ in CJFM. Kakamega Forest, "T.N.132", i.-ii.2003 (W. Freund), 1♂ in ZFMK. *Rift Valley*: Mt. Longonot [-0°55'S, 36°26'E], 2500 m a.s.l., ix.1981 (J. & F. Murphy), 1♀ abdomen in CJFM (9656).

RWANDA: Cyamudongo Forest [2°34'S, 28°59'E] nr. Nyakabuye, x.1993 (T. Wagner), 1♀ in ZFMK. *Assigned tentatively.* CONGO DEM. REP.: Mbangi (2°07'N, 21°44'E), "FOG06", 25.vi.2009 (MRAC Congostream Expedition), old secondary forest, 2♀ in MRAC. Monzé (Engengele) (2°02'N, 22°44'E), "FOG09", 30.vi.2009 (MRAC Congostream Expedition), old secondary forest (periodically inundated), 1♀ in MRAC. Eala [0°04'N, 18°17'E], xi.1936 (J. Ghesquiere), 2♀ 1 juv. in MRAC (898, 913, 1050).

*Pholcus luki* n. sp.

Figs. 912, 913, 934, 935, 1017-1021

*Type.* Male holotype from Congo Dem. Rep., Kongo Centrale Prov., Mayombe, Luki Forest Reserve (5°37.3'S, 13°05.9'E), central zone, by hand, 26.-27. ix.2007 (W. Hubau), in MRAC (separated from 222155).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by shapes of procurus, appendix, and uncus (Figs. 1017, 1018), by male cheliceral armature (Fig. 1019), and female genitalia (Figs. 934, 1020); from similar *Ph. leruthi* also by relatively larger male palpal femur (Fig. 1018) and hair brush medially on carapace (Fig. 912).

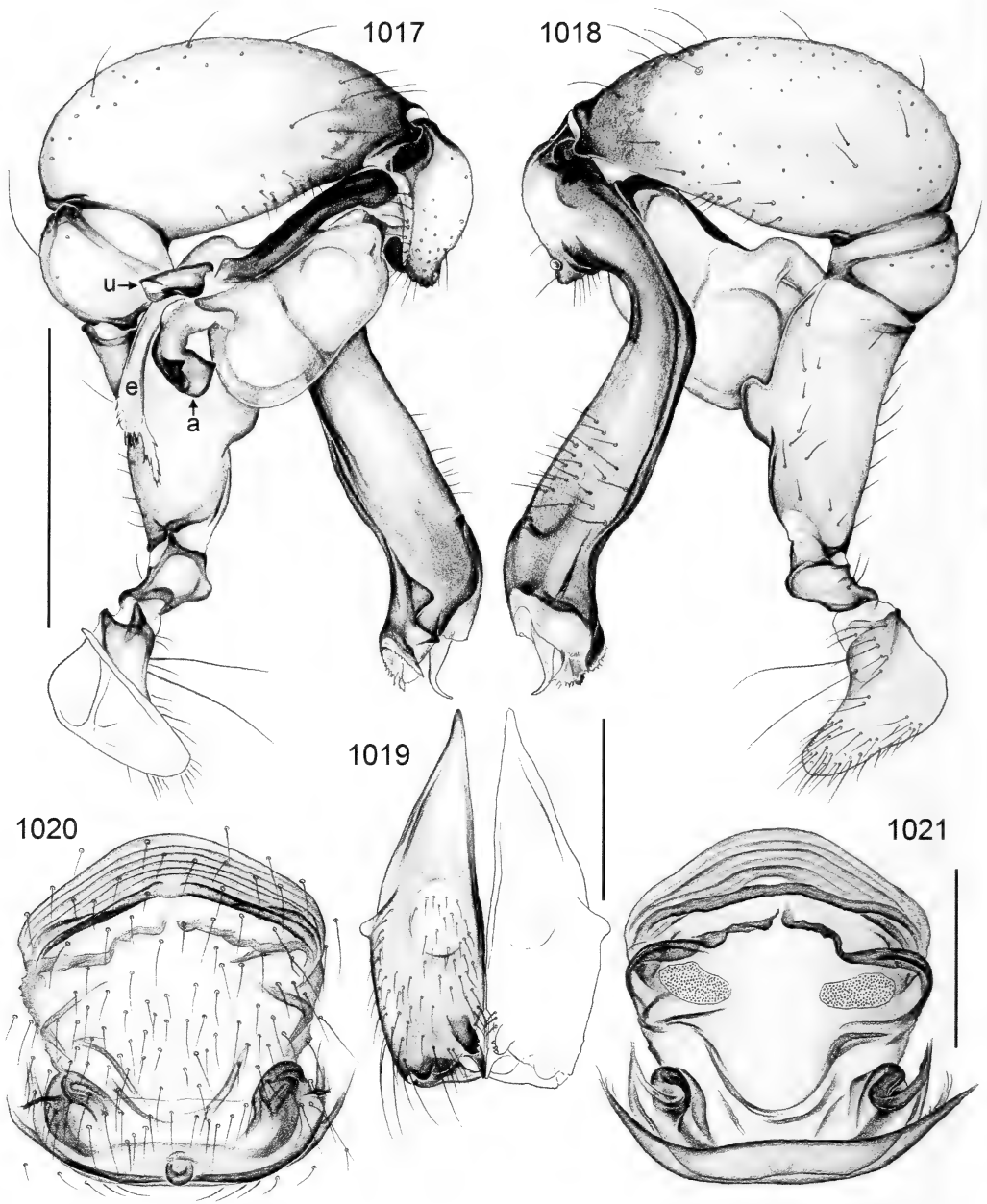


FIG. 1017-1021. *Pholcus luki*. 1017, 1018. Left male palp, prolateral and retrolateral views. 1019. Male chelicerae, frontal view. 1020, 1021. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1017, 1018), 0.5 (1019-1021).

*Male* (holotype). Total body length 6.6, carapace width 1.85. Leg 1: 12.9 + 0.8 + 12.8 + 22.4, tarsus missing, tibia 2: 8.8, tibia 3: 5.7, tibia 4: 8.0, tibia 1L/d: 66. Habitus similar to *Ph. leruthi* (cf. Figs. 910 and 911). Carapace pale ochre-whitish with large median brown mark, ocular area with darker median band, clypeus not darkened, sternum whitish, only anteriorly and posteriorly light brown marks, legs ochre-yellow with darker rings on femora and tibiae subdistally and in patella area, tips of femora and tibiae whitish, abdomen ochre-gray, dorsally and laterally many internal black spots visible through cuticle, ventrally without pattern (cf. female, Fig. 913). Distance PME-PME 425  $\mu$ m, diameter PME 170  $\mu$ m, distance PME-ALE 70  $\mu$ m, distance AME-AME 75  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area elevated, each triad on short hump directed laterally, with many stronger hairs posteriorly on ocular area and unique brush medially on carapace (Fig. 912). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1019, distal apophyses with two (or three?) modified hairs each, proximal lateral apophyses indistinct, frontally with lighter area. Sternum wider than long (1.15/0.90), unmodified. Palps as in Figs. 1017 and 1018, coxa unmodified, trochanter with very short retrolatero-ventral apophysis, femur with distinctive ventral protuberance, tibia large, distally darkened, procurus long and mostly simple except distally, retrolateral hairs unusually short, bulb slightly elongated, with very large proximal sclerite, long weakly sclerotized embolus, small simple uncus and larger distinctive appendix. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments (tarsus 2) distally fairly distinct.

*Female*. In general similar to male but triads closer together (distance PME-PME 275  $\mu$ m), without brushes of hairs on ocular area and carapace. Tibia 1 missing in all three females. Epigynum a large rectangular area of same coloration as abdomen, only posteriorly very narrow sclerite and small 'knob', anterior internal structures visible through cuticle (Figs. 934, 1020); internal genitalia as in Figs. 935 and 1021.

*Distribution*. Known from type locality only (Fig. 987). Note that some females from northwestern Congo Dem. Rep. tentatively assigned to *Ph. leruthi* (see above) may actually belong to this species.

Material examined. CONGO DEM. REP.: *Kongo Centrale Prov.*: Mayombe, Luki F.R.: ♂ holotype

above, together with 1♀; Luki Forest Reserve, "fogging 3, primary rainforest", 10.xi.2006 (D. de Bakker, J.P. Michiels), 2♀ in MRAC (separated from 219853).

*Pholcus bakweri* n. sp.

Figs. 914-916, 936, 937, 1022-1037

*Type*. Male holotype from Cameroon, Southwest Province, Fako Div., Mt. Cameroon, Mann's spring (4°08.5'N, 9°07.0'E), 2050 m a.s.l., 21.-25.i.1992 (J. Coddington, C.E. Griswold, S. Larcher, G. Hormiga), in CAS.

*Etymology*. Named for the Bakweri (or Kwe), an ethnic group primarily concentrated in Cameroon's Southwest Province; noun in apposition.

*Diagnosis*. Distinguished from congeners by shapes of procurus, appendix, uncus, and palpal trochanter (Figs. 1022, 1023), by male cheliceral armature (Fig. 1024), and female genitalia (Figs. 936, 1025, 1026; curved pore plates).

*Male* (holotype). Total body length 4.6, carapace width 1.5. Leg 1: 37.1 (8.9 + 0.6 + 8.9 + 16.2 + 2.5), tibia 2: 6.4, tibia 3: 4.5, tibia 4: 6.0; tibia 1 L/d: 57. Habitus as in Figs. 914 and 915. Carapace ochre-yellow with large brown mark including ocular area but not clypeus, sternum light, medially posteriorly darker, labium brown, legs ochre to light brown, femora and tibiae with darker subdistal rings, patellae and tibiae proximally also darker, abdomen ochre-gray with many dark spots dorsally, ventrally monochromous (cf. female, Fig. 916). Distance PME-PME 325  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area moderately elevated (Fig. 1027), with brush of hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1024, distal frontal apophyses with modified hairs (Fig. 1029), with lateral apophyses, indistinct proximal elevation frontally. Sternum wider than long (1.05/0.80), unmodified. Palps as in Figs. 1022 and 1023, coxa unmodified, trochanter with distinct ventral apophysis bent downwards and short retrolateral bulge, femur with large ventral protuberance, procurus slender and simple except distally (Figs. 1030, 1031), without prolatero-dorsal spines, uncus with bent tip, long weakly sclerotized embolus, appendix with distal hook (Figs. 1032, 1034). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments (>30), but

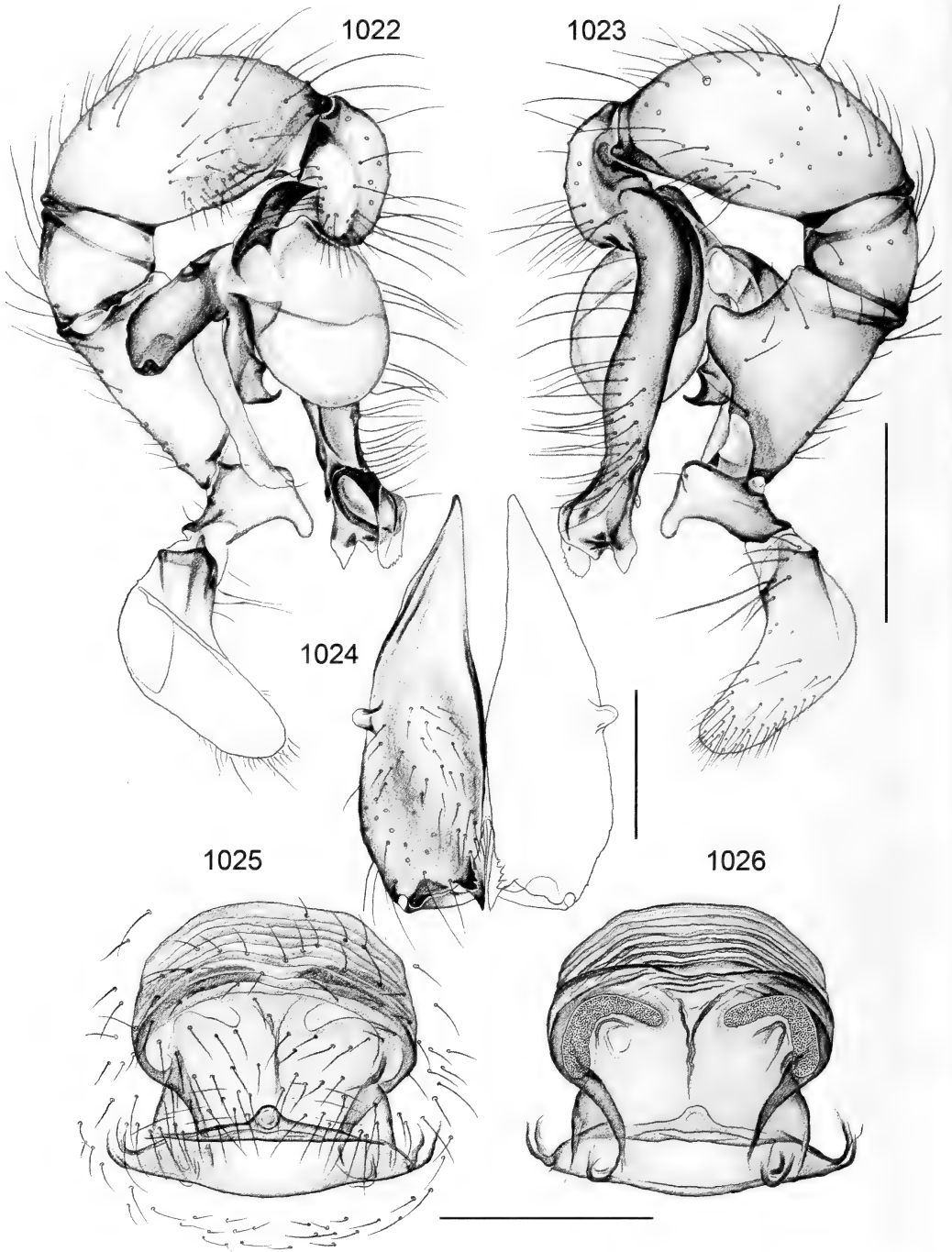


FIG. 1022-1026. *Pholcus bakweri*. 1022, 1023. Left male palp, prolateral and retrolateral views. 1024. Male chelicerae, frontal view. 1025, 1026. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1022, 1023, 1025, 1026), 0.3 (1024).

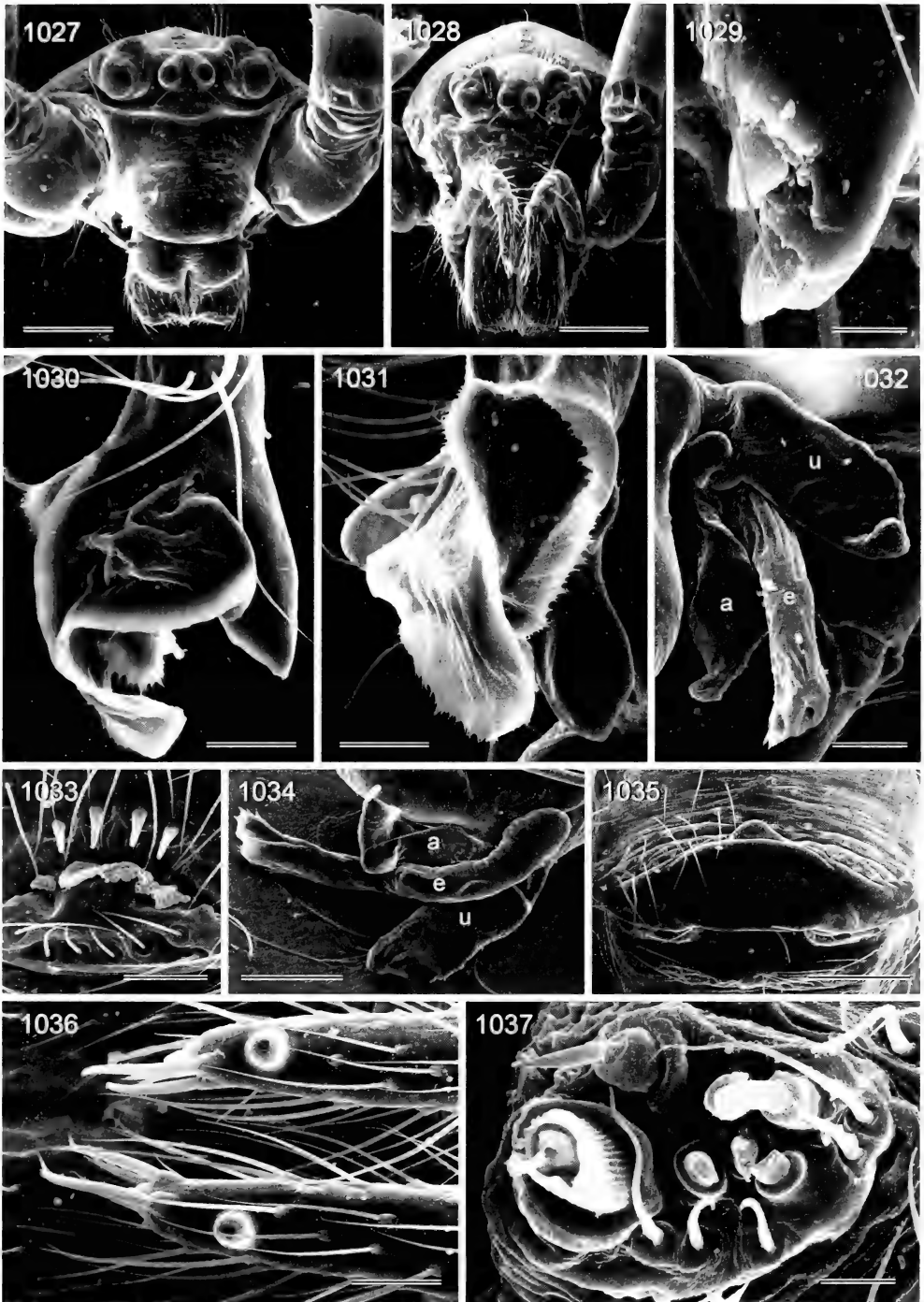


FIG. 1027-1037. *Pholcus bakweri*. 1027, 1028. Male and female prosomata, frontal views. 1029. Male distal cheliceral apophysis. 1030. Left procurus, retrolateral view. 1031. Right procurus, prolateral view. 1032. Right bulbal processes, prolateral view. 1033. Male gonopore. 1034. Left bulbal processes. 1035. Epigynum. 1036. Female palpal tarsi, dorsal view. 1037. Female ALS. Scale lines: 400  $\mu\text{m}$  (1027, 1028), 200  $\mu\text{m}$  (1034, 1035), 100  $\mu\text{m}$  (1032), 60  $\mu\text{m}$  (1030, 1031, 1036), 50  $\mu\text{m}$  (1033), 10  $\mu\text{m}$  (1029, 1037).



poorly visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1033).

*Variation.* Tibia 1 in 18 other males: 7.0-9.1 (mean 8.5); in some males sternum also anteriorly darker.

*Female.* In general similar to male but ocular area less elevated and triads closer together (Fig. 1028, distance PME-PME 250  $\mu$ m). Tibia 1 in 25 females: 6.0-7.6 (mean 6.7). Epigynum largely weakly sclerotized, often strongly protruding, with narrow sclerotized plate with small anterior 'knob' (Figs. 936, 1025, 1035); internal genitalia as in Figs. 937 and 1026. ALS with seven spigots each (Fig. 1037).

*Distribution.* Known from southwestern Cameroon and Bioko, Equatorial Guinea (Fig. 987).

*Material examined.* CAMEROON: *Southwest Province:* Fako Div., Mt. Cameroon, Mann's spring: ♂ holotype above; same data, 8♂8♀ in CAS; same data, 13♂18♀ in USNM.

EQUATORIAL GUINEA: *Bioko:* Moca (3°22.0'N, 8°39.9'E), ca. 1500 m a.s.l., beating and sweeping foliage, 6.-10.x.1998 (D.K. Dabney, D. Ubick), 3♂4♀ in CAS; same locality at 3°21.8'N, 8°39.9'E, ca. 1400 m a.s.l., at night, 4.-9.x.1998 (D.K. Dabney, D. Ubick), 1♀ in CAS; same data but 2.-10.x.1998, beating and sweeping foliage, 1♀ in CAS; same locality, 1.-11.x.1998 (M. Boko, D.K. Dabney, R.C. Drewes, L. Henwood, M.P. Ndung, R.W. Tomos, D. Ubick, J.V. Vindum), 1♀ in CAS. Pico Basilé (3°36.1'N, 8°46.6'E), ca. 2300 m a.s.l., 26. ix.1998 (M. Boko, D.K. Dabney, R.C. Drewes, L. Henwood, M.P. Ndung, R.W. Tomos, D. Ubick, J.V. Vindum), 1♀ 1 juv. in CAS; same locality, beating foliage, 26.-27.ix.1998 (D.K. Dabney, D. Ubick), 1♂ 1 juv. in CAS; Pico Basilé (3°37.6'N, 8°48.3'E), ca. 1750 m a.s.l., at night, 27.-29.ix.1998 (D.K. Dabney, D. Ubick), 1♀ in CAS.

*Pholcus nkoetye* n. sp.

Figs. 917, 918, 938, 939, 1038-1042

*Type.* Male holotype from Cameroon, South Region, near Ebolowa, Nkoetye (2°51.4'N, 11°21.7'E), 700 m a.s.l., underside of leaf, 12.iv.2009 (B.A. & J.C. Huber) in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by morphology of male palp (Figs. 1038, 1039; shapes of trochanter apophysis, procurus, and uncus; absence of appendix), by male cheliceral armature (Fig. 1040), and female genitalia (Figs. 938, 1041).

*Male* (holotype). Total body length 3.2 (with clypeus 3.5), carapace width 0.95. Leg 1: 27.6 (6.5 + 0.4 + 6.6 + 12.3 + 1.8), tibia 2: 4.1, tibia 3: 2.5, tibia 4: 3.9; tibia 1 L/d: 79. Habitus as in Figs. 917 and 918. Carapace whitish with pair of brown marks posteriorly, ocular area darkened around eye triads only, clypeus slightly darkened, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints black, femora subproximally reddish-brown, abdomen ochre-gray with some dark marks dorsally. Distance PME-PME 250  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 35  $\mu$ m. Ocular area slightly elevated, few longer hairs on posterior side, each triad on short stalk directed laterally. No thoracic furrow, clypeus with distinctive pair of weakly sclerotized frontal processes, ~0.14 long. Chelicerae with distinctive pair of proximal apophyses and pair of small distal apophyses, apparently without modified hairs (Fig. 1040). Sternum wider than long (0.65/0.50), unmodified. Palps as in Figs. 1038 and 1039, coxa unmodified, trochanter with distinctive retrolatero-ventral apophysis, femur widened distally, procurus complex distally, with membranous and sclerotized elements, bulb with heavily sclerotized uncus, weakly sclerotized embolus with semitransparent branch, without appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with >20 pseudosegments but only distally ~10 fairly distinct.

*Variation.* Tibia 1 other male: 7.2; this male has also large white spots dorsally on the abdomen (in addition to the black marks).

*Female.* In general similar to male but triads closer together (distance PME-PME 170  $\mu$ m) and not on stalks; tibia 1: 5.2. Epigynum very simple externally, rectangular, weakly sclerotized, only posteriorly slightly darker, without 'knob' (Figs. 938, 1041); internal genitalia as in Figs. 939 and 1042.

*Distribution.* Known from type locality only (Fig. 987).

*Material examined.* CAMEROON: *South Region:* near Ebolowa, Nkoetye: ♂ holotype above; same data, 1♂1♀ in ZFMK.

*Pholcus guineensis* species group

*Diagnosis.* Large, long-legged West African *Pholcus* (body length ~6.0-8.5, leg 1: ~40-75); distinguished from other species groups in *Pholcus* by the combina-



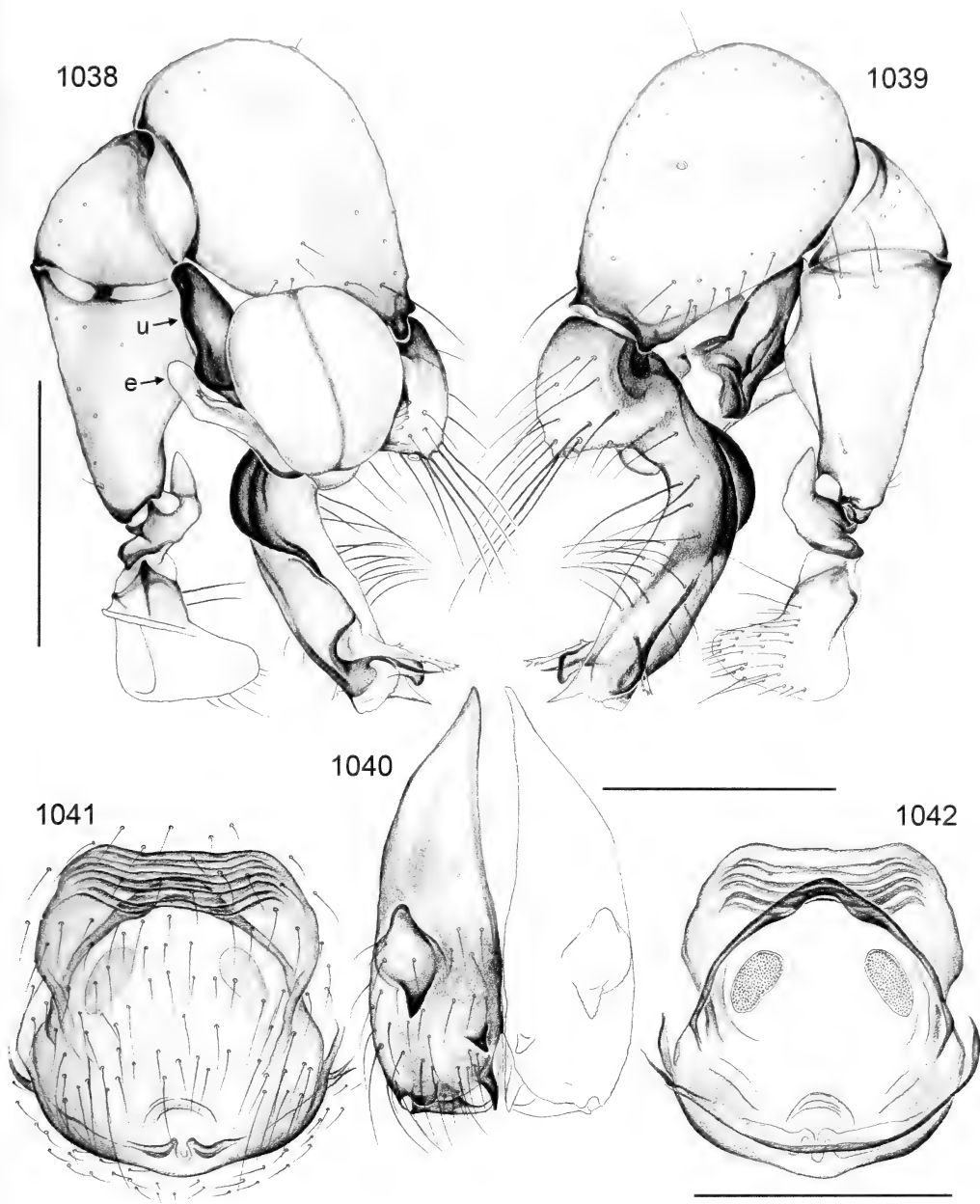


FIG. 1038-1042. *Pholcus nkoetye*. 1038, 1039. Left male palp, prolateral and retrolateral views. 1040. Male chelicerae, frontal view. 1041, 1042. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1038, 1039, 1041, 1042), 0.3 (1040).

tion of the following characters: distinctive ventral cuticular color pattern on elongate abdomen (two large marks with narrow connection; Figs. 1044,

1049, 1052), eight eyes, male chelicerae with proximal and distal apophyses, procurus without dorsal spines, sclerotized epigynum with 'knob'.

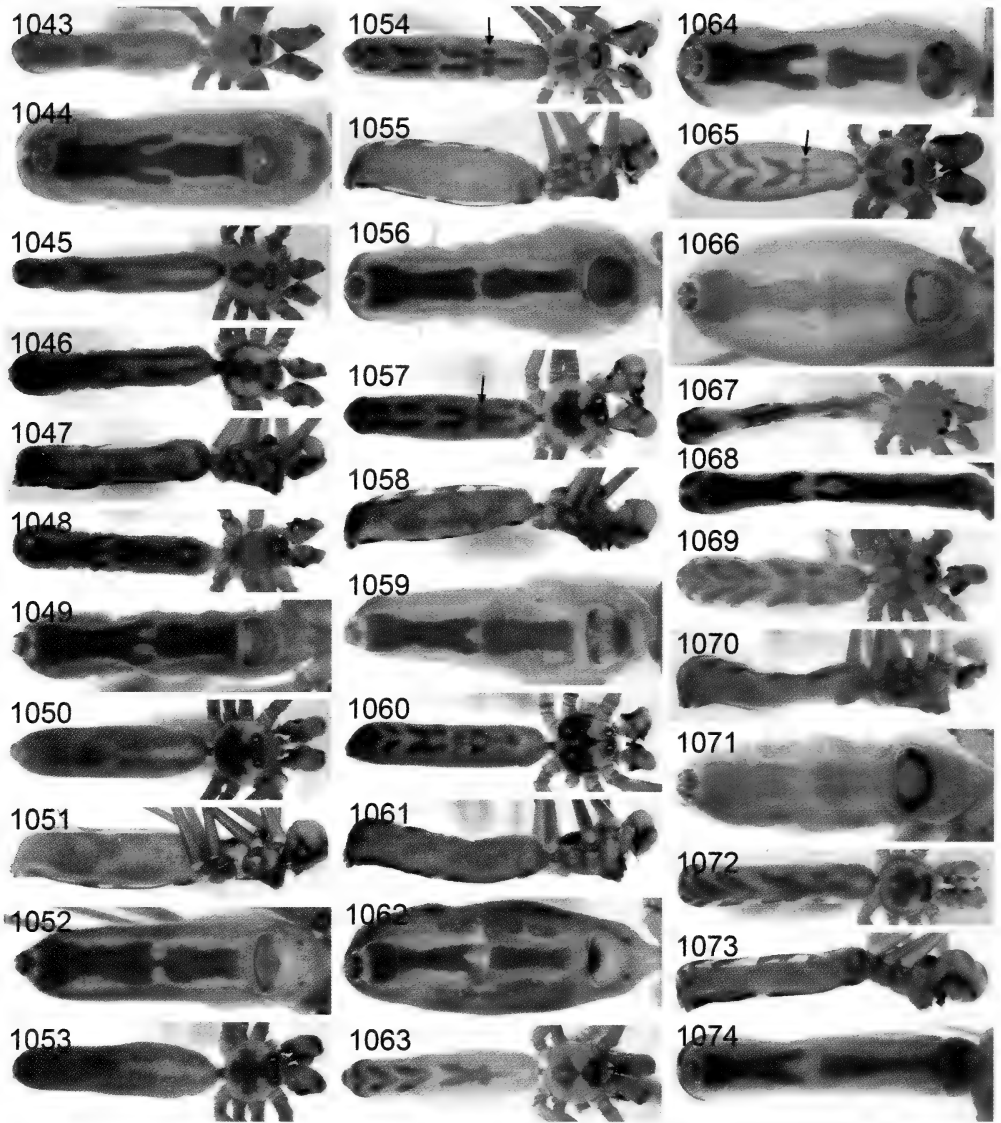


FIG. 1043-1074. *Pholcus guineensis* and *Ph. lamperti* species groups, habitus. 1043, 1044. *Ph. guineensis*, male, dorsal view; female abdomen, ventral view. 1045. *Ph. kindia*, male, dorsal view. 1046-1049. *Ph. doucki*, male, dorsal, lateral, and ventral views; female abdomen, ventral view. 1050-1052. *Ph. bourgini*, male, dorsal and lateral views; female abdomen, ventral view. 1053. *Ph. chattoni*, male, dorsal view. 1054-1056. *Ph. lamperti*, male, dorsal and lateral views; female abdomen, ventral view. 1057-1059. *Ph. fagei*, male, dorsal and lateral views; female abdomen, ventral view. 1060-1062. *Ph. taita*, male, dorsal and lateral views; female abdomen, ventral view. 1063, 1064. *Ph. amani*, male dorsal view; female abdomen, ventral view. 1065, 1066. *Ph. mazumbai*, male dorsal view; female abdomen, ventral view. 1067, 1068. *Ph. kihansi*, male dorsal view; female abdomen, ventral view. 1069-1071. *Ph. lupanga*, male, dorsal and lateral views; female abdomen, ventral view. 1072-1074. *Ph. wabehe*, male, dorsal and lateral views; male abdomen, ventral view. Arrows point at distinctive element of dorsal abdominal pattern.

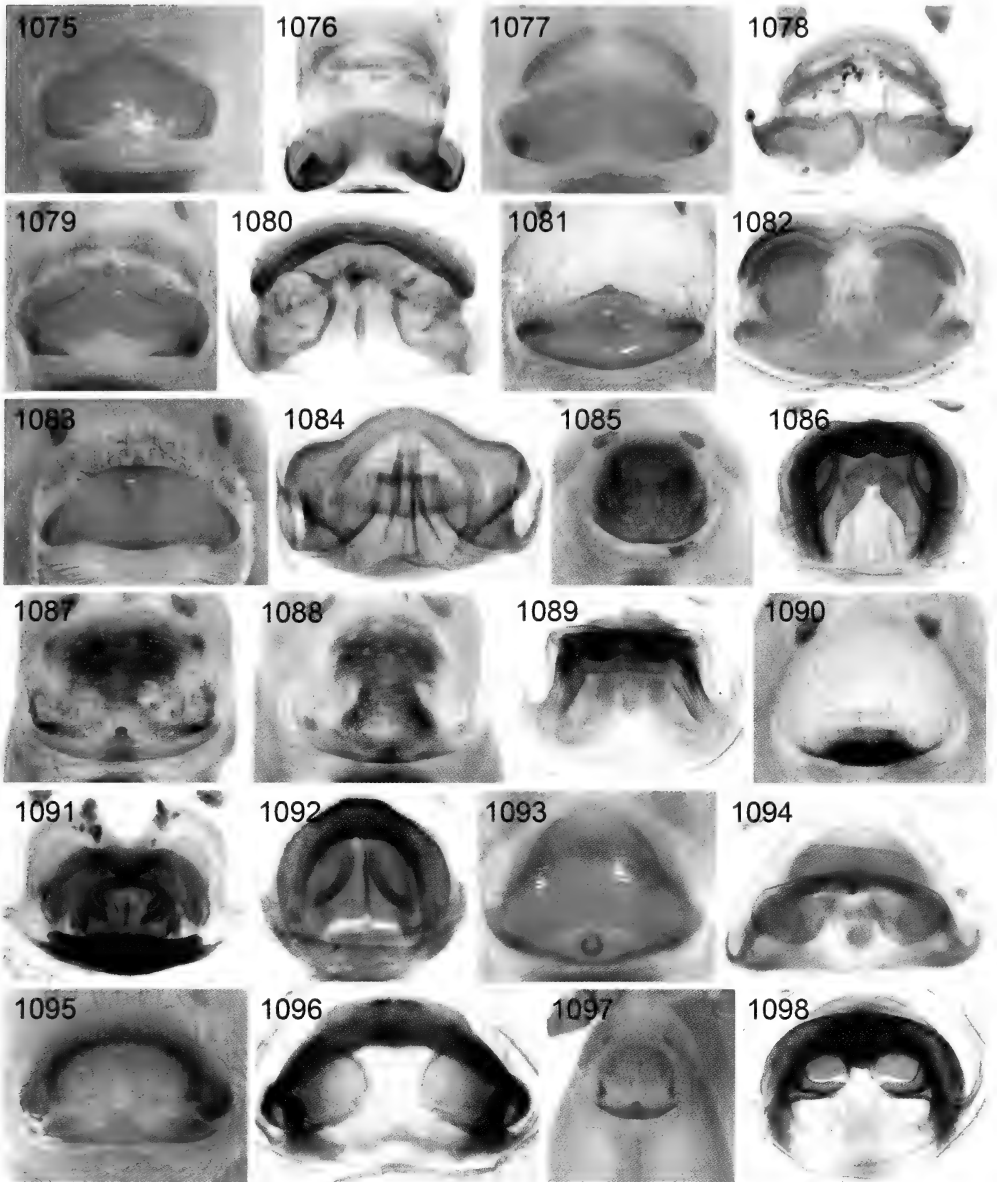


FIG. 1075-1098. *Pholcus guineensis* and *Ph. lamperti* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 1075, 1076. *Ph. guineensis*. 1077, 1078. *Ph. kindia*. 1079, 1080. *Ph. doucki*. 1081, 1082. *Ph. bourgini*. 1083, 1084. *Ph. chattoni*. 1085, 1086. *Ph. lamperti*. 1087-1089. *Ph. fagei*, females from Shimba Hills (1087), Arabuko (1088), and Shimoni caves (1089). 1090, 1091. *Ph. taita*. 1092. *Ph. amani*. 1093, 1094. *Ph. kibansi*. 1095, 1096. *Ph. lupanga*. 1097, 1098. *Ph. mazumbai*.

*Description.* Body length ~6.0-8.5, carapace width ~1.5-2.2. AME always present, triads on low elevations. Clypeus and sternum unmodified, male chelicerae with proximal and distal apophyses, distal apophyses provided with modified hairs. Male palpal coxa unmodified, trochanter with small retrolatero-ventral apophysis, femur simple, widening ventrally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines. Male bulb either with uncus and appendix (*Ph. bourgini*, *Ph. chattoni*), or only with appendix (*Ph. guineensis*, *Ph. kindia*, *Ph. doucki*), with weakly sclerotized embolus. Legs long, tibia 1 in males ~9.5-19.0, tibia 1 L/d ~60-80, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3-4%. Abdomen cylindrical, with distinctive ventral cuticular color pattern (two large marks with narrow connection; Figs. 1044, 1049, 1052), male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and variable number of cylindrically-shaped spigots (two in *Ph. doucki* and *Ph. chattoni*, five in *Ph. bourgini*, unknown in other species), PMS with two small spigots.

Sexual dimorphism slight, female chelicerae unmodified, body size as in males, legs slightly shorter (tibia 1:~8-15). Epigynum sclerotized with 'knob', internal genitalia with pair of pore-plates of variable shape.

*Monophyly.* The species included share the distinctive pattern ventrally on the abdomen (char. 15; two large marks with narrow connection; Figs. 1044, 1049, 1052).

*Relationships.* The *Ph. guineensis* group has great superficial similarity with the East African *lamperti* group but no synapomorphies are known to link the two groups, or to suggest a closer relationship of the *Ph. guineensis* group with any other species group within true *Pholcus* (Fig. 26). *Pholcus guineensis* shares some intriguing similarities with *Ph. leruthi* (male chelicerae without frontal proximal apophyses, reduced uncus, long internal female genitalia, reduced number of ALS spigots), but each species seems to be more closely related with other species that do not share at least some of these similarities.

Within the *guineensis* group, *Ph. chattoni* and *Ph. bourgini* share the highly enlarged frontal male cheliceral processes (char. 19). Further similarities may not be derived (ventral bulge on male palpal femur,

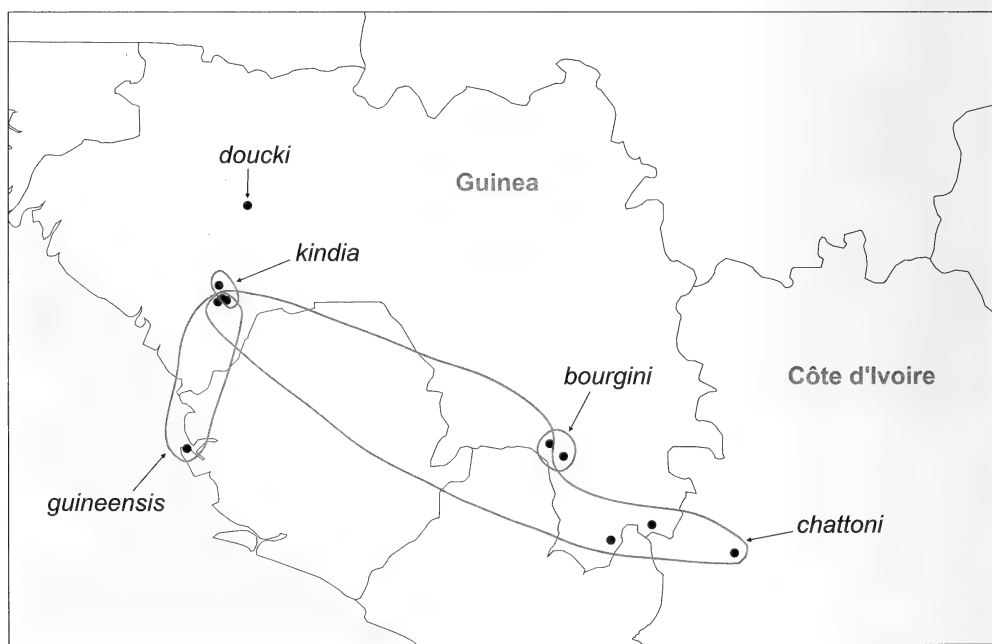


FIG. 1099. Known distribution of the *Pholcus guineensis* species group.

shape of appendix). The other three species (*Ph. guineensis*, *Ph. kindia*, *Ph. doucki*) have very similar procursi and share the reduction of the uncus and apparently also the reduction of proximal frontal modifications on the male chelicerae.

*Natural history.* The species for which data are available occur in caves, among large rocks in forests (Fig. 17), between buttresses and in similar protected spaces near the ground. They build large domed sheets (Fig. 19) and either hang from the apex of the dome or rest closely attached to the nearby rock or tree surface.

*Distribution.* The *Ph. guineensis* group is restricted to tropical West Africa, from Guinea to Côte d'Ivoire (Fig. 1099).

*Composition.* The *Ph. guineensis* group includes five species; of these, two are newly described below, the other three are redescribed: *Ph. guineensis* Millot, 1941; *Ph. kindia* n. sp.; *Ph. doucki* n. sp.; *Ph. bourgini* Millot, 1941; *Ph. chattoni* Millot, 1941.

*Pholcus guineensis* Millot, 1941

Figs. 1043, 1044, 1075, 1076, 1100-1106

*Pholcus guineensis* Millot 1941: 5-8, figs. 2A-I [specimens from Kindia and figs. 2J and 2bis: see *Ph. kindia* below].

*Types.* Male lectotype (designated herein) and 5♀ paralectotypes from Guinea, Kindia Region, "Grotte de Tassacouré" (near Kindia: ~10.0°N, 12.9°W), vii.1937 (J. Millot), in MNHN (10206, 10201), examined.

*Note.* The male from "Grotte de Tassacouré" lacks both palps. I nevertheless designate this specimen lectotype for three reasons: first, this is the male on which Millot's (1941) description is largely based while the other male (from Kindia) is only briefly mentioned as a variant. Second, the male from Kindia (which is here assigned to a different species) was found in a vial together with (and separated from) the male syntype of *Ph. chattoni* from Man, Côte d'Ivoire (see below), introducing some doubt as to its identity. Finally, females in this species group are more difficult to separate than males.

*Diagnosis.* Easily distinguished from most congeners by absence of uncus (Fig. 1100, 1106) and by ventral abdominal pattern (Fig. 1044); from similar species (*Ph. kindia*, *Ph. doucki*), by shapes of appendix (Fig. 1106) and female genitalia (long pore plates, Fig. 1105).

*Male* (Freetown). Total body length 6.1, carapace width 1.55. Leg 1: 42.1 (10.2 + 0.7 + 10.2 + 18.4 + 2.6), tibia 2: 6.8, tibia 3: 4.5, tibia 4: 6.7, tibia 1L/d: 61. Habitus as in Fig. 1043. Carapace ochre with brown median mark, ocular area also brown, clypeus slightly darkened, sternum light brown to orange, legs light brown, tips of femora and tibiae whitish, patella area and tibia-metatarsus joints slightly darkened, abdomen pale gray with indistinct brown cuticular pattern dorsally and postero-laterally, ventrally with distinct cuticular pattern (cf. female, Fig. 1044). Distance PME-PME 370 µm, diameter PME 150 µm, distance PME-ALE 35 µm, distance AME-AME 45 µm, diameter AME 85 µm. Ocular area elevated, each triad on short hump directed laterally, with some stronger hairs posteriorly on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1103, distal apophyses with two modified hairs each. Sternum wider than long (0.95/0.80), unmodified. Palps as in Figs. 1100 and 1101, coxa unmodified, trochanter with short rounded retro-latero-ventral apophysis, femur widened ventrally, procurrus rather simple except distally, bulb elongate, without uncus, embolus mostly weakly sclerotized (especially distally), appendix distinctive (Fig. 1106). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 21 other males 9.0-10.9 (mean 10.1; lectotype: 10.9).

*Female.* In general similar to male but triads closer together (distance PME-PME 240 µm). Tibia 1 in 26 females: 8.0-10.7 (mean 9.2; female paralectotypes: 8.9-10.7). Epigynum an orange plate with triangular light area posteriorly, internal structures weakly visible through cuticle anteriorly (Figs. 1075, 1104); internal genitalia as in Figs. 1076 and 1105.

*Distribution.* Known from Guinea and Sierra Leone (Fig. 1099).

*Material examined.* GUINEA: *Kindia Region*: "Grotte de Tassacouré", ♂ lectotype and 5♀ paralectotypes above.

SIERRA LEONE: Freetown, Fourah Bay college, Mount Aureol [8°29.0'N, 13°13.2'W], botanical garden, v.-vi.1977 (D. Olu-Pitt), 8♂11♀ in MRAC (separated from 159145); Mount Aureol, ix.1976 (D. Olu-Pitt), 6♂2♀ in MRAC (148460, 148478); Freetown, xi.1974 and i.1977 (D. Olu-Pitt), 8♂10♀ in MRAC (separated from 146489 and 148530).

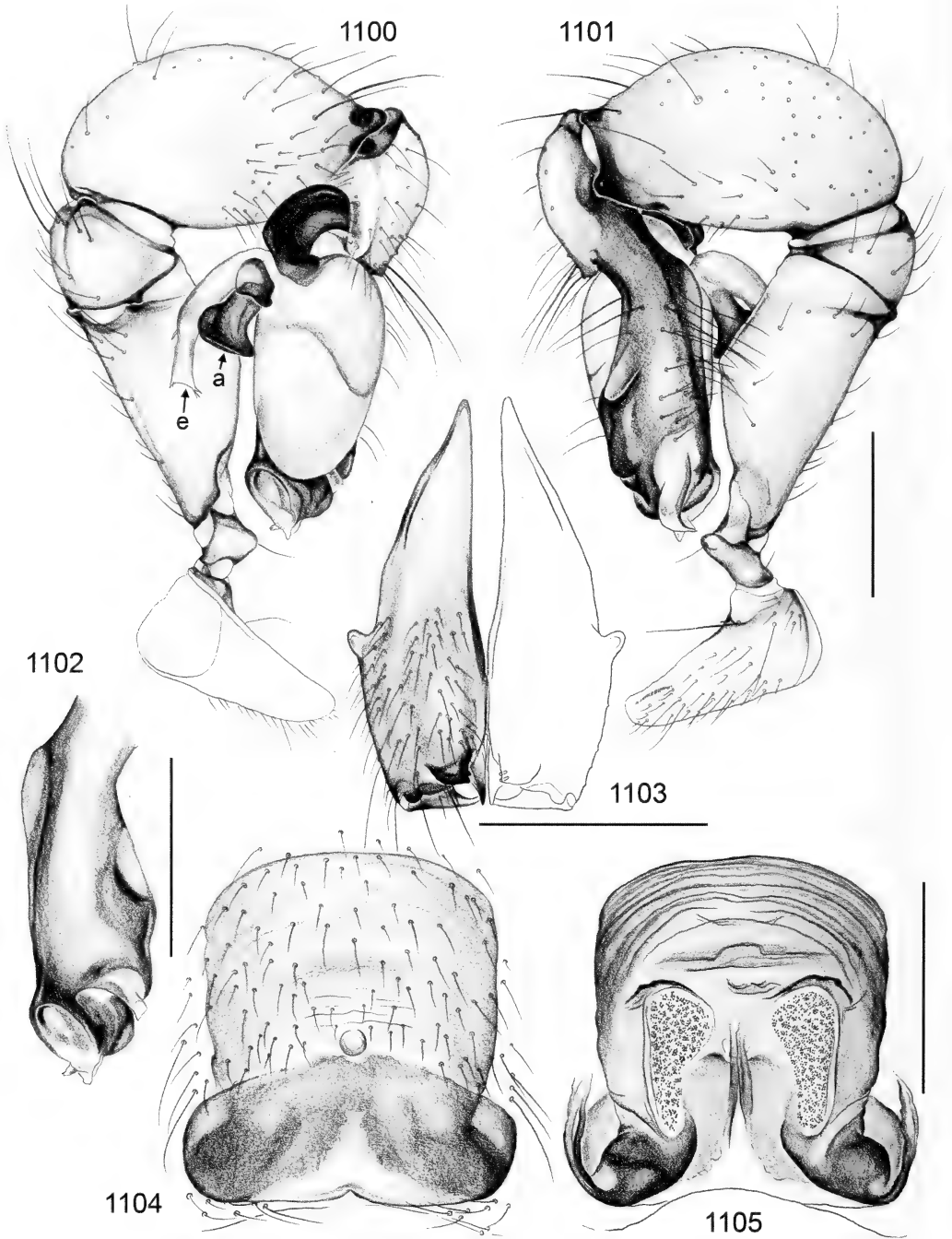


FIG. 1100-1105. *Pholcus guineensis*. 1100, 1101. Left male palp, prolateral and retrolateral views. 1102. Left procurus, prolateral view. 1103. Male chelicerae, frontal view. 1104, 1105. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Pholcus kindia* n. sp.

Figs. 1045, 1077, 1078, 1107-1109

"*Pholcus guineensis*" (misidentification): Millot 1941: figs. 2J, 2bis (only the specimens from Kindia).

*Type*. Male holotype from Guinea, Kindia Region, near Kindia (10°00.8'N, 12°48.6'W), along brook in plantation forest, 540 m a.s.l., 5.xii.2008 (B.A. Huber), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Easily distinguished from most congeners by absence of unculus (Fig. 1107) and ventral abdominal pattern (similar to *Ph. guineensis*; cf. Fig. 1044); from similar species (*Ph. guineensis*, *Ph. doucki*) by shape of appendix (Fig. 1107) and female genitalia with median light area (Figs. 1077, 1108).

*Male* (holotype). Total body length 6.7, carapace

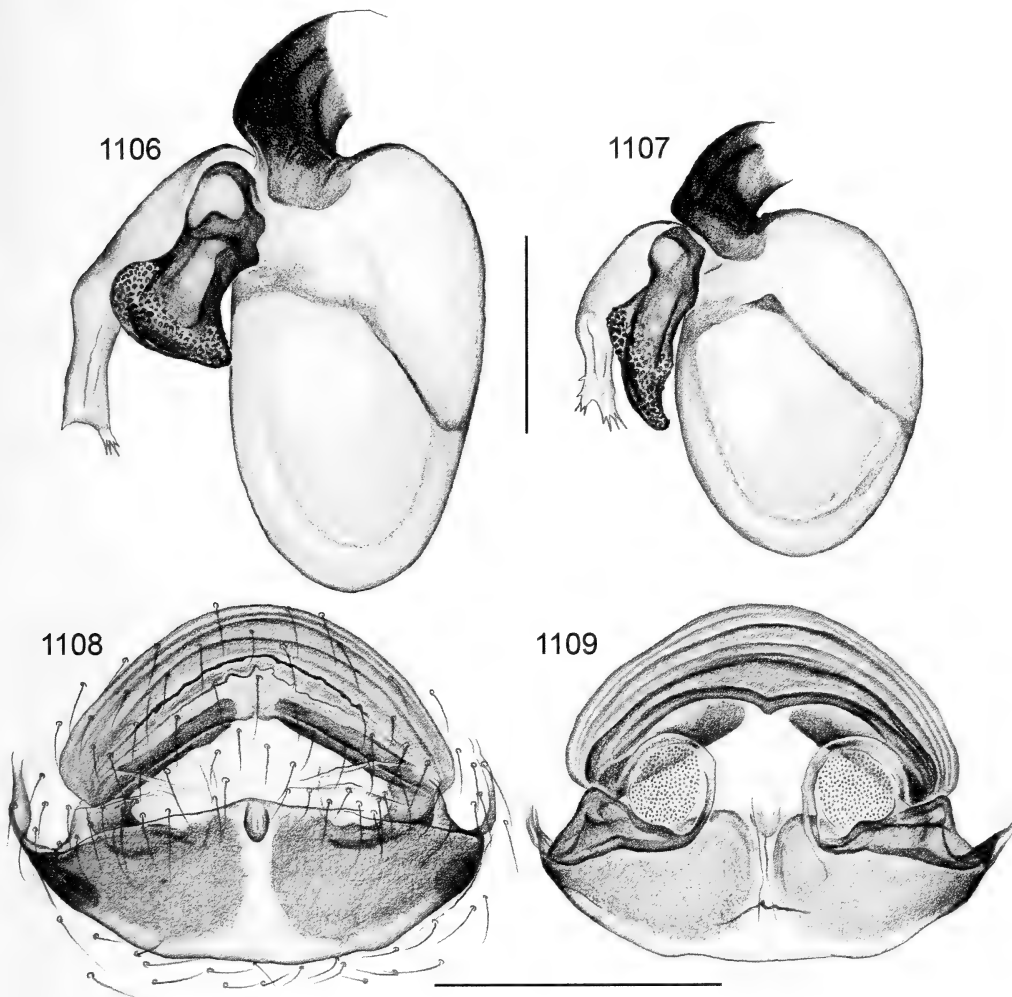


FIG. 1106-1109. *Pholcus guineensis* (1106) and *Ph. kindia* (1107-1109). 1106, 1107. Left genital bulbs, prolateral views, at same scale. 1108, 1109. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1108, 1109), 0.3 (1106, 1107).

width 1.65. Leg 1: 48.4 (11.9 + 0.7 + 11.8 + 20.9 + 3.1), tibia 2: 7.8, tibia 3: 5.4, tibia 4: 7.5, tibia 1L/d: 63. Habitus as in Fig. 1045. Carapace pale ochre with brown median mark divided medially by light area, ocular area and clypeus slightly darkened, sternum red-brown, legs ochre-yellow with darker rings on femora and tibiae subdistally and in patella area, tips of femora and tibiae whitish, abdomen ochre-gray, dorsally and laterally with many internal spots visible through cuticle, ventrally with distinct cuticular pattern. Distance PME-PME 335  $\mu$ m, diameter PME 175  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 70  $\mu$ m. Ocular area elevated, each triad on short hump directed laterally, with some stronger hairs posteriorly on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. guineensis* (cf. Fig. 1103). Sternum wider than long (1.0/0.8), unmodified. Palps in general very similar to *Ph. doucki* (cf. Figs. 1110, 1111), procurus rather like in *Ph. guineensis* (without dorsal protrusion) but smaller, bulb more globular and appendix clearly different in shape (Fig. 1107). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally -10 fairly distinct.

*Variation.* Tibia 1 in 44 other males 9.4-12.9 (mean 11.6). Some males also with cuticular pattern dorsally on abdomen like *Ph. guineensis*.

*Female.* In general similar to male but triads closer together (distance PME-PME 220  $\mu$ m). Tibia 1 in 34 females: 8.6-11.5 (mean 9.8). Epigynum similar to *Ph. guineensis* and *Ph. doucki*, but genital plate narrower and clearly divided into two halves by median light area (Figs. 1077, 1108); pair of internal sclerites visible through cuticle anteriorly; internal genitalia as in Figs. 1078 and 1109.

*Distribution.* Known from Kindia Region, Guinea, only (Fig. 1099).

*Material examined.* GUINEA: *Kindia Region:* near Kindia: ♂ holotype above; same data, 22♂15♀ in ZFMK; near Koumbaya (10°10.3'N, 12°53.3'W), forest, 220 m a.s.l., 19.xi.2008 (B.A. Huber), 24♂22♀ in ZFMK; Kindia, vii.1937 (J. Millot), 1♂4♀ 1 juv. in MNHN (AR 10193, male separated from AR 10192, see Note below).

*Note.* Millot's (1941) male from Kindia was found in a vial together with (and separated from) the male paratype of *Ph. chattoni* from Man, Côte d'Ivoire. Since it is morphologically indistinguishable from the

newly collected males from near Kindia, and since Millot reported on no other male *Pholcus* from Man except the single *Ph. chattoni* male, it seems a safe assumption that this male erroneously got into the *Ph. chattoni* vial.

*Pholcus doucki* n. sp.

Figs. 17, 1046-1049, 1079, 1080, 1110-1113, 1119-1123

*Type.* Male holotype from Guinea, Kindia Region, near Doucki, canyon (10°59.6'N, 12°35.3'W), 1020 m a.s.l., 24.xi.2008 (B.A. Huber), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by absence of uncus (Fig. 1110) and ventral abdominal pattern (Fig. 1049); from similar species (*Ph. guineensis*, *Ph. kindia*) by shape of appendix (Fig. 1110), procurus with dorsal protrusion (Fig. 1111), and female genitalia (transversal ridges, Figs. 1079, 1112).

*Male* (holotype). Total body length 7.1, carapace width 1.75. Leg 1: 53.4 (12.9 + 0.8 + 12.9 + 23.6 + 3.2), tibia 2: 8.1, tibia 3: 5.7, tibia 4: 8.0, tibia 1L/d: 63. Habitus as in Figs. 1046-1048. Carapace pale ochre with brown median mark and lateral bands, ocular area and clypeus slightly darkened, sternum red-brown, legs ochre-yellow with darker rings on femora and tibiae subdistally and in patella area, tips of femora and tibiae whitish, abdomen ochre-gray, dorsally and laterally with many internal spots visible through cuticle, ventrally with distinct cuticular pattern (cf. female, Fig. 1049). Distance PME-PME 440  $\mu$ m, diameter PME 170  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area elevated, each triad on short hump directed laterally, with some stronger hairs posteriorly on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. guineensis* (cf. Fig. 1103), distal apophyses with two modified hairs each (Fig. 1120). Sternum wider than long (1.2/1.0), unmodified. Palps as in Figs. 1110 and 1111, coxa unmodified, trochanter with very short retrolateral apophysis, femur widened ventrally, procurus with distinctive pointed sclerite distally and protrusion dorsally, bulb slightly elongate, embolus mostly weakly sclerotized (especially distally), appendix long, with many small scales, no uncus (Fig. 1123). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on



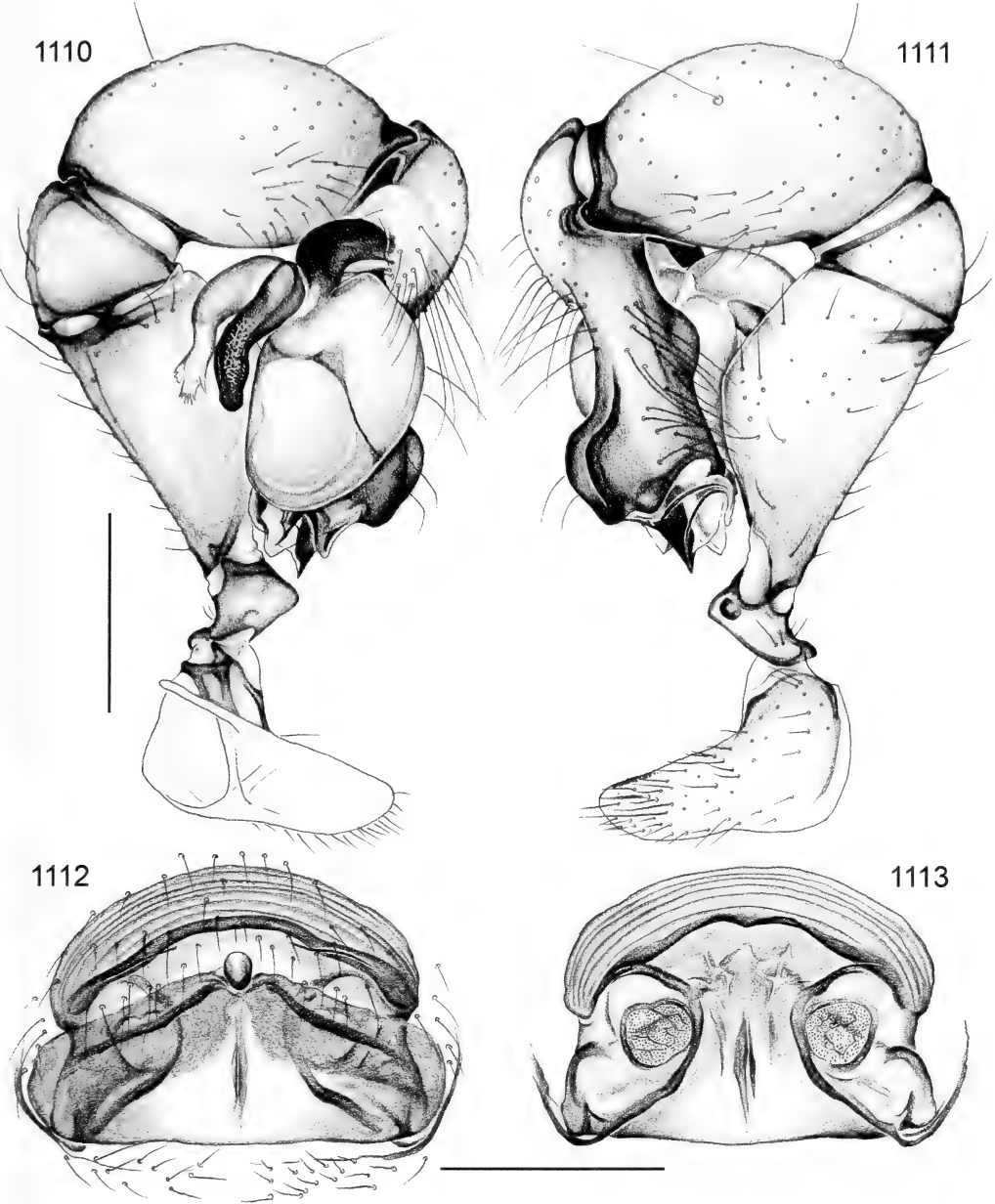


FIG. 1110-1113. *Pholcus doucki*. 1110, 1111. Left male palp, prolateral and retrolateral views. 1112, 1113. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

other tibiae; tarsal pseudosegments indistinct, only distally ~10 visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1122); ALS with only four spigots each (Fig. 1121).

*Variation.* Tibia 1 in 27 other males 11.2-13.6 (mean 12.7).

*Female.* In general similar to male but triads closer together (distance PME-PME 265  $\mu$ m). Tibia 1 in

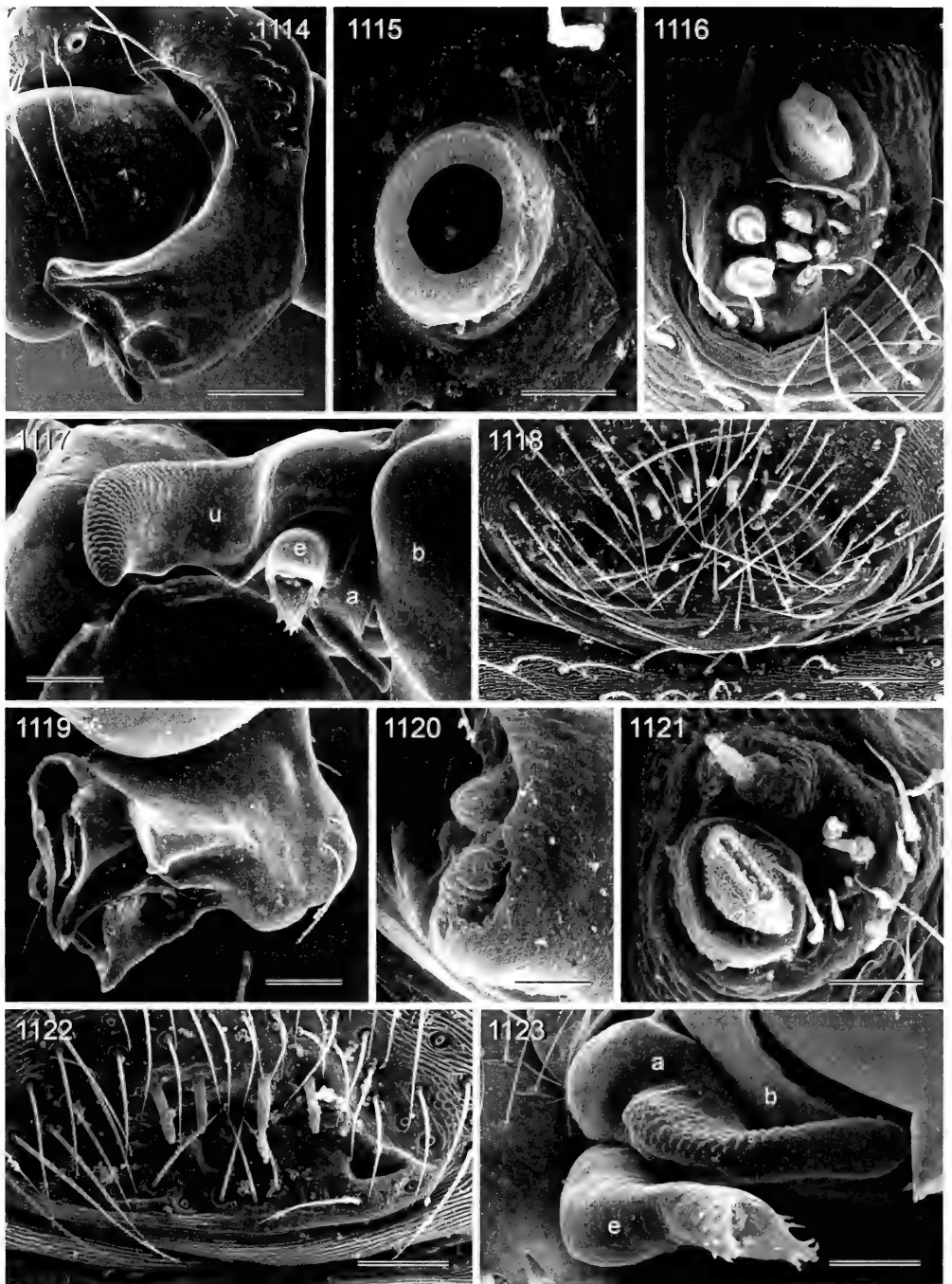


FIG. 1114-1123. *Pholcus batepa* (1114-1118) and *Ph. doucki* (1119-1123). 1114. Left procurus, retrolatero-distal view. 1115. Male palpal tarsal organ. 1116, 1121. Male ALS. 1117, 1123. Male bulbal processes. 1118, 1122. Male gonopores. 1119. Tip of left procurus, prolateral view. 1120. Distal male cheliceral apophysis. Scale lines: 200  $\mu\text{m}$  (1114), 100  $\mu\text{m}$  (1117, 1119), 80  $\mu\text{m}$  (1123), 60  $\mu\text{m}$  (1118, 1122), 20  $\mu\text{m}$  (1115, 1116, 1121), 10  $\mu\text{m}$  (1120).

13 females: 9.9-12.5 (mean 11.1). Epigynum very similar to *Ph. guineensis*, with pair of distinctive transversal ridges (Figs. 1079, 1112); internal arc visible through cuticle anteriorly; internal genitalia as in Figs. 1080 and 1113.

*Distribution.* Known from type locality only (Fig. 1099).

*Material examined.* GUINEA: *Kindia Region*: ♂ holotype above; same data, 30♂14♀ in ZFMK.

*Pholcus bourgini* Millot, 1941

Figs. 1050-1052, 1081, 1082, 1124-1138

*Pholcus bourgini* Millot 1941: 11-12, figs. 4A-I, 4bis.

*Types.* Male holotype and 1♂ paratype ("cotype") from Guinea, Nzérékoré Region, Macenta [-8°32'N, 9°28'W], viii.1937 (J. Millot), in MNHN (holotype without "AR" label; paratype AR 10238), examined.

*Diagnosis.* Easily distinguished from most congeners by male chelicerae with large frontal processes proximally (Fig. 1127); from similar *Ph. chattoni* by shapes of procurus and appendix (Figs. 1124-1126) and by female genitalia (Figs. 1081, 1128, 1129; shapes of pore plates and frontal arc).

*Male* (Forêt Classée de Zياما). Total body length 8.3, carapace width 2.2. Leg 1: 73.4 (17.7 + 0.9 + 18.0 + 32.7 + 4.1), tibia 2: 11.9, tibia 3: 8.4, tibia 4: 10.8, tibia 1L/d: 78. Habitus as in Figs. 1050 and 1051. Carapace ochre with large brown mark, ocular area with median brown band, clypeus not darkened, sternum light brown with lighter area (reddish) near coxae 2-4, legs brown, femora and tibiae subdistally dark brown, tips whitish, abdomen ochre gray with many dark internal marks dorsally and laterally, indistinct brown cuticular pattern dorsally and posteriorly-laterally, ventrally with distinct cuticular pattern (cf. female, Fig. 1052). Distance PME-PME 690 µm, diameter PME 220 µm, distance PME-ALE 90 µm, distance AME-AME 70 µm, diameter AME 95 µm. Ocular area elevated, many longer hairs posteriorly, each triad on short stalk directed laterally (Fig. 1130, longer than in *Ph. guineensis* and *Ph. chattoni*). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1127, with very large and distinctive proximal frontal apophyses (Fig. 1136; see also dorsal view in Millot 1941: fig. 4bis), distal apophyses with slender modified hairs (Fig. 1137). Sternum wider than long (1.4/1.2), unmodified. Palps as in Figs. 1124 and 1125, coxa unmodified, trochanter with small conical ventral projection and short rounded retrolateral apophysis (longer than appears in Fig. 1125), femur widened ventrally, with indistinct dorsal hump,

procurus distally curved inwards (similar to *Ph. chattoni* but with clearly different distal structures; Figs. 1132, 1133), bulb with uncus and appendix similar to *Ph. chattoni* (Fig. 1131), embolus with long transparent distal fringed process (Fig. 1134). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments but only distally ~10 fairly distinct. Gonopore with four epandrous spigots (Fig. 1138); ALS with seven spigots each (Fig. 1135).

*Variation.* Tibia 1 in 9 other males: 14.9-18.7 (mean 16.6). The cuticular pattern on the abdomen is very constant, but the internal spots vary from barely visible to very distinct. The types are strongly bleached but otherwise in fair condition; all legs 1 missing.

*Female.* In general similar to male but triads not on stalks and closer together (distance PME-PME 400 µm), entire ocular area dark brown. Tibia 1 in 6 females: 13.5-14.5 (mean 14.0). Epigynum a sclerotized plate with anterior 'knob' (Figs. 1081, 1128), entire epigynal area protruding; internal genitalia as in Figs. 1082 and 1129.

*Distribution.* Known from Nzérékoré Region, Guinea, only (Fig. 1099).

*Material examined.* GUINEA: *Nzérékoré Region*: Macenta: 2♂ types above; Forêt Classée de Zياما (8°24.2'N, 9°19.3'W), 640 m a.s.l., 2.xii.2008 (B.A. Huber), 11♂8♀ (+ 1♂1♀ in pure ethanol) in ZFMK.

*Pholcus chattoni* Millot, 1941

Figs. 1053, 1083, 1084, 1139-1161

*Pholcus chattoni* Millot 1941: 8-10, figs. 3A-K, 3bis.

*Types.* Male holotype ("type") and 1♂ paratype ("cotype") from Guinea, Nzérékoré Region, Macenta [-8°32'N, 9°28'W], viii.1937 (J. Millot), in MNHN (AR 10200, 10203); 1♀ paratype from Kindia Region, Kindia [-10°02'N, 12°51'W], vii.1937 (J. Millot), in MNHN (AR 10199); 1♂1♀ and several juvenile paratypes from Côte d'Ivoire, Man [-7°24'N, 7°33'W], ix.1937 (J. Millot), in MNHN (AR 10192, 10198); all types examined.

*Notes.* Millot (1941) did not publish type designations, but the males from Macenta are accompanied by original "type" and "cotype" labels and are thus considered holotype and paratype. The vial with the specimens from Man also included a male *Ph. kindia* (see Note under *Ph. kindia* description above).

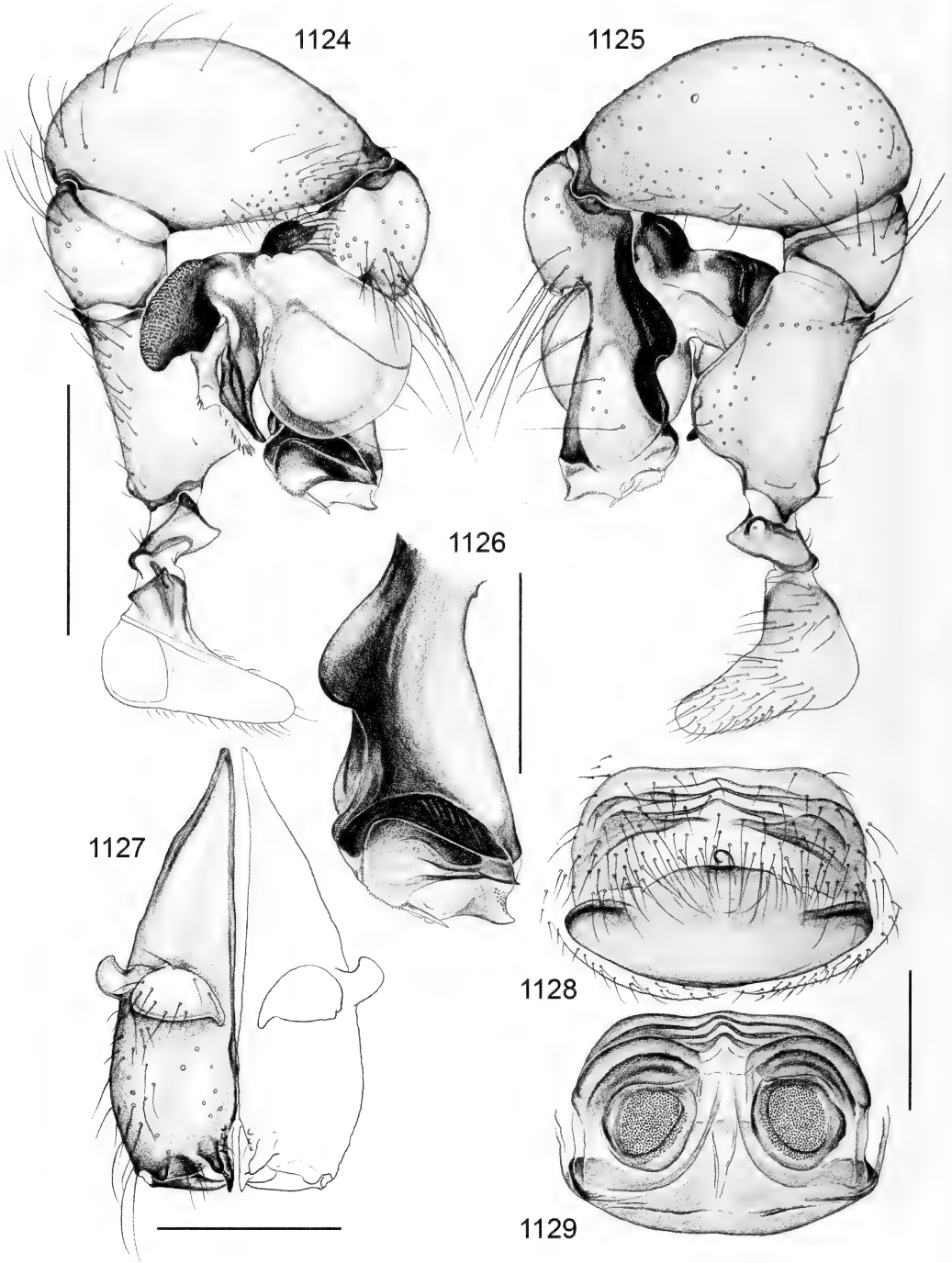


FIG. 1124-1129. *Pholcus bourgini*. 1124, 1125. Left male palp, prolateral and retrolateral views. 1126. Left procurus, prolateral view. 1127. Male chelicerae, frontal view. 1128, 1129. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1124, 1125), 0.5 (1126-1129).

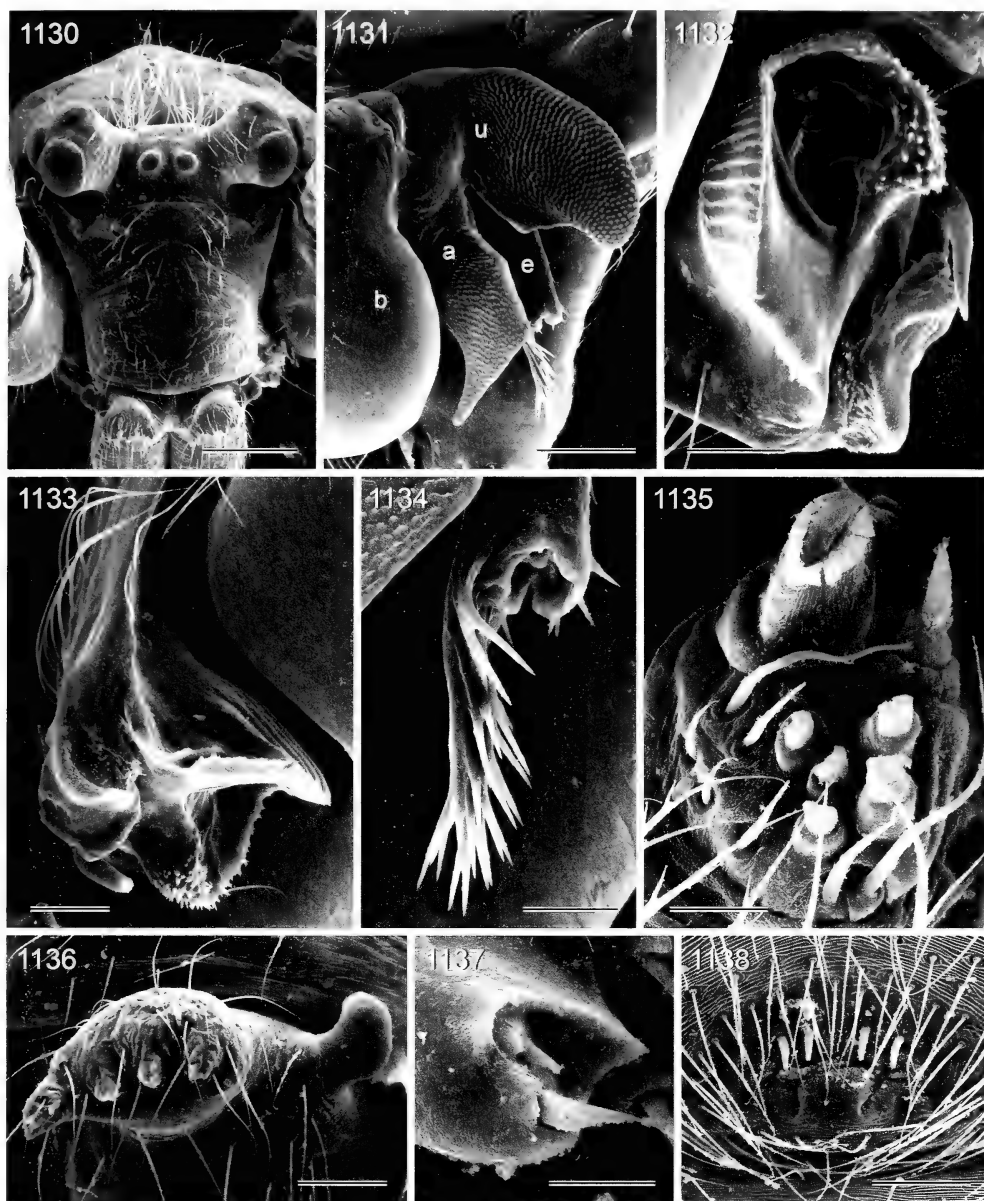


FIG. 1130-1138. *Pholcus bourgini*. 1130. Male prosoma, frontal view. 1131. Right bulbal processes, pro-lateral view. 1132, 1133. Tip of right procurus, distal and dorsal views. 1134. Tip of right embolus. 1135. Male ALS. 1136. Proximal male cheliceral apophyses. 1137. Distal male cheliceral apophysis. 1138. Male gonopore. Scale lines: 400  $\mu$ m (1130), 200  $\mu$ m (1131), 100  $\mu$ m (1132, 1133, 1136, 1138), 60  $\mu$ m (1134), 20  $\mu$ m (1135, 1137).

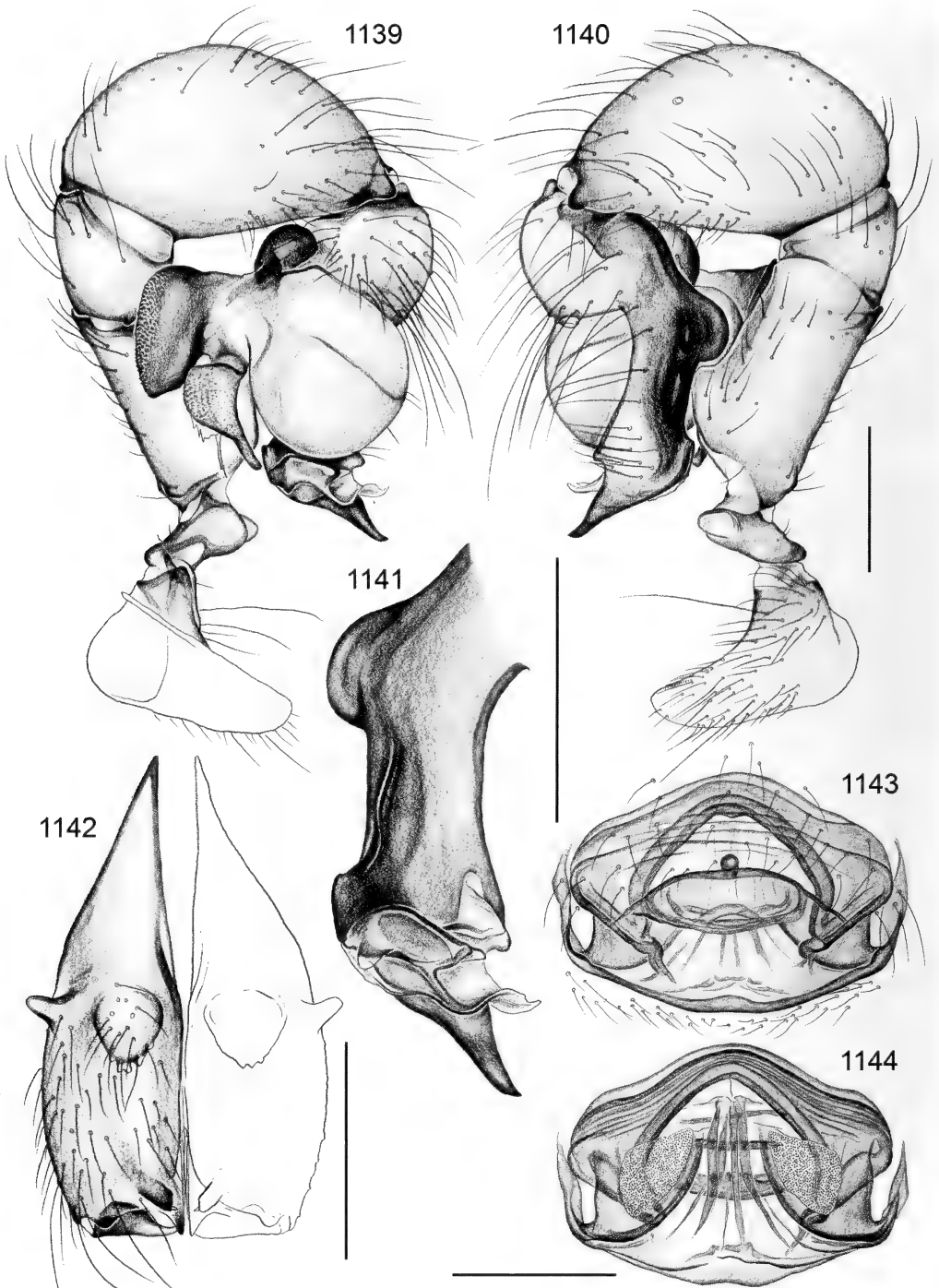


FIG. 1139-1144. *Pholcus chattoni*. 1139, 1140. Left male palp, prolateral and retrolateral views. 1141. Left procurus, prolateral view. 1142. Male chelicerae, frontal view. 1143, 1144. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



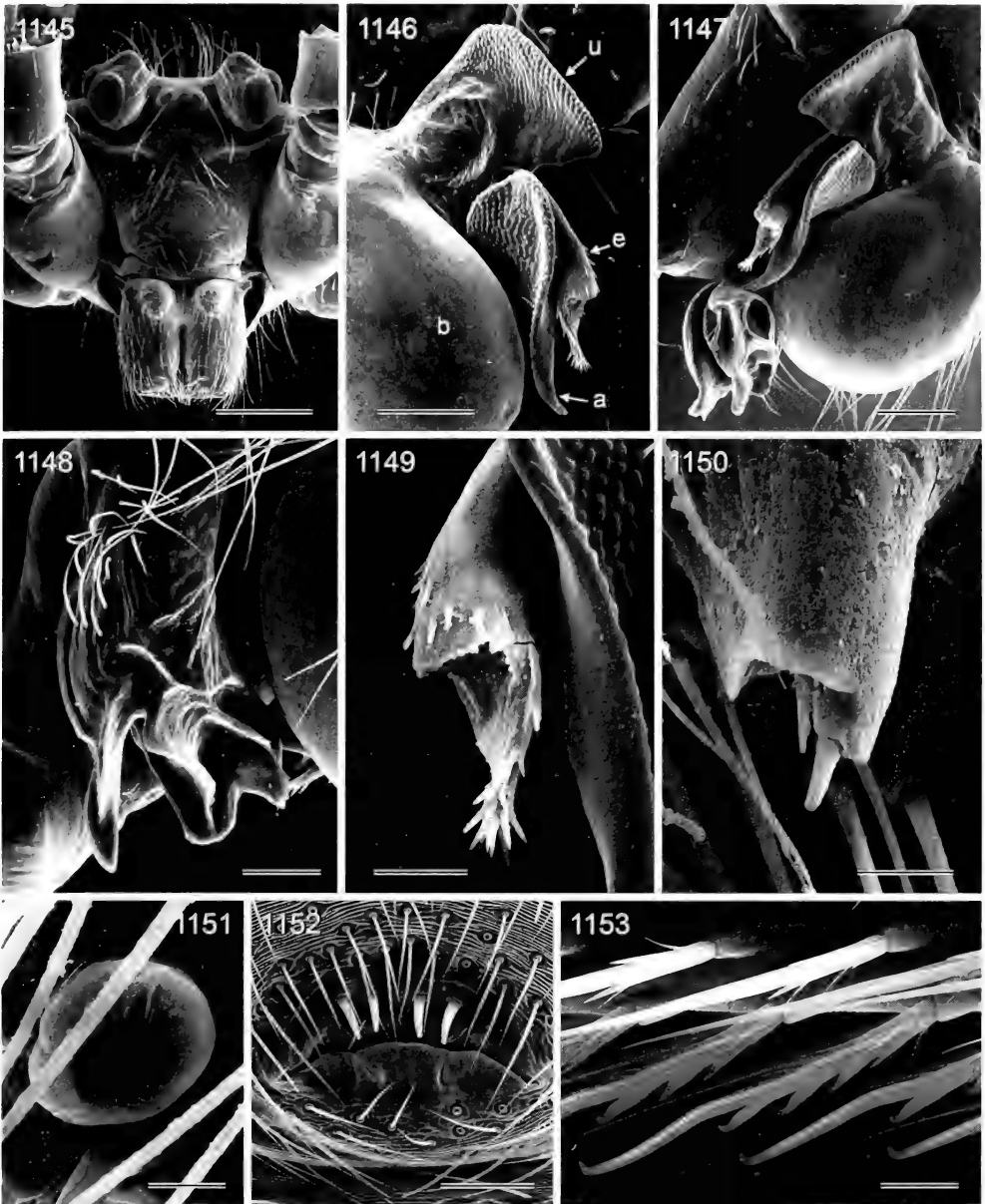


FIG. 1145-1153. *Pholcus chattoni*. 1145. Male prosoma, frontal view. 1146. Right bulbal processes, prolateral view. 1147. Left bulb, prolatero-dorsal view. 1148. Right procurrus, dorsal view. 1149. Left embolus tip. 1150. Distal male cheliceral apophysis. 1151. Male palpal tarsal organ. 1152. Male gonopore. 1153. Comb-hairs on male right tarsus 4. Scale lines: 500  $\mu\text{m}$  (1145), 200  $\mu\text{m}$  (1146, 1147), 100  $\mu\text{m}$  (1148), 80  $\mu\text{m}$  (1152), 60  $\mu\text{m}$  (1149), 20  $\mu\text{m}$  (1150, 1151, 1153).

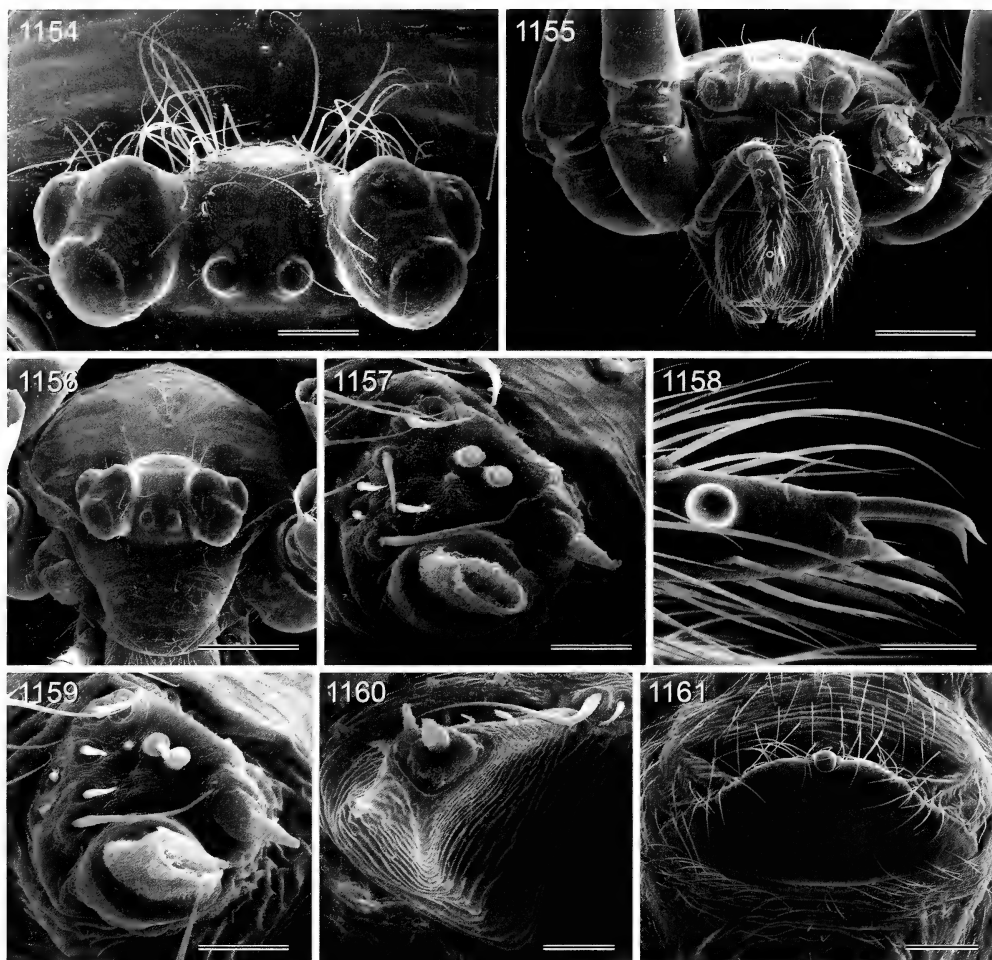


FIG. 1154-1161. *Pholcus chattoni*. 1154. Male ocular area. 1155, 1156. Female prosoma, frontal and fronto-dorsal views. 1157, 1159. Male (1157) and female (1159) ALS. 1158. Tip of female palpal tarsus. 1160. Female PMS. 1161. Epigynum. Scale lines: 500  $\mu\text{m}$  (1155, 1156), 200  $\mu\text{m}$  (1154, 1161), 60  $\mu\text{m}$  (1158), 20  $\mu\text{m}$  (1157, 1159, 1160).

*Diagnosis.* Easily distinguished from most congeners by male chelicerae with large frontal processes proximally (Fig. 1142); from similar *Ph. bourgini* by shapes of procurus and appendix (Figs. 1139-1141) and by female genitalia (Figs. 1083, 1143, 1144; shapes of pore plates and frontal arc).

*Male* ("cotype"). Total body length 7.4, carapace width 1.9. Leg 1: 62.8 (15.2 + 0.9 + 15.1 + 28.0 + 3.6), tibia 2: 10.0, tibia 3: 6.9, tibia 4: 9.1, tibia 1L/d: 68. Habitus as in Fig. 1053. Carapace ochre-yellow with large brown mark, ocular area light brown with

darker brown median band, clypeus not darkened, sternum pale ochre-orange, legs ochre-yellow, tips of femora and tibiae whitish, patella area and tibio-metatarsus joints slightly darkened, abdomen ochre with indistinct brown cuticular pattern dorsally and postero-laterally like *Ph. guineensis*, ventral cuticular pattern as in *Ph. bourgini* (cf. Fig. 1052). Distance PME-PME 470  $\mu\text{m}$ , diameter PME 185  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 65  $\mu\text{m}$ , diameter AME 60  $\mu\text{m}$ . Ocular area slightly elevated, many longer hairs posteriorly (Figs. 1145,



1154), each triad on low hump directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1142, with very large and distinctive proximal frontal apophyses, distal apophyses with slender modified hairs (Fig. 1150). Sternum wider than long (1.2/0.9), unmodified. Palps as in Figs. 1139 and 1140, coxa unmodified, trochanter with rounded retrolatero-ventral apophysis, femur with large proximal protrusion ventrally, small prolateral hump (cf. fig. 3H in Millot 1941), and indistinct retrolatero-dorsal hump, procurus distally curved inwards (similar to *Ph. bourgini* but with clearly different distal structures), complex tip (Figs. 1141, 1148), tarsal organ capsulate (Fig. 1151), bulb round, with uncus and appendix similar to *Ph. bourgini* (Figs. 1146, 1147), embolus short, weakly sclerotized, with transparent distal fringed process (Fig. 1149). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments but only distally ~10 fairly distinct; tarsus 4 with single row of comb-hairs (Fig. 1153). Gonopore with four epiandrous spigots (Fig. 1152); ALS with only four spigots each (Fig. 1157).

*Variation.* Tibia 1 in 13 other males: 13.1-16.7 (mean 14.4). Like in *Ph. bourgini*, the cuticular pattern on the abdomen is very constant, but the internal spots vary from barely visible to very distinct. In most newly collected specimens the sternum is red-brown to dark brown, with lighter margins. The distal apophysis on the procurus appears slightly less sclerotized and more slender in the newly collected specimens. The types are strongly bleached, and in the holotype both palps and the chelicerae are missing.

*Female.* In general similar to male but triads not on humps and closer together (Figs. 1155, 1156; distance PME-PME 325 µm), entire ocular area dark brown. Tibia 1 in 11 females: 10.0-13.7 (mean 11.6). Epigynum a sclerotized plate with anterior 'knob' (Figs. 1083, 1143, 1161); internal genitalia as in Figs. 1084 and 1144. ALS with only four spigots each (Fig. 1159).

*Distribution.* Known from Guinea and Côte d'Ivoire (Fig. 1099).

*Material examined.* GUINEA: *Nzérékoré Region*: Macenta: 2♂ types above; Forêt Classée de Diéké (7°32.0'N, 8°49.9'W), 430 m a.s.l., 1.xii.2008 (B.A. Huber), 3♂2♀ in ZFMK; Mount Nimba (~7°41.5'N, 8°24.5'W), ~600 m a.s.l., forest, 29.xi.2008 (B.A.

Huber), 14♂9♀ in ZFMK. *Kindia Region*: Kindia: 1♀ paratype above.

CÔTE D'IVOIRE: Man: 1♂1♀ paratypes above. Unidentified locality: Institut Français d'Afrique Noire, grotte Momi, paroiss, 960 m a.s.l., 15.i.1959 (collector not given), 3♂5♀ + juveniles in MNHN.

#### *Pholcus lamperti* species group

*Diagnosis.* Large, long-legged East African *Pholcus* (body length ~6.0-8.5, leg 1:~40-75); distinguished from other species groups in *Pholcus* by the combination of the following characters: distinctive dorsal cuticular color pattern on elongate abdomen (in contrast to *Ph. circularis* group; e.g., Figs. 1054, 1057, 1065), eight eyes, male chelicerae with proximal and distal apophyses, procurus without dorsal spines, with sclerotized part of epigynum confined to narrow posterior sclerite (similar to *Ph. circularis* group), usually with 'knob'.

*Description.* Body length ~6.0-8.5, carapace width ~1.5-2.1. AME always present, triads on low elevations. Clypeus and sternum unmodified, male chelicerae with proximal and distal apophyses, distal apophyses provided with modified hairs, highly derived in *Ph. taita*. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur simple, widening distally, tarsus usually without dorsal elongation (short conical in *Ph. wabehe*), tarsal organ capsulate, procurus with ventral 'knee' (absent in *Ph. wabehe*), without dorsal spines, often with large whitish membranous protrusion ventrally (e.g., Figs. 1165, 1187, 1222). Male bulb usually with uncus and appendix (homologies unclear in *Ph. wabehe*), weakly sclerotized embolus. Legs long, tibia 1 in males ~9.5-19, tibia 1 L/d ~60-90, legs without spines, usually without curved hairs (present in *Ph. taita*), few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 3-5%. Abdomen cylindrical, with distinctive dorsal cuticular color pattern including anterior transversal element (e.g., Figs. 1054, 1057, 1065), usually also with distinct ventral pattern (except *Ph. lupanga* and *Ph. mazumbai*), male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and six cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female chelicerae unmodified, body size as in males, legs slightly shorter (tibia 1:~9-16). Sclerotized part of epigynum confined to narrow posterior sclerite, with 'knob' (except

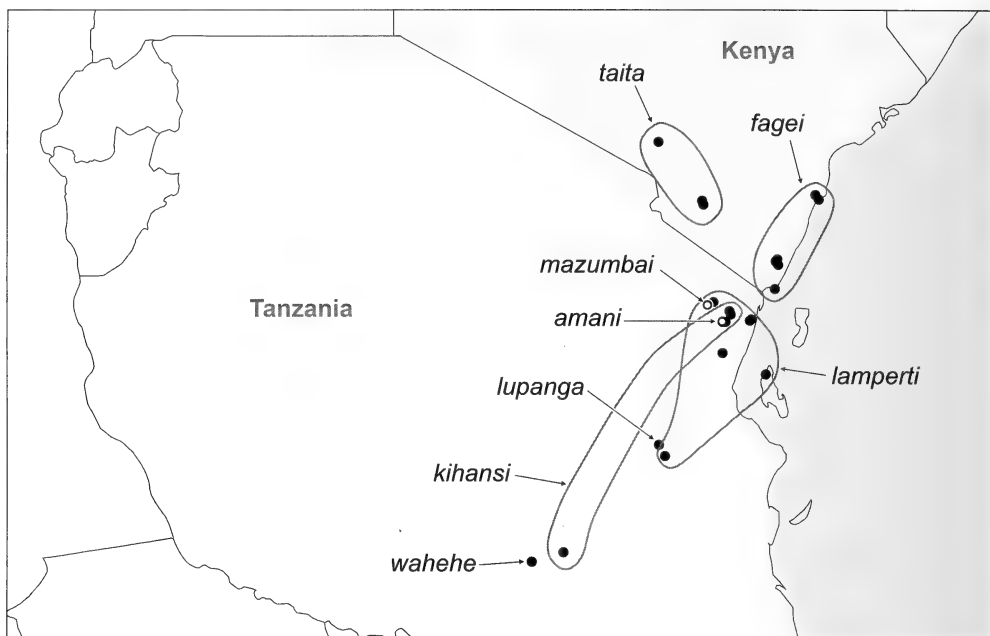


FIG. 1162. Known distribution of the *Pholcus lamperti* species group.

in *Ph. taita*), internal genitalia with pair of pore-plates of variable shape.

**Monophyly.** The species included share the distinctive pattern dorsally on the abdomen (char. 13; e.g., Figs. 1054, 1057, 1065). The large whitish membranous protrusion ventrally on the procurus (e.g., Figs. 1165, 1187, 1222) might be a further synapomorphy of the entire species group or of a part of it.

**Relationships.** As indicated above, the *Ph. lamperti* group may be nested within the paraphyletic *Ph. circularis* group. Both share a narrow epigynal sclerite (e.g., Figs. 1087, 1090, 1095). Other than that, the cladistic analysis only indicates that the *Ph. lamperti* group is one of many species groups within true *Pholcus* that lack procurus spines (Fig. 26).

**Natural history.** The species for which data are available (*Ph. lamperti*, *Ph. fagei*, *Ph. taita*) occur in caves (entrance area), among large rocks in forests, and between buttresses. *Pholcus lamperti* has also been collected from buildings. *Pholcus fagei* and *Ph. taita* sometimes occur in unusual densities. One label by R.R. Jackson accompanying *Ph. fagei* specimens from Shimba Hills, Kenya, says "species that cohabits" and "social pholcids". I have seen large numbers of *Ph. taita* under large rocks and in small caves in Taita

Hills, Kenya, with individual distances between same-sex adults often measuring less than one leg length (Fig. 22).

**Distribution.** The *Ph. lamperti* group is largely restricted to the Eastern Arc area of Tanzania and Kenya (Fig. 1162).

**Composition.** The *Ph. lamperti* group includes eight species; of these, six are newly described below, the other two are redescribed: *Ph. lamperti* Strand, 1907; *Ph. fagei* Kratochvil, 1940; *Ph. taita* n. sp.; *Ph. amani* n. sp.; *Ph. mazumbai* n. sp.; *Ph. kihansi* n. sp.; *Ph. lupanga* n. sp.; *Ph. wahehe* n. sp.

*Pholcus lamperti* Strand, 1907

Figs. 1054-1056, 1085, 1086, 1163-1184

*Pholcus lamperti* Strand 1907a: 527. Strand 1907b: 567-569.

*Pholcus lucifugus* Simon & Fage 1922: 539-542, figs. VI 1, 3-5, 9. New synonymy. (Specimens from "grotte A de Shimoni" see *Pholcus fagei* below).

**Types.** *Pholcus lamperti*: 2♂1♀ (and 3 juvenile) syntypes from Tanzania, Tanga Region, East Usambara, Amani [5°06'S, 38°38'E], v.1905 (J. Vosseler), in ZMB (9860), examined. *Pholcus lucifugus*: 1♂1♀

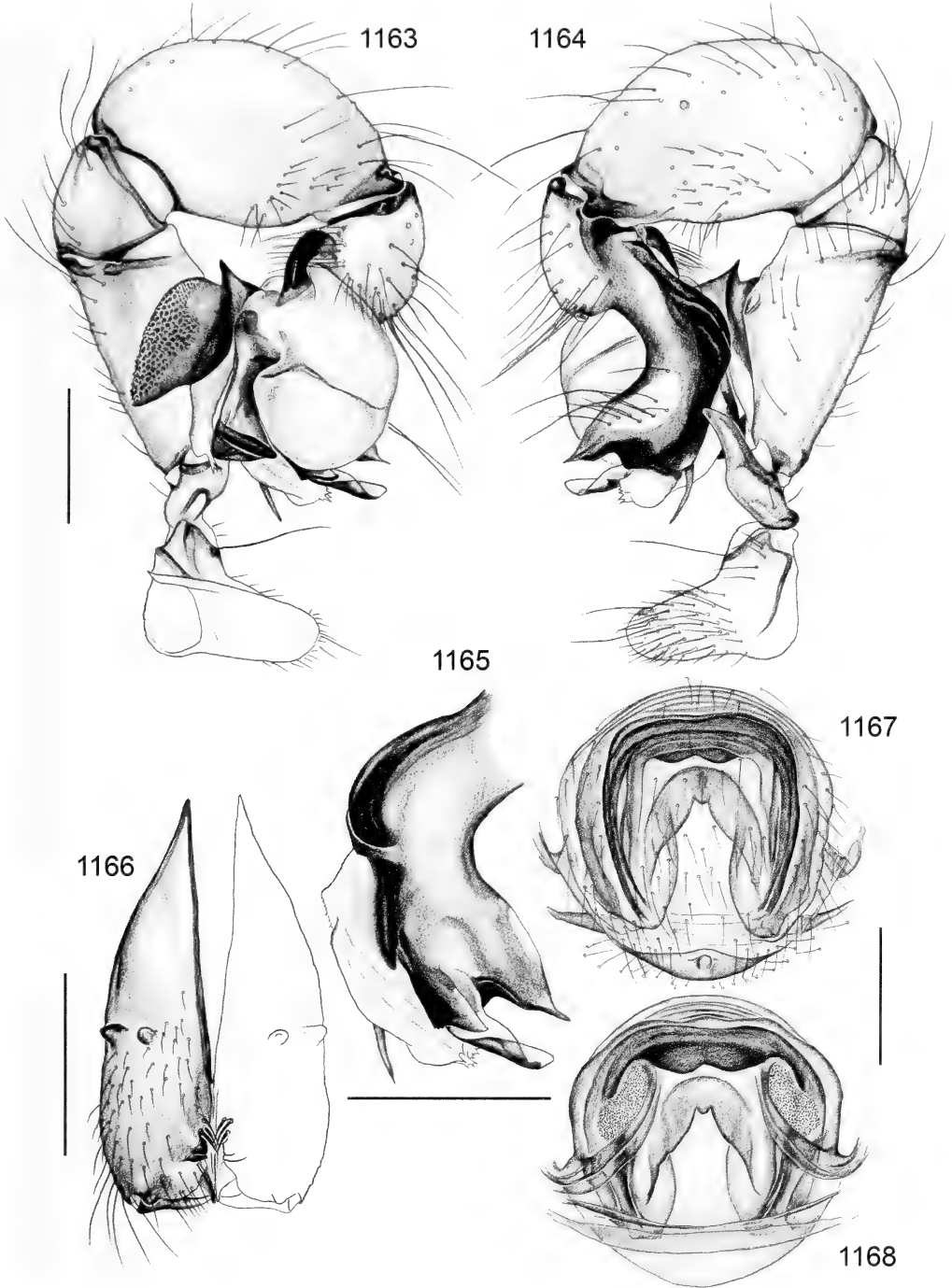


FIG. 1163-1168. *Pholcus lamperti*. 1163, 1164. Left male palp, prolateral and retrolateral views. 1165. Left procurus, prolateral view. 1166. Male chelicerae, frontal view. 1167, 1168. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

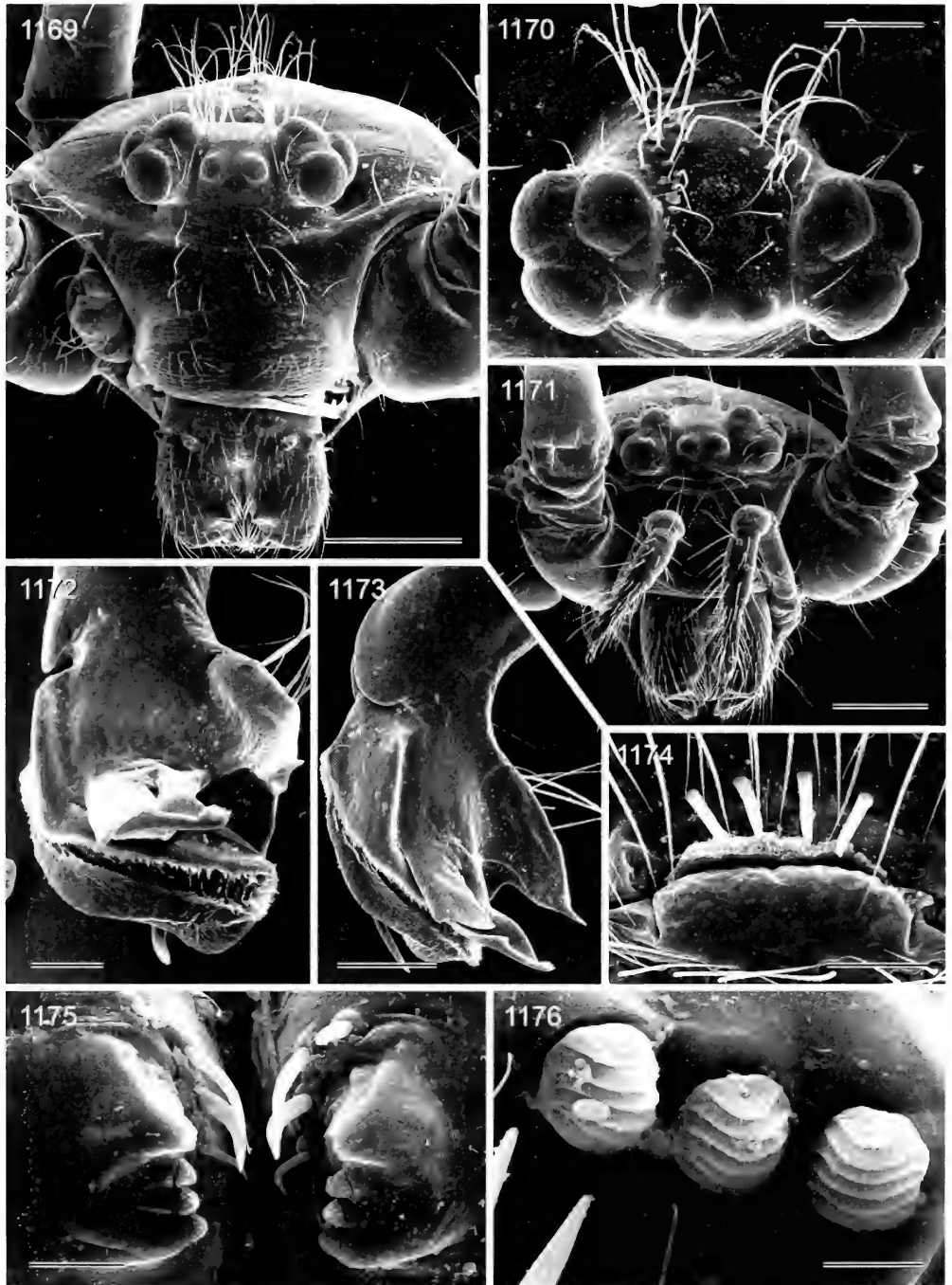


FIG. 1169-1176. *Pholcus lamperti*. 1169. Male prosoma, frontal view. 1170. Male ocular area, dorsal view. 1171. Female prosoma, frontal view. 1172, 1173. Left procurrus, dorsal and prolateral views. 1174. Male gonopore. 1175, 1176. Distal male cheliceral apophyses and modified hairs. Scale lines: 500  $\mu\text{m}$  (1169), 400  $\mu\text{m}$  (1171), 200  $\mu\text{m}$  (1170, 1173), 100  $\mu\text{m}$  (1172), 50  $\mu\text{m}$  (1174), 40  $\mu\text{m}$  (1175), 10  $\mu\text{m}$  (1176).

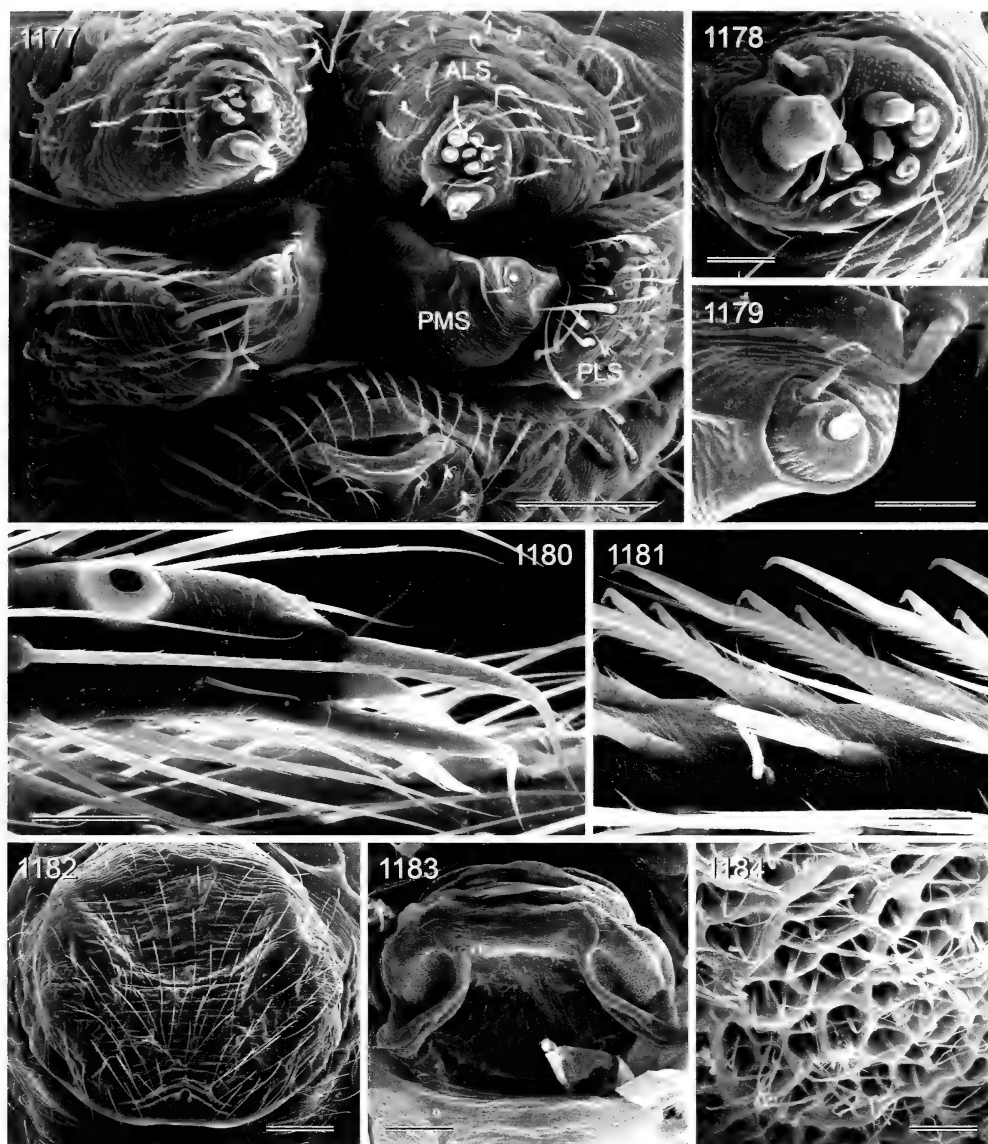


FIG. 1177-1184. *Pholcus lamperti*. 1177. Male spinnerets and anal cone. 1178, 1179. Female ALS and PMS. 1180. Tip of female palpal tarsus. 1181. Comb-hairs on female tarsus 4. 1182. Epigynum. 1183. Cleared female genitalia, dorsal view. 1184. Detail of pore plate. Scale lines: 200  $\mu\text{m}$  (1182, 1183), 100  $\mu\text{m}$  (1177), 70  $\mu\text{m}$  (1180), 20  $\mu\text{m}$  (1178, 1179, 1181), 10  $\mu\text{m}$  (1184).

(and some juvenile) syntypes from Tanga Region, "grotte A du Kulumuzi" and "grotte C du Kulumuzi" near Kyomoni [5°04'S, 39°03'E], 16.iv.1912 ("Biosp. no 534/536"), in MNHN (10210, 10223), examined.

*Justification of synonymy.* Simon & Fage (1922) did apparently not know about Strand's (1907a, b) descriptions of *Ph. lamperti* (both of which lack figures); they assumed (1922: 540) that "*Ph. lucifugus* est jusqu'ici la seule espèce du genre, connue dans l'Afrique tropicale." A direct comparison of the types revealed only minimal differences in the procurcus (see below); the two species are therefore synonymized.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1163-1165; shapes of procurcus, uncus, appendix), and female genitalia (Figs. 1085, 1167).

*Male* (Amani). Total body length 8.4, carapace width 2.1. Leg 1: 74.9 (17.9 + 0.9 + 18.1 + 34.7 + 3.3), tibia 2: 12.4, tibia 3: 7.7, tibia 4: 10.1; tibia 1 L/d: 89. Habitus as in Figs. 1054 and 1055. Carapace ochre-yellow with pair of large brown marks, ocular area also brown, clypeus not darkened, sternum with large brown mark medially, legs light brown, patellae and tibia-metatarsus joints brown, femora and tibiae with indistinct subdistal darker rings, lighter distally, abdomen gray with dark dorsal marks, ventrally wide brown band divided medially (cf. female, Fig. 1056), posterior part anteriorly weakly Y-shaped. Distance PME-PME 335 µm, diameter PME 185 µm, distance PME-ALE 55 µm, distance AME-AME 50 µm, diameter AME 100 µm. Ocular area elevated, many stronger hairs on posterior side (Figs. 1169, 1170). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1166, proximally with small frontal and lateral apophyses, distal apophyses with three modified hairs each (Figs. 1175, 1176). Sternum wider than long (1.3/1.0), unmodified. Palps as in Figs. 1163 and 1164, coxa unmodified, trochanter with curved retrolateroventral apophysis, femur with indistinct ventral protrusion, procurcus strongly bent towards dorsally, with several distinctive distal elements (Figs. 1165, 1172, 1173), bulb with large uncus, weakly sclerotized embolus, large T-shaped appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally ~10 fairly distinct. Gonopore with four epandrous

spigots (Fig. 1174); ALS with eight spigots each (Fig. 1177).

*Variation.* In some males dorsal sclerite on procurcus slightly longer (also in syntype of *Ph. lucifugus*); distal cheliceral apophyses often appear as single toothed ridge rather than two apophyses on each side. Posterior mark ventrally on abdomen often not or only very weakly Y-shaped. Dorsal marks on carapace sometimes slightly smaller. Tibia 1 in 16 males: 14.0-18.0 (mean 16.3) (*Ph. lamperti* syntypes: 14.4, 14.7; *Ph. lucifugus* syntype: 17.3).

*Female.* In general similar to male but triads closer together (Fig. 1171; distance PME-PME 285 µm). Tibia 1 in 22 females: 11.3-15.5 (mean 13.2) (*Ph. lamperti* syntype: 14.0; *Ph. lucifugus* syntype: 14.4). Epigynum large but mostly weakly sclerotized, posteriorly narrow plate with small 'knob' (Figs. 1085, 1167, 1182); internal genitalia as in Figs. 1086, 1168, and 1183; tarsus 4 with single row of comb-hairs (Fig. 1181). ALS with eight spigots each (Fig. 1178).

*Distribution.* Known from Tanzania, Tanga and Morogoro Regions, and from dubious specimens from Zanzibar (Fig. 1162; Simon & Fage 1922 report *Ph. lucifugus* females for Zanzibar, but I have not seen this material which could also be *Ph. fagei*).

*Material examined.* TANZANIA: *Tanga Region:* East Usambara: Amani, 2♂1♀ syntypes of *Ph. lamperti* above. East Usambara Mts., Amani (5°05.7'S, 38°38'E), forest, 950 m a.s.l., 27.x-9.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 7♂11♀ (2 vials) in CAS; 12 km SE Amani, Kihuhwi-Zigi Forest Reserve (5°06.3'S, 38°40.6'E), 400-450 m a.s.l., 2.-4.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 1♂1♀ 1 juv. in CAS; Amani, 1000 m a.s.l., 7.viii.1974 (O. Lomboldt), 1♂ 1 juv. in ZMUC; Amani, 1000 m a.s.l., in guest house, 10.vii.1980 (M. Stoltze, N. Scharff), 3♀ 1 juv. (2 vials) in ZMUC. East Usambara Mts., Dowde Stream [5°06'S, 38°38'E], in cave, 900 m a.s.l., 10.vii.1980 (M. Stoltze, N. Scharff), 1♂ in ZMUC; same data but 1000 m a.s.l., 1♀ in ZMUC. East Usambara Mts., Sigi River [-5°00'S, 38°45'E], in cave, 750 m a.s.l., 15.vii.1980 (M. Stoltze, N. Scharff), 1♂ in ZMUC. Amboni Caves (5°04'-06'S, 39°00'-03'E), 80 m a.s.l., no date (C.E. Griswold, N. Scharff, D. Ubick), 1♂1♀ in CAS; same data, 1♀ in ZMUC. Near Kyomoni, 1♂1♀ syntypes of *Ph. lucifugus* above. "Grotte B du Kulumuzi", 16.iv.1912 (Biosp. no 535), 1♂ 2 juvs. in MNHN (10212). West Usambara Mts., Mazumbai (4°49'S, 38°30'E), forest, 1400-1800 m a.s.l., 10.-20.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 1♂1♀ in CAS; Mazumbai,

station (4°48.5'S, 38°30'E), 1500 m a.s.l., around building, 10.-20.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 2♀ in CAS. Handeni Distr., Genda-Genda South Forest (5°33'S, 38°38'E), 29.vii.-18.ix.1991 (Frontier), 1♂ in ZMUC. *Morogoro Region*: Uluguru Mts., Kimboza Forest [7°01'-02'S, 37°48'-49'E], 250 m a.s.l., 18.vii.1981 (M. Stoltze, N. Scharff), 1♂1♀ (2 vials) in ZMUC. "Africa orient.", no further data, 1♂2♀ in MNHN (10241).

*Pholcus fagei* Kratochvil, 1940

Figs. 21, 24, 1057-1059, 1087-1089, 1185-1200

"*Pholcus lucifugus*": Simon & Fage 1922: 539-542, figs. VI 7, 8, 10 (only specimens from "grotte A de Shimoni").

*Pholcus fagei* Kratochvil 1940: 4 (elevation to species rank).

*Types*. 4♂13♀ syntypes from Kenya, Coast Province, "grotte A de Shimoni, province de Seyidié" [Shimoni caves, -4°38'S, 39°23'E], 9.xi.1911 ("Biosp. no 532"), in MNHN (10208) examined (the vial actually contains only 4♂6♀ and 4 juveniles).

*Diagnosis*. Distinguished from congeners by male palpal morphology (Figs. 1185-1187; procurus with two slender sclerites prolaterally, shapes of uncus and appendix), and female genitalia (Figs. 1087, 1189, 1190; pore plates in very lateral position).

*Male* (syntype). Total body length 7.2, carapace width 1.8. Leg 1: 61.6 (15.1 + 0.9 + 15.2 + 27.1 + 3.3), tibia 2: 10.5, tibia 3: 7.1, tibia 4: 9.3; tibia 1 L/d: 72. Habitus as in Figs. 1057 and 1058. Carapace pale ochre-yellow with large brown mark, ocular area also brown, clypeus not darkened, sternum pale gray with triangular light brown mark, legs ochre to light brown, patellae slightly darker, femora and tibiae lighter distally, abdomen pale gray with brown dorsal marks, ventrally wide brown band divided medially, posterior part anteriorly slightly Y-shaped (cf. female, Fig. 1059). Distance PME-PME 370 µm, diameter PME 175 µm, distance PME-ALE 45 µm, distance AME-AME 60 µm, diameter AME 95 µm. Ocular area elevated, stronger hairs on posterior side (Fig. 1191). No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae similar to *Ph. mazumbai* (cf. Fig. 1223), both pairs of proximal apophyses slightly larger, distal apophyses with two to three modified hairs each (Figs. 1192, 1193). Sternum wider than long (1.3/1.0), unmodified. Palps as in Figs. 1185 and 1186, coxa unmodified, trochanter with curved retrolatero-ventral apophysis, femur with

indistinct ventral protrusion, procurus strongly bent towards dorsally, with several distinctive distal elements (Figs. 1187, 1194, 1195), bulb with uncus, weakly sclerotized short embolus, simple blade-like appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct. Gonopore with four epiandrous spigots (Fig. 1198); ALS with eight spigots each (Fig. 1199). *Variation*. Tibia 1 in two other syntypes: 12.7, 13.3. Males from all other localities differ slightly and are therefore assigned tentatively: males from Shimba Hills have the appendix with a triangular side branch (Figs. 1196, 1197), and the distal procurus apophysis slightly shorter and the retrolateral apophysis more pointed; males from Arabuko Sokoke Forest also have a branched appendix and in addition a less pointed (obtuse) distal procurus apophysis and a distally upward-curved uncus (Fig. 1188); males from Kilifi have an uncus very similar to males from Arabuko but a more curved appendix. All these males have smaller palps than the syntypes. Tibia 1 in 19 non-type males: 10.1-14.1 (mean 12.2).

*Female*. In general similar to male but triads closer together (distance PME-PME 290 µm). Tibia 1 in 6 syntype females: 11.3-13.1 (mean 12.2); in 25 other females: 10.1-12.7 (mean 11.1). Epigynum sclerotized anteriorly, posteriorly narrow plate with small 'knob' (Figs. 1189, 1200), internal arch visible through cuticle (Figs. 1087, 1088); internal genitalia as in Figs. 1089 and 1190.

*Distribution*. Known from several localities in Coast Province, Kenya (Fig. 1162). Note, however, that all specimens other than the types are assigned tentatively.

*Material examined*. KENYA: *Coast Prov.*: Shimoni caves: 4♂6♀ syntypes above.

*Assigned tentatively*. KENYA: *Coast Prov.*: Shimba Hills, Makadera Forest (4°14.2'S, 39°23.7'E), 420 m a.s.l., 24.i.2010 (B.A. Huber), 3♂5♀ in ZFMK; same data, 1♂ penult. in pure ethanol, in ZFMK; Makadera Forest, 400 m a.s.l., 8.vi.1975 (A.J. Penniman, B.D. Valentine), 1♀ in AMNH. Shimba Hills, Sheldrick Falls (4°17.1'S, 39°25.9'E), 130 m a.s.l., 24.i.2010 (B.A. Huber), 3♂4♀ in ZFMK; same data, 2♀ 3 juvs. in pure ethanol, in ZFMK; Sheldrick Falls, riverine forest, 400 ft., 31.v.1989 (Coyle, Bennett), 1♀ 1 juv. in AMNH. Shimba Hills, near road Kwale-Kinango (4°12.2'S, 39°25.1'E), 260 m a.s.l., 23.i.2010 (B.A. Huber), 9♂8♀ in ZFMK and NMKE; same data, 2♀ 3 juvs. in pure ethanol, in ZFMK. Shimba



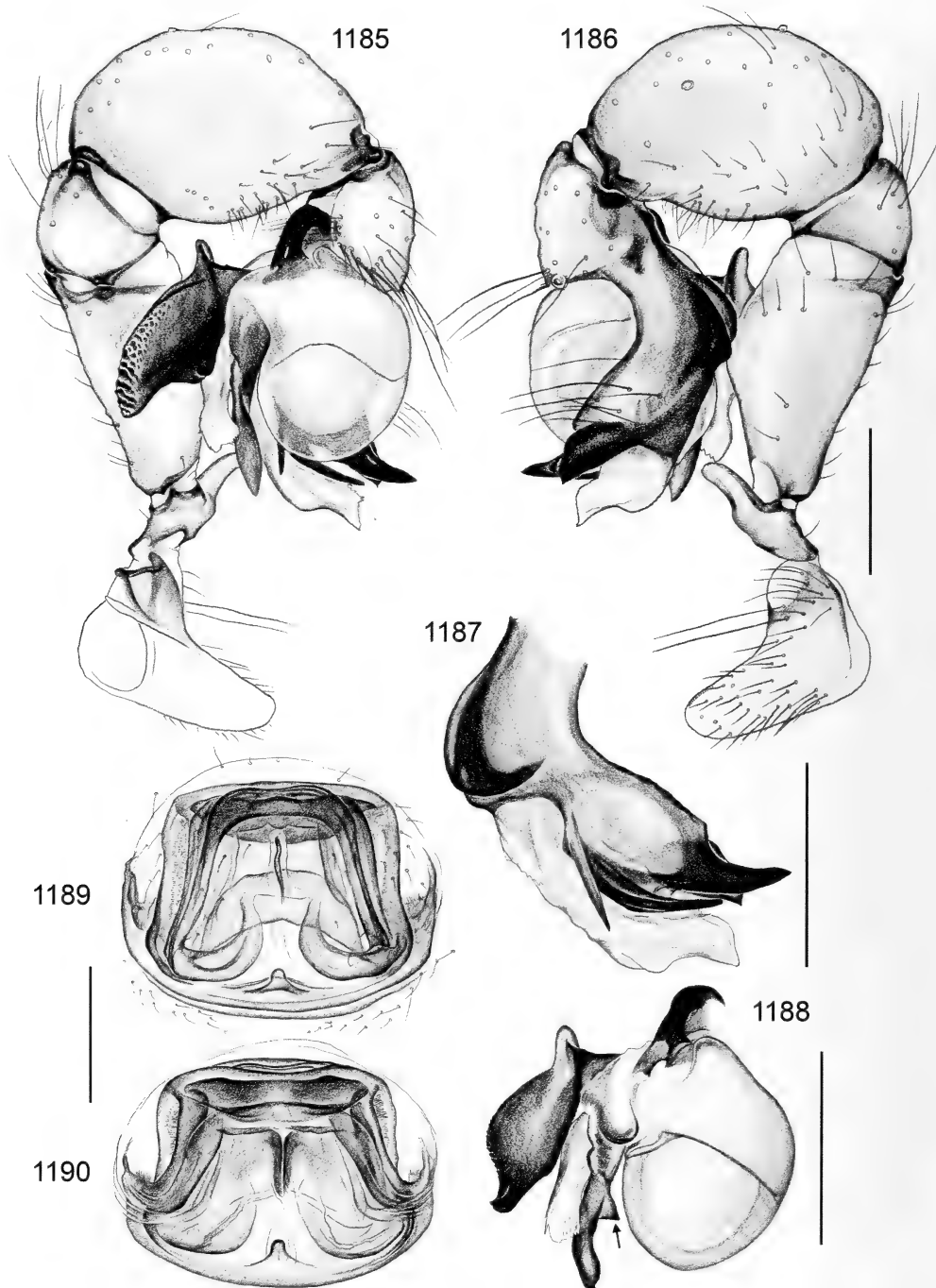


FIG. 1185-1190. *Pholcus fagei*, specimens from type locality (except Fig. 1188). 1185, 1186. Left male palp, prolateral and retrolateral views. 1187. Left procursus, prolateral view. 1188. Left bulb of specimen from Arabuko (arrow points at projection of appendix). 1189, 1190. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



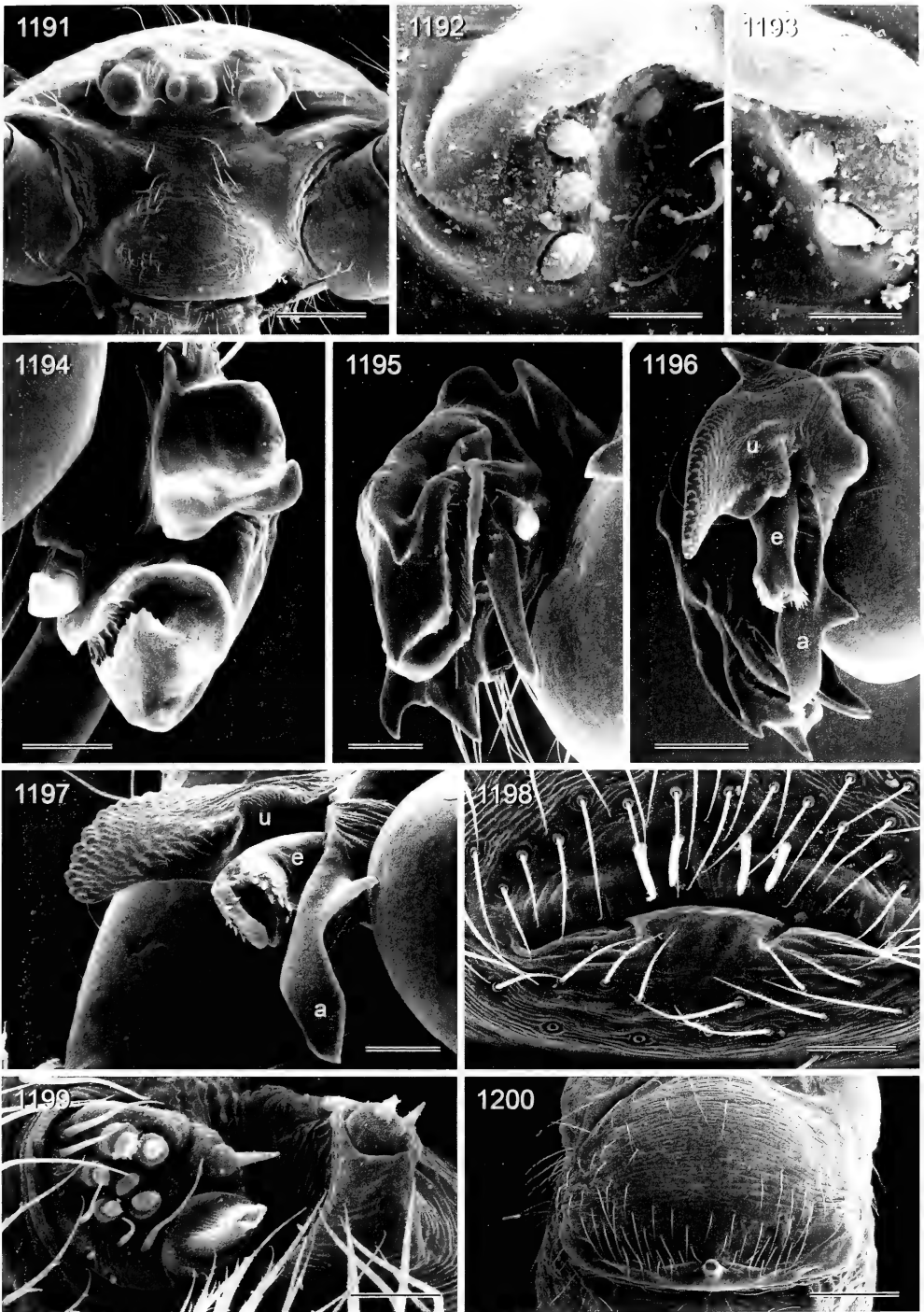


FIG. 1191-1200. *Pholcus fagei*, specimens from Shimba Hills. 1191. Male prosoma, frontal view. 1192, 1193. Distal male cheliceral apophyses with modified hairs. 1194, 1195. Left procurus, dorsal and prolatero-distal views. 1196, 1197. Left bulbular processes, prolatero and distal views. 1198. Male gonopore. 1199. Male ALS and PMS. 1200. Epigynum. Scale lines: 400  $\mu\text{m}$  (1191), 300  $\mu\text{m}$  (1200), 200  $\mu\text{m}$  (1196), 100  $\mu\text{m}$  (1195, 1197), 80  $\mu\text{m}$  (1194), 60  $\mu\text{m}$  (1198), 30  $\mu\text{m}$  (1199), 20  $\mu\text{m}$  (1192, 1193).

Hills, no further locality data, "species that cohabits", "social pholcids", 14.ii.1982 (R.R. Jackson), 5♂3♀ (3 vials) in BMNH. Arabuko-Sokoke N.P. (3°17.0'S, 39°58.0'E), 10 m a.s.l., in hollow log on ground, 22.i.2010 (B.A. Huber), 2♂1♀ in ZFMK; same data,

2♀ 7 juvs. in pure ethanol, in ZFMK. S Malindi, Watamu [3°21'S, 40°01'E], overhanging rocks, xi.1979 (M. Grasshoff), 2♀ in SMF. Kilifi Dist., no further locality data, 4.iv.1978 (D. & M. Davis, B. Akerbergs), 1♂ 1 juv. in USNM.

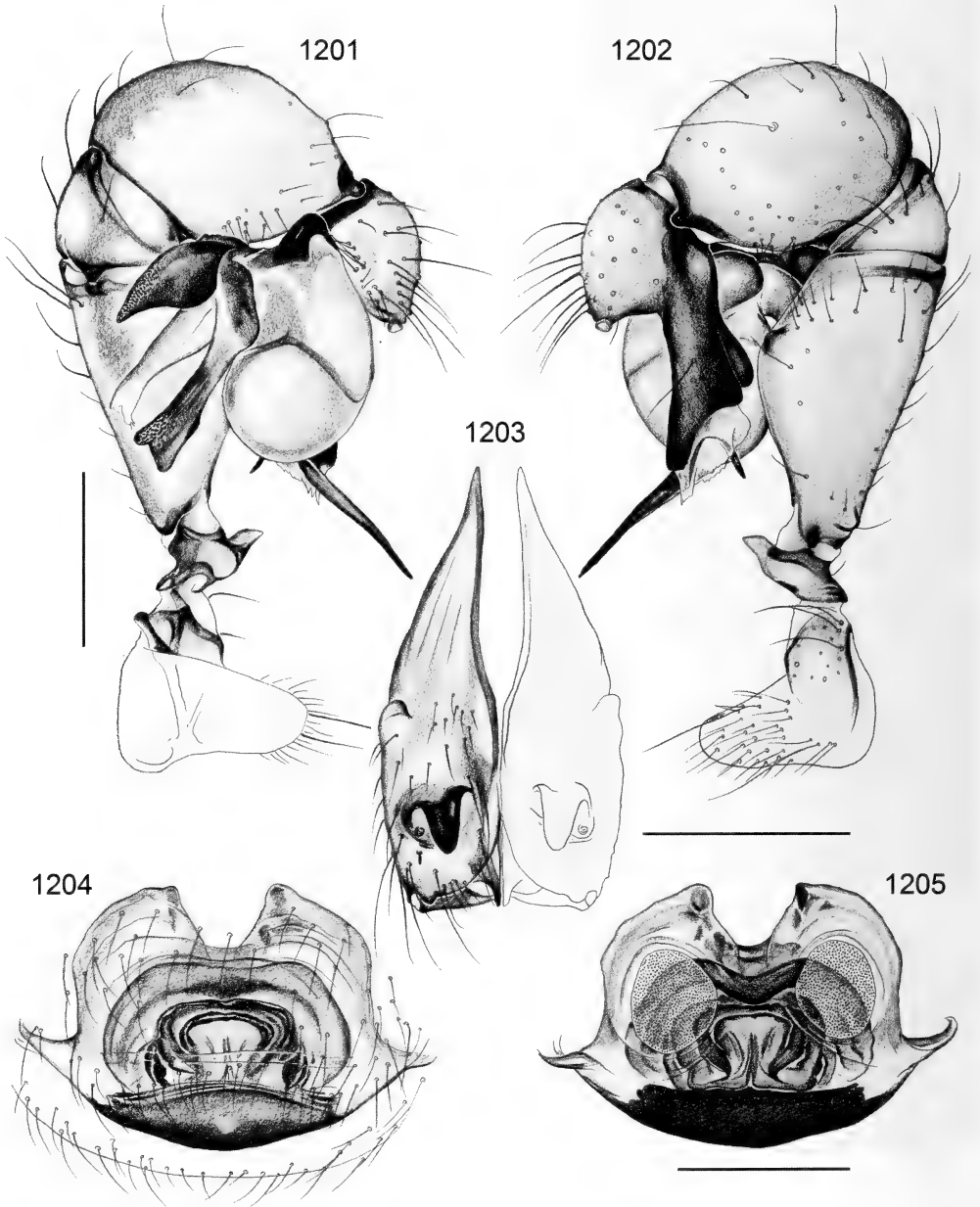


FIG. 1201-1205. *Pholcus taita*. 1201, 1202. Left male palp, prolateral and retrolateral views. 1203. Male chelicerae, frontal view. 1204, 1205. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Pholcus taita* n. sp.

Figs. 22, 23, 1060-1062, 1090, 1091, 1201-1214

*Type.* Male holotype from Kenya, Coast Prov., Taita Hills, Ngangao Forest (3°22.2'S, 38°20.4'E), 1810 m a.s.l., 19.i.2010 (B.A. Huber), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male cheliceral armature (Figs. 1203, 1209; large frontal apophyses and single modified hair on each

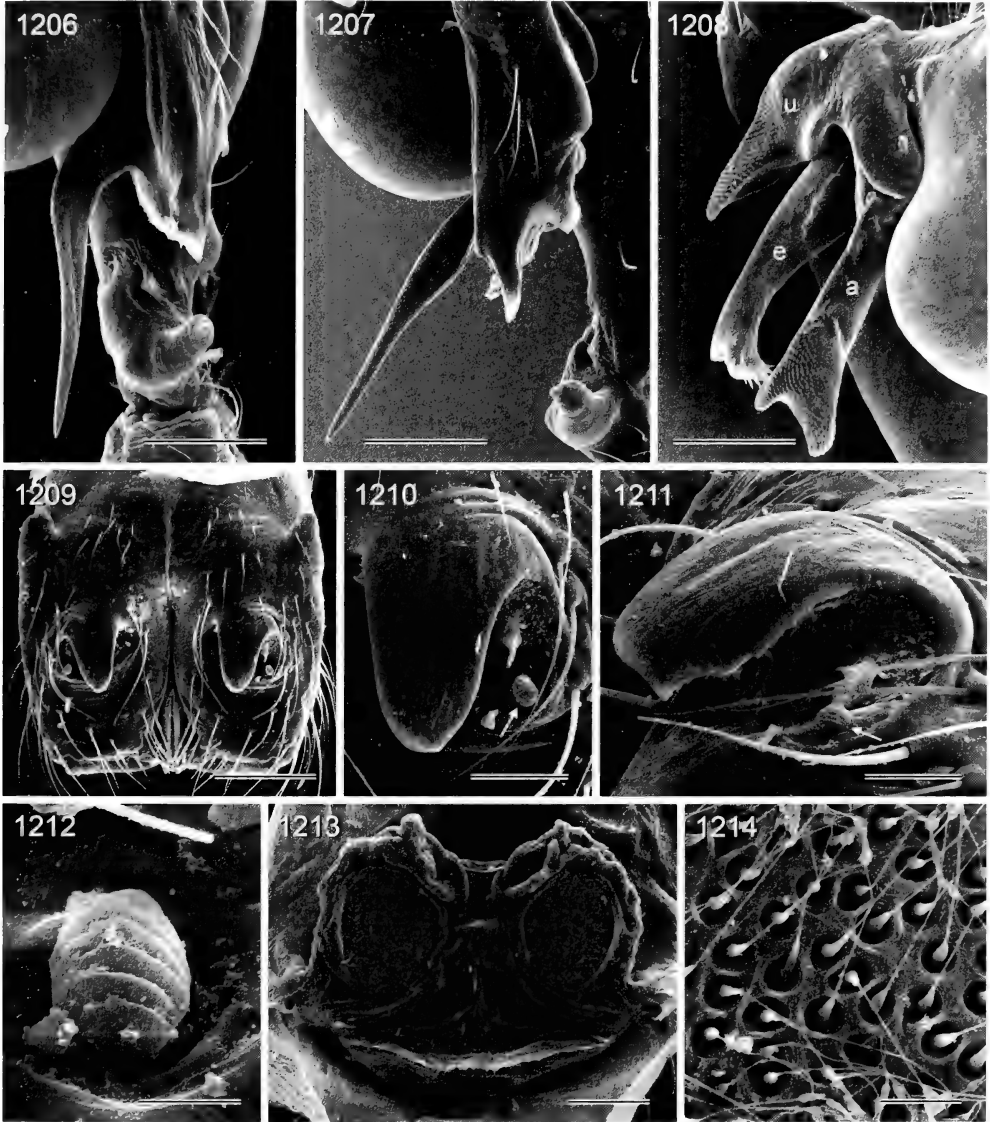


FIG. 1206-1214. *Pholcus taita*. 1206, 1207. Left procursus, dorsal and retrolateral views. 1208. Left bulb processes. 1209. Male chelicerae, frontal view. 1210, 1211. Distal male cheliceral apophysis, frontal and lateral views (arrows point at modified hair). 1212. Modified hair on male chelicera. 1213. Cleared female genitalia, dorsal view. 1214. Detail of pore plate. Scale lines: 200  $\mu$ m (1206-1209, 1213), 60  $\mu$ m (1210), 40  $\mu$ m (1211), 10  $\mu$ m (1212, 1214).

side) and palpal morphology (Figs. 1201, 1202; procurus with long distal sclerite, shape of appendix), and female genitalia (Figs. 1090, 1204; distinctive internal structures).

*Male* (holotype). Total body length 6.6, carapace width 1.8. Leg 1: 58.8 (14.1 + 0.8 + 14.3 + 26.7 + 2.9), tibia 2: 10.1, tibia 3: 6.7, tibia 4: 8.4; tibia 1 L/d: 77. Habitus as in Figs. 1060 and 1061. Carapace pale ochre with large dark mark posteriorly and median line on ocular area, clypeus darkened, sternum pale with median black mark, legs with dark rings on femora and tibiae subdistally and on tibiae proximally, abdomen with dorsal and ventral cuticular pattern (ventral pattern as in female; cf. Fig. 1062) and dark internal marks dorsally and laterally. Distance PME-PME 290  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 70  $\mu$ m, distance AME-AME 70  $\mu$ m, diameter AME 70  $\mu$ m. Ocular area elevated, no thoracic furrow; clypeus unmodified. Chelicerae with large rather flat frontal apophyses, each accompanied by large modified hair (Figs. 1203, 1209-1212), and proximo-lateral apophyses. Sternum wider than long (1.2/1.0), unmodified. Palps as in Figs. 1201 and 1202, coxa unmodified, trochanter with short retro-latero-ventral apophysis, femur with small apophysis proximo-dorsally, indistinct ventral protrusion, procurus complex distally, with distinctive long distal apophysis and further membranous and sclerotized elements (Figs. 1206, 1207), bulb with uncus, weakly sclerotized embolus, large rod-shaped appendix (Fig. 1208). Legs without spines, with curved hairs on metatarsi 1 and 2, few vertical hairs; retro-lateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally ~15 fairly distinct.

*Variation.* Tibia 1 in 22 other males: 11.5-19.1 (mean 15.1).

*Female.* In general similar to male but triads closer together (distance PME-PME 250  $\mu$ m). In most females the ventral band on the abdomen is divided (Fig. 1062); in a few it is undivided or not fully divided. Tibia 1 in 41 females from Taita Hills: 9.6-14.0 (mean 12.0). Epigynum large whitish bulging area with narrow posterior plate without 'knob' (Fig. 1090, 1204); internal genitalia as in Figs. 1091, 1205, and 1213. Females from Chyulu Hills are assigned tentatively because no males are known from this locality; they tend to be larger than those from Taita Hills (tibia 1: 12.0, 15.3, 16.7, 17.3).

*Distribution.* Known from two localities in Taita Hills, Coast Prov., and from specimens assigned tentatively from Chyulu Hills, Rift Valley, Kenya (Fig. 1162).

*Material examined.* KENYA: *Coast Prov.*: Taita Hills: Ngangao Forest: ♂ holotype above, together with 4♂10♀ in ZFMK and NMKE; same data, 3♀ 4 juveniles in pure ethanol, in ZFMK. Macha Forest (3°25.3'S, 38°21.5'E), 1610 m a.s.l., under large rocks, 20.i.2010 (B.A. Huber), 19♂32♀ in ZFMK; same data, 4 juveniles in pure ethanol, in ZFMK.

*Assigned tentatively.* KENYA: *Rift Valley*: Chyulu Hills, Ithundu Lava Cave [-2°31.5'S, 37°42.8'E], 19.xi.1970 and 10.i.1971 (Kock), 5♀ (2 vials) in SME.

*Pholcus amani* n. sp.

Figs: 1063, 1064, 1092, 1215-1219

*Type.* Male holotype from Tanzania, Tanga Region, East Usambara Mts., Amani (5°05.7'S, 38°38'E), forest, 950 m a.s.l., 27.x.-9.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), in CAS.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1215-1217; procurus with distinctive sclerites, complex appendix), and female genitalia (Fig. 1218; distinctive internal structures).

*Male* (holotype). Total body length 6.2, carapace width 1.6. Leg 1: 53.2 (12.7 + 0.8 + 12.7 + 24.1 + 2.9), tibia 2 missing, tibia 3: 6.0, tibia 4: 7.6; tibia 1 L/d: 82. Habitus as in Fig. 1063. Carapace ochre-yellow with brown median mark, ocular area also brown, clypeus not darkened, sternum medially brown, legs light brown, patellae and tibia-metatarsus joints brown, femora and tibiae with indistinct sub-distal darker rings, lighter distally, abdomen gray with dark dorsal marks, ventrally wide brown band divided medially, posterior part anteriorly strongly Y-shaped (cf. female, Fig. 1064). Distance PME-PME 275  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 85  $\mu$ m. Ocular area elevated, stronger hairs on posterior side. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae very similar to *Ph. lamperti* (cf. Fig. 1166), slightly smaller, distal apophyses are a pair of ridges rather than pointed apophyses. Sternum wider than long (0.90/0.75), unmodified. Palps as in Figs. 1215 and 1216, coxa unmodified, trochanter with long straight retro-

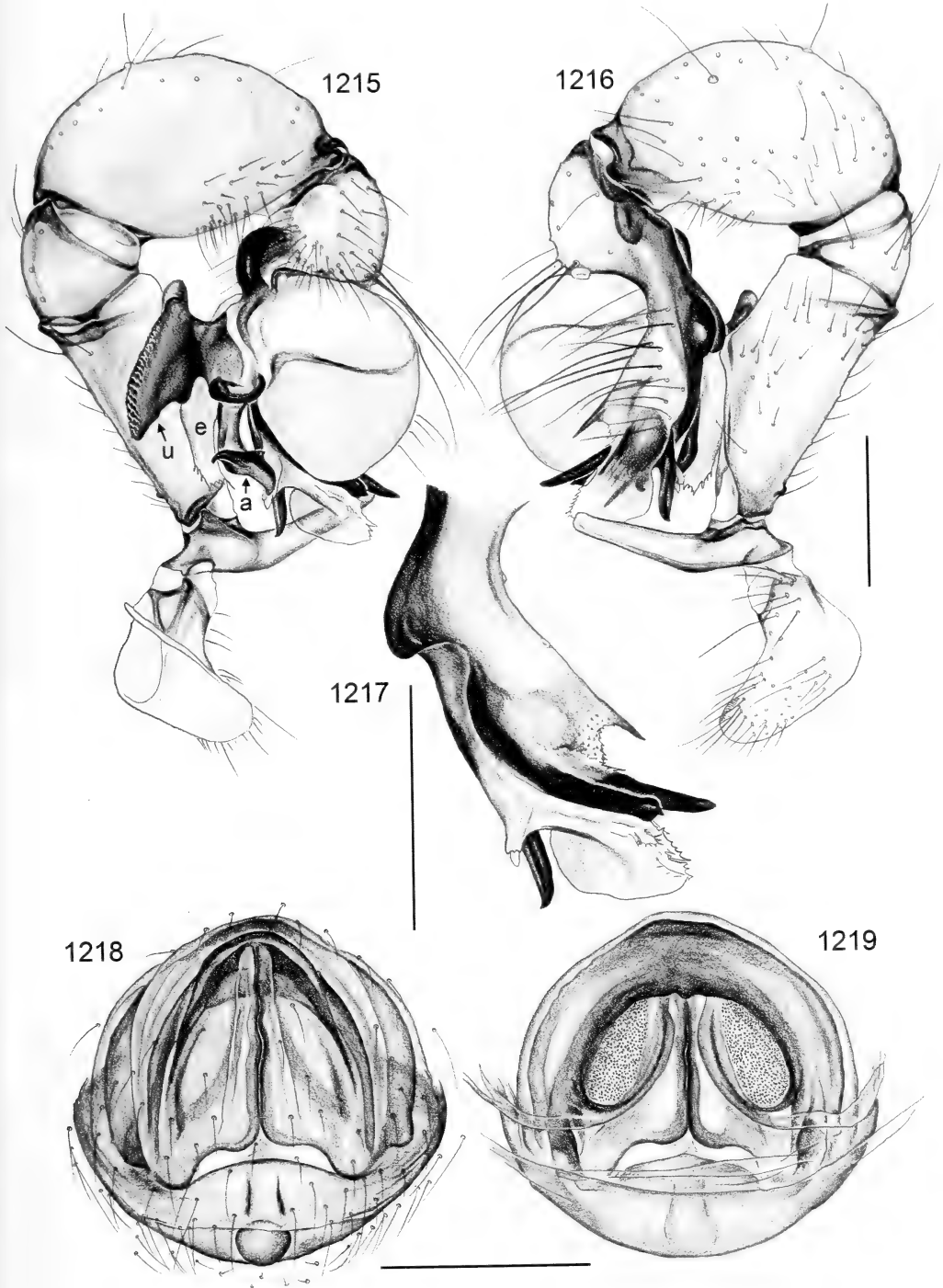


FIG. 1215-1219. *Pholcus amani*. 1215, 1216. Left male palp, prolateral and retrolateral views. 1217. Left procurrus, prolateral view. 1218, 1219. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

latero-ventral apophysis, femur with small apophysis proximo-dorsally, indistinct ventral protrusion, procurus complex distally, with several distinctive membranous and sclerotized elements (Fig. 1217), bulb with uncus, weakly sclerotized embolus, large and complex T-shaped appendix with additional prolateral projection. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; many tarsal pseudosegments, but only distally ~10 fairly distinct.

*Variation.* Tibia 1 in 3 other males: 11.2, 12.9, 13.7.

*Female.* In general similar to male but triads closer together (distance PME-PME 205  $\mu\text{m}$ ). Tibia 1 in 4 females: 9.5, 9.9, 10.4, 10.6. Epigynum large weakly sclerotized area with narrow posterior plate with large but short 'knob' (Fig. 1218); internal genitalia as in Figs. 1092 and 1219. One female with distinct genital plug.

*Distribution.* Known from type locality only (Fig. 1162).

*Material examined.* TANZANIA: *Tanga Region*: East Usambara: Amani: ♂ holotype above; same data, 3♂4♀ in CAS; East Usambara Mts., Amani, 1000 m a.s.l., 20.vii.1980 (M. Stoltze, N. Scharff), 1♀ in ZMUC.

*Pholcus mazumbai* n. sp.

Figs. 1065, 1066, 1097, 1098, 1220-1225

*Type.* Male holotype from Tanzania, Tanga Region, West Usambara Mts., Mazumbai (4°49'S, 38°30'E), sifting litter in forest, 1400-1800 m a.s.l., 11.-20. xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), in CAS.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1220-1222; complex procurus, shape of appendix), and female genitalia (Figs. 1097, 1224; distinctive internal structures).

*Male* (holotype). Total body length 7.1, carapace width 2.0. Leg 1: 61.4 (14.9 + 0.9 + 14.9 + 27.5 + 3.2), tibia 2: 10.3, tibia 3: 7.2, tibia 4: 9.3; tibia 1 L/d: 80. Habitus as in Fig. 1065. Carapace ochre-yellow with large brown mark, ocular area with indistinct light brown pattern, clypeus not darkened, sternum pale ochre-yellow, medially light brown, legs ochre-yellow, patellae and tibia-metatarsus joints slightly darker, femora and tibiae lighter distally, abdomen gray with dark dorsal marks, ventrally very indistinct wide band, not clearly divided medially (cf.

female, Fig. 1066). Distance PME-PME 365  $\mu\text{m}$ , diameter PME 160  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 70  $\mu\text{m}$ , diameter AME 90  $\mu\text{m}$ . Ocular area elevated, few stronger hairs on posterior side. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1223, strong ridge-shaped distal apophyses and frontal and lateral apophyses proximally. Sternum wider than long (1.20/1.05), unmodified. Palps as in Figs. 1220 and 1221, coxa unmodified, trochanter with simple straight retrolatero-ventral apophysis, femur with small apophysis proximo-dorsally, indistinct ventral protuberance and small prolateral conical projection, procurus complex distally, with several distinctive membranous and sclerotized elements (Fig. 1222), bulb with uncus, weakly sclerotized embolus, rod-shaped appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, seen on other tibiae; tarsal pseudosegments barely visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 16.0, 16.1.

*Female.* In general similar to male but triads closer together (distance PME-PME 250  $\mu\text{m}$ ). Tibia 1 in 2 females: 11.5, 11.7. Epigynum large weakly sclerotized area with narrow posterior plate with sclerotized 'knob', dark internal arc visible through cuticle (Figs. 1097, 1224); internal genitalia as in Figs. 1098 and 1225.

*Distribution.* Known from type locality only (Fig. 1162).

*Material examined.* TANZANIA: *Tanga Region*: West Usambara: Mazumbai: ♂ holotype above; same data, 1♂3♀ 2 juvs. in CAS; same locality, v.1969 (B. Kweri), 1♂ in MRAC (147254).

*Pholcus kihansi* n. sp.

Figs. 1067, 1068, 1093, 1094, 1226-1231

*Type.* Male holotype from Tanzania, Morogoro Region, Uzungwa Mts., Kihansi Forest Reserve, Lower Kihansi hydropower project (8°24'S, 36°21'E), forest, vi.-vii.1997 (J. Heionen, I. Zilihona), in ZMUC.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by male cheliceral armature (Fig. 1229; distinctive distal apophyses), male palpal morphology (Figs. 1226, 1227; procurus shape, bulbal processes), and female genitalia (Figs. 1093, 1230; distinctive internal structures).

*Male* (holotype). Total body length 6.5, carapace width ~1.3 (deformed). Leg 1: 43.0 (10.7 + 0.7 +

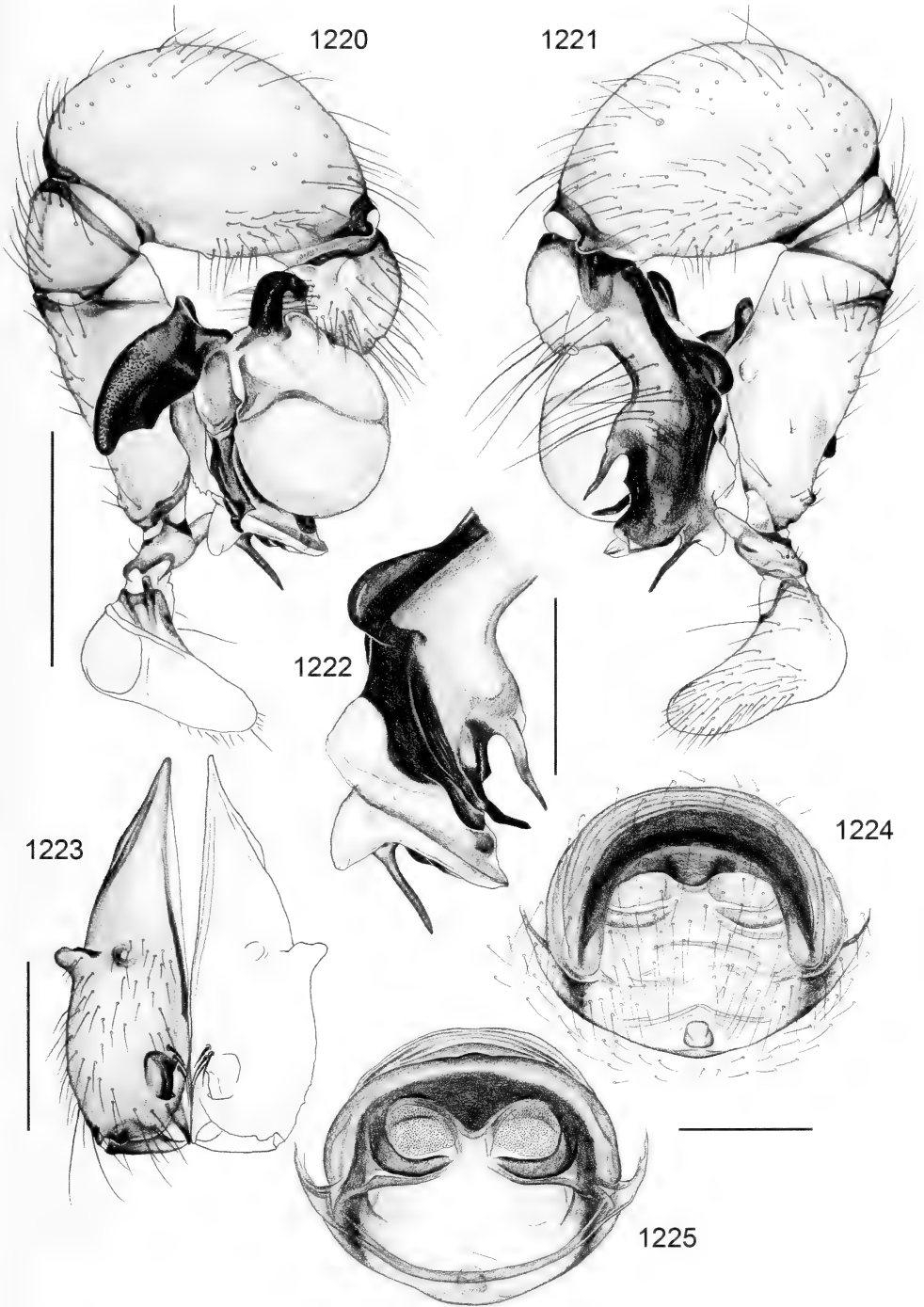


FIG. 1220-1225. *Pholcus mazumbai*. 1220, 1221. Left male palp, prolateral and retrolateral views. 1222. Left procurus, prolateral view. 1223. Male chelicerae, frontal view. 1224, 1225. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1220, 1221), 0.5 (1222-1225).



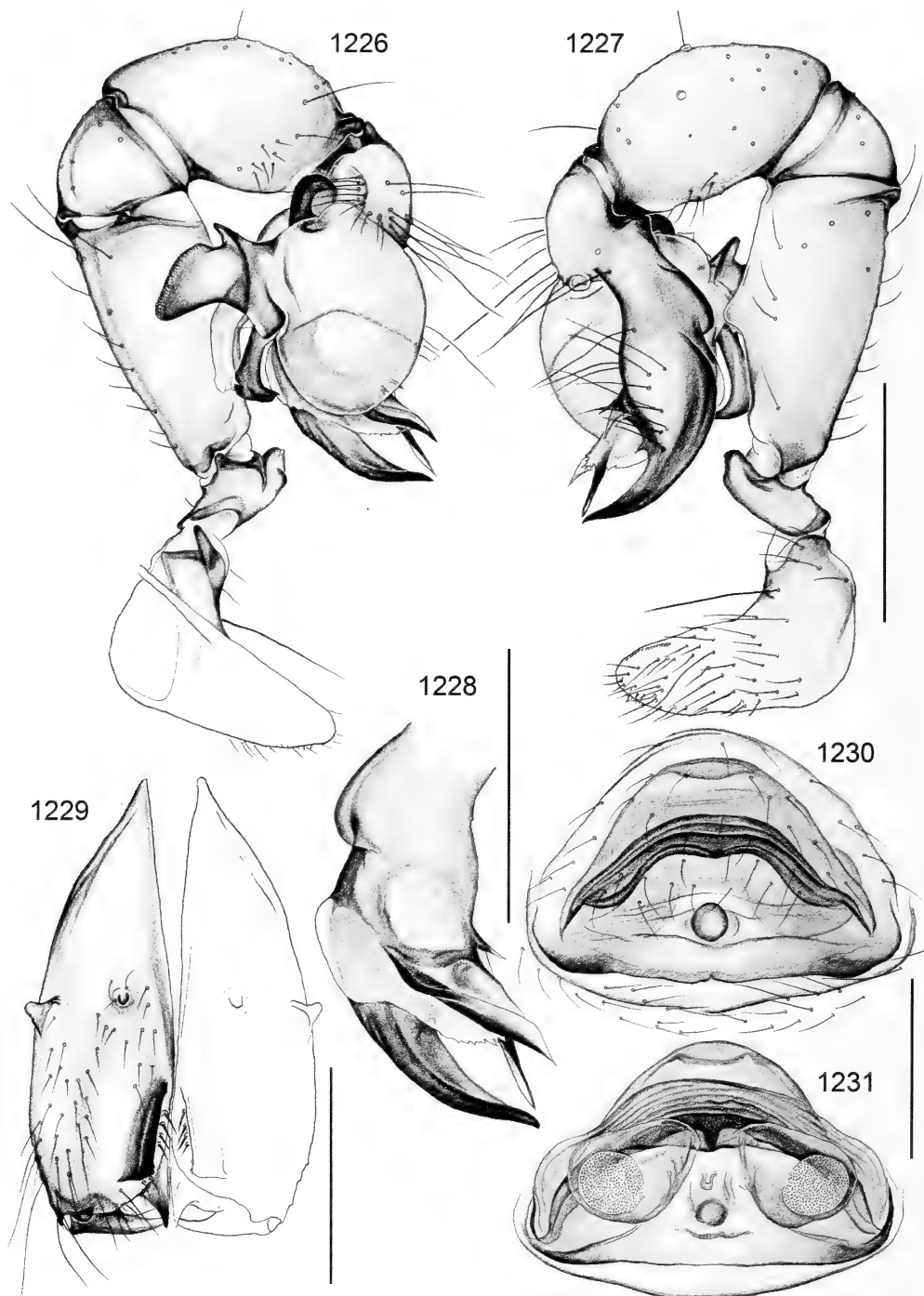


FIG. 1226-1231. *Pholcus kihansi*. 1226, 1227. Left male palp, prolateral and retrolateral views. 1228. Left procurrus, prolateral view. 1229. Male chelicerae, frontal view. 1230, 1231. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1226, 1227, 1229), 0.3 (1228, 1230, 1231).



10.8 + 18.4 + 2.4), tibia 2: 6.8, tibia 3: 4.7, tibia 4: 6.5; tibia 1 L/d: 58. Habitus as in Fig. 1067. Carapace ochre-yellow, slightly darker behind ocular area, ocular area posteriorly darkened, clypeus not darkened, sternum monochromous light brown, legs light ochre-brown, patellae and tibia-metatarsus joints slightly darker, femora and tibiae lighter distally, abdomen pale gray with three brown dorsal marks, ventrally dark brown band divided medially, anterior part strongly Y-shaped (cf. female, Fig. 1068). Distance PME-PME 290  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, few stronger hairs on posterior side. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1229, large ridge-shaped distal apophyses and frontal and lateral apophyses proximally. Sternum wider than long (0.90/0.75), unmodified. Palps as in Figs. 1226 and 1227, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with small ventral protuberance and small prolateral projection (hidden by uncus in Fig. 1226), procurus complex distally, with several distinctive membranous and sclerotized elements (Fig. 1228), bulb with small uncus, weakly sclerotized embolus, L-shaped appendix. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Most specimens with rather distinct pair of light brown marks on carapace; in the second male from Kihansi, the first dorsal abdominal mark is rather indistinct. Tibia 1 in 2 males from Kwamgumi: 10.2, 10.5.

*Female.* In general similar to male, triads slightly closer together (PME-PME 230  $\mu$ m). Tibia 1 in female from Kwamgumi: 9.2 (missing in others). Epigynum with large trapezoidal anterior sclerotized area and narrower posterior plate (Figs. 1093, 1230), internal genitalia as in Figs. 1094 and 1231.

*Distribution.* Known from Morogoro and Tanga Regions, Tanzania (Fig. 1162).

*Material examined.* TANZANIA: *Morogoro Region:* Kihansi Forest Reserve: ♂ holotype above; same data, 1♂ in ZMUC. *Tanga Region:* Muheza Dist., Kwamgumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 26.vii.1995 ("Fog 12"), 2♂ (2 vials) in ZMUC; same data but 31.x.1995 ("Fog 13"), 1♀ in

ZMUC; same locality but 4°57'S, 38°45'E, 430 m a.s.l., 15.xi.1995 ("Fog 22"), 2♀ (2 vials) in ZMUC.

*Pholcus lupanga* n. sp.

Figs. 1069-1071, 1095, 1096, 1232-1237

*Type.* Male holotype from Tanzania, Morogoro Region, Uluguru Mts., Lupanga West [-6°51.9'S, 37°43.4'E], 1500 m a.s.l., 1.vii.1981 (M. Stoltze, N. Scharff), in ZMUC.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1232, 1233; procurus shape, distinctive bulbal processes), and female genitalia (Figs. 1095, 1236; distinctive internal structures).

*Male* (holotype). Total body length 6.9, carapace width 1.9. Leg 1: 62.4 (14.9 + 0.8 + 15.1 + 28.7 + 2.9), tibia 2: 10.0, tibia 3: 6.5, tibia 4: 8.8; tibia 1 L/d: 81. Habitus as in Figs. 1069 and 1070. Carapace ochre-yellow with large brown mark, ocular area with brown pattern posteriorly, clypeus not darkened, sternum medially brown, legs pale ochre-yellow, patellae and tibia-metatarsus joints darker, femora and tibiae with subdistal darker rings, lighter distally, abdomen pale gray with brown dorsal marks, ventrally monochromous (or barely visible median band; cf. female, Fig. 1071). Distance PME-PME 300  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 105  $\mu$ m. Ocular area elevated, few stronger hairs on posterior side. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1235, distal apophyses with modified hairs, frontal and lateral apophyses proximally. Sternum wider than long (1.20/0.95), unmodified. Palps as in Figs. 1232 and 1233, coxa unmodified, trochanter with straight retrolatero-ventral apophysis, femur barely modified but with indistinct projection prolaterally (hidden by bulbal processes in Fig. 1232), procurus relatively simple, whitish area distally with fringed membrane (Fig. 1234), bulb with small bifid uncus, short weakly sclerotized embolus, L-shaped appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Female.* In general similar to male, triads slightly closer together (distance PME-PME 275  $\mu$ m). Tibia 1: 11.8. Epigynum mostly weakly sclerotized, ante-

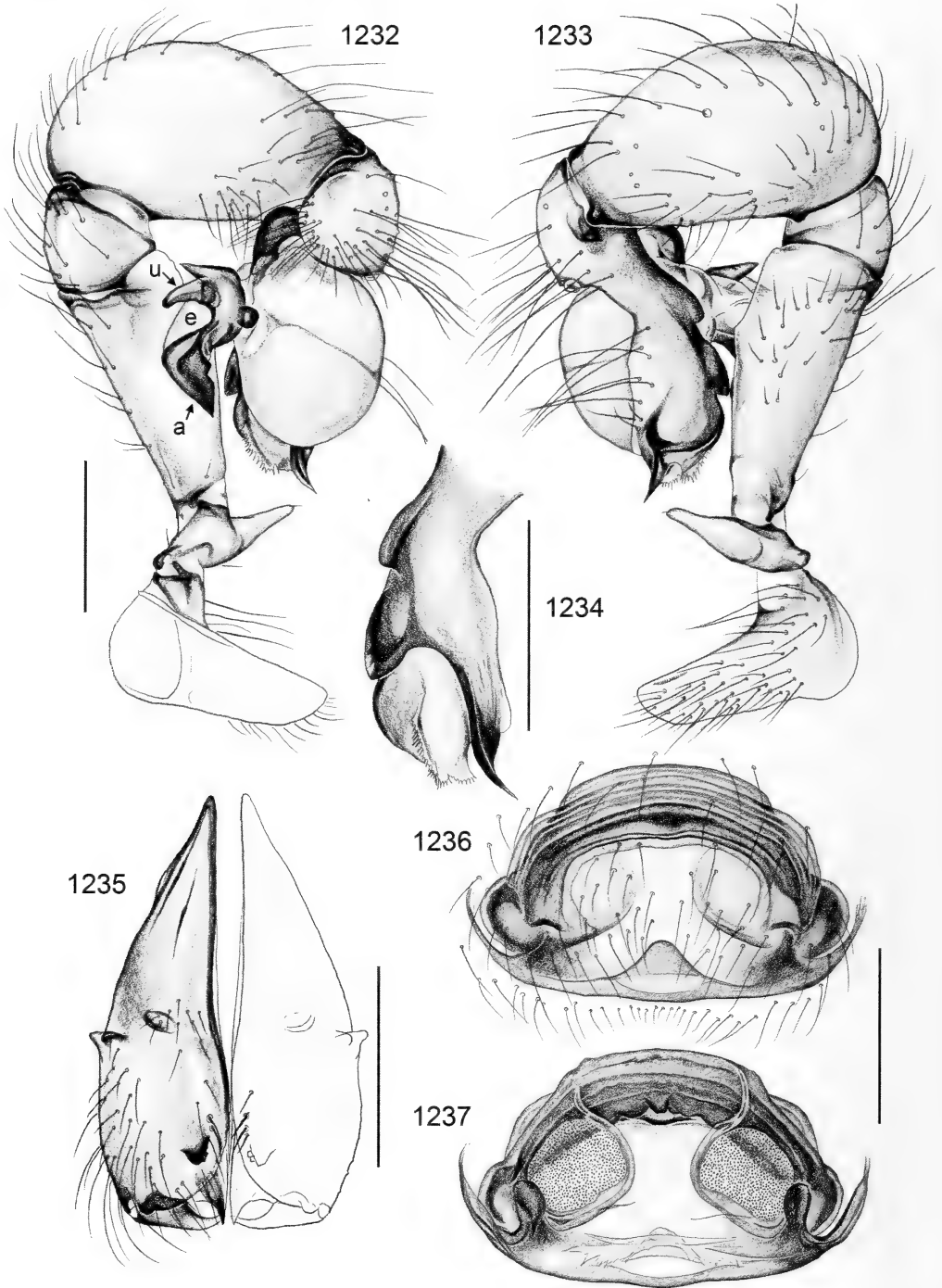


FIG. 1232-1237. *Pholcus lupanga*. 1232, 1233. Left male palp, prolateral and retrolateral views. 1234. Left procurus, prolateral view. 1235. Male chelicerae, frontal view. 1236, 1237. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

riorly with internal arc visible through cuticle, posteriorly narrow plate with short 'knob' (Figs. 1095, 1236); internal genitalia as in Figs. 1096 and 1237.

*Distribution.* Known from type locality only (Fig. 1162).

*Material examined.* TANZANIA: *Morogoro Region:* Uluguru Mts., Lupanga West: ♂ holotype above; same data, 1♀ in ZMUC.

*Pholcus wabehe* n. sp.

Figs. 1072-1074, 1238-1241

*Type.* Male holotype from Tanzania, Iringa Region, Mufindi Distr., Uzungwa Scarp Forest Reserve (8°31.6'S, 35°54.0'E), 750 m a.s.l., "canopy fog 36-AI", 7.iii.1996 (Mc Kamey *et al.*), in ZMUC.

*Etymology.* Named for the Hehe (Swahili collective: Wahehe), an ethnic and linguistic group based in the Iringa Region in south-central Tanzania; noun in apposition.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1238-1240; distinctive procurus shape and bulb processes), and long distal male cheliceral apophyses (Fig. 1241).

*Male* (holotype). Total body length 6.2, carapace width 1.5. Leg 1: 42.8 (10.8 + 0.7 + 10.3 + 18.6 + 2.4), tibia 2: 7.3, tibia 3: 4.9, tibia 4: 6.6; tibia 1 L/d: 65. Habitus as in Figs. 1072 and 1073. Carapace pale ochre-yellow with large brown median mark and lateral margins, ocular area also brown, especially medially, clypeus not darkened, sternum medially brown with light spots, legs ochre-yellow, patellae and tibia-metatarsus joints brown, femora and tibiae with subdistal darker rings and lighter tips, abdomen ochre-gray with brown pattern dorsally, ventrally posterior half of brown band Y-shaped (Fig. 1074). Distance PME-PME 335 µm, diameter PME 135 µm, distance PME-ALE 45 µm, distance AME-AME 85 µm, diameter AME 85 µm. Ocular area elevated, some stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1241, with unusually long distal apophyses with modified hairs, frontal and lateral apophyses proximally. Sternum wider than long (0.95/0.75), unmodified. Palps as in Figs. 1238 and 1239, coxa unmodified, trochanter with slightly curved tapering retrolatero-ventral apophysis, femur proximally narrow, distally widening, procurus relatively simple, widely curved (Fig. 1240), distally narrow whitish area, bulb with small uncus (homology uncertain), weakly sclerotized embolus with two terminal transparent tips, complex appendix with several processes.

Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few fairly distinct.

*Variation.* Tibia 1 in 2 other males: 9.4, 11.5.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 1162).

*Material examined.* TANZANIA: *Iringa Region:* Mufindi Distr., Uzungwa Scarp Forest Reserve: ♂ holotype above; same data but "canopy fog 36-FN", 1♂ in ZMUC; same data but 8.iii. and 16.iii.1996, "canopy fog 37-CM", "canopy fog 39-BD", 2♂ (2 vials) in ZMUC.

*Pholcus taarab* species group

*Diagnosis.* Long but very slender (similar to *Leptopholcus*), long-legged East African *Pholcus* (body length ~5.0-6.5, leg 1:~30-35); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, with distinctive ventral hinged process distally on procurus (Figs. 1277, 1283, 1299), procurus without dorsal spines, sclerotized epigynum with 'knob' (in contrast to *Leptopholcus*).

*Description.* Body length ~5.0-6.5, carapace width ~0.8-0.9. AME small, triads on low elevations. Clypeus and sternum unmodified, male chelicerae with distal apophyses provided with modified hairs and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with straight retrolatero-ventral apophysis, femur with small retrolatero-dorsal hump, only slightly wider distally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines, with distinctive ventral hinged process distally on procurus (Figs. 1277, 1283, 1299). Male bulb with uncus and appendix, with weakly sclerotized embolus. Legs long and very thin, tibia 1 in males ~7-9, tibia 1 L/d ~100-110, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 2-4%. Abdomen thin and long, male gonopore with four epiandrous spigots, ALS with one widened, one pointed, and five cylindrically-shaped spigots, PMS with two small spigots.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, eye triads closer to

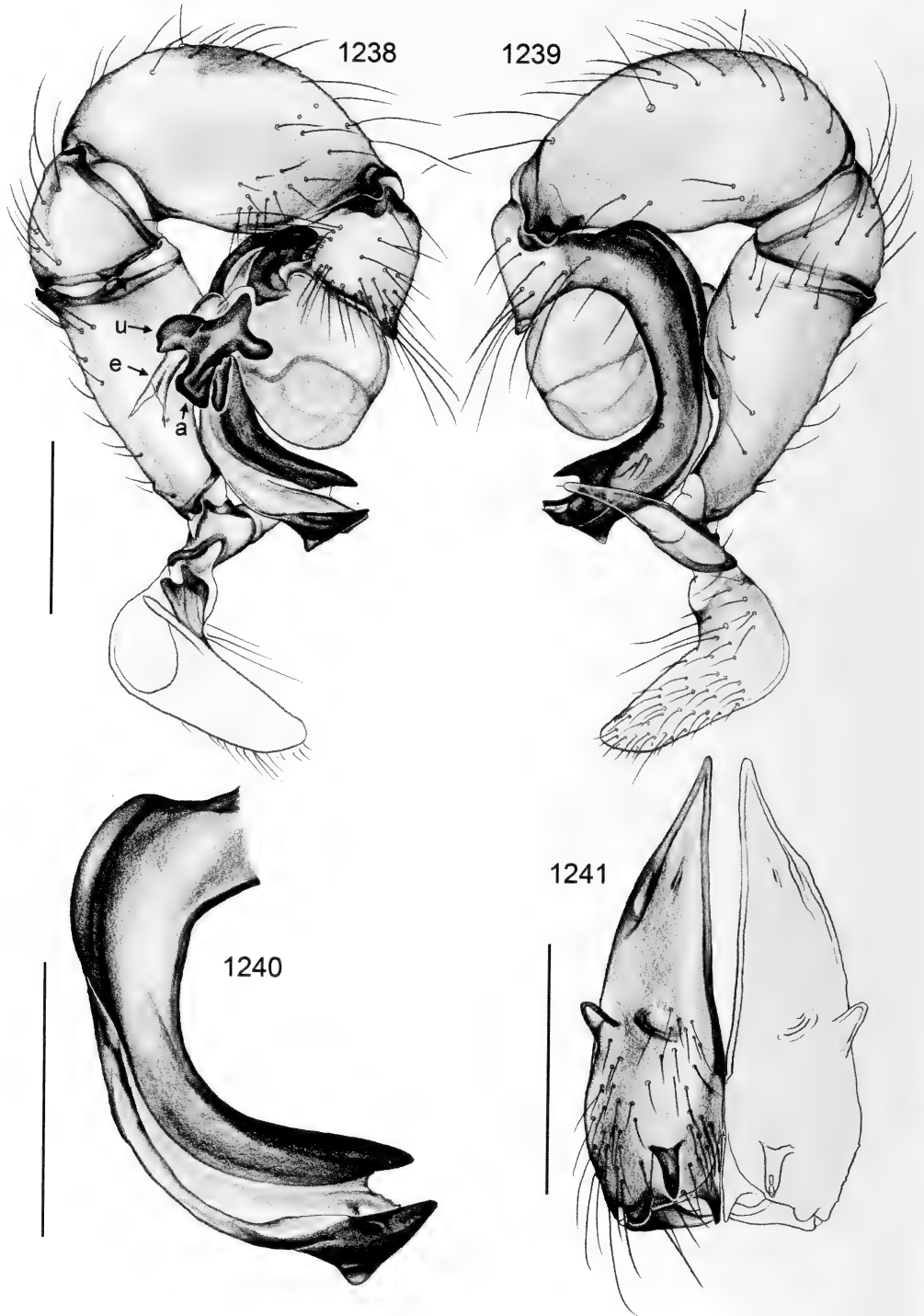


FIG. 1238-1241. *Pholcus wahebe*. 1238, 1239. Left male palp, prolateral and retrolateral views. 1240. Left procurrus, prolateral view. 1241. Male chelicerae, frontal view. Scale lines: 0.5.

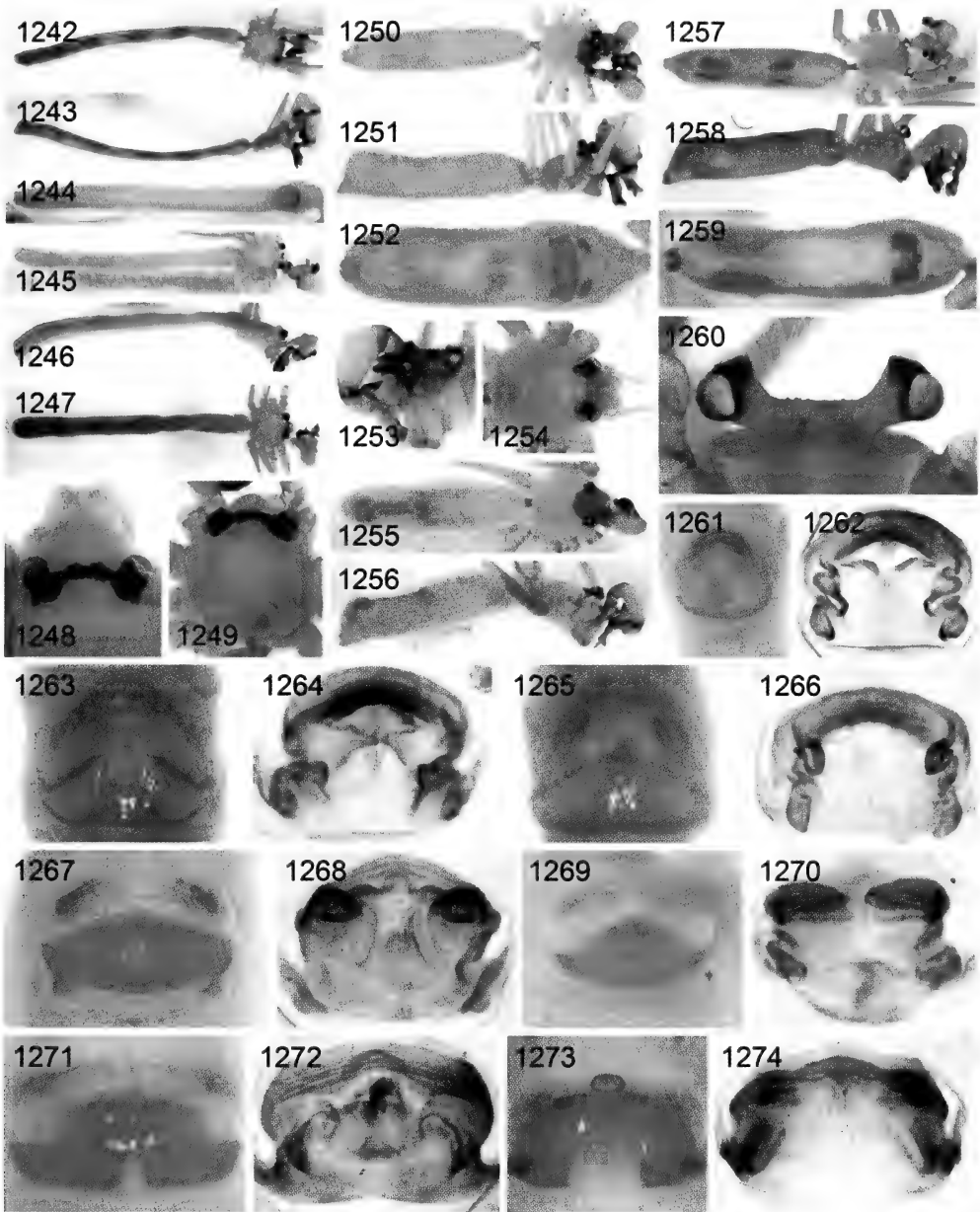


FIG. 1242-1274. *Pholcus taarab* and *Ph. debilis* species groups, habitus and female genitalia (epigyna, ventral views; cleared genitalia, dorsal views). 1242-1244. *Ph. taarab*, male, dorsal and lateral views; female abdomen, ventral view. 1245, 1246. *Ph. kwamgumi*, male, dorsal and lateral views. 1247-1249. *Ph. lilangai*, male, dorsal view; female (1248) and male (1249) ocular area. 1250-1252. *Ph. debilis*, male, dorsal and lateral views; female abdomen, ventral view. 1253-1256. *Ph. attuleh*, male prosoma, oblique view; female prosoma, dorsal view; male, dorsal and lateral views. 1257-1260. *Ph. soukous*, male, dorsal and lateral views; female abdomen, ventral view; male ocular area. 1261, 1262. *Ph. taarab*. 1263, 1264. *Ph. kwamgumi*. 1265, 1266. *Ph. lilangai*. 1267, 1268. *Ph. debilis*. 1269, 1270. *Ph. attuleh*. 1271, 1272. *Ph. baka*. 1273, 1274. *Ph. soukous*.

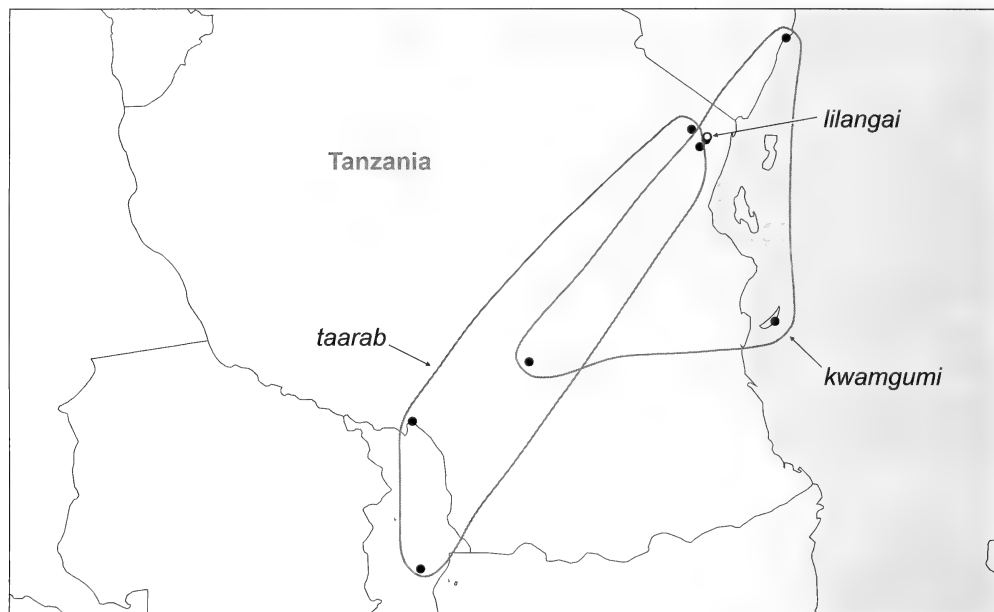


FIG. 1275. Known distribution of the *Pholcus taarab* species group.

gether, legs slightly shorter (tibia 1: -5.0-6.5). Epigynum sclerotized with 'knob'.

**Monophyly.** The species included share the general habitus (*Leptopholcus*-like: very thin and long abdomen, very thin legs, pale coloration; Figs. 1242-1247) and the ventral hinged process distally on the procurus (char. 40; Figs. 1277, 1283, 1299).

**Relationships.** The male cheliceral armature (chars. 17, 18, 20), the male palpal trochanter (chars. 25, 26), the procurus (char. 36), and the epigynum (chars. 64, 65) clearly show that these species belong to *Pholcus* and not to the superficially much more similar genus *Leptopholcus*. Within *Pholcus*, this is one of several species groups without procurus spines (Fig. 26); the detailed relationships with other species groups remain obscure.

**Natural history.** The general habitus of the three species strongly suggests they all live on the underside of green leaves. Only one label accompanying a female of *Ph. kwamgumi* gives the relevant microhabitat information which agrees with this hypothesis.

**Distribution.** The *Ph. taarab* group is restricted to East Africa from coastal Kenya to northern Malawi (Fig. 1275).

**Composition.** The *Ph. taarab* group includes three species all of which are newly described below: *Ph. taarab* n. sp.; *Ph. kwamgumi* n. sp.; *Ph. lilangai* n. sp.

*Pholcus taarab* n. sp.

Figs. 1242-1244, 1261, 1262, 1276-1281

**Type.** Male holotype from Tanzania, Tanga Region, West Usambara Mts., Mazumbai (4°49'S, 38°30'E), forest, 1400-1800 m a.s.l., 10.-20.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), in CAS.

**Etymology.** The Taarab is a music genre popular in Tanzania and Kenya; noun in apposition.

**Diagnosis.** Distinguished from similar species (*Ph. kwamgumi*, *Ph. lilangai*) by morphology of male palp (Figs. 1276, 1277; shapes of procurus, uncus, and appendix); from *Ph. lilangai* also by absence of black band anteriorly between eye triads.

**Male** (holotype). Total body length 6.3, carapace width 0.9. Leg 1: 34.1 (8.8 + 0.4 + 7.9 + 11.1 + 2.9), tibia 2: 5.9, tibia 3: 3.9, tibia 4: 5.7; tibia 1 L/d: 99. Habitus as in Figs. 1242 and 1243. Carapace pale ochre-yellow, ocular area and clypeus partly light brown, chelicerae with light brown bands, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints light brown, abdomen gray with very indistinct darker marks dorsally and laterally, ventrally monochromous (cf. female, Fig. 1244). Distance PME-PME 335  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 60  $\mu$ m, diameter AME ~25  $\mu$ m (lenses not clearly visible).

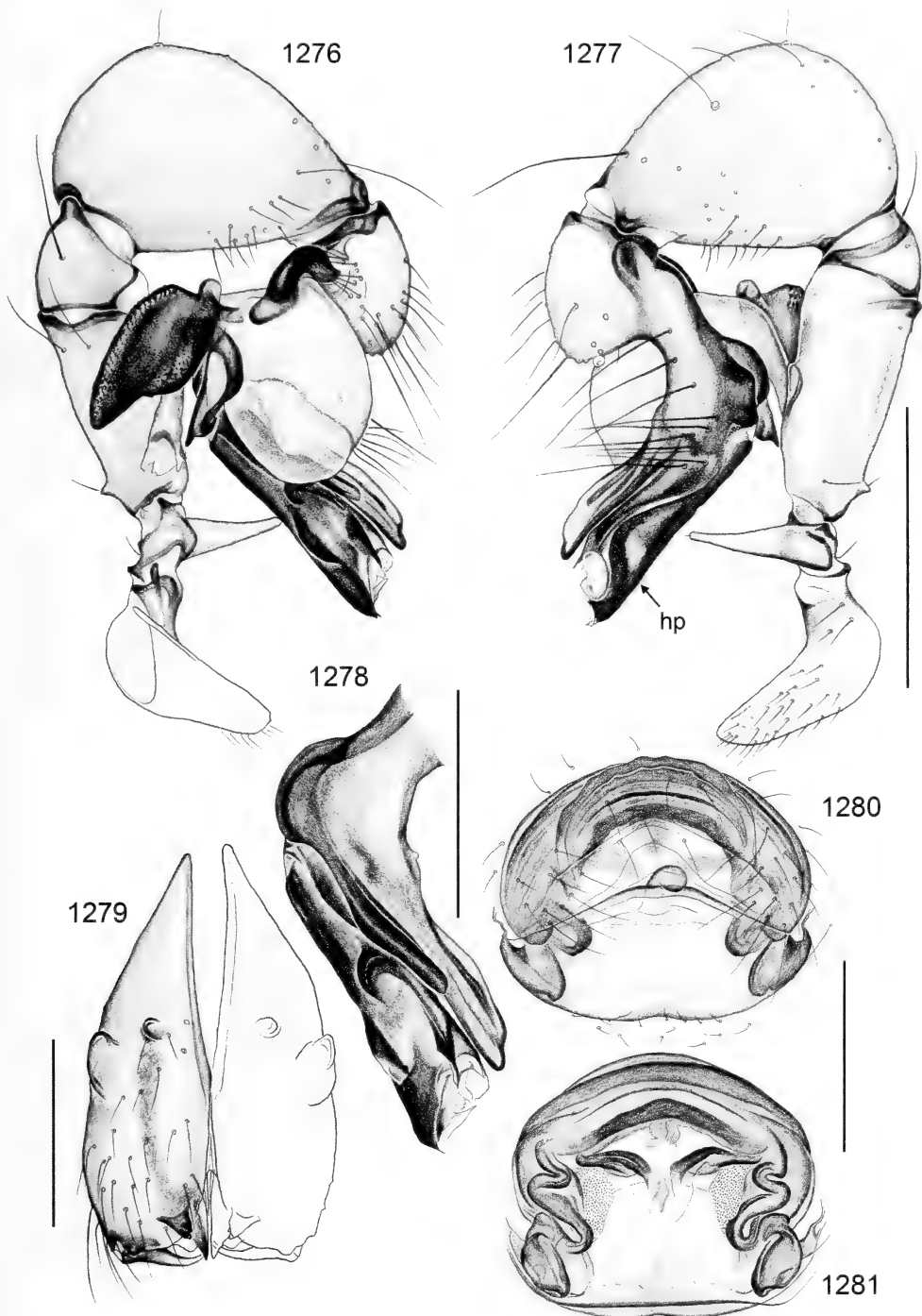


FIG. 1276-1281. *Pholcus taarab*. 1276, 1277. Left male palp, prolateral and retrolateral views. 1278. Left procurus, prolateral view. 1279. Male chelicerae, frontal view. 1280, 1281. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1276, 1277), 0.3 (1278, 1280, 1281), 0.2 (1279).

Ocular area medially not elevated but triads on short stalks directed laterally, few stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1279, simple distal apophyses with modified hairs and frontal and lateral apophyses proximally. Sternum wider than long (0.65/0.55), unmodified. Palps as in Figs. 1276 and 1277, coxa unmodified, trochanter with tapering straight retrolatero-ventral apophysis, femur with small apophysis dorso-proximally, ventrally with sclerotized ridge, procurus very complex distally (Fig. 1278), with large hinged structure ventrally, bulb with uncus, weakly sclerotized distally widened embolus, T-shaped appendix. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments not visible in dissecting microscope.

*Variation.* In some males the dorso-distal procurus apophysis is slightly more bifid; the appendix may be larger and set with more and stronger short spine-like processes; the abdomen may be entirely monochromous, the ocular area more generally brown, the brown bands on the chelicerae may be absent. Tibia 1 in 4 other males: 7.0, 7.8, 8.7, 8.7.

*Female.* In general similar to male but triads not on stalks and closer together (distance PME-PME 250  $\mu$ m), ocular area and clypeus not darkened. Tibia 1 in 5 females: 5.7-6.6 (mean 6.2). Epigynum mostly weakly sclerotized, internal arc visible through cuticle anteriorly, posterior plate with 'knob' (Figs. 1261, 1280); internal genitalia as in Figs. 1262 and 1281.

*Distribution.* Apparently widely distributed in Tanzania and northern Malawi (Fig. 1275).

*Material examined.* TANZANIA: *Tanga Region:* West Usambara Mts., Mazumbai: ♂ holotype above; Mazumbai Forest Reserve (4°49'S, 38°31'E), 1370-1435 m a.s.l., 4.xii.1995 ("Fog 31"), 2♂2♀ (4 vials) in ZMUC. East Usambara Mts., Amani (5°05.7'S, 38°38'E), forest, 950 m a.s.l., 27.x.-9.xi.1995 (C.E. Griswold, N. Scharff, D. Ubick), 1♂1♀ 1 juv. in CAS. *Iringa Region:* Mufindi Distr., Uzungwa Scarp Forest Reserve (8°31.6'S, 35°54'E), 750 m a.s.l., "canopy fog 37-CG", 8.iii.1996 (Mc Kamey *et al.*), 1♂ in ZMUC; same data but "canopy fog 38-FJ" and "canopy fog 38-AI", 12.iii.1996, 2♀ (2 vials) in ZMUC. *Mbeya Region:* 1 km N Matema [9°29'S, 34°02'E], forest at foot of Livingstone Mts., 26.xi.1991 (R. Jocqué), 1♂ in MRAC (173225).

MALAWI: *Northern Region:* Chintheche [11°50'S, 34°13'E], 1.-20.xi.1977 (R. Jocqué), 3♂2♀ in MRAC (153181).

*Pholcus kwamgumi* n. sp.

Figs. 1245, 1246, 1263, 1264, 1282-1297

*Type.* Male holotype from Tanzania, Tanga Region, Muheza Dist., Kwamgumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 26.vii.1995 ("Fog 12-GA"), in ZMUC.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species (*Ph. taarab*, *Ph. lilangai*) by morphology of male palp (Figs. 1282, 1283; shape of procurus, uncus with distinctive prolateral process, appendix); from *Ph. lilangai* also by absence of black band anteriorly between eye triads.

*Male* (holotype). Total body length 5.3, carapace width 0.85. Leg 1: 33.5 (8.4 + 0.4 + 7.7 + 14.5 + 2.5), tibia 2: 5.7, tibia 3: 3.6, tibia 4: 5.5; tibia 1 L/d: 109. Habitus as in Figs. 1245 and 1246. Entire prosoma pale ochre-yellow, legs ochre-yellow, patellae and tibia-metatarsus joints light brown, abdomen monochromous pale ochre-gray. Distance PME-PME 325  $\mu$ m, diameter PME 80  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 60  $\mu$ m, diameter AME 25  $\mu$ m. Ocular area not elevated, triads on low humps directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1286 (very similar to *Ph. taarab*, cf. Fig. 1279), distal apophyses with two modified hairs each (Fig. 1292). Sternum wider than long (0.55/0.50), unmodified. Palps as in Figs. 1282 and 1283, coxa unmodified, trochanter with long straight retrolatero-ventral apophysis, femur with small proximal apophysis retrolatero-dorsally, ventrally with small apophysis rather than ridge, procurus similar to *Ph. taarab* but hinged ventral process much shorter and shapes of sclerites different (Figs. 1287-1289), uncus with distinctive proximal process, embolus weakly sclerotized and distally widened, appendix a simple rod (Figs. 1290, 1291). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; tarsal pseudosegments barely visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1295); ALS with seven spigots each (Fig. 1294).

*Variation.* Tibia 1 in 14 other males: 7.1-8.0 (mean 7.6).



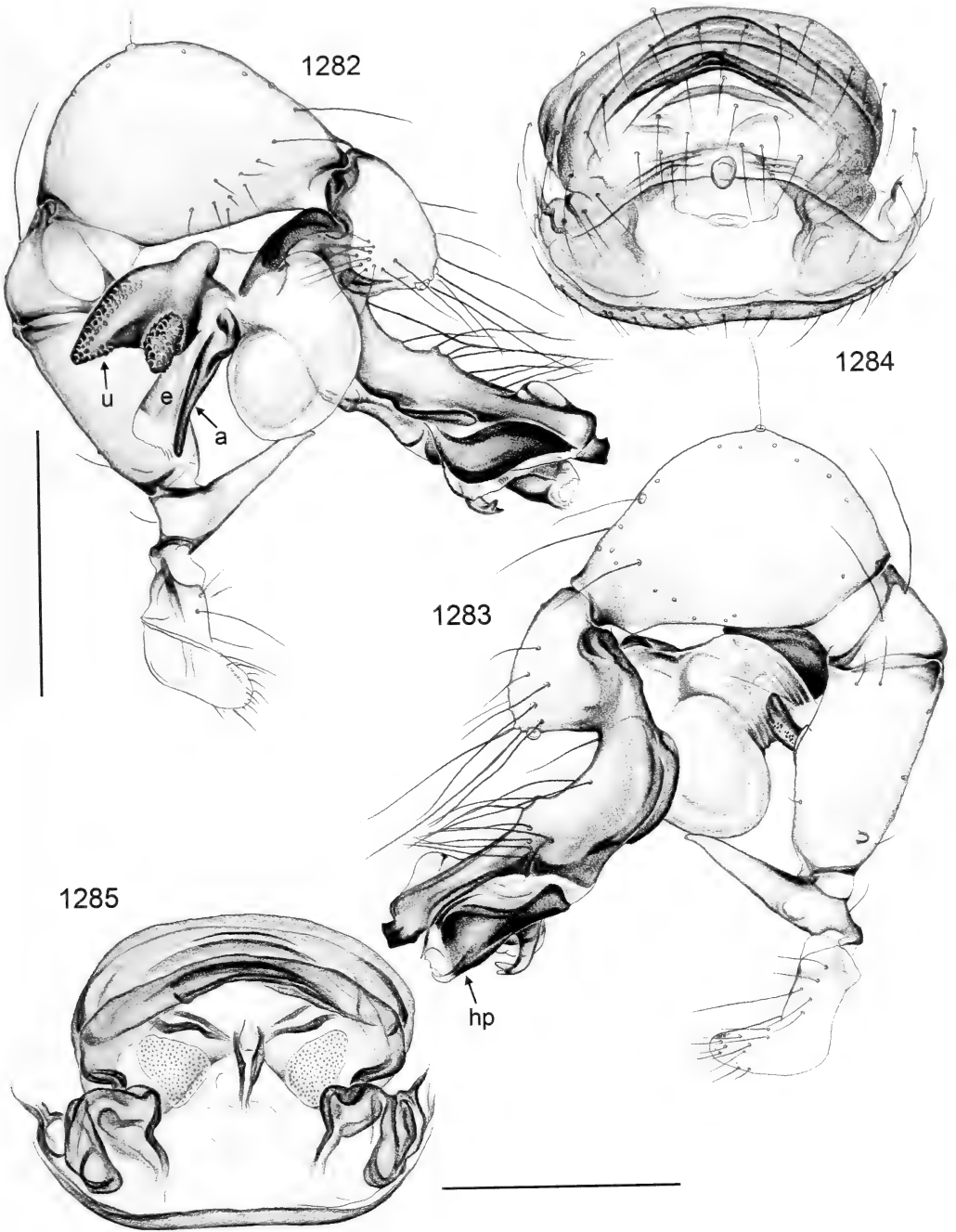


FIG. 1282-1285. *Pholcus kwamgumi*. 1282, 1283. Left male palp, prolateral and retrolateral views. 1284, 1285. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1282, 1283), 0.3 (1284, 1285).

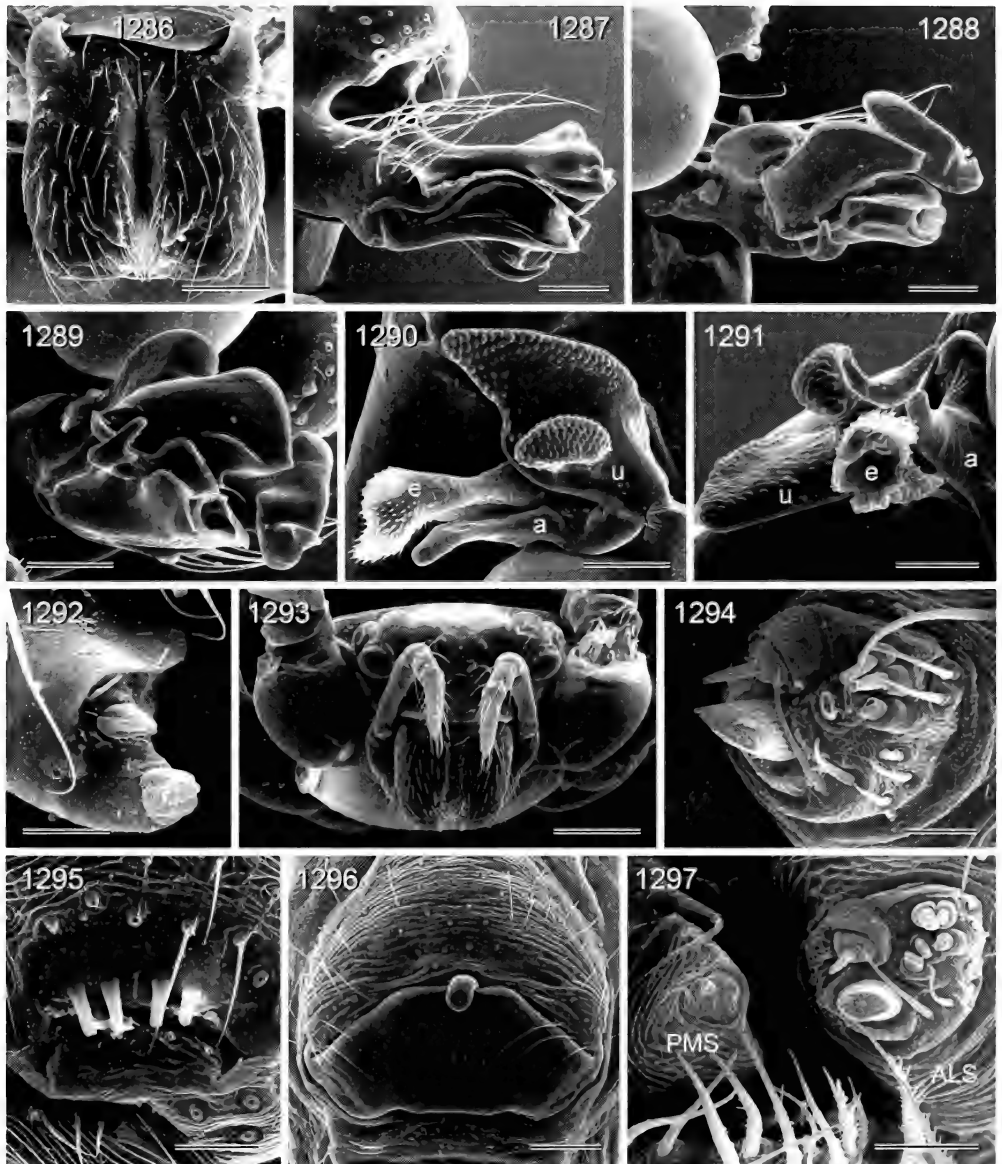


FIG. 1286-1297. *Pholcus kwamgumi*. 1286. Male chelicerae, frontal view. 1287. Right procurus, retrolatero-distal view. 1288. Left procurus, prolatero-distal view. 1289. Tip of left procurus, distal view. 1290, 1291. Left bulbal processes. 1292. Distal male cheliceral apophysis. 1293. Female prosoma, frontal view. 1294. Male ALS. 1295. Male gonopore. 1296. Epigynum. 1297. Female ALS and PMS. Scale lines: 200  $\mu\text{m}$  (1293), 100  $\mu\text{m}$  (1286-1290, 1296), 80  $\mu\text{m}$  (1291), 30  $\mu\text{m}$  (1295), 20  $\mu\text{m}$  (1297), 10  $\mu\text{m}$  (1292, 1294).

*Female*. In general very similar to male, triads closer together (Fig. 1293; distance PME-PME 210  $\mu\text{m}$ ). Tibia 1 in 21 females: 5.0-5.9 (mean 5.5). Epigynum very similar to *Ph. taarab*, anterior arc slightly less

strongly curved (Fig. 1263) and internal membranous structures slightly different (Figs. 1264, 1285). ALS with seven spigots each (Fig. 1297). The single female from Kenya is assigned tentatively because

females of *Ph. kwamgumi* and *Ph. taarab* are difficult to separate.

*Distribution.* Known from Tanga, Iringa, and Pwani Regions in Tanzania and from a specimen assigned tentatively from Kenya (Fig. 1275).

*Material examined.* TANZANIA: *Tanga Region:* Muheza Dist., Kwamgumi Forest Reserve: ♂ holotype above; same data but 18.vii. ("Fog 7"), 20.vii. ("Fog 8"), 22.vii. ("Fog 9"), 23.vii. ("Fog 10"), 25.vii. ("Fog 11"), 26.vii. ("Fog 12"), 31.x. ("Fog 13"), 2.xi. ("Fog 14"), 3.xi. ("Fog 15"), 5.xi. ("Fog 16"), 9.xi. ("Fog 18"), 10.xi. ("Fog 19"), 22♂ 32♀ (46 vials) in ZMUC. Segoma Forest Reserve (4°59'S, 38°44'E), 210 m a.s.l., 11.xi.1995 ("Fog 20"), 1♂ in ZMUC. *Iringa Region:* Mufindi Distr., Uzungwa Scarp Forest Reserve (8°31.6'S, 35°54'E), 750 m a.s.l., "canopy fog 40-EB", 17.iii.1996 (Mc Kamey *et al.*), 1♂ in ZMUC. *Pwani Region:* Mafia Island, Mlola (7°53'S, 39°50'E), evergreen coastal thicket, on clay, x.-xi.1990 (Frontier), 2♂ 3♀ in ZMUC.

*Assigned tentatively.* KENYA: *Coast Prov.:* Watamu [3°21'S, 40°01'E], Jilore, forest, under broad leaves, viii.1980 (J. & F. Murphy, 9248), 1♀ in ZFMK.

*Pholcus lilangai* n. sp.

Figs. 1247-1249, 1265, 1266, 1298-1301

*Type.* Male holotype from Tanzania, Tanga Region, Muheza Dist., Kwamgumi Forest Reserve (4°57'S, 38°44'E), 170-220 m a.s.l., 26.vii.1995 ("Fog 12-JB"), in ZMUC.

*Etymology.* Named for the Tanzanian artist George Lilanga (1934-2005).

*Diagnosis.* Distinguished from similar species (*Ph. taarab*, *Ph. kwamgumi*) by morphology of male palp (Figs. 1298, 1299; shapes of procurus, uncus, and appendix) and by black band frontally between eye triads (in males and females; Figs. 1248, 1249).

*Male* (holotype). Total body length 5.4, carapace width 0.9. Leg 1: 31.3 (8.1 + 0.4 + 7.2 + 13.6 + 2.0), tibia 2: 5.1, tibia 3: 3.2, tibia 4: 4.9; tibia 1 L/d: 102. Habitus as in Fig. 1247. Carapace ochre-yellow, with distinctive black band frontally between eye triads (Fig. 1249), sternum and legs pale ochre-yellow, patellae and tibia-metatarsus joints light brown, femora proximo-dorsally darkened, abdomen ochre-gray with indistinct darker marks dorsally. Distance PME-PME 250 µm, diameter PME 95 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 40 µm. Ocular area medially not elevated, triads on very low humps directed laterally, few hairs on posterior side. No thoracic furrow; clypeus

unmodified. Chelicerae as in *Ph. taarab* (cf. Fig. 1279). Sternum wider than long (0.6/0.5), unmodified. Palps as in Figs. 1298 and 1299, coxa unmodified, trochanter with slender straight retrolatero-ventral apophysis, femur with small apophysis dorso-proximally, ventrally with sclerotized ridge, procurus very complex distally, with large hinged process ventrally, similar to *Ph. taarab* but with distinctive distal sclerites, bulb with processes similar to *Ph. taarab*. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 7.8, 8.1.

*Female.* In general similar to male but triads closer together (distance PME-PME 195 µm). Tibia 1 in 2 females: 5.9, 6.0. Epigynum mostly weakly sclerotized, internal arc visible through cuticle anteriorly, posterior plate with 'knob' (Figs. 1265, 1300); internal genitalia as in Figs. 1266 and 1301.

*Distribution.* Known from two nearby localities in the East Usambara Mountains, Tanga Region, Tanzania (Fig. 1275).

*Material examined.* TANZANIA: *Tanga Region:* Muheza Dist., Kwamgumi Forest Reserve: ♂ holotype above; same data but 23.vii.1995 ("Fog 10"), 2♂1♀ (3 vials) in ZMUC; 26.vii.1995 ("Fog 12"), 1♀ in ZMUC. Segoma Forest Reserve (4°59'S, 38°44'E), 210 m a.s.l., 11.xi.1995 ("Fog 20"), 2♂1♀ (3 vials) in ZMUC.

*Pholcus debilis* species group

*Diagnosis.* Medium-sized, light colored, long-legged *Pholcus* (body length ~4-5, leg 1:-40-45); distinguished from other species groups in *Pholcus* by the combination of the following characters: abdomen cylindrical (not vermiform as in *Ph. taarab* species group), six eyes, in males on stalks (e.g., Figs. 1260, 1307, 1350), male chelicerae with proximal and distal apophyses, with thick but short retrolateral apophysis on male palpal trochanter, procurus without dorsal spines, sclerotized epigynum with 'knob'. *Description.* Body length ~4-5, carapace width 1.0-1.2. AME absent, male eye triads on stalks (e.g., Figs. 1260, 1307, 1350). Clypeus and sternum usually unmodified (clypeus in *Ph. debilis* with pair of bulges), male chelicerae with distal apophyses provided with modified hairs and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter

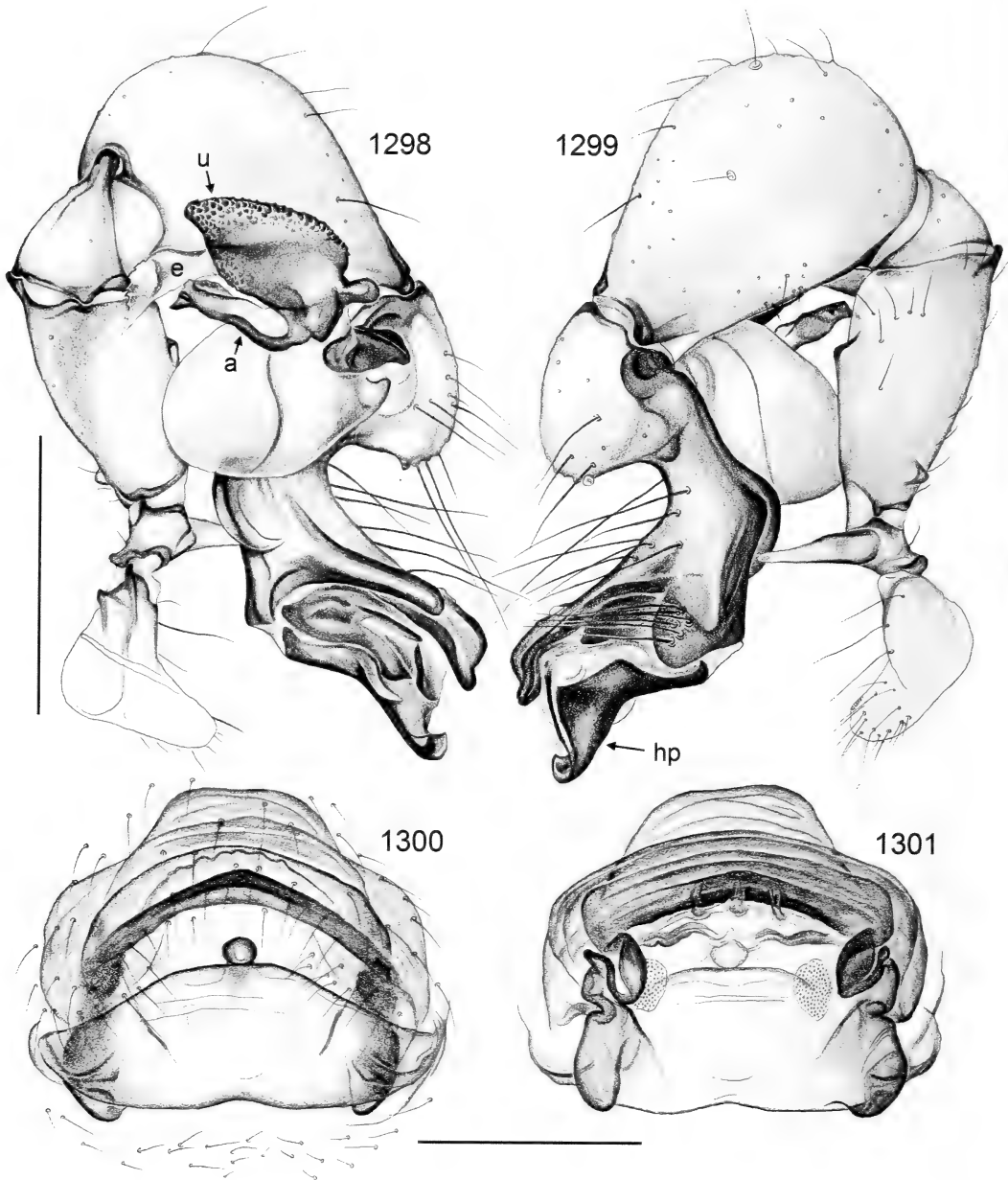


FIG. 1298-1301. *Pholcus lilangai*. 1298, 1299. Left male palp, prolateral and retrolateral views. 1300, 1301. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1298, 1299), 0.3 (1300, 1301).

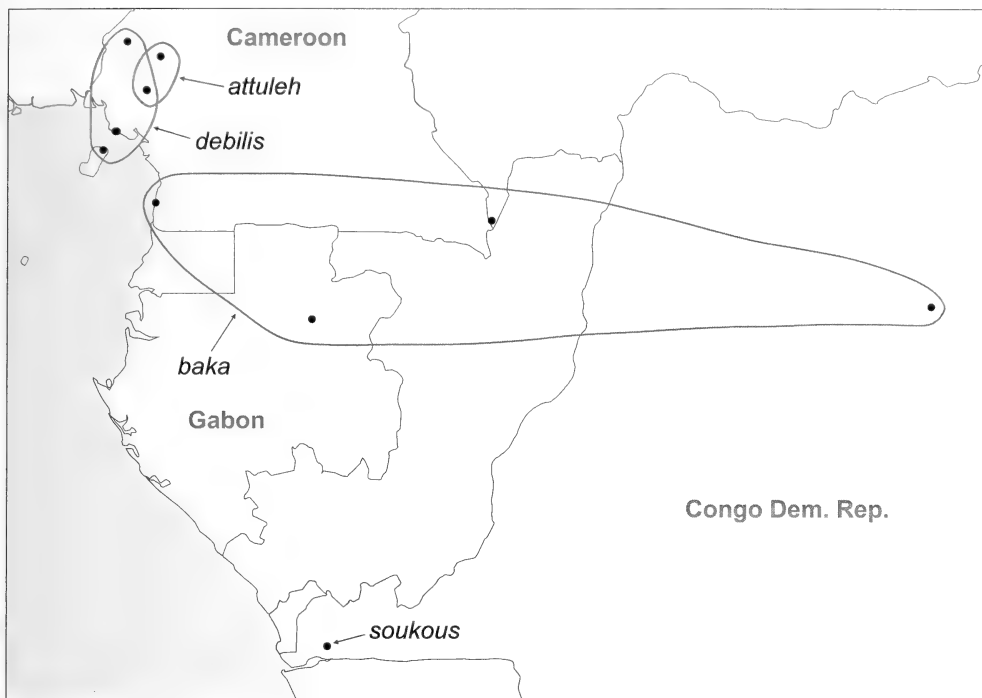


FIG. 1302. Known distribution of the *Pholcus debilis* species group.

with distinctively short but thick retrolatero-ventral apophysis, femur with small retrolatero-dorsal hump and ventral step-shaped projection, tarsus without dorsal elongation, tarsal organ capsulate, procurus with large uncus, simple appendix, weakly sclerotized embolus. Legs long and thin, tibia 1 in males ~8-11, tibia 1 L/d ~85-95, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4-5%. Abdomen cylindrical, male gonopore with four epiantrous spigots, ALS with one widened, one pointed, and variable number of cylindrically-shaped spigots (five in *Ph. attuleh*, none in *Ph. debilis* and *Ph. soukous*, unknown in *Ph. baka*), PMS with two small spigots.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, eye triads closer together and not on stalks, legs slightly shorter (tibia 1: ~6.5-8.5). Epigynum sclerotized with 'knob', internal genitalia with pair of pore-plates of variable shape and position.

*Monophyly.* The species included share the reduction of AME and the male eye triads on stalks (char. 3; e.g., Figs. 1260, 1307, 1350). A further derived feature may be the largely monochromous abdomen (Figs. 1250, 1255, 1257).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65) and the procurus without dorsal spines (char. 38) place this species group in a large polytomy at the 'basis' of the core group of *Pholcus* (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure.

*Natural history.* In Cameroon, I collected three of the four species included in this species group from the undersides of large leaves in well preserved forests (Figs. 11, 12).

*Distribution.* The *Ph. debilis* group is known from Cameroon, Gabon, southern Central African Rep., and western Congo Dem. Rep. (Fig. 1302).

*Composition.* The *Ph. debilis* group includes four species; three of them are newly described below, the fourth is redescribed: *Ph. debilis* (Thorell, 1899) n. comb.; *Ph. attuleh* n. sp.; *Ph. baka* n. sp.; *Ph. soukous* n. sp.

*Pholcus debilis* (Thorell, 1899), n. comb.

Figs. 1250-1252, 1267, 1268, 1303-1321

*Micromerys debilis* Thorell 1899: 22-23.

*Leptopholcus debilis*: Brignoli 1980: 653.

*Types*. Two female syntypes, one of them without abdomen, from unspecified locality in Cameroon, with label "Collectio T. Thorell, *Micromerys debilis* Thor., Camerun (Sjösted 1891) No 280a", in NHRS, examined.

*Note*. The Thorell collection also contains a male with almost identical collection data (see below), but Thorell never described this male and in the original description he explicitly refers only to the two (female) specimens above.

*Diagnosis*. Distinguished from similar species (*Ph. atuleb*, *Ph. baka*, *Ph. soukous*) by modified male clypeus (Figs. 1307, 1310), morphology of male palp (Figs. 1303, 1304; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1267, 1308, 1309; shapes of pore plates and other internal structures).

*Male* (NE Etome). Total body length 4.8, carapace width 1.2. Leg 1: 44.7 (10.0 + 0.5 + 10.6 + 20.6 + 3.0), tibia 2: 6.9, tibia 3: 4.2, tibia 4: 6.0; tibia 1 L/d: 92. Habitus as in Figs. 1250 and 1251. Carapace pale ochre-yellow, ocular area and clypeus brown, sternum whitish, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray with some indistinct dorsal spots on posterior half (unlike specimen shown in Figs. 1250, 1251), ventrally monochromous (cf. female, Fig. 1252). Distance PME-PME 630  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 25  $\mu$ m, no trace of AME. Ocular area elevated, each triad on distinct stalk directed slightly laterally (Figs. 1307, 1310). No thoracic furrow, clypeus with pair of humps at rim. Chelicerae as in Fig. 1307, distal frontal apophyses with two modified hairs each (Fig. 1313), with large proximal frontal and smaller lateral apophyses. Sternum wider than long (0.80/0.65), unmodified. Palps as in Figs. 1303 and 1304, coxa unmodified, trochanter with short rounded retrolateral apophysis, femur with low dorsal hump and distinct retrolateral apophysis proximally and distinct ventral projection distally, procurus complex distally (Figs. 1305, 1316, 1317), without prolatero-dorsal spines, bulb with large uncus, weakly sclerotized embolus fringed at tip, distally curved appendix (Figs. 1314, 1315). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only

distally a few visible in dissecting microscope. Gonopore with four epianndrous spigots (Fig. 1318); ALS with only two spigots each (Fig. 1319).

*Variation*. Tibia 1 in 27 other males: 8.1-10.2 (mean 9.4); spots on abdomen often indistinct or absent, some males with white spots. Males from Mamfe are assigned tentatively because they have a slightly different procurus (Fig. 1306), the trochanter apophysis is slightly shorter and more pointed, the clypeus is only weakly modified, and the uncus differs slightly in size and shape; tibia 1: 8.5, 9.7.

*Female*. In general similar to male but ocular area weakly elevated, lighter brown, triads not on stalks, closer together (Fig. 1312; distance PME-PME 285  $\mu$ m). Tibia 1 in 34 females: 6.4-8.1 (mean 7.4); in females from Mamfe: 7.1, 7.2, 7.4; tarsus 4 with single row of comb-hairs (Fig. 1321). Syntypes in fair condition, tibiae missing, femora 1: 7.5, 7.6. Epigynum with orange-brown plate, small anterior 'knob' (Figs. 1267, 1308, 1320); internal genitalia as in Figs. 1268 and 1309. ALS as in male (only two spigots each).

*Distribution*. Known from southwestern Cameroon and Bioko, Equatorial Guinea (Fig. 1302).

*Material examined*. CAMEROON: unspecified locality: 2♀ syntypes above; same data, but "No 280b", 1♂ in NHRS. *Southwest Region*: Fako Div., Limbe Subdiv.: 1.4 km NE of Etome (4°03.0'N, 9°07.5'E), ca. 400 m a.s.l., 13.-19.i.1992 (S. Larcher, G. Hormiga, J. Coddington, C.E. Griswold, C. Wanzie), 9♂23♀ in CAS; same data, ~45♂98♀ (4 vials) in USNM; south slope of Mt. Etinde nr. Batoke (4°03'N, 9°06'E), 300-1000 m a.s.l., 10.i.1992 (C.E. Griswold, J. Coddington, S. Larcher, G. Hormiga), 2♀ in USNM; Mt. Etinde, 700 m a.s.l., sweeping, 2.iii.1981 (R. Bosmans), 1♀ in MRAC (167981). Mt. Koupe above Nyasoso (4°49.6'N, 9°41.1'E), ~1600 m a.s.l., underside of leaves, 22.-23.iv.2009 (B.A. Huber), 7♂10♀ (2 vials) in ZFMK; same locality ["Meme Div., Mt. Kupe above Nyassosso (4°50'N, 9°41'E)"], forest, 800-1200 m a.s.l., arboreal, 16.-19.ii.1992 (C.E. Griswold, N. Scharff, C. Wanzie, S. Larcher, Masongo), 1♂3♀ in USNM; same data but "terrestrial", 3♀ (2 vials) in USNM.

EQUATORIAL GUINEA: Bioko: Pico Basilé (3°41.7'N, 8°52.3'E), ca. 700 m a.s.l., at night, 17.x.1998 (D.K. Dabney, D. Ubick), 1♂1♀ 1 juv. in CAS; same data but collected by M. Boko, D.K. Dabney, L. Henwood, R.W. Tomos, D. Ubick, J.V. Vindum, 1♂1♀ in CAS.

*Assigned tentatively*. CAMEROON: *Southwest Prov.*: Mamfe [5°45'N, 9°19'E], 7.-11.i.1949 (B. Malkin), 2♂3♀ in CAS.

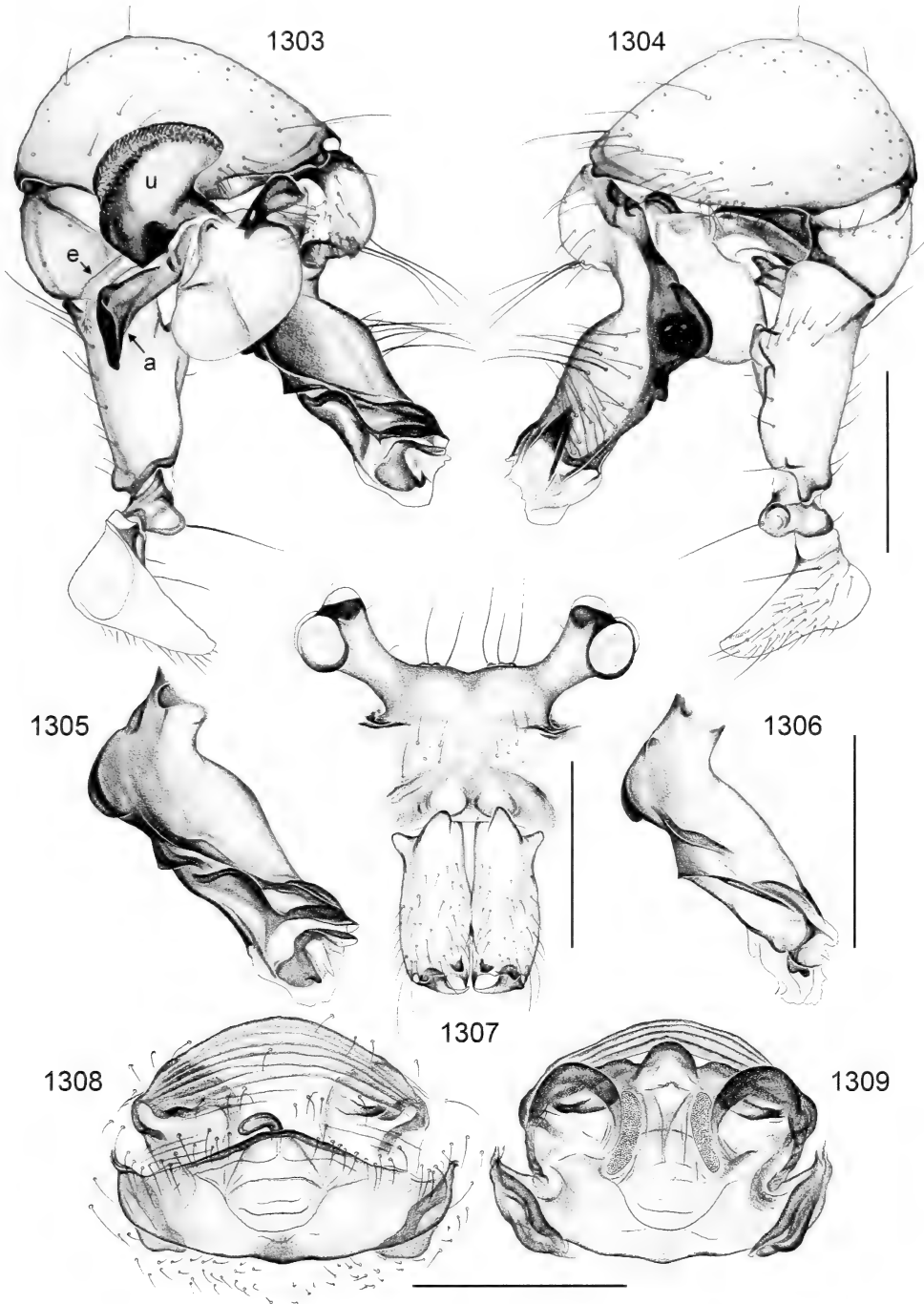


FIG. 1303-1309. *Pholcus debilis*, specimens from NE Etome (except Fig. 1306). 1303, 1304. Left male palp, prolateral and retrolateral views. 1305, 1306. Left procursi, prolateral views, males from NE Etome (1305) and Mamfe (1306). 1307. Male prosoma, frontal view. 1308, 1309. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

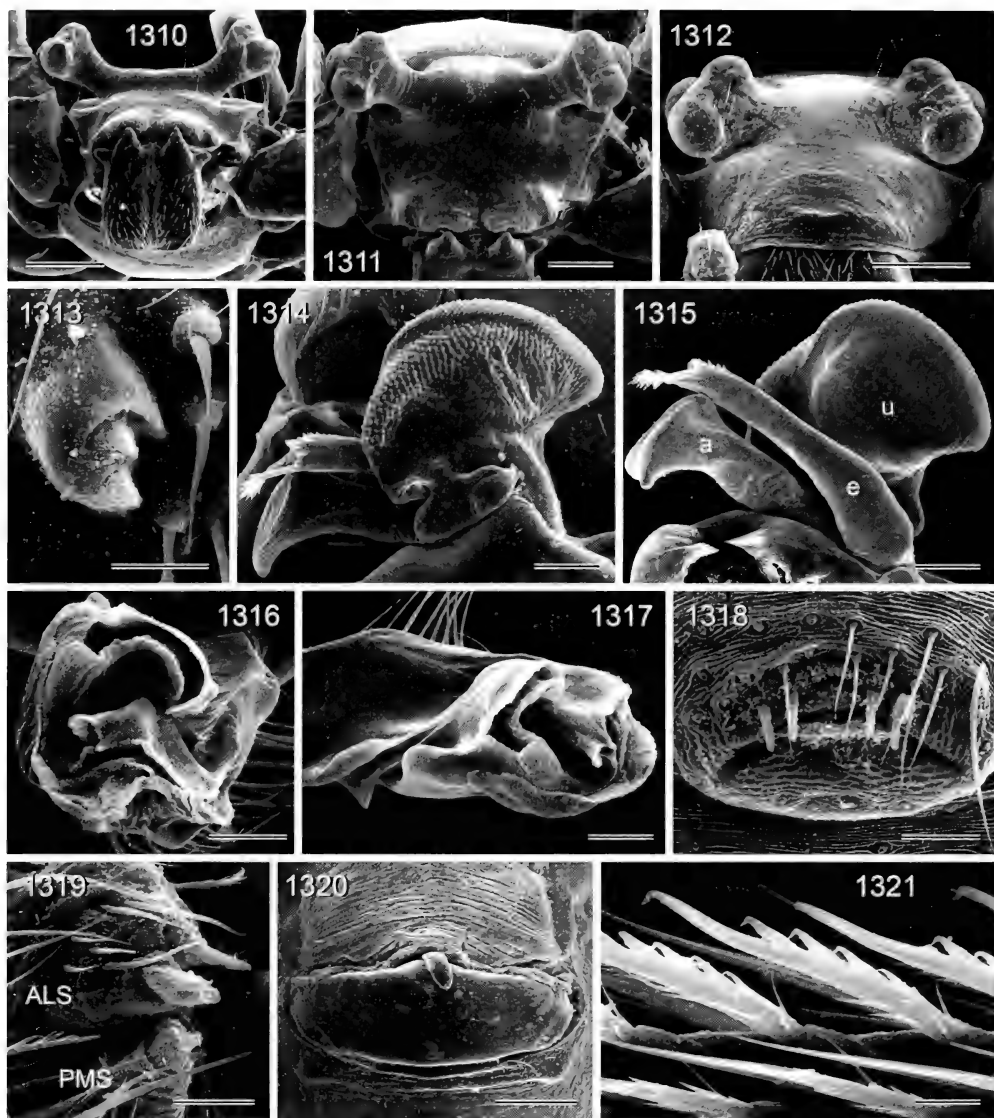


FIG. 1310-1321. *Pholcus debilis*. 1310, 1311. Male prosoma, frontal and fronto-dorsal views. 1312. Female prosoma, frontal view. 1313. Distal male cheliceral apophysis. 1314, 1315. Left and right bulbular processes, prolateral and retrolateral views. 1316, 1317. Left procurus, distal and prolateral views. 1318. Male gonopore. 1319. Male ALS and PMS. 1320. Epigynum. 1321. Comb-hairs on left female tarsus 4. Scale lines: 300  $\mu\text{m}$  (1310), 200  $\mu\text{m}$  (1311, 1312, 1320), 100  $\mu\text{m}$  (1314, 1315, 1317), 80  $\mu\text{m}$  (1316), 40  $\mu\text{m}$  (1318), 20  $\mu\text{m}$  (1313, 1319), 10  $\mu\text{m}$  (1321).

*Pholcus attuleh* n. sp.

Figs. 11, 1253-1256, 1269, 1270, 1322-1338

*Type*. Male holotype from Cameroon, Southwest Region, near Dschang, Attuleh "site 2" (5°27.9'N,

9°56.5'E), 1800 m a.s.l., underside of leaf, 20.iv.2009 (B.A. & J.C. Huber), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.



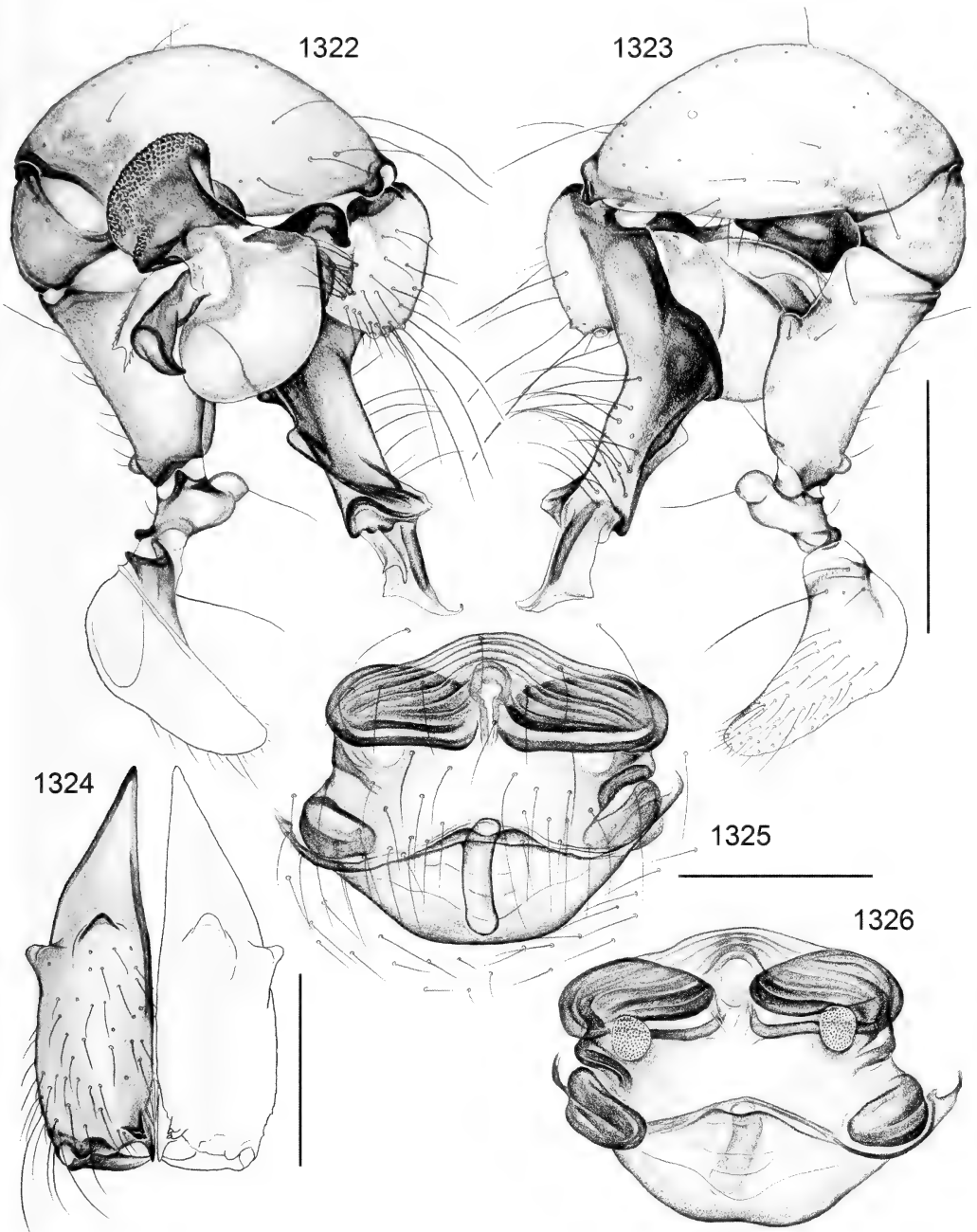


FIG. 1322-1326. *Pholcus attuleh*. 1322, 1323. Left male palp, prolateral and retrolateral views. 1324. Male chelicerae, frontal view. 1325, 1326. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1322, 1323), 0.3 (1324-1326).



FIG. 1327-1338. *Pholcus attuleh*. 1327. Right procurus tip, prolatero-distal view. 1328. Left procurus tip, distal view. 1329. Right embolus tip. 1330. Left procurus, retrolateral view. 1331. Right procurus, prolatero-distal view. 1332. Left procurus, dorsal view. 1333. Left procurus tip, ventral view. 1334. Left procurus, retrolatero-ventral view. 1335. Right bulbular processes. 1336. Male palpal tarsal organ. 1337. Male ALS. 1338. Male gonopore. Scale lines: 100  $\mu\text{m}$  (1331, 1332, 1335), 80  $\mu\text{m}$  (1327, 1330), 60  $\mu\text{m}$  (1328, 1333, 1334), 40  $\mu\text{m}$  (1338), 30  $\mu\text{m}$  (1329), 20  $\mu\text{m}$  (1336, 1337).

**Diagnosis.** Distinguished from similar species (*Ph. debilis*, *Ph. baka*, *Ph. soukous*) by morphology of male palp (Figs. 1322, 1323; shapes of procurus, uncus, and appendix) and female genitalia (Figs. 1269, 1325, 1326; shapes of pore plates and other internal structures); from *Ph. debilis* also by shorter male eye stalks and unmodified male clypeus.

**Male** (holotype). Total body length 3.9, carapace width 1.2. Leg 1: 39.9 (9.5 + 0.5 + 9.7 + 17.6 + 2.6), tibia 2: 6.4, tibia 3: 3.9, tibia 4: 5.6; tibia 1 L/d: 85. Habitus as in Figs. 1255 and 1256. Carapace pale ochre-yellow, ocular area and clypeus brown (Fig. 1253), sternum whitish, legs ochre-yellow, femora proximally with darker dorsal band, patellae and tibia-metatarsus joints dark brown, abdomen pale ochre-gray with some darker spots dorsally on posterior half. Distance PME-PME 400  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, each triad on short stalk (shorter than in *Ph. debilis*), few longer hairs on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1324, distal frontal apophyses with modified hairs, with proximal frontal and lateral apophyses. Sternum wider than long (0.75/0.65), unmodified. Palps as in Figs. 1322 and 1323, coxa unmodified, trochanter with short retrolateral apophysis (similar to *Ph. debilis*), femur with dorsal apophysis proximally and distinct ventral protuberance, no retrolateral apophysis, procurus with distinctive distal part, complex (Figs. 1327, 1328, 1330-1334), tarsal organ capsulate (Fig. 1336), bulb with large uncus, short and weakly sclerotized embolus, strong appendix (Fig. 1335). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1338); ALS with seven spigots each (Fig. 1337).

**Variation.** Spots on abdomen variably distinct. Tibia 1 in 24 other males: 9.3-10.8 (mean 10.0).

**Female.** In general similar to male but ocular area less darkened (Fig. 1254), triads closer together (distance PME-PME 250  $\mu$ m), abdomen in some females with only white spots, in some monochromous. Tibia 1 in 40 females: 6.5-7.8 (mean 7.4). Epigynum relatively small, orange-brown plate with large 'knob' (Figs. 1269, 1325); internal genitalia as in Figs. 1270 and 1326.

**Distribution.** Known from two localities in Southwest Region, Cameroon (Fig. 1302).

**Material examined.** CAMEROON: *Southwest Region*: near Dschang, Attuleh "site 2": ♂ holotype above; same data, 18♂ 21♀ (2 vials) in ZFMK; Attuleh "site 1" (5°27.7'N, 9°56.5'E), 1880 m a.s.l., underside of leaves, 20.iv.2009 (B.A. & J.C. Huber), 8♂ 20♀ (2 vials) in ZFMK. Meme Div., Mt. Koupé above Nyasoso (4°50'N, 9°41'E), forest, 1200-1600 m a.s.l., 19.ii.1992 (C.E. Griswold, N. Scharff, C. Wanzie, S. Larcher, Masongo), 1♂ 2♀ in CAS.

*Pholcus baka* n. sp.

Figs. 12, 1271, 1272, 1339-1343

**Type.** Male holotype from Cameroon, South Region, between Kribi and Campo, "site 1" (2°42.2'N, 9°51.8'E), 10 m a.s.l., underside of leaves, 10.iv.2009 (B.A. Huber), in ZFMK.

**Etymology.** Named for the Baka (also known as Bebayaka, Bebayaga, or Bibaya), an ethnic group inhabiting the southeastern rain forests of Cameroon and neighboring areas; noun in apposition.

**Diagnosis.** Distinguished from similar species (*Ph. debilis*, *Ph. attuleh*, *Ph. soukous*) by morphology of male palp (Figs. 1339, 1340; shapes of procurus, uncus, and appendix) and female genitalia (Figs. 1271, 1342, 1343; shapes of pore plates and other internal structures); from *Ph. debilis* also by unmodified male clypeus.

**Male** (holotype). Total body length 3.9, carapace width 1.1. Leg 1: 41.5 (9.8 + 0.4 + 9.6 + 17.5 + 2.7), tibia 2: 5.9, tibia 3: 3.3, tibia 4: 5.1; tibia 1 L/d: 94. Habitus similar to *Ph. debilis* (cf. Figs. 1250, 1251). Carapace pale ochre-yellow, ocular area and clypeus brown, sternum whitish, legs pale ochre-yellow, patellae and tibia-metatarsus joints light brown, abdomen pale ochre-gray with some indistinct darker marks dorsally and laterally. Distance PME-PME 510  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, no trace of AME. Ocular area elevated, each triad on short stalk directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1341, distal frontal apophyses with modified hairs, with large proximal frontal and smaller lateral apophyses. Sternum wider than long (0.70/0.55), unmodified. Palps as in Figs. 1339 and 1340, coxa unmodified, trochanter with short rounded retrolateral apophysis, femur with dorsal and distinct retrolateral apophyses proximally and distinct ventral apophysis, procurus complex distally, bulb with large uncus, weakly sclerotized embolus with fringed

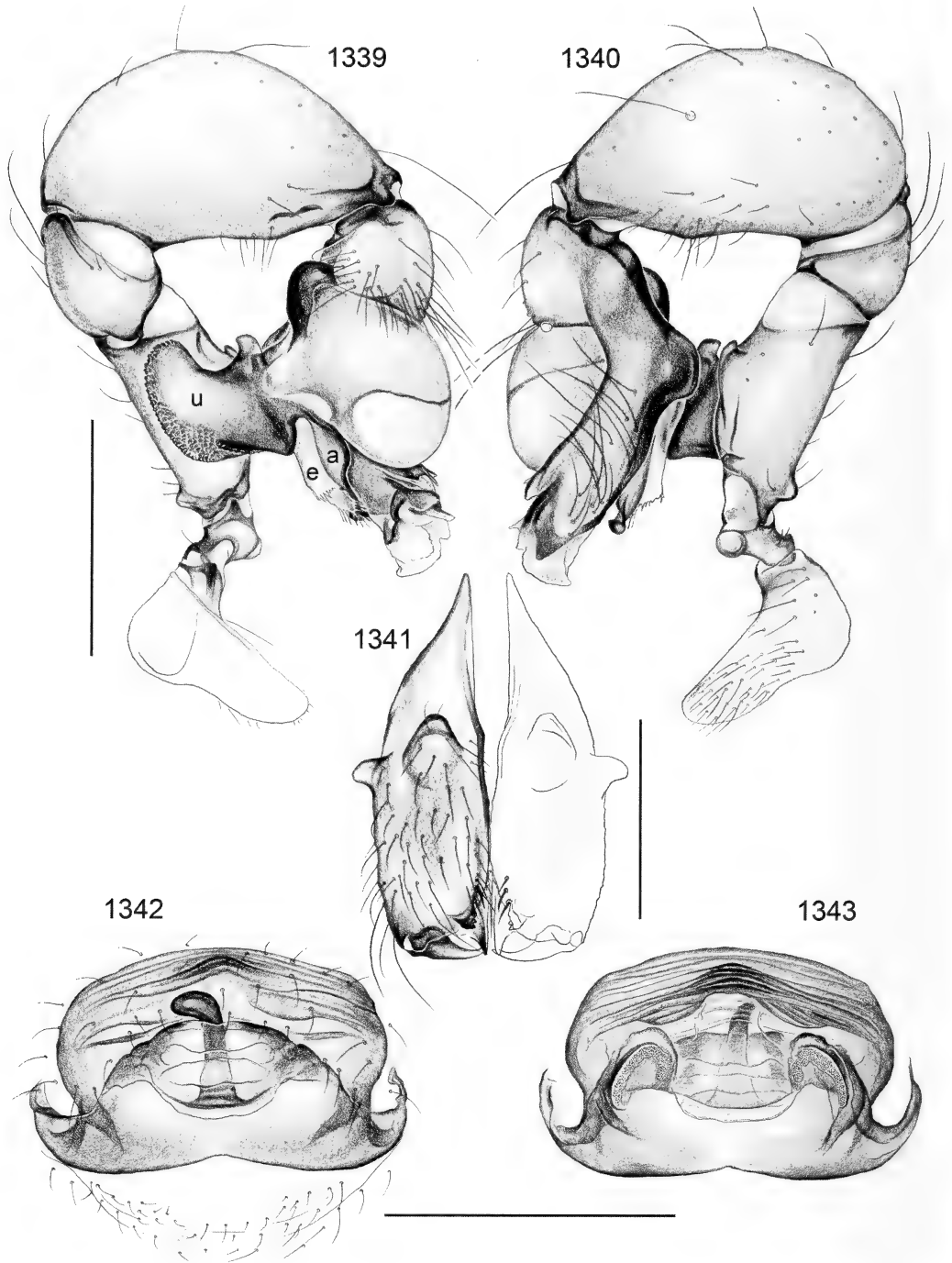


FIG. 1339-1343. *Pholcus baka*. 1339, 1340. Left male palp, prolateral and retrolateral views. 1341. Male chelicerae, frontal view. 1342, 1343. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1339, 1340, 1342, 1343), 0.3 (1341).

tip, rather flat appendix with distal hook. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few visible in dissecting microscope.

*Variation.* Some males with monochromous abdomen. Tibia 1 in 5 other males: 8.8-10.0 (mean 9.3).

*Female.* In general similar to male but triads closer together (distance PME-PME 265  $\mu$ m), one female with white spots on abdomen, some females with dark dorsal bands proximally on femora. Tibia 1 in 10 females: 6.5-7.5 (mean 7.0). Epigynum with orange-brown plate, anterior 'knob', distinctive median light area posteriorly (Figs. 1271, 1342); internal genitalia as in Figs. 1272 and 1343.

*Distribution.* Apparently widely distributed in Cameroon, Gabon, Central African Republic, and Congo Dem. Rep., but note that the two eastern-most records are based on females only (Fig. 1302).

*Material examined.* CAMEROON: *South Region*: between Kribi and Campo: ♂ holotype above; same data, 2♂4♀ in ZFMK.

GABON: *Ogooué-Ivindo*: Makokou, CNRS [0°30.8'N, 12°48.3'E] (original label says 0°04'N, 12°08'E), ix.-xi.1976 (A.L. Rypstra), 5♂9♀ in USNM.

CENTRAL AFRICAN REPUBLIC: *Prefecture Sangha-Mbaéré*: Parc National Dzanga-Ndoki, 37.9 km 169° S Lidjombo (2°22.2'N, 16°10.3'E), 360 m a.s.l., rainforest, beating low vegetation, 20.-28.v.2001 (B.L. Fisher), 1♀ in CAS (separated from 9027099). CONGO DEM. REP.: Yangambi [0°45.8'N, 24°26.1'E], forest, x.1956 (N.L.H. Krauss), 1♀ in AMNH.

*Pholcus soukous* n. sp.

Figs. 1257-1260, 1273, 1274, 1344-1359

*Type.* Male holotype from Congo Dem. Rep., Kongo Centrale Prov. ("Bas-Congo"), Mayombe, Luki Forest Reserve (5°37.3'S, 13°05.9'E), beating along trail near guest house, 8.xi.2006 (D. de Bakker & J.P. Michiels), in MRAC (separated from 219959).

*Etymology.* Soukous (also known as Lingala or Congo) is a dance music genre that originated in Belgian Congo and French Congo during the 1930s and early 1940s, and which has gained popularity throughout Africa; noun in apposition.

*Diagnosis.* Distinguished from similar species (*Ph. debilis*, *Ph. attuleh*, *Ph. baka*) by morphology of male palp (Figs. 1344, 1345; shapes of procurus, uncus,

and appendix) and female genitalia (Figs. 1273, 1348, 1349; shapes of pore plates and other internal structures); from *Ph. debilis* also by unmodified male clypeus.

*Male* (holotype). Total body length 4.4, carapace width 1.0. Leg 1: 39.8 (9.2 + 0.5 + 9.2 + 18.3 + 2.6), tibia 2: 6.0, tibia 3: 4.0, tibia 4: 5.4; tibia 1 L/d: 90. Habitus as in Figs. 1257 and 1258. Carapace pale ochre-yellow with median light brown to orange band including ocular area and clypeus, sternum pale ochre-yellow, legs ochre-yellow, patellae and tibia-metatarsus joints slightly darker, abdomen pale gray with some darker spots in two dorsal patches, ventrally monochromous (cf. female, Fig. 1259). Distance PME-PME 425  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 45  $\mu$ m, no trace of AME. Ocular area elevated, many longer hairs on posterior side (Fig. 1350), each triad on short stalk directed laterally (Fig. 1260). No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1346, with pair of distal apophyses carrying two modified hairs each (Fig. 1357), proximally with frontal and lateral apophyses. Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 1344 and 1345, coxa unmodified, trochanter with rounded retrolateral apophysis, femur with small retrolatero-dorsal apophysis proximally, large hump ventrally and small prolateral pointed apophysis near ventral hump, procurus distally very complex (Figs. 1352, 1353), bulb with very large uncus, distally widened short embolus, simple elongate appendix (Fig. 1354). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments but only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1355); ALS with only two spigots each (Fig. 1356).

*Variation.* Tibia 1 in 20 other males: 8.7-10.9 (mean 10.1); some males without dorsal spots on abdomen; clypeus sometimes not darkened.

*Female.* In general similar to male but most females (37 of 50) with different coloration: sternum brown, dark pattern on carapace darker, sometimes reduced to pair of median spots, clypeus darker brown, mostly with light spots; 12 females more like males but with rather orange sternum; one female intermediate. Triads not on stalks and closer together (Fig. 1351; distance PME-PME 220  $\mu$ m), legs with distinct brown rings before whitish tips on femora and

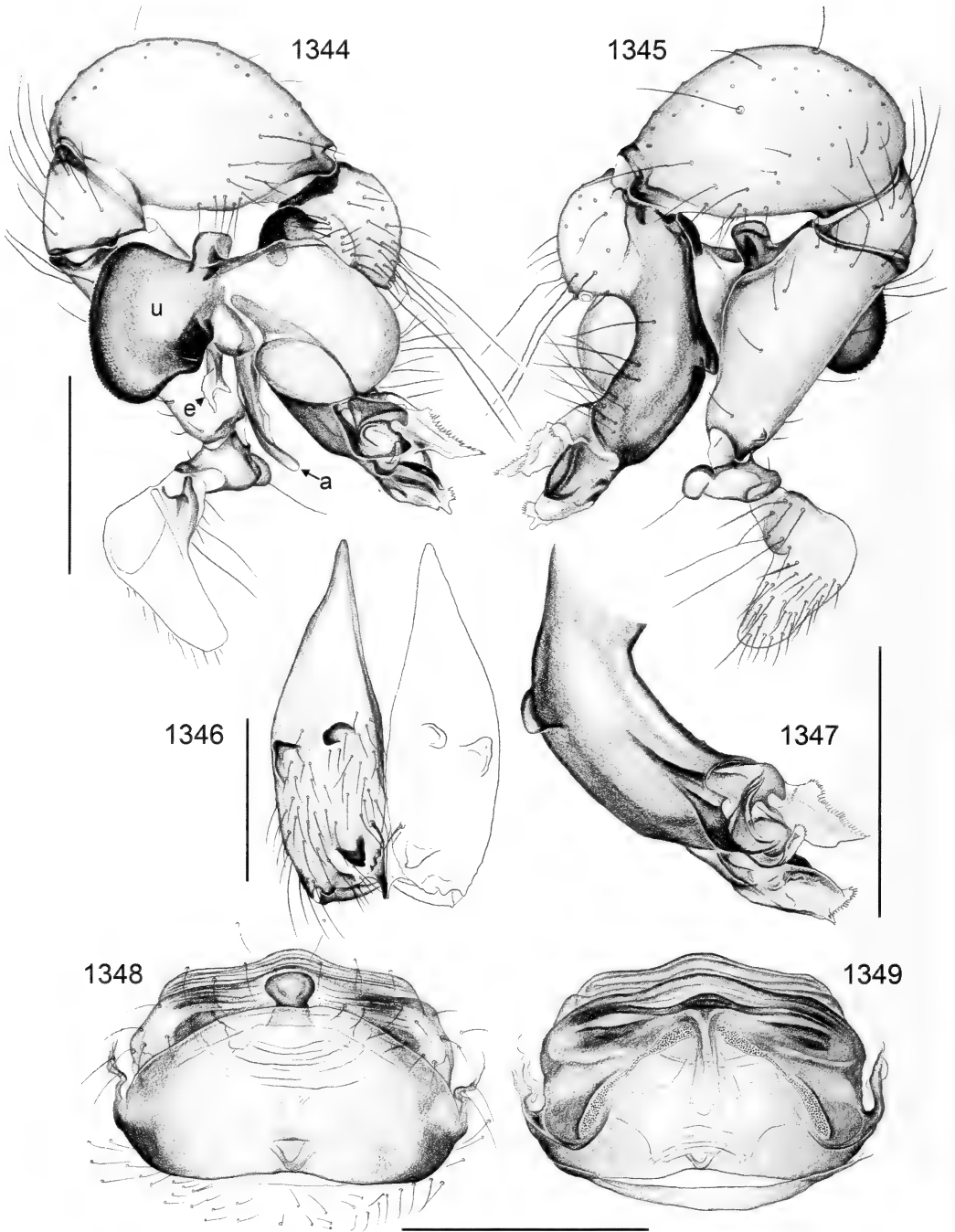


FIG. 1344-1349. *Pholcus soukous*. 1344, 1345. Left male palp, prolateral and retrolateral views. 1346. Male chelicerae, frontal view. 1347. Left procurrus, prolateral view. 1348, 1349. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1344, 1345, 1347-1349), 0.3 (1346).

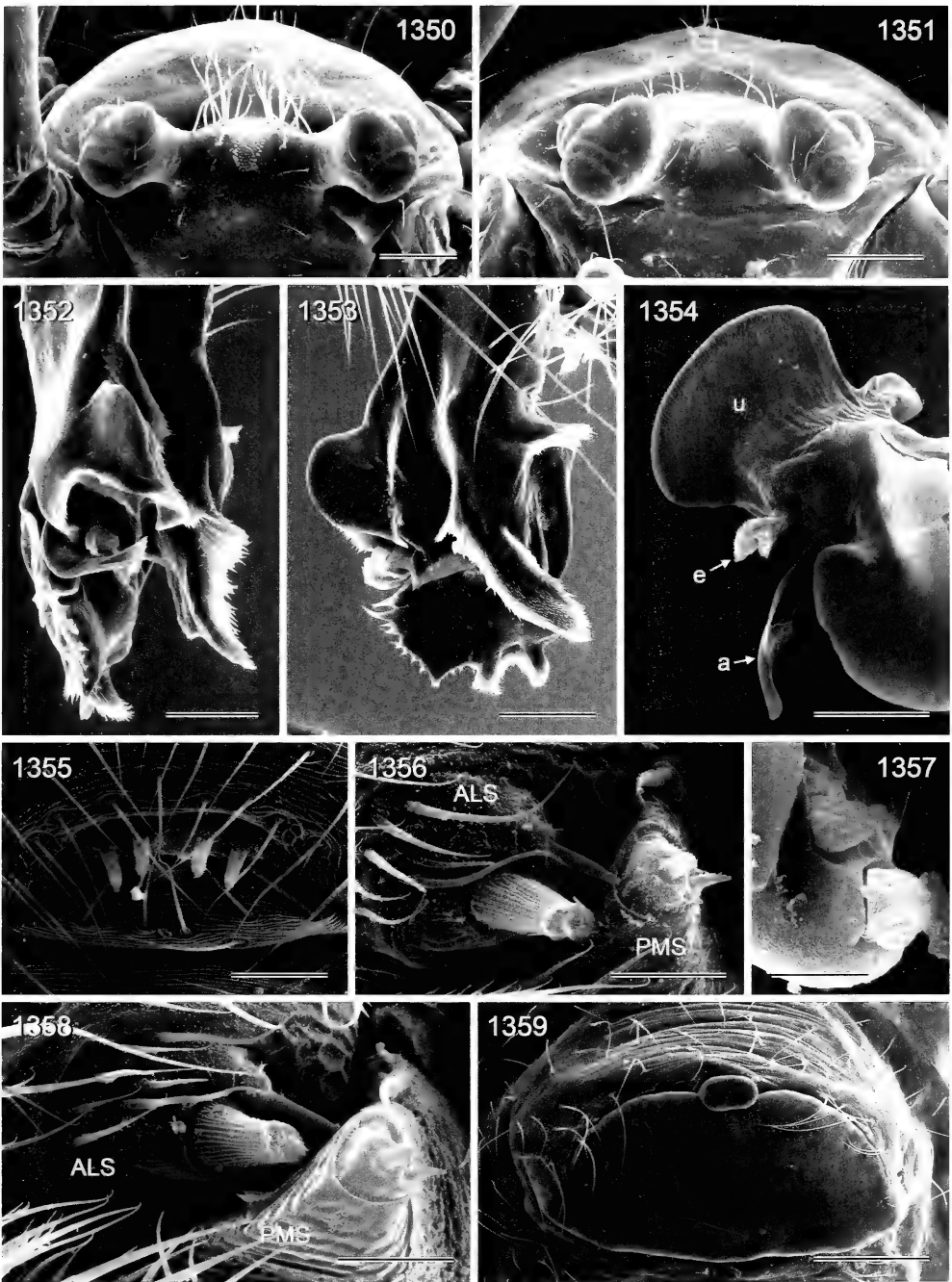


FIG. 1350-1359. *Pholcus soukous*. 1350, 1351. Male and female ocular regions, fronto-dorsal views. 1352, 1353. Left procurus, prolateral and dorsal views. 1354. Left bulbal processes. 1355. Male gonopore. 1356, 1358. Male (1356) and female (1358) ALS and PMS. 1357. Distal male cheliceral apophysis. 1359. Epigynum. Scale lines: 200  $\mu\text{m}$  (1350, 1351, 1354, 1359), 100  $\mu\text{m}$  (1353), 80  $\mu\text{m}$  (1352), 50  $\mu\text{m}$  (1355), 20  $\mu\text{m}$  (1356, 1358), 10  $\mu\text{m}$  (1357).



tibiae. Tibia 1 in 35 females: 6.9-8.5 (mean 7.8). Epigynum dark orange plate with posterior whitish area, large sclerotized 'knob' (Figs. 1273, 1348, 1359); internal genitalia as in Figs. 1274 and 1349. ALS as in male (only two spigots each; Fig. 1358).

*Distribution.* Known from type locality only (Fig. 1302).

*Material examined.* CONGO DEM. REP.: *Kongo Centrale Prov.*: Mayombe, Luki Forest Reserve: ♂ holotype above, together with 1♀; same locality and collectors: primary rainforest, fogging 1, 3-5, 13-18, 20, 4.-13.xi.2006 and 26.ix.-4.x.2007, 9♂41♀ (12 vials) in MRAC (parts of 219850, 852-855, 224312-317, 319); old secondary rainforest, fogging 4-7, 10-12, 17.-25.ix.2007, 5♂ 17♀ (7 vials) in MRAC (parts of 224303-306, 309-311); primary rainforest, beating, 10.xi.2006, 29.ix.-2.x.2007, 5♂ 9♀ (5 vials) in MRAC (222034, 063, 223629, 722, 842); along trail in primary rainforest, beating, 5. and 11. xi.2006, 4♂ 8♀ (3 vials) in MRAC (219967, 221532, 548); old secondary rainforest near fogging sites 4-8, 10, 11, beating, 17.-24.ix.2007, 10♂ 11♀ (8 vials) in MRAC (parts of 222111, 191, 994, 223006, 120, 169, 461, 685); old secondary rainforest, beating, 25.ix.2007, 1♂1♀ in MRAC (sep. from 223096); secondary forest, beating, 16.xi.2006, 2♀ in MRAC (219816); near fogging sites 3, 13, 14, 15, 17, 18, 19, beating, 16.ix.-3.x.2007, 3♂9♀ (8 vials) in MRAC (parts of 223113, 588, 606, 636, 731, 745, 806, 821); along trail, planted and regenerated forest near guest house, beating, 9.xi.2006, 1♂2♀ in MRAC (221620); along trail between fogging sites 1 and 2, beating, 7.xi.2006, 3♀ in MRAC (221516); along trail from house to Luki camp, beating, 19.ix.2007, 1♂4♀ in MRAC (223761); forest edge near guest house, 14.xi.2006, 1♂1♀ in MRAC (220002); central zone of Luki F.R., 26.-27.ix.2007 (W. Hubau), 1♀ in MRAC (sep. from 222155); by hand, primary rainforest, 20.ix.2007 (W. Hubau), 1♀ in MRAC (223576).

#### *Pholcus gracillimus* species group

*Diagnosis.* Large, rather dark, long-legged *Pholcus* (body length ~5.5-6.5, leg 1:~40-70); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes (except *Ph. mentawir*), male chelicerae with proximal and distal apophyses (distal modifications absent in *Ph. camba*), with distinctive step-shaped apophysis ventrally on male palpal femur (e.g., Figs. 1421, 1426), male palpal tibia darkened proximally and distally,

abdomen ventrally with undivided dark band (e.g., Figs. 1363, 1365, 1373) (divided or constricted in *Ph. camba*; divided and more complex in *Ph. kapuri*), procurus without dorsal spines, sclerotized epigynum with 'knob'.

*Description.* Body length ~5.5-6.5, carapace width 1.3-1.8. AME usually present (except *Ph. mentawir*), triads usually on low humps (short stalks in *Ph. camba*). Clypeus and sternum unmodified, male chelicerae with distal apophyses provided with modified hairs (hairs apparently absent in *Ph. mentawir*; distal modifications absent in *Ph. camba*) and one or two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with short retrolatero-ventral apophysis of variable shape, femur with distinctive ventral step-shaped projection (Figs. 1421, 1426; rounded in *Ph. camba*), tibia darkened proximally and distally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines. Male bulb with large uncus, simple appendix, weakly sclerotized embolus (aberrant in *Ph. camba*). Legs long and thin, tibia 1 in males ~9-16, tibia 1 L/d ~65-90, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4%. Abdomen cylindrical, with distinctive cuticular pattern dorsally (series of dark marks widening posteriorly) and ventrally (simple undivided band, Figs. 1363, 1365, 1373; divided or constricted in *Ph. camba*; divided and more complex in *Ph. kapuri*), male gonopore and spinnerets not examined.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, eye triads closer together and less elevated, legs slightly shorter (tibia 1: <10). Epigynum usually heavily sclerotized, with 'knob', internal genitalia with pair of round or oval pore-plates.

*Monophyly.* The species included share a number of similarities but it is not clear if these are derived or not. Potential synapomorphies are the shape of the ventral palpal femur apophysis (Figs. 1421, 1426, 1431), the color pattern of the male palpal tibia (darkened proximally and distally), and the undivided band ventrally on the abdomen (Figs. 1363, 1365, 1373).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65) and the procurus without dorsal spines (char. 38) place this species group in a large polytomy at the 'basis' of the



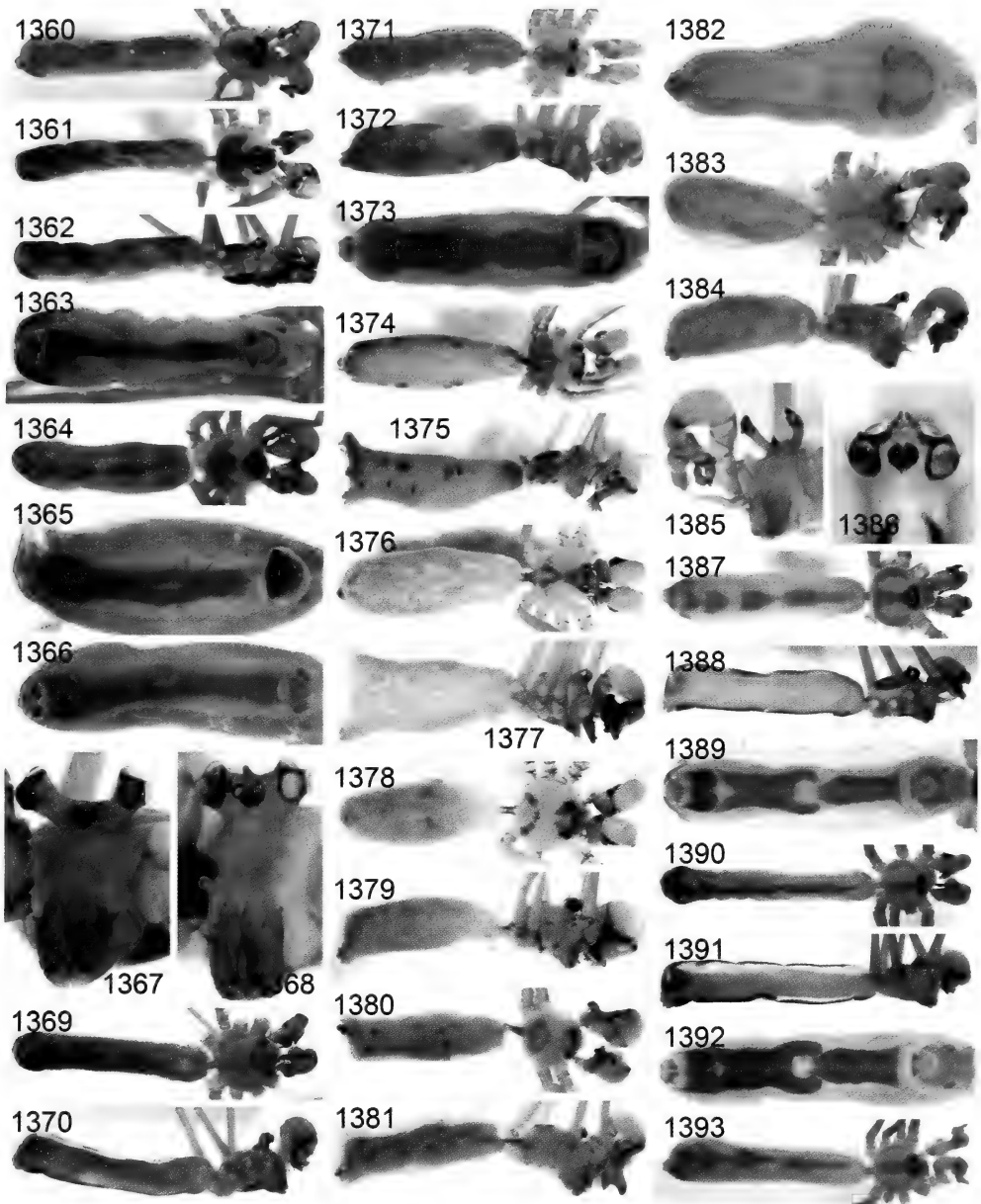


FIG. 1360-1393. *Pholcus gracillimus*, *Ph. quinquenotatus*, and *Ph. ancoralis* species groups, habitus. 1360. *Ph. gracillimus*, male, dorsal view. 1361-1363. *Ph. negara*, male, dorsal and lateral views; female abdomen, ventral view. 1364-1366. *Ph. ruteng*, male, dorsal view, female and male abdomens, ventral views. 1367, 1369, 1370. *Ph. camba*, male prosoma, frontal view; male, dorsal and lateral views. 1371-1373. *Ph. mentawir*, male dorsal and lateral views; female abdomen, ventral view. 1374, 1375. *Ph. erawan*, male, dorsal and lateral views. 1368, 1376, 1377. *Ph. quinquenotatus*, male prosoma, oblique view; male, dorsal and lateral views. 1378, 1379. *Ph. namou*, male, dorsal and lateral views. 1380-1382. *Ph. sudhami*, dorsal and lateral views; female abdomen, ventral view. 1383-1385. *Ph. youngae*, male, dorsal and lateral views; male prosoma, oblique view. 1387-1389. *Ph. ancoralis*, male, dorsal and lateral views; female abdomen, ventral view. 1386, 1390-1392. *Ph. varinata*, male ocular area; male, dorsal and lateral views; female abdomen, ventral view. 1393. *Ph. karawari*, male, dorsal view.

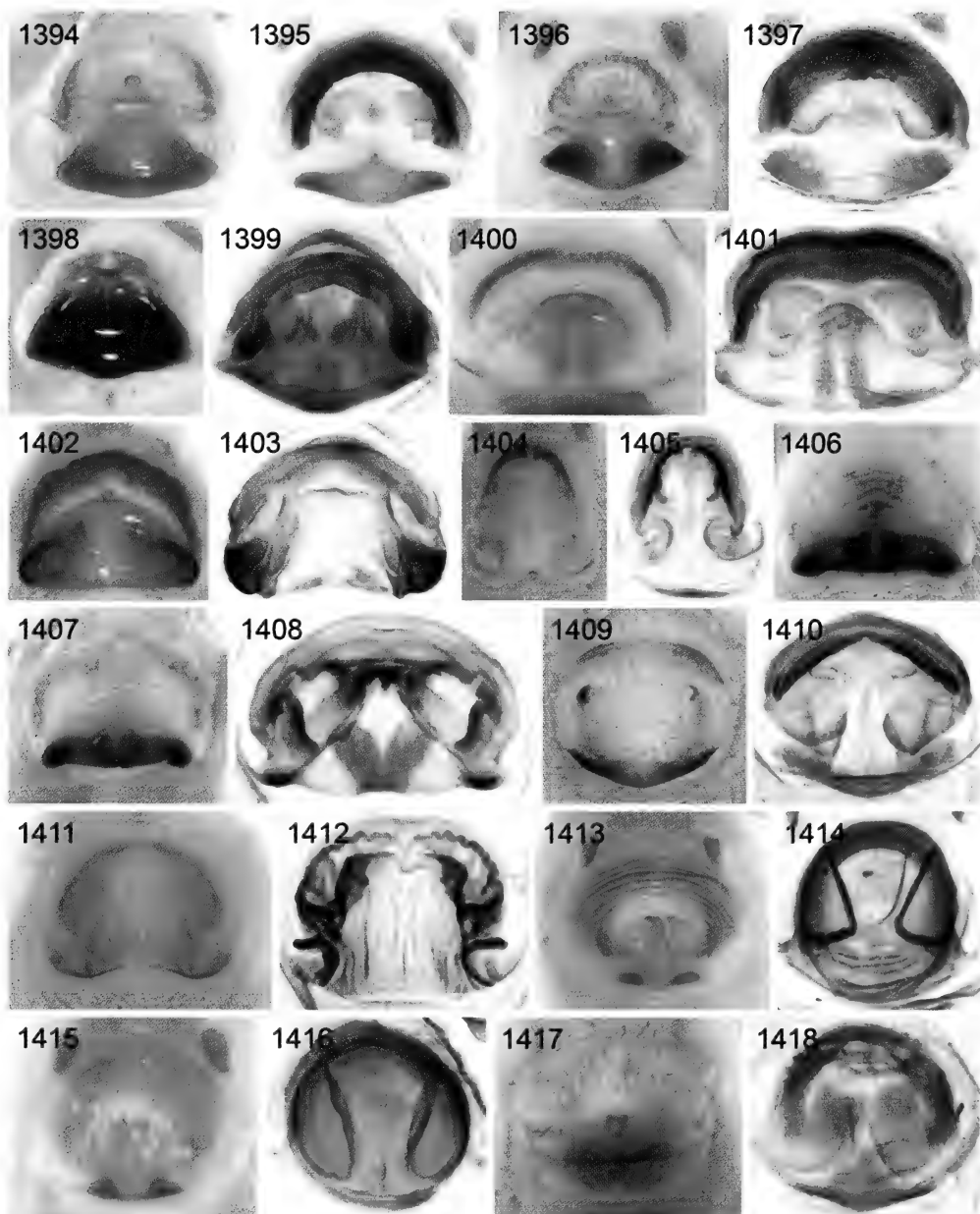


FIG. 1394-1418. *Pholcus gracillimus*, *Ph. quinquenotatus* and *Ph. ancoralis* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 1394, 1395. *Ph. gracillimus*. 1396, 1397. *Ph. negara*. 1398, 1399. *Ph. ruteng*. 1400, 1401. *Ph. camba*. 1402, 1403. *Ph. mentawir*. 1404, 1405. *Ph. erawan*. 1406-1408. *Ph. quinquenotatus*, *quinquenotatus*-type (1406), *dentifrons*-type (1407), specimen from Seram Island (1408). 1409, 1410. *Ph. namou*. 1411, 1412. *Ph. sudhami*. 1413, 1414. *Ph. ancoralis*. 1415, 1416. *Ph. varivata*. 1417, 1418. *Ph. karawari*.

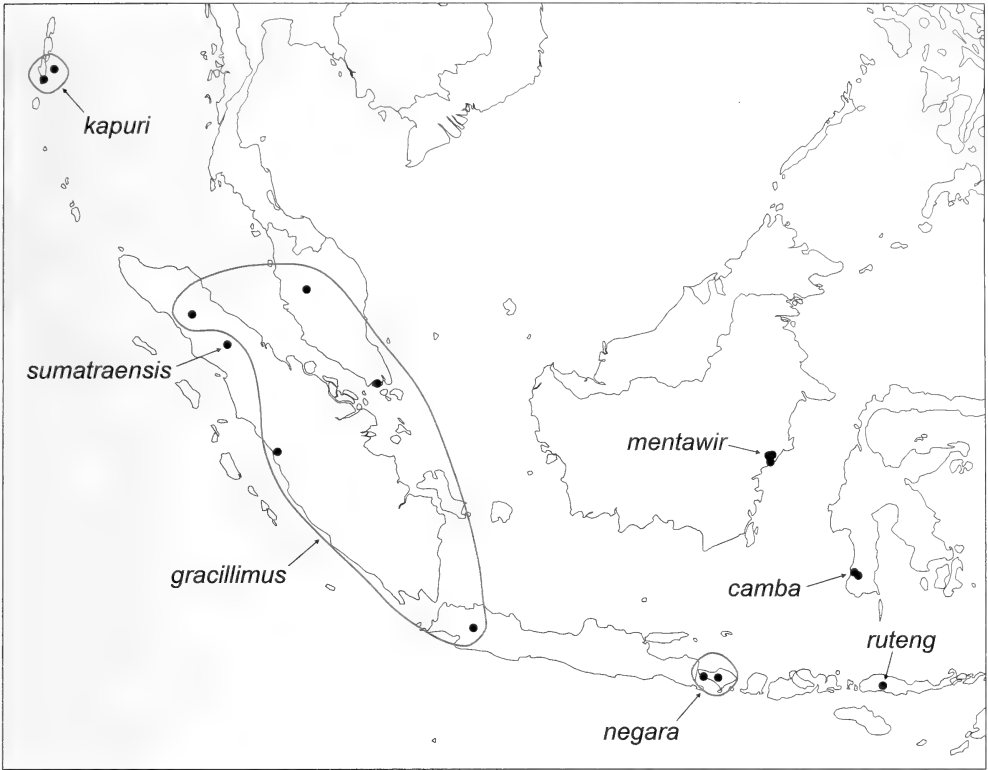


FIG. 1419. Known distribution of the *Pholcus gracillimus* species group.

core group of *Pholcus* (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure. Within the species group, four species have very similar male palps (*Ph. gracillimus*, *Ph. negara*, *Ph. ruteng*, *Ph. sumatraensis*); they are likely closely related and are considered the core group. The other three species are assigned tentatively based on general similarity and geographic closeness.

*Natural history.* Judging from the scarce label data and their general morphology (large, dark pholcids), the species included build their webs in large protected spaces among tree buttresses, in the lower vegetation, and among rocks.

*Distribution.* The core group is known from Sumatra, peninsular Malaysia, Java, and the Lesser Sunda Islands. Species assigned tentatively are from Borneo, Sulawesi, and Andaman and Nicobar Islands (Fig. 1419).

*Composition.* The *gracillimus* group includes seven species; four of them are newly described below, *Ph.*

*gracillimus* is redescribed. The *Ph. sumatraensis* male holotype cannot be found (J. Wunderlich, pers. comm.). I do not know the depository of the *Ph. kapuri* type material (1♂3♀). Core group: *Ph. gracillimus* Thorell, 1890; *Ph. negara* n. sp.; *Ph. ruteng* n. sp.; *Ph. sumatraensis* Wunderlich, 1995; assigned tentatively: *Ph. kapuri* Tikader, 1977; *Ph. camba* n. sp.; *Ph. mentawir* n. sp. The RMNH has females of possible further undescribed species from Sumba Island and West Timor.

*Pholcus gracillimus* Thorell, 1890

Figs. 1360, 1394, 1395, 1420-1424

*Pholcus gracillimus* Thorell 1890: 298-300. Workman 1896: pl. 71, figs. a-g. Simon 1905: 55.

*Type.* Male holotype from Indonesia, Sumatra, Sungei bulu [-0.9°S, 100.5°E], date unknown, col. Beccari, possibly in Museo Civico di Storia Naturale "Giacomo Doria", Genova, not examined.

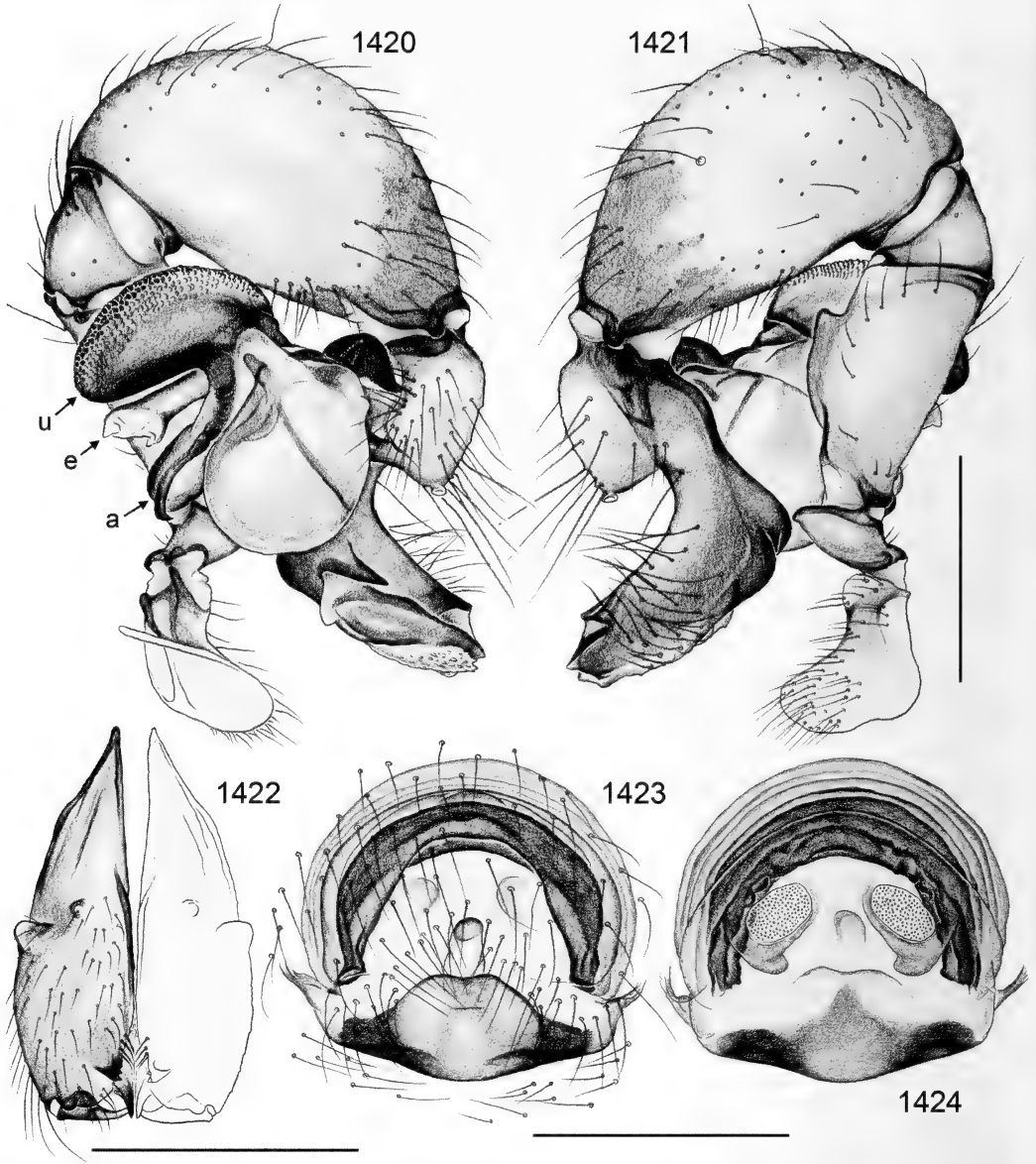


FIG. 1420-1424. *Pholcus gracillimus*. 1420, 1421. Left male palp, prolateral and retrolateral views. 1422. Male chelicerae, frontal view. 1423, 1424. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Note.* Since I have not been able to see the type, the assignment of the specimens below remains tentative. However, the new material seems to fit the original description well, while it does not fit the only other similar species known on Sumatra (*Ph. sumatraensis* Wunderlich, whose material seems to be lost).

*Diagnosis.* Distinguished from similar species (*Ph. negara*, *Ph. sumatraensis*, *Ph. ruteng*) by male palpal morphology (Figs. 1420, 1421; shapes of procurus, unculus, and appendix), and female genitalia (Figs. 1394, 1423; similar to *Ph. negara*; female of *Ph. sumatraensis* unknown).

*Male* (Ketambe). Total body length 6.0, carapace width 1.85. Leg 1: 40.3 (10.0 + 0.6 + 9.3 + 17.9 + 2.5), tibia 2: 6.1, tibia 3: 4.0, tibia 4: 5.8, tibia 1L/d: 70. Habitus as in Fig. 1360. Carapace ochre-yellow with large brown median and lateral bands, ocular area and clypeus (proximo-medially) also darkened, sternum dark brown with small light spots, legs ochre-yellow, tips of femora and tibiae whitish, darker rings on femora and tibiae subdistally and in patella area, abdomen ochre-gray with distinct cuticular pattern dorsally and simple uninterrupted band ventrally. Distance PME-PME 320  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 105  $\mu$ m. Ocular area elevated, with stronger hairs posteriorly, each triad on low hump directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1422, distal apophyses with two modified hairs each, proximally with lateral apophyses and low frontal humps. Sternum wider than long (0.85/0.70), unmodified. Palps as in Figs. 1420 and 1421, coxa unmodified, trochanter with short retrolateral apophysis, femur with distinctive ventral apophysis, tibia proximo-dorsally and distally characteristically darkened, procurus strongly bent, without spines, bulb with large uncus, weakly sclerotized distally widening embolus, sickle-shaped appendix. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 missing in other males. In the male from Malaysia, the appendix is more strongly bent (rather knee-shaped) and the tip of the procurus differs minimally; it is therefore assigned tentatively.

*Female.* In general similar to male but triads closer together (distance PME-PME 230  $\mu$ m); tibia 1 missing. Epigynum a roughly triangular plate with anterior 'knob'; internal arc visible through cuticle anteriorly (Figs. 1394, 1423); internal genitalia as in Figs. 1395 and 1424.

*Distribution.* Known from Sumatra, Java, and possibly Malaysia (Fig. 1419). I have not seen Workman's (1896) specimens from Singapore, but judging from his drawings and the distribution of similar species, his assignment may be correct.

*Material examined.* INDONESIA-SUMATRA: *Aceh*: Gunung Leuser, Ketambe [3°40'N, 97°39'E], 1400 m a.s.l., foliage, 7.vii.1985 (Bugama, Yono), 1♂ in RMNH.

INDONESIA-JAVA: *Jawa Barat*: Cibodas [-6°44'S, 107°00'E], 1450-1550 m a.s.l., from leaves, 7.-8.xii.1986 (S. Djojosedharmo), 1♂1♀ in RMNH.

*Assigned tentatively.* MALAYSIA: *Pahang*: Cameron Highlands (4°29'N, 101°27'E), 14.-21.iv.1990 (V. & B. Roth), 1♂ in CAS.

*Pholcus negara* n. sp.

Figs. 1361-1363, 1396, 1397, 1425-1429

*Type.* Male holotype from Indonesia, Lesser Sunda Islands, western Bali, above Negara [-8°20'S, 114°37'E], disturbed rainforest, buttress, fig tree, 22.xi.1997 (C.L. Deeleman-Reinhold), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species (*Ph. gracillimus*, *Ph. sumatraensis*, *Ph. ruteng*) by male palpal morphology (Figs. 1425, 1426; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1396, 1428; similar to *Ph. gracillimus*; female of *Ph. sumatraensis* unknown).

*Male* (holotype). Total body length 5.5, carapace width 1.3. Leg 1: 40.3 (10.0 + 0.5 + 9.9 + 17.7 + 2.2), tibia 2: 6.6, tibia 3: 4.3, tibia 4: 6.3; tibia 1 L/d: 72. Habitus as in Figs. 1361 and 1362. Carapace mostly dark brown, only lateral of ocular area ochre-yellow, ocular area and clypeus also brown, sternum black, very smooth with a bluish shine, legs ochre-yellow to light brown, tips of femora and tibiae whitish, femora subdistally and tibiae proximally darker brown, abdomen ochre-gray with distinct brown pattern dorsally and brown band ventrally (cf. female, Fig. 1363). Distance PME-PME 265  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area slightly elevated, few stronger hairs on posterior side. No thoracic furrow (only short black line behind ocular area); clypeus unmodified. Chelicerae as in Fig. 1427, distal apophyses provided with modified hairs, small proximal lateral apophyses. Sternum wider than long (0.95/0.75), unmodified. Palps as in Figs. 1425 and 1426, coxa unmodified, trochanter with short retrolateral apophysis, femur with distinctive ventral projection distally, tibia large, procurus massive, distally with distinctive processes, bulb with large uncus, embolus proximally more sclerotized than usual, simple hooked and pointed appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on

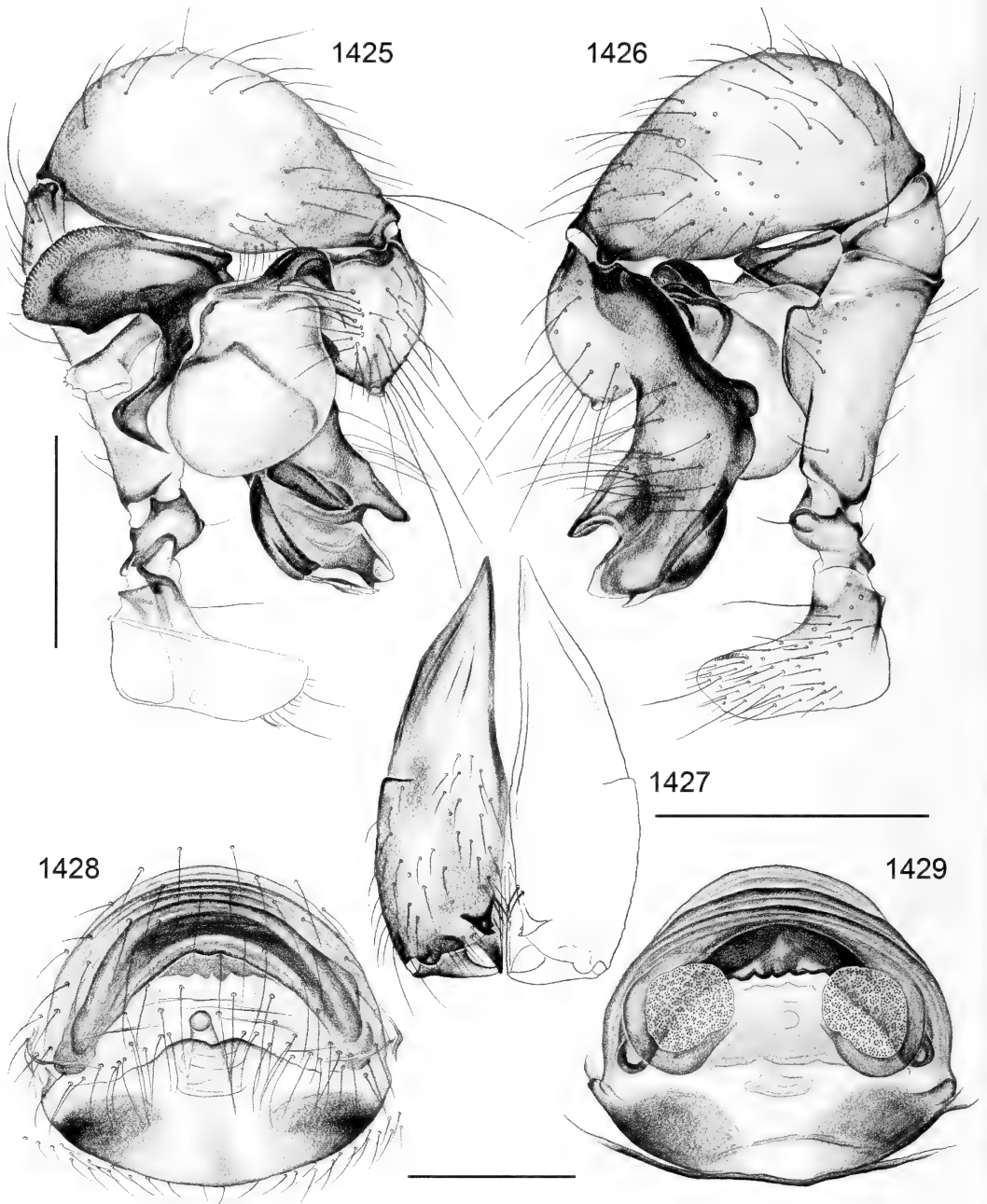


FIG. 1425-1429. *Pholcus negara*. 1425, 1426. Left male palp, prolateral and retrolateral views. 1427. Male chelicerae, frontal view. 1428, 1429. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1425-1427), 0.3 (1428, 1429).

other tibiae. Tarsal pseudosegments fairly distinct, distally regular, proximally irregular.

*Variation.* Tibia 1 in 2 other males: 9.7, 10.2. The male from Batukaru has a minimally wider uncus and a slightly different prolateral apophysis of the procurus.

*Female.* In general similar to male, triads slightly closer together (distance PME-PME 230  $\mu$ m); tibia 1 missing. Epigynum with dark arc visible through cuticle anteriorly, sclerotized brown plate posteriorly with 'knob' (Figs. 1396, 1428); internal genitalia as in Figs. 1397 and 1429.

*Distribution.* Known from Bali only (Fig. 1419).

*Material examined.* INDONESIA-LESSER SUNDA ISLANDS: *Bali*: above Negara: ♂ holotype above, together with 1♀. Batukaru [8°22.3'S, 115°06.2'E], temple, rainforest, tree buttress, 19.xi.1997 (C.L. & P.R. Deeleman), 1♂ 1 juv. in RMNH.

Without locality information, "leg + photo R. Preston-Mafham", 1♂ in RMNH.

*Pholcus ruteng* n. sp.

Figs. 1364-1366, 1398, 1399, 1430-1434

*Type.* Male holotype from Indonesia, Lesser Sunda Islands, East Nusa Tenggara, Flores, Ruteng, Ranamese [8°38.3'S, 120°33.6'E], cabin near lake, 24.i.2001 (C.L. Deeleman-Reinhold), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species (*Ph. gracillimus*, *Ph. sumatraensis*, *Ph. negara*) by male palpal morphology (Figs. 1430, 1431; shapes of trochanter apophysis, procurus, uncus, and appendix), and female genitalia (Figs. 1398, 1433; female of *Ph. sumatraensis* unknown).

*Male* (holotype). Total body length 6.7, carapace width 1.75. Leg 1: 12.4 + 0.8 + 12.7, metatarsus and tarsus missing, tibia 2: 8.9, tibia 3: 6.4, tibia 4: 8.7, tibia 1L/d: 65. Habitus as in Fig. 1364. Carapace ochre-yellow with large brown mark medially and posteriorly, ocular area also brown, clypeus only proximally slightly darkened, sternum dark brown except lighter margins, legs light ochre to light brown, tips of femora and tibiae lighter, with indistinct darker subdistal rings, abdomen ochre-gray with distinctive dorsal pattern, ventrally with dark band (Fig. 1366). Distance PME-PME 450  $\mu$ m, diameter PME 185  $\mu$ m, distance PME-ALE 60  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area slightly elevated with some stronger hairs posteriorly, each triad on short hump directed laterally,

with distinctive small knob above AME. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae as in Fig. 1432, distal apophyses with two modified hairs each, with proximal lateral apophyses. Sternum wider than long (1.10/0.85), unmodified. Palps as in Figs. 1430 and 1431, coxa unmodified, trochanter with distinctive ventral apophysis, femur with ventral projection, procurus large, complex distally, without spines, bulb with large uncus, partly sclerotized embolus, rather simple appendix. Legs without spines and curved hairs, few vertical hairs (most hairs lost). Retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female.* In general similar to male but triads closer together (distance PME-PME 300  $\mu$ m). Tibia 1: 9.5. Epigynum a very dark trapezoidal plate, 'knob' apparently lost in only female specimen seen (Figs. 1398, 1433); internal genitalia as in Figs. 1399 and 1434.

*Distribution.* Known from type locality only (Fig. 1419).

*Material examined.* INDONESIA-LESSER SUNDA ISLANDS: *East Nusa Tenggara*: Flores, Ruteng, Ranamese: ♂ holotype above, together with 1♀.

*Pholcus camba* n. sp.

Figs. 1367, 1369, 1370, 1400, 1401, 1435-1439

*Type.* Male holotype from Indonesia, Sulawesi, South Sulawesi Prov., 55 km of Ujung Pandang [=Makassar], road to Camba [-5°S, 119°45'E], in gorge, karst forest, 9.viii.1980 (C.L. & P.R. Deeleman), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by morphology of male palp (Figs. 1435, 1436; distinctive procurus and bulb processes), male cheliceral armature (Fig. 1437; no distal apophyses), and female genitalia (Figs. 1400, 1438).

*Male* (holotype). Total body length 6.4, carapace width 1.7. Leg 1: 67.6 (16.0 + 0.9 + 16.4 + 30.8 + 3.5), tibia 2: 9.9, tibia 3: 6.1, tibia 4: 8.9; tibia 1 L/d: 88. Habitus as in Figs. 1369 and 1370. Carapace ochre-yellow with light brown pattern, ocular area light brown, clypeus not darkened, sternum brown, legs ochre-yellow, tips of femora and tibiae whitish, abdomen ochre-gray with light brown median marks dorsally and brown band ventrally divided into anterior and posterior half. Distance PME-PME 675



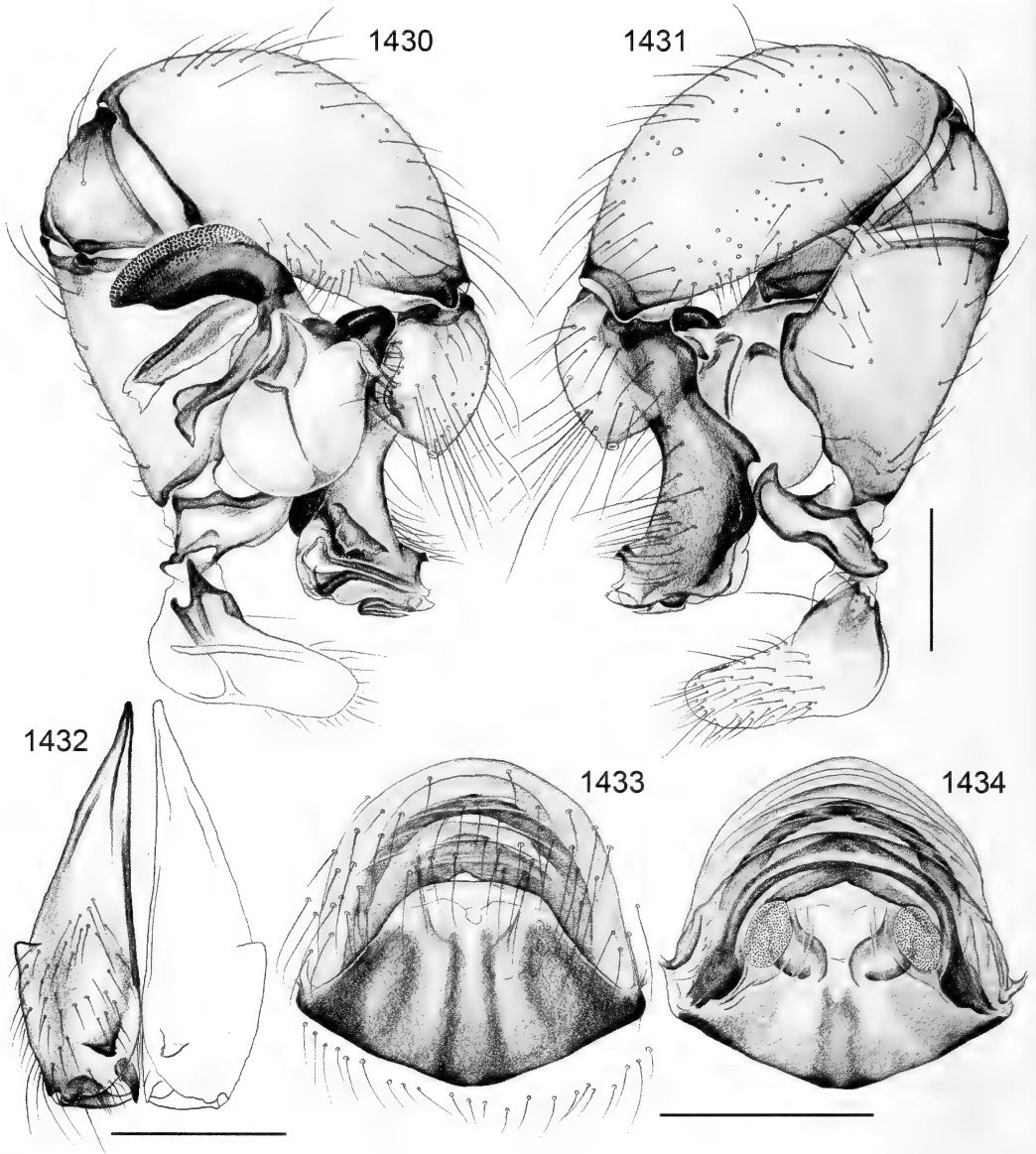


FIG. 1430-1434. *Pholcus ruteng*. 1430, 1431. Left male palp, prolateral and retrolateral views. 1432. Male chelicerae, frontal view. 1433, 1434. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

$\mu\text{m}$ , diameter PME 150  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 90  $\mu\text{m}$ . Ocular area elevated, some stronger hairs on posterior side, triads on short stalks directed laterally (Fig. 1367). No thoracic furrow (only distinct median line); clypeus unmodified. Chelicerae as in Fig.

1437, with proximal apophyses laterally, without distal modification. Sternum wider than long (1.15/0.90), unmodified. Palps as in Figs. 1435 and 1436, coxa unmodified, trochanter with short retrolateral apophysis, femur with distinctive ventral protuberance, procurus strongly curved, with strong



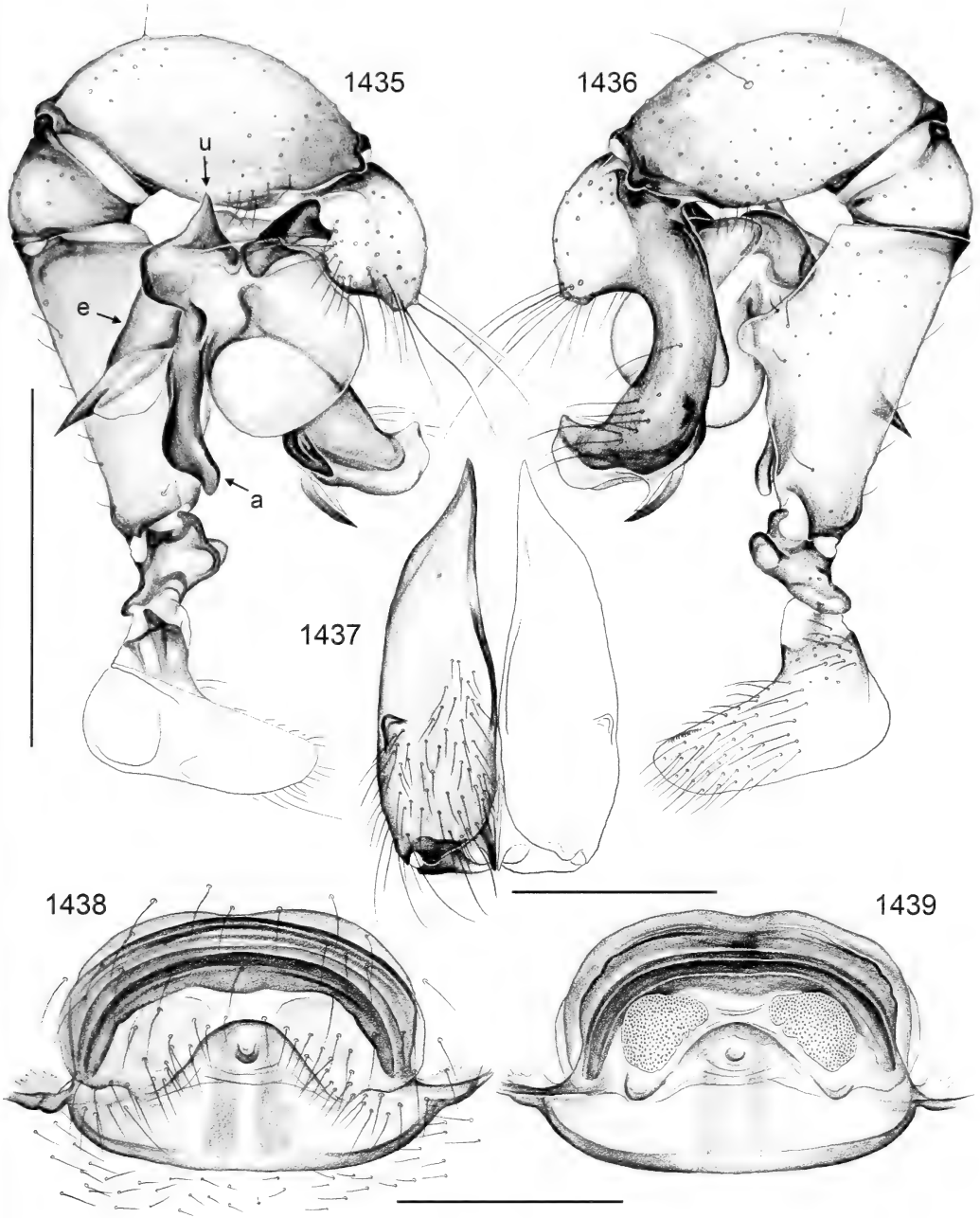


FIG. 1435-1439. *Pholcus camba*. 1435, 1436. Left male palp, prolateral and retrolateral views. 1437. Male chelicerae, frontal view. 1438, 1439. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1435, 1436), 0.5 (1437-1439).

prolateral apophysis and ventral spine-like process distally, bulb with simple small uncus, long partly sclerotized embolus with distal pointed apophysis, large simple appendix. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments barely visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 14.7. Ventral band on abdomen constricted, not divided in two parts.

*Female.* In general similar to male, triads closer together (distance PME-PME 345  $\mu\text{m}$ ), not on stalks, ventral band on abdomen as in non-type male. Tibia 1: 9.7, tibia 2: 8.2, tibia 3: 5.4, tibia 4: 7.8. Epigynum with dark arc visible through cuticle anteriorly, medially brown plate with anterior 'knob' (Figs. 1400, 1438); internal genitalia as in Figs. 1401 and 1439.

*Distribution.* Known from two nearby localities in South Sulawesi (Fig. 1419).

*Material examined.* INDONESIA-SULAWESI: *South Sulawesi*: 55 km of Udjung Pandang, road to Camba: ♂ holotype above, together with 1♀ and juveniles; same data, 1♂1♀ (2 vials) in RMNH. Kapang, [-4°53'S, 119°37'E], 2.viii.1985 (B. Lebreton), 1♂ in RMNH.

*Pholcus mentawir* n. sp.

Figs. 1371-1373, 1402, 1403, 1440-1444

*Type.* Male holotype from Indonesia, East Kalimantan, near Mentawir (1°02'S, 116°47'E), near sea level, 27.v.1976 (J.R. Thomson), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from known congeners by morphology of male palp (Figs. 1440, 1441; distinctive procurus, shapes of uncus and appendix), male cheliceral armature (Fig. 1442; large proximal frontal protuberances), and female genitalia (Figs. 1402, 1443).

*Male* (holotype). Total body length 5.5, carapace width 1.4. Leg 1: 46.1 (11.2 + 0.7 + 11.3 + 20.3 + 2.6), tibia 2: 7.6, tibia 3: 5.1, tibia 4: 7.2; tibia 1 L/d: 71. Habitus as in Figs. 1371 and 1372. Carapace pale ochre-orange, slightly darker medially and on ocular area posteriorly, clypeus not darkened, sternum light brown, legs pale ochre-yellow, without rings, abdomen ochre-gray with poorly visible brown pattern dorsally, ventrally with wide brown band (cf. female, Fig. 1373). Distance PME-PME 575  $\mu\text{m}$ , diameter

PME 140  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , no trace of AME. Ocular area elevated, many stronger hairs on posterior side, each triad on short additional elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1442, with distal apophyses apparently without modified hairs, large proximal frontal protuberances and small proximal lateral apophyses. Sternum wider than long (0.95/0.85), unmodified. Palps as in Figs. 1440 and 1441, coxa unmodified, trochanter with small retrolateral apophysis, femur with distinctive ventral protuberance, tibia large, procurus massive, complex distally, with long prolateral process distally, bulb with large uncus, weakly sclerotized embolus, simple curved appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not visible in dissecting microscope.

*Variation.* The holotype is a rather pale specimen; other males have a triangular brown mark posteriorly on the carapace, tips of femora and tibiae lighter, clypeus with two brown bands. Tibia 1: 11.9 (missing in male from Sepaku).

*Female.* In general similar to male but triads closer together (distance PME-PME 290  $\mu\text{m}$ ), AME reduced to pigment spots, no lenses, mark on carapace and clypeus pattern like darker males, ocular area also brown. Tibia 1 in 3 females: 9.7, 10.2, 10.3. Epigynum with large brown arc anteriorly, sclerotized brown plate posteriorly with 'knob' (Figs. 1402, 1443); internal genitalia as in Figs. 1403 and 1444.

*Distribution.* Known from East Kalimantan, Borneo, only (Fig. 1419).

*Material examined.* INDONESIA-BORNEO: *East Kalimantan*: Mentawir: ♂ holotype above, together with 1♀ 1 juvenile. Camp of International Timber Corp. of Indonesia (1°15'S, 116°51'E), 0-100 m a.s.l., 5.x.1975 (J.R. Thomson), 1♂1♀ in RMNH. Sepaku, 40 km N of Balikpapan [1°00'S, 116°54'E], primary forest, webs in hollow tree, 21.vii.1982 (collector not given), 1♂1♀ in RMNH.

*Pholcus quinquenotatus* species group

*Diagnosis.* Medium-sized, rather light, long-legged *Pholcus* (body length ~3.5-5.0, leg 1: ~30-40); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, carapace with V-pattern posteriorly (Figs. 1374, 1376, 1378, 1380), abdomen elevated dorso-poste-

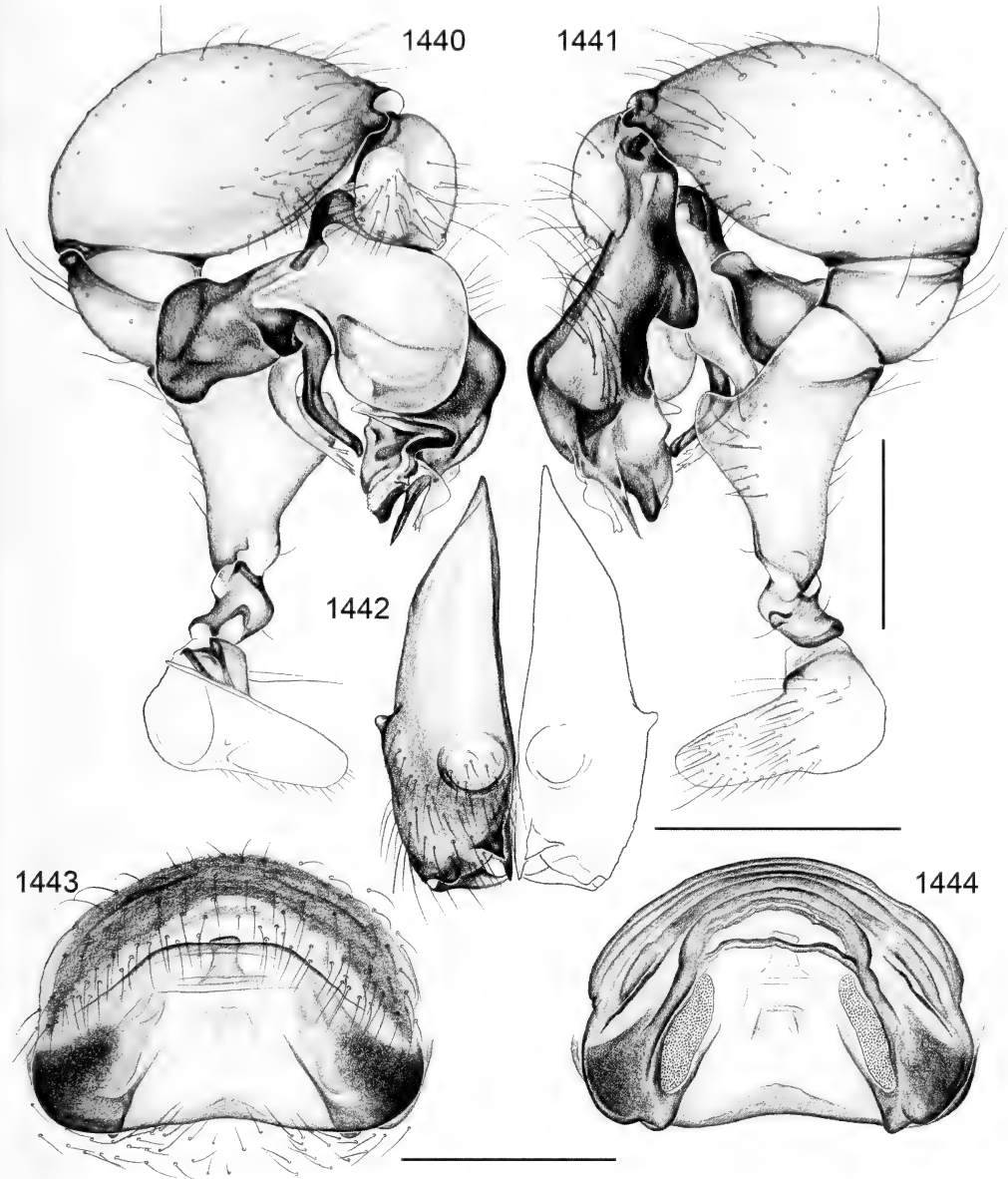


FIG. 1440-1444. *Pholcus mentawir*. 1440, 1441. Left male palp, prolateral and retrolateral views. 1442. Male chelicerae, frontal view. 1443, 1444. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

riorly, without cuticular pattern, procurus without dorsal spines, sclerotized epigynum with 'knob'. *Pholcus youngae* is highly autapomorphic and does not fit this diagnosis; it is assigned to this group only because of its male median ocular horn resembling that of *Ph. quinquenotatus*.

*Description.* Body length ~3.5-5.0, carapace width 1.0-1.4. AME usually present (except *Ph. youngae*), triads usually on low humps (stalks in *Ph. youngae*). Clypeus and sternum unmodified, male chelicerae with distal apophyses provided with modified hairs (distal modifications absent in *Ph. youngae*) and one

or two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with mostly straight retro-latero-ventral apophysis, femur usually slightly modified, with distinctive ventral process in *Ph. youngae*, tarsus with or without dorsal elongation, tarsal organ capsulate, procurus with indistinct ventral 'knee', without dorsal spines. Male bulb usually with uncus, embolus, and appendix, the latter absent in *Ph. sudhami* and *Ph. pakse*, homology of sclerites unclear in *Ph. erawan*. Legs long and thin, tibia 1 in males -7-15, tibia 1 L/d -80-90, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at 4-8%. Abdomen elevated dorso-posteriorly, with or without internal marks, without cuticular pattern, male gonopore with four epiandrous spigots; ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, eye triads closer together and less elevated, legs slightly shorter (tibia 1: ~6-9). Epigynum with 'knob'.

*Monophyly.* The species included share a number of similarities but it is not clear if these are derived or not. Potential synapomorphies are the shape and pattern of the abdomen (elevated posteriorly, no cuticular color pattern) and the color pattern on the carapace (V-pattern posteriorly), but it seems likely that this group is not monophyletic.

*Relationships.* No representative of this group was included in the cladistic analyses, but the male cheliceral armature (char. 18), the sclerotized epigynum (char. 65) and the procurus without dorsal spines (char. 38) would probably place this species group in the large polytomy at the 'basis' of the core group of *Pholcus*; the detailed relationships with other species groups in this polytomy remain obscure. Within the

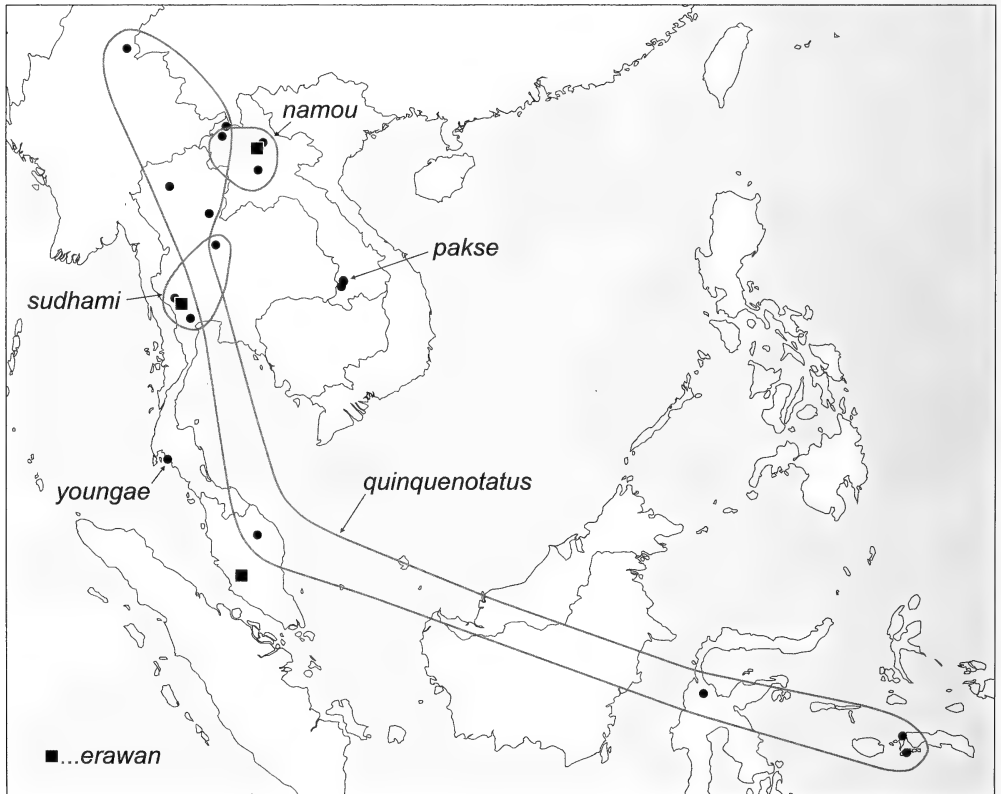


FIG. 1445. Known distribution of the *Pholcus quinquenotatus* species group.

species group, *Ph. sudhami* and *Ph. pakse* have extremely similar palps and are likely closely related. All other species appear very isolated, especially *Ph. youngae*.

*Natural history.* Judging from the scarce label data, the species occur in a variety of microhabitats like leaves, rocks, and in caves. Some appear quite tolerant to human impact, especially the widespread *Ph. quinquenotatus*.

*Distribution.* The *Ph. quinquenotatus* group is largely restricted to mainland Southeast Asia; only *Ph. quinquenotatus* has a wider distribution, possibly as a result of human transport (Fig. 1445).

*Composition.* The *Ph. quinquenotatus* group includes six species; five of them are newly described below, the sixth is redescribed: *Ph. quinquenotatus* Thorell, 1878; *Ph. erawan* n. sp.; *Ph. namou* n. sp.; *Ph. sudhami* n. sp.; *Ph. pakse* n. sp.; *Ph. youngae* n. sp.

*Pholcus quinquenotatus* Thorell, 1878

Figs. 1368, 1376, 1377, 1406-1408, 1446-1465

*Pholcus V-notatus* Thorell 1878: 163-165. Thorell 1887: 90. Simon 1901: 49. [misidentification: Leardi Airaghi 1902: 349-350; see below].

*Pholcus quinquenotatus.* Roewer 1942: 341. Deeleman-Reinhold 2001: 41, figs. 28-30.

*Pholcus dentifrons* Thorell 1898: 275-276. New synonymy.

*Types.* *Pholcus quinquenotatus.* One female syntype from Indonesia, Maluku Islands, Amboina [=Ambon Isl.: -3°40'S, 128°10'E], date unknown, col. Beccari, in NHRS, examined; other female syntype(s?), same data, in Museo Civico di Storia Naturale "Giacomo Doria", Genova, not examined.

*Pholcus dentifrons.* 1♂1♀ syntypes from Myanmar, Bhamo [24°16'N, 97°14'E], 1885 (L. Fea), female in NHRS, examined; male possibly in Museo Civico di Storia Naturale "Giacomo Doria", Genova, not examined.

*Justification of synonymy.* The distinctive shape of the epigynum is virtually identical in both type specimens compared (Figs. 1406, 1407). The *Ph. quinquenotatus* female in Genova has been examined by C.L. Deeleman-Reinhold (2.x.1986, label information), who already suggested the synonymy of the two names (Deeleman-Reinhold 2001) and found the type to be conspecific with the material from Lore Lindu below.

*Diagnosis.* Easily distinguished from congeners by hooked process above male AME (Figs. 1451, 1452),

male palpal morphology (Figs. 1446, 1447; procurus shape, bulb processes) and female genitalia (Figs. 1406, 1449; shapes of epigynum and internal structures).

*Male* (Seram). Total body length 4.9, carapace width 1.3. Leg 1: 42.1 (10.5 + 0.6 + 10.5 + 19.0 + 1.5), tibia 2: 6.7, tibiae 3: 4.1, tibia 4: 5.9; tibia 1 L/d: 82. Habitus as in Figs. 1376 and 1377. Carapace pale ochre with brown V-mark posteriorly and small spots on both sides of V-mark, ocular area and clypeus brown, sternum brown with many light spots, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen pale gray, many whitish spots dorsally and laterally. Distance PME-PME 320 µm, diameter PME 115 µm, distance PME-ALE 35 µm, distance AME-AME 50 µm, diameter AME 70 µm. Ocular area elevated, with distinctive median hooked process (Figs. 1451, 1452), stronger hairs on posterior side of ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1448, with frontal apophyses distally provided with two modified hairs each (Fig. 1456), and two pairs of proximal apophyses. Sternum wider than long (0.85/0.60), unmodified. Palps as in Figs. 1446 and 1447, coxa unmodified, trochanter with pointed retrolatero-ventral apophysis with curved tip, femur with small retrolatero-dorsal apophysis, slightly widened ventrally, procurus massive, complex distally (Figs. 1454, 1455, 1457), bulb with massive black uncus and appendix, weakly sclerotized pale curved embolus (Fig. 1453). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 8%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments only distally quite distinct. Gonopore with four epiandrous spigots (Fig. 1458); ALS with eight spigots each (Fig. 1461).

*Variation.* Some males with a few indistinct darker spots on abdomen; in one male from Thailand, these spots are quite distinct; both males from Thailand differ by larger marks on carapace and by minimally different uncus (more rounded distally) and trochanter shapes (not as pointed). Tibia 1 in three other males: 9.7, 9.7, 9.8.

*Female.* In general similar to male but without median process on ocular area and triads closer together (Fig. 1459; distance PME-PME 210 µm). Tibia 1 in 3 females: 8.0, 8.7, 8.9. Epigynum weakly sclerotized and rugose anteriorly, transverse sclerite posteriorly with 'knob' (Figs. 1406, 1449, 1463); internal genitalia as in Figs. 1408, 1450, and

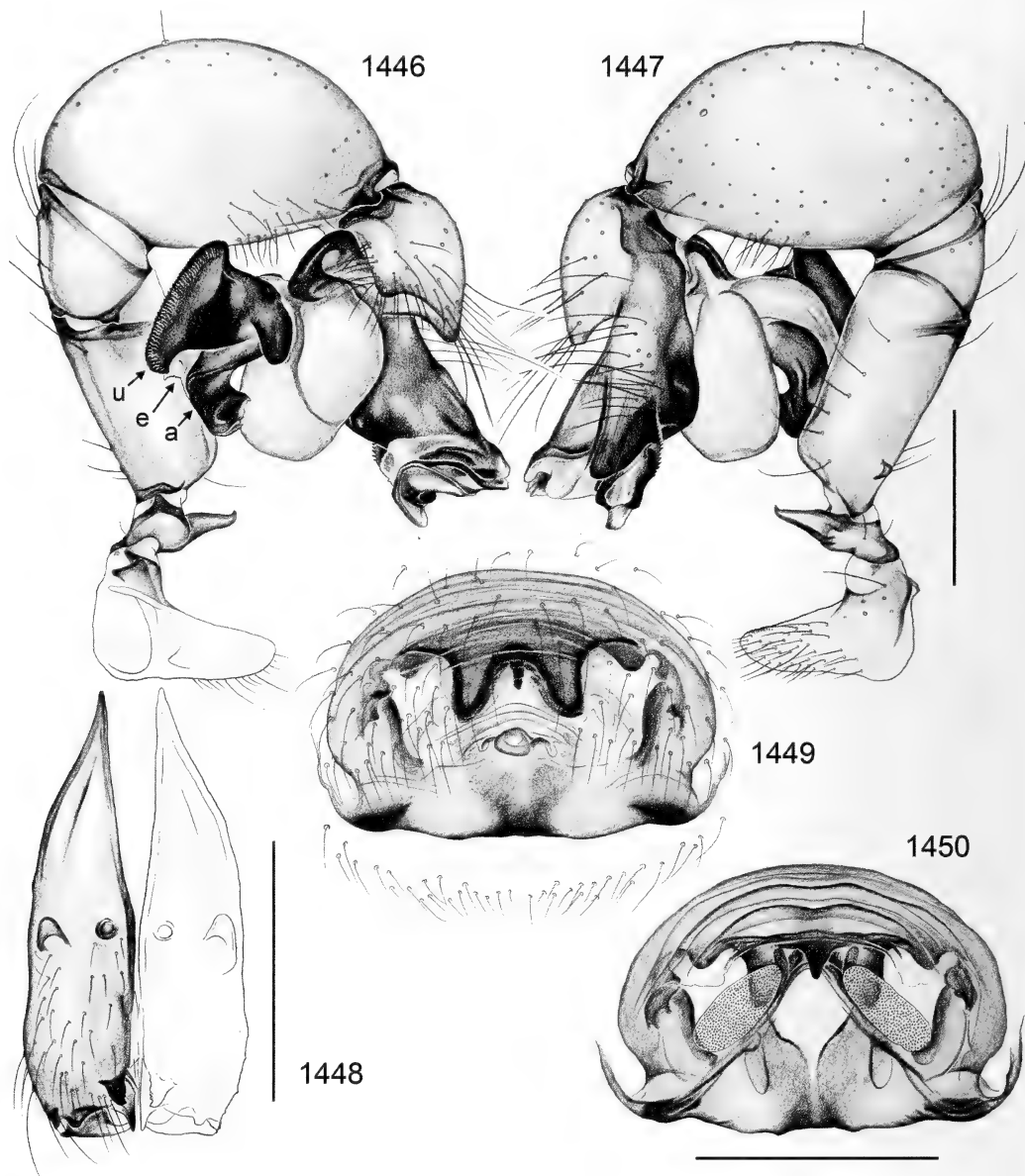


FIG. 1446-1450. *Pholcus quinquenotatus*. 1446, 1447. Left male palp, prolateral and retrolateral views. 1448. Male chelicerae, frontal view. 1449, 1450. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

1464. ALS with eight spigots each (Fig. 1462). The examined syntype of *Ph. quinquenotatus* is in good condition, femur 1: 8.4 (tibia 1 missing). The female syntype of *Ph. dentifrons* is in fair condition, femur 1: 8.3, tibia 1: 8.1.

*Distribution.* Apparently widely distributed in South-east Asia (Fig. 1445). The AMNH has a single female from New Caledonia that may also belong to this species. I have not seen Leardi Airaghi's (1902) specimens from Mahé [Southern India, 11°42'N,

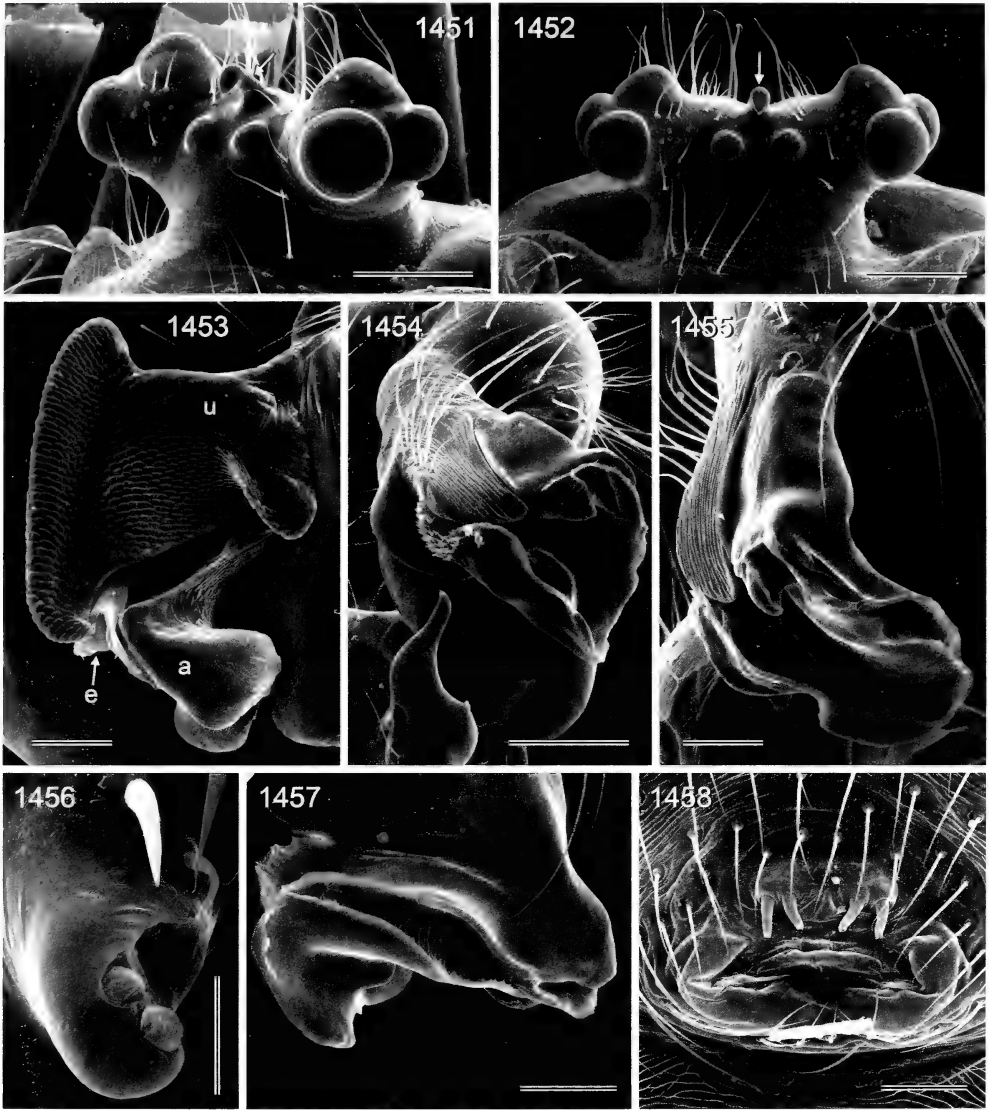


FIG. 1451-1458. *Pholcus quinquenotatus*. 1451, 1452. Male ocular area, oblique and frontal views (arrows point at hook). 1453. Male bulbal processes. 1454, 1455. Right procurrus, distal and dorsal views. 1456. Distal male cheliceral apophysis. 1457. Left procurrus tip, prolateral view. 1458. Male gonopore. Scale lines: 200  $\mu$ m (1451, 1452, 1454), 100  $\mu$ m (1453, 1455), 80  $\mu$ m (1457), 60  $\mu$ m (1458), 20  $\mu$ m (1456).

75°32'E], but the “impressioni toraciche profundissime” clearly indicate that this was not even *Pholcus* (possibly *Smeringopus pallidus*).

*Material examined*. INDONESIA-MALUKU ISLANDS: *Maluku Prov.*: Ambon: 1 ♀ syntype of *Ph.*

*quinquenotatus* above. Seram Island (3°S, 128°E), Roho, 26.viii.1995 (K. Leus *et al.*), 5 ♂ 3 ♀ in BPBM. INDONESIA-SULAWESI: *North Sulawesi*: Lore Lindu Reserve (Palu, Marena) [-1°18'S, 120°05'E], in cabin, with label “*Ph. v-notatus* ♂ ♀ comp. type

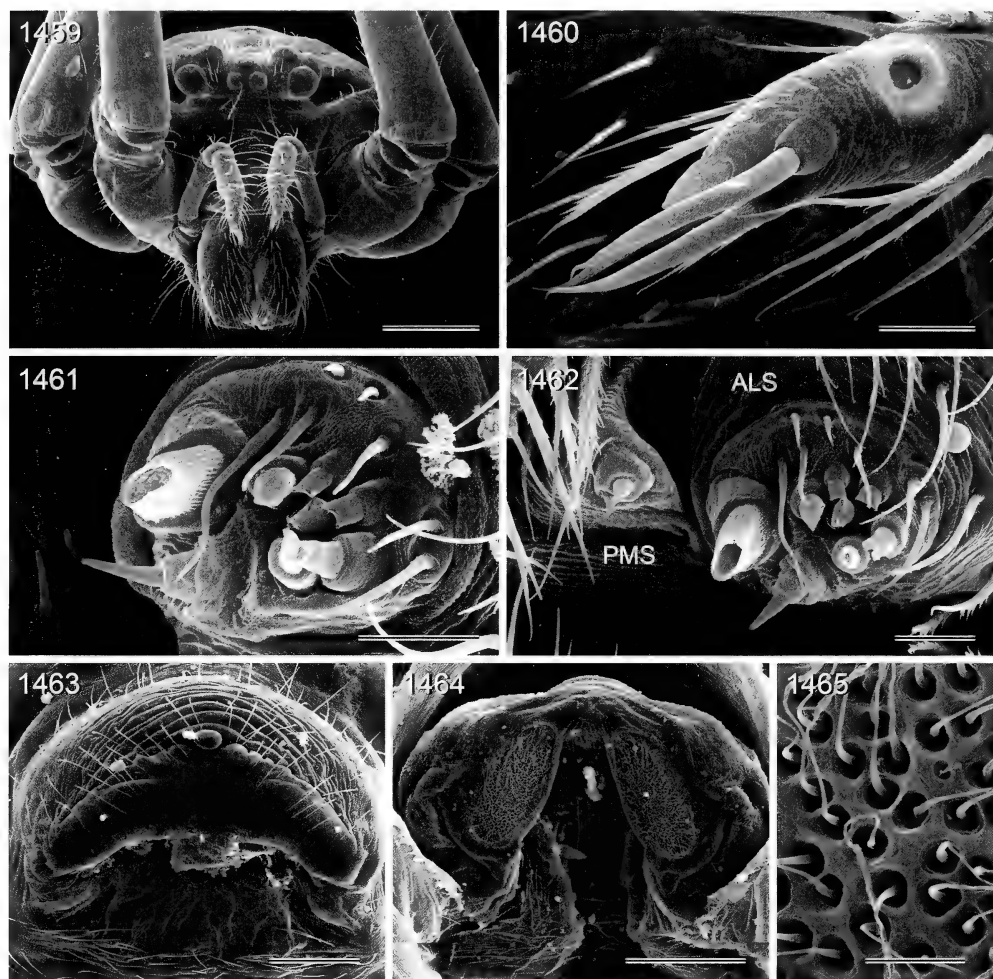


FIG. 1459-1465. *Pholcus quinquenotatus*. 1459. Female prosoma, frontal view. 1460. Tip of female palp. 1461. Male ALS. 1462. Female ALS and PMS. 1463. Epigynum. 1464. Cleared female genitalia, dorsal view. 1465. Detail of pore plate. Scale lines: 400  $\mu\text{m}$  (1459), 200  $\mu\text{m}$  (1463, 1464), 30  $\mu\text{m}$  (1460), 20  $\mu\text{m}$  (1461, 1462), 10  $\mu\text{m}$  (1465).

2.10.86 Genua", 24.vii.1982 (C.L. & P.R. Deeleman), 2♂1♀ in RMNH.

THAILAND: *Chiang Mai*: Doi Suthep [18°48.3'N, 98°55.3'E], 700 m a.s.l., 24.xi.1987 (P. Schwendinger), 1♂ in RMNH. *Uttaradit Prov.*: Nam Pat Distr., Lam Nam Nan N. P., beside road Uttaradit-Nam Pat (17°44.5'N, 100°29.4'E), 120 m a.s.l., dry

deciduous forest, 17.xii.2008 (P. Schwendinger), 1♂1♀ in MHNG.

MYANMAR: Bhamo: 1♀ syntype of *Ph. dentifrons* above. LAOS: *Luang Nam Tha Prov.*: Moung Sing (21°11.4'N, 101°09.5'E), 640 m a.s.l., cultural fields, hedge, beside street, at night, by hand, 3.xi.2004 (P. Jäger, V. Vedel), 1♂ in SMF.



*Pholcus erawan* n. sp.

Figs. 1374, 1375, 1404, 1405, 1466-1470

*Type.* Male holotype from Thailand, Kanchanaburi Prov., Erawan waterfalls [14°23.7'N, 99°08.2'E], evergreen forest, from leaves, 15./16.iii.1986 (C.L. & P.R. Deeleman), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1466, 1467; procurus shape, bulbal processes, dorsal elongation of tarsus) and female genitalia (Figs. 1404, 1469; longer than wide).

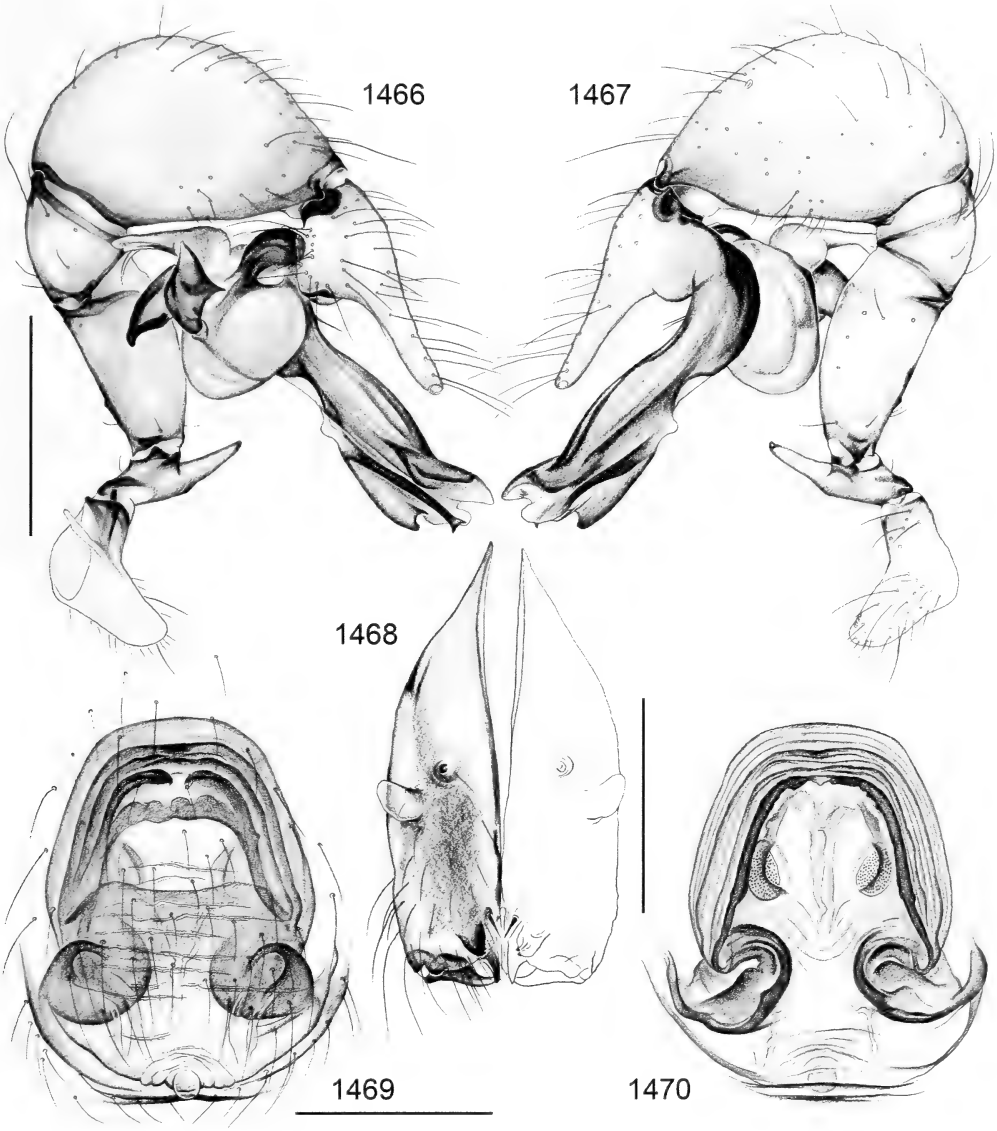


FIG. 1466-1470. *Pholcus erawan*. 1466, 1467. Left male palp, prolateral and retrolateral views. 1468. Male chelicerae, frontal view. 1469, 1470. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1466, 1467), 0.3 (1468-1470).

*Male* (holotype). Total body length 3.8, carapace width 1.0. Leg 1: 29.5 (7.2 + 0.4 + 7.0 + 13.5 + 1.4), tibia 2: 4.6, tibiae 3: 2.7, tibia 4: 4.0; tibia 1 L/d: 79. Habitus as in Figs. 1374 and 1375. Carapace pale ochre-yellow with distinctive brown pattern on posterior half, ocular area not darkened, clypeus light brown, sternum whitish with brown marks posteriorly, legs pale ochre-yellow, femora proximodorsally brown, patellae and tibia-metatarsus joints brown, abdomen pale gray with some dark spots dorsally and laterally. Distance PME-PME 275  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 55  $\mu$ m. Ocular area slightly elevated, many stronger hairs on posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1468, with frontal apophyses distally provided with modified hairs and two pairs of proximal apophyses. Sternum wider than long (0.65/0.50), unmodified. Palps as in Figs. 1466 and 1467, coxa unmodified, trochanter with simple ventral apophysis, femur with very indistinct hump dorsally, tarsus elongated, procurus relatively simple, bulb with weakly sclerotized embolus with subdistal transparent process, two sclerites of uncertain homology (divided appendix or uncus and appendix?). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseudosegments (>20 on tarsus 1), only distally quite distinct.

*Variation.* Males from Malaysia with more distinct dorsal apophysis on palpal femur, dorso-distal sclerite of procurus slightly more rounded, and ventro-distal sclerite of procurus slightly narrower and more pointed. Male from Laos with ventro-distal sclerite of procurus more pointed; tibia 1 in this male: 8.0 (missing in others).

*Female.* In general similar to male but triads closer together (distance PME-PME 210  $\mu$ m), marks on sternum fused to large brown posterior half of sternum. Tibia 1: 5.9 (missing in other female). Epigynum mostly weakly sclerotized, internal anterior arc visible through cuticle, narrow posterior sclerite with 'knob' (Figs. 1404, 1469); internal genitalia as in Figs. 1405 and 1470.

*Distribution.* Known from Thailand, Laos, and mainland Malaysia (Fig. 1445).

*Material examined.* THAILAND: *Kanchanaburi*: Erawan waterfalls: ♂ holotype above, together with 2♀.

MALAYSIA: *Pahang*: Genting [3°24.5'N, 101°45.9'E], secondary jungle, 600 m a.s.l., 3.xii.1990 (Murphy, 7979), 2♂ in ZFMK.

LAOS: *Luang Prabang Prov.*: NE Luang Prabang, Nam Ou, Nong Khiao, Tham Pathok (20°33.1'N, 102°37.9'E), 370 m a.s.l., outside cave, paddy fields, bananas, at night, by hand, 10.iii.2006 (P. Jäger, J. Altmann), 1♂ in SMF.

*Pholcus namou* n. sp.

Figs. 1378, 1379, 1409, 1410, 1471-1475

*Type.* Male holotype from Laos, Luang Prabang Prov., NE Luang Prabang, Nam Ou, Nong Khiao, Tham Pathok (20°33.1'N, 102°37.9'E), 370 m a.s.l., outside limestone cave, at rocks, by hand, 16.-17.iii.2007 (P. Jäger, F. Steinmetz), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1471, 1472; distinctive process on trochanter, shapes of procurus and uncus, appendix with basal branch) and female genitalia (Figs. 1409, 1474, 1475; epigynum mostly weakly sclerotized; small pore plates).

*Male* (holotype). Total body length 4.4, carapace width 1.2. Leg 1: 40.7 (9.9 + 0.5 + 9.9 + 18.5 + 1.9), tibia 2: 6.7, tibia 3: 3.7, tibia 4: 5.7; tibia 1 L/d: 93. Habitus as in Figs. 1378 and 1379. Carapace pale gray with V-mark posteriorly, ocular area and clypeus not darkened, sternum with distinctive brown pattern (spots near each leg coxa and median mark with branches to legs 2 and 3), legs pale, patellae and tibia-metatarsus joints brown, abdomen gray, dorsally with few small darker marks and larger whitish marks. Distance PME-PME 250  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 70  $\mu$ m. Ocular area elevated, posteriorly two areas with many stronger hairs. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1473, distal apophyses with modified hairs, proximally with one pair of lateral apophyses. Sternum wider than long (0.80/0.55), unmodified. Palps as in Figs. 1471 and 1472, coxa unmodified, trochanter with long ventral apophysis and short proximal apophysis pointing distally, femur with indistinct proximal apophysis retrolatero-dorsally, procurus complex distally, with distinctive membranous and sclerotized elements, bulb with uncus, long weakly sclerotized embolus, massive appendix with sclerotized basal branch. Legs without spines and curved hairs, few vertical hairs (most hairs

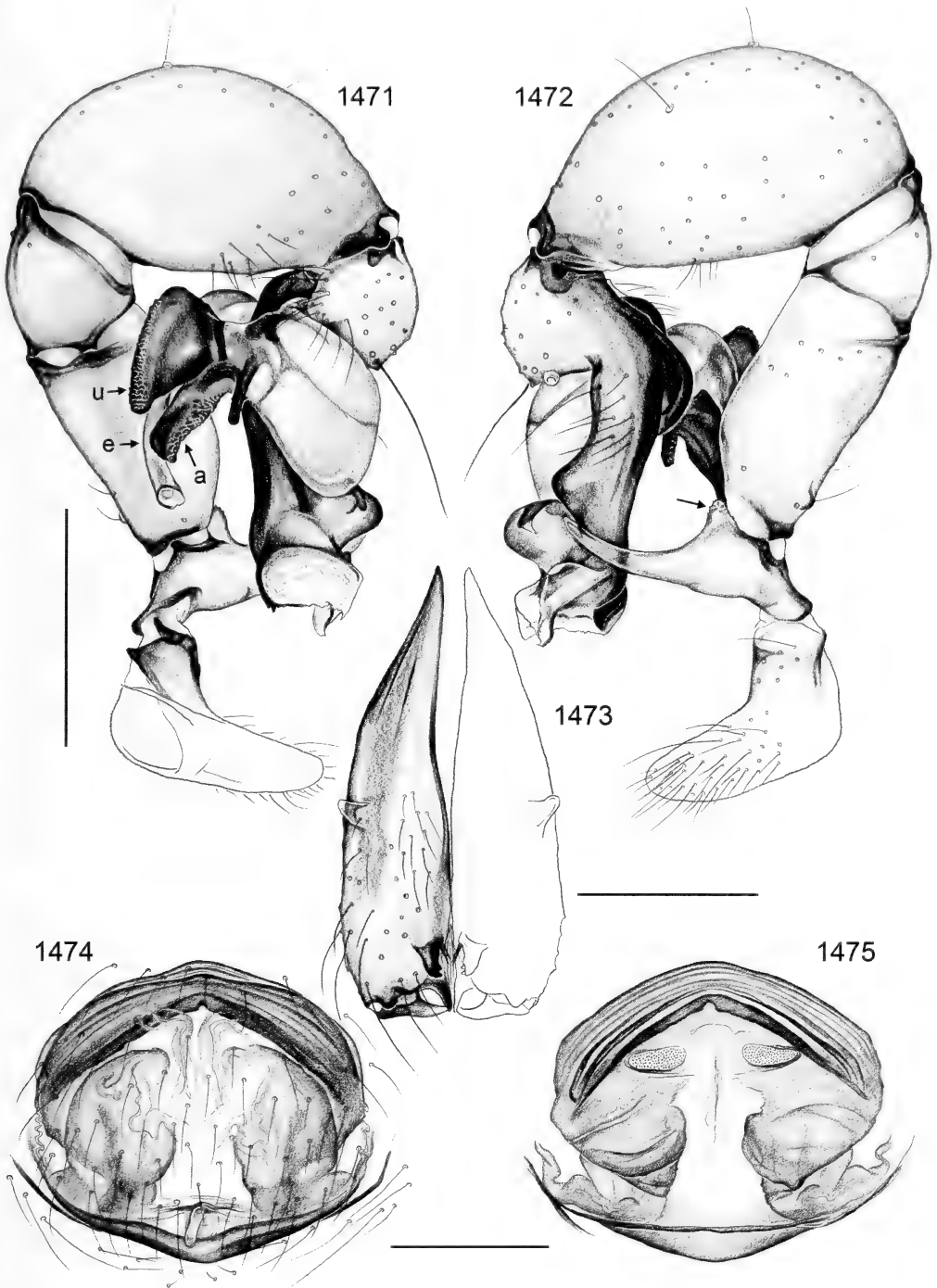


FIG. 1471-1475. *Pholcus namou*. 1471, 1472. Left male palp, prolateral and retrolateral views (arrow points at distinctive trochanter apophysis). 1473. Male chelicerae, frontal view. 1474, 1475. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1471, 1472), 0.3 (1473-1475).

missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally ~10 fairly distinct.

*Variation.* Tibia 1 in 5 other males: 8.9-10.7 (mean 10.1).

*Female.* In general similar to male but triads closer together (distance PME-PME 170  $\mu$ m). Tibia 1 in 8 females: 7.1-8.7 (mean 8.0). Epigynum largely weakly sclerotized oval area, often strongly protruding, narrow posterior sclerite with thin 'knob' (Figs. 1409, 1474); internal genitalia as in Figs. 1410 and 1475.

*Distribution.* Known from northern Laos only (Fig. 1445).

*Material examined.* LAOS: *Luang Prabang Prov.*: NE Luang Prabang, Nam Ou, Nong Khiao, Tham Pathok: ♂ holotype above; same data, 3♂4♀ in SMF; same locality, inside cave, at night, by hand, 10./11.iii.2006 (P. Jäger, J. Altmann), 2♂2♀ (2 vials) in SMF; same locality, inside limestone cave, by hand, 16.-17.iii.2007 (P. Jäger, F. Steinmetz), 1♂ in SMF; same locality, outside cave, paddy fields, bananas, at night, sweep net, by hand, 10./11.iii.2006 (P. Jäger, J. Altmann), 1♂2♀ (2 vials) in SMF. Phou Khoun Distr., Tham Muay (19°27.1'N, 102°26.1'E), 4.i.2007 (H. Steiner), 1♂2♀ in SMF. *Luang Namtha Prov.*: Tham Roj Ru (20°47.7'N, 101°00.7'E), 13.ii.2006 (H. Steiner), 1♀ in SMF.

*Pholcus sudhami* n. sp.

Figs. 1380-1382, 1411, 1412, 1476-1480

*Type.* Male holotype from Thailand, Kanchanaburi Prov., Erawan Waterfalls N.P. [14°23.7'N, 99°08.2'E], evergreen forest, under bark, 15./16.iii.1986 (C.L. & P.R. Deeleman), in RMNH.

*Etymology.* Named for Thai writer Pira Sudham.

*Diagnosis.* Easily distinguished from most congeners by male palpal morphology (Figs. 1476, 1477; distinctive procurus with large membranous structure, absence of appendix) and female genitalia (Figs. 1411, 1479, 1480; elongate pore plates and shapes of other internal structures; very similar to *Ph. pakse*); from *Ph. pakse* only by male embolus without spines (cf. Fig. 1481).

*Male* (holotype). Total body length 4.7, carapace width 1.2. Leg 1 missing, tibia 2: 6.5, tibia 3: 3.9, tibia 4: 5.4. Habitus as in Figs. 1380 and 1381. Carapace pale ochre-yellow with distinct mark posteriorly, ocular area light brown except medially, clypeus light brown, sternum whitish with small light brown marks near bases of coxae 2-4, legs pale ochre-yellow, patellae and

tibia-metatarsus joints brown, abdomen ochre-gray, with some indistinct darker and whitish spots dorsally, ventrally monochromous (cf. female, Fig. 1382). Distance PME-PME 205  $\mu$ m, diameter PME 100  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 55  $\mu$ m. Ocular area slightly elevated. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1478, with distal apophyses provided with modified hairs, two pairs of proximal apophyses. Sternum wider than long (0.80/0.65), unmodified. Palps as in Figs. 1476 and 1477, coxa unmodified, trochanter with straight ventral apophysis, femur with low humps proximo-dorsally and retrolaterally, distally widened, procurus with large dorsal protrusion distally, large prolatero-ventral area set with transparent scales, bulb with uncus, long partly sclerotized embolus, without appendix.

*Variation.* Leg 1 in other male from type locality: 9.6 + 0.5 + 9.5 + 17.9, tarsus missing, tibia 2: 6.4; tibia 1 L/d: 89. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tibia 1 in male from Thung Salaeng Luang: 14.5; male from Tham Phraya Prap: 9.8.

*Female.* In general similar to male but triads closer together (distance PME-PME 185  $\mu$ m); clypeus pale ochre-yellow. Tibia 1 in 3 females: 7.3, 7.4, 8.0. Epigynum large semicircular plate with pale 'knob' posteriorly (Figs. 1411, 1479); internal genitalia as in Figs. 1412 and 1480.

*Distribution.* Known from three localities in Thailand (Fig. 1445).

*Material examined.* THAILAND: *Kanchanaburi Prov.*: Erawan Waterfalls N.P.: ♂ holotype above, together with 1♂4♀ in RMNH. *Phitsanulok Prov.*: Thung Salaeng Luang [-16.5°N, 100.75°E], 550 m a.s.l., in cave, 25.viii.1987 (H. Ono), 1♂ 2 juvs. in NSMT (Ar 7866). *Ratchaburi Prov.*: Amphoe Muang Ratburi, Ban Huay Ta Kaeng, Tham Phraya Prap (13°35'N, 99°45'E), 26.viii.1981 (F.D. Stone), 1♂ in RMNH.

*Pholcus pakse* n. sp.

Figs. 1481, 1482

*Type.* Male holotype from Laos, Champasak Prov., Muang Pathoumphone, 2.5 km S of Pakse, Vat Phou Salao (15°05.7'N, 105°48.6'E), 150 m a.s.l., dry bed of stream, rocks, vegetation, at night, by hand, 24.xi.2009 (P. Jäger, S. Bayer), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

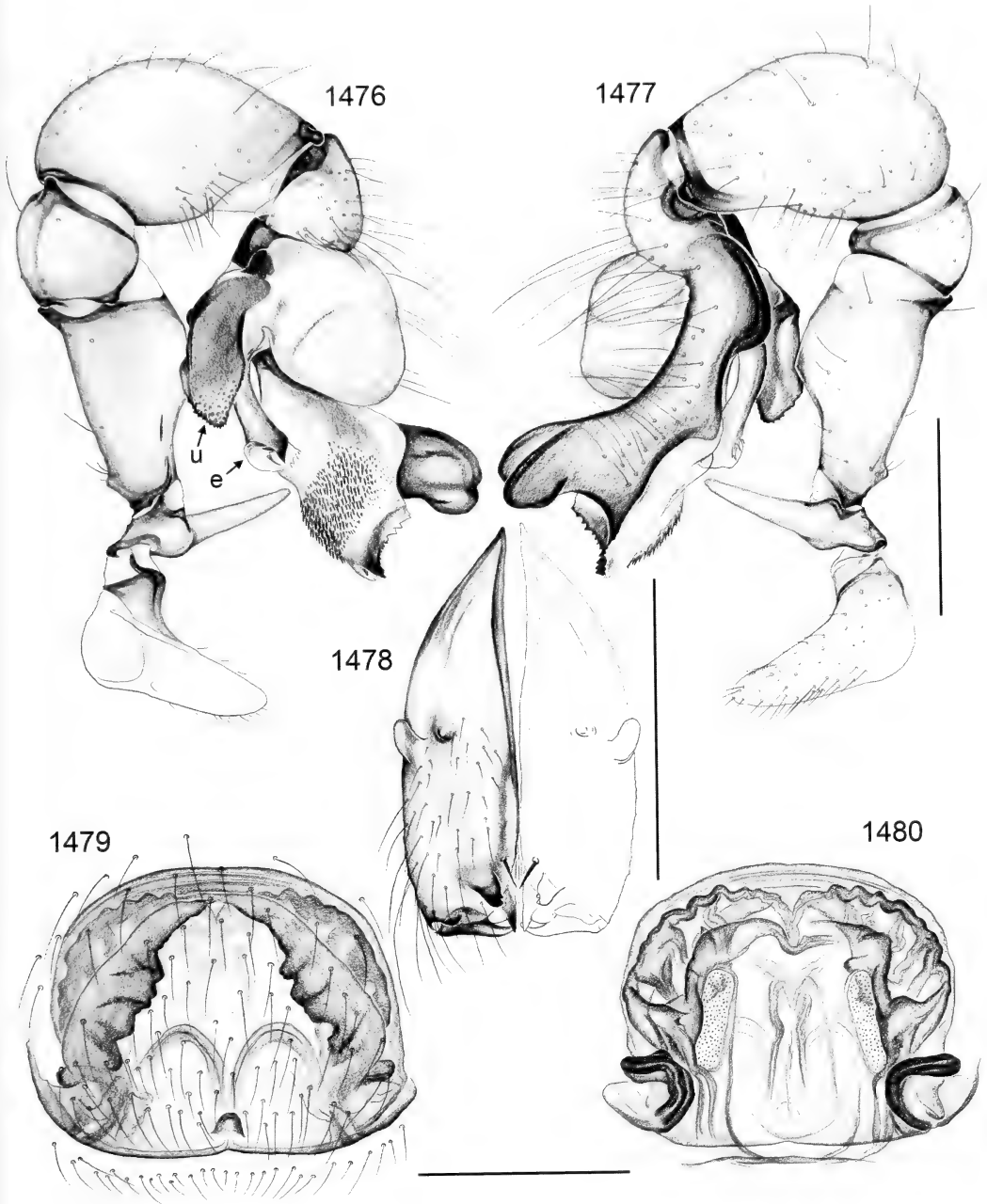


FIG. 1476-1480. *Pholcus sudhami*. 1476, 1477. Left male palp, prolateral and retrolateral views. 1478. Male chelicerae, frontal view. 1479, 1480. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

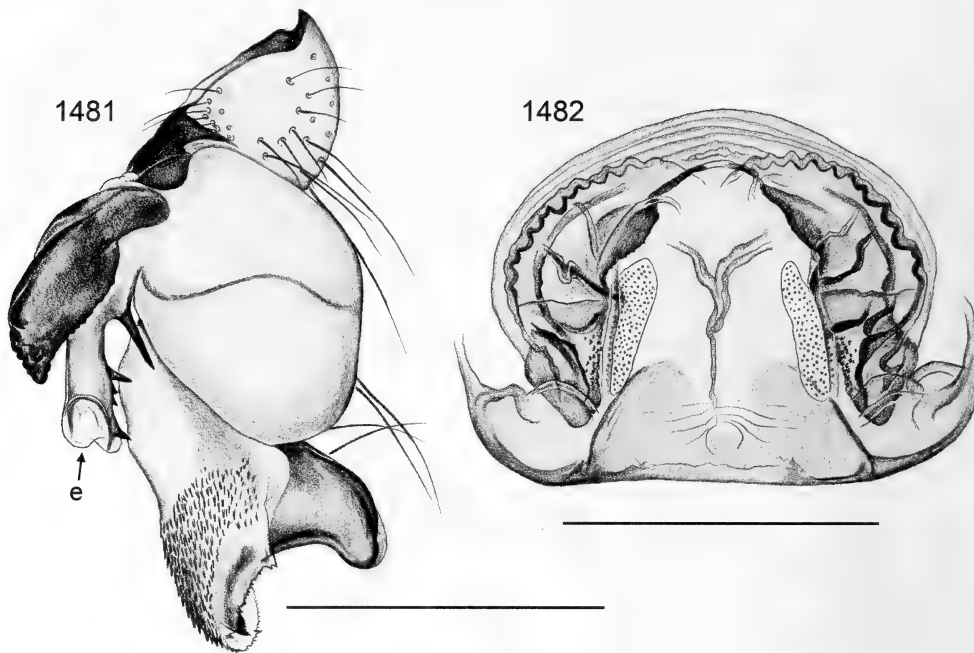


FIG. 1481, 1482. *Pholcus pakse*. 1481. Left male bulb and procrurus, prolateral view. 1482. Cleared female genitalia, dorsal view. Scale lines: 0.5.

**Diagnosis.** Easily distinguished from most congeners by male palpal morphology (very similar to *Ph. sudhami*; cf. Figs. 1476, 1477; distinctive procrurus, absence of appendix) and female genitalia (externally very similar to *Ph. sudhami*; cf. Fig. 1411); from *Ph. sudhami* only by male embolus with distinctive spines and slightly different procrurus tip (Fig. 1481). **Male** (holotype). Total body length 4.5, carapace width 1.2. Leg 1: 40.6 (9.9 + 0.5 + 9.8 + 18.6 + 1.8), tibia 2: 6.5, tibia 3 missing, tibia 4: 5.7. Habitus similar to *Ph. sudhami* (cf. Figs. 1380, 1381). Carapace pale ochre-yellow with distinct mark posteriorly, ocular area light brown except medially, clypeus light brown, sternum whitish with small light brown marks near bases of coxae 2-4 and behind labium, legs ochre-yellow, patellae and tibia-metatarsus joints brown, abdomen ochre-gray, with many dark and whitish spots dorsally and laterally, ventrally monochromous. Distance PME-PME 195  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 25  $\mu\text{m}$ , diameter AME 65  $\mu\text{m}$ . Ocular area slightly elevated. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. sudhami* (cf. Fig. 1478). Sternum wider than long (0.80/0.65), unmodified. Palps very similar to *Ph. sudhami* (cf. Figs.

1476, 1477), but embolus with distinctive spines and dorsal tip of procrurus simpler (not bifid; Fig. 1481). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 4; tarsus 1 with many pseudosegments but only distally ~10 fairly distinct.

**Female.** In general similar to male, triads at almost same distance (distance PME-PME 185  $\mu\text{m}$ ). Tibia 1: 9.1 (missing in other females). Epigynum large semicircular plate with pale 'knob' posteriorly, very similar to *Ph. sudhami* (cf. Fig. 1411); internal genitalia as in Fig. 1482.

**Distribution.** Known from Laos, Champasak Prov., only (Fig. 1445).

**Material examined.** LAOS: *Champasak Prov.*: Muang Pathoumphone, 2.5 km S of Pakse, Vat Phou Salao: ♂ holotype above; 7 km S of Pakse, Ban Nog Hoy, N slope of Phou Malong (15°03.2'N, 105°49.1'E), 115 m a.s.l., dry bed of stream, stones, rocks, vegetation, at day, by hand, 23.xi.2009 (P. Jäger), 1♂2♀ in SMF. S of Champasak, Wat Phou (14°51.0'N, 105°43.9'E), 155 m a.s.l., rocks, vegetation, at day, by hand, 28.xi.2009 (P. Jäger, S. Bayer), 1♀ in SMF.

*Pholcus youngae* n. sp.

Figs. 1383-1385, 1483-1485

*Type.* Male holotype from Thailand, Krabi Prov., Krabi, Diamond Cave [8°00.8'N, 98°50.5'E], 17. xii.1990 (C.L. & P.R. Deeleman), in RMNH.

*Etymology.* Named for Thai singer Amita Marie Young, better known under her stage name Tata Young.

*Diagnosis.* Easily distinguished from congeners by male ocular area (Fig. 1385; triads on stalks and small median elevation), male cheliceral armature (Fig. 1485; no distal apophyses), and male palpal mor-

phology (Figs. 1483, 1484; femur with long ventral process, distinctive procurus, shapes of bulbal processes).

*Male* (holotype). Total body length 4.5, carapace width 1.4. Legs 1 and 2 missing, tibia 3: 5.5, tibia 4: 7.1. Habitus as in Figs. 1383 and 1384. Carapace ochre-yellow, only anteriorly dark median line, ocular area brown, clypeus not darkened, sternum ochre yellow with darker margins and indistinct marks behind labium, legs ochre-yellow, patellae slightly darker, abdomen monochromous ochre-gray. Distance PME-PME 665  $\mu$ m, diameter PME 95  $\mu$ m,

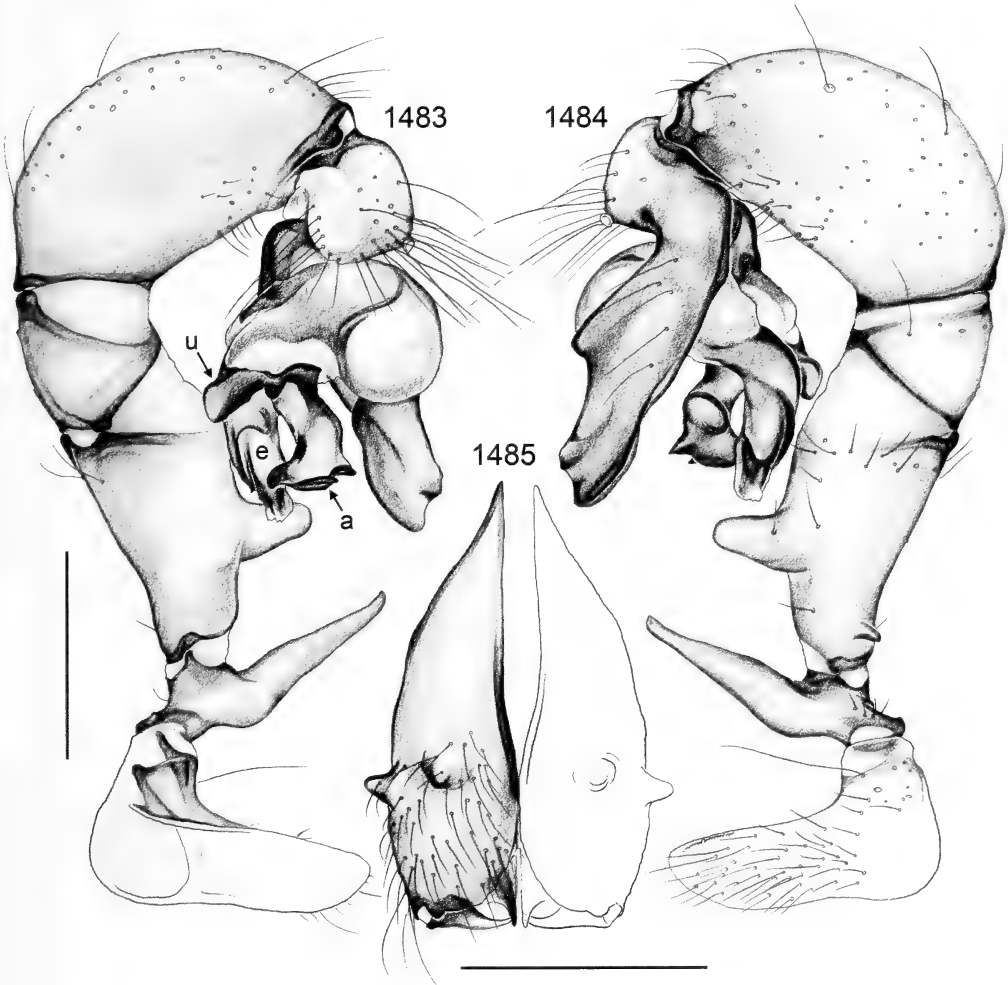


FIG. 1483-1485. *Pholcus youngae*. 1483, 1484. Left male palp, prolateral and retrolateral views. 1485. Male chelicerae, frontal view. Scale lines: 0.5.

distance PME-ALE 25  $\mu\text{m}$ , some pigment in place of AME but apparently no lenses. Ocular area elevated, many longer hairs on posterior side, triads on long stalks (Fig. 1385), median elevation that carries AME(?) pigment. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1485, with two pairs of proximal apophyses, without distal modification. Sternum wider than long (1.0/0.7), unmodified. Palps as in Figs. 1483 and 1484, coxa unmodified, trochanter with long pointed apophysis, femur with small retrolatero-dorsal apophysis proximally and long ventral process, procurus very simple, without membranous structures, bulb with rather simple uncus, complex and partly sclerotized embolus, complex distinctive appendix. Legs without spines and curved hairs, few vertical hairs (two legs and many hairs missing).

*Female.* The holotype is accompanied by a prosoma that might be from a conspecific female; tibia 2: 7.7, tibia 4: 7.4; eyes slightly elevated, not on stalks, much closer together (distance PME-PME 275  $\mu\text{m}$ ); AME apparently with small lenses.

*Distribution.* Known from type locality only (Fig. 1445).

*Material examined.* THAILAND: *Krabi Prov.*: Krabi, Diamond Cave: ♂ holotype above, together with 1♀(?) prosoma.

#### *Pholcus ancoralis* species group

*Diagnosis.* Large, rather dark, long-legged *Pholcus* (body length ~6.5-8.0, leg 1: ~45-65); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes on compact, slightly elevated ocular area, core group (*Ph. ancoralis*, *Ph. varirata*, *Ph. karawari*) with distinctive horns between eye triads (Figs. 1386, 1493), male chelicerae with proximal and distal apophyses, abdomen cylindrical, with cuticular pattern dorsally and ventrally (Figs. 1387-1393), male palpal femur with prominent rounded ventral protuberance (e.g., Figs. 1488, 1505), appendix blade- or sickle-shaped, uncus narrow, palpal tibia relatively small (about same size as femur; in contrast to *Ph. bicornutus* species group), procurus without dorsal spines, sclerotized epigynum with 'knob'.

*Description.* Body length ~6.5-8.0, carapace width 1.3-1.9. AME present, triads on slightly elevated ocular area, some species with distinctive horns between eye triads (*Ph. ancoralis*, *Ph. varirata*, *Ph. karawari*). Clypeus and sternum unmodified, male chelicerae with distal apophyses provided with two

modified hairs each and one or two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter mostly with long retrolatero-ventral apophysis (shorter in *Ph. varirata*), femur with distinctive rounded ventral protuberance, tibia relatively small in relation to femur, tarsus without dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', without dorsal spines. Male bulb with narrow uncus, weakly sclerotized embolus, and blade- or sickle-shaped appendix. Legs long and thin, tibia 1 in males ~8-16, tibia 1 L/d ~60-95, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~4%. Abdomen cylindrical, with cuticular pattern dorsally and ventrally, male gonopore with four epiandrous spigots; ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, ocular area without horns, legs slightly shorter (tibia 1: <14). Epigynum with long slender 'knob'.

*Monophyly.* The species of the core group (*Ph. ancoralis*, *Ph. varirata*, *Ph. karawari*) share a pair of distinctive horns between the eye triads (char. 6; Figs. 1386, 1493). A further potential synapomorphy is the ventral abdominal pattern (divided, posterior part forked; Figs. 1389, 1392). The monophyly of the entire species group is less certain. Several similarities exist, but some or all may be plesiomorphies: prominent rounded apophysis on male palpal femur, blade- or sickle-shaped appendix, narrow uncus, relatively small palpal tibia, and long slender epigynal 'knob'.

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), and the procurus without dorsal spines (char. 38) place this species group in a large polytomy at the 'basis' of the core group of *Pholcus* (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure. Within the species group, the core group is likely monophyletic (see above). However, it may turn out to be more closely related with the *Ph. bicornutus* group than with the Australian species (modifications between eye triads; characters 6 and 9 are here not considered homologous but they might be). The three Australian species are in general very similar, but they share no clear synapomorphy. In some respects they rather resemble the *Ph. gracillimus* group (ventral abdominal band undivided).



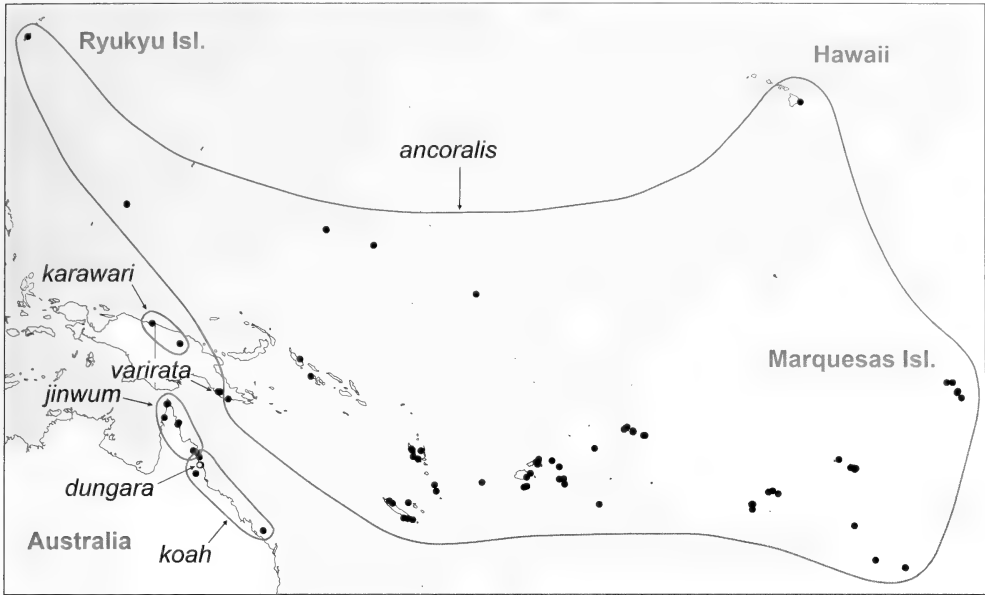


FIG. 1486. Known distribution of the *Pholcus ancoralis* species group.

*Natural history.* Unknown. *Pholcus ancoralis* seems to be very tolerant against human impact which may explain its wide distribution.

*Distribution.* The *Ph. ancoralis* group is largely restricted to New Guinea and north-eastern Australia; only *Ph. ancoralis* has a much wider distribution, possibly as a result of human transport (Fig. 1486).

*Composition.* The *Ph. ancoralis* group includes six species; two of them are newly described below, *Ph. ancoralis* is redescribed. For the three Australian species, see Huber (2001). Core group: *Ph. ancoralis* L. Koch, 1865; *Ph. varirata* n. sp.; *Ph. karawari* n. sp.; assigned tentatively: *Ph. jinwum* Huber, 2001; *Ph. dungara* Huber, 2001; *Ph. koah* Huber, 2001. The AMNH has males and females of an undescribed species that appears very close to the core group but lacks horns between the male eye triads (from Papua New Guinea, Morobe Prov., Mt. Kaindi near Wau). The USNM has a single female specimen from Wau that may also belong to that species.

*Pholcus ancoralis* L. Koch, 1865

Figs. 1387-1389, 1413, 1414, 1487-1501

*Pholcus ancoralis* L. Koch 1865: 862. L. Koch 1872: 287-289, pl. 24, figs. 2, 2a-h. Berland 1929: 43-44, figs. 4, 5. Berland 1934: 328. Berland 1935: 101.

Berland 1938: 162. Berland 1942: 13. Marples 1955: 466. Ledoux & Hallé 1995: 2-3, fig. 1a. Huber 2001: 111. Beatty, Berry & Huber 2008: 15-18, figs. 23-25, 53-54.

*Types.* One female syntype from Samoa, Upolu [13°52.5'S, 171°46.0'W], in ZMB, examined; one male and two female syntypes (male with left palp only, females without abdomens) from same locality, no further data, in ZMH, examined.

*Diagnosis.* Easily distinguished from most congeners by distinctive pair of horns between male eye triads (Fig. 1493) and strongly bent procurus (Fig. 1488); from similar species (*Ph. varirata*, *Ph. karawari*) by details of male palp morphology (Figs. 1487, 1488; trochanter apophysis, femur shape, procurus and bulbapophyses); from *Ph. karawari* also by female genitalia (Figs. 1413, 1491, 1492; shape and position of pore plates; very similar *Ph. varirata*).

*Male* (Lelu Isl.). Total body length 7.9, carapace width 1.7. Leg 1: 62.0 (15.1 + 0.8 + 15.5 + 27.7 + 2.9), tibia 2: 10.3, tibiae 3: 6.5, tibia 4: 9.1; tibia 1 L/d: 80. Habitus as in Figs. 1387 and 1388. Carapace ochre-yellow with distinct brown pattern including ocular area, clypeus not darkened, sternum brown, legs light brown, tips of femora and tibiae pale ochre-yellow, abdomen ochre-gray with distinctive dorsal

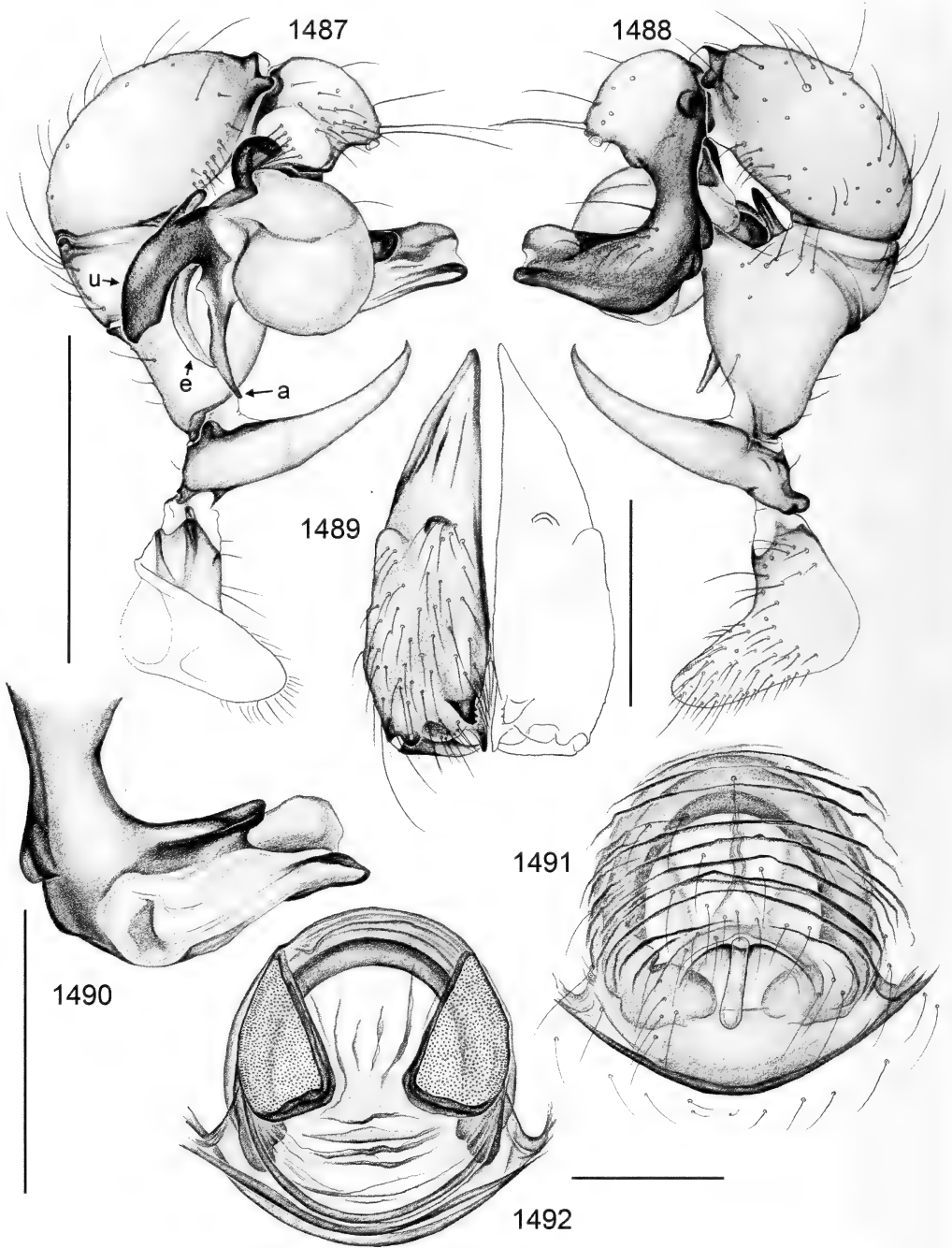


FIG. 1487-1492. *Pholcus ancoralis*. 1487, 1488. Left male palp, prolateral and retrolateral views. 1489. Male chelicerae, frontal view. 1490. Left procurus, prolateral view. 1491, 1492. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1487, 1488), 0.5 (1489, 1490), 0.3 (1491, 1492).

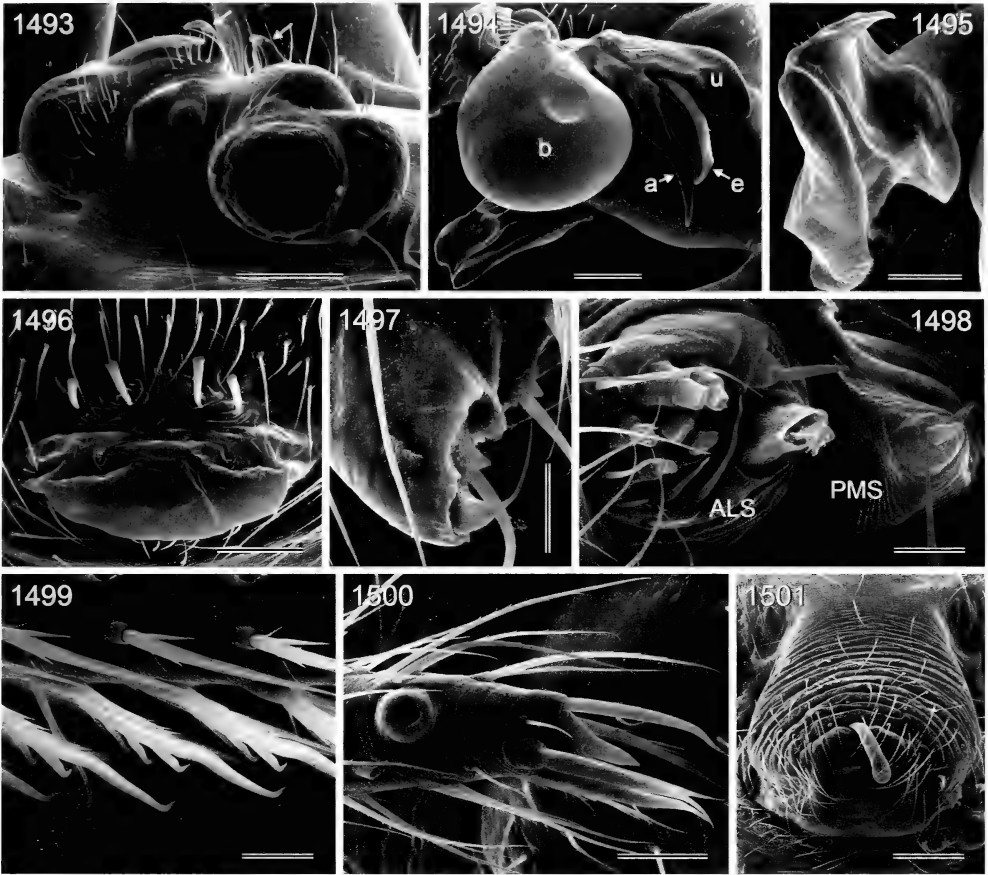


FIG. 1493-1501. *Pholcus ancoralis*. 1493. Male ocular area (arrows point at processes). 1494. Right bulbal processes. 1495. Right procurus tip, distal view. 1496. Male gonopore. 1497. Distal male chelical apophysis. 1498. Male ALS and PMS. 1499. Comb-hairs on right female tarsus 4. 1500. Female palpal tarsus tip. 1501. Epigynum. Scale lines: 200  $\mu$ m (1493, 1494, 1501), 80  $\mu$ m (1495), 60  $\mu$ m (1496), 50  $\mu$ m (1500), 20  $\mu$ m (1497, 1498, 1499).

and ventral brown pattern (ventral pattern as in female, cf. Fig. 1389). Distance PME-PME 175  $\mu$ m, diameter PME 160  $\mu$ m, distance PME-ALE 60  $\mu$ m, distance AME-AME 20  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area elevated, very compact, with distinctive pair of horns between triads and very low median hump above AME (Fig. 1493). No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1489, with frontal apophyses distally provided with two modified hairs each (Fig. 1497), light proximal lateral apophyses and proximal frontal humps. Sternum wider than long (1.1/0.9), unmodified. Palps as in Figs. 1487 and 1488, coxa unmodified, trochanter with long pointed ventral

apophysis with retrolateral hump proximally, femur dorsally unmodified, with large ventral protuberance, procurus strongly curved, rather simple, with extensive membranous area ventro-distally (Fig. 1490), no dorsal spines, bulb with slender uncus with long proximal process, long embolus more sclerotized than usual, simple blade-like appendix (Fig. 1494). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, barely visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1496); ALS with eight spigots each (Fig. 1498).

*Variation.* Some males with indistinct brown bands on clypeus (below triads). Tibia 1 in 25 males: 10.7-16.3 (mean 13.5).

*Female.* In general similar to male but ocular area without horns, triads slightly closer together (distance PME-PME 160  $\mu$ m); brown pattern on clypeus often more distinct. Tibia 1 in 37 females: 8.8-13.5 (mean 11.4); tarsus 4 with single row of comb-hairs (Fig. 1499). Epigynum mostly weakly sclerotized, strongly protruding, with distinctive transverse folds anteriorly, long transparent 'knob' originating from plate that is only posteriorly more strongly sclerotized (Figs. 1413, 1491, 1501); internal genitalia as in Figs. 1414 and 1492.

*Distribution.* Widely distributed in the Pacific, from southern Japan to Hawaii in the northeast, Rapa in the southeast, and New Caledonia and Papua New Guinea in the southwest (Fig. 1486). Apparently absent from Australia.

*Material examined.* JAPAN: Ryukyu Isl.: Okinawa [-26.5°N, 128°E], Nakasoni, 2.ix.1945 (J.B.D.), 1♂ in AMNH.

MICRONESIA: Kusaie (=Kosrae): Lelu Island [5.3°N, 163.0°E], no further data, 2♂2♀ in SMF. Ponape (=Pohnpei): Nett District [-6°56'N, 158°13'E], cliff near hilltop near Nanpil, 1500 ft a.s.l., 6.vi.1973 (J.A. Beatty, J.W. Berry), 3♂1♀ in BPBM; Ponape: Mt. Dolennankap, 1700-1900 ft. a.s.l., 13.viii.1946 (H.K. Townes), 1♂ in USNM. Ponape, Kolonia, forest and houses, 26.i.1970 (M. Sabath), 1♂1♀ 2 juvs. (2 vials) in MCZ. Ponape, Kolonia area, 5.-7.iii.1969 (M. Sabath), 6♀ in MCZ. Chuuk ("Truk") Islands, 10.iii.1969 (M. Sabath), 2♂3♀ in MCZ.

PAPUA NEW GUINEA: *Central Prov.*: Musgrave Range, Javarere [=Iawarere] Cave [9°27'S, 147°35'E], 18.viii.1986 (D.J. Court), 1♂1♀ in RMNH; same locality, 28.iv.1985 (D.J. Court), 1♀ in RMNH. Moreguina, Cape Rodney [-10°11'S, 148°22'E], 1.xi.1985 (D.J. Court), 1♂3♀ in RMNH. *Bougainville*: Tautsina Isl. [near] Kieta Harbour [-6°11'S, 155°36'E], 28.ix.1986 (D.J. Court), 3♂1♀ in RMNH.

SOLOMON ISLANDS: Vella Lavella Island, Barakoma [7°55'S, 156°42'E], 0-50 m a.s.l., xi.1972 (N.L.H. Krauss), 1♀ in AMNH. "Fulakora" [8°55'S, 161°04'E], 1916 (W.M. Mann), 1♀ in MCZ.

VANUATU: Espiritu Santo [-15°20'S, 166°55'E], viii.1943-vi.1944 (J.S. Haeger), 4♀ (2 vials) in AMNH; same locality, v.1944 (G. Banner), 2♂4♀ in AMNH. Erromanga Isl. [=Erromango, -18°50'S,

169°10'E], iii./iv.1937 (L. Macmillan), 1♀ in AMNH. Aoba [=Ambae Isl., 15°24'S, 167°48'E], 1894 (P. François), 1♀ in MNHN.

NEW CALEDONIA: *Prov. Sud*: Port Boisé, coast (22°21'S, 166°58'E), 8.ii.1993 (N.I. Platnick, R.J. Raven, M.S. Harvey), 1♀ in AMNH; Port Boisé, ~20 m a.s.l., dry coastal forest, 6.ix.1990 (N.I. Platnick, R.J. Raven, P. Goloboff), 1♂ in AMNH. Nouméa [22°14.4'S, 166°28.2'E], no further data, with E. Simon's original label "11737 Ph. noumeensis ES, Noumea", 1♂ in MNHN (AR 10221). *Prov. Nord*: Oubatché [-20°27'S, 164°38'E], iv.1911 (Roux, Sarasin), 1♀ in NHMB. Hienghène [20°41.4'S, 164°56.4'E], vi.1911 (Roux, Sarasin), 2♂1♀ in NHMB. *Loyalty Islands*: Uvea Isl. [-20°39'S, 166°32'E], 15.vi.1938 (L. Macmillan), 1♂1♀ in AMNH.

FIJI: *Vanua Levu*: 19 km E Savu Savu [-16°47'S, 179°31.5'E], Pyrethrum, logs and trees, 20 m a.s.l., 19.vii.1987 (G.B. Monteith, D. Cook), 12♂12♀ in QMB (S50341). 82 km E of Labasa on Wainikoro Rd towards Odo Point (16°17'S, 179°40'E), logged rainforest, 21.xi.1988 (T.B. Churchill), 1♀ in QMB (S14230). Along road between Lambusa and Savu Savu [-16°34'S, 179°24'E], 19.xi.1988 (T.B. Churchill), 1♂1♀ in QMB (S14244). *Viti Levu*: Colo-i-Suva forest park, N of Suva [18°04.2'S, 178°27'E], mahogany 'rainforest', no date (T.B. Churchill, R. Raven), 1♀ in QMB (S14264). Suva, Colo-i-Suva, 7.ii.1969 (J.E. Tobler), 1♂ in CAS. Near Suva, Fulton College, on vegetation beside mangrove swamp, 5.i.1975 (N. Poulter), 1♀ in AMS (KS56210). Suva, 15.xii.1897 (A.M. Mayer), 1♂ in MCZ. *Ovalau*: Lovoni, track behind Levuca [-17°41.3'S, 178°49.4'E], 13.xi.1988 (R. Raven), 1♀ in QMB (S14318); Levuca, plantations, creeks, some forest, 13.xi.1988 (T.B. Churchill), 1 juv. in QMB (S14303). *Kadavu*: 2 km SE Vunisea [19°04.6'S, 178°11.0'E], 20 m a.s.l., Pyrethrum, logs and trees, 28.vi.1987 (G.B. Monteith), 3♂1♀ in QMB (S50342, 50346); Lagalevu [18°59.1'S, 178°28.6'E], 0-20 m a.s.l., 2.-7.vii.1987 (G.B. Monteith), 1♂3♀ in QMB (S50340, 50347); waterfall 2.5 km E of Vunisea, Pyrethrum, logs, 29.-30.vi.1987 (G.B. Monteith), 2 juvs. in QMB (S 50351); same data but 50 m a.s.l. (G.B. & S.R. Monteith), 2 juvs. in QMB (S50339). *Taveuni* [-16°50'S, 179°55'W]: L. Tagimaucia track, 400 m a.s.l., Pyrethrum, logs and trees, 17.vii.1987 (G.B. Monteith, D. Cook), 1♂ in QMB (S50344). *Lau Islands*: Komo [18°39.6'S, 178°43.2'W], 20.viii.1924 (E.H. Bryan),

2♀ in AMNH; Mothe [18°40.2'S, 179°09.6'W], 16.viii.1924 (E.H. Bryan), 2♂2♀ in AMNH; Fulatinga [19°10.2'S, 178°39'W], 5.viii.1924 (E.H. Bryan), 1♂ in AMNH; Mango [17°27'S, 179°09.6'W], 18.ix.1924 (E.H. Bryan), 2♀ in AMNH. Fiji Islands, no further data (collection Roewer), 1♂1♀ in SMF (RII/8904).

GILBERT ISL. (KIRIBATI): "Aspamana" [=Abe-mama?, 0°24'N, 173°50'E], no date (Bock), collection Roewer, 2♀ in SMF (RII/9588).

SAMOA / AMERICAN SAMOA: Samoa: Upolu, 1♂2♀ syntypes above. "Apia and Pago Pago" [Apia: 13°50'S, 171°45'W; Pago Pago: 14°17'S, 170°42'W], 17.vii.1934 (W.M. Karshner), 2♀ in CAS. Tutuila, Tafuna, 25.x.1949 (L. Zachowski, H.H. Marrer), 1♀ in USNM. Samoa: Savaii, Salailua [13°40'S, 172°38'W], 20.v.1924 (E.H. Bryan), 1♀ in AMNH; Savaii, Mataatu harbor [-13°28'S, 172°26'W], shore trail, 18.x.1936 (C.E. Olsen), 1♂1♀ in AMNH.

TONGA: Tongatapu [-21°13'S, 175°09'W], 12.iii.1988 (Ilfie), 1♂ in RMNH. Niufo'ou [15°34'S, 175°38'W], 23.viii.1930 (H.C. Kellers), 2♂6♀ in USNM.

COOK ISL.: Rarotonga (21°14'S, 159°46'W), 15.-18.i.1996 (J. Boutin), 3♂6♀ in CAS. Mitiaro coral island [19°52'S, 157°42'W], 19.-21.i.1996 (J. Boutin), 1♂2♀ in CAS.

FRENCH POLYNESIA: Moorea [17°32'S, 149°50'W], 11.iv.1961 (R. Schick), 2♂ in AMNH. Moorea, west base of Mt. Rotui, 16.x.1958 (D.E. Puleston), 2♀ in USNM. Tahiti: Papeete [17°33'S, 149°33'W], "sur les Vanilles", 1902 (G. Seurat), 1♂1♀ in MNHN. "AC. 3415 - Tahiti", no further data, 1♂1♀ in AMNH. Tahiti: "Weg zum Wasserfall" [path to waterfall], no further locality, 1909 (E. Wolf), 1♀ in SMF (2942). Marquesas Islands: Fatu Hiva [10°29'S, 138°38'W], 16.ix.1929 (A.K. Fisher), 2♂ in USNM.

*Pholcus varirata* n. sp.

Figs. 1386, 1390-1392, 1415, 1416, 1502, 1503

*Type.* Male holotype from Papua New Guinea, Central Province, Varirata National Park [-9°26'S, 147°21'E], 23.vi.1985 (D.J. Court), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

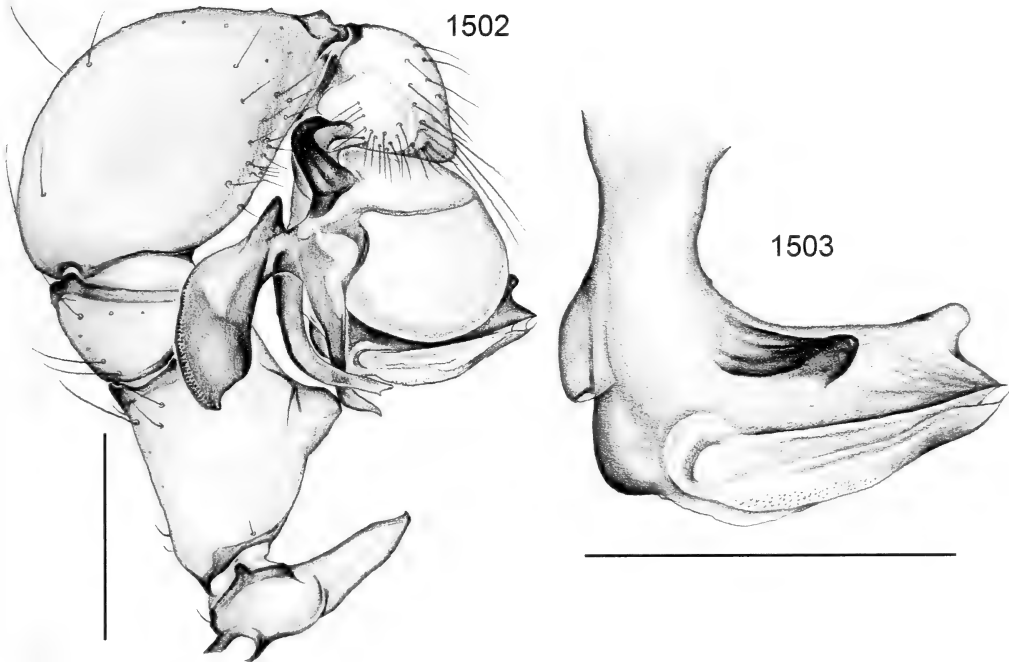


FIG. 1502, 1503. *Pholcus varirata*, left male palp and left procursor, prolateral views. Scale lines: 0.5.

*Diagnosis.* Easily distinguished from most congeners by distinctive pair of horns between male eye triads (Fig. 1386) and strongly bent procurus (Fig. 1503); from similar species (*Ph. ancoralis*, *Ph. karawari*) by details of male palp morphology (trochanter apophysis, femur shape, procurus and bulbal apophyses); from *Ph. karawari* also by female genitalia (Figs. 1415, 1416; shape and position of pore plates; very similar *Ph. ancoralis*).

*Male* (holotype). Total body length 7.3, carapace width 1.4. Leg 1: 53.3 (12.9 + 0.7 + 13.1 + 23.9 + 2.7), tibia 2: 8.5, tibiae 3: 5.3, tibia 4: 7.6; tibia 1 L/d: 96. Habitus as in Figs. 1390 and 1391. Carapace ochre-yellow with distinct brown pattern similar to *Ph. ancoralis* but ocular area only posteriorly darkened and median band slightly divided medially, clypeus not darkened, sternum and legs light brown, tips of femora and tibiae lighter, abdomen ochre-gray with distinctive dorsal and ventral brown pattern similar to *Ph. ancoralis*. Distance PME-PME 150  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, very compact, with distinctive pair of horns between triads and very low median hump above AME, hairs on posterior side in higher than usual density but short. No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae as in *Ph. ancoralis* (cf. Fig. 1489). Sternum wider than long (0.95/0.70), unmodified. Palps in general very similar to *Ph. ancoralis*, but trochanter apophysis shorter, femur apophysis more proximal, uncus slightly wider, embolus longer and more curved, appendix tip more curved, dorso-distal tip of procurus narrower (Figs. 1502, 1503). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; proateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally ~10 visible in dissecting microscope.

*Variation.* In two other males median brown band on carapace not divided medially. Tibia 1: 13.3, 13.5. *Female.* In general similar to male but ocular area without horns (triads at same distance); brown pattern on carapace includes ocular area and clypeus. Tibia 1 in 2 females: 11.0, 13.9. Epigynum extremely similar to *Ph. ancoralis* (Fig. 1415), externally not distinguishable, also internal view almost identical (Fig. 1416), only pore plates medially less angular.

*Distribution.* Known from Papua New Guinea, Central Province, only (Fig. 1486).

*Material examined.* PAPUA NEW GUINEA: *Central Province:* Varirata National Park: ♂ holotype above; same locality, 2.vi.1985 (D.J. Court), 1♂ in RMNH; same locality, 10.v.1986 (D.J. Court), 1♀ 1 juv. in RMNH. SW side of main Astrolabe Range, adjacent Sirinumu Dam [ $-9^{\circ}30'S$ ,  $147^{\circ}27'E$ ], 15.vii.1986 (D.J. Court), 1♂1♀ in RMNH. Goldie [River] Barracks [ $9^{\circ}21'S$ ,  $147^{\circ}16'E$ ], 11.viii.1986 (D.J. Court), 1♀ in RMNH.

*Pholcus karawari* n. sp.

Figs. 1393, 1417, 1418, 1504-1508

*Type.* Male holotype from Papua New Guinea, East Sepik Province, Karawari Lodge at Karawari River [ $4^{\circ}36.4'S$ ,  $143^{\circ}30.0'E$ ;  $-30$  m a.s.l.], 8.vii.1986 (D.J. Court), in RMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by distinctive pair of horns between male eye triads and strongly bent procurus (Fig. 1505); from similar species (*Ph. ancoralis*, *Ph. varirata*) by details of male palp morphology (Figs. 1504, 1505; trochanter apophysis, femur shape, procurus and bulbal apophyses) and by female genitalia (Figs. 1417, 1507, 1508; shape and position of pore plates).

*Male* (holotype). Total body length 6.5, carapace width 1.3. Leg 1: 50.6 (12.4 + 0.7 + 12.4 + 22.4 + 2.7), tibia 2: 8.0, tibiae 3: 5.1, tibia 4: 7.2; tibia 1 L/d: 93. Habitus as in Fig. 1393. Carapace ochre-yellow with distinct brown pattern similar to *Ph. ancoralis*, clypeus not darkened, sternum brown, legs light brown, tips of femora and tibiae whitish, abdomen ochre-gray with distinctive dorsal and ventral brown pattern similar to *Ph. ancoralis*. Distance PME-PME 175  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 60  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, very compact, with distinctive pair of horns between triads and very low median hump above AME, hairs on posterior side in higher than usual density but short. No thoracic furrow (only black line anteriorly); clypeus unmodified. Chelicerae with distal apophyses similar to *Ph. ancoralis* but proximally with only one pair of rounded lateral apophyses (Fig. 1506). Sternum wider than long (0.85/0.80), unmodified. Palps as in Figs. 1504 and 1505, coxa unmodified, trochanter with long and pointed retrolatero-ventral apoph-

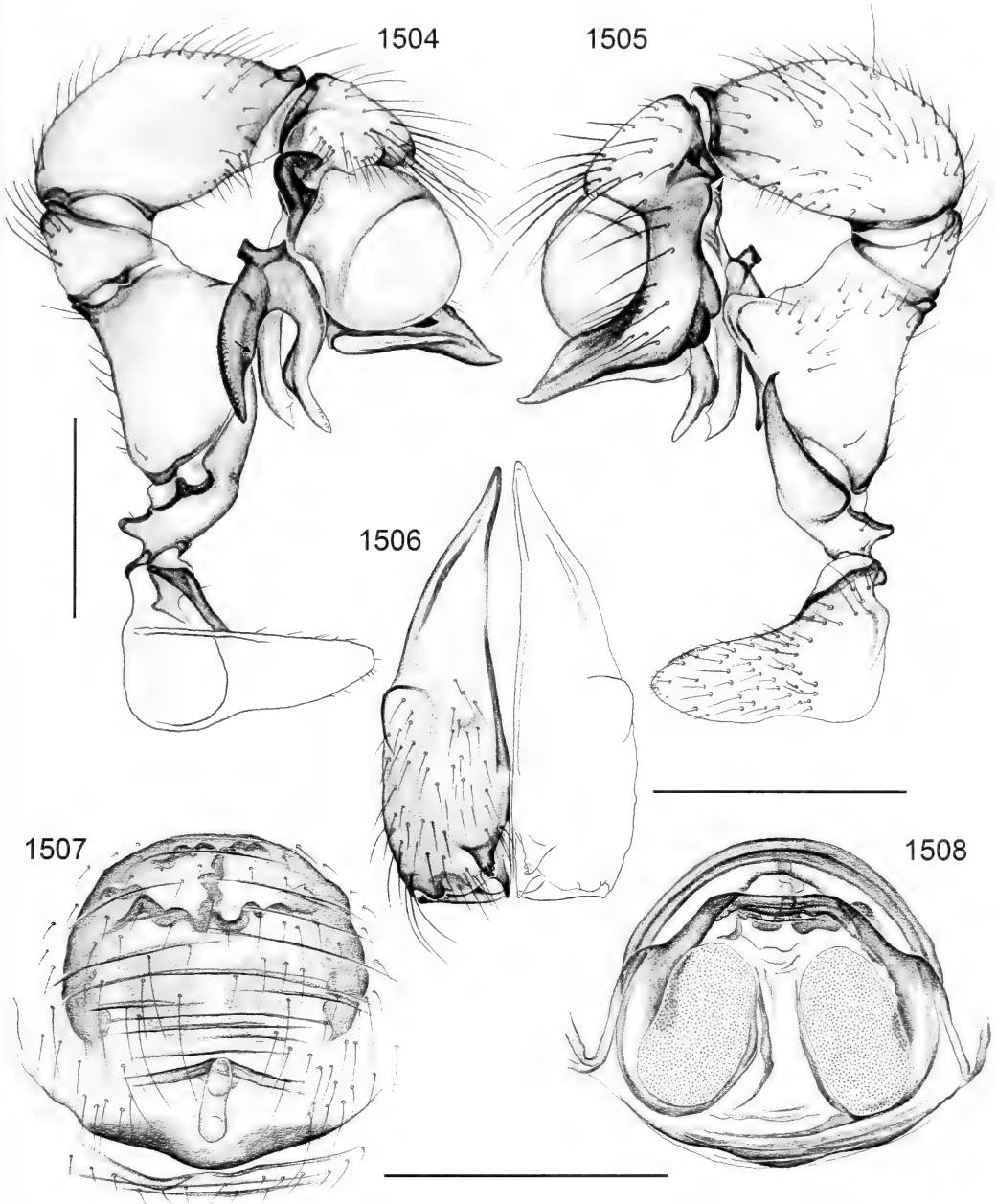


FIG. 1504-1508. *Pholcus karawari*. 1504, 1505. Left male palp, prolateral and retrolateral views (arrow points at detail of uncus that projects more in specimen from Jayapura). 1506. Male chelicerae, frontal view. 1507, 1508. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

ysis and smaller dorsal apophysis, femur with large ventral protuberance, procurus strongly curved, pointed distally, with whitish area ventrally and prolateral sclerite, bulb similar to *Ph. ancoralis* but uncus more pointed, embolus only on one side sclerotized, appendix more curved. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in other male from type locality: 13.2. The material from Jayapura is assigned tentatively because males differ slightly: proximal cheliceral apophyses more pointed, uncus with slightly more pronounced process (arrow in Fig. 1504), trochanter apophysis slightly wider and more evenly curved, procurus tip slightly more pointed.

*Female.* No females are available from the type locality and the females described here are with the males that are assigned tentatively due to minor differences (see above). Therefore, these females are also assigned tentatively and may turn out to represent a different species. In general similar to male but ocular area without horns (tiny elevations present; median hump above AME also present); tibia 1 missing in both females. Epigynum strongly elevated, sclerotized plate larger than in *Ph. ancoralis*, anterior folds less distinct (Figs. 1417, 1507); internal view as in Figs. 1418 and 1508.

*Distribution.* Known from Papua New Guinea, East Sepik Province, and from specimens assigned tentatively from Papua Province, Indonesia (Fig. 1486).

*Material examined.* PAPUA NEW GUINEA: *East Sepik Province:* Karawari Lodge: ♂ holotype above; same data, 1♂ 1 juvenile in RMNH.

*Assigned tentatively.* INDONESIA: *Papua Prov.:* Jayapura ("Hollandia") [-2°32'S, 140°42'E], tropical rainforest, 7.i.1945 (L.W. Saylor), 1♂1♀ in AMNH; same locality, on leaves, rainforest, 5.i.1945 (L.W. Saylor), 1♀ in AMNH.

*Pholcus jinwum* Huber, 2001

*Pholcus jinwum* Huber 2001: 111-113, figs. 339-353.

*New record.* AUSTRALIA: *Queensland:* Cape Tribulation National Park, Emmagen Creek (16°02.5'S, 145°27.7'E), rainforest, sea level, 26.vii.1992 (C.E. Griswold), 2♂4♀ in CAS (9027209); same data but J. Coddington & G. Hormiga leg., -5♂12♀ in USNM.

*Pholcus bicornutus* species group

*Diagnosis.* Large, rather dark, long-legged *Pholcus* (body length ~5.0-6.5, leg 1:~45); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, ocular area with distinctive processes, each carrying brush of hairs (Figs. 1512, 1515, 1565), male chelicerae with proximal and distal apophyses, abdomen cylindrical, with cuticular pattern dorsally (except *Ph. bicornutus*) and ventrally (e.g., Figs. 1520, 1521), male palpal tibia very large relative to femur (in contrast to *Ph. ancoralis* species group), procurus without dorsal spines, sclerotized epigynum with 'knob'.

*Description.* Body length ~5.0-6.5, carapace width 1.3-1.5. AME present, elevated ocular area with distinctive processes, each carrying brush of hairs. Clypeus and sternum unmodified, male chelicerae with distal apophyses provided with two modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with long retrolatero-ventral apophysis, femur with small retrolateral and larger ventral protuberances, tibia large in relation to femur, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines. Male bulb with uncus, weakly sclerotized embolus, with or without appendix. Legs long, tibia 1 in males ~10-14, tibia 1 L/d ~70-80, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~3-5%. Abdomen cylindrical, with cuticular pattern dorsally (except *Ph. bicornutus*) and ventrally, male gonopore with four epiandrous spigots; ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae and ocular area unmodified, legs slightly shorter (tibia 1: ~7.5-11.5). Epigynum with 'knob', internal genitalia with pair of round to oval pore-plates.

*Monophyly.* The three species share a pair of distinctive processes between the male eye triads, each provided with a brush of hairs (char. 9; Figs. 1512, 1515, 1565).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65) and the procurus without dorsal spines (char. 38) place this species group in a large polytomy at the 'basis' of the core group of *Pholcus* (Fig. 26); the detailed relation-



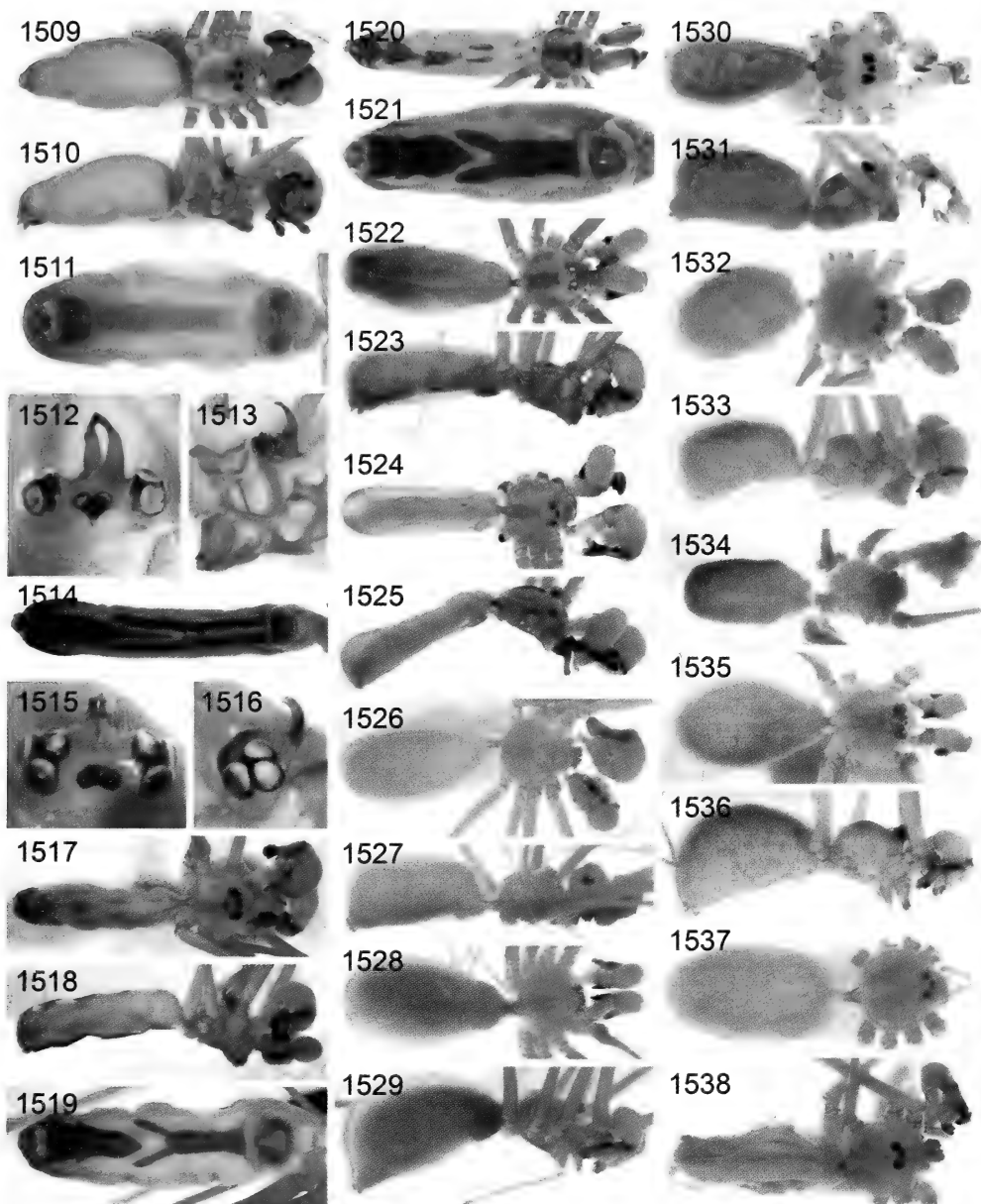


FIG. 1509-1538. *Pholcus bicornutus*, *Ph. opilionoides*, and *Ph. nenjukovi* species groups, habitus. 1509-1513. *Ph. bicornutus*, male, dorsal and lateral views; female abdomen, ventral view; male ocular area, frontal and lateral views. 1514, 1515. *Ph. arayat*, female abdomen, ventral view; male ocular area, frontal view. 1516-1521. *Ph. pagbilao*, male ocular area, lateral view; males, dorsal and lateral views; female abdomens, ventral views; specimens from Pagbilao (1516-1519) and Negros (1520, 1521). 1522, 1523. *Ph. opilionoides*, male, dorsal and lateral views. 1524, 1525. *Ph. genuiformis*, male, dorsal and lateral views. 1526, 1527. *Ph. crassipalpis*, male, dorsal and lateral views. 1528, 1529. *Ph. spiliensis*, male, dorsal and lateral views. 1530, 1531. *Ph. agadir*, male, dorsal and lateral views. 1532, 1533. *Ph. mecheria*, male, dorsal and lateral views. 1534. *Ph. berlandi*, male holotype, dorsal view. 1535, 1536. *Ph. creticus*, male, dorsal and lateral views. 1537. *Ph. nenjukovi*, female, dorsal view. 1538. *Ph. sidorenkoi*, male, dorsal view.

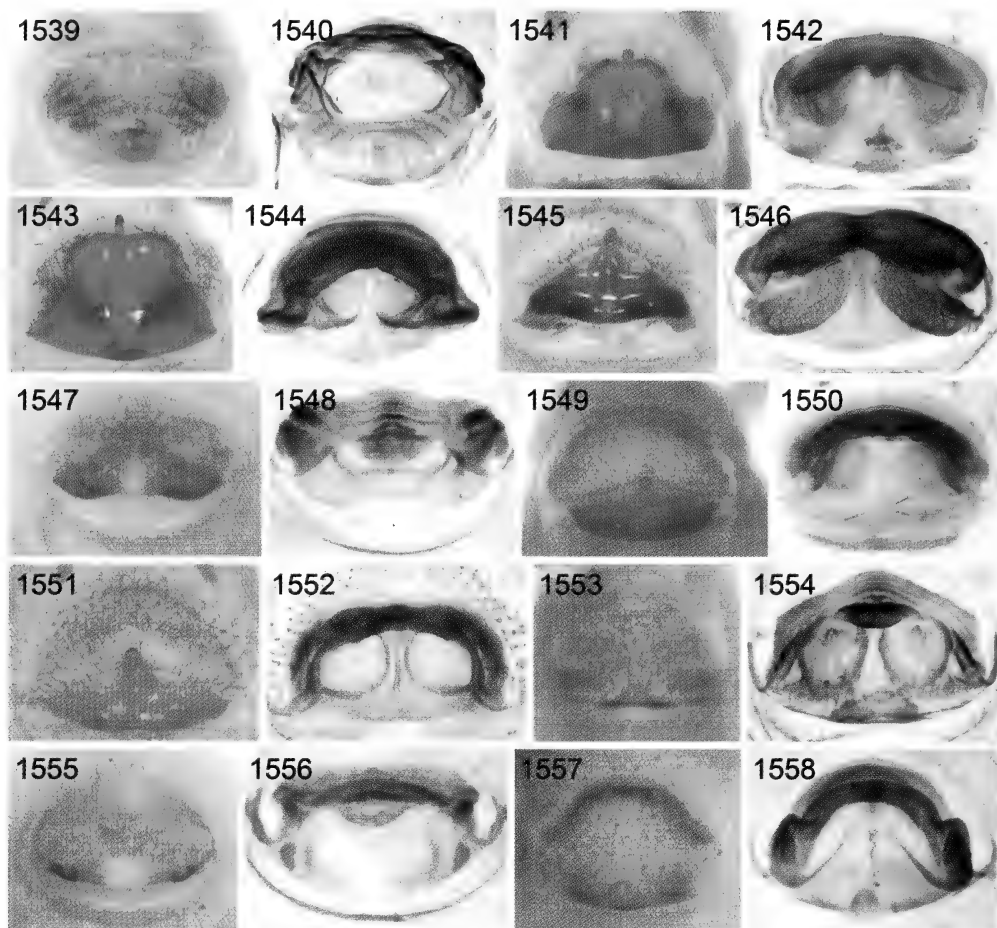


FIG. 1539-1558. *Pholcus bicornutus* and *Ph. opilionoides* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 1539, 1540. *Ph. bicornutus*. 1541, 1542. *Ph. arayata*. 1543, 1544. *Ph. pagbilao*. 1545, 1546. *Ph. opilionoides*. 1547, 1548. *Ph. genuiformis*. 1549, 1550. *Ph. crassipalpis*. 1551, 1552. *Ph. spiliensis*. 1553, 1554. *Ph. agadir*. 1555, 1556. *Ph. mecheria*. 1557, 1558. *Ph. creticus*.

ships with other species groups in this polytomy remain obscure. The modifications between the male eye triads remind of the *Ph. ancoralis* group, but there they are not provided with brushes of hairs. They are thus tentatively considered non-homologous (chars. 6 and 9). Within the *Ph. bicornutus* group, the two new species (*Ph. arayata*, *Ph. pagbilao*) share a number of characters that are likely synapomorphic: a distinctive shape of the male palpal trochanter apophysis (Figs. 1575, 1580; distally curved downwards), a distinctive ventral abdominal

pattern (Figs. 1514, 1519; divided, anterior part forked), and a large trapezoidal epigynal plate (Figs. 1541, 1543).

*Natural history.* The species have been collected from caves and in tropical rainforest.

*Distribution.* The *Ph. bicornutus* group is restricted to the Philippines (Fig. 1559).

*Composition.* The *Ph. bicornutus* group includes three described species; two of them are newly described below, the third is redescribed: *Ph. bicornutus* Simon, 1892; *Ph. arayata* n. sp.; *Ph.*

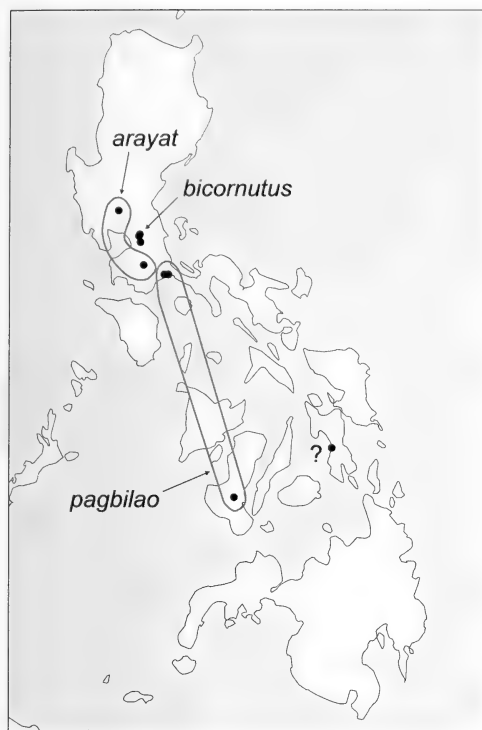


FIG. 1559. Known distribution of the *Pholcus bicornutus* species group. The question mark refers to "*Pholcus phalangioides*" by Barrion & Litsinger (1995), which is here considered a misidentification of *Ph. arayat* or of a new species of the *Ph. bicornutus* group.

*pagbilao* n. sp. The RMNH has a male of a further undescribed species from Mindanao, Davao Nature Reserve, Mt. Apo.

*Pholcus bicornutus* Simon, 1892

Figs. 1509-1513, 1539, 1540, 1560-1573

*Pholcus bicornutus* Simon 1892: 41-42, pl. 2, figs. 3-4. Simon 1893a: 466-468, figs. 455, 458.

*Types.* Male lectotype (designated here; see Note below) and 2♂3♀ paralectotypes from Philippines, Luzon, Cueva San Mateo [-14°42'N, 121°08'E], no further data, with Simon's original label "14789 *Ph. bicornutus* E.S., Cueva San Mateo!", in MNHN (Ar 10240), examined. 2♂2♀ paralectotypes from Luzon, Cueva de Antipolo [-14°35'N, 121°10'E], with Simon's original label "14790 *Ph. bicornutus* E.S.,

Cueva de Antipolo!", in MNHN (Ar 10227), examined.

*Note.* A lectotype is designated because male syntypes from the two type localities differ slightly in the shape of the procurus. Simon (1893a: fig. 458) obviously illustrated a male from Cueva San Mateo. The lectotype is thus chosen from this locality.

*Diagnosis.* Easily distinguished from most congeners by male horns with brushes of hairs between eye triads (Figs. 1512, 1565); from similar species (*Ph. arayat*, *Ph. pagbilao*) by ventral abdominal pattern (Fig. 1511; undivided dark band), by very distinctive procurus and absence of appendix (Figs. 1560, 1561), and by female genitalia (Figs. 1539, 1563; small epigynal plate).

*Male* (lectotype). Total body length 4.9, carapace width 1.5. Leg 1: 10.3 + 0.7 + 10.7, metatarsus and tarsus missing, tibia 2: 7.3, tibiae 3: 4.9, tibia 4: 6.5; tibia 1 L/d: 73. Habitus as in Figs. 1509 and 1510. Carapace ochre-yellow with brown mark medially including ocular area, clypeus not darkened, sternum pale ochre-yellow with median star-shaped light brown mark, legs ochre-yellow, tips of femora and tibiae lighter, abdomen pale ochre-gray, ventrally with brown band fading anteriorly (cf. female, Fig. 1511). Distance PME-PME 435 µm, diameter PME 135 µm, distance PME-ALE 35 µm, distance AME-AME 35 µm, diameter AME 90 µm. Ocular area elevated, with distinctive horns between triads carrying brushes of hairs that appear glued together at tips (Figs. 1566, 1568). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1562, with frontal apophyses distally provided with two modified hairs each (Fig. 1571), light proximal lateral apophyses and proximal frontal humps. Sternum wider than long, unmodified. Palps as in Figs. 1560 and 1561, coxa unmodified, trochanter with short light retrolateral protrusion, femur with small retrolateral apophysis pointing proximally, with ventral apophysis, procurus consisting of strong proximal part with long dorsal process and long hinged distal part (Figs. 1561, 1569), bulb with large unculus, long weakly sclerotized embolus, without appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Gonopore with four epiaandrous spigots (Fig. 1570); ALS with seven or eight spigots each (Fig. 1572).

*Variation.* Males from Cueva de Antipolo have a slightly different procurus (main branch more

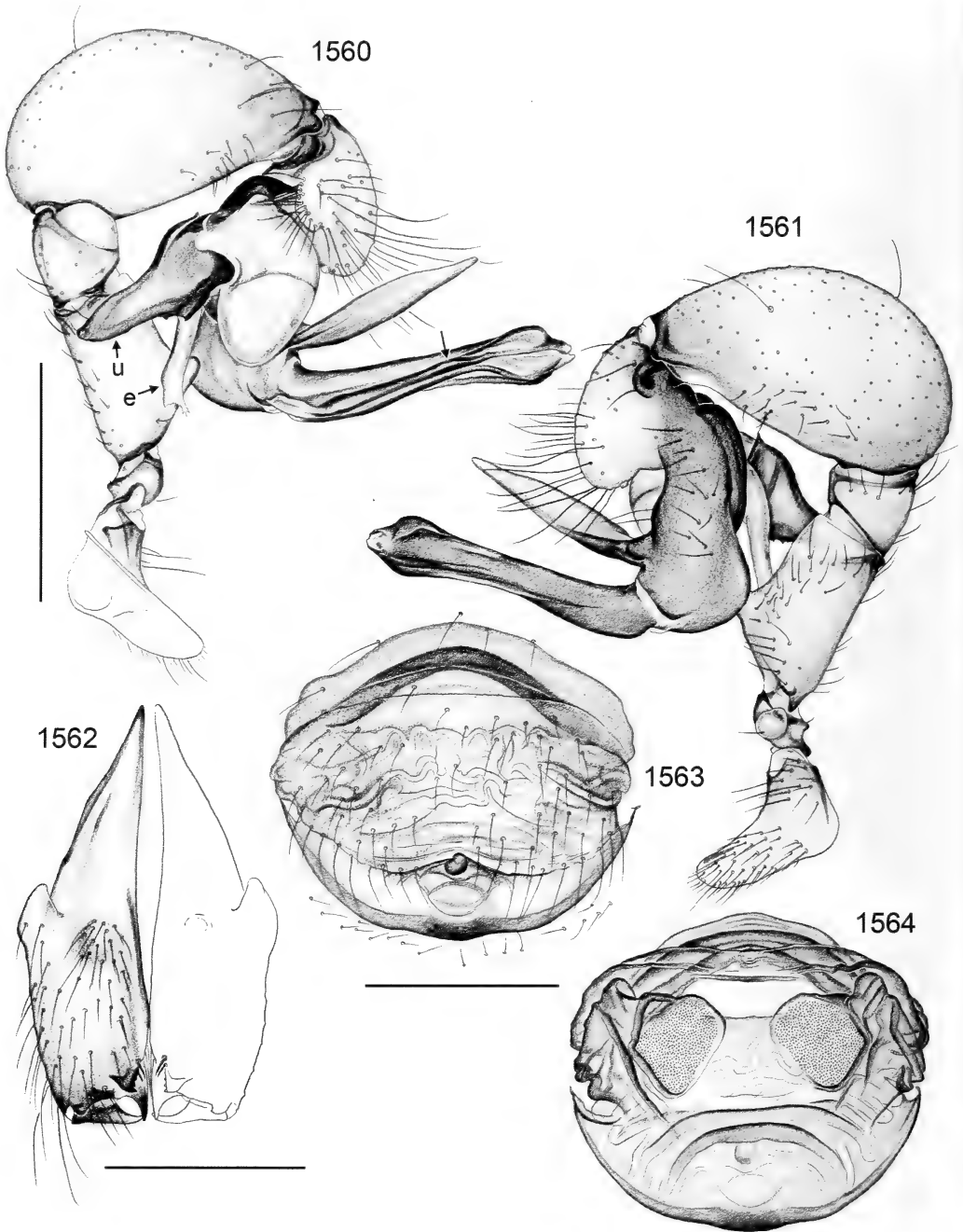


FIG. 1560-1564. *Pholcus bicornutus*. 1560, 1561. Left male palp, prolateral and retrolateral views (arrow points at prolateral ridge that is more prominent in males from Cueva de Antipolo). 1562. Male chelicerae, frontal view. 1563, 1564. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1560, 1561), 0.5 (1562-1564).

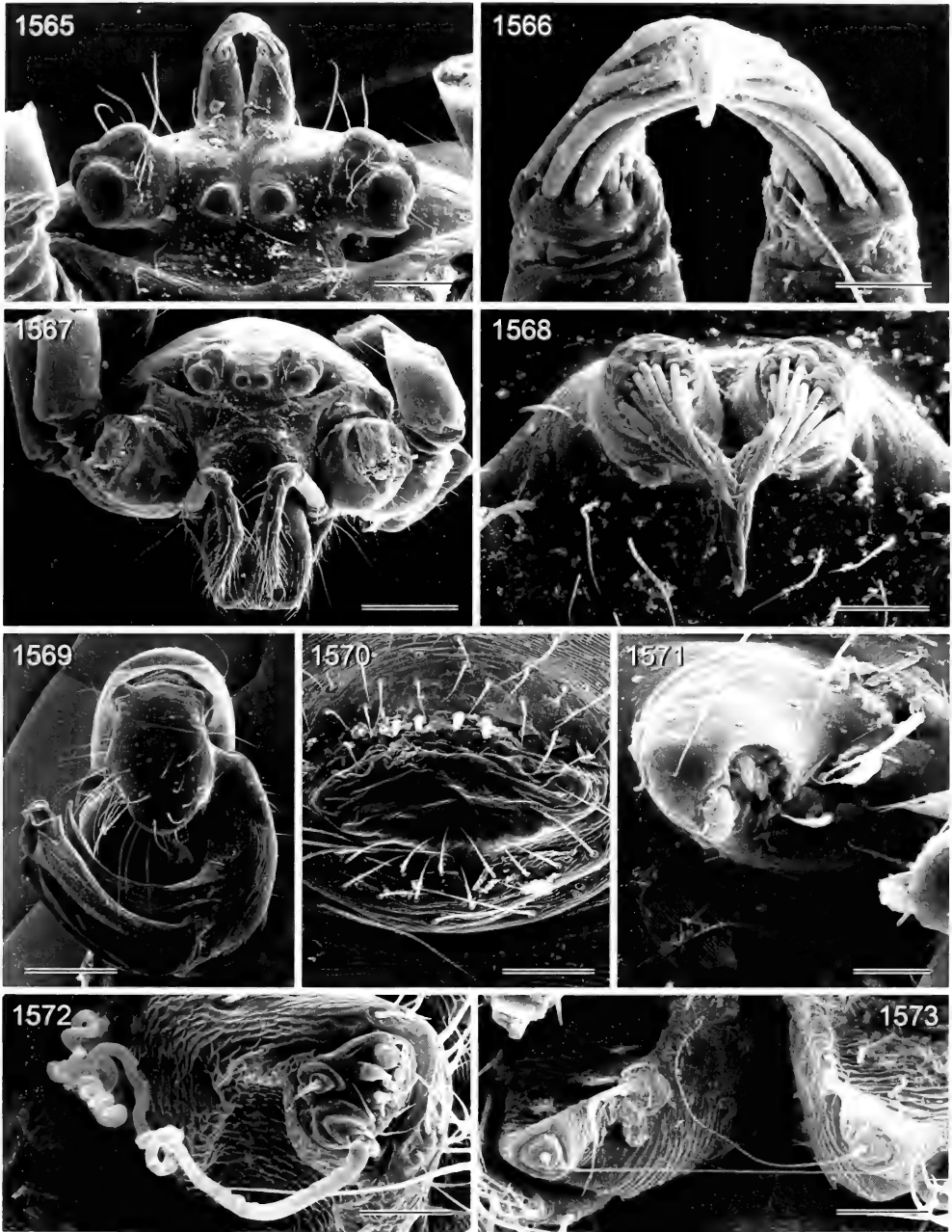


FIG. 1565-1573. *Pholcus bicornutus*. 1565. Male ocular area. 1566, 1568. Modifications on male ocular area, frontal and dorsal views. 1567. Female prosoma, frontal view. 1569. Left male palp, dorsal view. 1570. Male gonopore. 1571. Distal male cheliceral apophysis. 1572. Male ALS (with silk line emerging from the enlarged piriform gland spigot). 1573. Same male specimen, PMS (with silk lines emerging from median spigots). Scale lines: 500  $\mu$ m (1567), 400  $\mu$ m (1569), 200  $\mu$ m (1565), 80  $\mu$ m (1568), 60  $\mu$ m (1570), 50  $\mu$ m (1566), 40  $\mu$ m (1572, 1573), 20  $\mu$ m (1571).

strongly curved and with more prominent prolateral ridge; arrow in Fig. 1560). They are tentatively assigned to (kept in) this species. Tibia 1 in 4 males: 10.7, 11.0, 11.1, 11.3. Leg 1 in male from Montealban Cave: 44.4 (10.7 + 0.6 + 11.1 + 19.4 + 2.6), metatarsi with very long slightly curved hairs, tarsal pseudosegments only distally visible.

*Female.* In general similar to male but ocular area without horns, triads closer together (Fig. 1567; distance PME-PME 285  $\mu$ m). Tibia 1 in 8 females: 7.6-11.3 (mean 9.6) (the three paralectotypes from Cueva San Mateo have relatively short tibiae 1: 7.6-8.3, in other females the range is 10.1-11.3). Epigynum mostly weakly sclerotized, in some females strongly protruding, narrow posterior plate with small 'knob' (Figs. 1539, 1563); internal genitalia as in Figs. 1540 and 1564. ALS with eight spigots each. *Distribution.* Known from Philippines, Luzon, only (Fig. 1559).

*Material examined.* PHILIPPINES: *Luzon:* Rizal: Cueva de San Mateo: ♂ lectotype and 2♂3♀ paralectotypes above; Cueva de Antipolo: 2♂2♀ paralectotypes above; Montealban Cave [-14°44'N, 121°09'E], 30.iii.1983 (P. Strinati), 2♂3♀ in MHNG; same data but 29.iii.1983, 2♂2♀ in MHNG; same locality, 14.iv.1977 (P. Strinati, V. Aellen), 1♀ 2 juvs. in MHNG; same locality, 16.ii.1951 (J.F. Berseng), 1♀ 1 juv. in MCZ.

*Pholcus arayat* n. sp.

Figs. 1514, 1515, 1541, 1542, 1574-1578

"? *Pholcus phalangioides*" (misidentification): Barrion & Litsinger 1995: 37-38, figs. 13a-e (see Note below).

*Note.* I have not seen the male identified as *Ph. phalangioides* by Barrion & Litsinger (1995), but their drawings clearly show that their specimen (from Baybay: 10°41'N, 124°48'E, Leyte Prov., Philippines) is either conspecific or very closely related to the present species (the long abdomen suggests this species rather than *Ph. pagbilao*).

*Type.* Male holotype from Philippines, Central Luzon, Pampanga, Mt. Arayat [15°11'N, 120°45'E], 11.ii.1984 (C.K. Starr), in AMNH.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by male horns with brushes of hairs between eye triads (Fig. 1515); from *Ph. bicornutus* by details of male palp (Figs. 1574, 1575; distinctive male palpal

trochanter apophysis, shape of procurus, presence of appendix), and large epigynal plate (Fig. 1541); from very similar *Ph. pagbilao* by more slender abdomen (Fig. 1514), details of male palpal morphology (shapes of procurus, unculus, appendix) and epigynum shape (Fig. 1541).

*Male* (holotype). Total body length 6.5, carapace width 1.3. Leg 1: 11.2 + 0.6 + 10.8, metatarsus and tarsus missing, tibia 2: 7.0, tibia 3: 4.2, tibia 4: 6.3, tibia 1L/d: 79. Habitus similar to *Ph. pagbilao* (cf. Figs. 1517, 1518) but with longer abdomen. Prosoma mostly brown, apparently artificially darkened, no pattern visible, sternum dark brown, legs light brown, tips of femora and tibiae lighter, abdomen dark gray with distinctive brown patterns dorsally and ventrally (cf. female, Fig. 1514). Distance PME-PME 290  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area elevated, with median elevation carrying dense brushes of hairs (Fig. 1515), longer hairs also in general denser than usual on posterior side of ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1576, distal apophyses with two (or three?) modified hairs each, with proximal lateral and frontal apophyses. Sternum wider than long (0.85/0.70), unmodified. Palps as in Figs. 1574 and 1575, coxa unmodified, trochanter with very distinctive ventral apophysis and short rounded retrolateral hump, femur small, with slender retrolateral apophysis and larger ventral protrusion, tibia large, procurus distally very complex, without spines, bulb with large flat unculus, wide weakly sclerotized embolus, appendix with long pointed process directed retrolaterally. Most hairs on legs missing. Retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium apparently absent on tibia 1, apparently present on other tibiae.

*Variation.* Tibia 1 in other male: 11.0.

*Female.* In general similar to male but ocular area unmodified and triads closer together (distance PME-PME 210  $\mu$ m). Tibia 1 in 2 females: 9.8, 10.5. Epigynum a large trapezoidal plate with anterior 'knob' (Figs. 1541, 1577); internal genitalia as in Figs. 1542 and 1578.

*Distribution.* Known from Luzon Island and possibly from Leyte Island (see Note above) (Fig. 1559).

*Material examined.* PHILIPPINES: *Central Luzon:* Pampanga Prov., Mt. Arayat: ♂ holotype above. Calabarzon: Laguna Province, Mt. Maquiling, above Los Baños [14°08.9'N, 121°13.6'E], 2.-3.iii.1984 (DLSU Entomol. Class), 1♀ in AMNH; Mt. Ma-

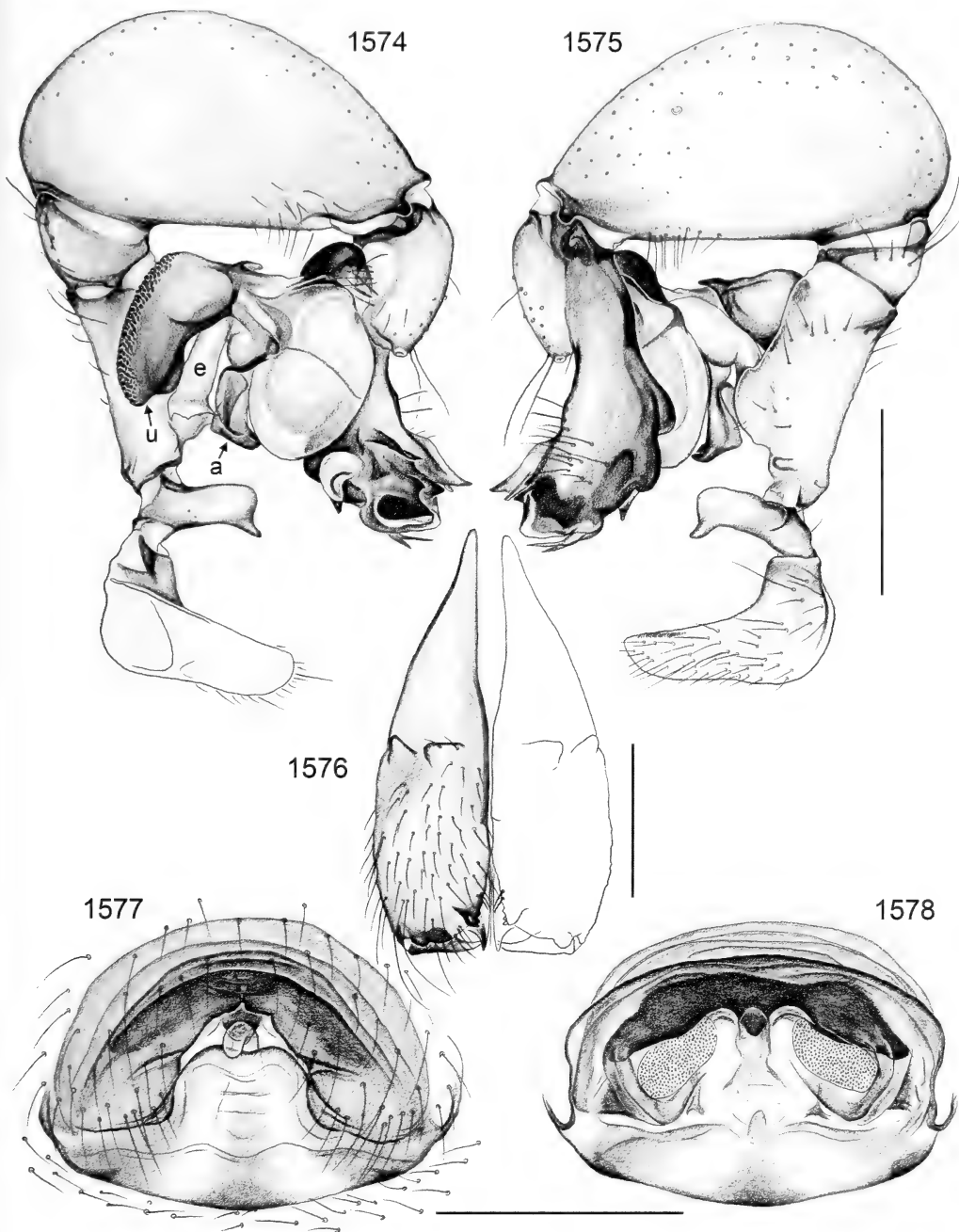


FIG. 1574-1578. *Pholcus arayata*. 1574, 1575. Left male palp, prolateral and retrolateral views. 1576. Male chelicerae, frontal view. 1577, 1578. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1574, 1575, 1577, 1578), 0.3 (1576).



quiling, 1100-1400 ft a.s.l., tropical rainforest, 29. ix.1945 (B. Malkin, S. Jewett Jr.), 1♂ in AMNH; Mt. Maquiling, no date (R.A. Cushman), 1♀ in USNM.

*Pholcus pagbilao* n. sp.

Figs. 1516-1521, 1543, 1544, 1579-1584

*Type.* Male holotype from Philippines, Luzon, Calabarzon, Quezon Prov., Pagbilao [13°58'N, 121°42'E], Cueva Balisen, 20.ii.1975 (P. Strinati), in MHNG.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from most congeners by male horns with brushes of hairs between eye triads (Fig. 1516); from *Ph. bicornutus* by details of male palp (Figs. 1579, 1580; distinctive male palpal trochanter apophysis, shape of procurus, presence of appendix), and large epigynal plate (Fig. 1543); from very similar *Ph. arayat* by wider abdomen (Fig. 1519), details of male palpal morphology (shapes of procurus, uncus, appendix) and epigynum shape (Fig. 1543).

*Male* (holotype). Total body length 5.2, carapace width 1.4. Leg 1: 45.0 (11.2 + 0.7 + 11.6 + 19.3 + 1.6), tibia 2: 7.9, tibia 3: 5.1, tibia 4: 7.2; tibia 1 L/d: 76. Habitus as in Figs. 1517 and 1518. Carapace pale ochre-yellow with light brown median band, ocular area and clypeus not darkened, sternum medially light brown, lateral and posterior margins whitish, legs ochre-yellow, tips of femora and tibiae lighter, abdomen pale ochre-gray with light brown marks dorsally and dark brown distinctive pattern ventrally (cf. female, Fig. 1519). Distance PME-PME 310 µm, diameter PME 140 µm, distance PME-ALE 35 µm, distance AME-AME 60 µm, diameter AME 80 µm. Ocular area slightly elevated, with short elevations posteriorly, each carrying dense brush of strong hairs. No thoracic furrow; clypeus unmodified. Chelicerae very similar to *Ph. arayat* (cf. Fig. 1576), proximal lateral apophyses more pointed and sclerotized, proximal frontal apophyses slightly longer. Sternum wider than long (0.85/0.75), unmodified. Palps as in Figs. 1579 and 1580, coxa unmodified, trochanter with short retrolateral apophysis and distinctive ventral protuberance, femur with retrolateral apophysis proximally and ventral bulge medially, tibia large, procurus strongly bent, distally with distinctive processes (Fig. 1581), bulb with large uncus, weakly sclerotized short embolus, complex distinctive appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral

trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not seen in dissecting microscope.

*Variation.* Tibia 1 in other male from Luzon: 10.8. Males from Negros are assigned tentatively because they have a slightly different procurus tip (Fig. 1582); most specimens from Negros also have brown lateral marks on the carapace (Fig. 1520), wider ventral bands on the abdomen (cf. female, Fig. 1521), and a uniformly brown sternum; tibia 1 in 6 males from Negros: 12.8-14.2 (mean 13.3).

*Female.* In general similar to male, ocular area unmodified, triads slightly closer together (distance PME-PME 275 µm). Tibia 1 in 4 females from Luzon: 10.5-11.5; in 4 females from Negros: 10.4-11.6. Epigynum large trapezoidal sclerotized plate with thin anterior 'knob' (Figs. 1543, 1583); internal genitalia as in Figs. 1544 and 1584. Females from Negros have apparently identical epigyna.

*Distribution.* Known from two nearby localities in Quezon Prov., Luzon, and from specimens assigned tentatively from Negros, Philippines (Fig. 1559).

*Material examined.* PHILIPPINES: Luzon Island, Calabarzon: *Quezon Prov.*: Pagbilao, Cueva Balisen: ♂ holotype above; same data, 2♂4♀ in MHNG; "Tayabas: Laguimanor" [-13°58'N, 121°37'E], no date (Majarredo), 1♂ in MNHN (Ar 10288).

*Assigned tentatively.* PHILIPPINES: Negros Island, Central Visayas: *Negros Oriental Prov.*: Mabinay [-9°45'N, 122°57'E], Pañiabonan, Pandalihan Cave, 26.xi.1989 (T. v. Es), 1♂1♀ in RMNH; same locality, 24.xii.1989 (T. v. Es), 1♂1♀ (2 vials) in RMNH; Mabinay, Lamdas, entrance of Odoloman Cave, 27. xii.1989 (T. v. Es), 1♂ in RMNH; Mabinay, Lamdas, Odoloman Cave, 21.xii.1989 (T. v. Es), 1♀ in RMNH; Mabinay, Poblacion, Cayaso Cave, 3. xii.1989 (T. v. Es), 2♂2♀ in RMNH; Mabinay, Kangohab, Kangohab Cave, 1.i.1990, collector not given, 1♂2♀ in RMNH.

*Pholcus opilionoides* species group

*Diagnosis* (core group). Small to medium-sized, long-legged *Pholcus* (body length ~3.0-4.5, leg 1: ~20-30); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, carapace with distinctive pattern of median band and lateral marks (e.g., Figs. 1522, 1524), sternum with large light marks near bases of coxae 2-4, male chelicerae with proximal and distal apophyses, tibia 2 mostly shorter than tibia 4 (tibia 2/4:



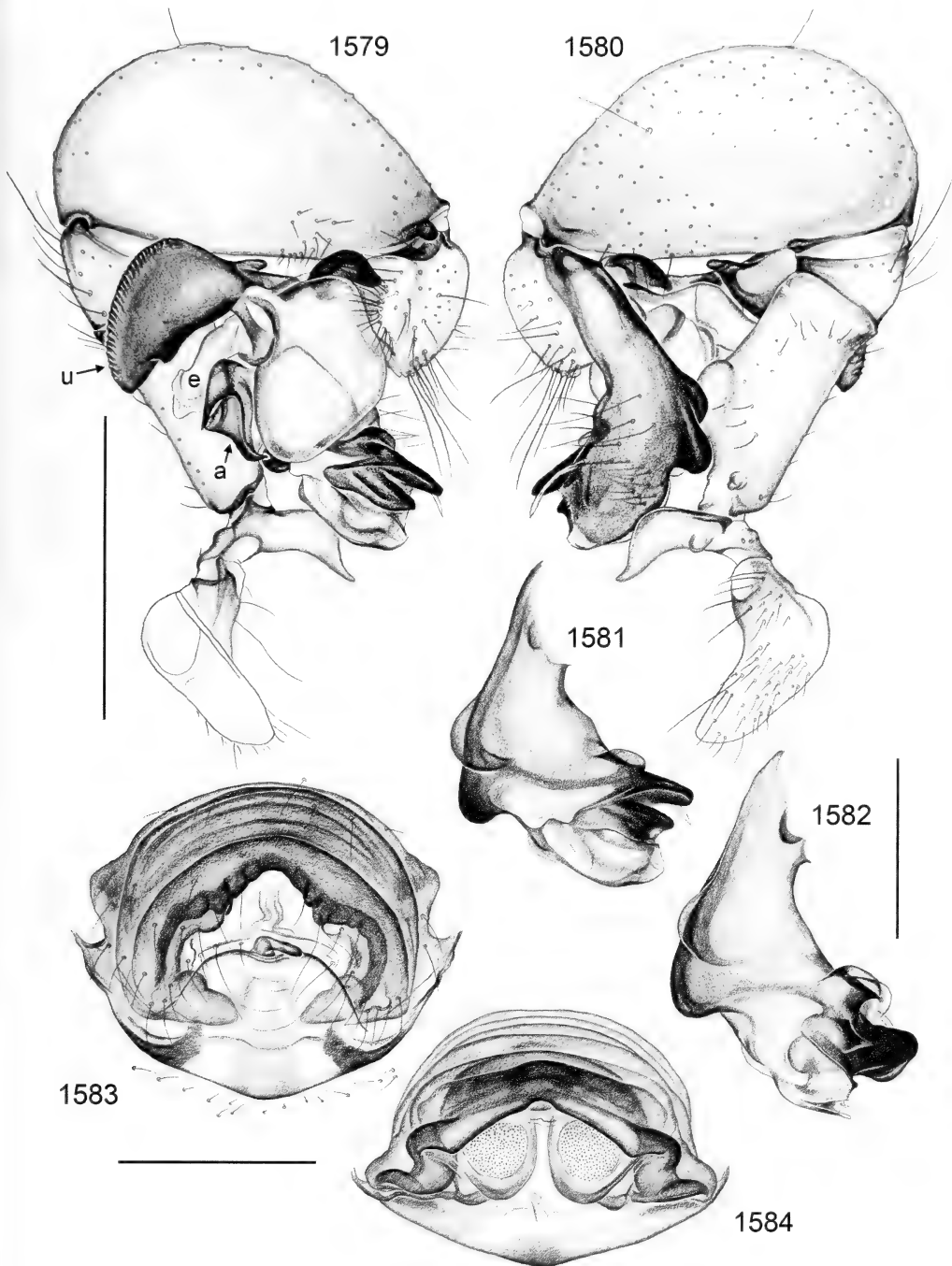


FIG. 1579-1584. *Pholcus pagbilao*, specimens from Pagbilao (except Fig. 1582). 1579, 1580. Left male palp, prolateral and retrolateral views. 1581, 1582. Left procursi, prolateral views, males from Pagbilao (1581) and Mabinay (1582). 1583, 1584. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1579, 1580), 0.5 (1581-1584).

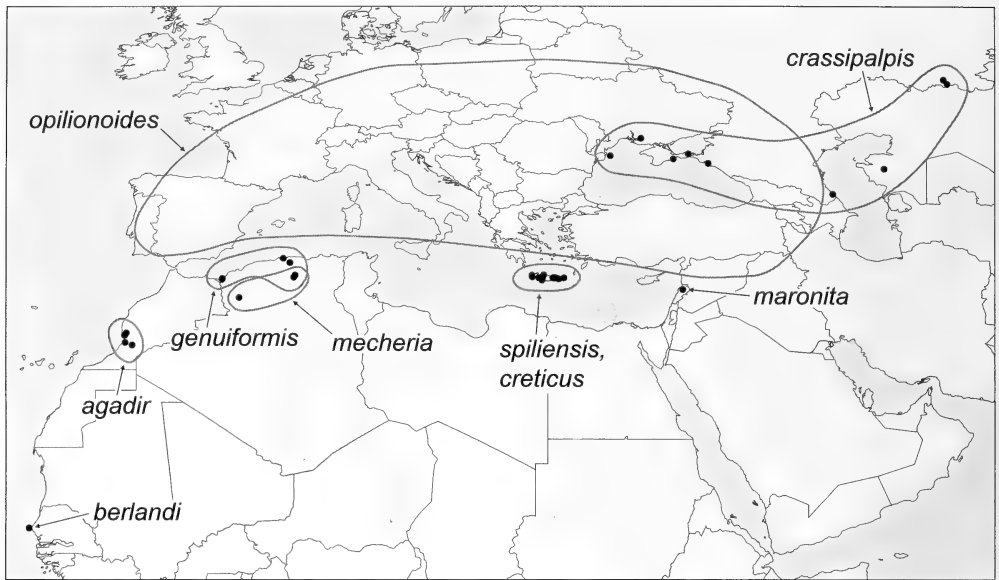


FIG. 1585. Known distribution of the *Pholcus opilionoides* species group; for *Ph. opilionoides*, only a rough estimate of its geographic range is shown.

0.92-1.00), abdomen cylindrical, without cuticular pattern, procurus without dorsal spines (present in *Ph. creticus*, *Ph. berlandi*), sclerotized epigynum with 'knob'.

**Description** (core group). Body length ~3.0-4.5, carapace width 1.0-1.3. Carapace with distinctive pattern of median band and lateral marks, AME present. Clypeus and sternum unmodified, sternum with large light marks near bases of coxae 2-4. Male chelicerae with distal apophyses provided with two modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with small retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis and ventral protuberance, tibia large in relation to femur, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', without dorsal spines (present in *Ph. creticus*, *Ph. berlandi*). Male bulb with uncus, weakly sclerotized embolus, T-shaped appendix. Legs long and thin, tibia 1 in males ~4.0-7.5, tibia 1 L/d ~40-60, tibia 2 mostly shorter than tibia 4 (tibia 2/4: 0.92-1.00), legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-8%. Abdomen cylindrical, without cuticular pattern, male gonopore with four epiandrous spigots; ALS with

eight spigots each, PMS with two small spigots each (only *Ph. opilionoides* examined).

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs slightly shorter (tibia 1: ~4.0-6.5). Epigynum with 'knob', internal genitalia with pair of round to oval pore-plates.

**Monophyly.** The species of the core group share the pattern on the carapace (char. 2) and an unusually long tibia 4 (tibia 2/4: 0.92-1.00; values below 1.00 are rare in *Pholcus* and closely related genera; see *Leptopholcus* and *Micromerys*, *Pholcus kamkaly*, *Ph. spilis*, *Ph. higoensis*, *Ph. kribi*).

**Relationships.** The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), and the procurus without dorsal spines (char. 38) place this group in a large polytomy at the 'basis' of the core group of *Pholcus* (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure. Within the group, *Ph. opilionoides* is very similar to *Ph. genuiformis* (tip of procurus bifid in dorsal view, char. 45; shapes of uncus and appendix) with at least some of this similarity probably being derived. The other two species of the core group (*Ph. crassipalpis*, *Ph. spiliensis*) share a transparent lobe on the appendix (char. 54) and are extremely similar in many other respects; they are probably closely related. The two new species (*Ph. agadir*, *Ph. mecheria*) as well as *Ph.*

*berlandi* and *Ph. creticus* are very autapomorphic; they are tentatively assigned to this group based on their geographic origin, but they are best considered incertae sedis. *Pholcus maronita* is only known from the female, which shares with the core group a relatively long tibia 4 (female tibia 2/4: 0.91; Brignoli 1977).

*Natural history.* Most species have been collected from under stones and from other protected places near the ground. *Pholcus opilionoides* is often found in and around buildings, especially at its northern limits (Wiehle 1953). Certain aspects of its reproductive biology have been studied by Gerhardt (1921, 1923, 1924), Huber (1995), and Senglet (2001).

*Distribution.* The *Ph. opilionoides* group is largely Mediterranean. Only *Ph. crassipalpis* ranges further east until western Kazakhstan and Orenburg Oblast in Russia (Fig. 1585). *Pholcus agadir*, *Ph. mecheria*, and *Ph. berlandi* possibly represent Northwest African relict species. The species "*Pholcus* sp. 1" from Cape Verde sequenced by Astrin *et al.* (2006) may also belong in this species group.

*Composition.* The *Ph. opilionoides* group includes nine species, two of them are newly described below; six are redescribed; I have not seen the type specimens of *Ph. maronita*. Core group: *Ph. opilionoides* (Schrank, 1781); *Ph. genuiformis* Wunderlich, 1995; *Ph. crassipalpis* Spassky, 1937; *Ph. spiliensis* Wunderlich, 1995; assigned tentatively: *Ph. maronita* Brignoli, 1977; *Ph. agadir* n. sp.; *Ph. mecheria* n. sp.; *Ph. berlandi* Millot, 1941; *Ph. creticus* Senglet, 1971.

*Pholcus opilionoides* (Schrank, 1781)

Figs. 1522, 1523, 1545, 1546, 1586-1589, 2189-2191

*Aranea opilionoides* Schrank 1781: 530-531.

*Pholcus opilionoides* [selection of relevant references]:

Thorell 1871: 145-151. Simon 1874: 259-260. Simon 1875: pl. 4, figs. 14, 15. Chyzer & Kulczyński 1891: 149, pl. 6, figs. 20a, b. Bösenberg 1902: 218-219, fig. 310a-f. Lessert 1910: 87-88. Kulczyński 1913: 29, pl. 1, figs. 3, 4. Simon 1914: 236, 237, 240, figs. 489-491. Wiehle 1953: 39-43, figs. 93-99. Loksa 1969: 71, figs. 47a, 48c-d. Brignoli 1971b: 261. Huber 1995: figs. 1b, 3a, b, 5a, b, 9a-e, 10b. Senglet 2001: 53-55, 63, figs. 39-45, 57. Cutler 2007: 129, figs. 1b, d. Zhang & Zhu 2009a: 59, 61, figs. 31a-c (copied from Huber 1995, not from Uhl *et al.* 1995).

*Pholcus grossipalpus* Simon 1866: 121-122, pl. 2, fig. 10; synonymized by Simon 1874.

*Pholcus osellai* Brignoli 1971a: 35-38, figs. 1-3; synonymized by Senglet 2001.

*Pholcus donensis* Ponomarev 2005: 44, figs. 1c, d, 2a-e. New synonymy.

"*Pholcus opilionoides*" (misidentifications, see Notes below). Simon 1901: 49. Chamberlin 1924: 4. Roewer 1960: 39-40. Yaginuma 1960: 48, pl. 15, fig. 97. Zhu & Wang 1963: 463-464, pl. 1, figs. 1-3, 5, 6, 9, 10. Yaginuma 1970: 646. Kaston 1977: 6. Paik 1978a: 225, figs. 96.1-12. Paik 1978b: 2-4. Hu 1984: 78, figs. 71.1-5. Yaginuma 1986: 29-30, pl. 6, fig. 12, figs. 3e, 3p. Chikuni 1989: p. 29, fig. 6. Chen & Zhang 1991: 74-75, figs. 64.1-5 (copied from Hu 1984). Song *et al.* 1999: 58. Lee & Kim 2003: figs. 57-69 (copied from Paik 1978a). Namkung 2003: 42, figs. ♂, ♀, a, b.

*Types.* *Pholcus opilionoides*: the type material originated from Austria, Vienna [-48°10'N, 16°20'E], but is most probably lost.

*Pholcus grossipalpus*: numerous juvenile syntypes from France, Champagne-Ardenne, Bar-sur-Seine [48°07'N, 4°23'E], date unknown (E. Simon), not examined (not found in MNHN).

*Pholcus osellai*: female holotype from Spain, Valencia, Lago de Albufera [39°20'N, 0°22'E], 5.v.1967 (B. Osella), in Museo Civico di Storia Naturale di Verona, not examined.

*Pholcus donensis*: male holotype from Russia, Rostov Area, Ust-Donetsk Distr., Rasdorskaya Station [Razdorskaya: 47°32'N, 40°39'E], Semenikha Village, Beiratschnj forest, 14.vi.2001 (A. Ponomarev) in ZMMU (not examined); 10♂12♀ paratypes from type locality and nearby localities (see Ponomarev 2005), 3♂3♀ examined (see below).

*Justification of synonymy.* Paratypes of *Ph. donensis* were compared directly with specimens from Austria and were found to be identical in all details of genital structure and color patterns.

*Notes.* In the 19<sup>th</sup> century there was considerable confusion as to the distinction between *Ph. opilionoides* and *Ph. phalangoides*. This has been largely resolved by Thorell (1871), and his solution, whether correct or not (none of the types where available to him), has been adopted by subsequent workers. As a consequence, the two species have posed no major problems for more than a century, at least in Europe.

What has remained controversial, however, is the distribution of *Ph. opilionoides*. Simon (1901) was the first to report it from Asia (Malaysia, China),

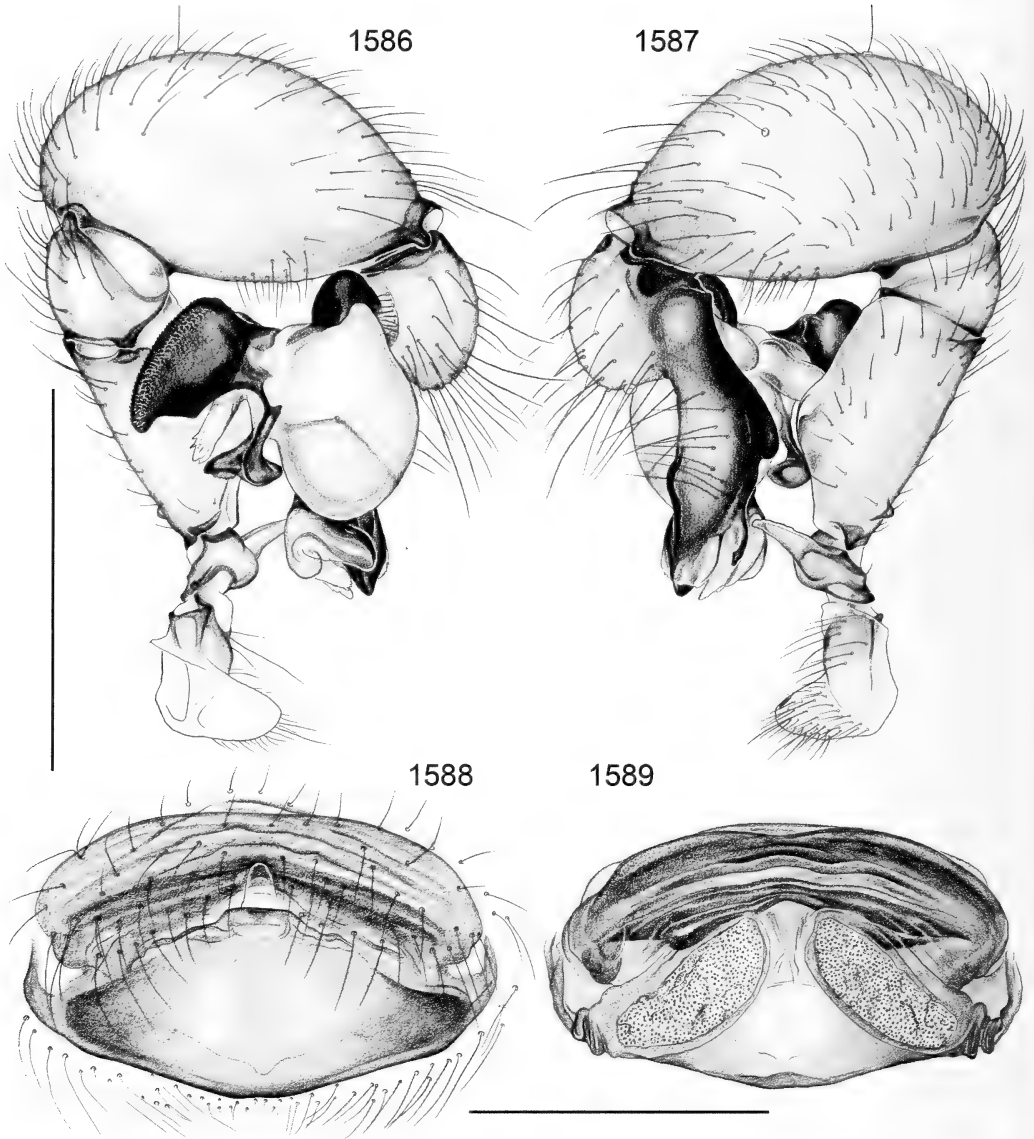


FIG. 1586-1589. *Pholcus opilionoides*. 1586, 1587. Left male palp, prolateral and retrolateral views. 1588, 1589. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1586, 1587), 0.5 (1588, 1589).

and Chamberlin (1924) reported another specimen from China, both without further comments or illustrations. Their specimens seem to be lost. Numerous recent papers on East Asian spiders cite *Ph. opilionoides*, but the figures clearly show that the species is *Ph. manueli*: Zhu & Wang (1963), Paik (1978), Hu (1984), Yaginuma (1986), Chikuni

(1989), Chen & Zhang (1991), Lee & Kim (2003), Namkung (2003). In their recent revision of Chinese *Pholcus*, Zhang & Zhu (2009a) report this misidentification for Chinese papers and emphasize that they had no Chinese material of *Ph. opilionoides* available for study, but they still include two Korean references (Namkung 2003, Lee & Kim 2003). I

suggest that all East Asian (east of the Caspian Sea) records of *Ph. opilionoides* result from misidentifications.

A similar history of misidentification has also occurred in the USA, where all available evidence suggests that *Ph. opilionoides* does not occur but has repeatedly been confused with the widespread and common (introduced) *Ph. manueli* (see Cutler 2007). In sum, *Ph. opilionoides* seems to have a much narrower distribution than previously thought, ranging from western Europe to the Caucasus (see below).

**Diagnosis.** Easily distinguished from *Ph. manueli* and *Ph. phalangioides* (the two species with which it has most often been confused) by lateral marks on carapace (Fig. 1522); also by male palpal morphology (Figs. 1586, 1587; shapes on procurus and uncus, T-shaped appendix) and epigynum shape (Fig. 1545).

**Male** (Austria, near Molln). Total body length 3.9, carapace width 1.2. Leg 1: 25.4 (6.7 + 0.5 + 6.8 + 9.5 + 1.9), tibia 2: 4.6, tibia 3: 3.2, tibia 4: 4.6; tibia 1 L/d: 57. Habitus as in Figs. 1522 and 1523. Carapace pale ochre-yellow with distinct brown band divided medially and less distinct lateral marks, ocular area and clypeus not darkened, sternum light brown with light spots medially and near coxae, legs ochre-yellow, tips of femora and tibiae lighter, abdomen monochromous ochre-gray, genital area light brown. Distance PME-PME 170  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 30  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area slightly elevated, few rather normal hairs (~7 per side). No thoracic furrow; clypeus unmodified. Chelicerae with distal frontal apophyses with two modified hairs each (Fig. 2189) and proximal frontal and lateral apophyses (cf. fig. 5a in Huber 1995). Sternum wider than long (0.85/0.65), unmodified. Palps as in Figs. 1586 and 1587, coxa unmodified, trochanter with retrolateral apophysis curved towards ventrally, femur with small retrolatero-dorsal apophysis proximally, ventrally widened with indistinct apophysis, large tibia, procurus distally complex, with sclerotized and membranous elements, distally bifid in dorsal view, without dorsal spines, bulb with large uncus, weakly sclerotized embolus, appendix complex, T-shaped in lateral view. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few visible in dissecting microscope. Gono-

pore with four epiandrous spigots (Fig. 2190). ALS with eight spigots each (Fig. 2191).

**Variation.** Tibia 1 in 24 other males: 5.5-7.3 (mean 6.4). In some males femora with slightly darker subdistal rings.

**Female.** In general very similar to male, even distance between PME very similar (160  $\mu$ m). Tibia 1 in 21 females: 5.1-6.5 (mean 5.8). Epigynum with triangular plate, small anterior 'knob' (Figs. 1545, 1588); internal genitalia as in Figs. 1546 and 1589.

**Distribution.** Widely distributed in Europe, east to Azerbaijan (Fig. 1585). I have not made an effort to borrow European *Ph. opilionoides* and can therefore not comment on its fine scale distribution. However, thousands of American, African, and East Asian *Pholcus* specimens studied did not include a single unambiguous *Ph. opilionoides*.

**Material examined.** AUSTRIA: Vienna: terrace of Institute of Zoology [48°13.8'N, 16°21.5'E], v.2001 (B.A. Huber), 1♂1♀ in ZFMK. Lower Austria: Leopoldsdorf [48°13'N, 16°41'E], v.2001 (A. Pernstich), 1♂ in ZFMK. Upper Austria: near Molln between Ramsau and Frauenstein (47°50.8'N, 14°14.3'E), at house, vii.2006 (B.A. Huber), 16♂11♀ in ZFMK. Lichtenberg (near Linz), "Reitpoidl" (48°22.8'N, 14°16.6'E), near house, vii.2000 (B.A. Huber), several males and females in ZFMK. Near Goldwörth [-48°18'N, 14°06'E], in pile of bricks, 18.viii.2004 (B.A. Huber), 1♀ in ZFMK. Pesenbachtal [-48°21'N, 14°04'E], among rocks, 17.viii.2004 (B.A. Huber), 4♂1♀ in ZFMK. Gr. Rodtal [-48°20'N, 14°09'E], at bridge, 12.viii.2004 (B.A. Huber), 2♂ in ZFMK. GERMANY: Nordrhein-Westfalen: Bonn, Museum Koenig (50°43.3'N, 7°06.8'E), in building, 8.vi.2010 (B.A. Huber), 1♂ in ZFMK. Köln/Bonn airport [50°52.9'N, 7°07.0'E], 60 m a.s.l., 23.xi.2003 (A.V. Gromov), 3♀ in ZMMU.

FRANCE: Corsica, Corse-du-Sud, 3 km SE Aullène [-41°45'N, 9°06'E], 770 m a.s.l., 9.vi.1982 (J. Martens), 1♂ in SME.

SPAIN: Huesca: between Hecho and Selva de Oza [-42°49'N, 0°43'W], roadsides, 8.x.1986 (J. Codrington), 1♀ in USNM.

PORTUGAL: Charneca de Caparica [38°37'N, 9°11'W], 5.vii.1980 (A. Matos), 1♀ in ZMUC.

ITALY: Vittorio Veneto [45°59'N, 12°18'E], garden, 24.vii.1987 (H. Enghoff), 1♀ in ZMUC.

SLOVENIA: Postojna [45°46'N, 14°13'E], 8.vi.1964 (J.T. Skorgaard), 1♂ in ZMUC.

SERBIA: Central Serbia: Zlatibor Mountain, S Zlatibor village (43°35.3'N, 19°43.8'E), 325 m a.s.l.,

valley with conifer woods, under stones, 7.v.2006 (A. Schönhofer), 1♂ in SMF. *Vojvodina*: Palanka [Bačka Palanka, 45°15'N, 19°23'E], no date (Hermann), 2♀ in NHMW (374 part).

BULGARIA: Dobrich Distr., Krushari Municipality, Dunay (=Danube) River valley, Kapitan Dimitrovo (43°57.2'N, 27°41.5'E), 120 m a.s.l., buildings, 20.viii.2005 (A.V. Gromov), 1♀ in ZMMU. Blagoevgrad Distr., Razlog Municipality, S env. of Banya (41°52.6'N, 23°31.6'E), 850 m a.s.l., hill, *Pinus* forest, 8.viii.2005 (A.V. Gromov), 1♂3♀ in ZMMU. Blagoevgrad Distr., Simitli Municipality, N foothills of Krupnishna Planina Mt. Range, ca. 0.2 km NNE Krupnik (40°51.1'N, 23°07.6'E), 370 m a.s.l., hill, under stones and building, 12.viii.2005 (A.V. Gromov), 4♀ in ZMMU.

UKRAINE: Chernivtsi (48°16'N, 26°07'E), in greenhouse, 26.vi.2007 (M. Fedoriak), 2♂4♀ (2 vials) in ZFMK; Chernivtsi Town (48°16'N, 25°56'E), 8.x.2005 (S.V. Ovchinnikov), 1♀ in ZMMU. Vil. Kobzarivka, Zborivski d-t, Ternopil reg. [49°44'N, 25°26'E], in pantry, 9.i./30.vi.2007 (M. Fedoriak), 5♂4♀ (2 vials) in ZFMK. Vil Seliatin, Putilski d-t, Chernivtsi reg. [47°52'N, 25°12'E], outside walls of house, 24.v.2002 (M. Fedoriak), 1♂2♀ in ZFMK.

RUSSIA: *Samarskaya Region*: near Samara [-53°12'N, 50°12'E], viii.1972 (A.Y. Berezantsev), 1♂ in ZMMU. *Rostov Region*: same data as holotype of *Ph. donensis* (see above), 2♂2♀ paratypes of *Ph. donensis* (collection A. Ponomarev 35.10.4/5, in ZFMK). Rasdorskaya Station, Majak Vill., grassland and steppe, hill, 3.v.2002 (A. Ponomarev), 1♂ paratype of *Ph. donensis* (collection A. Ponomarev, 35.10.4/8, in ZFMK); Rasdorskaya Station, wet grassland near bank of Don river, 1.ix.2002 (A. Ponomarev), 1♀ paratype of *Ph. donensis* (collection A. Ponomarev, 35.10.4/10, in ZFMK).

TURKEY: *Ankara Prov.*: Kızılcahamam Dist., Çamlidere Town (40°32.7'N, 32°30.5'E), 960 m a.s.l., 28.v.2009 (Yu.M. Marusik), 6♂6♀ in ZFMK.

AZERBAIJAN: Zagatala Dist., Zagatala Res. [-41°43'N, 46°36'E], 24.vi.2003 (N. Snegovaya, H. Aliev), 1♂ in ZMMU. Nagorno-Karabakh: Shusha [39°45.5'N, 46°44.9'E], 1200 m a.s.l., 1.viii.1986 (P.M. Dunin), 2♀ in ZMMU. Naxçıvan (=Naxçıvan) Autonomous Republic: Şahbuz Distr., W slope of Zangezür Mt. Range, Gemyur env. [-39°27.7'N, 45°45.3'E], 1500 m a.s.l., 9.vii.1988 (P.M. Dunin), 1♂3♀ in ZMMU.

*Pholcus genuiformis* Wunderlich, 1995

Figs. 1524, 1525, 1547, 1548, 1590-1594

*Pholcus genuiformis* Wunderlich 1995: 626-628, figs. 6-12.

*Types*. Male holotype from Algeria, Wilaya Bourmedès, Réghaia [36°46'N, 3°20'E], 45 m a.s.l., "pièges en forêt dégradée de *Quercus suber*", 30.ix.1988 (R. Bosmans), in IRSB, examined; 3♂ paratypes from Wilaya Bouira, Massif du Djurdjura, Tikjda [36°26'N, 3°53'E], 1450 m a.s.l., among stones around hotel, 17.ix.1987 (R. Bosmans), in SMF (37635, 1♂), examined, and CRB (2♂, one examined); 1♀ paratype from Wilaya Tlemcen, Monts de Traras, between El Arba and El Arabienne [35°06'N, 1°39'W], 580 m a.s.l., "pièges en maquis de lentisque", 24.v.1990 (R. Bosmans), in IRSB, examined. *Note*. As noted by Wunderlich (1995), the single known female specimen may not be conspecific with the male holotype.

*Diagnosis*. Easily distinguished from congeners by long prolateral process on procurus (Fig. 1590) and numerous small cones frontally on male chelicerae (Fig. 1592); otherwise very similar to *Ph. opilionoides* (carapace pattern, palp morphology).

*Male* (M'Sila). Total body length 4.6, carapace width 1.3. Leg 1: 27.9 (7.6 + 0.6 + 7.4 + 10.3 + 2.0), tibia 2: 5.1, tibia 3: 3.6, tibia 4: 5.2; tibia 1 L/d: 52. Habitus as in Figs. 1524 and 1525. Carapace ochre-yellow with distinct brown median band and less distinct lateral marks, ocular area not darkened, clypeus with two indistinct brown marks, sternum brown with light spots medially and near bases of coxae 2-4, legs light brown to ochre-yellow, tips of femora and tibiae whitish, indistinct darker rings subdistally on femora and tibiae and in patella area, abdomen monochromous ochre-gray, genital area light brown. Distance PME-PME 205 µm, diameter PME 105 µm, distance PME-ALE 35 µm, distance AME-AME 35 µm, diameter AME 60 µm. Ocular area slightly elevated, few hairs (most hairs missing). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1592, distal frontal apophyses with modified hairs, with proximal frontal and lateral apophyses, several hair bases frontally elevated into small cones. Sternum wider than long (0.90/0.75), unmodified. Palps as in Figs. 1590 and 1591, coxa unmodified, trochanter with retrolateral apophysis curved towards ventrally, femur with low retrolaterodorsal hump proximally, ventrally widened with indistinct apophysis, procurus with distinctive long

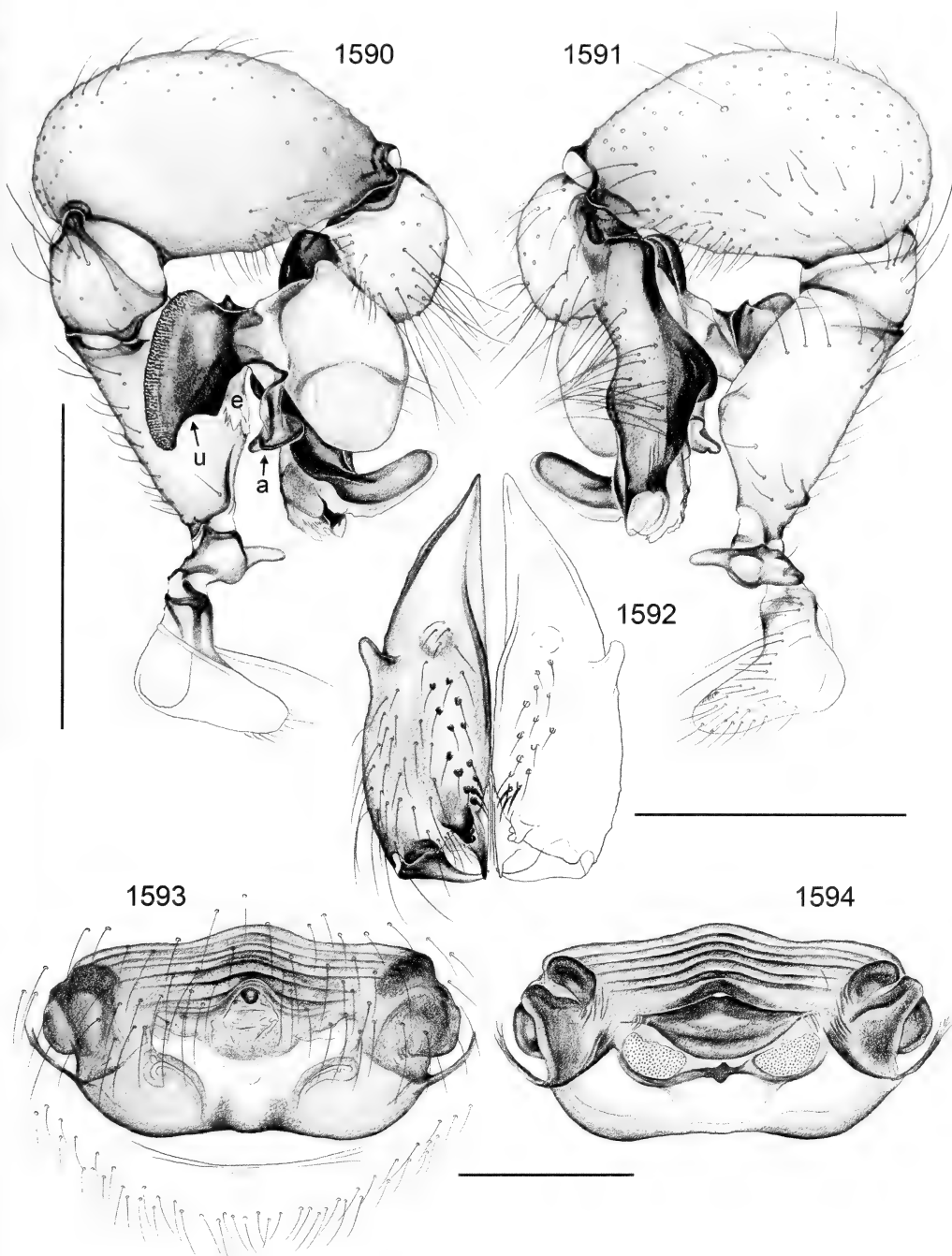


FIG. 1590-1594. *Pholcus genuiformis*. 1590, 1591. Left male palp, prolateral and retrolateral views. 1592. Male chelicerae, frontal view. 1593, 1594. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1590, 1591), 0.5 (1592), 0.3 (1593, 1594).

prolateral process distally, without prolatero-dorsal spines, bulb with large unculus, weakly sclerotized embolus, appendix T-shaped in lateral view. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, even distally barely visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 7.2 (missing in others). The holotype is in fair condition but many legs are broken or missing; the two male paratypes examined are in poor condition, either much dissected or strongly bleached.

*Female* (see Note above). In general similar to male but with pair of small spots on carapace medially, lateral marks as in male, sternum rather with many small light spots; distance PME-PME 160 µm; tibia 1 missing. Epigynum with orange-brown plate, medially weakly sclerotized, small anterior 'knob' (Figs. 1547, 1593); internal genitalia as in Figs. 1548 and 1594.

*Distribution.* Known from northern Algeria only (Fig. 1585).

*Material examined.* ALGERIA: *Wil. Bourmedès*: Réghaia, ♂ holotype above. *Wil. Bouira*: Massif du Djurdjura, Tikjda, 2♂ paratypes above. *Wil. Tlemcen*: Monts de Traras, 1♀ paratype above. *Wil. M'Sila*: Oultem [10 km E Bou Saada: 35°13'N, 4°17'E], stones in steppe, 2.xi.1987 (R. Bosmans), 1♂ in CRB.

*Pholcus crassipalpis* Spassky, 1937

Figs. 1526, 1527, 1549, 1550, 1595-1601

*Pholcus crassipalpis* Spassky 1937: 134-135, 138. Spassky 1940: 359, 360, figs. 9-11. Kovblyuk *et al.* 2008: 72, fig. 76.

*Types.* Five males and 27 females from three localities combined in one vial, including the 2♂6♀ syntypes (see Spassky 1940) from Russia, Krasnodar Territory, "Helengeek" [Gelendzhik: 44°33.5'N, 38°05.3'E], 18.v.-15.vi.1926 (D.V. Metelkov), and non-types from Ukraine, Autonomous Republic of Crimea, Kerch [45°21.4'N, 36°27.8'E], 1.vi.1938 (A. Meck), and from Ukraine, Kherson Region, Kherson [46°38'N, 32°36'E], ii.1939 (V. Nikolaev), in ZIN, examined. This vial may further contain non-type specimens collected by Spassky in Gelendzhik in 1935 (see Spassky 1940).

*Diagnosis.* Distinguished from most congeners by male palpal morphology (Figs. 1595, 1596; shapes

of procurus, unculus, and appendix), and female genitalia (Figs. 1549, 1598); from very similar *Ph. spiliensis* by absence of membranous triangular area ventrally on procurus (Fig. 1601) and relatively smaller pore plates (Fig. 1599).

*Male* (syntype?). Total body length 2.9, carapace width 1.0. Leg 1: 18.3 (4.9 + 0.4 + 5.0 + 6.7 + 1.3), tibia 2: 3.2, tibia 3: 2.3, tibia 4: 3.4; tibia 1 L/d: 43. Habitus as in Figs. 1526 and 1527. Entire spider mostly pale ochre-yellow, slightly darker median mark on carapace, sternum light brown with small light spots (larger near coxae). Distance PME-PME 150 µm, diameter PME 90 µm, distance PME-ALE 25 µm, distance AME-AME 20 µm, diameter AME 55 µm. Ocular area slightly elevated, some rather normal hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1597, with distal frontal apophyses with modified hairs and proximal frontal and lateral apophyses, some hairs with elevated cone-shaped bases. Sternum wider than long (0.65/0.55), unmodified. Palps as in Figs. 1595 and 1596, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis proximally, large hump ventrally, tibia large, procurus relatively simple, without dorsal spines, bulb with large unculus, weakly sclerotized embolus, appendix triangular in lateral view, with transparent flap proximally (Fig. 1600). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 8%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally -15 visible in dissecting microscope.

*Variation.* Tibia 1 in 4 other males: 4.6, 4.6, 4.7, 4.9. In males from Karadag Nature Reserve the unculus is slightly smaller; in the male from Kazakhstan the entire palp is smaller but identical in shape.

*Female.* In general very similar to male, even distance between PME identical. Tibia 1 in 26 females: 3.7-5.1 (mean 4.3). Epigynum large oval weakly protruding area, anterior arc visible through cuticle, posterior plate with 'knob' (Figs. 1549, 1598); internal genitalia as in Figs. 1550 and 1599.

*Distribution.* Widely distributed from southern Ukraine to western Kazakhstan and Orenburg Oblast in Russia (Fig. 1585).

*Material examined.* UKRAINE: Kerch and Kherson: non-type specimens together with syntypes (see above). *Crimea*: Feodosya Distr., Karadag Mt., Karadag Nature Reserve [-44°56'N, 35°13'E], 1.v.-15.vi.2004 (O.V. Kukushkin), 3♂4♀ in ZFMK.



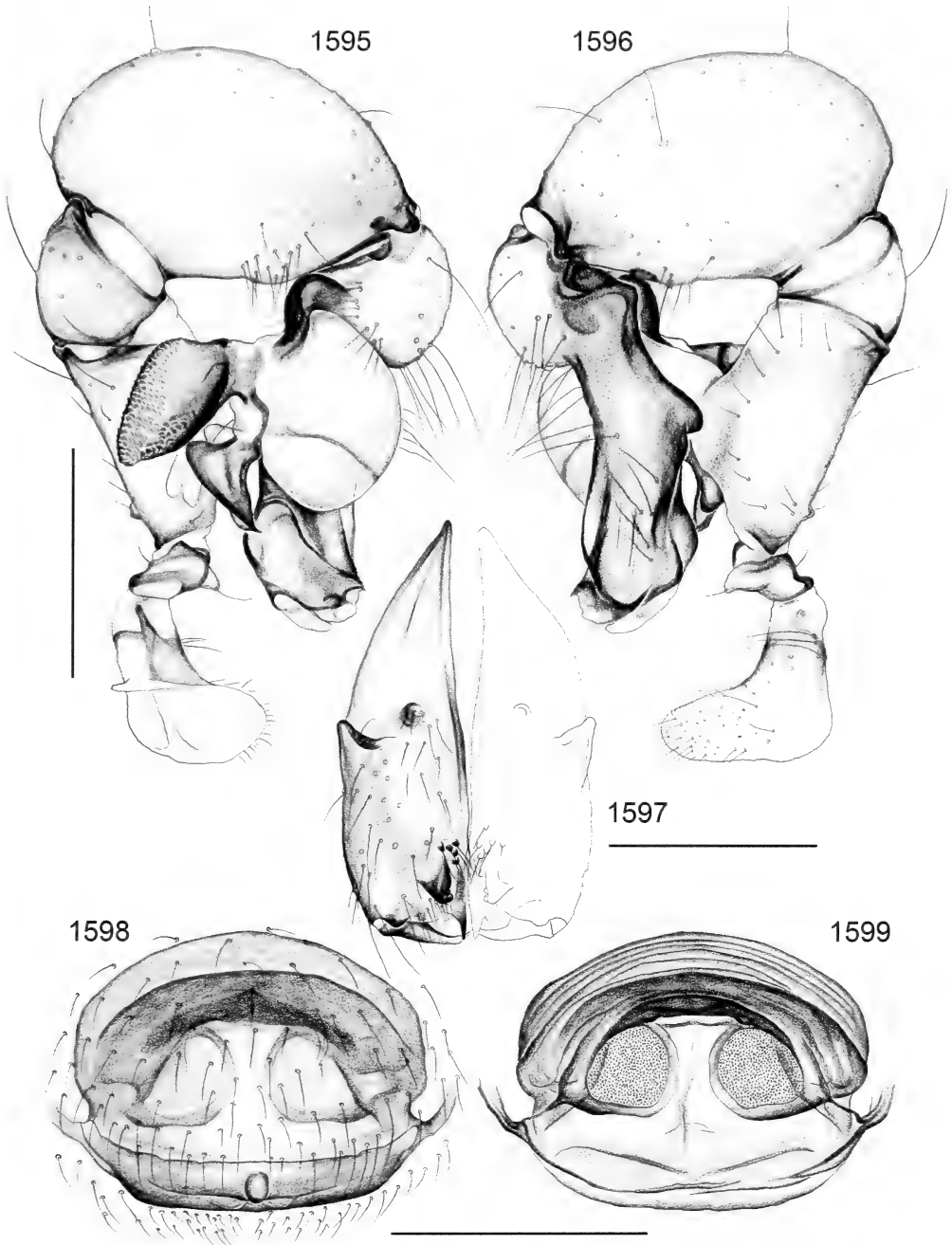


FIG. 1595-1599. *Pholcus crassipalpis*. 1595, 1596. Left male palp, prolateral and retrolateral views. 1597. Male chelicerae, frontal view. 1598, 1599. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1595, 1596, 1598, 1599), 0.3 (1597).

*Odessa Oblast*: Snake Island [45°15.3'N, 30°12.3'E], no further data, 2♀ in NHMW.

RUSSIA: *Krasnodar Territory*: Gelendzhik: 2♂6♀ syntypes above. *Aut. Rep. Dagestan*: W of Derbent [-42°04'N, 48°18'E], 20.v.1989 (P.M. Dunin), 2♂5♀ in ZMMU. *Orenburg Oblast*: "Kuvandinskij region" [Kuvandyk, 51°28'N, 57°22'E], Kattala river,

on rocks, 2.vii.2002 (T. Tuneva), 1♂1♀ in PSU; "Kuvandinskij region", Aytuar village [51°07'N, 57°40'E], on rocks, 22.v.1997 (S. Esyunin), 1♂5♀ in PSU.

KAZAKHSTAN: *Mangystau Prov.*: Mangyshlak Peninsula, Karatau Mts. [-44°08'N, 52°30'E], under stones, 19.v.1985 (S. Deryugin), 1♂ in ZMMU.

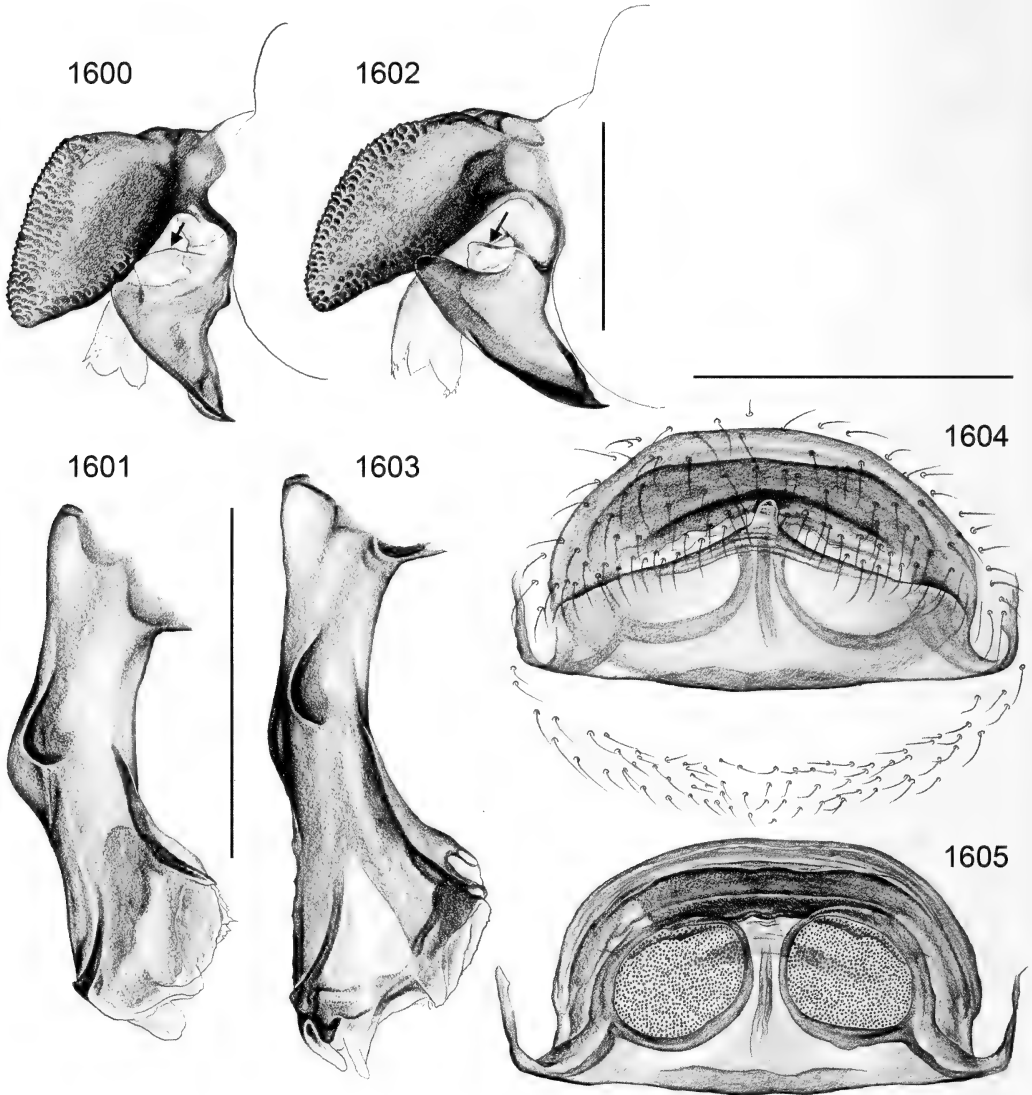


FIG. 1600-1605. *Pholcus crassipalpis* (1600, 1601) and *Ph. spiliensis* (1602-1605). 1600, 1602. Left bulbous processes, prolateral views (same scale; arrows point at distinctive membranous flaps on appendices). 1601, 1603. Left proci, prolateral views (same scale). 1604, 1605. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1601, 1603-1605), 0.3 (1600, 1602).

*Pholcus spiliensis* Wunderlich, 1995

Figs. 1528, 1529, 1551, 1552, 1602-1605

*Pholcus spiliensis* Wunderlich 1995: 625-626, figs. 1-5. Senglet 2001: 63, figs. 52-56.

*Type*. Male holotype from Greece, Crete, a few km S of Spili [ $-35^{\circ}12'N$ ,  $24^{\circ}32'E$ ], in irrigation ditch, iv.1985 (J. Wunderlich), in SMF (34612), examined. *Diagnosis*. Distinguished from most congeners by male palpal morphology (very similar to *Ph. crassipalpis*; cf. Figs. 1595, 1596), and female genitalia (Fig. 1551); from very similar *Ph. crassipalpis* only by details of male bulb and procurus (Figs. 1602, 1603; shapes of uncus and appendix; membranous triangular area ventrally on procurus), and relatively larger pore plates (Fig. 1605).

*Male* (Chania). Total body length 3.7, carapace width 1.1. Leg 1: 18.9 (5.1 + 0.5 + 5.1 + 6.6 + 1.6), tibia 2: 3.4, tibia 3: 2.5, tibia 4: 3.7; tibia 1 L/d: 4.1. Habitus as in Figs. 1528 and 1529. Prosoma and legs mostly ochre-yellow, slightly darker median mark on carapace, sternum light brown with small light spots (larger near coxae), abdomen monochromous ochre-gray, only genital area light brown. Distance PME-PME 175  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area slightly elevated, some rather normal hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. crassipalpis* (cf. Fig. 1597), including hairs with elevated cone-shaped bases. Sternum wider than long (0.80/0.65), unmodified. Palps extremely similar to *Ph. crassipalpis* (cf. Figs. 1595, 1596) but procurus in ventral view with distinctive triangular membranous area (Fig. 1603), procurus slightly more slender, uncus and appendix shapes slightly different (Fig. 1602). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae; ~20 tarsal pseudosegments, distally ~10 fairly distinct.

*Variation*. Tibia 1 in 3 other males: 4.1 (holotype), 5.0, 5.4. The holotype is slightly smaller than the other males and quite pale but identical in shape. Two males (including type) with rather cylindrical abdomen.

*Female*. In general very similar to male, even distance between PME almost identical (170  $\mu$ m). Tibia 1 in 11 females: 4.0-5.5 (mean 4.7). Epigynum large oval weakly protruding area, anterior arc visible through cuticle, posterior plate with 'knob' (Figs. 1551,

1604); internal genitalia as in Figs. 1552 and 1605.

*Distribution*. Known from Crete only (Fig. 1585).

*Material examined*. GREECE: Crete: S of Spili: ♂ holotype above. Chania, Frangokastello ( $35^{\circ}11'N$ ,  $24^{\circ}14'E$ ), "sous joncs", 4.x.1999 (A. Senglet), 2♂4♀ in MHNG. Lasithi, Palekastro E., Roussolakos [ $35^{\circ}11'N$ ,  $26^{\circ}17'E$ ], 10 m a.s.l., herbs and stones around lagoon, 11.v.2003 (R. Bosmans), 1♂2♀ in CRB. Lasithi plateau, Mesa Potamoi [ $-35^{\circ}13'N$ ,  $25^{\circ}31'E$ ], 950 m a.s.l., grassland along rivulet, 10.v.2003 (R. Bosmans), 1♀ in CRB. Lasithi plateau, Agios Georgios E. [ $35^{\circ}10'N$ ,  $25^{\circ}29'E$ ], 800 m a.s.l., abandoned fields, 9.v.2003 (R. Bosmans), 1♀ in CRB. Lasithi, Psichro [ $35^{\circ}10'N$ ,  $25^{\circ}27'E$ ], stones in grassland, 21.x.1998 (R. Bosmans), 1♀ 1 juv. in CRB. Rethimno, Skaleta E., stones along Geropotamos river [ $35^{\circ}25'N$ ,  $24^{\circ}39'E$ ], 25 m a.s.l., 12.ix.2004 (R. Bosmans), 1♀ in CRB. Sitia Mountains, 1000 m a.s.l., Thrypti [ $35^{\circ}06'N$ ,  $25^{\circ}52'E$ ], 18.iv.1990 (E. Heiss), 2♀ in ZFMK.

*Pholcus agadir* n. sp.

Figs. 1530, 1531, 1553, 1554, 1606-1611

*Type*. Male holotype from Morocco, Agadir Province (now Souss-Massa-Draâ Region), Anza, 7 km N Agadir [ $-30^{\circ}28'N$ ,  $9^{\circ}38'W$ ], 50 m a.s.l., stones in *Euphorbia* vegetation, 3.ii.1996 (R. Bosmans), in IRSB.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Very small species, easily distinguished from congeners by distinctive procurus (Fig. 1608); also by shapes of trochanter apophysis, uncus, and appendix (Figs. 1606, 1607), male cheliceral armature (Fig. 1609; both pairs of proximal apophyses in very frontal position), and female genitalia (Figs. 1553, 1610).

*Male* (holotype). Total body length 2.8, carapace width 1.1. Leg 1: 23.3 (6.4 + 0.4 + 6.0 + 9.2 + 1.3), tibia 2: 4.0, tibia 3: 2.5, tibia 4: 3.6; tibia 1 L/d: 57. Habitus as in Figs. 1530 and 1531. Carapace pale ochre-yellow with light brown pattern on posterior half, sternum whitish, slightly darker laterally and posteriorly, legs pale ochre to whitish, patella area slightly darker, abdomen with some indistinct darker and whitish spots dorsally. Distance PME-PME 150  $\mu$ m, diameter PME 90  $\mu$ m, distance PME-ALE 20  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 35  $\mu$ m. Ocular area slightly elevated, few hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1609, with two pairs of low

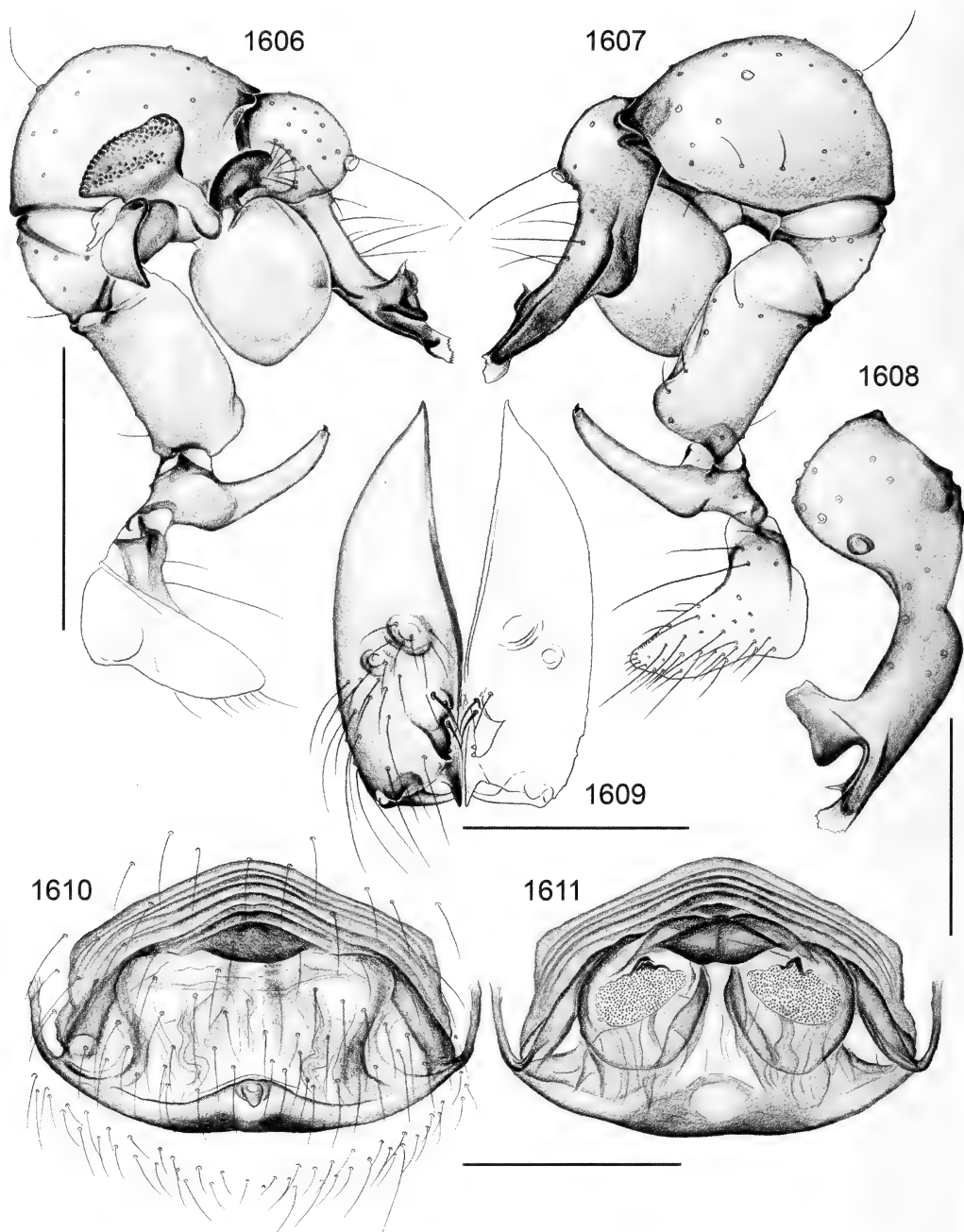


FIG. 1606-1611. *Pholcus agadir*. 1606, 1607. Left male palp, prolateral and retrolateral views. 1608. Left tarsus and procurrus, dorsal view. 1609. Male chelicerae, frontal view. 1610, 1611. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1606, 1607), 0.3 (1608-1611).

humps proximally and long distal apophyses provided with modified hairs. Sternum wider than long (0.70/0.65), unmodified. Palps as in Figs. 1606 and 1607, coxa unmodified, trochanter with long retro-latero-ventral apophysis with modified hair distally, femur with ventral hump proximally, procurus rather simple, with prolateral branch subdistally (Fig. 1608), without spines, bulb with simple uncus, distinctive appendix, and short transparent embolus. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, distally ~10 fairly well visible in dissecting microscope.

*Female.* In general similar to male, even distance between PME identical. Tibia 1 in 4 females: 5.5, 5.6, 5.8, 6.1. Epigynum large weakly sclerotized area, narrow posterior plate with 'knob' (Figs. 1553, 1610); internal genitalia as in Figs. 1554 and 1611.

*Distribution.* Known from Morocco, Agadir area, only (Fig. 1585).

*Material examined.* MOROCCO: *Souss-Massa-Draâ* Region: Anza, 7 km N Agadir: ♂ holotype above, together with 2♀; 2 km E Aourir, 12 km N Agadir [~30°30'N, 9°38.5'W], 75 m a.s.l., near river, 3. ii.1996 (R. Bosmans), 1♀ in CRB. S Aït-ou-Mribete, Oued Massa [29°53'N, 9°35'W], stones and *Juncus* tussocks, in marshy area, 9.ii.2007 (R. Bosmans), 2♀ in IRSB. Agadir: Immouzer Ida Ou Tanane [30°40.2'N, 9°28.8'W], paradise valley, stones along rivulet, 8.ii.2007 (R. Bosmans), 1♀ in CRB. Prop de Tafraoute (29°40.8'N, 9°01.4'W), 1060 m a.s.l., 13.iii.2007 (C. Ribera, Txasko, A. Lopez), 3♀ in CRBA.

*Pholcus mecheria* n. sp.

Figs. 1532, 1533, 1555, 1556, 1612-1616

*Type.* Male holotype from Algeria, Wilaya Naâma, Mécheria [33°33'N, 0°17'W], with E. Simon's original label "6292 Ph. Mecheria!", no further information, in MNHN (AR 10218).

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Very small species, easily distinguished from congeners by distinctive procurus, shape of uncus, and absence of appendix (Figs. 1612, 1613); also by unmodified male chelicerae (Fig. 1614) and female genitalia (Figs. 1555, 1615, 1616; small pore plates).

*Male* (holotype). Total body length 2.3, carapace width 0.9. Leg 1: 17.1 (4.5 + 0.4 + 4.5 + 6.7 + 1.0), tibia 2: 3.1, tibia 3: 2.0, tibia 4: 2.4; tibia 1 L/d: 51. Habitus as in Figs. 1532 and 1533. Entire spider mostly pale ochre-yellow, only carapace with indistinct median mark, sternum and abdomen pale-gray. Distance PME-PME 170 µm, diameter PME 90 µm, distance PME-ALE 25 µm, distance AME-AME 25 µm, diameter AME 30 µm. Ocular area slightly elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1614, with slight elevation proximally frontally, otherwise unmodified. Sternum wider than long (0.65/0.55), unmodified. Palps as in Figs. 1612 and 1613, coxa unmodified, trochanter with long retro-latero-ventral apophysis with modified hair distally, femur with indistinct ventral ridge, procurus distally complex, without spines, bulb with triangular uncus, short transparent embolus, without appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 12%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with ~15 pseudosegments, barely visible in dissecting microscope.

*Variation.* In the other male the tip of the uncus has a slightly different shape; tibia 1: 4.6.

*Female.* In general similar to male, triads slightly closer together (PME-PME distance 150 µm). Tibia 1 in 6 females: 4.1-4.7 (mean 4.4). Epigynum large weakly sclerotized area, narrow posterior plate without 'knob' (Figs. 1555, 1615); internal genitalia as in Figs. 1556 and 1616.

*Distribution.* Known from northern Algeria only (Fig. 1585).

*Material examined.* ALGERIA: *Wilaya Naâma*: Mécheria: ♂ holotype above, together with 6♀. *Wilaya M'Sila*: "B. Sauda" [Beni Sauda = Bou Saâda, 35°12'N, 4°11'E], with Simon's original label "12327 Ph - B. Sauda!", no further information, 1♂ in MNHN (AR 10209).

*Pholcus berlandi* Millot, 1941

Figs. 1534, 1617-1619

*Pholcus berlandi* Millot 1941: 13-14, figs. 5a-g.

*Type.* Male holotype from Senegal, Dakar [14°45'N, 17°25.5'W], ix. 1937 (L. Berland) (according to Millot 1941; the label erroneously says "Ph. Berlandi M ♂, J. Millot rec. et det. IX 37, Dakar, C. d' Iv."), in MNHN, examined.

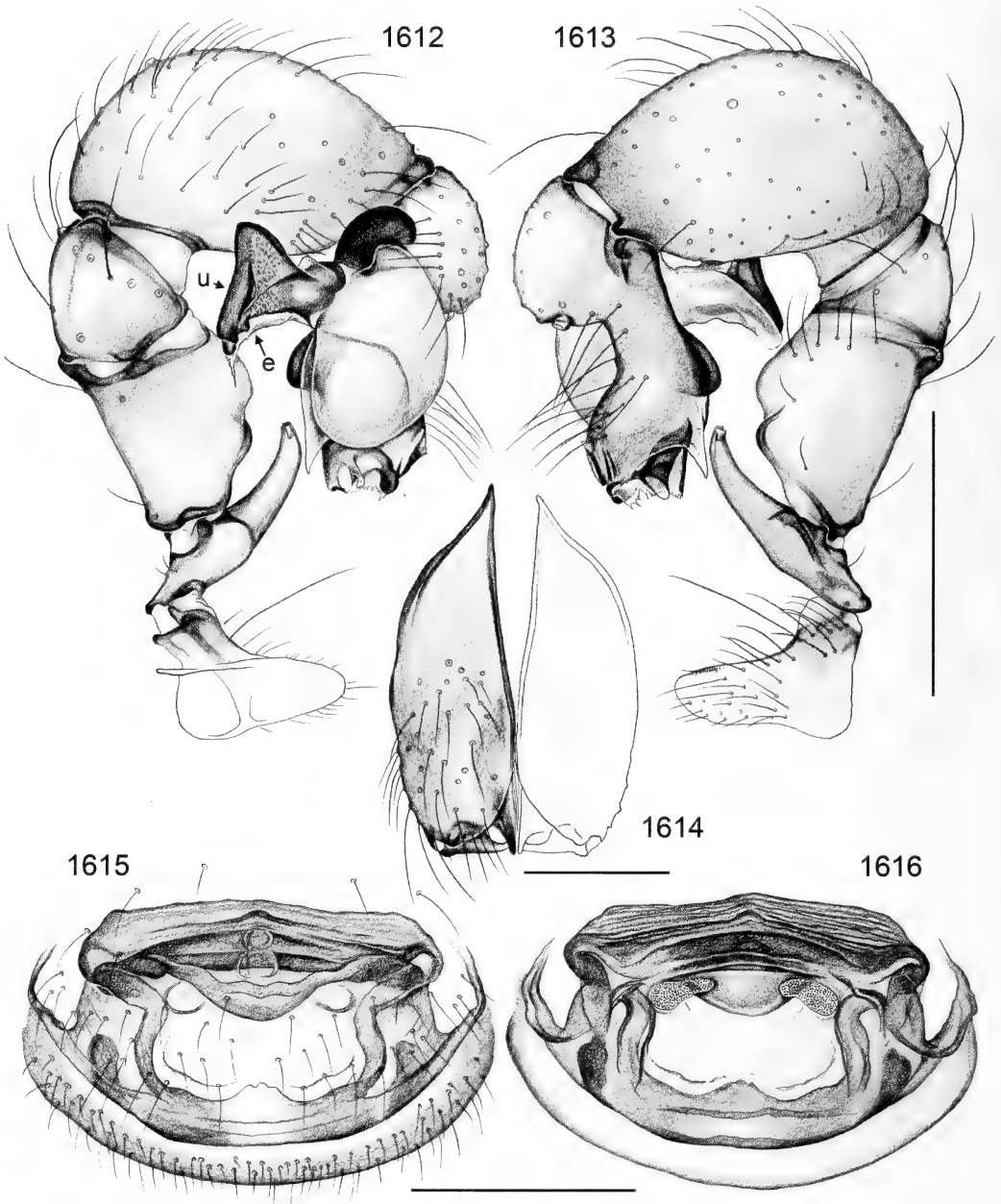


FIG. 1612-1616. *Pholcus mecheria*. 1612, 1613. Left male palp, prolateral and retrolateral views. 1614. Male chelicerae, frontal view. 1615, 1616. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1612, 1613), 0.3 (1615, 1616), 0.2 (1614).

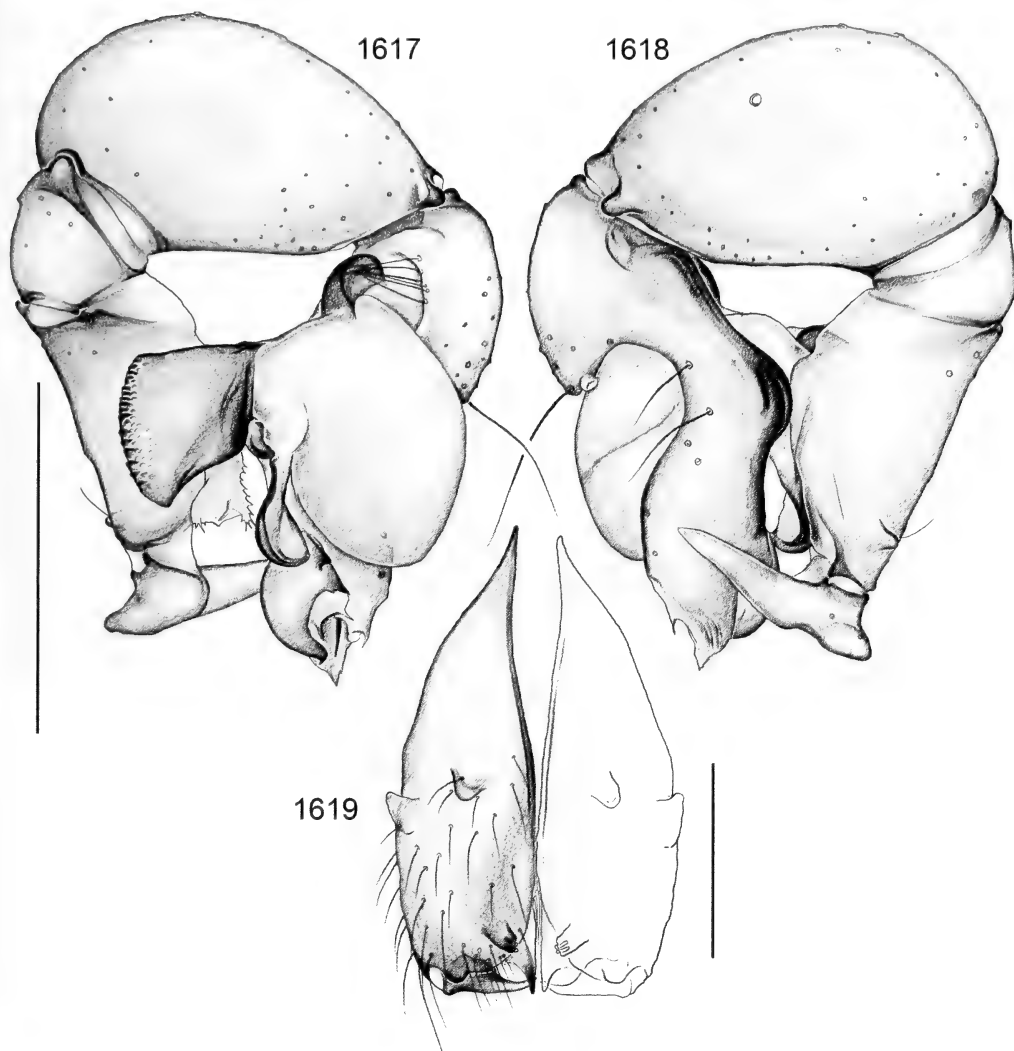


FIG. 1617-1619. *Pholcus berlandi*. 1617, 1618. Left male palp, prolateral and retrolateral views. 1619. Male chelicerae, frontal view. Scale lines: 0.5 (1617, 1618), 0.2 (1619).

*Diagnosis.* Small species, distinguished from congeners by morphology of male palp (Figs. 1617, 1618; shapes of procurus, uncus, and appendix).

*Male* (holotype). Total body length 2.4, carapace width 0.8. Leg 1: 15.0 (3.7 + 0.4 + 3.9 + 5.7 + 1.3), tibia 2: 2.5, tibia 3 missing, tibia 4: 2.7; tibia 1 L/d: 46. Habitus as in Fig. 1534. Entire specimen pale whitish, partly probably artificially bleached. Eyes difficult to measure: distance PME-PME 160  $\mu$ m, diameter PME 55  $\mu$ m, distance PME-ALE 25  $\mu$ m,

distance AME-AME 20  $\mu$ m, diameter AME 35  $\mu$ m. Ocular area slightly elevated, no thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1619, with pair of distal apophyses provided with modified hairs and two pairs of weakly sclerotized proximal humps. Palps as in Figs. 1617 and 1618, coxa unmodified, trochanter with long retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis proximally, widened ventrally, procurus distally complex, apparently with two short modified hairs prolatero-

dorsally (rather globular than pointed), bulb with uncus, short transparent embolus, appendix simple, slightly twisted. Legs without spines and curved hairs, few vertical hairs (many hairs missing); trichobothria and pseudosegments not seen.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 1585).

*Material examined.* SENEGAL: Dakar: ♂ holotype above.

*Pholcus creticus* Senglet, 1971

Figs. 1535, 1536, 1557, 1558, 1620-1635

*Pholcus creticus* Senglet 1971: 345-347, figs. 1-10. Senglet 2001: 62, figs. 58, 59.

*Types.* Male holotype, 3♀ paratypes, and three juveniles from Greece, Crete, Chania, Azoghîrès/Paleochôra [-35°15'N, 23°42'E], 4.-6.viii.1970 (A. Senglet), in MHNG, examined. Female paratype from Chania, Topôlia (cave) [35°24.7'N, 23°40.9'E], 8.viii.1970 (A. Senglet), in MHNG, examined.

*Diagnosis.* Easily distinguished from congeners by distinctive complex appendix (Figs. 1620, 1629); also by shape of procurus (Figs. 1621, 1622) and female genitalia (Figs. 1557, 1623, 1633).

*Male* (holotype). Total body length 3.2, carapace width 1.0. Leg 1: 21.0 (5.6 + 0.5 + 5.7 + 7.7 + 1.5), tibia 2: 3.8, tibia 3: 2.8, tibia 4: 3.8; tibia 1 L/d: 50. Habitus as in Figs. 1535 and 1536. Carapace pale ochre-yellow with indistinct darker median mark, sternum light brown, anteriorly pale ochre-yellow, legs monochromous ochre-yellow, abdomen monochromous pale ochre-gray. Distance PME-PME 240 µm, diameter PME 95 µm, distance PME-ALE 25 µm, distance AME-AME 25 µm, diameter AME 45 µm. Ocular area slightly elevated, with stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae with distal apophyses carrying two modified hairs each (Fig. 1631) and two pairs of proximal apophyses (similar to *Ph. manueli*, *crypticolens*, etc., cf. Figs. 1711, 1731; see also Senglet 1971, fig. 1). Sternum wider than long (0.7/0.5), unmodified. Palps as in Figs. 1620 and 1621 (shown here is the male from Katharo Plateau, see Variation below and Senglet 1971 for figures of the holotype), coxa unmodified, trochanter with ventral apophysis, femur with ventral hump, tarsal organ capsulate (Fig. 1628), procurus rather simple except distally, with long transparent process prolatero-ventrally and two spines dorsally (Figs. 1622, 1625, 1626), bulb with wide uncus, distinctive appendix consisting of flat

part with two distal pointed processes and sickle-shaped darker part (Figs. 1620, 1629, 1630). Legs without spines and curved hairs, few vertical hairs (most hairs missing in holotype; checked in other males); retrolateral trichobothrium on tibia 1 at 8%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct. Gonopore with four epiandrous spigots (Fig. 1632); ALS with eight spigots each (cf. female).

*Variation.* Tibia 1 in 5 other males: 4.8-6.6 (mean 5.7). The holotype has the tip of the uncus slightly longer (cf. Senglet 1971, fig. 3), the process of the appendix that points towards dorsally slightly shorter, and the ventral femur protuberance slightly more pronounced (cf. Senglet 1971, fig. 2).

*Female.* In general similar to male, but triads closer together (PME-PME distance 160 µm). Tibia 1 in 10 females: 4.3-6.9 (mean 5.9); tarsus 4 with single row of comb-hairs (Fig. 1635). Epigynum mostly whitish, slightly elevated, dark internal arc visible through cuticle anteriorly, narrow posterior plate with 'knob' (Figs. 1557, 1623, 1633); internal genitalia as in Figs. 1558 and 1624. ALS with eight spigots each (Fig. 1627).

*Distribution.* Known from Crete only (Fig. 1585).

*Material examined.* GREECE: Crete: Chania, Azoghîrès/Paleochôra: 1♂3♀ types above; same locality, in an abandoned house, 28.v.1978 (A. Senglet), 5♂5♀ in MHNG. Topôlia: 1♀ paratype above. Kritsa above Aghios Nikolaos, Katharo Plateau [-35°10'N, 25°40'E], "Eichen, Karst", 900-1100 m a.s.l., 1.x.1998 (K. Thaler, B. Knoflach), 1♂2♀ in CTh. Lasithi W, on path Kato Metohi to Kastamonitsa [-35°11'N, 25°24'E], 700-850 m a.s.l., 24.ix.1998 (K. Thaler, B. Knoflach), 1♀ in ZFMK (TH-340).

*Pholcus nenjukovi* species group

*Diagnosis.* Medium-sized to large, long-legged *Pholcus* (body length ~5.0-6.5, leg 1: ~30-40); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, male palpal trochanter with very long apophysis (e.g., Figs. 1637, 1642; shorter in *Ph. afghanus*), abdomen cylindrical, without cuticular pattern, procurus with dorsal spines, appendix simple and without branch, sclerotized epigynum with 'knob', internal female genitalia with pair of distinctive anterior structures medially (Fig. 1641; except *Ph. cophenius*, unknown in *Ph. sidorenkoi*).



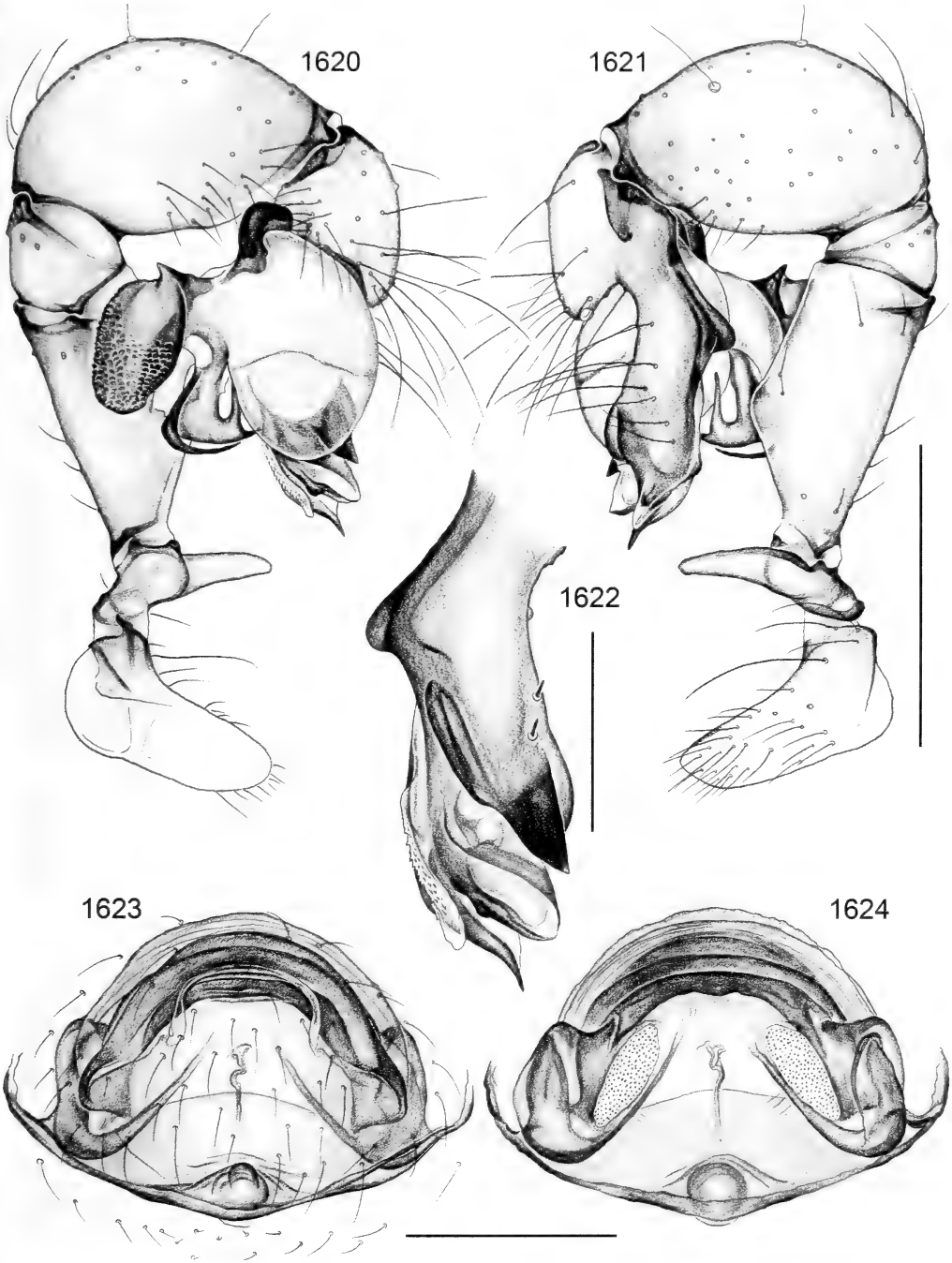


FIG. 1620-1624. *Pholcus creticus*. 1620, 1621. Left male palp, prolateral and retrolateral views. 1622. Left procurus, prolateral view. 1623, 1624. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1620, 1621), 0.3 (1623, 1624), 0.2 (1622).

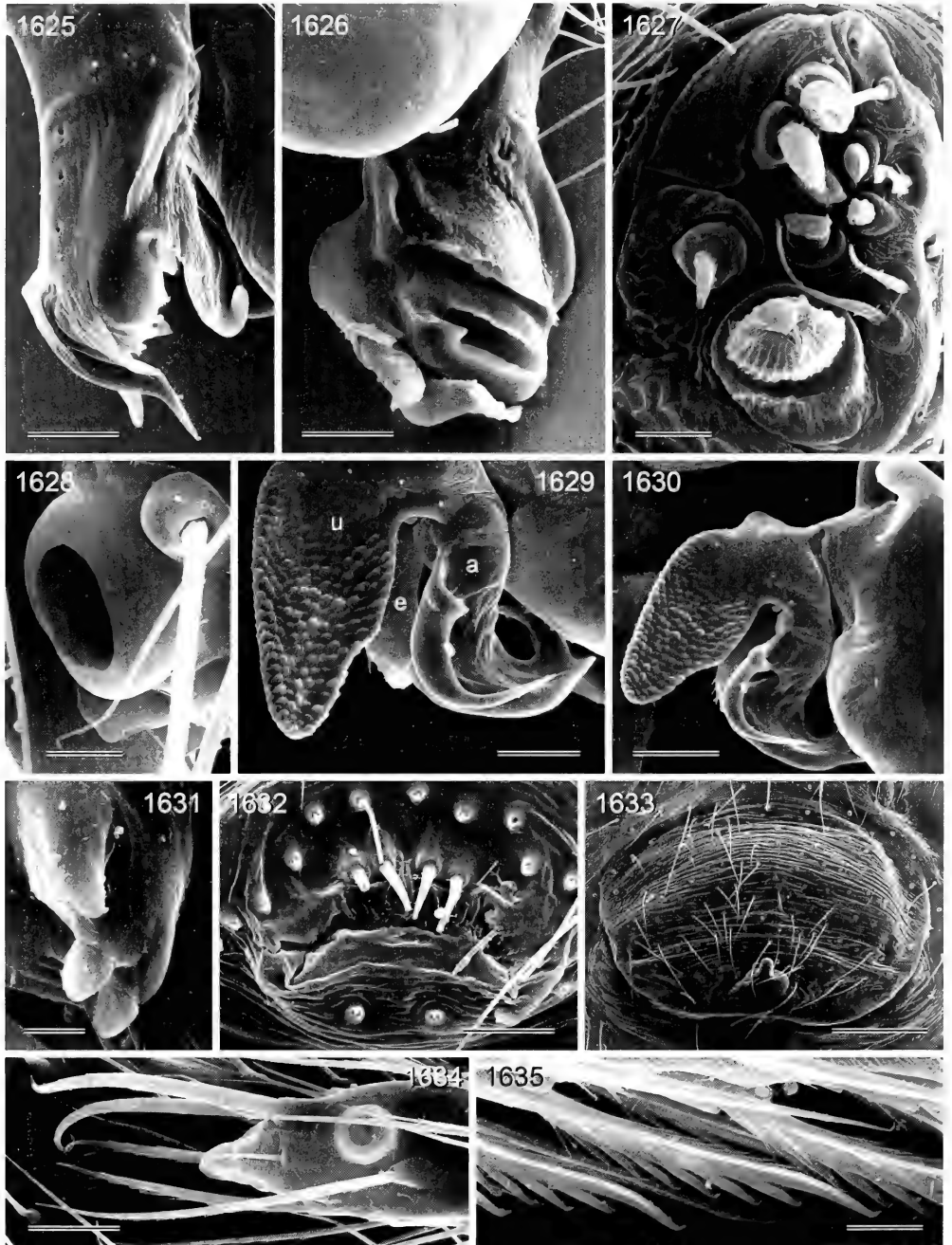


FIG. 1625-1635. *Pholcus creticus*. 1625. Right procurus, retrolatero-dorsal view. 1626. Left procurus, distal view. 1627. Female ALS. 1628. Male palpal tarsal organ. 1629, 1630. Left bulbular processes. 1631. Distal male cheliceral apophysis. 1632. Male gonopore. 1633. Epigynum. 1634. Tip of female palpal tarsus. 1635. Comb-hairs on female tarsus 4. Scale lines: 200  $\mu\text{m}$  (1633), 100  $\mu\text{m}$  (1630), 60  $\mu\text{m}$  (1625, 1626, 1629), 40  $\mu\text{m}$  (1632), 30  $\mu\text{m}$  (1634), 10  $\mu\text{m}$  (1627, 1628, 1631, 1635).

**Description.** Body length ~5.0-6.5, carapace width 1.5-1.9. Ocular area compact, slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with distal apophyses provided with two modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with very long retrolatero-ventral apophysis (shorter in *Ph. afghanus*), femur with small retrolatero-dorsal apophysis and ventral protuberance, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', with 1-2 dorsal spines. Male bulb with uncus, weakly sclerotized embolus, appendix without branch. Legs long and thin, tibia 1 in males ~8-11, tibia 1 L/d ~60 (only *Ph. sidorenkoi* known), legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5%. Abdomen cylindrical, without cuticular pattern, male gonopore and spinnerets not examined.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified. Epigynum with 'knob', internal genitalia with pair of pore-plates and distinc-

tive anterior structures medially (except *Ph. cophenius*, unknown in *Ph. sidorenkoi*).

**Monophyly.** The species included share the distinctive anterior structures medially in the female internal genitalia (char. 70; Fig. 1641) and a long trochanter apophysis (Figs. 1637, 1642; the latter may be plesiomorphic).

**Relationships.** The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), and the procurus with dorsal spines (char. 38) place this group in a polytomy together with other mostly Palearctic *Pholcus* species groups (Fig. 26); the detailed relationships with other species groups and within the group remain obscure.

**Natural history.** Most specimens have been collected from caves or shelters, from under large stones and from houses.

**Distribution.** The group is known from northeastern Iran, Afghanistan, and Tajikistan (Fig. 1636). The single record from Russia is dubious (type locality of *Ph. sidorenkoi*, based on a single specimen collected in a house).



FIG. 1636. Known distribution of the *Pholcus nenjukovi* species group. The question mark indicates the dubious type locality of *Ph. sidorenkoi* (see text).

*Composition.* The group includes six species, two of them are redescribed below; for the other four, see Senglet (2008): *Ph. nenjukovi* Spassky, 1936; *Ph. arsacius* Senglet, 2008; *Ph. parthicus* Senglet, 2008; *Ph. afghanus* Senglet, 2008; *Ph. sidorenkoi* Dunin, 1994; *Ph. cophenius* Senglet, 2008.

*Pholcus nenjukovi* Spassky, 1936

Figs. 1537, 1637-1641, 1659, 1660

*Pholcus nenjukovi* Spassky 1936: 40-43, figs. 4-6. Denis 1958: 112-113 (possibly misidentification, see below).

*Types.* One male and 6♀ syntypes from Tajikistan, Gorno-Badakhshan Prov., Kalay-Chumb [Kalai-khum; 38°27'N, 70°47'E], 1340 m a.s.l., 30.vii.-2.viii.1935 (S. Nenjukov), in ZIN, examined.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1637, 1638; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1640, 1659); from the very similar *Ph. arsacius* Senglet (type specimens of *Ph. arsacius* examined) by smaller palp, slightly more slender trochanter apophysis, L-shaped appendix (in *Ph. arsacius* more gently curved), larger lateral cheliceral apophyses, and smaller and more triangular epigynal plate (much wider in *Ph. arsacius*, cf. fig. 56 in Senglet 2008).

*Male* (syntype). Carapace damaged, length 1.4; abdomen missing. All legs missing. Habitus as in female (cf. Fig. 1537). Prosoma pattern similar to *Ph. sidorenkoi*, including shape of mark on carapace and dark line on ocular area. Distance PME-PME 230 µm, diameter PME 115 µm, distance PME-ALE 25 µm, distance AME-AME 35 µm, diameter AME 70 µm. Ocular area slightly elevated, many stronger hairs posteriorly (most missing). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1639, distal apophyses with modified hairs, proximally lateral and frontal apophyses. Sternum damaged, 0.75 long, unmodified. Palps as in Figs. 1637 and 1638, coxa, trochanter, and femur very similar to *Ph. sidorenkoi*, procurus also similar but with two sclerotized ridges instead of retrolateral flap, apparently with dorsal spine (only basis left), uncus shorter and more pointed distally than in *Ph. sidorenkoi*, appendix more curved than in *Ph. sidorenkoi*. *Female.* Very similar to male, triads at almost same distance (PME-PME 210 µm). All tibiae 1 missing. Epigynum weakly elevated, distinctive shape of anterior internal structures and of posterior plate with

lighter areas and large 'knob' (Figs. 1640, 1659); internal genitalia as in Figs. 1641 and 1660, pore plates not seen.

*Distribution.* The only unambiguous record is the type locality (Fig. 1636). Denis' (1958) records for Afghanistan (Paghman, Kabul) need to be checked, especially because these were based on females only and because Senglet (2008) has recently described two species with similar females from this area (*Ph. afghanus*, *Ph. cophenius*).

*Material examined.* TAJIKISTAN: Gorno-Badakhshan Prov.: Kalaikhum: 1♂6♀ syntypes above.

*Pholcus sidorenkoi* Dunin, 1994

Figs. 1538, 1642-1644

*Pholcus sidorenkoi* Dunin 1994: 122-124, figs. 1-7.

*Type.* Male holotype from Russia, Samara Region, Tol'yatti [Togliatti, ~53°32'N, 49°24'E], in house, 28.ix.1992 (M.V. Sidorenko), in ZMMU, examined.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1642, 1643; shapes of procurus, uncus, and appendix); from the very similar *Ph. cophenius* Senglet by slightly thicker trochanter apophysis, less curved procurus, more elongate uncus, and absence of 'apical sclerite' (cf. fig. 60 in Senglet 2008).

*Male* (holotype). Total body length ~6.0, carapace width 1.8. Leg 1: 40.4 (10.5 + 0.8 + 10.9 + 16.2 + 2.0), tibia 2: 7.6, tibia 3: 5.7, tibia 4: 7.6; tibia 1 L/d: 59. Habitus as in Fig. 1538. Carapace ochre-yellow with light brown mark, ocular area with small median brown line, sternum monochromous, only margins darker, femora and tibiae with indistinct darker rings subdistally, abdomen monochromous ochre-gray. Distance PME-PME 325 µm, diameter PME 125 µm, distance PME-ALE 35 µm, distance AME-AME 55 µm, diameter AME 90 µm. Ocular area slightly elevated, stronger hairs posteriorly (only bases left). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1644, distal apophyses with modified hairs, proximally with lateral and frontal apophyses. Sternum wider than long (1.25/1.00), unmodified. Palps as in Figs. 1642 and 1643, coxa unmodified, trochanter with long curved ventral apophysis, femur with small dorsal apophysis proximally and small ventral projection, procurus rather simple, with distinctive retrolateral sclerotized flap distally, with 1-2 dorsal spines, bulb with simple uncus, embolus short and weakly sclerotized, appendix slender with flat prolateral process. Legs

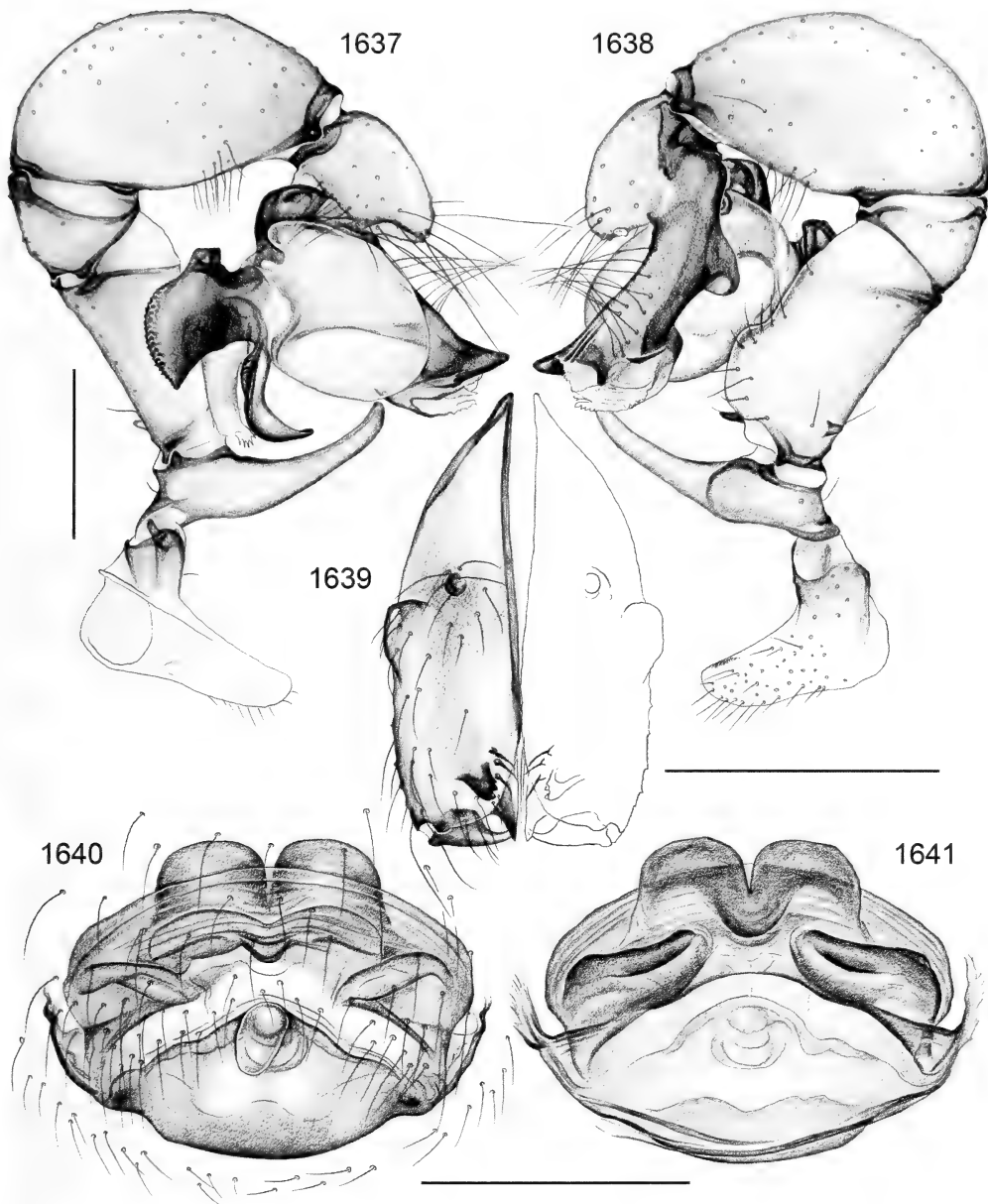


FIG. 1637-1641. *Pholcus nenjukovi*. 1637, 1638. Left male palp, prolateral and retrolateral views. 1639. Male chelicerae, frontal view. 1640, 1641. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 10.2 (missing in third male).

*Female.* Unknown.

*Distribution.* Known from Russia and Tajikistan (Fig. 1636). The type locality may be far outside the

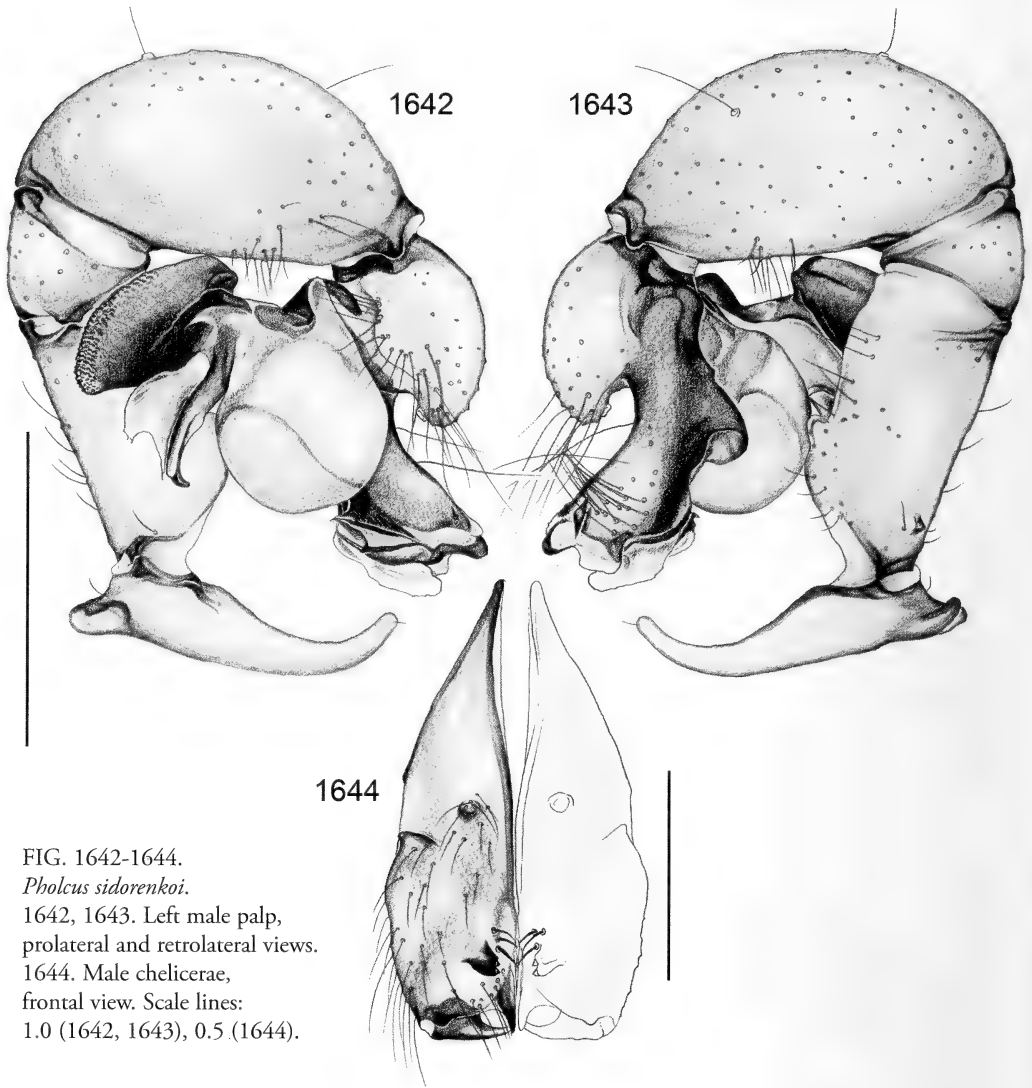


FIG. 1642-1644.  
*Pholcus sidorenkoi*.  
 1642, 1643. Left male palp,  
 prolateral and retrolateral views.  
 1644. Male chelicerae,  
 frontal view. Scale lines:  
 1.0 (1642, 1643), 0.5 (1644).

natural distribution of this species (single specimen in house!).

*Material examined.* RUSSIA: *Samara Region*: Tol'yatti: ♂ holotype above.

TAJIKISTAN: *Dushanbe area*: "Stalinabad" [=Dushanbe, 38°33.6'N 68°46.2'E], summer 1933 (A. Alparov), 2♂ 1 juv. in ZIN.

*Pholcus ponticus* species group

*Diagnosis.* Medium-sized, long-legged *Pholcus* (body length ~3.5-4.5, leg 1:~25-40); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, abdomen long oval to cylindrical, without cuticular pattern, procurrus with dorsal spines, appendix simple and without branch, distally characteristically twisted (Figs. 1691, 1693, 1695), sclerotized epigynum with 'knob'.

*Description.* Body length ~3.5-4.5, carapace width 1.1-1.6. Ocular area compact, slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with distal apophyses provided with two modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with

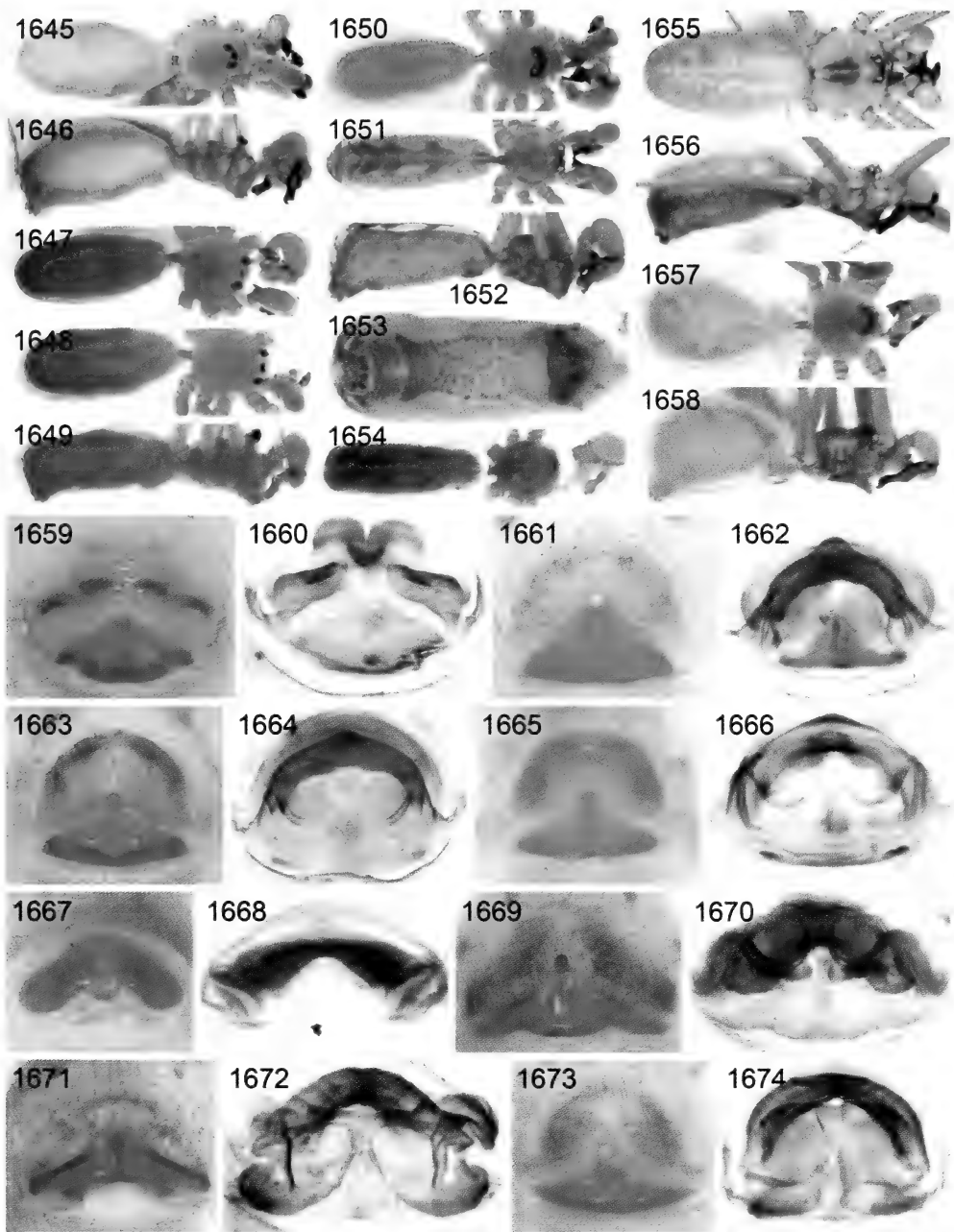


FIG. 1645-1674. *Pholcus ponticus* and *Ph. crypticolens* species groups (plus *Ph. nenjukovi*); habitus, epigyna in ventral views, and cleared female genitalia in dorsal views. 1645, 1646. *Ph. ponticus*, male, dorsal and lateral views. 1647. *Ph. sogdianae*, male, dorsal view. 1648, 1649. *Ph. arkit*, male, dorsal and lateral views. 1650. *Ph. kamkaly*, male, dorsal view. 1651-1653. *Ph. crypticolens*, male, dorsal and lateral views; female abdomen, ventral view. 1654. *Ph. spilis*, male, dorsal view. 1655, 1656. *Ph. manueli*, male, dorsal and lateral views. 1657, 1658. *Ph. bessus*, male, dorsal and lateral views. 1659, 1660. *Ph. nenjukovi*. 1661, 1662. *Ph. ponticus*. 1663, 1664. *Ph. sogdianae*. 1665, 1666. *Ph. arkit*. 1667, 1668. *Ph. kamkaly*. 1669, 1670. *Ph. crypticolens*. 1671, 1672. *Ph. manueli*. 1673, 1674. *Ph. bessus*.

small retrolatero-dorsal apophysis and more or less distinct ventral protuberance, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', with 2-3 dorsal spines. Male bulb with uncus, weakly sclerotized embolus, simple flat appendix that is characteristically twisted. Legs long, tibia 1 in males usually 6.5-10 (shorter in *Ph. kamkaly*: ~4.5-6.0), tibia 1 L/d ~50-70, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~6-7%. Abdomen long oval to cylindrical, without cuticular pattern, male gonopore with four epiandrous spigots, ALS with eight spigots each, PMS with two small spigots each (SEM characters examined in *Ph. ponticus* only).

Sexual dimorphism slight, female body size as in males, chelicerae unmodified. Epigynum with 'knob', internal genitalia with pair of round to oval pore-plates.

*Monophyly.* The species share a flat, twisted appendix (char. 59; e.g., Figs. 1691, 1693, 1695).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), and the procurus with dorsal spines (char. 38) place this group in a polytomy together with other mostly Palearctic *Pholcus* species groups (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure. Within the group, three species (*Ph. ponticus*, *Ph. sogdiana*, *Ph. arkit*) have very similar palps (general shape, uncus, appendix, procurus) and may form a monophylum. The assignment of *Ph. velitchkovskiyi* to this species group is tentative (I have only seen the 3♀ syntypes deposited in NHMW).

*Natural history.* Most specimens have been collected from protected spaces close to the ground, from shelters, under large stones, and from houses.

*Distribution.* The group is mainly known from Central Asia (southern Kazakhstan, Kirgizstan, Tajikistan, eastern Uzbekistan, western Xinjiang; Fig. 1676). *Pholcus ponticus* has a much wider distribution, presumably as a result of human transport (Fig. 1675). *Pholcus velitchkovskiyi* has a more western distribution,

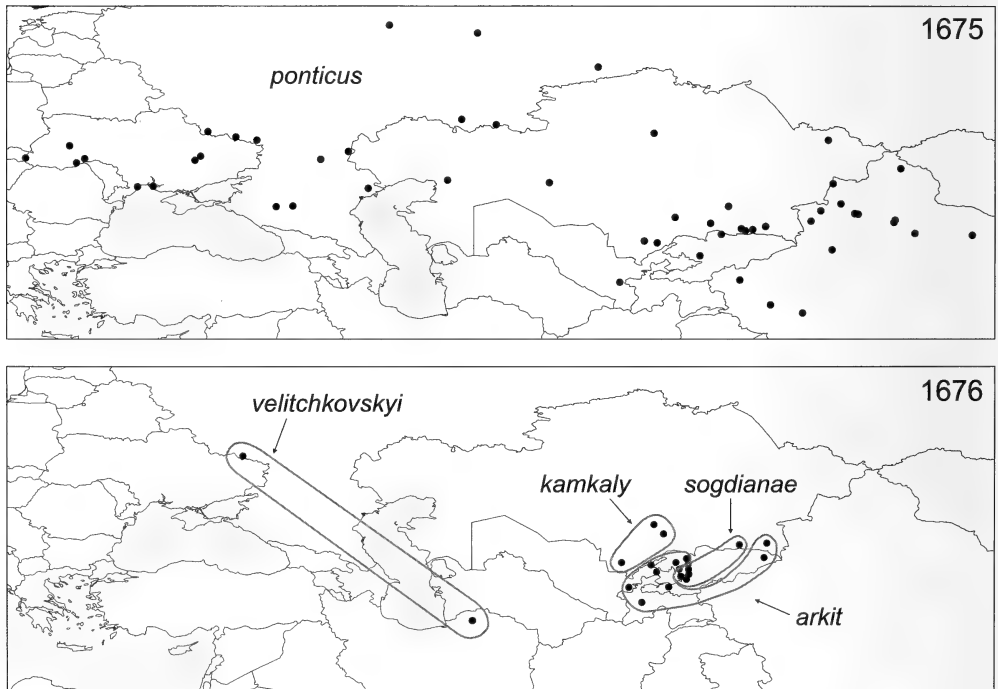


FIG. 1675, 1676. Known distributions of *Pholcus ponticus* and of the other species of the *Ph. ponticus* species group.



but it may not belong in this species group (see above).

**Composition.** The group includes five species; two are newly described below, two are redescribed: *Ph. ponticus* Thorell, 1875; *Ph. sogdianae* Brignoli, 1978; *Ph. arkit* n. sp.; *Ph. kamkaly* n. sp.; assigned tentatively: *Ph. velitchkovskiyi* Kulczyński, 1913. For *Ph. velitchkovskiyi*, see Senglet (2008).

*Pholcus ponticus* Thorell, 1875

Figs. 1645, 1646, 1661, 1662, 1677-1692

*Pholcus ponticus* Thorell 1875a: 32. Thorell 1875b: 70-71. Kulczyński 1913: 8. Wunderlich 1980: 221-223, figs. 8-13. Fedoriak 2008b: figs. 10-12, 22-24.

"*Pholcus fagei* Spassky, 1940" (misidentification): Efimik *et al.* 1997: 86-87, figs. 1-4.

*Pholcus xinjiangensis* Hu & Wu 1989: 74-76, 414, figs. 1-8. Song *et al.* 1999: 63, figs. 25x-z. Zhang & Zhu 2009a: 98, figs. 56a-i, 57a-l. New synonymy.

**Justification of synonymy.** A direct comparison of specimens from Xinjiang and from Ukraine revealed no differences in the relevant male and female characters.

**Types.** *Pholcus ponticus*: Four male and three female syntypes from Ukraine, Dnipropetrovsk Oblast, "Jekaterinoslaw" [Dnipropetrovsk, 48°27'N, 35°03'E], date unknown (A. v. Nordmann), in NHRS, examined. The depository of further syntypes from Ukraine, Odessa [46°28'N, 30°43'E] and Russia, Sarepta [48°31.7'N, 44°29.0'E] is unknown (possibly in Museo Civico di Storia Naturale "Giacomino Doria", Genova).

*Pholcus xinjiangensis*: Male holotype and 3♂3♀ paratypes from China, Xinjiang Autonomous Region, Cele County [37°N, 80°48'E], 8.vi.1982 (J.L. Hu), in Biology Department of Shandong University, China, not examined. For further paratypes, see Hu & Wu (1989).

**Diagnosis.** Distinguished from congeners by morphology of male palp (Figs. 1677, 1678, 1691, 1692; distinctive processes prolaterally and ventro-distally on procurus, shapes of uncus and appendix); from very similar *Ph. sogdianae* and *Ph. arkit* by eyes less elevated, femur apophysis more complex, and minor genital differences (compare Figs. 1691-1696).

**Male** (Makarivka). Total body length 4.5, carapace width 1.6. Leg 1: 30.1 (8.0 + 0.7 + 8.0 + 11.4 + 2.0), tibia 2: 5.8, tibia 3: 4.1, tibia 4: 5.6; tibia 1 L/d: 50. Habitus as in Figs. 1645 and 1646. Entire spider mostly pale ochre-yellow, carapace with median

brown mark divided by narrow median line, sternum light brown with large whitish marks near bases of coxae 2-4 and behind labium and palpal endites, leg femora proximally slightly darkened (red-brown), especially frontally, abdomen monochromous pale-gray. Distance PME-PME 285 µm, diameter PME 115 µm, distance PME-ALE 25 µm, distance AME-AME 40 µm, diameter AME 70 µm. Ocular area elevated, many stronger hairs posteriorly (Figs. 1681, 1682). No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. manueli* (cf. Fig. 1731), distal apophyses with two modified hairs each (Fig. 1683). Sternum wider than long (1.15/0.80), unmodified. Palps as in Figs. 1677 and 1678, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with relatively large dorsal apophysis proximally and distinctive ventral protuberance, procurus rather simple, distally with distinctive curved ventral apophysis and membranous dorsal process (Figs. 1684, 1692), with distinctive prolateral process (Fig. 1685), with dorsal spines, bulb with uncus, short embolus proximally weakly sclerotized, distally transparent, appendix distally modified (Fig. 1691). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few visible in dissecting microscope. Gonopore with epandrous spigots (Fig. 1687).

**Variation.** Tibia 1 in 38 other males: 6.4-8.9 (mean 7.9). The red-brown coloration of the femora may be very indistinct or even absent. In some specimens the appendix appears slightly smaller. The four male syntypes are in fair condition; tibia 1: 7.6-8.1.

**Female.** In general similar to male, triads closer together (distance PME-PME 205 µm). Tibia 1 in 64 females: 5.6-8.7 (mean 7.5) (in three syntypes: 7.2-8.1); tarsus 4 with single row of comb-hairs (Fig. 1688). Epigynum weakly protruding oval area, internal arc visible through cuticle anteriorly, triangular plate with 'knob' (Figs. 1661, 1679, 1690); internal genitalia as in Figs. 1662 and 1680. ALS with eight spigots each (Fig. 1689).

**Distribution.** Widely distributed from western Ukraine (maybe Bulgaria, see Drensky 1939 in Brignoli 1978) to Xinjiang (China) (Fig. 1675). For Chinese records see Zhang & Zhu (2009a) (under *Pholcus xinjiangensis*).

**Material examined.** UKRAINE: *Dnipropetrovsk Oblast*: Dnipropetrovsk: 4♂3♀ syntypes above. Novomostovsky District, Andreevka Vill. [Andreyev-

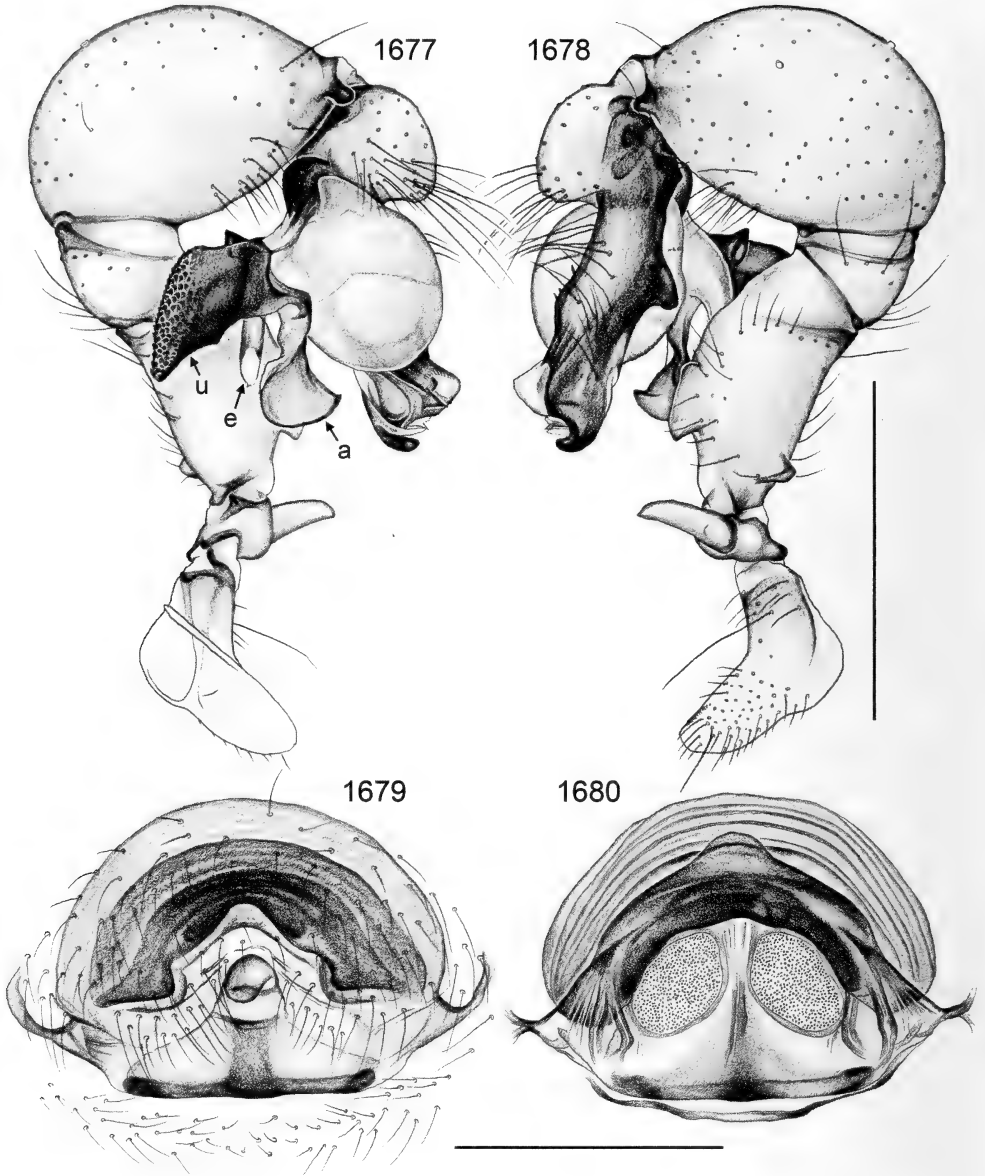


FIG. 1677-1680. *Pholcus ponticus*. 1677, 1678. Left male palp, prolateral and retrolateral views. 1679, 1680. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1677, 1678), 0.5 (1679, 1680).

ka: 48°46'N, 35°28'E], 6.iv.1975 (A.A. Zyuzin), 1♂2♀ in ZMMU. *Kherson Oblast*: Kherson, Chernomorsky Reserve, Geroiskoe Vil. [Geroyskoye: 46°31'N, 31°54'E], 20.v.1987 (M.Y. Polchaninova), 1♀ in ZMMU. *Chernivtsi Oblast*: Chernivtsi (48°16'N, 26°07'E), in hospital, 4.vii.2007 (M. Fedoriak), 1♂1♀ in ZFMK. Kelmenetsky District,

Makarivka Vill. (48°34.8'N, 26°44.4'E), "in/out building", 30.vi.2007 (M. Fedoriak), 2♂3♀ in ZFMK. *Ternopil Oblast*: Ternopil' [49°33'N, 25°36'E], in house, 26.xi.2006 (M. Fedoriak), 1♂ in ZFMK. *Zakarpattia Oblast*: Ujgorod [Uzhhorod, 48°37'N, 22°18'E], in building, 2.iv.2007 (M. Fedoriak), 2♂2♀ in ZFMK.

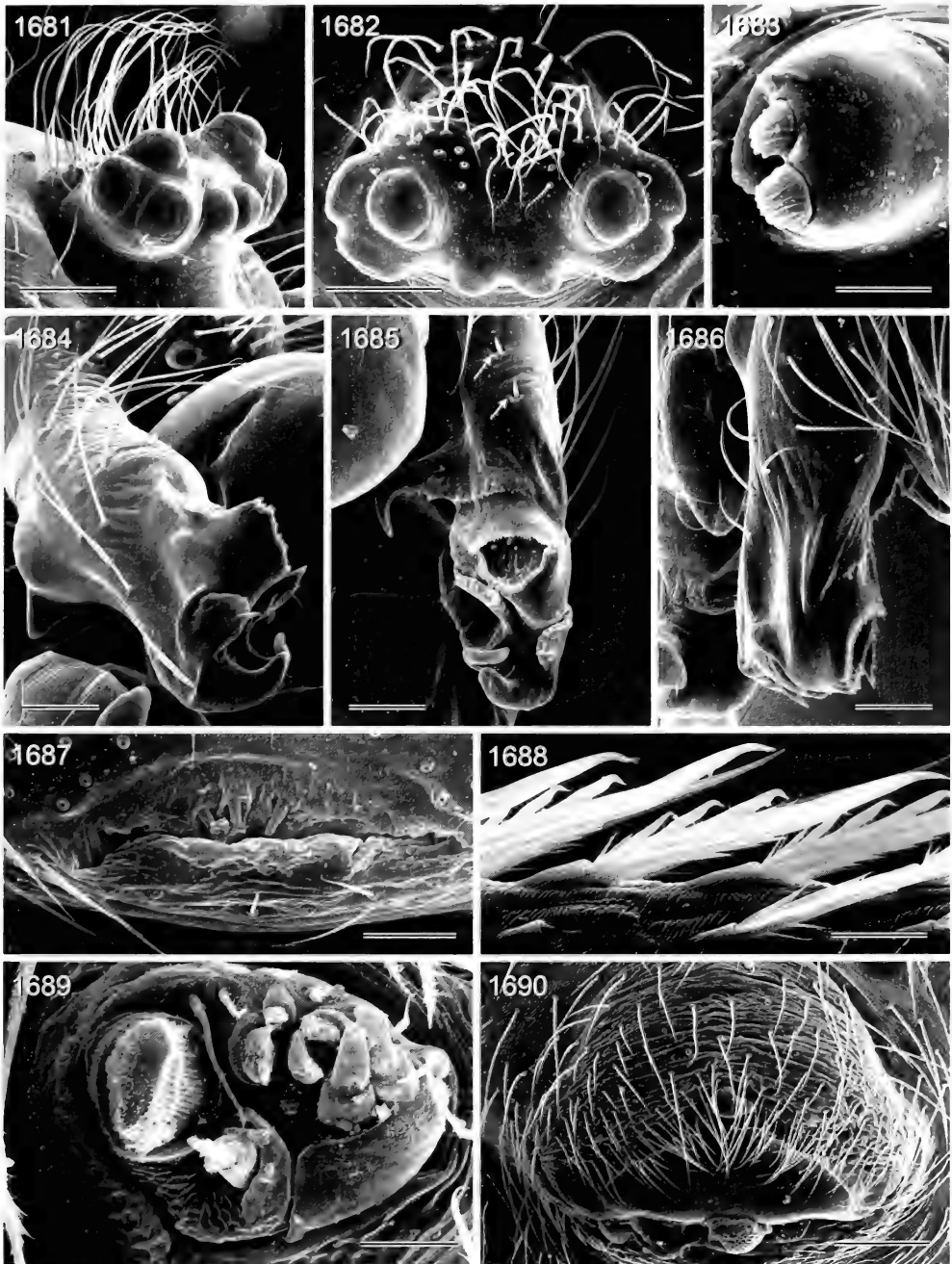


FIG. 1681-1690. *Pholcus ponticus*. 1681, 1682. Male ocular area, oblique and dorsal views. 1683. Distal male chelicerapophysis. 1684. Right procurrus, retrolatero-distal view. 1685. Left procurrus, dorsal view (arrows point at spines). 1686. Right procurrus, retrolatero-dorsal view. 1687. Male gonopore. 1688. Comb-hairs on female tarsus 4. 1689. Female ALS. 1690. Epigynum. Scale lines: 200  $\mu\text{m}$  (1681, 1682, 1690), 100  $\mu\text{m}$  (1684-1686), 60  $\mu\text{m}$  (1687), 20  $\mu\text{m}$  (1683, 1688, 1689).

RUSSIA: *Rostov Region*: "Veliki", 8.x.1961 (Mitrofanov), 1♀ in ZMMU. *Astrakhan' Region*: Astrakhan' [46°21'N, 48°03'E], 10.ix.1993 (N.A. Rukhlenko), 7♂7♀ in ZMMU. *Stavropol Territory*: ca. 35 km NNE of Stavropol, Beshpagir Vill. [45°01'N, 42°23'E], in buildings, 13.viii.2003 (D.V. Logunov), 7♂4♀ in ZMMU. *Volgograd Region*: Pallasovka Distr., Elton Lake [Elton 49°07'N, 46°34'E], indoor, 28.v.1993 (P.M. Dunin), 4♂1♀ in ZMMU. *Krasnodar Territory*: Armavir [-44°59'N, 41°07.5'E], Uspenka Vil., 30.iv.1977 (P.M. Dunin), 1♂4♀ in ZMMU. *Voronezh Region*: Kantemirovka Distr., Mitrofanovka Vil. [-49°58'N, 39°42'E], thicket near river, 17.vii.1979 (A.A. Zyuzin), 1♂2♀ in ZMMU. *Belgorod Region*: near Borisovka Vil. [50°36'N, 36°01'E], Les-na-Vorskla Reserve, indoor, 20.viii.1983 (V.E. Krivokhatsky), 2♀ in ZIN. Valuyki [50°12.5'N, 38°06.3'E], 30.x.1897 (Velitchkovsky), 2♀ in NHMW. *Orenburg Region*: Orenburg Natural Reserve, Aytuar village [-51°07'N, 57°40'E], in house, 15.v.1996 (N. Masura), -8♂10♀ in PSU. *Kirov Region*: Ganino village [58°39'N, 49°33'E], in building, 9.vi.2005 (A. Lyapunov), 2♂ in PSU. *Perm Region*: Perm [58°00'N, 56°15'E], in house, vii.1999 (S. Esyunin), 1♂ in PSU. *Kurgan Region*: Kurgan city [55°27'N, 65°20'E], 17.xi.1992 (S. Tulenev), 3♂5♀ in PSU.

KAZAKHSTAN: Atyrau [=Gur'ev] Region, Emba Distr., near Kulsary [-46°58'N, 54°01'E], 4.vi.1989 (A. Raikhanov, S. Ibraev), 2♀ in ZMMU. Kyzylorda Prov.: Aralsk [46°47'N, 61°40'E], ix.1928 (N.N. Terehov), 12♂ in PSU. South-Kazakhstan Region, 30-35 km E of Shymkent (=Chimkent), Lenger Distr., near Georgievka Vil. [-42°15'N, 69°46'E], indoor, 2.ix.1992 (D.V. Logunov), 6♂20♀ (2 vials) in ZMMU. Arys Town [42°24'N, 68°48'E], indoor, 8.v.1988 (D.V. Logunov), 1♂ in ZMMU. Near Arys Town, clayey ravines, 2.v.1988 (D.V. Logunov), 1♂1♀ in ZMMU. East Kazakhstan Region, Azeh, near Ust'-Kamenogorsk [49°58'N, 82°40'E], 16.ix.1990 (V.K. Zinchenko), 2♀ in ZMMU. Almaty City [43°15'N, 76°57'E], indoor, 10.vii.1995 (Yu.M. Marusik), 2♂3♀ in ZMMU; same locality, 15.ix.1994 (S. Ovchinnikov), 2♂5♀ in ZMMU. "Zailiysky Mt." (=Trans Ili Alatau), Bol. Alma-Atinka, 8.vi.1993 (S. Ovchinnikov), 1♂ in ZMMU. Almaty (Alma-Ata) Region, Zhambyl Distr., Fabrichnij Vil. [-43°09'N, 76°25'E], indoor, 26.xii.1993 (A.A. Zyuzin), 2♂2♀ in ZMMU. Almaty Region, Zhambyl Distr., ca. 50 km W Samsy [43°19'N, 76°06'E], 9.iv.1997 (A.V. Gromov), 4♂2♀ in ZMMU. Al-

maty Region, Balkhash Distr., ca. 5.5 km ESE Akkol', Karakol (44°59.8'N, 75°44.1'E), 380 m a.s.l., buildings, 5.vi.2004 (A.V. Gromov), 1♂1♀ in ZMMU. Almaty Region, Chilik Distr., N foothills of Tzansili Alatau Mt. Range, Zhalganbulak Spring Valley, ca. 7 km SE Teskenu (43°29.2'N, 77°55.5'E), 740 m a.s.l., in mine, 31.i.2009 (N.V. Baskakov), 6♂1♀ in ZMMU. Zhambyl (=Taraz, Dzhambul) Region, Shu (=Chu) Distr., left bank of Chu River, 3rd km of road Novotroitskoe-Moinkum [-43°44'N, 73°47'E], 31.v.1990 (A.A. Zyuzin), 1♂ in ZMMU; Moinkum Desert, ca. 72 km S of Ulanbel' (44°10.6'N, 71°07.3'E), 350 m a.s.l., 28.v.2002 (A.V. Gromov), 1♂2♀ in ZMMU. Aqmola Area, Kurgal'dzhinskoe Distr., Kurgal'dzhino Nature Reserve, ca. 25.5 km WSW Urkendeu, E shore of Sultankel'dy Lake, Karazhar (50°28.6'N, 69°32.6'E), 310 m a.s.l., 13.-14.vi.2005 (A.V. Gromov), 2♂1♀ in ZMMU.

UZBEKISTAN: *Samarkand Area*: Urgut Distr., N slope of Zeravshan Mt. Range, Aman-Kutan (39°18.1'N, 66°58.2'E), 1300 m a.s.l., 26.iv.2002 (A.V. Gromov), 1♂2♀ in ZMMU.

KYRGYZSTAN: Bishkek [42°54'N, 74°36'E], 20.ix.1995 (S.V. Ovchinnikov), 2♂2♀ in ZMMU; same locality, 17.vi.1974 (S.L. Zonstein), 1♀ in ZMMU; S part of Bishkek, waste ground, 20.iv.2005, 17. and 23.vi.2005 (S. Ovchinnikov), 4♀ (3 vials) in ZMMU. Surroundings of Gumkhana village, -6 km SE Arslanbob town [-41°18'N, 72°59'E], 1200 m a.s.l., 1.vi.1981 (S.L. Zonstein), 1♀ in ZMMU.

CHINA: *Xinjiang Autonomous Region*: Altay [47°50'N, 88°07'E], 26.viii.2006 (F. Zhang), 1♂1♀ in MHBU.

Unspecified localities, material collected by Spassky: "UdSSR", 2♂4♀ in SMF (19437/7). "S-Rußland", 1♂ in SMF (19425/1). "S-Rußland", xii.1934, 1♂3♀ in SMF (19432/2).

*Pholcus sogdianae* Brignoli, 1978

Figs. 1647, 1663, 1664, 1693, 1694, 1697, 1698, 2192, 2193

*Pholcus fagei* Spassky 1940: 357-359, pl. 7, figs. 6-8. (name preoccupied: *Pholcus fagei* Kratochvil, 1940). [misidentification: Efimik *et al.* 1997; see *Ph. ponticus* above].

*Pholcus sogdianae* Brignoli 1978: 489 (new name).

*Types*. Three male and two female syntypes from Kazakhstan, near Almaty ["near Vernyi, Volkovskii's dacha", Alma-Ata: 43°15'N, 76°57'E], vii.1919

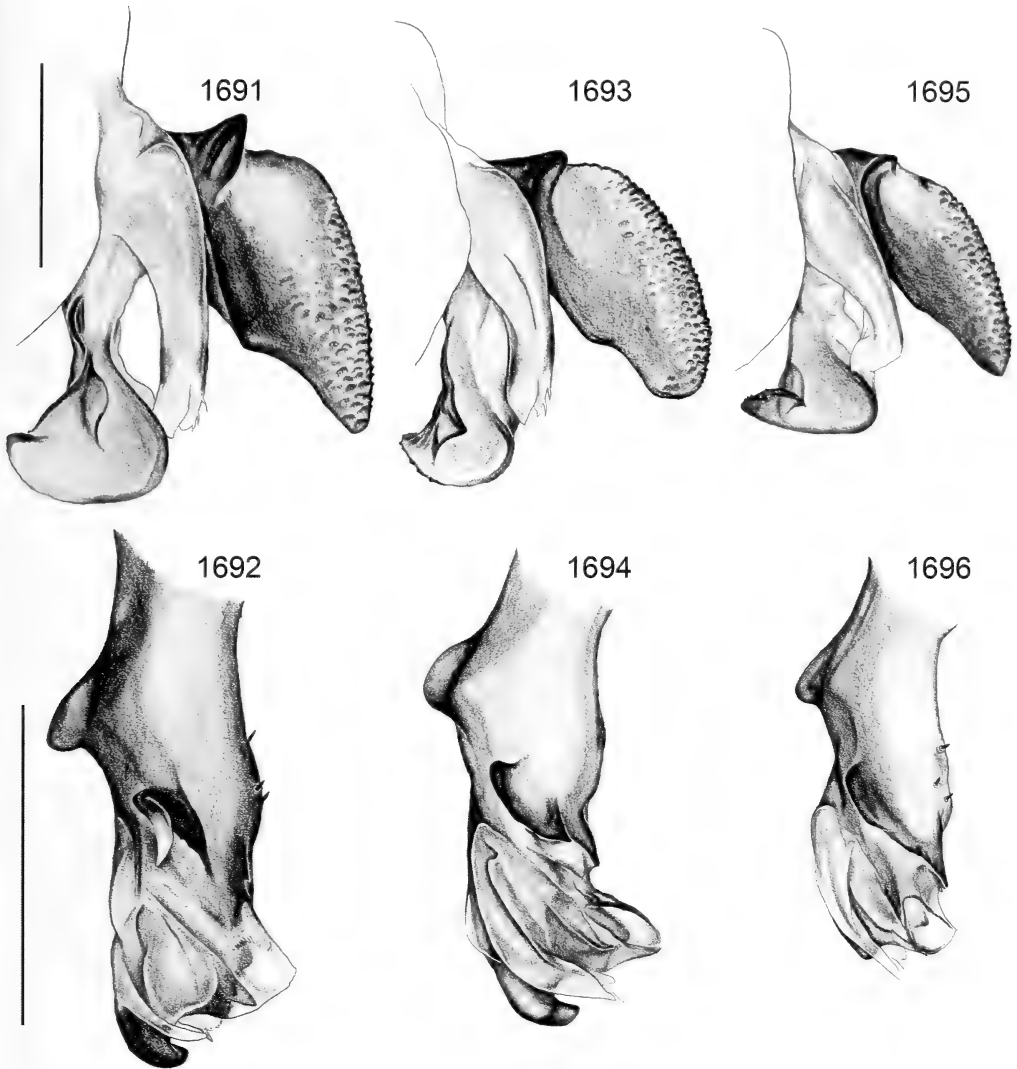


FIG. 1691-1696. Left bulbal processes, retrolateral views (same scale), and left procursi, prolateral views (same scale) of *Pholcus ponticus* (1691, 1692), *Ph. sogdianae* (1693, 1694), and *Ph. arkit* (1695, 1696). Scale lines: 0.3 (bulbs), 0.5 (procursi).

(V.N. Schnitnikov), in ZIN (together with numerous specimens from other localities, see Note below), examined.

*Note.* According to Spassky (1940), there were 3♂2♀ syntypes originating from “Kasachstan: in vicinis urbis Alma-Ata”, collected by Schnitnikov in “VII. 1929 V. 1929”. The ZIN has a vial where specimens from various localities were put together (see below), including an unspecified number of specimens from “near Vernyi, Volkovski’s dacha”, collected by Schnit-

nikov in “late VII. 1919”. Vernyi was the name of Almaty until 1921, suggesting that this vial contains at least topotypical material. It is further likely that Spassky’s published dates contain a lapsus and should have been “VII. 1919 V. 1929”, which would mean that the vial contains the 3♂2♀ type specimens.

*Diagnosis.* Very similar to *Ph. ponticus*, distinguished by male ocular area more elevated and male palpal femur apophysis less complex (more like in *Ph. spasskyi*, cf. Fig. 1854); from *Ph. ponticus* and *Ph.*

*arkit* also by minor differences in procurcus and bulbal processes (compare Figs. 1691-1696).

**Male** (N Tash-Komur). Total body length 3.8, carapace width 1.4. Leg 1: 25.6 (6.6 + 0.6 + 6.6 + 9.9 + 1.9), tibia 2: 4.7, tibia 3: 3.5, tibia 4: 4.7; tibia 1 L/d: 47. Habitus as in Fig. 1647. Spider mostly pale ochre-yellow, carapace with median brown mark divided by narrow median line, sternum light brown with lighter marks near bases of coxae and behind labium, leg femora proximally slightly darkened, abdomen rather pale-gray. Distance PME-PME 400  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 60  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area elevated, many stronger hairs posteriorly, each triad on additional low elevation. No thoracic furrow; clypeus unmodified. Chelicerae similar to *Ph. manueli* (cf. Fig. 1731). Sternum wider than long (0.85/0.70), unmodified. Palps very

similar to *Ph. ponticus* (cf. Figs. 1677, 1678), tip of trochanter apophysis slightly more rounded, ventral femur apophysis simpler (more like in *Ph. spasskyi*, cf. Fig. 1854), prolateral processes of procurcus different shape (Fig. 1694), appendix not so widening distally (Fig. 1693), uncus tip more rounded (Fig. 1693). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, barely visible in dissecting microscope.

**Variation.** Tibia 1 in 5 other males: 7.2-9.0 (mean 7.8). The tip of the trochanter apophysis is variously pointed or rounded.

**Female.** In general similar to male, triads closer together (distance PME-PME 250  $\mu$ m). Tibia 1 in 11 females: 5.7-8.6 (mean 7.2). Epigynum weakly protruding oval area, internal arc visible through cuticle

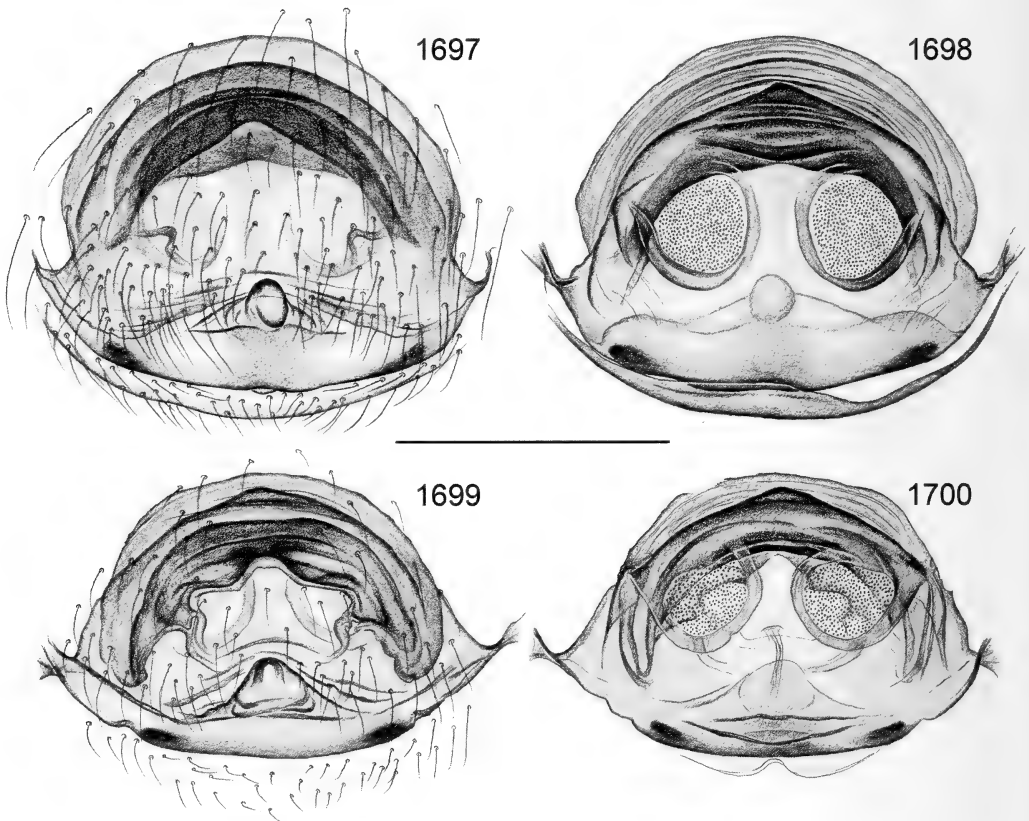


FIG. 1697-1700. Cleared female genitalia, ventral and dorsal views, *Pholcus sogdianae* (1697, 1698) and *Ph. arkit* (1699, 1700). Scale line (for all): 0.5.

anteriorly, triangular plate with 'knob' (Figs. 1663, 1697, 2193); internal genitalia as in Figs. 1664 and 1698. ALS with eight spigots each (Fig. 2192).

*Distribution.* Known from Kazakhstan, Kyrgyzstan, and eastern Uzbekistan (Fig. 1676). Note, however, that the only record from Kazakhstan is from a populated area, and no new material is available from Kazakhstan.

*Material examined.* KAZAKHSTAN – UZBEKISTAN – KYRGYZSTAN: 7♂13♀ from several localities combined in one vial: 3♂2♀ syntypes from near Almaty, Kazakhstan, see Types above; 4♂10♀ from Andhizan [Uzbekistan; 40°47'N, 72°21'E], 1937/1938 (M. & P. Karpov); 1♀ from Osh [Kyrgyzstan; 40°32'N, 72°48'E], 1937 (M. & P. Karpov). KYRGYZSTAN: *Jalal-Abad Region*: "Osh Region; near Tashkumyr" [Tash-Komur = Tash-Kumyr, 41°21'N, 72°14'E], Sary-Kamysh-sai Vil., 13.ix.1985 (D.V. Logunov), 1♂ in ZMMU. N of Tash-Komur, 14.-15.vi.1992 (A.A. Zyuzin), 1♂ in ZMMU. Dzhahalad-Abad [Jalal-Abad = Dzhahal-Abad, 40°56'N, 73°00'E], x.1979 (S.L. Zonstein), 1♂1♀ in ZMMU. Baubashata Mt. Range, surroundings of Yarodar Vil., ~3 km ESE Arslanbob town [41°19,4'N, 72°58,1'E], 1400-1450 m a.s.l., 8.vi.1981 (S.L. Zonstein), 1♂ 1 juv. in ZMMU.

*Pholcus arkit* n. sp.

Figs. 1648, 1649, 1665, 1666, 1695, 1696, 1699, 1700

*Type.* Male holotype from Kyrgyzstan, Jalal-Abad Oblast, Chatkalsky Mt. Range, valley of Tumanyak river, Sary-Chelek Reserve, 4 km NE of Arkit [-41°51'N, 71°58'E], 20.vi.1992 (A.A. Fedorov, A.A. Zyuzin), in ZMMU.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Very similar to *Ph. ponticus* and *Ph. sogdiana*, distinguished from former by male ocular area more elevated and male palpal femur apophysis less complex (more like in *Ph. spasskyi*, cf. Fig. 1854); from both by minor differences in shapes of procurus and bulbal processes (compare Figs. 1691-1696) and female genitalia (Figs. 1699, 1700).

*Male* (holotype). Total body length 4.1, carapace width 1.4. Leg 1: 38.7 (10.1 + 0.6 + 10.1 + 15.8 + 2.1), tibia 2: 6.8, tibia 3: 4.8, tibia 4: 6.5; tibia 1 L/d: 71. Habitus as in Figs. 1648 and 1649. Carapace pale ochre-yellow with median brown mark divided by narrow median line, sternum light brown with many

small light spots, legs ochre-yellow, femora proximally frontally slightly darkened (reddish-brown), abdomen monochromous ochre-gray. Distance PME-PME 480 µm, diameter PME 125 µm, distance PME-ALE 35 µm, distance AME-AME 45 µm, diameter AME 60 µm. Ocular area elevated, longer hairs posteriorly, each triad on additional low elevation. No thoracic furrow; clypeus unmodified. Chelicerae similar to *Ph. manueli* (cf. Fig. 1731). Sternum wider than long (1.0/0.7), unmodified. Palps very similar to *Ph. ponticus* (cf. Figs. 1677, 1678) and *Ph. sogdiana*, ventral femur apophysis simple as in *Ph. sogdiana*, procurus without ventrodistal apophysis (Fig. 1696), prolateral process more like in *Ph. sogdiana*, uncus and appendix more like in *Ph. ponticus* (Fig. 1695). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, barely visible in dissecting microscope.

*Variation.* Tibia 1 in 5 other males: 6.5-9.3 (mean 7.6). The trochanter apophysis is slightly more slender in some specimens.

*Female.* In general similar to male, triads closer together (distance PME-PME 250 µm). Tibia 1 in 11 females: 5.3-8.7 (mean 7.3). Epigynum apparently indistinguishable from *Ph. sogdiana* (compare Figs. 1663 and 1665); internal genitalia as in Figs. 1666 and 1700.

*Distribution.* Known from Kyrgyzstan, Uzbekistan, Tajikistan, and eastern Kazakhstan (Fig. 1676).

*Material examined.* KYRGYZSTAN: *Jalal-Abad Oblast*: Sary-Chelek Reserve, 4 km NE of Arkit: ♂ holotype above; 2 km S of Arkit, 19.v.1992 (A.A. Zyuzin), 1♂1♀ in ZMMU. Sary-Chelek Reserve, Chatkalsky Mt. Range, near Arkit, 1500 m a.s.l., 5.v.1983 (S.L. Zonstein), 1♂2♀ in ZMMU. Chatkalsky Mt. Range, Sary-Cheleksky Reserve, Arkit village, indoor, 27.ix.1983 (A.B. Ryvkin), 2♀ 1 juv. in ZMMU. Sary-Chelek Reserve, 10 km NE of Arkit, Trikol Lake, 1500 m a.s.l., 18.vi.1992 (A.A. Zyuzin), 1♀ in ZMMU. Alaisky Mt. Range, Teketekerek gorge 6 km NNE Khaidarkan town [39°57'N, 71°25'E], 2100 m a.s.l., 11.vi.1987 (S.L. Zonstein), 2♂1♀ in ZMMU. S slope of Talassky Mt. Range, Itagor river canyon, ~32 km N Toktogul town [42°10'N, 72°49'E], 1900-2000 m a.s.l., 2.vi.1987 (S.L. Zonstein), 1♀ in ZMMU. Kok-Bel' Pass [-41°42'N, 72°55'E], nr. Kara-Kul town, 4.vi.1997 (S. Ovchinnikov), 2♂1♀ in ZMMU. *Issyk Kul*



*Oblast*: Karakol [42°29'N, 78°24'E], 1600 m a.s.l., 15.viii.1984 (S.V. Ovchinnikov), 1♂1♀ in ZMMU. UZBEKISTAN: Chatkalsky Reserve, meteorostation, Bash-Kyzyl-Sai Canyon [-39°56'N, 68°18'E], indoor, 18.ix.1983 (K.Y. Eskov), 1♂4♀ in ZMMU; Chatkalsky Reserve, Bash-Kyzyl-Sai Canyon, creek bank, 19.ix.1983 (K.Y. Eskov), 1♂ in ZMMU. Tashkent Region, Ugamski Mt. Range, Sidzhak Vil. [41°41'N, 70°03'E], 6.-27.vi.1983 (A.S. Zorskin), 1♂ in ZMMU. Namangan Area, Pap Distr., NW slope of Kurama Mt. Range, ca. 12 km ENE Koksarai, Kamchik-Sai River canyon (-41°07.4'N, 70°28.7'E), 1400-2000 m a.s.l., 11.iv.1985 (S.V. Ovchinnikov), 1♂ in ZMMU. TAJIKISTAN: Dushanbe Area: Hyssarsky Mt. Range, near Ramit Vil. [38°44'N, 69°19'E], Charmin Stow, 1400 m a.s.l., 3.x.1986 (S.L. Zonstein), 1♂1♀ in ZMMU. KAZAKHSTAN: *Almaty Region*: Charyn Canyon [-43°22'N, 79°05'E], Sartogai, 12.vi.1993 (S. Ovchinnikov), 2♂1♀ in ZMMU.

*Pholcus kamkaly* n. sp.

Figs. 1650, 1667, 1668, 1701-1705

*Type*. Male holotype from Kazakhstan, Zhambyl (=Taraz, Dzhambul) Region, Sarysu Distr., ~20 km E of Lake Bol'shie Kamkaly [-44°51'N, 70°15'E], 27.vi.1989 (A.A. Zyuzin), in ZMMU.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from congeners by morphology of male palp (Figs. 1701, 1702; shapes of procurus, uncus and appendix, trochanter apophysis) and female genitalia (Figs. 1667, 1704).

*Male* (holotype). Total body length 3.5, carapace width 1.3. Leg 1: 23.7 (6.3 + 0.5 + 6.4 + 8.8 + 1.7), tibia 2: 4.4, tibia 3: 3.2, tibia 4: 4.6; tibia 1 L/d: 52. Habitus as in Fig. 1650. Entire spider mostly ochre-yellow, carapace with light brown median mark, sternum light brown with light spots near bases of coxae 2-4 and anteriorly, abdomen monochromous ochre-gray. Distance PME-PME 175 µm, diameter PME 90 µm, distance PME-ALE 35 µm, distance AME-AME 35 µm, diameter AME 70 µm. Ocular area slightly elevated, few hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1703, distal apophyses with modified hairs, proximally with large lateral and tiny frontal apophyses. Sternum wider than long (0.85/0.65), unmodified. Palps as in Figs. 1701 and 1702, coxa unmodified, trochanter apophysis distally directed

proximally, femur with small dorsal apophysis proximally, otherwise almost cylindrical, procurus rather simple, with two dorsal spines, strongly widened distally (especially in dorsal view), large uncus with distinctive protuberance overlying embolus in pro-lateral view, embolus short and weakly sclerotized, appendix simple, distally hooked. Legs without spines and curved hairs, few vertical hairs (more than usual, arranged in rows on tibiae); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few visible in dissecting microscope.

*Variation*. Tibia 1 in 2 other males: 4.5, 5.3. The shape of the trochanter apophysis varies slightly among the specimens examined.

*Female*. In general similar to male, triads closer together (distance PME-PME 140 µm). Tibia 1: 4.2. Epigynum elevated, distinctively shaped plate with large 'knob' (Figs. 1667, 1704); internal genitalia as in Figs. 1668 and 1705.

*Distribution*. Known from southern Kazakhstan only (Fig. 1676).

*Material examined*. KAZAKHSTAN: *Zhambyl Region*: Sarysu Distr., Lake Bol'shie Kamkaly: ♂ holotype above. Mounkum Distr., ~124 km of highway Akkol'-Ulanbel' [-44.1°N, 71.0°E], 16.-17.v.1991 (A.A. Zyuzin), 1♂ in ZMMU. *South Kazakhstan Region*: Chardara Distr., Kyzylkum desert, 45 km SW of Bairkum [-41°52'N, 67°44'E], 15.iv.1990 (A.A. Zyuzin), 1♂1♀ in ZMMU.

*Pholcus crypticolens* species group

*Diagnosis*. Medium-sized, long-legged *Pholcus* (body length ~3-4, leg 1: ~20-35); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, abdomen long oval to cylindrical, with or without cuticular pattern (Figs. 1651-1658), procurus with dorsal spines, appendix with distinctive large transversal element (triangular to T-shaped; Figs. 1709, 1727, 1729, 1742), sclerotized epigynum with 'knob'.

*Description*. Body length ~3-4, carapace width 1.0-1.3. Ocular area compact, slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with distal apophyses provided with two modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis and ventral hump (dis-



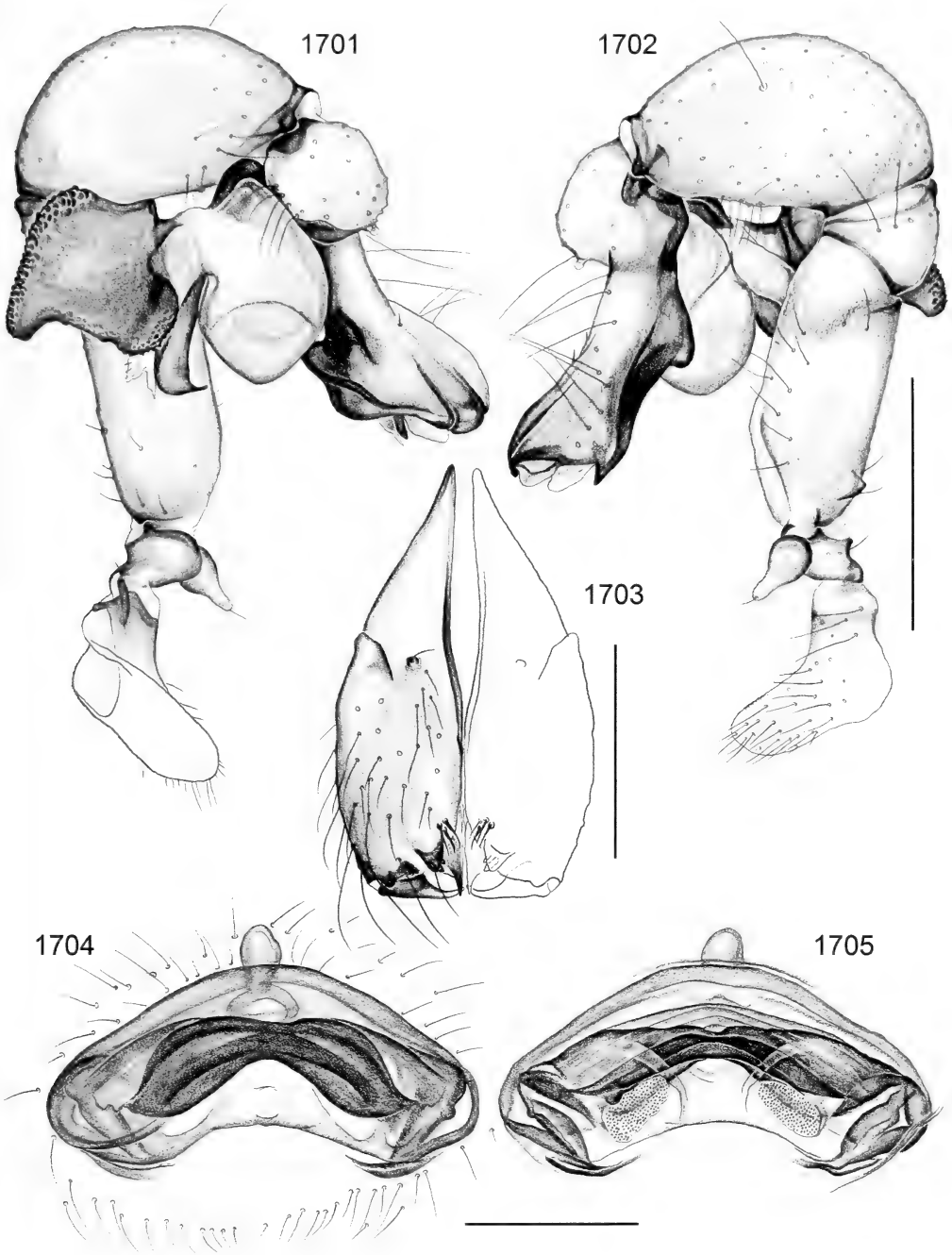


FIG. 1701-1705. *Pholcus kamkaly*. 1701, 1702. Left male palp, prolateral and retrolateral views. 1703. Male chelicerae, frontal view. 1704, 1705. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1701, 1702), 0.3 (1703-1705).

tinctive in *Ph. bessus*), tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', with 1-3 dorsal spines. Male bulb with conservative uncus, weakly sclerotized embolus, appendix with distinctive large transversal element (triangular to T-shaped). Legs long, tibia 1 in males usually 5.5-9.5, tibia 1 L/d ~45-75, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-7%. Abdomen long oval to cylindrical, with or without cuticular pattern, male gonopore with four epiandrous spigots, ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified. Epigynum with 'knob', internal genitalia with pair of large round pore-plates. *Monophyly*. The species share the appendix with distinctive large transversal element (char. 63; Figs. 1709, 1727, 1729, 1742). However, a similar appendix also occurs in the *Ph. opilionoides* group. The shape of the uncus is extremely similar in all species included, but this may be a plesiomorphy.

*Relationships*. The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), and the procurus with dorsal spines (char. 38) place this

group in a polytomy together with other mostly Palaearctic *Pholcus* species groups (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure. Within the group, three species (*Ph. crypticolens*, *Ph. zichyi*, *Ph. spilis*) share spots on the legs (char. 11) and distinctive color patterns on carapace and abdomen (dorsally; Figs. 1651, 1654); they are likely close relatives. The other two species (*Ph. manueli*, *Ph. bessus*) have very similar procursi (Figs. 1730, 1743; long, straight, very proximal 'knee', dorso-distal sclerite) and may also be sister species.

*Natural history*. Several species seem to be tolerant against human impact; they occur in disturbed habitats and even around and in buildings (especially *Ph. manueli*).

*Distribution*. The group is largely restricted to East Asia (Figs. 1706, 1707). *Pholcus manueli* has a much wider distribution, presumably as a result of human transport (Figs. 1707, 1708).

*Composition*. The group includes five previously named species all of which are treated below: *Ph. crypticolens* Bösenberg & Strand, 1906; *Ph. zichyi* Kulczyński, 1901; *Ph. spilis* Zhu & Gong, 1991; *Ph. manueli* Gertsch, 1937; *Ph. bessus* Zhu & Gong, 1991.

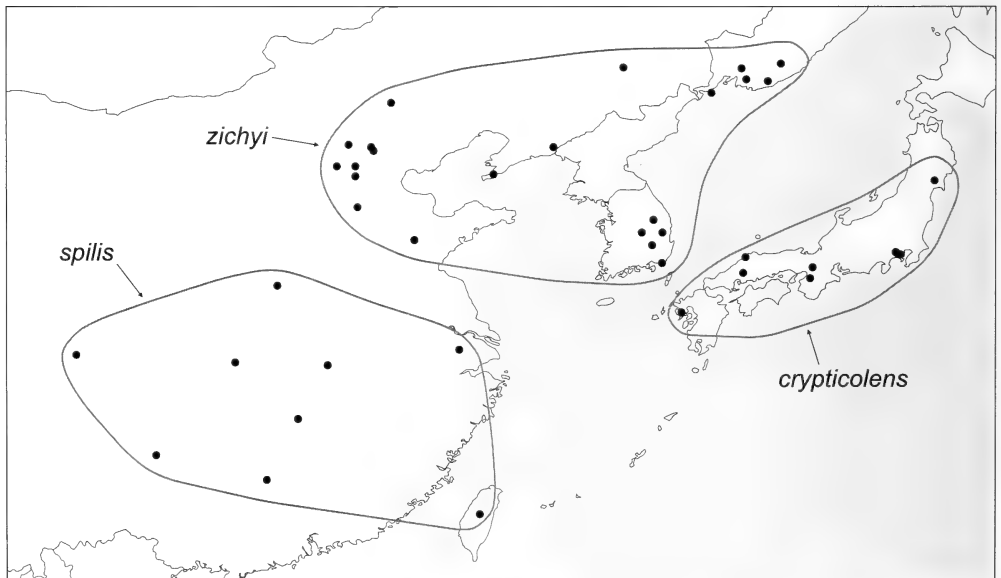


FIG. 1706. Known distribution of the *Pholcus crypticolens* species group (for *Ph. manueli* and *Ph. bessus*, see Figs. 1707, 1708).

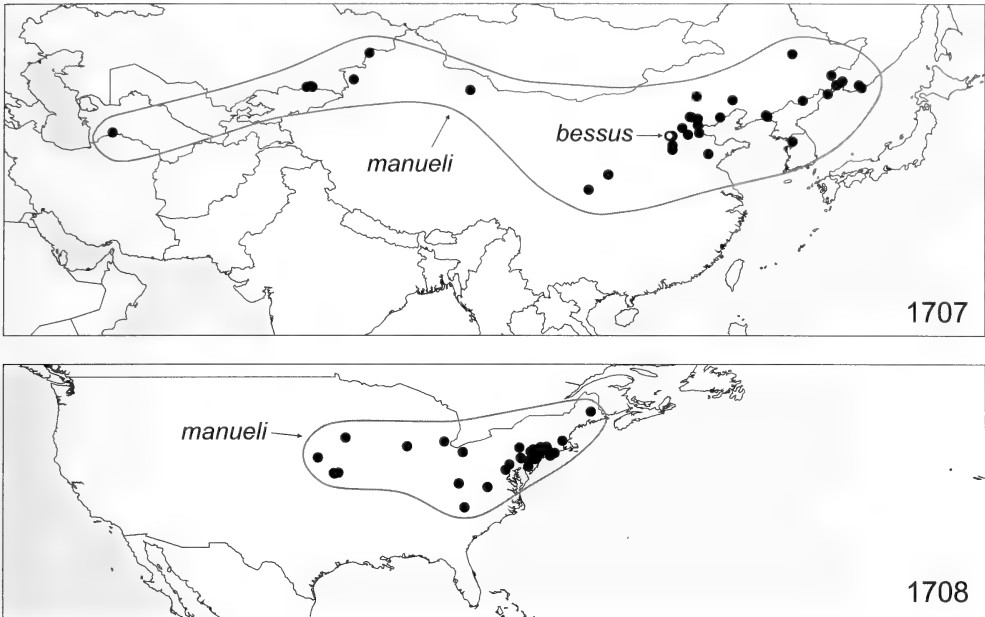


FIG. 1707, 1708. Known distributions of *Pholcus bessus* and of *Ph. manueli* in Asia (1707) and North America (1708).

*Pholcus crypticolens* Bösenberg & Strand, 1906

Figs. 1651-1653, 1669, 1670, 1709-1721, 1722-1724

*Pholcus crypticolens* Bösenberg & Strand 1906: 127, pl. 6, fig. 72, pl. 15, figs. 440a-f. Saito 1934: 299 (not seen). Uyemura 1937: 111, figs. A-F (not seen). Saito 1959: 65, figs. 51a-e. Yaginuma 1960: 48, fig. 96; 1970: 646; 1986: 29, figs. 2e, p, pl. 6, fig. 10. Chikuni 1989: 28, fig. 3. Misidentifications: see *Ph. zichyi* and *Ph. spilis* below.

"*Pholcus zichyi*" (misidentification): Irie 2009: 110, figs. (2-2-13) 33-35.

*Note.* Mainland (Russian, Chinese, Korean) specimens have traditionally been identified either as *Ph. crypticolens* or *Ph. minutus* (for references see *Ph. zichyi* below). Marusik & Koponen (2000) synonymized *Ph. crypticolens* and *Ph. minutus* with *Ph. zichyi*, but the senior synonym *Ph. zichyi* was suppressed by Platnick (2001) for lack of usage. I have compared the type series of *Ph. minutus* with Chinese specimens from near the type locality of *Ph. zichyi* and found them to be identical, in agreement with Marusik & Koponen (2000). However, Japanese

specimens are consistently different from mainland specimens, so *Ph. crypticolens* and *Ph. zichyi* are both considered valid species.

*Types.* Two female and 5 juvenile syntypes from Japan, near Nagasaki [ $-32^{\circ}54'N$ ,  $129^{\circ}54'E$ ], 1882 (Dönitz), in SMF (2943), examined.

*Diagnosis.* Easily distinguished from most congeners by distinctive color pattern of carapace and abdomen (dorsally and ventrally) (Figs. 1651, 1653) and of legs (sprinkled with light brown spots); also by morphology of male palp (Figs. 1709, 1710; shapes of procurus, uncus, and appendix) and female genitalia (Figs. 1669, 1712); from the very similar *Ph. zichyi* and *Ph. spilis* only by minor details of procurus, appendix, and palpal trochanter apophysis shape (Figs. 1722-1724).

*Male* (Hazama-cho). Total body length 4.0, carapace width 1.2. Leg 1: 34.4 (8.9 + 0.5 + 9.1 + 13.7 + 2.2), tibia 2: 5.8, tibia 3: 4.0, tibia 4: 5.3; tibia 1 L/d: 76. Habitus as in Figs. 1651 and 1652. Carapace ochre-yellow with light brown median and lateral marks, clypeus with pair of median marks, sternum pale ochre-yellow, sprinkled with light brown spots, legs pale ochre-yellow with darker rings subdistally on

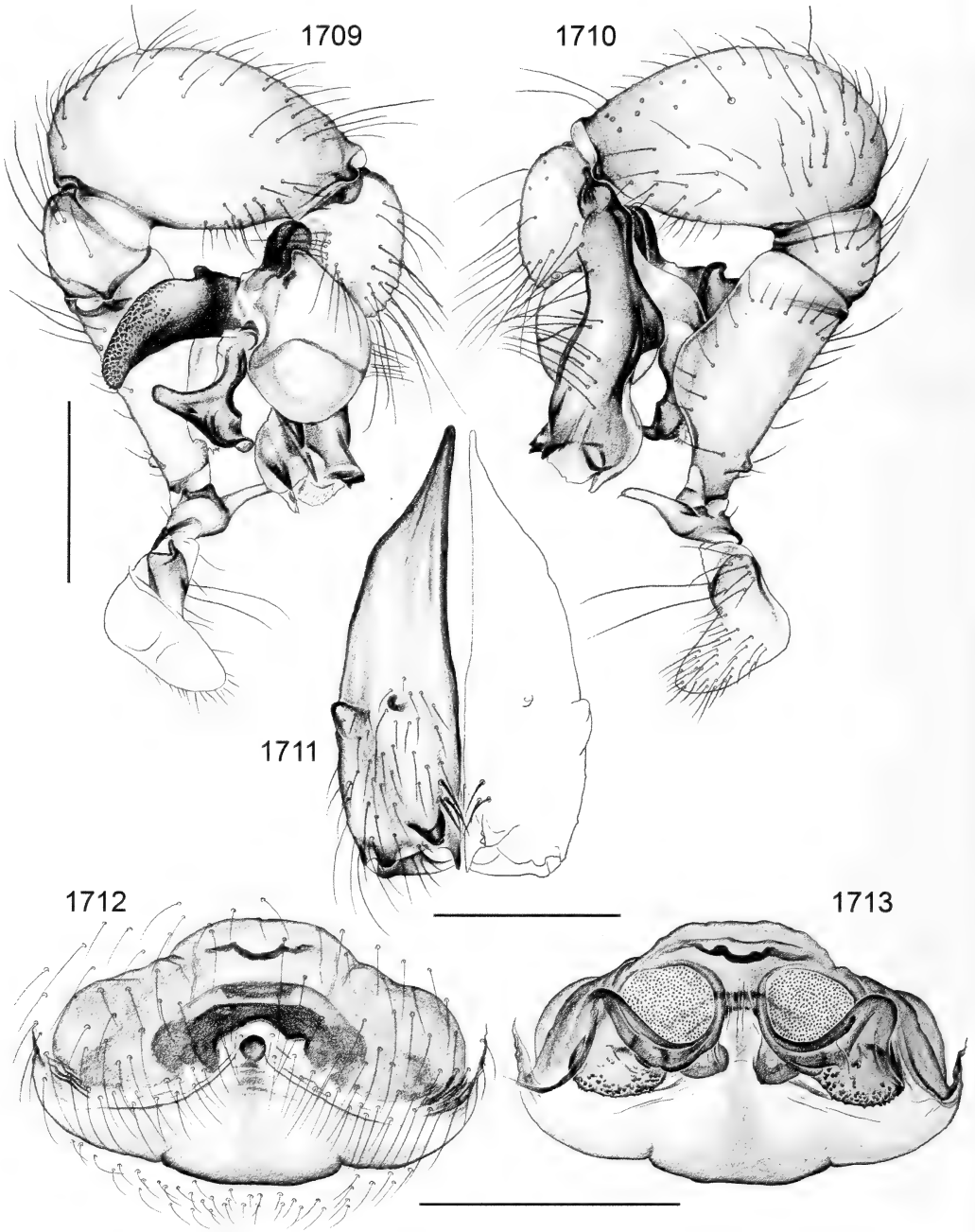


FIG. 1709-1713. *Pholcus crypticolens*. 1709, 1710. Left male palp, prolateral and retrolateral views. 1711. Male chelicerae, frontal view. 1712, 1713. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1709, 1710, 1712, 1713), 0.3 (1711).

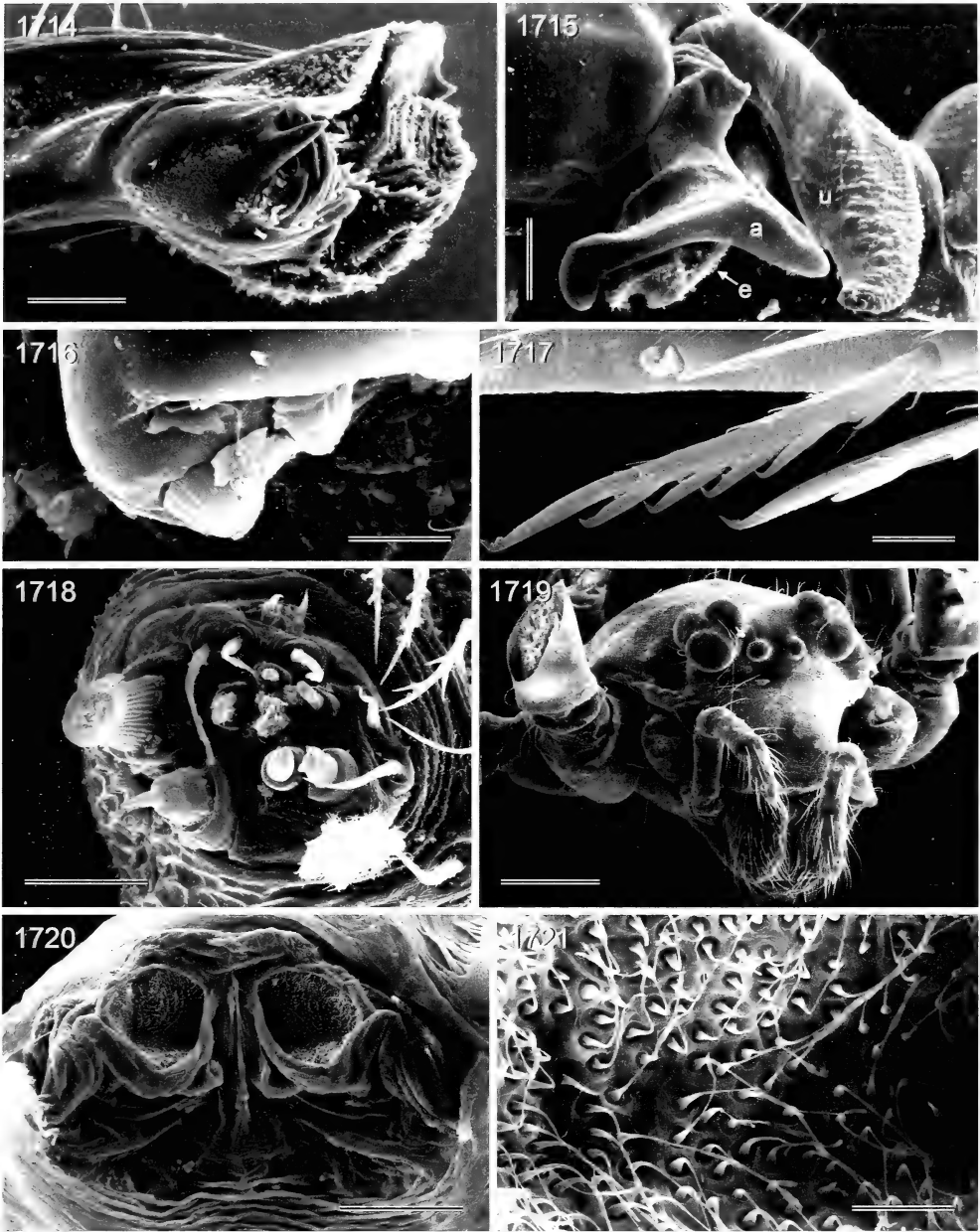


FIG. 1714-1721. *Pholcus crypticolens*. 1714. Left procurus tip, ventro-distal view. 1715. Right bulbal processes, prolatero-distal view. 1716. Distal male cheliceral apophyses. 1717. Comb-hair on female right tarsus 4. 1718. Male ALS. 1719. Female prosoma, oblique view. 1720. Cleared female genitalia, dorsal view. 1721. Detail of pore plate. Scale lines: 300  $\mu\text{m}$  (1719), 200  $\mu\text{m}$  (1720), 100  $\mu\text{m}$  (1715), 80  $\mu\text{m}$  (1714), 20  $\mu\text{m}$  (1718, 1721), 10  $\mu\text{m}$  (1716, 1717).

femora and tibiae and in patella area, many light brown spots especially on femora, abdomen ochre-gray with distinctive cuticular pattern dorsally, many indistinct darker internal spots visible through cuticle dorsally and laterally, ventrally with many brown spots arranged in median band (cf. female, Fig. 1653), genital area light brown. Distance PME-PME 265  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 80  $\mu\text{m}$ , diameter AME 75  $\mu\text{m}$ . Ocular area moderately elevated, -20 stronger hairs posteriorly on each side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1711, distal apophyses with two modified hairs each (Fig. 1716), stronger hairs medially, two pairs of apophyses proximally. Sternum wider than long (0.75/0.65), unmodified. Palps as in Figs. 1709 and 1710, coxa unmodified, trochanter with slender retrolateral apophysis curving towards ventral, femur with proximal apophysis dorsally and rounded hump ventrally, tibia ventrally unmodified, procurus with dorso-distal sclerotized ridge and prolateral pointed apophysis (Figs. 1714, 1722, 1723), apparently only one dorsal spine, bulb similar to *Ph. spilis*, *Ph. manueli* and *Ph. bessus*, only appendix different, T-shaped with small spine-like process prolaterally. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally a few fairly distinct. ALS with eight spigots each (Fig. 1718).

*Variation.* Tibia 1 in 8 other males: 7.3-9.6 (mean 8.5).

*Female.* In general similar to male, triads closer together (Fig. 1719, distance PME-PME 195  $\mu\text{m}$ ), spots on femora more distinct. Tibia 1 in 15 females: 6.1-7.5 (mean 6.8); tarsus 4 with single row of comb-hairs (Fig. 1717). Epigynum similar to *Ph. manueli*, also with median part of anterior arc strongly curved, triangular plate with pair of posterior notches (Figs. 1669, 1712); internal genitalia as in Figs. 1670, 1713, and 1720. The syntypes of *Ph. crypticolens* are very pale, the markings are barely visible or lost; tibia 1: 6.1 (missing in other syntype).

*Distribution.* Apparently restricted to Japan (Fig. 1706).

*Material examined.* JAPAN: *Nagasaki Pref.:* Nagasaki: 2♀ syntypes above. *Miyagi Pref.:* Lake Izunuma [-38°43'N, 141°06'E], Hazama-cho, 15.vi.1986 (A. Tanikawa), 3♂2♀ in ZFMK; same data but 29.vi.1986, 2♂ in ZFMK. *Kanagawa Pref.:* Kmioshima,

Sgamihara-shi [-35°33'N, 139°22'E], 13.vii.2005 (A. Tanikawa), 1♂4♀ in ZFMK; Yokohama-shi [-35°27'N, 139°36'E], Noba-cho, 7.ii.1987 (A. Tanikawa), 1♂ in ZFMK; Yamato-shi [-35°28'N, 139°27.5'E], Tsukimino, 20.vi.1993 (A. Tanikawa), 4♀ in ZFMK; Yamato-shi, Izuminomori, 20.vi.1993 (A. Tanikawa), 1♀ in ZFMK. *Kyoto Pref.:* Otokoyama [34°52.7'N, 135°41.9'E], 2.vi.2002 (H. Tanaka), 2♀ in ZFMK. *Osaka Pref.:* Amami [34°23.8'N, 135°35.7'E], 27.v.2002 (H. Tanaka), 1♂ in ZFMK. *Hiroshima Pref.:* Akitakata-shi, Haji-dam [34°38.6'N, 132°37.3'E], 17.v.2005 (Y. Ihara), 1♂ in ZFMK; same data but 21.vii.2005, 1♀ in ZFMK; same data but 19.v.2005, 1♀ in ZFMK. Takano-chō, Shōbara-shi, 7.vii.2006 (Y. Ihara), 1♂ in ZFMK. *Shimane Pref.:* Izumo-shi [-35°20'N, 132°44'E], Koryō-chō, 26.vii.2001 (Y. Ihara), 1♀ in ZFMK.

*Pholcus zichyi* Kulczyński, 1901

Figs. 1725, 1726

*Pholcus zichyi* Kulczyński 1901: 326-328, pl. 12, figs. 3-4. Erroneously synonymized with *Ph. crypticolens* by Marusik & Koponen (2000: 65), suppressed for lack of usage by Platnick (2001); see Note under *Ph. crypticolens*.

*Pholcus minutus* Oligier 1998: 111-112, figs. 1-12. Synonymized by Marusik & Koponen (2000: 65).

"*Pholcus crypticolens*" (misidentifications): Schenkel 1963: 101, fig. 58. Paik 1978a: 223, figs. 95.1-9; 1978b: 2-3. Hu 1984: 77, figs. 68-70, pl. 3, figs. 4, 5. Song 1987: 110, fig. 72. Feng 1990: 47, figs. 22, 22a, 22.1-3. Chen & Zhang 1991: 73-74, fig. 63. Zhu & Gong 1991: 18, 25, figs. 1a-f. Song *et al.* 1999: 57, figs. 23h-k (copied from Zhu & Gong 1991). Song *et al.* 2001: 76, figs. 33a-f (copied from Zhu & Gong 1991). Namkung 2003: 44, figs. 5.3♂♀, a, b. Lee & Kim 2003: 108, figs. 19-30 (copied from Paik 1978a). Zhang & Zhu 2009a: 23-25, figs. 8a-i.

*Types.* *Pholcus zichyi*: female holotype (or syntypes?) from China, "Tshan-pin-cho" [=Ch'ang-p'ing-ch'u, Changping District, W of Beijing, 40°12'N, 116°12'E], 1897-1898 (E. Zichy), depository unknown, not examined.

*Pholcus minutus*: female holotype, male "allotype" and 1♂ paratype from Russia, Maritime Province, Lazovsky State Nature Reserve, Sukhoy Klyuch [43°03'N, 133°43'E], 22.vi.1981 (T. Oligier), in ZMMU, examined; 6♀ paratypes, same data but 23.vi.1981, in ZMMU, examined.

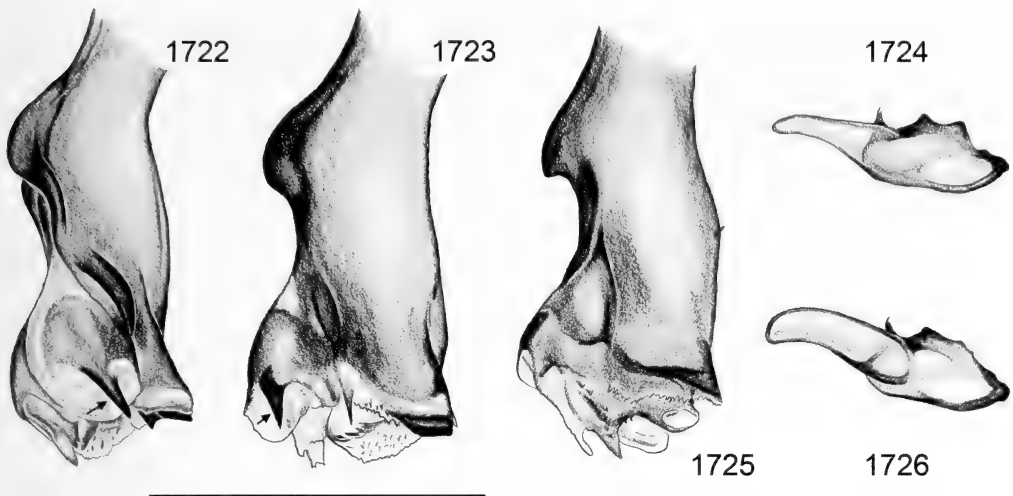


FIG. 1722-1726. *Pholcus crypticolens* (1722-1724) and *Ph. zichyi* (1725, 1726). 1722, 1723, 1725. Left procursi in prolateral (1722) and prolatero-dorsal views (1723, 1725); arrows point at distinctive apophysis. 1724, 1726. Left palpal trochanters, retrolateral views. Scale line (for all): 0.5.

**Diagnosis.** Easily distinguished from most congeners by distinctive color pattern of carapace and abdomen (dorsally and ventrally) (as in *Ph. crypticolens*; cf. Figs. 1651-1653) and of legs (sprinkled with light brown spots). Also by morphology of male palp (very similar to *Ph. crypticolens*, cf. Figs. 1709, 1710; shapes of procursus, uncus, and appendix) and female genitalia (very similar to *Ph. crypticolens*, cf. Fig. 1669); from the very similar *Ph. crypticolens* only by minor details of procursus (absence of prolateral spine) and trochanter apophysis shape (Figs. 1725, 1726).

**Description.** See Feng (1990), Zhu & Gong (1991), Oligier (1998), and Zhang & Zhu (2009a) (under "*Ph. crypticolens*" and "*Ph. minutus*" respectively). Procursus and male palpal trochanter apophysis as in Figs. 1725 and 1726.

**Distribution.** Widely distributed in China, eastern Russia, and Korea (Fig. 1706). According to Zhang & Zhu (2009a), *Ph. zichyi* (under "*Ph. crypticolens*") in China is restricted to the north (Jilin, Liaoning, Hebei, Beijing, Henan, Shandong), but they did not comment on older records for southern China (Fujian, Zhejiang, Hunan, Sichuan) and Taiwan (Zhu & Gong 1991, Song *et al.* 1999) that would then rather be *Ph. spilis*.

**Material examined.** RUSSIA: *Maritime Province*: Lazovsky State Nature Reserve, Sukhoy Klyuch:

2♂7♀ types of *Ph. minutus* above. S part of Ussuri Reserve (43°39'N, 132°33'E), 29.-31.vii.1998 (Yu.M. Marusik), 1♂1♀ in USNM. CHINA: *Hebei*: Zhuolu County, Yangjiaping Village [40°18'N, 115°12'E], 3.vii.2004 (F. Zhang), 1♂1♀ in MHBU.

*Pholcus spilis* Zhu & Gong, 1991

Figs. 1654, 1727, 1728

*Pholcus spilis* Zhu & Gong 1991: 22-23, 26, figs. 4a-g. Song *et al.* 1999: 59, figs. 24e'-h' (copied from Zhu & Gong 1991). Zhang & Zhu 2009a: 83, figs. 47a-g (copied from Zhu & Gong 1991).

Probable misidentification ("*Pholcus crypticolens*"): Chen & Gao 1990: 40 ("*crypticolens*", lapsus), pl. 4, fig. 25 (Sichuan).

**Types.** Male holotype, female "allotype", and 1♂2♀ paratypes from China, Hunan Prov., Dao County (25°30'N, 111°35'E), 27.v.1984 (L. Gong), in MHBU (1♂ paratype examined).

**Diagnosis.** Easily distinguished from most congeners by distinctive color pattern of carapace and abdomen (dorsally and ventrally) (Fig. 1654) and of legs (sprinkled with light brown spots). Also by morphology of male palp (Figs. 1727, 1728; shapes of procursus, uncus, and appendix); from the very similar

*Ph. crypticolens* and *Ph. zichyi* only by minor details of procurus and appendix shape.

*Male* (paratype). Total body length 3.0, carapace width 1.0. Leg 1: 6.5 + 0.5 + 6.5, metatarsus and tarsus missing, tibiae 2 and 4 missing [tibia 4 according to Zhu & Gong (1991) and Zhang & Zhu (2009a) considerably longer than tibia 2], tibia 3: 2.9; tibia 1 L/d: 64. Habitus as in Fig. 1654. Carapace pale ochre-yellow with light brown pattern, ocular area not darkened, clypeus with pair of brown bands, sternum light brown with light marks near bases of coxae 2-4 and medially, legs whitish with darker rings subdistally on femora and tibiae and in patella area, many light brown spots especially on femora, abdomen ochre-gray with distinctive cuticular pattern dorsally, many indistinct darker internal spots visible through cuticle dorsally and laterally, ventrally with many brown spots arranged in median band, genital area light brown. Distance PME-PME 240  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 25  $\mu$ m,

distance AME-AME 45  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area moderately elevated, some stronger hairs posteriorly, each triad slightly projecting towards lateral. No thoracic furrow; clypeus unmodified. Chelicerae missing in paratype. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 1727 and 1728, coxa unmodified, trochanter with slender retrolateral apophysis curving towards ventral, femur with proximal apophysis dorsally (slightly smaller than in *Ph. crypticolens*) and rounded hump ventrally, tibia ventrally unmodified, procurus very similar to *Ph. crypticolens* but without prolateral pointed apophysis, apparently only one dorsal spine, bulb very similar to *Ph. crypticolens*. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct except distally.

*Female*. Similar to *Ph. crypticolens* and *Ph. zichyi*, see Zhu & Gong (1991) (and Zhang & Zhu 2009a).

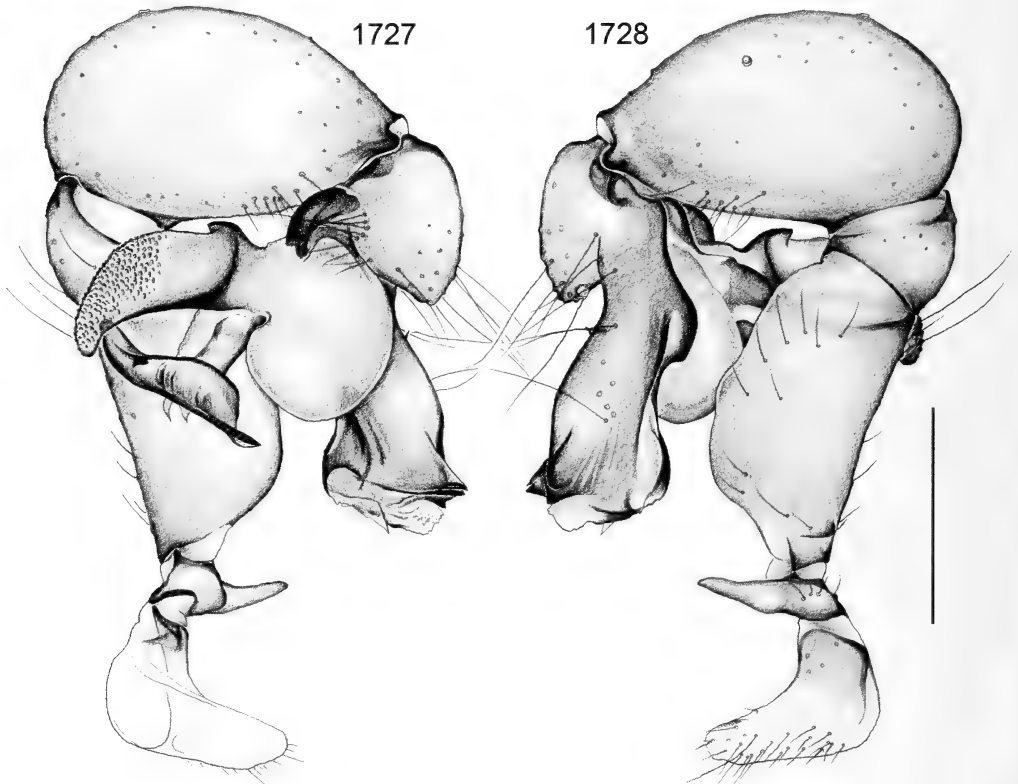


FIG. 1727, 1728. *Pholcus spilis*, left male palp, prolateral and retrolateral views. Scale line: 0.5.



*Distribution.* Widely distributed in southern China: Hunan, Hubei, Sichuan, Jiangsu, and Guizhou Provinces (see Zhang & Zhu 2009a) (Fig. 1706). Further records of "*Pholcus crypticolens*" from southern China may also refer to this species (e.g., Zhejiang in Chen & Zhang 1991).

*Material examined.* CHINA: Hunan Prov.: Dao County: 1♂ paratype above. Jiangsu Prov.: Soochow [=Suzhou, 31°19'N, 120°36'E], no further data, 1♂1♀ in AMNH.

*Pholcus manueli* Gertsch, 1937

Figs. 1655, 1656, 1671, 1672, 1729-1741

*Pholcus manueli* Gertsch 1937: 1-4, figs. 6, 7. Kaston 1977: 6 (erroneous synonymization with *Ph. opilionoides*). Senglet 2001: 62, figs. 60-66 (reestablishment of *Ph. manueli*, synonymization of *Ph. affinis*). Zhang *et al.* 2006: 195. Cutler 2007: 129-131, figs. 1a, c. Zhang & Zhu 2009a: 52-54, figs. 26a-i.

*Pholcus affinis* Schenkel 1953: 23, figs. 12a, b. Yaginuma 1957: 57, pl. 3, fig. 6 (not seen). Zhu & Shi 1983: 66, figs. 54a-e. Zhu, Tu & Shi 1986: 118-119, figs. 1.1-7. Song 1987: 109, figs. 71a-d. Zhang 1987: 58, figs. 42.1-4 (not seen). Hu & Wu 1989: 74, figs. 55.1-4. Feng 1990: 46, figs. 21.1-6, 21, 21a. Chen & Gao 1990: 39-40, figs. 41a, b. Chen & Zhang 1991: 76, figs. 76.1-4. Song *et al.* 1999: 52, figs. 11h, 22d-g. Marusik & Koponen 2000: 64-65. Hu 2001: 81, figs. 7.1-4 (not seen). Song *et al.* 2001: 71, figs. 28a-d.

"*Pholcus opilionoides*" (misidentifications): Zhu & Wang 1963: 463-464, pl. 1, figs. 1-3, 5-6, 9-10. Yaginuma 1960: 48, pl. 15, fig. 97. Paik 1978a: 225, figs. 96.1-12. Paik 1978b: 2-4. Hu 1984: 78, figs. 71.1-5. Yaginuma 1986: 29-30, figs. 3e, 3p, pl. 6, fig. 12. Chikuni 1989: 29, fig. 6. Chen & Zhang 1991: 74-75, figs. 64.1-5 (copied from Hu 1984). Song *et al.* 1999: 58. Irie 2009: 108, figs. (2-2-13) 24-26.

*Types.* *Pholcus manueli*: Male holotype and female "allotype" from USA, New Jersey, Mendham [40°46.2'N, 74°36'W], garage, 19.iv.1937 (M. dos Passos), in AMNH, examined. 7♂8♀ paratypes from same locality, 28.iv.1937 (W.J. Gertsch), in AMNH, examined.

*Pholcus affinis*: 1♂ syntype (not "paratype" as in Senglet 2001, Zhang *et al.* 2006, and Zhang & Zhu 2009a) from China, "Sian hian, Tcheuly" [Hebei Prov., Xian County, ~38°12'N, 116°06'E], 11.v.1914, in NHMB, examined. The depository of the second

male from "Tcheuly" and of the female from "Tiet-sin" (Schenkel 1953) is not known to me ("Museum Hoangho-Peiho").

*Diagnosis.* Easily distinguished from most congeners by male procurus with distinctive dorsal sclerite distally (Figs. 1730, 1736); from very similar *Ph. bessus* by shapes of procurus, appendix, ventral femur modifications, and by female genitalia (Figs. 1729, 1730, 1732, 1733).

*Male* (paratype). Total body length 4.1, carapace width 1.3. Leg 1: 30.4 (7.8 + 0.6 + 8.0 + 12.1 + 1.9), tibia 2: 5.5, tibia 3: 4.0, tibia 4: 5.4; tibia 1 L/d: 60. Habitus as in Figs. 1655 and 1656. Carapace ochre-yellow, with brown median mark divided medially, clypeus slightly darkened medially, sternum brown, with light spots near coxae 2-4 and larger light mark anteriorly, legs monochromous ochre-yellow, abdomen ochre-gray with some indistinct lighter and darker spots visible through cuticle, ventrally only genital area light brown. Distance PME-PME 185 µm, diameter PME 105 µm, distance PME-ALE 25 µm, distance AME-AME 45 µm, diameter AME 60 µm. Ocular area moderately elevated, ~12 stronger hairs posteriorly on each side (Fig. 1734). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1731, distal apophyses with two modified hairs each (Fig. 1740), stronger hairs medially, two pairs of apophyses proximally. Sternum wider than long (0.90/0.65), unmodified. Palps as in Figs. 1729 and 1730, coxa unmodified, trochanter with slender retrolatero-ventral apophysis, femur with small proximal apophysis dorsally and slightly angular hump ventrally, tibia ventrally unmodified, procurus with distinctive prolateral pointed apophysis and dorsal apophysis (actually flat, Figs. 1736, 1737), three small dorsal spines, bulb with long uncus, short weakly sclerotized embolus, distinctive appendix with two small pointed processes. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally ~10 fairly distinct. Gonopore with epiandrous spigots (Fig. 1739); ALS with seven or eight spigots each (Fig. 1738).

*Variation.* The shape of one of the pointed processes on the appendix (arrow in Fig. 1729) varies slightly (often thinner than in Fig. 1729); procurus dorsally often with only two spines. Tibia 1 in 20 males from New Jersey: 6.8-8.0 (mean 7.4; holotype: 6.8); in 12 males from Asia: 6.2-8.0 (mean 7.2; syntype of *Ph. affinis*: 6.8).

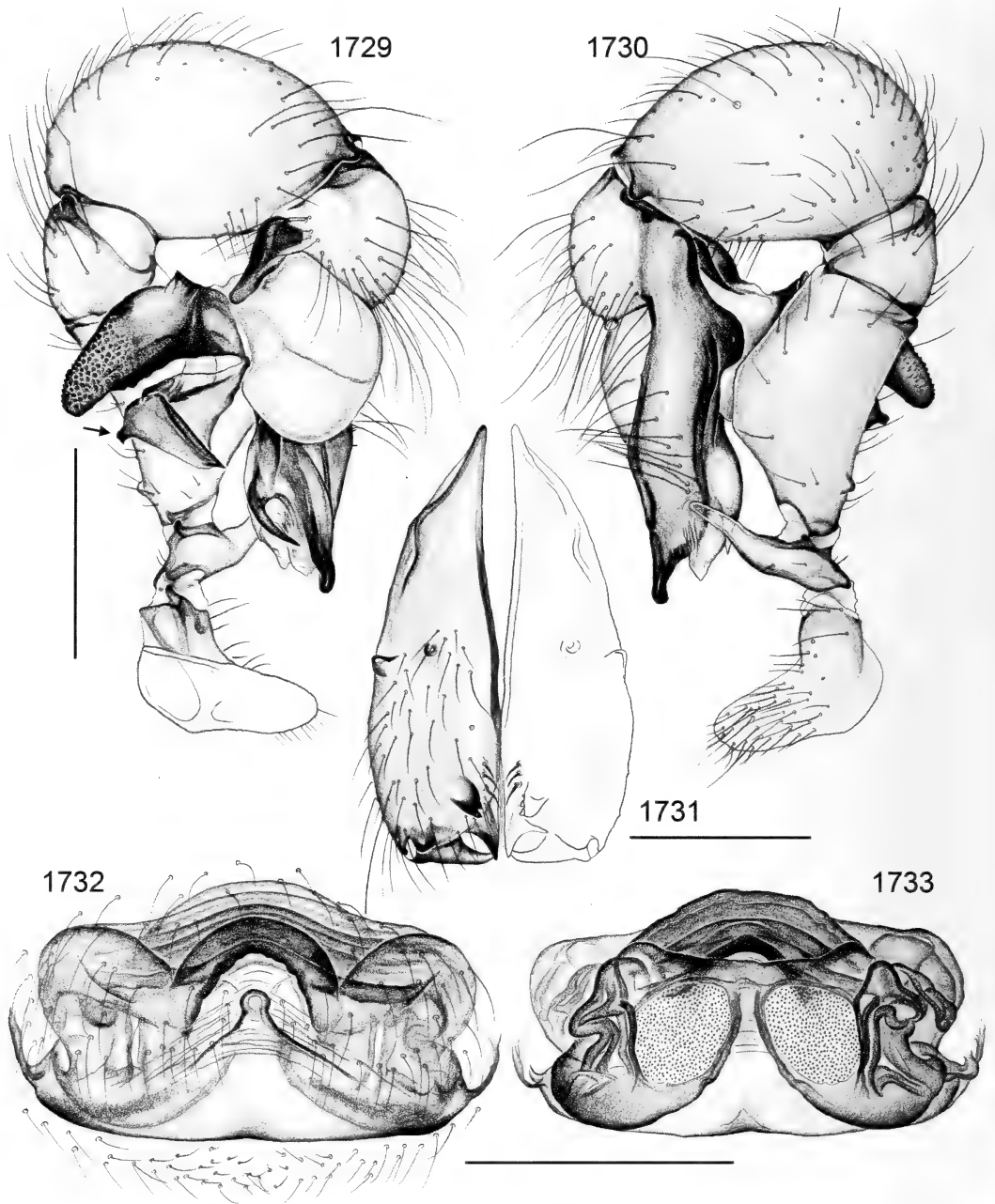


FIG. 1729-1733. *Pholcus manueli*. 1729, 1730. Left male palp, prolateral and retrolateral views (arrow points at variable detail of appendix). 1731. Male chelicerae, frontal view. 1732, 1733. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1729, 1730, 1732, 1733), 0.3 (1731).

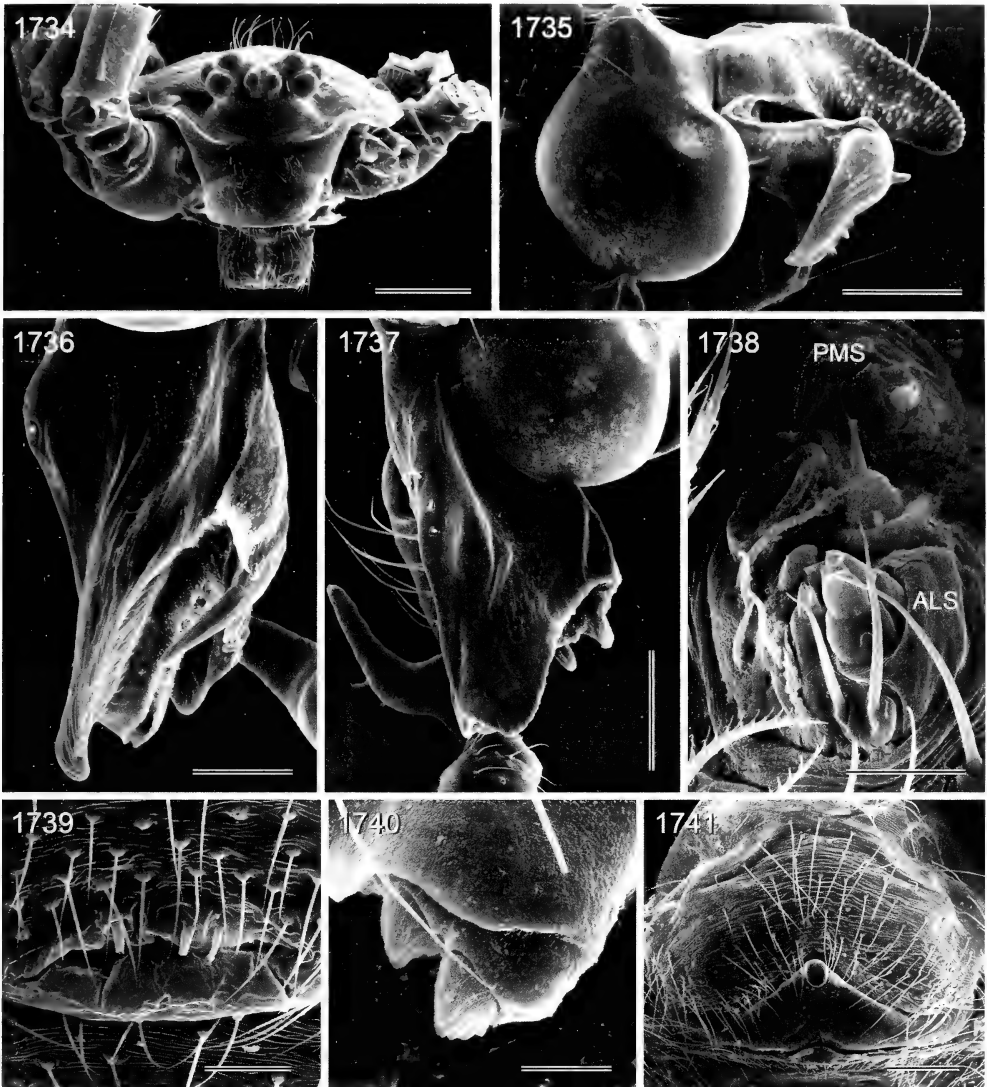


FIG. 1734-1741. *Pholcus manueli*. 1734. Male prosoma, frontal view. 1735. Right bulb, prolateral view. 1736, 1737. Right procursor, prolateral and dorsal views. 1738. Male ALS and PMS. 1739. Male gonopore. 1740. Distal male cheliceral apophysis. 1741. Epigynum. Scale lines: 400  $\mu\text{m}$  (1734), 200 (1735, 1737, 1741), 100  $\mu\text{m}$  (1736), 60  $\mu\text{m}$  (1739), 20  $\mu\text{m}$  (1738), 10  $\mu\text{m}$  (1740).

*Female*. In general similar to male, triads slightly closer together (distance PME-PME 155  $\mu\text{m}$ ). Tibia 1 in 20 females from New Jersey: 5.7-7.6 (mean 6.5), in 16 females from Asia: 5.8-7.3 (mean 6.5). Epigynum rather flat, anterior internal structures visible through cuticle (distinctive median arc),

simple triangular plate with 'knob' (Figs. 1671, 1732, 1741); internal genitalia as in Figs. 1672 and 1733.

*Distribution*. Widely distributed in Asia (Fig. 1707, Turkmenistan to Russian Maritime Province), and the USA (Fig. 1708, eastern and central states).

*Material examined.* USA: *New Jersey*: Mendham: 8♂9♀ types above; Lambertville (40°22'N, 74°56'W), various dates (1950-1953) (W. Ivie), -36♂63♀ (7 vials) in AMNH. 1 mile N Lambertville (40°23'N, 74°56'W), x.1950 (W. Ivie), -5♂9♀ in AMNH. Ramsey [41°03.6'N, 74°08.6'W], various dates (1946-1963) (W.J. Gertsch), 4♂4♀ (6 vials) in AMNH; same locality, ix.1946, 3♂2♀ in USNM. Glassboro [39°42.2'N, 75°06.8'W], 21.viii.1942 and 12.viii.1943 (W.F. Rapp), 1♂2♀ in AMNH. Sussex Co., Baleville [-41°03'N, 74°27'E], rock wall, 11.x.1979 (K. Schmidt, P. Wygodzinsky), 3♀ 3 juvs. in AMNH. Kinnelon (40°35.4'N, 74°13.2'W), 13.vi.1964 (J. & W. Ivie), 1 juv. in AMNH. Harrington Park [40°59.3'N, 73°58.5'W], in building, 13.xi.1966 (V. Roth), 1♂ in AMNH. Somerset, 3 mi S of Neshanic Station [-40°27.7'N, 74°26.8'W], 550' a.s.l., spring/summer 1976 (collector not given), 1♂1♀ in AMNH. *New York*: Orange Co., Cuddebackville [41°28'N, 74°35.6'W], 10.vii.1967 (collector not given), 1♀ 3 juvs. in AMNH. Orange Co., Monroe [41°19.3'N, 74°11.2'W], Ludlam Rd., 1.iii.-21.v.1988 (C.J. Cole, C.R. Townsend), 1♀ 2 juvs. in AMNH. Orange Co., Gardnertown [41°32.1'N, 74°04.2'W], 13.xi.1938 (A. Pizzini), 1♂1♀ + juvs. in USNM; same locality, 3.vi.1939 (J.E. Gross), 1♂2♀ in USNM. Dutchess Co., 3 mi E Poughkeepsie [-41°42'N, 73°52'W], 6.vii.1972 (G. Dingerkus), 1♂ in AMNH. Dutchess Co., Lithgow [41°49.7'N, 73°37.2'W], 21.vi.1971 (J. Coddington), 4♀ in USNM. Dutchess Co., Pine Plains [41°58.9'N, 73°39.4'W], 1.vii.1974 (J.A.C.), 1♀ in USNM. Greenport, 1 mi N of town (41°07'N, 72°22'W), 8.v.1955 (W. Ivie), -20♂20♀ in AMNH. Long Island, Mastic [40°48.2'N, 72°50.5'W], various dates (vii.-x.1945) (Nichols), 1♂4♀ 1 juv. (3 vials) in AMNH. *Connecticut*: New Haven Co.: Orange [41°16.9'N, 73°01.7'W], off route 34, in barn, "frozen, but thawed up", 17.i.1981 (L.N. Sorokin, S. Voket, T. Douglan), 1♂2♀ in AMNH. Litchfield Co., Litchfield [41°44.9'N, 73°11.4'W], buildings, sawhouse and understructure, 29.v.1980 (L.N. Sorokin, M.W. Klemens), 1♂1♀ in AMNH. *Massachusetts*: Middlesex Co., Framingham [42°16.8'N, 71°25.0'W], Primate Research Center, in barn, 1. ix.1969 (collector not given), 1♀ in USNM. *Pennsylvania*: Bucks Co., NE of Jamison, Horseshoe Bend, Neshaminy Creek, (40°16'N, 75°03'W), various dates (1953-1958) (W. Ivie), -87♂116♀ (22 vials) in AMNH. 3 miles S of New Hope (40°20'N, 74°56'W), 11.vi.1953 (W. Ivie), 2♀ in AMNH.

Berks Co., Virginville [40°31.4'N, 75°52.4'W], summer 1966 (P. Vaurie), 1♂2♀ in AMNH. Berks Co., Lenhartsville [40°34.4'N, 75°53.2'W], summer 1964 (P. Vaurie), 1♀ in AMNH. Wyoming Co., Slumber Valley Camping Ground NW Scranton [41°39'N, 76°01'W], 25.vi.2000 (B.A. Huber), 1♂1♀ in ZFMK; same data 2♂3♀ in pure ethanol, in ZFMK. Pike Co., Dingmans Campground, ~20 mi NE Stroudsburg [41°13'N, 74°52'W], vii.2000 (B.A. Huber), 3♂2♀ in pure ethanol, in ZFMK. Allegheny Co., Pittsburgh [40°27'N, 80°01'W], 29.x.1989 (H.J. Guarisco), 1♀ in ZFMK. Lancaster Co., 405 Lampeter Rd. [40°01.7'N, 76°16.2'W], in bucket in garage, 15.v.1985 (K. Smith, L. Kirsch), 1♂1♀ in USNM. *Maryland*: Charles Co., St. Charles [38°36.4'N, 76°54.7'W], in horse barn, 21.vi.1986 (S. Larcher, J. Coddington), 4♀ in USNM. *Washington D.C.*: Rock Creek Park, Rock Creek at Broad Branch Road [38°57.1'N, 77°03.3'W], 16.vii.1985 (J. Coddington), 1♀ in USNM. *Virginia*: Prince William Co., Lake Ridge [38°41.1'N, 77°17.8'W], 4.vi.1999 (collector not given), 1♂ in USNM. Montgomery Co., Blacksburg area [37°14'N, 80°25'W], 14.vi.1997 (S.W. Lingafelter), 1♀ 1 juv. in USNM. *North Carolina*: Rutherford Co., Hollis [35°26.2'N, 81°43.9'W], shed behind house, 24.viii.1981 (E. Coyle), 1♀ in AMNH. *Kentucky*: Jackson Co. [-37°25'N, 84°00'W], 21.vi.1996 (H.J. Guarisco), 1♂1♀ in ZFMK. *Michigan*: Washtenaw County [-42°15'N, 83°50'W], urban area, ix.1990 (L. Vawter), 1♂ in WAM (99/1488). *Iowa*: Guthrie Co., Springbrook State Park, Conservation Education Center [41°46.3'N, 94°27.5'W], 17.vii.1986 (D.J. Perschau), 1♀ in USNM. *Kansas*: Douglas Co., Lawrence [38°57.6'N, 95°15.2'W], Univ. Kansas, outside wall, lower level, 25.v.2005 (B. Cutler), 1♂1♀ in AMNH; Lawrence, in building, 10.vi.1991 (H.J. Guarisco), 3♂1♀ in ZFMK; Lawrence, 17. ix.1995 and 13.vi.2000 (2 vials) (H.J. Guarisco), 3♂3♀ in ZFMK. 3 mi S Lecompton [-39°00'N, 95°24'W], "summer" (H.J. Guarisco), on house, 1♂2♀ in ZFMK. "FNHR", October (H.J. Guarisco), 1♂1♀ in ZFMK. *Nebraska*: Saline Co., Crete [40°37.5'N, 96°57.5'W], various dates (1976-1986) (W.F. Rapp), 2♂1♀ (3 vials) in AMNH; same locality, 12.ix.1987 (J. & W. Rapp), 1 juv. in AMNH. KAZAKHSTAN: Almaty [=Alma-Ata; 43°15'N, 76°57'E], indoor, 30.vi.1974 (collector not given), 1♂5♀ in ZMMU; Almaty, indoor, 20.iii.1981 (M.Y. Folkina), 1♀ in ZMMU. Almaty Region, Chiliksky Distr., "Kisht-Bai Canyon", biostation, in honeybee

hive, 9.viii.1984 (N.Y. Polchaninova), 2♀ in ZMMU. Almaty Region, Zhambyl Distr., Fabrichnyi Vil. [-43°09'N, 76°25'E], indoor, 26.vi.1994 (A.A. Zyuzin), 1♂2♀ in ZMMU. Almaty env., Talgarsky Distr., near Medeo [-43°09'N, 77°04'E], 3.-28.vii.1997 (A.V. Gromov), 1♂ in ZMMU. Mangyshlak Peninsula, "Turusli Vil.", 13.v.1985 (S.I. Deryugin), 1♂ in ZMMU.

TURKMENISTAN: Balkhan velayat, near Kara-Kala [-38°26'N, 56°18'E], Syunt-Khasardagh Reserve, 29.iii.1993 (A.A. Zyuzin), 1♂ in ZMMU.

RUSSIA: *Maritime Territory*: Khasan Vil. [42°25'N, 130°39'E], indoor, 22.vii.1977 (B.P. Zakharov), 1♂2♀ in ZMMU. ~7 km NNW of Zanadvorovka [-43°21'N, 131°34'E] Gusevsky's mine, 14.-23.vi.1999 (V.V. Dubatolov), 1♂ in ZMMU. Lazovsky Nat. Res., near Glazovka [Glazovka: 43°04'N, 134°11'E], indoor, vii.1984 (T. Oligier), 1♀ in ZIN. Ussuriysk Distr., nr. Gornotaezh-noe [43°47'N, 132°14'E], 21.-22.viii.1999 (V. Krivokhatski, Ovchinnikova), 1♀ in ZIN. Lazo Town (43°22.7'N, 133°54.0'E), in house, xi.1998-iii.1999 (Yu. Sundukov), 2♂1♀ in ZMMU.

SOUTH KOREA: near Seoul [-37.5°N, 127°E], Biostation Aik, 23.x.1991 (Yu.M. Marusik), 1♂ in ZMMU.

CHINA: *Shaanxi Prov.*: Taibai Shan [-34°00'N, 107°50'E], S flanks, above Houshenzi, secondary broad-leaved forest, 1300-1700 m a.s.l., 30.vi. and 2.vii.1997 (J. Martens, P. Jäger), 2♂7♀ (2 vials) in SMF; same data but 7.-17.vi.1997 (various dates) (P. Jäger, J. & B. Martens), 1♂5♀ (3 vials) in SMF. *Hebei Prov.*: Xian County: 1♂ syntype of *Ph. affinis* above. *Beijing Municipality*: Beijing [-40°N, 116.5°E], 100 m a.s.l., cultivated land, 6.vii.1997 (J. Martens, P. Jäger), 3♂ in SMF. *Shandong Prov.*: Taishan [36°15'N, 117°05'E], without date (Hwang Har Ho), 1♂ in AMNH.

*Pholcus bessus* Zhu & Gong, 1991

Figs. 1657, 1658, 1673, 1674, 1742-1745

*Pholcus bessus* Zhu & Gong 1991: 20-22, 25-26, figs. 3a-g. Song *et al.* 1999: 57, figs. 23d-g (copied from Zhu & Gong 1991). Zhang & Zhu 2009a: 15, figs. 3a-g (copied from Zhu & Gong 1991).

*Types*. Male holotype, female "allotype", and 2♂2♀ paratypes from China, Hebei Prov., Jingxing County (38°03'N, 114°10'E), Mt. Cangyan, 26.viii.1985 (M. Zhu), in MHBU (1♂1♀ paratypes examined).

*Diagnosis*. Easily distinguished from most congeners

by male procurus with distinctive dorsal sclerite distally (Fig. 1743); from very similar *Ph. manuelyi* by shapes of procurus, appendix, ventral femur modifications, and by female genitalia (Figs. 1742-1745). *Male* (Zhangshiyuan). Total body length 3.4, carapace width 1.2. Leg 1: 22.3 (5.7 + 0.5 + 5.7 + 8.5 + 1.9), tibia 2: 4.0, tibia 3: 2.8, tibia 4: 3.8; tibia 1 L/d: 46. Habitus as in Figs. 1657 and 1658. Carapace ochre-yellow with brown median mark divided medially, clypeus slightly darkened medially, sternum brown, with indistinct lighter spots near coxae 2-4 and distinct light mark anteriorly, legs monochromous ochre-yellow, abdomen ochre-gray with some indistinct lighter spots visible through cuticle, ventrally only genital area light brown. Distance PME-PME 160 µm, diameter PME 105 µm, distance PME-ALE 25 µm, distance AME-AME 45 µm, diameter AME 60 µm. Ocular area moderately elevated, ~12 stronger hairs posteriorly on each side. No thoracic furrow; clypeus unmodified. Chelicerae similar to *Ph. manuelyi* (cf. Fig. 1731) but slightly smaller and proximo-lateral apophyses slightly larger. Sternum wider than long (0.8/0.6), unmodified. Palps as in Figs. 1742 and 1743, coxa unmodified, trochanter with slender retrolatero-ventral apophysis, femur with proximal apophysis dorsally and distinctive protuberance ventrally, tibia ventrally unmodified, procurus with dorsal flattened apophysis like *Ph. manuelyi* but without prolateral pointed apophysis, two small dorsal spines, bulb similar to *Ph. manuelyi*, only appendix different. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, even distally poorly visible in dissecting microscope.

*Variation*. Tibia 1 in male paratype examined: 6.4; in this male the lateral light spots on the sternum are more distinct, the abdomen lacks light spots. Zhang & Zhu (2009a) report much longer legs: tibia 1 in holotype: 9.4, in paratypes: 8.8, 9.1. These are obviously mismeasurements as also the original description (Zhu & Gong 1991) gives a much lower value for the holotype (patella + tibia: 7.0).

*Female*. In general similar to male, triads barely closer together (distance PME-PME 145 µm). Tibia 1: 5.1 (missing in other female examined). In both females examined, the lateral light spots on the sternum are more distinct and the abdominal light spots are less distinct. Epigynum similar to *Ph. manuelyi*, but median part of anterior arc not so strongly curved

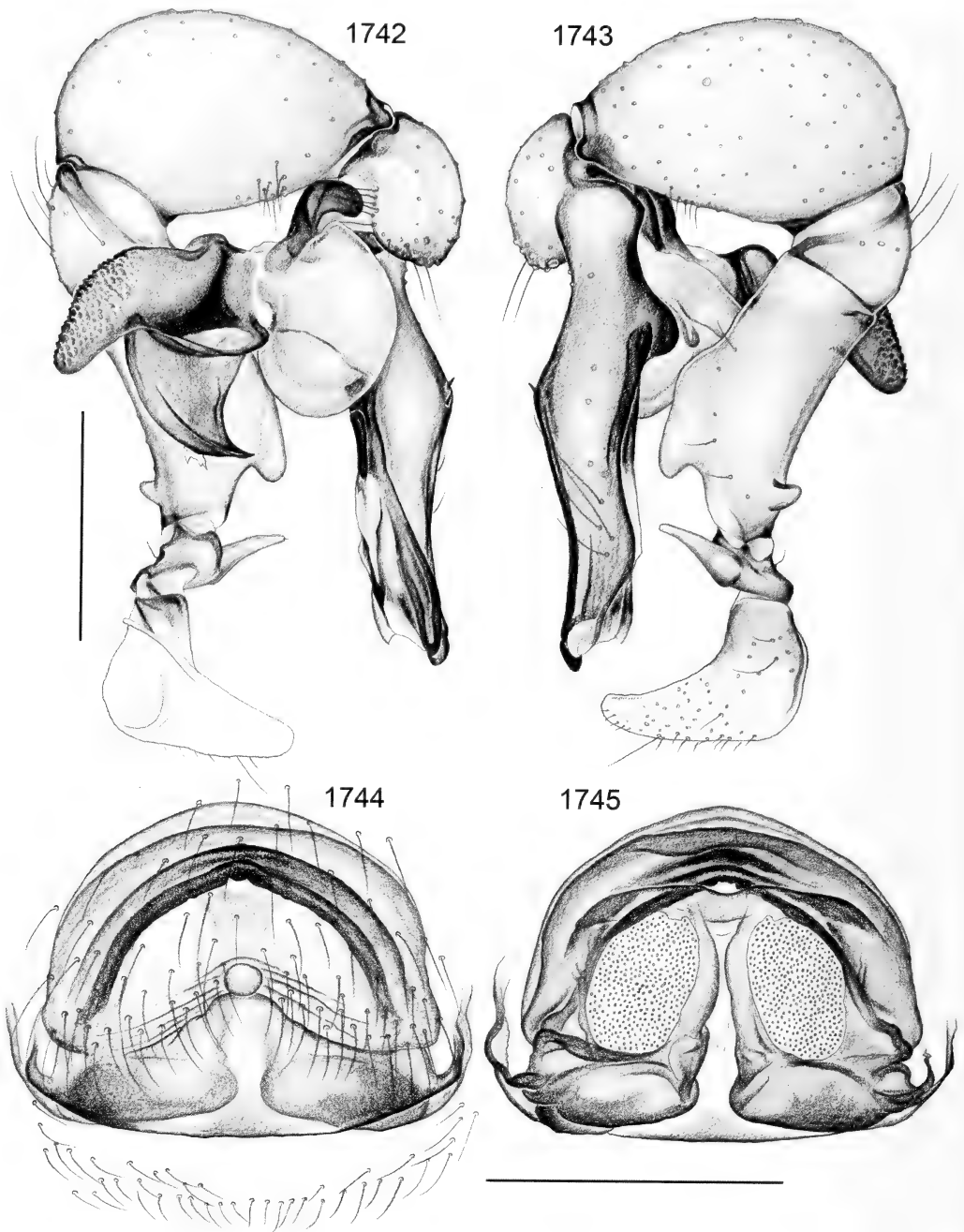


FIG. 1742-1745. *Pholcus bessus*. 1742, 1743. Left male palp, prolateral and retrolateral views. 1744, 1745. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

(Figs. 1673, 1744); internal genitalia as in Figs. 1674 and 1745.

*Distribution.* Known from China, Hebei Prov., only (Fig. 1707).

*Material examined.* CHINA: *Hebei Prov.*: Jingxing County, Mt. Cangyan: 1♂1♀ paratypes above. Zanhuan County, Zhangshiyan [37°36'N, 114°18'E], 1.ix.2006 (Y. Tong), 1♂1♀ in IZCAS (Ar 21797).

Macaronesian *Pholcus* and *Ossinissa* Dimitrov & Ribera, 2005

Macaronesian *Pholcus*: Dimitrov & Ribera 2007: 103-109. Dimitrov *et al.* 2008: 602-610.

*Ossinissa* Dimitrov & Ribera 2005a: 3-8.

*Notes.* Macaronesian *Pholcus* have been revised and analyzed cladistically in two recent papers by Dimitrov and coauthors (Dimitrov & Ribera 2007, Dimitrov *et al.* 2008). The analyses suggest that a majority of the 26 known Macaronesian species form a monophylum. Within this monophylum, Dimitrov *et al.* (2008) recognized four clades that are largely congruent with geographic areas: a Madeiran clade, a Western clade (El Hierro, La Gomera), a Central clade (Gran Canaria), and an Eastern clade (easternmost Canaries and islets north of Lanzarote).

Three further Macaronesian species did not fit into any of these clades. Two of them were considered to belong to *Pholcus* (*Ph. corniger*, *Ph. baldiosensis*); for the third species, a new genus was created by Dimitrov & Ribera (2005a): *Ossinissa justoi* (Wunderlich, 1992). While the assignment of the former species to *Pholcus* appears well supported, the genus *Ossinissa* is problematic. Three characters were used to justify the new genus. Of these, two refer to the shape of the procurus, a structure that is species-specific and extremely variable even among species groups in the core group of *Pholcus*. The third character is an exposed tarsal organ, while *Pholcus* and close relatives usually have a capsulate tarsal organ. Two new observations cast some doubt on the strength of this character: (1) female *Ossinissa justoi* have capsulate tarsal organs (a fact not mentioned by Dimitrov & Ribera 2005a); (2) very low male (but not female) tarsal organ rims have evolved independently in a number of taxa: within *Buitinga* (*B. kadogo* Huber, 2003), within *Pholcus* (*Ph. tahai* n. sp.; Fig. 686), within *Panjange* (*Pa. iban* n. sp., Fig. 481), and within *Calapnita* (*C. phyllicola*, Fig. 180).

However, the present cladistic analysis does neither convincingly resolve the position of *Ossinissa justoi*. The species is placed outside the core group of *Pholcus* due to the absence of proximal frontal modifications on the male chelicerae and a weakly sclerotized epigynum. It seems thus unjustified to synonymize *Ossinissa* with *Pholcus* based on current knowledge, but further analysis is necessary, also regarding its relationship with the two unplaced Macaronesian *Pholcus* species (*Ph. corniger*, *Ph. baldiosensis*). Unfortunately, none of the three species was included in the molecular analysis of Dimitrov *et al.* (2008).

The phylogenetic position of the core group of Macaronesian *Pholcus* is slightly better resolved. Dorsal spines on the procurus and a branched appendix place this group in a polytomy with several other mostly Palaearctic species groups (Fig. 26). I have seen only a limited sample of species and cannot comment on the details. In some cases, species limits appear dubious. For example, *Ph. roquensis* and *Ph. tenerifensis* are extremely similar both morphologically and in the molecular sequences analyzed by Dimitrov *et al.* (2008). The apical procurus apophyses and female internal genitalia that are said to differ between the species appear practically identical in the figures (figs. 94/137 and 83/124 in Dimitrov & Ribera 2007); the shapes of the unci appear distinct in the drawings (figs. 81/119 in Dimitrov & Ribera 2007), but the SEM photo of the uncus of *Ph. tenerifensis* (fig. 91 in Dimitrov & Ribera 2007) shows that this is simply the result of different angles of view in the drawings. The remaining differences are so minimal that the usefulness of such extreme species splitting should be reconsidered, especially since it has a direct impact on measures like speciation rate which is considered extremely high in Macaronesian *Pholcus* (Dimitrov *et al.* 2008).

In the case of the Moroccan *Ph. vachoni* Dimitrov & Ribera, 2005, new material requires a reevaluation and formal synonymization. The species has been considered a case of back colonization from the Canaries to mainland Africa, with a colonization time of about 1-5 Mya (Dimitrov & Ribera 2007, Dimitrov *et al.* 2008). The new Moroccan material clearly identifies *Ph. vachoni* as a junior synonym of *Ph. fuerteventurensis*, a species that is known to occur also in human constructions (Dimitrov & Ribera 2007) and that was thus possibly introduced to Morocco by recent human transport.



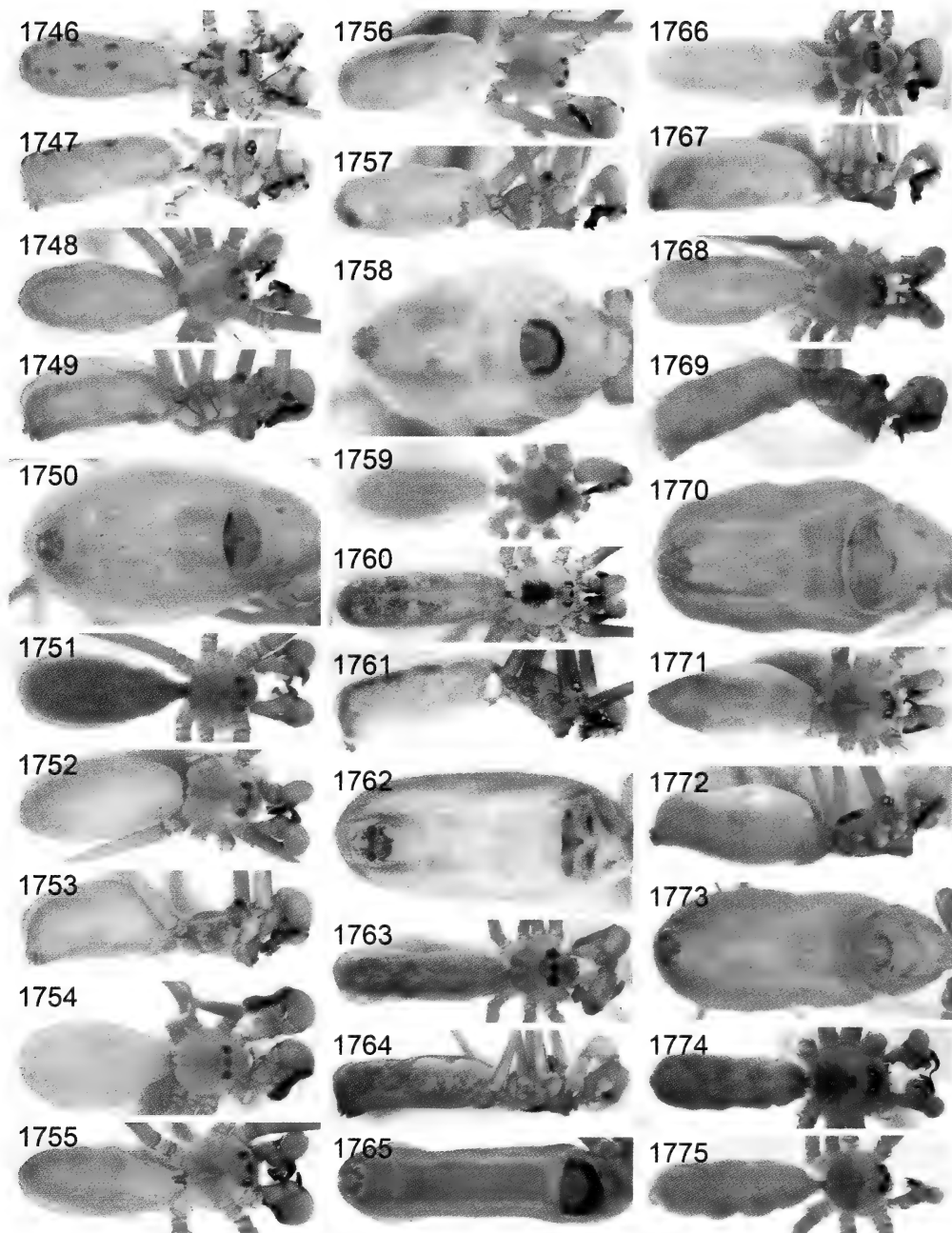


FIG. 1746-1775. *Pholcus fuerteventurensis*, and *Ph. phalangioides*, *Ph. zham*, and *Ph. kingi* species groups, habitus. 1746, 1747. *Ph. fuerteventurensis*, male, dorsal and lateral views. 1748-1750. *Ph. armeniicus*, male, dorsal and lateral views; female abdomen, ventral view. 1751. *Ph. hyrcanus*, male, dorsal view. 1752, 1753. *Ph. medicus*, male, dorsal and lateral views. 1754. *Ph. persicus*, male, dorsal view. 1755. *Ph. alticeps*, male, dorsal view. 1756-1758. *Ph. spasskyi*, male, dorsal and lateral views; female abdomen, ventral view. 1759. *Ph. turcicus*, male, dorsal view. 1760-1762. *Ph. phalangioides*, male, dorsal and lateral views; female abdomen, ventral view. 1763-1765. *Ph. zham*, male, dorsal and lateral views; female abdomen, ventral view. 1766, 1767. *Ph. medog*, male, dorsal and lateral views. 1768-1770. *Ph. muralicola*, male, dorsal and lateral views; female abdomen, ventral view. 1771-1773. *Ph. kingi*, male, dorsal and lateral views; female abdomen, ventral view. 1774. *Ph. reevesi*, male dorsal view. 1775. *Ph. jusahi*, male, dorsal view.



*Distribution.* Macaronesian *Pholcus* and *Ossinissa* are largely restricted to the Canary Islands and Madeira. Only *Ph. fuerteventurensis* seems to have established populations on the African mainland (Fig. 1811).

*Composition.* The Macaronesian species group includes 25 previously named species. Of these, 23 species form the likely monophyletic core group that is divided into four clades according to Dimitrov *et al.* (2008); the two other species are assigned tentatively. *Western clade:* *Ph. malpaisensis* Wunderlich, 1992; *Ph. knoeseli* Wunderlich, 1992; *Ph. intricatus* Dimitrov & Ribera, 2003; *Ph. mascaensis* Wunderlich, 1987; *Ph. roquensis* Wunderlich, 1992; *Ph.*

*tenerifensis* Wunderlich, 1987; *Ph. bimbache* Dimitrov & Ribera, 2006; *Ph. sveni* Wunderlich, 1987; *Ph. gomeræ* Wunderlich, 1980. *Eastern clade:* *Ph. guadarfia* Dimitrov & Ribera, 2007; *Ph. fuerteventurensis* Wunderlich, 1992 (= *Ph. vachoni* Dimitrov & Ribera, 2005); *Ph. anachoreta* Dimitrov & Ribera, 2006. *Central clade:* *Ph. helena* Wunderlich, 1987; *Ph. multidentatus* Wunderlich, 1987; *Ph. calcar* Wunderlich, 1987; *Ph. corcho* Wunderlich, 1987; *Ph. ornatus* Bösenberg, 1895; *Ph. edentatus* Campos & Wunderlich, 1995. *Madeiran clade:* *Ph. silvai* Wunderlich, 1995; *Ph. parvus* Wunderlich, 1987; *Ph. dentatus* Wunderlich, 1995; *Ph. magnus* Wunderlich,

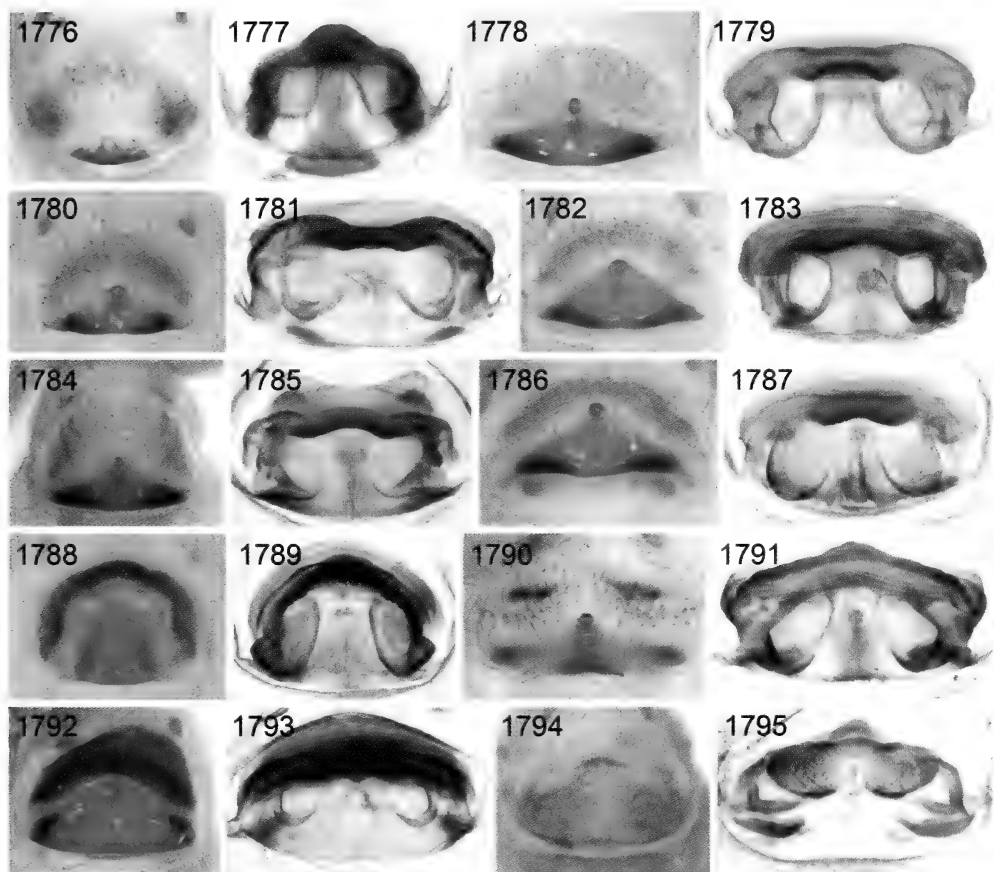


FIG. 1776-1795. *Pholcus fuerteventurensis*, and *Ph. phalangioides*, *Ph. zham*, and *Ph. kingi* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 1776, 1777. *Ph. fuerteventurensis*. 1778, 1779. *Ph. armeniacus*. 1780, 1781. *Ph. hyrcanus*. 1782, 1783. *Ph. medicus*. 1784, 1785. *Ph. persicus*. 1786, 1787. *Ph. alticeps*. 1788, 1789. *Ph. spasskyi*. 1790, 1791. *Ph. phalangioides*. 1792, 1793. *Ph. zham*. 1794, 1795. *Ph. muralicola*.

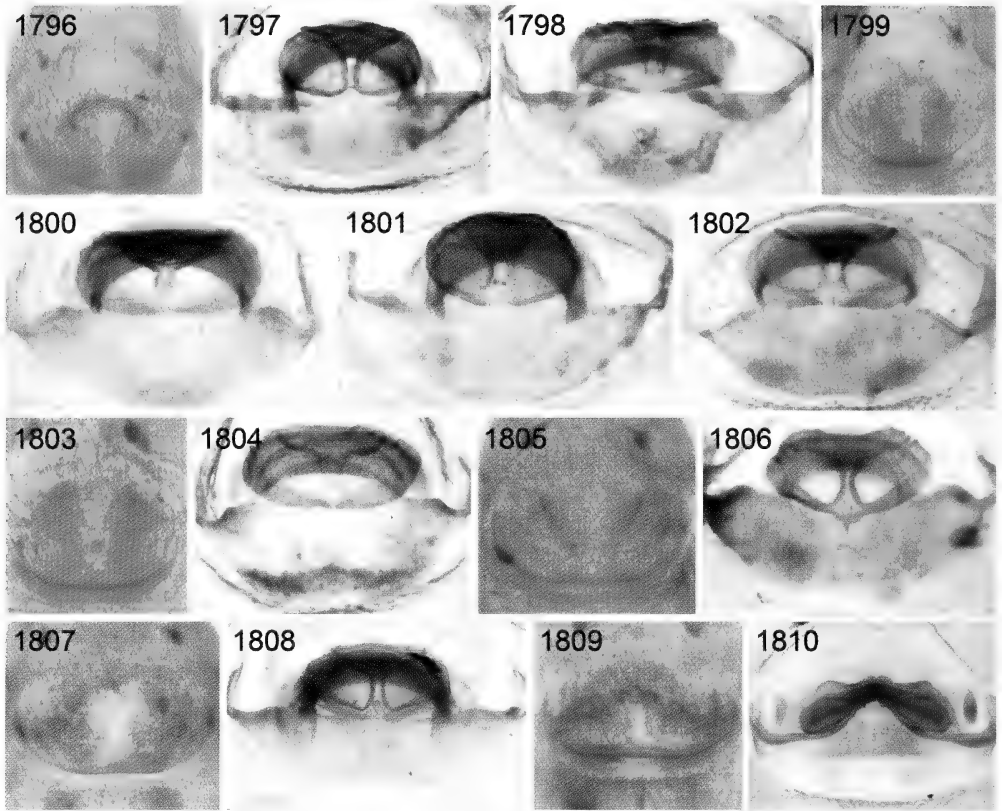


FIG. 1796-1810. *Pholcus kingi* species group; epigyna, ventral views, and cleared female genitalia, dorsal views. 1796, 1797. *Ph. kingi*. 1798. *Ph. koasati*. 1799, 1800. *Ph. dade*. 1801. *Ph. dixie*. 1802. *Ph. lanieri*. 1803, 1804. *Ph. cheaha*. 1805, 1806. *Ph. choctaw*. 1807, 1808. *Ph. reevesi*. 1809, 1810. *Ph. jusabi*.

1987; *Ph. madeirensis* Wunderlich, 1987. Assigned tentatively. *Ph. corniger* Dimitrov & Ribera, 2006; *Ph. baldiosensis* Wunderlich, 1992.

Only *Ph. fuerteventurensis* is treated below. For other species see Dimitrov & Ribera (2003, 2006, 2007), Dimitrov *et al.* (2008), and Wunderlich (1987, 1995).

*Pholcus fuerteventurensis* Wunderlich, 1992

Figs. 1746, 1747, 1776, 1777, 1812-1816

*Pholcus fuerteventurensis* Wunderlich 1992: 319-320, figs. 145-155. Campos & Wunderlich 1995: 295-296, fig. 10. Dimitrov & Ribera 2007: 99-102, figs. 251-268.

*Pholcus vachoni* Dimitrov & Ribera 2005b: 4-6, figs. 1-5. Dimitrov & Ribera 2007: 114. Dimitrov *et al.* 2008: 608. New synonymy.

*Justification of synonymy.* *Pholcus vachoni* was described based on a single poorly preserved specimen. Reexamination of the holotype and of new material from near the type locality, and direct comparison with type material of *Ph. fuerteventurensis*, has shown that all characters separating *Ph. fuerteventurensis* and *Ph. vachoni* in the data matrix in Dimitrov & Ribera (2007) were wrongly coded. For example, the appendix has three processes (Fig. 1812; one of which is weakly sclerotized and thus poorly visible in the bleached holotype); the procurus is provided with dorsal spines (they are lost in the *Ph. vachoni* holotype, but their bases are clearly visible).

*Types.* *Pholcus fuerteventurensis*: Male holotype, 2♂4♀ paratypes from Canary Islands, Fuerteventura, Barranco de los Molinos [~28°32'N, 14°03'W], May (year not given) (J. Wunderlich), in SMF (paratypes examined). 1♂2♀ paratypes from Fuerteventura, -8



FIG. 1811. Known distribution of the Macaronesian species group. Black dots: *Ph. fuerteventurensis*. Gray dots: all other species (for details see Dimitrov & Ribera 2007 and Dimitrov et al. 2008). The Madeiran dot is centered on the island and does not reflect the actual known distribution of the Madeiran species.

km N Puerto del Rosario near Guisgüey [ $-28^{\circ}35'N$ ,  $13^{\circ}53'W$ ],  $\sim 350$  m a.s.l., May (year not given) (J. Wunderlich), in MNHN, examined. For further paratypes (not examined), see Wunderlich (1992).

*Pholcus vachoni*: Male holotype from Morocco, Maroc-Sud, Agadir [ $30^{\circ}24'N$ ,  $9^{\circ}35'W$ ] (not "S of Agadir" as in Dimitrov & Ribera 2005b), v.1939 (L. Berland), in MNHN (AR 10298), examined.

**Diagnosis.** Distinguished from similar eastern Macaronesian species (*Ph. anachoreta*, *Ph. edentatus*, *Ph. guadarfia*) by male palpal morphology (Figs. 1812, 1813; procurus, trochanter apophysis, bulbal processes) and female genitalia (Figs. 1776, 1815); see also Dimitrov & Ribera (2007).

**Male** (Laayoune). Total body length 4.6, carapace width 1.4. Leg 1: 31.9 ( $8.2 + 0.6 + 8.1 + 13.3 + 1.7$ ), tibia 2: 5.8, tibia 3: 3.8, tibia 4: 5.4; tibia 1 L/d: 55. Habitus as in Figs. 1746 and 1747. Carapace ochre-yellow with distinctive light brown pattern posteriorly, ocular area and clypeus not darkened except light brown mark below AME, sternum pale ochre-yellow, margins darker, very indistinct darker marks behind labium and posteriorly medially, legs ochre-

yellow, tips of femora and tibiae whitish, indistinct darker rings subdistally on femora and tibiae and in patella area, abdomen pale ochre-gray with five pairs of darker marks dorsally. Distance PME-PME 250  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 70  $\mu$ m. Ocular area elevated,  $\sim 10$  stronger hairs per side posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1814, with relatively long distal frontal apophyses with two modified hairs each (fig. 260 in Dimitrov & Ribera 2007) and proximal frontal and lateral apophyses. Sternum wider than long (1.0/0.7), unmodified. Palps as in Figs. 1812 and 1813, coxa unmodified, trochanter with long straight retrolatero-ventral apophysis, femur without dorsal modification but with large ventral hump, procurus with distinctive distal structures, two short spines dorsally, large bulb with narrow uncus, embolus proximally slightly sclerotized, distally membranous, appendix with three lobes, one pointed, one flat but sclerotized, one flat and membranous. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolater-

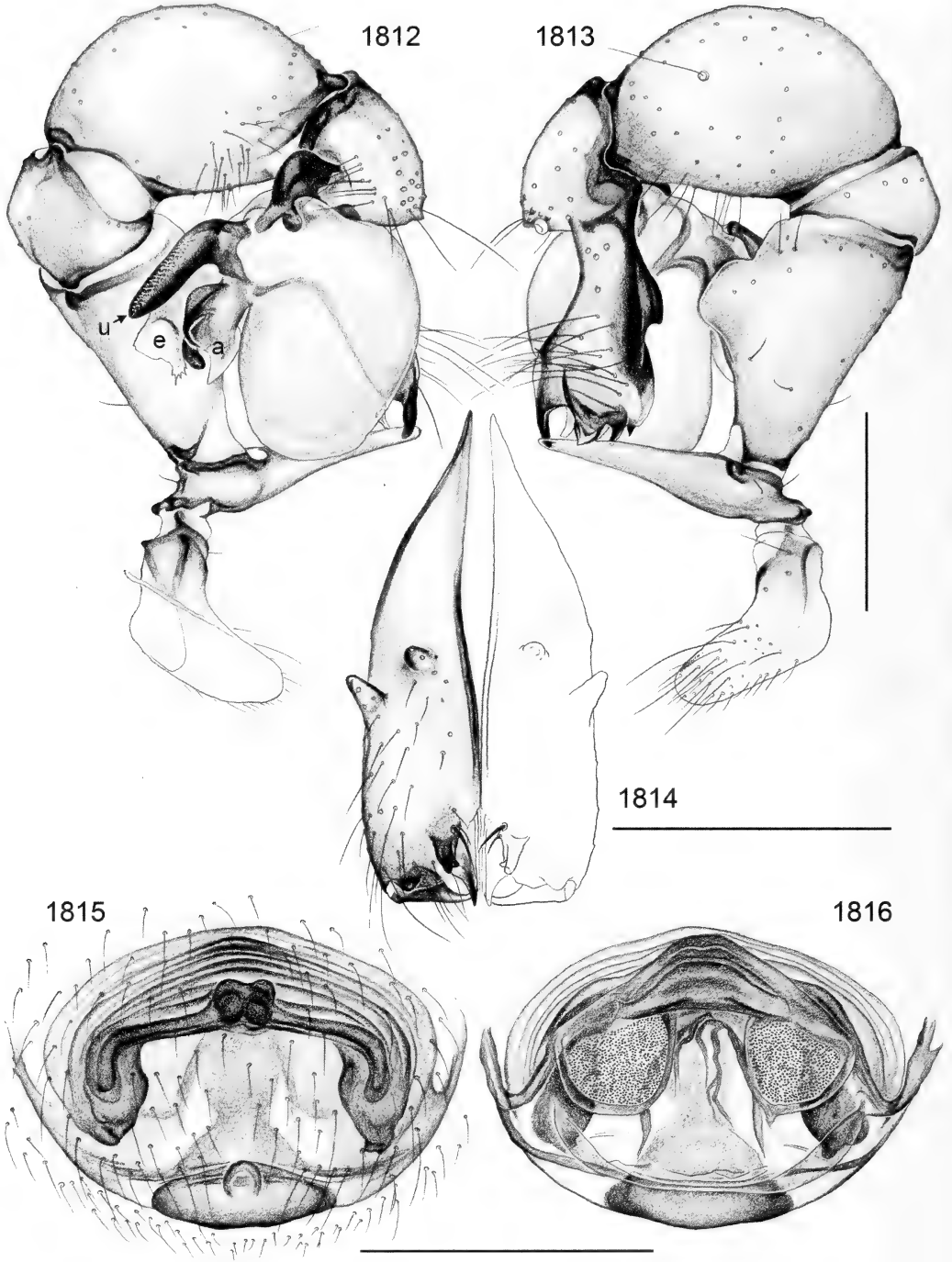


FIG. 1812-1816. *Pholcus fuerteventurensis*. 1812, 1813. Left male palp, prolateral and retrolateral views. 1814. Male chelicerae, frontal view. 1815, 1816. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

eral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally ~10 visible in dissecting microscope.

*Variation.* Tibia 1 in 8 other males: 7.9-9.9 (mean 8.9). The extent of the carapace pattern varies slightly.

*Female.* In general similar to male, triads slightly closer (distance PME-PME 205  $\mu$ m), light brown mark on sternum sometimes larger, with branches reaching margins. Tibia 1 in 6 females: 7.3-8.3 (mean 7.6). Epigynum relatively small, mostly weakly sclerotized, distinctive internal structures visible through cuticle (especially paired median structure anteriorly), posteriorly with very small sclerotized triangular sclerite with small 'knob' (Figs. 1776, 1815); internal genitalia as in Figs. 1777 and 1816.

*Distribution.* Known from the Canary Islands, Morocco, and Western Sahara (Fig. 1811).

*Material examined.* SPAIN-CANARY ISLANDS:

*Fuerteventura:* Barranco de los Molinos: 2♂4♀ *Ph. fuerteventurensis* paratypes above; ~8 km N Puerto del Rosario near Guisguy: 1♂2♀ *Ph. fuerteventurensis* paratypes above. Barranco de la Torre [-28°22'N, 13°54'W], 30.i.2003 (D. Dimitrov), 1♂1♀ in CRBA. Triguivijate [-28°26'N, 13°58'W], "AN 2160, 4707-174", no date (N. Macias), 1♂1♀ (2 vials) in CRBA.

MOROCCO: Maroc-Sud, Agadir: ♂ *Ph. vachoni* holotype above. Tan Tan, 10 km S Tan Tan plage [-28°21'N, 11°20'W], stones in grassland in dry oued, 11.ii.2007 (R. Bosmans), 1♂1♀ in CRB.

WESTERN SAHARA: Laayoune [El Aaiún], 40 km S Tarfaya [-27°30'N, 12°54'W], stones along road in stony desert, 11.ii.2007 (R. Bosmans), 2♂2♀ in CRB.

#### *Pholcus phalangoides* species group

*Diagnosis.* Medium-sized to large, long-legged *Pholcus* (body length ~4-7, leg 1:~25-50); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, abdomen long oval to cylindrical, without cuticular pattern, procurus with dorsal spines, appendix branched, with branch arising from distinctive membranous lamina parallel to basal part of appendix (e.g., Figs. 1819, 1828, 1829, 1831, 1834, 1838), sclerotized epigynum with 'knob'.

*Description.* Body length ~4-7, carapace width 1.3-1.9. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae

with distal apophyses provided with two modified hairs each (more in *Ph. turcicus*) and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis and ventral hump of variable shape, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', with 2-3 dorsal spines. Male bulb with uncus, weakly sclerotized embolus, appendix branched, with branch arising from distinctive membranous lamina parallel to basal part of appendix. Legs long, tibia 1 in males ~7.5-13, tibia 1 L/d ~55-60, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-6% (8% in *Ph. turcicus*). Abdomen long oval to cylindrical, without cuticular pattern, male gonopore with four epiandrous spigots, ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size and leg length as in males, chelicerae unmodified. Epigynum with 'knob', internal genitalia with pair of large round to oval pore-plates.

*Monophyly.* The species share the branched appendix with branch arising from distinctive membranous lamina parallel to basal part of appendix (e.g., Figs. 1828, 1838, 1856). However, this similarity is difficult to distinguish from comparable structures in other species (e.g., *Ph. calligaster* species group), so the monophyly is considered tentative and requires further analysis.

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), the procurus with dorsal spines (char. 38), and the branched appendix (char. 57) place this group in a polytomy together with other mostly Palaearctic *Pholcus* species groups (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure.

*Natural history.* Most species have been collected from small caves, under large stones, rocks, and overhangs, either in forests or in semiarid regions (Senglet 1974, 2008). *Pholcus alticeps* and *Ph. phalangoides* also occur in buildings. As a result, *Ph. phalangoides* has attained a worldwide distribution and has in many respects become the best known pholcid spider (references see above, general section on *Pholcus*).

*Distribution.* The group is largely restricted to eastern Turkey and Iran (Fig. 1817). *Pholcus alticeps* and *Ph.*

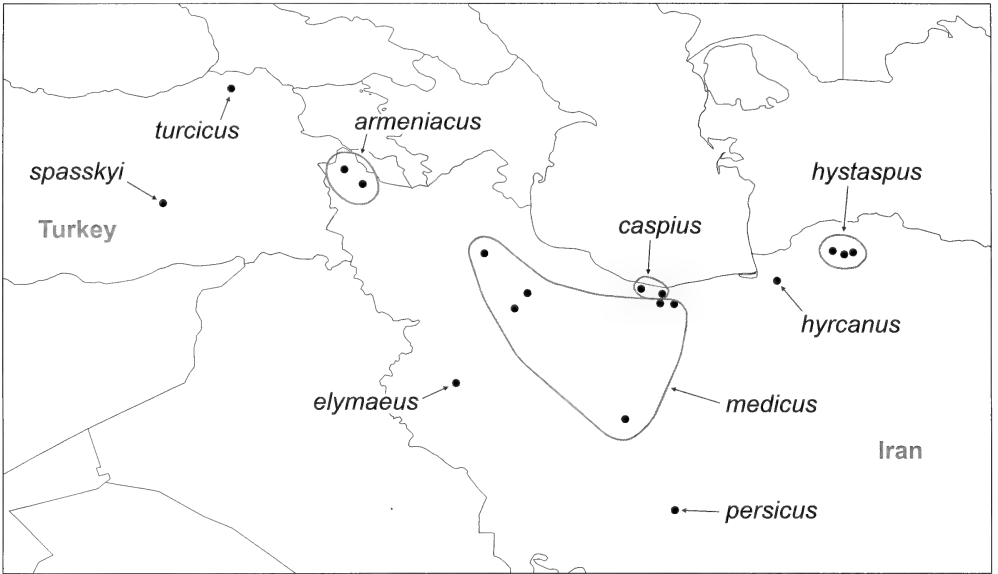


FIG. 1817. Known distribution of the *Pholcus phalangioides* species group (the cosmopolitan *Ph. phalangioides* is excluded; for *Ph. alticeps*, see Fig. 1818).

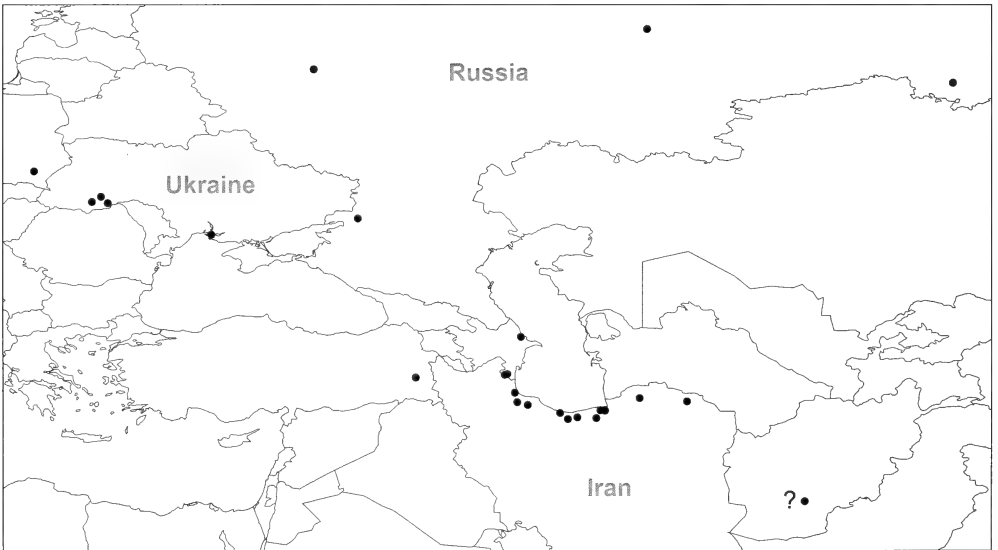


FIG. 1818. Known distribution of *Pholcus alticeps*; the question mark denotes the dubious record in Denis (1958).

*phalangioides* have much wider distributions, presumably as a result of human transport (Fig. 1818; worldwide distribution of *Ph. phalangioides* not shown).

*Composition.* The group includes eleven previously named species: *Ph. phalangioides* (Fuesslin, 1775); *Ph. armeniacus* Senglet, 1974; *Ph. hyrcanus* Senglet, 1974; *Ph. medicus* Senglet, 1974; *Ph. hystaspus* Sen-

glet, 2008; *Ph. persicus* Senglet, 1974; *Ph. caspius* Senglet, 2008; *Ph. elymaeus* Senglet, 2008; *Ph. alticeps* Spassky, 1932; *Ph. spasskyi* Brignoli, 1978; *Ph. turcicus* Wunderlich, 1980. Of these, eight are re-described below; for the others, see Senglet (2008).

*Pholcus phalangioides* (Fuesslin, 1775)

Figs. 20, 1760-1762, 1790, 1791, 1819-1822

*Note.* Bonnet (1958) provided an extensive list of references on this species up to 1939 (over five pages), and newer relevant literature can be found in Platnick (2010). The list below shows only the synonyms and a selection of publications with useful figures.

*Aranea phalangoides* [sic!] Fuesslin 1775: 61.

*Aranea meticulosa* Fourcroy 1785: 537. Synonymized by Simon (1874).

*Aranea phalangioides* [sic!]: Fourcroy 1785: 535.

*Aranea phalangioides*: Walckenaer 1802: 213.

*Aranea longipes* Geoffroy 1799: 651. Synonymized by Walckenaer (1837).

*Pholcus phalangioides*: Walckenaer 1805: 80, pl. 8, figs. 79, 80; Wiehle 1953: 43-47, figs. 100-109; Paik 1978a: 227-228, figs. 97.1-9; Roberts 1985: 64, fig. 21a; Wunderlich 1987: 69, figs. 48-54; Chikuni 1989: 28, fig. 4; Uhl 1994: 1-12, figs. 1-9; Uhl, Huber & Rose 1995: 1-9, figs. 1-12.

*Pholcus nemastomoides* C.L. Koch 1837: 97-99, pl. 136, fig. 312. Synonymized by Simon (1874).

*Pholcus atlanticus* Hentz 1850: 284-285, pl. 10, fig. 7. Synonymized by Emerton (1876; see Keyserling 1877). See *Note* below.

*Pholcus americanus* Nicolet 1849: 463-464, pl. 4, figs. 8, 8a-d; Pickard- Cambridge 1899: 20. Tentatively synonymized by Keyserling 1877.

"*Pholcus opilionoides*" (misidentifications): Westring 1862: 296 (not seen) (see Simon 1874); Simon 1866: 120-121, pl. 2 figs. 1-7 (see Simon 1874).

*Pholcus litoralis* L. Koch 1867: 193-194; L. Koch 1872: 285-287, pl. 24, figs. 1, 1a-g; Rainbow 1905: 22-23, fig. 3 (not seen). Synonymized by Huber (2001).

*Pholcus dubiomaclulatus* Mello-Leitão 1918: 116-118, figs. 31-32. Synonymized by Huber (2000).

*Pholcus communis* Piza 1938: 22-23, figs. 1-4. Synonymized by Soares (1944).

*Pholcus lambertoni* Millot 1946: 131-132, figs. 3a-b. New synonymy.

*Misidentifications.* Barrion & Litsinger 1995: 37, figs. 13a-e (see *Pholcus arayat*); Doleschall (1859), (see Simon 1893a: 475).

Dubious citations for India: Leardi Airaghi 1902: 348; Majumder & Biswas 1992: 2.

*Types.* *Pholcus phalangioides*: type material from wine cellars in Switzerland, Geneva [46°12'N, 6°08'E], most probably lost.

*Aranea meticulosa*: type material from France, Paris, probably lost.

*Aranea longipes*: type material probably from France, Paris, probably lost.

*Pholcus nemastomoides*: several syntypes from Greece, Nauplion [37°34'N, 22°48'E], collected by Schuch, depository unknown.

*Pholcus atlanticus*: 1♀(?) from USA, Alabama, entrance of limestone cave, June (N.M. Hentz), probably lost.

*Pholcus americanus*: unknown number of syntypes from Chile, no further data, depository unknown.

*Pholcus litoralis*: 4♀ 6 juv. syntypes from Australia, Queensland, Brisbane, in ZMH, partly examined (Huber 2001).

*Pholcus dubiomaclulatus*: 2♂ 1 juv. syntypes from Brazil, Rio de Janeiro, in MNRJ, examined (Huber 2000).

*Pholcus communis*: 12♂31♀ syntypes from Brazil, São Paulo, Piracicaba [22°44'S, 47°39'W], no date (S.T. Piza), depository unknown.

*Pholcus lambertoni*: ♀ holotype from Madagascar, "Tanararive" [Antananarivo, 18°55'S, 47°31'E], ix.1945 (J. Millot), in MNHN, examined.

*Justification of synonymy.* The holotype of *Ph. lambertoni* was compared directly with specimens from Europe and was found to be identical in all details of genital structure and color pattern. The female was collected in a house, and no other species of *Pholcus* has ever been collected on Madagascar.

*Note.* *Pholcus atlanticus* Hentz, 1850 was synonymized with *Ph. phalangioides* by Emerton (1876) but it might actually be a valid species. Hentz (1850) cites as habitat "Alabama, at the entrance of limestone caves", which is exactly the locality where some of the US-species newly described herein (e.g., *Ph. koasati*, *Ph. choctaw*, *Ph. dixie*) originate. However, Hentz also observed the species "in the dark corners of the ceilings of uninhabited houses", suggesting that he might have dealt with more than one species.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1819, 1820; procurrus with distinctive sclerites distally; bent appendix) and female genitalia (Figs. 1790, 1821; shape of epigynum).

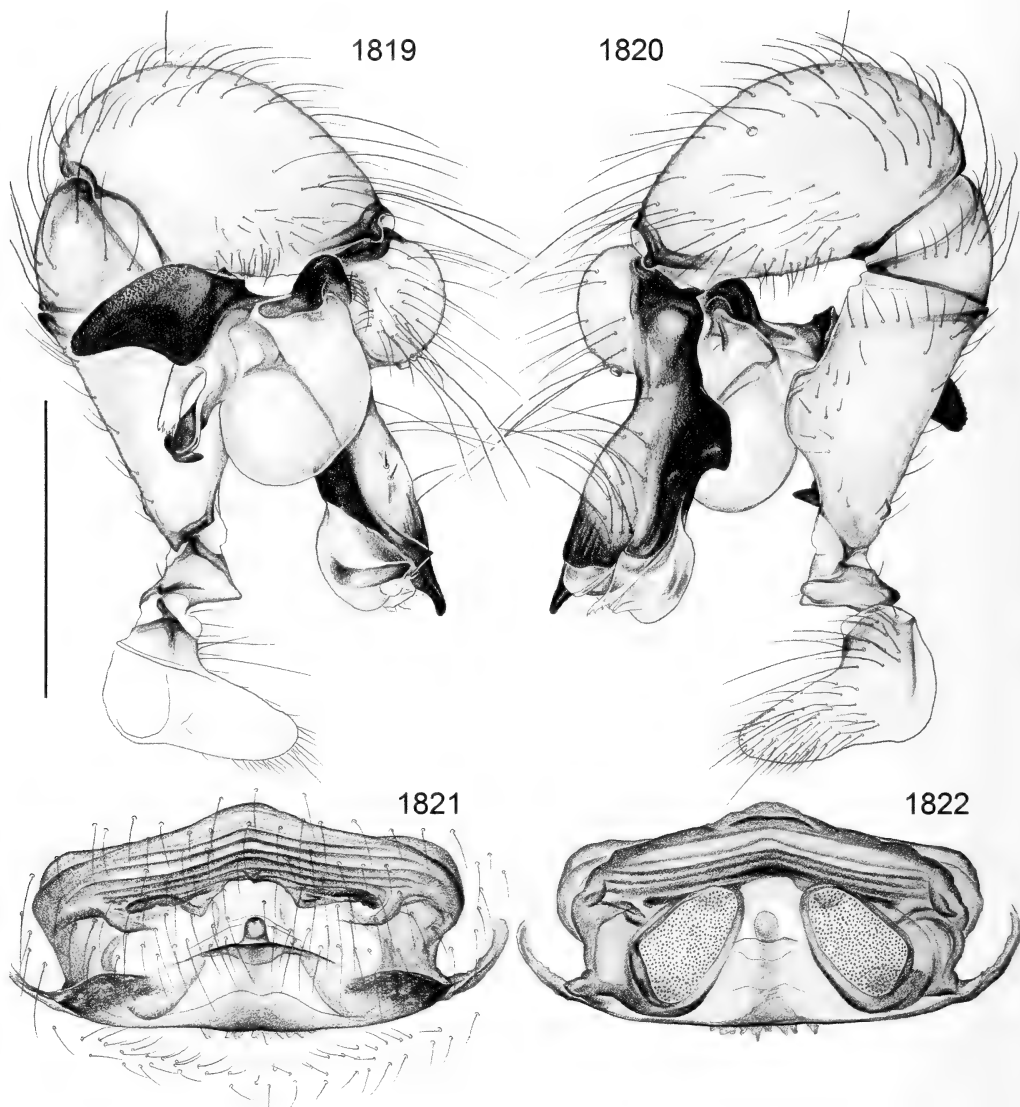


FIG. 1819-1822. *Pholcus phalangioides*. 1819, 1820. Left male palp, prolateral and retrolateral views. 1821, 1822. Cleared female genitalia, ventral and dorsal views. Scale line: 1.0.

*Male* (Germany, Bonn). Total body length 6.7, carapace width 1.85. Leg 1: 45.1 (11.2 + 0.9 + 11.5 + 18.8 + 2.7), tibia 2: 8.4, tibia 3: 6.0, tibia 4: 7.7; tibia 1 L/d: 59. Habitus as in Figs. 1760 and 1761. Carapace ochre-yellow with distinct brown median mark slightly divided medially, ocular area and clypeus not darkened, sternum light brown with darker margins and indistinct lighter areas near

coxae, legs ochre-yellow, tips of femora and tibiae lighter, very indistinct darker rings subdistally on femora and tibiae and in patella area, anterior femora also proximally slightly darkened frontally; abdomen monochromous ochre-gray (Figs. 1760 and 1761 show a recently molted specimen with many darker internal spots visible through cuticle), genital area light brown mark. Distance PME-PME



405 µm, diameter PME 175 µm, distance PME-ALE 45 µm, distance AME-AME 35 µm, diameter AME 95 µm. Ocular area slightly elevated, each triad slightly projecting laterally, ~40 longer hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae with distal frontal apophyses with modified hairs and proximal frontal and lateral apophyses. Sternum wider than long (1.3/1.0), unmodified. Palps as in Figs. 1819 and 1820, coxa unmodified, trochanter with short ventral and longer retrolateral apophyses, femur with small retrolatero-dorsal hump proximally, ventrally widened with distinct protuberance, large tibia, procurus distally with distinctive sclerite embedded in large membranous ventral area, with two prolatero-dorsal spines, bulb with large uncus, weakly sclerotized embolus, hooked appendix with branch originating from membranous basis. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments very indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 24 other males: 8.9-12.5 (mean 10.6).

*Female.* In general very similar to male, triads closer together (distance PME-PME 255 µm); leg length very similar to males: tibia 1 in 21 females: 8.3-14.0 (mean 10.6). Epigynum a narrow transverse sclerite with roughly triangular median part and frontal 'knob', internal arc variously well visible through cuticle anteriorly (often seemingly divided medially) (Figs. 1790, 1821); internal genitalia as in Figs. 1791 and 1822. The holotype of *Ph. lambertoni* is in fair condition, with abdomen and several legs detached and slightly bleached; tibia 1: 8.3.

*Distribution.* Widely distributed in temperate and subtropical areas around the world. I have not made an effort to borrow *Ph. phalangioides* and can therefore not comment on its fine scale distribution.

*Material examined.* Given the worldwide distribution of the species, I only list the countries from which I had specimens available for the current study: USA, Mexico, Peru, Brazil, Paraguay, Uruguay, Argentina, Chile, Portugal (Madeira), Spain (mainland and Canary Isl.), France, Switzerland, Germany, Denmark, Italy, Bulgaria, Turkey, Ukraine, Morocco, South Africa, Madagascar, Iran, Japan, Vanuatu, Australia, and New Zealand.

*Pholcus armeniicus* Senglet, 1974

Figs. 1748-1750, 1778, 1779, 1823-1828

*Pholcus armeniicus* Senglet 1974: 810-811, figs. 29-34, 37. Senglet 2001: fig. 37. Senglet 2008: 358.

*Types.* Male holotype and 3♂6♀ paratypes from Iran, West Azarbaijan Prov., Mākū (label: 39°16'N, 44°38'E; Senglet 1974: 39°12'N, 44°30'E), 16. ix.1973 (A. Senglet), in MHNG, examined.

*Diagnosis.* Distinguished from very similar species (*Ph. medicus*, *Ph. hyrcanus*, *Ph. hystaspus*) by details of appendix (Fig. 1828) and female genitalia (Figs. 1778, 1827; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.7, carapace width 1.8. Leg 1: 38.5 (9.6 + 0.8 + 10.0 + 15.8 + 2.3), tibia 2: 7.3, tibia 3: 5.4, tibia 4: 7.1; tibia 1 L/d: 57. Habitus as in Figs. 1748 and 1749. Carapace ochre-yellow with light brown median mark, sternum monochromous, only margins darker, legs monochromous but femora 1 and 2 proximally reddish-brown (frontally), abdomen monochromous ochre-gray. Distance PME-PME 515 µm, diameter PME 115 µm, distance PME-ALE 35 µm, distance AME-AME 45 µm, diameter AME 90 µm. Ocular area elevated, many stronger hairs posteriorly, each triad on low elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1825, distal apophyses with modified hairs and some stronger hairs medially, two pairs of weakly sclerotized apophyses proximally. Sternum wider than long (1.10/0.85), unmodified. Palps as in Figs. 1823 and 1824, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small dorsal apophysis proximally and ventral protuberance, procurus rather simple, with three prolatero-dorsal spines, uncus long and slender, embolus weakly sclerotized, appendix consisting of two branches, prolateral branch proximally membranous and attached to retrolateral branch, distally sclerotized with two tips (Fig. 1828). Legs without spines and curved hairs, few vertical hairs (in rows on tibiae, barely visible in dissecting microscope); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 10.7, 10.9.

*Female.* Very similar to male, ocular area lower, triads closer together (distance PME-PME 320 µm), femora not reddish-brown proximally. Tibia 1 in 5

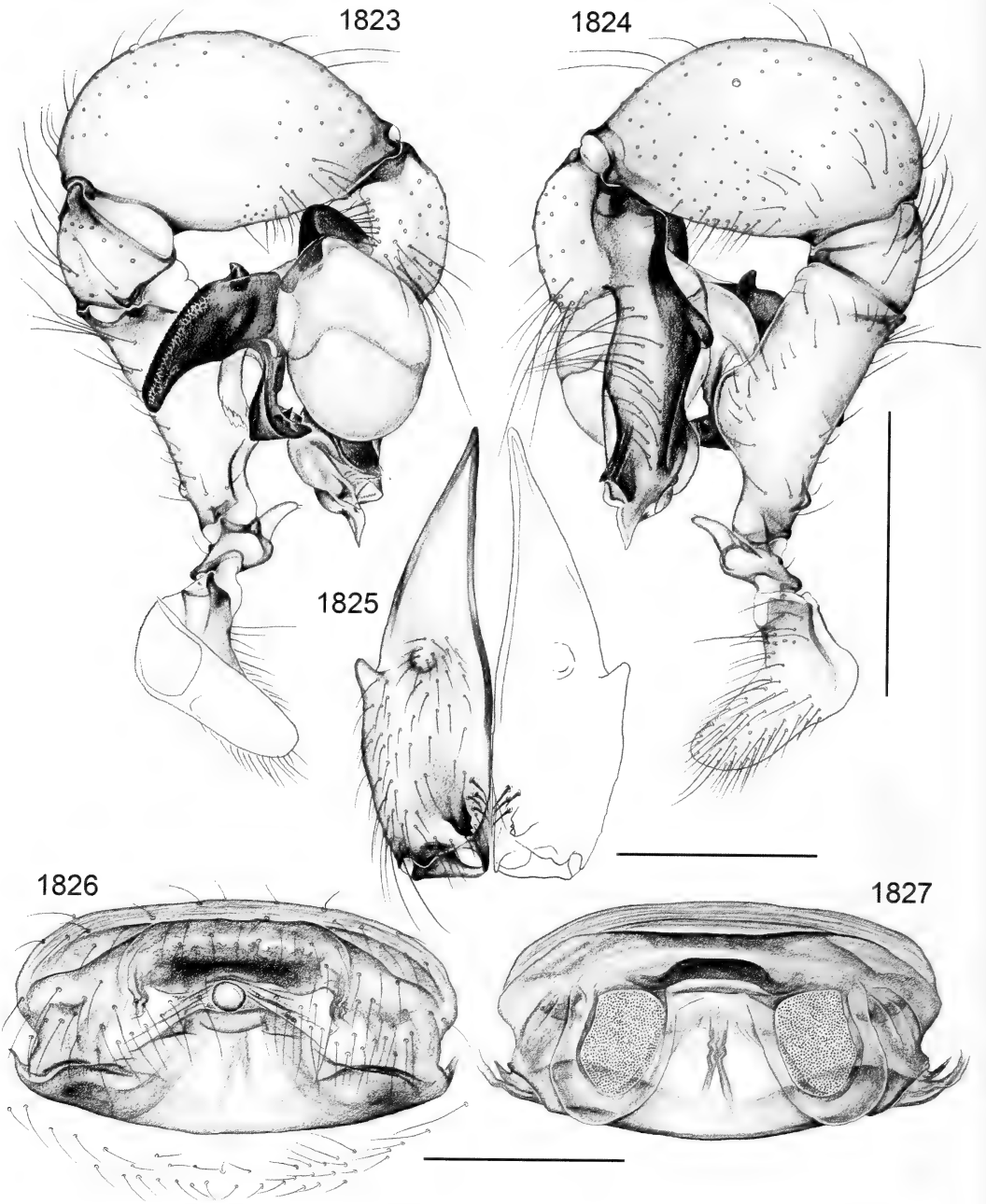


FIG. 1823-1827. *Pholcus armeniacus*. 1823, 1824. Left male palp, prolateral and retrolateral views. 1825. Male chelicerae, frontal view. 1826, 1827. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0

females: 10.0-11.2 (mean 10.6). Epigynum weakly elevated, anteriorly with internal arc visible through cuticle, narrow posterior plate with 'knob' (Figs. 1778, 1826); internal genitalia as in Figs. 1779 and 1827.

*Distribution.* Known from two localities in Iran, West Azarbaijan Prov. (type locality and further locality in Senglet 2008) (Fig. 1817).

*Material examined.* IRAN: West Azarbaijan Prov.: Mākū: ♂ holotype and 3♂6♀ paratypes above.

*Pholcus hyrcanus* Senglet, 1974

Figs. 1751, 1780, 1781, 1829, 1830

*Pholcus hyrcanus* Senglet 1974: 806-807, figs. 1-8, 36.

*Types.* Male holotype and 3♂4♀ paratypes from Iran, Māzanderān Prov., Naharkorān / Gorgān (36°44'N, 54°29'E), 20.vii.1973 (A. Senglet), in MHNG, examined.

*Diagnosis.* Distinguished from very similar species (*Ph. armeniacus*, *Ph. medicus*, *Ph. hystaspus*) by details of appendix (Fig. 1829) and female genitalia (Figs. 1780, 1830; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.2, carapace width 1.8. Leg 1: 41.3 (10.1 + 0.8 + 10.7 + 17.0 + 2.7), tibia 2: 7.9, tibia 3: 5.6, tibia 4: 7.3; tibia 1 L/d: 62. Habitus as in Fig. 1751. Carapace ochre-yellow with light brown median mark widened posteriorly, sternum light brown with large light marks near bases of coxae, margins dark brown, legs monochromous but femora 1 and 2 proximally reddish-brown (frontally), abdomen monochromous ochre-gray. Distance PME-PME 460 μm, diameter PME 135 μm, distance PME-ALE 35 μm, distance AME-AME 35 μm, diameter AME 90 μm. Ocular area elevated, many stronger hairs posteriorly, each triad on low elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. armeniacus* (cf. Fig. 1825), apparently with three modified hairs on each distal apophysis. Sternum wider than long (1.1/0.9), unmodified. Palps in general very similar to *Ph. armeniacus* (cf. Figs. 1823, 1824), ventral protrusion of femur slightly different shape (compare figs. 3 and 29 in Senglet 1974), procurus with two prolatero-dorsal spines, procurus tip and uncus almost identical to *Ph. armeniacus*, appendix slightly different (Fig. 1829). Legs without spines and curved hairs, few vertical hairs (in rows on tibiae, barely visible in dissecting microscope); retrolateral

trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 9.2, 10.7.

*Female.* Very similar to male, ocular area lower, triads closer together (distance PME-PME 250 μm), femora not reddish-brown proximally. Tibia 1 in 5 females: 10.0-11.2 (mean 10.6). Epigynum weakly elevated, anteriorly with internal arc visible through cuticle, posterior plate slightly less narrow than in *Ph. armeniacus*, with 'knob' (Fig. 1780); internal genitalia as in Figs. 1781 and 1830.

*Distribution.* Known from type locality only (Fig. 1817).

*Material examined.* IRAN: Māzanderān Prov.: Naharkorān / Gorgān: ♂ holotype and 3♂4♀ paratypes above.

*Pholcus medicus* Senglet, 1974

Figs. 1752, 1753, 1782, 1783, 1831, 1832

*Pholcus medicus* Senglet 1974: 808-810, figs. 23-28, 39, 40. Senglet 2008: 358, figs. 47, 48.

*Types.* Male holotype and 2♂1♀ paratypes from Iran, Zanjan Prov. [not Guilān as in Senglet 1974], Solta-nieh (36°27'N, 48°48'E), 14.ix.1973 (A. Senglet), in MHNG, examined. 1♀ paratype from Zanjan Prov., Karasf (36°06'N, 48°30'E), 14.ix.1973 (A. Senglet), in MHNG, examined. 1♀ paratype from Esfahan Prov. (not Tehrān as in Senglet 1974), 50 km S [actually SE] of Delidjān (33°35'N, 51°01'E), 24.viii.1973 (A. Senglet), in MHNG, examined.

*Diagnosis.* Distinguished from very similar species (*Ph. armeniacus*, *Ph. hyrcanus*, *Ph. hystaspus*) by details of appendix (Fig. 1831) and female genitalia (Figs. 1782, 1832; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 4.9, carapace width 1.6. Leg 1: 31.3 (8.1 + 0.7 + 8.2 + 12.4 + 1.9), tibia 2: 6.1, tibia 3: 4.5, tibia 4: 5.8; tibia 1 L/d: 54. Habitus as in Figs. 1752 and 1753. Carapace ochre-yellow with light brown median mark, sternum monochromous, only margins darker, legs monochromous but femora 1 and 2 proximally reddish-brown (frontally), abdomen monochromous ochre-gray. Distance PME-PME 415 μm, diameter PME 115 μm, distance PME-ALE 35 μm, distance AME-AME 30 μm, diameter AME 75 μm. Ocular area elevated, many stronger hairs posteriorly, each triad on low elevation directed laterally. No tho-

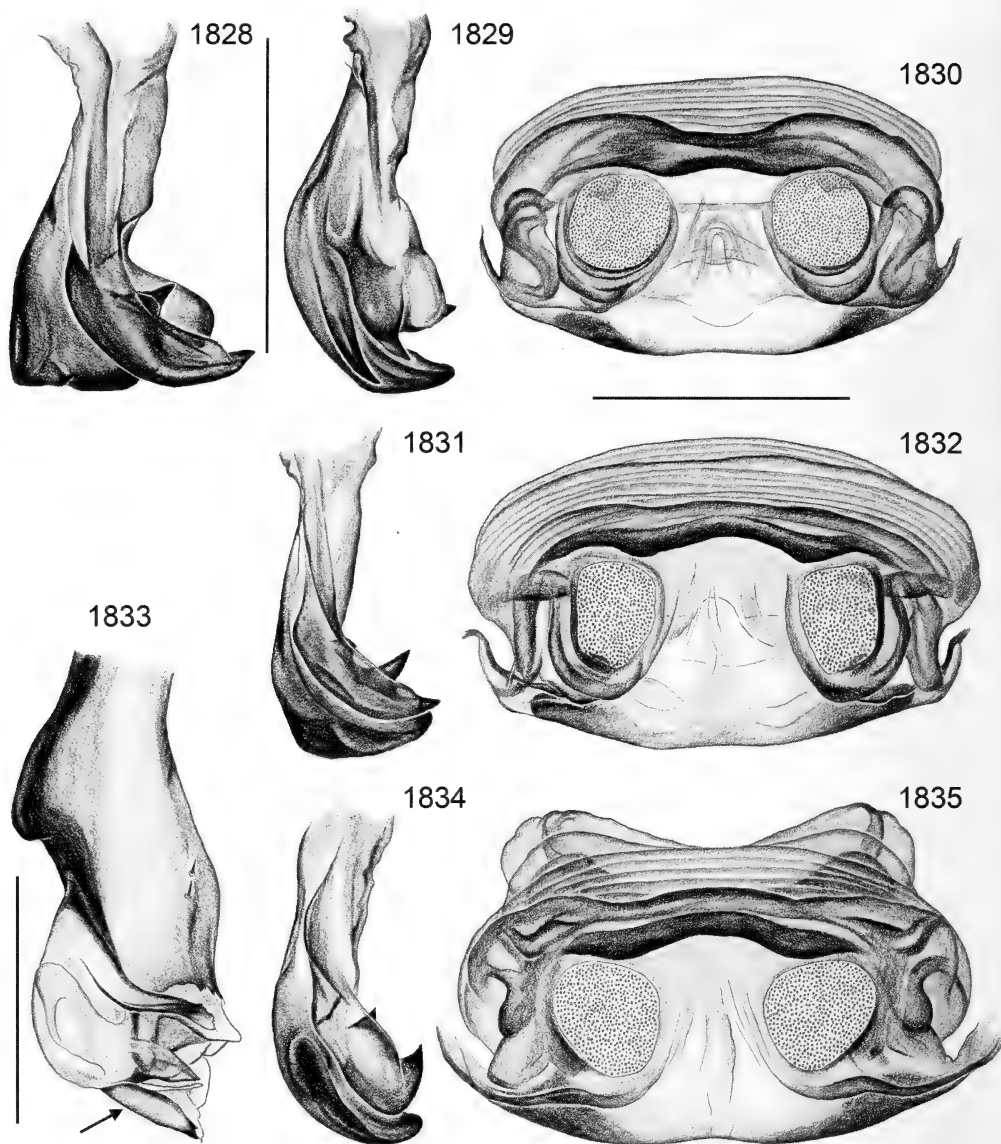


FIG. 1828-1835. Bulbal appendices in prolatero-dorsal views (1828, 1829, 1831, 1834; all at same scale), left procurus in prolateral view (1833) and cleared female genitalia in dorsal views (1830, 1832, 1835; all at same scale). 1828. *Ph. armeniacus*. 1829, 1830. *Ph. hyrcanus*. 1831, 1832. *Ph. medicus*. 1833-1835. *Ph. persicus* (arrow points at distinctive sclerite). Scale lines: 0.5 (1830, 1832, 1833, 1835), 0.3 (1828, 1829, 1831, 1834).

racic furrow; clypeus unmodified. Chelicerae as in *Ph. armeniacus* (cf. Fig. 1825). Sternum wider than long (1.05/0.80), unmodified. Palps in general very similar to *Ph. armeniacus* (cf. Figs. 1823, 1824),

procurus with two prolatero-dorsal spines, procurus tip and uncus almost identical to *Ph. armeniacus*, appendix slightly different (Fig. 1831). Legs without spines and curved hairs, few vertical hairs (in rows

on tibiae, barely visible in dissecting microscope); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 9.1, 9.5.

*Female.* Very similar to male, ocular area lower, triads closer together (distance PME-PME 285  $\mu$ m), femora not reddish-brown proximally. Tibia 1 in 2 females: 8.5, 8.7. In the female from 50 km SE of Delidjān the sternum is not monochromous but rather light brown with light marks as in *Ph. hyrcanus*. Epigynum weakly elevated, anteriorly with internal arc visible through cuticle, posterior plate as in *Ph. hyrcanus* (not as narrow as in *Ph. armeniacus*), with 'knob' (Fig. 1782); internal genitalia as in Figs. 1783 and 1832.

*Distribution.* Known from several localities in north-eastern Iran (type data above plus localities in Senglet 2008) (Fig. 1817).

*Material examined.* IRAN: *Zanjan Prov.*: Soltanieh: ♂ holotype and 2♂1♀ paratypes above; Karasf: 1♀ paratype above. *Esfahan Prov.*: 50 km SE of Delidjān: 1♀ paratype above.

*Pholcus persicus* Senglet, 1974

Figs. 1754, 1784, 1785, 1833-1835

*Pholcus persicus* Senglet 1974: 807-808, figs. 15-22, 38.

*Types.* Male holotype and 1♂5♀ paratypes from Iran, Fārs Prov., Izad Khāst (31°31'N, 52°09'E), 16. viii.1973 (A. Senglet), in MHNG, examined.

*Diagnosis.* Distinguished from very similar species (*Ph. armeniacus*, *Ph. hyrcanus*, *Ph. hystaspus*, *Ph. medicus*) by male palpal morphology (Figs. 1833, 1834; tip of procurus with distinctive sclerite, appendix shape) and female genitalia (Figs. 1784, 1835; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.0, carapace width 1.8. Leg 1: 37.6 (9.8 + 0.7 + 10.1 + 14.8 + 2.2), tibia 2: 7.0, tibia 3: 5.0, tibia 4: 6.8; tibia 1 L/d: 57. Habitus as in Fig. 1754. Carapace ochre-yellow with light brown median mark, sternum monochromous, only margins darker, legs monochromous but femora 1 and 2 proximally reddish-brown (frontally), abdomen monochromous ochre-gray. Distance PME-PME 480  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 20  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 65  $\mu$ m. Ocular area elevated, many stronger hairs posteriorly, each triad on low

elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. armeniacus* (cf. Fig. 1825), apparently with three modified hairs in each distal apophysis. Sternum wider than long (1.05/0.80), unmodified. Palps in general very similar to *Ph. armeniacus* (cf. Figs. 1823, 1824), procurus with two prolatero-dorsal spines and with distinctive distal sclerite (arrow in Fig. 1833), uncus almost identical to *Ph. armeniacus*, appendix slightly different (Fig. 1834). Legs without spines and curved hairs, few vertical hairs (in rows on tibiae, barely visible in dissecting microscope); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, barely visible in dissecting microscope.

*Female.* Very similar to male, ocular area lower, triads closer together (distance PME-PME 255  $\mu$ m), femora not reddish-brown proximally. Tibia 1 in 4 females: 8.3, 8.5, 8.7, 9.8. Epigynum weakly elevated, anteriorly and especially laterally with distinctive internal structures visible through cuticle, narrow posterior plate as in *Ph. armeniacus*, with 'knob' (Fig. 1784); internal genitalia as in Figs. 1785 and 1835.

*Distribution.* Known from type locality only (Fig. 1817).

*Material examined.* IRAN: *Fārs Prov.*: Izad Khāst: ♂ holotype and 1♂5♀ paratypes above.

*Pholcus alticeps* Spassky, 1932

Figs. 1755, 1786, 1787, 1836-1852

*Pholcus alticeps* Spassky 1932: 972-975, figs. 1-6. Denis 1958: 112 (possibly misidentification). Senglet 1974: 804, figs. 9-14, 35. Senglet 2008: 356. Fedoriak 2008a: 244-245. Fedoriak 2008b: figs. 7-9, 19-21.

*Types.* Male and female syntypes ("exempla multa") from Russia, Rostov Oblast, Novochoerkassk [47°25'N, 40°05'E], in houses, no date (S. Spassky), depository unknown, not examined (but see Note below).

*Note.* Spassky's types could not be found in the ZIN collection (unlike some others of his types). However, the two females from an unspecified locality in southern Russia (collected by Spassky and donated to the SMF) and the specimens from Novochoerkassk (deposited in the MNHN) might both be part of the type series.

*Diagnosis.* Easily distinguished from congeners by distinctive process on appendix (Figs. 1838, 1848;

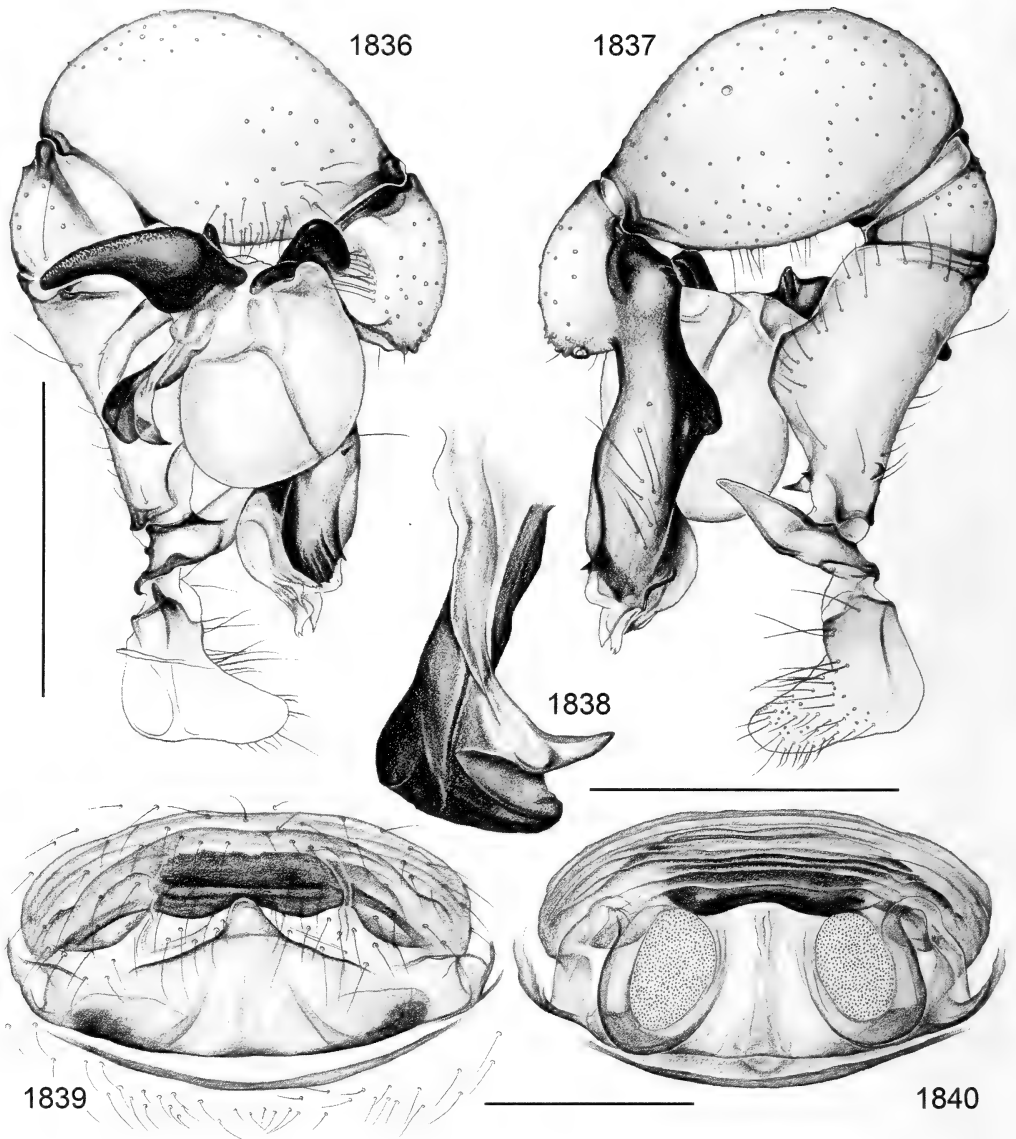


FIG. 1836-1840. *Pholcus alticeps*. 1836, 1837. Left male palp, prolateral and retrolateral views. 1838. Bulbal appendix, prolatero-dorsal view. 1839, 1840. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1836, 1837), 0.5 (1839, 1840), 0.3 (1838).

also illustrated by Spassky 1932, figs. 2, 6); also by shapes of procurus (Fig. 1837) and female genitalia (Figs. 1786, 1840; shapes of epigynum and internal structures).

*Male* (type locality). Total body length 5.0, carapace width 1.7. Leg 1: 38.8 (9.8 + 0.8 + 10.1 + 15.7 +

2.4), tibia 2: 7.2, tibia 3: 5.3, tibia 4: 7.0; tibia 1 L/d: 57. Habitus as in Fig. 1755. Carapace ochre-yellow with brown median mark widening posteriorly, sternum and legs monochromous ochre-yellow, abdomen monochromous ochre-gray. Distance PME-PME 440  $\mu$ m, diameter PME 140  $\mu$ m, distance

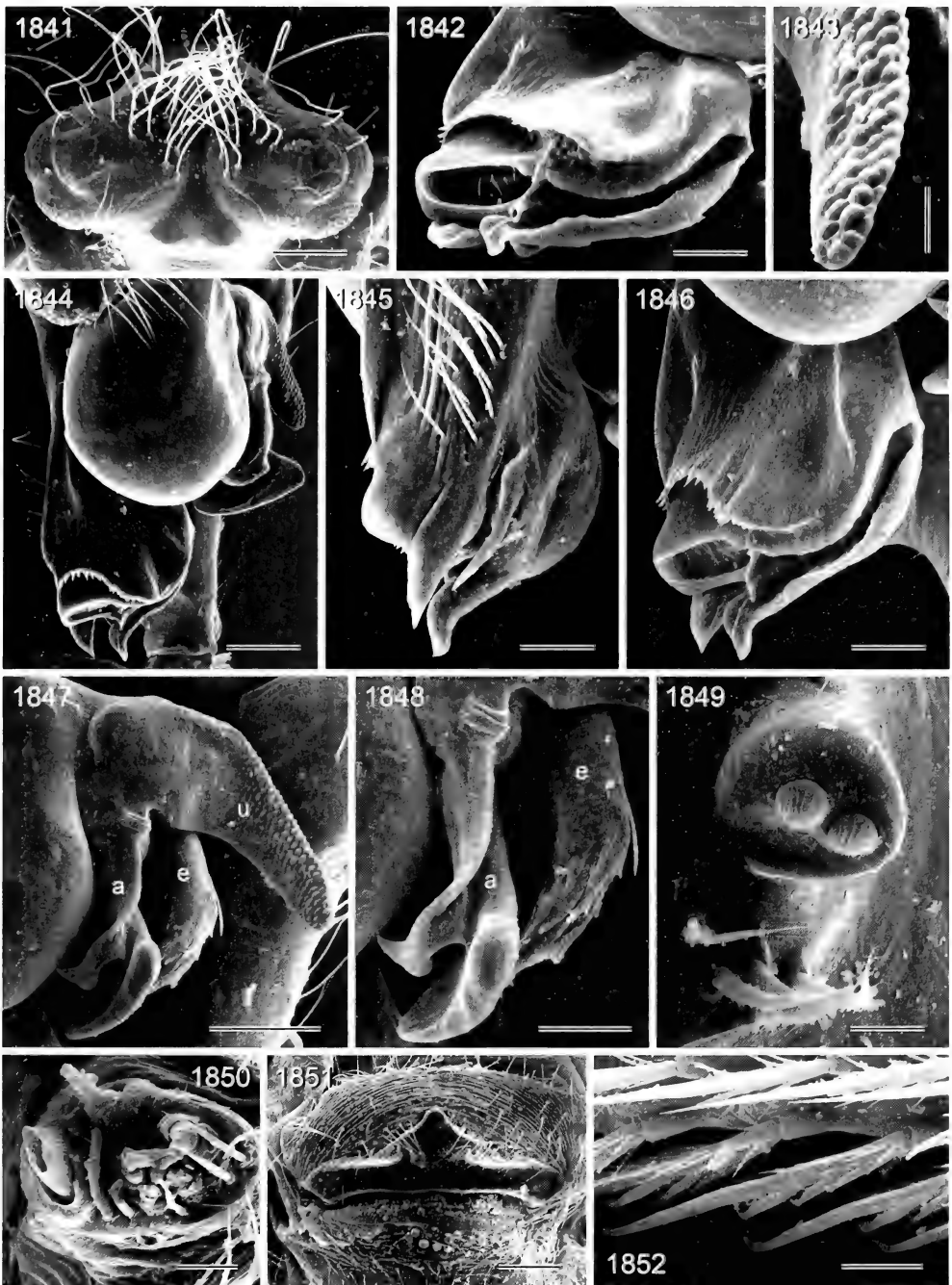


FIG. 1841-1852. *Pholcus alticeps*. 1841. Male ocular area, dorsal view. 1842. Right procurus tip, distal view. 1843. Right uncus tip, prolateral view. 1844. Right bulb and procurus, dorsal view. 1845. Left procurus, retrolateral view. 1846. Right procurus, prolateral view. 1847, 1848. Right bulbal processes, prolateral views. 1849. Distal male cheliceral apophysis. 1850. Female ALS. 1851. Epigynum. 1852. Comb-hairs on right female tarsus 4. Scale lines: 200  $\mu\text{m}$  (1841, 1844, 1847, 1851), 100  $\mu\text{m}$  (1842, 1845, 1846, 1848), 40  $\mu\text{m}$  (1843), 20  $\mu\text{m}$  (1849, 1850, 1852).



PME-ALE 35  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 90  $\mu\text{m}$ . Ocular area slightly elevated, many stronger hairs posteriorly (Fig. 1841). No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. armeniacus* (cf. Fig. 1825), with two modified hairs in each distal apophysis (Fig. 1849). Sternum wider than long (1.15/1.00), unmodified. Palps as in Figs. 1836 and 1837, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small dorsal apophysis proximally and large ventral protuberance, procurus rather simple, with two tiny dorsal spines, complex distally (Figs. 1842, 1844-1846), uncus long and slender; embolus weakly sclerotized, appendix with distinctive process that is first membranous, then sclerotized and ending in two tips (one tip hidden in Figs. 1838, 1847, 1848; cf. figs. 2 and 6 in Spassky 1932). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments not visible in dissecting microscope.

*Variation.* Tibia 1 in 21 other males: 9.0-11.1 (mean 10.4). Some darker specimens have a light brown sternum with small lighter spots anteriorly and near coxae; AME area often with brown mark (in addition to black pigment); femora proximally sometimes darkened (especially frontally); some males with dark brown chelicerae.

*Female.* Very similar to male, ocular area lower, triads closer together (distance PME-PME 290  $\mu\text{m}$ ). Tibia 1 in 28 females: 8.0-10.9 (mean 9.5); tarsus 4 with single row of comb-hairs (Fig. 1852). Epigynum weakly elevated, anteriorly with internal arc visible through cuticle, simple triangular plate with 'knob' (Figs. 1786, 1839, 1851); internal genitalia as in Figs. 1787 and 1840. ALS with eight spigots each (Fig. 1850).

*Distribution.* Widely distributed from Poland to Iran and Omsk Region, Russia (Fig. 1818). Denis' (1958) record of a single female from Afghanistan needs to be checked.

*Material examined.* RUSSIA: Moscow city [55°45'N, 37°37'E], basement, 17.xii.1993 (S. Esyunin), 2♂4♀ in PSU. *Perm Region:* Perm [58°00'N, 56°15'E], in building, 29.viii.1999 (S. Esyunin), 1♂3♀ in PSU. *Rostov Region:* Novochoerkassk, no further data, 3♂3♀ (syntypes?) in MNHN (Ar 10224). *Omsk Region:* Omsk [54°59'N, 73°22'E], indoor, xii.1995 (S. Kosterin), 1♀ in ZMMU.

POLAND: Rzeszow (50°03'N, 21°59'E), in Univer-

sity, 24.iv.2007 (M. Fedoriak), 2♂3♀ in ZFMK.

UKRAINE: *Chernivtsi Oblast:* Putilski d-t, Pidzacharichi Vil. (48°21'N, 25°13'E), "in/out house", 25.vii.2006 (M. Fedoriak), 1♂2♀ in ZFMK. *Chernivtsi* (48°16'N, 26°07'E), in hospital, 4.vii.2007 (M. Fedoriak), 1♂1♀ in ZFMK. *Ternopil' Oblast:* Zalischiki [Zalishchyky, 48°37.8'N, 25°43.8'E], in hospital, 29.vi.2007 (M. Fedoriak), 2♂2♀ in ZFMK. *Kherson Oblast:* Chernomorsky Reserve, Geroiskoe Vil. [Geroyskoye, 46°31'N, 31°54'E], 20.v.1987 (N. Polchaninova), 1♂ in ZMMU.

TURKEY: Van, Yüzüncü [38°32.8'N, 43°19.3'E], Y.L., University Campus, 15.vi.1996 (T. Danisman), 3♂3♀ in ZFMK.

GEORGIA: "Gorn. Madgievskij", 13.viii.1938 (T. Mkheidze), 1♂ in PSU.

AZERBAIJAN: ~70 km NW of Baku, Galalty Vil. (40°48'N, 49°12'E), ~1000 m a.s.l., 19.iv.2001 (Yu.M. Marusik), 1♂ in ZMMU. Lenkoran Dist., near Aurora Vil. (38°41'N, 48°17'E), 36 m a.s.l., 21.-29.v.2003 (Yu.M. Marusik), 3♂6♀ in ZMMU. Lerik Distr., near Lerik (38°43.8'N, 48°25.7'E), 1200 m a.s.l., 25.v.2003 (E. Guseinov), 1♂2♀ in ZMMU.

IRAN: *Prov. Mázanderán:* Baladeh (36°13'N, 51°49'E), 7.vii.1975 (A. Senglet), 15♂16♀ in MHNG.

Undefined locality: "S-Rußland" [southern Russia], without date (S. Spassky), 2♀ (syntypes?) in SMF (19428/2).

*Pholcus spasskyi* Brignoli, 1978

Figs. 1756-1758, 1788, 1789, 1853-1859

*Pholcus* prope *nenjukovi* Spassky: Brignoli 1972a: 163, figs. 3-8.

*Pholcus spasskyi* Brignoli 1978: 486-489, figs. 60-66.

*Types.* Male holotype and 4♂2♀ paratypes from Turkey, Diyarbakır Prov., Lice District [-38°28'N, 40°32'E], Korkha cave ("grotta inferiore di Korkha"), 23.vi.1968 (P. Brignoli, V. Sbordoni), in MHNG (holotype and 2♂1♀ paratypes, 3 vials, examined), and in "CBL" (collection Brignoli, 1♂1♀, not examined).

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1853-1856); distinctive dorsal apophysis on procurus, shapes of uncus and appendix, and female genitalia (Figs. 1788, 1859; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.4, carapace width 1.7. Leg 1: 38.7 (10.0 + 0.7 + 10.2 + 15.6 +



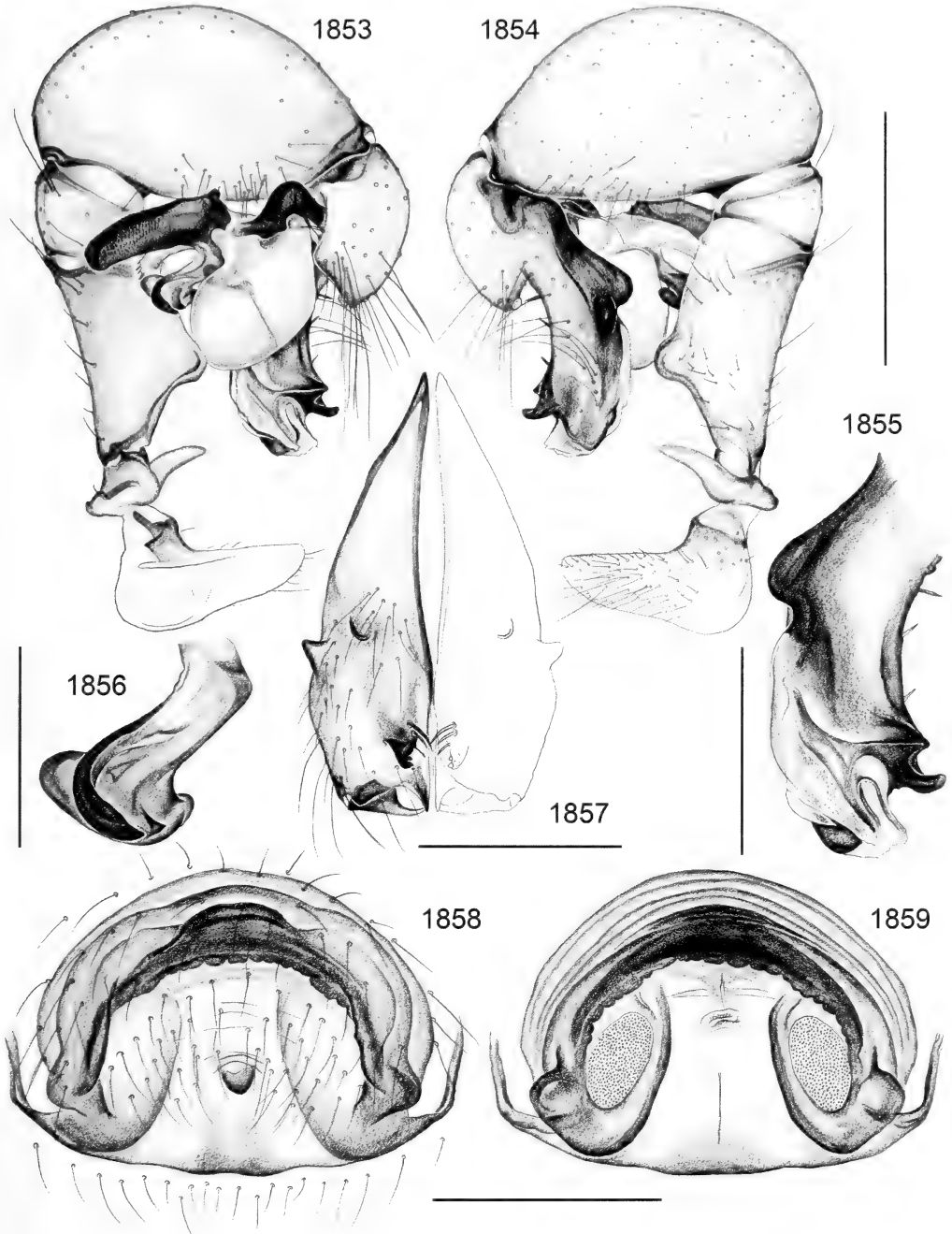


FIG. 1853-1859. *Pholcus spasskyi*. 1853, 1854. Left male palp, prolateral and retrolateral views. 1855. Left procurus, prolateral view. 1856. Bulbal appendix, prolatero-dorsal view. 1857. Male chelicerae, frontal view. 1858, 1859. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (1853, 1854), 0.5 (1855, 1857-1859), 0.3 (1856).

2.2), tibia 2: 7.6, tibia 3: 5.5, tibia 4: 7.1; tibia 1 L/d: 61. Habitus as in Figs. 1756 and 1757. Carapace ochre-yellow with light brown median mark widening posteriorly, ocular area and clypeus not darkened, only small light brown area around AME, sternum light brown with many small lighter spots, larger spots near coxae 2-4, margin dark brown, legs monochromous, abdomen monochromous ochre-gray. Distance PME-PME 380  $\mu$ m, diameter PME 140  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 70  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, many stronger hairs posteriorly (only bases left), each triad on additional low hump. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1857, distal apophyses longer than usual, with modified hairs and some stronger hairs medially, two pairs of weakly sclerotized apophyses proximally. Sternum wider than long (1.10/0.95), unmodified. Palps as in Figs. 1853 and 1854, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with distinct ventral protuberance, procurus with three dorsal spines, distinctive dorsal apophysis distally and complex membranous processes prolatero-ventrally (Fig. 1855), bulb with elongate uncus, embolus weakly sclerotized, appendix consisting of massive part with small cone-shaped process and slender hook-shaped part (Fig. 1856). Legs without spines and curved hairs, few vertical hairs (most hairs lost); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments barely visible in dissecting microscope.

*Variation.* Tibia 1 in 2 other males: 10.5, 11.5.

*Female.* Very similar to male, triads closer together (distance PME-PME 255  $\mu$ m). Tibia 1 missing in female examined. Epigynum weakly elevated, anteriorly and laterally with strong internal arc visible through cuticle, distinctively colored plate with 'knob' (Figs. 1788, 1858); internal genitalia as in Figs. 1789 and 1859.

*Distribution.* Known from type locality only (Fig. 1817).

*Material examined.* TURKEY: *Diyarbakır*: Lice, Korkha cave: ♂ holotype and 2♂1♀ paratypes above.

*Pholcus turcicus* Wunderlich, 1980

Figs. 1759, 1860-1862

*Pholcus turcicus* Wunderlich 1980: 219-221, figs. 1-7.

*Type.* Male holotype from Turkey, NE-Anatolia, Artvin Prov., near Ardanuç [-41°07'N, 42°03'E; in original description: "41.15.N.-42.10.E."], 1750 m

a.s.l., 10.vii.1977 (H. Korge), in SMF (29975), examined.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1860, 1861; shapes of procurus and appendix) and male chelicerae (Fig. 1862; distal apophyses divided and provided with more than three modified hairs each).

*Male* (holotype). Total body length 4.0, carapace width 1.3. Leg 1: 26.3 (7.0 + 0.5 + 7.4 + 9.8 + 1.6), tibia 2 missing, tibia 3: 3.4, tibia 4: 4.8; tibia 1 L/d: 56. Habitus as in Fig. 1759. Entire spider mostly pale ochre-yellow, carapace with indistinct brown mark divided medially, sternum with very indistinct lighter areas near bases of coxae, legs without rings, abdomen monochromous. Distance PME-PME 185  $\mu$ m, diameter PME 95  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, rather compact. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1862, with distinctively divided distal apophyses provided with 4 (or 6?) modified hairs each. Sternum wider than long (0.9/0.7), unmodified. Palps as in Figs. 1860 and 1861, coxa unmodified, trochanter with slender retrolatero-ventral apophysis, femur widened ventrally, with small indistinct retrolatero-dorsal apophysis proximally, tibia large, procurus rather simple, with distinctive membranous processes, with two relatively long prolatero-dorsal spines, uncus conservative, embolus simple, partly sclerotized, appendix with curved tip, with small subdistal branch prolaterally. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 8%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; tarsal pseudosegments very indistinct, barely visible in dissecting microscope.

*Female.* Unknown.

*Distribution.* Known from type locality only (Fig. 1817).

*Material examined.* TURKEY: *Artvin Prov.*: near Ardanuç: ♂ holotype above.

*Pholcus zham* species group

*Diagnosis.* Large, long-legged *Pholcus* (body length ~5.0-6.5, leg 1: ~40-60); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, distal apophyses distinctively divided (Figs. 1866, 1874), abdomen cylindrical, procurus with dorsal spines, appendix branched, sclerotized epigynum with 'knob'.

*Description.* See redescrptions below.

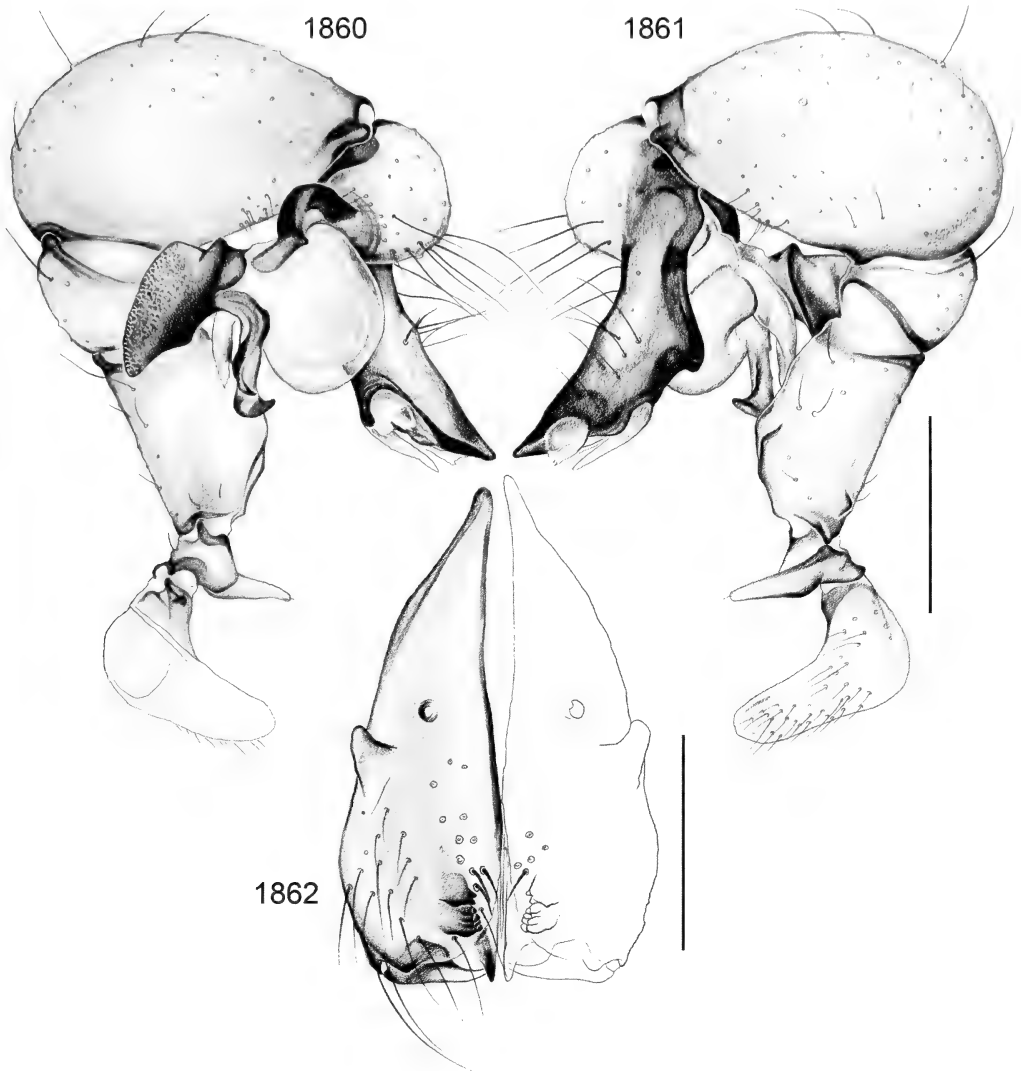


FIG. 1860-1862. *Pholcus turcicus*. 1860, 1861. Left male palp, prolateral and retrolateral views. 1862. Male chelicerae, frontal view. Scale lines: 0.5 (1860, 1861), 0.3 (1862).

*Monophyly.* The species share the divided apophyses distally on the male chelicerae (char. 21).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), the procurus with dorsal spines (char. 38; only in *Ph. medog*), and the branched appendix (char. 57) place this group in a polytomy together with other mostly

Palearctic *Pholcus* species groups (Fig. 26); the detailed relationships with other species groups in this polytomy remain obscure.

*Natural history.* Unknown.

*Distribution.* The two species are known from Nepal, southern Tibet, and northeastern India (Fig. 1863).

*Composition.* The group includes two named species

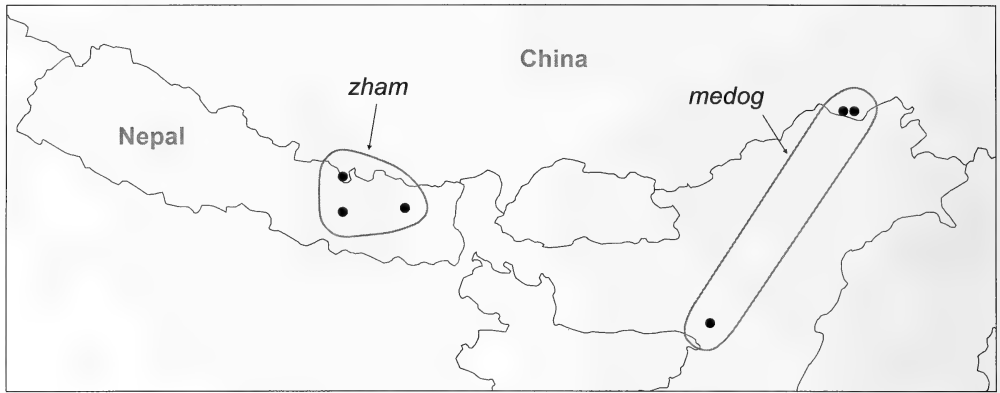


FIG. 1863. Known distributions of *Pholcus zham* and *Ph. medog*.

both of which are redescribed below: *Ph. zham* Zhang, Zhu & Song, 2006; *Ph. medog* Zhang, Zhu & Song, 2006.

*Pholcus zham* Zhang, Zhu & Song, 2006

Figs. 1763-1765, 1792, 1793, 1864-1871

*Pholcus zham* Zhang, Zhu & Song 2006: 197-198, figs. 9-16. Zhang & Zhu 2009a: 106-108, figs. 62a-g (copied from Zhang *et al.* 2006).

*Types.* Male holotype and 6♀ paratypes from China, Tibet, Nyalam County, Zham Town [27°59.7'N, 85°58.8'E; the coordinates in Zhang *et al.* 2006 are mistaken], 30.viii.2002 (F. Zhang, Z. Zhang), in MHBU, not examined.

*Note.* The Nepalese specimens below are certainly very closely related to the types of this species, but considering the variation found within Nepal, the specific status of these specimens warrants further collecting and study.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 1864, 1865; complex procurus, shapes of uncus and appendix), male chelicerae (Fig. 1866; distal apophyses divided; similar to *Ph. medog*), and female genitalia (Figs. 1792, 1868). *Male* (Arun Valley). Total body length 4.9, carapace width 1.3. Leg 1: 39.0 (9.5 + 0.6 + 9.2 + 17.0 + 2.7), tibia 2: 6.2, tibia 3: 4.2, tibia 4: 5.9; tibia 1 L/d: 69. Habitus as in Figs. 1763 and 1764. Carapace ochre-yellow with light brown mark posteriorly, ocular area and clypeus medially also light brown, sternum brown with light spots near bases of coxae, legs with light brown rings on femora and tibiae subdistally, patella area and tibia-metatarsus also darker, abdo-

men ochre-gray with poorly visible cuticular brown pattern dorsally, ventrally with wide brown band (cf. female, Fig. 1765). Distance PME-PME 460 µm, diameter PME 140 µm, distance PME-ALE 45 µm, distance AME-AME 60 µm, diameter AME 80 µm. Ocular area elevated, many stronger hairs on posterior side, each triad on short additional elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1866, with two pairs of distal apophyses apparently without modified hairs, with proximal frontal and lateral apophyses. Sternum wider than long (0.80/0.65), unmodified. Palps as in Figs. 1864 and 1865, coxa unmodified, trochanter with slender retrolatero-ventral apophysis, femur with small dorsal apophysis proximally, large hump ventrally, procurus very complex distally, with several membranous and sclerotized processes, without dorsal spines (Fig. 1869), bulb with large uncus, weakly sclerotized embolus, branched appendix. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Many tarsal pseudosegments, but only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in 3 other males from Arun Valley: 10.0, 10.6, 11.0. Some males also with many internal spots visible through cuticle dorsally and laterally. The male from Toma Kosi has longer legs (tibia 1: 13.0; holotype: ~13.3), lacks the cuticular pattern on the abdomen, and has a slightly different procurus tip (Fig. 1870) and appendix (Fig. 1871).

*Female.* In general similar to male but triads closer together (distance PME-PME 255 µm). Tibia 1 in female from Arun Valley: 8.7; female from Toma

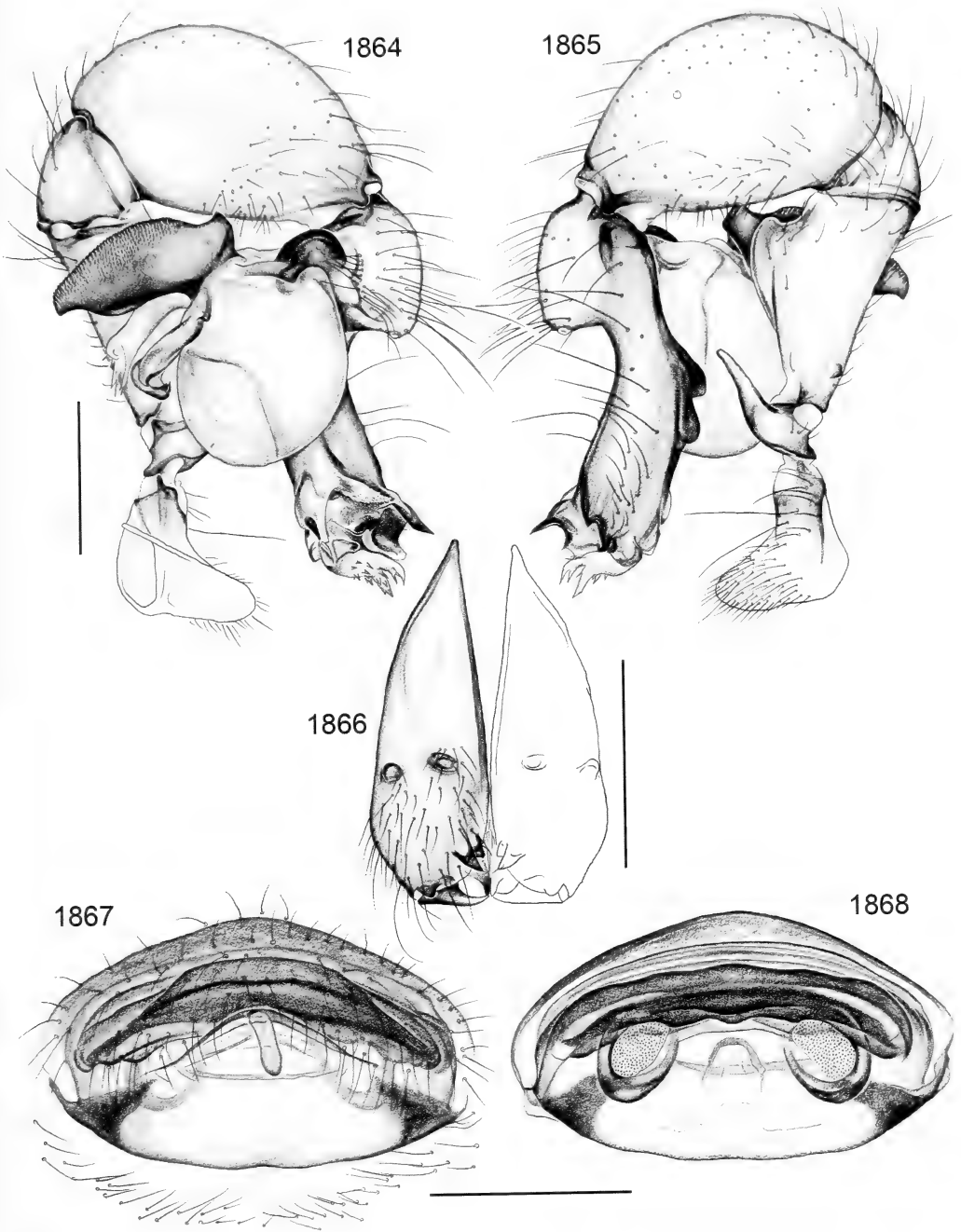


FIG. 1864-1868. *Pholcus zham*. 1864, 1865. Left male palp, prolateral and retrolateral views. 1866. Male chelicerae, frontal view. 1867, 1868. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

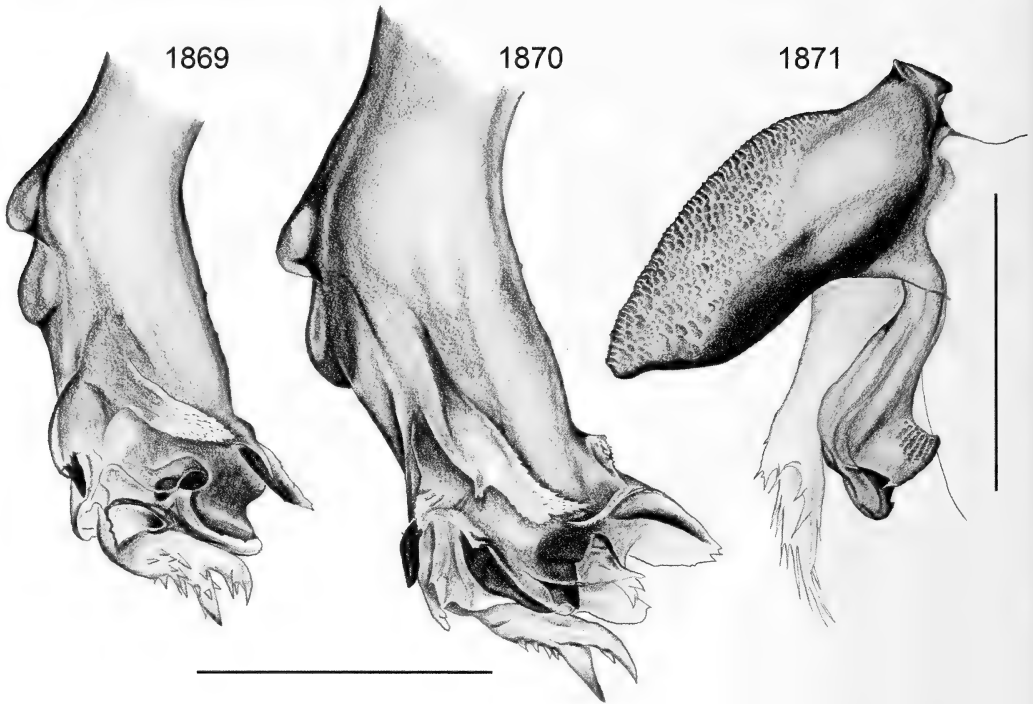


FIG. 1869-1871. *Pholcus zhambalensis*. 1869, 1870. Left procurus of males from Arun Valley (1869) and Toma Kosi river valley (1870). 1871. Bulbous processes of male from Toma Kosi river valley. Scale lines: 0.5.

Kosi: 10.2. Epigynum with large brown arc anteriorly, sclerotized brown plate with 'knob' (Figs. 1792, 1867); internal genitalia as in Figs. 1793 and 1868.

*Distribution*. Known from type locality in southern Tibet and from eastern Nepal (Fig. 1863).

*Material examined*. NEPAL: *Koshi*: Sankhuwasabha Distr.: Arun Valley, "between Mure and Hurure" [ $-27^{\circ}25'N$ ,  $87^{\circ}07'E$ ], mixed broad-leaved forest, 2050-2150 m a.s.l., 9.-17.vi.1988 (J. Martens, Schawaller), 4♂1♀ in SMF. *Janakpur*: Toma Kosi river valley ( $-27^{\circ}21'N$ ,  $85^{\circ}59'E$ ), west slope of Rolwaling Himal, Simigau Valley env., 2000 m a.s.l., among rocks, 3.vi.2000 (J. Schmidt), 1♂1♀ in ZFMK.

*Pholcus medog* Zhang, Zhu & Song, 2006

Figs. 1766, 1767, 1872-1874

*Pholcus medog* Zhang, Zhu & Song 2006: 195-197, figs. 1-8. Zhang & Zhu 2009a: 54-56, figs. 27a-g (copied from Zhang *et al.* 2006).

*Types*. Male holotype, 2♂5♀ paratypes from China, Tibet, Medog County ( $29^{\circ}12'N$ ,  $95^{\circ}18'E$ ), 17.

viii.2003 (F. Zhang), in MHBU, 1♂1♀ paratypes examined; 1♂1♀ paratypes from same locality, 10.viii.2003 (F. Zhang), in MHBU, not examined; 1♀ 3 juvenile paratypes from Medog County, Baibung Town ( $29^{\circ}12'N$ ,  $95^{\circ}06'E$ ), 13.viii.2003 (F. Zhang), in MHBU, not examined.

*Note*. The Indian specimens below are certainly very closely related to the types of this species (note distinctive shape of appendix), but considering the supposedly minor differences, the species status of these specimens warrants further collecting and study.

*Diagnosis*. Distinguished from congeners by male palpal morphology (Figs. 1872, 1873; shapes of procurus and uncus, distinctive appendix with long branch) and male chelicerae (Fig. 1874; distal apophyses divided; similar to *Ph. zhambalensis*). The MNHN has 1♂1♀ of a very similar undescribed species from Nepal, Libang [= Livang, Rolpa District] that differs primarily by a more strongly bent procurus.

*Male* (Jaintia Hills). Total body length 6.6, carapace width 1.8. Leg 1: 62.1 (14.5 + 0.8 + 14.8 + 29.2 + 2.8), tibia 2: 9.9, tibia 3: 6.1, tibia 4: 8.5; tibia 1 L/d:

86. Habitus as in Figs. 1766 and 1767. Carapace ochre-yellow with brown mark on posterior half, ocular area also brown, clypeus not darkened, sternum brown, legs pale ochre-yellow, slightly darker on femora proximally and subdistally, in patella area and on tibia subdistally, abdomen monochromous pale gray. Distance PME-PME 515  $\mu\text{m}$ , diameter PME 175  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 95  $\mu\text{m}$ . Ocular area elevated, many stronger hairs on posterior side,

each triad on short additional elevation directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1874, with two pairs of distal apophyses apparently without modified hairs, with proximal frontal and lateral apophyses. Sternum wider than long (1.00/0.95), unmodified. Palps as in Figs. 1872 and 1873, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with small dorsal apophysis proximally, large hump ventrally, procurus complex distally, with several mem-

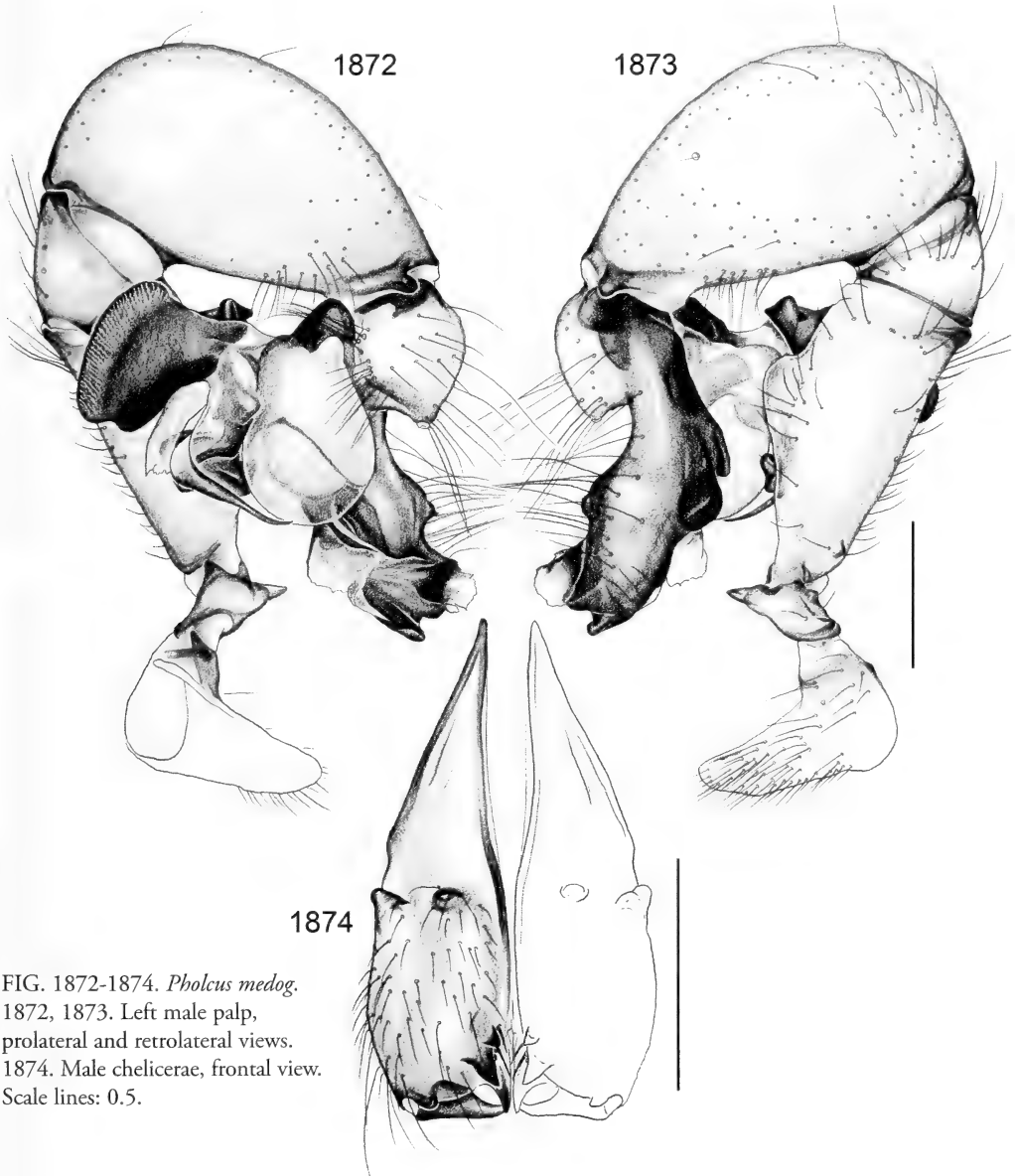


FIG. 1872-1874. *Pholcus medog*. 1872, 1873. Left male palp, prolateral and retrolateral views. 1874. Male chelicerae, frontal view. Scale lines: 0.5.

branous and sclerotized processes, with two short spines on dorsal projection, bulb with large uncus, weakly sclerotized embolus, complex branched appendix with slender proximally membranous prolateral branch and large massive retrolateral branch. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments not seen in dissecting microscope.

*Variation.* The male paratype examined has a slightly different brown mark on the carapace (not divided posteriorly), the eye stalks are longer, the palp is slightly smaller, the trochanter apophysis is more bent up (cf. fig. 6 in Zhang *et al.* 2006), the appendix has an additional small hook (not illustrated by Zhang *et al.* 2006, Zhang & Zhu 2009a), it differs slightly in the tip of the procurus, and it lacks frontal proximal modifications on the male chelicerae.

*Female.* See Zhang *et al.* (2006).

*Distribution.* Known from southeastern Tibet and from specimens assigned tentatively from northeastern India (Fig. 1863).

*Material examined.* CHINA: *Tibet*: Medog County: 1♂1♀ paratypes above.

*Assigned tentatively.* INDIA: *Meghalaya*: Jaintia Hills [-25°20'N, 92°40'E], Krem Pakse, Shnongrim, 15.ii.2001 (C. Fischer), 1♂ 1 juv. in ZFMK; Jaintia Hills, Shnongrim Ridge, Tongseng, Krem Brisang, 18.ii.2005 (C. Fischer), 1♀ in SMF.

#### *Pholcus kingi* species group

*Diagnosis.* Medium-sized, long-legged *Pholcus* (body length ~4.0-5.5, leg 1: ~45-65); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with proximal and distal apophyses, abdomen long oval to cylindrical, without cuticular pattern, procurus with dorsal spines, uncus slender and curved, appendix distinctively divided into three branches (Figs. 1878-1886; only two in *Ph. muralicola*), tibia 2 very long relative to tibia 4 (tibia 2/4 mostly ~1.2), epigynum mostly weakly sclerotized except posterior rim, with 'knob'.

*Description.* Body length ~4.0-5.5, carapace width 1.1-1.7. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with distal apophyses provided with 2-3 modified hairs each and two pairs of proximal apophyses. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small retro-

latero-dorsal apophysis and ventral hump, tarsus without dorsal elongation, tarsal organ capsulate, procurus with ventral 'knee', with variable number of dorsal spines (0-5). Male bulb with slender curved uncus, weakly sclerotized embolus, appendix branched, usually three branches, only two in *Ph. muralicola*. Legs long, tibia 1 in males ~10-16 (only 7-8 in *Ph. muralicola*), tibia 1 L/d ~80-100, tibia 2 very long relative to tibia 4 (tibia 2/4 ~1.20, in *Ph. muralicola* 1.15), legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~4-7%. Abdomen long oval to cylindrical, without cuticular pattern, male gonopore with four epiandrous spigots, ALS with eight spigots each, PMS with two small spigots each (SEM characters examined in *Ph. dade* only).

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs slightly shorter (tibia 1: ~8-13; in *Ph. muralicola* ~6-7). Epigynum with 'knob', weakly sclerotized except posterior rim, internal genitalia with pair of pore-plates close together.

*Monophyly.* All species except *Ph. muralicola* share the division of the appendix into three distinct branches (char. 58; Figs. 1878-1886). The relatively long tibia 2 (in relation to tibia 4) might also be a derived similarity. *Pholcus muralicola* has a similar basally branched appendix, but with only two branches. It is also significantly smaller than the other species and has a uniquely modified procurus tip. It may not be sister to the other nine species.

*Relationships.* The male cheliceral armature (char. 18), the procurus with dorsal spines (char. 38), and the branched appendix (char. 57) place this group in a polytomy together with several Palaearctic *Pholcus* species groups (Fig. 26) [as a result, the mostly weak sclerotization of the epigynum (char. 65) is considered secondary by the cladistic analysis]. The detailed relationships with other species groups in this polytomy remain obscure.

*Natural history.* Most species have been collected from within caves or from cave entrances, some under rocks or from the forest shrub layer, some even from man-made structures. *Pholcus muralicola*, once a common species at the University of Kansas Natural History Reservation (Maughan & Fitch 1976), seems to be extinct at its type locality (B. Cutler & H. Guarisco, pers. comm., May 2010).



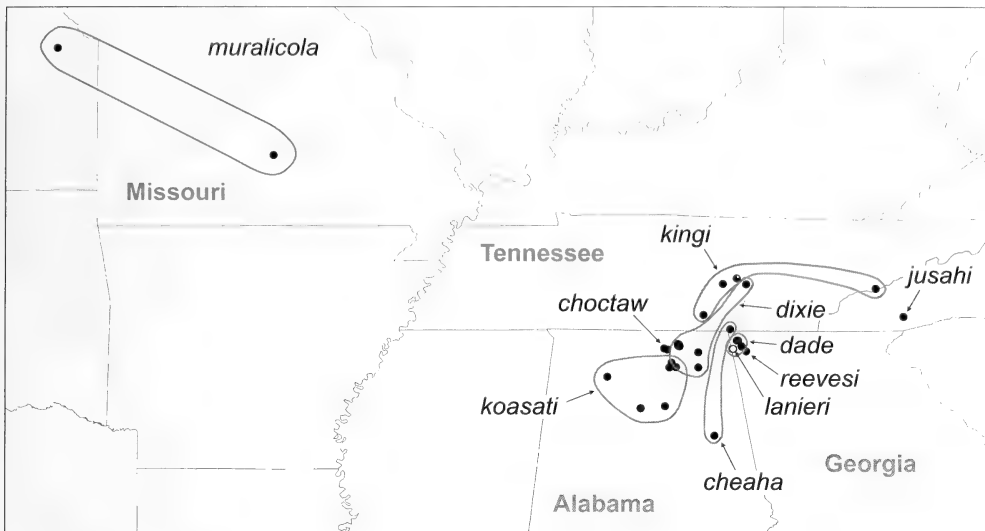


FIG. 1875. Known distribution of the *Pholcus kingi* species group.

**Distribution.** The group is largely restricted to the TGA area (Tennessee, Georgia, Alabama) and North Carolina (Fig. 1875). *Pholcus muralicola* is known from Missouri and Kansas. The USNM has unidentified females from Virginia, Grayson County.

**Relict status.** The Appalachian mixed mesophytic forests are considered relicts of ancient mesic forests that once covered much of the temperate regions of the Northern Hemisphere (Ricketts *et al.* 1999). They acted as a mesic refuge during drier glacial epochs for a wide range of taxa. The distribution of *Pholcus* in North America agrees well with such a scenario and may best be explained as a relict distribution.

**Composition.** The group includes ten species. Of these, nine are newly described below, the tenth is redescribed. Core group: *Ph. kingi* n. sp.; *Ph. dixie* n. sp.; *Ph. choctaw* n. sp.; *Ph. koasati* n. sp.; *Ph. cheaha* n. sp.; *Ph. dade* n. sp.; *Ph. lanieri* n. sp.; *Ph. reevesi* n. sp.; *Ph. jusahi* n. sp.; assigned tentatively: *Ph. muralicola* Maughan & Fitch, 1976.

*Pholcus kingi* n. sp.

Figs. 1771-1773, 1796, 1797, 1876-1878, 1888, 1889

**Type.** Male holotype from USA, Tennessee, Franklin Co., Sewanee, "Thumping Dick I" [35°13.1'N, 85°57.6'W], 1.ii.1958 (S. Lazell), in AMNH.

**Etymology.** Named for Martin Luther King, Jr., leader in the African American civil rights movement.

**Diagnosis.** Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1878); from other congeners also by straight procurus (Fig. 1877) and weakly sclerotized epigynum (Fig. 1796).

**Male** (holotype). Total body length 4.7, carapace width 1.55. Leg 1: 53.5 (13.5 + 0.7 + 12.9 + 24.0 + 2.4), tibia 2: 8.8, tibia 3: 6.0, tibia 4 missing; tibia 1 L/d: 88. Habitus as in Figs. 1771 and 1772. Carapace ochre-yellow with large brown mark partly divided medially, ocular area not darkened except very indistinct median line and small mark below AME, clypeus not darkened, sternum ochre-yellow, margins and behind labium brown, legs ochre-orange, tips of femora and tibiae lighter, slightly darker rings on femora subdistally and in patella area, abdomen ochre-gray, with very indistinct darker internal spots visible through cuticle. Distance PME-PME 205  $\mu$ m, diameter PME 115  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area moderately elevated, few slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913), distal frontal apophyses with three modified hairs each. Sternum wider than long (1.0/0.8), unmodified. Palps as in Figs. 1876 and 1877, coxa

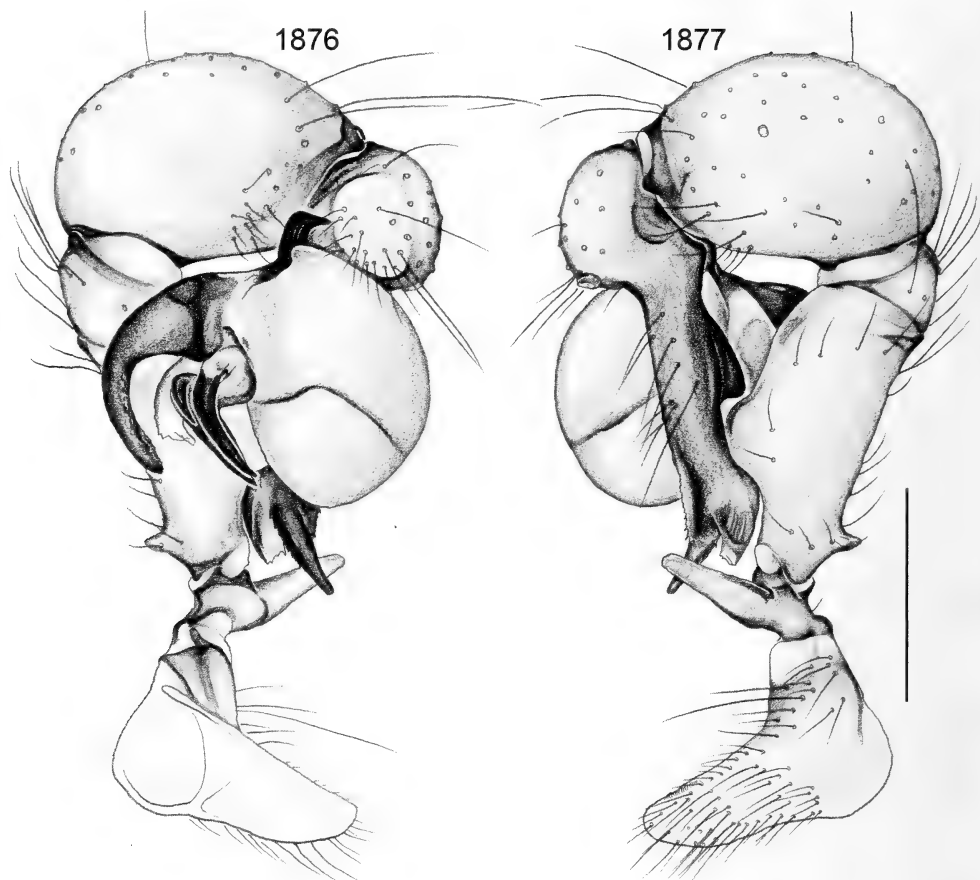


FIG. 1876, 1877. *Pholcus kingi*, left male palp, prolateral and retrolateral views. Scale line: 0.5.

unmodified, trochanter with retrolatero-ventral apophysis, femur with ventral bulge and distinct dorsal apophysis proximally, procurus rather simple, with two dorsal spines, bulb with long slender uncus, weakly sclerotized embolus, complex distinctive appendix consisting of three sclerotized processes (Fig. 1878). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 3; tarsus 1 with >20 pseudosegments, poorly visible in dissecting microscope.

*Variation.* Tibia 1 in two other males: 12.8, 14.4.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 175  $\mu$ m); tibia 1 in four females: 9.3, 10.0, 10.2, 10.4. Epigynum weakly sclerotized, slightly protruding, with internal

arc visible through cuticle anteriorly, small 'knob' (Figs. 1796, 1888); internal genitalia as in Figs. 1797 and 1889. Females not accompanied by male specimens are assigned tentatively.

*Distribution.* Known from Tennessee only (Fig. 1875).

*Material examined.* USA: Tennessee: Franklin Co., Thumping Dick near Sewanee: ♂ holotype above; same data, 1♂3♀ in AMNH; same locality and collector, 22.iii.1958, 1♀ 1 juv. in AMNH. Van Buren Co., 1.5 mi E Spencer [35°44.8'N, 85°29.1'W], 11.viii.1951, collector not given, 1♂1♀ in AMNH. *Assigned tentatively.* USA: Tennessee: Warren Co., Cardwell Mountain, near entrance to Cumberland Caverns, 8 mi SE McMinnville [-35°40'N, 85°41'W], from web beneath porch of old house, 12.v.1956 (T.C. Barr), 1♀ in AMNH; Cumberland

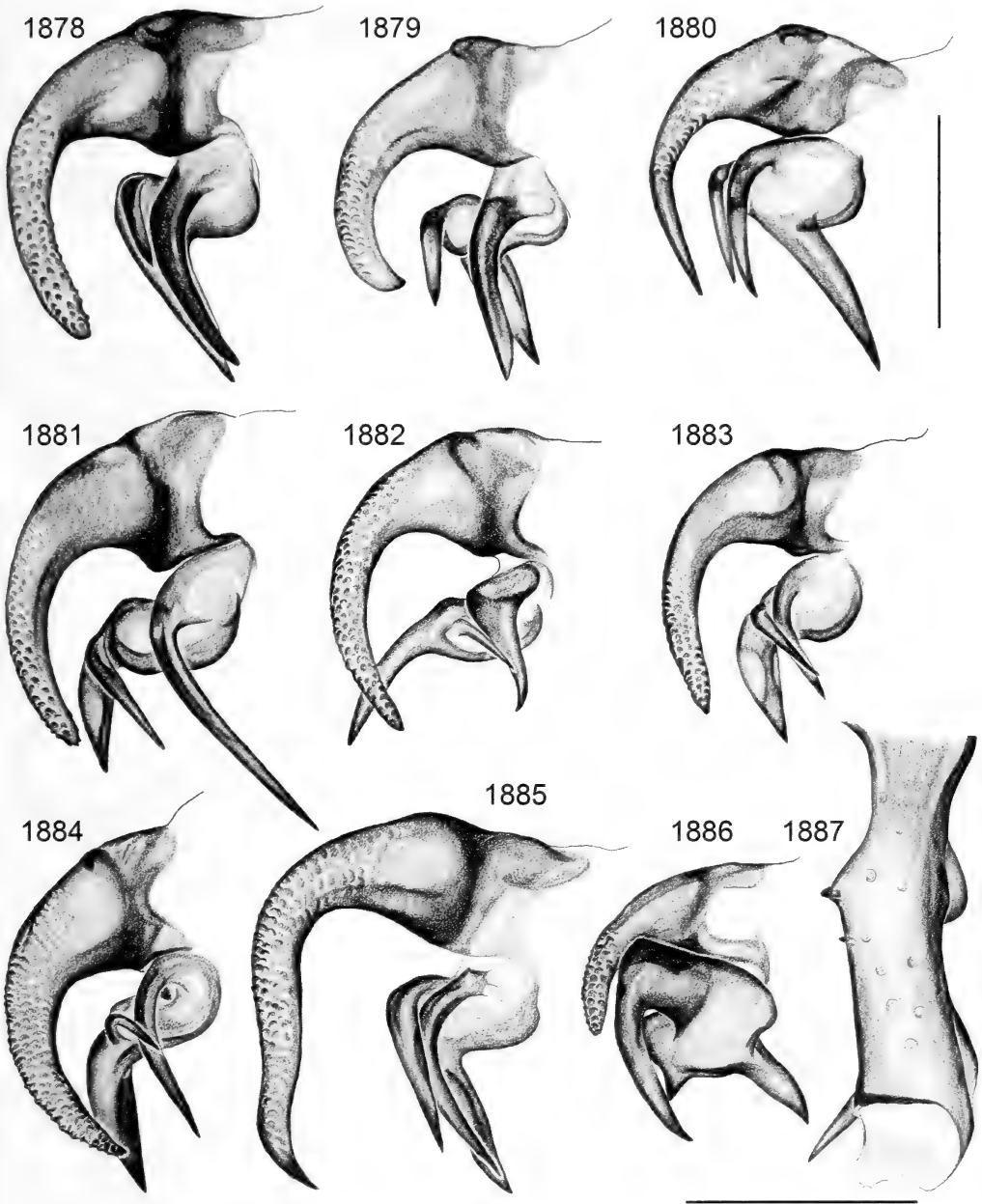


FIG. 1878-1887. Left bulbal uncus and appendix, prolateral views (1878-1886; all at same scale) and left procurus, retrolateral view (1887) of representatives of the *Pholcus kingi* species group. 1878. *Ph. kingi*. 1879. *Ph. dixie*. 1880. *Ph. choctaw*. 1881. *Ph. koasati*. 1882. *Ph. dade*. 1883. *Ph. cheaha*. 1884. *Ph. lanieri*. 1885. *Ph. reevesi*. 1886, 1887. *Ph. jusabi*. Scale lines: 0.3.

Caverns, 27.ix.1988 (H.J. Guarisco), 2♀ in ZFMK; Higgenbotham Cave (Cumberland Caverns), 12.v.1956 (T.C. Barr), 1 juv. in AMNH. Sevier Co., Elkmont [35°36'N, 83°30'W], Gt. Smoky Mts. Nat. Park, 8.viii.1960 (T.C. Barr), 1♀ in AMNH.

*Pholcus dixie* n. sp.

Figs. 1801, 1879, 1890, 1891

*Type*. Male holotype from USA, Alabama, Jackson Co., Sheldons Cave, 1 mi N Scottsboro [34°41'N, 86°02'W], 21.iii.1966 (S. Peck), in AMNH.

*Etymology*. Dixie is a nickname for the Southern United States, with Alabama as the "Heart of Dixie" due to its geographical location within the region; noun in apposition.

*Diagnosis*. Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1879); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (similar to *Ph. kingi*).

*Male* (holotype). Total body length 5.5, carapace width 1.55. Leg 1: 57.6 (14.0 + 0.7 + 14.1 + 26.4 + 2.4), tibia 2: 9.5, tibia 3: 6.4, tibia 4: 7.9; tibia 1 L/d: 97. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, ocular area and clypeus not darkened, sternum ochre-yellow, margins and behind labium brown, legs light brown, tips of femora and tibiae slightly lighter, darker rings on femora subdistally and in patella area, abdomen ochre-gray, with very indistinct darker internal spots visible through cuticle. Distance PME-PME 205 µm, diameter PME 140 µm, distance PME-ALE 35 µm, distance AME-AME 45 µm, diameter AME 85 µm. Ocular area moderately elevated, few slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913), distal frontal apophyses with three modified hairs each. Sternum wider than long (1.1/0.9), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877), procurus apparently with one short thick spine and

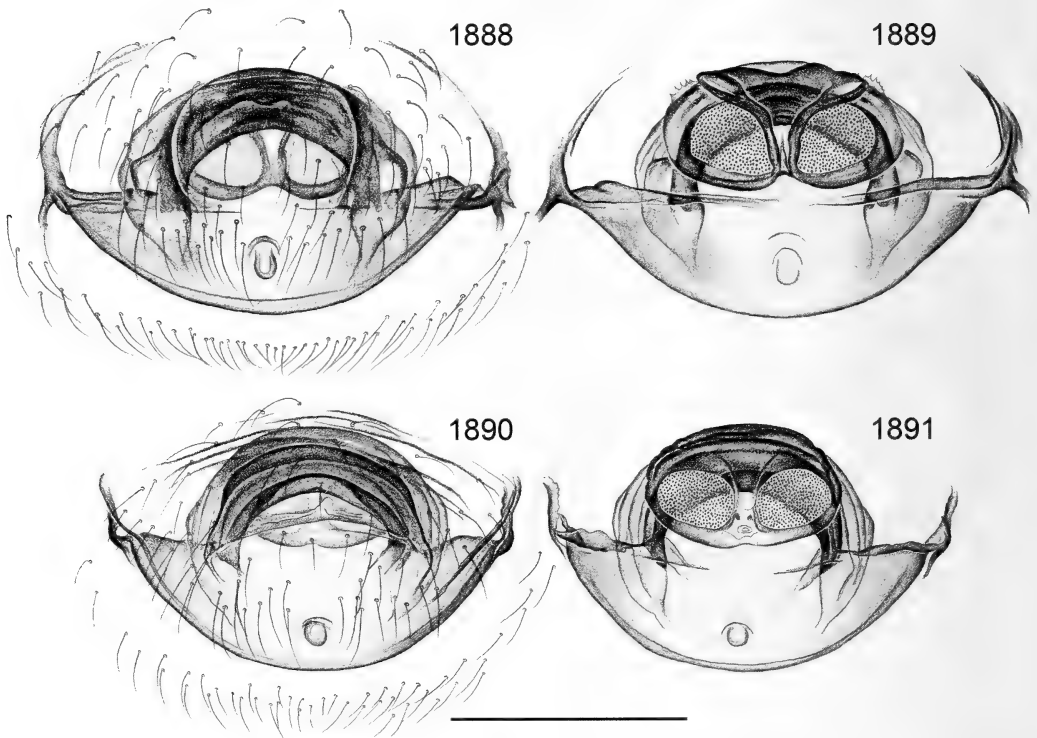


FIG. 1888-1891. Cleared female genitalia in ventral (left) and dorsal views. 1888, 1889. *Ph. kingi*. 1890, 1891. *Ph. dixie*. Scale line (for all): 0.5.

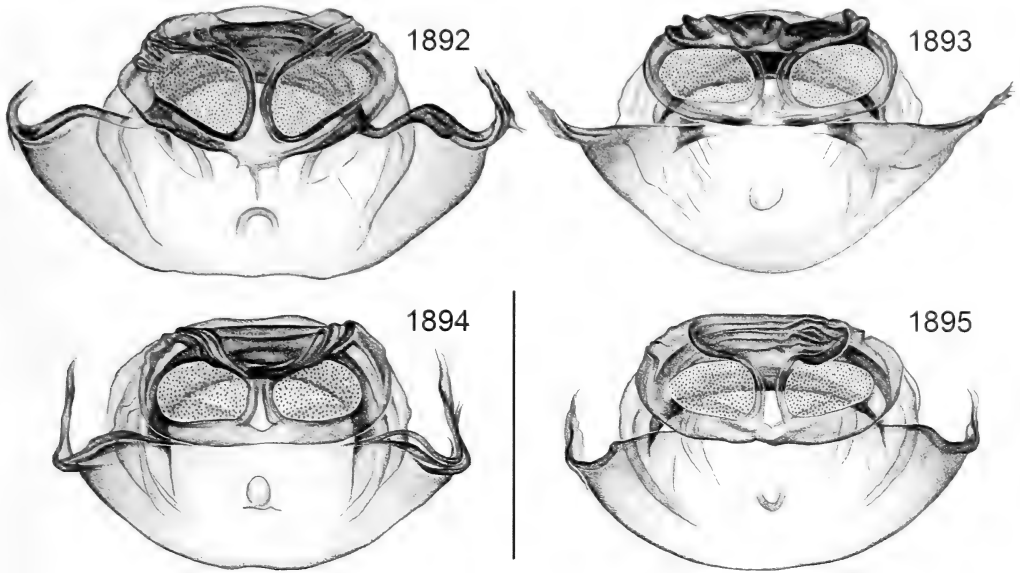


FIG. 1892-1895. Cleared female genitalia in dorsal views. 1892. *Ph. choctaw*. 1893. *Ph. koasati*. 1894. *Ph. dade*. 1895. *Ph. cheaha*. Scale line (for all): 0.5.

two longer and thinner spine-like hairs, complex distinctive appendix (Fig. 1879). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; only ~10 pseudosegments distally on tarsus 1 fairly distinct.

**Variation.** Tibia 1 in 7 other males: 10.7-14.5 (mean 13.1); there is slight variation among males in uncus length, trochanter apophysis shape, dorsal procurus apophysis length, and the presence of a brown median line on the ocular area. In males from Buck's Pocket State Park the appendix processes also differ slightly in shape and relative position; they are therefore assigned tentatively.

**Female.** In general similar to male, eye triads slightly closer together (distance PME-PME 170  $\mu$ m); tibia 1 in 7 females: 9.7-11.9 (mean 10.5). Sternum pattern mostly as in males; one female from Buck's Pocket State Park with light marks medially and near coxae. Epigynum weakly sclerotized, slightly protruding, with internal arc visible through cuticle anteriorly, small 'knob' (Fig. 1890); internal genitalia as in Figs. 1801 and 1891.

**Distribution.** Known from Alabama and Tennessee (Fig. 1875).

**Material examined.** USA: *Alabama*: Jackson Co., 1 mi N Scottsboro: ♂ holotype above. Clear Creek [-34°47'N, 86°19'W], vi.1940, collector not given, 3♂2♀ in AMNH. Mc Farland Cave (34°46.1'N, 86°18.3'W), 28.vi.2007 (J.C., J.G., A.M. & H.S. Godwin), 3♀ in ZFMK; same locality, 29.ii.1940 (Jones, Archer), 1♂ in AMNH. Cassius Cave (34°46.4'N, 86°18.1'W), 8.vi.2006 (J.C. Godwin, G.G. Sorrell, L. de Souza, S. Lindey), 1♂1♀ in ZFMK. Salpeter Cave (34°46.6'N, 86°19.3'W), 13.xi.2007 (J.C. Godwin, G.G. Sorrell), 1♀ in ZFMK. Steamed Chicken Pit (34°48.1'N, 86°19.7'W), 14.xi.2007 (J.C. Godwin, G.G. Sorrell), 1♀ in ZFMK. Tony Cave (34°47.8'N, 86°18.9'W), 28.vi.2007 (J.C., J.G., A.M. & H.S. Godwin), 1♀ in ZFMK. *Tennessee*: Van Buren Co., Fall Creek Falls State Park [35°40'N, 85°21'W], 27.ix.1988 (J.C. Godwin), 2♂ in ZFMK. De Kalb Co., 5 mi SW Smithville [-35°55'N, 85°53'W], Fox Cave, 27.xii.1956 (T.C. Barr), 1♂ in AMNH.

**Assigned tentatively.** USA: *Alabama*: De Kalb Co., Buck's Pocket State Park [34°28'N, 86°02'W], forest, shrub layer, cliffs, 19.vi.1984 (J. Coddington), 2♂1♀ in USNM; same data but "general", 1♂1♀ in USNM.

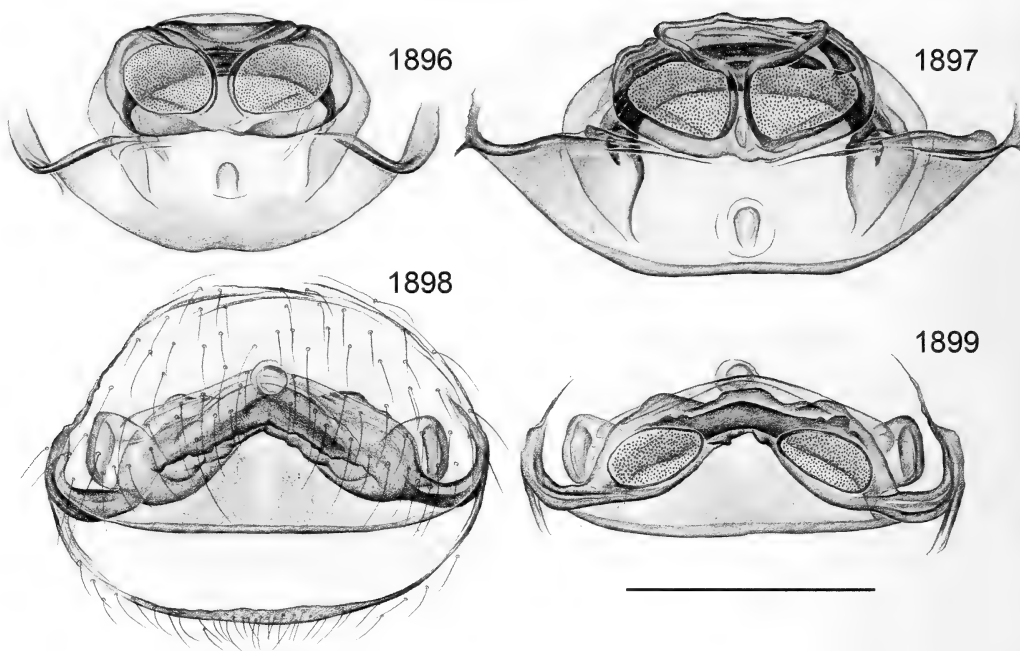


FIG. 1896-1899. Cleared female genitalia in dorsal (1896, 1897, 1899) and ventral (1898) views. 1896. *Ph. lanieri*. 1897. *Ph. reevesi*. 1898, 1899. *Ph. jusabi*. Scale line (for all): 0.5.

*Pholcus choctaw* n. sp.

Figs. 1805, 1806, 1880, 1892

*Type*. Male holotype from USA, Alabama, Madison Co., Monte Sano [34°44'N, 86°31'W], 1939, collector not given, in AMNH.

*Etymology*. Named for the Choctaw (also Chahta, Chactas, Chato, Tchakta, and Choctaw), a native American people originally from the Southeastern United States; noun in apposition.

*Diagnosis*. Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1880); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum with dark lines converging posteriorly (Fig. 1805).

*Male* (holotype). Total body length 4.7, carapace width 1.5. Leg 1 missing, tibia 2: 8.1, tibia 3: 5.5, tibia 4: 6.8. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, ocular area not darkened except very indistinct median line and small mark below AME, clypeus not darkened, ster-

num light brown, margins darker, medially and near coxae slightly lighter, legs light brown, tips of femora and tibiae lighter, abdomen monochromous ochre-gray, genital area brown pattern. Distance PME-PME 185  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 30  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area moderately elevated, few slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913), distal frontal apophyses apparently with two modified hairs each. Sternum wider than long (1.0/0.8), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877) but distal procurus apophysis not pointed, dorsal projection on procurus similar to *Ph. muralicola* but less distinct, with several dorsal spines (~4-5), uncus very slender, complex distinctive appendix (Fig. 1880). Legs without spines and curved hairs, few vertical hairs (most hairs missing).

*Variation*. Second male with smaller palps but identical in shape; abdomen with dark internal marks, sternum ochre-yellow with brown margins and brown behind labium; tibia 1 missing.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 160  $\mu$ m), pattern on sternum more distinct; tibia 1 missing. Epigynum weakly sclerotized, slightly protruding, with distinctive pair of dark lines converging posteriorly, small 'knob' (Fig. 1805); internal genitalia as in Figs. 1806 and 1892. Females not accompanied by male specimens are assigned tentatively.

*Distribution.* Known from Madison County, Alabama, only (Fig. 1875).

*Material examined.* USA: *Alabama:* Madison Co., Monte Sano: ♂ holotype above; same data, 1♂1♀.

*Assigned tentatively.* USA: *Alabama:* Madison Co., Chestnut Knob [34°43.5'N, 86°28.8'W], under loose "ls." slabs, 19.-22.v.1946 (A.F. Archer), 2♀ in AMNH.

*Pholcus koasati* n. sp.

Figs. 1798, 1881, 1893

*Type.* Male holotype from USA, Alabama, Marshall Co., Porch's Spring Cave, Ledbetter Cave [34°28.1'-28.6'N, 86°20.9'-21.7'W], 17.iii.1966 (S. Peck), in AMNH.

*Etymology.* Named for the Coushatta (also Koasati), a Muskogean-speaking native American people living primarily in the U.S. state of Louisiana. When first encountered by Europeans, they lived in the territory of present-day Georgia and Alabama; noun in apposition.

*Diagnosis.* Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1881); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (similar to *Ph. kingi*).

*Male* (holotype). Total body length 5.4, carapace width 1.65. Leg 1: 58.6 (14.9 + 0.8 + 14.4 + 26.0 + 2.5), tibia 2: 10.3, tibia 3: 6.8, tibia 4: 8.4; tibia 1 L/d: 96. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, ocular area not darkened except indistinct median line, clypeus not darkened, sternum light brown, margins darker, near coxae lighter, legs light brown, tips of femora and tibiae lighter, slightly darker rings on femora subdistally and in patella area, abdomen ochre-gray, with very indistinct darker internal spots visible through cuticle, genital area brown. Distance PME-PME 205  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 90  $\mu$ m. Ocular area moderately elevated, hairs missing. No thoracic furrow; clypeus unmodified. Chelicerae

as in *Ph. muralicola* (cf. Fig. 1913) but distal frontal apophyses apparently with three modified hairs each. Sternum wider than long (1.0/0.9), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877), procurus apparently with only one dorsal spine, distinctive appendix (Fig. 1881). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with ~15 pseudosegments, fairly distinct.

*Variation.* Tibia 1 in 5 other males: 9.9-16.0 (mean 14.0); pattern on sternum variably distinct. Male from Horseshoe Cave with slightly longer trochanter apophysis.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 170  $\mu$ m); tibia 1 in 3 females: 9.7, 12.1, 12.7. Epigynum weakly sclerotized, slightly protruding, with internal arc visible through cuticle anteriorly, small 'knob'; internal genitalia as in Figs. 1798 and 1893. Females not accompanied by male specimens are assigned tentatively.

*Distribution.* Known from northern Alabama only (Fig. 1875).

*Material examined.* USA: *Alabama:* Marshall Co., Porch's Spring Cave, Ledbetter Cave: ♂ holotype above. Blount Co., near Allgood [-33°55'N, 86°31'W], Horseshoe Cave, 8.iii.1940 (W.B. Jones), 1♂4♀ in AMNH; near Allgood, Ingram Cave, 8.iii.1940 (W.B. Jones), 4♂ in AMNH. Rickwood Caverns State Park [33°53'N, 86°52'W], 1.ii.1989 (H.J. Guarisco), 1♂ in ZFMK.

*Assigned tentatively.* USA: *Alabama:* Marshall Co., Painted Bluff Cave [34°27.8'N, 86°26.9'W], 16.iii.1966 (S. Peck), 2♀ 1 juv. in AMNH. Lawrence Co., Black Warrior Nat. Forest [now William B. Bankhead National Forest, -34°20'N, 87°20'W], 1939, collector not given, 2♀ in AMNH.

*Pholcus dade* n. sp.

Figs. 1799, 1800, 1882, 1894, 1900-1910

*Type.* Male holotype from USA, Georgia, Dade Co., Sitton's Cave (34°51'N, 85°28'W), 7.viii.1998 (W. Reeves), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1882); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (Fig. 1799).

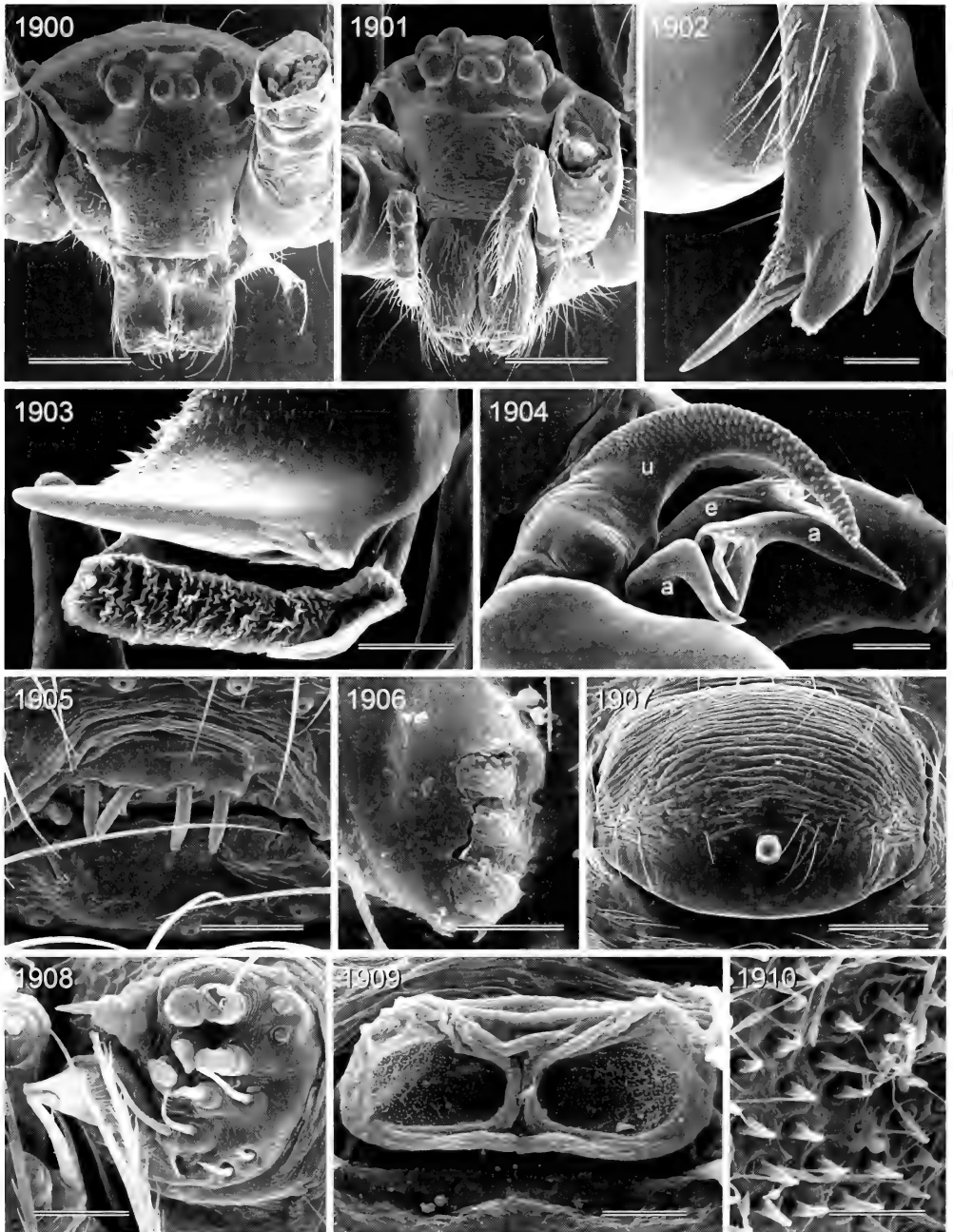


FIG. 1900-1910. *Pholcus dade*. 1900, 1901. Male and female prosomata, frontal views. 1902. Left procrurus, retrolateral view. 1903. Right procrurus tip, distal view. 1904. Right bulbar processes, prolateral view. 1905. Male gonopore. 1906. Distal male cheliceral apophysis. 1907. Epigynum. 1908. Female ALS. 1909. Cleared female genitalia, dorsal view. 1910. Detail of pore plate. Scale lines: 400  $\mu\text{m}$  (1900, 1901), 200  $\mu\text{m}$  (1907), 100  $\mu\text{m}$  (1902, 1904, 1909), 50  $\mu\text{m}$  (1903), 40  $\mu\text{m}$  (1905), 20  $\mu\text{m}$  (1906, 1908), 10  $\mu\text{m}$  (1910).



*Male* (holotype). Total body length 4.7, carapace width 1.2. Leg 1: 49.6 (12.5 + 0.7 + 12.3 + 22.0 + 2.1), tibia 2: 8.3, tibia 3: 5.6, tibia 4: 6.9; tibia 1 L/d: 93. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, ocular area and clypeus not darkened, sternum light brown, margins darker, lighter medially and near coxae, legs ochre-yellow to light brown, tips of femora and tibiae lighter, abdomen monochromous pale ochre-gray, only genital area light brown. Distance PME-PME 185  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 30  $\mu$ m, diameter AME 75  $\mu$ m. Ocular area moderately elevated, -15 stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913) but distal frontal apophyses apparently with three modified hairs each (Fig. 1906). Sternum wider than long (0.95/0.70), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877), apparently with only one long spine resembling other dorsal hairs, complex tip (Fig. 1903), distinctive appendix (Figs. 1882, 1904). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with few pseudosegments, barely visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 1905).

*Variation*. Tibia 1 in 5 other males: 12.5-14.8 (mean 14.0); pattern on sternum variable (median light spot may be absent); some males with indistinct internal marks on abdomen visible through cuticle.

*Female*. In general similar to male, eye triads slightly closer together (Fig. 1901, distance PME-PME 160  $\mu$ m); tibia 1 in 2 females: 10.1, 10.8. Sternum pattern also in females variable (light marks medially and near coxae may be absent). Epigynum weakly sclerotized except posteriorly medially, slightly protruding, with internal arc visible through cuticle anteriorly, small 'knob' (Figs. 1799, 1907); internal genitalia as in Figs. 1800, 1894, and 1909. ALS with eight spigots each (Fig. 1908). The female not accompanied by male specimens is assigned tentatively.

*Distribution*. Known from northwestern Georgia only (Fig. 1875).

*Material examined*. USA: *Georgia*: Dade Co., Sitton's Cave: ♂ holotype above, together with 1♀; same locality, 28.xi.1952 (E.J. Kuenzler), 1♂ in AMNH. Sitton's Gulf (34°51'N, 85°29'W), 6.iv.1999 (W. Reeves), 5♂3♀ in USNM; same locality, "web on roof", 14.i.1998 (W. Reeves), 1♂ in USNM. Walk-

er Co., Frick's Cave (34°46'N, 85°25'W), "eats *Culicidae*", 11.xii.1998 (W. Reeves), 3♂ in USNM. Walker Co., Spooky Cave, 19.iii.1999 (J. Jenson), 1♂ in USNM.

*Assigned tentatively*. USA: *Georgia*: Dade Co., Byers Cave [-34°44'N, 85°33'W], 3.xii.1967 (Tilles), 1♀ in AMNH.

*Pholcus cheaha* n. sp.

Figs. 1803, 1804, 1883, 1895

*Type*. Male holotype from USA, Alabama, Cleburne Co., Cheaha State Park [33°29.4'N, 85°48.6'W], vi.1940 (A.F. Archer), in AMNH.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from similar species (all *Pholcus* from TGA area) by details of uncus and appendix (Fig. 1883); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (Fig. 1803).

*Male* (holotype). Total body length 4.3, carapace width 1.45. Leg 1 missing, tibia 2 missing, tibia 3: 4.8, tibia 4: 5.9. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, median line on ocular area, clypeus not darkened, sternum light brown with lighter marks medially and near coxae, legs ochre-yellow, tips of femora and tibiae lighter, abdomen monochromous ochre-gray, genital area with brown pattern. Distance PME-PME 220  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 35  $\mu$ m, diameter AME 75  $\mu$ m. Ocular area moderately elevated, hairs missing. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913), distal frontal apophyses apparently with three modified hairs each. Sternum wider than long (0.95/0.75), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877) but procurus apparently with only one dorsal spine, dorso-distal apophysis on procurus slightly longer, complex distinctive appendix (Fig. 1883). Legs without spines and curved hairs, few vertical hairs (most legs and hairs missing).

*Variation*. The second male is very pale but has identical genitalia; tibia 1: 12.7.

*Female*. In general similar to male, eye triads slightly closer together (distance PME-PME 185  $\mu$ m); tibia 1 in 4 females: 8.7, 9.1, 9.5, 9.7. Epigynum weakly sclerotized, slightly protruding, with internal arc visible through cuticle anteriorly, small 'knob' (Fig. 1803); internal genitalia as in Figs. 1804 and 1895.

*Distribution.* Known from two localities in Alabama and Tennessee respectively (Fig. 1875).

*Material examined.* USA: *Alabama:* Cleburne Co., Cheaha State Park: ♂ holotype above, together with 4 ♀. *Tennessee:* Marion Co., Little Cedar Mt. [35°01'N, 85°35'W], cave, 9.i.1954 (E.J. Kuenzler), 1 ♂ in AMNH.

*Pholcus lanieri* n. sp.

Figs. 1802, 1884, 1896

*Type.* Male holotype from USA, Georgia, Dade Co., Hurricane Cave [34°45'N, 85°32'W], on Fox Mt., near cave entrance, 10.xii.1998 (W. Reeves), in USNM.

*Etymology.* Named for the American musician and poet Sidney Lanier (1842-1881).

*Diagnosis.* Distinguished from similar species (all *Pholcus* from TGA area) by details of unculus and appendix (Fig. 1884); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (similar to *Ph. kingi*).

*Male* (holotype). Total body length 5.2, carapace width 1.55. Leg 1: 14.9 + 0.7 + 14.5, metatarsus and tarsus missing, tibia 2: 9.9, tibia 3: 6.5, tibia 4: 8.1; tibia 1 L/d: 99. Habitus similar to *Ph. kingi* (cf. Figs. 1771, 1772). Carapace ochre-yellow with large brown mark partly divided medially, darker median line on ocular area, clypeus not darkened, sternum light brown, margins darker, light spots medially and near coxae, legs light brown, tips of femora and tibiae lighter, abdomen ochre-gray, with many indistinct darker spots dorsally and laterally, genital area with pair of brown marks. Distance PME-PME 215 µm, diameter PME 135 µm, distance PME-ALE 45 µm, distance AME-AME 35 µm, diameter AME 90 µm. Ocular area moderately elevated, few slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913), distal frontal apophyses with three (possibly four) modified hairs each. Sternum wider than long (1.1/0.9), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877) but procurus apparently without dorsal spines, dorso-distal apophysis on procurus slightly longer, and complex distinctive appendix clearly different (Fig. 1884). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 170 µm); tibia

1: 8.6 (missing in second female). Epigynum weakly sclerotized, slightly protruding, with internal arc visible through cuticle anteriorly, small 'knob'; internal genitalia as in Figs. 1802 and 1896.

*Distribution.* Known from type locality in northwestern Georgia only (Fig. 1875).

*Material examined.* USA: *Georgia:* Dade Co., Hurricane Cave on Fox Mt.: ♂ holotype above, together with 1 ♀; same collection data, cave entrance, 1 ♀ in USNM.

*Pholcus reevesi* n. sp.

Figs. 1774, 1807, 1808, 1885, 1897

*Type.* Male holotype from USA, Georgia, Walker Co., Pigeon Mountain [-34°42'N, 85°21'W], 10.v.1999 (W. Reeves), in USNM.

*Etymology.* The species is named for Will Reeves who kindly contributed material from his caving expeditions.

*Diagnosis.* Distinguished from similar species (all *Pholcus* from TGA area) by details of unculus and appendix (Fig. 1885); from other congeners also by straight procurus (cf. Fig. 1877) and weakly sclerotized epigynum (Fig. 1807).

*Male* (holotype). Total body length 5.4, carapace width 1.65. Leg 1: 64.9 (16.1 + 0.8 + 15.9 + 29.6 + 2.5), tibia 2: 10.9, tibia 3: 7.2, tibia 4: 8.8; tibia 1 L/d: 97. Habitus as in Fig. 1774. Carapace ochre-yellow with large brown mark partly divided medially, ocular area with darker median line, clypeus not darkened, sternum light brown with darker margins and lighter marks near coxae, legs light brown, tips of femora and tibiae slightly lighter, abdomen monochromous ochre-gray, genital area with brown pattern. Distance PME-PME 240 µm, diameter PME 150 µm, distance PME-ALE 35 µm, distance AME-AME 40 µm, diameter AME 85 µm. Ocular area moderately elevated, ~15 slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913) but proximo-lateral apophyses longer, distal frontal apophyses apparently with two modified hairs each. Sternum wider than long (1.1/0.9), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877) but trochanter apophysis slightly longer, procurus distally slightly different, with one short spine and about three longer dorsal hair-like spines, appendix similar to *Ph. kingi* and *Ph. dixie*, uncus distinctively curved and pointed (Fig. 1885). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral

trichobothrium absent on tibia 1, present on other tibiae; only ~10 pseudosegments distally on tarsus 1 fairly distinct.

*Variation.* Tibia 1 in other male: 15.1; one male with many indistinct internal marks dorsally on abdomen.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 175  $\mu$ m); tibia 1 in 2 females: 10.0 (both). Epigynum weakly sclerotized, slightly protruding, with internal arc poorly visible except laterally, small 'knob' (Fig. 1807); internal genitalia as in Figs. 1808 and 1897.

*Distribution.* Known from type locality in northwestern Georgia only (Fig. 1875).

*Material examined.* USA: Georgia: Walker Co., Pigeon Mountain: ♂ holotype above; same data, 2♂3♀ in USNM.

*Pholcus jusahi* n. sp.

Figs. 1775, 1809, 1810, 1886, 1887, 1898, 1899

*Type.* Male holotype from USA, North Carolina, Jackson Co., 3 mi SW Balsam Gap on old route 19A-23 [-35°12'N, 83°06'W], Willetts Community, 2800' a.s.l., in rusted truck body, 9.viii.1994 (M. Killian), in USNM.

*Etymology.* Named for Franklin Gritts, also known as Oau Nah Jusah (1915-1996), a Cherokee artist best known for his contributions to the "Golden Era" of Native American art.

*Diagnosis.* Distinguished from similar species (all *Pholcus* from TGA area) by shapes of procurus, uncus, and appendix (Figs. 1886, 1887); from other congeners also by weakly sclerotized epigynum (Fig. 1809).

*Male* (holotype). Total body length 4.5, carapace width 1.35. Leg 1: 46.2 (11.7 + 0.6 + 11.6 + 20.1 + 2.2), tibia 2: 7.7, tibia 3: 5.1, tibia 4: 6.2; tibia 1 L/d: 82. Habitus as in Fig. 1775. Carapace ochre-yellow with large brown mark partly divided medially, ocular area with indistinct median line (only posteriorly), clypeus not darkened, sternum light brown with darker margins, with many light spots and lighter marks near coxae, legs light brown, tips of femora and tibiae slightly lighter, abdomen monochromous ochre-gray, genital area with light brown pattern. Distance PME-PME 220  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 50  $\mu$ m, diameter AME 85  $\mu$ m. Ocular area moderately elevated, with stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. muralicola* (cf. Fig. 1913) but distal apophyses much more proximal. Sternum wider than long

(0.95/0.75), unmodified. Palps in general as in *Ph. kingi* (cf. Figs. 1876, 1877) but femur more slender, ventral bulge not so prominent, procurus as in Fig. 1887, with two strong dorsal spines, one of them on prominence (cf. *Ph. muralicola*), uncus very short, appendix distinctive and complex (Fig. 1886). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 175  $\mu$ m); tibia 1: 7.9. Epigynum weakly sclerotized, slightly protruding, with internal arc visible through cuticle, small 'knob' (Figs. 1809, 1898); internal genitalia as in Figs. 1810 and 1899.

*Distribution.* Known from type locality only (Fig. 1875).

*Material examined.* USA: North Carolina: Jackson Co., 3 mi SW Balsam Gap: ♂ holotype above; same locality, in back of old truck, 9.viii.1994 (M. Kuntner), 1♀ in USNM.

*Pholcus muralicola* Maughan & Fitch, 1976

Figs. 1768-1770, 1794, 1795, 1911-1915

*Pholcus muralicola* Maughan & Fitch 1976: 304-311, figs. 1, 2, 3b, 4. Brignoli 1983: 168 ("probably misplaced").

*Types.* Male holotype from USA, Kansas, Douglas Co., University of Kansas Natural History Reservation [39°02.5'N, 95°11.8'W], 1030 ft a.s.l., 4.iii.1967 (O.E. Maughan), in SEMK, examined. Unspecified number of paratypes (~18♂24♀, see tables 1 and 2 in Maughan & Fitch 1976) from within 0.8 miles from type locality, dates and collectors not specified, partly apparently lost (partly possibly in AMNH, see below), 2♂3♀ 2 juvs. examined (all poorly preserved), in SEMK.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 1911, 1912; distinctive serrated process on procurus, appendix with slender curved process).

*Male* (type locality). Total body length 4.2, carapace width 1.1. Leg 1: 7.6 + 0.5 + 7.9, metatarsus and tarsus missing, tibia 2: 5.2, tibia 3: 3.6, tibia 4: 4.5; tibia 1 L/d: 78. Habitus as in Figs. 1768 and 1769. Carapace ochre-yellow with large brown mark partly divided medially, ocular area with median line, clyp-

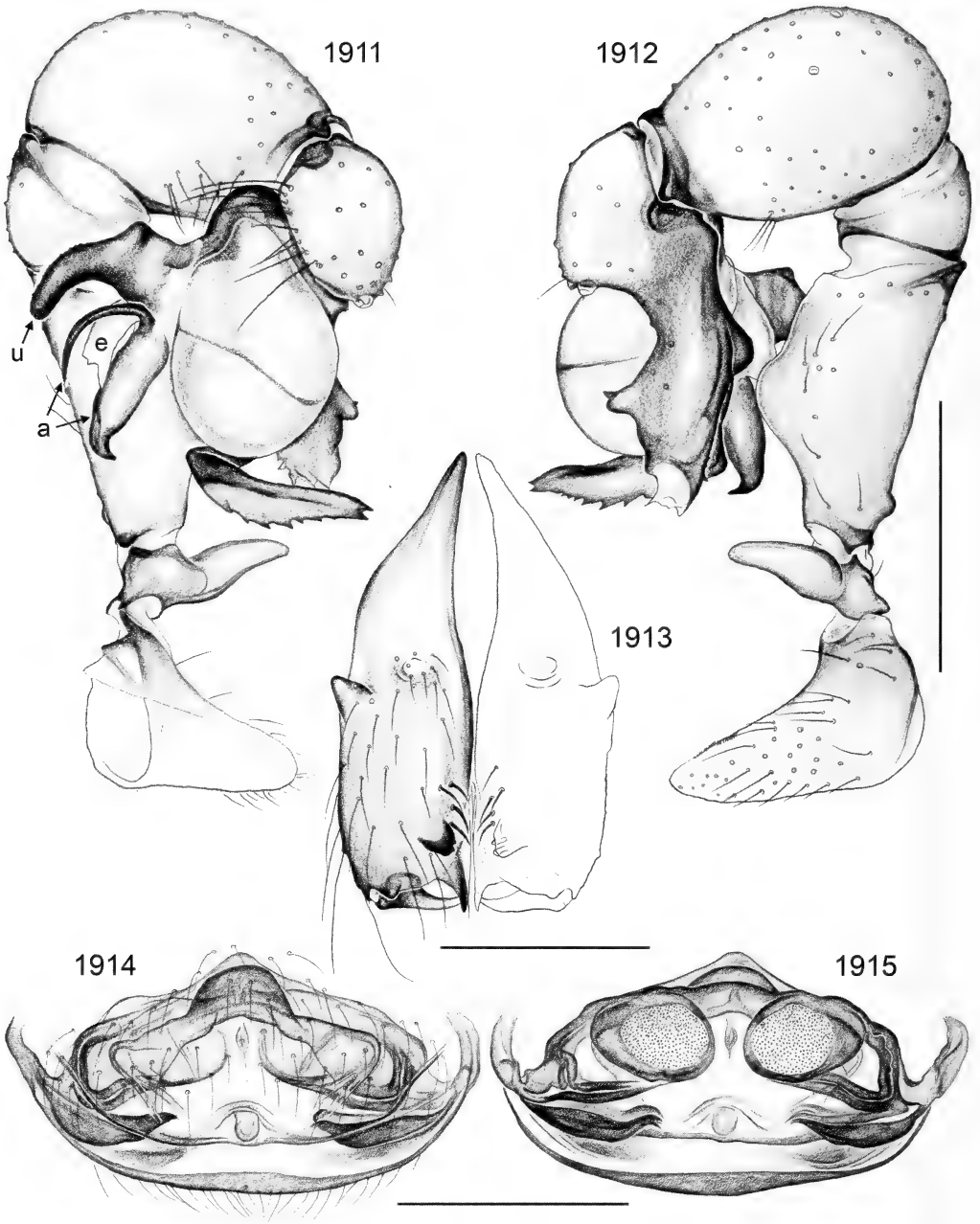


FIG. 1911-1915. *Pholcus muralicola*. 1911, 1912. Left male palp, prolateral and retrolateral views. 1913. Male chelicerae, frontal view. 1914, 1915. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1911, 1912, 1914, 1915), 0.3 (1913).

eus not darkened, sternum light brown with lighter specks, legs light brown, tips of femora and tibiae lighter, abdomen monochromous, only genital area with light brown pattern. Distance PME-PME 185  $\mu\text{m}$ , diameter PME 95  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 35  $\mu\text{m}$ , diameter AME 70  $\mu\text{m}$ . Ocular area moderately elevated, few slightly stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1913, distal frontal apophyses with two modified hairs each, with proximal frontal and lateral apophyses, stronger hairs close to distal apophyses. Sternum wider than long (0.75/0.65), unmodified. Palps as in Figs. 1911 and 1912, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with ventral bulge and low dorsal apophysis proximally, procurus with spine on dorsal projection, with very distinctive prolatero-distal serrated process curved towards dorsal, bulb with slender uncus, weakly sclerotized embolus, appendix consisting of two processes. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation.* Tibia 1 in two other males: 7.5, 8.1.

*Female.* In general similar to male, eye triads as in male (distance PME-PME 185  $\mu\text{m}$ ); tibia 1 in four females: 6.3, 6.6, 6.7, 7.1. Epigynum weakly sclerotized, barely elevated, with distinctive internal arc visible through cuticle anteriorly, small 'knob' (Figs. 1794, 1914); internal genitalia as in Figs. 1795 and 1915.

*Distribution.* Known from two localities in Kansas and Missouri respectively (Fig. 1875). Possibly extinct at type locality (B. Cutler & H. Guarisco, pers. comm., May 2010).

*Material examined.* USA: *Kansas:* Douglas Co., University of Kansas Natural History Reservation: ♂ holotype and 2♂3♀ paratypes above; same locality, 25.vii.1960 (2♀) and viii.1964 (2♂2♀) (possibly also paratypes), in AMNH. *Missouri:* Texas Co., 12 mi "SNW" Licking [37°30'N, 92°06'W], "FS Cave 135", 1.v.1980 (J.E. Gardner), 1♂1♀ in AMNH.

#### *Pholcus calligaster* species group

*Diagnosis.* Medium-sized, long-legged *Pholcus* (body length ~3.5-4.5, leg 1:~20-40); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, male chelicerae with three pairs of frontal apophyses (e.g., Figs. 1998, 2024), abdomen long oval to cylindrical,

without dorsal cuticular pattern, male palpal femur with distinctive anvil-shaped ventral apophysis (e.g., Figs. 1981, 2018, 2023), procurus with dorsal spine, uncus with unusually large scales along rim (e.g., Figs. 1980, 1990, 2005), appendix branched, epigynum sclerotized, with 'knob'.

*Description.* Body length ~3.5-4.5, carapace width 1.0-1.1. Ocular region distinctly elevated, sometimes with pair of sculptured horns between triads (e.g., Figs. 1987, 2002), AME present. Clypeus and sternum unmodified. Male chelicerae with pair of lateral apophyses and three pairs of frontal apophyses, distal pair provided with two modified hairs each. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with small retrolatero-dorsal apophysis and distinctive anvil-shaped ventral apophysis, tarsus with cone-shaped dorsal elongation (longer in *Ph. fragillimus*), tarsal organ capsulate, procurus with ventral 'knee', with only one dorsal spine. Male uncus with unusually large scales, weakly sclerotized embolus, appendix divided. Legs long, tibia 1 in males ~5-10, tibia 1 L/d ~50-80, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~4-7%. Abdomen long oval to cylindrical, without dorsal cuticular pattern, ventrally only in *Ph. calligaster* with distinct pattern (Fig. 1918), male gonopore with four epandrous spigots, ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, ocular area less raised and never with horns, chelicerae unmodified, legs barely shorter (in *Ph. fragillimus* apparently longer in females than in males!). Epigynum sclerotized, with 'knob', internal genitalia with pair of pore-plates.

*Monophyly.* All species share the three frontal apophyses on the male chelicerae (of which the median pair is probably the actual synapomorphy; char. 22), the distinctive shape of the ventral male palpal femur apophysis (char. 31), and a row of unusually large scales on the uncus (char. 51; e.g., Figs. 1980, 1990, 2005). Two further shared characters might also be synapomorphies: the raised ocular area (e.g., Figs. 1919, 1920), and the single dorsal spine on the procurus. The conical dorsal elongation of the male palpal tarsus (char. 34) is probably plesiomorphic (Fig. 26).

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), the procur-

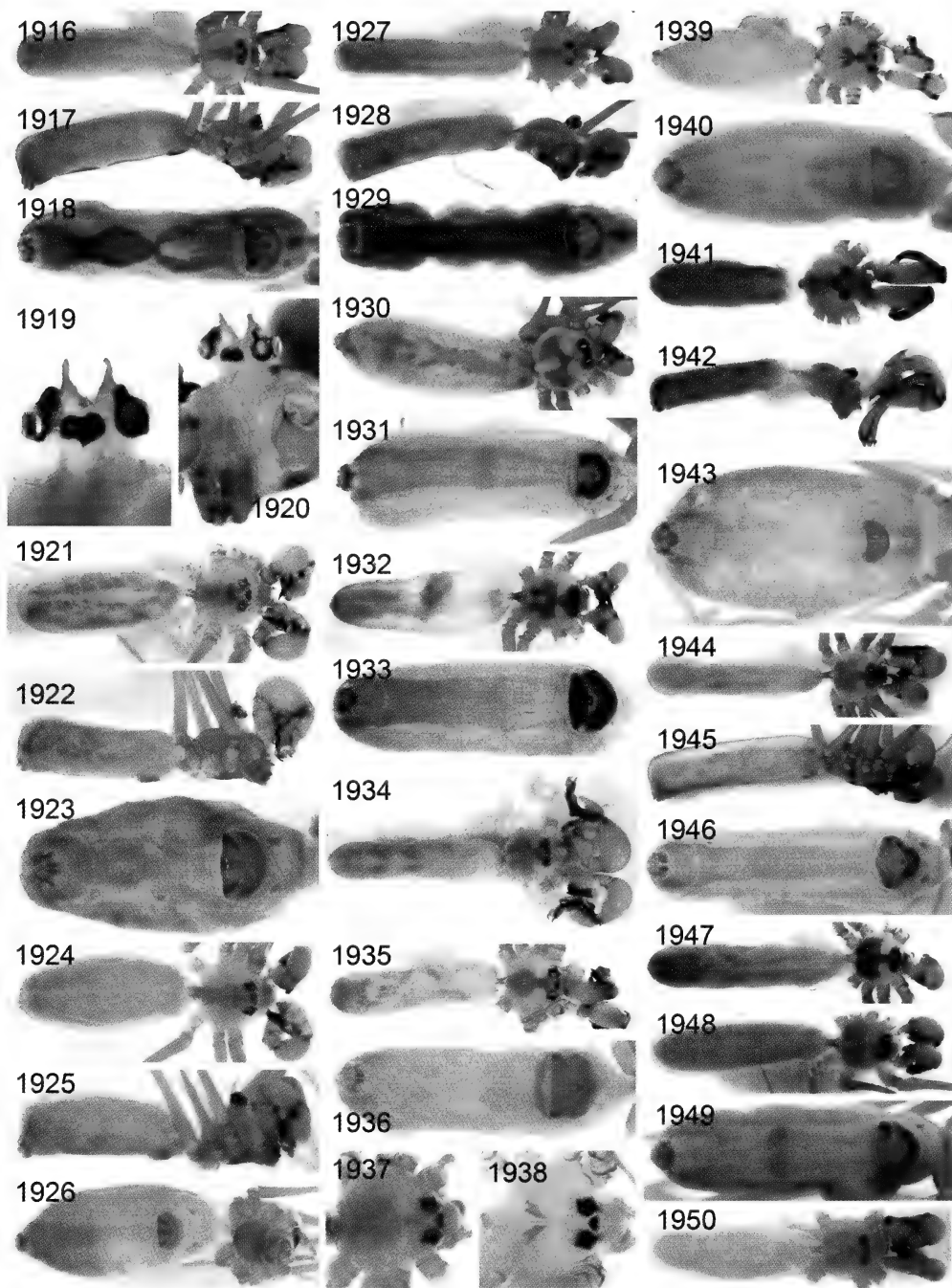


FIG. 1916-1950. *Pholcus calligaster*, *Ph. bidentatus*, and *Ph. nagasakiensis* species groups, habitus. 1916-1919. *Ph. calligaster*, male, dorsal and lateral views; female abdomen, ventral view; male ocular area, frontal view. 1920-1923. *Ph. djelalabad*, male prosoma, oblique view; male, dorsal and lateral views; female abdomen, ventral view. 1924-1926. *Ph. fragillimus*, male, dorsal and lateral views; female abdomen, ventral view. 1927-1929. *Ph. kobi*, male, dorsal and lateral views; female abdomen, ventral view. 1930, 1931. *Ph. bidentatus*, male, dorsal view; female abdomen, ventral view. 1932, 1933. *Ph. namkhan*, male, dorsal view; female abdomen, ventral view. 1934. *Ph. gui*, male, dorsal view. 1935-1937. *Ph. thakek*, male, dorsal view; female abdomen, ventral view; female prosoma, dorsal view. 1938-1940. *Ph. jaegeri*, female prosoma, dorsal view; male, dorsal view; female abdomen, ventral view. 1941-1943. *Ph. bangfai*, male, dorsal and lateral views; female abdomen, ventral view. 1944-1946. *Ph. otomi*, male, dorsal and lateral views; female abdomen, ventral view. 1947. *Ph. nagasakiensis*, male, dorsal view. 1948, 1949. *Ph. wuyiensis*, male, dorsal view; female abdomen, ventral view. 1950. *Ph. yoshikurai*, male, dorsal view.

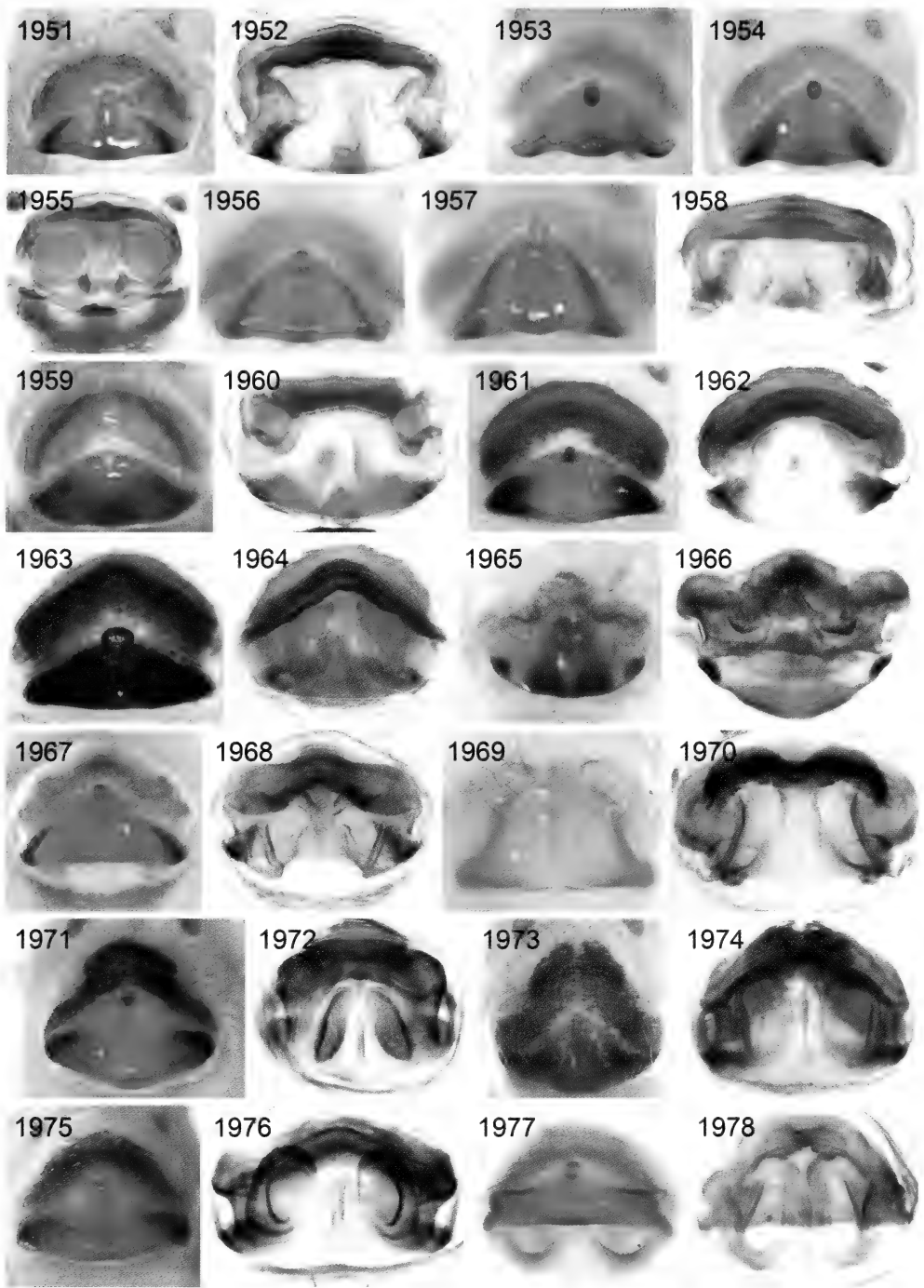


FIG. 1951-1978. *Pholcus calligaster*, *Ph. bidentatus*, and *Ph. nagasakiensis* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 1951, 1952. *Ph. djelalabad*. 1953-1955. *Ph. calligaster*, syntype (1953) and female from Shwe Settaw W.R. (1954, 1955). 1956-1958. *Ph. fragillimus*, from Sri Lanka (1956) and India (1957, 1958). 1959, 1960. *Ph. kobi*. 1961, 1962. *Ph. bidentatus*. 1963, 1964. *Ph. namkhan*. 1965, 1966. *Ph. gui*. 1967, 1968. *Ph. thakek*. 1969, 1970. *Ph. jaegeri*. 1971, 1972. *Ph. otomi*. 1973, 1974. *Ph. nagasakiensis*. 1975, 1976. *Ph. wuyiensis*. 1977, 1978. *Ph. yoshikurai*.



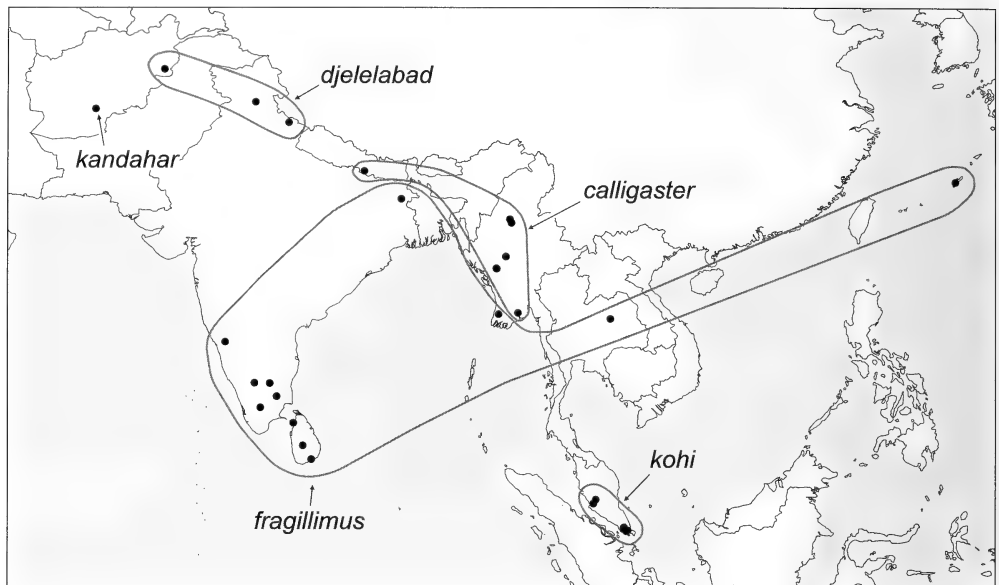


FIG. 1979. Known distribution of the *Pholcus calligaster* species group.

sus with dorsal spine (char. 38), and the branched appendix (char. 57) place this group in a polytomy together with several mostly Palaearctic *Pholcus* species groups (Fig. 27). The cladistic analysis suggests that the *Ph. calligaster* group is most closely related to two other Asian species groups (*Ph. bidentatus* and *Ph. nagasakiensis* groups), based on the dorsal elongation of the male palpal tarsus (char. 34). Within the *Ph. calligaster* species group, three species share a unique pair of sculptured horns between the triads (char. 7): *Ph. djelalabad*, *Ph. kandahar*, and *Ph. calligaster*.

**Natural history.** The species have been collected from a variety of microhabitats. None of them seems restricted to pristine habitats, and at least two seem to tolerate considerable human disturbance (*Ph. calligaster*, *Ph. fragillimus*).

**Distribution.** The group is widely distributed in South and Southeast Asia (Fig. 1979). *Pholcus fragillimus* seems to have expanded its original range by human transport.

**Composition.** The group includes five species: *Ph. calligaster* Thorell, 1895; *Ph. djelalabad* Senglet, 2008; *Ph. kandahar* Senglet, 2008; *Ph. fragillimus* Strand, 1907; *Ph. kohi* n. sp. Four species are treated below; for *Ph. kandahar*, see Senglet (2008).

*Pholcus calligaster* Thorell, 1895

Figs. 1916-1919, 1953-1955, 1980-1994

*Pholcus calligaster* Thorell 1895: 71-72. Thorell 1898: 274.

**Types.** Female syntype from Myanmar, Rangoon [=Yangon: 16°52'N, 96°08'E], collected by Oates, "No 269a", no further data, in NHRS, examined. The second female syntype mentioned in the original description was not examined; it might be in Museo Civico di Storia Naturale "Giacomo Doria", Genova. **Diagnosis.** Easily distinguished from most congeners by male horns between eye triads (Figs. 1919, 1987) and three pairs of frontal apophyses on male chelicerae (Fig. 1983); from similar species (*Ph. djelalabad*, *Ph. kandahar*) by details of male palpal morphology (Figs. 1980, 1981; shapes of procurus and appendix); and distinctive ventral abdominal pattern (Fig. 1918).

**Male** (Shwe Settaw). Total body length 4.5, carapace width 1.1. Leg 1: 34.1 (8.2 + 0.6 + 8.5 + 14.5 + 2.3), tibia 2: 5.5, tibia 3: 3.6, tibia 4: 5.2; tibia 1 L/d: 69. Habitus as in Figs. 1916 and 1917. Carapace ochre-yellow with median brown mark and indistinct lateral marks posteriorly, ocular area with brown horns and brown pattern posteriorly, otherwise not dark-



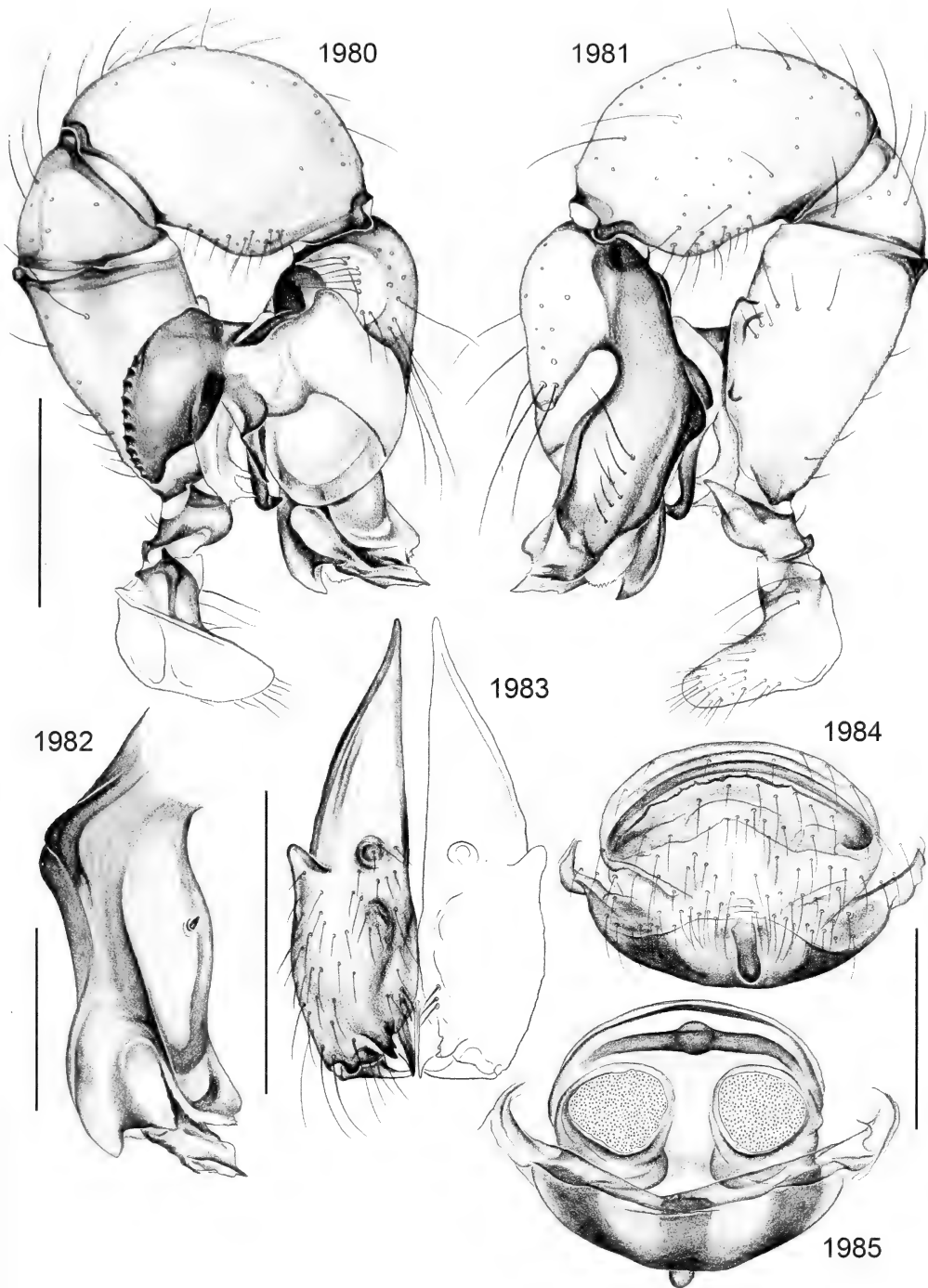


FIG. 1980-1985. *Pholcus calligaster*. 1980, 1981. Left male palp, prolateral and retrolateral views. 1982. Left procursus, prolateral view. 1983. Male chelicerae, frontal view. 1984, 1985. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1980, 1981, 1983-1985), 0.3 (1982).

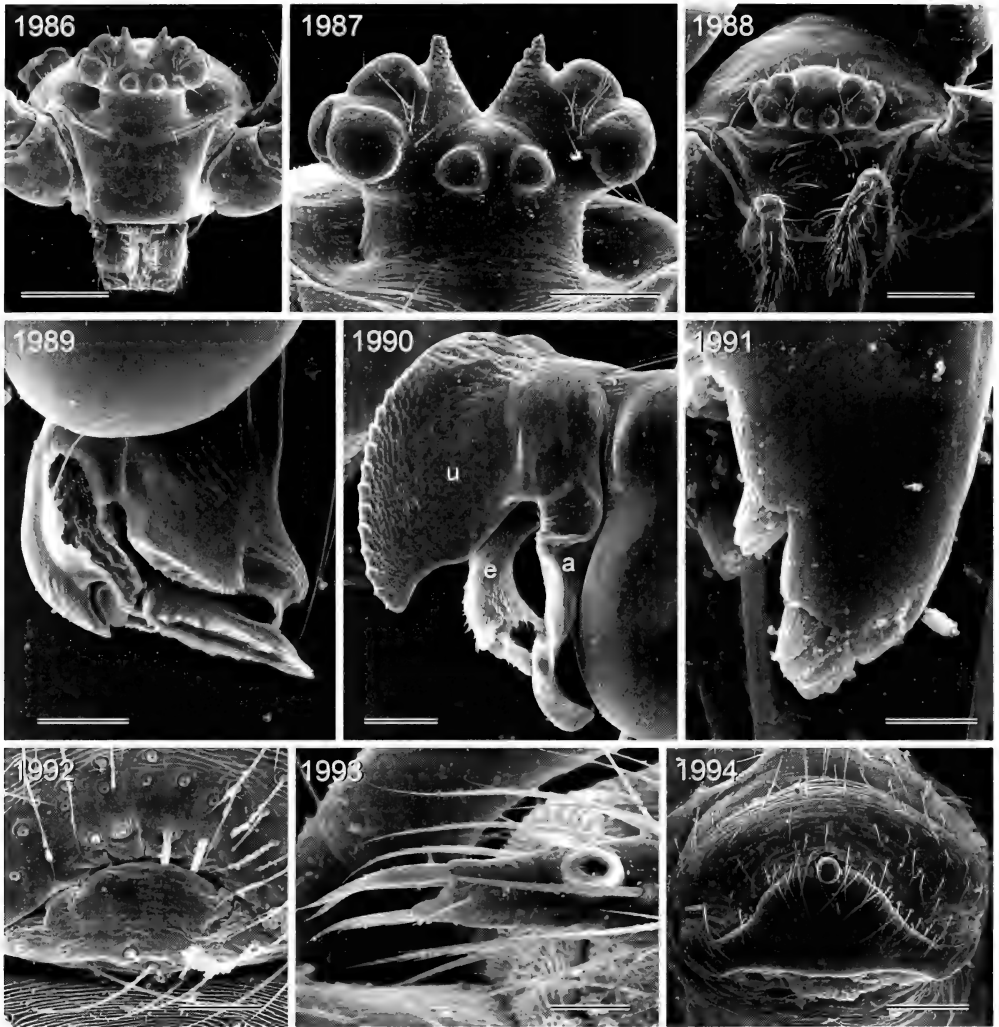


FIG. 1986-1994. *Pholcus calligaster*. 1986, 1987. Male prosoma and ocular area, frontal views. 1988. Female prosoma, dorso-frontal view. 1989. Left procurtus tip, prolateral view. 1990. Left bulbal processes, prolateral view. 1991. Distal male cheliceral apophysis. 1992. Male gonopore (two spigots damaged). 1993. Tip of female palpal tarsus. 1994. Epigynum. Scale lines: 400  $\mu\text{m}$  (1986, 1988), 200  $\mu\text{m}$  (1987, 1994), 100  $\mu\text{m}$  (1989, 1990), 50  $\mu\text{m}$  (1992), 40  $\mu\text{m}$  (1993), 10  $\mu\text{m}$  (1991).

ened, clypeus only slightly darker than carapace, sternum irregularly dark brown, legs ochre to light brown, patellae slightly darker, tips of femora and tibiae lighter, abdomen ochre-gray with small darker internal spots dorsally and laterally, ventrally with distinctive cuticular pattern (cf. female, Fig. 1918). Distance PME-PME 285  $\mu\text{m}$ , diameter PME 105  $\mu\text{m}$ , distance PME-ALE 25  $\mu\text{m}$ , distance AME-AME

35  $\mu\text{m}$ , diameter AME 80  $\mu\text{m}$ . Ocular area elevated, with distinctive pair of horns medially of PME (Figs. 1919, 1987), many stronger hairs on posterior side (lost in Figs. 1986, 1987). No thoracic furrow (only dark median line anteriorly); clypeus unmodified. Chelicerae as in Fig. 1983, distal apophyses with two modified hairs each (Fig. 1991), proximally with one pair of lateral apophyses, one pair of frontal apophy-

ses, and one pair of frontal ridges. Sternum wider than long (0.8/0.6), unmodified. Palps as in Figs. 1980 and 1981, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with three inconspicuous projections ventrally, procurus complex distally (Figs. 1982, 1989), with distinctive membranous and sclerotized elements, with one spine prolatero-dorsally, bulb with unculus, weakly sclerotized embolus, pointed tip of appendix directed retrolaterally (Fig. 1990). Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments only distally fairly distinct. Gonopore with four epiandrous spigots (Fig. 1992).

*Variation.* Tibia 1 in 15 other males: 7.0-9.5 (mean 8.4). Lateral marks on carapace variably distinct.

*Female.* In general similar to male but ocular area without horns and few normal hairs, triads closer together (Fig. 1988; distance PME-PME 205  $\mu$ m). Tibia 1 in 28 females: 6.8-10.0 (mean 8.1). Epigynum a protruding triangular plate with anterior 'knob' (Figs. 1953, 1954, 1984, 1994; very similar to *Ph. fragillimus*); internal genitalia as in Figs. 1955 and 1985. The syntype has lost much of its coloration, but ventral abdominal pattern still clearly visible; femur 1: 7.5 (tibia 1 missing).

*Note.* This species is unusual in that males do not have considerably longer legs than females. Considering only the specimens from Shwe Settaw, tibia 1 in 8 males ranges from 7.0-9.0 (mean 8.3), in 17 females from 7.3-10.0 (mean 8.1). A similar situation is documented for the closely related *Ph. fragillimus* below.

*Distribution.* Known from several localities in Myanmar and from Nepal (Fig. 1979).

*Material examined.* MYANMAR: *Yangon Division:* Yangon: 1♀ syntype above. *Magway Division:* Shwe Settaw Wildlife Reservation (20°05.8'N, 94°33.4'E), 450' a.s.l., deciduous forest, general collecting, 28.-29.ix.2003 (C.E. Griswold), 4♂11♀ in CAS (9019385); same data, 3♂2♀ (2 vials) in CAS (9019346, 473); same locality, at termite mound, 29.ix.2003 (D. Ubick), 2♀ in CAS (9017093); same locality, deciduous forest, puffing at tree bases, 29.ix.2003 (D. Ubick), 1♂1♀ in CAS (9017083); same locality, guest house (20°03.6'N, 94°35.7'E), deciduous forest, at night, 28.ix.2003 (D. Ubick), 1♀ in CAS (9017110); same data but 28.ix.2003 (C.E. Griswold, P. Sierwald, D. Ubick, Aye Aye Cho, Tin Mya Soe), 1♀ in CAS (9019787). Shwe Settaw

Wildlife Reservation (20°04.1'N, 94°35.0'E), 140 m a.s.l., deciduous forest, at night, 29.ix.2003 (C.E. Griswold, P. Sierwald, D. Ubick, Aye Aye Cho, Tin Mya Soe), 1♀ in CAS (9019673). *Mandalay Division:* Mt. Popa Wildlife Reserve, 4.63 km 90° E Po Pa Myo (20°55.7'N, 95°15.3'E), 2000' a.s.l., ravine in rainforest, general collecting, 23.ix.2003 (D. Ubick, C.E. Griswold), 2♀ 1 juv. in CAS. *Saigang Division:* Chattin Wildlife Sanctuary, San Myaung (23°23.1'N, 95°38.9'E), day, 4.-17.x.1998 (J. Coddington, R. Baptista), 5♂9♀ in USNM; same data but night, 1♀ in USNM. Chattin Wildlife Sanctuary, Takontaing Camp (23°37.3'N, 95°31.9'E), day, 7.-12.x.1998 (J. Coddington, R. Baptista), 3♂3♀ in USNM.

NEPAL: [Parsa District], 13 mi N Birganj [-27°11'N, 84°58'E], 200 m a.s.l., 16.xi.1961 (E.S. Ross, D.Q. Cavagnaro), 2♂1♀ in CAS.

*Pholcus djelalabad* Senglet, 2008

Figs. 1920-1923, 1951, 1952, 1995-2016

*Pholcus djelalabad* Senglet 2008: 368-370, figs. 88-95.

*Types.* Male holotype and 1♀ paratype from Afghanistan, Nangarhar Prov., northeast of Djelalabad [=Jalalabad] (34°30'N, 70°33'E), 8.viii.1975 (A. Senglet), in MHNG, examined.

*Diagnosis.* Easily distinguished from most congeners by male horns between eye triads (Figs. 1920, 2001-2003) and three pairs of frontal apophyses on male chelicerae (Fig. 1998); from similar species (*Ph. calligaster*, *Ph. kandahar*) by details of male palpal morphology (Figs. 1995, 1996; shapes of procurus and appendix); from *Ph. calligaster* also by epigynum shape and absence of ventral abdominal pattern (Figs. 1923, 1951).

*Male* (Patlikuhl). Total body length 3.6, carapace width 1.0. Leg 1: 22.9 (5.8 + 0.5 + 5.9 + 8.9 + 1.8), tibia 2: 3.8, tibia 3: 2.6, tibia 4: 3.8; tibia 1 L/d: 58. Habitus as in Figs. 1921 and 1922. Carapace ochre-yellow with large median brown mark, ocular area with brown pattern posteriorly, clypeus not darkened, sternum brown, legs ochre-yellow, tibiae slightly darker, abdomen ochre-gray with irregular pattern of darker spots dorsally and laterally, ventrally no markings (cf. female, Fig. 1923), only genital area light brown. Distance PME-PME 255  $\mu$ m, diameter PME 105  $\mu$ m, distance PME-ALE 25  $\mu$ m, distance AME-AME 50  $\mu$ m, diameter AME 60  $\mu$ m. Ocular area elevated, with distinctive horns medially of PME (Figs. 1920, 2001-2003), many stronger hairs on

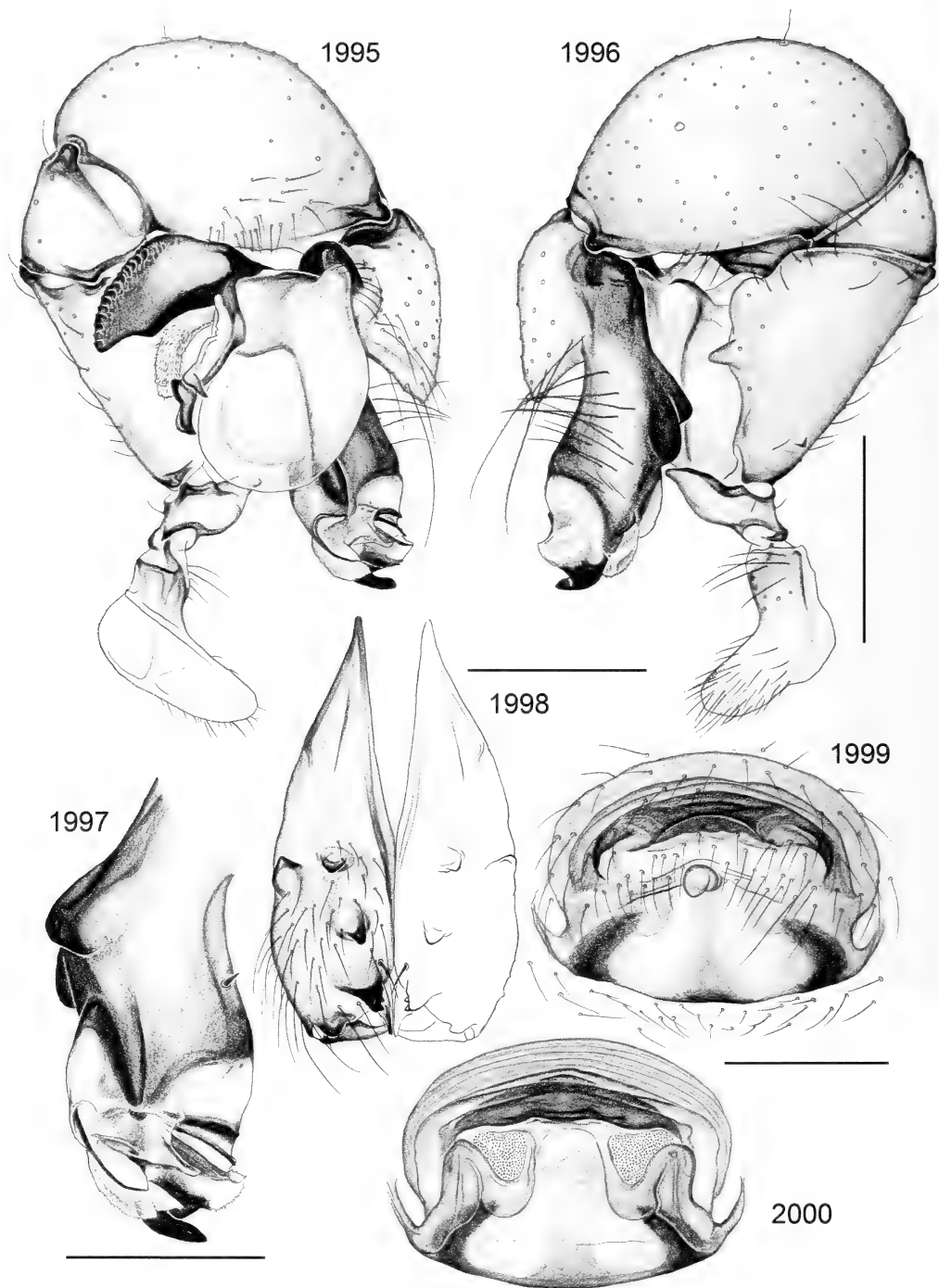


FIG. 1995-2000. *Pholcus djelalabad*. 1995, 1996. Left male palp, prolateral and retrolateral views. 1997. Left procurrus, prolateral view. 1998. Male chelicerae, frontal view. 1999, 2000. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (1995, 1996), 0.3 (1997-2000).

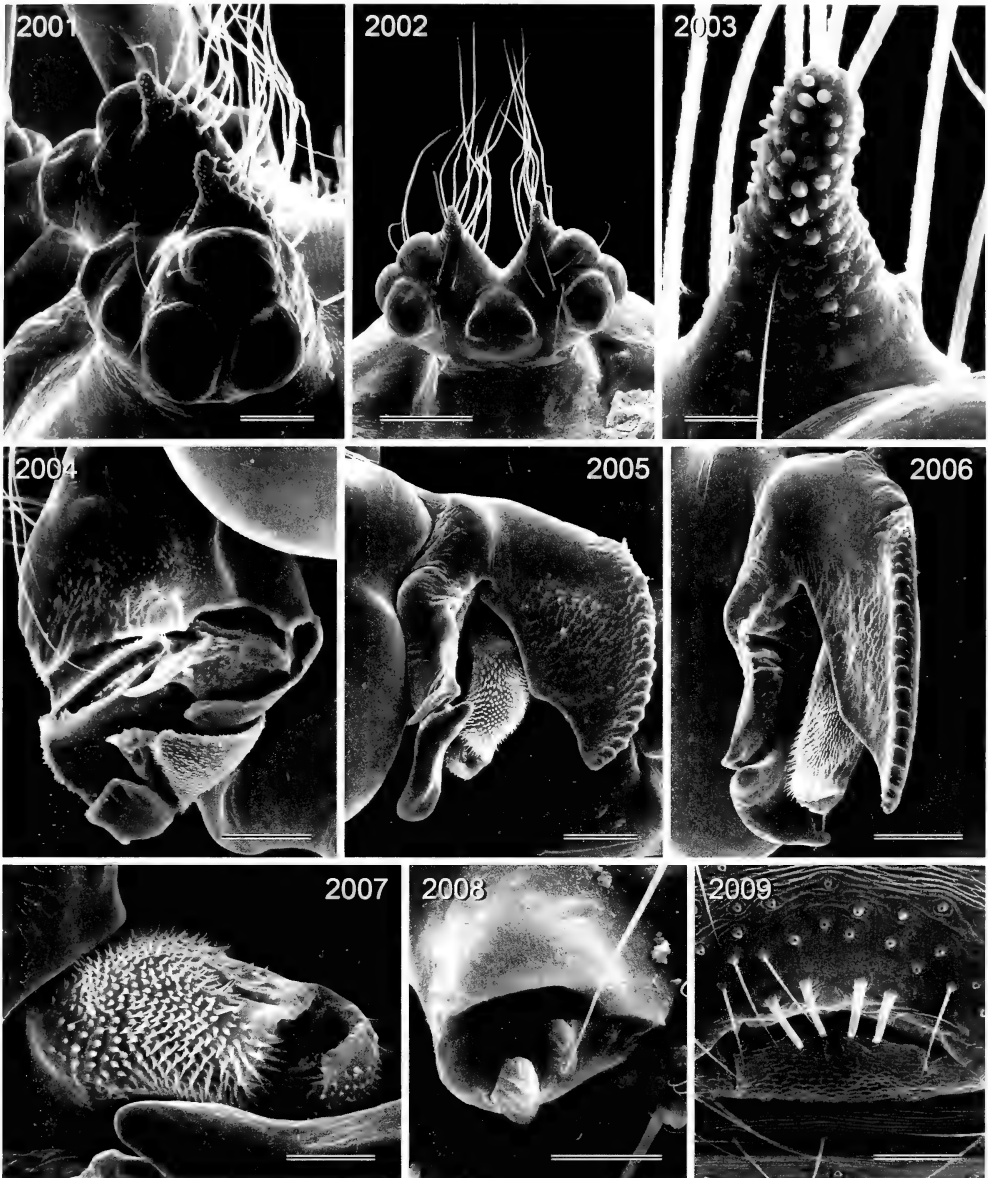


FIG. 2001-2009. *Pholcus djelalabad*. 2001, 2002. Male ocular area, oblique and frontal views. 2003. Projection on male ocular area. 2004. Right procurus, prolateral view. 2005, 2006. Right bulbal processes, prolateral and dorsal views. 2007. Right embolus. 2008. Distal male cheliceral apophysis. 2009. Male gonopore. Scale lines: 200  $\mu\text{m}$  (2002), 100  $\mu\text{m}$  (2001, 2005, 2006), 80  $\mu\text{m}$  (2004), 60  $\mu\text{m}$  (2009), 40  $\mu\text{m}$  (2007), 20  $\mu\text{m}$  (2003, 2008).

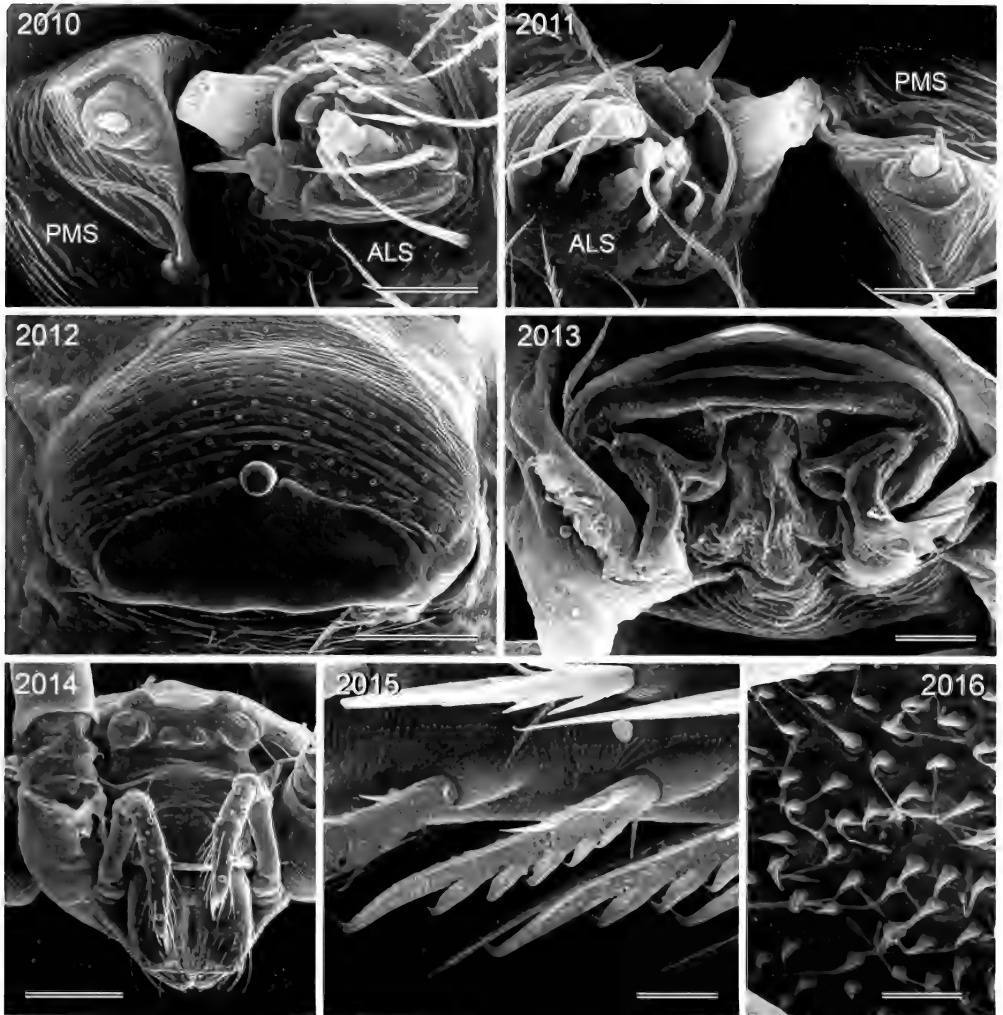


FIG. 2010-2016. *Pholcus djelalabad*. 2010, 2011. Male (2010) and female (2011) ALS and PMS. 2012. Epigynum. 2013. Cleared female genitalia, dorsal view. 2014. Female prosoma, frontal view. 2015. Comb-hairs on right female tarsus 4. 2016. Detail of pore-plate. Scale lines: 300  $\mu\text{m}$  (2014), 200  $\mu\text{m}$  (2012), 100  $\mu\text{m}$  (2013), 20  $\mu\text{m}$  (2010, 2011), 10  $\mu\text{m}$  (2015, 2016).

posterior side. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 1998, distal apophyses with two modified hairs each (Fig. 2008), proximally with one pair of lateral and two pairs of frontal apophyses. Sternum wider than long (0.70/0.55), unmodified. Palps as in Figs. 1995 and 1996, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with small proximal apophysis retrolatero-dorsally, two larger projections ventrally, procurus

very complex distally (Figs. 1997, 2004), with several distinctive membranous and sclerotized elements, with one spine dorsally, bulb with uncus, weakly sclerotized embolus covered with short spines (Fig. 2007), appendix distally pointed and directed retrolaterally, with additional small prolateral process (Figs. 2005, 2006). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral

trichobothrium absent on tibia 1, present on other tibiae; tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 2009); ALS with eight spigots each (Fig. 2010).

*Variation.* Tibia 1 in 2 other males: 6.4, 7.2; missing in holotype. Pattern on abdomen variably distinct. Holotype with palp slightly smaller and distal apophysis of procurus slightly less curved.

*Female.* In general similar to male but ocular area without horns and with few normal hairs, triads closer together (Fig. 2014; distance PME-PME 195  $\mu$ m). Tibia 1 in 6 females: 5.7-6.5 (mean 6.2); tarsus 4 with single row of comb-hairs (Fig. 2015). Epigynum as in Figs. 1951, 1999, and 2012 (very similar to *Ph. calligaster*); internal genitalia as in Figs. 1952, 2000, and 2013. In the paratype the pore plates are rounder (fig. 89 in Senglet 2008). ALS as in male (eight spigots each; Fig. 2011).

*Distribution.* Known from eastern Afghanistan and northern India (Fig. 1979).

*Material examined.* AFGHANISTAN: *Nangarhar Prov.*: NE of Jalalabad: 1♂1♀ types above.

INDIA: *Himachal Pradesh*: Patlikuhl Town (32°07.4'N, 77°08.8'E), 1200 m a.s.l., 17.-23.vi.1999 (Yu.M. Marusik), 5♂8♀ (2 vials) in ZFMK. *Uttar Pradesh*: Gobind Ghat Vill. (30°37.5'N, 79°33.5'E), 1750-1900 m a.s.l., 17.-23.v.1999 (Yu.M. Marusik), 2♂1♀ in ZFMK.

*Pholcus fragillimus* Strand, 1907

Figs. 1924-1926, 1956-1958, 2017-2021

*Pholcus fragillimus* Strand 1907c: 126-128.

*Pholcus okinawaensis* Irie 2002: 141-143, figs. 1-7. Irie 2009: 108, figs. (2-2-13) 21-23 (22 and 23 copied from Irie 2002). New synonymy.

*Types.* *Pholcus fragillimus*: Male and female syntypes from Sri Lanka, collected by Redemann, no further data, probably lost (but see Note below).

*Pholcus okinawaensis*: Male holotype from Japan, Okinawa Prefecture, Okinawa-shi, Tönanshokubut-su-rakuen [-26°22'N, 127°48'E], 24.viii.2001 (T. Irie), in NSMT (Ar 5211), examined; female "allotype" from same locality, 7.viii.2001, in NSMT (AR 5212), examined.

*Note.* The MNHN has a vial containing a single male palp and the label "197 c. St. *Pholcus fragillimus* Strand, ♂ - Ceylan" (AR 10233). This palp is very pale but agrees perfectly well with those of the specimens described below which in turn agree well with the

original description. The abbreviation "c. St." probably denotes "collectio Strand". It seems thus quite probable that the single male palp is in fact taken from the type series (and is all that is left from it).

*Justification of synonymy.* The types of *Ph. okinawaensis* were compared directly with *Ph. fragillimus* specimens from Sri Lanka. The genitalia are indistinguishable, including the distinctive semitransparent process on the appendix.

*Diagnosis.* Easily distinguished from most congeners by three pairs of frontal apophyses on male chelicerae (Fig. 2019) and large scales on uncus (Fig. 2017); from only similar species without male horns between eye triads (*Ph. kobi*) by details of male palpal morphology (Figs. 2017, 2018; tarsus elongation, procurus shape, appendix with distinctive semitransparent process; arrow in Fig. 2017), and female genitalia (Figs. 1956, 2021).

*Male* (Wirawila). Total body length 3.6, carapace width 1.1. Leg 1: 21.5 (5.4 + 0.5 + 5.5 + 8.5 + 1.6), tibia 2: 3.5, tibia 3: 2.4, tibia 4: 3.5, tibia 1L/d: 48. Habitus as in Figs. 1924 and 1925. Carapace pale ochre-yellow with brown median band, ocular area posteriorly darkened, clypeus not darkened, sternum brown, legs ochre-yellow, tips of femora and tibiae slightly lighter, abdomen monochromous pale ochre-gray, ventrally with brown genital area, very indistinct brown band (cf. female, Fig. 1926). Distance PME-PME 265  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area strongly elevated, with many longer hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2019, distal apophyses with two modified hairs each, two further pairs of frontal apophyses and usual pair of lateral apophyses. Sternum slightly wider than long (0.65/0.55), unmodified. Palps as in Figs. 2017 and 2018, coxa unmodified, trochanter with short retrolateral apophysis, femur with low hump dorsally and distinctive modification ventrally, tarsus dorsally elongated, procurus complex distally with distinctive pointed prolateral apophysis, with one long spine very proximally, bulb with uncus provided with large scales, weakly sclerotized short and wide embolus, distinctive appendix with semitransparent prolateral process (arrow in Fig. 2017). Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 pseudosegments barely visible in dissecting microscope.



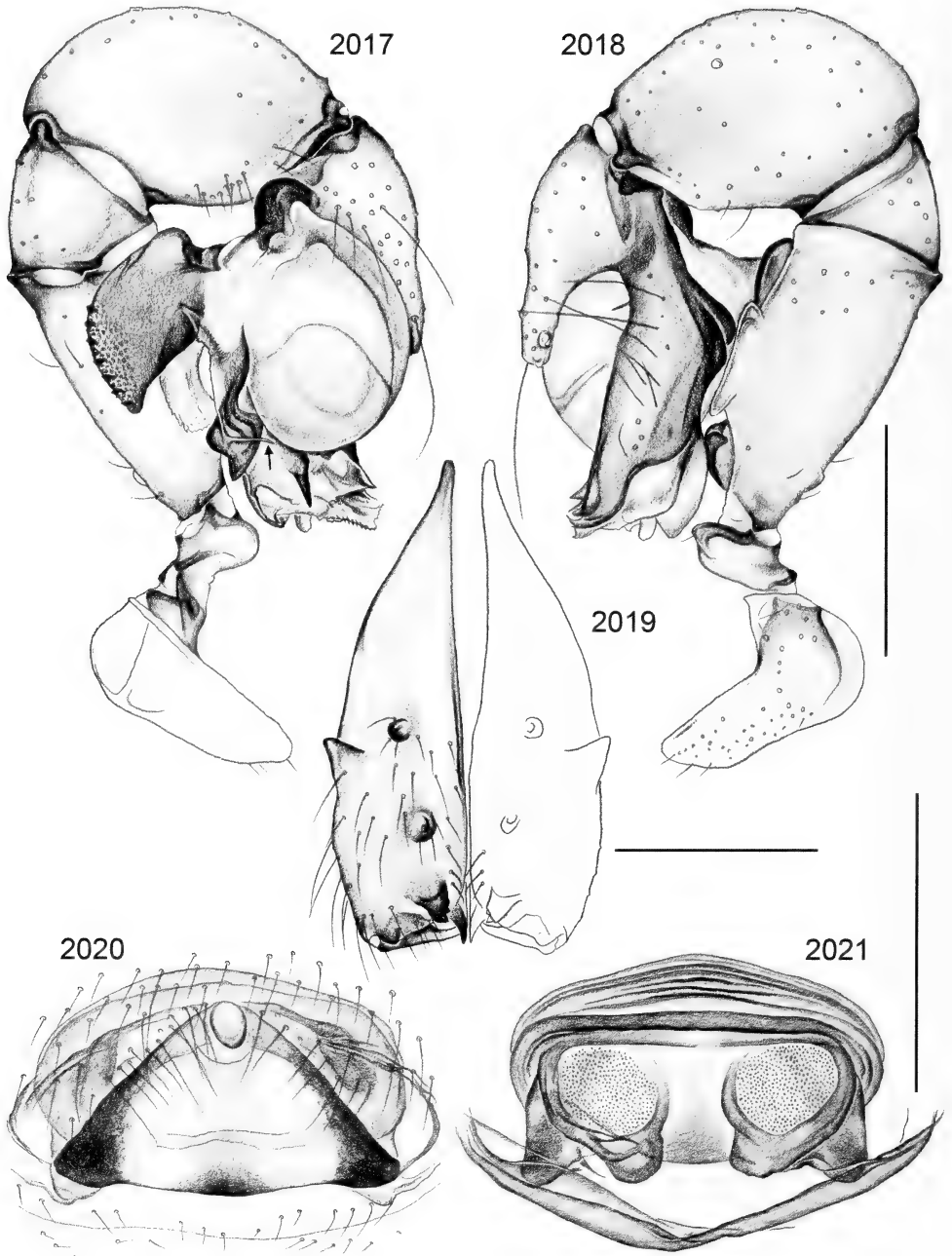


FIG. 2017-2021. *Pholcus fragillimus*. 2017, 2018. Left male palp, prolateral and retrolateral views (arrow points at tip of thin but distinctive process on appendix). 2019. Male chelicerae, frontal view. 2020, 2021. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (2017, 2018, 2020, 2021), 0.3 (2019).



*Variation.* Tibia 1 in 6 other males 5.3-7.3 (mean 6.5). Strand's (1907c) measured male had a tibia + patella (leg 1) length of 7.6 (i.e. tibia 1: -7.0). In some males, a few internal darker marks are visible through the abdominal cuticle dorsally. The prolateral process on the appendix is transparent and very difficult to see in most specimens. In the male from Peradeniya Botanical Garden it is absent, possibly artificially. The male holotype of *Ph. okinawaensis* is very pale and all legs are detached, but otherwise it is in fair condition; tibia 1: 7.3.

*Female.* In general similar to male but ocular area much less elevated, without longer hairs, and triads closer together (distance PME-PME 185  $\mu$ m). Tibia 1 in 8 females: 6.3-8.1 (mean 7.3); Strand's (1907c) measured female had a tibia + patella (leg 1) length of 8.0 (i.e. tibia 1: -7.5); tibia 1 in "allotype" of *Ph. okinawaensis*: 7.6. Epigynum a triangular plate of slightly varying shape, with very dark lateral margins and darker median band, with anterior 'knob' (Figs. 1956, 1957, 2020); internal genitalia as in Figs. 1958 and 2021.

*Remark.* The small sample sizes certainly preclude any definitive conclusion, but the tibia 1 measurements above indicate that this might be an extremely rare case of a pholcid with longer female than male legs (cf. Huber 2005b).

*Distribution.* Widely distributed in southern and eastern Asia (Fig. 1979).

*Material examined.* SRI LANKA: no further data, 1♂ palp, possibly of type specimen (see Note above). *Southern Province:* Wirawila [6°17.3'N, 81°13.6'E], "house surrounds, northwinds sanctuary", 16.-18.x.1982 ("Mike"), 1♂ in RMNH. *Western Province:* Colombo [-8°55'N, 79°55'E], 17.vii.1996 (S.P. Benjamin), 1♀ in ZFMK; same locality, 20.i.1974 (O.E. Paget), 1♀ in NHMW. *Central Province:* Kandy District, Peradeniya Botanical Garden [7°16.3'N, 80°35.7'E], 30.i.1969 (P. Lehtinen), 1♀ in ZMT (AA 3513); same locality, under leaves, 22.x.1982 (F.R. Wanless), 1♂1♀ + juvs. in RMNH. INDIA: *Tamil Nadu:* Trichinopoly [=Tiruchirappalli: 10°49'N, 78°42'E], with E. Simon's original label: "21310 *Ph. V-notatus* Th. Trichinopoly", no further data, 2♂2♀ in MNHN (AR 10222). Yercaud [11°46.6'N, 78°12.9'E], 4000' a.s.l., 6.iii.1962 (E.S. Ross, D.Q. Cavagnaro), 1♀ in CAS. 5 mi E Theni [10°01'N, 77°31'E], 350 m a.s.l., 24.iii.1962 (E.S. Ross, D.Q. Cavagnaro), 1♂1♀ in CAS. 5 km W Rajapalayam, Ayyanar Falls [-9°30'N, 77°27'E], 350 m a.s.l., xi.1979 (W. Eberhard), 1♂1♀ (2 vials) in

MCZ. *Karnataka:* Mysore, 2 mi NW Punjur [-11°48'N, 77°06'E], 850 m a.s.l., 13.iii.1962 (E.S. Ross, D. Cavagnaro), 1♂ in CAS. *Jharkhand:* 6 mi NE Borio [-25°06'N, 87°42'E], 220 m a.s.l., 30.x.1961 (E.S. Ross, D. Cavagnaro), 1♂2♀ (2 vials) in CAS. *Karnataka:* Dandeli [15°15'N, 74°37'E], 530 m a.s.l., xi.1979 (W. Eberhard), 1♀ in MCZ. MYANMAR: *Ayeyarwaddy:* Bassein [16°47'N, 94°44'E], no date (Workman, "269b"), 1♂1♀ in NHRS.

THAILAND: *Khon Kaen Province:* Khon Kaen University [16°26.8'N, 102°49.0'E], at electric lights, 17.iii.1994 (W.D. Shepard), 1♂ in CAS.

JAPAN: *Okinawa Prefecture:* Okinawa-shi, Tōnanshokubutsu-rakuen: 1♂1♀ types of *Ph. okinawaensis* above. Okinawa, Motobu Peninsula [-26°40'N, 127°55'E], no further data, 1♀ in AMNH.

*Pholcus kobi* n. sp.

Figs. 1927-1929, 1959, 1960, 2022-2026

*Type.* Male holotype from Indonesia, Sumatra, Riau Islands, Bantam Island, outside Turi Beach Resort [1°11.6'N, 104°06.1'E], in fern thicket, 19.vi.1990 (J.K.H. Koh, 90.06.19.0009), in ZFMK.

*Etymology.* The species is named for Joseph K.H. Koh who kindly contributed material from various South-east Asian countries.

*Diagnosis.* Easily distinguished from most congeners by three pairs of frontal apophyses on male chelicerae (Fig. 2024) and large scales on uncus (Fig. 2022); from only similar species without male horns between eye triads (*Ph. fragillimus*) by details of male palpal morphology (Figs. 2022, 2023; tarsus without dorsal elongation, shapes of procurus and appendix), and female genitalia (Figs. 1959, 2026).

*Male* (holotype). Total body length 4.2, carapace width 1.1. Leg 1: 35.9 (8.6 + 0.5 + 8.6 + 15.6 + 2.6), tibia 2: 5.2, tibia 3: 3.4, tibia 4: 4.9; tibia 1 L/d: 81. Habitus as in Figs. 1927 and 1928. Carapace ochre-yellow with median brown mark, ocular area with pair of small brown marks posteriorly, clypeus not darkened, sternum dark brown, legs light brown, tips of femora and tibiae whitish, abdomen ochre-gray with indistinct darker marks dorsally and laterally, ventrally with long brown band widened near spinnerets and in genital area (cf. female, Fig. 1929). Distance PME-PME 210  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 35  $\mu$ m, distance AME-AME 25  $\mu$ m, diameter AME 80  $\mu$ m. Ocular area elevated, without horns. No thoracic furrow (only short black line anteriorly); clypeus unmodified. Chelicerae as in

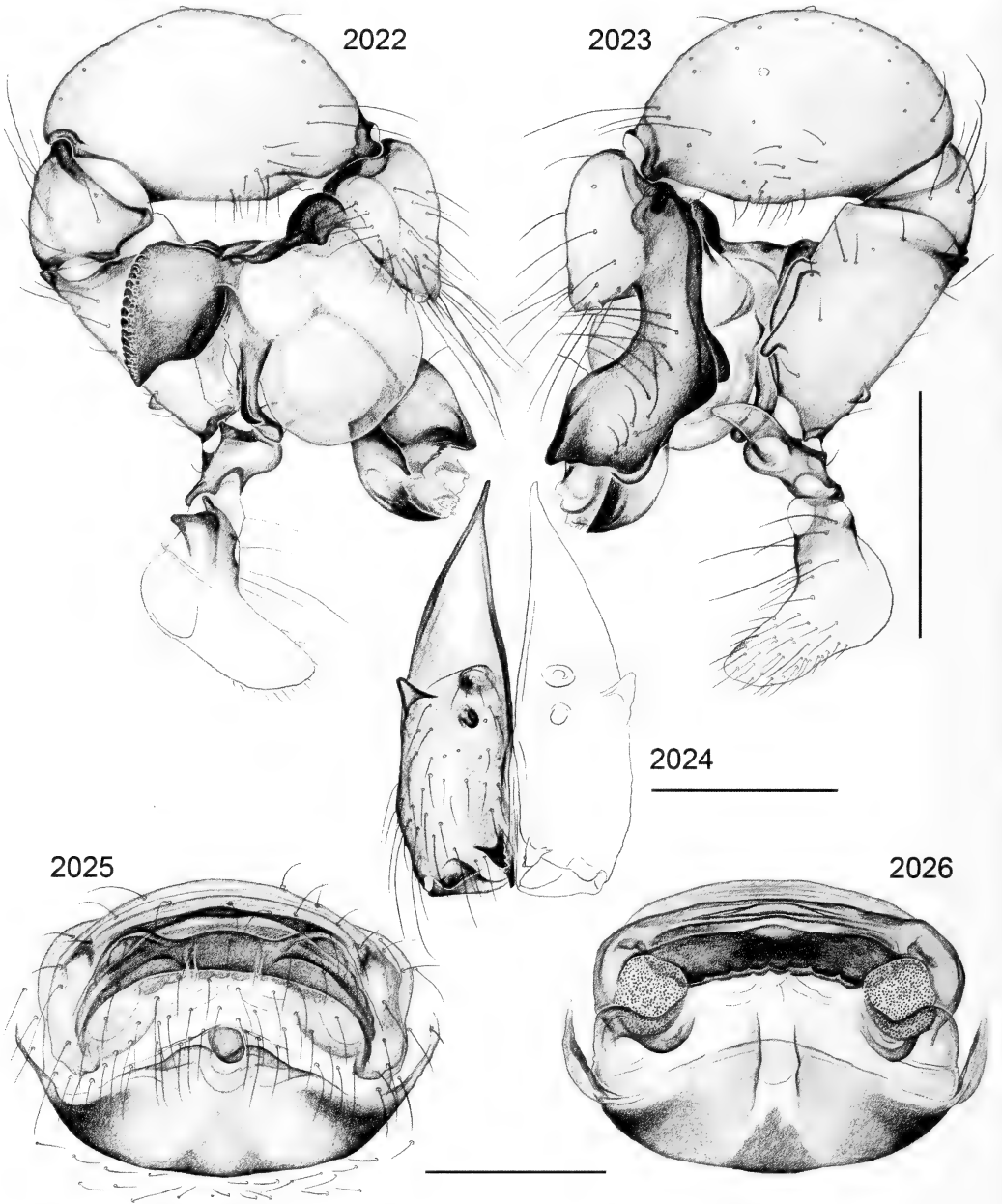


FIG. 2022-2026. *Pholcus kohi*. 2022, 2023. Left male palp, prolateral and retrolateral views. 2024. Male chelicerae, frontal view. 2025, 2026. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5 (2022, 2023), 0.3 (2024-2026).

Fig. 2024, distal apophyses with modified hairs, proximally with one pair of lateral and two pairs of frontal apophyses. Sternum wider than long (0.7/0.6), unmodified. Palps as in Figs. 2022 and 2023, coxa unmodified, trochanter and femur very similar to *Ph. fragillimus*, procurus complex distally, with several distinctive membranous and sclerotized elements, similar to *Ph. calligaster* but distal ventral sclerite larger, spine dorsally longer and more slender, bulb with uncus, weakly sclerotized embolus, appendix with sclerotized branch prolaterally. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae; many tarsal pseudosegments, but only distally a few fairly distinct.

*Variation.* Tibia 1 in 3 other males: 8.9, 9.2, 10.0. Dorso-lateral marks on abdomen variably distinct.

*Female.* In general similar to male but triads closer together (distance PME-PME 170  $\mu$ m). Tibia 1 in 6 females: 8.6-9.0 (mean 8.8). Epigynum triangular plate with weakly sclerotized 'knob' (Figs. 1959, 2025); internal genitalia as in Figs. 1960 and 2026.

*Distribution.* Known from Bantam Island in Indonesia, Singapore, and Malaysia (Fig. 1979).

*Material examined.* INDONESIA: *Riau*: Bantam Island: ♂ holotype above.

SINGAPORE: Pulau Ubin [1°08.7'N, 103°58.1'E], 5.vii.1992 (J.K.H. Koh, 92.07.05.0007), 1♂ in RMBR; same data but 12.xi.1990 (J.K.H. Koh, 90.11.12.26), 1♀ in RMNH. Kent Ridge Park [1°17.1'N, 103°47.5'E], fern thicket, 23.ii.1988 (J.K.H. Koh, 88.02.23.04), 1♂ in RMNH; same data but 7.ii.1989, (J.K.H. Koh, 89.02.07.17), 1♀ in RMNH; Kent Ridge, 29.iii.1989, no further data, 1♀ in RMBR. Bukit Timah [1°20.6'N, 103°46.5'E], Hindhede Drive, 1.v.1988 (H.K. Lua), 1♂ in RMBR; Bukit Timah, rainforest litter, 100 m a.s.l., 15.viii.1992 (J. & F. Murphy), 1♂ in CJFM (21022). Nee Soon pipeline track [-1°24'N, 103°49'E], 25.vi.2007 (D.J. Court), 1♀ in RMBR.

MALAYSIA: Federal District, Kuala Lumpur, Damansara Road [-3°08'N, 101°37'E], in oil palm plantation, 30.xii.1984 (J.A. Beatty), 1♂2♀ in BPBM. Genting [3°24.5'N, 101°45.9'E], secondary jungle, 600 m a.s.l., 26.xi.1990 (J. & F. Murphy), 3♂1♀ in CJFM (18943).

#### *Pholcus bidentatus* species group

*Diagnosis* (core group). Medium-sized to large, long-legged *Pholcus* (body length ~5-7, leg 1:~45-55); distinguished from other species groups in *Pholcus* by

the combination of the following characters: eight eyes, abdomen cylindrical, distal cheliceral apophyses without modified hairs, male palpal tarsus with finger-shaped dorsal elongation, procurus with two dorsal spines, with distinctive retrolateral membranous process (arrows in Figs. 2036, 2041), uncus with long proximal element, appendix branched, epigynum heavily sclerotized, with 'knob'.

*Description* (core group). Body length ~5-7, carapace width 1.5-1.7. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with one or two pairs of proximal apophyses and distal apophyses, the latter without modified hairs. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with rounded ventral protuberance, tarsus with distinctive finger-shaped dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', two dorsal spines, distinctive retrolateral membranous conical process. Bulbal uncus with long proximal element, weakly sclerotized embolus, appendix branched. Legs long, tibia 1 in males ~10.5-12.5, tibia 1 L/d ~60-75, tibia 2 significantly longer than tibia 4, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5%. Abdomen cylindrical, with dorsal cuticular pattern (sometimes very indistinct), ventrally with simple indistinct band. Male gonopore with four epandrous spigots, ALS apparently with eight spigots each, PMS with two small spigots each (only *Ph. kimi* examined: Zhang & Zhu 2009a, fig. 22).

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs barely shorter. Epigynum heavily sclerotized, with 'knob'.

*Monophyly.* The monophyly of the core group is supported by the distinctive retrolateral membranous conical process on the procurus (char. 44; arrows in Figs. 2036, 2041) and possibly also by the long proximal element of the uncus (e.g., Figs. 2028, 2035). Other similarities (male palpal tarsus elongation, distal male cheliceral apophyses without modified hairs) may be plesiomorphic.

*Relationships.* The sclerotized epigynum (char. 65), the procurus with dorsal spines (char. 38), and the branched appendix (char. 57) place this group near several other mostly Palearctic *Pholcus* species groups. The (secondary) absence of proximal frontal apophyses on the male chelicerae (char. 18) may link this group with the *Ph. nagasakiensis* species group

but these apophyses are present in some species of both groups (*Ph. gui*, *Ph. steineri*, *Ph. yoshikunai*; indistinct in *Ph. namkhan*). The species assigned tentatively may best be considered incertae sedis. Some are superficially similar to representatives of the core group; some are extremely autapomorphic (e.g., *Ph. bangfai*) and will likely have to be removed from this group.

*Natural history.* Most species have been collected from caves or from the surroundings of caves.

*Distribution.* The group is known from southern China and Laos (Fig. 2027).

*Composition.* The group includes eleven species. Of these, seven are newly described below, three are re-described; for *Ph. mengla* (only female known), see Song *et al.* (1999) and Zhang & Zhu (2009a). Core group: *Ph. bidentatus* Zhu *et al.*, 2005; *Ph. kimi* Song & Zhu, 1994; *Ph. namkhan* n. sp.; *Ph. steineri* n. sp.; assigned tentatively: *Ph. gui* Zhu & Song, 1999; *Ph.*

*mengla* Song & Zhu, 1999; *Ph. thakek* n. sp.; *Ph. laksao* n. sp.; *Ph. jaegeri* n. sp.; *Ph. bolikhamsai* n. sp.; *Ph. bangfai* n. sp. Several further undescribed species exist in collections.

*Pholcus bidentatus* Zhu, Zhang, Zhang & Chen, 2005

Figs. 1930, 1931, 1961, 1962, 2028-2033

*Pholcus bidentatus* Zhu, Zhang, Zhang & Chen 2005: 490-491, 544-545, figs 1a-f. Zhang & Zhu 2009a: 15-18, figs. 4a-f (copied from Zhu *et al.* 2005).

*Types.* Female holotype and 1♂1♀ paratypes from China, Guizhou Prov., Daozhen County, Dashahe Nature Reserve [-29°10'N, 107°35'E], Yuheba, 26.viii.2004 (Z. Zhang), in MHBU, not examined. 7♂9♀ paratypes from Guizhou Prov., Xishui County [-28°20'N, 106°13'E], 26.vii.2004 (H. Chen), in MHBU, not examined.



FIG. 2027. Known distribution of the *Pholcus bidentatus* species group.

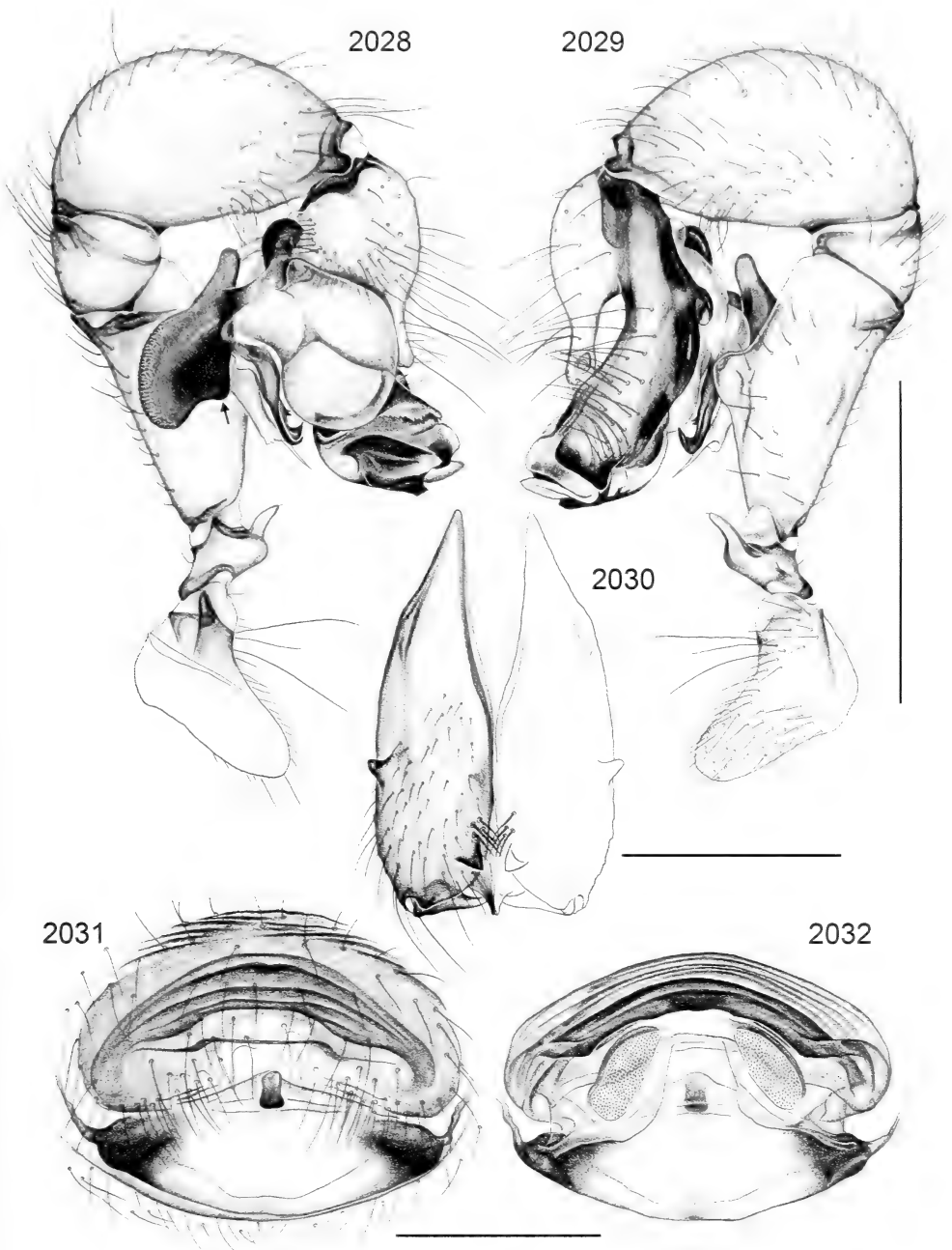


FIG. 2028-2032. *Pholcus bidentatus*. 2028, 2029. Left male palp, prolateral and retrolateral views (arrow points at part of uncus that projects more strongly in *Ph. kimi*). 2030. Male chelicerae, frontal view. 2031, 2032. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2028, 2029), 0.5 (2030-2032).

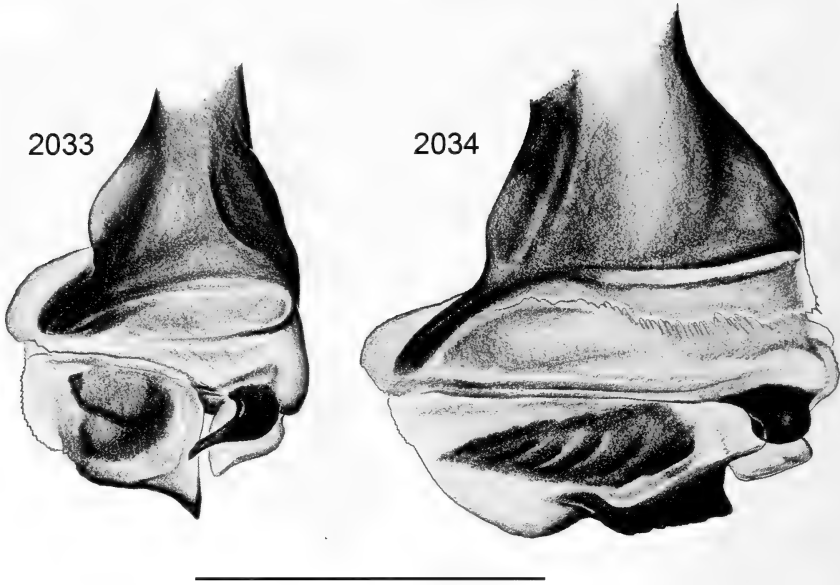


FIG. 2033, 2034. Tips of left procrursi at same scale, dorsal views. 2033. *Ph. bidentatus*. 2034. *Ph. kimi*. Scale line: 0.5.

*Diagnosis.* Distinguished from most congeners by male palpal morphology (Figs. 2028, 2029; dorsally elongated tarsus, shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1961, 2031, 2032); from very similar *Ph. kimi* by tip of procurus (Fig. 2033) (not by spine-like processes on appendix, see *Ph. kimi* below).

*Male* (Mt. Emei). Total body length 6.0, carapace width 1.5. Leg 1: 45.4 (11.1 + 0.7 + 11.1 + 20.0 + 2.5), tibia 2: 7.6, tibia 3: 5.2, tibia 4: 7.1; tibia 1 L/d: 70. Habitus as in Fig. 1930. Carapace ochre-yellow with distinctive brown mark posteriorly, ocular area slightly darkened, clypeus not darkened, sternum dark brown, legs light brown, femora and tibiae with lighter tips and darker subdistal rings, patella area also darker, abdomen ochre-gray with many dark internal spots and indistinct cuticular pattern dorsally, ventrally with indistinct darker band (cf. female, Fig. 1931), genital area brown. Distance PME-PME 290  $\mu$ m, diameter PME 175  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 110  $\mu$ m. Ocular area elevated, with stronger hairs posteriorly. No thoracic furrow (only short dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 2030, distal apophyses apparently without modified hairs, with some stronger hairs medially, one pair of

small lateral apophyses proximally (not two pairs as in Zhang & Zhu 2009a). Sternum wider than long (1.1/0.9), unmodified. Palps as in Figs. 2028 and 2029, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with distinct ventral protuberance, tarsus with dorsal elongation, procurus strongly bent, with two dorsal spines, distally complex, prolatero-distal part apparently hinged against proximal part, bulb with large uncus, weakly sclerotized embolus with long transparent process distally, appendix distally hooked, with long prolateral branch and two tiny spine-like processes. Legs without spines and curved hairs, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with >30 pseudosegments, only distally ~10 quite distinct.

*Variation.* Tibia 1 in three other males: 11.5, 11.6, 11.9. Some males with fewer spots on abdomen. The number of little spine-like processes on the appendix varies from one to two.

*Female.* Very similar to male, triads closer together (distance PME-PME 220  $\mu$ m), clypeus with pair of distinct dark bands. Tibia 1: 9.8, 10.9. Epigynum weakly elevated, with large dark area anteriorly, posteriorly wide triangular plate strongly sclerotized

laterally and with anterior 'knob' (Figs. 1961, 2031); internal genitalia as in Figs. 1962 and 2032.

*Distribution.* Known from Guizhou and Sichuan Provinces, China and from Huaphan Prov., Laos (Fig. 2027).

*Material examined.* CHINA: *Sichuan Prov.*: "Omei Shan" [=Emei Shan, Mt. Emei, 29°31'N, 103°20'E], 1000-2200 m a.s.l., 25.v.-16.vi.1998 (J. Martens), 1♂1♀ in SMF. Emei Shan, Wannian Temple and surrounding area (29°34.9'N, 103°22.9'E), 1000 m a.s.l., 29.iii.1999 (P. Jäger), 3♂2♀ 1 juv. in SMF.

LAOS: *Huaphan Prov.*: Vieng Thong, Tham Mue ("F48-135-010") (20°16.9'N, 103°22.3'E), 15.i.2009 (H. Steiner), 1♂ in SMF. Vieng Thong, Tham Long Mak ("F48-135-011") (20°16.9'N, 103°22.4'E), 15.i.2009 (H. Steiner), 1♂ in SMF.

*Pholcus kimi* Song & Zhu, 1994

Fig. 2034

*Pholcus kimi* Song & Zhu 1994: 37-38, 44-45, figs. 2a-d. Song *et al.* 1999: 58, figs. 24i, j (copied from Song & Zhu 1994). Zhang *et al.* 2004: 77-78, figs. 1a-g. Zhang & Zhu 2009a: 43-47, figs. 21a-g, 22a-i.

*Note.* The specimens below are assigned tentatively because I have not seen the types. However, the tip of the procurus (especially when seen in dorsal view: Fig. 2034) is quite distinctive. In addition, *Ph. kimi* males have significantly larger and stronger palps but only slightly longer legs than *Ph. bidentatus* (tibia 1 in 9 males examined: 11.4-12.8; mean 12.0; tibia 1 in 8 females: 10.2-11.4; mean 10.9). Another character supposed to be distinctive by Zhang & Zhu (2009a) varies considerably in the material studied: the number of little spine-like processes on the appendix varies from 0-3, and even left and right appendix in a given individual may vary in this respect. They are thus not distinctive for *Ph. bidentatus*.

*Distribution.* Widely distributed in southern China (records in Zhang & Zhu 2009a) and in northern Laos (Fig. 2027).

*New Records:* LAOS: *Huaphan Prov.*: Tham Nam Long (20°27.8'N, 104°09.2'E), cave entrance area, 10.i.2008 (H. Steiner), 1♂ in SMF; Tham Houay Long Kou 1 (20°23.7'N, 104°13.4'E), 13.i.2008 (L. Price), 1♂ in SMF; same locality, 15.i.2008 (H. Steiner), 3♀ in SMF. Vieng Thong, Owl Cave II (20°31.1'N, 103°24.1'E), 17.i.2009 (H. Steiner), 1♂1♀ (2 vials) in SMF. Vieng Thong, Tham Mak Sak (20°27.0'N, 103°23.6'E), 20.i.2010 (H. Steiner), 1♂ in SMF. Vieng Thong, Tham Chao Houa Khao Khong (20°27.2'N, 103°23.8'E), 20.i.2010 (H.

Steiner), 3♀ in SMF. Vieng Thong, Tham Ho Neung (20°27.9'N, 103°21.0'E), 19.i.2010 (H. Steiner), 1♂2♀ in SMF. Xop, Tham Long Puang (20°28.4'N, 103°21.7'E), 16.i.2009 (H. Steiner), 2♂1♀ in SMF. *Oudomxay Prov.*: La district, Tham Phatiao Singkam (20°47.3'N, 102°02.3'E), 3.ii.2010 (H. Steiner), 2♂2♀ in SMF. SE of Oudomxay (=Muang Xai) city, ca. 3 km E of Tad Lak 11 (20°36.3'N, 102°01.3'E), 1020 m a.s.l., primary forest, 18.ix.2010 (P. Schwendinger), 1♂ 1 juv. in MHNG.

*Pholcus namkhan* n. sp.

Figs. 1932, 1933, 1963, 1964, 2035-2039

*Type.* Male holotype from Laos, Luang Prabang Province, SE Luang Prabang, Nam Khan, Xieng Ngeun Distr., Ban Keng Koung (19°40.9'N, 102°18.4'E), -700 m a.s.l., valley, secondary forest, dry stream bed, at rock, by hand, 24.ii.2008 (P. Jäger), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from similar congeners (*Ph. bidentatus*, *Ph. kimi*, *Ph. steineri*) by male palpal morphology (Figs. 2035, 2036; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1963, 2038; large epigynal 'knob'). The SMF has a male and a female of a very similar undescribed species from NE Luang Prabang (Nam Ou, Nong Khiao, Tham Pathok) that differs only in the shape of the uncus.

*Male* (holotype). Total body length 6.6, carapace width 1.65. Leg 1: 11.1 + 0.7 + 10.7, metatarsus and tarsus missing, tibia 2: 7.5, tibia 3: 5.3, tibia 4: 6.9; tibia 1 L/d: 60. Habitus as in Fig. 1932. Carapace pale ochre-gray with distinctive brown mark partly divided medially, ocular area also darkened, clypeus not darkened, sternum dark brown, legs ochre-yellow, femora and tibiae with lighter tips and darker subdistal rings, patella area also darker, abdomen (appears emptied in holotype) pale gray with indistinct cuticular pattern dorsally (similar to *Ph. bidentatus*) and indistinct darker band ventrally (cf. female, Fig. 1933), brown rectangle in genital area. Distance PME-PME 400 µm, diameter PME 170 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 95 µm. Ocular area elevated, with some stronger hairs posteriorly, each triad on low hump directed laterally. No thoracic furrow (only short dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 2037, large distal ridges apparently without modified hairs, with some stronger

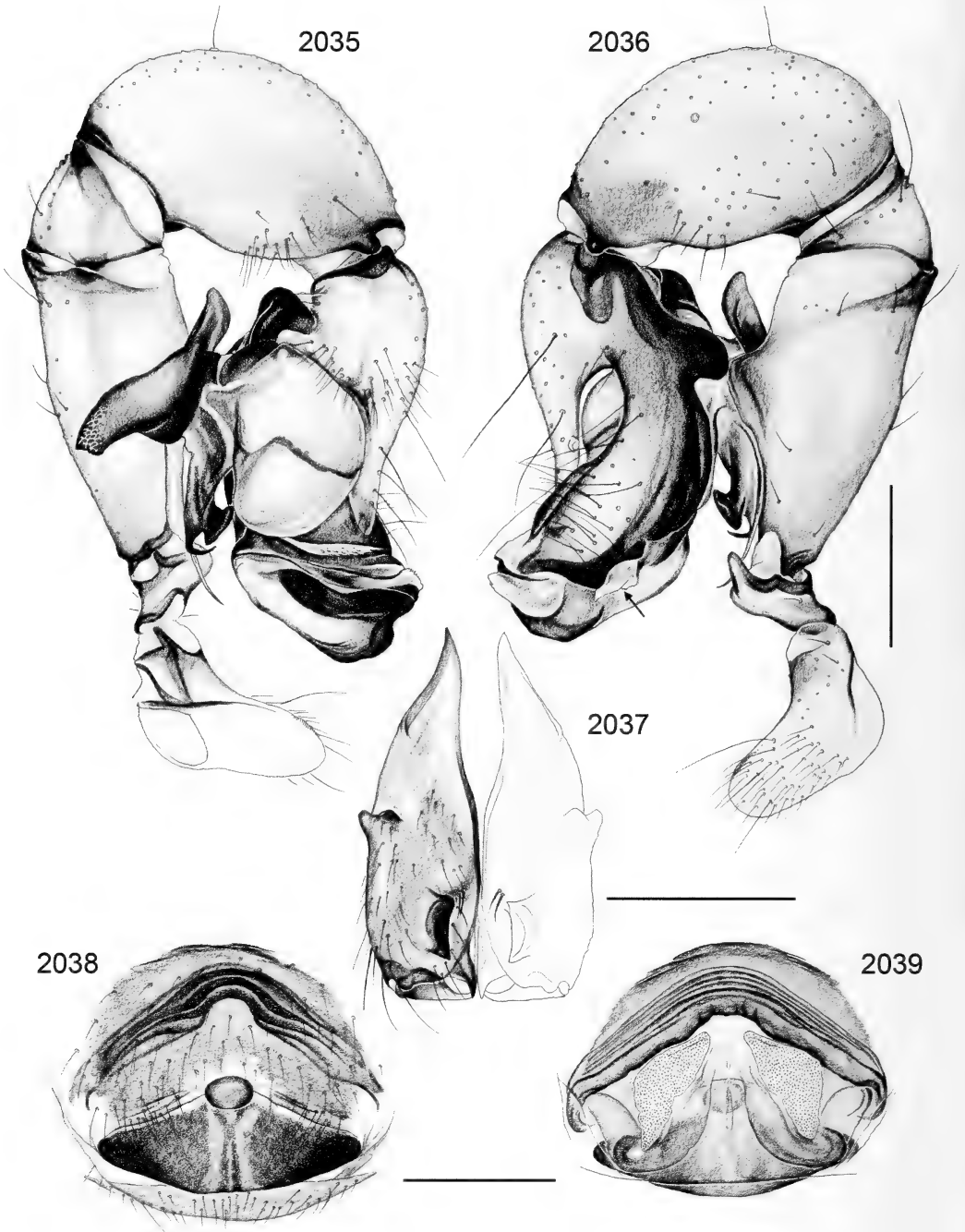


FIG. 2035-2039. *Pholcus namkhan*. 2035, 2036. Left male palp, prolateral and retrolateral views (arrow points at retrolateral membranous process of procurus). 2037. Male chelicerae, frontal view. 2038, 2039. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



hairs medially, one pair of bifid lateral apophyses proximally. Sternum wider than long (1.05/0.90), unmodified. Palps as in Figs. 2035 and 2036, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with distinct ventral protuberance, tarsus with finger-shaped dorsal elongation, procurus strongly bent, with two dorsal spines, distally complex, bulb with distinctive narrow uncus, weakly sclerotized embolus with long transparent process distally, appendix with two distinctive distal processes. Legs without spines and curved hairs, few ventral hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5.5%.

*Variation.* Tibia 1 in other male: 10.8; abdomen darker with black internal spots visible through cuticle dorsally. Tip of uncus minimally wider than in type. *Female.* Very similar to male, triads closer together (distance PME-PME 285  $\mu$ m). Tibia 1: 9.4, 9.8. Epigynum weakly elevated, with large dark area anteriorly, posteriorly wide triangular plate strongly sclerotized and with large sclerotized 'knob' (Figs. 1963, 2038); internal genitalia as in Figs. 1964 and 2039.

*Distribution.* Known from three localities in Luang Prabang Province, Laos (Fig. 2027).

*Material examined.* LAOS: *Luang Prabang Province:* SE Luang Prabang, Nam Khan, Xieng Ngeun Distr., Ban Keng Koung: ♂ holotype above; same data, 2♀ + juvs. in SMF. S Luang Prabang, Ban Ean, Nam Khan, That Se (19°50.6'N, 102°13.1'E), 300 m a.s.l., dry waterfall, disturbed forest, at day, sieving, by hand, 4.iii.2006 (P. Jäger, J. Altmann), 1♂ in SMF. Tham Pha Man (19°55.7'N, 102°11.3'E), 1.i.2004 (H. Steiner), 1♀ in SMF.

*Pholcus steineri* n. sp.

Figs. 2040-2043

*Type.* Male holotype from Laos, Oudomxay Province, Chom Ong Cave System ("F47-120-001") (20°43.1'N, 101°45.9'E), 23.i.2009 (H. Steiner), in SMF.

*Etymology.* The species is named for H. Steiner who collected large amounts of material in Laos.

*Diagnosis.* Easily distinguished from similar congeners (*Ph. bidentatus*, *Ph. kimi*, *Ph. namkhan*) by male palpal morphology (Figs. 2040, 2041; shapes of procurus, uncus, and appendix) and female genitalia (Figs. 2042, 2043; shapes of epigynum, frontal arc, and pore plates).

*Male* (holotype). Total body length 6.7, carapace width 1.7. Leg 1: 12.6 + 0.8 + 12.5, metatarsus dam-

aged, tibia 2: 8.8, tibia 3: 6.1, tibia 4: 8.0; tibia 1 L/d: 71. Habitus similar to *Ph. namkhan* (cf. Fig. 1932). Carapace ochre-yellow with distinctive brown mark, ocular area also darkened, clypeus not darkened, sternum very dark brown, legs ochre-yellow, femora and tibiae with lighter tips and darker subdistal rings, patella area also darker, abdomen pale gray with indistinct cuticular pattern dorsally (similar to *Ph. bidentatus*), ventrally monochromous, brown mark in genital area. Distance PME-PME 415  $\mu$ m, diameter PME 175  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 100  $\mu$ m. Ocular area elevated, with some stronger hairs posteriorly, each triad on low hump directed laterally. No thoracic furrow (only short dark line anteriorly); clypeus unmodified. Chelicerae very similar to *Ph. gui* (cf. Fig. 2046) but proximal frontal apophyses shorter. Sternum wider than long (1.15/1.00), unmodified. Palps as in Figs. 2040 and 2041, coxa unmodified, trochanter with short retrolatero-ventral apophysis, femur with ventral hump, without dorsal modification, tarsus with long dorsal elongation, procurus with distinctive 'knee', retrolateral membranous process (arrow in Fig. 2041), large distal sclerite, two prolatero-dorsal spines (hidden by bulb in Fig. 2040), bulb with distinctive uncus and appendix, weakly sclerotized embolus with long transparent process distally. All leg hairs lost; retrolateral trichobothrium on tibia 1 at 5%.

*Female.* Very similar to male, triads closer together (distance PME-PME 285  $\mu$ m). Tibia 1: 11.1, 11.2. Epigynum wide triangular plate with anterior 'knob', area in front of epigynum darkened, internal arc visible through cuticle (Fig. 2042); internal genitalia as in Fig. 2043.

*Distribution.* Known from Oudomxay Province, Laos, only (Fig. 2027).

*Material examined.* LAOS: *Oudomxay Province:* Chom Ong Cave System: ♂ holotype above. Namor District, Tham Mokfek (20°48.6'N, 101°47.2'E), 28.i.2010 (H. Steiner), 1♂1♀ in SMF. Namor District, Tham Na Thong (20°52.3'N, 101°47.0'E), 31.i.2010 (H. Steiner), 1♀ in SMF.

*Pholcus gui* Zhu & Song, 1999

Figs. 1934, 1965, 1966, 2044-2049

*Pholcus gui* Zhu & Song in Song, Zhu & Chen 1999: 57-58, figs. 24a-h. Tong & Li 2009: 30. Zhang & Zhu 2009a: 32-35, figs. 14a-j.

*Types.* Male holotype, 3♂3♀ paratypes from China, Hainan Prov., Mt. Jianfengling [-18°44'N,

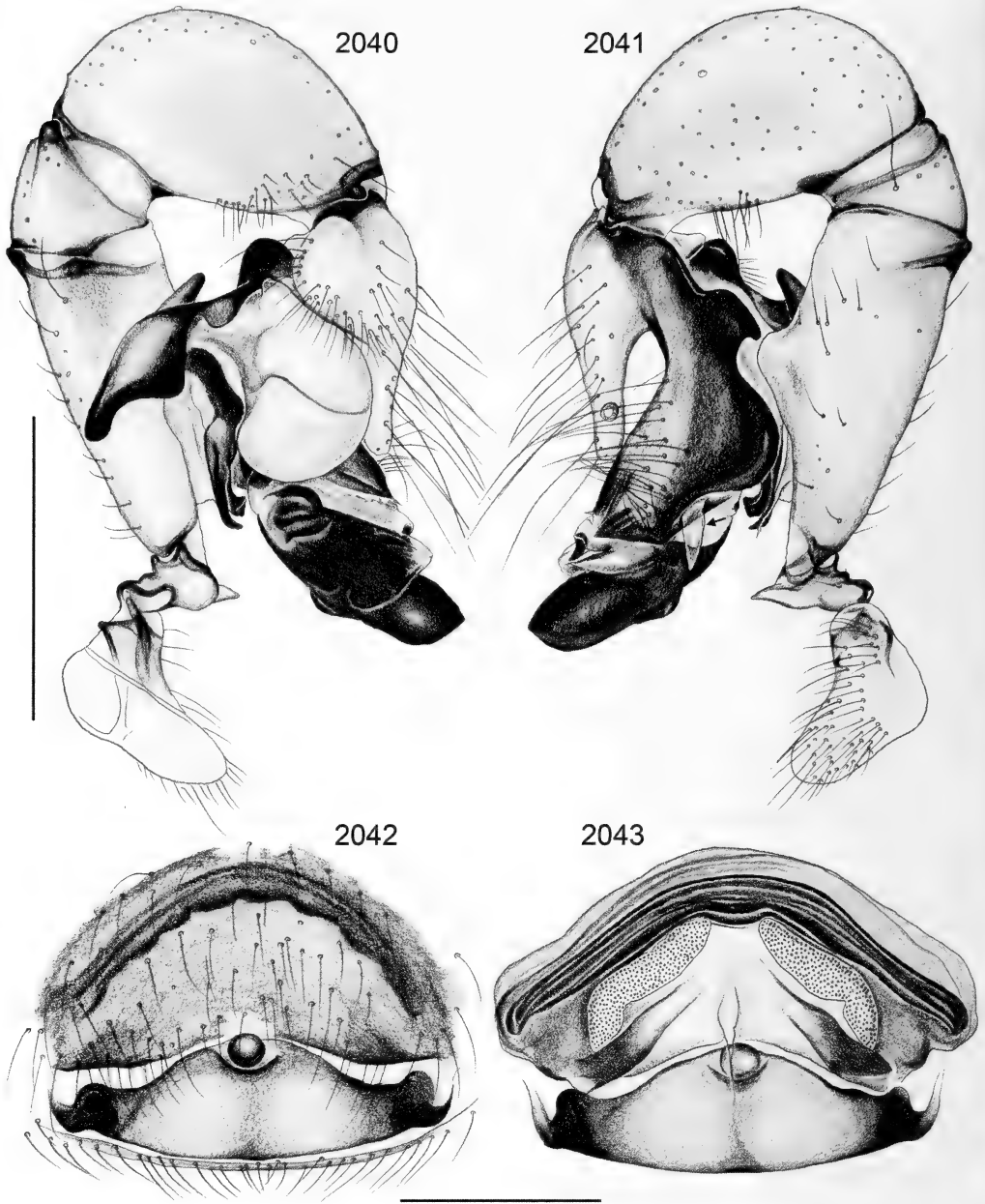


FIG. 2040-2043. *Pholcus steineri*. 2040, 2041. Left male palp, prolateral and retrolateral views (arrow points at retrolateral membranous process of procurus). 2042, 2043. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2040, 2041), 0.5 (2042, 2043).

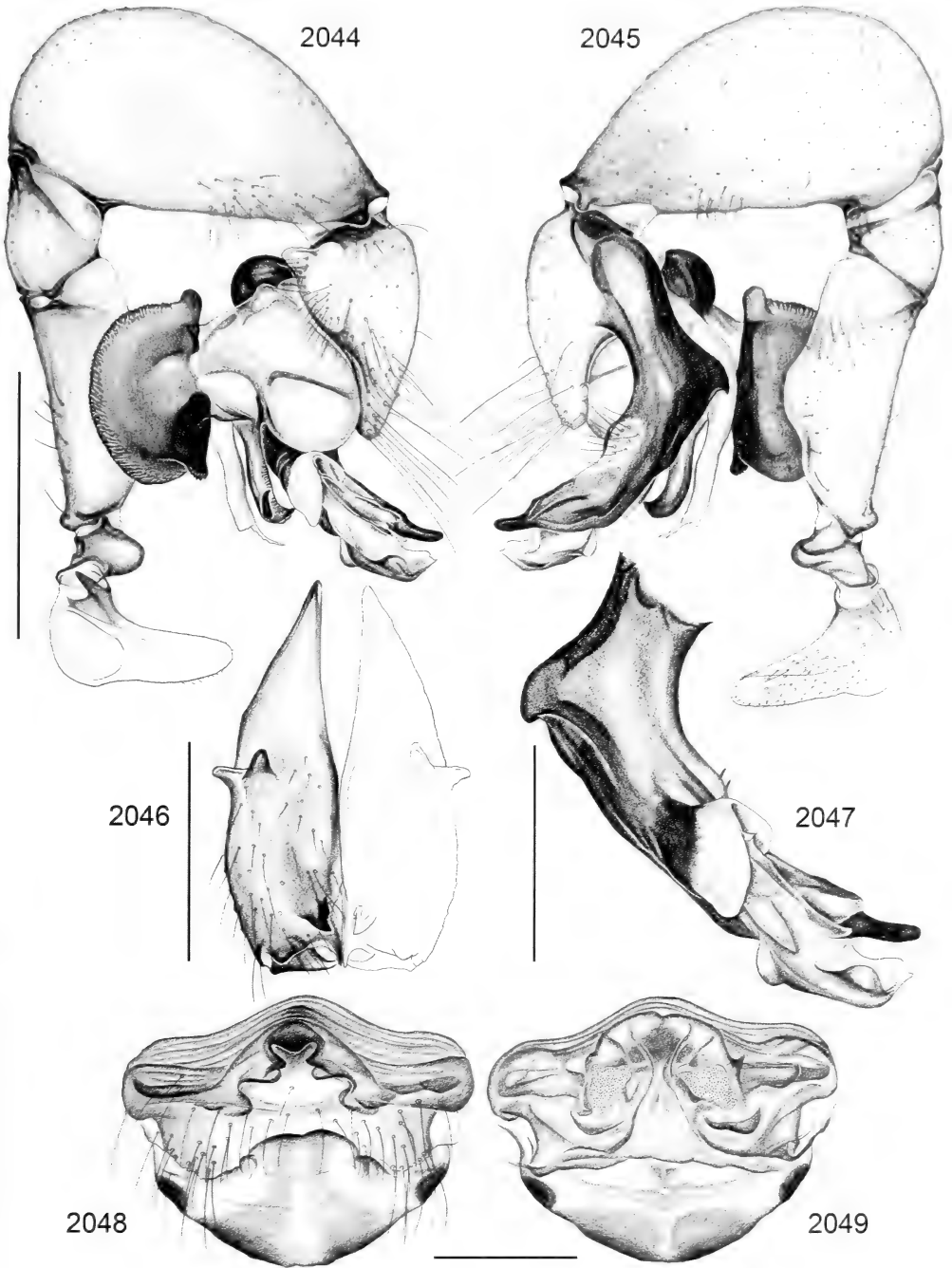


FIG. 2044-2049. *Pholcus gui*. 2044, 2045. Left male palp, prolateral and retrolateral views. 2046. Male chelicerae, frontal view. 2047. Left procursus, prolateral view. 2048, 2049. Cleared female genitalia (damaged, see text), ventral and dorsal views. Scale lines: 1.0 (2044, 2045), 0.5 (2046-2049).

108°50'E], 13.xii.1989 (M.B. Gu), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 2044, 2045; shapes of procurus, uncus, and appendix).

*Male* (paratype). Total body length 6.2, carapace width 1.6. All legs detached, most missing. Habitus as in Fig. 1934. Carapace pale ochre-yellow with large brown mark divided posteriorly, ocular area brown, clypeus with pair of brown bands, sternum pale ochre-yellow, margins brown, posterior third light brown, abdomen ochre-gray with indistinct cuticular dorsal pattern, ventrally very indistinct wide band fading anteriorly, genital area brown. Distance PME-PME 325 µm, diameter PME 160 µm, distance PME-ALE 25 µm, distance AME-AME 55 µm, diameter AME 90 µm. Ocular area elevated, many stronger hairs posteriorly. No thoracic furrow, clypeus with pair of low humps at rim. Chelicerae as in Fig. 2046, distal apophyses apparently without modified hairs, two pairs of apophyses proximally. Sternum wider than long (0.90/0.85), unmodified. Palps as in Figs. 2044 and 2045, coxa unmodified, trochanter apophysis very short and wide, femur with proximal hump dorsally and low ventral protuberance, tibia very large, ventrally unmodified, tarsus dorsally elongated, procurus long, strongly bent, with two prolatero-dorsal spines, distally complex with sclerotized and membranous elements (Fig. 2047), bulb with large uncus, weakly sclerotized long embolus with terminal transparent process, rod-shaped appendix with distinctive prolateral branch distally.

*Female.* In general similar to male, triads closer together (distance PME-PME 230 µm), bands on clypeus barely visible, sternum also anteriorly darkened, legs ochre yellow, femora and tibiae with subdistal darker rings and light tips, patella area also darkened; tibia 1: 10.8. The epigynum examined had already been dissected and partly destroyed but still shows a distinctive color pattern on the sclerotized plate, the 'knob' is missing and the pore plates appear damaged (Figs. 1965, 1966, 2048, 2049).

*Distribution.* Known from type locality, and several further localities in Hainan and Guangxi Provinces (Sanya City: ~18°19'N, 109°33'E; Dongfang City, Donghe Town: 18°58.9'N, 108°53.2'E; Fusui County, Bapen Natural Reserve: ~22°30'N, 107°53'E; see Tong & Li 2009, Zhang & Zhu 2009a) (Fig. 2027). *Material examined.* CHINA: Hainan Prov.: Mt. Jianfengling: 1♂1♀ paratypes above.

*Pholcus thakek* n. sp.

Figs. 1935-1937, 1967, 1968, 2050-2057

*Type.* Male holotype from Laos, Khammouan Prov., Thakek area (17°26.7'N, 104°56.9'E), in Tham En karst cave, near entrance, ~180 m a.s.l., 28.ii.2003 (P. Jäger), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 2050, 2051; procurus distal elements and dorsal process, uncus shape) and female genitalia (Figs. 1967, 2057; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.1, carapace width 1.5. Leg 1: 12.2 + 0.7 + 12.4, metatarsus and tarsus missing, tibia 2 missing, tibia 3: 3.8, tibia 4: 5.4; tibia 1 L/d: 85. Habitus as in Fig. 1935. Carapace pale ochre-yellow with large light brown median mark including ocular area, clypeus not darkened, sternum whitish, margins narrowly dark brown, posterior third light brown, legs ochre-yellow, tips of femora and tibiae lighter, indistinct darker rings on femora and tibiae subdistally, in patella area, and on metatarsi proximally, abdomen ochre-gray with some darker spots dorsally, without ventral pattern (cf. female, Fig. 1936). Distance PME-PME 325 µm, diameter PME 170 µm, distance PME-ALE 45 µm, distance AME-AME 35 µm, diameter AME 70. Ocular area elevated, each triad on additional short elevation, many stronger hairs posteriorly. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 2052, distal frontal apophyses without modified hairs (or tiny hairs that are barely visible in dissecting microscope), light proximal lateral apophyses and indistinct proximal frontal humps. Sternum wider than long (0.95/0.80), unmodified. Palps as in Figs. 2050 and 2051, coxa unmodified, trochanter with short straight retrolatero-ventral apophysis, femur with indistinct retrolatero-dorsal hump proximally and larger ventral protuberance, procurus with two spines on distinctive dorsal process, distally complex (Fig. 2053), bulb with large uncus, weakly sclerotized embolus, flat appendix with retrolateral pointed projection. Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4.

*Variation.* In the other three males, the procurus differs slightly (distal elements, Figs. 2054, 2055); they are therefore assigned tentatively. Tibia 1: 11.7 (missing in other males).

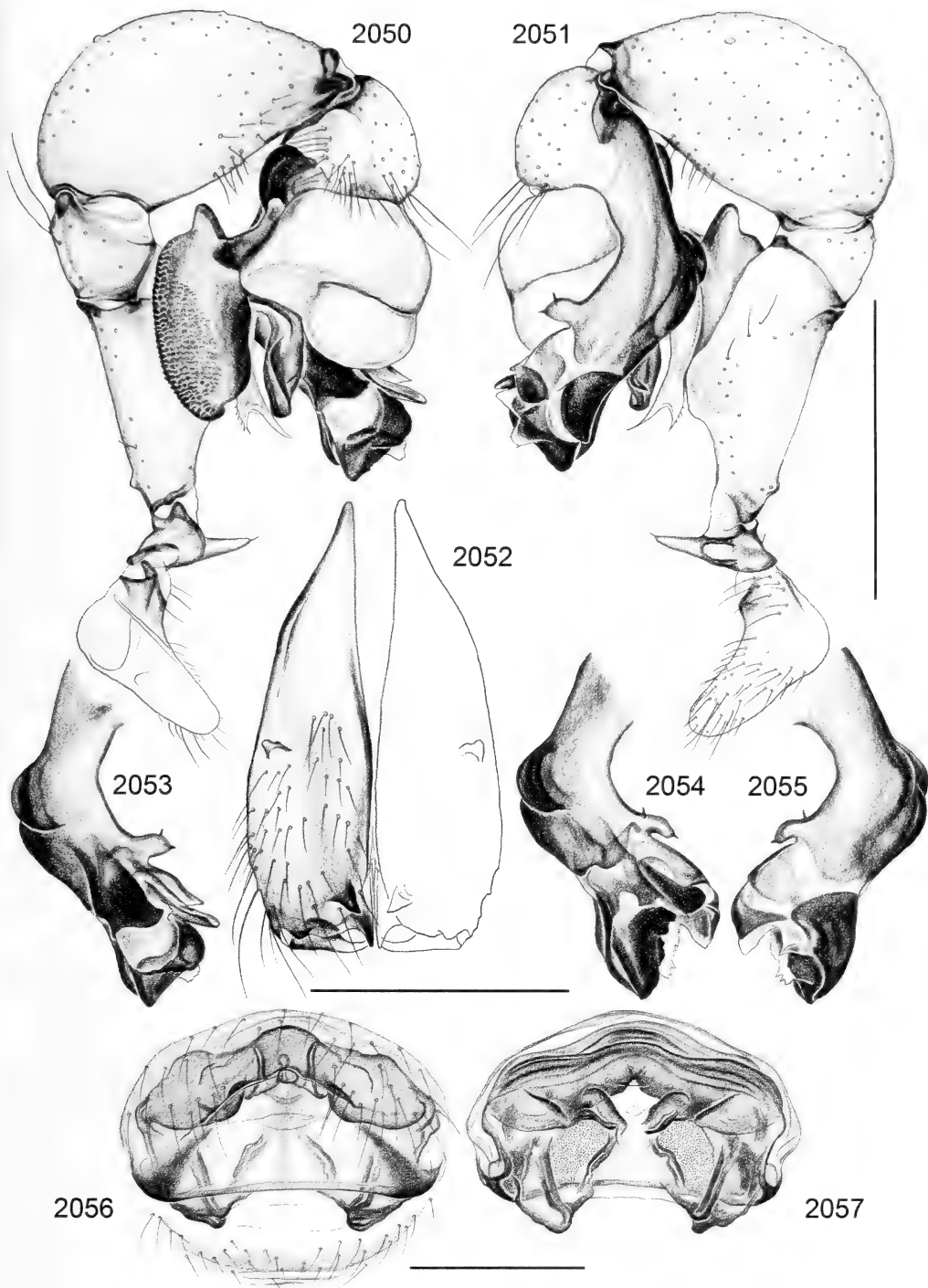


FIG. 2050-2057. *Pholcus thakek*, specimens from Tham En karst cave (2050-2053), Tham Deua karst cave (2054, 2055) and Ban Kouanphavang (2056, 2057). 2050, 2051. Left male palp, prolateral and retrolateral views. 2052. Male chelicerae, frontal view. 2053. Left procurus, prolateral view. 2054, 2055. Left procurus, prolateral and retrolateral views. 2056, 2057. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2050, 2051, 2053-2055), 0.5 (2052, 2056, 2057).

*Female.* In general similar to male but triads closer together (distance PME-PME 160  $\mu\text{m}$ ), less elevated, pattern on sternum sometimes not limited to posterior part, median mark on carapace variable, abdomen pattern variably distinct. Tibia 1 in 4 females: 8.7, 9.1, 9.3, 9.7. Epigynum with triangular sclerite with anterior 'knob', internal arc visible through cuticle anteriorly (Figs. 1967, 2056); internal genitalia as in Figs. 1968 and 2057.

*Distribution.* Known from Khammouan Prov., Laos, only (Fig. 2027).

*Material examined.* LAOS: *Khammouan Prov.*: Thakek area, Tham En karst cave: ♂ holotype above. *Assigned tentatively:* LAOS: *Khammouan Prov.*: Thakek area, Ban Kouanphavang 2 (17°27.4'N, 104°55.4'E), ~180 m a.s.l., cave and surroundings, by hand, sweep net, 29.x.2004 (P. Jäger, V. Vedel), 1♂1♀ in SMF; Ban Kouanphavang 1 (17°27.2'N, 104°56.3'E), ~180 m a.s.l., entrance and outside cave, vegetation, rocks, at night, by hand, 6.xi.2009 (P. Jäger, S. Bayer), 1♂ in SMF; Thakek area, 9.5 km NE Thakek (17°26.9'N, 104°52.5'E), ~180 m a.s.l., footcave, 28.ii.2003 (P. Jäger), 1♀ in SMF; 4.6 km WNW Ban Tathot, entrance to Tham Deua karst cave (17°38.1'N, 105°06.3'E), ~200 m a.s.l., 21.ii.2003 (P. Jäger), 1♂ (very pale) in SMF; Ban Tathot, caves near village, entrance area (17°37.5'N, 105°08.8'E), ~180 m a.s.l., 23.ii.2003 (P. Jäger), 1♀ in SMF; Ban Tathot, village and surroundings (17°37.5'N, 105°08.8'E), ~180 m a.s.l., rocks, bushes, 23.ii.2003 (P. Jäger), 1♀ in SMF; 2.5 km WNW Ban Tathot, Tham Kamouk karst cave (17°37.9'-38.0'N, 105°07.2'-07.5'E), ~200 m a.s.l., 19.ii.2003 (P. Jäger), 1♀ in SMF; same data but 19./20.ii.2003 (H. Steiner), 2♀ (2 vials) in SMF.

*Pholcus laksao* n. sp.

Figs. 2058-2061

*Type.* Male holotype from Laos, Bolikhamsai Prov., Lak Sao (1) (18°11.2'N, 104°53.9'E), 500 m a.s.l., in cave, at day, by hand, 6.iii.2010 (P. Jäger, J. Martens), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 2058, 2059; long pointed trochanter apophysis, procurus shape, uncus shape, distinctive appendix) and female genitalia (Figs. 2060, 2061; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.5, carapace width 1.5. Leg 1: 50.6 (12.1 + 0.7 + 12.1 + 23.2 + 2.5), tibia 2: 8.1, tibiae 3: 5.3, tibia 4: 7.4; tibia 1 L/d: 80. Habitus similar to *Ph. thakek* (cf. Fig. 1935). Carapace pale ochre-yellow with large light brown median mark including ocular area posteriorly, clypeus not darkened, sternum whitish, margins narrowly dark brown, posterior third with darker smudges, legs ochre-yellow, tips of femora and tibiae lighter, indistinct darker rings on femora and tibiae subdistally, in patella area, and on metatarsi proximally, abdomen ochre-gray with some darker internal spots dorsally, ventrally monochromous. Distance PME-PME 470  $\mu\text{m}$ , diameter PME 140  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 60  $\mu\text{m}$ , diameter AME 60  $\mu\text{m}$ . Ocular area elevated, each triad on additional short elevation, many stronger hairs posteriorly. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae very similar to *Ph. thakek* (cf. Fig. 2052) but slightly smaller, distal apophyses slightly larger, no proximal median humps. Sternum wider than long (1.00/0.85), unmodified. Palps as in Figs. 2058 and 2059, coxa unmodified, trochanter with long pointed retrolatero-ventral apophysis, femur with retrolatero-dorsal hump proximally and larger ventral protuberance, procurus with two prolatero-dorsal spines, distinctive hinged sclerite dorso-distally, bulb with large uncus, weakly sclerotized long embolus, distinctive appendix with large weakly sclerotized proximal part and sharply bent distal part. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5.5%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Variation.* The single male from Lak Sao (4) is assigned tentatively because it has a slightly narrower uncus, a narrower appendix, and a more clearly different procurus. Tibia 1 in two other males: 12.1, 12.3.

*Female.* In general similar to male but dorsal pattern on carapace different (pair of small marks as in *Ph. jaegeri*, cf. Fig. 1938; this is also the pattern in juveniles, including penultimate males), triads closer together (distance PME-PME 220  $\mu\text{m}$ ), less elevated, pattern on sternum not limited to posterior part. Tibia 1 in 8 females: 8.8-10.2 (mean 9.3). Epigynum with large triangular plate with distinctive pattern and anterior 'knob' (Fig. 2060); internal genitalia as in Fig. 2061 (the female from Lak Sao (4) is not visibly different from the other females examined).

*Distribution.* Known from Bolikhamsai Prov., Laos, only (Fig. 2027).

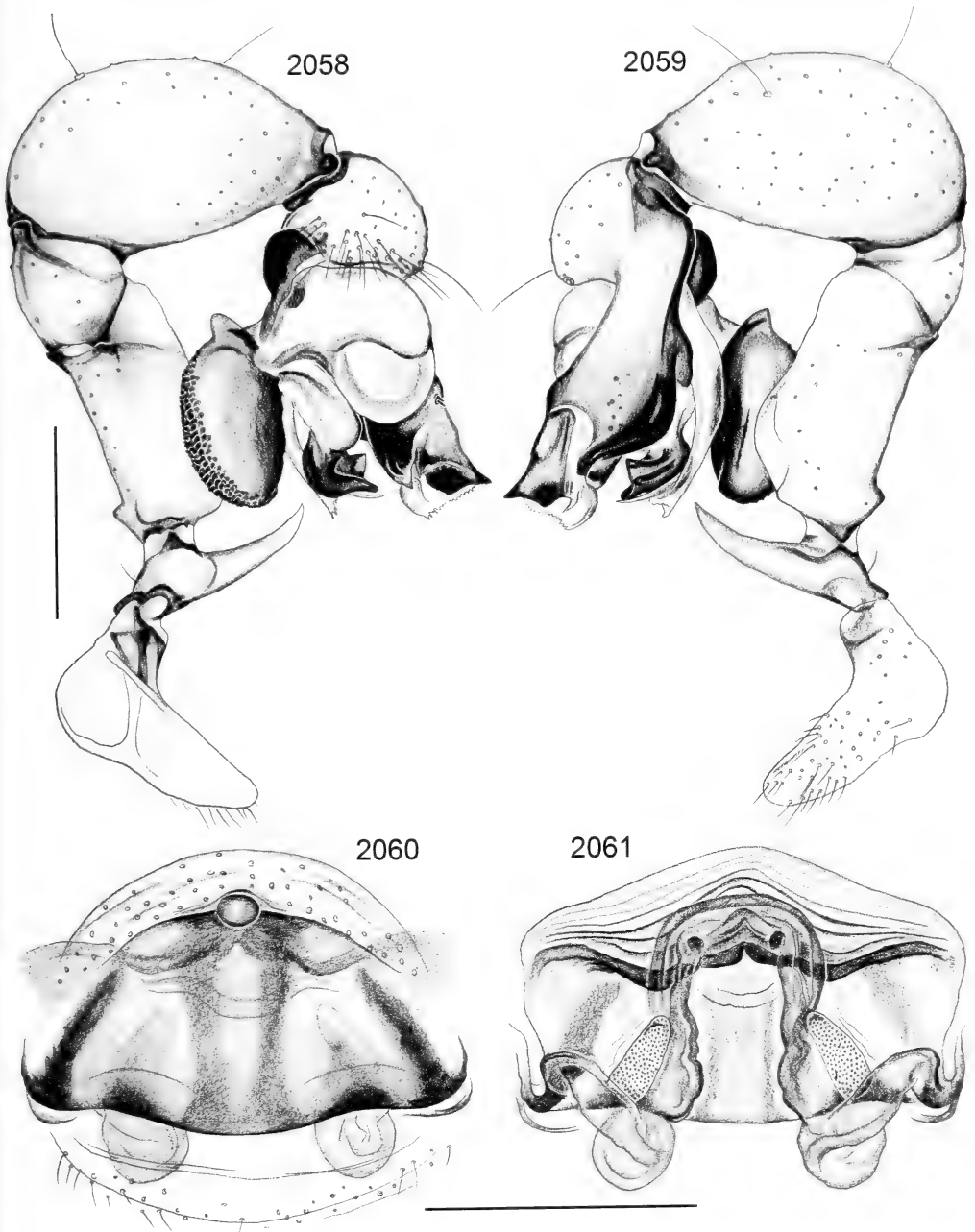


FIG. 2058-2061. *Pholcus laksao*. 2058, 2059. Left male palp, prolateral and retrolateral views. 2060, 2061. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Material examined.* LAOS: *Bolikhamsai Prov.*: Lak Sao (1): ♂ holotype above; same data, 1♂3♀ in SMF; same locality, cave entrance, rocks, vegetation, at day, by hand, 8.xi.2009 (P. Jäger, S. Bayer), 4♀ in SMF. Lak Sao (5) (18°12.7'N, 104°50.4'E), 550 m a.s.l., cool valley, bed of stream, at day, sieving, 10.xi.2009 (P. Jäger, S. Bayer), 2♀ in SMF.

*Assigned tentatively.* LAOS: *Bolikhamsai Prov.*: Lak Sao (4) (18°13.6'N, 104°44.8'E), 530 m a.s.l., inside cave and cave entrance, at day, by hand, 9.xi.2009 (P. Jäger, S. Bayer), 1♂1♀ in SMF.

*Pholcus jaegeri* n. sp.

Figs. 1938-1940, 1969, 1970, 2062-2066

*Type.* Male holotype from Laos, Khammouan Prov., 9.5 km NE Thakek (17°26.9'N, 104°52.5'E), ~160 m a.s.l., footcave and surrounding area, 30.x.2004 (P. Jäger, V. Vedel), in SMF.

*Etymology.* The species is named for Peter Jäger who contributed large amounts of material from his expeditions to Laos.

*Diagnosis.* Easily distinguished from congeners by male cheliceral armature (Fig. 2064; one pair of apophyses proximally, no distal apophyses), male palpal morphology (Figs. 2062, 2063; bent trochanter apophysis, procurus and uncus shapes) and female genitalia (Figs. 1969, 2066; shapes of epigynum and internal structures). The MHNG has males and females of a closely related undescribed species from Laos (Khammouan Prov., Nam Kading NPA) that differs only in minor details of genitalic shape.

*Male* (holotype). Total body length 5.4, carapace width 1.5. Leg 1 missing, tibia 2: 8.3, tibiae 3: 4.9, tibia 4: 7.0. Habitus as in Fig. 1939. Carapace pale ochre-yellow with distinctive brown mark, ocular area also partly brown, clypeus not darkened, sternum whitish, margins narrowly dark brown, posterior third light brown, legs ochre-yellow, tips of femora and tibiae lighter, indistinct darker rings on femora and tibiae subdistally, in patella area, and on metatarsi proximally, abdomen monochromous ochre-gray (cf. female, Fig. 1940). Distance PME-PME 380 µm, diameter PME 135 µm, distance PME-ALE 45 µm, distance AME-AME 35 µm, diameter AME 70 µm. Ocular area elevated, each triad on additional elevation, many stronger hairs posteriorly. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 2064, without distal apophyses, proximal apophyses directed laterally. Sternum wider than long (0.9/0.7), unmodified. Palps as in Figs. 2062 and 2063, coxa

unmodified, trochanter with distinctively bent retro-latero-ventral apophysis, femur with small retro-latero-dorsal apophysis proximally, procurus with two large dorsal spines, simple except distally, bulb with rather small uncus, sclerotized embolus only distally with membranous elements, flattened appendix with long pointed process towards retro-lateral. Legs without spines and curved hairs, few vertical hairs.

*Female.* In general similar to male but ocular area not brown and only two small brown marks on carapace (Fig. 1938), triads closer together (PME-PME distance 185 µm), tibia 1 in two females: 9.2, 10.2. Epigynum trapezoidal, without 'knob' (Figs. 1969, 2065), internally with complex folds or ducts (Figs. 1970, 2066).

*Distribution.* Known from Thakek area, Khammouan Prov., Laos, only (Fig. 2027).

*Material examined.* LAOS: *Khammouan Prov.*: 9.5 km NE Thakek: ♂ holotype above; same locality, footcaves, at day, by hand, 6.xi.2009 (P. Jäger, S. Bayer), 1♂ in SMF. Thakek area, Ban Kouanphavang 2 (17°27.4'N, 104°55.4'E), ~180 m a.s.l., cave and surroundings, by hand, sweep net, 29.x.2004 (P. Jäger, V. Vedel), 1♀ in SMF; Thakek area, Ban Tham karst cave and foot-caves (17°25.8'N, 104°51.9'E), ~180 m a.s.l., 27.ii.2003 (H. Steiner) 1♀ in SMF.

*Pholcus bolikhamsai* n. sp.

Figs. 2067-2071

*Type.* Male holotype from Laos, Bolikhamsai Province, Lak Sao, Tham Mang Kone (18°13.3'N, 104°48.8'E), 500 m a.s.l., inside cave and cave entrance, at day, by hand, 9.xi.2009 (P. Jäger, S. Bayer), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 2067, 2068; shapes of trochanter, femur, procurus, uncus, embolus, and appendix), male chelicerae (Fig. 2069; barely modified), male ocular area with two dense brushes of hairs, and female genitalia (Figs. 2070, 2071; shapes of epigynum and internal structures).

*Male* (holotype). Total body length 5.3, carapace width 1.6. Leg 1: 13.2 + 0.7 + 13.2, metatarsus and tarsus missing, tibia 2: 9.3, tibia 3: 6.1, tibia 4: 8.1; tibia 1 L/d: 83. Habitus similar to *Ph. thakek* (cf. Fig. 1935). Carapace pale ochre-gray with wide median darker mark, ocular area and clypeus also slightly darker brown, sternum with large indistinct median



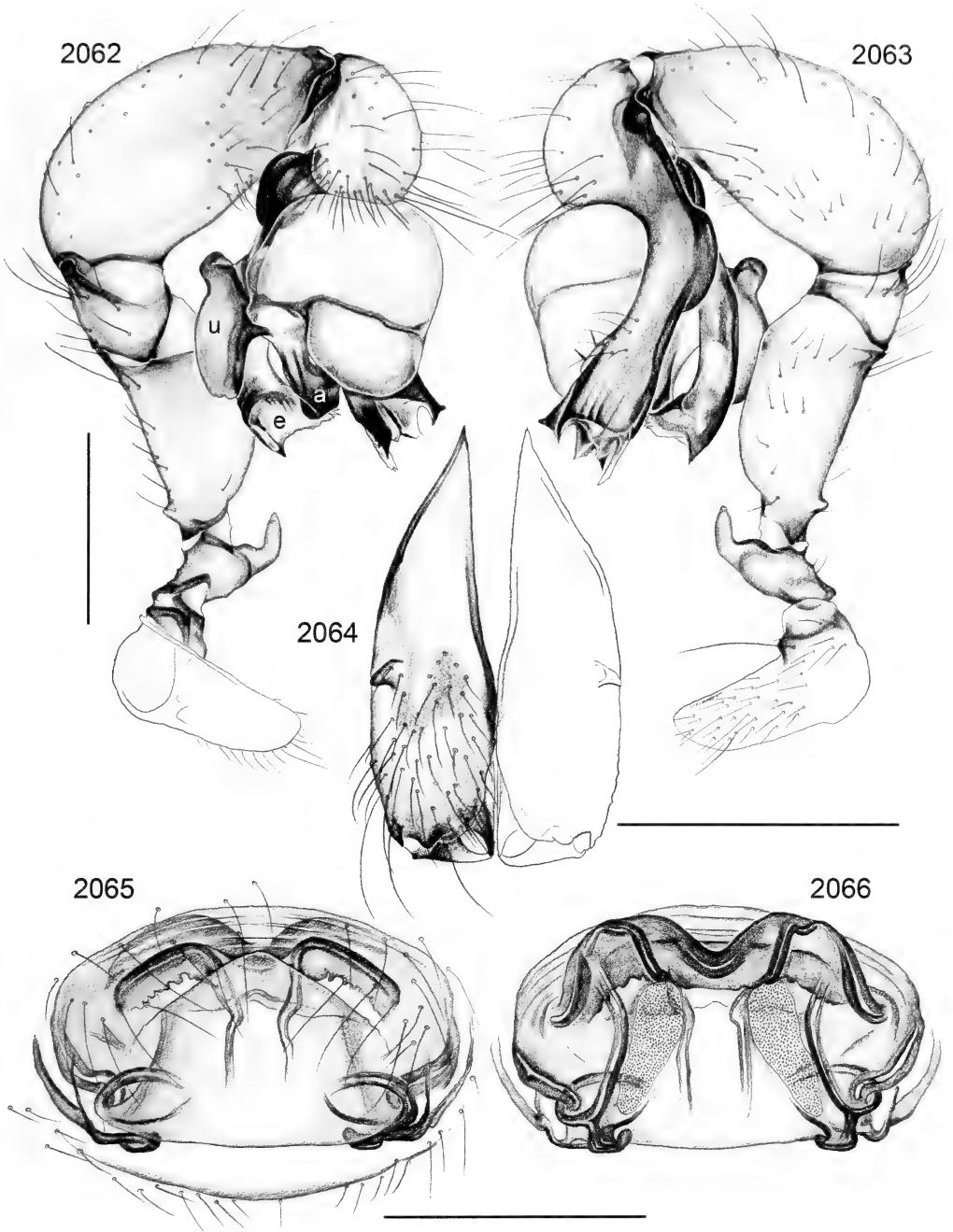


FIG. 2062-2066. *Pholcus jaegeri*. 2062, 2063. Left male palp, prolateral and retrolateral views. 2064. Male chelicerae, frontal view. 2065, 2066. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

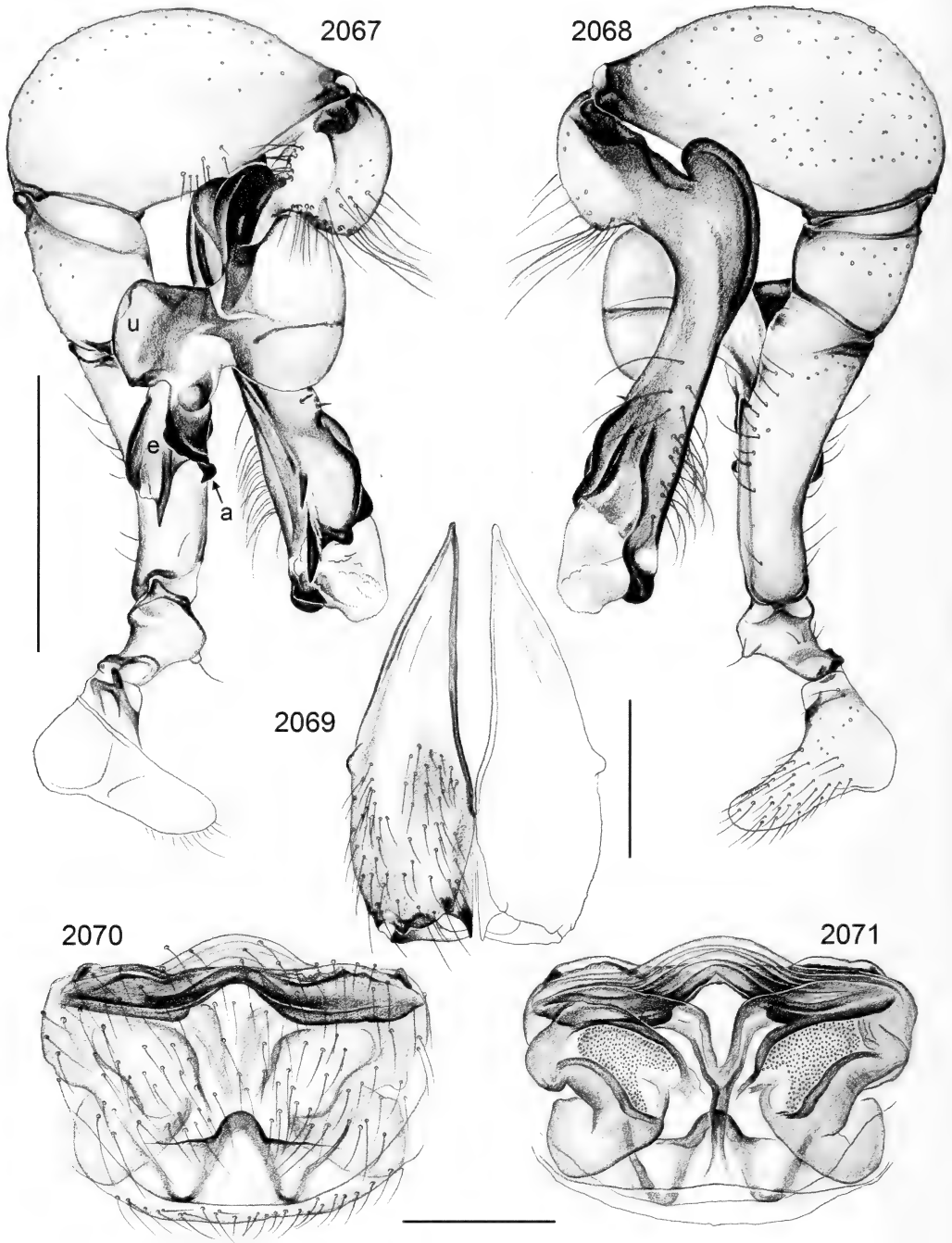


FIG. 2067-2071. *Pholcus bolikhamsai*. 2067, 2068. Left male palp, prolateral and retrolateral views. 2069. Male chelicerae, frontal view. 2070, 2071. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2067, 2068), 0.5 (2070, 2071), 0.4 (2069).

mark and brown margins, legs ochre-gray, femora and tibiae with slightly lighter tips, patella area slightly darker, abdomen monochromous ochre-gray, darker rectangle in genital area. Distance PME-PME 520  $\mu\text{m}$ , diameter PME 140  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 55  $\mu\text{m}$ . Ocular area elevated, with pair of dense brushes of stronger hairs between triads. No thoracic furrow (only dark line anteriorly); clypeus unmodified. Chelicerae as in Fig. 2069, unmodified except for pair of indistinct lateral humps. Sternum wider than long (1.15/0.85), unmodified. Palps as in Figs. 2067 and 2068, coxa unmodified, trochanter with short ventral apophysis, femur with small but distinct ventral apophysis, patella relatively long, procurus with very distinctive ventral 'knee', two dorsal spines, distinctive prolateral and distal processes, bulb with large proximal sclerite, simple uncus, largely sclerotized embolus, distinctive appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); prolateral trichobothrium absent on tibia 1, present on other tibiae; retrolateral trichobothrium on tibia 1 at 4.5%.

*Variation.* Tibia 1 in one other male: 14.9 (missing in other males).

*Female.* In general similar to male, triads closer together (distance PME-PME 285  $\mu\text{m}$ ), ocular area without hair brushes. Tibia 1 in three females: 11.3, 11.7, 12.4. Epigynum simple externally, with small partly sclerotized plate posteriorly, internal arc visible through cuticle anteriorly (Fig. 2070); internal genitalia as in Fig. 2071.

*Distribution.* Known from type locality only (Fig. 2027).

*Material examined.* LAOS: *Bolikhamtai Prov.*: SE Luang Prabang, Lak Sao, Tham Mang Kone: ♂ holotype above; same data, 1 ♀ and several juveniles, in SMF; same locality, inside cave, 3.iii.2010 (P. Jäger, J. Martens), 3♂3♀ in SMF.

*Pholcus bangfai* n. sp.

Figs. 1941-1943, 2072-2076

*Type.* Male holotype from Laos, Khammouan Province, Ban Nong Ping, Tham Xe Bangfai (17°22.3'N, 105°50.3'E), "middle section", 20.ii.2007 (H. Steiner), in SMF.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Easily distinguished from congeners by male palpal morphology (Figs. 2072, 2073; long

procurus, uncus shape, slender appendix), male cheliceral morphology (Fig. 2074; distinctive frontal apophyses, no distal apophyses), and female genitalia (Figs. 1943, 2075, 2076; small epigynal plate, long internal genitalia).

*Male* (holotype). Total body length 5.1, carapace width 1.35. Leg 1: 46.6 (11.2 + 0.6 + 11.3 + 21.1 + 2.4), tibia 2: 7.7, tibia 3: 5.0, tibia 4 missing, tibia 1L/d: 88. Habitus as in Figs. 1941 and 1942. Carapace ochre-yellow, medially slightly darker, ocular area also darkened, clypeus ochre-yellow, sternum ochre-yellow with darker margins, slightly darkened medially in anterior and posterior areas, legs ochre-yellow, tips of femora and tibiae lighter, abdomen monochromous ochre-gray. Distance PME-PME 370  $\mu\text{m}$ , diameter PME 115  $\mu\text{m}$ , distance PME-ALE 35  $\mu\text{m}$ , distance AME-AME 45  $\mu\text{m}$ , diameter AME 55  $\mu\text{m}$ . Ocular area elevated, each triad on low hump directed laterally. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae as in Fig. 2074, with distinctive pair of large frontal apophyses, each carrying several black tubercles, plus pair of lateral apophyses. Sternum wider than long (0.9/0.7), unmodified. Palps as in Figs. 2072 and 2073, coxa unmodified, trochanter with very short retrolateral apophysis, femur slender, with small dorsal apophysis proximally and slightly larger projection retrolatero-ventrally, procurus very long, simple except distally, with two prolatero-dorsal spines, hairs on retrolateral side unusually short, bulb elongate, long proximal sclerite, large uncus with distinctive proximal process dorsally, very long weakly sclerotized embolus, mostly semitransparent bifid appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing). Retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, seen on tibiae 2 and 3; pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Variation.* Tibia 1 in other male: 11.0.

*Female.* In general similar to male but triads closer together (distance PME-PME 230  $\mu\text{m}$ ); tibia 1: 10.0. Epigynum very small relative to abdomen (Fig. 1943), simple semicircular plate, without 'knob' (Fig. 2075); internal genitalia very elongated (Fig. 2076).

*Distribution.* Known from type locality only (Fig. 2027).

*Material examined.* LAOS: *Khammouan Prov.*: Ban Nong Ping, Tham Xe Bangfai: ♂ holotype above; same data but 14.ii.2007, 1♂ in SMF; same data but 22.ii.2007, "balcony & passage to", 1♀ in SMF.

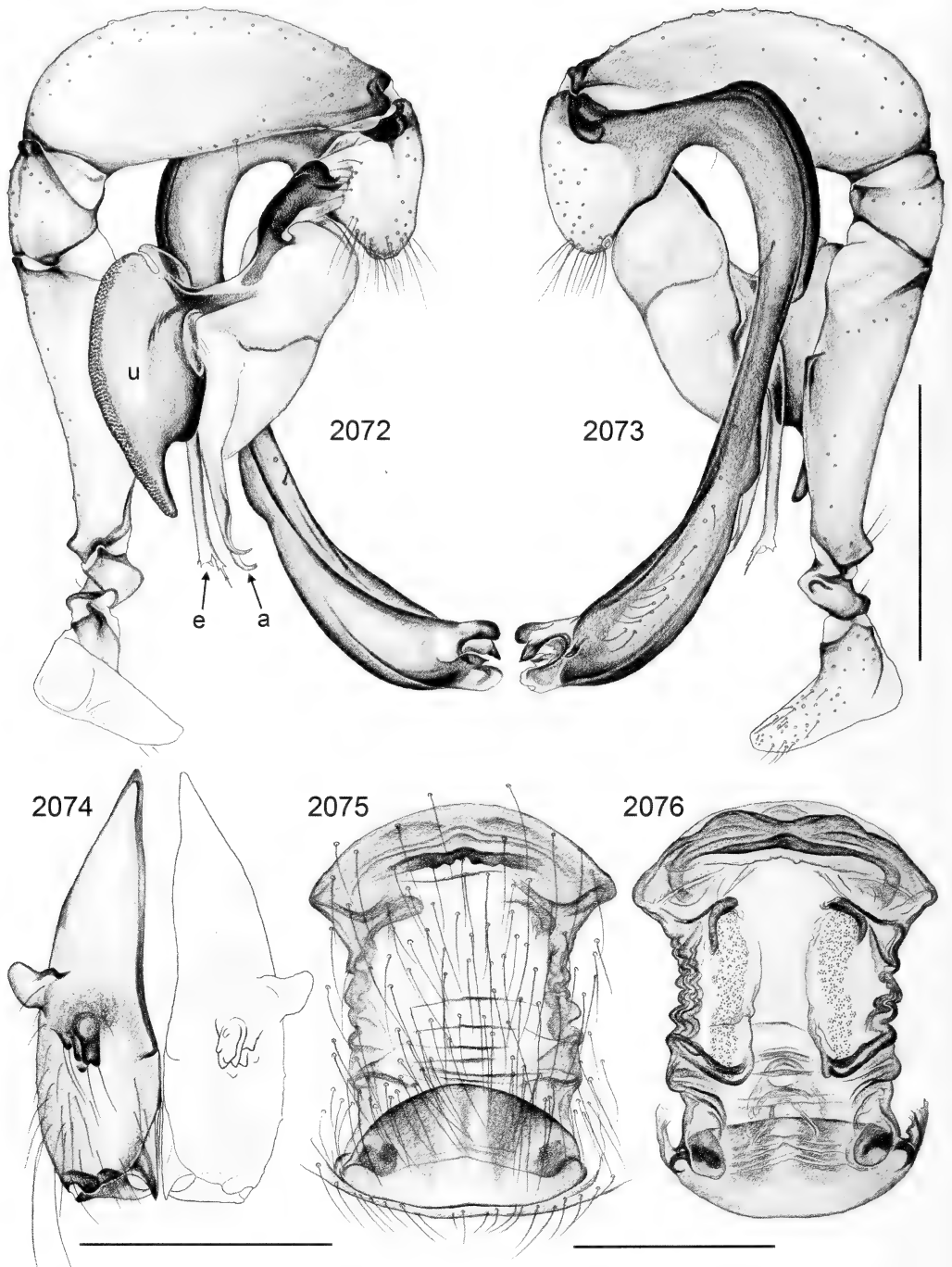


FIG. 2072-2076. *Pholcus bangfai*. 2072, 2073. Left male palp, prolateral and retrolateral views. 2074. Male chelicerae, frontal view. 2075, 2076. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2072, 2073), 0.5 (2074-2076).

*Pholcus nagasakiensis* species group

**Diagnosis** (core group). Medium-sized to large, long-legged *Pholcus* (body length ~4.5-7.5, leg 1: ~40-55); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, abdomen cylindrical, male chelicerae without proximal frontal apophyses (except *Ph. yoshikurai*), procurus with distinctive membranous fringed process prolaterally (e.g., Figs. 2078, 2086, 2091), with two dorsal spines (except *Ph. yoshikurai*), uncus roughly rectangular (except *Ph. yoshikurai*), epigynum sclerotized, with 'knob', pore plates surrounded by thick structure (Figs. 2085, 2090, 2095).

**Description** (core group). Body length ~4.5-7.5, carapace width 1.6-1.9. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with one or two pairs of proximal apophyses and distal apophyses, the latter with two modified hairs each. Male palpal coxa unmodified, trochanter with retrolatero-ventral apophysis, femur with rounded ventral protuberance, tarsus with cone-shaped dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', with two dorsal spines, with distinctive membranous fringed process prolaterally. Bulbal uncus roughly rectangular, embolus weakly sclerotized, appendix with branch. Legs long, tibia 1 in males ~9.5-12.5, tibia 1 L/d ~65-80, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-7%. Abdomen cylindrical, without dorsal cuticular pattern, ventrally monochromous or with simple indistinct band. Male gonopore with four epandrous spigots, ALS with seven spigots each, PMS with two small spigots each (SEM characters examined in *Ph. otomi* only).

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs barely shorter. Epigynum sclerotized, with 'knob', internal genitalia with pair of pore-plates surrounded by thick structure (e.g., Figs. 2090, 2095).

**Monophyly.** The monophyly of the core group is supported by the membranous fringed process prolaterally on the procurus (char. 41; e.g., Figs. 2078, 2086, 2091) and by the thick structure surrounding the pore plates in the female internal genitalia (char. 69; e.g., Figs. 2090, 2095).

**Relationships.** The sclerotized epigynum (char. 65), the procurus with dorsal spines (char. 38), and the branched appendix (char. 57) place this group near

several other mostly Palaearctic *Pholcus* species groups. The (secondary) absence of proximal frontal apophyses on the male chelicerae (char. 18) may link this group with the *Ph. bidentatus* species group (Fig. 26) but these apophyses are present in some species of both groups (*Ph. gui*, *Ph. steineri*, *Ph. yoshikurai*; indistinct in *Ph. namkhan*). *Pholcus higoensis* is best considered incertae sedis. Its uncus resembles the *Ph. nagasakiensis* group, but it is much smaller, and has a longer tibia 4 than tibia 2 (as in the *Ph. opilionoides* species group).

**Natural history.** Unknown.

**Distribution.** The *Ph. nagasakiensis* group is known from southern Japan and eastern China (Fig. 2077).

**Composition.** The *Ph. nagasakiensis* group includes five species. Core group: *Ph. otomi* n. sp.; *Ph. nagasakiensis* Strand, 1918; *Ph. wuyiensis* Zhu & Gong, 1991; *Ph. yoshikurai* Irie, 1997; assigned tentatively: *Ph. higoensis* Irie & Ono, 2008. Four species are treated below; for *Ph. higoensis*, see Irie & Ono (2008).

*Pholcus otomi* n. sp.

Figs. 1944-1946, 1971, 1972, 2078-2083, 2194-2198

**Type.** Male holotype from Japan, Okinawa Prefecture, Iriomotejima Island [24°18'N, 123°48'E], Otomi, Cave No 2, 17.viii.1985 (A. Tanikawa), 1♂ in NSMT.

**Etymology.** The specific name is a noun in apposition, derived from the type locality.

**Diagnosis.** Distinguished from the very similar *Ph. nagasakiensis* by male procurus (Fig. 2083; wider and shorter, without large membranous structure prolaterally, shapes of distal elements), and female internal genitalia (Fig. 2082; narrower pore plates closer together, converging anteriorly).

**Male** (holotype). Total body length 7.0, carapace width 1.55. Leg 1: 47.2 (11.3 + 0.8 + 11.1 + 21.3 + 2.7), tibia 2: 7.9, tibia 3: 5.7, tibia 4: 7.7, tibia 1L/d: 66. Habitus as in Figs. 1944 and 1945. Carapace pale ochre with large brown median mark posteriorly slightly interrupted by median line, ocular area and clypeus also brown, with darker median band between eye triads, sternum very dark brown, almost black, legs light brown, tips of femora and tibiae lighter, indistinct darker rings on femora subdistally and in patella area, abdomen pale gray with very indistinct internal spots visible through cuticle dorsally, ventrally with wide but very indistinct darker band (cf. female, Fig. 1946). Distance PME-PME

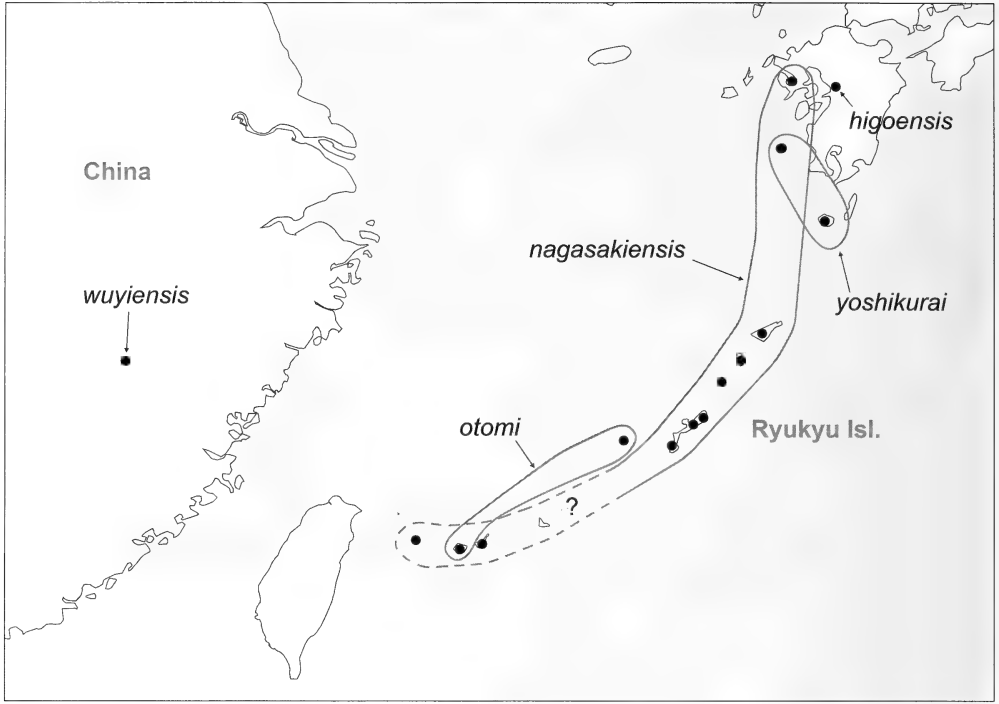


FIG. 2077. Known distribution of the *Pholcus nagasakiensis* species group. Most of the *Ph. nagasakiensis* localities are from Irie (1997); some of them (especially the southern ones) may represent *Ph. otomi*.

275  $\mu\text{m}$ , diameter PME 175  $\mu\text{m}$ , distance PME-ALE 45  $\mu\text{m}$ , distance AME-AME 45  $\mu\text{m}$ , diameter AME 105  $\mu\text{m}$ . Ocular area slightly elevated, few hairs posteriorly on ocular area. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae as in Fig. 2080, distal apophyses with two modified hairs each (Fig. 2195). Sternum slightly wider than long (1.1/1.0), unmodified. Palps as in Figs. 2078 and 2079, coxa unmodified, trochanter with slender retrolateral apophysis, femur with ventral protrusion, tibia large, tarsus elongated dorsally, procurus with two short prolatero-dorsal spines and one longer spine more retrolaterally, with distinctive membranous fringed and sclerotized prolateral processes (Figs. 2078, 2194, 2197), bulb with large uncus, embolus mostly weakly sclerotized (especially distally), appendix rather simple. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with >20 pseudosegments, but only

distally a few visible in dissecting microscope. Gonopore with four epiandrous spigots (Fig. 2198); ALS with seven spigots each (Fig. 2196).

*Variation.* Tibia 1 in 4 other males 9.6, 11.1, 11.2, 11.5.

*Female.* In general similar to male but ocular area even lower and triads closer together (distance PME-PME 195  $\mu\text{m}$ ). Light median line dividing brown mark on carapace sometimes absent. Tibia 1 in 6 females: 9.6-11.3 (mean 10.5). Epigynum a large plate with very dark lateral areas and median darker line, with anterior 'knob', area in front of epigynum also darkened (Figs. 1971, 2081), in some females entire epigynal area strongly protruding; internal genitalia as in Figs. 1972 and 2082.

*Distribution.* The only unambiguous records are from Iriomotejima and Kumejima Islands (Fig. 2077). However, some of the dots in Irie's (1997) map (especially the southern ones) may also denote this species rather than the very similar *Ph. nagasakiensis* (see Note under *Ph. nagasakiensis* redescription below).

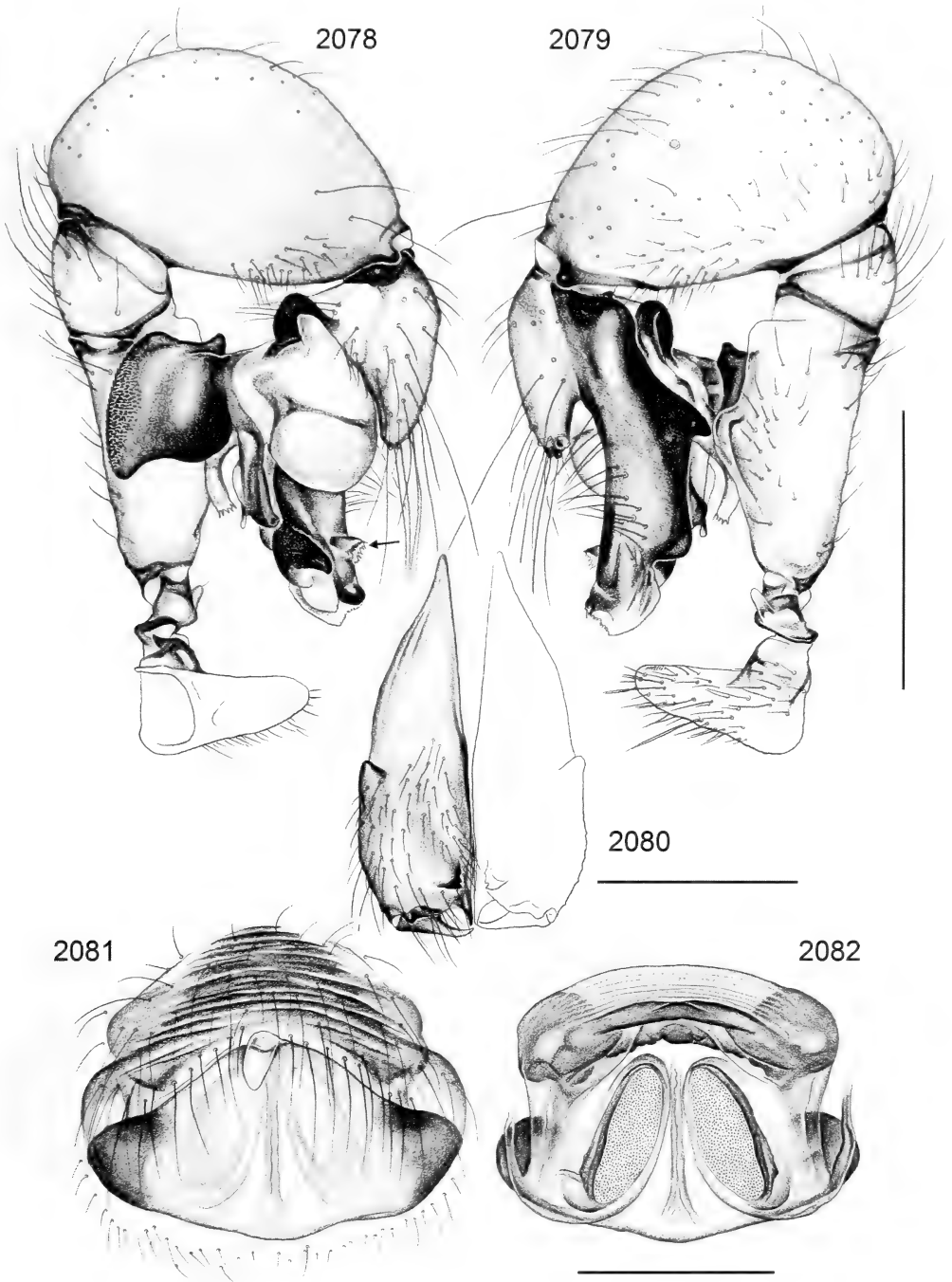


FIG. 2078-2082. *Pholcus otomi*. 2078, 2079. Left male palp, prolateral and retrolateral views (arrow points at prolateral fringed process). 2080. Male chelicerae, frontal view. 2081, 2082. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2078, 2079), 0.5 (2080-2082).

*Material examined.* JAPAN: Okinawa Pref.: Iriomotejima Island [24.3°N, 123.8°E]: Otomi: ♂ holotype above, together with 1♀; Otomi, 20.viii.1987 (A. Tanikawa), 1♂ in ZFMK; Urauchi, 17.viii.1985 (A. Tanikawa), 3♀ in ZFMK; Ohara, 1.i.1991 (A. Tanikawa), 1♂3♀ in ZFMK; Shirahama, 22.vii.1991 (A. Tanikawa), 1♂ in ZFMK. Kumejima Island [26.3°N, 126.8°E], Darumayama, 15.vi.2004 (A. Tanikawa), 1♂1♀ in ZFMK.

*Pholcus nagasakiensis* Strand, 1918

Figs. 1947, 1973, 1974, 2084, 2085

*Pholcus nagasakiensis* Strand 1918: 93. Yaginuma 1970: 646. Yaginuma 1986: 29-30, figs. 9p, 9e, pl. 6, fig. 13. Chikuni 1989: 29, fig. 5. Irie 1997: 135, fig. 7 (in part). Irie 2009: 108, figs. (2-2-13) 18-20.

*Note.* Even though several authors (see above) have claimed to deal with Strand's species, it should be noted that the identity of *Ph. nagasakiensis* remains ambiguous for several reasons. First, the species has never been adequately described and the type specimens are lost. Strand (1918) described only the

epigynum and did not provide illustrations. Second, while numerous specimens are available from the Ryukyu Islands, no topotypical specimens seem to be available from Nagasaki or Kyushu Island. Irie's (1997) distribution map shows a single dot on Kyushu, which apparently just denotes the type locality rather than being backed by new material. Third, at least two closely related species occur in the Kyushu Region, *Ph. nagasakiensis* and *Ph. otomi*, and Strand's (1918) description does not allow to decide which is the 'real' *Ph. nagasakiensis*. Here I follow Yaginuma (1986) and Chikuni (1989) and consider the species with a slender procurus (and oval pore plates) as *Ph. nagasakiensis*. Obviously, further collecting at or near the type locality is necessary to test this assignment. *Types.* One female and one juvenile syntypes from Japan, Kyushu, Nagasaki [-32°54'N, 129°54'E], in dark corner of a house, 30.viii.1882 and 1.ix.1882 (E. Strand), probably lost.

*Diagnosis.* Distinguished from very similar *Ph. otomi* by male procurus (Fig. 2084; longer and more slender, conspicuous membranous structures prolaterally,

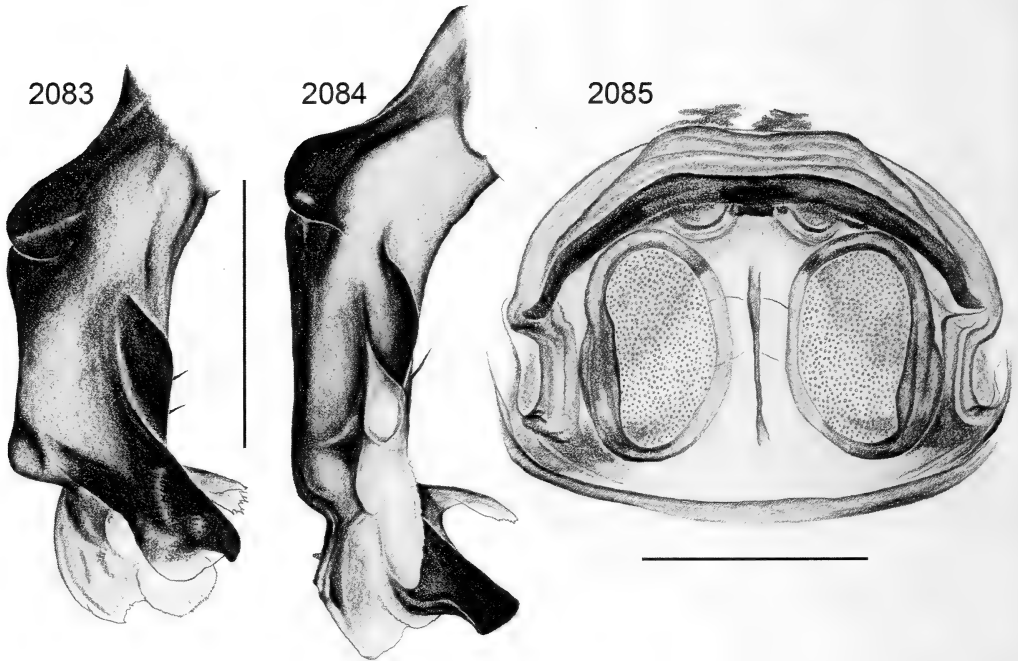


FIG. 2083-2085. Left procuri, prolateral views (at same scale), and cleared female genitalia, dorsal view. 2083. *Pholcus otomi*. 2084, 2085. *Ph. nagasakiensis*. Scale lines: 0.5.



shapes of distal elements), and female internal genitalia (Fig. 2085; oval pore plates).

*Male* (Naha). Total body length 7.3, carapace width 1.7. Leg 1: 49.6 (11.9 + 0.8 + 12.1 + 21.8 + 3.0), tibia 2: 8.9, tibia 3: 6.3, tibia 4: 8.4, tibia 1L/d: 68. Habitus as in Fig. 1947. Distance PME-PME 285 µm, diameter PME 175 µm, distance PME-ALE 60 µm, distance AME-AME 95 µm, diameter AME 100 µm. Ocular area slightly elevated, few hairs posteriorly on ocular area. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. otomi* (cf. Fig. 2080). Sternum slightly wider than long (1.15/1.05), unmodified. Palps in general very similar to *Ph. otomi* (cf. Figs. 2078, 2079), procurus more slender, distally clearly different, with distinctive prolateral membranous elements (Fig. 2084), with two short prolatero-dorsal spines (one apparently missing in drawn male), bulb very similar to *Ph. otomi*, only subdistal branch of appendix larger. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with >20 pseudosegments, but only distally a few visible in dissecting microscope.

*Variation*. Tibia 1 in 2 other males 10.8, 12.5.

*Female*. In general similar to male but triads slightly closer together (distance PME-PME 250 µm). Tibia 1 in 4 females: 9.5, 10.4, 10.5, 10.6. Epigynum as in Fig. 1973 (very similar to *Ph. otomi*); internal genitalia as in Figs. 1974 and 2085, with pore plates less elongated than in *Ph. otomi* and not converging anteriorly.

*Distribution*. Apparently widely distributed in the Kyushu Region, including Okinawa (Strand 1918, Irie 1997). However, most of the dots in Fig. 2077 are adopted from Irie's (1997) map and some of them may denote the closely related *Ph. otomi* (especially the southern ones).

*Material examined*. JAPAN: Okinawa Pref.: Okinawa Island: Naha [-26°12'N, 127°41'E], Nagayoshi Park, 20.viii.2001 (H. Tanaka), 2♂ in ZFMK. Okinawa Island: Aha [-26°43'N, 128°16'E], along river, 24.-25.viii.1955 (D.C. Lowrie), 1♂2♀ in AMNH; Aha-gawa, 5.x.1955 (D.C. Lowrie), 2♀ in AMNH.

*Pholcus wuyiensis* Zhu & Gong, 1991

Figs. 1948, 1949, 1975, 1976, 2086-2090

*Pholcus wuyiensis* Zhu & Gong 1991: 23-24, 26, figs. 5a-g. Song *et al.* 1999: 63, figs. 25t-w (copied from Zhu & Gong 1991). Zhang & Zhu 2009a: 94, figs. 55a-g (copied from Zhu & Gong 1991).

*Types*. Male holotype, female "allotype", 6♂5♀ paratypes from China, Fujian Prov., Chong'an (=Wuyishan) County, Mt. Wuyi (27°45'N, 117°40'E), 19. vii.1986 (M. Zhu, L. Gong), in MHBU (1♂1♀ paratypes examined).

*Diagnosis*. Distinguished from similar species with roughly rectangular uncus and distinct prolateral process on procurus (*Ph. otomi*, *Ph. nagasakiensis*) by details of male palpal morphology (Figs. 2086, 2087; shapes of trochanter apophysis, femur, procurus, and appendix), and female genitalia (Figs. 1975, 2090; wider epigynum, shape and position of pore plates).

*Male* (paratype). Total body length 5.9, carapace width 1.4. Leg 1: 41.9 (10.2 + 0.6 + 10.0 + 18.7 + 2.4), tibiae 2 and 3 missing, tibia 4: 6.7. Habitus as in Fig. 1948. Carapace ochre-yellow with brown marks posteriorly, ocular area with median brown band, clypeus medially slightly darker, sternum dark brown, legs ochre-yellow, femora and tibiae with indistinct darker rings subdistally, patella area also slightly darker, abdomen ochre-gray with many indistinct spots dorsally, without ventral pattern (cf. female, Fig. 1949), only genital area brown. Distance PME-PME 230 µm, diameter PME 150 µm, distance PME-ALE 55 µm, distance AME-AME 70 µm, diameter AME 70 µm. Ocular area moderately elevated, only normal hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2088, distal apophyses with two modified hairs each, only one pair of proximal apophyses. Sternum wider than long (0.95/0.80), unmodified. Palps as in Figs. 2086 and 2087, coxa unmodified, trochanter with slender ventral apophysis, femur with very indistinct proximal hump dorsally and distinct ventral protuberance, tibia unmodified ventrally, procurus with distinctive prolateral fringed process, uncus similar to *Ph. otomi* and *Ph. nagasakiensis*, weakly sclerotized embolus, appendix with flat prolateral branch. Legs without spines and curved hairs, few vertical hairs (most hairs missing), prolateral trichobothrium absent on tibia 1, seen on tibia 4.

*Female*. In general similar to male, triads at about same distance (distance PME-PME 220 µm); marks on abdomen slightly more distinct. Tibia 1: 8.0. Epigynum weakly elevated, anterior area brown, triangular plate strongly sclerotized laterally, with anterior 'knob' (Figs. 1975, 2089); internal genitalia as in Figs. 1976 and 2090.

*Distribution*. Known from type locality only (Fig. 2077).

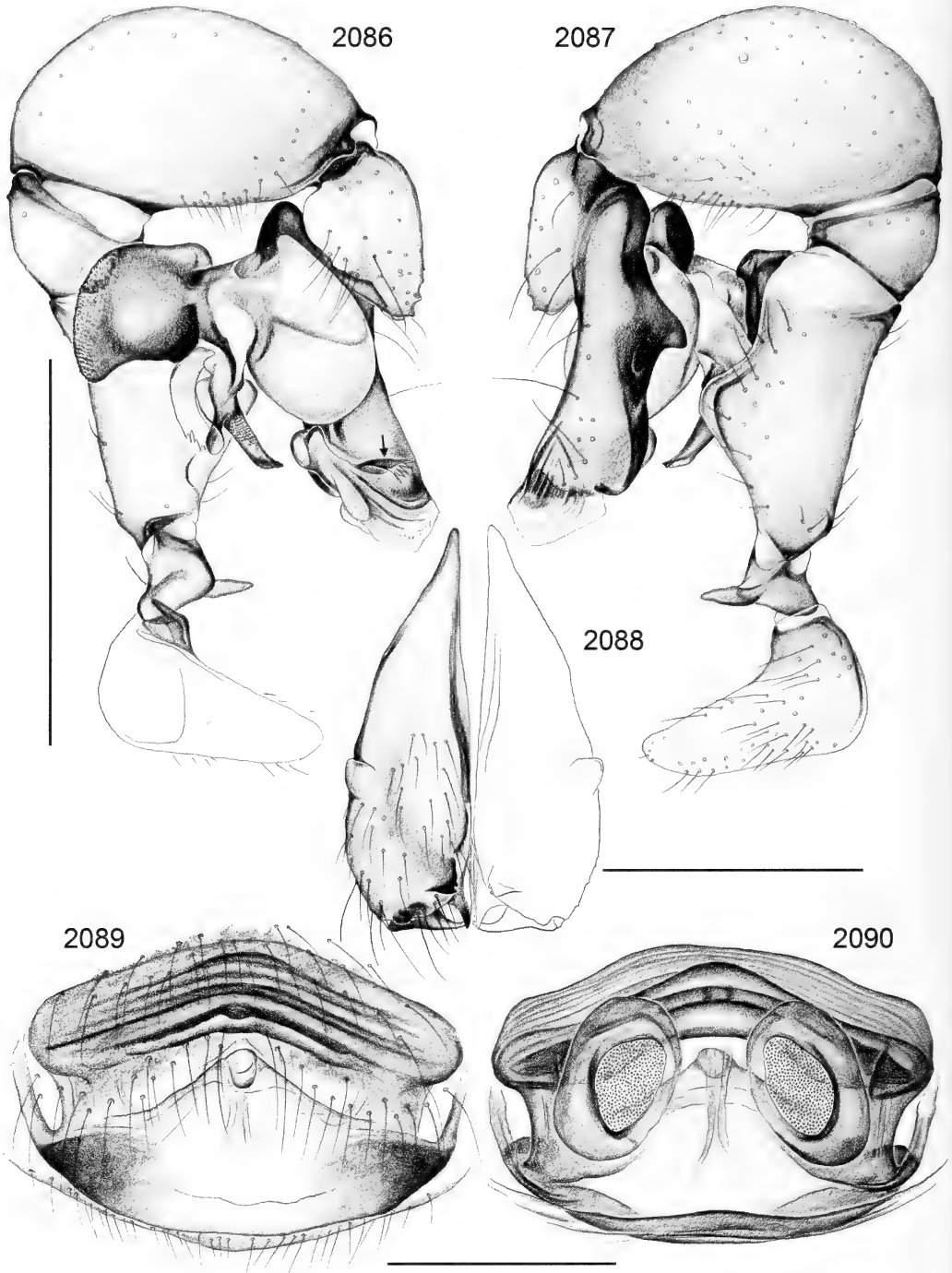


FIG. 2086-2090. *Pholcus wuyiensis*. 2086, 2087. Left male palp, prolateral and retrolateral views (arrow points at prolateral fringed process). 2088. Male chelicerae, frontal view. 2089, 2090. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2086, 2087), 0.5 (2088-2090).

*Material examined.* CHINA: Fujian Prov.: Wuyishan County: 1♂1♀ paratypes above.

*Pholcus yoshikurui* Irie, 1997

Figs. 1950, 1977, 1978, 2091-2095

*Pholcus yoshikurui* Irie 1997: 133-136, figs. 1-7. Irie 2009: 108, figs. (2-2-13) 30-32 (31 and 32 copied from Irie 1997).

*Types.* Male holotype from Japan, Kagoshima Prefecture, Yakushima Island [30°20'N, 130°30'E], Kamiyaku-chô, Miyanoura, 8.viii.1991 (T. Irie, N. Kinoshita), in NSMT (Ar 3566), examined; female "allotype" from Kamiyaku-chô, Kawahara, 9. viii.1991 (T. Irie, N. Kinoshita), in NSMT (Ar 3567), examined. For further paratypes from Yakushima and Koshikishima Islands, see Irie (1997). *Diagnosis.* Distinguished from congeners by male palpal morphology (Figs. 2091, 2092; shapes of procurus, uncus, and appendix), and female genitalia (Figs. 1977, 2095; shapes of epigynum and pore plates).

*Male* (type locality). Total body length 6.4, carapace width 1.9. Leg 1: 50.7 (12.2 + 0.8 + 12.3 + 22.5 + 2.9), tibia 2: 9.0, tibia 3: 6.3, tibia 4: 8.3, tibia 1L/d: 77. Habitus as in Fig. 1950. Specimen bleached, carapace with light brown mark divided posteriorly, ocular area also darker, clypeus not darkened, sternum light brown with many lighter dots, legs ochre-yellow, femora and tibiae with subdistal darker rings and light tips, patella area also darkened, abdomen monochromous whitish. Distance PME-PME 380 µm, diameter PME 175 µm, distance PME-ALE 60 µm, distance AME-AME 55 µm, diameter AME 105 µm. Ocular area elevated, each triad on low hump directed laterally. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2093, distal apophyses with two modified hairs each. Sternum wider than long (1.10/0.95), unmodified. Palps as in Figs. 2091 and 2092, coxa unmodified, trochanter with slender retrolatero-ventral apophysis, femur with ventral protrusion and very low indistinct prolatero-dorsal hump proximally, tibia large, procurus apparently without prolatero-dorsal spines, with distinctive membranous prolateral fringed process, uncus rather slender, embolus mostly weakly sclerotized (especially distally), appendix distally enlarged. Legs without spines and curved hairs, few vertical hairs. Retrolateral trichobothrium on tibia 1 at 7%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with >20 pseudosegments, but

only distally ~15 visible in dissecting microscope.

*Variation.* The holotype is extremely bleached; tibia 1: 12.5.

*Female.* In general similar to male but triads closer together (distance PME-PME 265 µm); tibia 1: 10.3, 11.3. Epigynum distinctive, much wider than long, roughly rectangular with anterior 'knob' (Figs. 1977, 2094); internal genitalia as in Figs. 1978 and 2095.

*Distribution.* Known from Yakushima and Koshikishima Islands, Japan (Irie 1997) (Fig. 2077).

*Material examined.* JAPAN: Kagoshima Pref.: Yakushima Island, Kamiyaku-chô, Miyanoura: ♂ holotype above; same locality, 16.vii.1997 (T. & J. Irie), 1♂1♀ in NSMT; Kamiyaku-chô, Kawahara: ♀ "allotype" above.

*Pholcus yichengicus* species group

*Notes.* This group includes species with a prolatero-ventral modification on the male palpal tibia and a vivid pattern on the carapace, but without the synapomorphies of the *Ph. taishan* and *Ph. phungiformes* groups (i.e. male chelicerae with frontal apophyses proximally, bulb with appendix). It is thus a paraphyletic group, and some species seem indeed closer to the *Ph. taishan* group than to other representatives of the *Ph. yichengicus* group (see Relationships below).

The group is highly diverse in southern and central China (Fig. 2171), and many species have recently been described and redescribed by Zhang & Zhu (2009a) and Tong & Li (2010). I have seen only a very limited sample of species so the conclusions must be seen as preliminary. However, the cladistic analysis suggests that species that were previously considered closely related (e.g., *Ph. wuyiensis* and *Ph. subwuyiensis*) are in fact in different species groups. Little attention has been paid to structures that are apparently informative for higher classification (male palpal tibia modification, procurus spines). For example, a tibia modification was not illustrated in *Ph. guani* by Song & Ren (1994) and Zhang & Zhu (2009a) but it is predicted to be present. Procurus spines have almost never been drawn (except for *Ph. kangding* by Tong & Li 2010 and *Ph. songxian* by Zhang & Zhu 2009a) and never mentioned in the text but they are predicted to be present in the large majority of species.

*Diagnosis.* Medium-sized, long-legged *Pholcus* (body length 4-6, leg 1: ~30-50); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, carapace with vivid pattern, abdomen cylindrical, male chelicerae with

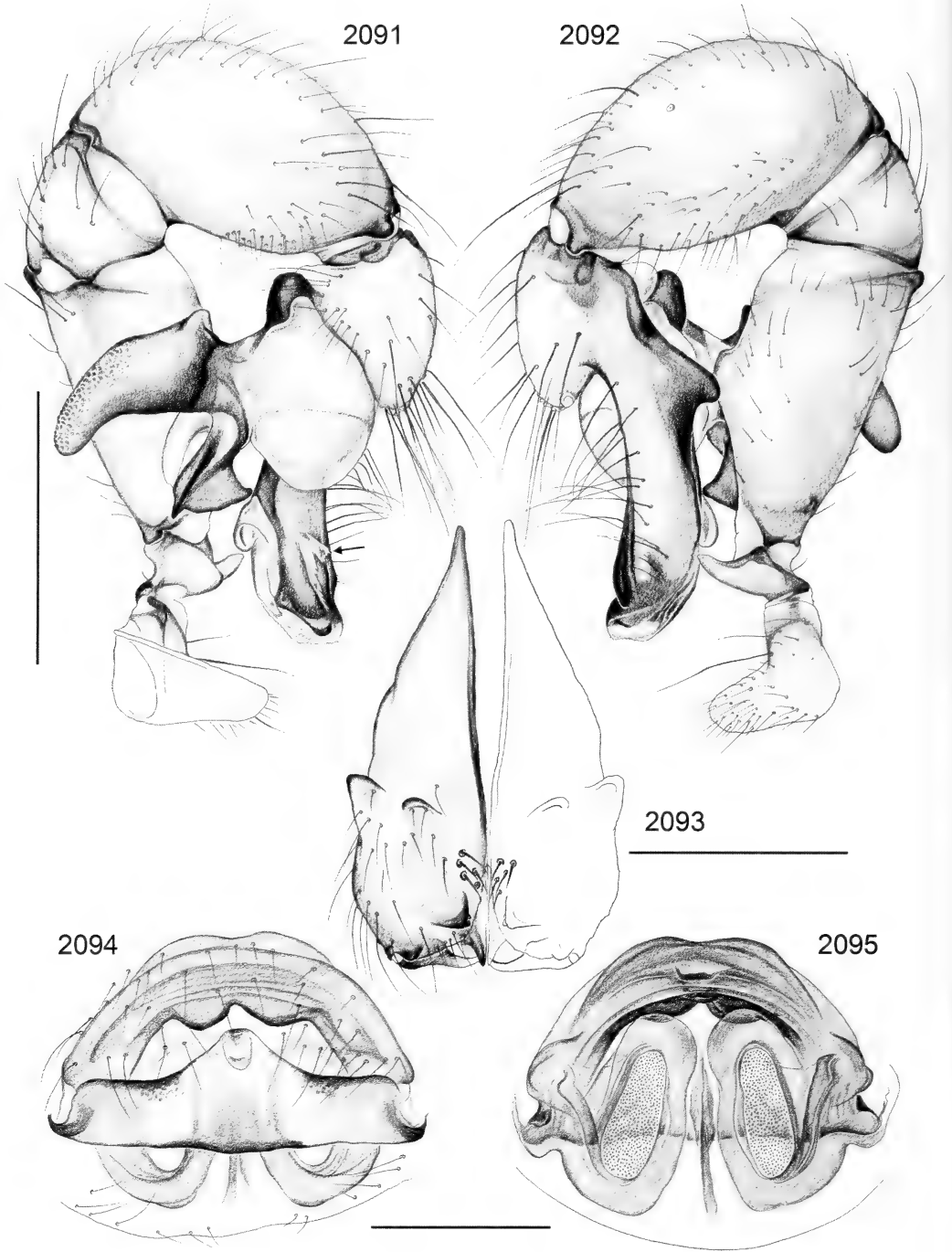


FIG. 2091-2095. *Pholcus yoshikurai*. 2091, 2092. Left male palp, prolateral and retrolateral views (arrow points at prolateral fringed process). 2093. Male chelicerae, frontal view. 2094, 2095. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2091, 2092), 0.5 (2093-2095).

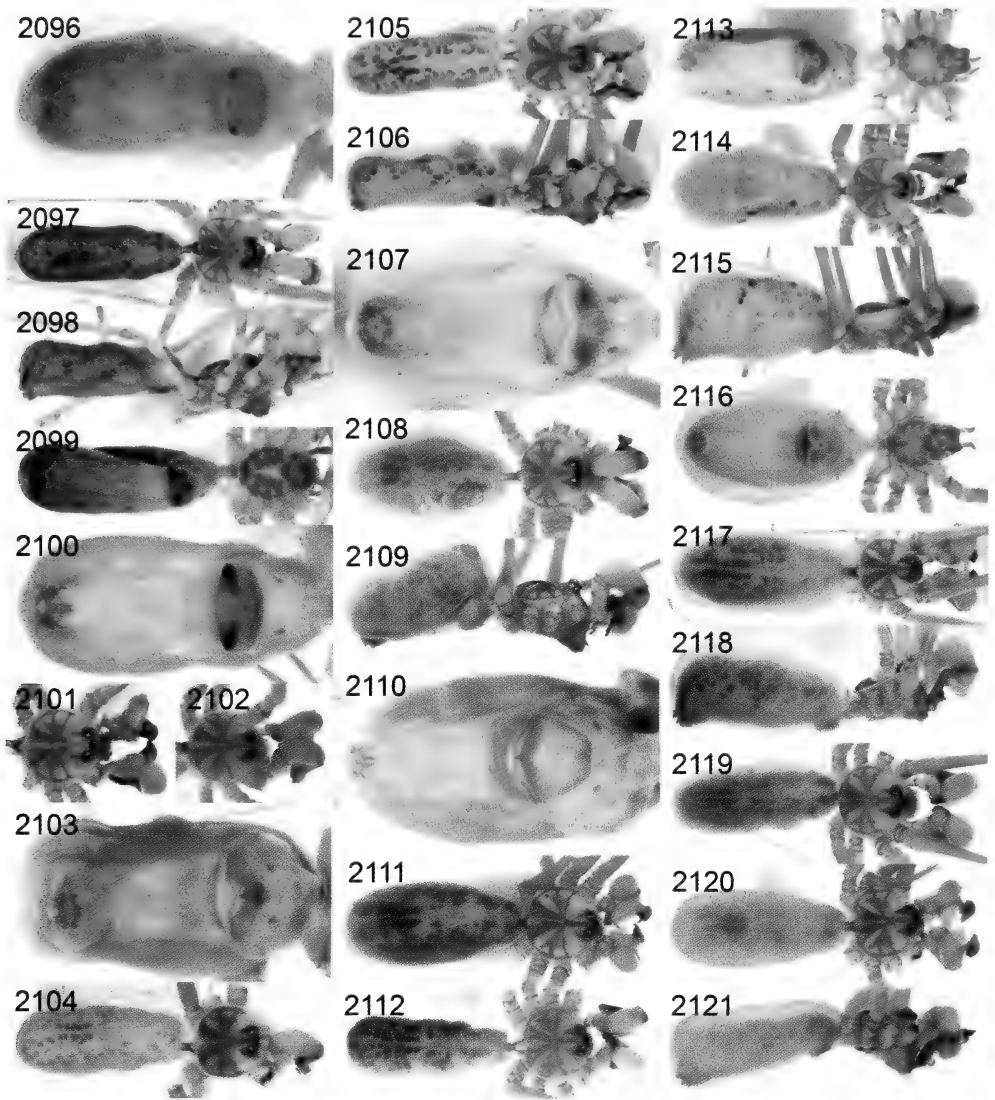


FIG. 2096-2121. *Pholcus yichengicus*, *Ph. taishan*, and *Ph. phungiformes* species groups, habitus. 2096. *Ph. yichengicus*, female abdomen, ventral view. 2097-2099. *Ph. taibaiensis*, male, dorsal and lateral views; female, ventral view. 2100, 2101. *Ph. qinghaiensis*, female abdomen, ventral view; male prosoma, dorsal view. 2102, 2103. *Ph. taishan*, male prosoma, dorsal view; female abdomen, ventral view. 2104. *Ph. oculusus*, male, dorsal view. 2105-2107. *Ph. linzhou*, male, dorsal and lateral views; female abdomen, ventral view. 2108-2110. *Ph. allectospilus*, male, dorsal and lateral views; female abdomen, ventral view. 2111. *Ph. montanus*, male, dorsal view. 2112, 2113. *Ph. woongil*, male, dorsal view; female ventral view. 2114-2116. *Ph. yeongwool*, male, dorsal and lateral views; female, ventral view. 2117, 2118. *Ph. okgye*, male, dorsal and lateral views. 2119. *Ph. nodong*, male, dorsal view. 2120, 2121. *Ph. simbok*, male, dorsal and lateral views.

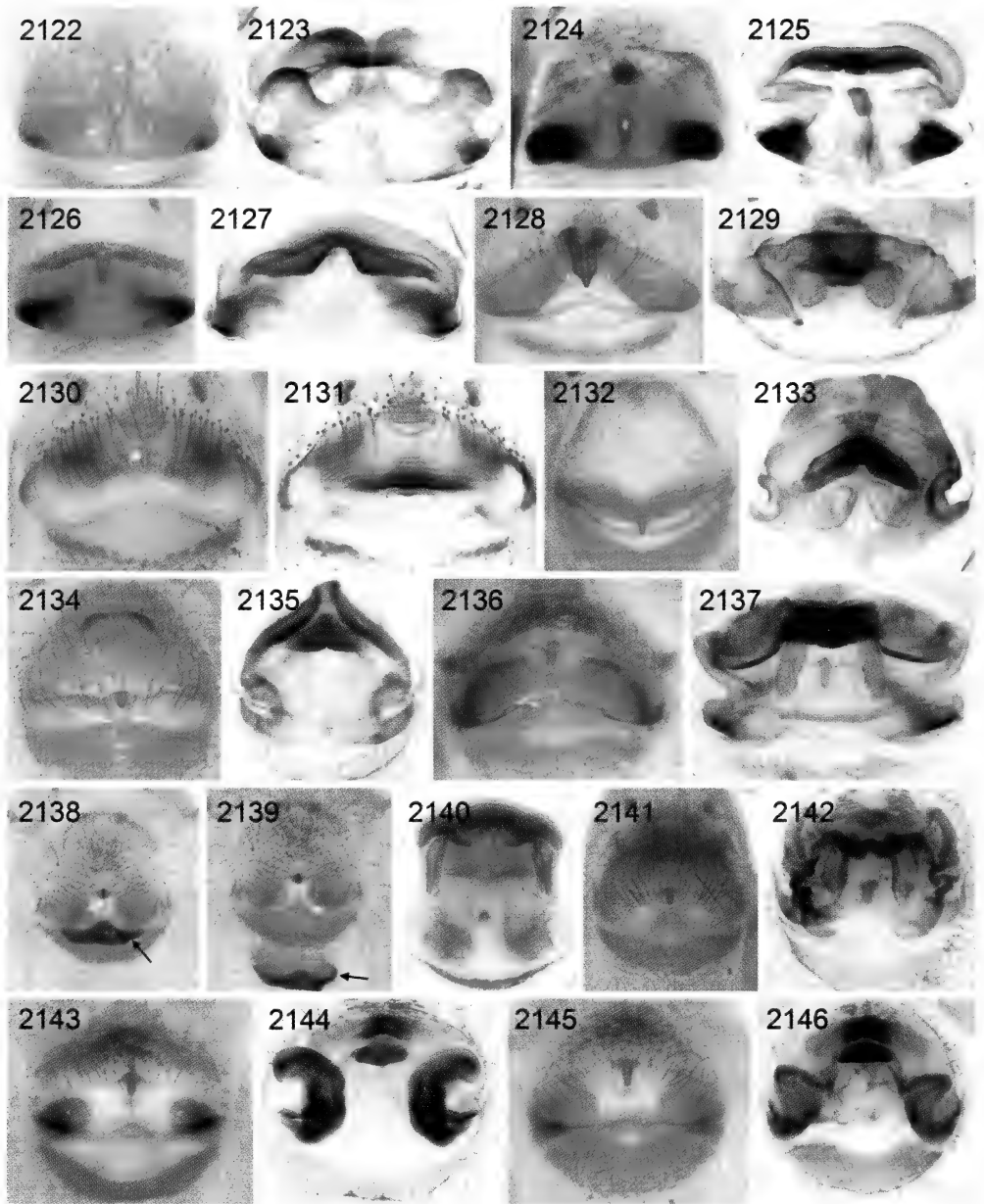


FIG. 2122-2146. *Pholcus yichengicus*, *Ph. taishan*, and *Ph. phungiformes* species groups; epigyna, ventral views, and cleared female genitalia, dorsal views. 2122, 2123. *Ph. yichengicus*. 2124, 2125. *Ph. taibaiensis*. 2126, 2127. *Ph. qinghaiensis*. 2128, 2129. *Ph. taishan*. 2130, 2131. *Ph. linzhou*. 2132, 2133. *Ph. allostospilus*. 2134, 2135. *Ph. montanus*. 2136, 2137. *Ph. woongil*. 2138-2140. *Ph. yeongwol*, with genital plug (arrows) in place (2138) and removed (2139). 2141, 2142. *Ph. okgye*. 2143, 2144. *Ph. nodong*. 2145, 2146. *Ph. simbok*.

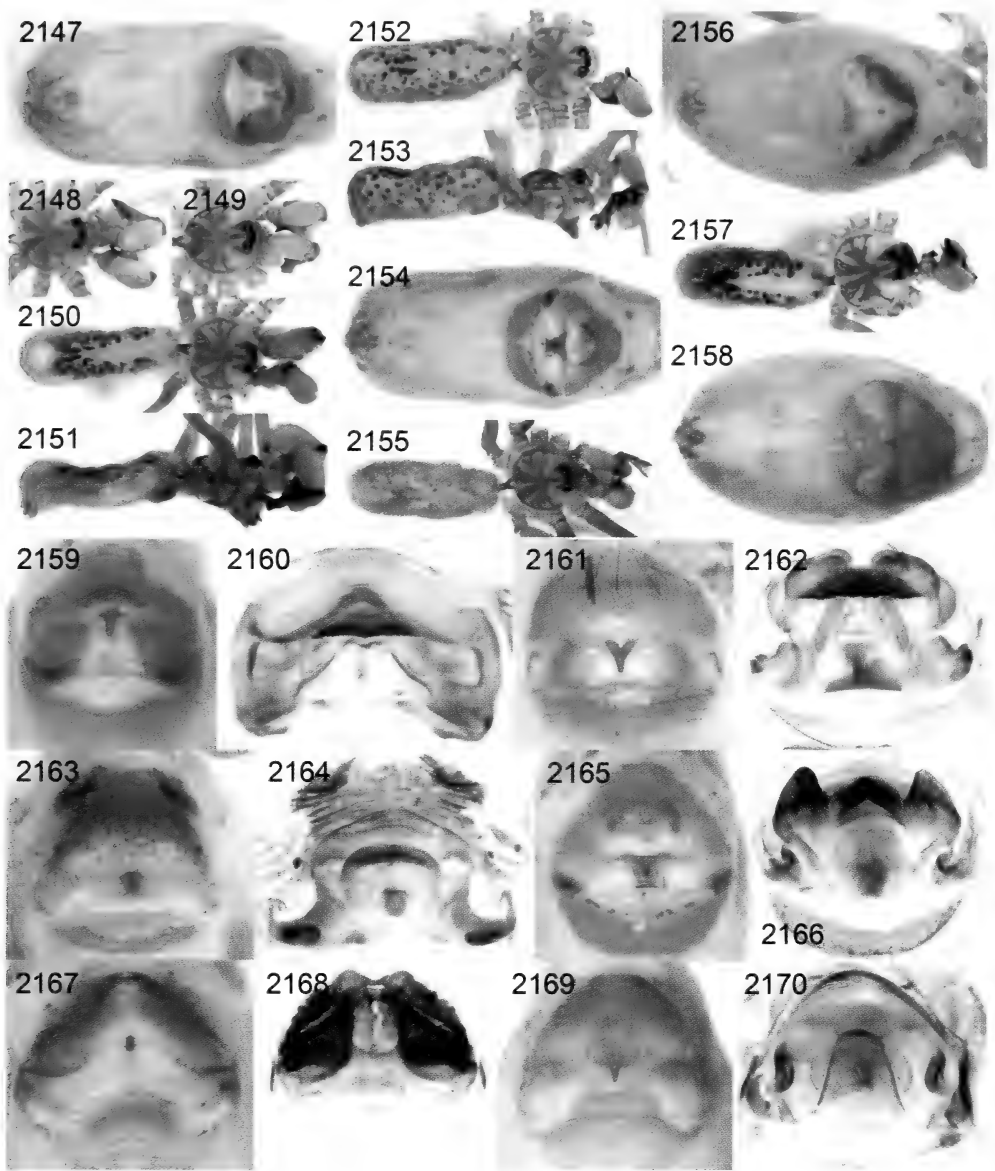


FIG. 2147-2170. *Pholcus phungiformes* species group; habitus, epigyna (ventral views), and cleared female genitalia (dorsal views). 2147, 2148. *Ph. lingulatus*, female abdomen, ventral view; male prosoma, dorsal view. 2149. *Ph. phungiformes*, male prosoma dorsal view. 2150, 2151. *Ph. beijingensis*, male, dorsal and lateral views. 2152-2154. *Ph. pennatus*, male, dorsal and lateral views; female abdomen, ventral view. 2155. *Ph. clavimaculatus*, male, dorsal view. 2156. *Ph. triangulatus*, female abdomen, ventral view. 2157, 2158. *Ph. crassus*, male dorsal view; female abdomen, ventral view. 2159, 2160. *Ph. lingulatus*. 2161, 2162. *Ph. phungiformes*. 2163, 2164. *Ph. beijingensis*. 2165, 2166. *Ph. pennatus*. 2167, 2168. *Ph. triangulatus*. 2169, 2170. *Ph. crassus*.



proximal apophyses frontally and laterally and distal apophyses, palpal trochanter apophyses medium long, often with short retrolateral branch, palpal tibia with prolatero-ventral modification, procurus with two dorsal spines, appendix with branch, epigynum sclerotized, with 'knob' of variable length. *Description.* Body length ~4-6, carapace width 1.2-1.9. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with two pairs of proximal apophyses and distal apophyses, the latter with two tiny modified hairs each (Fig. 2199; barely visible in dissecting microscope). Male palpal coxa unmodified, trochanter with medium-long retrolatero-ventral apophysis often with short retrolateral branch, femur with rounded ventral protuberance, tibia with prolatero-ventral modification proximally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', with two dorsal spines. Bulbal uncus conservative, embolus weakly sclerotized, appendix

with branch. Legs long, tibia 1 in males ~6-13, tibia 1 L/d ~50-80, tibia 2 significantly longer than tibia 4 (tibia 2/4 ~1.10-1.25; two exceptions in Zhang & Zhu 2009a are probably based on mismeasurement: *Ph. zhangae* with 0.96, *Ph. parayichengicus* with 0.66), legs without spines, sometimes with curved hairs on tibiae and/or metatarsi, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-6%. Abdomen cylindrical, without cuticular pattern but usually with many dark internal spots visible through cuticle. Male gonopore with four epiandrous spigots, ALS with eight spigots each, PMS with two small spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs slightly shorter (tibia 1: ~5-9). Epigynum sclerotized, with 'knob' of variable length, internal genitalia with pair of pore-plates.

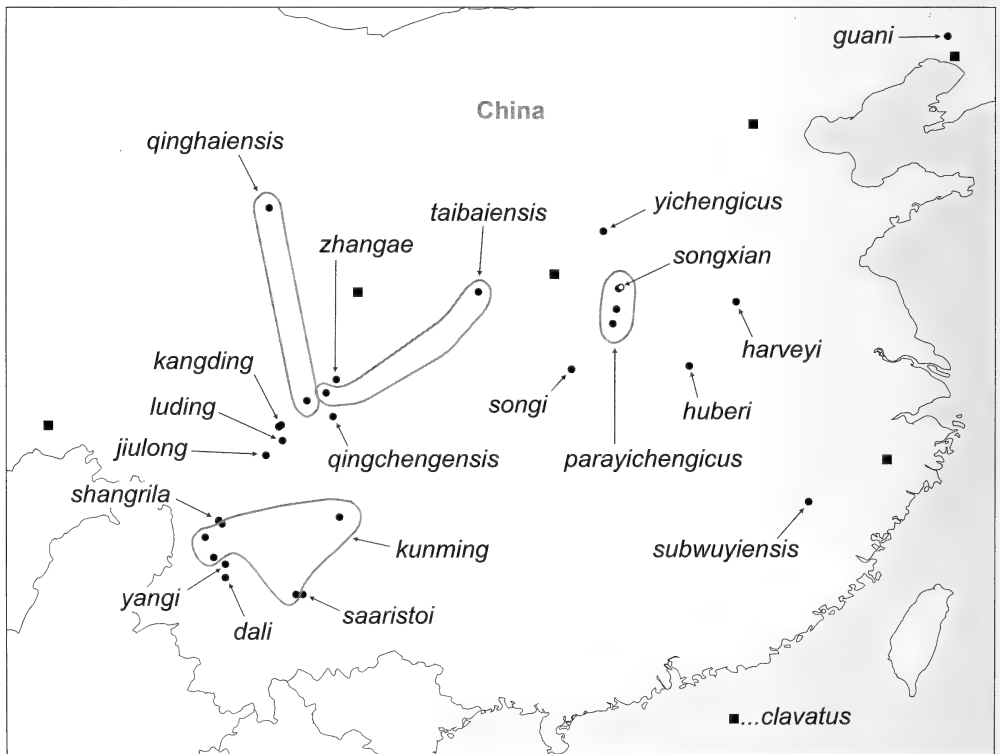


FIG. 2171. Known distribution of the *Pholcus yichengicus* species group.



*Monophyly.* As indicated above, this group is likely to be paraphyletic. It includes the species with a male palpal tibia modification (char. 32) that are not part of the *Ph. taishan* and *Ph. phungiformes* groups.

*Relationships.* The male cheliceral armature (char. 18), the sclerotized epigynum (char. 65), the procurus with dorsal spines (char. 38), and the branched appendix (char. 57) place this group (together with the two groups nested within it) near several other mostly Palaearctic *Pholcus* species groups. The eastern species that share a long, scape-like epigynal 'knob' (char. 67) (*Ph. guani*, *Ph. harveyi*, *Ph. huberi*, *Ph. parayichengicus*, *Ph. songxian*, *Ph. yichengicus*) may form a monophylum together with the *Ph. taishan* group (Fig. 26).

*Natural history.* Even though large samples of several species have been collected recently (Zhang & Zhu 2009a, Tong & Li 2010), practically nothing has been published on the biology of any of the species included in this group.

*Distribution.* The group is widely distributed in central and southeastern China (Fig. 2171). *Pholcus clavatus* is the only species with a wide distribution, but some of the records may actually be based on misidentifications (the type specimens appear to be lost and no new material seems to be available from the type locality). *Pholcus guani* from Liaoning Province is far outside the general distribution of the species group, which is otherwise strictly allopatric with the *Ph. phungiformes* species group (cf. Fig. 2216).

*Composition.* The group includes 21 previously described species. Of these, only three are redescribed below; for the other species, see Zhang & Zhu (2009a) and Tong & Li (2010). Species included (from southwest to northeast): *Ph. dali* Zhang & Zhu, 2009; *Ph. yangi* Zhang & Zhu, 2009; *Ph. shangrila* Zhang & Zhu, 2009; *Ph. saaristoi* Zhang & Zhu, 2009; *Ph. kunming* Zhang & Zhu, 2009; *Ph. jiulong* Tong & Li, 2010; *Ph. luding* Tong & Li, 2010; *Ph. kangding* Zhang & Zhu, 2009; *Ph. qingchengensis* Gao *et al.*, 2002; *Ph. taibaiensis* Wang & Zhu, 1992; *Ph. zhangae* Zhang & Zhu, 2009; *Ph. qingbaiensis* Song & Zhu, 1999; *Ph. subwuyiensis* Zhang & Zhu, 2009; *Ph. songi* Zhang & Zhu, 2009; *Ph. huberi* Zhang & Zhu, 2009; *Ph. harveyi* Zhang & Zhu, 2009; *Ph. parayichengicus* Zhang & Zhu, 2009; *Ph. songxian* Zhang & Zhu, 2009; *Ph. clavatus* Schenkel, 1936; *Ph. yichengicus* Zhu, Tu & Shi, 1986; *Ph. guani* Song & Ren, 1994.

*Pholcus yichengicus* Zhu, Tu & Shi, 1986

Figs. 2096, 2122, 2123, 2172-2177

*Pholcus yichengicus* Zhu, Tu & Shi 1986: 121-124, figs. 4.1-7. Song *et al.* 1999: 63, figs. 25a'-c' (copied from Zhu *et al.* 1986). Song *et al.* 2001: 77-78, figs. 34A-G (copied from Zhu *et al.* 1986). Zhang & Zhu 2009a: 103, figs. 60a-i.

*Types.* Female holotype, male "allotype", 1♂2♀ paratypes from China, Shanxi Prov., Yicheng County [-35°48'N, 111°33'E], 14.viii.1983 (M. Zhu), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Distinguished from congeners by details of male palp (Figs. 2172, 2173; shapes of trochanter apophysis, procurus, and uncus, slender appendix with proximal branch) and female genitalia (Figs. 2122, 2177; shapes of 'knob' and pore plates); see also Zhang & Zhu (2009a).

*Male* (paratype). Total body length 4.7, carapace width 1.7. Leg 1 missing, tibia 2: 6.7, tibia 3: 4.3, tibia 4: 6.0. Habitus similar to *Ph. taibaiensis* (cf. Figs. 2097, 2098). Carapace pale ochre-yellow with distinctive brown pattern, ocular area with median brown stripe and lateral marks, clypeus medially slightly darker, sternum mostly light brown, lighter behind labium and near coxae, legs ochre-yellow, femora and tibiae with indistinct darker rings subdistally, patella area also slightly darker, abdomen ochre-gray with many dark spots dorsally, without ventral pattern (cf. female, Fig. 2096). Distance PME-PME 220 µm, diameter PME 135 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 105 µm. Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2175, distal apophyses with indistinct proximal hump, apparently without modified hairs, stronger hairs medially, two pairs of apophyses proximally. Sternum wider than long (1.10/0.85), unmodified. Palps as in Figs. 2172 and 2173, coxa unmodified, trochanter apophysis with distinctive retrolateral branch, femur with very indistinct proximal hump dorsally and distinct ventral protuberance, tibia with very indistinct hump ventrally proximally, procurus with two prolatero-dorsal spines and distinctive distal elements (Fig. 2174), uncus rectangular, weakly sclerotized embolus, very slender curved appendix with curved pointed branch proximally. Legs without spines, some curved hairs on metatarsi 2 and 3 (most hairs missing), few vertical hairs.

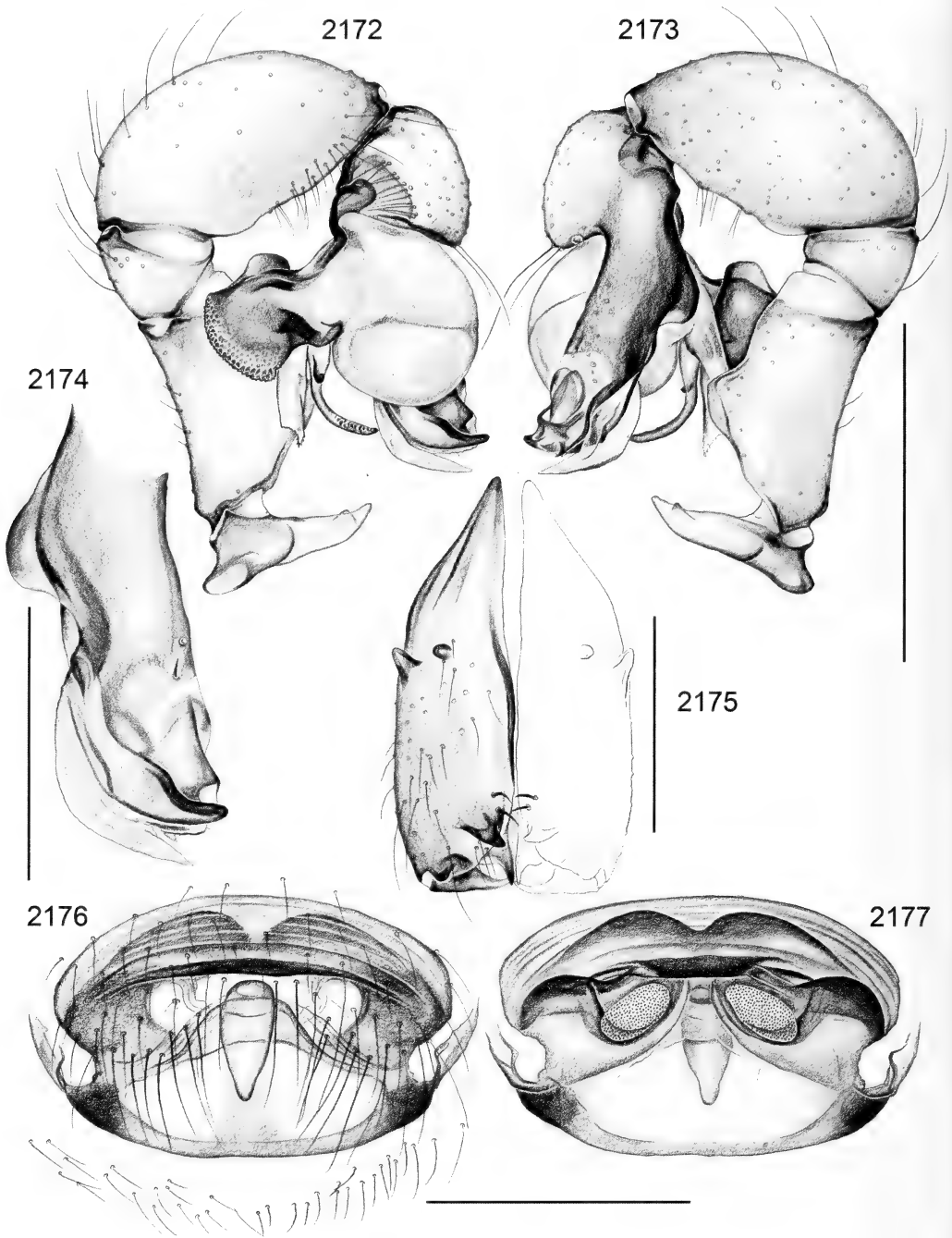


FIG. 2172-2177. *Pholcus yichengicus*. 2172, 2173. Left male palp, prolateral and retrolateral views. 2174. Left procurus, prolateral view. 2175. Male chelicerae, frontal view. 2176, 2177. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2172, 2173), 0.5 (2174-2177).

*Female.* In general similar to male, triads closer together (distance PME-PME 185  $\mu$ m). Tibia 1: 6.5. Epigynum slightly elevated, anterior arc visible through cuticle, triangular plate strongly sclerotized laterally and with large and wide anterior 'knob' (Figs. 2122, 2176); internal genitalia as in Figs. 2123 and 2177.

*Distribution.* Known from type locality only (Fig. 2171).

*Material examined.* CHINA: *Shanxi Prov.*: Yicheng County: 1♂1♀ paratypes above.

*Pholcus taibaiensis* Wang & Zhu, 1992

Figs. 2097-2099, 2124, 2125, 2178-2183, 2185, 2199

*Pholcus taibaiensis* Wang & Zhu 1992: 20-22, figs. 1-6. Song *et al.* 1999: 63, figs. 25i-k (copied from Wang & Zhu 1992). Zhang & Zhu 2009a: 90, figs. 52a-i.

*Types.* Male holotype, 1♀ "allotype", 1♂3♀ paratypes from China, Shaanxi Prov., Mei County, Mt. Taibai (34°00'N, 107°50'E), Temple Haoping, 6.-10.viii.1989 (X. Wang), in IZCAS (holotype and "allotype" examined) and MHBU (1♂1♀ paratypes, not examined). 7♂10♀ paratypes from Mt. Taibai, 11.-12.vii.1991 (X. Wang), in XTC, not examined.

*Diagnosis.* Distinguished from congeners by details of male palp (Figs. 2178, 2179); shapes of trochanter apophysis, procurus, uncus, and appendix) and female genitalia (Figs. 2124, 2182); from the very similar *Ph. qinghaiensis* only by minor details of procurus and bulb (Figs. 2183, 2185) and (more clearly) by female genitalia (Figs. 2124, 2181, 2182 shapes of epigynum and internal structures).

*Male* (type locality). Total body length 4.4, carapace width 1.3. Leg 1: 33.5 (8.4 + 0.6 + 8.2 + 14.2 + 2.1), tibia 2: 5.4, tibia 3: 3.6, tibia 4: 4.9; tibia 1 L/d: 66. Habitus as in Figs. 2097 and 2098. Carapace ochre-yellow with distinctive brown pattern, ocular area with distinct median mark, clypeus light brown, sternum brown with light triangular mark medially and light spots near coxae 2-4 (cf. female, Fig. 2099), legs ochre-yellow, femora and tibiae with three dark rings each, femora also with proximo-ventral marks, abdomen with many dark spots dorsally, genital area light brown. Distance PME-PME 210  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 100  $\mu$ m. Ocular area moderately elevated, very few longer hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2180, distal apophyses with two

tiny modified hairs each (Fig. 2199), two pairs of apophyses proximally. Sternum wider than long (0.95/0.70), unmodified. Palps as in Figs. 2178 and 2179, coxa unmodified, trochanter with thick ventral apophysis, femur with barely visible proximal hump dorsally and distinct ventral projections, tibia with distinctive modification ventrally proximally, procurus with two prolatero-dorsal spines, distally complex (Fig. 2183), bulb with large uncus, weakly sclerotized embolus with long transparent process distally, simple curved appendix with long pointed branch (longer than appears in Fig. 2185). Legs without spines, some curved hairs on tibiae (most hairs missing), few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae; tarsus 1 with ~20 pseudosegments but only distally ~10 quite distinct. *Variation.* Pointed branch of appendix more curved in holotype. Shape of dark mark on ocular area varies slightly. Tibia 1 in 5 other males: 8.8-10.7 (mean 9.7; in holotype: 9.7).

*Female.* In general similar to male, triads closer together (distance PME-PME 185  $\mu$ m). Tibia 1: 6.0, 6.3. Epigynum weakly elevated, anterior arc visible through cuticle, triangular plate strongly sclerotized laterally and with anterior 'knob' (Figs. 2124, 2181); internal genitalia as in Figs. 2125 and 2182.

*Distribution.* Known from Mt. Taibai area in Shaanxi Prov., and from Wolong Natural Reserve, Sichuan Prov. (Zhang & Zhu 2009a) (Fig. 2171).

*Material examined.* CHINA: *Shaanxi Prov.*: Mt. Taibai: 1♂1♀ types above; S flanks of Mt. Taibai, above Houshenzi, secondary broad-leaved forest, 1300-1700 m a.s.l., 20.vi.1997 (J. Martens, P. Jäger), 2♂ in SMF; same locality, 8.vi.1997 (P. Jäger, J. & B. Martens), 3♂1♀ in SMF.

*Pholcus qinghaiensis* Song & Zhu, 1999

Figs. 2100, 2101, 2126, 2127, 2184, 2186-2188

*Pholcus qinghaiensis* Song & Zhu in Song *et al.* 1999: 59, figs. 24w-z, a'-d'. Zhang & Zhu 2009a: 75, figs. 41a-h (copied from Song *et al.* 1999).

*Types.* Male holotype, 5♂15♀ paratypes from China, Qinghai Prov., Huangzhong County [-36°30'N, 101°36'E], viii.1988 (J. Wang), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Distinguished from the very similar *Ph. taibaiensis* only by minor details of procurus and bulb (Figs. 2184, 2186) and (more clearly) by female genitalia (Figs. 2126, 2187, 2188).

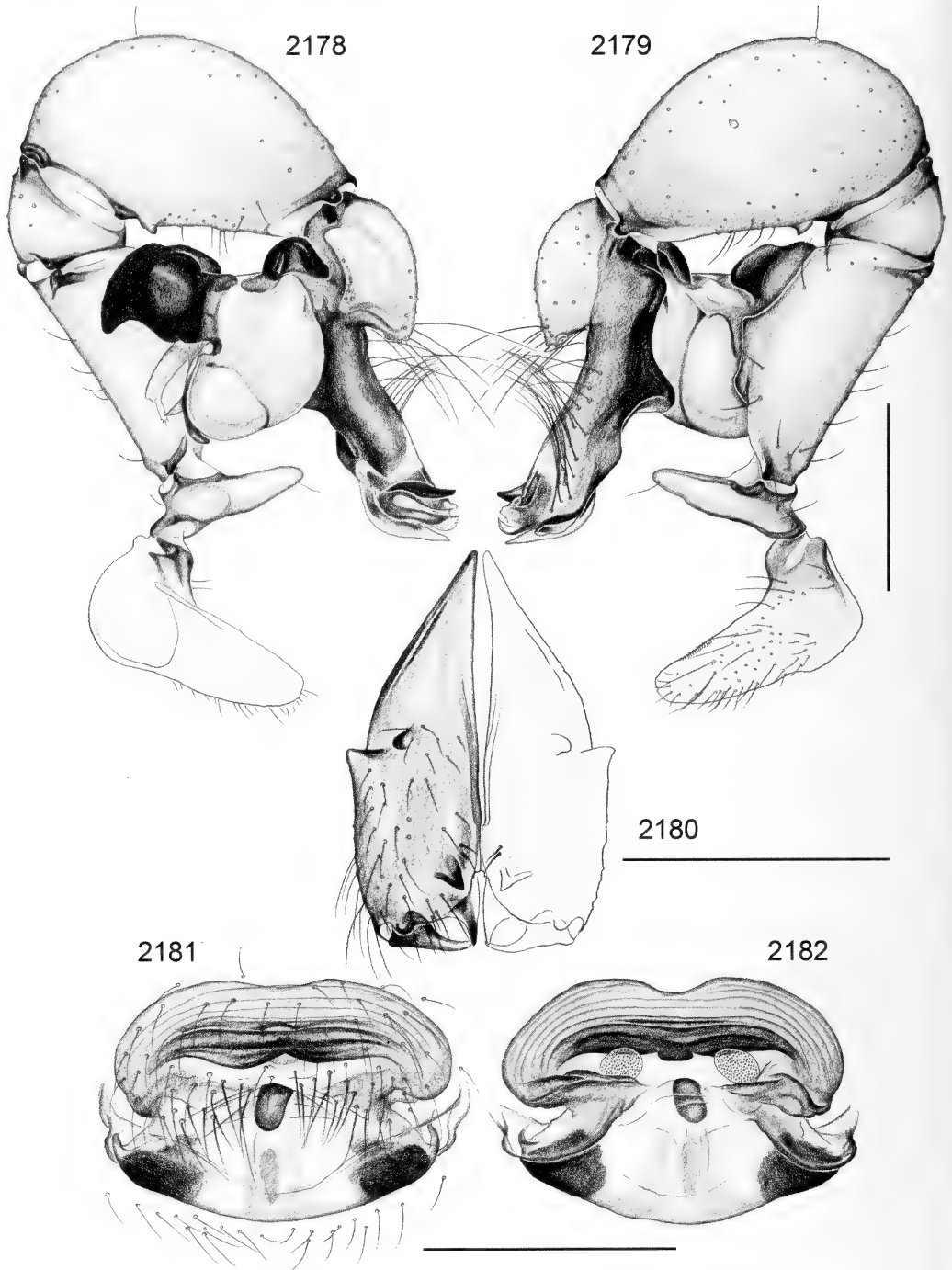


FIG. 2178-2182. *Pholcus taibaiensis*. 2178, 2179. Left male palp, prolateral and retrolateral views. 2180. Male chelicerae, frontal view. 2181, 2182. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Male* (paratype). Carapace width 1.7; abdomen missing. Leg 1: 43.3 (11.0 + 0.7 + 11.1 + 18.0 + 2.5), tibia 2 missing, tibia 3: 4.8, tibia 4: 6.6; tibia 1 L/d: 72. Habitus similar to *Ph. taibaiensis* (cf. Figs. 2097, 2098), carapace pale ochre-yellow with distinct brown pattern (Fig. 2101), ocular area laterally brown, medially with very indistinct mark, clypeus light brown, sternum mostly ochre-yellow with triangular brown marks near leg coxae, legs ochre-yellow, femora and tibiae with three dark rings each, femora also with proximo-ventral brown marks. Distance PME-PME 290  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area moder-

ately elevated, very few longer hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. taibaiensis* (cf. Fig. 2180), slightly larger. Sternum wider than long (1.15/0.90), unmodified. Palps in general very similar to *Ph. taibaiensis* (cf. Figs. 2178, 2179) but much larger, tibia with indistinct hump proximally as in *Ph. yichengicus* (cf. Fig. 2172), procurus distally slightly different from *Ph. taibaiensis* (Fig. 2184), pointed branch on appendix much shorter and uncus shape slightly different (Fig. 2186). All hairs on legs missing; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4; tarsal pseudosegments indistinct, only distally ~10 fairly distinct.

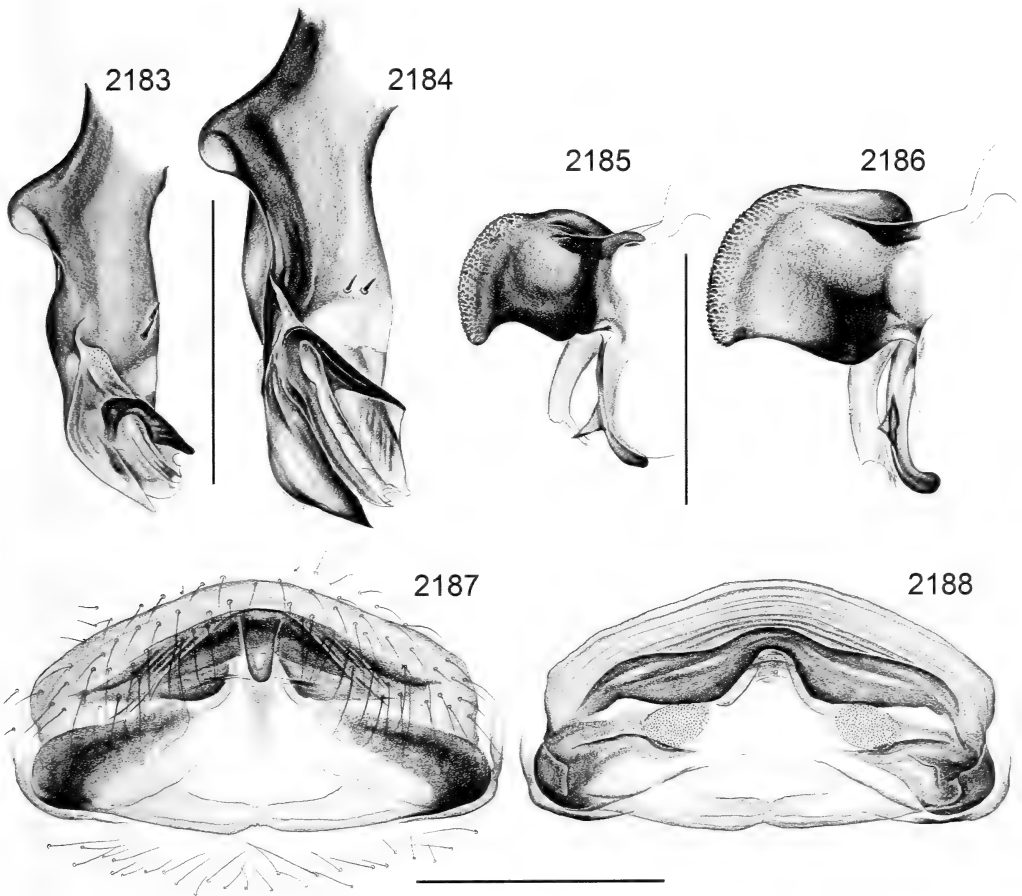


FIG. 2183-2188. *Pholcus taibaiensis* (2183, 2185) and *Ph. qinghaiensis* (2184, 2186-2188). 2183, 2184. Left procursi, prolateral views (at same scale). 2185, 2186. Left bulbular processes, prolateral views (at same scale). 2187, 2188. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Female.* In general similar to male, triads closer together (distance PME-PME 230  $\mu\text{m}$ ); rings on legs and median mark on ocular area more distinct, abdomen dorsal spots indistinct (possibly bleached). Tibia 1: 7.6. Epigynum weakly elevated, anterior arc visible through cuticle, triangular plate strongly sclerotized laterally and with long anterior 'knob' (Figs. 2126, 2187); internal genitalia as in Figs. 2127 and 2188.

*Distribution.* Known from type locality in Qinghai Prov. and from Sichuan Prov. (Tong & Li 2010) (Fig. 2171).

*Material examined.* CHINA: *Qinghai Prov.*: Huangzhong County: 1♂1♀ paratypes above. *Sichuan Prov.*: Baoxing County, Yaoji Town, Zegen Village (30°46.4'N, 102°43.7'E), 2360 m a s.l., 27.ix.2005 (X. Xu, X. Zhang), 1♂1♀ in IZCAS.

#### *Pholcus taishan* species group

*Diagnosis.* Medium-sized, long-legged *Pholcus* (body length 3.5-5.5, leg 1: ~30-45); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, carapace with vivid pattern, abdomen cylindrical, male chelicerae without proximal apophyses frontally, with long proximo-lateral apophyses, palpal trochanter apophyses very long (Figs. 2202, 2212), palpal tibia with prolatero-ventral modification, procurus with dorsal spines, bulb with distinctive protuberance near base of embolus (Figs. 2206, 2208, 2210), appendix without branch, epigynum sclerotized, with 'knob' developed into long scape (e.g., Figs. 2203, 2214).

*Description.* Body length ~3.5-5.5, carapace width 1.4-1.9. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with long proximo-lateral apophyses, without proximal frontal apophyses, distal apophyses apparently without or with very small modified hairs. Male palpal coxa unmodified, trochanter with very long retrolatero-ventral apophysis, femur relatively short and wide, tibia with prolatero-ventral modification proximally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', with two (sometimes apparently three) dorsal spines. Bulb with distinctive protuberance near base of embolus, appendix without branch, embolus weakly sclerotized. Legs long, tibia 1 in males ~8-11, tibia 1 L/d ~55-65, legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~5-6%. Abdomen cylindrical, without cuticular pattern

but usually with many dark internal spots visible through cuticle. Male gonopore and spinnerets not examined.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs slightly shorter (tibia 1: ~4.5-9.0). Epigynum sclerotized, with 'knob' developed into long scape, internal genitalia with pair of small pore-plates.

*Monophyly.* Several putative synapomorphies support this group: long male palpal trochanter apophysis (Figs. 2202, 2212); male chelicerae with longer than usual proximo-lateral apophyses (Fig. 2213) and without proximal frontal modifications (char. 18); bulb with distinctive protuberance near base of embolus (char. 46); appendix without branch (char. 57). *Relationships.* The modified male palpal tibia (char. 32) places this group together with two other East Asian groups: *Ph. yichengicus* and *Ph. phungiformes* groups (Fig. 26). The long, scape-like epigynal 'knob' (char. 67) suggests it may be closest to those representatives of the *Ph. yichengicus* group that share this character and are also geographically closest (*Ph. harveyi*, *Ph. huberi*, *Ph. parayichengicus*, *Ph. songxian*, *Ph. yichengicus*, *Ph. guani*).

*Natural history.* Unknown.

*Distribution.* The *Ph. taishan* group has a restricted distribution in central-eastern China (Fig. 2200). Geographically it is thus largely intermediate between the *Ph. yichengicus* (south-west) and *Ph. phungiformes* (north-east) groups (cf. Figs. 2171 and 2216).

*Composition.* The *Ph. taishan* group includes eight previously described species. Of these, only three are redescribed below; for the other species, see Zhang & Zhu (2009a). Species included (from south to north): *Ph. henanensis* Zhu & Mao, 1983; *Ph. linzhou* Zhang & Zhang, 2000; *Ph. paralinzhou* Zhang & Zhu, 2009; *Ph. yugong* Zhang & Zhu, 2009; *Ph. taishan* Song & Zhu, 1999; *Ph. oculosus* Zhang & Zhang, 2000; *Ph. mianshanensis* Zhang & Zhu, 2009; *Ph. jixianensis* Zhu & Yu, 1983.

#### *Pholcus taishan* Song & Zhu, 1999

Figs. 2102, 2103, 2128, 2129, 2201-2206

*Pholcus taishan* Song & Zhu in Song *et al.* 1999: 63, figs. 251-s. Zhang & Zhu 2009a: 93, figs. 53a-g (copied from Song *et al.* 1999).

*Types.* Male holotype, 4♂6♀ paratypes from China, Shandong Prov., Tai'an City, Mt. Taishan [36°15'N, 117°05'E], 5.viii.1988 (M. Zhu), in MHBU (1♂1♀ paratypes examined).

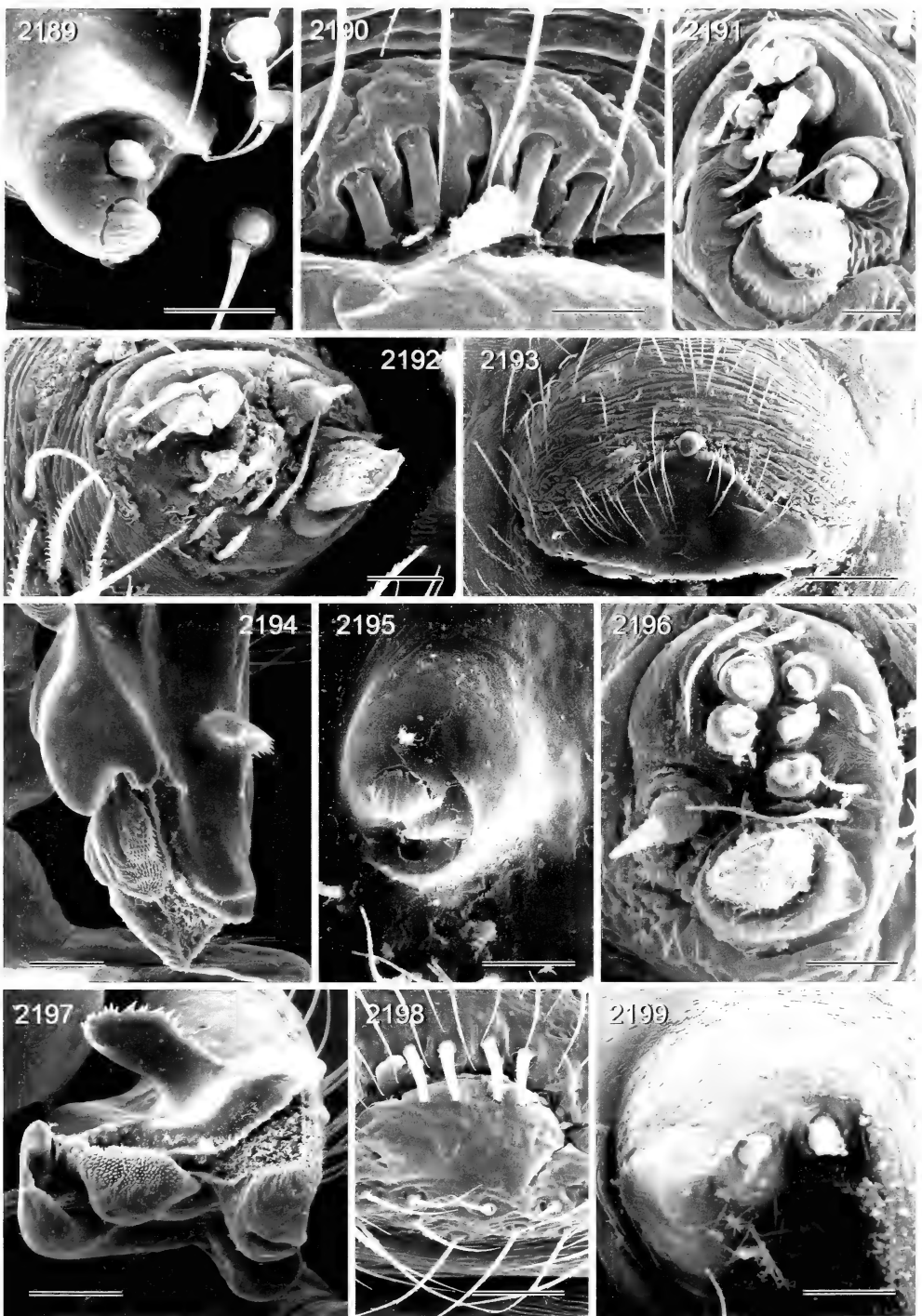


FIG. 2189-2199. *Pholcus opilionoides* (2189-2191), *Ph. sogdianae* (2192, 2193), *Ph. otomi* (2194-2198), and *Ph. taibaiensis* (2199). 2189, 2195, 2199. Distal male cheliceral apophyses. 2190, 2198. Male gonopores. 2191, 2196. Male ALS. 2192. Female ALS. 2193. Epigynum. 2194. Left procurus, prolateral view. 2197. Left procurus tip, distal view. Scale lines: 200  $\mu\text{m}$  (2193), 100  $\mu\text{m}$  (2194, 2197), 50  $\mu\text{m}$  (2198), 20  $\mu\text{m}$  (2189, 2190, 2192, 2195, 2196), 10  $\mu\text{m}$  (2191, 2199).

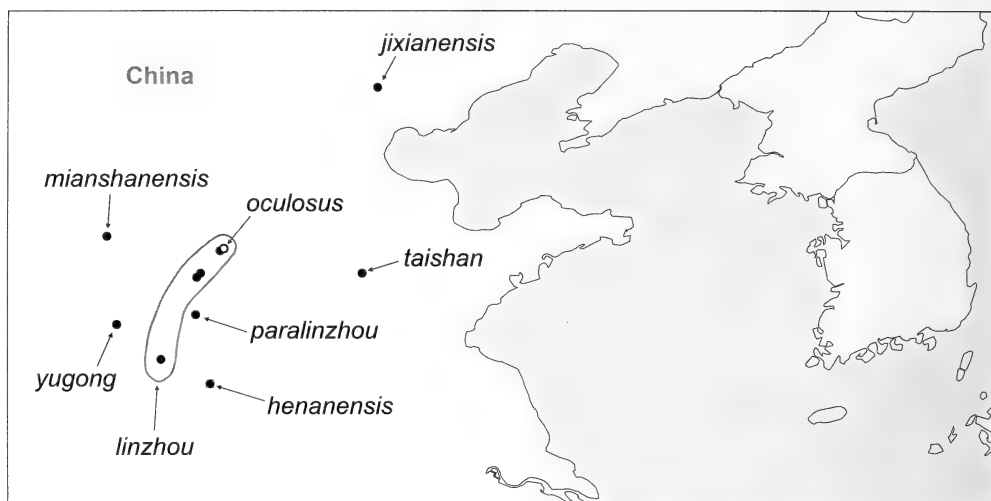


FIG. 2200. Known distribution of the *Pholcus taishan* species group.

*Diagnosis.* Distinguished from similar species with long trochanter apophysis, large proximal male cheliceral apophysis, and long epigynal 'knob' by shapes of procurus, uncus, and appendix (Figs. 2205, 2206) and by female genitalia (Figs. 2128, 2204); from very similar *Ph. henanensis* by wide tip of palpal trochanter apophysis (Fig. 2202) and round pore plates (Fig. 2204).

*Male* (paratype). Total body length 5.4, carapace width 1.8. Leg 1: 39.5 (9.8 + 0.8 + 9.7 + 16.7 + 2.5), tibia 2: 6.7, tibia 3: 4.8, tibia 4: 6.5; tibia 1 L/d: 55. Habitus similar to *Ph. linzhou* (cf. Figs. 2105, 2106). Carapace ochre-yellow with distinct brown pattern, ocular area with brown median mark, sternum light brown, medially lighter, margins darker, legs almost monochromous, very indistinct darker rings on femora and tibiae subdistally and in patella area, abdomen ochre-gray with indistinct spots dorsally, ventrally only genital area light brown (cf. female, Fig. 2103). Distance PME-PME 240  $\mu$ m, diameter PME 140  $\mu$ m, distance PME-ALE 55  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area elevated, many stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. linzhou* (cf. Fig. 2213), only minimally larger and distal apophyses minimally smaller, apparently without modified hairs on distal apophyses. Sternum

wider than long (1.10/0.85), unmodified. Palps as in Figs. 2201 and 2202, coxa unmodified, trochanter with long ventral apophysis with distinctively wide tip, small retrolateral apophysis proximally, femur with low humps ventrally and prolatero-ventrally, tibia with distinct proximal apophysis prolatero-ventrally, procurus relatively simple, with two or three long prolatero-dorsal spines (Fig. 2205), bulb with rounded retrolateral protuberance, distinctive uncus and appendix, short weakly sclerotized embolus (Fig. 2206). Legs without spines and curved hairs, few vertical hairs (many hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally ~10 fairly distinct.

*Female.* In general similar to male, triads slightly closer together (distance PME-PME 205  $\mu$ m); clypeus light brown, spots on abdomen more distinct. Tibia 1: 8.5. Epigynum with wide and long 'knob', sclerotized area diverging posteriorly, narrow sclerotized plate behind genital opening (Figs. 2128, 2203); internal genitalia as in Figs. 2129 and 2204.

*Distribution.* Known from type locality only (Fig. 2200).

*Material examined.* CHINA: Shandong Prov.: Tai'an City, Mt. Taishan: 1♂1♀ paratypes above.



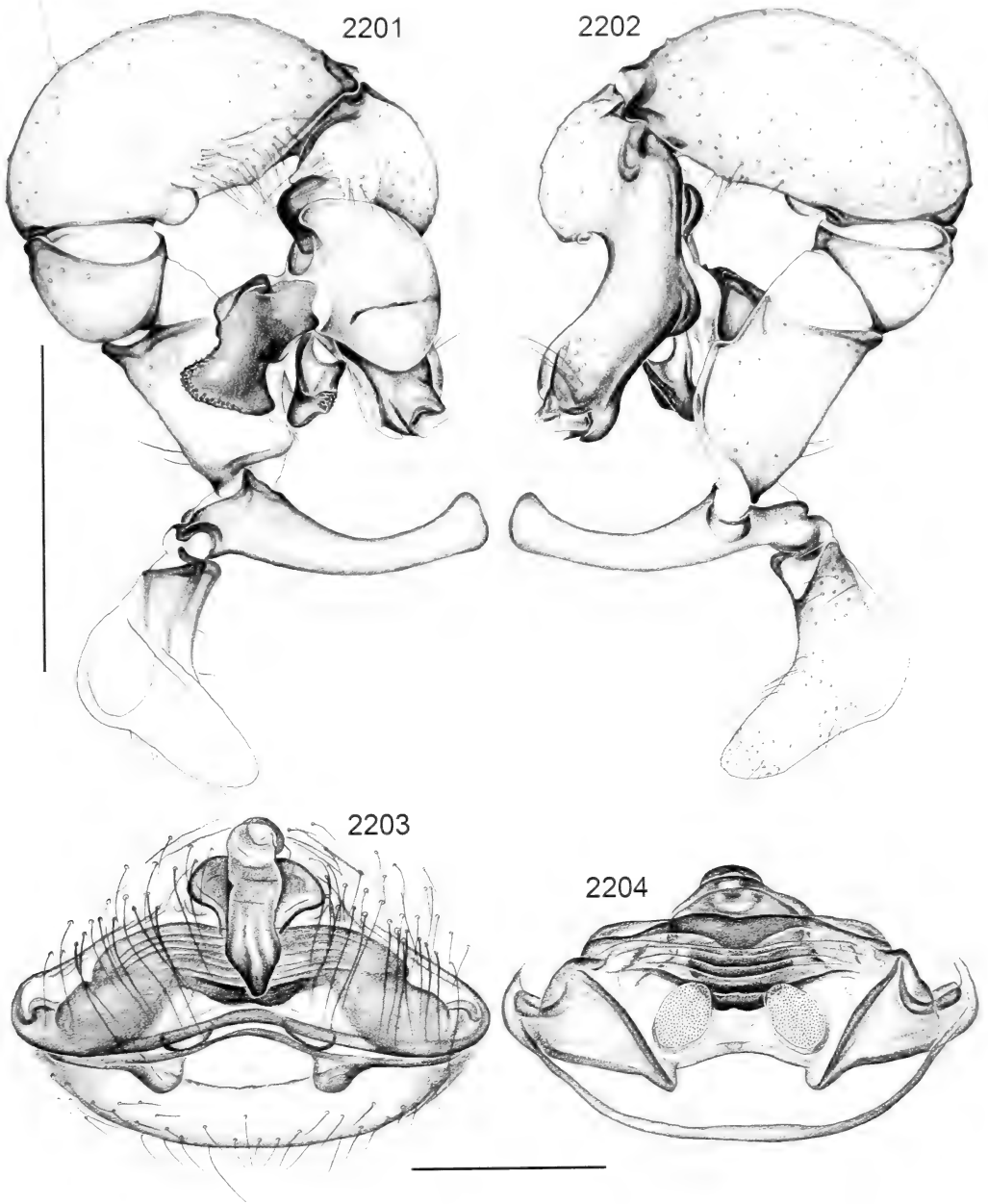


FIG. 2201-2204. *Pholcus taishan*. 2201, 2202. Left male palp, prolateral and retrolateral views. 2203, 2204. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2201, 2202), 0.5 (2203, 2204).

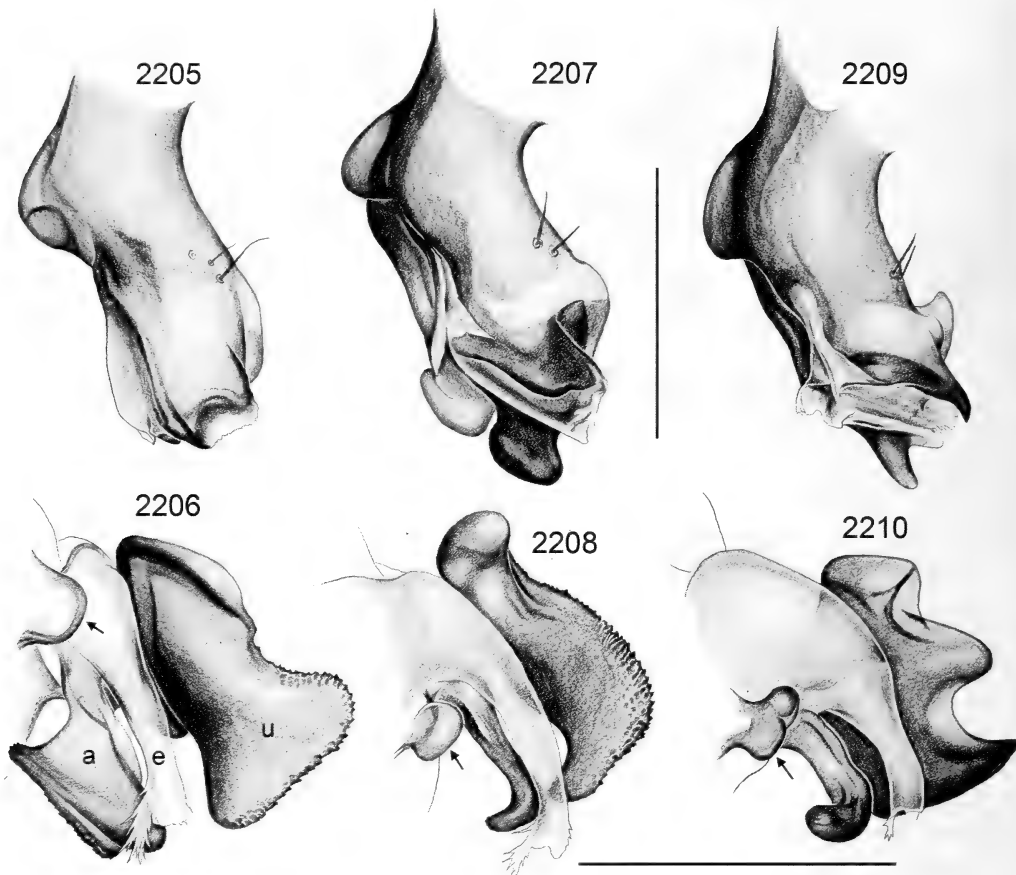


FIG. 2205-2210. *Pholcus taishan* (2205, 2206), *Ph. oculusus* (2207, 2208), and *Ph. linzhou* (2209, 2210). Left procurus, prolateral views (at same scale), and left bulbal processes, retrolateral views (at same scale; arrows point at bulbal projection characteristic of the *Ph. taishan* species group). Scale lines: 0.5.

*Pholcus oculusus* Zhang & Zhang, 2000

Figs. 2104, 2207, 2208

*Pholcus oculusus* Zhang & Zhang 2000: 151-152, 155, figs. 1a-f. Zhang & Zhu 2009a: 59, figs. 30a-e (copied from Zhang & Zhang 2000).

*Types*. Male holotype, 2♂ paratypes from China, Hebei Prov., Wu'an County [-36°42'N, 114°12'E], Liejiang Town, 700-900 m a.s.l., 19.v.1999 (F. Zhang), in MHBV (1♂ paratype examined).

*Diagnosis*. Distinguished from similar species with long trochanter apophysis and large proximal male cheliceral apophysis by shapes of procurus, uncus, and appendix (Figs. 2207, 2208).

*Male* (paratype). Total body length 5.2, carapace width 1.7. Leg 1: 11.1 + 0.7 + 10.9, metatarsus and tarsus missing, tibia 2: 7.5, tibia 3: 5.3, tibia 4: 7.3; tibia 1 L/d: 59. Habitus as in Fig. 2104. Carapace ochre-yellow with distinct brown pattern, ocular area light brown with darker median mark, clypeus with pair of brown marks fusing distally, sternum brown with indistinct lighter marks near coxae 2-4, legs light brown, darker on femora subdistally and tibiae proximally and subdistally, tips of femora and tibiae pale ochre-yellow, abdomen ochre-gray with many black spots dorsally, ventrally only genital area light brown. Distance PME-PME 265 µm, diameter PME 135 µm, distance PME-ALE 60 µm, distance

AME-AME 60  $\mu\text{m}$ , diameter AME 90  $\mu\text{m}$ . Ocular area elevated, many stronger hairs posteriorly (most missing). No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. linzhou* (cf. Fig. 2213), only slightly larger, proximal apophyses minimally smaller. Sternum wider than long (1.3/0.9), unmodified. Palps in general very similar to *Ph. linzhou* (cf. Figs. 2211, 2212), trochanter apophysis thinner and not bent at tip, procurus and bulb processes clearly different (Figs. 2207, 2208). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae.

*Female*. Unknown.

*Distribution*. Known from type locality only (Fig. 2200).

*Material examined*. CHINA: Hebei Prov.: Wu'an County: Liejiang: 1♂ paratype above.

*Pholcus linzhou* Zhang & Zhang, 2000

Figs. 2105-2107, 2130, 2131, 2209-2215

*Pholcus linzhou* Zhang & Zhang 2000: 152-153, 155-156, figs. 2a-i. Zhang & Zhu 2009a: 50-52, figs. 25a-h (copied from Zhang & Zhang 2000).

*Types*. Male holotype, 5♂3♀ paratypes from China, Henan Prov., Linzhou County, Hongqi Canal [-36°15'N, 113°48'E], 500-600 m a.s.l., 11.v.1999 (F. Zhang), in MHBHU, not examined. 11♂5♀ paratypes from Hebei Prov., Wu'an County [-36°42'N, 114°12'E], Liejiang Town, 900-1100 m a.s.l., 28.vi.1999 (F. Zhang), in MHBHU (1♂1♀ paratypes examined).

*Diagnosis*. Distinguished from similar species with long trochanter apophysis, large proximal male cheliceral apophysis, and long epigynal 'knob' by shapes of procurus, uncus, and appendix (Figs. 2209, 2210) and by female genitalia (Figs. 2130, 2214; shapes of epigynum, 'knob', and pore plates).

*Male* (paratype). Total body length 5.4, carapace width 1.9. Leg 1: 10.7 + 0.7 + 10.5, metatarsus and tarsus missing, tibia 2: 7.3, tibia 3: 5.1, tibia 4 missing; tibia 1 L/d: 66. Habitus as in Figs. 2105 and 2106. Carapace ochre-yellow with distinctive brown pattern, ocular area slightly darker, frontally with pair of brown marks under AME, sternum light brown, margins darker, slightly lighter marks near coxae 2-4, legs light brown, darker on femora subdistally and tibiae proximally and subdistally, tips of femora and tibiae whitish, abdomen ochre-gray with many black

spots dorsally, ventrally only genital area light brown (cf. female, Fig. 2107). Distance PME-PME 255  $\mu\text{m}$ , diameter PME 135  $\mu\text{m}$ , distance PME-ALE 55  $\mu\text{m}$ , distance AME-AME 55  $\mu\text{m}$ , diameter AME 90  $\mu\text{m}$ . Ocular area elevated, many stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2213, distal apophyses possibly with tiny modified hair(s), large lateral apophyses proximally. Sternum wider than long (1.20/0.85), unmodified. Palps as in Figs. 2211 and 2212, coxa unmodified, trochanter with long ventral apophysis distally curved towards retrolateral, femur short, with low humps dorsally, ventrally, and prolatero-ventrally, tibia very large, prolatero-ventrally with low darker hump (hidden by uncus in Fig. 2211), procurus relatively simple except distally, with two long prolatero-dorsal spines (Fig. 2209), bulb with rounded retrolateral protuberance, complex uncus with several lobes, short weakly sclerotized embolus, flattened and distally hooked appendix (Fig. 2210). Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5%.

*Female*. In general similar to male, triads closer together (distance PME-PME 185  $\mu\text{m}$ ), light marks on sternum very distinct; tibia 1 missing in female examined. Epigynum mostly weakly sclerotized except pair of lateral areas, with very long, proximally folded 'knob' and long hairs (Figs. 2130, 2214); internal genitalia as in Figs. 2131 and 2215.

*Distribution*. Known from type localities in Henan and Hebei Provinces (above) and from two further localities in Henan Province (Shibanyan [36°09.8'N, 113°43.4'E] and Sanhuangzhai Scenic Spot, Dengfeng County [34°30'N, 113°E], Zhang & Zhu 2009a) (Fig. 2200).

*Material examined*. CHINA: Hebei Prov.: Wu'an County: Liejiang: 1♂1♀ paratypes above.

*Pholcus phungiformes* species group

*Diagnosis*. Medium-sized, long-legged *Pholcus* (body length ~3.5-6.0, leg 1: ~30-60); distinguished from other species groups in *Pholcus* by the combination of the following characters: eight eyes, carapace with vivid pattern, abdomen cylindrical, male chelicerae with proximal apophyses frontally (absent in *Ph. beijingensis*), male palpal tibia with prolatero-ventral modification, procurus with dorsal spines (absent in *Ph. yeongwol*, *Ph. beijingensis*), appendix absent (e.g., Figs. 2218, 2233), sometimes with 'pseudoappendix' (apophysis arising from uncus rather than from bulb;

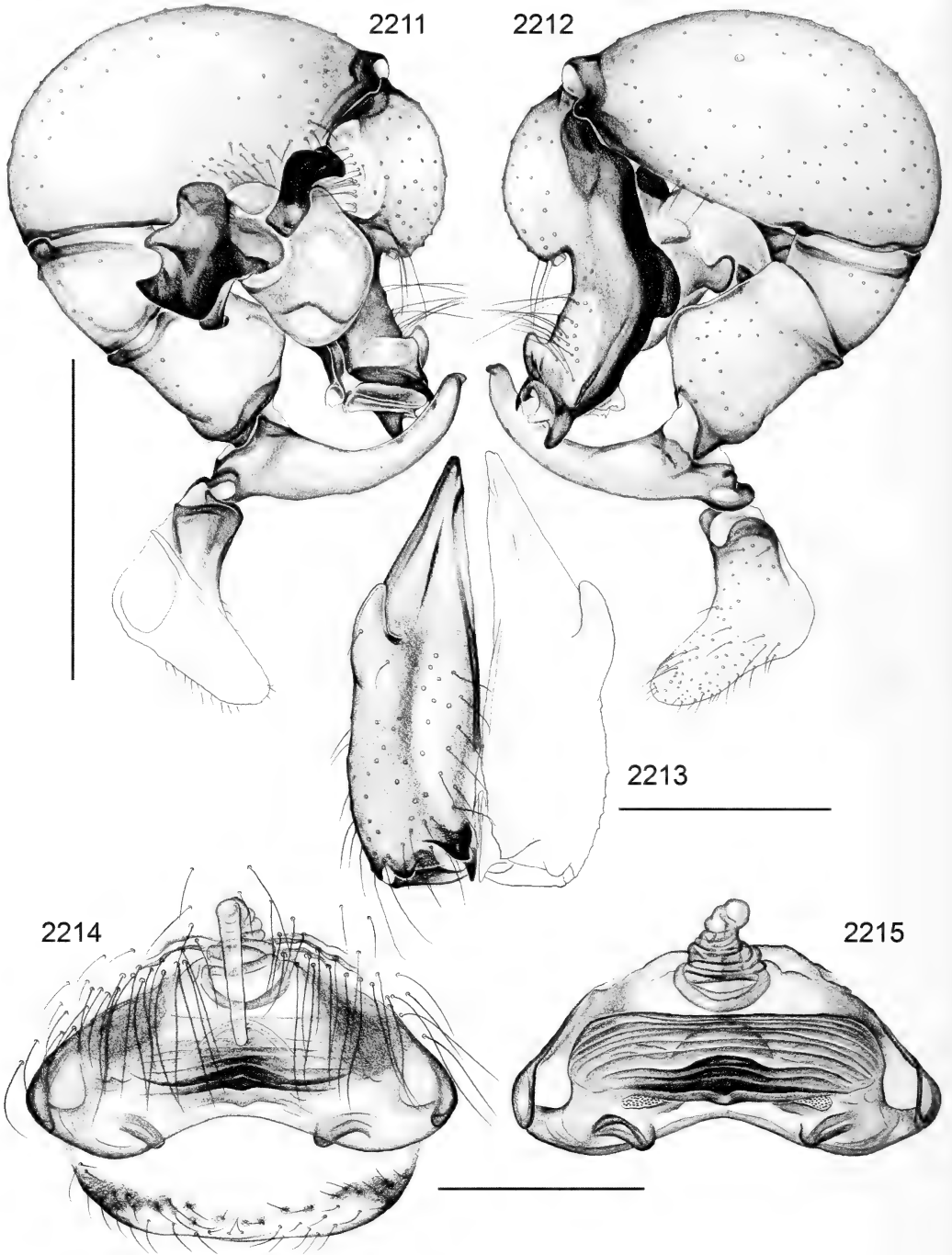


FIG. 2211-2215. *Pholcus linzhou*. 2211, 2212. Left male palp, prolateral and retrolateral views. 2213. Male chelicerae, frontal view. 2214, 2215. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2211, 2212), 0.5 (2213-2215).

e.g., Figs. 2263, 2273, 2280), epigynum sclerotized, with 'knob'.

*Note.* In three recent papers by J.P. Kim and coauthors (Kim & Park 2009, Kim & Yoo 2008, 2009), body length of the three new species ranges from 8-11.5 mm, carapace width ranges from 2.8-3.0. This is far above the usual ranges in this species group. I have not seen any of these species but consider the measurements dubious.

*Description.* Body length usually ~4.5-6.0, in *Ph. zhuolu* only 3.5, carapace width 1.3-2.0. Ocular region slightly elevated, AME present. Clypeus and sternum unmodified. Male chelicerae with two pairs of proximal apophyses (laterally and frontally; frontal pair absent in *Ph. beijingensis*), distal apophyses apparently without or with very small modified hairs. Male palpal coxa unmodified, trochanter with retro-latero-ventral apophysis (usually short, longer in *Ph. beijingensis*, *Ph. kwangkysanensis*, *Ph. kwanaksanensis*), femur relatively short and wide, tibia with pro-latero-ventral modification proximally, tarsus without dorsal elongation, tarsal organ capsulate, procurus with distinct ventral 'knee', with 1-3 dorsal spines (absent in *Ph. yeongwol*, *Ph. beijingensis*). Appendix absent, some species with 'pseudoappendix' (apophysis arising from uncus near usual position of appendix), embolus weakly sclerotized. Legs long, tibia 1 in males usually ~9-15, shorter in *Ph. clavimaculatus* and *Ph. zhuolu*, tibia 1 L/d ~55-90 (lower in *Ph. clavimaculatus* and *Ph. zhuolu*), legs without spines and curved hairs, few vertical hairs, tibiae with three trichobothria each except tibia 1 (prolateral trichobothrium absent), retrolateral trichobothrium on tibia 1 at ~4-6%. Abdomen cylindrical, without cuticular pattern but usually with many dark internal spots visible through cuticle. Male gonopore with four epiandrous spigots, anterior lateral spinnerets with eight spigots each.

Sexual dimorphism slight, female body size as in males, chelicerae unmodified, legs slightly shorter (tibia 1: ~5-11). Epigynum sclerotized, often with distinctive whitish area between anterior and posterior sclerotized areas, with 'knob', internal genitalia with pair of pore-plates.

*Monophyly.* The group is primarily characterized by the absence of the appendix (char. 53). Several species have a 'pseudoappendix' (char. 52) and it is often difficult to judge from figures (and even from specimens) whether a true appendix or a 'pseudoappendix' is present. The homology is particularly problematic in species where two structures seem to arise from

the uncus (*Ph. chicheng*, *Ph. wuling*, *Ph. exilis*). I consider this a divided 'pseudoappendix', but this needs further study. A second putative synapomorphy is the whitish area between anterior and posterior sclerotized areas on the epigynum (char. 66).

*Relationships.* The modified male palpal tibia (char. 32) places this group together with two other East Asian groups: *Ph. yichengicus* and *Ph. taishan* groups (Fig. 26). Within the group, the species with a 'pseudoappendix' (char. 52) are likely monophyletic.

*Natural history.* Several species have been found in caves or at cave entrances. Others are probably found in protected places in forests but relevant data have barely ever been published. *Pholcus phungiformes* is frequently found in buildings. Only *Ph. beijingensis* has been the subject of more in-depth studies (Chen *et al.* 2008, Xiao *et al.* 2009, 2010).

*Distribution.* The *Ph. phungiformes* group is largely restricted to northeastern China and the Korean Peninsula (Fig. 2216); only *Ph. phungiformes* occurs further east, probably as a result of human transport.

*Composition.* The *Ph. phungiformes* group includes 40 nominal species. Of these, five are newly described below, nine are redescribed; for the other species, see Paik (1978b), Namkung & Kim (1990), Kim & Lee (2004), Seo (2004), Kim & Yoo (2008, 2009), Zhang & Zhu (2009a, b), Kim & Park (2009), Tong & Ji (2010), and Tong & Li (2010). Species included (from west to east): *Ph. allocospilus* Zhu & Gong, 1991; *Ph. pennatus* Zhang, Zhu & Song, 2005; *Ph. triangulatus* Zhang & Zhang, 2000; *Ph. clavimaculatus* Zhu & Song, 1999; *Ph. beijingensis* Zhu & Song, 1999; *Ph. wangxidong* Zhang & Zhu, 2009; *Ph. zhuolu* Zhang & Zhu, 2009; *Ph. chicheng* Tong & Li, 2010; *Ph. datan* Tong & Li, 2010; *Ph. babao* Tong & Li, 2010; *Ph. wuling* Tong & Li, 2010; *Ph. jinniu* Tong & Li, 2010; *Ph. exilis* Tong & Li, 2010; *Ph. suizhongicus* Zhu & Song, 1999; *Ph. jiuwei* Tong & Ji, 2010; *Ph. fengcheng* Zhang & Zhu, 2009; *Ph. phoenixus* Zhang & Zhu, 2009; *Ph. gaoi* Song & Ren, 1994; *Ph. wangtian* Tong & Ji, 2010; *Ph. hamatus* Tong & Ji, 2010; *Ph. lingulatus* Gao, Gao & Zhu, 2002; *Ph. sublingulatus* Zhang & Zhu, 2009; *Ph. phungiformes* Oligier, 1983; *Ph. parkyeonensis* Kim & Yoo, 2009; *Ph. kwanaksanensis* Namkung & Kim, 1990; *Ph. kwangkysanensis* Kim & Park, 2009; *Ph. woongil* n. sp.; *Ph. montanus* Paik, 1978; *Ph. crassus* Paik, 1978; *Ph. okgye* n. sp.; *Ph. simbok* n. sp.; *Ph. yeongwol* n. sp.; *Ph. gosuensis* Kim & Lee, 2004; *Ph. nodong* n. sp.; *Ph. socheunensis* Paik, 1978; *Ph. joreongensis* Seo, 2004;

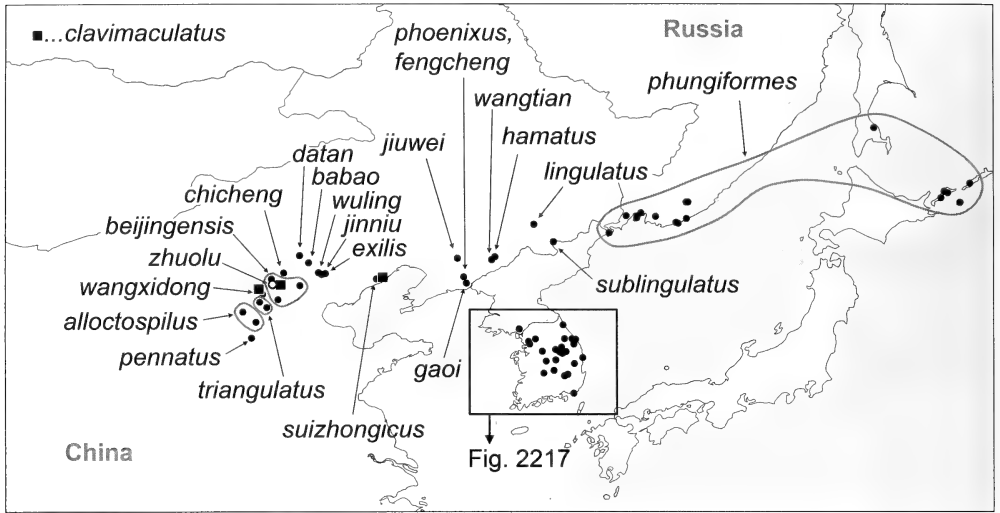


FIG. 2216. Known distribution of the *Pholcus phungiformes* species group. For Korean species, see Fig. 2217.

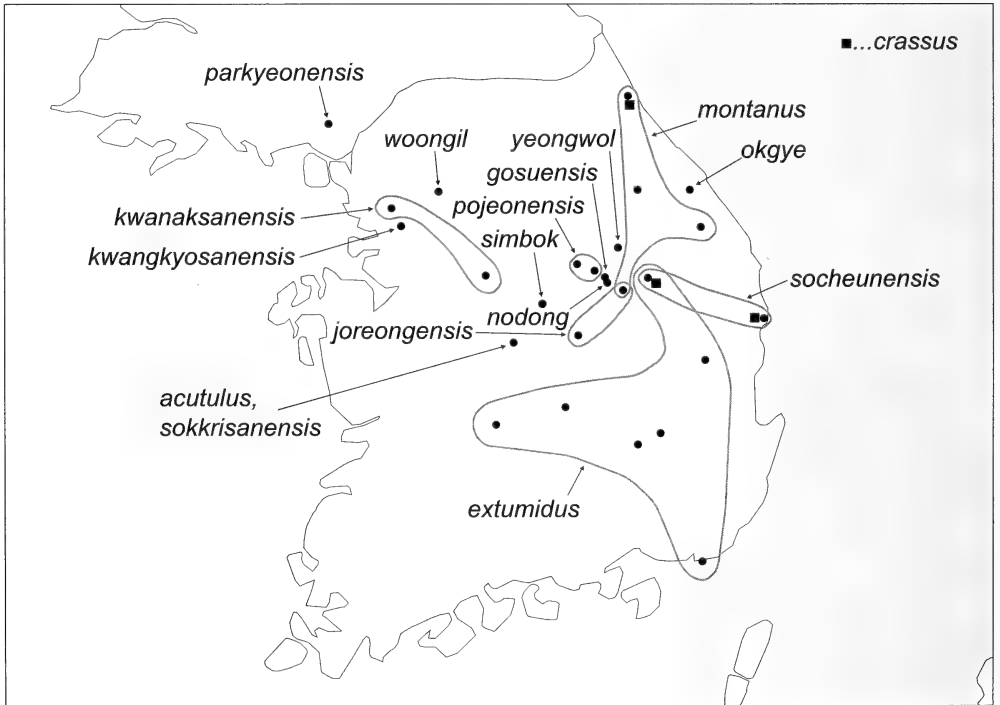


FIG. 2217. Known distribution of Korean representatives of the *Pholcus phungiformes* species group.

*Ph. sokkrisanensis* Paik, 1978; *Ph. acutulus* Paik, 1978; *Ph. extumidus* Paik, 1978; assigned tentatively: *Ph. pojeonensis* Kim & Yoo, 2008.

*Pholcus alloctospilus* Zhu & Gong, 1991

Figs. 2108-2110, 2132, 2133, 2218-2223

*Pholcus alloctospilus* Zhu & Gong 1991: 18-20, 25, figs. 2a-g. Song *et al.* 1999: 52, figs. 22p-s (copied from Zhu & Gong 1991). Zhang & Zhu 2009a: 11-13, figs. 1a-g (copied from Zhu & Gong 1991).

*Types.* Male holotype, female "allotype", 5♂6♀ paratypes from China, Hebei Prov., Lingshou County, Mt. Manshan [38°20'N, 114°30'E] (not 28°20'N as in Zhu & Gong 1991), 26.v.1986 (M. Zhu), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Distinguished from congeners without appendix by distinctive shapes of procurus (Figs. 2219, 2220; long ventral process distally) and female genitalia (Figs. 2132, 2223; distinctive epigynum and internal structures).

*Male* (paratype). Total body length 4.8, carapace width 1.6. Legs 1 and 2 missing, tibia 3: 5.0, tibia 4: 6.9. Habitus as in Figs. 2108 and 2109. Carapace pale ochre-yellow with distinct brown pattern, ocular area with lateral and median brown marks, clypeus slightly darkened, sternum mostly ochre-yellow but margins light brown, legs pale ochre-yellow, indistinct darker rings on femora subdistally, in patella area, and on tibiae subdistally, some marks proximo-ventrally on femora, abdomen gray, many dark spots dorsally and laterally, ventrally only genital area brown (cf. female, Fig. 2110). Distance PME-PME 230 µm, diameter PME 125 µm, distance PME-ALE 45 µm, distance AME-AME 55 µm, diameter AME 95 µm. Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2221, apparently with two tiny modified hairs on each distal apophysis. Sternum wider than long (1.15/0.80), unmodified. Palps as in Figs. 2218 and 2219, coxa unmodified, trochanter with ventral apophysis with short retro-lateral branch, femur with very indistinct dorsal hump and larger ventral hump, tibia with sclerotized area slightly projecting on prolatero-ventral side, procurus with distinctive long distal sclerite ventrally and complex membranous structures, with two small dorsal spines (Fig. 2220), bulb with uncus, weakly sclerotized embolus, without appendix (reduced to small transparent projection). Legs without spines, with curved hairs on tibiae and metatarsi, few vertical hairs (most hairs missing).

*Female.* In general similar to male, triads closer together (distance PME-PME 185 µm), clypeus darker; tibia 1 missing in female examined. Epigynum with large, weakly sclerotized anterior plate with sclerotized 'knob', large posterior plate (Figs. 2132, 2222); internal genitalia as in Figs. 2133 and 2223.

*Distribution.* Known from two localities in Hebei Province, China (type locality and Mt. Tuoliang [-38°46'N, 113°54'E], Zhang & Zhu 2009a) (Fig. 2216).

*Material examined.* CHINA: Hebei Prov.: Lingshou County, Mt. Manshan: 1♂1♀ paratypes above.

*Pholcus pennatus* Zhang, Zhu & Song, 2005

Figs. 2152-2154, 2165, 2166, 2224-2228

*Pholcus pennatus* Zhang, Zhu & Song 2005: 65-66, figs. 1-8. Zhang & Zhu 2009a: 65-67, figs. 35a-h (copied from Zhang *et al.* 2005).

*Types.* Male holotype, 2♂4♀ paratypes from China, Hebei Prov., Zhanhuang County (37°36'N, 114°18'E), Zhangshiyuan Scenic Area, 800-1000 m a.s.l., 13. vi.1998 (M. Zhu, F. Zhang), in MHBU (1♂1♀ paratypes examined). Zhang & Zhu (2009a) report 4♂4♀ paratypes and give a slightly different date (15. vi.1998).

*Diagnosis.* Distinguished from congeners without appendix by distinctive shapes of procurus (Figs. 2225, 2226; distal elements) and female genitalia (Figs. 2165, 2228; epigynum shape, lateral internal membranous structures).

*Male* (type locality). Total body length 5.2, carapace width 1.75. Leg 1: 42.7 (11.0 + 0.8 + 10.4 + 18.2 + 2.3), tibia 2: 7.5, tibia 3: 5.2, tibia 4: 7.1; tibia 1 L/d: 62. Habitus as in Figs. 2152 and 2153. Carapace pale ochre-yellow with distinct brown pattern, ocular area with lateral and median brown marks, clypeus slightly darkened, sternum light brown, darker posteriorly and at margins, lighter behind labium, legs pale ochre-yellow, indistinct darker rings on femora subdistally, in patella area, and on tibiae subdistally, some marks proximo-ventrally on femora, abdomen gray, many dark spots dorsally and laterally, ventrally only genital area brown (cf. female, Fig. 2154). Distance PME-PME 250 µm, diameter PME 125 µm, distance PME-ALE 55 µm, distance AME-AME 60 µm, diameter AME 105 µm. Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. phungiformes* (cf. Fig. 2251). Sternum wider than long (1.15/0.90), unmodified. Palps as in Figs. 2224 and 2225, coxa unmodified, trochanter with

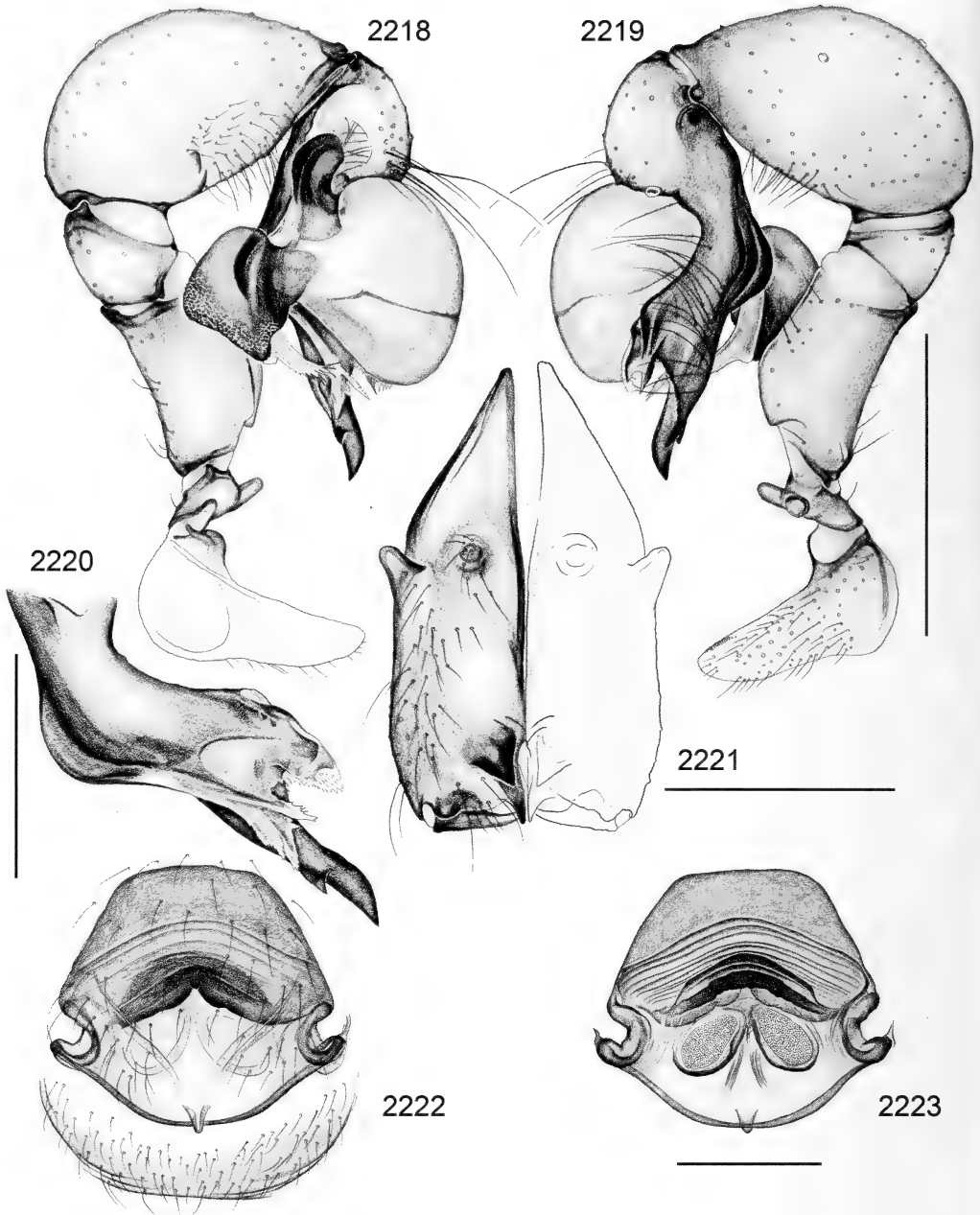


FIG. 2218-2223. *Pholcus alloctospilus*. 2218, 2219. Left male palp, prolateral and retrolateral views. 2220. Left procurus, prolateral view. 2221. Male chelicerae, frontal view. 2222, 2223. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2218, 2219), 0.5 (2220-2223).



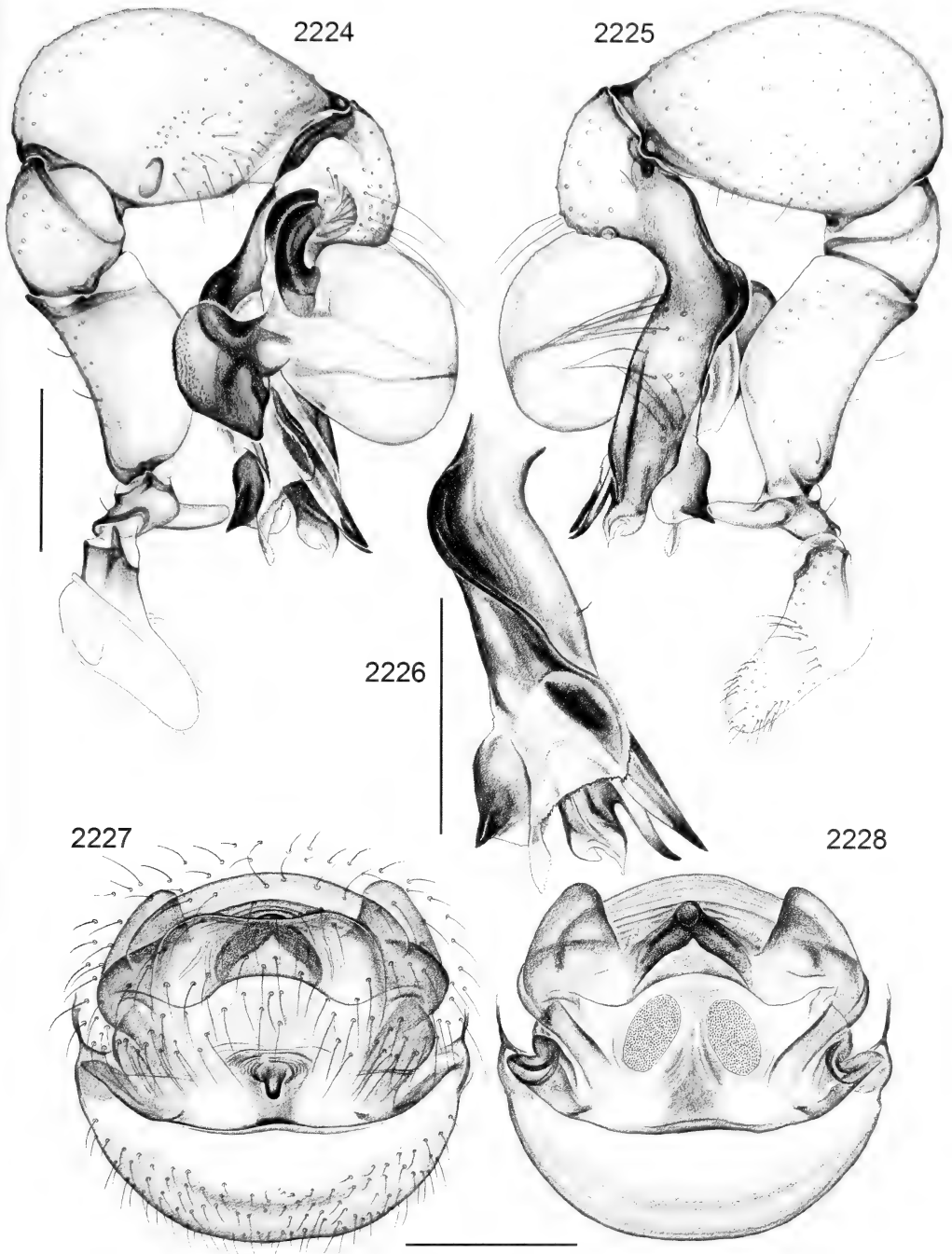


FIG. 2224-2228. *Pholcus pennatus*. 2224, 2225. Left male palp, prolateral and retrolateral views. 2226. Left procurus, prolateral view. 2227, 2228. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

retrolateral apophysis bending towards ventral, femur barely modified, tibia with sclerotized area slightly projecting on prolatero-ventral side, procurus with distinctive distal processes, dorsally with thin 'spine', with distinctive ventral sclerite distally, bulb with uncus, weakly sclerotized embolus, without appendix (reduced to small transparent projection). Legs without spines, with curved hairs on tibiae and metatarsi (especially anterior legs), few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally ~10 quite distinct.

*Variation.* Tibia 1 in other male: 10.5 (missing in third male examined).

*Female.* In general similar to male, triads closer together (distance PME-PME 185  $\mu\text{m}$ ); tibia 1: 7.6 (missing in other females examined). Epigynum with large anterior plate, median plate only medially sclerotized, with sclerotized 'knob', posterior plate also large (Figs. 2165, 2227); internal genitalia as in Figs. 2166 and 2228.

*Distribution.* Known from type locality in Hebei Province, China, only (Fig. 2216).

*Material examined.* CHINA: Hebei Prov.: Zhanhuang County: Zhangshiyuan Scenic Area: 1♂1♀ paratypes above; same locality, 1.ix.2006 (Y. Tong), 2♂2♀ in IZCAS (Ar 21796).

*Pholcus clavimaculatus* Zhu & Song, 1999

Figs. 2155, 2229-2232

*Pholcus clavimaculatus* Zhu & Song in Song *et al.* 1999: 57, figs. 23p-u. Zhang & Zhang 2000: 154, 156, figs. 4a-d. Zhang & Zhu 2009a: 20-23, figs. 6a-h (copied from Song *et al.* 1999 and Zhang & Zhang 2000), 7a-i.

*Type.* Male holotype from China, Liaoning Prov., Suizhong County [-40°20'N, 120°10'E], 26.viii.1987 (J. Guan), in MHBU, not examined.

*Diagnosis.* Distinguished from congeners without appendix by distinctive shapes of procurus (Figs. 2230, 2232; distal elements) and female genitalia (see figures in Zhang & Zhang 2000, Zhang & Zhu 2009a).

*Male* (Mt. Xiaowutai). Total body length 5.3, carapace width 1.7. Femur 1: 13.3, other segments missing, tibia 2 missing, tibia 3: 5.9, tibia 4: 7.9. Habitus as in Fig. 2155. Carapace pale ochre-yellow with distinct brown pattern, ocular area with lateral and median brown marks, clypeus slightly darkened, sternum light brown, darker posteriorly and at mar-

gins, lighter behind labium, legs pale ochre-yellow, indistinct darker rings on femora subdistally, in patella area, and on tibiae subdistally, some marks proximo-ventrally on femora, abdomen gray, many dark spots dorsally and laterally, ventrally only genital area brown. Distance PME-PME 250  $\mu\text{m}$ , diameter PME 135  $\mu\text{m}$ , distance PME-ALE 55  $\mu\text{m}$ , distance AME-AME 60  $\mu\text{m}$ , diameter AME 95  $\mu\text{m}$ . Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2231, distal apophyses apparently without modified hairs, with frontal and lateral apophyses proximally (both pairs of frontal apophyses longer than appears in Fig. 2231). Sternum wider than long (1.20/0.85), unmodified. Palps as in Figs. 2229 and 2230, coxa unmodified, trochanter with retrolatero-ventral apophysis, femur widening ventro-distally, otherwise barely modified, tibia with sclerotized area slightly projecting on prolatero-ventral side, procurus with distinctive distal sclerites, with ventral sclerite similar to *Ph. pennatus*, with two dorsal spines, bulb with rather small uncus, weakly sclerotized embolus, without appendix (reduced to small transparent projection). Legs without spines and curved hairs, few vertical hairs (most hairs missing). Gonopore with four epiandrous spigots, anterior lateral spinnerets with eight spigots each (Zhang & Zhu 2009a).

*Note.* Zhang & Zhu (2009a) report a much shorter tibia 2 than tibia 4 (for the holotype) even though tibia 2 was said to be missing in the holotype in the original description. Such a relationship would be exceptional in this species group and is thus doubted.

*Female.* In general similar to male, triads closer together (distance PME-PME 185  $\mu\text{m}$ ); tibia 1: 7.7; epigynum missing in specimen examined.

*Distribution.* Known from Liaoning and Hebei Provinces, China (Zhang & Zhu 2009a) (Fig. 2216).

*Material examined.* CHINA: Hebei Prov.: Yu County, Mt. Xiaowutai [-39°36'N, 114°48'E], 10.vii.1999 (F. Zhang), 1♂1♀ in MHBU.

*Pholcus triangulatus* Zhang & Zhang, 2000

Figs. 2156, 2167, 2168, 2233-2237

*Pholcus triangulatus* Zhang & Zhang 2000: 153-154, 156, figs. 3a-h. Zhang & Zhu 2009a: 93-94, figs. 54a-g (copied from Zhang & Zhang 2000). Zhang & Zhu 2009b: figs. 6-8, 11, 12 (exact copies of figures in Zhang & Zhu 2009a).

*Types.* Male holotype, 12♂15♀ paratypes from China, Hebei Prov., Laiyuan County, Mt. Baishi

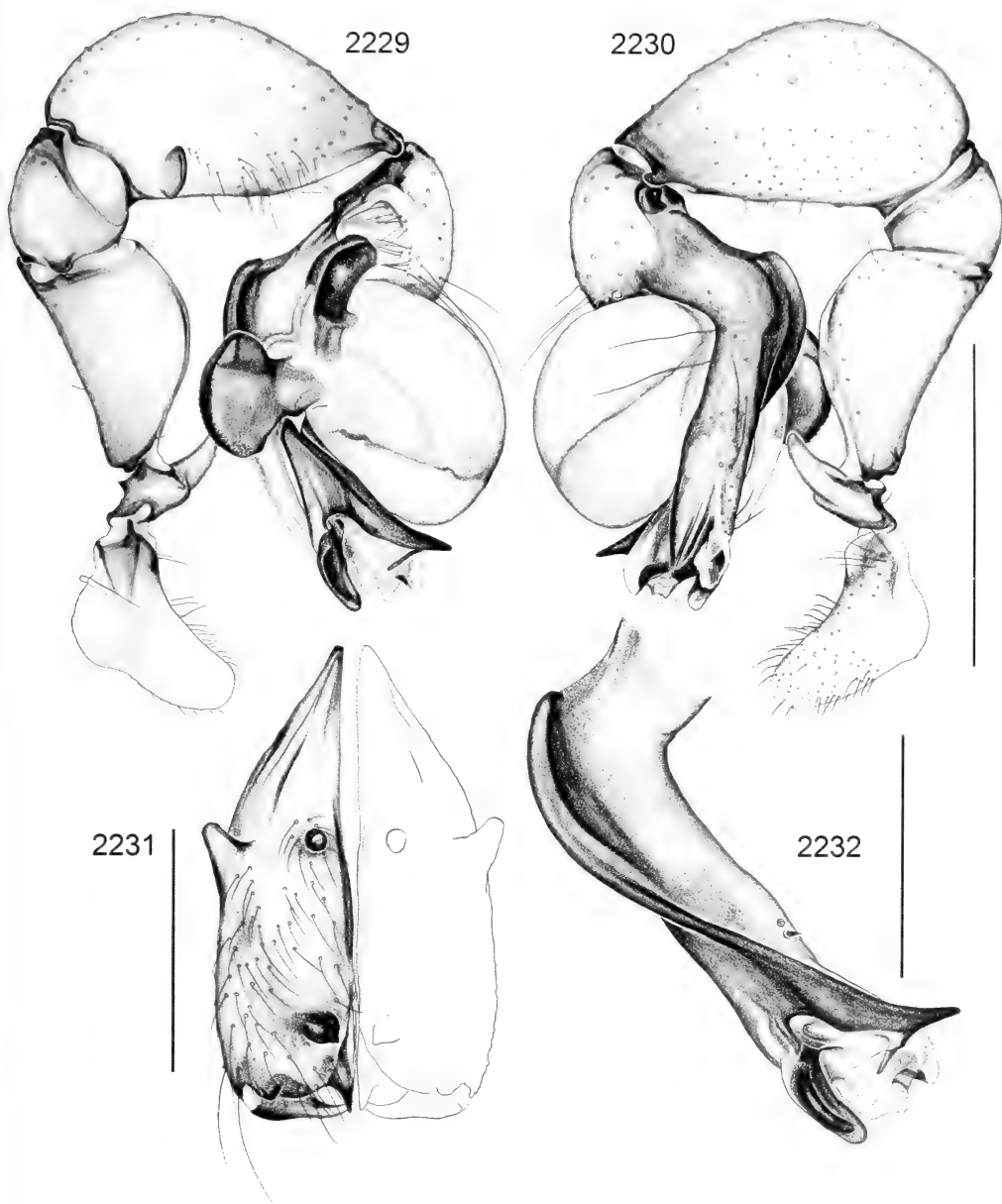


FIG. 2229-2232. *Pholcus clavimaculatus*. 2229, 2230. Left male palp, prolateral and retrolateral views. 2231. Male chelicerae, frontal view. 2232. Left procurrus, prolateral view. Scale lines: 1.0 (2229, 2230), 0.5 (2231, 2232).

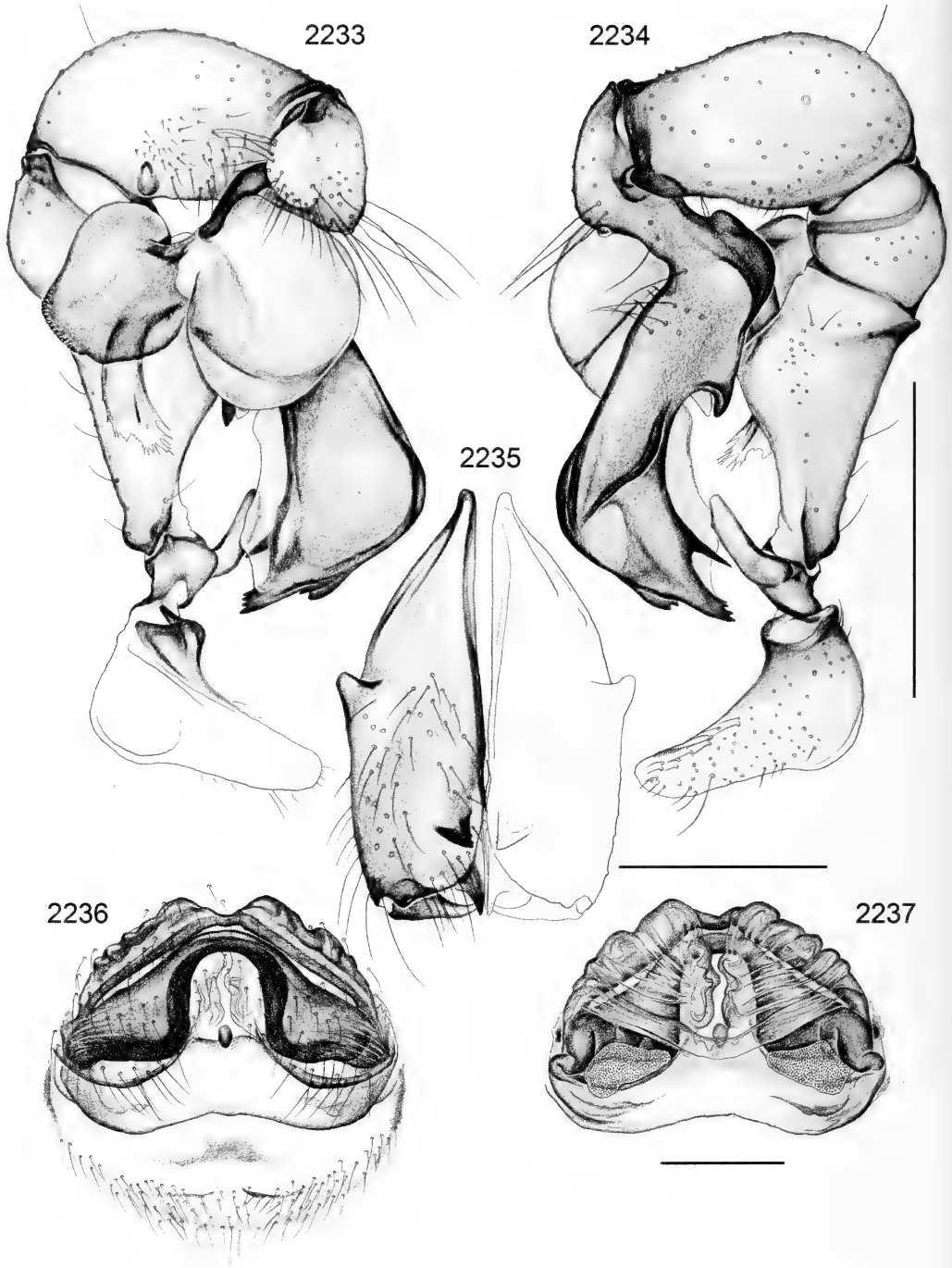


FIG. 2233-2237. *Pholcus triangulatus*. 2233, 2234. Left male palp, prolateral and retrolateral views. 2235. Male chelicerae, frontal view. 2236, 2237. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2233, 2234), 0.5 (2235-2237).

[-39°15'N, 114°40'E], 800-1200 m a.s.l., 19.vii.1999 (F. & J. Zhang), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Easily distinguished from congeners without appendix by distinctive shape of procurus (Fig. 2234) and female internal genitalia (Figs. 2168, 2237; distinctive internal structures).

*Male* (paratype). Total body length 5.1, carapace width 1.7. Leg 1: 44.3 (10.9 + 0.8 + 11.4 + 18.6 + 2.6), tibia 2: 7.8, tibia 3: 5.3, tibia 4: 7.1; tibia 1 L/d: 70. Habitus similar to *Ph. pennatus* (cf. Figs. 2152, 2153). Carapace ochre-yellow with distinct brown pattern, ocular area with lateral and median brown marks, clypeus with pair of brown marks under ocular area, sternum light brown, yellowish marks near bases of coxae, pale whitish behind labium, legs light brown, femora and tibiae with indistinct darker rings subdistally and with pale tips, abdomen gray, many dark spots dorsally, ventrally only genital area brown (cf. female, Fig. 2156). Distance PME-PME 265 µm, diameter PME 140 µm, distance PME-ALE 55 µm, distance AME-AME 60 µm, diameter AME 95 µm. Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2235, with two tiny modified hairs on each distal apophysis. Sternum wider than long (1.25/0.90), unmodified. Palps as in Figs. 2233 and 2234, coxa unmodified, trochanter with short retrolateral hump and longer ventral apophysis, femur with low proximo-dorsal hump and very distal ventral protuberance, tibia with prolatero-ventral modification, procurus very distinctive, with three small spines dorsally, bulb with large flat uncus, weakly sclerotized embolus, without appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments mostly indistinct, only distally -10 quite distinct.

*Female.* In general similar to male, triads closer together (distance PME-PME 195 µm), clypeus darker brown, rings on legs more distinct, with additional dark rings on femora and tibiae and brown ventral marks on femora; tibia 1: 7.5. Epigynum with distinctive anterior plate, dark internal arc visible through cuticle, with sclerotized 'knob', weakly sclerotized posterior plate (Figs. 2167, 2236); internal genitalia as in Figs. 2168 and 2237.

*Distribution.* Known from type locality and Mt. Damao [-39°N, 115°E] (Zhang & Zhu 2009a), Hebei Province, China (Fig. 2216).

*Material examined.* CHINA: Hebei Prov.: Laiyuan County, Mt. Baishi: 1♂1♀ paratypes above.

*Pholcus beijingensis* Zhu & Song, 1999

Figs. 2150, 2151, 2163, 2164, 2238-2242

*Pholcus beijingensis* Zhu & Song in Song *et al.* 1999: 52, 57, figs. 22z, a'-c', 23a-c. Song *et al.* 2001: 73-74, figs. 30A-H (copied from Song *et al.* 1999). Zhang & Zhu 2009a: 13-15, figs. 2a-h (copied from Song *et al.* 1999).

*Types.* Male holotype, 4♀ paratypes from China, Beijing [-40°N, 116.5°E], 30.v.1980 (M. Zhu), in MHBU, not examined.

*Diagnosis.* Distinguished from congeners without appendix by male palpal morphology (Figs. 2238, 2239; long trochanter apophysis, short femur, shapes of procurus and uncus) and female genitalia (Figs. 2163, 2241, 2242; distinctive epigynum and internal structures).

*Male* (Beijing). Total body length 4.9, carapace width 1.7. Legs 1: 9.7 + 0.7 + 9.5, metatarsus and tarsus missing, tibia 2 missing, tibia 3: 4.3, tibia 4: 6.2; tibia 1 L/d: 65. Habitus as in Figs. 2150 and 2151. Carapace pale ochre-yellow with distinct brown pattern, ocular area with lateral and median brown marks, clypeus slightly darkened, sternum light brown, lighter behind labium, legs light brown, indistinct darker rings on femora and tibiae subdistally, tips of femora and tibiae whitish, abdomen gray, many dark spots dorsally and laterally, ventrally only genital area brown. Distance PME-PME 240 µm, diameter PME 105 µm, distance PME-ALE 45 µm, distance AME-AME 45 µm, diameter AME 95 µm. Ocular area moderately elevated, few stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2240, with tiny modified hairs in distal apophyses (not visible in dissecting microscope). Sternum wider than long (1.1/0.8), unmodified. Palps as in Figs. 2238 and 2239, coxa unmodified, trochanter with retrolateral hump and long ventral apophysis distally curved towards retrolateral, femur rather short, strongly protruding ventrally, indistinct small hump proximo-dorsally, tibia with prolatero-ventral modification, procurus with distinctive membranous process retrolaterally (arrow in Fig. 2239; not shown in previous publications), without dorsal spines, bulb with medium-size uncus (slightly different view than in previous publications explains apparent different shape), weakly sclerotized embolus, without appendix (reduced to small trans-

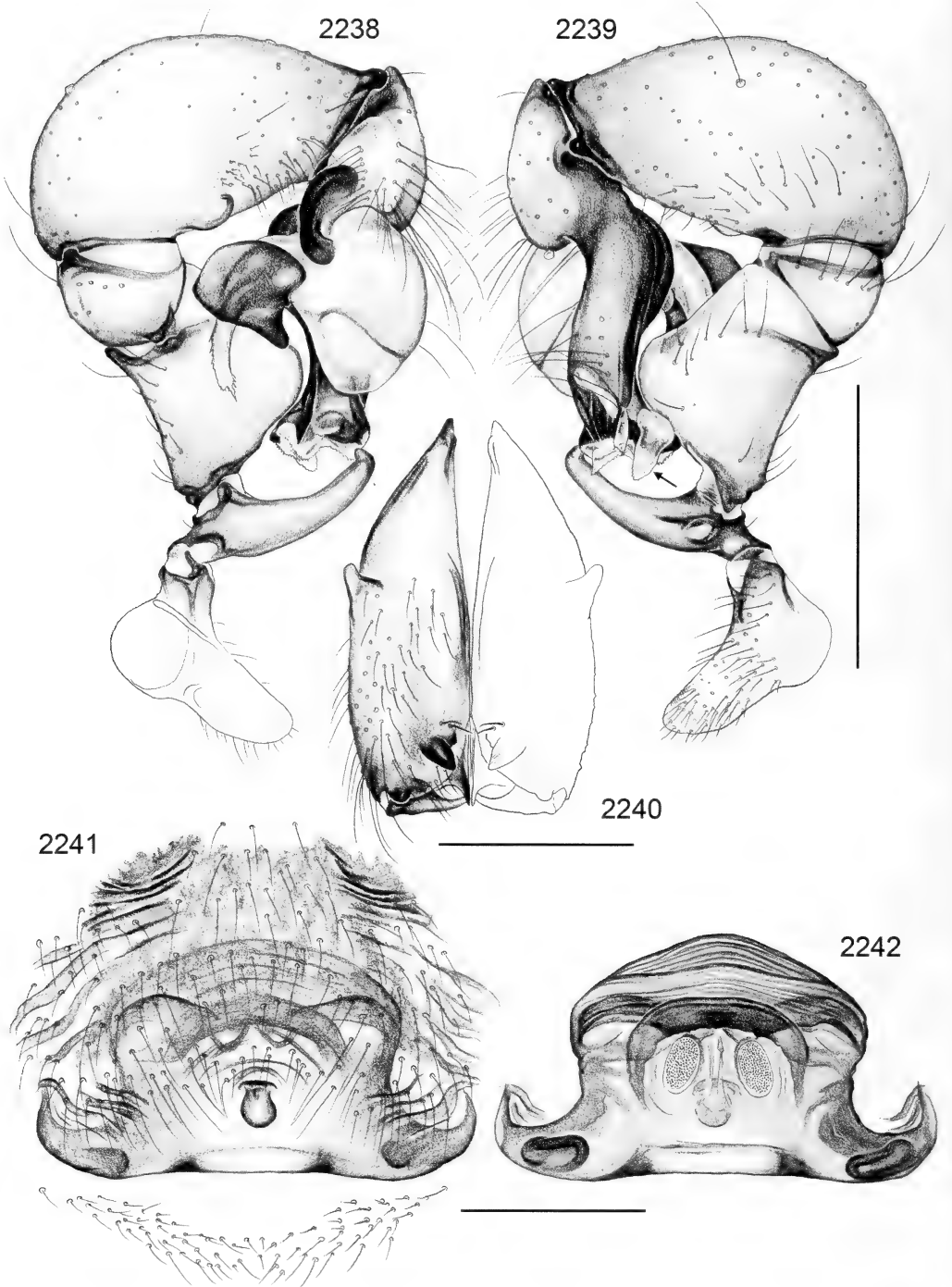


FIG. 2238-2242. *Pholcus beijingensis*. 2238, 2239. Left male palp, prolateral and retrolateral views (arrow points at distinctive membranous process of procursor). 2240. Male chelicerae, frontal view. 2241, 2242. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2238, 2239), 0.5 (2240-2242).

parent projection). Legs without spines, curved hairs on tibiae and metatarsi (most hairs missing), few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, seen on tibiae 3 and 4.

*Variation.* The whitish area on the abdomen is present only in the photographed specimen (Fig. 2150). Tibia 1 missing in other male examined.

*Female.* In general similar to male, triads closer together (distance PME-PME 175  $\mu$ m), clypeus darker brown; dark rings on legs more distinct, sternum light brown with light patches near coxae and behind labium. Tibia 1: 8.2 (missing in other female examined). Epigynum slightly elevated, anterior plate with large brown mark and wide brown 'knob', posterior plate weakly sclerotized (Figs. 2163, 2241); internal genitalia as in Figs. 2164 and 2242.

*Natural history.* Chen *et al.* (2008) and Xiao *et al.* (2009, 2010) have studied specific aspects of the biology of this species.

*Distribution.* Known from Beijing and two localities in Hebei Prov., China (Zhang & Zhu 2009a) (Fig. 2216).

*Material examined.* CHINA: Beijing, collected by Y. Tong, no further data: 2♂2♀ in IZCAS (Ar 21799).

*Pholcus lingulatus* Gao, Gao & Zhu, 2002

Figs. 2147, 2148, 2159, 2160, 2243-2247

*Pholcus lingulatus* Gao, Gao & Zhu 2002: 74-75, 77, figs. 1-8. Zhang & Zhu 2009a: 47-50, figs. 24a-h (copied from Gao *et al.* 2002).

*Types.* Female holotype, 2♂2♀ paratypes from China, Jilin Prov., Huadian City, Weisha River (42°48'N, 127°12'E), 13.viii.1973 (collector not given), in MHBU (1♂1♀ paratypes examined).

*Diagnosis.* Easily distinguished from most congeners by strong and long spines dorsally on procurus (Figs. 2244, 2245); from very similar *Ph. sublingulatus* by female internal genitalia (pore plates wider apart; cf. fig. 48b in Zhang & Zhu 2009a) and details of male procurus shape (cf. figs. 48h-j in Zhang & Zhu 2009a); from *Ph. phungiformes* also by absence of ventral spines on procurus and by female genitalia (Figs. 2159, 2247).

*Male* (paratype). Carapace width 1.6, abdomen missing. Leg 1: 41.4 (10.6 + 0.7 + 10.4 + 17.2 + 2.5), tibia 2: 7.0, tibia 3: 4.8, tibia 4: 6.5; tibia 1 L/d: 71. Habitus similar to *Ph. pennatus* (cf. Figs. 2152, 2153). Carapace pale ochre-yellow with distinct brown pattern (Fig. 2148), ocular area with median

brown mark, clypeus light brown, sternum pale ochre-yellow with light brown marks near coxae 2-4, legs very pale but with indistinct rings apparently as in *Ph. phungiformes*: on femora subdistally, tibiae proximally and subdistally, marks proximo-ventrally on femora. Distance PME-PME 250  $\mu$ m, diameter PME 135  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 45  $\mu$ m, diameter AME 105  $\mu$ m. Ocular area moderately elevated, stronger hairs posteriorly. No thoracic furrow; clypeus unmodified. Chelicerae as in *Ph. phungiformes* (cf. Fig. 2251). Sternum wider than long (1.00/0.75), unmodified. Palps as in Figs. 2243 and 2244, coxa unmodified, trochanter with short retrolateral apophysis curving towards ventral, femur with very indistinct proximal hump dorsally, widening ventrally, tibia with sclerotized area on prolatero-ventral side, procurus with three distinctive strong dorsal spines, with light hinge-like area retrolaterally (similar to *Ph. phungiformes*), bulb with large uncus, weakly sclerotized embolus, without appendix. Legs without spines and curved hairs, few vertical hairs (most hairs missing); retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only distally a few visible in dissecting microscope.

*Female.* In general similar to male, triads closer together (distance PME-PME 185  $\mu$ m); sternum more uniformly light brown, abdomen dorsally with many dark spots (cf. *Ph. pennatus*, Fig. 2152). Tibia 1 missing in specimen examined. Epigynum large, weakly elevated, large weakly sclerotized anterior and posterior plates, median plate with sclerotized 'knob' less triangular than in *Ph. phungiformes* (Figs. 2159, 2246), internal genitalia as in Figs. 2160 and 2247.

*Distribution.* Known from type locality only (Fig. 2216).

*Material examined.* CHINA: Jilin Prov.: Huadian City: 1♂1♀ paratypes above.

*Pholcus phungiformes* Oliger, 1983

Figs. 2149, 2161, 2162, 2248-2262

*Pholcus phungiformes* Oliger 1983: 627-629, figs. 1-5. Oliger 1998: 112-115, figs. 13-20.

*Types.* Male holotype from Russia, Maritime Territory, Lazovsky Nat. Res., near Kievka [42°54'N, 133°42'E], indoor, 8.ix.1977 (T. Oliger), apparently together with 4♀ paratypes (same data) and 1♂1♀ paratypes (6.vi.1975) in one vial, in ZMMU, examined. Further paratypes from same locality: 3♂2♀

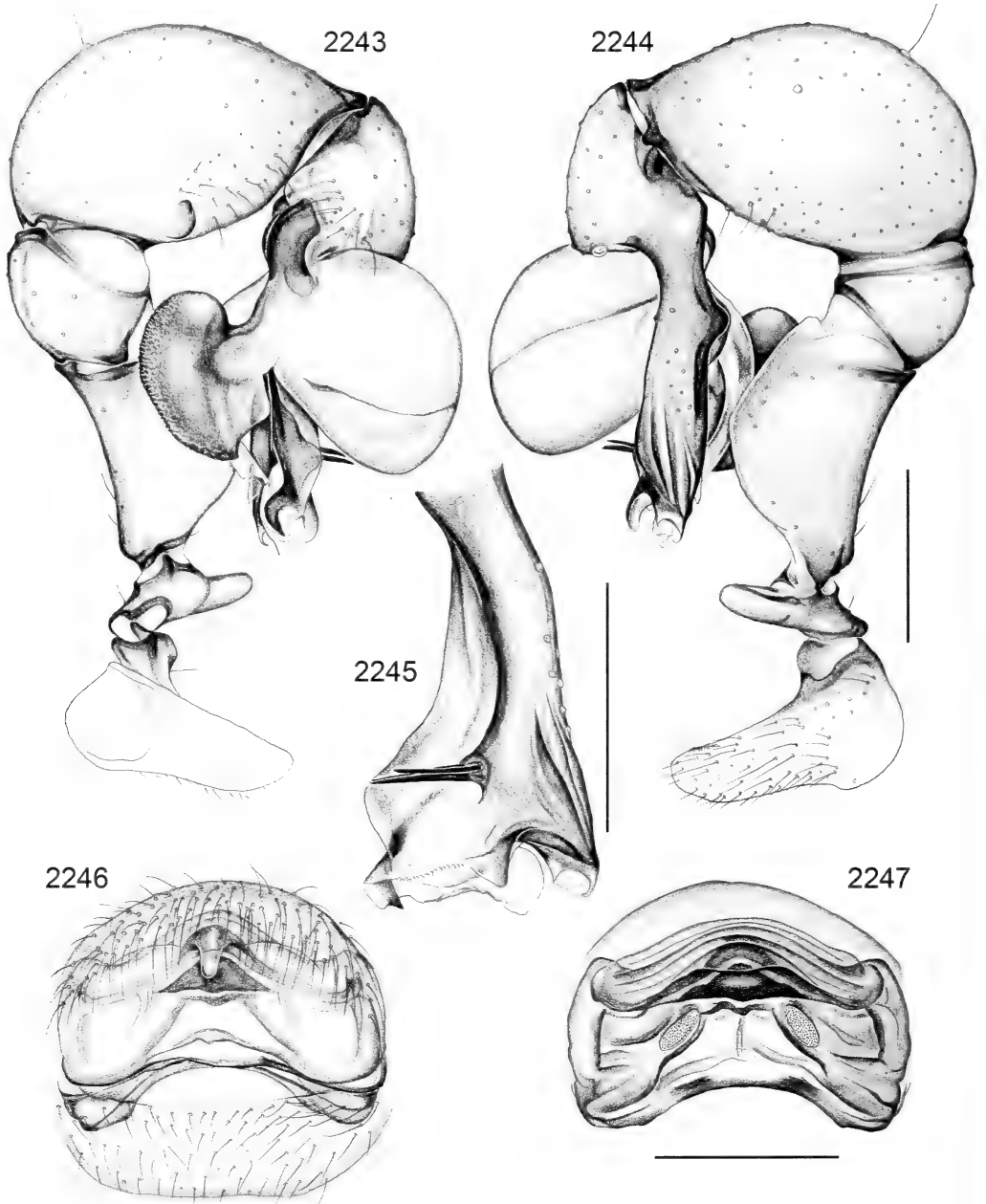


FIG. 2243-2247. *Pholcus lingulatus*. 2243, 2244. Left male palp, prolateral and retrolateral views. 2245. Left procurus, dorsal (slightly retrolateral) view. 2246, 2247. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



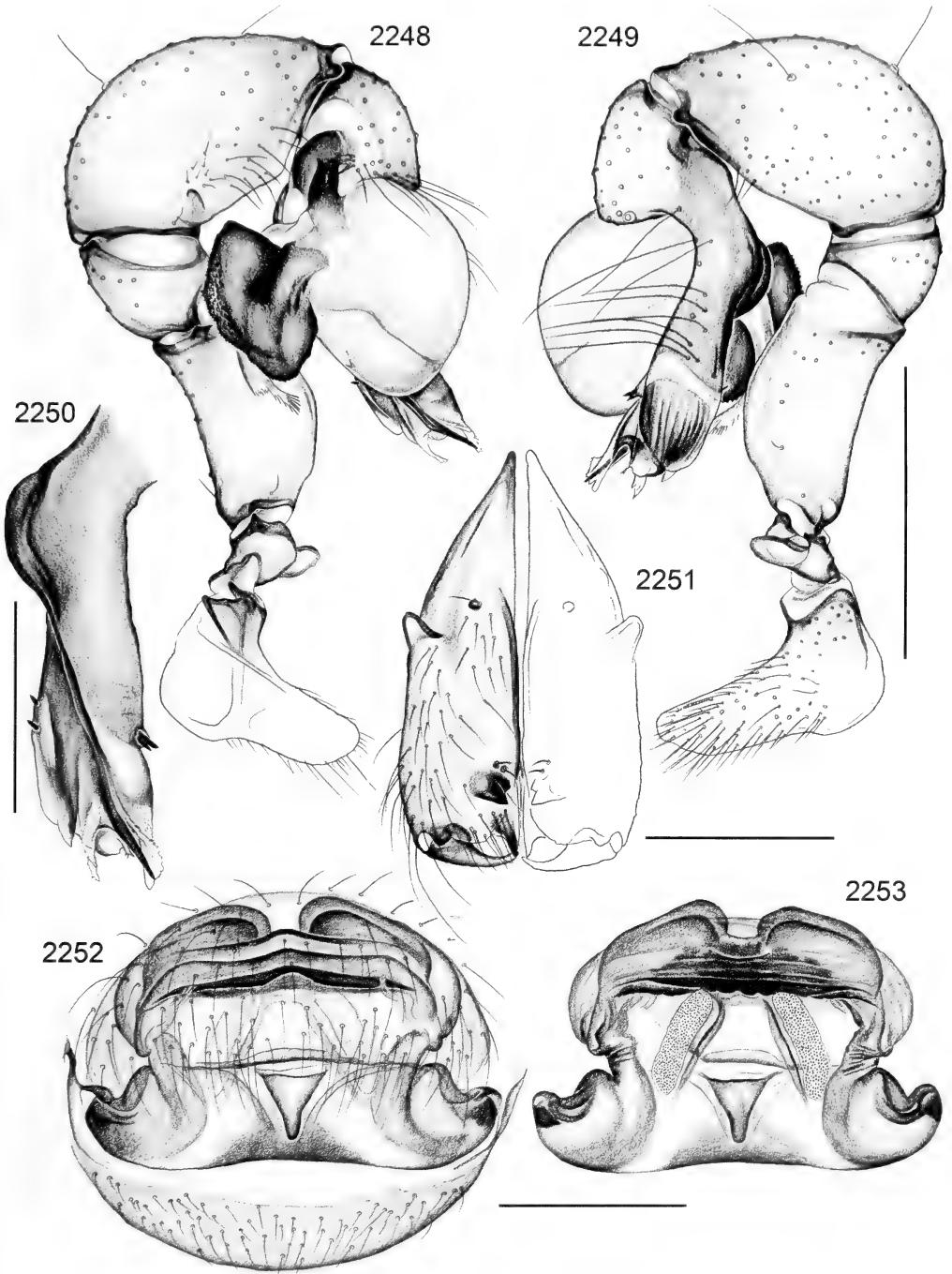


FIG. 2248-2253. *Pholcus phungiformes*. 2248, 2249. Left male palp, prolateral and retrolateral views. 2250. Left procurus, prolateral view. 2251. Male chelicerae, frontal view. 2252, 2253. Cleared female genitalia, ventral and dorsal views. Scale lines: 1.0 (2248, 2249), 0.5 (2250-2253).

(13.vi.1978) (2♂ in ZIN, examined), 2♀ (5.xii.1980), 4♂3♀ (x.1981), not examined. 2♂1♀ paratypes from Maritime Territory, Petrova [42°51'N, 133°47'E], 8.viii.1980, in ZIN, examined (see Note below).

*Note.* Oligier (1983) cites 2♂1♀ paratypes from Petrova, but the ZIN has 6♂6♀ with exactly the same collection data (see below). Presumably, further specimens were added later to the paratypes.

*Diagnosis.* Easily distinguished from most congeners without appendix by ventral spines on procurus (Fig. 2250; in addition to usual dorsal spines); from similar *Ph. gosuenis* by procurus shape (distal sclerites) and female internal genitalia (Fig. 2253, elongate pore plates).

*Male* (Petrova). Total body length 5.1, carapace width 1.7. Leg 1: 43.0 (11.0 + 0.7 + 11.0, 17.8 + 2.5), tibia 2: 7.5, tibia 3: 4.9, tibia 4: 6.4; tibia 1 L/d: 65. Habitus similar to *Ph. pennatus* (cf. Figs. 2152, 2153). Carapace pale ochre-yellow with distinct brown pattern (Fig. 2149), ocular area with median brown mark, clypeus light brown, sternum pale ochre-yellow with light brown marks near coxae 2-4, legs with several darker rings, distinct on femora subdistally, tibiae proximally and subdistally, darker marks also proximo-ventrally on femora, abdomen monochromous (internal organs missing). Distance PME-PME 230 µm, diameter PME 135 µm, distance PME-ALE 55 µm, distance AME-AME 45 µm, diameter AME 115 µm. Ocular area moderately elevated, stronger hairs posteriorly (missing in Fig. 2254). No thoracic furrow; clypeus unmodified. Chelicerae as in Fig. 2251, distal apophyses with only one small modified hair each (Fig. 2255), small proximal apophyses frontally and larger apophyses laterally. Sternum wider than long (1.10/0.75), unmodified. Palps as in Figs. 2248 and 2249, coxa unmodified, trochanter with short retrolateral apophysis curving towards ventral, femur with very indistinct proximal hump dorsally, tibia with sclerotized area on prolatero-ventral side, procurus with two strong dorsal spines and row of about five small ventral spines, with light hinge-like area retrolaterally, complex distally (Figs. 2256, 2257), bulb with large uncus, weakly sclerotized embolus, without appendix (or with tiny remnant, arrow in Fig. 2259). Legs without spines, curved hairs on tibiae and metatarsi 1-3, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments indistinct, only dis-

tally a few visible in dissecting microscope. Gonopore with four epianndrous spigots (Fig. 2260); ALS with eight spigots each (Fig. 2261).

*Variation.* Tibia 1 in 15 other males: 9.5-12.3 (mean 10.9). Most males with internal spots dorsally and laterally on abdomen.

*Female.* In general similar to male, triads slightly closer together (distance PME-PME 195 µm). Tibia 1 in 21 females: 6.9-9.0 (mean 8.1). Epigynum large, weakly elevated, large weakly sclerotized anterior and posterior plates, median plate with sclerotized triangular 'knob' (Figs. 2161, 2252, 2262), internal genitalia as in Figs. 2162 and 2253.

*Distribution.* Known from Maritime Territory, Sakhalin Island, and Kurile Islands, Russia (Fig. 2216).

*Material examined.* RUSSIA: *Maritime Territory:* Lazovsky Nat. Res., near Kievka: 2♂5♀ types above; same data but 5.xii.1978, 2♀ in ZIN (these might actually be two further paratypes, assuming that "1980" in Oligier 1983 is a typing error for 1978); same data but 3.viii.1976, 4♂1♀ in ZIN; winter-spring 1981, 2♂1♀ in ZIN; viii.1981, 2♂1♀ in ZIN. Lazovsky Nat. Res., Petrova (42°51.1'N, 133°47.6'E), cabin, in building, 10.ix.2003 (S. Buchholz), 4♂2♀ in ZFMK; Petrova, indoor, 8.viii.1980 (T. Oligier), 6♂6♀ (presumably including 2♂1♀ paratypes; see Note above) in ZIN. Lazovsky Nat. Res., near Glazovka [-43°04'N, 134°11'E], indoor, iii.1984 (T. Oligier), 1♀ in ZIN. Khasan Vil. [42°25'N, 130°39'E], 26.vii.1976 (B.P. Zakharov), 1♂1♀ in ZMMU; near Khasan, 26.vii.1976 (B.P. Zakharov), 2♂1♀ in ZMMU. Khasan Distr., Kedrovaya Pad' Reserve [-43°12'N, 131°25'E], 31.viii.1988 (L.A. Nessov), 1♂1♀ in ZMMU. Kedrovaya Balka Nat. Reserve [=Kedrovaya Pad' Reserve?], 5.xi.1976 (B. Zakharov), 1♂ in ZMMU. Chuguyevski Distr., Sokolovka R., Upper Ussuri Field Station (43°50'N, 134°10'E), summer 1991, collector not given, 3♂1♀ in ZMMU. Chuguyevka Field Station (-43°50'N, 134°15'E), 31.vii.-5.viii.1998 (Yu.M. Marusik), 1♀ in ZMMU; same data, S. Koponen leg., 1♂1♀ in ZMMU. Near Anisimovka Vil. (43°10'N, 132°46'E), 24.-28.vii.1998 (Yu.M. Marusik), 6♂10♀ in ZMMU. NW part of Vladivostok [-43°11'N, 131°55'E], catacombs, 21.viii.1998 (Yu.M. Marusik), 2♀ in ZMMU. Vladivostok, Akademgorod, forest park, 30.ix.1997 (Yu.M. Marusik), 1♂1♀ in USNM. Near Vladivostok, NW of Uglovoye [Uglovoye, 43°20'N, 132°06'E], "under the barn", 22.vii.1995 (Yu.M. Marusik), 6♂5♀ in ZMMU. *Sakhalin Oblast:* Sakhalin Island: nr. Sokol

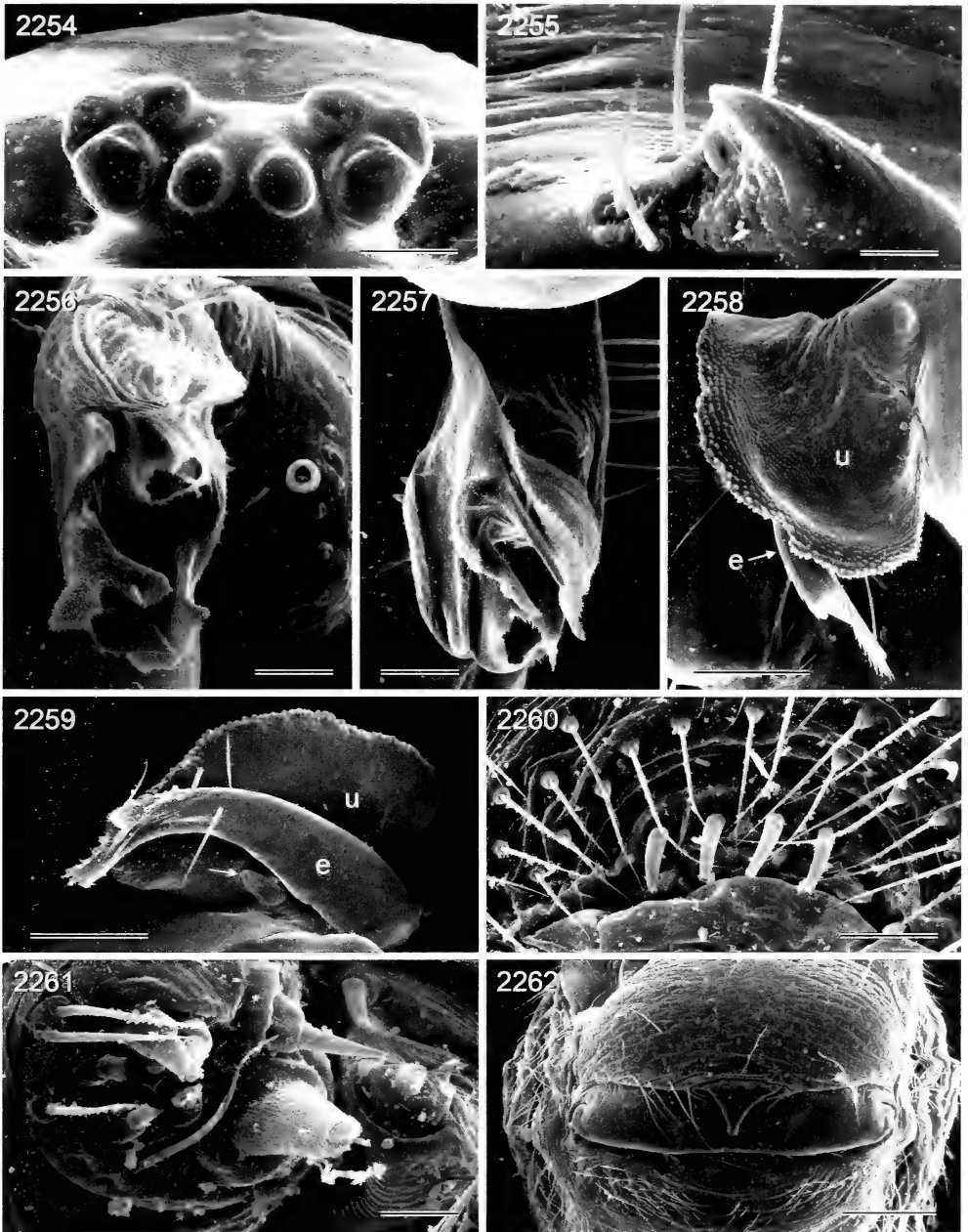


FIG. 2254-2262. *Pholcus phungiformes*. 2254. Male ocular area, frontal view. 2255. Distal male cheliceral apophysis. 2256. Right procurus, distal view. 2257. Left procurus, prolateral view. 2258. Left uncus and embolus, prolateral view. 2259. Right bulbal processes, retrolateral view (arrow points at possible remnant of appendix). 2260. Male gonopore. 2261. Male ALS. 2262. Epigynum. Scale lines: 300  $\mu\text{m}$  (2262), 200  $\mu\text{m}$  (2254, 2258, 2259), 100  $\mu\text{m}$  (2256, 2257), 50  $\mu\text{m}$  (2260), 20  $\mu\text{m}$  (2255, 2261).

Field Station, Belaya River middle flow (47°14.6'N, 142°46.6'E), 16.vii.-21.viii.2001 (Yu.M. Marusik), -7♂5♀ in ZMMU. Kuril Islands: Kunashir Isl., Yuznokuril'sk [Yuzhno-Kuril'sk, 44°02'N, 145°51'E], 16.viii.1987 (A.M. Basarukin), 1♂2♀ in ZMMU; same locality, in houses, 20.viii.-24.ix.1997 (Yu.M. Marusik), 5♂3♀ in ZMMU. Kunashir Isl., NW shore, Rudnoye Vil., Severyanka R. (44°20.5'N, 146°00'E), in unused houses, 25.-27.viii.1997 (Yu.M. Marusik), -10♂10♀ in ZMMU. Kunashir Isl., NE shore, 1 km E Tyatina river mouth (44°16.3'N, 146°10.3'E), in house, 28.-29.viii.1997 (Yu.M. Marusik), 3♂5♀ in ZMMU. Shikotan Isl., N coast of Krabovaya Bay (43°50'N, 146°44'E), in left and broken houses, 11.-18.ix.1997 (Yu.M. Marusik), -20♂20♀ in ZMMU. Iturup Island, Dobroye Nachalo Gulf [-44°42'N, 147°11'E], in building, 22.viii.1996 (Eskov), 1♂ in ZMMU.

*Pholcus montanus* Paik, 1978

Figs. 2111, 2134, 2135, 2263-2267

*Pholcus montanus* Paik 1978b: 118-119, figs. 13-20.

*Types.* Male holotype from South Korea, Gangwon-do Prov., Mt. Sulakk [=Seolaksan, Seoraksan, -38°12'N, 128°32'E], 9.viii.1964 (K.Y. Paik); 3♂ paratypes from same locality, 10.viii.1964; 8♂16♀ paratypes from South Korea, Mt. Sopaik [=Sobaeksan, -36°57'N, 128°31'E], 28.vi.1962 (J. Namkung) and 31.vii.1962 (K.Y. Paik); all material in Kyungpook National University, South Korea, not examined.

*Note.* The assignment of the specimens below to *Ph. montanus* is tentative. The specimens examined appear extremely similar to Paik's (1978b) drawings of *Ph. montanus* (except for the shape of the anterior arc in the female internal genitalia) but a direct comparison of specimens should be made.

*Diagnosis.* Distinguished from similar species with 'pseudo-appendix' by shapes of procurus and uncus (Figs. 2263-2265).

*Male* (Mt. Odae). Total body length 5.7, carapace width 1.75. Leg 1: 58.0 (14.7 + 0.8 + 14.7 + 25.1 + 2.7), tibia 2: 9.9, tibia 3: 6.5, tibia 4: 8.8; tibia 1 L/d: 90. Habitus as in Fig. 2111. Carapace ochre-yellow with distinct brown pattern, ocular area with weak brown lateral margins and median brown band, clypeus partly darkened, sternum posterior half brown with large light areas near coxae 3 and 4 and with many small light spots, legs ochre-yellow with two darker rings on each femur and four on each tibia (median ones on tibiae poorly visible), abdomen

ochre-gray, many black spots dorsally and laterally, ventrally with light brown mark at genital area. Distance PME-PME 255 µm, diameter PME 140 µm, distance PME-ALE 55 µm, distance AME-AME 70 µm, diameter AME 115 µm. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. phungiformes* (cf. Fig. 2251). Sternum wider than long (1.25/0.90), unmodified. Palps as in Figs. 2263 and 2264, coxa unmodified, trochanter with retrolatero-ventral apophysis with short rounded retrolateral branch (cf. fig. 16 in Paik 1978b), femur ventrally widened, with low retrolateral hump, tibia with prolatero-ventral modification, procurus with distinctive distal structures, two short spines on low elevation, bulb with oval uncus, simple curved 'pseudo-appendix', weakly sclerotized embolus. Legs without spines, curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with -6 distinct pseudosegmental rings distally, proximally broken into many smaller indistinct sclerites.

*Female.* In general similar to male but triads closer together (distance PME-PME 195 µm), entire clypeus brown; tibia 1: 8.6 (both). Epigynum consisting of large anterior and posterior plates, with 'knob', internal arc visible through cuticle anteriorly (Figs. 2134, 2266); internal genitalia as in Figs. 2135 and 2267.

*Distribution.* Known from several localities in north-eastern South Korea (Fig. 2217).

*Material examined.* SOUTH KOREA: Gangwon-do: Pyeongchang-gun: Mt. Odae, Temple Woljung (37°34.3'N, 128°35.8'E), 4.ix.2005 (B.W. Kim), 1♂1♀ in ZFMK; Samcheok-si, entrance of cave Hwan-sun (37°19.4'N, 129°01.3'E), 1.ix.2005 (B.W. Kim), 1♀ in ZFMK.

*Pholcus woongil* n. sp.

Figs. 2112, 2113, 2136, 2137, 2268-2272

*Type.* Male holotype from South Korea, Gyeonggi-do (Prov.), Mt. Woongil (37°33.6'N, 127°15.9'E), Namyangju-si (City), 29.v.2000 (B.W. Kim), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species with 'pseudo-appendix' by shapes of procurus and uncus (Figs. 2268-2270), and by female genitalia (Figs. 2136, 2272; distinctive shapes of epigynum and internal structures).

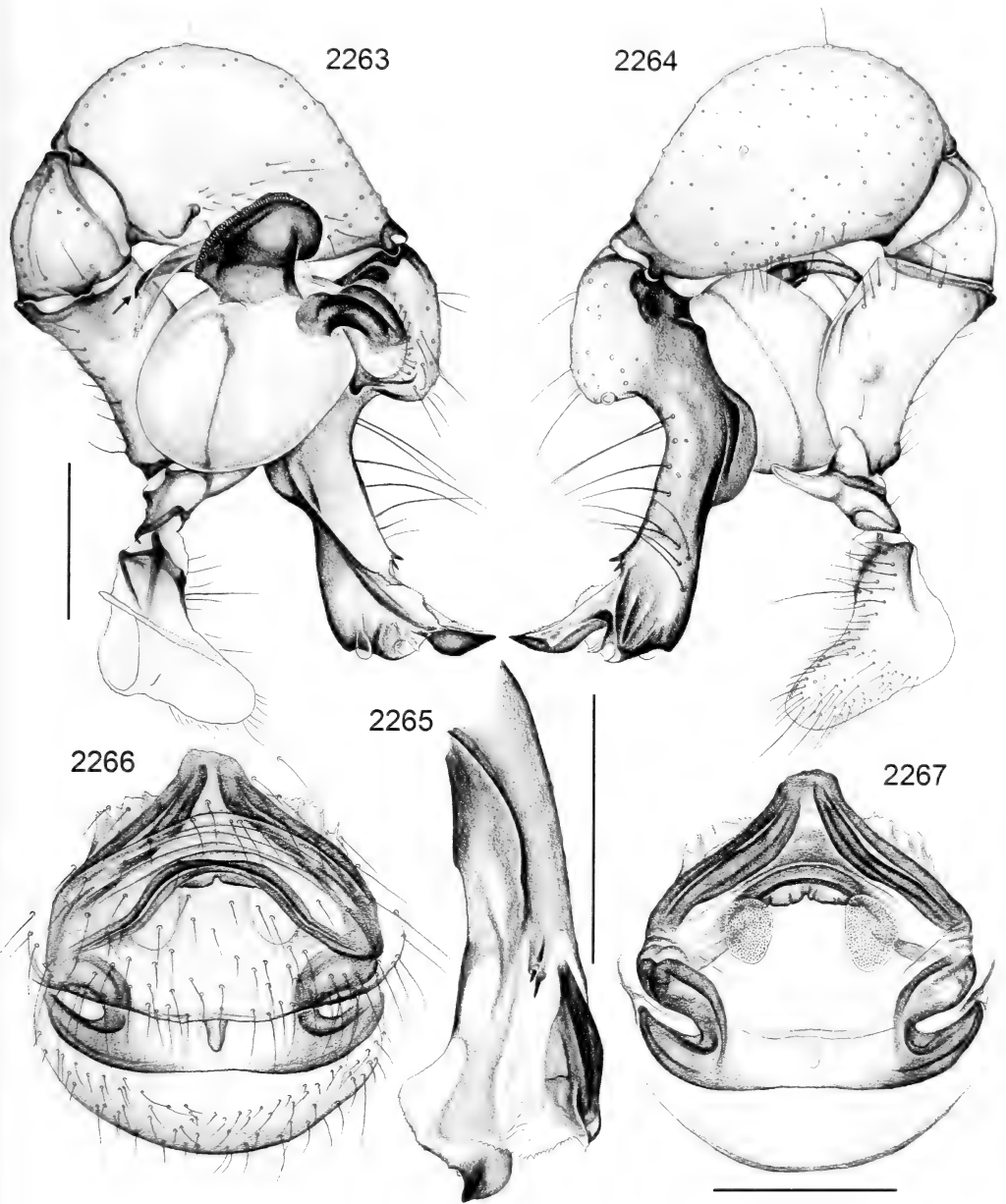


FIG. 2263-2267. *Pholcus montanus*. 2263, 2264. Left male palp, prolateral and retrolateral views (arrow points at 'pseudo-appendix'). 2265. Left procurus, dorsal view. 2266, 2267. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

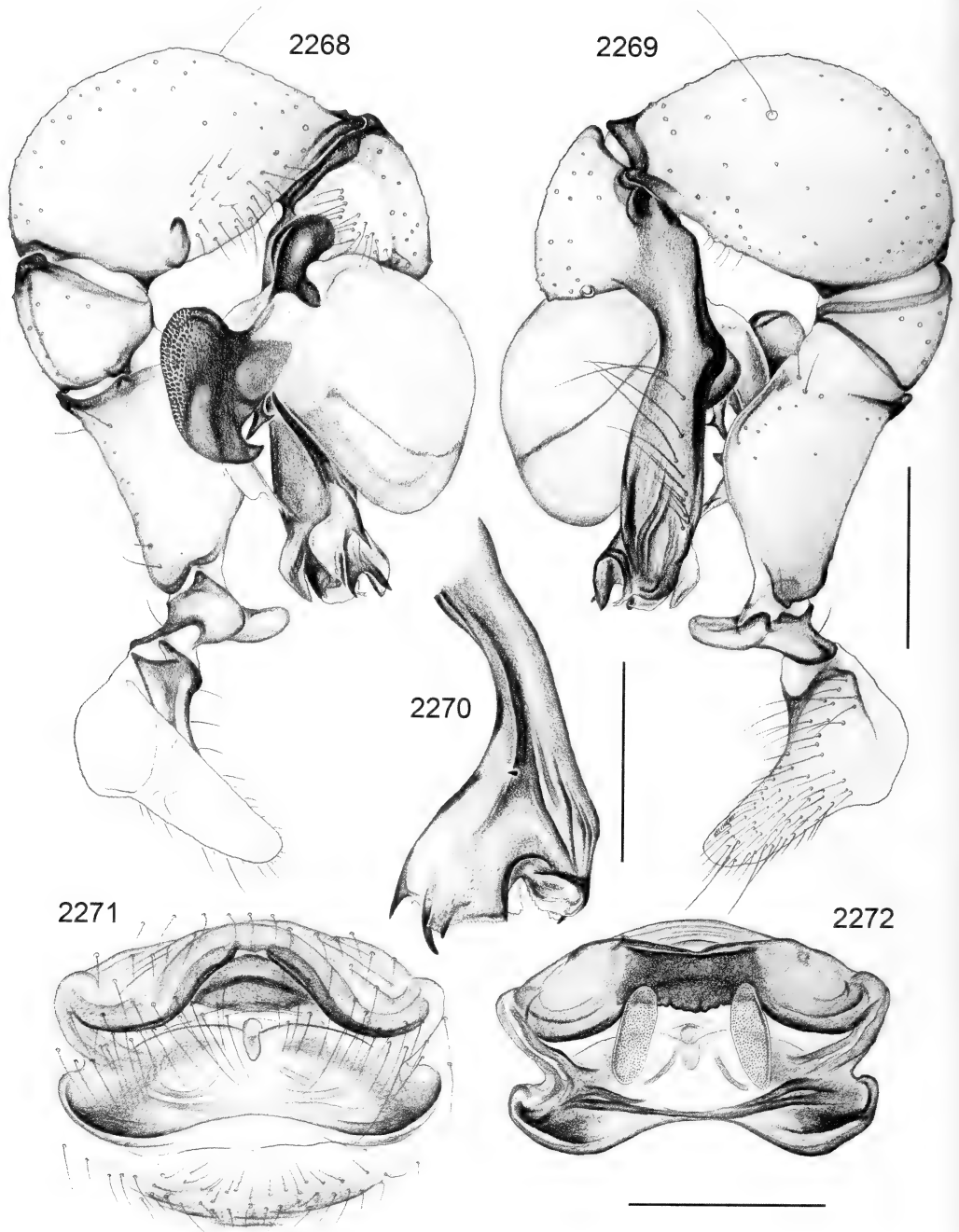


FIG. 2268-2272. *Pholcus woongil*. 2268, 2269. Left male palp, prolateral and retrolateral views. 2270. Left procurus, dorsal view. 2271, 2272. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

*Male* (holotype). Total body length 5.0, carapace width 1.55. Leg 1: 46.8 (11.4 + 0.8 + 11.8 + 20.3 + 2.5), tibia 2: 7.8, tibia 3: 5.2, tibia 4: 7.0; tibia 1 L/d: 78. Habitus as in Fig. 2112. Carapace ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown band, clypeus brown, sternum laterally brown, medially ochre-yellow with brown spots, legs pale ochre-yellow with two darker rings on each femur and four on each tibia (median ones on tibiae indistinct), abdomen ochre-gray, many black spots dorsally and laterally, ventrally only light brown mark at genital area (cf. female, Fig. 2113). Distance PME-PME 250  $\mu$ m, diameter PME 140  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 115  $\mu$ m. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. phungiformes* (cf. Fig. 2251). Sternum wider than long (1.1/0.9), unmodified. Palps as in Figs. 2268 and 2269, coxa unmodified, trochanter with retrolatero-ventral apophysis slightly spoon-shaped, femur widened ventrally, tibia with prolatero-ventral modification, procurus complex distally, with large prolateral process (Fig. 2270), one short dorsal spine, bulb with simple uncus and small Y-shaped 'pseudo-appendix', weakly sclerotized embolus. All hairs on legs missing; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with ~6 distinct pseudosegmental rings distally, proximally broken into many smaller indistinct sclerites.

*Female*. In general similar to male, eye triads closer together (distance PME-PME 185  $\mu$ m), rings on legs more distinct; tibia 1: 7.7. Epigynum with two oval sclerotized areas laterally, with median 'knob', internal arc visible through cuticle anteriorly (Figs. 2136, 2271); internal genitalia as in Figs. 2137 and 2272.

*Distribution*. Known from type locality only (Fig. 2217).

*Material examined*. SOUTH KOREA: *Gyeonggi-do*: Namyangju-si: ♂ holotype above, together with 1 ♀.

*Pholcus yeongwol* n. sp.

Figs. 2114-2116, 2138-2140, 2273-2279

*Type*. Male holotype from South Korea, Gangwon-do (Prov.), Yeongwol-eup (37°11.2'N, 128°28.0'E), Yeongwol-gun (County), 3.x.2002 (B.W. Kim), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from similar species with 'pseudo-appendix' by shapes of procurus and uncus (Figs. 2273, 2274, 2277), and by distinctive female genitalia (Figs. 2138, 2279; elongate pore plates in lateral position).

*Male* (holotype). Total body length 5.7, carapace width 1.75. Leg 1: 47.6 (11.9 + 0.7 + 12.2 + 20.3 + 2.5), tibia 2: 8.2, tibia 3: 5.4, tibia 4: 7.4; tibia 1 L/d: 77. Habitus as in Figs. 2114 and 2115. Carapace ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown line, clypeus with indistinct brown marks in upper part, sternum anteriorly ochre with many brown spots, posteriorly and laterally light brown, legs light brown, with darker rings subdistally on femora and proximally and subdistally on tibiae, abdomen ochre-gray, many dark spots dorsally and laterally, ventrally only indistinct mark at genital area (cf. female, Fig. 2116). Distance PME-PME 220  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 105  $\mu$ m. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae as in Figs. 2275 and 2276, with long proximo-frontal apophyses, distal apophyses apparently without modified hairs. Sternum wider than long (1.1/0.8), unmodified. Palps as in Figs. 2273 and 2274, coxa unmodified, trochanter with wide, spoon-shaped retrolatero-ventral apophysis, femur widened ventrally, tibia with prolateral modification (similar to *Ph. montanus*, *Ph. woongil*), procurus with large prolateral process, spines apparently absent (not seen in both palps), bulb with small uncus with hooked tip, simple rod-shaped 'pseudo-appendix', weakly sclerotized embolus. Legs without spines, with curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with ~6 distinct pseudosegmental rings distally, proximally broken into many smaller indistinct sclerites.

*Female*. In general similar to male, eye triads at same distance, entire clypeus brown, sternum pattern slightly different (rather like in *Ph. simbok*: with median brown line posteriorly); legs with more rings on femora and tibiae (cf. *Ph. nodong*, *Ph. simbok*): two on femora, four on tibiae; tibia 1: 8.3. Epigynum with two semicircular sclerotized areas, with median



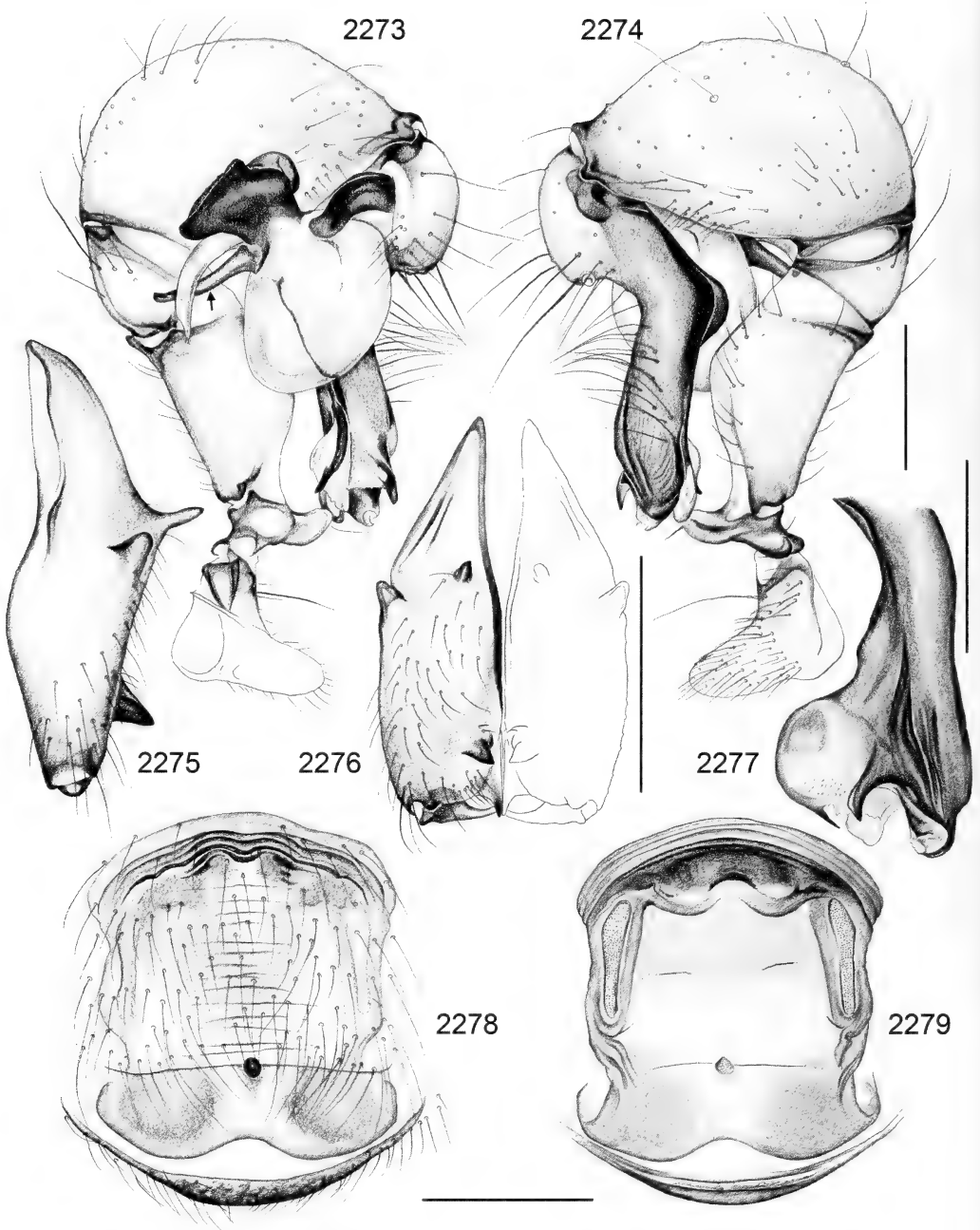


FIG. 2273-2279. *Pholcus yeongwol*. 2273, 2274. Left male palp, prolateral and retrolateral views (arrow points at 'pseudo-appendix'). 2275, 2276. Male chelicerae, lateral and frontal views. 2277. Left procurrus, dorsal view. 2278, 2279. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.



'knob', internal arc visible through cuticle anteriorly (Figs. 2138, 2278); internal genitalia as in Figs. 2140 and 2279, with very lateral, narrow pore plates. The only female available had a large genital plug protruding from her genitalia (arrows in Figs. 2138, 2139). *Distribution*. Known from type locality only (Fig. 2217).

*Material examined*. SOUTH KOREA: *Gangwon-do*: ♂ holotype above, together with 1 ♀.

*Pholcus okgye* n. sp.

Figs. 2117, 2118, 2141, 2142, 2280-2283

*Type*. Male holotype from South Korea, Gangwon-do (Prov.), Okgye-myeon (37°34.3'N, 128°56.8'E), entrance of Cave Okgye, 3.ix.2005 (B.W. Kim), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from similar species with 'pseudo-appendix' by shapes of procurus and uncus (Figs. 2280-2282), and by female genitalia (Figs. 2141, 2283; epigynum shape and distinctive internal structures).

*Male* (holotype). Total body length 5.7, carapace width 1.65. Leg 1: 48.9 (12.3 + 0.7 + 12.7 + 20.8 + 2.4), tibia 2: 8.5, tibia 3: 5.5, tibia 4: 7.4; tibia 1 L/d: 80. Habitus as in Figs. 2117 and 2118. Carapace ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown line, clypeus with brown mark in upper part, sternum anteriorly ochre with many brown spots, posteriorly and laterally light brown, legs light brown, with darker rings subdistally on femora and proximally and subdistally on tibiae, abdomen ochre-gray, many dark spots dorsally and laterally, ventrally with indistinct mark at genital area. Distance PME-PME 230 µm, diameter PME 140 µm, distance PME-ALE 45 µm, distance AME-AME 45 µm, diameter AME 125 µm. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. phungiformes* (cf. Fig. 2251) frontal proximal apophyses longer and stronger (but not facing upwards as in *Ph. yeonwol*). Sternum wider than long (1.1/0.9), unmodified. Palps as in Fig. 2280, coxa unmodified, trochanter with retrolatero-ventral apophysis slightly spoon-shaped and bifid, femur widened ventrally, tibia with prolatero-ventral modification (similar to *Ph. montanus*, *Ph. woongil*; hidden by uncus in Fig. 2280), procurus and bulb similar to *Ph. yeonwol*, but distal

structures on procurus different (Figs. 2281, 2282) and uncus without distal hook, 'pseudo-appendix' shorter, no spines seen on procuri (possibly one socket). Legs without spines, with curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 6%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with ~3-4 distinct pseudo-segmental rings distally, proximally broken into many smaller indistinct sclerites.

*Female*. In general similar to male, eye triads at same distance, sternum pattern slightly different (large indistinct darker areas laterally); legs with very indistinct further rings on femora and tibiae (cf. *Ph. yeonwol*); tibia 1: 8.6. Epigynum consisting of relatively large sclerotized plates anteriorly and posteriorly, with median 'knob' (Fig. 2141); internal genitalia as in Figs. 2142 and 2283.

*Distribution*. Known from type locality only (Fig. 2217).

*Material examined*. SOUTH KOREA: *Gangwon-do*: Okgye-myeon: ♂ holotype above, together with 1 ♀.

*Pholcus nodong* n. sp.

Figs. 2119, 2143, 2144, 2284-2288

*Type*. Male holotype from South Korea, Chungcheongbuk-do (Prov.), Danyang-gun (County), Cave Nodong (36°57.0'N, 128°23.7'E), 21.vii.2005 (B.W. Kim), in ZFMK.

*Etymology*. The specific name is a noun in apposition, derived from the type locality.

*Diagnosis*. Distinguished from similar species without appendix by shapes of procurus and uncus (Figs. 2284-2286), and by female genitalia (Figs. 2143, 2288) (females of *Ph. simbok* are extremely similar).

*Male* (holotype). Total body length 4.5, carapace width 1.5. Leg 1: 39.7 (10.2 + 0.7 + 10.0 + 16.7 + 2.1), tibia 2: 6.5, tibia 3: 4.4, tibia 4: 6.0; tibia 1 L/d: 71. Habitus as in Fig. 2119. Carapace ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown band, clypeus partly darkened, sternum medially pale ochre-yellow, laterally and posteriorly (especially at leg bases) brown, legs ochre-yellow with two darker rings on each femur and four on each tibia (median ones on tibiae indistinct), abdomen ochre-gray, many black spots dorsally and laterally, ventrally with light brown mark at genital area. Distance PME-PME 220 µm, diameter PME 125 µm, distance PME-ALE 45 µm, distance AME-AME 45 µm, diameter AME 105 µm. Ocular area moderately elevated, all eyes relatively

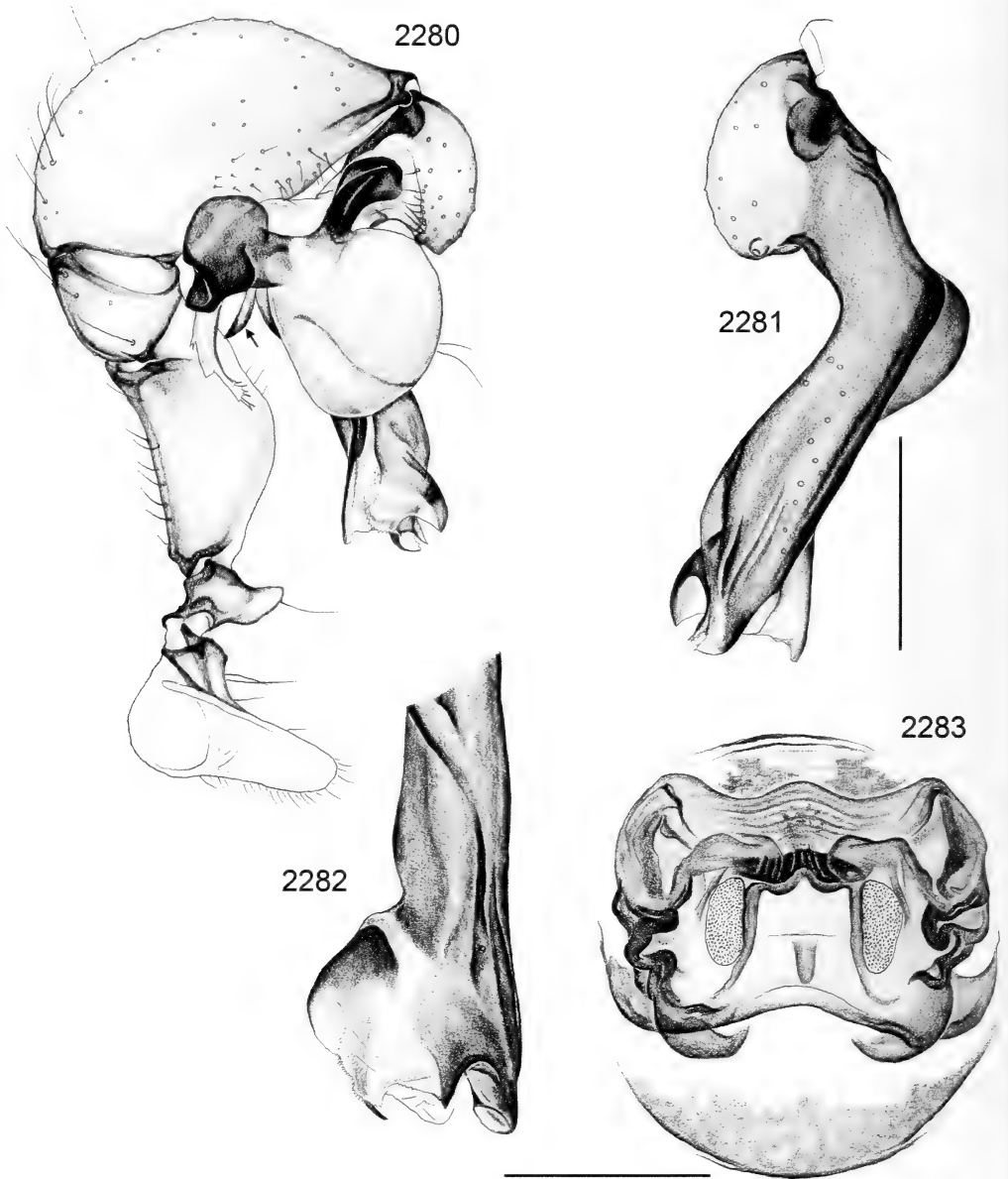


FIG. 2280-2283. *Pholcus okgye*. 2280. Left male palp, prolateral view (arrow points at 'pseudo-appendix'). 2281, 2282. Left prokursus, retrolateral and dorsal views (at same scale). 2283. Cleared female genitalia, dorsal view. Scale lines: 0.5.

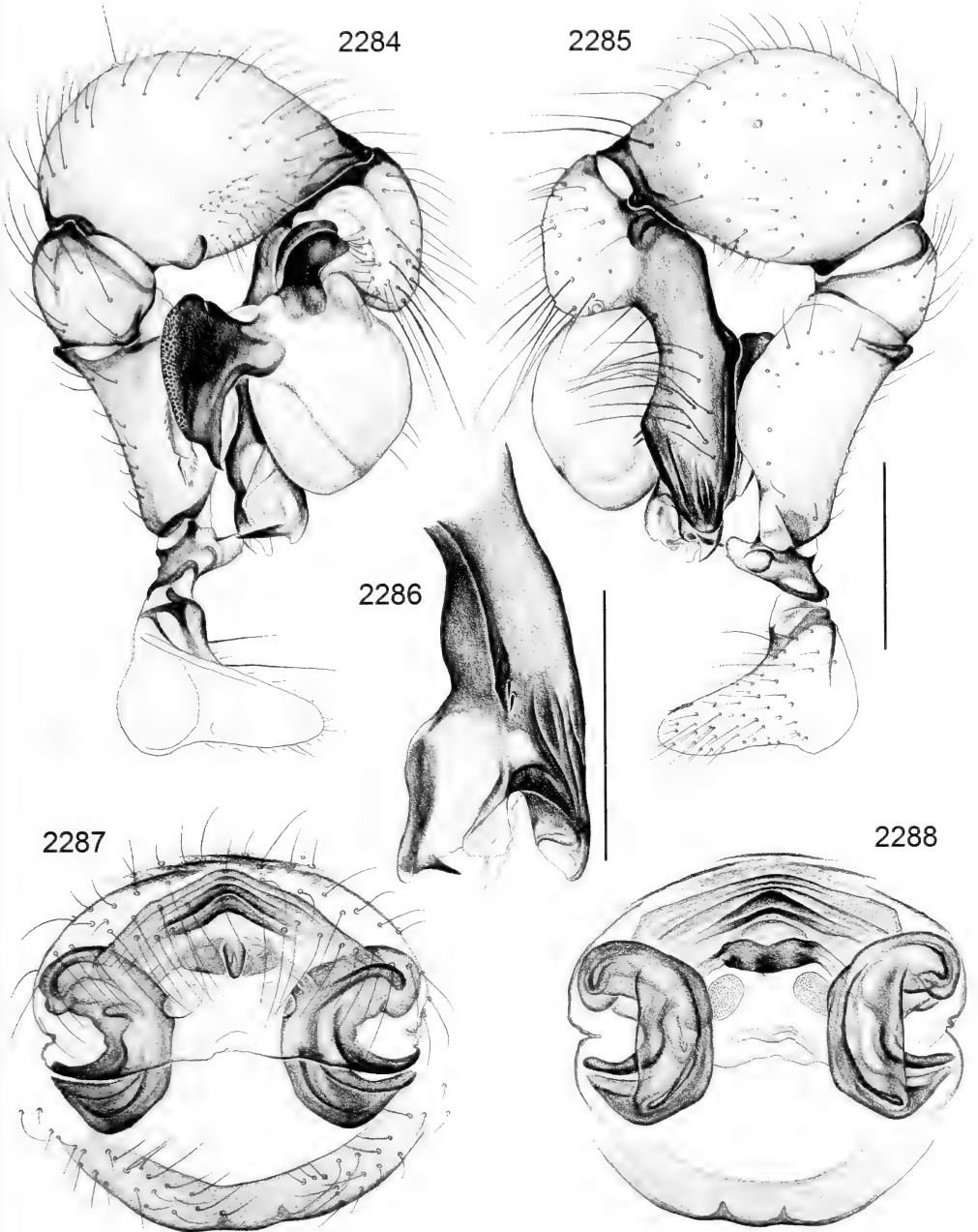


FIG. 2284-2288. *Pholcus nodong*. 2284, 2285. Left male palp, prolateral and retrolateral views. 2286. Left procurrus, dorsal view. 2287, 2288. Cleared female genitalia, ventral and dorsal views. Scale lines: 0.5.

close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. phungiformes* (cf. Fig. 2251) but smaller. Sternum wider than long (0.95/0.70), unmodified. Palps as in Figs. 2284 and 2285, coxa unmodified, trochanter with ventral apophysis with retrolateral branch, femur widened ventrally, tibia with prolatero-ventral modification, procurus complex distally, with large prolateral process (Fig. 2286), two dorsal spines, bulb with pointed uncus, weakly sclerotized embolus, no appendix. Legs without spines, with curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with >20 pseudosegments, only distally ~10 quite distinct.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 195 µm), entire

clypeus brown; tibia 1: 6.9. Epigynum with two oval sclerotized areas laterally, medially whitish with brown 'knob', posterior sclerite arc-shaped; internal arc visible through cuticle anteriorly (Figs. 2143, 2287); internal genitalia as in Figs. 2144 and 2288, with small pore plates and large lateral membranous structures.

*Distribution.* Known from type locality only (Fig. 2217).

*Material examined.* SOUTH KOREA: *Chungcheongbuk-do*: Danyang-gun: ♂ holotype above, together with 1♀.

*Pholcus simbok* n. sp.

Figs. 2120, 2121, 2145, 2146, 2289-2291

*Type.* Male holotype from South Korea, *Chungcheongbuk-do* (Prov.), Goisan-gun, entrance of

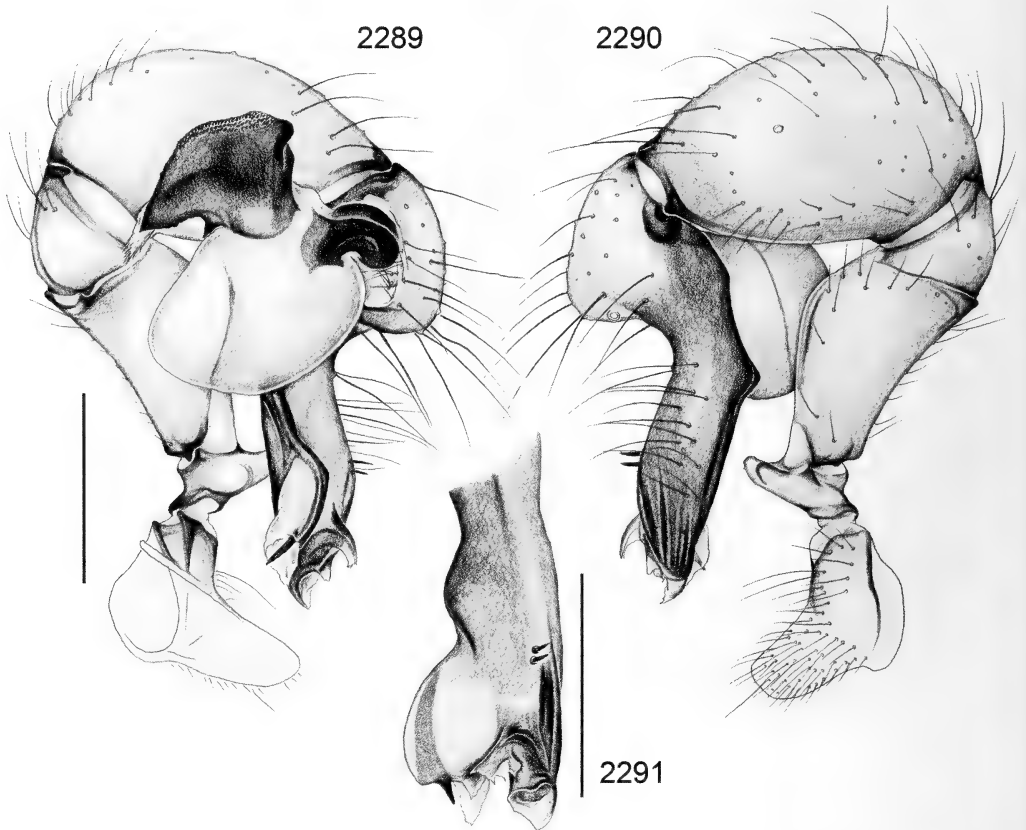


FIG. 2289-2291. *Pholcus simbok*. 2289, 2290. Left male palp, prolateral and retrolateral views. 2291. Left procurus, dorsal view. Scale lines: 0.5.

Cave Simbok (36°46.6'N, 127°57.8'E), 19.i.2006 (B.W. Kim), in ZFMK.

*Etymology.* The specific name is a noun in apposition, derived from the type locality.

*Diagnosis.* Distinguished from similar species without appendix by shapes of procurus and uncus (Figs. 2289-2291), and by female genitalia (Figs. 2145, 2146) (females of *Ph. nodong* are extremely similar). *Male* (holotype). Total body length 4.8, carapace width 1.4. Leg 1: 38.7 (10.0 + 0.6 + 9.7 + 16.2 + 2.2), tibia 2: 6.4, tibia 3: 4.2, tibia 4: 5.7; tibia 1 L/d: 69. Habitus as in Figs. 2120 and 2121. Carapace ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown band, clypeus partly darkened, sternum laterally and posteriorly (especially near coxae) brown, medially pale ochre-yellow with short median brown line posteriorly, legs ochre-yellow with two darker rings on each femur and four on each tibia (median ones on tibiae barely visible), abdomen ochre-gray, many black spots dorsally and laterally, ventrally with light brown mark at genital area. Distance PME-PME 230  $\mu$ m, diameter PME 125  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 70  $\mu$ m, diameter AME 95  $\mu$ m. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark line anteriorly; clypeus unmodified. Chelicerae similar to *Ph. phungiformes* (cf. Fig. 2251), but smaller and frontal proximal apophyses slightly stronger. Sternum wider than long (1.00/0.75), unmodified. Palps as in Figs. 2289 and 2290, coxa unmodified, trochanter with ventral apophysis with short retrolateral branch, femur widened ventrally, tibia with prolateral modification as in *Ph. nodong* (cf. Fig. 2284), procurus complex distally, with distinctive prolateral process (Fig. 2291), two dorsal spines, bulb with distinctive uncus with small pointed process near basis (possibly a homologue of the 'pseudo-appendix' of close relatives), weakly sclerotized embolus, no appendix. Legs without spines, with curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with >20 pseudosegments, only distally ~10 quite distinct.

*Female.* In general similar to male, eye triads slightly closer together (distance PME-PME 185  $\mu$ m); tibia 1: 6.7. Epigynum with two sclerotized areas laterally, medially whitish with brown 'knob', large posterior sclerite, internal arc visible through cuticle anteriorly

(Fig. 2145); internal genitalia as in Fig. 2146 (very similar to *Ph. nodong* but slightly larger, lateral membranous structures smaller, and pore plates slightly more elongate).

*Distribution.* Known from type locality only (Fig. 2217).

*Material examined.* SOUTH KOREA: *Chungcheongbuk-do*: Goisan-gun, Cave Simbok: ♂ holotype above, together with 1♀.

*Pholcus crassus* Paik, 1978

Figs. 2157, 2158, 2169, 2170, 2292-2295

*Pholcus crassus* Paik 1978b: 119-121, figs. 21-29.

*Types.* Male holotype and female "allotype" from South Korea, Kyungpook, Bongwha-gun, Socheun [36°59'N, 128°40'E], 15.viii.1964 (K.Y. Paik); further paratypes from type locality, from Mt. Sulakk [Gangwon-do Prov.: Mt. Seolaksan/Seoraksan, ~38°12'N, 128°32'E], and from "Mt. Paikan-san, Urjin-gun, Kyungpook" [Paikam-san, Uljin-gun, 36°43'N, 129°27'E] (complete data in Paik 1978b); all material in Kyungpook National University, not examined.

*Note.* The assignment of the specimens below to *Ph. crassus* is tentative. The specimens examined appear extremely similar to Paik's (1978b) drawings (except for the more elongate pore plates), and they originate from Uljin-gun which is probably identical to the paratype locality "Urjin-gun". Nevertheless, a direct comparison of specimens should be made.

*Diagnosis.* Distinguished from similar species without appendix by shapes of procurus and uncus (Figs. 2292-2294); *Ph. acutulus* has a similar uncus, but is easily distinguished by procurus shape.

*Male* (holotype). Total body length 5.2, carapace width 2.0. Leg 1: 49.9 (12.4 + 0.8 + 12.7 + 21.5 + 2.5), tibia 2: 8.5, tibia 3: 5.6, tibia 4: 7.5; tibia 1 L/d: 76. Habitus as in Fig. 2157. Carapace pale ochre-yellow with distinct brown pattern, ocular area with brown lateral margins and median brown line, clypeus brown, sternum anteriorly ochre with brown spots, posteriorly brown, legs pale ochre-whitish, with two darker rings on each femur and four on each tibia, abdomen pale ochre-gray with many black spots dorsally and laterally, ventrally only indistinct light brown mark at genital area (cf. female, Fig. 2158). Distance PME-PME 250  $\mu$ m, diameter PME 150  $\mu$ m, distance PME-ALE 45  $\mu$ m, distance AME-AME 55  $\mu$ m, diameter AME 135  $\mu$ m. Ocular area moderately elevated, all eyes relatively close together, few hairs posteriorly. No thoracic furrow, only dark

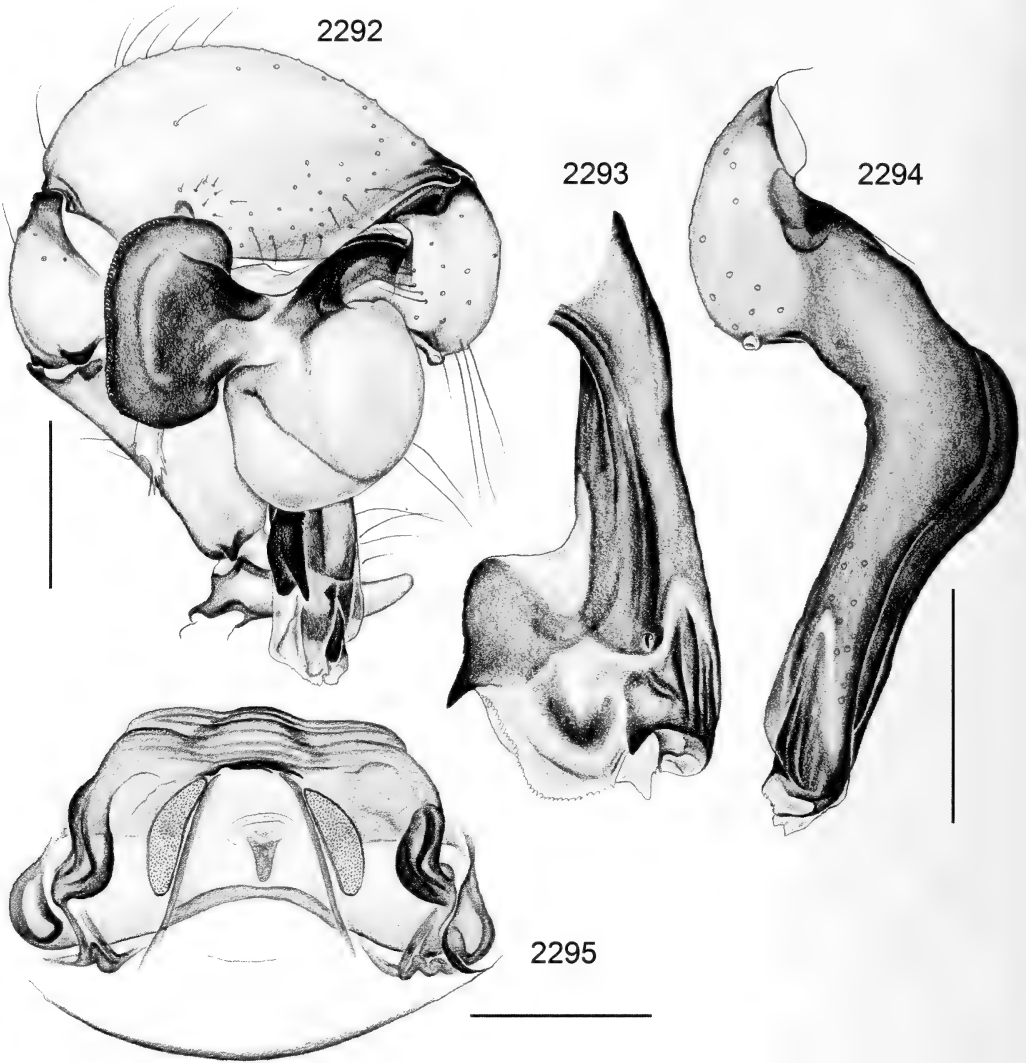


FIG. 2292-2295. *Pholcus crassus*. 2292. Left male palp, prolateral view. 2293, 2294. Left procurus, dorsal and retrolateral views (at same scale). 2295. Cleared female genitalia, dorsal view. Scale lines: 0.5.

line anteriorly; clypeus unmodified. Chelicerae as in *Ph. phungiformes* (cf. Fig. 2251), but frontal proximal apophyses slightly stronger. Sternum wider than long (1.25/0.90), unmodified. Palps as in Fig. 2292, coxa unmodified, trochanter with long retrolatero-ventral apophysis, femur slightly widened ventrally, tibia with prolatero-ventral modification (similar to *Ph. montanus*, *Ph. woongil*), procurus rather simple in

retrolateral view (Fig. 2294), with large distinctive prolateral process (Fig. 2293), one dorsal spine, bulb with large oval uncus, weakly sclerotized embolus, no appendix. Legs without spines, with curved hairs on tibiae and metatarsi 1 and 2, few vertical hairs; retrolateral trichobothrium on tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsus 1 with ~6 distinct pseudosegmental

rings distally, proximally broken into many smaller indistinct sclerites.

*Female.* In general similar to male, eye triads closer together (distance PME-PME 205  $\mu\text{m}$ ; note, however, that this seems to be a rather small specimen), sternum pattern slightly different (rather like in *Ph. simbok*: with median brown line posteriorly); rings on legs quite indistinct; tibia 1: 6.9. Epigynum with two pale lateral areas, with median 'knob', internal

arc visible through cuticle anteriorly (Fig. 2169); internal genitalia as in Figs. 2170 and 2295, with narrow pore plates.

*Distribution.* Known from three localities in north-eastern South Korea (Fig. 2217).

*Material examined.* SOUTH KOREA: *Gyeongsangbuk-do*: Uljin-gun, entrance of Cave Youngchi (36°42.7'N, 129°26.6'E), 2.ii.2005 (B.W. Kim), 1♂1♀ in ZFMK.

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Appendix 1. continued

<i>Pholcus afghanus</i>	1000000000?0000010000010000000000100?00000000010000000001000000000-00000011000001	70
<i>Pholcus sogdianae</i>	1000000000?000001000001000000000100100000000010000000001000000000-1000001100000	70
<i>Pholcus kambaly</i>	1000000000?0000010000010000000000100100000000010000000001000000000-1000001100000	70
<i>Pholcus crypticolens</i>	10000000001?0000010000010000000000100100000000010000000001000000000-0000011100000	70
<i>Pholcus spilis</i>	10000000001?0000010000010000000000100100000000010000000001000000000-0000011100000	70
<i>Pholcus manuli</i>	100000000010000010000010000000000100100000000010000000001000000000-0000011100000	70
<i>Pholcus fuerteventurensis</i>	1000000000?00000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus armeniacus</i>	1000000000?00000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus phalangioides</i>	1000000000100000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus medog</i>	1000000000?00000100100100000000001001000000000100000000010000000001000000	70
<i>Pholcus muralicola</i>	1000000000?00000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus kingi</i>	1000000000?00000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus dade</i>	1000000000?00000100000100000000001001000000000100000000010000000001000000	70
<i>Pholcus calligaster</i>	1000001000010000010000010000000001001000000000100100000000010000000001000000	70
<i>Pholcus djelalabad</i>	1000001000010000010000000001001000000000100100000000010010000000001000000	70
<i>Pholcus fragillimus</i>	1000000000?000001000101000000100110010000000001001000000000100100000100000001100000	70
<i>Pholcus bidentatus</i>	1000000000?00000-000001000000000100100000010001000000000100000000100000001100000	70
<i>Pholcus namkhan</i>	1000000000?00000-0000010000000001001000000100010000001000000000100000001100000	70
<i>Pholcus wuyiensis</i>	1000000000?00000-000001000000000100100100000010000000010000000010000001100010	70
<i>Pholcus negasaktensis</i>	1000000000?00000-0000010000000001001001000000100000000100000000100000011000010	70
<i>Pholcus taihaiensis</i>	1000000000?0000010000010000000100100100000010000000010000000010000001100000	70
<i>Pholcus qinghaiensis</i>	1000000000?00000100000100000001001001000000000100000000010000000010000001100000	70
<i>Pholcus yichengicus</i>	1000000000?0000010000010000000100100?000000000100000000010000000010000001101000	70
<i>Pholcus parvichengicus</i>	1000000000?0000010000010000000100100?000000000100000000010000000010000001101000	70
<i>Pholcus taishan</i>	1000000000?00000-0000010000000100100100000001010000000010100000000-00000001101000	70
<i>Pholcus linzhou</i>	1000000000?00000-000001000000010010010000000101001000000010100000000-0000001101000	70
<i>Pholcus allostropilus</i>	1000000000?0000010000010000000100100100000000010001000000000100001-----1110000	70
<i>Pholcus pennatus</i>	1000000000?0000010000010000000100100100000000010001000000000100001-----1110000	70
<i>Pholcus montanus</i>	1000000000?000001000001000000010010010000000001000100000000010001-----1110000	70
<i>Pholcus woongi</i>	1000000000?000001000001000000010010010000000001000100000000010001-----1110000	70
<i>Pholcus gosuensis</i>	1000000000?000001000001000000010010010000000001000100000000010001-----1110000	70
<i>Pholcus phungiformes</i>	1000000000100000100000100000001001001000000001000100000000010001-----1110000	70

## 7. APPENDIX 2. Terminal taxa scored for the cladistic analysis. Taxa are arranged as in Appendix 1.

- Smeringopina* sp.: Cameroon, South Region, nr. Kribi (ZFMK "Cam 04")
- Quantana merwei*: South Africa, KwaZulu-Natal, Ngome State Forest (NCP)
- Micropholcus fauroti*: Dom. Rep., Monte Plata (ZFMK)
- Sihala ceylonica*: Sri Lanka, Hanguranketa (MHNG)
- Sihala alagarkoil*: India, Tamil Nadu, Alagarkoil (CAS)
- Ossinisa justoi*: Spain, Canary Islands, El Hierro (CRBA; coded according to data in Dimitrov & Ribera 2005a)
- Uthina luzonica*: Indonesia, Sulawesi, Dumoga, near Doloduo (RMNH)
- '*Leptopholcus delicatulus*': Cuba, Oriente (AMNH)
- '*Leptopholcus baoruco*': Dom. Rep., Barahona Prov. (ZFMK)
- Calapnita vermiformis*: Malaysia, Sarawak, Semengoh Arboretum (RMNH)
- Calapnita saluang*: Indonesia, Sumatra, Kerinci National Park (RMNH)
- Calapnita phyllicola*: Indonesia, East Kalimantan, Sepaku (RMNH)
- Calapnita phasmoides*: Indonesia, East Kalimantan, Sepaku (RMNH)
- Panjange nigrifrons*: Indonesia, East Kalimantan, Sepaku (RMNH, coded according to data in Deeleman-Reinhold & Deeleman 1983)
- Panjange iban*: Malaysia, Sarawak, Semengoh Arboretum (RMNH)
- Panjange lanthana*: Philippines, Luzon, Quezon National Park, nr. Atimonan (RMNH)
- Panjange mirabilis*: Australia, Queensland, Iron Range (QMB)
- Panjange alba*: Indonesia, Maluku Islands, Maluku, Ambon Island (RMNH)
- Leptopholcus signifer*: Kenya, Nairobi Area, Langata (ZFMK)
- Leptopholcus gracilis*: Kenya, Coast Prov., Arabuko-Sokoke Forest (ZFMK)
- Leptopholcus guineensis*: Guinea, Basse-Guinée, Kindia (ZFMK)
- Leptopholcus tipula*: Cameroon, South Region, nr. Kribi (ZFMK)
- Leptopholcus talatakely*: Madagascar, Fianarantsoa Prov., P.N. Ranomafana (CAS)
- Leptopholcus borneensis*: Indonesia, Lesser Sunda Isl., Sumbawa, Semokat (RMNH)
- Leptopholcus podophthalmus*: Sri Lanka, Central Prov., Kandy (RMNH)
- Leptopholcus tanikawai*: Japan, Okinawa, Iriomotejima Island (ZFMK)
- Micromerys gracilis*: Australia, Northern Territory, Radon Ck. (QMB)
- Micromerys papua*: Papua New Guinea, Madang Province, Baiteta (IRSB)
- Micromerys daviesae*: Australia, Queensland, Rundle Range (QMB)
- Pholcus halabala*: Indonesia, Sumatra, Bohorok (RMNH)
- Pholcus sepaku*: Indonesia, East Kalimantan, Sepaku (RMNH)
- Pholcus diopsis*: Thailand, Yala, Biserat (MNHN)
- Pholcus atrigularis*: Malaysia, Pahang, Genting (CJFM)
- Pholcus bohorok*: Indonesia, Sumatra, Gunung Leuser, Bohorok (RMNH)
- Pholcus minang*: Indonesia, Sumatra, Kerinci N.P. (RMNH)
- Pholcus hurau*: Indonesia, Sumatra, West Sumatra Prov., cave above Hurau Canyon (MHNG)
- Pholcus kerinci*: Indonesia, Sumatra, Kerinci N.P. (RMNH)
- Pholcus cibodas*: Indonesia, Java, Jawa Barat, Cibodas (RMNH)
- Pholcus ethagala*: Sri Lanka, North Western Prov., Kurunegala (ZFMK)
- Pholcus maturata*: Sri Lanka, Central Prov., Agrabopath Forest Res. (ZFMK)
- Pholcus ledang*: Malaysia, Johor, Puteri Waterfalls (MHNG)
- Pholcus gombak*: Malaysia, Selangor, Gombak Exp. Station (RMNH)
- Pholcus bikilai*: Ethiopia, Sidama Zone, Yirga Alem (MRAC)
- Pholcus chappuisi*: Kenya, Rift Valley, Mt. Elgon, Kitum Cave (ZFMK)
- Pholcus strandi*: Ethiopia, Mega (MZF)
- Pholcus lamperti*: Tanzania, Tanga Prov., East Usambara, Amani (CAS)
- Pholcus fagei*: Kenya, Coast Province, Shimoni caves (MNHN)
- Pholcus circularis*: São Tomé and Príncipe, São Tomé, Parque Nacional Ôbó (CAS)
- Pholcus batepa*: São Tomé and Príncipe, São Tomé, Rio Contador Valley (CAS)

- Pholcus luki*: Congo D.R., Kongo Centrale Prov., Luki Forest Res. (MRAC)
- Pholcus bamboutos*: Cameroon, West Region, near Mbouda, Bamboutos (ZFMK)
- Pholcus bourgini*: Guinea, Nzérékoré Region, Forêt Classée de Ziama (ZFMK)
- Pholcus chattoni*: Guinea, Nzérékoré Region, Mount Nimba (ZFMK)
- Pholcus debilis*: Cameroon, Southwest Region, 1.4 km NE Etome (CAS)
- Pholcus soukous*: Congo D.R., Kongo Centrale Prov., Luki Forest Res. (MRAC)
- Pholcus taarab*: Tanzania, Tanga Prov., Mazumbai (ZMUC)
- Pholcus kwamgumi*: Tanzania, Tanga Prov., Kwamgumi Forest Reserve (ZMUC)
- Pholcus gracillimus*: Java, Jawa Barat, Cibodas (RMNH)
- Pholcus bicornutus*: Philippines, Luzon, Montealban Cave (MHNG)
- Pholcus arayat*: Philippines, Calabarzon, Mt. Maquililing (AMNH)
- Pholcus pagbilao*: Philippines, Luzon, Calabarzon, Pagbilao (MHNG)
- Pholcus ancoralis*: Fiji, Vanua Levu (QMB)
- Pholcus karawari*: Papua New Guinea, East Sepik Province, and Indonesia, Papua Prov. (RMNH, AMNH)
- Pholcus opilionoides*: Austria, Upper Austria, nr. Frauenstein (ZFMK)
- Pholcus genuiformis*: Algeria, Wilaya Bouira (SMF) and Wilaya Tlemcen (IRSB)
- Pholcus spiliensis*: Greece, Crete, Chania, Frangokastello (MHNG)
- Pholcus crassipalpis*: Ukraine, Crimea, Karadag Nature Reserve (ZFMK)
- Pholcus nenjukovi*: Tajikistan, Gorno-Badakhshan Prov., Kalaikhum (ZIN)
- Pholcus afghanus*: Afghanistan, Kabul (MHNG, coded according to data in Senglet 2008)
- Pholcus sogdiana*: Kyrgyzstan, Jalal-Abad Region, Dzhahalal-Abad (ZMMU)
- Pholcus kamkaly*: Kazakhstan, South Kazakhstan Region, Kyzylkum desert (ZMMU)
- Pholcus crypticolens*: Japan, Miyagi Pref., Lake Izunuma, Hazama-cho (ZFMK)
- Pholcus spilis*: China, Hunan Prov., Dao County (MHBU)
- Pholcus manueli*: USA, New Jersey, Mendham (AMNH)
- Pholcus fuerteventurensis*: Spain, Canary Islands, Fuerteventura, Barranco de los Molinos (SMF)
- Pholcus armeniacus*: Iran, West Azarbaijan Prov., Mākū (MHNG)
- Pholcus phalangioides*: Germany, Bonn (ZFMK)
- Pholcus medog*: China, Tibet, Medog County (MH-BU, female coded according to data in Zhang *et al.* 2006)
- Pholcus muralicola*: USA, Kansas, Douglas Co., Univ. Kansas Nat. Hist. Res. (SEMK)
- Pholcus kingi*: USA, Tennessee, "Thumping Dick I" (AMNH)
- Pholcus dade*: USA, Georgia, Dade Co., Sitton's Gulf (USNM)
- Pholcus calligaster*: Myanmar, Magway Division, Shwe Setraw Wildlife Res. (CAS)
- Pholcus djelalabad*: India, Himachal Pradesh, above Patlikuhl Town (ZFMK)
- Pholcus fragillimus*: Sri Lanka, Central Province, Kandy District (RMNH)
- Pholcus bidentatus*: China, Sichuan Prov., Mt. Emei (SMF)
- Pholcus namkhan*: Laos, Luang Prabang Province, Ban Keng Koung (SMF)
- Pholcus wuyiensis*: China, Fujian Prov., Wuyishan County, Mt. Wuyi (MHBU)
- Pholcus nagasakiensis*: Japan, Okinawa Island (ZFMK, AMNH)
- Pholcus taibaiensis*: China, Shaanxi Prov., Mt. Taibai (SMF)
- Pholcus qinghaiensis*: China, Qinghai Prov., Huangzhong County (MHBU)
- Pholcus yichengicus*: China, Shanxi Prov., Yicheng County (MHBU)
- Pholcus parayichengicus*: China, Henan Prov. (MHBU, coded according to data in Zhang & Zhu 2009a)
- Pholcus taishan*: China, Shandong Prov., Tai'an City, Mt. Taishan (MHBU)
- Pholcus linzhou*: China, Hebei Prov., Wu'an County, Liejiang Town (MHBU)
- Pholcus alloctospilus*: China, Hebei Prov., Lingshou County, Mt. Manshan (MHBU)
- Pholcus pennatus*: China, Hebei Prov., Zhanhuang County (IZCAS)
- Pholcus montanus*: South Korea, Gangwon-do, Pyeongchang-gun, Mt. Odae (ZFMK)
- Pholcus woongil*: South Korea, Gyeonggi-do, Mt. Woongil (ZFMK)
- Pholcus gosuensis*: South Korea, Chungcheongbuk-do, Danyang-gun (BMNH; coded according to data in Kim & Lee 2004)
- Pholcus phungiformes*: Russia, Maritime Territory, Lazovsky Nat. Res. (ZFMK)

## 8. APPENDIX 3. Characters scored

## PROSOMA

1. Carapace median indentation (fovea): (0) present; (1) absent. In the present matrix, all taxa except *Smeringopina* sp. have an evenly domed carapace without median indentation (e.g., Figs. 164, 1567). This condition is considered derived, independent from the very similar domed carapace of *Ninetinae* where it might be plesiomorphic (Huber 2000).
2. Carapace with two to three pairs of lateral marks: (0) absent; (1) present. In the present matrix, only the *Pholcus opilionoides* species group is characterized by such a carapace pattern (e.g., Fig. 1522). It evolved independently at least in *Physocyclus*, *Modisimus*, and *Smeringopus*.
3. Eye triads on long stalks (at least twice as long as wide): (0) absent; (1) present. In the present sample of taxa, long eye stalks have apparently evolved several times independently, i.e. within *Leptopholcus*, in *Panjange* and related taxa tentatively assigned to *Pholcus* (*Ph. ethagala* and *Ph. minang* species groups), and in the *Pholcus debilis* species group (e.g., Figs. 405, 441, 632, 702, 763). *Ossinissa* has slightly shorter stalks. Outside the *Pholcus* group of genera, such eye stalks do not seem to occur.
4. Pointed process from near PME: (0) absent; (1) present. Pointed processes arising from beside the PME occur in certain species of *Panjange* and of two species groups tentatively assigned to *Pholcus* (*Ph. minang* and *Ph. ethagala* species groups) (Figs. 632, 680, 702, 799). The analyses using equal and successive character weighting suggest these are three independent origins, but the analyses using implied weighting at  $K=1-2$  suggest a single origin of such processes, uniting the three taxa (see discussions of relationships in individual species groups).
5. Ocular area flat: (0) no; (1) yes. Usually, the entire ocular area of pholcids is at least slightly elevated. In *Micromerys* and *Calapnita* the ocular area is extremely flat (e.g., Figs. 164, 177), which is here considered to have evolved independently in the two genera in all analyses.
6. Small pointed apophyses between eye triads: (0) absent; (1) present. Such apophyses are distinctive of *Pholcus ancoralis* and its closest relatives (Figs. 1386, 1493). They are here considered non-homologous to the rounded and sculptured apophyses of the *Pholcus calligaster* species group (char. 7) and non-homologous to the apophyses provided with hairs in the *Pholcus bicornutus* species group (char. 9).
7. Rounded and sculptured horns between eye triads: (0) absent; (1) present. Such horns characterize *Pholcus calligaster* and its closest relatives (Figs. 2001-2003).
8. Brush of hairs between eye triads: (0) absent; (1) present. Only *Pholcus halabala* and *Ph. sepaku* are known to share such brushes of short, spine-like hairs between the eye triads.
9. Brush of hairs on apophyses between eye triads: (0) absent; (1) present. These apophyses with brushes of hairs (Figs. 1565, 1566) are the synapomorphy of the *Pholcus bicornutus* species group.
10. Clypeus median horn: (0) absent; (1) present. In the present sample of taxa, a median process on the clypeus (Figs. 211, 290, 293) is synapomorphic for a group of African *Leptopholcus* species, including the type species *L. signifer*. Modifications of the clypeus have evolved several times independently in Pholcidae (Huber 2000: 14), but only rarely in *Pholcus* (*Ph. nkoetye*, *Ph. debilis*, *Ph. gui*) and related taxa (only *Leptopholcus*).

## LEGS

11. Leg spots: (0) absent; (1) present. Numerous spots on the legs (especially on the femora) are distinctive of *Pholcus crypticolens* and its closest relatives. Similar spots occur independently in *Leptopholcus gracilis*; spots of a different shape (rather thin lines) occur in *Holocnemus* and *Crossopriza*.
12. Tarsus 4 comb-hairs: (0) *Belisana*-type; (1) *Pholcus*-type. Two types of tarsal comb-hairs occur in Pholcidae (Huber & Fleckenstein 2008): complex ones (three rows of tines) and simple ones (only one row of a few tines). The simple *Pholcus*-type of comb-hair (e.g., Figs. 96, 145, 364, 458) is a synapomorphy of the ten genera treated herein, the *Pholcus* group of genera.

## ABDOMEN

13. Abdomen dorsal transversal mark: (0) absent; (1) present. A small transversal mark on the anterior half of the abdomen (e.g., Figs. 1054, 1057, 1065) characterizes the *Pholcus lamperti* species group.

14. Abdomen dorsal rectangular marks: (0) absent; (1) present. A distinctive pattern of rectangular elements (e.g., Figs. 826, 827, 830, 833) characterizes the *Pholcus chappuisi* species group.
15. Abdomen ventral dark band with median constriction: (0) absent; (1) present. A dark band that is constricted medially (e.g., Figs. 1044, 1049, 1052) is characteristic of the *Pholcus guineensis* species group.

#### MALE CHELICERAE

16. Chelicerae lateral apophyses: (0) present; (1) absent. Lateral cheliceral apophyses (e.g., Fig. 1127) are a synapomorphy of Pholcinae and thus plesiomorphic for the taxa considered herein. However, they have been lost repeatedly: within the *Pholcus chappuisi* species group (Fig. 861), in the *Pholcus kerinci* species group (Fig. 722), and in a few taxa not included in the data matrix (e.g., *Pholcus satun*, *Ph. mecheria*). In some species, the lateral apophyses are here interpreted to have moved to a more frontal position (*Panjange lanthana*, *Pholcus chiangdao*, *Pholcus ethagala* species group; Figs. 438, 549, 816).
17. Chelicerae lateral apophyses position: (0) proximal; (1) distal, pointing upwards; (2) distal, pointing laterally. Originally, the lateral cheliceral apophyses are in a proximal position (e.g. Fig. 1127). In *Pebrforsskalia*, *Leptopholcus*, and *Micromerys* these apophyses are in a distal position and point upwards (e.g., Figs. 78, 303, 423). In some species of *Calapnita*, these apophyses are in a distal position and point in a lateral direction, or even slightly downwards (Figs. 142, 155).
18. Chelicerae proximal frontal apophyses: (0) absent; (1) present. Proximal frontal apophyses (e.g., Figs. 1241, 1866) on the male chelicerae characterize a large group of *Pholcus*, including the type species and several other species groups. They are here considered to have evolved independently in *Micropholcus* (Fig. 85).
19. Chelicerae proximal frontal apophyses size: (0) regular (about same size as lateral apophyses); (1) very large (much larger than lateral apophyses). Very large proximal frontal apophyses or processes on the male chelicerae are a synapomorphy of *Pholcus bourgini* and *Ph. chattoni* (Figs. 1127, 1142). A similar morphology in *Ph. strandi* (Figs. 882, 883) is here considered to have evolved independently.
20. Chelicerae distal apophyses: (0) present; (1) absent. Distal cheliceral apophyses (usually close to the median pointed lamina; e.g. Fig. 1127) are plesiomorphic for the taxa considered herein, but have been lost at least twice: (1) in a large clade including *Leptopholcus* (only 'true', Old World *Leptopholcus*), *Micromerys*, *Panjange* (with a dubious regain), and two species groups tentatively assigned to *Pholcus* (*Ph. kerinci* and *Ph. ethagala* species groups); (2) in certain species of the *Pholcus chappuisi* group. However, in the analyses using implied character weighting at K=1-2, these apophyses are lost independently in *Leptopholcus* + *Micromerys*, within *Panjange*, and in the *Pholcus ethagala* species group. Moreover, other taxa not included in the matrix also lack these apophyses (e.g., *Pholcus satun*, *Ph. mecheria*), suggesting even more independent reductions.
21. Chelicerae distal apophyses division: (0) absent; (1) with small pointed proximal apophysis; (2) with large rounded apophysis behind main apophysis; (3) with weakly sclerotized proximal process. Usually, the distal apophyses are undivided (e.g., Fig. 1127), but several different kinds of division occur that are here considered non-homologous. A small pointed apophysis proximal to the main apophysis (state 1) unites *Pholcus circularis* and *Ph. batepa* (Fig. 991), and (independently) *Ph. zham* and *Ph. medog* (Figs. 1866, 1874). A large rounded apophysis behind the main apophysis (state 2) characterizes the *Pholcus minang* group (Figs. 629, 640, 656, 664) but also occurs in certain species of *Panjange* (Figs. 472, 476). This character state unites *Panjange* with the *Pholcus ethagala* and *Ph. minang* groups in all analyses using implied character weighting. Finally, a weakly sclerotized proximal process (state 3) unites *Calapnita vermiformis* and *C. saluang* (Figs. 142, 155, 161).
22. Chelicerae third pair of frontal apophyses: (0) absent; (1) present. A third pair of frontal apophyses that does not appear derived from subdivision of the distal apophyses (cf. char. 21) is a synapomorphy of the *Pholcus calligaster* species group (e.g., Figs. 1998, 2019, 2024).

#### MALE PALP

23. Palp shape: (0) regular; (1) strongly elongated, including patella ventrally. Strongly elongated male palps (e.g., Figs. 437, 460, 465) unite two species groups within the genus *Panjange*.
24. Trochanter retrolatero-ventral apophysis: (0) absent; (1) present. A retrolatero-ventral trochanter apophysis (sometimes rather ventral, sometimes rather retrolateral; e.g. Figs. 824, 848) is a synapomorphy of Phol-

- cinæ and thus plesiomorphic for the taxa considered herein. However, its absence unites two species groups within the genus *Panjange*. The fact that these same species are characterized by a retrolatero-dorsal trochanter apophysis (char. 27) suggests that the apophysis might just have shifted its position.
25. Trochanter retrolatero-ventral apophysis tip: (0) not serrated; (1) serrated. A serrated tip of the trochanter apophysis (e.g., Figs. 294, 387) unites the genera *Leptopholcus* and *Micromerys*.
  26. Trochanter apophysis arising from retrolateral trochanter-femur joint: (0) absent; (1) present. A sclerotized apophysis arising from the trochanter-femur joint (e.g., Figs. 325, 329, 332; clearly visible in dorsal or ventral views only) characterizes 'true' (Old World) *Leptopholcus*. The cladistic analysis using equally weighted characters suggests it was lost in *Micromerys*, but in the analysis using successive character weighting this character supports the monophyly (rather than paraphyly) of Old World *Leptopholcus* (Fig. 27).
  27. Trochanter retrolatero-dorsal apophysis: (0) absent; (1) present. Retrolatero-dorsal apophyses on the palpal trochanter (Figs. 437, 460, 465) unite two species groups within the genus *Panjange*. They may actually have shifted from a more ventral or retrolateral position and be homologous to the ubiquitous retrolatero-ventral apophyses (see char. 24).
  28. Femur ventral protuberance directed proximally: (0) absent; (1) present. Such protuberances of the femur occur in the *Pholcus minang* species group (Figs. 650, 658) and in the *Ph. ethagala* species group (Figs. 794, 810). The cladistic analyses using equal and successive character weighting suggest they evolved independently in both groups, while all analyses using implied character weighting suggest a single origin, uniting the two species groups (with the exception of *Ph. atrigularis* and *Ph. diopsis* at  $K = 1-2$ ).
  29. Femur ventral 'serration', i.e. series of apophyses: (0) absent; (1) present. This distinctive modification (Figs. 139, 153) unites *Calapnita vermiformis* and *C. saluang*.
  30. Femur ventral finger-shaped apophysis: (0) absent; (1) present. A distinctively finger-shaped apophysis (Figs. 470, 490) is a synapomorphy of the *Pa. nigrifrons* group within *Panjange*.
  31. Femur ventral anvil-shaped protuberance: (0) absent; (1) present. This distinctive modification of the palpal femur (e.g., Figs. 2018, 2023) is a synapomorphy of the *Pholcus calligaster* species group.
  32. Tibial ventral modification: (0) absent; (1) present. A ventral modification of the palpal tibia (e.g., Figs. 2178, 2201, 2229) unites a large clade of East Asian *Pholcus* (*Ph. yichengicus*, *Ph. taishan*, and *Ph. phungiformes* species groups).
  33. Tibia dorsal trichobothrium: (0) proximal; (1) distal (beyond middle). A very distal dorsal trichobothrium (arrows in Figs. 720, 737) is a synapomorphy of the *Pholcus kerinci* species group. It occurs independently in the outgroup taxon *Quamtana merwei* (in the analyses using implied character weighting at  $K=1-2$  this is actually used to unite the two taxa).
  34. Tarsus dorsal elongation: (0) absent; (1) present. Such a dorsal elongation of the palpal tarsus has evolved several times convergently within the taxa considered herein (e.g., Figs. 379, 437, 460, 531, 655, 794, 815) but it is rare within the core group of *Pholcus* where it unites three species groups in all analyses (*Ph. calligaster*, *Ph. bideniatus*, and *Ph. nagasakiensis* species groups; e.g., Figs. 1981, 2018, 2036, 2079).
  35. Procurus ventral 'knee': (0) absent; (1) present. A ventral, usually heavily sclerotized knee-like element of the procurus (e.g., Figs. 1304, 1837) is here considered a synapomorphy of most of the genera of the *Pholcus* group (all except *Micropholcus*, *Pehrforsskalia*, and *Sihala*). In two species groups in the genus *Panjange* this structure is considered secondarily absent (Figs. 437, 460, 465).
  36. Process arising from procurus ventral 'knee': (0) absent; (1) membranous; (2) sclerotized. A membranous process arising from the procurus 'knee' (Figs. 284, 302, 371, 432) characterizes 'true' (Old World) *Leptopholcus* and *Micromerys*. A sclerotized process (Figs. 990, 996) unites *Pholcus circularis* and *Ph. batepa*.
  37. Procurus parallel ridges: (0) absent; (1) present. These distinctive ridges (e.g., Figs. 436, 445, 464, 479) are the only known synapomorphy of the genus *Panjange*. Similar structures are otherwise known only in the distantly related genus *Metagonia* (Huber 2000, figs. 235-237).
  38. Procurus spines in dorsal/prolateral position: (0) absent; (1) present. Such spines (e.g., Figs. 1685, 1982, 2184, 2265) characterize a large clade within the core group of *Pholcus*. However, the spines have been reduced in some taxa (*Ph. yeongwol*, *Ph. beijingensis*, *Ph. lanieri*), and it remains unclear whether the rare occurrences outside this clade (in *Ph. kakum*, *Ph. lualaba*, *Ph. creticus*, *Ph. berlandi*), result from convergent evolution or from misplacement of the respective species.

39. Procrurus ventral spines: (0) absent; (1) present. Ventral spines on the procrurus (Fig. 2250) unite *Pholcus phungiformes* and *Ph. gosuensis*.
40. Procrurus ventral hinged process: (0) absent; (1) largely attached to main branch; (2) largely detached. A ventral hinged process that is largely attached to the main branch (state 1) is a synapomorphy of the *Pholcus taarab* species group (Figs. 1277, 1283, 1299). A much longer and largely detached hinged process (state 2) is a synapomorphy of *Micromerys* (Figs. 421, 432). A very similar structure occurs in the distantly related genus *Metagonia* (Huber 2000).
41. Procrurus prolateral fringed process: (0) absent; (1) present. A membranous fringed process prolaterally on the procrurus (e.g., Figs. 2078, 2086) is a synapomorphy of the *Pholcus nagasakiensis* species group.
42. Procrurus size: (0) regular (as long as or longer than palpal femur); (1) small (shorter than palpal femur) and simplified. A small and simplified procrurus (Fig. 104) is a synapomorphy of the new genus *Sihala*.
43. Procrurus dorsal flap: (0) absent; (1) present. A weakly sclerotized dorsal flap on the procrurus (Figs. 535, 536, 538) unites *Pholcus halabala* with its closest relatives. A similar structure is otherwise only known from some distantly related Ninetinae (*Guaranita*, *Galapa*; Huber 2000).
44. Procrurus retrolateral membranous process: (0) absent; (1) present. A small but distinctive retrolateral membranous conical process (e.g., Figs. 2036, 2041) characterizes the core-group of the *Pholcus bidentatus* species group.
45. Procrurus strongly bifid in dorsal view: (0) no; (1) yes. A strongly bifid procrurus unites *Pholcus opilionoides* and *Ph. genuiformis*.
46. Bulb retrolateral protuberance: (0) absent; (1) present. A distinctive protuberance of the bulb near the base of the embolus (Figs. 2206, 2208, 2210) is a synapomorphy of the *Pholcus taishan* group.
47. Embolus enlarged and flattened: (0) no; (1) yes. A large, flat, and partly sclerotized embolus unites the Australian representatives of the genus *Micromerys* (e.g., figs. 302, 313, 316 in Huber 2001).
48. Uncus: (0) absent; (1) present. The uncus is a distinctive bulbal process (e.g., Figs. 301, 673, 968, 1677) that unites most genera of the *Pholcus* group (except *Micropholcus* and *Sihala*). Its absence in *Panjange* and closely related taxa (*Pholcus ethagala* and *Ph. kerinci* species groups) is considered secondary by most analyses (only under implied weights at  $K=3-6$ , the uncus is considered absent in the common ancestor of these three taxa, requiring a dubious regain in the *Ph. minang* group). Secondary absence is probably also the case in some further taxa not included in the data matrix (*Ph. leruthi*, *Ph. guineensis* and close relatives). It must be emphasized that the homology of the bulbal processes remains unclear in some taxa (*Calapnita*, *Micromerys*).
49. Uncus semi-transparent dorsal flap: (0) absent; (1) present. A small semi-transparent flap dorsally on the uncus (e.g., Figs. 627, 637) unites three species of the *Pholcus minang* group (*Ph. minang*, *Ph. singalang*, *Ph. hurau*).
50. Uncus distally transparent and slender: (0) no; (1) yes. A very simple uncus that is partly membranous (e.g., Figs. 149, 182, 189) is a synapomorphy of *Calapnita*. It is not clear if such an uncus shape is primitive or derived.
51. Uncus scales: (0) small or absent; (1) large. The uncus is usually provided with numerous small scales or tiles (e.g., Fig. 1290, 1843, 1904). Larger (and fewer) scales, especially along the rim of the uncus (e.g., Figs. 1980, 1990, 2005) are a synapomorphy of the *Pholcus calligaster* species group.
52. Uncus ventral process ('pseudo-appendix'): (0) absent; (1) present. Several species within the *Pholcus phungiformes* group have apparently regained an appendix. However, this structure does not seem to arise from the bulb like a true appendix but rather from the uncus (Figs. 2263, 2280). In some species, the pseudo-appendix may even be bifid (e.g., *Ph. exilis*, *Ph. wuling*, *Ph. chicheng*) but the homology of the two processes requires further study (in the original descriptions of these species the structures were considered an appendix and a process of the uncus; Tong & Li 2010).
53. Appendix: (0) present; (1) absent. The bulbal process traditionally called appendix (in *Pholcus*) is here considered to be homologous with the single (unnamed) bulbal apophysis of other pholcids. It is thus plesiomorphic within the taxa considered herein, but has been reduced several times convergently: (1) in *Calapnita vermiformis* + *C. saluang*; (2) in most species of the *Pholcus minang* species group; (3) in certain East Asian representatives of *Leptopholcus* and in *Micromerys* (suggesting paraphyly of *Leptopholcus*); (4) in *Pholcus bicornutus*; (5) in the *Pholcus phungiformes* species group (see char. 52).



54. Appendix basal transparent lobe: (0) absent; (1) present. A transparent lobe at the basis of the appendix (Figs. 1600, 1602) unites *Pholcus crassipalpis* and *Ph. spiliensis*.
55. Appendix small spine: (0) absent; (1) present. A small spine-like process on the appendix unites all Caribbean species of 'Leptopholcus' (Huber 2000: figs. 293, 298, 300, 304).
56. Appendix forked: (0) no; (1) yes. A forked appendix (two main parts; Figs. 793, 805) unites the two Sri Lankan representatives of the *Pholcus ethagala* species group (*Ph. ethagala*, *Ph. maturata*). A forked appendix also occurs in certain *Leptopholcus* species not included in the data matrix (Figs. 339, 349) and in several pholcids outside the *Pholcus* group of genera (e.g., *Smeringopus*; also in the outgroup taxon *Quamtana merwei*).
57. Appendix branch: (0) absent; (1) present. A branched appendix (main part with smaller branch; e.g., Figs. 1838, 2086) characterizes several species groups in the core group of *Pholcus*. The branch seems to have been lost secondarily in the *Pholcus taishan* species group.
58. Branched appendix with additional process: (0) no; (1) yes. All species of the *Pholcus kingi* species group (except *Ph. muralicola*) share a distinctive appendix made of three branches (Figs. 1878-1886).
59. Appendix flat and twisted: (0) no; (1) yes. A flat and slightly twisted appendix (Figs. 1691, 1693, 1695) is characteristic of the *Pholcus ponticus* species group.
60. Appendix serrated, large: (0) absent; (1) present. A distinctively serrated appendix (Figs. 170, 189, 202) is considered a synapomorphy of *Calapnita* (note, however, that the appendix is reduced in some species).
61. Appendix membranous lobe: (0) no; (1) yes. In the *Pholcus chappuisi* species group, the appendix is reduced to a membranous lobe or a thin membranous flap (Figs. 854, 869, 886). A similar situation occurs independently in some species of the *Ph. phungiformes* species group (e.g., Fig. 2259).
62. Appendix shape like 'reversed uncus': (0) no; (1) yes. In the *Pholcus ethagala* species group, two of the Malayan species (*Ph. ledang*, *Ph. gombak*) share a huge semicircular appendix that reminds of a reversed uncus (Figs. 814, 819).
63. Appendix large transversal sclerite: (0) absent; (1) present. In the *Pholcus crypticolens* species group, the appendix appears T-shaped, with a large transversal distal element (Figs. 1709, 1727, 1729, 1742).

#### FEMALE GENITALIA

64. Epigynum 'knob': (0) absent; (1) present. A knob-shaped structure on the epigynum unites all the genera of the ingroup, the *Pholcus* group of genera. It is rarely reduced, especially in taxa that have lost the distal male cheliceral apophyses that are known to interact with the epigynal 'knob' (Huber 1995, 2002, Uhl et al. 1995).
65. Epigynum knob arising from sclerotized plate: (0) absent; (1) distinct. In the plesiomorphic condition, the epigynal 'knob' arises from a slightly sclerotized area (e.g., Figs. 48, 62, 622). The core-group of *Pholcus* is characterized by a more heavily sclerotized plate from which the 'knob' arises (e.g., Figs. 1079, 1543, 1954). This is rarely reversed (e.g., in the *Pholcus kingi* species group).
66. Epigynum plate central whitish area: (0) absent; (1) present. Most representatives of the *Pholcus phungiformes* species group share a whitish area (or pair of areas) on the epigynal area (e.g., Figs. 2143, 2159).
67. Epigynum 'knob' length: (0) short; (1) long. A long epigynal 'knob' (rather a 'scape') unites the *Pholcus taishan* species group with some but not all representatives of the *Ph. yichengicus* species group (suggesting parphyly of the latter; Figs. 2203, 2214). It evolved independently in *Ph. elongatus* (Figs. 545, 546).
68. Epigynum concertina-like elongation: (0) absent; (1) present. A concertina-like elongation of the epigynum (Figs. 439, 462, 466) unites two species groups in the genus *Panjanje* (*Pa. lanthana* and *Pa. cavicola* species group).
69. Thick structure around pore plate: (0) absent; (1) present. A thick structure surrounding the pore plates in the female internal genitalia (e.g., Figs. 2090, 2095) characterizes the core group of the *Pholcus nagsakiensis* species group.
70. Internal female genitalia paired median lobes: (0) absent; (1) present. A pair of frontal lobes medially in the internal female genitalia (Fig. 1641) is a putative synapomorphy of the *Pholcus nenjukovi* species group.

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BONNER ZOOLOGISCHE MONOGRAPHIEN Nr. 58, 2011

Editor: Karl-L. Schuchmann

Zoologisches Forschungsmuseum Alexander Koenig (ZFMK)

Ornithologie

Adenauerallee 160, D-53113 Bonn, Germany

Druck: **JF CARTHAUS BONN**

ISBN-13: 978-3-925382-62-8

ISSN 0302-671X