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A Remarkable New Genus and New Species of the Plant Bug (Heteroptera: Miridae: Phylinae), Inhabiting Psyllid Leaf Margin Roll Gall on Indian Banyan, *Ficus benghalensis*

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ABSTRACT

A new genus and new species of the plant bug, *Chimairacoris lakshmiae* Yasunaga, Schuh, and Cassis are described from Bangalore, India. This morphologically and ecologically specialized mirid belongs to the subfamily Phylinae on the basis of genitalic structures and is currently considered best placed in the subtribe Oncotylina of the tribe Phylini. Its morphological convergence with termatophyline mirids and placement within the Phylinae are discussed. It is associated with psyllid leaf galls on Indian banyan, *Ficus benghalensis*. The gall-producing psyllid, *Trioza* sp., and a mealybug, *Phenacoccus parvus*, are confirmed as prey of this unique mirid. A similar phenomenon observed in some *Montandoniola* spp. (Anthocoridae) and *Fingulus* species (Miridae: Deraeocorinae), which are associated with thrips species of the genus *Gynaikothrips* (Thysanoptera: Tubulifera) on *Ficus microcarpa*, is also documented.

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INTRODUCTION

This work reports the discovery of a morphologically and ecologically remarkable plant bug, representing a new genus and a species of the subfamily Phylinae from Bangalore, South India. Although the external appearance of this mirid resembles that of members of the tribe Termatophylini (Deraeocorinae), the male and female genitalic structures unequivocally place it in the Phylinae. Furthermore, the shape of the external metathoracic scent-efferent system is very similar to that found in certain species of Anthocoridae and the rather toughened body with the shortened legs and expanded abdomen beyond the corial margin is structurally similar to that seen in the Thaumastocorinae. The nymphal stages are also specialized, and have rhyparochromid-like facies (Lygaeoidea) because of their red and black coloration.

The new species can be found inside of leaf-margin roll galls produced by a psyllid (*Trioza* sp.) on the Indian banyan (*Ficus benghalensis* L.). The mirid was observed to prey not only on the psyllid but also on a mealybug, *Phenacoccus parvus* Morrison, which often cooccurs on the same individual banyan tree. Because of its unusual, concealed habitat preference, such a conspicuous bug, in spite of existing so close to humankind, had been ignored until very recent field investigations discovered it.

We herein describe a new genus, *Chimairacoris,* to accommodate this peculiar, predaceous, new mirid species. We discuss its suprageneric position, offering reasons why we place it in the tribe Phylini of the Phylinae. The similarity of habitat and food preferences with those observed in species of the genus *Montandoniola* (Anthocoridae) and *Fingulus* spp. (Miridae: Deraeocorinae) is also discussed.

MATERIALS AND METHODS

All examined specimens were collected by P.J. and her colleagues, who also made all of the field observations. Type materials are deposited in the following collections:

AMNH	American Museum of Natural History, New York
NBAIR	National Bureau of Agricultural Insect Resources, Bangalore, India
NPC	National Pusa Collection, Indian Agricultural Research Institute, New Delhi
TYCN	T. Yasunaga collection, Nagasaki, Japan
UASB	University of Agricultural Sciences, Bangalore
UNSW	University of New South Wales, Sydney, Australia

Matrix-code labels are attached to most adult specimens, which uniquely identify those specimens, and are referred to as unique specimen identifiers (USIs). The USI codes (e.g., AMNH_PBI 012345) comprise a data set code (AMNH_PBI) and a unique specimen number (e.g., 012345). These data were digitized on the Planetary Biodiversity Inventory instance of the Arthropod Easy Capture database of the AMNH (http://research.amnh.org/pbi/) and are distributed online (http://www.discoverlife.org and http://research.amnh.org/pbi/heteropteraspeciespages).

All measurements are in millimeters. Terminology of the genitalia follows Cassis (2008), Schuh (2006) and Yasunaga (2010). The latest tribal classification system of the Phylinae by Schuh and Menard (2013) is employed.

***Chimairacoris* Yasunaga, Schuh, and Cassis**, new genus

Figures 1–6

Type Species: *Chimairacoris lakshmiae* Yasunaga, Schuh, and Cassis, n. sp., by original designation.

Diagnosis: *Chimairacoris* is distinguished from other genera of Phylinae by the following characters: termatophyline or anthocoridlike habitus, parallel-sided body, 3.5 mm in total length; generally fuscous coloration; densely distributed, erect, stout, short, black vestiture; very short antenna, labium, and legs; and widened lateral margin of abdomen beyond straight corial margin.

Description: Body mostly fuscous, elongate, parallel sided, moderate in size (among Phylinae), with densely distributed, stout, erect, short, black setae, absence of scalelike or silvery setae throughout, absence of sexual dimorphism; and dorsal surface weakly shining, minutely punctate or rugose (figs. 1A, 2A). **Head:** Short and oblique, porrect, pointed toward clypeal apex as in termatophylines/anthocorids, with densely distributed, simple, reclining setae (figs. 1A, 2A), but labium inserted ventrally on head rather than apically as in Anthocoridae and most other Cimicoidea; eye small, removed from anterior margin of pronotum, lacking sensory setae, and with ommatidia generally flat and rather irregularly arranged near eye margin (fig. 3A); vertex weakly carinate posteriorly; buccula narrow. **Antenna:** Short, segment I very short, as broad as long; segment II spindle shaped; segment III somewhat clavate, subequal in length to apically pointed IV. **Labium:** Short, not exceeding middle of procoxa; segment I very short, about as long as antennal segment I, almost completely retractable under clypeus; segments II and III rather widely cleft proximally; segment IV blunt apically (figs. 2A, B, 3A). **Thorax:** Pronotum weakly rugose, campanulate, with lateral margins carinate on anterior half and with posterior margin deeply concave; calli weakly swollen; propleuron covering almost entire procoxa (fig. 2B); mesoscutum largely exposed; scutellum somewhat produced, flattened medially; propleuron shiny, weakly punctate. **Metathoracic scent efferent system:** Very similar in general shape to those in anthocorids (e.g., tribe Oriini); median part without pore, forming “median suture” (sensu Yasunaga, 1997) between evaporative areas (figs. 3B, 4A). **Hemelytron:** Shining, generally flat, narrower than abdomen in dorsal view; corial margin straight; cuneus distinct; membrane with two cells. **Legs:** Very short; pro- and metafemora broadened, with acute spines along anterior margin (figs. 3C, 4B); mesofemur more slender and smooth; protibia with two (ventral and dorsal) rows of dark, minute spines (fig. 2B); metatibia subequal in length to metafemur (fig. 4B); metafemur with robust spines along anterior and posterior margins; tarsomere III of all legs long, broadened towards apex, about as long as combined length of tarsomeres I+II; claws generally broad, strongly toothed at base(figs. 3D, E, 4C); parempodia flattened, ribbonlike, symmetrically developed (figs. 3E, 4C); pulvillus developed, triangular, situated on basal tooth of claw(figs. 3D, 4C). **Abdomen:** Wider than hemelytron, lateral margin of each segment developed, expanding beyond corial

FIG 1. **A.** Dorsal habitus of *Chimairacoris lakshmiae*, adult. **B.** Same, fifth instar nymph. **C.** Eggs, chorion exposed on gall surface. **D.** Eggs laid in a gall. **E.** *Ficus benghalensis*, leaf-margin roll gall. **F.** *Chimairacoris lakshmiae*, adult female on a gall. **G.** A gall-making psyllid, *Trioza* sp., aggregation of immature forms and damaged leaf. **H.** *Trioza* sp., adult. **I.** A mealybug, *Phenacoccus parvus* Morrison, female.

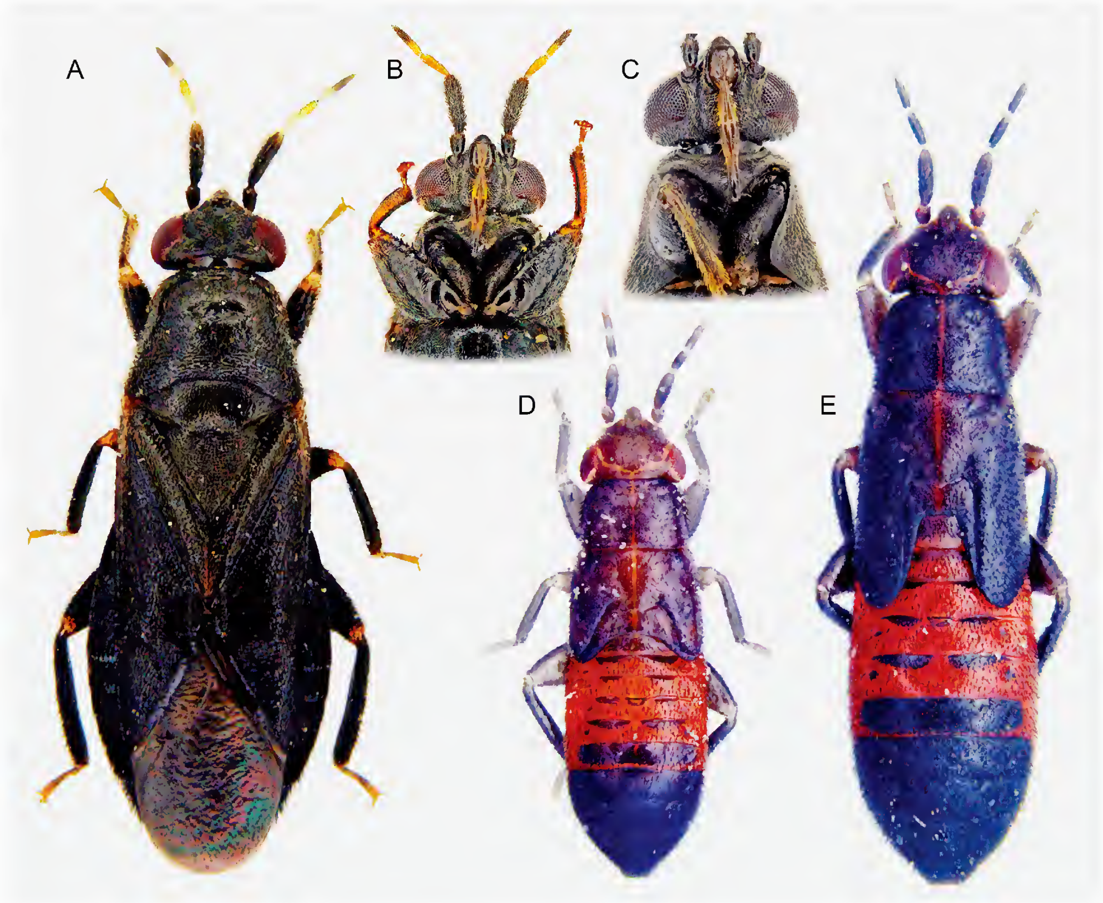

FIG. 2. Habitus images of *Chimairacoris lakshmiae*. **A.** Adult, dorsal habitus. **B.** Head and thorax in ventral view. **C.** Head and thorax in ventral view. **D.** Third instar nymph. **E.** Final (fifth) instar nymph.

margin (figs. 1A, 2A). **Male genitalia** (fig. 5): Phyline type (see Discussion); phallotheca L-shaped, narrowed apically (fig. 4D), with basal portion attached to interior of posteroventral wall of pygophore (pygophore split in fig. 5 because of slide preparation); endosoma J-shaped, slender, somewhat twisted subapically, with developed secondary gonopore and long, slender, dentate apical appendages (fig. 4E); right and left parameres typical of Phylinae. **Female genitalia** (fig. 5): Vestibular sclerites asymmetrical, enlarged, projecting to right hand side; seminal depository large; sclerotized rings distinctly rimmed, ovoid; interramal sclerite thin; ramus toughened, with an inner, triangular process anterodorsally.

ETYMOLOGY: From Greek (mythology), *Chimaira* (Χίμαιρα = chimera, a fictitious animal composed of lion head, goat body, and dragon tail) combined with *coris* (κόρις = bug), referring to its nearly termatophyline body shape, with anthocorid-shaped metathoracic scent efferent system, typical phyline-type genitalia, and rhyparochromid-like coloration in immature forms; gender masculine.

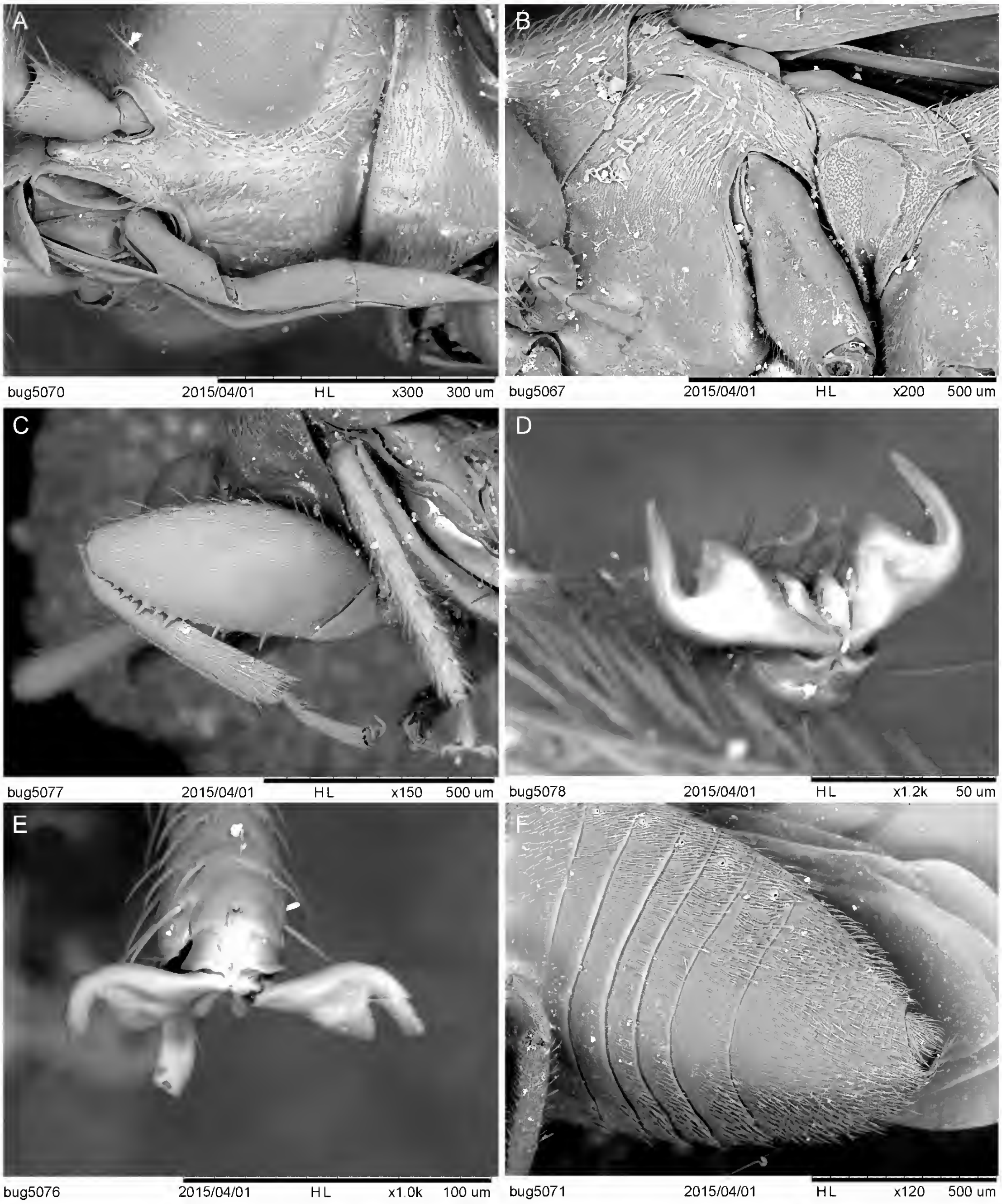

FIG 3. Scanning electron micrographs for *Chimairacoris lakshmiae*. **A.** Head, left ventrolateral view. **B.** Thoracic pleura, left lateral view. **C.** Profemur. **D, E.** Pretarsus. **F.** Male abdomen (sternum).

DISCUSSION. This remarkable new genus is readily distinguished from all other phyline genera by the characters listed above. We regard its flattened body and short appendages as adaptations for inhabiting narrow spaces in leaf roll galls (see species description for biology).

The following structural features found in *Chimairacoris* are unusual in the Miridae but (sometimes commonly) known in other family groups: scent-efferent system as in figures 3B and 4A, without noticeable pore, cleft, or concave gland opening (most similar to Anthocoridae); strong spines on broadened profemur, possibly useful for predation (Anthocoridae, Nabidae, Reduviidae, Plokiophilidae, Pyrrhocoridae, etc.); very short tibia as long as respective femur, as in some species of anthocorid genus *Scoloposcelis* Fieber (Anthocoridae) that often inhabit narrow spaces under bark of rotten logs; developed metafemoral spines, which are also unusual in most heteropteran families, but some leaf-footed bugs (Coreidae) are equipped with metafemoral spines that are assumed to be used for conflict or defense; widened abdomen beyond lateral margins of hemelytron, which is frequently found in many groups of the Heteroptera but usually not prominent in most mirid bugs (for further information on other heteropteran families, see Schuh and Slater, 1995).

Some of the morphological features of *Chimairacoris* are reminiscent of those found in termatophyline mirids and anthocorids (Cassis 1995), and at first we thought our new taxon was a termatophyline mirid. *Chimairacoris* and termatophylines (and also some deraeocorines, e.g., *Fingulus* as in fig. 7F) both have a porrect head (fig. 7G) flattened and dark body (fig. 1F), a short first labial segment (fig. 3A), and ribbonlike parempodia (figs. 3E, 4C). The Termatophylini are also characterized by the following distinctive characters: pronotum and veins and fractures of hemelytron with patterned rows of punctures, pretarsal claw with basal tooth and without pulvilli, and endosoma simple, with indiscernible secondary gonopore (Cassis, 1995). *Chimairacoris* lacks all of these characters, which brought into question our thought that it belonged to the Deraeocorinae. In addition, the compound eye is smaller, and has flattened, rather irregularly arranged ommatidia, and lacks any sensory setae, features that are common in termatophylines and many other mirids.

There is apparent convergence in habits and habitats of *Chimairacoris* and some termatophyline species (10 genera, 35 species; Cassis, 1995; Schuh, 2002–2014, online catalog). Several termatophylines are found on inflorescences of broadleaf angiosperms (cf. fig. 7G), and often observed to feed on nectar and/or pollen although they appear predominantly to prey on thrips or other tiny arthropods (Yasunaga et al., 2001). In contrast, other termatophylines are known from concealed habitats, such as moth larval galleries and rolled bark (Cassis, 1995; Cassis et al., 2011), and are assumed to be predators. In addition, the short first labial segment of *Chimairacoris* and termatophylines is apparently indicative of a predatory habit.

The male and female genitalia are one of the most important character systems for determining the systematic position of mirid taxa (Schuh and Slater, 1995; Cassis and Schuh, 2012). Our investigation of these character systems in *Chimairacoris* both surprised us, and left us in no doubt that this taxon belongs to the subfamily Phylinae. In particular, the structure of the endosoma, placement of the secondary gonopore, attachment of the phallotheca to pygophore,

FIG 4. Images made by stereoscopic microscope (A–B) and compound microscope (C–E) for *Chimairacoris lakshmiae*. **A.** Thoracic pleuron, left lateral view. **B.** Metafemur. **C.** Pretarsus. **D.** Phallotheca. **E.** Apical part of endosoma.

and the shape of the parameres are defining characters for the Phylinae and allow us to conclude that any similarities with *Chimairacoris* and termatophylines are due to convergence.

Thus, even though there is little doubt about the placement of *Chimairacoris* within the Phylinae (see Schuh and Menard, 2013, for current classification), we are less certain about its tribal/subtribal position. On the basis of the slender, J-shaped endosoma and subapical secondary gonopore, *Chimairacoris* resembles *Brachyarthrum* Fieber and *Phymatopsallus* Knight of the subtribe Oncotylina. On the other hand, its well developed and somewhat sigmoid female vestibular sclerites are found

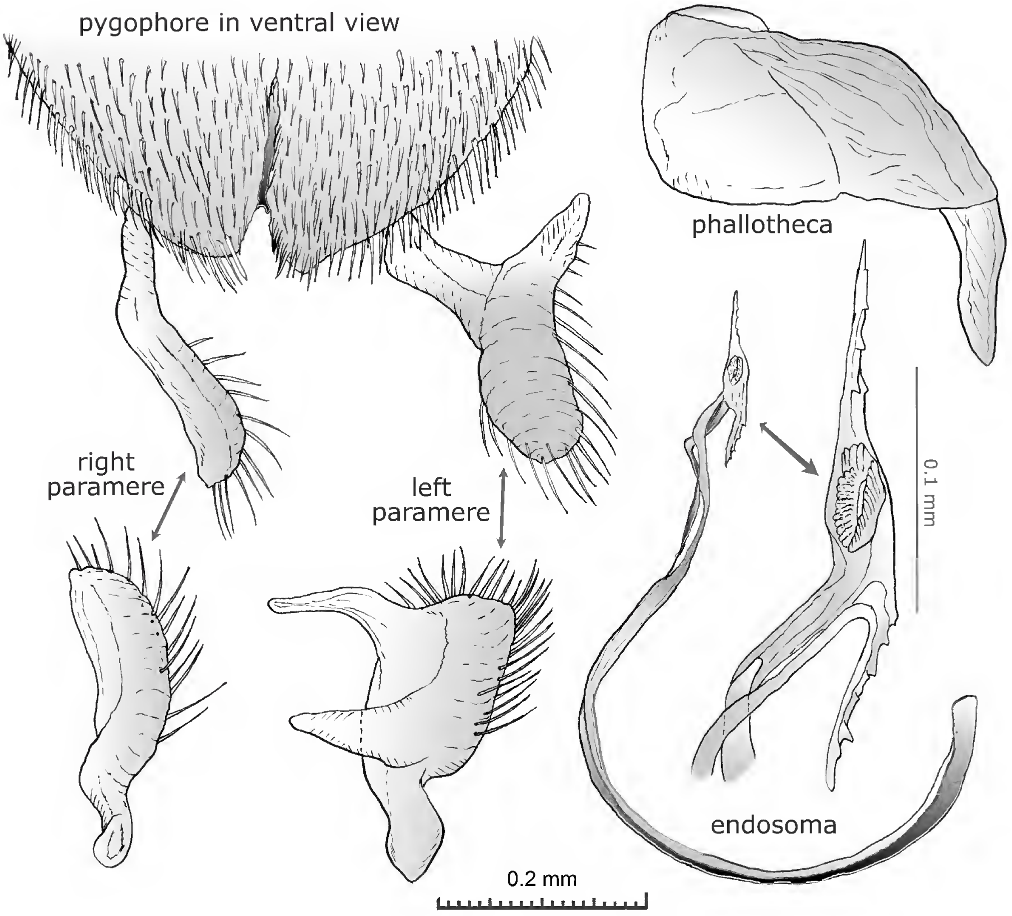

FIG. 5. Male genitalia of *Chimairacoris lakshmiae*. Apical part of pygophore cracked along the midline appears to be a result of preparation or dissection, or this part may be weakly sclerotized (cf. fig. 3F).

in representatives of several phyline tribes (e.g., *Atractotomoidea* Yasunaga of Nasocorini, *Phymatopsallus* group of Phylini: Oncotylina) (Schuh, 2006; Schuh and Menard, 2013; Yasunaga, 2010), as well as in the Hallodapini (Pluot-Sigwalt and Matocq, 2006; Wyniger, 2006).

Current evidence suggests possible placement of *Chimairacoris* in three tribes: Nasocorini, Phylini (Oncotylina), or Pilophorini. Which of the placements—if any—might prevail in the long run is unclear and will doubtless depend on the acquisition of DNA sequence data. The small size, dark coloration, and predatory habits might well suggest an association with the Nasocorini, as all those features are seen in genera such as *Rhinacloa* Reuter, and at least two of them are found in other nasocorine genera such as *Campylomma* Reuter, *Spanagonicus* Berg, and probably others. The triangularly developed pulvillus (at first sight similar to the deraeocorine basal claw tooth) is recognized not only in *Chimairacoris* but also in

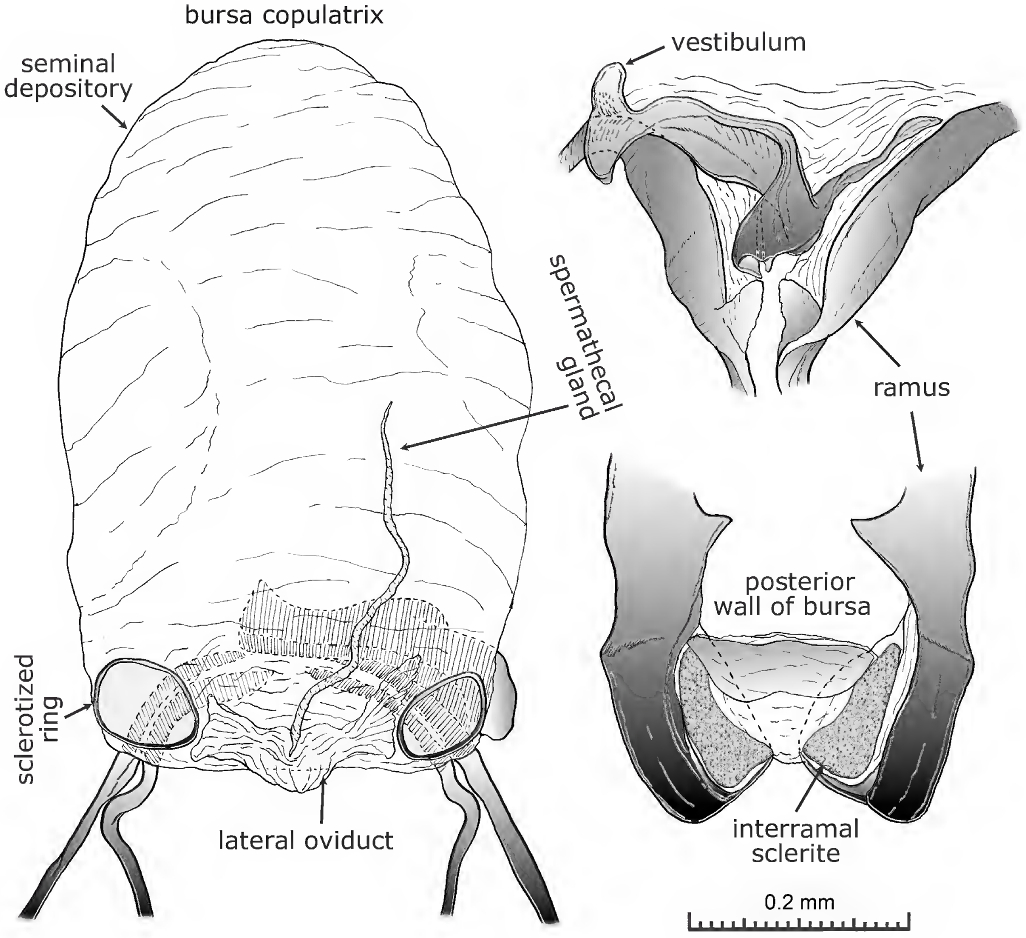

FIG. 6. Female genitalia of *Chimairacoris lakshmiae*.

some phyline tribes, such as *Acrotelus* Reuter (Oncotylina) and *Macrotylus* Fieber (Cremnorrhinini: Cremnorrhinina). On the other hand, the male and female genitalia possibly show greater structural similarity with the Oncotylina, particularly genera such as *Phymatopsallus*. There are also similarities in coloration, antennal structure, predatory habits, and small size with the New World spider-commensal genus *Ranzovius* Distant, which was placed in the Oncotylina by Schuh and Menard (2013).

It is our opinion that comparison with Pilophorini also merits careful consideration. This is a group that almost certainly shows some tendency toward predation in many species, even though the evidence for this is largely inferential. Also, the slender, tubular, J-shaped endosoma in *Chimairacoris* strongly resembles many members of the Pilophorini, as does the dark coloration and elongate, nearly parallel-sided body form. Compare *Chimairacoris* with *Pilophorus gracilis* Uhler, for example. Nevertheless, Pilophorini, as diagnosed by Schuh (1974, 1984), do not have a sclerotized secondary gonopore, but the work of Schuh and Menard (2013) and Menard et al. (2014) indicates that the situation is more complex than previously thought, revealing that the Pilophorini lineage includes taxa that have a broader range of setal types than previously thought to be the case, that the pretarsus is not monolithic in its structure and can vary from the classic *Pilophorus* Hahn type, and that members of the lineage may also have a sclerotized secondary gonopore (*Lasiolabops* Poppius), all features not seen in the group as conceived by Schuh (1974, 1984). The preponderance of the evidence argues for the placement of *Chimairacoris* in the Oncotylina.

***Chimairacoris lakshmiae* Yasunaga, Schuh, and Cassis,** new species

Figures 1–6

Holotype: ♂, **INDIA:** Karnataka, Bangalore, Hebbal, 12.97° N 77.58° E 670 m, on *Ficus benghalensis*, 16 Jul 2013, L. Lakshmi (AMNH_PBI 00380339) (AMNH).

Diagnosis: This species is recognized by the generic diagnostic characters; no other known phyline species exhibits them. Nymphs, (figs 1B, 2C, D) superficially similar to those of some cylapine mirids (e.g., *Fulvius* spp.) or lygaeoids (e.g., Rhyparochromidae), can be recognized by the elongate body, densely distributed, short, stiff setae on dorsum, generally dark bluish coloration, somewhat reddish head, and red anterior half of the abdomen.

Description: *Coloration:* Body generally fuscous, partly shining, velvety or roughened (figs. 1A, 2A). Eye dark red. Extreme apex of antennal segment II, entire III and basal half of IV yellow. Labial segments II and III pale brown. Hemelytral membrane grayish brown, semitransparent. Coxae partly pruinose or shagreened. Apex of all femora and tibiae, and entire tarsus yellowish brown. Abdomen entirely fuscous. *Structure:* As in generic description. Pronotum posterior to calli, scutellum, and hemelytron shallowly, roughly and irregularly punctate. Pleura and basal part of all coxae partly shagreened or roughened.

Measurements: ♂/♀: Total body length 3.3–3.7/3.4–3.6; length from apex of clypeus to cuneal fracture 2.15–2.31/1.96–2.26; head width across eyes 0.66–0.74/0.72–0.74; vertex width 0.34–0.37/0.37–0.38; lengths of antennal segment I–IV 0.14–0.21, 0.31–0.37, 0.19–0.23, 0.24–0.26/0.13–0.19, 0.33–0.36, 0.20–0.25, 0.24–0.26; labial length 0.62–0.68/0.61–0.69; mesal pronotal length 0.52–0.62/0.60–0.63; basal pronotal width 0.84–0.98/0.98–1.01; maximum width across abdominal connexiva 0.99–1.11/1.23–1.28; and lengths of metafemur, tibia, and tarsus 0.72–0.81, 0.69–0.80, 0.23–0.25/0.73–0.84, 0.73–0.81, 0.23–0.25.

Etymology: Named after a colleague of one of us (P.J.), L. Lakshmi, who enthusiastically collected the specimens used in this paper (her name "Lakshmi' represents the goddess of love, wealth, beauty, and prosperity or fortune in Hinduism); a noun in genitive case.

Distribution: South India (Bangalore).

Biology: Although the present new species exists close to human settlement, it was not until quite recently that this intriguing bug was discovered by one of the authors (P.J.) and her eager colleagues, due to its concealed and unexpected habitat preference.

Chimairacoris lakshimiae inhabits the leaf-margin roll galls produced by *Trioza* sp. (Hemiptera: Sternorrhyncha: Triozidae) on the leaves of Indian banyan tree (*Ficus benghalensis*) (fig.

FIG. 7. Minute pirate bugs, *Montandoniola* spp. (Anthocoridae: Oriini) and mirid bugs (Deraeocorinae) associated with leaf-roll gall produced by *Gynaikothrips* spp. (Thysanoptera: Tubulifera) (B and E) on *Ficus microcarpa* in Okinawa, Japan (A, C–D), Nakhon Nayok, Thailand (B), and Siem Reap, Cambodia (F), and termatophyline mirid from Nagasaki, Japan (G). **A.** Typical leaf-roll (or curl) galls (red arrow). **B.** Adult (blue arrow) and final instar nymph (yellow arrow) of *Montandoniola* sp. (possibly undescribed) with colonized *Gynaikothrips* sp. **C, D.** *Montandoniola thripodes* Bergroth, male adult. **E.** Gall-making thrips, *Gynaikothrips ficorum* (Marchal), adult. **F.** *Fingulus* sp. (Deraeocorini) (left) and *Montandoniola* sp. (right). **G.** *Termatophylum hikosanum* Miyamoto (Termatophylini), female adult on *Ligustrum japonicum* Thunb. (Oleaceae).

1 E–G). This *Trioza* species folds and tightly rolls one or both margins of the banyan leaves, and the nymphs remain sheltered inside these roll galls, which are often covered with globules of honeydew. A mealybug, *Phenacoccus parvus* Morrison (Sternorrhyncha: Pseudococcidae), is also commonly found with the psyllids in the same galls (fig. 1I). A possibly undescribed species of the genus *Anthocoris* Fallén (Anthocoridae) is observed to cooccur in the same niche (Poorani and Yamada, unpublished data). In India, Yamada et al. (2011) also reported that eggs, all immature stages, and adults of *Montandoniola indica* Yamada (Anthocoridae: Oriini) inhabit the leaf curl galls induced by the thrips, *Liothrips karnyi* Bagnall (Phlaeothripidae) on leaves of black pepper, *Piper nigrum* L. (Piperaceae).

Chimairacoris lakshmiae was observed to deposit eggs in small groups in the leaf roll galls. The eggs are embedded into the leaf tissue (fig. 1 C), with the opercula exposed on the gall surface (fig. 1 D). The nymphs are always found inside the galls where they apparently complete their life cycle. All developmental stages were seen throughout the year and as a result we assume that *C. lakshmiae* is multivoltine. In Bangalore peak populations were observed during summer (May through July), which taper off in the dry winter season (December through January). The basic structure of the small compound eye appears to be rather simple and rougher than that of other mirids; the ommatidia are flat and not so evenly arranged. *Chimairacoris lakshmiae* completes its whole life cycle in the dark gall, which implies the visual function of this species might be somewhat regressed, or unneeded for this bug.

A similar life style is confirmed in species of the flower bug genus *Montandoniola* Poppius (Anthocoridae); some species are known to be associated with leaf roll (or curl) galls produced by thrips, *Gynaikothrips* spp. (Thysanoptera: Tubulifera), on *Ficus microcarpa* L.f., and the anthocorids propagate and prey on the thrips in and around the galls (fig. 7A–E) (Tavaresa et al., 2013; Yamada et al., 2010; Yasunaga et al., 2001). The adults of these anthocorid bugs putatively mimic the thrips upon which they prey (cf. fig. 7D and E). However, these anthocorids appear to attack smaller immature thrips only, as the adult thrips (larger in size than the bug) were observed to repel the predators, wielding the long, posterior end of the abdomen when approached (Yasunaga and Yamada, unpublished observation both in Cambodia and Thailand). Mimicking host insects and inhabiting colonies with their prey may allow these predaceous bugs to minimize the threat of natural enemies, as supposed by Yasunaga et al. (1997, 2001). Mirid species of the genus *Stethoconus* Flor (Deraeocorinae: Hyaliodini), which preferably attack lace bugs (Tingidae) within the tingid colonies, also probably mimics their prey (see Wheeler, 2001).

During recent observations at a college campus in Siem Reap, Cambodia, one of the authors (T.Y.) found more than a few individuals of a possibly undescribed *Fingulus* species (Deraeocorinae: Deraeocorini) (fig. 7F) and some of *Cardiastethus* (probably) *exiguus* Poppius (Anthocoridae: Cardiastethini) from the leaf roll galls of *Ficus microcarpa*. Also in Japan *Fingulus longicornis* Miyamoto is known to have a close association with the gall of *Ficus microcarpa* made by its assumed prey, *Gynaikothrips ficorum* (Marchal) (fig. 7E); the late instar immatures of this mirid have an elongate abdomen and are similar in appearance to (and probably mimetic of) the thrips (Nakatani et al., 2000; Yasunaga et al., 2001). Incidentally, fruits of *Ficus microcarpa*, *F. superba* (Miq.) Miq. and *F. religiosa* L. serve as a breeding site for the phytophagous pilophorine, *Lasiolabops cosmopolites* Schuh.

In tropical and subtropical zones of Asia, little is currently known about the faunas of both gall-making insects and their heteropteran predators on *Ficus* trees. Further studies on the faunas and their biology are required to demonstrate their coevolution as well as any remarkable morphological modifications similar to those seen in *Chimairacoris lakshmiae*. Since the present document is based upon surveys targeting a few plant species for landscaping or worship within rather artificial or urbanized zones, more unexpected, morphologically or ecologically novel species may be discovered from well-preserved environments.

PARATYPES: **INDIA:** same data as for holotype, 9♂19♀ (AMNH_PBI 00380340–00380365) (AMNH, TYCN, UNSW); same locality, 13.01° N 77.35° E, on *F. benghalensis*, 20 Apr 2014, L. Lakshmi, 1♂5♀; same locality, 31 Jul 2014, L. Lakshmi, 2♂8♀; same data except date, 06 Feb 2015, L. Lakshmi, 1♂1♀; same data, except 4 Feb 2015, J. Poorani, 2♂, 13♀, 1 nymph (AMNH without USI labels); same locality, 03 Feb 2015, inside of *F. benghalensis* leaf galls with *Trioza* sp., J. Poorani and S. K. Rajeshwari, 4 ♂6♀ (5 each in NPC and UASB, rest in NBAIR, without USI labels).

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