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TAXONOMY AND LIFE HISTORY OF  
COSTA RICAN *ALABAGRUS*  
(HYMENOPTERA: BRACONIDAE), WITH A KEY  
TO WORLD SPECIES

JASON W. LEATHERS AND MICHAEL J. SHARKEY



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# TAXONOMY AND LIFE HISTORY OF COSTA RICAN *ALABAGRUS* (HYMENOPTERA: BRACONIDAE), WITH A KEY TO WORLD SPECIES

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JASON W. LEATHERS<sup>1</sup> AND MICHAEL J. SHARKEY<sup>2</sup>

## CONTENTS

ABSTRACT.....	2
INTRODUCTION AND HISTORICAL REVIEW .....	2
MATERIALS AND METHODS.....	3
COLOR AND MIMICRY .....	5
SEASONALITY.....	5
GEOGRAPHICAL RANGE.....	5
SYSTEMATICS .....	6
Key to the Species of <i>Alabagrus</i> of the World.....	6
Species Descriptions of the <i>Alabagrus</i> of Costa Rica.....	19
<i>Alabagrus albispina</i> (Cameron).....	19
<i>Alabagrus arawak</i> Sharkey .....	20
<i>Alabagrus arua</i> Sharkey .....	21
<i>Alabagrus cara</i> Sharkey .....	21
<i>Alabagrus cocto</i> Sharkey.....	22
<i>Alabagrus combos</i> new species .....	23
<i>Alabagrus cuna</i> Sharkey.....	24
<i>Alabagrus derailersi</i> new species.....	25
<i>Alabagrus donmai</i> new species .....	26
<i>Alabagrus englishi</i> new species .....	27
<i>Alabagrus imitatus</i> (Cresson).....	28
<i>Alabagrus janzeni</i> Sharkey.....	29
<i>Alabagrus juchuy</i> Sharkey .....	30
<i>Alabagrus kagaba</i> Sharkey.....	31
<i>Alabagrus latisoma</i> Sharkey .....	32
<i>Alabagrus latreillei</i> (Spinola) .....	32
<i>Alabagrus maculipes</i> (Cameron).....	33
<i>Alabagrus masneri</i> Sharkey.....	34
<i>Alabagrus maya</i> Sharkey.....	35
<i>Alabagrus miqa</i> Sharkey .....	36
<i>Alabagrus mojos</i> Sharkey .....	37
<i>Alabagrus nahuatl</i> Sharkey .....	37
<i>Alabagrus nicoya</i> Sharkey .....	38
<i>Alabagrus nigrifulus</i> (Szépligeti) .....	39
<i>Alabagrus pachamama</i> Sharkey .....	40
<i>Alabagrus paruyana</i> Sharkey .....	41
<i>Alabagrus parvifaciatus</i> (Cameron) .....	42
<i>Alabagrus pecki</i> Sharkey .....	42
<i>Alabagrus roibasi</i> Sharkey .....	43
<i>Alabagrus sarapiqui</i> new species .....	44
<i>Alabagrus semialbus</i> (Szépligeti).....	45
<i>Alabagrus stigma</i> (Brulle).....	46

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<i>Alabagrus tricarinatus</i> (Cameron).....	47
<i>Alabagrus tripartitus</i> (Brullé).....	48
<i>Alabagrus varius</i> (Enderlein).....	49
<i>Alabagrus voto</i> Sharkey.....	49
<i>Alabagrus warrau</i> Sharkey.....	50
<i>Alabagrus watsoni</i> new species.....	51
<i>Alabagrus yaruro</i> Sharkey.....	52
ACKNOWLEDGMENTS.....	53
LITERATURE CITED.....	53
PLATE I.....	55
FIGURES.....	56

**ABSTRACT.** The genus *Alabagrus* (Hymenoptera: Braconidae) is revised to include specimens collected throughout Costa Rica, including those from the Arthropods of La Selva (ALAS) project and rearings by Janzen and Hallwachs at Santa Rosa National Park. Descriptions are provided for a total of 39 species collected in Costa Rica, including 17 species that are new to Costa Rica and 6 species that are new to science. New species are *A. combos*, *A. derailersi*, *A. donnai*, *A. englishi*, *A. sarapiqui*, and *A. watsoni*. Species of *Alabagrus* are reported to be primarily associated with successional habitats, where they parasitize the larvae of Crambidae (Lepidoptera). The treatment of each species includes a total of 75 morphological and color characters and host records. Graphs of the temporal distribution and color photographs are presented for each of the 39 Costa Rican species. An illustrated key to the species of *Alabagrus* is provided.

## INTRODUCTION AND HISTORICAL REVIEW

Parasitic wasps belonging to the genus *Alabagrus* Enderlein (Braconidae: Agathidinae) are restricted to the New World, and are found from southeastern Canada to northern Argentina. They are especially diverse in wet tropical habitats. Species of *Alabagrus* are solitary, koinobiont endoparasitoids of concealed larvae of the family Crambidae (Lepidoptera) (Table 1). Some species of *Alabagrus* are important in the control of pest Lepidoptera, including *A. stigma* (Brullé), a parasitoid of the sugar cane and rice borer *Diatraea saccharalis* (Fabricius).

*Alabagrus* was proposed by Enderlein (1920) for several species of Neotropical agathidines. Muesebeck and Walkley (1951) synonymized *Alabagrus* under *Agathis* Enderlein, and Shenefelt (1970) adopted this classification in his catalogue of world Agathidinae. Sharkey (1988) resurrected *Alabagrus* and included in the genus *Astiria*, *Craspedobothrus*, and *Liyptia*, of Enderlein (1920). He included a total of 104 species in his revision of the genus, 22 of which were recorded from Costa Rica.

Since his revision, the Arthropods of La Selva (ALAS) project has extensively sampled the lowland Neotropical rainforest surrounding the Organization for Tropical Studies (OTS) La Selva Biological Station at La Selva, Costa Rica (Longino, 1994). The project yielded a total of 904 specimens, representing 26 species of *Alabagrus* from La Selva, of which 12 are new Costa Rican records and 6 are new to science. Based on the ALAS specimens, estimators of species diversity calculated by using EstimateS 5.0.1 (Colwell, 1994–1997) predict that there are between 29 (Coleman richness expectation [Coleman, 1981; Coleman et al., 1982]) and

33 (second-order jackknife richness estimator [Burnham and Overton, 1978, 1979; Smith and van Belle, 1984; Palmer, 1991]) species of *Alabagrus* at La Selva, indicating that the area has been well sampled by Malaise traps. Furthermore, subsequent Malaise trap samples from La Selva, as well as canopy fogging and blacklight samples, have yielded no new species of *Alabagrus*. We are thus fairly confident that this revision includes most species of *Alabagrus* found at La Selva. However, a specimen of *A. tricarinatus* (Cameron) was reared by H. Hespeneide (University of California, Los Angeles) in 1986 from an unknown host on *Byttneria aculeata* (Jacquemoud) (Sterculiaceae) at La Selva. This species was not captured by the ALAS sampling, suggesting that a few additional species of *Alabagrus* could be present there.

Because of their diversity, abundance, and frequent role as keystone species in the natural regulation of ecosystems, parasitic wasps are an excellent focal group for systematic and conservation studies (Lasalle and Gauld, 1991). Members of the genus *Alabagrus* are particularly abundant and diverse in lowland Neotropical rainforests. They are efficiently captured with Malaise traps and, because of their large size and colorful nature, they are common in museum collections and are relatively easy to identify. It is our hope that the biodiversity information obtained on the species of *Alabagrus* of La Selva will be used as a benchmark bioindicator through which tropical sites may be compared.

This paper builds on Sharkey's (1988) revision by describing the 39 species recorded from Costa Rica. Many of these species were previously described from only a few specimens, so they have been re-described to document the range of variation in

Table 1. List of known hosts of species of *Alabragus* and the plants from which they have been reared. Blank spaces represent incomplete records. Data are from Janzen and Hallwach's caterpillar database, a specimen reared by Hespeneide, and Sharkey (1988).

Species	<i>Alabragus</i> host	Host plant
<i>A. albispina</i>	<i>Bicilia iarchasalis</i>	<i>Petiveria alliacea</i> (Phytolaccaceae)
	<i>Conchylodes ovulalis</i>	<i>Baltimora recta</i> (Asteraceae)
	<i>Eulepte concordalis</i>	<i>Cydista heterophylla</i> (Bignoniaceae)
	<i>Glyphodes sybillalis</i>	<i>Trophis racemosa</i> (Moraceae)
	<i>Phaedropsis</i> sp.	<i>Triplaris melaenodendron</i> (Polygonaceae)
	<i>Pilocrocis ramentalis</i>	<i>Dyschoriste valeriana</i> (Acanthaceae)
	<i>Salbia cassidalis</i>	<i>Lasiacis sorghoidea</i> (Poaceae)
<i>A. imitatus</i>	<i>Diatraea</i> sp.	
<i>A. janzeni</i>	<i>Eulepte concordalis</i>	<i>Tabebuia rosea</i> (Bignoniaceae)
	<i>E. concordalis</i>	<i>T. impetiginosa</i>
<i>A. latreillei</i>	<i>Phostria metalobalis</i>	<i>Genipa americana</i> (Rubiaceae)
<i>A. maculipes</i>	<i>Pilocrocis ramentalis</i>	<i>Dyschoriste valeriana</i> (Acanthaceae)
	Crambidae sp.	<i>Maranta arundinacea</i> (Marantaceae)
<i>A. nahuatl</i>	<i>Lygropia tripunctata</i>	<i>Operculina pteripes</i> (Convolvulaceae)
<i>A. nicoya</i>	<i>Dichogama colotha</i>	<i>Capparis indica</i> (Capparidaceae)
	<i>D. colotha</i>	<i>C. incana</i>
	<i>D. redtenbacheri</i>	<i>C. frondosa</i>
	<i>Lativalva pseudosmithii</i>	<i>Morisonia americana</i> (Capparidaceae)
		<i>Capparis frondosa</i> (Capparidaceae)
<i>A. roibasi</i>	<i>Alatuncusia</i> sp.	<i>Cornutia grondifolia</i> (Verbenaceae)
	<i>Aponia itzalis</i>	<i>Petiveria alliacea</i> (Phytolaccaceae)
	<i>Bicilia iarchasalis</i>	<i>Triplaris melaenodendron</i> (Polygonaceae)
	<i>Phaedropsis cernalis</i>	<i>P. alliacea</i>
	<i>Psara obscuralis</i>	
		<i>Byttneria aculeata</i> (Sterculiaceae)
<i>A. stigma</i>	<i>Diatraea canella</i>	
	<i>D. impersonatella</i>	
	<i>D. lineolata</i>	
	<i>D. saccharalis</i>	
	Unknown	<i>Inga vera</i> (Fabaceae)
<i>A. watsoni</i>	<i>Omiodes humeralis</i>	

morphology and color observed in specimens collected in Costa Rica since that date. A key generated with the DELTA software package (Dallowitz et al., 1997) is provided to the species of *Alabragus* of the world. To better understand the phenology of *Alabragus* species, we have provided graphs illustrating the temporal distribution of each species at La Selva and throughout Costa Rica. All species were collected in primary forest, secondary growth, and successional areas unless otherwise mentioned in the distribution information sections associated with each species description. Maps illustrating the distribution of every species aside from the new ones found only at La Selva are available in Sharkey's (1988) revision. Finally, color photographs are provided for each of the 39 species found in Costa Rica.

## MATERIALS AND METHODS

### STUDY SITE

The La Selva Biological Station is an OTS research site of 1,536 ha located at the confluence of the Sarapiquí and Puerto Viejo rivers in northeastern Costa Rica. The land is composed of primary forest (55%) dominated by *Pen-*

*taclethra macroloba* (Willd.) (Fabaceae), selectively logged primary forest (7%), secondary forest that has been regenerating since the early 1970's (11%), successional pasture (18%), abandoned plantations (8%), and managed habitats including an arboretum and successional plots (0.5%) (McDade and Hartshorn, 1994).

### SAMPLING PROGRAM

The ALAS project's sampling regime was described by Longino and Colwell (1997). In brief, the project involved a total of 18 Malaise traps placed at La Selva. Sixteen of these were divided between four habitat types: young alluvial soil with secondary growth vegetation, young alluvial soil with primary forest, old residual soil with secondary growth vegetation, and old residual soil with primary forest. Four traps were placed in each of the above habitat types from March 1993 until June 1996. Only one Malaise trap was used to sample all five successional plots. These five plots are all contiguous and the single trap was left in the same location for the duration of the project. A single Malaise trap also was placed at the border of a swamp (referred to as "borde suampo" in the DISTRIBUTION sections after each of the species descriptions) from August 1997 until November 1998. Additionally, canopy fogging, blacklight traps, and Berlese funnels were used to sample La Selva, but yielded only two *Alabragus*

specimens. One *A. semialbus* (Szépligeti) and one *A. pachamama* Sharkey were collected by canopy fogging of *Pentaclethra macroloba*. Blacklight traps and Berlese funnels yielded no specimens.

## KEY CONSTRUCTION

We have constructed the key to the species of *Alabragus* of the world by using the software package DELTA (Dallowitz et al., 1997), which is available at <http://biodiversity.uno.edu/delta>. The DELTA software constructs keys by using two text files: a CHARS file that contains a list of characters and states, and an ITEMS file that contains a list of taxa and the character states of each taxon. The keys were constructed to facilitate identification rather than to be as efficient as possible, thus, many species will key out in multiple places. Interactive versions of both keys that allow the user to choose which characters to examine for species determination are available on M.J. Sharkey's Web page at <http://www.uky.edu/~mjshar0>. The CHARS and ITEMS files used to produce the key also are available at this Web site. The program INTKEY can be downloaded from this site free of charge.

## SPECIMENS EXAMINED

We examined a total of 1,617 specimens of *Alabragus*, over half of which were collected through the ALAS project. Others were collected through a recent Mellon Foundation grant to J. Pickering and M.J. Sharkey. Some reared specimens from Santa Rosa National Park, Costa Rica, were provided by D.H. Janzen. Almost all specimens involved in this project are labeled with a unique bar code or rearing number. The ALAS specimens are labeled IN-BIOCRI xxxxxxxxx, where the x's represent a unique number. Numbers for specimens of new species are included in the DISTRIBUTION and MATERIAL EXAMINED sections. Specimens from the Mellon Foundation grant are labeled UGCA xxxxxx and also are included for new species in the just-mentioned sections. Specimens from Santa Rosa National Park are labeled yy-SRNP-xxxx, where y's represent the year of rearing. A database of these records is available at <http://janzen.sas.upenn.edu>.

All holotype specimens are deposited at the National Institute of Biodiversity (Instituto Nacional de Biodiversidad de Costa Rica [INBC]) in Santo Domingo de Heredia, Costa Rica. Paratypes and other specimens are deposited in a variety of other museums, including American Entomological Institute, British Natural History Museum, Canadian National Collection, Natural History Museum of Los Angeles County, Oregon State Arthropod Collection, University of Kentucky Insect Collection, and National Museum of Natural History.

## DESCRIPTION GENERATION

A description generated with DELTA (Dallowitz et al., 1997) is provided for each species of *Alabragus* from Costa Rica. In the case of previously described species, these descriptions refer to all specimens found in Costa Rica rather than holotypes, lectotypes, or other extralimital material. The description of new species includes the range of information on meristic, measured, and discrete morphological characters for all known specimens of the species. When this information is variable, holotype information is set apart in square brackets ([ ]). Percentages included in the descriptions of variable characters refer to the approximate percentage of specimens that exhibit the characteristic. The number of specimens examined to de-

termine percentages is reported with the first percentage in each description as sample size. Characters that are missing from some species descriptions represent characters that are not applicable to that taxon; for example, the propodeum of *A. pachamama* is smooth, so characters 17 to 19 that describe propodeal sculpture are not included in the description. The integers in parentheses before each character identify the character in both the species description (ITEMS) and character list (CHARS) files of DELTA. Character numbers have been used similarly by Sharkey (1996) in his revision of the Agathidinae of Japan. Character numbers allow for easy comparisons among species. The ITEMS and CHARS files are available at M.J. Sharkey's Web site at <http://www.uky.edu/~mjshar0>. Information on species distribution outside Costa Rica and previously known host species provided in the descriptions are taken from Sharkey's (1988) revision.

## MORPHOLOGY

Morphological terminology follows Sharkey and Wharton (1997). All specimens collected by the ALAS project were examined for a total of 7 continuous, 3 meristic, 22 discrete morphological characters, and 42 color characters.

## REPOSITORIES

The acronyms used here are taken from Arnett et al. (1993), and UKIC is new.

- |      |   |
|------|---|
| AEIC | American Entomological Institute, Townes's Collection, Gainesville, Florida, USA.   |
| AMNH | American Museum of Natural History, New York, New York, USA.                        |
| ANSP | Academy of Natural Sciences, Philadelphia, Pennsylvania, USA.                       |
| BMNH | The Natural History Museum, London, United Kingdom.                                 |
| CNCI | Canadian National Collection, Agriculture Canada, Ottawa, Ontario, Canada.          |
| HNHM | Hungarian Natural History Museum, Budapest, Hungary.                                |
| INBC | Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica.          |
| LACM | Natural History Museum of Los Angeles County, Los Angeles, California, USA.         |
| MIZT | Museo ed Istituto di Zoologia Sistematica, Università di Torino, Torino, Italy.     |
| MNHN | Muséum National d'Histoire Naturelle, Paris, France.                                |
| OSUO | Oregon State Arthropod Collection, Oregon State University, Corvallis, Oregon, USA. |
| SMEC | Snow Museum of Entomology, University of Kansas, Lawrence, Kansas, USA.             |
| UKIC | University of Kentucky Insect Collection, Lexington, Kentucky, USA.                 |
| USNM | National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA. |
| ZMPA | Polish Academy of Science, Warszawa, Poland.  |

## TRAILS AT LA SELVA

Acronyms are used in the DISTRIBUTION AND MATERIAL EXAMINED sections of new species descriptions to provide an approximate location of their collection at La Selva.

- |     |                      |
|-----|----------------------|
| CC  | Camino Central       |
| SCH | Sendero La Chanchera |

## COLOR AND MIMICRY

Most species of *Alabragus* have bright, distinct color patterns (Figs. 3–8). Many of these species belong to a Neotropical, presumably mimetic, complex with thousands of other species composed of members of several orders of winged insects (Sharkey, pers. obs.). Representatives of this complex include approximately 1,300 species of Braconidae in such other genera as *Capitonius* Brullé, *Coccygidium* de Saussure, and *Digonogastra* Viereck, more than 1,000 species of Ichneumonidae (e.g., *Acrotaphus* Townes), at least 200 species of symphyta, several hundred species of Reduviidae (e.g., *Hiragnetis* Stål), and unknown numbers of Diptera, Lepidoptera, and Coleoptera. The mimicry is not constrained to color. Some of the Reduviidae, the “braconiformes” clade, have wing shape and physical proportions very similar to some braconids (Fig. 4d). Although members of *Alabragus* do not have a foul odor detectable to humans and are not known to sting (Sharkey, pers. obs.), other representatives of the complex such as many Braconinae (Quicke, 1997) have an odor (Braconidae) (Quicke 1997) and the Reduviidae are odiferous and can bite painfully (Sharkey, pers. obs.). The species of *Alabragus* involved in this complex possibly are Batesian mimics of other members in the complex. Because of our interest in the mimetic color complex, a great deal of attention is paid to the description of color patterns in this revision. Approximately one half of the characters included in the descriptions are color characters, and the lateral photographs will facilitate future analysis of color patterns within *Alabragus* and with other members of the complex.

## SEASONALITY

The seasonality of most tropical insect species, including parasitoids, is traditionally considered to be correlated with the periods of rainfall (Buskirk and Buskirk, 1976; Wolda, 1978, 1989; Janzen, 1981, 1993; Smythe, 1985; Kato et al., 1995; Coley and Barone, 1996; Novotny and Basset, 1998; Shapiro and Pickering, 2000), which can vary considerably in most moist tropical forests. Like much of the Atlantic side of Central America, La Selva averages 4 m of rain annually, distributed relatively evenly throughout the year (Fig. 1a). The driest period typically occurs from February through April, with an average of 172 mm per month (Sanford et al., 1994). The wet season generally begins the second week of May and has two peaks: June through August (450 mm/month) and November through December (404 mm/month).

The greatest number of *Alabragus* species were collected by Malaise traps at La Selva in April through September. Seventeen to 22 species were collected each month during this period (Fig. 1b). This precedes the onset of the rainy season and the first wet period of June and July. Specimens also were most abundant in April through August (Fig. 1c).

Fewer species were collected at La Selva from October through February, during the second part of the wet season and the beginning of the dry season, respectively (Fig. 1b). Individuals were also least abundant from October through February (Fig. 1c). However, an anomalous small peak in specimen abundance occurred in January. Fifty-nine specimens were collected in January at La Selva, compared to 29 in December. Two of the four abundant species in January are *A. pachamama* (Fig. 4c) and *A. cara* Sharkey (Fig. 5e). Both of these have bright color patterns, whereas the other species, *A. masneri* Sharkey and *A. arawak* Sharkey, do not. Specimen abundance and species richness for Costa Rica as a whole follow a similar trend to La Selva (Fig. 2a, 2b), possibly because of the inclusion of the large number of specimens from La Selva.

## GEOGRAPHICAL RANGE

### DISTRIBUTION AT LA SELVA

Nearly one half of the specimens (44.4%) and most of the species (84.6%) of *Alabragus* collected at La Selva were collected in the one Malaise trap in successional plots (Table 2). Four of the species found in successional plots at La Selva were not collected in any of the other habitats (*A. cocto* Sharkey, *A. maya* Sharkey, *A. sarapiqui* new species, and *A. stigma*). These plots were begun in the early 1970's to maintain patches of the early successional stages of vegetation at La Selva (Hartshorn and Hammel, 1994). One of the five 0.5-ha strips is cut each February on a 5-year rotation. These habitats are dominated by both herbaceous and woody plants that sprout after cutting, as well as classic pioneer species such as *Phytolacca rivinoides* Kunth and Bouché (*Phytolaccaceae*) and *Erechtites hieracifolia* (L.) (*Asteraceae*) (Hartshorn and Hammel, 1994).

Although the Malaise trap placed on the edge of a swamp did not yield any new species of *Alabragus*, it did yield many specimens of *A. latisoma* Sharkey, which are rarely collected in other habitats at La Selva. This trap accounted for 10.6% of the specimens of *Alabragus* and collected 61.5% of the species. The four Malaise traps in secondary forest collected a total of 27.7% of the specimens of *Alabragus* and captured 76.9% of the species. No species were found to be restricted to secondary forest. The four Malaise traps in primary forest caught a mere 17.3% of the specimens and only 65.4% of the species. Two species, *A. derailersi* new species and *A. latreillei* (Spinola), were found to be restricted to primary forest. One species, *A. kagaba* Sharkey, was found to be restricted to secondary and primary forest and two species, *A. cuna* Sharkey and *A. mojos* Sharkey, were found to be restricted to successional plots and secondary forest. Although members of the genus are especially diverse in lowland Neotropical rainforests, they appear to be primarily associated with successional habitats.

Table 2. The habitat types in which each species of *Alabagrus* has been collected at La Selva.

Species	Habitat type <sup>a</sup>			
	BS	SP	SF	PF
<i>A. albisipina</i>	×	×	×	×
<i>A. arawak</i>	×	×	×	×
<i>A. cara</i>	×	×	×	×
<i>A. cocto</i>		×		
<i>A. combos</i>		×	×	×
<i>A. cuna</i>		×	×	
<i>A. derailersi</i>				×
<i>A. donnai</i>	×	×	×	
<i>A. englishi</i>	×	×	×	
<i>A. imitatus</i>	×	×	×	×
<i>A. kagaba</i>			×	×
<i>A. latisoma</i>	×	×	×	×
<i>A. latreillei</i>				×
<i>A. maculipes</i>	×	×	×	×
<i>A. masneri</i>	×	×	×	×
<i>A. maya</i>		×		
<i>A. mojos</i>		×	×	
<i>A. nigritulus</i>	×	×	×	×
<i>A. pachamama</i>	×	×	×	×
<i>A. pecki</i>	×	×	×	×
<i>A. sarapiqui</i>		×		
<i>A. semialbus</i>	×	×	×	×
<i>A. stigma</i>		×		
<i>A. warrau</i>	×	×	×	×
<i>A. watsoni</i>	×	×	×	
<i>A. yaruro</i>	×		×	×

<sup>a</sup> BS = borde suampo, SP = successional plots, SF = secondary forest, PF = primary forest.

OVERALL DISTRIBUTION

Of the 39 species of *Alabagrus* that are known from Costa Rica, 5 (12.8%) are endemic to Costa Rica, 9 others (23.1%) are restricted to Central America, 22 (56.4%) include South America in their distribution, and 14 (35.9%) of these are found on both sides of the Andes. However, only one (2.6%) is found in the United States north of the extreme southern tip of Florida, where two are found because of the introduction of *A. stigma* (Sharkey, 1988) and only three (7.7%) range north of the limits of moist tropical forests in southern Mexico.

SYSTEMATICS

*Alabagrus* Enderlein

- Alabagrus* Enderlein, 1920:203–205.
- Astiria* Enderlein, 1920:207–208; Sharkey 1988: 341.
- Craspedobothrus* Enderlein, 1920:206–207; Sharkey 1988:341.
- Lyptia* Enderlein, 1920:210–211; Sharkey 1988: 341.

Diagnosis. Species of *Alabagrus* can be distin-

guished from other species of Agathidinae using the key of Sharkey (1997), and by the following combination of character states (Sharkey, 1988): tarsal claws have a rounded basal lobe, the first metasomal tergite is convex and often has a median longitudinal carina (few males have two carinae present), and the frons is bordered by carinae.

KEY TO THE SPECIES OF *ALABAGRUS* OF THE WORLD

Some species of *Alabagrus* are slightly sexually dimorphic in regard to sculpture, and the males of a few species have yet to be collected. Thus, females may be easier to identify with this key. Species names in square brackets ([ ]) have not been collected in Costa Rica.

- 1 Propodeum areolate (cf. Fig. 12a) . . . 2
- Propodeum mostly smooth (cf. Fig. 14a) . . . . . 154
- Propodeum punctate in anterior half, areolate posteriorly (cf. Fig. 17c) . . . . . 204
- 2 (1) Antenna black or brown . . . . . 3
- Antenna yellowish-orange . . . . . 148
- Antenna black or brown except distal third yellowish-orange . . . . . 151
- 3 (2) Metasoma entirely yellowish-orange to red (cf. Figs. 5a, 6a) . . . . . 4
- Metasoma entirely dark brown to black (cf. Figs. 4f, 5f) . . . . . 104
- Metasoma mostly yellowish-orange to red anteriorly, but brown to black posteriorly (cf. Figs. 4b, 7e) . . . . . 105
- 4 (3) Hind femur smooth ventrally (cf. Fig. 10b) . . . . . 5
- Hind femur rugose ventrally (cf. Fig. 10c) . . . . . 79
- Hind femur punctate ventrally (cf. Fig. 10a) . . . . . 98
- 5 (4) Hind tarsus black (cf. Figs. 4f, 5f) . . . 6
- Hind tarsus yellowish-orange . . . . . 76
- Hind tarsus orange in basal tenth, black apically (cf. Figs. 6c, 6d) . . . . . [A. voto Sharkey]
- 6 (5) Gena right-angled posteroventrally (cf. Fig. 9a) . . . . . 7
- Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 24
- Gena acute posteroventrally (cf. Fig. 9d) . . . . . 59
- Gena with obtuse angle posteriorly (cf. Fig. 9c) . . . . . 74
- 7 (6) Metapleuron black (cf. Fig. 7e) . . . . . 8
- Metapleuron yellowish-orange (cf. Fig. 7f) . . . . . 10
- Metapleuron yellowish-orange in dorsal third, black ventrally . . . . . [A. variegatus (Brullé)]
- 8 (7) Tergum 8 black (Fig. 5f); first median tergite less than 1.1 × longer than wide . . . . . A. combos new species



- Tergum 8 yellowish-orange (cf. Figs. 5d, 5e); first median tergite more than  $1.3 \times$  longer than wide . . . . . 9
- 9 (8) Forecoxa and midtarsus black (Fig. 7f); ovipositor more than  $1.2 \times$  body length; hind tibia with 5 to 9 spines . . . . . *A. englishi* new species
- Forecoxa and midtarsus yellowish-orange (cf. Figs. 6b, 6d); ovipositor less than  $0.8 \times$  body length; hind tibia with 0 to 3 spines . . [A. *variegatus* (Brullé)]
- 10 (7) Forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . *A. pachamama* Sharkey
- Forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c) . . . . . 11
- Forewing clear basally, black apically (cf. Figs. 6f, 7c) . . . . . 12
- Forewing entirely black but darker apically (cf. Figs. 6d, 7d) . . . . . 13
- Forewing entirely and evenly black (cf. Figs. 6a, 6c) . . . . . 14
- Forewing black except yellow or clear basally and stigma yellow (cf. Fig. 5b) . . . . . 23
- 11 (10) Antenna with 37 to 41 flagellomeres; first median tergite  $1.48\text{--}1.83 \times$  longer than wide; body length  $5.77\text{--}6.98$  mm; (Fig. 3e) . . . . . *A. cuna* Sharkey
- Antenna with 34 to 36 flagellomeres; first median tergite  $1.05\text{--}1.35 \times$  longer than wide; body length  $5.25\text{--}5.75$  mm; (Fig. 5e) . . . . . *A. cara* Sharkey
- 12 (10) Mesopleuron black; ovipositor less than  $1.0 \times$  body length; body length greater than 7 mm; midtarsus black (Fig. 7f) . . . . . *A. englishi* new species
- Mesopleuron yellowish-orange; ovipositor more than  $1.2 \times$  body length; body length less than 6 mm; midtarsus yellowish-orange (Fig. 6b) . . . . . *A. arawak* Sharkey
- 13 (10) Midcoxa black (Fig. 7a); 39 to 47 antennal flagellomeres . . . . . *A. cocto* Sharkey
- Midcoxa entirely yellowish-orange or yellowish-orange basally, black apically (cf. Figs. 6a, 6b); 33 to 36 antennal flagellomeres . . . . . *A. arawak* Sharkey
- 14 (10) Mesopleuron black (cf. Fig. 5f) . . . . . 15
- Mesopleuron yellowish-orange (cf. Fig. 5e) . . . . . 22
- 15 (14) Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 16
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 20
- 16 (15) Median longitudinal ridge of scutum weak anteriorly or absent (cf. Figs. 11b, 11c) . . . . . 17
- Median longitudinal ridge of scutum strong (cf. Fig. 11d) . . . . . 18
- 17 (16) Ovipositor less than  $1.0 \times$  body length; metasomal syntergite 2+3 less than  $1.3 \times$  longer than wide; (Fig. 8g) . . . . . *A. maya* Sharkey
- Ovipositor greater than  $1.25 \times$  body length; metasomal syntergite 2+3 more than  $1.35 \times$  longer than wide; (Fig. 7f) . . . . . *A. englishi* new species
- 18 (16) Midtarsus black (Fig. 7f) . . . . . *A. englishi* new species
- Midtarsus yellowish-orange (cf. Fig. 8c) . . . . . 19
- 19 (18) Median syntergite 2+3 less than  $1.05 \times$  longer than wide; (Fig. 8c) . . . . . *A. donnai* new species
- Median syntergite 2+3 greater than  $1.3 \times$  longer than wide; (Fig. 8f) . . . . . *A. nigrifulus* (Szépligeti)
- 20 (15) Hind tibia mostly black (Figs. 7f, 8c) . . . . . 21
- Hind tibia mostly yellowish-orange (Fig. 7c) . . . . . *A. sarapiqui* new species
- 21 (20) Midtarsus yellowish-orange; ovipositor less than  $0.9 \times$  body length; (Fig. 8c) . . . . . *A. donnai* new species
- Midtarsus black; ovipositor greater than  $1.2 \times$  body length; (Fig. 7f) . . . . . *A. englishi* new species
- 22 (14) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a); forewing veins 1M and 1cu-a intersect (Fig. 13a); hind tibia with 7 or more spines; (Fig. 8g) . . . . . *A. maya* Sharkey
- Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d); forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b); hind tibia with 4 or fewer spines; (Fig. 6b) . . . . . *A. arawak* Sharkey
- 23 (10) Tergum 8 yellowish-orange (cf. Fig. 5e); first median tergite evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); antenna with 38 or fewer flagellomeres . . . [A. *caingang* Sharkey]
- Tergum 8 black (cf. Fig. 5f); first median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); antenna with 42 or more flagellomeres . . . . . [A. *mocovi* Sharkey]
- 24 (6) Head entirely black (cf. Fig. 6c) . . . . . 25
- Head entirely yellowish-orange (cf. Fig. 6d) . . . . . 58
- Head yellowish-orange except vertex black or yellowish-orange except black anteriorly . . . *A. maculipes* (Cameron)
- 25 (24) Mesopleuron black (cf. Figs. 5f, 6f) . . . . . 26
- Mesopleuron yellowish-orange (cf. Figs. 5a, 5c) . . . . . 41
- Mesopleuron black ventrally, yellowish-orange dorsally (cf. Fig. 5b) . . . . . 57
- 26 (25) Hind coxa entirely yellowish-orange (cf. Figs. 7b, 7d) . . . . . 27

- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . 32
- Hind coxa mostly black, but yellowish-orange basally (cf. Figs. 4c, 6b) . . . 40
- 27 (26) Metapleuron mostly smooth (cf. Fig. 15a) . . . . . 28
- Metapleuron areolate rugose in ventral quarter (cf. Fig. 15b) . . . . . 38
- Metapleuron areolate rugose in ventral half (cf. Fig. 16a) . . . . . 39
- 28 (27) Apex of scutellum rugose, lacking transverse ridge (cf. Fig. 11c) . . . . . 29
- Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a) . . . . . 30
- Apex of scutellum rugose or smooth, with transverse ridge (cf. Figs. 11a, 12d) . . . . . 32
- 29 (28) Median longitudinal ridge of scutum strong (cf. Fig. 11d); hind tibia black (Fig. 8c) . . . . . *A. donnai* new species
- Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c); hind tibia mostly yellowish-orange but black apically (cf. Fig. 8e) . . . . . [*A. nio* Sharkey]
- 30 (28) Hind femur entirely black or black with a yellowish-orange area distolaterally (Fig. 8e) . . . . . *A. tripartitus* (Brullé)
- Hind femur mostly to entirely yellowish-orange (cf. Figs. 5a, 5c) . . . . . 31
- 31 (30, 38) Ovipositor longer than  $1.2 \times$  body length; first median tergite  $1.34\text{--}1.49 \times$  longer than wide; midtarsus black . . . . . *A. englishi* new species
- Ovipositor shorter than  $1.0 \times$  body length; first median tergite  $0.86\text{--}1.22 \times$  longer than wide; midtarsus often yellowish-orange but sometimes black . . . . . 36
- 32 (26, 28) Ovipositor shorter than  $1.0 \times$  body length; first median tergite  $0.82\text{--}1.23 \times$  longer than wide; median syntergite 2+3  $0.89\text{--}1.27 \times$  longer than wide . . . . . 33
- Ovipositor longer than  $1.1 \times$  body length; first median tergite  $1.34\text{--}1.49 \times$  longer than wide; median syntergite 2+3  $1.35\text{--}1.60 \times$  longer than wide . . . . . 37
- 33 (32) Antenna with less than 40 flagellomeres . . . . . 34
- Antenna with 40 or more flagellomeres . . . . . 35
- 34 (33) Median syntergite 2+3  $1.12\text{--}1.24 \times$  longer than wide; antenna with 36 to 39 flagellomeres; body length 5.48–7.81 mm; (Fig. 7b) . . . . . *A. albispina* (Cameron)
- Median syntergite 2+3  $0.89\text{--}1.05 \times$  longer than wide; antenna with 32 to 39 flagellomeres; body length 4.93–5.76 mm; (Fig. 8c) . . . . . *A. donnai* new species
- 35 (33) Forewing entirely and evenly black (cf. Figs. 6a, 6c), or clear basally and black apically with a sharp distinction (cf. Figs. 7b, 7d); hind tibia with 4 to 13 spines; scutellar sulcus usually with weak to strong median ridge (cf. Figs. 11b, 11d), but occasionally without median ridge (cf. Fig. 11c) . . . . . 36
- Forewing entirely black but darker in apical quarter to tenth (Fig. 7c); hind tibia with 2 to 5 spines; scutellar sulcus without median ridge (cf. Fig. 11c) . . . . . *A. sarapiqui* new species
- 36 (31, 35) Propleuron black (Fig. 7b); hind femur rugose ventrally (cf. Fig. 10c); gena rounded posteroventrally (cf. Fig. 9b) . . . . . *A. albispina* (Cameron)
- Propleuron dark brown or black (Fig. 7d, but can be browner); hind femur usually smooth ventrally (except some males) (cf. Fig. 10b); gena with obtuse angle posteroventrally (but may appear rounded) (cf. Fig. 9c) . . . . . *A. roibasi* Sharkey
- 37 (32) Midtarsus black (Fig. 7f); hind tibia with fewer than 10 spines . . . . . *A. englishi* new species
- Midtarsus yellowish-orange (cf. Figs. 7a, 7c); hind tibia with more than 12 spines . . . . . [*A. xolotl* Sharkey]
- 38 (27) Ovipositor sheath black; body length 4.5–8.5 mm; antenna with 32 to 45 flagellomeres . . . . . 31
- Ovipositor sheath mostly black but yellow at apex; body length 9.1–11.0 mm; antenna with 45 to 48 flagellomeres . . . . . *A. nicoya* Sharkey
- 39 (27) Metanotum black; anterior transverse carina of propodeum complete (cf. Fig. 11a, ATC); hind femur more than  $4.0 \times$  longer than wide . . . . . [*A. texanus* (Cresson)]
- Metanotum yellowish-orange; anterior transverse carina of propodeum weakly defined or absent (cf. Figs. 11b, 11c); hind femur less than  $3.0 \times$  longer than wide . . . . . *A. nicoya* Sharkey
- 40 (26) Ovipositor less than  $1.0 \times$  length of body; first median tergite without anterolateral converging carinae; (Fig. 7b) . . . . . *A. albispina* (Cameron)
- Ovipositor longer than  $1.4 \times$  length of body; first median tergite with anterolateral converging carinae; (Fig. 6e) . . . . . *A. parvifaciatus* (Cameron)
- 41 (25) Forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c) . . . . . 42
- Forewing clear basally and black apically, or entirely black but darker apically (Fig. 6b) . . . . . *A. arawak* Sharkey

- Forewing entirely and evenly black (cf. Figs. 6a, 6c) . . . . . 45
- Forewing yellow basally, gradually becoming infusate apically . . . . . [A. *masoni* Sharkey] 49 (48)
- 42 (41) Median longitudinal ridge of scutum strong (cf. Fig. 11d); hind tibia mostly yellowish-orange except black apically (cf. Figs. 6b, 6d) . . . . . 43
- Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c) or absent (cf. Fig. 11a); hind tibia black (cf. Fig. 6f) or mostly yellowish-orange except black apically (cf. Figs. 6b, 6d) . . . . . 44
- 43 (42) Antenna with 37 to 41 flagellomeres; first median tergite  $1.48-1.83 \times$  longer than wide; body length 5.77-6.98 mm; (Fig. 3e) . . . . . A. *cuna* Sharkey 51 (49)
- Antenna with 34 to 36 flagellomeres; first median tergite  $1.05-1.35 \times$  longer than wide; body length 5.25-5.75 mm; (Fig. 5e) . . . . . A. *cara* Sharkey 52 (51)
- 44 (42) Metapleuron with several crenulae along ventral margin; malar space  $0.45-0.52 \times$  the distance from the eye to the maximum extent of the gena; (Fig. 5e) . . . . . A. *cara* Sharkey
- Metapleuron with no crenulae along ventral margin; malar space  $0.57-0.79 \times$  the distance from the eye to the maximum extent of the gena; (Fig. 5a) . . . . . A. *pecki* Sharkey 53 (51)
- 45 (41) Hind coxa entirely yellowish-orange (cf. Figs. 7b, 7d) . . . . . 46
- Hind coxa mostly yellowish-orange but black in apical fifth (cf. Fig 6b, but less black) . . . . . 55
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . A. *arawak* Sharkey
- Hind coxa mostly black but yellowish-orange in basal twelfth . . . . . A. *masneri* Sharkey 55 (45)
- 46 (45) Median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a) . . . . . [A. *carib* Sharkey]
- Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or metanotum bisected by strong median longitudinal ridge . . . . . 47
- 47 (46) Hind tibia mostly yellowish-orange (cf. Figs. 6b, 6d) . . . . . 48
- Hind tibia mostly black (cf. Figs. 6c, 6f) . . . . . 54
- 48 (47) Antenna with 33 to 45 flagellomeres; forefemur, midfemur, and midtibia usually black, but sometimes yellowish-orange . . . . . 49
- Antenna with 47 or more flagellomeres; forefemur, midfemur, and mid-tibia yellowish-orange . . . . . [A. *marginatifrons* (Muesebeck)]
- 49 (48) Hind tibia with more than 10 spines; midtibia with more than 6 spines 50
- Hind tibia with fewer than 8 spines; midtibia with fewer than 5 spines 51
- 50 (49) Ovipositor  $1.3-1.6 \times$  body length; hind tibia mostly yellowish-orange but black in apical and basal sixth . . . . . A. *imitatus* (Cresson)
- Ovipositor  $1.1 \times$  body length; hind tibia mostly yellowish-orange with a black area laterally . . . . . [A. *xolotl* Sharkey]
- 51 (49) Ovipositor  $0.5-1.0 \times$  longer than body . . . . . 52
- Ovipositor  $1.1-1.6 \times$  longer than body . . . . . 53
- 52 (51) Hind tibia mostly yellowish-orange but black in apical third to eighth; malar space  $0.50-0.62 \times$  the distance from the eye to the maximum extent of the gena; (Fig. 6b) . . . . . A. *arawak* Sharkey
- Hind tibia mostly yellowish-orange but black in basal and apical sixth; malar space  $0.73-1.00 \times$  the distance from the eye to the maximum extent of the gena; (Fig. 6a) . . . . . A. *derailersi* new species 53 (51)
- Ovipositor  $1.3-1.6 \times$  body length (Fig. 3f) . . . . . A. *imitatus* (Cresson)
- Ovipositor  $0.7-1.3 \times$  body length; (Fig. 6a) . . . . . A. *derailersi* new species 54 (47)
- Maxillary and labial palpomeres black; ovipositor less than  $1.0 \times$  body length . . . . . [A. *varipes* (Cresson)]
- Maxillary and labial palpomeres yellowish-orange or mostly yellowish-orange but black basally; ovipositor greater than  $1.3 \times$  body length . . . . . A. *imitatus* (Cresson) 55 (45)
- Hind femur black or mostly yellowish-orange but black in basal and apical twelfth (cf. Figs. 6f, 6c) . . . . . A. *masneri* Sharkey
- Hind femur entirely yellowish-orange (cf. Figs. 6b, 6d) . . . . . 56
- 56 (55) Ovipositor  $0.7-1.3 \times$  body length; (Fig. 6a) . . . . . A. *derailersi* new species
- Ovipositor  $1.3-1.6 \times$  body length; (Fig. 3f) . . . . . A. *imitatus* (Cresson) 57 (25)
- Foretrochanter black; foretrochantellus black; forefemur black; foretibia black; midtrochanter black (Fig. 3f) . . . . . A. *imitatus* (Cresson)
- Foretrochanter yellowish-orange; foretrochantellus yellowish-orange; forefemur yellowish-orange; foretibia yellowish-orange; midtrochanter yellowish-orange . . . . . [A. *marginatifrons* (Muesebeck)]

- 58 (24) Hind tibia black (cf. Figs. 6c, 6f); maxillary and labial palpomeres black . . . . . [A. *varipes* (Cresson)]  
 - Hind tibia mostly yellow but black in apical eighth (cf. Figs. 6b, 6d); maxillary and labial palpomeres yellowish-orange . . . . . A. *maculipes* (Cameron)
- 59 (6) Mesopleuron black (cf. Figs. 4f, 5f) . . . . . 60  
 - Mesopleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 66  
 - Mesopleuron black ventrally, yellowish-orange dorsally (cf. Fig. 5b) . . . . . A. *yaruro* Sharkey
- 60 (59) Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 61  
 - Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 65
- 61 (60) Forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . A. *pachamama* Sharkey  
 - Forewing banded from base: clear, black, clear, black; or black basally, clear apically (Fig. 8e) . . . . . A. *tripartitus* (Brullé)  
 - Forewing entirely and evenly black (cf. Figs. 6a, 6c) . . . . . 62
- 62 (61) Midtarsus black or brown (cf. Figs. 6a, 6f) . . . . . 63  
 - Midtarsus yellowish-orange (cf. Figs. 6b, 6c) . . . . . 64
- 63 (62) Gena usually acute (cf. Fig. 9d); forewing often banded from base: clear, black, clear, black, but may be black basally and clear apically or entirely and evenly black (Fig. 8e) . . . . . A. *tripartitus* (Brullé)  
 - Gena usually right-angled (cf. Fig. 9a); forewing entirely and evenly black (Fig. 8g) . . . . . A. *maya* Sharkey
- 64 (62) Median longitudinal ridge of scutum weak to absent (cf. Figs. 11a-11c); hind tibia with 7 to 11 spines; (Fig. 8g) . . . . . A. *maya* Sharkey  
 - Median longitudinal ridge of scutum strong (cf. Fig. 11d); hind tibia with 3 to 5 spines; (Fig. 8f) . . . . . A. *nigritulus* (Szépligeti)
- 65 (60) Forewing banded from base: yellow, black, yellow, black (Fig. 4c); maxillary and labial palpomeres yellowish-orange; tergum 6 black . . . . . A. *pachamama* Sharkey  
 - Forewing entirely black (Fig. 7c); maxillary and labial palpomeres mostly yellowish-orange but black basally; tergum 6 yellowish-orange . . . . . A. *sarapiqui* new species
- 66 (59) Head black . . . . . 67  
 - Head yellowish-orange except labrum black . . . . . [A. *caquetio* Sharkey]
- 67 (66) Midcoxa black (cf. Fig. 6f) . . . . . 68  
 - Midcoxa yellowish-orange (cf. Fig. 6d) . . . . . 69  
 - Midcoxa yellowish-orange basally, black apically (cf. Fig. 6b) . . . . . 73
- 68 (67) Forewing yellow basally and black apically with a sharp distinction (Fig. 5d); hind coxa variable . . . . . A. *yaruro* Sharkey  
 - Forewing entirely black but darker apically (Fig. 7a); hind coxa mostly yellowish-orange but black laterally . . . . . A. *cocto* Sharkey  
 - Forewing entirely and evenly black (Fig. 8g); hind coxa entirely yellowish-orange . . . . . A. *maya* Sharkey
- 69 (67) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a) . . . . . 70  
 - Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a) . . . . . A. *cuna* Sharkey  
 - Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d) . . . . . 71
- 70 (69) Forewing yellow basally and black apically with a sharp distinction (Fig. 5e); foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange . . . . . A. *cara* Sharkey  
 - Forewing entirely black (Fig. 8g); foretrochanter and trochantellus black; forefemur black . . . . . A. *maya* Sharkey
- 71 (69) Antenna with 33 to 36 flagellomeres; (Figs. 3e, 6b) . . . . . 72  
 - Antenna with 37 to 41 flagellomeres; (Fig. 5e) . . . . . A. *cara* Sharkey
- 72 (71) Foretrochanter and trochantellus black; forefemur black; midtrochanter black; midtibia black (Fig. 6b) . . . . . A. *arawak* Sharkey  
 - Foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange; midtrochanter yellowish-orange; midtibia yellowish-orange (Fig. 3e) . . . . . A. *cuna* Sharkey
- 73 (67) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a); body length 7.8-8.2 mm; antenna with 43 to 47 flagellomeres; (Fig. 5d) . . . . . A. *yaruro* Sharkey  
 - Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d); body length 4.0-6.5 mm; antenna with 33 to 36 flagellomeres; (Fig. 6b) . . . . . A. *arawak* Sharkey
- 74 (6) Metapleuron black (Fig. 5f) . . . . . A. *combos* new species  
 - Metapleuron yellowish-orange (cf. Fig. 7d) . . . . . 75  
 - Metapleuron yellowish-orange in dorsal third, black ventrally . . . . . A. *roibasi* Sharkey
- 75 (74) Median areola of metanotum not excavated, posterior margin not elevated

	(cf. Fig. 17a); antenna with 34 to 38 flagellomeres; (Fig. 8d) . . . . .		bial palpomeres black; midtarsus black (cf. Figs. 6a, 6f) . . . . .	
	. . . . . <i>A. arua</i> Sharkey		. . . . . [A. <i>coatlicue</i> Sharkey]	
-	Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong median longitudinal ridge; antenna with 40 to 44 flagellomeres; (Fig. 7d) . . . . .	82 (80)	Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . .	83
	. . . . . <i>A. roibasi</i> Sharkey		Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . .	84
76 (5)	Gena right-angled posteroventrally (cf. Fig. 9a) . . . . .	83 (82)	Foretrochanter and trochantellus black; forefemur black; midtibia black (Fig. 6b) . . . . .	
	. . . . . <i>A. guayaki</i> Sharkey		Foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange; midtibia yellowish-orange (Fig. 3e) . . . . .	
-	Gena rounded posteroventrally (cf. Fig. 9b) . . . . .		<i>A. cuna</i> Sharkey	
-	Gena acute posteroventrally (cf. Fig. 9d) . . . . .	84 (82)	Hind femur yellowish-orange; foretrochanter and trochantellus black (Fig. 6b) . . . . .	
77 (76)	Scutellar sulcus mostly smooth (cf. Fig. 12a); antenna with 42 flagellomeres; median longitudinal ridge of scutum absent (cf. Fig. 11a); tergum 8 black . . . . .		. . . . . <i>A. arawak</i> Sharkey	
	. . . . . [A. <i>watachupa</i> Sharkey]		Hind femur mostly yellowish-orange but black in basal twelfth; foretrochanter and trochantellus yellowish-orange (Fig. 5c) . . . . .	
-	Scutellar sulcus with median ridge (cf. Fig. 11b); antenna with 37 to 38 flagellomeres; median longitudinal ridge of scutum strong (cf. Fig. 11d); tergum 8 yellowish-orange . . . . .	85 (79)	<i>A. warrau</i> Sharkey	
	. . . . . [A. <i>caingang</i> Sharkey]		Hind tarsus black . . . . .	86
78 (76)	Head black (cf. Fig. 6c); forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c); anterior transverse carina of propodeum absent (cf. Fig. 17d); foretrochanter and trochantellus black . . . . .		Hind tarsus yellowish-orange . . . . .	
	. . . . . [A. <i>sispacara</i> Sharkey]		. . . . . [A. <i>cora</i> Sharkey]	
-	Head yellowish-orange (cf. Fig. 6d); forewing black with stigma yellow (cf. Fig. 5b); anterior transverse carina of propodeum complete (cf. Fig. 11d); foretrochanter and trochantellus yellowish-orange . . . . .	86 (85)	Hind tarsus orange in basal tenth, black apically . . . . .	
	. . . . . [A. <i>oyana</i> Sharkey]		<i>A. stigma</i> (Brullé)	
79 (4)	Gena right-angled posteroventrally (cf. Fig. 9a) . . . . .		Mesopleuron black (cf. Figs. 4f, 5f) . . . . .	87
	. . . . .		. . . . .	
-	Gena rounded posteroventrally (cf. Fig. 9b) . . . . .		Mesopleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . .	89
-	Gena acute posteroventrally (cf. Fig. 9d) . . . . .		Mesopleuron black ventrally, yellowish-orange dorsally (Fig. 5b) . . . . .	
	. . . . .		. . . . . [A. <i>stigma</i> (Brullé)]	
80 (79)	Mesopleuron black (cf. Figs. 4f, 5f) . . . . .	87 (86)	Hind femur 3.15–4.47 × longer than wide; maxillary and labial palpomeres entirely yellowish-orange or mostly yellowish-orange but black basally; ovipositor sheath black . . . . .	88
	. . . . .		Hind femur 2.5–2.9 × longer than wide; maxillary and labial palpomeres mostly black but yellowish-orange apically; ovipositor sheath mostly black but yellow at apex . . . . .	
-	Mesopleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . .		. . . . . <i>A. nicoya</i> Sharkey	
-	Mesopleuron black ventrally, yellowish-orange dorsally (cf. Fig. 5b) . . . . .	88 (87)	Metapleuron mostly smooth (cf. Fig. 15a) or areolate rugose in ventral quarter (cf. Fig. 15b); antenna with 36 to 41 flagellomeres . . . . .	
	. . . . . [A. <i>calibi</i> Sharkey]		. . . . . <i>A. albispina</i> (Cameron)	
81 (80)	Hind coxa yellowish-orange (cf. Figs. 7b, 7d); hind femur yellowish-orange (cf. Figs. 5d, 5e); maxillary and labial palpomeres yellowish-orange; midtarsus yellowish-orange (cf. Figs. 6c, 6d) . . . . .		Metapleuron areolate rugose in ventral half (cf. Fig. 16a); antenna with 41 to 45 flagellomeres . . . . .	
	. . . . . <i>A. nigrifulus</i> (Szépligeti)		. . . . . [A. <i>texanus</i> (Cresson)]	
-	Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c); hind femur black basally and yellowish-orange apically; maxillary and la-	89 (86)	Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . .	90
			Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . .	92
		90 (89)	Antenna with less than 37 flagellomeres; forewing not black to clear except stigma yellow (Figs. 3e, 6b) . . . . .	91
			Antenna with 39 to 40 flagellomeres;	

- forewing black to clear except stigma yellow (Fig. 5b) . . . *A. stigma* (Brullé)
- 91 (90) Foretrochanter and trochantellus black; forefemur black; midtibia black (Fig. 6b) . . . . . *A. arawak* Sharkey
- Foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange; midtibia yellowish-orange (Fig. 3e) . . . . . *A. cuna* Sharkey
- 92 (89) Hind femur yellowish-orange; foretrochanter and trochantellus black (Fig. 6b) . . . . . *A. arawak* Sharkey
- Hind femur mostly yellowish-orange but black in basal twelfth; foretrochanter and trochantellus yellowish-orange (Fig. 5c) . . . . . *A. warrau* Sharkey
- 93 (79) Head entirely black . . . . . 94
- Head entirely yellowish-orange . . . . . [ *A. oyana* Sharkey ]
- Head yellowish-orange except labrum black . . . . . [ *A. caquetio* Sharkey ]
- Head black except apical part of gena yellow . . . [ *A. testaceus* (Szépligeti) ]
- 94 (93) Mesopleuron black; mesonotum black (Fig. 8f) . . . *A. nigrutilus* (Szépligeti)
- Mesopleuron yellowish-orange; mesonotum yellowish-orange (cf. Figs. 7e, 7f) . . . . . 95
- 95 (94) Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 96
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 97
- 96 (95) Foretrochanter and trochantellus black; forefemur black; midtibia black (Fig. 6b) . . . . . *A. arawak* Sharkey
- Foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange; midtibia yellowish-orange (Fig. 3e) . . . . . *A. cuna* Sharkey
- 97 (95) Hind femur yellowish-orange; foretrochanter and trochantellus black (Fig. 6b) . . . . . *A. arawak* Sharkey
- Hind femur mostly yellowish-orange but black in basal twelfth; foretrochanter and trochantellus yellowish-orange (Fig. 5c) . . . . . *A. warrau* Sharkey
- 98 (4) Gena right-angled or with obtuse angle posteroventrally (cf. Fig. 9a) . . . . . *A. combos* new species
- Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 99
- Gena acute posteroventrally (cf. Fig. 9d) . . . . . 103
- 99 (98) Hind coxa entirely yellowish-orange (cf. Figs. 7b, 7d) . . . . . 100
- Hind coxa mostly yellowish-orange but black in apical fifth, or black but yellowish-orange in basal twelfth . . . . . *A. masneri* Sharkey
- but black laterally (cf. Figs. 7a, 7c) . . . . . [ *A. intimapa* Sharkey ]
- 100 (99) Mesopleuron black (cf. Figs. 4f, 5f) . . . . . 101
- Mesopleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 102
- Mesopleuron black ventrally, yellowish-orange dorsally (Fig. 5b) . . . . . *A. stigma* (Brullé)
- 101 (100) Foretarsus black; midtibia with up to 4 spines; hind tibia mostly yellowish-orange but black apically (cf. Figs. 5d, 5e); maxillary and labial palpomeres black . . . . . [ *A. sanctus* (Say) ]
- Foretarsus yellowish-orange; midtibia with 5 to 9 spines; hind tibia black (cf. Figs. 6c, 6f); maxillary and labial palpomeres yellowish-orange . . . . . *A. tripartitus* (Brullé)
- 102 (100) Forewing yellow basally and black apically with a sharp distinction (Fig. 5a) . . . . . *A. pecki* Sharkey
- Forewing black with stigma yellow (Fig. 5b) . . . . . *A. stigma* (Brullé)
- 103 (98) Pronotum black; mesopleuron black; hind coxa yellowish-orange; hind tibia with 4 to 11 spines; (Fig. 8e) . . . . . *A. tripartitus* (Brullé)
- Pronotum yellowish-orange; mesopleuron yellowish-orange (cf. Figs. 5c, 5d); hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c); hind tibia with 3 spines . . . . . [ *A. olmec* Sharkey ]
- 104 (3) Gena rounded posteroventrally (cf. Fig. 9b); metapleuron mostly smooth (cf. Fig. 15a); antenna with 50 flagellomeres . . . . . [ *A. ekchuah* Sharkey ]
- Gena with obtuse angle posteriorly (cf. Fig. 9c); metapleuron areolate rugose in ventral quarter (cf. Fig. 15b); antenna with 40 flagellomeres . . . . . [ *A. ixtilton* Sharkey ]
- 105 (3) Hind femur smooth ventrally (cf. Fig. 10b) . . . . . 106
- Hind femur rugose ventrally (cf. Fig. 10c) . . . . . 142
- Hind femur punctate ventrally (cf. Fig. 10a) . . . . . 146
- 106 (105) Gena right-angled posteroventrally (cf. Fig. 9a) . . . . . 107
- Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 117
- Gena acute posteroventrally (cf. Fig. 9d) . . . . . 128
- Gena with obtuse angle posteriorly (cf. Fig. 9c) . . . . . 138
- 107 (106) Propodeum black (cf. Figs. 4f, 7e) . . . . . 108
- Propodeum yellowish-orange (cf. Figs. 4e, 7f) . . . . . 109

- 108 (107) Midtarsus black; hind tibia black (Fig. 7e) . . . . . *A. tricarinatus* (Cameron)
- Midtarsus yellowish-orange; hind tibia mostly yellowish-orange but black apically (cf. Figs. 7a, 7c) . . . . . [A. *waorani* Sharkey]
- 109 (107) Hind coxa entirely black (cf. Fig. 7e) . . . . . 110
- Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 111
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 114
- Hind coxa mostly black but yellowish-orange in basal twelfth . . . . . *A. mojos* Sharkey
- Hind coxa mostly black but yellowish-orange posteriorly . . . . . 116
- 110 (109) Scutellar sulcus mostly smooth (cf. Fig. 12a); hind femur black; terga 4 to 6 black (Fig. 7e) . . . . . *A. tricarinatus* (Cameron)
- Scutellar sulcus with weak median ridge (cf. Fig. 11d); hind femur mostly black with a yellowish-orange area apicolaterally; terga 4 to 6 yellowish-orange (Fig. 5f) . . . . . *A. combos* new species
- 111 (109) Hind tarsus black . . . . . 112
- Hind tarsus yellowish-orange . . . . . [A. *watachupa* Sharkey]
- 112 (111) Metapleuron black (Fig. 7e) . . . . . *A. tricarinatus* (Cameron)
- Metapleuron yellowish-orange (cf. Figs. 7d, 7f) . . . . . 113
- 113 (112) Forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . *A. pachamama* Sharkey
- Forewing entirely and evenly black (Fig. 8g) . . . . . *A. maya* Sharkey
- Forewing black except yellow or clear basally and stigma yellow (cf. Fig. 5b) . . . . . [A. *mocovi* Sharkey]
- 114 (109) Forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . *A. pachamama* Sharkey
- Forewing clear basally and black apically, or black except yellow or clear basally and stigma yellow (cf. Figs. 5b, 7c) . . . . . [A. *muisca* Sharkey]
- Forewing entirely and evenly black (cf. Figs. 6a, 6c) . . . . . 115
- 115 (114) Hind tibia black; maxillary and labial palpomeres yellowish orange; midtarsus black (Fig. 6f) . . . . . *A. watsoni* new species
- Hind tibia mostly yellowish-orange but black in apical tenth; maxillary and labial palpomeres mostly yellowish-orange but black basally; midtarsus yellowish-orange (Fig. 7c) . . . . . *A. sarapiqui* new species
- 116 (109) Scutellar sulcus with a strong median ridge (cf. Fig. 11b); maxillary and labial palpomeres black; terga 5 and 6 black (cf. Figs. 6f, 7e) . . . . . [A. *wachapu* Sharkey]
- Scutellar sulcus with weak median ridge (cf. Fig. 11d); maxillary and labial palpomeres yellowish-orange; terga 5 and 6 yellowish-orange (Fig. 5f) . . . . . *A. combos* new species
- 117 (106) Hind tarsus black; midcoxa and midtibia black; forefemur and foretibia black . . . . . 118
- Hind tarsus yellowish-orange; midcoxa black anteriorly, yellowish-orange posteriorly; midtibia yellowish-orange; forefemur black in basal half, yellowish-orange apically; foretibia yellowish-orange . . . . . [A. *guayaki* Sharkey]
- 118 (117) Metapleuron black (Fig. 7e) . . . . . *A. tricarinatus* (Cameron)
- Metapleuron yellowish-orange (cf. Figs. 7c, 7f) . . . . . 119
- Metapleuron yellowish-orange in dorsal third, black ventrally . . . . . 127
- 119 (118) Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 120
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 124
- Hind coxa mostly black but yellowish-orange in basal twelfth . . . . . 126
- 120 (119) Scutum highly elevated; maxillary and labial palpomeres black; antenna with 32 or 33 flagellomeres . . . . . [A. *elatoscutum* Sharkey]
- Scutum not highly elevated; maxillary and labial palpomeres yellowish-orange or yellowish-orange but black basally; antenna with 36 to 44 flagellomeres . . . . . 121
- 121 (120) Midtarsus black (cf. Figs. 6a, 6f) . . . . . 122
- Midtarsus yellowish-orange (cf. Figs. 6b, 6d) . . . . . 123
- 122 (121) Hind femur entirely yellowish-orange, or mostly yellowish-orange but black in apical and basal eighth to tenth; metapleuron with several crenulae along ventral margin; (Fig. 7b) . . . . . *A. albispina* (Cameron)
- Hind femur entirely black, or mostly black with a yellowish-orange area distolaterally; metapleuron with no crenulae along ventral margin; (Fig. 8e) . . . . . *A. tripartitus* (Brullé)
- 123 (121, 124) Propleuron black; hind femur rugose ventrally (cf. Fig. 10c); gena rounded posteroventrally (cf. Fig. 9b); (Fig. 7b) . . . . . *A. albispina* (Cameron)
- Propleuron dark brown or black; hind femur usually smooth ventrally (except some males) (cf. Fig. 10b); gena

- with obtuse angle posteroventrally (but may appear rounded) (cf. Fig. 9c); (Fig. 7d) . . . *A. roibasi* Sharkey
- 124 (119) Scutellar sulcus with strong to weak median ridge (cf. Figs. 11b, 11d) . . . 123
- Scutellar sulcus mostly smooth (cf. Fig. 12a) . . . . . 125
- 125 (124) Hind tibia usually entirely black, but sometimes mostly yellowish-orange but black in apical half to third (Fig. 7b) . . . . . *A. albispina* (Cameron)
- Hind tibia mostly yellowish-orange but black in apical tenth (Fig. 7c) . . . . . *A. sarapiqui* new species
- 126 (119) Ovipositor  $1.5 \times$  length of body; first median tergite with anterolateral converging carinae (cf. Fig. 19e); (Fig. 6e) . . . . . *A. parvifaciatus* (Cameron)
- Ovipositor  $0.6-0.9 \times$  length of body; first median tergite without anterolateral converging carinae (cf. Fig. 19a-19d); (Fig. 7b) . . . . . *A. albispina* (Cameron)
- 127 (118) Scutellar sulcus with strong median ridge (cf. Fig. 11b); forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c) . . . . . [*A. diegeli* Sharkey]
- Scutellar sulcus with weak median ridge (cf. Fig. 11d); forewing entirely and evenly black, or clear basally, black apically with a sharp distinction (cf. Figs. 6a, 7d) . . . . . *A. roibasi* Sharkey
- 128 (106) Propodeum black (cf. Figs. 4f, 7e) . . . . . [*A. puri* Sharkey]
- Propodeum yellowish-orange (cf. Figs. 4e, 7f) . . . . . 129
- 129 (128) Hind tarsus black . . . . . 130
- Hind tarsus yellowish-orange . . . . . [*A. shorteri* Sharkey]
- 130 (129) Metapleuron black (cf. Figs. 4f, 5f) . . . . . [*A. maue* Sharkey]
- Metapleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 131
- 131 (130) Hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . . 132
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 136
- 132 (131) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a) . . . 133
- Apex of scutellum with transverse, smooth ridge or mostly smooth with several weak punctures . . . . . *A. pachamama* Sharkey
- Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a) . . . . . [*A. erythromelas* (Brullé)]
- 133 (132) Tergum 8 yellowish-orange (cf. Figs. 5a, 5e) . . . . . 134
- Tergum 8 black (cf. Figs. 4b, 5f) . . . 135
- 134 (133) Gena usually acute (cf. Fig. 9d); forewing often banded from base: clear, black, clear, black, but may be black basally and clear apically, or entirely and evenly black; (Fig. 8e) . . . . . *A. tripartitus* (Brullé)
- Gena usually right-angled (cf. Fig. 9a); forewing entirely and evenly black (Fig. 8g) . . . . . *A. maya* Sharkey
- 135 (133) Scutellar sulcus mostly smooth (cf. Fig. 12a); forewing color pattern banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . *A. pachamama* Sharkey
- Scutellar sulcus with strong to weak median ridge (cf. Figs. 11b, 11d); forewing color pattern banded from base: clear, black, clear, black, or entirely black, or black basally and clear apically; (Fig. 8e) . . . . . *A. tripartitus* (Brullé)
- 136 (131) Hind tibia black (Fig. 6f) . . . . . *A. watsoni* new species
- Hind tibia mostly yellow but black apically (cf. Figs. 6b, 6d) . . . . . 137
- 137 (136) Forewing banded from base: yellow, black, yellow, black; maxillary and labial palpomeres yellowish-orange; tergum 6 black (Fig. 4c) . . . . . *A. pachamama* Sharkey
- Forewing entirely black; maxillary and labial palpomeres mostly yellowish-orange but black basally; tergum 6 yellowish-orange (Fig. 7c) . . . . . *A. sarapiqui* new species
- 138 (106) Scutellar sulcus mostly smooth (cf. Fig. 12a) . . . . . *A. juchuy* Sharkey
- Scutellar sulcus with strong median ridge (cf. Fig. 11b) . . . . . 139
- Scutellar sulcus with weak median ridge (cf. Fig. 11d) . . . . . 140
- 139 (138) Metapleuron black; metapleuron areolate rugose in ventral quarter (cf. Fig. 15b); forewing clear basally, black apically (cf. Figs. 7a, 7c); midtibia with more than 7 spines . . . . . [*A. mixcoatl* Sharkey]
- Metapleuron yellowish-orange; metapleuron mostly smooth (cf. Fig. 15a); forewing pattern entirely and evenly black (cf. Figs. 6a, 6c); midtibia with fewer than 5 spines . . . . . *A. arua* Sharkey
- 140 (138) Metapleuron black (Fig. 5f) . . . . . *A. combos* new species
- Metapleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 141
- Metapleuron yellowish-orange in dorsal third, black ventrally . . . . . *A. roibasi* Sharkey
- 141 (140) Median areola of metanotum not excavated, posterior margin not elevat-



	ed (cf. Fig. 17a); antenna with 34 to 38 flagellomeres; (Fig. 8d) . . . . .		
	. . . . . <i>A. arua</i> Sharkey		
-	Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong median longitudinal ridge; antenna with 40 to 44 flagellomeres; (Fig. 7d) . . . . . <i>A. roibasi</i> Sharkey	149 (148)	
142 (105)	Gena right-angled posteroventrally (cf. Fig. 9a) . . . . .		
	. . . . . <i>A. semialbus</i> (Szépligeti)		
-	Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 143		
-	Gena acute posteroventrally (cf. Fig. 9d) . . . . . 145		
143 (142)	Forewing black except clear apically (Fig. 4f); propodeum black; metapleuron black; tergum 1 yellowish-orange but black in posterior quarter; tergum 2 black dorsally, yellowish-orange elsewhere . . . . . <i>A. semialbus</i> (Szépligeti)		
-	Forewing not black except clear apically; propodeum yellowish-orange; metapleuron yellowish-orange; terga 1 and 2 yellowish-orange . . . . . 144		
144 (143)	Metapleuron mostly smooth (cf. Fig. 15a) or areolate rugose in ventral quarter (cf. Fig. 15b); body length 5.4–7.9 mm; (Fig. 7b) . . . . .		
	. . . . . <i>A. albispina</i> (Cameron)		
-	Metapleuron areolate rugose in ventral half (cf. Fig. 16a); body length 9.3–10.5 mm; (Fig. 3g) . . . . .		
	. . . . . <i>A. nahuatl</i> Sharkey		
145 (142)	Scutellar sulcus with one weak median ridge (cf. Fig. 11d); metapleuron yellowish-orange in dorsal third, black ventrally; metapleuron mostly smooth (cf. Fig. 15a) . . . . .		
	. . . . . <i>A. latisoma</i> Sharkey		
-	Scutellar sulcus with two or more ridges (cf. Fig. 17c); metapleuron yellowish-orange; metapleuron completely areolate rugose . . . . .		
	. . . . . [ <i>A. alixa</i> Sharkey]		
146 (105)	Gena right-angled posteroventrally (cf. Fig. 9a) . . . . . 147		
-	Gena rounded or acute posteroventrally (cf. Figs. 9b, 9d) . . . . .		
	. . . . . <i>A. tripartitus</i> (Brullé)		
-	Gena with obtuse angle posteriorly (cf. Fig. 9c) . . . . . <i>A. combos</i> new species		
147 (146)	Pronotum yellowish-orange; mesopleuron yellowish-orange; metapleuron yellowish-orange; propleuron yellowish-orange . . . . .		
	. . . . . [ <i>A. fucistigma</i> Enderlein]		
-	Pronotum black; mesopleuron black; metapleuron black; propleuron black . . . . . <i>A. combos</i> new species		
148 (2)	Hind femur smooth ventrally (cf. Fig.		
	10b); hind coxa yellowish-orange; mesonotum yellowish orange (cf. Figs. 4e, 5e) . . . . . 149		
-	Hind femur rugose ventrally (cf. Fig. 10c); hind coxa black; mesonotum black (cf. Figs. 4f, 5f) . . . . .		
	. . . . . [ <i>A. botocudo</i> Sharkey]		
	Gena right-angled posteroventrally (cf. Fig. 9a); scutellar sulcus mostly smooth (cf. Fig. 12a); metapleuron mostly yellowish orange with black area laterally; antenna with up to 36 flagellomeres . . . . .		
	. . . . . [ <i>A. versicolor</i> (Brèthes)]		
-	Gena rounded posteroventrally (cf. Fig. 9b); scutellar sulcus with median ridge (cf. Fig. 11b); metapleuron yellowish-orange; antenna with 46 flagellomeres or more . . . . . 150		
150 (149)	Scutellar sulcus with one ridge (cf. Fig. 11b); hind tarsus black; forecoxa and midcoxa yellowish-orange (cf. Figs. 5a, 5c) . . . . .		
	. . . . . [ <i>A. marginatifrons</i> (Muesebeck)]		
-	Scutellar sulcus with two or more ridges (cf. Fig. 17c); hind tarsus yellowish-orange; forecoxa and midcoxa black (cf. Figs. 7c, 7d) . . . . .		
	. . . . . [ <i>A. triangulifer</i> (Enderlein)]		
151 (2)	Metasoma entirely yellowish-orange to red (cf. Figs. 5a, 6a); scutellar sulcus with median ridge (cf. Fig. 11b); tergum 8 yellowish-orange . . . . . 152		
-	Metasoma mostly yellowish-orange to red anteriorly, but brown to black posteriorly (cf. Figs. 4f, 6f); scutellar sulcus mostly smooth (cf. Fig. 12a); tergum 8 black . . . . .		
	. . . . . [ <i>A. parunapi</i> Sharkey]		
152 (151)	Hind femur smooth ventrally (cf. Fig. 10b) . . . . . 153		
-	Hind femur rugose ventrally (cf. Fig. 10c) . . . . . [ <i>A. aa</i> Sharkey]		
-	Hind femur punctate ventrally (cf. Fig. 10a) . . . . . [ <i>A. llampu</i> Sharkey]		
153 (152)	Gena right-angled posteroventrally (cf. Fig. 9a); head yellowish-orange (cf. Fig. 6d); metapleuron mostly smooth (cf. Fig. 15a); hind tibia with up to 4 spines . . . . . [ <i>A. aa</i> Sharkey]		
-	Gena rounded posteroventrally (cf. Fig. 9b); head black (cf. Fig. 6c); metapleuron areolate rugose in ventral quarter (cf. Fig. 15b); hind tibia with 5 to 9 spines . . . . .		
	. . . . . [ <i>A. marginatifrons</i> (Muesebeck)]		
154 (1)	Metasoma entirely yellowish-orange to red (cf. Figs. 5a, 6a) . . . . . 155		
-	Metasoma entirely dark brown to black . . . . . 171		
-	Metasoma mostly yellowish-orange to		

- red anteriorly, but brown to black posteriorly (cf. Figs. 4f, 6f) . . . . . 172
- Metasoma black dorsally, yellowish-orange ventrally . . . . . [A. *uru* Sharkey]
- 155 (154) Hind femur smooth ventrally (cf. Fig. 10b) . . . . . 156
- Hind femur rugose ventrally (cf. Fig. 10c) . . . . . [A. *mataco* Sharkey]
- Hind femur punctate ventrally (cf. Fig. 10a) . . . . . 169
- 156 (155) Antenna black . . . . . 157
- Antenna yellowish-orange . . . . . [A. *kiska* Sharkey]
- 157 (156) Propodeum black (cf. Figs. 4f, 7e) . . . . . 158
- Propodeum yellowish-orange (cf. Figs. 4e, 7f) . . . . . 159
- 158 (157) Maxillary and labial palpomeres yellowish-orange; scutellar sulcus mostly smooth (cf. Fig. 12a) or with weak median ridge (cf. Fig. 11d); antenna with 38 to 42 flagellomeres . . . . . A. *englishi* new species
- Maxillary and labial palpomeres black; scutellar sulcus with strong median ridge (cf. Fig. 11b); antenna with 50 to 51 flagellomeres . . . . . [A. *pisipuka* Sharkey]
- 159 (157) Gena right-angled posteroventrally (cf. Fig. 9a) . . . . . 160
- Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 161
- Gena acute posteroventrally (cf. Fig. 9d) . . . . . A. *pachamama* Sharkey
- 160 (159) Terga 6 to 8 black; forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . . A. *pachamama* Sharkey
- Terga 6 to 8 yellowish-orange; forewing entirely black or clear basally and black apically; (Fig. 7f) . . . . . A. *englishi* new species
- 161 (159) Mesopleuron black (cf. Figs. 4f, 5f) . . . . . 162
- Mesopleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 163
- Mesopleuron black ventrally, yellowish-orange dorsally (cf. Fig. 5b) . . . . . A. *imitatus* (Cresson)
- 162 (161) Hind coxa yellowish-orange or mostly yellowish-orange but black laterally (cf. Figs. 5a, 5d, 7a, 7c); metanotum black (Fig. 7f) . . . . . A. *englishi* new species
- Hind coxa mostly black but yellowish-orange in basal twelfth; metanotum yellowish-orange (Fig. 6e) . . . . . A. *parvifaciatus* (Cameron)
- 163 (161) Hind coxa yellowish-orange (cf. Figs. 5a, 5d) . . . . . 164
- Hind coxa mostly yellowish-orange but black in apical fifth (cf. Figs. 5c, 5e) . . . . . 168
- Hind coxa mostly black but yellowish-orange in basal twelfth . . . . . A. *masneri* Sharkey
- 164 (163) Forewing yellow basally and black apically with a sharp distinction (Fig. 5a) . . . . . A. *pecki* Sharkey
- Forewing entirely and evenly black (cf. Figs. 6a, 6c) . . . . . 165
- 165 (164) Propleuron black (cf. Figs. 6a, 6b) . . . . . 166
- Propleuron yellowish-orange (cf. Figs. 5a, 5c) . . . . . 167
- 166 (165, 168) Ovipositor 1.3–1.6 × body length; (Fig. 3f) . . . . . A. *imitatus* (Cresson)
- Ovipositor 0.7–1.3 × body length; (Fig. 6a) . . . . . A. *derailersi* new species
- 167 (165) Hind femur yellowish-orange; foretrochanter and trochantellus black; forefemur black (Fig. 3f) . . . . . A. *imitatus* (Cresson)
- Hind femur mostly yellowish-orange but black in apical eighth and basal tenth; foretrochanter and trochantellus yellowish-orange; forefemur yellowish-orange (cf. Figs. 4e, 5e) . . . . . [A. *uchuk* Sharkey]
- 168 (163) Hind femur black or mostly yellowish-orange but black in basal and apical twelfth . . . . . A. *masneri* Sharkey
- Hind femur yellowish-orange . . . . . 166
- 169 (155) Hind coxa yellowish-orange (Fig. 5a) . . . . . A. *pecki* Sharkey
- Hind coxa mostly yellowish-orange but black in apical fifth (cf. Figs. 5c, 5e) . . . . . 170
- Hind coxa mostly black but yellowish-orange in basal twelfth . . . . . A. *masneri* Sharkey
- 170 (169) Foretarsus and midtarsus black (cf. Figs. 7e, 7f); body length greater than 10 mm; antenna with 45 to 49 flagellomeres . . . . . [A. *xipe* Sharkey]
- Foretarsus and midtarsus yellowish-orange (cf. Figs. 7a, 7c); body length less than 8 mm; antenna with 32 to 36 flagellomeres . . . . . A. *masneri* Sharkey
- 171 (154) Antenna black; scutellar sulcus with median ridge (cf. Fig. 11b); forecoxa and midcoxa black (cf. Figs. 7c, 7d) . . . . . [A. *pisipuka* Sharkey]
- Antenna yellowish-orange; scutellar sulcus mostly smooth (cf. Fig. 12a); forecoxa and midcoxa yellowish-orange (cf. Figs. 6a, 6d) . . . . . [A. *paqo* Sharkey]
- 172 (154) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a) . . . . . 173
- Margin between metepisternum and metepimeron smooth (cf. Fig. 16f) . . . . . 192

- 173 (172) Hind femur smooth ventrally (cf. Fig. 10b) . . . . . 174
- Hind femur rugose ventrally (cf. Fig. 10c) . . . . . [A. *caudatus* (Szépligeti)]
- 174 (173) Propodeum black (cf. Figs. 4f, 7e) . . . . . 175
- Propodeum yellowish-orange (cf. Figs. 4e, 7f) . . . . . 178
- Propodeum mostly black but yellowish-orange posteriorly (Plate I) . . . . . A. *kagaba* Sharkey
- 175 (174) Gena rounded posteroventrally (cf. Fig. 9b); head yellowish-orange anteriorly, black posteriorly; maxillary and labial palpomeres black . . . . . [A. *plaumanni* Sharkey]
- Gena acute posteroventrally (cf. Fig. 9d); head black; maxillary and labial palpomeres yellowish-orange . . . . . 176
- 176 (175) Hind coxa entirely black (cf. Figs. 4f, 5f) . . . . . 177
- Hind coxa entirely yellowish-orange (cf. Figs. 5a, 5d) . . . . . [A. *waiwai* Sharkey]
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . A. *kagaba* Sharkey
- Hind coxa mostly yellowish orange but black in apical third (cf. Figs. 5c, 5e) . . . . . [A. *lokono* Sharkey]
- Hind coxa mostly yellowish-orange but black in basal third . . . . . [A. *sispalatreillei* Sharkey]
- 177 (176) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a); first median tergite with well-defined median longitudinal carina (cf. Fig. 19c); hind femur and tibia yellowish-orange (cf. Figs. 5a, 5d) . . . . . [A. *leptosoma* Sharkey]
- Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d); first median tergite evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); hind femur and tibia black (cf. Figs. 4f, 6f) . . . . . [A. *parusimi* Sharkey]
- 178 (174) Gena right-angled posteroventrally (cf. Fig. 9a) . . . . . 179
- Gena rounded posteroventrally (cf. Fig. 9b) . . . . . 182
- Gena acute posteroventrally (cf. Fig. 9d) . . . . . 185
- Gena with obtuse angle posteriorly (cf. Fig. 9c) . . . . . A. *varius* (Enderlein)
- 179 (178) Metapleuron black (cf. Figs. 4f, 5f) . . . . . 180
- Metapleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . . 181
- 180 (179) Scutellar sulcus mostly smooth (cf. Fig. 12a); hind coxa mostly yellowish-orange but black laterally; forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c) . . . . . [A. *aymara* Sharkey]
- Scutellar sulcus with weak median ridge (cf. Fig. 11d); hind coxa black but yellowish-orange posteriorly; forewing black with stigma yellow (Fig. 3b) . . . . . A. *miqa* Sharkey
- 181 (179) First median tergite with well-defined median longitudinal carina (cf. Fig. 19c); hind tibia with 6 to 8 spines; (Fig. 4a) . . . . . A. *janzeni* Sharkey
- First median tergite without well-defined median longitudinal carina (cf. Figs. 19a, 19b); hind tibia with 4 or 5 spines; (Fig. 4c) . . . . . A. *pachamama* Sharkey
- 182 (178) Hind coxa mostly black (cf. Figs. 4e, 4f) . . . . . 183
- Hind coxa mostly yellowish-orange (cf. Figs. 5a, 5d) . . . . . 184
- Hind coxa mostly black but yellowish-orange in basal twelfth (Fig. 6e) . . . . . A. *parvifaciatus* (Cameron)
- 183 (182) Forewing entirely black (Fig. 6e); antenna with 40 to 45 flagellomeres . . . . . A. *parvifaciatus* (Cameron)
- Forewing banded from base: yellow, black, yellow, black (Fig. 8b); antenna with 49 to 52 flagellomeres . . . . . A. *varius* (Enderlein)
- 184 (182) Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f); hind tibia with up to 4 spines; notaulus deeply impressed (cf. Fig. 11d) . . . . . [A. *sunii* Sharkey]
- Sternaulus long, distinct and composed of many small foveae (cf. Fig. 15b); hind tibia with 10 spines or more; notaulus weakly impressed (cf. Fig. 12a) . . . . . [A. *yanamapa* Sharkey]
- 185 (178) Hind tarsus black . . . . . 186
- Hind tarsus yellowish-orange . . . . . [A. *tupinamba* Sharkey]
- 186 (185) Hind coxa black (cf. Figs. 4f, 7e) . . . . . 187
- Hind coxa yellowish-orange (cf. Figs. 5a, 5d) . . . . . 188
- Hind coxa mostly black but yellowish-orange in apical eighth (Fig. 4a) . . . . . A. *janzeni* Sharkey
- Hind coxa mostly yellowish-orange but black in apical fifth (cf. Fig. 5e) . . . . . A. *latreillei* (Spinola)
- Hind coxa mostly yellowish-orange but black laterally (cf. Figs. 7a, 7c) . . . . . 190
- Hind coxa black but yellowish-orange posteriorly (Fig. 3b) . . . . . A. *miqa* Sharkey
- 187 (186) Mesopleuron black (Fig. 4a); apex of scutellum smooth, lacking transverse

	ridge (cf. Fig. 12a); first median tergite with well-defined median longitudinal carina (cf. Fig. 19c) . . . . .		–	Propodeum yellowish-orange (cf. Figs. 4e, 7f) . . . . .	198
	. . . . . <i>A. janzeni</i> Sharkey		197 (196)	Propleuron black; mesopleuron black (cf. Figs. 4f, 5f); metapleuron black; forecoxa black; hind coxa yellowish-orange (cf. Figs. 7b, 7d) . . . . .	
–	Mesopleuron yellowish-orange (cf. Figs. 4e, 7f); apex of scutellum with transverse, smooth ridge (cf. Fig. 12d); first median tergite evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b) . . . . .		–	. . . . . <i>A. paruyana</i> Sharkey	
188 (186)	Metapleuron black (cf. Figs. 4f, 7e) . . . . .		–	Propleuron yellowish-orange; mesopleuron yellowish-orange (cf. Figs. 4e, 5e); metapleuron yellowish-orange; forecoxa yellowish-orange; hind coxa black (cf. Figs. 5f, 7e) . . . . .	
	. . . . . [ <i>A. levipodeum</i> Sharkey]		198 (196)	. . . . . [ <i>A. laevis</i> (Enderlein)]	
–	Metapleuron yellowish-orange (cf. Figs. 4e, 7f) . . . . .	189	–	Metapleuron black; hind tibia black; foretrochanter and trochantellus black; midtarsus black (cf. Fig. 4f) . . . . .	199
189 (188)	Scutellar sulcus mostly smooth (cf. Fig. 12a); forewing banded from base: yellow, black, yellow, black (Fig. 4c) . . . . .		–	Metapleuron yellowish-orange; hind tibia mostly yellowish-orange but black apically; foretrochanter and trochantellus yellowish-orange; midtarsus yellowish-orange (Fig. 8b) . . . . .	
–	. . . . . <i>A. pachamama</i> Sharkey		199 (198)	. . . . . [ <i>A. varius</i> (Enderlein)]	
–	Scutellar sulcus with median ridge (cf. Fig. 11b); forewing entirely black (cf. Figs. 6a, 6c) . . . . .		–	Hind coxa black (cf. Figs. 5f, 7e); median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c); maxillary and labial palpomeres black . . . . .	
190 (186)	. . . . . [ <i>A. erythromelas</i> (Brullé)]		–	. . . . . [ <i>A. jatunqepi</i> Sharkey]	
–	Pronotum black; metapleuron yellowish-orange; forewing banded from base: yellow, black, yellow, black (Figs. 4b, 4c) . . . . .	191	–	Hind coxa yellowish-orange (cf. Figs. 7b, 7d); median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a); maxillary and labial palpomeres yellowish-orange . . . . .	
–	Pronotum black ventrally, yellowish-orange dorsally; metapleuron black in dorsal third, yellowish-orange ventrally; forewing yellow basally and black apically with a sharp distinction (cf. Figs. 5a, 5c) . . . . .		200 (195)	. . . . . <i>A. paruyana</i> Sharkey	
191 (190)	Antenna with 51 to 54 flagellomeres; (Fig. 4b) . . . . .		–	Pronotum entirely black; forecoxa and midcoxa entirely black; median areola of hind femur black . . . . .	
–	. . . . . <i>A. latreillei</i> (Spinola)		–	. . . . . [ <i>A. esenbeckii</i> (Spinola)]	
–	Antenna with 42 to 48 flagellomeres; (Fig. 4c) . . . . .		–	Pronotum black anteriorly, orange posteriorly; forecoxa and midcoxa black anteriorly, yellowish-orange posteriorly; hind femur yellowish-orange . . . . .	
192 (172)	Antenna black . . . . .	193	–	. . . . . [ <i>A. festivus</i> (Enderlein)]	
–	Antenna yellowish-orange . . . . .	203	–	Propodeum black; metapleuron black (cf. Figs. 4f, 5f) . . . . .	
193 (192)	Gena right-angled posteroventrally (cf. Fig. 9a) . . . . .	194	–	. . . . . [ <i>A. haenschi</i> (Enderlein)]	
–	Gena rounded posteroventrally (cf. Fig. 9b) . . . . .	195	–	Propodeum yellowish-orange; metapleuron yellowish-orange (cf. Figs. 4e, 5e) . . . . .	202
–	Gena acute posteroventrally (cf. Fig. 9d) . . . . .	201	–	Pronotum black; mesopleuron black; hind tibia mostly yellow but black in apical eighth; mesonotum black (Fig. 4c) . . . . .	
–	Gena with obtuse angle posteriorly (cf. Fig. 9c) . . . . .		202 (201)	. . . . . <i>A. pachamama</i> Sharkey	
194 (193)	. . . . . [ <i>A. varius</i> (Enderlein)]		–	Pronotum black anteriorly, orange posteriorly (cf. Fig. 6b); mesopleuron yellowish-orange (cf. Fig. 6b); hind tibia mostly yellowish-orange but black apically (cf. Fig. 6b); mesonotum yellowish-orange (cf. Fig. 6b) . . . . .	
–	Metapleuron black (cf. Figs. 4f, 6f); sternaulus completely absent (cf. Fig. 16d); hind tibia black (cf. Figs. 4f, 6f) . . . . .		–	. . . . . [ <i>A. misa</i> Sharkey]	
–	. . . . . <i>A. paruyana</i> Sharkey		203 (192)	Hind tarsus black; all coxae black;	
–	Metapleuron yellowish-orange (cf. Figs. 4f, 5f); sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a); hind tibia mostly yellow but black in apical eighth (cf. Figs. 4e, 5e) . . . . .				
195 (193)	. . . . . <i>A. pachamama</i> Sharkey				
–	Hind tarsus black . . . . .	196			
–	Hind tarsus yellowish-orange . . . . .	200			
196 (195)	Propodeum black (cf. Figs. 4f, 7e) . . . . .	197			

- pronotum black (cf. Figs. 4f, 5f) . . . . .  
 . . . . . [A. *uchukqepi* Sharkey]  
 - Hind tarsus yellowish-orange; all coxae at least partly yellowish-orange; pronotum black anteriorly, orange posteriorly (cf. Fig. 6b) . . . . .  
 . . . . . [A. *festivus* (Enderlein)]  
 204 (1) Propodeum black; metapleuron black; hind coxa black (cf. Figs. 4f, 5f); forewing yellow basally, gradually becoming infusate . . . . .  
 . . . . . [A. *chimu* Sharkey]  
 - Propodeum yellowish-orange; metapleuron yellowish-orange; hind coxa yellowish-orange; forewing black with stigma yellow (Fig. 5b) . . . . .  
 . . . . . A. *stigma* (Brullé)

SPECIES DESCRIPTIONS OF THE  
 ALABAGRUS OF COSTA RICA

*Alabragus albispina* (Cameron)

Figs. 7b, 16a

*Agathis albispina* Cameron, 1887:399. Holotype ♂, Mexico (BMNH).

*Alabragus albispina* Sharkey, 1988:356, figs. 4a, 18e.

**DIAGNOSIS.** Forewing entirely and evenly black; or clear basally, black in apical third with a sharp distinction. Gena rounded posteroventrally (cf. Fig. 9b). Pronotum black. Hind femur yellowish-orange; or mostly yellowish-orange but black in apical eighth and basal tenth. Antenna with 36 to 41 flagellomeres. Malar space  $0.46-0.64 \times$  the distance from the eye to the maximum extent of the gena. Median syntergite  $2+3$   $1.12-1.24 \times$  longer than wide. First median tergite  $0.86-1.13 \times$  longer than wide. Ovipositor  $2.21-3.24 \times$  length of hind femur. Tergum 4 yellowish-orange. Metapleuron mostly smooth (cf. Fig. 15a); or areolate rugose in ventral quarter (cf. Fig. 15b).

**LENGTH.** (1) 5.48-7.81 mm.

**HEAD.** (2) Antenna with 36 to 41 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.46-0.64 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to strong (cf. Figs. 11a, 11c, 11d). (8, 9) Scutellar sulcus with strong (cf. Fig. 11d) to weak median ridge (cf. Fig. 11b), or mostly smooth, lacking median ridge (cf. Fig. 12a). (10) Apex of scutellum with smooth (cf. Fig. 12d) to rugose (cf. Fig. 11a) transverse ridge, or smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (Fig. 16a). (13) Metapleuron usually mostly smooth (cf. Fig. 15a), sometimes areolate

rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or not excavated, posterior margin not elevated (cf. Fig. 16a). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d), or with long, blunt, wide ridge anteriorly (cf. Fig. 17d), or weak anteriorly (cf. Fig. 17a); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d), weakly defined (cf. Fig. 14f), or complete (cf. Fig. 11d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 2 to 8 spines; (21) hind tibia with 4 to 13 spines. (22) Hind femur rugose (usually) (cf. Fig. 10c) or smooth (cf. Fig. 10b) ventrally; (23)  $3.15-4.47 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with weak (cf. Fig. 19d) to strong (cf. Fig. 19c) longitudinal median carina; (26)  $0.86-1.13 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite  $2+3$   $1.12-1.24 \times$  longer than wide. (29) Second median tergite with transverse depression ranging from distinctly to weakly indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.65-0.92 \times$  body length; (32)  $2.21-3.24 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange or mostly yellowish-orange but black apically. Mesosoma mostly black, except metanotum sometimes yellowish-orange, and propodeum and metapleuron yellowish-orange. Foreleg and midleg black except both tarsi sometimes yellowish-orange. Hind leg highly variable in coloration. Forewing ranging from clear basally, black in apical third with a sharp distinction to entirely black. Hind wing entirely clear. Terga 1 to 4 yellowish-orange. Terga 5 to 8 yellowish-orange, black, or partly black. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange, or mostly yellowish-orange but black basally, or entirely black (rarely). (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus black, or yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black, or yellowish-orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally, or yellowish-orange in basal twelfth, black apically, or entirely black (rare-

ly); (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange, or mostly yellowish-orange but black in apical eighth and basal tenth, or entirely black (rarely); (63) hind tibia black, or mostly yellowish-orange but black in apical and basal sixth, or mostly yellowish-orange but black in apical third; (64) hind tarsus black; (65) forewing clear basally, black in apical third with a sharp distinction, or entirely black; (66) hind wing pattern entirely clear, or entirely black. **Metasoma.** (67–71) Terga 1 to 5 yellowish-orange; (72) tergum 6 black, or yellowish-orange, or black posteriorly, yellowish-orange otherwise; (73, 74) terga 7 and 8 black, or yellowish-orange. (75) Ovipositor sheath black.

**HOSTS.** Leaf-rolling Crambidae, including *Glyphodes sybillalis* Walker on *Trophis racemosa* (Moraceae) (81-SRNP-770, 81-SRNP-962, 90-SRNP-1647), *Phaedropsis* sp. on *Triplaris melaenodendron* (Polygonaceae) (83-SRNP-1290), *Eulepte concordalis* Hübner on *Cydista heterophylla* (Bignoniaceae) (90-SRNP-1985), *Conchylodes ovunialis* (Guenee) on *Baltimora recta* (Asteraceae) (92-SRNP-4747, 92-SRNP-4758, 92-SRNP-4791), *Pilocrocis ramentalis* Lederer on *Dyschoriste valeriana* (Acanthaceae) (93-SRNP-3044, 94-SRNP-7203), *Bicilia iarchasalis* Walker on *Petiveria alliacea* (Phytolaccaeae) (90-SRNP-1256.2a), and *Salbia cassidalis* Guenee on *Lasiacis sorghoidea* (Poaceae) (95-SRNP-10813).

**DISTRIBUTION.** Widespread throughout Mexico, through Central America to the Caribbean countries of South America. Collected mostly in successional plots at La Selva, from March through August (Fig. 20).

### *Alabragus arawak* Sharkey

Figs. 6b, 9d, 12d, 17d, 19a, 19d

*Alabragus arawak* Sharkey, 1988:357–358. Holotype ♀, Ecuador (CNCI).

**DIAGNOSIS.** Hind tibia mostly yellowish-orange but black in apical third to eighth. Antenna with 33 to 36 flagellomeres. Mesonotum yellowish-orange. Malar space  $0.50\text{--}0.62 \times$  the distance from the eye to the maximum extent of the gena. Anterior areola of propodeum weak anteriorly (cf. Fig. 17a); or with long, blunt, wide ridge anteriorly (cf. Fig. 17d). Foretibia black; or yellowish-black. Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d). Pronotum yellowish-orange; or mostly yellowish-orange with some black spots. Hind wing pattern entirely clear to entirely black.

**LENGTH.** (1) 3.99–6.30 mm.

**HEAD.** (2) Antenna with 33 to 36 flagellomeres. (3) Gena acute (usually) (cf. Fig. 9d), rounded (cf. Fig. 9b), or right-angled (cf. Fig. 9a) posteroventrally. (4) Malar space  $0.50\text{--}0.62 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate

(cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to strong anteriorly (cf. Figs. 11a, 11c, 11d). (8, 9) Scutellar sulcus with one or more weak (cf. Fig. 11d) to distinct (cf. Fig. 11b) median ridges, or without any median ridges (cf. Fig. 12a). (10) Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus with several foveae posteroventrally and smooth groove anteriorly (cf. Fig. 16f), composed of large crenulae posteroventrally without smooth groove (cf. Fig. 16a), or completely absent (cf. Fig. 16d), or mostly absent, represented by a small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with long, blunt, wide ridge anteriorly (Fig. 17d); (18) anterior transverse carina of propodeum absent to weakly defined (Fig. 17d). (20) Midtibia with 0 to 4 spines; (21) hind tibia with 1 to 4 spines. (22) Hind femur weakly to strongly rugose ventrally (usually), or smooth ventrally (cf. Figs. 10b, 10c); (23)  $3.29\text{--}5.73 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (Fig. 19a); (26)  $1.20\text{--}1.57 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.96\text{--}1.35 \times$  longer than wide. (29) Second median tergite lacking transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.55\text{--}0.98 \times$  body length; (32)  $1.74\text{--}3.94 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except pronotum sometimes with black areas and propleuron sometimes black or dark yellow. Foreleg and midleg black except forecoxa sometimes yellowish-orange, foretibia sometimes dark yellow, foretarsus yellowish-orange, midcoxa yellowish-orange or yellowish-orange basally, black apically, midtarsus yellowish-orange. Hind leg black except coxa yellowish-orange or mostly yellowish-orange but black laterally, femur yellowish-orange, and tibia mostly yellowish-orange. Forewing yellow to clear basally and black apically with a sharp distinction and costal vein black or yellow, or forewing entirely black. Hind wing entirely black to entirely clear. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or mostly yellowish-orange with some black areas; (39) propleuron black, or yellowish-orange,

or black yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black, or yellowish-black; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange, or yellowish-orange basally, black apically; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia mostly yellow but black in apical eighth, or mostly orange but black in apical third; (64) hind tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein black, or entirely black, or clear basally, black in apical third with a sharp distinction; (66) hind wing pattern entirely clear, or entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread, southern Mexico to northern Argentina. Found throughout the year at La Selva (Fig. 20). Most abundant in successional plots and at the swamp site.

### *Alabragus arua* Sharkey

Fig. 8d

*Alabragus arua* Sharkey, 1988:358–359. Holotype ♀, Ecuador (CNCI).

**DIAGNOSIS.** Gena with obtuse angle posteriorly (cf. Fig. 9c). Median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a). Malar space  $1.00\text{--}1.09 \times$  the distance from the eye to the maximum extent of the gena. Antenna with 34 to 38 flagellomeres. Pronotum black.

**LENGTH.** (1) 4.9–7.0 mm.

**HEAD.** (2) Antenna with 34 to 38 flagellomeres. (3) Gena with obtuse angle posteriorly (cf. Fig. 9c). (4) Malar space  $1.00\text{--}1.09 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply (cf. Fig. 11d) to weakly (cf. Fig. 12a) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8, 9) Scutellar sulcus with one strong (cf. Fig. 11b) to weak (cf. Fig. 11d) median ridge. (10) Apex of scutellum rugose (cf. Fig. 11c) or smooth, lacking (cf. Fig. 12a) transverse ridge, sometimes with several weak punctures. (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum

not excavated, posterior margin not elevated (cf. Fig. 17a). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 0 to 3 spines; (21) hind tibia with 3 to 6 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.8\text{--}4.3 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with weak longitudinal median carina (cf. Fig. 19d); (26)  $1.25\text{--}1.90 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite  $2+3$   $1.1\text{--}1.4 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.70\text{--}0.92 \times$  body length; (32)  $2.5\text{--}3.5 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except metanotum, propodeum, and metapleuron yellowish-orange. Foreleg and midleg entirely black, except tarsi sometimes yellowish-orange. Hind leg black except coxa yellowish-orange and femur sometimes brown or orange distally. Metasoma mostly yellowish-orange except tergum 8 and ovipositor sheath black. Forewing and hind wing entirely black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus black, or yellowish-orange, or yellowish-orange apically, black basally; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black, or yellowish-orange; (59) hind coxa yellowish-orange; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur black, or black basally and yellowish-orange apically, or yellowish-brown; (63) hind tibia black; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–73) Terga 1 to 7 yellowish-orange; (74) tergum 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread from Costa Rica south to Bolivia. Found in Costa Rica from January through June (Fig. 20). Has not been collected at La Selva.

### *Alabragus cara* Sharkey

Fig. 5e

*Alabragus cara* Sharkey, 1988:362. Holotype ♀, Ecuador (CNCI).

**DIAGNOSIS.** Hind tibia mostly yellow but black in apical eighth. Forewing pattern yellow basally and black apically with a sharp distinction, costal vein black or yellow. First median tergite 1.48–1.83  $\times$  longer than wide. Foretrochanter yellowish-orange. Hind wing pattern entirely black; or yellow basally, black in apical twentieth.

**LENGTH.** (1) 5.77–6.92 mm.

**HEAD.** (2) Antenna with 37 to 41 flagellomeres. (3) Gena acute (usually) (cf. Fig. 9d), right-angled (cf. Fig. 9a), or rounded (cf. Fig. 9b) posteroventrally. (4) Malar space 0.45–0.52  $\times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply (cf. Fig. 11d) to weakly (cf. Fig. 12a) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d) to absent (cf. Fig. 11a). (8, 9) Scutellar sulcus with one weak median ridge (cf. Fig. 11d), or mostly smooth (cf. Fig. 12a). (10) Apex of scutellum with transverse, smooth ridge (usually) (cf. Fig. 12d), or smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d) to complete (cf. Fig. 11d); (19) when present consisting of only one smooth, straight, transverse ridge, or with additional transverse carina present, defining two extra areolae. (20) Midtibia with 2 to 5 spines; (21) hind tibia with 2 to 4 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 3.95–5.11  $\times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump antero-medially (cf. Fig. 19b); (26) 1.48–1.83  $\times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.2–1.4  $\times$  longer than wide. (29) Second median tergite lacking transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor 0.67–0.94  $\times$  body length; (32) 2.32–2.92  $\times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma entirely yellowish-orange, with propleuron black in some males. Foreleg and midleg both entirely yellowish-orange, except midtrochanter and trochantellus sometimes black. Hind leg yellowish-orange except coxa sometimes black laterally, trochanter and trochantellus black, tibia black

in apical eighth, and tarsus black. Forewing yellow basally and black apically with a sharp distinction, costal vein black or yellow. Forewing of males may be entirely black or rarely banded from base: yellow, black, yellow, black. Hind wing entirely yellow but sometimes black in apical tenth. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange (usually), or black; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur yellowish-orange; (51) foretibia yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange; (54) midtrochanter yellowish-orange (usually), or black; (55) midtrochantellus yellowish-orange (usually), or black; (56) midfemur yellowish-orange; (57) midtibia yellowish orange; (58) midtarsus yellowish orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia mostly yellow but black in apical eighth; (64) hind tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein black, or yellow basally and black apically with a sharp distinction, costal vein yellow, or rarely banded from base: yellow, black, yellow, black; apical yellow band not complete posteriorly and costal vein yellow; (66) hind wing pattern entirely yellow, or yellow basally, black in apical tenth. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Costa Rica and the coastal lowlands of Ecuador. Found throughout the year at La Selva (Fig. 20), in all habitat types.

*Alabragus cocto* Sharkey

Fig. 7a

*Alabragus cocto* Sharkey, 1988:364. Holotype ♀, Panama (USNM).

**DIAGNOSIS.** Forewing entirely black but darker in apical tenth to twelfth. Hind tibia mostly yellow but black in apical eighth. Gena right-angled posteroventrally (cf. Fig. 9a); or acute posteroventrally (cf. Fig. 9e). Antenna with 39 to 47 flagellomeres.

**LENGTH.** (1) 5.49–8.30 mm.

**HEAD.** (2) Antenna with 39 to 47 flagellomeres. (3) Gena right-angled (cf. Fig. 9a) or acute (cf. Fig. 9d) posteroventrally (usually). (4) Malar space 0.39–0.61  $\times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scu-



tum weak (cf. Fig. 11c) to strong (cf. Fig. 11d). (8, 9) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d), or large and five-sided (cf. Fig. 14d); (18) anterior transverse carina of propodeum complete to absent (cf. Figs. 11d, 14f, 17d); (19) when present consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 0 to 3 spines; (21) hind tibia with 3 to 9 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.20\text{--}5.75 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b), or veins 1M and 1cu-a intersect (rarely) (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19a); (26)  $0.79\text{--}1.51 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.07\text{--}1.28 \times$  longer than wide. (29) Second median tergite with strong transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.56\text{--}0.79 \times$  body length; (32)  $2.07\text{--}2.86 \times$  length of hind femur.

**COLOR.** (33) Summary. Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except propleuron black. Foreleg and midleg black except tarsi yellowish-orange, or both legs entirely yellowish-orange (rarely). Hind leg yellowish-orange with the following parts black: coxa laterally, trochanter, trochantellus, sometimes basal part of hind femur, apical part of hind tibia, and tarsus. Forewing entirely black but darker apically. Hind wing entirely black. Metasoma yellowish-orange, with ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron black; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange (rarely); (48) foretrochanter black, or yellowish-orange (rarely); (49) foretrochantellus black, or yellowish-orange (rarely); (50) forefemur black, or yellowish-orange (rarely); (51) foretibia

black, or yellowish-orange (rarely); (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange (rarely); (54) midtrochanter black, or yellowish-orange (rarely); (55) midtrochantellus black, or yellowish-orange (rarely); (56) midfemur black, or yellowish-orange (rarely); (57) midtibia black, or yellowish-orange (rarely); (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange, or mostly yellowish-orange but black in basal twelfth; (63) hind tibia mostly yellow but black in apical eighth; (64) hind tarsus black; (65) forewing entirely black but darker in apical tenth or twelfth; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Costa Rica and Panama. Collected in May, June, August, and September at La Selva (Fig. 20), exclusively in successional plots.

### *Alabragus combos* new species

Fig. 5f

**DIAGNOSIS.** Midtarsus with basal tarsomere yellowish-orange basally, otherwise black; or mostly yellowish-orange, but black posteriorly. Body length 5.75–6.67 mm. Hind femur mostly black with a yellowish-orange area laterally and apically. Apex of scutellum rugose, lacking transverse ridge (cf. Fig. 11c); or mostly smooth with several weak punctures.

**LENGTH.** (1) [5.75]–6.67 mm.

**HEAD.** (2) Antenna with [37] to 39 flagellomeres. (3) [Gena right-angled posteroventrally] (usually) (cf. Fig. 9a), or with obtuse angle posteriorly (cf. Fig. 9c). (4) Malar space [0.49]–0.58  $\times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus [deeply] (cf. Fig. 11d) to weakly (cf. Fig. 12a) impressed; (6) not crenulate. (7) [Median longitudinal ridge of scutum weak anteriorly] (cf. Fig. 11c), or absent (cf. Fig. 11a). (8, 9) Scutellar sulcus with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum mostly smooth with several weak punctures, or rugose, lacking transverse ridge (cf. Fig. 11c). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) [Propodeum areolate] (cf. Fig. 12a), or weakly areolate (cf. Fig. 14b); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d) to weakly defined (cf. Fig. 14f). (20) Midtibia with 2 to 6 [4] spines, (21) hind tibia with 2 to 6 [4] spines. (22) [Hind femur

punctate ventrally] (usually) (cf. Fig. 10a), or smooth ventrally (cf. Fig. 10b); (23)  $3.28\text{--}[4.07] \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) [First median tergite with small longitudinal bump anteriorly] (cf. Fig. 19a), or with weak longitudinal median carina (cf. Fig. 19d); (26)  $0.82\text{--}1.08 [0.95] \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $[1.03]\text{--}1.12 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $[0.94]\text{--}0.97 \times$  body length; (32)  $[3.35]\text{--}3.64 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum yellowish-orange. Foreleg and midleg black except entire foretarsus and basal portion of midtarsus yellowish-orange. Hind leg black except sometimes posterior portion of coxa and/or lateral portion of tibia yellowish-orange. Forewing and hind wing both entirely black. Terga 1 to 7 yellowish-orange. Median tergum 8 black. Ovipositor sheath [black] except sometimes yellowish at apex. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) propodeum yellowish-orange; (46) metapleuron black; (47) forecoxa [black], or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa [black], or yellowish-orange; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus with basal tarsomere yellowish-orange basally, otherwise black, or mostly yellowish-orange, but black posteriorly; (59) hind coxa black, or black but yellowish-orange posteriorly; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur mostly black with a yellowish-orange area laterally and apically; (63) hind tibia black, or mostly yellow but black in apical and basal third; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–73) Terga 1 to 7 [yellowish-orange], except terga 2 and 3 sometimes black dorsally, yellowish-orange laterally; (74) tergum 8 black. (75) [Ovipositor sheath black], or mostly black but yellow at apex.

**DISTRIBUTION AND MATERIAL EXAMINED.** Known from La Selva and Manuel Antonio National Park (Parque Nacional [P.N.] Manuel Antonio), Costa Rica. Collected in May and June at La Selva, and in September through November at Manuel Antonio National Park (Fig. 20).

**Holotype** ♀. COSTA RICA: Heredia: La Selva:  $10^{\circ}26'N, 84^{\circ}01'W$ : 50–150 m: Malaise trap in pri-

mary forest, CC: 1.vi.1993, (INBIOCRI) 002277040 (INBC).

**Allotype** ♂. COSTA RICA: Puntarenas: P.N. Manuel Antonio: 80 m: ix.1991, (G.Varela), (INBIO) 000494263 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva:  $10^{\circ}26'N, 84^{\circ}01'W$ : 50–150 m: Malaise trap in successional plots: 1♀, 18.v.1993, (INBIO) 002261305 (UKIC). Malaise trap in second-growth forest, SCH: 1♀, 19.v.1993, 002271696 (CNCI). Puntarenas: P.N. Manuel Antonio: 80 m: 1♀, x.1991, (G. Varela), 000501775 (BMNH); 1♀, xi.1991, (G. Varela), 000348712 (AEIC).

### *Alabragus cuna* Sharkey

Fig. 3e

*Alabragus cuna* Sharkey, 1988:365. Holotype ♀, Panama (AMNH).

**DIAGNOSIS.** Forewing yellow basally and black apically with a sharp distinction, costal vein yellow. Body length 5.25–5.75 mm. Hind tibia mostly yellowish-orange but black apically.

**LENGTH.** (1) 5.25–5.75 mm.

**HEAD.** (2) Antenna with 34 to 36 flagellomeres. (3) Gena right-angled posteroventrally (cf. Fig. 9a), or rounded posteroventrally (cf. Fig. 9b), or acute posteroventrally (cf. Fig. 9d). (4) Malar space  $0.51\text{--}0.75 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f), or completely absent (cf. Fig. 16d), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with long, blunt, wide ridge anteriorly (cf. Fig. 17d); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 1 to 5 spines; (21) hind tibia with 1 to 3 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b), or rugose ventrally (cf. Fig. 10c); (23)  $4.0\text{--}4.5 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.05\text{--}1.35 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.88\text{--}1.25 \times$  longer than wide. (29) Second median

tergite lacking transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.50\text{--}0.79 \times$  body length; (32)  $1.88\text{--}3.40 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellow. Mesosoma entirely yellowish-orange. All legs entirely yellow except hind trochanter and trochantellus sometimes black and apical part of hind tibia and entire hind tarsus usually black. Metasoma entirely yellow with ovipositor sheath black. Forewing yellow basally and black in apical third with a sharp distinction. Hind wing yellow basally but black in apical twelfth. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur yellowish-orange; (51) foretibia yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange; (54) midtrochanter yellowish-orange; (55) midtrochantellus yellowish-orange; (56) midfemur yellowish-orange; (57) midtibia yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange; (60) trochanter black, or yellowish-orange; (61) trochantellus black, or yellowish-orange; (62) femur yellowish-orange; (63) tibia mostly yellowish-orange but black apically; (64) tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein yellow; (66) hind wing pattern yellow basally, black in apical twelfth. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Barro Colorado Island in Panama and La Selva, Peñas Blancas, and Limón, Costa Rica. Found most often in secondary forest and sometimes in successional plots at La Selva. Has been collected at La Selva in February, April, August, September, October, and December (Fig. 20).

### *Alabragus derailersi* new species

Fig. 6a

**DIAGNOSIS.** Hind tibia mostly yellow but black in apical and basal sixth. Sternaulus completely absent (cf. Fig. 16d). Ovipositor  $0.78\text{--}1.28 \times$  body length,  $2.82\text{--}4.61 \times$  length of hind femur. Forewing entirely and evenly black. Hind femur yellowish-orange. Malar space  $0.73\text{--}1.00 \times$  the distance from the eye to the maximum extent of the gena.

**LENGTH.** (1)  $5.2\text{--}[7.0]$  mm.

**HEAD.** (2) Antenna with 35 to 42 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $[0.73]\text{--}1.00 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf.

Fig. 11d), or weakly impressed (cf. Fig. 12a), or absent (cf. Fig. 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d), or weak anteriorly (cf. Fig. 11c), or absent (usually) (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with weak median ridge (rarely) (cf. Fig. 11d); (9) with no ridges (cf. Fig. 12a), or one ridge (rarely) (cf. Fig. 11b). (10) Apex of scutellum rugose, lacking transverse ridge (cf. Fig. 11c), or smooth, lacking transverse ridge (usually) (cf. Fig. 12a), or with transverse, rugose ridge (cf. Fig. 11a). (11) Sternaulus completely absent (cf. Fig. 16d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a), or mostly smooth (cf. Fig. 14a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f), or complete (cf. Fig. 11d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 0 to 2 spines; (21) hind tibia with 2 to 6 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.8\text{--}4.8 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (rarely) (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with weak longitudinal median carina (cf. Fig. 19d), or with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $1.28\text{--}1.54 [1.47] \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.09\text{--}1.23 [1.16] \times$  longer than wide. (29) Second median tergite lacking transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression (usually), or with shallow transverse depression. (31) Ovipositor  $0.78\text{--}1.28 [0.85] \times$  body length; (32)  $[2.60]\text{--}4.61 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres entirely yellowish-orange. Mesosoma yellowish-orange except entire propleuron, anterior part of pronotum, and parts of mesonotum sometimes black. Fore and midlegs both entirely black except both coxae and tarsi sometimes yellowish-orange. Hind leg black except basal three-quarters of coxa and femur yellowish-orange and trochanter, trochantellus, and central part of hind tibia sometimes orange. Entire metasoma yellowish-orange except ovipositor sheath black. Forewing and hind wing black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or black anteriorly, orange posteriorly;

(39) propleuron black; (40) mesonotum black, or yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black in apical fifth; (60) trochanter black, or yellowish-orange; (61) trochantellus black, or yellowish-orange; (62) femur yellowish-orange; (63) tibia mostly yellow but black in apical and basal sixth; (64) tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1–8 yellowish orange. (75) Ovipositor sheath black.

**DISTRIBUTION AND MATERIAL EXAMINED.** Costa Rica. Collected exclusively in primary forest at La Selva, in all months except April and October (Fig. 20).

**Holotype** ♀. COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in primary forest: 30.vi.1995, (INBIO) 002302045 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in primary forest: 1♀, 2.iii.1993, (INBIOCRI) 002285573 (CNCI); 1♀, 1.vii.1993, 002277297 (CNCI); 1♀, 15.vii.1993, 002277347 (INBC); 1♀, 1♂, 3.viii.1993, 002292094 (INBC), 002277483 (BMNH); 2♀, 14.viii.1993, 002292478 (LACM), 002292475 (OSUO); 1♀, 1.ix.1993, 002293306 (UKIC); 1♂, 16.ix.1993, 002292942 (UKIC); 1♀, 15.xii.1993, 002302115 (USNM); 1♀, 3.i.1994, 002293417 (USNM); 1♀, 6.i.1994, 002302111 (AEIC); 1♀, 1.ii.1994, 002302112 (AEIC); 1♀, 3.ii.1994, 002302046 (CNCI); 4♀, 30.vi.1995, 002302113 (CNCI), 002302114 (INBC), 002302110 (INBC); 1♀, 17.vii.1995, 002302048 (BMNH); 2♂, 1.viii.1995, 002301662 (BMNH), 002301661 (LACM); 1♀, 14.ix.1995, 002300765 (LACM); 1♂, 14.ix.1995, 002300648 (UKIC); 1♀, 29.ix.1995, 002300798 (UKIC); 1♀, 1.xi.1995, 002290033 (USNM); 2♀, 15.xi.1995, 002291742 (USNM), 002291740 (AEIC); 1♀, 14.xii.1995, 002291915 (AEIC); 1♀, 31.v.1996, 002270953 (CNCI); 1♀, 2.i.1996, 002292015 (CNCI); 1♀, 1.iii.1996, 002304176 (UKIC); 1♀, 15.iii.1996, 002304329 (UKIC); 1♀, 14.vi.1996, 002304986 (UKIC). Limón: Sector Cerro Cocori: 150 m: 1♀, vii.1993 (E. Rojas), 001699530 (INBC); 1♀, i.1994 (E. Rojas), 001855496 (UKIC). Guanacaste: Est. Pitilla: 1♀, 22.viii.1993, 001639618 (INBC). Alajuela: Peñas Blancas: Malaise trap: 700 m: 1♀, iv.1987 (E. Cruz) (INBC), 2♀, 9.vi.1987 (E. Cruz) (INBC); 1♀, 1.viii.1987 (E. Cruz) (INBC).

## *Alabragus donnai* new species

Fig. 8c

**DIAGNOSIS.** Median longitudinal ridge of scutum strong (cf. Fig. 11d). Metanotum black. Body length 4.93–5.76 mm. Median syntergite 2+3 0.89–1.05 × longer than wide. Hind tibia black. Midtarsus yellowish-orange. Antenna with 32 to 37 flagellomeres.

**LENGTH.** (1) [4.93]–5.76 mm.

**HEAD.** (2) Antenna with 32 to 37 [34] flagellomeres. (3) Gena [rounded] (cf. Fig. 9b) or right-angled (cf. Fig. 9a) posteroventrally. (4) Malar space 0.47–0.72 [0.6] × distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to [deeply] (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8, 9) Scutellar sulcus with one weak to [strong median ridge] or mostly smooth (cf. Figs. 11b, 11d, 12a). (10) Apex of scutellum [with transverse, rugose ridge] (cf. Fig. 11a), or rugose, lacking transverse ridge (cf. Fig. 11c). (11) [Sternaulus composed of large crenulae posteroventrally] (cf. Fig. 16a) or mostly absent, represented by a shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) [with] (cf. Fig. 16b) or without (cf. Fig. 16f) several crenulae along ventral margin. (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with long, blunt, wide ridge anteriorly (cf. Fig. 17d), or with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum strongly defined to [absent] (cf. Figs. 11d, 14f, 17d). (20). Midtibia with 0 to 3 spines; (21) Hind tibia with 1 to 7 [4] spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 3.64–4.78 [4.17] × longer than wide. (24) Forewing vein [1cu-a intersects Cu distad 1M] (Fig. 13b), or vein 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite [with small longitudinal bump anteriorly] (cf. Fig. 19a), or with well-defined median longitudinal carina (cf. Fig. 19c); (26) 0.90–[1.23] × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 0.89–1.05 [0.98] × longer than wide. (29) Second median tergite lacking transverse depression, or [with transverse depression barely indicated]. (30) Third median tergite lacking transverse depression. (31) Ovipositor 0.66–[0.88] × body length; (32) 2.17–[2.81] × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres [yellowish-orange apically] or entirely yellowish-orange. Mesosoma black except propodeum and metapleuron yellowish-orange. Foreleg and midleg black except both tarsi yellowish-orange. Hind leg black except coxa [entirely yellowish-orange] or yellowish-orange ex-

cept black laterally and femur yellowish-orange. Forewing and hind wing black. Mesosoma yellowish-orange except ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres mostly yellowish-orange but black basally. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa [yellowish-orange], or mostly yellowish-orange except black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia black; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION AND MATERIAL EXAMINED.** Alajuela, Cartago, Guanacaste, and Heredia provinces of Costa Rica and the Uxmal Ruins on the Yucatán Peninsula of Mexico. Found in January, May, and July through September at La Selva (Fig. 20).

**Holotype** ♀. COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in second-growth forest: 26.xii.1997–8.i.1998, (Brenes and Vargas), (UGCA) 326876, (INBC).

**Allotype** ♂. COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in second-growth forest: 10–24.vii.1997 (Blasier), (UGCA) 326862 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap at the swamp site: 1♀, 14.ix.1995, (INBIO) 002300718 (CNCI); 1♀, 15–29.v.1997 (Ness), (UGCA) 326688 (CNCI). 1♀, 9.iii.1998, (INBIO) 002283791 (INBC); 1♀, 14.v.1998, 002282358 (INBC); 1♀, 31.v.1998, 002304894 (BMNH). Malaise trap in successional plots: 1♂, 01.viii.1995, 002289278 (LACM). Heredia: Est. Magsasay: 200 m: 1♂, i.1991 (M. Barrelier), 000298508 (UKIC). Alajuela: Peñas Blancas: 700 m: Malaise trap: 9♀, ix–x.1986 (E. Cruz) (INBC, UKIC); 2♀, x.1986 (E. Cruz) (INBC); 1♀, xi.1986 (E. Cruz) (INBC); 1♀, xii.1986 (E. Cruz) (INBC, UKIC); 6♀, ii.1987 (E. Cruz) (INBC, USNM); 2♀, iv.1987 (E. Cruz) (INBC); 1♂, 9.vi.1987 (E. Cruz); 5♀, 7.vii.1987 (E. Cruz) (INBC, AEIC); 2♀, 1.viii.1987 (E. Cruz) (UKIC); 2♀, 1–12.xii.1987 (E. Cruz) (INBC). Guanacaste: Est. Pitilla: 700 m: 1♀, 4–25.xi.1991 (P. Rios), (INBIO) 000389982 (INBC); 1♀, iv.1995 (P. Rios), 002335500 (CNCI). Cartago: Grano de Oro: 1,120 m: 1♀, 13–15.iv.1993 (P. Campos), 001307300 (INBC). MEXICO: Yucatán: Uxmal Ruins: 5 m: 1♀, 2.viii.1983 (R.S. Anderson) (LACM).

### *Alabragus englishi* new species

Fig. 7f

**DIAGNOSIS.** Ovipositor  $5.70\text{--}5.75 \times$  length of hind femur,  $1.26\text{--}1.33 \times$  body length. Mesonotum black; or bicolorous, black and yellowish-orange. Scutellar sulcus mostly smooth, with (cf. Fig. 11d) or without (cf. Fig. 12a) one weak median ridge. Pronotum black. Mesopleuron black.

**LENGTH.** (1)  $7.00\text{--}9.50$  [7.61] mm.

**HEAD.** (2) Antenna with 38 to [42] flagellomeres. (3) Gena [rounded posteroventrally] (cf. Fig. 9b), or right-angled posteroventrally (rarely) (cf. Fig. 9a). (4) Malar space  $[0.59]\text{--}0.64 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus [deeply impressed] to absent (cf. Figs. 11d, 12a, 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to [strongly defined] (cf. Figs. 11a, 11c, 11d). (8, 9) Scutellar sulcus [mostly smooth] (usually) (cf. Fig. 12a), or with one weak (cf. Fig. 11d) median ridge. (10) Apex of scutellum [with transverse smooth] (cf. Fig. 12d) or rugose ridge (cf. Fig. 11a), or mostly smooth lacking (cf. Fig. 12a) transverse ridge. (11) Sternaulus [mostly absent, represented by small, shallow depression] (cf. Fig. 18d), or long, distinct, and composed of many small crenulae (cf. Fig. 15b), or composed of large crenulae (cf. Fig. 16a) posteroventrally. (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron [mostly smooth] (cf. Fig. 15a), or areolate rugose (cf. Fig. 15b) in ventral quarter; (14) with (cf. Fig. 16b) or [without] (cf. Fig. 16f) crenulae along ventral margin. (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum [mostly smooth] (cf. Fig. 14a) to weakly areolate (cf. Fig. 12a). (20) Midtibia with [2] to 6 spines; (21) hind tibia with 5 to 9 [7] spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $[3.33]\text{--}3.90 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (usually) (Fig. 13b), or vein 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite [with small longitudinal bump anteriorly] (cf. Fig. 19a), or with weak (cf. Fig. 19d) to well-defined (cf. Fig. 19c) median longitudinal carina; (26)  $1.34\text{--}[1.49] \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $[1.35]\text{--}1.37 \times$  longer than wide. (29) Second median tergite with [weak] to strong transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $1.26\text{--}[1.33] \times$  body length; (32)  $[5.70]\text{--}5.75 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma entirely black or [black except propodeum and metapleuron-yellowish orange]. Areas of mesopleuron rarely yellowish-orange. Foreleg and midleg black except foretarsus always yellowish-orange and foretibia sometimes yellowish-orange. Hind leg mostly black except yellowish-orange as

follows: coxa, femur, and tibia laterally. Hind tibia sometimes entirely black and hind coxa sometimes yellowish-orange with black area laterally. Forewing [clear basally and black in apical third], or entirely and evenly black. Hind wing black to clear. Metasoma yellowish-orange with ovipositor sheath black. One male specimen has terga 1 to 4 black dorsally. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum [black], or bicolorous, black and yellowish-orange; (43) mesopleuron black; (44) metanotum black; (45) propodeum [yellowish-orange] (usually), or black; (46) metapleuron [yellowish-orange] (usually), or black; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia [black], or yellowish-black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange, or mostly yellowish-orange but black in basal twelfth, or mostly yellowish-orange but black in basal and apical twelfth; (63) hind tibia [mostly black with an yellowish-orange area laterally], or black; (64) hind tarsus black; (65) forewing [clear basally, black in apical third], or entirely and evenly black; (66) hind wing pattern entirely clear, or entirely black. **Metasoma.** (67–70) Terga 1 to 4 [yellowish-orange], or yellowish-orange but black dorsally (71–74); terga 4 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION AND MATERIAL EXAMINED.** Heredia, Cartago, Guanacaste, Alajuela, and Puntarenas provinces of Costa Rica. Found in January and April through July at La Selva (Fig. 20).

**Holotype** ♀. COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in successional plots: 17.vii.1995, (INBIOCRI) 002302108 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in borde suampo: 1♀, 9.i.1998, (INBIOCRI) 002305305 (CNCI); Malaise trap in successional plots: 1♀, 2.v.1993, 002271982 (CNCI); 1♀, 18.v.1993, 002261316 (INBC); 1♀, 1.vi.1993, 002261442 (INBC); 1♂, 17.vii.1995, 002302272 (BMNH); Malaise trap in secondary forest: 1♂, 30.vi.1995, 002302098 (BMNH); 1♂, 31.v.1996, 002304894 (LACM); Malaise trap: 2♂, iv–v.1993 (P. Hanson) (INBC). Cartago: P.N. Tapantú: 2♀, iii.1994 (G. Mora), 001733452 (INBC), 001733486 (UKIC). Cartago: P.N. Tapantú: Quebrada Segunda: 1,250 m: 1♀, iv.1992 (R. Vargas), 000699858 (INBC); 1♀, vi.1992 (G. Mora), 000433473 (UKIC); 1♀, xii.1992 (G. Mora), 001209401 (USNM); 1,300 m: 1♀, x.1993 (G. Mora), 001128696 (AEIC); 1,250 m: 1♂, xi.1993

(G. Mora), 001825836 (OSUO); 1,150 m: 1♀, 3♂, vii.1994 (G. Mora), 001885420 (CNCI), 001885417 (CNCI), 001885419 (INBC), 001885418 (BMNH). Cartago: Turrialba: Malaise Trap: 3–5.vi.1976 (M. Washbauer) (INBC). Cartago: Grano de Oro: 1,120 m: 1♀, ix.1992 (P. Campos), 000935859 (INBC). Guanacaste: Est. Pitilla: 700 m: 1♀, viii.1988, 000124394 (INBC); 1♀, ix.1989, 000035738 (UKIC); 2♂, 1–11.ix.1992 (C. Moraga), 000849118 (CNCI), 000849126 (AEIC); 2♀, xi.1992 (P. Rios), 000972147 (LACM), 000972172 (UKIC); 1♀, 22.x–2.xi.1992 (C. Moraga), 000916540 (INBC); 4♂, 19.v–3.vi.1993 (C. Moraga), 001342847 (INBC), 001342718 (CNCI), 001342775 (UKIC), 001342916 (UKIC); 1♂, viii.1993 (C. Moraga), 001639620 (INBC); 1♂, 6–17.ix.1993 (C. Moraga), 001614970 (CNCI); 2♂, v.1994 (P. Rios), 001877958 (BMNH), 001877964 (UKIC); 2♂, 1♀, viii.1994 (P. Rios), 002052133 (AEIC), 002052131 (UKIC), 002052132 (CNCI); 1♂, ix.1994 (C. Moraga), 002017961 (INBC); 1♂, v.1995 (P. Rios), 002203214 (CNCI). Guanacaste: Río San Lorenzo: 1,050 m: 1♀, viii.1992 (G. Rodriguez), 000378221 (INBC). Guanacaste: Finca Yafa: 320 m: 2♀, 8–26.i.1993 (E. López), 001192406 (INBC), 001192405 (INBC). Guanacaste: Los Almendros: 300 m: 1♂, 28.vii–14.viii.1992 (E. López), 000874226 (INBC); 3♀, 3♂, 3–22.viii.1993 (E. López), 001850504 (INBC), 001850508 (INBC), 001850503 (CNCI), 001850509 (CNCI), 001850527 (UKIC), 001850272 (UKIC); 3♂, 8–20.xi.1993 (E. López), 001633535 (INBC), 001633609 (CNCI), 001633629 (UKIC). Guanacaste: scrub forest: 1♂, 13.vii–3.viii.1985 (Gauld & Janzen) (INBC). Alajuela: Peñas Blancas: Malaise trap: 700 m: 1♀, iv.1987 (E. Cruz) (INBC); 2♂, 23.v.1987 (E. Cruz) (INBC); 1♀, 7.vii.1987 (E. Cruz) (INBC). Alajuela: R. San Lorencito: 900 m: 1♀, 13–18.vi.1993, 001365499 (INBC). Puntarenas: San Luis: 1,000–1,350 m: ii.1995 (Z. Fuentes), 002165616 (INBC). San José: Zurquí de Moravia: 1,600 m: 2♀, 4♂, v.1995 (P. Hanson), 002302116 (INBC), 002302117 (INBC), 002302120 (CNCI), 002302118 (CNCI), 002302109 (UKIC), 002302119 (BMNH).

*Alabragus imitatus* (Cresson)

Fig. 3f, 16b

*Microdus imitatus* Cresson, 1873:51. Holotype ♀, USA (ANSP).

*Microdus nigrotrochantericus* Viereck, 1905:275. Holotype ♀, USA (SMEC).

*Bassus floridanus* Muesebeck, 1927:31. Holotype ♂, USA (USNM).

*Alabragus imitatus* Sharkey, 1988:370–371, figs. 4b, 7b, 13c.

**DIAGNOSIS.** Ovipositor length 5.6–6.4 × length of hind femur; 1.3–1.6 × length of body. Forewing entirely and evenly black; or entirely black but darker in apical tenth to twelfth. Pronotum yellowish-orange; or black ventrally, yellowish-orange dorsally. Foretrochanter black. Hind femur smooth ventrally (cf. Fig. 10b). Mesopleuron

yellowish-orange; or black ventrally, yellowish-orange dorsally.

**LENGTH.** (1) 5.50–9.40 mm.

**HEAD.** (2) Antenna with 35 to 45 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.62\text{--}0.90 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed (usually) (cf. Fig. 11d), or weakly impressed (cf. Fig. 12a) to absent (cf. Fig. 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to strongly defined (cf. Figs. 11a, 11c, 11d). (8, 9) Scutellar sulcus mostly smooth (usually) (cf. Fig. 12a), or with one weak (cf. Fig. 11d) to strong (cf. Fig. 11b) median ridge. (10) Apex of scutellum mostly smooth with several weak punctures (cf. Fig. 11c), or rugose or smooth, lacking transverse ridge (cf. Fig. 12a), or with transverse, rugose ridge (cf. Fig. 11a); (11) Sternaulus completely absent (cf. Fig. 16d), or mostly absent, represented by small, shallow depression (cf. Fig. 18d), or long, distinct and composed of many small crenulae (rarely) (cf. Fig. 15b), or composed of several large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (usually) (cf. Fig. 16a) or smooth (cf. Fig. 16f). (13) Metapleuron mostly smooth (cf. Fig. 15a) or areolate rugose (cf. Fig. 15b) in ventral quarter (rarely); (14) with several crenulae along ventral margin (usually) (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f), or with rugae on ventral third and on margin (cf. Fig. 16a). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (usually) (cf. Fig. 17c), or bisected by strong ridge, or deeply excavated, with a hooklike projection from the posterior margin. (16) Propodeum distinctly areolate (cf. Fig. 12a), or weakly areolate (Fig. 11b), or mostly smooth (cf. Fig. 14a); (17) anterior areola of propodeum with weak (cf. Fig. 17a) to sharp (cf. Fig. 11d) ridge anteriorly; (18) anterior transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f), or complete (cf. Fig. 11d). (20) Midtibia with 0 to 8 spines; (21) hind tibia with 2 to 15 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.65\text{--}4.53 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (usually) (Fig. 13b), or veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (usually) (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b), or with weak (cf. Fig. 19d) to strong (cf. Fig. 19c) longitudinal median carina; (26)  $1.09\text{--}1.60 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.15\text{--}1.84 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated, or lacking transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $1.3\text{--}1.6 \times$  body length; (32)  $5.60\text{--}6.40 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres entirely or apically yellowish-orange. Mesosoma entirely yellowish-orange except propleuron, ventral parts of pronotum, mesonotum, and/or ventral part of mesopleuron sometimes black. Foreleg and midleg black except both coxae and tarsi sometimes yellowish-orange. Hind coxa, femur, sometimes trochanter and trochantellus, and lateral part of tibia yellowish-orange. Hind leg otherwise black. Forewing and hind wing entirely black. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange, or mostly yellowish-orange but black basally. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or yellowish-orange and black ventrally; (39) propleuron black, or yellowish-orange; (40) mesonotum yellowish-orange, or black; (43) mesopleuron yellowish-orange, or black ventrally, yellowish-orange dorsally; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange, or black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange, or black; (53) midcoxa yellowish-orange, or black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black in apical fifth; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange; (63) hind tibia black, or mostly yellow but black in apical and basal sixth, or mostly black with an yellowish orange area laterally; (64) hind tarsus black; (65) forewing entirely and evenly black, or entirely black but darker in apical tenth to twelfth; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**HOSTS.** *Diatraea* sp.

**DISTRIBUTION.** Widespread in Mexico, Central America, and the southeastern USA, as far north as Kentucky. Commonly collected at La Selva throughout the year except for April, May, October, and November (Fig. 21). Nearly all specimens were collected in primary forest at La Selva.

### *Alabragus janzeni* Sharkey

Fig. 4a

*Alabragus janzeni* Sharkey, 1988:373. Holotype ♀, Costa Rica (AEIC).

**DIAGNOSIS.** Terga 3 and 4 black dorsally, yellowish-orange laterally. Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c). Body length 8.9–10.1 mm. Forewing banded from base: yellow, black, yellow, black.

**LENGTH.** (1) 8.9–10.1 mm.

**HEAD.** (2) Antenna with 45 to 48 flagellomeres. (3) Gena right-angled posteroventrally (cf. Fig. 9a),

or acute posteroventrally (usually) (cf. Fig. 9d). (4) Malar space  $0.42-0.67 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with median ridge (cf. Fig. 11b), or with weak median ridge (cf. Fig. 11d); (9) with no ridges (cf. Fig. 12a), or one ridge (cf. Fig. 11b). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 5 to 8 spines; (21) hind tibia with 6 to 8 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.9-4.0 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $1.38-1.43 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.2-1.5 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression, or with shallow transverse depression. (31) Ovipositor  $0.89-1.00 \times$  body length; (32)  $3.75-4.13 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except metanotum, propodeum, and metapleuron yellowish-orange. Foreleg and midleg vary from entirely yellowish-orange to entirely black with both tarsi yellow. Hind leg entirely yellow except coxa mostly black, apical eighth of hind tibia black, and hind tarsus black. Metasomal terga 1 and 2 entirely yellowish-orange, 3 and 4 mostly yellowish-orange except black dorsally, and terga 5 to 8 and ovipositor sheath entirely black. Forewing banded from base: yellow, black, yellow, black. Hind wing yellow basally, black apically. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black, or yellowish-orange; (49) foretrochantellus black, or yellowish-orange; (50) forefemur black, or yellowish-orange; (51) foretibia black, or yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa black, or

black basally, yellowish-orange apically; (54) midtrochanter black, or yellowish-orange; (55) midtrochantellus black, or yellowish-orange; (56) midfemur black, or yellowish-orange; (57) midtibia black, or yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa black, or mostly black but yellowish-orange in apical eighth; (60) trochanter yellowish-orange; (61) trochantellus yellowish-orange; (62) femur yellowish-orange; (63) tibia mostly yellowish-orange but black apically; (64) tarsus black; (65) forewing banded from base: yellow, black, yellow, black; all bands complete and costal vein black, or banded from base: yellow, black, yellow, black; all bands complete and costal vein yellow; (66) hind wing pattern yellow basally, black in apical eighth. **Metasoma.** (67, 68) Terga 1 and 2 yellowish-orange; (69, 70) terga 3 and 4 black dorsally, yellowish-orange laterally elsewhere; (71-74) terga 5 to 8 black. (75) Ovipositor sheath black.

**HOSTS.** *Eulepte concordalis* on *Tabebuia rosea* and *T. impetiginosa* (Bignoniaceae) (82-SRNP-670, 94-SRNP-5867, 94-SRNP-6353, 94-SRNP-6362, 94-SRNP-6364, 94-SRNP-6367, 94-SRNP-6369, 94-SRNP-6371, 94-SRNP-6385, 94-SRNP-6388, 94-SRNP-6389, 94-SRNP-6390). 94-SRNP-6367 and 94-SRNP-6388 were attacked by hyperparasitoids (Hymenoptera: Perilampidae).

**DISTRIBUTION.** Costa Rica south to Venezuela. Has been collected in Guanacaste and Puntarenas provinces of Costa Rica from June through September (Fig. 21).

### *Alabragus juchuy* Sharkey

Figs. 3a, 9c

*Alabragus juchuy* Sharkey, 1988:374-375. Holotype ♀, Trinidad (BMNH).

**DIAGNOSIS.** Gena with obtuse angle posteriorly (cf. Fig. 9c). Body length 5.2-5.5 mm. Malar space  $0.5 \times$  the distance from the eye to the maximum extent of the gena. Maxillary and labial palpomeres black. Antenna with 36 flagellomeres.

**LENGTH.** (1) 5.20-5.50 mm.

**HEAD.** (2) Antenna with 36 flagellomeres. (3) Gena with obtuse angle posteriorly (cf. Fig. 9c). (4) Malar space  $0.5 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a), or deeply



excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or large and five-sided (cf. Fig. 14d); (18) transverse carina of propodeum weakly defined (cf. Fig. 14f), or complete (cf. Fig. 11d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 1 spine; (21) hind tibia with 2 or 3 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 3.2–4.7 × longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with well-defined median longitudinal carina (cf. Fig. 19c); (26) 1.3–1.6 × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.125–1.30 × longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor 0.8 × body length; (32) 2.8 × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum and metapleuron yellowish-orange and pronotum, mesonotum, and metanotum sometimes yellowish-orange. Foreleg and midleg entirely black except both fore- and midtarsus yellowish-orange. Hind leg black except coxa yellowish-orange and femur rarely orange. Metasoma yellowish-orange except tergum 8 black and terga 5 to 7 sometimes black. Forewing black with stigma sometimes yellow and base of wing sometimes clear. Hind wing entirely black. **Head.** (34) Antenna black; (35) flagellum paler than scape. (36) Maxillary and labial palpomeres black. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron black; (40) mesonotum black, or yellowish-orange; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange; (60) trochanter black; (61) trochantellus black; (62) femur black, or yellowish-orange; (63) tibia black; (64) tarsus black; (65) forewing entirely black, or black with stigma yellow, or black with stigma yellow and base of wing clear; (66) hind wing pattern entirely black. **Metasoma.** (67–70) Terga 1 to 4 yellowish-orange; (71–73) terga 5 to 7 black, or yellowish-orange; (74) terga 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Costa Rica south to Argentina. Has been collected at Turrialba and Peninsula de Osa in Costa Rica, in August and September, respectively (Fig. 21).

## *Alabragus kagaba* Sharkey

### Plate I

*Alabragus kagaba* Sharkey, 1988:375. Holotype ♀, Colombia (BMNH).

**DIAGNOSIS.** Forewing banded from base: clear, black, clear, black. Metapleuron with several crenulae along ventral margin (cf. Fig. 16b). Hind femur mostly yellowish-orange but black in apical eighth and basal tenth. Gena acute posteroventrally (cf. Fig. 9d).

**LENGTH.** (1) 7.95–10.80 mm.

**HEAD.** (2) Antenna with 46–52 flagellomeres. (3) Gena acute posteroventrally (cf. Fig. 9d). (4) Malar space 0.42–0.54 × distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly impressed (cf. Fig. 12a), or absent (cf. Fig. 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to strong (cf. Fig. 11d) anteriorly. (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or mostly smooth with several weak punctures. (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or weakly excavated, with posterior margin not elevated. (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 3 to 6 spines; (21) hind tibia with 5 to 9 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 2.53–4.43 × longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26) 0.84–1.05 × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.10–1.24 × longer than wide. (29) Second median tergite with transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor 0.76–0.90 × body length; (32) 2.88–3.47 × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum sometimes yellowish-orange posteriorly. Foreleg and midleg entirely black except foretarsus yellowish-orange. Hind leg mostly black, coxa yellowish-orange but black laterally, femur yellowish-orange centrally. Forewing banded from base: clear, black, clear, black. Hind wing entirely infusate. Terga 1 to 4 yellowish-orange. Terga 5 to 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) pro-

podeum black, or mostly black but yellowish-orange posteriorly; (46) metapleuron black; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black; (59) hind coxa mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur mostly yellowish-orange but black in apical eighth and basal tenth; (63) hind tibia black; (64) hind tarsus black; (65) forewing banded from base: clear, black, clear, black; (66) hind wing pattern entirely clear. **Metasoma.** (67–70) Terga 1 to 4 yellowish-orange; (71–74) terga 5 to 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Veracruz, Mexico, south through Central America and the Caribbean countries of South America. Collected at La Selva throughout the year, except August and September (Fig. 21). Collected only in primary and secondary forest.

*Alabragus latisoma* Sharkey

Figs. 8a, 11a

*Alabragus latisoma* Sharkey, 1988:377. Holotype ♀, Argentina (AEIC).

**DIAGNOSIS.** Metapleuron yellowish-orange in dorsal third, black ventrally. Gena acute posteroventrally (cf. Fig. 9d). Hind coxa mostly yellowish-orange but black in apical fifth. Antenna with 40 to 41 flagellomeres.

**LENGTH.** (1) 6.8–9.9 mm.

**HEAD.** (2) Antenna with 40 to 41 flagellomeres. (3) Gena acute posteroventrally (cf. Fig. 9d). (4) Malar space  $0.46\text{--}0.59 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent (Fig. 11a). (8, 9) Scutellar sulcus with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum complete (cf. Fig. 11d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 3 to 9 spines; (21) hind tibia with 10 or 11 spines. (22) Hind femur rugose ventrally (cf. Fig. 10c); (23)  $3.10\text{--}4.72 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with well-defined median longitudinal ridge (Fig. 19c); (26)  $1.0\text{--}1.1 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.85\text{--}1.10 \times$  longer than wide. (29) Second median tergite with transverse depression. (30) Third median tergite with transverse depression. (31) Ovipositor  $0.60\text{--}0.71 \times$  body length; (32)  $2.60\text{--}3.34 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum and dorsal third of metapleuron yellowish-orange. Foreleg and midleg black except both tarsi yellowish-orange. Hind leg mostly black except coxa yellowish-orange in basal four fifths, femur yellowish-orange, and tibia sometimes yellowish-orange centrally. Forewing and hind wing black. Terga 1 to 6 yellowish-orange. Terga 7 and 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange in dorsal third, black ventrally; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish-orange but black in apical fifth; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia black, or mostly yellow but black in apical and basal third; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–72) Terga 1 to 6 yellowish-orange; (73–74) terga 7 and 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread from Costa Rica to northern Argentina and east to Pará, Brazil, apparently absent from the Brazilian Highlands. Collected at La Selva from March through July and September and October (Fig. 21). Commonly collected in the swamp site at La Selva, rarely elsewhere.

*Alabragus latreillei* (Spinola)

Figs. 4b, 9a

*Agathis latreillei* Spinola, 1840:191–192. Holotype ♀, French Guiana (MIZT).

*Agathis lepida* Brullé, 1846:497. Holotype ♀, Central America (MNH).

*Craspedobothrus fuscovittatus* Enderlein, 1920:206. Holotype ♀, Suriname (ZMPA).

*Alabragus latreillei* Sharkey, 1988:377–378, figs. 2a, 20a.

**DIAGNOSIS.** Forewing banded from base: yellowish-orange, black, yellowish-orange, black, yellowish-orange.

low, black, yellow, black; all bands complete and costal vein yellow. First median tergite 0.83–1.20 × longer than wide. Ovipositor 0.75–1.00 × body length. Antenna with 51 to 54 flagellomeres. Hind tibia mostly yellowish-orange but black apically. Gena acute posteroventrally (cf. Fig. 9d).

**LENGTH.** (1) 8.7–10.5 mm.

**HEAD.** (2) Antenna with 51 to 54 flagellomeres. (3) Gena acute (usually) (cf. Fig. 9d) to right-angled (cf. Fig. 9a) posteroventrally.

**MESOSOMA.** (5) Notaulus deeply impressed to absent (cf. Figs. 11d, 12a, 12c); (6) not crenulate. (7) Median longitudinal ridge of scutum absent to strong anteriorly (cf. Figs. 11a, 11c, 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one median ridge (cf. Fig. 11b). (10) Apex of scutellum smooth, sometimes with transverse, ridge (cf. Figs. 12a, 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or long, distinct, and composed of many small crenulae (cf. Fig. 15b). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with or without several crenulae along ventral margin (cf. Figs. 16b, 16f). (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 3 to 6 spines; (21) hind tibia with 4 to 6 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 3.7–4.7 × longer than wide.

**METASOMA.** (25) First median tergite with weak (cf. Fig. 19d) to well-defined (cf. Fig. 19c) median longitudinal carina, or with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26) 1.1 × longer than wide. (28) Median syntergite 2+3 1.1–1.3 × longer than wide. (29) Second median tergite with or without weak to strong transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor 0.75–1.00 × body length; (32) 2.7–3.5 × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum, metapleuron, and occasionally mesonotum and/or posterior area of mesopleuron yellowish-orange. Foreleg and midleg both usually black except tarsi and sometimes tibiae yellowish-orange, but both legs may be entirely yellowish-orange. Hind leg yellowish-orange except tarsus and apical part of tibia always black, and trochanter, trochantellus, and lateral part of coxa sometimes black. Forewing banded from base: yellow, black, yellow, black. Hind wing yellow except black apically. Metasoma yellowish-orange anteriorly, black posteriorly. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black, or yellowish-orange; (43) mesopleuron black, or mostly black except yellowish-orange posteriorly; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-or-

ange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black, or yellowish-orange; (49) foretrochantellus black, or yellowish-orange; (50) forefemur black, or yellowish-orange; (51) foretibia black, or yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black, or yellowish-orange; (55) midtrochantellus black, or yellowish-orange; (56) midfemur black, or yellowish-orange; (57) midtibia yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish-orange but black laterally, or mostly yellowish-orange but black in apical fifth; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange; (63) hind tibia mostly yellowish-orange but black apically; (64) hind tarsus black; (65) forewing banded from base: yellow, black, yellow, black: all bands complete from foremargin to hind margin of wing and costal vein yellow. (66) Hind wing yellow basally, black in apical eighth, or yellow basally, slightly black in apical quarter. **Metasoma.** (67–70) Terga 1 to 4 yellowish-orange; (71) tergum 5 yellowish-orange, or black; (72–74) terga 6 to 8 black. (75) Ovipositor sheath black.

**HOSTS.** *Phostria metalobalis* (Hampson) on *Genipa americana* (Rubiaceae) (80-SRNP-244.1, 80-SRNP-244.2, 81-SRNP-436).

**DISTRIBUTION.** Widespread but rare from Costa Rica east to Suriname and through the Amazon Basin south to Brasilia and southern Bahia in Brazil. Collected only once in April at La Selva (Fig. 21), in primary forest.

### *Alabragus maculipes* (Cameron)

Fig. 6d

*Microdus maculipes* Cameron, 1887:404. Holotype ♂, Guatemala (BMNH).

*Microdus trochanteratus* Cameron, 1905:50. Holotype ♀, Nicaragua (BMNH).

*Alabragus maculipes* Sharkey, 1988:380, fig. 17c.

**DIAGNOSIS.** Head yellowish-orange; or yellowish-orange except vertex black; or yellowish-orange except black anteriorly. Midtibia black; or mostly yellowish-orange, black in apical fifth. Antenna with 34 to 37 flagellomeres. Hind tibia mostly yellow but black in apical eighth. Gena rounded posteroventrally (cf. Fig. 9b). Malar space 0.62–0.94 × the distance from the eye to the maximum extent of the gena. Anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d).

**LENGTH.** (1) 4.40–6.90 mm.

**HEAD.** (2) Antenna with 34 to 37 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space 0.62–0.94 × distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate. (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to absent (cf. Fig. 11a). (8, 9) Scutellar

sulcus with one weak (cf. Fig. 11d) to strong (cf. Fig. 11b) median ridge. (10) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a), with transverse, smooth ridge (cf. Fig. 12d), or smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus mostly absent, represented by small, shallow depression (cf. Fig. 18d), or composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by a strong ridge (some males). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum complete to absent (cf. Figs. 11d, 14f, 17d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 2 to 6 spines; (21) hind tibia with 3 to 5 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $2.91\text{--}4.34 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite evenly convex, lacking distinct bump anteromedially (usually) (cf. Fig. 19b), or with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.21\text{--}1.55 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.02\text{--}1.24 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated (usually), or lacking transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.60\text{--}0.78 \times$  body length; (32)  $1.96\text{--}2.91 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head yellowish-orange except antenna and rarely vertex or anterior part of head black. Mesosoma entirely yellowish-orange. Foreleg mostly yellowish-orange, femur sometimes partly to entirely black, tibia sometimes black apically. Midleg mostly yellowish-orange, femur sometimes black in apical third, tibia black in apical fifth; trochanter, trochantellus, and entire femur and tibia rarely black. Hind leg black except trochanter and trochantellus sometimes black, tibia black in apical eighth, and tarsus black to yellowish-black. Forewing and hind wing black. Metasoma yellowish-orange with ovipositor sheath black; one male has the dorsal surface of terga 1 to 8 black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head yellowish-orange (99%, sample size = 190), or yellowish-orange except vertex black, or yellowish-orange except black anteriorly. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) fore-

coxa yellowish-orange; (48) foretrochanter yellowish-orange, or black; (49) foretrochantellus yellowish-orange, or black; (50) forefemur yellowish-orange, or yellowish-orange in apical and basal third, black centrally; (51) foretibia yellowish-orange, or mostly yellowish-orange but black apically; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange; (54) midtrochanter yellowish-orange, or black; (55) midtrochantellus yellowish-orange; (56) midfemur yellowish-orange, or yellowish-orange basally, black in apical third, or entirely black; (57) midtibia mostly yellowish-orange, black in apical fifth, or entirely black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange, or black (rare); (63) hind tibia mostly yellow but black in apical eighth; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange (99%), or yellowish-orange but black dorsally. (75) Ovipositor sheath black.

**HOSTS.** *Pilocrocis ramentalis* Lederer on *Dyschoriste valeriana* (Acanthaceae) (94-SRNP-7176, 94-SRNP-7194) and an unknown crambid on *Marranta arundinacea* (Marantaceae) (90-SRNP-1513).

**DISTRIBUTION.** From the midlatitudes of Mexico south through Central America and Cuba to the Caribbean countries of South America. Collected throughout the year at La Selva, except for November (Fig. 21), mostly in successional plots.

### *Alabragus masneri* Sharkey

Figs. 6c, 11c, 16e

*Alabragus masneri* Sharkey, 1988:381–382. Holotype ♀, Panama (AEIC).

**DIAGNOSIS.** Hind coxa mostly yellowish-orange but black in apical fifth; or yellowish-orange in basal twelfth, black apically. Hind femur black; or mostly yellowish-orange but black in basal and apical twelfth. Body length 3.8–6.0 mm. Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f); or completely absent (cf. Fig. 16d); or mostly absent, represented by a small shallow depression (cf. Fig. 18d). Gena rounded posteroventrally (cf. Fig. 9b). Ovipositor  $0.71\text{--}1.13 \times$  body length. Hind tibia black.

**LENGTH.** (1) 3.8–6.0 mm.

**HEAD.** (2) Antenna with 32 to 36 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.63\text{--}0.80 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed to absent (cf. Figs. 11d, 12a, 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent (cf. Fig. 11a) to weak anteriorly (cf. Fig. 11c). (8, 9) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or mostly smooth with several

weak punctures, or with transverse, rugose or smooth ridge (cf. Figs. 11a, 12d). (11) Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f), or mostly absent, represented by small, shallow depression (cf. Fig. 18d), or completely absent (cf. Fig. 16d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum weakly areolate (cf. Fig. 12a) to mostly smooth (cf. Fig. 14a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d), or large and five-sided (cf. Fig. 14d); (18) anterior transverse carina of propodeum complete to absent (cf. Figs. 11d, 14f, 17d). (20) Midtibia with 0 to 4 spines; (21) hind tibia with 3 to 5 spines. (22) Hind femur smooth ventrally (usually) (cf. Fig. 10b), or punctate ventrally (cf. Fig. 10a); (23)  $3.48\text{--}4.93 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b), or veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b), or with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $1.07\text{--}1.64 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.10\text{--}1.38 \times$  longer than wide. (29) Second median tergite lacking transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.71\text{--}1.13 \times$  body length; (32)  $2.69\text{--}3.72 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except propleuron sometimes black. Foreleg and midleg mostly black but both tibia and mid coxa sometimes yellowish-orange apically and both tarsi always yellowish-orange. Hind leg black except coxa yellowish-orange in basal four fifths and femur sometimes yellowish-orange centrally. Forewing and hind wing black. Metasoma almost always yellowish-orange but rarely brown. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron black, or yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black, or black in basal half, yellow apically; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black; (55) midtrochantellus black; (56)

midfemur black; (57) midtibia black, or yellowish-orange in apical fifth, black basally; (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish-orange but black in apical fifth, or yellowish-orange in basal twelfth, black apically; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur black, or mostly yellowish-orange but black in basal and apical twelfth; (63) hind tibia black; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread from Belize south to Peru and east to Suriname. Collected throughout the year at La Selva (Fig. 21). Collected mostly in successional plots and at the swamp site.

### *Alabragus maya* Sharkey

Fig. 8g

*Alabragus maya* Sharkey, 1988:384. Holotype ♀, Mexico (USNM).

**DIAGNOSIS.** Hind tibia with 7 to 11 spines. Gena right-angled (cf. Fig. 9a) or acute (cf. Fig. 9d) posteroventrally. Tergum 8 yellowish-orange. Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). Malar space  $0.45\text{--}0.55 \times$  the distance from the eye to the maximum extent of the gena. Hind coxa yellowish-orange. Forewing entirely and evenly black. Median syntergite 2+3  $1.09\text{--}1.27 \times$  longer than wide. First median tergite  $1.17\text{--}1.52 \times$  longer than wide. Metapleuron yellowish-orange.

**LENGTH.** (1) 5.6–8.9 mm.

**HEAD.** (2) Antenna with 34 to 42 flagellomeres. (3) Gena right-angled (usually) (cf. Fig. 9a), or acute posteroventrally (cf. Fig. 9d). (4) Malar space  $0.45\text{--}0.55 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate. (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to absent (cf. Fig. 11a). (8, 9) Scutellar sulcus mostly smooth (cf. Fig. 12a), sometimes with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several (cf. Fig. 16b) or no (cf. Fig. 16f) crenulae along ventral margin. (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak (cf. Fig. 17a) or with blunt (cf. Fig. 17d) to sharp (cf. Fig. 11d) ridge anteriorly; (18) anterior transverse carina of propodeum complete to absent (cf. Figs. 11d, 14f, 17d). (20) Midtibia with 2 to 6 spines; (21) hind tibia with 7 to 11 spines. (22) Hind femur smooth

ventrally (cf. Fig. 10b); (23)  $3.76-5.03 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $1.17-1.52 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.09-1.27 \times$  longer than wide. (29) Second median tergite with transverse depression. (30) Third median tergite with transverse depression absent to strong. (31) Ovipositor  $0.58-0.93 \times$  body length; (32)  $2.18-3.20 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma usually black except propodeum and metapleuron yellowish-orange, but some specimens from outside Costa Rica have been recorded with entirely yellowish-orange mesosomas. Foreleg black except foretarsus yellowish-orange. Midleg highly variable in coloration: usually entirely black but ranges to entirely yellowish-orange. Hind leg usually black except yellowish-orange coxa and lateral portion of femur, but can be entirely yellowish-orange except tarsus black. Metasoma yellowish-orange except tergite of median tergite 7 sometimes black. Ovipositor sheath black. Head. (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum black, or yellowish-orange; (39) propleuron black, or yellowish-orange; (40) mesonotum black, or yellowish-orange; (43) mesopleuron black, or yellowish-orange; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black, or yellowish-orange; (55) midtrochantellus black, or yellowish-orange; (56) midfemur black, or yellowish-orange; (57) midtibia black; (58) midtarsus black; (59) hind coxa yellowish-orange; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur mostly black with a yellowish-orange area laterally and apically, or entirely black, or entirely yellowish-orange; (63) hind tibia black, or yellowish-orange; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67-72) Terga 1 to 6 yellowish-orange; (73) tergum 7 yellowish-orange, or black; (74) tergum 8 yellowish-orange. Metasoma of males brown to black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Southern Mexico south to Colombia. Collected at La Selva in April, May, July, August, and October (Fig. 21), exclusively in successional plots.

*Alabragus miqa* Sharkey

Fig. 3b

*Alabragus miqa* Sharkey, 1988:384-385. Holotype ♀, Mexico (BMNH).

**DIAGNOSIS.** Hind coxa black but yellowish-orange posteriorly. Notaulus absent (cf. Fig. 12c). Median syntergite 2+3  $0.88-1.00 \times$  longer than wide.

**LENGTH.** (1) 7.0-7.3 mm.

**HEAD.** (2) Antenna with 37 to 41 flagellomeres. (3) Gena right-angled posteroventrally (cf. Fig. 9a), or acute posteroventrally (cf. Fig. 9d). (4) Malar space  $0.9 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus absent (cf. Fig. 12c). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c). (8) Scutellar sulcus with weak median ridge (cf. Fig. 11d); (9) with one ridge (cf. Fig. 11b). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 0 to 3 spines; (21) hind tibia with 3 to 5 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.8-4.0 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $0.72-1.30 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.88-1.00 \times$  longer than wide. (29) Second median tergite with strong transverse depression. (30) Third median tergite with strong transverse depression. (31) Ovipositor  $0.4-1.0 \times$  body length; (32)  $1.5-2.3 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except palpi yellow; mesosoma brownish-black except metanotum, tegula, propodeum, hind trochanter and hind coxa posteriorly orange; legs all brownish-black except fore- and midtarsi yellow; metasoma orange except black distad segment 5; forewing infusate except stigma yellow distally. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron black; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa black but yellowish-orange posteriorly; (60) trochanter black; (61) trochantellus black; (62) femur black; (63) tibia black; (64) tarsus

black; (65) forewing entirely black, or black with stigma yellow; (66) hind wing pattern entirely black. **Metasoma.** (67–71) Terga 1 to 5 yellowish-orange; (72, 73) terga 6 and 7 black, or yellowish-orange; (74) tergum 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Southern Mexico south to Costa Rica. Collected only once in January in Limón Province of Costa Rica (Fig. 21).

*Alabragus mojos* Sharkey

Fig. 4e

*Alabragus mojos* Sharkey, 1988:386–387. Holotype ♀, Ecuador (CNCI).

**DIAGNOSIS.** Hind coxa yellowish-orange in basal twelfth, black apically. Gena right-angled posteroventrally (cf. Fig. 9a). Tergum 4 mostly yellowish-orange but black posteriorly.

**LENGTH.** (1) 5.3–7.7 mm.

**HEAD.** (2) Antenna with 34 to 37 flagellomeres. (3) Gena right-angled posteroventrally (cf. Fig. 9a). (4) Malar space  $0.58 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), sometimes with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum with transverse smooth (cf. Fig. 12d) or rugose ridge (cf. Fig. 11a). (11) Sternaulus mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (usually) (cf. Fig. 16a) or smooth (cf. Fig. 16f). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with long, blunt, wide ridge anteriorly (cf. Fig. 17d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d) to weakly defined (cf. Fig. 14f). (20) Midtibia with 0 to 4 spines; (21) hind tibia with 2 to 4 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $4.5\text{--}4.7 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.36\text{--}1.80 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.06\text{--}1.80 \times$  longer than wide. (29) Second median tergite lacking transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.66\text{--}0.70 \times$  body length; (32)  $2.47\text{--}2.80 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head usually black except maxillary and labial palpomeres yellowish-orange, but sometimes orange except vertex black. Mesosoma yellowish-orange except mesoscutum black. Foreleg

and midleg both entirely yellowish-orange. Hind leg black except coxa in basal twelfth, femur, and tibia in basal seven eighths yellowish-orange. Forewing and hind wing usually banded from base: yellow, black, yellow, black, but forewing can be entirely black or black with one clear band in apical third quarter. Terga 1 to 3 yellowish-orange. Median tergum 4 yellowish-orange but black posteriorly. Terga 5 to 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black (98%, sample size = 41), or yellowish-orange except vertex black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange; (40) mesonotum bicolorous, black and yellowish-orange; (41) mesoscutum black; (42) scutellum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur yellowish-orange; (51) foretibia yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange; (54) midtrochanter yellowish-orange; (55) midtrochantellus yellowish-orange; (56) midfemur yellowish-orange; (57) midtibia yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange in basal twelfth, black apically; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange, or mostly yellowish-orange but black in apical eighth and basal tenth; (63) hind tibia mostly yellow but black in apical eighth, or mostly yellow but black in apical and basal sixth; (64) hind tarsus black; (65) forewing banded from base: yellow, black, yellow, black; all bands complete from foremargin to hind margin of wing and costal vein yellow, or entirely and evenly black, or black with one clear band in apical third quarter; (66) hind wing pattern banded from base: yellow, black, yellow, black. **Metasoma.** (67–69) Terga 1 to 3 yellowish-orange; (70) tergum 4 mostly yellowish-orange but black posteriorly; (71–74) terga 5 to 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread from Guatemala south to northern Argentina. Collected at La Selva from March through August, and in November and December (Fig. 22), in successional plots and second-growth forest.

*Alabragus nahuatl* Sharkey

Fig. 3g

*Alabragus nahuatl* Sharkey, 1988:388. Holotype ♀, Mexico (CNCI).

**DIAGNOSIS.** Forewing clear in basal half, black apically. Gena rounded posteroventrally (cf. Fig. 9b). Metapleuron areolate rugose in ventral half (cf. Fig. 16a). First median tergite  $1.0 \times$  longer than wide.

**LENGTH.** (1) 9.3–10.5 mm.

**HEAD.** (2) Antenna with 40 to 46 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4)

Malar space  $0.5 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with median ridge (cf. Fig. 11b), or with weak median ridge (cf. Fig. 11d); (9) with no ridges (cf. Fig. 12a), or one ridge (cf. Fig. 11b). (10) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus long, distinct, and composed of many small foveae (cf. Fig. 15b), or composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron areolate rugose in ventral half (cf. Fig. 16a). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 3 to 10 spines; (21) hind tibia with 8 to 20 spines. (22) Hind femur rugose ventrally (cf. Fig. 10c); (23)  $2.9\text{--}3.2 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.0 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.1\text{--}1.2 \times$  longer than wide. (29) Second median tergite with strong transverse depression. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.8 \times$  body length; (32)  $3.4 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Black, reddish orange, and brown; palpi, fore-, and midtarsus brown; reddish orange as follows: metanotum, metapleuron, propodeum, hind femur, and metasoma except terminally and along ventral midline black; forewing clear basally, infusate distad 1RS cell. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres black. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa black; (60) trochanter black; (61) trochantellus black; (62) femur yellowish-orange; (63) tibia black; (64) tarsus black; (65) forewing clear in basal half, black apically; (66) hind wing pattern entirely black. **Metasoma.** (67–69) Terga 1 to 3 yellowish-orange; (70) terga 4 to 8 black. (75) Ovipositor sheath black.

**HOSTS.** *Lygropia tripunctata* (Fabricius) feeding

on *Operculina pteripes* (Convolvulaceae) (94-SRNP-5606).

**DISTRIBUTION.** Mexico south to Costa Rica. One specimen reared in July in Guanacaste Province of Costa Rica (Fig. 22).

### *Alabragus nicoya* Sharkey

Fig. 3c

*Alabragus nicoya* Sharkey, 1988:388–389. Holotype ♀, Costa Rica (AEIC).

**DIAGNOSIS.** First median tergite  $0.58\text{--}0.70 \times$  longer than wide. Gena rounded posteroventrally (cf. Fig. 9b). Maxillary and labial palpomeres mostly black, but yellowish-orange apically. Hind femur  $2.5\text{--}2.9 \times$  longer than wide.

**LENGTH.** (1)  $9.1\text{--}11.0$  mm.

**HEAD.** (2) Antenna with 45 to 48 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.63\text{--}0.77 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d), or weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d), or weak anteriorly (cf. Fig. 11c). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with median ridge (cf. Fig. 11b), or with weak median ridge (cf. Fig. 11d); (9) with no ridges (cf. Fig. 12a), or two or more ridges (cf. Fig. 17c). (10) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus long, distinct, and composed of many small foveae (cf. Fig. 15b), or composed of large crenulae posteroventrally (cf. Fig. 16a) (almost always). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron areolate rugose in ventral quarter (cf. Fig. 15b), or areolate rugose in ventral half (cf. Fig. 16a). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 5 or 6 spines; (21) hind tibia with 5 to 12 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b), or rugose ventrally (cf. Fig. 10c) (almost always); (23)  $2.5\text{--}2.9 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26)  $0.58\text{--}0.70 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.88\text{--}1.00 \times$  longer than wide. (29) Second median tergite with strong transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression, or with shallow transverse depression. (31) Ovipositor  $0.75\text{--}0.80 \times$  body length; (32)  $3.4\text{--}3.7 \times$  length of hind femur.



**COLOR.** (33) **Summary.** Head black except apical tips of maxillary and labial palpomeres yellowish-orange. Mesosoma black except metanotum, propodeum, and metapleuron yellowish-orange. Foreleg and midleg both entirely black, but tarsi are sometimes yellowish-orange. Hind leg black except coxa and femur yellowish-orange. Forewing entirely black but darker apically, or yellow basally and black apically with a sharp or gradual distinction. Hind wing entirely black. Metasoma mostly yellowish-orange, with some black along venter and rarely terga 2 to 4. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres mostly black, but yellowish-orange apically. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus black, or yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black, or yellowish-orange; (59) hind coxa yellowish-orange; (60) trochanter black; (61) trochantellus black; (62) femur yellowish-orange; (63) tibia black; (64) tarsus black; (65) forewing yellow basally and black apically with a weak distinction, costal vein black, or yellow basally and black apically with a weak distinction, costal vein yellow, or entirely black but darker in apical tenth; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath mostly black but yellow at apex.

**HOSTS.** *Dichogama colotha* Dyar on *Capparis indica* or *C. incana* (Capparidaceae) (79-SRNP-211, 89-SRNP-204, 90-SRNP-1194, 92-SRNP-665, 92-SRNP-4177, 92-SRNP-4220, 92-SRNP-4222, 92-SRNP-4228, 92-SRNP-4230, 92-SRNP-4232, 92-SRNP-4242, 92-SRNP-4254, 92-SRNP-4261, 92-SRNP-4532, 93-SRNP-831, 93-SRNP-833, 93-SRNP-4953, 93-SRNP-4958, 93-SRNP-4964.1, 96-SRNP-1278, 96-SRNP-4969), *Dichogamma redtenbacheri* Lederer on *Capparis frondosa* (90-SRNP-1242.1, 90-SRNP-1407.1, 90-SRNP-1407.2, 90-SRNP-1407.3, 90-SRNP-1955, 93-SRNP-4734), and *Latalva pseudosmithii* Amsel on *Morisonia americana* (Capparidaceae) (93-SRNP-4715). 93-SRNP-4964.1 was attacked by a hyperparasitoid (Hymenoptera: Perilampidae).

**DISTRIBUTION.** Known only from Santa Rosa National Park in Guanacaste, Costa Rica. Has been reared from larvae collected in May through August (Fig. 22).

*Alabragus nigrutilus* (Szépligeti)

Figs. 8f, 11d, 18c, 19b

*Microdus nigrutilus* Szépligeti, 1902:76. Holotype ♀, Brazil (HNHM).

*Cremonops punctipennis* Cameron, 1911:322. Holotype ♂, Guyana (BMNH).

*Alabragus nigrutilus* Sharkey, 1988:389, figs. 7d, 15d.

**DIAGNOSIS.** Forewing entirely black. Gena right-angled (cf. Fig. 9a) or acute (cf. Fig. 9e) posteroventrally. Median syntergite 2+3  $1.30\text{--}1.52 \times$  longer than wide. Midtarsus yellowish-orange. Pronotum black. Tergum 8 yellowish-orange. Ovipositor  $2.67\text{--}3.80 \times$  length of hind femur. Median longitudinal ridge of scutum strong (cf. Fig. 11d). Scutellar sulcus mostly smooth (cf. Fig. 12a); or with weak median ridge (cf. Fig. 11d). Mesonotum black.

**LENGTH.** (1) 4.9–8.0 mm.

**HEAD.** (2) Antenna with 33 to 40 flagellomeres. (3) Gena acute posteroventrally (usually) (cf. Fig. 9d), or right-angled (cf. Fig. 9a). (4) Malar space  $0.52\text{--}0.76 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed; (6) not crenulate. (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8, 9) Scutellar sulcus with one weak median ridge (cf. Fig. 11d), or mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or mostly smooth with several weak punctures, or with transverse smooth (cf. Fig. 12d) or rugose ridge (rarely) (cf. Fig. 11a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or with several crenulae posteroventrally and a smooth groove (cf. Fig. 16f), or long, distinct, and composed of many small crenulae (cf. Fig. 15b). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (usually) (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (usually) (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with blunt (cf. Fig. 17d) to sharp (cf. Fig. 11d) ridge anteriorly, or large and five-sided (cf. Fig. 14d); (18) anterior transverse carina of propodeum strongly defined to absent (cf. Figs. 11d, 14f, 17d). (20) Midtibia with 0 to 6 spines; (21) hind tibia with 3 to 5 spines. (22) Hind femur smooth (usually) (cf. Fig. 10b) or rugose ventrally (cf. Fig. 10c); (23)  $3.17\text{--}4.37 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (usually) (Fig. 13b), or veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking small longitudinal bump anteriorly (Fig. 19b); (26)  $1.00\text{--}1.59 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.30\text{--}1.52 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite

lacking transverse depression. (31) Ovipositor  $0.64\text{--}0.93 \times$  body length; (32)  $2.67\text{--}3.80 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except metanotum, propodeum, and metapleuron yellowish-orange. Foreleg and midleg black except both tarsi yellowish-orange. Hind leg black except coxa and femur yellowish-orange, and tibia sometimes mostly yellowish-orange or with an yellowish-orange area distolaterally. Forewing and hind wing entirely black. Metasoma almost always yellowish-orange with ovipositor sheath black, but some males have more black posteriorly. Outside Costa Rica some specimens have yellowish-orange fore- and midcoxae and can even be entirely black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia black, or mostly yellow but black in apical eighth, or mostly black with a yellowish-orange area laterally; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Widespread in the Neotropics from San Luis Potosí, Mexico, to northern Argentina. Collected throughout the year at La Selva, except February and November (Fig. 22). Commonly collected in successional plots at La Selva; occasionally collected in other habitats.

*Alabragus pachamama* Sharkey

Figs. 4c, 14c

*Alabragus pachamama* Sharkey, 1988:391–392. Holotype ♀, Ecuador (CNCI).

**DIAGNOSIS.** Hind tibia mostly yellow but black in apical eighth. Forewing banded from base: yellow, black, yellow, black. Antenna with 42 to 48 flagellomeres. Median syntergite 2+3  $1.21\text{--}1.56 \times$  longer than wide. Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). Hind tibia with 4 or 5 spines. Second median tergite lacking transverse depression; or with transverse depression barely indicated.

**LENGTH.** (1)  $5.68\text{--}10.00$  mm.

**HEAD.** (2) Antenna with 42 to 48 flagellomeres. (3) Gena acute posteroventrally (usually) (cf. Fig.

9d), or right-angled posteroventrally (cf. Fig. 9a). (4) Malar space  $0.34\text{--}0.62 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply (cf. Fig. 11d) or weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (90%, sample size = 129) (cf. Fig. 11d), or weak (10%) (cf. Fig. 11c). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or mostly smooth with several weak punctures, or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron smooth (95%) (cf. Fig. 16f), or crenulate (5%) (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several (cf. Fig. 16b) or no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or rarely not excavated (<1%) (cf. Fig. 17a). (16) Propodeum mostly smooth (cf. Fig. 14a), or areolate (cf. Fig. 12a). (20) Midtibia with 0 to 5 spines; (21) hind tibia with 4 or 5 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.75\text{--}5.66 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b), or with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $0.98\text{--}1.50 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.21\text{--}1.56 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated or lacking. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.51\text{--}0.93 \times$  body length; (32)  $1.95\text{--}3.26 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except clypeus and maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum, metapleuron, and sometimes metanotum yellowish-orange. Foreleg entirely yellowish-orange to entirely black except tarsus yellowish-orange. Midleg yellowish-orange except femur sometimes black in part to entirely black except basal part of midtibia yellowish-orange. Hind leg yellowish-orange except coxa distolaterally, parts of tibia, and tarsus sometimes black. Forewing banded from base: yellow, black, yellow, black. Hind wing yellow except black in apical quarter, or yellowish-orange with black band in apical third quarter. Metasoma mostly to entirely black, terga 1 to 4 often yellowish-orange. Ovipositor sheath black with yellowish-orange area at apex. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa

yellowish-orange, or black, or black in anterior half, yellow posteriorly; (48) foretrochanter yellowish-orange, or black, or black in anterior half, yellow posteriorly; (49) foretrochantellus yellowish-orange, or black, or black anteriorly, yellow posteriorly; (50) forefemur yellowish-orange, or black, or black in basal half, yellowish-orange apically; (51) foretibia yellowish-orange, or black; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange, or black; (54) midtrochanter yellowish-orange, or black; (55) midtrochantellus yellowish-orange, or black; (56) midfemur yellowish-orange, or black, or yellowish-orange in basal and apical sixth, black elsewhere; (57) midtibia yellowish-orange, or yellowish-orange in basal tenth, black apically; (58) midtarsus yellowish-orange, or black, or mostly yellowish-orange, but apical tarsomere black; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange; (63) hind tibia mostly yellow but black in apical eighth; (64) hind tarsus black; (65) forewing banded from base: yellow, black, yellow, black: all bands complete from foremargin to hind margin of wing and costal vein yellow; (66) hind wing pattern yellow with one black band in apical third quarter, or yellow basally, black in apical quarter to eighth. **Metasoma.** (67–70) Terga 1 to 4 yellowish-orange (usually), or black; (71–74) terga 5 to 8 black. (75) Ovipositor sheath black, or mostly black but yellow at apex.

**DISTRIBUTION.** Widespread from Costa Rica south to Bolivia, east to Trinidad and through the Amazon Basin. Collected throughout the year at La Selva (Fig. 22) in all habitat types.

*Alabragus paruyana* Sharkey

Figs. 3d, 18b

*Alabragus paruyana* Sharkey, 1988:393–394. Holotype ♀, Ecuador (AEIC).

**DIAGNOSIS.** Sternaulus completely absent (cf. Fig. 16d). Median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a). Body length 7.0–10.8 mm. Third median tergite with shallow transverse depression; or with strong transverse depression. Antenna with 44 to 50 flagellomeres.

**LENGTH.** (1) 7.0–10.8 mm.

**HEAD.** (2) Antenna with 44 to 50 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b) (usually), or right-angled posteroventrally (cf. Fig. 9a). (4) Malar space 0.63–0.67 × the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d), or weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11)

Sternaulus completely absent (cf. Fig. 16d). (12) Margin between metepisternum and metepimeron smooth (cf. Fig. 16f). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum not excavated, posterior margin not elevated (cf. Fig. 17a). (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 1 or 2 spines; (21) hind tibia with 1 to 7 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 3.7–4.1 × longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26) 1.0–1.4 × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.05–1.20 × longer than wide. (29) Second median tergite with strong transverse depression. (30) Third median tergite with strong transverse depression, or with shallow transverse depression. (31) Ovipositor 1.09–1.15 × body length; (32) 4.37–5.16 × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma entirely black except propodeum and metanotum sometimes yellowish-orange. Foreleg and midleg entirely black except foretarsus yellowish-orange and both tibia and femur sometimes yellowish-orange. Hind leg black except coxa and femur yellowish-orange. Forewing banded from base: yellow, black, yellow, black with costal vein black. Hindwing entirely yellow except apical tip sometimes black. Metapleuron yellowish-orange except terga 6 to 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum black, or yellowish-orange; (46) metapleuron black; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black, or yellowish-orange; (51) foretibia black, or yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black, or yellowish-orange; (57) midtibia black, or yellowish-orange; (58) midtarsus black; (59) hind coxa yellowish-orange; (60) trochanter black; (61) trochantellus black; (62) femur yellowish-orange; (63) tibia black; (64) tarsus black; (65) forewing banded from base: yellow, black, yellow, black; all bands complete and costal vein black; (66) hind wing pattern yellow basally, black in apical twentieth, or yellow basally, slightly black in apical quarter. **Metasoma.** (67–71) Terga 1 to 5 yellowish-orange; (72–74) terga 6 to 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Costa Rica south to Ecuador. Has been collected in March and June in Guana-

caste and Puntarenas provinces of Costa Rica (Fig. 22).

*Alabragus parvifaciatus* (Cameron)

Figs. 6e, 16d, 19e

*Cremonops parvifaciatus* Cameron, 1911:323. Holotype ♂, Guyana (BMNH).

*Cremonops maculipes* Cameron, 1911:322. Holotype ♀, Guyana (BMNH).

*Liyptia rufiventris* Enderlein, 1920:211. Holotype ♀, Ecuador (ZMPA).

*Alabragus parvifaciatus* Sharkey, 1988:394–395, figs. 1e, 4d, 12b, 12d.

**DIAGNOSIS.** First median tergite with anterolateral converging carinae (cf. Fig. 19e). Hind femur smooth ventrally (cf. Fig. 10b). Hind coxa yellowish-orange in basal twelfth, black apically. Ovipositor  $1.5 \times$  body length.

**LENGTH.** (1) 4.6–10.2 mm.

**HEAD.** (2) Antenna with 40 to 45 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.8\text{--}1.0 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d), or weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d), or weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with weak median ridge (cf. Fig. 11d). (10) Apex of scutellum rugose, lacking transverse ridge (cf. Fig. 11c), or with transverse, rugose ridge (cf. Fig. 11a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f), or long, distinct and composed of many small foveae (cf. Fig. 15b), or composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or weakly excavated, with posterior margin not elevated. (16) Propodeum areolate (cf. Fig. 12a), or mostly smooth (cf. Fig. 14a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d), or large and five-sided (cf. Fig. 14d); (18) transverse carina of propodeum complete (cf. Fig. 11d), or weakly defined (cf. Fig. 14f); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 0 to 2 spines; (21) hind tibia with 4 to 6 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3\text{--}4 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with anterolateral converging carinae (cf. Fig. 19e); (26)  $0.95\text{--}1.70 \times$  longer than wide; (27) lacking trans-

verse depression. (28) Median syntergite 2+3  $1.1\text{--}1.5 \times$  longer than wide. (29) Second median tergite with strong transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $1.5 \times$  body length; (32)  $5.90\text{--}6.25 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Black, orange, and yellow; palpi, foretarsus, and portions of midtarsus yellow; orange as follows: metapleuron, propodeum, hind coxa except laterally slightly darker, hind femur except apical fifth, and metasoma except apical third; forewing infuscate; stigma concolorous with remainder of wing. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black, or bicolorous, black and yellowish-orange; (41) mesoscutum black, or yellowish-orange; (42) scutellum black, or yellowish-orange; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus black, or yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black, or yellowish-orange; (59) hind coxa yellowish orange in basal twelfth, black apically; (60) trochanter black; (61) trochantellus black; (62) femur yellowish-orange; (63) tibia black; (64) tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–72) Terga 1 to 6 yellowish-orange; (73) terga 7 and 8 black, or yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Honduras south to Ecuador and east to Brazil. Has been collected in Guanacaste Province of Costa Rica in August and September (Fig. 22).

*Alabragus pecki* Sharkey

Figs. 5a

*Alabragus pecki* Sharkey, 1988:395. Holotype ♀, Mexico (CNCI).

**DIAGNOSIS.** Forewing yellow basally and black apically with a sharp distinction, costal vein black. Gena rounded posteroventrally (cf. Fig. 9b). Hind wing yellow basally, black in apical eighth. Sternaulus with several foveae posteroventrally and smooth groove (cf. Fig. 16f); or completely absent (cf. Fig. 16d); or mostly absent, represented by a small, shallow depression (cf. Fig. 18d). Malar space  $0.57\text{--}0.79 \times$  the distance from the eye to the maximum extent of the gena.

**LENGTH.** (1) 6.75–9.70 mm.

**HEAD.** (2) Antenna with 40 to 46 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.57\text{--}0.79 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed to absent (cf. Figs. 11d, 12a, 12c); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, with (cf. Fig. 12d) or without (cf. Fig. 12a) transverse ridge. (11) Sternaulus with several foveae posteroventrally and a smooth groove (cf. Fig. 16f), or mostly absent, represented by small, shallow depression (cf. Fig. 18d), or completely absent (cf. Fig. 16d). (12) Margin between metepisternum and metepimeron smooth (usually) (cf. Fig. 16f), or crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum weakly areolate (cf. Fig. 12a) to mostly smooth (usually) (cf. Fig. 14a). (20) Midtibia with 1 to 6 spines; (21) hind tibia with 3 to 9 spines. (22) Hind femur smooth ventrally (usually) (cf. Fig. 10b), or punctate ventrally (cf. Fig. 10a); (23)  $2.66\text{--}5.14 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (usually) (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.01\text{--}1.47 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.19\text{--}1.48 \times$  longer than wide. (29) Second median tergite with transverse depression lacking to strong. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.79\text{--}1.26 \times$  body length; (32)  $2.78\text{--}5.35 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except propleuron and ventral half of pronotum sometimes black and mesonotum sometimes with black areas. Foreleg and midleg highly variable in coloration, from entirely yellowish-orange to entirely black. Hind leg black except yellowish-orange coxa, femur, and sometimes tibia except apical eighth. Forewing yellow basally and black apically with a sharp distinction, costal vein black. Hind wing yellow basally, black in apical eighth. Metasoma yellowish-orange. Ovipositor sheath black, sometimes yellowish at apex. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or black ventrally, yellowish-orange dorsally; (39) propleuron yellowish-orange, or black; (40) mesonotum yellowish-orange, or yellowish-orange with black areas; (43) mesopleuron yellowish-orange, or yellowish-orange with black spots; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange, or black; (48) foretrochanter yellowish orange, or black; (49) foretrochantellus yellowish orange, or

black; (50) forefemur black, or yellowish-orange, or mostly yellowish-orange, black laterally; (51) foretibia black, or yellowish-orange, or mostly black but yellowish-orange apically; (52) foretarsus yellowish-orange, or black; (53) midcoxa yellowish-orange, or black; (54) midtrochanter yellowish-orange, or black; (55) midtrochantellus yellowish-orange, or black; (56) midfemur black, or yellowish-orange, or yellowish-orange in basal and apical sixth, black elsewhere, or black basally, yellowish orange in apical tenth; (57) midtibia black, or yellowish-orange, or mostly yellowish-orange, black in apical fifth, or mostly yellowish-orange, black in basal and apical fifths; (58) midtarsus black, or yellowish-orange; (59) hind coxa yellowish-orange; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia black, or mostly yellow but black in apical eighth, or mostly yellowish-orange but black in apical tenth; (64) hind tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein black; (66) hind wing pattern yellow basally, black in apical eighth. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black, or mostly black but yellow at apex.

**DISTRIBUTION.** Costa Rica, Belize, Guatemala, and southern Mexico. Collected throughout the year at La Selva, except for December (Fig. 22). Most commonly collected in primary forest.

### *Alabragus roibasi* Sharkey

Fig. 7d

*Alabragus roibasi* Sharkey, 1988:397–398. Holotype ♀, Costa Rica (AEIC).

**DIAGNOSIS.** Scutellar sulcus with weak median ridge (cf. Fig. 11d). Hind tibia with 7 to 11 spines. Forewing entirely and evenly black; or clear basally, black in apical third with a sharp distinction. Gena rounded (cf. Fig. 9b) or with obtuse angle posteriorly (cf. Fig. 9c). Ovipositor  $0.70\text{--}0.86 \times$  body length. Antenna with 40 to 44 flagellomeres. Anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d). Ovipositor  $2.8\text{--}4.0 \times$  length of hind femur. Midtarsus yellowish orange. Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c); or absent (cf. Fig. 11a). Sternaulus composed of large crenulae posteroventrally and a smooth groove (cf. Fig. 16f). Anterior transverse carina of propodeum absent (cf. Fig. 17d) to weakly defined (cf. Fig. 14f).

**LENGTH.** (1) 5.6–8.5 mm.

**HEAD.** (2) Antenna with 40 to 44 flagellomeres. (3) Gena rounded posteroventrally (usually) (cf. Fig. 9b), or with obtuse angle posteroventrally (cf. Fig. 9c). (4) Malar space  $0.55\text{--}0.80 \times$  the distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to absent (cf. Fig. 11a). (8),

9) Scutellar sulcus with one weak median ridge (cf. Figs. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally and a smooth groove (cf. Fig. 16f). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d) to weakly defined (cf. Fig. 14f). (20) Midtibia with 2 to 5 spines; (21) hind tibia with 7 to 11 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $2.70\text{--}4.17 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump antero-medially (cf. Fig. 19b); (26)  $0.89\text{--}1.22 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.0\text{--}1.2 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.70\text{--}0.86 \times$  body length; (32)  $2.8\text{--}4.0 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propleuron sometimes dark yellow, metanotum sometimes yellowish-orange, and propodeum and metapleuron yellowish-orange. Foreleg and midleg black except foretarsus yellowish-orange and midtarsus sometimes yellowish-orange. Hind leg mostly yellowish-orange except tarsus and apical part of tibia always black and remainder of tibia and lateral part of coxa sometimes black. Forewing clear basally, black in apical third with a sharp distinction to entirely black. Hind wing entirely clear to black. Metasoma yellowish-orange with terga 7 and 8 rarely black and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black, or yellowish-orange; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black, or yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange, or yellowish-orange in dorsal third, black ventrally; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind

coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange; (63) hind tibia mostly yellowish-orange but black in apical eighth; (64) hind tarsus black; (65) forewing clear basally, black in apical third with a sharp distinction, or entirely and evenly black; (66) hind wing pattern entirely clear, or entirely black. **Metasoma.** (67–72) Median terga 1 to 6 yellowish-orange; (73, 74) terga 7 and 8 yellowish-orange (usually), or black. (75) Ovipositor sheath black.

**HOSTS.** Leaf-rolling Crambidae including *Aponia itzalis* Munroe on *Cornutia grandifolia* (Verbenaceae) (89-SRNP-442b), *Bicilia iarchasalis* Walker on *Petiveria alliacea* (Phytolaccaceae) (90-SRNP-1216, 90-SRNP-1256.1, 90-SRNP-1256.2a, 90-SRNP-1256.2b), *Phaedropsis cernalis* (Guenée) on *Triplaris melaenodendron* (Polygonaceae) (90-SRNP-1247A, 90-SRNP-1397A), *Psara obscuralis* Lederer on *Petiveria alliacea* (90-SRNP-1435), and *Alatuncusia* sp. on *Capparis frondosa* (Capparidaceae) (90-SRNP-1418.2).

**DISTRIBUTION.** Widespread in Mexico south to northern Costa Rica. Has been collected in Costa Rica from May through September (Fig. 22). Has not been collected at La Selva.

### *Alabragus sarapiqui* new species

Fig. 7c

**DIAGNOSIS.** Hind tibia mostly yellowish-orange but black in apical tenth. Maxillary and labial palpomeres mostly yellowish-orange but black basally. Hind femur mostly yellowish-orange but black in basal twelfth; or mostly yellowish-orange but black in basal eighth and apical twelfth. Body length 5.47–7.55 mm.

**LENGTH.** (1) 5.47–7.55 [5.69] mm.

**HEAD.** (2) Antenna with 39 to 46 [42] flagellomeres. (3) Gena acute posteroventrally (usually) (cf. Fig. 9d), or right-angled posteroventrally (cf. Fig. 9a), or rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.49\text{--}0.62$  [0.50]  $\times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to strong (cf. Fig. 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or with transverse, rugose ridge (cf. Fig. 11a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with (cf. Fig. 16b) or without (cf. Fig. 16f) crenulae along ventral margin. (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with weak

(cf. Fig. 17a) to sharp (cf. Fig. 11d) ridge anteriorly; (18) anterior transverse carina of propodeum complete to absent (cf. Figs. 11d, 14f, 17d); (19) consisting of only one smooth, straight, transverse ridge. (20) Midtibia with 0 to 4 [1] spines; (21) hind tibia with 2 to [6] spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23) 2.10–4.66 [3.56] × longer than wide. (24) [Forewing vein 1cu-a intersects Cu distad 1M] (usually) (Fig. 13b), or veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26) [0.82]–1.16 × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.01–[1.32] × longer than wide. (29) Second median tergite lacking transverse depression. (30) Third median tergite lacking transverse depression, or with shallow transverse depression barely indicated. (31) Ovipositor 0.64–[1.00] × body length; (32) 2.33–3.88 [3.35] × length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange apically. Mesosoma black except metanotum, propodeum, and metapleuron yellowish-orange. Foreleg and midleg black except both tarsi yellowish-orange. Hind leg mostly yellowish-orange with the following parts black: coxa laterally, trochanter, trochantellus, femur basally and sometimes apically, tibia apically, and tarsus. Forewing black but darker apically. Hind wing entirely black. Metasoma entirely yellowish-orange except terga 7 and 8 sometimes black. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres mostly yellowish orange but black basally. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) [hind femur mostly yellowish-orange but black in basal twelfth], or mostly yellowish-orange but black in basal eighth and apical twelfth; (63) hind tibia mostly yellowish-orange but black in apical tenth; (64) hind tarsus black; (65) forewing entirely black but darker in apical tenth; (66) hind wing pattern entirely black. **Metasoma.** (67–72) Terga 1 to 6 yellowish-orange; (73, 74) terga 7 and 8 [yellowish-orange] (usually), or black. (75) Ovipositor sheath black.

**DISTRIBUTION AND MATERIAL EXAMINED.** La Selva, Limón province, and the Guanacaste Conservation Area in Costa Rica. Found exclusively in successional plots at La Selva,

from March through October and December (Fig. 22).

**Holotype** ♀. COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in successional plots, 14.viii.1993, (INBIOCRI) 002277561 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in successional plots: 1♀, 15.iii.1993, (INBIOCRI) 002276468 (INBC); 1♀, 15.iv.1993, 002276503 (CNCI), 1♂, 002276504 (CNCI); 3♂, iv–v.1993 (P. Hanson), 002302280 (INBC), 002302282 (BMNH), 002302281 (LACM); 1♂, 2.v.1993, 002271979 (OSUO); 1♀, 1.vi.1993, 002261429 (UKIC); 1♂, 3.viii.1993, 002261762 (UKIC); 1♂, 14.viii.1993, 002277559 (USNM); 2♂, 1.ix.1993, 002277428 (AEIC), 002277425 (UKIC); 1♀, 15.x.1993, 002285445 (AEIC), 1♂, 002285438 (UKIC); 1♂, 1.xii.1993, 002302061 (INBC); 1♀, 17.vii.1995, 002302089 (CNCI); 1♂, 16.x.1995, 002300549 (CNCI). Limón: Est. Hitoy Cerere: 100 m: 1♀, x.1992 (G. Carballo), 000906881 (INBC). Guanacaste: Est. Pitilla: 700 m: 1♀, ix.1993, 001932278 (INBC).

#### *Alabragus semialbus* (Szépligeti)

Fig. 4f

*Microdus semialbus* Szépligeti, 1902:76. Holotype ♂, Brazil (HNHM).

*Alabragus semialbus* Sharkey, 1988:399–400.

**DIAGNOSIS.** Forewing black basally, clear apically. Tergum 1 yellowish-orange but black in posterior quarter. Metapleuron areolate rugose in ventral quarter (cf. Fig. 15b).

**LENGTH.** (1) 8.11–8.35 mm.

**HEAD.** (2) Antenna with 42 to 47 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b), or right-angled posteroventrally (cf. Fig. 9a). (4) Malar space 0.49–0.55 × distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8, 9) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one distinct (cf. Fig. 11b) to weak (cf. Fig. 11d) median ridge. (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or with transverse, rugose (cf. Fig. 11a) or smooth ridge (cf. Fig. 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron areolate rugose in ventral quarter (cf. Fig. 15b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d) to complete (cf. Fig. 11d); (19) consisting of only one smooth, straight, transverse ridge, or with additional transverse carina present,

defining two extra areolae, or with one carina on either side anterad opposite carina. (20) Midtibia with 0 to 7 spines; (21) hind tibia with 5 or 6 spines. (22) Hind femur rugose ventrally (cf. Fig. 10c); (23)  $3.86\text{--}4.46 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (usually) (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $0.83\text{--}0.92 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.03\text{--}1.11 \times$  longer than wide. (29) Second median tergite with transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.50\text{--}0.91 \times$  body length; (32)  $1.69\text{--}3.48 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange apically. Mesosoma black. All legs black, except foretarsus, hind femur, and sometimes midtarsus yellowish-orange apically. Forewing and hind wing both black basally, clear apically. Median tergite 1 yellowish-orange to red but median tergite black in posterior quarter. Median tergite 2 black dorsally, yellowish-orange to red elsewhere. Median tergite 3 black, but sometimes anterior half yellowish-orange to red. Terga 4 to 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres mostly black, but yellowish-orange apically. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) propodeum black; (46) metapleuron black; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange apically, black basally; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black, or black basally, yellowish-orange apically; (59) hind coxa black; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur black, or yellowish-orange; (63) hind tibia black; (64) hind tarsus black; (65) forewing black basally, clear apically; (66) hind wing pattern black basally, clear apically. **Metasoma.** (67) Median tergite 1 yellowish-orange to red but median tergite black in posterior quarter; (68) tergum 2 black dorsally, yellowish-orange to red laterally; (69) tergum 3 black, or mostly black but anterior half yellowish-orange to red; (70–74) terga 4 to 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Costa Rica, Trinidad, Venezuela, and São Paulo, Brazil. Collected throughout the year at La Selva except for January, April, and December (Fig. 23), mostly in secondary forest.

*Alabragus stigma* (Brullé)  
Figs. 5b, 10a, 12b, 15b, 17c

*Agathis stigma* Brullé, 1846:501. Holotype ♀, Brazil (MNHN).

*Microdus stigmaterus* Cresson, 1865:65. Holotype ♀, Cuba (ANSP).

*Microdus diatraeae* Turner, 1918:82. Holotype ♀, Guyana (BMNH).

*Alabragus citreistigma* Enderlein, 1920:203. Holotype ♀, Brazil (ZMPA).

*Microdus crossi* Brèthes, 1927:163. Holotype ♀, Argentina (?).

*Microdus sacchari* Myers, 1931:274. Holotype ♀, Guyana (BMNH).

*Alabragus stigma* Sharkey, 1988:401–402, figs. 3a, 3g, 6b, 8b, 9c, 12a, 20f.

**DIAGNOSIS.** Forewing black with stigma yellow. First median tergite with well-defined median longitudinal carina (cf. Fig. 19c), or with anterolateral converging carinae (cf. Fig. 19e). Gena rounded posteroventrally (cf. Fig. 9b). Ovipositor  $5.0\text{--}6.8 \times$  length of hind femur. Hind femur rugose ventrally (cf. Fig. 10c); or punctate ventrally (cf. Fig. 10a). Antenna with 39 to 40 flagellomeres.

**LENGTH.** (1)  $6.8\text{--}11.6$  mm.

**HEAD.** (2) Antenna with 39 to 40 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.7\text{--}0.8 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak anteriorly (cf. Fig. 11c). (8, 9) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with one or more strong (cf. Fig. 11b) to weak (cf. Fig. 11d) median ridges. (10) Apex of scutellum mostly smooth with or without several weak punctures (cf. Fig. 12a), or with transverse smooth (cf. Fig. 12d) or rugose ridge (cf. Fig. 11a). (11) Sternaulus long, distinct and foveolate (cf. Fig. 15b), or composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum punctate in anterior half, areolate posteriorly (cf. Fig. 17c), or entirely areolate (cf. Fig. 12a); (17) anterior areolae of propodeum weak anteriorly (cf. Fig. 17a); (18) anterior transverse carina of propodeum absent (cf. Fig. 17a). (20) Midtibia with 1 to 4 spines; (21) hind tibia with 6 to 13 spines. (22) Hind femur rugose (cf. Fig. 10c) to punctate (cf. Fig. 10a) ventrally; (23)  $3.0\text{--}3.5 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (usually) (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with well-defined median longitudinal carina (cf. Fig. 19c), or with anterolateral converging carinae (cf. Fig. 19e); (26)  $0.9\text{--}1.5 \times$  longer than wide. (28) Median syntergite 2+3  $1.2\text{--}1.4 \times$  longer than wide. (29) Second median tergite with transverse



depression deeply to barely indicated. (30) Third median tergite with transverse depression lacking to barely present. (31) Ovipositor  $1.1\text{--}1.5 \times$  body length; (32)  $5.0\text{--}6.8 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange basally. Mesosoma yellowish-orange except sometimes propodeum, propleuron, and ventral part of mesopleuron black. Foreleg and midleg black except both coxae, foretibia, and foretarsus can be yellowish-orange. Hind leg mostly yellowish-orange except apical part of tibia and tarsus black, and trochanters and remainder of tibia can be black. Forewing black with stigma and sometimes base yellow. Hind wing entirely black. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34) Antenna black; (35) flagellum sometimes paler than scape. (36) Maxillary and labial palpomeres mostly yellowish-orange but black basally, or entirely yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or black ventrally, yellowish-orange dorsally; (39) propleuron black, or yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange, or black ventrally, yellowish-orange dorsally; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black, or yellowish-orange, or mostly black but yellowish-orange basally; (52) foretarsus black, or yellowish-orange, or yellowish-orange apically, black basally; (53) midcoxa black, or yellowish-orange; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black, or yellow in basal tenth, black apically; (58) midtarsus black, or yellowish-black; (59) hind coxa yellowish-orange; (60) hind trochanter black, or yellowish-orange; (61) hind trochantellus black, or yellowish-orange; (62) hind femur yellowish-orange, or black; (63) hind tibia yellowish-orange, or black, or mostly yellowish-orange but black apically; (64) hind tarsus black, or orange in basal tenth, black apically; (65) forewing pattern black with stigma yellow, or black with stigma and sometimes base yellow; (66) hind wing pattern entirely black. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**HOSTS.** *Diatraea canella* Hudson, *Diatraea impersonatella* (Walker), *Diatraea lineolata* (Walker), and *Diatraea saccharalis* (Fabricius).

**DISTRIBUTION.** Widespread south from Florida to Uruguay and northern Argentina. Known at La Selva from only one specimen collected in May (Fig. 23) in successional plots.

*Alabragus tricarinatus* (Cameron)

Figs. 7e, 10b

*Agathis tricarinata* Cameron, 1905:385. Holotype ♀, Brazil (BMHN).

*Alabragus tricarinatus* Sharkey, 1988:405, figs. 3b, 18c.

**DIAGNOSIS.** Forewing entirely and evenly black; or black with one clear band in apical third quarter. Sternaulus composed of large crenulae posteroventrally. Tergum 2 yellowish-orange anteriorly, black posteriorly. Tergum 3 black.

**LENGTH.** (1) 6.0–8.2 mm.

**HEAD.** (2) Antenna with 37 to 44 flagellomeres. (3) Gena right-angled posteroventrally (usually) (cf. Fig. 9a), or rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.55\text{--}0.70 \times$  the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to strong (cf. Fig. 11d) anteriorly. (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a), or with transverse rugose ridge (cf. Fig. 11a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a), or areolate rugose in ventral quarter (cf. Fig. 15b); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with long, blunt, wide ridge anteriorly (cf. Fig. 17d); (18) anterior transverse carina of propodeum absent (cf. Fig. 17d). (20) Midtibia with 0 to 4 spines; (21) hind tibia with 1 to 7 spines. (22) Hind femur smooth ventrally (Fig. 10b); (23)  $3.3\text{--}4.6 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a) or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26)  $0.8\text{--}1.4 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.9\text{--}1.3 \times$  longer than wide. (29) Second median tergite with transverse depression absent to strong. (30) Third median tergite transverse depression absent to strong. (31) Ovipositor  $0.8\text{--}1.1 \times$  body length; (32)  $3.20\text{--}3.42 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres sometimes yellowish-orange. Mesosoma black except propodeum can be yellowish-orange. All legs entirely black except posteroventral part of hind coxa yellowish-orange and foretarsus, forecoxa, and hind coxa sometimes yellowish-orange. Forewing and hindwing entirely black (usually) to black with one clear band in apical third quarter. Terga 1 and 2 entirely yellowish-orange to red. Terga 3 to 5 black dorsally and yellowish-orange to red ventrally. Terga 6 to 8

and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange, or black. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum black; (45) propodeum black, or yellowish-orange; (46) metapleuron black; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange, or black; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black; (59) hind coxa black, or yellowish-orange; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur black; (63) hind tibia black; (64) hind tarsus black; (65) forewing entirely black, or black with a clear band in apical third quarter (rarely); (66) hind wing pattern entirely black. **Metasoma.** (67) Tergum 1 yellowish-orange; (68–70) terga 2 and 3 yellowish-orange in anterior half, black posteriorly; (71–74) terga 4 to 8 black; (75) Ovipositor sheath black.

**HOSTS.** Unknown, but a specimen was reared from an unknown host feeding on *Byttneria aculeata* (Sterculiaceae).

**DISTRIBUTION:** Widespread, from northern Costa Rica south to northern Argentina. Reared once by Henry Hespeneheide in January at La Selva (Fig. 23).

*Alabragus tripartitus* (Brullé)

Figs. 8e, 15a, 19c

*Agathis tripartita* Brullé, 1846:496. Holotype ♀, Guyana (MIZT).

*Alabragus tripartitus* Sharkey, 1988:406, figs. 1a, 6d, 6e, 11b, 18a, 18b.

**DIAGNOSIS.** Hind femur black; or mostly black with a yellowish-orange area distolaterally. Midtibia with 5 spines. Gena acute posteroventrally (cf. Fig. 9d). First median tergite with well-defined median longitudinal carina (cf. Fig. 19c). Body length 6.5–9.2 mm. Hind coxa yellowish-orange. Ovipositor 0.67–0.80 × body length. Antenna with 39 to 44 flagellomeres.

**LENGTH.** (1) 6.5–9.2 mm.

**HEAD.** (2) Antenna with 39 to 44 flagellomeres. (3) Gena rounded posteroventrally (usually) (cf. Fig. 9b), or acute posteroventrally (cf. Fig. 9d). (4) Malar space 0.50–0.75 × the distance from the eye to the maximum extent of the gena.

**MESOSOMA.** (5) Notaulus weakly (usually) (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to strong (cf. Fig. 11d). (8, 9) Scutellar sulcus with one weak (cf. Fig. 11d) to strong (cf. Fig. 11b) median ridge. (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by small, shallow depression

(cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (usually) (cf. Fig. 16a), or smooth (cf. Fig. 16f). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum weakly excavated, with posterior margin not elevated, or deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 3 to 5 spines; (21) hind tibia with 4 to 11 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b), or punctate ventrally (cf. Fig. 10a); (23) 3.2–4.7 × longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with well-defined median longitudinal carina (cf. Fig. 19c); (26) 1.00–1.29 × longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 1.10–1.23 × longer than wide. (29) Second median tergite with weak to strong transverse depression. (30) Third median tergite with transverse depression absent to strong. (31) Ovipositor 0.67–0.80 × body length; (32) 2.7–3.9 × length of hind femur.

**COLOR.** (33) **Summary.** Head entirely black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propodeum and metapleuron yellowish-orange. Foreleg and midleg entirely black except foretarsus yellowish-orange. Hind leg mostly black except coxa yellowish-orange and sometimes lateral parts of femur yellowish-orange. Forewing entirely black, black but clear distally, or banded from base: clear, black, clear, black. Hind wing entirely black. Metasoma yellowish-orange except terga 7 and 8 sometimes black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black; (59) hind coxa yellowish-orange; (60) trochanter black; (61) trochantellus black; (62) femur black, or mostly black with a yellowish-orange area distolaterally; (63) tibia black; (64) tarsus black; (65) forewing entirely black, or black basally, clear apically, or banded from base: clear, black, clear, black; (66) hind wing pattern entirely black. **Metasoma.** (67–72) Terga 1 to 6 yellowish-orange; (73, 74) terga 7 and 8 black, or yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Mexico south to Peru and

Pará, Brazil. Collected in Puntarenas and Limón provinces of Costa Rica, in January, March through May, and November (Fig. 23).

*Alabragus varius* (Enderlein)

Fig. 8b

*Astitia varia* Enderlein, 1920:207. Holotype ♀, Mexico (ZMPA).

*Alabragus varius* Sharkey, 1988:410.

**DIAGNOSIS.** Midfemur black in basal half, yellowish-orange apically. Body length 10.0–11.6 mm. Midcoxa yellowish-orange basally, black apically. Antenna with 49 to 52 flagellomeres.

**LENGTH.** (1) 10.0–11.6 mm.

**HEAD.** (2) Antenna with 49 to 52 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b), or with obtuse angle posteriorly (cf. Fig. 9c). (4) Malar space  $0.64 \times$  the distance from the eye to the maximum extent of the gena. Occiput deeply excavated medially; occipital excavation right-angled.

**MESOSOMA.** (5) Notaulus weakly impressed (cf. Fig. 12a); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to strong (cf. Figs. 11a, 11c, 11d). (8, 9) Scutellar sulcus mostly smooth, lacking median ridge (cf. Fig. 12a), or with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or completely absent (cf. Fig. 16d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a), or smooth (cf. Fig. 16f). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum mostly smooth (cf. Fig. 14a). (20) Midtibia with 0 to 4 spines; (21) hind tibia with 5 or 6 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.5\text{--}4.0 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26)  $1.15\text{--}1.20 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.30\text{--}1.44 \times$  longer than wide. (29) Second median tergite with strong transverse depression, or with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $1.25\text{--}1.30 \times$  body length; (32)  $5.0\text{--}5.9 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except propleuron, part or all of pronotum, scutum, propodeum, and metapleuron yellowish-orange. Foreleg yellow except middle part of femur black. Midleg yellow except dorsal half of coxa, basal half of femur, and sometimes

trochanter and trochantellus black. Hind leg black except apical third of femur and basal half of tibia yellowish-orange. Forewing banded from base: yellow, black, yellow, black; costal vein yellow. Hind wing entirely yellow. Terga 1 and 2 yellowish-orange, terga 3 to 6 yellowish-orange or black, terga 7 and 8 and ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or black ventrally, yellowish-orange dorsally; (39) propleuron yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron black; (44) metanotum black; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur black in basal half, yellowish-orange apically; (51) foretibia yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange basally, black apically; (54) midtrochanter black, or yellowish-orange; (55) midtrochantellus black, or yellowish-orange; (56) midfemur black in basal half, yellowish-orange apically; (57) midtibia yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa black; (60) trochanter black; (61) trochantellus black; (62) femur black basally and yellowish-orange apically; (63) tibia mostly yellowish-orange but black apically; (64) tarsus black; (65) forewing banded from base: yellow, black, yellow, black: all bands complete and costal vein yellow; (66) hind wing pattern yellow. **Metasoma.** (67, 68) Terga 1 and 2 yellowish-orange; (69–72) terga 3 to 6 black, or yellowish-orange; (73, 74) terga 7 and 8 black. (75) Ovipositor sheath black.

**DISTRIBUTION.** Known from Chiapas, Mexico, and Los Almendros National Park, Guanacaste, Costa Rica. Collected once at Los Almendros in October (Fig. 23).

*Alabragus voto* Sharkey

Fig. 5g

*Alabragus voto* Sharkey, 1988:411. Holotype ♀, Costa Rica (AEIC).

**DIAGNOSIS.** Hind tarsus orange in basal tenth, black apically. Hind femur  $3.7 \times$  longer than wide. Head yellowish-orange. Antenna with 38 to 40 flagellomeres.

**LENGTH.** (1) 6.0–7.3 mm.

**HEAD.** (2) Antenna with 38 to 40 flagellomeres. (3) Gena rounded posteroventrally (cf. Fig. 9b), or acute posteroventrally (usually) (cf. Fig. 9d).

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d), or weak anteriorly (cf. Fig. 11c), or absent (cf. Fig. 11a). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a), or with median ridge (cf. Fig. 11b), or with weak median ridge (cf. Fig. 11d); (9) with no ridges (cf. Fig. 12a), or one ridge (cf. Fig. 11b). (10) Apex of scutellum rugose,

lacking transverse ridge (cf. Fig. 11c), or with transverse, rugose ridge (cf. Fig. 11a), or with transverse, smooth ridge (cf. Fig. 12d). (11) Sternaulus mostly absent, represented by small, shallow depression (cf. Fig. 18d) (usually), or composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c), or bisected by strong ridge (some males). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d); (18) transverse carina of propodeum absent (cf. Fig. 17d), or weakly defined (cf. Fig. 14f). (20) Midtibia with 2 to 8 spines; (21) hind tibia with 4 to 8 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.7 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump antero-medially (cf. Fig. 19b), or with weak longitudinal median carina (cf. Fig. 19d), or with well-defined median longitudinal carina (cf. Fig. 19c); (26)  $1.1 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.1 \times$  longer than wide. (29) Second median tergite lacking transverse depression, or with strong transverse depression, or with transverse depression barely indicated (most often). (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.6 \times$  body length; (32)  $2.1 \times$  length of hind femur.

**COLOR.** (33) Summary. Head yellowish-orange except antenna black. Mesosoma entirely yellowish-orange. All legs yellowish-orange except apical part of hind tibia and most of hind tarsus black. Forewing banded from base: yellow, black, yellow, black. Hind wing black with one yellow band in apical third quarter. Metasoma entirely yellowish-orange, except dorsally black in some males. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head yellowish-orange. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur yellowish-orange; (51) foretibia yellowish-orange; (52) foretarsus yellowish-orange; (53) midcoxa yellowish-orange; (54) midtrochanter yellowish-orange; (55) midtrochantellus yellowish-orange; (56) midfemur yellowish-orange; (57) midtibia yellowish-orange; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange; (60) trochanter yellowish-

orange; (61) trochantellus yellowish-orange; (62) femur yellowish-orange; (63) tibia mostly yellowish-orange but black apically; (64) tarsus orange in basal tenth, black apically; (65) forewing banded from base: yellow, black, yellow, black: all bands complete and costal vein black; (66) hind wing pattern yellow with one black band in apical third quarter. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange to red. (75) Ovipositor sheath black.

**DISTRIBUTION.** Known only from Guanacaste Province of Costa Rica. Collected there from May through August, and October (Fig. 23).

### *Alabragus warrau* Sharkey

Fig. 5c

*Alabragus warrau* Sharkey, 1988:413. Holotype ♀, Trinidad (AEIC).

**DIAGNOSIS.** Hind femur mostly yellowish-orange but black in basal twelfth. Hind femur rugose ventrally (cf. Fig. 10c). Malar space  $0.44\text{--}0.46 \times$  the distance from the eye to the maximum extent of the gena. Forewing yellow basally and black apically with a sharp distinction, costal vein black; or banded from base: yellow, black, yellow, black; basal black band not complete posteriorly and costal vein yellow.

**LENGTH.** (1) 5.0–6.1 mm.

**HEAD.** (2) Antenna with 34 to 38 flagellomeres. (3) Gena right-angled posteroventrally (usually) (cf. Fig. 9a), or rounded posteroventrally (cf. Fig. 9b). (4) Malar space  $0.44\text{--}0.46 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus weakly (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum absent to strong anteriorly (cf. Figs. 11a, 11c, 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum smooth (cf. Fig. 12a), sometimes with transverse ridge (cf. Fig. 12d). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a), or mostly absent, represented by a small, shallow depression (cf. Fig. 18d). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b), or with no crenulae along ventral margin (cf. Fig. 16f). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum weakly areolate (cf. Fig. 14b); (17) anterior areola of propodeum weak anteriorly (cf. Fig. 17a), or with sharp ridge anteriorly (cf. Fig. 11d); (18) anterior transverse carina of propodeum weakly defined (cf. Fig. 14f), or complete (cf. Fig. 11d). (20) Midtibia with 3 or 4 spines; (21) hind tibia with 2 to 4 spines. (22) Hind femur rugose ventrally (cf. Fig. 10c); (23)  $3.38\text{--}4.53 \times$  longer than wide. (24) Forewing vein 1cu-a intersects Cu distad 1M (usually) (Fig. 13b), or 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite with

small longitudinal bump anteriorly (cf. Fig. 19a), or evenly convex, lacking distinct bump anteromedially (cf. Fig. 19b); (26)  $1.05\text{--}1.20 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $0.89\text{--}1.08 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated to absent. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.79\text{--}0.80 \times$  body length; (32)  $2.62\text{--}3.03 \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except propleuron sometimes black. Foreleg yellowish-orange except femur black or black centrally, foretibia sometimes dark yellow. Midleg black except coxa yellowish-orange or yellowish-orange basally, midtarsus yellowish-orange. Hind leg black except coxa mostly yellowish-orange but black laterally, femur mostly yellowish-orange but black in basal twelfth, and tibia mostly yellow but black in apical eighth. Forewing yellow basally and black apically with a sharp distinction and costal vein black, or banded: yellow, black, yellow, black, basal black band sometimes not complete posteriorly. Hind wing yellow basally, slightly black in apical quarter. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange; (39) propleuron yellowish-orange, or mostly black, yellowish-orange posteriorly; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa yellowish-orange; (48) foretrochanter yellowish-orange; (49) foretrochantellus yellowish-orange; (50) forefemur black, or yellowish-orange in apical and basal eighths, black centrally; (51) foretibia yellowish orange, or yellowish black; (52) foretarsus yellowish orange; (53) midcoxa yellowish-orange, or yellowish-orange basally, black apically; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus yellowish-orange; (59) hind coxa mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur mostly yellowish-orange but black in basal twelfth; (63) hind tibia mostly yellow but black in apical eighth; (64) hind tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein black, or banded from base: yellow, black, yellow, black: basal black band not complete posteriorly and costal vein yellow; (66) hind wing pattern yellow basally, slightly black in apical quarter. **Metasoma.** (67) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Scattered from San Luis Potosí, Mexico, south through Central America to Colombia, and east to Trinidad. Collected in April

through November at La Selva (Fig. 23), in all habitat types.

### *Alabragus watsoni* new species

Fig. 6f

**DIAGNOSIS.** Hind femur mostly yellowish-orange but black apically and basally with a black area laterally. Body length  $6.64\text{--}7.27$  mm. Hind coxa mostly yellowish-orange but black laterally. Midtarsus black. Gena right-angled posteroventrally (cf. Fig. 9a); or acute posteroventrally (cf. Fig. 9d). Midtibia black.

**LENGTH.** (1)  $6.64\text{--}[7.27]$  mm.

**HEAD.** (2) Antenna with 38 to 48 [41] flagellomeres. (3) Gena [acute posteroventrally] (usually) (cf. Fig. 9d), or right-angled posteroventrally. (4) Malar space  $0.37\text{--}0.55$  [0.47]  $\times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus [weakly] (cf. Fig. 12a) to deeply (cf. Fig. 11d) impressed; (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum weak (cf. Fig. 11c) to strong (cf. Fig. 11d) anteriorly. (8, 9) Scutellar sulcus [mostly smooth] (cf. Fig. 12a), sometimes with one weak median ridge (cf. Fig. 11d). (10) Apex of scutellum smooth, lacking transverse ridge (cf. Fig. 12a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron [areolate rugose in ventral quarter] (cf. Fig. 15b), or mostly smooth (cf. Fig. 15a). (15) Median areola of metanotum [deeply excavated, with well-defined posterior margin] (cf. Fig. 17c), or bisected by strong ridge. (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum with weak (cf. Fig. 17a) to [sharp] ridge (cf. Fig. 11d) anteriorly; (18) anterior transverse carina of propodeum complete [weakly defined] to absent (cf. Figs. 11d, 14f, 17d); (19) consisting of only one smooth, straight, transverse ridge, or [with carina branching into two carina before reaching edge of propodeum]. (20) Midtibia with 2 to 6 [3] spines; (21) hind tibia with 3 to [9] spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.65\text{--}4.58$  [4.16]  $\times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a).

**METASOMA.** (25) First median tergite [with small longitudinal bump anteriorly] (cf. Fig. 19a), or with well-defined median longitudinal carina (some males) (cf. Fig. 19c); (26)  $0.70\text{--}1.09$  [1.00]  $\times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3 [0.88]–1.32  $\times$  longer than wide. (29) Second median tergite with weak to [strong] transverse depression. (30) Third median tergite [lacking transverse depression], or with weak transverse depression. (31) Ovipositor  $0.75\text{--}[0.93] \times$  body length; (32)  $2.57\text{--}[3.46] \times$  length of hind femur.

**COLOR.** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma black except metanotum, propodeum,

and metapleuron yellowish-orange. Foreleg and midleg entirely black except foretarsus yellowish-orange. Hind leg mostly black except coxa mostly yellowish-orange but black laterally, hind femur mostly yellowish-orange but black apically and basally with a black area distolaterally. Forewing and hind wing entirely and evenly black. Terga 1 to 4 yellowish-orange, terga 5 and 6 yellowish-orange or black, terga 7 and 8 black. Ovipositor sheath black. **Head.** (34) Antenna black. (36) Maxillary and labial palpomeres yellowish orange. (37) Head black. **Mesosoma.** (38) Pronotum black; (39) propleuron black; (40) mesonotum black; (43) mesopleuron black; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia black; (58) midtarsus black; (59) hind coxa mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur mostly yellowish-orange but black apically and basally with a black area distolaterally; (63) hind tibia black; (64) hind tarsus black; (65) forewing entirely black; (66) hind wing pattern entirely black. **Metasoma.** (67–70) Terga 1 to 4 yellowish-orange; (71, 72) terga 5 and 6 yellowish-orange, or black; (73, 74) terga 7 and 8 black. (75) Ovipositor sheath black.

**HOSTS.** *Omiodes humeralis* Guenee on *Inga vera* (Fabaceae) (93-SRNP-2814).

**DISTRIBUTION AND MATERIAL EXAMINED.** La Selva and Guanacaste Province of Costa Rica. Collected in April through August and November at La Selva (Fig. 23).

**Holotype ♀.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W, 50–150 m, Malaise trap in successional plots, 1.vi.1993, (INBIOCRI) 002261453 (INBC).

**Paratypes.** COSTA RICA: Heredia: La Selva: 10°26'N, 84°01'W: 50–150 m: Malaise trap in successional plots: 1 ♀, 1.iv.1993, (INBIOCRI) 002275405 (INBC); 1 ♀, 15.iv.1993, 002276505 (CNCI); 1 ♀, 15.vii.1993, 002276237 (CNCI). Malaise trap in second-growth forest, SCH: 1 ♂, 16.iv.1993, 002264032 (INBC); 1 ♂, 1.vi.1993, 002292362 (CNCI); 3 ♂, 15.vii.1993, 002261999 (BMNH), 002262003 (LACM), 002262007 (UKIC); 4 ♂, 3.viii.1993, 002292480 (CNCI), 002292481 (UKIC), 002292483 (CNCI), 002292484 (UKIC); 1 ♂, 14.viii.1993, 002292129 (AEIC); 1 ♂, 2.v.1996, 002303253 (AEIC). Malaise trap in borde suampo: 1 ♀, 2.iv.1998, 002283670 (INBC). Guanacaste: Guanacaste Conservation Area: 1 ♀, 93-SRNP-2814 (INBC). Guanacaste: Est. Pitilla: 700 m: 1 ♀, 19.v–3.vi.1993 (C. Moraga), (INBIOCRI) 001342828 (INBC). Alajuela: Caño Negro: 20 m: 2 ♂, 22.viii.1993, 001931971 (INBC), 001931972 (UKIC).

## *Alabragus yaruro* Sharkey

Fig. 5d

*Alabragus yaruro* Sharkey, 1988:416. Holotype ♀, Venezuela (USNM).

**DIAGNOSIS.** Midtibia yellowish-orange in basal twentieth, otherwise black. Body length 7.8–8.6 mm. Hind tibia mostly yellowish-orange but black in basal eighth. Forewing yellow basally and black apically with a sharp distinction.

**LENGTH.** (1) 7.8–8.6 mm.

**HEAD.** (2) Antenna with 43 to 47 flagellomeres. (3) Gena acute posteroventrally (cf. Fig. 9d). (4) Malar space  $0.71 \times$  distance from eye to maximum extent of gena.

**MESOSOMA.** (5) Notaulus deeply impressed (cf. Fig. 11d); (6) not crenulate (cf. Fig. 11d). (7) Median longitudinal ridge of scutum strong (cf. Fig. 11d). (8) Scutellar sulcus mostly smooth (cf. Fig. 12a). (10) Apex of scutellum with transverse, rugose ridge (cf. Fig. 11a). (11) Sternaulus composed of large crenulae posteroventrally (cf. Fig. 16a). (12) Margin between metepisternum and metepimeron crenulate (cf. Fig. 16a). (13) Metapleuron mostly smooth (cf. Fig. 15a); (14) with several crenulae along ventral margin (cf. Fig. 16b). (15) Median areola of metanotum deeply excavated, with well-defined posterior margin (cf. Fig. 17c). (16) Propodeum areolate (cf. Fig. 12a); (17) anterior areola of propodeum large and five-sided (cf. Fig. 14d); (18) anterior transverse carina of propodeum weakly defined (cf. Fig. 14f). (20) Midtibia with 3 spines; (21) hind tibia with 4 spines. (22) Hind femur smooth ventrally (cf. Fig. 10b); (23)  $3.86\text{--}4.27 \times$  longer than wide. (24) Forewing veins 1M and 1cu-a intersect (Fig. 13a), or 1cu-a intersects Cu distad 1M (Fig. 13b).

**METASOMA.** (25) First median tergite with small longitudinal bump anteriorly (cf. Fig. 19a); (26)  $1.00\text{--}1.01 \times$  longer than wide; (27) lacking transverse depression. (28) Median syntergite 2+3  $1.14\text{--}1.30 \times$  longer than wide. (29) Second median tergite with transverse depression barely indicated. (30) Third median tergite lacking transverse depression. (31) Ovipositor  $0.73\text{--}0.86 \times$  body length; (32)  $2.71\text{--}3.17 \times$  length of hind femur.

**COLOR:** (33) **Summary.** Head black except maxillary and labial palpomeres yellowish-orange. Mesosoma yellowish-orange except pronotum sometimes black ventrally, propleuron sometimes black or dark yellowish-orange, and mesopleuron sometimes black ventrally. Foreleg and midleg black except forecoxa sometimes yellowish-orange, midcoxa and midtibia sometimes yellowish-orange basally, and both tarsi yellowish-orange. Hind leg black except coxa yellowish-orange and sometimes black laterally, femur yellowish-orange, and tibia yellowish-orange in apical seven eighths. Forewing yellow basally, black apically with a sharp distinction and costal vein black. Hind wing yellow basally, black in apical twelfth. Metasoma yellowish-orange with ovipositor sheath black. **Head.** (34)

Antenna black. (36) Maxillary and labial palpomeres yellowish-orange. (37) Head black. **Mesosoma.** (38) Pronotum yellowish-orange, or black ventrally, yellowish-orange dorsally; (39) propleuron black, or dark yellowish-orange; (40) mesonotum yellowish-orange; (43) mesopleuron yellowish-orange, or black ventrally, yellowish-orange dorsally; (44) metanotum yellowish-orange; (45) propodeum yellowish-orange; (46) metapleuron yellowish-orange; (47) forecoxa black, or yellowish-orange; (48) foretrochanter black; (49) foretrochantellus black; (50) forefemur black; (51) foretibia black; (52) foretarsus yellowish-orange; (53) midcoxa black, or yellowish-orange basally, black apically; (54) midtrochanter black; (55) midtrochantellus black; (56) midfemur black; (57) midtibia yellowish-orange in basal twentieth, otherwise black; (58) midtarsus yellowish-orange; (59) hind coxa yellowish-orange, or mostly yellowish-orange but black laterally; (60) hind trochanter black; (61) hind trochantellus black; (62) hind femur yellowish-orange; (63) hind tibia mostly orange but black in basal eighth; (64) hind tarsus black; (65) forewing yellow basally and black apically with a sharp distinction, costal vein black; (66) hind wing pattern yellow basally, black in apical twelfth. **Metasoma.** (67–74) Terga 1 to 8 yellowish-orange. (75) Ovipositor sheath black.

**DISTRIBUTION.** Las Quiguas, Venezuela, and La Selva, Costa Rica. Collected in August, September, and November at La Selva (Fig. 23), in all habitats except successional plots.

#### ACKNOWLEDGMENTS

We thank the following people and institutions: Jack Longino and the ALAS staff at La Selva, Danilo Brenes, Ronald Vargas, Maylin Paniagua, and Nelci Oconitrillo, for their time and expertise in collecting, mounting, and sorting specimens to morphospecies. We also thank Martha Potts who assisted in the measurement of continuous characters; John Pickering and Ryan Bartlett at the University of Georgia for laboratory space and help sorting specimens, respectively; Darlene Judd and Andy Brower at Oregon State University for laboratory space and the use of laboratory equipment; Dan Janzen and Winnie Hallwachs at the University of Pennsylvania for supplying reared material and host records; Jane Phillips in the Classics Department at the University of Kentucky for help with Greek names; Anuj Patel for help with DELTA; Henry Hespenehede for supplying reared material; Robert Colwell for help with species estimates; Alma Solis for help with author names of Crambidae; Thomas Henry for help identifying some reduviid mimics; David Wahl for help identifying additional mimics as well as comments on a draft; and Robert Wharton and three anonymous reviewers for also providing comments. Kentucky Agricultural Experiment Station Project 99-08-95 and NSF grants DEB-9706976 and 9972024 to Mike Sharkey supported this research. A Mellon Foundation grant to John Pickering and Mike Sharkey supported some of the collecting in Costa Rica.

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Plate I Lateral photograph of *Alabragus kagaba*

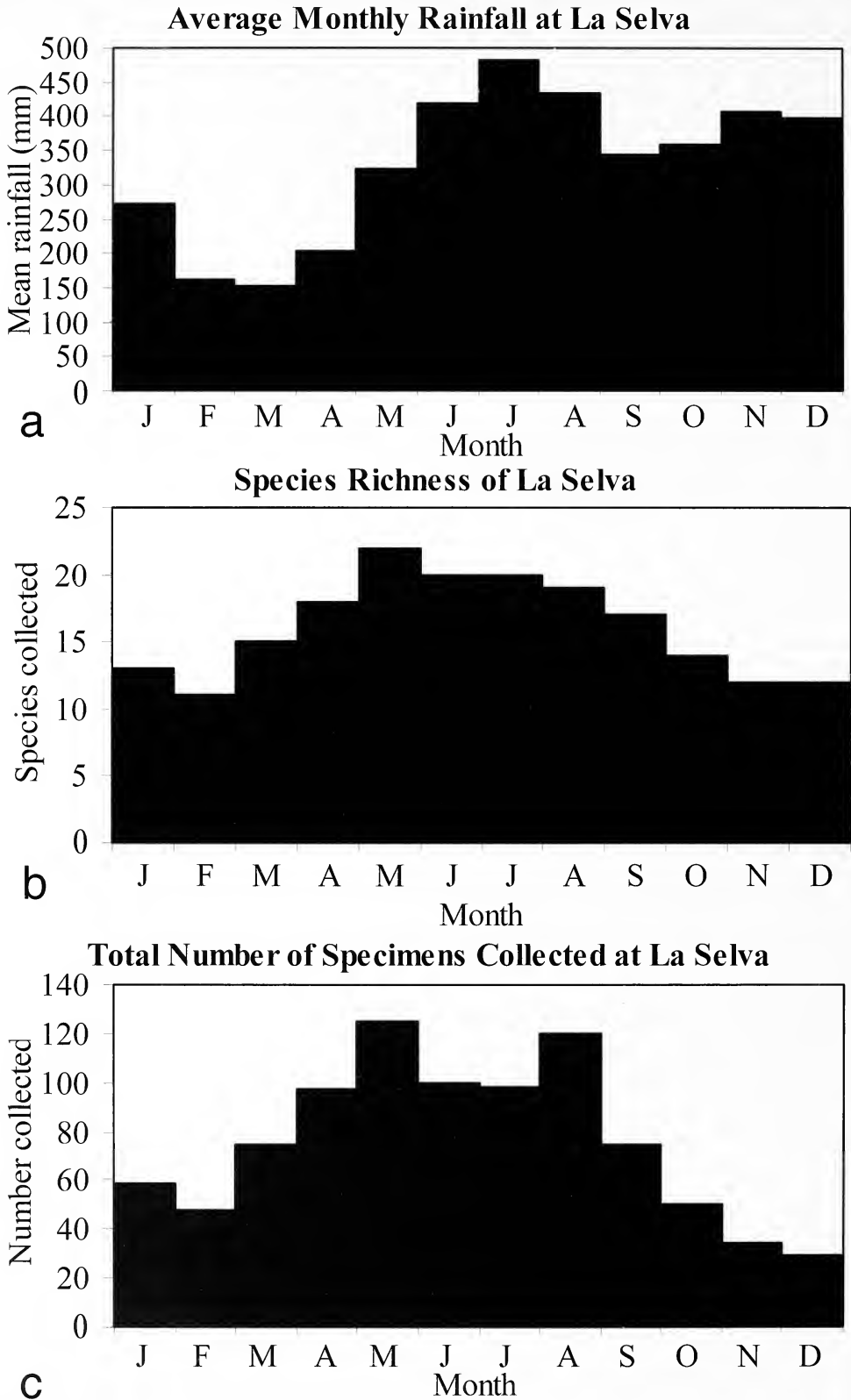


Figure 1 a, The total number of specimens of *Alabragus* collected in each month by the ALAS project. b, The total number of species of *Alabragus* collected in each month by the ALAS project. c, The average monthly rainfall in mm at La Selva from 1963 to 1991 (Sanford et al., 1994)

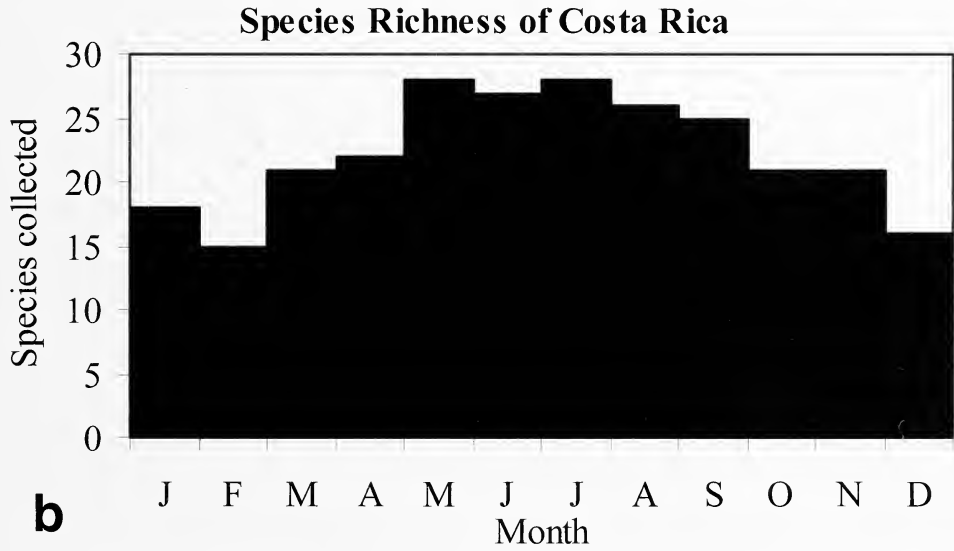
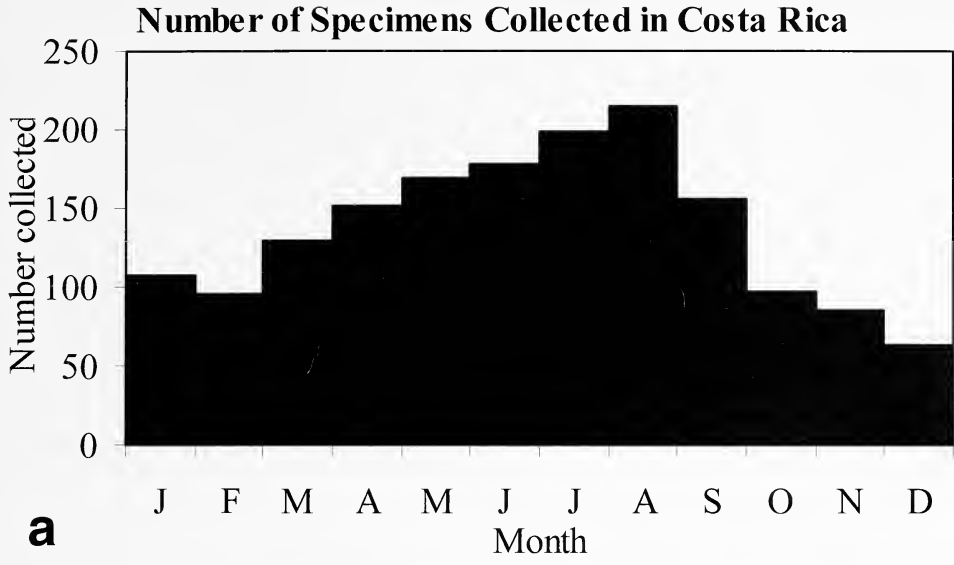


Figure 2 a, The total number of specimens of *Alabragus* known to have been collected in each month in Costa Rica. b, The total number of species of *Alabragus* known to have been collected in each month in Costa Rica

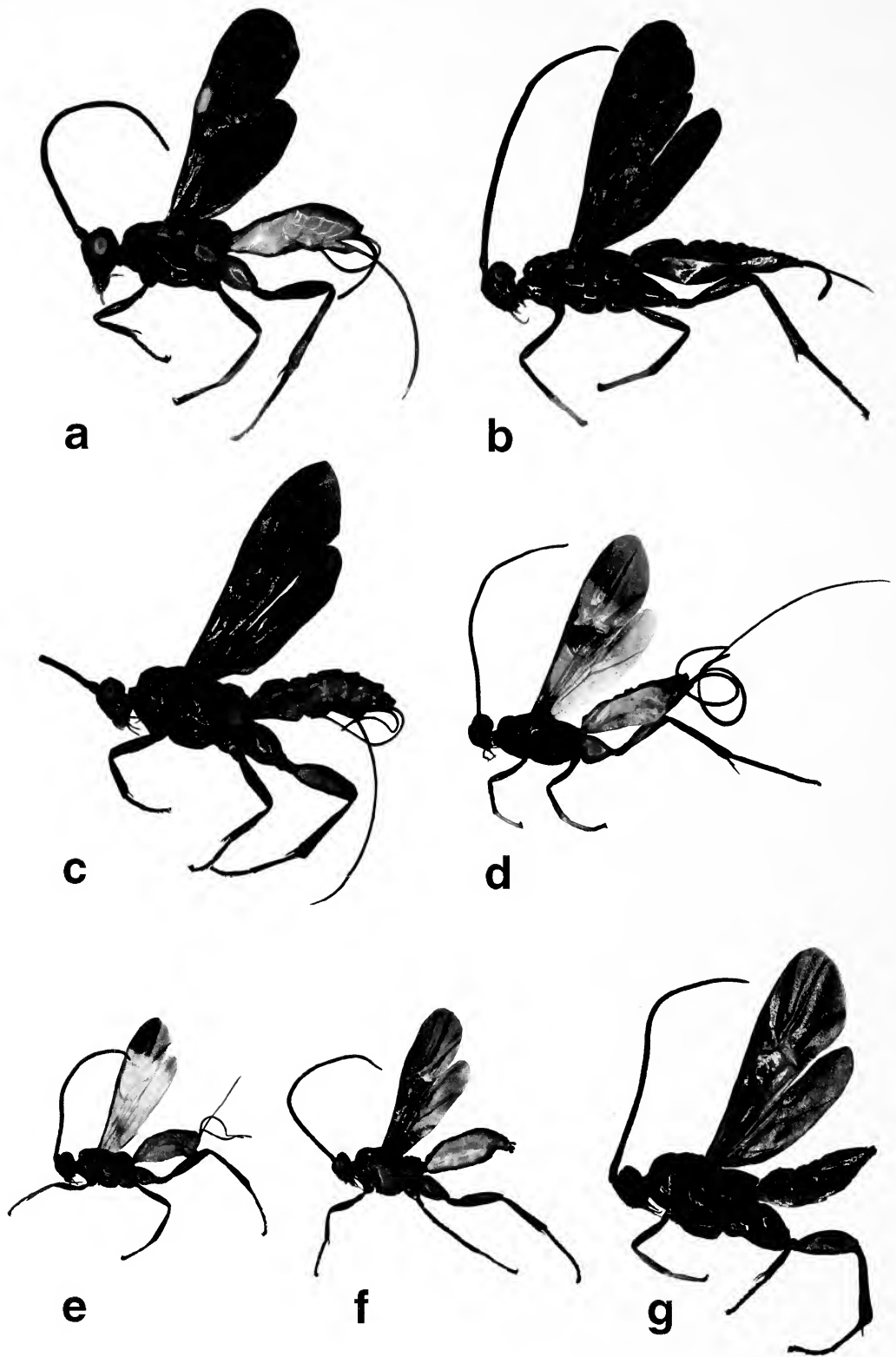


Figure 3 Lateral photographs of species of *Alabragus*. a, *juchuy* (8.4× magnification); b, *miqa* (7.0×); c, *nicoya* (4.7×); d, *paruyana* (4.5×); e, *cuna* (4.5×); f, *imitatus* (4.7×); g, *nabuatl* (4.8×)

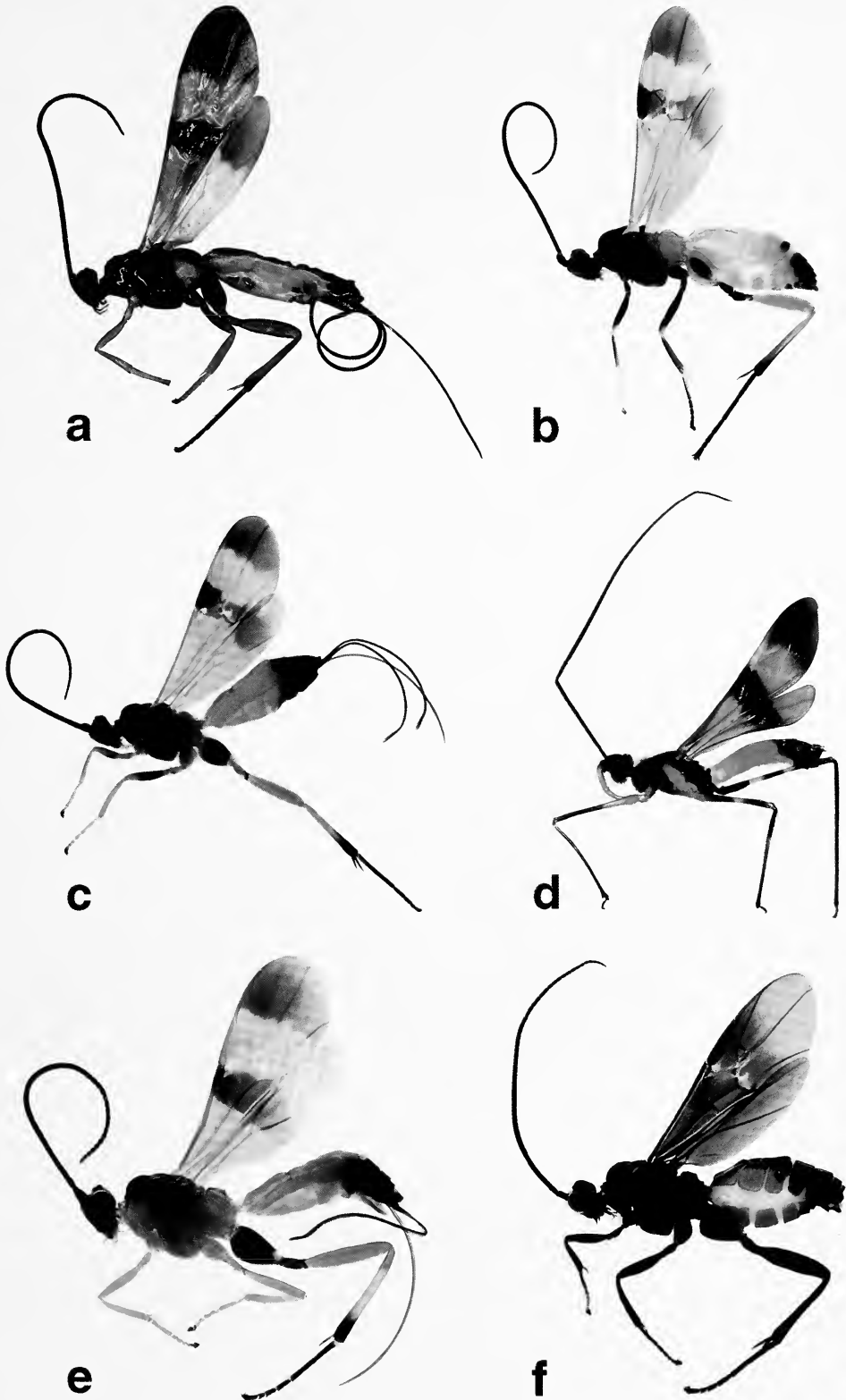


Figure 4 Lateral photographs of species of *Alabragus* and a mimic. a, *janzeni* (5.0×); b, *latreillei* (3.6×); c, *pachamama* (4.7×); d, *Hirantetis* nr. *braconiformis* (Burmeister) (Reduviidae: Harpactorinae) (5.7×); e, *mojos* (7.1×); f, *semialbus* (4.9×)

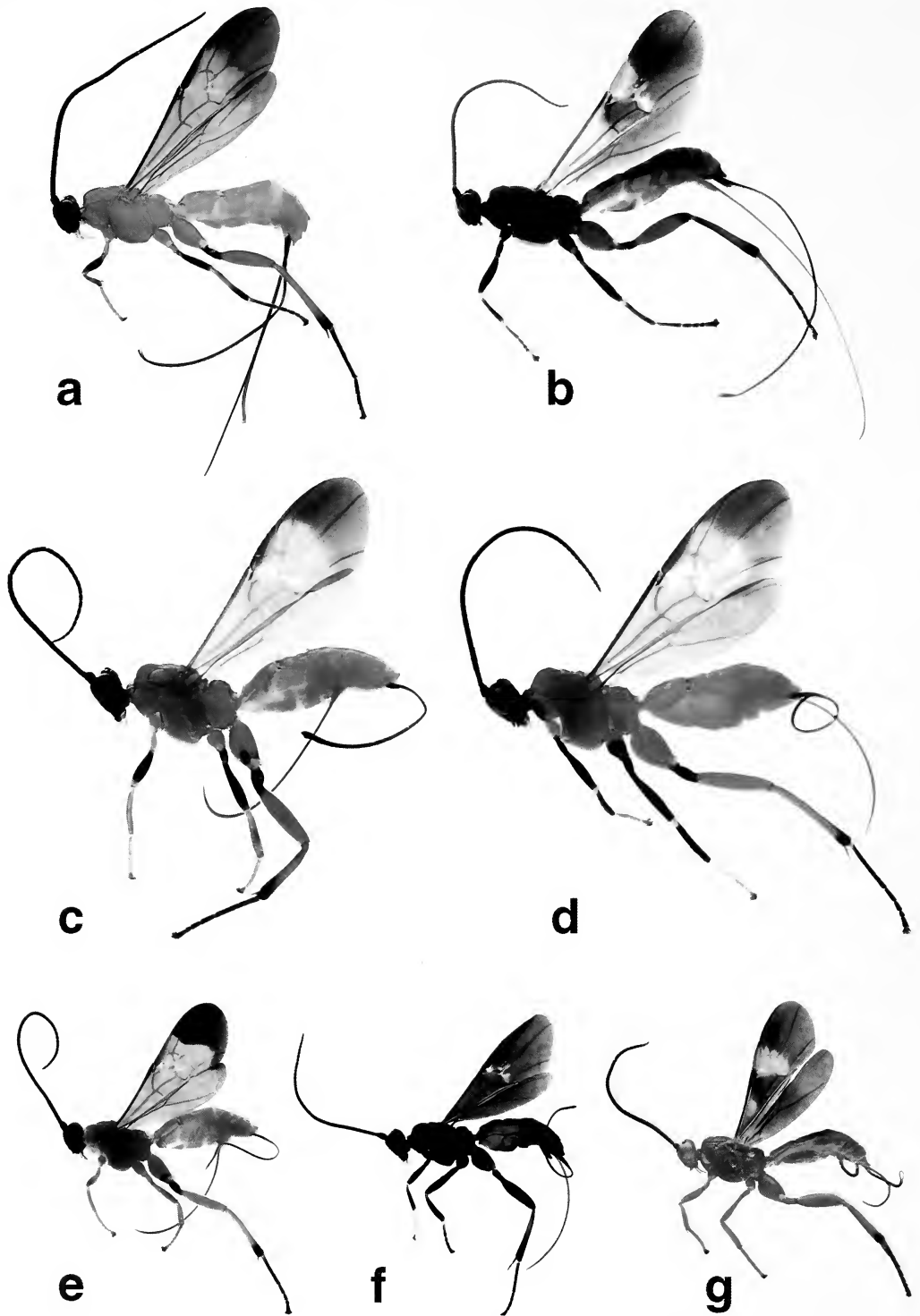


Figure 5 Lateral photographs of species of *Alabragus*. a, *pecki* (4.5×); b, *stigma* (4.2×); c, *warrau* (5.6×); d, *yaruro* (7.0×); e, *cara* (6.6×); f, *combos* (4.8×); g, *voto* (5.0 ×)

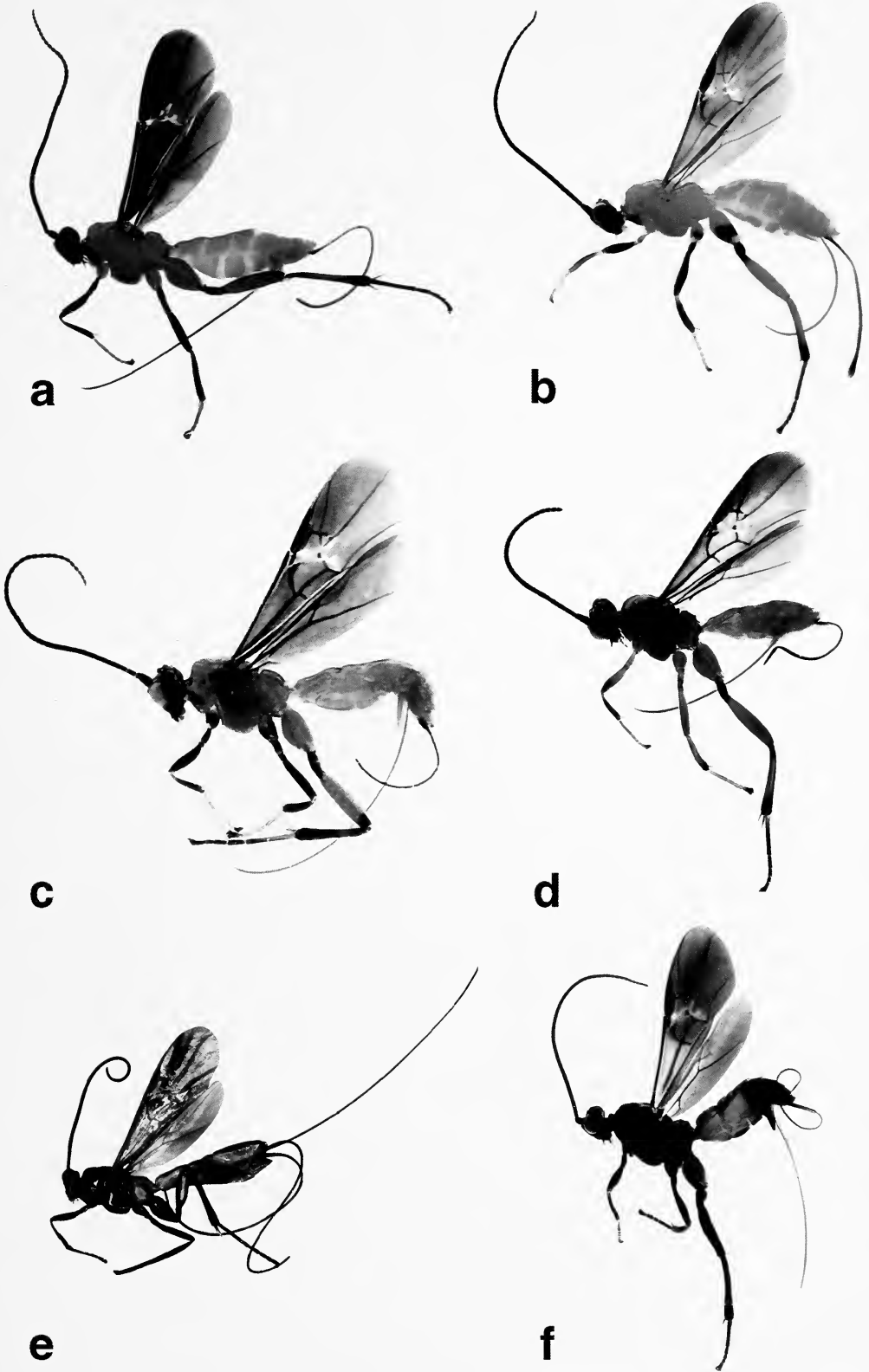


Figure 6 Lateral photographs of species of *Alabragus*. a, *derailersi* (5.7×); b, *arawak* (7.9×); c, *masneri* (9.2×); d, *maculipes* (7.3×); e, *parvifaciatus* (4.0×); f, *watsoni* (4.7×)

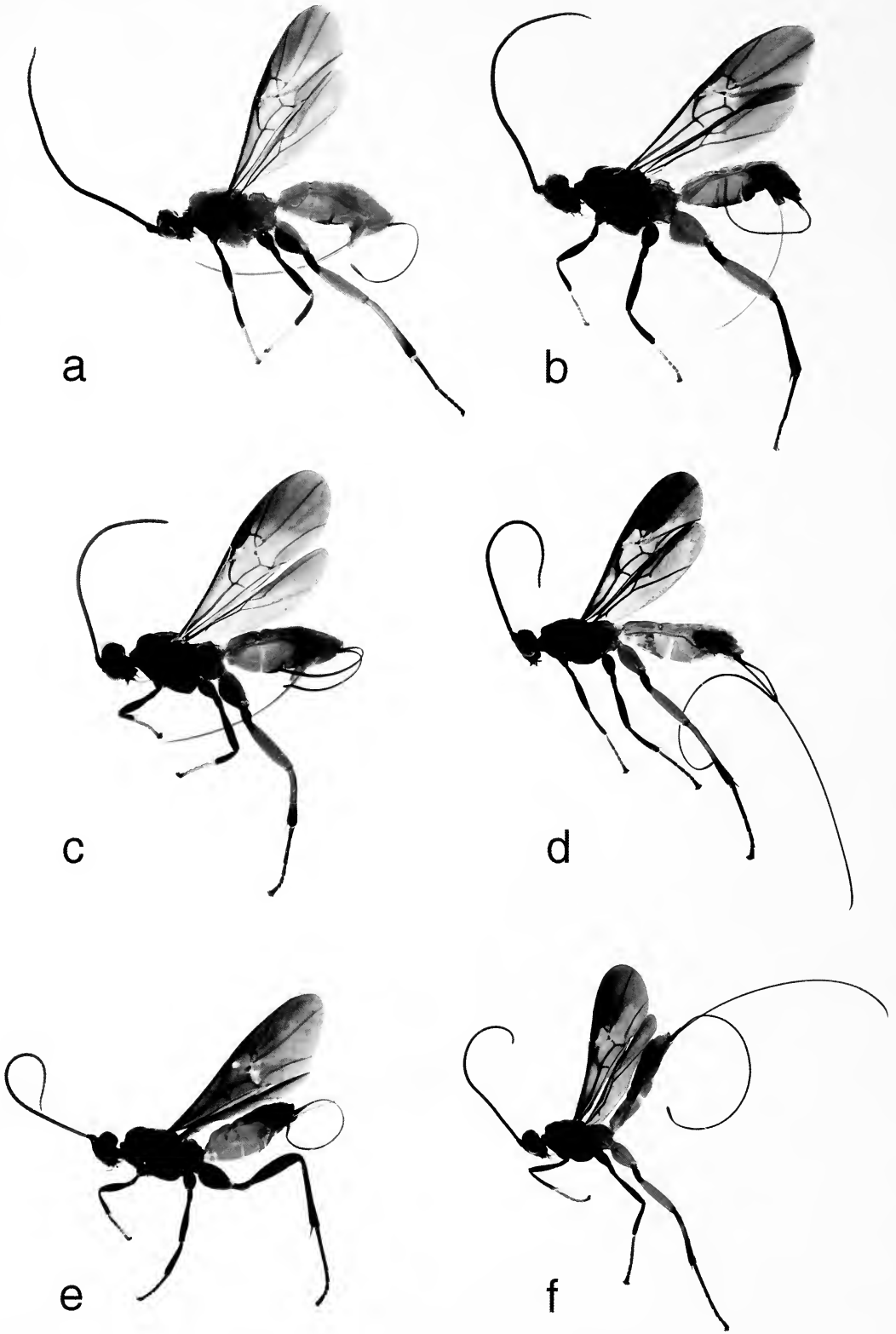


Figure 7 Lateral photographs of species of *Alabragus*. a, *cocto* (5.4×); b, *albispina* (6.0×); c, *sarapiqui* (5.8×); d, *roibasi* (4.8×); e, *tricarinatus* (4.5×); f, *englishi* (4.2×)



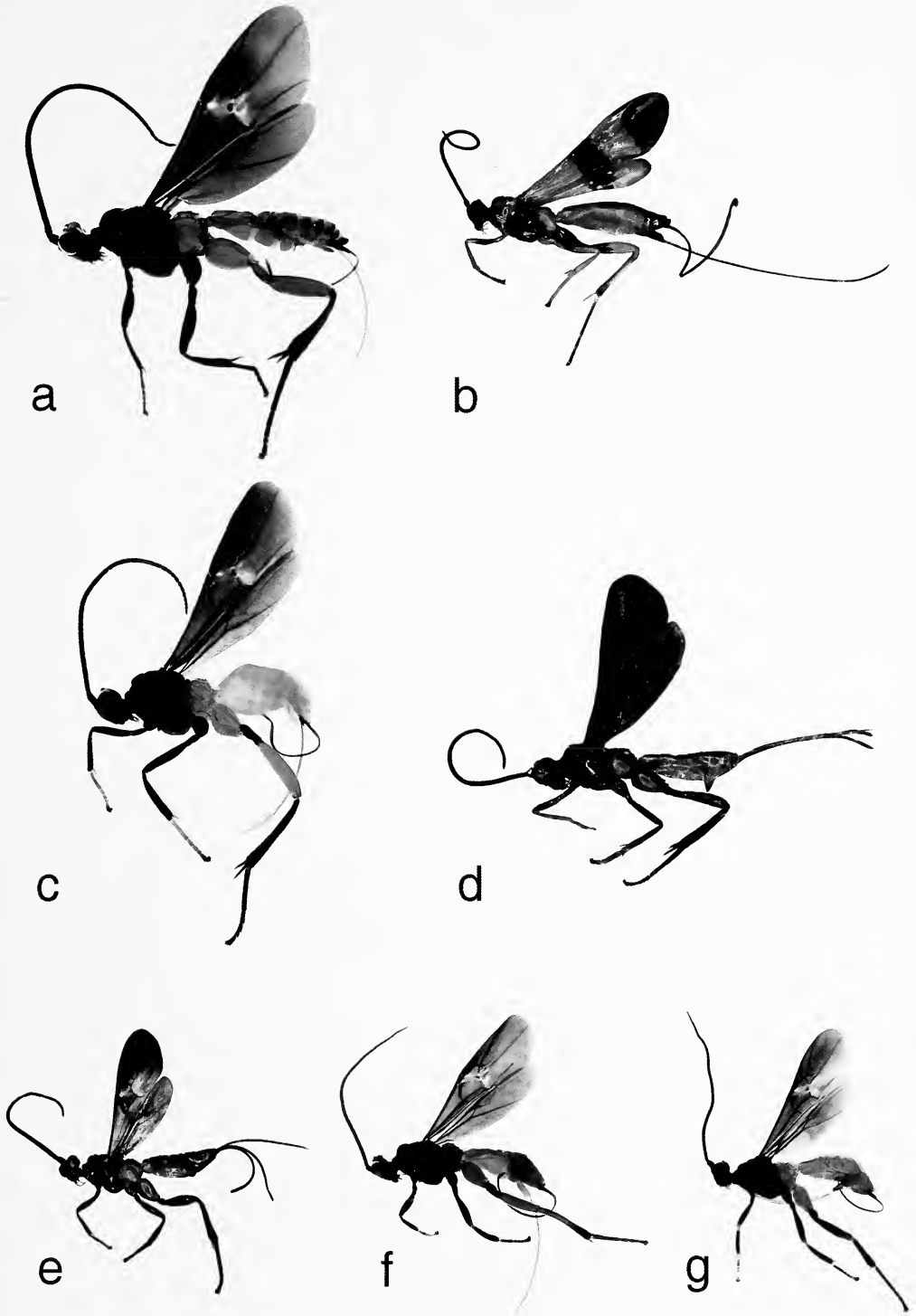


Figure 8 Lateral photographs of species of *Alabragus*. a, *latisoma* (5.0×); b, *varius* (3.0×); c, *donnai* (5.8×); d, *arua* (5.0×); e, *tripartitus* (3.1×); f, *nigritulus* (4.4×); g, *maya* (3.4×)

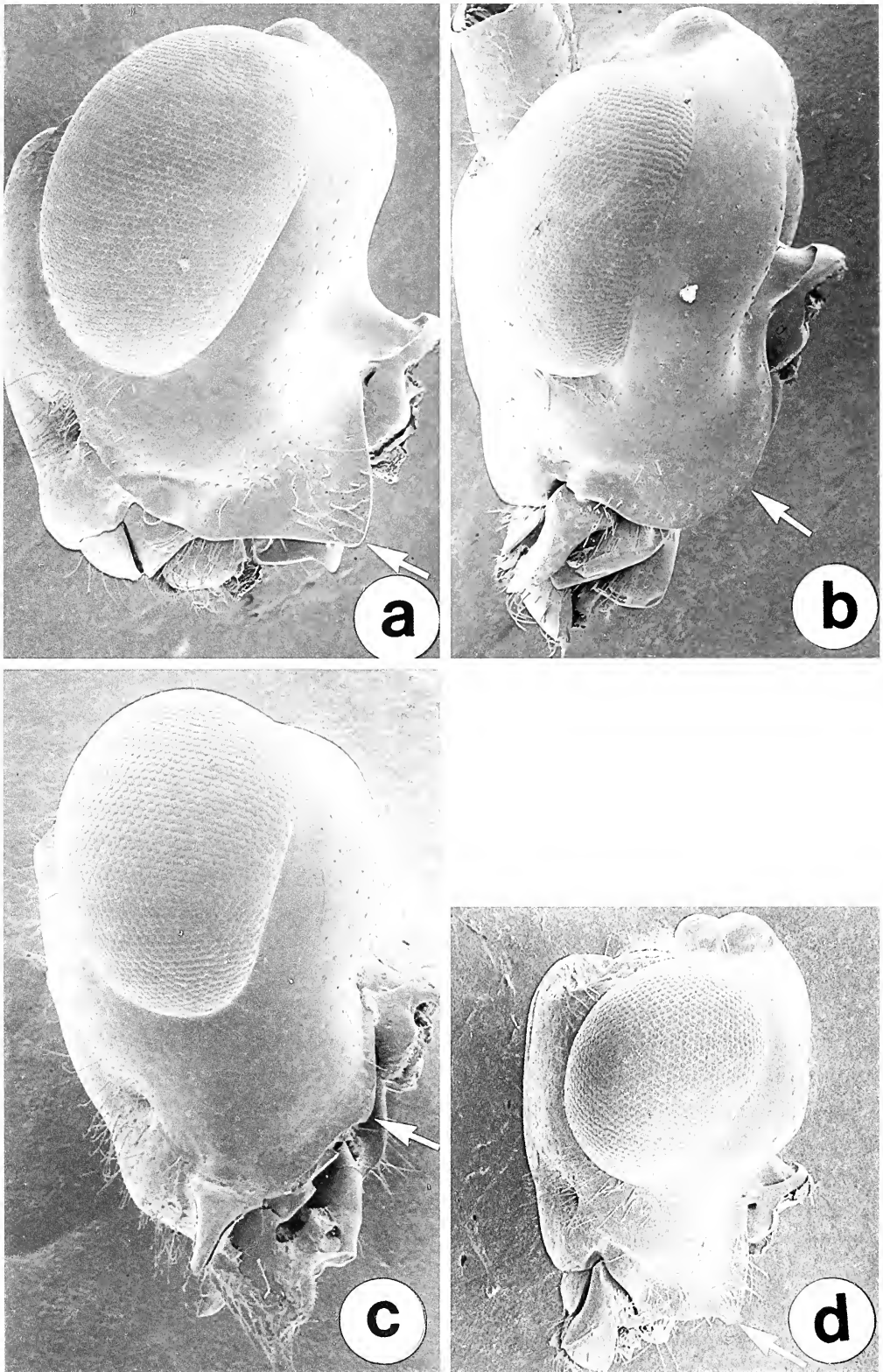


Figure 9 Lateral heads of species of *Alabragus*. a, *latreillei*; b, *texasus*; c, *juchbuy*; d, *arawak*. Arrows point to the gena of each species

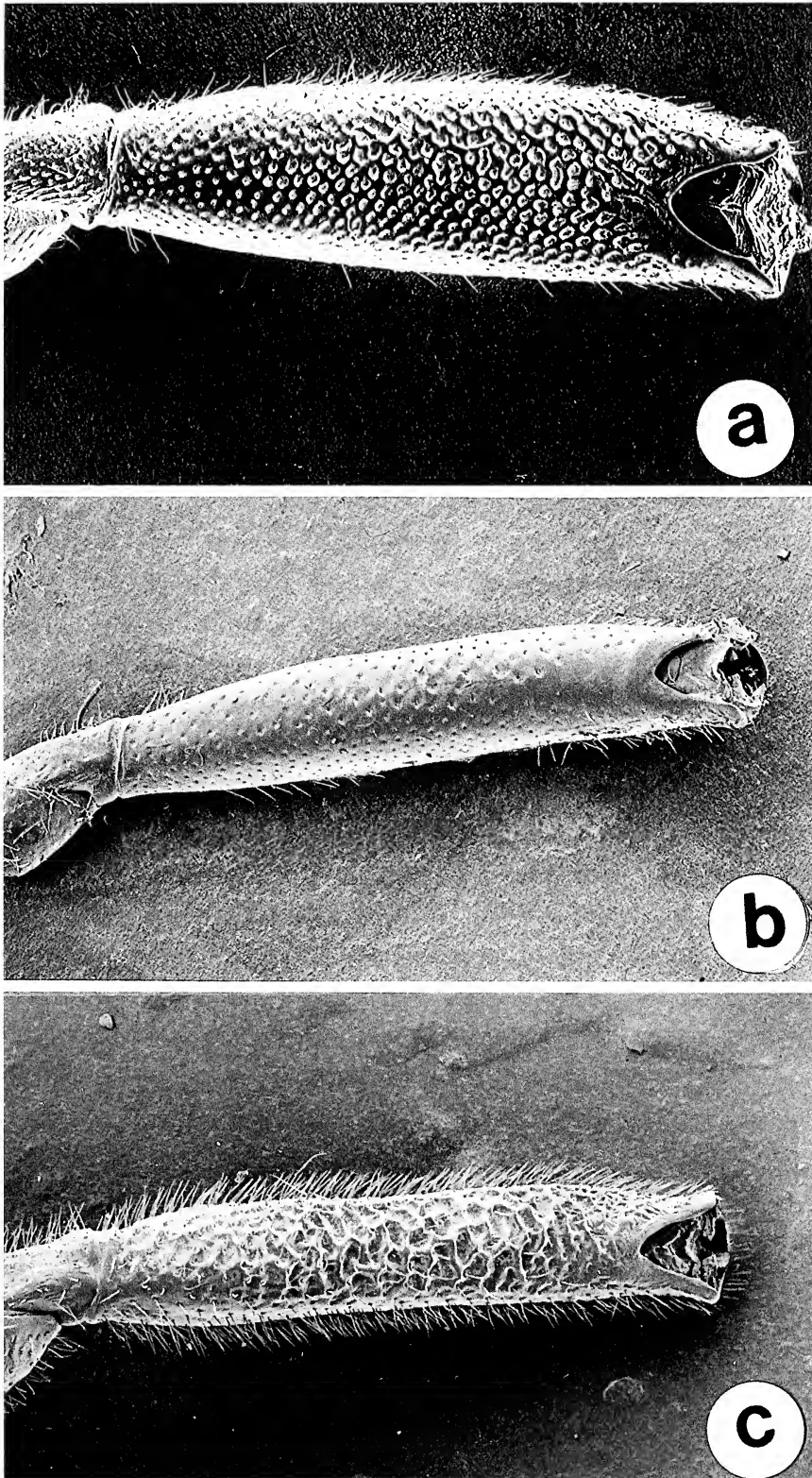


Figure 10 Hind femurs of species of *Alabragus*. a, *stigma*; b, *tricarinatus*; c, *texanus*

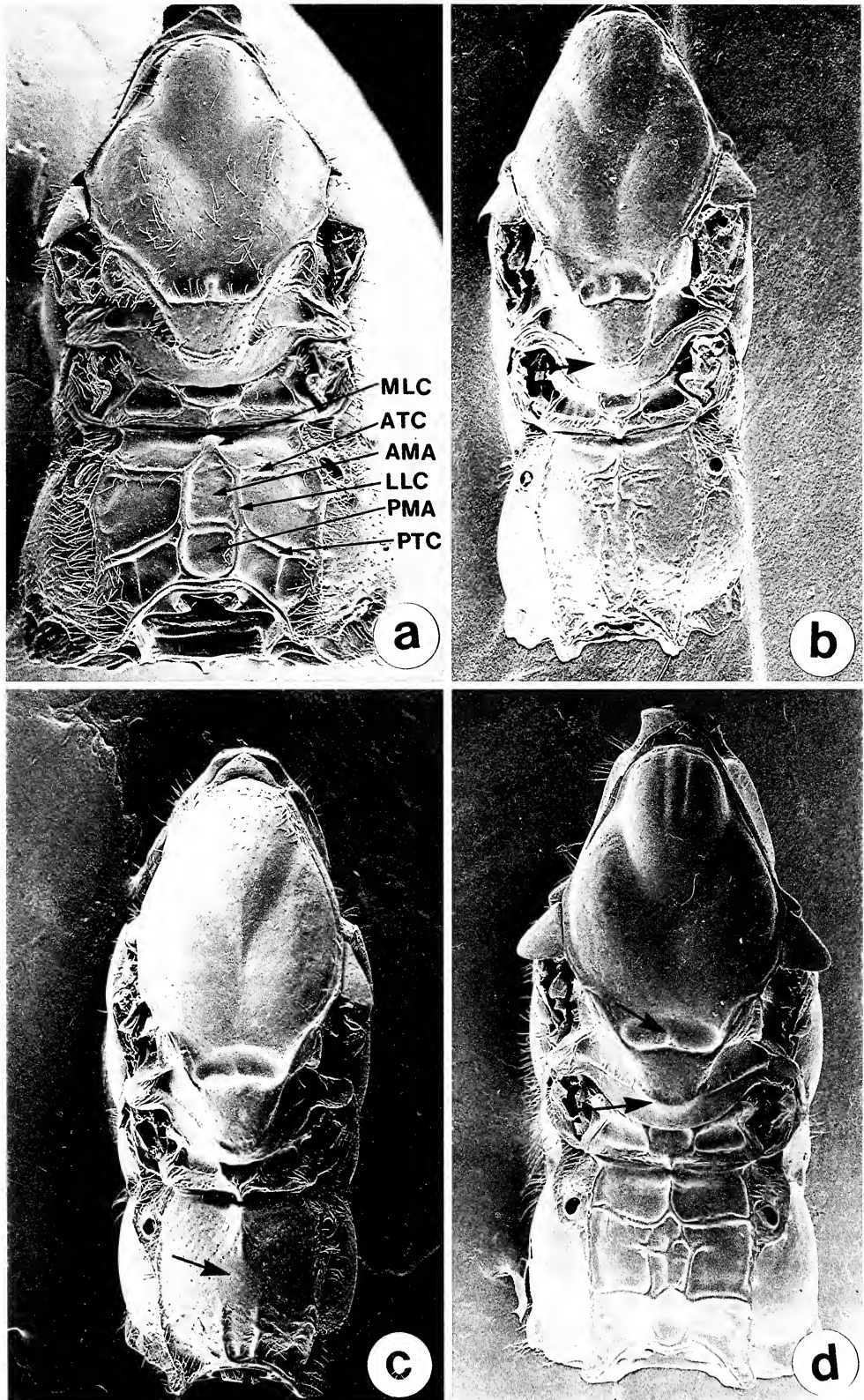


Figure 11 Dorsal mesosoma of species of *Alabragus*. a, *latisoma*: MLC = median longitudinal carina, ATC = anterior transverse carina, AMA = anterior median areola, LLC = lateral longitudinal carina, PMA = posterior median areola, PTC = posterior transverse carina; b, *imitatus*; c, *masneri*; d, *nigritulus*

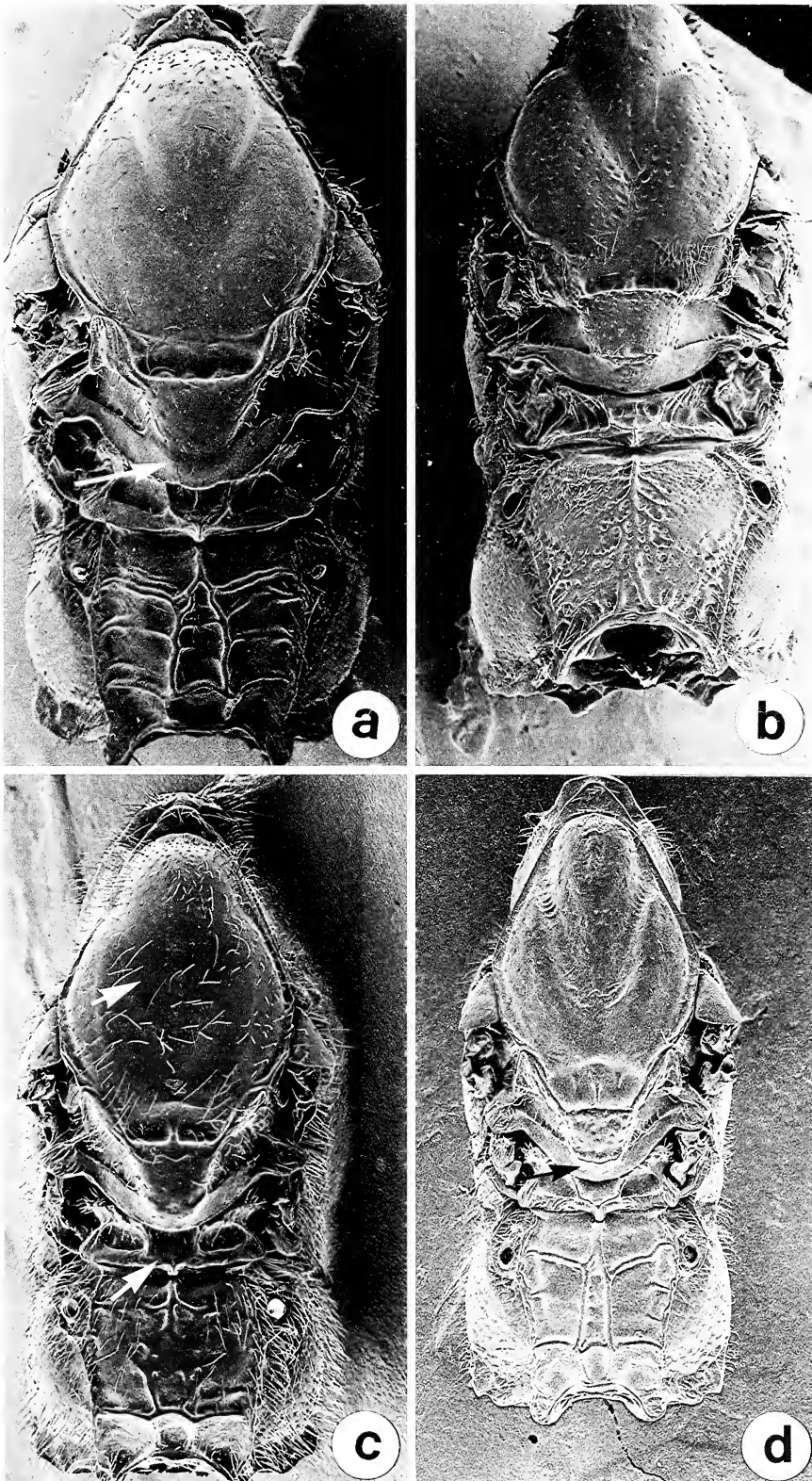


Figure 12 Dorsal mesosoma of species of *Alabragus*. a, *ucbuk*; b, *stigma*; c, *versicolor*; d, *arawak*

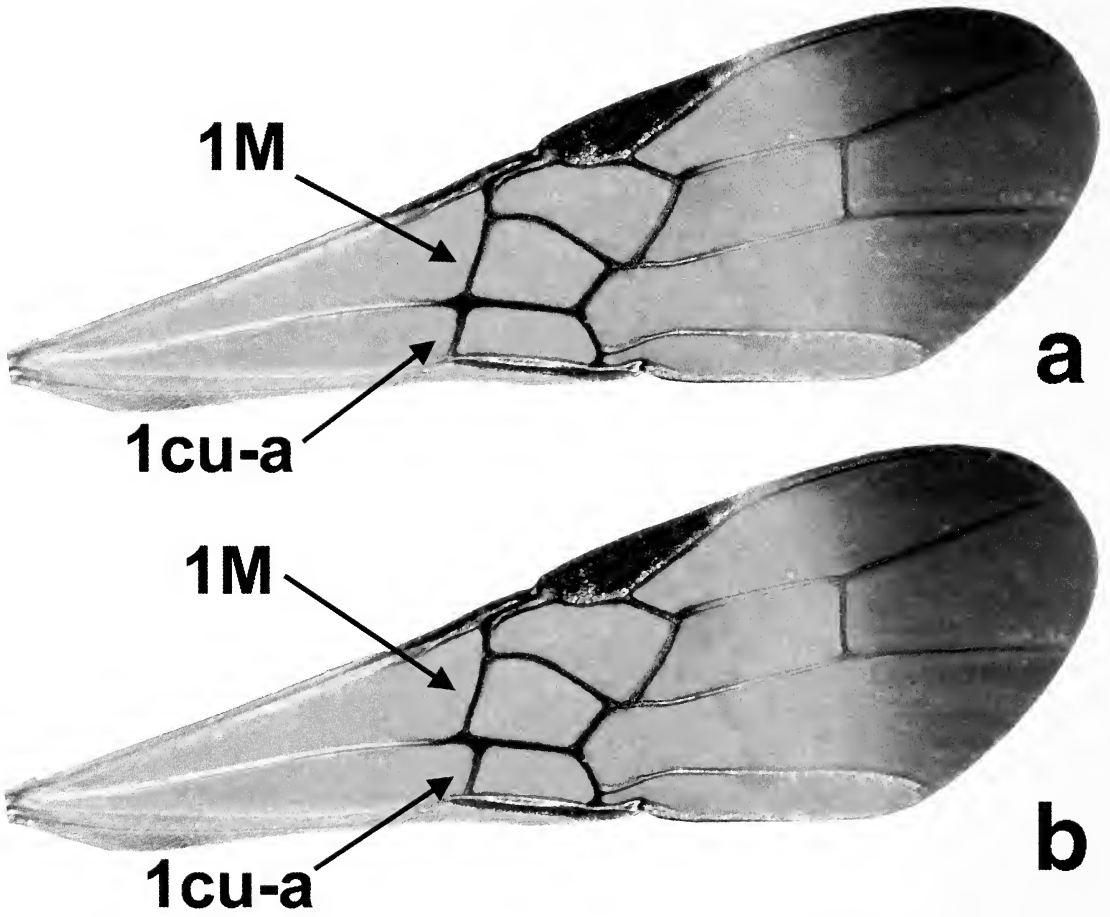


Figure 13 Wings of *Digonogastra* sp. a, forewing veins 1M and 1cu-a intersect; b, forewing vein 1cu-a intersects Cu distad 1M

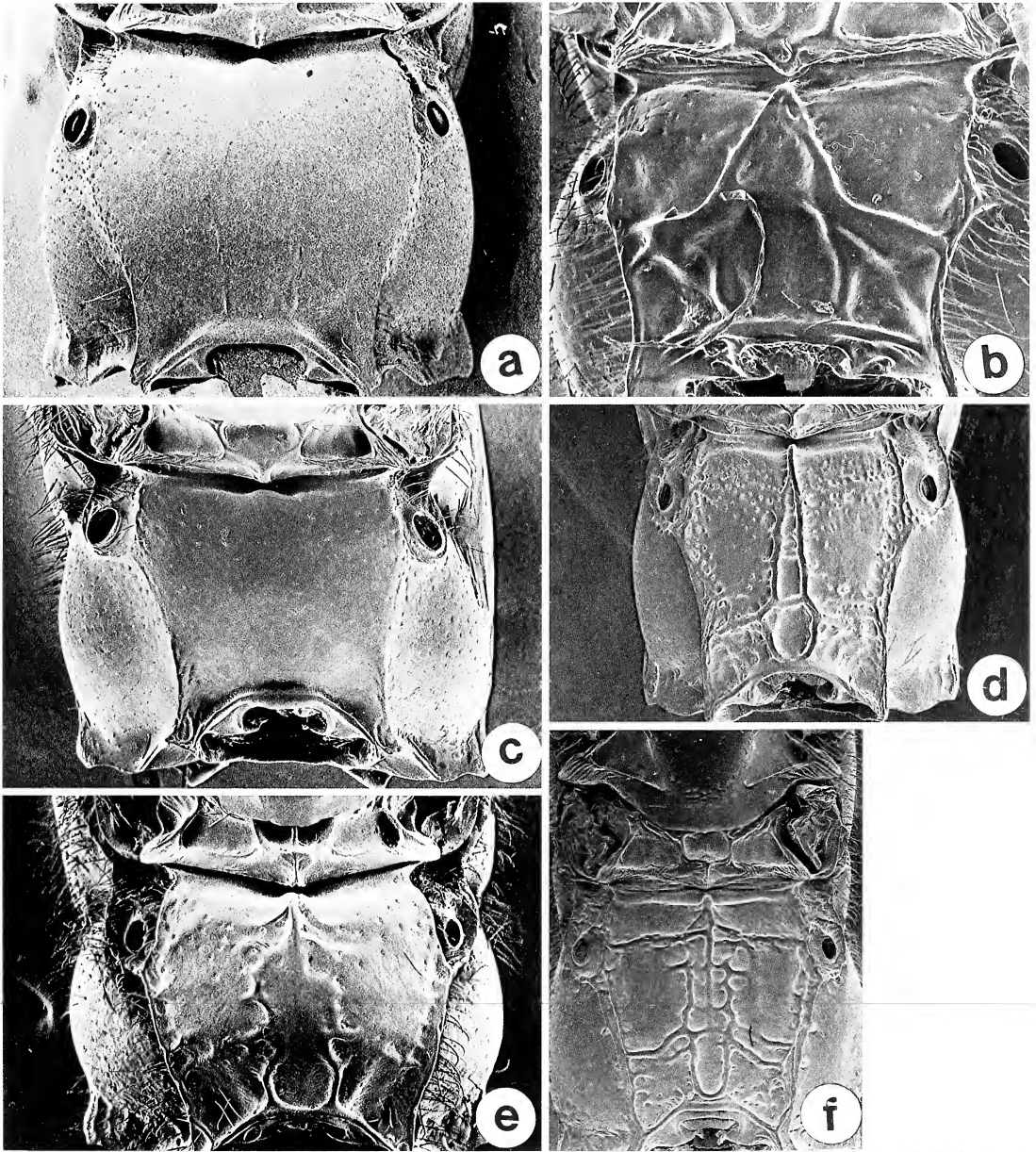


Figure 14 Propodeum of species of *Alabragus*. a, *kiska*; b, *wachupa*; c, *pachamama*; d, *triangulifer*; e, *uchuk*; f, *sanctus*

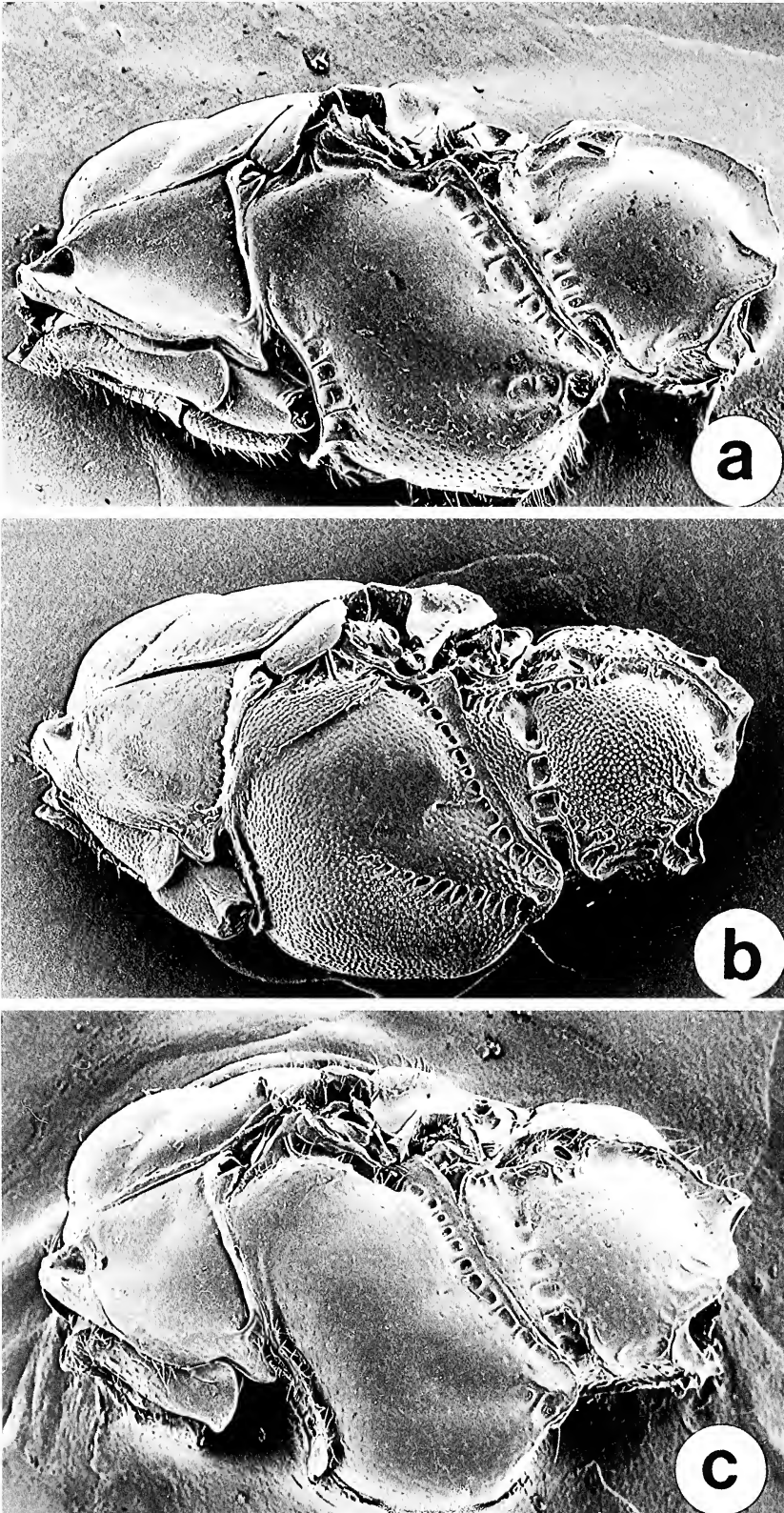


Figure 15 Lateral mesosoma of species of *Alabragus*. a, *tripartitus*; b, *stigma*; c, *uchuk*



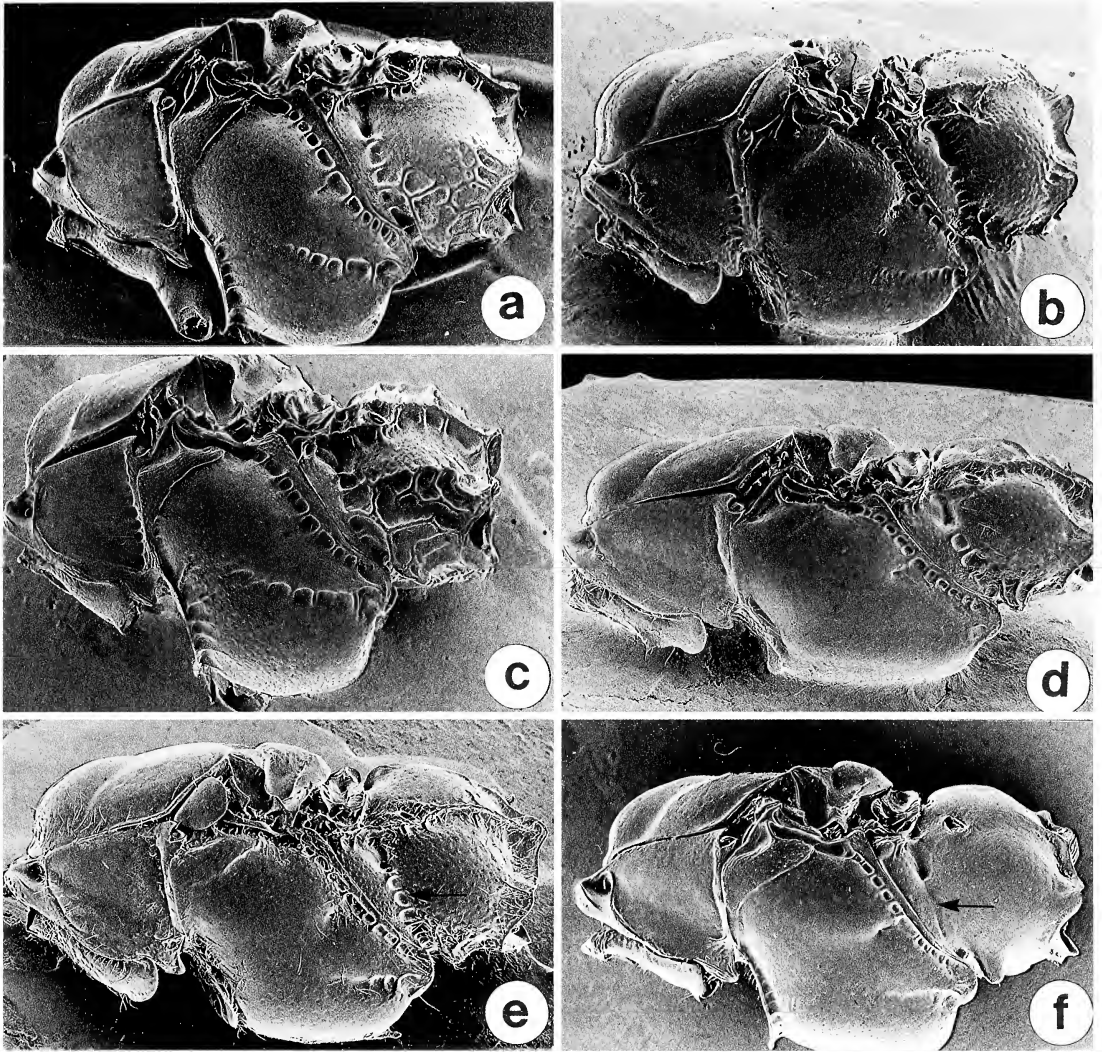


Figure 16 Lateral mesosoma of species of *Alabragus*. a, *albispina*; b, *imitatus*; c, *texanus*; d, *parvifaciatus*; e, *masneri*; f, *haenschii*

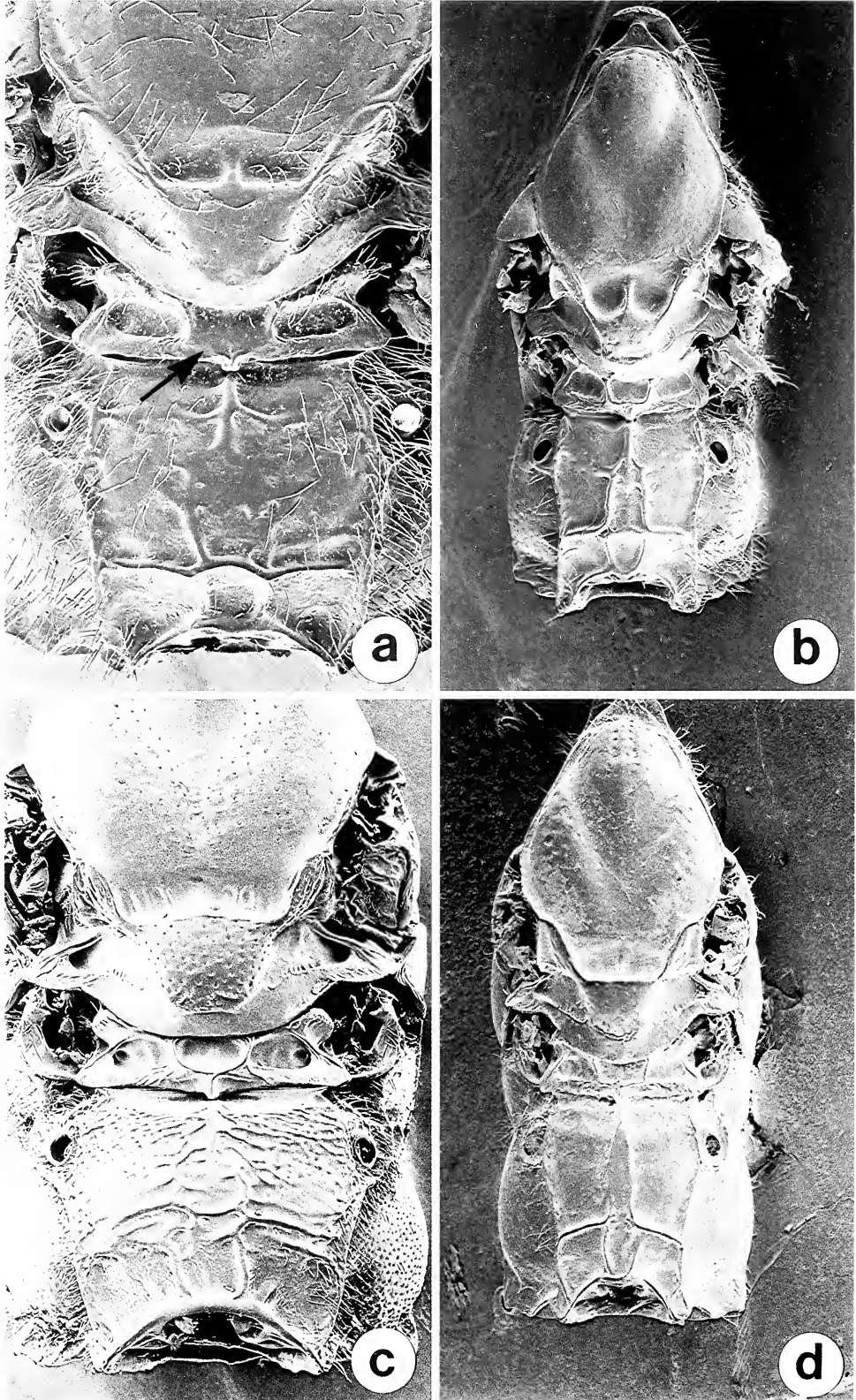


Figure 17 Dorsal mesosoma of species of *Alabragus*. a, *versicolor*; b, *elatoscutum*; c, *stigma*; d, *arawak*

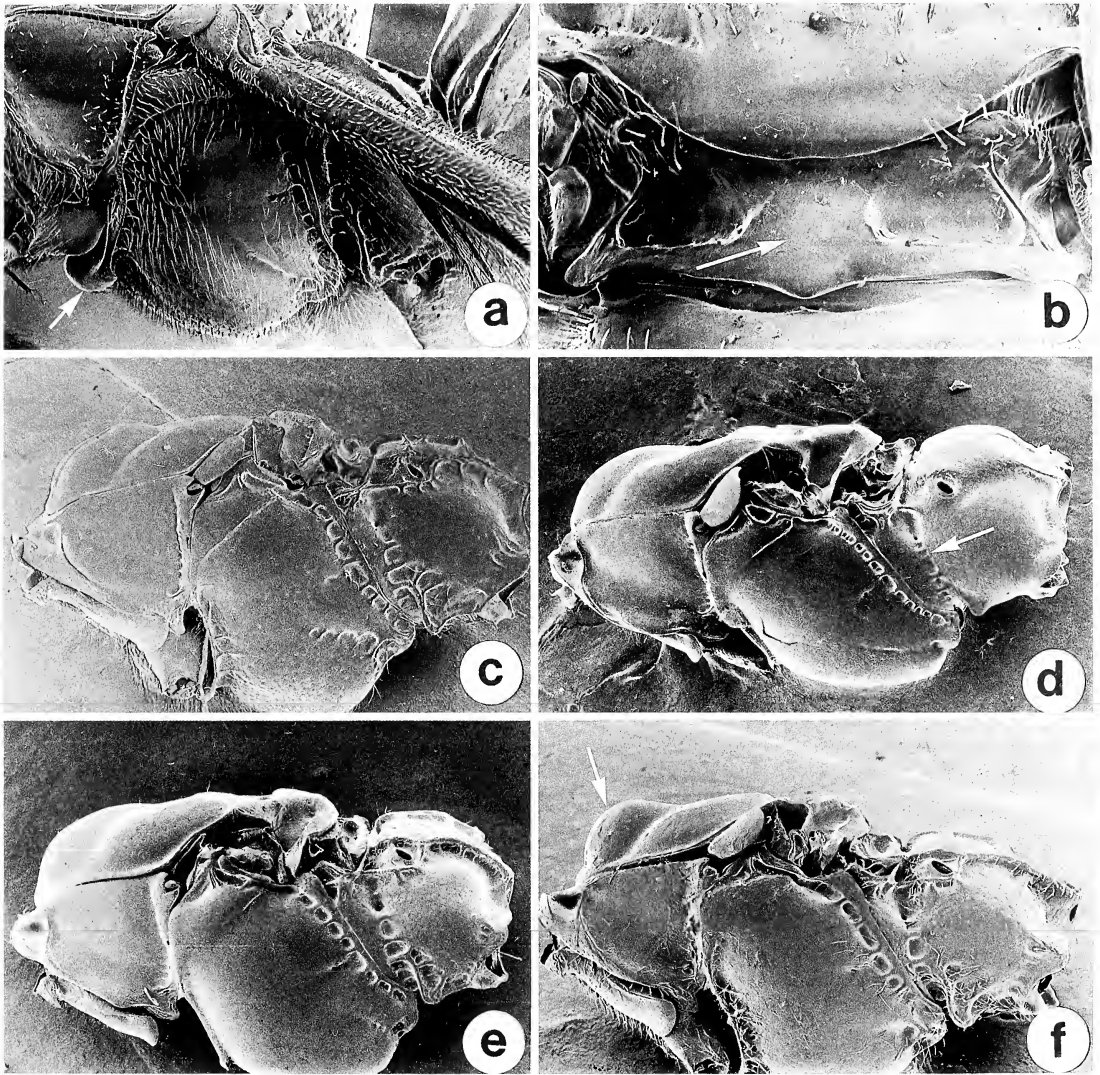


Figure 18 Species of *Alabragus*. a, *varipes*, lateral mesosoma; b, *paruyana*, dorsal metanotum; c, *nigrifolius*, lateral mesosoma; d, *kiska*, lateral mesosoma; e, *versicolor*, lateral mesosoma; f, *elatoscutum*, lateral mesosoma

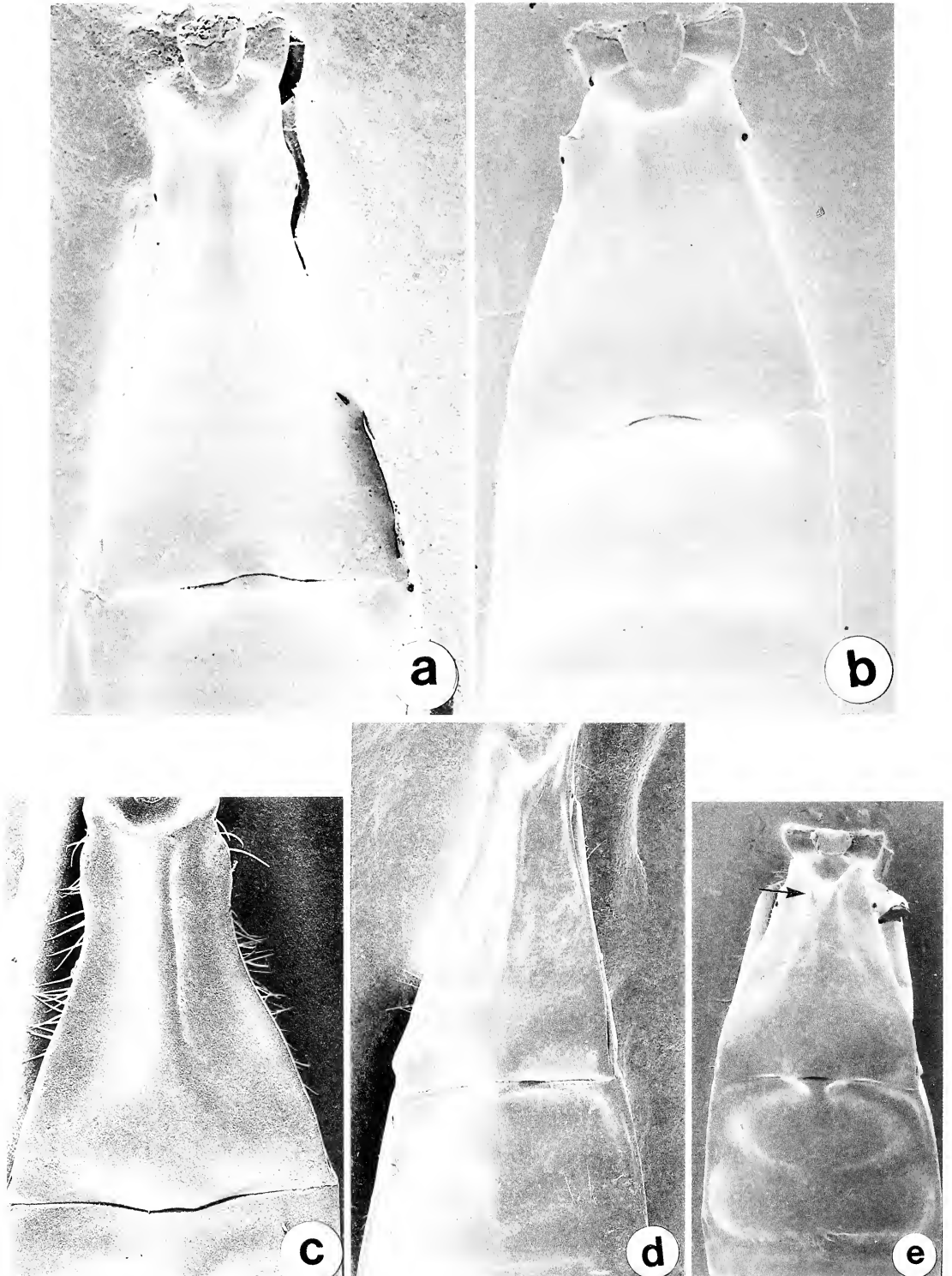


Figure 19 Dorsal metasoma of species of *Alabragus*. a, *arawak*; b, *nigrifulus*; c, *tripartitus*; d, *arawak*; e, *parvifaciatus*

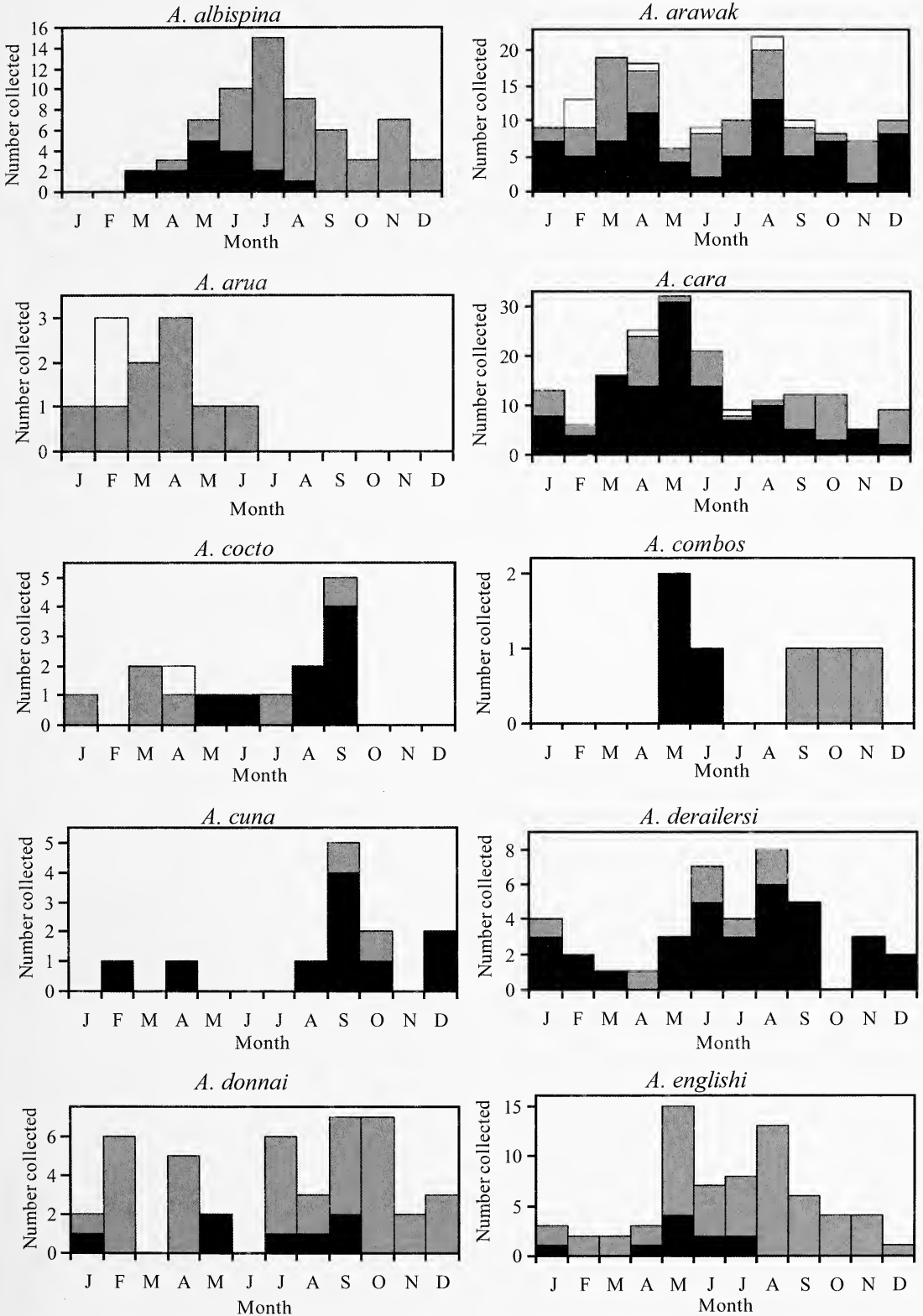


Figure 20 Temporal distribution of species of *Alabragus* at La Selva. Solid black bars represent specimens collected at La Selva. Gray bars represent specimens collected in Costa Rica, outside of La Selva. White bars represent specimen data from Sharkey (1988)

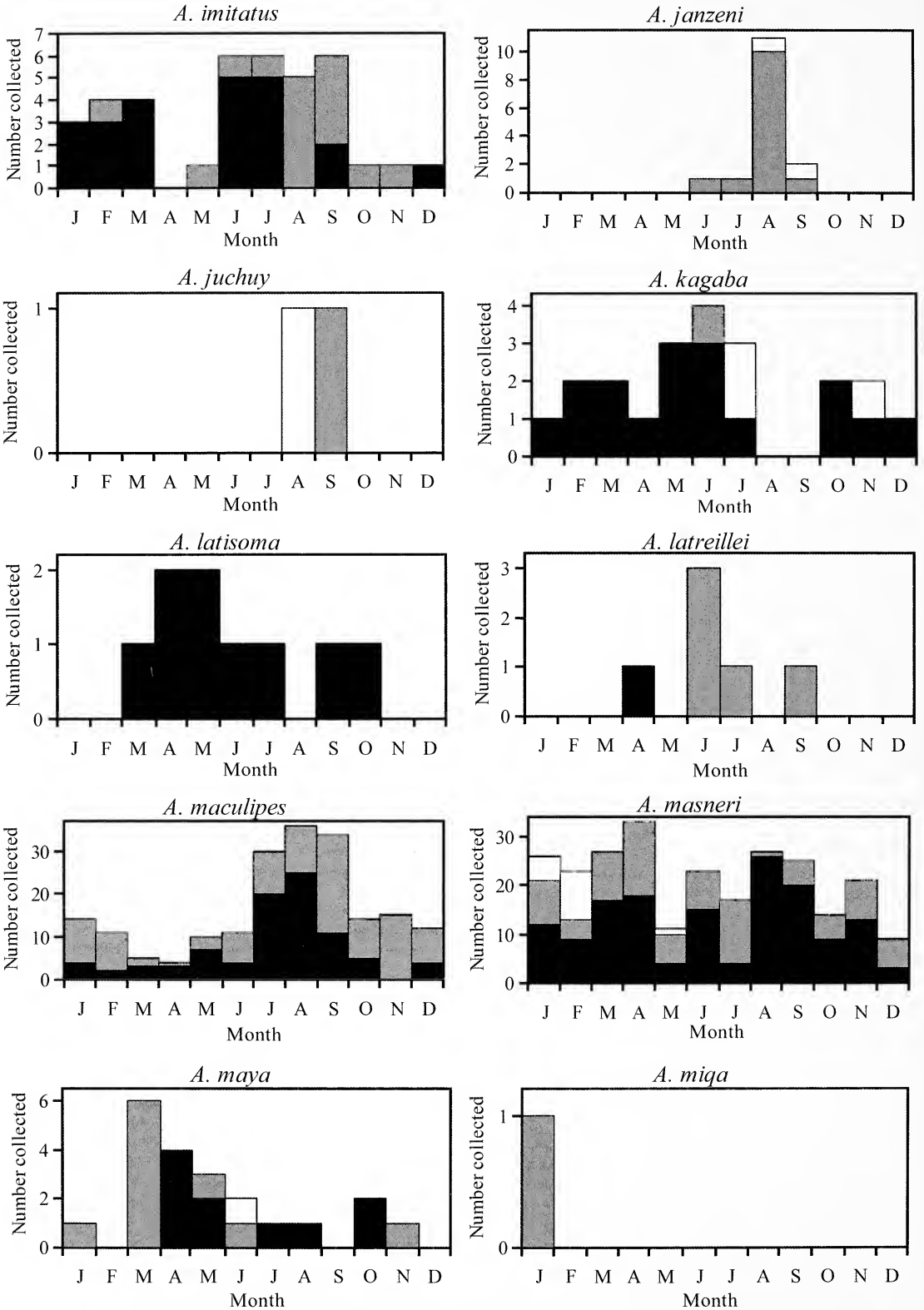


Figure 21 Temporal distribution of species of *Alabragus* at La Selva. Solid black bars represent specimens collected at La Selva. Gray bars represent specimens collected in Costa Rica, outside of La Selva. White bars represent specimen data from Sharkey (1988)

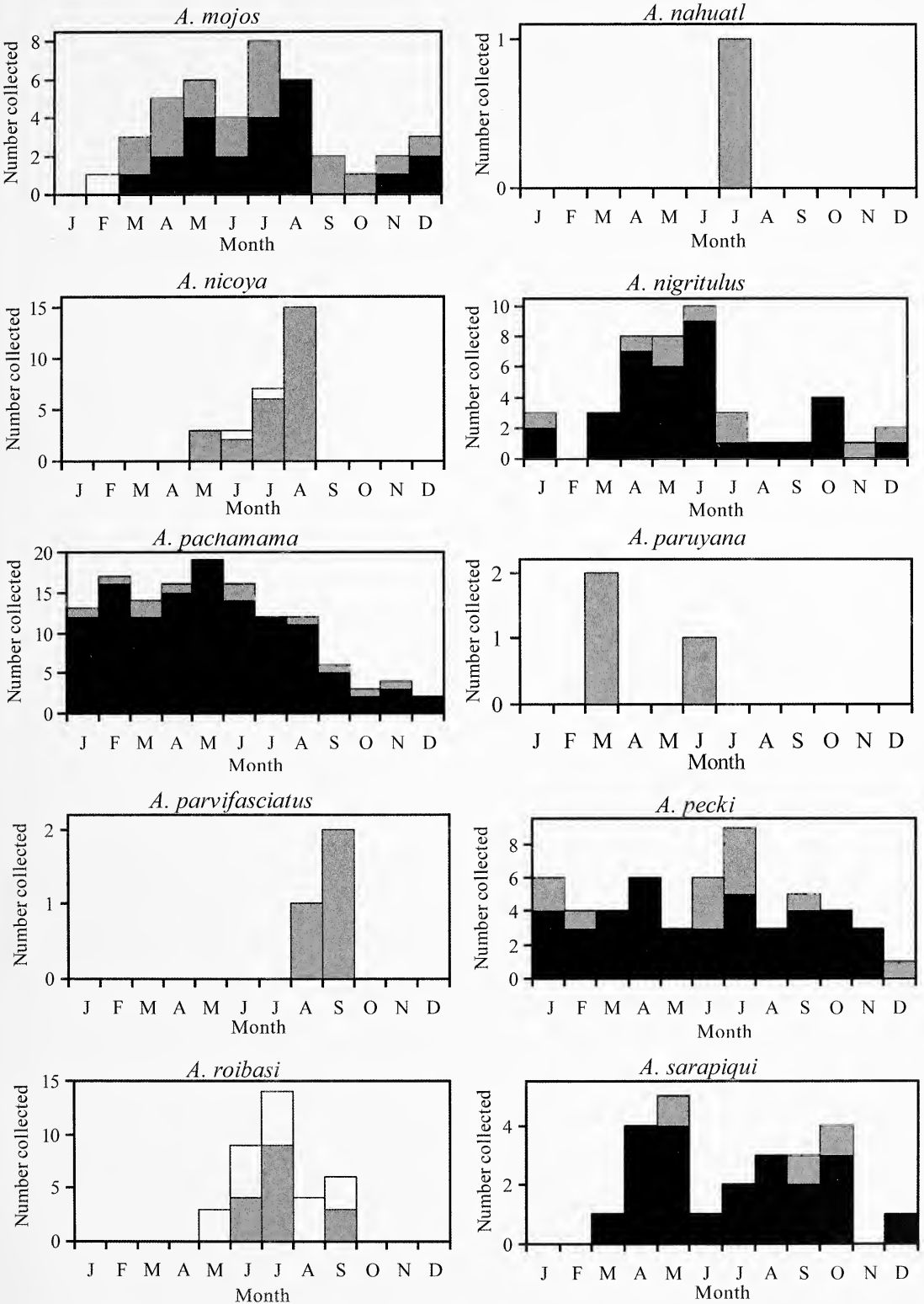


Figure 22 Temporal distribution of species of *Alabragus* at La Selva. Solid black bars represent specimens collected at La Selva. Gray bars represent specimens collected in Costa Rica, outside of La Selva. White bars represent specimen data from Sharkey (1988)

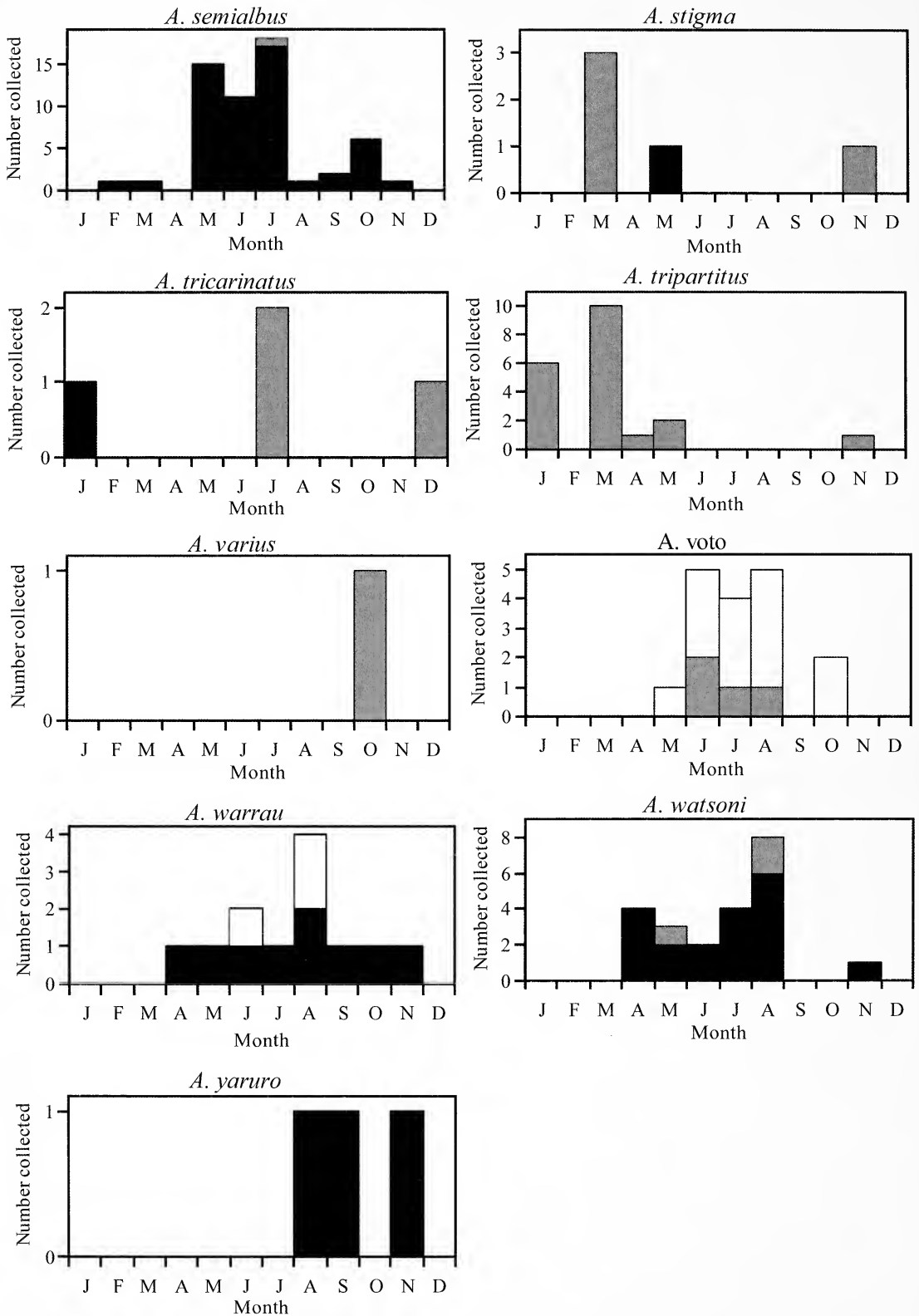


Figure 23 Temporal distribution of species of *Alabragus* at La Selva. Solid black bars represent specimens collected at La Selva Gray bars represent specimens collected in Costa Rica, outside of La Selva. White bars represent specimen data from Sharkey (1988)









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