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# The pholcid spiders of Costa Rica (Araneae: Pholcidae)

Bernhard A. Huber

Escuela de Biología, Universidad de Costa Rica, Ciudad Universitaria, Costa Rica.

Mailing address: Dept. of Entomology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, USA.

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**Abstract**: Recent studies on the pholcid fauna of Central America have elevated the number of known Costa Rican species from 11 to 28 in only two years. The present paper summarizes the scattered literature and adds two new species as well as three undescribed species, bringing the total number to 33 species representing seven genera. An illustrated key is presented. An annotated list summarizes the information available about taxonomy, morphology and natural history of all known Costa Rican pholcids. The two new species are *Anopsicus tico* n.sp. from the Central Valley, and *Physocyclus guanacaste* n.sp. from the Santa Rosa National Park, Guanacaste. The male of *Metagonia hondura* Huber, 1997 is described and illustrated for the first time. Old pholcid records from Costa Rica are discussed, and types of unsufficiently well described species are redescribed, including all previously known Costa Rican *Anopsicus* species (*A. chiriqui* Gertsch, 1982; *A. concinnus* Gertsch, 1982; *A. facetus* Gertsch, 1982; *A. turrialba* Gertsch, 1982) as well as *Metagonia osa* Gertsch, 1986 and *M. selva* Gertsch, 1986. New localities are given for twelve species; of these, four are new for Costa Rica: *Anopsicus chiriqui* Gertsch, 1982; '*Coryssocnemis*' *viridescens* Kraus, 1955; *Physocyclus globosus* (Taczanowski, 1873); and *Smeringopus pallidus* (Blackwall, 1858). The genera *Coryssocnemis* Simon, 1893 and *Smeringopus* Simon, 1890 are new for Costa Rica. It is argued that carefully directed collecting in certain areas and habitats will probably lead to a further considerable increase in known species.

**Key words**: Araneae, Pholcidae, taxonomy, Costa Rica.

When Reimoser (1939) published the arachnological results of the 1930 Austrian expedition to Costa Rica, he included four pholcid species: *Physocyclus dugesi*, *P. rotundus*, *Modisimus inornatus*, and *Metagonia caudata*, Four decades later, Zuñiga's (1980) annotated list of Costa Rican spiders still contained the same four species and no new entries. Gertsch's revisions then added three *Anopsicus* species (1982) and four *Metagonia* species (1986), bringing the total number to eleven. The present paper (1) discusses all previous records, showing that three of Reimoser's species were probably misidentified and do not occur in Costa Rica, (2) it briefly characterizes several Costa Rican pholcids recently described in other publications (Huber 1996b, 1997b, 1998b), and (3) describes two new species and presents illustrations of three undescribed species, resulting in a total of 33 pholcid species known from Costa Rica.

## MATERIALS AND METHODS

This work is primarily based on the pholcid collections of the Instituto National de Biodiversidad, Costa Rica (INBIO), the Escuela de Biología of the Universidad de Costa Rica (UCR), and the author's collection. These are probably the best collections of Costa Rican pholcids, but I have not made an effort to extensively borrow material from

North American and European collections, other than types of previously described Costa Rican pholcids and of species that appeared closely related to the new material, from the following institutions: The Natural History Museum, London (BMNH), Museum of Comparative Zoology, Cambridge (MCZ), American Museum of Natural History, New York (AMNH), Museum National d'Histoire Naturelle, Paris (MNHN).

Drawings were made with a compound microscope with camera lucida. Measurements (all in mm) were taken with ocular micrometers in a compound or a dissecting microscope. Measurement error was about +/- 0.07 mm for leg measurements, +/- 0.03 mm for other measurements. Averages are given for N≥5. Prosoma length was defined as the distance between frontal face of eye region and posterior border of carapace medially, but it varies widely with the angle at which the prosoma is viewed. The term carapace is used to refer to the dorsal part of the prosoma. The most accurate indicators of size are probably prosoma width and tibia length. Total size is simply the sum of prosoma length and opisthosoma length, regardless of the petiolus, and is given as an approximate indication of overall size. The tibia index ("tibind") is the length of the tibia divided by its width at the middle, and is so a measure of the 'slenderness' of the legs. The error for this index is about +/- 2. Diagnoses are only given for the genera in which species are (re)described, and these only intend to cover the Costa Rican species and can thus not be used for the entire genus. The names of two collectors are abbreviated as follows: Carlos E. Valerio (C.E.V.) and Bernhard A. Huber (B.A.H.).

## NATURAL HISTORY

Five of the 33 known Costa Rican pholcid species are anthropophilic. Of these, *Physocyclus globosus* can be found in almost every building, especially in bathrooms, in loose three dimensional webs, preferably in the corners between ceiling and walls (cf. Eberhard 1992b). *Modisimus culicinus* is a very small spider, and has in Costa Rica been found only at four localities, but it is easily confounded with juvenile *Physocyclus globosus* and may in fact be common and widespread. It lives in hidden places, under all sorts of objects, and builds no web or only a few fine threads close to the substrate (Huber 1996b). *Smeringopus pallidus* is a large pholcid that lives in much the same habitat as *P. globosus*, but is apparently much less common. *Physocyclus dugesi* has been recorded from several localities by Reimoser (1939); all new records (see below) are from the Central Valley in or near San José, but I have never found the species. Nothing is known about its habitat, but the records suggest it may be anthropophilic. The new species *Physocyclus guanacaste* was collected within the administration buildings of the Santa Rosa National Park, and is so far only known from that site.

All other species were collected in natural habitats, usually in forests. Here they inhabit a variety of microhabitats: some live under stones or in the leaf litter on the ground, either without webs or with fine 'two-dimensional' webs (all *Anopsicus* spp.) or in small dome-shaped webs (some *Modisimus* spp.). Some live close to the ground, in dome shaped webs between buttresses of trees, or in corners between the ground and fallen logs or other objects (several dark *Modisimus* spp.; probably '*Coryssocnemis*' *viridescens*). Some live higher up in the vegetation, either in dome shaped sheet webs which are usually in contact with the underside of one or more leaves that provide a shelter (some light *Modisimus* spp.) or on the underside of preferably large leaves of a variety of plant families, to which they attach a few barely visible threads (all *Metagonia* spp.).

Information about other aspects of natural history has been accumulating: on web construction and web structure in a *Modisimus* species and *Physocyclus globosus* (Briceño 1985; Eberhard 1992a, b; Eberhard & Briceño 1983), on courtship, copulation and other intraspecific interactions (Eberhard 1992b; Eberhard & Briceño 1983, 1985; Huber & Eberhard 1997; Huber 1996b, 1997b, 1998c), on population fluctuation (Huber unpubl. data), and on genital morphology and mechanics in several species (Huber & Eberhard 1997; Huber 1997b, 1998a, c).

## SPECIES THAT WERE ERRONEOUSLY REPORTED FROM COSTA RICA, AND NAMES THAT ARE SYNONYMS

*Modisimus inornatus* O. P.-Cambridge has been described and recorded from the Mexican states Tabasco, San Luis Potosí and Tamaulipas (O. P.-Cambridge 1895, 1896, 1899; Gertsch & Davis 1937, 1942), and later recorded from "La Palma between Irazu and Barba" in Costa Rica (Reimoser 1939). This species has been redescribed recently (Huber 1998b). It is not present in the collections of Costa Rican pholcids I studied. "La Palma" (Alto Palma) is only about 2 km from the type locality of *Modisimus guatuso* Huber, the most common *Modisimus* in Costa Rica (Huber 1998b). At this locality, no other dark *Modisimus* has been found, making it probable that Reimoser's record of *M. inornatus* is based on a misidentification.

*Metagonia caudata* O. P.-Cambridge is also a Mexican species. Gertsch (1986) synonymized the Panamanian records (Petrunkevitch 1911; Banks 1929) with the newly described *M. panama*, but did not comment on Reimoser's (1939) record from Turrialba, Costa Rica. *Metagonia caudata* is not present in the studied collections, but at least two other medium-sized to large *Metagonia* species occur near Turrialba: *M. rica* Gertsch and *M. reventazona* Huber. Reimoser's record is probably based on a misidentification.

*Physocyclus rotundus* O. P-Cambridge is a poorly known species. Only the female is known (O. P.-Cambridge 1899; F. O. P.-Cambridge 1902), and apart from the type locality (Coban, Guatemala) it has been recorded only once, from "San Isidro near San José", Costa Rica (Reimoser 1939). None of the three *Physocyclus* species recorded in the present paper agree with the original description of *P. rotundus*, and Reimoser's record is probably based on a misidentification.

Finally, *Metagonia turrialba* Gertsch is a synonym of *M. rica* Gertsch (Huber 1997b), a fact already suspected by Gertsch (1986) who had only one male from one species and one female from the other species available.

## SPECIES THAT HAVE NOT BEEN FOUND IN COSTA RICA BUT MAY BE PRESENT

The following five species have not been found in Costa Rica, but their distributions suggest they might occur there. *Pholcus phalangioides* (Fuesslin), *Artema atlanta* Walckenaer, and *Micropholcus fauroti* (Simon) are anthropophilic cosmopolitan species, and have been found in other American countries. American records of *P. phalangioides* include the USA, Brazil, Argentine and Chile; those of *A. atlanta* include the USA, several Antilles, Mexico, Panama and several South American countries; those of *M. fauroti* include the USA, Mexico, Puerto Rico and Cuba. *Anopsicus zeteki* (Gertsch) is a Panamanian species that has been recorded from the Canal Zone (Gertsch 1982; Nentwig 1993), and from David, Prov. Chiriquí (Huber 1996b), which is about 300 km from the Canal Zone but only about 50 km from the border with Costa Rica. As is true of most other *Anopsicus* species, it lives in the ground, under stones and in the leaf litter, and may therefore have gone unnoticed. Finally, *Modisimus david* Huber has been found both in Panama (David), and in Nicaragua (San Juan del Sur) (Huber 1996b), and almost certainly occurs between these localities in Costa Rica. It is, however, a minute spider, and lives in the same reclusive habitat as *Anopsicus zeteki* (Huber 1996b).

## GENERA WHOSE ABSENCE IN COSTA RICA IS TAXONOMICALLY IMPORTANT

Two genera supposedly occur both north and south of Costa Rica, but have not been found in Costa Rica: *Psilochorus* Simon and *Pholcophora* Banks. The type species of both genera are North American, and the South American representatives are mostly poorly known. Arguments based on the morphology of the genitalia have been presented that suggest that South American '*Psilochorus*' are not congeneric with the North American type species (Huber 1998c). Its absence from Costa Rica supports this idea.

*Pholcophora* is a poorly defined genus, with ten species in the USA and Mexico, and four species in South America. The apparent

absence in Central America appears to support the polyphyly of the genus, but more intense collecting of the small reclusive spiders is necessary.

## AN OUTLOOK

It seems probable that the present number of 33 pholcid species is still far from the actual number of species ocurring in Costa Rica. First, there are still some areas that have been poorly collected, e.g. the more remote regions of the Cordillera de Talamanca, the Peninsula de Osa, the Peninsula de Nicoya, the northern flatlands, and Cocos Island. Second, leaf litter species (e.g. *Anopsicus* spp.) have been collected in very few places and may be much more diverse than suggested by the few records. Third, caves have been almost completely neglected by collectors but may have a rich, maybe endemic fauna (cf. pholcid diversity in Mexican caves - Gertsch 1982). Finally, two species (*Modisimus bribri* Huber and *M. guatuso* Huber) are highly variable and may turn out to consist of several species each (discussion in Huber 1998b).

## DESCRIPTIONS AND REDESCRIPTIONS

### *Anopsicus* Chamberlin & Ivie, 1938

For synonyms and types see Gertsch (1982).

Costa Rican representatives are small pholcids (1.5-2 mm body length) with globular abdomen, 6 eyes in two triads on slightly elevated ocular area. Male pedipalpal femur with pointed and upward projecting ventral apophysis. Male chelicerae without modified hairs, with or without frontal apophyses. Legs relatively short (about 2-5 times body length), without spines; leg 4 longer than leg 2. For comprehensive description of the genus, see Gertsch (1982).

### *Anopsicus chiriqui* Gertsch, 1982
(Figs 1-10)

*A. chiriqui* Gertsch 1982: 133, figs 235-237, 250-252.

**Type data**: Male holotype and many males and females from **El Volcán**, Prov. Chiriquí, Panama, Aug. 9-14, 1950 (A.M.Chickering) (MCZ), examined.

**Other material examined**: COSTA RICA: 2 males, 4 females, 6 juvs from near **Rincón de Osa**, Prov. Puntarenas, Aug. 3-15, 1970 (C.E.V.) (UCR). 1 male from **Madreselva**, Los Lagos, Prov. Cartago, June 1995 (M.M.Chavarría, A.Solano) (INBIO). The following females are assigned tentatively to this species: 1 female from **Rincón de Osa**, Prov. Puntarenas, Feb. 19 - March 13, 1967 (C.E.V.) (UCR). 1 female from **Playa Dominical**, Prov. Puntarenas, Nov. 9-10,1968 (C.E.V.) (UCR).

**Diagnosis**: Typical small *Anopsicus*, distinguished from congeners by the form of the procursus (Figs 4, 7), the bifid bulbal apophysis (Fig. 8), and the lack of frontal apophyses on the male chelicerae (Fig. 5).

**Redescription**: Male. Prosoma unicolored ochre, with a fine darker Y mark behind ocular elevation (Fig. 1). Opisthosoma greenish ochre. Legs colored as prosoma. Eyes and ocular area see Figs 1-2. Pedipalps as shown in Figs 3-4. Procursus (Fig. 7), bulbal apophysis (Fig. 8), and distal femur apophysis (Fig. 6) of distinctive shapes. Chelicerae as in Fig. 5.

Measurements of male holotype: Total length: 1.55, prosoma length: 0.60, width: 0.60, opisthosoma length: 0.95; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.68 | 1.26 | 1.05 | — |
| Pat | 0.25 | 0.25 | 0.25 | — |
| Tib | 1.65 | 1.12 | 0.91 | — |
| Met | 2.00 | 1.47 | 1.26 | — |
| Tar | 0.77 | 0.56 | 0.4 | — |
| Total | 6.35 | 4.66 | 3.96 | — |
| Tibind | 19 | 13 | 10 | — |

Female. Colors and habitus as in male. Epigynum slightly darker, of simple form (Fig. 9).

Measurements of a female from near Rincón de Osa: Total length: 1.36, prosoma length: 0.60, width: 0.65, opisthosoma length: 0.76; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.42 | 1.16 | 1.05 | 1.42 |
| Pat | 0.21 | 0.21 | 0.21 | 0.21 |
| Tib | 1.53 | 1.05 | 0.95 | 1.37 |
| Met | 1.84 | 1.37 | 1.26 | 1.68 |
| Tat | 0.68 | 0.53 | 0.42 | 0.47 |
| Total | 5.68 | 4.32 | 3.89 | 5.15 |
| Tibind | 21 | 14 | 13 | 20 |

**Variation**: Tibia 1 in other material: El Volcán: 15 males: x=1.72 (1.58-1.89); 9 females: x=1.54 (1.44-1.65); Rincón de Osa: 2 males: 1.47, 1.63; 4 females: 1.37, 1.37, 1.53, 1.58; Dominical: 1 female: 1.50; Madreselva: 1 male: 1.75.

**Distribution**: Known only from above mentioned localities in Prov. Chiriquí, Panama, and southern Costa Rica (Fig. 10).

## ***Anopsicus concinnus*** Gertsch, 1982 (Figs 10-12)

*A. concinnus* Gertsch 1982: 131, figs 53, 229-231.

**Type data**: Female holotype from "Puntarenas Reserve near **Cabuya**", Prov. Puntarenas, Costa Rica, July 9, 1976 (M. and C.Goodnight) (AMNH), examined.

**Other material**: not known.

**Diagnosis**: Very small *Anopsicus* with the eye triads close together (Fig. 11).

**Redescription**: Female. Prosoma ochre-yellow, with a fine darker Y mark behind ocular area (Fig. 11). Legs same color, opisthosoma grayish. Eye triads close together (Fig. 11). Epigynum a simple plate (Fig. 12).

Measurements of female holotype: Total length: 1.16, prosoma length: 0.58, width: 0.55, opisthosoma length: 0.65; The legs are lost or loose and broken. Gertsch's (1982) measurements for leg 1 are: fem: 1.1, patella: 0.21, tibia: 1.2, metatarsus: 1.12, tarsus: 0.4; total length: 4.03.

**Distribution**: Known only from type locality (Fig. 10).

## ***Anopsicus facetus*** Gertsch, 1982 (Figs 10, 13-22)

*A. facetus* Gertsch 1982: 131, figs 50, 219-221, 244-246.

**Type data**: Male holotype (examined), and four female paratypes (not examined) from "**Monteverde**, Puntarenas Reserve", July 1, 1976 (M. and C.Goodnight) (AMNH).

**Other material examined**: COSTA RICA: 2 males, 2 females, 1 juv. from 5 km NE **Tilarán**, Prov. Guanacaste, June 20, 1968 (C.E.V.) (UCR). 1 male, 1 female, 1 juv. from **San Ramón de Dos Rios**, 1.5 km NW Hacienda Nueva Zelandia, Prov. Alajuela, elev. 620 m, June-July, 1995 (C.Cano) (INBIO).

**Diagnosis**: Typical small *Anopsicus*, distinguished from congeners by the form of the procursus (Figs 16, 20), and the two protuberances on the female epigynum (Figs 21-22).

**Redescription**: Male. Prosoma unicolored ochre to reddish ochre, with a fine darker Y mark behind ocular elevation (Fig. 13). Opisthosoma greenish ochre. Legs colored as prosoma. Eyes and ocular area as in Figs 13-14. Pedipalps as shown in Figs 15-16. Procursus (Fig. 20), bulbal apophysis (Fig. 18), and distal femur apophysis (Fig. 19) of distinctive shapes. Chelicerae with frontal apophyses (Fig. 17).

Measurements of male holotype: Total length: 1.74, prosoma length: 0.76, width: 0.79, opisthosoma length: 0.98; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.40 | 1.12 | 0.95 | 1.54 |
| Pat | 0.28 | 0.25 | 0.25 | 0.28 |
| Tib | 1.37 | 0.98 | 0.84 | 1.40 |
| Met | 1.61 | 1.26 | 1.26 | 1.75 |
| Tar | 0.60 | 0.35 | 0.42 | 0.56 |
| Total | 5.26 | 3.96 | 3.72 | 5.53 |
| Tibind | 14 | 10 | 9 | 16 |

Female. Colors and habitus as in male. Epigynum slightly darker, with a pair of simple protuberances anteriorly (Figs 21-22).

Measurements of a female from Tilarán: Total length: 1.73, prosoma length: 0.65, width: 0.68, opisthosoma length: 1.08, legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.16 | 0.95 | 0.89 | 1.21 |
| Pat | 0.21 | 0.21 | 0.21 | 0.21 |
| Tib | 1.16 | 0.87 | 0.74 | 1.18 |
| Met | 1.32 | 1.11 | 1.03 | 1.37 |
| Tar | 0.53 | 0.45 | 0.42 | 0.47 |
| Total | 4.38 | 3.59 | 3.29 | 4.44 |
| Tibind | 15 | 10 | 9 | 16 |

**Variation**: Tibia 1 in other material: Tilarán: 2 males: 1.39, 1.50; 1 female: 1.26; San Ramón de Dos Rios: 1 female: 1.48.

**Distribution**: Known only from the three mentioned localities in north-western Costa Rica (Fig. 10).

## ***Anopsicus tico*** new species
(Figs 10, 23-31)

**Type data**: Male holotype, female paratype, and numerous males and females from **Turrialba** (not further specified), Prov. Cartago, Costa Rica, July 25 - Aug. 15, 1965 (A.M.Chickering) (MCZ).

**Note**: The type material was erroneously labelled as "*A. turrialba*". Since the two species are easily distinguished (see redescription of *A. turrial-ba* below), this is probably a case of a labelling error, and it is difficult to decide at this point whether the type of *A. turrialba* or the present mate-rial received the wrong collection-data label. However, the distribution map (Fig. 10) rather suggests that the collection data are correct for the present material, but wrong for the *A. turrialba* type.

**Other material examined**: COSTA RICA, Prov. San José: 1 male from the Universidad de Costa Rica, **Ciudad Universitaria**, May 5, 1981 (collector not given) (UCR). 1 male from **Cuevas del Virilla**, May 25, 1967 (S.Salas, C.E.V.) (UCR).

**Etymology**: "Tico" is the vulgar form of "Costa Rican" (noun and adjective).

**Diagnosis**: Typical *Anopsicus*, distinguished from congeners by the form of the procursus (Figs 26, 28).

**Description**: Male. Prosoma unicolored orange-ochre, with a fine darker Y mark behind ocular elevation (Fig. 23). Opisthosoma greenish ochre. Legs colored as prosoma. Eyes and ocular area see Figs 23-24. Pedipalps as shown in Figs 25-26. Procursus (Fig. 28), bulbal apophysis (Fig. 30), and distal femur apophysis (Fig. 29) of distinctive shapes. Chelicerae with a pair of small frontal apophyses (Fig. 27, often even smaller).

Measurements of male holotype: Total length: 1.84, prosoma length: 0.76, width: 0.79, opisthosoma length: 1.08; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 2.04 | 1.61 | 1.40 | 2.04 |
| Pat | 0.32 | 0.28 | 0.28 | 0.32 |
| Tib | 2.00 | 1.54 | 1.33 | 2.04 |
| Met | 2.39 | 1.89 | 1.75 | 2.39 |
| Tar | 0.77 | 0.63 | 0.63 | 0.63 |
| Total | 7.52 | 5.95 | 5.39 | 7.42 |
| Tibind | 21 | 15 | 14 | 21 |

Female. Colors and habitus as in male, with simple, slightly darker epigynum (Fig. 31).

Measurements of female paratype: Total length: 1.76, prosoma length: 0.68, width: 0.76, opisthosoma length: 1.08; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.82 | 1.47 | 1.40 | 1.82 |
| Pat | 0.28 | 0.28 | 0.28 | 0.28 |
| Tib | 1.89 | 1.40 | 1.26 | 1.82 |
| Met | 2.18 | 1.72 | 1.54 | 2.18 |
| Tar | 0.67 | 0.63 | 0.56 | 0.63 |
| Total | 6.84 | 5.50 | 5.04 | 6.73 |
| Tibind | 20 | 16 | 14 | 23 |

**Variation**: Tibia 1 in other material: Turrialba: 20 males: x=1.90 (1.68-2.11); 20 females: x=1.95 (1.72-2.11); Ciudad Universitaria: 1 male: 2.00; Cuevas del Virilla: 1 male: 1.63.

**Distribution**: Known only from above mentioned localities in central Costa Rica (Fig. 10).

## ***Anopsicus turrialba*** Gertsch, 1982
(Figs. 10, 32-40)

*A. turrialba* Gertsch 1982: 131, 133, figs 222-224, 259-261.

**Type data**: Male holotype from **Turrialba** (not further specified), Prov. Cartago, Costa Rica, July 25 - Aug. 15, 1965 (A.M.Chickering) (MCZ), examined. The collection data may be wrong (see Note below).

**Note**: One vial with numerous males and females, labelled "*A. turrialba*" contains a different

species (*A. tico* n.sp. see above). Since the differences between the two species are conspicuous it seems probable that an error happened with the labels, and Gertsch's (1982) "numerous males and females" of *A. turrialba* may be in another vial with a wrong label. Because of this error, the locality above may not be the real collecting area. This is supported by the distribution map (Fig. 10).

**Other material examined**: 1 male, 1 female from Estacion **Sirena**, Sendero Espaveles, Prov. Puntarenas, elev. 0-10 m, April 5-23, 1995 (B.Gamboa, A.Picado) (INBIO).

**Diagnosis**: Very small *Anopsicus*, distinguished from congeners by the form of the male bulb and procursus (Figs 34-35, 37-38), and the long apophyses on the chelicerae (Figs 32, 39).

**Redescription**: Male. Prosoma ochre yellow, with a fine darker Y mark behind ocular elevation (Fig. 32). Opisthosoma grayish. Legs colored as prosoma. Eyes and ocular area as in Figs 32-33. Pedipalps as shown in Figs 34-35. Procursus (Figs 37-38), bulb (Fig. 34), and distal femur apophysis (Fig. 36) of distinctive shapes. Chelicerae with long frontal apophyses (Figs 32, 39).

Measurements of male holotype: Total length: 1.33, prosoma length: 0.54, width: 0.60, opisthosoma length: 0.79; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 1.12 | 0.84 | 0.77 | 1.12 |
| Pat | 0.21 | 0.21 | 0.21 | 0.21 |
| Tib | 1.16 | 0.77 | 0.70 | 1.05 |
| Met | 1.40 | 0.98 | 0.95 | 1.16 |
| Tar | 0.42 | 0.35 | 0.35 | 0.35 |
| Total | 4.31 | 3.15 | 2.98 | 3.89 |
| Tibind | 15 | 10 | 9 | 14 |

Measurements of male from Sirena: prosoma width: 0.56, tibia 1 length: 1.00.

Female. Colors and habitus as in male. Epigynum simple (Fig. 40), slightly darker.

Measurements of female from Sirena: Total length: 1.15, prosoma length: 0.48, width: 0.52, opisthosoma length: 0.67; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | — | 0.71 | 0.61 | 0.84 |
| Pat | — | 0.21 | 0.21 | 0.21 |
| Tib | — | 0.61 | 0.53 | 0.82 |
| Met | — | 0.79 | 0.74 | 0.89 |
| Tar | — | 0.32 | 0.32 | 0.34 |
| Total | — | 2.64 | 2.41 | 3.10 |
| Tibind | — | 10 | 8 | 13 |

**Distribution**: Known only from above mentioned localities (Fig. 10).

## *Metagonia* Simon, 1893

For a comprehensive treatment of the genus see Gertsch (1986). Costa Rican representatives are small to medium sized (about 2-3 mm body length) light pholcids, with six eyes in two triads far apart, opisthosoma often pointed behind. Procursus with hinged ventral process, bulb with long, weakly sclerotized embolus, male chelicerae usually with club shaped hairs frontally, rarely also with apophyses. Legs relatively long (leg 1 about 6-11 times body length), without spines; leg 4 shorter than or equal to leg 2. External female genitalia usually simple, internally with seminal receptacle. For more comprehensive descriptions of the genus, see Gertsch (1986) and Huber (1997b).

### *Metagonia hondura* Huber, 1997
(Figs 41-46)

*M. hondura* Huber 1997b: fig. 21a-c.

**Type data**: Female holotype from Bajo la Hondura (15 km NE San José, Costa Rica), elev. about 1200 m, Nov. 3, 1995 (B.A.H.) (AMNH), examined.

**Other material examined**: 1 male, 3 females from type locality, Jan. 2, 1997 (B.A.H.), male and one female deposited in AMNH, other females in author's collection.

**Diagnosis**: Small *Metagonia* with distinctive procursus (Figs 43-44) and internal female genitalia (Fig. 76).

**Description of male**: Prosoma and legs pale yellowish, opisthosoma slightly darker. Clypeus without modifications. Chelicerae with only a few club shaped hairs distally, and fine ridged bands proximally (Fig. 45). Pedipalps as in Figs 41-42, procursi as in Figs 43-44. For description of female see Huber (1997b).

Measurements: Total length: 1.8, prosoma length: 0.7, width: 0.70, opisthosoma length: 1.8; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | — | 3.2 | 2.4 | 3.5 |
| Pat | — | 0.2 | 0.2 | 0.2 |
| Tib | — | 3.0 | 2.1 | 3.0 |
| Met | — | 4.7 | 3.0 | 4.6 |
| Tar | — | 1.0 | 0.7 | 0.8 |
| Total | — | 12.1 | 8.4 | 12.1 |
| Tibind | — | 43 | 33 | 48 |

**Distribution**: Known only from type locality (Fig. 46)

## ***Metagonia osa*** Gertsch, 1986
(Figs 46-53)

*M. osa* Gertsch 1986: 57, 59, figs 56-62.

**Type data**: Male holotype (examined) and two female paratypes (not examined) from 2.5 km SW **Rincón de Osa**, Peninsula de Osa, Prov. Puntarenas, Costa Rica, March 8-12, 1967 (OTS course) (MCZ).

**Other material examined** (in author's collection unless otherwise noted): COSTA RICA: Prov. Puntarenas: 11 males, 11 females, 2 juvs from **Esquinas Rainforest**, La Gamba, July 2-3, 1996 (B.A.H.); 3 males, 7 females from forest at **Bahia Drake**, July 3, 1997 (B.A.H.); 4 males, 12 females from **Wilson Botanical Gardens**, Las Cruces, July 5, 1996 (B.A.H.); 2 males from **Estacion Pittier**, elev. 1750 m, June 8, 1995 (parataxonomist's course) (INBIO); 1 female, tentatively assigned to this species, from **San Vito de Coto Brus**, March 14-20, 1967 (C.E.V.) (UCR).

**Diagnosis**: Medium sized *Metagonia*, characterized by the form of the procursus (Figs 51-52), the male apophysis on the clypeus (Figs 49-50), and the internal female genitalia (Fig. 53).

**Redescription**: Male. Basic color light ochre-yellow, with or without dark and white spots on the opisthosoma (Figs 47-48). Legs with dark 'knees' (patellae and tarsus-metatarsus joints). Six eyes in two triads (Fig. 47), clypeus with characteristic apophysis (Figs 49-50), chelicerae with several distal club shaped hairs (Fig. 49). Palps as shown in Figs 51-52.

Measurements of male holotype: Total length: 2.64, prosoma length: 0.83, width: 0.89, opisthosoma length: 1.8 1; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 6.23 | 4.20 | 2.68 | 4.20 |
| Pat | 0.43 | 0.36 | 0.29 | 0.36 |
| Tib | 6.38 | 3.77 | 2.32 | 3.48 |
| Met | 11.01 | 5.94 | 3.19 | 5.29 |
| Tar | 1.45 | 0.94 | 0.65 | 0.72 |
| Total | 25.50 | 15.21 | 9.13 | 14.05 |
| Tibind | 74 | 48 | 29 | 40 |

Female. Colors and habitus as in male. Internal genitalia as in Fig. 53.

Measurements of a female from Esquinas Rainforest: Total length: 2.54, prosoma length: 0.86, width: 0.83, opisthosoma length: 1.68; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 4.93 | 3.62 | 2.39 | 3.91 |
| Pat | 0.43 | 0.36 | 0.29 | 0.36 |
| Tib | 5.00 | 3.12 | 2.03 | 3.04 |
| Met | 7.68 | 4.57 | 2.75 | 4.49 |
| Tar | 1.44 | 0.94 | 0.65 | 0.72 |
| Total | 19.48 | 12.61 | 8.11 | 12.52 |
| Tibind | 53 | 33 | 21 | 32 |

**Variation**: Tibia 1 in other material: Esquinas Rainforest: 10 males: x=6.03 (5.43-6.52); 10 females: x=4.92 (4.64-5.14); Wilson Botanical Gardens: 3 males: 6.52, 6.59, 6.88; 12 females: x=5.17 (4.78-5.43); Estacion Pittier: 2 males: 6.38, 6.96; San Vito: 1 female: 4.93.

**Distribution**: Known only from southern Prov. Puntarenas, Costa Rica (Fig. 46).

## ***Metagonia selva*** Gertsch, 1986
(Figs 46, 54-57)

*M. selva* Gertsch 1986: 57, figs 48-50, 53-55.

**Type data**: Male holotype (examined) and two female paratypes (not examined) from **Finca La**

**Selva**, elev. about 50 m, Prov. Heredia, Costa Rica, Jan. 1978 (W.G.Eberhard) (MCZ).

**Other material**: not known.

**Diagnosis**: Medium sized *Metagonia*, characterized by the form of the procursus (Figs 56-57), and the male apophysis on the clypeus (Figs 54-55).

**Redescription of male**: Basic color light ochre-yellow, with darker spots dorsally on the opisthosoma. Legs with dark 'knees' (patellae and tarsus-metatarsus joints). Six eyes in two triads (Fig. 54), clypeus with characteristic apophysis (Figs 54-55), chelicerae with several club shaped hairs (Fig. 54). Palps as shown in Figs 56-57.

Measurements of male holotype: Total length: 2.41, prosoma length: 0.79, width: 0.76, opisthosoma length: 1.62; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | — | 3.26 | 2.03 | 3.33 |
| Pat | — | 0.36 | 0.29 | 0.36 |
| Tib | — | 2.75 | 1.59 | 2.75 |
| Met | — | 3.48 | 2.25 | 3.99 |
| Tar | — | — | 0.58 | 0.87 |
| Total | — | — | 6.74 | 11.30 |
| Tibind | — | 39 | 22 | 39 |

**Distribution**: Known only from type locality (Fig. 46)

## *Physocyclus* Simon, 1893

For synonyms and types see Brignoli (1981). Costa Rican representatives are large (usually >3 mm body length) pholcids with eight eyes, with highly inflated pedipalps, male chelicerae with stridulatory files laterally and sclerotized cones frontally. Female epigynum large and sclerotized, often complex. Legs without spines.

## *Physocyclus guanacaste* new species (Figs 58-64)

**Type data**: Male holotype, female paratype, and 11 males, 47 females from administration area of **Santa Rosa National Park**, Prov. Guanacaste, Costa Rica, Jan. 1991 (D.H.Janzen) (INBIO).

**Other material**: not known.

**Etymology**: Species name from the province of Guanacaste.

**Diagnosis**: Large *Physocyclus*, closely related to *P. globosus*, distinguished by the form of the procursus (Fig. 61), the male chelicerae (Fig. 59), the external female genitalia (Figs 62-63), and the vivid dark pattern on prosoma (Fig. 58) and legs.

**Description**: Male. Carapace orange-ochre with brown pattern of spots (Fig. 58). Sternum slightly lighter, with a pair of brown spots behind the edges of the dark labium. Clypeus dark below eyes, towards the chelicerae the dark area fades into a pair of stripes. Chelicerae and palps orange with sclerotized parts brown and black (Figs 59-61). Opisthosoma dorsally yellow, but densely covered with many black and fewer white spots. Genital plate yellow-brown, with a pair of dark spots lateral to it. Legs orange ochre, with dark spots ventrally on coxae and trochanters; femora proximally with 2-3 dark ventral spots and distally with dark ring; patellae dark; tibiae with dark rings proximally and distally; metatarsi with dark rings proximally. Eight eyes on moderately elevated ocular area (Fig. 58), chelicerae with stridulatory files (the plectrum is on the pedipalpal femur), and several cone shaped apophyses (Fig. 59). Pedipalp as shown in Fig. 60, with distinctive bulb and procursus (Fig. 61). Legs without spines.

Measurements of male holotype: Total length: 4.0, prosoma length: 1.7, width: 1.87, opisthosoma length: 2.3; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 11.7 | 8.8 | 6.7 | 9.3 |
| Pat | 0.9 | 0.9 | 0.8 | 0.8 |
| Tib | 11.7 | 8.2 | 5.5 | 8.3 |
| Met | 18.0 | 12.6 | 8.7 | 12.5 |
| Tar | 1.7 | 1.3 | 0.9 | 1.2 |
| Total | 44.0 | 31.8 | 22.6 | 32.1 |
| Tibind | 65 | 47 | 31 | 44 |

Female. Colors mostly as in male, clypeus darker, sternum almost completely dark, only one light spot centrally and one at the basis of each coxa. Posteriorly on the carapace there is a sclerotized cone that acts against a sclerotized area on the opisthosoma, above the pedicel. No stridulatory files on chelicerae. Opisthosoma colored as in male, with large, black epigynum (Figs 62-63). Legs as in male.

Measurements of female paratype: Total length: 3.8, prosoma length: 1.5, width: 1.68, opisthosoma length: 2.4; legs:

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Fem | 8.0 | 5.9 | 4.6 | 6.5 |
| Pat | 0.7 | 0.7 | 0.7 | 0.7 |
| Tib | 7.7 | 5.3 | 3.8 | 5.7 |
| Met | 10.9 | 7.9 | 5.6 | 8.3 |
| Tar | 1.6 | 1.0 | 0.9 | 1.2 |
| Total | 28.9 | 20.8 | 15.6 | 22.4 |
| Tibind | 43 | 31 | 22 | 30 |

**Variation**: Tibia 1 in other material: 8 males: x=10.6 (7.5-12.5); 44 females: x=7.6 (5.8-9.7).

**Distribution**: Known only from type locality (Fig. 64).

## ANNOTATED LIST OF COSTA RICAN PHOLCIDS

This section lists all described Costa Rican pholcids alphabetically and summarizes the information available about each species. Well described species are only shortly characterized, and illustrated only with the simple line drawings used for the key. Type data of these species have been published recently elsewhere and are therefore not given. Unsufficiently well described species as well as new species were treated in the previous section but are included to make the list complete.

***Anopsicus chiriqui*** Gertsch, 1982
see redescription above

***Anopsicus concinnus*** Gertsch, 1982
see redescription above

***Anopsicus facetus*** Gertsch, 1982
see redescription above

***Anopsicus tico*** n.sp.
see description above

***Anopsicus turrialba*** Gertsch, 1982
see redescription above

***'Coryssocnemis' viridescens*** Kraus, 1955
(Figs 64-69)

*C. viridescens* Kraus 1955: 14-15, figs 24-26.
'*C.*' *viridescens*: Huber 1998c: figs 4a,b, 5a,b, 7c,d.

**Diagnosis**: Eight-eyed, medium sized (2-3 mm body length) dark pholcid (Fig. 65), with distinct form of the male bulb and procursus (Figs 66-67), male chelicerae without sexually dimorphic modifications, female with large epigyneal plate (Fig. 68) and paired 'stridulatory' apparatus (Fig. 69). For more detailed figures see Huber 1998c.

**Distribution**: The species was originally described from El Salvador (La Libertad, San Salvador, San Vicente - Kraus 1955) and further reported from two localities in Nicaragua (Huber 1998c). The following records from Costa Rica (Fig. 64) are new: Prov. Guanacaste: 3 males, 1 female, 4 juvs from **Parque Nacional Santa Rosa**, administration area, Jan. 1991 (D.H.Janzen) (INBIO); 1 male, 2 females 2 juvs from Libano, **Tilarán**, Dec. 1964 and Dec. 1968 (C.E.V.) (UCR); 3 males, 6 females from **Sámara**, June 5, 1997 (B.A.H.), in author's collection; 2 penultimate stage males, tentatively assigned to this species, from **Palo Verde National Park**, July 1996 (R.L. Rodriguez), in author's collection.

**Habitat**: In Nicaragua as well as in Sámara, Costa Rica, the spiders were found in dome-shaped webs near the ground, with retreats into the substrate or under rocks, fallen logs, leaves, etc.

**Others**: The genus name is put under quotation marks because Central American '*Coryssocnemis*' are probably not congeneric with the type species, *C callaica* Simon, 1893 from Venezuela (Huber 1998c). Data on courtship, copulation, genital mechanics and other aspects of natural history are given in Huber (1998c).

***Metagonia delicata*** (O. P.-Cambridge, 1895)
(Figs 70-72, 81)

*Micromerys delicatus* O. P.-Cambridge 1895: 149-150, pl. 21, figs 7, 7a-c; F. O. P.-Cambridge 1902: 370, pl. 35, figs 6, 6a; Deeleman-Reinhold 1986: 47; Nentwig 1993: 97.
*Metagonia delicata*: Huber 1997b: figs 3a-c, 4a,b, 5a,b, 6, 7.

**Diagnosis**: Small (< 2 mm) *Metagonia*, with characteristic long s-shaped apophysis on the procursus (Fig. 70), with club-shaped hairs and frontal apophyses on male chelicerae (Fig. 71). Female internal genitalia asymmetric (Fig. 72). For more detailed illustrations see Huber 1997b.

**Distribution**: The species has a wide distribution ranging at least from Mexico to Panama (Huber 1997b). In Costa Rica it has been found at two localities, in Hitoy Cerere, and at the Rio Reventazon

near Turrialba (Fig. 81, exact collection data in Huber 1997b).

**Habitat**: On the underside of preferably large leaves, in humid conditions, on a few indistinct threads.

### ***Metagonia hitoy*** Huber, 1997
(Figs 46, 73-75)

*M. hitoy* Huber 1997b: fig 18a-e.

**Diagnosis**: Medium sized *Metagonia* with dark ring on carapace (Fig. 73), distinctive procursus (Fig. 74) and internal female genitalia (Fig. 75). For more detailed illustrations see Huber 1997b.

**Distribution**: Known only from type locality, Hitoy Cerere Biol. Reserve, Prov. Limón, Costa Rica (Fig. 46; exact collection data in Huber 1997b).

**Habitat**: On the underside of leaves.

### ***Metagonia hondura*** Huber, 1997
(Figs 41-46, 76)

*M. hondura* Huber 1997b: fig. 2la-c.
Description of male see above. Female internal genitalia see Fig. 76 (for more detailed figures of female see Huber 1997b).

### ***Metagonia osa*** Gertsch, 1986
see redescription above

### ***Metagonia reventazona*** Huber, 1997
(Figs 77-81)

*M. reventazona* Huber 1997b: figs 16a-d, 17a-e.

**Diagnosis**: Medium sized *Metagonia* with short blunt horn on male clypeus. (Fig. 77), proximal apophyses on male chelicerae (Fig. 78), distinctive form of procursus (Fig. 79) and internal female genitalia (Fig. 80).

**Distribution**: Known from type locality (near Turrialba, Prov. Cartago), and two localities in Prov. Limón (Siquirres, Hitoy Cerere) (Fig. 81; exact collection data in Huber 1997b). The species was also found on Bocas del Toro Island, Panama (Huber 1997b).

**Habitat**: On the underside of preferably large leaves, in humid conditions, on a few hardly visible threads.

### ***Metagonia rica*** Gertsch, 1986
(Figs 81-84)

*M. rica* Gertsch 1986: 59, figs 45-47; Huber 1997b: figs 12a,b, 13a-c, 14a-f, 15, 25b, 27a-c, 28a,b.
*M. turrialba* Gertsch 1986: 59, figs 51-52 (synonymized by Huber 1997b).

**Diagnosis**: Medium sized (about 2.5-3 mm body length) *Metagonia* with a pair of rounded apophyses on the male clypeus (Fig. 82). Palp as in Fig. 83, female internal genitalia as in Fig. 84. For more detailed figures see Huber 1997b.

**Distribution**: This species seems to be the most widely distributed *Metagonia* in Costa Rica (Fig. 81, exact collection data in Huber 1997b). The species also occurs in Panama (Bocas del Toro Island - Huber 1997b).

**Habitat**: Usually on the underside of large leaves, at rest with their body pressed against the surface. In the Reserva Biologica San Ramón I could not find the spider in the forest but in large quantities within the biological station building (in comers at the ceiling; Huber 1997b).

**Others**: Courtship, copulation and genital mechanics were described by Huber (1997b). A morphometric analysis of some characters is presented by Eberhard et al. (1998).

### ***Metagonia selva*** Gertsch, 1986
see redescription above

### ***Metagonia talamanca*** Huber, 1997
(Figs 81, 85-86)

*M. talamanca* Huber 1997b: figs 10a,b, 11a-c.

**Diagnosis**: Small (about 2 mm body length) *Metagonia* with distinctive procursus (Fig. 85), and asymmetric internal female genitalia (Fig. 86). For more detailed figures see Huber 1997b.

**Distribution**: Known only from three localities in Costa Rica, all between 1300 and 1750 m (Fig. 81; exact collection data in Huber 1997b).

**Habitat**: On the underside of leaves.

***Metagonia uvita*** Huber, 1997
(Figs 81, 87-88)

*M. uvita* Huber 1997b: figs 8a-e, 9.

**Diagnosis**: Small (< 2 mm) *Metagonia* with characteristic form of procursus (Fig. 87). Female internal genitalia asymmetric (Fig. 88). For more detailed illustrations see Huber 1997b.

**Distribution**: Known only from south eastern Costa Rica (Fig. 81; exact collection data in Huber 1997b). New records: Prov. Puntarenas: 2 males, 2 females from forest near beach at **Herradura**, March 7, 1997 (B.A.H.); 5 males, 3 females from forest at **Bahia Drake**, July 3, 1997 (B.A.H.).

**Habitat**: On the underside of several kinds of large leaves.

***Modisimus bribri*** Huber, 1998
(Figs 89-90, 100)

*M. bribri* Huber 1998b: figs 1-23.

**Diagnosis**: Variable light *Modisimus* without black spots on pale-greenish opisthosoma, procursus as in Fig. 89, palpal femur apophysis as in Fig. 90. For more detailed figures see Huber 1998b.

**Distribution**: Widely distributed throughout Costa Rica (Fig. 100, exact collection data see Huber 1998b). The species is also known from Panama (Bocas del Toro Island - Huber 1998b).

**Habitat**: In dome shaped webs in branches and twigs usually about 1-1.5 m above the ground, with the apex of the dome connected to the underside of a leave (Huber 1998b).

**Others**: The populations included under this highly variable species may eventually turn out to be several species (discussion in Huber 1998b).

***Modisimus cahuita*** Huber, 1998
(Figs 91, 100)

*M. cahuita* Huber 1998b: figs 24-35.

**Diagnosis**: Large (> 3 mm) dark *Modisimus*, characterized by the paired protuberances on the epigynum (Fig. 91), two rows of spines on the male femur 1, and only up to four spines on each chelicera. For more detailed figures see Huber 1998b.

**Distribution**: Known only from two localities in southern Prov. Limón (Fig. 100; exact collection data in Huber 1998b).

**Habitat**: In dome shaped webs about 5-20 cm above the ground.

***Modisimus coco*** Huber, 1998
(Figs 92-93, 100)

*M. coco* Huber 1998b: figs 45-51.

**Diagnosis**: Small (about 2 mm body length) light *Modisimus* with distinctive procursus (Fig. 92) and palpal femur apophysis (Fig. 93). Female unknown.

**Distribution**: Known only from one male from Isla del Coco, Costa Rica (Fig. 100; exact collection data in Huber 1998b).

**Habitat**: unknown.

***Modisimus culicinus*** (Simon, 1893)
(Figs 94-96, 101)

*Hedypsilus culicinus* Simon 1893a: 322; Simon 1893b: 484-486, figs 483-484, 486; Gertsch & Peck 1992: 1192, figs 20-26. Huber 1997a: 95-98, figs 1-3.
*Hedypsilus lawrencei*: de Lessert 1938: 434-436, figs 15-17 (synonymized by Huber 1996b).
*Modisimus culicinus*: Huber 1996b: figs 2a-c, 3a,b, 4a,b.

**Diagnosis**: Very small (1-1.5 mm body length) dark *Modisimus* with a cuticular lobe frontally on the eye turret in males (Fig. 94). Male chelicerae with a pair of frontal horns (Fig. 95). Female epigynum as in Fig. 96. For more detailed illustrations see Huber 1996b, 1997a.

**Distribution**: Pantropical (Huber 1996b). In Costa Rica the species has been found at four localities (Fig. 101): Several males and females from **Ciudad Universitaria**, Prov. San José, 1995-1997 (B.A.H.); 2 males, 1 female from house in **Fortuna**, Prov. Alajuela, Oct. 1995 (B.A.H.), both in author's collection; 1 female from within INBIO, **Santo Domingo de Heredia**, Prov. Heredia, Dec. 11, 1996 (C.Viquez) (INBIO); 1 female from **Palo Verde**, Prov. Guanacaste, April 14-16, 1995 (E.Navarro) (INBIO).

**Habitat**: Almost all records of this species are from within human buildings. The spiders are hidden under all sorts of objects, and swiftly run away when disturbed (Huber 1996b).

**Others**. Notes on the natural history and genital mechanics are given by Huber (1996b, 1997a, 1998c).

### ***Modisimus dominical*** Huber, 1998
(Figs 97-99, 101)

*M. dominical* Huber 1998b: figs 52-60.

**Diagnosis**: Large (about 3 mm body length) dark *Modisimus*, characterized by the form of the procursus (Fig. 97), the form of the modified hairs on the chelicerae (club-shaped), the palpal femur apophysis (Fig. 98), and the form of the epigynum (Fig. 99). For more detailed figures see Huber 1998b.

**Distribution**: Known from several localities in southern Prov. Puntarenas (Fig. 101; exact collection data in Huber 1998b). New record: 4 males, 2 females from forest at **Bahia Drake**, Prov. Puntarenas, July 3, 1997 (B.A.H.).

**Habitat**: In dome-shaped webs near the ground, with a retreat in the substrate or under rocks.

### ***Modisimus guatuso*** Huber, 1998
(Figs 102-103)

? *M. inornatus* Reimoser: 1939: 334 (see discussion above).
*M.* sp. C: Eberhard & Briceño 1983: 189-195; Eberhard & Briceño 1985: 29-36, fig. 2c, d.
*M.* sp.: Eberhard 1992a: 25-34, figs 1-9.
*M. guatuso* Huber 1998b: figs 61-94.

**Diagnosis**: Variable dark *Modisimus*, procursus as in Fig. 103, epigynum flat. For more detailed figures see Huber 1998b.

**Distribution**: Widely distributed throughout Costa Rica (Fig. 102; exact collection data in Huber 1998b). Also recorded from Panama (Prov. Bocas del Toro, Prov. Chiriquí) and Nicaragua (Bluefields) (Huber 1998b). New record: 2 males, 7 females from forest at **Bahia Drake**, Prov. Puntarenas, July 3, 1997 (B.A.H.).

**Habitat**: In dome shaped webs, near the ground or (rarely) in the lower vegetation, often with retreats into the substrate.

**Others**: Web structure and construction of this species have been studied by Briceño (1985) and Eberhard (1992a). Intraspecific interactions were studied by Eberhard & Briceño (1983, 1985), population fluctuations are being documented by Huber (unpubl. data) and genital mechanics is described in Huber (1998c).

**Note**: The populations included under this highly variable species may eventually turn out to be several species (discussion in Huber 1998b).

### ***Modisimus madreselva*** Huber, 1998
(Figs 101, 104)

*M. madreselva* Huber 1998b: Figs 95-100.

**Diagnosis**: Small light *Modisimus*, characterized by the form of the procursus (Fig. 104).

**Distribution**: Known from only two localities in the Cordillera de Talamanca (Madreselva, Cuerici), at elevations above 2000 m (Fig. 101; exact collection data in Huber 1998b).

**Habitat**: unknown.

### ***Modisimus pittier*** Huber, 1998
(Figs 105-107, 123)

*M. pittier* Huber 1998b: figs 110-118.

**Diagnosis**: Large dark *Modisimus*, characterized by the procursus (Fig. 105), the spiral apophysis on the bulb (arrow in Fig. 106), and the large epigynum (Fig. 107).

**Distribution**: In Costa Rica only known from the type locality, at Cerro Pittier (Fig. 123; exact collection data in Huber 1998b). The species is also known from Prov. Chiriquí, Panama (Huber 1998b).

**Habitat**: unknown.

### ***Modisimus sanvito*** Huber, 1998
(Figs 108-109, 123)

*M. sanvito* Huber 1998b: figs 119-127.

**Diagnosis**: Small (about 2 mm body length) light *Modisimus* without black spots on opisthosoma, with characteristic form of the male procursus (Fig. 108) and femur apophysis (Fig. 109). For more detailed figures see Huber 1998b.

**Distribution**: Known only from type locality, San Vito de Coto Brus (Prov. Puntarenas; Fig. 123).

**Habitat**: unknown.

### ***Modisimus sarapiqui*** Huber, 1998
(Figs 110-111, 123)

*M. sarapiqui* Huber 1998b: figs 128-137.

**Diagnosis**: Large (about 3-3.5 mm) dark *Modisimus* with characteristic protruding epigynum (Figs 110-111). For more detailed figures see Huber 1998b.

**Distribution**: Known only from two localities in Prov. Heredia (Fig. 123; exact collection data in Huber 1998b).

**Habitat**: unknown.

### ***Modisimus tortuguero*** Huber, 1998
(Fig. 123)

*M. tortuguero* Huber 1998b: figs 143-148.

**Diagnosis**. Dark large *Modisimus* closely resembling *M. guatuso* and *M. cahuita*, distinguished from first by high number of spines (about 40) in two rows on the male anterior femora, from second by lack of protrusions on female epigynum.

**Distribution**: Known only from Tortuguero, Prov. Limón (Fig. 123; exact collection data in Huber 1998b).

**Habitat**: In dome shaped webs very close to the ground in humid, shaded places in the forest.

### ***Physocyclus dugesi*** Simon, 1893
(Figs 64, 112-115)

*P. dugesi* Simon 1893a: 320; F. O. P.-Cambridge 1902: 369, pl. 35, figs 1, 1a-d, 2, 2a-b; Banks 1913: 181, pl. 12, fig. 25; Gertsch & Davis 1937: 4; Reimoser 1939: 334; Gertsch & Davis 1942: 7; di Caporiacco 1955: 297; Huber 1997c: figs 51-55.

**Diagnosis**: Large dark *Physocyclus* with relatively huge pedipalps, male chelicerae with many black cone-shaped apophyses frontally and stridulatory files laterally (Fig. 112). Procursus and bulb of characteristic shape (Fig. 113). Female chelicerae without stridulatory files. Epigynum as in Figs 114-115. For more detailed illustrations of male see Huber 1997c.

**Distribution**: The species was originally described from Mexico, and was then also reported from Guatemala (F. O. P.-Cambridge 1902), Venezuela (di Caporiacco 1955) and Costa Rica (F. O. P.-Cambridge 1902, Reimoser 1939). Reimoser gives several localities (**San José**, **S. Maria Dota**, **Tejar de Cartago**, **Jimenez**, **Irazú**, **La Caja**, **Hamburg-Farm**). New records (material in coll. UCR): COSTA RICA: Prov. San José: 2 males, 5 juvs from **Ciudad Universitaria**, June 22, 1967 (C.E.V.). 2 males, 2 females, 1 juv. from **San Pedro** de Montes de Oca, March 18, 1981 (A. Del Valle C.). 1 male from **San Pedro** de Montes de Oca, August 1965 (C.E.V.). 1 male from **San Antonio de Escazú**, March 1993 (W.G.Eberhard). 1 male, 1 juv. from **San Pedro**, March 1993 (V.Solano). 1 male, 1 juv. from **San Pedro**, March 1993 (M.C.Marin). I have only seen the material from the collection UCR, and Simon's type. I have not seen Reimoser's material, and have therefore not included his localities in the distribution map (Fig. 64).

**Habitat**: unknown.

### ***Physocyclus globosus*** (Taczanowski, 1873)
(Figs 64, 116-119)

Selection of references (limited to Central America without Mexico - for further references see Roewer (1942), Brignoli (1981), and Platnick (1989):

*Physocyclus globosus*: Petrunkevitch 1925: 67; Chickering 1936: 452; Kraus 1955: 14; Eberhard 1992b: 38-42; Eberhard et al. 1993: 197-209. Nentwig 1993: 98; Huber 1996a: 289-294, figs 1-16; Huber & Eberhard 1997, figs 1-10. Eberhard et al. 1998.

**Diagnosis**: Large dark *Physocyclus*, male chelicerae with about 3-6 cone-shaped apophyses frontally and stridulatory files laterally (Fig. 116). Procursus and bulb of characteristic shape (Fig. 117). Female with unpaired peak on carapace, opposing a sclerotized plate above pedicel (Fig. 118). Female chelicerae also with stridulatory files. Epigynum triangular in ventral view (Fig. 119). For more detailed illustrations see Brignoli 1981, Huber 1996a, Huber & Eberhard 1997.

**Distribution**: Worldwide. In America from the USA (Comstock 1967) to Brazil (Brignoli 1981). In Costa Rica the species has not been previously reported, but is extremely common (Fig. 64). In the author's collection there is the following material: numerous males and females from **Guadalupe**, Prov. San José, March to Dec. 1995 (B.A.H.). 1 male from house in **San Pedro**, Prov. San José, Sept. 14, 1995 (B.A.H.). 2 males, 2 females from the **Escuela de Biología**, Ciudad Universitaria, Prov. San José, July 12, 1996 (B.A.H.). 1 male, 1 female from Airport **Juan Santamaria**, Prov. Alajuela, July 16, 1996 (B.A.H.). 2 males, 2 females from **Hitoy Cerere** Biological Station, Prov. Limón, Sept. 7, 1996 (B.A.H.). 1 female from **Siquirres**, Prov. Limón, Sept. 10, 1996 (B.A.H.). 1 female from rest-

ing house **3 km E Rio Ceiba** on Interamericana, Prov. Puntarenas, July 5, 1996 (B.A.H.). 2 females, 7 juvs from Biological Station **La Gamba**, Prov. Puntarenas, May 1995 (R.L.Rodriguez), and 1 male, 3 females from same locality, July 3, 1996 (B.A.H.). 1 male, 1 juv. from **Dominical**, Prov. Puntarenas, Feb. 15, 1996 (B.A.H.). 2 males, 1 female from **Uvita**, Bahia, Prov. Puntarenas, Feb. 14, 1996 (B.A.H). 1 female from **Manuel Antonio**, Prov. Puntarenas, Dec. 7, 1996 (B.A.H.). 1 male, 2 females from **Tamarindo**, Prov. Guanacaste, July 18, 1996 (B.A.H.). In collection UCR: 1 female, 2 juvs from **Hacienda Taboga**, Prov. Guanacaste, Feb. 5-15, 1967 (C.E.V.). 3 males, 3 females, 5 juvs from **San Rafael de Ojo de Agua**, Prov. Alajuela, Oct. 5-19, 1967 (C.E.V.). 1 male, 1 female from **Cebadilla De Alajuela**, Prov. Alajuela, March 22, 1981 (A. Del Valle C.). 1 female from Refugio de Fauna Silvestre **Palo Verde**, Bagaces, Prov. Guanacaste, March 13, 1981 (R.Aimerich). 1 female, 1 juv. from **Parque Nacional Santa Rosa**, Prov. Guanacaste, March 1983 (J.H.Castro). 1 male from **Hacienda de La Pacifica**, Cañas, Prov. Guanacaste, June 22, 1969 (C.E.V.). 2 males, 2 females, 2 juvs from **Cañas**, Prov. Guanacaste, April 1964 (C.E.V.). 2 males, 2 juvs from **La Garita**, Prov. Alajuela, March 3, 1981 (M.M.Gonzales). 1 male, 1 female from **Palo Verde**, Prov. Guanacaste, March 1983 (M.-C.Marin). 1 male from **Liberia**, Prov. Guanacaste, June 1980 (L.Gonzales). In coll. INBIO: 1 male, 2 females from **San Joaquín**, Prov. Heredia, May 12, 1996 (C.Viquez). 1 male, 6 females from **Parque National Santa Rosa**, administration area, Prov. Guanacaste, Jan. 1991 (D.H.Janzen).

**Habitat**: Common in human buildings, in diffuse webs preferably in wall-ceiling corners. One label from the UCR collection reads "collected between high grasses" (La Garita, Alajuela).

**Others**: Eberhard (1992b) gives notes on web design and prey, distribution, movements between websites, oviposition and care of offspring, male aggressive behavior and missing legs (based on a study in Panama). Eberhard et al. (1993) give data on sperm precedence. Huber (1996a) and Eberhard et al. (1998) give morphometric data of genitalic and non-genitalic structures. Huber & Eberhard 1997 describe courtship, copulation, and genital mechanics.

### ***Physocyclus guanacaste*** n.sp.

see description above

### ***Smeringopus pallidus*** (Blackwall, 1858)

(Figs 64, 120-122)

Selection of references (limited to Central America and the West Indies - for further references see Roewer (1942), Kraus (1957), Brignoli (1983), and Platnick (1989):

*S. elongatus*: Simon 1894: 519; Petrunkevitch 1929: 144-147; Bryant 1940: 294; Nentwig 1993: 98.

*S. geniculatus*: Petrunkevitch 1925: 67.

*S. pallidus*: Franganillo 1936a: 45; Franganillo 1936b: 77; Kraus 1957: 219-222; pl. 19, figs 1-6.

**Diagnosis**: Large (about 5-7 mm body length) eight-eyed species with cylindrical long opisthosoma (Fig. 120), male chelicerae with one pair of small anterior apophyses distally (arrow in Fig. 121), female epigynum consisting of two large sclerotized bulges (Fig. 122). For more detailed illustrations see Millot (1941) and Petrunkevitch (1929) (both under *S. elongatus*).

**Distribution**: Pantropic (Petrunkevitch 1929, Millot 1941). The species in new for Costa Rica. Material in author's collection: 1 male, 1 female from **San Pedro**, Prov. San. José, March-May, 1995 (B.A.H.). 1 male from **Guadalupe**, Prov. San José, May 1995 (B.A.H.) (Fig. 64).

**Habitat**: In irregular webs in human buildings (see also Millot 1941).

## UNDESCRIBED SPECIES

The following three species are not formally described as they are known only from females. They are probably new species, but the females do not offer sufficient characters that would justify their formal description.

### ***Metagonia*** **sp.**

(Figs 46, 124-126)

**Description**: Female. Typical *Metagonia*, with characteristic pattern of dark spots on prosoma (Fig. 124) and legs (Fig. 125). Total length: 2.9; prosoma width: 0.87; tib 1 missing, tib 2: 2.5; tib 3: 1.6; tib 4: 2.7. Epigynum as in Fig. 126. Male unknown.

**Distribution**: Known only from one female and one juvenile from **Manuel Antonio** (Fig. 46), Prov.

Puntarenas, Dec. 7, 1996 (B.A.H.), in author's collection.

**Habitat**: On the underside of large leaves.

### *Modisimus* sp.
(Figs 123, 127)

**Description**: Female. Typical large dark *Modisimus* with huge epigynum (about 0.5 mm wide; Fig. 127). Total length: 2.7; prosoma width: 1.05; tib 1: 4.1; tib 2: 2.9; tib 3: 2.3; tib 4: 2.9. Male unknown.

**Distribution**: Known only from one female and one juvenile from 2 km N Villa Mills (Fig. 123), Cerro de la Muerte, Prov. Cartago; Aug. 26, 1970 (C.E.V.) (UCR).

**Habitat**: unknown.

### Pholcidae gen. sp. indet.
(Figs 64, 128-130)

**Description**: Female. Small, light (greenish at 'life) eight-eyed pholcid (Figs 128-129) with simple external genitalia (Fig. 130). Total length: 2.1; prosoma width: 0.81; tib 1: 5.5; tib 2: 3.3; tib 3: 2.2; tib 4: 3.2. Male unknown.

**Distribution**: Known only from one female from Esquinas Rainforest (Fig. 64), **La Gamba**, Prov. Puntarenas, July 2, 1996 (B.A.H.), in author's collection.

**Habitat**: Probably in sheet webs in the undergrowth.

## KEY TO THE PHOLCIDS OF COSTA RICA (UNDESCRIBED SPECIES EXCLUDED)

All genera and several species can be determined with a standard dissecting microscope at magnifications of about 10-45 x. In most smaller species it is recommended to detach one pedipalp (including the coxa) and the chelicerae from the male and to study them under a compound microscope at magnifications of about 100-500 x. Most species of the genus *Metagonia* can easily be determined in the presence of males. If only females are available, the genital area must be dissected from the specimen, cleared (e.g. in a KOH solution), and studied in water under a compound microscope.

| | | |
|---|---|---|
| 1. | 6 eyes | 5 |
| – | 8 eyes | 2 |
| 2(1) | Opisthosoma elongate (Fig. 120), male chelicerae with tiny distal teeth (Fig. 121), epigynum with two simple bulges (Fig. 122) ***Smeringopus pallidus*** | |
| – | Opisthosoma not elongate, chelicerae and epigynum different | 3 |
| 3(2) | Male chelicerae unmodified, without stridulatory files, female prosoma with a pair of dorsal humps opposing plates on opisthosoma (Fig. 69), epigynum a simple plate (Fig. 68) ***'Coryssocnemis' viridescens*** | |
| – | Male chelicerae with several tooth-like projections anteriorly and stridulatory files laterally (Figs 59, 112, 116), epigynum with one or more projections (*Physocyclus*) | 4 |
| 4(3) | Male chelicerae as shown in Fig. 116, pedipalp as in Fig. 117, female prosoma with median peak (Fig. 118), epigynum as in Fig. 119 ***Physocyclus globosus*** | |
| – | Male chelicerae as shown in Fig. 112, pedipalp as in Fig. 113, female prosoma without peak, epigynum as in Figs 114-115 ***Physocyclus dugesi*** | |
| – | Male chelicerae as in Fig. 59, procursus as in Fig. 61, female prosoma with median peak (c.f. Fig. 118), epigynum as in Figs 62-63 ***Physocyclus guanacaste*** | |
| 5(1) | Eye triads close together (e.g. Figs 1, 94), male pedipalpal femur with distal apophysis (e.g. Figs 6, 93), male bulb without embolus but with sclerotized apophysis (e.g. Figs 8, 106) (*Modisimus* and *Anopsicus*) | 11 |
| – | Eye triads well separated (e.g. Fig. 49), male pedipalpal femur without distal apophysis, male bulb with pale finger-like embolus (e.g. Fig. 56) (*Metagonia*) | 6 |
| 6(5) | Male chelicerae without distal apophyses | 8 |
| – | Male chelicerae with distal apophyses (Fig. 71) | 7 |
| 7(6) | Male procursus as in Fig: 70, female internal genitalia as in Fig. 72 ***Metagonia delicata*** | |
| – | Male procursus as in Fig. 87, female internal genitalia as in Fig. 88 ***Metagonia uvita*** | |
| – | Male procursus as in Fig. 85, female internal genitalia as in Fig. 86 ***Metagonia talamanca*** | |
| 8(6) | Carapace marked with black ring (Fig. 73), procursus as in Fig. 74, female internal genitalia as in Fig. 75 ***Metagonia hitoy*** | |
| – | Carapace without black ring, procursus and female genitalia different | 9 |
| 9(8) | Male with paired projection on clypeus (Fig. 82), procursus as in Fig. 83, female internal genitalia as in Fig. 84 ***Metagonia rica*** | |
| – | Male without projection on clypeus, male procursus as in Figs 43-44, female genitalia as in Fig. 76 ***Metagonia hondura*** | |
| – | Male with unpaired median projection on clypeus, female genitalia different | 10 |
| 10(9) | Projection on male clypeus pointed (Figs 54-55), procursus as in Figs 56-57 ***Metagonia selva*** | |
| – | Projection on male clypeus rounded (Fig. 77), male chelicerae with a pair of proximal apophyses (Fig. 78), procursus as in Fig. 79, female internal genitalia as in Fig. 80 ***Metagonia reventazon*** | |
| – | Projection on male clypeus rounded (Figs 49-50), male chelicerae without proximal apophyses (Fig. 49), procursus as in Figs 51-52, female internal genitalia as in Fig. 53 ***Metagonia osa*** | |
| 11(5) | Eye region only slightly elevated (e.g. Figs 2, 33) (*Anopsicus*) | 22 |
| – | Eye region considerably elevated into an eye turret (Fig. 94) (*Modisimus*) | 12 |

12(11) Male eye turret with frontal cuticular lobe (Fig. 94), male chelicerae with one pair of horns (Fig. 95), without modified hairs, abdomen globular, epigynum simple (Fig. 96) ..... ***Modisimus culicinus***

– Male eye turret without frontal cuticular lobe, male chelicerae without horns but with modified hairs anteriorly, abdomen oval to elongate ..... 13

13(12) Dark colored, with black and often white spots on opisthosoma ..... 17

– Light colored, pale greenish in live, pale whitish in ethanol, without black spots on opisthosoma ..... 14

14(13) Male pedipalpal femur apophysis as in Figs 93, 109 ..... 15

– Male pedipalpal femur apophysis as in Fig. 90..... 16

15(14) Procursus as in Fig. 92 ..... ***Modisimus coco***

– Procursus as in Fig. 108 ..... ***Modisimus sanvito***

16(14) Procursus with long dorsal 'flagellum' (Fig. 89) ..... ***Modisimus bribri***

– Procursus with short dorsal 'flagellum' (Fig. 104) ..... ***Modisimus madreselva***

17(13) Modified hairs on male chelicerae club-shaped, in two patches, male procursus as in Fig. 97, epigynum as in Fig. 99 ..... ***Modisimus dominical***

– Modified hairs on male chelicerae not club shaped, male procursus with dorsal 'flagellum' (e.g. Figs 103, 105), epigynum different ..... 18

18(17) Male chelicerae with only 0-4 modified hairs distally, epigynum conspicuously elevated into two protrusions (Fig. 91) ..... ***Modisimus cahuita***

– Male chelicerae with about 10 to 20 modified hairs anteriorly, epigynum different ..... 19

19(18) Procursus as in Fig. 105, bulb with spiral apophysis (Fig. 106), epigynum as in Fig. 107 ..... ***Modisimus pittier***

– Procursus as in Fig. 103, epigynum different ..... 20

20(19) Epigynum protruded, with a pair of black apophyses anteriorly (Figs 110-111) ..... ***Modisimus sarapiqui***

– Epigynum a simple flat plate ..... 21

21(20) Male femur 1 with numerous (about 40) short spines in 2 rows ..... ***Modisimus tortuguero***

– Male femur 1 without or with less than 20 long spines in one row, only rarely a few spines in a second row ..... ***Modisimus guatuso***

22(11) Eye triads close together (Fig. 11), epigynum as in Fig. 12, (male unknown) ..... ***Anopsicus concinnus***

– Eye triads moderately spaced (Figs 1, 13, 23, 32), epigynum different ..... 23

23(22) Male chelicerae without horns on frontal face, bulb with bipartite apophysis (Fig. 8), procursus with a slender sclerotized apophysis (Fig. 7), epigynum as in Fig. 9 ..... ***Anopsicus chiriqui***

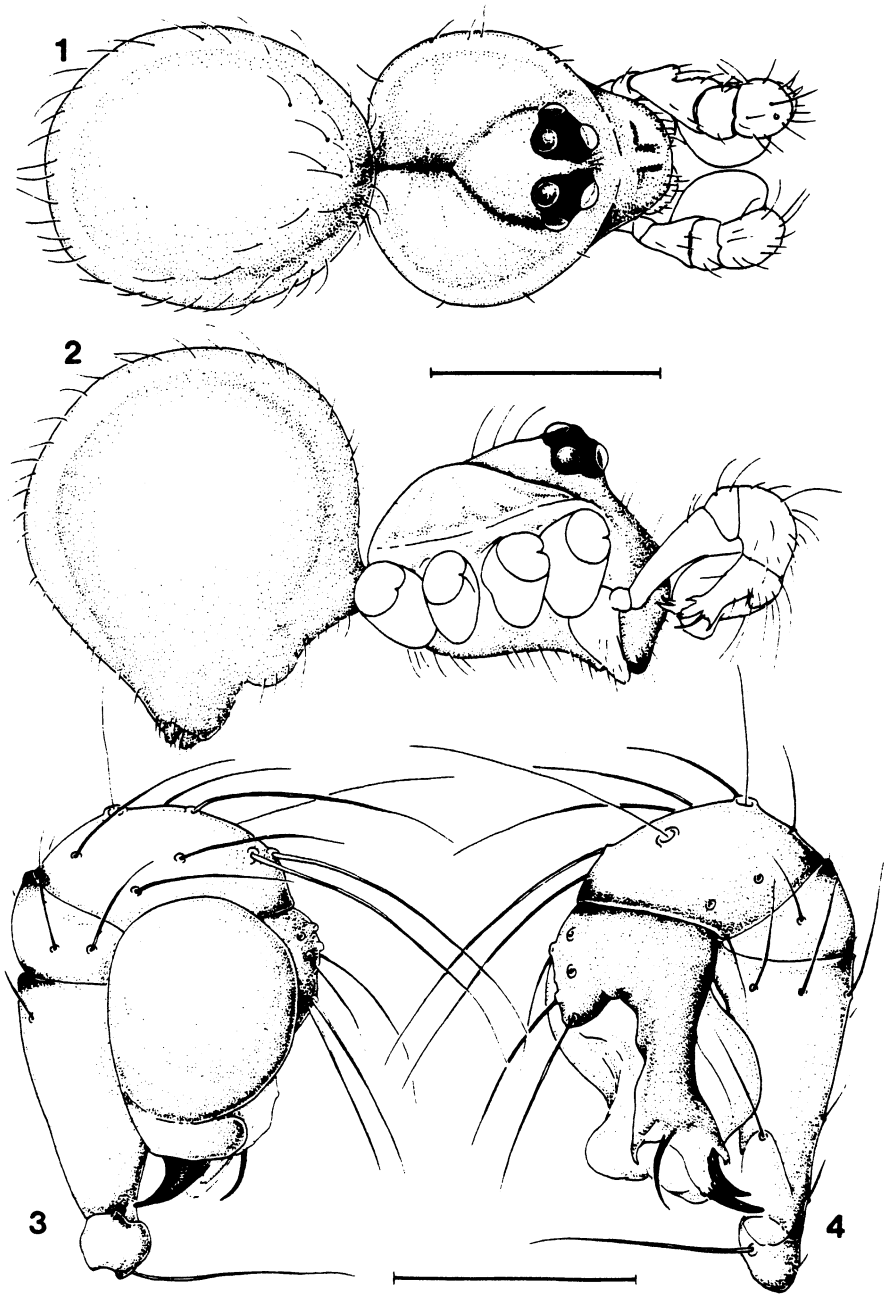
– Male chelicerae with a pair of horns on frontal face (e.g. Figs 27, 39), epigynum different ..... 24

24(23) Male horns large, projecting forwards (Figs 32, 39), procursus and bulb as in Figs 34-35, female epigynum as in Fig. 40 ..... ***Anopsicus turrialba***

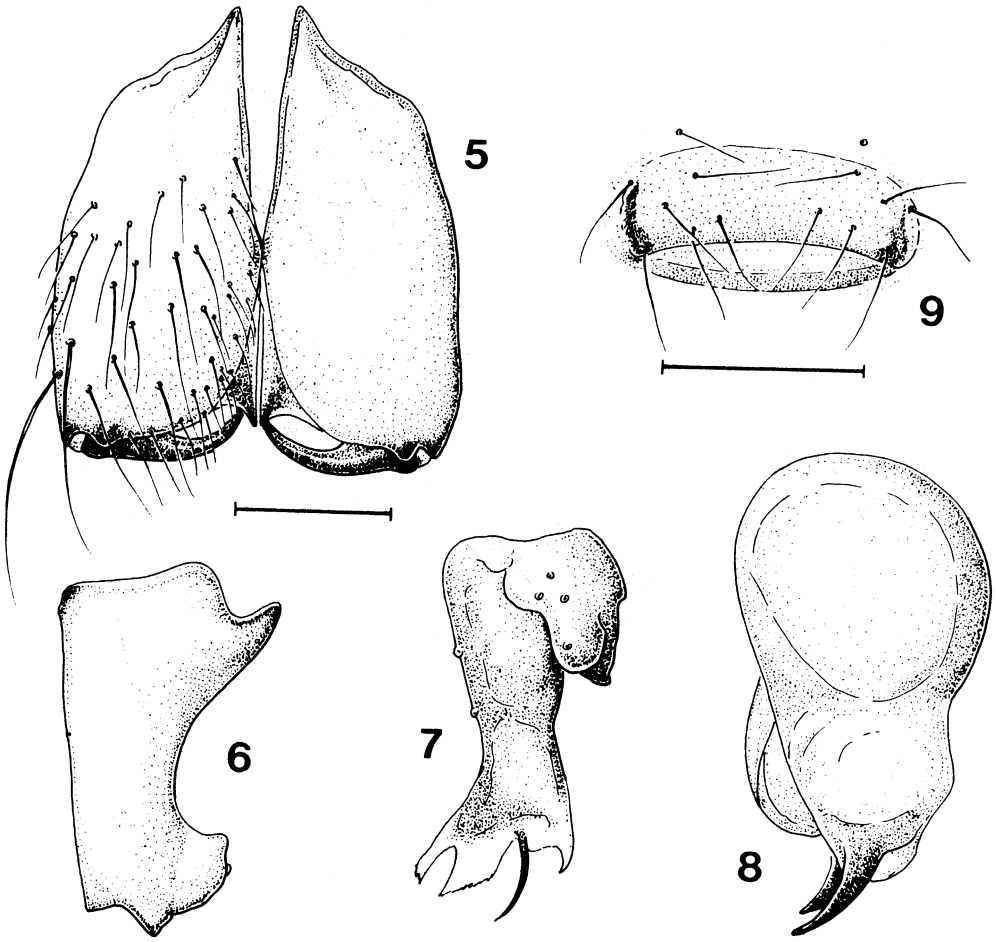
– Male horns much smaller, projecting downwards (Figs 17, 27), female epigynum different ..... 25

25(24) Procursus with a row of pointed fringes distally (Fig. 28), female epigynum simple (Fig. 31) ..... ***Anopsicus tico***

– Procursus without row of fringes (Fig. 20), epigynum with a pair of blunt protrusions anteriorly (Figs 21-22) ..... ***Anopsicus facetus***




Figs 1-4. *Anopsicus chiriqui*, male. 1, Dorsal view. 2, Lateral view. 3, Left pedipalp, prolateral view. 4, Left pedipalp, retrolateral view. Scale lines: (1-2) 0.5 mm, (3-4) 0.2 mm.




Figs 5-9. *Anopsicus chiriqui*. 5, Male chelicerae, frontal view. 6, Palpal femur, lateral view. 7, Left cymbium with procursus, prolateral view. 8, Genital bulb. 9, Epigynum, ventral view. Scale lines: (5-6) 0.1 mm, (9) 0.2 mm.

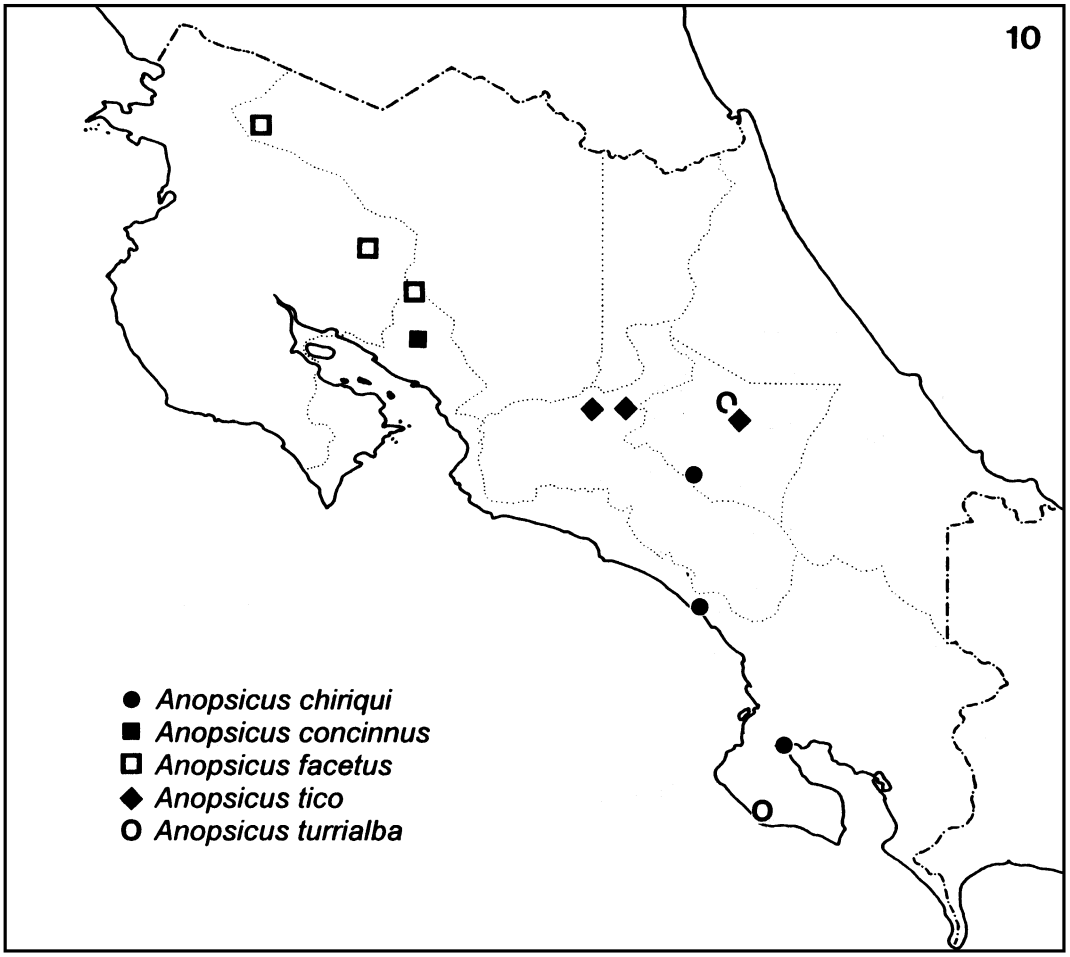
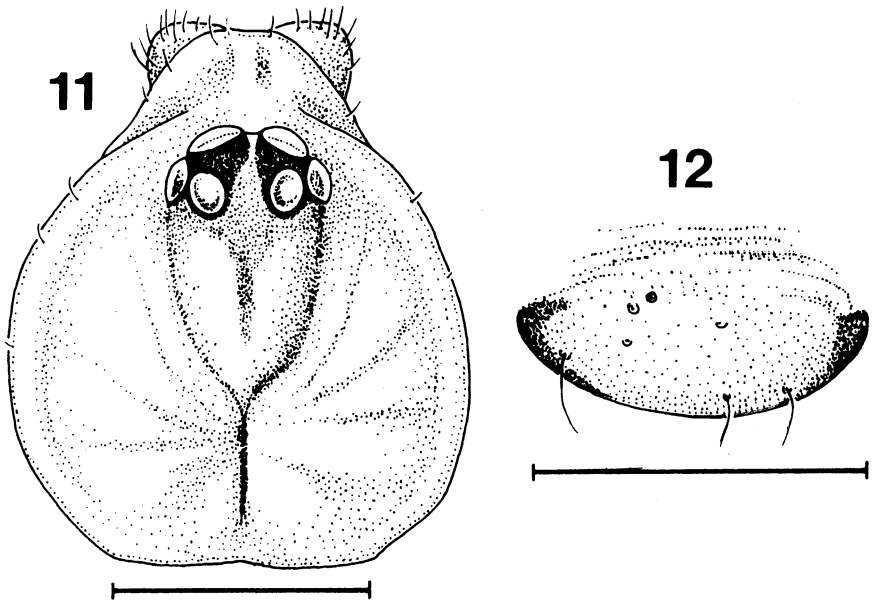
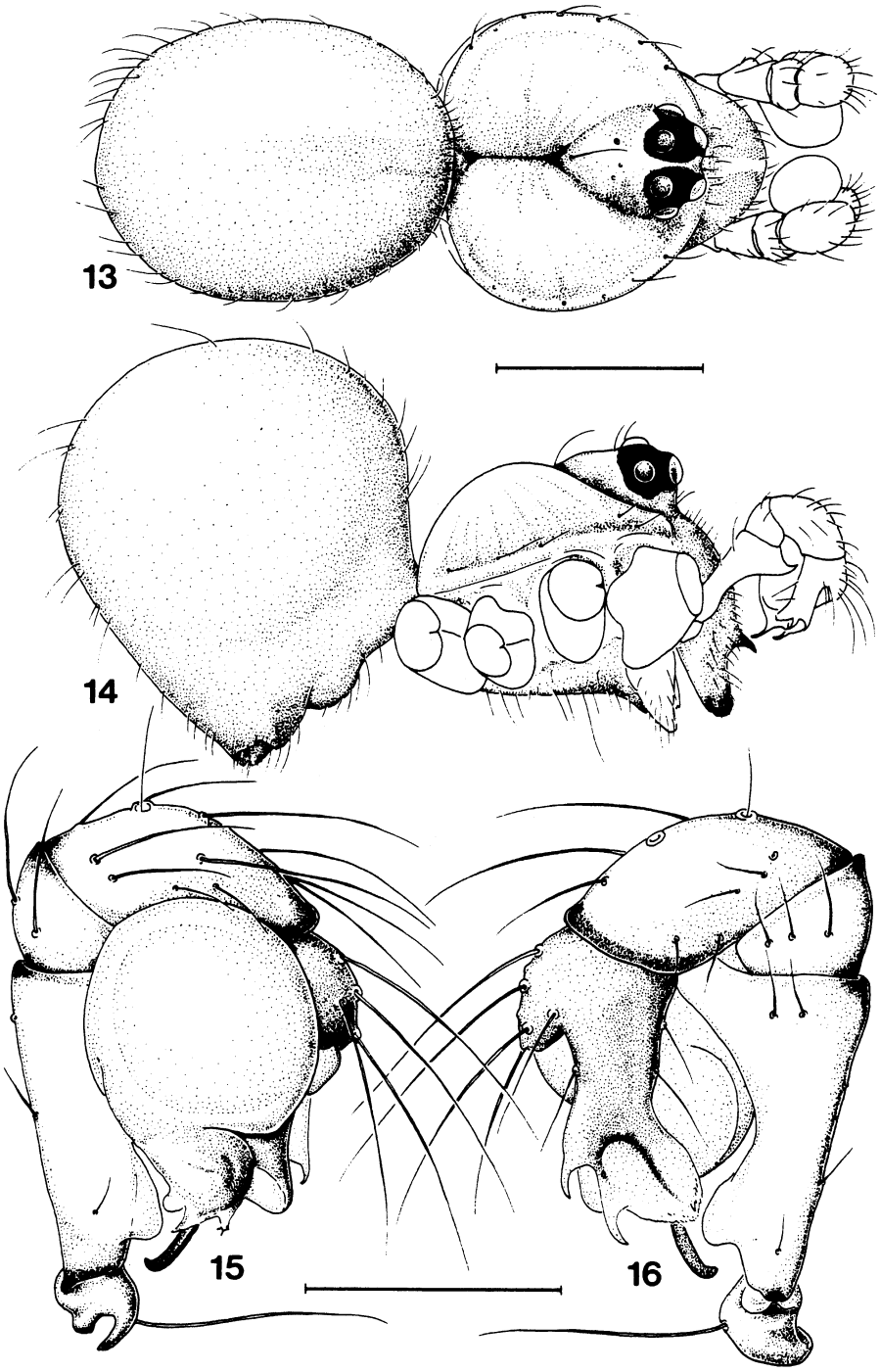


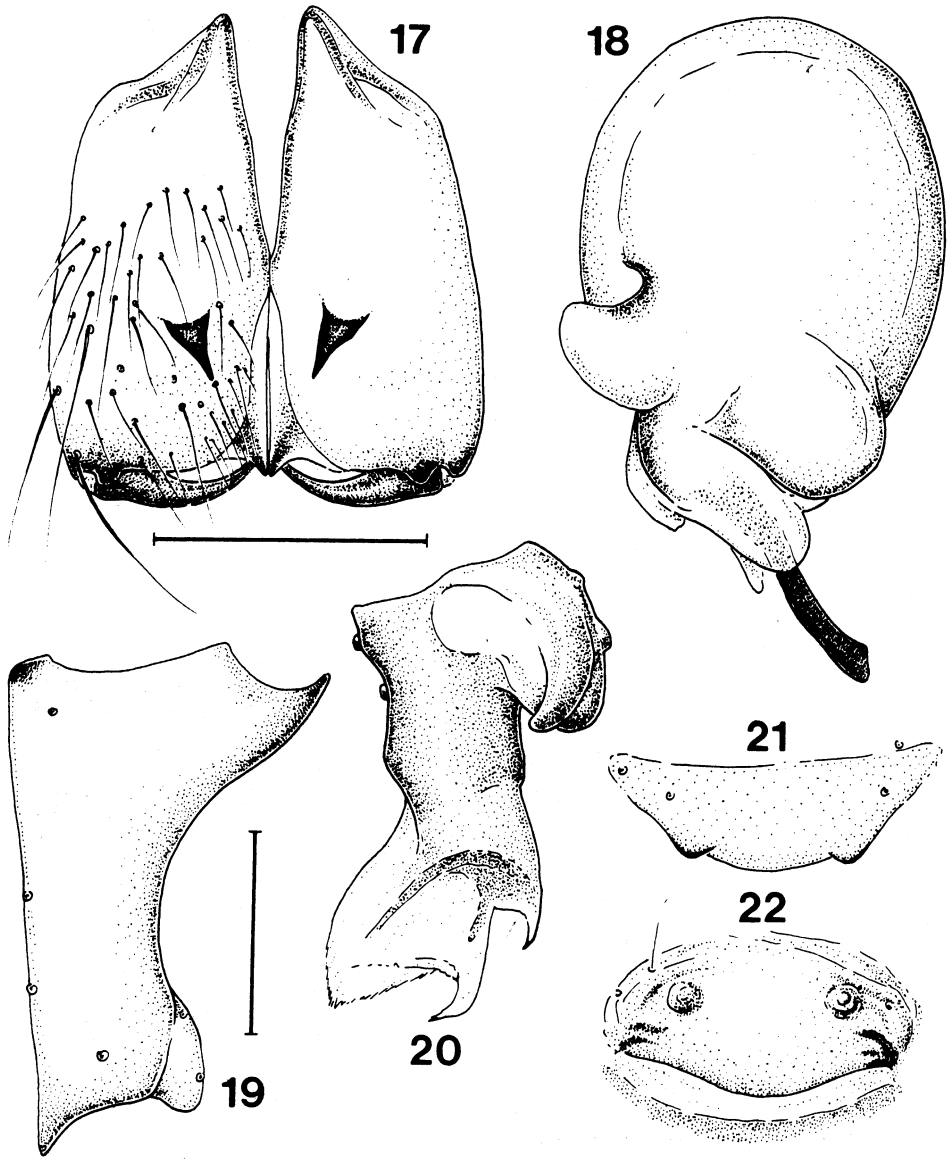

Fig. 10.Known distribution of the genus *Anopsicus* in Costa Rica.



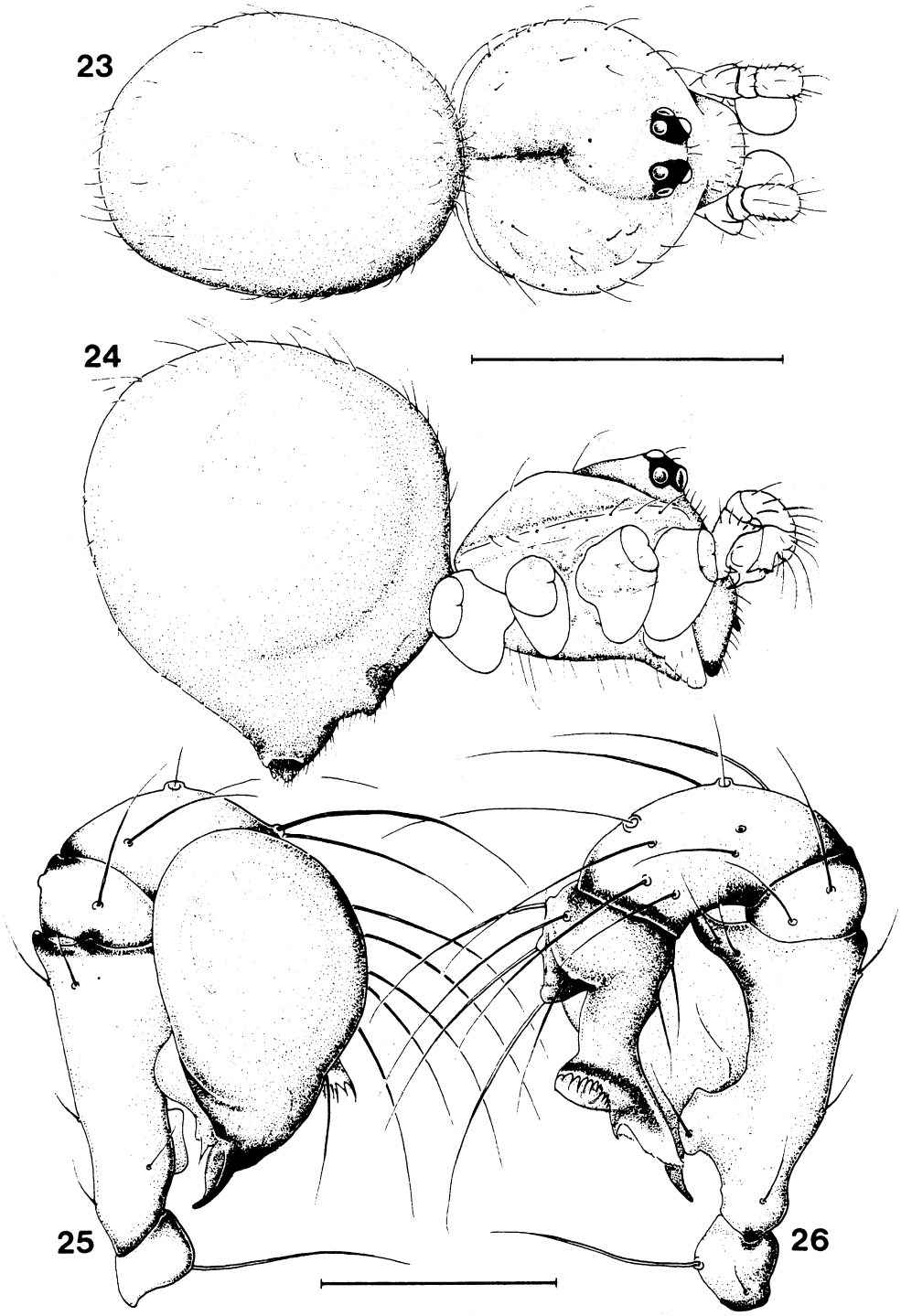

Figs 11-12. *Anopsicus concinnus*, female. 11, Prosoma, dorsal view. 12, Epigynum, ventral view. Scale lines: (11) 0.3 mm, (12) 0.2 mm.



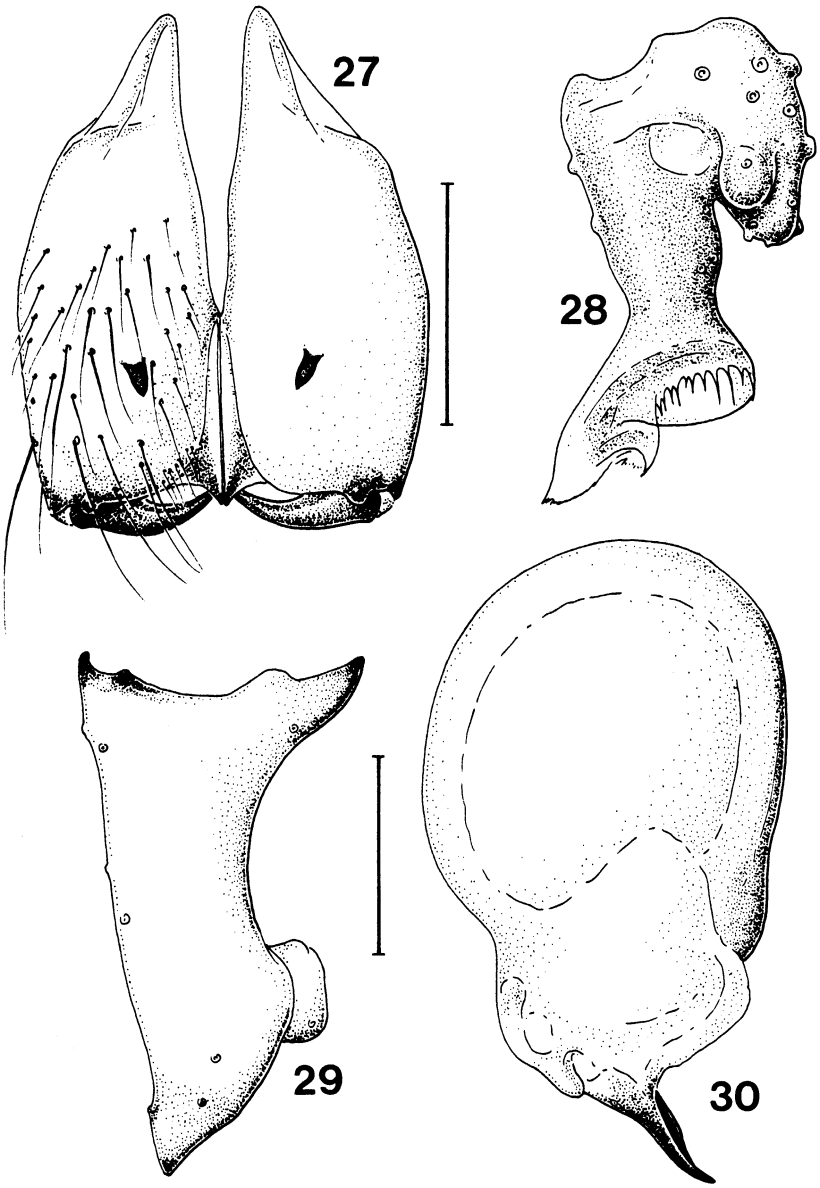

Figs 13-16. *Anopsicus facetus*, male. 13, Dorsal view. 14, Lateral view. 15, Left pedipalp, prolateral view. 16, Left pedipalp, retrolateral view. Scale lines: (13-14) 0.5 mm, (15-16) 0.2 mm.




Figs 17-22. *Anopsicus facetus*. 17, Male chelicerae, frontal view. 18, Genital bulb. 19, Palpal femur, lateral view. 20, Left cymbium with procursus, prolateral view. 21, Epigynum, frontal view. 22, Epigynum, ventral view. Scale lines: (17) 0.2 mm, (18-20) 0.1 mm.




Figs 23-26. *Anopsicus tico*, male. 23, Dorsal view. 24, Lateral view. 25, Left pedipalp, prolateral view. 26, Left pedipalp, retrolateral view. Scale lines: (23-24) 1 mm, (25-26) 0.2 mm.




Figs 27-30. *Anopsicus tico*, male. 27, Chelicerae, frontal view. 28, Left cymbium with procursus, prolateral view. 29, Palpal femur, lateral view. 30, Genital bulb. Scale lines: (27) 0.2 mm, (28-30) 0.1 mm.

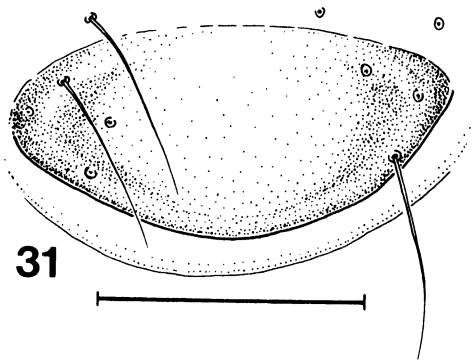
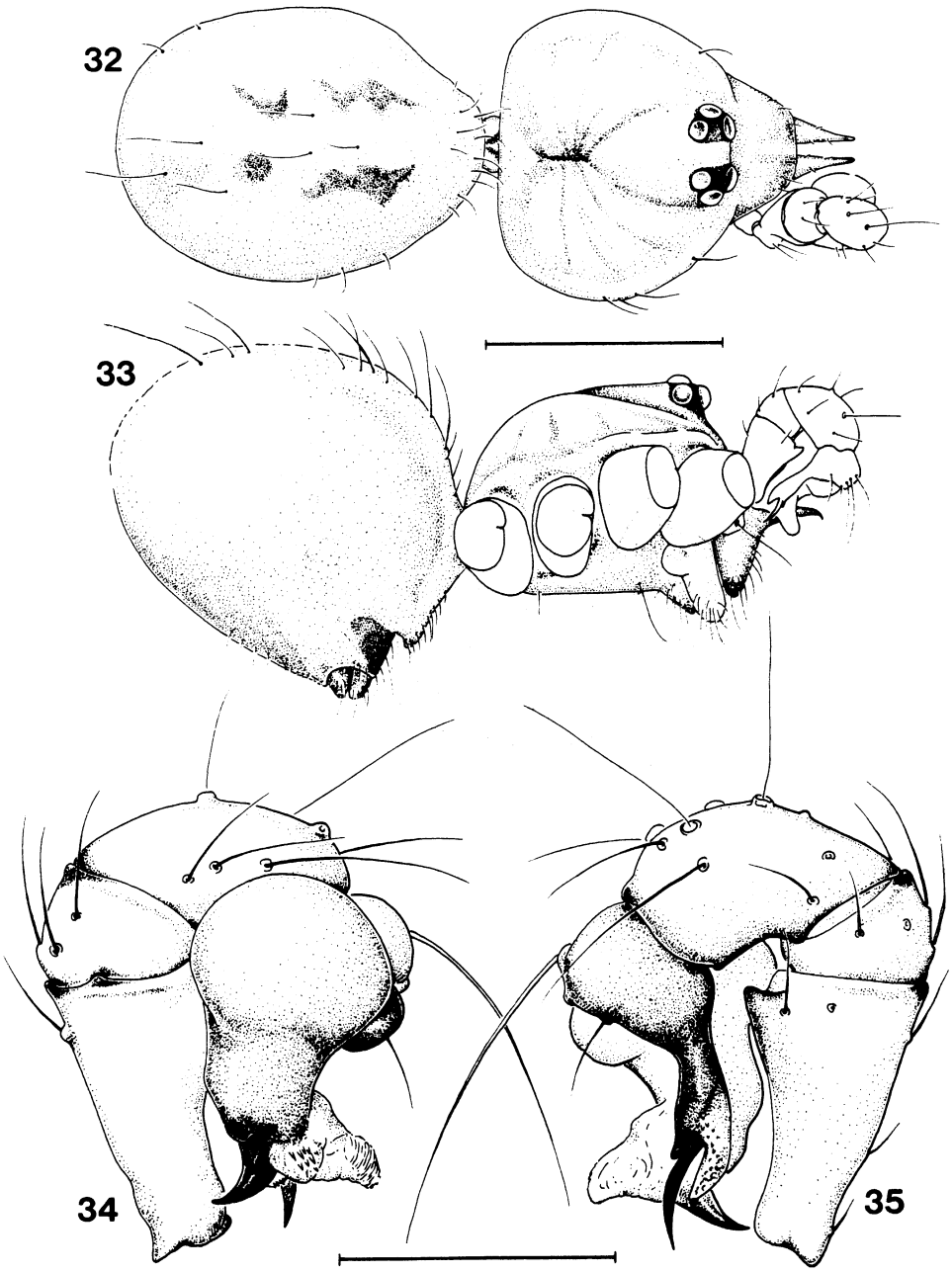
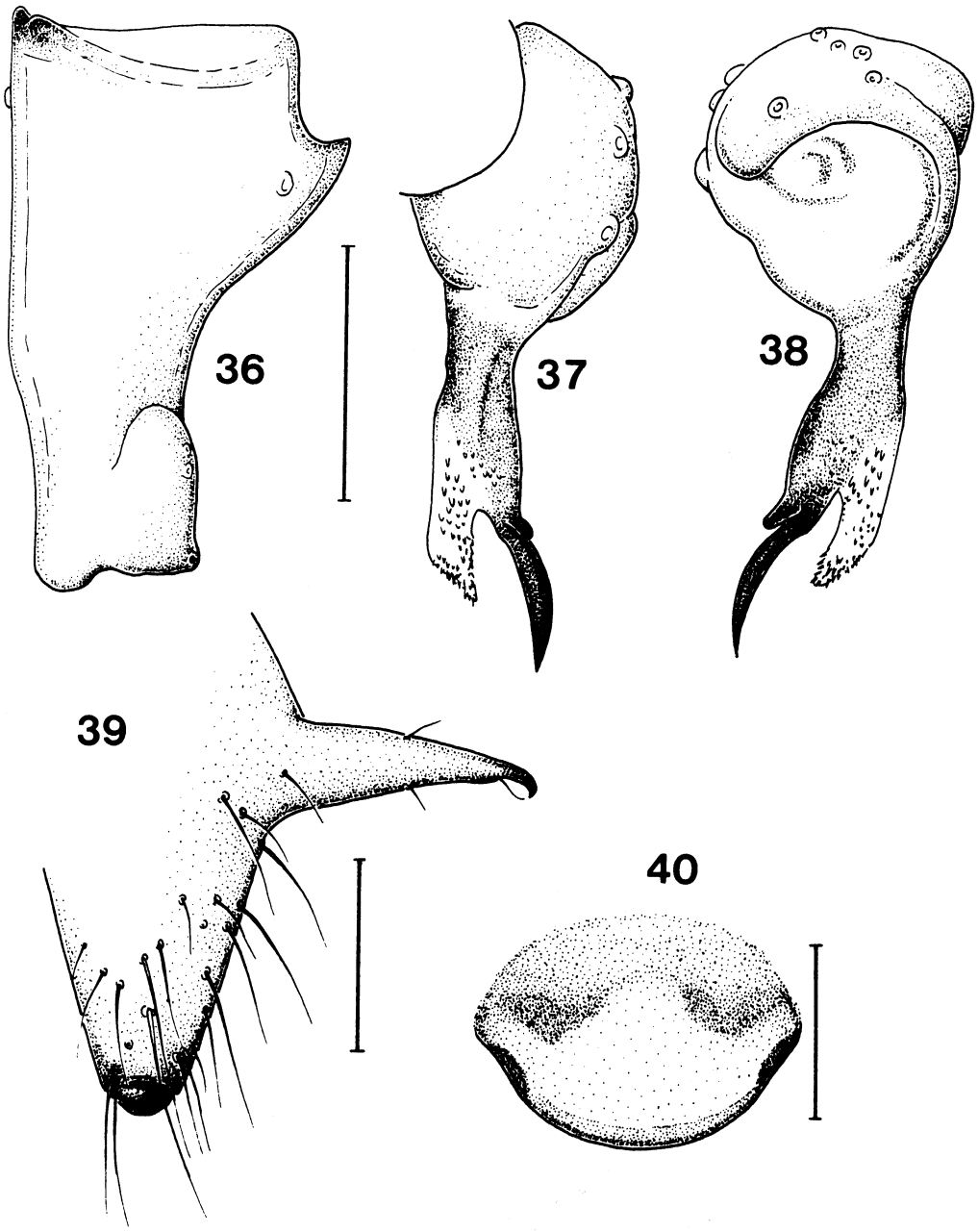


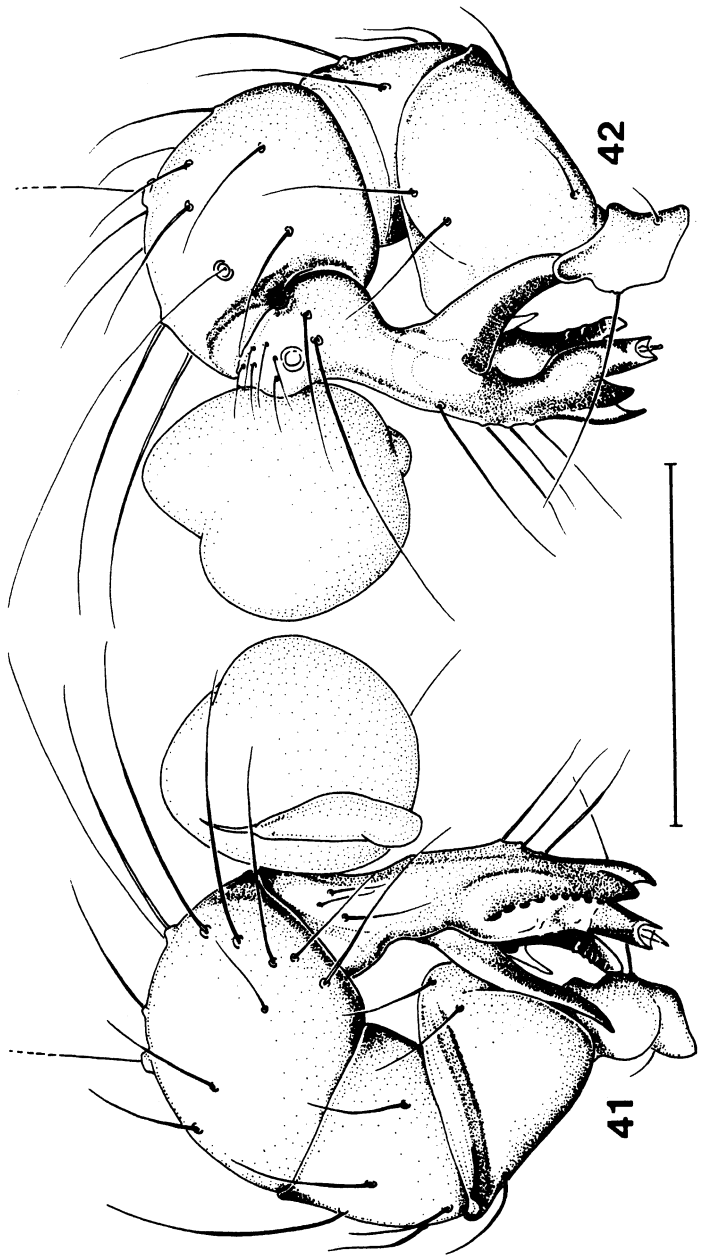

Fig. 31. *Anopsicus tico*, epigynum, ventral view. Scale line: 0.2 mm.



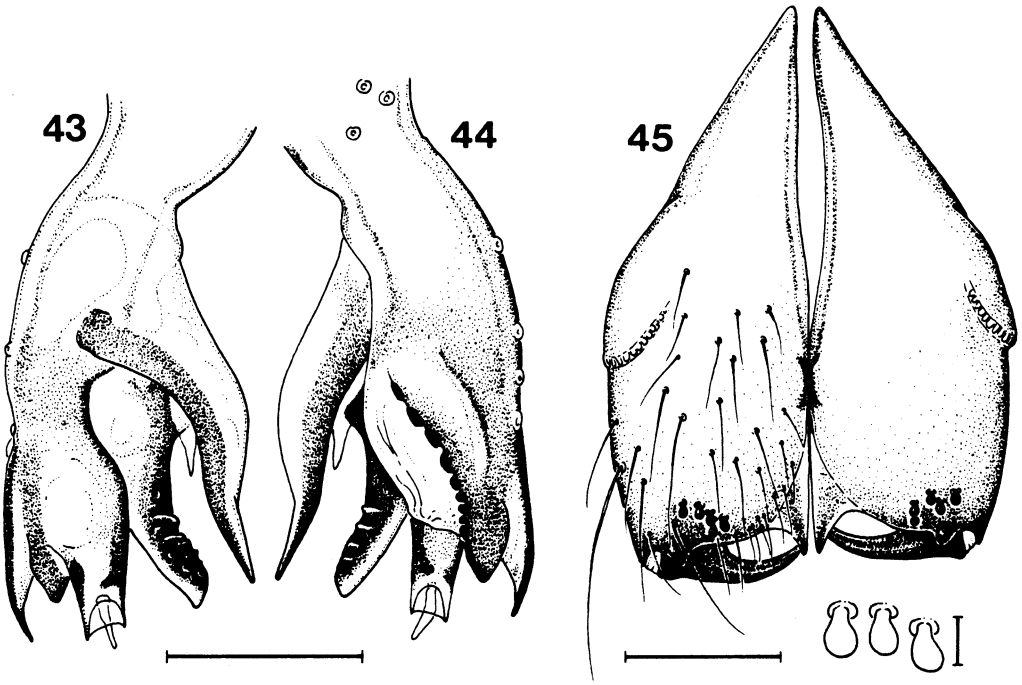

Figs 32-35. *Anopsicus turrialba*, male. 32. Dorsal view. 33, Lateral view. 34, Left pedipalp, prolateral view. 35, Left pedipalp, retrolateral view. Scale lines: (32-33) 0.5 mm, (34-35) 0.2 mm.




Figs 36-40. *Anopsicus turrialba*. 36, Palpal femur, lateral view. 37, Left cymbium with procursus, prolateral view. 38, Left cymbium with procursus, retrolateral view. 39, Male chelicerae, lateral view. 40, Epigynum, ventral view. Scale lines: 0.1 mm.




Figs 41-42. *Metagonia hondura*, male. 41, Left pedipalp, prolateral view. 42, Left pedipalp, retrolateral view. Scale line: 0.3 mm.




Figs 43-45. *Metagonia hondura*, male. 43, Left procursus, retrolateral view. 44, Left procursus, prolateral view. 45, Chelicerae, frontal view, with three modified hairs enlarged. Scale lines: (43-45) 0.1 mm, (modified hairs) 0.01 mm.

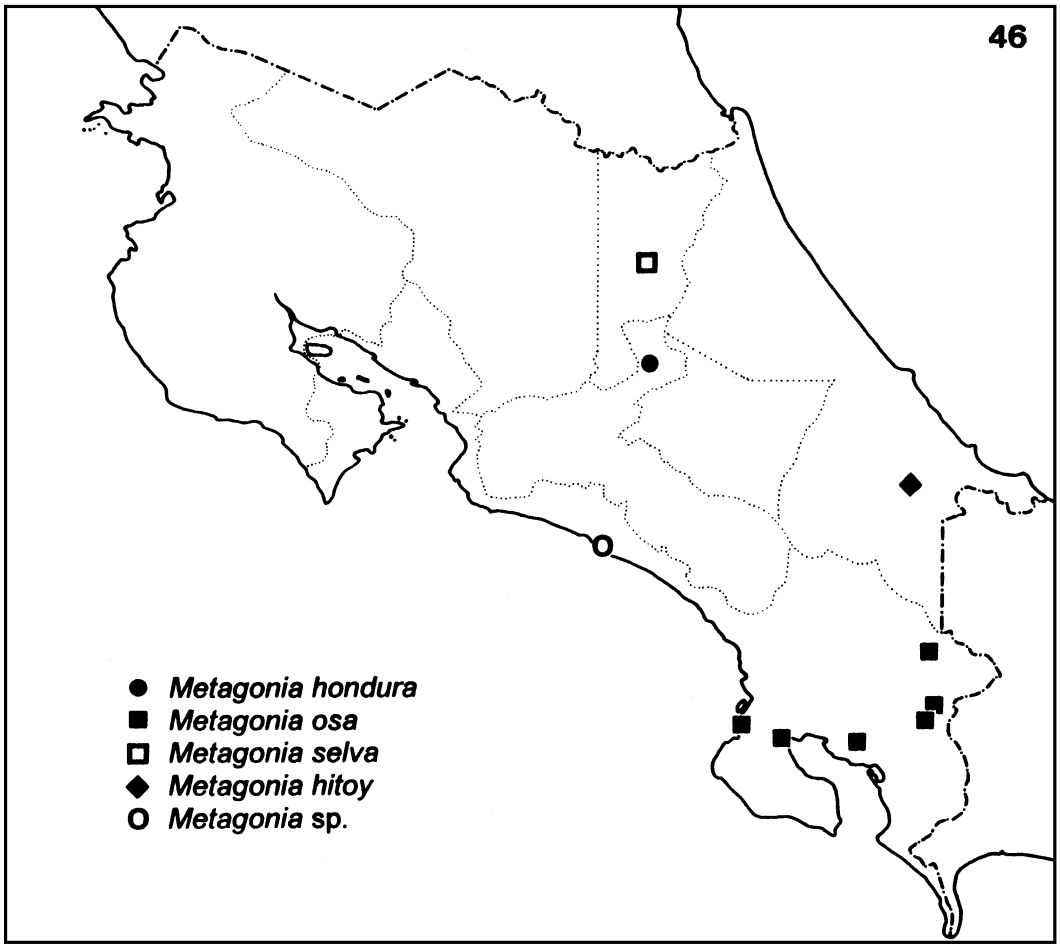
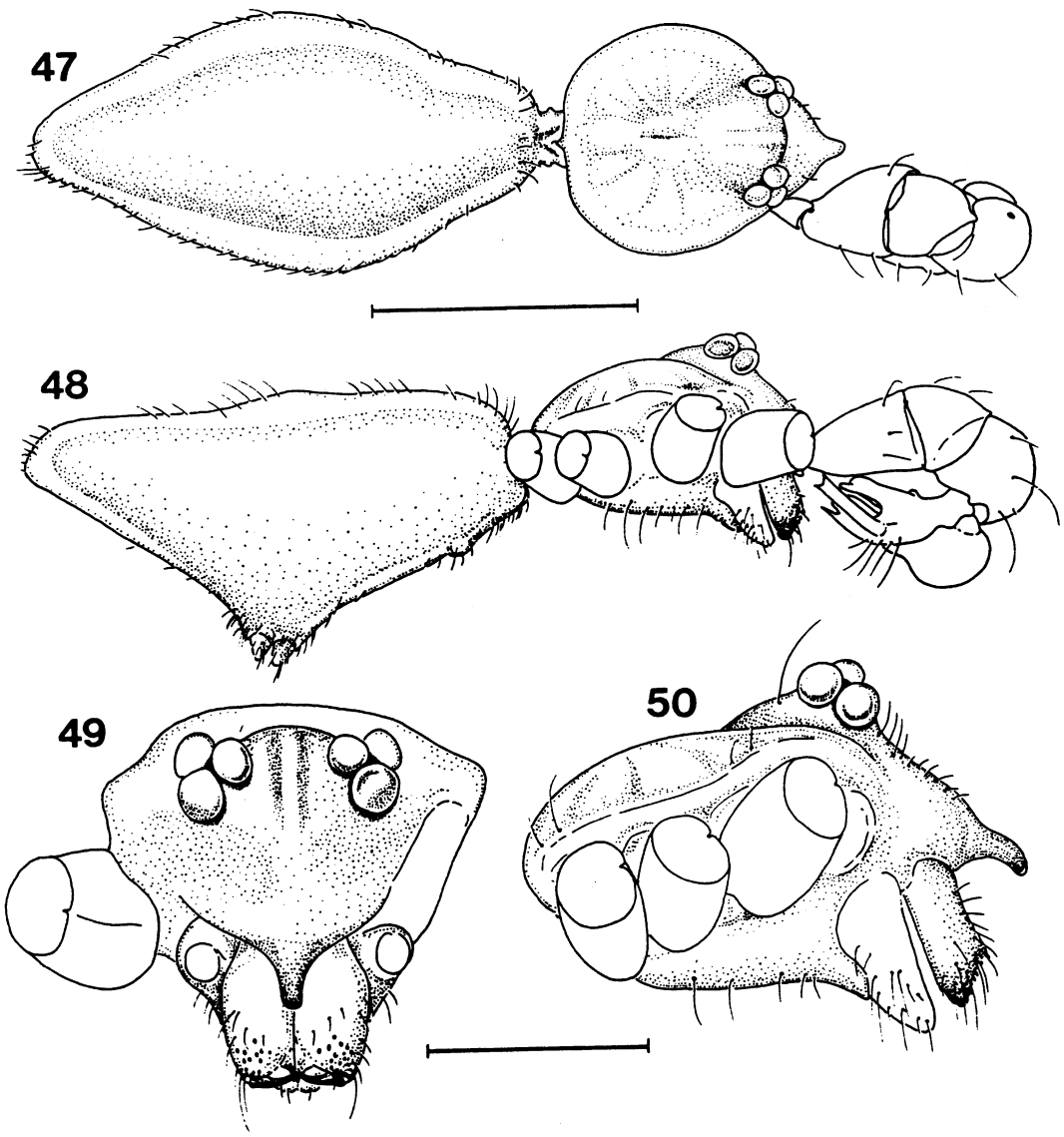
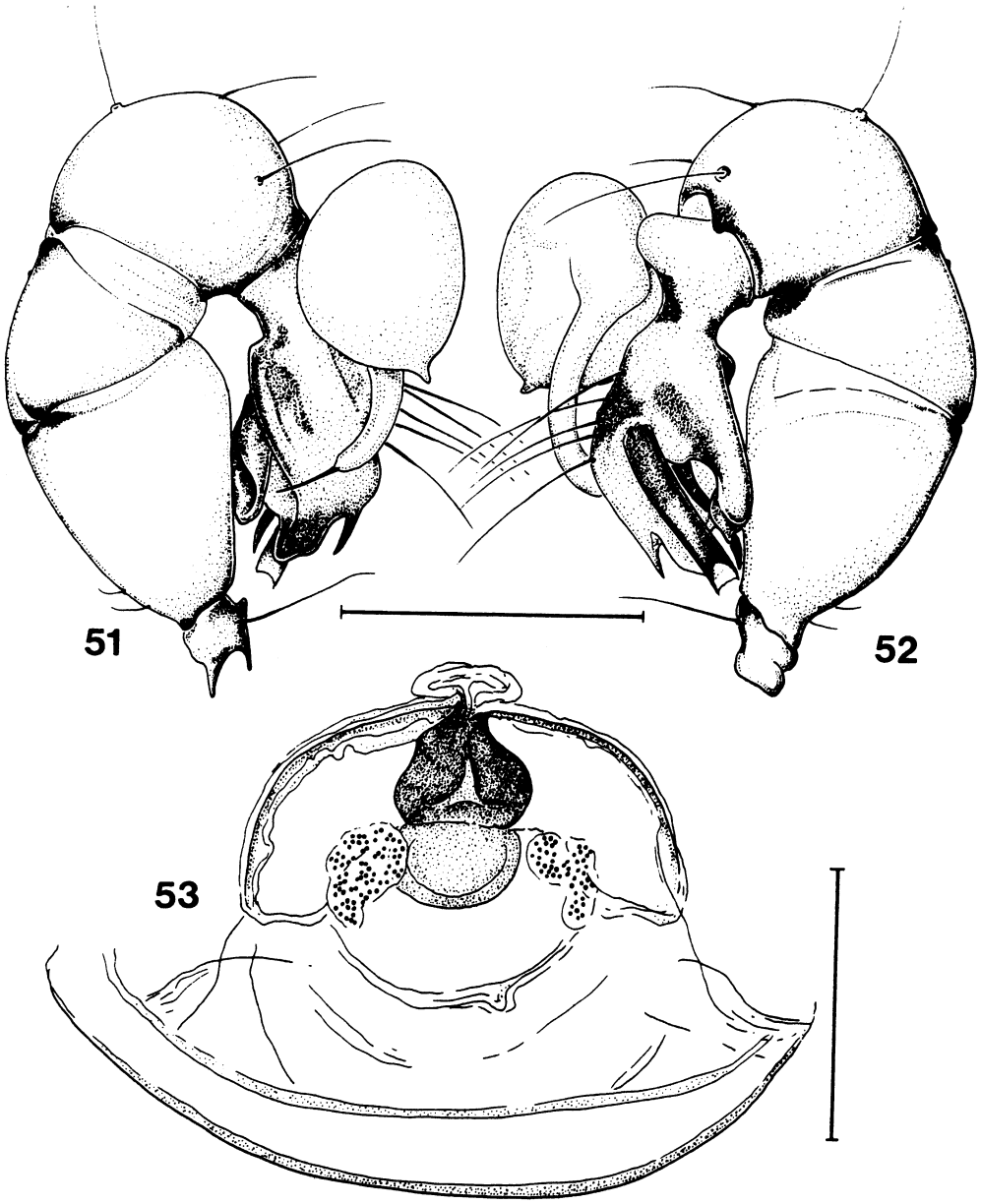


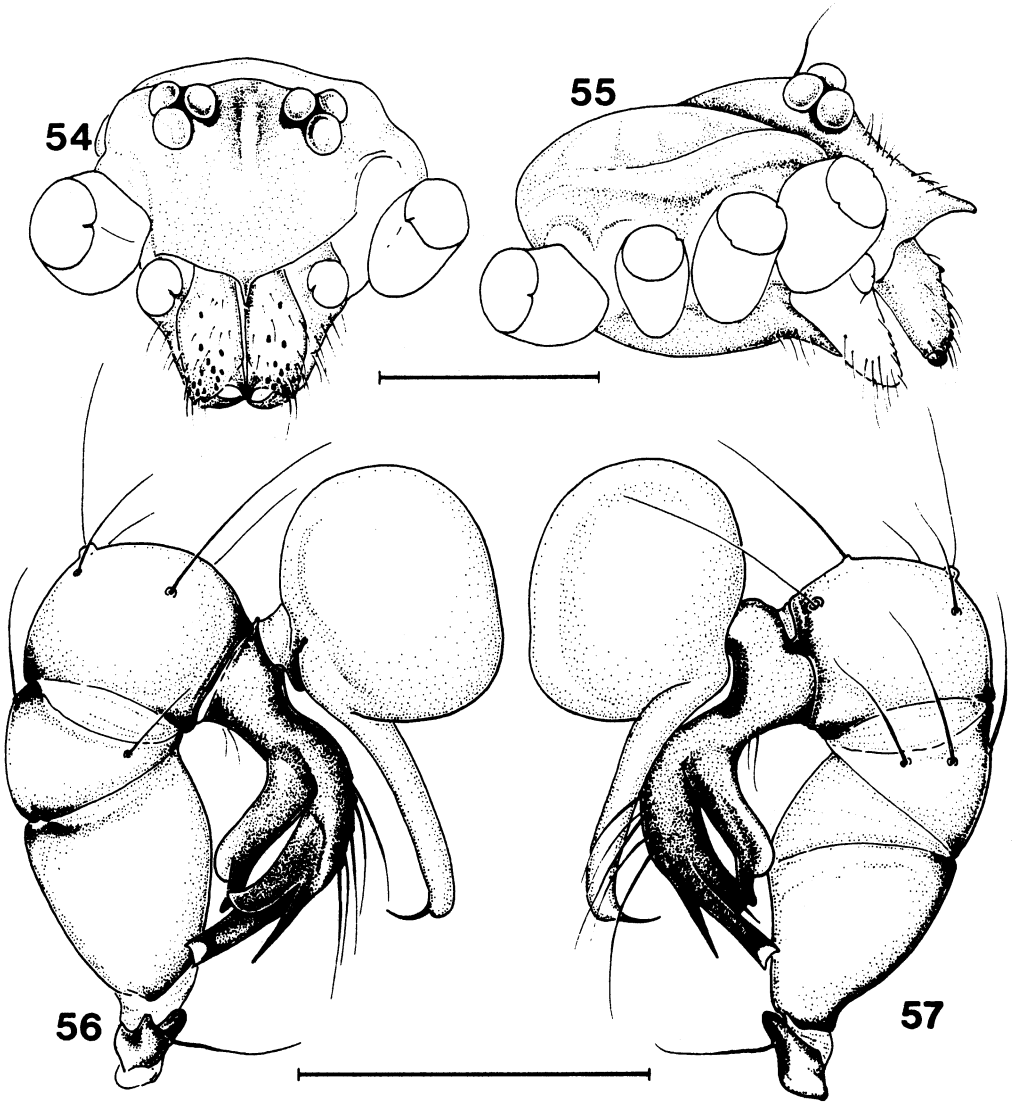

Fig. 46. Known distribution of five species of the genus *Metagonia* in Costa Rica (for other species see Figure 81).



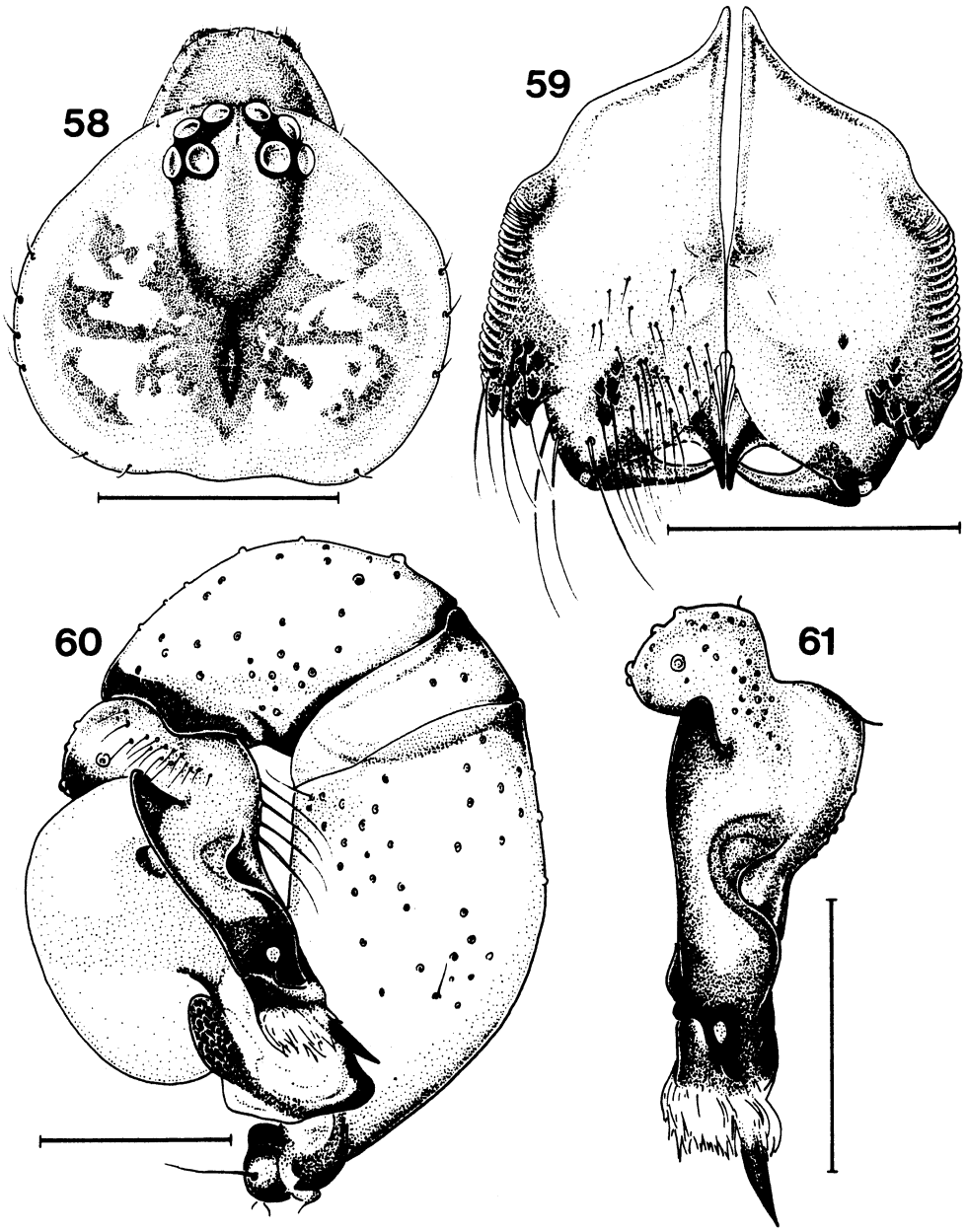

Figs 47-50. *Metagonia osa*, male. 47, Dorsal view. 48, Lateral view. 49, Prosoma, frontal view. 50, Prosoma, lateral view. Scale lines: (47-48) 1 mm, (49-50) 0.5 mm.



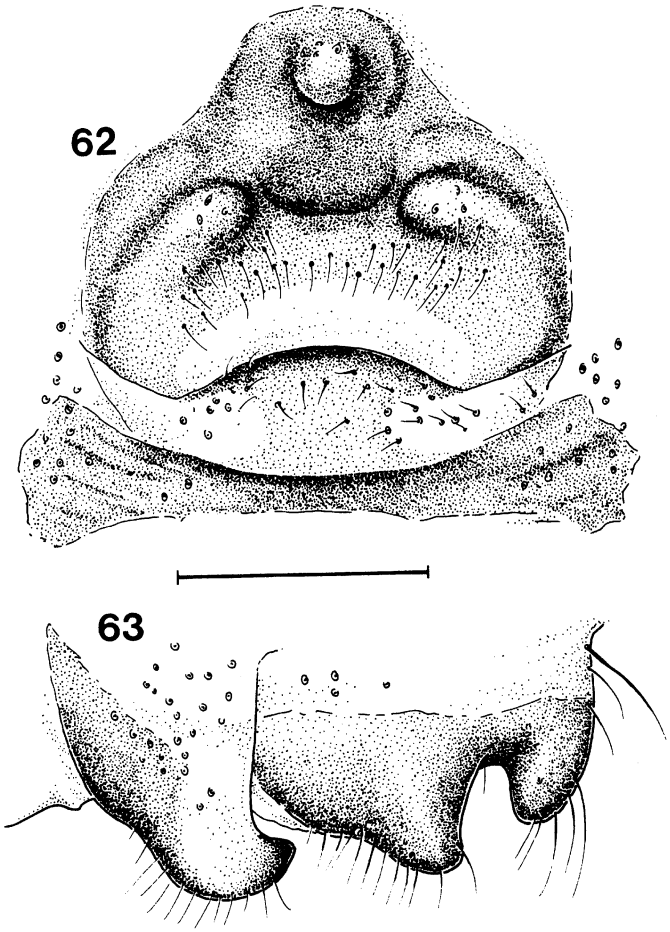

Figs 51-53. *Metagonia osa*. 51, Left pedipalp, prolateral view. 52, Left pedipalp, retrolateral view. 53, Female internal genitalia, dorsal view. Scale lines: (51-52) 0.5 mm, (53) 0.2 mm.




Figs 54-57. *Metagonia selva*, male. 54, Prosoma, frontal view. 55, Prosoma, lateral view. 56, Left pedipalp, prolateral view. 57, Left pedipalp, retrolateral view. Scale lines: 0.5 mm.




Figs 58-61. *Physocyclus guanacaste*, male. 58, Prosoma, dorsal view. 59, Chelicerae, frontal view. 60, Left pedipalp, retrolateral view. 61, Left cymbium with procursus, retrolateral view. Scale lines: (58) 1 mm, (59-61) 0.5 mm.




Figs 62-63. *Physocyclus guanacaste*, female. 62, Epigynum, ventral view. 63, Epigynum, lateral view, frontal side on the right. Scale line: 0.5 mm.

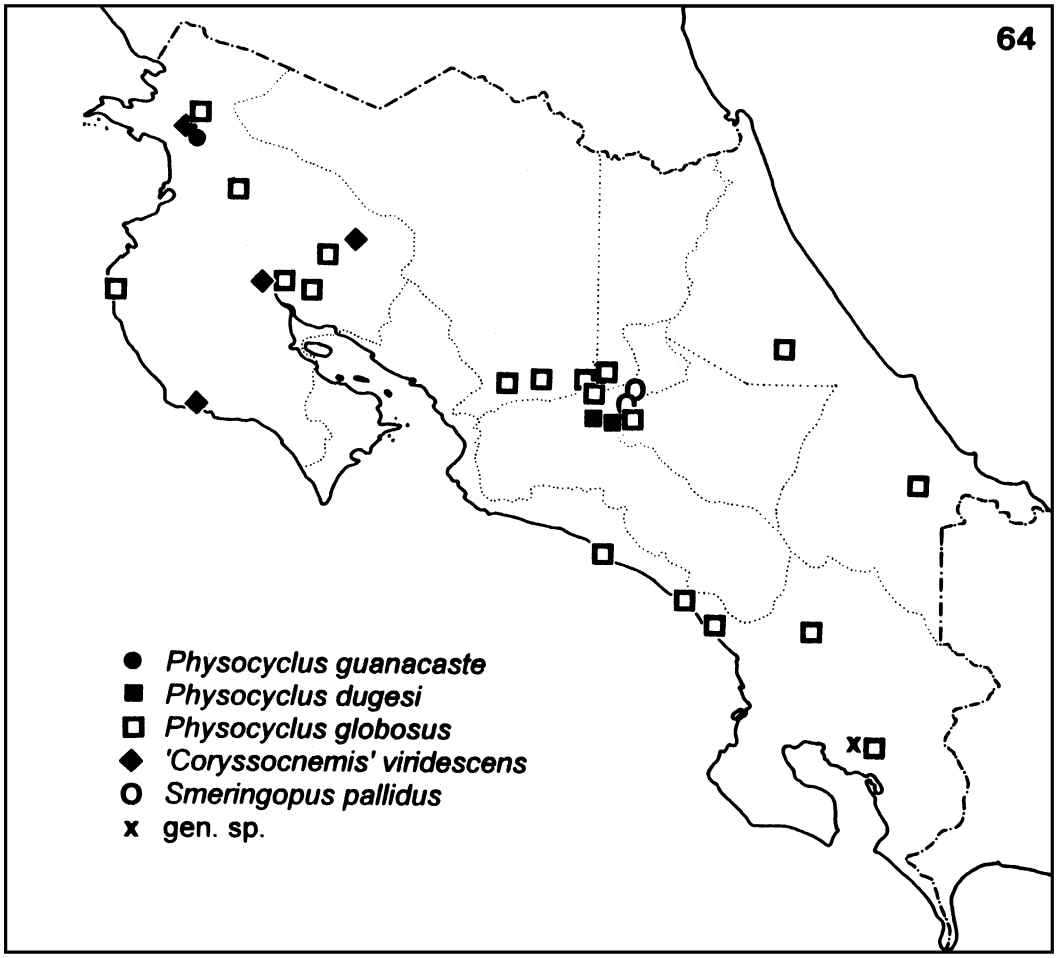



Fig. 64. Known distribution of the genera *Physocyclus*, '*Coryssocnemis*', *Smeringopus*, and an unidentified genus in Costa Rica. Note that Reimoser's (1939) records of *P. dugesi* are not included.

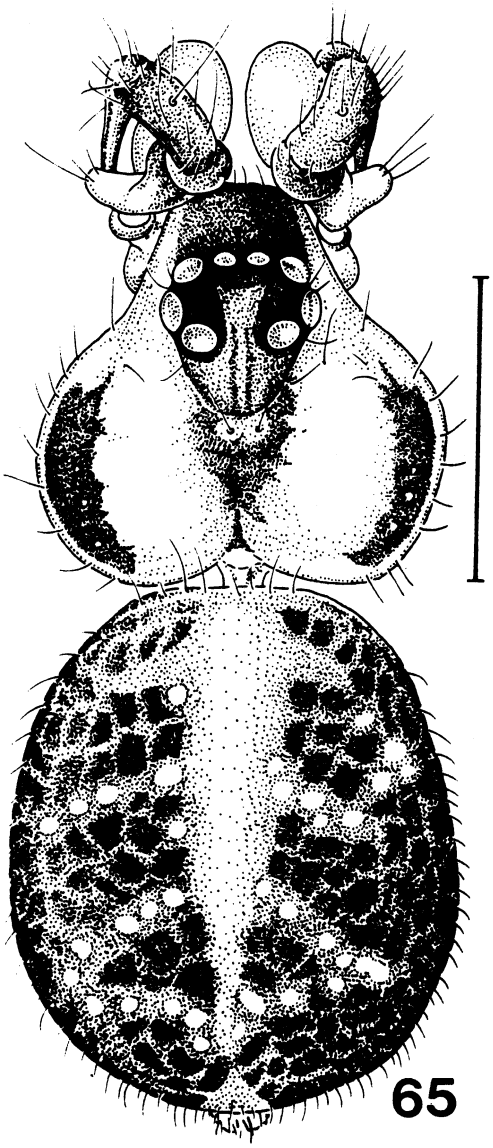
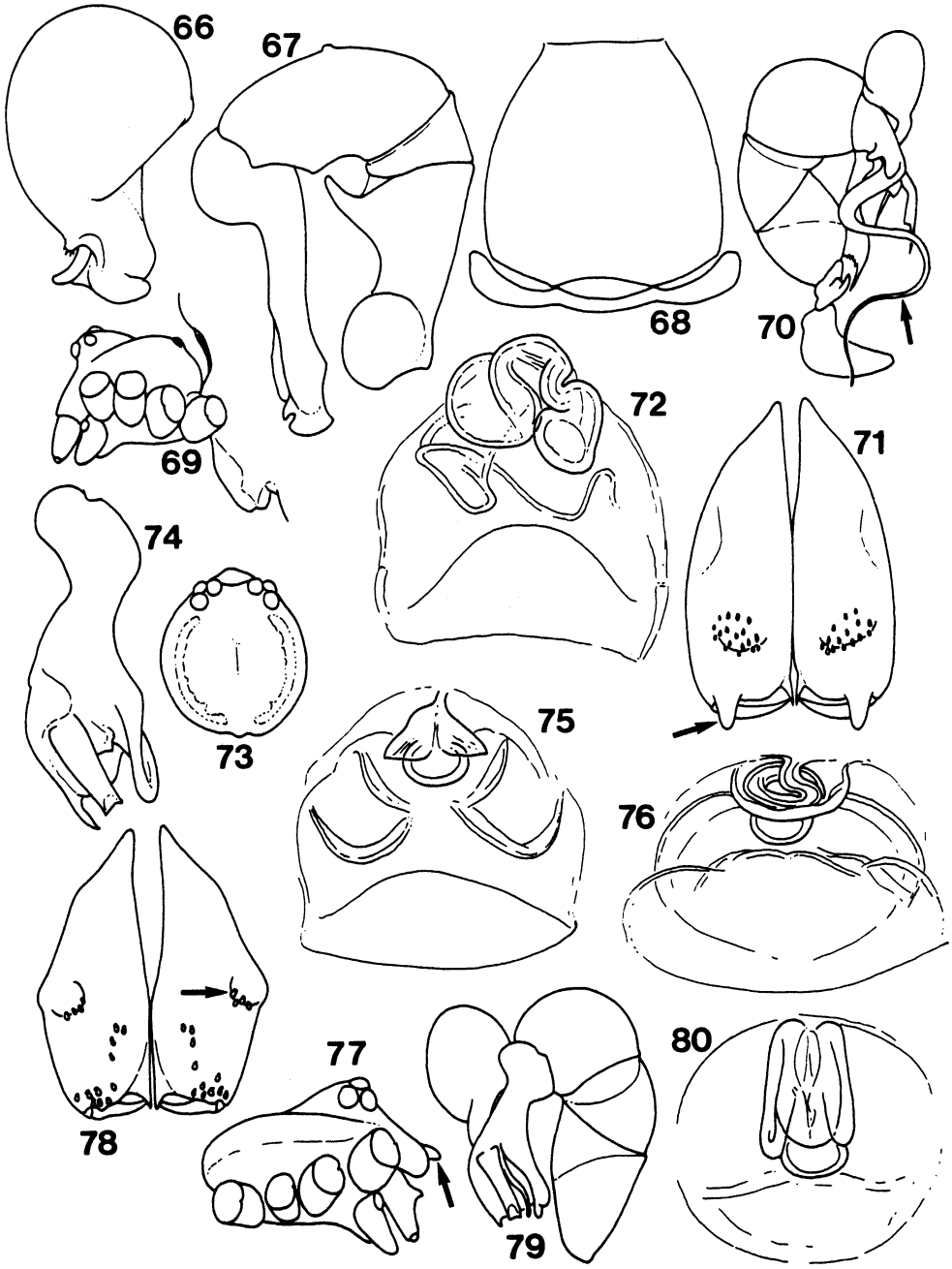



Fig. 65. '*Coryssocnemis*' *viridescens*, male, dorsal view. Scale line: 1 mm.




Figs 66-80. Distinctive characters of Costa Rican pholcids. 66-69, '*Coryssocnemis*' *viridescens*: male bulb (66), left pedipalp without bulb in retrolateral view (67), epigynum, ventral view (68), female stridulatory apparatus, lateral view (69). 70-72, *Metagonia delicata*: Right male pedipalp, retrolateral view (70; arrow: procursus-apophysis), male chelicerae, frontal view (71; arrow: frontal apophysis), female internal genitalia, dorsal view (72). 73-75. *Metagonia hitoy* male prosoma, dorsal view (73), left cymbium with procursus, retrolateral view (74), female internal genitalia, dorsal view (75). 76, *Metagonia hondura*: female internal genitalia, dorsal view. 77-80, *Metagonia reventazona*: male prosoma, lateral view (77; arrow: clypeus apophysis), male chelicerae, frontal view (78; arrow: frontal apophysis), left pedipalp, retrolateral view (79), female internal genitalia, dorsal view (80). From: Huber 1998c (66-67), Huber 1997b (70-80).

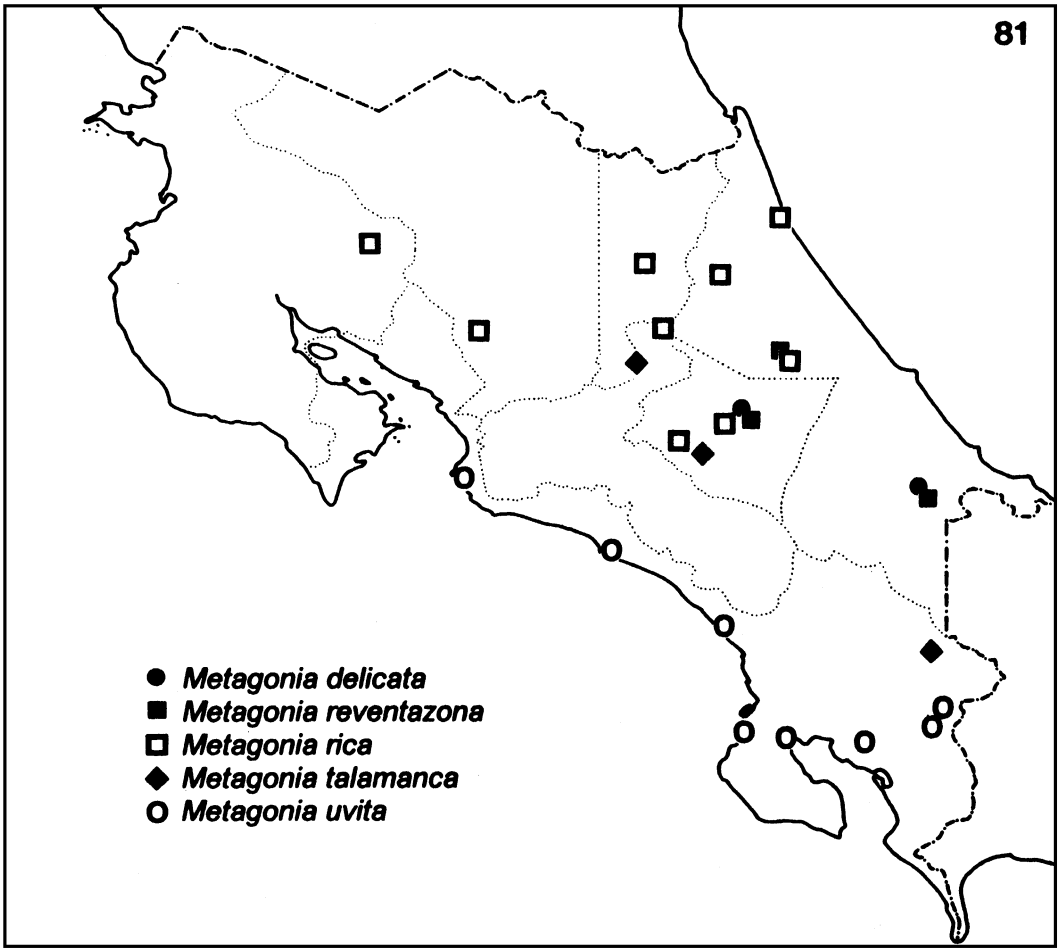
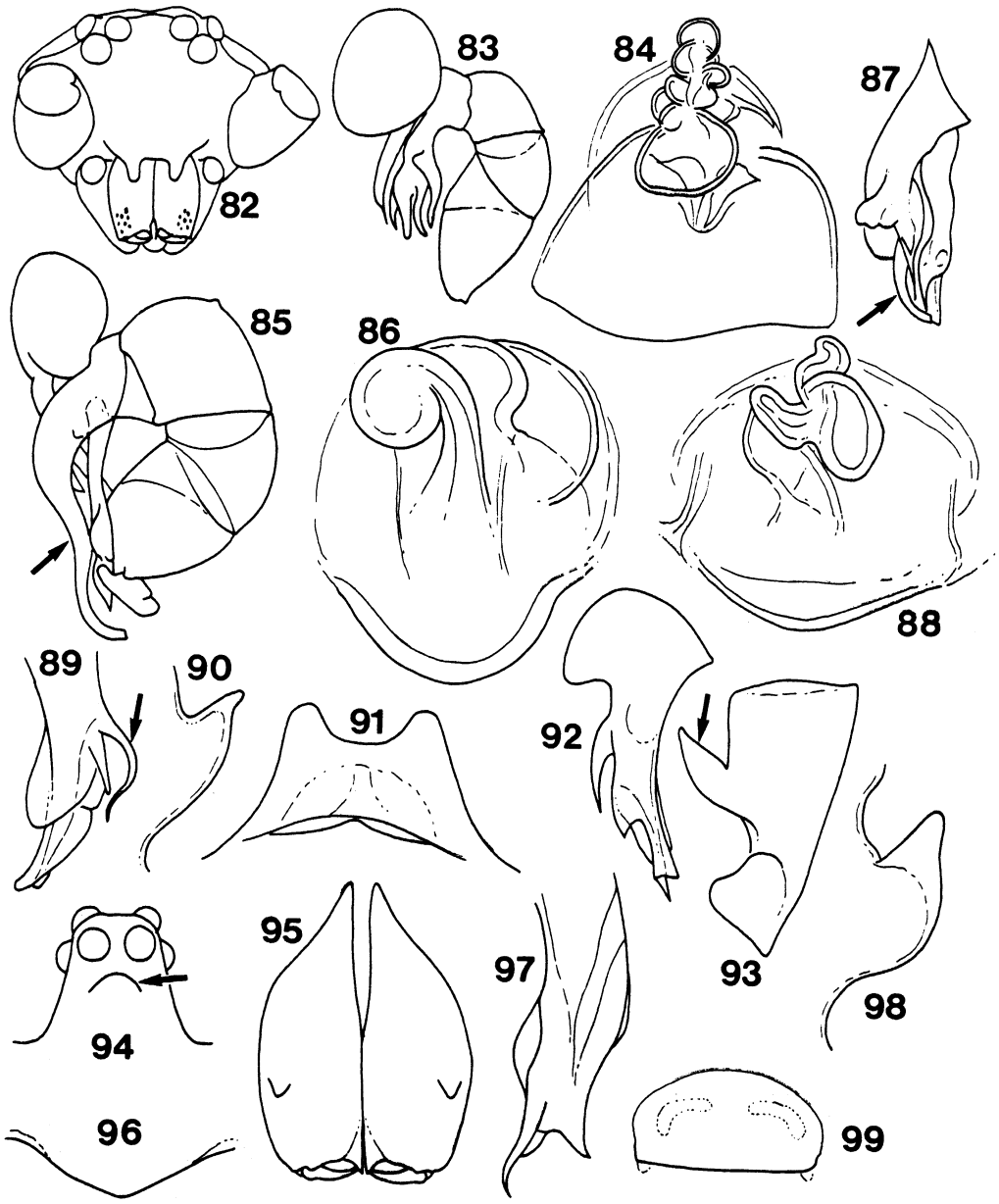



Fig. 81. Known distribution of the genus *Metagonia* in Costa Rica (for other species see Figure 46).




Figures 82-99. Distinctive characters of Costa Rican pholcids. 82-84, *Metagonia rica*: male prosoma, frontal view (82), left pedipalp, retrolateral view (83), female internal genitalia, dorsal view (84). 85-86, *Metagonia talamanca*: left pedipalp, retrolateral view (85; arrow: procursus-apophysis), female internal genitalia, dorsal view (86). 87-88, *Metagonia uvita*: left cymbium with procursus, retrolateral view (87; arrow: procursus-apophysis), female internal genitalia, dorsal view (88). 89-90, *Modisimus bribri*: left paracymbium, prolateral view (89; arrow: dorsal 'flagellum'), apophysis on male palpal femur (90). 91, *Modisimus cahuita*: epigynum, posterior view. 92-93, *Modisimus coco*: left cymbium with procursus, retrolateral view (92), male palpal femur, lateral view (93; arrow: ventral apophysis). 94-96, *Modisimus culicinus*: male eye turret, frontal view (94; arrow: frontal lobe), male chelicerae, frontal view (95), epigynum, ventral view (96). 97-99, *Modisimus dominical*: left procursus, prolateral view (97), apophysis on male palpal femur (98), epigynum, ventral view (99). From: Huber 1997b (82-88), Huber 1998b (89-93, 97-99), Huber 1996b, 1997a (94-96).

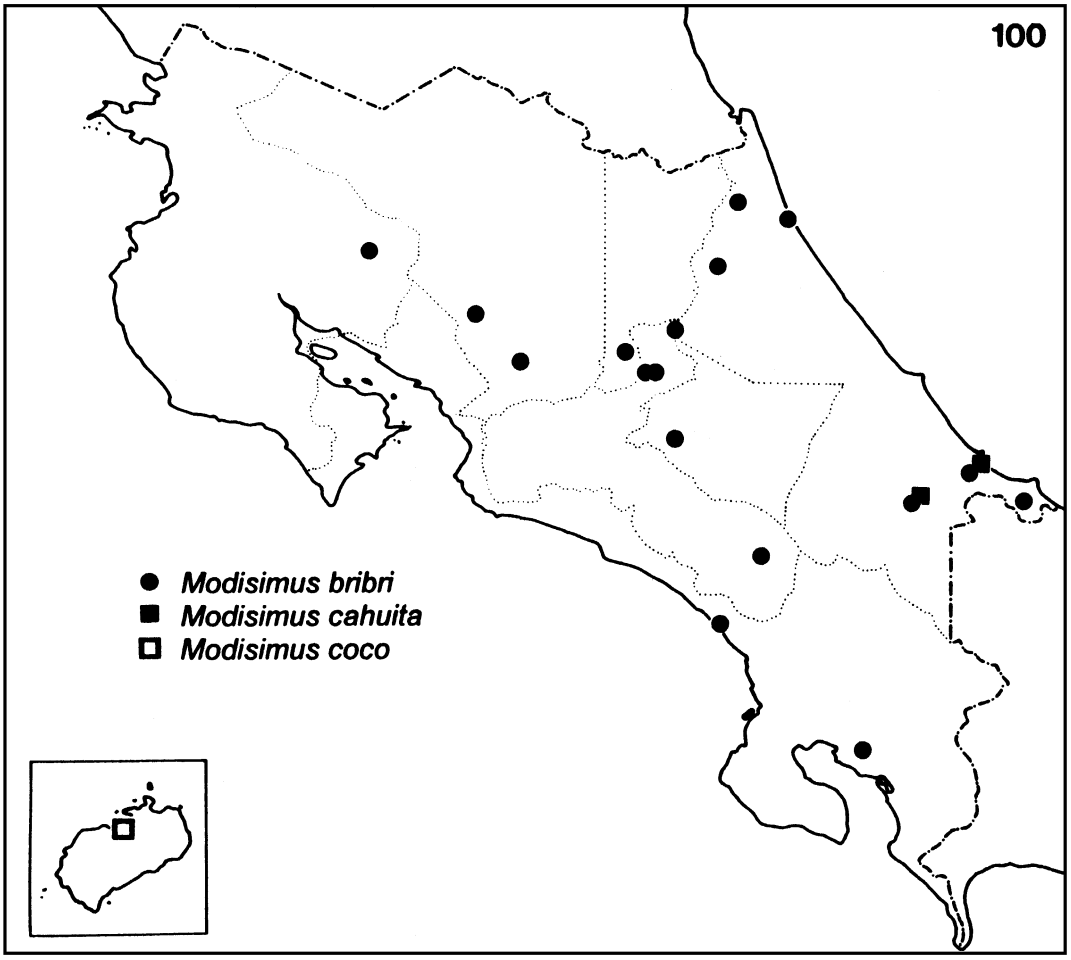



Fig. 100. Known distribution of three species of the genus *Modisimus* in Costa Rica (for other species see Figures 101, 102, 123).

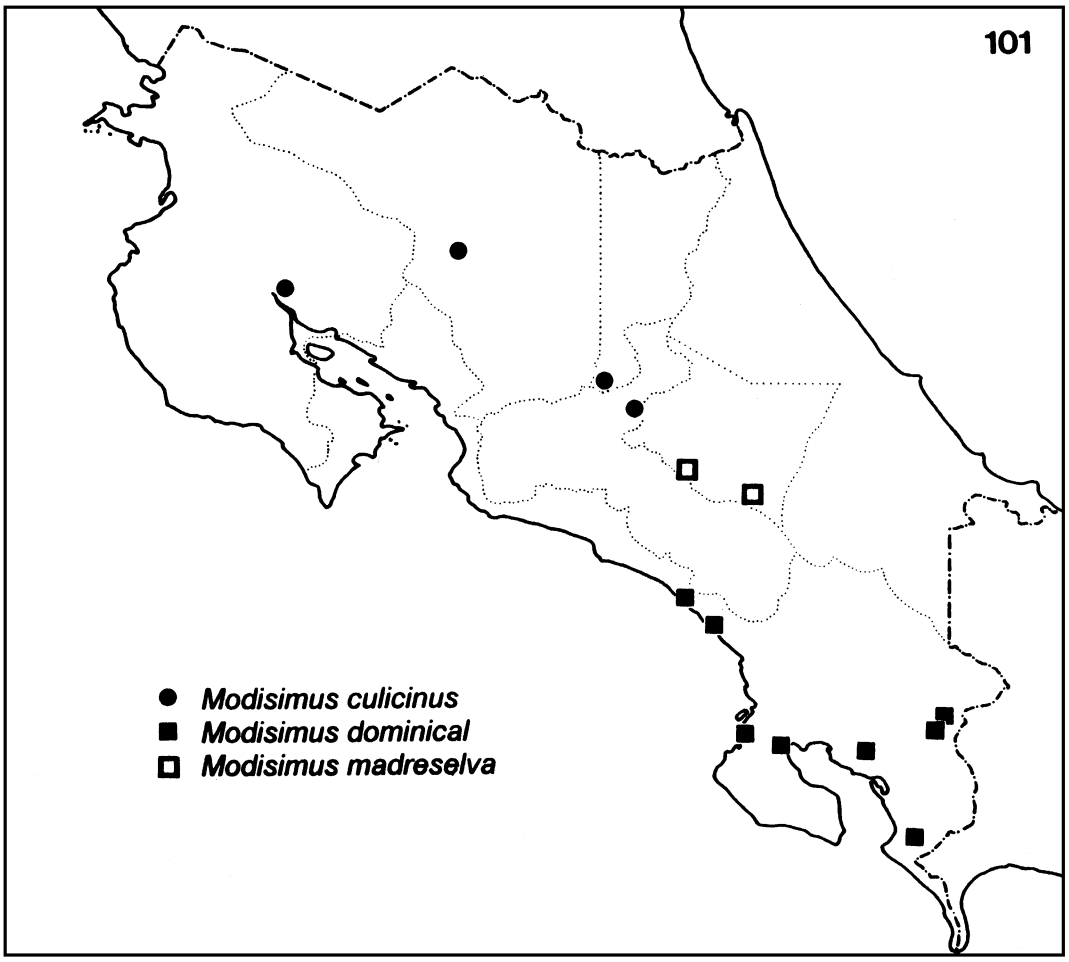



Fig. 101. Known distribution of 3 species of the genus *Modisimus* in Costa Rica (for other species see Figures 100, 102, 123).

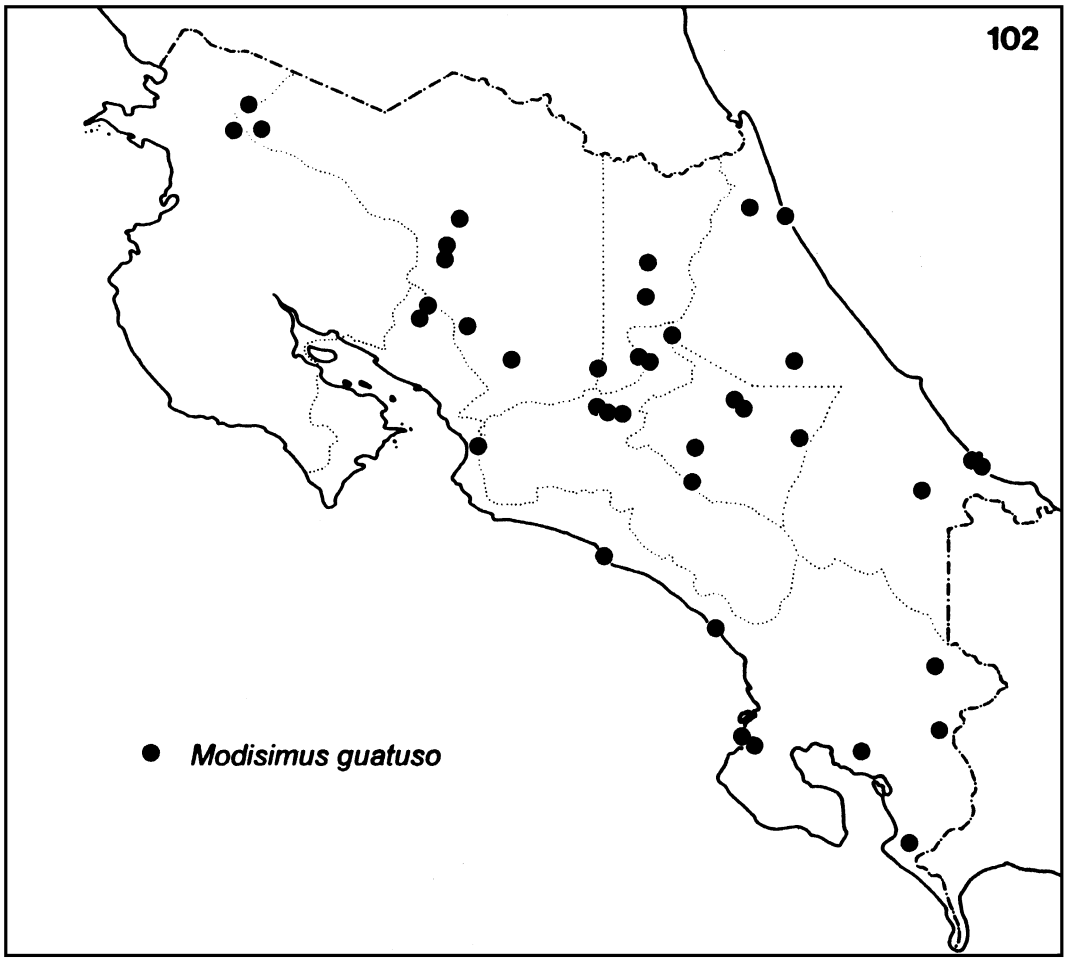
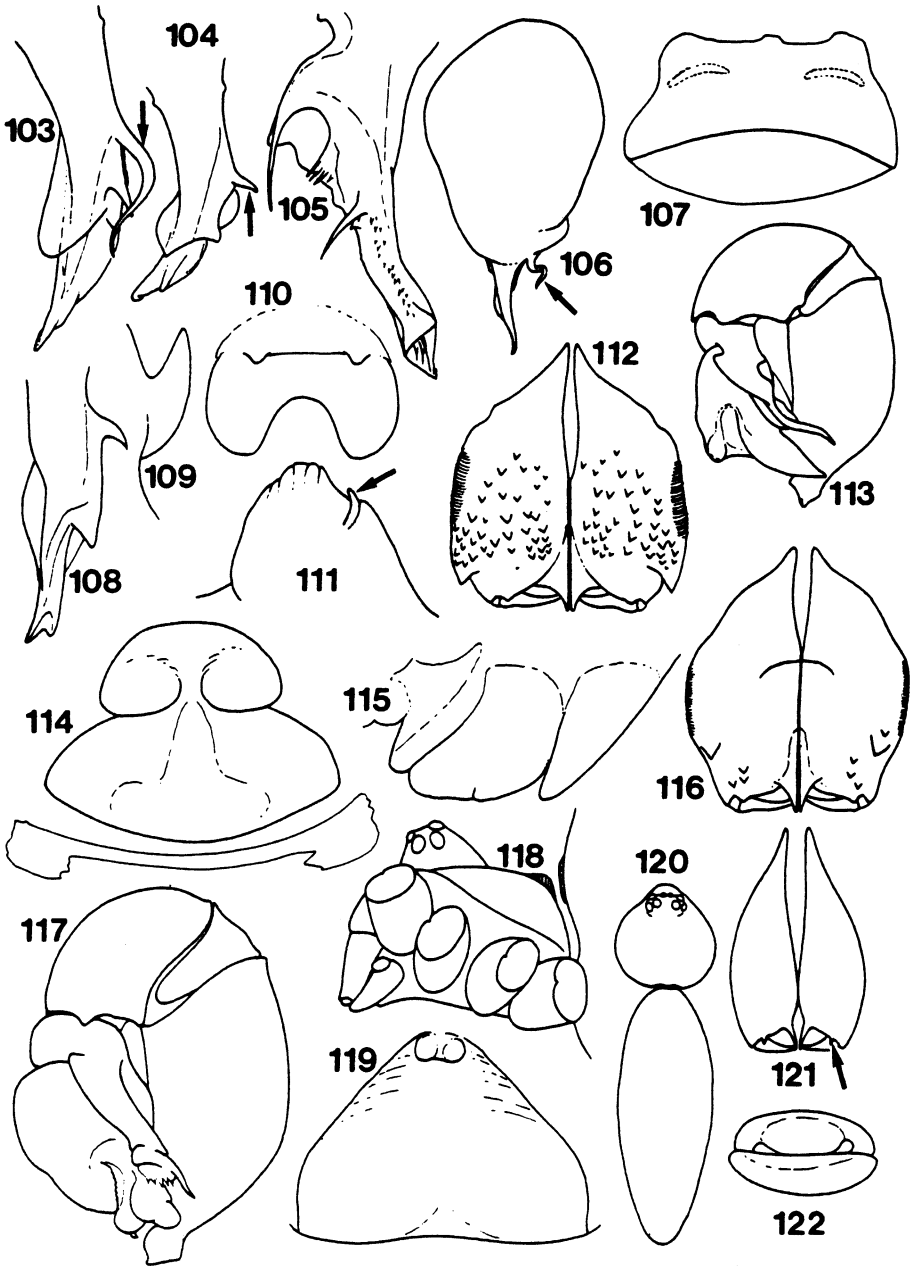



Fig. 102. Known distribution of *Modisimus guatuso* in Costa Rica.




Figs 103-122. Distinctive characters of Costa Rican pholcids. 103, *Modisimus guatuso*: left procursus, prolateral view; arrow: dorsal 'flagellum'. 104, *Modisimus madreselva*: left procursus, prolateral view; arrow: dorsal 'flagellum'. 105-107, *Modisimus pittier*: left procursus, retrolateral view (105), genital bulb, prolateral view (106; arrow: spiral apophysis), epigynum, ventral view (107). 108-109, *Modisimus sanvito*: left procursus, prolateral view (108), apophysis on palpal femur (109). 110-111, *Modisimus sarapiqui*: epigynum in ventral (110) and lateral (111; arrow: apophysis) view. 112-115, *Physocyclus dugesi*: male chelicerae, frontal view (112), left pedipalp, retrolateral view (113), epigynum, ventral (114) and lateral (115) view. 116-119, *Physocyclus globosus*: male chelicerae, frontal view (116), left pedipalp, retrolateral view (117), female stridulatory apparatus, lateral view (118), epigynum, ventral view (119). 120-122, *Smeringopus pallidus*: habitus, dorsal view (120), male chelicerae, frontal view (121; arrow: frontal apophysis), epigynum, ventral view (122). From: Huber 1998b (103-111), Huber 1997c (112-113), Huber & Eberhard 1997 (116-119), Millot 1941 (120-121), Petrunkevitch 1929 (122).

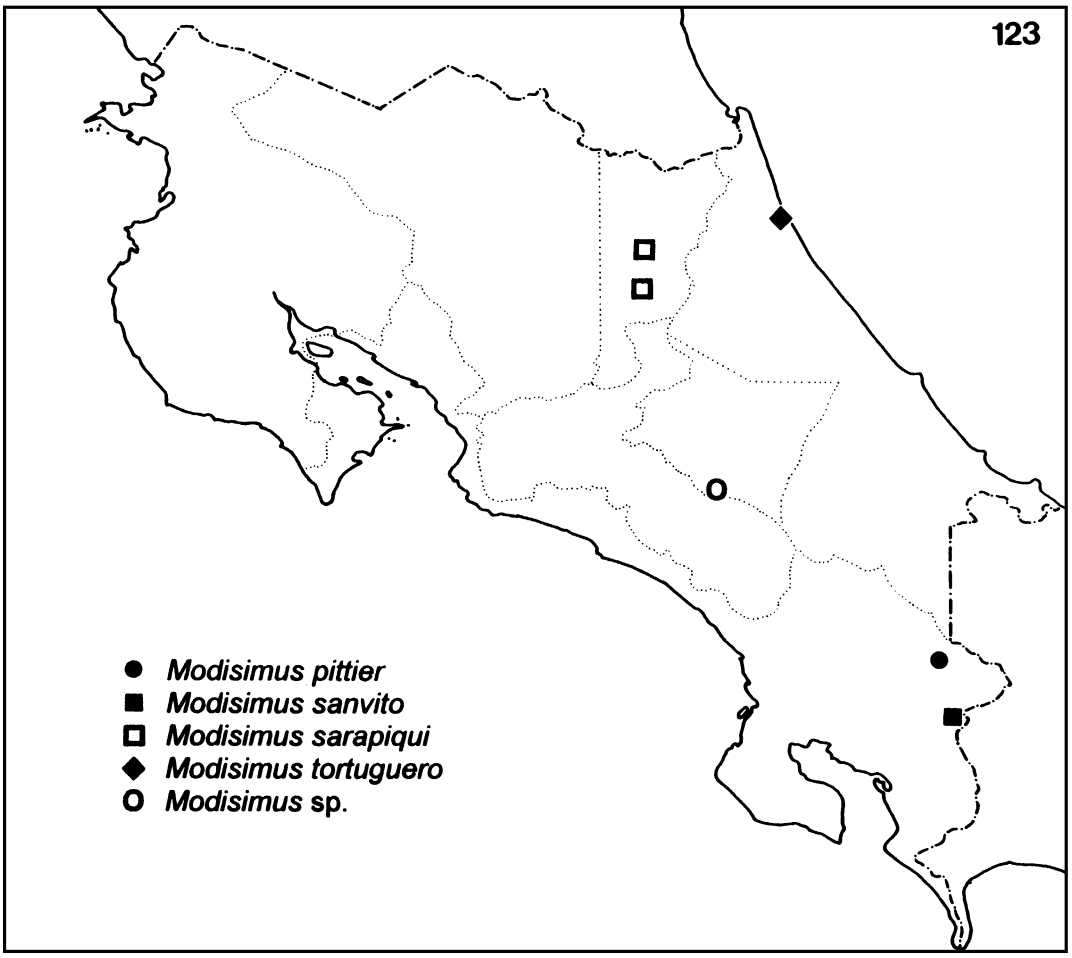
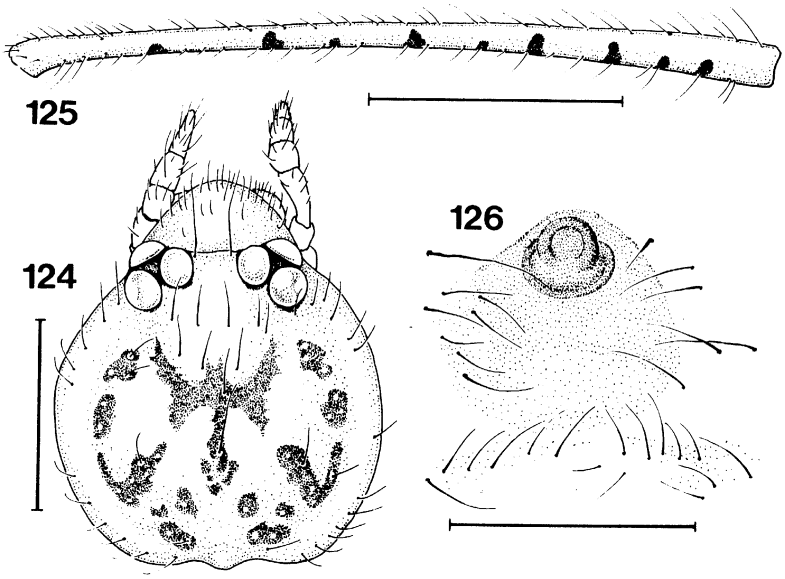



Fig. 123. Known distribution of five species of the genus *Modisimus* in Costa Rica (for other species see Figures 100-102).




Figs 124-126. *Metagonia* sp. from Manuel Antonio. 124, Female prosoma, dorsal view. 125, Femur of leg 2, prolateral view. 126, Female genitalia, ventral view. Scale lines: (124) 0.5 mm, (125) 1 mm, (126) 0.3 mm.

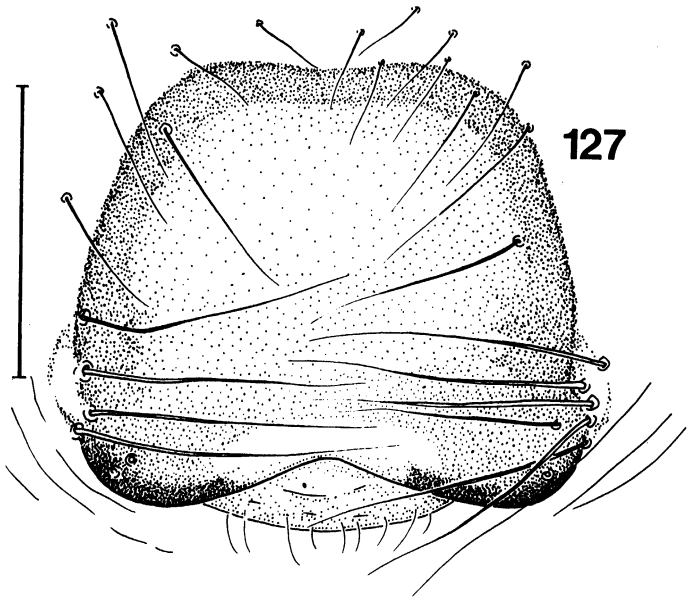
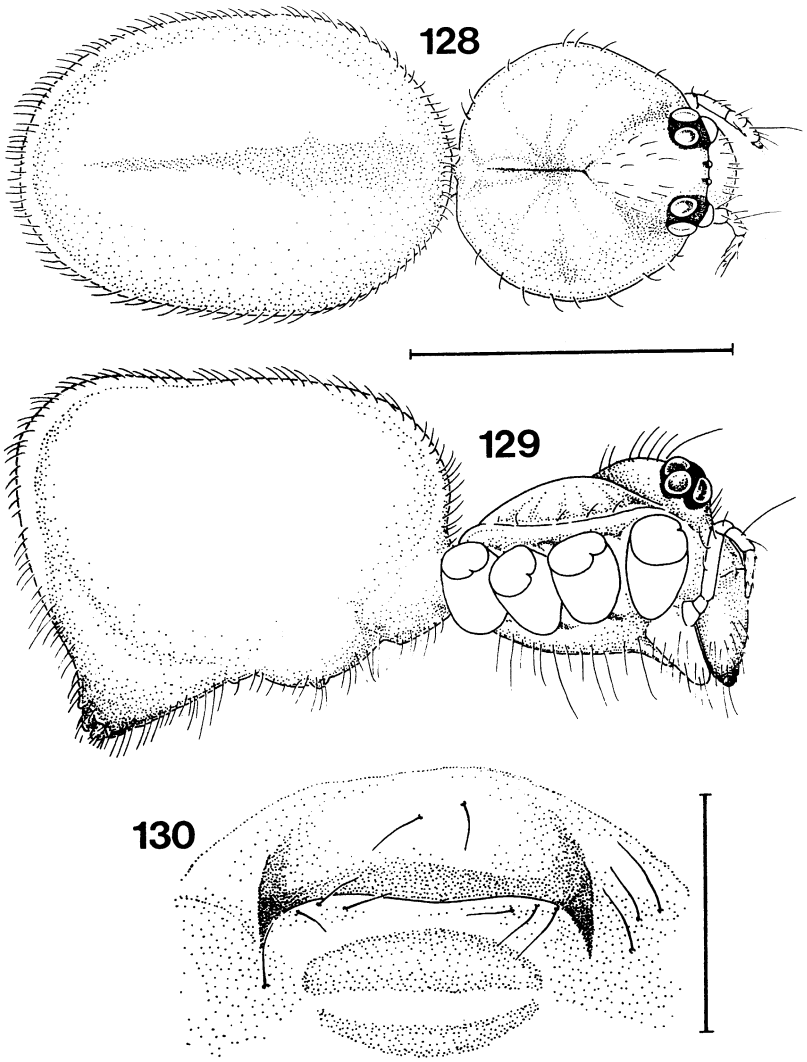



Fig. 127. *Modisimus* sp. from Villa Mills. Epigynum, ventral view. Scale line: 0.3 mm.




Figs 128-130. Unidentified genus and species from Esquinas Rainforest, La Gamba, female. 128, Dorsal view. 129, Lateral view. 130, Genitalia, ventral view. Scale lines: (128-129) 1 mm, (130) 0.2 mm.

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