
TAXONOMIC REVISION OF THE
JUMPING GOBLIN SPIDERS OF THE GENUS
ORCHESTINA SIMON, 1882, IN THE AMERICAS
(ARANEAE: OONOPIDAE)

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AND
MARTÍN J. RAMÍREZ



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ABSTRACT

The genus *Orchestina* Simon is distributed worldwide and is characterized by having an enlarged fourth femur with which these species are capable of jumping. The genus is also characterized by having a well-sclerotized sperm duct, a near H-shaped arrangement of the eye group, a 4-4-3-3 pattern of raised receptors on the tarsal organs of the legs I–IV, respectively, and by lacking spines on all the legs. All these characters, together with molecular evidence, support the monophyly of the genus, as well as its placement as sister group of Oonopinae. Most American species of *Orchestina* inhabit the forest foliage and canopy, but in unforested areas they also occur in shrubs and grasses. In this work, we revise the American representatives of *Orchestina* in a comprehensive context for the first time. In the past, six species were known from the Americas: five from the United States and only one from South America, described from Venezuela. After the study of the principal collections of the world and several field trips to several South American countries, we describe 85 new species and redescribe all previously known species. Matching sexes was occasionally problematic; while females are very homogeneous in somatic traits, males may have modifications on different parts of the body, making the matching very difficult. Therefore, in this review 56 of the species are described from only one sex, whereas 20 unmatched species are informally described as morphospecies, pending the discovery of conspecific sexes. Two species, *O. pavesiiformis* Saaristo and *O. dentifera* Simon, originally known from Israel and Sri Lanka, respectively, are here reported as introduced in several countries in the Americas and other continents. *O. justini* Saaristo described from the Seychelles is here considered a synonym of *O. dentifera*. One species, *O. truncata* Wunderlich, previously known as a subfossil spider from Colombian Copal is here tentatively redescribed based on recent material from Costa Rica, Colombia, and Ecuador; the female is also described for the first time. The species list by country is as follows (numbers refer to records, independently of the locality of the type material): United States (9 species: *O. utahana* Chamberlin and Ivie, *O. moaba* Chamberlin and Ivie, *O. obscura* Chamberlin and Ivie, *O. saltitans* Banks, *O. nadleri* Chickering, the introduced *O. pavesiiformis* Saaristo, and three new species, *O. quasimodo*, *O. kamehameha*, and *O. auburndalensis*); Mexico (3 species: *O. utahana* Chamberlin and Ivie, and two new species, *O. nahuatl* and *O. chaparrita*); Guatemala (1 new species: *O. guatemala*); Costa Rica (3 new species: *O. laselva*, *O. griswoldi*, and *O. chiriqui*; and the previously known *O. truncata* Wunderlich); Panama (5 new species: *O. chiriqui*, *O. labarquei*, *O. pan*, *O. campana*, and *O. galapagos*); Jamaica (2 species, the introduced *O. dentifera* Simon and *O. galapagos*); Haiti and Dominican Republic (only the introduced *O. dentifera* Simon); Colombia (6 new species: *O. filandia*, *O. zingara*, *O. arboleda*, *O. cali*, *O. platnicki*, *O. pakitza*; and *O. truncata* Wunderlich, plus the morphospecies OMI020 and OMI038); Venezuela (7 species: *O. saltabunda*; and 6 new, *O. venezuela*, *O. aragua*, *O. bolivar*, *O. maracay*, *O. ranchogrande*, and *O. neblina*); Trinidad and Tobago (1 new species: *O. kairi*); Guyana (1 morphospecies: OMI026); Ecuador (18 new species: *O. galapagos*, *O. fernandina*, *O. erwini*, *O. ecuatoriensis*, *O. sotoi*, *O. magna*, *O. shuar*, *O. golem*, *O. waorani*, *O. tzantza*, *O. predator*, *O. goblin*, *O. yanayacu*, *O. otonga*, *O. santodomingo*, *O. quijos*, *O. mayo*, *O. laselva*, and *O. truncata* Wunderlich, plus the morphospecies OMI020, OMI021, OMI022, OMI023, OMI024, OMI025, OMI026, OMI027, OMI029, OMI036, and OMI038); Peru (9 new species: *O. cajamarca*, *O. comaina*, *O. atocongo*, *O. mancocapac*, *O. silvae*, *O. madrededios*, *O. pakitza*, *O. losamigos*, *O. golem*, and the morphospecies OMI020, OMI023, OMI026, and OMI030); Brazil (25 new species: *O. cristinae*, *O. coari*, *O. moura*, *O. valquiria*, *O. aproeste*, *O. caxiuana*, *O. para*, *O. taruma*, *O. retiro*, *O. divisor*, *O. juruti*, *O. platnicki*, *O. iemanja*, *O. bonaldoi*, *O. rapaz*, *O. itapety*, *O. catarina*, *O. leon*, *O. saudade*, *O. sarava*, *O. goblin*, *O. sotoi*, *O. golem*, *O. waorani*, *O. ucumar*, the introduced *O. pavesiiformis* Saaristo, and *O. dentifera* Simon, plus the morphospecies OMI021, OMI023, OMI024, OMI025, OMI026, OMI027, OMI029, OMI032, OMI033, OMI034, OMI035, OMI036, OMI037, OMI039, and OMI040); Bolivia (3 new species: *O. moyuchi*, *O. grismadoi*, and *O. ucumar*); Chile (12 new species: *O. pandeazucar*, *O. caleta*,

O. totoralillo, *O. pizarroi*, *O. molles*, *O. granizo*, *O. quenies*, *O. curico*, *O. cachai*, *O. nahuelbuta*, *O. jaiba*, and *O. osorno*); and Argentina (6 new species: *O. ucumar*, *O. andianavarroi*, *O. luispi*, *O. cristinae*, *O. platnicki*, *O. jaiba*, and the introduced *O. pavesiiformis* Saaristo). Although the internal relationships of the genus are still not clear, we suggest some groups of species based on morphological characters and geographic distributions. Species from the western United States share the presence of a net-shaped pattern of coloration and, in some species, modifications of carapace or first legs of males. Females of this group are characterized by the presence of a thin, generally long and twisted anterior receptaculum and external pockets on the epigastric region. This group inhabits in a geographic region that remained isolated during the late Cretaceous and is still isolated by geographic and climatic conditions. Species groups in South American members were more difficult to establish, given their wide diversity. However, some species are unique in having internal pockets in female genitalia and apophyses on the male copulatory bulb. The Chilean species are probably a monophyletic group; they are separated from the rest by the combined presence of external pockets and ridges on the epigastric region of female, whereas males are very similar in the morphology of copulatory bulb, which is very simple, with long embolus and sometimes with additional spine-shaped apophysis. This group may have experienced events of isolation during and after the elevation of the Andes range. As in other members of the family the genus is interesting for the presence of secondary sexual characters in males whereas females are practically homogenous in somatic characters. However, female genital morphology is variable, which may suggest a coevolution with somatic characters in males and probably mechanical interactions. Although this work reveals the incredible diversity of this genus, many important geographic regions remain undersampled and records for some countries are entirely lacking.

INTRODUCTION

The genus *Orchestina* was established by Simon (1882) to include a small spider, *Schoenobates pavesii* Simon (1873) from France, originally described in the Dysderidae. Even then, the jumping behavior of this species drew the attention of Simon who also noted a particular character, the enlarged fourth femur: “*Il est excessivement vif et marche par sauts, comme l’indique ses cuisses postérieures plus longues et plus épaisses que les autres.*” This trait has been used since then as a diagnostic character for the group and the jumping behavior is easily observed in live specimens. Although Simon did not explain the etymology of the genus, proposing the name in a footnote, Cameron (2005) indicated that the name is a feminine diminutive that means “dancer.” It is likely that Simon named this genus for its active behavior and ability to jump, and to reflect the old genus of Blackwall, *Schoenobates* (“rope dancer”), in the new name.

Although the genus was well known among arachnologists this knowledge was based mainly

on isolated publications of species distributed in Asia, Europe, Africa, and United States (Simon, 1873, 1882, 1893a–e, 1909; Oi, 1955, 1958; Brignoli, 1978; Benoit, 1979; Xu, 1987; Saaristo and van Harten, 2002, 2006; Saaristo and Marusik, 2004; Ono, 2005; Wunderlich, 2011; Chamberlin, 1924; Chamberlin and Ivie, 1935, 1942; Chickering, 1969; Banks, 1894). The most recent publications on the genus include a description of 18 new species of the Afrotropical region (Henrard and Jocqué, 2012) and nine new species from China (Tong and Li, 2011; Liu et al., 2016). No species has been described from Central America or the West Indies and only one, *Orchestina saltabunda* Simon (1893c) from Venezuela, is previously known from South America. The knowledge for other regions of the world remains relatively incomplete; only one species has been described for all of Oceania (Marples, 1955) and besides the Afrotropical fauna, all other regions are still unexplored or with spiders in collections waiting to be described. A preliminary revision of material from several countries of southeast

Asia and Papua New Guinea gives an estimate of at least 20 new species (M.A.I., personal obs). For Europe there are at least five new species awaiting description (A. Henrard and L. Crespo, personal commun.) whereas many other countries are still undersampled or with few described species considering their territorial extent.

RELATED GROUPS

The monophyly of Oonopidae has been recently supported by several morphological synapomorphies and molecular data (Burger and Michalik, 2010; de Busschere et al., 2014; Lipke and Michalik, 2015), but the internal relationships among genera and species remain uncertain. Historically, *Orchestina* was placed into its own subfamily by Chamberlin and Ivie (1942) although without strong justification. In a recent contribution, the study of the tarsal organ morphology of several genera of oonopids and related families led to the recognition of three subfamilies: Sulsulinae Platnick, Orchestininae Chamberlin and Ivie, and Oonopinae Simon (Platnick et al., 2012a). In that paper, the relatively basal position of the Sulsulinae and Orchestininae was supported by the sclerotization of the sperm duct in the male copulatory bulb and the H-arrangement of the eye group, both plesiomorphic as they also occur in Segestriidae, Dysderidae, and Orsolobidae. Moreover, the tarsal organ morphology reveals a pattern of 4-4-3-3 raised receptors on the legs I to IV in Orchestininae, instead of a reduced pattern of 3-3-2-2 as in most Oonopinae except *Kapitia* Forster, also with a 4-4-3-3 pattern, which suggests that the 4-4-3-3 pattern is actually the ground-plan of the tarsal organ in oonopids.

The phylogenetic relationships of the species of *Orchestina* were first explored for a group of African species using morphological data (Henrard and Jocqué, 2012). In that analysis the genus was recovered as monophyletic and two groups of species (each with two subgroups) were identified. More recently, a molecular phylogeny of the whole family using two molecular markers (18s and 28s) recovered *Orchestina* as monophy-

letic, although the African species were not recovered as such (de Busschere et al., 2014). In addition, their analysis combining both markers showed the genus as a relatively early branch in Oonopidae, splitting after the Sulsulinae and hence the sister group of Oonopinae.

THE GENUS *ORCHESTINA* IN THE AMERICAS

After the revision of the African representatives by Henrard and Jocqué (2012), America was the largest continent for which the diversity of this genus was strongly underestimated and practically unknown; for example, more species of *Orchestina* were described from Yemen than from all of South America (see Saaristo and van Harten, 2006; World Spider Catalog, 2017). The Neotropical Region is one of the richest places on earth in terms of biodiversity hotspots, such as the Brazilian Cerrado and the tropical Andes; many other places with high levels of endemic plants and animals suggest that the diversity of arthropods in general is underestimated (see Myers et al., 2000). Many species described in this work were collected with specific methods and it was only after their usage that the diversity of the genus became evident. One of these methods is canopy fogging. Canopy habitats were explored exhaustively from the 1970's with the aim of collecting several groups of arthropods that were difficult to obtain with traditional methods (Erwin, 1983); compared with other methods, canopy fogging produces the largest numbers of *Orchestina* species and specimens. In contrast with other oonopids that seem more abundant in litter, the genus *Orchestina* is perhaps the dominant group in canopies, with several species living in sympatry. Occasionally, some of these spiders are also found under bark, in litter, grasses, and suspended litter, and even inside buildings (Ubick, 2005). Surprisingly, some species have been abundantly collected from a number of extremely different environments, such as small, semidesert shrubs and in creeping succulent plants near the seashore of the Pacific coast of Chile, suggesting that the the genus can occupy a wide variety of habitats in the absence of forests.

DIVERSITY

With 74 species worldwide, the genus *Orchestina* was one of the largest oonopid genera that remained to be reviewed globally; other speciose genera historically known, such as *Dysderina* Simon, 1891, *Opopaea* Simon, 1891, *Escaphiella* Platnick and Dupérré, 2009, and *Ischnothyreus* Simon, 1893, have been already reviewed for at least some of their major areas of distribution (see Platnick et al., 2013; Platnick and Dupérré, 2009b; Platnick et al., 2012b; Baehr et al., 2013; Edward and Harvey, 2014). From the 85 new species described in this contribution, 28 are known from both sexes and 57 are known from one sex. Twenty morphospecies are fully documented but without a formal description, as they might match any of the species described from a single sex, or belong to additional species (see below, Criteria for matching sexes). So far the United States National Museum of Natural History (USNM) houses the largest number of specimens, mostly collected by the entomologist Terry Erwin and his collaborators using fogging in tropical forests in Ecuador. This method was also used in Chile and Peru by several collectors, although on a smaller scale. If we consider that in only two nearby localities in Ecuador, the Reserva Etnica Waorani and the Tiputini Biodiversity Station, 12 new species were collected with this technique, it is quite possible that using the same sampling effort in other regions, similar or even higher numbers of species might be sampled, especially in the Amazon region. Except for some isolated areas that have been sampled exhaustively, most countries in South America need to be better explored for *Orchestina* species. Some of them, such as Bolivia, Peru, Venezuela, and Colombia appear promising, and given the diversity of environments that they hold, the number of species known for these countries is still insignificant. Moreover, no species has been cited for Paraguay (except for one record of *O. cristinae*). All these countries will probably provide further new species, as well as extension into the ranges of the species known from neighboring countries. One of the most

exciting possibilities in terms of biogeography is Chile, which has been well sampled in the southern regions, but less so in its northern part. For Argentina, the western and central parts could provide additional species as well. A special case is Brazil, from which we have analyzed large amounts of material, but mostly from a few well-sampled localities; vast areas remain represented by only sparse collections. Other countries from the Caribbean region and Central and South America are far from being understood in terms of species diversity and could be the focus of new investigations. For North America, the United States seems to have been well sampled, especially the western region; perhaps because most of the specimens were collected and/or studied historically by very productive arachnologists, e.g., Chamberlin, Ivie, Kaston, Gertsch, and Roth, almost all the available material predates 1970. However, the eastern region of the country seems to be less studied and may result in interesting findings because of its proximity to the Caribbean region. Mexico is a country that may provide not only new species, given the variety of environments found there, but also revealing findings from the biogeographic point of view, given its connection to the Neotropical and Nearctic regions. No species of *Orchestina* has been cited for Canada, so it would be enlightening to determine whether the absence of records is due to a lack of sampling in that country or whether environmental or climatic variables are involved. Only one species of Oonopidae has been cited for Canada, *Ischothyreus peltifer* (Simon, 1891), apparently introduced (Platnick et al., 2012b). However, the presence of fossil records in that area indicates that ancestral forms of *Orchestina* were present in the past (see below).

Finally, it should be mentioned that the conservation of new material for future molecular studies will be crucial in matching sexes, especially in highly diverse localities and also to produce phylogenetic hypotheses in complement with morphological and biogeographic studies. Interestingly, the use of DNA barcoding (i.e., sequencing cytochrome c oxidase subunit I) has

proven to be very useful in matching and recognizing similar species from Panama (Labarque, 2012). Both sources of evidence, morphology and molecules, will be very helpful for future works, especially for matching sexes and integrative taxonomic studies.

BIOGEOGRAPHY

Through this review it was possible to infer some morphological and geographical patterns that may be useful in future biogeographic and comparative studies. There seem to be two main regions in the United States, each characterized by its own fauna. The western region includes species with females that have external pockets on the epigastric region and a twisted anterior receptaculum, characters not present in the eastern species. In addition, three species of the western region are characterized by the presence of modifications on the dorsal region of the carapace of males that include, for example, glandular pores (*O. quasimodo*), a patch of setae in an excavated area (*O. moaba*), and PME placed over a tubercle (*O. kamehameha*). All the species from the eastern region lack these modifications. Males of two western species (*O. moaba* and *O. quasimodo*) also have modifications at the proximal region of the tibia of the first pair of legs. The male of the eastern species *O. nadleri*, described for Florida, has a copulatory bulb that differs markedly from the other species by having the very long and coiled sperm duct, but other characters, such as the color pattern and the presence of a dark stripe on the anterior middle of the sternum resemble other species from that country.

The western United States is particularly rich in endemic plants and invertebrates (Myers et al., 2000); a new family of spiders was recently discovered in Oregon caves (Griswold et al., 2012) and other primitive arachnids have also been described for the region (e.g., Harvey, 1998; Coyle, 2005; Hedin, 2001). Given its geographic position, flanked by deserts and the Pacific Ocean, it is possible that some of these groups have been kept in isolation, allowing their diver-

sification. This isolation, however, may have occurred much earlier, at the end of the Late Cretaceous when the western region of North America was isolated from the east region by the presence of an internal sea known as "Cretaceous seaway" (Hay et al., 1999; Nicholls and Russell, 1990). At that time the genus was already well diversified, so the process of speciation in this region could have operated long before the current geological and climatic conditions. In contrast, the eastern and southeastern parts of the country could have been more influenced by the Caribbean and Central American fauna and therefore less isolated than the western region.

The Hawaiian species, *O. kamehameha*, deserves special mention. In this archipelago there is a generalized pattern in which species have colonized the newer islands from the older (see, e.g., Funk and Wagner, 1995; Gillespie, 2013). This process was studied for some spiders, such those of the genus *Orsonwelles* (Linyphiidae, Hormiga et al., 2003) and *Tetragnatha* (Tetragnathidae, Gillespie, 2004). In other cases, new events of colonization occurred by recolonizations from young to old islands (as in some Thomisidae) or recent colonizations (as in *Havaika*, Salticidae; Gillespie, 2004). Most of them came from North America, but other lineages originated from the islands of Polynesia (Gillespie et al., 1994; Arnedo et al., 2007; Arnedo and Gillespie, 2006). The morphological similarity observed between *O. kamehameha* (which occupies the younger islands) with some species of the western United States may suggest colonization from North America. New records and more material will be helpful to understand the history of this genus in those islands.

The only two species herein described for Mexico (besides *O. utahana* extending from the United States to Baja California) clearly illustrate the knowledge gap in that region, probably due to undersampling, and, for this reason, it is difficult to determine morphological patterns in relation to the adjacent fauna.

The spider fauna of Chile has always been of great interest to arachnologists, as many of their

representatives are more similar to spiders of Australia and New Zealand than those of the Neotropical region (Forster and Platnick, 1985; Forster et al. 1987; Rix and Harvey, 2010; Ott et al., 2013). Of the 12 species here reported from Chile, all are endemics, with a single species extending to the adjacent temperate forests in southern Argentina. The species of *Orchestina* from Chile show characters that have not been observed in other species from adjacent areas, allowing a clear differentiation as a putative monophyletic group. These characters are mainly from the genital structures of females including a pair of external pockets (except in *O. totoralillo*) in combination with sclerotized ridges on the epigastric region. Another feature is the shape of the anterior receptaculum with well-developed lumen. The male genitalia can vary from simple bulbs, formed only by a long embolus, to a more complex structure with an additional, long apophysis. The sperm duct generally follows a similar pattern in all species. Furthermore, the geography of Chile may have played an important role in the evolution of this group, mainly due to isolation imposed by the Andes range. Some of the species described in this review have been found in microhabitats, such as succulent plants near the seashore or semidesert shrubs in Atacama and Antofagasta, indicating that species are able to occupy niches in which there is minimal protection against drought and heat. Another peculiarity is the presence of sympatric species, for example *O. osorno*, *O. jaiba*, and *O. cachai*, while others are very close to each other, for example, in Coquimbo and Valparaíso, making these species important for determining habitat preference and niche overlap. The only species shared between Chile and Argentina is *O. jaiba*, which inhabits the Andean-Patagonian forests of Neuquén and Río Negro where the Andes are lower. These spiders also provide a framework for exploring aspects of phylogeography and the interrelationships among species of neighboring regions at the emergence of the Andes, and has the additional advantage of a rich fossil record to calibrate molecular clocks.

Based on the studied material we have discovered that *Orchestina dentifera* has been introduced in several localities of Central America and Brazil and probably other regions of the world; most of the American material has been collected in botanical gardens where the species could have come associated with exotic plants. Besides the basal conical projections on male chelicerae, this species shows other remarkable characters in males. The cheliceral promargin has a group of three long, nearly parallel setae (fig. 27A, C) that also occur in four African species of the “orange subgroup” (Henrard and Jocqué, 2012: fig. 336, see also fig. 610). This character is also present in *O. truncatula* from China (Tong and Li, 2011: fig. 3A, D), *O. pilifera* from Sri Lanka (Dalmás, 1916: fig. 28, note that the setae are not placed on clypeus, but see description) and in an undescribed species from Thailand (M.A.I., personal obs.). Also, all these species share a group of flattened setae on the labium of males (fig. 27B), although this character has been previously illustrated only for the African species (Henrard and Jocqué, 2012: figs. 120, 158, 190, and 338) and was overlooked by other previous authors. In addition, these groups of species have similar palp morphology, especially by the subbasal joint of the patella-tibia and shape of copulatory bulb. Flattened setae in the labium were also observed in two undescribed species from Singapore (Henrard, personal obs.). Interestingly, these Asian species appear related to two African species of the *macrofoliata* group (*O. macrofoliata* and *O. fractipes*) in a molecular phylogeny based on 18s marker genes (de Busschere et al., 2014: fig. 2). This result, together with the study of characters in a group of African and Asian species, might indicate a relationship between these regions that should explain the nonmonophyly of the African species of the genus. Unfortunately, the species diversity of Asia is still poorly known and a future revision of that fauna as well as the implementation of phylogenetic analyses with morphological and molecular characters are strongly needed.

Finally, one species, *Orchestina pavesiiformis*, originally described from Israel (Saaristo, 2007),

has been found in Buenos Aires, São Paulo, Minas Gerais, and California, mostly in houses, parks, and other modified environments. Its presence in other regions of the world is also possible.

It has been suggested that oonopids have, on average, very small distribution ranges (e.g., Platnick and Dupérré, 2011). However, this assumption does not seem to hold true for all species of Oonopidae and may apply largely to litter-dwelling species (Platnick and Dupérré, 2009a). Some studies have already shown that spiders inhabiting canopies have wide distribution ranges (Fannes et al., 2008), including the recent revision of *Orchestina* in tropical Africa (Henrard and Jocqué, 2012). In this work, some species, such as *O. platnicki*, *O. truncata* Wunderlich (2004a), and *O. cristinae* show wide distributions, supporting the idea that canopy species may reach wider distributions than litter-dwelling spiders.

THE FOSSIL RECORD

As one of the best-represented spider families in amber inclusions, the Oonopidae have a relatively widespread and rich fossil record that indicates that this group was already present at least by the Cretaceous (Dunlop et al., 2016). The diversity of the genus *Orchestina* is also reflected in the fossils, consisting exclusively of inclusions of Mesozoic amber and copal from Lebanon, Myanmar, New Jersey, and Canada, as well as Cenozoic amber from France, Spain, the Baltic region, Mexico, Dominican Republic, and Colombia (Wunderlich, 2004a, 2004b, 2008; Penney, 2006; Dunlop et al., 2016). Many of the Cenozoic records date from the Palaeogene, approximately 66 to 23 million years ago, but the older ones date from the Albian (early Cretaceous), approximately 112 to 99.6 million years ago (Dunlop et al., 2016; Saupe et al., 2012). Along with *Ariadna* Audouin (Segestriidae), *Orchestina* is also one of the oldest genera of spiders found in this type of inclusion (Wunderlich, 2004a, 2004b). Given the considerable evolutionary stasis exhibited by this genus, the species can

be considered “living fossils.” In fact, the enlarged femur of leg IV is clearly visible in some amber inclusions. The fossil record for this genus is so rich that even mating couples have been found and these spiders seem to adopt the same position as in *O. ucumar* (see Wunderlich, 2004a: 698, fig. 8g; Burger et al., 2010). Other specimens were found with prey items including Psocoptera and Diptera (Wunderlich, 2004a). Although there are currently no records for the genus in Canada, the findings of fossils indicate that there was at least one related species, *Canadaorchestina albertensis* (Penney, 2006), while the rest of the American fossil material has been found in amber or copal of Mexico, Colombia, and the Dominican Republic (Wunderlich, 1981, 1988, 2004a, 2004b; Petrunkevitch, 1971). However, most records are from the Baltic region (Dunlop et al., 2016). In this revision we provide a tentative description of recent *O. truncata*, which was based on a subfossil previously known from a single male from Colombia, including the unknown female.

MORPHOLOGY

COLORATION

Coloration and patterns are in general orange or yellow and smooth or reticulated (fig. 2). In the South American members the carapace is smooth; with no coloration patterns whereas some North American representatives have a net-shaped pattern of purple or gray coloration. In live or fresh specimens of South American species, the abdomen may have an orange or pale orange coloration, sometimes with purple or gray pattern of square patches on the cardiac region with lateral bands of the same color (fig. 199B, E); the ventral region may have a band of the same gray color on the median half. On the other hand, North American species have a gray netlike pattern that is more evident in well-preserved specimens. In general, coloration and body patterns are better preserved in 100% ethanol than in 80% although specimens become

easily breakable and in some cases slightly green or blue if the specimens are preserved for a long time. As noted by Saaristo and van Harten (2006) when specimens are placed in ethanol they frequently become discolored and many of the body setae also become detached.

LEGS

The most conspicuous character of the genus is the presence of an enlarged fourth femur in both sexes and juveniles; as far as we know, it is present in all the species and seems to enable the spiders to jump when they are disturbed. This peculiar morphological trait has also been observed in fossil representatives (Wunderlich, 2004a: photo 34, 2004b: 1863, fig. 1; Saupe et al., 2012: fig. 1). Other leg modifications are rare, except in the North American species *O. quasimodo* in which first tibiae are provided with gland pores and are also swollen and covered by long or strong setae (fig. 8); such setae are also present in *O. moaba* but pores were not confirmed with SEM. Similar modifications are also present in some African representatives (Henrard and Jocqué, 2012).

The genus is further characterized by a lack of spines, although this is not a diagnostic character. The absence of spines is a useful character to separate *Orchestina* from other spiny, soft-bodied oonopids with which it can be confused, such as *Neotrops* Grismado and Ramírez (2013), *Gradunguloonops* Grismado et al., 2015 (in Grismado et al., 2015), and other genera with robust spines, especially on the forelegs. Exceptionally, some species may have paired, very thin spines at the ends of metatarsi III and IV that are easily overlooked or difficult to distinguish from regular setae. *Orchestina* can be separated from other nonspiny, soft-bodied oonopids by the combination of other characters (see the diagnosis of the genus, below). The tarsal claws are bipectinate; normally the outer row of each claw bears longer teeth than the inner side. Both claws are inserted on a small onychium, which is sometimes retracted into the final section of the tarsus or

bent backward. Claw tufts are reduced to a few setae, from two to four although SEM images are sometimes difficult to interpret.

SETAE

Species of *Orchestina* are very pilose. Unfortunately, many of the setae that cover the spiders' body are easily lost in preserved specimens and are better viewed in recently collected or live specimens. In general, both the cephalothorax and abdomen are covered by long, needlelike setae. In both sexes the pedicel is also surrounded by long setae disposed as a ring, starting from the proximity of the epigastric region through the dorsal insertion of the abdomen with the pedicel (figs. 69B, 82A–C). Similarly, the spinnerets in both sexes are surrounded by a ring of long setae. Such setae of pedicel and spinnerets are also difficult to observe given that they are normally detached, but it is still possible to see the sockets around such areas. Normally males possess long setae on the clypeus and in some species these setae are even stronger, similar to macrosetae (as in *O. griswoldi*). Legs are covered by short setae on the proximal segments, being slightly longer on the distal region of the metatarsi and tarsi. Several distinct types of setae were observed on the apical region of the prolateral margin of metatarsus I–III in both sexes, and occasionally on the tarsus as well (figs. 83C–E, 153A–D). These setae are aligned in groups of two or three and are formed by filiform projections and a flattened, canoe-shaped structure in contact with the leg cuticle. In the female of *O. caleta* from Chile, the canoe structure has a globular region near base (fig. 153A–D). Similar setae have been reported in *O. communis* Henrard and Jocqué, *O. fractipes* Henrard and Jocqué, *O. kasuku* Henrard and Jocqué, *O. lanceolata* Henrard and Jocqué, and *O. probosciformis* Henrard and Jocqué. Also, they have been observed in *Mechisedec* Fannes (Fannes, 2010). Their function is unknown. The chelicerae are in general covered by few setae, the more conspicuous being two long, plumose setae, placed on the

promargin and retromargin whereas the other setae are needlelike or slightly flattened (figs. 67A, B, 73, 181).

GENITALIA

Although the genital structures of males and females follows a basic plan the diversity of forms of some of those structures is extremely high. Saaristo and van Harten (2002) argued that because of the complicated radiation in the structure of the secondary genital organs (among other organs) it will be necessary to split the genus. However, up to now, there is no evidence supporting that idea and the variation observed in the genital structures seems to be a widespread pattern in many other genera of oonopids. The intergeneric relationships of *Orchestina* will be better understood when other areas of the planet can be revised and the results analyzed in a phylogenetic context.

MALE PALP

Typically, the palp tibia is enlarged although the degree differs among species (figs. 15, 37, 93). The attachment with the patella is either basal or subbasal, although the latter type seems to be more common in African and Asian species, being an exception in South American representatives (as in fig. 37A, C). The copulatory bulb is generally stout, gradually tapering apically and the embolus shape and length are extremely variable. The sperm duct is well sclerotized; it begins with the fundus near cymbium and runs apically to the embolus, forming loops during its course. The sperm duct varies from slightly coiled to extremely coiled in South American species (fig. 63A, C, E, G, I) whereas North American species have a duct with only one or two loops (fig. 20A, C, E, G, I, L). Saaristo and van Harten (2006) argued that the course of the sperm duct is species specific. Although this holds true for distantly related species, some closely related species have a sperm duct that follows almost the same course as occurs in some representatives from

Panama and Chile. The sperm duct is surrounded by a glandular tissue that is not easily observed under the microscope. However, it is possible to distinguish the places where these glands enter to the duct though conspicuous pores along its extension (figs. 102B, 140A, 192A–D). Such pores have also been observed in *Ariadna* (fig. 192E, F) and entelegyne spiders such as *Pelegrina proterva* (Walckenaer, 1837), *Sitticus floricola palustris* (Peckham and Peckham, 1883), *Phlegra fasciata* (Hahn, 1826) (Salticidae, see Maddison, 1996: figs 3, 16, 18, under ducts of tegular glands), and may well be widespread in spiders (Juberthie-Jupeau and Lopez, 1981). Additionally, there is another gland that seems to be different from the others and is always placed near distal end of the duct (figs. 102B, G, M, 173I). Although the functions of these glands have not been studied in *Orchestina*, it is possible that they have a role in maintaining the sperm as well as in the ejaculation mechanism (Michalik and Ramírez, 2014). In non-entelegyne spiders two muscles are present in the male genital bulb of adult specimens, the m29 and the m30 (Huber, 2004). These muscles move the copulatory bulb prior to and during intrusion. The m29 originates in the tibia, the m30 in the tarsus (figs. 20L, 63I, 173E). In some oonopids both muscles could be absent (for example, in specimens with copulatory bulb fused to cymbium) whereas the m30 is either absent or reduced to connective fibers with very thin striated muscles among them (Huber, 2004). In *Orchestina* both muscles are present. The m29 is a well-developed muscle with striated fibers that it is attached to the fundus through a tendon, whereas the m30 is a reduced muscle whose striated muscles are not clearly distinguished. This muscle is attached to a projection at base of the bulb, apparently without a tendon (fig. 102D, K). The attachment of the m29 to the fundus has been reported for other Dysderoidea as well (*Oonops* Templeton, 1835, *Dysdera*; see Huber, 2004).

Additional apophyses on the copulatory bulb may also be present in some species, although they have been observed in species of Central and

South America, but not in North American members. A comparison of the known species shows that these apophyses, especially the largest ones (such as in *O. mancopac* or *O. shuar*, figs. 93G–I, 102M, 109), are not as regular in taxa from other continents as in those from the Americas; for example, none of the described species of Africa have similar structures. In the future, it would be interesting to check whether these apophyses are a particular character of a group of American species, taking in to account the homology, or whether it is a matter of convergence. The functions of these apophyses are unknown. We suggest that they may have a function during mating, for example, attachment to external or internal pockets on the female genitalia. However, no direct observations have been made and it is possible that other structures such as the cheliceral fangs interact with the pockets.

FEMALE GENITALIA

As in all the Dysderoidea the female genitalia consist of an anterior section derived from the anterior wall of the uterus externus and a posterior section originating from the posterior wall of the same structure. Both sections are of course variable in the four families of Dysderoidea, but have evolved to a huge complex in Orsolobidae and Oonopidae (see for example Fannes and Jocqué, 2008). In these two families (and in some Dysderidae as well) the anterior receptaculum is highly sclerotized. In *Orchestina* the anterior receptaculum is extremely variable and is one of the most useful structures for species identification (figs. 39, 60, 61, 134). In general, it is a well-sclerotized structure that may have anterior apodemes where a pair of muscles is attached (fig. 197A, B). These apodemes can be long, as in *O. leon* (fig. 143E) and *O. luispi* (fig. 197E), short as in *O. yanayacu* (fig. 111A) and *O. otonga* (fig. 111B), or inconspicuous as in *O. valquiria* (fig. 142B) and *O. caxiuana* (fig. 142D). In some species the anterior receptaculum is straight (fig. 61A, E), projected to the sides (figs. 41C–E, 51A–C, 56B–D, 61C, D), or wider at the base (fig. 39C,

D). In some U.S. species the anterior receptaculum is long and twisted ventrally (figs. 9B, C, 19A–D, 21D–H). In other species there are lateral plates at both sides of the median line of the epigastric region (as in *O. venezuela*, figs. 60J, 62A, 64E, and *O. cristinae* fig. 144C). The development of the lumen is variable among species, but this structure is not always easy to observe. Although several studies show that in some species of orsolobids and oonopids the anterior receptaculum was found filled with sperm (Forster and Platnick, 1985; Burger et al., 2010), a similar function for the receptaculum in other oonopids is not easy to determine. Also the presence of a well-developed lumen is variable, from thin ducts (figs. 111F, 142A, 144A) to several chambers (figs. 175A, C, D, 176C–E). In this work we have decided to use the term “anterior receptaculum” and “posterior receptaculum” even when a storage function is not demonstrated. We think that the use of this terminology contributes to identification of homologous structures in other oonopids, provides a stable terminology, and establishes a framework for discussion and comparative analysis.

The posterior female genitalia consist of two elements, the posterior receptaculum, present in the other members of the superfamily, and a posterior apodeme, which is highly sclerotized. The posterior receptaculum may be absent in some species of the genus. In some specimens it is possible to observe it through the cuticle as a pale circle at the level of the posterior spiracles, but in general it is observed only when the tissues are cleared or digested. The absence of a posterior receptaculum was also confirmed by histological serial sections of *Orchestina ucumar* (see Burger et al., 2010, under *Orchestina* sp.) and it is also absent in other species of the genus as well (see Henrard and Jocqué, 2012). The absence of the posterior receptaculum is not clearly understood in functional terms; this condition is observed for a large number of species from different regions and it is possible that the loss has occurred multiple times independently throughout the evolution of the group. The absence of the posterior

receptaculum may indicate that the sperm must be stored in a different structure, probably the anterior receptaculum or in some part of the uterus as observed by Burger et al. (2010). As in many other dysderoids the posterior receptaculum is a saclike structure surrounded by a secretory tissue; gland ducts are easily observed with SEM (figs. 201F, 212F). The second structure, the posterior apodeme, is a sclerotized structure (figs. 201C, 203B, D) that is intimately associated with the posterior receptaculum (when present). We have decided to name this structure “posterior apodeme” despite its variable shape among the species of the genus and also in other genera. In all the South American species this apodeme is a plate-shaped structure (figs. 201C, 203B, D) whereas in species from the western United States it is nearly bar-shaped with flattened anterior projections (figs. 9C, 21A, G). Both types of apodemes have been documented in other species of the genus around the world (see Henrard and Jocqué, 2012; Tong and Li, 2011; M.A.I., personal obs.). The posterior receptaculum lies dorsally to such apodemes and at least in the South American species it seems to be connected to the rest of the genital tract through a narrow slit at the base of the plate-shaped apodeme (figs. 201A, 203D). Although not clearly visible, the uterus externus is usually placed between the anterior receptaculum and the posterior apodeme (see Burger et al., 2010: figs 2B, 3B). This posterior apodeme is also present as a plate in the genera *Neotrops*, *Gradunguloonops*, and *Dalmasula* (Platnick et al., 2012a: figs. 296–298). We hypothesize that at least in these groups of oonopids this apodeme is homologous and may function as a locking mechanism (and probably has other functions as well), as described by Burger et al. (2010). The great variation of posterior apodemes in other genera makes finding homologies difficult. It seems that the locking mechanism may be widespread among oonopids and that different lineages have used different arrangements of apodemes for the same functions.

Another feature of the female genitalia of *Orchestina* and some other oonopids is the pres-

ence of massive muscles connecting different parts of the anterior receptaculum and posterior apodemes. This development of muscles in the female genital organs of a haplogyne family is remarkable and not comparable with other families. Anterior and posterior elements of the female genitalia are interconnected through these muscles. There are at least three paired groups of muscles and one unpaired muscle. The paired are the m1, m2, and m4, and the unpaired is the m3 (nomenclature from Burger et al., 2010). The m3 and m1 may not be possible to observe because of the preservation of the specimen, or may be absent. The unpaired m3 connects the tip of the anterior receptaculum with apodemes placed on the internal cuticle of the abdomen (fig. 197A–D), the paired m2 connects the anterior apodemes of the anterior receptaculum with the posterior apodeme (fig. 197B) and the m1 and m4 connect the posterior apodeme with small apodemes on the internal cuticle of the abdomen (fig. 197A, B; see also Burger et al., 2010: fig. 2). The function of these muscles is not entirely clear, but the mechanics of the muscles indicates that they are involved in the regulation of the aperture of the uterus by modulating the space between the base of the anterior receptaculum and the base of the posterior apodeme, where a locking mechanism seems to be present. In this way, the posterior apodeme is moved back and forth, suggesting that the uterus can be locked preventing sperm from getting into it during copulation (Burger, 2009; Burger et al., 2003, 2006, 2010: fig. 3b).

A peculiar characteristic in some species is the presence of external pockets. They are placed near the epigastric fold in South American species (figs. 169, 170) or near the pedicel as in some species of the United States (figs. 18A–D, 19A–D). External pockets are invaginations of the abdominal cuticle, not connected with internal organs, and easily observed with light microscopy and SEM. These pockets seem to have appeared independently in other species from different regions of the world, such as *O. debakeri* Henrard and Jocqué, 2012; *O. fannesi* Hen-

rard and Jocqué, 2012; *O. kasuku*, 2012; *O. lanceolata* Henrard and Jocqué, 2012; *O. acaciae* Henrard and Jocqué, 2012, from Africa, and *O. tubulata* Tong and Li, 2011, from Asia. Henrard and Jocqué (2012: 97) concluded that the pockets are probably not homologous structures in the African species, and they are even less likely homologs in species from distant continents.

In Chilean species, in addition to external pockets, there are also paired folds placed near the median line of the abdomen, just below the epigastric groove. These folds are variable in each species but in general are crescent shaped. Their function is unknown. So far as we know, these folds are present only in Chilean species, and thus are a potential synapomorphy for that group.

Internal pockets may also occur, but, so far as we know, only in some South American species. Internal pockets are sclerotized invaginations of the anterior wall of the epigastric groove, and are sometimes externally visible by transparency; their apertures are hidden in the epigastric groove. The internal pockets are easily observed in clarified preparations or in dorsal images with SEM after digestion (figs. 51A, 56B, F, 201A–C). The function of both types of pockets is unknown, as the only *Orchestina* species that has been studied in copulatory mechanics (Burger et al., 2010) lacks any genital pocket. The absence of muscle insertions suggests that they may interact with male structures, rather than playing a role in the functional mechanics of female structures.

SEXUALLY DIMORPHIC CHARACTERS

Males and females may be sexually dimorphic in somatic characters; in these cases the adult males are those bearing modifications not present in immatures or adult females. Although some species in this revision are known only from males, our knowledge of dimorphic characters in other species of the group and oonopids in general (Henrard and Jocqué, 2012; Tong and Li, 2011; Kranz-Baltensperger, 2011; Brescovit et al., 2012; Fannes, 2013) indicates that in most cases, females lack modifications

and that it is highly possible that the unknown females of this revision have no modifications as well. For example, some modifications described in this section are from males from Ecuador and none of the unmatched females from the same locality (and probably conspecific with those males) show such modifications. Females are particularly uniform in their general appearance, with almost no differences in somatic traits among the species, but are highly variable in genital characters.

We have identified the following sexual dimorphic characters.

CARAPACE

Sexual modifications of the carapace are not common in spiders, but are not rare in *Orchestina*; some examples are the recently synonymized *O. storozhenkoi* (Saaristo and Marusik, 2004, under *Ferchestina*), *O. kasuku* Henrard and Jocqué, 2012, and *O. moaba*.

Internal-lateral apodemes: In some species, there is a pair of lateral marks at both sides of the anterior region of the carapace, very close to the insertions of the chelicerae. We think that these marks are sclerotized apodemes of the internal cuticle of the carapace that serve as attachments for cheliceral muscles. These bands are conspicuous in *O. predator* (fig. 86D) and *O. magna* (fig. 82E), in which the chelicerae are strongly developed or modified, and are weaker in other species with normal chelicerae (fig. 87E).

Pores: In the new species *O. quasimodo* the cephalic region of carapace is covered by pores, presumable serving glands (figs. 7D–F). The pores also extend to the clypeus.

Cephalic excavation: males of *O. moaba* are particularly unusual in having an excavated area behind the eye region covered by short setae (fig. 4D, E). As in *O. quasimodo* it is probable that this area serves as a collector organ for secretions produced in some part of the internal cephalothorax.

PME tubercle: In males of *O. kamehameha* the posterior median eyes are placed over a tubercle (fig. 10B, D).

Clypeus sinuous: Males of *O. predator* (fig. 86C, D), *O. quijos* (fig. 90C), and *O. catarina* (fig. 126E) have a sinuous clypeus.

Clypeus protruding in lateral view: In general, males and females have the clypeus projected forward in lateral view. In males of *O. ucumar* the clypeus is strongly projected forward and protruded, whereas in females it is normally directed forward as in many other species (fig. 179B).

Clypeus directed backward in lateral view: In *O. pan*, males have the clypeus directed backward in lateral view. Females of this species are unknown, but, as mentioned above, it is probable that the clypeus is directed forward in that sex.

Long setae on clypeus: Present in males of *O. griswoldi* (fig. 31C) as a group of long, thick setae.

Strong pair of macrosetae on clypeus: Present in males of *O. pan* as two strong, dark, and long setae (fig. 34).

CHELICERAE

Anterior blunt projections: They are placed on the anterior margin (sometimes slightly displaced to the sides), near base of the chelicerae (arrows in fig. 72D, asterisks in figs. 78C, 87D). Their function is unknown but may have a similar mechanism to the cheliceral boss of some Entelegynae (see for example Ramírez, 2014: fig. 15D) and they should articulate with a pair of sclerotized projections at the lateral margins of clypeus (clypeal apodemes, CA on figs. 72D) or alternatively with the margins of clypeus.

Anterior median projections: In males of *O. cristinae* there are two conical projections at the anterior margin of the chelicerae near the median region. Similar projections are also present in males of *O. dentifera*. We think that these structures are not homologous with the anterior blunt projections described above.

Toothlike projections on the mesal margin: The mesal margin may be provided with toothlike projections (fig. 105F). Sometimes, these teeth originate from a common lamina (la, figs. 53C, 73A), as found in scytodoid spiders.

Cuticular projection of promargin: This projection of the cheliceral promargin bears setae (figs. 65F, G, 73B).

Lamina: This is a cuticular structure, similar to that present in Scytodoidea, placed at the mesal margin of both chelicerae.

Prominence of cheliceral fang: This is a small cuticular projection at the base of the cheliceral fang (asterisks in figs. 73E, 81D).

Chelicerae fang curvature: The cheliceral fang may be slightly curved or sinuous in males, as in figure 86B.

Long setae on promargin: In general, cheliceral setae are similar in all species and in both males and females. Sexually dimorphic setae of chelicerae are rare in American species, but they are present in other representatives as three pairs of long setae on the promargin of the chelicerae (fig. 27A, C), as in the introduced *O. dentifera*, in African species of the "orange subgroup" (Henrard and Jocqué, 2012), in *O. truncatula* from China (Tong and Li, 2011), *O. pilifera* from Sri Lanka (Dalmas, 1916), and in an undescribed species from Thailand (M.A.I., personal obs). See Biogeography, above, for more detail.

ENDITES

Serrula: in some species (for example some United States species, *O. dentifera* and *O. comaina*) the serrula is lost in adult males but present in females.

Anterior projection of endites: in males, the anterior margin of the endites may be more or less modified, with projections (for example figs. 81A, B, 150D, 164C, D, E, G, 187D).

Anterior dorsal region excavated: present in *O. dentifera* (fig. 27D).

LABIUM

Margin of labium sclerotized: in some males, the labial margin is more sclerotized than the remainder (figs 78B, 89D, 210C).

Lateral projections on the labium: viewed as two wings or flaps at both margins of labium (fig. 210C, arrow).

Flattened setae of labium: present in the introduced *O. dentifera* (fig. 27B) and in other Asian and African species of the *macrofoliata* group (Henrard and Jocqué, 2012; see also Biogeography, above).

LEGS

Pores: In *O. quasimodo* the proximal ends of tibiae I are swollen and covered with pores. In this species there are also pores on the cephalic region and clypeus. As in that part of the spider body, we suspect that the tibial pores are gland outlets. The swollen tibiae (as well as the elevated carapace) might be a consequence of the presence of glands. Note that the swollen tibiae are also present in *O. moaba*. We have not confirmed the presence of gland pores in that species, but it is highly possible that, as in *O. quasimodo*, such pores are also present. Additional evidence is that in *O. moaba* there is also a modified region of the carapace that suggests the presence of glands, as also occurs in *O. quasimodo*.

Prolateral macrosetae on first tibiae: In *O. quasimodo* there is a set of strong macrosetae forming a row on the prolateral side of tibiae I.

MATERIAL AND METHODS

COLLECTIONS AND FIELDWORK

The survey of the genus is based on study of more than 3000 specimens from the collections listed below. Most of the material belongs to the USNM, consisting mainly of specimens from Ecuador, whereas the AMNH and MACN follow the list in number of specimens. However, from these collections those of AMNH and MACN cover more countries. Other collections consist of spiders from one or two countries. During the past five years, field trips to conservation areas of Argentina, Chile, Bolivia, and Ecuador were carried out by the PBI project participants. Additionally, several specimens were available for study from the project PANCODING in Panama by Facundo Labarque and other collaborators. In these field trips, the spi-

ders were collected by the method of beating, but fogging was also used in several localities of Ecuador (fig. 1). Occasionally the spiders were also collected under stones, sifting leaf litter, under bark, nests of birds, and in suspended litter. Once collected, specimens were preserved in 80% ethanol for morphological studies and in absolute ethanol at -18°C for DNA analysis.

TREATMENT OF THE SPECIMENS

All the vials were individualized with a voucher number unique for that tube. This number is formed by six letters that refers to the Planetary Biodiversity Inventory project of oonopid spiders (PBI_OON), plus eight numbers (currently beginning with three zeros that have been left out in this paper for easier reading) forming, for example, the following alphanumeric code: PBI_OON 76312. All the specimens have been uploaded to the PBI locality database which enables a complete listing of the material under study. Additionally, each vial contains the collection number (when available) of the housing institution. In many cases one or more specimens were used for images, SEM, drawings, and tissue extraction. In these cases a preparation number was also included in the vial. This number is formed by the letters of the first author name plus a three or four digit number (e.g., MAI 1432). This code refers to a Microsoft Access database where fields provide information on the specimen (locality, collection method, etc.) as well as the preparation that was carried out (SEM, temporary mounts, drawings, etc.). The convenience in using this code enables other researchers to consult the voucher that was used in a particular drawing or tissue extraction and should be valuable for future comparisons or potential taxonomic problems. Vouchers of tissue extractions were identified with a red or blue bead and with a label. Specimens collected under the PANCODING project have two additional labels, one belonging to the particular project, and another for the barcoding identifier, which enables consulting data and sequences in BOLD (<http://www.boldsystems.org/>).

MICROSCOPY AND IMAGES

Male and female genitalia were observed in temporary preparations in clove oil under Olympus BH-2 compound microscope and illustrated with a camera lucida. When possible, the course of the sperm duct was also schematized (see, for example, fig. 141C, F). Photographs were taken with a digital Leica camera mounted on a Leica compound microscope and focal planes combined with Helicon Focus 3.10.3 software (<http://helicon.com.ua/heliconfocus/>). Details of the background were edited using Adobe Photoshop ver. 7.0. Some images were also retouched, for example, some legs were eliminated digitally so cosequent enlargement of the layers would provide better details and save space in every final plate. For scanning electron microscope (SEM) preparations the different body parts were dissected, dehydrated in a graded ethanol series (80–100%), critical point dried, and Au-Pd coating. Female genitalia was dissected and prepared for SEM using the method of Álvarez-Padilla and Hormiga (2008). Images were taken under high vacuum with a Philips FEI XL30 TMP. In some cases, delicate structures, such as parts of the female genitalia, carapace, or abdomen collapse after the critical point drying process. To solve this problem, a solution of 100% ethanol and hexamethyldisilazane (HMDS) in equal proportion was used after the normal ethanol series. Then, the pieces were transferred to absolute HMDS and dried. All the remaining dissected parts, not used for SEM, were placed in glass microvials and into a larger vial. High resolution versions of all images as well as others not included in this paper will be available on the PBI website. Abbreviations for eyes and spinnerets are standard for arachnology.

Except when noted, images and drawings of male genitalia are from left palps. All images of environments and collecting techniques were taken by the first author, unless otherwise noted.

MAPS AND GEOREFERENCING

Maps were generated with SimpleMapp (www.simplemapp.net). When possible, all the

localities for which coordinates and elevations were not supplied on the original label were searched with Google Earth or in additional web resources. These data are expressed between parentheses in the text and should be taken as approximations of the real place where the specimens were collected. For details see the information in the lists of material examined.

FORMAT OF DESCRIPTIONS AND TERMINOLOGY

The species are treated geographically by country from north to south. Although in terms of biogeography Hawai'i is part of Polynesia, we have decided to include one species from its islands in our study with the aim of comparing characters with species from North America. Descriptions were generated with the aid of the PBI descriptive goblin spider database (PBI, <http://research.amnh.org/oonopidae/>) and shortened when possible. The species descriptions contain only the differences from the generic description. The descriptions of the females include just those differences from the male. In describing the female genitalia we followed the terminology introduced in Forster and Platnick (1985), Burger et al. (2010), and Henrard and Jocqué (2012). In naming structures anteriorly or posteriorly to the uterus externus the criterion used by Platnick et al. (1999) is here employed. The terminus "embolus" is preferred instead of "psembolus" and similar names (see, for example, Saaristo and van Harten, 2006) and is used in a broad sense to refer to structures where the sperm outlet is placed and not in terms of a probably homology (if any) with the same structure in entelegyne spiders.

CRITERIA FOR MATCHING SEXES

As in many spiders, genitalia provide the most widely used and in most cases exclusive means to distinguish species (Huber, 2004). The matching of male and female spiders of the same species is not always formally questioned and in general this matching is based on simultaneous

findings of both sexes in the same locality or by using additional sources of information such as coloration, spine patterns, behavior (especially copulatory or reproductive), or molecular markers. Mating experiments are not practical in terms of taxonomic revisions and impossible to carry out, as many species are based only on preserved material. For highly diverse groups, such as oonopids, matching sexes is especially difficult when there are no additional characters and when many morphospecies were collected from the same locality. Molecular methods such as DNA barcoding seem appropriate for matching sexes, but much of the material is older or has been preserved for other purposes. Much of the material analyzed here was collected with fogging, which produces a mixture of many morphospecies of both sexes. In other cases, singletons and doubletons were also found from only one or few localities that were not extensively sampled. Females of *Orchestina* are very uniform in somatic traits, but males may show additional characters besides genitalia, such as modifications of the chelicerae, endites, labium, and carapace. These secondary sexual characters are, of course, absent in females and thus matching in this case is also difficult. We have adopted the following criteria to describe the species:

- Males and females are always collected together in the same locality of collections made several times and no other species is present or only a few specimens of another species are collected sporadically: both sexes described under the same species. In *O. luispi* and *O. ucumar* the matching of sexes was also confirmed by observations of mating in the field or laboratory (see, for example, Burger et al., 2010).
- Males and females are paired with molecular evidence (e.g., species of Panama): description of both sexes in the same species (Labarque, 2012).
- One or more specimens of the same morphospecies, of the same sex, are collected in one or more localities while no other morphospecies were collected: description

of that particular sex at species level (e.g., *O. rapaz*, *O. iemanja*).

- Males and females are collected together in more than one locality, but at least in one of these no other morphospecies were collected: description of both sexes in the same species (e.g., *O. valquirira*, *O. catarina*).
- When a male and a female were found in the same vial, but at the same locality many other morphospecies were also found at the same time, then both specimens were considered not conspecific. The specimens represent different species, and so were placed in separate tubes, each containing a label indicating its original location (through institution number or PBI_OON code). This will facilitate any future matches.
- When many males and females were collected at the same time in one or more localities, but were mixed in the same vial, the number of morphospecies for each sex was counted, and the sex with the greater number of morphospecies was selected for formal description (e.g., in the case of R.E. Waorani in Ecuador, only males were described). In order to reflect the diversity (of both species and morphology) of all the regions, the other sexes were also illustrated and briefly described but with an informal morphospecies name, using the notation “MI” plus a number of three digits, for example “*Orchestina* MI020.”

By following the conservative criteria described above we think that our approximation is less detrimental in terms of future nomenclatorial acts (for example, synonymies arising from sexes described under two different names) and also reflect more realistically the diversity in regions with high numbers of morphospecies. In this way, there is no overestimation of diversity; underestimation is still possible, but not significant when a locality has been well sampled.

Future studies on copulatory mechanics may reveal the interaction of genitalic elements such

as female internal and external pockets, and male palpal and cheliceral projections, and thus provide further guidelines to match orphan sexes. The scenario is, however, complex, because there are many candidates for interactions (internal and external female pockets; projections on male bulb, paturon, fang, endites), and the interactions may not be constant. For example, in the Chilean species, all females have external pockets, but males may have palpal apophyses or not, suggesting that those pockets may fit either the bulbal apophyses or some other structure, such as the cheliceral fangs.

COLLECTIONS EXAMINED

AMNH	American Museum of Natural History, New York	JAB	Joseph A. Beatty Collection, Carbon-dale, Illinois
CAS	California Academy of Sciences, San Francisco, California	KBIN	Royal Belgium Institute of Natural Sciences, Brussels, Belgium
CBF	Colección Boliviana de Fauna, La Paz, Bolivia	MACN	Museo Argentino de Ciencias Naturales, Capital Federal, Argentina
CNC	Canadian National Collection, Ontario, Canada	MCTP	Museu de Ciências e Tecnologia da PUCRS, Rio Grande do Sul, Brazil
CUIC	Cornell University Insect Collection, Ithaca, New York	MCZ	Museum of Comparative Zoology, Cambridge, Massachusetts
FCE	Facultad de Ciencias Exactas, Montevideo, Uruguay	MEKRB	Museo de Entomología Klaus Raven Büller, UNALM, Lima, Peru
FMNH	Field Museum of Natural History, Chicago, Illinois	MIUP	Museo de Invertebrados G.B. Fairchild, Universidad de Panama, Panama
GBFM	Museo de Invertebrados G.B. Fairchild, Universidad de Panama, Estafeta Universitaria, Panama	MNHN	Museum National d'Histoire Naturelle, Paris, France
GWU	George Washington University, Washington D.C.	MNSC	Museo Nacional de Historia Natural, Santiago, Chile
IBSP	Instituto Butantan, São Paulo, Brazil	MNVG	Museum d'Histoire Naturelle de la Ville de Genève, Geneva, Switzerland
IAvH	Instituto de Investigación en Recursos Biológicos Alexander von Humboldt, Boyacá, Colombia	MPEG	Museu Paraense Emílio Goeldi, Belém, Brazil
ICN	Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia	MRAC	Musée Royal de l'Afrique Centrale, Tervuren, Belgium
INBIO	Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica	MSU	Albert J. Cook Arthropod Research Collection, Michigan State University, East Lansing
IZCAS	Institute of Zoology, Chinese Academy of Sciences, Beijing, China	MUSM	Museo de Historia Natural, Universidad Nacional Mayor de San Carlos, Lima, Peru
		MZUT	Zoologica Museum, University of Turku, Finland
		QCAZ	Museum of Invertebrates, Pontificia Universidad Católica, Quito, Ecuador
		SGN	Naturmuseum Senckenberg, Frankfurt, Germany
		TMM	Texas Memorial Museum, Austin, Texas
		UB	Universitat de Barcelona, Barcelona, Spain
		UCB	University of California, Berkeley, California
		USNM	United States National Museum of Natural History, Washington, D.C.
		ZIMG	Zoologisches Institut und Museum Greiswald, Greiswald, Germany

TAXONOMY

Orchestina Simon, 1882

Orchestina Simon, 1882: 237 (type species by original designation *Schoenobates pavesii* Simon, 1873).

Ferchestina Saaristo and Marusik, 2004: 52 (type species by original designation *Ferchestina stozhenkoi* Saaristo and Marusik, 2004). First synonymized by Platnick et al., 2012a: 37.

NOTE: The genus was redescribed by Henrard and Jocqué (2012) based on of Afrotropical species. Here we provide only differences from that description.

MALE: CEPHALOTHORAX: Carapace variable in shape, pale orange, smooth or with net-shaped pattern. Clypeus margin unmodified, sloping forward, straight, or sloping backward. Posterior eye row recurved from above, slightly recurved from front (procurved in *O. kamehameha*). Pars cephalica slightly elevated in lateral view, anteriorly narrowed to between 0.5 and 0.75× its maximum width. Setae needlelike, scattered but absent on the lateral region of carapace, dark. Sternum microsculpture “fingerprint” (scanned in males of *O. cachai*, *O. ecuatoriensis*, *O. pachamama*, *O. pandeazucar*, and *O. waorani* and in females of *O. cristinae*, *O. luispi*, and OMI022), covering the entire surface, anterior margin unmodified, in some species with less sclerotized areas on anterior lateral margins (figs. 34B, 210C) and dark marks below labium (figs. 78B, 89D), posterior margin extending posteriorly beyond anterior edges of coxae IV as single extension, setae sparse, needlelike, slightly dense in laterals and slightly longer than the rest, dark, originating from surface. Chelicerae straight; in general slender, short (figs. 30C, 32C, 35C), without teeth on either promargin or retromargin but sometimes with strong conical projections, fangs rarely with modifications; setae dark, needlelike, promargin and retromargin with one long plumose seta each, inner margin unmodified. Labium variable in shape, generally square, with six or more setae on anterior margin, with

unmodified setae (except in the introduced *O. dentifera*), same as sternum in sclerotization, not fused to sternum (except in *O. pan*). Endites with or without modifications, same as sternum in sclerotization, generally with serrula. ABDOMEN: Ovoid, yellow to pale orange, coloration pattern variable. Book lung covers large; posterior spiracles not connected by groove. Pedicel tube medium, with fringe of needlelike setae. Colulus present, small, with two setae (figs. 116E, 206F). Spinnerets six (scanned in *O. erwini*, *O. cristinae*, *O. cachai*, *O. luispi*, OMI020, OMI038), with fringe of long, needlelike setae; basal segment of ALS divided by membranous area, ALS with one MAP (major ampullate gland) and two to four piriform gland (Pi) spigots, PMS with one or two spigots probably of aciniform glands, PLS with two or three aciniform gland spigots. LEGS: In general pale orange, without modifications (except in *O. moaba* and *O. quasimodo*), rarely with spines; two tarsal claws with variable number of teeth. GENITALIA: Palp with both m29 and m30 muscles. In general, all segments pale orange. Patella attaching to tibia basally in general, exceptionally subbasally. Tibia similarly enlarged in all species. Bulb typically ovoid. Sperm duct highly sclerotized in its entire course, with gland duct openings, highly spiraled or with only one or few loops; embolus highly variable, solitary or flanked by one or more apophyses, short or long.

FEMALE: CEPHALOTHORAX: Carapace ovoid in dorsal view. Clypeus curved downward in front view, sloping forward in lateral view. Chelicerae, fang tips, endites unmodified. ABDOMEN: Epigastric region weakly sclerotized, not surrounding pedicel. GENITALIA: Epigastric region with or without external pockets or ridges, internal genitalia with or without internal pockets, anterior receptaculum highly sclerotized, variable in shape, simple or with projections, in general without glands or with only few ducts, lumen with different levels of development, anterior apodemes with different lengths, sometimes inconspicuous. Posterior receptaculum either present or absent, posterior apodeme in general plate shaped (South

American species) or divided in two plates (some United States species). Some species exhibit sclerotized areas extended to sides (figs. 60J, 147B, D). Muscle M2 always present.

DISTRIBUTION AND HABITATS. Worldwide. The genus is more frequent in canopy, but many species has been collected in a wide variety of ambients and microhabitats, such as small shrubs on the Pacific coast of Chile (figs 177A–C, 178B), nests of birds, and suspended litter (dead leaves, small fragments of branches, bark, etc., that are captured by branch forks in the lowest strata of forests). While many species seem to be restricted to small areas, other species are widely distributed or have even colonized other regions of the world, some of them seemingly transported by human activities.

NATURAL HISTORY: The general biology of the genus is virtually unknown and details of its diet and behavior are fragmentary.

INTRODUCED SPECIES

Orchestina pavesiiformis Saaristo, 2007

Figures 11, 17D–F, 19G, 20N, O, 22D,
maps 1, 25

Orchestina pavesiiformis Saaristo, 2007: 124, figs. 16, 18, 20, 21 (male holotype from Israel: Jerusalem, 08.Jan.1989, G. Levy leg., deposited in HUJ 14220; same data, male paratype, 13.June.1990, deposited in MZT 3703; same data, female paratype, 03.May.1989 in MZT 3704; same data, female paratype, 24. Apr.1991, deposited in HUJ 15326; same data, female paratype, 25.Mar.1988, deposited in HUJ 14184; all taken at night inside buildings; not examined).

NOTE: Here we provide additional notes to the description of Saaristo (2007) which is sufficient to distinguish the species. The diagnosis was based on material collected in Argentina (PBI_OON 42270 and 42252) and is valid to recognize this species in the Americas.

DIAGNOSIS: Males (fig. 11A–C) can be distinguished from other males of American species by the dorsal V-pattern on the abdomen, similar to that in *O. obscura*, and by the shape of the embolus, sinuous and with apical extensions (figs. 17D–F, 20N, O). Females (fig. 11D–F) have the same coloration pattern as males, genitalia with external pockets, and an anterior receptaculum wide at its base with V-shaped anterior apodemes at the tip (figs. 19G, 22D). Both sexes have lateral setae on the carapace margins, so far as we know, this character is absent in native American species.

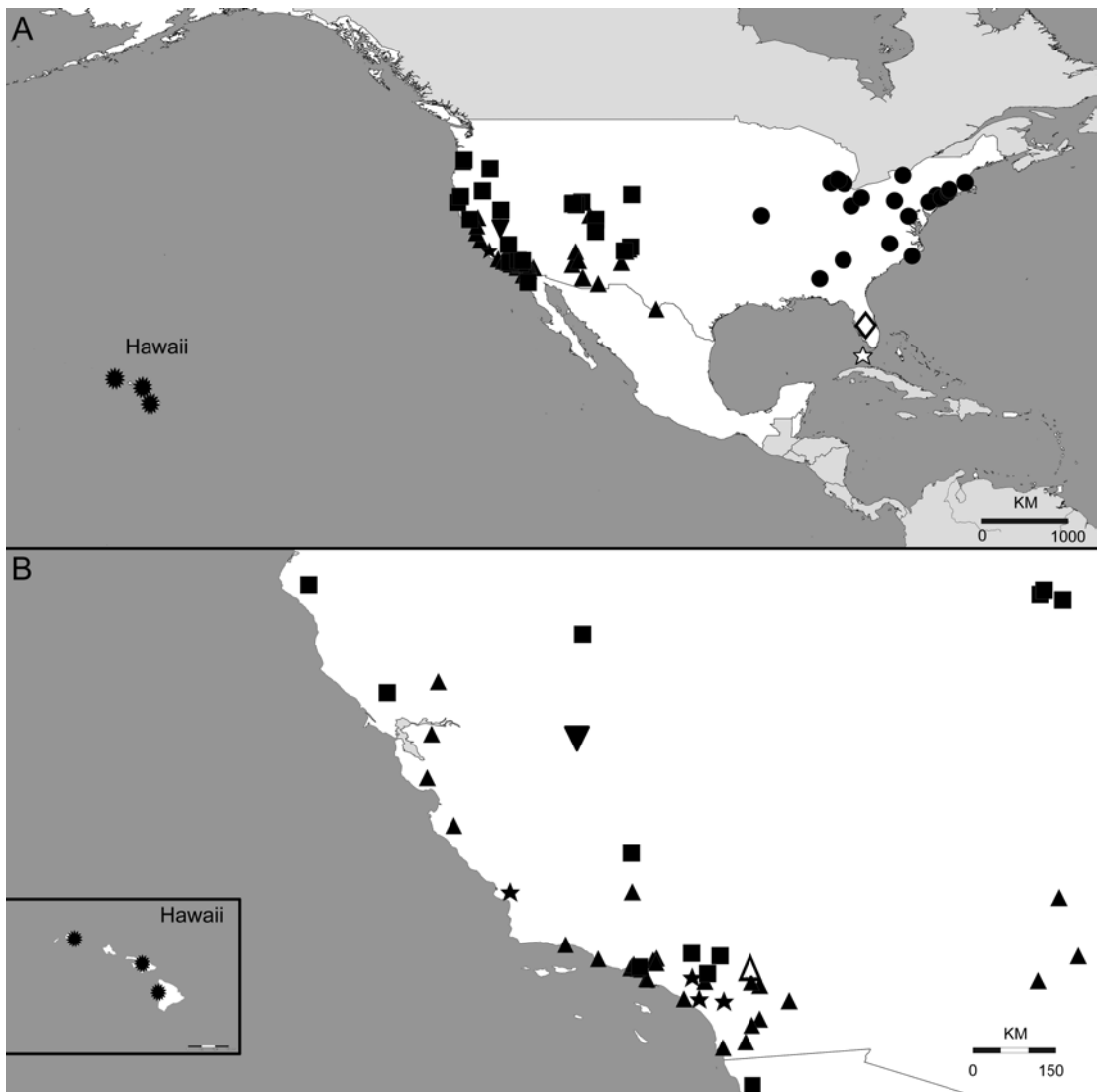
DESCRIPTION: See Saaristo (2007).

ADDITIONAL OBSERVATIONS: Sperm duct slightly coiled (fig. 20N), female genitalia with plate-shaped posterior apodeme and a posterior receptaculum (fig. 22D).

DISTRIBUTION: Besides the type locality, Israel, recorded for United States, Brazil, and Argentina (maps 1 and 25). Present in other countries of Europe, collected at least in Portugal (A. Henrard, personal commun.).

NATURAL HISTORY: The species has been introduced into many countries and its natural origin is still unknown. In Argentina it has been collected in disturbed environments and in houses or other human buildings. In some cases the species was observed walking on walls or furniture or collected in leaf litter. The species is very similar to *O. pavesii* which is also widely distributed (Spain to Slovakia, Bulgaria, Greece, Algeria, Canary Is., Egypt, and Yemen).

OTHER MATERIAL EXAMINED: **UNITED STATES:** **California:** Riverside Co.: San Jacinto Mts. (Snow Creek Can.) (33.88772°, -116.67551°), Apr. 13, 1955, J. Belkin, 1 ♀ (AMNH PBI_OON 1131). **BRAZIL:** **São Paulo:** Campinas, dentro de vivienda (-22.83849°, -47.01939°), July 22, 2002, A.J. Santos, 1 ♂ (IBSP, PBI_OON 42247); same data, Aug. 16, 2006, 1 ♂, 1 ♀ (IBSP, PBI_OON 42246); same data, no banheiro, Jun.15, 2003, 1 ♂ (IBSP, PBI_OON 30389); same data, inside a house, Jan., 2003, 1 ♂ (IBSP, PBI_OON 30294); same data, São Paulo, Campus do Instituto Butantan (-23.56755°, -46.71841°), Apr. 3, 2007, s/col. 1 ♂ (IBSP, PBI_OON 42345). **Minas Gerais:** Mariana, Gruta Nossa Senhora da Lapa (-20.35083°, -43.36807°), Sep.,



MAP 1. Distribution map of *Orchestina* species in United States. **A**, General view. **B**, Detail of the west coast and Hawai'i. *O. saltitans* (circles), *O. nadleri* (white star), *O. auburndalensis* (white triangles), *O. moaba* (black triangles), *O. utahana* (black squares), *O. quasimodo* (black stars), *O. pavesiiformis* (white triangle, see also map 25), *O. obscura* (inverted black triangle), *O. kamehameha* (black serrated circles).

2002, F. Túlio 1 ♂ (IBSP, PBI_OON 42388); same data, Belo Horizonte (-19.92056°, -43.95787°), Apr.20, 2008, A.J. Santos 1 ♂ (IBSP, PBI_OON 42411). **ARGENTINA: Buenos Aires:** Escobar: Paraná de Las Palmas, mixed forest of *Fraxinus* and oak (-34.24611°, -58.74361°), Mar. 24, 2011, A. Porta, 1 ♂ (MACN-Ar 28664, PBI_OON 42154). Partido de Avellaneda: Sarandí, inside a house, 11 m, -34.67555°, -58.34944°,

Mar.21, 2010, C. Grismado and A. Grismado, 1 ♀ (MACN-Ar 27984 PBI_OON 30156); Sarandí, inside a house, 11 m, -34.67555°, -58.34944°, Feb. 06, 2010, C. Grismado, 1 ♀ (MACN-Ar 27983, PBI_OON 30955). Partido de Ezeiza: Ezeiza (-34.852786°, -58.530773°), in litter of *Eucalyptus*, Jan. 30, 2011, Cecilia Bidarte, 1 ♂ 1 ♀ (MACN-Ar 27982, PBI_OON 42271). **Ciudad Autonoma de Buenos Aires:** Colegiales, en domicilio,

29 m, -34.57417°, -58.44917°, Nov. 13, 2014, Rodríguez Landó, R., 1♂ (MACN 34538 PBI_OON 42756); Boedo, inside a house of the 13th floor (-34.62111°, -58.41611°), Feb. 20, 2013, J.M. Andía-Navarro, 1♂ (MACN-Ar 29939, PBI_OON 51100); Reserva Ecológica Costanera Sur, Camino de Los Lagartos del lado de la Laguna Los Coipos (-34.612834°, -58.356242°), in *Cortaidera* and *Fraxinus*, Feb. 17, 2011, A. Porta, 1♂ (MACN-Ar 27979, PBI_OON 42268); same data, Cortaderal, Feb. 17, 2011, A. Porta, 1♀, 3 juveniles, sex unknown (MACN-Ar 27980, PBI_OON 42269); same data, entrada Brasil, Feb. 17, 2011, A. Porta, 1♀ (MACN-Ar 27985, PBI_OON 42267); same data, Higuerón, Feb. 17, 2011, A. Porta, 1♂, 1♀ (MACN-Ar 27981, PBI_OON 42270); Parque Avellaneda, Parque Nicolás Avellaneda, in nest of *Acromyrmex lundi* in *Eucaliptus* sp., 25 m, -34.64555°, -58.47861°, Sep. 17, 2011, A. Porta, 1♂, 1 juvenile, sex unknown (MACN-Ar 28187, PBI_OON 42142); Villa Crespo, in a plant on the 5th floor, 26 m (-34.604125°, -58.438305°), Oct. 11, 2011, M. Ramírez, 1♀ (MACN-Ar 28188, PBI_OON 42143). **Chubut:** Departamento Escalante, Reserva Punta del Marqués, Rada Tilly, 100 m mirador Norte de la Reserva Punta del Marqués, -45.94741°, -067.5571°, 168 m, Nov. 6, 2014, A. Porta, Berlese litter of "duraznillo," 1♂ (MACN-Ar 34537, PBI_OON 51166). **URUGUAY: Canelones:** Las Piedras (-34.716667°, -56.216667°), Dec. 13, 2006, A. Laborda, 1♀, 1 juvenile, sex unknown (FCE-6474); same data, Mar. 18, 2015, 1♀ (FCE-6034, AJL Prep. 0046); same data, Aug. 22, 2006, 1♀ (FCE-6473); same data, Nov. 30, 2005, 1♀ (FCE-6476); same data, Dec. 18, 2005, 1♂ (FCE-6475); same data, Nov. 19, 2006, 3♀, 2♂ (FCE-6472). **Montevideo:** ciudad de Montevideo (-34.866944°, -56.166667°), Euskallerría 71 building, Dec. 2, 2006, A. Laborda, 1♂ (FCE-6504). **Paysandú:** ciudad de Paysandú (-32.32°, -58.075556°), Jan. 3, 2007, A. Laborda, 2♂, 1♀, 2 juvenile, sex unknown (FCE-6470).

Orchestina dentifera Simon, 1893

Figures 25–27, 36D–F, 41A, 43, 44C, map 5, 24

Orchestina dentifera Simon, 1893a: 248 (one male, four females, and one juvenile syntypes from Sri Lanka (ex Ceylan), Kandy!, date not provided, M.E. Simon, deposited in MNHN 6025 (additional number 15250), PBI_OON 50024; examined) – Simon, 1893d: 294 – Dalmás, 1916: 232, figs. 21, 27.

Orchestina justini Saaristo, 2001: 356, figs. 190–195 (male holotype from Seychelles: Silhouette, Anse Cimitiare, under *Casuarina* bark, Jan. 17, 1999, M. Saaristo leg., deposited in MZUT 1250, PBI_OON 50030; same data, 3 male and 3 female paratypes, from old stems of *Ipomea* hanging down from stones, Jan. 18, 1999, M. Saaristo leg., deposited in MZUT 1251 (partim), PBI_OON 50029; all examined). NEW SYNONYMY.

SYNONYMY: The species was first described by Simon (1893a) and later redescribed by Dalmás (1916); both authors noted the conical projections on the chelicerae, which is the most conspicuous characteristic of males, although illustrations were provided only by Dalmás. Later Saaristo (2001) described a new species from the Seychelles without any comparison or mention to the one previously described by Simon. We have examined only one vial from the MNHN with no details about the type status of the specimens. The locality is the same for those specimens described by Simon, so it is quite possible that this vial contains the syntypes because, as far as we know, it is the only vial available from that museum. We have compared the American specimens (figs. 25, 27) with the type material described by Saaristo and the material from the MNHN (fig. 26) and did not find any significant differences. The species is amply distributed in tropical areas throughout the world, so it is not surprising that it occurs in the Seychelles and Sri Lanka.

The material from the MNHN is in good condition although for detailed descriptions we have used material from Brazil.

MALE (PBI_OON 42164): Total length 1.00. Habitus as in figures 25A, C, 26A. **CEPHALOTHORAX:** Clypeus margin unmodified, curved downward in front view, vertical in lateral view, high, ALE separated from edge of carapace by their radius or more, setae dark, needlelike. Sternum as long as wide, pale orange, anterior margin unmodified, coloration as carapace (fig. 26C). Chelicerae, endites, labium pale orange. Chelicerae anterior face with strong, conical pro-

jections on median line (figs. 25G, 26B, 27A, E), promargin with three long, near parallel setae (fig. 27A, C), fang unmodified (fig. 27F). Labium elongated hexagon, same as sternum in sclerotization; with six or more needlelike setae on anterior margin, median region with two pairs of flattened setae (fig. 27B). Endites without serrula, anteromedian tip unmodified, anterior dorsal region excavated (fig. 27D). ABDOMEN: Ovoid, dorsum soft portions white, with gray netlike pattern. LEGS: Yellow; spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Proximal segments yellow, femur sinuous; patella attached to tibia subbasally, cymbium yellow, ovoid in dorsal view; bulb pale orange, more than 2× as long as cymbium, stout, spherical; embolus short, dark; sperm duct not highly coiled, with only one loop (figs. 36D–F, 43).

FEMALE (PBI_OON 42163): Total length 1.00. Habitus as in figures 25B, D, 26D. CEPHALOTHORAX: Carapace yellow (fig. 25E). Clypeus slightly sloping forward. PLE-PME separated by less than PME radius. Chelicerae anterior face unmodified, promargin with needlelike setae. Endites with serrula in single row. LEGS: Spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Epigastric region with highly convex ridge (fig. 44C); external and internal pockets absent; anterior receptaculum with wide, rounded base, bifid tip; posterior receptaculum present, posterior apodeme bar shaped (figs. 41A, 44C).

DISTRIBUTION: Besides the type locality, also known from Haiti, Jamaica, Brazil, and Seychelles (maps 5 and 24). The species has been also collected in other regions of the world such as Isla Reunion (Indian Ocean) and Tanzania (A. Henrard, personal commun.).

OTHER MATERIAL EXAMINED: **HAITI: Damiens:** Port-au-Prince, 31 m (18.53926°, -72.33640°), Nov. 09, 1959, A. Nadler, 1 ♂ (AMNH, PBI_OON 1977), same, Nov. 10, 1959, A. Nadler, 2 ♀ (AMNH, PBI_OON 1978). **Mariani:** Haiti, 21 m (18.53802°, -72.60994°), Nov. 12, 1959, A. Nadler, 1 ♀ (AMNH, PBI_OON 1976). **DOMINICAN REPUBLIC: La Romana:** Altos de Chavón on west bank of Rio Chavón (18.40000°, -68.88333°), Nov. 12, 1990, S.

Larcher, 1 ♂, 1 ♀ (USNM, PBI_OON 42561). **Nacional:** Ciudad Trujillo, 1 m (18.46666°, -69.90000°), Mar. 03, 1955, A. Nadler, 2 ♂ (AMNH, PBI_OON 1321). **JAMAICA: Kingston:** Botanical Gardens, Nov. 16, 1959, A. Nadler, 2 ♂, 2 ♀ (MCZ, PBI_OON 29412); Kingston (17.96666°, -76.80000°), Dec. 06, 1954, A. Nadler, 3 ♀ (MCZ, PBI_OON 29410). **Saint Andrew:** Hope Gardens (18.03333°, -76.75000°), Nov. 02, 1957, A. Chickering, 1 ♀ (AMNH, PBI_OON 1489); Hope Gardens, Kingston (18.03333°, -76.75000°), Dec. 09, 1954, A. Nadler, 2 ♀ (AMNH, PBI_OON 29408); same data, Mar. 16, 1955, A. Nadler, 5 ♀ (MCZ, PBI_OON 29409); same data, Dec. 09, 1954, A. Nadler, 2 ♀, 6 juveniles, sex unknown (AMNH, PBI_OON 29411); same data, Mar. 14, 1955, A. Nadler, 2 ♂, 6 juveniles, sex unknown (MCZ, PBI_OON 29414); *Liguanea* (18.01666°, -76.76667°), Oct. 25, 1957, A. Chickering, 3 ♂, 2 ♀ (AMNH, PBI_OON 1499); same data, 1 ♂, 1 ♀ (MCZ, PBI_OON 1501); *Liguanea*, Mona Road (18.01666°, -76.76667°), Oct. 15, 1937, A. Chickering, 1 ♂ (MCZ, PBI_OON 1987); Long Mt, 413 m (17.98401°, -76.74970°), Oct. 26, 1957, A. Chickering, 1 ♂ (MCZ, PBI_OON 1500); Stony Hill, 497 m (18.07900°, -76.78300°), Oct. 18, 1957, A. Chickering, 1 ♂ (AMNH, PBI_OON 1488). **BRAZIL: Bahía:** Salvador: Jardim Botânico de Salvador, 29 m (-12.94139°, -38.39083°), Jan. 01, 2008, A. Andrade et al., 1 ♀ (IBSP 141016, PBI_OON 42644). **Pará:** Belém: Parque Zoobotânico (-1.45333°, -48.47638°), Mar. 30, 2009, B.V.B. Rodrigues, 1 ♀ (MPEG 18950, PBI_OON 42163); same data, 1 ♂ (MPEG 18951, PBI_OON 42164).

NORTH AMERICAN AND HAWAIIAN SPECIES

KEY TO UNITED STATES AND HAWAIIAN SPECIES

Females (those of *O. obscura* unknown)

1. Epigastric region with external pockets.....2
 - Epigastric region without external pockets.....7
2. Anterior receptaculum not twisted ventrally...3
 - Anterior receptaculum twisted ventrally.....4
3. Anterior receptaculum with V-shaped tip (fig. 22D) (introduced).....*pavesiiformis*
 - Anterior receptaculum with rounded tip (fig. 22C)*auburndalensis*

4. External pockets placed anteriorly.....5
 - External pockets placed near epigastric fold, tiny, anterior receptaculum very long, Hawaii*kamehameha*
5. External pockets large close together....*moaba*
 - External pockets separated, not so large.....6
6. External pockets with large openings, carapace high in lateral view*quasimodo*
 - External pockets with small openings, carapace lower.....*utahana*
7. Anterior receptaculum wide with anterior apodemes placed at its tip.....*nadleri*
 - Anterior receptaculum thin, anterior apodemes placed below the tip.....*saltitans*

Males (those of *O. auburndalensis* unknown)

1. Sperm duct with many loops.....*nadleri*
 - Sperm duct with only one loop.....2
2. Carapace strongly elevated.....*quasimodo*
 - Carapace slightly elevated.....3
3. Cephalic region excavated and with many setae*moaba*
 - Cephalic region otherwise.....4
4. PME placed on a cuticular elevation, Hawaii ...
.....*kamehameha*
 - PME normal, not elevated.....5
5. Embolus long (fig. 20L, M).....*saltitans*
 - Embolus otherwise.....6
6. Embolus sinuous, bifid (fig. 20N) (introduced).....*pavesiiformis*
 - Embolus almost straight, not bifid.....7
7. Dark coloration, PME larger, oval.....*obscura*
 - Light coloration, PME smaller, rounded
.....*utahana*

Orchestina utahana Chamberlin and Ivie, 1935

Figures 3, 15A–C, 18A, 19A, 20A, B, 21A, E,
maps 1, 2

Orchestina utahana Chamberlin and Ivie, 1935

(male holotype and female allotype from the United States: Utah, west shore of Utah Lake, sifting cottonwood leaves, deposited in AMNH, PBI_OON 51099, 3

male and 4 female paratypes from Utah Lake, west shore at heron rookery, 1437 m, 40.16667°, -111.95000°, Apr. 08, 1934, Wilton Ivie, deposited in AMNH, PBI_OON 42586; examined).

NOTE: The original label is missing, but there is an additional one with the inscription “*Orchestina utahana* types.” The type locality was revised from the original publication and transcribed onto a new label. A clear label was added to indicate the type status of both specimens.

DIAGNOSIS: Males resemble those of *O. obscura* by the general appearance and a similar palp, and by having cuticular projections on the cheliceral promargins, but can be distinguished by the paler coloration and the slightly larger PME (compare figs. 3E and 5A). Females resemble those of *O. moaba* by having external pockets on the epigastric region (figs. 18A, 19A, 21A, E), but can be distinguished by their smaller size and proximity to the pedicel.

MALE (PBI_OON 51099): Total length 1.24. CEPHALOTHORAX: Carapace (fig. 3E) sometimes with weak pattern of dark pigment on sides. Clypeus slightly sloping forward in lateral view. Posterior eye row straight from front. Sternum with dark stripe on anterior median half (fig. 3G, arrow). Cheliceral promargins with conical projections (as in *O. obscura*, fig. 5B). Endites without serrula. ABDOMEN: Dorsum with gray netlike pattern (fig. 3A, H), epigastric area pale. LEGS: Yellow. GENITALIA (figs. 15A–C, 20A, B): Embolus short, dark, straight in dorsal view, convex in lateral view (figs. 20A, B); sperm duct with only one loop (fig. 20A).

FEMALE (PBI_OON 51099). Total length 1.19. CEPHALOTHORAX: Clypeus sloping forward in lateral view. Endites with serrula in single row. ABDOMEN: Cylindrical; dorsum with white coloration, without pattern in female allotype, other material with brown net-shaped pattern (fig. 3C, D, I). LEGS: Left legs I, II absent. GENITALIA (figs. 18A, 19A, 21A, E): Epigastric region with two external pockets near pedicel, internal pockets absent; anterior receptaculum tube

shaped, twisted ventrally (fig. 21E), posterior receptaculum present, posterior apodeme divided, formed by two parallel plates.

DISTRIBUTION: West and central United States, Mexico (maps 1 and 2).

OTHER MATERIAL EXAMINED: UNITED STATES:

Oregon: Benton Co.: 10 mi N Corvallis (44.708258°, -123.260383°), Feb. 20, 1949, Frank Beer, 1 ♂ (MCZ 68000, PBI_OON 26476). Douglas Co.: Beside Cleaveland Hill Cemetery (43.804133°, -120.554200°), 500 m, Feb. 07, 1972, E. Benedict, 1 ♂ (ANMH, PBI_OON 1659). **California:** Los Angeles Co.: Santa Monica Mountains (34.08333°, -118.75000°), Feb. 22, 1952, W. McDonald, 1 ♀ (AMNH, PBI_OON 1107). Siskiyou Co.: 9 mi of SW Tulelake (41.86666°, -121.56666°), Sep. 15, 1965, J.W. Ivie, 3 ♂, 3 ♀ (AMNH, PBI_OON 1081); Willow Creek (41.00000°, -123.00000°), July 14, 1937, R. Chamberlin, 1 ♂ (AMNH, PBI_OON 1126). Sonoma Co.: 2 mi W Petrified Forest, Oct. 25, 1959, J. Buckett, 1 ♀ (AMNH, PBI_OON 1124). Tulare Co.: 6 mi W Johnsondale (35.931475°, -118.648028°), Sep. 15, 1959, W. Gertsch, V. Roth, 1 ♀ (AMNH, PBI_OON 1111). San Bernardino Co.: Arrowhead Lake (34.248339°, -117.189208°), May 06, 1936, 1 ♂, 1 ♀ (AMNH, PBI_OON 1130); Riverside Co.: Riverside (33.953361°, -117.3960078°), Oct. 10, 1956, A. Nadler, 1 ♀ (AMNH, PBI_OON 1134); San Gabriel Mts. Big Rock Camp (34.283333°, -117.650000°), Apr. 09, 1955, R. Schick, 1 ♂ (AMNH, PBI_OON 1120); Weott (Redwood Grove) (40.321944°, -123.921667°), Sep. 21, 1964, J. W. Ivie, 2 ♂ (AMNH, PBI_OON 1317). **Nevada:** Washoe Co.: 20 mi E Reno, 39.52250°, -119.43806°, Aug. 06, 1935, W. Ivie and R.V. Chamberlin, 2 ♀, 9 juveniles, sex unknown (MCZ, PBI_OON 42816). **Wyoming:** Albany Co.: 17 mi SW Laramie, 2400 m (41.13697°, -105.82246°), July 05, 1960, to July 12, 1960, B. Patterson, 1 ♀ (MCZ 66799, PBI_OON 26474). **Utah:** Utah Co.: West side of Utah Lake (40.23778°, -111.88306°), Sep. 24, 1939, B. Mulaik, specimen in bad condition, sex unknown (MCZ, PBI_OON 42823); West side of Utah Lake (40.23778°, -111.88306°), May 13, 1934, A., W. Ivie, 4 ♀ (AMNH, PBI_OON 1459); same, Apr. 08, 1934, A., W. Ivie, 4 ♂, 2 ♀ 2 juveniles, sex unknown (MACN-Ar 31475, PBI_OON 1460). Bluff Co.: (37.28444°, -109.55250°), May 11, 1933, W. Ivie, 1 ♂, 1 ♀ (MCZ, PBI_OON 42819); Spanish Fork Canyon (40.068644°, -111.574472°), Nov. 02, 1951, R. Chamberlin, W. Ivie, 1 ♂ (AMNH, PBI_OON 1458). Wasatch Co.: Wasatch (40.00000°, -111.00000°), 1 ♂, 1 ♀ (AMNH, PBI_OON 1076). **New Mexico:** Los Alamos Co.: Los Alamos, Mortandad Canyon (34.518883°, -105.869219°), 5 m,

June 25, 1976, to June 28, 1976, D. Lowrie, 1 ♀ (FMNH 33508, PBI_OON 10015) misidentified as *Orchestina saltitans*. Santa Fe Co.: 2136 m (35.68639°, -105.93806°), Chamberlin and Ivie, 3 ♀, 1 juvenile, sex unknown (AMNH, PBI_OON 42831); 12 mi N Albuquerque (35.280406°, -106.588728°), Oct. 04, 1965, 6 ♂, 1 juvenile, sex unknown (AMNH, PBI_OON 1454). **MEXICO: Baja California:** Tecate: 40 mi S Tecate in oak grove (31.981506°, -116.623897°), Nov. 10, 1957, V. Roth, 1 ♀ (AMNH, PBI_OON 1325).

Orchestina moaba Chamberlin and Ivie, 1935

Figures 4, 15D–F, 18B, 19B, 20C, D, 21B, map 1

Orchestina moaba Chamberlin and Ivie, 1935:

10, pl. 2, figs. 10–13, pl. 3, figs. 15–18 (male holotype and female allotype from the United States, Moab, Utah, should be deposited in AMNH, presumably lost, see below).
– Wunderlich, 1986: 167, fig. 56 (m) –
Wunderlich, 1988: 57, fig. 46 (m).

NOTE: The type material was not examined, either because is lost or is mixed with other material with no indication. Three vials are coincident with the type locality (Moab, Utah), one of them (PBI_OON 42824) with 2 ♂ and 16 ♀, a second (PBI_OON 42825) with only one male, and a third vial (PBI_OON 42573) with 4 ♂ and 5 ♀ labeled as “paratypes.” Note that Chamberlin and Ivie designated a female allotype but no paratypes. The illustrations in the original description are consistent with this material and the rest of the studied specimens.

DIAGNOSIS: Males can easily be separated from the other North American species by having a depressed area behind the eyes covered with patch of short setae (fig. 4D, E). Additionally, the proximal part of tibiae I is swollen, covered with long, needlelike setae (fig. 4F) and probably with pores (as in *O. quasimodo*, see below). Females resemble those of *O. utahana* in having external pockets on the epigastric region, but in *O. moaba* these pockets are larger and are placed near epigastric fold (figs. 18B, 19B, 21B).

MALE (PBI_OON 1073): Total length 0.98. **CEPHALOTHORAX:** Carapace orange, margins

of carapace brown or purple; cephalic region with depression covered with patch of setae (fig. 4A, D, E, G). PME circular. Sternum with dark pigment on sides, anterior margin with dark sclerotized band originating at base of labium (fig. 4B). Endites without serrula. ABDOMEN: Dorsum with gray netlike pattern (fig. 4A, G). LEGS: Tibiae I proximal end swollen, with long, needlelike setae (fig. 4F). GENITALIA (figs. 15D–F, 20C, D): Palp proximal segments yellow; bulb yellow, spherical; embolus short, dark, straight in dorsal view, slightly convex in lateral view; sperm duct with only one loop.

FEMALE (PBI_OON 1079): Total length 1.37. CEPHALOTHORAX (fig. 4C): Endites with serrula in single row. LEGS: Patella plus tibia I shorter than carapace. GENITALIA (figs. 18B, 19B, 21B): Epigastric region with large external pockets near epigastric fold, internal pockets absent; anterior receptaculum short, twisted ventrally, posterior receptaculum present, massive; posterior apodeme divided, formed by two parallel plates.

DISTRIBUTION: Known from the west and central region of United States (map 1).

OTHER MATERIAL EXAMINED: UNITED STATES:
Utah: Grand Co.: Moab, 1227 m (38.57333°, -109.54972°), Aug. 05, 1933, W. Ivie, 4♂, 5♀ (AMNH, PBI_OON 42573). **Arizona:** Coconino Co.: 20 mi S Flagstaff, Dec. 4, 1935, Wilton Ivie, 1♂ (AMNH, PBI_OON 42826). Cochise Co.: Chiricahua Mts. Cave Creek Canyon (31.846389°, -109.291111°), Apr. 28, 1968, K. Stephan, 1♀ (MCZ 66798, PBI_OON 26475); Idlewild Camp, Cave Creek (31.88333°, -109.18333°), Sep. 09, 1964, J.W. Ivie, 1♀, 2 juveniles, sex unknown (AMNH, PBI_OON 1329). Pima Co.: Santa Catalina Mountains, Molino Basin (32.50000°, -110.92056°), Jan. 09, 1960, J.A. Beatty, 1♂ (JAB, PBI_OON 42713). Pinal Co.: Santa Catalina, 1134 m (32.41444°, -110.82167°), Nov. 16, 1976, Roth Schoepfer, 2♀, 2♂ (AMNH, PBI_OON 42829). 2 mi SO Payson, Nov. 4, 1935, Wilton Ivie, 1♂ (AMNH, PBI_OON 42815). **California:** Monterrey Co.: Hastings Res., Feb. 28, 1946, collector not provided, additional label: "217 *Neotoma* Midden LPT ♂ 654 Feb. 28 46" 1♀ (AMNH, PBI_OON 1080). Contra Costa Co.: Mount Diablo (37.881667°, -121.913889°), May 29, 1951, S. Bailey, 1♂, 1♀ (AMNH, PBI_OON 1075). Kern Co.: 11 mi NE Caliente (35.291111°, -118.627778°), Mar. 31, 1959, F.C. Raney, 1♀ (AMNH, PBI_OON 1127). Los

Ángeles Co.: Hermosa Beach, Mar. 18, 1941, Wilton Ivie, 1♀ (AMNH, PBI_OON 42822); 2 mi SO Redondo Beach, Mar. 18, 1941, Wilton Ivie, 2♂ (AMNH, PBI_OON 42814); highway from San Francisco to Santa Cruz, July 1, 1948, H.L. Shantz, 1♀ (AMNH, PBI_OON 1123); Montrose, Dec. 31, 1932, Wilton Ivie, 4♂, 3♀ (AMNH, PBI_OON 1110); Santa Mónica (34.01944°, -118.49028°), Dec. 19, 1933, W. Ivie, 5♂, 5♀ (AMNH, PBI_OON 1068); 15 mi West Santa Mónica, 44 m (34.04556°, -118.66500°), Mar. 20, 1941, Wilton Ivie, 4♂, 4♀ (AMNH, PBI_OON 42568); same data, 2♂, 7♀ (AMNH, PBI_OON 42820); same data, 4♂, 4♀ (AMNH, PBI_OON 42569); Santa Mónica, 34.03333°, -118.53333°, Dec. 19, 1933, W. Ivie, 4♂, 7♀ (AMNH, PBI_OON 42566); same data, 8♂, 7♀ (AMNH, PBI_OON 42570); same data, 3♂ (AMNH, PBI_OON 42574); same data, 4♂, 2♀ (AMNH, PBI_OON 42588); same data, 7♂, 6♀ (AMNH, PBI_OON 42828); same data, 4♂, 4♀ (AMNH, PBI_OON 42832); same data, 4♂, 5♀ (AMNH, PBI_OON 42836); same data, 3♂, 3♀ (AMNH, PBI_OON 42837). **Riverside Co.:** Andreas Canyon near Palm Springs, 183 m (33.76222°, -116.53611°), Mar. 26, 1960, W. Gertsch, W. Ivie, R. Schrammel, 2♂, 1♀ (AMNH, PBI_OON 1119); Lake Matthews Canyon (33.825000°, -117.435000°), Dec. 20, 1951, R.E. Ryckman, R. D. Lee, C.T. Ames, C.C. Lindt, K.Y. Arakawa, 1♀ (AMNH, PBI_OON 1074); **Riverside** (33.95334°, -117.39615°), Jan. 06, 1957, I. Newell, 3♀ (AMNH, PBI_OON 1128); White Water (33.92500°, -116.63750°), Feb. 03, 1957, I. Newell, 1♂ (AMNH, PBI_OON 1121); San Jacinto Mts (Snow Creek Canyon), leaf mould, Apr. 13, 1955, Jhon Belkin, 1♀ (AMNH, PBI_OON 42838). **San Diego Co.:** 0.3 miles W Ranchita on HWY, 1193 m (33.21027°, -116.54166°), Mar. 16, 2003, R. Vetter, 1♂ (MCZ 53544, PBI_OON 26477); 3.5 mi NNE Alpine, 777 m (32.834444°, -116.770556°), Mar. 26, 2002, L. Merrill, R. Vetter, 1♀ (AMNH, PBI_OON 27512), on label: "*O. algerica*"; Balboa Park (32.73167°, -117.14611°), Mar. 28, 1957, A. Nadler, 2♀ (AMNH, PBI_OON 1125); Santa Ysabel, 910 m (33.10900°, -116.67200°), Feb. 01, 1970, 1♂ (USNM, PBI_OON 42585). **Santa Bárbara Co.:** Feb.–Mar. 1947, Homer, L. Shantz, 7♂, 3 juvenile (AMNH, PBI_OON 1117); same data, Apr. 7–8, 1948, H.L. Shantz, 1♀ (AMNH, PBI_OON 1116); same data (MW. N.H. grounds) (34.425833°, -119.714167°), Feb. 07, 1967, V. Roth, 1♂, 1♀ (AMNH, PBI_OON 1066); Santa Bárbara (34.42083°, -119.69722°), Mar. 14, 1948, H. Shantz, 6♂ (AMNH, PBI_OON 1073); same data, May 10, 1948, to May 30, 1948, H. Shantz, 1♂ (AMNH, PBI_OON 1114); same data, June 01, 1948, H. Shantz, 1♀ (AMNH, PBI_OON 1115); Santa Bárbara (MW.

N.H. grounds), Feb. 07, 1967, V. Roth, 2♂, 3♀ (AMNH, PBI_OON 1079). Riverside, Apr. 23, 1955, I. Newell, 1♂, 1 juvenile, sex unknown (AMNH, PBI_OON 1078); San Fernando, 34.21666°, -118.38333°, Sep. 25, 1965, J.W. Ivie, 1♀ (AMNH, PBI_OON 1067); same data, 1♀, 1 juvenile, sex unknown (AMNH, PBI_OON 1071); same data, Oct. 07, 1963, J.W. Ivie, 1♀ (AMNH, PBI_OON 1133); same data, 34.170000°, -118.280000°, Sep. 14, 1964, J.W. Ivie, 2♀ (AMNH, PBI_OON 1319). Santa Mónica, 34.00000°, -118.00000°, Dec. 19, 1933, W. Ivie, 3♀ (AMNH, PBI_OON 42574); Topanga Canyon (Near Mouth) (34.00000°, -118.00000°), Mar. 18, 1941, W. Ivie, 2♂, 1♀ (AMNH, PBI_OON 1108). Ventura Co.: Oxnard, 16 m (34.11510°, -119.10370°), Aug. 10, 1959, W. Gertsch, V. Roth, 1♀ (AMNH, PBI_OON 1112). Yolo Co.: 5.4 min. SW Winters (38.740511°, -121.809314°), May 29, 1959, F.C. Raney, L.M. Smith, R.O. Schuster, 1♀ (AMNH, PBI_OON 1129). Orange Co.: Laguna Beach, among fallen leaves, back of the label: "when touched these small spiders would jump 3–4 cm backward," Dec. 28, 1932, W. Ivie 4♂, 5♀ (MACN-Ar 31476, PBI_OON 1072); same data, among dead leaves on hillsides, 4♂, 4♀ (AMNH, PBI_OON 1113); same data, Dec. 28, 1932, 4♂, 7♀ (AMNH, PBI_OON 42833). **New Mexico:** Socorro Co.: 5 mi W Socorro (33.93194°, -107.03601°), Sep. 02, 1957, C. Hoff, 2♂, 1 juvenile, sex unknown (AMNH, PBI_OON 1452). Bernalillo Co.: Sandia Mts., near "U," collector unknown, date not provided, 1♀ (AMNH, PBI_OON 1451); Cerillos, 35.270000°, -106.070000°, Oct. 5, 1965, Jean and Wilton Ivie, 1♀, 2 juveniles (AMNH, PBI_OON 1450). **Texas:** Brewster Co.: Big Bend National Park, Panther pass, 1768 m (29.216653°, -103.266347°), May 25, 1965, K. Haller, 1♀ (AMNH, PBI_OON 1448).

Orchestina obscura Chamberlin and Ivie, 1942

Figures 5, 15G–I, 20E, F, map 1

Orchestina obscura Chamberlin and Ivie, 1942: 6, fig. 4 (male holotype from the United States: California, Mariposa Co.: Yosemite Park (37.83722°, -119.54028°), May 08, 1931, A.M. Woodbury, deposited in AMNH, PBI_OON 42747; examined).

DIAGNOSIS: Males resemble those of *O. utahana* by the general shape of the palp and the presence of cuticular projections on cheliceral promargins, but the embolus is slightly thinner

and more sinuous than in that species (fig. 15G–I); the carapace is more rounded in *O. utahana* and in that species the PME are also larger. As its name indicates, males of *O. obscura* are darker than any other United States species (fig. 5).

MALE (PBI_OON 42747): Total length 1.33. **CEPHALOTHORAX:** Carapace dark orange or brown, with netlike pattern. Sternum with dark stripe on anterior median half. Cheliceral promargins with cuticular projections (fig. 5B, arrow). Labium slightly darker than sternum. Endites without serrula. **ABDOMEN:** Dorsum with gray netlike pattern. **LEGS:** Only right legs I, II, left leg IV present. **GENITALIA** (figs. 15G–I, 20E, F): Palp yellow; bulb yellow, spherical; embolus short, dark; sperm duct with only one loop.

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in the United States (California, map 1).

OTHER MATERIAL EXAMINED: None.

Orchestina quasimodo Izquierdo, new species

Figures 6–9, 16A–C, 18C, 19C, 20G, H, 21C, G, H, map 1

TYPES: Male holotype and female paratype from the United States: Riverside Co., California: 1½ mi S Temecula (just SW Temecula river underpass), 305 m (33.503333°, -117.123611°), Apr. 01, 1976, W. Icenogle, deposited in AMNH, PBI_OON 50040; same data, 5 male, 8 female paratypes, and 3 juveniles, sex unknown, deposited in AMNH, PBI_OON 38005.

ETYMOLOGY: The specific name is a noun in apposition used to note the strongly elevated carapace in males that resembles a hump, as that of *Quasimodo*, principal character of the novel *The Hunchback of Notre-Dame* by Victor Hugo.

DIAGNOSIS: Males can easily be distinguished by the presence of a strongly elevated carapace in lateral view (figs. 6F, 7A–C); females resemble those of *O. utahana* by the general shape of the genitalia, but in *O. quasimodo* the external pockets have a more rounded cavity with slightly larger openings directed posteriorly, whereas in *O. utah-*

ana the pockets have a deeper cavity and the openings are smaller, directed to the sides of the abdomen (figs. 9A, 18C, 19C, 21C). In addition, the carapace in females of *O. quasimodo* is slightly higher in lateral view than in *O. utahana*. Coloration is also different, although the preserved material could have lost its natural pigmentation.

MALE (PBI_OON 38005): Total length 1.24. **CEPHALOTHORAX**: Carapace orange, with diffuse net-shaped pattern, strongly elevated in lateral view (fig. 6A, F). Pars thoracica with long, needlelike setae (figs. 6F, 7A, B, G). Clypeus and cephalic region with gland pores (fig. 7D–F). Sternum with patches or dots of brown pigment (fig. 6B). Endites without serrula. **ABDOMEN**: Dorsum with gray netlike pattern (fig. 6A, F). **LEGS**: Yellow, tibiae I proximal end swollen with row of prolateral strong macrosetae and gland pores on prolateral, ventral surfaces (figs. 6F, 8). Leg spination, metatarsi: IV p0-0-1; r0-0-1. **GENITALIA** (figs. 16A–C, 20G, H): Bulb spherical; embolus slightly sinuous in lateral view; sperm duct with only one loop (fig. 20G).

FEMALE (PBI_OON 38005): **CEPHALOTHORAX**: Carapace slightly elevated; clypeus and cephalic region without gland pores (fig. 6C, E). Endites with serrula in single row. **LEGS**: Leg spination, metatarsi: IV p0-0-1; r0-0-1; tibiae I without modifications. **GENITALIA** (figs. 9, 18C, 19C, 21C, G, H): External pockets present, placed anteriorly, internal pockets absent; anterior receptaculum twisted ventrally, with well-developed anterior apodemes; posterior receptaculum present, posterior apodeme divided, formed by two parallel plates.

DISTRIBUTION: Known only from California (map 1).

OTHER MATERIAL EXAMINED: UNITED STATES: California: Orange Co.: 12 min. E Capistrano. Nr Riverside Co. line (33.542422°, -117.531706°), Mar. 30, 1960, W. Gertsch, W. Ivie, R. Schrammel, 1 ♀ (AMNH, PBI_OON 1132). Riverside Co.: Near Prado Dam, *Quercus agrifica* litter (33.8902°, -117.6408°), Mar. 24, 1956, I. Newell, 1 ♂, 3 ♀ (AMNH, PBI_OON 1318). San Luis Obispo Co.: Reservoir Canyon (35.29192°, -120.63100°), Aug. 15, 1959, W. Gertsch, W. Ivie, 1 ♀ (AMNH, PBI_OON 1109).

Orchestina kamehameha Izquierdo,
new species

Figures 10, 16D–F, 18D, 19D, 20I–K, 21D, F,
map 1

TYPES: Male holotype and female paratype from Hawai'i Co.: Honokahau (19.680667°, -156.023544°), Sep. 06, 1957, A. Nadler, deposited in AMNH, PBI_OON 50036; same data, 1 male and 3 female paratypes deposited in AMNH, PBI_OON 38004; Kaua'i Co.: Kahili Mountain, 5 mi N Koloa (21.96196°, -159.47770°), Jan. 11, 1998, J., E. Berry, 1 male paratype deposited in JAB, PBI_OON 42714; Maui Co.: Kahului, Maui, Sep. 17, 1957, A. Nadler, 1 female paratype deposited in AMNH, PBI_OON 38006.

ETYMOLOGY: The specific name is a noun in apposition, after Kamehameha I, first king of Hawai'i.

DIAGNOSIS: Males can be distinguished from those of the other species by the PME placed on a protuberance (fig. 10B), a posterior eye row procurved in front view (fig. 10D), a higher clypeus with long, needlelike setae directed upward (fig. 10B, C), a larger copulatory bulb and the subbasal insertion of the patella-tibia joint on the palp (fig. 16D–F). Females can be distinguished by having small, nearly contiguous external pockets on the epigastric region, and a long anterior receptaculum (figs. 18D, 19D, 21D, F).

MALE (PBI_OON 38004): **CEPHALOTHORAX**: Carapace orange, with net-shaped pattern, broadly round in dorsal view (fig. 10A–D). Clypeus high. Posterior eye row procurved in front view (fig. 10D), PME placed on protuberance (fig. 10B), touching for less than half their length. Sternum as long as wide, with net-shaped pattern. Labium rectangular. **ABDOMEN**: Dorsum soft portions dark purple, with gray netlike pattern. **LEGS**: Yellow, patella plus tibia I longer than carapace. **GENITALIA** (fig. 16D–F, 20I–K): Palp proximal segments yellow, patella-tibia joint subbasal, tibia with one brown band at middle; bulb yellow, large, spherical; embolus dark, sperm duct with only two loops (fig. 20I).

FEMALE (PBI_OON 38004): Total length 1.69 (fig. 10E–G). CEPHALOTHORAX: Posterior eye row slightly recurved from front; PME not placed on protuberance, touching throughout most of their length. Sternum longer than wide. Labium elongated, hexagonal. LEGS: Patella plus tibia I shorter than carapace, femora, patellae, tibiae with purple pigment. GENITALIA (figs. 18D, 19D, 21D, F): Epigastric region with small external pockets, internal pockets absent; anterior receptaculum long, twisted ventrally; posterior receptaculum apparently absent, posterior apodeme divided, formed two parallel plates.

DISTRIBUTION: Known only from the Hawaiian archipelago, Kaua'i and Maui islands (map 1).

OTHER MATERIAL EXAMINED: None.

Orchestina saltitans Banks, 1894

Figures 12, 16G–I, 18E, 19E, 20L, M, 22A, map 1

Orchestina saltitans Banks, 1894: 300 (male holotype from the United States: New York, Sea Cliff (40.848989°, -73.644850°), July, 1894, Nathan Banks, deposited in MCZ 22976, PBI_OON 42750; examined). – Emerton, 1909: 214, pl. 1, figs. 4 (Dm). – Dalmás, 1916: 239, figs. 24–25, 35–36 (m). – Petrunkevitch, 1920: 158, pl. 9, figs. 1–9 (m). – Kaston, 1938: 12 (Df). – Comstock, 1940: 311, fig. 290 (m).

Orchestina saltabunda: Petrunkevitch, 1910: 207, pl. 21, figs. 2–3 (m, misidentified).

NOTE: The collection number of the type specimen is missing, but it is provided in the online catalog of the MCZ collection. We have added a label with this number to the vial.

DIAGNOSIS: Males are similar to those of the other United States species but are easily distinguished by the absence of a conical projection on the promargin of chelicerae (present in *O. obscura* and *O. utahana*) and by the long embolus, shorter in other species (figs. 16G–I, 20L, M). Females lack the external pockets on

the epigastric region characteristic of *O. moaba*, *O. utahana*, *O. kamehameha*, *O. quasimodo*, and *O. auburndalensis* and can be distinguished from those of *O. nadleri* by the shape of the anterior receptaculum thinner and longer in *O. nadleri*, and by the subapical position of the anterior apodemes, placed on the tip of the anterior receptaculum in *O. nadleri* (figs. 18E, 19E, 22A).

MALE (PBI_OON 42750): Total length 0.92. CEPHALOTHORAX: Carapace orange-brown, with net-shaped pattern (fig. 12A, B, D). Sternum orange-brown, with net-shaped pattern (fig. 12C). Chelicerae, endites, labium orange-brown. Labium rectangular. Endites without serrula. ABDOMEN: Dorsum with gray netlike pattern (fig. 12A, B). LEGS: Yellow, patella plus tibia I longer than carapace. GENITALIA (figs. 16G–I, 20L, M): Palp segments yellow with diffuse pattern of brown spots or patches; bulb yellow, spherical; embolus long, dark, sperm duct not very coiled, with only one loop.

FEMALE (PBI_OON 42750): Total length 1.42. CEPHALOTHORAX: Sternum yellow (fig. 12F). Endites with serrula in single row. LEGS: Patella plus tibia I near as long as carapace. GENITALIA (figs. 18E, 19E, 22A): Epigastric region without external pockets, internal pockets absent; anterior receptaculum short, twisted ventrally, with short anterior apodemes; posterior receptaculum present, massive; posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the eastern region of the United States (map 1).

OTHER MATERIAL EXAMINED: **UNITED STATES:** **Michigan:** Calhoun Co.: Ott Biol. Pres. (42.318983°, -85.125778°), June 06, 1947, A.M. Chickering, 1 ♂ (MCZ 66797, PBI_OON 26480). Ingham Co.: East Lansing, MSU Nat. Sci. building, fourth floor desk, 258 m (42.73083°, -84.47833°), June 19, 1969, 1 ♀ (AMNH, PBI_OON 42567). Ann Arbor (42.280825°, -83.743039°), Feb. 07, 1944, R. Westover, 1 ♂ (MCZ 71448, PBI_OON 26478); same data, Apr. 09, 1943, R. Westover, 1 ♀ (MCZ 71499, PBI_OON 26479). **Ohio:** Franklin Co.: Columbus (39.96111°, -82.99889°), W.M. Barrows, 2 ♂, 2 ♀, on building (AMNH, PBI_OON 42839). Wayne Co.: Wooster College Campus, in building, 338 m (40.81416°, -81.93361°), Nov. 10, 1958, J.A. Beatty, 1 ♂ (JAB, PBI_OON 42712). **Missouri:** Boone Co.: Columbia (38.95167°, -92.33389°),

June 01, 1905, Crosby, 1 ♂ (CUIC 1416, PBI_OON 42565). Missouri University (38.94528°, -92.32861°), C.R. Crosby, 1 ♂ without palps (AMNH, PBI_OON 42564). **New York:** Monroe Co.: Dewey Bldg. Campus, Univ. of Rochester (43.128333°, -77.628333°), Aug. 13, 1942, John Buck, 1 ♂ (AMNH, PBI_OON 38007); same data, Nov. 18, 1940, 1 ♂ (AMNH, PBI_OON 1456); same data, River Campus, Jan. 31, 1946, G. Leclerc, 1 ♂ (AMNH, PBI_OON 1457); Sea Cliff (40.846389°, -73.644444°), N. Banks, 3 ♂, 5 ♀ (MCZ 71454, PBI_OON 26481). New York Co.: AMNH building, 27 m (40.78111°, -73.97388°), May 26, 1937, Paul Richard, 2 ♂, 1 ♀, 1 juvenile, sex unknown (AMNH, PBI_OON 42294); same data, Aug. 19, 1936, Gertsch, 1 ♂, 1 ♀ (AMNH, PBI_OON 42835); same data, Sep. 01, 1937, Paul Richard, 1 ♂, 1 ♀ (MACN-Ar 31474, PBI_OON 51089). Hunterdon Co.: Lambertville, 40.36666°, -74.93333°, Aug. 01, 1951, W. Ivie, 1 ♂ (AMNH, PBI_OON 1446). **Massachusetts:** Suffolk Co.: Allston (42.3529°, -71.1321°), May 31, 1916, E. Bryant, 1 ♀ (MCZ 71451, PBI_OON 26483); same data, Apr. 25, 1916, E. Bryant, on window sill, 1 ♂ (MCZ 71452, PBI_OON 26484); 9 Baldwin St., Cambridge (42.381135, -71.071225), Oct. 13, 1968, W.A. Shear, 1 ♂ (AMNH, PBI_OON 1658). **Connecticut:** New Haven Co.: Meriden (41.53500°, -72.79750°), Sep. 25, 1937, H.L. Johnson, 1 ♂ (USNM, PBI_OON 42563). Hartford Co.: New Britain (41.66777°, -72.78194°), Nov. 20, 1950, B.J. Kaston, 1 ♀ (USNM, PBI_OON 42580). New Haven Co.: (41.310000°, -72.923611°), summer 1934, B.J. Kaston, 1 ♂ (USNM, PBI_OON 42579); same data, Jan. 01, 1934, to Jan. 01, 1937, B.J. Kaston, 13 ♂ (USNM, PBI_OON 42581); same data, Jan. 01, 1934, to Jan. 01, 1937, B.J. Kaston, 3 ♀ (USNM, PBI_OON 42582); 3 juveniles, sex unknown (USNM, PBI_OON 42582). **Pennsylvania:** Bucks Co.: Horseshoe Bend, Neshaminy Creek NE Jamison (40.27394°, -75.09222°), Jan. 01, 1960, W. Ivie, 1 ♀ (AMNH, PBI_OON 1070). **New Jersey:** Bergen Co.: Ramsey (41.05722°, -74.14139°), May 26, 1939, W. Gertsch, 2 ♂, 2 ♀ (AMNH, PBI_OON 1445); same data, Feb. 20, 1938, Gertsch, 1 ♂ (AMNH, PBI_OON 42840). **District of Columbia:** Washington D.C.: 21 m (38.91535°, -76.95653°), N. Banks, 1 ♂, 1 ♀ (MCZ 71453, PBI_OON 26485). **North Carolina:** Carteret Co.: Beaufort, Piver's Island, 1 m (34.71750°, -76.67194°), July 24, 1965, J.A. Beatty, 1 ♂ (JAB, PBI_OON 42711). Durham Co.: Durham, Duke Forest (36.017700°, -78.980567°), June 10, 1963, J.A. Beatty, 1 ♀ (JAB, PBI_OON 42710). **Alabama:** Montgomery Co.: Montgomery (32.36604°, -86.29829°), on label: "aedificarian," A. Archer, 1 ♀ (AMNH, PBI_OON

1732). **Georgia:** Hall Co.: Gainesville, 381 m (34.30444°, -83.83388°), Sep. 01, 1939, B.J. Kaston, 2 ♀ (USNM, PBI_OON 42583); same data, Aug. 25, 1942, B.J. Kaston, 2 ♂, 4 ♀ (USNM, PBI_OON 42584); same data, 385 m (34.30444°, -83.83389°), Sep. 10, 1940, B.J. Kaston, 4 ♂, 1 ♀ (AMNH, PBI_OON 42587); same data, Dec. 07, 1944, B.J. Kaston, 2 ♂ (AMNH, PBI_OON 42830).

Orchestina auburndalensis Izquierdo,
new species

Figures 13, 18G, 22C, map 1

TYPE: Female holotype from Auburndale, Florida (28.101111°, -81.793611°), Mar. 04, 1936, collector not provided, deposited in AMNH, PBI_OON 1449.

ETYMOLOGY: The species is named after the type locality, Auburndale.

DIAGNOSIS: Females of this species can be distinguished by the general shape of the body, which is longer, with tubular, more elongated abdomen, instead of rounded or globular as in other species. The epigastric region shows external pockets that are slightly extended posteriorly. Curiously the general shape of the female genitalia resembles that of *O. fernandina* from the Galapagos Islands in having an anterior receptaculum with wide base and external pockets, but in that species the pockets are closer to each other over the epigastric furrow.

MALE: Unknown.

FEMALE (PBI_OON 1449). Total length 1.38. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Cylindrical, posterior end of abdomen with slightly brown pattern similar to other North American species. **LEGS:** Missing. **GENITALIA:** Epigastric area with external pockets extended slightly posteriorly, internal pockets absent; anterior receptaculum with rounded anterior tip, wide base, anterior apodemes absent; posterior receptaculum present, posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the type locality in the United States (Florida, map 1).

OTHER MATERIAL EXAMINED: None.

Orchestina nadleri Chickering, 1969

Figures 14, 17A–C, 18F, 19F, 22B, map 1

Orchestina nadleri Chickering, 1969: 158, figs.

35–39 (male holotype from Key West, Florida (1 ♂) (24.55917°, -81.78389°), Dec. 31, 1950, A.M. Nadler, deposited in AMNH, PBI_OON 42746; female paratype from the same locality, Dec. 29, 1950, A.M. Nadler, deposited in AMNH, PBI_OON 42572; examined) – Wunderlich, 1988: 57, fig. 47.

DIAGNOSIS: Males can easily be distinguished by the shape of the copulatory bulb, more oval in lateral view, embolus and bulb clearly delimited; the sperm duct has many loops, which is also a clear difference from the other species from the United States. Females resemble those of *O. auburndalensis* by the shape of the abdomen, more oval in lateral view, but lack external pockets on the epigastric area.

MALE (PBI_OON 42746): **CEPHALOTHORAX:** Laterals of carapace with dark pigment. Sternum wider than long, laterals with dark spots or patches of dark pigment, with dark stripe on anterior median half. Chelicerae anterior face with basal conical projections. Labium triangular. **ABDOMEN:** Dorsum with diffuse netlike pattern. Spinnerets with only a few long, needlelike setae. **LEGS:** White; patella plus tibia I shorter than carapace. **GENITALIA:** Palp proximal segments yellow; bulb yellow; embolus dark; broad ovoid; sperm duct slightly coiled with few loops.

FEMALE (PBI_OON 42572): Total length 1.5. **CEPHALOTHORAX:** Sternum longer than wide. **GENITALIA:** Epigastric region without external or internal pockets; anterior receptaculum with anterior apodemes placed on tip; posterior receptaculum present, posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the type locality in the United States (Florida, map 1).

OTHER MATERIAL EXAMINED: None.

Orchestina nahuatl Izquierdo, new species

Figures 23, 39A, 44A, map 2

TYPE: Female holotype from Guerrero, Mexico, 5 miles NE Taxco (18.58333°, -99.55000°), May 04, 1963, W. Gertsch, W. Ivie, deposited in AMNH, PBI_OON 1092.

ETYMOLOGY: A noun in apposition; Nahuatl is a language of the Nahuan branch of the Uto-Aztec language family that has been spoken in Central Mexico since the seventh century.

DIAGNOSIS: Females can easily be distinguished from those of other species of the region by having the anterior receptaculum with ventral, massive projection (fig. 44A), with long anterior apodemes, and two cuticular ridges on the epigastric region (figs. 39A).

MALE: Unknown.

FEMALE (PBI_OON 1092): Total length 1.4. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Left leg IV absent. **GENITALIA:** Epigastric region with two lateral cuticular ridges (fig. 39A), external, internal pockets absent; anterior receptaculum apparently with two small, lateral additional receptacles (fig. 44A), massive, rounded ventral projection, anterior apodemes very long; posterior receptaculum absent, posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the type locality in Mexico (Guerrero, map 2).

OTHER MATERIAL EXAMINED: Same data as the holotype, 1 juvenile, sex unknown.

Orchestina chaparrita Izquierdo, new species

Figures 24, 36A–C, 39B, 42A, B, 44B, map 2

TYPES: Male holotype and female paratype from Mexico: Coatzacoalcos (west side), Veracruz (18.15000°, -94.43333°), Aug. 11, 1966, J.W. Ivie, deposited in AMNH, PBI_OON 1085.

ETYMOLOGY: A noun in apposition; *chaparrita* is a word normally used in Mexico to kindly refer to a short-statured woman and is used in



MAP 2. Distribution map of *Orchestina* species in Mexico and Guatemala: *O. chaparrita*, *O. guatemala*, *O. nahuatl*, and the southernmost distribution of *O. utahana*.

this case to illustrate the small size of these spiders in general.

DIAGNOSIS: Males resemble those of the other species from Panama by the general shape of the copulatory bulb but can be separated by subtle differences of embolus and the course of the sperm duct (fig. 42A, B), while females are distinguished by the shape of the anterior receptaculum with long lateral apodemes and the shape and location of the internal pockets (figs. 39B, 44B).

MALE (PBI_OON 1085): Total length 0.94. Habitus as in figure 24A–C. **CEPHALOTHORAX:** Carapace orange. Labium rectangular. **ABDOMEN:** Pale white. **GENITALIA:** Embolus short, dark; sperm duct coiled, with several loops (figs. 36A–C, 42A–B).

FEMALE (PBI_OON 1085): Total length 1.37. Habitus as in figure 24D–F. **GENITALIA:** Internal pockets present, directed to median line; anterior receptaculum with long lateral apodemes; posterior receptaculum absent (figs. 39B, 44B).

DISTRIBUTION: Known only from the type locality in Mexico (Veracruz, map 2).

OTHER MATERIAL EXAMINED: None.

CENTRAL AMERICAN AND CARIBBEAN SPECIES

In this section we describe the species with their major distribution in Central America and the Caribbean Region, although some of them (*O. truncata* and *O. laselva*) extend to Colombia and Ecuador as well (map 3).

Orchestina guatemala Izquierdo, new species

Figures 28, 39C, 41B, 44D, map 2

TYPE: Female holotype from Guatemala: San Marcos: San Lorenzo, 3 mi N (15.11666°, -89.61666°), July 07, 1986, to July 19, 1986, J. Campbell, deposited in CNC, PBI_OON 38165.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished from those of the similar species *O. griswoldi* and *O. chiriqui* by the presence of internal pockets placed nearly parallel to the epigastric furrow, and by the shape of base of the anterior receptaculum, slightly round (figs. 39C, 41B, 44D).

MALE: Unknown.



MAP 3. Distribution map of *Orchestina* species in Costa Rica: *O. griswoldi*, *O. laselva*, and *O. truncata* (black circles). Note the sympatric localities in Costa Rica and Ecuador.

FEMALE (PBI_OON 38165): CEPHALOTHORAX (separated from abdomen, fig. 28): Carapace length 0.9; orange. Labium rectangular. ABDOMEN: Pale white. GENITALIA: External pockets absent, internal pockets present, slightly horizontal to body axis; anterior receptaculum wide at its base, V-shaped at its tip; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 39C, 41B, 44D).

DISTRIBUTION: Known only from the type locality in Guatemala (San Lorenzo, map 2).

OTHER MATERIAL EXAMINED: None.

Orchestina truncata Wunderlich, 2004

Figures 29, 37A–C, 39F, 41C, 42C, D, 44E, map 3

Orchestina truncata Wunderlich, 2004a: 1854, figs. 5–6 (male holotype in copal from Colombia and two separated pieces of copal, from Peña Blanca, Santander province, Colombia (ca. 5.94755°, -73.64110°), deposited in SGN; not examined).

NOTE: We have tentatively included the following specimens under *O. truncata*, a subfossil spe-

cies described from a male from Colombia. The specimens treated here are very similar in male palp morphology to the type as illustrated by Wunderlich (2004a); we consider that the small differences are insufficient to justify describing a new species. Among the examined specimens there is a single male from Quindío, Colombia, which is very close to the type locality, although most of the specimens are from Costa Rica. We have received an image of the label belonging to the holotype with the following inscription: F1113/CC/AR/OON/C7W. We provide a full description of male and female. A further, detailed analysis of the type material by micro-CT scanning may confirm this assignment.

DIAGNOSIS: Males can easily be distinguished by the shape of the pedipalp, characterized by a small femur, patella attached to the tibia subbasally, tibia swollen, and copulatory bulb stout, almost the same width as the tibia with short embolus (fig. 37A–C). Females resemble those of some species from Panama and *O. cali* from Colombia by the general shape of the genitalia, with internal pockets and anterior receptaculum with massive lateral projections. However, in *O. truncata* the internal pockets are more parallel to each other (figs. 39F, 41C, 44E), and the tip of

the anterior receptaculum is slightly different in *O. cali* and in all the Panamanian species.

MALE (PBI_OON 31129): Total length 1.10. Habitus as in figure 29A–C. CEPHALOTHORAX: Sternum wider than long. Labium rectangular. ABDOMEN: Pale grey. LEGS: Spination, metatarsi: III, IV d0-0-2. GENITALIA: Femur sinuous, patella attached to tibia subbasally; embolus dark, short; sperm duct highly spiraled, with many loops (figs. 37A–C, 42C, D).

FEMALE (PBI_OON 27986): Total length 1.35. Habitus as in figure 29D–F. CEPHALOTHORAX: Sternum as long as wide. ABDOMEN: Dorsum, sides, venter soft portions with patches of purple pigment (fig. 29D–F). GENITALIA: Besides diagnostic characters, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 39F, 41C, 44E).

DISTRIBUTION: Known from Costa Rica, Colombia, and Ecuador (map 3).

OTHER MATERIAL EXAMINED: **COSTA RICA:** **Cartago:** Quebrada Segunda, Tapantí, 1150 m, 9.76111°, -83.78444°, Sep. 01, 1994, Malaise trap, G. Mora, 1 ♀ (INBIO 3247, PBI_OON 27982). **Guanacaste:** Cerro El Hacha. 12 km SE de La Cruz, 300 m, 11.00000°, -85.50000°, May 01, 1988, M. Espinoza, 1 ♀ (INBIO 3523, PBI_OON 27981). **Heredia:** Estación Biológica La Selva, 150 m, 10.43333°, -84.01666°, July 04, 1993, fogging in *Pentadethra macroloba*/08, 1 ♂ (INBIO, PBI_OON 31129); same data, Jan. 05, 1994, in *Vitex cooperi*, C. Viquez, 1 ♂ (INBIO, PBI_OON 50039); same data, 1 ♂ (INBIO 1269489, PBI_OON 27985); same data, July 05, 1993, in *Virola koschnyi*, 1 ♂ (INBIO 1279527, PBI_OON 27987); same data, Mar. 15, 1994, in primary forest, 1 ♀ (INBIO 1242375, PBI_OON 27986); same data, May 06, 1993, in *Pentaclethra macroloba*, 1 ♂ (INBIO 1232621, PBI_OON 27989); same data, in *Virola koschnyi*, July 05, 1993, 1 ♂ (INBIO 1279308, PBI_OON 27990); same data, in *Pentaclethra macroloba*, Nov. 06, 1993, 1 ♂ (INBIO 1237048, PBI_OON 27991); same data, in *Vitex cooperi*, Jan. 05, 1994, 1 ♂ (INBIO 1269195, PBI_OON 27993); same data, July 04, 1993, in *Pentaclethra macroloba*, 1 ♂ (INBIO 1229682, PBI_OON 27994); same data, Jan. 8, 1994, fogging in *Pentaclethra macroloba*, 1 ♀ (INBIO 1270208, PBI_OON 27992); same data, Dec. 1, 1993, in secondary forest, 1 ♀ (INBIO 1268135, PBI_OON 27988). **Puntarenas:** P.N. Corcovado, Golfito, Quebrada La Bonanza, 500 m, 8.55000°, -83.58333°, Dec. 20, 2000,

to Jan. 20, 2001, Malaise trap, J. Azofeifa, 1 ♀ (INBIO 61202, PBI_OON 27983); same data, 1 ♀ (INBIO 61199, PBI_OON 27984). **COLOMBIA:** **Quindío:** Filandia: Reserva Forestal Bremen, 1870 m, 4.68277°, -75.62666°, Feb. 22, 2005, fogging, M.C. Pimienta, 1 ♂ (IAvH, PBI_OON 30798). **ECUADOR:** **Santo Domingo de los Tsáchilas:** Santo Domingo, Tinalandia lodge Km 85 Road Alóag–Santo Domingo, -0.32103°, -78.95158°, 758 m, Dec. 07, 2009, M. Ramírez, C. Gris-mado, M. Izquierdo and F. Labarque (PBI expedition), 1 ♂, 1 ♀ (MACN-Ar 26517, PBI_OON 30900). **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37240). **Pichincha:** (-0.246526°, -78.500258°), collector and date not provided, 1 ♀ (KBIN, PBI_OON 16667).

Orchestina laselva Izquierdo, new species

Figures 30, 36G–I, 40C, 42G, H, 44H, map 3

TYPES: Male holotype from Costa Rica: Heredia, Estación Biológica La Selva, in *Carapa guianensis*, 50–150 m, 10.433333°, -84.016667°, Mar. 05, 1993, collector not provided, deposited in INBIO 1230859, PBI_OON 27936; same data, in *Conceveiba pleiostemona*, one female paratype, deposited in INBIO 1227995, PBI_OON 27935; same data, in *Virola koschnyi*, Jan. 14, 1993, one female paratype deposited in INBIO 1225068, PBI_OON 27943.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the short embolus with flat, sclerotized projection in prolateral view (fig. 36G). Females can easily be distinguished by having two adjacent external pockets on the median line of the epigastric region (figs. 40C, 44H).

MALE (PBI_OON 27936): Total length 1.00. Habitus as in figure 30A–C. CEPHALOTHORAX: Carapace as in figure 30A–C. Chelicerae anterior face unmodified but provided with group of dark, needlelike setae, slightly thicker than others (fig. 30C). Labium rectangular. ABDOMEN: Pale orange. LEGS: Patella plus tibia I shorter than carapace. GENITALIA: Cymbium yellow, bulb stout, tapering apically;

embolus dark, short, with flat, sclerotized projection on prolateral side; sperm duct coiled, with few loops (figs. 36G–I, 42G, H).

FEMALE (PBI_OON 27943): Total length 1.00. Habitus as in figure 30D, E. Chelicerae anterior face with needlelike setae. **GENITALIA**: Epigastric region with two adjacent pockets on median line; anterior receptaculum straight with wide anterior tip; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 40C, 44H).

DISTRIBUTION: Known from Heredia, Costa Rica, and Orellana, Ecuador (map 3).

OTHER MATERIAL EXAMINED: **COSTA RICA**: **Heredia**: Estacion Biologica La Selva, 150 m, 10.43333°, -84.01666°, May 05, 1993, 1 ♀ (INBIO 1001227995, PBI_OON 27935); same data, 1 ♂ (INBIO 1001230859, PBI_OON 27936); same data, 1 ♀ (INBIO 1001279476, PBI_OON 27937); same data, July 05, 1993, 1 ♂ (INBIO 1001279395, PBI_OON 27938); same data, Jan. 17, 1993, 1 ♀ (INBIO 1001223568, PBI_OON 27939); same data, Mar. 06, 1993, 1 ♂ (INBIO 1001226126, PBI_OON 27940); same data, Jan. 14, 1993, 1 ♀ (INBIO 1001224858, PBI_OON 27941); same data, May 07, 1993, 1 ♀ (INBIO 1001276127, PBI_OON 27942); same data, Jan. 14, 1993, 1 ♀ (INBIO 1001225068, PBI_OON 27943); same data, Jan. 14, 1993, 1 ♀ (INBIO 1001225031, PBI_OON 27944); same data, locality, date and collectors not provided, 1 ♀ (INBIO PBI_OON 27945). **ECUADOR**: **Orellana**: Reserva Etnica Waorani: 1 km S Onkone Gare Camp; Transect Ent., 216 m, -0.65716°, -76.45300°, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30174); same data, Oct. 04, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30883).

Orchestina griswoldi Izquierdo, new species

Figures 31, 37D–F, 39D, map 3

TYPES: Male holotype from Costa Rica: Heredia: Sarapiquí: 4 km SE Puerto Viejo de Sarapiquí, Finca La Selva (10.42194°, -84.01500°), Oct. 18, 1981, C. Griswold, deposited in CAS 9023348, PBI_OON 2299; same data, 1 female paratype deposited in CAS 9023351, PBI_OON 2300.

ETYMOLOGY: The specific name is a patronym in honor of Charles Griswold, collector of the type material, for his contributions to the knowledge of arachnology.

DIAGNOSIS: Males can be distinguished by having about 10 macrosetae on the clypeus and by details of the palp, such as the embolus tip and the sperm duct course (figs. 31A–C, 37D–F). Females can be distinguished by the wide, highly sclerotized base of the anterior receptaculum (fig. 39D).

MALE (PBI_OON 2299): Total length 0.97. Habitus as in figure 31A, B. **CEPHALOTHORAX**: Carapace as in figure 31A–C. Clypeus with 10 long macrosetae (fig. 31C). Labium rectangular. **ABDOMEN**: Pale white. **LEGS**: Yellow. **GENITALIA**: Embolus dark, short; sperm duct coiled, with many loops (fig. 37D–F).

FEMALE (PBI_OON 2300): Total length 1.40. Habitus as in figure 31D, E. **CEPHALOTHORAX**: Clypeus unmodified, with normal setae. **GENITALIA**: Besides the diagnostic characters, internal pockets small, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (fig. 39D).

DISTRIBUTION: Known only from the type locality in Costa Rica (Heredia, map 3).

OTHER MATERIAL EXAMINED: None.

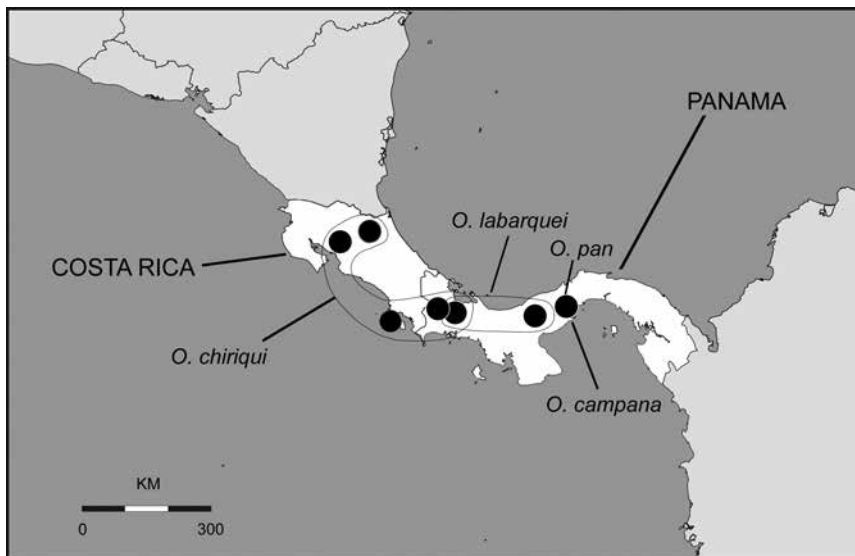
Orchestina chiriqui Izquierdo, new species

Figures 32, 37G–I, 39E, 41F, 44F, map 4

TYPES: Male holotype and female paratype from Panama: Chiriqui: Reserva Forestal Fortuna, Sendero km 63, 992 m, 8.77917°, -82.20028°, June 22, 2008, L. Piacentini, F. Labarque, deposited in MIUP, PBI_OON 51107, PANCODING: SFNQM8P005; same data, P. Inter. La Amistad, Cerro Picacho, 1 hectare PANCODING Inventory, 2299 m, 8.89027°, -82.61861°, Jun 12–17, 2008, M. Arnedo, L. Benavides, G. Hormiga, F. Labarque, M. Ramírez, 1 female paratype deposited in MACN-Ar 29886, PBI_OON 42292, PANCODING: SAB1DFB026, BOLD: SPIPA603-10.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of the other species from Panama by the general shape



MAP 4. Distribution map of *Orchestina* species in Costa Rica and Panama: *O. campana*, *O. chiriqui*, *O. labarquei*, and *O. pan*. Note the sympatric localities in Panama.

of the palp, but can be distinguished by a small lateral projection on base of the embolus in dorsal and lateral view (fig. 37G–I). Females resemble those of *O. guatemala* by the shape of the anterior receptaculum but can be distinguished by the internal pockets, placed ~45° from the body axis (figs. 39E, 41F).

MALE (PBI_OON 51107): Total length 1.10. Habitus as in figure 32A–D. CEPHALOTHORAX: Carapace as in figure 32A, C, D. Sternum as in figure 32B. Labium rectangular. ABDOMEN: Pale white. LEGS: Only legs II present. GENITALIA: Embolus dark, short, with ventral projection near base; sperm duct spiraled with several loops (fig. 37G–I).

FEMALE (PBI_OON 51107): Total length 1.41. Habitus as in figure 32E–G. CEPHALOTHORAX: Carapace yellow (fig. 32E, G). Sternum yellow (fig. 32F). Chelicerae, endites, labium yellow. ABDOMEN: Pattern of dorsal squares and lateral bands of pale-purple pigment (fig. 32E–G). LEGS: Yellow. GENITALIA: Epigastric region without external pockets, internal pockets present, well developed, placed at sides of epigastric fold; ante-

rior receptaculum with rounded base, anterior apodemes short; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 39E, 41F, 44F).

DISTRIBUTION: Known from Costa Rica and Panama (map 4).

OTHER MATERIAL EXAMINED: **COSTA RICA:** **Alajuela:** San Ramón: Angeles, R.B. Alberto Manuel Brenes, 1000 m, 10.21448°, -84.60429°, Nov. 13, 1994, to Jan. 23, 1995, C. Viquez, 1 ♀ (INBIO, PBI_OON 36977). **Heredia:** Ca. Puerto Viejo, La Selva, 50 m, 10.43118°, -84.00334°, Dec. 01, 1980, W. Eberhard, 1 ♀ (MCZ 68299, PBI_OON 26472); same data, 1 ♀ (MCZ 68298, PBI_OON 42827); La Selva, 10.43333°, -84.01666°, May 11, 2000, C. Viquez, 2 ♀ (INBIO, PBI_OON 31130). **Puntarenas:** Península de Osa, Corcovado Sirena, 8.483333°, -83.516667°, 10 m, primary rainforest, beating vegetation, Mar. 12, 1999, J. Zjko-Miller 1 ♀ (USNM, PBI_OON 42562). **PANAMA:** **Chiriqui:** Oct. 1983, S. Heimer, 1 ♀ (MNVG, PBI_OON 15787); Parque Internacional La Amistad, Cerro Picacho, 1 hectare PANCODING Inventory, 2299 m, 8.89027°, -82.61861°, Jun 12–17, 2008, M. Arnedo, L. Benavides, G. Hormiga, F. Labarque, M. Ramírez, 1 ♀ (MACN-Ar 29885, PBI_OON 42293, PANCODING: SAU1NGA026, barcoding: PA1864); same data as holotype, 1 ♂ (MACN-Ar 29909, PBI_OON 51108, PANCODING: SFNQM8L046).

***Orchestina labarquei* Izquierdo, new species**

Figures 33, 38A–C, 40B, 41D, 44G, map 4

TYPES: Male holotype from Panama: Chiriqui: Reserva Forestal Fortuna, Quebrada Honda, 1 hectare PANCODING Inventory, 1135 m, 8.75000°, -82.23889°, June 7–12, 2007, M. Arnedo, D. Dimitrov, G. Hormiga, F. Labarque, M. Ramírez, deposited in MIUP, PBI_OON 42286, PANCODING: SFU1N7R030, barcoding: PA897; same data, 1 female paratype deposited in MACN-Ar 29889, PBI_OON 42305, PANCODING: SFB1D9H029, barcoding: PA895.

ETYMOLOGY: The specific name is a patronym in honor of Facundo Labarque, colleague and collector of the type specimen and other species from Panama.

DIAGNOSIS: Males resemble those of *O. campana* by the general shape of the copulatory bulb, but in *O. labarquei* the embolic region is wider in lateral view (fig. 38A–C). Females resemble those of *O. campana*, *O. truncata*, and *O. cali* by the general shape of genitalia, but can be distinguished by subtle details of the anterior receptaculum tip shape, larger than in the other species; the lateral projections, and internal pockets (figs. 40B, 41D, 44G).

MALE (PBI_OON 42286): Total length 1.20 (taken from paratype PBI_OON 42319). Habitus as in figure 33A–C. CEPHALOTHORAX: Carapace as in figure 33A, B. Sternum as in figure 33C. Labium rectangular. ABDOMEN: Pale white. GENITALIA: Embolus dark, short, with claw-shaped projection seen in prolateral view; sperm duct slightly coiled, with several loops (fig. 38A–C).

FEMALE (PBI_OON 42304): Total length 1.25 (taken from paratype PBI_OON 42322). Habitus as in figure 33D–F. ABDOMEN: Dorsum, sides, venter soft portions with pale-purple bands. GENITALIA: External pockets absent, internal pockets present, small, placed at margins of epigastric fold; anterior receptaculum with massive, rounded-lateral projections, anterior tip wide, with long anterior apodemes, almost hidden by these projections; posterior receptaculum absent,

posterior apodeme formed by entire plate (figs. 40B, 41D, 44G).

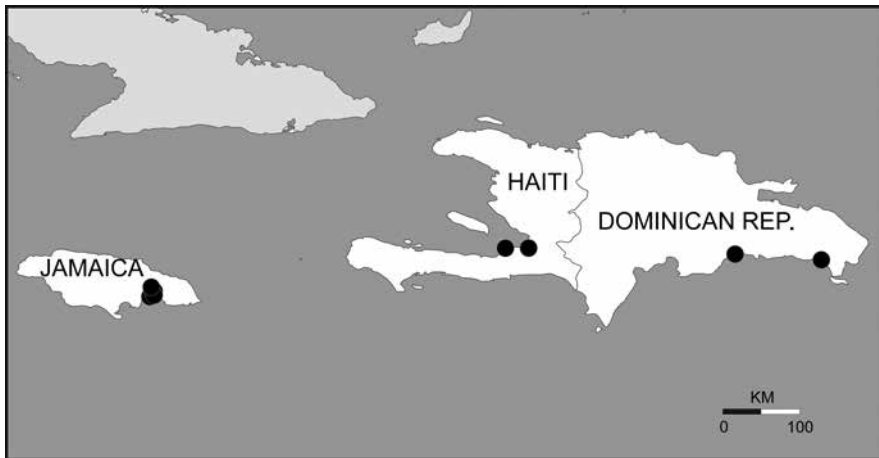
DISTRIBUTION: Known from the provinces of Chiriqui and Coclé in Panama (map 4).

OTHER MATERIAL EXAMINED: PANAMA: Chiriqui: same data as holotype, 1 ♀ (GWU, PBI_OON 42283, PANCODING: SFU1N7H038, barcoding: PA892); same data, 1 ♀ (MACN-Ar 29891, PBI_OON 42304, PANCODING: SFU1NCD020, barcoding: PA894); same data, 1 ♀ (GWU, PBI_OON 42284, PANCODING: SFU2NAD027, barcoding: PA886); same data, 1 ♀ (GWU, PBI_OON 42285, PANCODING: SFU1NBA012, barcoding: PA882); same data, 1 ♀ (MIUP, PBI_OON 42289, PANCODING: SFD1NBR030); same data, 1 ♀ (MIUP, PBI_OON 42290, PANCODING: SFU1NAR030); same data; same data, 1 ♂ (MACN-Ar 29892, PBI_OON 42306, PANCODING: SFU2N8A007); same data, 1 ♀ (UB, PBI_OON 42314, PANCODING: SFU2NBD030, barcoding: PA893); same data, 1 ♀ (UB, PBI_OON 42315, PANCODING: SFU1N8A013, barcoding: PA890); same data, 1 ♀ (UB, PBI_OON 42316, PANCODING: SFB1D9H045, barcoding: PA896); same data, 1 ♀ (UB, PBI_OON 42317, PANCODING: SFU2N8D029, barcoding: PA889); same data, 1 ♀ (UB, PBI_OON 42318, PANCODING: SFD1NAH001, barcoding: PA903); same data, 1 ♂ (MACN-Ar 29890, PBI_OON 42319, PANCODING: SFU2NBA015, BOLD: SPIPA068-10); same data, 1 ♀ (MACN-Ar 29888, PBI_OON 42320, PANCODING: SFB1DAH022, barcoding: PA881); same data, 1 ♀ (MACN-Ar 29893, PBI_OON 42321, PANCODING: SFU1N7R050, barcoding: PA898); same data, 1 ♀ (MACN-Ar 29887, PBI_OON 42322, PANCODING: SFU2N8D016, barcoding: PA1127); same data, June 21–24, 2008, L. Piacentini, F. Labarque, 1 ♂ (MACN-Ar 29911, PBI_OON 51110, PANCODING: SFNQP8L024); same data, 1 ♀ (MACN-Ar 29910, PBI_OON 51109, PANCODING: SFNQM8L046). **Code:** P. Nac. G.D. Omar Torrijos Herrera, El Cope, 1 hectare PANCODING Inventory, 760 m, 8.66805°, -80.59250°, June 4–9, 2008, M. Arnedo, L. Benavides, G. Hormiga, F. Labarque, M. Ramírez, 1 ♀ (GWU, PBI_OON 42287, PANCODING: STU1N7R022, barcoding: PA1846).

***Orchestina pan* Izquierdo, new species**

Figures 34, 38D–F, 42E, F, map 4

TYPES: Male holotype from Panama: Panama: Parque Nacional Altos de Campana, 1 hectare PANCODING Inventory, 895 m, 8.68333°,



MAP 5. Distribution map of *Orchestina dentifera* in Caribbean region. The species reaches the southernmost distribution in Brazil, see map 24.

-79.92972°, June 14–19, 2007, M. Arnedo, D. Dimitrov, G. Hormiga, F. Labarque, M. Ramírez, deposited in MIUP, PBI_OON 42313; same data, 1 male paratype deposited in MACN-Ar 29895, PBI_OON 42312.

ETYMOLOGY: A noun in apposition; in Greek religion and mythology, Pan is the god of the wild natural world, of shepherds, flocks, and mountains, and of hunting and rustic music. He has hindquarters, legs, and horns of a goat, and the name is here employed to note the large macrosetae at the eye region of males that resemble the horns in some illustrations of this god.

DIAGNOSIS: This is one of the most autapomorphic species from the Americas; males have the labium fused with the sternum (fig. 34B), small chelicerae, shorter than the endite length, with anterior blunt projections, and directed backward in lateral view (fig. 34D, E); clypeus directed backward (fig. 34D); two light areas on the sternum just below the endites (fig. 34B), carapace almost flat in lateral view and two strong macrosetae at the eye region, pointing forward (fig. 34C–E). Other characters of the male palp, such as the presence of two apophyses, also distinguish this species from others (fig. 38D–F).

MALE (PBI_OON 42312): Total length 1.00. Habitus as in figure 34A–C. **CEPHALOTHORAX:** Carapace orange, with brown stripe along

margin of cephalic area, broadly oval in dorsal view, pars cephalica flat in lateral view, with two strong macrosetae emerging between PME and ALE (fig. 34A–E). Clypeus directed backward in lateral view. Posterior eye row slightly procurved in front view. Sternum as long as wide, with two pale areas below endites; setae densest laterally (fig. 34B). Chelicerae shorter than endite length, anterior face with basal conical projections (fig. 34D, E). Labium rectangular, fused to sternum. Endites without serrula. **ABDOMEN:** Pale white. **GENITALIA:** Embolus dark, short, curved, base with one prolateral palm, leaf-shaped apophysis and one retrolateral, spine-shaped apophysis; sperm duct strongly coiled, with many loops (figs. 38D–F, 42E, F).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Panama (P. Nac. Altos de Campana, map 4).

OTHER MATERIAL EXAMINED: None.

Orchestina campana Izquierdo, new species

Figures 35, 38G–I, 40A, 41E, map 4

TYPES: Male holotype from Panama: Parque Nacional Altos de Campana, 1 hectare PAN-CODING Inventory, 895 m, 8.68333°, -79.92972°, June 14–19, 2007, M. Arnedo, D. Dimitrov, G.

Hormiga, F. Labarque, M. Ramírez, deposited in MIUP, PBI_OON 42308, PANCODING: SCU1NDH008; same data 1 female paratype deposited in MIUP, PBI_OON 42281, PANCODING: SCB2DGL028; same data, 1 female paratype deposited in MACN-Ar 29903, PBI_OON 42298, PANCODING: SCU1NGD027.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *O. labarquei* by the general shape of the copulatory bulb, but in *O. campana* the embolus region is narrow in lateral view (fig. 38G–I). Females resemble those of *O. labarquei*, *O. truncata*, and *O. cali*, from which they can be distinguished by details of the tip of the anterior receptaculum, which in this species is much larger (figs. 40A, 41E).

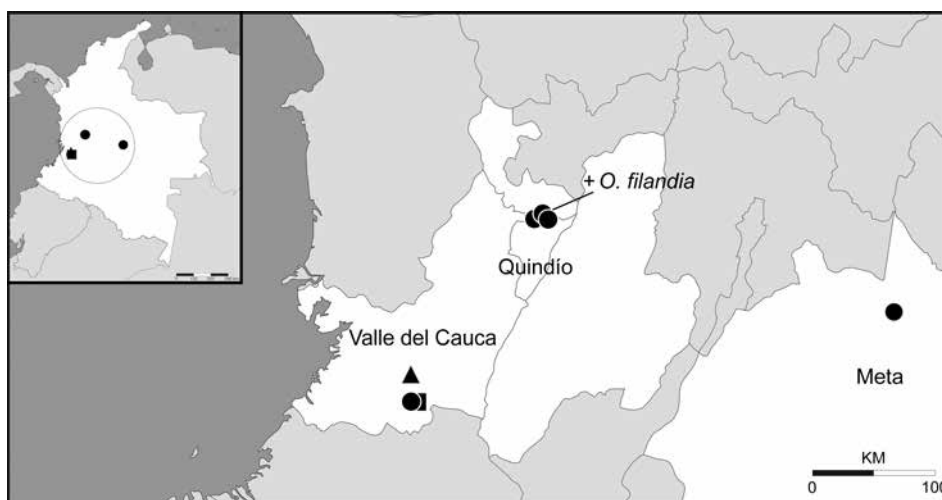
MALE (PBI_OON 42308): Total length 1.13. Habitus as in figure 35A–D. CEPHALOTHORAX: Carapace as in figure 35A, D. Clypeus as in figure 35C, D. Sternum as in figure 35B. Labium rectangular. ABDOMEN: Pale orange. LEGS: Only right legs I, IV present. GENITALIA: Embolus dark, short, with small claw-shaped apophysis; sperm duct slightly coiled, with few loops (fig. 38G–I).

FEMALE (PBI_OON 42281): Total length 1.09. Habitus as in figure 35E–G. ABDOMEN: Dorsum soft portions pale white with weak pattern of gray squares on dorsal area, lateral bands of same color. LEGS: Only right legs I, II, left leg II present. GENITALIA: External pockets absent, internal pockets present, small, placed at sides of epigastric fold; anterior receptaculum with massive lateral projections, anterior tip wide, with short anterior apodemes; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 40A, 41E).

DISTRIBUTION: Known only from the province of Panama, Panama (map 4).

OTHER MATERIAL EXAMINED: **PANAMA: Panama:** same data as holotype (MIUP, PBI_OON 42282, PANCODING: SCB1DGL035); same data, 1 ♀ (UB, PBI_OON 42295, PANCODING: SCU1NHL027, barcoding: PA883); same data, 1 ♀ (MACN-Ar 29900, PBI_OON

42296, PANCODING: SCB1DGD012, barcoding: PA904); same data, 1 ♂ (MACN-Ar 29904, PBI_OON 42297, PANCODING: SCU2NDR027); same data, 1 ♂ (MACN-Ar 29905, PBI_OON 42299, PANCODING: SCU2NHH019, barcoding: PA880); same data, 1 ♂ (MACN-Ar 29907, PBI_OON 42300, PANCODING: SCU1NDR035, barcoding: PA874); same data, 1 ♂ (MACN-Ar 29902, PBI_OON 42301, PANCODING: SCU1NDR013, barcoding: PA871); same data, 1 ♀ (MACN-Ar 29901, PBI_OON 42302, PANCODING: SCB1DGR030, barcoding: PA899); same data, 1 ♂ (MACN-Ar 29898, PBI_OON 42303, SCU1NDD020); same data, 1 ♀ (MIUP, PBI_OON 42307, PANCODING: SCU1NGD021); same data, 1 ♀ (MACN-Ar 29899, PBI_OON 42309, SCU1NFL015, barcoding: PA908); same data, 1 ♂ (MACN-Ar 29897, PBI_OON 42310, SCU1NFR014, BOLD: SPIPA608-10); same data, 1 ♂ (MACN-Ar 29906, PBI_OON 42311, SCB2DGL021 barcoding: PA870); same data, 1 ♂ (UB, PBI_OON 51045, PANCODING: SCU1NDH020); same data, 1 ♂ (UB, PBI_OON 51046, PANCODING: SCB1DGH009, barcoding: PA876); same data, 1 ♀ (UB, PBI_OON 51047, PANCODING: SCB1DIH012, barcoding: PA907); same data, 1 ♂ (UB, PBI_OON 51048, PANCODING: SCU1NDR033, barcoding: PA872); same data, 1 ♂ (UB, PBI_OON 51049, PANCODING: SCU1NFA009, barcoding: PA829); same data, 1 ♀ (UB, PBI_OON 51050, PANCODING: SCB1DFL021, barcoding: PA902); same data, 1 ♀ (UB, PBI_OON 51051, PANCODING: SCU2NHH020, barcoding: PA910); same data, 1 ♂ (UB, PBI_OON 51052, PANCODING: SCB2DGR021); same data, 1 ♂ (UB, PBI_OON 51053, PANCODING: SCU1NDA018, barcoding: PA879); same data, 1 ♂ (GWU, PBI_OON 51054, PANCODING: SCU1NDL022); same data, 1 ♂ (GWU, PBI_OON 51055, PANCODING: SCU1NDR034, barcoding: PA873); same data, 1 ♂ (GWU, PBI_OON 51056, PANCODING: SCB1DIR025, barcoding: PA823); same data, 1 ♂ (GWU, PBI_OON 51057, PANCODING: SCU2NHD011); same data, 1 ♂ (GWU, PBI_OON 51058, PANCODING: SCU1NDD017, barcoding: PA877); same data, 1 ♀ (GWU, PBI_OON 51101, PANCODING: SCB1DFR023, barcoding: PA911); same data, 1 ♀ (GWU, PBI_OON 51102, PANCODING: SCU1NDA014, barcoding: PA909); same data, 1 ♂ (GWU, PBI_OON 51103, PANCODING: SCU2NEH011, barcoding: PA842); same data, 1 ♂ (GWU, PBI_OON 51104, PANCODING: SCU1NGD014, barcoding: PA828); same data, 1 ♀ (GWU, PBI_OON 51105, PANCODING: SCU2NDR019, barcoding: PA906); same data, 1 ♀ (GWU, PBI_OON 51106, PANCODING: SCB1DGL014, barcoding: PA905); same



MAP 6. Distribution map of *Orchestina* species in Colombia: *O. arboleda* (square), *O. cali* (circles), and *O. zingara* (triangle).

data, 1 ♀ (MACN-Ar 30351, PBI_OON 51125, PAN-CODING: SCU1NDR029, barcoding: PA887).

SOUTH AMERICAN SPECIES

Three South American species have wide distributions and extend into Central America and the Caribbean region: *O. truncata* and *O. laselva*, present also in Costa Rica (map 3) and *O. galapagos*, extending to Panama and Jamaica (map 8). For more details on the first two species, see previous section; the third species is treated below.

Orchestina filandia Izquierdo, new species

Figures 45A–C, 60A, 61A, map 6

Types: Female holotype from Colombia: Quindío, Filandia, Reserva Forestal Bremen, 1851 m, 4.68083333°, -75.634916°, Feb. 20, 2005, M.C. Pimienta, fogging, deposited in IAvH 108156, PBI_OON 30796; same data, 1 female paratype with a nontype juvenile, sex unknown, deposited in IAvH, PBI_OON 51119.

Etymology: The specific name is a noun in apposition taken from the type locality.

Diagnosis: Females can easily be distinguished by the shape of the genitalia, with oval

external pockets, separated on the epigastric region and by the T-shaped anterior receptaculum (fig. 60A).

Male: Unknown.

Female (PBI_OON 30796): Total length 1.18. Habitus as in figure 45A–C. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Pale yellow. **LEGS:** Patella plus tibia I longer than carapace. **GENITALIA:** Epigastric region with external pockets, oval-shaped, internal pockets absent; anterior receptaculum straight with anterior apodemes forming T-shaped structure; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 60A, 61A).

Distribution: Known only from the type locality in Colombia (Quindío, map 6).

Other material examined: None.

Orchestina zingara Izquierdo, new species

Figures 45D, E, 58A–C, 63A, B, map 6

Type: Male holotype from Colombia: Valle del Cauca: Cali: Finca La Zingara, ca. km 18, 1900 m, 3.53944°, -76.60389°, Feb. 11, 1998, G. Hormiga, J. Coddington, J. Zujko-Miller, D. Correa, deposited in USNM, PBI_OON 30709.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the shape of the embolus, which is long and slightly sinuous in dorsal view (figs. 58A–C, 63A, B).

MALE (PBI_OON 30709): Total length 1.10. Habitus as in figure 45D, E. **CEPHALOTHORAX:** Carapace as in figure 45D, E. Sternum yellow. Chelicerae, endites, labium yellow. Labium rectangular. Endites without serrula, anteromedian tip with one strong, toothlike projection. **ABDOMEN:** Pale orange. **LEGS:** Yellow. **GENITALIA:** Palp proximal segments yellow; cymbium yellow, bulb yellow; embolus dark, long; sperm duct strongly coiled with many loops (figs. 58A–C, 63A, B).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Colombia (Valle del Cauca, map 6)

OTHER MATERIAL EXAMINED: None.

Orchestina arboleda Izquierdo, new species

Figures 46, 60B, 61B, 64B, map 6

TYPES: Female holotype from Colombia: Valle del Cauca: Cali: Colegio de La Arboleda, 1086 m, 3.33777°, -76.55583°, Apr. 13, 2012, Natalia Muriel Triana, deposited in ICN 5267, PBI_OON 42240; same data, 1 female paratype deposited in ICN, PBI_OON 50041.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be separated from those of other species by having an additional ventral membranous receptaculum and two slightly depressed areas at the end of the epigastric fold (figs. 60B, 61B, 64B).

MALE: Unknown.

FEMALE (PBI_OON 42240): Total length 1.00. Habitus as in figure 46. **CEPHALOTHORAX:** Carapace yellow. Sternum as long as wide. Labium rectangular. **ABDOMEN:** Pale orange. **LEGS:** Patella plus tibia I shorter than carapace. Leg spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. **GENITALIA:** External and internal pockets absent,

epigastric region with two lateral depressions with sclerotized borders at end of epigastric fold; anterior receptaculum with one ventral, rounded, slightly sclerotized section at base, anterior apodemes short, directed posteriorly; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 60B, 61B, 64B).

DISTRIBUTION: Only known from the type locality in Cali, Colombia (map 6).

OTHER MATERIAL EXAMINED: None.

Orchestina cali Izquierdo, new species

Figures 47–51, 58D–F, 60C, 61C, 63C, D, 64A, map 6

TYPES: Male holotype from Colombia: Valle del Cauca, Cali, Chorro de Plata, 1402 m, 3.34472°, -76.60138°, Mar. 04, 2012, Natalia Muriel Triana and Antonella Sardi, deposited in ICN 5269, PBI_OON 42225; same data, 1 male and 1 female paratypes deposited in ICN, PBI_OON 50043; same data, Jan. 11, 2012, Natalia Muriel Triana and Antonella Sardi, 2 females paratypes deposited in ICN 5268, PBI_OON 42239; same data, 1 male paratype deposited in ICN, PBI_OON 50042.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the shape of the copulatory bulb, with embolus with basal projection in dorsal view (figs. 58D–F, 63C, D). Females are similar to those of *O. truncata*, *O. labarquei*, and *O. campana* but can be differentiated by subtle details of genitalia, such as the shape of the anterior portion of the anterior receptaculum and the internal pockets (figs. 51, 60C, 61C, 64A).

MALE (PBI_OON 42225): Total length 1.24. Habitus as in figure 47A–C. **CEPHALOTHORAX:** Carapace as in figures 47A, B, 48A. Clypeus as in figure 48A, D. Eyes as in figure 48B, C. Labium rectangular. Endites anteriomedian part with one short toothlike projection. **ABDOMEN:** Pale yellow. **LEGS** (fig. 50A–D): Patella plus tibia I shorter than carapace. Leg spination, metatarsi:

IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Bulb tapering apically; embolus dark, simple, with one conical projection at base; sperm duct coiled, with many loops (figs. 58D–F, 63C, D).

FEMALE (PBI_OON 42225): Total length 1.28. Habitus as in figure 47D–F. LEGS: Yellow; patella plus tibia I longer than carapace. Leg spination, metatarsi: IV d0-0-2; p0-0-1; tarsal organ, claws, setae as in figure 49. GENITALIA: External pockets absent, internal pockets small; anterior receptaculum with massive lateral projections; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 60C, 61C, 64A).

DISTRIBUTION: Known from Valle del Cauca and Quindío, Colombia (map 6).

OTHER MATERIAL EXAMINED: **COLOMBIA:** **Quindío:** Filandia: Cañón del Rio Barbas, 1762 m, 4.70527°, -75.64527°, Mar. 10, 2005, M.C. Pimienta, 1 ♀ (IAvH, PBI_OON 30789); same data, 1 ♀ (IAvH 108155, PBI_OON 30792); Finca Agroforestal Bengala, 138 m, 4.68333°, -75.66667°, Feb. 23, 2005, M.C. Pimienta, 1 ♂ (IAvH 108161, PBI_OON 30747); same data, 4 ♂, 5 ♀, 5 juveniles, sex unknown (IAvH, PBI_OON 30761); same data, 3 ♂, 1 juvenile, sex unknown (IAvH 108146, PBI_OON 30795); Reserva Forestal Bremen, 1944 m, 4.68555°, -75.62722°, Feb. 22, 2005, M.C. Pimienta, 1 ♀ (IAvH 108151, PBI_OON 30760); same data, 1 ♂ (IAvH 108143, PBI_OON 30790); same data, 2 ♂ (IAvH, PBI_OON 30799). **Meta:** 15 km SW Puerto López (3.996134, -73.060997), 200 m, July, year not provided, on label “et Shear 1979,” 1 ♀ (MCZ 72936, PBI_OON 29401).

Orchestina saltabunda Simon, 1893

Figures 52, 58G–I, 60D, 61D, 63E, F, 64D,
map 7

Orchestina saltabunda Simon, 1893c: 447, pl. 9, fig. 12 (8 male and 17 female syntypes from Venezuela: Caracas: Colonia Tovar, 2200 m (10.41667°, -67.30000°), deposited in MNHN 6031, PBI_OON 42748; examined). – Dalmás, 1916: 238, figs. 6, 33–34 (mf).

NOTE: The type material of *O. saltabunda* is in good condition in general, but most of the females lack their legs and some prosomas are

separated from the abdomens. The label has an exclamation mark (!) after the locality, which according to Galiano (1974) means that it was collected by Simon himself. Also, the tube contains a small label with the number 14559 written by hand. A juvenile specimen of a different soft-bodied oonopid genus is mixed with the material.

DIAGNOSIS: Males can be distinguished by the shape of the copulatory bulb with a terminal arrow-shaped section in dorsal view (fig. 58H) and by having two teeth on the internal margin of chelicerae, one larger than the other (fig. 52E). Females can be distinguished by the shape of the anterior receptaculum, with massive lateral projections almost reaching the tip of the anterior receptaculum, and by having internal pockets (figs. 60D, 61D, 64D).

MALE (PBI_OON 42748): Total length 1.23. Habitus as in figure 52A. CEPHALOTHORAX (fig. 52B–E): Carapace as in figure 52B–E. Clypeus vertical in lateral view (fig. 52D, E). Sternum as long as wide (fig. 52C). Chelicerae anterior face with basal conical projections, mesal margin with two tooth-shaped projections, proximal larger than distal one; fangs tip unmodified. Labium rectangular. ABDOMEN: Pale yellow. LEGS: Yellow. GENITALIA: Bulb yellow; embolus short, dark, wide, base with laterally flattened projection in dorsal view; sperm duct coiled, with many loops (figs. 58G–I, 63E, F).

FEMALE (PBI_OON 42748): Total length 1.56. Habitus as in figure 52F–H. CEPHALOTHORAX: Clypeus sloping forward in lateral view. Sternum longer than wide. GENITALIA: External pockets absent, internal pockets well developed; anterior receptaculum with massive lateral projections arising almost from the tip, anterior apodemes long, slightly hidden by such projections; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 60D, 61D, 64D).

DISTRIBUTION: Known only from the type locality in Venezuela (Caracas, map 7).

OTHER MATERIAL EXAMINED: None.



MAP 7. Distribution map of *Orchestina* species in Venezuela and Trinidad and Tobago: *O. aragua*, *O. bolivar*, *O. kairi*, *O. maracay*, *O. neblina*, *O. ranchogrande*, *O. saltabunda*, and *O. venezuela*.

Orchestina venezuela Izquierdo, new species

Figures 60 J, 62A, 64E, map 7

TYPES: Female holotype from Venezuela: Miranda: 35 km N Altigracia, Parque Nacional Guatopo, Agua Blanca, 400 m (10.19180°, -66.49580°), June 07, 1987, S., J. Peck, deposited in AMNH, PBI_OON 1683.

NOTE: The specimen is in bad condition, abdomen separated from cephalothorax, which has no legs and is slightly collapsed.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by having lateral, rounded basal projections on the anterior receptaculum plus internal, lateral sclerotized plates at both margins of the epigastric region (figs. 60J, 62A, 64E).

MALE: Unknown.

FEMALE (PBI_OON 1683): CEPHALOTHORAX: Length 0.66. Labium rectangular. ABDOMEN: In bad condition, white. GENITALIA: External, internal pockets absent; anterior receptaculum bifurcated at tip, with rounded lateral projections on base; laterals with highly sclerotized plates; posterior receptaculum absent, pos-

terior apodeme formed by entire plate (figs. 60J, 62A, 64E).

DISTRIBUTION: Known only from the type locality in Venezuela (Miranda, map 7).

OTHER MATERIAL EXAMINED: None.

Orchestina aragua Izquierdo, new species

Figures 53, 59A–C, 63G, H, map 7

TYPE: Male holotype from Venezuela: Aragua: Maracay: Rancho Grande, 1200 m (10.40167°, -67.58500°), Aug. 01, 1987, to Aug. 10, 1987, Bordon, Peck, deposited in AMNH, PBI_OON 1684.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *O. saltabunda* by the presence of two conical projections on the internal margin of chelicerae, but in *O. aragua* these are strong, well separated (fig. 53C) rather than adjacent. The copulatory bulb is also different, in *O. aragua* the embolus is longer and the sperm duct takes a different course.

MALE (PBI_OON 1684): Total length 1.00. CEPHALOTHORAX (fig. 53): Carapace orange, almost triangular in dorsal view (fig.

53A). Clypeus slightly curved downward in front view, vertical in lateral view (fig. 53C, D). Sternum wider than long. Chelicerae anterior face with basal conical projections, mesal margin with two strong projections, proximal larger than distal one. Labium elongated, hexagon. ABDOMEN: Pale white. GENITALIA: Bulb tapering apically; embolus with ventral rounded projection in retrolateral view; sperm duct coiled, with many loops (figs. 59A–C, 63G, H).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Venezuela (Aragua, map 7).

OTHER MATERIAL EXAMINED: None.

***Orchestina bolivar* Izquierdo, new species**

Figures 54, 59D–F, 63I, J, map 7

TYPE: Male holotype from Venezuela: Bolivar: 12 km N Luepa, 1500 m (5.852155°, -61.51719722°), Gran Sabana, June 1–11, 1987, S. and J. Peck, deposited in AMNH, PBI_OON 1682.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be separated from those of the species of Venezuela by the shape of the male copulatory bulb, with short and wide embolus, and by the absence of projections on the internal margin of the chelicerae.

MALE (PBI_OON 1682): Habitus as in figure 54. CEPHALOTHORAX: Carapace length 0.57. Eyes as in figure 54A, C. Sternum as long as wide (fig. 54B). Labium rectangular. ABDOMEN: In bad condition, collapsed, pale white. LEGS: Yellow; right legs and left legs I–II absent. GENITALIA: Embolus short; base with small rounded projection viewed in lateral position; sperm duct coiled with many loops (figs. 59D–F, 63I, J).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Venezuela (Bolivar, map 7).

OTHER MATERIAL EXAMINED: None.

***Orchestina maracay* Izquierdo, new species**

Figures 61E, map 7

TYPES: Female holotype from Venezuela: Aragua: Maracay, 548 m (10.246944, -67.596111), Mar. 05, 1959, A. Nadler, deposited in AMNH, PBI_OON 1666.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the anterior receptaculum, which is straight, without lateral projections and with rounded basal portion. Additionally, the epigastric region has two depressions at the end of the epigastric furrow surrounded by sclerotized borders (fig. 61E).

MALE: Unknown.

FEMALE (PBI_OON 1666): CEPHALOTHORAX (separated from abdomen): Carapace length 0.61. Labium rectangular. ABDOMEN: Separated from prosoma, pale white. LEGS: Legs IV missing. GENITALIA: Besides diagnostic characters, external and internal pockets absent; anterior receptaculum with short anterior apodemes pointing posteriorly; posterior receptaculum absent, posterior apodeme formed by entire plate (fig. 61E).

DISTRIBUTION: Known only from the type locality (map 7).

OTHER MATERIAL EXAMINED: None.

***Orchestina ranchogrande* Izquierdo, new species**

Figures 59G–I, 60E, 61F, 63K, L, 64C, map 7

TYPES: Male holotype and female paratype from Venezuela: Aragua: Maracay, Rancho Grande, 1200 m, 10.40167°, -67.58500°, Dec. 20, 1954, A. Nadler, deposited in AMNH, PBI_OON 1665.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the presence of a rounded projection near base of the embolus (figs. 59G–I, 63K, L), females by the

shape of the tip of the anterior receptaculum, with highly sclerotized base, and by the shape and position of the internal pockets, nearly parallel to the body axis (figs. 60E, 61F, 64C).

MALE (PBI_OON 1665): CEPHALOTHORAX: Carapace length 0.61; orange. Clypeus slightly sloping forward. Sternum as long as wide. Chelicerae anterior face with basal conical projections. Labium rectangular. ABDOMEN: Separated from prosoma, pale white. LEGS: Unfortunately, legs are separated in both sexes and mixed in the same vial. They have no spines, fourth femur swollen, two tarsal claws. GENITALIA: Embolus short, with rounded projection near base; sperm duct coiled with several loops (figs. 59G–I, 63K, L).

FEMALE (PBI_OON 1665): CEPHALOTHORAX: Carapace length 0.62. GENITALIA: External pockets absent, internal pockets almost parallel to each other; anterior receptaculum more sclerotized at base, slightly forked in apical region; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 60E, 61F, 64C).

DISTRIBUTION: Known only from the type locality in Venezuela (Aragua, map 7).

OTHER MATERIAL EXAMINED: None.

Orchestina neblina Izquierdo, new species

Figures 60I, 62B, 64F, map 7

TYPE: Female holotype from Venezuela: Amazonas: Cerro de La Neblina, base camp, low foliage, 140 m, 0.83333°, -66.16666°, Feb. 9, 1985, W.E. Stelner deposited in USNM, PBI_OON 30708.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the lateral projections of the anterior receptaculum and by having the internal pockets placed parallel to the body axis (figs. 60I, 62B, 64F).

MALE: Unknown.

FEMALE (PBI_OON 30708): CEPHALOTHORAX: Carapace length 0.67. Labium rectangular. ABDOMEN: Separated from prosoma, pale white. GENITALIA: External pockets absent,

internal pockets present, placed at both sides of epigastric furrow; anterior receptaculum well developed with massive lateral projections; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 60I, 62B, 64F).

DISTRIBUTION: Known only from the type locality (map 7).

REMARKS: The abdomen of this female has a parasitic larva of Acroceridae (Diptera, figs. 60I, 62B).

OTHER MATERIAL EXAMINED: None.

Orchestina kairi Izquierdo, new species

Figures 55A, B, 60F, 62C, map 7

TYPE: Female holotype from Trinidad and Tobago: Trinidad: Arima: Simla, 10.63265°, -61.27694°, Apr. 19, 1964, deposited in MCZ 71416, PBI_OON 27360.

ETYMOLOGY: A noun in apposition; *Kairi* is the native name of Trinidad and Tobago used by the inhabitants of that region.

DIAGNOSIS: Females can be distinguished by the genitalia, with anterior receptaculum with rounded apex and two barely sclerotized areas visible by transparency through the abdomen cuticle (figs. 60F, 62C).

MALE: Unknown.

FEMALE (PBI_OON 27360): Total length 1.46. Habitus as in figure 55A, B. CEPHALOTHORAX: Labium rectangular. ABDOMEN: Dorsum soft portions with pattern of light gray patches. GENITALIA: External and internal pockets absent, anterior receptaculum widened at its base with parallel, barely sclerotized areas; posterior apodeme formed by entire plate, posterior receptaculum absent.

DISTRIBUTION: Known only from the type locality in Trinidad and Tobago (Trinidad, map 7).

OTHER MATERIAL EXAMINED: None.

Orchestina galapagos Izquierdo, new species

Figures 55C–E, 56, 60G, 61G, 64G, map 8, 9

TYPES: Female holotype from Ecuador: Galapagos Islands: Isla San Cristobal, Cerro Pelado,



MAP 8. Distribution map of *Orchestina galapagos* in the Galapagos Islands, Panama, and Jamaica. See also map 9.

450 m (-0.8081138° , -89.437761°), Feb. 17, 1978, W. Reeder, from litter and moss-fern growth base of lava block, soil well-drained litter thin, *Scalesia*, *Psychotria*, *Chiococca*, *Zanthoxylum* community, deposited in TMM, PBI_OON 36907; Isla Santa Cruz: Santa Cruz, Trail to Bellavista (-0.6393583° , -90.33718°), 125 m, Oct. 11, 1975, W.G. Reeder 3 female paratypes deposited in TMM 59878, PBI_OON 36902.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the internal genitalia with massive anterior receptaculum with lateral projections and internal pockets widely separated (figs. 56B–D, 60G, 61G, 64G).

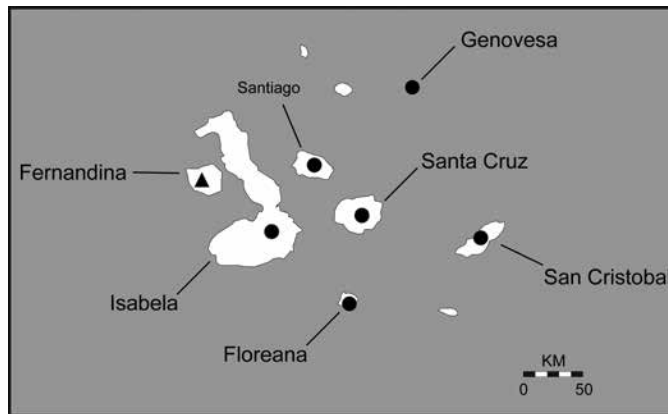
MALE: Unknown.

FEMALE (PBI_OON 36907): Total length 1.43. Habitus as in figure 55C–E. **CEPHALOTHORAX:** Sternum as long as wide, yellowish white (fig. 55D). Chelicerae, endites, labium yellowish white. Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Patella plus tibia I longer than carapace. **GENITALIA:** Besides diagnostic characters, external pockets absent; posterior receptaculum present, posterior

apodeme formed by entire plate (figs. 56A–F, 60G, 61G, 64G).

DISTRIBUTION: Known from Jamaica, Panama, and the Galapagos Islands (maps 8, 9).

OTHER MATERIAL EXAMINED: **JAMAICA:** **Hanover Parish:** Askenish Trail to Dolphin Head, 385 m (18.36667° , -78.16667°), June 24, 1954, 1 ♀ (MCZ 66803, PBI_OON 27363). **Saint Ann:** 2m S Unity Valley, 431 m (18.24972° , -77.11666°), Dec. 09, 1954, A. Nadler, 1 ♀ (MCZ, PBI_OON 29415). **Saint Andrew:** Hope Gardens, Kingston (18.03333° , -76.75000°), Mar. 14, 1955, A. Nadler, 1 ♀ (MCZ, PBI_OON 42766); Stony Hill, 497 m (18.07900° , -76.78300°), Oct. 18, 1957, A. Chickering, 1 ♀ (AMNH, PBI_OON 1490). **St. James:** ½ mile E Reading (18.38333° , -77.88333°), June 23, 1959, 1 ♀ (MCZ 71447, PBI_OON 26471). **Trelawny Parish:** Kinloss, 209 m (18.40388° , -77.56048°), Mar. 23, 1955, A. Nadler, 1 ♂ (MCZ, PBI_OON 29413). **PANAMA:** **Colon:** Barro Colorado Island, Canal Zone (9.15472° , -79.84806°), May 05, 1964, 1 ♀ (MCZ 71412, PBI_OON 27362). **Darien:** Park National Darien, Est. Rancho Frio Pirre (7.90832° , -77.80522°), Mar. 21, 2000, to Apr. 04, 2000, R. Cabra, A. Santos, S. Bermudez, 1 ♀ (GBFM, PBI_OON 37738). **Panama:** Barro Colorado: Canal Zone, 170 m (9.15388° , -79.85138°), Apr. 20, 1953, A. Nadler, 1 ♀ (AMNH, PBI_OON 1979); Canal Zone, 170 m (9.15388° , -79.85138°), Apr. 03, 1935, to Apr. 20, 1953, A. Nadler, 1 ♀ (AMNH, PBI_OON 1980); same data, Apr. 01, 1953, A. Nadler, 1 ♀ (AMNH, PBI_OON



MAP 9. Distribution map of *Orchestina* species in the Galapagos Islands: *O. fernandina* (triangle) and *O. galapagos* (circles). See also map 8.

1981). Summit (9.04697°, -79.64056°), July 07, 1950, A. Chickering, 1 ♀ (MCZ 71413, PBI_OON 27359); Summit Gardens (9.04201°, -79.63052°), Aug. 12, 1954, A. Chickering, 1 ♀ (MCZ 66948, PBI_OON 27361).

ECUADOR: Galapagos Islands: Isla Santiago, La Trágica, 360 m (-0.259005°, -90.698516°), Mar. 04, 1983, Y. Lubin, 1 ♀ (MCZ 72965, PBI_OON 27613). Isla Floreana: old wittmer farm house, 300 m (-1.3091055°, -90.432161°), Jan. 21, 1977, W.G. Reeder, 1 ♀ (TMM 59875, PBI_OON 36906); same data, SE slope Cerro de La Paja, 380 m, under and on lava rocks in dry soil substrate, *Scalesia*, *Macraea*, *Zanthoxylum*, *Citrus*, *Psidium*, Feb. 21, 1977, 1 ♀ (TMM 73749, PBI_OON 42701); same data, 360 m, night collection in *Macrea*, *Scalesia*, *Citrus*, *Guayaba*, *Croton*, *Tournefortia*, Feb. 20, 1977, 4 ♀ (TMM 58040, PBI_OON 43574), same data, Asilia de La Paz, Cerro Wittmer, 300 m, screened from *Pisonia* and *Tournefortia-rufo-sericea* litter, small spring, substrate slightly damp, Feb. 22, 1977, 1 ♀ (TMM 59948, PBI_OON 43580). Genovesa: Bahía Darwin, screened from litter of *Cordia lutea* and *Croton*; also beneath small lava rocks in litter, *Opuntia*, *Bursera*, 15 m, Oct. 12, 1975, W.G. Reeder, 1 ♀ (TMM 58902, PBI_OON 43581). Isla San Cristóbal: Cerro Pelado, 450 m (-0.8081138°, -89.437761°), Feb. 17, 1978, W. Reeder, 1 ♀ (TMM, PBI_OON 36907); same data, from litter and moss-fern growth, base of lava block, soil well drained, litter thin *Scalesia*, *Psychotria*, *Chiococca*, *Zanthoxylum* community, 2 ♀, 4 juveniles, sex unknown (TMM 72800, PBI_OON 42817); same data, Tres Palos 0.3 km W Escuela Cabo, Feb. 13, 1978, W. Reeder, 1 ♀ (TMM 57846, PBI_OON 36904); same data, 150–160 m, 1 ♀, 1 juvenile, sex unknown (TMM 72806, PBI_OON 42703); same data, Tres Palos area, cultivated area, *Psidium guajava*, *Jatropha*, *Tournefor-*

tia, *Kalanchoe*, 185 m, Feb. 11, 1978, W.G. Reeder, 5 ♀ (TMM 57855, PBI_OON 36901); same data, 0.3 km W Escuela Cabo, 150–160 m, Feb. 11, 1978, W.G. Reeder, 1 ♀ (TMM 72808, PBI_OON 42702); same data, Tres Palos area, 110 m, Feb. 11, 1978, W.G. Reeder, 2 ♀, 2 juveniles, sex unknown (TMM 57865, PBI_OON 36905); same data, beneath loose bark of *Psidium*, *Hippomane*, in area with *Pisonia*, *Tournefortia rufo-sericea*, *Chiococca*, 1 ♀ (TMM 59935, PBI_OON 43577); same data, trail from Tres Palos to Espinero, 160 m, sweeping in *Psidium galapageium* and *P. uajava*, *Clerodendrum*, *Zanthoxylum*, *Hippomane*, Feb., 12, 1978, W.G. Reeder, 1 ♀ (TMM 58056, PBI_OON 43575). Isla Santa Cruz: Santa Cruz (-0.6393583°, -90.33718°), W. Reeder, 1 ♀ (TMM 7973, PBI_OON 36909); Trail to Bellavista, 100 m, Oct. 11, 1975, W.G. Reeder, 1 juvenile, sex unknown (TMM 59874, PBI_OON 36900); same data, 195 m, Sep. 11, 1975, W.G. Reeder, 2 ♀ (TMM 59908, PBI_OON 36903); same data, sweeping in *Clarodendrum* tangles with *Zanthoxylum* and *Pisonia* Damp., *Psidium*, *Scalesia*, herbs, and ferns, Oct. 11, 1975, 1 ♀ (TMM 58035, PBI_OON 43571); same data under rocks and under dead *Zanthoxylum*, sparse litter *Bursera*, *Acacia*, *Opuntia*, *Zanthoxylum*; dry herb cover, 2 ♀ (TMM 58045, PBI_OON 43569); same data, Charles Darwin Research Station, -0.74141°, -90.30423°, Jan. 01, 1978, 1 ♀ (TMM 59333, PBI_OON 43582). Isla Isabela: 1 km S Cerro Verde, 320 m, from balls of epiphytic moss growing about 4–5 m above ground in large introduced trees, Jan. 16, 1978, W.G. Reeder, 2 ♀, 8 juveniles, sex unknown (TMM 58043, PBI_OON 43583); Alemania, 350 m, sweeping in fern, *tournefortia rufo-sericea*, in *Scalesia*, *Zanthoxylum* stand, Jan. 22, 1977, W. Reeder, 1 ♀ (TMM 72799, PBI_OON 42818).

Orchestina fernandina Izquierdo, new species

Figures 57, 60H, 61H, 64H, map 9

TYPES: Female holotype from Ecuador: Galapagos Islands: Isla Fernandina: near Cabo Hammond, in *Scalesia*, 10 m, Apr. 29, 1975, to Apr. 30, 1975, W.G. Reeder, deposited in TMM 59911, PBI_OON 36908; same data, 1 female paratype deposited in TMM, PBI_OON 51196.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the presence of external pockets on the epigastric region and by the general shape of the anterior receptaculum, complex at base with rounded tip (figs. 60H, 61H, 64H).

MALE: Unknown.

FEMALE (PBI_OON 36908): Total length 1.3. **CEPHALOTHORAX** (fig. 57A–C): Carapace yellow. Clypeus slightly sloping forward in lateral view. Sternum yellow. Chelicerae, endites, labium yellow. Labium rectangular. **GENITALIA:** Besides diagnostic characters, internal pockets absent; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 60H, 61H, 64H).

DISTRIBUTION: Known only from the type locality in Ecuador (Galapagos, map 9).

OTHER MATERIAL EXAMINED: None.

Orchestina erwini Izquierdo, new species

Figures 65A–C, 66–70, 92D–F, 100A, B, map 10

TYPES: Male holotype from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 03, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37598; same data, Oct. 08, 1995, T. Erwin et al., 2 male paratypes deposited in USNM, PBI_OON 37603.

ETYMOLOGY: The specific name is a patronym in honor of Terry Erwin, collector of the type material and most of the known species from Ecuador and Peru.

DIAGNOSIS: Males can be distinguished by the shape of the copulatory bulb, which in dorsal

view has a short embolus with widened base (figs. 70B, C, 92D–F, 100A, B).

MALE (PBI_OON 37598): Total length 1.02. **Habitus** as in figure 65A. **CEPHALOTHORAX:** Carapace anteriorly narrowed to 0.49× its maximum width or less, textured fingerprint (fig. 66A–D). Clypeus as in figure 66A, E. Eyes as in figure 66C, E. Sternum as long as wide, texture fingerprint (figs. 65B, 67C). Chelicerae anterior face with basal blunt projections (fig. 67A, B, D). Labium rectangular (fig. 67E). Endites with one anterior toothlike projection (fig. 67D, E). **ABDOMEN:** Pale orange. **GENITALIA:** Embolus short; sperm duct coiled with several loops (figs. 70B, C, 92D–F, 100A, B).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known from Orellana province, Ecuador (map 10).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 08, 1995, T. Erwin et al., 3♂ (USNM, PBI_OON 15100); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 29994); same data, Feb. 05, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 29999); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30009); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30025); same data, Feb. 05, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30030); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30047); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30051); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30078); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30091); same data, Aug. 04, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30099); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30103); same data, Feb. 08, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30113); same data, June 22, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 30117); same data, Aug. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30125); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30132); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30165); same data, Oct. 07, 1995, T. Erwin et al., 3♂ (USNM, PBI_OON 30176); same data, Oct. 06, 1994, T. Erwin et al., 2♂

(USNM, PBI_OON 30197); same data, Aug. 04, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30202); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30223); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30226); same data, July 06, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30227); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30234); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 30245); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30250); same data, Feb. 04, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30262); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30300); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30333); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30334); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30341); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30344); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30354); same data, July 06, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30355); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30361); same data, Oct. 04, 1995, T. Erwin et al., 4♂ (USNM, PBI_OON 30413); same data, Oct. 04, 1995, T. Erwin et al., 3♂ (USNM, PBI_OON 30417); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 30422); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30426); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30429); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30436); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30441); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30451); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30455); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30466); same data, Feb. 04, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30477); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30507); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30527); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 30536); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30542); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30543); same data, Feb. 07, 1996, T. Erwin et al., 4♂ (USNM, PBI_OON 30652); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 30694); same data, Oct. 07, 1995, T. Erwin et al., 3♂ (USNM, PBI_OON 30710); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30728); same data, Oct. 07, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30732); same data, Oct. 06, 1994, T. Erwin et al.,

8♂ (USNM, PBI_OON 30739); same data, July 06, 1995, T. Erwin et al., 4♂ (MACN 31457, PBI_OON 30741); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30773); same data, Feb. 07, 1996, T. Erwin et al., 5♂ (USNM, PBI_OON 30803); same data, Oct. 06, 1994, T. Erwin et al., 3♂ (USNM, PBI_OON 30819); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30890); same data, Oct. 06, 1994, T. Erwin et al., 3♂ (USNM, PBI_OON 30895); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30903); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30906); same data, June 21, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 30912); same data, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30915); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30922); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37558); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37559); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37560); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37561); same data, Feb. 07, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 37562); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37563); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37564); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37565); same data, Feb. 05, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37566); same data, June 21, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37567); same data, June 26, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37568); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37569); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37571); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37572); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37573); same data, Oct. 04, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 37574); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37575); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 37576); same data, Oct. 08, 1995, T. Erwin et al., 3♂ (USNM, PBI_OON 37577); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37578); same data, Oct. 07, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 37579); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37580); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37581); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37582); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37583); same data, Oct. 03, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37584); same data, Oct. 01, 1996, T. Erwin et al., 2♂

(USNM, PBI_OON 37585); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37586); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37587); same data, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 37588); same data, June 22, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37589); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37590); same data, June 22, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 37591); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37592); same data, Feb. 07, 1996, T. Erwin et al., 5♂ (MACN 31455, PBI_OON 37593); same data, Oct. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37594); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37595); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37596); same data, Oct. 03, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37597); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37599); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37600); same data, Oct. 04, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 37601); same data, July 06, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37602); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37604); same data, Feb. 07, 1996, T. Erwin et al., 3♂ (MACN 31456, PBI_OON 37605); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37606); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37607); same data, Oct. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37608); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37609); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37610); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37611); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37612); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 37613); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37614); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37615); same data, June 26, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37616); same data, Oct. 02, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37617); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 43264); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 43268); same data, Oct. 06, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 43271); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 43277); same data, Feb. 04, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 43296); same data, June 22, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 43297); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30206).

Orchestina ecuatoriensis Izquierdo,
new species

Figures 71–75, 93A–C, 100C–E, map 10

TYPES: Male holotype from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 21, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37627; Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 01, 1998, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 37642.

ETYMOLOGY: The species is named after the type locality, Ecuador.

DIAGNOSIS: Males resemble those of *O. magna* in the presence of a spine-shaped apophysis on the copulatory bulb, but in *O. ecuatoriensis* both the embolus and spine-shaped apophysis are shorter (figs. 74E, F, 93A–C, 100C–E). The copulatory bulb is slightly more slender in *O. ecuatoriensis*.

MALE (PBI_OON 37627): Total length 1.20. Habitus as in figure 71A, B. **CEPHALOTHORAX:** With brown stripe along margin of cephalic area (fig. 71D), wide oval in dorsal view (fig. 72A). Clypeus as in figures 71A, C, 72A–D, slightly sloping forward in lateral view. Eyes as in figure 72A–D. Sternum as long as wide (figs. 71B, 74C). Chelicerae anterior face with basal blunt projections (fig. 72D), with mesal lamina and one strong cuticular projection on promargin (fig. 73B); fang tip unmodified. Labium rectangular (fig. 74A, B). Endites anteriomedian part with one short toothlike projection. **ABDOMEN:** Pale white. **LEGS:** Ultrastructure as in figure 75A–F. **GENITALIA:** Bulb pale orange, tapering apically; embolus short; sperm duct coiled, with several loops (figs. 74E, F, 93A–C, 100C–E).

FEMALE: Unknown; females of morphospecies females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known from Orellana province, Ecuador (map 10).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: 1 km S Onkone Gare Camp, Reserva Etnica



MAP 10. Distribution map of *Orchestina* species in Ecuador: *O. ecuatoriensis*, *O. erwini*, *O. magna*, *O. mayo*, *O. otonga*, *O. predator*, *O. quijos*, *O. santodomingo*, *O. shuar*, and *O. yanayacu*. Species noted on this map were not identified in this study from other countries. Note the sympatric localities.

Waoorani, 216 m, -0.65715°, -76.45300°, June 25, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 29996); same data, Feb. 05, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30000); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30056); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30071); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30090); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30095); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30109); same data, June 22, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30115); same data, Aug. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30127); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30145); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30157); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30225); same data, Oct. 06, 1994, T. Erwin et al., 3♂ (1♂ mounted for SEM) (MACN 34397, PBI_OON 30242); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30252); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30268); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30298); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30450); same data, June 26, 1996,

T. Erwin et al., 1♂ (USNM, PBI_OON 30454); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30467); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30471); same data, Oct. 05, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30488); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30516); same data, Oct. 07, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30526); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30538); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30545); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30658); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30693); same data, Oct. 07, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30712); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30717); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30720); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30727); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30733); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30820); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30905); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30909); same data, Oct. 08, 1995, T. Erwin et al., 1♂



MAP 11. Distribution map of *Orchestina goblin*.

(USNM, PBI_OON 30920); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37618); same data, Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37619); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37620); same data, June 21, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37621); same data, June 21, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37622); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37623); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37624); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37625); same data, June 25, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37626); same data, Oct. 03, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37628); same data, Feb. 07, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37629); same data, Oct. 02, 1996, T. Erwin et al., 3 ♂ (MACN 34398, PBI_OON 37630); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37631); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37632); same data, Feb. 05, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37633); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37634); same data, Aug. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37635); same data, Oct. 02, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37636); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37637); same data, Oct. 05, 1995, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37638); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37639); same data, Oct. 01, 1996, T. Erwin

et al., 1 ♂ (USNM, PBI_OON 37640); same data, Oct. 06, 1994, T. Erwin et al., 1 ♂ (left palp mounted for SEM) (USNM, PBI_OON 37644); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 01, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37641).

Orchestina sotoi Izquierdo, new species

Figures 76, 93D–F, 100F, G, map 12

TYPE: Male holotype from Ecuador: Orellana, 1km S Onkone Gare Camp; Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 26, 1996, T. Erwin et al., deposited in USNM, PBI_OON 30080; Brazil: Amazonas, Reserva Adolpho Ducke, -2.92638°, -59.94027°, Sep. 01, 1995, J.C.H. Guerrero, 1 male paratype deposited in MPEG 18917, PBI_OON 42156; Brazil: Pará: Melgaço, Estação Científica Ferreira Penna, FLONA Caxiuanã, -1.73833°, -51.46333°, 1 male paratype deposited in MPEG 18919, PBI_OON 42145.

ETYMOLOGY: The specific name is a patronym in honor of Eduardo Soto for his friendship during our work in MACN.

DIAGNOSIS: Males can be distinguished by the triangular embolus (in dorsal view) and the presence of a curved apophysis near base of embolus (figs. 93D–F, 100F, G).

MALE (PBI_OON 42167): Total length 1.03. Habitus as in figure 76. CEPHALOTHORAX: Carapace as in figure 76A–C. Anterior face of chelicerae with basal blunt projections. Labium rectangular. ABDOMEN: Pale white. LEGS: Yellow; patella plus tibia I longer than carapace. GENITALIA: Besides diagnostic characters, sperm duct coiled, with several loops (fig. 100F).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Ecuador (Provincia de Orellana), Brazil (states of Amazonas, and Pará) (map 12).

OTHER MATERIAL EXAMINED: same data as holotype, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30057). **BRAZIL: Amazonas:** Manaus, Igapó, Tarumã-Mirim (-3.03306°, -60.15750°), Jul. 27, 1979, J. Adis et al., 1 ♂ (IBSP 17326, PBI_OON 30293); Reserva

Adolpho Ducke, -2.92638°, -59.94027°, Oct. 11, 1995, J.C.H. Guerrero, 1 ♂ (MPEG 19007, PBI_OON 42144); same data, Jun. 27, 1995, Camilo, 1 ♂ (MPEG 18852, PBI_OON 42155); same data, Sep. 15, 1995, J.C.H. Guerrero, 1 ♂ (MPEG 19002, PBI_OON 42157). **Para:** Flona Caxiuanã, -1.79222°, -51.43306°, Nov. 18, 2005, N. Abraham, 1 ♂ (MPEG 18823, PBI_OON 42167).

***Orchestina magna* Izquierdo, new species**

Figures 77, 94A–C, 100H, I, map 10

TYPE: Male holotype from Ecuador: Orellana, Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 24, 1998, T. Erwin et al., deposited in USNM, PBI_OON 37646.

ETYMOLOGY: The specific name refers to the strong development of the chelicerae.

DIAGNOSIS: Males are similar to those of *O. ecuatoriensis* by the shape of embolus and the spine-shaped apophysis, but in *O. magna* both structures are longer. Also, this species is easily distinguished by the presence of a laminar projection on the mesal margin of the chelicerae.

MALE (PBI_OON 37646): Total length 1.14. Habitus as in figure 77A, D. **CEPHALOTHORAX:** Carapace with brown stripe along margin of cephalic area (fig. 77E). Clypeus curved slightly downward in front view, vertical in lateral view (fig. 77E). Eyes as in figure 77B. Sternum as long as wide (fig. 77F). Anterior face of chelicerae with basal blunt projections, mesal margin with prominent lamina. Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Yellow; patella plus tibia I longer than carapace. **GENITALIA:** Palp proximal segments yellow; cymbium yellow; bulb yellow, tapering apically, with strong, spine-shaped apophysis near base of embolus; embolus with notch near base; sperm duct coiled with several loops (figs. 94A–C, 100H, I).

FEMALE: Unknown; females of morphospecies MI020, MI022–MI023, MI025–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known only from the type locality in Ecuador (Orellana, map 10).

OTHER MATERIAL EXAMINED: Same data as holotype, Oct. 22, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37645).

***Orchestina shuar* Izquierdo, new species**

Figures 65D–G, 93G–I, 100J–L, map 10

TYPES: Male holotype from Ecuador: Orellana, Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 04, 1998, T. Erwin et al., deposited in USNM, PBI_OON 37647; 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 08, 1995, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 30217.

ETYMOLOGY: A noun in apposition; *Shuar* are indigenous inhabitants of Ecuador and Peru.

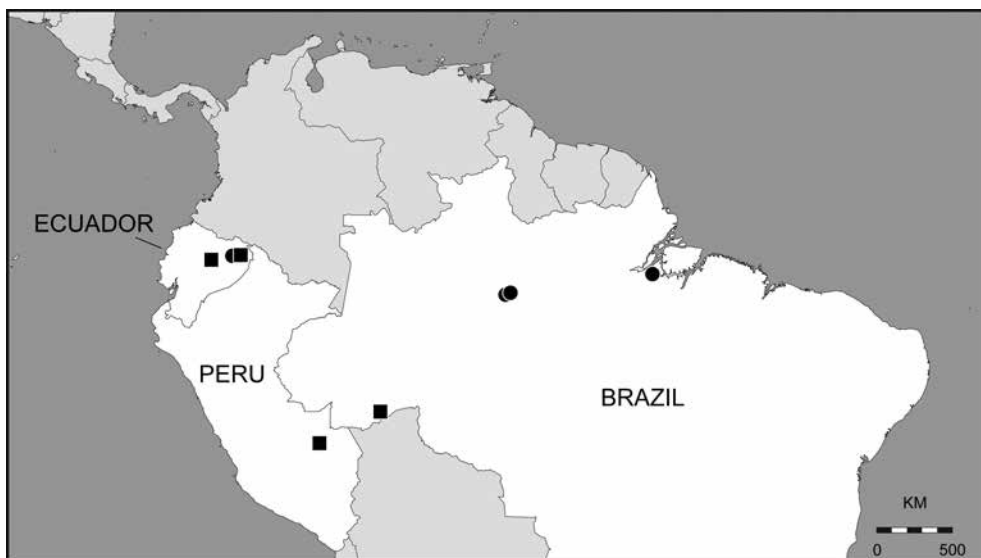
DIAGNOSIS: Males resemble to those of *O. mancocapac* by having a strong apophysis, covered by short cusps on the copulatory bulb (fig. 93G–I), but in *O. shuar* this apophysis is longer and cylindrical.

MALE (PBI_OON 37647): Total length 1.13. Habitus as in figure 65A. **CEPHALOTHORAX** (fig. 65D–G): Carapace orange. Clypeus slightly sinuous in frontal view. Sternum as long as wide. Anterior face of chelicerae with basal anterior blunt projections, promargin with cuticular projections (fig. 65F, G, arrow). Labium rectangular. Endites anteromedian tip with one strong, tooth-like projection. **ABDOMEN:** Pale white. **LEGS:** Yellow. **GENITALIA:** Bulb tapering apically, with one strong, huge apophysis covered by short cuticular projections; embolus light, base with one short, spine-shaped apophysis; sperm duct coiled, with many loops (figs. 93G–I, 100J–L).

FEMALE: Unknown; females of morphospecies MI020, MI022–MI023, MI025–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known from the province of Orellana in Ecuador (map 10).

OTHER MATERIAL EXAMINED: **ECUADOR:** **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica



MAP 12. Distribution map of *Orchestina golem* (squares) and *Orchestina sotoi* (circles).

Woorani, 216 m, -0.65715° , -76.45300° , June 25, 1996, T. Erwin et al., 1 ♂ (USNM PBI_OON 30433); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37650); same data, only one palp is in the vial (USNM, PBI_OON 30013); same data, Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37651); same data, Oct. 21, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37648); same data, July 05, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37649).

***Orchestina golem* Izquierdo, new species**

Figures 78, 79, 95, 101, map 12

Types: Male holotype from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Woorani, 216 m, -0.65715° , -76.45300° , Feb. 5, 1996, T. Erwin et al., deposited in USNM, PBI_OON 36480; same data, June 21, 1996, T. Erwin et al., 2 male paratypes deposited in USNM, PBI_OON 36475; same data, Oct. 05, 1995, T. Erwin et al., 2 male paratypes deposited in USNM, PBI_OON 36461; same data, Oct. 24, 1994, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36462; same data, Feb. 05, 1996, T. Erwin et al., 3 male paratypes deposited in USNM, PBI_OON 36468; same data, June 26, 1996, T. Erwin et al., 2 male paratypes deposited

in USNM, PBI_OON 36470; same data, June 22, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36472; same data, Oct. 08, 1995, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36474; same data, June 25, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36479; same data, Feb. 13, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36481; same data, June 21, 1996, T. Erwin et al., 4 male paratypes deposited in MACN 31465, PBI_OON 36485; same data, Feb. 07, 1996, T. Erwin et al., 5 male paratypes deposited in USNM, PBI_OON 36495; same data, June 26, 1996, T. Erwin et al., 2 male paratypes deposited in USNM, PBI_OON 36498; same data, Feb. 13, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 36500; Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194° , -76.14416° , Oct. 24, 1998, T. Erwin et al., 2 males paratypes deposited in USNM, PBI_OON 37761.

NOTE: The specimens from Brazil are slightly different in palpal morphology from the ones in Ecuador and Peru (see "Variability"); that is here considered as intraspecific variability, but future studies with additional material and females may show that these are two different species.

30695); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30705); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30713); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30804); 1♂ (USNM, PBI_OON 30804); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30877); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30880); same data, June 21, 1996, T. Erwin et al., 5♂ (USNM, PBI_OON 30910); same data, Feb. 05, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30924); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30937); same data, Oct. 02, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36463); same data, June 22, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36464); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36465); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36466); same data, Oct. 03, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36467); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 36469); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36471); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 36473); same data, Feb. 05, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36476); 2♂ (USNM, PBI_OON 36476); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36477); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 36478); 1♂ (USNM, PBI_OON 36479); same data, June 21, 1996, T. Erwin et al., 3♂ (USNM, PBI_OON 36482); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36483); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36484); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36486); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36487); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 36488); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36489); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36490); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36491); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36492); same data, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 36493); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 36494); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36496); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36497); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36499); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36501); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36502); same data, June 21, 1996, T. Erwin et al.,

1♂ (USNM, PBI_OON 36503); 1♂ (USNM, PBI_OON 36503); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36504); 1♂ (USNM, PBI_OON 36504); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36505); same data, Oct. 02, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 36506); same data, Oct. 01, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 36507); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 43269); 1♂ (USNM, PBI_OON 43269); same data, June 26, 1996, T. Erwin et al., 4♂ (MACN 31464, PBI_OON 43284); same data, Feb. 13, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 43287); same data, Oct. 06, 1994, T. Erwin et al., 2♂ (USNM, PBI_OON 43288); 2♂ (USNM, PBI_OON 43288); same data, June 26, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 43302); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 01, 1998, T. Erwin et al., 2♂ paratypes (USNM, PBI_OON 36508); same data, July 04, 1998, T. Erwin et al., 1♂ (USNM, PBI_OON 36509). **PERU: Madre de Dios:** Provincia Manu: Zona Reservada Pakitzta, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, 1♂ (MUSM 501578, PBI_OON 43289). **BRAZIL: Acre:** Senador Guimard: Reserva Extrativista de Catubaba (-10.07666, -67.61666), Jan. 01, 2002, E. Morato et al., 1♂ (IBSP 87021, PBI_OON 30749); same data, 1♂ (IBSP 86913, PBI_OON 42653); same data, 1♂ (IBSP 86871, PBI_OON 42694); same data, 1♂ (IBSP 86892, PBI_OON 42697); same data, 1♂ (IBSP 86910, PBI_OON 43323).

Orchestina waorani Izquierdo, new species

Figures 80–84, 94D–F, 100M, N, map 13

TYPES: Male holotype from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 4, 1995, T. Erwin et al. deposited in USNM, PBI_OON 37126; same data, 2 male paratypes deposited in USNM, PBI_OON 37136; same data, June 25, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 37130; same data, June 25, 1996, T. Erwin et al., 2 male paratypes deposited in USNM, PBI_OON 37118.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the shape of the terminal portion of the copulatory bulb, consisting of a short, flattened embolus



MAP 13. Distribution map of *Orchestina waorani*.

flanked by a short, spine-shaped apophysis (figs. 84, 94D–F).

MALE (PBI_OON 37136): Total length 1.35. Habitus as in figure 80D. **CEPHALOTHORAX** (fig. 80A–C): Carapace orange-brown (fig. 80B). Clypeus straight in front view (fig. 80A). Sternum wider than long. Chelicerae, endites, labium orange-brown; anterior face of chelicerae with basal blunt projections, fang with one tooth projection on base (fig. 81D). Labium rectangular. Endites anteromedian tip with one short, tooth-like projection (fig. 81A, B). **ABDOMEN**: Pale white. **LEGS**: Metatarsus of at least leg I with special modified setae on prolateral side (fig. 84C–E). Tarsal proclaws, retroclaws inner face smooth; tarsi I, II, IV superior claws with nine or more teeth on lateral surface of proclaw, nine or more teeth on lateral surface of retroclaw. **GENITALIA**: Bulb tapering apically; embolus flattened in dorsal view, short; sperm duct coiled, with many loops (figs. 84, 94D–F).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known from the Orellana, Ecuador, and Mato Grosso, Brazil (map 13).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: same data as holotype, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 15099); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30015); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30021); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 30034); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30044); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30058); same data, June 26, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30077); same data, July 30, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30141); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30155); same data, Feb. 13, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30164); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30186); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30208); same data, Feb. 04, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30248); same data, Oct. 07, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30312); same data, Oct. 05, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 30409); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30434); same data, June 25, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 30443); same data, June 21, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30503); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 30650); same data, Oct. 06, 1994, T. Erwin et al., 3♂ (USNM, PBI_OON 30700); same data, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30723); same data, Oct. 08, 1995, T. Erwin et al., 1♂



MAP 14. Distribution map of *Orchestina tzantzta*.

(USNM, PBI_OON 30730); same data, Oct. 08, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 30940); same data, Feb. 07, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37111); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37112); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37113); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37114); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37115); same data, Feb. 08, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37116); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37117); same data, June 22, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37119); same data, Oct. 04, 1995, T. Erwin et al., 2♂ (USNM, PBI_OON 37120); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37121); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37122); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37123); same data, Oct. 04, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 37124); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37125); same data, Oct. 06, 1994, T. Erwin et al., 1♂ (USNM, PBI_OON 37127); same data, Feb. 07, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37128); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37129); same data, June 26, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37131); same data, Oct. 04, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37132); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37133); same data, Feb. 04, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37134); same data, Oct. 08,

1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37135); same data, Oct. 02, 1996, T. Erwin et al., 2♂ (USNM, PBI_OON 37138); same data, Oct. 02, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37139); same data, June 25, 1996, T. Erwin et al., 1♂ (USNM, PBI_OON 37140); same data, Oct. 08, 1995, T. Erwin et al., 1♂ (USNM, PBI_OON 37141). **BRAZIL: Mato Grosso:** Rio do Peixe, Reserva do Cabaçal (-15.080000, -58.465833) (525 m), Mar. 07, 2002, R.P. Indicatti, beating (IBSP 43610, PBI_OON 10953).

Orchestina tzantzta Izquierdo, new species

Figures 85, 98, map 14

Types: Male holotype from Ecuador: Orelana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 26, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37398; same data, Oct. 06, 1994, T. Erwin et al., 4 male paratypes deposited in USNM, PBI_OON 30540; same data, Oct. 06, 1994, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 30544; same data, Feb. 07, 1996, T. Erwin et al., 3 male paratypes deposited in USNM, PBI_OON 30656; same data, Feb. 08, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 37409.

ETYMOLOGY: A noun in apposition; *tzantzta*, or “shrunk head,” is a practice of the Shuar and other native inhabitants of northwestern region of the Amazonian rain forest. This mystic ritual was conceived with the aim of mummifying and preserving heads of enemies as war-trophy talismans.

DIAGNOSIS: Males are very similar to those of *O. platnicki* in the long embolus, but in *O. tzantzta* the embolus is longer and has a constricted base (fig. 98), thicker and shorter in *O. platnicki*.

MALE (PBI_OON 30656): Total length 0.99. Habitus as in figure 85. **CEPHALOTHORAX:** Carapace as in figure 85A, B, D. Sternum as long as wide (fig. 85C). Labium rectangular. **ABDOMEN:** Pale orange. **GENITALIA:** Embolus long with well-developed constriction at its base; sperm duct strongly coiled, with many loops (fig. 98).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

OON 37357); same data, Feb. 07, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37358); same data, June 25, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37359); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37360); same data, Oct. 08, 1995, T. Erwin et al., 4 ♂ (USNM, PBI_OON 37361); same data, June 26, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37362); same data, Oct. 07, 1995, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37363); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37364); same data, June 25, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37365); same data, Oct. 05, 1995, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37366); same data, Feb. 07, 1996, T. Erwin et al., 6 ♂ (MACN 31648, PBI_OON 37367); same data, Oct. 05, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37368); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37369); same data, Feb. 04, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37370); same data, June 25, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37371); same data, Oct. 06, 1994, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37372); same data, July 06, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37373); same data, June 22, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37374); same data, June 22, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37375); same data, Feb. 04, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37376); same data, Feb. 05, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37377); same data, Oct. 04, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37378); same data, Oct. 04, 1994, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37379); same data, Feb. 05, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37380); same data, Feb. 07, 1996, T. Erwin et al., 4 ♂ (MACN 31467, PBI_OON 37381); same data, Feb. 04, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37382); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37383); same data, June 22, 1996, T. Erwin et al., 4 ♂ (USNM, PBI_OON 37384); same data, Feb. 05, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37385); same data, Oct. 06, 1994, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37386); same data, Feb. 07, 1996, T. Erwin et al., 5 ♂ (USNM, PBI_OON 37387); same data, Feb. 07, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37388); same data, Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37389); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37390); same data, June 21, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37391); same data, June 26, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37392); same data, Feb. 13, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37393); same data, Feb. 05, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37394); same data, Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM,

PBI_OON 37395); same data, Feb. 07, 1996, T. Erwin et al., 4 ♂ (USNM, PBI_OON 37396); same data, June 26, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37397); same data, June 22, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37399); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37400); same data, Oct. 08, 1995, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37401); same data, June 26, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37402); same data, Feb. 04, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37403); same data, Oct. 04, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37404); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37405); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37406); same data, Oct. 08, 1995, T. Erwin et al., 5 ♂ (USNM, PBI_OON 37407); same data, June 26, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37408); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37410); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37411); same data, Feb. 05, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37412); same data, Oct. 04, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37413); same data, Oct. 04, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37414); same data, June 22, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37415); same data, Oct. 04, 1995, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37416); same data, Oct. 02, 1996, T. Erwin et al., 4 ♂ (USNM, PBI_OON 37417); same data, Oct. 01, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37418); same data, Oct. 02, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37419); same data, Oct. 02, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37420); same data, Oct. 03, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37421); same data, Oct. 02, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37422); same data, Oct. 02, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37843); same data, Feb. 05, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 42149); same data, Feb. 13, 1996, T. Erwin et al., 3 ♂ (USNM, PBI_OON 42150); same data, Feb. 05, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30322); same data, Feb. 07, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 30648); same data, Oct. 06, 1994, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30791); same data, June 26, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 42151); same data, Oct. 06, 1996, T. Erwin et al., 4 ♂ (USNM, PBI_OON 42152); same data, Feb. 04, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 42218); same data, Oct. 08, 1995, T. Erwin et al., 3 ♂ (USNM, PBI_OON 42272); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 21, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37844); same data, Oct. 21, 1998, T. Erwin et al., 1 ♂

(USNM, PBI_OON 37845); same data, Oct. 24, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37846); same data, Oct. 24, 1998, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37847); same data, Oct. 22, 1998, T. Erwin et al., 3 ♂ (USNM, PBI_OON 37848); same data, July 01, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37849). **PERU: Madre de Dios:** Provincia de Manu: Cuenca del Rio Los Amigos, Estación Científica CICRA, trocha Palmeras (-12.53483°, -70.11189°), Mar. 16, 2006, M. Deza, on label "UA-193," 1 ♂ (MEKRB, PBI_OON 14820); same data, zona reservada Pakitza, -11.93333°, -71.28333°, 356 m, Jun. 2002, Erwin and Silva, 1 ♂ (MUSM 501571, PBI_OON 43306 (found in the same vial with a female of OMI023, PBI_OON 51198, but, given that many other males and females were found in the same locality on the same date, the specimens were separated and treated as different. In case of future matching, we have placed a label in both vials indicating the original location of these specimens).

Orchestina predator Izquierdo, new species

Figures 86, 97A–C, 102A–C, map 10

TYPE: Male holotype from Ecuador: Orellana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, July 06, 1995, T. Erwin et al., deposited in USNM, PBI_OON 30229.

ETYMOLOGY: A noun in apposition; the name is a reference to the modifications of chelicerae reminiscent of those of the genus *Predatoroonops* Brescovit et al. (2012).

DIAGNOSIS: Males can be distinguished by the following combination of characters: carapace with two sclerotized stripes on both sides (fig. 86D), clypeus sinuous (fig. 86C), chelicerae strong, modified, with swollen median part and a projection on the promargin (fig. 86C, D), cheliceral fangs slightly sinuous with bifid tips, copulatory bulb with short embolus and a short, strong, prolateral spinelike apophysis (figs. 97A–C, 102A–C).

MALE (PBI_OON 30229): Total length 1.11. **CEPHALOTHORAX** (fig. 86): Carapace with sclerotized stripes along margin of cephalic area, wide in dorsal view (fig. 86A), anteriorly narrowed to 0.49× its maximum width or less. Cly-

peus sinuous in front view, vertical in lateral view (fig. 86C, D). Sternum wider than long (fig. 86B). Chelicerae, endites, labium orange-brown. Chelicerae anterior face with swollen median part, promargin with cuticular projections, fang tips bifurcated (fig. 86C, D). Labium rectangular. **LEGS:** Yellow. **GENITALIA:** Palp proximal segments yellow; cymbium yellow; bulb with one short, spine-shaped apophysis near base of embolus; embolus light, short; sperm duct slightly coiled (figs. 97A–C, 102A–C).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known only from the type locality in Ecuador (Orellana, map 10).

OTHER MATERIAL EXAMINED: Same data as holotype, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 43278).

Orchestina goblin Izquierdo, new species

Figures 87, 88, 92A–C, 102D, E, map 11

TYPES: Male holotype from Ecuador: Orellana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Jun. 26, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37671; same data, Jun. 26, 1996, T. Erwin et al., 1 male paratype deposited in USNM, PBI_OON 51197.

ETYMOLOGY: The specific name is a noun in apposition, and refers to the colloquial name with which the spiders of the family Oonopidae are known.

DIAGNOSIS: Males can be distinguished by the shape of the copulatory bulb, with short embolus and a weakly sclerotized apophysis extending beyond the embolus (figs. 88, 92A–C, 102D, E).

MALE (PBI_OON 37671): Total length 0.95. **Habitus** as in figure 87A.

CEPHALOTHORAX: Carapace with sclerotized stripes along margin of cephalic area (fig. 87B, E, F). Clypeus as in figure 87D. Sternum as long as wide. Anterior face of chelicerae with basal conical projections (fig. 87D). Labium rect-



MAP 15. Distribution map of *Orchestina* MI020.

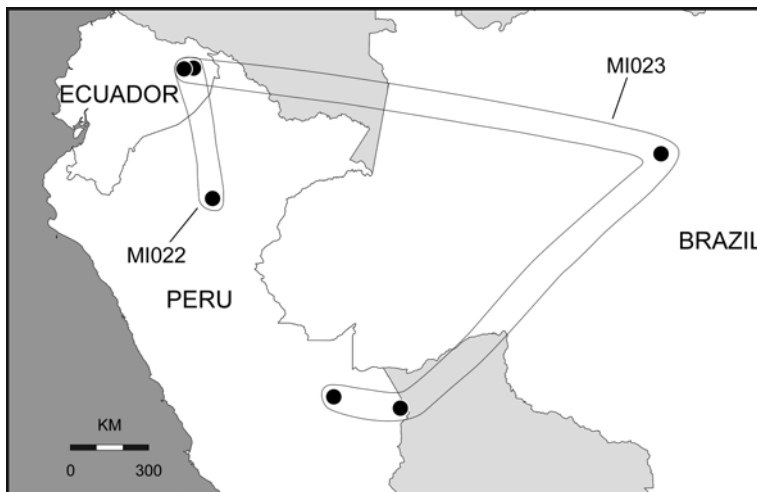
angular. ABDOMEN: Round, white. GENITALIA: Bulb with weakly sclerotized apophysis extending beyond tip of embolus; embolus very short; sperm duct coiled with many loops (figs. 88, 92A–C, 102D, E).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Ecuador, Colombia, and Peru (map 11).

OTHER MATERIAL EXAMINED: **ECUADOR:** **Napo:** Parque Nacional Napo-Galeras, road between Tena and Loreto, 1105 m, -0.73333° , -77.59130° , Nov. 27, 2009, Niarchos Expedition, M. Ramírez, C. Grismado, M. Izquierdo, F. Labarque, 1 ♂ (MACN 30729, PBI_OON 51117); same data, 1 ♂, 1 juvenile, sex unknown (MACN 28892, PBI_OON 30788); same data, Sacha Wagra Lodge, Rio Hollín, 665 m, -0.963173° , -77.814812° , Nov. 29, 2009, fogging, Niarchos Expedition, 1 ♂ (MACN 30324, PBI_OON 51127). **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715° , -76.45300° , Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30043); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30059); same data, Feb. 08, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30089); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30183); same data, July 06, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30358); same data, Feb. 07, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 30432); same data, Oct. 08, 1995,

T. Erwin et al., 1 ♂ (USNM, PBI_OON 30705); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30805); same data, Oct. 06, 1994, T. Erwin et al., 2 ♂ (USNM, PBI_OON 30879); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37652); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37653); same data, Oct. 06, 1994, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37654); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37655); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37656); same data, Oct. 06, 1994, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37657); same data, Feb. 05, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 37658); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37659); 1 ♂ (USNM, PBI_OON 37659); same data, Oct. 08, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37660); same data, June 22, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37661); same data, Oct. 03, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37662); same data, Oct. 04, 1996, T. Erwin et al., 3 ♂ (MACN 34399, PBI_OON 37663); same data, Oct. 04, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37664); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37665); same data, Feb. 13, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37666); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37667); same data, Oct. 07, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37668); same data, June 21, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37669); same data, Feb. 07, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37670); same data, Oct. 08, 1995, T. Erwin et al.,



MAP 16. Distribution map of *Orchestina* MI022 and MI023.

1 ♂ (USNM, PBI_OON 43265); same data, Oct. 21, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37672); same data, Feb. 13, 1996, T. Erwin et al., 2 ♂ (USNM, PBI_OON 30151); same data, June 26, 1996, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30231); same data, July 06, 1995, T. Erwin et al., 1 ♂ (USNM, PBI_OON 30743); same data, June 26, 1996, T. Erwin et al., 1 ♂ paratype (USNM, PBI_OON 51197). Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 21, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37672). **COLOMBIA: Vaupés:** Taraira: Lago Taraira bajo Rio Apaporis, Est. Biol. Caparú, 200 m, 1.06666°, -69.48333°, Apr. 01, 2003, Ligia Benavides, 1 ♀ (ICN, PBI_OON 30794). **PERU: Madre de Dios:** Provincia de Manu: Zona Reservada Pakitzá, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, 1 ♂ (MUSM 501570, PBI_OON 43304); same data, 1 ♂ (MUSM, PBI_OON 51116). **BRAZIL: Acre:** Senador Guimard: Reserva Extrativista de Catuaba (-10.07666, -67.61666), Jan. 01, 2002, E. Morato et al., 1 ♂ (IBSP 87017, PBI_OON 30800); same data, 1 ♂ (IBSP 86835, PBI_OON 42693).

***Orchestina yanayacu* Izquierdo, new species**

Figures 99C, 111A, map 10

TYPE: Female holotype from Ecuador: Napo: Yanayacu Biological Station, Rio Perdido trail, 2085 m, -0.60826°, -77.88245°, Nov. 26, 2009, Niarchos Expedition, deposited in QCAZ, PBI_OON 30745.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by having two external pockets, widely separated on the epigastric region (figs. 99C, 111A).

MALE: Unknown.

FEMALE (PBI_OON 30745): CEPHALOTHORAX (separated from abdomen): Carapace length 0.64; orange. Sternum as long as wide. Labium rectangular. **ABDOMEN:** Pale orange. **LEGS:** Missing. **GENITALIA:** Epigastric region with two external pockets widely separated, internal pockets absent; anterior receptaculum with wide anterior tip; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 99C, 111A).

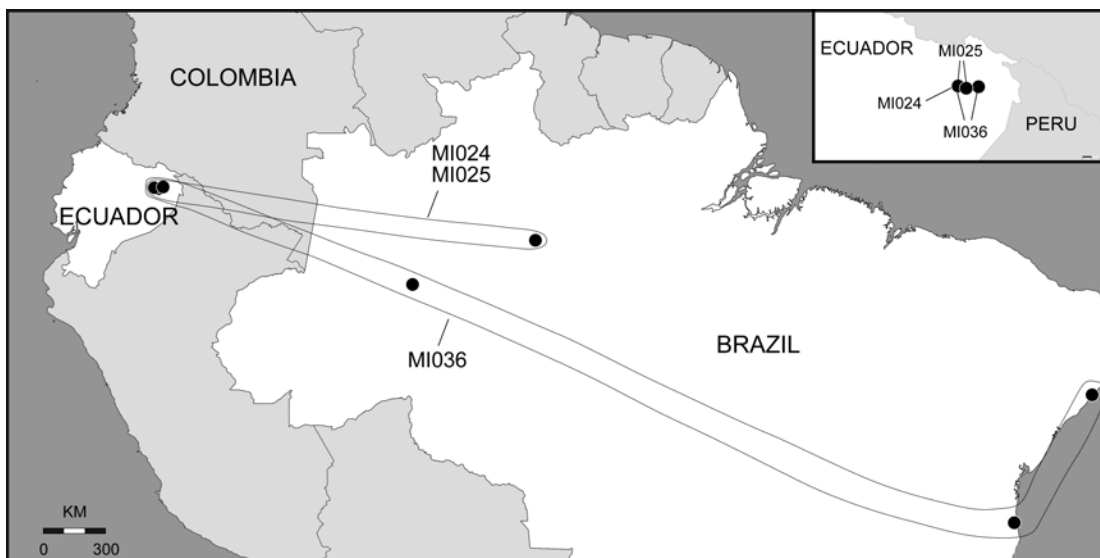
DISTRIBUTION: Known only from the type locality in Ecuador (Napo, map 10).

OTHER MATERIAL EXAMINED: None.

***Orchestina otonga* Izquierdo, new species**

Figures 89, 97D–F, 111B, map 10

TYPES: Male holotype from Ecuador: Santo Domingo de los Tsachilas: Bosque Integral Otonga, -0.32083°, -78.95167°, 1705 m, Dec. 08, 2009, M. Ramírez, C. Grismado, M. Izquierdo, F. Labarque (Niarchos Expedition), deposited in



MAP 17. Distribution map of *Orchestina* MI024, MI025, and MI036.

QCAZ, PBI_OON 43369, same data, 1 female paratype deposited in QCAZ, PBI_OON 50047; same data, 1 male, 1 female paratype deposited in MACN 30728, PBI_OON 51118.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by the combination of the following characters: clypeus rebordered (fig. 89C), chelicerae directed backward, anterior face with basal conical projections (fig. 89B), copulatory bulb with additional apophysis forming a nearly V-shaped structure with the embolus in dorsal view (fig. 97D–F). Females can easily be distinguished by the presence of two external pockets that converge on the median field (fig. 111B) and by the wide anterior tip of the anterior receptaculum.

MALE (PBI_OON 43369): Total length 1.04. Habitus as in figure 89A. **CEPHALOTHORAX:** Carapace as in figure 89B, orange. Clypeus vertical in lateral view, rebordered (fig. 89B, C). Sternum as long as wide (fig. 89D). Chelicerae directed posteriorly, anterior face with basal blunt projections (fig. 89B). Labium rectangular, with sclerotized margins (fig. 89D). **ABDOMEN:** Pale white. **LEGS:** Only left legs I–II are present.

GENITALIA: Bulb with apophysis of almost same length as embolus; sperm duct coiled with many loops (fig. 97D–F).

FEMALE (PBI_OON 50047): **CEPHALOTHORAX:** Carapace length 0.60. **ABDOMEN:** Ovoid (separated from prosoma). **LEGS:** Missing. **GENITALIA:** External pockets converging on median field, internal pockets absent, anterior receptaculum with wide tip; posterior receptaculum present, posterior apodeme formed by entire plate (fig. 111B).

DISTRIBUTION: Known only from the type locality in Ecuador (Santo Domingo de los Tsachilas, map 10).

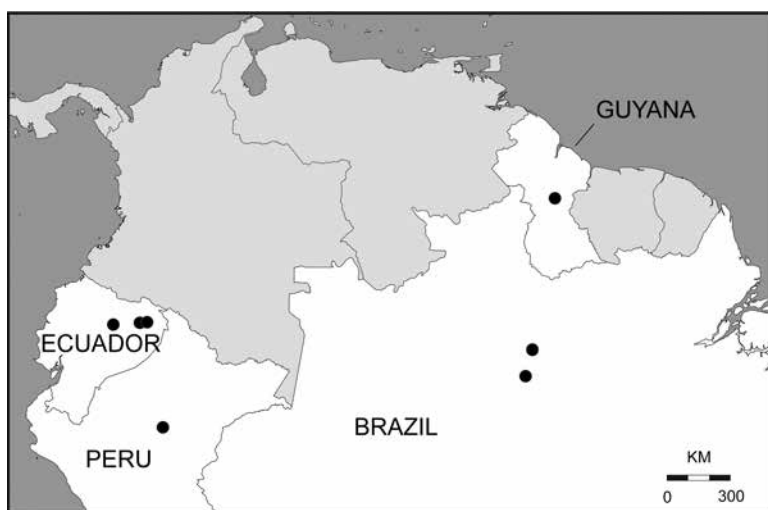
OTHER MATERIAL EXAMINED: Same data as holotype, 4 ♀ (MACN 34536, PBI_OON 51182).

***Orchestina santodomingo* Izquierdo,**
new species

Figures 99B, 111C, map 10

TYPE: Female holotype from Ecuador: Santo Domingo de los Tsachilas: Otonga, -0.32083° , -78.95167° , 1705 m, Dec. 08, 2009, Niarchos Expedition, deposited in QCAZ, PBI_OON 50048.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



MAP 18. Distribution map of *Orchestina* MI026.

DIAGNOSIS: Females can easily be distinguished by having external pockets placed near median line of the epigastrium with their cavities directed anteriorly plus a wide anterior receptaculum tip (figs. 99B, 111C).

MALE: Unknown.

FEMALE (PBI_OON 50048): **CEPHALOTHORAX** (separated from abdomen): Carapace length 0.62; orange. Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Missing. **GENITALIA:** Epigastric region with two, almost adjacent pockets with cavities directed anteriorly, internal pockets absent, anterior receptaculum with wide tip; posterior receptaculum present, posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the type locality in Ecuador (Santo Domingo de los Tsáchilas, map 10).

OTHER MATERIAL EXAMINED: Same data as holotype, 1 juvenile, sex unknown, probably of the same species (QCAZ, PBI_OON 50048).

Orchestina quijos Izquierdo, new species

Figures 90, 96A–C, 99A, map 10

TYPES: Male holotype from Ecuador: Napo, Sacha Wagra Lodge, Rio Hollin, 665 m, -0.95500°, -77.74750°, Nov. 29, 2009, Niarchos Expedition,

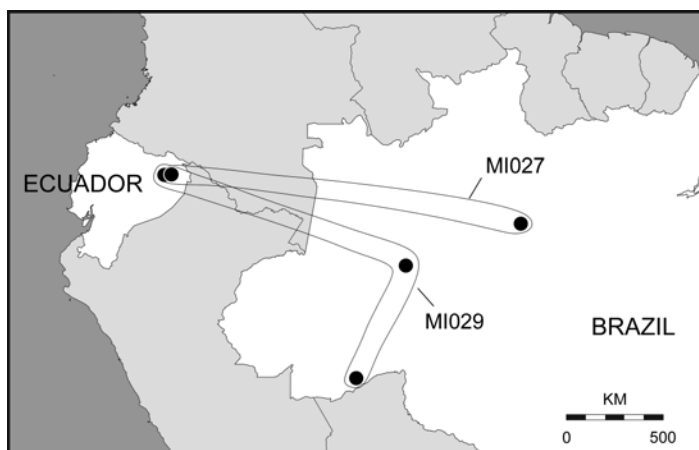
deposited in QCAZ, PBI_OON 30941; same data, 1 female paratype deposited in QCAZ, PBI_OON 30941.

ETYMOLOGY: A noun in apposition; the Quijos-Quichua (Napo-Quichua) are lowland Quechua people, living in the basins of the Napo, Aguarico, San Miguel, and Putumayo river basins of Ecuador and Peru.

DIAGNOSIS: Males resemble those of *O. golem* by the general shape of the palp, with a similar morphology of the embolus region, but can be distinguished by the carapace higher in the clypeus area (fig. 90A–C). Females can be distinguished by the rhomboid anterior receptaculum (fig. 99A).

MALE (PBI_OON 30941): **CEPHALOTHORAX** (fig. 90A–D): Carapace length 0.58; wide oval in dorsal view (fig. 90A). Clypeus as in figure 90B, C. Sternum wider than long (fig. 90D). Anterior face of chelicerae with basal blunt projections. Labium rectangular, with dark projections to sternum. **ABDOMEN:** Pale white. **LEGS:** Yellow. **GENITALIA:** Embolus long, robust, with cuticular projection near base, visible in dorsal view; sperm duct slightly coiled (fig. 96A–C).

FEMALE (PBI_OON 30941): Total length 1.26. Habitus as in figure 90E, F. **CEPHALOTHORAX:** Sternum longer than wide. **GENITALIA:** External pockets absent, internal pockets well developed,



MAP 19. Distribution map of *Orchestina* MI027 and MI029.

anterior receptaculum with rhomboid lateral projections; posterior receptaculum absent, posterior apodeme formed by entire plate (fig. 99A).

DISTRIBUTION: Known from the province of Napo, Ecuador (map 10).

OTHER MATERIAL EXAMINED: ECUADOR: Napo: Parque Nacional Napo-Galeras, road between Tena and Loreto, 1105 m, -0.73333° , -77.59130° , Nov. 27, 2009, Niarchos Expedition, M. Ramírez, C. Grismado, M. Izquierdo, F. Labarque, 1 ♀ (MACN 28654, PBI_OON 30283); same data, 1 ♀, 5 juveniles, sex unknown (MACN 28653 PBI_OON 30671); Sacha Wagra Lodge, Rio Hollin, 665 m, -0.95500° , -77.74750° , Nov. 29, 2009, Niarchos Expedition, 1 ♂ (MACN 28894, PBI_OON 30857); same data, 1 ♂ (MACN 28650, PBI_OON 30871); same data, 1 ♀ (MACN 28649 PBI_OON 30927); Tena, Puerto Napo, Estación Biológica Jatun Sacha, 410 m, -1.06583° , -77.61666° , Dec. 01, 2009, to Dec. 05, 2009, Niarchos Expedition, 1 ♀ (MACN 28661, PBI_OON 30886).

Orchestina mayo Izquierdo, new species

Figures 91, 96D–F, map 10

TYPE: Male holotype from Ecuador: Orellana: Reserva Etnica Waorani: 1 km S Onkone Gare Camp; Transect Ent., 216 m, -0.65715° , -26.45300° , Feb. 07, 1996, T. Erwin et al., deposited in USNM, PBI_OON 30889.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: Males can be distinguished by the simple copulatory bulb, with long embolus (fig. 96D–F).

MALE (PBI_OON 30889): Total length 0.88. Habitus as in figure 91. **CEPHALOTHORAX:** Carapace slightly collapsed (fig. 91A, B). Sternum as long as wide (fig. 91C). Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Yellow; left legs absent. **GENITALIA:** Right palp absent; embolus long; sperm duct strongly coiled (fig. 96D–F).

FEMALE: Unknown; females of morphospecies MI020–MI027, MI029, MI036, and MI038 from the same area are candidates to match this male.

DISTRIBUTION: Known only from the type locality in Ecuador (Orellana, map 10).

OTHER MATERIAL EXAMINED: None.

Orchestina cajamarca Izquierdo, new species

Figures 102F, G, 103, 108A–C, 110A, 111F, map 21

TYPE: Male holotype from Peru: Cajamarca: Cajamarca: Parque Nacional Cutervo, Puente del Suro, 2438 m, -6.20277° , -78.73944° , May 22, 2010, R. Pinto-da-Rocha, M. Alvarado and D. Silva, deposited in MUSM 503016, PBI_OON 42768; same data as holotype, 1 female paratype deposited in MUSM 503016, PBI_OON 42768.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



MAP 20. Distribution map of *Orchestina* MI038.

DIAGNOSIS: Males can be distinguished by the shape of the copulatory bulb, with very short embolus flanked by a spinelike apophysis (figs. 102G, 108B). Females can be distinguished by the shape of the lateral projections of the anterior receptaculum, widely extended to the sides (figs. 110A, 111F).

MALE (PBI_OON 42768): Total length 1.29. Habitus as in figure 103A, C, E. **CEPHALOTHORAX:** Carapace orange. Sternum as long as wide. Labium rectangular. **ABDOMEN:** Round, white. **LEGS:** Yellow. **GENITALIA:** Bulb yellow, spherical; embolus short, base with spine-shaped apophysis pointing to prolateral side in dorsal view; sperm duct strongly coiled (figs. 102F, G, 108A–C).

FEMALE (PBI_OON 42768): Total length 1.50. Habitus as in figure 103B, D, F. **ABDOMEN:** Ovoid. **GENITALIA:** External, internal pockets absent, anterior receptaculum with conspicuous lateral projections, anterior apodemes long; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 110A, 111F).

DISTRIBUTION: Known from the provinces of Cajamarca and Junín in Peru (map 21).

OTHER MATERIAL EXAMINED: **PERU: Junín:** Huacapistana, 1800 m, -11.21763°, -75.52538°, July 27, 1965, to July 30, 1965, P., B. Wygodzinsky, 1 ♀ (AMNH, PBI_OON 1661).

Orchestina comaina Izquierdo, new species

Figures 102H–J, 104, 106, 108D–F, 110B, map 21

TYPE: Male from Peru: Amazonas: Alto Rio Comaina (Puesto de Vigilancia 22 “Falso Paquisha”) (-4.45, -78.2166667), 850 m, Oct. 21, 1987, to Nov. 03, 1987, D. Silva, deposited in MUSM 5001480, PBI_OON 43307; same data, 1 female paratype deposited in MUSM 5001480, PBI_OON 43307.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be distinguished by the shape of the copulatory bulb, with long embolus, wide in dorsal view and with a nearly flat projection in the region of the embolus, evident in lateral views (figs. 102H, I, 108D, F). Females resemble those of *O. cajamarca* in having lateral projections in the anterior receptaculum, but in *O. comaina* these projections are rounded (fig. 110B).

MALE (PBI_OON 43307): Total length 1.08. Habitus as in figure 104A–C. **CEPHALOTHORAX:** Carapace as in figure 104A, orange. Clypeus as in figure 104C. Labium rectangular. Endites without serrula. **ABDOMEN:** Pale white. **GENITALIA:** Embolus wide in dorsal view with ventral projection; sperm duct strongly coiled (figs. 102H–J, 108D, E).

FEMALE (PBI_OON 43307): Total length 1.33. CEPHALOTHORAX: Carapace as in figure 104D–F. Endites with serrula in single row. GENITALIA: External pockets absent, internal pockets small, anterior receptaculum with massive lateral projections, anterior apodemes short; posterior receptaculum absent, posterior apodeme formed by entire plate (fig. 110B).

DISTRIBUTION: Known only from the type locality in Peru (Amazonas, map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina atocongo Izquierdo, new species

Figures 102 K, L, 105A–D, 108G–I, map 21

TYPE: Male holotype from Peru: Lima: Lomas de Atocongo (-12.168828°, -76.893349°), Oct. 10, 1963, P.B. Wygodzinsky, deposited in AMNH, PBI_OON 1662.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of species from the United States in having a netlike dark coloration pattern at the sides of carapace and dorsum of abdomen (fig. 105A–D), but can be distinguished by having a short, strong triangular projection on the endites.

MALE: (PBI_OON 1662): CEPHALOTHORAX: Carapace as in figure 105A, C; length 0.55, with dark pigment on borders. Clypeus as in figure 105B. Sternum anteriorly heart shaped. Labium rectangular. Endites without serrula, anteromedian tip with one strong, toothlike projection. ABDOMEN: Dorsum with gray netlike pattern, round (fig. 105D). Abdomen separated from prosoma. LEGS: Yellow; coxae femora, patellae, tibiae, and metatarsi slightly colored with purple pigment, left leg I, right legs I, III, IV absent. GENITALIA: Right palp missing; with no apophysis; embolus long, light; sperm duct slightly coiled (figs. 102K, L, 108G–I).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Peru (Lima, map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina mancocapac Izquierdo, new species

Figures 102M, N, 105E, F, 109, map 21

TYPE: Male holotype from Peru: Cusco: Armi-huari: Rio Camisea, 560 m, -11.85000°, -72.76666°, Oct. 16, 1997, S. Cordova, deposited in MUSM 0501455, PBI_OON 43305.

ETYMOLOGY: The specific name is a noun in apposition taken from Manco Cápac, the first governor and founder of the Inca culture in Cusco.

DIAGNOSIS: Males can be distinguished by the presence of two strong toothlike projections on the mesal margin of the chelicerae (fig. 105F) and by a serrated apophysis on the copulatory bulb (figs. 102M, N, 109).

MALE (PBI_OON 43305): CEPHALOTHORAX: Carapace length 0.74; orange, with sclerotized stripes at lateral margins of cephalic area, almost squared in dorsal view (fig. 105E). Clypeus almost vertical in lateral view. Sternum as long as wide, setae densest laterally. Anterior face of chelicerae with basal blunt projections, mesal margin with two strong toothlike projections (fig. 105F). Labium rectangular. ABDOMEN: Collapsed, pale white. LEGS: Spination, metatarsi: I d0-0-1; r0-0-1; II p0-0-1; r0-0-1; III d0-0-1; r0-0-1; IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Embolus short; bulb prolateral margin with strong, serrated apophysis; sperm duct slightly coiled (figs. 102M, N, 109).

FEMALE: Unknown.

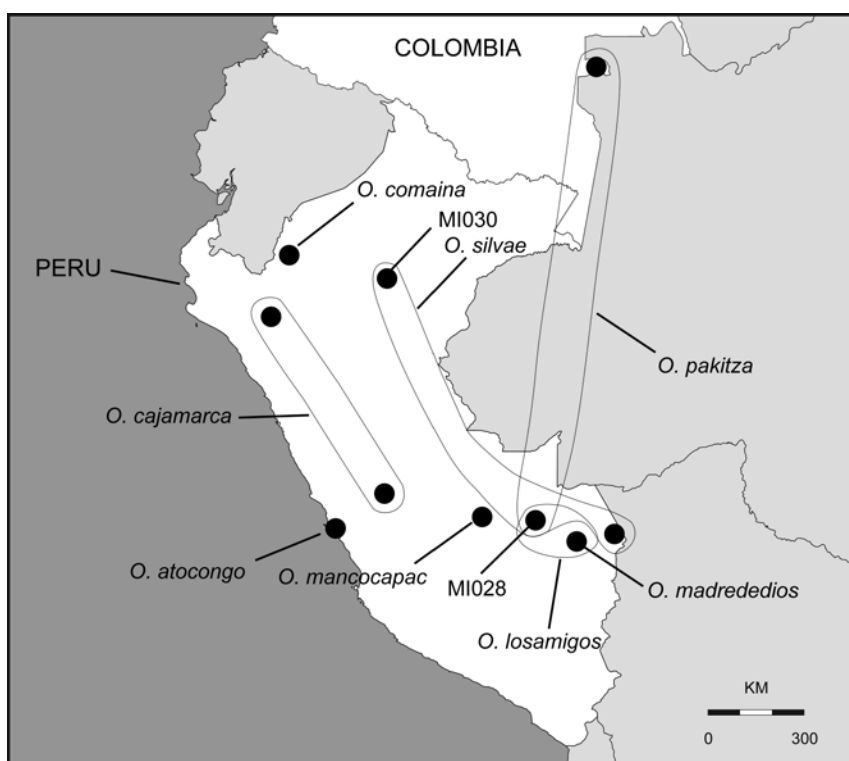
DISTRIBUTION: Known only from the type locality in Peru (Cusco, map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina silvae Izquierdo, new species

Figures 106A, B, 111E, map 21

TYPES: Female holotype from Peru: Madre de Dios: Manu, Zona Reservada Pakitza, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, deposited in MUSM 501566, PBI_OON 43318; Loreto: Rio Samiria, -5.11666°, -75.46666°, May 01, 1990, to June 01, 1990, T. Erwin, D. Silva, 2 female paratypes deposited in MUSM, PBI_OON 43312.



MAP 21. Distribution map of *Orchestina* species and morphospecies in Peru and Colombia: *O. atocono*, *O. cajamarca*, *O. comaina*, *O. losamigos*, *O. madredeios*, *O. mangocapac*, *O. pakitza*, *O. silvae*, MI028 and MI030. Note the sympatric localities.

ETYMOLOGY: The specific name is a patronym in honor of Diana Silva, one of the collectors of the type material.

DIAGNOSIS: Females can be distinguished by having external pockets, placed near median region of the epigastric area and opened toward the sides, and by the shape of the anterior receptaculum with its wide anterior tip almost T-shaped (fig. 111E).

MALE: Unknown.

FEMALE (PBI_OON 43318): Total length 1.5. Habitus as in figure 106A, B. **CEPHALOTHORAX:** Carapace orange. Labium rectangular. **ABDOMEN:** Pale white. **GENITALIA:** Epigastric region with two external pockets; anterior receptaculum with wide tip; posterior receptaculum present, posterior apodeme formed by entire plate (fig. 111E).

DISTRIBUTION: Known from Loreto and Madre de Dios, Peru (map 21).

OTHER MATERIAL EXAMINED: **PERU: Madre de Dios:** Provincia Manu: Zona Reservada Pakitza, leaf litter, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, 1 ♀ (MUSM 501564 PBI_OON 43308); same data, 1 ♀ (MUSM 501556 PBI_OON 43315). Provincia de Tambopata: 15 km E Puerto Maldonado, 200 m, -12.33000°, -69.02972°, July 18, 1989, D. Silva, 1 ♀ (MUSM 504654 PBI_OON 42770).

Orchestina madredeios, Izquierdo new species

Figures 106E, 110C, map 21

TYPE: Female holotype from Peru: Madre de Dios: Provincia Manu: Cuenca del Rio Los Amigos; CICRA, -12.53483°, -70.11189°, Aug. 29, 2005, M. Deza, on label "UA-785," deposited in MEKRB, PBI_OON 42744; same data, Feb. 23, 2006, M. Deza leg. 1 female paratype, on label "UA-346," deposited in MEKRB, PBI_OON 14982.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females are unique in having two sclerotized ridges on the epigastric region (fig. 110C) and two small adjacent external pockets.

MALE: Unknown.

FEMALE (PBI_OON 42744): Total length 1.62. Habitus as in figure 106E. **CEPHALOTHORAX:** Carapace orange. Labium rectangular. **LEGS:** Patella plus tibia I longer than carapace. Left legs I, II absent. **ABDOMEN:** Pale white. **GENITALIA:** Epigastric region with two sclerotized ridges (fig. 110C), two small, adjacent external pockets, internal pockets absent.

DISTRIBUTION: Known only from the type locality in Peru (Madre de Dios, map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina pakitza Izquierdo, new species

Figures 106C, D, 110E, map 21

TYPE: Female holotype from Peru: Madre de Dios, Provincia de Manu, Zona Reservada Pakitza, 356 m, -11.93305°, -71.28305°, May 04, 1991, D. Silva, deposited in MUSM 504651, PBI_OON 51113, female Paratype from Colombia: Vaupés: Taraira: Lago Taraira bajo Rio Apaporis, Est. Biol. Caparú, 200 m, 1.06666°, -69.48333°, Apr. 01, 2003, Ligia Benavides, deposited in ICN-Ar 2216, PBI_OON 30793.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the anterior receptaculum, long and thin, with lateral projections on its base forming a triangular structure, and by the epigastric lateral plates (arrows, fig. 110E).

MALE: Unknown.

FEMALE: (PBI_OON 51113): Total length 1.28. Habitus as in figure 106C, D. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Pale white. **LEGS:** Right legs I–III, left leg I absent. **GENITALIA:** As in diagnosis, external and internal pockets absent (fig. 110E).

DISTRIBUTION: Known from Colombia and Peru (map 21).

OTHER MATERIAL EXAMINED: **PERU:** same data as holotype, June 01, 1992, T. Erwin et al., 1 ♀ (MUSM 501565, PBI_OON 42273).

Orchestina losamigos Izquierdo, new species

Figures 107A–C, 110D, 111G, map 21

TYPES: Female holotype from Peru: Madre de Dios: Provincia Manu: Cuenca del Rio Los Amigos; CICRA, 2° mirador, 267 m, -12.56917°, -70.10028°, Sep. 15, 2009, M. Deza, in label “UA-568,” deposited in MEKRB, PBI_OON 14984; same data, -12.53483°, -70.11189°, Aug. 29, 2005, M. Deza, 1 female paratype deposited in MEKRB, PBI_OON 42745; Zona Reservada Pakitza, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, 1 female paratype deposited in MUSM 501562, PBI_OON 43303.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the anterior apodemes of the anterior receptaculum, which are curved posteriorly, and by the shape of the lateral projections, which are narrow anteriorly and widened posteriorly (figs. 110D, 111G).

MALE: Unknown.

FEMALE (PBI_OON 14984): Total length 1.55. Habitus as in figure 107A–C. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Dorsum soft portions with pattern of gray squares and bands (fig. 107A–C). **GENITALIA:** External pockets absent, internal pockets separated, placed at both sides of epigastric fold; anterior receptaculum with anterior apodemes curved posteriorly, lateral projections narrow anteriorly, widened posteriorly; posterior receptaculum absent; posterior apodeme formed by entire plate (figs. 110D, 111G).

DISTRIBUTION: Known only from the type locality in Peru (Madre de Dios, map 21).

OTHER MATERIAL EXAMINED: None.



MAP 22. Distribution map of *Orchestina cristinae*.

Orchestina cristinae Izquierdo, new species

Figures 112–117, 131A–C, 134A, B, 137A, B, 140E–G, 144C, map 22

TYPES: Male holotype from Brazil: Minas Gerais: Marliéria, Parque Estadual do Rio Doce, -19.80000°, -42.63333°, Sep. 01, 2003, to Sep. 10, 2003, Equipe Biota, deposited in IBSP 67639, PBI_OON 10935; 1 female paratype from Santa Catarina: Parque Estadual da Serra do Tabuleiro, -27.91666°, -48.70000°, Jan. 10, 2003, to Jan. 20, 2003, Equipe Biota, deposited in IBSP 67310, PBI_OON 43386.

ETYMOLOGY: The specific name is a patronym in honor of Cristina Rheims, who first recognized this species as new.

DIAGNOSIS: Males can be identified by having two additional apophysis on the copulatory bulb (figs. 131A–C, 140E, F) and small, conical projections on the chelicerae (fig. 112B, C). Females can be distinguished by the shape of the genitalia with internal lateral plates converging at the median area (figs. 117, 134A, B, 137A, B, 144C).

MALE (PBI_OON 10935): Total length 1.00. Habitus as in figure 112A. CEPHALOTHORAX: Carapace as in figure 112C. Clypeus as in figure 112B. Sternum as long as wide. Anterior face of chelicerae with conical projections near promargin (fig. 112C). Labium rectangular. LEGS: Yel-

low. GENITALIA: Cymbium yellow; bulb stout, tapering apically, with two strong, dark apophysis; embolus short; sperm duct coiled, with many loops (figs. 131A–C, 140E–G).

FEMALE (PBI_OON 10936): Total length 1.00. Habitus as in figure 112D. CEPHALOTHORAX: Carapace with texture “fingerprint” (fig. 113F). Chelicerae anterior face unmodified (figs. 113B, 114C, F). Endites, sternum as in figure 114D, E, G. ABDOMEN: Epigastric region weakly sclerotized, slightly protruding. Palp tibia with three trichobothria (fig. 114A, B). Spinnerets (fig. 116A–D): ALS with one MAP and three PI spigots (fig. 116B); PMS with two spigots of similar size, presumably from aciniform glands (fig. 116D); PLS with three AC spigots (fig. 116C), colulus with two setae (fig. 116E). LEGS: Claws and tarsal organs as described for genus (fig. 115). GENITALIA: External, internal pockets absent (figs. 117, 134A, B); with lateral plates converging at median field (figs. 117, 134A, B, 137A, B, 144C), anterior receptaculum thin, wide at tip, with well-developed anterior apodemes (fig. 117A–C); posterior receptaculum present (fig. 117A, D, collapsed), posterior apodeme formed by entire plate.

VARIABILITY: The shape of the lateral plates of the female genitalia is slightly variable, especially near median area (figs. 134A, B, 137A, B).

DISTRIBUTION: Widely distributed from Brazil to Argentina (map 22).

OTHER MATERIAL EXAMINED: BRAZIL: Minas Gerais: Alto Caparaó: Parque Nacional do Caparaó, -20.33333°, -41.75000°, May 01, 2002, to May 07, 2002, Eq. Curso USP, 1 ♀ (IBSP 66945, PBI_OON 42417); same data, 2 ♀ (IBSP 66958, PBI_OON 42419); same data, 4 ♀ (IBSP 66957, PBI_OON 42420); same data, 1 ♀ (IBSP 66959, PBI_OON 50032); same data, 1 ♀ (IBSP 66967, PBI_OON 50033). Belo Horizonte: Estação Ecológica da UFMG, -19.86666°, -43.96666°, Nov. 10, 1999, A.F. Kumagai, 1 ♀ (IBSP 70129, PBI_OON 30767); same data, Aug. 04, 1999, A.F. Kumagai, 1 ♀ (IBSP 70134, PBI_OON 30777); same data, July 23, 1999, A.F. Kumagai, 1 ♀ (IBSP 70142, PBI_OON 42651); same data, July 01, 1999, to Feb. 01, 2001, E.S.S. Álvares, E.O. Machado and C.S. Azevedo, 3 ♀ (IBSP 32331, PBI_OON 43326). Marliéria: Parque Estadual do Rio Doce, -19.80000°, -42.63333°, Sep. 01, 2003, to Sep. 10, 2003, Equipe Biota, 1 ♀ (IBSP 67633, PBI_OON 10936); same data, 1 ♂ (IBSP 67640, PBI_OON 42410); same data, 1 ♀ (IBSP 67681, PBI_OON 42412); same data, 1 ♂ (IBSP 67630, PBI_OON 42413); same data, 1 ♀ (IBSP 67643, PBI_OON 42642); same data, 1 ♀ (IBSP 67649, PBI_OON 43246); same data, 1 ♂ (IBSP 67675, PBI_OON 50034); same data, 1 ♂ (IBSP 67662, PBI_OON 50035). Jaboticatubas: Parque Nacional da Serra do Cipó, -19.00000°, -43.65000°, Jan. 01, 2002, to Jan. 01, 2003, A.D. Brescovit, 1 ♀ (IBSP 68344, PBI_OON 30748); same data, -19.25000°, -43.51666°, Jan. 01, 2002, to Jan. 01, 2003, A.D. Brescovit, 1 ♀ (IBSP 68346, PBI_OON 30296); same data, 2 ♀ (IBSP 68335, PBI_OON 30406); same data, 1 ♀ (IBSP 68331, PBI_OON 30757); same data, 1 ♀ (IBSP 68329, PBI_OON 42662). Nat. Park Serra do Caparaó, Vale Verde, 1100 m, June 09, 1994, M. Ramírez, 3 ♀ (MACN 18017, PBI_OON 14877). **Espirito Santo:** Santa Teresa, -19.91666°, -40.60000°, Jan. 26, 1959, A. Nadler, 2 ♀ (AMNH, PBI_OON 1649); same data, Apr. 01, 2005, to July 01, 2005, T.G. Souza, 1 ♀ (IBSP 69479, PBI_OON 30385); same data, Estación Biológica Santa Lucía, -19.95277°, -40.52583°, Sep. 01, 2005, T. Souza, 1 ♀ (IBSP 67621, PBI_OON 43249). São Mateus: Reserva Florestal da Companhia Vale do Rio Doce, -18.72083°, -39.86139°, July 01, 1997, A.J. Santos, 1 ♀ (IBSP 35135, PBI_OON 30374). **Paraná:** Fénix, -23.91583°, -51.97889°, Dec. 01, 1986, Equipe Profauapar, 2 ♀ (IBSP 73232, PBI_OON 30378); Maringá, -23.42500°, -51.93889°, Jan. 01, 2008, E.G.C. Silva, 1 ♀ (IBSP 124804, PBI_OON 30768). **Rio de Janeiro:** Paineiras, Jan. 22, 1959, A. Nadler, 1 ♀ (AMNH, PBI_OON 1648); Trindade, 25 km S Parati, -23.22055°, -44.67694°, Jan. 23, 1996, M. Ramírez, 1 ♀ (MACN 18018, PBI_OON

14878); Regua: Cachoiras de Macacu, Reserva Ecológica de Guapi-Assu, -22.41667°, -42.73333°, Nov. 08, 2001, to Nov. 12, 2001, Equipe Biota, 1 ♀ (IBSP 66810, PBI_OON 30392). Resende: Parque Nacional de Itatiaia, -22.31666°, -44.56666°, June 08, 2001, to June 15, 2001, Equipe Biota, 1 ♀ (IBSP 67255, PBI_OON 30287); same data, 1 ♀ (IBSP 67264, PBI_OON 30377); same data, 1 ♀ (IBSP 67262, PBI_OON 30384); same data, 1 ♀ (IBSP 67253, PBI_OON 43232); same data, 1 ♀ (IBSP 68581, PBI_OON 43251); same data, 1 ♀ (IBSP 67261, PBI_OON 43400). Teresópolis: Parque Nacional da Serra dos Orgaos, -22.49306°, -43.07333°, Aug. 18, 2001, to Aug. 22, 2001, Equipe Biota, 1 ♀ (IBSP 66833, PBI_OON 30403). **Rio Grande do Sul:** Maquiné: Fepagro, -29.65000°, -50.20000°, Jan. 18, 2002, to Jan. 27, 2002, Equipe Biota, 1 ♀ (IBSP 66856, PBI_OON 30275); same data, 1 ♀ (IBSP 60074, PBI_OON 42381); same data, 1 ♀ (IBSP 66855, PBI_OON 43382). Rio Grande: Sep. 01, 2004, Felipe A. Pena dos Santos leg., 1 ♀ (MCTP 21817, PBI_OON 42133); Oct. 01, 2004, Felipe A. Pena dos Santos leg., 5 ♀ (MCTP 21818, PBI_OON 43224); Aug. 01, 2004, Felipe A. Pena dos Santos leg., 1 ♀ (MCTP 21816, PBI_OON 43235); Mar. 01, 2004, to June 01, 2004, Felipe A. Pena dos Santos leg., 3 ♀ (MCTP 21815, PBI_OON 43240); Apr. 01, 2005, Felipe A. Pena dos Santos leg., 2 ♀ (MCTP 21819, PBI_OON 43242); June 01, 2008, Felipe A. Pena dos Santos leg., 1 ♀ (MCTP 21882, PBI_OON 43256). São Francisco de Paula: Floresta Nacional de São Francisco de Paula, -29.38333°, -50.38333°, Jan. 01, 2003, to Jan. 01, 2004, R. Baldissere, 1 ♀ (IBSP 90258, PBI_OON 4265); same data, 3 ♀ (IBSP 90280, PBI_OON 30282); same data, 1 ♀ (IBSP 90266, PBI_OON 30367); same data, 1 ♀ (IBSP 90251, PBI_OON 30386); same data, 1 ♀ (IBSP 90265, PBI_OON 30388); same data, 2 ♀ (IBSP 90270, PBI_OON 30402); same data, 1 ♀ (IBSP 90250, PBI_OON 30769); same data, 1 ♀ (IBSP 90275, PBI_OON 42229); same data, 4 ♀ (IBSP 90286, PBI_OON 42351); same data, 10 ♀ (IBSP 90256, PBI_OON 42352); same data, 1 ♀ (IBSP 90255, PBI_OON 42365); same data, 1 ♀ (IBSP 90284, PBI_OON 42366); same data, 1 ♀ (IBSP 90277, PBI_OON 42367); same data, 2 ♀ (IBSP 90269, PBI_OON 42368); same data, 1 ♀ (IBSP 90262, PBI_OON 42369); same data, 1 ♀ (IBSP 90276, PBI_OON 42370); same data, 1 ♀ (IBSP 90281, PBI_OON 42371); same data, 1 ♀ (IBSP 90283, PBI_OON 42372); same data, 1 ♀ (IBSP 90271, PBI_OON 42373); same data, 1 ♀ (IBSP 90272, PBI_OON 42374); same data, 2 ♀ (IBSP 90287, PBI_OON 42375); same data, 1 ♀ (IBSP 90274, PBI_OON 42376); same data, 3 ♀ (IBSP 90267, PBI_OON 42377); same data, 3 ♀ (IBSP 90252, PBI_OON 42378); same data, 6 ♀ (IBSP 90268, PBI_OON 42379); same data, 3 ♀ (IBSP 90261, PBI_OON

42390); same data, 4 ♀ (IBSP 90279, PBI_OON 42391); same data, 1 ♀ (IBSP 90264, PBI_OON 42392); same data, 1 ♀ (IBSP 90282, PBI_OON 42393); same data, 1 ♀ (IBSP 90247, PBI_OON 42394); same data, 1 ♀ (IBSP 90259, PBI_OON 42395); same data, 1 ♀ (IBSP 90260, PBI_OON 42396); same data, 1 ♀ (IBSP 90273, PBI_OON 42397); same data, 1 ♀ (IBSP 90285, PBI_OON 42647); same data, 1 ♀ (IBSP 90258, PBI_OON 42654); same data, 2 ♀ (IBSP 90257, PBI_OON 42655); same data, 4 ♀ (IBSP 90253, PBI_OON 42661); same data, 1 ♀ (IBSP 90263, PBI_OON 43250); same data, 4 ♀ (IBSP 90278, PBI_OON 43381); same data, 1 ♀ (IBSP 90248, PBI_OON 43383); same data, 1 ♀ (IBSP 90254, PBI_OON 43396); Potreiro Velho, 517 m, -29.73333°, -50.40000°, Oct. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24639, PBI_OON 42127); same data, 1 ♀ (MCTP 24516, PBI_OON 42128); same data, 1 ♀ (MCTP 24515, PBI_OON 42130); same data, 1 ♀ (MCTP 24517, PBI_OON 42131); same data, 1 ♀ (MCTP 24524, PBI_OON 42139); same data, 1 ♀ (MCTP 24521, PBI_OON 43221); same data, 1 ♀ (MCTP 24504, PBI_OON 43222); same data, 2 ♀ (MCTP 24523, PBI_OON 43231); same data, 2 ♀ (MCTP 24518, PBI_OON 43241); same data, 1 ♀ (MCTP 24520, PBI_OON 43252); same data, 1 ♀ (MCTP 24506, PBI_OON 43253); same data, 1 ♀ (MCTP 24513, PBI_OON 43255); same data, 1 ♀ (MCTP 24510, PBI_OON 43354); same data, Sep. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24501, PBI_OON 42129); same data, 1 ♀ (MCTP 24502, PBI_OON 42132); same data, 1 ♀ (MCTP 24633, PBI_OON 43226); same data, 2 ♀ (MCTP 24495, PBI_OON 43229); same data, 1 ♀ (MCTP 24499, PBI_OON 43237); same data, 1 ♀ (MCTP 24498, PBI_OON 43238); same data, Aug. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24485, PBI_OON 42134); same data, 1 ♀ (MCTP 24487, PBI_OON 43227); same data, Nov. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24536, PBI_OON 42136); same data, 1 ♀ (MCTP 24531, PBI_OON 42140); same data, 1 ♀ (MCTP 24540, PBI_OON 43220); same data, 1 ♀ (MCTP 24545, PBI_OON 43225); same data, 1 ♀ (MCTP 24533, PBI_OON 43243); same data, 1 ♀ (MCTP 24532, PBI_OON 43245); same data, 1 ♀ (MCTP 24534, PBI_OON 43254); same data, 1 ♀ (MCTP 24541, PBI_OON 43258); same data, Jan. 01, 2002, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24600, PBI_OON 43234); same data, 1 ♀ (MCTP 24601, PBI_OON 43257); same data, Dec. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24547, PBI_OON 43239); same data, 1 ♀ (MCTP 24552, PBI_OON 43259); same data, Apr. 01, 2002, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24581, PBI_OON 43236); same data, June 01,

2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24579, PBI_OON 42138); same data, 1 ♀ (MCTP 24653, PBI_OON 43244). Viamao: Parque Estadual de Itapua, Dec. 30, 2003, Ana C.K. Ferreira, 1 ♀ (MCTP 20121, PBI_OON 43223); same data, Jan. 13, 2004, Ana C.K. Ferreira, 1 ♀ (MCTP 20120, PBI_OON 43228). **Santa Catarina:** Blumenau: Parque Natural Municipal Nascentes do Garcia, -27.03916°, -49.06888°, Jan. 21, 2003, to Jan. 28, 2003, Equipe Biota, 1 ♀ (IBSP 66809, PBI_OON 43385). Florianópolis: Lagoa do Peri, -27.72500°, -48.53833°, May 24, 2000, to June 12, 2000, A.L.T. Souza, 3 ♀ (IBSP 44413, PBI_OON 30780). Paulo Lopes: Parque Estadual, -27.91666°, -48.70000°, Jan. 10, 2003, to Jan. 20, 2003, Equipe Biota, 1 ♀ (IBSP 67307, PBI_OON 30786); same data, 1 ♀ (IBSP 67312, PBI_OON 43384). **São Paulo:** Cotia, Reserva Estadual do Morro Grande, -23.65000°, -47.01667°, Mar. 07, 2003, to Mar. 27, 2003, Equipe Biota, 1 ♀ (IBSP 67344, PBI_OON 50031); same data, 1 ♀ (IBSP 67341, PBI_OON 43248); same data, 1 ♀ (IBSP 67339, PBI_OON 43329); same data, 1 ♀ (IBSP 67342, PBI_OON 30274); same data, 1 ♀ (IBSP 67345, PBI_OON 30288); Caucaia do Alto, -23.68472°, -47.02861°, June 18, 2002, to June 28, 2002, Equipe Biota, 1 ♀ (IBSP 91356, PBI_OON 42380); Jardim Rizzo (URB-USP), Apr. 13, 2000, F.S. Cunha, 3 ♀ (IBSP 30028, PBI_OON 42399); same data, Apr. 06, 2000, F.S. Cunha, 1 ♀ (IBSP 30025, PBI_OON 42409); Mata da Previdência, Jan. 01, 1999, D. Candiani, 1 ♀ (IBSP 68976, PBI_OON 42346); same data, 1 ♀ (IBSP 68975, PBI_OON 42349); same data, Oct. 21, 1999, D. Candiani, 1 ♀ (IBSP 30048, PBI_OON 42405); Mata do Butantan, Instituto Butantan, -23.56641°, -46.73036°, June 11, 1999, to June 18, 1999, D. Candiani, 1 ♀ (IBSP 68977, PBI_OON 42230); same data, 1 ♀ (IBSP 68978, PBI_OON 43397); Parque da Previdência, May 18, 1999, F.S. Cunha, 1 ♀ (IBSP 30038, PBI_OON 4239); same data, 1 ♀ (IBSP 33327, PBI_OON 30383); same data, May 20, 1999, R.P. Indicatti, 1 ♀ (IBSP 30046, PBI_OON 42222); same data, Oct. 21, 1999, F.S. Cunha, 1 ♀ (IBSP 30040, PBI_OON 42337); same data, Sep. 14, 2000, J. Império, 1 ♀ (IBSP 30039, PBI_OON 42340); same data, May 18, 1999, F.S. Cunha, 1 ♀ (IBSP 30047, PBI_OON 42341); same data, Sep. 14, 1999, to Sep. 21, 1999, D. Candiani, 1 ♀ (IBSP 68585, PBI_OON 42342); same data, Aug. 10, 1999, F.S. Cunha, 1 ♀ (IBSP 30042, PBI_OON 42343); same data, Sep. 15, 2000, F.S. Cunha, 1 ♀ (IBSP 30038, PBI_OON 42398); same data, May 16, 2000, F.S. Cunha, 1 ♀ (IBSP 30036, PBI_OON 42400); same data, Feb. 21, 2001, J. Império, 1 ♀ (IBSP 30043, PBI_OON 42401); same data, May 11, 1999, F.S. Cunha, 1 ♀ (IBSP 30045, PBI_OON 42402); same data, Oct. 22, 2000, F.S. Cunha, 1 ♀ (IBSP 30049, PBI_OON 42403); same data, May 18, 1999, F.S.

Cunha, 1 ♀ (IBSP 30050, PBI_OON 42404); same data, Feb. 28, 2000, F.S. Cunha, 1 ♀ (IBSP 30037, PBI_OON 42407); same data, Dec. 12, 2000, F.S. Cunha, 1 ♀ (IBSP 30041, PBI_OON 42643); Parque Estadual da Serra da Cantareira, -23.41667°, -46.61667°, June 24, 2001, R. Pinto-da-Rocha et al, 1 ♀ (IBSP 130698, PBI_OON 42659); Parque Estadual do Jaraguá, -23.45722°, -46.77194°, Oct. 14, 2002, to Oct. 19, 2002, Equipe Biota, 1 ♀ (IBSP 67358, PBI_OON 15096); same data, 1 ♀ (IBSP 67359, PBI_OON 42382); same data, 1 ♀ (IBSP 67360, PBI_OON 43327); Parque Ilha dos Eucaliptos, Reservatório Guarapiranga, -23.73361°, -46.73361°, Apr. 07, 2005, to Apr. 13, 2005, I. Cizauskas and C.R.M. Garcia, 1 ♀ (IBSP 61280, PBI_OON 43330); Previdência (URB-PREV), Dec. 08, 2000, J. Império, 2 ♀ (IBSP 30030, PBI_OON 30271); same data, 1 ♀ (IBSP 30029, PBI_OON 42339); same data, June 11, 1999, F.S. Cunha, 1 ♀ (IBSP 30031, PBI_OON 42348); Reserva CUASO, USP, 784 m, -23.56583°, -46.73027°, Aug. 04, 1999, R.P. Indicatti, 1 ♀ (IBSP 30033, PBI_OON 30396); same data, May 19, 1999, F.S. Cunha, 1 ♀ (IBSP 30034, PBI_OON 42385); Reservatório Guarapiranga, Jardim Angela, -23.73306°, -46.73306°, Apr. 07, 2005, to Apr. 13, 2005, I. Cizauskas and C.R.M. Garcia, 1 ♀ (IBSP 61278, PBI_OON 42323); Vila Butantan (URB-USP), Apr. 20, 1999, F.S. Cunha, 1 ♀ (IBSP 30026, PBI_OON 42338); same data, Dec. 07, 2000, M.S. Sebastião, 1 ♀ (IBSP 30027, PBI_OON 42350); same data, Jan. 29, 2000, D.F. Candiari, 1 ♀ (IBSP 32966, PBI_OON 42406); Vila Sabiá (URB-PREV), -23.52222°, -47.43417°, Feb. 02, 2000, F.S. Cunha, 1 ♀ (IBSP 30032, PBI_OON 42668). Biritiba-Mirim: Barragem do Rio Biritiba-Mirim, -23.56667°, -46.03889°, Jan. 01, 2003, Equipe IBSP, 1 ♀ (IBSP 119426, PBI_OON 30781); Ilhabela: Parque Estadual de Ilhabela, -23.84277°, -45.36083°, Oct. 09, 2001, to Oct. 15, 2001, Equipe Biota, 1 ♀ (IBSP 67333, PBI_OON 30755); same data, 1 ♀ (IBSP 67327, PBI_OON 43399); Itapetininga: Estação Ecológica de Angatuba, -23.40000°, -48.35000°, Nov. 11, 2002, Equipe Biota, 1 ♀ (IBSP 67334, PBI_OON 30372); same data, 1 ♀ (IBSP 67335, PBI_OON 30391); same data, 1 ♀ (IBSP 67338, PBI_OON 42244); same data, 1 ♀ (IBSP 67336, PBI_OON 42646); same data, 1 ♀ (IBSP 67337, PBI_OON 42649); Itirapina: Estação Ecológica de Itirapina, -22.25000°, -47.81667°, Oct. 04, 2001, to Oct. 09, 2001, Equipe Biota, 1 ♀ (IBSP 67324, PBI_OON 42243); same data, 2 ♀ (IBSP 67315, PBI_OON 30751); same data, 1 ♀ (IBSP 67314, PBI_OON 30776); same data, 3 ♀ (IBSP 67323, PBI_OON 42353); same data, 1 ♀ (IBSP 67320, PBI_OON 42354); same data, 1 ♀ (IBSP 67313, PBI_OON 42355); same data, 1 ♀ (IBSP 67319, PBI_OON 42356); same data, 2 ♀ (IBSP 67321, PBI_OON 42357); same data, 3 ♀ (IBSP 67317, PBI_OON 42358);

same data, 1 ♀ (IBSP 67316, PBI_OON 42359); same data, 1 ♀ (IBSP 67318, PBI_OON 42657); same data, Aug. 07, 2000, R. Sawaya, 1 ♀ (IBSP 38119, PBI_OON 42656). Jundiá: Serra do Japi, -23.21666°, -46.93333°, Aug. 06, 2001, to Aug. 10, 2001, Equipe Biota, 1 ♀ (IBSP 67243, PBI_OON 30376); same data, 1 ♀ (IBSP 67242, PBI_OON 30399); same data, 1 ♀ (IBSP 67251, PBI_OON 30772); same data, 1 ♀ (IBSP 67248, PBI_OON 30779); same data, 1 ♀ (IBSP 67250, PBI_OON 42221); same data, 1 ♀ (IBSP 67245, PBI_OON 42414); same data, 1 ♀ (IBSP 67246, PBI_OON 42415); same data, 1 ♀ (IBSP 67252, PBI_OON 42416); same data, 1 ♀ (IBSP 67244, PBI_OON 42645); same data, 1 ♀ (IBSP 67247, PBI_OON 42648); same data, 1 ♀ (IBSP 67241, PBI_OON 42652); same data, 1 ♀ (IBSP 67249, PBI_OON 42665); Miracatu: Fazenda Iterei, -24.05000°, -47.21667°, Sep. 20, 2001, to Sep. 26, 2001, Equipe Biota, 1 ♀ (IBSP 67286, PBI_OON 30785); Mogi das Cruzes: Parque Natural Municipal da Serra do Itapety, -23.47048°, -46.15618°, Oct. 13, 2003, to Oct. 19, 2003, Equipe Biota, 1 ♀ (IBSP 66829, PBI_OON 30273); same data, 1 ♀ (IBSP 66827, PBI_OON 30277); same data, 1 ♀ (IBSP 66828, PBI_OON 30295); same data, 1 ♀ (IBSP 66826, PBI_OON 42386); same data, 1 ♀ (IBSP 66823, PBI_OON 42387); same data, 1 ♀ (IBSP 66825, PBI_OON 43247); Botanical Gardens, Jan. 17, 1959, A. Nadler, 3 ♀ (AMNH, PBI_OON 1644); same data, Jan. 13, 1959, A. Nadler, 2 ♀ (AMNH, PBI_OON 1647); Campus USP, -23.55000°, -46.63333°, May 01, 1997, A.A. Nogueira, 1 ♀ (IBSP 12060, PBI_OON 42344); same data, 1 ♀ (IBSP 12075, PBI_OON 42347); Forest Reservation, Jan. 16, 1959, A. Nadler, 4 ♀ (AMNH, PBI_OON 1646); Ipiranga, Jan. 12, 1959, A. Nadler, 4 ♀ (AMNH, PBI_OON 1642); Itapevi, -23.54889°, -46.93417°, Jan. 01, 1999, to Dec. 01, 1999, C. Bertim and V. Onofrio, 1 ♀ (IBSP 115670, PBI_OON 30398); Itu, Jan. 14, 1959, A. Nadler, 1 ♀ (AMNH, PBI_OON 1653); Rio Claro: Floresta Estadual Edmundo Navarro de Andrade, -22.41083°, -47.56083°, Sep. 01, 2001, Alunos curso UNESP, 1 ♀ (IBSP 146359, PBI_OON 42383); Salesópolis: Estação Bilógica de Boracéia, -23.53333°, -45.85000°, May 18, 2001, to May 24, 2001, Equipe Biota, 1 ♀ (IBSP 67296, PBI_OON 30408); same data, 1 ♀ (IBSP 67291, PBI_OON 43260); Santa Rita do Passa Quatro: Parque Estadual de Vassununga, -21.71666°, -47.58333°, Mar. 19, 2002, to Mar. 24, 2002, Equipe Biota, 2 ♀ (IBSP 67373, PBI_OON 30393); same data, 1 ♀ (IBSP 67369, PBI_OON 30764); same data, 1 ♀ (IBSP 67374, PBI_OON 42242); same data, 1 ♀ (IBSP 67371, PBI_OON 42667); same data, 1 ♀ (IBSP 67370, PBI_OON 43233); São José do Barreiro: Parque Nacional da Serra da Bocaina, -22.71667°, -44.60000°, Apr. 28, 2002, to May

03, 2002, Equipe Biota, 1 ♀ (IBSP 67350, PBI_OON 30276); same data, 1 ♀ (IBSP 57084, PBI_OON 42223); same data, 1 ♀ (IBSP 67349, PBI_OON 42384); Teodoro Sampaio: Parque Estadual Morro do Diabo, -22.51667°, -52.30000°, Jan. 11, 2002, to Jan. 18, 2002, Equipe Biota, 1 ♀ (IBSP 67368 PBI_OON 30400); same data, Mar. 24, 2003, to Mar. 31, 2003, Equipe Biota, 1 ♀ (IBSP 67365, PBI_OON 30401); same data, 1 ♀ (IBSP 67363, PBI_OON 43398); Ubatuba: Parque Estadual da ilha Anchieta, -23.55000°, -45.06667°, July 23, 2001, to July 30, 2001, Equipe Biota, 1 ♀ (IBSP 66835, PBI_OON 30371). **PARAGUAY:** Paraguari: Gral. Caballero (env. 11km E de Sapucaí, A° Paso Ybucuí, -26.01667°, -57.05000°, Mar. 24, 1985, Expédition Zoologique du Muséum de Genève, 1 ♀ (MNVG, PBI_OON 42174). **ARGENTINA:** **Jujuy:** Parque Nacional Calilegua, Seccional Aguas Negras, 605 m, -23.76194°, -64.85111°, Feb. 20, 2013, G.D. Rubio, H.A. Iuri, A. Ojanguren, A. Porta, R. Adilardi, 1 ♀ (MACN 29940, PBI_OON 51087). **Corrientes:** San Martín: Colonia Carlos Pellegrini, Esteros del Iberá, Dec. 21, 2004, Avalos and Rubio G., 1 ♀ (MACN 27952, PBI_OON 30664). **Misiones:** Cainguas: Sendero al Salto Escondido, Parque Provincial Salto Encantado, -27.11666°, -54.80000°, Jan. 11, 2005, to Jan. 12, 2005, C. Grismado, L. Lopardo, L. Piacentini, A. Quaglino, G. Rubio, 1 ♀ (MACN 15344, PBI_OON 14870). Iguazú: Iguazú Natl. Pk., Palmital 5 km W Yacuí, Feb. 08, 1995, to Feb. 15, 1995, M. Ramírez, 1 ♀ (MACN 15342, PBI_OON 14859). R.N.E. San Antonio, -26.13333°, -53.71667°, Nov. 11, 2011, G.D. Rubio, 1 ♀ (MACN 30240, PBI_OON 42749); same data, 2 ♀ (MACN 30296, PBI_OON 50050); same data, 8 ♀, 1 juvenile, sex unknown (MACN 30295, PBI_OON 51128). **Buenos Aires:** Reserva Natural Otamendi, "Los Guardianes de la Barranca" section, 16 m, -34.22888°, -58.89472°, Apr. 07, 2007, Cristian Grismado, L. Damer, N. López, I. Crudele and N. Olejnik, 1 ♀ (MACN 12460, PBI_OON 14873). **Ciudad Autónoma de Buenos Aires:** Reserva Ecológica Costanera Sur, -34.59638°, -58.36000°, Aug. 24, 2008, M. Benedicto, L. Damer, 1 ♀ (MACN 29664, PBI_OON 42324).

***Orchestina coari* Izquierdo, new species**

Figures 107D–F, 111D, 134C, 137C, map 23

TYPE: Female holotype from Brazil: Amazonas: Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.88611°, -65.27944°, Sep. 04, 2009, N.F. Lo-Man-Hung et al., deposited in MPEG 016706, PBI_OON 43338.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the genitalia with two proximal external pockets, anterior receptaculum with wide base and wide anterior tip, and two lateral sclerotized plates at both sides of the epigastric region (figs. 111D, 134C, 137C).

MALE: Unknown; males of morphospecies MI032 from the same area are a candidate to match this female.

FEMALE: (PBI_OON 43338): Total length 1.49. Habitus as in figure 107D–F. **CEPHALOTHORAX:** Carapace orange. Sternum orange-brown. Chelicerae, endites, labium orange-brown. Labium rectangular. **LEGS:** Missing. **GENITALIA:** Epigastric region with two proximal external pockets on median line, internal pockets absent; anterior receptaculum widened at its base, tip rounded; posterior receptaculum absent, posterior apodeme difficult to observe but probably plate shaped (figs. 111D, 134C, 137C).

DISTRIBUTION: Known only from the type locality in Brazil (Amazonas, map 23).

OTHER MATERIAL EXAMINED: same data as holotype, 1 juvenile, sex unknown (MPEG 016706, PBI_OON 43338).

***Orchestina moura* Izquierdo, new species**

Figures 137D, 142A, map 25

TYPE: Female holotype from Brazil: Amazonas: Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.85194°, -65.28305°, Sep. 03, 2009, N.F. Lo-Man-Hung et al., deposited in MPEG 016704, PBI_OON 43335.

REMARKS: The holotype and the remaining specimens are in very poor condition.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females resemble those of *O. aproeste* by the general shape of the anterior receptaculum, but can be distinguished by the lateral projections, emerging almost from the tip (figs. 137D, 142A).



MAP 23. Distribution map of *Orchestina* species in Brazil: *O. aproeste* (circles), *O. bonaldoi* (black stars), *O. catarina* (squares), *O. caxiuana* (triangle), and *O. coari* (white star). Note the sympatry between *O. aproeste* and *O. bonaldoi*.

MALE: Unknown; males of morphospecies MI032 from the same area are candidates to match this female.

FEMALE (PBI_OON 40487): Total length 1.00. CEPHALOTHORAX: Carapace pale orange, without any pattern, anteriorly narrowed to between 0.5 and 0.75× its maximum width, nonmarginal pars cephalica setae dark,

scattered, needlelike. Clypeus sloping forward in lateral view. Posterior eye row slightly recurved in front view, PME largest, touching throughout most of their length, PLE-PME separated by PME radius to PME diameter. Sternum as long as wide, pale orange. Chelicerae, endites, labium pale orange. Labium an elongated hexagon, anterior margin not indented at



MAP 24. Distribution map of *Orchestina* species in Brazil: *O. dentifera* (circles), *O. divisor* (black star), *O. iemanja* (squares), *O. itapety* (inverted triangle), *O. juruti* (triangles), and *O. leon* (white stars).

middle. Endites with serrula in single row. ABDOMEN: Ovoid, dorsum soft portions pale white, without color pattern. Epigastric region not protruding. GENITALIA: External pockets absent, internal pockets well developed; anterior receptaculum with well-developed anterior apodemes, lateral projections; posterior receptaculum present, posterior apodeme formed by

entire plate (figs. 137D, 142A).

DISTRIBUTION: Known only from the state of Amazonas, Brazil (map 25).

OTHER MATERIAL EXAMINED: **BRAZIL: Amazonas:** same data as holotype, 1 ♀ (MPEG 016701, PBI_OON 43337); same data, 1 ♀ (MPEG 016707, PBI_OON 43341). **Presidente Figueiredo:** UHE Balbina, -1.80000°, -59.65000°, July 29, 2006, R. Saturnino, 1 ♀ (MPEG 010665, PBI_OON 40481).



MAP 25. Distribution map of *Orchestina* species in Colombia, Brazil, Argentina, and Uruguay: *O. moura* (black stars), *O. para* (squares), *O. pavesiiformis* (circles), *O. platnicki* (white stars), and *O. rapaz* (triangle).

Orchestina valquiria Izquierdo, new species

Figures 118, 131D–F, 134D, 137E, 140A, C, 142B, map 26

TYPE: Male holotype from Brazil: Amazonas: Presidente Figueiredo: Usina Hidrelétrica de Balbina, -1.81666°, -59.41666°, July 14, 2006, R. Saturnino, deposited in MPEG 010664, PBI_OON 40480.

ETYMOLOGY: A noun in apposition; because, while analyzing this species, the first author was listening to *Die Walküre* (“The Valkyrie”), an opera by Richard Wagner, we decided to give its name to this species.

DIAGNOSIS: Males can be distinguished by the presence of a short embolus flanked by a short apophysis and a highly coiled sperm duct (figs. 131D–F, 140A, C). Females can be distinguished by the absence of anterior apodemes on the anterior receptaculum and by the lateral projections, emerging near median half of the anterior receptaculum (figs. 134D, 137E, 142B).

MALE (PBI_OON 40480): Total length 1.40. Habitus as in figure 118A–C. **CEPHALOTHORAX:** Carapace orange. Labium rectangular. **LEGS:** Yellow. **GENITALIA:** Palp proximal segments yellow, cymbium yellow; embolus short; sperm duct strongly coiled, with many loops (figs. 131D–F, 140A, C).

FEMALE (PBI_OON 40491): Total length 1.55. Habitus as in figure 118D–F. **CEPHALOTHORAX:** Carapace pale orange. Sternum as long as wide, yellow. Chelicerae, endites, labium yellow. **GENITALIA:** External pockets absent, internal pockets well developed; anterior receptaculum without anterior apodemes, nearly triangular, with widened lateral projections at base; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 134D, 137E, 142B).

DISTRIBUTION: states of Amazonas, Pará, Amapá, Piauá, and Tocantins, Brazil (map 26).

OTHER MATERIAL EXAMINED: **BRAZIL:** **Amapá:** Laranjal do Jari: Cachoeira de Santo Antônio, (-0.841944°, -52.515833°), Feb. 22, 2003, J.A.P. Barreiros, 1♂, 1♀ (MPEG 010400, PBI_OON 40470). **Pará:** Melgaço: Flona Caxiuanã, -1.85527°, -51.43250°, Nov. 22, 2005, N. Abraham, 1♀ (MPEG 18949, PBI_OON 42166); same data, -1.79222°, -51.43305°, Nov. 18, 2005, J.A.P. Barreiros, 1♀ (MPEG 19020, PBI_OON 42169); same data, 1♀ (MPEG 18824, PBI_OON 42178); same data, Nov. 23, 2005, J.H.C. Cordeiro, 1♀ (MPEG 18943, PBI_OON 42170). **Piauá:** Castelo do Piauí: ECB Rochas Ornamentais LTDA, Fazenda Bonito, -5.23055°, -41.70027°, Mar. 28, 2005, M.P. Albuquerque, 2♀ (MPEG 015659, PBI_OON 40491). **Tocantins:** Palmas: Serra do Lajeado, (-10.045551°, -48.254163°), Apr. 17, 2005, to Apr. 25, 2005, I. Knysak and R. Martins, 2♀ (IBSP 124514, PBI_OON 30370).

Nov. 22, 2005, N. Abraham, 1♀ (MPEG 18949, PBI_OON 42166); same data, -1.79222°, -51.43305°, Nov. 18, 2005, J.A.P. Barreiros, 1♀ (MPEG 19020, PBI_OON 42169); same data, 1♀ (MPEG 18824, PBI_OON 42178); same data, Nov. 23, 2005, J.H.C. Cordeiro, 1♀ (MPEG 18943, PBI_OON 42170). **Piauá:** Castelo do Piauí: ECB Rochas Ornamentais LTDA, Fazenda Bonito, -5.23055°, -41.70027°, Mar. 28, 2005, M.P. Albuquerque, 2♀ (MPEG 015659, PBI_OON 40491). **Tocantins:** Palmas: Serra do Lajeado, (-10.045551°, -48.254163°), Apr. 17, 2005, to Apr. 25, 2005, I. Knysak and R. Martins, 2♀ (IBSP 124514, PBI_OON 30370).

Orchestina aproeste Izquierdo, new species

Figures 120, 134F, map 23

TYPE: Female holotype from Brazil: Pará: Associação de Produtores e São Miguel do Oeste (APROESTE), km 350 da Transamazônica, -5.90027°, -57.69583°, Oct. 28, 2009, N. Abraham, deposited in MPEG 015655, PBI_OON 40487.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

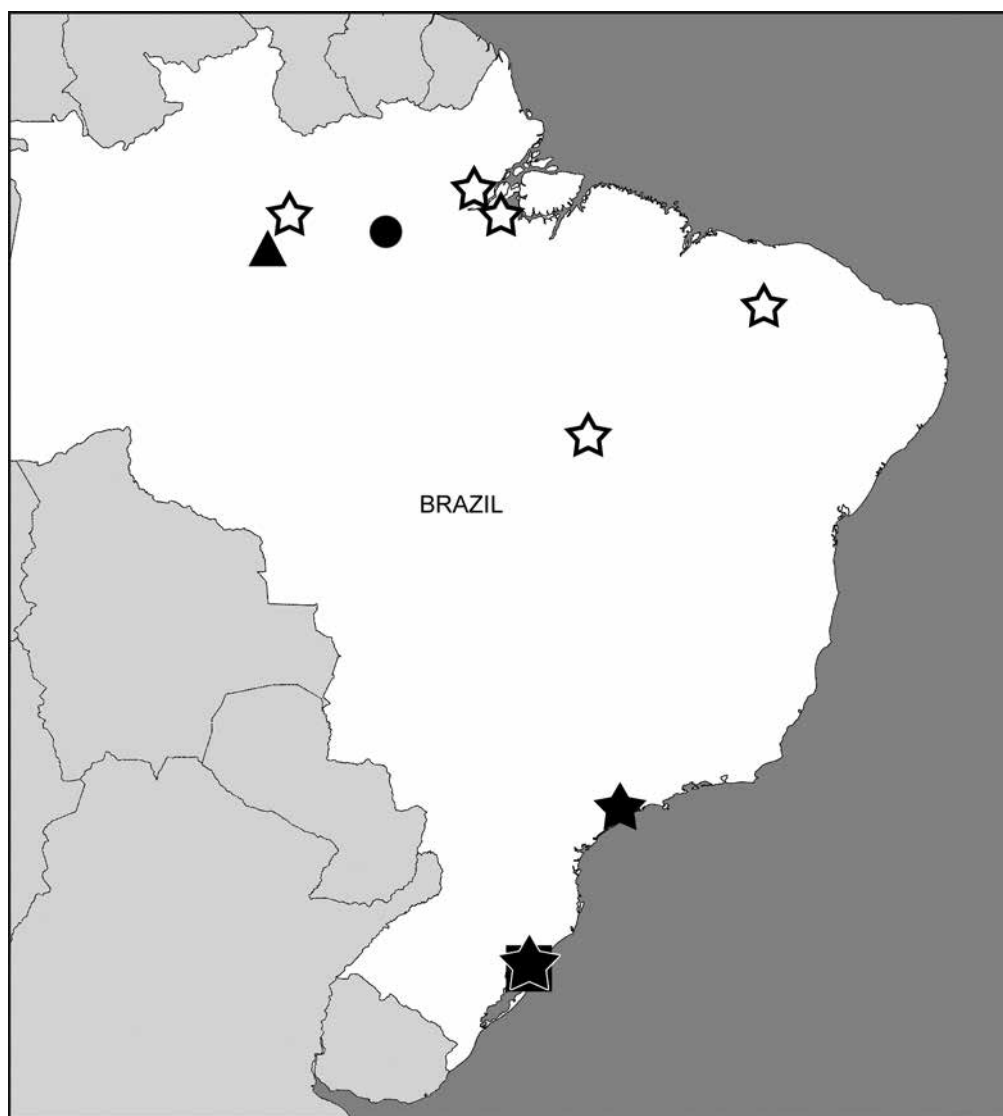
DIAGNOSIS: Females resemble those of *O. moura* by the shape of the anterior receptaculum, but can be distinguished by the lateral projections, emerging from its median part (fig. 134F).

MALE: Unknown; males of morphospecies MI035 from Brazil (Amazonas) are candidates to match this male (see Other material examined under MI035).

FEMALE (PBI_OON 40487): Total length 1.44. Habitus as in figure 120. **CEPHALOTHORAX:** Labium rectangular. **LEGS:** yellow (right leg IV, left legs I, II absent). **GENITALIA:** Besides diagnostic characters, external pockets absent; posterior receptaculum present, posterior apodeme formed by entire plate (fig. 134F).

DISTRIBUTION: Known from the states of Pará and Amazonas in Brazil (map 23).

OTHER MATERIAL EXAMINED: **BRAZIL:** **Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, May 01, 1995, Camilo, 1♀ (MPEG 18855, PBI_OON 42158); same locality, Feb. 07, 1996, Camilo, 1♀ (MPEG 18853, PBI_OON 42172). **Pará:** same data as holotype, B.V.B. Rodrigues, 1♀ (MPEG 015654, PBI_OON 40486).



MAP 26. Distribution map of *Orchestina* species in Brazil: *O. retiro* (circle), *O. sarava* (black stars), *O. saudade* (square), and *O. taruma* (triangle). Note the sympatry between *O. sarava* and *O. saudade*.

Orchestina caxiuana Izquierdo, new species

Figures 121, 135A, 138A, 142D, map 23

Type: Female holotype from Brazil: Pará: Santarem: Plote PPBio, Igarapé Caquajó, Floresta Nacional de Caxiuanã, -1.96055°, -51.61250°, May 08, 2010, S.C. Dias et al., deposited in MPEG 016709, PBI_OON 43332.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can easily be distinguished by the internal genitalia, which has the anterior receptaculum with wide base, two parallel bars projecting anteriorly, and lateral plates ending in two well-developed internal pockets (figs. 135A, 138A, 142D).

MALE: Unknown.

FEMALE (PBI_OON 43332): Total length 1.33. Habitus as in figure 121.

CEPHALOTHORAX: Carapace orange. Clypeus slightly sloping forward. Sternum as long as wide. Labium rectangular. LEGS: Missing. GENITALIA: External pockets absent, internal pockets well developed; anterior receptaculum without anterior apodemes, base wide with two parallel bars directed anteriorly, lateral plates present; posterior receptaculum probably absent, posterior apodeme formed by entire plate (figs. 135A, 138A, 142D).

DISTRIBUTION: Known only from the type locality in Brazil (Pará, map 23).

OTHER MATERIAL EXAMINED: None.

Orchestina para Izquierdo, new species

Figures 122A–C, 135B, 138B, 142E, map 25

TYPE: Female holotype from Brazil: Pará: Jacareacanga: Rabelo, km 276 da Transamazônica, -5.57222°, -57.30666°, Oct. 30, 2009, E.G. Cafofo, deposited in MPEG 015656, PBI_OON 40488.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the tip of the anterior receptaculum, which is rounded, and by the presence of two internal pockets, oblique to the body axis. In addition, the posterior apodeme is highly sclerotized and is easily observed by transparency (figs. 135B, 138B, 142E).

MALE: Unknown.

FEMALE (PBI_OON 40488): Total length 1.33. Habitus as in figure 122A–C.

CEPHALOTHORAX: Carapace yellow. Sternum as long as wide, yellow. Chelicerae, endites, labium yellow. Labium rectangular. LEGS: Yellow. GENITALIA: As in diagnosis, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 135B, 138B, 142E).

DISTRIBUTION: Known from Pará, Brazil (map 25).

OTHER MATERIAL EXAMINED: **BRAZIL: Pará:** Fazenda Treviso, MAFLOPS, -3.15277°, -54.84166°, July 21, 2009, B.J.F. Silva, 1 ♀ (MPEG 015652, PBI_OON 40484).

Orchestina taruma Izquierdo, new species

Figures 119, 134E, 137F, 142C, map 25

TYPES: Female holotype from Brazil: Amazonas: Manaus, Igapó, Tarumã-Mirim (-3.03306°, -60.15750°), July 30, 1979, J. Adis et al., deposited in IBSP 17260, PBI_OON 43325; same data, 1 female paratype deposited in IBSP 17274, PBI_OON 30290.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the genitalia, with an internal transverse sclerotized structure at the midline (probably an apodeme) and internal pockets widely separated, placed almost at the end of the epigastric furrow (figs. 134E, 137F, 142C).

MALE: Unknown.

FEMALE (PBI_OON 43325): CEPHALOTHORAX (fig. 119): Carapace length 0.63. Sternum longer than wide. Labium rectangular. ABDOMEN: Epigastric region weakly sclerotized. LEGS: Yellow. GENITALIA: As in diagnosis, external pockets absent; anterior receptaculum wide at base, anterior tip wide; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 134E, 137F, 142C).

DISTRIBUTION: Known only from the type locality in Brazil (Amazonas, map 25).

OTHER MATERIAL EXAMINED: Same data as holotype, 1 ♀ (IBSP 17273, PBI_OON 30750).

Orchestina retiro Izquierdo, new species

Figures 130A, B, 132A–C, 141A–C, map 26

TYPE: Male holotype from Brazil: Pará: Retiro: AAE Lago Grande, -2.39555°, -55.77750°, Oct. 05, 2008, C. Praxedes, deposited in MPEG 015642, PBI_OON 40483.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be distinguished by the shape of the bulb structures, with short embolus and light, hook-shaped apophysis. Also the copulatory bulb is more oval in lateral view than in other Brazilian species (fig. 141A).

MALE (PBI_OON 40483): Total length 1.00. Habitus as in figure 130A, B. **CEPHALOTHORAX:** Carapace yellow. Sternum as long as wide, yellow. Chelicerae, endites, and labium yellow. Chelicerae anterior face with conical projections. Labium rectangular. **LEGS:** White. Leg spination, metatarsi: IV d0-0-2. **GENITALIA:** Palp proximal segments white, cymbium yellow, bulb pale white, stout, tapering apically, with long, hook-shaped apophysis; embolus short; sperm duct coiled, with many loops (figs. 132A–C, 141A–C).

FEMALE: Unknown.

DISTRIBUTION: Known only from the type locality in Brazil (Pará, map 26).

OTHER MATERIAL EXAMINED: None.

Orchestina divisor Izquierdo, new species

Figures 130C–E, 136A, 139A, 144, map 24

TYPE: Female holotype from Brazil: Acre: Morro Queimado, Parque Nacional da Serra do Divisor (–8.253279°, –73.452701°) (241 m), Nov. 08, 1996, R.S. Vieira, deposited in IBSP 9085, PBI_OON 42232.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the genital morphology characterized by internal pockets extended posteriorly and the tip of the anterior receptaculum nearly M-shaped (figs. 136A, 139A, 144A).

MALE: Unknown.

FEMALE (PBI_OON 42232): Total length 1.3. Habitus as in figure 130C–E. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Epigastric region weakly sclerotized. **GENITALIA:** External pockets absent, internal pockets placed below epigastric fold; anterior receptaculum with

massive lateral projections, anterior apodemes well developed, nearly M-shaped; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 136A, 139A, 144A).

DISTRIBUTION: Known only from the type locality in Brazil (Acre, map 24).

OTHER MATERIAL EXAMINED: None.

Orchestina juruti Izquierdo, new species

Figures 129, 132D–F, 136B, 139B, 141D–F, 144B, map 24

TYPES: Male holotype from Brazil: Pará: Juruti: Barroso, –2.45000°, –56.00194°, Nov. 16, 2007, N.F. Lo Man Hung, deposited in MPEG 018872, PBI_OON 42147; same, Várzea, margem do Rio Amazonas, –2.40917°, –56.43611°, Sep. 18, 2002, A.B. Bonaldo, 1 female paratype deposited in MPEG 18871, PBI_OON 42173.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be distinguished by the presence of short projections near embolus and by the extremely coiled sperm duct (figs. 132D–F, 141D, E). Females can be distinguished by the shape of the anterior receptaculum, with wide base and internal sclerotized plates at both sides of the genitalia (figs. 136B, 139B, 144B).

MALE (PBI_OON 42147): Total length 0.89. Habitus as in figure 129A, B. **CEPHALOTHORAX:** Posterior eye row straight from front. Anterior face of chelicerae with basal conical projections. Labium rectangular. **GENITALIA:** Bulb stout; embolus short, flanked by short projections; sperm duct strongly coiled, with many loops (figs. 132D–F, 141D, E).

FEMALE (PBI_OON 42173): **CEPHALOTHORAX** (fig. 129C, D): Carapace length 0.62; chelicerae anterior face unmodified. **ABDOMEN:** Separated from cephalothorax; epigastric region weakly sclerotized. **LEGS:** Right legs II–IV, left legs I, II absent. **GENITALIA:** As in diagnosis, external, internal pockets absent; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 136B, 139B, 144B).

DISTRIBUTION: Brazil, states of Amazonas and Pará (map 24).

OTHER MATERIAL EXAMINED: **BRAZIL: Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, July 26, 1995, Camilo, 1 ♂ (MPEG 18854, PBI_OON 42171). Same data as holotype, D.F. Candi-ani, 1 ♂ (MPEG 18874, PBI_OON 42168).

***Orchestina platnicki* Izquierdo, new species**

Figures 123, 131G–I, 135C, 142F, map 25

TYPES: Male holotype from Brazil: Mato Grosso: Pantanal do Poconé, Fazenda Retiro Novo, -16.25000°, -56.60000°, Jan. 01, 2004, to Dec. 01, 2005, L. Battirola, deposited in IBSP 68507, PBI_OON 10937; Nossa Senhora do Livramento: Pantanal de Poconé, Pirizal, Fazenda Retiro novo, -16.25000°, -56.60000°, Jan. 01, 2004, to Mar. 01, 2005, L.D. Battirola, 1 male and 1 female paratypes deposited in IBSP 90894, PBI_OON 30765; same data, 1 female paratype deposited in IBSP 68516, PBI_OON 10938. Mato Grosso do Sul: Passo do Lontra, Subregiões Miranda e Abobral, -19.50000°, -56.91666°, July 01, 1998, to Nov. 01, 1999, J. Raizer et al., 1 female paratype deposited in IBSP 92931, PBI_OON 43324. Pará: Novo Progresso: Campo de Provas Brigadeiro Velloso, Serra do Cachimbo, -9.36083°, -55.03361°, Mar. 22, 2004, J. Ricetti, Mar. 18, 2004, D.D. Guimarães, 1 female paratype deposited in MPEG 18887, PBI_OON 42161.

ETYMOLOGY: The specific name is a patronym in honor of Norman Platnick, with whom we shared a field trip to Ecuador in search of oonopids, for his extensive contribution to the knowledge of the group and many other spider families.

DIAGNOSIS: Males resemble those of *O. tzantzana* from Ecuador by the shape of copulatory bulb although in such species the embolus is longer than in *O. platnicki* (fig. 131G–I). Females can be distinguished by the strong development of the anterior apodemes of the anterior receptaculum, and by having lateral projections and internal pockets at both sides of those projections (figs. 135C, 142F).

MALE (PBI_OON 37409): Total length 1.43. Habitus as in figure 123A–C. **CEPHALOTHORAX:** Clypeus slightly sloping forward in lateral view. Sternum as long as wide. Anterior face of chelicerae with conical projections. Labium rectangular. **LEGS:** Yellow; patella plus tibia I longer than carapace. **GENITALIA:** Cymbium yellow; bulb tapering apically; embolus simple, with no additional apophyses; sperm duct highly coiled, with many loops (fig. 131G–I).

FEMALE (PBI_OON 43320): Total length 1.48. **CEPHALOTHORAX:** Carapace orange. Clypeus sloping forward in lateral view. **ABDOMEN:** Dorsum soft portions yellow. **GENITALIA:** External pockets absent, internal pockets small; anterior receptaculum with massive lateral projections, anterior tip with two anterior apodemes, posterior receptaculum present, posterior apodeme formed by entire plate (figs. 135C, 142F).

DISTRIBUTION: Known from Colombia, Brazil, and Argentina (Corrientes province) (map 25).

OTHER MATERIAL EXAMINED: **COLOMBIA: Quindío:** Filandia, Reserva Forestal Bremen, 1851 m, 4.68083333°, -75.634916°, Feb. 20, 2005, M.C. Pimienta, canopy fogging, 1 ♀ (IAvH, PBI_OON 42767). **BRAZIL: Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, June 27, 1995, J.C.H. Guerrero, 2 ♀ (MPEG 19005, PBI_OON 42175). **Para:** Novo Progresso: Campo de Provas Brigadeiro Velloso, Serra do Cachimbo, -9.36083°, -55.03361°, Mar. 22, 2004, J. Ricetti, 1 ♀ (MPEG 18891, PBI_OON 42160). **Rondonia:** Guajara-Mirim, -10.32390°, -64.56415°, July 01, 2000, M. Carvalho, 1 ♀ (IBSP 80587, PBI_OON 30390); same data, 1 ♂ (IBSP 80584, PBI_OON 30753). **Mato Grosso:** Nossa Senhora do Livramento: Pantanal de Poconé, Pirizal, Fazenda Retiro novo, -16.25000°, -56.60000°, Jan. 01, 2004, to Mar. 01, 2005, L.D. Battirola, 1 ♀ (IBSP 90885, PBI_OON 30783); same data, 2 ♂ (IBSP 90893, PBI_OON 42360); same data, 1 ♂ (IBSP 90892, PBI_OON 42361); same data, 1 ♂ (IBSP 90895, PBI_OON 42362); same data, 1 ♀ (IBSP 90891, PBI_OON 42363); same data, 1 ♂ (IBSP 97227, PBI_OON 42364); same data, 1 ♂ (IBSP 68535, PBI_OON 30270); 1 ♀ (IBSP 68535, PBI_OON 30270); same data, 2 ♀ (IBSP 68518, PBI_OON 30279); same data, 1 ♂ (IBSP 68514, PBI_OON 30280); same data, 1 ♀ (IBSP 90889, PBI_OON 43320); same data, 1 ♀ (IBSP 68508, PBI_OON 43322); same data,

3♂, 3♀ (IBSP 68517, PBI_OON 30369); same data, 1♂ (IBSP 68503, PBI_OON 30763); same data, 1♀ (IBSP 68529, PBI_OON 30766); same data, 1♀ (IBSP 68527, PBI_OON 30770); same data, 1♀ (IBSP 68525, PBI_OON 42219), same, Cambarazal: *Vochysia divergens* Pohl, Jan. 01, 2004, to Mar. 01, 2005, L.D. Battirola, 1♂ (IBSP 90890, PBI_OON 42666); same data, Jan. 01, 2004, to Mar. 01, 2005, L.D. Battirola, 1♂ (IBSP 90888, PBI_OON 42751); same data, 1♂ (IBSP 90886, PBI_OON 43321). **Mato Grosso do Sul:** Corumba: Passo do Lontra, -19.00944°, -57.65305°, Apr. 01, 1998, J. Raizer et al., 1♀ (IBSP 21759, PBI_OON 30375); same data, 1♀ (IBSP 21800, PBI_OON 30758); Passo do Lontra, Subregiões Miranda e Abobral, -19.50000°, -56.91666°, July 01, 1998, to Nov. 01, 1999, J. Raizer et al., 1♂ (IBSP 97484, PBI_OON 30289); same data, 1♂, 1♀ (IBSP 97473, PBI_OON 30394); same data, 1♀ (IBSP 97470, PBI_OON 30395); same data, 2♂ (IBSP 93026, PBI_OON 30397); same data, 1♂ (IBSP 97483, PBI_OON 30407); same data, 1♀ (IBSP 93045, PBI_OON 30756); same data, 1♂ (IBSP 97479, PBI_OON 30782); Passo do Lontra, Subregiões Miranda e Abobral, -19.50000°, -56.91666°, July 01, 1998, to Nov. 01, 1999, J. Raizer et al., 1♂ (IBSP 97487, PBI_OON 30784); same data, 1♂ (IBSP 97482, PBI_OON 42231); same data, 1♀ (IBSP 90137, PBI_OON 42641); same data, 1♀ (IBSP 97480, PBI_OON 42660); same data, 1♂ (IBSP 93001, PBI_OON 42669); same data, 1♀ (IBSP 97475, PBI_OON 42670); same data, 1♀ (IBSP 97477, PBI_OON 42671); same data, 1♀ (IBSP 97471, PBI_OON 42672); same data, 1♀ (IBSP 97474, PBI_OON 42673); same data, 1♀ (IBSP 93086, PBI_OON 42674); 1♂ (IBSP 93086, PBI_OON 42674); same data, 2♀ (IBSP 97469, PBI_OON 42675); same data, 1♀ (IBSP 92917, PBI_OON 42676); same data, 1♀ (IBSP 97460, PBI_OON 42677); same data, 1♀ (IBSP 92930, PBI_OON 42678); same data, 1♀ (IBSP 97481, PBI_OON 42679); same data, 1♂ (IBSP 97486, PBI_OON 42680); same data, 2♀ (IBSP 97478, PBI_OON 42681); same data, 1♂ (IBSP 97485, PBI_OON 42682); same data, 1♀ (IBSP 90129, PBI_OON 42683). Anaurilandia (-22.187778°, -52.717778°), Mar. 12, 2001, to Mar. 19, 2001, F.S. Cunha and C.A.R. Souza, 2♀ (IBSP 38903, PBI_OON 30771). **São Paulo:** Primavera: Usina Hidrelétrica Sérgio Motta (-22.475278°, -52.958333°), Jan. 01, 2000, to Feb. 01, 2000, Equipe Biota, 1♀ (IBSP 30182, PBI_OON 30405). **ARGENTINA:** **Corrientes:** Mburucuyá, P.N. Mburucuyá, Sendero Yatay, beating, -28.02588°, -58.04108, 82 m, May. 27 to May. 30, 2011, G. Rubio, M. Izquierdo, L. Piacentini 1♂ (MACN 28398, PBI_OON 42193).

Orchestina iemanja Izquierdo, new species

Figures 122D–F, 135D, 138C, 143A, map 24

TYPES: Female holotype from Brazil: Bahia: Lafaiete Coutinho: Lafaiete Coutinho (-13.65583°, -40.21277°), pitfall, Aug. 01, 2006, to June 01, 2007, J. Romão, deposited in IBSP 92707, PBI_OON 30278; Central, -11.01666°, -41.78333°, July 15, 2002, to July 31, 2002, E. Ramos, F. Cunha, 1 female paratype deposited in IBSP 67401, PBI_OON 30269; same data, 1 female paratype deposited in IBSP 67386, PBI_OON 30752.

ETYMOLOGY: A noun in apposition; Iemanjá (or Jemanjá, Yemanyá) is a female Orishá, originally of the Yoruba pantheon of Nigeria, whose veneration was brought to America during the period of the slave trade along with other religious customs. She is revered in Brazil as a sea deity.

DIAGNOSIS: Females can be distinguished by the epigastric region with two wide external pockets and sclerotized patches on the median region and an anterior receptaculum with well-developed anterior apodemes and internal lumen (figs. 135D, 138C, 143A).

MALE: Unknown.

FEMALE (PBI_OON 30278): Total length 1.40. Habitus as in figure 122D–F. **CEPHALOTHORAX:** Labium rectangular. **LEGS:** Patella plus tibia I shorter than carapace. **GENITALIA:** As in diagnosis, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 135D, 138C, 143A).

DISTRIBUTION: Known only from Bahía and Sergipe, Brazil (map 24).

OTHER MATERIAL EXAMINED: **BRAZIL:** **Sergipe:** Fazenda Esplanada, Usina Hidroelétrica de Xingó (-9.62089°, -37.7910°), Mar. 4, 2000, to Mar. 29, 2001, L. Ianuzzi et al., 1♀ (IBSP 88131, PBI_OON 42389).

Orchestina bonaldoi Izquierdo, new species

Figures 124A–C, 135E, 138D, 143B, map 23

TYPE: Female holotype from Brazil: Bahía: Salvador, Jardim Botânico (-12.97083°, -38.51083°),

Nov. 01, 2002, to Apr. 01, 2006, A.O. Alves, deposited in IBSP 3358, PBI_OON 30778.

ETYMOLOGY: The specific name is a patronym in honor of the Brazilian arachnologist Alexadre Bonaldo with whom we are shared a field trip to Ecuador collecting oonopids and other spiders.

DIAGNOSIS: Females can be distinguished by the shape of the internal genitalia, with anterior receptaculum widened anteriorly and anterior apodemes long, curved posteriorly, and internal pockets well developed and oriented parallel to the body axis (figs. 135E, 138E, 143B).

MALE: Unknown.

FEMALE (PBI_OON 30778): Total length 1.32. Habitus as in figure 124A–C. CEPHALOTHORAX: Labium rectangular. LEGS: Yellow. GENITALIA: As in diagnosis, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 135E, 138E, 143B).

DISTRIBUTION: Known from Amazonas and Bahía, Brazil (map 23).

OTHER MATERIAL EXAMINED: **BRAZIL:** **Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, June 27, 1995, J.C.H. Guerrero, 2 ♀ (MPEG 19005, PBI_OON 42175); same data, 1 ♀ (MPEG, PBI_OON 51115). Presidente Figueiredo: UHE Balbina, -1.78333°, -59.26666°, Sep. 27, 2006, R. Saturnino, 1 ♀ (MPEG 010659, PBI_OON 40475). **Bahia:** Parque Metropolitano de Pituáçu (-12.95750°, -38.42056°), Jan. 19, 2008, to Feb. 26, 2008, D.U. Sena et al., 1 ♀ (IBSP 126008, PBI_OON 42224).

Orchestina rapaz Izquierdo, new species

Figures 124D–F, 135F, 138E, map 25

TYPES: Female from Brazil: Alagoas: Murici: Estação Ecológica de Murici, 194 m, -9.25000°, -35.83333°, Sep. 13, 2003, to Sep. 20, 2003, Equipe Biota, deposited in IBSP 68115, PBI_OON 30285; same data, 1 female paratype deposited in IBSP 68114, PBI_OON 30286.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: Females can be distinguished by the bifurcated tip of the anterior receptaculum and by the strongly sclerotized posterior apodeme viewed as two oblique bars (figs. 135F, 138E).

MALE: Unknown.

FEMALE (PBI_OON 30285): Total length 1.15. Habitus as in figure 124D–F. CEPHALOTHORAX: Labium rectangular. LEGS: Leg spination, metatarsi: III d0-0-2; r0-0-1. GENITALIA: As in diagnosis, external pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 135F, 138E).

DISTRIBUTION: Known from the state of Alagoas, Brazil (map 25).

OTHER MATERIAL EXAMINED: None.

Orchestina itapety Izquierdo, new species

Figures 125A–C, 136C, 138F, map 24

TYPE: Female holotype from Brazil: São Paulo: Mogi das Cruzes: Parque Natural Municipal da Serra do Itapety (-23.47048°, -46.15618°), Oct. 13, 2003, to Oct. 19, 2003, Equipe Biota, deposited in IBSP 66824, PBI_OON 42220.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females resemble those of *O. catarina* and *O. saudade* by the presence of external pockets near median area but can be distinguished by having the pockets closer and larger than in the other species (figs. 136C, 138F).

MALE: Unknown.

FEMALE (PBI_OON 42220): Total length 1.38. Habitus as in figure 125A–C. CEPHALOTHORAX: Labium rectangular. GENITALIA: As in diagnosis, internal pockets absent; anterior receptaculum without anterior apodemes, apparently without lumen; posterior receptaculum apparently absent, posterior apodeme formed by entire plate (figs. 136C, 138F).

DISTRIBUTION: Known only from the type locality in Brazil (São Paulo, map 24).

OTHER MATERIAL EXAMINED: None.

Orchestina catarina Izquierdo, new species

Figures 125D–F, 126, 133, 136D, 139C, 140B, D, 143C, map 23

TYPES: Male from Brazil: Santa Catarina: Paulo Lopes: Parque Estadual, -27.91666°,

-48.70000°, Jan. 10, 2003, to Jan. 20, 2003, Equipe Biota, deposited in IBSP 67309, PBI_OON 30754; same data, 1 female paratype deposited in IBSP 67309, PBI_OON 30754; São Paulo: São Paulo: Reserva CUASO, USP, 784 m (-23.56583°, -46.73027°), Aug. 04, 1999, R.P. Indicatti, 1 female paratype deposited in IBSP 30035, PBI_OON 30292; São Paulo: Ilhabela: Parque Estadual de Ilhabela (-23.84277°, -45.36083°), Oct. 09, 2001, to Oct. 15, 2001, Equipe Biota, 1 female paratype deposited in IBSP 67332, PBI_OON 30281; Rio de Janeiro: Volta Redonda: Floresta da Cicuta, 445 m (-22.52305°, -44.10416°), June 11, 2001, to June 18, 2001, Equipe Biota, 1 female paratype deposited in IBSP 67238, PBI_OON 30272.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be distinguished by long chelicerae, short embolus, and a short, curved apophysis covered by small peaks (figs. 133, 140B, D). Females are similar to those of *O. itapety* and *O. saudade* but can be distinguished by the widely separated external pockets (figs. 136D, 143C).

MALE (PBI_OON 30754): Total length 1.28. Habitus as in figure 126A–C. CEPHALOTHORAX (fig. 126D, E): Carapace orange, clypeus sinuous in front view. Sternum as long as wide. Chelicerae long, anterior face with small basal conical projections. Labium rectangular. ABDOMEN: Dorsum soft portions white, round. LEGS: Yellow; patella plus tibia I shorter than carapace. GENITALIA: Bulb with short apophysis with small peaks on its surface; embolus short; sperm duct slightly coiled (figs. 133, 140B, D).

FEMALE (PBI_OON 30754): Total length 1.37. Habitus as in figure 125D–F. CEPHALOTHORAX: Carapace pale orange. ABDOMEN: Ovoid. GENITALIA: As in diagnosis, internal pockets absent, anterior receptaculum small, widened anteriorly; posterior receptaculum small, posterior apodeme formed by entire plate (figs. 136D, 143C).

DISTRIBUTION: São Paulo, Rio de Janeiro, and Santa Catarina, Brazil (map 23).

OTHER MATERIAL EXAMINED: **BRAZIL:** **Rio de Janeiro:** Ilha Grande: Ensenada das Palmas, 12 m (-23.15805°, -44.13972°), Jan. 16, 1996, to Jan. 22, 1996, M. Ramírez, 1 ♀ (MACN 28685, PBI_OON 14874). **São Paulo:** Ilhabela: Parque Estadual de Ilhabela, -23.84277°, -45.36083°, Oct. 09, 2001, to Oct. 15, 2001, Equipe Biota, 1 ♀ (IBSP 67328, PBI_OON 15095); Salesópolis, Barragem do Rio Paraitinga, Jun. 11, 2002, Eq. IBSP, batedor, 1 ♀ (IBSP 147212, PBI_OON 42640). **Santa Catarina:** Blumenau: Parque Natural Municipal Nascentes do Garcia, -27.03916°, -49.06888°, Jan. 21, 2003, to Jan. 28, 2003, Equipe Biota, 1 ♂ (IBSP 66808, PBI_OON 42233). Same data as holotype, 1 ♀ (IBSP 67306, PBI_OON 42235); same data, 1 ♀ (IBSP, PBI_OON 42248). **Rio Grande do Sul:** São Francisco de Paula: Floresta Nacional de São Francisco de Paula, -29.38333°, -50.38333°, Jan. 01, 2003, to Jan. 01, 2004, R. Baldissere, 1 ♀ (IBSP, PBI_OON 42418).

Orchestina leon Izquierdo, new species

Figures 127D–F, 136F, 143E, map 24

TYPES: Female holotype from Brazil: Rio Grande do Sul: Rio Grande: Ilha do Leonídio (1 m) (-32.04953°, -52.21631°), Sep. 01, 2007, Felipe A. Pena dos Santos leg., deposited in MCTP 21875, PBI_OON 43345; same data, 1 female paratype deposited in MCTP, PBI_OON 50026.

ETYMOLOGY: The specific name is a noun in apposition, as an abbreviated form of the type locality.

DIAGNOSIS: Females can easily be distinguished by the shape of the genitalia, with anterior receptaculum with very long anterior apodemes and a ventral, globular, less sclerotized region at the base with a pair of lateral plates (figs. 136F, 143E).

MALE: Unknown.

FEMALE (PBI_OON 43345): Total length 1.46. Habitus as in figure 132D–F. CEPHALOTHORAX: Sternum as long as wide. Labium elongated hexagon. LEGS: Patella plus tibia I shorter than carapace. Leg spination, metatarsi: III d0-0-1; r0-0-1; IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Besides diagnostic characters, external, internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 136F, 143E).

DISTRIBUTION: Known only from Rio Grande do Sul, Brazil (map 24).

OTHER MATERIAL EXAMINED: **BRAZIL: Rio Grande do Sul:** Rio Grande: Reserva Biológica do Lami (6m) (-30.23611°, -51.10139°), June 15, 2000, E.L.C. da Silva, 1 ♀ (IBSP 48857, PBI_OON 42245).

Orchestina saudade Izquierdo, new species

Figures 127A–C, 136E, 139D, 143D, map 27

TYPE: Female from Brazil: Rio Grande do Sul: São Francisco de Paula: Potreiro Velho, -29.73333°, -50.40000°, June 01, 2002, Luis A. Bertoncello et al. leg., deposited in MCTP 24655, PBI_OON 43353; same data, 1 female paratype deposited in MCTP 24630, PBI_OON 43355.

ETYMOLOGY: A noun in apposition; *saudade* is a word commonly used in the Brazilian music and literature to describe a bittersweet nostalgic feeling of both loss and fond memory of something or someone. We name this species *saudade* inspired by the song “chega de saudade” by the Brazilian musicians Vinicius da Moraes and Antonio Carlos Jobim.

DIAGNOSIS: Females resemble those of *O. catarina* and *O. itapety* by having external pockets but can be distinguished by the smaller size of the pockets and the more developed anterior receptaculum (figs. 136E, 139D, 143D).

MALE: Unknown.

FEMALE (PBI_OON 43353): Total length 1.36. Habitus as in figure 127A–C. **ABDOMEN:** Epigastric region weakly sclerotized. **GENITALIA:** As in diagnosis; internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate.

DISTRIBUTION: Known only from the type locality in Brazil (Rio Grande do Sul, map 25).

OTHER MATERIAL EXAMINED: None.

Orchestina sarava Izquierdo, new species

Figures 128, 136G, 143F, map 27

TYPE: Female from Brazil: Rio Grande do Sul: São Francisco de Paula: Potreiro Velho, -29.73333°,

-50.40000°, June 01, 2002, Luis A. Bertoncello et al. leg., deposited in MCTP 24652, PBI_OON 43375.

ETYMOLOGY: A noun in apposition *saravá* is a Brazilian term that means something like “bless you” and is used by many people especially in Bahia to wish someone good fortune.

DIAGNOSIS: Females can be distinguished by the widely separated external pockets and the shape of the anterior receptaculum, which is wide throughout almost all its length (figs. 136G, 143F).

MALE: Unknown.

FEMALE (PBI_OON 43375): Total length 1.38. Habitus as in figure 128. **LEGS:** Patella plus tibia I longer than carapace. **GENITALIA:** As in diagnosis, internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 136G, 143F).

DISTRIBUTION: Known from southern Brazil, in the states of Rio Grande do Sul and São Paulo (map 25).

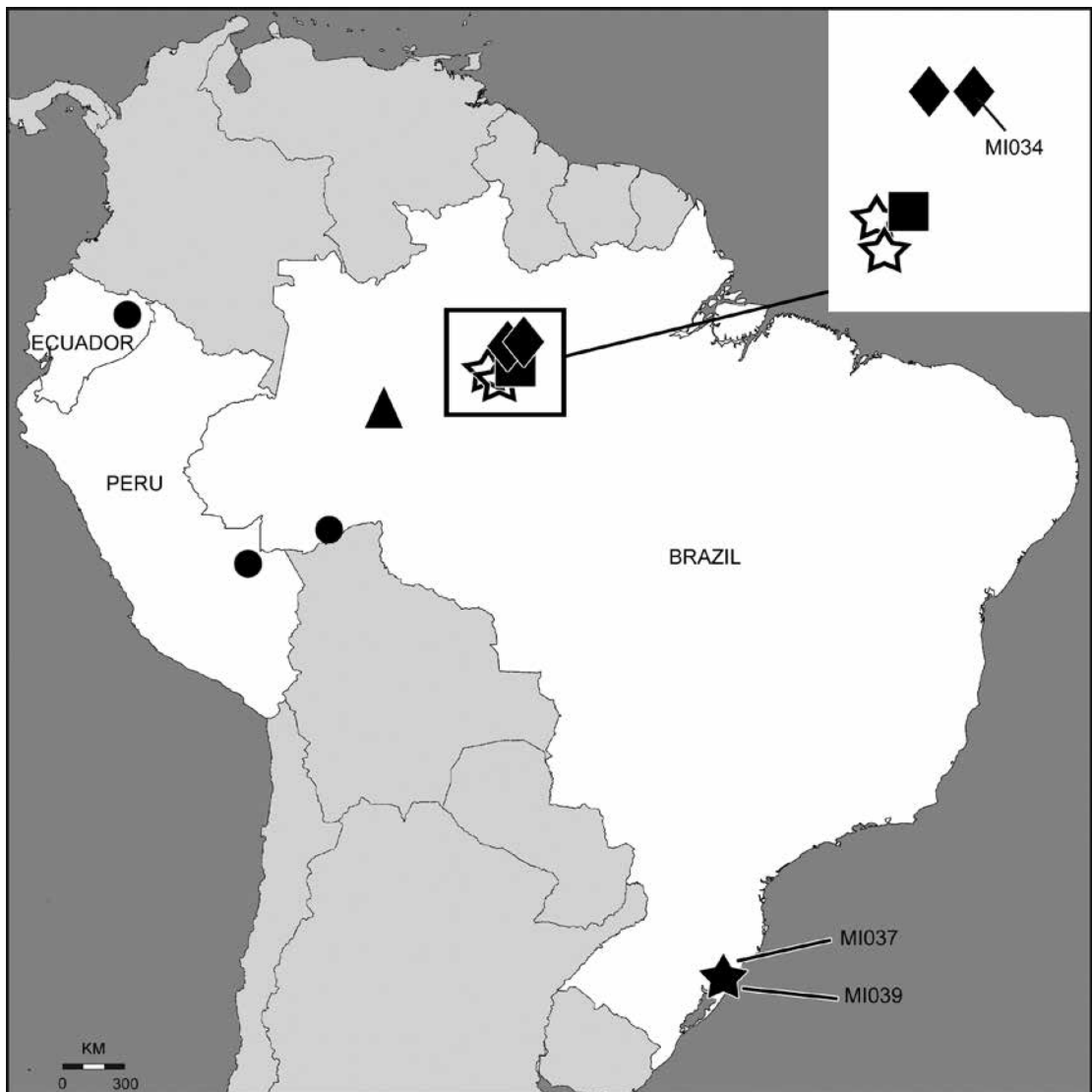
OTHER MATERIAL EXAMINED: **BRAZIL: Rio Grande do Sul:** same data as holotype, Oct. 01, 2001, Luis A. Bertoncello et al. leg., 1 ♀ (MCTP 24509, PBI_OON 43389); same data, Oct., 2001 (MCTP 24637, PBI_OON 43230). São Paulo: Cotia, Reserva Estadual do Morro Grande (Etapa III), -23.65000°, -47.01667°, Mar., 7–27, 2003, Equipe Biota (IBSP 67343, PBI_OON 30368).

Orchestina moyuchi Izquierdo, new species

Figures 145, 147A, C, 148C, D, 197A, map 28

TYPE: Female holotype from Bolivia: Departamento de La Paz: Provincia de Sud Yungas, Municipio de Chulumani: Paraíso, beating vegetation in *yungas* forest, 2255 m, Oct. -16.39488°, -067.55847°, 13, 2011, to Oct. 18, 2011, M. Izquierdo, deposited in CBFC, PBI_OON 42279; same data, 1 female paratype deposited in MACN 28177, PBI_OON 42253; same data, 1 female paratype deposited in MACN 28178, PBI_OON 42280.

ETYMOLOGY: The specific name is a combination of the first letters of three native groups of Bolivia (Moxeño, Yuracaré, and Chiriguano) and is a tribute to all the ethnicities of that country.



MAP 27. Distribution map of *Orchestina* morphospecies in Brazil, Peru, and Ecuador: MI021 (circles), MI032 (triangle), MI033 (diamonds), MI035 (square), MI037 and MI039 (black star), and MI040 (white stars). Note the sympatry between MI033-MI034 and MI037-MI039.

DIAGNOSIS: Females can easily be distinguished by the shape of the internal genitalia with massive anterior receptaculum with lateral projections, two lateral sclerotized plates (asterisk in fig. 197A), long anterior apodemes, and by the presence of widely separated internal pockets (figs. 147A, C, 197A).

MALE: Unknown.

FEMALE (PBI_OON 42279): Total length 1.62. Habitus as in figure 145. **CEPHALOTHORAX:** Sternum longer than wide, pale orange. Labium rectangular. **GENITALIA:** As in diagnosis, external pockets absent; anterior receptaculum with massive lateral projections and inconspicuous lumen, two lateral sclerotized structures and two long anterior apodemes; posterior receptaculum



MAP 28. Distribution map of *Orchestina* species in Bolivia, Brazil, and Argentina: *O. grismadoi* (triangle), *O. moyuchi* (square), and *O. ucumar* (circles).

absent, posterior apodeme formed by entire plate (figs. 147A, C, 197A).

DISTRIBUTION: Known only from the type locality in Bolivia (Departamento de La Paz, map 28).

OTHER MATERIAL EXAMINED: None.

***Orchestina grismadoi* Izquierdo, new species**

Figures 146, 147B, D, 148B, 197B, map 28

TYPES: Female holotype from Bolivia: Departamento de Santa Cruz: Provincia de Guarayos: Concesión Forestal La Chonta, 330 m, -15.71166°, -62.77222°, Oct. 26, 2010, to Oct. 30, 2010, Grismado, C., Vacaflores, M.R. and Pérez, M., deposited in CBFC, PBI_OON 43299; same data, 1 female paratype deposited in MACN 29051, PBI_OON 43298; same data, 1 female paratype deposited in MACN 29052, PBI_OON 43300.

ETYMOLOGY: The name is a patronym in honor of Cristian Grismado, colleague, friend, and collector of the type specimen, and with whom we have discussed oonopid diversity and morphology and shared many field trips.

DIAGNOSIS: The female of this species can be separated from others by the shape of the ante-

rior receptaculum, which is long and heart shaped at the tip, with oval structures at the base and massive sclerotized plates laterally (figs. 147B, D, 197B).

MALE: Unknown.

FEMALE (PBI_OON 43299): Total length 1.45. Habitus as in figure 146. **CEPHALOTHORAX:** Labium rectangular. **LEGS:** Patella plus tibia I shorter than carapace. Leg spination, metatarsi: III r0-0-1; IV p0-0-1; r0-0-1. **GENITALIA:** As in diagnosis, external, internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 147B, D, 197B).

DISTRIBUTION: Known only from the type locality in Bolivia (Departamento de Santa Cruz, map 28).

OTHER MATERIAL EXAMINED: None.

***Orchestina pandeazucar* Izquierdo, new species**

Figures 149–151, 161C, D, 164C, 168A–C, 170B, 172B, 173A, 174A, 175A, 178B, map 29

TYPES: Male holotype from Chile: Región de Atacama (III): Provincia de Chañaral: Aguada Las Chilcas, P.N. Pan de Azucar, 32.5 km (por aire) NNE Chañaral, flowering desert, 439 m,

-26.05722°, -70.54028° (MJR Loc. 43), Oct. 26, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., deposited in MNSC, PBI_OON 42184; same data, 1 male, 6 female paratypes deposited in MNSC, PBI_OON 51120. Provincia de Huasco: P.N. Llanos del Challe, 12.5 km (por aire) SE Carrizal Bajo camino a Canto de Agua cerca de cabaña CONAF, 133 m, -28.16083°, -71.05556° (MJR Loc. 35), Oct. 24, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 17 ♀ paratypes deposited in MACN 28637, PBI_OON 42185. Región de Antofagasta (II): 8.1 km NNW Paposo, 60 km (por aire) N. Taltal, flowering desert, 114 m, -24.93944°, -70.49250° (MJR Loc. 45), Oct. 27, 2011, to Oct. 29, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 6 male, 35 female paratypes deposited in MACN 28395, PBI_OON 42186.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *O. cachai* by having one long apophysis on the copulatory bulb but can be distinguished by having projections on the endites (fig. 164C) absent in *O. cachai* (fig. 164A), and by the more robust embolus and bulb apophysis (figs. 151E, F, 168A–C, 173A, 174A). Females resemble those of other Chilean species in having external pockets and paired folds on the epigastric area but can be distinguished by the shape of the anterior receptaculum, which is rounded at the tip, with short anterior apodemes and a well-developed lumen with two chambers (figs. 161C, D, 170B, 172B, 175A).

MALE (PBI_OON 42184): Total length 1.29. Habitus as in figure 149A, B. CEPHALOTHORAX: Clypeus as in figure 150B, slightly sloping forward in lateral view. Eyes as in figure 150A, B. Sternum as in figures 149C, 150C. Labium rounded, triangular. Endites parallel, anteromedian tip with one short, strong, toothlike projection (figs. 149C, 150D). ABDOMEN: Round, pale white with purple bands on sides and purple spot on ventral middle. LEGS: Metatarsi I, III with modified setae on prolateral margin (fig. 151C, D); tarsal organ and claws as in figure 151A–B. GENITALIA: Bulb tapering apically, base of embolus with one strong, long, sinuous

apophysis; embolus long, sperm duct slightly coiled (figs. 151E, F, 168A–C, 173A, 174A).

FEMALE (PBI_OON 42184): Total length 1.50. Habitus as in figure 149D, E. CEPHALOTHORAX: Sternum as long as wide. ABDOMEN: Ovoid, dorsum soft portions dark purple, without color pattern. GENITALIA: Epigastric area with two weakly sclerotized paired folds at both sides of the median region, two external pockets widely separated, placed slightly above epigastric furrow, internal pockets absent; anterior receptaculum rounded at tip, with well-developed lumen consisting of two chambers, anterior apodemes short, almost inconspicuous; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 161C, D, 170B, 172B, 175A).

DISTRIBUTION: Known from Antofagasta (near Paposo) and Atacama (Chañaral and Huasco Provinces), Chile (fig. 178B, map 29).

OTHER MATERIAL EXAMINED: **CHILE: Región de Antofagasta (II):** 8.1 km NNW Paposo, 60 km (por aire) N. Taltal, flowering desert, 114 m, -24.93944°, -70.49250° (MJR Loc. 45), Oct. 27, 2011, to Oct. 29, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 1 ♂, 1 ♀ (MACN 28399, PBI_OON 42191); same data, 2 ♀ (MACN 28400, PBI_OON 42217); same data, 1 ♀ (MACN 30352, PBI_OON 51124); Las Lomitas, P.N. Pan de Azúcar, 26.7 km (por aire) N Cañaral, 823 m, -26.01000°, -70.60611° (MJR Loc. 42), Oct. 26, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 1 ♀ (MACN 28396, PBI_OON 42187). **Región de Atacama (III):** same data as holotype, 1 ♀ (MACN 34524, PBI_OON 50120); same data, 1 ♀ (MACN 34525, PBI_OON 50106); same data, 2 ♀ (MACN 34526, PBI_OON 50091); same data, 1 ♀ (MACN 34527, PBI_OON 50090); same data, 1 ♀ (MACN 34528, PBI_OON 50089); same data, 1 ♂ (MACN 34530, PBI_OON 50088); Provincia de Chañaral: Quebrada Agua Salada, P. Nac. Pan de Azúcar, 22.5 km (por aire) N Chañaral, 104 m, -26.13000°, -70.61472° (MJR Loc. 44), general collecting in desert with *Copiapoa* and *Nolana*, Oct. 26, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 1 ♀ (MACN 29013, PBI_OON 42763); same data, 1 ♀ (MACN 34530, PBI_OON 50087). Provincia de Huasco: P.N. Llanos del Challe, flowering desert, 133 m, -28.16083°, -71.05555° (MJR Loc. 35), Oct. 24, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 1 ♀ (MACN 28639, PBI_OON 42179); same data, 1 ♂ (MACN 28636, PBI_OON 42180); same data, 2 ♂ 9 ♀ (MACN 28397, PBI_OON 42181); same data, 1 ♀ (MACN 28638, PBI_OON 42189); same data, 1 ♂ (MACN 28640, PBI_OON 42190).

Orchestina caleta Izquierdo, new species

Figures 152, 153, 165A–C, 170C, 172C, 173I, 174H, 175B, 177A–C, 178C, map 29

TYPES: Male holotype from Chile: Región de Atacama (III): Provincia de Huasco: Caleta Chañaral de Aceituno, 89.9 km (por aire) SW Val-lenar, rocky shore with *Nolana* sp., 10 m, -29.07194°, -71.48750°, Oct. 30, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., deposited in MNSC, PBI_OON 42182; same data, 1 female paratype deposited in MACN 30604, PBI_OON 50045; same data, 1 female paratype deposited in MNSC, PBI_OON 50046.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *O. curico*, *O. granizo*, *O. jaiba*, and *O. pizarroi* in having a simple copulatory bulb, with no additional apophysis and a long embolus, but can be distinguished by the stronger embolus with slightly different sperm duct course (figs. 165A–C, 173I, 174H). Females resemble those of other Chilean species by the general shape of the anterior receptaculum but can be distinguished by the absence of external pockets and the shape of the anterior receptaculum with short, strong anterior apodemes in a straight transverse line (figs. 170C, 172C, 175B).

MALE (PBI_OON_00042182): Total length 1.17. Habitus as in figure 152A–C. CEPHALOTHORAX: Clypeus slightly sloping forward. Labium rectangular. Endites with one short, toothlike projection. ABDOMEN: Dorsum soft portions pale orange, round. GENITALIA: Bulb tapering apically; embolus strong, long; sperm duct slightly coiled (figs. 165A–C, 173I, 174H).

FEMALE (PBI_OON 42182): Total length 1.52. Habitus as in figure 152D–F. CEPHALOTHORAX: Carapace anteriorly narrowed to 0.49× its maximum width or less. ABDOMEN: Ovoid. GENITALIA: Epigastric region without external pockets, with two weakly sclerotized, paired folds at both sides of median region, internal pockets absent; anterior receptaculum with well-developed lumen formed by one large chamber;

posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 170C, 172C, 175B).

DISTRIBUTION: Known from Atacama (Huasco Province) and Coquimbo (Limarí and Choapa Provinces), Chile (figs. 177A–C, 178C, map 29).

OTHER MATERIAL EXAMINED: **CHILE: Región de Atacama (III):** same data as holotype, 4 ♀ (MACN 28392, PBI_OON 50044). **Región de Coquimbo (IV):** Provincia de Limarí: 24 km S Socos Rt. 5, km., 360 m, -30.88333°, -71.61666°, Nov. 09, 1993, Platinick, Catley, Ramírez, and Allen, 1 ♀ (AMNH, PBI_OON 1943). Provincia de Choapa: costa al S de Quebrada de Quereo, rocky shore with succulent plants, 4 m, -31.93556°, -71.51556°, Feb. 21, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 ♂ (MACN 28647, PBI_OON 42206); same data, 1 ♂, 14 juveniles, sex unknown (MACN 28648, PBI_OON 42207); costa en Quebrada de Quereo, 2.2 km S Los Vilos, rocky shore with *Nolana* sp., 1 m, -31.93250°, -71.51388°, Nov. 02, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 1 ♀ (MACN 28393, PBI_OON 42183); Los Vilos, -31.91667°, -71.51667°, Aug. 25, 1966, E. Schlinger, M. Irwin, 1 ♂ (AMNH, PBI_OON 51090).

Orchestina totoralillo Izquierdo, new species

Figures 170D, 172D, 175C, 178A, map 29

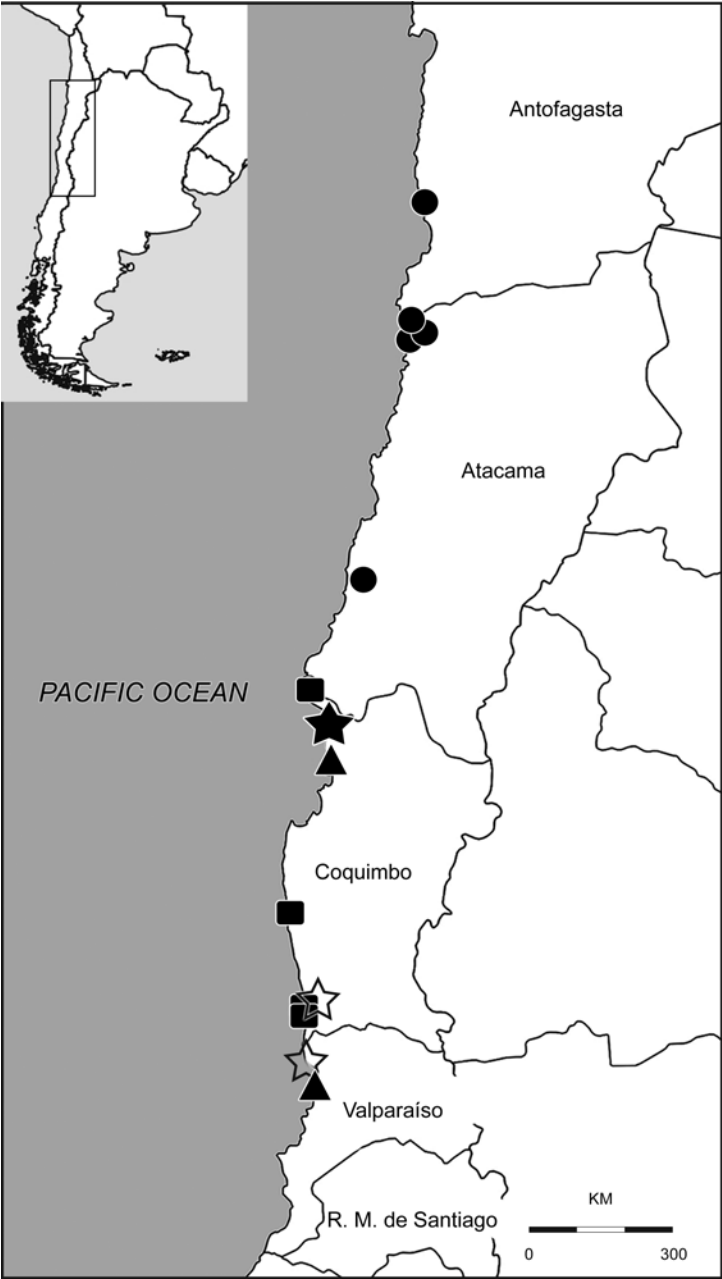
TYPE: Female holotype from Chile: Región de Coquimbo (IV): Provincia de Elqui: Totoralillo Norte, in shrubs, elev. 199 m, -29.59250°, -71.26138°, July 13, 2009, M. Izquierdo, A. Ojanguren, J. Pizarro, F. Alfaro, deposited in MNSC, PBI_OON 30844.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females resemble those of *O. pandeazucar* from which they can be distinguished by the shape of the lumen of the anterior receptaculum, with two wide chambers; the anterior apodemes slightly directed anteriorly; and the different position of the external pockets, near level of the anterior receptaculum tip (figs. 170D, 172D, 175C).

MALE: Unknown.

FEMALE (PBI_OON 30844): Total length 1.05. CEPHALOTHORAX: Carapace yellow. Sternum



MAP 29. Distribution map of *Orchestina* species in northern Chile: *O. caleta* (squares), *O. molles* (white stars), *O. pandeazucar* (circles), *O. pizarroi* (triangles), and *O. totoralillo* (black star).

yellow. Chelicerae, endites, labium yellow. Labium rectangular. ABDOMEN: Dorsum with bands of gray pigment (purple in fresh specimens). LEGS: Yellow. GENITALIA: Epigastric region with external pockets placed almost at level of anterior apodemes, with two weakly sclerotized epigastric ridges at both sides of median field, internal pockets absent; anterior receptaculum rounded at tip with anterior apodemes directed anteriorly; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 170D, 172D, 175C).

DISTRIBUTION: known only from the type locality in Chile (Elqui) (fig. 178A, map 29).

OTHER MATERIAL EXAMINED: None.

***Orchestina pizarroi* Izquierdo, new species**

Figures 154, 165D–F, 170E, 172E, 173C, 174I, 175D, map 29

TYPES: Male holotype, female paratype and one juvenile from Chile: Región de Valparaíso (V): Provincia de Valparaíso, Quebrada El Tigre 2.5 km E Zapallar, 357 m, -32.55138°, -71.43277°, Feb. 12, 2011, M. Ramírez, E. Soto, J. Pizarro, deposited in MNSC, PBI_OON 42238; same data, 1 female paratype deposited in MACN 28745, PBI_OON 42241; same data, 2 female paratypes deposited in MACN 28645, PBI_OON 42226. Región de Coquimbo (IV): Provincia de Elqui: Cuesta Porotitos, N La Serena, xerophytic shrub, 156 m, -29.70805°, -71.30694° (MJR Loc. 31), Oct. 23, 2011, M.J. Ramírez, A. Ojanguren, J. Pizarro et al., 3 female paratypes deposited in MACN 28629, PBI_OON 42237.

ETYMOLOGY: This species is dedicated to Jaime Pizarro of the Universidad de La Serena, Chile, one of the collectors of the type specimens, for his constant support and friendship during our field trips to Chile.

DIAGNOSIS: Males can easily be distinguished by the presence of subtle modifications on the embolus, which has a prolateral laminar projection and a serrated final section just below the tip (figs. 165D–F, 173C, 174I). Females can be dis-

tinguished by the shape of the genitalia with the external pockets placed far from each other and near the end of the sclerotized margin of the epigastric area and a basal, slightly sclerotized, additional receptaculum (figs. 170E, 172E).

MALE (PBI_OON 42238): Total length 1.16. Habitus as in figure 154A–C. CEPHALOTHORAX: Carapace orange. Labium rectangular. Endites anteromedian tip slightly pointed. ABDOMEN: Round. LEGS: All legs missing except left leg I, shorter than carapace. GENITALIA: Unfortunately both copulatory bulbs are slightly collapsed, but the characters are still visible. Embolus with serrated projection on base, prolateral laminar extension; sperm duct slightly coiled (figs. 165D–F, 173C, 174I).

FEMALE (PBI_OON 42237): Total length 1.41. Habitus as in figure 154D–F. ABDOMEN: Ovoid, dorsum soft portions pale, cardiac area with four pairs of square purple patches, one additional pair longer near spinnerets, sides with four purple bands. LEGS: Spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: Epigastric region with strongly convex rim, external pockets widely separated, two weakly sclerotized epigastric ridges at both sides of median field, internal pockets absent; anterior receptaculum with one additional, weakly sclerotized receptaculum at base, apical region with well-developed anterior apodemes, lumen; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 170E, 172E).

DISTRIBUTION: Known from Coquimbo (Elqui Province) and Valparaíso (Valparaíso Province), Chile (map 29).

OTHER MATERIAL EXAMINED: None.

***Orchestina molles* Izquierdo, new species**

Figures 170F, 172F, 175E, map 29

TYPES: Female holotype from Chile: Región de Valparaíso (V): Provincia de Petorca: Los Molles, Rt. 5, km 188, 10 m, -32.23333°, -71.50000°, Oct. 13, 1993, Platnick, Catley, Ramírez and Allen, deposited in AMNH, PBI_

OON 42331; Región de Coquimbo (IV): Provincia de Choapa: Los Vilos, (-31.9°, -71.516667°), Aug. 25, 1966, E. Schlinger, M. Irwin, 2 female paratypes deposited in AMNH, PBI_OON 1934.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This is probably one of the most distinctive *Orchestina* species from Chile; however, it shares some characters with its congeners, such as the general shape of the anterior receptaculum and the presence of pockets and epigastric ridges. It can be distinguished by the massive development of the anterior receptaculum, nearly 8-shaped in ventral view, by the small anterior apodemes placed at the sides of the anterior receptaculum (instead of at the tip, as in other species), and by the shape of the external pockets, which have long rims (figs. 170F, 172F, 175E).

MALE: Unknown.

FEMALE (PBI_OON 42331): Total length 1.40. CEPHALOTHORAX: Labium rectangular. ABDOMEN: Dorsum soft portions with light gray squares and bands on the sides. LEGS: Yellow; only left leg II present. GENITALIA: Besides diagnostic characters, epigastric region with two almost C-shaped epigastric ridges, internal pockets absent; anterior receptaculum with slightly sclerotized basal structure, probably additional chamber; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 170F, 172F, 175E).

DISTRIBUTION: Known from Coquimbo (Choapa province) and Valparaíso (Petorca Province, map 29).

OTHER MATERIAL EXAMINED: None.

***Orchestina granizo* Izquierdo, new species**

Figures 164D, 166G–I, 173D, 174C, 178D,
map 30

Type: Male holotype from Chile: Región de Valparaíso (V): Provincia de Quillota: Parque Nacional La Campana, Sector Granizo, Cajon La Opositora, 545 m, -32.98016°, -71.12833°, Nov.

29, 2002, to Dec. 29, 2002, Thayer, Newton, Solodovnikov, Clarke, Chani, deposited in FMNH 34840, PBI_OON 10557.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of the other Chilean species with simple copulatory bulbs but can be distinguished by the presence of a projection on base of the embolus, absent in other species, and by the notched endites (figs. 164D, 166G–I, 173D, 174C).

MALE (PBI_OON 10557): Total length 1.20. CEPHALOTHORAX: Labium near pentagonal, borders slightly more sclerotized than sternum. Endites anteriomedian part notched (fig. 164D). ABDOMEN: Dorsum soft portions white, round. GENITALIA: Bulb with one curved projection at base; sperm duct slightly coiled (figs. 166G–I, 173D, 174C).

FEMALE: Unknown.

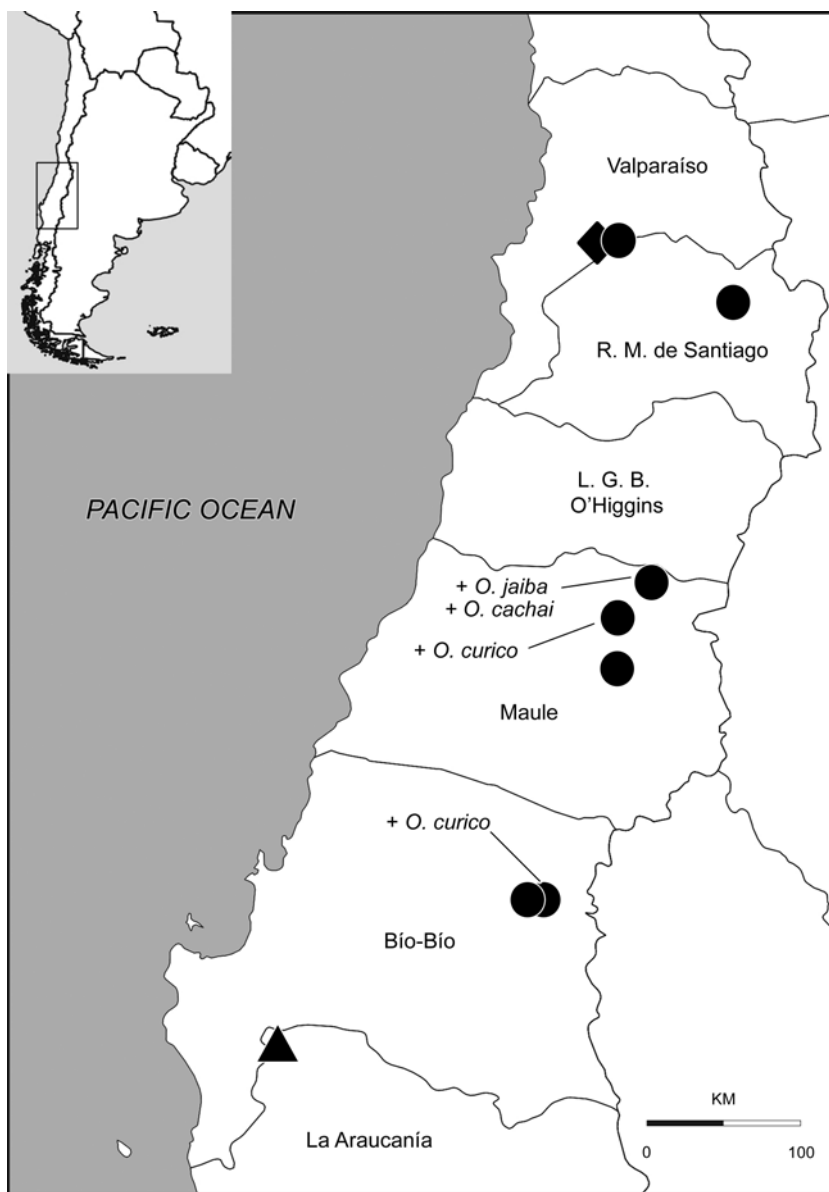
DISTRIBUTION: Known only from the type locality in Chile (Quillota, fig. 178D, map 30).

OTHER MATERIAL EXAMINED: None.

***Orchestina quenies* Izquierdo, new species**

Figures 164G, 166A–C, 170A, 172A, 173H,
174F, 176E, map 30

TYPES: Female holotype from Chile: Región del Maule (VII): Provincia de Curicó: 10 km E Los Queñes, fogging in *Nothofagus obliqua*, 1000 m, -35.01666°, -70.80000°, May 13, 2004, J.E. Barriga, deposited in CAS 9023358, PBI_OON 2307; El Coihue, 20 km E Potrero Grande, in *Nothofagus dombeyi*, 1000 m, -35.18776°, -70.97105°, Oct. 25, 2003, J.E. Barriga et al., 3 female paratypes deposited in CAS 9021278, PBI_OON 2301; Provincia de Talca: Vilches Alto, 70 km E. Talca, 1300 m (-35.47833°, -70.96417°), Dec. 05, 1984, to Feb. 20, 1985, S. and J. Peck, 1 male paratype deposited in AMNH, PBI_OON 15017; Región del Biobío (VIII): Provincia de Ñuble: 72 km SE Chillán, Termas Road, 1175 m (-36.91667°, -71.50000°), Nov. 16, 1993, to Nov. 25, 1993, Platnick, Catley, Ramírez and



MAP 30. Distribution map of *Orchestina* species in central Chile: *O. granizo* (diamond), *O. nahuelbuta* (triangle), and *O. quenies* (circles). Note the localities of sympatry (+ symbols).

Allen, 1 male paratype deposited in AMNH, PBI_OON 42335.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of the other Chilean species with simple male palp (figs. 166A–C, 173H, 174F). The embolus is relatively

shorter than in *O. jaiba* and the endites are parallel; additionally, the tips of the endites are provided with strong, short projections (arrows, fig. 164G). Females can be distinguished by the length and direction of the anterior apodemes of anterior receptaculum, short and almost at 180°, and by the shape and position of the epigastric

ridges, highly convex and near base of the anterior receptaculum (figs. 170A, 172A, 176E).

MALE (PBI_OON 42335): Total length 1.10. CEPHALOTHORAX: Labium near triangular, pentagonal. Endites parallel, with small projection at tip (fig. 164G). LEGS: Only right legs II, III, left leg IV present. GENITALIA: Bulb without apophyses, long; sperm duct slightly coiled (figs. 166A–C, 173H, 174F).

FEMALE (PBI_OON 2307): Total length 1.25. CEPHALOTHORAX: Labium rectangular. GENITALIA: Epigastric region with external pockets, well-developed epigastric ridges near median area, internal pockets absent; anterior receptaculum rounded at tip, lumen with three chambers, anterior apodemes short; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 170A, 172A, 176E).

DISTRIBUTION: From Región Metropolitana de Santiago (XIII) to Región del Biobío (VIII) to, Chile (map 30).

OTHER MATERIAL EXAMINED: **CHILE: Región del Maule (VII):** Provincia de Talca: Vilches Alto, 70 km E. Talca, 1300 m (-35.47833° , -70.96417°), Dec. 05, 1984, to Feb. 20, 1985, S. and J. Peck, 3 ♀ (AMNH, PBI_OON 1948). **Región del Biobío (VIII):** Provincia de Ñuble: 60 km SE Chillán, Termas Road, 1300 m (-36.92646° , -71.42547°), Dec. 07, 1984, to Nov. 19, 1985, S. and J. Peck, 3 ♀ (AMNH, PBI_OON 1946). **Región Metropolitana De Santiago (XIII):** Provincia de Santiago: Valle Rio Mapocho, 1700 m (-32.99788° , -70.97736°), Dec. 11, 1959, W. Nood, 1 ♂, 2 ♀ (AMNH, PBI_OON 1944); Provincia de Chacabuco: Caleu, in *Nothofagus* forest, 1850 m, Jan. 14, 1985, N. Platnick and O.F. Frankle, 1 ♀ (AMNH, PBI_OON 1942).

Orchestina curico Izquierdo, new species

Figures 164F, 166D–F, 169C, 171C, 173G, 174E, 176C, map 30

TYPES: Male holotype from Chile: Región del Maule (VII): Provincia de Curicó: 20 km E. Potrero Grande, Fdo. El Coihue, fogging in *Nothofagus dombeyi*, Cypres, 937 m, -35.178983° , -70.963333° , May 25, 2004, J.E. Barriga, deposited in MNSC, PBI_OON 14871; same data, 1035 m, -35.17889° , -70.96333° , May 25, 2004,

J.E. Barriga, 1 female paratype deposited in MACN 17659, PBI_OON 14875; Región del Biobío (VIII): Provincia de Ñuble: North of Las Trancas, Puente Aserradero, fogging in *Nothofagus dombeyi*, 1274 m, -36.91645° , -71.45695° , Dec. 01, 2001, E. Arias et al., 3 female paratypes deposited in CAS 9023357, PBI_OON 2311; same data, 1 female paratype deposited in CAS, PBI_OON 43334.

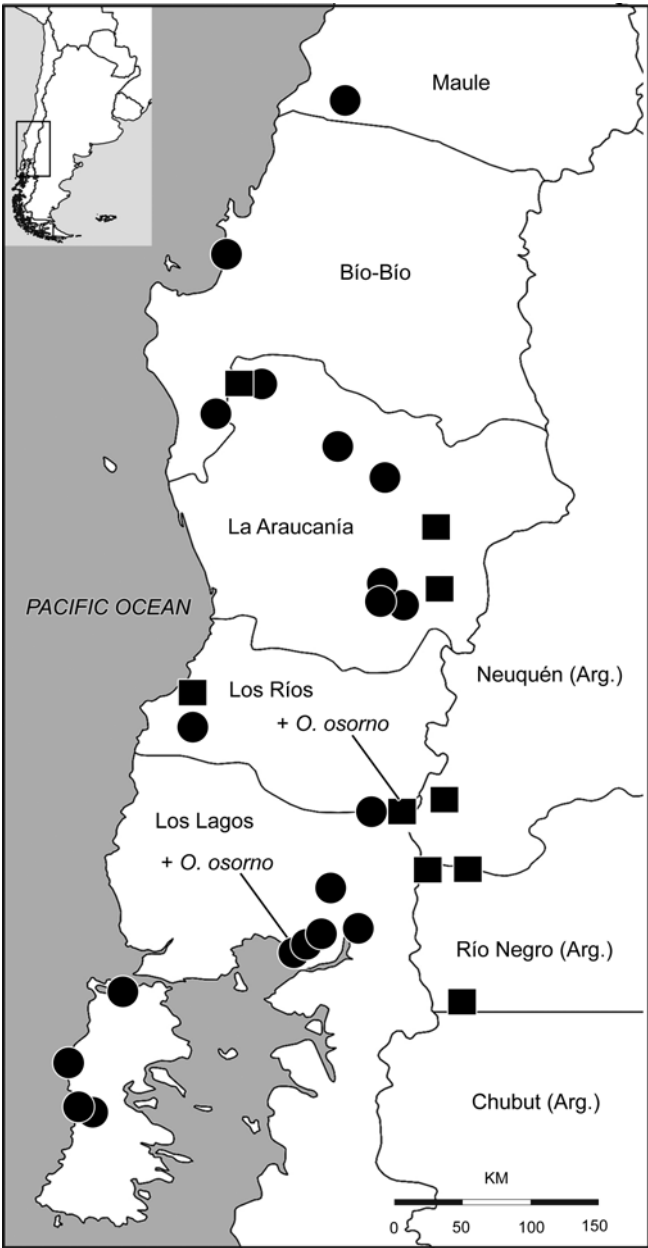
ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males are very similar to those of other species with simple palp; the endites are parallel as in *O. nahuelbuta* and *O. cachai*, although in *O. curico* they are slightly wider and with small projections at the tip (fig. 164F). Other subtle differences are present in the male copulatory bulb, such as the sperm duct course and the length and width of the embolus (figs. 166D–F, 173G, 174E). Female genitalia are similar to those of *O. nahuelbuta* but can be distinguished by the position of the external pockets, proximal to the epigastric fold (anteriorly directed in *O. nahuelbuta*).

MALE (PBI_OON 14871): Total length 1.08. CEPHALOTHORAX: Labium nearly pentagonal. Endites converging, with small projection at the tip (fig. 164F). ABDOMEN: Dorsum with pattern of purple bands, round. Epigastric area dark. LEGS: Only left leg I, right legs II, III present. GENITALIA: Bulb with no additional apophyses; embolus long; sperm duct slightly coiled (figs. 166D–F, 173G, 174E).

FEMALE (PBI_OON 43334): Total length 1.12. CEPHALOTHORAX: Labium rectangular. ABDOMEN: Ovoid, dorsum soft portions bands of purple pigment. LEGS: Only right leg IV is present. GENITALIA: Epigastric region with external pockets, small epigastric ridges, difficult to see, placed on median region, internal pockets absent; anterior receptaculum with lumen formed by two chambers, apodemes long; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 169C, 171C, 176C).

DISTRIBUTION: From Región del Maule (VII) to Región del Biobío (VIII), Chile (map 30).



MAP 31. Distribution map of *Orchestina* species in southern Chile and Argentina: *O. cachai* (circles), and *O. jaiba* (squares). Note the localities of sympatry (+symbols)

OTHER MATERIAL EXAMINED: **Región del Maule (VII)**: Provincia de Curicó: Camino El Relvo, 15 km E Potrero Grande, -35,190907°, -70,9228267°, 1000 m, May. 13, 2004, J.E. Barriga, fogging on *N. obliqua* and *N. dombeyi*, 1 ♀ (MACN 34533, PBI_OON 51169).

Orchestina cachai Izquierdo, new species
 Figures 155–160, 161A, B, 164A, 168D–F, 170G, 172G, 173B, 174B, 175F, 177D, map 31
 TYPES: Male holotype and female paratype

from Chile: Región de Los Lagos (X): Provincia de Chiloé, Lago Huillinco, margen S, 8.4 km (por aire) ESE Cucao, beating in secondary forest at side of the road, 3 m, -42.66389°, -74.01000°, Feb. 15, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, deposited in MNSC PBI_OON 42211; same data, Parque Nacional Chiloé, Cucao, sendero El Tepual, 15 m, -42.61750°, -74.10111°, Feb. 15, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 4 male paratypes deposited in MACN 28633, PBI_OON 42213; same data, humid forest of *Tepualia stipularis*, 6 female paratypes plus 2 juveniles, sex unknown, deposited in MACN 29065, PBI_OON 42765. Región de La Araucanía (IX): Provincia de Malleco: Monumento Natural Contulmo, Sendero Lemu Mau, 341 m, -38.01306°, -73.18639°, Feb. 09, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 female paratype deposited in MACN 28642, PBI_OON 42202.

ETYMOLOGY: *Cachai* is a common expression used in Chile. It is used primarily to mean “to understand” or “to suspect,” so “cachai” is equivalent to “got it?” The most popular meaning in the Hispanic world is “holding any object,” which is close to the literal meaning of the English “to catch.”

DIAGNOSIS: Males of *O. cachai* resemble those of *O. pandeazucar* by having an additional apophysis in copulatory bulb, but in this species the apophysis is sinuous, whereas it is straight and short in *O. cachai*. Also, the course of the sperm duct is slightly different in both species (figs. 159A, B, E, F, 168D, F, 173B, 174B), and males of *O. pandeazucar* have basal conical projections on the endites, absent in *O. cachai* (compare fig. 164A, C). Females of *O. cachai* can be distinguished by the short and straight anterior apodemes, epigastric ridges closer to each other, and lumen of anterior receptaculum with three chambers (figs. 161A, B, 170G, 172G, 175F).

MALE (PBI_OON 14826): Total length 1.15. Habitus as in figure 155A, B. CEPHALOTHORAX (fig. 155C, D): Carapace as in figure 156A–C. Eyes as in figure 156B, D. Sternum as long as wide (figs. 156D, 156E). Chelicerae as in figure 157A–F. Labium rectangular. Endites converging

(fig. 164A). ABDOMEN: Dorsum soft portions white, round, setae as in figure 156F. Spinnerets (fig. 157G, H): ALS with one major ampullate gland spigot and three piriform gland spigots seemingly without bases; PMS with one minor ampullate gland spigot; PLS with two aciniform gland spigots. LEGS: Yellow. Leg spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. Metatarsus I with modified setae on prolateral side (fig. 158B, C); claws, trichobothria, tarsal organs, setae as in other species (figs. 158A, D–F, 160A, B). GENITALIA: Cymbium as in figure 159C, tarsal organ as in figure 159D; bulb yellow, tapering apically, with one spine-shaped apophysis; embolus long; sperm duct slightly coiled (figs. 159A, B, E, F, 168D, F, 173B, 174B).

FEMALE (PBI_OON 14826): Total length 1.39. Habitus as in figure 155E–G. CEPHALOTHORAX: Sternum longer than wide. ABDOMEN: Ovoid. Spinnerets: PMS with two minor ampullate gland spigots (SEM not provided). LEGS: Spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. GENITALIA: External pockets placed almost over ridge on epigastric fold, epigastric ridges on median line, comma-shaped (asterisks fig. 170G); internal pockets absent; anterior receptaculum with straight anterior apodemes, lumen formed by three chambers; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 161A, B, 170G, 172G, 175F).

DISTRIBUTION: From Región del Maule (VII) to Región de Los Lagos (X), Chile (fig. 177D, map 31).

OTHER MATERIAL EXAMINED: CHILE: Región del Maule (VII): Provincia de Cauquenes: Los Ruiles, 20 km W Cauquenes, -35.96666°, -72.35000°, Oct. 01, 2003, J.E. Barriga et al., 1 ♀ (CAS 9023355, PBI_OON 2312); Provincia de Curicó: 20 km E Potrero Grande, Fdo. El Coihue, -35.178983°, -70.963333°, 1035 m, jogging s/ *Podocarpus saligna*, May. 13, 2004, J.E. Barriga, 1 ♂ (MACN 34532, PBI_OON 51183). **Región del Bío-Bío (VIII):** Provincia de Concepción: Escuadrón, S Concepción, 5 m, -36.95000°, -73.15000°, Nov. 18, 1993, Platnick, Catley, Ramírez and Allen, 1 ♀ (AMNH, PBI_OON 42326); 17 km Angol, 800 m, Aug. 12, 1984, to Nov. 16, 1985, S., J. Peck, 1 ♂, 1 juvenile, sex unknown (AMNH, PBI_OON 1936); 3 km W Victoria, 100 m, Dec. 13, 1984, to Nov. 12, 1985, S., J. Peck, 1 ♂, 5 ♀

(AMNH, PBI_OON 1947). **Región de La Araucanía (IX):** Provincia de Cautín: 15 km NE Villarrica, Flor del Lago, forest, 300 m, Dec. 14, 1984, to Nov. 10, 1985, S. and J. Peck, 3 ♀ (AMNH, PBI_OON 1945); Pucón at Lago Villarica, -39.26666°, -71.96666°, Dec. 14, 1988, V. Roth, B. Roth, 4 ♀ (CAS 9023353 PBI_OON 2303); Villarrica, Los Pellines, 249 m, -39.21468°, -72.10678°, Mar. 20, 2005, Arias et al., 1 ♂, 6 ♀ (CAS 9023356 PBI_OON 2302); Bellavista, North shore Lago Villarrica site 655, 310 m, -39.21361°, -72.11583°, Dec. 15, 1982, to Dec. 30, 1982, A. Newton, M. Thayer, 6 ♂, 11 ♀ (AMNH, PBI_OON 42332); same data, North shore Lago Villarrica site 655, 310 m, -39.21361°, -72.11583°, Dec. 15, 1982, to Dec. 30, 1982, A. Newton, M. Thayer, 1 ♂, 4 ♀, 1 juvenile, sex unknown (AMNH, PBI_OON 42333). Provincia de Malleco: 20 km W Curacautin, 1000 m, Dec. 12, 1984, to Nov. 16, 1985, S. and J. Peck, 3 ♀ (AMNH, PBI_OON 1937); Monumento Natural Contulmo, Sendero Lemu Mau, 410 m, -38.01233°, -73.18550°, Dec. 08, 2002, to Dec. 24, 2002, Thayer, Newton, Solodovnikov, Clarke, Chani, 2 ♂ (FMNH, PBI_OON 10561); same data, Dec. 19, 1998, to Dec. 21, 1998, M. Ramírez, L. Compagnucci, C. Grismado, L. Lopardo, 1 ♂, 2 ♀ (MACN 15346, PBI_OON 14826); same data, 2 ♀ (MNSC, PBI_OON 15065); same data, 341 m, -38.02000°, -73.16972°, Feb. 09, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 ♂ (MACN 29012, PBI_OON 42764); same data, 4 ♂ (ZIMG 28110–28125; PBI_OON 42203); 5 juveniles, sex unknown (ZIMG 28110–28125, PBI_OON 42203); 7 ♀ (ZIMG 28110–28125, PBI_OON 42203); same data, 1 ♀ (MACN 28641, PBI_OON 42204); same data, 1 ♂ (MACN 28644, PBI_OON 42205); same data, 1 ♂, 1 ♀ (MACN 30365, PBI_OON 42215), same data, 2 ♂, 1 ♀ (MACN 30502, PBI_OON 42216); same data, -38.01667°, -73.18333°, Nov. 18, 1993, Platnick, Catley, Ramírez and Allen, 1 ♂ (AMNH, PBI_OON 42230); same data, 1 ♂, 2 ♀ (AMNH, PBI_OON 42327); same data, 1 ♂ (AMNH, PBI_OON 42330); same data, 1 ♂ (AMNH, PBI_OON 42332). **Región de Los Lagos (X):** Provincia de Osorno: Termas de Puyehue, litter and moss, 180 m, -40.65694°, -72.16306°, Nov. 24, 1981, N.I. Platnick and R.T. Schuh, 1 ♂, 1 ♀ (AMNH, PBI_OON 42325). Provincia de Llanquihue: Lago Chapo 13.5 km E. Correntoso, site 656, Valdivian forest, 310 m, -41.45167°, -72.16306°, Dec. 16, 1982, to Dec. 27, 1982, A. Newton, M. Thayer, 2 ♂ (AMNH, PBI_OON 42329); Lago Chapo, near SE end km 9.9 on road from Rollizo, Valdivian rainforest on steep slope, 385 m, -41.51050°, -72.39966°, Jan. 04, 1997, to Jan. 26, 1997, A. Newton, M. Thayer, 4 ♀, 2 juveniles, sex unknown (FMNH, PBI_OON 43309); N.W. Shore Lago Chapo, 250 m,

-41.45000°, -72.50000°, Nov. 13, 1966, M. Irwin, E. Schlinger, 1 ♀ (AMNH, PBI_OON 1935); P.N. Alerce Andino, Sargazo, sendero “Rodal Alerce,” wet forest, 340 m, -41.50972°, -72.61222°, Feb. 04, 2005, M. Ramírez and F. Labarque, 1 ♀ (MACN 15875, PBI_OON 14774); P.N. Vicente Perez Rosales, 9.2 km NE Ensenada on road to Petrohué, Valdivian rainforest w/ *Nothofagus* spp., 125 m, -41.17694°, -72.45805°, Jan. 02, 1997, to Jan. 28, 1997, A. Newton, M. Thayer, 4 ♂, 2 ♀, 2 juveniles, sex unknown (FMNH 56555, PBI_OON 10773); same data, Mar. 28, 1997, A. Newton, M. Thayer, 1 ♀ (FMNH, PBI_OON 43291). Provincia de Chiloé: 15 m, Nov. 02, 1985, N. Platnick, O. Francke, 1 ♀ (AMNH, PBI_OON 1940); Lago Huillincó, margen S, 8.4 km (por aire) ESE Cucao, bosque secundario al costado del camino, 3 m, -42.66389°, -74.01000°, Feb. 15, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 ♀ (MACN 30504, PBI_OON 42214); same data, margen N 4.6 km (por aire) ESE Cucao, -42.64117°, -74.04763°, 12 m, Feb. 16, 2012, bosque húmedo, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 ♀ (MACN 34534, PBI_OON 51168); same data, 11 ♀ (MACN 34535, PBI_OON 51167); Parque Nacional Chiloé, Cucao, sendero El Tepual, 15 m, -42.61750°, -74.10111°, Feb. 15, 2012, M.J. Ramírez, M.A. Izquierdo, P. Michalik, C. Wirkner, K. Huckstorf, 1 ♂, 1 ♀ (MACN 28634, PBI_OON 42208); same data, 1 ♀ (MACN 28635, PBI_OON 42209); same data, 3 ♂, 9 ♀, 5 juveniles, sex unknown (MACN 28632, PBI_OON 42210), same data, 4 ♂, 1 ♀, 3 juveniles, sex unknown (MACN 28631, PBI_OON 42212); same data, humid forest of *Tepualia stipularis*, 3 ♀, 3 juveniles, sex unknown (MACN 30085, PBI_OON 42743). Provincia de Llanquihue: Lago Chapo, 13.5 km E Correntoso, site 656, 310 m, -41.45167°, -72.51111°, Dec. 16, 1982, to Dec. 27, 1982, A. Newton, M. Thayer, 1 ♂ (AMNH, PBI_OON 42229); P.N. Alerce Andino, 100 m, -41.58333°, -72.68333°, Nov. 23, 1993, Platnick, Catley, Ramírez and Allen, 1 ♀ (AMNH, PBI_OON 42328); same data, 4 ♀, 1 juvenile, sex unknown (AMNH, PBI_OON 42334). **Región de Los Ríos (XIV):** Valdivia: 34 km NW La Unión, 700 m, Dec. 17, 1984, to Nov. 07, 1985, S., J. Peck, 1 ♀ (AMNH, PBI_OON 1938).

***Orchestina nahuelbuta* Izquierdo, new species**

Figures 164E, 167D–F, 169D, 171D, 173F, 174G, 176D, map 30

TYPES: Female holotype from Chile: Región de La Araucanía (IX): Provincia de Malleco: P.N. Nahuelbuta, Pichinahuel exit, fogging in *Arau-*

caria araucana, 1182 m, -37.80473°, -73.03520°, Dec. 06, 2001, E. Arias et al., deposited in CAS 9023354, PBI_OON 2304; same data, 1 male and 1 female paratypes deposited in CAS 9023362, PBI_OON 2308; same data, Nov. 22, 2004, J.E. Barriga, 1 male paratype deposited in CAS 9023360, PBI_OON 2309.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males are very similar to those of *O. granizo*, *O. curico*, *O. jaiba*, and *O. quenies* in the shape of copulatory bulb. They can be distinguished from those of *O. curico* by the shape of endites, slightly more pointed than those of that species (compare fig. 164E), and from other species by subtle differences in the course of the sperm duct and the shape of labium and endites. Females can be distinguished by the shape of the paired epigastric ridges, placed near median region, by the position of the external pockets, just below the level of the anterior apodemes of the anterior receptaculum, the more convex sclerotized margin of the epigastric area, and by the lumen of the anterior receptaculum with two chambers (figs. 169D, 171D, 176D).

MALE (PBI_OON 2309): Total length 1.09. **CEPHALOTHORAX:** Labium nearly pentagonal, slightly swollen. Endites convergent, thin (fig. 164E). **LEGS:** Missing. **GENITALIA:** Bulb with no apophyses; embolus long; sperm duct slightly coiled (figs. 167D–F, 173F, 174G).

FEMALE (PBI_OON 2304): Total length 1.10. **CEPHALOTHORAX:** Labium rectangular. **ABDOMEN:** Separated from prosoma, ovoid, dorsum with purple bands. **LEGS:** Only left leg II present. **GENITALIA:** Epigastric region with external pockets almost over anterior apodemes (in transparency), epigastric ridges highly convex, near median region; anterior receptaculum with lumen formed by two chambers, anterior apodemes long, directed forward; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 169D, 171D, 176D).

DISTRIBUTION: Known only from the type locality in Chile (Malleco, map 30).

OTHER MATERIAL EXAMINED: Only one juvenile in the same vial as the holotype.

Orchestina jaiba Izquierdo, new species

Figures 162, 164B, 167A–C, 169A, 171A, 173E, 174D, 176A, 178F, map 31

TYPES: Female holotype from Chile: Región de Los Lagos (X): Provincia de Osorno: Natl. Pk. Puyehue, Aguas calientes, 340 m, Dec. 13, 1998, to Dec. 17, 1998, M. Ramírez, L. Compagnucci, C. Grismado, L. Lopardo deposited in MNSC, PBI_OON 43295; same data, 2 female paratypes and 1 juvenile, sex unknown, deposited in MACN 15337, PBI_OON 14808. Argentina: Rio Negro: El Bolsón, Reserva Forestal Loma del Medio, -41.94388°, -71.56361°, Feb. 01, 2002, Paula Sackmann, 2 male paratypes and 2 juveniles, sex unknown, deposited in MACN 19298, PBI_OON 15058; same data, San Carlos de Bariloche, Parque Municipal Llao Llao, sendero a Villa Tacul, 841 m, -41.04389°, -71.54944°, Jan. 15, 2012, M. Guala, 2 female paratypes deposited in MACN 30753, PBI_OON 51195.

ETYMOLOGY: The specific name is a noun in apposition taken from the *jaiba*, a crab from the Pacific coast of Chile used in many typical dishes.

DIAGNOSIS: Males are very similar to those of *O. granizo*, *O. quenies*, *O. curico*, and *O. nahuelbuta* by the shape of the bulb and the embolus. They can be separated from the first by differences in the morphology of the copulatory bulb; the embolus is shorter in *O. granizo*, which also has a protuberance near the base of that structure. They can be separated from *O. curico* by subtle differences in the shape of the labium and the endites, which are more convergent in *O. curico*. From *O. quenies* they can be separated by the presence of a small projection at the anterior margin of both endites, absent in *O. jaiba* (compare fig. 164B, G). Similarly, they can be distinguished from *O. nahuelbuta* by differences in labium; endites and male copulatory bulb (see figs. 164–167). Of all these species, *O. jaiba* has the longest embolus. Females can be distinguished by the small, paired, sclerotized epigas-

tric ridges near each other on the median line of abdomen, by the position of the external pockets, nearly at the level of the anterior apodemes of the anterior receptaculum, and by the shape of the anterior receptaculum, with lumen formed by three chambers (figs. 169A, 171A, 176A).

MALE (PBI_OON 14871): Total length 1.09. Habitus as in figure 162A–C. **CEPHALOTHORAX**: Labium rectangular. Endites parallel (fig. 164B). **ABDOMEN**: Round, dorsum soft portions pale white, with pattern of lateral bands of purple pigment. **GENITALIA**: Without additional apophyses; embolus long; sperm duct slightly coiled (figs. 167A–C, 173E, 174D).

FEMALE (PBI_OON 14808): Total length 1.5. **ABDOMEN**: Ovoid, dorsum soft portions without color pattern. **GENITALIA**: As in diagnosis, internal pockets absent; anterior receptaculum with rounded tip; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 169A, 171A, 176A).

DISTRIBUTION: Chile (Regions VII, IX and X) and Argentina (Rio Negro and Neuquén provinces) (fig. 178F, map 31).

OTHER MATERIAL EXAMINED: **CHILE: Región del Maule (VII)**: Provincia de Curicó: El Coihue, 20 km E Potrero Grande, 1000 m, -35.18776°, -70.97105°, Apr. 01, 2003, J.E. Barriga, 1 ♀ (CAS 9021109, PBI_OON 2310). **Región de La Araucanía (IX)**: Provincia de Cautín: P.N. Conguillio, 11.1 km SE Laguna Captrén guard sta., *Nothofagus obliqua*, *N. alpina*, dense *Chusquea*, 1080 m, -38.66750°, -71.62016°, Dec. 23, 1996, to Feb. 05, 1997, A. Newton, M. Thayer, 1 ♀ (FMNH, PBI_OON 43290); P.N. Huerquehue, exit, *Nothofagus dombeyi*, 823 m, -39.16944°, -71.72638°, Dec. 11, 2001, E. Arias et al., 1 ♂ (CAS 9023361, PBI_OON 2305); Provincia de Malleco: Nahuelbuta Natl. Pk., *Nothofagus* and *Araucaria* forest, 1100 m, -37.82750°, -73.00888°, Feb. 12, 2005, M. Ramírez and F. Labarque, 1 ♀ (MACN 15338, PBI_OON 14858). **Región de Los Ríos (XIV)**: Provincia de Valdivia: Reserva Costera Valdiviana, -40.125866°, -73.561706°, 634 m, Jan. 2007, J.E. Barriga, Fogging, 9 ♀, 6 ♂, 28 juveniles (UCB, PBI_OON 51155). **ARGENTINA: Provincia de Rio Negro**: Departamento de Bariloche: El Bolsón, Reserva Forestal Loma del Medio, -41.94388°, -71.56361°, Feb. 01, 2002, Paula Sackmann, 2 ♂, 2 juveniles, sex unknown (MACN 19298, PBI_OON 15058); same data, Jan. 01, 2004, Paula

Sackmann, 1 ♀ (MACN 27953, PBI_OON 15061); Nahuel Huapi N. Park, peatbog next to Frías Lake, 772 m, -41.04055°, -71.80527°, Dec. 29, 2010, M. Ramírez, V. Werenkraut, S. Aisen, 1 ♀ (MACN 28667, PBI_OON 42153); San Carlos de Bariloche, Parque Municipal Llaolao, sendero a Villa Tacul, 841 m, -41.04389°, -71.54944°, Jan. 15, 2012, beating vegetation, M. Guala, 1 ♀ (MACN 28668, PBI_OON 42251). **Provincia de Neuquén**: Departamento de Los Lagos: P.N. Nahuel Huapi, sendero a Cerro La Mona, cerca de Lago Espejo Chico, 840 m, -40.59083°, -71.70417°, Jan. 05, 2011, M.J. Ramírez and V. Werenkraut, 1 ♂, 1 ♀ (MACN 30503, PBI_OON 42188).

Orchestina osorno Izquierdo, new species

Figures 163, 169B, 171B, 176B, map 31

TYPE: Female holotype from Chile: Región de Los Lagos (X): Provincia de Osorno: Parque Nacional Puyehue, Aguas Calientes (-40.681630°, -71.988162°) (1020 m), Dec. 13, 1998, to Dec. 17, 1998, M. Ramírez, L. Compagnucci, C. Grisnado, L. Lopardo, deposited in MNSC, PBI_OON 51091; Provincia de Llanquihue: P.N. Alerce Andino, 100 m, -41.58333°, -72.68333°, Nov. 23, 1993, Platnick, Catley, Ramírez and Allen, deposited 1 female paratype in AMNH, PBI_OON 42752.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished by the shape of the genitalia with external pockets placed over the epigastric fold and the anterior receptaculum slightly curved dorsally (figs. 169B, 171B, 176B).

MALE: Unknown.

FEMALE (PBI_OON 51091): Total length 1.30. Habitus as in figure 163. **CEPHALOTHORAX**: Labium rectangular. **ABDOMEN**: Separated from prosoma. **GENITALIA**: Besides diagnostic characters, epigastric ridges difficult to observe but placed near on the median part of epigastric region, internal pockets absent; anterior receptaculum slightly curved ventrally, anterior apodemes long; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 169B, 171B, 176B).

DISTRIBUTION: Known from the provinces of Llanquihue and Osorno, Chile (map 31).

OTHER MATERIAL EXAMINED: None.

Orchestina ucumar Izquierdo, new species

Figures 148A, 179–185, 194A–C, 195A, D, 196A, C, E, 197C, 198C, D, map 28

Orchestina sp.: Burger et al., 2010: 102.

TYPES: Male holotype from Argentina: Jujuy: Departamento Ledesma: Parque Nacional Calilegua, Seccional Aguas Negras, 605 m, -23.76194°, -64.85111°, Jan. 27, 2009, to Jan. 31, 2009, M. Izquierdo, L. Zapata and M. Akmentins, deposited in MACN 30751, PBI_OON 42754; same data, 1 male, 7 females, 13 juvenile paratypes deposited in MACN 18016, PBI_OON 14895; same data, 800 m, El Cortaderal, Km 6, Dec. 18, 1987, to Dec. 28, 1987, S. and J. Peck, 1 male paratype deposited in AMNH, PBI_OON 1654.

ETYMOLOGY: The specific name is a noun in apposition taken from the *ucumar*, which means “bear” in Quichua and Aymara languages. The term has been associated with the spectacled bear (*Tremarctos ornatus*), which may be responsible for the legendary *ucumar*, a Bigfoot-like creature, half man half bear, that snatches away women and forces them to live with him in his cave.

DIAGNOSIS: Males can be distinguished by the combination of a strongly projected clypeus (fig. 179B), long chelicerae (fig. 179C) and the short embolus flanked by a short apophysis (figs. 184A–E, 194A–C, 196A, C). Females can be distinguished by the presence of two depressions on the epigastric region, slightly below the booklung covers (figs. 195A, LD in 197C), by the shape of the anterior receptaculum, massive anteriorly with a basal, less sclerotized additional chamber with sinuous lumen (figs. 195D, 197C).

MALE (PBI_OON 14895): Total length 1.2. Habitus as in figure 179A–C. CEPHALOTHORAX: Clypeus strongly sloping forward in lateral view (fig. 179B). Sternum as in figure 179D. Chelicerae long (fig. 179C, 181). Labium rectangular (fig. 180C, F). Labrum small with one dorsal

setae (fig. 180B). Endites anteromedian tip with one strong, curved projection (fig. 180A, D, E). LEGS: Orange. Leg spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1; tarsal organs, trichobothria as described for genus (fig. 183). GENITALIA: Bulb yellow to pale orange, tapering apically; embolus short, with short projection near base; sperm duct slightly coiled (figs. 184, 194A–C, 196A, C, E).

FEMALE (PBI_OON 14895): Total length 1.5. Habitus as in figure 179E–G. CEPHALOTHORAX: Clypeus not strongly projected forward. Chelicerae comparatively shorter than in males. ABDOMEN: Dorsum soft portions yellow. Spinnerets: ALS with two spigots (SEM not provided). LEGS: Spination, metatarsi: IV d0-0-1; p0-0-1; r0-0-1. Tarsal organ, trichobothria, palp as described for the genus (fig. 182A–G). Metatarsus, tarsus II with modified setae on prolateral margin (fig. 182H, I). GENITALIA: As in diagnosis, without external or internal pockets; anterior apodemes short; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 185A–F, 195A, D, 197C).

NATURAL HISTORY: The reproductive behavior of this species has been studied by Burger et al. (2010). The different steps of the behavior are not complex and the position during copulation is similar to other haplogynes in which the male is placed below the female with the clypeus facing the females' sternum. Both palps are inserted simultaneously.

DISTRIBUTION: Known from Brazil (Minas Gerais), Bolivia (Chuquisaca), and northern Argentina (Jujuy and Formosa provinces) (fig. 198C, D, map 28).

OTHER MATERIAL EXAMINED: **BOLIVIA: Chuquisaca:** Tomina: Municipio de Padilla, Comunidad de Pedernal, 1369 m, -19.39861°, -64.09166°, Oct. 06, 2011, to Oct. 09, 2011, M. Izquierdo, 1 ♂ (CBFC PBI_OON 42276). **BRAZIL: Minas Gerais:** Belo Horizonte: Estação Ecológica da UFMG, -19.86666°, -43.96666°, Oct. 01, 2000, E.S.S. Alvares, 1 ♂, 1 ♀ (IBSP 66802, PBI_OON 42234); same data, 1 ♀ (IBSP 67297 PBI_OON 42658). **Marliéria:** Parque Nacional da Serra do Cipó, Serra do Cipó, -19.25000°, -43.51666°, Jan. 01, 2002, to Jan. 01, 2003, A.D. Brescovit, 1 ♀ (IBSP 68326, PBI_OON

30291); same data, 1 ♀ (IBSP 68337 PBI_OON 30379); same data, 1 ♂ (IBSP 68327, PBI_OON 30775). **ARGENTINA: Provincia de Jujuy:** Departamento de Ledesma: Calilegua Nat. Pk., 550 m, Aguas Negras, camp, Dec. 18, 1987, to Dec. 28, 1987, S. and J. Peck, 1 ♂ (AMNH, PBI_OON 1657); same data, 900 m, Estaca El Cero, Dec. 18, 1987, to Dec. 28, 1987, S. and J. Peck, 1 ♀ (AMNH, PBI_OON 1656); same data, Aguas Negras section, 605 m, -23.76194°, -64.85111°, Dec. 06, 2008, to Dec. 11, 2008, Grismado, Izquierdo, Labarque, Rubio, Burger, Michalik, Carrera, Ojanguren, Mattoni, 1 ♂ (MACN 17718, PBI_OON 14879, voucher for TEM studies PM-41); same data, 1 ♀ (MACN 18243, PBI_OON 14890); same data, 1 ♀ (MACN 17674, PBI_OON 14905); same data, 1 ♀ (MACN 17675, PBI_OON 14907); same data, 1 ♀ (MACN 17676, PBI_OON 14908); same data, 1 ♂ (MACN 17678, PBI_OON 14922); same data, 1 ♂ (MACN 17677, PBI_OON 14924); same data, 1 ♂ (MACN 17714, PBI_OON 14882); same data, 1 ♀ (MACN 18015, PBI_OON 14896); same data, 1 ♀ (MACN 18058, PBI_OON 14900); same data, 1 ♀ (MACN 18056, PBI_OON 14909); same data, Feb. 20, 2013, G.D. Rubio, H.A. Iuri, A. Ojanguren, A. Porta, R. Adilardi, 1 ♀ (MACN 29934, PBI_OON 51088); same data, 2 ♀ (MACN 29938, PBI_OON 51114); same data, sobre el sendero El Pedemontano, altura km 2.5 de la Ruta Provincial N° 83, 711 m, -23.750726, -64.855038, Aug. 5, 2010, M. Andía Navarro (MACN 27210, PBI_OON 42755). **Provincia de Formosa:** Departamento de Bermejo: Reserva Natural Formosa, Seccional Rio Teuco, sendero Monte Adentro, 181 m, -24.31169°, -61.81236°, June 24, 2010, to July 06, 2010, Izquierdo, M., Calderón, L. and Kopuchian C., 1 ♂, 1 ♀, 2 juveniles, sex unknown (MACN 29064, PBI_OON 30496).

***Orchestina andianavarroi* Izquierdo,**
new species

Figures 178E, 186, 195B, E–G, 197D, map 32

TYPE: Female holotype from Argentina: San Juan: Departamento de Valle Fértil: Las Tumanas (cruce ruta Provincial 510 y Rio Las Tumanas), 731 m, -30.86500°, -67.32222°, Jan. 21, 2012, J.M. Andía Navarro and J. Aguilera, deposited in MACN 27083, PBI_OON 42192.

ETYMOLOGY: The name is a patronym in honor of Juan Manuel Andía Navarro, colleague and collector of the type material.

DIAGNOSIS: Females resemble those of *O. luispi* by the long anterior apodemes of the ante-

rior receptaculum but can be distinguished by the more sclerotized lateral chambers of the anterior receptaculum that are visible through the transparent abdominal cuticle (figs. 195B, E–G, 197D).

MALE: Unknown.

FEMALE (PBI_OON 14868): Habitus as in figure 186. **CEPHALOTHORAX:** Carapace length 0.67. Sternum as long as wide. Labium elongated hexagon. **GENITALIA:** External, interal pockets absent; anterior receptaculum with two long anterior apodemes, three membranous chambers at base, those at sides with strongly sclerotized walls, lumen well developed; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 195B, E–G, 197D).

DISTRIBUTION: Jujuy, Tucumán, and San Juan provinces, Argentina (figs. 178E, map 32).

OTHER MATERIAL EXAMINED: **ARGENTINA: Provincia de Jujuy:** Departamento de Ledesma: P.N. Calilegua, Aguas Negras, altura Km 2 de la ruta Provincial N° 83, 705 m, -23.750742, -64.855036, Aug. 4, 2010, M. Andía Navarro, 1 ♀ (MACN 27209, PBI_OON 51193). **Provincia de Tucumán:** Cochuna, 1073 m (-27.34202°, -65.89976°), July 02, 1995, M. Ramírez, P. Goloboff, 1 ♀ (MACN 15340, PBI_OON 14868).

***Orchestina luispi* Izquierdo, new species**

Figures 187–191, 192A–D, 193, 194D–F, 195C, H, 196B, D, F, 197E, 198A, B, E, map 32

TYPES: Male holotype from Argentina: Buenos Aires: Ciudad Autonoma de Buenos Aires, Reserva Ecológica Costanera Sur, Camino de los sauces, mirador al Canal Sur, - 34.61694°, -58.34722°, Oct. 24, 2011, L. Zapata, G. Rubio, M. Izquierdo, M. Guala y C. Grismado, in MACN 30750, PBI_OON 42753; same data, 4 ♂, 13 ♀ paratypes deposited in MACN 28179, PBI_OON 42262; same data, Margen de la Laguna Los Patos (LNP-Loc-011), 4 m, -34.608217, -58.353518, Sep. 29, 2014, beating, M. Izquierdo and L. Piacentini, 3 ♂, 5 ♀ paratypes deposited in AMNH, PBI_OON 51156.

ETYMOLOGY: The specific name is a noun in apposition in honour of Luis “Luispi” Piacen-



MAP 32. Distribution map of *Orchestina* species in Argentina and Uruguay: *O. andianavarroi* (triangles), and *O. luispi* (circles).

tini, colleague and friend with whom we have shared many field trips and hours in the laboratory.

DIAGNOSIS: Males can easily be distinguished by the modified endites, with sclerotized curved projections (fig. 187D), and by the simple copulatory bulb (figs. 191A–C, 194D–F, 196B, D). Females resemble those of *O. andianavarroi* by the two long apodemes of the anterior receptaculum but can be distinguished by the less-sclerotized additional chambers of the anterior receptaculum (figs. 195C, H, 197E). In *O. andianavarroi* the female carapace is slightly more elevated than in this species.

MALE (PBI_OON 14809): Total length 1.13. Habitus as in figure 187A, B. **CEPHALOTHORAX:** Carapace as in figure 188A–C. Clypeus as in figure 187C. Sternum as long as wide (figs. 187D). Labium rectangular. Endites anterome-

dian tip with one strong, curved projection (fig. 187D). **ABDOMEN:** Round, in fresh specimens, abdomen with lateral bands of purple pigment. Setae as in figure 189F, G. **Spinnerets:** ALS with one major ampullate gland spigot and three piri-form gland spigots seemingly without bases; PMS with one minor ampullate gland spigot; PLS with two aciniform gland spigots (fig. 189A–D); epiandrum without fusules (fig. 189E). **LEGS:** Tarsal organ, claws, trichobothria as in figure 190. **GENITALIA:** Cymbium yellow, bulb yellow, spherical; embolus long; sperm duct slightly coiled (figs. 191A–F, 192A–D, 194D–F, 196B, D, F).

FEMALE (PBI_OON 14998): Total length 1.41. Habitus as in figure 187E, F. **CEPHALOTHORAX** (fig. 187A, C): Carapace texture as in figure 188F. Pedicel as in figure 188G. Sternum longer than wide (fig. 188H), yellowish white. Labium

elongated hexagon (fig. 188I). Eyes as in figure 188B, D, E. ABDOMEN: Ovoid, dorsum soft portions pale orange. LEGS: Yellow. GENITALIA: External, internal pockets absent; anterior receptaculum with two long anterior apodemes (fig. 193A, B), three membranous chambers at base, lumen well developed; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 193, 195C, H, 197E).

DISTRIBUTION: Known from Ciudad Autónoma de Buenos Aires and the provinces of Buenos Aires and Corrientes, Argentina (fig. 198A, B, E, map 32).

NATURAL HISTORY: Practically unknown. In the type locality the specimens were found in abundance in dry bases of *Cortadeira* and other grasses and trees. In field trips a couple was collected in copula. It seems to be a species found in gallery forests that are present in the last course of Uruguay River and Rio de La Plata estuary, although some specimens were found in other wetlands in Corrientes province.

OTHER MATERIAL EXAMINED: **ARGENTINA: Provincia de Corrientes:** Departamento de Mburucuya: P.N. Mburucuya, Camino del Uno, 64 m, -28.00083°, -58.09500°, May 27, 2011, to May 30, 2011, Rubio G., Izquierdo M. and Piacentini L., 5♂, 3 juveniles, sex unknown (MACN 28273, PBI_OON 43392). **Provincia de Buenos Aires:** Partido de Campana: Reserva Natural Otamendi, 0.3 km instalaciones R.N. Otamendi, in remainder forest of *Bacharis salicifolia* and *Celtis*, 17 m, -34.22805°, -58.90027°, Nov. 15, 2012, A.O. Porta, G.D. Rubio, L.N. Piacentini, E.M. Soto, 1♀ (MACN 29394, PBI_OON 42336); Reserva Natural Otamendi, 32 m, -34.22527°, -58.90000°, Apr. 22, 2006, M. Ramírez, F. Labarque, C. Sosa, 2♂, 1♀ (MACN 11084, PBI_OON 14809); same data, June 10, 1997, Ramírez. Compagnucci, Grismado, Uehara, 2♂ (MACN 15341, PBI_OON 14810); San Isidro: Acassuso, Reserva Municipal Refugio Natural Educativo Ribera Norte, Sauzal, 7 m, -34.46729, -58.49365, July 21, 2014, Grismado, Cristian José, Rodríguez Landó, R. et al. 1♂ (MACN 32049, PBI_OON 51194); Partido de La Plata: Paseo del Bosque (-34.933333°, -57.95°), under bark of *Eucalyptus* sp., June 14, 2011, J. Barneche, 1♀ (MACN 27844, PBI_OON 43367); same data, June 15, 2011, J. Barneche, 2♀ (MACN 27845, PBI_OON 43380); Partido de San Miguel: Campo de Mayo, Km 26 F.C. Gral. Belgrano (-34.530721°, -58.641104°), in nest of *Anumbius*

annumbi, May 07, 2005, Paola Turienzo, 1♂, 1♀ (MACN 15339, PBI_OON 14811); Partido de San Pedro: Reserva Municipal Vuelta de Obligado, -33.59861°, -59.80805°, Apr. 11, 2009, O.N. Olejnik and N. López, 1♀ (MACN 20508, PBI_OON 14939). **Ciudad Autónoma de Buenos Aires:** Facultad de Veterinaria (-34.593740°, -58.483361°), in nest of *Myopsitta monachus* in the floor, July 07, 2009, P. Turienzo, 1♀ (MACN 23118, PBI_OON 14998); Reserva Ecológica Costanera Sur, Laguna de los Macáes, -34.60583°, -58.34861°, Oct. 24, 2011, L. Zapata, G. Rubio, M. Izquierdo, M. Guala y C. Grismado, 1♂, 1♀ (MACN 28185, PBI_OON 42141); same data, 1♀ (MACN 28184, PBI_OON 42265); same data, grasses, -34.60472°, -58.34916°, Oct. 24, 2011, L. Zapata, G. Rubio, M. Izquierdo, M. Guala y C. Grismado, 2♂ (MACN 28182 PBI_OON 42261); 1♀ (MACN 28182, PBI_OON 42261); same data, grasses, -34.60472°, -58.34916°, Oct. 24, 2011, L. Zapata, G. Rubio, M. Izquierdo, M. Guala y C. Grismado, 1♂, 1♀ (MACN 28183, PBI_OON 42264); same data, Bosque de *Tessaria integrifolia*, -34.60472°, -58.34972°, Oct. 24, 2011, L. Zapata, G. Rubio, M. Izquierdo, M. Guala y C. Grismado, 2♂, 5♀ (MACN 28186, PBI_OON 42263); same data, camino de los sauces: mirador al Canal Sur, -34.61694°, -58.34722°, Nov. 04, 2011, C. Grismado and L. Zapata, 4♀ (MACN 28237, PBI_OON 42176); same data, 1♂, 1♀ (MACN 28181 PBI_OON 42260); same data, 4♂, 13♀ (MACN 28179 PBI_OON 42262); same data, 1♂, 3♀ (MACN 28180, PBI_OON 42266); same data, litter of *Cortadeira* sp, -34.61694°, -58.34722°, Nov. 04, 2011, C. Grismado and L. Zapata, 2♂, 4♀ (MACN 28236, PBI_OON 42177); same data, Canal de Viamonte, -34.60458°, -58.35008°, Dec. 08, 2008, P. Turienzo, 1♀ (MACN 26833, PBI_OON 43319); same data, Margen de la Laguna Los Patos (LNP-Loc-011), 4 m, -34.608217, -58.353518, Sep. 29, 2014, beating, M. Izquierdo and L. Piacentini, 3♂, 3♀ (MRAC, PBI_OON 51170); same data, 1♂, 6♀ (USNM, PBI_OON 51184); same data, 1♂ (MACN 32967, PBI_OON 51072); same data 1♀ (MACN 32966, PBI_OON 51071); same data, 1♀ (MACN 34539, PBI_OON 42742). **URUGUAY: Rivera:** Cerro Miriñaque (-30.9025°, -55.550556°), bosque de cornisa, Oct. 14, 2012, G-vac (Garden-Vacuum method), M. Simo, 1♂ (FCE-7061).

DESCRIPTION OF MORPHOSPECIES

NOTE: Species described from a single sex in the taxonomic sections above probably match some of the morphospecies described here, especially when they come from the same or

nearby localities. Some possible matches are suggested in the preceding species (see Criteria for matching sexes).

Orchestina MI020

Figures 199A, D, 200, 201, 220A, 224A, 229A,
map 15

MORPHOTYPE: Female from Ecuador: Orelana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 13, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37553.

DIAGNOSIS: The females are similar to those of OMI038 and OMI021 from which they can be distinguished by the general shape of the anterior receptaculum and the size of the internal pockets (figs. 201, 220A, 224A, 229A).

DESCRIPTION: Habitus as in figure 199A, D. Spinnerets as in figure 200. **GENITALIA:** External pockets absent, internal pockets present, well developed; anterior receptaculum with massive lateral projections, short anterior apodemes; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 201, 220A, 224A, 229A).

DISTRIBUTION: Known from Colombia, Ecuador, Peru and Brazil (map 15).

OTHER MATERIAL EXAMINED: **ECUADOR: Orelana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 15098); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 29990); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 29997); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30003); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30016); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30039); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30052); same data, June 25, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30067); same data, June 26, 1996, T. Erwin et al., 5 ♀ (USNM, PBI_OON 30081); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30087); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30094); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30104); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30118); same data, Aug. 07, 1995, T. Erwin et al., 4 ♀ (MACN 31460, PBI_

OON 30122); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30131); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30137); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30148); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30149); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30152); same data, June 25, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30162); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30172); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30178); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30192); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30198); same data, Aug. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30201); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30210); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30219); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30235); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30253); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30256); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30265); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30301); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30304); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30311); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30317); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30237); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30699); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30719); same data, June 26, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30325); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30329); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30348); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30416); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30424); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30428); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30437); same data, June 25, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30445); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30457); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30470); same data, Feb. 05, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30493); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30499); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30511); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30514); same data, Oct. 07, 1995, T. Erwin et al., 4 ♀ (USNM,

PBI_OON 30525); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30531); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (MACN 31459, PBI_OON 30533); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30548); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30655); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30716); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30726); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30735); same data, July 06, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30744); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30759); same data, Feb. 07, 1996, T. Erwin et al., 6 ♀ (USNM, PBI_OON 30807); same data, Oct. 07, 1995, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30813); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30817); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30824); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30893); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30897); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30916); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30926); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30931); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30938); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36443); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36444); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36445); same data, Oct. 08, 1995, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36446); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36447); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36448); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36449); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36450); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36451); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36452); same data, Oct. 04, 1995, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36453); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36454); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36455); same data, Feb. 05, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36456); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36457); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36458); same data, June 25, 1996, T. Erwin et al., 3 ♀ (MACN 31458, PBI_OON 36510); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36511); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36512); same data, Oct. 05, 1995, T. Erwin et

al., 3 ♀ (USNM, PBI_OON 36513); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36514); same data, Oct. 02, 1996, T. Erwin et al., 5 ♀ (USNM, PBI_OON 36515); same data, Oct. 04, 1994, T. Erwin et al., 6 ♀ (USNM, PBI_OON 36516); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36517); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36518); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36519); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36520); same data, Feb. 04, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36521); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36522); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36523); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36524); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36525); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36526); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36527); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36528); same data, July 06, 1995, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36529); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36530); same data, Oct. 04, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36531); same data, June 25, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36532); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36533); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36534); same data, Oct. 03, 1996, T. Erwin et al., 4 ♀ (USNM, PBI_OON 36535); same data, June 26, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 36536); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36537); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36538); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36539); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36540); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37535); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37536); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37537); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37538); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37539); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37540); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37541); same data, Oct. 03, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37542); same data, Oct. 03, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37543); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37544); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37545); same data, Feb. 05, 1996, T. Erwin et

al., 1 ♀ (USNM, PBI_OON 37546); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37547); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37548); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37549); same data, June 26, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 37550); same data, Oct. 01, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37551); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37552); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37553); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37554); same data, Oct. 06, 1994, T. Erwin et al., 5 ♀ (USNM, PBI_OON 43263); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43266); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43282); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43286); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 36459); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37555); same data, Oct. 24, 1998, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37556); same data, Oct. 21, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37557). **PERU: Madre de Dios:** Provincia Manu: Zona Reservada Pakitzta, -11.93305°, -71.28305°, 356 m, June 01, 1992, T. Erwin and D. Silva, fogging, 1 ♀ (MUSM 501561, PBI_OON 43317); same data, Jun. 1992, 1 ♀ (MUSM 501561, PBI_OON 43317); same data, Cuenca Rio Los Amigos, Estación Científica CICRA, Trocha Palmeras (-12.53483°, -70.11189°), sep. 29, 2005, M. Deza, on label "UA-578/2005," 1 ♀ (MEKRB, PBI_OON 14983). **Loreto:** Rio Samiria, -5.11666°, -75.46666°, May. 12, 1990, T. Erwin and D. Silva, 3 ♀ (MUSM, PBI_OON 43311). **BRAZIL: Acre:** Senador Guimard: Reserva Extrativista de Catuaba (-10.07666°, -67.61666°), Jan. 01, 2002, E. Morato et al., 1 ♀ (IBSP 87016, PBI_OON 42685); same data, 1 ♀ (IBSP 87023, PBI_OON 42686). **COLOMBIA: Vaupes:** Taraira: Lago Taraira bajo Rio Apaporis, Est Biol. Caparu, 200 m, 1.06666°, -69.48333°, Apr. 01, 2003, Ligia Benavides, 1 ♀ (ICN, PBI_OON 30797).

Orchestina MI038

Figures 199C, F, 202, 203, 220B, 224B, 229C,
map 20

MORPHOTYPE: Female from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 07, 1996, T. Erwin et al., deposited in USNM, PBI_OON 30914.

DIAGNOSIS: Females are similar to those of OMI020 and OMI021 but can be distinguished by the less-extended lateral projections of the anterior receptaculum and the longer anterior apodemes (fig. 220B).

DESCRIPTION: Habitus as in figure 199C, F. Spinnerets as in figure 202. **GENITALIA:** External pockets absent, internal pockets small; anterior receptaculum with lateral projections, long anterior apodemes; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 203, 220B, 224B, 229C).

DISTRIBUTION: Ecuador and Brazil (map 20).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 08, 1996, T. Erwin et al. 1 ♀ (USNM, PBI_OON 30855); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 15097); same data, Feb. 05, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30321); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 29991); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 29992); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30010); same data, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30028); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30031); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30033); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30045); same data, Aug. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30054); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30062); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30065); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30069); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30083); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30092); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30098); same data, Feb. 08, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30108); same data, Aug. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30121); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30136); same data, Oct. 05, 1995, T. Erwin et al., 5 ♀ (MACN 31471, PBI_OON 30138); same data, June 25, 1996, T. Erwin et al., 5 ♀ (USNM, PBI_OON 30161); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30184); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30191); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30220); same

data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30231); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30257); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30264); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30309); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30316); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30331); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30335); same data, July 03, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30338); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30411); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30427); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30431); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30440); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30448); same data, June 26, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30456); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30481); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30485); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30492); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30505); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30515); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30530); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30534); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 42762); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30364); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30691); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30692); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30697); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30736); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30808); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30814); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30845); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30846); same data, Oct. 03, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30847); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30848); same data, June 22, 1996, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30849); same data, Oct. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30850); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30851); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30852); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30853); same data, Feb. 07, 1996, T.

Erwin et al., 1 ♀ (USNM, PBI_OON 30854); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30856); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30859); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30860); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30862); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30863); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30864); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30865); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30867); same data, June 21, 1996, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30868); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30869); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30870); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30873); same data, Feb. 07, 1996, T. Erwin et al., 5 ♀ (USNM, PBI_OON 30891); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (MACN 31469, PBI_OON 30894); same data, June 21, 1996, T. Erwin et al., 5 ♀ (MACN 31470, PBI_OON 30911); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30914); same data, Feb. 05, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30925); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30929); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30930); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30942); same data, June 26, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30943); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30944); same data, Oct. 01, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30945); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30946); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30948); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30949); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30950); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30951); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30952); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30953); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30954); same data, June 22, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30956); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30957); same data, June 21, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30958); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30959); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30960); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30961); same data, Feb. 04, 1996, T. Erwin

et al., 1 ♀ (USNM, PBI_OON 30962); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30963); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30965); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30966); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30967); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30968); same data, Oct. 06, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43267); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43279); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 24, 1998, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30861); same data, July 01, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30866); same data, July 04, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30928); same data, Oct. 24, 1998, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30947); same data, Oct. 22, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30964). **BRAZIL: Para:** Jacareacanga: Terreno do Burandí, km 406 da Transamazônica (-6.223889, -57.753889), Oct. 27, 2009, E.G. Cafofo, 1 ♀ (MPEG 015653, PBI_OON 40485).

Orchestina MI022

Figures 204A–C, 205–207, 222, 225C, 229D,
map 16

MORPHOTYPE: Female from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 13, 1996, T. Erwin et al., deposited in USNM, PBI_OON 30423.

DIAGNOSIS: Females can easily be distinguished by the massive internal pockets of the genitalia, absent in any other species (fig. 207C, D).

DESCRIPTION: Habitus as in figure 204A–C. Carapace, eyes, sternum, endites as described for genus (fig. 205). Metatarsi II, III with modified setae on prolateral side, tarsal organ, claws, spinnerets as described for genus (fig. 206). **GENITALIA:** External pockets absent; anterior receptaculum with short anterior apodemes; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 207, 222A, 225C, 229D).

REMARKS: Some females were found with larvae of Acroceridae (Diptera) inside their abdomen (fig. 222B).

DISTRIBUTION: Known from the provinces of Orellana (Ecuador) and Loreto (Peru) (map 16).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: Reserva Etnica Waorani: 1km S Onkone Gare Camp; Transect Ent., 216 m, -0.65716°, -76.45300°, Oct. 05, 1995, T. Erwin et al., 2 ♀ (MACN 31447, PBI_OON 37244); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 1881); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 15085); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 29993); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30001); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30005); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30011); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30018); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 30019); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30023); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30026); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30036); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30038); same data, June 26, 1996, T. Erwin et al., 1 ♀, 3 juveniles, sex unknown (USNM, PBI_OON 30041); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30046); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30061); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30063); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30066); same data, Feb. 08, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30075); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30079); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30105); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30112); same data, 1 ♀ (USNM, PBI_OON 30116); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30129); same data, 1 ♀ (USNM, PBI_OON 30135); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30153); same data, June 25, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30158); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30169); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM PBI_OON 30177); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30187); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30195); same data, Aug. 04, 1995, T. Erwin et al., 3 ♀ (USNM PBI_OON 30205); same data, July 06, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30213); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30232); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30244); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM,

PBI_OON 30247); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30249); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (MACN 31450, PBI_OON 30254); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30260); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30267); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30302); same data, 3 ♀ (USNM, PBI_OON 30305); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30315); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30320); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30332); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30336); same data, July 03, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30337); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30339); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30343); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30362); same data, Oct. 04, 1995, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30410); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30430); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30435); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30439); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30442); same data, June 25, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30444); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30446); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30461); same data, Feb. 04, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30465); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30472); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30474); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30479); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30489); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30502); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30506); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30510); same data, Feb. 04, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30518); same data, Oct. 06, 1994, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30522); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30524); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30539); same data, June 25, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30541); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30546); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30649); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30651); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30690);

same data, Oct. 06, 1994, T. Erwin et al., 5 ♀ (MACN 31446, PBI_OON 30698); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30704); same data, Oct. 08, 1995, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30724); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30725); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30734); same data, Feb. 07, 1996, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30806); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30812); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30818); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30827); same data, Feb. 07, 1996, T. Erwin et al., 4 ♀ (USNM, PBI_OON 30878); same data, June 26, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30884); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30898); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30901); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30908); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30917); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30933); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30936); same data, Oct. 05, 1995, T. Erwin et al., 2 ♀ (USNM PBI_OON 37208); same data, 2 ♀ (USNM PBI_OON 37209); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (USNM PBI_OON 37210); same data, Oct. 04, 1994, T. Erwin et al., 1 ♀ (USNM PBI_OON 37211); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37212); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37213); same data, Feb. 05, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37214); same data, 3 ♀ (USNM PBI_OON 37215); same data, June 25, 1996, T. Erwin et al., 2 ♀ (MACN 31451, PBI_OON 37216); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37217); same data, June 21, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37218); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM PBI_OON 37219); same data, July 06, 1995, T. Erwin et al., 2 ♀ (USNM PBI_OON 37220); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37221); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37222); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37223); same data, Feb. 08, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37224); same data, Feb. 04, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37225); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37226); same data, Feb. 07, 1996, T. Erwin et al., 4 ♀ (USNM PBI_OON 37227); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37228); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM PBI_OON 37229); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀

(USNM PBI_OON 37230); same data, Feb. 04, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37231); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37232); same data, 1 ♀ (USNM PBI_OON 37233); same data, 2 ♀ (USNM PBI_OON 37245); same data, Feb. 07, 1996, T. Erwin et al., 5 ♀ (USNM PBI_OON 37246); same data, Feb. 08, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37247); same data, June 26, 1996, T. Erwin et al., 1 ♀ (MACN 31454, PBI_OON 37248); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37249); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (USNM PBI_OON 37250); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (MACN 31449, PBI_OON 37251); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM PBI_OON 37252); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37253); same data, 1 ♀ (USNM PBI_OON 37254); same data, Feb. 13, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37255); same data, Oct. 07, 1995, T. Erwin et al., 4 ♀ (MACN 31445, PBI_OON 37256); same data, 1 ♀ (USNM PBI_OON 37257); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (MACN 31448, PBI_OON 37258); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37259); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37260); same data, Feb. 05, 1996, T. Erwin et al., 4 ♀ (USNM PBI_OON 37261); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37262); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37263); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37264); same data, Oct. 02, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37265); same data, Oct. 04, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37266); same data, Feb. 07, 1996, T. Erwin et al., 5 ♀ (USNM PBI_OON 37267); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37268); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM PBI_OON 37269); same data, Feb. 07, 1996, T. Erwin et al., 4 ♀ (USNM PBI_OON 37270); same data, June 26, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON 37271); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37272); same data, June 26, 1996, T. Erwin et al., 1 ♀ (MACN 31452, PBI_OON 37273); same data, Oct. 03, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37274); same data, Feb. 08, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37275); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37276); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (USNM PBI_OON 37277); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37278); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37279); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (USNM PBI_OON 37280); same data, June 25, 1996, T. Erwin et al., 2 ♀ (USNM PBI_OON

37281); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37282); same data, Oct. 01, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37283); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 37570); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 43272); same data, Oct. 06, 1996, T. Erwin et al., 1 ♀ (USNM PBI_OON 43273); same data, Oct. 08, 1995, T. Erwin et al., 3 ♀ (USNM PBI_OON 43274); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM PBI_OON 43368); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM PBI_OON 43394); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 22, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 35252); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37234); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37284); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (MACN 31453, PBI_OON 37285); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37286); same data, Oct. 21, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37287); same data, Oct. 22, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37288); same data, Oct. 24, 1998, T. Erwin et al., 2 ♀ (USNM PBI_OON 37289); same data, July 01, 1998, T. Erwin et al., 1 ♀ (USNM PBI_OON 37290). **PERU: Loreto:** Rio Samiria, -5.11666°, -75.46666°, May 01, 1990, to June 01, 1990, T. Erwin, D. Silva, 1 ♀ (MUSM 504657, PBI_OON 42769); same data, 3 ♀ (MUSM, PBI_OON 43314).

Orchestina MI023

Figures 204D–F, 208, 221A, 224E, map 16

MORPHOTYPE: Female from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 13, 1996, T. Erwin et al., deposited in USNM, PBI_OON 37157.

REMARKS: One female (PBI_OON 51198) was found in the same vial with a male of *O. tzantza* (MUSM 501571, PBI_OON 43306), but, given that many other males and females were found in the same locality on the same date, the specimens were separated and treated as different. In case of future matching, we have placed a label in both vials indicating the original location of such specimens.

DIAGNOSIS: Females can be distinguished by the presence of two adjacent external pockets on the median line (figs. 208, 221A, 224E) and

by the sclerotized lateral plates at both sides of the genitalia.

DESCRIPTION: Habitus as in figure 204D–F. **GENITALIA:** Besides diagnostic characters, internal pockets absent; anterior receptaculum with rounded tip; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 208, 221A, 224E).

DISTRIBUTION: Known from Ecuador, Peru, and Brazil (map 16).

OTHER MATERIAL EXAMINED: ECUADOR: Orellana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 08, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 28222); same data, June 25, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 29995); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30029); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30040); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30048); same data, Feb. 08, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30074); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30084); same data, June 21, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30097); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30110); same data, June 22, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30119); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30130); same data, June 25, 1996, T. Erwin et al., 1 ♂ (UNSM, PBI_OON 30173); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30181); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30194); same data, Aug. 04, 1995, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30203); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30209); same data, July 06, 1995, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30215); same data, Oct. 08, 1995, T. Erwin et al., 4 ♀ (MACN 31463, PBI_OON 30216); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30239); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 30243); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30251); same data, Feb. 04, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30261); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30307); same data, June 22, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30328); same data, July 03, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30352); same data, July 06, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30357); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30412); same data, Oct. 04, 1995, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30414); same data, Oct.

07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30447); same data, June 26, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30453); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30491); same data, June 21, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 30500); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30654); same data, Oct. 06, 1994, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 30696); same data, Oct. 06, 1994, T. Erwin et al., 5 ♀ (MACN 31462, PBI_OON 30715); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30737); same data, July 06, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30801); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30809); same data, Oct. 07, 1995, T. Erwin et al., 4 ♀ (UNSM, PBI_OON 30811); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30816); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 30881); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30887); same data, June 22, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37142); same data, June 22, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37143); same data, Oct. 07, 1995, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37144); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37145); same data, Oct. 05, 1995, T. Erwin et al., 4 ♀ (UNSM, PBI_OON 37146); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37147); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37148); same data, Oct. 08, 1995, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37149); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37150); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37151); same data, Feb. 05, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37152); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37153); same data, June 22, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37154); same data, June 22, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37156); same data, Oct. 03, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37158); same data, Feb. 07, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37159); same data, Oct. 03, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37160); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37161); same data, Oct. 04, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37163); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37165); same data, June 25, 1996, T. Erwin et al., 5 ♀ (MACN 31461, PBI_OON 37166); same data, Oct. 02, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37167); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37168); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON

37169); same data, Feb. 05, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37170); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37171); same data, Oct. 02, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37172); same data, Oct. 04, 1994, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37173); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37174); same data, Oct. 02, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37175); same data, June 21, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37176); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37177); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37178); same data, Feb. 08, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37179); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37180); same data, June 26, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37181); same data, Oct. 03, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37182); same data, Oct. 01, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37183); same data, Oct. 02, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37184); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37185); same data, June 21, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 37186); same data, Feb. 04, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37187); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37188); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37189); same data, Oct. 06, 1994, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37190); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37191); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37192); same data, Feb. 13, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37193); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37194); same data, June 22, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37195); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37196); same data, June 21, 1996, T. Erwin et al., 2 ♀ (UNSM, PBI_OON 37197); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37198); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37199); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37200); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37201); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37202); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37203); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37204); same data, Feb. 05, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 43270); same data, June 25, 1996, T. Erwin et al., 3 ♀ (UNSM, PBI_OON 30064); same data, Aug. 07, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_

OON 30124); same data, June 25, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30140); same data, June 26, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30326); same data, Oct. 06, 1994, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30360); same data, June 02, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30875); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 30921); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 50049). Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 05, 1998, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37155); same data, Oct. 22, 1998, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37162); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37164); same data, July 04, 1998, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37205); same data, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37206); same data, Oct. 24, 1998, T. Erwin et al., 1 ♀ (UNSM, PBI_OON 37207). **PERU: Madre de Dios:** Provincia Manu: Zona Reservada Pakitza, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, 1 ♀ (MUSM, PBI_OON 51198). Provincia de Tambopata: 15 km E Puerto Maldonado, 200 m, -12.33000°, -69.02972°, June 17, 1989, D. Silva, 1 ♀ (MUSM 504656, PBI_OON 51111). **BRAZIL: Amazonas:** Manaus: Reserva do Km 41, -3.60000°, -60.01667°, Aug. 01, 2005, A.J. Santos, 1 ♀ (IBSP 57675, PBI_OON 30381).

Orchestina MI024

Figures 209A–C, 221C, 225A, 230A, map 17

MORPHOTYPE: Female from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 05, 1995, T. Erwin et al., deposited in USNM, PBI_OON 30934.

DIAGNOSIS: Females can be distinguished by the shape of the genitalia, which has a convex epigastric rim with the anterior receptaculum ending in a rounded anterior tip (figs. 221C, 225A, 230A). In addition the abdomen is more cylindrical than in other species (fig. 209A–C).

DESCRIPTION: Habitus as in figure 209A–C. **GENITALIA:** External, internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 221C, 225A, 230A).

DISTRIBUTION: Known from Ecuador and for Manaus, Brazil (map 17).

OTHER MATERIAL EXAMINED: ECUADOR: Orelana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30707); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37235); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37236); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37237); same data, 1 ♀ (USNM, PBI_OON 30449). **BRAZIL: Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, July 22, 1995, J.C.H. Guerrero, 1 ♀, 2 juveniles, sex unknown (MPEG 019004, PBI_OON 42146).

Orchestina MI025

Figures 209D–F, 223, 230B, map 17

MORPHOTYPE: Female from Ecuador: Orelana 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 8, 1996; T. Erwin et al. deposited in USNM, PBI_OON 30932.

DIAGNOSIS: Females can be distinguished by having external pockets far separated on the epigastric region and the thin anterior receptaculum with membranous chambers at base (figs. 223, 230B).

DESCRIPTION: Habitus as in figure 209D–F. **GENITALIA:** internal pockets absent, anterior apodemes short; posterior apodeme plate shaped (figs. 223, 230B).

DISTRIBUTION: Ecuador and Brazil (map 17).

OTHER MATERIAL EXAMINED: ECUADOR: Orelana: Reserva Etnica Waorani, 1 km S Onkone Gare Camp, 216 m, -0.65715°, -76.45300°, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43285); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30168); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30349); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30483); same data, June 21, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 30874); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43301). Rio Tiputini, Estación Científica Yasuni, 218 m, -0.67424°, -76.39755°, Dec. 01, 2009, to Dec. 05, 2009, Niarchos Expedition, 1 ♀ (MACN 30055, PBI_OON 30284). **BRAZIL: Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, July 01, 1995, Camilo, 1 ♀ (MPEG 18856, PBI_OON 42165).

Orchestina MI036

Figures 211C–E, 220D, 224D, 230C, map 17

MORPHOTYPE: Female from Ecuador: Orelana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Oct. 8, 1995, T. Erwin et al., deposited in USNM, PBI_OON 50060.

DIAGNOSIS: Females are similar to those of OMI038 and OMI021 by the general morphology of genitalia, but in OMI036 the lateral projections of anterior receptaculum are wider than in OMI021. Additionally, in OMI021 the anterior apodemes are longer (compare fig. 220B–D).

DESCRIPTION: Habitus as in figure 211C–E. **GENITALIA:** External pockets absent, internal pockets small; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 220D, 224D, 230C).

DISTRIBUTION: Ecuador and Brazil (map 17).

OTHER MATERIAL EXAMINED: ECUADOR: Orelana: Tiputini Biodiversity Station, near Yasuni National Park, 250 m, -0.63194°, -76.14416°, July 04, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 50059). **BRAZIL: Alagoas:** Maceió: Barro Duro (-9.618673°, -35.721778°), Jan. 27, 2003, N.F. Lo Man Hung, 1 ♀ (IBSP 36625, PBI_OON 30373). **Amazonas:** Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.85194°, -65.28305°, Sep. 02, 2009, N.F. Lo-Man-Hung et al., 1 ♀ (MPEG 16701, PBI_OON 43336); same data, Sep. 01, 2009, N.F. Lo-Man-Hung et al., 1 ♀ (MPEG 016705, PBI_OON 43339). **Bahia:** Una: Reserva Biológica de Una (-15.177521°, -39.134150°), Nov. 15, 2000, to Nov. 28, 2000, A.D. Brescovit et al., 1 ♀ (IBSP 46122, PBI_OON 30387).

Orchestina MI026

Figures 211A, B, 212, 221D, 225B, map 18

MORPHOTYPE: Female from Ecuador: Orelana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 07, 1996, T. Erwin et al., deposited in USNM, PBI_OON 43280.

DIAGNOSIS: Females can be distinguished by a thin anterior receptaculum with flat tip, and a

slightly undulating plate near its base (figs. 212, 221D, 225B).

DESCRIPTION: Habitus as in figure 211A, B. **GENITALIA:** External, internal pockets absent; posterior receptaculum absent, posterior apodeme formed by entire plate (figs. 212, 221D, 225B).

DISTRIBUTION: Known from Guyana, Ecuador, Peru, and Brazil (map 18).

OTHER MATERIAL EXAMINED: **GUYANA:** **Upper Demerara–Berbice Region:** Iwokrama Forest Research Sta., 1 km N. Kurupukari (4.672584°, -58.684287°), Mora tree, Jan. 14, 1996, to Jan. 19, 1996, W. Tschinkel, 1 ♀ (CAS 9023352, PBI_OON 2298). **ECUADOR:** **Napo:** Parque Nacional Napo-Galeras, road between Tena and Loreto, 1105 m, -0.73333°, -77.59130°, Nov. 27, 2009, Niarchos Expedition, M. Ramírez, C. Gris-mado, M. Izquierdo, F. Labarque, 2 ♀, 4 juveniles, sex unknown (MACN 28652, PBI_OON 30872); same data, 1 ♀ (MACN 30325, PBI_OON 51126). **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14950); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14960); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14963); same data, Oct. 04, 1994, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14964); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14967); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14995); same data, Feb. 07, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 15023); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43281); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30055); same data, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30134); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30240); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30825); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30826); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, July 01, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14958); same data, Oct. 21, 1987, T. Erwin et al., 1 ♀ (USNM, PBI_OON 15037); same data, Erwin transect T/1 Sta 1, 220 m, -0.63194°, -76.14417°, Oct. 21, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30340). **PERU:** **Loreto:** Rio Samiria, -5.11666°, -75.46666°, May 01, 1990, to June 01, 1990, T. Erwin, D. Silva, 1 ♀ (MUSM, PBI_OON 43313). **BRAZIL:** **Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, Oct. 15, 1995, J.C.H. Guerrero, 1 ♀, 1 juvenile, sex unknown (MPEG 19006, PBI_OON 42159); Presidente Figueiredo: UHE Bal-

bina, -1.80000°, -59.65000°, July 29, 2006, R. Saturnino, 1 ♀, 1 juvenile, sex unknown (MPEG 010663, PBI_OON 40479).

Orchestina MI027

Figures 213, 221B, 224F, map 19

MORPHOTYPE: Female from Ecuador: Orellana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 04, 1996, T. Erwin et al., 1 ♀, deposited in USNM, PBI_OON 30939.

DIAGNOSIS: Females resemble those of OMI023 but can be distinguished by having the external pockets more separated and followed by sclerotized rims (figs. 221B, 224F).

DESCRIPTION: Habitus as in figure 213. **GENITALIA:** Internal pockets absent; tip of anterior receptaculum wide; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 221B, 224F).

DISTRIBUTION: Known from the provinces of Orellana in Ecuador and the state of Amazonas in Brazil (map 19).

OTHER MATERIAL EXAMINED: **ECUADOR:** **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 04, 1996, T. Erwin et al., 3 ♀ (USNM, PBI_OON 14946); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30006); same data, June 25, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30072); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30144); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30166); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30246); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30721); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43292); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 43293); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 43294); Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14942); same data, Oct. 24, 1998, T. Erwin et al., 2 ♀ (USNM, PBI_OON 14943); same data, July 04, 1998, T. Erwin et al., 2 ♀ (USNM, PBI_OON 14944); same data, Oct. 22, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14945); same data, Oct. 21, 1987, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14947); same data, Oct. 24, 1998, T. Erwin

et al., 3 ♀ (USNM, PBI_OON 14948); same data, Oct. 22, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14949). **BRAZIL: Amazonas:** Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, July 29, 1995, J.C.H. Guerrero, 1 ♀ (MPEG 18914, PBI_OON 42148).

Orchestina MI029

Figures 225D, 230D, map 19

MORPHOTYPE: Female from Ecuador: Orelana, 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 26, 1996, T. Erwin et al., deposited in USNM, PBI_OON 14962.

DIAGNOSIS: Females can be distinguished by the shape of the anterior receptaculum, rounded at base and by the presence of lateral plates (figs. 225D, 230D).

DESCRIPTION: GENITALIA: External, internal pockets absent; anterior receptaculum without anterior apodemes, widened at base; lateral plates present, viewed by transparency; posterior receptaculum absent; posterior apodeme formed by entire plate (figs. 225D, 230D).

DISTRIBUTION: Ecuador and Brazil (map 19).

OTHER MATERIAL EXAMINED: ECUADOR: Orelana: 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, June 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14951); same data, Oct. 04, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14952); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14959); same data, July 06, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14961); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14965); same data, Feb. 08, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14966); same data, June 21, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 14981); same data, Oct. 05, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 15009); same data, Oct. 03, 1996, T. Erwin et al., 2 ♀ (USNM, PBI_OON 37238); same data, Oct. 02, 1996, T. Erwin et al., 2 ♀, 1 juvenile, sex unknown (USNM, PBI_OON 37241); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (USNM, PBI_OON 43262); same data, Aug. 07, 1995, T. Erwin et al., 3 ♀ (MACN 31472, PBI_OON 30114); same data, June 30, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30142); same data, Oct. 07, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30180); same data, Oct. 07, 1995, T. Erwin et al., 3 ♀ (1 ♀ abdomen mounted for SEM) (USNM,

PBI_OON 30182); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30188); same data, Aug. 04, 1995, T. Erwin et al., 3 ♀ (USNM, PBI_OON 30200); same data, Oct. 08, 1995, T. Erwin et al., 2 ♀ (MACN 31473, PBI_OON 30236); same data, Feb. 13, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30346); same data, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30366); same data, Feb. 04, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30475); same data, July 22, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30482); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30822); same data, Oct. 08, 1995, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30918); same data, June 26, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 30923). Tiputini Biodiversity Station, near Yasuní National Park, 250 m, -0.63194°, -76.14416°, Oct. 24, 1998, T. Erwin et al., 1 ♀ (USNM, PBI_OON 37242); same data, Oct. 21, 1998, T. Erwin et al., 1 ♂ (USNM, PBI_OON 37243). **BRAZIL: Acre:** Senador Guiomard: Reserva Extrativista de Catuaba (-10.07666°, -67.61666°), Jan. 01, 2002, E. Morato et al., 1 ♀ (IBSP 86883, PBI_OON 42695). **Amazonas:** Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.85194°, -65.28305°, Sep. 03, 2009, N.F. Lo-Man-Hung et al., 1 ♀ (MPEG 16708, PBI_OON 43333).

Orchestina MI028

Figures 210, 226A–C, map 21

MORPHOTYPE: Male from Peru: Madre de Dios: Provincia Manu: Zona Reservada Pakitza, 356 m, -11.93333°, -71.28333°, June 01, 1992, T. Erwin, D. Silva, deposited in MUSM, PBI_OON 51092.

REMARKS: This male was found in the same vial with a female of *O. silvae* (MUSM 501566, PBI_OON 43318), but, given that many other males and females were found in the same locality on the same date, the specimens were separated and treated as different species. In case of future matching, we have placed a label in both vials indicating the original location of such specimens.

DIAGNOSIS: Males can be distinguished by the sinuous clypeus (fig. 210B), the abruptly narrowed promargin of chelicerae (fig. 210B), the lateral projections on the labium (fig. 210C, arrow) and the morphology of the palp (fig. 226A–C).

DESCRIPTION: Anterior margins of sternum with two pale areas at both sides of labium (fig. 210C). Chelicerae anterior face with basal conical projections near base, promargin abruptly narrowed (fig. 210B). Labium widest at base, with two lateral projections, slightly more sclerotized than sternum, two sclerotized bands extending to sternum (fig. 210C). Endites anteromedian tip with one short, strong, toothlike projection, serrula difficult to observe but probably present. **ABDOMEN:** Pattern of gray or purple patches (fig. 210A). **GENITALIA:** Embolus short, flanked by short spinelike apophysis (fig. 226A–C), sperm duct strongly coiled, with several loops.

DISTRIBUTION: Known only from the morphotype locality (map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina MI030

Figures 214, 226D–F, 231A, B, map 21

MORPHOTYPE: Male from Peru: Loreto: Pithecia, -5.18333°, -74.70000°, May 01, 1990, to June 01, 1990, T. Erwin, D. Silva, deposited in MUSM, PBI_OON 43310.

DIAGNOSIS: Males resemble those of *O. mancocapac* in having a serrated apophysis on the copulatory bulb, but can be distinguished by a significant difference in the general shape of the copulatory bulb and the apophysis (fig. 226D–F). In addition, both chelicerae are provided with only one toothlike projection instead of two, as occur in that species (fig. 214B).

DESCRIPTION: **CEPHALOTHORAX** (fig. 214): Carapace with brown stripe along margin of cephalic area, oval in dorsal view (fig. 214A). Chelicerae anterior face with conical projection (fig. 214B). Endites anteromedian tip with one short, toothlike projection, serrula present in single row. **ABDOMEN:** Missing. **LEGS:** Missing. **GENITALIA:** Bulb prolateral margin with strong serrated apophysis near embolus base; embolus light, wide in lateral view; sperm duct slightly coiled (figs. 226D–F, 231A, B).

DISTRIBUTION: Known only from the morphotype locality (map 21).

OTHER MATERIAL EXAMINED: None.

Orchestina MI021

Figures 199B, E, 220C, 224C, 229B, map 27

MORPHOTYPE: Female from Brazil: Acre: Senador Guimard, Reserva Extrativista de Catuaba (-10.07666°, -67.61666°), 2002. E. Morato et al., deposited in IBSP 86908, PBI_OON 42408.

DIAGNOSIS: Females are similar to those of OMI038 from which they can be distinguished by the extension of the lateral projections of the anterior receptaculum, forming a wider structure than in OMI038; in addition, the anterior apodemes differ in length. They also resemble those of OMI020, from which they can be also distinguished by the general shape of the anterior receptaculum and internal pockets (figs. 220C, 224C, 229B).

DESCRIPTION: Habitus as in figure 199B, E. **GENITALIA:** External pockets absent, internal pockets small; anterior receptaculum with massive lateral projections, short anterior apodemes; posterior receptaculum present, posterior apodeme formed by entire plate (figs. 220C, 224C, 229B).

DISTRIBUTION: Ecuador, Peru, and Brazil (map 27).

OTHER MATERIAL EXAMINED: **ECUADOR:** **Orellana:** 1 km S Onkone Gare Camp, Reserva Etnica Waorani, 216 m, -0.65715°, -76.45300°, Feb. 07, 1996, T. Erwin et al., 1 ♀ (USNM, PBI_OON 36460). **PERU:** **Madre de Dios:** Tambopata: Zona Reservada Pakitza, 356 m, -11.56000°, -71.17000°, May 04, 1991, D. Silva, 2 ♀ (MUSM, PBI_OON 51112). **BRAZIL:** **Acre:** Senador Guimard: Reserva Extrativista de Catuaba, Jan. 01, 2002, E. Morato et al., 1 ♀ (IBSP 87019, PBI_OON 30380); same data, 1 ♀ (IBSP 86856 PBI_OON 30382); same data, 1 ♀ (IBSP 86852, PBI_OON 42249); same data, 1 ♀ (IBSP 87022, PBI_OON 42250); same data, 1 ♀ (IBSP 86893, PBI_OON 42650); same data, 1 ♀ (IBSP 87025, PBI_OON 42663); same data, 1 ♀ (IBSP 86881, PBI_OON 42664); same data, 1 ♀ (IBSP 87024, PBI_OON 42684); same data, 1 ♀ (IBSP 87020, PBI_OON 42687); same data, 1 ♀ (IBSP 86868, PBI_OON 42688);

same data, 1 ♀ (IBSP 86863, PBI_OON 42689); same data, 1 ♀ (IBSP 86866, PBI_OON 42690); same data, 1 ♀ (IBSP 86880, PBI_OON 42691); same data, 1 ♀ (IBSP 87026, PBI_OON 42692); same data, 1 ♀ (IBSP 86899, PBI_OON 42696); same data, 1 ♀ (IBSP 86989, PBI_OON 42699); same data, 1 ♀ (IBSP 86898, PBI_OON 42700); same data, 1 ♀ (IBSP 87017, PBI_OON 50028).

Orchestina MI032

Figures 215, 226G–I, 231D, E, map 27

MORPHOTYPE: Male from Brazil: Amazonas: Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.85194°, -65.28305°, Sep. 02, 2009, N.F. Lo-Man-Hung et al., deposited in MPEG 016703, PBI_OON 43340.

DIAGNOSIS: Males can be distinguished by having two short additional apophyses on the palp (fig. 226G–I), the wide cephalic region, strong chelicerae and sinuous clypeus (fig. 215D).

DESCRIPTION: Habitus as in figure 215A, B, D. **CEPHALOTHORAX:** Clypeus sinuous in front view, vertical in lateral view (fig. 215B–D). Chelicerae anterior face without basal conical projections near base; fang tip distally widened. Endites with serrula in single row, anteromedian tip unmodified. Leg spination (only surfaces bearing spines listed, all spines longer than segment width): metatarsi: IV d0-0-2. **GENITALIA:** Embolus dark, short, flanked by two spine-shaped apophyses, sperm duct strongly coiled, with several loops (figs. 237G–I, 231D, E).

DISTRIBUTION: Known from Amazonas, Brazil (map 27).

OTHER MATERIAL EXAMINED: **BRAZIL: Amazonas:** Coari: Base de Operações Geólogo Pedro de Moura, Porto Urucu, -4.86861°, -65.26472°, Sep. 29, 2004, A.B. Bonaldo, D.F. Candiani and J.A. Marin-Fernandes, 1 ♂ (MPEG 010261, PBI_OON 40467).

Orchestina MI033

Figures 216, 227A–C, 231C, F, G, map 27

MORPHOTYPE: Male from Brazil: Amazonas: Presidente Figueiredo: UHE Balbina, -1.81666°,

-59.66666°, July 30, 2006, R. Saturnino, deposited in MPEG 010661, PBI_OON 40477.

DIAGNOSIS: Males can easily be distinguished by the shape of the copulatory bulb, with short embolus and a serrate border on the retrolateral side, near base of embolus (figs. 227A–C, 231C).

DESCRIPTION: Habitus as in figure 216. Carapace, chelicerae, endites without modifications; sperm duct slightly coiled (fig. 231F, G).

DISTRIBUTION: Known only from the type locality in Brazil (Amazonas, map 27).

OTHER MATERIAL EXAMINED: **BRAZIL: Amazonas:** UHE Balbina, -1.78333°, -59.26666°, July 19, 2006, R. Saturnino, 1 ♂ (MPEG 10662, PBI_OON 40478).

Orchestina MI034

Figures 217, 227D–F, 232A, B, map 27

MORPHOTYPE: Male holotype from Brazil: Amazonas: Presidente Figueiredo: UHE Balbina, -1.78333°, -59.26666°, Sep. 26, 2006, R. Saturnino, deposited in MPEG 010660, PBI_OON 40476.

DIAGNOSIS: Males of this morphospecies are easily distinguished by the palm, leaf-shaped apophysis near embolus tip (figs. 227D, F, 232A, B).

DESCRIPTION: Habitus as in figure 217. Carapace, chelicerae, endites without modifications (fig. 217). **GENITALIA:** Besides diagnostic characters, sperm duct strongly coiled, with many loops (Fig 232A).

DISTRIBUTION: Known only from the morphotype locality (map 27).

OTHER MATERIAL EXAMINED: None.

Orchestina MI035

Figures 232F, G, map 27

MORPHOTYPE: Male from Brazil: Amazonas: Manaus: Reserva Adolpho Ducke, -2.92638°, -59.94027°, July 18, 1995, J.C.H. Guerrero, deposited in MPEG 19003, PBI_OON 42162.

DIAGNOSIS: Males can be distinguished by the shape of the bulb, without apophyses and with moderately long embolus (fig. 232F, G).

DESCRIPTION: Specimen in poor condition; carapace, chelicerae, endites without modifications. **GENITALIA:** Copulatory bulb without additional apophyses, embolus long, sperm duct strongly coiled, with many loops (fig. 232F, G).

DISTRIBUTION: Known only from the morphotype locality (map 27).

OTHER MATERIAL EXAMINED: None.

Orchestina MI037

Figures 218, 228A–C, 232C–E, map 27

MORPHOTYPE: Male from Brazil: Rio Grande do Sul, Potreiro Velho, São Francisco de Paula, -29.73333, -50.4, June 2002, Luis A. Bertonecello et al. leg., deposited in MCTP, PBI_OON 51097.

REMARKS: This male was found in the same vial with a female of *O. sarava* (MCTP 24652, PBI_OON 43375), but, given that other males and females were found in the same locality on the same date, the specimens were separated and treated as different species. In case of future matching, we have placed a label in both vials indicating the original location of such specimens.

DIAGNOSIS: Males can be distinguished by the shape of the bulb, with inconspicuous embolus and a very wide first section of the sperm duct, starting from fundus (figs. 228A–C, 232C–E).

DESCRIPTION: Habitus as in figure 218. Chelicerae anterior face with basal conical projections near base. Endites with serrula in single row, anteromedian tip unmodified. **GENITALIA:** Embolus dark, short, base with serrated border when viewed from side (fig. 228A–C); sperm duct strongly coiled, very wide in first part of its course (asterisk on fig. 232C).

DISTRIBUTION: Only known from the morphotype locality in Rio Grande do Sul, Brazil (map 27).

OTHER MATERIAL EXAMINED: None.

Orchestina MI039

Figures 219, 228D–F, 233A–C, map 27

MORPHOTYPE: Male from Brazil: Rio Grande do Sul: São Francisco de Paula: Potreiro Velho, -29.73333, -50.4, Aug. 01, 2001, Luis A. Bertonecello et al. leg., deposited in MCTP 24631, PBI_OON 43331.

DIAGNOSIS: The male palp is very different from those of other species. The femur is longer than the tibia and not enlarged; the copulatory bulb is widely oval and the cymbium is also very oval in dorsal view, clearly longer than wide (figs. 228D–F, 233A, C).

DESCRIPTION: Habitus as in figure 219A, B. **CEPHALOTHORAX** (fig. 219C–F): Carapace, chelicerae, endites without modifications. **GENITALIA:** Embolus dark, long; sperm duct slightly coiled (figs. 228D–F, 233A–C).

DISTRIBUTION: Rio Grande do Sul, Brazil (map 27).

OTHER MATERIAL EXAMINED: **Brazil: Rio Grande do Sul:** same data as morphotype, 1♂ (MCTP 24654, PBI_OON 43359).

Orchestina MI040

Figures 228G–I, 233D, E, map 27

MORPHOTYPE: Male from Brazil: Amazonas: Manaus: Igapó, Tarumã-Mirim (-3.03306°, -60.15750°), July 30, 1979, J. Adis et al. leg., deposited in IBSP, PBI_OON 51096.

DIAGNOSIS: Males can be distinguished by having a short embolus and a translucent, hook-like apophysis (figs. 228G–I, 233D, E).

DESCRIPTION: Specimen in poor condition. Carapace, chelicerae, labium, endites without modifications. **GENITALIA:** copulatory bulb stout with one slightly sclerotized, hooklike apophysis at tip, embolus very short, dark; sperm duct slightly coiled (figs. 228G–I 233D, E).

DISTRIBUTION: Known from Amazonas, Brazil (map 27).

OTHER MATERIAL EXAMINED: **Brazil: Amazonas:** Manaus: Paraná, Ilha de Curari (-3.331111, -60.085278), Aug. 03, 1979, J. Adis et al. leg., 1♂ (IBSP 17285, PBI_OON 30404).



FIGURE 1. Collecting methods. **A–D.** Fogging. **E.** Beating vegetation. **F.** Berlese funnels. **A.** The sheets are disposed under the canopy approximately at 1 m above the ground. **B.** Each sheet was connected to each other with ropes and clasps. **C.** Setting the machine with a mixture of diesel and pyrethroids. **D.** The fog is finally directed to the canopy. **E.** Beating vegetation was the most frequent technique employed during this project. **F.** Occasionally, some specimens were captured in litter using Berlese funnels. **A–D, F.** Ecuador. **E.** Juan Fernández Islands, illustrative image, no specimens of *Orchestra* were collected there. Credits. **C, D.** Dimitri Forero. **E.** Jaime Pizarro.

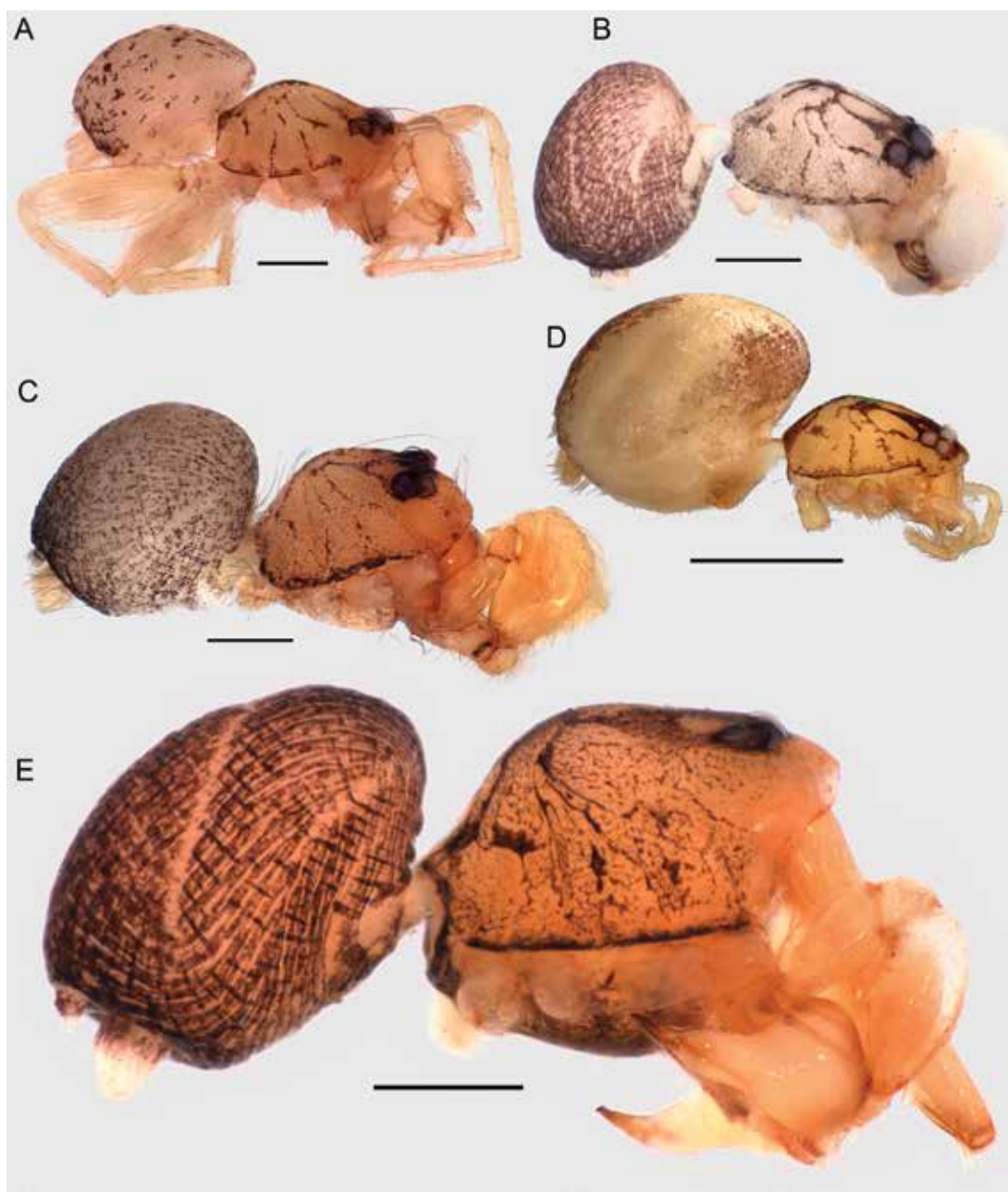


FIGURE 2. Habitus of specimens of *Orchestina* from other continents, lateral views. **A–C, E.** Males. **D.** Female. **A.** *O.* sp. from Malaysia. **B.** *O. clavulata* Tong and Li, 2011, from Hainan, South China. **C.** *O. macrofoliata* Henrard and Jocqué, 2012, from Congo. **D.** *O.* sp. from Australia. **E.** *O.* sp. from Papua New Guinea. Voucher codes, respectively: (PBI_OON 50017, NML), (PBI_OON 51094, IZCAS 19334), (PBI_OON 32872, MRAC 239558), (PBI_OON 14850, MACN-Ar 11923), (PBI_OON 42601, USNM). Scale bars: 0.2 mm, except **D**, 0.5 mm.

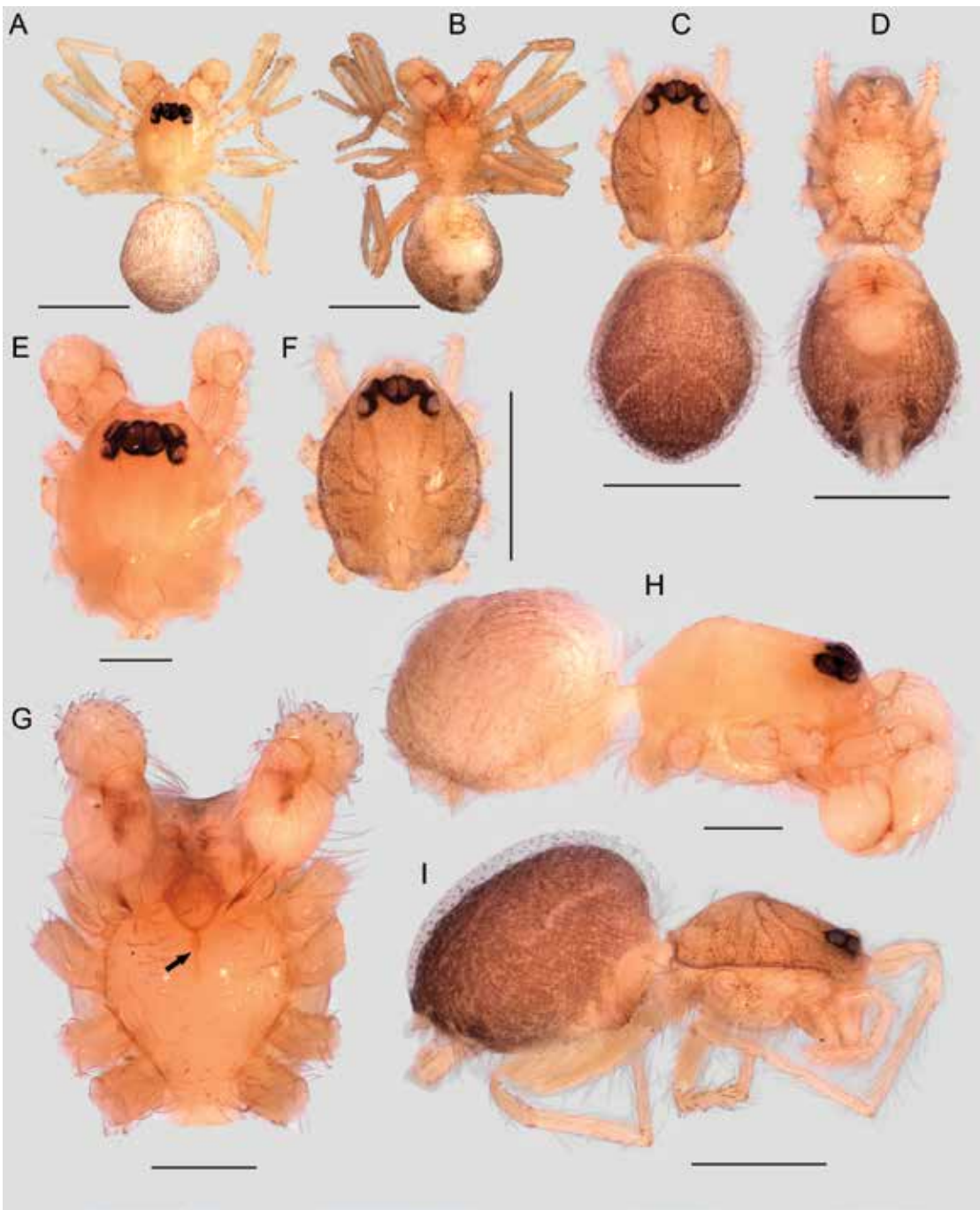


FIGURE 3. *Orchestina utahana*, habitus. A, B, E, G, H. Male. C, D, F, I. Female. A, C. Habitus dorsal. B, D. Same, ventral. E, F. Cephalothorax, dorsal. G. Sternum; arrow points to dark band of sternum. H, I. Habitus lateral. Scale bars: A–D, F, I. 0.5 mm. E, G, H. 0.2 mm. (PBI_OON 51099, 1076, 1107).

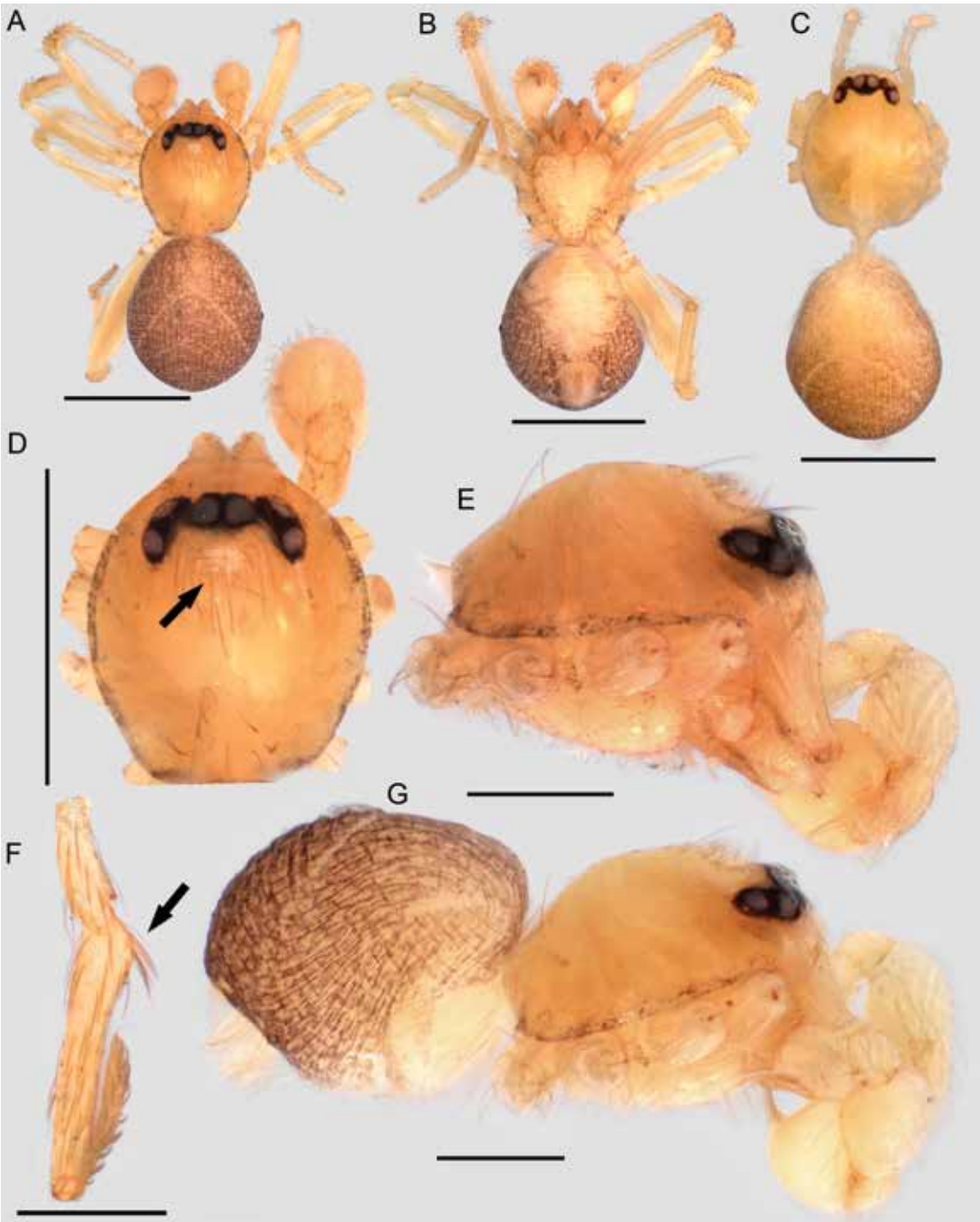


FIGURE 4. *Orchestina moaba*. **A, B, D–G.** male. **C.** Female. **A, C.** Habitus dorsal. **B.** Same, ventral. **G.** Same, lateral. **D.** Cephalothorax, dorsal; arrow points to the excavated area of the cephalic region covered by short setae. **E.** Same, lateral. **F.** Right leg I; arrow points to the proximal enlargement of tibia. Scale bars: **A–D.** 0.5 mm. **E, F.** 0.2 mm. (PBI_OON 1073, 1117, 1079).

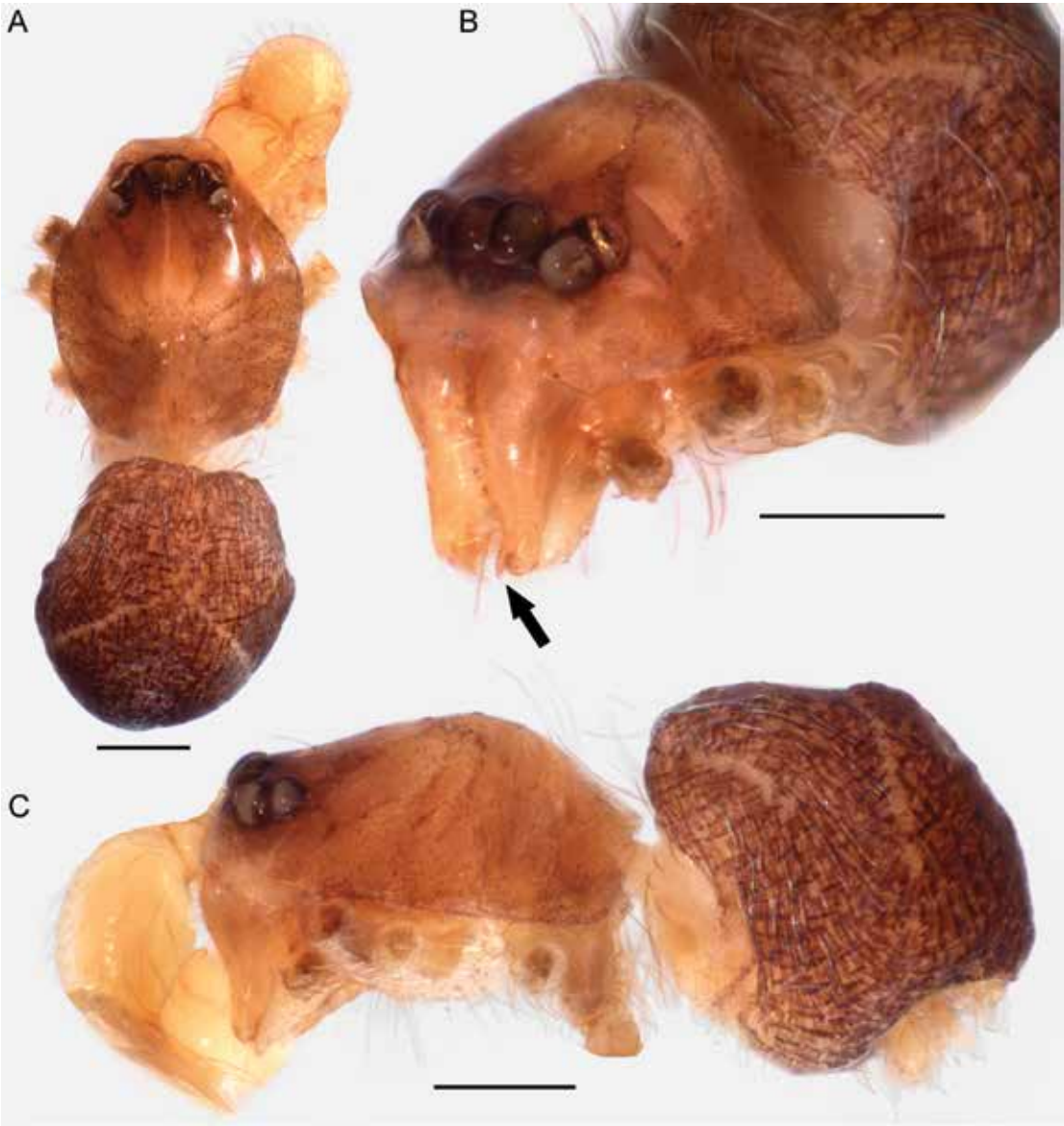


FIGURE 5. *Orchestina obscura*, habitus of male holotype. **A.** Dorsal. **B.** Anterior; arrow points to the cuticular projections of promargin of chelicerae. **C.** Lateral. Scale bars: 0.2 mm. (PBI_OON 42747).

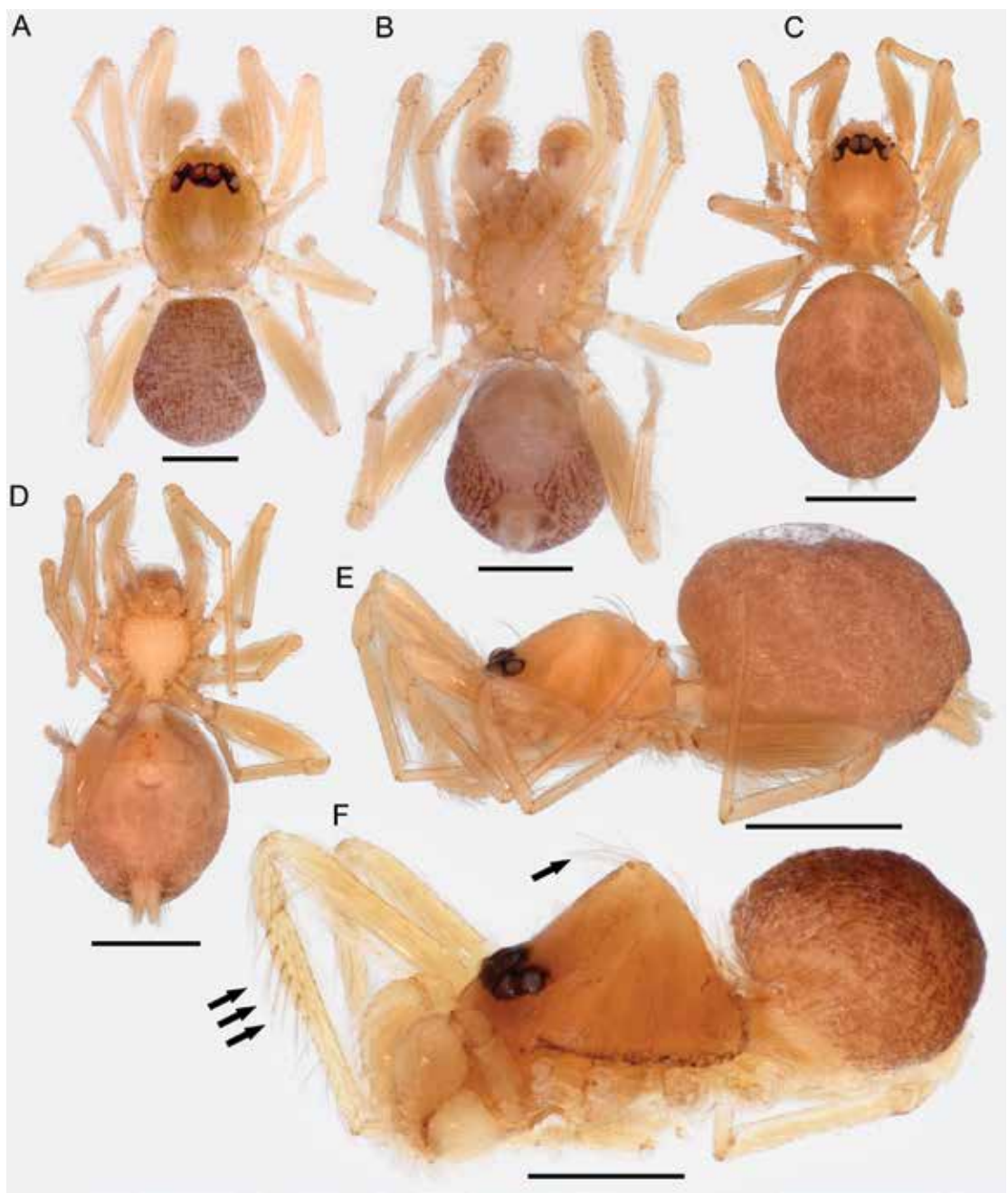


FIGURE 6. *Orchestina quasimodo*, habitus. A, B. Male holotype. F. Same, paratype. C–E. Female paratype. A, C. Dorsal. B, D. Ventral. E, F. Lateral; arrows pointing to the strong macrosetae of tibiae I and the long setae of carapace. Scale bars: A, B, F. 0.3 mm. C, E. 0.5 mm. (PBI_OON 50040, 38005).

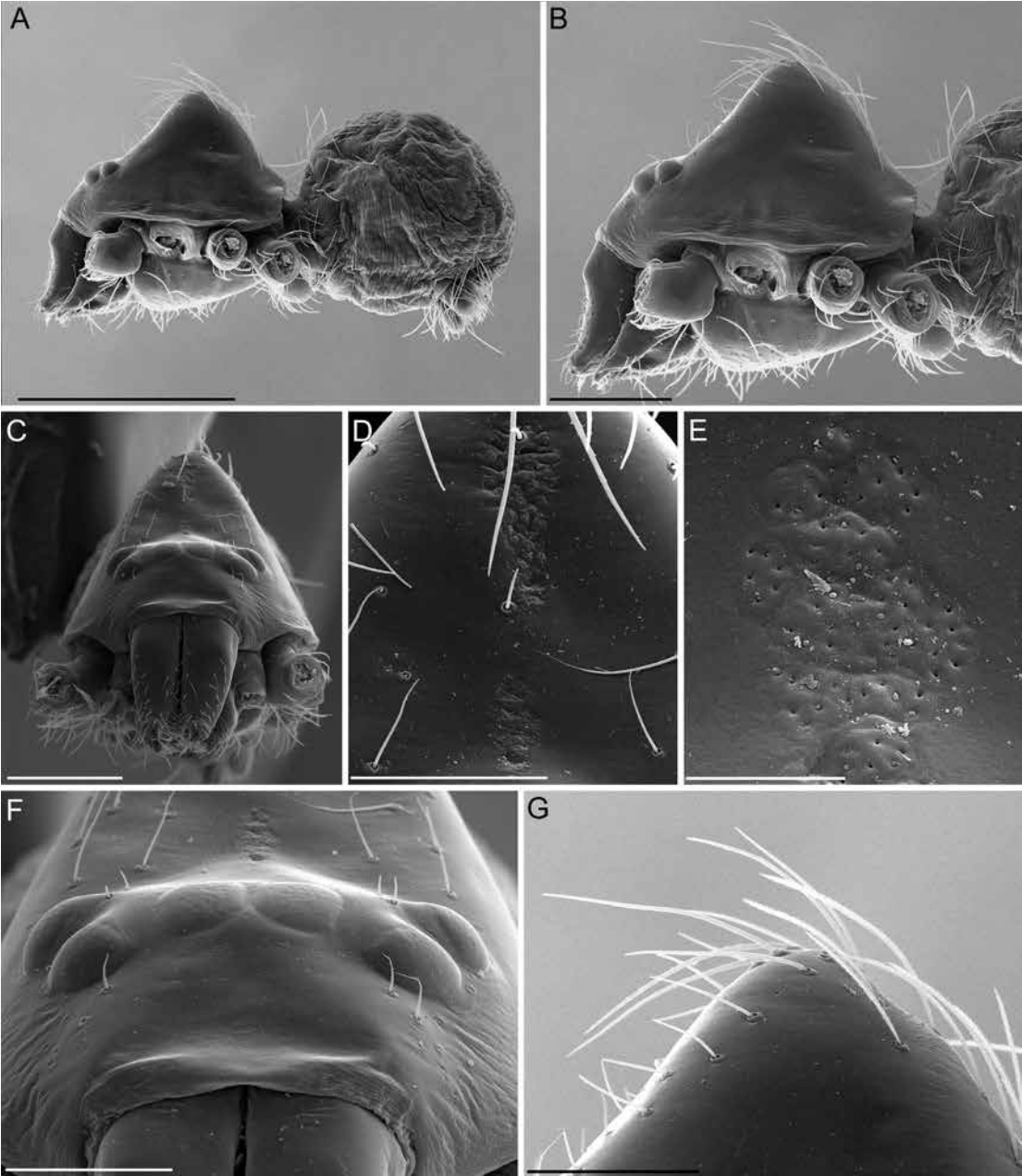


FIGURE 7. *Orchestina quasimodo*, SEM of male. **A.** Cephalothorax and abdomen, lateral view. **B.** Cephalothorax, lateral view. **C.** Same, anterior view. **D.** Gland pores in cephalic region. **E.** Same, detail. **F.** Clypeus and eyes, anterior view. **G.** Detail of carapace setae. Scale bars: **A.** 500 μm . **B, C.** 200 μm . **D, F, G.** 100 μm . **E.** 2 μm . (PBI_OON 38005).

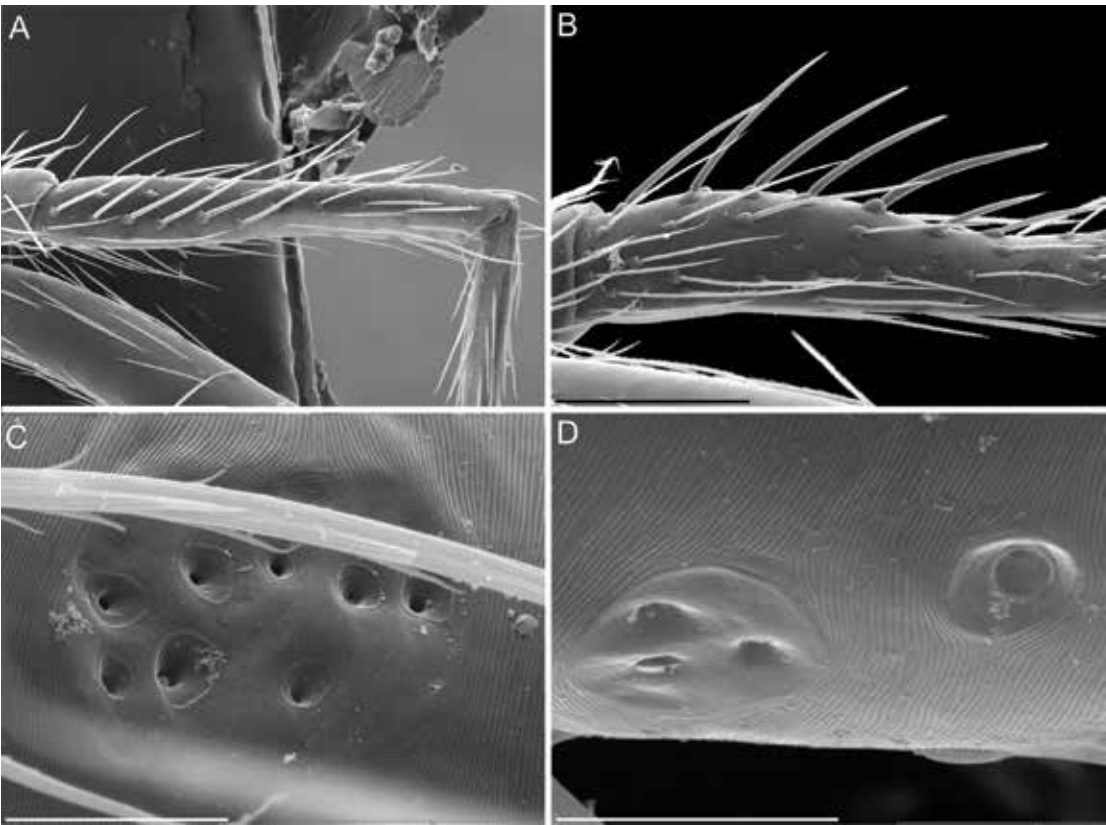


FIGURE 8. *Orchestina quasimodo*, SEM of male, tibiae I. **A.** Prolateral view. **B.** Prolateroventral view. **C.** Detail showing a special field of the tibia with gland pores. **D.** Same. Scale bars: **A.** 200 μm. **B.** 100 μm. **C, D.** 10 μm. (PBI_OON 38005).

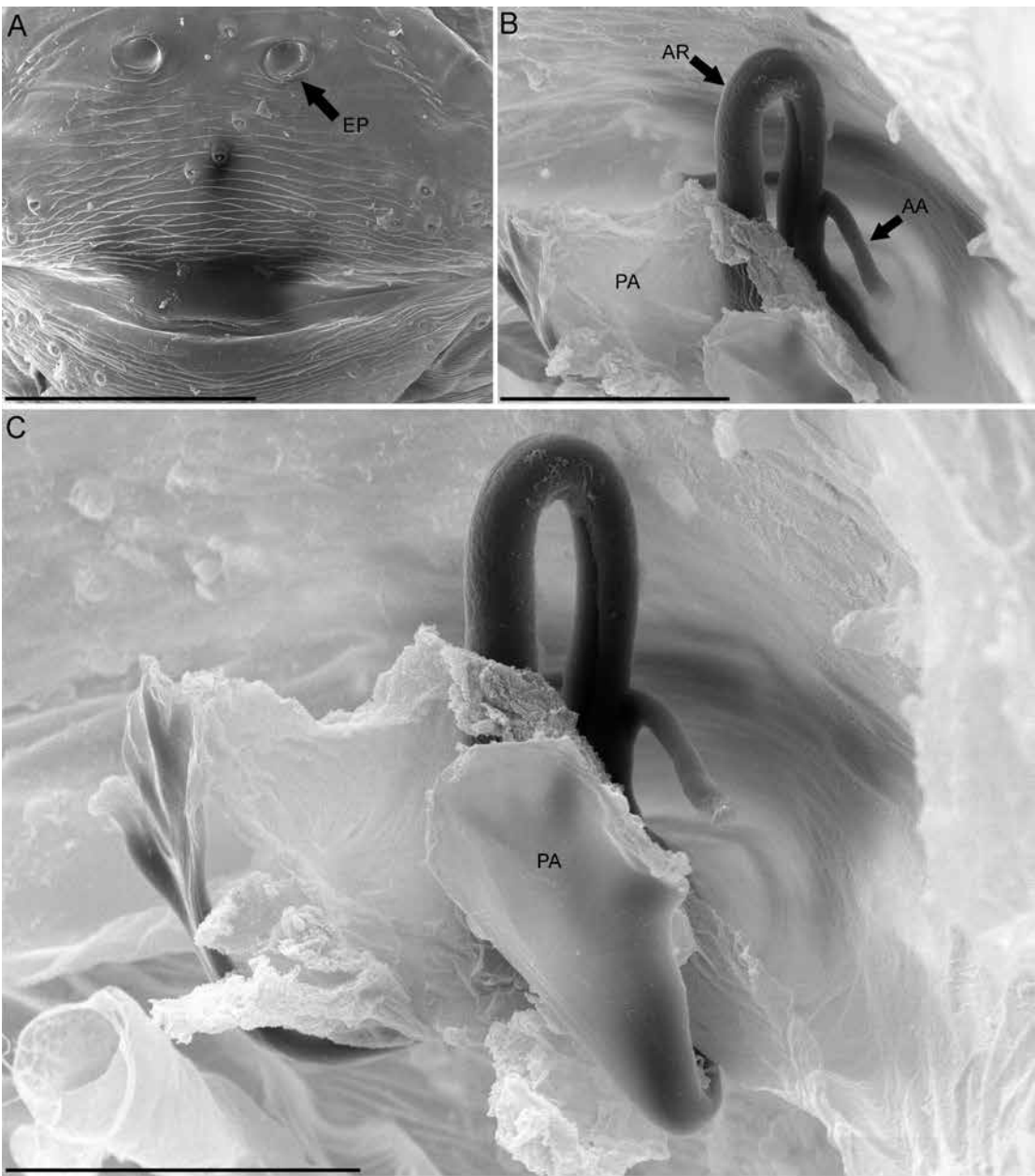


FIGURE 9. *Orchestina quasimodo*, SEM of female genitalia. **A.** Epigastric region. **B, C.** Laterodorsal views. Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **EP**, external pockets; **PA**, posterior apodeme. Scale bars: **A.** 100 µm. **B, C.** 50 µm. (PBI_OON 38005).

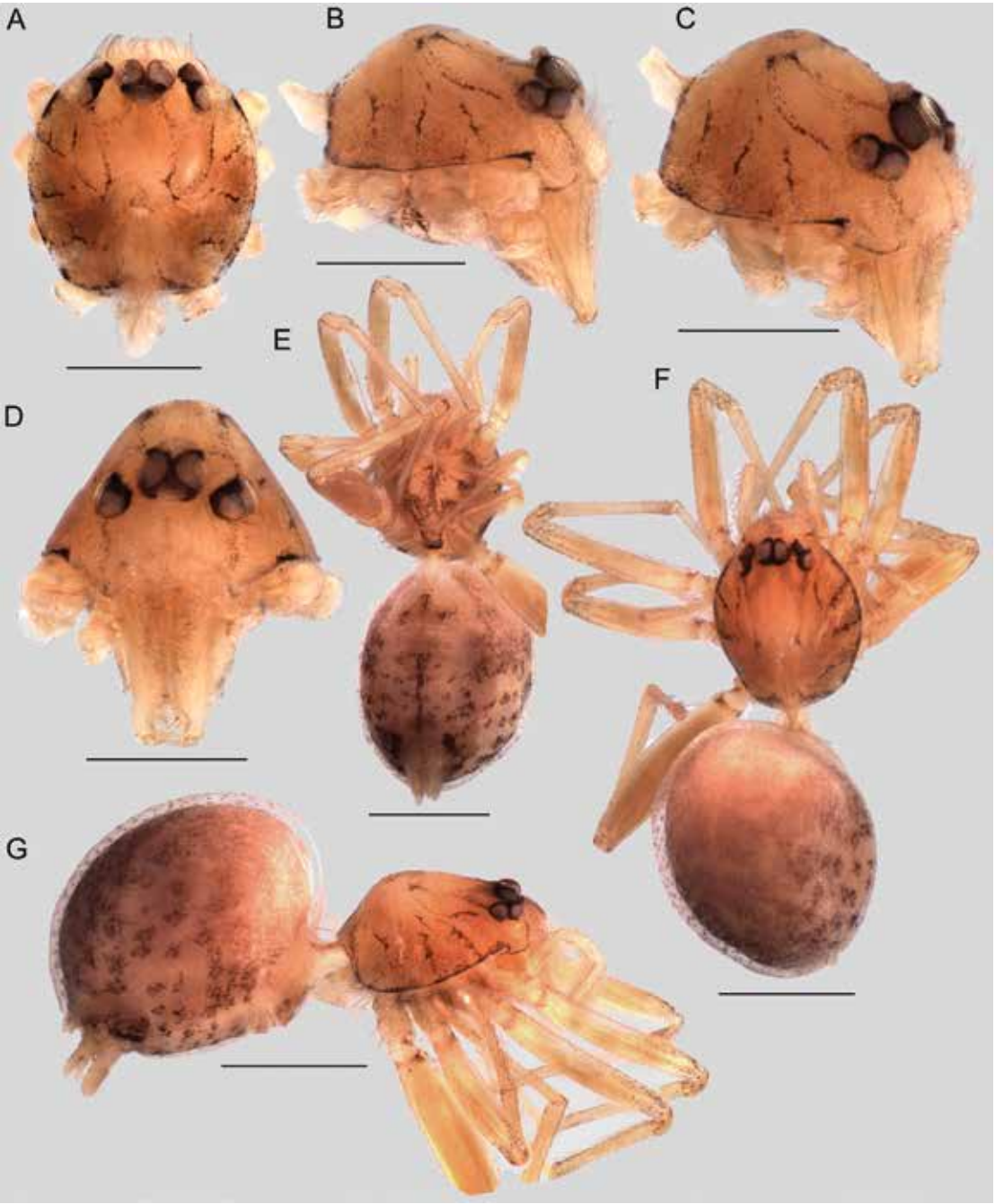


FIGURE 10. *Orchestina kamehameha*, habitus. A-D. Cephalothorax of male. E-G. Female. A, F. Dorsal. B, C, G. Lateral. D. Anterior. E. Ventral. Scale bars: A-D. 0.3 mm. E-G. 0.5 mm. (PBI_OON 38004).

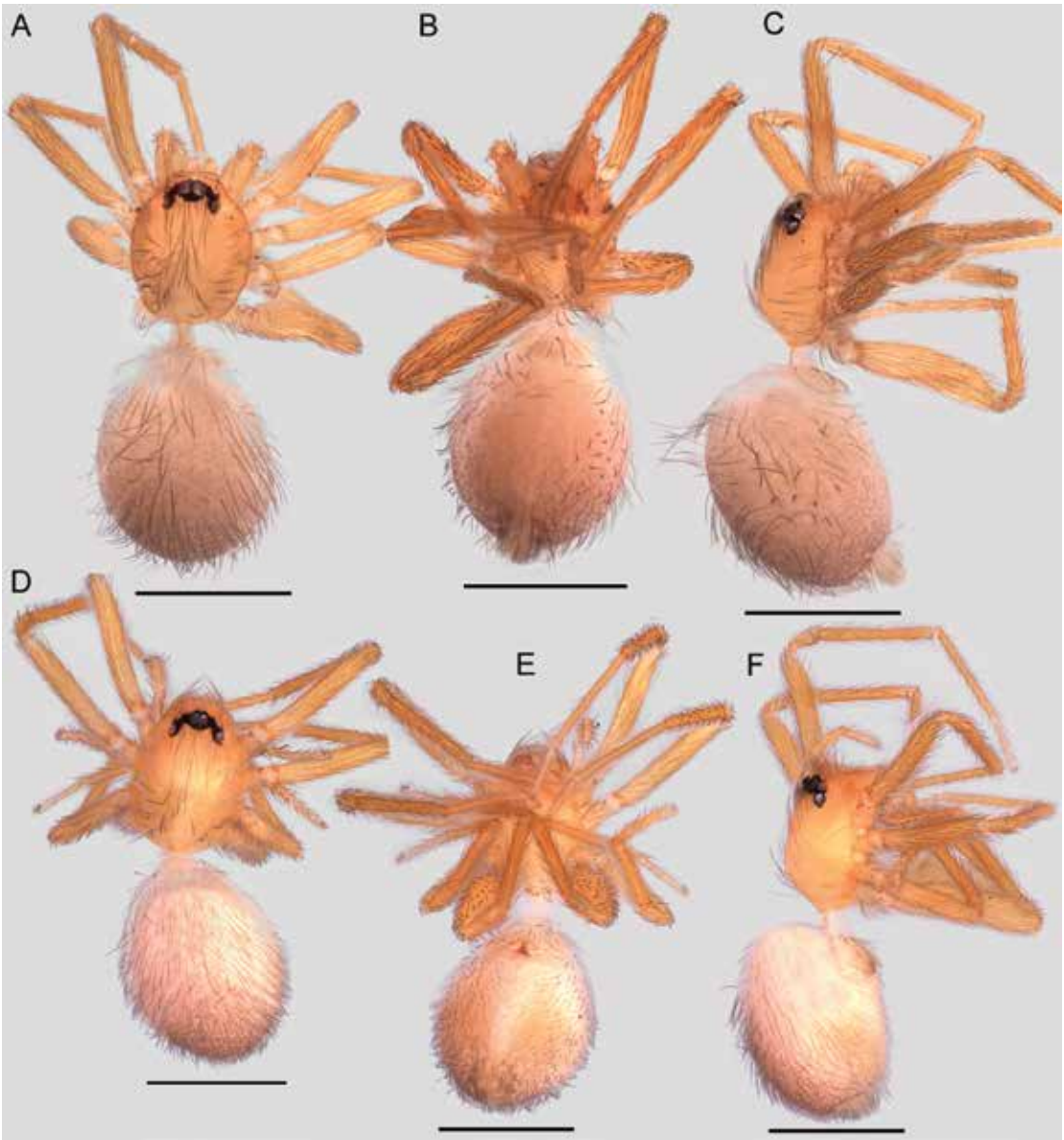


FIGURE 11. *Orchestina pavesiiformis*, habitus. A–C. Male. D–F. Female. A, D. Dorsal. B, E. Ventral. C, F. Lateral. Scale bars: 0.5 mm. (PBI_OON 42252, 42154).

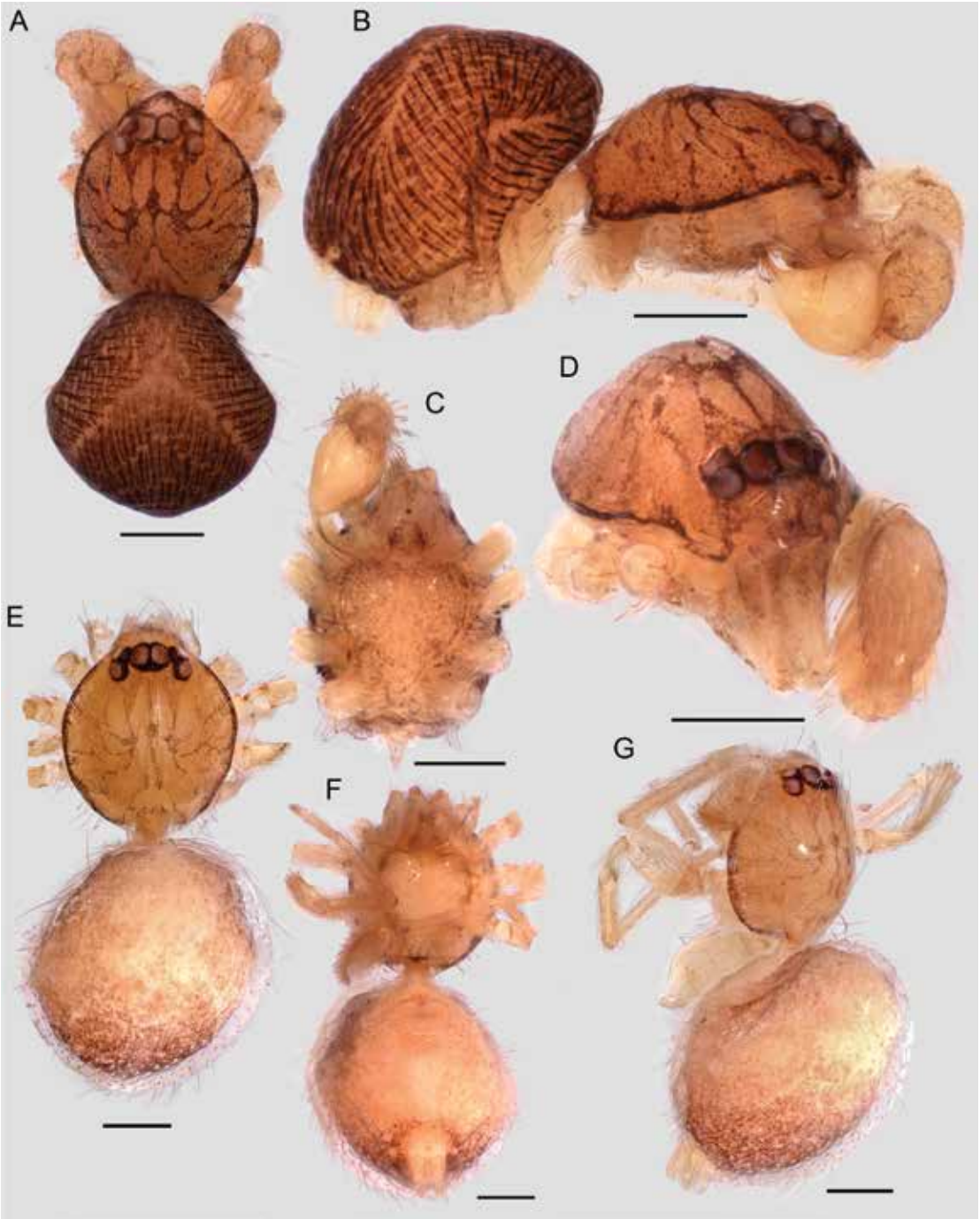


FIGURE 12. *Orchestina saltitans*. A–D. Male. E–G. Female. A, B, E–G. Habitus. C, D. Cephalothorax. A, E. Dorsal. B, G. Lateral. C, F. Ventral. D. Anterolateral. Scale bars: 0.2 mm. (PBI_OON 1070, 51089, 42584).

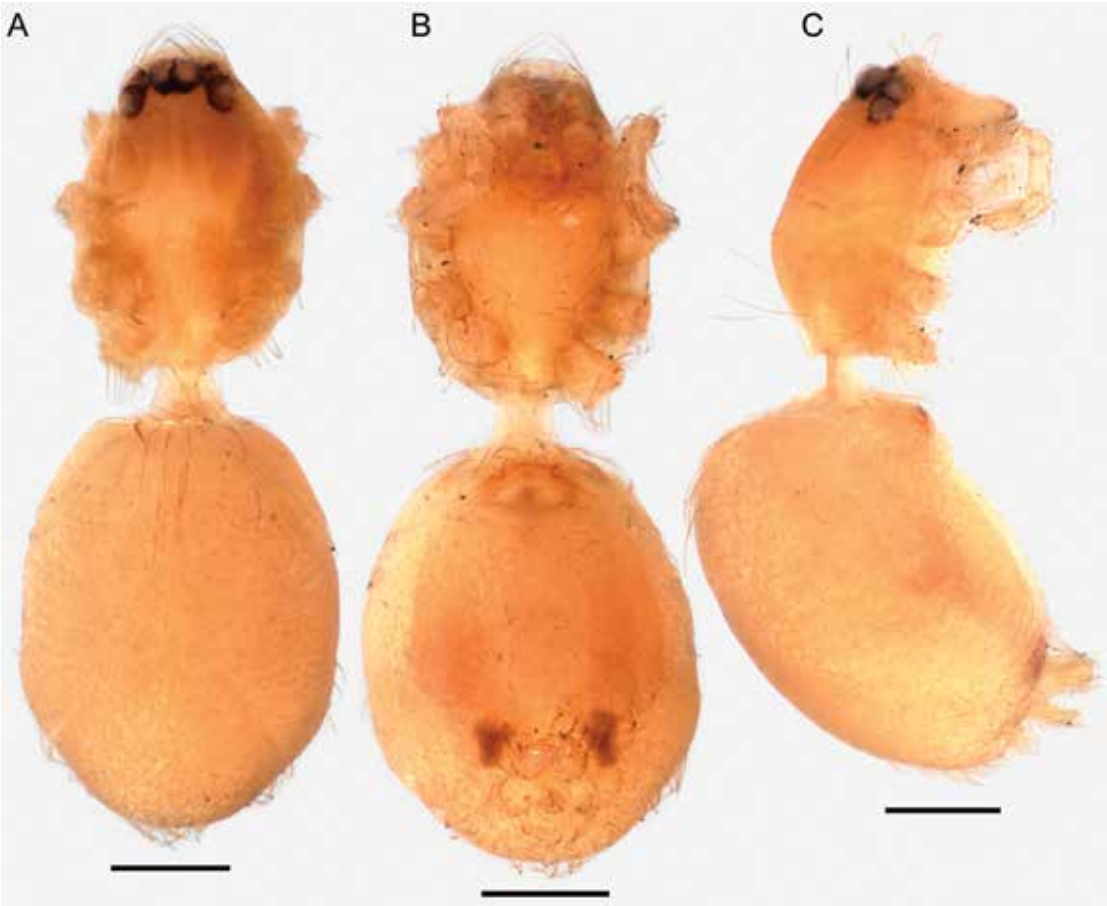


FIGURE 13. *Orchestina auburndalensis*, habitus of female holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.2 mm. (PBI_OON 1449).



FIGURE 14. *Orchestina nadleri*, habitus of types. A–C. Male holotype. D–F. Female paratype. A, D. Dorsal. B, E. Ventral. C, F. Lateral. Arrow points to the dark band of sternum. Scale bars: A–C. 0.2 mm. D–F. 0.5 mm. (PBI_OON 42746).

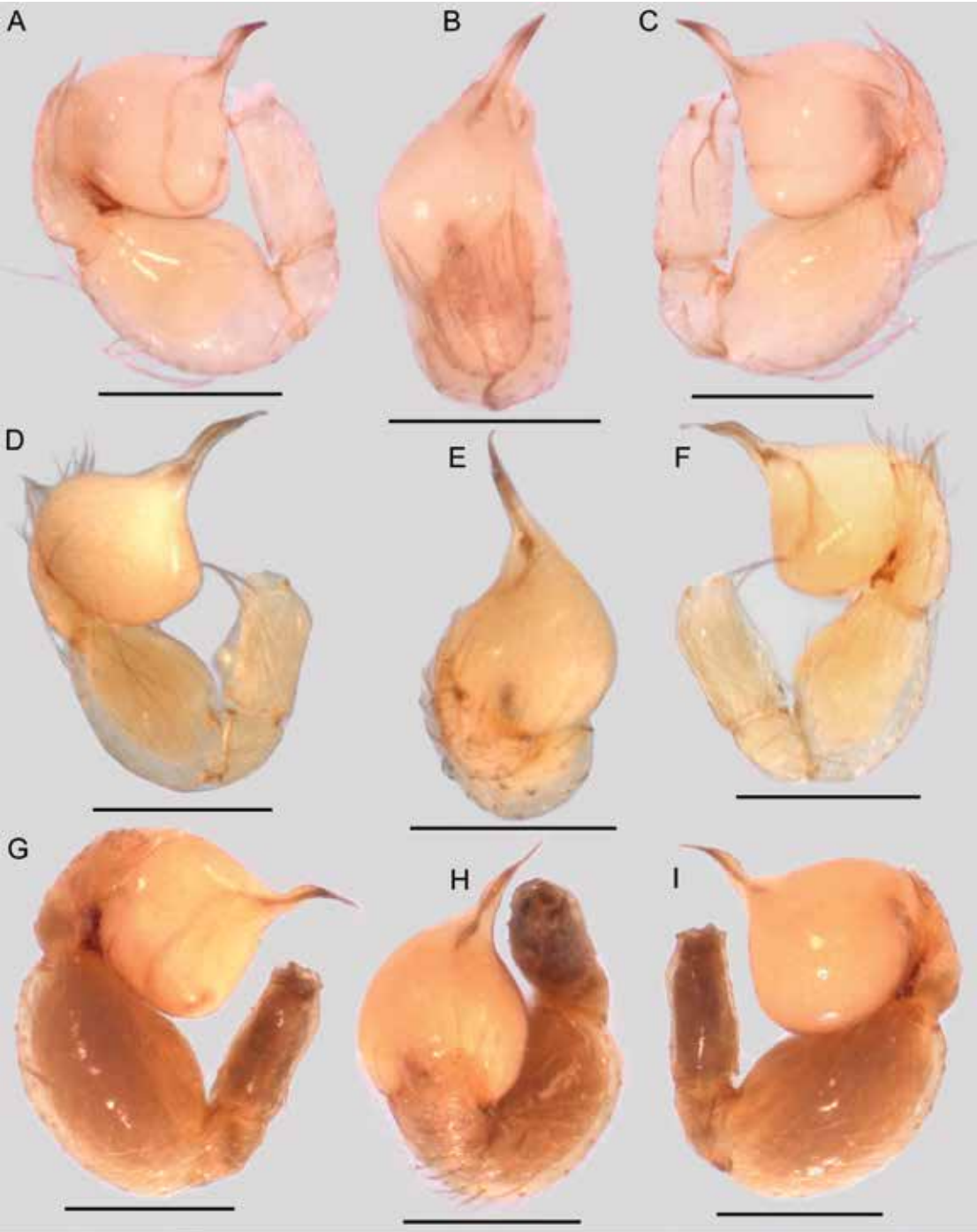


FIGURE 15. *Orchestina* spp., male palps. A–C. *O. utahana*. D–F. *O. moaba*. G–I. *O. obscura*. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 1076, 1073, 42747).

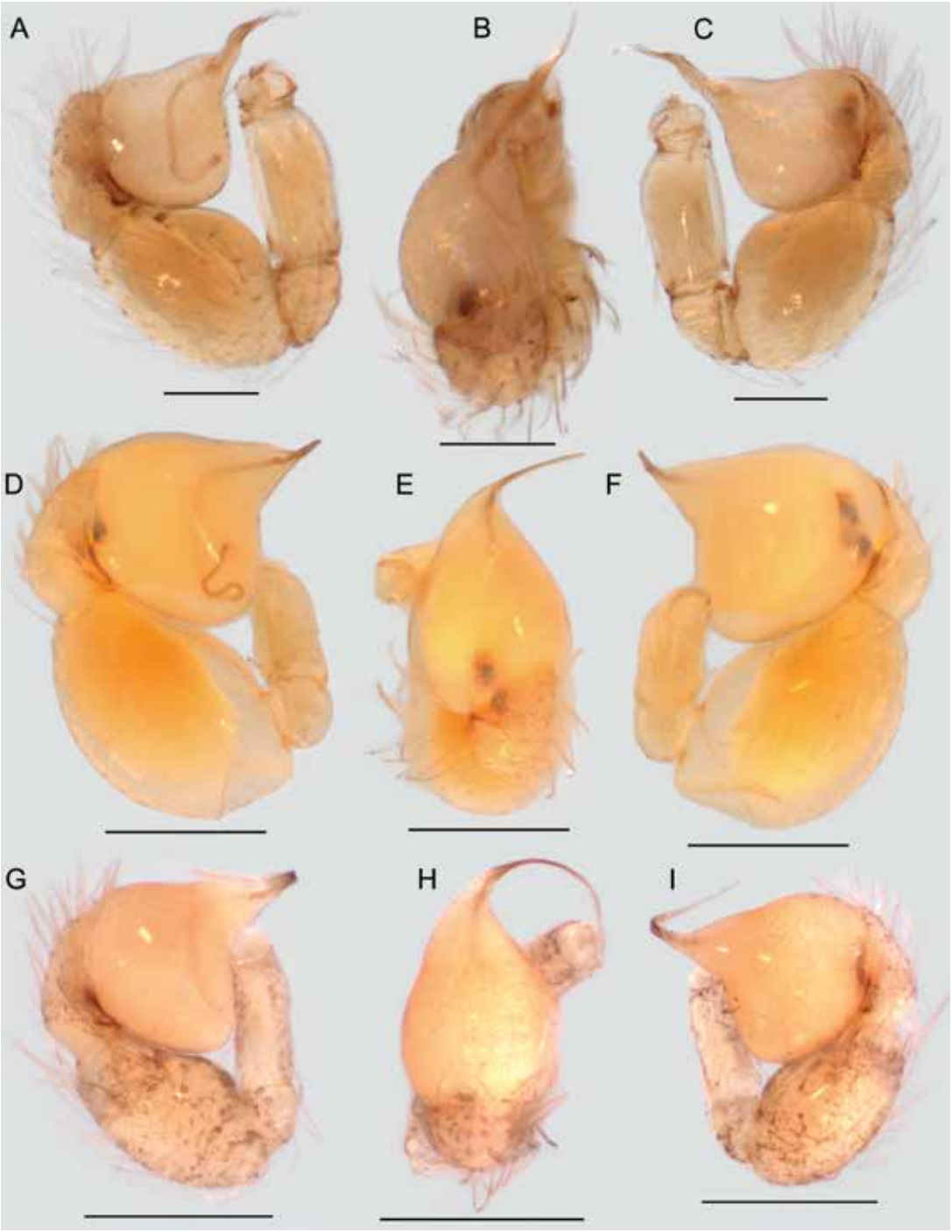


FIGURE 16. *Orchestina* spp., male palps. A–C. *O. quasimodo*, paratype. D–F. *O. kamehameha*. G–I. *O. saltitans*. A, D, G. Prolateral. B, E, H, dorsal. C, F, I. Retrolateral. Scale bars: A–C. 0.1 mm. D–I. 0.2 mm. (PBI_OON 38005, 38004, 51089).

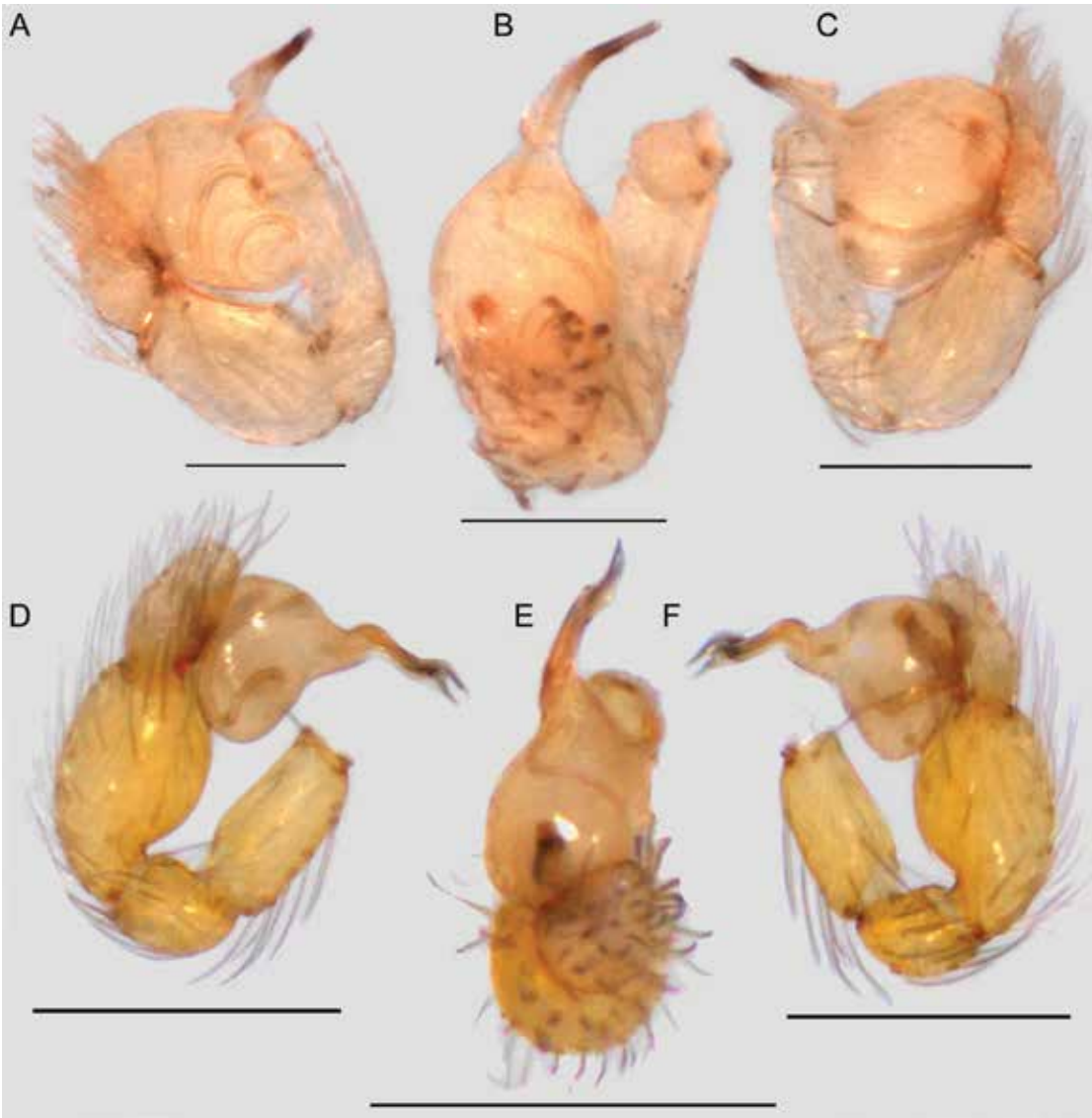


FIGURE 17. *Orchestina* spp., male palps. **A–C.** *O. nadleri*, holotype. **D–F.** *O. pavesiiformis*. **A, D.** Prolateral. **B, E.** Dorsal. **C, F.** Retrolateral. Scale bars: 0.2 mm. (PBI_OON 42746, 42271).

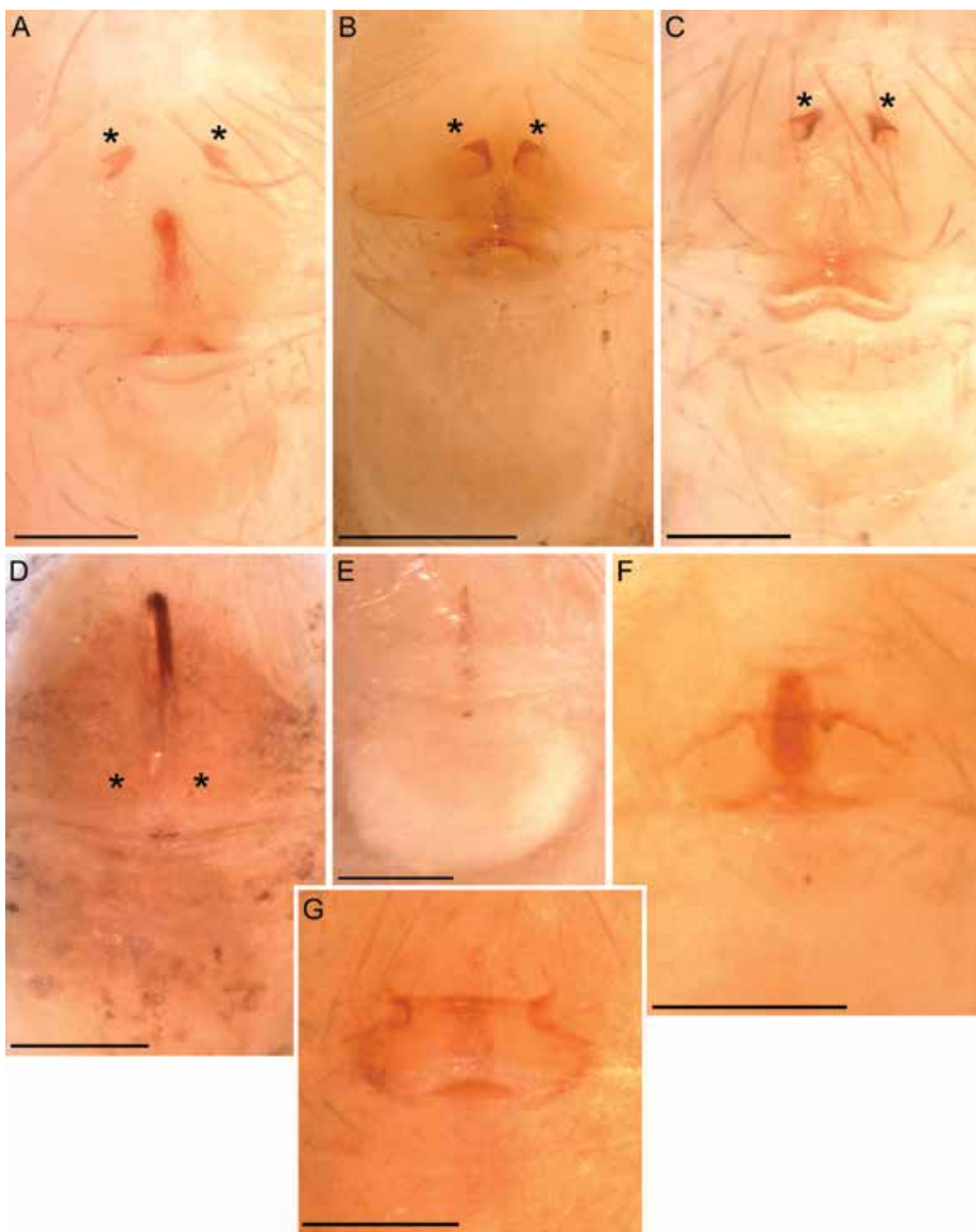


FIGURE 18. *Orchestina* spp., female genitalia, ventral view. **A.** *O. utahana*. **B.** *O. moaba*. **C.** *O. quasimodo*. **D.** *O. kamehameha*. **E.** *O. saltitans*. **F.** *O. nadleri*. **G.** *O. auburndalensis*. Asterisks indicate external pockets. Scale bars: **A, C–G.** 0.1 mm. **B.** 0.2 mm. (PBI_OON 1076, 1078, 1073, 38004, 42584, 42572, 1449).

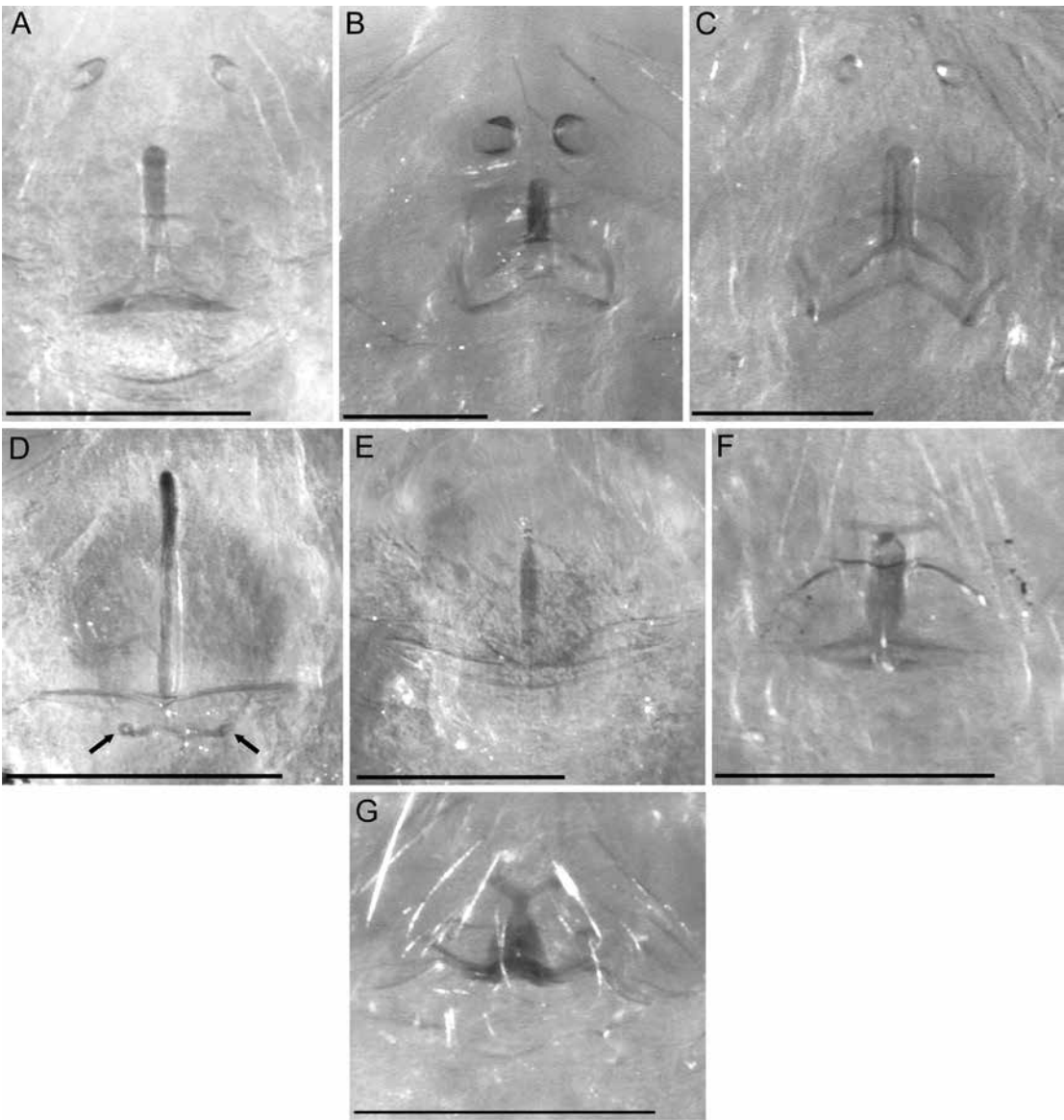


FIGURE 19. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. utahana*. **B.** *O. moaba*. **C.** *O. quasimodo*. **D.** *O. kamehameha*; arrows point to small external pockets. **E.** *O. saltitans*. **F.** *O. nadleri*. **G.** *O. pavesii-formis*. Scale bars: **A, E, F.** 1.5 mm. **B, D, G.** 0.2 mm. **C.** 0.1 mm. (PBI_OON 1459, 1078, 38005, 38004, 26481, 42572, 42267).

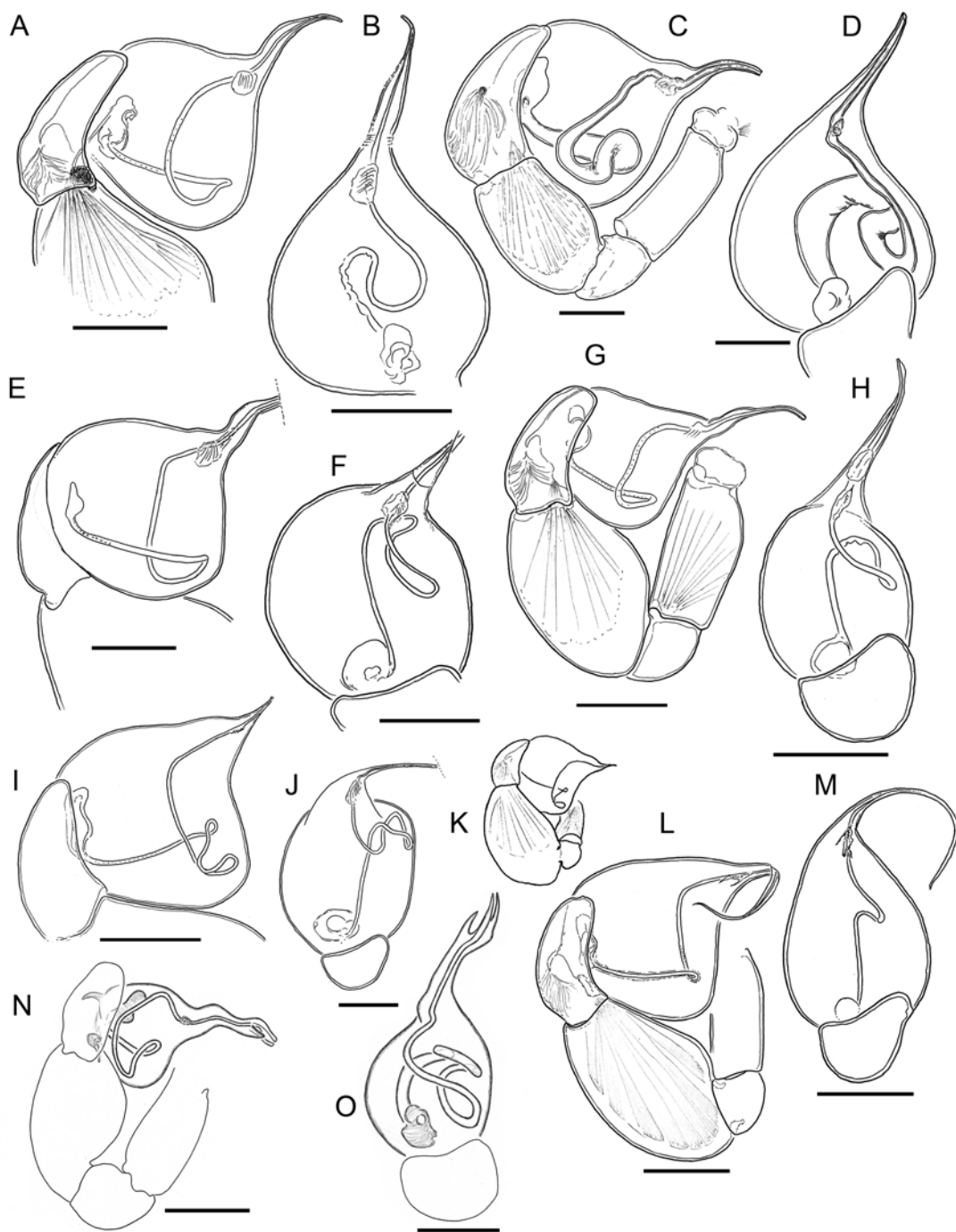


FIGURE 20. *Orchestina* spp., drawings of palp of males. A, B. *O. utahana*. C, D. *O. moaba*. E, F. *O. obscura*. G, H. *O. quasimodo*. I–K. *O. kamehameha*. L, M. *O. saltitans*. N, O. *O. pavesiiformis*. A, C, E, G, I, K, L, N. Prolateral. B, D, F, H, J, M, O. Dorsal. Scale bars: 0.1 mm. (PBI_OON 1317, 42824, 42747, 38005, 38004, 42587, 42271).

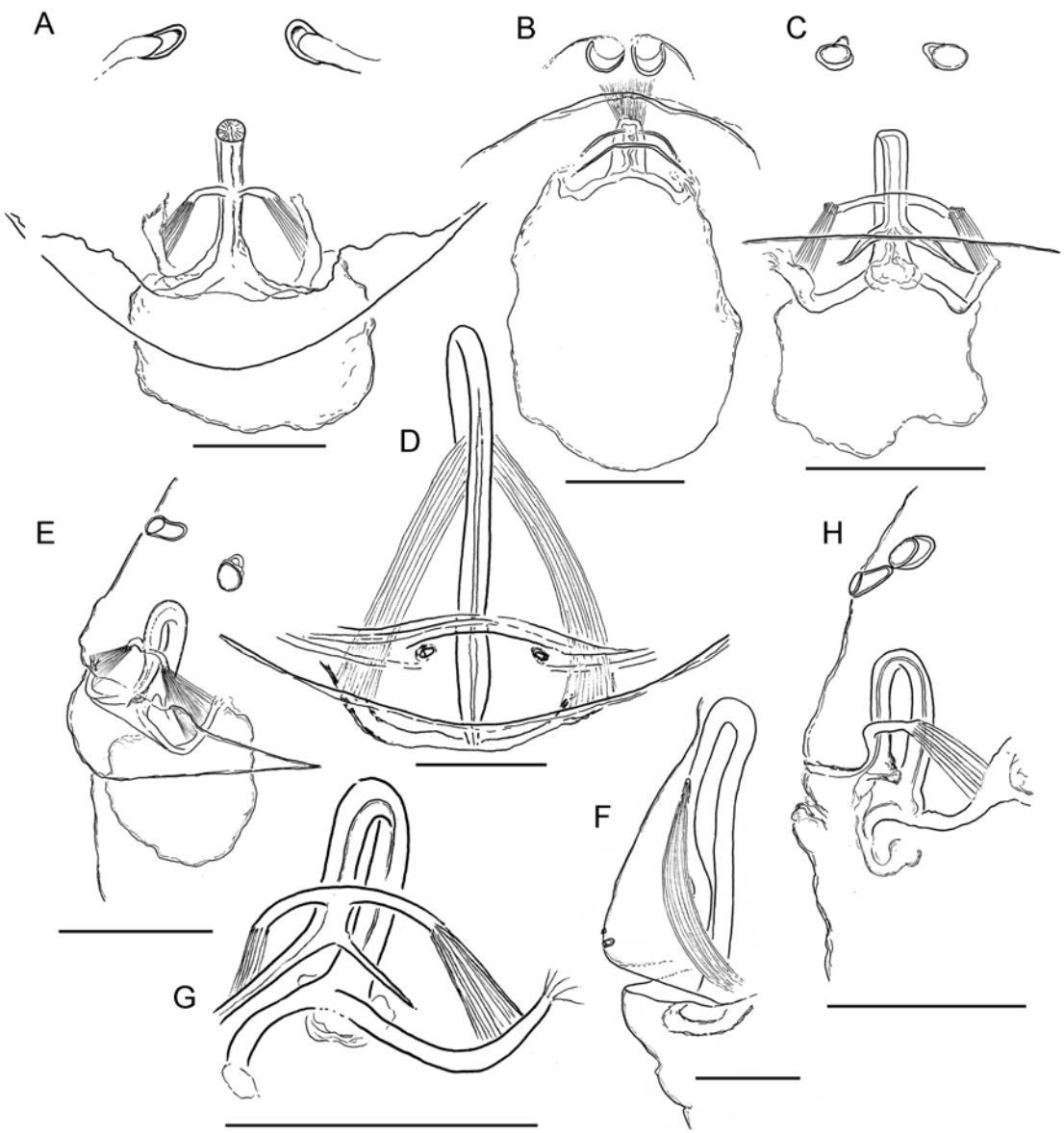


FIGURE 21. *Orchestina* spp. drawings of female genitalia, ventral. **A, E.** *O. utahana*. **B.** *O. moaba*. **C, G, H.** *O. quasimodo*. **D, F.** *O. kamehameha*. **A–C, D.** Ventral. **E–H.** Lateral. Scale bars: 0.1 mm. (PBI_OON 1459, 42824, 38005, 38004).

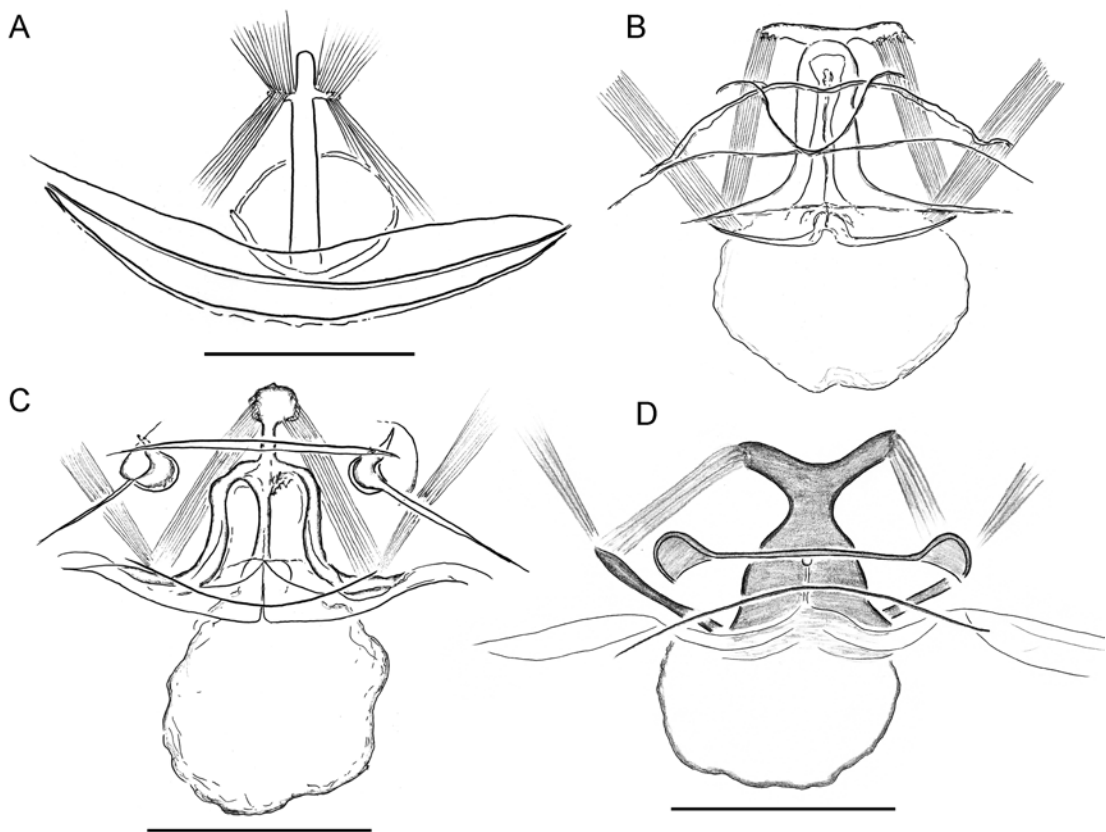


FIGURE 22. *Orchestina* spp., drawings of female genitalia, ventral. **A.** *O. saltitans*. **B.** *O. nadleri*. **C.** *O. auburn-dalensis*. **D.** *O. pavesiiformis*. Scale bars: 0.1 mm. (PBI_OON 26481, 42572, 1449, 42267).

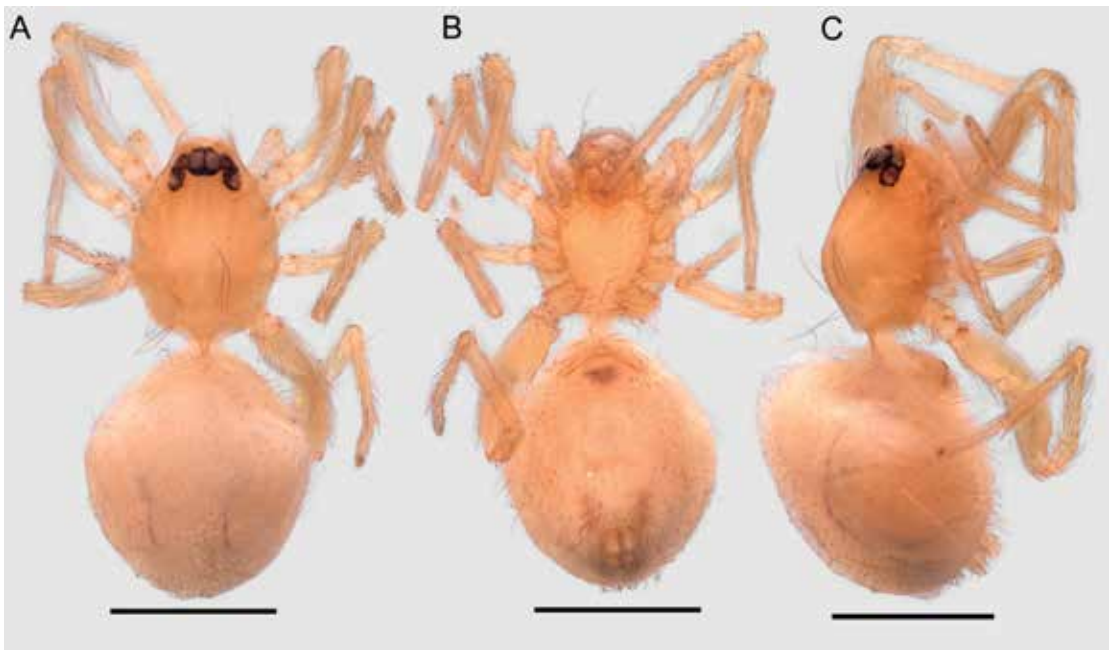


FIGURE 23. *Orchestina nahuatl*, habitus of female holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.5 mm. (PBI_OON 1092).

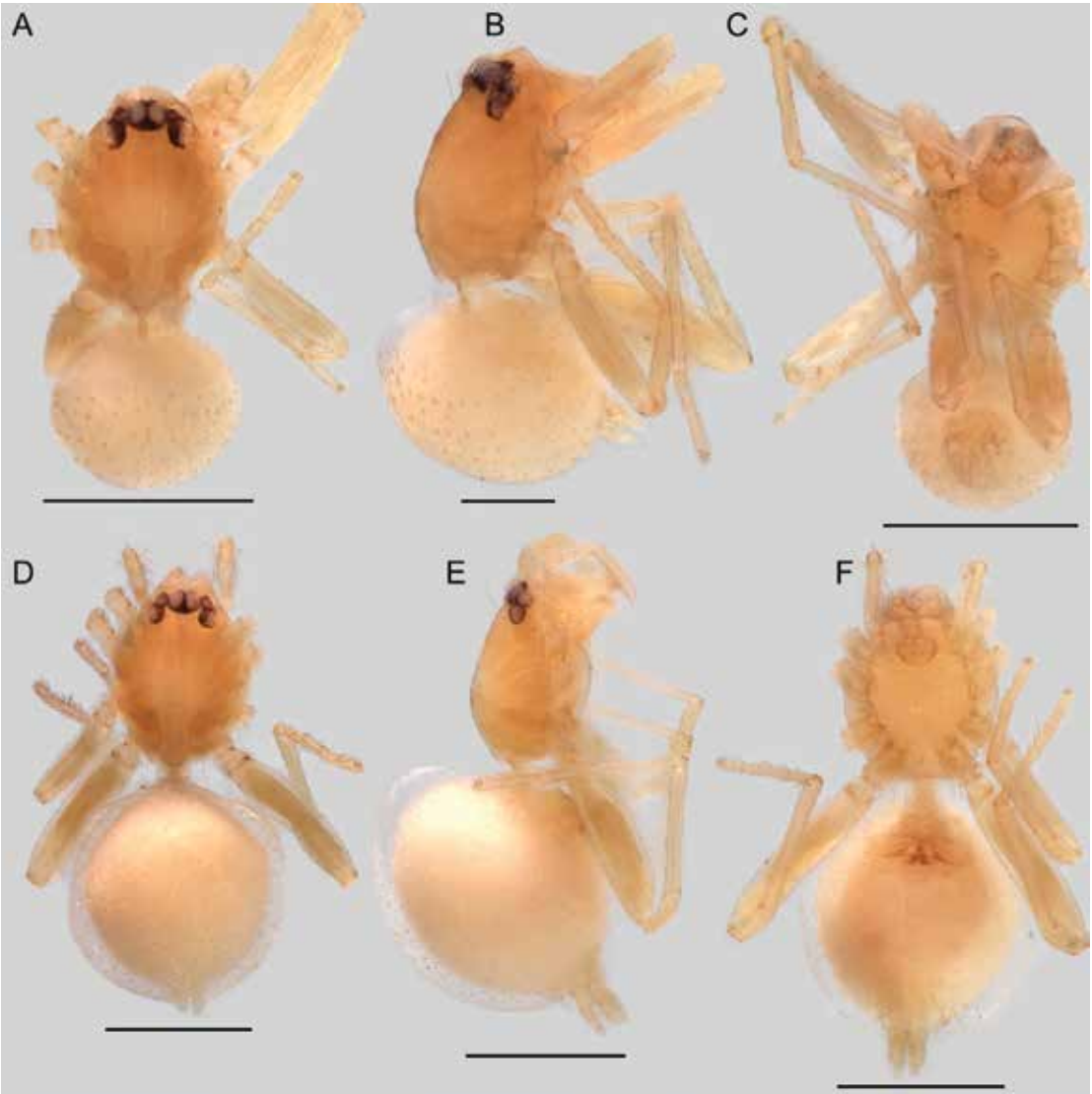


FIGURE 24. *Orchestina chaparrita*, habitus. A–C. Male holotype. D–F. Female paratype (PBI_OON 1085). A, D. Dorsal. B, E. Lateral. C, F. Ventral. Scale bars: A, C–F. 0.5 mm. B. 0.2 mm. (PBI_OON 1085).

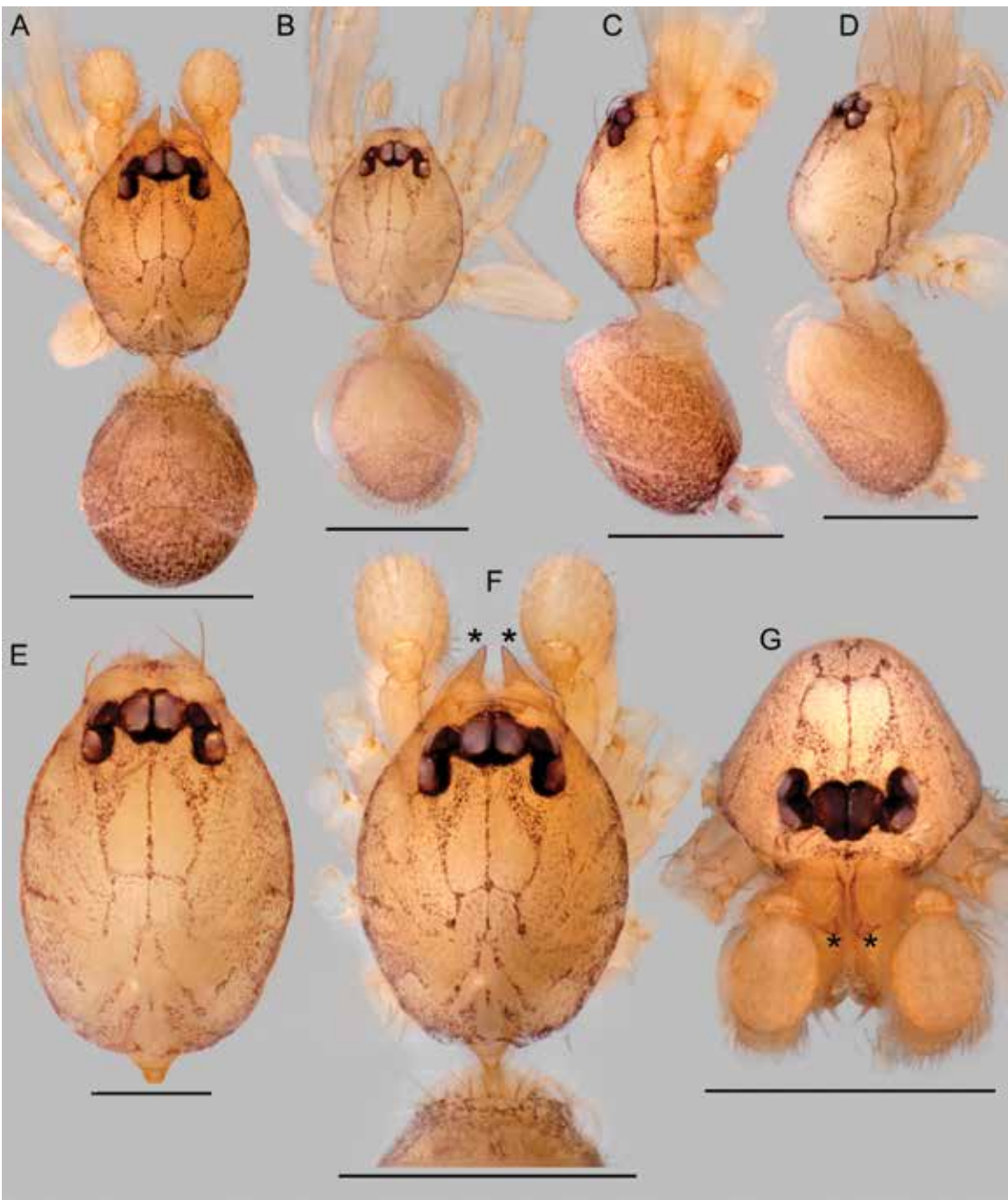


FIGURE 25. *Orchestina dentifera*, specimens from Brazil. A, C, E, G. Male. B, D, F. Female. A, B. Habitus dorsal. C, D. Habitus lateral. E, F. Cephalothorax dorsal. G. Cephalothorax anterior. Asterisks indicate conical projections on the anterior margin of chelicerae. Scale bars: 0.5 mm, except E, 0.2 mm. (PBI_OON 42164).



FIGURE 26. *Orchestina dentifera*, probable syntypes. A–C. Male. D. Female. A. Habitus dorsal. B. Habitus anterior, asterisks indicate the conical projections on the anterior face of chelicerae. C. Sternum and labium. D. Habitus lateral. Scale bars: A, D. 0.5 mm. B, C. 0.2 mm. (PBI_OON 50024).

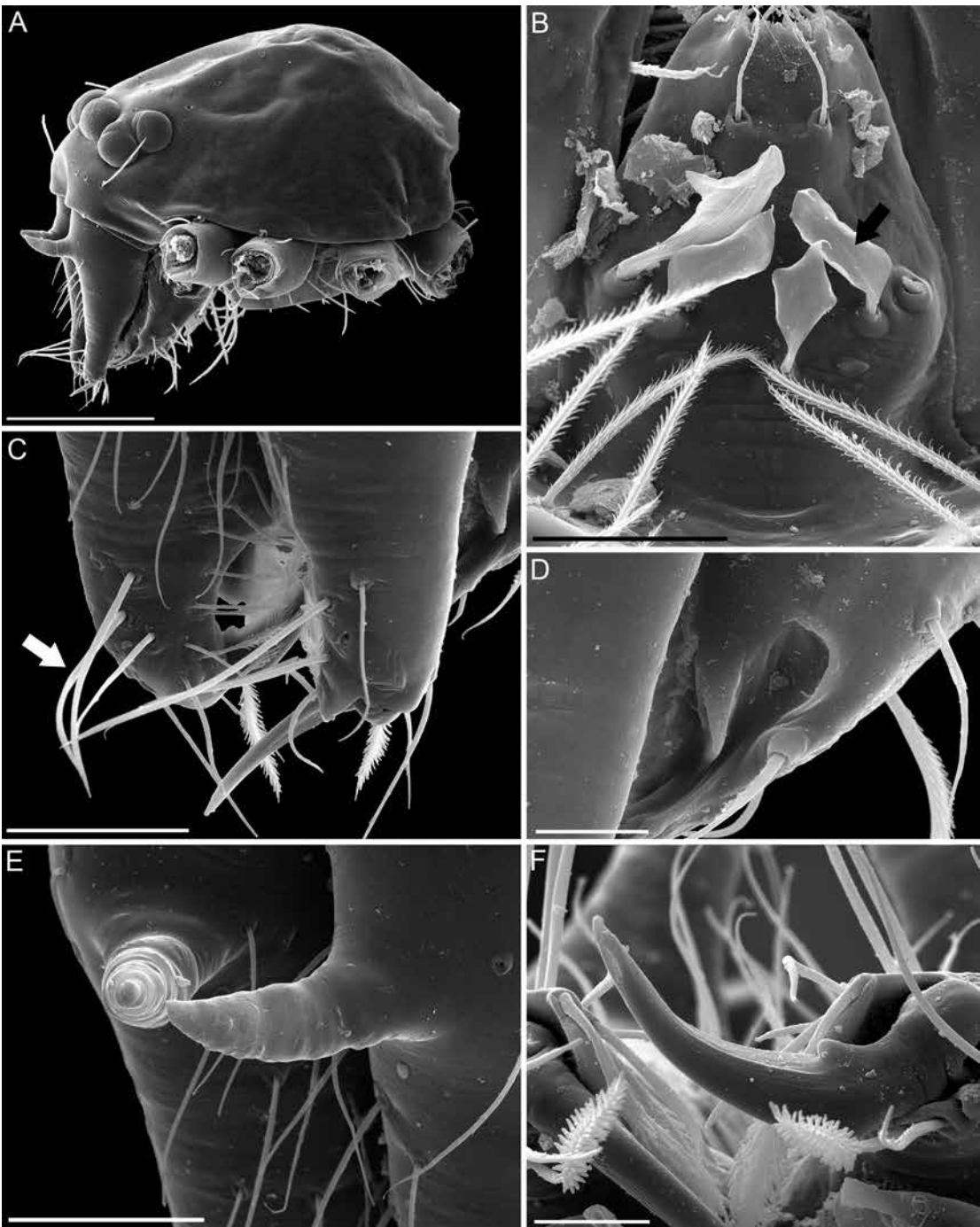


FIGURE 27. *Orchestina dentifera*, SEM of male cephalothorax structures. **A.** Prosoma lateral view. **B.** Labium; arrow points to the modified setae. **C.** Chelicerae promargin; arrow points to the three pairs of long setae. **D.** Detail of endite. **E.** Detail of the conical projection of chelicerae. **F.** Detail of cheliceral fang. Scale bars: **A.** 200 μm . **B, C, E.** 50 μm . **D, F.** 20 μm . (PBI_OON 1321).

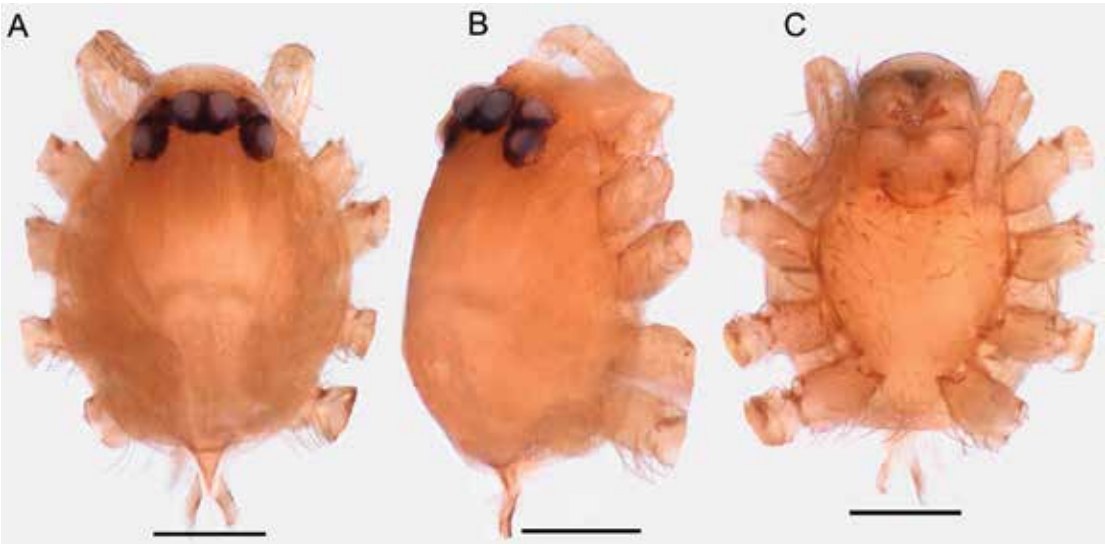


FIGURE 28. *Orchestina guatemala*, cephalothorax of female holotype. **A.** Dorsal. **B.** Lateral. **C.** Ventral. Scale bars: 0.2 mm. (PBI_OON 38165).

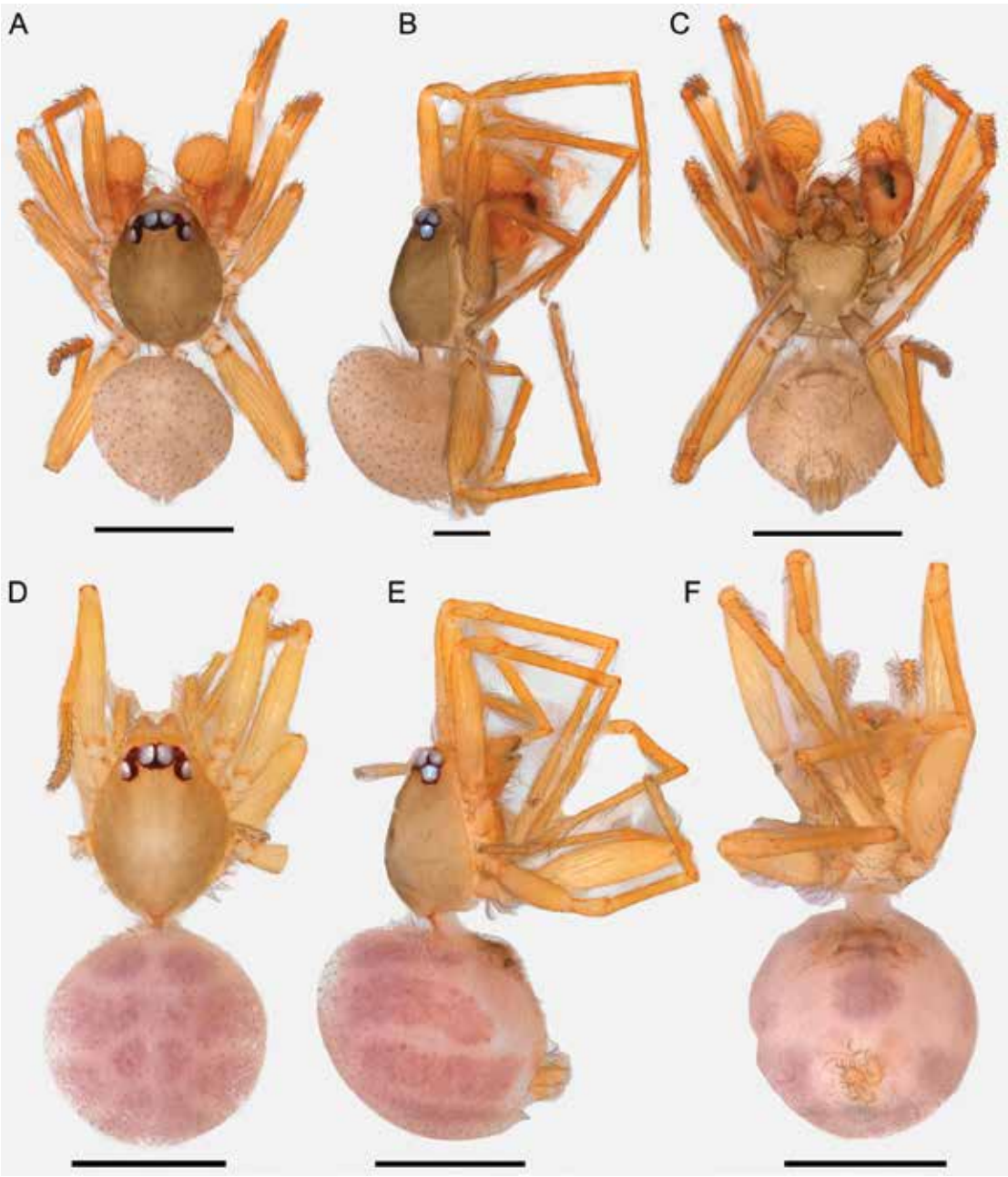


FIGURE 29. *Orchestina truncata*, habitus. A–C. Male. D–F. Female. A, D. Dorsal. B, E. Lateral. C, F. Ventral. Scale bars: A, C–F. 0.5 mm. B. 0.2 mm. (PBL_OON 30900).

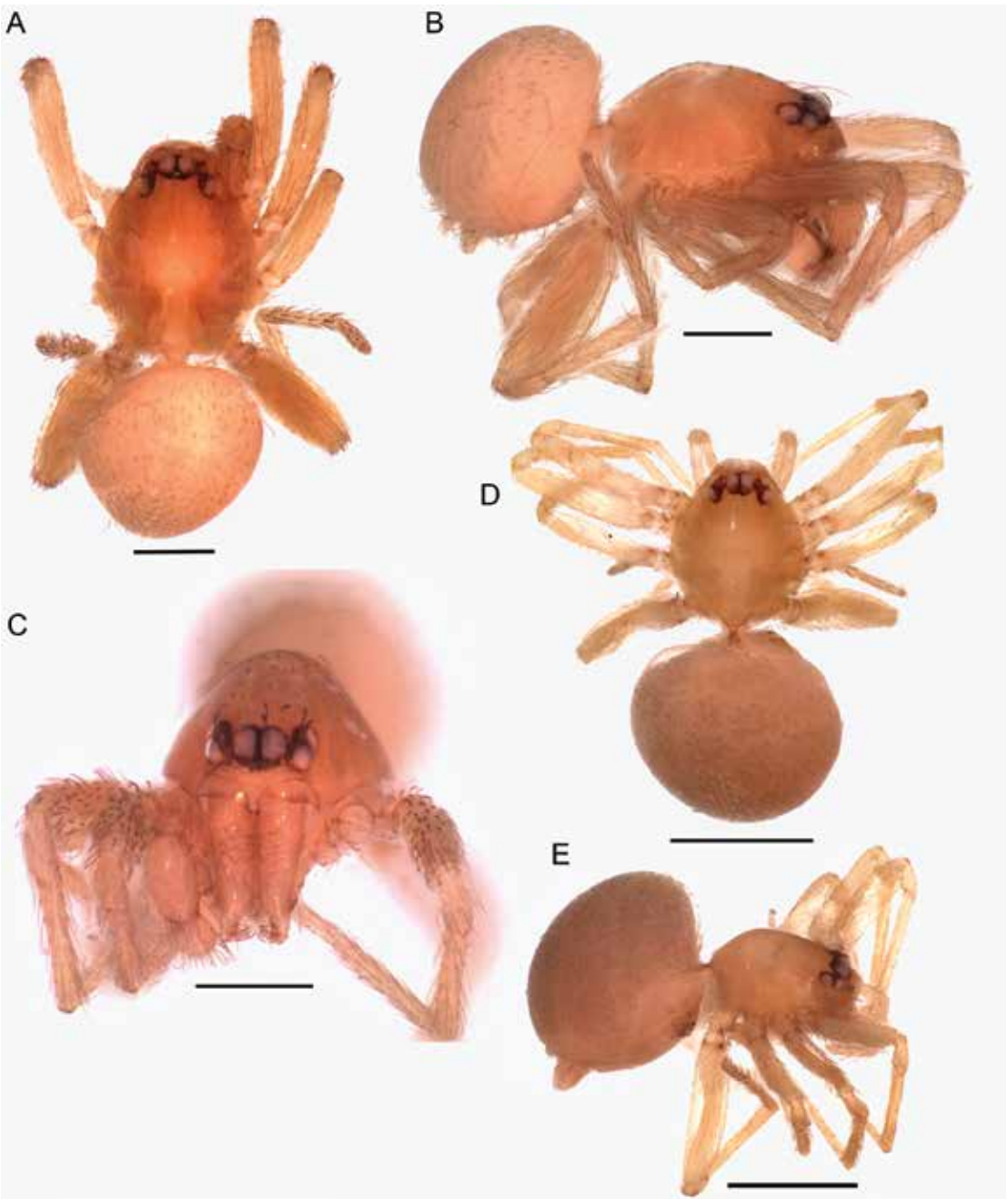


FIGURE 30. *Orchestina laselva*, habitus. A–C. Male holotype. D, E. Female paratype. A, D. Dorsal. B, E. Lateral. C. Anterior. Scale bars: A–C. 0.2 mm. D, E. 0.5 mm. (PBI_OON 27936, 27935).

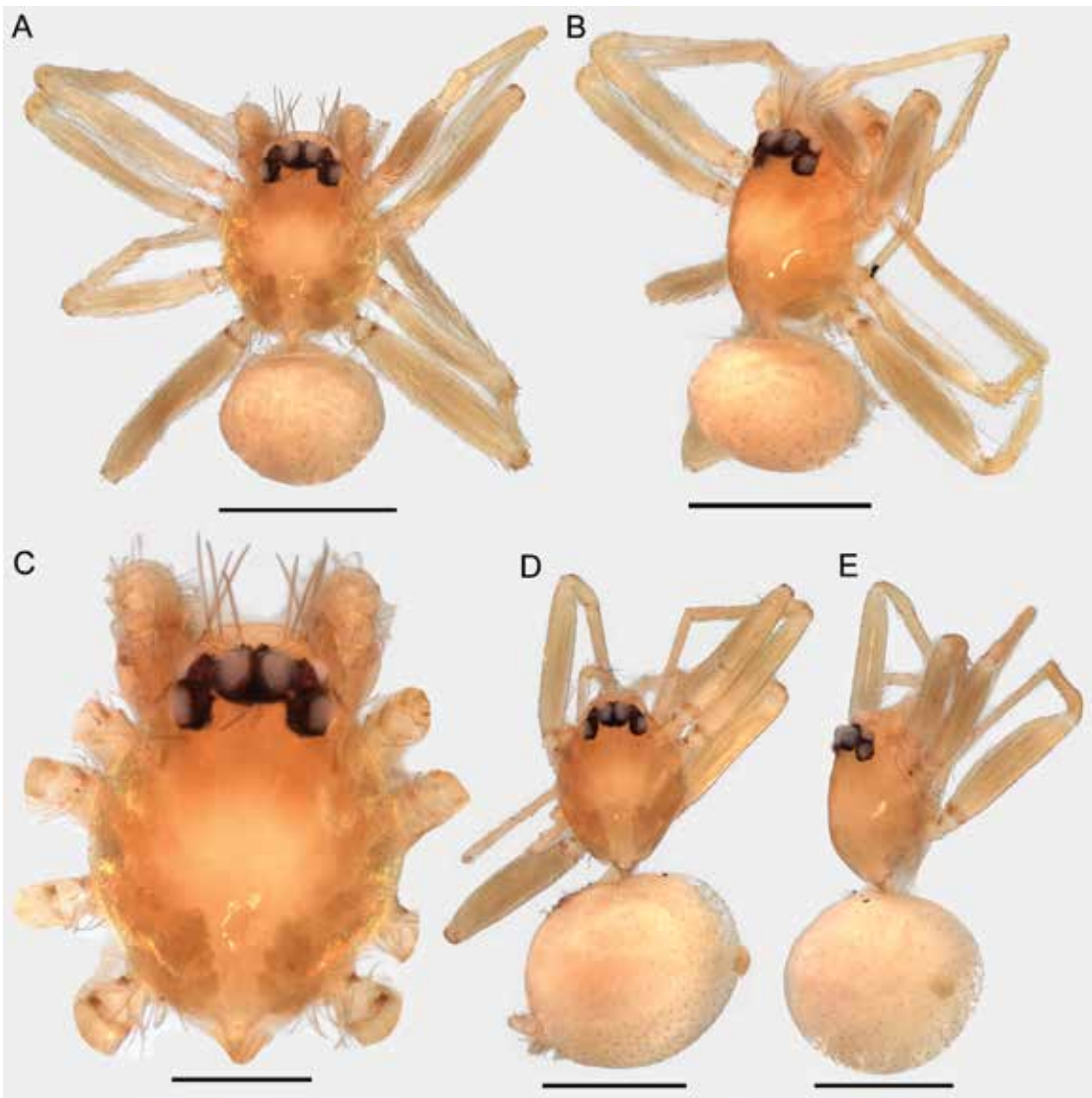


FIGURE 31. *Orchestina griswoldi*, habitus. A–C. Male holotype. D, E. Female paratype. A, D. Dorsal. B, E. Lateral. C. Cephalothorax dorsal. Scale bars: 0.5 mm, except C, 0.2 mm. (PBI_OON 2299, 2300).

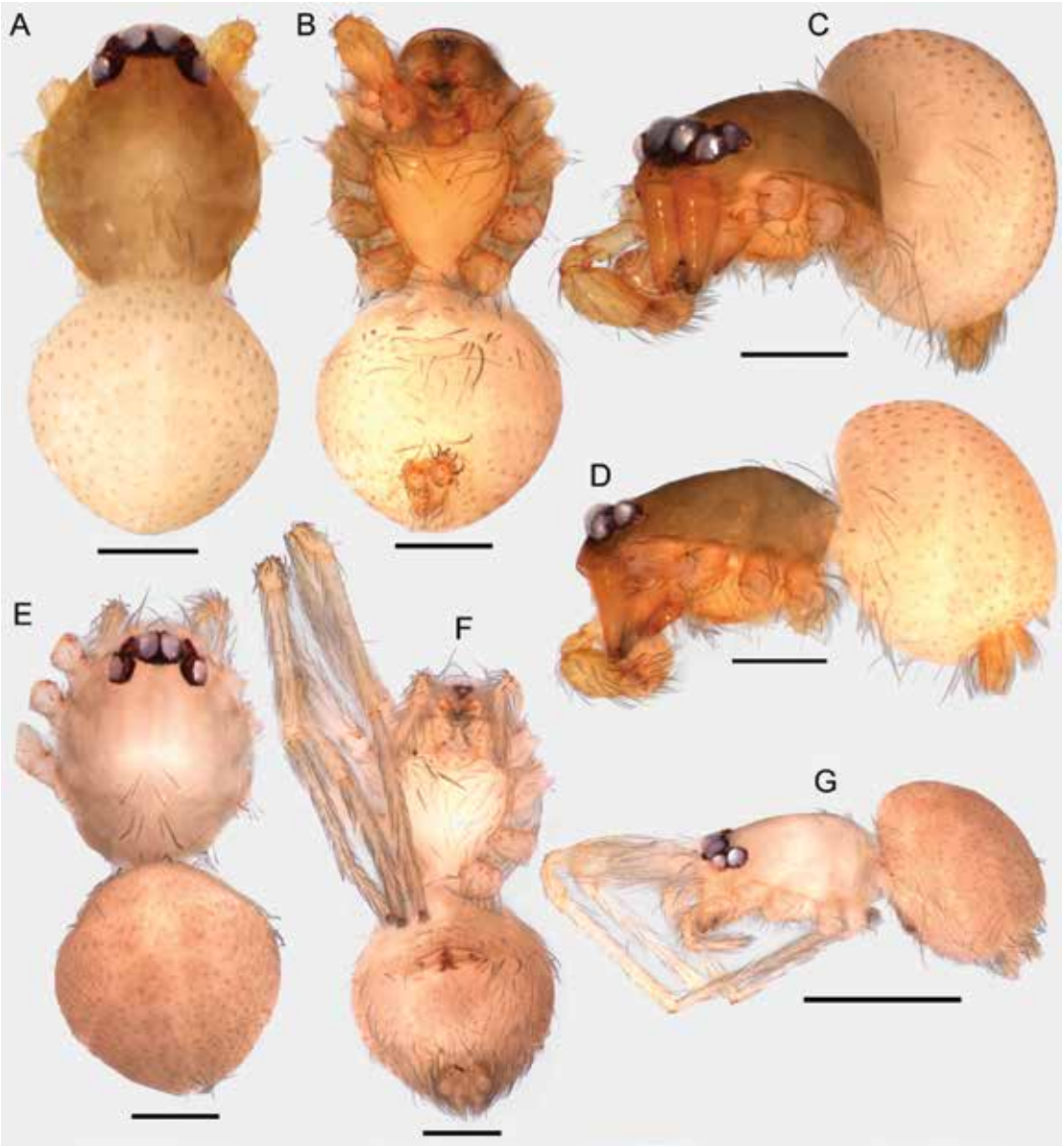


FIGURE 32. *Orchestina chiriqui*, habitus. A–D. Male holotype. E–G. Female paratype. A, E. Dorsal. B, F. Ventral. C, D, G. Lateral. Scale bars: A–F. 0.2 mm. G. 0.5 mm. (PBI_OON 51107).

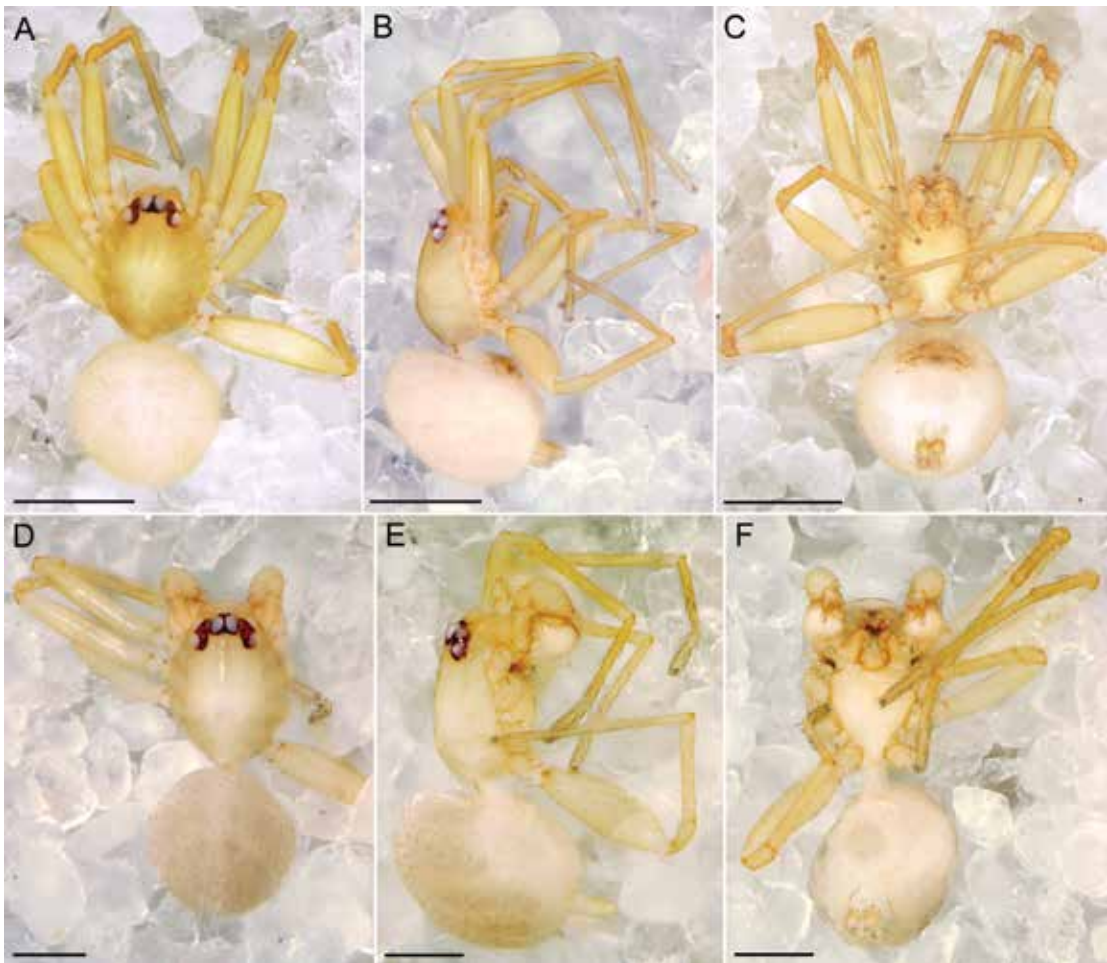


FIGURE 33. *Orchestina labarquei*, habitus. **A–C.** Female. **D–F.** Male. **A, D.** Dorsal. **B, E.** Lateral. **C, F.** Ventral. Scale bars: **A–C.** 0.25 mm. **D–F.** 0.5 mm. Images by Luis Piacentini. (PBI_OON 42319, 42322).

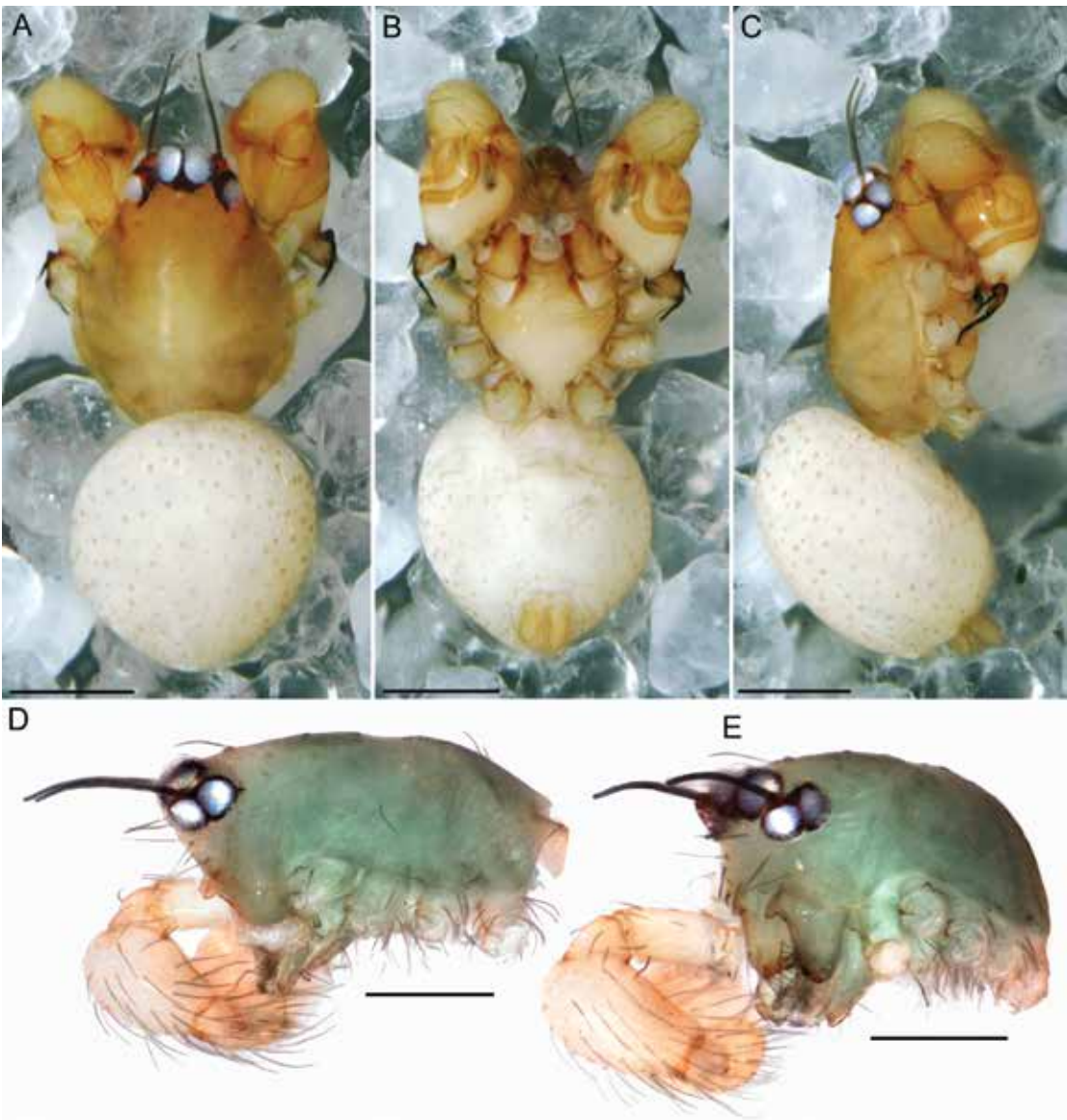


FIGURE 34. *Orchestina pan*, male holotype. A. Dorsal. B. Ventral. C. Lateral. D, E. Cephalothorax lateral. Scale bars: A–C. 0.25 mm. D, E. 0.2 mm. Images A–C by Facundo Labarque. (PBI_OON 42313).

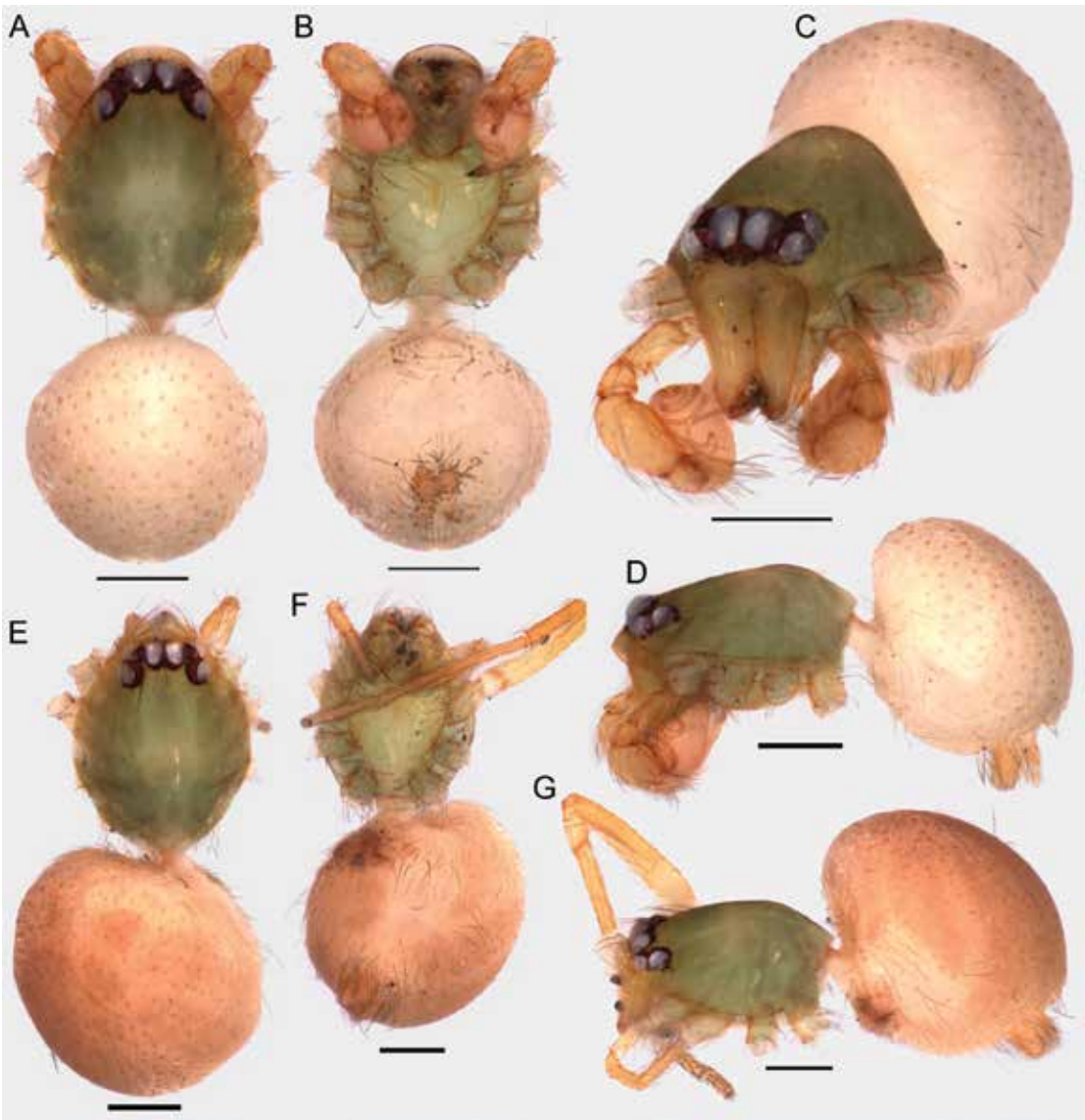


FIGURE 35. *Orchestina campana*, habitus. A–D. Male holotype. E–G. Female paratype. A, E. Dorsal. B, F. Ventral. C. Anterior. D, G. Lateral. Scale bars: 0.2 mm. (PBI_OON 42308, 42298).

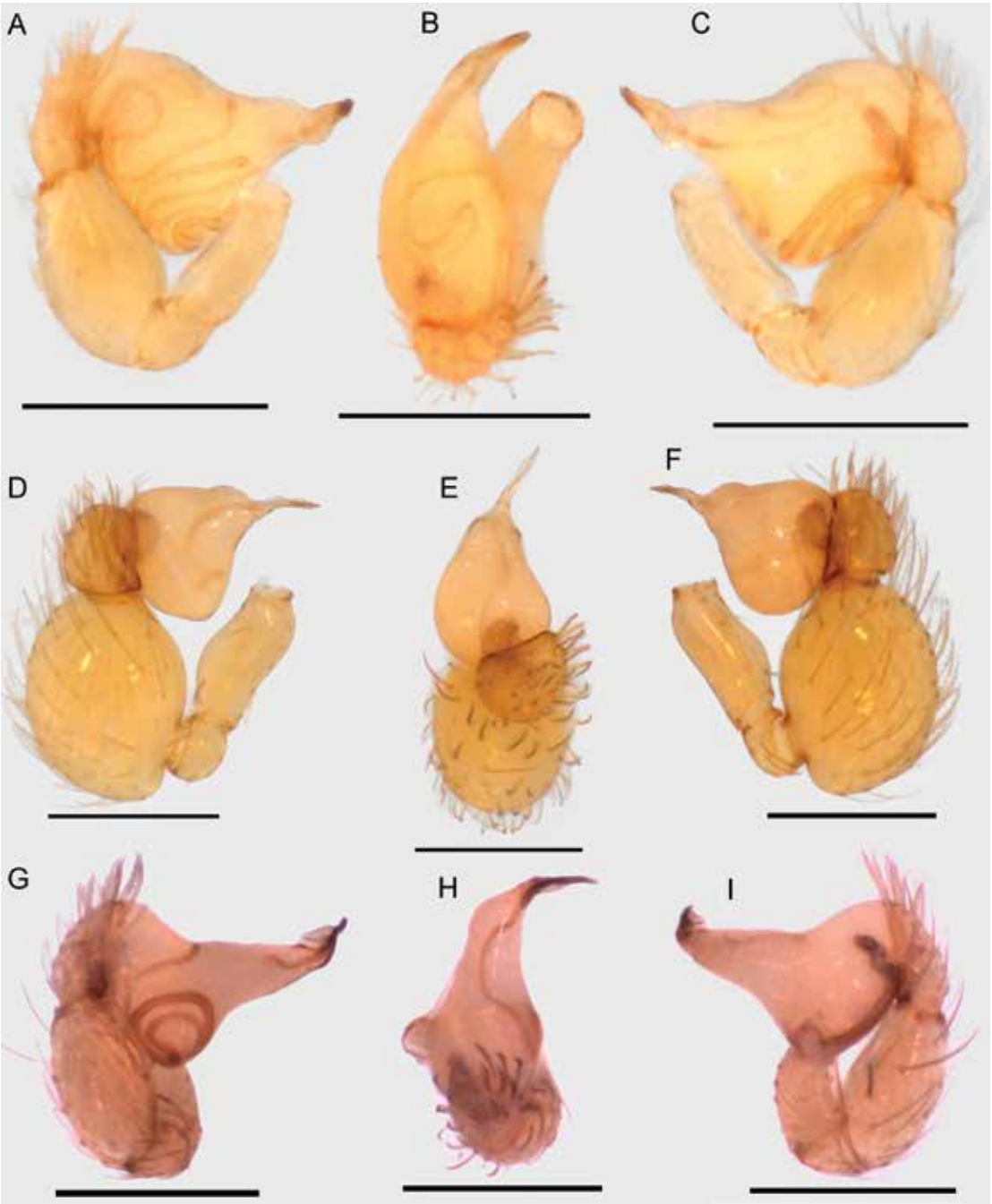


FIGURE 36. *Orchestina* spp., palps of males. A–C. *O. chaparrita*, holotype. D–F. *O. dentifera*, specimen from Brazil. G–I. *O. laselva*, holotype. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 1085, 42164, 27936).

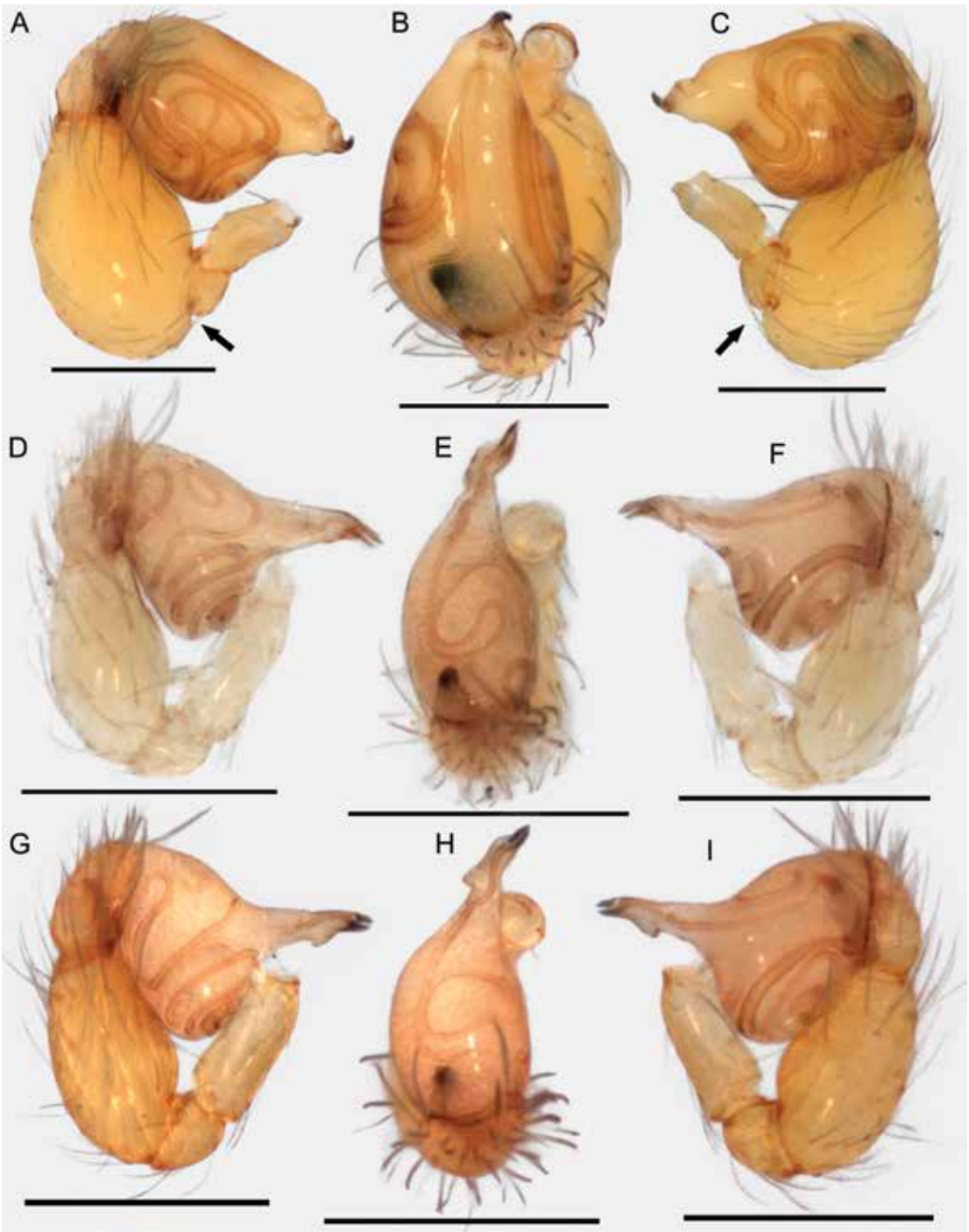


FIGURE 37. *Orchestina* spp., palps of males. A–C. *O. truncata*. D–F. *O. griswoldi*. G–I. *O. chiriqui*. A, G. Prolateral. B, H. Dorsal. C, I. Retrolateral. Arrows point to the subbasal insertion of patella-tibia. Scale bars: 0.2 mm. (PBI_OON 30900, 2299, 51107).

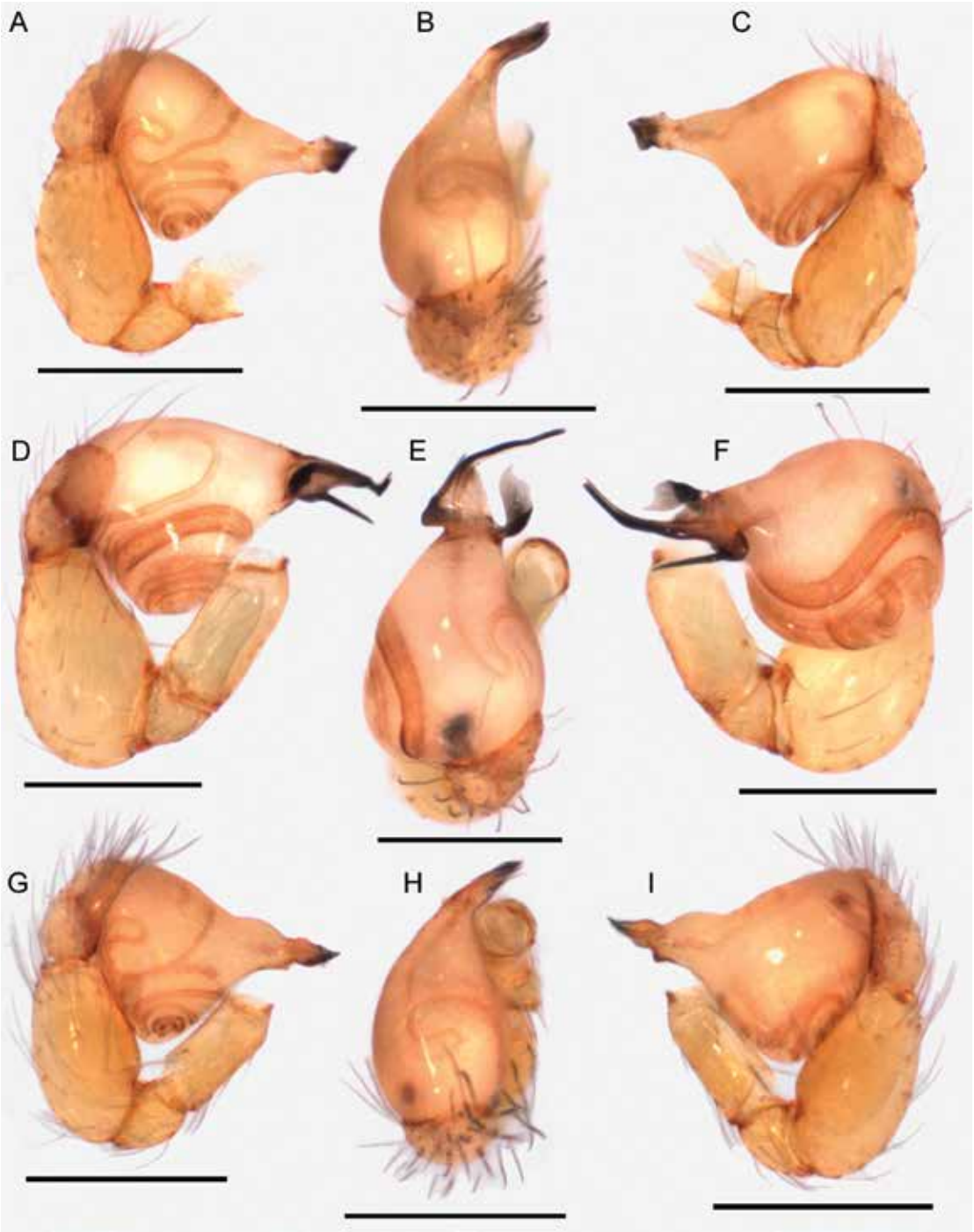


FIGURE 38. *Orchestina* spp., palps of males. A–C. *O. labarquei*. D–F. *O. pan*. G–I. *O. campana*. A–G. Prolateral. B–H. Dorsal. C–I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 42286, 42312, 42301).

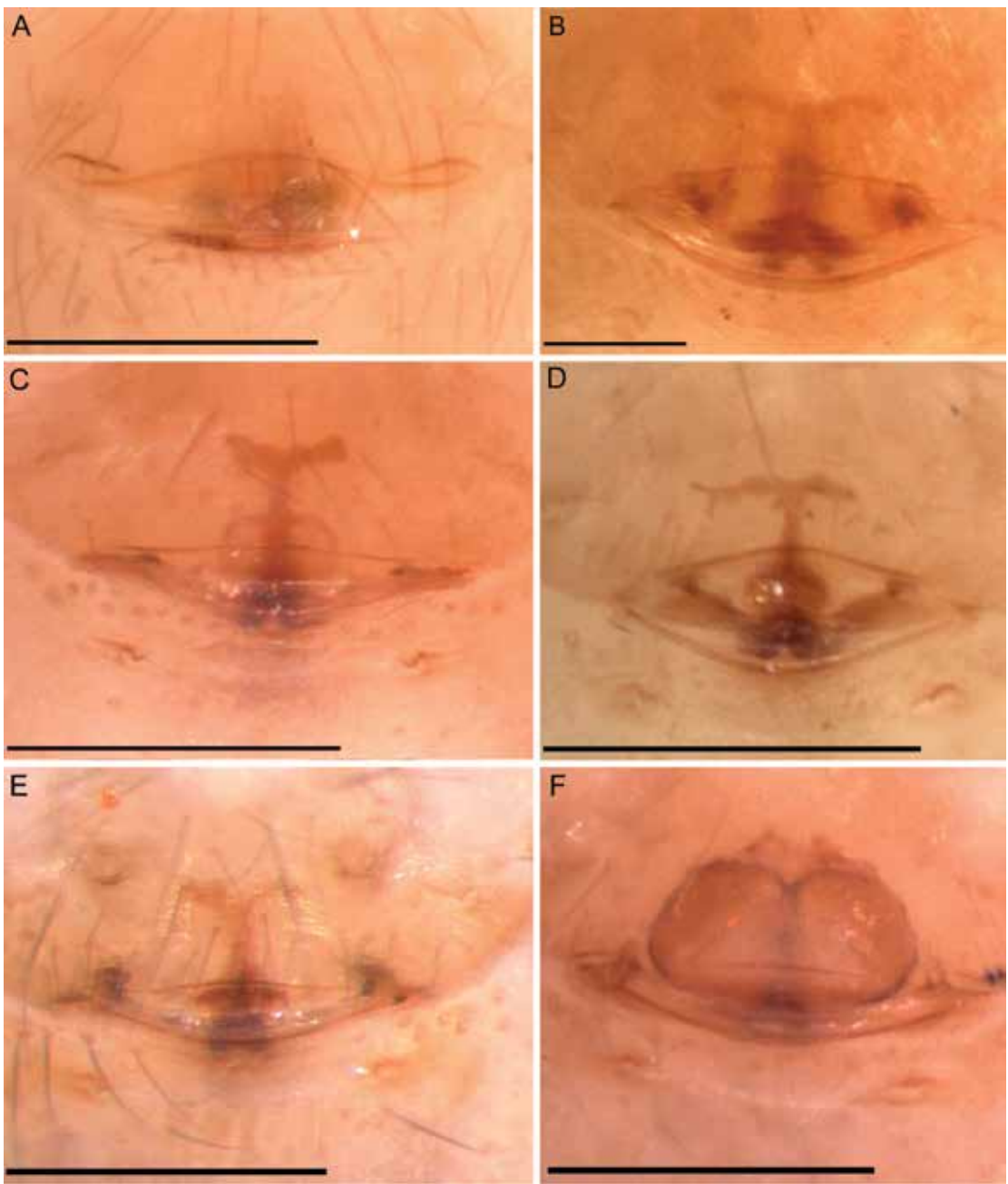


FIGURE 39. *Orchestra* spp., female genitalia, ventral view. A. *O. nahuatl*. B. *O. chaparrita*. C. *O. guatemala*. D. *O. griswoldi*. E. *O. chiriqui*. F. *O. truncata*. Scale bars: 0.2 mm, except B, 0.1 mm. Image E by Luis Piacentini. (PBI_OON 1092, 1085, 38165, 2300, 42292, 27982).

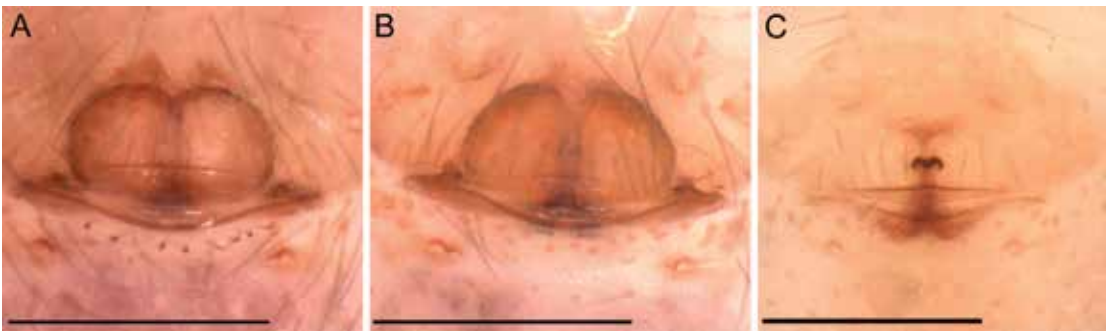


FIGURE 40. *Orchestina* spp., female genitalia, ventral view. **A.** *O. campana*. **B.** *O. labarquei*. **C.** *O. laselva*, paratype. Scale bars: 0.2 mm. (PBI_OON 42309, 42304, 27943).

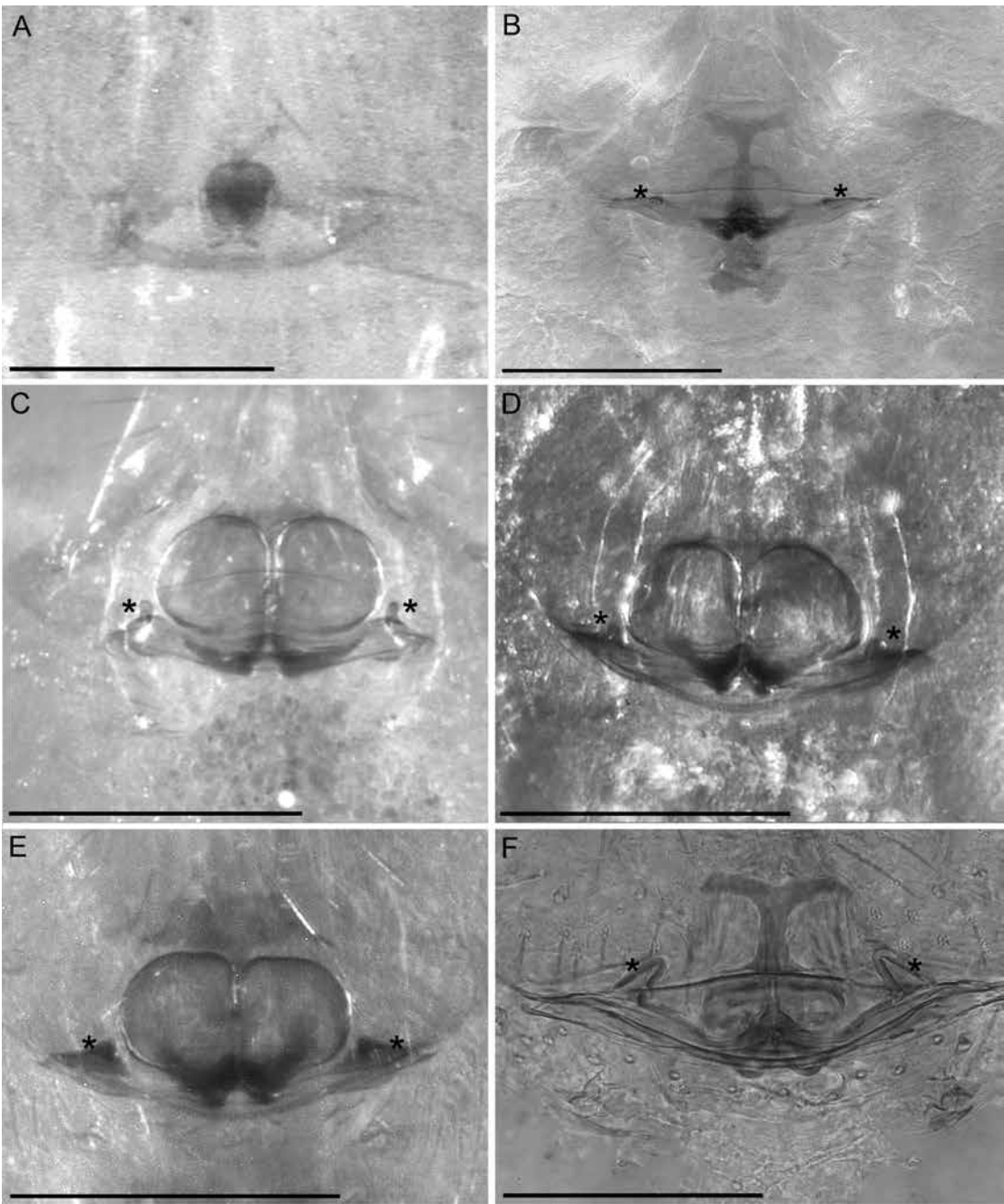


FIGURE 41. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. dentifera*. **B.** *O. guatemala*. **C.** *O. truncata*. **D.** *O. labarquei*. **E.** *O. campana*. **F.** *O. chiriqui*. Asterisks indicate internal pockets. Scale bars: 0.2 mm. (PBI_OON 42163, 38165, 30900, 42305, 42296, 42562).

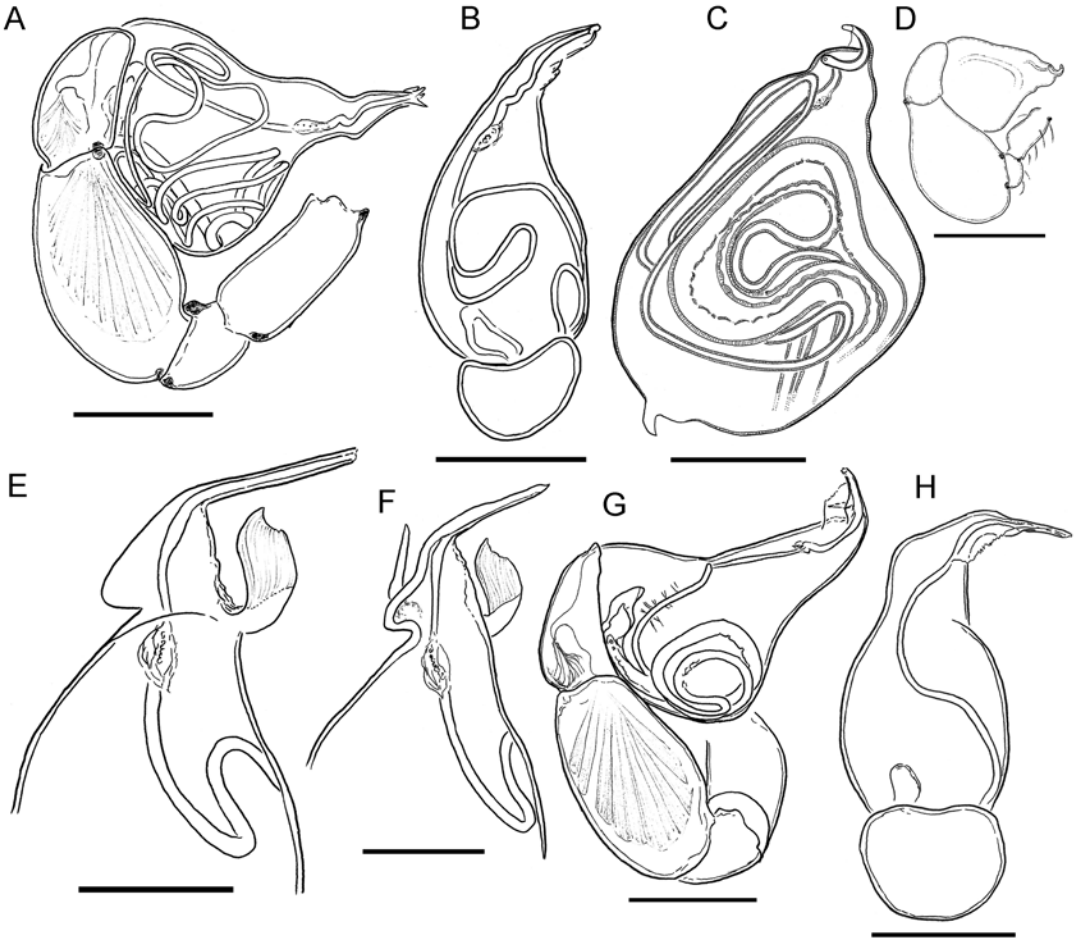


FIGURE 42. *Orchestina* spp., drawings of male palps. A, B. *O. chaparrita*. C, D. *O. truncata*. E, F. *O. pan.* G, H. *O. laselva*. A, C, D, G. Prolateral. B, E, H. Dorsal. F. Retrolateral. Scale bars: 0.1 mm except D, 0.25 mm.

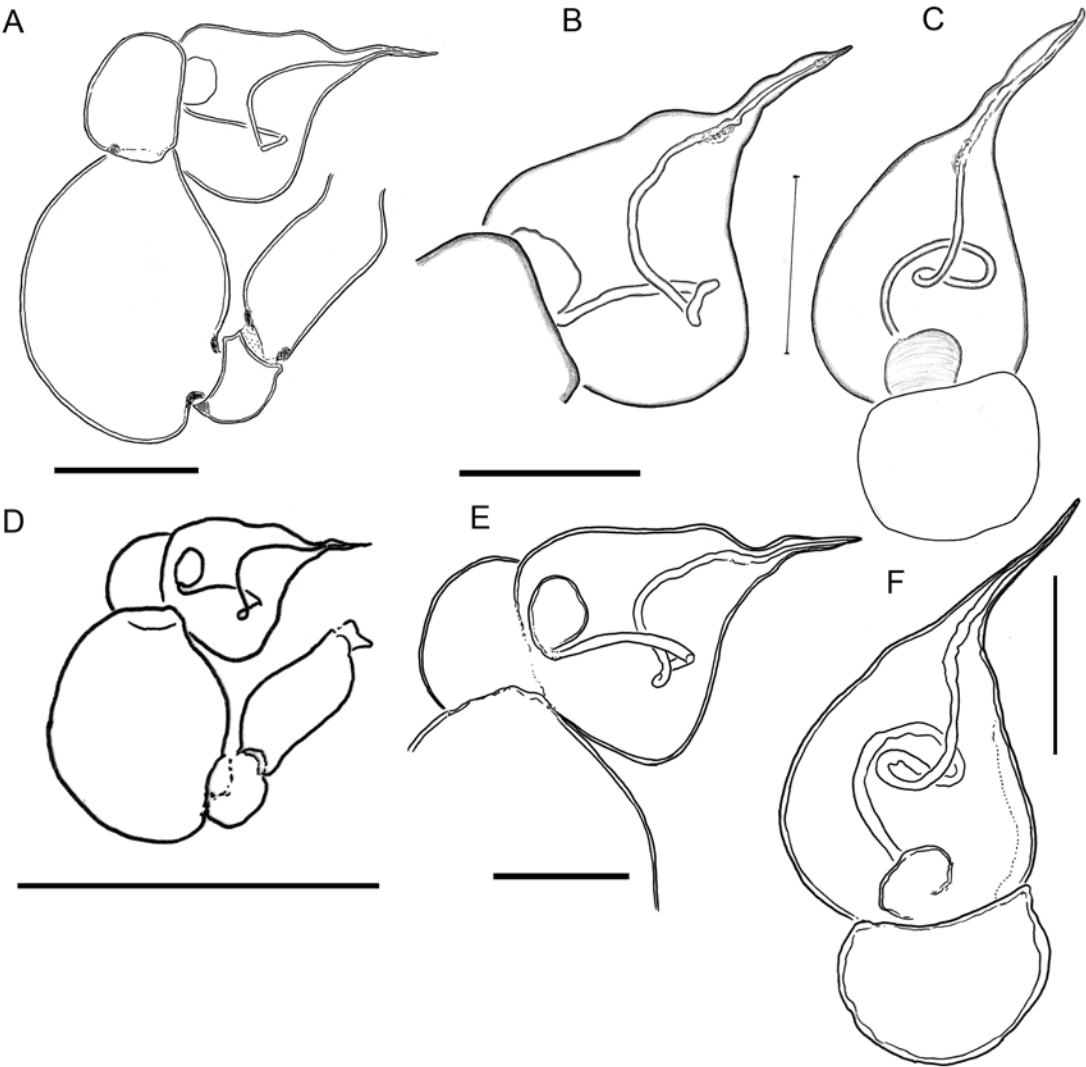


FIGURE 43. *Orchestina dentifera*, drawings of male palps. A–C. Specimen from Brazil. D–F. Probable type specimen from Sri Lanka. A, B, D, E. Prolateral. C, F. Dorsal. Scale bars: A, D. 0.5 mm. B, C, E, F. 0.1 mm. (PBI_OON 42164, 50024).

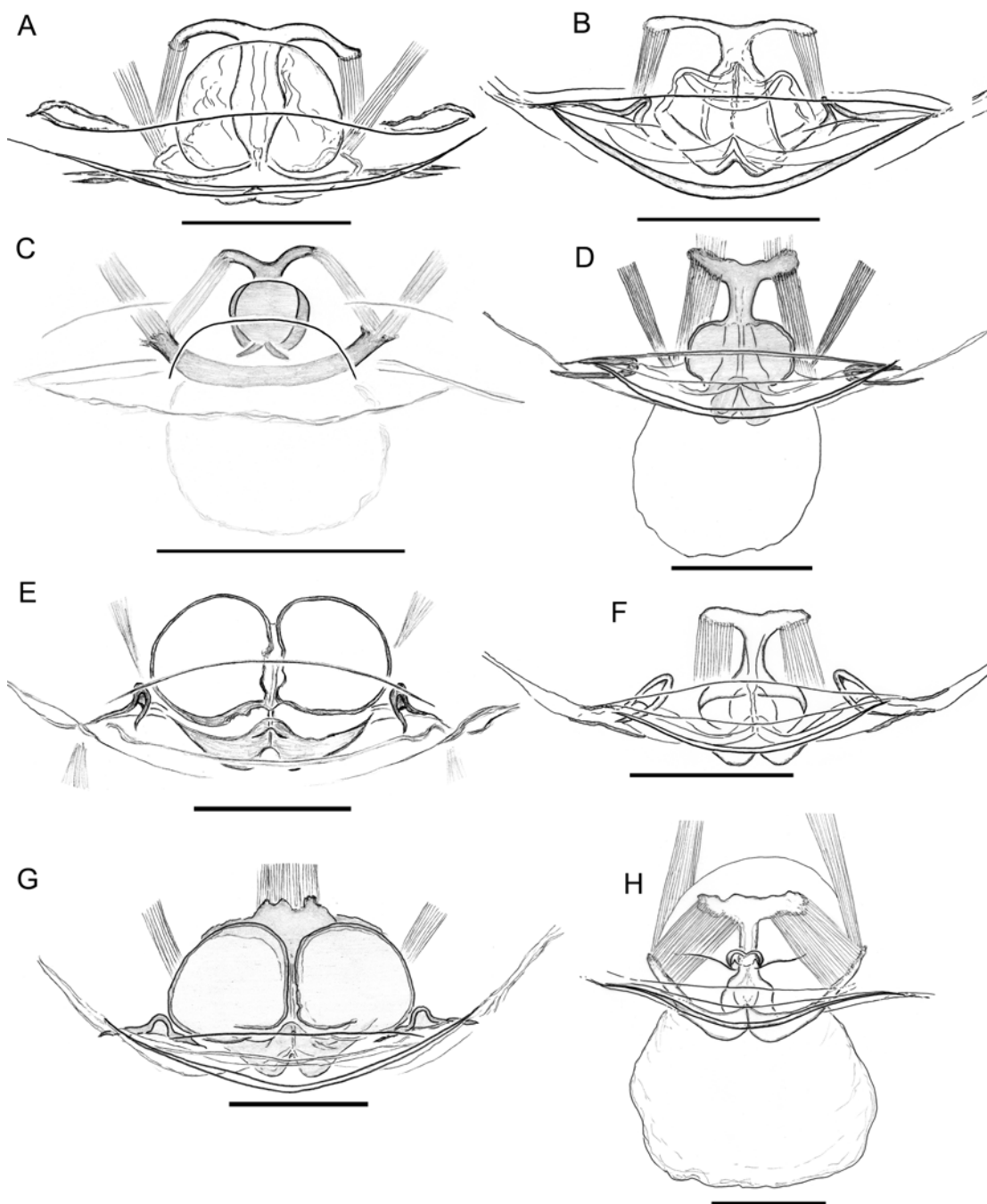


FIGURE 44. *Orchestina* spp., drawings of female genitalia, ventral view. A. *O. nahuatl*. B. *O. chaparrita*. C. *O. dentifera*. D. *O. guatemala*. E. *O. truncata*. F. *O. chiriqui*. G. *O. labarquei*. H. *O. laselva*. Scale bars: 0.1 mm. (PBI_OON 1092, 1085, 42163, 38165, 30900, 42562, 42305, 27943).

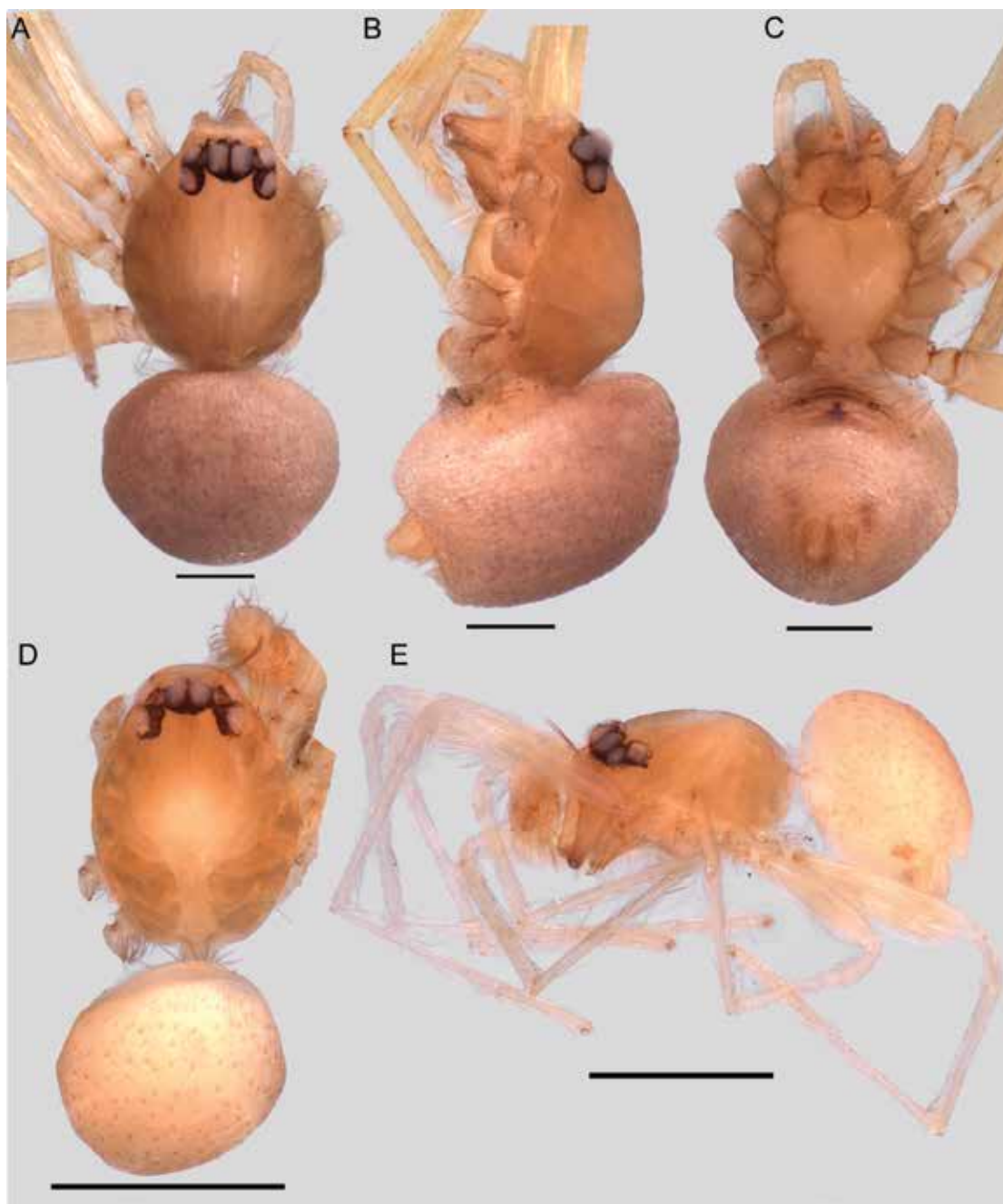


FIGURE 45. *Orchestina* spp., habitus. A–C. *O. filandia*, holotype female. D–E. *O. zingara*, holotype male. A, D. Dorsal. B, E. Lateral. C. Ventral. Scale bars: A–C. 0.2 mm. D, E. 0.5 mm. (PBI_OON 30796, 30709).

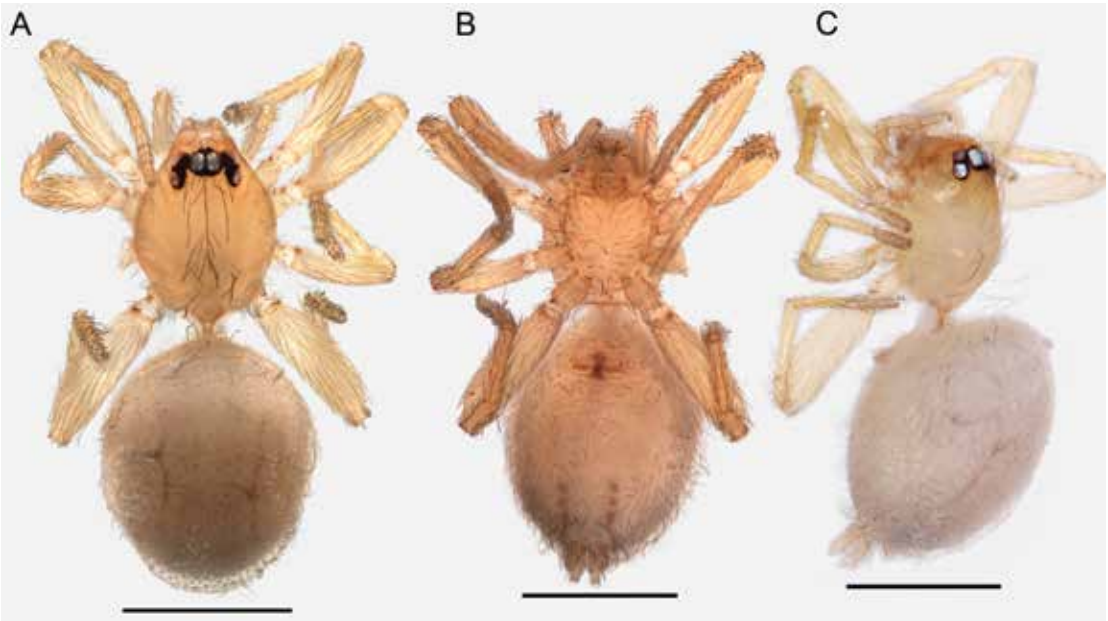


FIGURE 46. *Orchestina arboleda*, habitus of female holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.5 mm. (PBI_OON 42240).

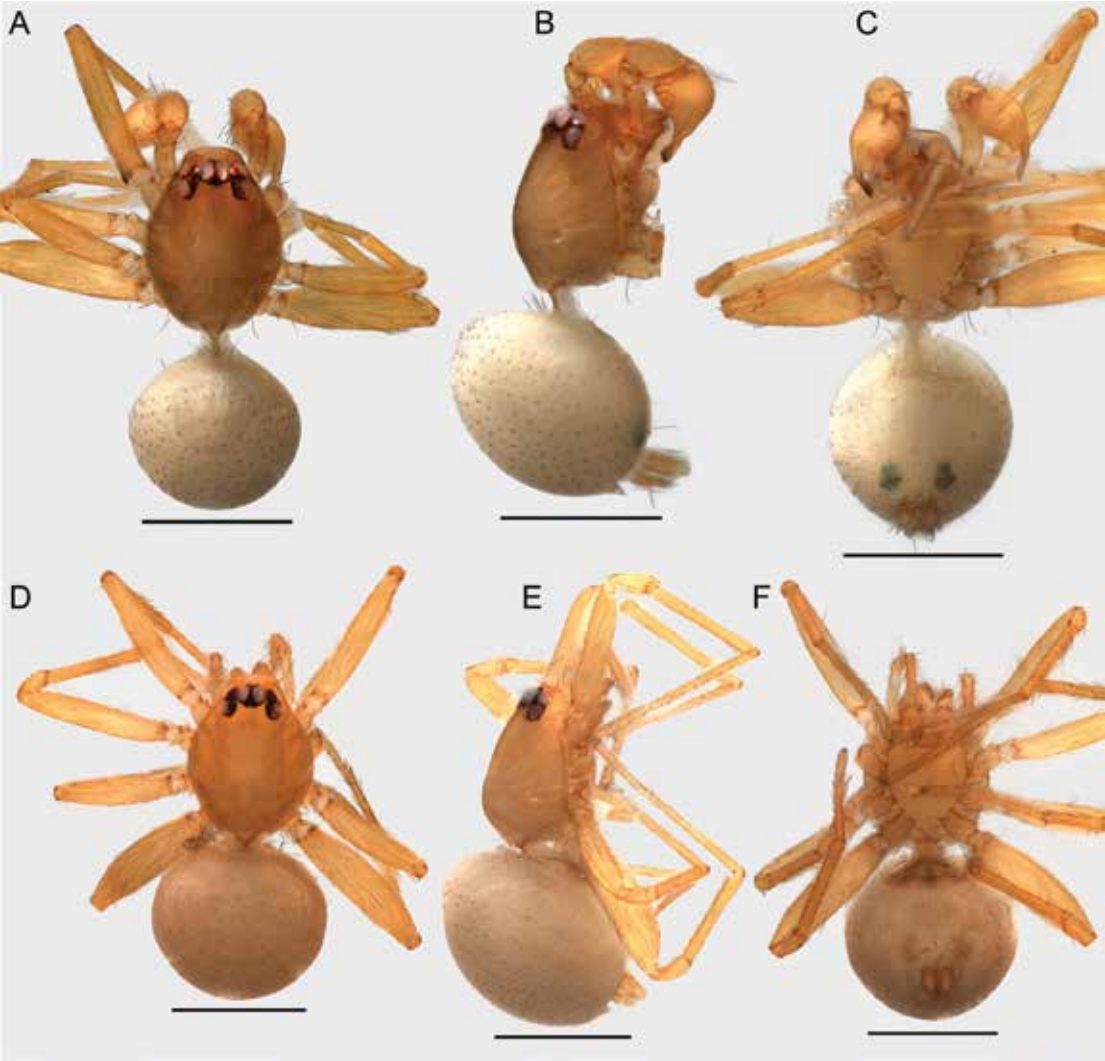


FIGURE 47. *Orchestina cali*, habitus. A–C. Male holotype. D–F. Female paratype. A, D. Dorsal. B–E. Lateral. C, F. Ventral. Scale bars: 0.5 mm. (PBI_OON 42225, 42239).

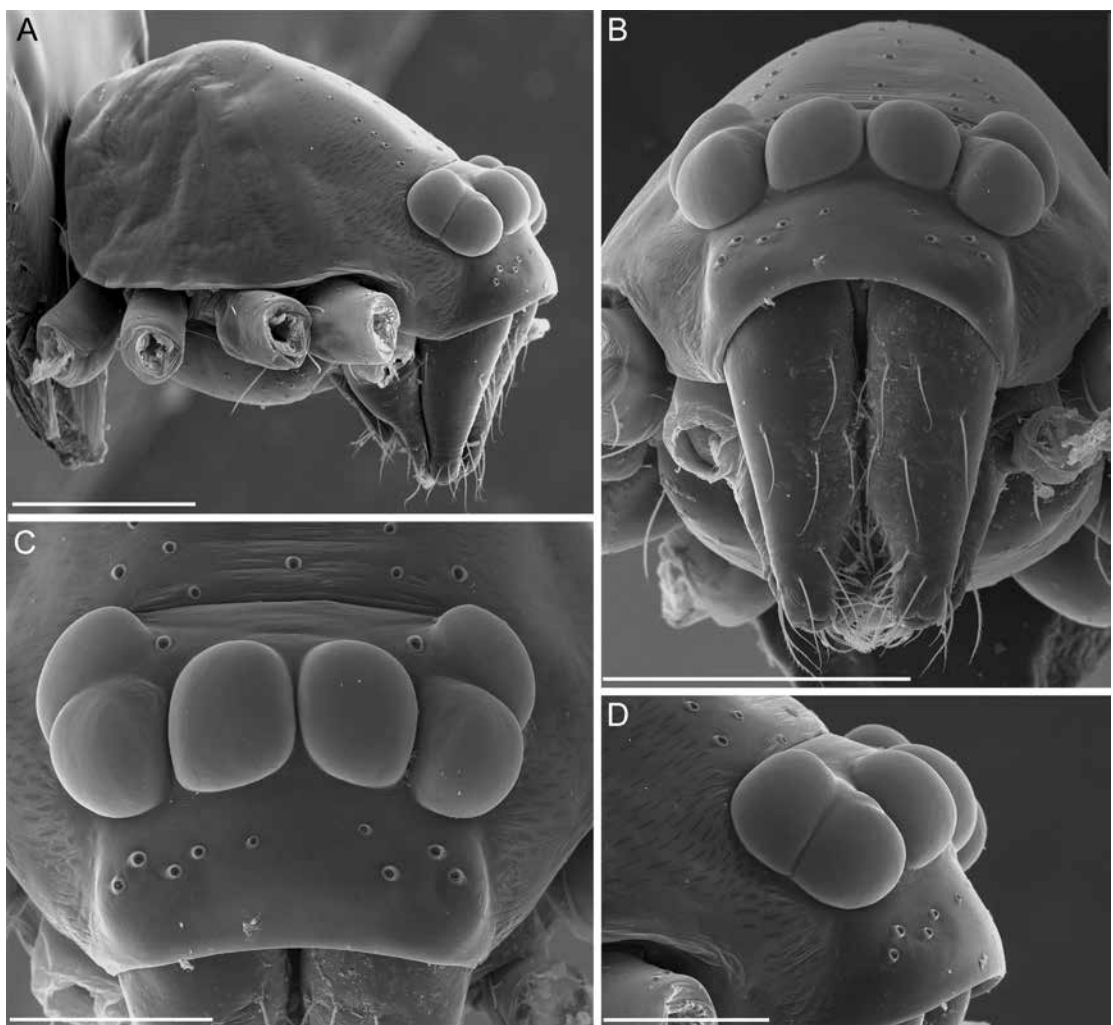


FIGURE 48. *Orchestina cali*, SEM of male cephalothorax. **A.** Lateral view. **B.** Anterior view. **C.** Eyes, anterior view. **D.** Same, lateral view. Scale bars: **A, B.** 200 μm . **C, D.** 100 μm . (PBI_OON 30761).

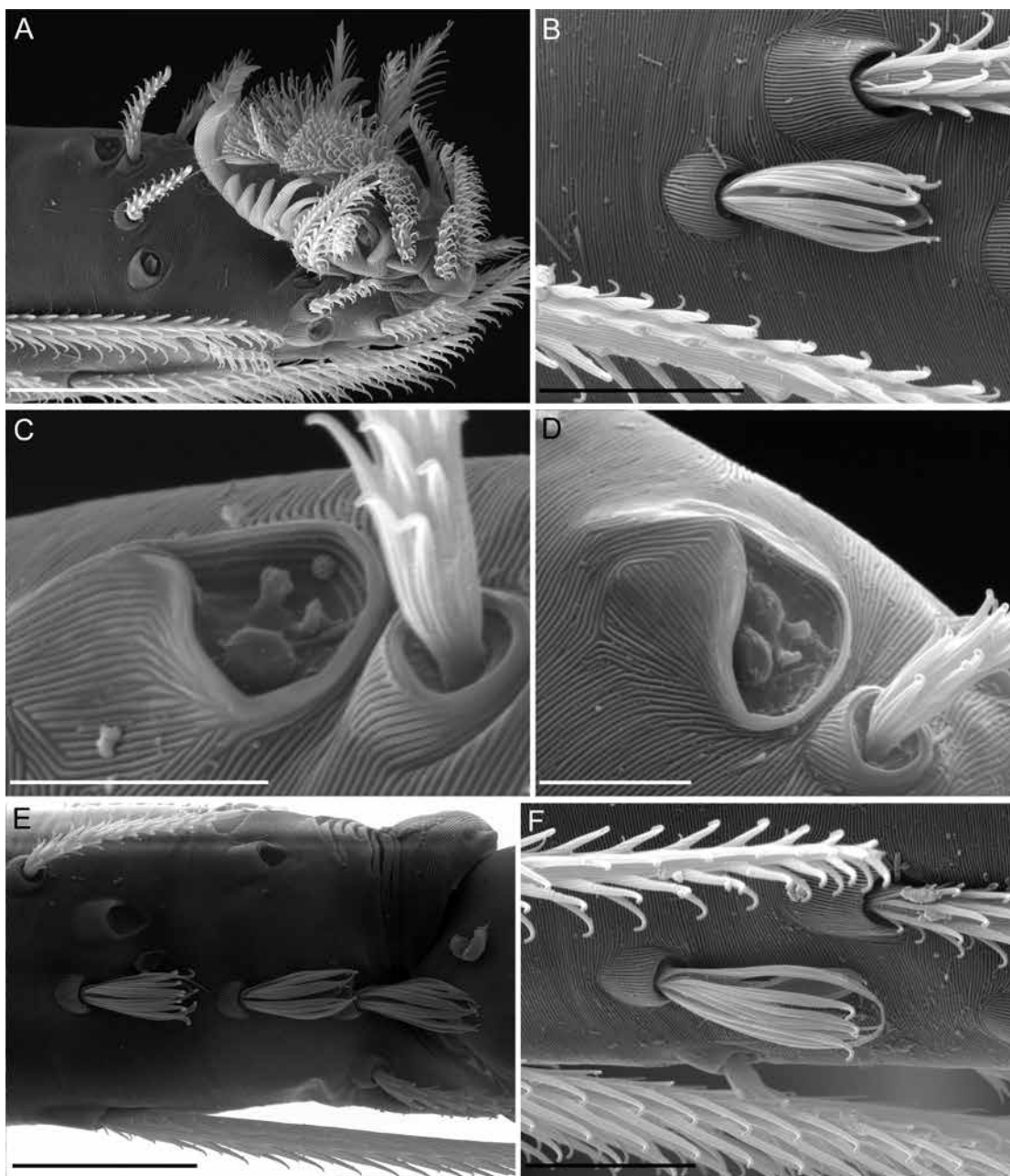


FIGURE 49. *Orchestina cali*, SEM of legs of female. **A.** Claws III, prolateral view. **B.** Detail of prolateral setae of metatarsus III. **C.** Tarsal organ III. **D.** Tarsal organ II. **E.** Prolateral setae of metatarsus II. **F.** Same, tarsus II. Scale bars: **A, E.** 20 µm. **B, F.** 10 µm. **C, D.** 5 µm. (PBI_OON 30761).

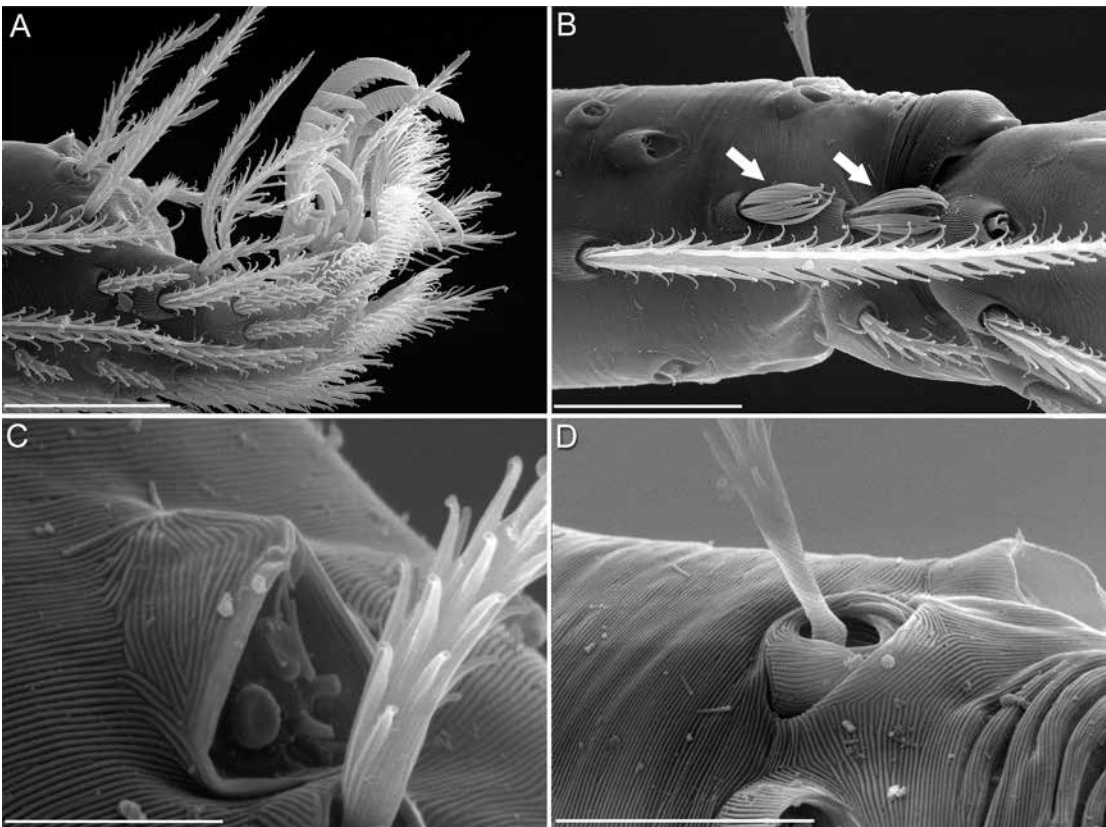


FIGURE 50. *Orchestina cali*, SEM of left leg I of male. **A.** Claws, prolateral view. **B.** Prolateral setae of metatarsus (arrows). **C.** Tarsal organ. **D.** Trichobothrial sockets and base of shaft. Scale bars: **A, B.** 20 μm . **C.** 5 μm . **D.** 10 μm . (PBI_OON 30761).

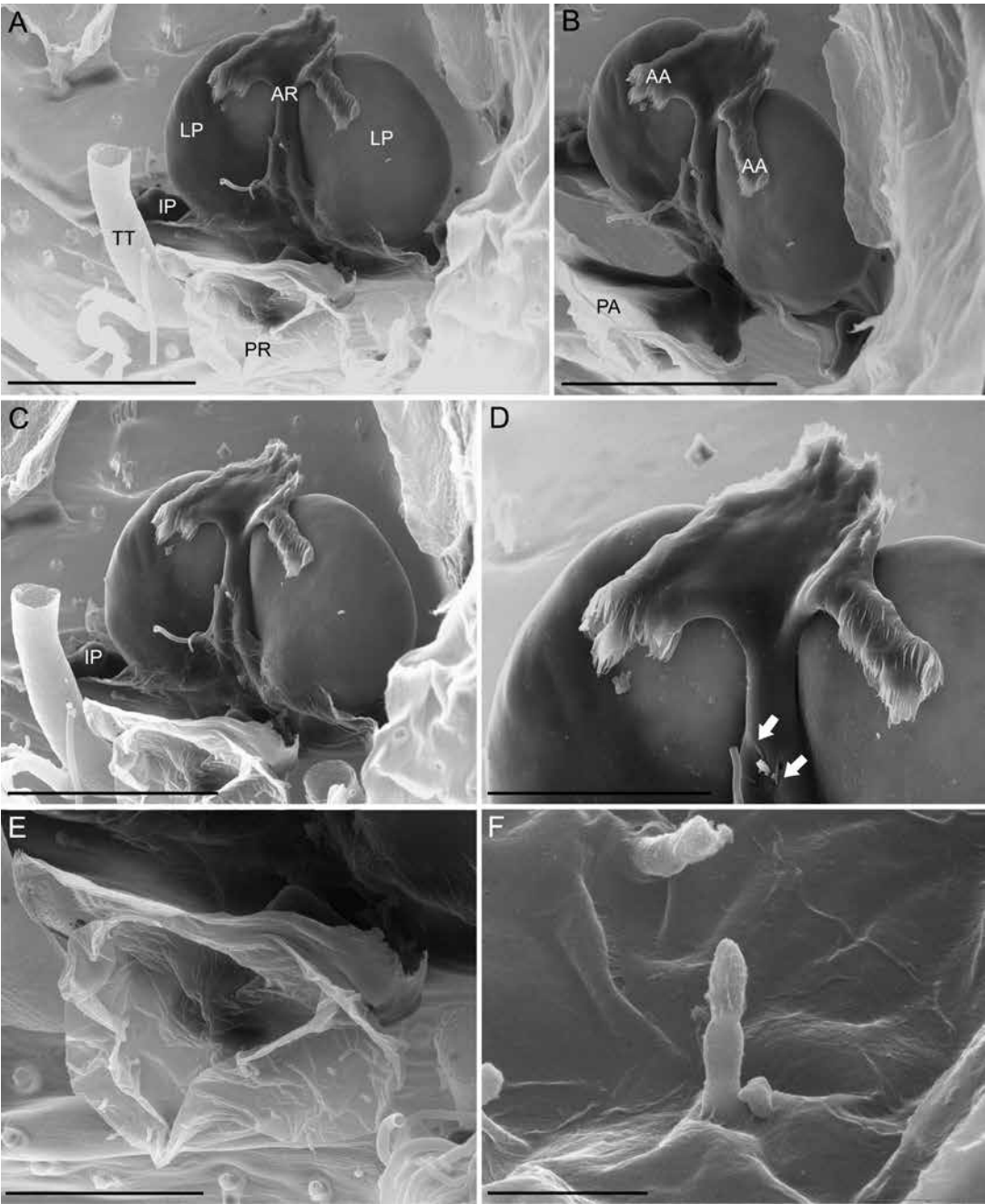


FIGURE 51. *Orchestina cali*, SEM of female genitalia. **A.** Dorsal view. **B.** Lateral view. **C.** Close-up, dorsal view. **D.** Detail of the anterior receptaculum tip; arrows point to gland ducts. **E.** Detail of the posterior receptaculum, slightly collapsed. **F.** Close-up of one gland duct of the posterior receptaculum. Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **IP**, internal pockets; **LP**, lateral projections of the anterior receptaculum; **PA**, posterior apodeme; **PR**, posterior receptaculum; **TT**, tracheal tube. Scale bars: **A, C.** 100 μ m, **D, E.** 50 μ m. **F.** 5 μ m. (PBI_OON 30761).

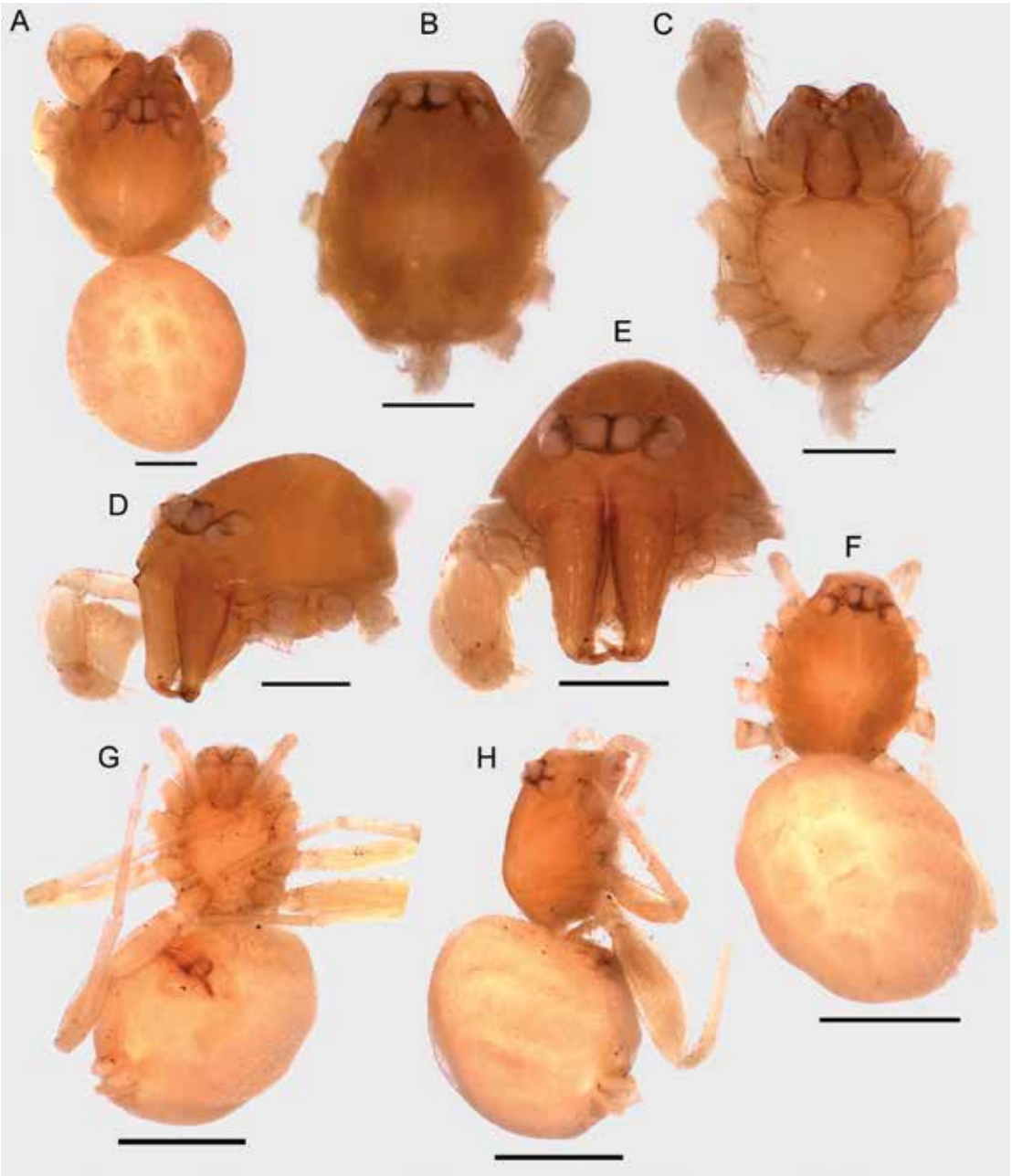


FIGURE 52. *Orchestina saltabunda*, syntypes. A-E. Male. F-H. Female. A, F-H. Habitus. B-E. Cephalothorax. A, B, F. Dorsal. C, G. Ventral. D, H. Lateral. E. Anterior. Scale bars: A-E. 0.2 mm. F-H. 0.5 mm. (PBI_OON 42748).

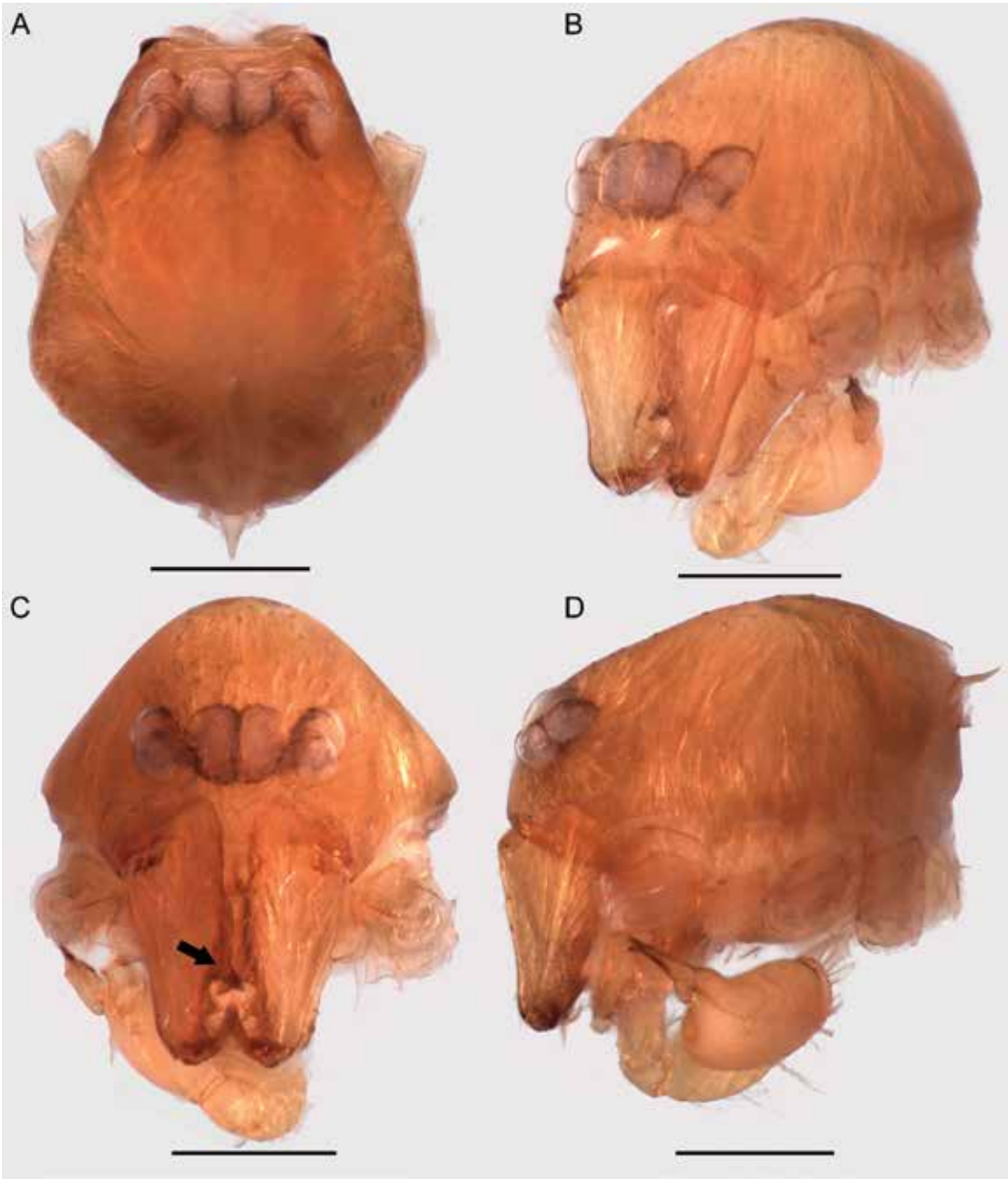


FIGURE 53. *Orchestina aragua*, cephalothorax of male holotype. **A.** Dorsal. **B.** Anterolateral. **C.** Anterior; arrows point to projections on the internal margin of chelicerae. **D.** Lateral. Scale bars: 0.2 mm. (PBI_OON 1684).

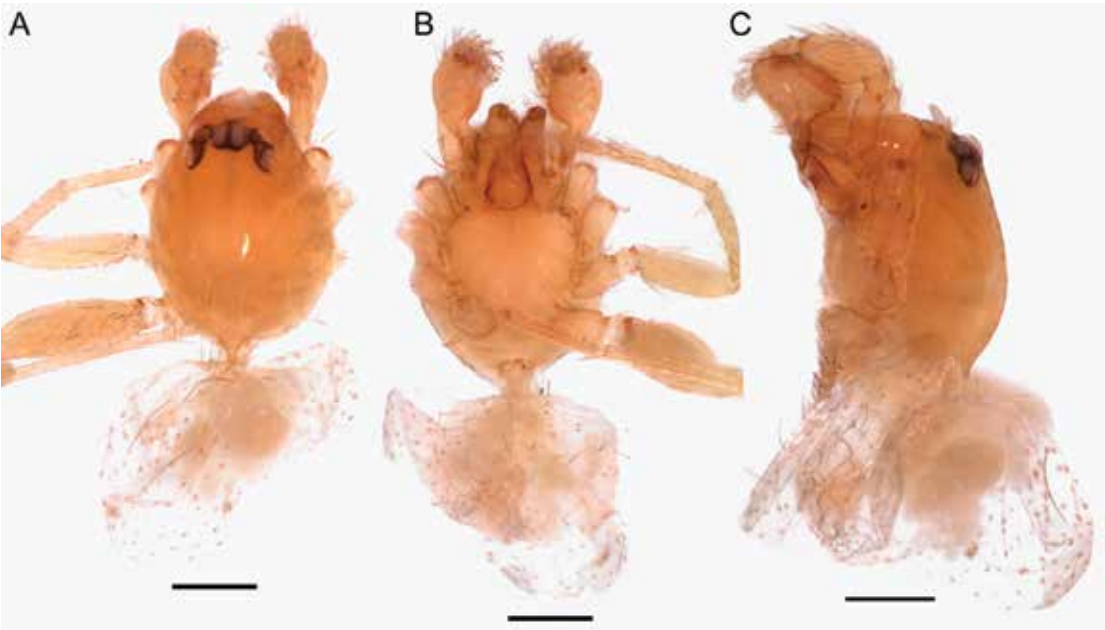


FIGURE 54. *Orchestina bolivar*, habitus of male holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.2 mm. (PBI_OON 1480).



FIGURE 55. *Orchestina* spp., habitus of females. **A–B.** *O. kairi*, holotype. **C–E.** *O. galapagos*. **A, C.** Dorsal. **B, E.** Lateral. **D.** Ventral. Scale bars: 0.5 mm. (PBI_OON 36907, 27360, 36902).

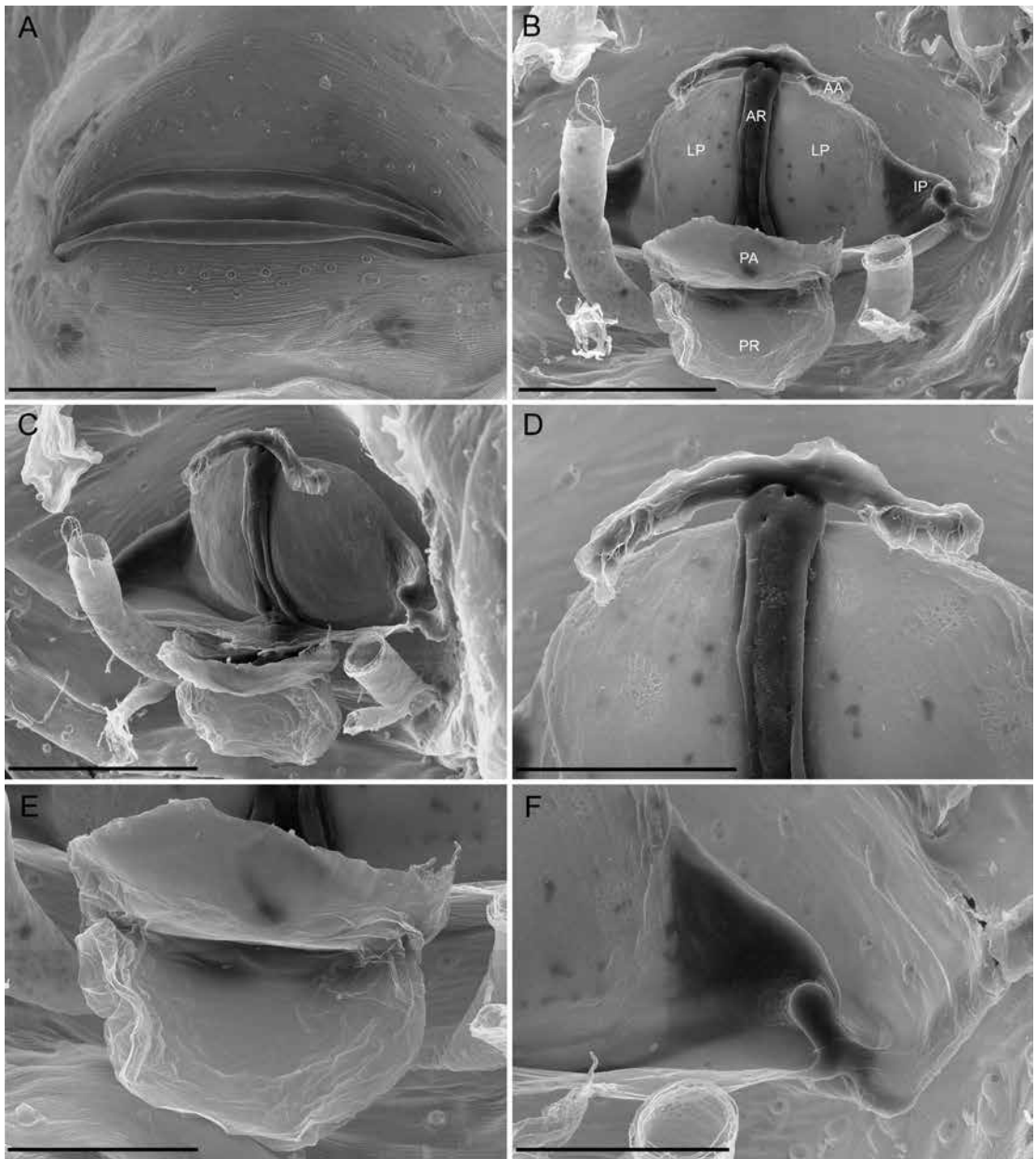


FIGURE 56. *Orchestina galapagos*, SEM of female genitalia. **A.** Epigastric region. **B.** Dorsal view. **C.** Same, dorsolateral view. **D.** Detail of the apical region of the anterior receptaculum. **E.** Detail of the posterior receptaculum and posterior apodeme. **F.** Detail of internal pocket. Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **IP**, internal pocket; **LP**, lateral projection of the anterior receptaculum; **PA**, posterior apodeme; **PR**, posterior receptaculum. Scale bars: **A–C.** 100 μ m. **D–F.** 50 μ m. (PBI_OON 43574).

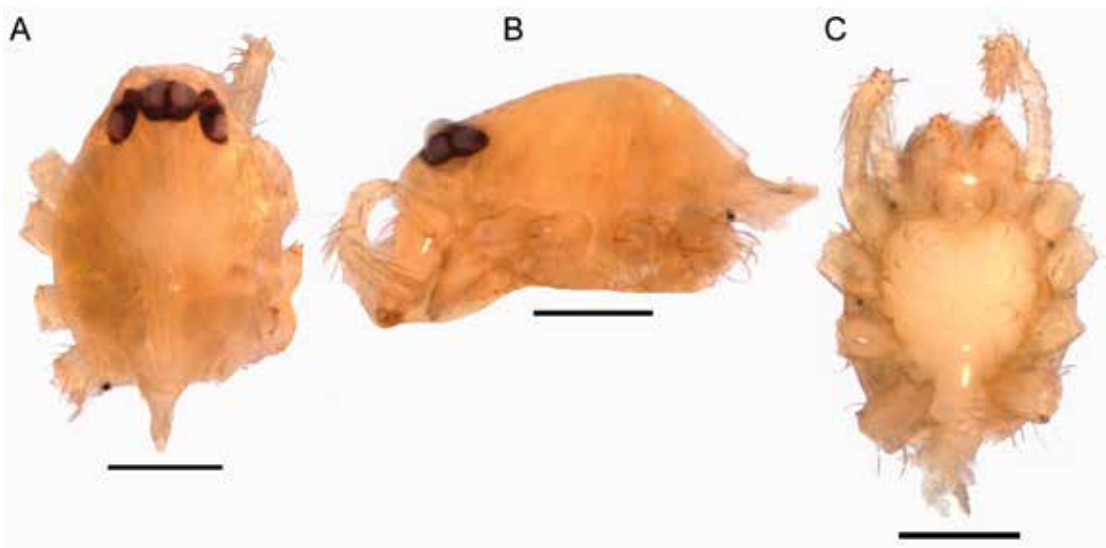


FIGURE 57. *Orchestina fernandina*, female holotype, cephalothorax. **A.** Dorsal. **B.** Lateral. **C.** Ventral. Scale bars: 0.2 mm. (PBI_OON 36908).

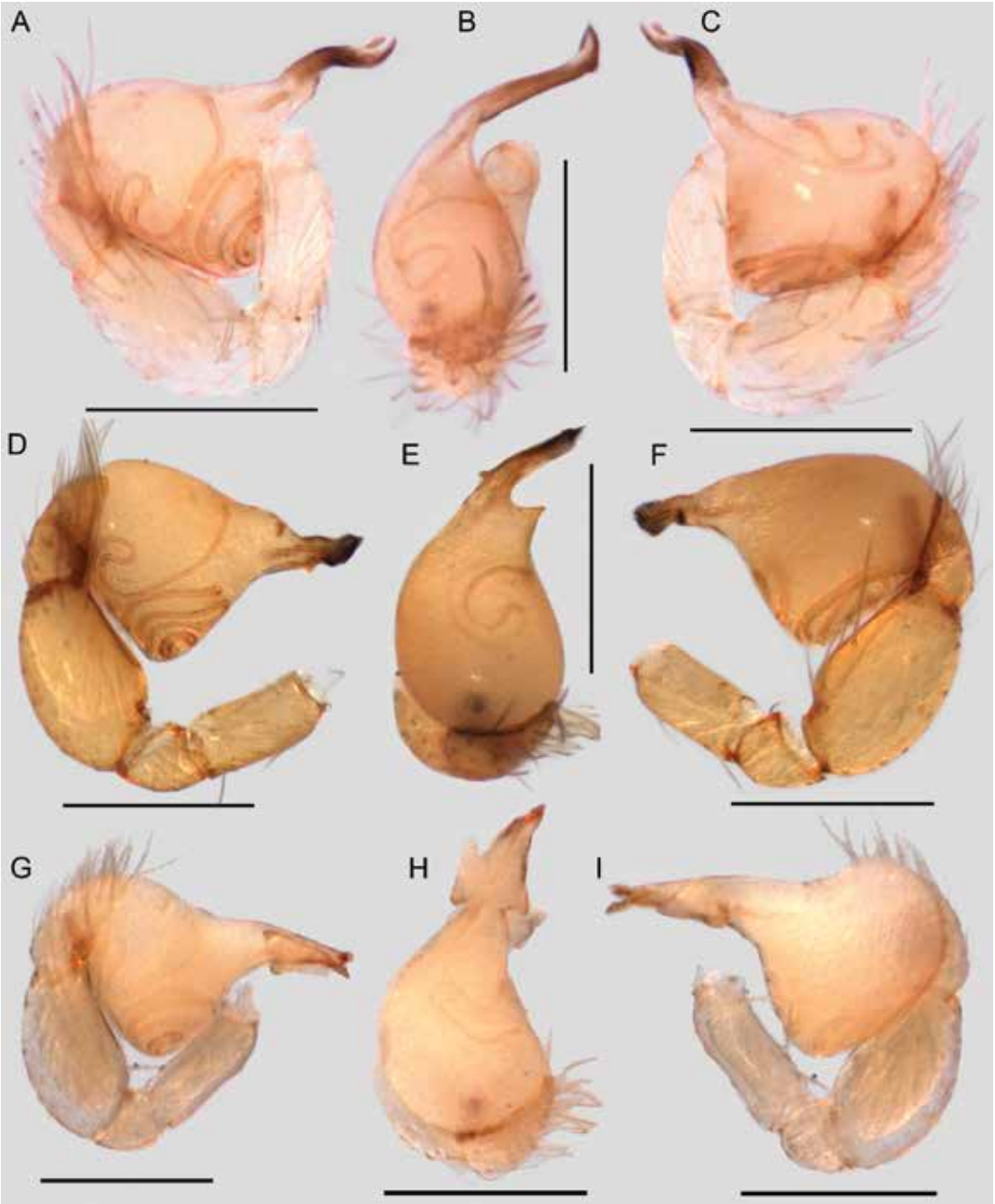


FIGURE 58. *Orchestina* spp., palps of males. A–C. *O. zingara*. D–F. *O. cali*. G–I. *O. saltabunda*. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 30709, 42225, 42748).

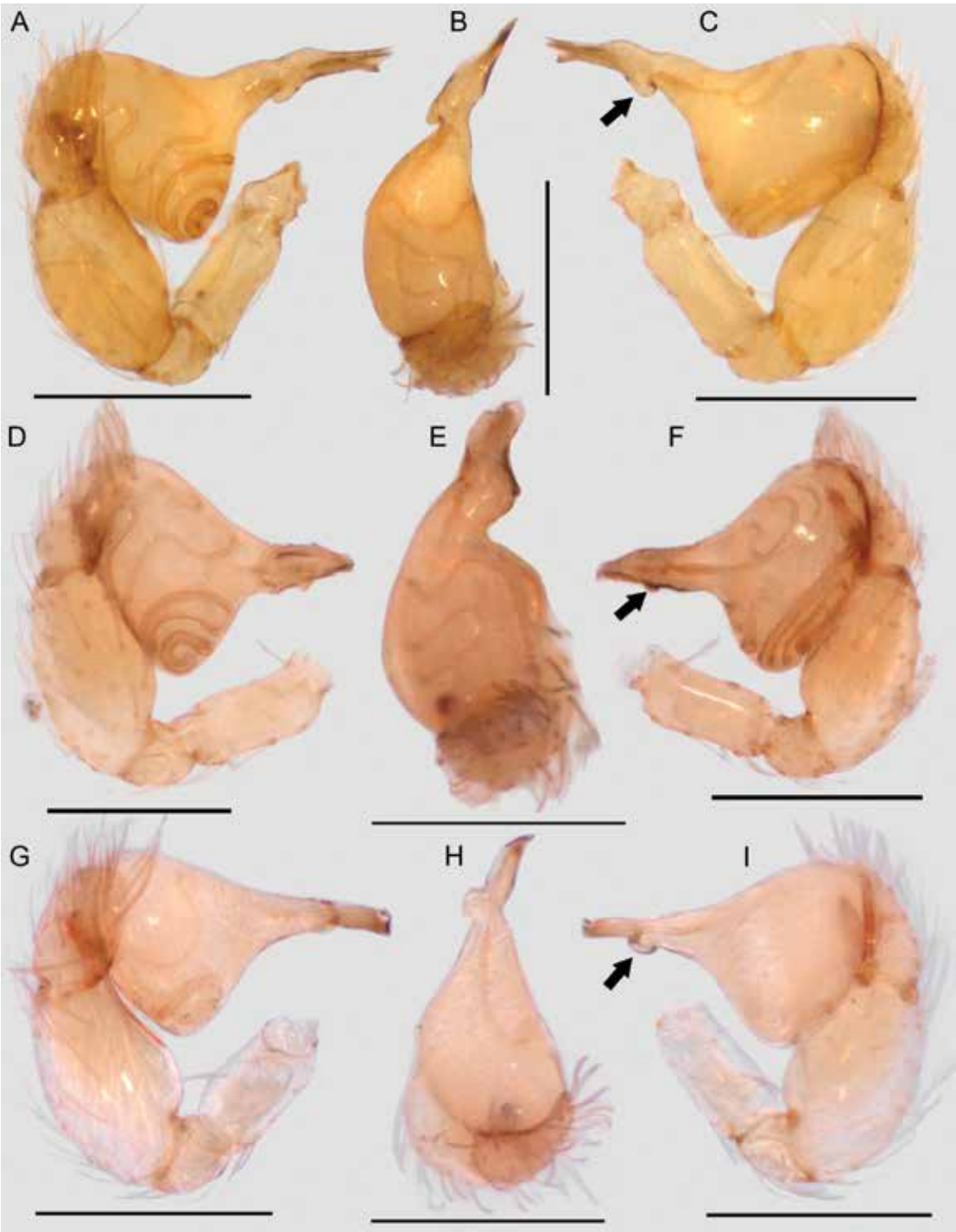


FIGURE 59. *Orchestina* spp., palps of males. A–C. *O. aragua*. D–F. *O. bolivar*. G–I. *O. ranchogrande*. Arrows pointing to the rounded projection near the embolus base. Scale bars: 0.2 mm. (PBI_OON 1684, 1480, 1665).

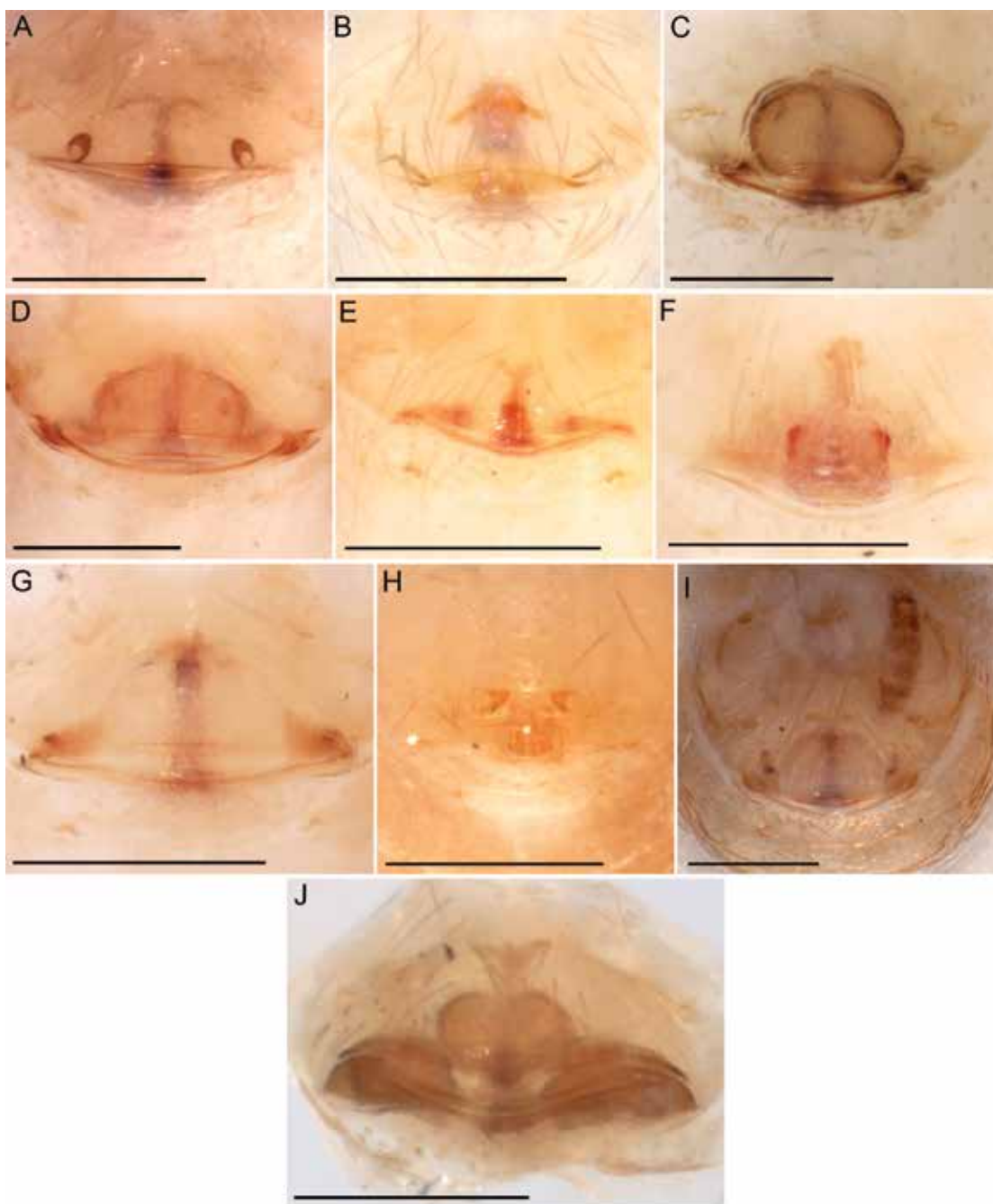


FIGURE 60. *Orchestina* spp., female genitalia, ventral view. A. *O. filandia*. B. *O. arboleda*. C. *O. cali*. D. *O. saltabunda*. E. *O. ranchogrande*. F. *O. kairi*. G. *O. galapagos*. H. *O. fernandina*. I. *O. neblina*. J. *O. venezuela*. Scale bars: 0.2 mm. (PBI_OON 42240, 42225, 42748, 1665, 27360, 36903, 36908, 30708, 51119, 1683).

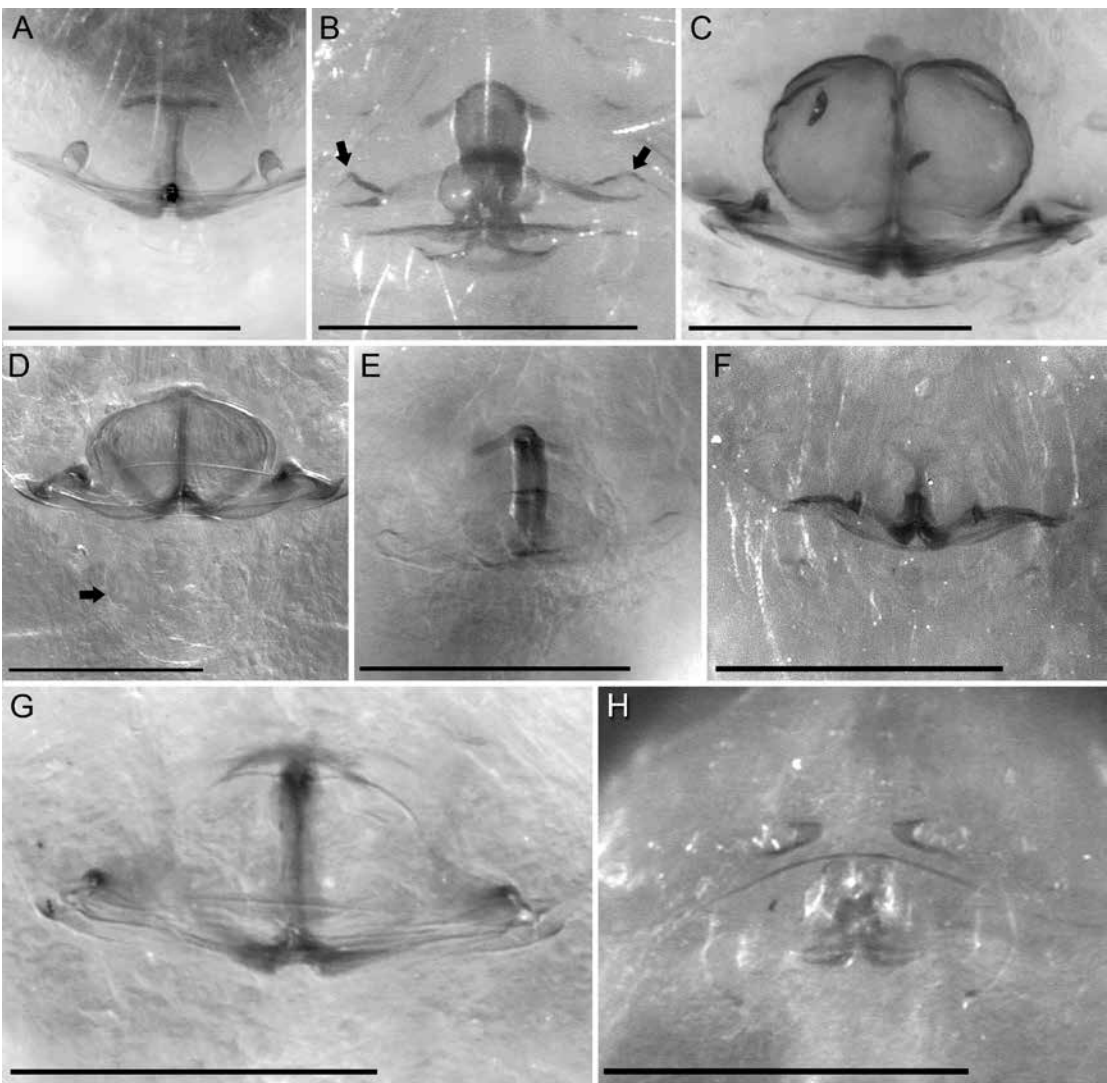


FIGURE 61. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. filandia*. **B.** *O. arboleda*. Arrows point to depressions at the end of epigastric fold. **C.** *O. cali*. **D.** *O. saltabunda*; arrow points to posterior receptacle. **E.** *O. maracay*. **F.** *O. ranchogrande*. **G.** *O. galapagos*. **H.** *O. fernandina*. Scale bars: 0.2 mm. (PBI_OON 51119, 42240, 42225, 42748, 1666, 1665, 36903, 36908).

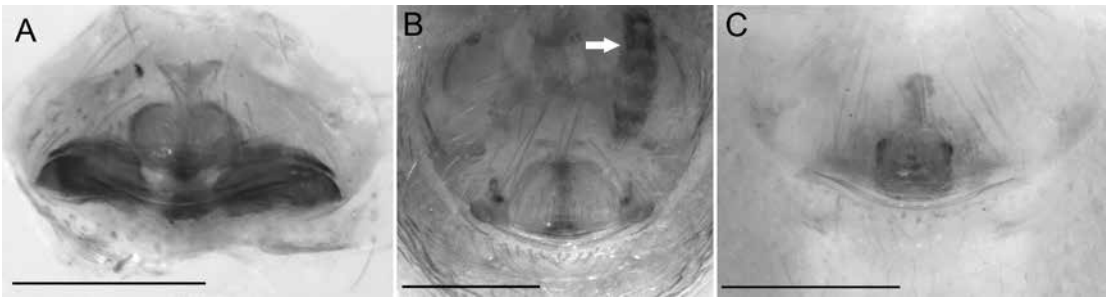


FIGURE 62. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. venezuela*. **B.** *O. neblina*; arrow points to an Acroceridae larvae. **C.** *O. kairi*. Scale bars: 0.2 mm. (PBI_OON 1683, 30708, 27360).

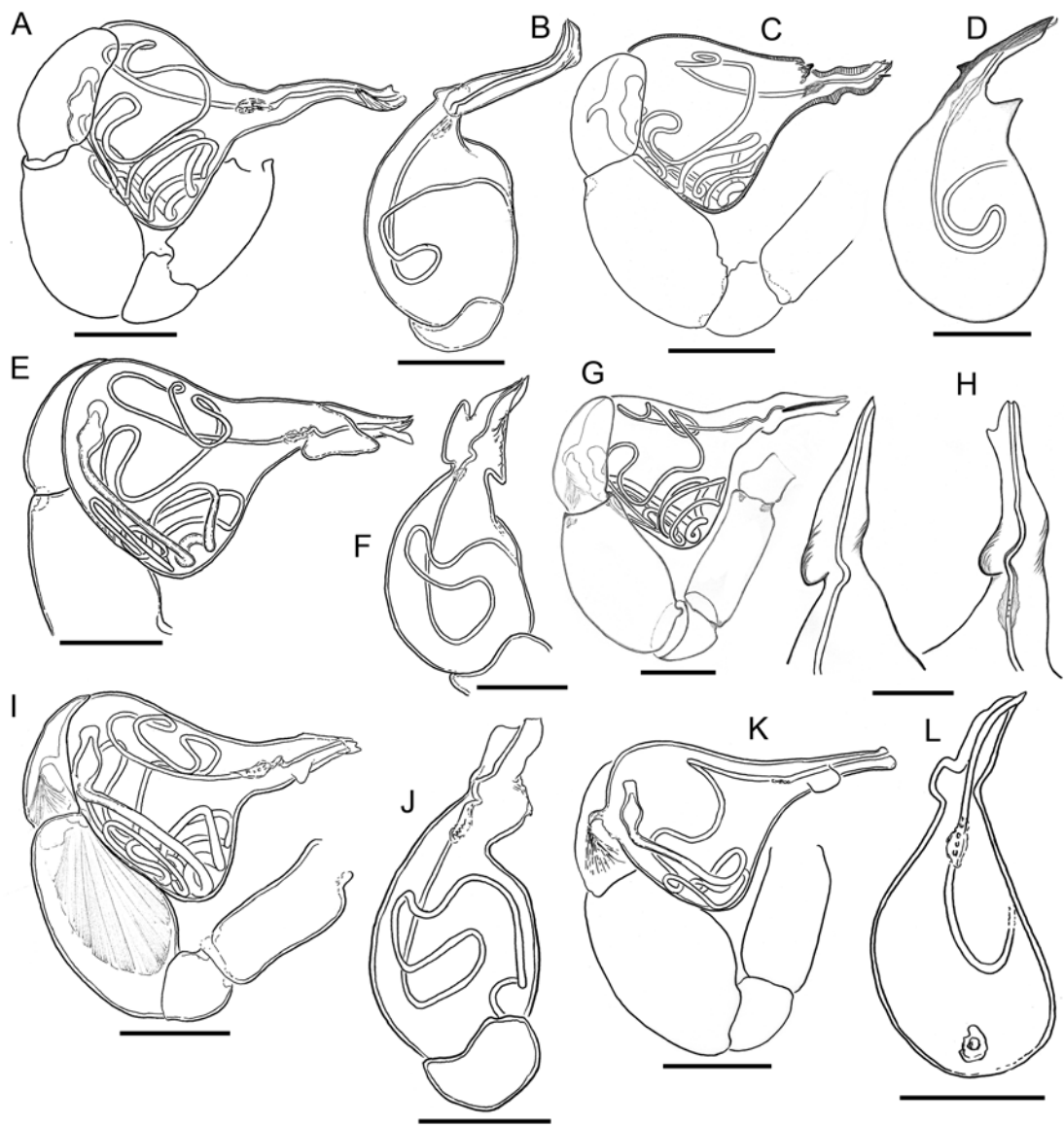


FIGURE 63. *Orchestina* spp., drawings of male palps. A, B. *O. zingara*, holotype. C, D. *O. cali*, holotype. E, F. *O. saltabunda*, syntype. G, H. *O. aragua*, holotype. I, J. *O. bolivar*, holotype. K, L. *O. ranchogrande*, holotype. A, C, G. Prolateral. E, I, K. Retrolateral (images have been flopped for consistency). B, D, F, J, L. Dorsal. Scale bars: 0.1 mm. (PBI_OON 30709, 42225, 42748, 1682, 1684, 1665).

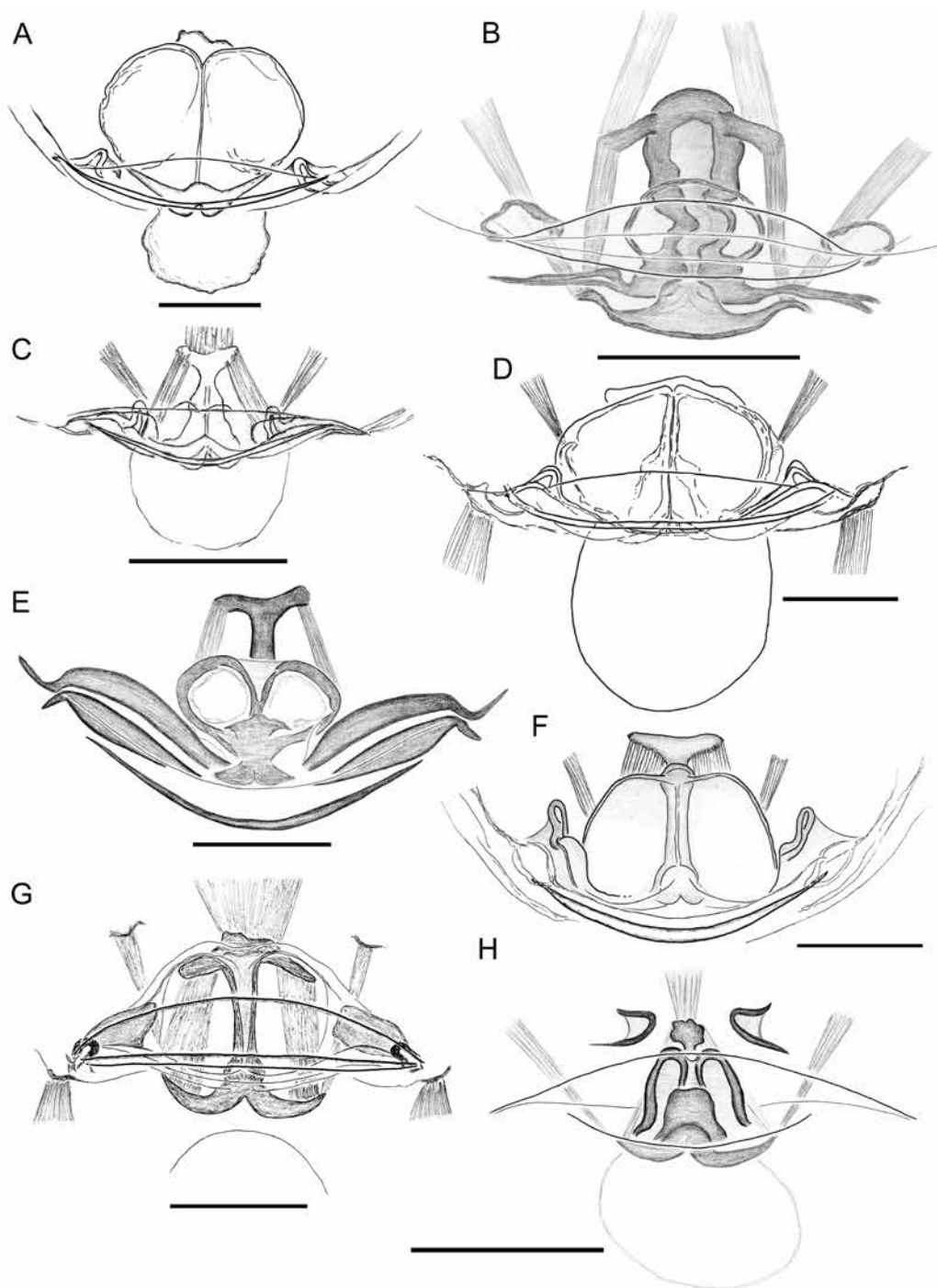


FIGURE 64. *Orchestina* spp., drawings of female genitalia, ventral view. A. *O. cali*. B. *O. arboleda*. C. *O. rancho grande*. D. *O. saltabunda*. E. *O. venezuela*. F. *O. neblina*. G. *O. galapagos*. H. *O. fernandina*. Scale bars: 0.2 mm. (PBI_OON 42225, 42240, 1665, 42748, 1683, 30708, 36902, 36908).

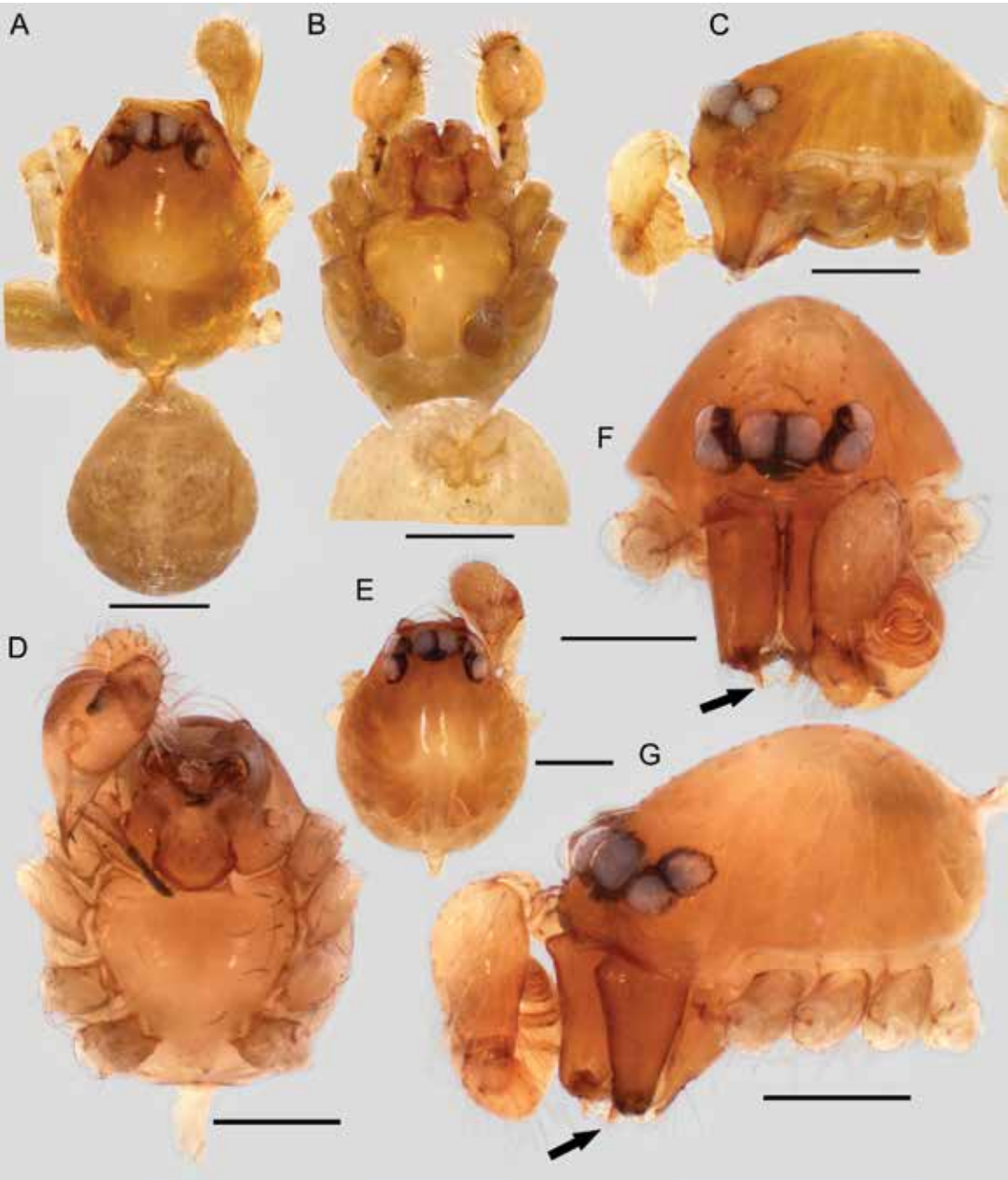


FIGURE 65. *Orchestina* spp., males. A–B. habitus. C–G. Cephalothorax. A–C. *O. erwini*. D–G. *O. shuar*. A, E. Dorsal. B, D. Ventral. C, G. Lateral. F. Anterior. Arrows point to the prolateral projections on chelicerae. Scale bars: 0.2 mm. (PBI_OON 37598, 37610, 37650).

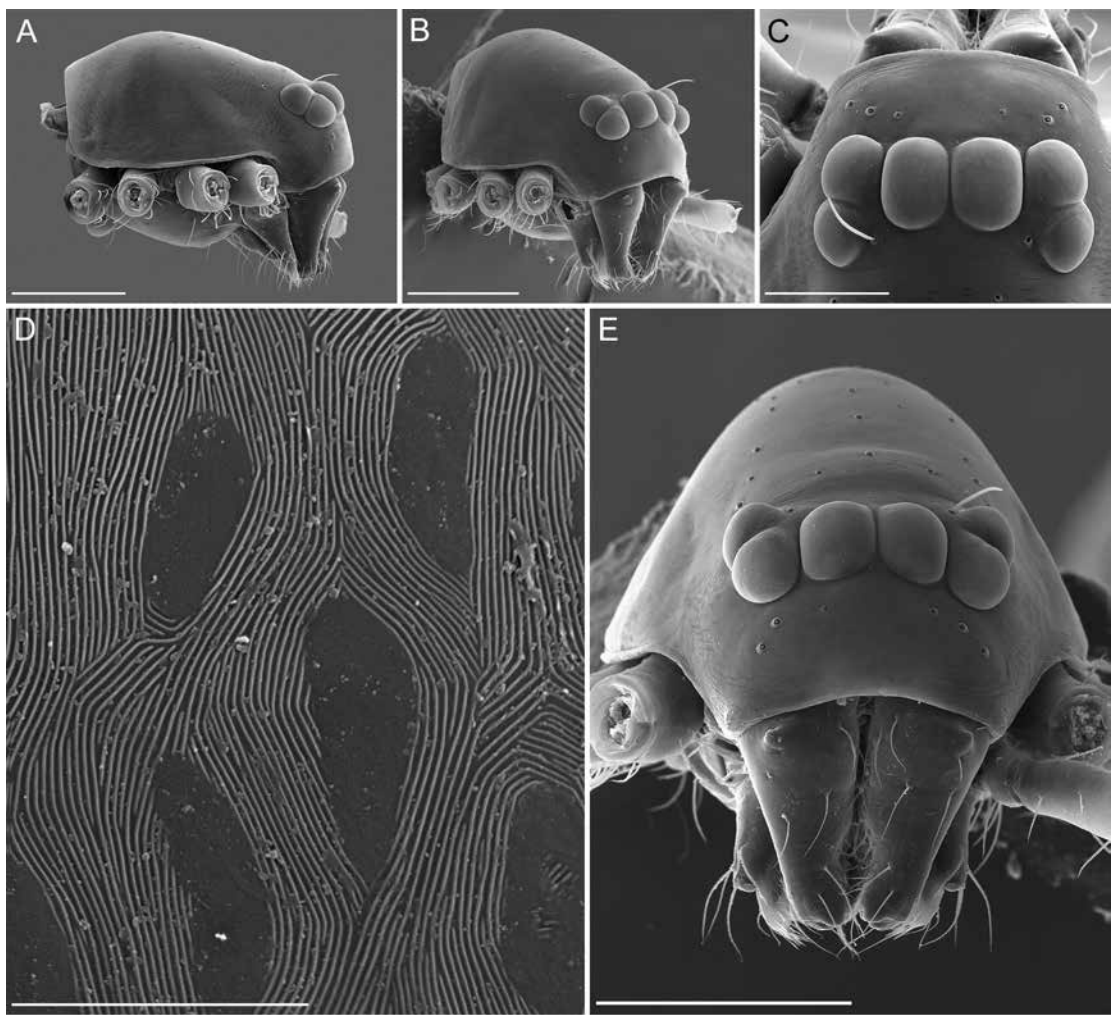


FIGURE 66. *Orchestina erwini*, SEM of male cephalothorax. **A.** Lateral view. **B.** Anterolateral view. **C.** Eyes, dorsal view. **D.** Carapace texture. **E.** Eyes and chelicerae, anterior view. Scale bars: **A, B, E.** 200 μm . **C.** 100 μm . **D.** 10 μm . (PBI_OON 37574).

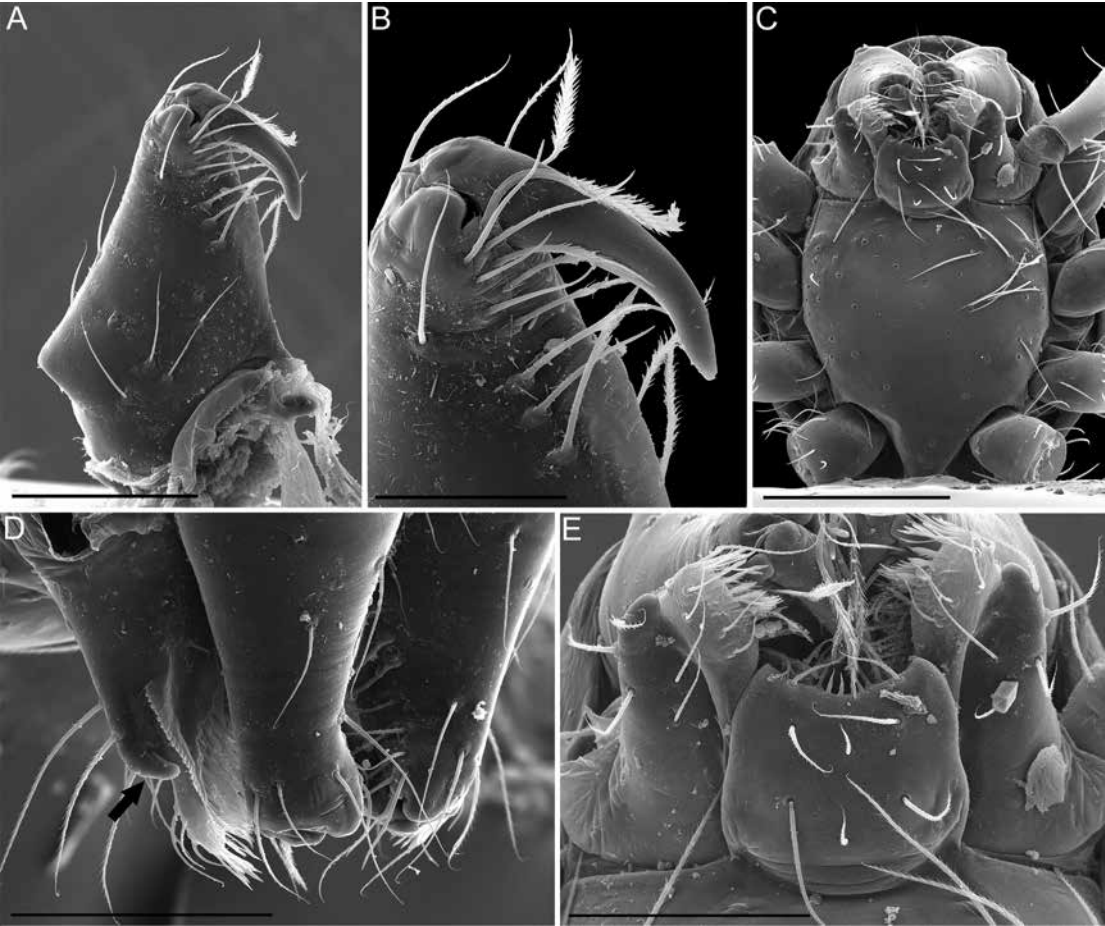


FIGURE 67. *Orchestina erwini*, SEM of male cephalothorax structures. **A.** Left chelicerae, anterior view. **B.** Same, promargin. **C.** Sternum. **D.** Detail of right endite; arrow points to a small projection. **E.** Labium and endites. Scale bars: **A, D, E.** 100 μm . **B.** 50 μm . **C.** 200 μm . (PBI_OON 37577, 37574).

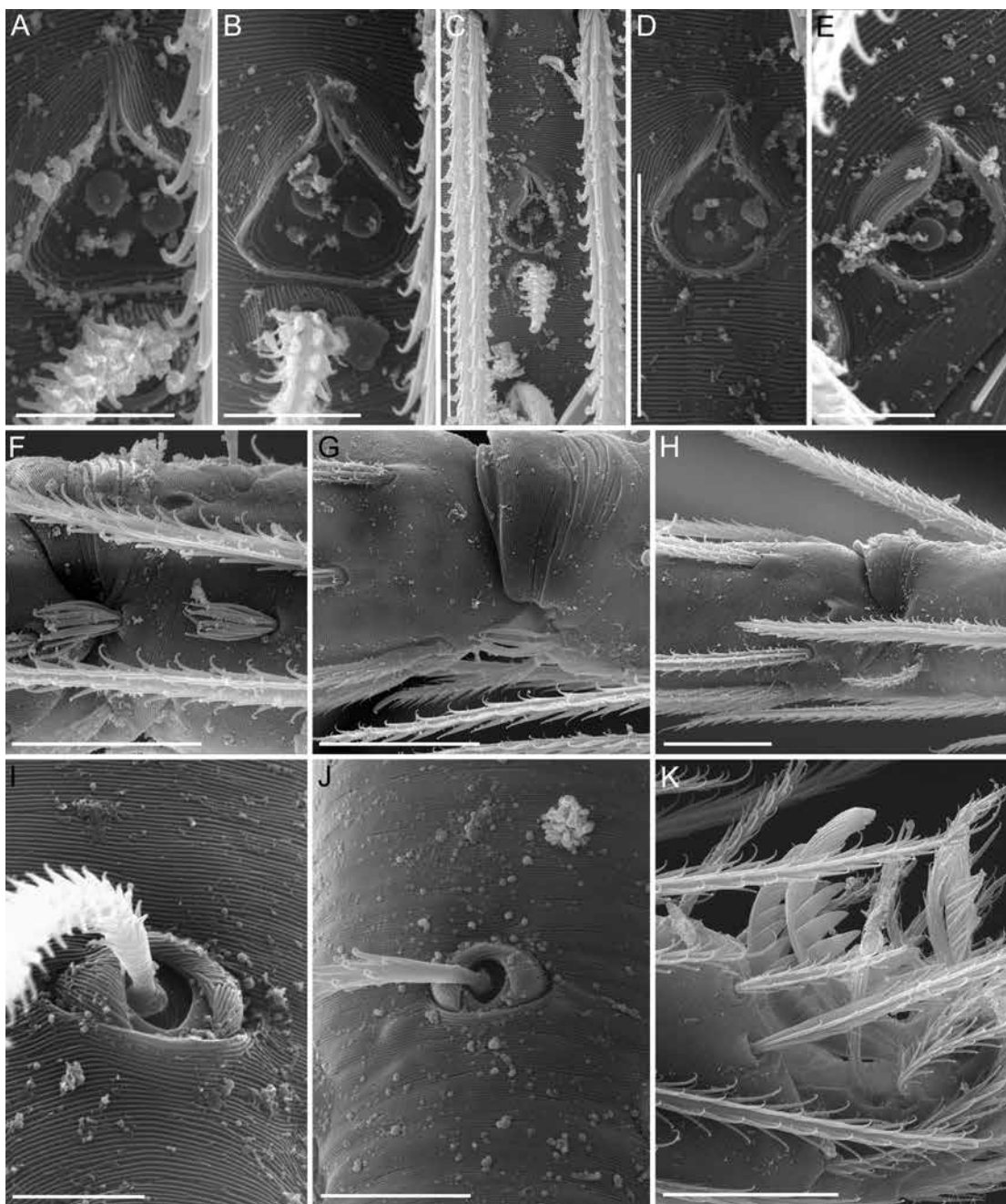


FIGURE 68. *Orchestina erwini*, SEM of male leg and palp structures. **A.** Right tarsal organ I. **B.** Same, leg II. **C.** Same, leg III. **D.** Same, leg IV. **E.** Same, cymbium. **F.** Modified setae of the apical region of right metatarsus I, prolateral view. **G.** Same, right leg II. **H.** Tarsus-metatarsus joint of right leg IV, prolateral view. **I.** Trichobothrial socket of right leg II. **J.** Same, right leg III. **K.** Right claws of leg I, retrolateral view. Scale bars: **A, B, E, I.** 5 μ m. **C, D, J.** 10 μ m. **F, G, H, K.** 20 μ m. (PBI_OON 37574).

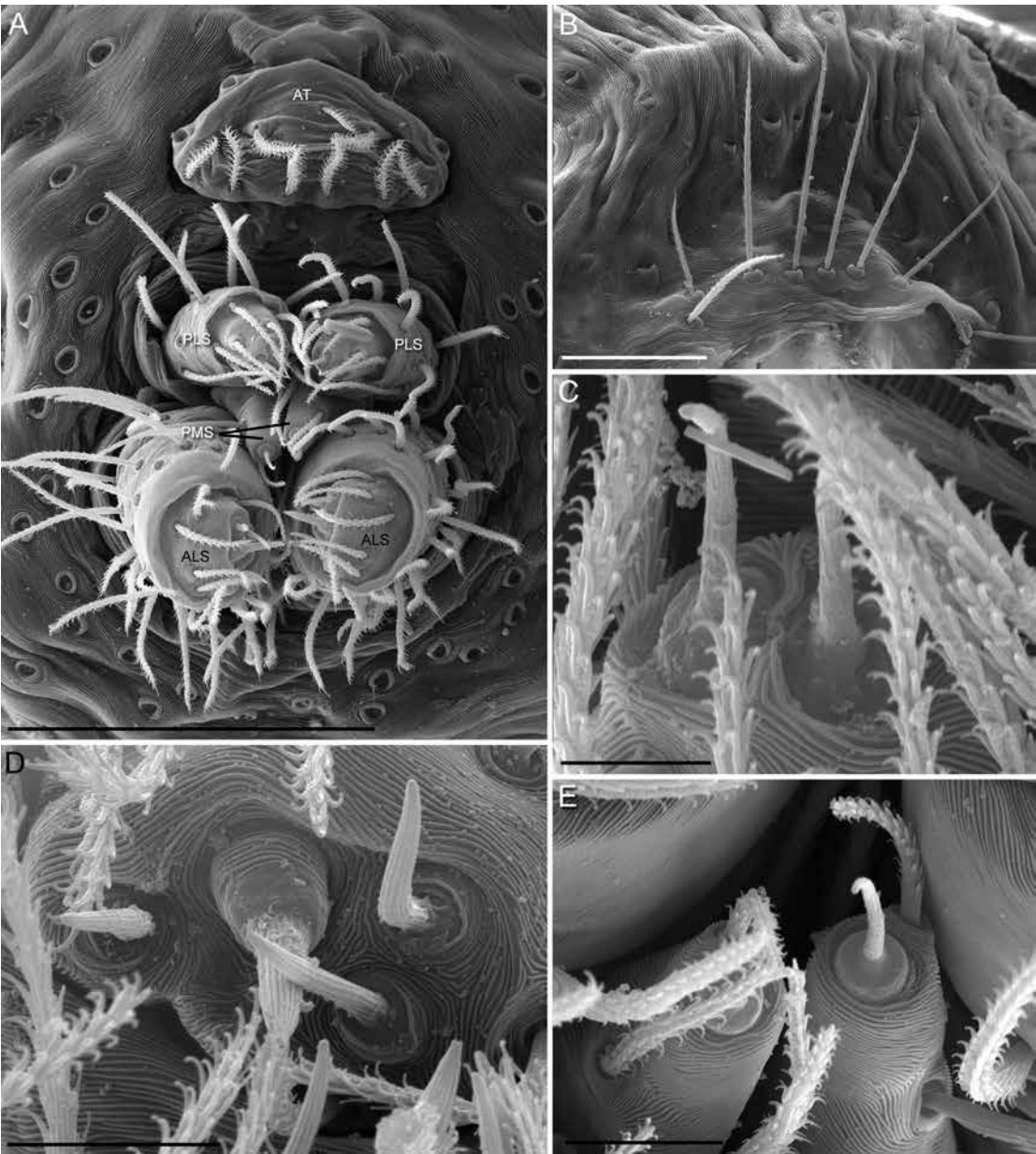


FIGURE 69. *Orchestina erwini*, SEM of male abdomen structures. **A.** Spinnerets, ventral-posterior view. **B.** Pedicel region showing the ring of needlelike setae. **C.** PLS. **D.** ALS. **E.** PMS. Abbreviations: **ALS**, anterior lateral spinneret; **AT**, anal tubercle; **PMS**, posterior median spinneret; **PLS**, posterior lateral spinneret. Scale bars: **A.** 100 µm. **B.** 50 µm. **C.** 5 µm. **D, E.** 10 µm. (PBI_OON 37574).

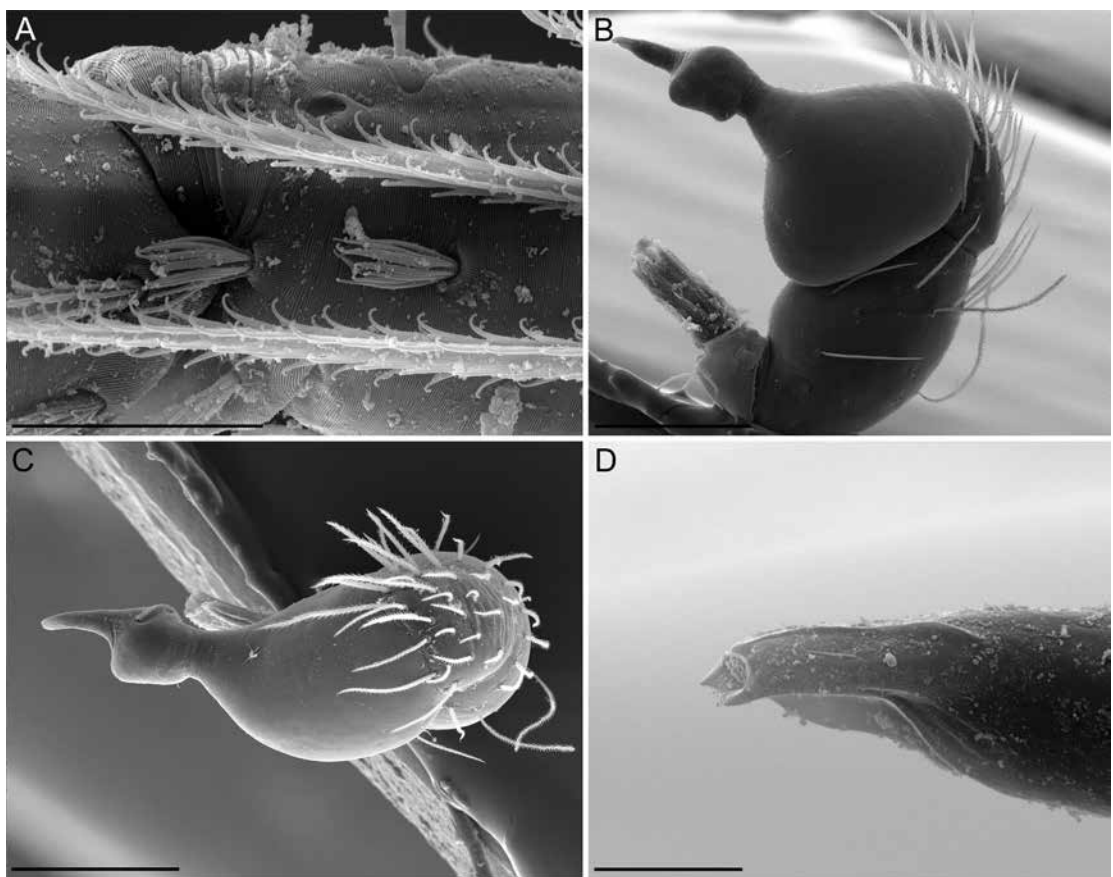


FIGURE 70. *Orchestina erwini*, SEM of male right leg I and palp. **A.** Modified setae of metatarsus I. **B.** Palp, retrolateral view. **C.** Same, dorsal view. **D.** Detail of embolus. Scale bars: **A.** 20 μm . **B, C.** 100 μm . **D.** 10 μm . (PBI_OON 37574).

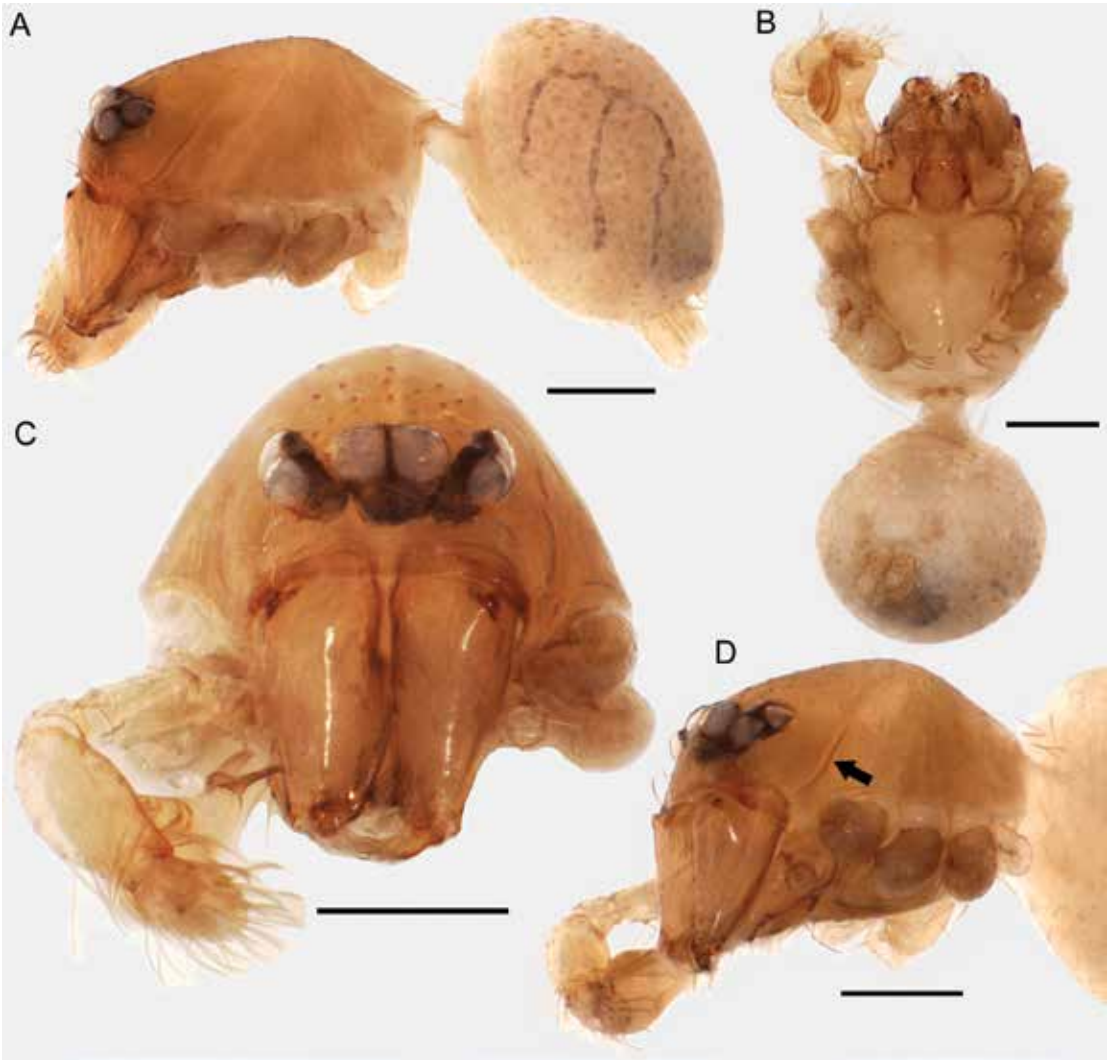


FIGURE 71. *Orchestina ecuatoriensis*, male. **A.** Lateral. **B.** Ventral. **C.** Anterior. **D.** Cephalothorax, lateral view; arrow points to the sclerotized band of carapace. Scale bars: 0.2 mm. (PBI_OON 37631).

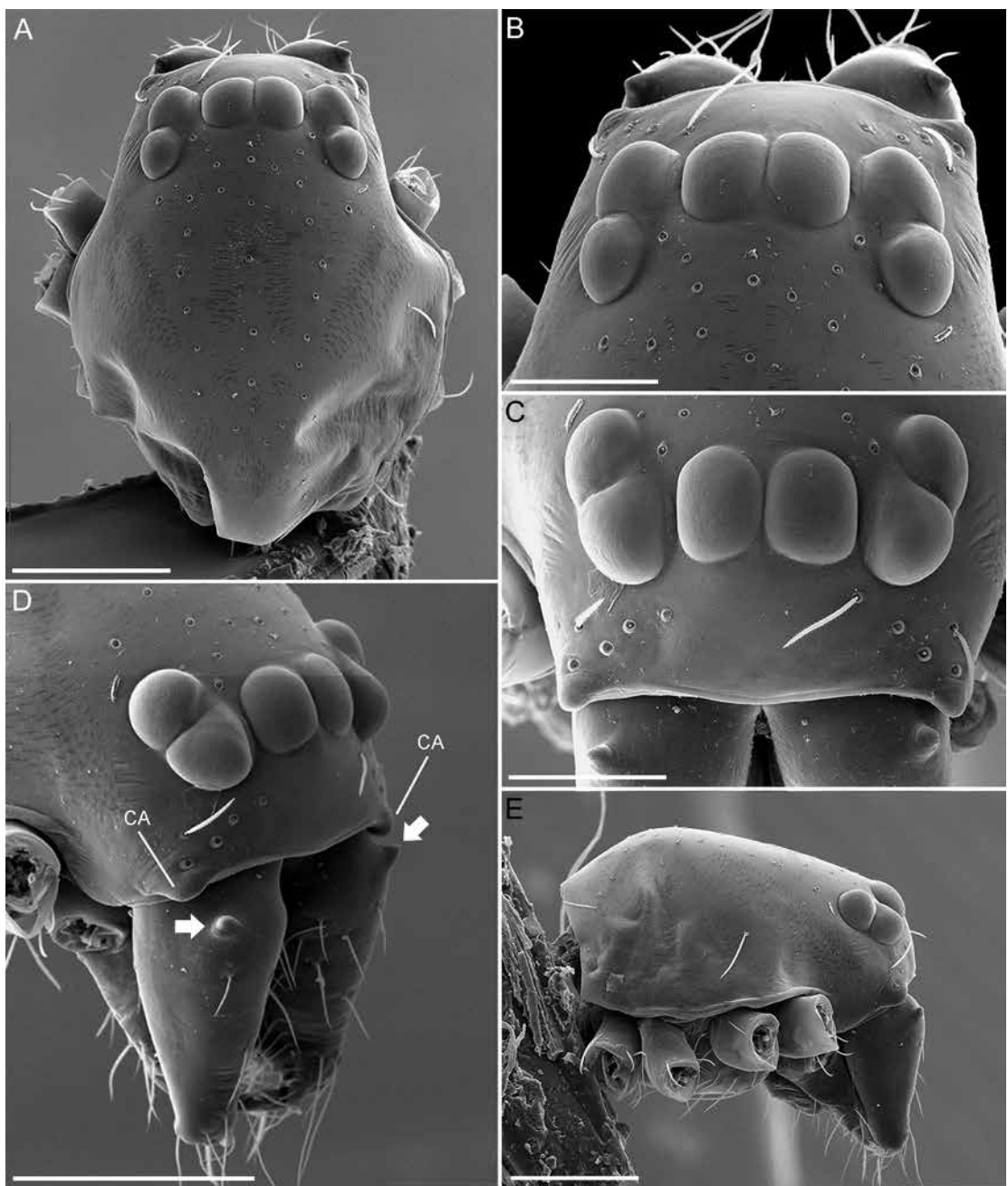


FIGURE 72. *Orchestina ecuatoriensis*, SEM of male cephalothorax. **A.** Dorsal view. **B.** Eyes dorsal view. **C.** Same, anterior. **D.** Eyes and chelicerae, lateral view; arrows showing the conical projections on chelicerae. **E.** Lateral view. Scale bars: **A, D, E.** 200 μm . **B, C.** 100 μm . (PBI_OON 29996). Abbreviations **CA**, clypeal apodemes.

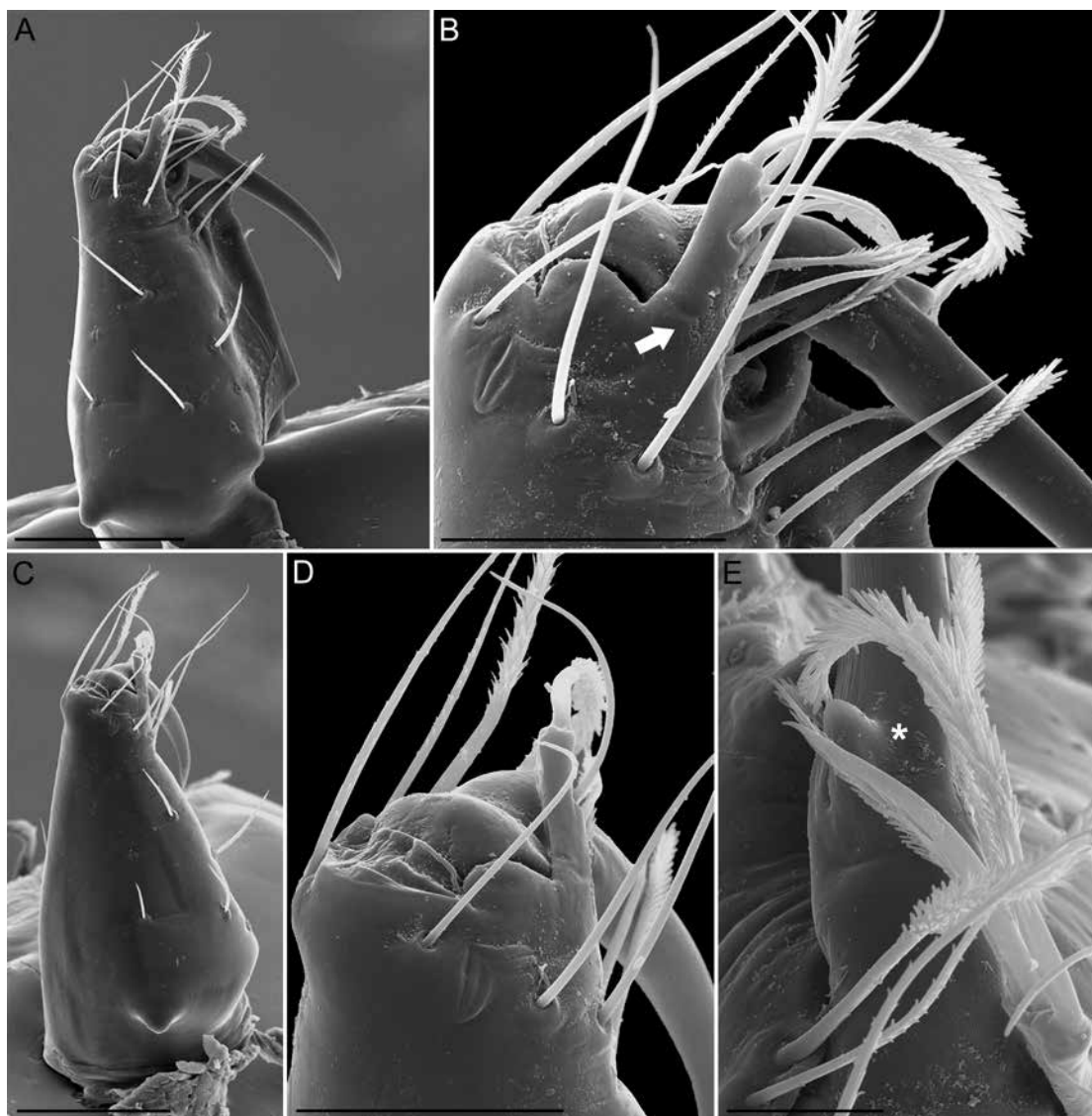


FIGURE 73. *Orchestina ecuatoriensis*, SEM of male left chelicerae. **A.** Anterior view. **B.** Promargin (arrow showing cuticular projection). **C.** Ectal view. **D.** Same, detail. **E.** Detail of cheliceral fang (asterisk indicates a small projection on the base). Scale bars: **A, C.** 100 µm. **B, D.** 50 µm. **E.** 20 µm. (PBI_OON 30242).

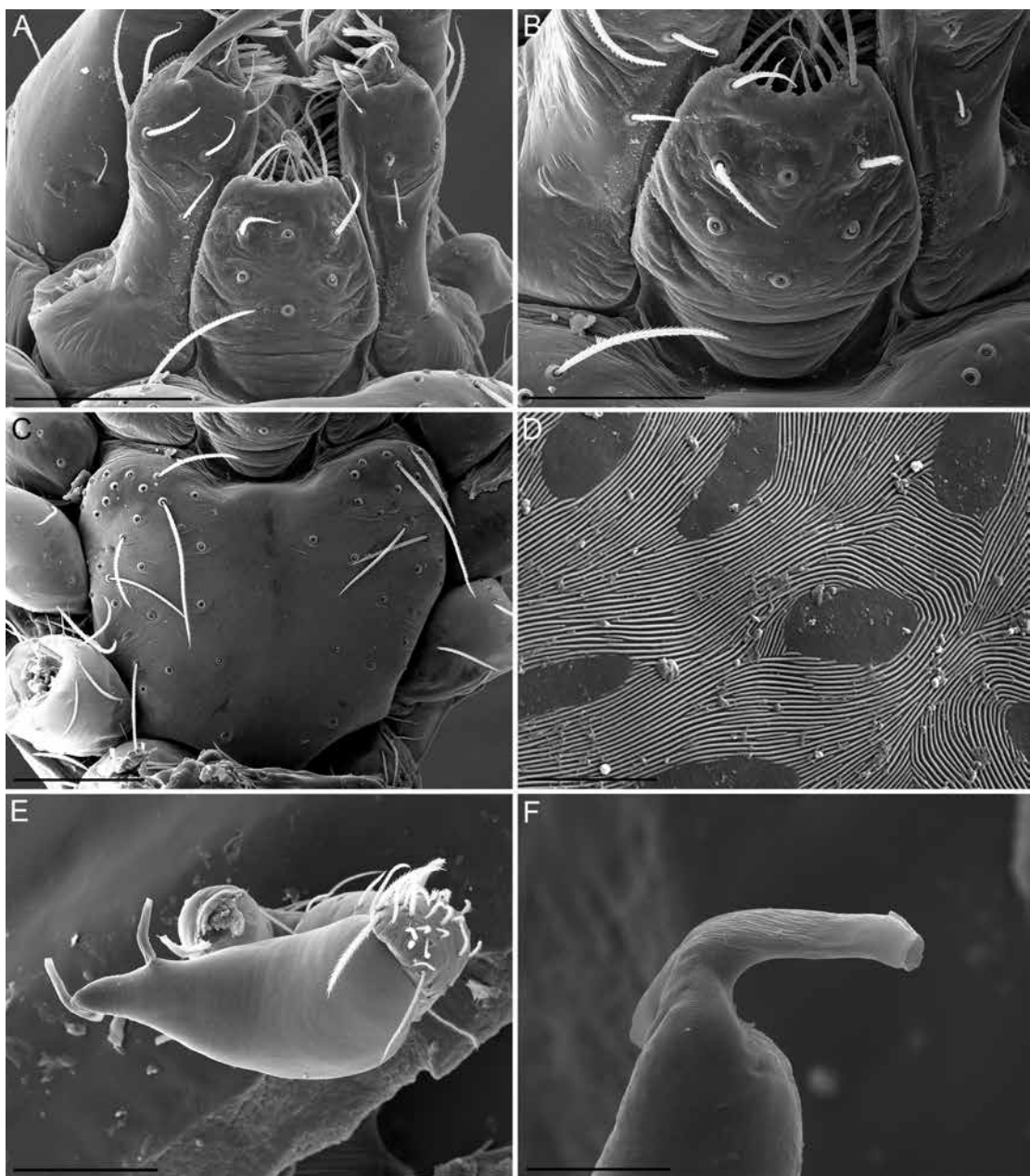


FIGURE 74. *Orchestina ecuatoriensis*, SEM of male cephalothorax and palp. **A.** Labium and endites. **B.** Detail of labium. **C.** Sternum. **D.** Detail of cuticle texture of sternum. **E.** Copulatory bulb, dorsal view. **F.** Detail of embolus. Scale bars: **A, C, E.** 100 μ m. **B.** 50 μ m. **D.** 10 μ m. **F.** 20 μ m. (PBI_OON 29996, 37644).

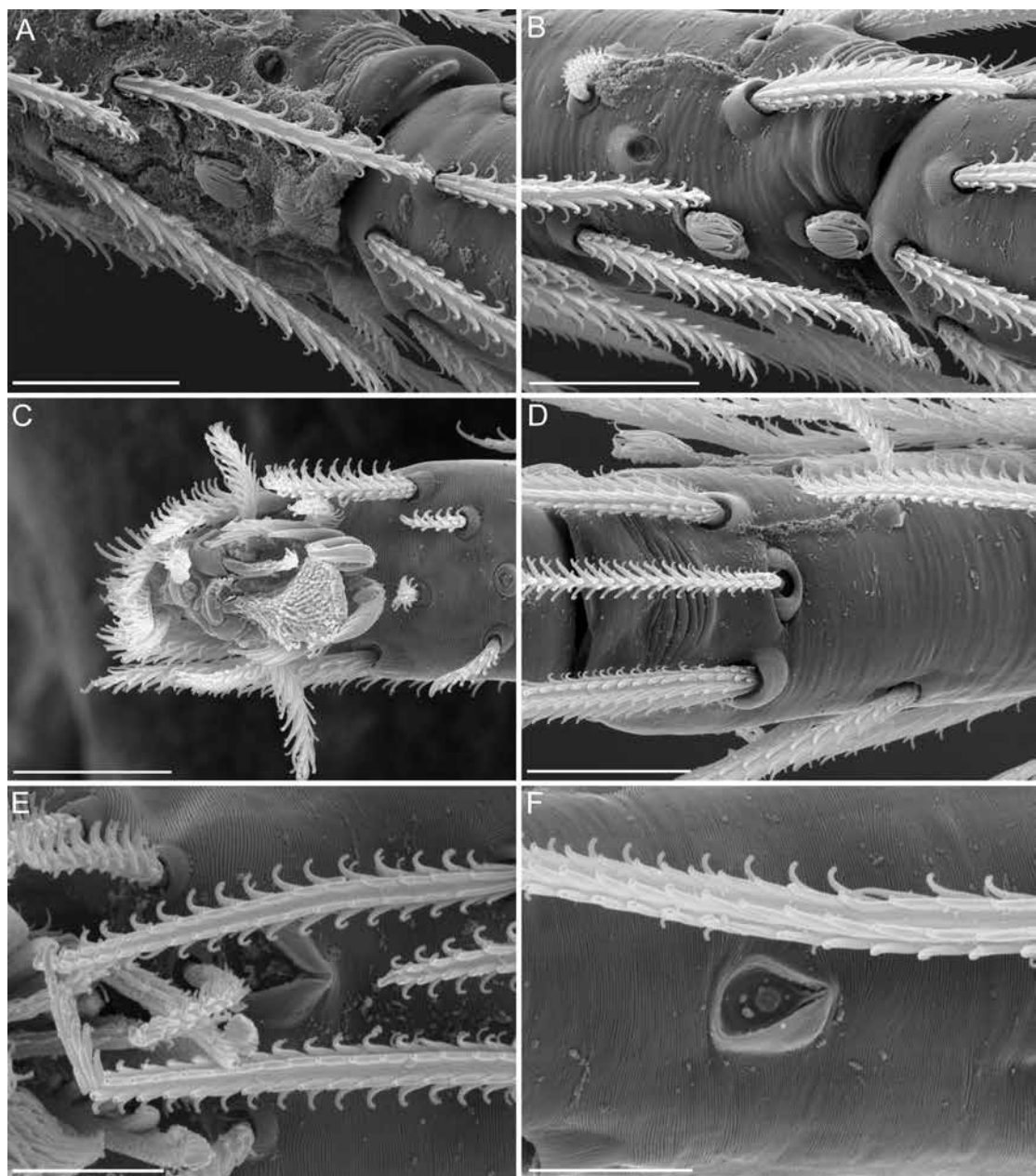


FIGURE 75. *Orchestina ecuatoriensis*, SEM of male left legs I, II and IV. **A.** Prolateral setae of the terminal region of metatarsus I. **B.** Same, leg II. **C.** Claws IV, apical view. **D.** Trichobothrial socket of metatarsus II. **E.** Tarsal organ I. **F.** Tarsal organ IV. Scale bars: **A–D.** 20 μm . **E, F.** 10 μm . (PBI_OON 30242).

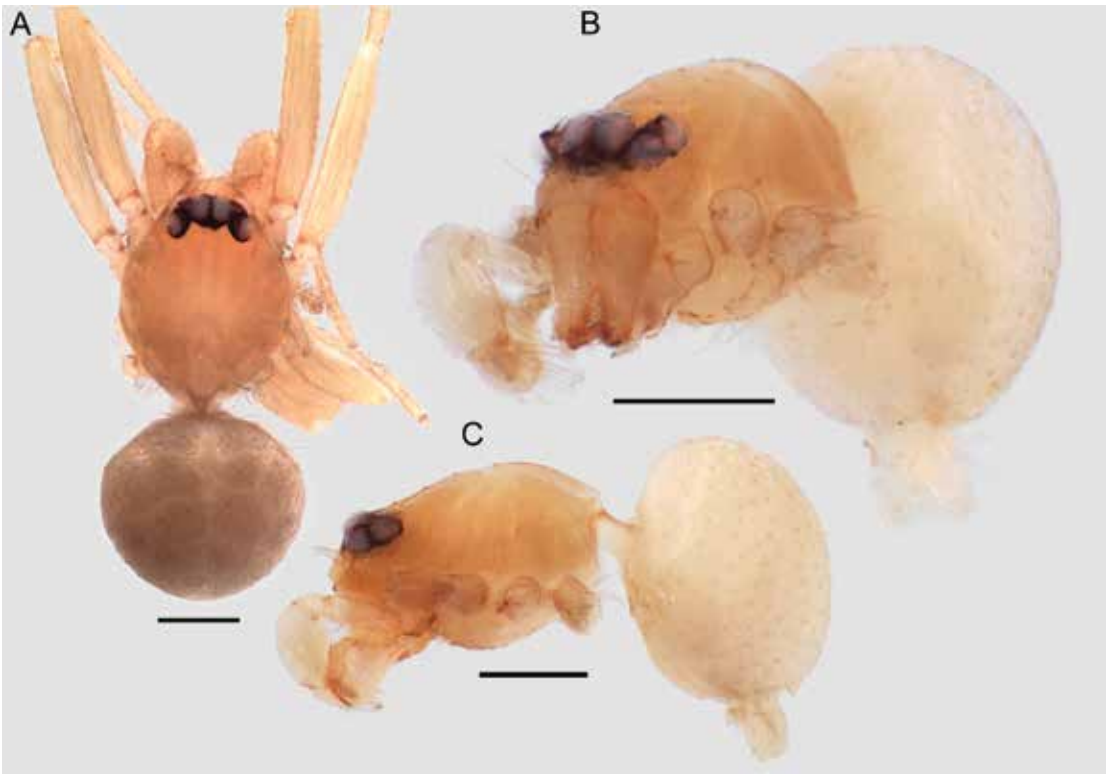


FIGURE 76. *Orchestina sotoi*, habitus of male. A. Dorsal. B. Anterolateral. C. Lateral. Scale bars: 0.2 mm. (PBI_OON 42167, 30057).



FIGURE 77. *Orchestina magna*, male. **A, B, D.** Habitus. **C, E, F.** Cephalothorax. **A, E.** Lateral. **B.** Anterior; asterisks show conical projection of chelicerae. **C.** Dorsal. **D.** Anterolateral. **F.** Ventral. Arrow in **E** pointing to sclerotized band of carapace. Scale bars: 0.2 mm. (PBI_OON 37645).



FIGURE 78. *Orchestina golem*, male. **A.** Habitus dorsal. **B.** Sternum ventral; arrows point to sclerotized borders of labium. **C.** Cephalothorax, lateral; asterisks show the conical projections of chelicerae. Scale bars: **A.** 0.5 mm. **B, C.** 0.2 mm. (PBI_OON 36475, 43269).

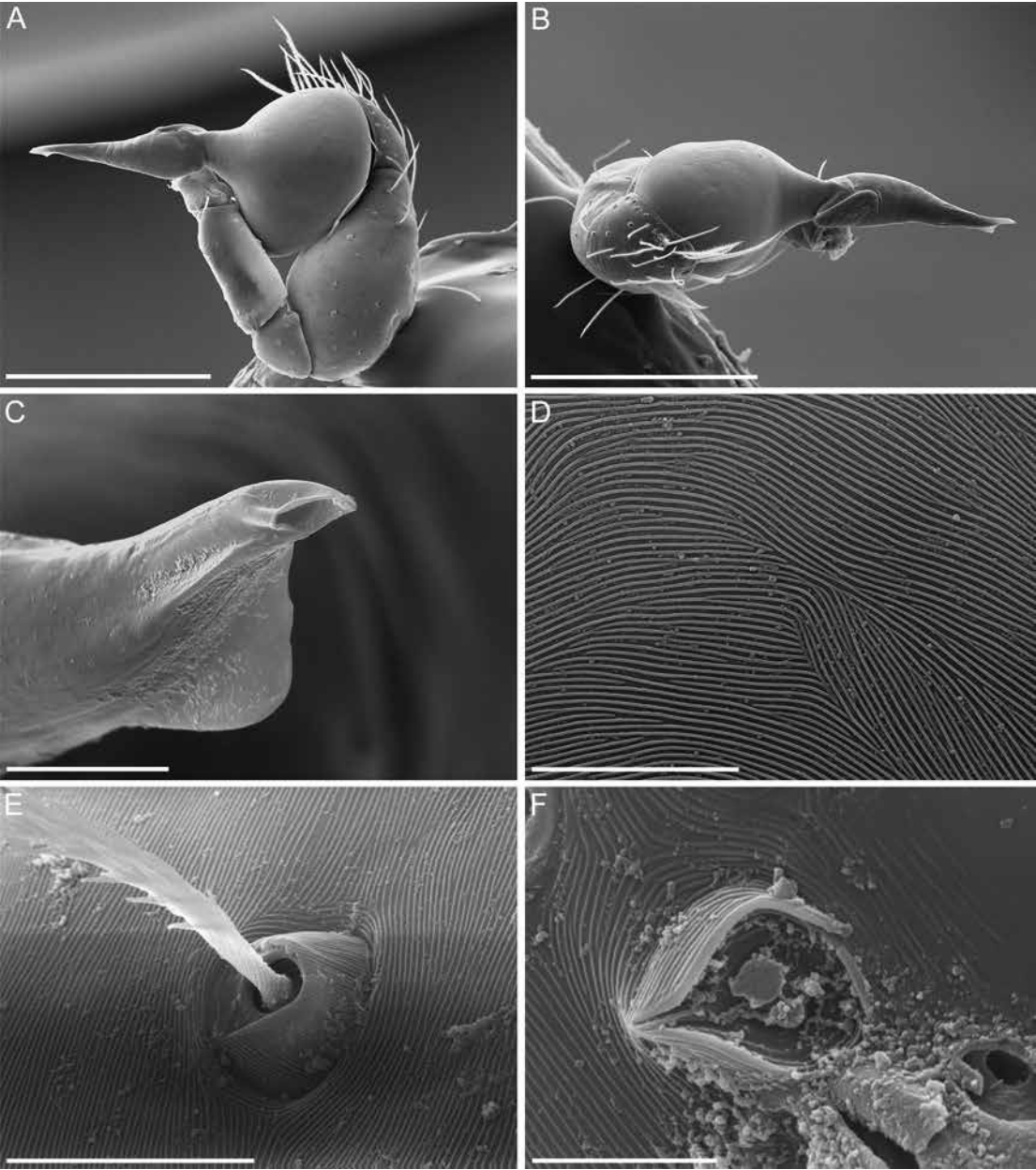


FIGURE 79. *Orchestina golem*, SEM of male palp. **A.** Retrolateral view. **B.** Dorsal view. **C.** Embolus. **D.** Detail of the copulatory bulb cuticle. **E.** Trichobothrial socket of palp tibia. **F.** Palp tarsal organ. Scale bars: **A, B.** 200 µm. **C–E.** 10 µm. **F.** 5 µm. (PBI_OON 30212).

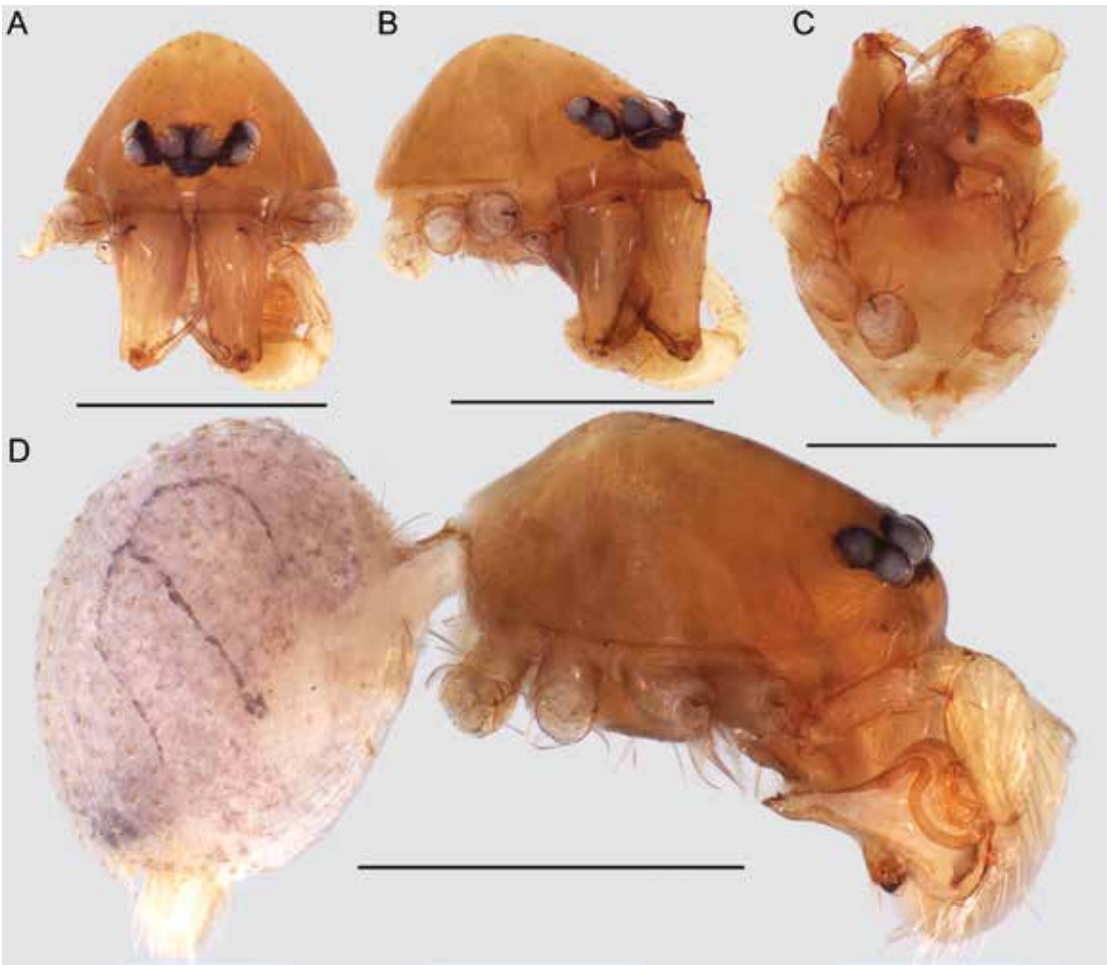


FIGURE 80. *Orchestina waorani*, male. **A.** Cephalothorax, anterior. **B.** Same, lateral. **C.** Same, ventral. **D.** Habitus lateral. Scale bars: 0.5 mm. (PBI_OON 37131, 15099).

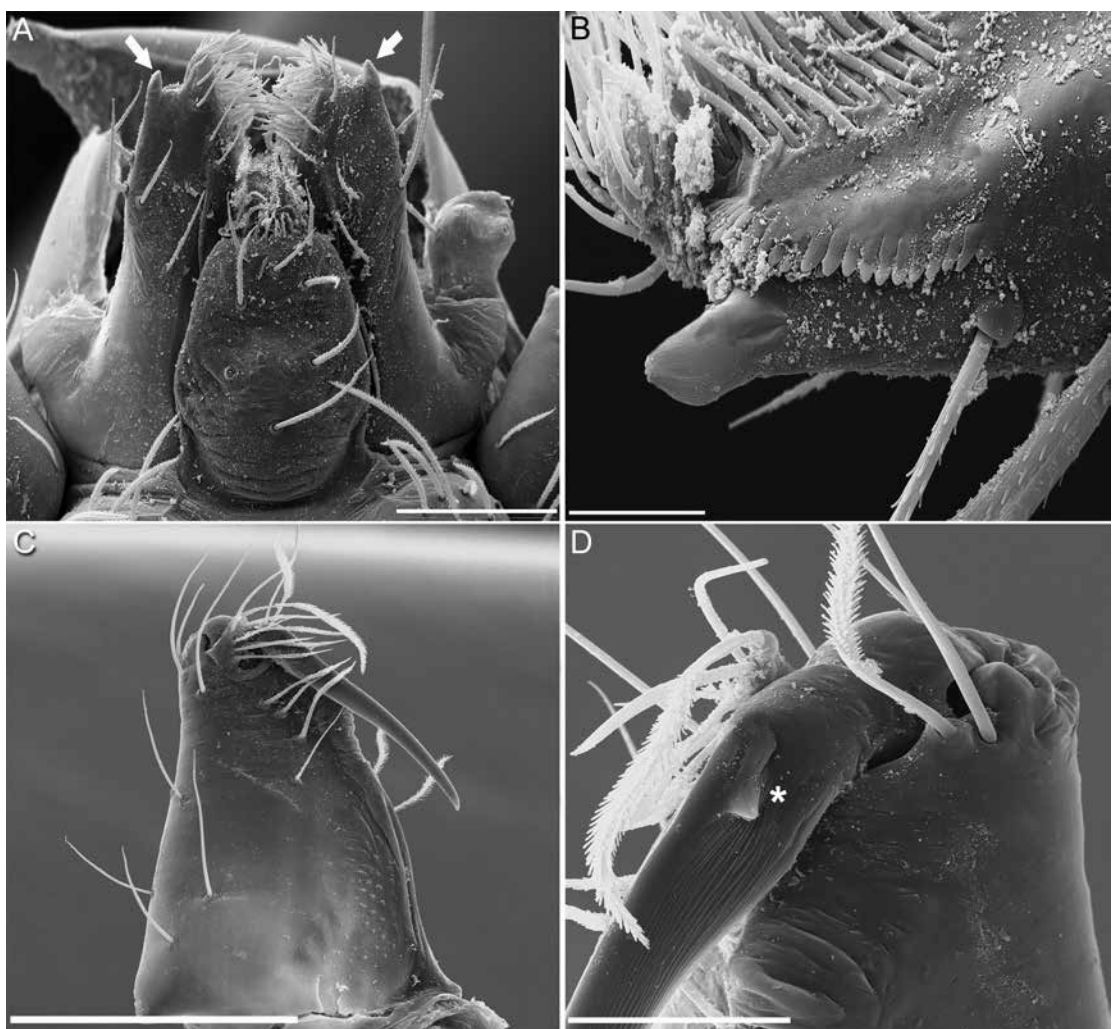


FIGURE 81. *Orchestina waorani*, SEM of male endites and left chelicerae. **A.** Endites, ventral view, white arrows points to the endite projections. **B.** Serrula. **C.** Chelicerae, anterior view. **D.** Same, detail of fang, retro-margin. Asterisk on tooth projection on base of fang. Scale bars: **A.** 100 μm . **B.** 20 μm . **C.** 200 μm . **D.** 50 μm . (PBI_OON 37138, 37128).

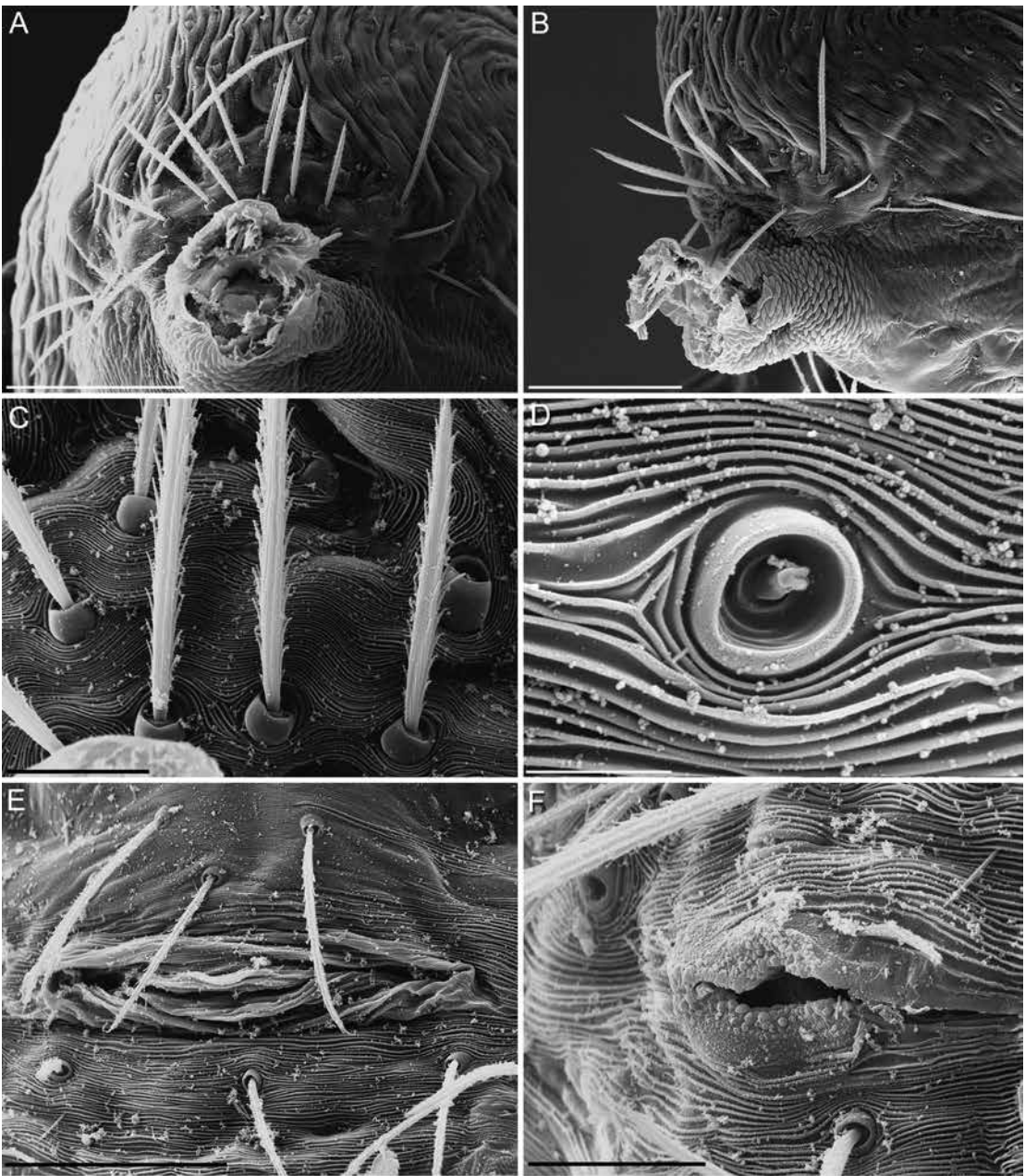


FIGURE 82. *Orchestina waorani*, SEM of male abdomen. **A.** Pedicel region showing part of the ring of setae that surrounds the pedicel. **B.** Same, lateral view. **C.** Same, detail of setae bases. **D.** Detail of one seta's socket on the abdomen. **E.** Epigastric region. **F.** Tracheal spiracle. Scale bars: **A, B.** 100 μm . **C, F.** 20 μm . **D.** 5 μm . **E.** 50 μm . (PBI_OON 37131).

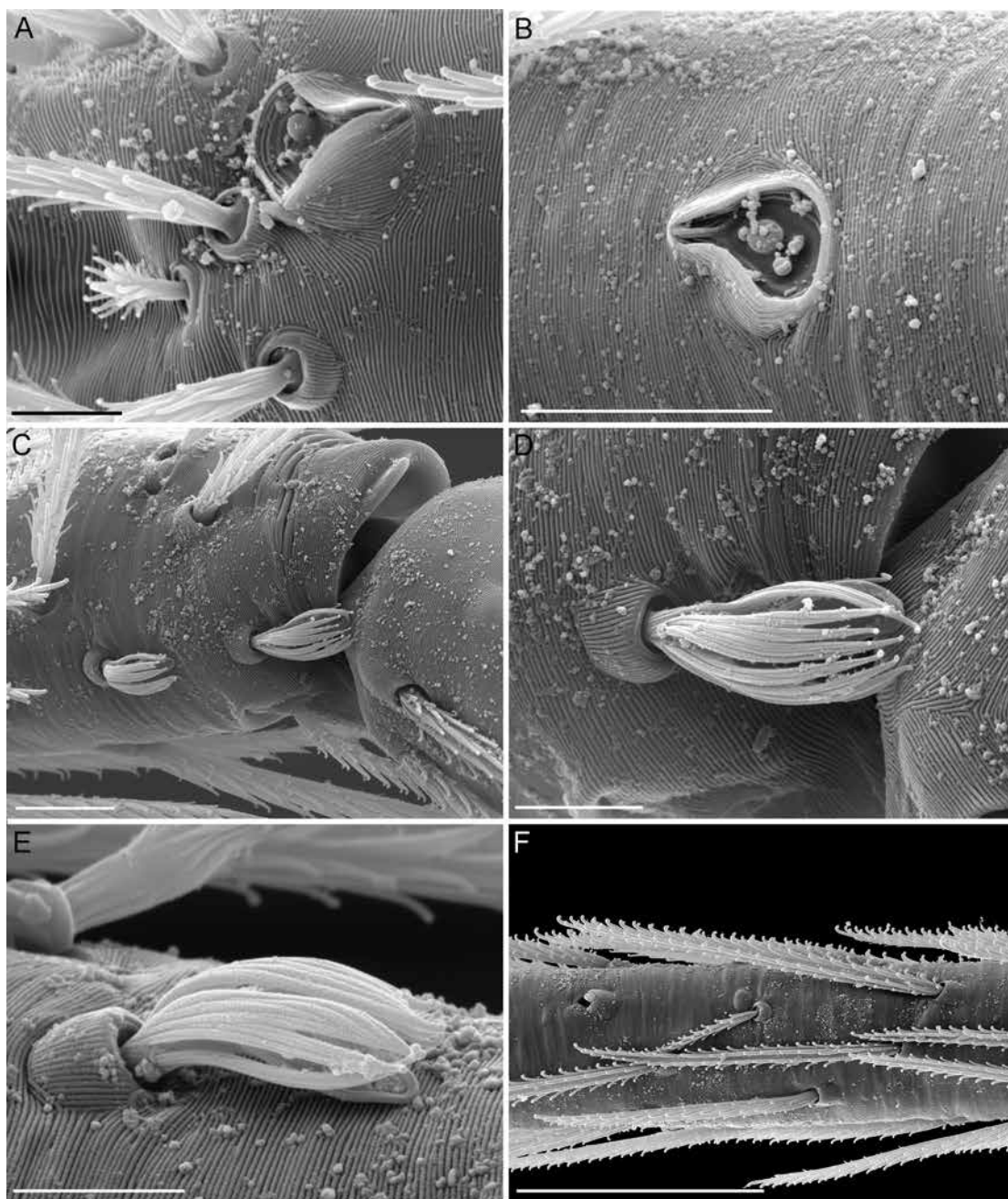


FIGURE 83. *Orchestina waorani*, SEM of male leg structures. **A.** Left tarsal organ I. **B.** Right tarsal organ IV. **C.** Modified setae of the terminal region of metatarsus I, prolateral view. **D.** Same, detail of one seta. **E.** Same, lateral view. **F.** Metatarsus I, detail of some setae. Scale bars: **A, C.** 10 µm. **B, D, E.** 5 µm. **F.** 50 µm. (PBI_OON 37138).

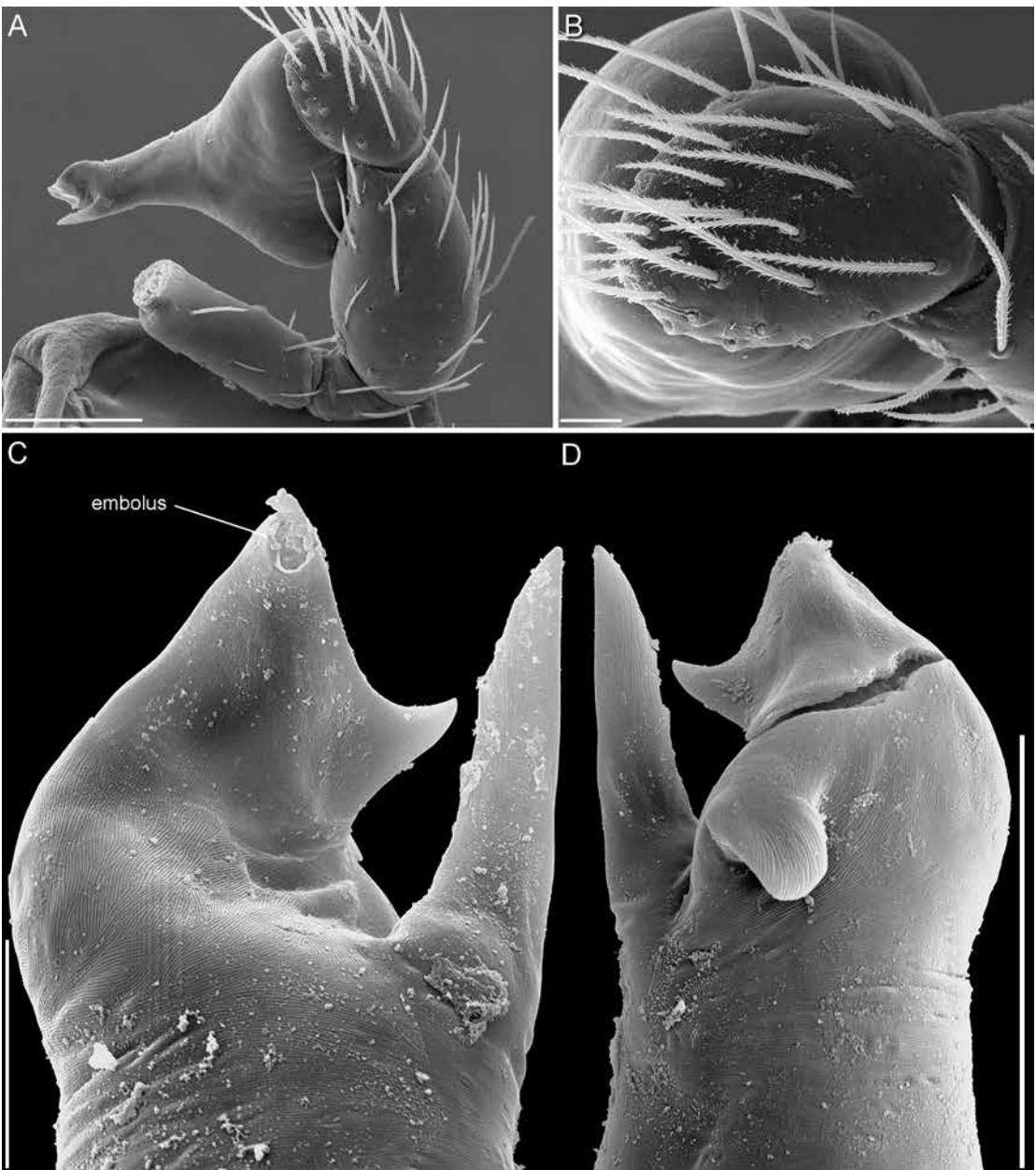


FIGURE 84. *Orchestina waorani*, SEM of male right palp. **A.** Prolateral view. **B.** Cymbium, dorsal view. **C.** Detail of embolus and apophyses, prolateral view (flopped). **D.** Same, retrolateral view (flopped). Scale bars: **A.** 100 μm . **B, C.** 20 μm . **D.** 50 μm . (PBI_OON 37128).

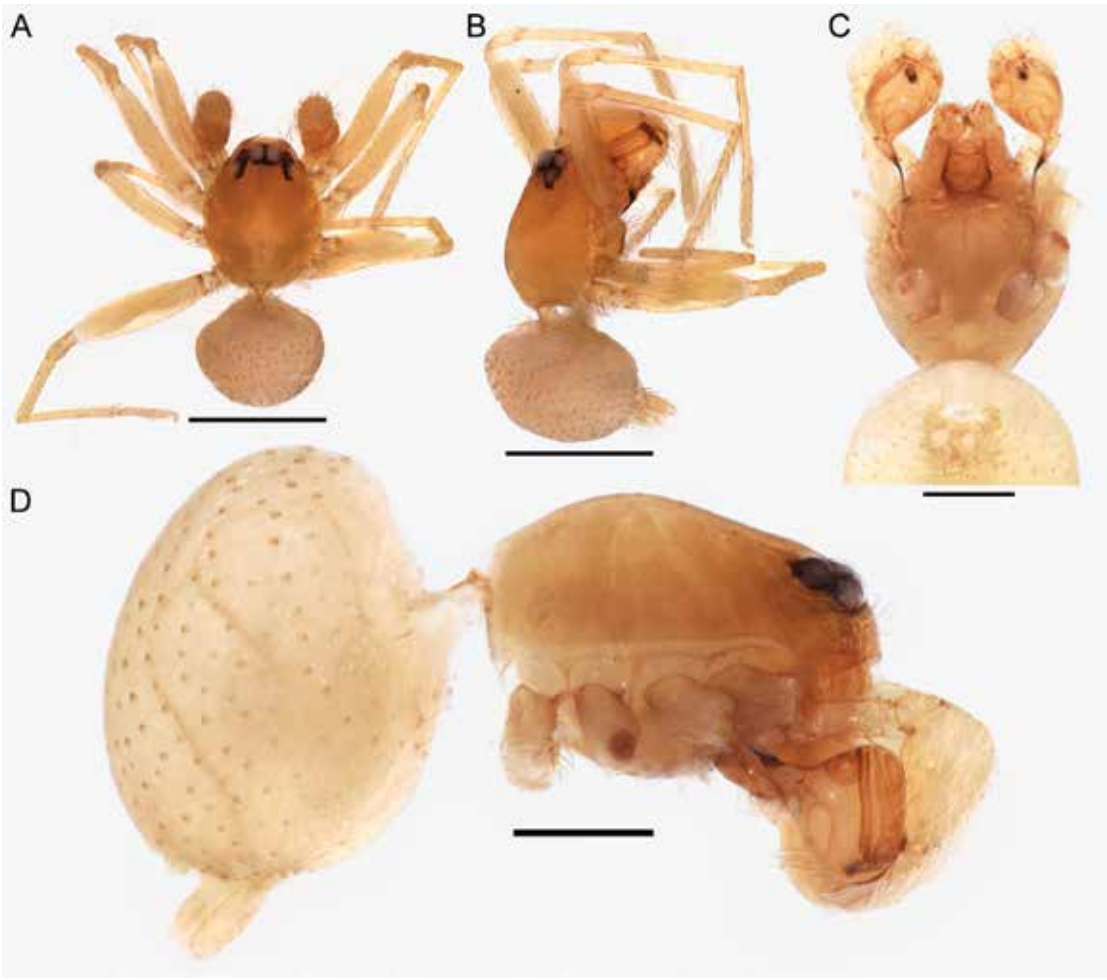


FIGURE 85. *Orchestina tzantza*, habitus of male (A, B: paratype,). A. Dorsal. B. Lateral. C. Ventral. D. Lateral. Scale bars: A–C. 0.5 mm. D. 0.2 mm. (PBI_OON 30656, 37357).

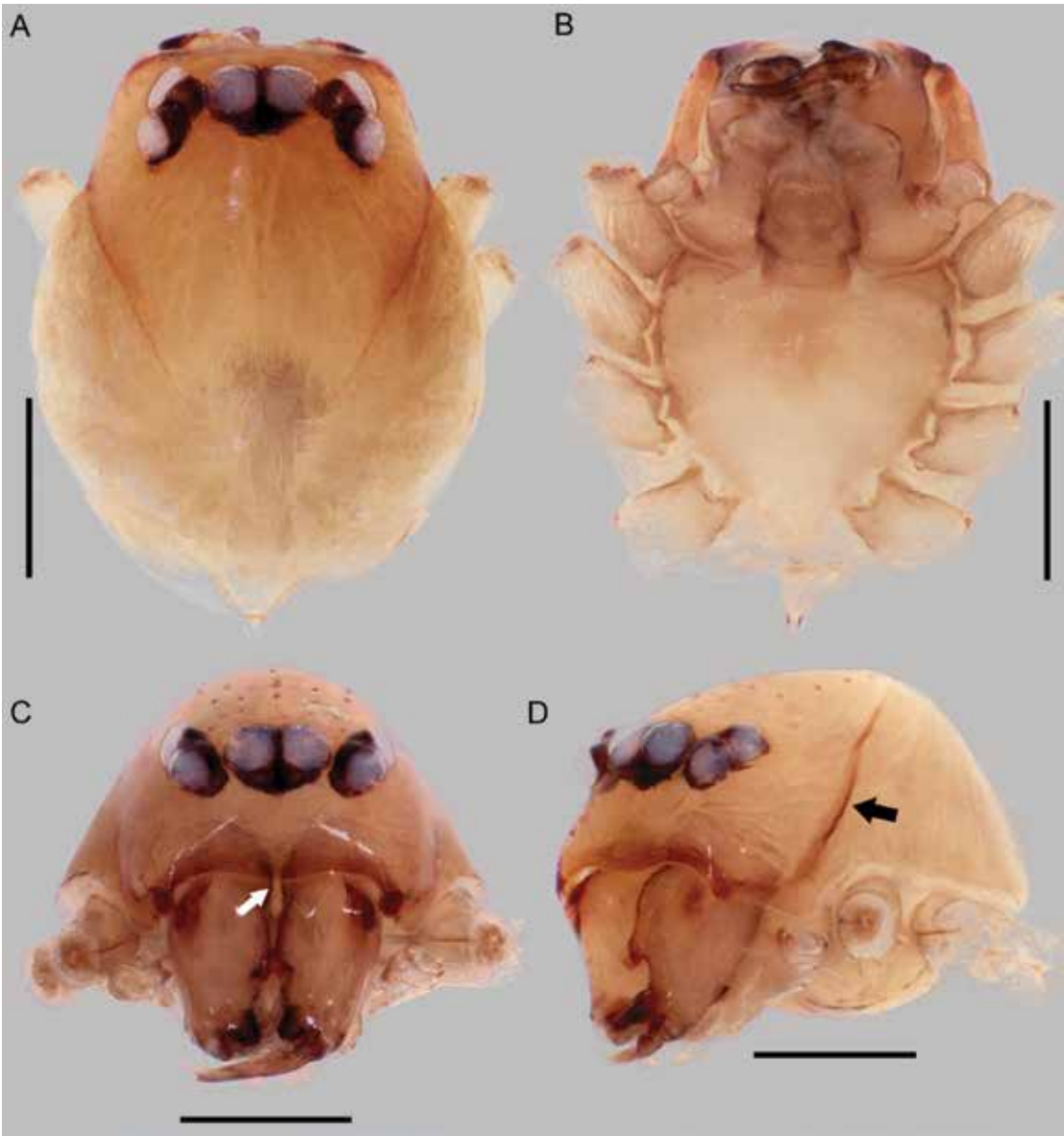


FIGURE 86. *Orchestina predator*, cephalothorax of male. **A.** Dorsal. **B.** Ventral. **C.** Anterior, white arrow points to sinuous clypeus. **D.** Anterolateral; arrow points to sclerotized band of carapace. Scale bars: 0.2 mm. (PBI_OON 43278).

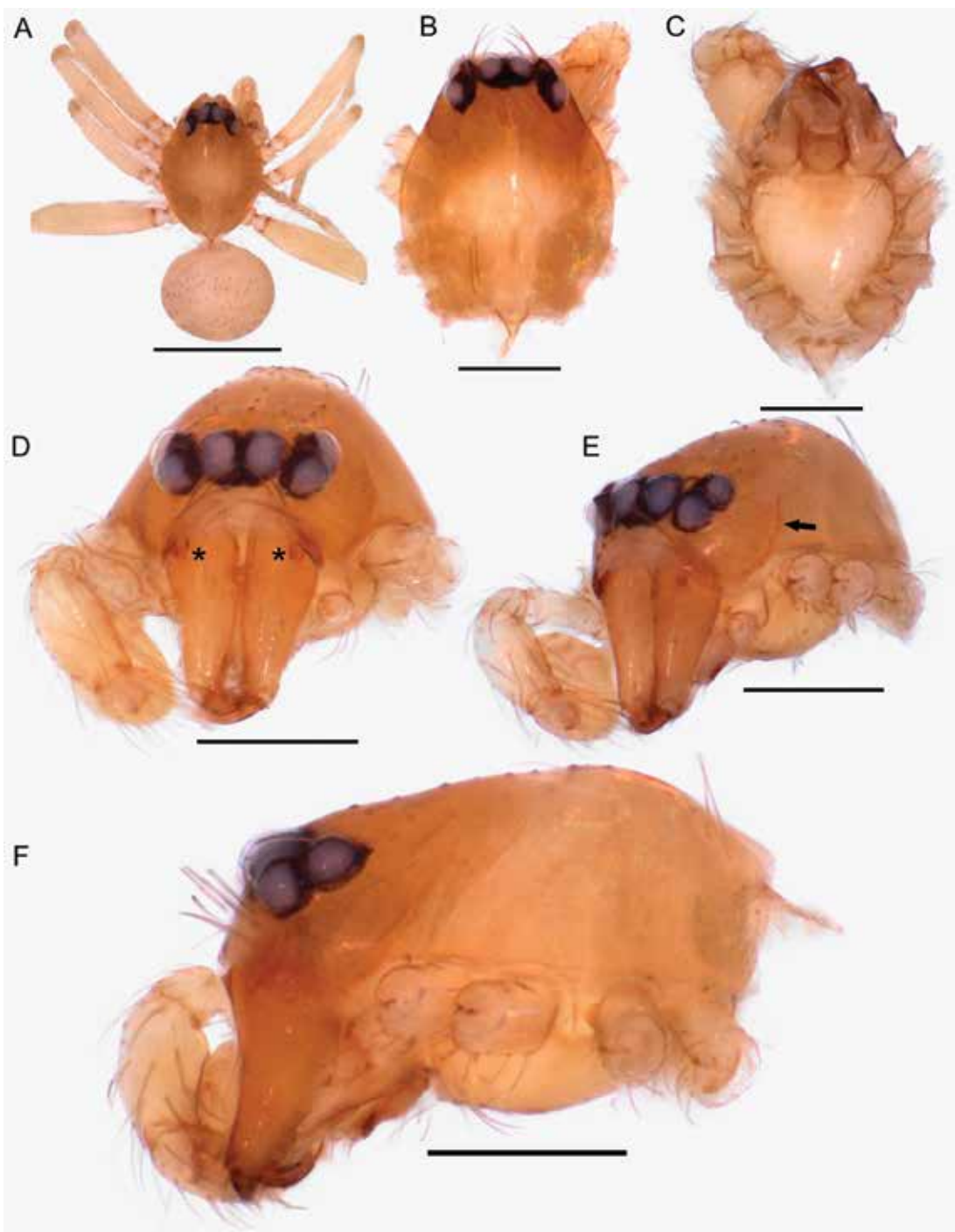


FIGURE 87. *Orchestina goblin*, male. **A.** Habitus of holotype. **B–F.** Cephalothorax. **A, B.** Dorsal. **C.** Ventral. **D.** Anterior; asterisks show the conical projections of chelicerae. **E.** Anterolateral; arrow points to the sclerotized band of carapace. **F.** Lateral. Scale bars: **A.** 0.5 mm. **B–F.** 0.2 mm. (PBI_OON 37671, 42693).

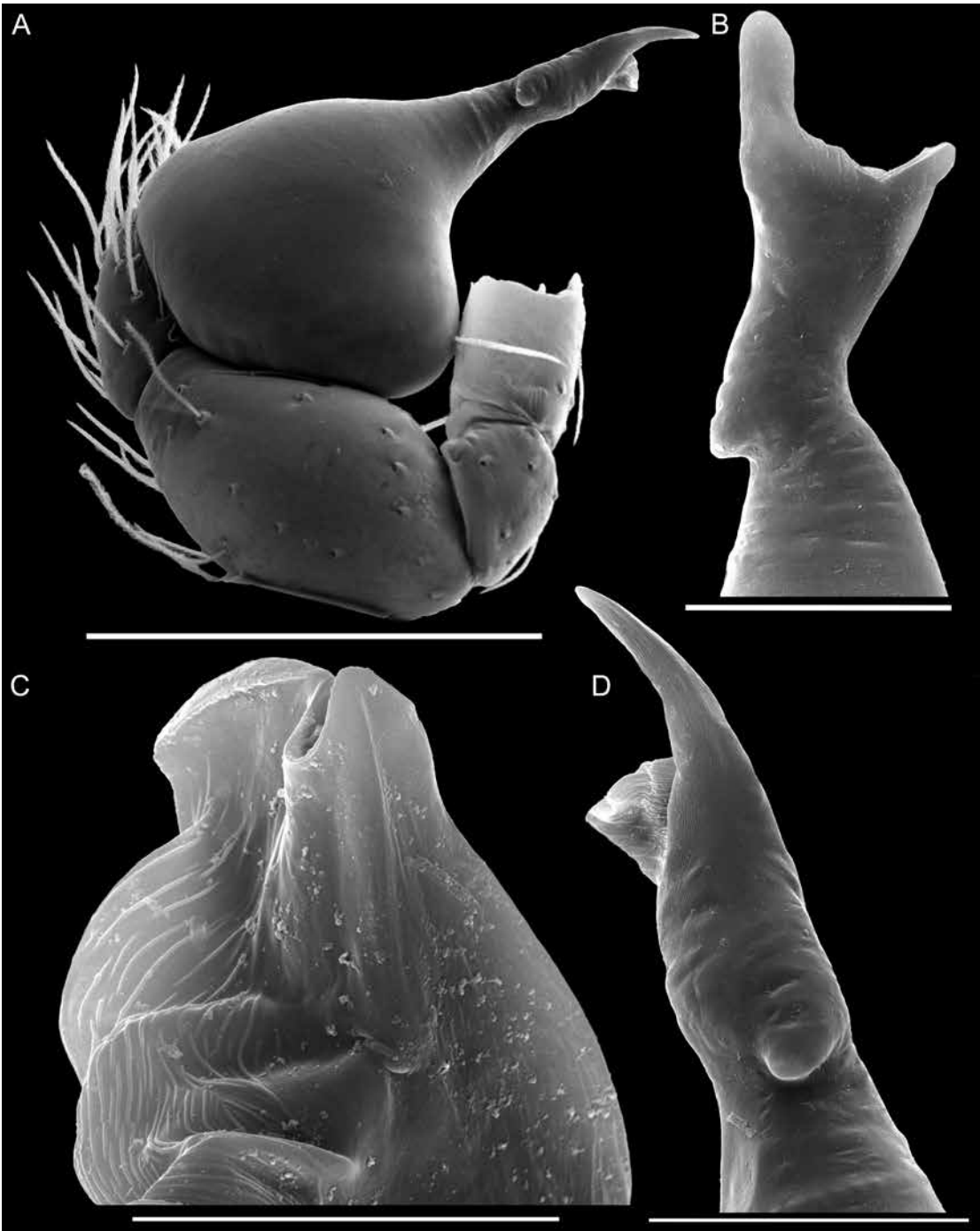


FIGURE 88. *Orchestina goblin*, SEM of male palp. **A.** Retrolateral view (flopped). **B.** Embolus region, dorsal view. **C.** Detail of embolus tip. **D.** Embolus region, retrolateral view. Scale bars: **A.** 200 μm . **B.** **D.** 50 μm . **C.** 20 μm . (PBI_OON 30743).

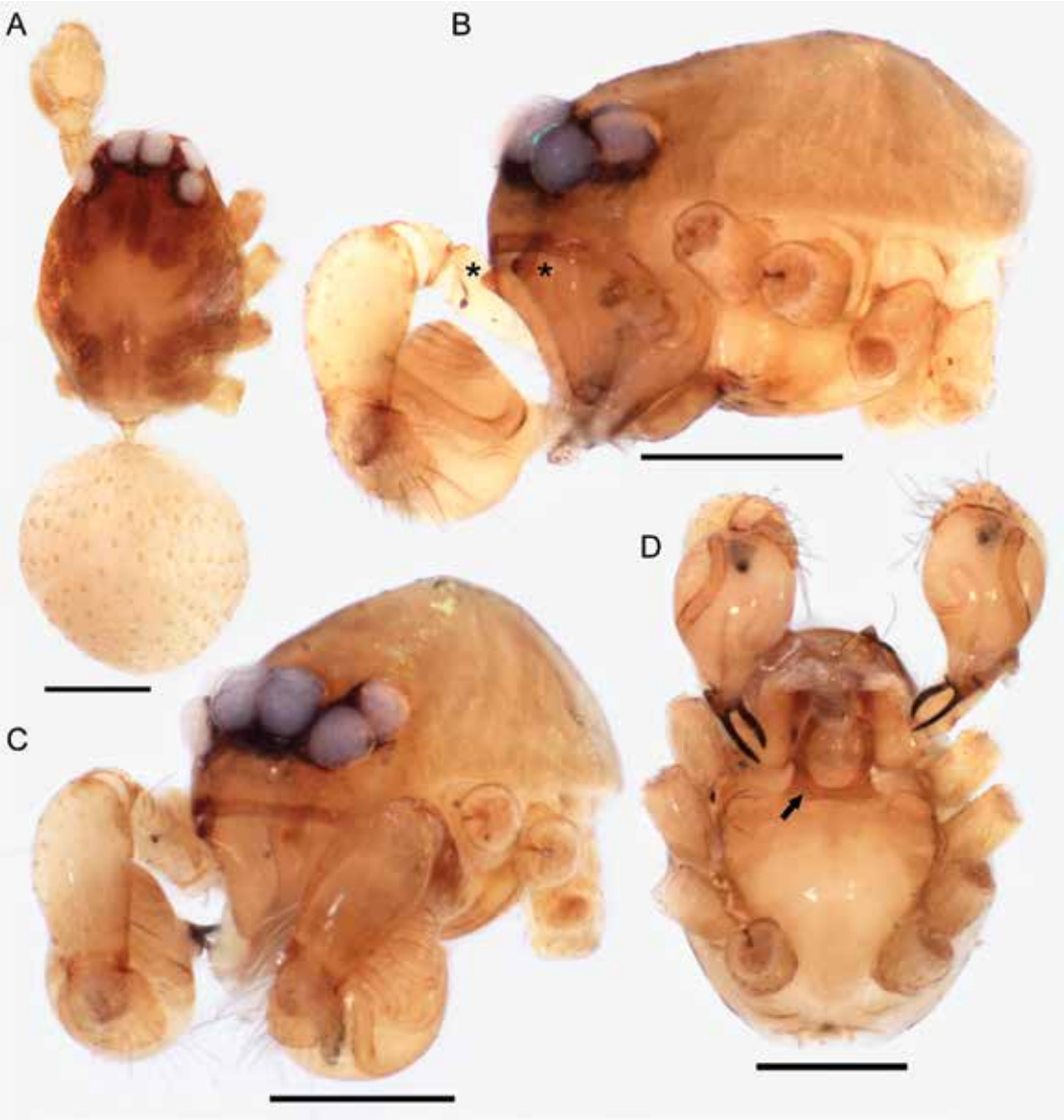


FIGURE 89. *Orchestina otonga*, male holotype and paratype. **A.** Habitus dorsal. **B.** Cephalothorax, lateral asterisks show the conical projections of chelicerae. **C.** Same, anterolateral. **D.** Same, ventral; arrow points to the sclerotized margin of labium. Scale bars: 0.2 mm. (PBI_OON 43369, 51118).

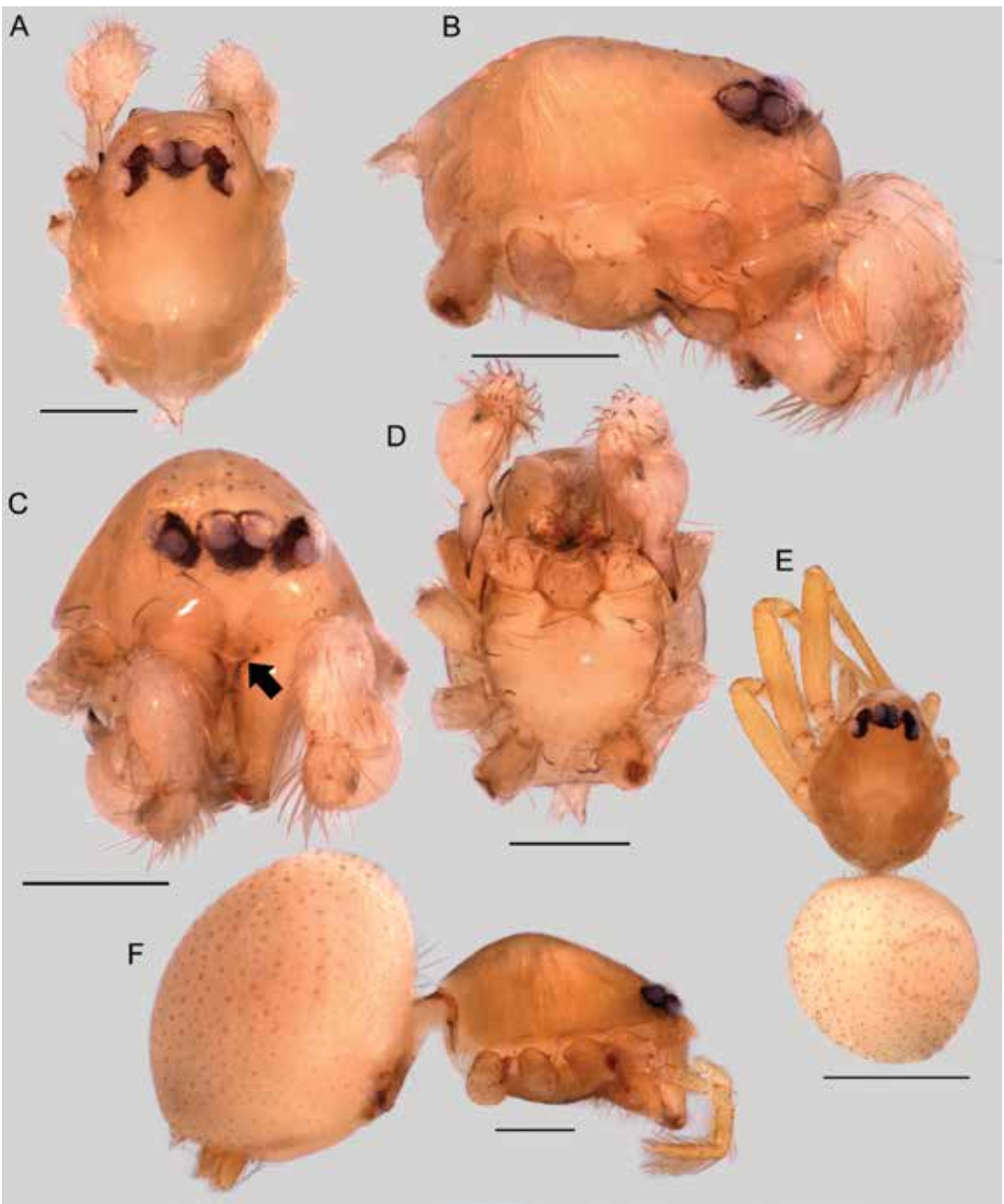


FIGURE 90. *Orchestina quijos*. A–D. Cephalothorax of male. E, F. Habitus of female. A, E. Dorsal. B, F. Lateral. C. Anterior, arrow points to sinuous clypeus. D. Ventral. Scale bars: A–D. 0.2 mm. E, F. 0.5 mm. (PBI_OON 30871, 30927).

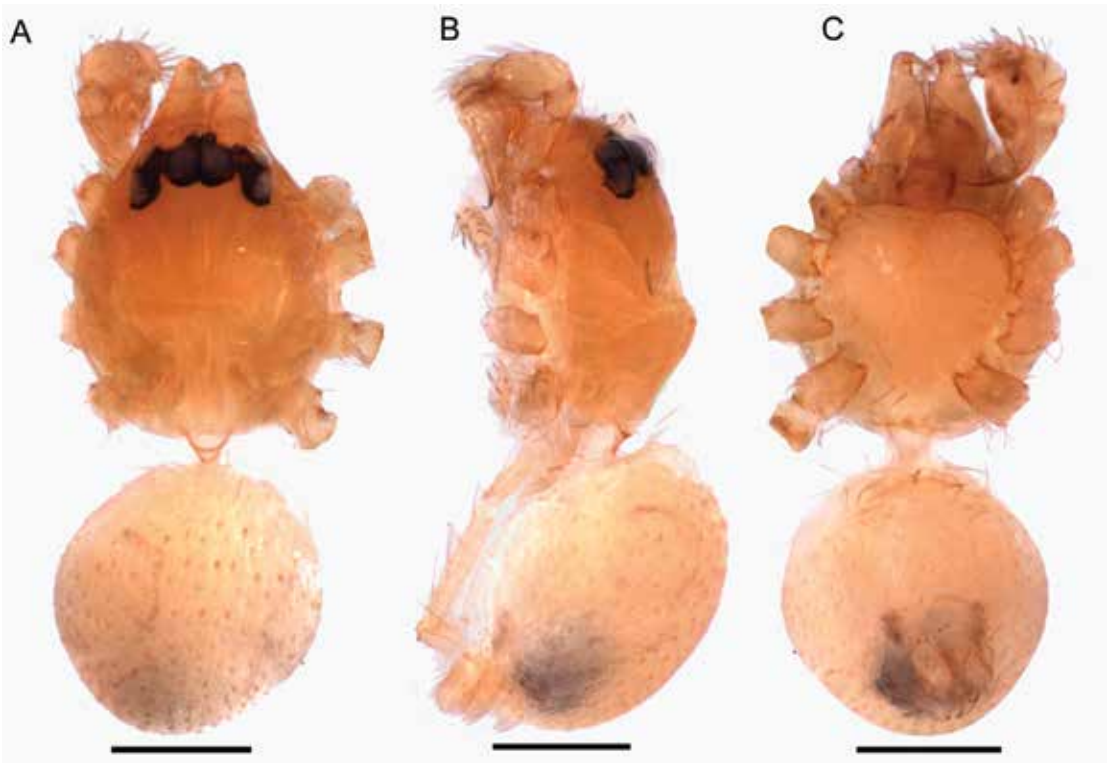


FIGURE 91. *Orchestina mayo*, habitus of male holotype. **A.** Dorsal. **B.** Lateral. **C.** Ventral. Scale bars: 0.2 mm. (PBI_OON 30889).

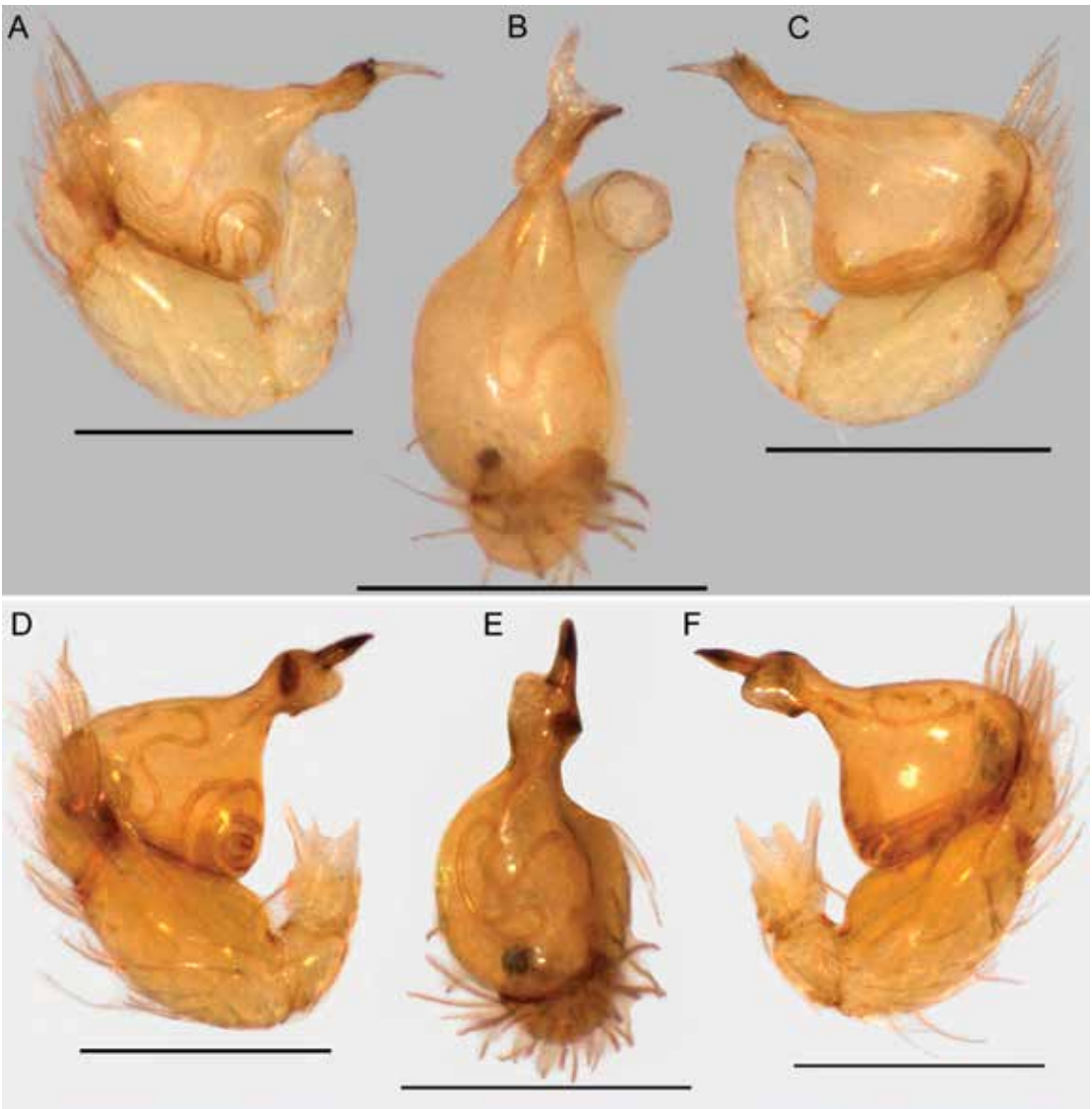


FIGURE 92. *Orchestina* spp., palps of males. A–C. *O. goblin*. D–F. *O. erwini*. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 37671, 37598).

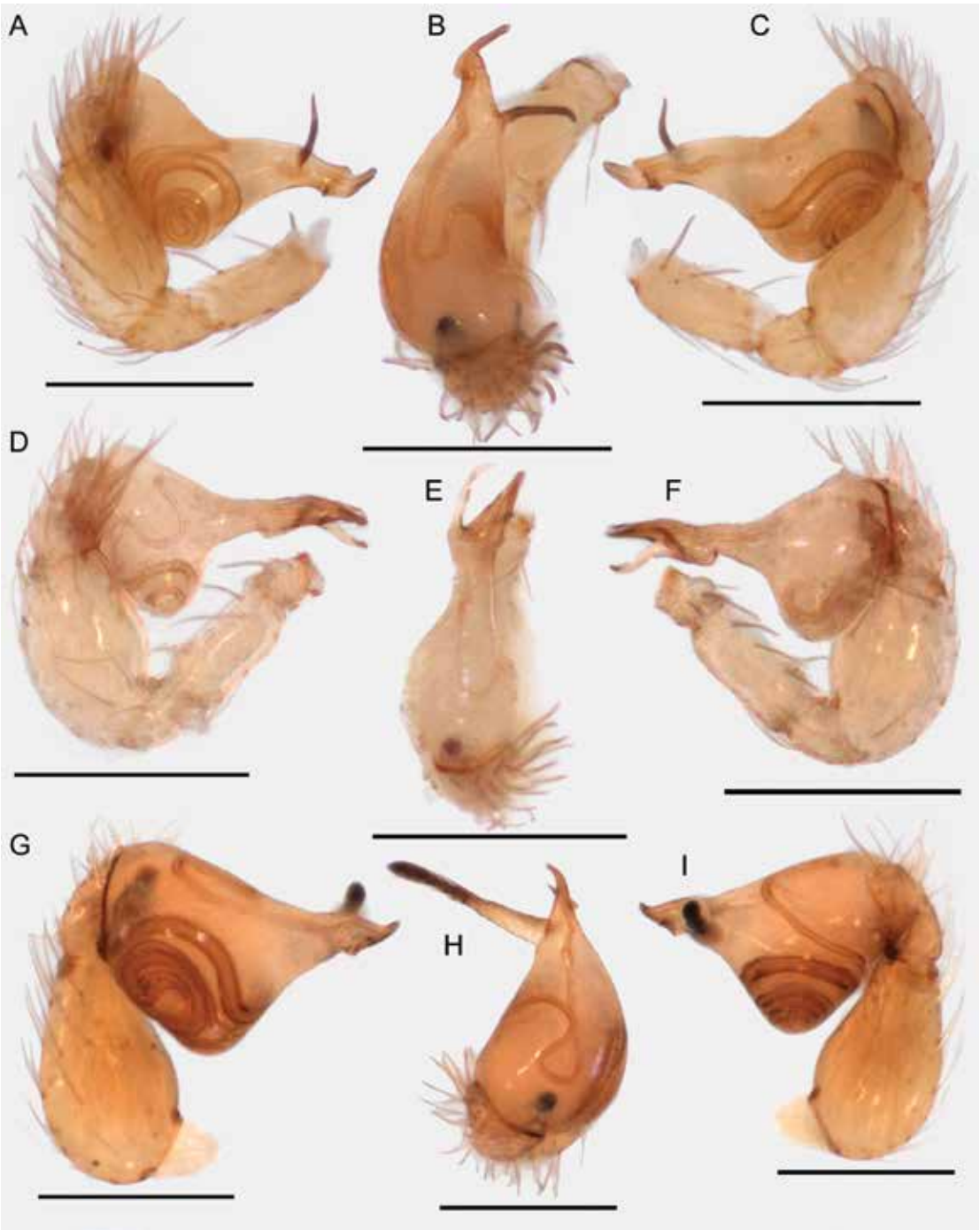


FIGURE 93. *Orchestina* spp., palps of males. A–C. *O. ecuatoriensis*. D–F. *O. sotoi*. G–I. *O. shuar*. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 37627, 30057, 30217).

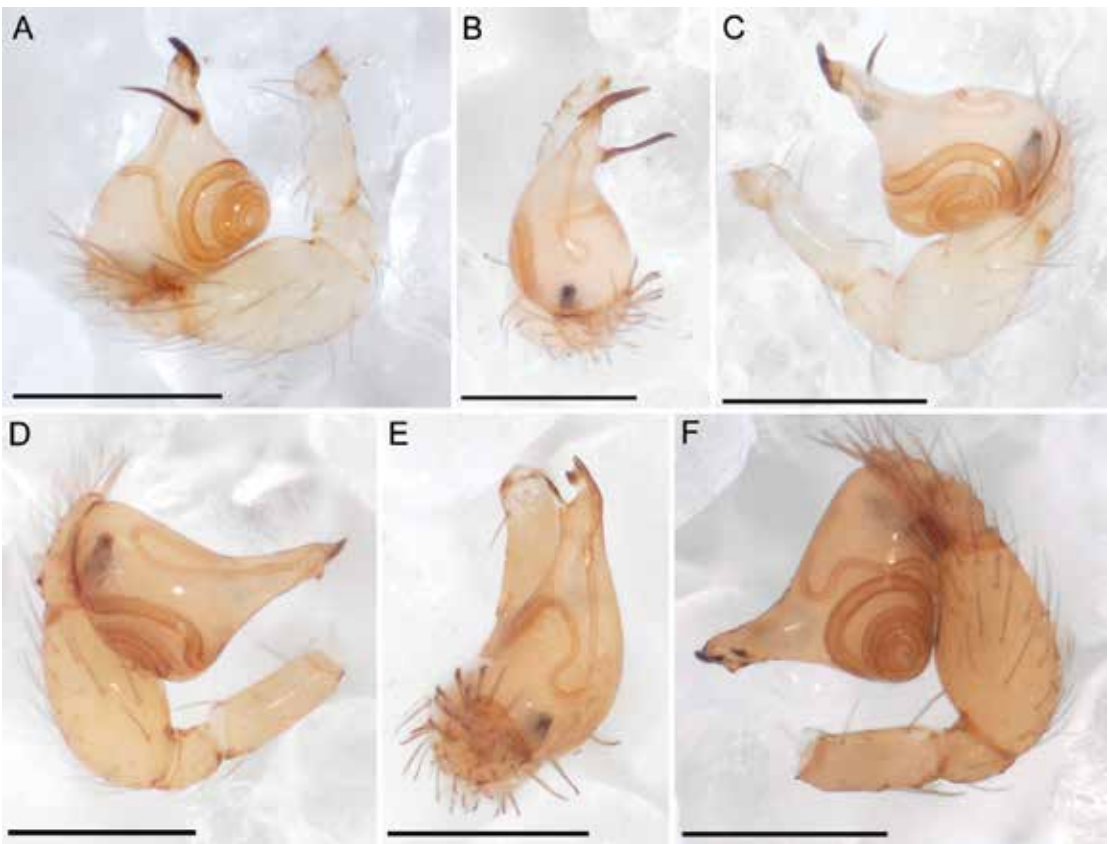


FIGURE 94. *Orchestina* spp., palps of males. A–C. *O. magna*. D–F. *O. waorani*, right palp. A, F. Prolateral. B, E. Dorsal. C, D. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 37646, 37136).



FIGURE 95. *Orchestina golem*, palps. A–C. Specimen from Orellana, Ecuador. D–F. Specimen from Acre, Brazil. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 43269, 43323).

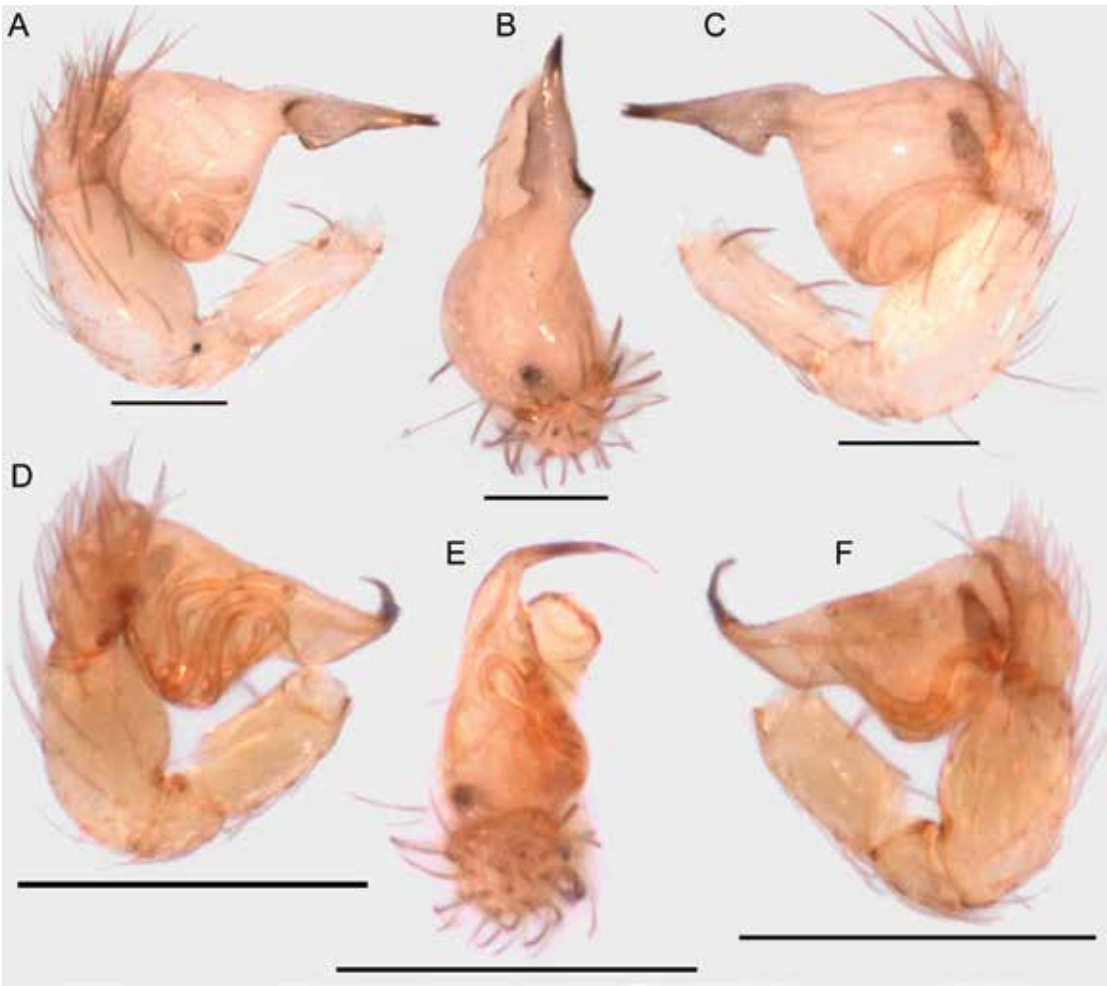


FIGURE 96. *Orchestina* spp., palps of males. A–C. *O. quijos*. D–F. *O. mayo*. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 30871, 30889).

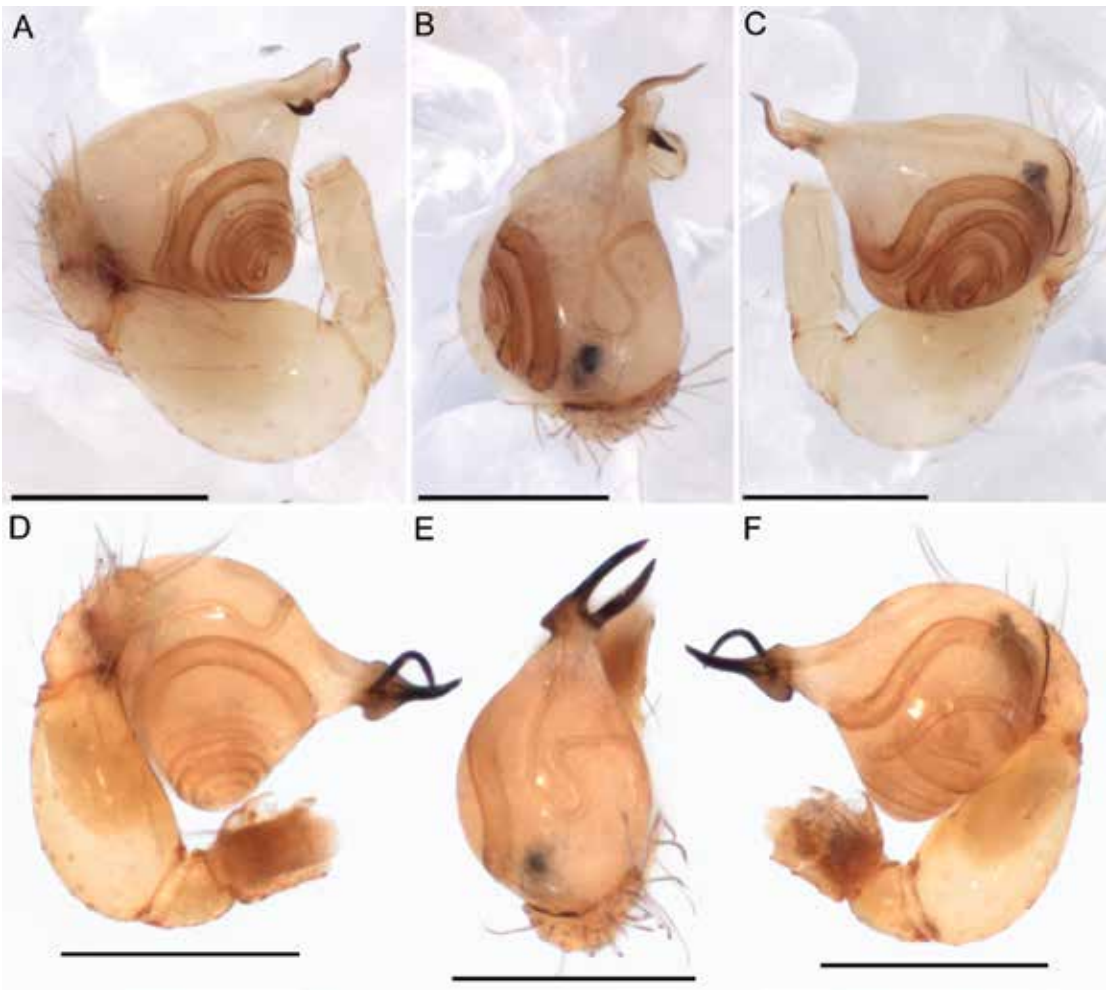


FIGURE 97. *Orchestina* spp., palps of males. A–C. *O. predator*. D–F. *O. otonga*. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 43278, 51118).

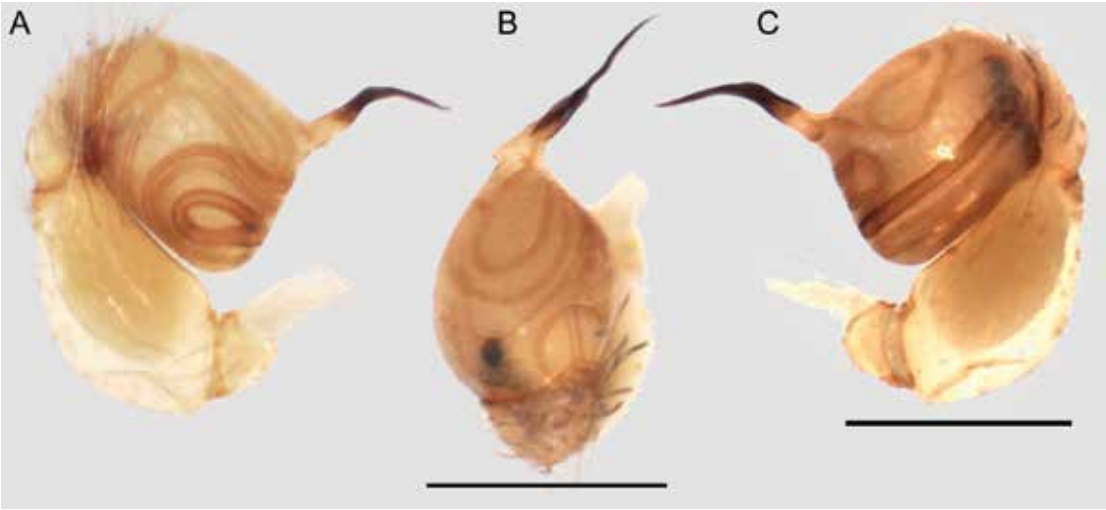


FIGURE 98. *Orchestina tzantza*, palp of male. **A.** Prolateral. **B.** Dorsal. **C.** Retrolateral. Scale bars: 0.2 mm. (PBI_OON 37364).



FIGURE 99. *Orchestina* spp., female genitalia, ventral view. **A.** *O. quijos*. **B.** *O. santodomingo*, cleared. **C.** *O. yanayacu*, cleared. Scale bars: 0.2 mm. (PBI_OON 30927, 50048, 30745).

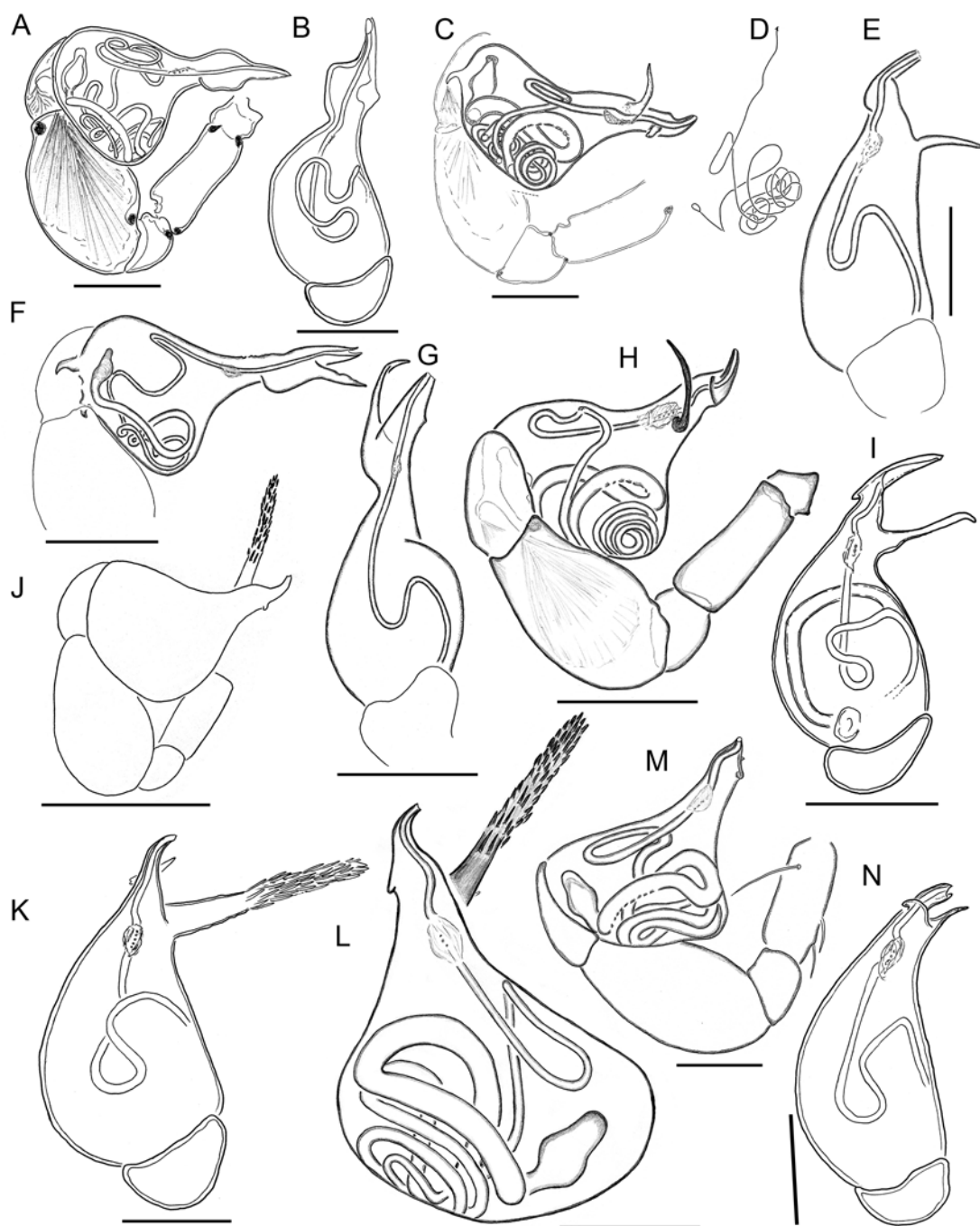


FIGURE 100. *Orchestina* spp., drawings of male palps. A, B. *O. erwini*. C–E. *O. ecuatoriensis*. F, G. *O. sotoi*. H, I. *O. magna*. J–L. *O. shuar*, right palp. M, N. *O. waorani*. A, F, H, M. Prolateral. J, L. Retrolateral. B, E, G, I, K, N. Dorsal. D. Scheme of sperm duct course. Images J and K have been flopped for consistency. Scale bars: 0.1 mm, except J, 0.25 mm. (PBI_OON 37574, 30516, 42145, 37646, 37650, 30217, 31114).

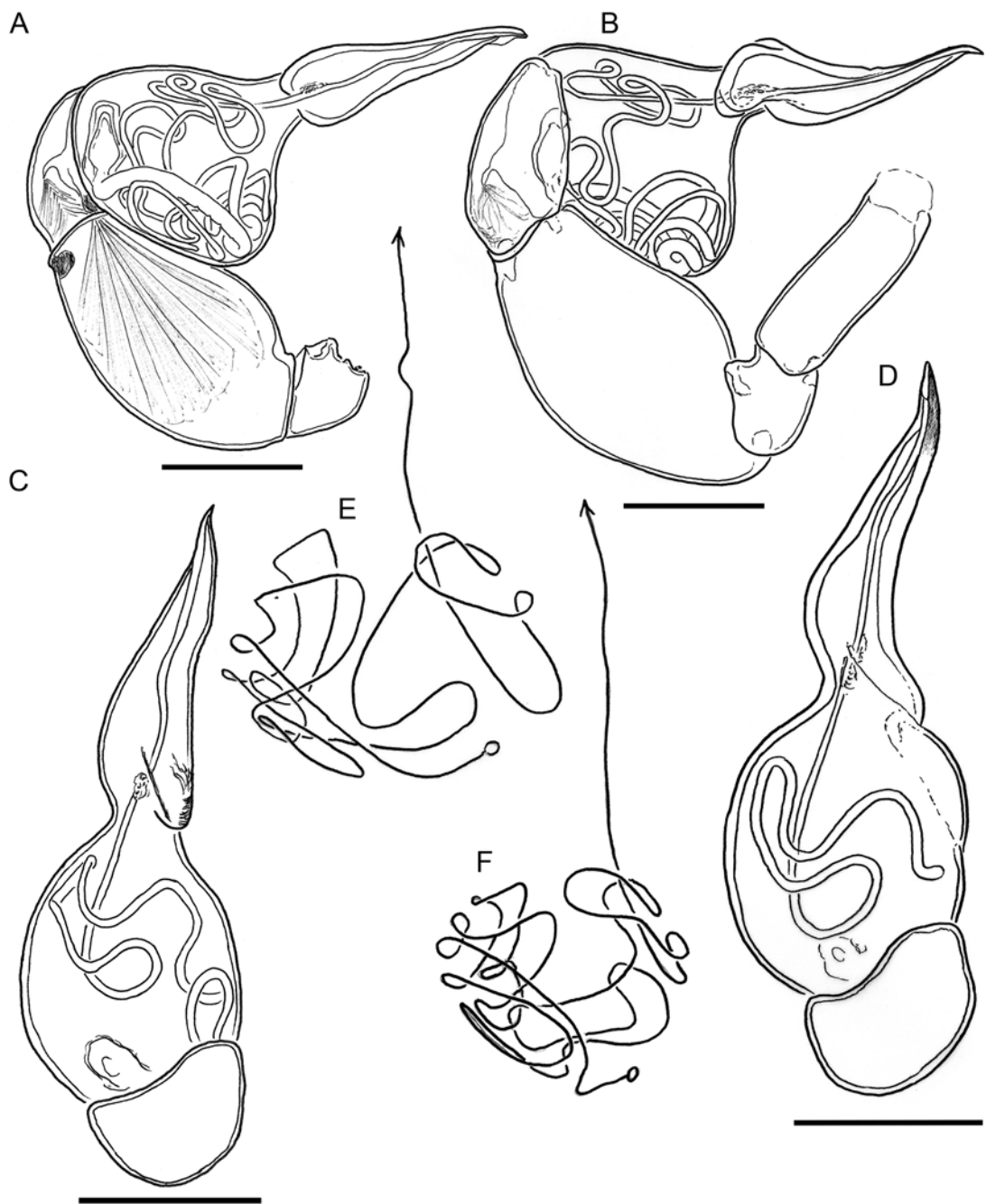


FIGURE 101. *Orchestina golem*, drawing of male palps. A, C, E. Specimen from Orellana, Ecuador. B, D, F. Specimen from Acre, Brazil. A. Retrolateral (flopped). B. Prolateral. C, D. Dorsal. E, F. Scheme of sperm duct course. Scale bars: 0.1 mm. (PBI_OON 30185, 43323).

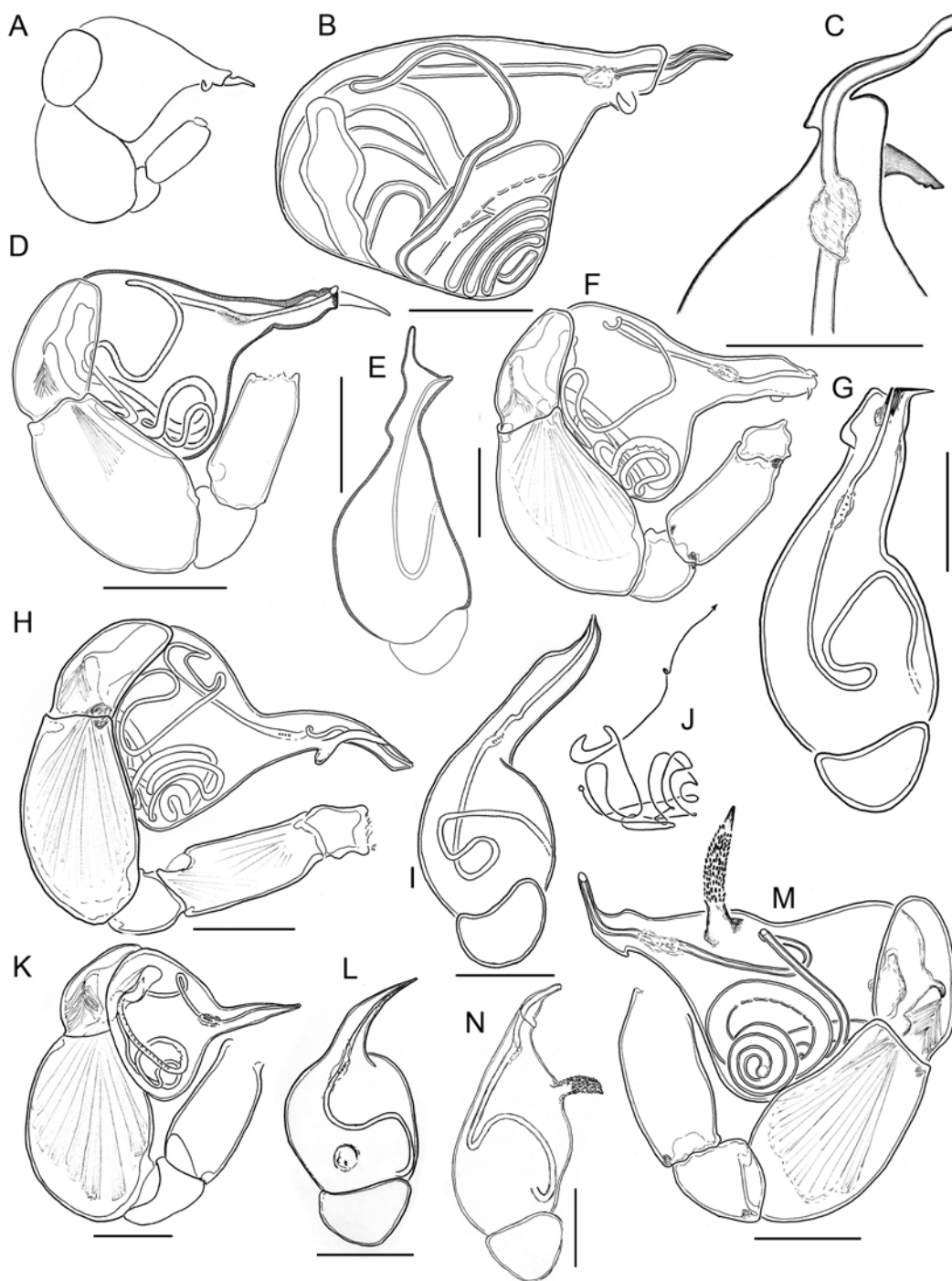


FIGURE 102. *Orchestina* spp., drawing of male palps. A–C. *O. predator*. D, E. *O. goblin*. F, G. *O. cajamarca*. H–J. *O. comaina*. K, L. *O. atocongo*. M, N. *O. mancocapac*. Image M flopped for consistency. (A, B, D, H, K, M) prolateral, (C, E, G, I, L, N) dorsal, (J) scheme of sperm duct course. Scale bars: 0.1 mm. (PBI_OON 43278, 37671, 42768, 43307, 1662, 43305).

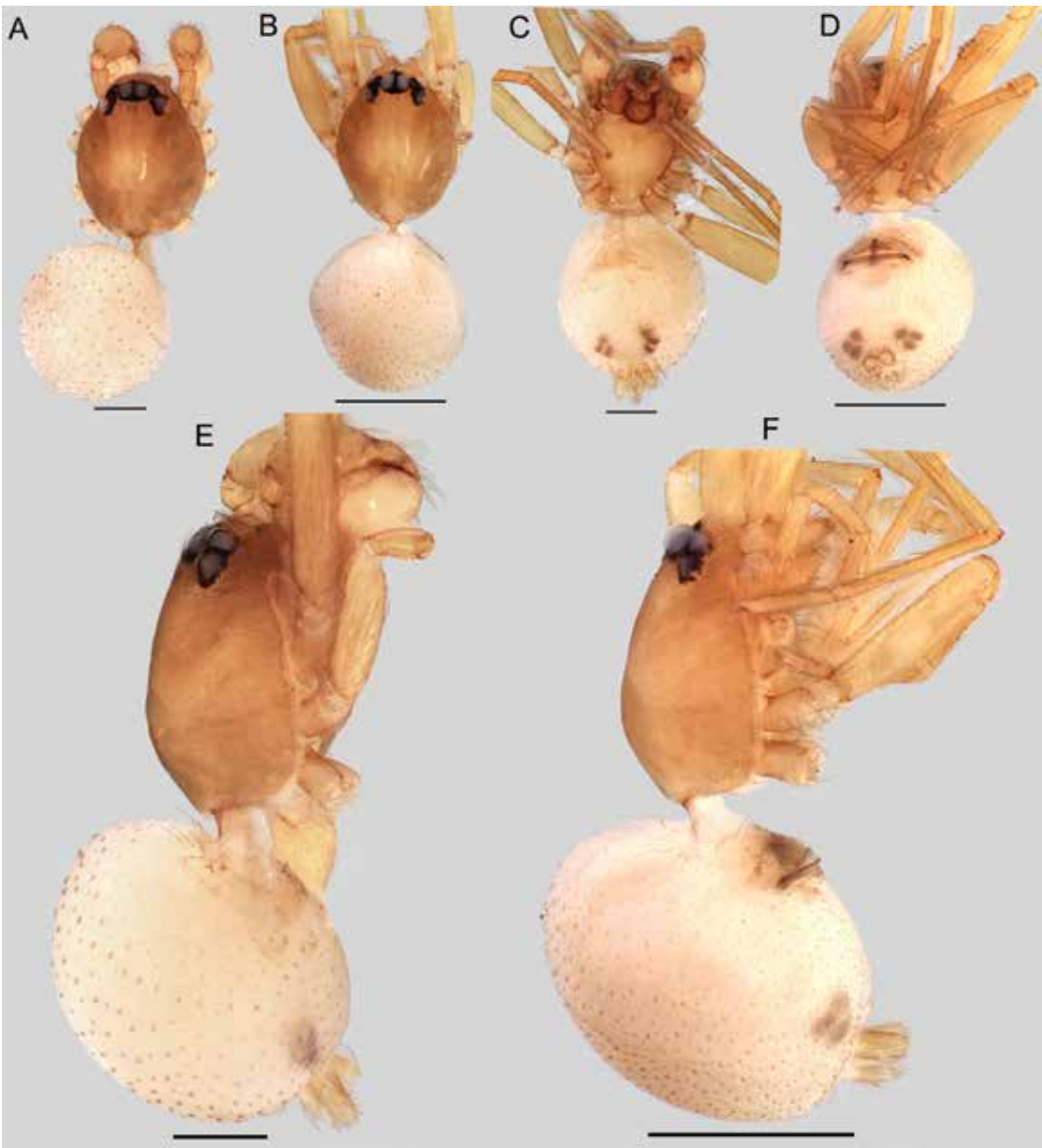


FIGURE 103. *Orchestina cajamarca*, habitus. A, C, E. Male. B, D, F. Female. A, B. Dorsal. C, D. Ventral. E, F. Lateral. Scale bars: A, C, E. 0.2 mm. B, D, F. 0.5 mm. (PBI_OON 42768).



FIGURE 104. *Orchestina comaina*, habitus of male holotype and cephalothorax of female paratype. **A–D.** Dorsal. **B, E.** Lateral. **C.** Anterior. **F.** Ventral. Scale bars: **A–C.** 0.5 mm. **D–F.** 0.2 mm. (PBI_OON 43307).

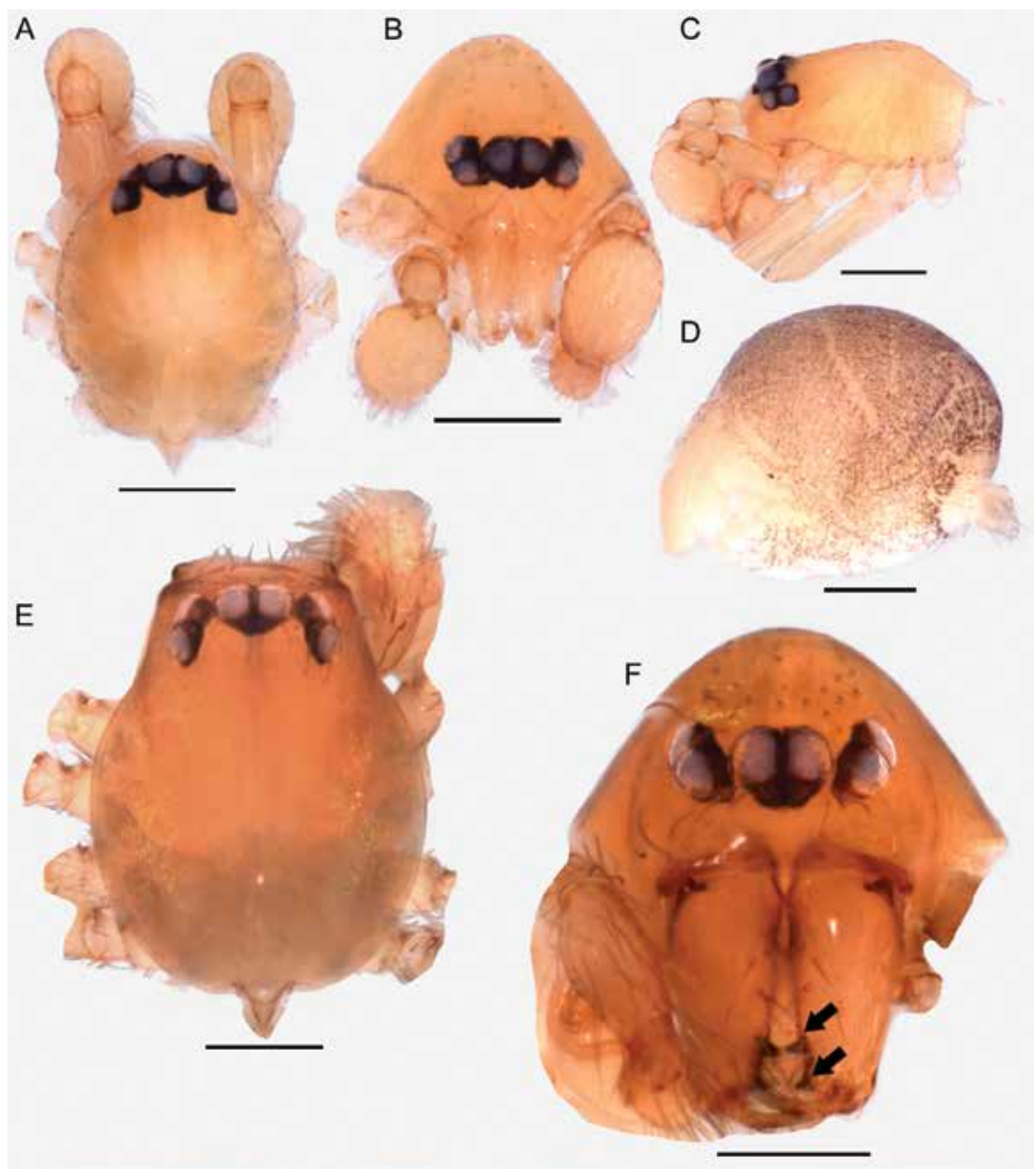


FIGURE 105. *Orchestina* spp., males. **A–D.** *O. atocongo*, holotype. **E, F.** *O. mancocapac*, holotype. **A.** Cephalothorax, dorsal. **B.** Same, anterior. **C.** Same, lateral. **D.** Abdomen, lateral. **E.** Cephalothorax, dorsal. **F.** Same, anterior; arrows point to toothlike projections of chelicerae. Scale bars: 0.2 mm. (PBI_OON 1662, 43305).

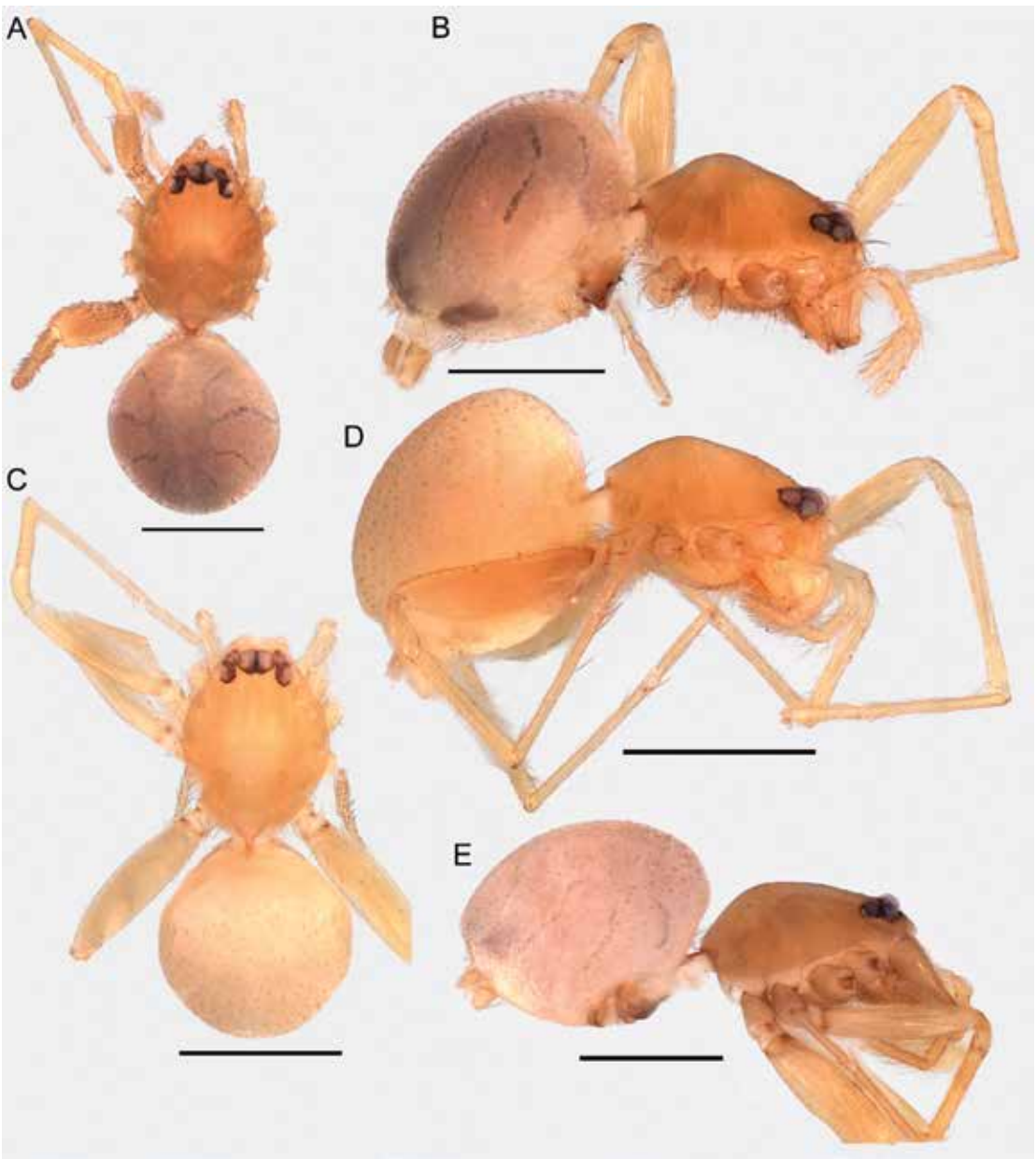


FIGURE 106. *Orchestina* spp., habitus of females. A–B. *O. silvae*, paratype. C, D. *O. pakitza*, holotype. E. *O. madredeios*, holotype. A, C. Dorsal. B, D, E. Lateral. Scale bars: 0.5 mm. (PBI_OON 43312, 51113, 42744).



FIGURE 107. *Orchestina* spp., habitus. **A–C.** *O. losamigos*, holotype. **D–F.** *O. coari*, holotype. **A, D.** Dorsal. **B, E.** Ventral. **C, F.** Lateral. Scale bars: 0.5 mm. (PBI_OON 14984, 43338).

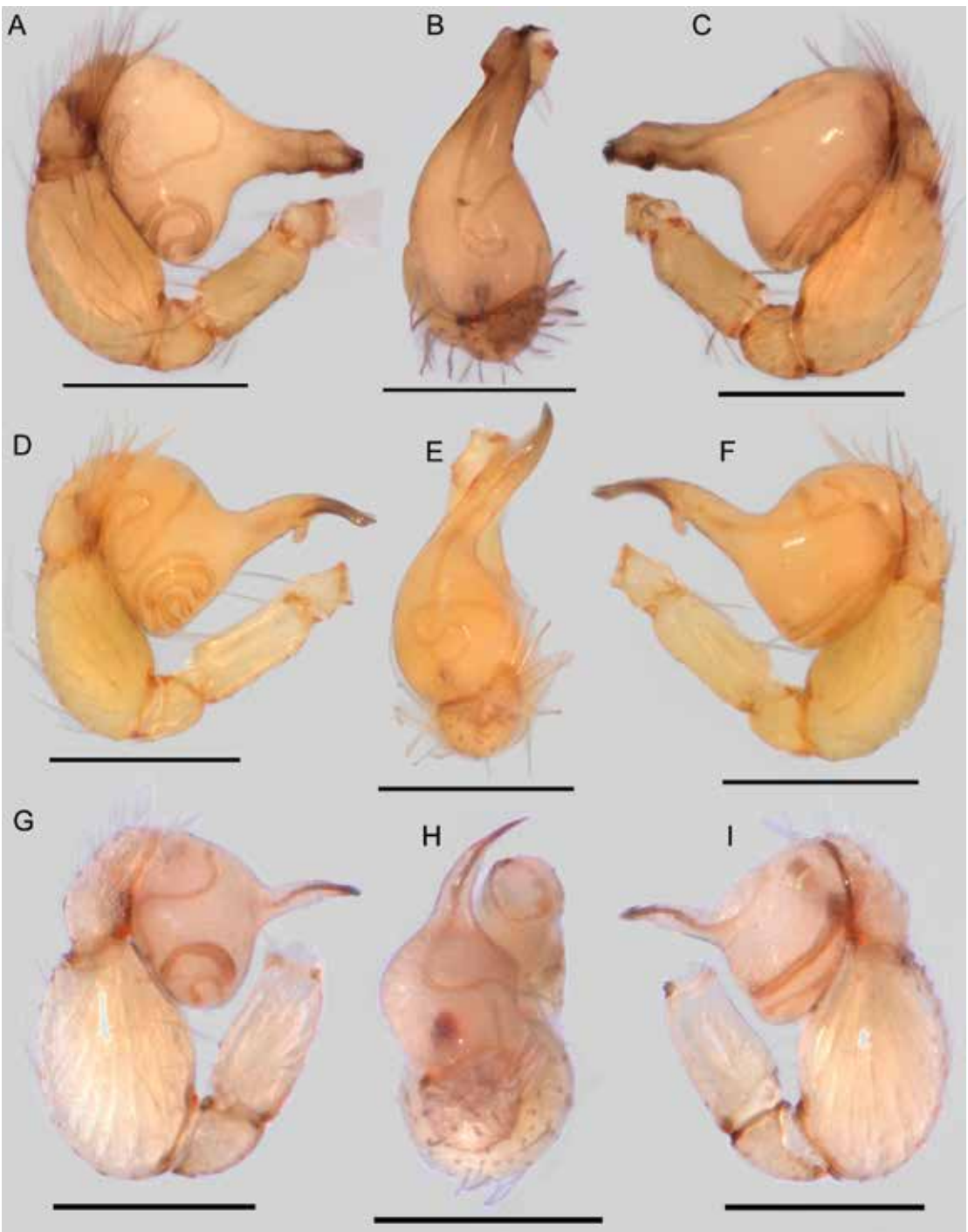


FIGURE 108. *Orchestina* spp., male palps. A–C. *O. cajamarca*, holotype. D–F. *O. comaina*, holotype. G–I. *O. atocongo*, holotype. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 42768, 43307, 1662).

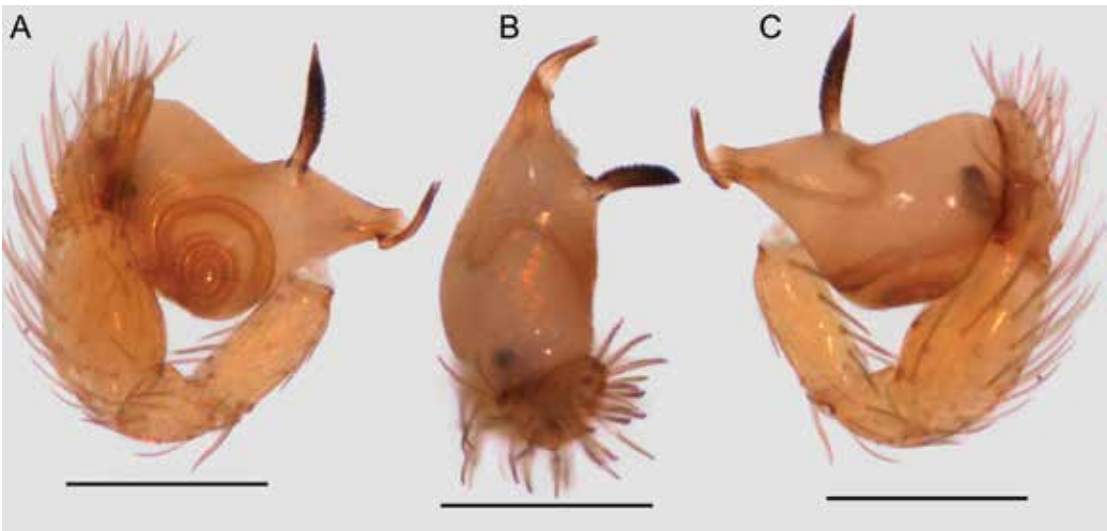


FIGURE 109. *Orchestina mancocapac*, palp. **A.** Prolateral. **B.** Dorsal. **C.** Retrolateral. Scale bars: 0.2 mm. (PBI_OON 43305).

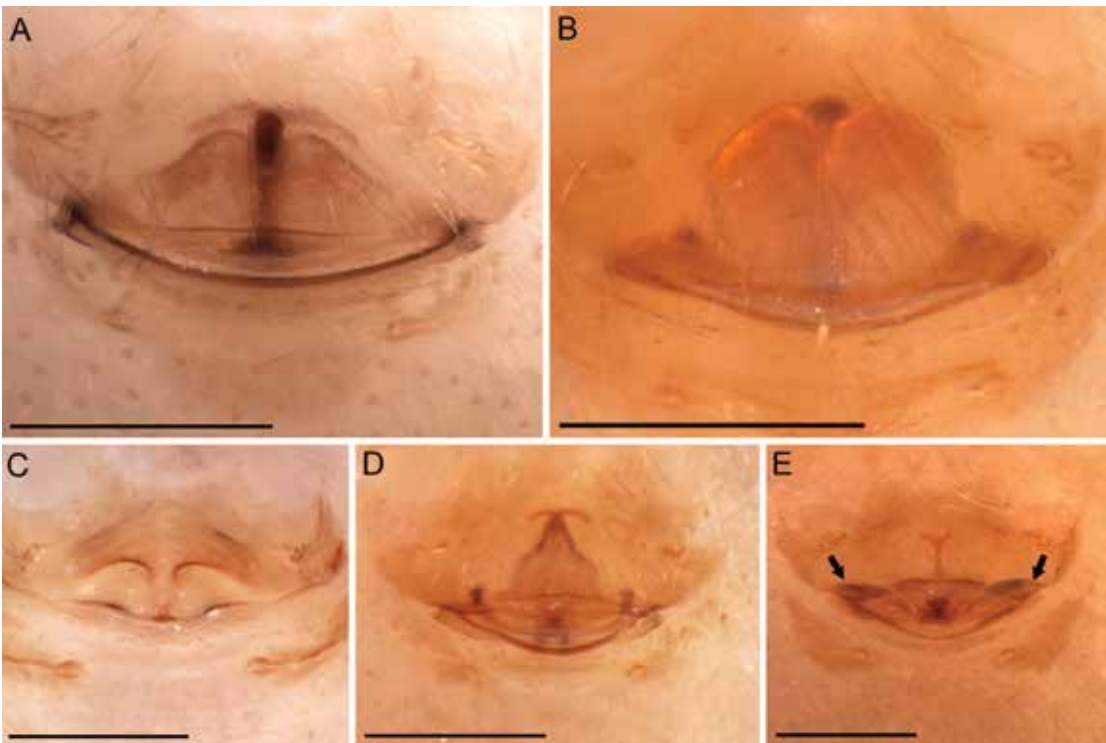


FIGURE 110. *Orchestina* spp., female genitalia, ventral view. **A.** *O. cajamarca*, paratype. **B.** *O. comaina*, paratype. **C.** *O. madredeios*, holotype. **D.** *O. losamigos*, paratype. **E.** *O. pakitza*, paratype; arrows pointing to the lateral plates. Scale bars: 0. 2 mm. (PBI_OON 42768, 43307, 42744, 43303, 42273).

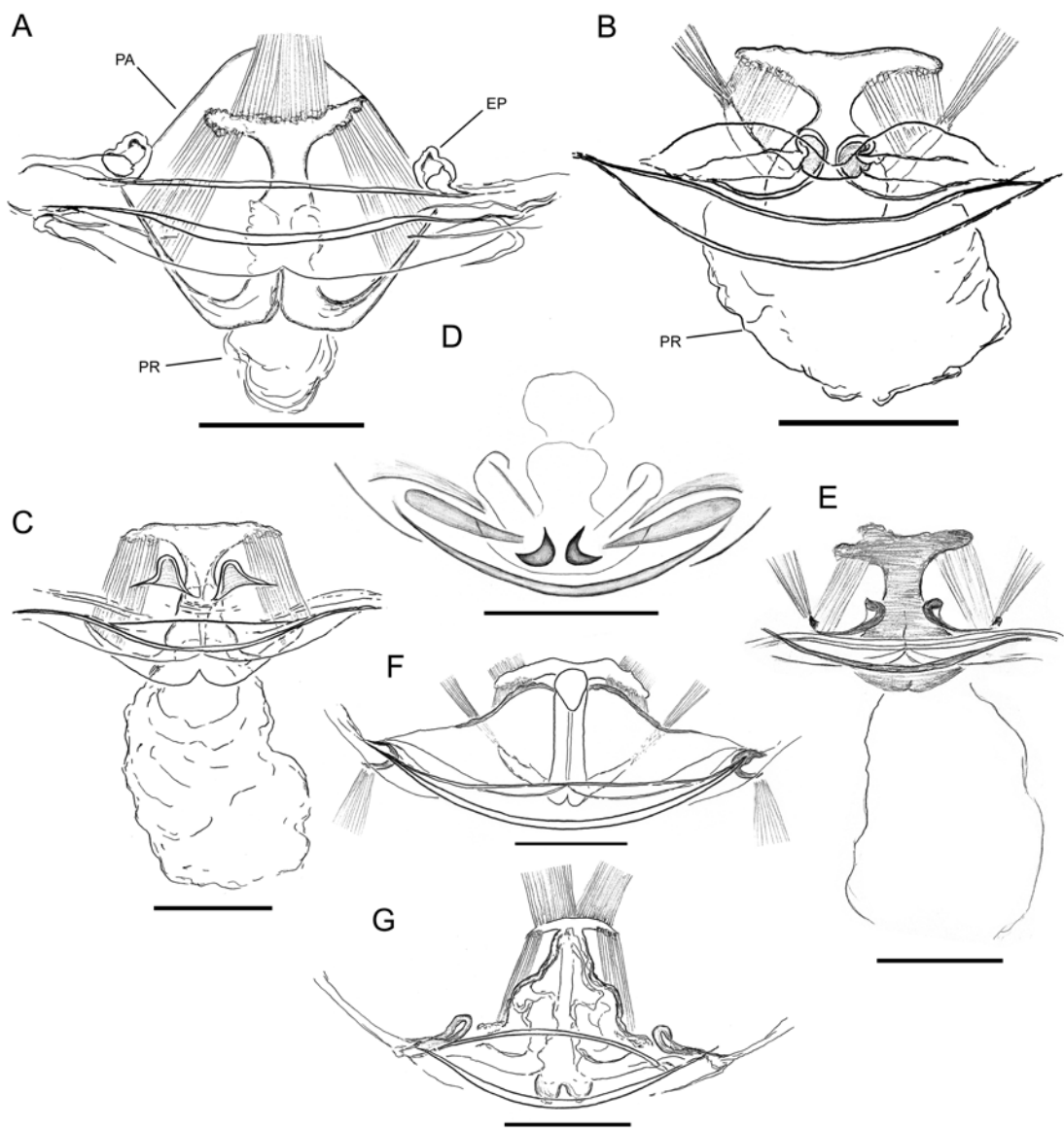


FIGURE 111. *Orchestina* spp., drawings of female genitalia, ventral view. **A.** *O. yanayacu*, holotype. **B.** *O. otonga*, paratype. **C.** *O. santodomingo*, holotype. **D.** *O. coari*, holotype. **E.** *O. silvae*, paratype. **F.** *O. cajamarca*, paratype. **G.** *O. losamigos*, paratype. Scale bars: 0.1 mm. (PBI_OON 30745, 50047, 50048, 43338, 43312, 42768, 43303). Abbreviations: **EP**, external pocket; **PA**, posterior apodeme; **PR**, posterior receptaculum.

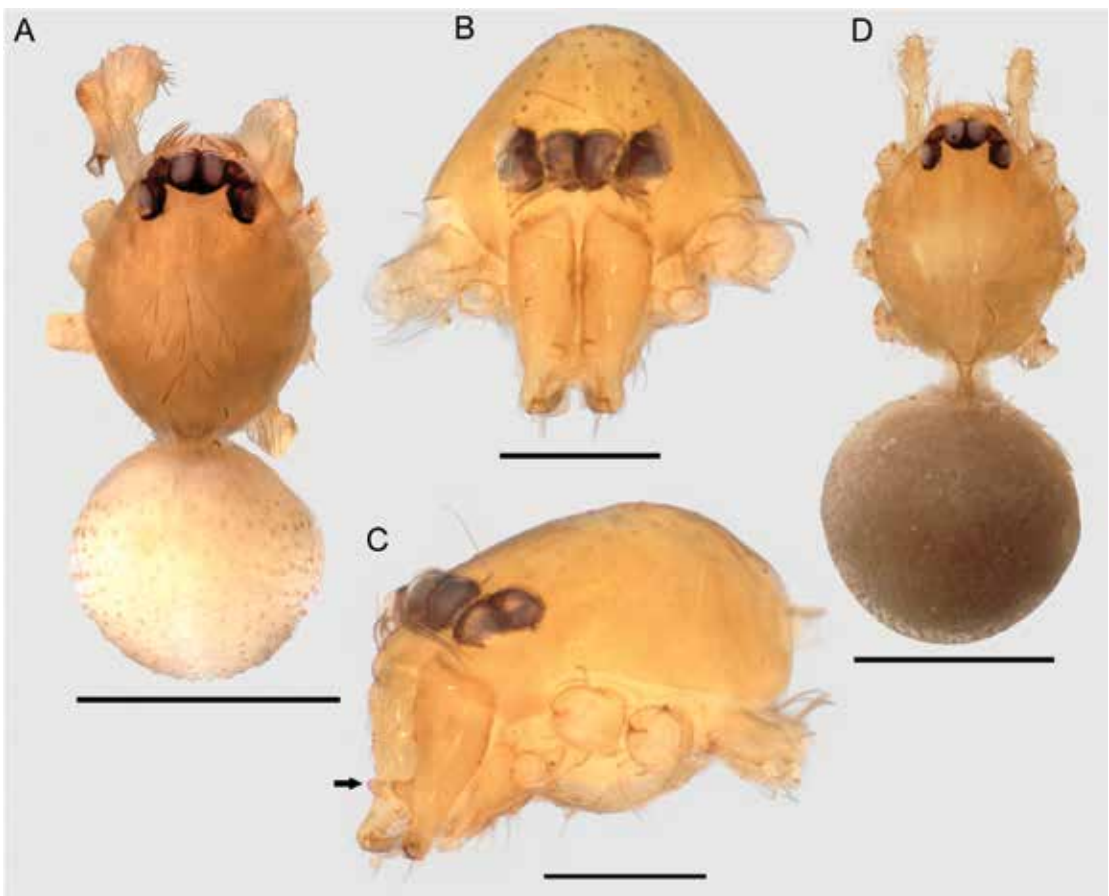


FIGURE 112. *Orchestina cristinae*. A–C. Male holotype. D. Female. A, D. Habitus dorsal. B. Cephalothorax, anterior. C. Same, lateral; arrow points to conical projections on chelicerae. Scale bars: A, D. 0.5 mm. B, C. 0.2 mm. (PBI_OON 10935, 43386).

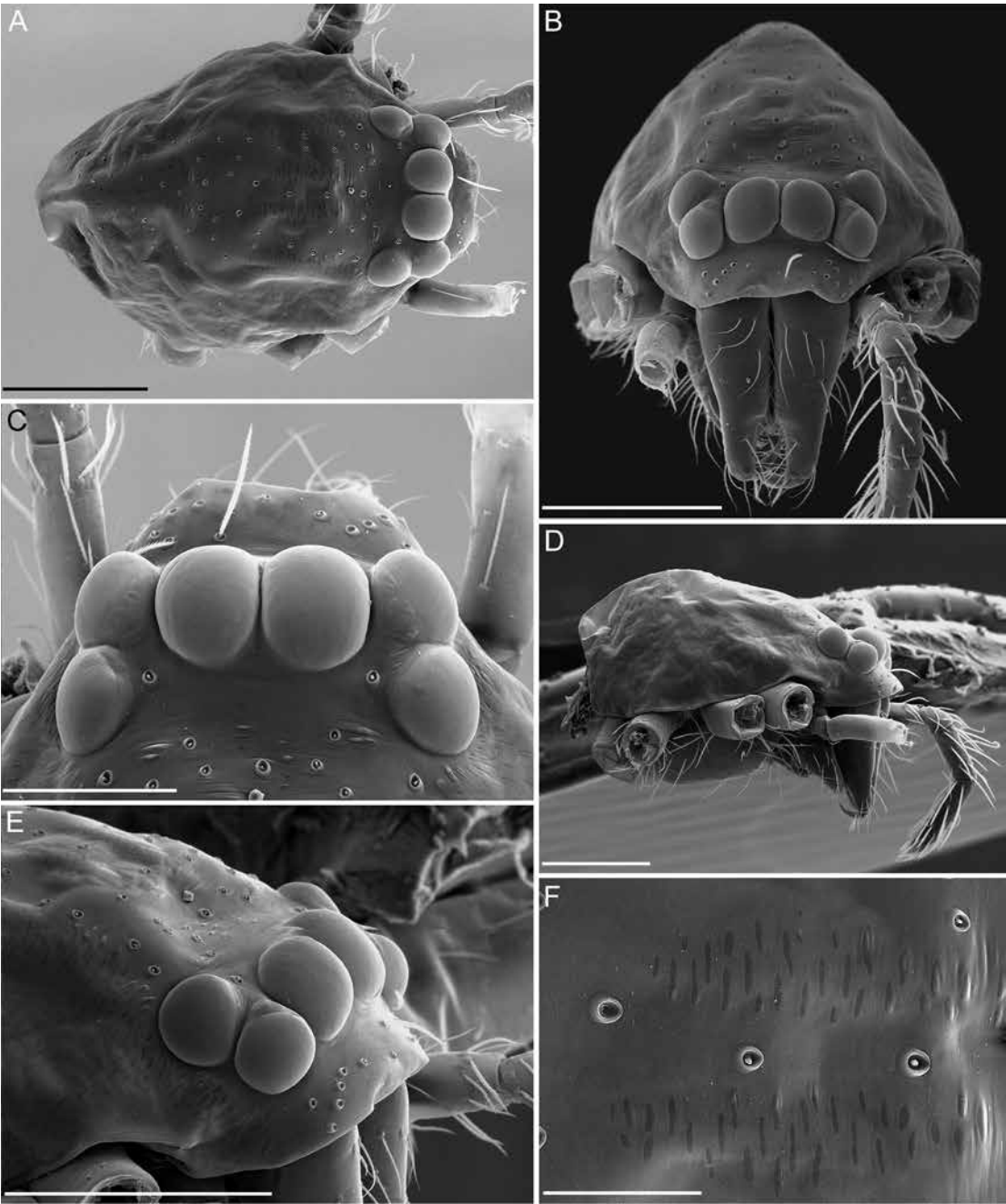


FIGURE 113. *Orchestina cristinae*, SEM of female cephalothorax. **A.** Carapace, dorsal. **B.** Same, anterior. **C.** Eyes, dorsal. **D.** Carapace, lateral. **E.** Eyes, lateral. **F.** Detail of carapace cuticle. Scale bars: **A, B, D, E.** 200 μm . **C.** 100 μm . **F.** 50 μm . (PBI_OON 43381).

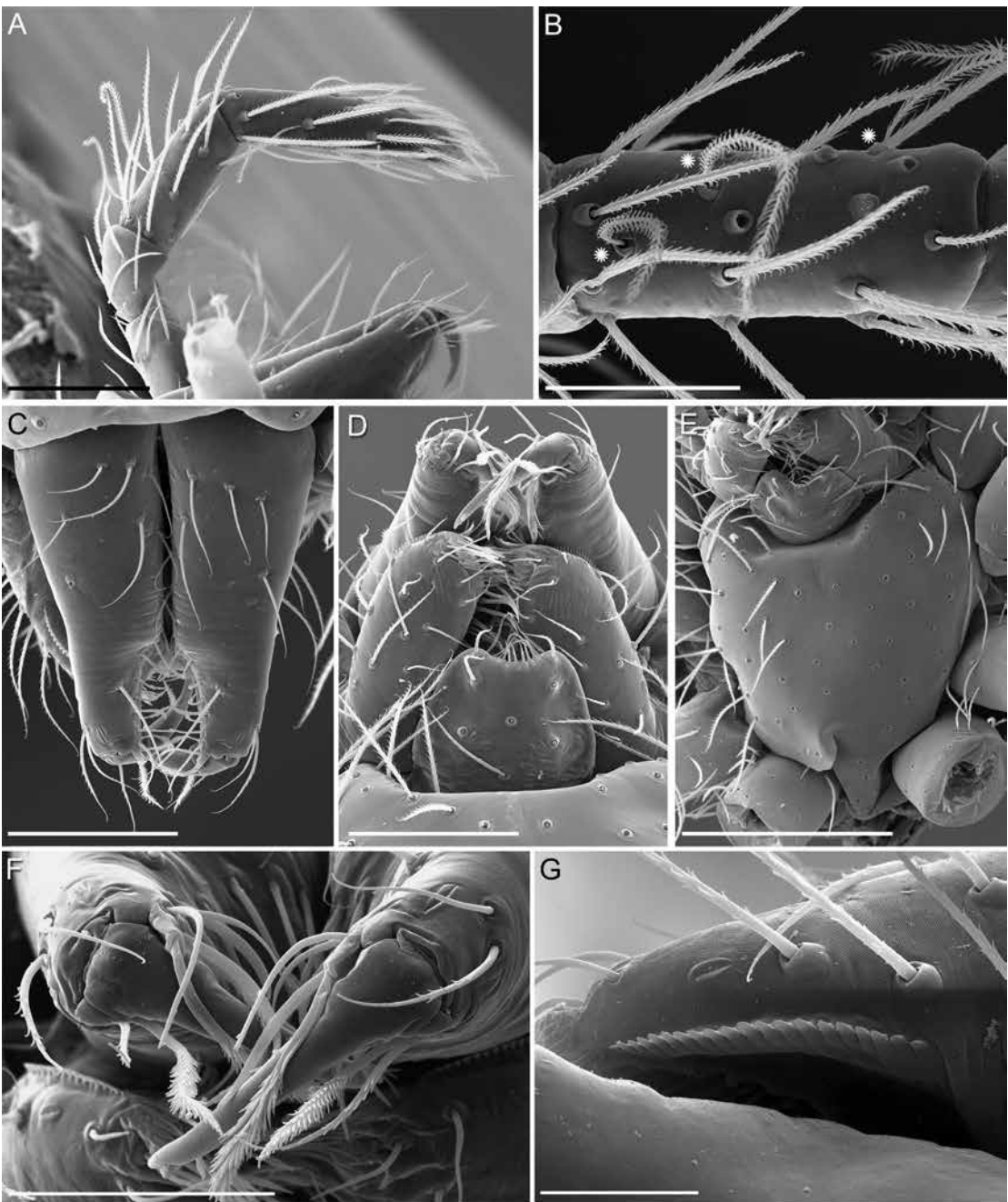


FIGURE 114. *Orchestina cristinae*, SEM of female chelicera, sternum, endites and left palp. **A.** Prolateral. **B.** Detail of palpal tibia; asterisks show the insertion patterns of trichobothria. **C.** Chelicerae, anterior. **D.** Endites and labium, ventral. **E.** Sternum. **F.** Cheliceral fangs, ventral. **G.** Serrula. Scale bars: **A, C, D.** 100 μm . **B, F.** 50 μm . **E.** 200 μm . **G.** 20 μm . (PBI_OON 43381).

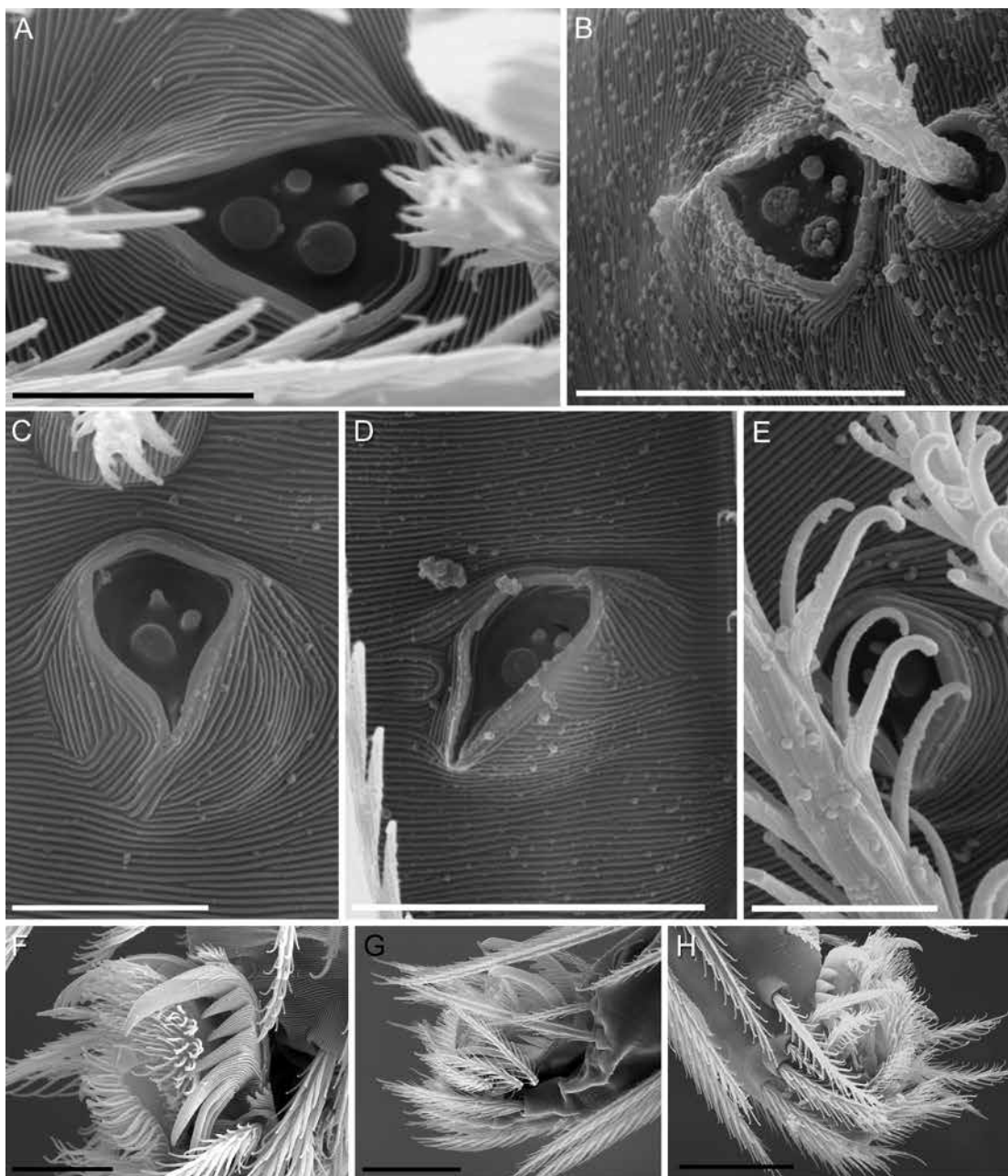


FIGURE 115. *Orchestina cristinae*, SEM of female tarsal organ and claws. **A.** Tarsal organ I, left leg. **B.** Same, left leg II. **C.** Same, right leg III. **D.** Same, right leg IV. **E.** Same, left palp. **F.** Right claws IV, prolateral. **G.** Left claws II, retrolateral. **H.** Right claws IV, retrolateral. Scale bars: **A, C, E.** 5 μm . **B, D.** 10 μm . **G, H.** 20 μm . (PBI_OON 43381).

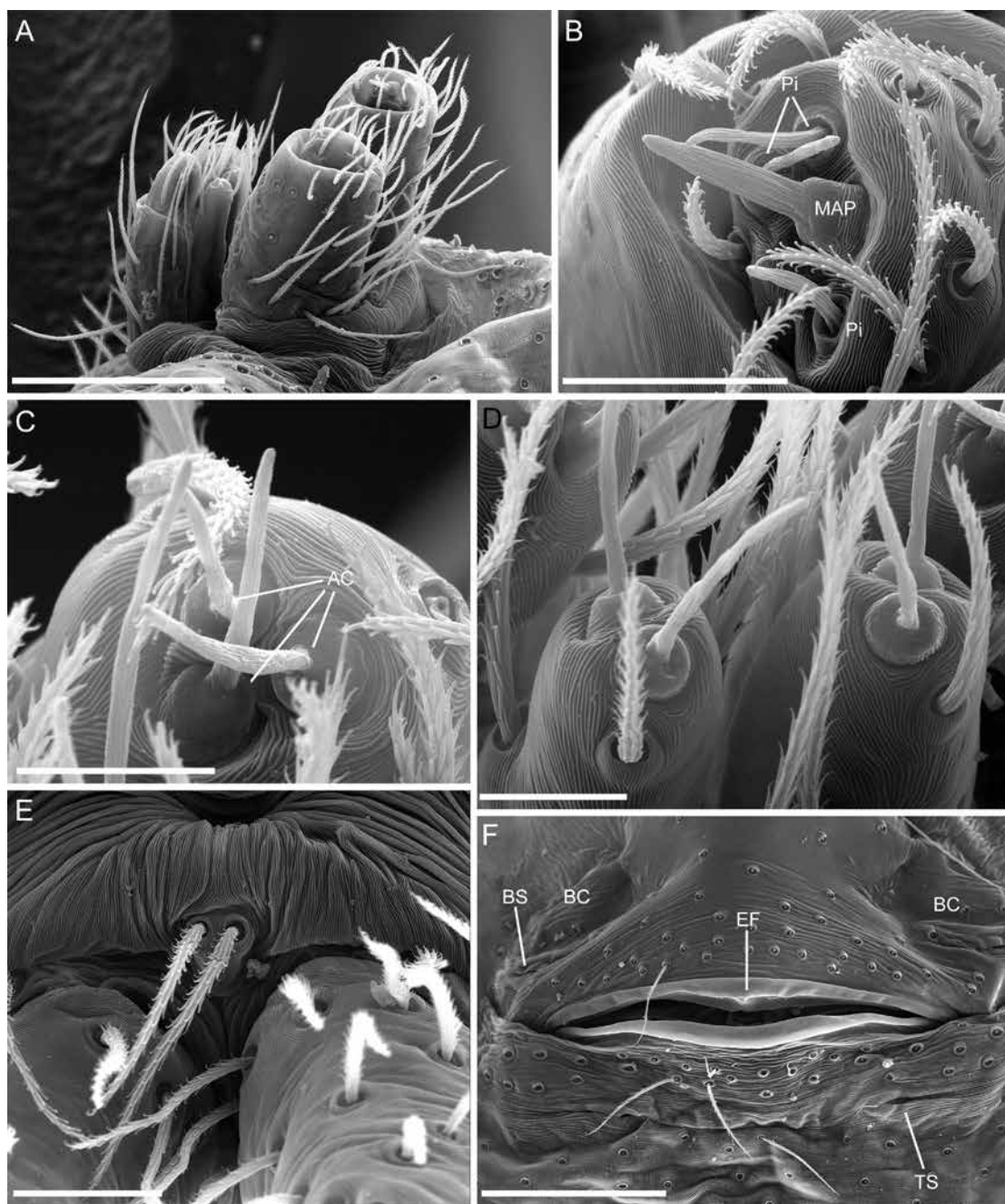


FIGURE 116. *Orchestina cristinae*, SEM of female abdomen. A. Spinnerets, lateral. B. ALS. C. PLS. D. PMS. E. Colulus. F. Epigastric region. Abbreviations: AC, aciniform gland spigot; BC, booklung cover; BS, booklung spiracle; EF, epigastric fold; MAP, major ampullate gland spigot; Pi, piriform gland spigot; TS, tracheal spiracle. Scale bars: A, F. 100 μ m. B, E. 20 μ m. C, D. 10 μ m. (PBI_OON 43381).

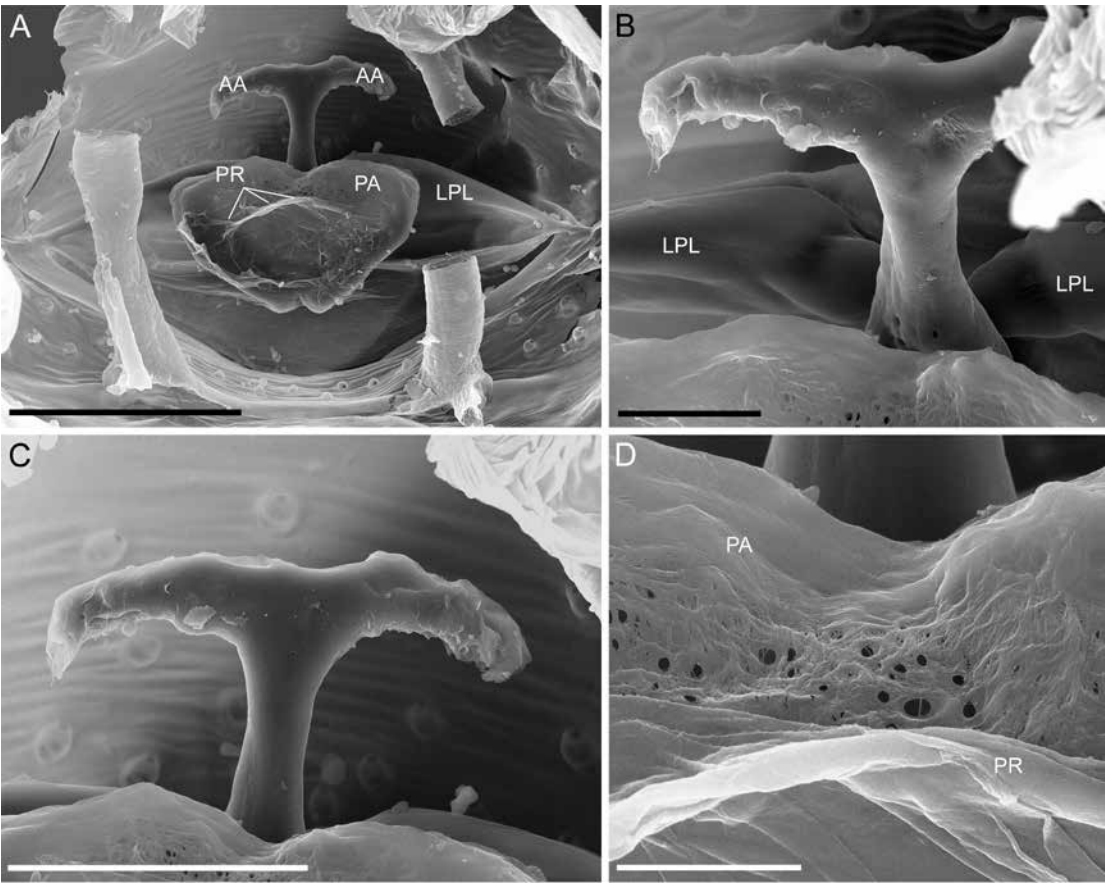


FIGURE 117. *Orchestina cristinae*, SEM of female genitalia. **A.** Dorsal. **B.** Detail of the anterior receptaculum tip, anterior. **C.** Same, dorsal. **D.** Detail of the posterior apodeme and the posterior receptaculum (collapsed). Abbreviations: **AA**, apodemes of the anterior receptaculum; **LPL**, lateral plates; **PA**, posterior apodeme; **PR**, posterior receptaculum. Scale bars: **A.** 100 μm . **B.** 20 μm . **C.** 50 μm . **D.** 10 μm . (PBI_OON 43381).

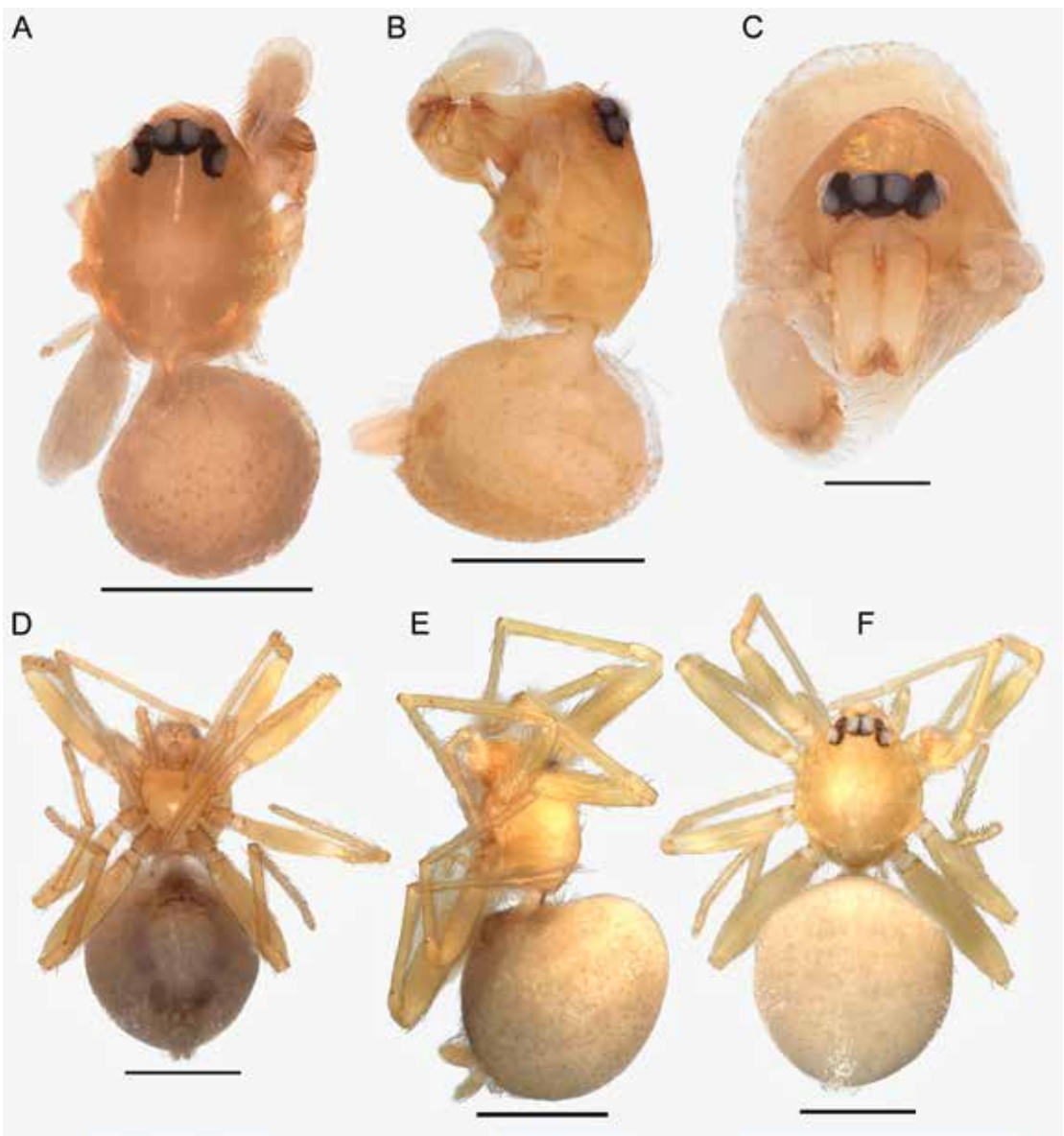


FIGURE 118. *Orchestina valquiria*, habitus. A–C. Male. D–F. Female. A, F. Dorsal. B, E. Lateral. C. Anterior. D. Ventral. Scale bars: 0.5 mm except C, 0.2 mm. (PBI_OON 40480, 42166).

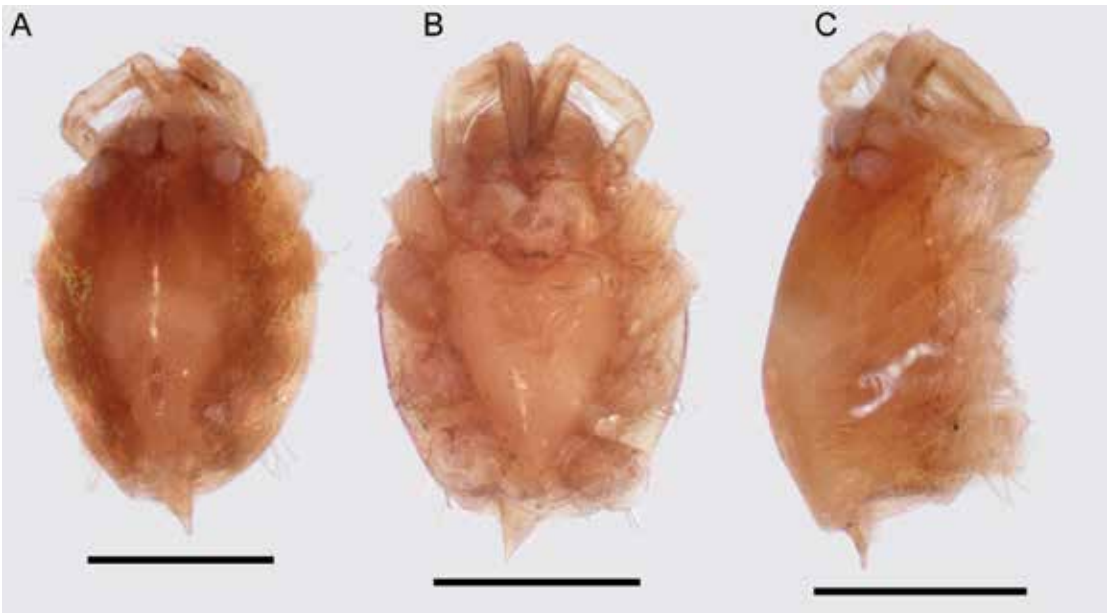


FIGURE 119. *Orchestina taruma*, cephalothorax of female paratype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.3 mm. (PBI_OON 30290).

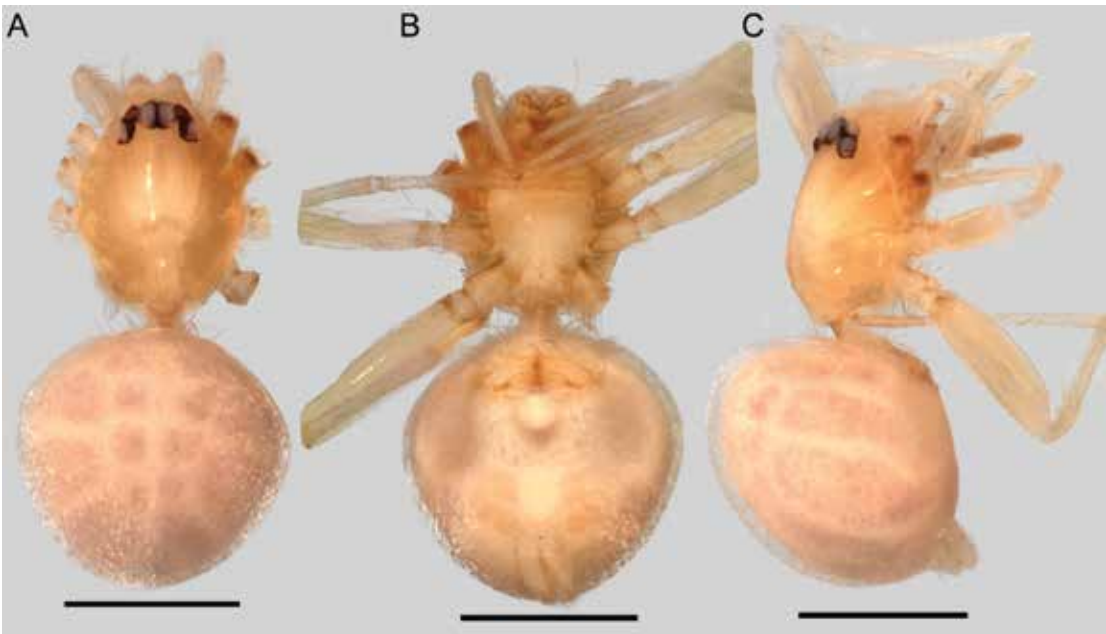


FIGURE 120. *Orchestina aproeste*, habitus of female. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.5 mm. (PBI_OON 40487).

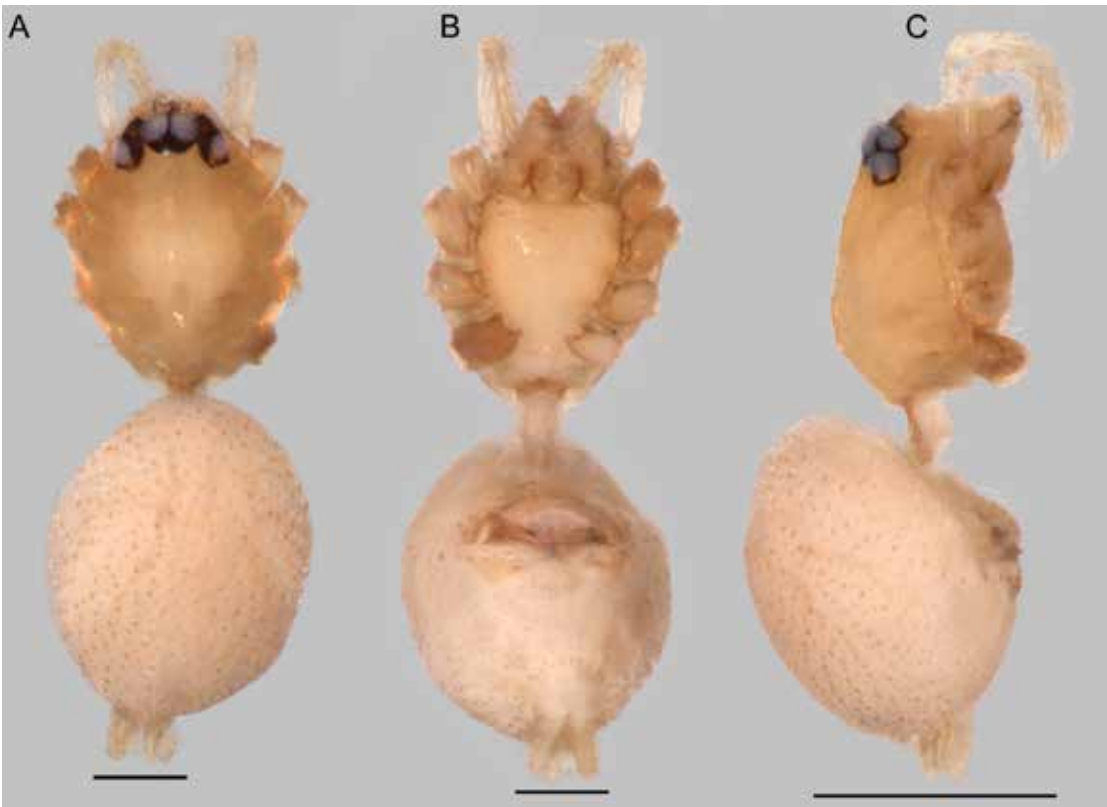


FIGURE 121. *Orchestina caxiuana*, habitus of female holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: **A, B.** 0.2 mm. **C.** 0.5 mm. (PBI_OON 43332).



FIGURE 122. *Orchestina* spp., habitus of females. A–C. *O. para*, holotype. D–F. *O. iemanja*, holotype (PBI_OON 30278). A, D. Dorsal. B, E. Ventral. C, F. Lateral. Scale bars: A–C. 0.2 mm. D–F. 0.5 mm. (PBI_OON 40488).

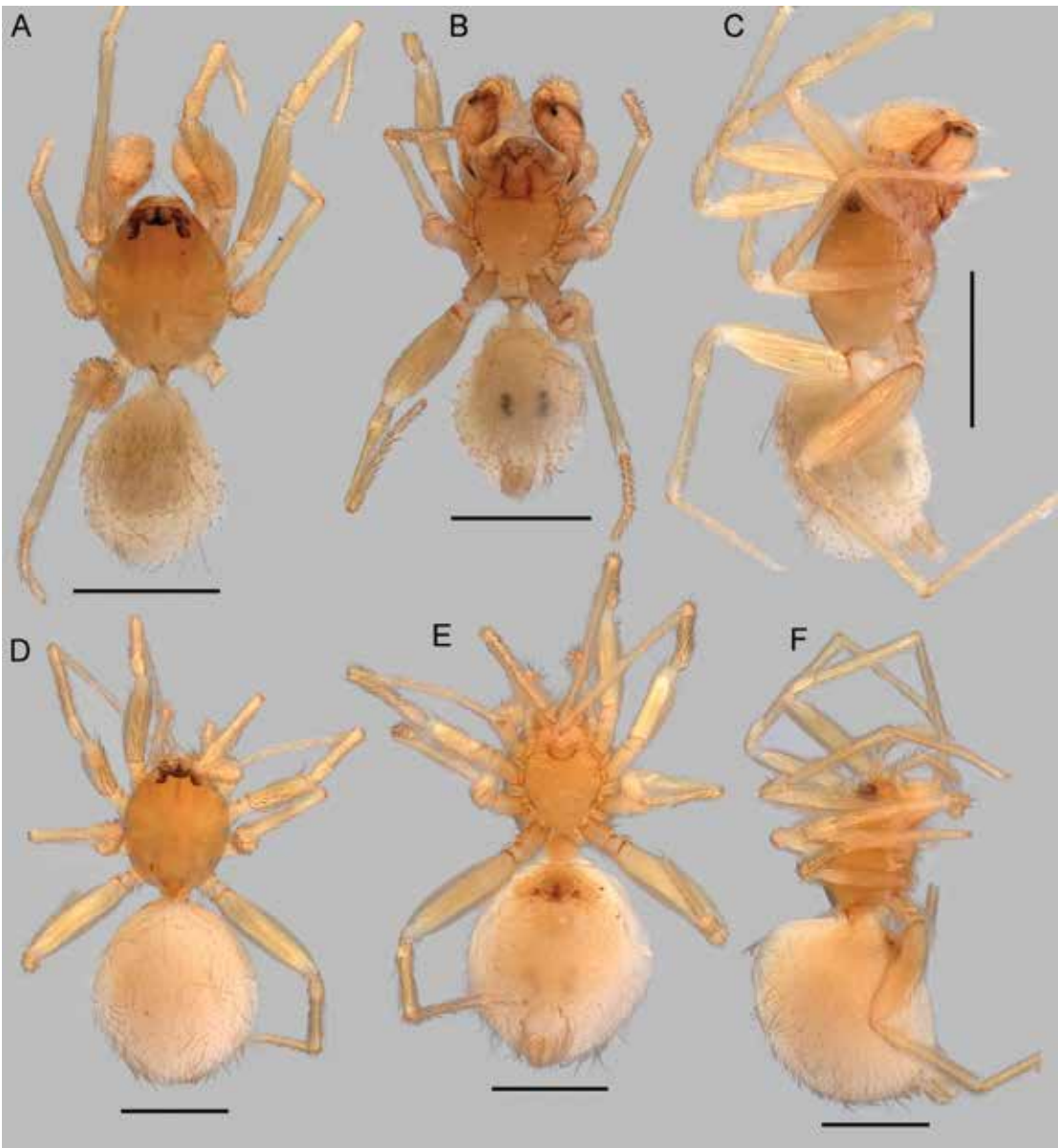


FIGURE 123. *Orchestina platnicki*, habitus. A–C. Male holotype. D–F. Female paratype. A, D. Dorsal. B, E. Ventral. C, F. Lateral. Scale bars: 0.5 mm. (PBI_OON 10937, 10938).

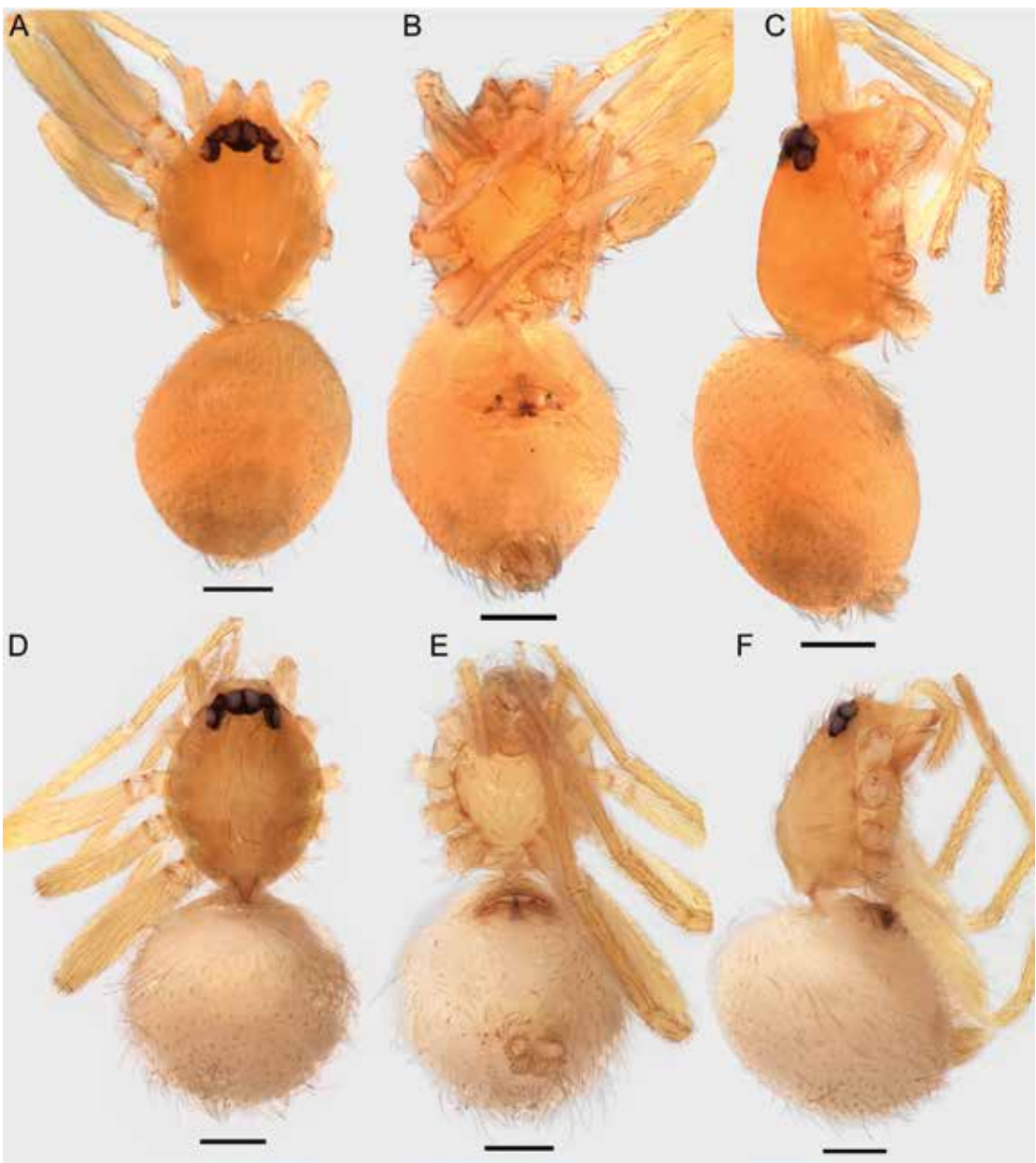


FIGURE 124. *Orchestina* spp., habitus. A–C. *O. bonaldoi*. D–F. *O. rapaz*. A, D. Dorsal. B, E. Ventral. C, F. Lateral. Scale bars: 0.2 mm. (PBI_OON 43307, 30285).

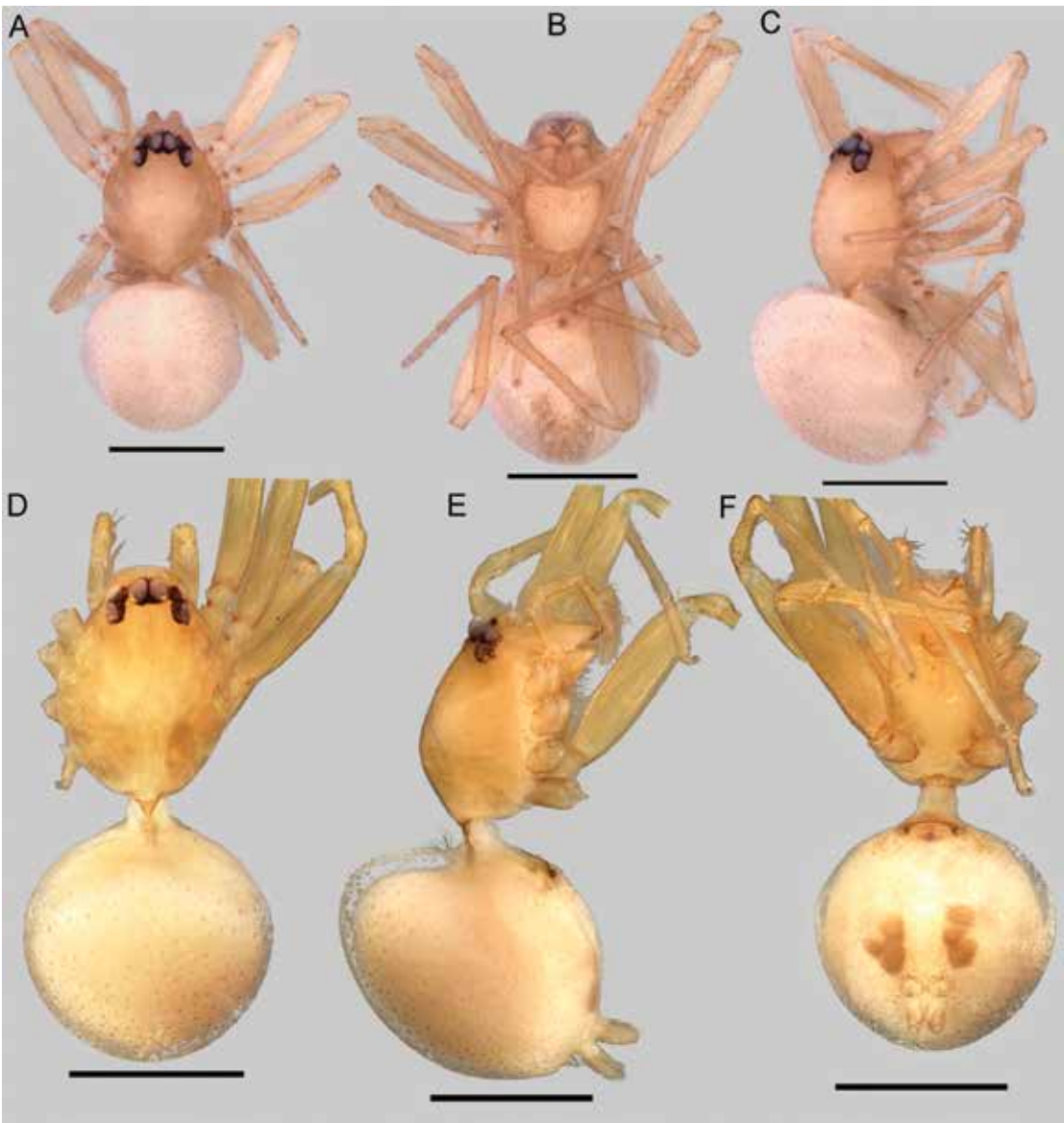


FIGURE 125. *Orchestina* spp., habitus of females. A–C. *O. itapety*. D–F. *O. catarina*. A, D. Dorsal. C, E. Lateral. B, F. Ventral. Scale bars: 0.5 mm. (PBI_OON 42220, 30754).

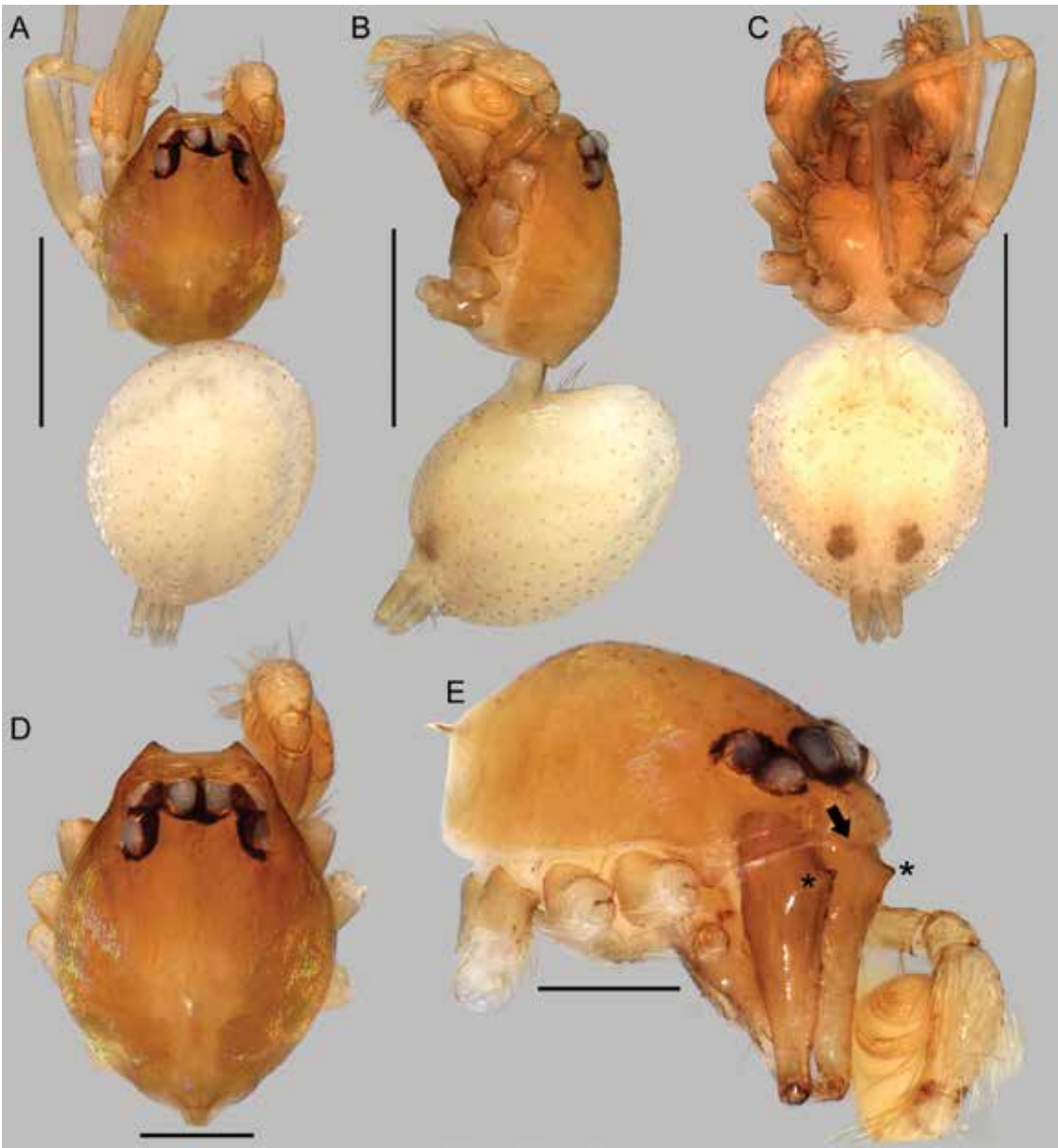


FIGURE 126. *Orchestina catarina*, male. **A.** Habitus dorsal. **B.** Same, lateral. **C.** Same, Ventral. **D.** Cephalothorax, dorsal. **E.** Same, anterolateral; arrow points to the sinuous clypeus; asterisks show the conical projections of chelicerae. Scale bars: **A-C.** 0.5 mm. **D-E.** 0.2 mm. (PBI_OON 30754).

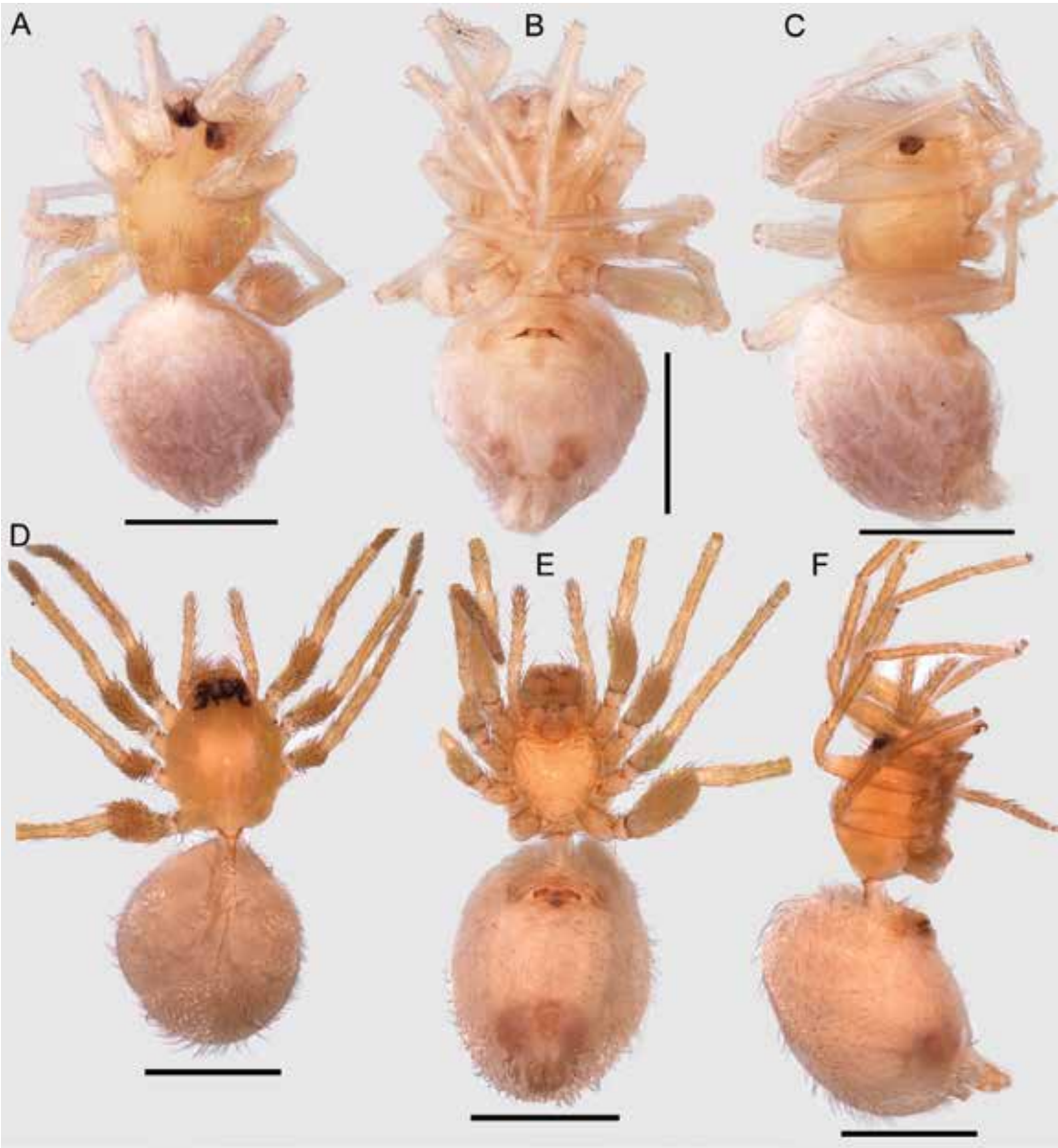


FIGURE 127. *Orchestina* spp., habitus of females. A–C. *O. saudade*, holotype. D–F. *O. leon*, holotype. A, D. Dorsal. B, E. Ventral. C, F. Lateral. Scale bars: 0.5 mm. (PBI_OON 43353, 43345).

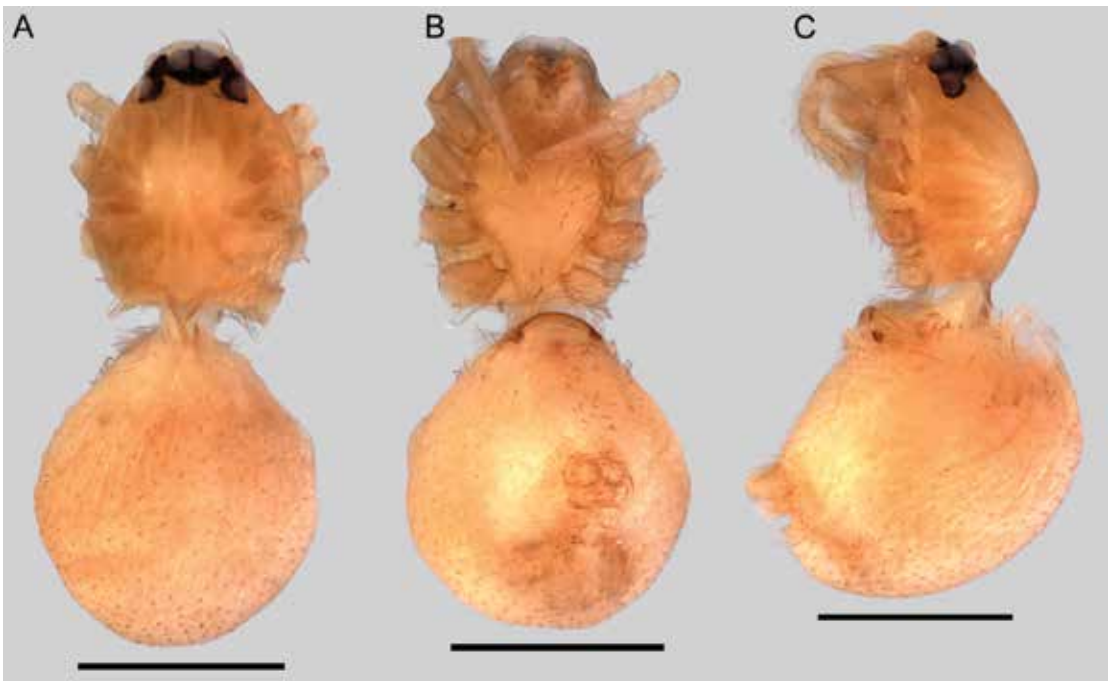


FIGURE 128. *Orchestina sarava*, habitus of female. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.5 mm. (PBI_OON 43375).

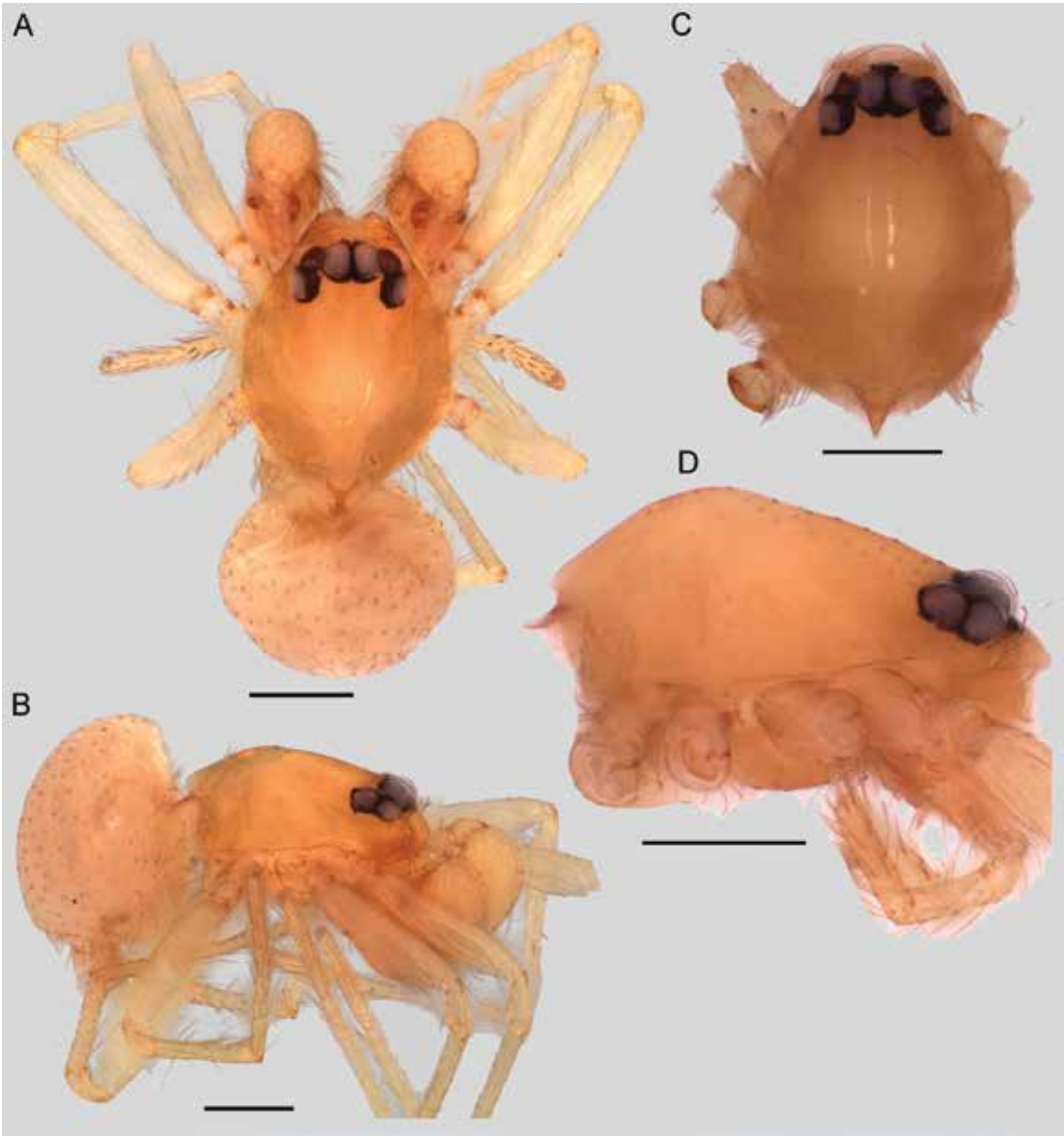


FIGURE 129. *Orchestina juruti*, habitus. **A, B.** Holotype male. **C, D.** Paratype female. **A.** Habitus dorsal. **B.** Same, lateral. **C.** Cephalothorax dorsal. **D.** Same, lateral. Scale bars: 0.2 mm. (PBI_OON 42147, 42173).

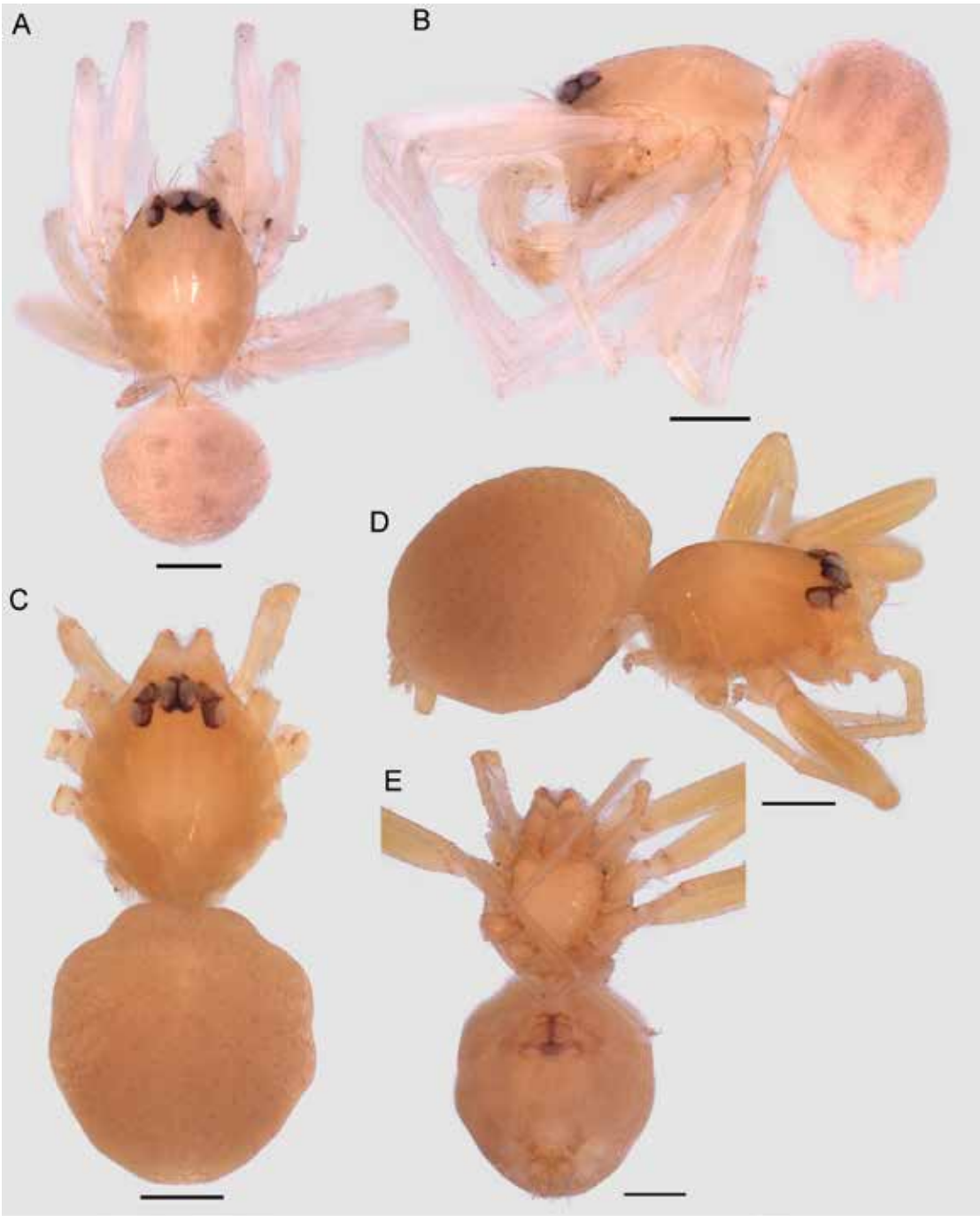


FIGURE 130. *Orchestina* spp., habitus. **A, B.** *O. retiro*, habitus of holotype male. **C–E.** *O. divisor*, habitus of holotype female. **A, C.** Dorsal. **B, D.** Lateral. **E.** Ventral. Scale bars: 0.2 mm. (PBI_OON 40483, 42232).

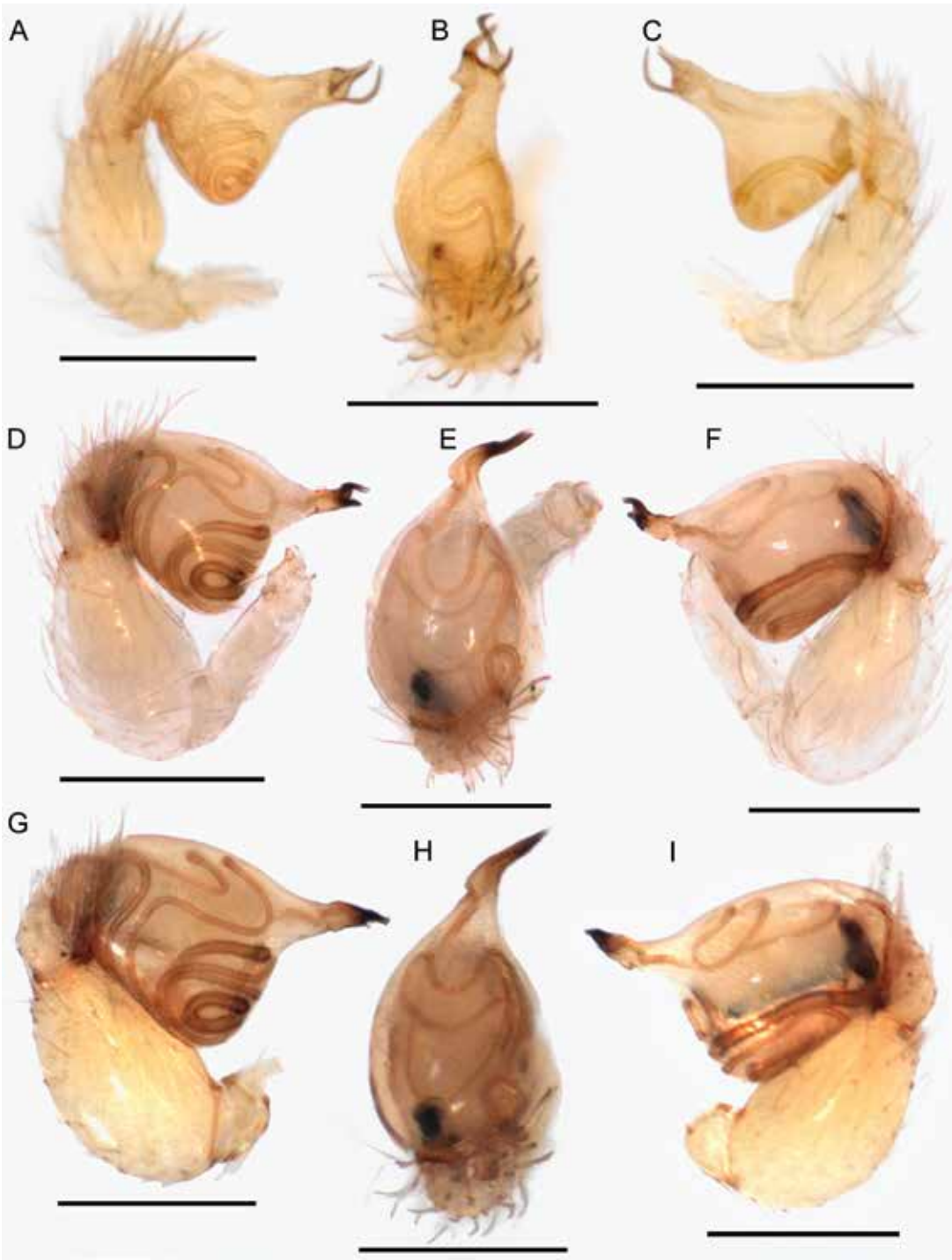


FIGURE 131. *Orchestina* spp., male palps. A–C. *O. cristinae*. D–F. *O. valquiria*. G–I. *O. platnicki*. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 10935, 40482, 30270).

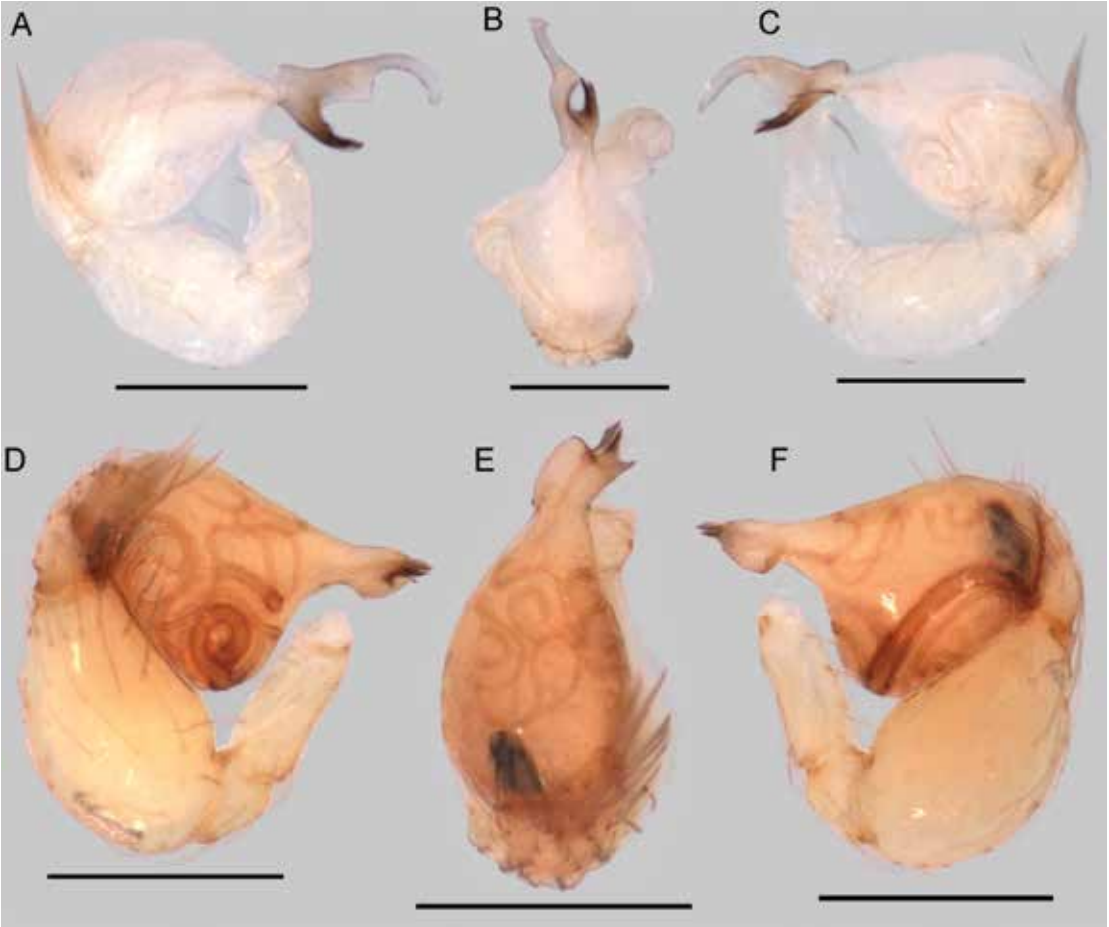


FIGURE 132. *Orchestina* spp., male palps. A–C. *O. retiro* holotype. D–F. *O. juruti* holotype. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 40483, 40483).

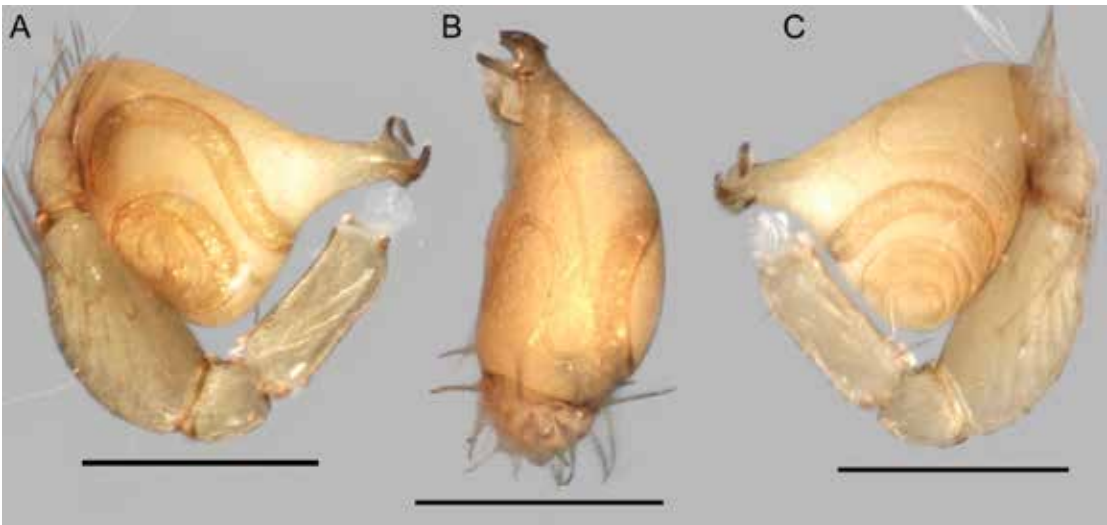


FIGURE 133. *Orchestina catarina*, right palp of male. **A.** Retrolateral. **B.** Dorsal. **C.** Prolateral. Scale bars: 0.2 mm. (PBI_OON 30754).



FIGURE 134. *Orchestina* spp., female genitalia, ventral view. **A.** *O. cristinae*, specimen from Mato Grosso. **B.** Same, specimen from São Paulo. **C.** *O. coari*, holotype. **D.** *O. valquiria*. **E.** *O. taruma*, paratype. **F.** *O. aproeste*, holotype. Scale bars: 0.2 mm. (PBI_OON 14877, 15096, 43338, 42169, 30290, 40487).

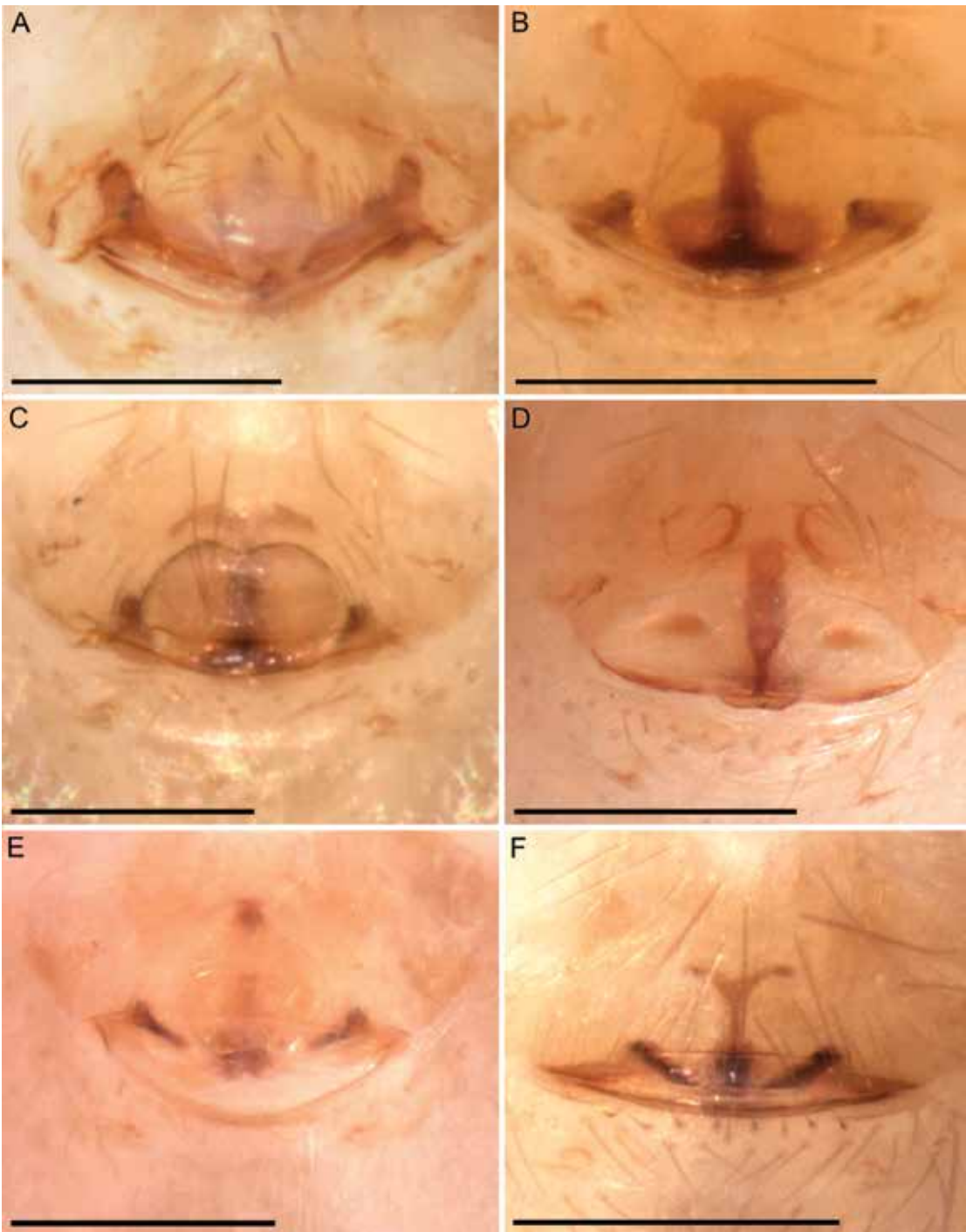


FIGURE 135. *Orchestina* spp., female genitalia, ventral view. **A.** *O. caxiuana*, holotype. **B.** *O. para*, holotype. **C.** *O. platnicki*, paratype. **D.** *O. iemanja*. **E.** *O. bonaldoi*. **F.** *O. rapaz*, paratype. Scale bars: 0.2 mm. (PBI_OON 43332, 40488, 43324, 30278, 40475, 30286).

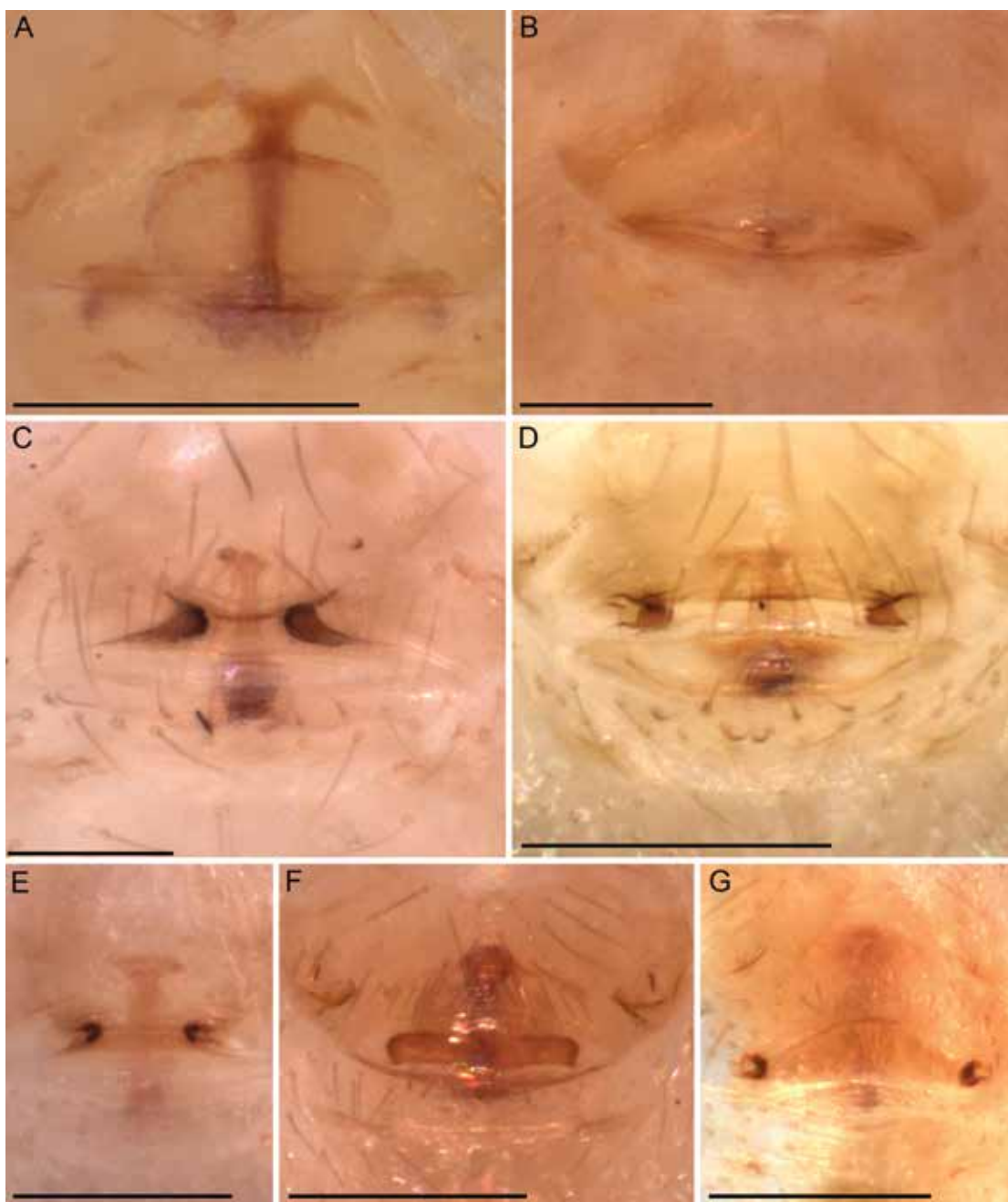


FIGURE 136. *Orchestina* spp., female genitalia, ventral view. **A.** *O. divisor*, holotype. **B.** *O. juruti*, paratype. **C.** *O. itapety*, holotype. **D.** *O. catarina*, paratype. **E.** *O. saudade*, paratype. **F.** *O. leon*, holotype. **G.** *O. sarava*. Scale bars: 0.2 mm, except C, 0.1 mm. (PBI_OON 42232, 42173, 42220, 30272, 43355, 43345).

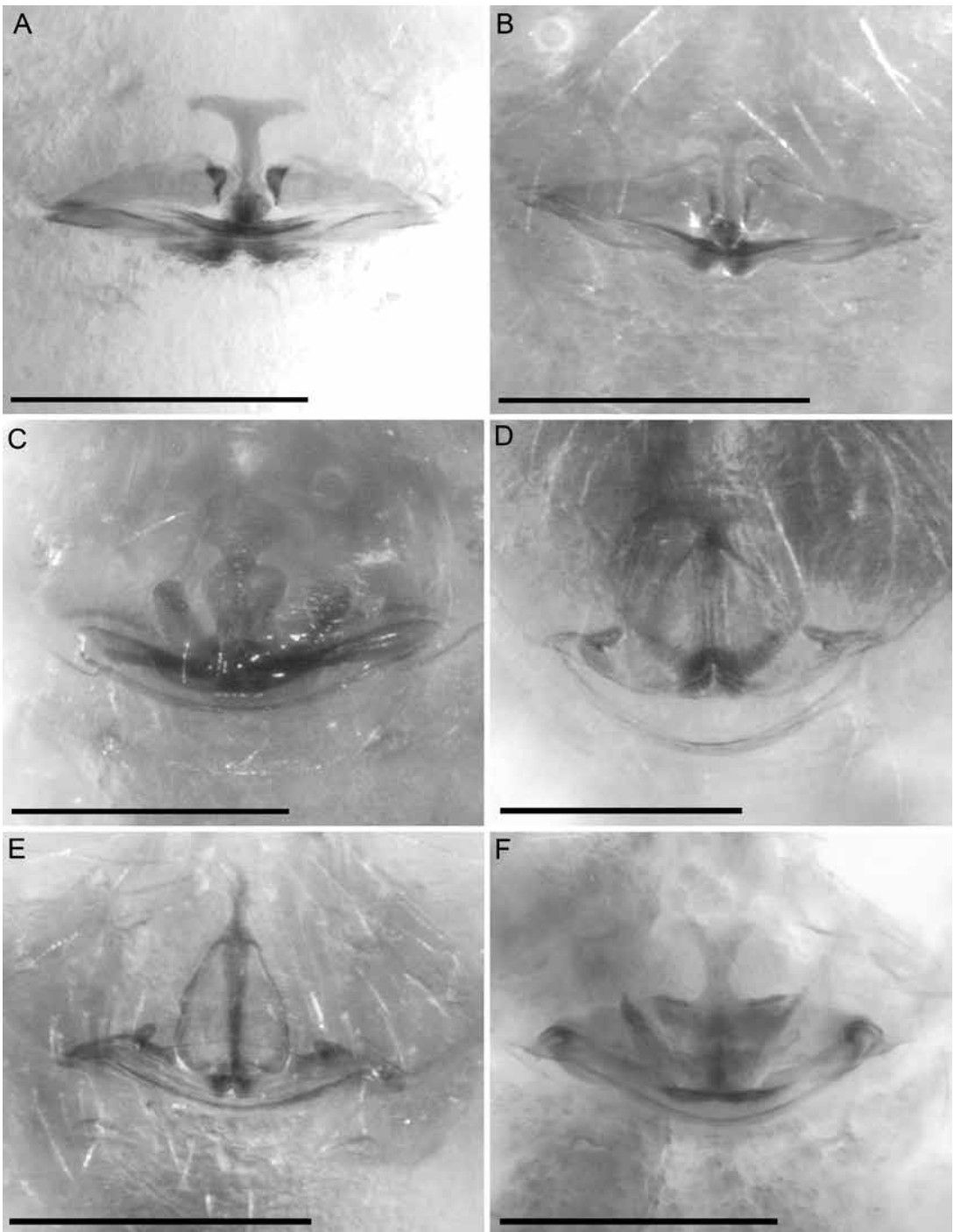


FIGURE 137. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. cristinae*, specimen from São Paulo. **B.** Same, specimen from Santa Catarina. **C.** *O. coari*, holotype. **D.** *O. moura*. **E.** *O. valquiria*. **F.** *O. taruma*, paratype. Scale bars: 0.2 mm. (PBI_OON 30400, 43386, 43338, 43341, 42169, 30290).

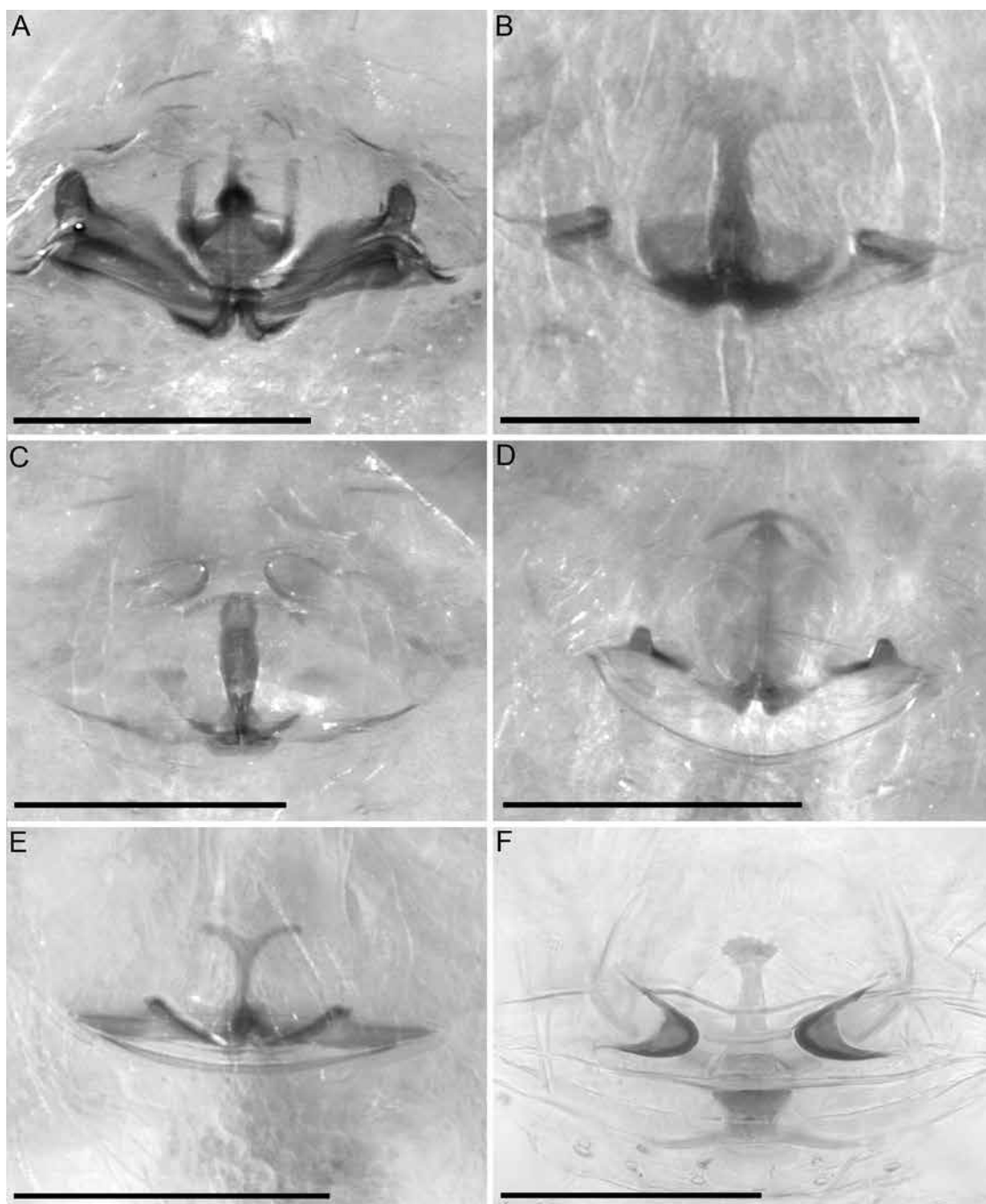


FIGURE 138. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. caxiuana*, holotype. **B.** *O. para.* **C.** *O. iemanja*, paratype. **D.** *O. bonaldoi*. **E.** *O. rapaz*, paratype. **F.** *O. itapety*, holotype. Scale bars: 0.2 mm. (PBI_OON 43332, 40484, 30752, 40475, 30286, 42220).

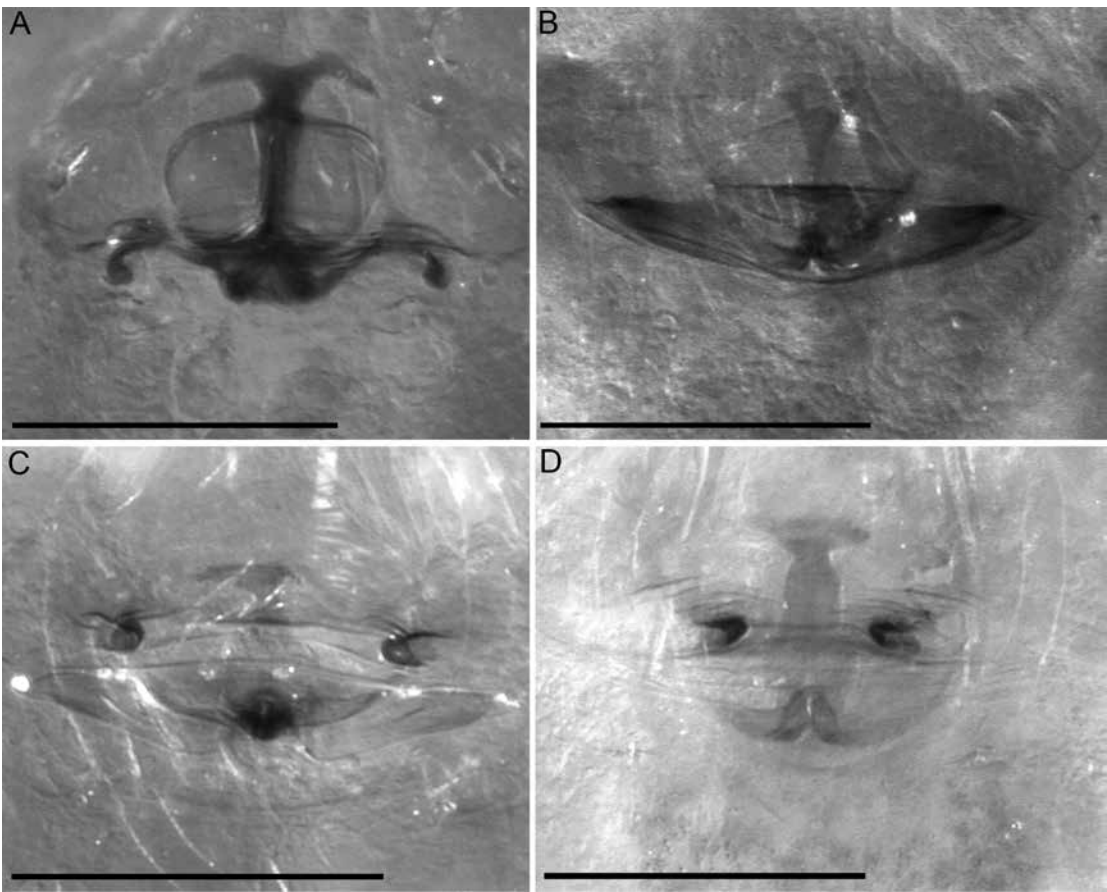


FIGURE 139. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. divisor*, holotype. **B.** *O. juruti*, paratype. **C.** *O. catarina*, paratype. **D.** *O. saudade*, paratype. Scale bars: 0.2 mm. (PBI_OON 42232, 42173, 30272, 43355).

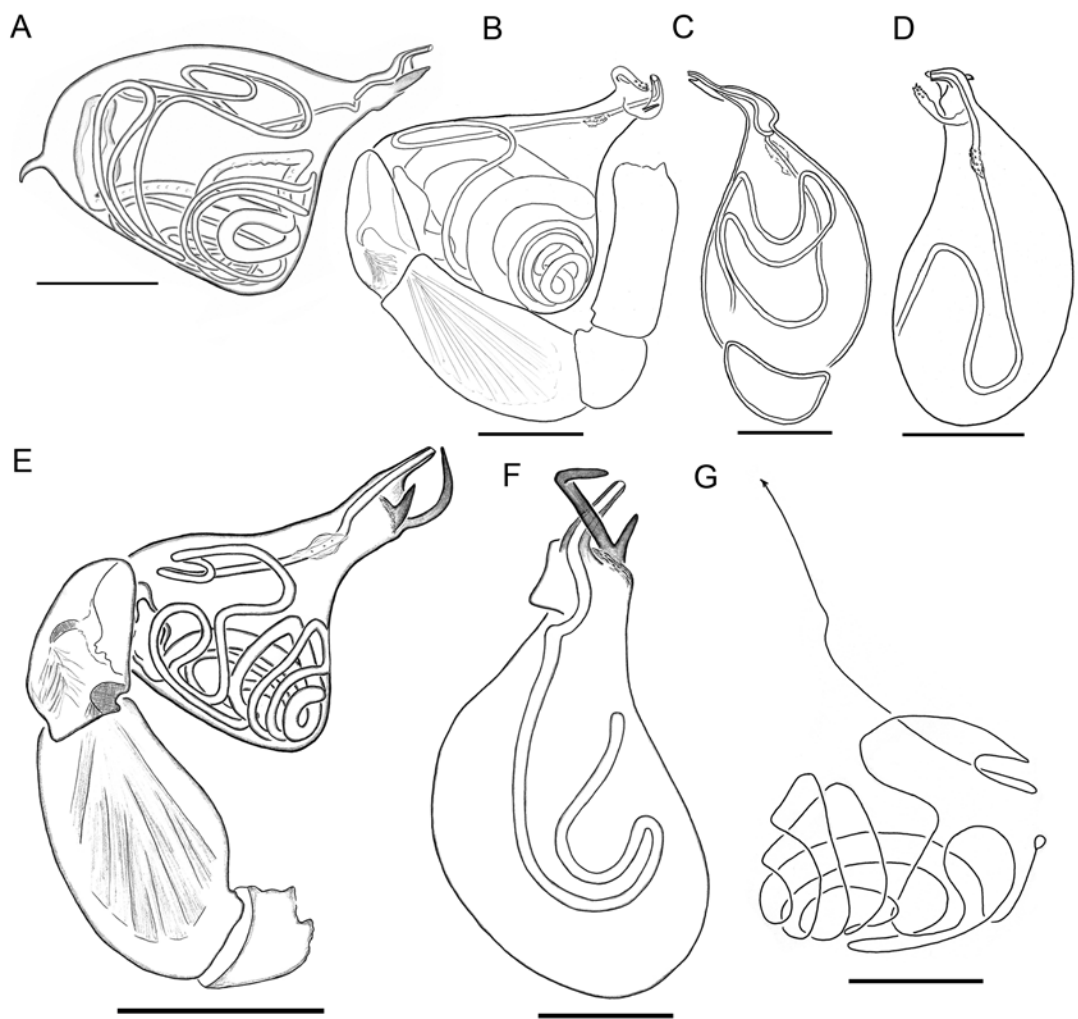


FIGURE 140. *Orchestina* spp., drawings of male palps. **A, C.** *O. valquiria*, paratype. **B, D.** *O. catarina*, right palp, holotype. **E–G.** *O. cristinae*, holotype. **A, E.** Prolateral. **B.** Retrolateral (flopped). **C, D, F.** Dorsal. **G.** Scheme of sperm duct course. Scale bars: 0.1 mm. (PBI_OON 40480, 30754, 10935).

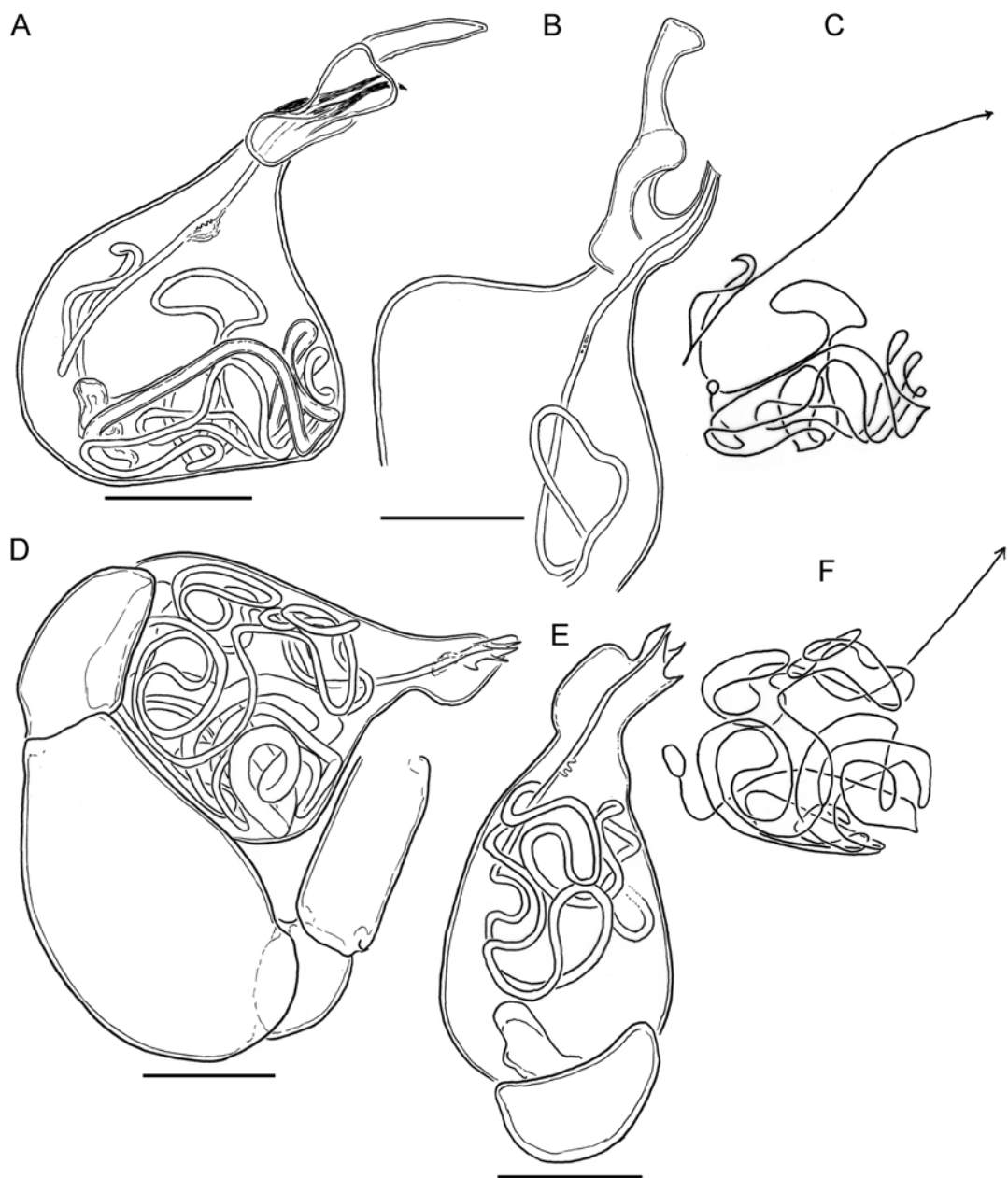


FIGURE 141. *Orchestina* spp., drawings of male palps. A–C. *O. retiro*, holotype. D–F. *O. juruti*. A, D. Retro-lateral. B, E. Dorsal. C, F. Scheme of sperm duct course. Scale bars: 0.1 mm. (PBI_OON 40483, 42168).

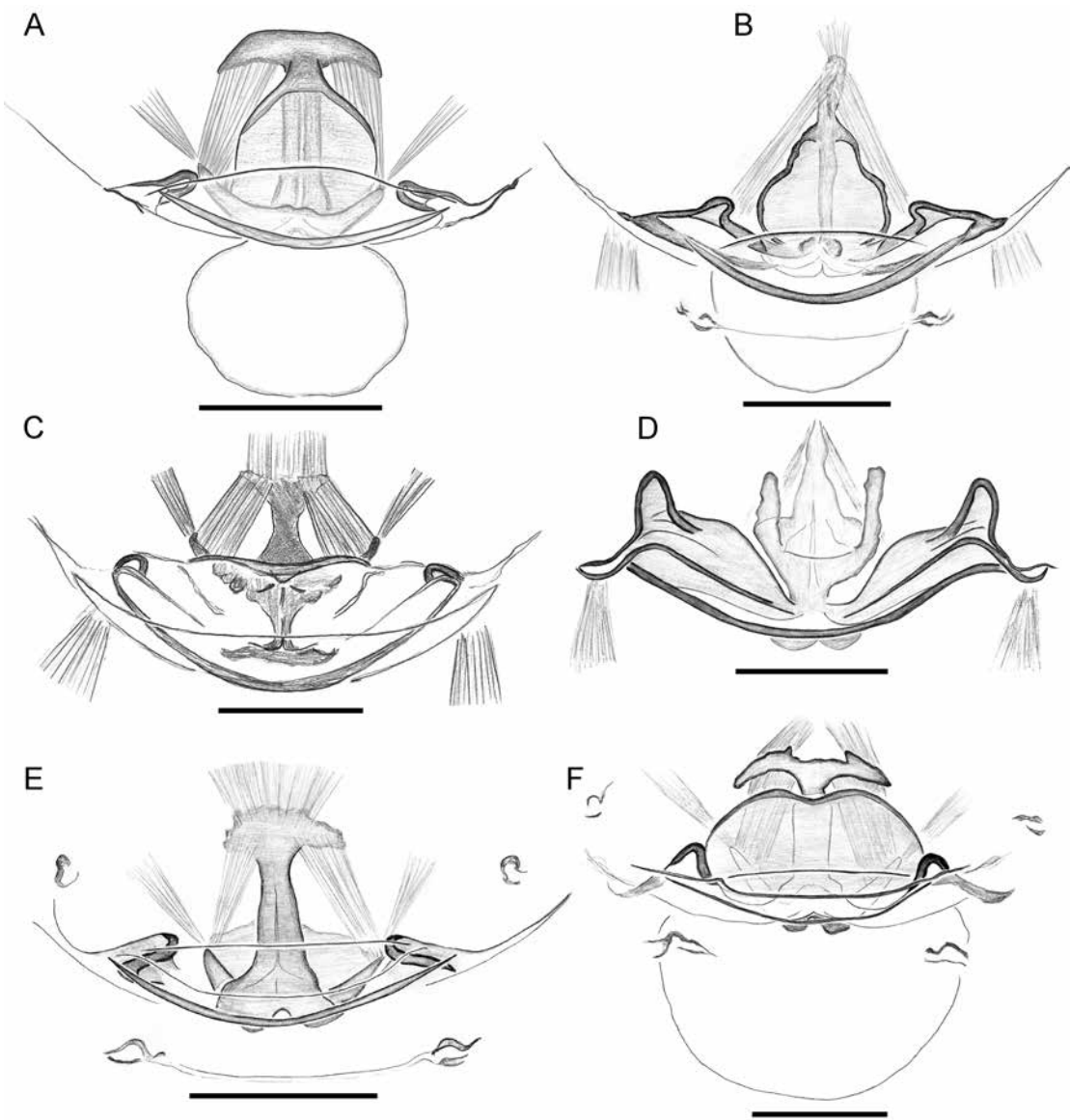


FIGURE 142. *Orchestina* spp., drawings of female genitalia, ventral view. A. *O. moura*. B. *O. valquiria*. C. *O. taruma*, paratype. D. *O. caxiuana*, holotype. E. *O. para*. F. *O. platnicki*. Scale bars 0.1 mm. (PBI_OON 43337, 40491, 30290, 43332, 40484, 43324).

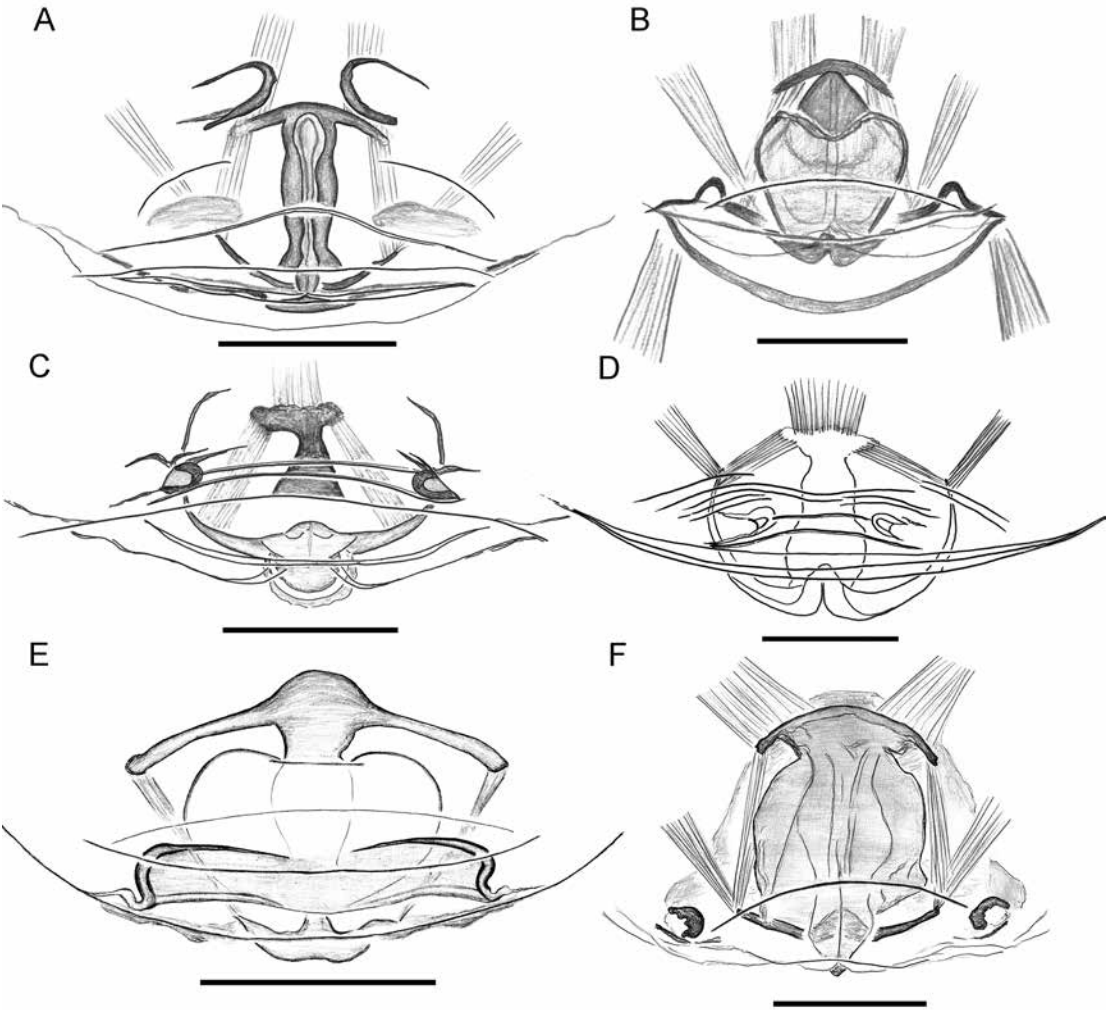


FIGURE 143. *Orchestina* spp., drawings of female genitalia, ventral view. **A.** *O. iemanja*, paratype. **B.** *O. bonaldi*. **C.** *O. catarina*, holotype. **D.** *O. saudade*, paratype. **E.** *O. leon*, holotype. **F.** *O. sarava*. Scale bars: 0.1 mm. (PBI_OON 30752, 40475, 30754, 43355, 43345, 43389).

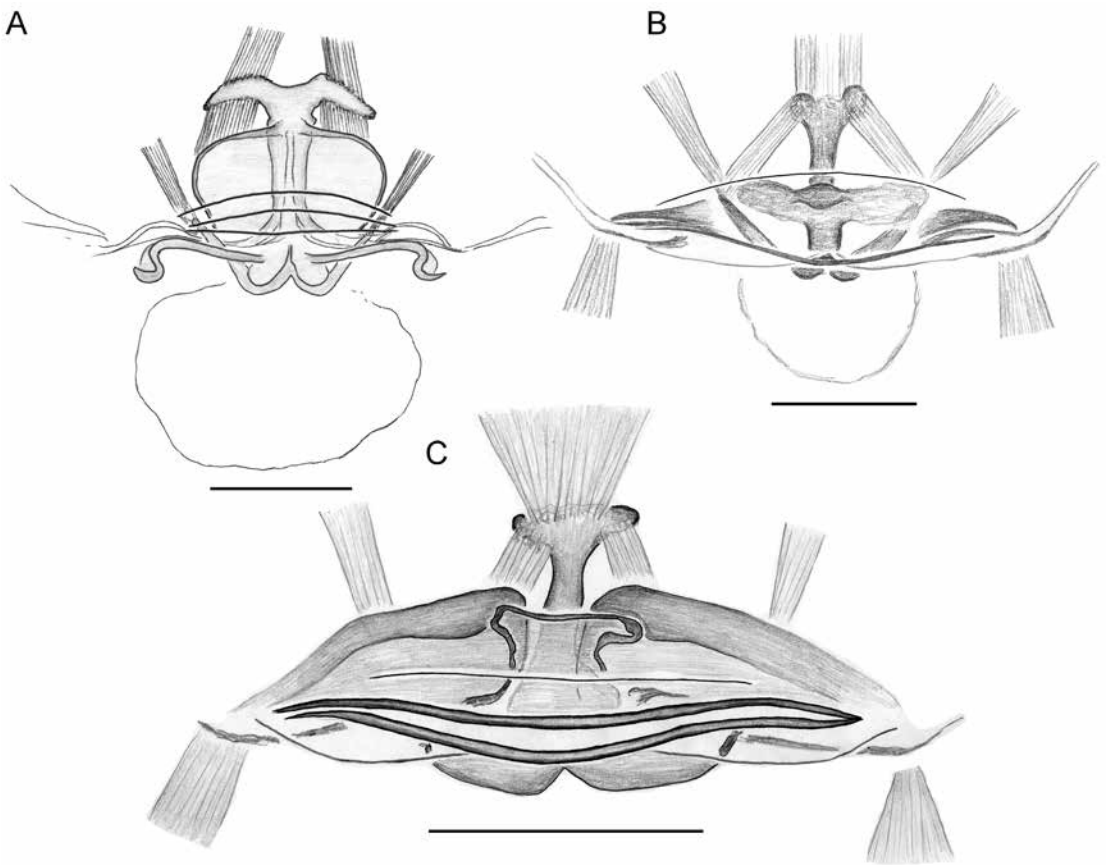


FIGURE 144. *Orchestina* spp., drawings of female genitalia, ventral view. **A.** *O. divisor*, holotype. **B.** *O. juruti*, holotype. **C.** *O. cristinae*. Scale bars: 0.1 mm. (PBI_OON 42232, 42173, 10936).

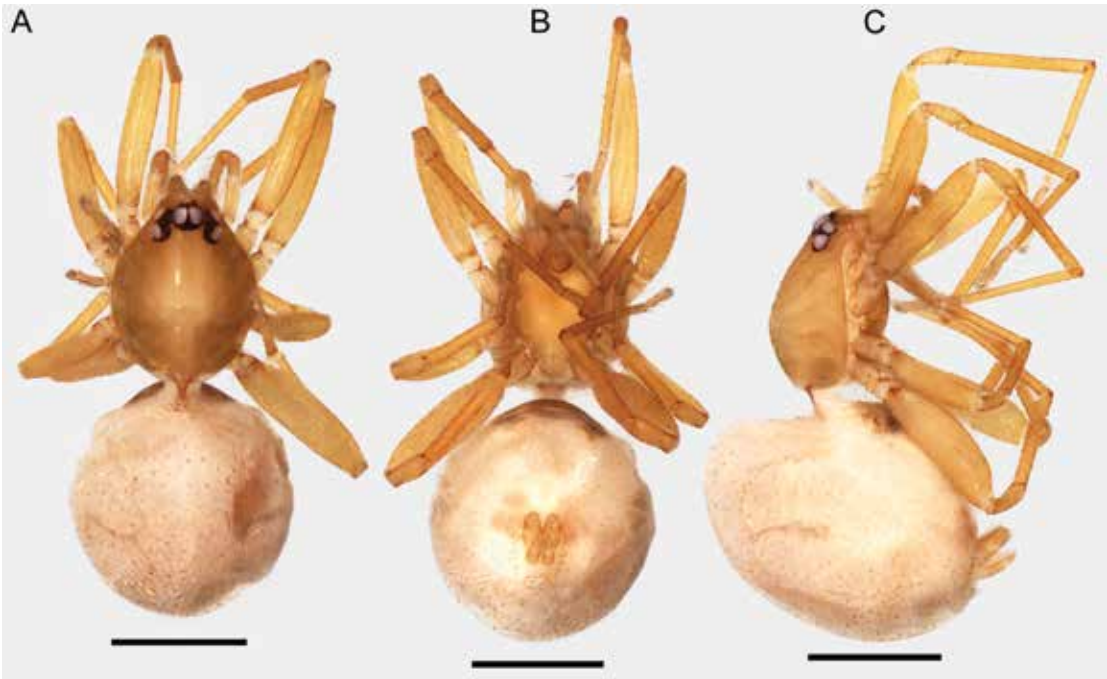


FIGURE 145. *Orchestina moyuchi*, habitus of female holotype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.2 mm. (PBI_OON 42279).

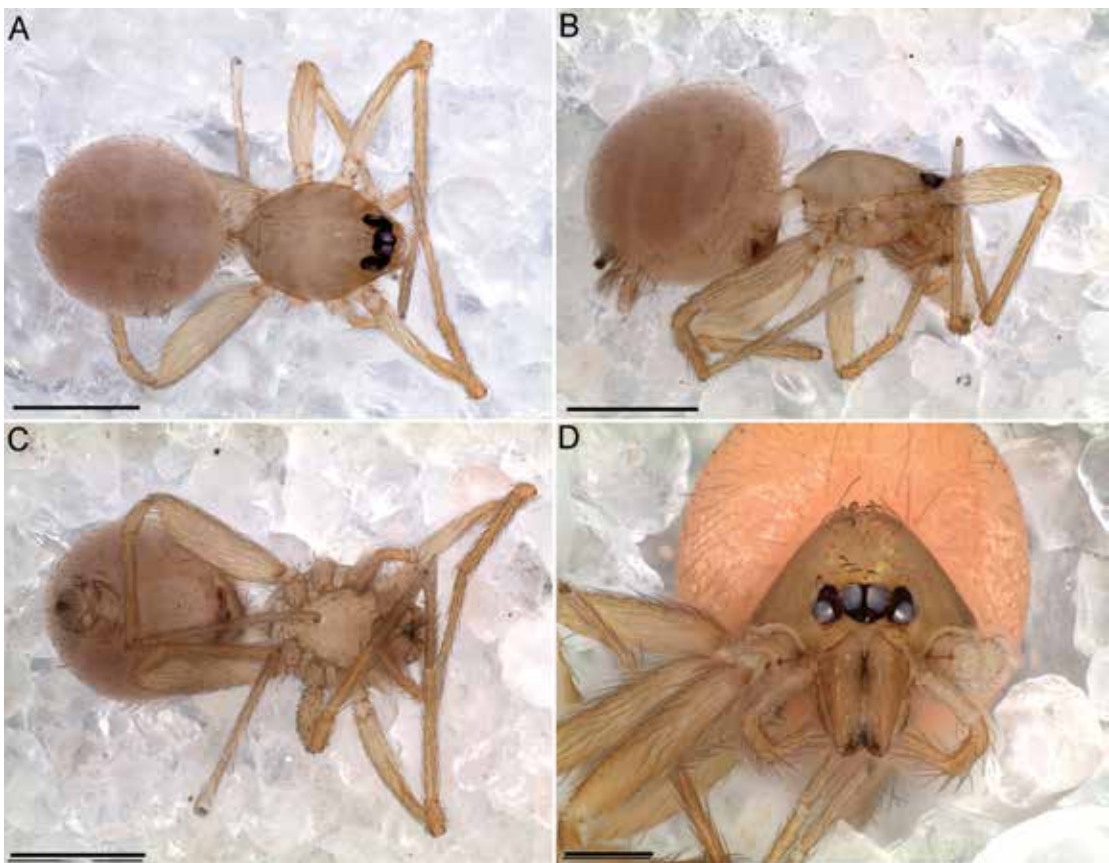


FIGURE 146. *Orchestina grismadoi*, habitus of female. A–C. Holotype. D. Paratype. A. Dorsal. B. Lateral. C. Ventral. D. Anterior. Scale bars: 0.5 mm except D, 0.2 mm. (PBI_OON 43299, 43298, 43298).

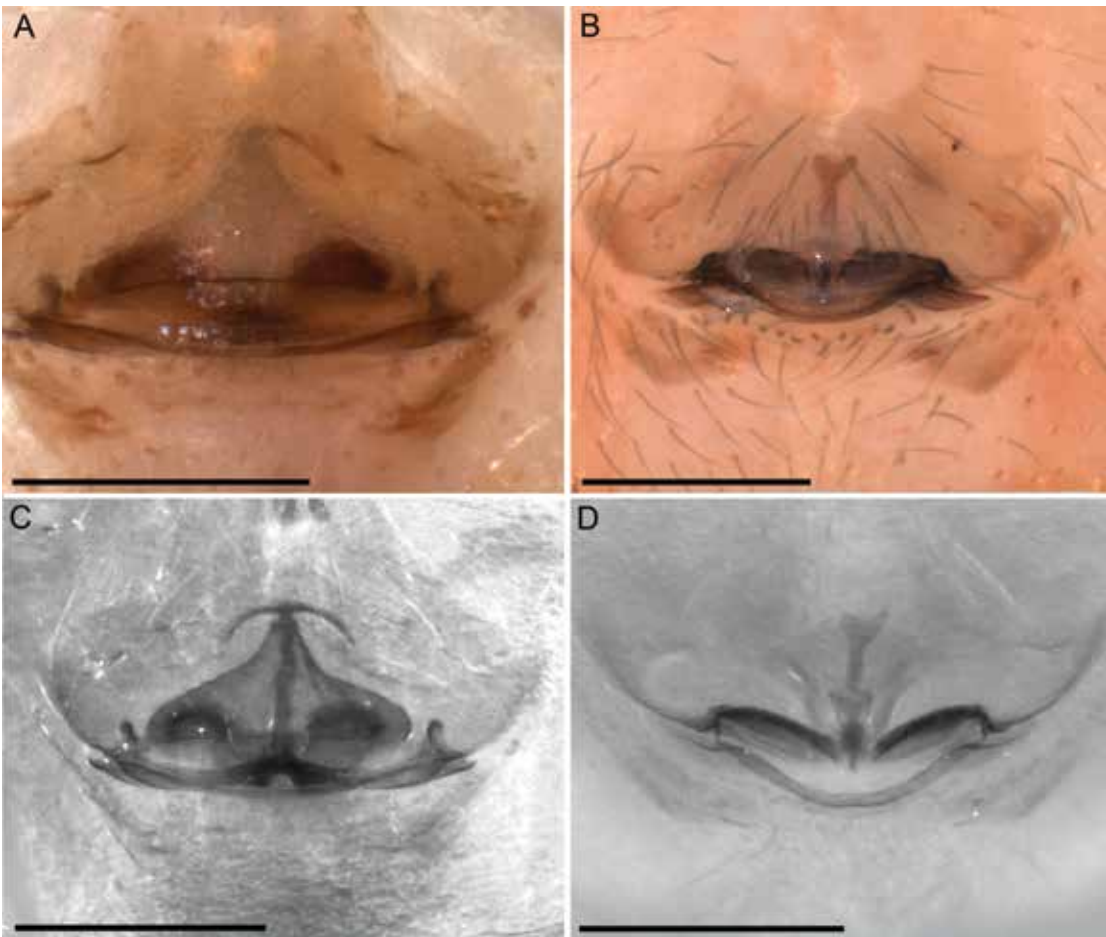


FIGURE 147. *Orchestina* spp., female genitalia, ventral view. **A, C.** *O. moyuchi*, paratype. **B, D.** *O. grismadoi*, paratype. Scale bars: 0.2 mm. (PBI_OON 42253, 43298).



FIGURE 148. Habitats of *Orchestina* in Bolivia. **A.** Beating vegetation in Pedernal (Chuquisaca), one of the habitats of *O. ucumar*. **B.** Concesión Forestal La Chonta (Santa Cruz), type locality of *O. grismadoi*. **C, D.** Paraíso (La Paz), type locality of *O. moyuchi*. Image B by Cristian Grismado.

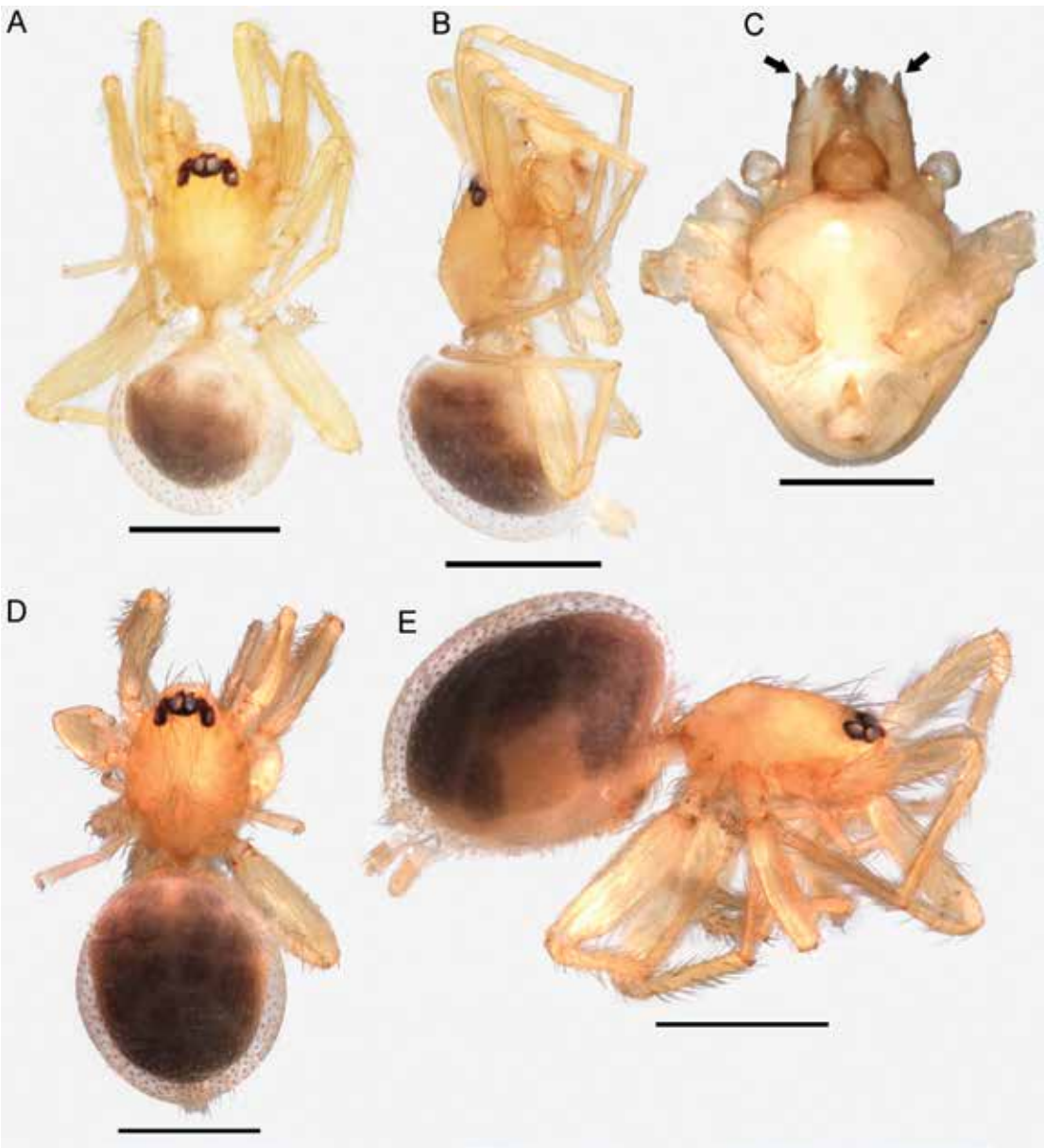


FIGURE 149. *Orchestina pandeazucar*, habitus. A–C. Male holotype. D–E. Female paratype. A, D. Dorsal. B, E. Lateral. C. Cephalothorax ventral; arrows point to conical projections of endites. Scale bars: 0.5 mm, except C, 0.2 mm. (PBI_OON 42184, 42186).

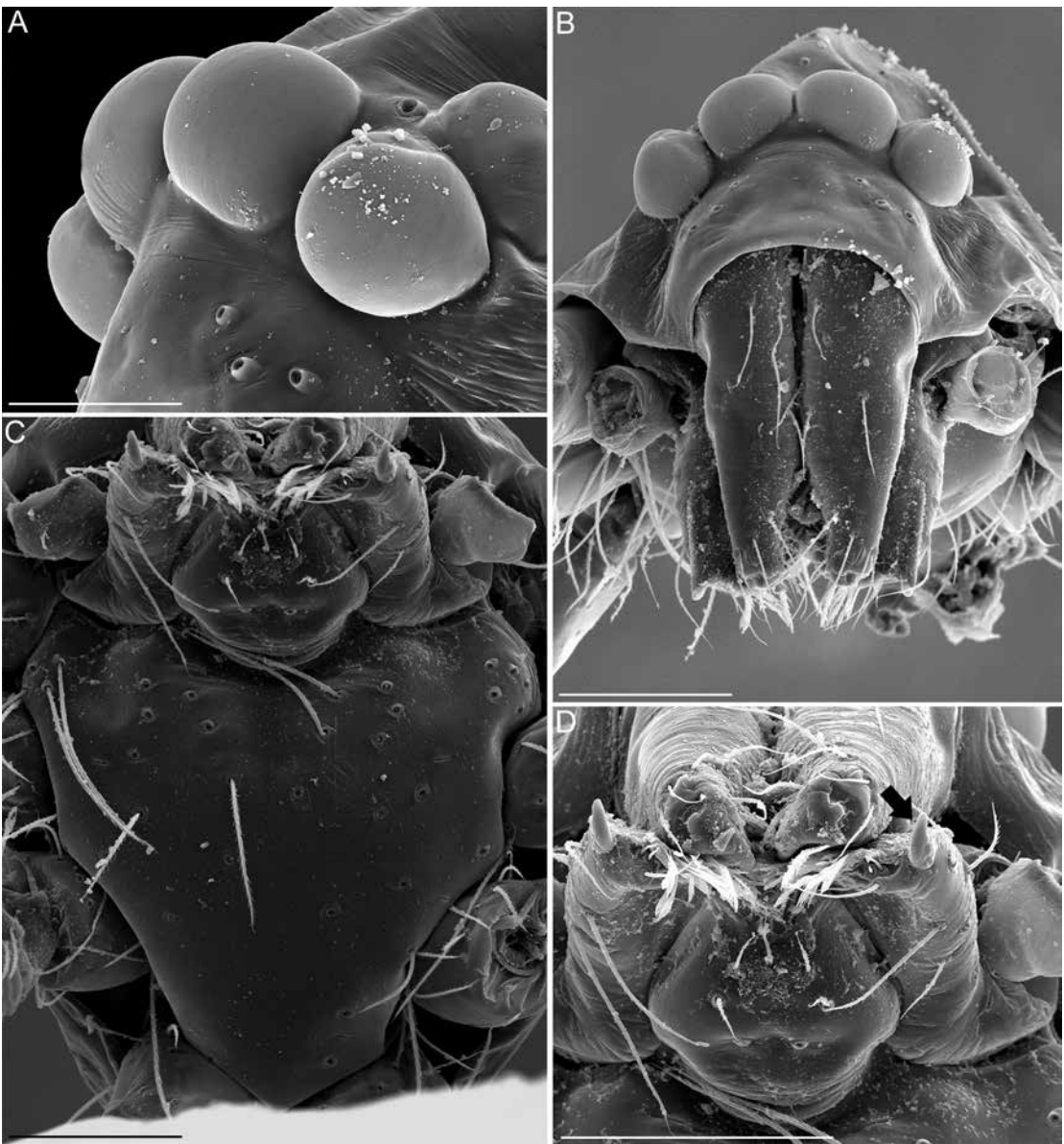


FIGURE 150. *Orchestina pandeazucar*, SEM of male cephalothorax. **A.** Eyes, lateral view. **B.** Eyes and chelicerae, anterior view. **C.** Sternum. **D.** Labium and endites; arrow points to projections. Scale bars: **A.** 50 μm . **B.** 200 μm . **C, D.** 100 μm . (PBI_OON 42186).

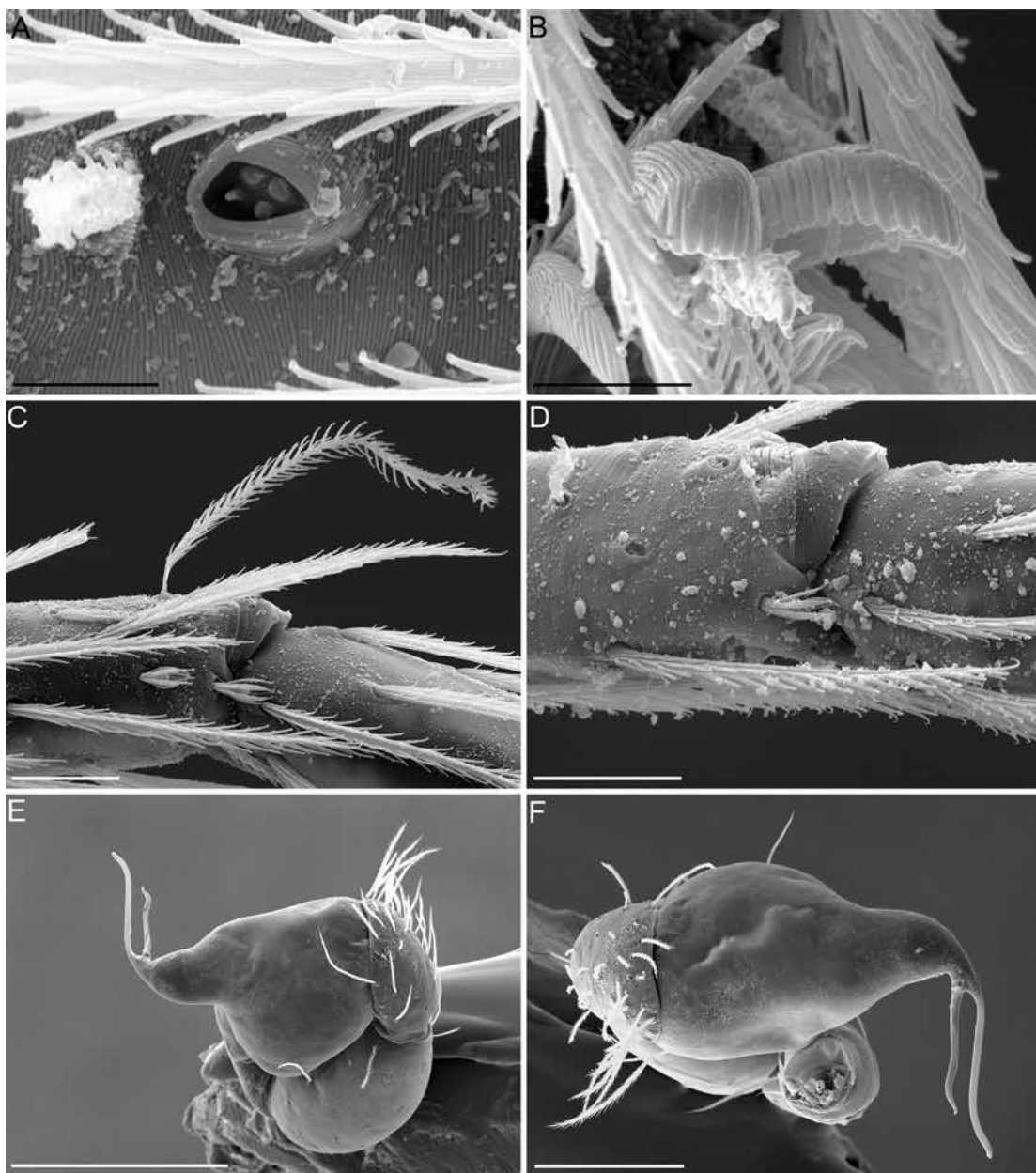


FIGURE 151. *Orchestina pandeazucar*, SEM of male legs and palp. **A.** tarsal organ I. **B.** Claws I, apical. **C.** Prolateral setae of the terminal region of left metatarsus I. **D.** Same, left leg III. **E.** Palp, retrolateral. **F.** Same, dorsal view. Scale bars: **A, B.** 5 μ m. **C, D.** 20 μ m. **E.** 200 μ m. **F.** 100 μ m. (PBI_OON 42186).

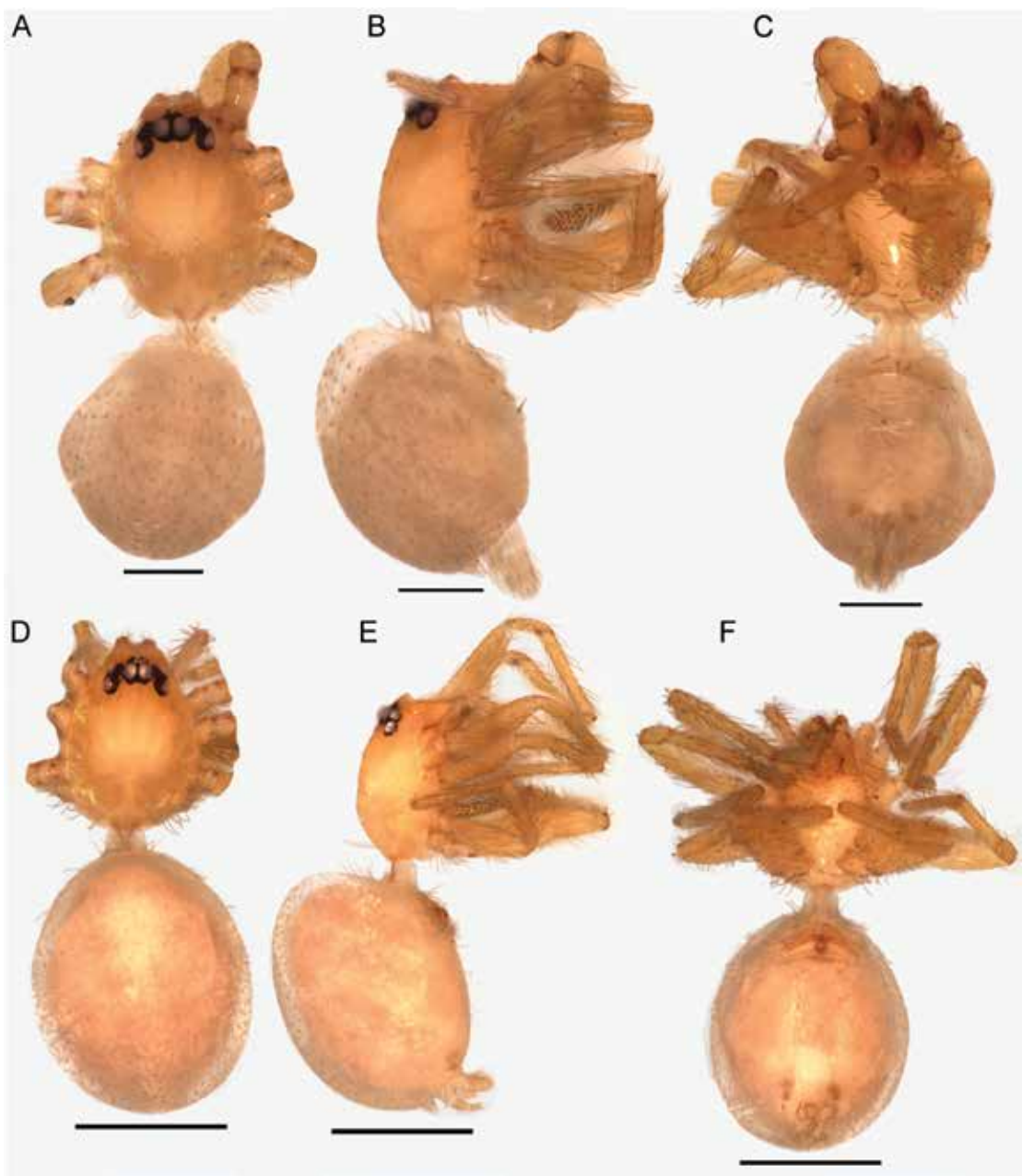


FIGURE 152. *Orchestina caleta*, habitus. **A–C.** male. **D–F.** female. **A, D.** Dorsal. **B, E.** Lateral. **C, F.** Ventral. Scale bars: **A–C.** 0.2 mm. **D–F.** 0.5 mm. (PBI_OON 42182).

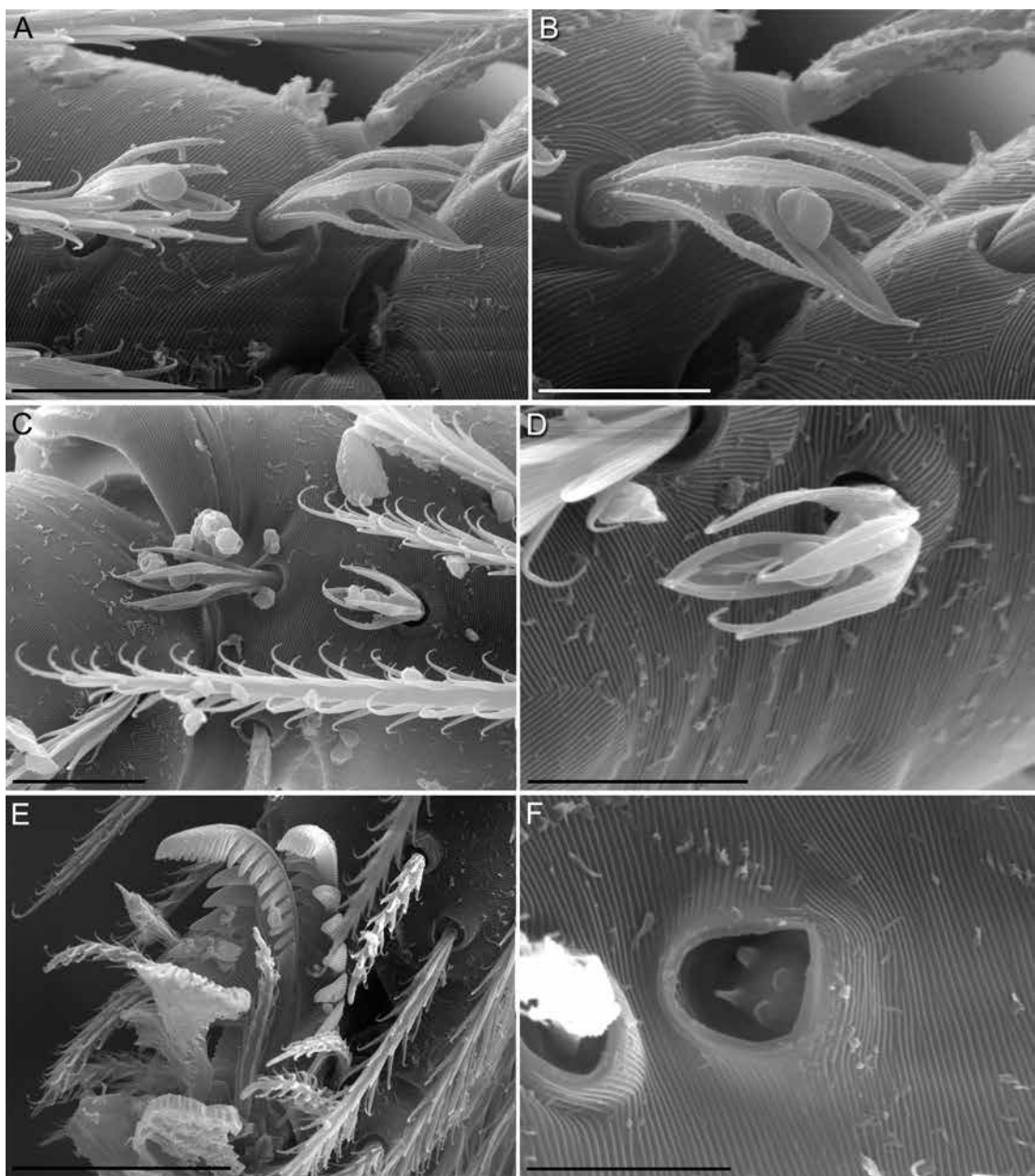


FIGURE 153. *Orchestina caleta*, SEM of female leg structures. **A.** Prolateral setae of right metatarsus I. **B.** Same, close-up of one seta. **C.** Same, right metatarsus II. **D.** Same, close-up of one seta. **E.** Claws of right leg I, apical. **F.** Tarsal organ II. Scale bars: **A, C.** 10 μm . **B, D, F.** 5 μm . **E.** 20 μm . (PBI_OON 42182).



FIGURE 154. *Orchestina pizarroi*, habitus. A–C. Male holotype. D–F. Female paratype. A, D. Dorsal. B, E. Lateral. C, F. Ventral. Scale bars: A–C. 0.2 mm. D–F. 0.5 mm. (PBI_OON 42238, 42237).

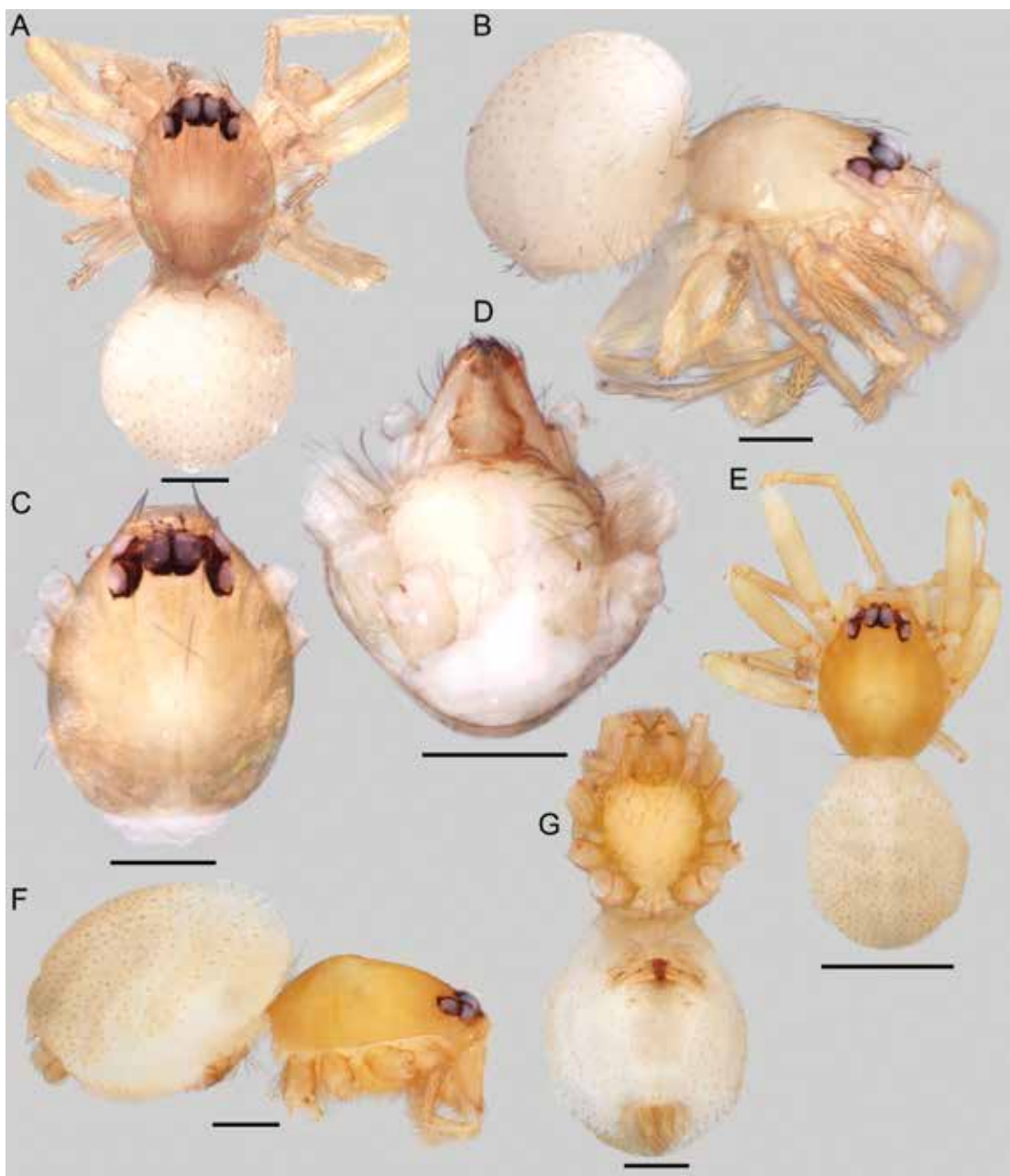


FIGURE 155. *Orchestina cachai*, habitus. A–D. male. E–G. Female. A, E. Dorsal. B, F. Lateral. G. Ventral. C. Carapace, dorsal. D. Endites and sternum, ventral. Scale bars: 0.2 mm, except F, 0.5 mm. (PBI_OON 42205, 42203, 14826).

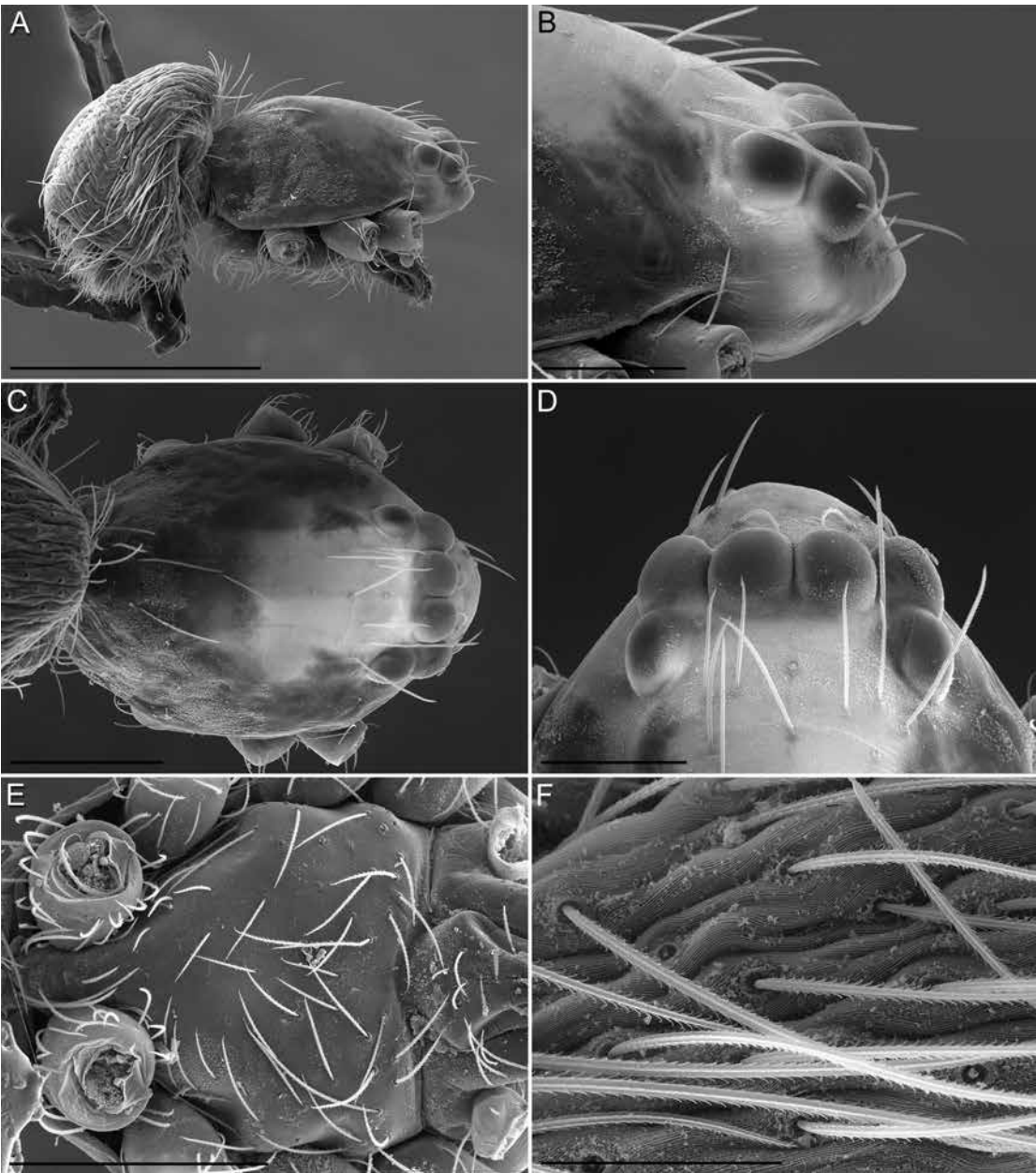


FIGURE 156. *Orchestina cachai*, SEM of male. **A.** Carapace and abdomen, lateral. **B.** Eyes, lateral view. **C.** Carapace, dorsal view. **D.** Eyes, dorsal view. **E.** Sternum. **F.** Detail of abdominal setae and cuticle. Scale bars: **A.** 500 μm. **B, D.** 100 μm. **C, E.** 200 μm. **F.** 50 μm. (PBI_OON 42213).

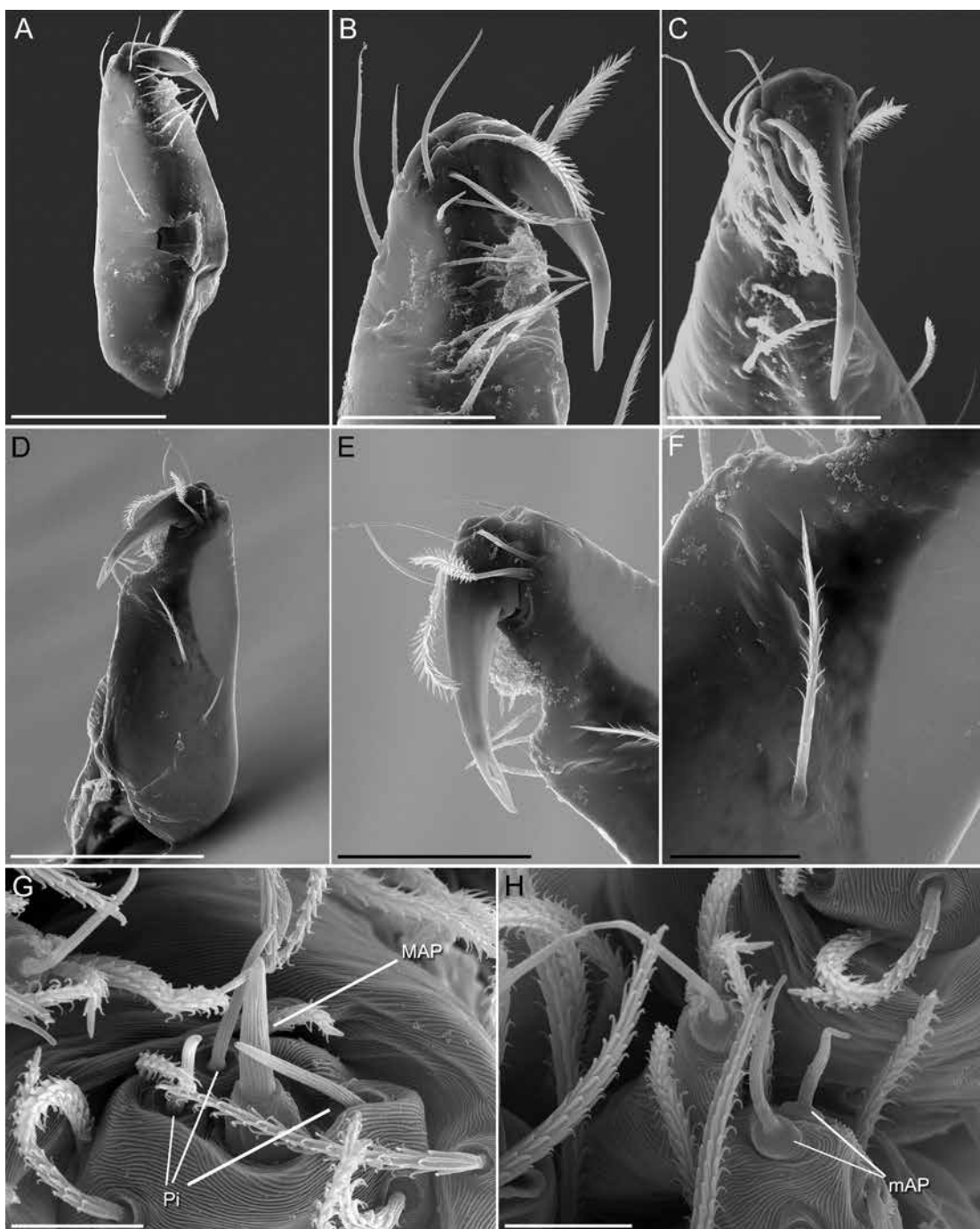


FIGURE 157. *Orchestina cachai*, SEM of male. **A–F**, Left chelicerae. **G–H**, Spinnerets. **A**, Anterior view. **B**, Promargin. **C**, Mesal view. **D**, Posterior view. **E**, Retromargin. **F**, Detail of setae in posterior view. **G**, ALS. **H**, PMS. Abbreviations: **MAP**, major ampullate gland spigot; **mAP**, minor ampullate gland spigot; **PI**, piriform gland spigot. Scale bars: **A**, **D**, 100 μ m. **B**, **F**, 20 μ m. **C**, **E**, 50 μ m. **G**, **H**, 10 μ m. (PBI_OON 1947).

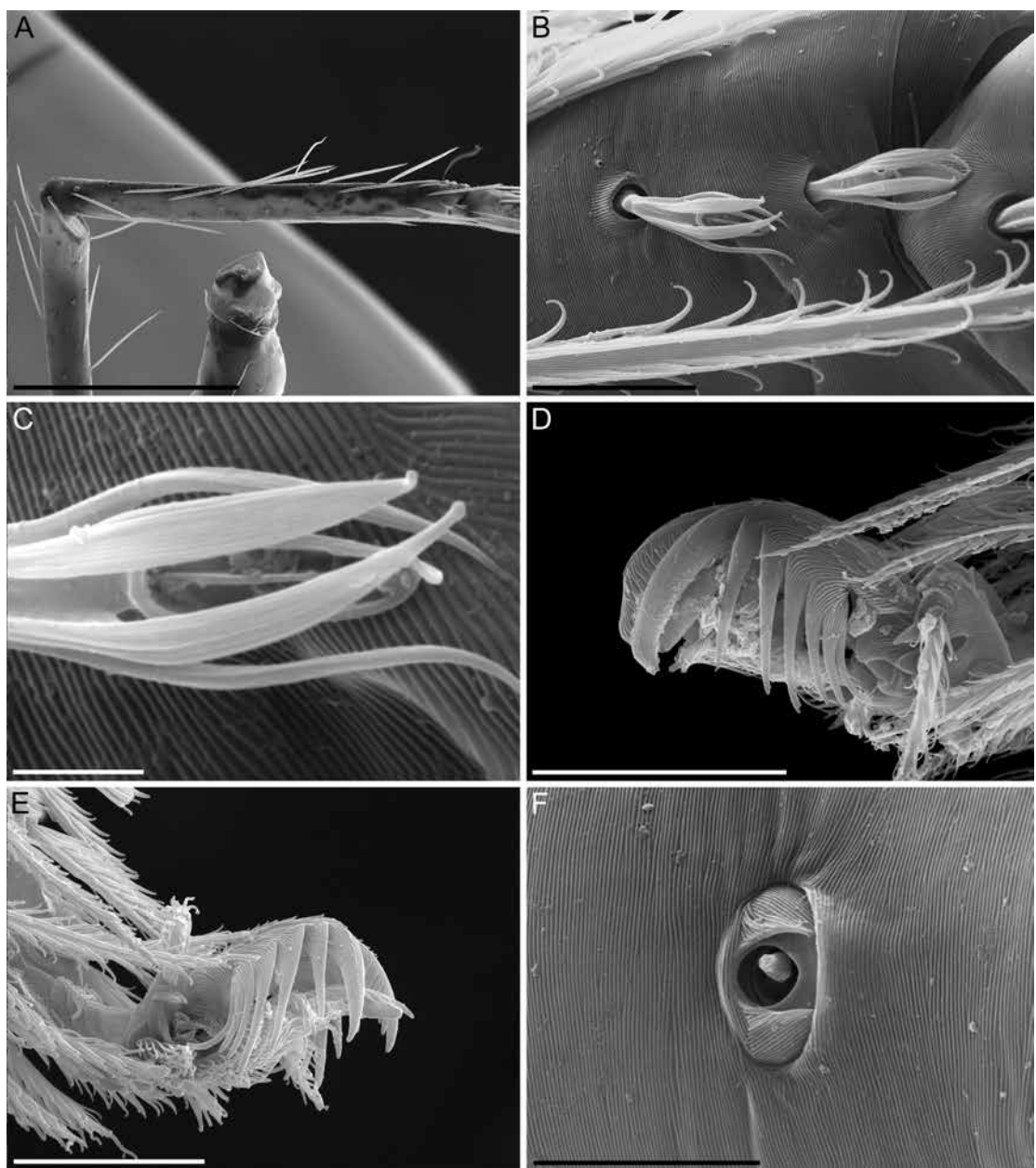


FIGURE 158. *Orchestina cachai*, SEM of leg structures of male. **A.** Left metatarsus I, prolateral view. **B.** Prolateral setae of the terminal region of metatarsus I. **C.** Same, close-up of one seta. **D.** Claws of left leg II, retrolateral view. **E.** Claws of left leg IV, prolateral view. **F.** Trichobothrial socket of leg IV. Scale bars: **A.** 100 μ m. **B, F.** 10 μ m. **C.** 2 μ m. **D, E.** 20 μ m. (PBI_OON 1947).

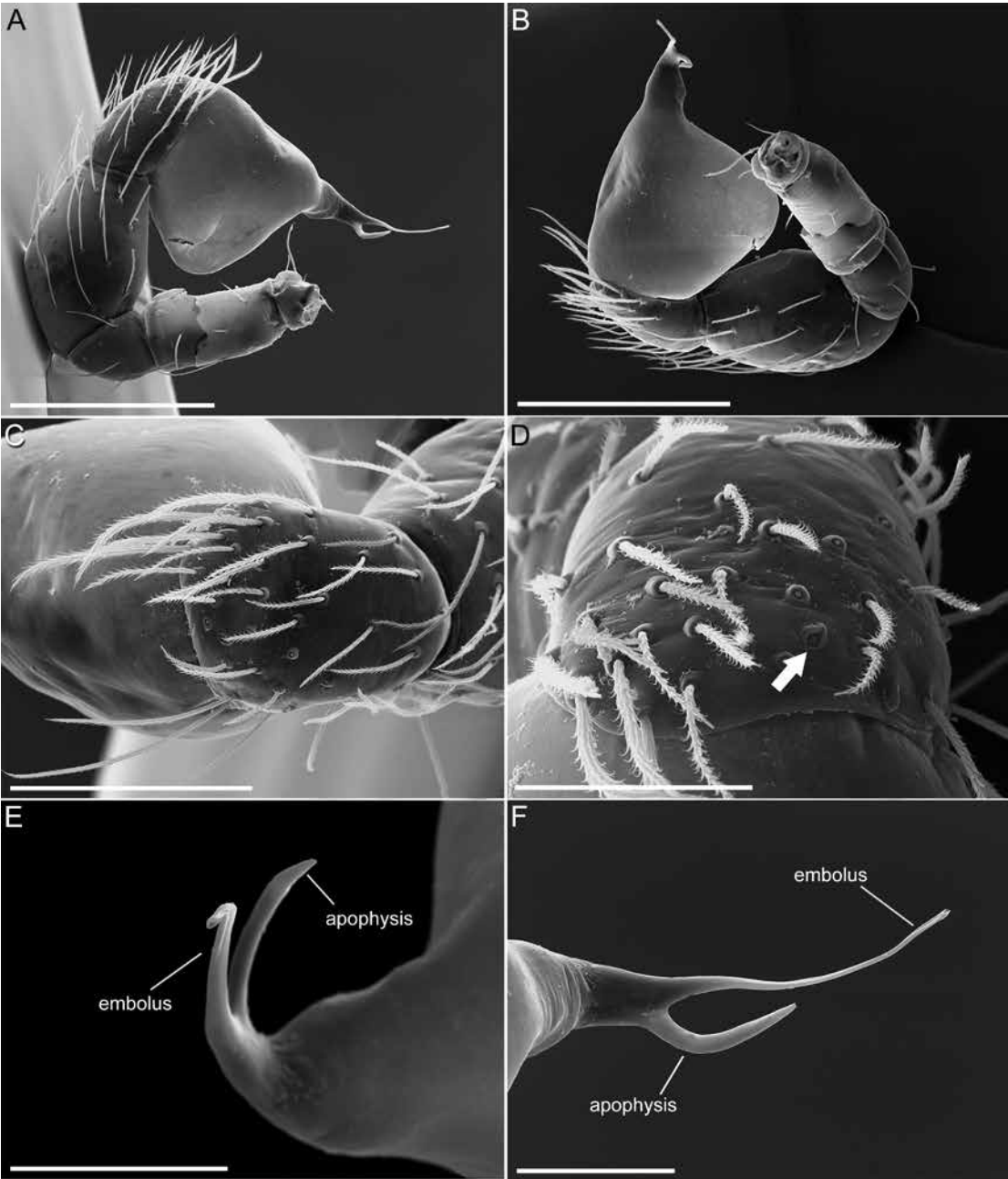


FIGURE 159. *Orchestina cachai*, SEM male palp. **A.** Prolateral view. **B.** Retrolateral view. **C.** Cymbium, dorsal view. **D.** Same; arrow points to the tarsal organ. **E.** Detail of embolus and additional apophysis, apical view. **F.** Same, prolateral view. Scale bars: **A, B.** 200 μm . **C.** 100 μm . **D, F.** 50 μm . (PBI_OON 1947).

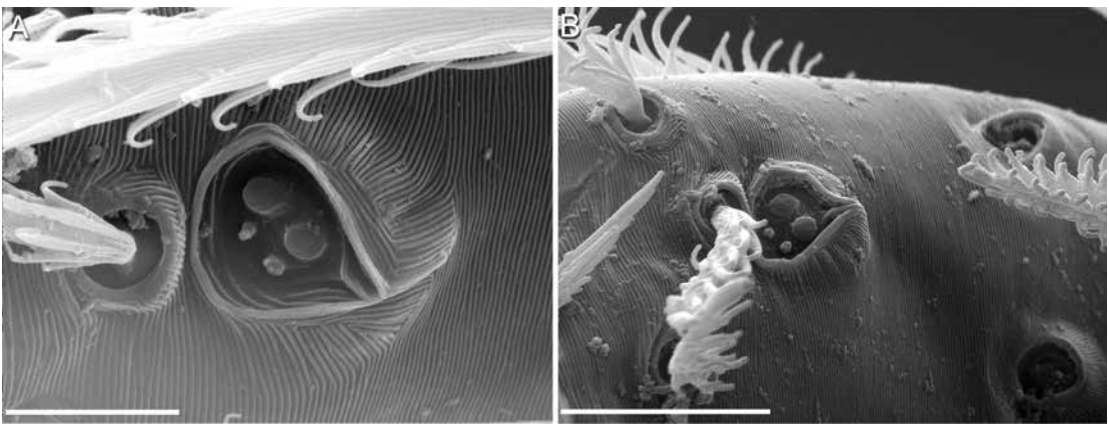


FIGURE 160. *Orchestina cachai*, SEM of male tarsal organs. **A.** Left tarsus I. **B.** Left tarsus II. Scale bars: **A.** 5 μ m. **B.** 10 μ m. (PBI_OON 1947).

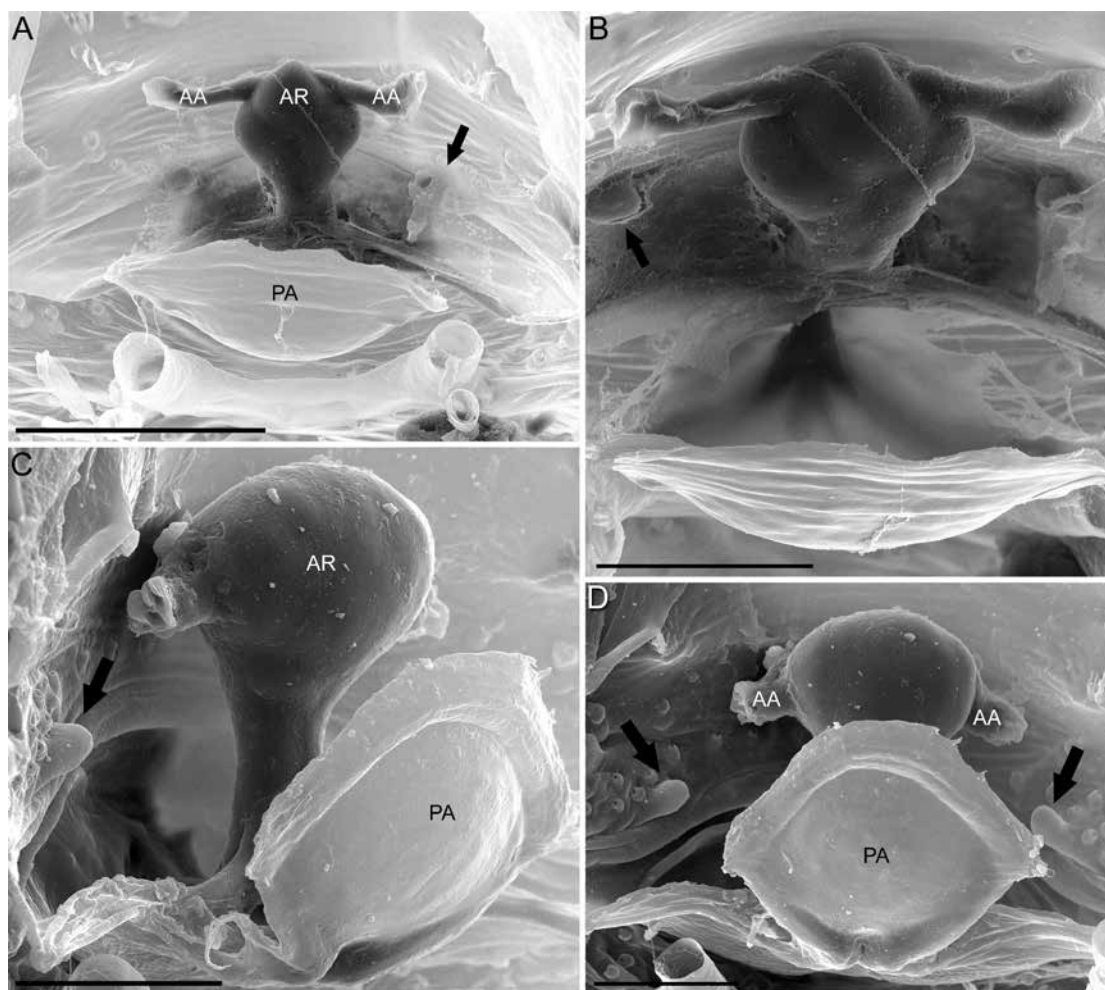


FIGURE 161. *Orchestina* spp., SEM of female genitalia. **A, B.** *O. cachai*. **C, D.** *O. pandeazucar*. **A, D.** Dorsal. **B.** Apical. **C.** Lateral; arrows point to the cuticular invaginations of external pockets. Abbreviations: **AA**, apodemes of anterior receptaculum; **AR**, anterior receptaculum; **PA**, posterior apodeme. Scale bars: **A.** 100 μ m. **B, D.** 50 μ m. (PBI_OON 42210, 42185).



FIGURE 162. *Orchestina jaiba*, habitus. A–C. male. D–F. Female. A, D. Dorsal. B, E. Anterior. C, F. Lateral. Scale bars: 0.5 mm except B, 0.2 mm. (PBI_OON 15058, 14808).

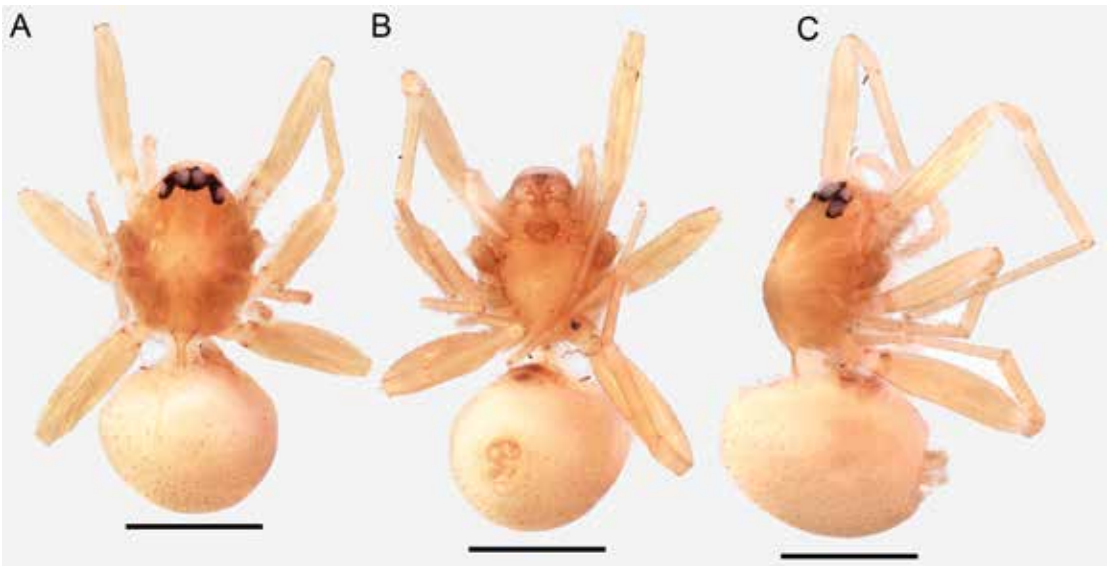


FIGURE 163. *Orchestina osorno*, habitus of female paratype. **A.** Dorsal. **B.** Ventral. **C.** Lateral. Scale bars: 0.5 mm. (PBI_OON 42752).



FIGURE 164. *Orchestina* spp., comparison of endites and labium of males. **A.** *O. cachai*. **B.** *O. jaiba*. **C.** *O. pandeazucar*. **D.** *O. granizo*. **E.** *O. nahuelbuta*. **F.** *O. curico*. **G.** *O. quenies*. Arrows point to the modification of endites. Scale bars: 0.2 mm. (PBI_OON 42203, 42186, 10557, 2309, 14871, 42335).

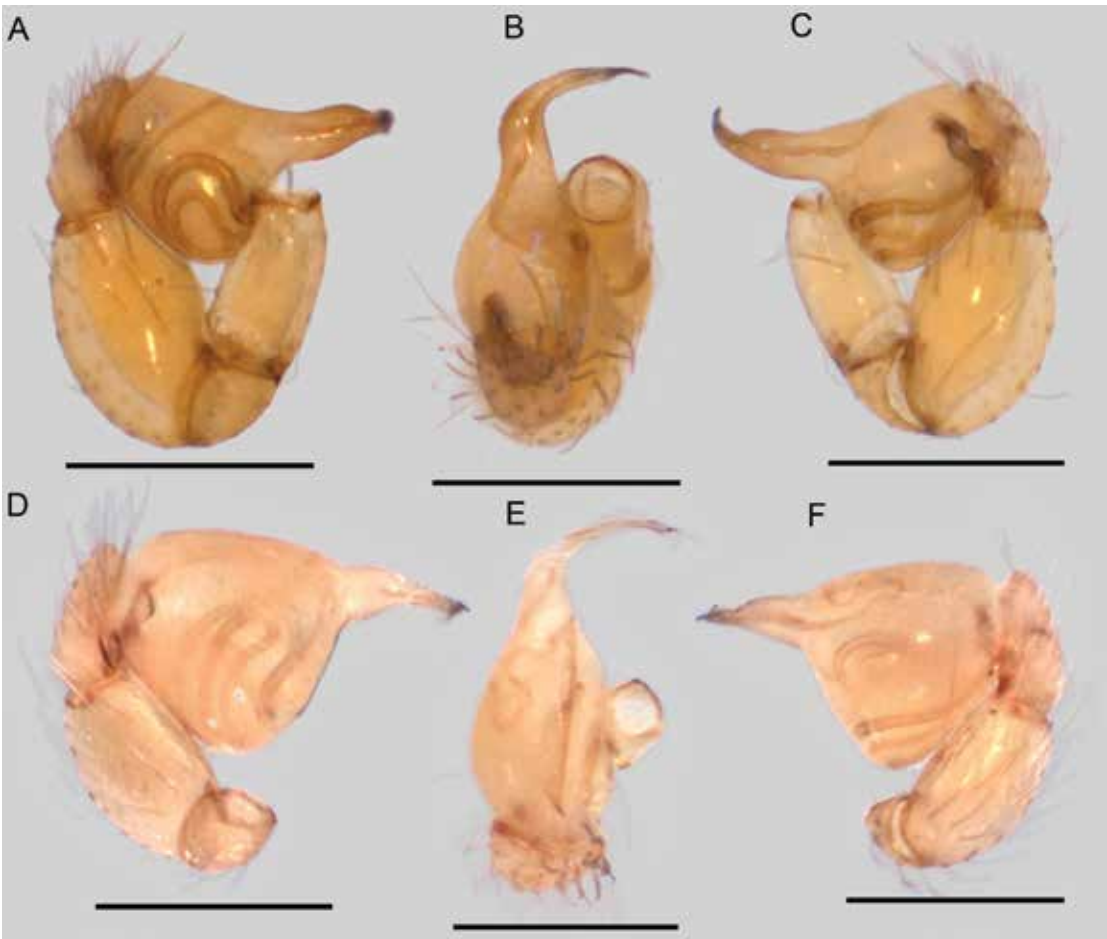


FIGURE 165. *Orchestina* spp., male palps. A–C. *O. caleta*, holotype. D–F. *O. pizarroi*, holotype. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Scale bars 0.2 mm. (PBI_OON 42182, 42238).

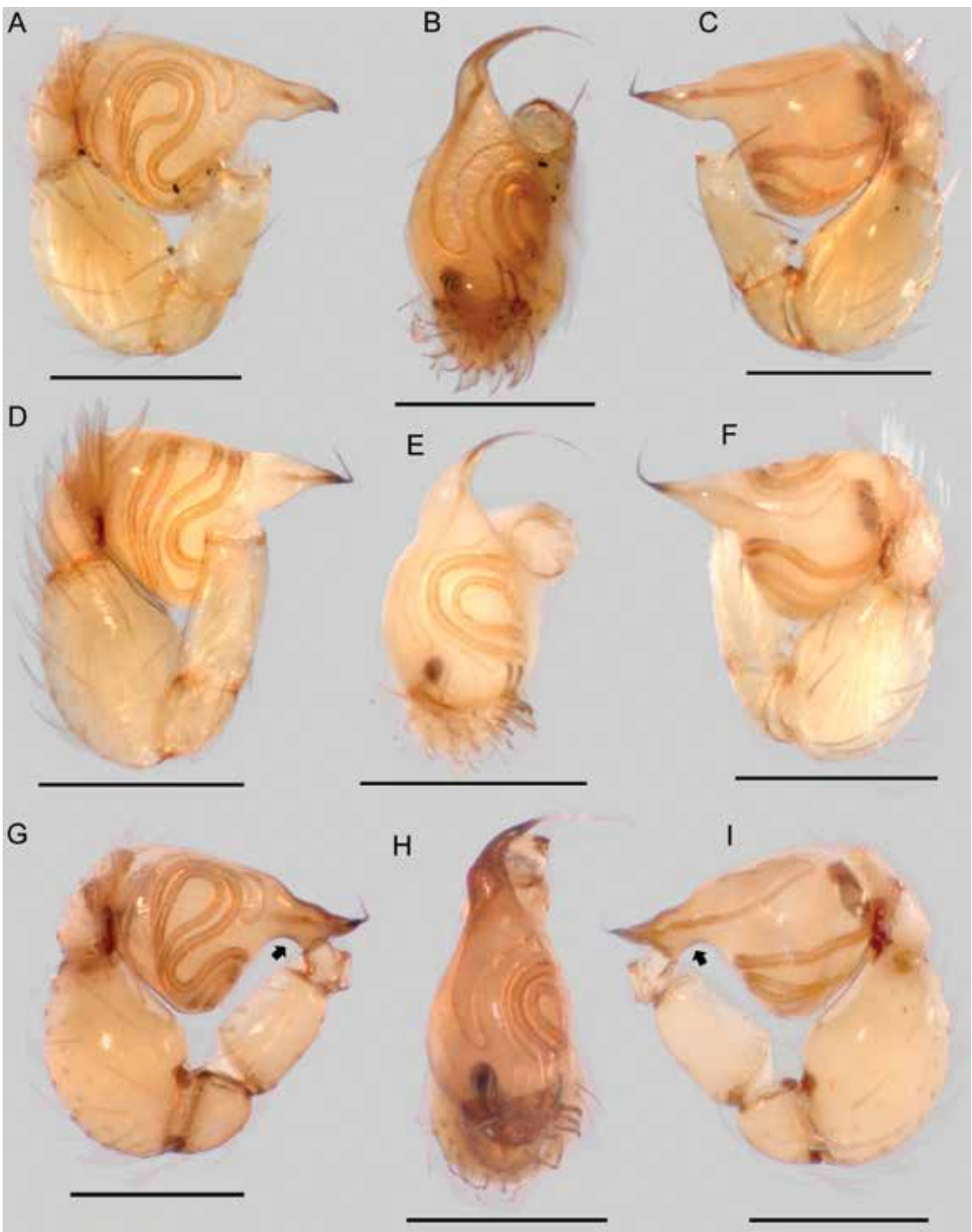


FIGURE 166. *Orchestina* spp., male palps. A–C. *O. quenies* paratype. D–F. *O. curico*, holotype. G–I. *O. granizo*, holotype. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Arrows point to the constriction near the base of embolus. Scale bars: 0.2 mm. (PBI_OON 42335, 14871, 10557).

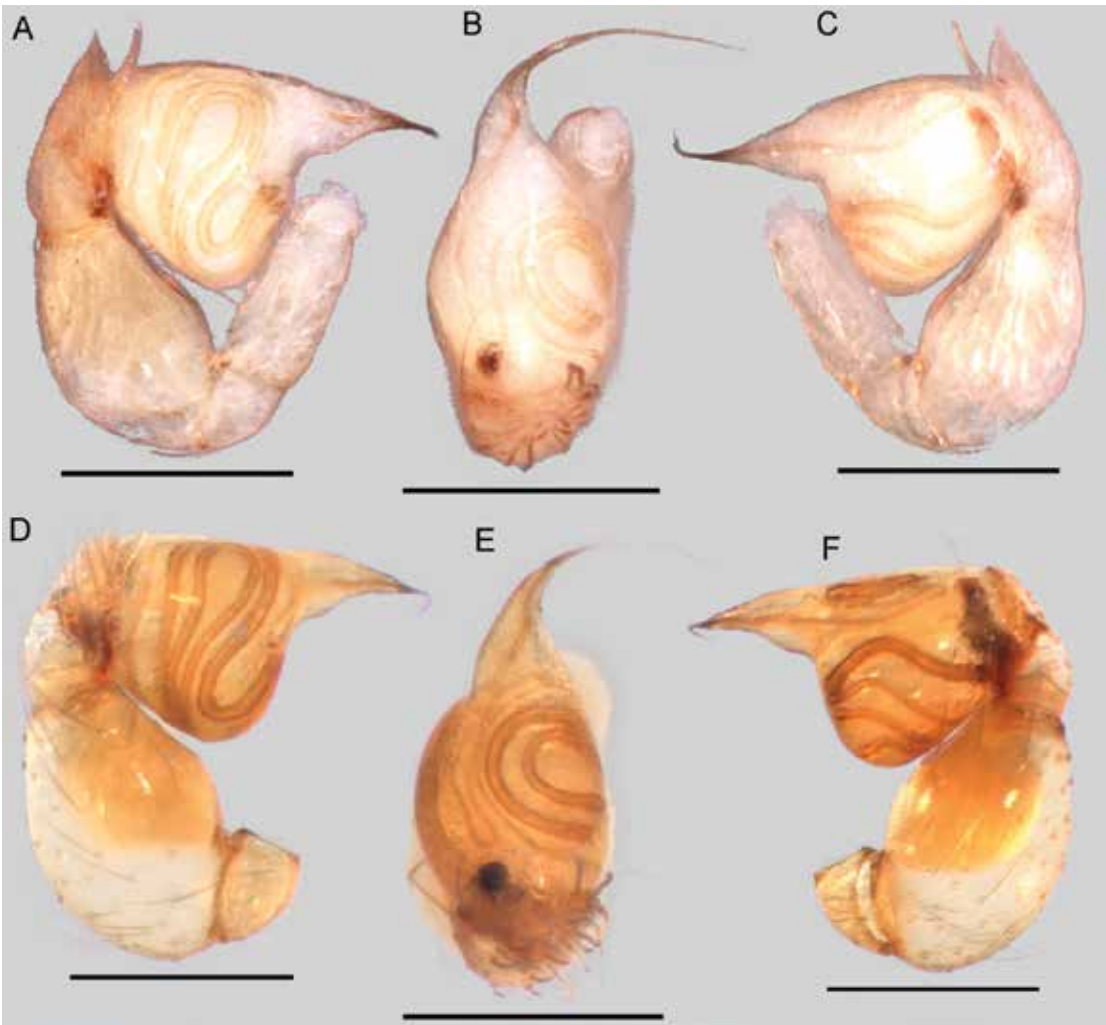


FIGURE 167. *Orchestina* spp., right male palps. A–C. *O. jaiba*. D–F. *O. nahuelbuta*. A, D. Prolateral. B, E. Dorsal. C, F. Retrolateral. Images flopped for consistency. Scale bars: 0.2 mm. (PBI_OON 15058, 2308).



FIGURE 168. *Orchestina* spp., male palps. A–C. *O. pandeazucar*, right palp. D–F. *O. cachai*, paratype. Images A–C flopped for consistency. Scale bars: 0.2 mm. (PBL_OON 42181, 14826).

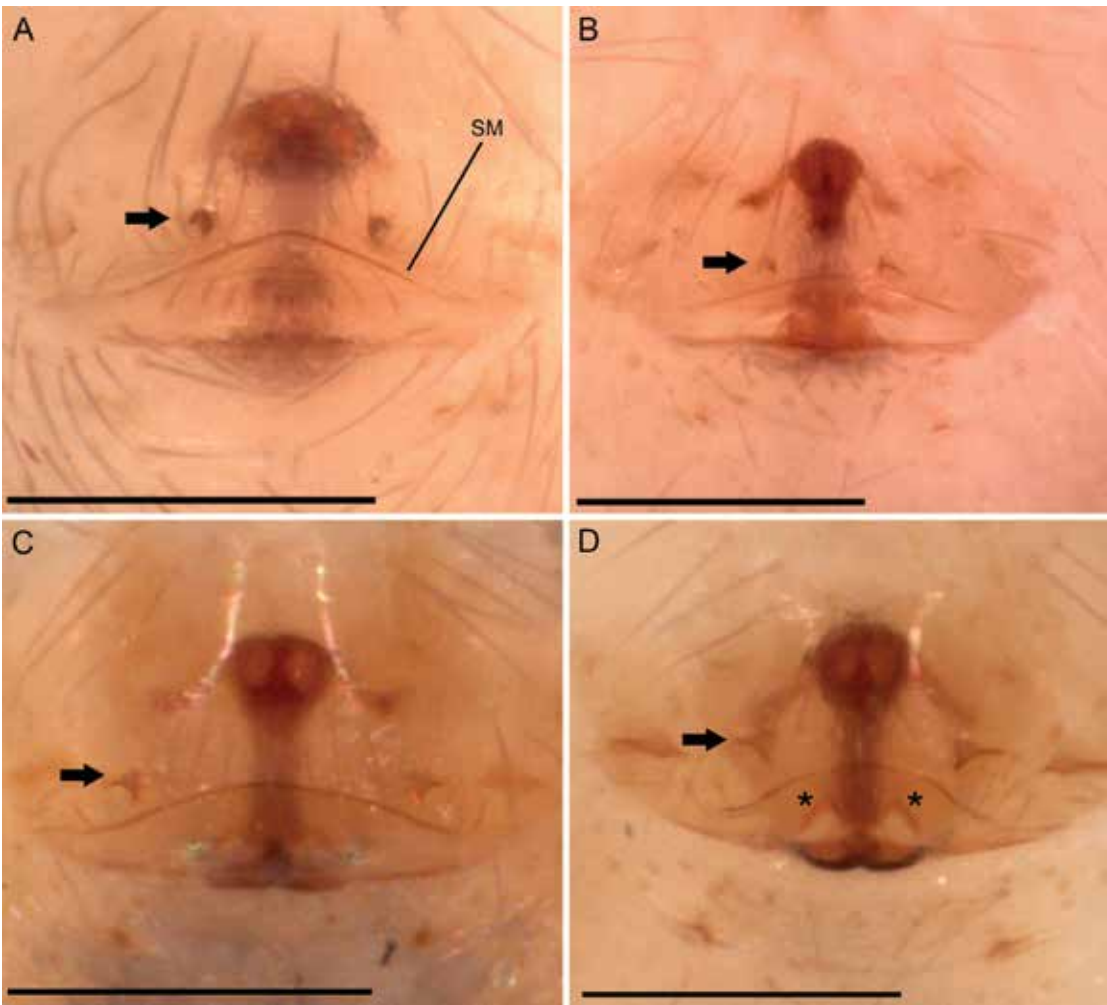


FIGURE 169. *Orchestina* spp., female genitalia, ventral view. **A.** *O. jaiba*. **B.** *O. osorno*, holotype. **C.** *O. curico*, paratype. **D.** *O. nahuelbuta*, holotype. Abbreviation: **SM**, sclerotized margins in the epigastric area. Arrows point to the external pockets; asterisks show the sclerotized ridges in the epigastric fold area. Scale bars: 0.2 mm. (PBI_OON 42251, 51091, 2311, 2304).

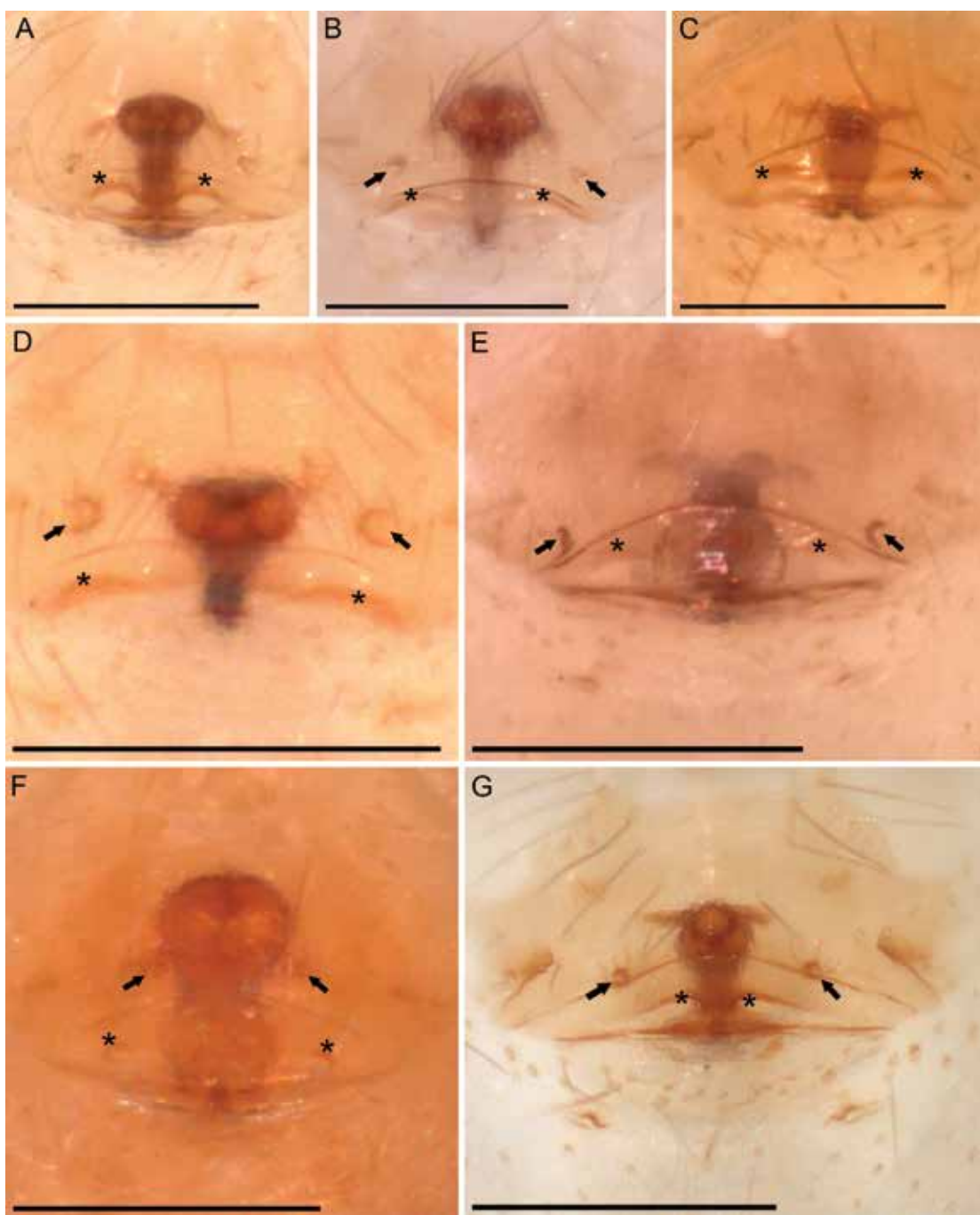


FIGURE 170. *Orchestina* spp., female genitalia, ventral view. **A.** *O. queniés*, paratype. **B.** *O. pandeazucar*, paratype. **C.** *O. caleta*, paratype. **D.** *O. totoralillo*, holotype. **E.** *O. pizarroi*, paratype. **F.** *O. molles*, paratype. **G.** *O. cachai*. Arrows point to the external pockets. Asterisks show the sclerotized ridges in the epigastric fold area. Scale bars: 0.2 mm. (PBI_OON 2301, 50045, 42185, 30844, 42238, 1934, 14826).

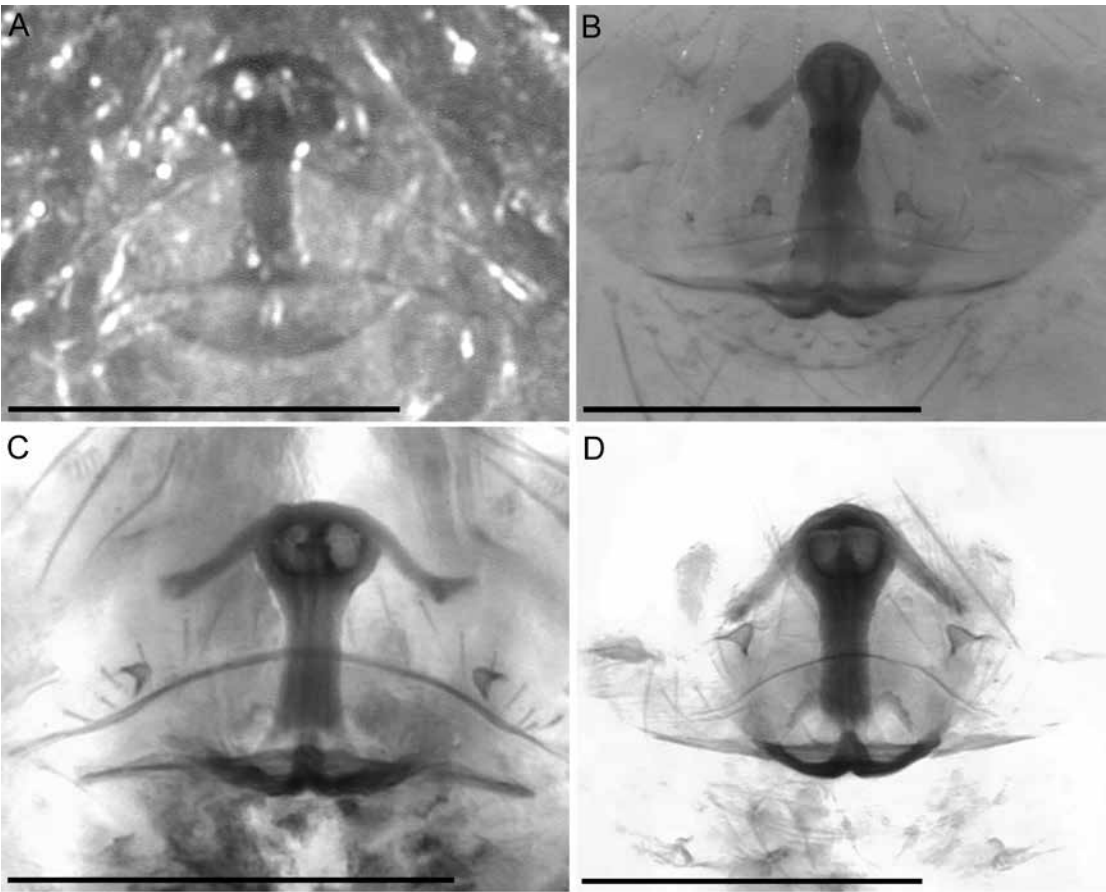


FIGURE 171. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. jaiba*, paratype. **B.** *O. osorno*, holotype. **C.** *O. curico*, paratype. **D.** *O. nahuelbuta*, holotype. Scale bars: 0.2 mm. (PBI_OON 14808, 51091, 2311, 2304).

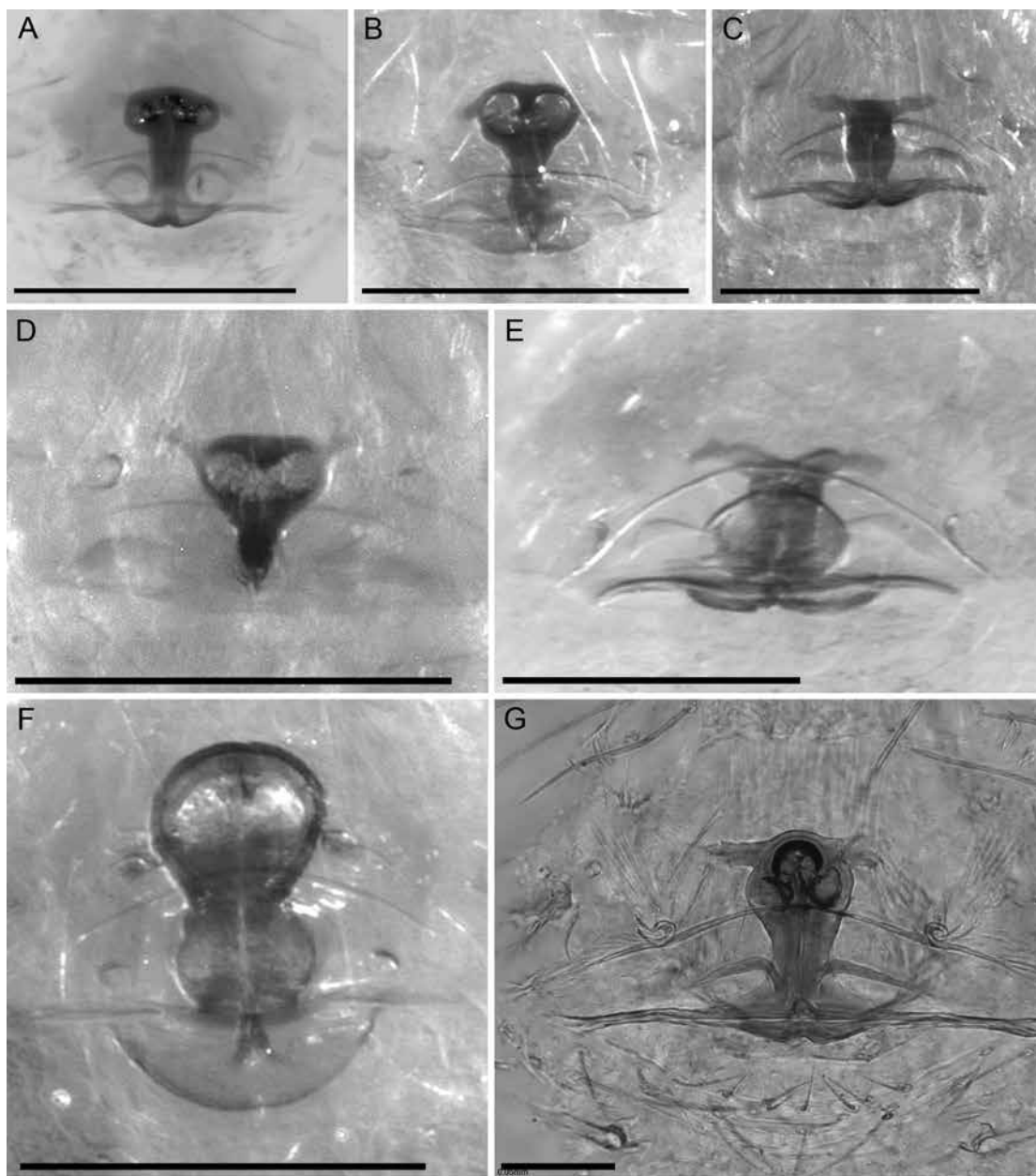


FIGURE 172. *Orchestina* spp., cleared female genitalia, ventral view. **A.** *O. quenies*. **B.** *O. pandeazucar*, paratype. **C.** *O. caleta*, paratype. **D.** *O. totoralillo*, holotype. **E.** *O. pizarroi*, paratype. **F.** *O. molles*, paratype. **G.** *O. cachai*. Scale bars: 0.2 mm except E, 0.3 mm and G, 0.05 μ m. (PBI_OON 1946, 42186, 50045, 30844, 42226, 1934, 14826).

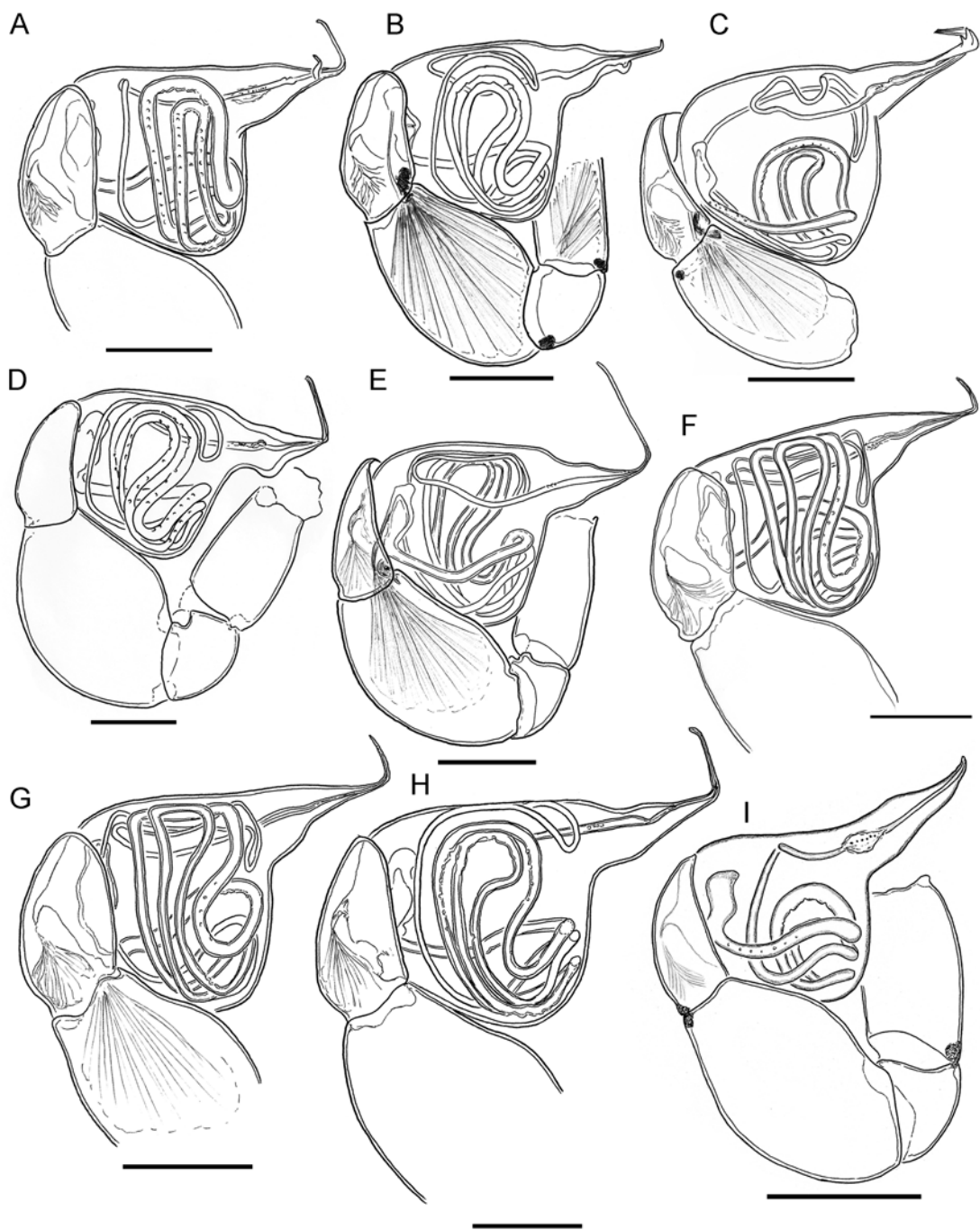


FIGURE 173. *Orchestra* spp., drawing of male palps. **A.** *O. pandeazucar*, paratype. **B.** *O. cachai*. **C.** *O. pizarroi*, holotype. **D.** *O. granizo*, holotype. **E.** *O. jaiba*, paratype, right palp. **F.** *O. nahuelbuta*, paratype, right palp. **G.** *O. curico*, holotype. **H.** *O. quenies*, paratype. **I.** *O. caleta*, holotype. Images E and F flopped for consistency. Scale bars: 0.1 mm. (PBI_OON 42184, 14826, 10557, 15058, 2308, 14871, 42335, 42182).

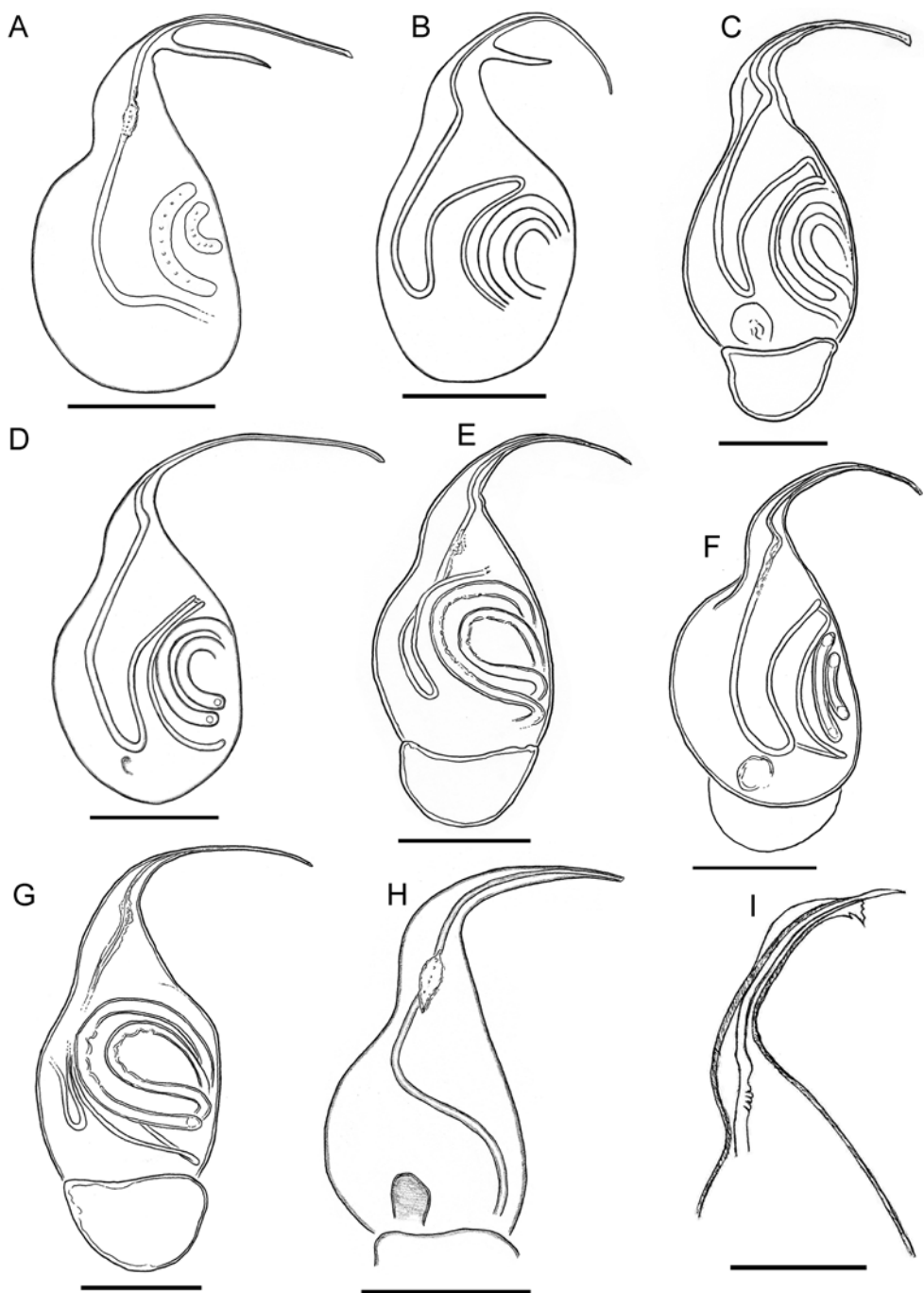


FIGURE 174. *Orchestina* spp., drawings of male palps, dorsal view. **A.** *O. pandeazucar*. **B.** *O. cachai*. **C.** *O. granizo*, holotype. **D.** *O. jaiba*, paratype. **E.** *O. curico*. **F.** *O. quenies*, paratype. **G.** *O. nahuelbuta*, right palp. **H.** *O. caleta*, holotype. **I.** *O. pizarroi*, holotype. Images **D** and **G** flopped for consistency. Scale bars: 0.1 mm. (PBI_OON 42184, 14876, 10557, 15058, 14871, 42335, 2308, 42182, 42238).

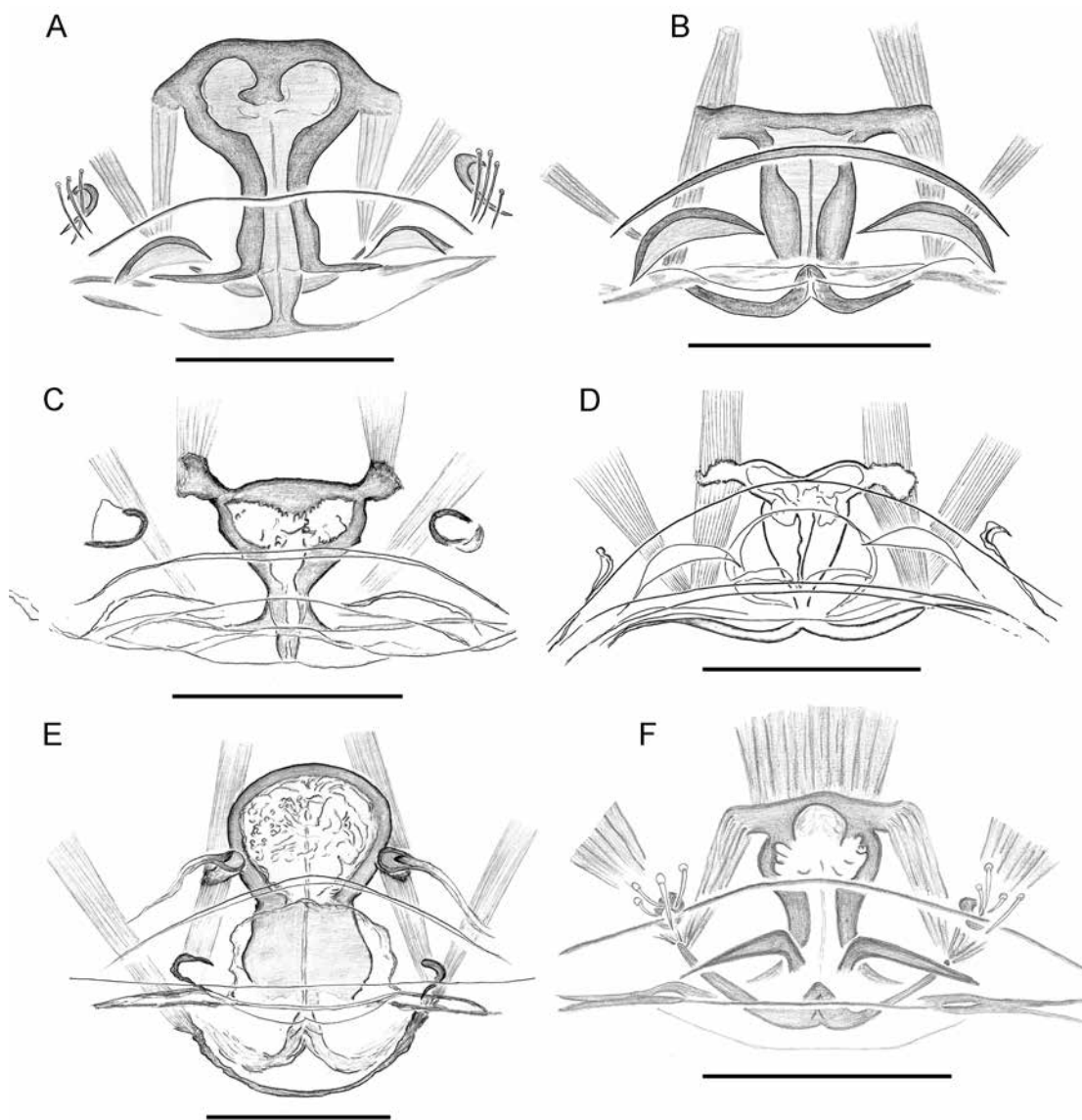


FIGURE 175. *Orchestina* spp., drawings of female genitalia, ventral view. **A.** *O. pandeazucar*, paratype. **B.** *O. caleta*, paratype. **C.** *O. totoralillo*, holotype. **D.** *O. pizarroi*, paratype. **E.** *O. molles*, paratype. **F.** *O. cachai*. Scale bars: 0.1 mm. (PBI_OON 42186, 30844, 50045, 42241, 1934, 14826).

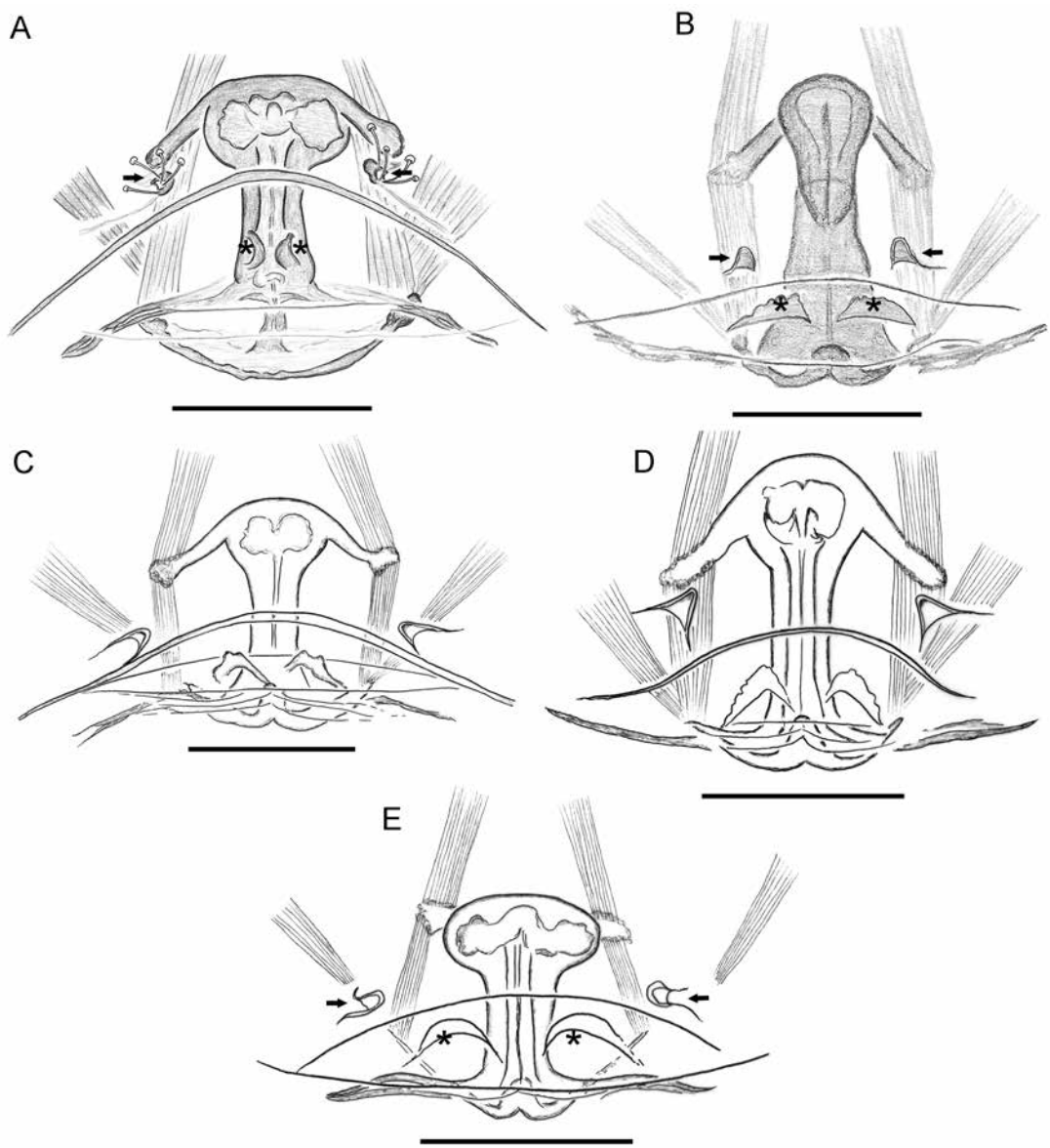


FIGURE 176. *Orchestina* spp., drawings of female genitalia, ventral view. A. *O. jaiba*, paratype. B. *O. osorno*, holotype. C. *O. curico*, paratype. D. *O. nahuelbuta*, holotype (PBI_OON 2304). E. *O. quenies*. Arrows point to external pockets, asterisks to epigastric ridges. Scale bars: 0.1 mm. (PBI_OON 14808, 51091, 2311, 1946).



FIGURE 177. Habitats of *Orchestina* in Chile. **A–C.** Seashore with succulent plants in Quebrada del Quereo, habitat of *O. caleta*. **A, B.** General views of the rocky coast with succulent plants. **C.** Beating succulent plants over a white plastic sheet. **D.** Trail with *Tepualia stipularis* in Parque Nacional Chiloé, habitat of *O. cachai*. Credits: **A–C.** Peter Michalik. **D.** Christian Wirkner.

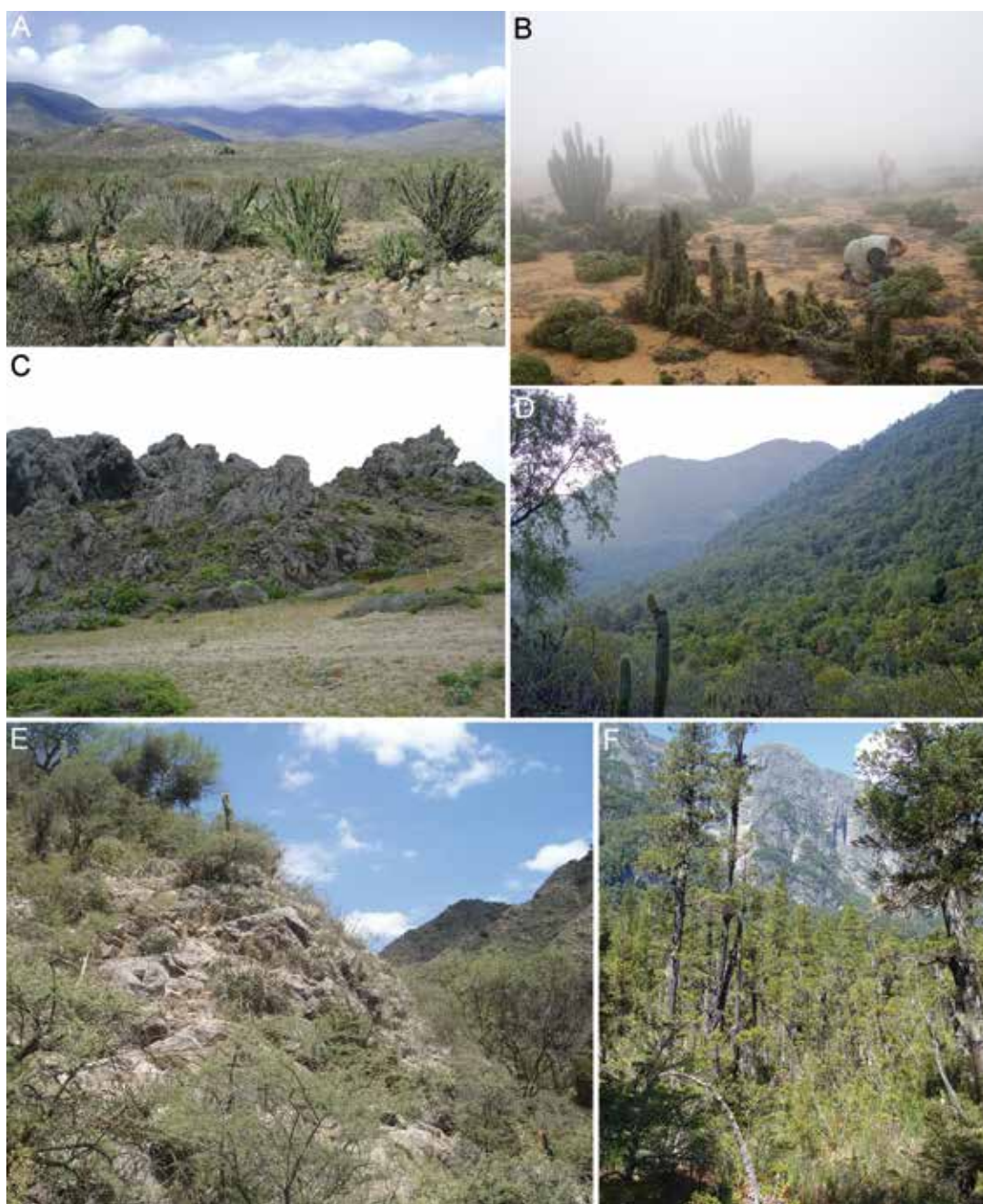


FIGURE 178. Habitats of *Orchestina* in Chile (A–D) and Argentina (E–F). **A.** Totoralillo Norte (Elqui), type locality of *O. totoralillo*. **B.** Parque Nacional Pan de Azúcar (Hiasco), type locality of *O. pandeazucar*. **C.** Caleta Chañaral de Aceituno (Hiasco), type locality of *O. caleta*. **D.** Parque Nacional La Campana (Quillota), type locality of *O. granizo*. **E.** Las Tumanas (San Juan), type locality of *O. andianavarroi*. **F.** One of the localities where *O. jaiba* can be found in Parque Nacional Nahuel Huapi, Argentina. Photos by **A.** Jaime Pizarro. **B, C, F.** Martín Ramírez. **E.** J.M. Andia-Navarro.

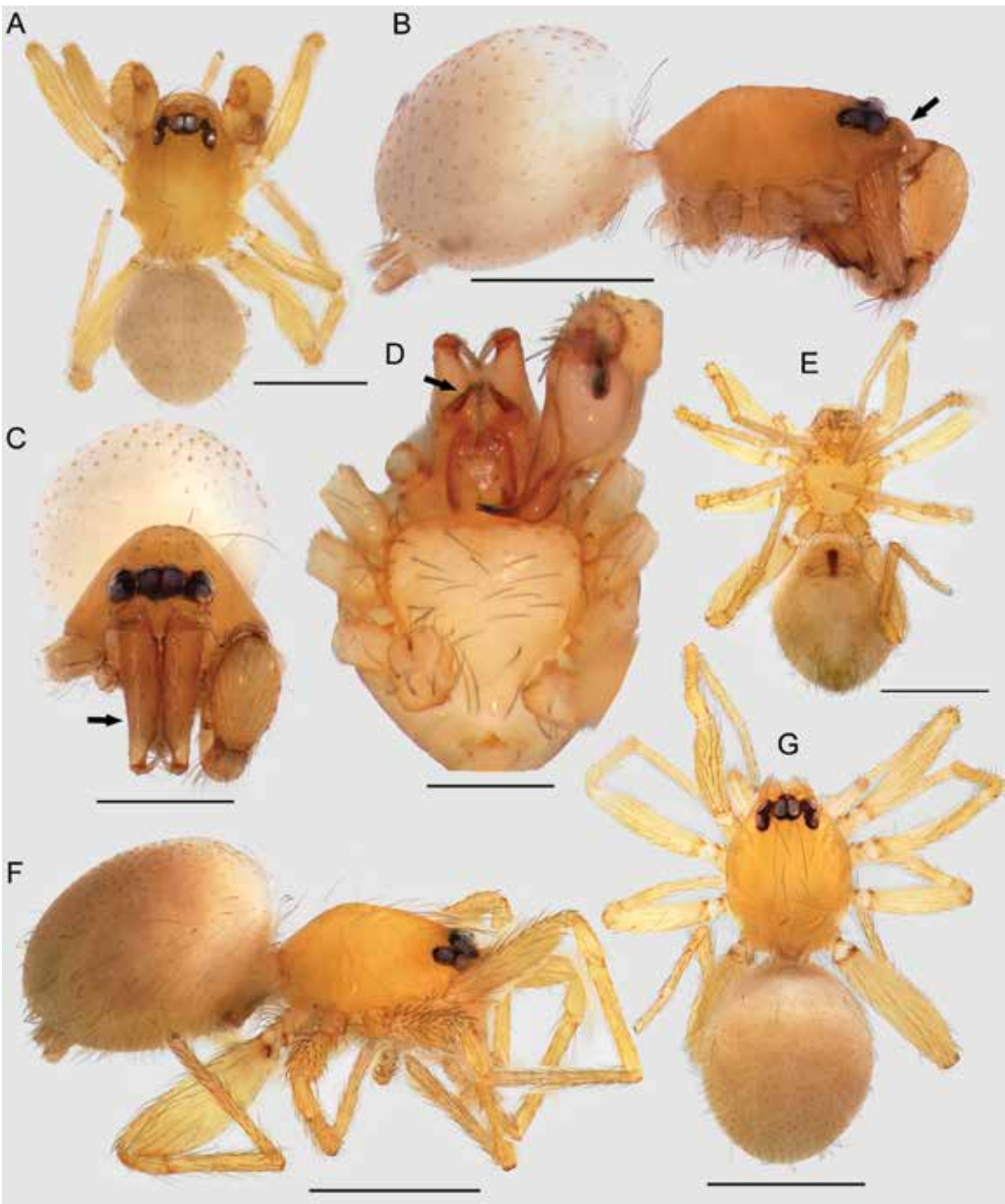


FIGURE 179. *Orchestina ucumar*. A–D. male. E–G. Female. A, G. Habitus dorsal. B, F. Same, lateral; arrow in B points to the forward clypeus. C. Same, anterior; arrow points to the long chelicerae. D. Cephalothorax, ventral; arrow points to the modifications of endites. E. Habitus ventral. Scale bars: 0.5 mm except D, 0.2 mm. (PBI_OON 14895).

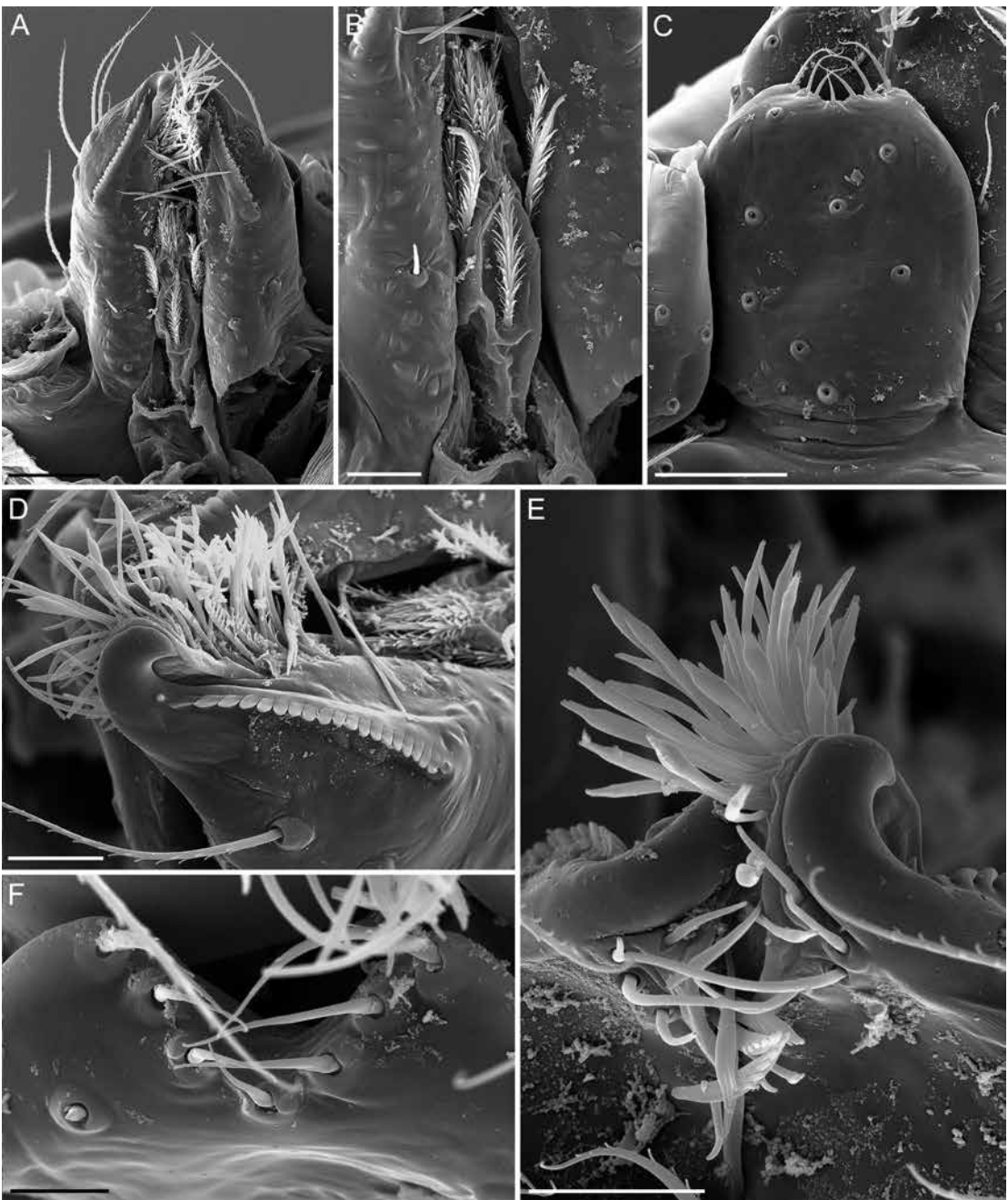


FIGURE 180. *Orchestina ucumar*, SEM of male endites and labium. **A.** Endites and labrum, dorsal. **B.** Labrum, dorsal. **C.** Labium, ventral. **D.** Detail of endites and serrula. **E.** Apical region of endites showing setae. **F.** Detail of the apical region of labium. Scale bars: **A, C.** 50 μ m. **B, D, E.** 20 μ m. **F.** 10 μ m. (PBI_OON 14924).

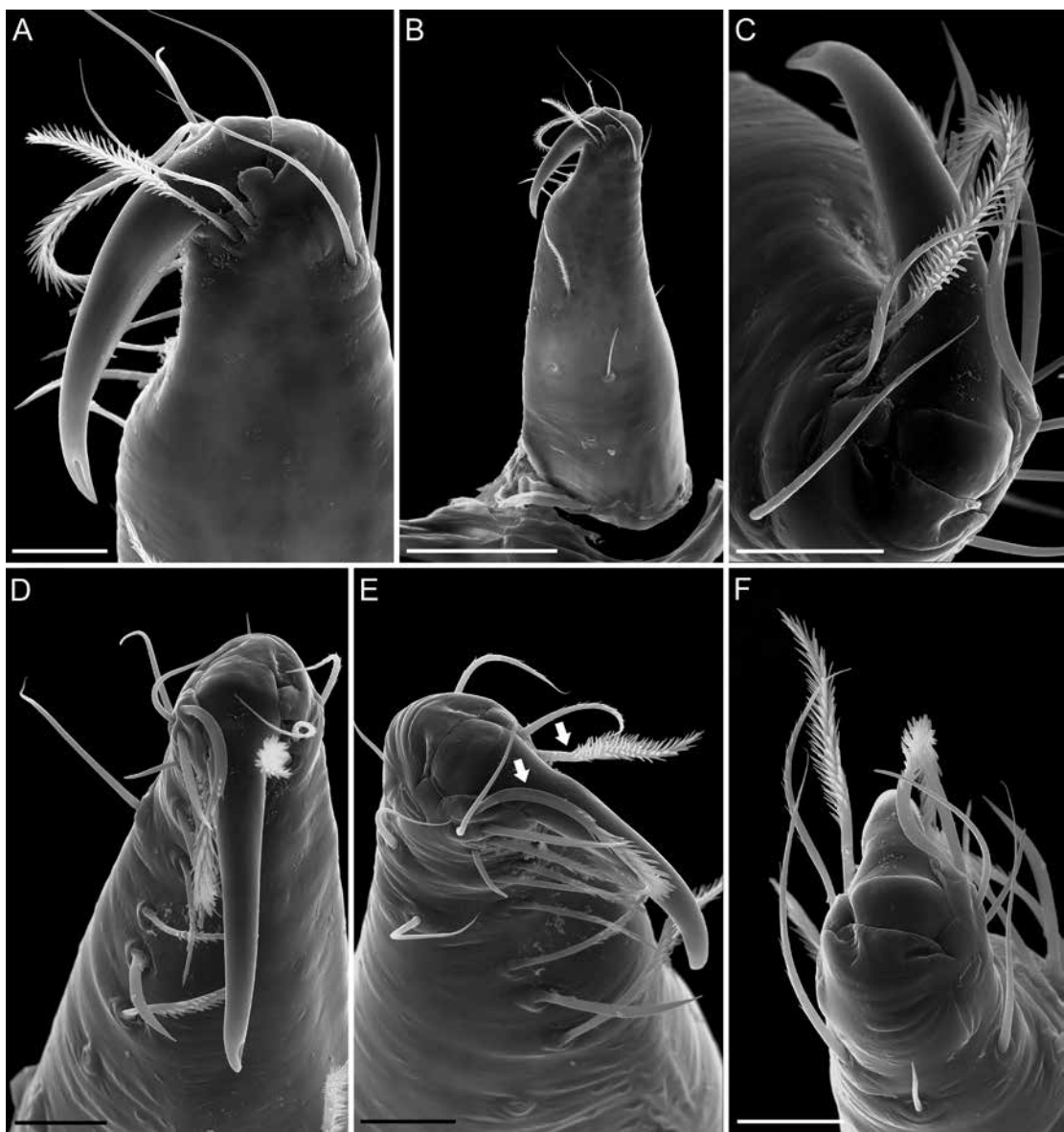


FIGURE 181. *Orchestina ucumar*, SEM of male left chelicerae. **A.** Retromargin. **B.** Anterior. **C.** Apical. **D.** Mesal on fang. **E.** Anteroapical; arrows point to two plumose setae. **F.** Apical view, detail of fang insertion. Scale bars: **A–F.** 20 µm. **B.** 100 µm. (PBI_OON 14924).

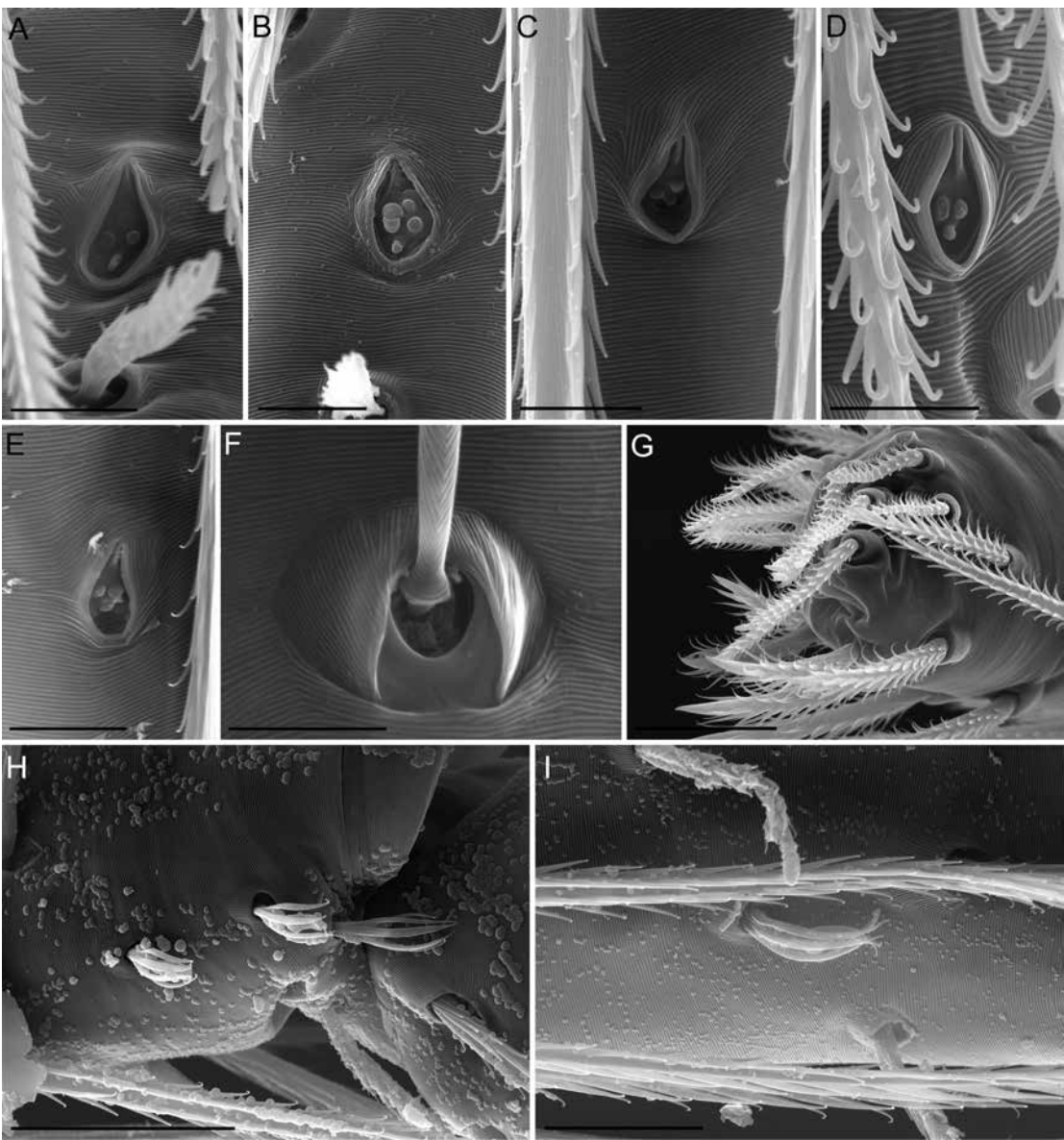


FIGURE 182. *Orchestina ucumar*, SEM of female leg and palp structures. **A.** Tarsal organ of left leg I. **B.** Same, left leg II. **C.** Same, left leg IV. **D.** Same, left palp. **E.** Same, left leg III. **F.** Trichobothrial socket of leg IV. **G.** Palp, apical view. **H.** Modified setae on the terminal region of left metatarsus II, prolateral view. **I.** Same, tarsus. Scale bars: **A–F.** 5 μm . **G, H,** 20 μm . **I.** 10 μm . (PBI_OON 14896, 14905).

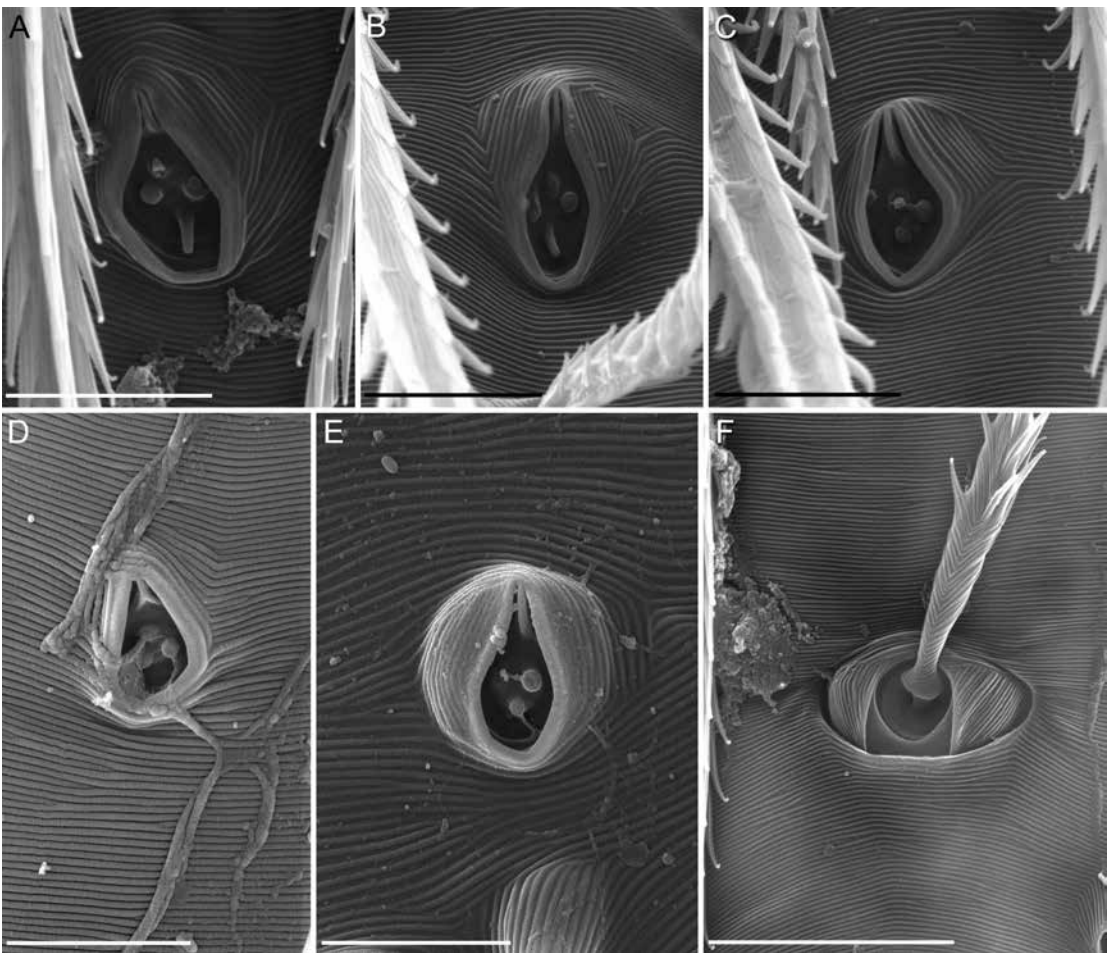


FIGURE 183. *Orchestina ucumar*, SEM of male leg and palp structures. **A.** Tarsal organ of right leg I. **B.** Same, left leg II. **C.** Same, left leg III. **D.** Same, left leg IV. **E.** Same, cymbium of left palp. **F.** Trichobothrial socket of right leg I. Scale bars: 5 μ m except **F**, 10 μ m. (PBI_OON 14924, 14922).

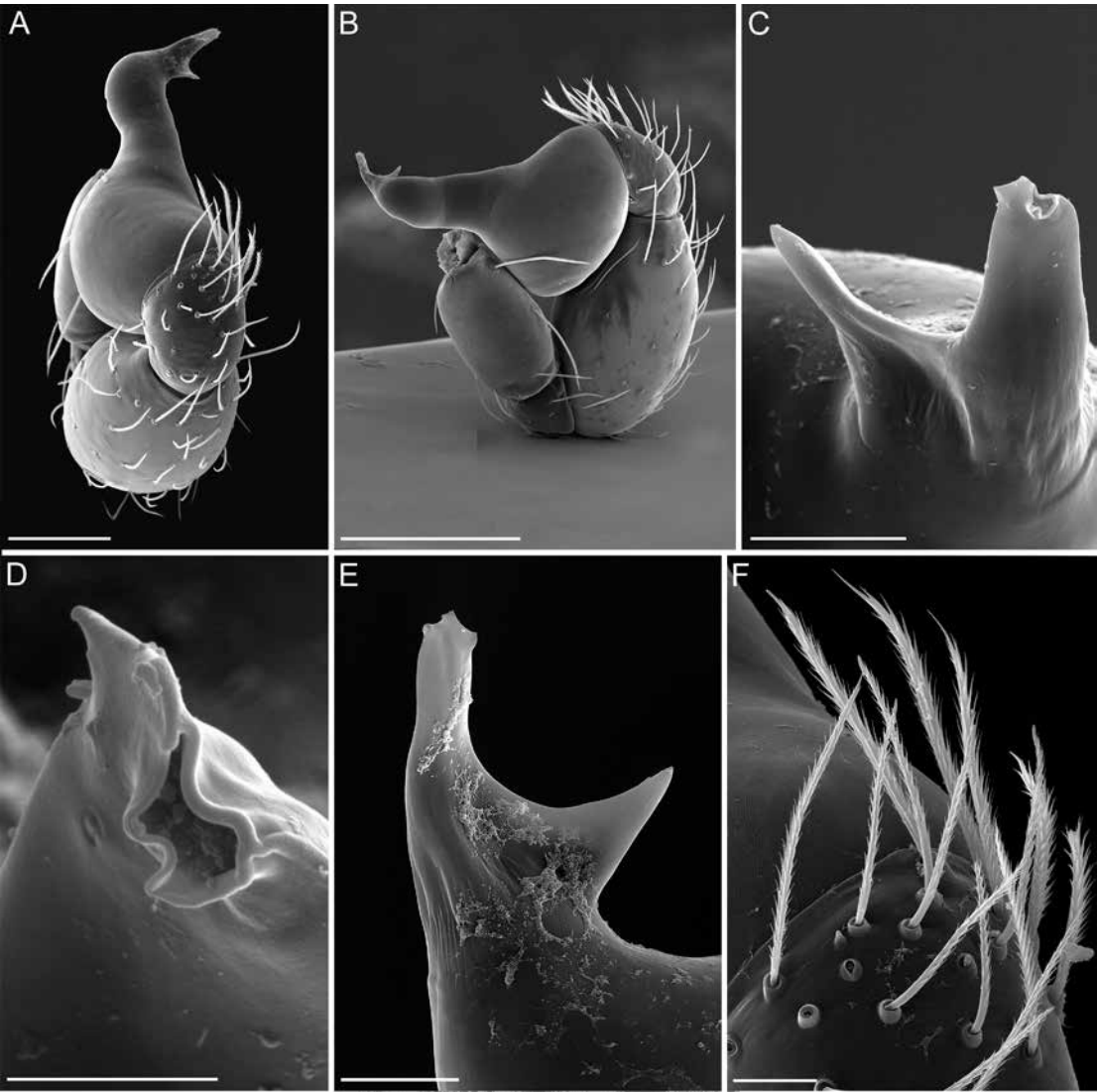


FIGURE 184. *Orchestina ucumar*, SEM of male left palp. **A.** Dorsal. **B.** Retrolateral. **C.** Detail of embolus and apophysis. **D.** Detail of embolus. **E.** Embolus and apophysis, lateral. **F.** Detail of cymbium. Scale bars: **A.** 100 μ m. **B.** 200 μ m. **C, E, F.** 20 μ m. **D.** 5 μ m. (PBI_OON 14924).

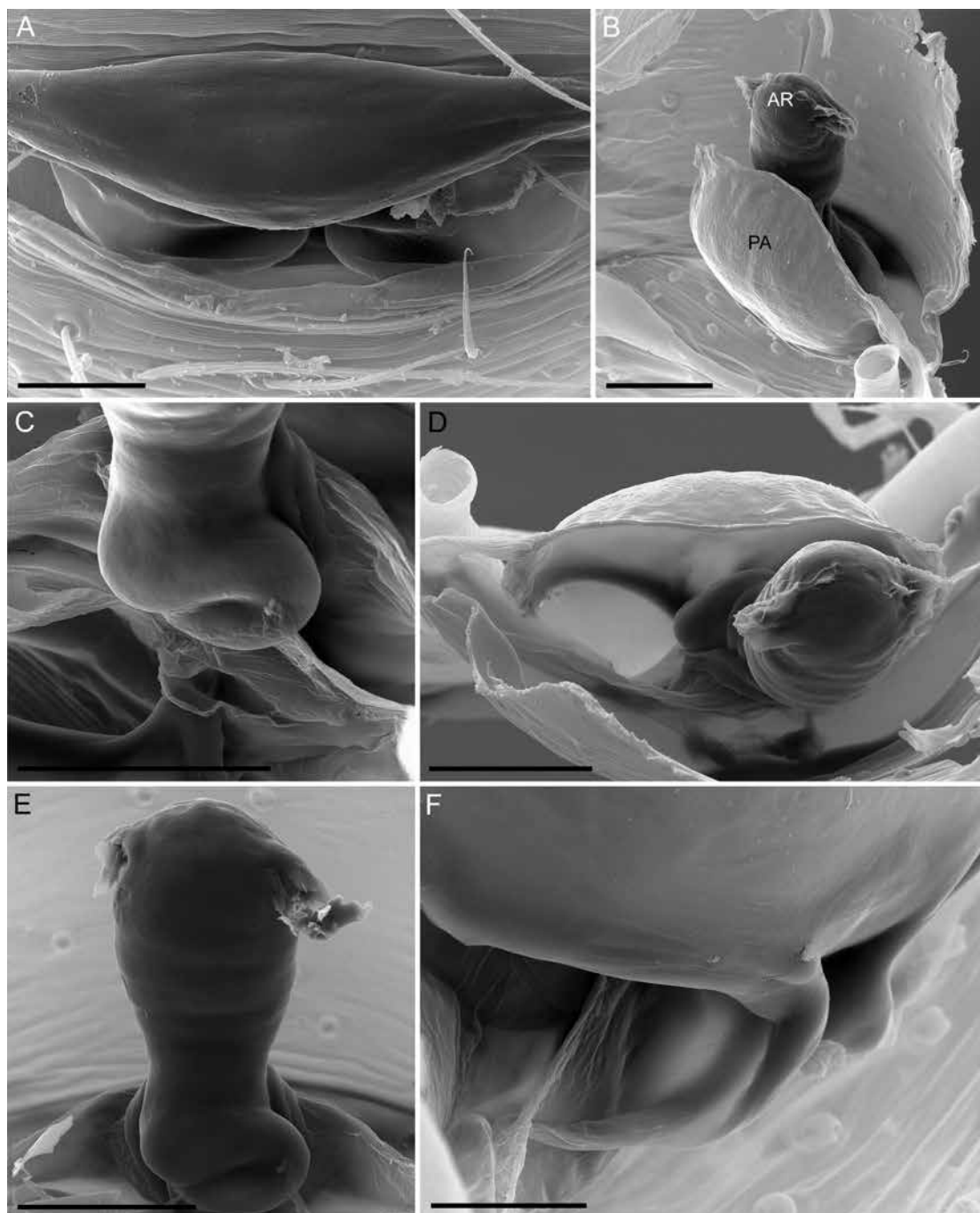


FIGURE 185. *Orchestina ucumar*, SEM of female genitalia. **A.** Epigastric region. **B.** Dorsolateral. **C.** Detail of the base of anterior receptaculum. **D.** Anterior. **E.** Anterior receptaculum, dorsal. **F.** Detail of the base of posterior apodeme. Abbreviations: **AR**, anterior receptaculum; **PA**, posterior apodeme. Scale bars: **A.** 20 μm . **B–E.** 50 μm . **F.** 20 μm . (PBI_OON 14895).

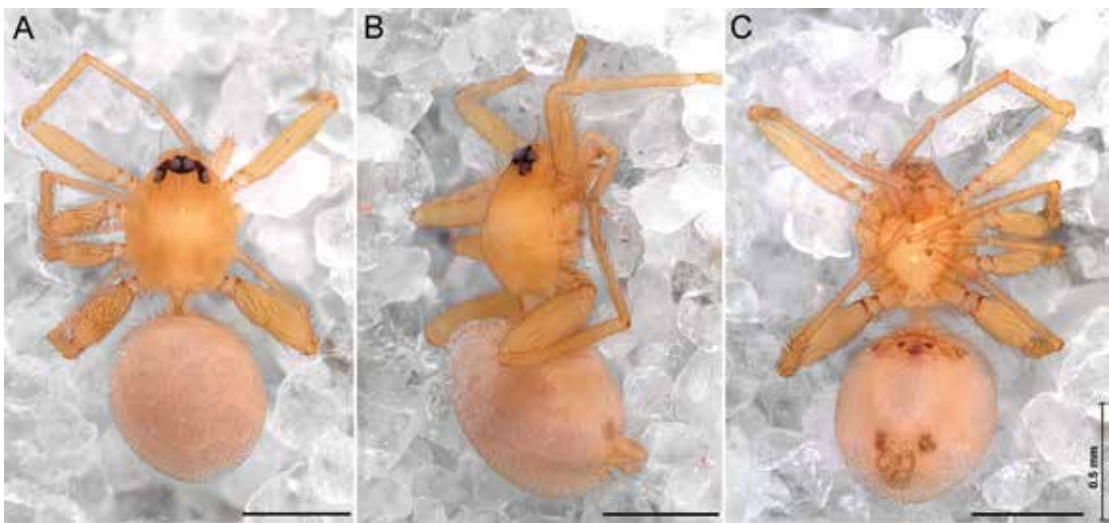


FIGURE 186. *Orchestina andianavarroi*, habitus of female. A. Dorsal. B. Lateral. C. Ventral. Scale bars: 0.5 mm. (PBI_OON 14868).



FIGURE 187. *Orchestina luispi*. **A–D.** Male. **E, F.** Female. **A–E.** Habitus dorsal. **B.** Same, lateral. **C.** Cephalothorax, anterior. **D.** Same, ventral; arrow points to the modified endites. **F.** Habitus ventral. Scale bars: **A, B.** 0.5 mm. **C–F.** 0.2 mm. (PBI_OON 14809, 43367, 42264).

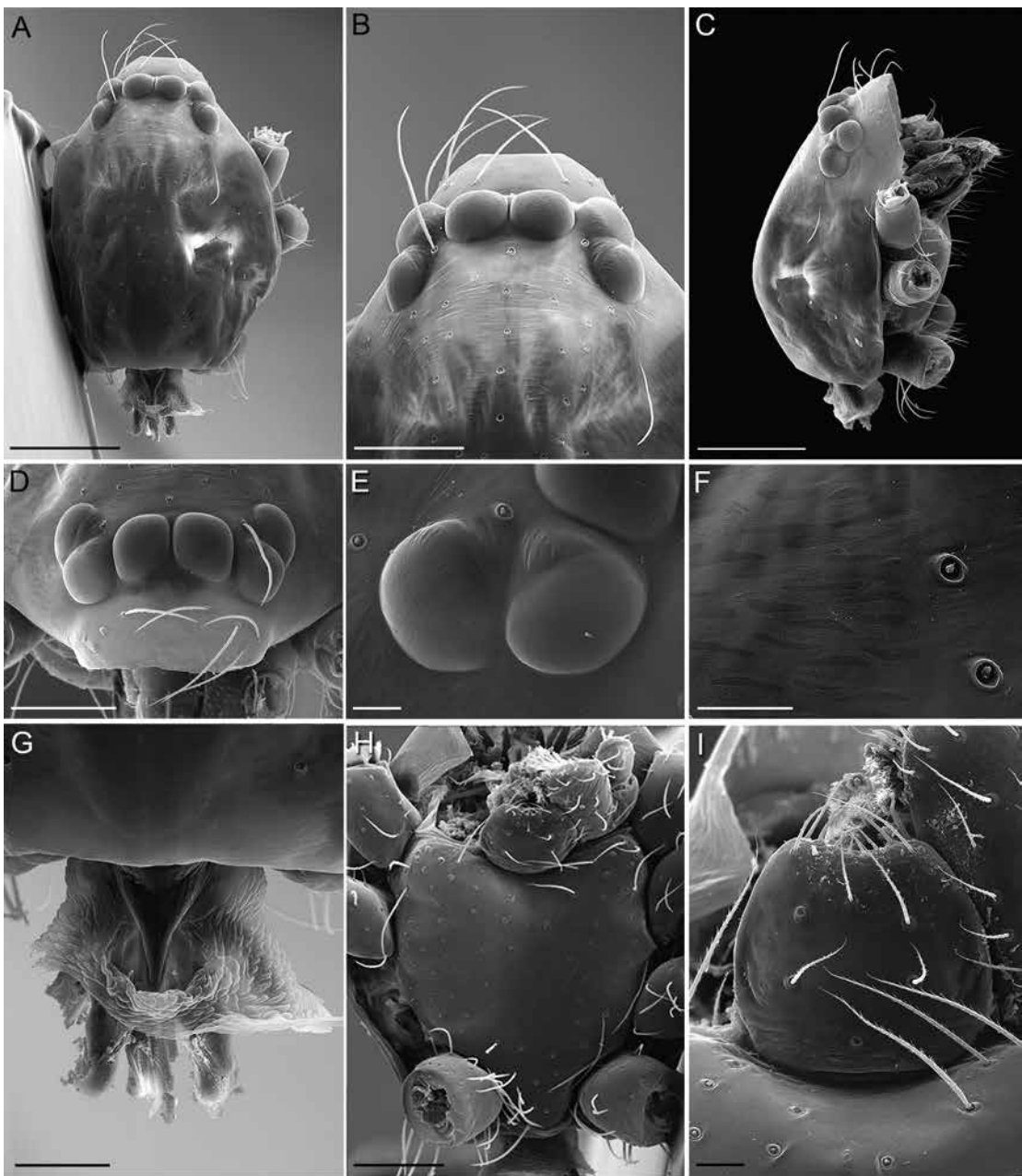


FIGURE 188. *Orchestina luispi*, SEM of female cephalothorax structures. **A.** Carapace, dorsal. **B.** Eyes, dorsal. **C.** Carapace, lateral. **D.** Eyes, anterior. **E.** Lateral eyes. **F.** Carapace texture. **G.** Pedicel, dorsal. **H.** Sternum. **I.** Labium. Scale bars: **A, C.** 200 μm . **B, D, H.** 100 μm . **E, F, I.** 20 μm . **G.** 50 μm . (PBI_OON 14809).

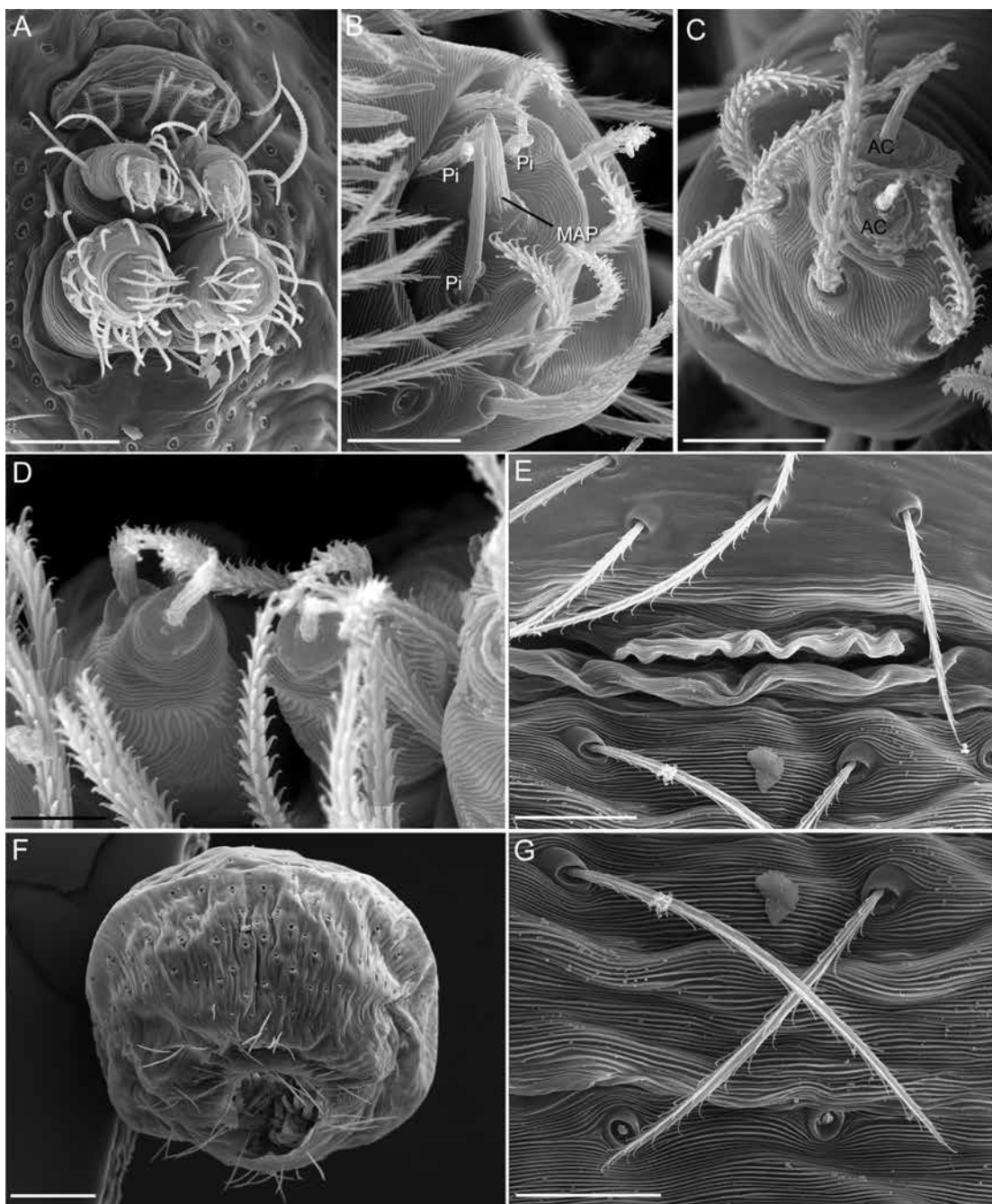


FIGURE 189. *Orchestina luispi*, SEM of male abdomen. **A.** Spinnerets, posteroventral. **B.** ALS. **C.** PLS. **D.** PMS. **E.** Epiandrium. **F.** Abdomen anterior. **G.** Detail of abdominal cuticle and setae. Abbreviations: AC, aciniform gland spigot(s); MAP, major ampullate gland spigot(s); Pi, piriform gland spigot(s). Scale bars: **A.** 50 μ m. **B.** **C.** 10 μ m. **D.** 5 μ m. **E.** **G.** 20 μ m. **F.** 100 μ m. (PBI_OON 14809).

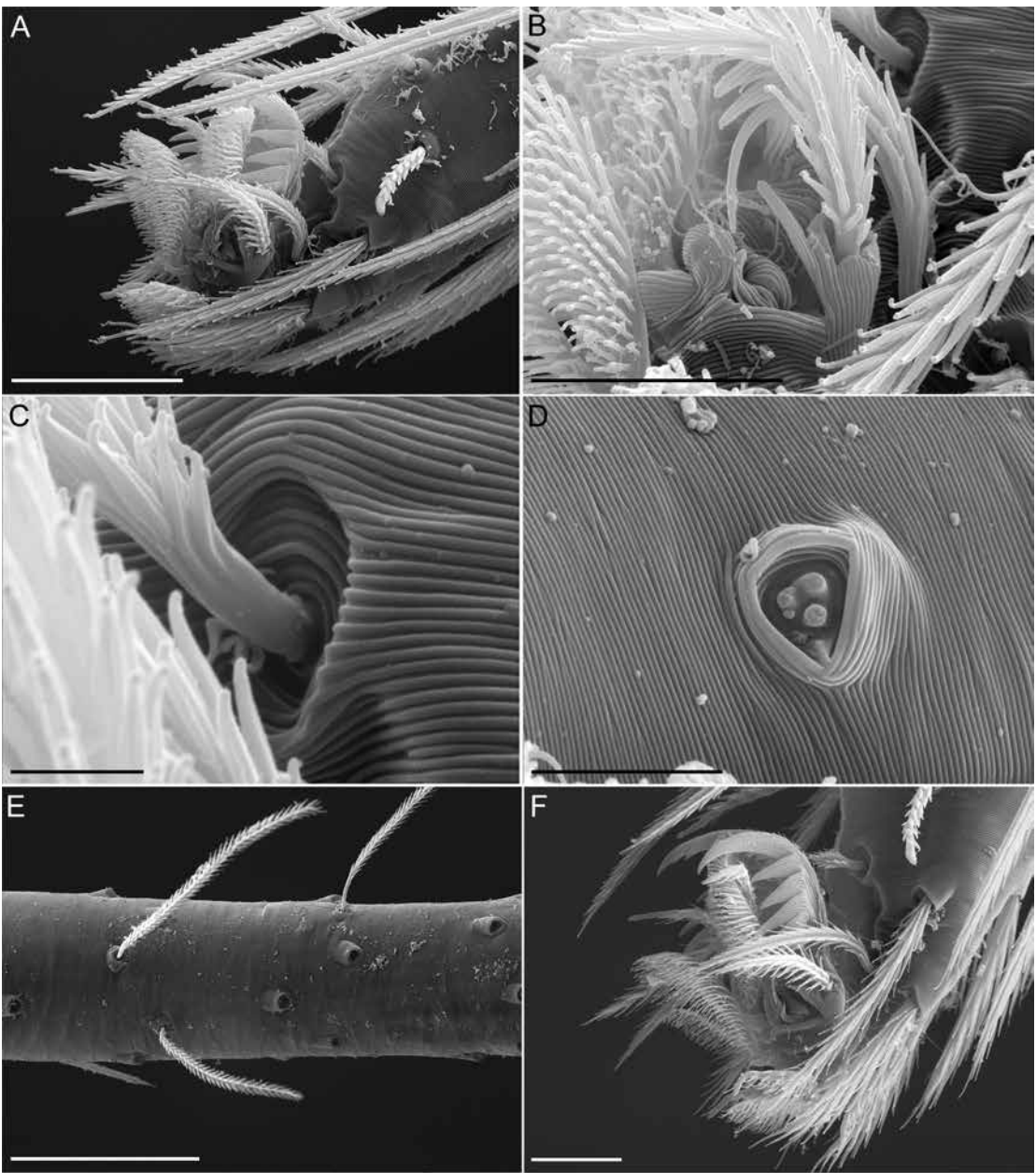


FIGURE 190. *Orchestina luispi*, SEM of male legs. **A.** Right claws IV, prolateral. **B.** Detail of setae base near claw insertion. **C.** Same. **D.** Tarsal organ IV. **E.** Trichobothrial pattern of tibia IV. **F.** Left claws I. Retrolateral view. Scale bars: **A.** 20 μm . **B, F.** 10 μm . **C.** 2 μm . **D.** 5 μm . **E.** 50 μm . (PBI_OON 14809).

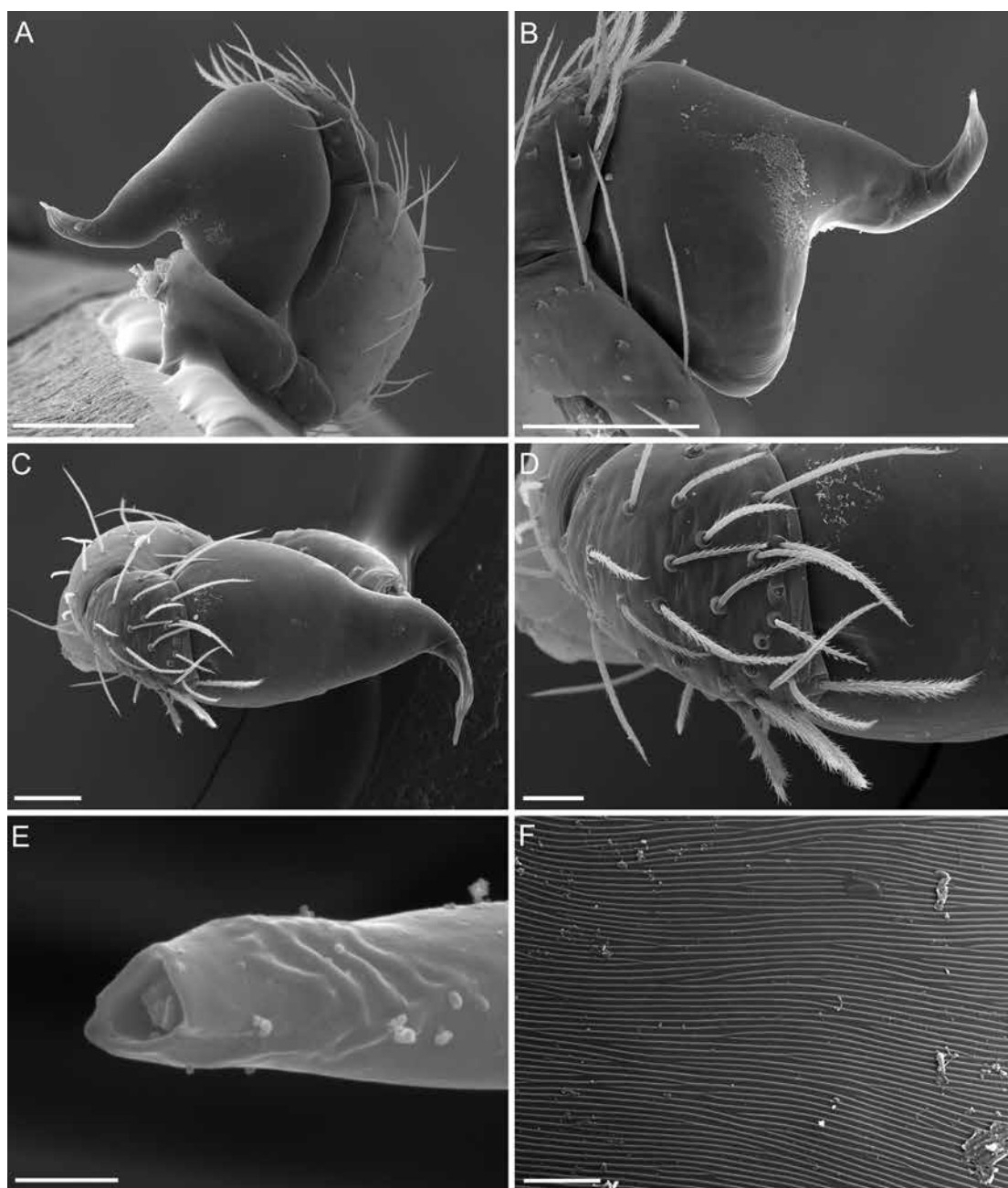


FIGURE 191. *Orchestina luispi*, SEM of male palp. **A.** Retrolateral. **B.** Copulatory bulb, prolateral. **C.** Same, dorsal. **D.** Cymbium, dorsal. **E.** Detail of embolus. **F.** Detail of bulb cuticle. Scale bars: **A, B.** 100 μm . **C.** 50 μm . **D.** 20 μm . **E.** 2 μm . **F.** 5 μm . (PBI_OON 14809).

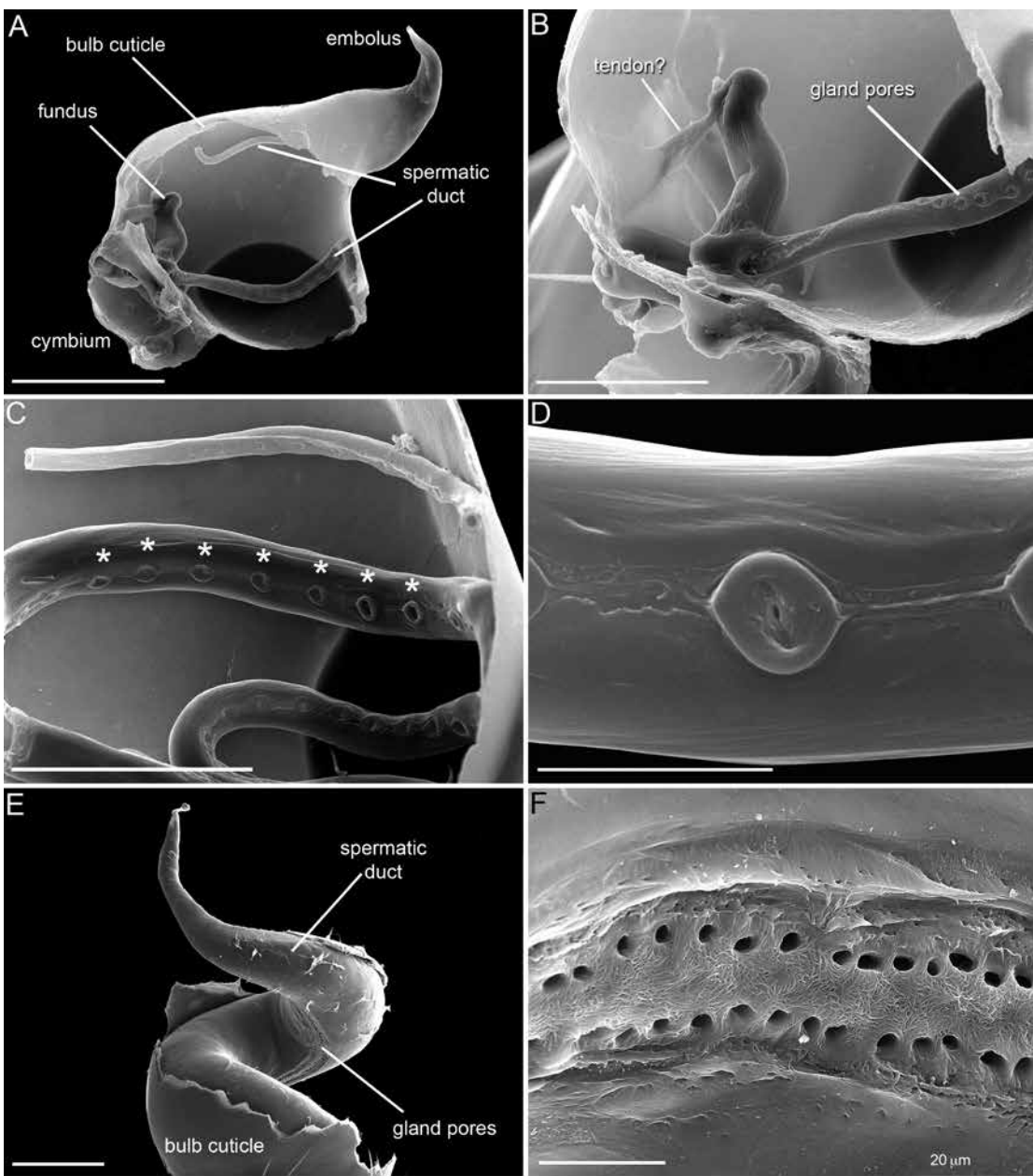


FIGURE 192. SEM of sperm duct. **A–D.** *Orchestina luispi*. **E, F.** *Ariadna boesenbergi* (Segestriidae). **A.** General view showing the different parts of the sperm duct and copulatory bulb. **B.** Detail of fundus and gland pores. **C.** Detail of the sperm duct with many pores. **D.** Detail of a pore. **E.** Similar pores in a double row in *A. boesenbergi*. **F.** Detail of pores. Scale bars: **A, B.** 100 μm. **C.** 50 μm. **D.** 20 μm. **E.** 2 μm. **F.** 5 μm. (PBI_OON 14809).

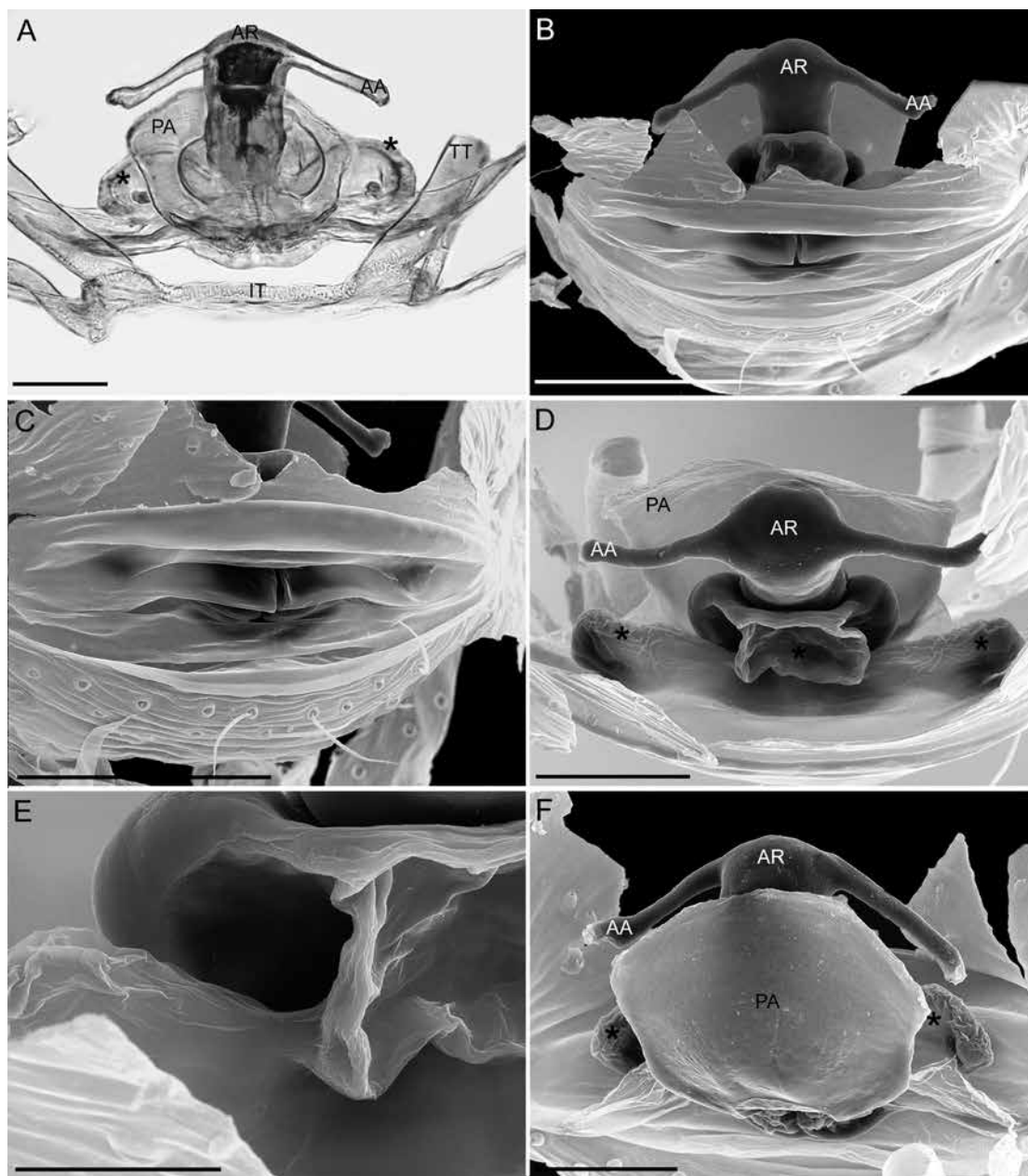


FIGURE 193. *Orchestina luispi*, female genitalia. **A.** Dorsal, cleared. **B.** SEM, ventral (cuticle partially removed). **C.** Same, detail of the epigastric region. **D.** Same, dorsal-posterior. **E.** Detail of the anterior receptaculum. **F.** Dorsal. Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **IT**, intertracheal tube; **PA**, posterior apodeme; **TT**, tracheal tube. Asterisks indicate the additional membranous expansions of the anterior receptaculum. Scale bars: **A, D, F.** 50 μ m. **B, C.** 100 μ m. **E.** 20 μ m. (PBI_OON 14809).

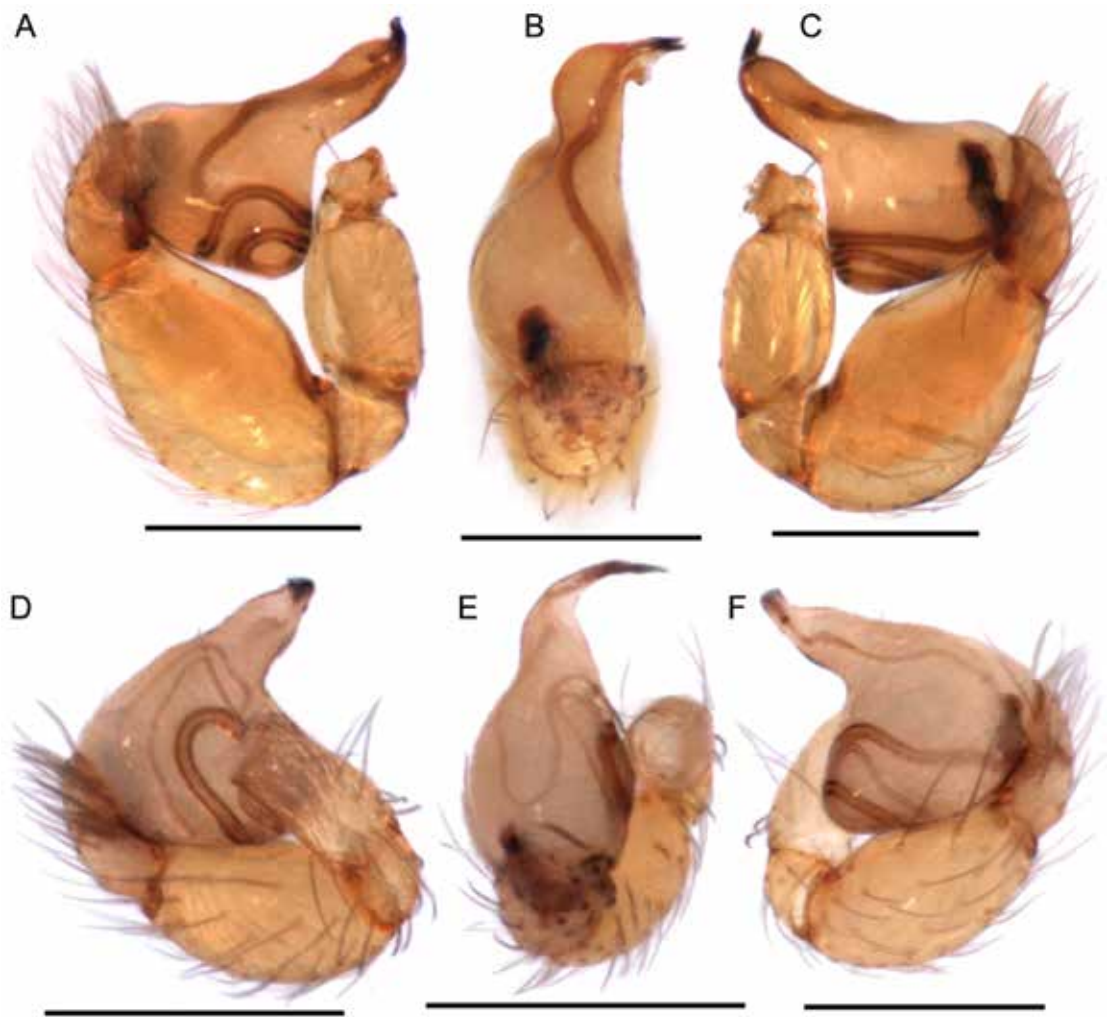


FIGURE 194. *Orchestina* spp., male palps. A–C. *O. ucumar*, paratype, right palp. D–F. *O. luispi*, paratype (PBI_OON 42262). A, D. Prolateral. B, E. Dorsal. C, D. Retrolateral. Images A–C flopped for consistency. Scale bars: 0.2 mm. (PBI_OON 14895).

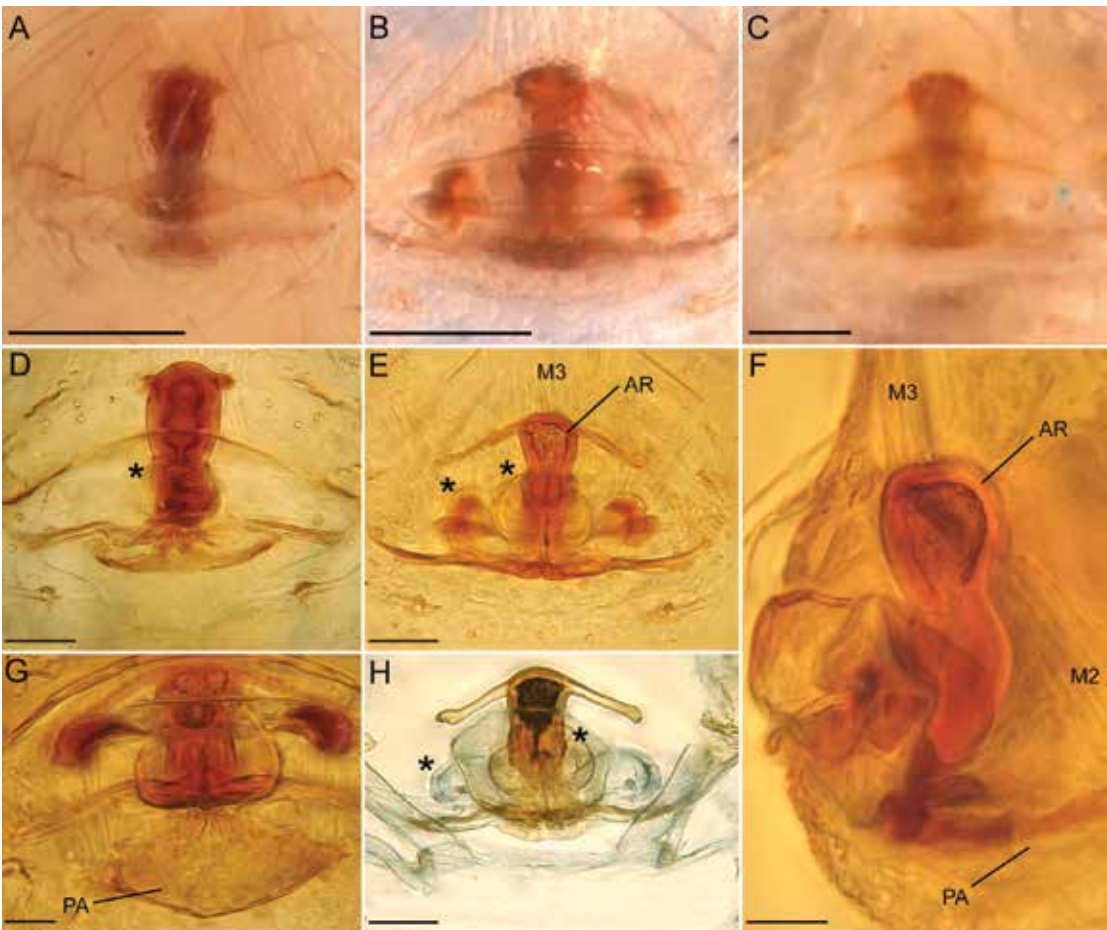


FIGURE 195. *Orchestina* spp., female genitalia. D–H. Cleared. A, D. *O. ucumar*. B, E–G. *O. andianavarroi*. C, H. *O. luispi*. A–E. Ventral. H. Dorsal. G. Anterodorsal. F. Lateral. Abbreviations: AR, anterior receptaculum; M2, M3, muscles 2 and 3 respectively; PA, posterior apodeme. Asterisks indicate the membranous chambers of the anterior receptaculum. Scale bars: A. 0.25 mm. B, C. 0.1 mm. D–H. 0.025 mm. (PBI_OON 1656, 14896, 14868, 14998, 14809).

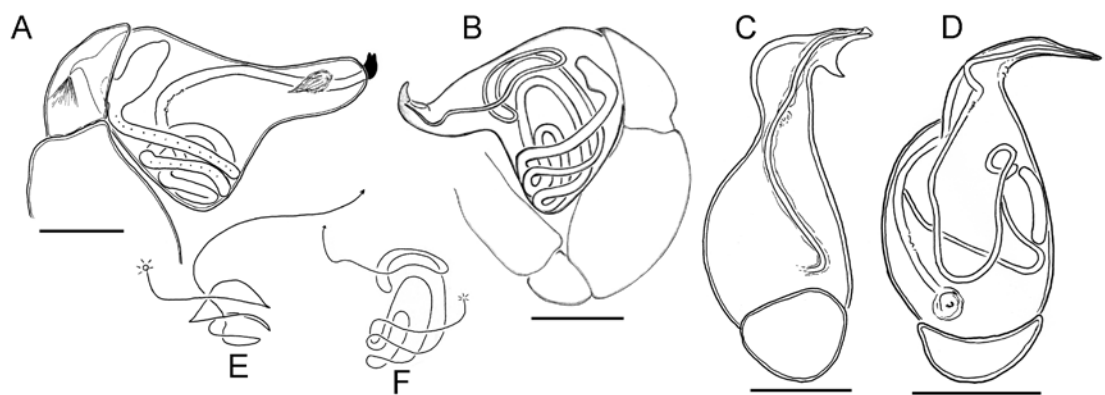


FIGURE 196. *Orchestina* spp., drawings of male palps. **A, C, E.** *O. ucumar*, paratype, right palp. **B, D, F.** *O. luispi*. **A, B.** Retrolateral. **C, D.** Dorsal. **E, F.** Scheme of sperm duct course. Images **C** and **D** flopped for consistency. Scale bars: 0.1 mm. (PBI_OON 14895, 14924, 14809).

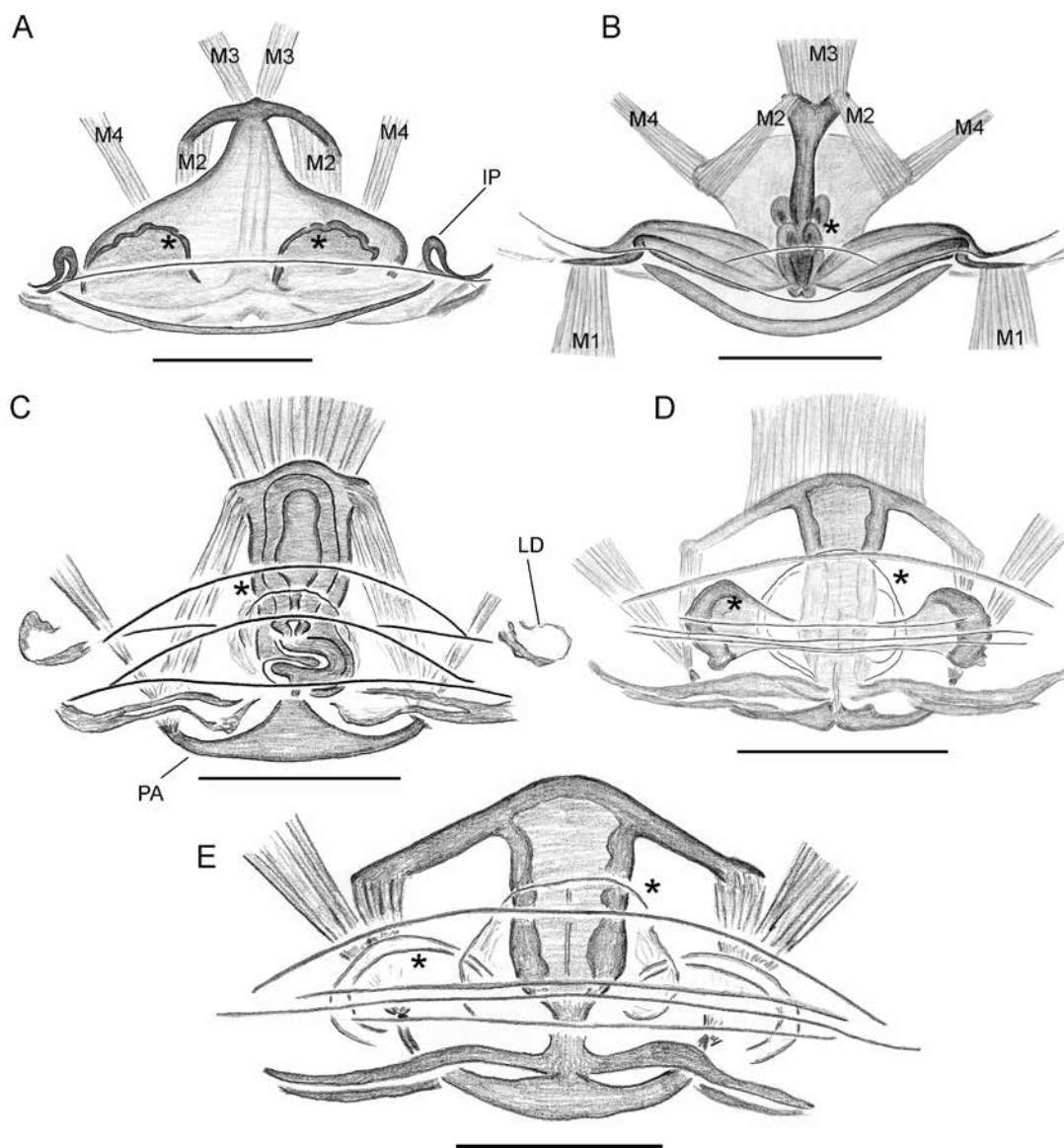


FIGURE 197. *Orchestina* spp., drawings of female genitalia, ventral. **A.** *O. moyuchi*, paratype. **B.** *O. grismadoi*, paratype. **C.** *O. ucumar*. **D.** *O. andianavarroi*. **E.** *O. luispi*. Abbreviations: **IP**, internal pocket; **LD**, lateral depression; **M1–M4**, muscles 1–4 respectively; **PA**, posterior apodeme. Asterisks indicate additional membranous receptacles. Scale bars: 0.1 mm. (PBI_OON 42253, 43298, 14896, 14868, 14811).

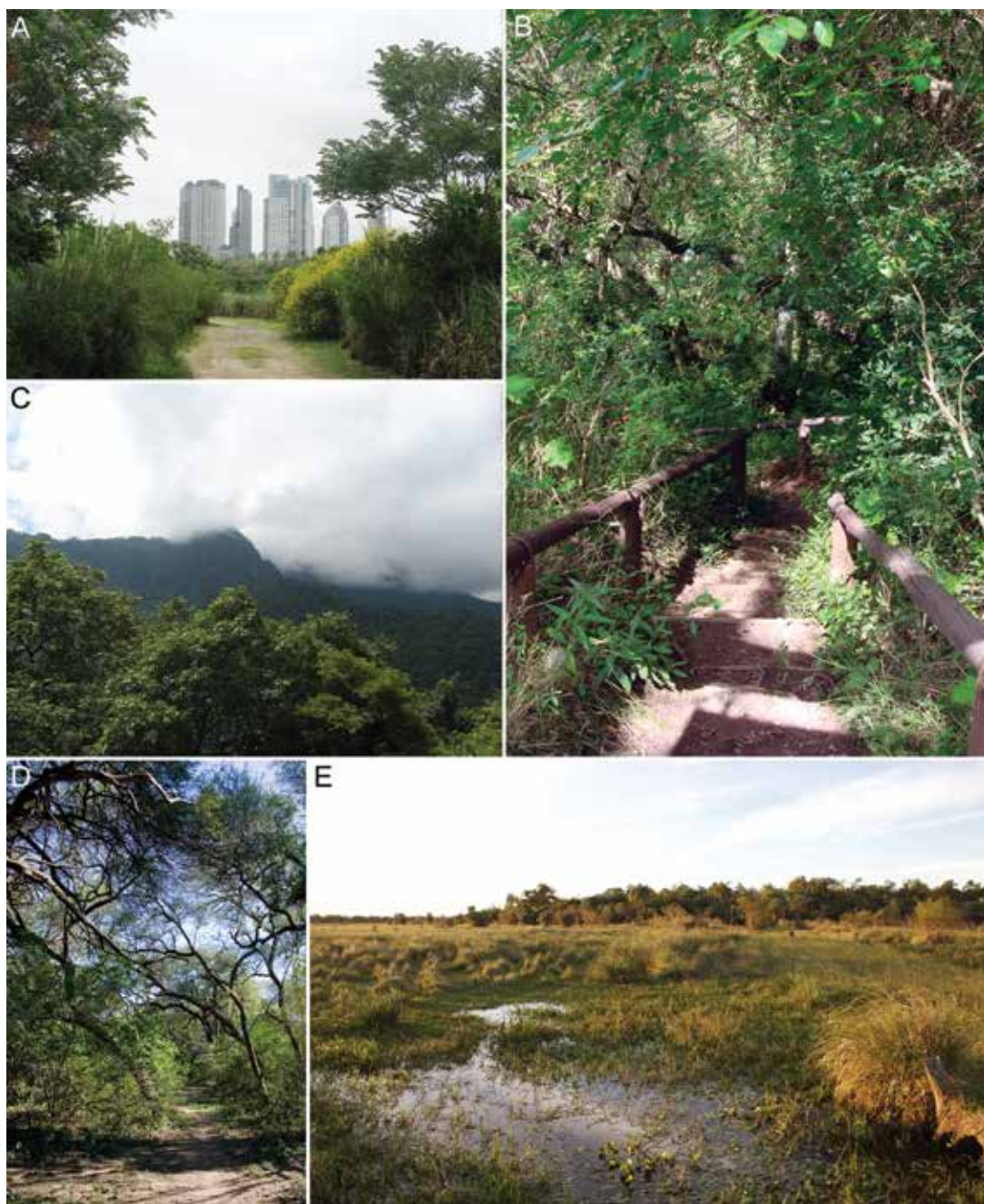


FIGURE 198. Habitats of *Orchestina* in Argentina. **A.** Reserva Ecológica Costanera Sur (Ciudad Autónoma de Buenos Aires), type locality of *O. luispi*. **B.** Otamendi (Buenos Aires province), an additional locality where *O. luispi* can be found. **C.** Parque Nacional Calilegua (Jujuy province), type locality of *O. ucumar*. **D.** Reserva Natural Formosa (Formosa province), an additional locality of *O. ucumar*. **E.** Parque Nacional Mburucuyá (Corrientes province), additional locality where *O. luispi* can be found. Credits: **A, C.** Cristian Grismado. **B.** Ignacio Crudele.

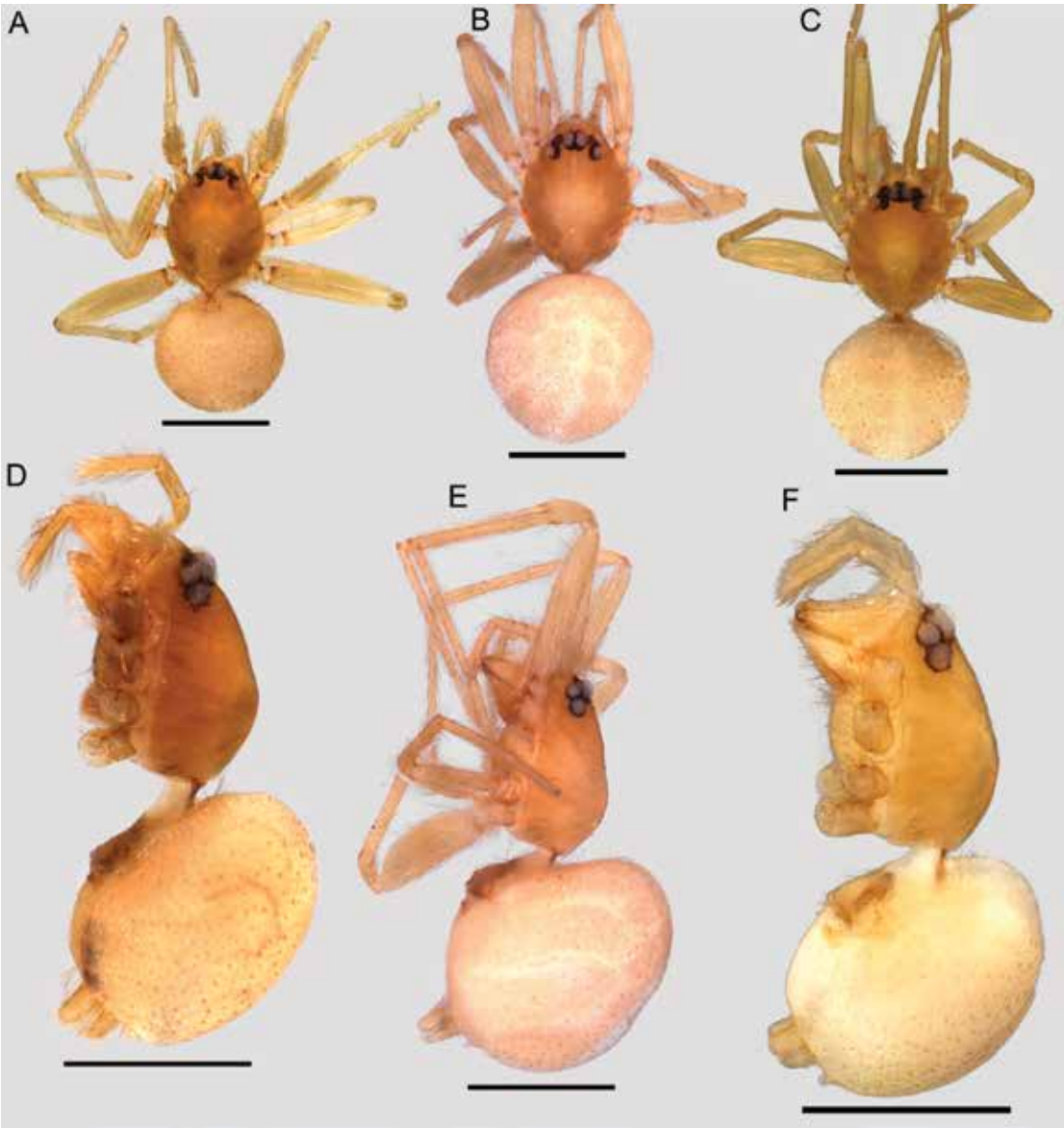


FIGURE 199. Morphospecies of *Orchestina*, females. **A, D.** OMI020. **B, E.** OMI021. **C, F.** OMI038. **A–C.** Dorsal. **D–F.** Lateral. Scale bars: 0.5 mm. (PBI_OON 37553, 37556, 42408, 30914, 30868).

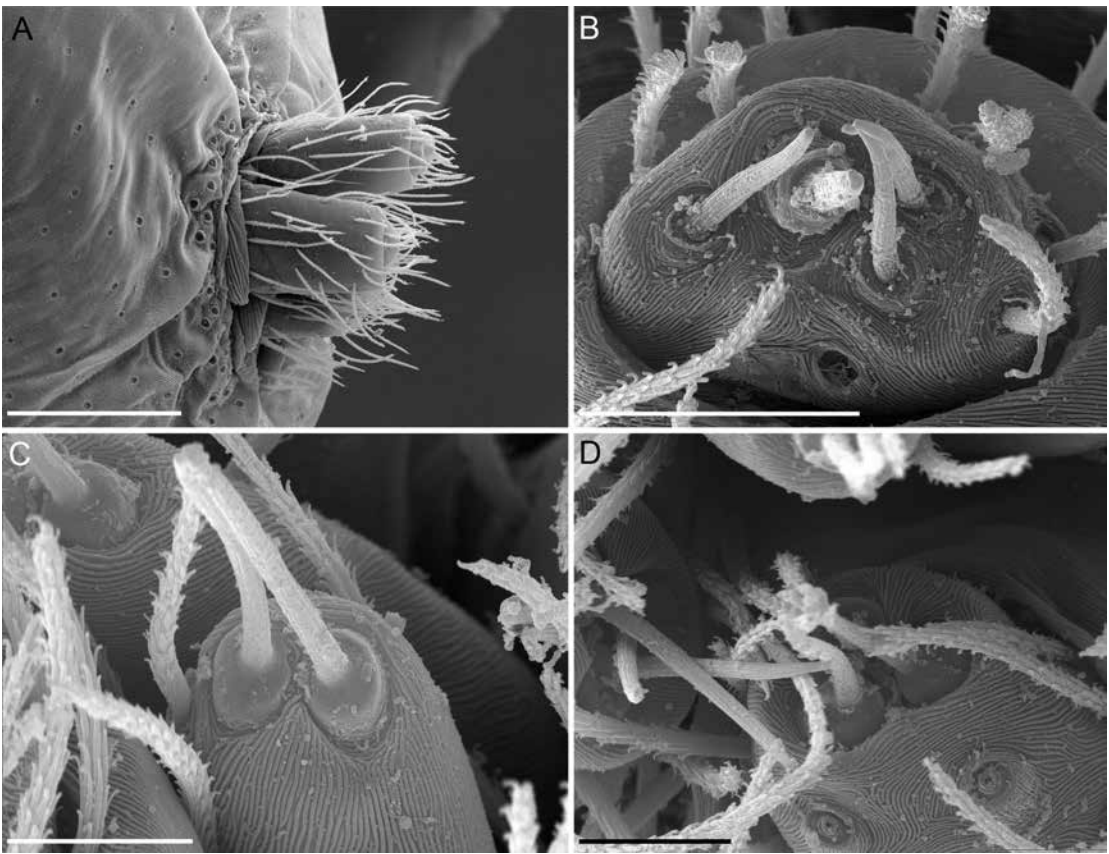


FIGURE 200. *Orchestina* MI020, SEM of female spinnerets. **A.** Lateral. **B.** ALS. **C.** PMS. **D.** PLS. Scale bars: **A.** 100 µm. **B.** 20 µm. **C, D.** 10 µm. (PBI_OON 36453).

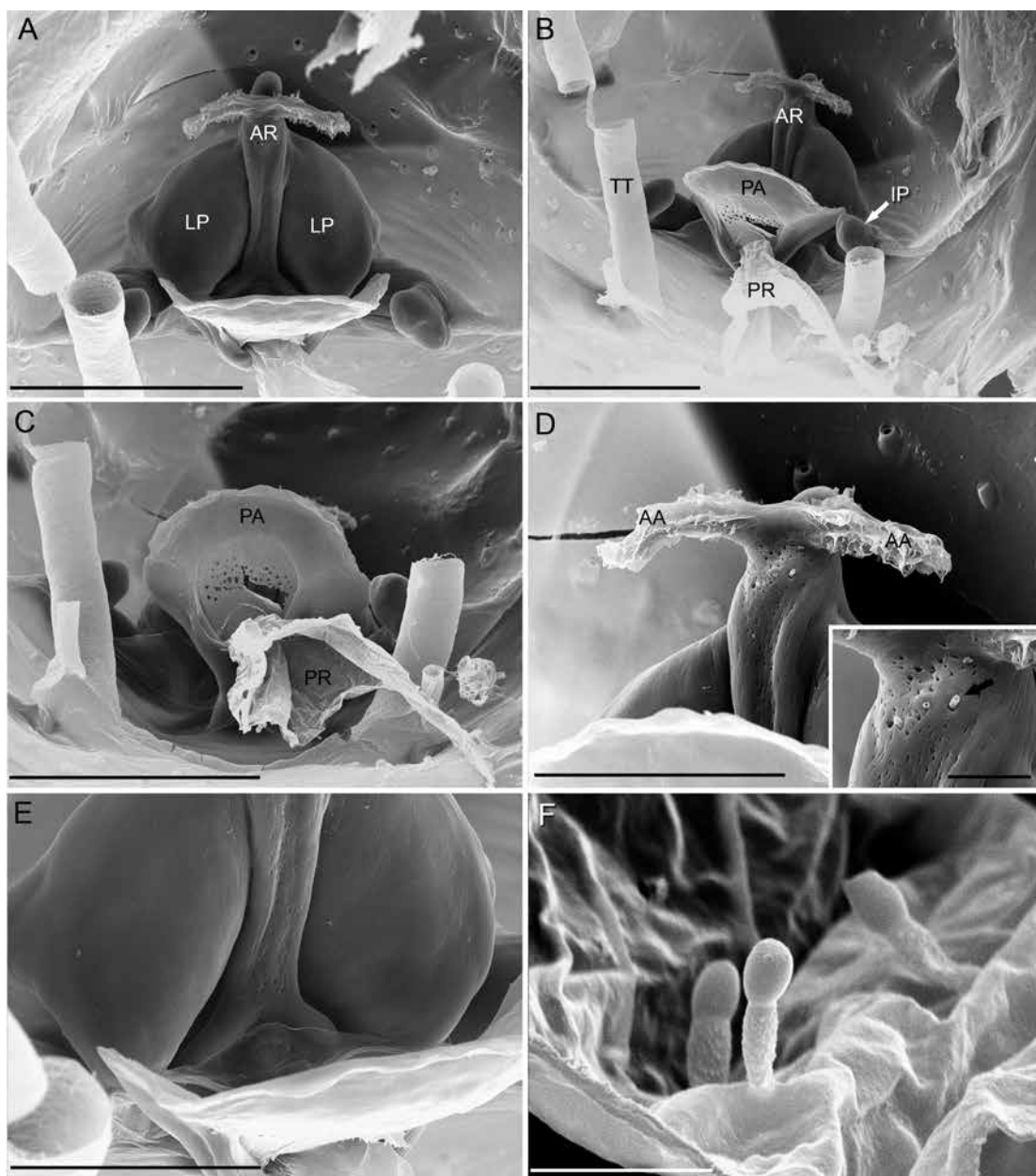


FIGURE 201. *Orchestina* MI020, SEM of female genitalia. **A.** Dorsal. **B.** Dorsolateral. **C.** Detail of the anterior receptaculum and posterior apodeme. **D.** Detail of the apical region of the anterior receptaculum, inset showing a detail of a gland duct (arrow). **E.** Detail of the basal region of the anterior receptaculum. **F.** Detail of gland ducts of the posterior receptaculum. Abbreviations: AA, apodemes of the anterior receptaculum; AR, anterior receptaculum; IP, internal pocket; LP, lateral projections of the anterior receptaculum; PA, posterior apodeme; PR, posterior receptaculum; TT, tracheal tube. Scale bars: A–C. 100 µm. D, E. 50 µm. Inset in D. 10 µm. F. 5 µm. (PBI_OON 30699).

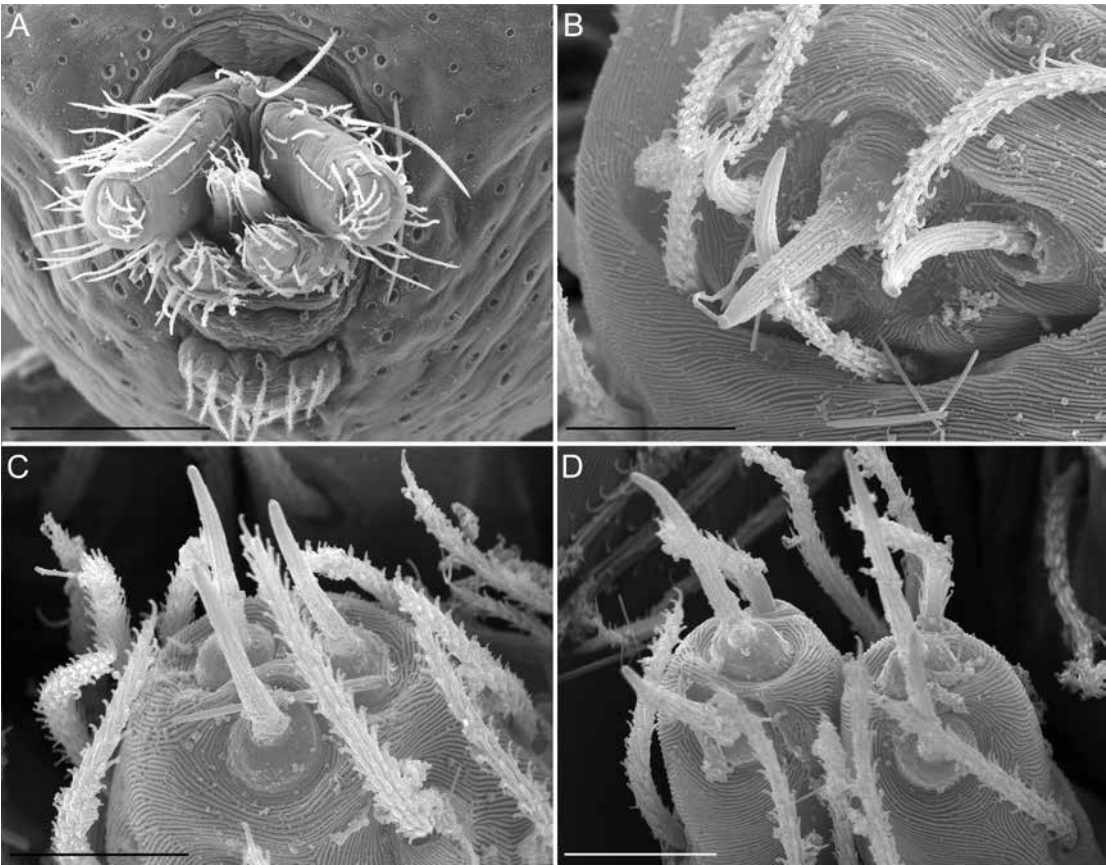


FIGURE 202. *Orchestina* MI038, SEM of female spinnerets. **A.** Posteroventral. **B.** ALS. **C.** PLS. **D.** PMS. Scale bars: **A.** 100 μm . **B–D.** 10 μm . (PBI_OON 30515).

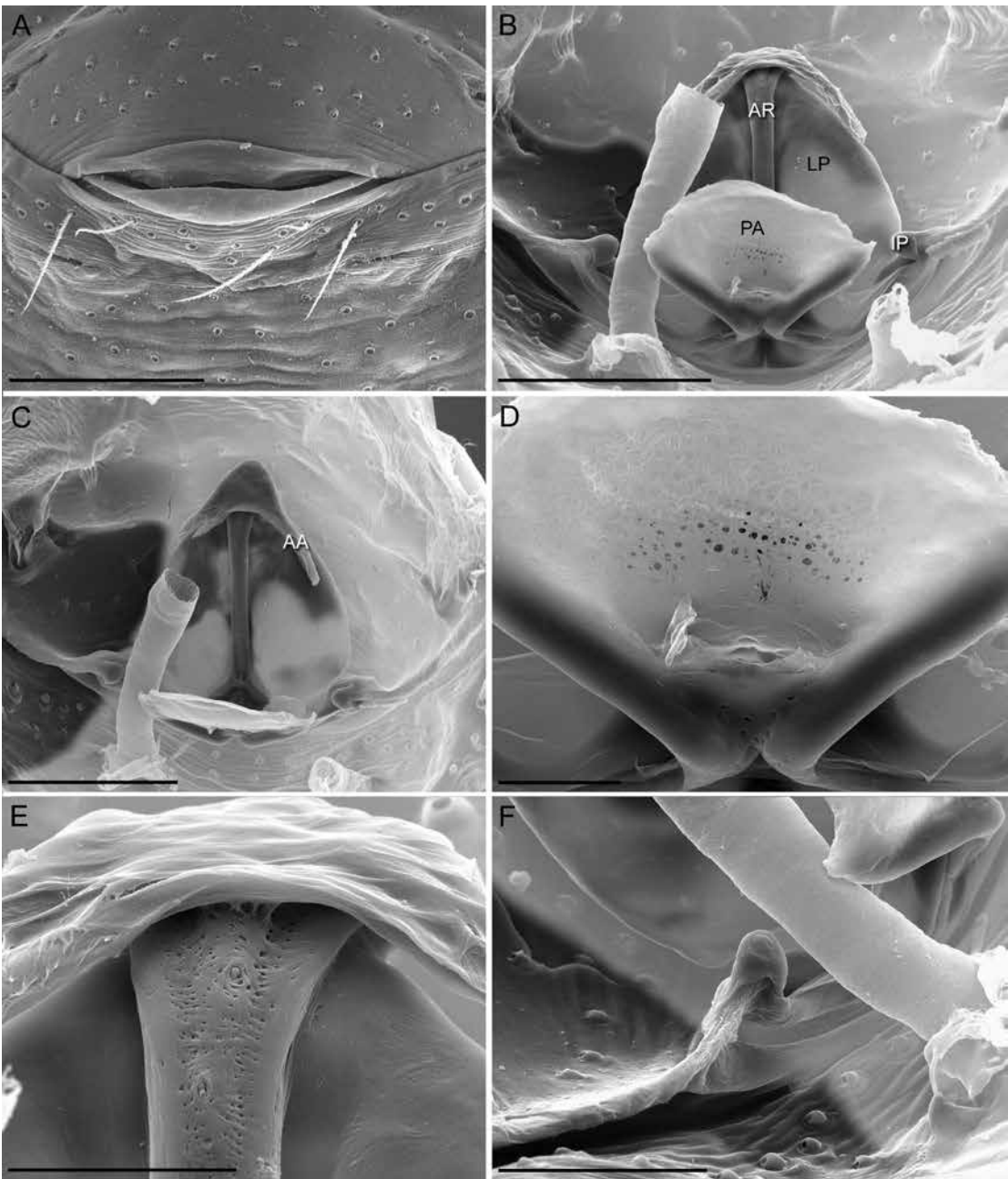


FIGURE 203. *Orchestina* MI038, SEM of female genitalia. **A.** Epigastric region. **B.** Dorsal. **C.** Anterodorsal. **D.** Detail of the posterior apodeme base; with remnants of posterior receptaculum, damaged during preparation. **E.** Detail of the apical region of the anterior receptaculum. **F.** Detail of an internal pocket. Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **IP**, internal pocket; **LP**, lateral projection of the anterior receptaculum; **PA**, posterior apodeme. Scale bars: **A–C.** 100 μ m. **D, E.** 20 μ m. **F.** 50 μ m. (PBI_OON 30943).

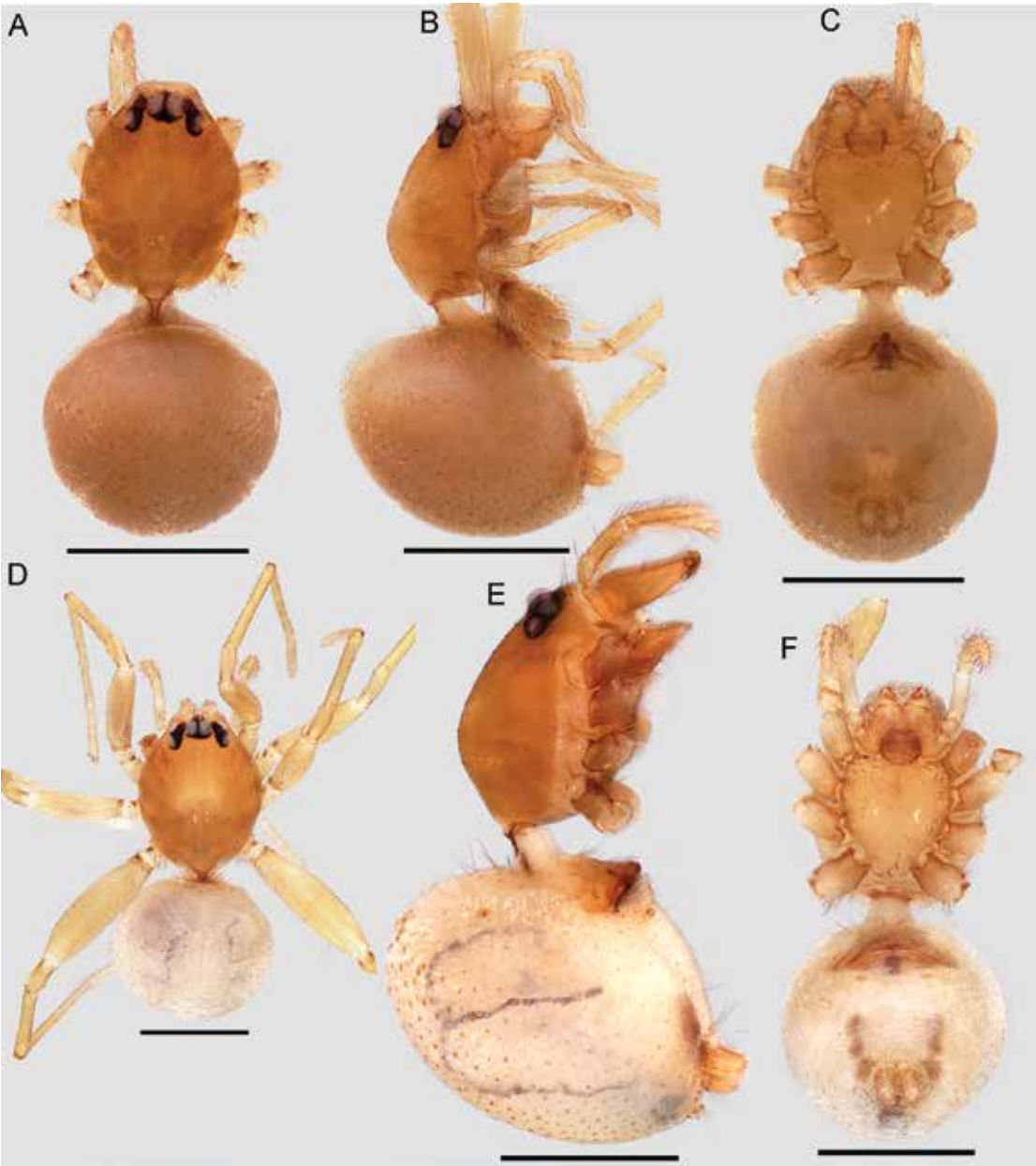


FIGURE 204. Morphospecies of *Orchestina*, females. A–C. OMI022. D–F. OMI023. A, D. Dorsal. B, E. Lateral. E, F. Ventral. Scale bars: 0.5 mm. (PBI_OON 37255, 37193).

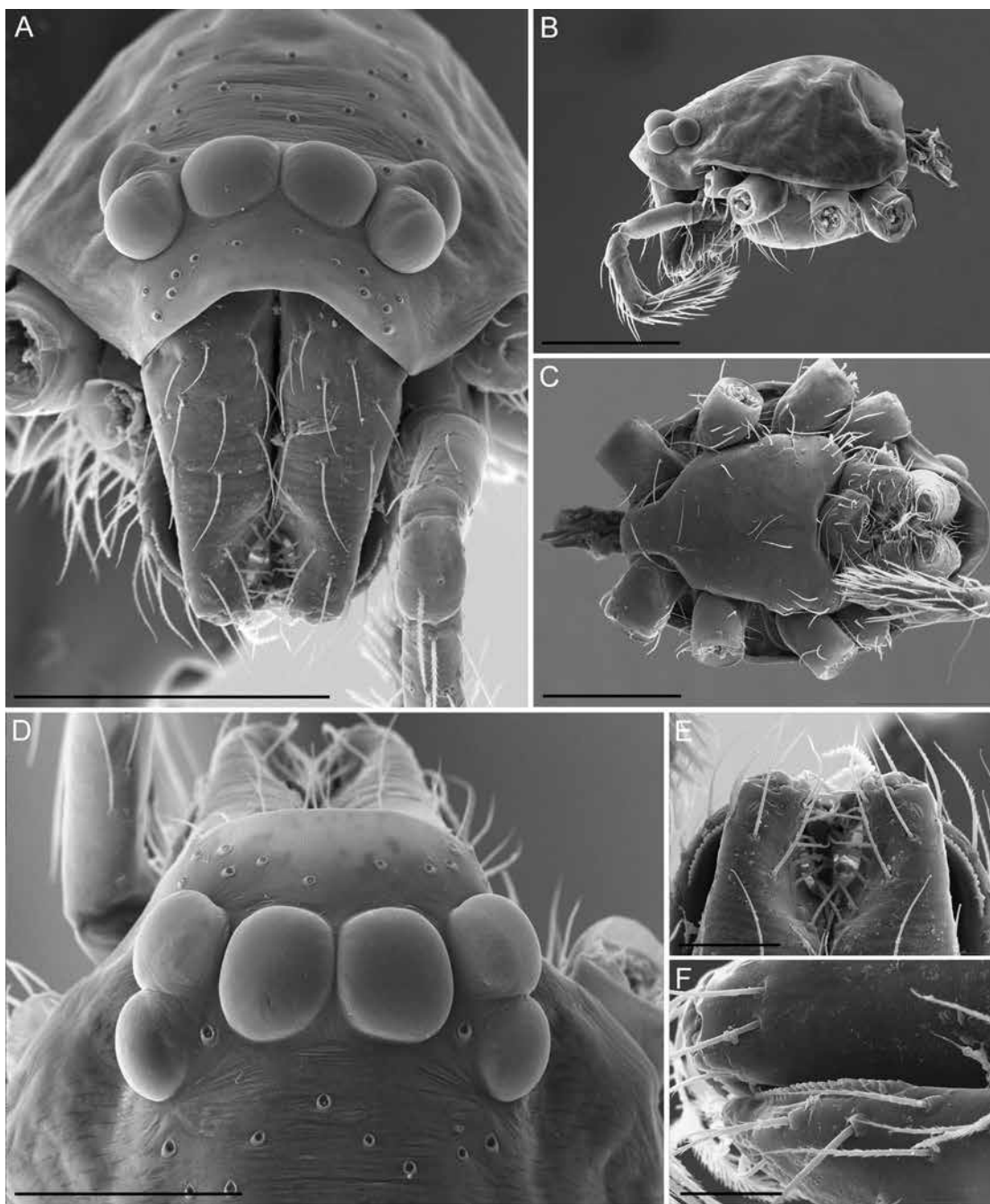


FIGURE 205. *Orchestina* MI022, SEM of female cephalothorax. **A.** Eyes, anterior. **B.** Lateral view. **C.** Sternum. **D.** Eyes, dorsal view. **E.** Chelicerae, promargin. **F.** Serrula. Scale bars: **A–C.** 200 μm . **D.** 100 μm . **E.** 50 μm . **F.** 20 μm . (PBI_OON 37245).

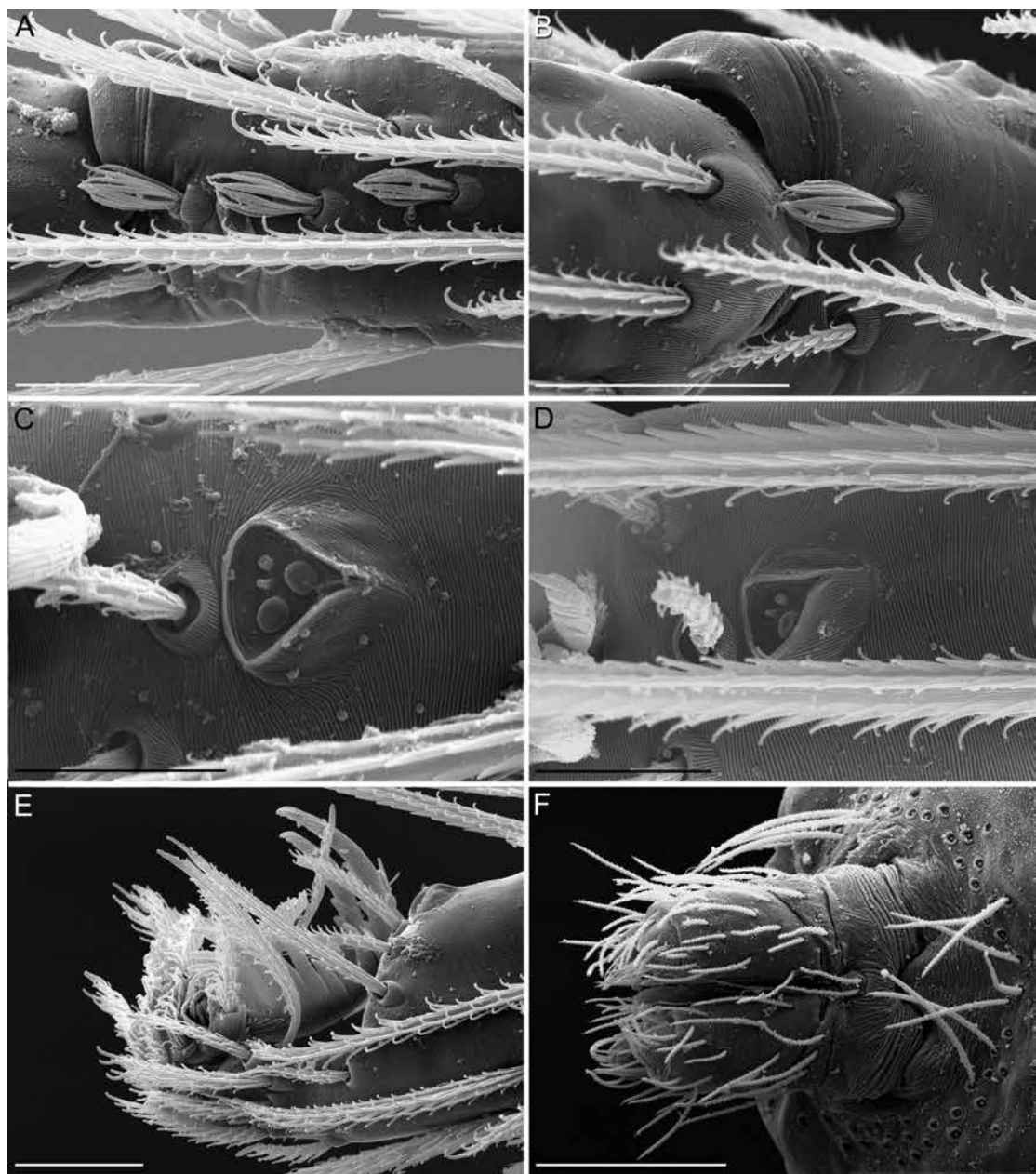


FIGURE 206. *Orchestina* MI022, SEM of female legs and spinnerets. **A.** Prolateral setae of the terminal region of right metatarsus II. **B.** Same, metatarsus III. **C.** Tarsal organ I. **D.** Tarsal organ III. **E.** Right claws II, prolateral. **F.** Spinnerets, ventral view. Scale bars: **A, B.** 20 μ m. **C, E.** 10 μ m. **F.** 100 μ m. (PBI_OON 37245).

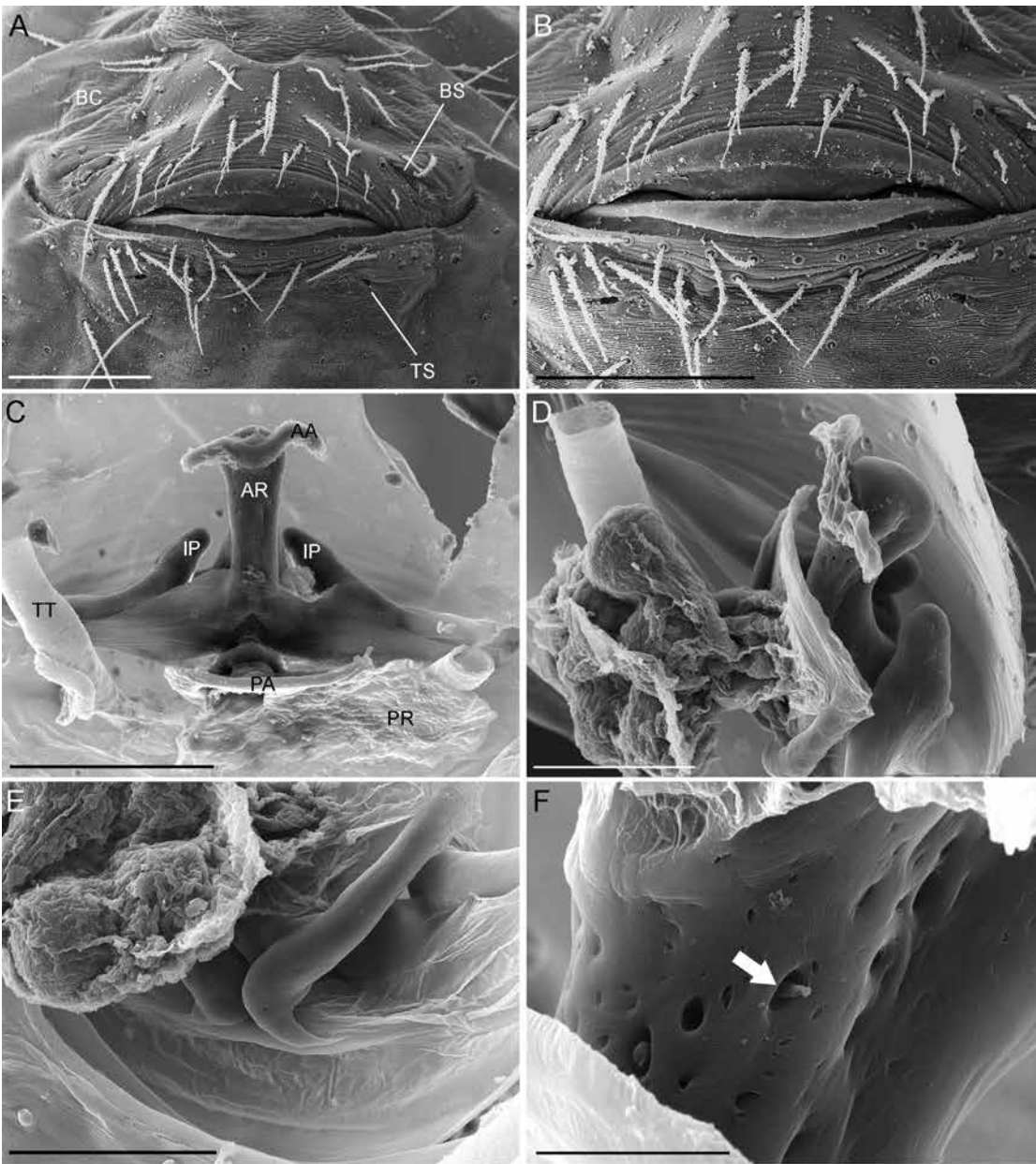


FIGURE 207. *Orchestina* MI022, SEM of female epigastric region and genitalia. **A.** Epigastric region. **B.** Same, close view. **C.** Genitalia, ventral. **D.** Same, lateral. **E.** Detail of the posterior apodeme and posterior receptaculum. **F.** Detail of a gland duct of the anterior receptaculum (arrow). Abbreviations: **AA**, apodemes of the anterior receptaculum; **AR**, anterior receptaculum; **BC**, booklung cover; **BS**, booklung spiracle; **IP**, internal pocket; **PA**, posterior apodeme; **PR**, posterior receptaculum; **TS**, tracheal spiracle; **TT**, tracheal tube. Scale bars: **A–C.** 100 µm. **D, E.** 50 µm. **F.** 10 µm. (PBI_OON 37224, 37259).

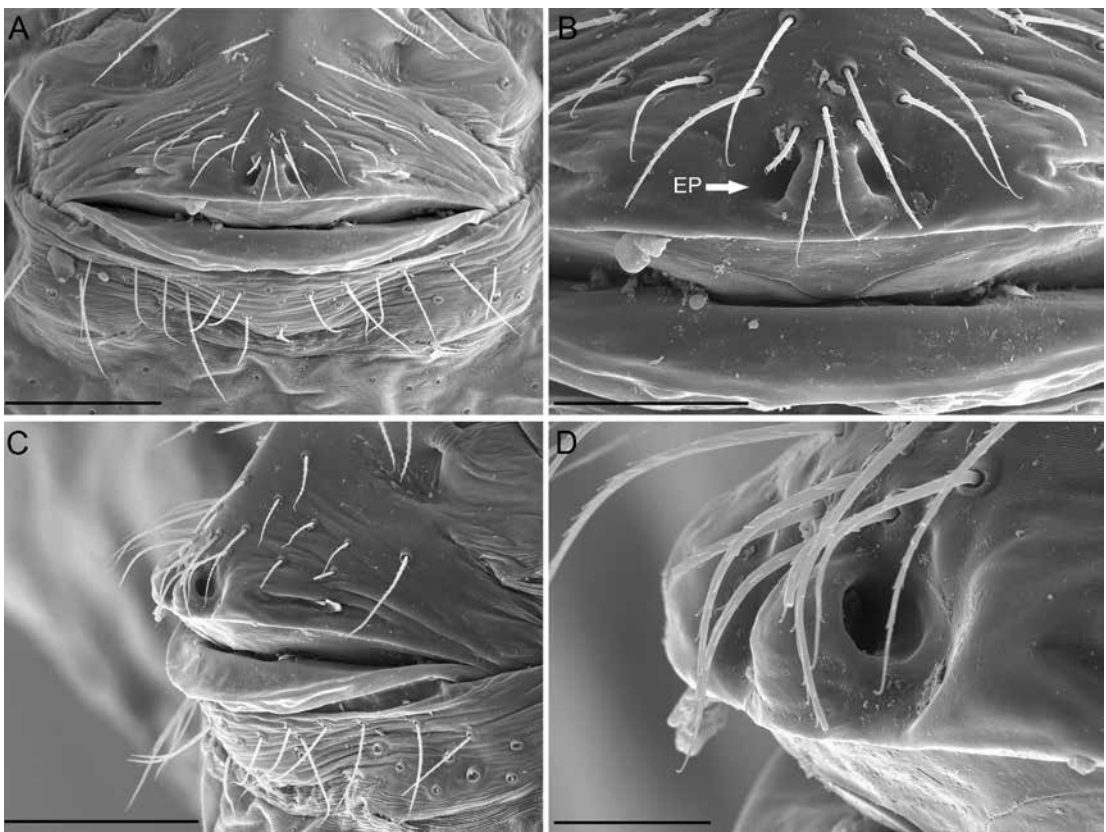


FIGURE 208. *Orchestina* MI023, SEM of female epigastric region. **A.** General view. **B.** Closer view; arrow points to external pockets (EP). **C.** Lateral view. **D.** Same, detail of pocket. Scale bars: **A, C.** 100 μ m. **B.** 50 μ m. **D.** 20 μ m. (PBI_OON 37197).

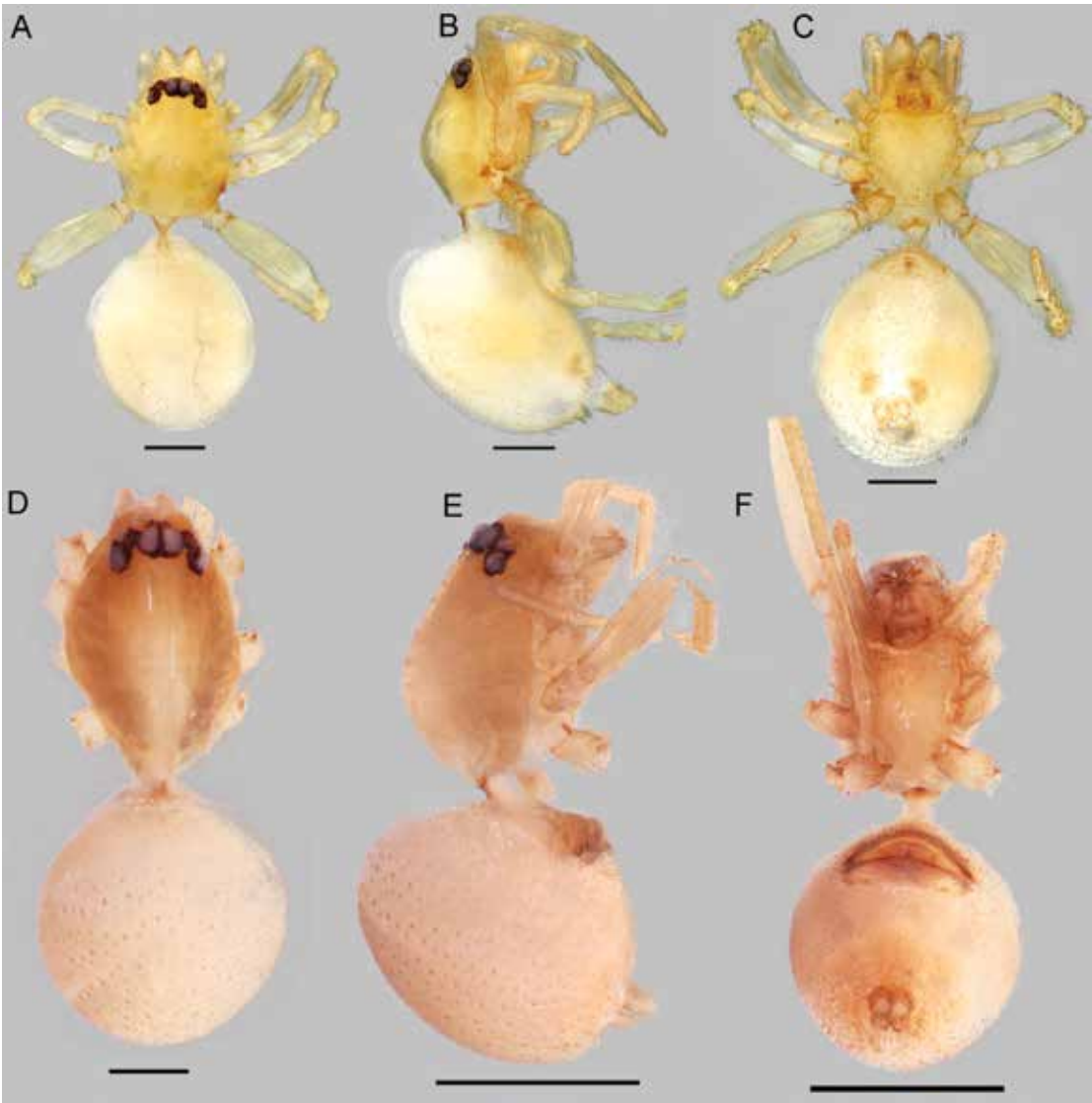


FIGURE 209. Morphospecies of *Orchestina*, females. A–C. OMI024. D–F. OMI025. A, D. Dorsal. B, E. Lateral. C, F. Ventral. Scale bars: A–D. 0.2 mm. E, F. 0.5 mm. (PBI_OON 30934, 30932).

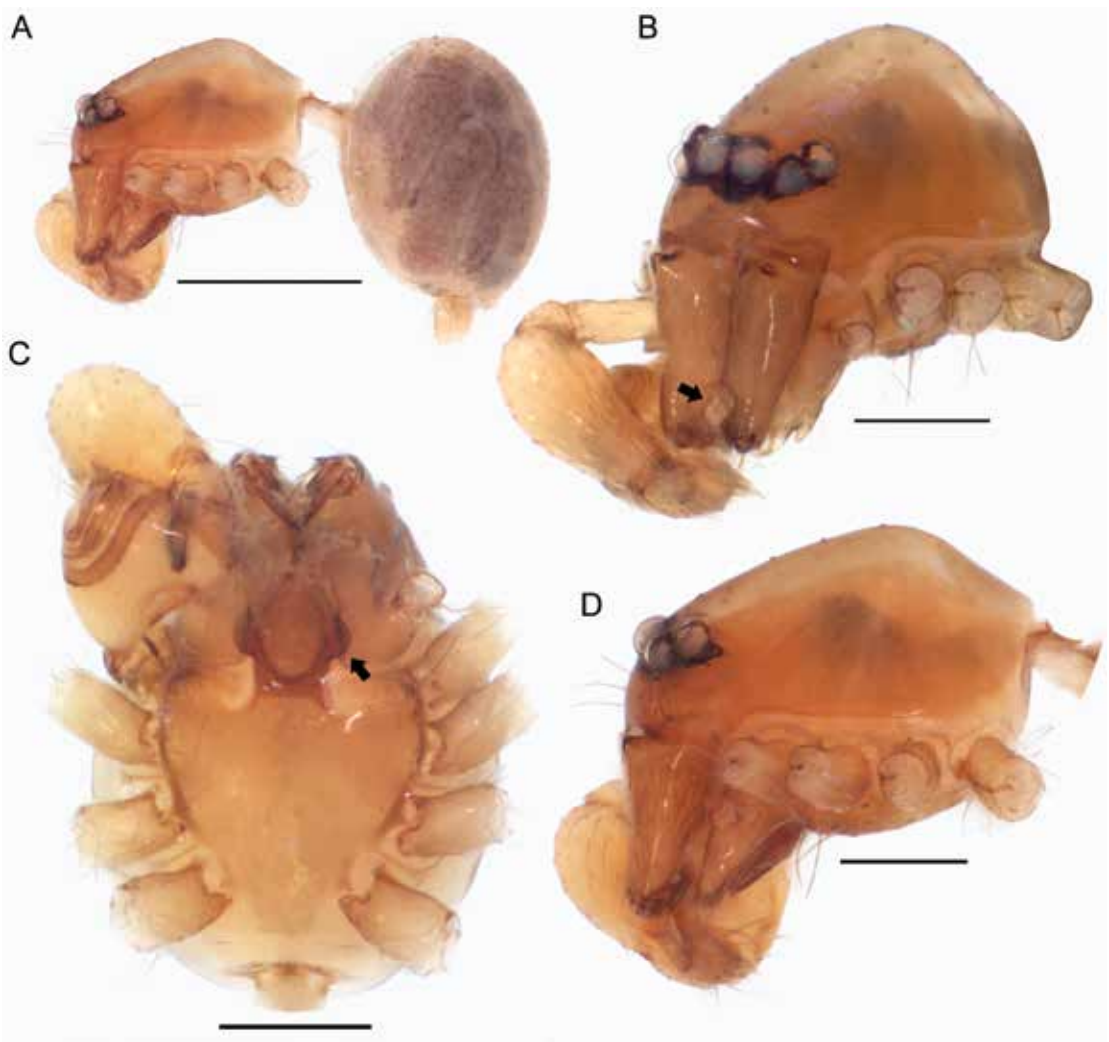


FIGURE 210. *Orchestina* MI028. **A.** Habitus. **B–D.** Cephalothorax. **A, D.** Lateral. **B.** Anterolateral. **C.** Ventral. Arrow in **B** points to the narrowed promargin of chelicerae. Arrow in **C** points to the lateral projections of labium. Scale bars: **A.** 0.5 mm. **B–D.** 0.2 mm. (PBI_OOON 51092).

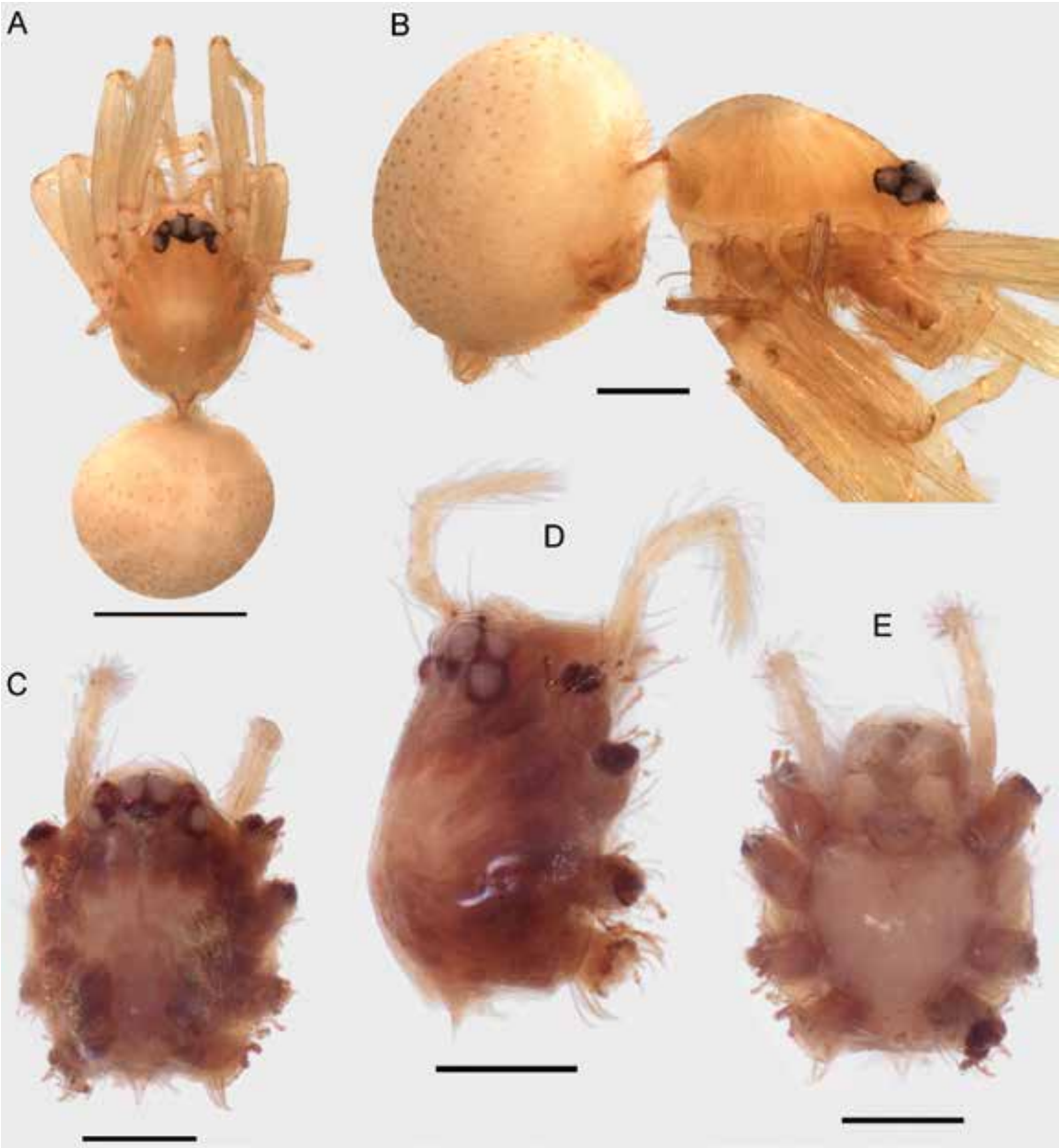


FIGURE 211. Morphospecies of *Orchestina*, females. **A, B.** OMI026. **C-E.** OMI036. **A.** Habitus dorsal. **B.** Habitus lateral. **C.** Cephalothorax, dorsal. **D.** Same, lateral. **E.** Ventral. Scale bars: **A.** 0.5 mm. **B-E.** 0.2 mm. (PBI_OON 14962, 43336).

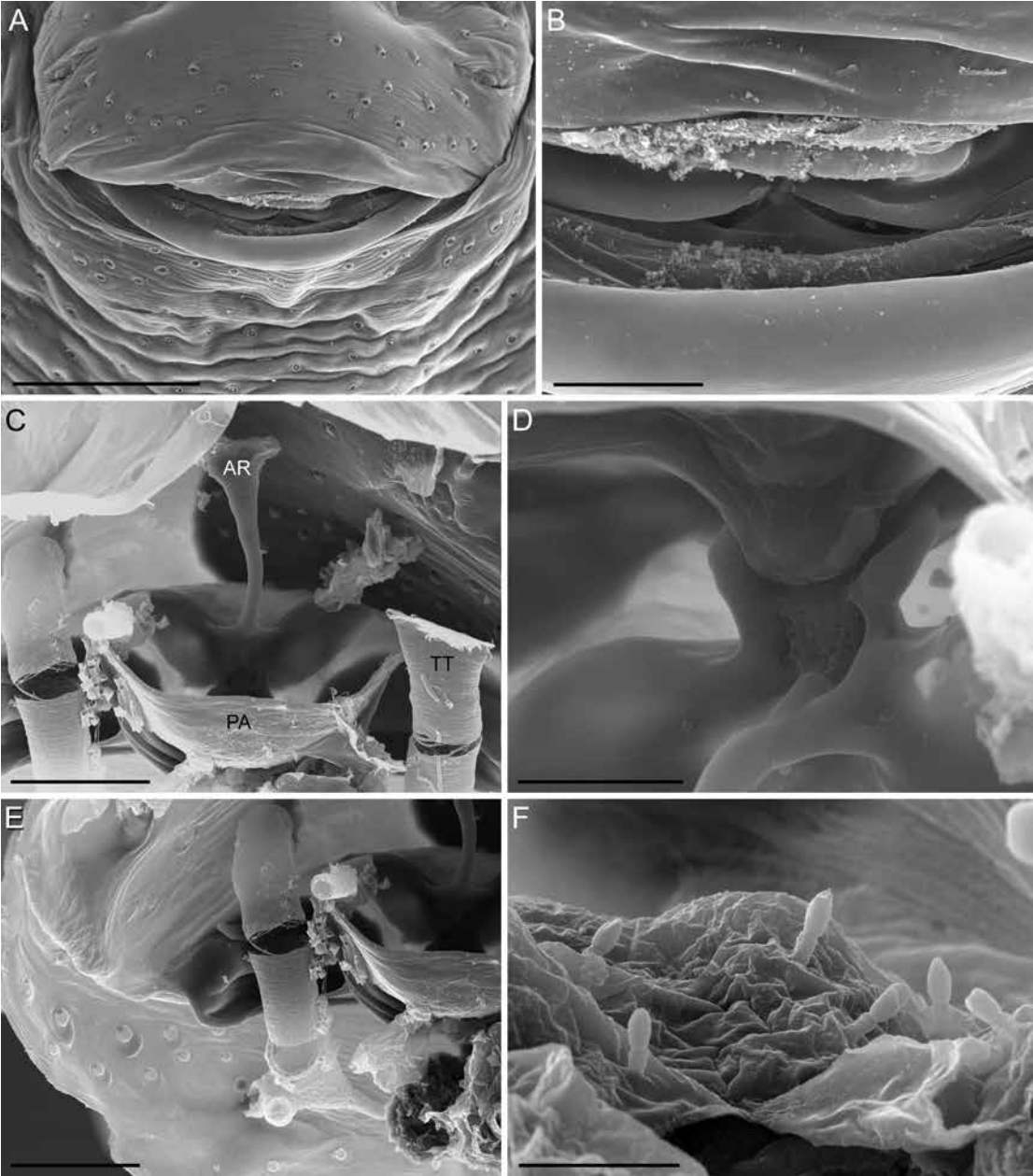


FIGURE 212. *Orchestina* MI026, SEM of female genitalia. **A.** Epigastric region. **B.** Same, detail. **C.** Dorsal. **D.** Detail of the posterior apodeme base. **E.** Detail of a tracheal tube and internal pocket. **F.** Gland ducts of the posterior receptaculum. Abbreviations: **AR**, anterior receptaculum; **PA**, posterior apodeme; **TT**, tracheal tube. Scale bars: **A.** 100 µm. **B.** **D.** 20 µm. **C.** **E.** 50 µm. **F.** 10 µm. (PBI_OON 30240, 14958).



FIGURE 213. *Orchestina* MI027, habitus of female. A. Dorsal. B. Ventral. C. Lateral. Scale bars: 0.5 mm. (PBI_OON 30939, 14942).

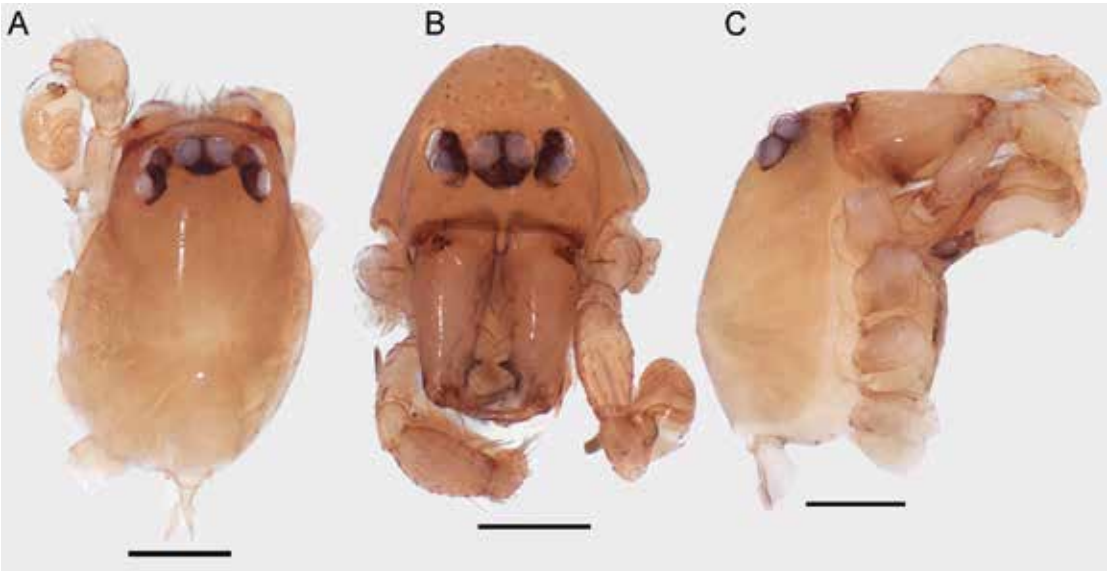


FIGURE 214. *Orchestina* MI030, cephalothorax of male. **A.** Dorsal. **B.** Anterior. **C.** Lateral. Scale bars: 0.2 mm. (PBI_OON 43310).

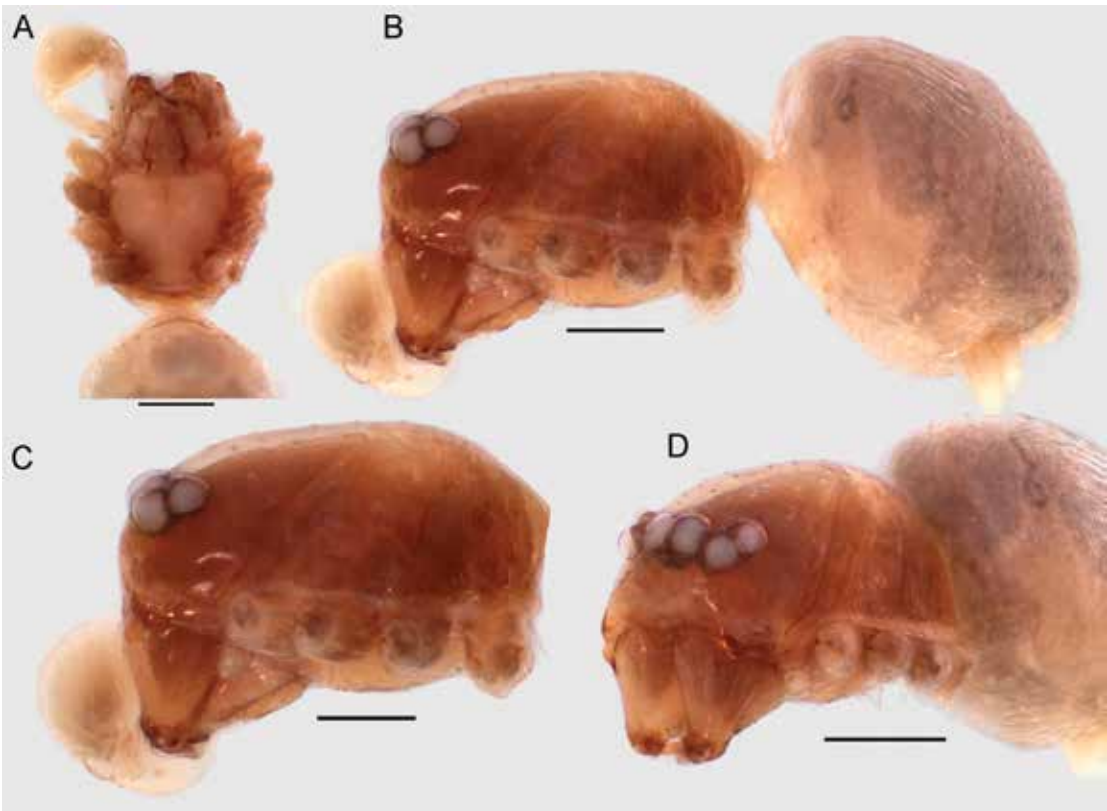


FIGURE 215. *Orchestina* MI032, male. A, C. Cephalothorax. B, D. Habitus. A. Ventral. B, C. Lateral. D. Anterolateral. Scale bars: 0.2 mm. (PBI_OON 40467).

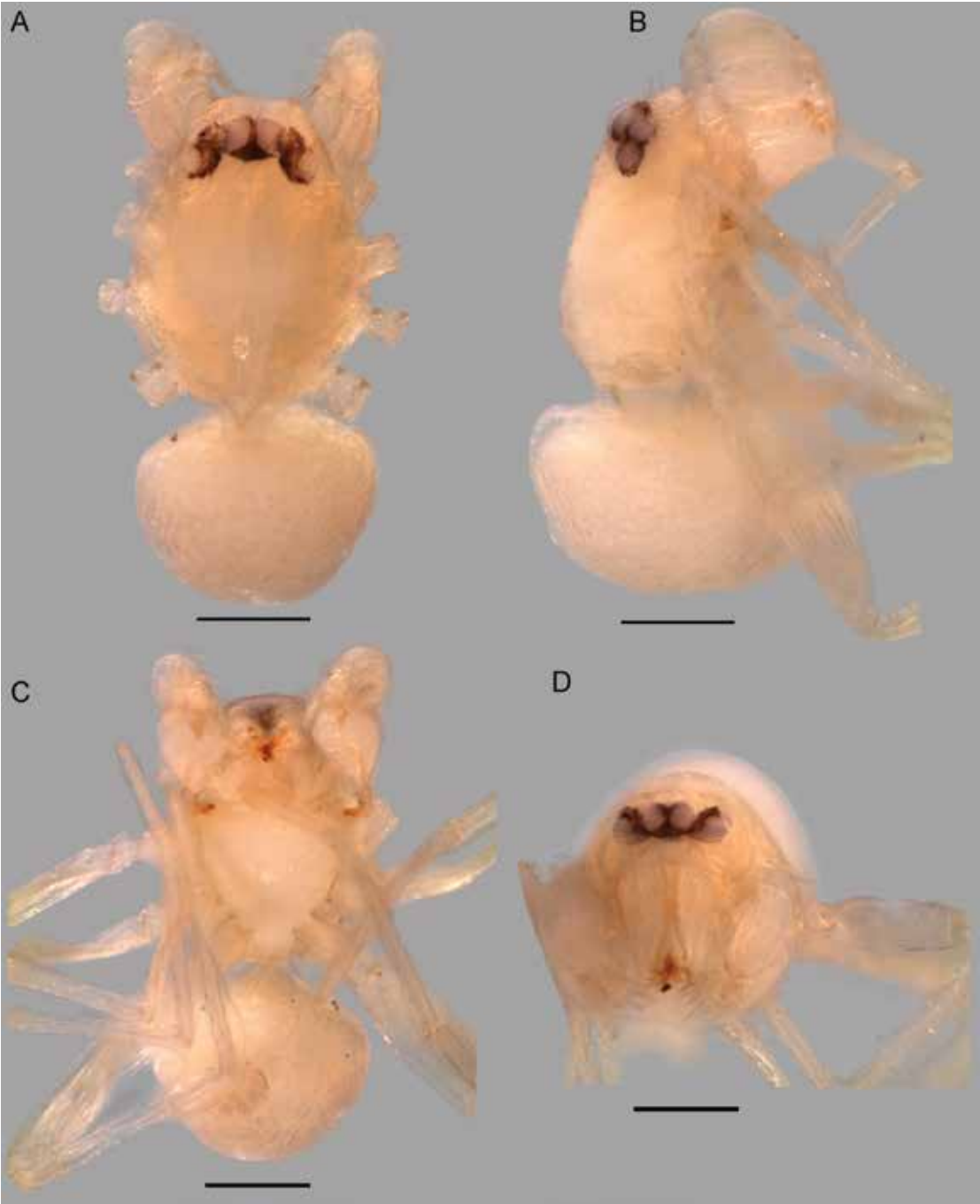


FIGURE 216. *Orchestina* MI033, habitus of male. **A.** Dorsal. **B.** Lateral. **C.** Ventral. **D.** Anterior. Scale bars: 0.2 mm. (PBI_OON 40477).



FIGURE 217. *Orchestina* MI034, habitus of male. **A.** Dorsal. **B.** Anterior. **C.** Ventral. **D.** Lateral. Scale bars: 0.2 mm. (PBI_OON 40477).

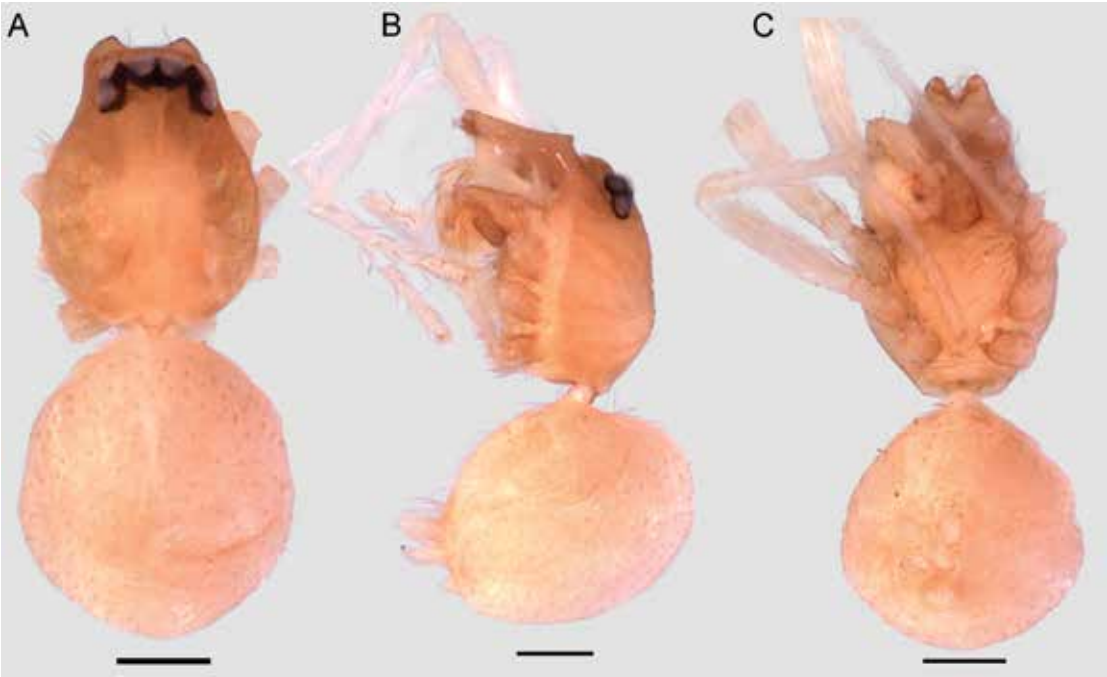


FIGURE 218. *Orchestina* MI037, habitus. **A.** Dorsal. **B.** Lateral. **C.** Ventral. Scale bars: 0.2 mm. (PBI_OON 43375).



FIGURE 219. *Orchestina* MI039, male. **A.** Habitus dorsal. **B.** Habitus lateral. **C.** Cephalothorax, lateral. **D.** Same, dorsal. **E.** Same, ventral. **F.** Same, anterior. Scale bars: 0.2 mm. (PBI_OON 43331, 43359).

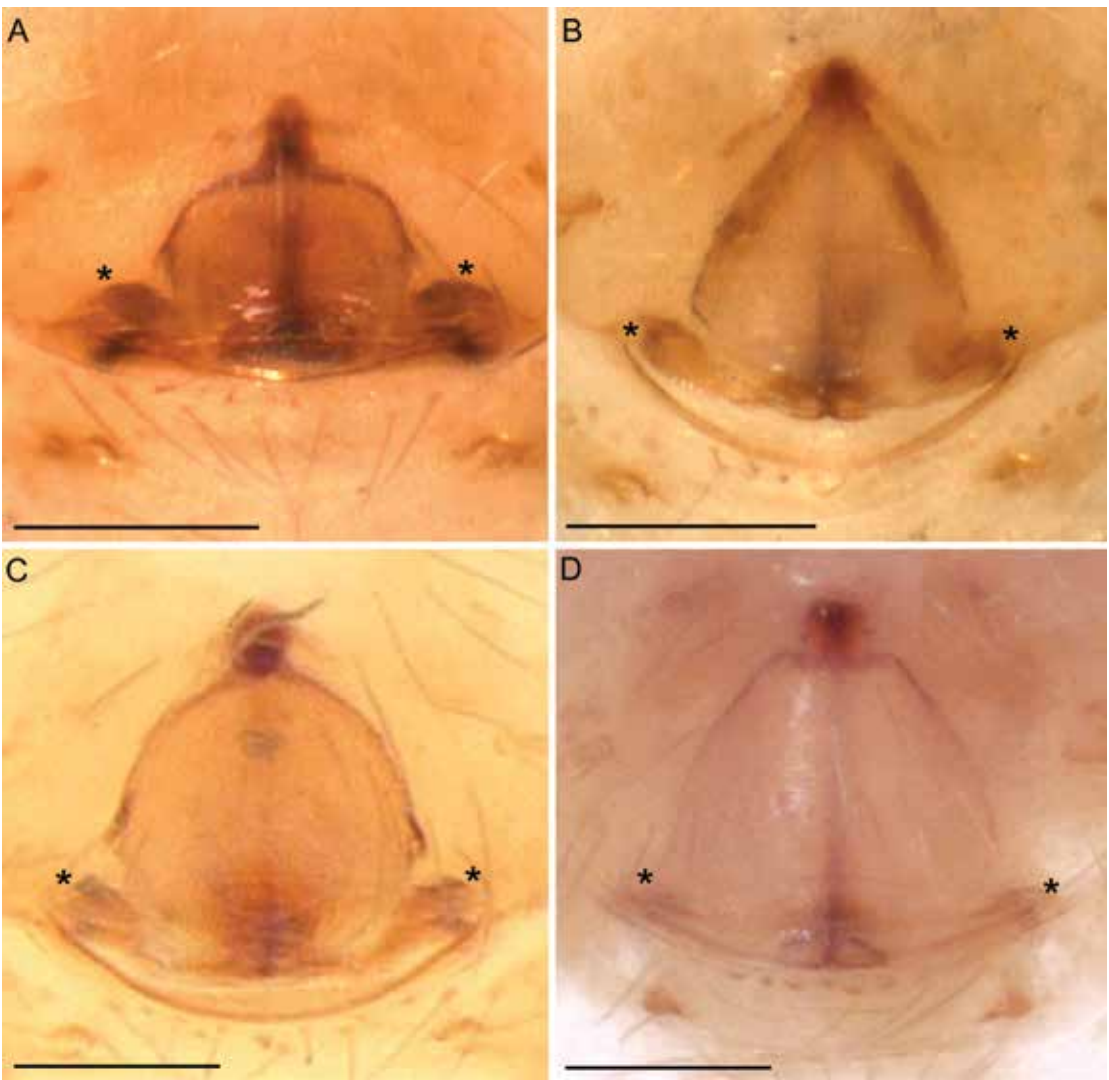


FIGURE 220. Genitalia of morphospecies of *Orchestina*, ventral. **A.** OMI020. **B.** OMI038. **C.** OMI021. **D.** OMI036. Asterisks indicate internal pockets. Scale bars: **A–C.** 0.25 mm. **D.** 0.1 mm. (PBI_OON 36510, 30382, 43336).

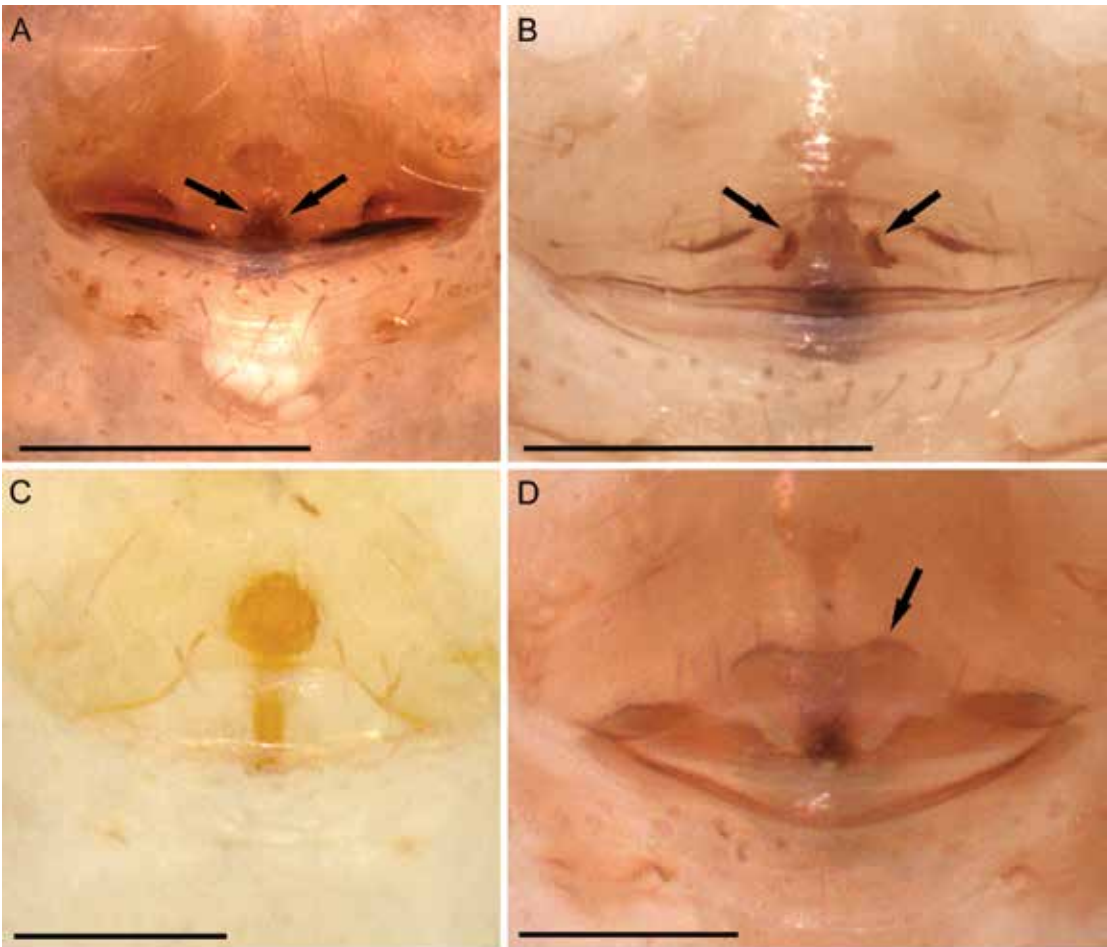


FIGURE 221. Genitalia of morphospecies of *Orchestina*, ventral. **A.** OMI023. **B.** OMI027. **C.** OMI024. **D.** OMI026. Arrows in A and B point to external pockets; arrow in D points to undulating plate. Scale bars: **A.** 0.25 mm. **B–D.** 0.1 mm. (PBI_OON 37191, 14943, 37236, 14967).

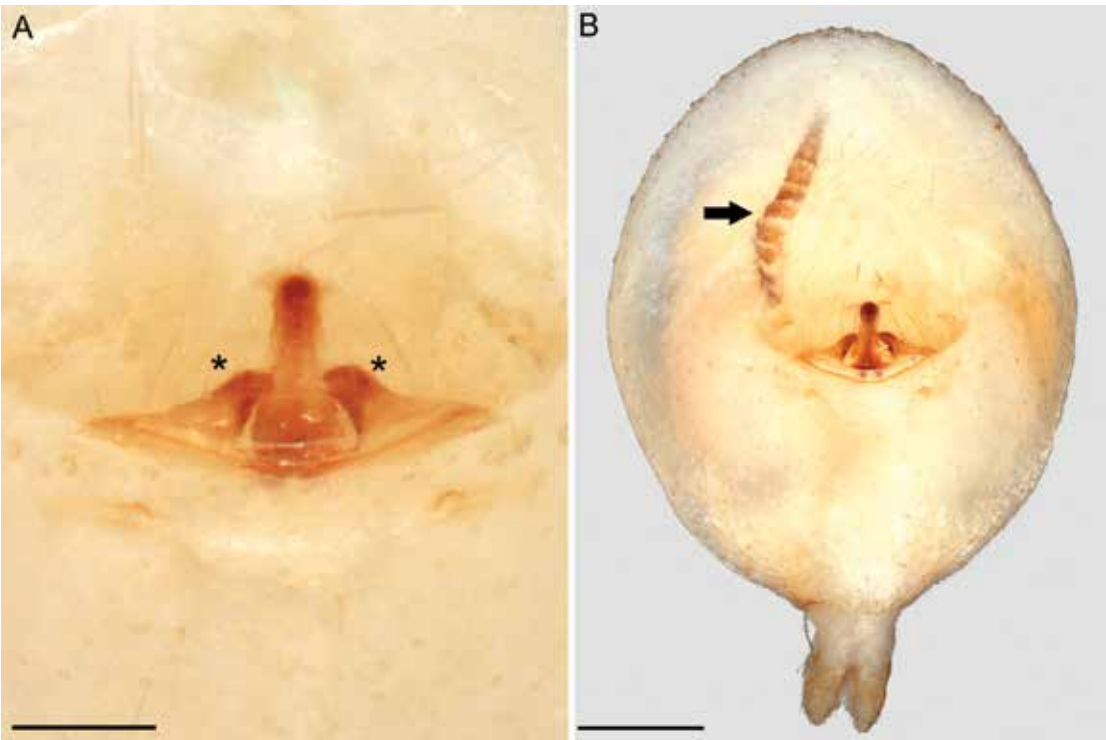


FIGURE 222. *Orchestina* MI022. **A.** Genitalia, ventral. **B.** Abdomen in ventral view showing the presence of Acroceridae larva (arrow). Asterisks show internal pockets. Scale bars: **A.** 0.1 mm. **B.** 0.2 mm. (PBI_OON 37263, 37234).

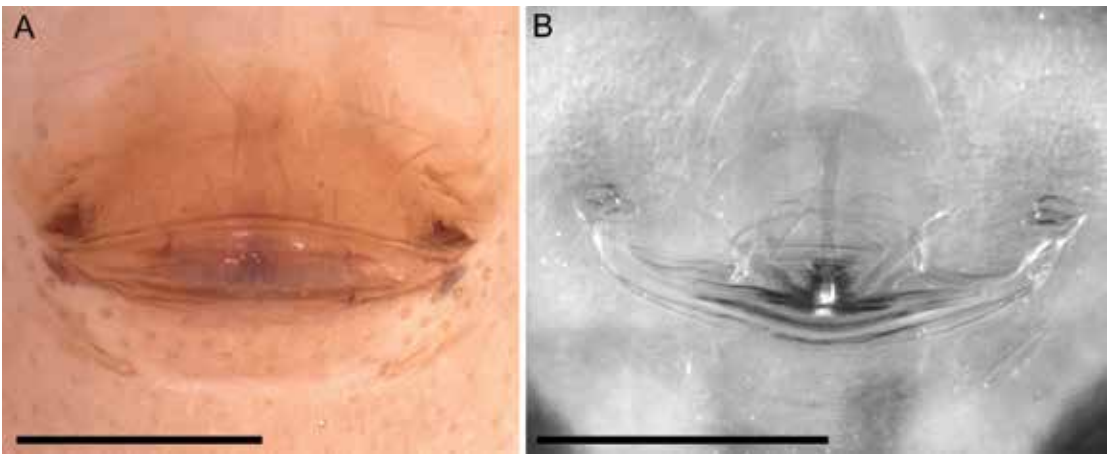


FIGURE 223. *Orchestina* MI025, genitalia. **A.** Ventral. **B.** Same, cleared. Scale bars: **A.** 0.1 mm. **B.** 0.2 mm. (PBI_OON 43301, 42165).

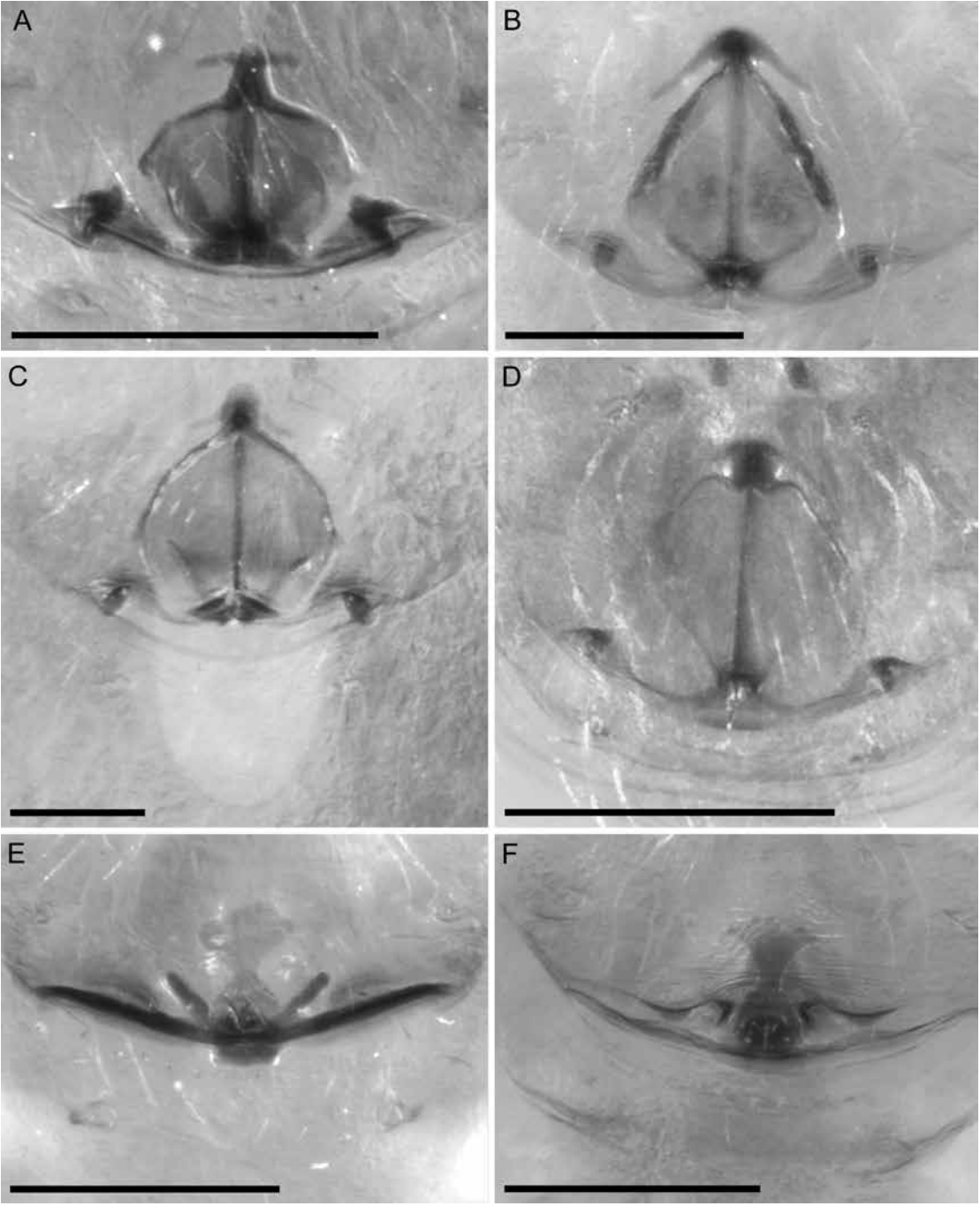


FIGURE 224. Genitalia of morphospecies of *Orchestina*, ventral, cleared. **A.** OMI020. **B.** OMI038. **C.** OMI021. **D.** OMI036. **E.** OMI023. **F.** OMI027. Scale bars: **A, D–F.** 0.2 mm. **B.** 0.15 mm. **C.** 0.1 mm. (PBI_OON 37750, 30161, 42250, 43336, 37197, 14942).

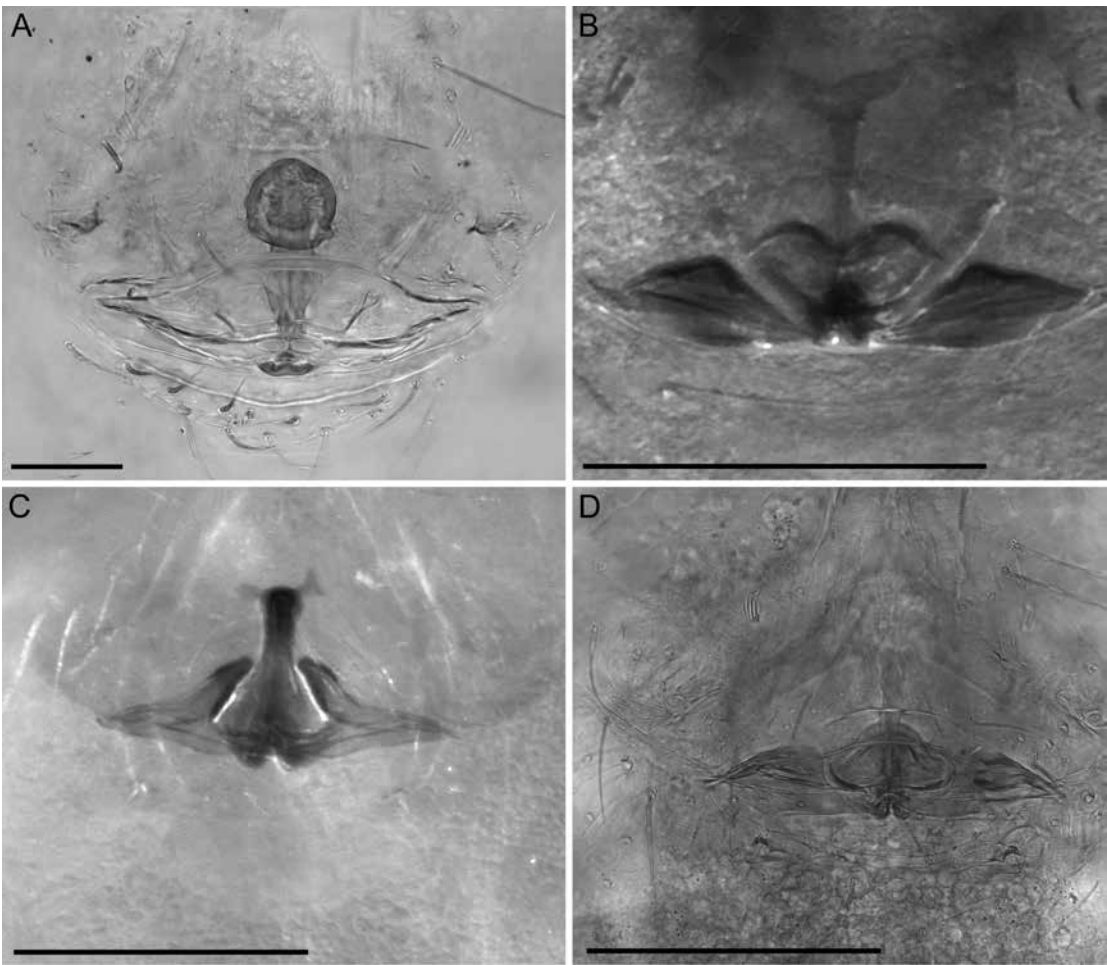


FIGURE 225. Genitalia of morphospecies of *Orchestina*, ventral, cleared. **A.** OMI024. **B.** OMI026. **C.** OMI022. **D.** OMI029. Scale bars: **A, D.** 0.05 mm. **B, C.** 0.2 mm. (PBI_OON 37237, 42159, 30908, 14966).

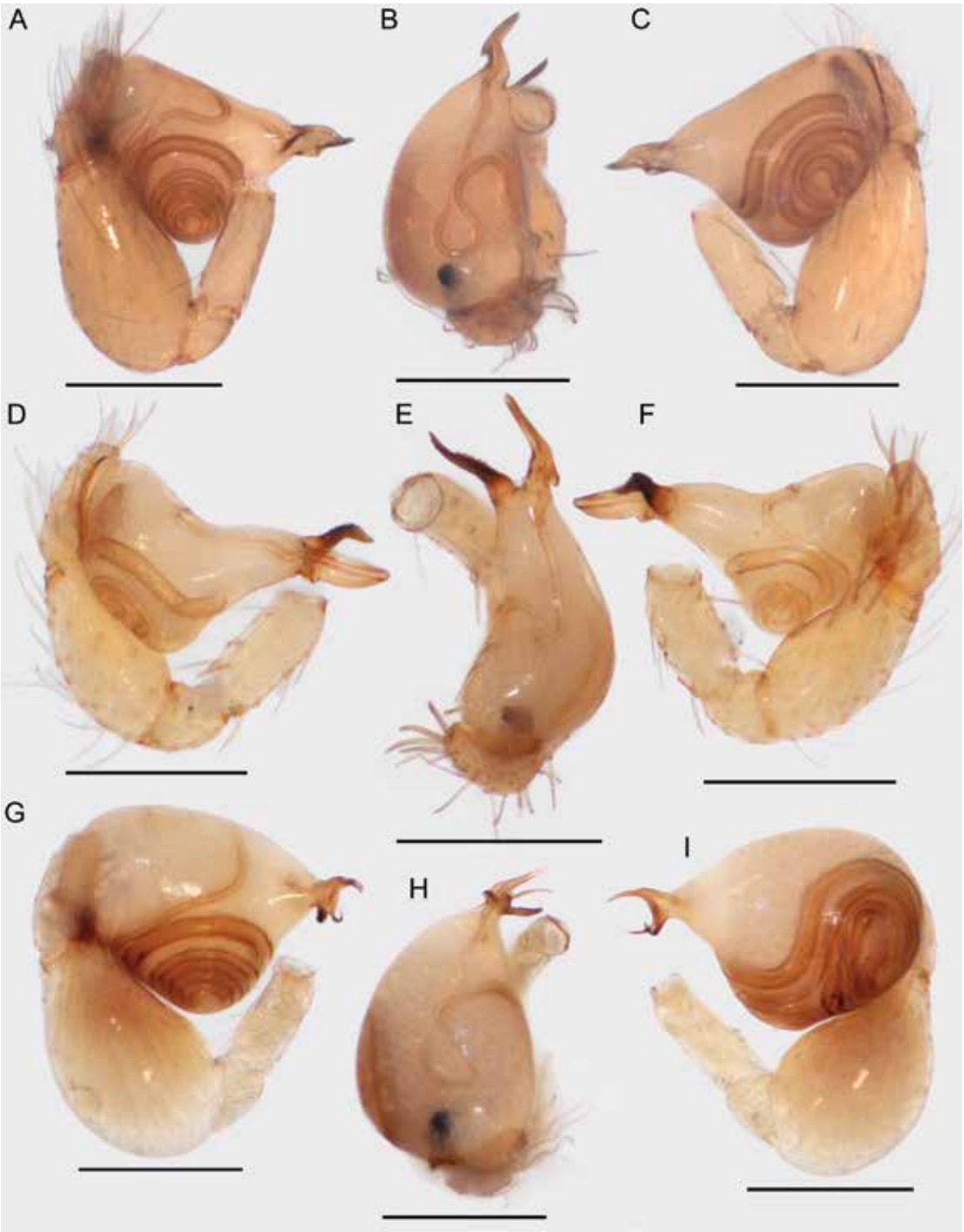


FIGURE 226. Palps of morphospecies of *Orchestina*. A–C. OMI028. D–F. OMI030. G–I. OMI032. A, D, G. Prolateral. B, E, H. Dorsal. C, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 51092, 40467, 43310).

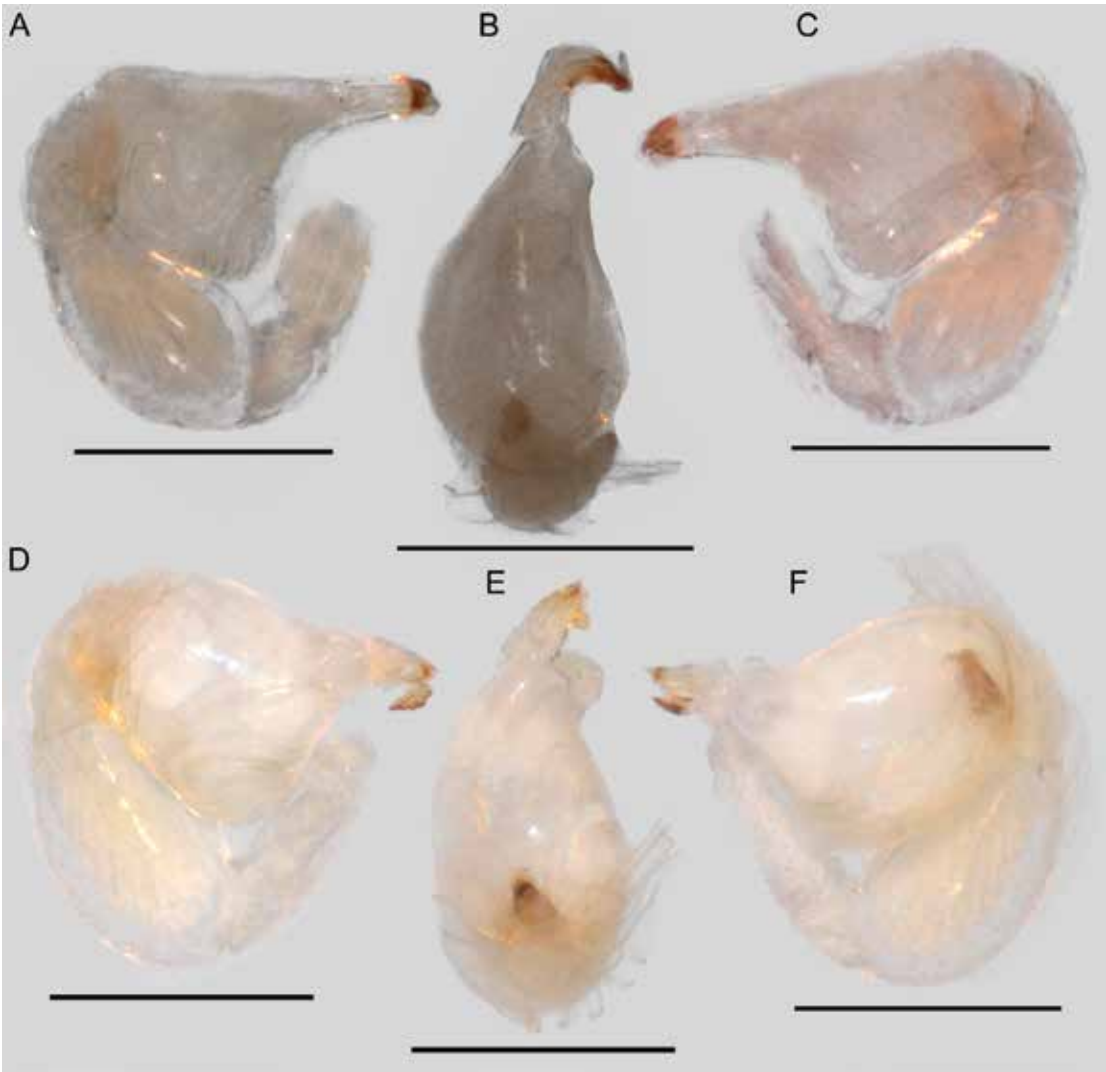


FIGURE 227. Palps of morphospecies of *Orchestina*. A–C. OMI033. D–F. OMI034. A, D. Prolateral. B, E. Dorsal. E, F. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 40478, 40476).

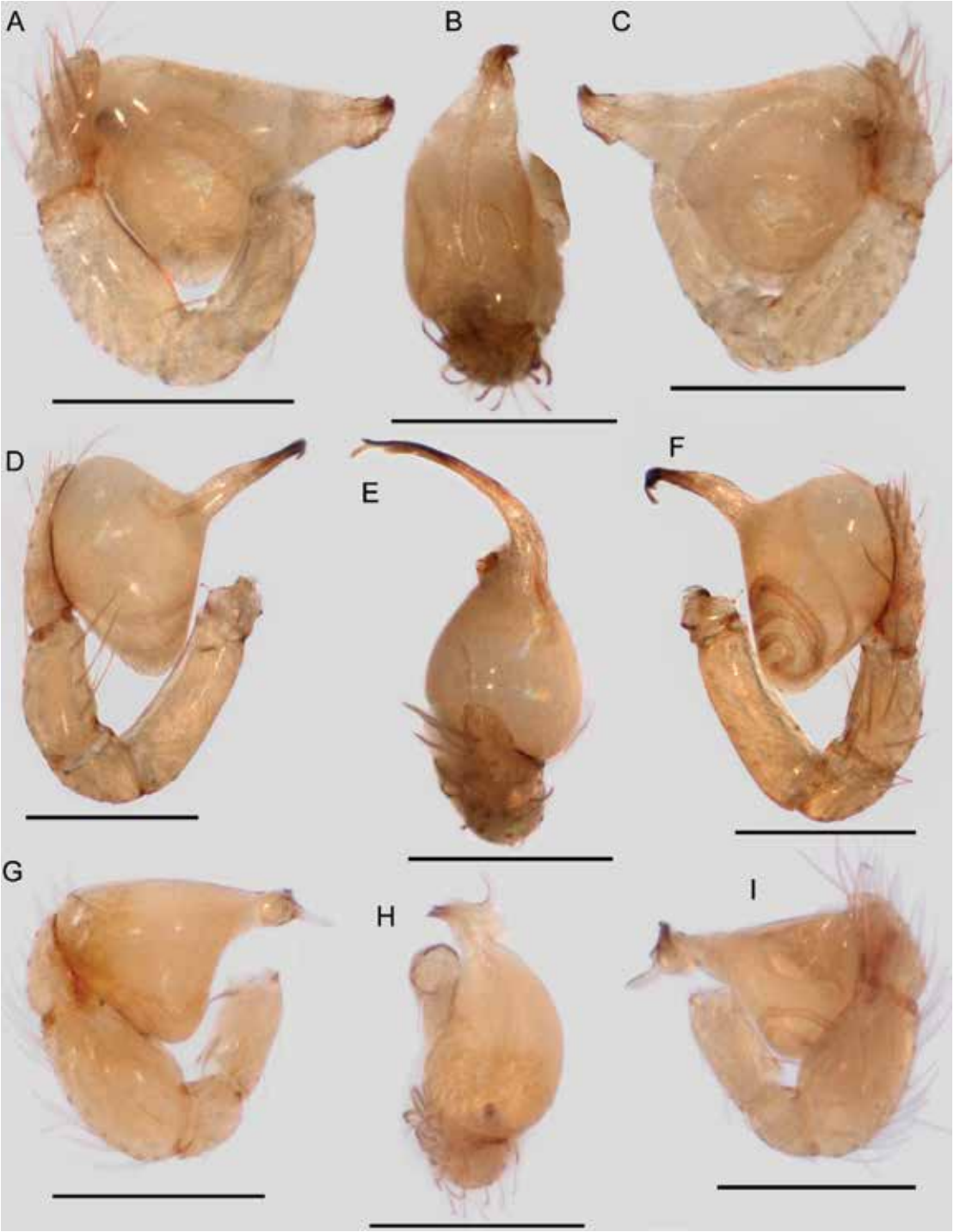


FIGURE 228. Palps of morphospecies of *Orchestina*. A–C. OMI037. D–F. OMI039. G–I. OMI040. A, D, G. Prolateral. B, E, H. Dorsal. E, F, I. Retrolateral. Scale bars: 0.2 mm. (PBI_OON 43375, 43359, 30290).

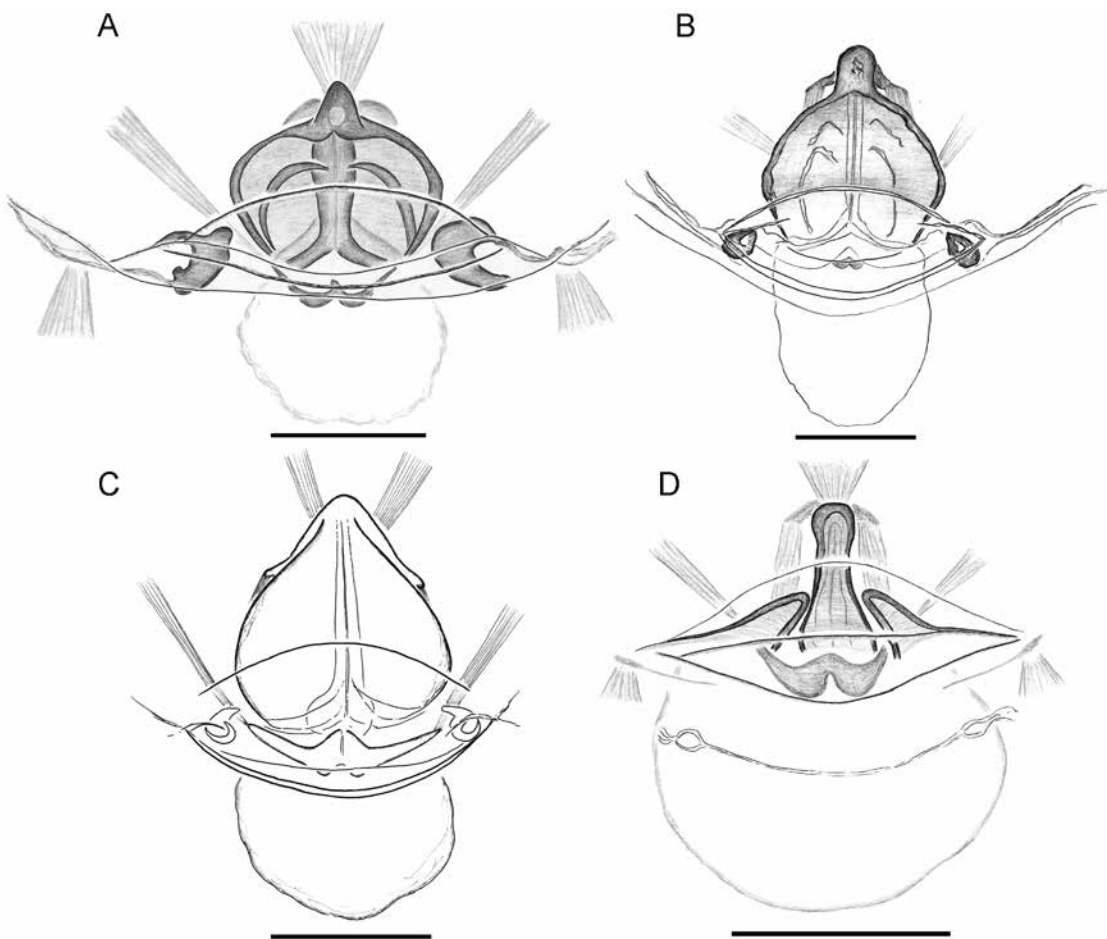


FIGURE 229. Morphospecies of *Orchestina*, drawings of female genitalia, ventral. **A.** OMI020. **B.** OMI021. **C.** OMI038. **D.** OMI022. Scale bars: 0.1 mm. (PBI_OON 37541, 42250, 30856, 37255).

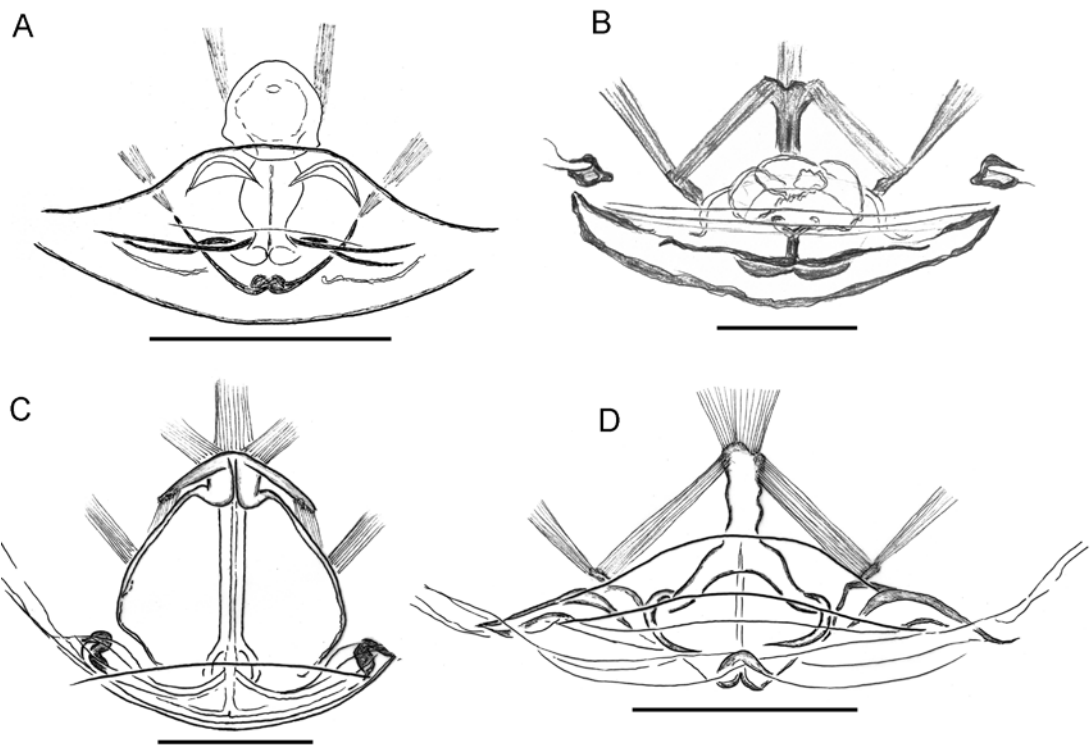


FIGURE 230. Morphospecies of *Orchestina*, drawings of female genitalia, ventral. **A.** OMI024. **B.** OMI025. **C.** OMI036. **D.** OMI029. Scale bars: 0.1 mm. (PBI_OON 37237, 42165, 43336, 14966).

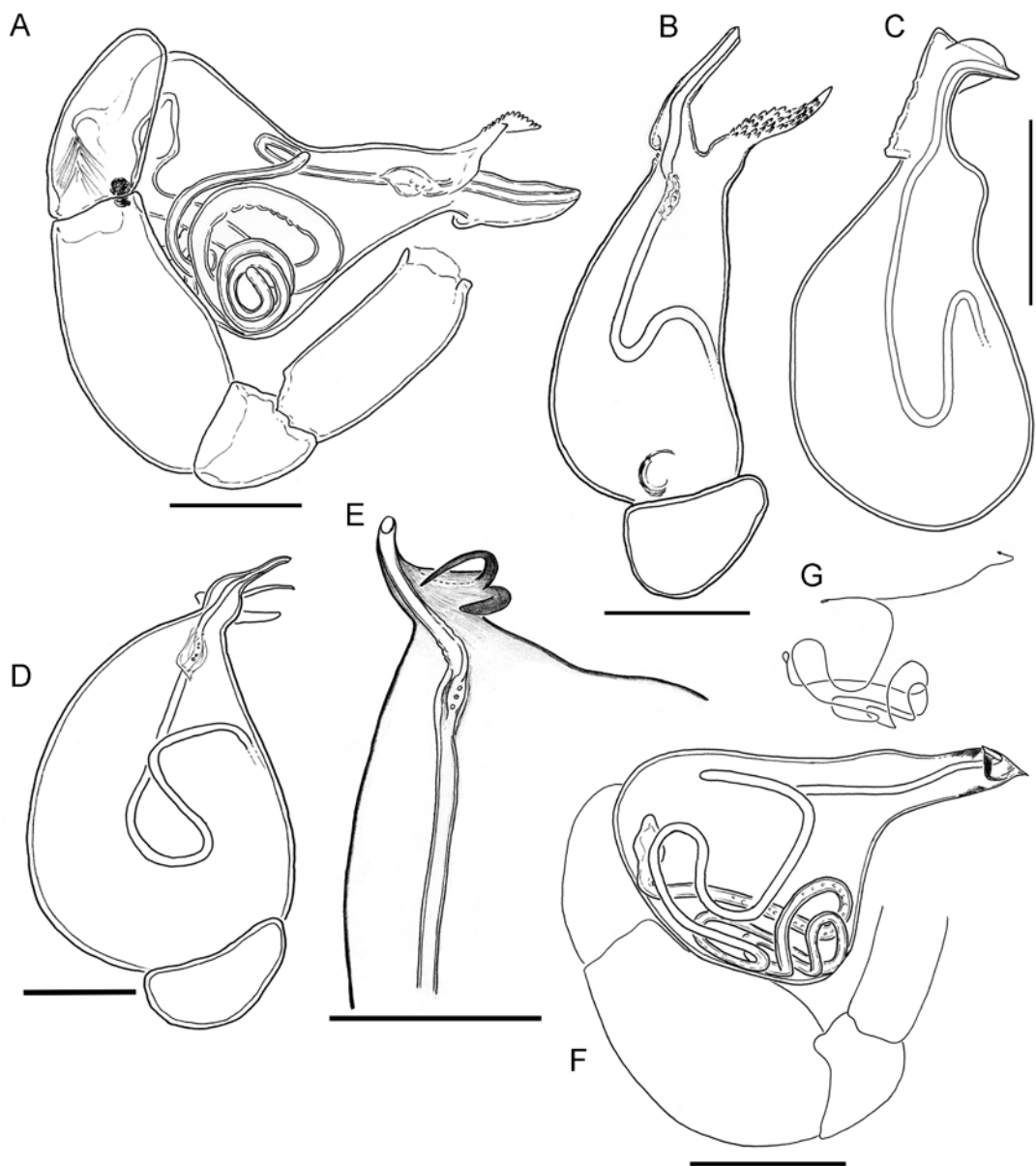


FIGURE 231. Morphospecies of *Orchestina*, drawings of male palps. **A, B.** OMI030, right palp. **C, F, G.** OMI033. **D, E.** OMI032. **A, F, E.** Detail, prolateral. **B, C, D.** Dorsal. **G.** Schematic course of the sperm duct. Images **A, B** flopped for consistency. Scale bars 0.1 mm (PBI_OON 43310, 40478, 40467).

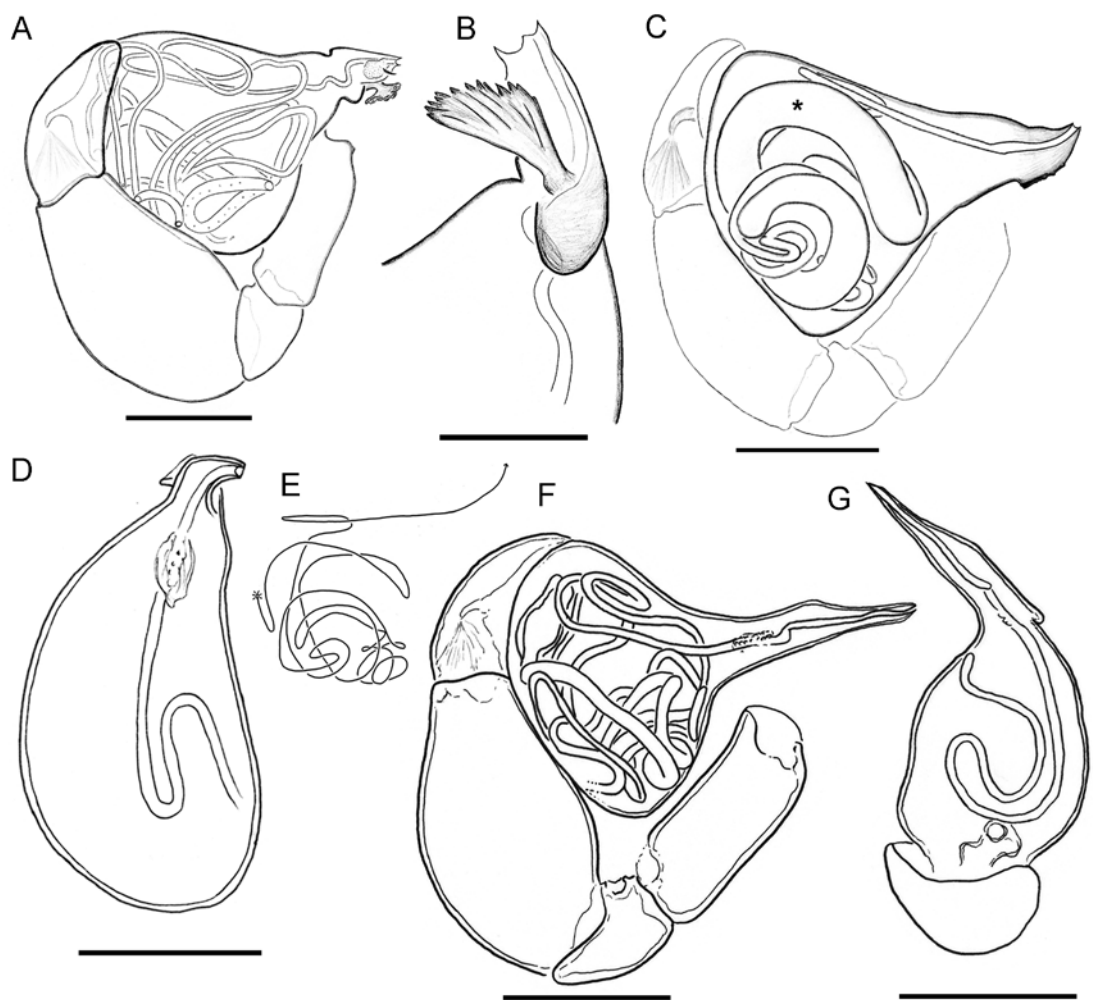


FIGURE 232. Morphospecies of *Orchestina*, drawings of male palps. **A, B.** OMI034. **C-E.** OMI037, asterisk on the wide first section of sperm duct. **F, G.** OMI035, right palp. **A.** Prolateral. **B** (detail), **D, G.** Dorsal. **C, F.** Retrolateral. Image **C** flopped for consistency. **E.** Scheme of sperm duct course. Scale bars: 0.1 mm. (PBI_OON 40476, 43375, 42162).

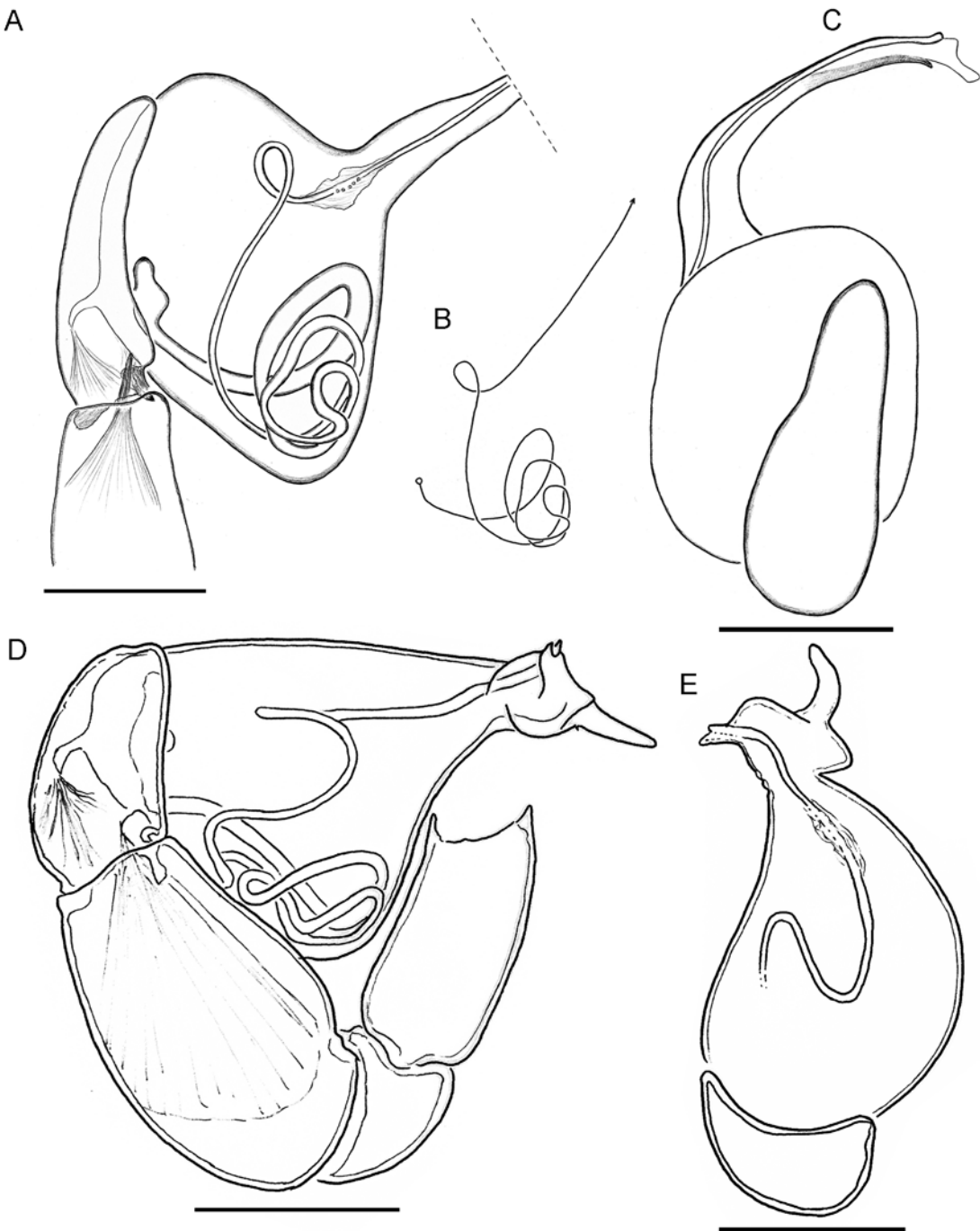


FIGURE 233. Morphospecies of *Orchestina*, drawings of male palps. A–C. OMI039, right palp. D, E. OMI040. A, D. Retrolateral. B. Schematic course of sperm duct. C, E. Dorsal. Image D flopped for consistency. Scale bars: 0.1 mm. (PBI_OON 43359, 51096).

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