

## The Goblin Spider Genus *Pescennina* (Araneae, Oonopidae)

NORMAN I. PLATNICK<sup>1</sup> AND NADINE DUPÉRRÉ<sup>1</sup>

### ABSTRACT

The goblin spider genus *Pescennina* Simon has been known only from females of its type species from Venezuela, whereas the more recently described genus *Marsupopaea* Cooke has been known only from males taken in Colombia. Discovery of the missing sexes, in both cases, indicates that these spiders belong to the *Scaphiella* complex; males have dorsal abdominal scuta that are absent in females. The presence, in the males of both type species, of a terminal, coiled embolus that can be held in an excavated “pouch” at the anterior edge of the sternum and is matched by coiled anterior ducts in the female genitalia, suggests that these taxa are congeneric. *Marsupopaea* is therefore newly synonymized with *Pescennina*, and its type species, *M. sturmi* Cooke, is placed as a junior synonym of *P. cupida* (Keyserling). Species of *Pescennina* occur widely in North, Central, and South America; many are apparently ant mimics, with color patterns (and sometimes a constricted abdomen) that enhance their antlike appearance. Although most of the species seem to be ground dwelling, with the extremely narrow geographic ranges typical of goblin spiders, at least four species inhabit the forest canopy, and at least one of those species is much more widespread. Males of the type species, *P. epularis* Simon, and females of *P. cupida* (Keyserling) are described for the first time; 16 new species are described: *P. iviei*, *P. gertschi*, *P. sumidero*, and *P. ibarra* from Mexico; *P. murphyorum* from Nicaragua and Costa Rica; *P. viquezi* from Costa Rica; *P. laselva* from Costa Rica and Panama; *P. fusca* from Panama; *P. arborea* from Panama, Colombia, and Ecuador; *P. magdalena* and *P. sasaima* from Colombia; *P. orellana* from Ecuador; *P. piura* and *P. loreto* from Peru; *P. grismadoi* from Bolivia; and *P. otti* from southern Brazil.

<sup>1</sup>Division of Invertebrate Zoology, American Museum of Natural History.

## INTRODUCTION

Simon (1903a) established the genus *Pescennina* for a species from Venezuela that he found puzzling; he noted that the characters of the genus are “très ambigus et rappellent ceux des Oonopides” but nevertheless placed the genus near the dionychnan genera *Micaria* Westring and *Sphingius* Thorell (currently placed in the families Gnaphosidae and Liocranidae, respectively). This placement was curious, not least because these are six-eyed, haplogyne spiders, but probably just reflects the antlike appearance of the animals. Roth (1988) reported that Simon’s accession book indicates that he had initially placed the specimens as oonopids, and Roth transferred *Pescennina* to the Oonopidae. As Simon had only females, and no illustrations of the genus have ever been published, these animals have remained poorly known and enigmatic.

Cooke (1972) established a new oonopid genus, *Marsupopaea*, based on a male from Colombia, indicating that “The long coiled embolus and sternal pouch set this spider clearly apart from any species described hitherto.” He noted “a strong similarity to *Opopaea* and *Gamasomorpha*” but apparently didn’t compare his specimen to the known species then placed in those genera in any detail. Had he done so, he would presumably have noted that Keyserling’s (1881: fig. 20) drawing of the palp of *Opopaea cupida* (Keyserling), also described from Colombia, clearly matches his specimen, showing the same type of embolus, and that other South American species described in *Gamasomorpha* have smaller but distinct anterior sternal “pouches” in which the embolus rests (e.g., Birabén, 1954: figs. 16, 24).

The discovery of the missing sexes of *Pescennina epularis* Simon (1903a) and *Marsupopaea sturmi* Cooke (1972), along with both sexes of several previously undescribed species, provides substantial new information about their relationships. Although males of these spiders are clearly gamasomorphines, with a distinct dorsal scutum (figs. 2, 47) as well as a substantial postepigastric scutum (figs. 5, 50) on the abdomen, females lack a dorsal scutum (figs. 13, 58) and have only a very short postepigastric scutum (figs. 11, 56). This pattern of sexual dimorphism suggests that these taxa belong to the *Scaphiella* complex, a group of genera including at least *Scaphiella* Simon (1891, see Platnick and Dupérré, 2010a), *Escaphiella* Platnick and Dupérré (2009b), *Niarchos* Platnick and Dupérré (2010b), and *Scaphios* Platnick and Dupérré (2010b). If our association of *Pescennina* with these taxa proves correct, then there is a formal family-group name available for the assemblage, as Simon (1903b: 1036) established a tribe, based on *Pescennina*, within his dionychnan subfamily Micariinae. By analogy with his other tribal-level names, it should have been called Pescennineae, but Simon inadvertently omitted the penultimate “e,” producing a name, Pescenninae, that unfortunately looks like a subfamily (an error corrected by Roewer, 1955: 607). The generic name is a feminine diminutive apparently based on the second-century Roman emperor Pescennius Niger, probably so used by Simon because the Latin masculine form was already in use as a generic name in the Coleoptera, so the root is *Pescennin-* (H.D. Cameron, personal commun.). If formally recognized as a tribe in the future, the correct spelling will therefore be the typographically awkward Pescenninini.

The matching of the sexes also shows that the distinctive terminal placement of the male embolus in *M. sturmi* (figs. 191, 192), and the deep “marsupial pouch” in which those emboli are

protected (figs. 103, 187), are found also in *P. epularis*, as are the anteriorly coiled ducts in the female genitalia (figs. 14, 198) and the peculiar form of the female posterior receptaculum, the dorsal surface of which bears numerous circular ridges that are visible under both light and electron microscopy (figs. 15, 38, 153, 199). We therefore regard *Marsupopaea* as a junior synonym of *Pescennina*. The similarities between the male palps of *Marsupopaea* and *Opopaea* noted by Cooke (an enlarged patella that connects subbasally with the femur) occur only in Cooke's species, not in any of the others treated below, and were apparently acquired independently, just as in the males of *Camptoscaphiella* Caporiacco (1934; see Baehr and Ubick, 2010).

Species of *Pescennina* occur in North, Central, and South America, ranging from northern Mexico to southern Brazil, but have not been found, to date, in the West Indies. Some members of *Pescennina* are unusual among goblin spiders in their appearance and ecology. In many species, both sexes are notable for their antlike appearance, and are apparently as effective ant mimics as are the members of the African genus *Antoonops* Fannes and Jocqué (2008). The abdomens of these species sometimes have a definite anterior constriction (figs. 2, 25), accompanied by color patterns (figs. 9, 13) that accentuate the thoraxlike appearance of the portion of the abdomen anterior to the constriction.

Most of the species are apparently ground dwelling, and seem to have the small geographic ranges that are typical of ground-dwelling goblin spiders (oonopids may have, on average, the smallest distribution ranges of any spiders). However, at least four species (*P. laselva*, *P. arborea*, *P. loreto*, and *P. otti*) occur in the forest canopy and have been collected by fogging. At least one of those canopy species seems to have a much broader geographic range than its congeners; *P. arborea* is known from Panama, Colombia, and Amazonian areas in Ecuador. Other species have been taken by beating foliage reachable by collectors from the ground, especially from plant parts where suspended soil, detritus, dead leaves, and twigs have accumulated.

The 18 species recognized below can be placed into several informal species groups. One group contains only two species from Mexico, *P. iviei* and *P. sumidero*, which are united by the presence, in both sexes, of the distinct abdominal constriction (figs. 2, 25) that makes them the best ant mimics in the genus. Six species from Panama and South America (*P. arborea*, *P. magdalena*, *P. sasaima*, *P. epularis*, *P. piura*, and *P. loreto*) are united by the presence in males of a deep, distinct depression situated just behind the anterior margin of the dorsal scutum (figs. 98, 171), a putative synapomorphy that also enhances the antlike appearance of these males; a seventh species known only from females, *P. grismadoi* from Bolivia, probably belongs to this group as well, based on similarities in the female genitalic apodeme arrangement.

Another group includes at least *P. cupida* from Colombia and *P. orellana* from Ecuador; these two species are easily distinguished from all the others by their wider carapace (figs. 185, 193), their larger eyes (figs. 188, 196), and the narrower dorsal scutum of males (which in dorsal view is completely surrounded by soft cuticle; figs. 185, 244). However, each of these features is likely to be plesiomorphic, and may thus provide evidence only for the monophyly of a group containing the remaining 16 species. Males of *P. orellana* resemble those of *P. cupida* in having a translucent conductor accompanying the basal portion of the embolus (figs. 191,

250), but similar (if longer and narrower) conductors appear to be present in *P. gertschi* and *P. laselva*. If the *cupida* group is monophyletic, then it is certainly ecologically diverse, as *P. cupida* is known only from high-altitude paramo habitats in Colombia, whereas *P. orellana* is known only from a lowland Amazonian site in Ecuador.

The males of *P. orellana* are so similar to those of *P. cupida* that in an early draft of this paper we predicted that the then unknown females of *P. orellana* would resemble those of *P. cupida* in lacking the female abdominal patterning characteristic of (and possibly synapomorphic for) a group containing all the remaining species. We subsequently discovered a single female specimen of *P. orellana*, from the type locality, that had been sorted into a different group because its appearance is so different from that of the male. As we predicted, the female has a white abdomen, with no color pattern, and no indication of ant mimicry.

It is certainly possible that *P. cupida* and *P. orellana* may together represent the sister group of the remaining, ant-mimicking species. However, the geographically disjunct species *P. otti*, known only from females from southern Brazil, offers some characters that may be incongruent with that hypothesis. Although the Brazilian females have a relatively narrow carapace, relatively small eyes, and a patterned abdomen, their genitalia are much more similar to those of *P. cupida* and *P. orellana* than to those of the remaining females. There is a long, longitudinal anterior duct that is not accompanied by a transverse duct, and there is an asymmetrical sclerotization just anterior of the posterior receptaculum. These distinctive genitalic features suggest that *P. otti* may be more closely related to *P. cupida* and *P. orellana* than to the remaining species, despite its somatic similarities with those more antlike species. Indeed, the very short apodemes suggest that *P. otti* and *P. cupida* might even be sister species. If all these female genitalic features are instead plesiomorphic for the genus, then *P. otti* presumably represents the sister group of the other 15 species with abdominally patterned (and presumably ant-mimicking) females.

Among the remaining species, *P. ibarra*, *P. murphyorum*, *P. viquezi*, and *P. fusca* from Mexico and Central America resemble the two *iviei* group species in having a patterned carapace, whereas *P. gertschi* from Mexico and *P. laselva* from Costa Rica and Panama share a distinctively short embolus (figs. 21, 66). Because the males of *P. murphyorum* and *P. viquezi* resemble those of *P. iviei*, *P. sumidero*, *P. gertschi*, and *P. laselva* in having a distinctly patterned abdomen, we predict that the unknown males of *P. ibarra* and *P. fusca* will also have a patterned abdomen. If so, then the patterned abdomen in males may be a synapomorphy of a much smaller group (of eight species) than is the female patterned abdomen (which occurs in all species except *P. cupida* and *P. orellana*). Interestingly, the species with a patterned abdomen in males are known only from Mexico and Central America; the known males lacking a distinct abdominal pattern are all from South America (except in the case of *P. arborea*, which occurs also in Panama).

Our methods follow those of Platnick and Dupéré (2009a, 2009b); the species are treated geographically, by country, proceeding from north to south. Only differences from the males (beyond the obvious lack of male endite modifications) are mentioned in the descriptions of females. Scans were taken from uncoated right male palps, and the images were flipped for consistency; the coiling of the embolus changes dramatically (and variably) when the palps are dried, so only the structural details of the embolar base provide useful diagnostic information,

and even those details can vary dramatically with only slight shifts in position (figs. 132, 133). Because the scans show a dorsal rather than ventral view of the embolar base, the prolateral and retrolateral sides are easily confused and we refer to the prongs on the embolar base as simply left, median, or right, indicating only their relative position in those images. All measurements are in mm. High-resolution versions of the published images, many additional images, and a distribution map for each species, will be available on the goblin spider Planetary Biodiversity Inventory (PBI) project's website (<http://research.amnh.org/oonopidae>).

### COLLECTIONS EXAMINED

AMNH	American Museum of Natural History, New York, NY
BMNH	Natural History Museum, London, England
CAS	California Academy of Sciences, San Francisco, CA
CDU	Darrell Ubick collection, San Francisco, CA
ECOT	El Colegio de la Frontera Sur, Unidad Tapachula, Chiapas, Mexico
FMNH	Field Museum of Natural History, Chicago, IL
ICN	Instituto de Ciencias Naturales, Universidad Nacional, Bogotá, Colombia
INBIO	Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina
MCN	Museu de Ciências Naturais, Porto Alegre, Brazil
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, MA
MELM	Museo de Entomología, Universidad Nacional Agraria, La Molina, Peru
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland
MNHN	Muséum National d'Histoire Naturelle, Paris, France
MUSM	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru
USNM	National Museum of Natural History, Smithsonian Institution, Washington DC
ZMUC	Zoological Museum, University of Copenhagen, Denmark

### *Pescennina* Simon

*Pescennina* Simon, 1903a: 32 (type species by monotypy *P. epularis* Simon).

*Marsupopaea* Cooke, 1972: 91 (type species by original designation *M. sturmi* Cooke). NEW SYNONYMY.

**DIAGNOSIS:** Males of this genus can easily be recognized by the terminally situated, distally coiled embolus (figs. 236, 237), which is strongly twisted at its base, makes a wide turn over the dorsal surface of the cymbium, and rests in the deeply excavated anterior portion of the sternum (figs. 3, 103, 232); females have distinctively coiled anterior ducts that apparently accommodate the embolar coils (figs. 14, 37) and a posterior receptaculum that is marked with circular ridges and protected by the posterior apodemes (figs. 15, 153).

**DESCRIPTION:** Total length of males 1.4–2.4, of females 1.5–2.6; carapace yellow-brown to brown, sometimes with dark markings, sternum and mouthparts yellow-brown to brown, ster-

num sometimes with dark markings; abdomen white, often with dorsal and lateral dark markings; legs usually yellow, some segments often patterned. **Cephalothorax:** Carapace usually elongate oval in dorsal view (figs. 98, 138), anteriorly narrowed to 0.49 times its maximum width or less (but ovoid and wider in front in *P. cupida* and *P. orellana*), pars cephalica slightly elevated in lateral view (figs. 99, 139), pars thoracica with angular posterolateral corners (figs. 101, 141), without depressions, posterolateral edge without pits, posterior margin not bulging below posterior rim, anterolateral corners with slightly sclerotized triangular projections, posterolateral surface without spikes, fovea absent, without radiating rows of pits; lateral margin straight, rebordered (figs. 102, 142), with sharply pointed denticles; plumose setae near posterior margin of pars thoracica absent; nonmarginal pars cephalica setae dark, needlelike, scattered; nonmarginal pars thoracica setae and marginal setae dark, needlelike. Clypeus margin slightly rebordered, straight in front view, sloping forward in lateral view, high (figs. 100, 140), ALE separated from edge of carapace by their radius or more, median projection absent; setae dark, needlelike. Chilum absent. Eyes six, well developed, ALE largest, ALE oval, PME usually circular (but squared in *P. cupida* and *P. orellana*, fig. 188), PLE oval; posterior eye row procurved from front, usually straight from above (but recurved in *P. cupida* and *P. orellana*, fig. 186); ALE separation variable, ALE-PLE separated by less than ALE radius, PME separated by less than their radius, PME-PLE separation variable. Sternum longer than wide, uniform, distinctly fused to carapace only in *P. cupida* and *P. orellana*, median concavity absent, without radial furrows between coxae I–II, II–III, III–IV, radial furrow opposite coxae III absent, without pits, microsculpture present everywhere, but front, sickle-shaped structures absent, anterior margin of males with large, deep, medially narrowed transverse groove (fig. 103), groove of females smaller, shallower (fig. 143); posterior margin extending posteriorly beyond anterior edges of coxae IV as single extension (fig. 103), anterior corner unmodified, lateral margin with infracoxal grooves bearing anterior and posterior openings (fig. 143), distance between coxae approximately equal, extensions of precoxal triangles absent, lateral margins with indented extensions between coxae, without posterior hump; hair tufts absent; setae sparse, dark, needlelike, densest laterally, originating from surface. Chelicerae straight (figs. 104, 105, 144, 145), anterior face unmodified; without teeth on either promargin or retromargin; fang without toothlike projections, directed medially, shape normal, without prominent basal process, tip unmodified; setae dark, needlelike, evenly scattered; paturon inner margin with short interdigitating setae, distal region abruptly narrowed, posterior surface unmodified, promargin unmodified, inner margin unmodified, laminate groove absent. Labium triangular, fused to sternum, anterior margin indented at middle (figs. 106, 146), same as sternum in sclerotization; with six or more setae on anterior margin, subdistal portion with unmodified setae. Endites distally not excavated, serrula present in single row (figs. 108, 109, 147, 148), anteromedian tip with stout projection in males (fig. 107), posteromedian part unmodified, same as sternum in sclerotization. Female palp (figs. 149, 150) without claw; spines absent; tarsus unmodified, patella without prolateral row of ridges, tibia with three trichobothria (fig. 151). **Abdomen:** Without long posterior extension, rounded posteriorly, interscutal membrane rows of small sclerotized platelets absent. Booklung covers large, ovoid, without setae, anterolateral edge unmodified. Posterior spiracles connected by groove. Pedicel with scutopedicel region unmodified, plumose hairs

absent, matted setae on anterior ventral abdomen absent, cuticular outgrowths near pedicel absent. Pedicel tube of males medium, ribbed, scutum extending far dorsal of pedicel, of females short, not ribbed, not extending far dorsal of pedicel (figs. 137, 139). Ventral pedicel sclerite of males fused to sternum, usually separate in females (except in *P. cupida* and *P. orellana*), but sometimes separated from sternum by only tiny, inconspicuous sliver of unsclerotized cuticle or with no trace of that sliver visible (in presumably contracted specimens). Dorsal scutum absent in females but present in males, where strongly sclerotized, not fused to epigastric scutum, covering more than  $\frac{3}{4}$  of abdominal length, smooth, without anterior denticles. Epigastric scutum surrounding pedicel, strongly sclerotized in males, weakly sclerotized, not extending as far above pedicel in females, not protruding, small lateral sclerites absent, without lateral joints in females. Postepigastric scutum of male strongly sclerotized, long, almost rectangular, occupying most of space between epigastric furrow and spinnerets, fused to epigastric scutum, but in females only weakly sclerotized, short, confined to epigastric area, not fused to epigastric scutum (fig. 152); in both sexes anterior margin unmodified, with short posteriorly directed lateral apodemes. Inter-scutal membrane with setae. Spinneret scutum present, incomplete ring, with fringe of long setae. Supraanal scutum absent. Dorsum setae dark, needlelike; epigastric area setae uniform, dark, needlelike; postepigastric area setae dark, needlelike. Dense patch of setae anterior to spinnerets absent. Colulus absent. Spinnerets (scanned only in *P. arborea*, figs. 110, 154); ALS with single major ampullate gland spigot and two piriform gland spigots in males (fig. 111), three in females (fig. 155); PMS with single spigot in males (fig. 112), four spigots in females (fig. 156); PLS with three spigots in males (fig. 113), five in females (fig. 157). Male epigastric region with sperm pore large, oval, rebordered, situated in front of anterior spiracles (fig. 124); furrow without  $\Omega$ -shaped insertions, without setae. **Legs:** Femur IV not thickened, same size as femora I–III, patella plus tibia I shorter than carapace, tibia I unmodified, tibia IV specialized hairs on ventral apex absent, ventral scopula absent, metatarsi I and II mesoapical comb absent, metatarsi III and IV weak ventral scopula absent. Leg spines absent. Tarsal proclaws and retroclaws outer faces with few large teeth (figs. 118, 162), inner faces striated (fig. 163), with numerous small teeth, those on legs I–III with teeth of inner margin coalesced at tip (figs. 114–117, 158–161); inferior claws absent. Trichobothrial bases rounded, aperture internal texture not gratelike, hood covered by numerous low, closely spaced ridges (fig. 169). Tarsal organs of legs I, II, and palp apparently with three sensillae (figs. 119, 120, 123, 164, 165, 168), of legs III, IV with two sensillae (figs. 121, 122, 166, 167). **Genitalia:** Male palp of normal size, not strongly sclerotized, right and left palps symmetrical; trochanter normal size, unmodified; femur two or more times as long as trochanter, without posteriorly rounded lateral dilation, attached to patella basally (except in *P. cupida*); patella shorter than femur, not expanded (except in *P. cupida*, where larger than femur), without prolateral row of ridges, setae unmodified; tibia short, with three dorsal trichobothria (fig. 127); cymbium ovoid in dorsal view, completely fused with bulb, no seam visible, not extending beyond distal tip of bulb, plumose setae absent, without stout setae, without distal patch of setae; bulb 1–1.5 times as long as cymbium, stout, tapering apically; embolus light, prolateral excavation absent; typically with distal coils (figs. 125, 126, 128, 129), embolar base typically with elaborate prongs (figs. 130–136). Female genitalia with anterior looping or coiled ducts, often with trans-

verse duct portion; posterior receptaculum surrounded by apodemes, surface with circular ridges (fig. 153).

DISTRIBUTION: Northern Mexico to southern Brazil.

SYNONYMY: We hypothesize that the name *Marsupopaea* refers to the males of *Pescennina*.

#### KEY TO SPECIES

1. Carapace with dark markings (figs. 1, 24), at least along midline (figs. 46, 54).....2
  - Carapace without dark markings.....8
2. Sternum with dark markings (figs. 40, 92).....3
  - Sternum without dark markings.....6
3. Males (unknown in *P. ibarra* and *P. fusca*); palp with middle prong on embolar base extending much farther distally than left or right prongs (fig. 81); Costa Rica.....*viquezi*
  - Females.....4
4. Apodemes converging posteriorly (figs. 96, 97); Panama.....*fusca*
  - Apodemes straight (figs. 45, 90).....5
5. Posterior receptaculum small (fig. 45); Mexico.....*ibarra*
  - Posterior receptaculum large (fig. 90); Costa Rica.....*viquezi*
6. Males with right prong on embolar base directed distally (fig. 51); females with posterior receptaculum large (figs. 59, 60); abdomen without constriction (figs. 47, 58); Nicaragua and Costa Rica.....*murphyorum*
  - Males with right prong on embolar base directed laterally (figs. 6, 29); females with posterior receptaculum small (figs. 15, 38); abdomen with constriction at about half its length (figs. 2, 25); Mexico.....7
7. Dark markings on pars cephalica diffuse (figs. 1, 9); males with distal lobe on embolar base relatively short (fig. 6); females with posterior receptaculum relatively short (fig. 15).....*iviei*
  - Dark markings on pars cephalica concentrated near midline (fig. 24); males with distal lobe on embolar base relatively long (fig. 29); females with posterior receptaculum relatively long (fig. 38).....*sumidero*
8. Eyes relatively large (figs. 188, 247).....9
  - Eyes relatively small (figs. 19, 64).....10
9. Males with palpal patella inflated (figs. 191, 192); females with apodemes relatively short (figs. 198, 199); Colombia.....*cupida*
  - Males with palpal patella normal (figs. 250, 251); females with apodemes relatively long (figs. 301, 302); Ecuador.....*orellana*
10. Males with short embolus (figs. 22, 23, 67, 68); females (those of *P. gertschi* unknown) with anterior margin of posterior receptaculum bell shaped (figs. 74, 75).....11
  - Males with long embolus (figs. 176, 177, 206, 207); females with anterior margin of posterior receptaculum otherwise.....12
11. Males with rounded embolar base (fig. 21); females unknown; Mexico.....*gertschi*

- Males with distally bifid embolar base (fig. 66); females with anterior margin of posterior receptaculum bell shaped (figs. 74, 75); Costa Rica and Panama.....*laselva*
- 12. Males (those of *P. grismadoi* and *P. otti* unknown).....13
  - Females.....18
- 13. Right prong on embolar base relatively short (figs. 175, 220, 235).....14
  - Right prong on embolar base relatively long (figs. 205, 257, 272).....16
- 14. Left prong on embolar base reduced to small triangle (fig. 235); Venezuela.....*epularis*
  - Left prong on embolar base larger (figs. 175, 220); Panama, Colombia, Ecuador.....15
- 15. Middle prong on embolar base gradually narrowed distally (fig. 175).....*arborea*
  - Middle prong on embolar base abruptly narrowed distally (fig. 220).....*sasaima*
- 16. Right prong on embolar base directed laterally (fig. 272).....*loreto*
  - Right prong on embolar base directed distally (figs. 205, 257).....17
- 17. Right edge of embolar base serrated (fig. 257); Peru.....*piura*
  - Right edge of embolar base smooth (fig. 205); Colombia.....*magdalena*
- 18. Apodemes straight (figs. 229, 281, 295).....19
  - Apodemes converging posteriorly (figs. 184, 214, 243).....21
- 19. Anterior receptaculum without transverse duct, apodemes relatively short (figs. 294, 295), Brazil.....*otti*
  - Anterior receptaculum with transverse duct, apodemes relatively long (figs. 229, 281); Colombia and Peru.....20
- 20. Posterior receptaculum large (fig. 281); Peru.....*loreto*
  - Posterior receptaculum small (fig. 229); Colombia.....*sasaima*
- 21. Apodemes relatively long (figs. 184, 214, 243).....22
  - Apodemes relatively short (figs. 266, 288).....24
- 22. Transverse bar and apodemes forming heart-shaped structure (fig. 214).....*magdalena*
  - Transverse bar and apodemes forming triangular structure (figs. 184, 243).....23
- 23. Posterior ends of apodemes convergent (fig. 184); Panama, Colombia, Ecuador.....*arborea*
  - Posterior ends of apodemes widely separated (fig. 243); Venezuela.....*epularis*
- 24. Transverse bar and apodemes forming triangular structure (fig. 266); Peru.....*piura*
  - Transverse bar and apodemes forming rectangular structure (fig. 288); Bolivia.....*grismadoi*

***Pescennina iviei*, new species**

Figures 1–15

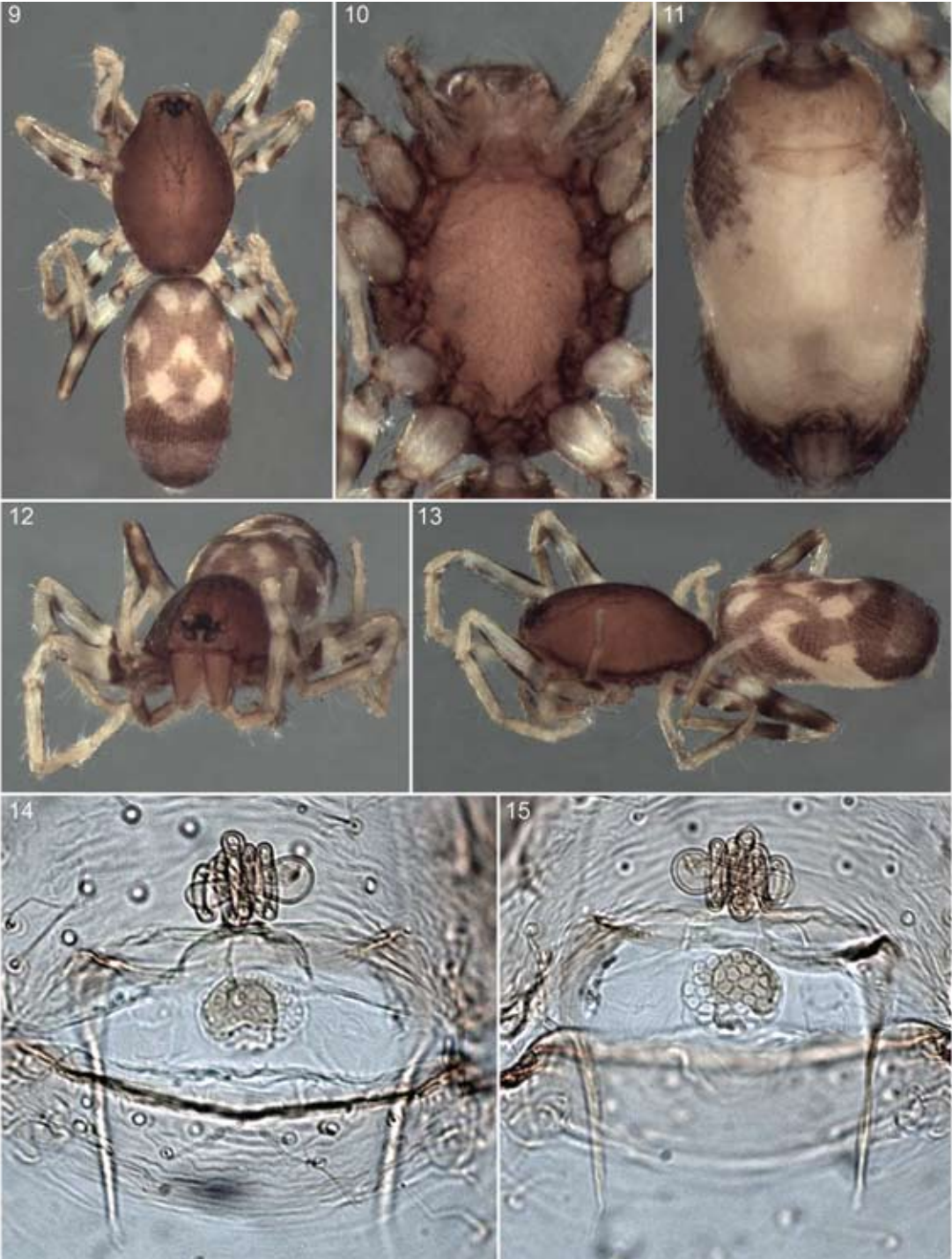
TYPE: Male holotype and female allotype from Tamazunchale, 21°15'N, 98°47'W, San Luis Potosí, Mexico (Aug. 17, 1964; J., W. Ivie), deposited in AMNH (PBI\_OON 1363).

ETYMOLOGY: The specific name is a patronym in honor of Wilton Ivie, one of the collectors of the types.

DIAGNOSIS: Males and females resemble those of *P. sumidero* in having a distinctly constricted abdomen (figs. 2, 13) but have wider dark markings on the pars cephalica (figs. 1, 9). Males have a much smaller extension on the base of the embolus (fig. 6); females have the posterior receptaculum situated more posteriorly of the transverse bar connecting the apodemes (figs. 14, 15).



FIGS. 1–8. *Pescennina iviei*, new species, male. 1. Habitus, dorsal view. 2. Same, lateral view. 3. Cephalothorax, ventral view. 4. Habitus, anterior view. 5. Abdomen, ventral view. 6. Embolar base of left palp, dorsal view. 7. Left palp, prolateral view. 8. Same, retrolateral view.



FIGS. 9–15. *Pescennina iviei*, new species, female. 9. Habitus, dorsal view. 10. Cephalothorax, ventral view. 11. Abdomen, ventral view. 12. Habitus, anterior view. 13. Same, lateral view. 14. Genitalia, ventral view. 15. Same, dorsal view.

MALE (PBI\_OON 1363, figs. 1–8): Total length 1.51. Carapace orange-brown, with dark Y-shaped patch reaching from PLE to pars thoracica; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Abdomen constricted in middle. Dorsal scutum pale orange, with medially incomplete anterior and medially complete posterior transverse dark stripes; epigastric scutum with darkened lateral margins; postepigastric scutum pale orange, anterior one-fourth with darkened lateral margins. Femora I, II with basal darkening on prolateral surface, dorsal and retroventral longitudinal dark stripes; III, IV with basal and distal dark rings; patellae I–III with ventral darkenings, IV with dorsoapical darkening; tibiae with basal darkenings, III, IV with ventral longitudinal darkening. Palp pale orange; embolar base with laterally directed right prong, proximal portion of embolus making three 90° turns, then 180° turn, then partial terminal coil.

FEMALE (PBI\_OON 1363, figs. 9–15): Total length 1.64. Abdominal dorsum yellow-brown, with dark posterior end, with intricate pattern of seven white spots, dorsum and sides iridescent, ridged. Postepigastric scutum yellow-brown. Femur IV with longitudinal lateral stripes connecting rings. Anterior genitalic ducts with four coils around transverse duct, originating from inverted U-shaped sclerite; posterior receptaculum circular, small.

OTHER MATERIAL EXAMINED: **Mexico:** *Hidalgo*: 3 mi N Chapulhuacán, Apr. 20, 1963 (W. Gertsch, W. Ivie, AMNH PBI\_OON 40878), 1 ♂. *San Luis Potosí*: Tamazunchale, 21°15'N, 98°47'W, Aug. 17, 1964 (J., W. Ivie, AMNH PBI\_OON 1363), 1 ♂; Tamazunchale, 21°15'N, 98°48'W, Apr. 19, 1963 (W. Gertsch, W. Ivie, AMNH PBI\_OON 40889), 1 ♂; 1 mi S Tamazunchale, 21°15'N, 98°49'W, July 25, 1966 (J., W. Ivie, AMNH PBI\_OON 40890), 3 ♀; 8 mi NNW Tamazunchale, 21°20'N, 98°50'W, Apr. 19, 1963 (W. Gertsch, W. Ivie, AMNH PBI\_OON 40888), 1 ♂. *Veracruz*: El Potrero, Nov. 12, 1941 (AMNH PBI\_OON 40891), 1 ♀.

DISTRIBUTION: Northeastern Mexico (San Luis Potosí, Hidalgo, and Veracruz).

*Pescennina gertschi*, new species

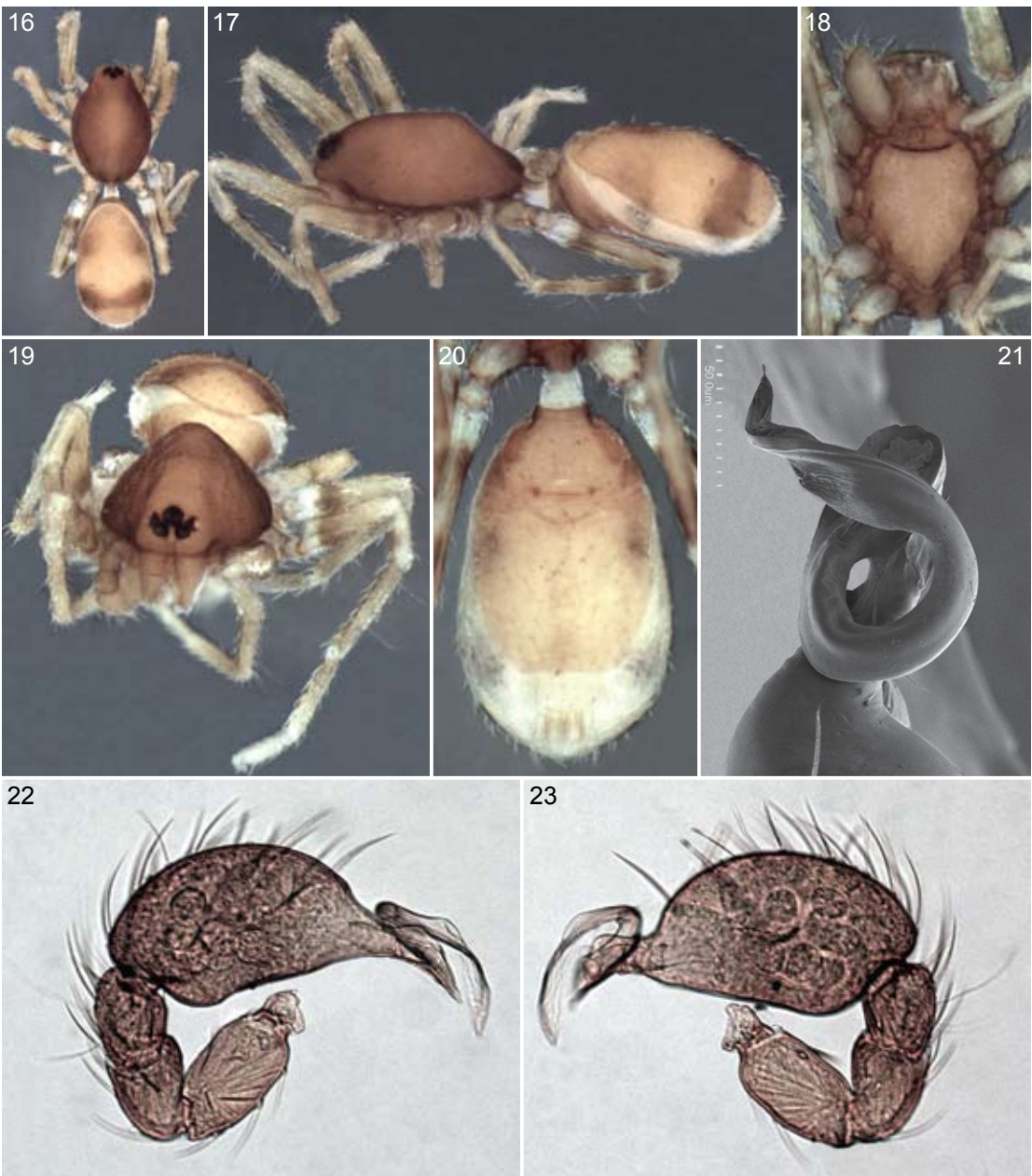
Figures 16–23

TYPE: Male holotype from 5 mi SE of Nejapa, 16°34'N, 95°56'W, Oaxaca, Mexico (Apr. 29, 1963; W. Gertsch, W. Ivie), deposited in AMNH (PBI\_OON 40877).

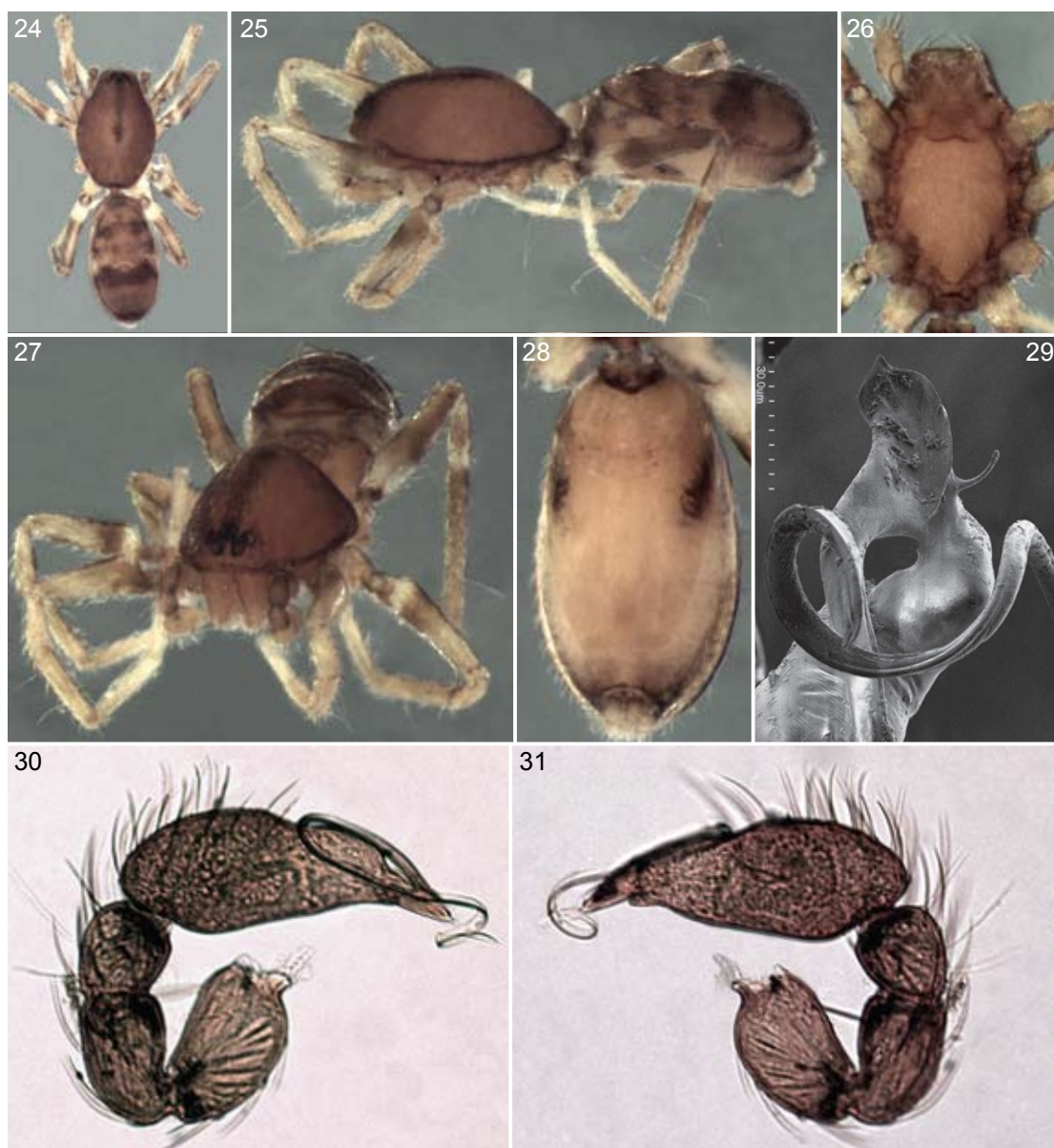
ETYMOLOGY: The specific name is a patronym in honor of Willis Gertsch, one of the collectors of the types.

DIAGNOSIS: Males resemble those of *P. laselva* in having a distinctively short, thick embolus, but differ in having a rounded embolar base (fig. 21).

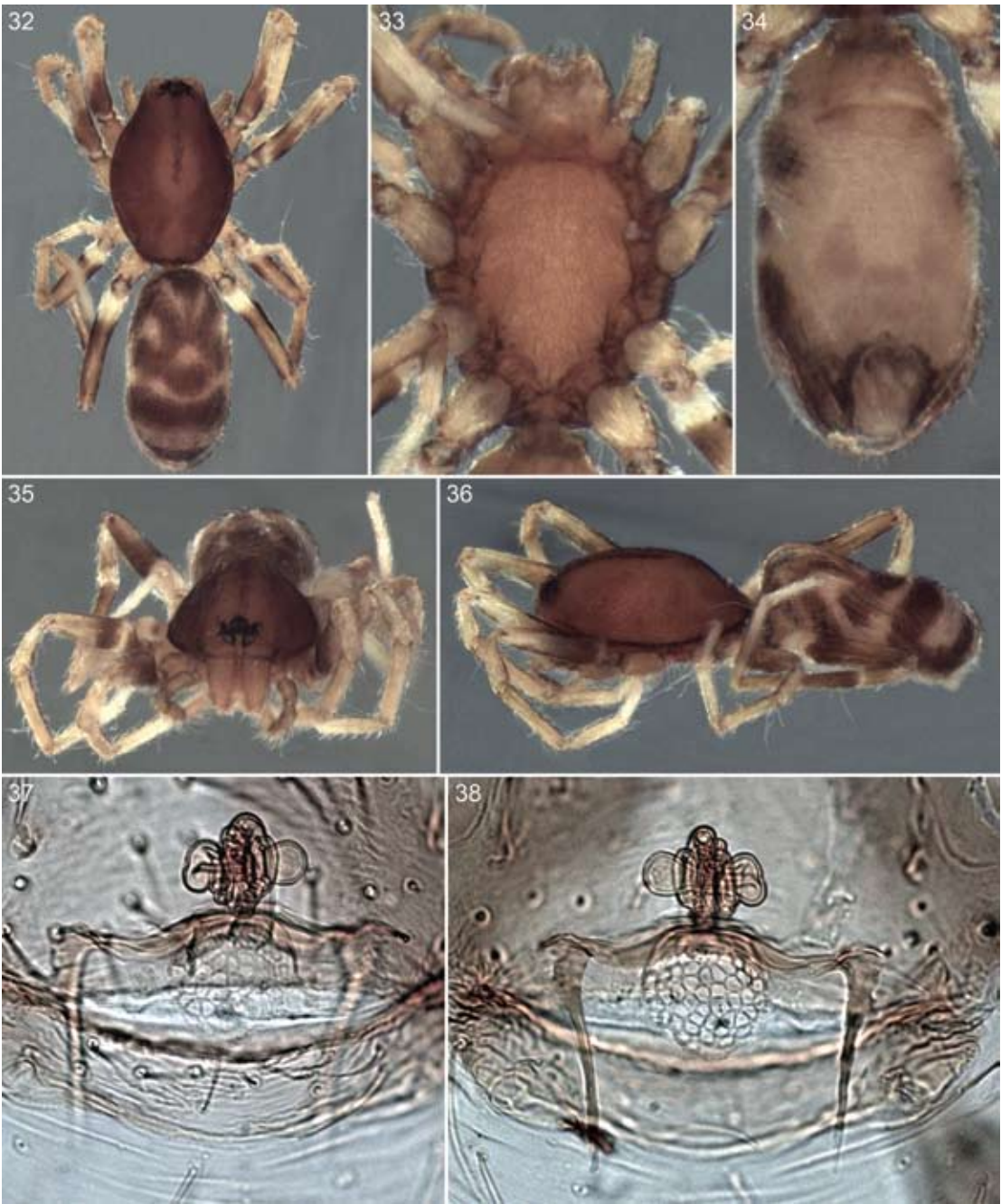
MALE (PBI\_OON 40877, figs. 16–23): Total length 1.66. Carapace pale orange, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Abdomen very slightly constricted in middle. Dorsal scutum pale orange, with medially incomplete anterior dark transverse stripe and medially narrowed but complete posterior dark transverse stripe;



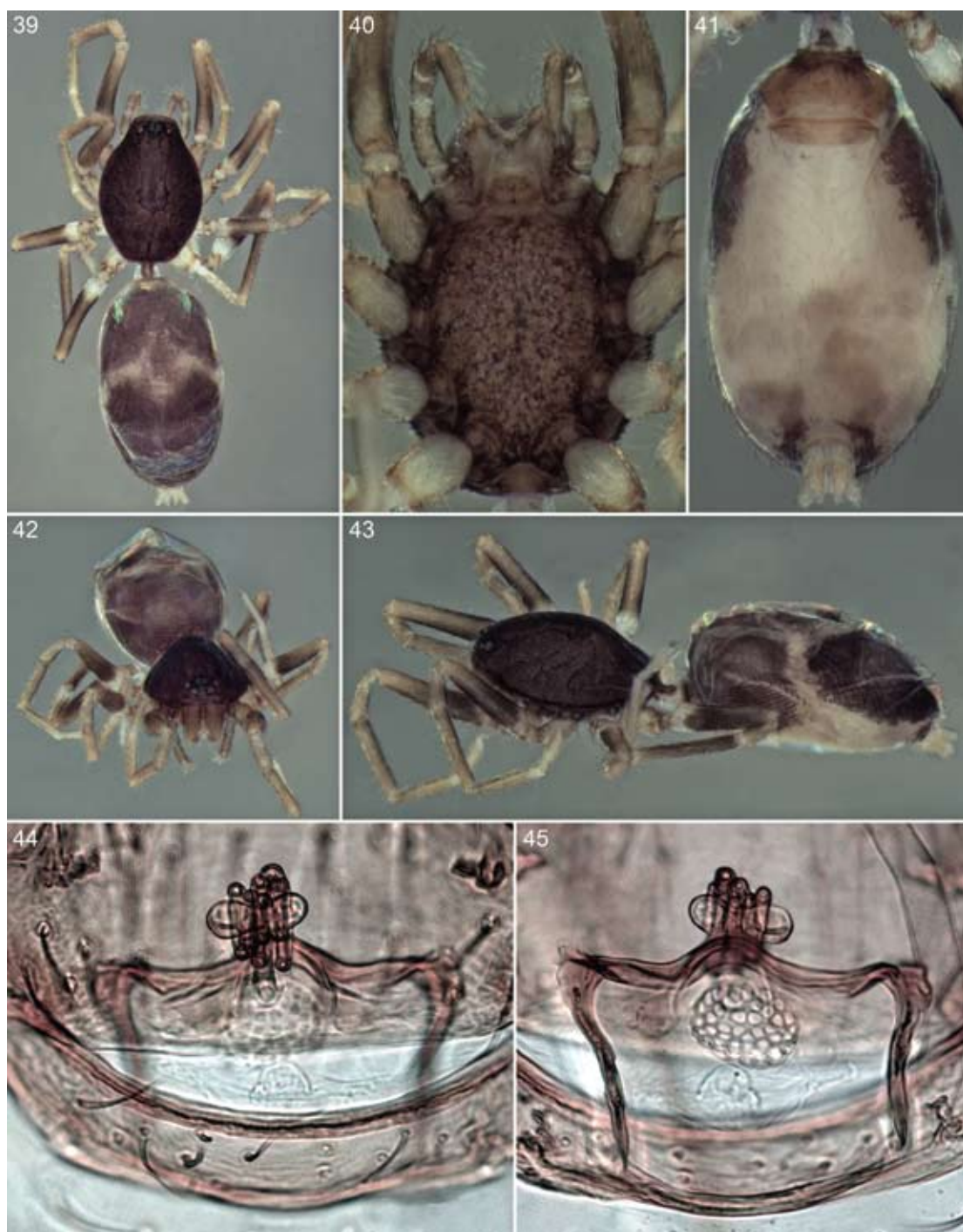
FIGS. 16–23. *Pescennina gertschi*, new species, male. 16. Habitus, dorsal view. 17. Same, lateral view. 18. Cephalothorax, ventral view. 19. Habitus, anterior view. 20. Abdomen, ventral view. 21. Embolar base of left palp, dorsal view. 22. Left palp, prolateral view. 23. Same, retrolateral view.



FIGS. 24–31. *Pescennina sumidero*, new species, male. 24. Habitus, dorsal view. 25. Same, lateral view. 26. Cephalothorax, ventral view. 27. Habitus, anterior view. 28. Abdomen, ventral view. 29. Embolar base of left palp, dorsal view. 30. Left palp, prolateral view. 31. Same, retrolateral view.



FIGS. 32–38. *Pescennina sumidero*, new species, female. 32. Habitus, dorsal view. 33. Cephalothorax, ventral view. 34. Abdomen, ventral view. 35. Habitus, anterior view. 36. Same, lateral view. 37. Genitalia, ventral view. 38. Same, dorsal view.



FIGS. 39–45. *Pescennina ibarrae*, new species, female. 39. Habitus, dorsal view. 40. Cephalothorax, ventral view. 41. Abdomen, ventral view. 42. Habitus, anterior view. 43. Same, lateral view. 44. Genitalia, ventral view. 45. Same, dorsal view.

postepigastric scutum pale orange. Femora with basal dark rings, weakest on I, strongest on IV; patellae I, II with ventral darkenings, III, IV with distal dark rings; tibiae III, IV with distal dark rings, distal ventral darkenings. Palp orange-brown; embolar base with rounded distal protrusion, embolus making tight coil leading to short, untwisted tip, with wide, translucent conductor.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: One male taken with the type (AMNH PBI\_OON 40877).

DISTRIBUTION: Southern Mexico (Oaxaca).

*Pescennina sumidero*, new species

Figures 24–38

TYPES: Male holotype and female allotype from rim of gorge NE of Tuxtla Gutiérrez, 2 mi S of Sumidero, 16°48'N, 93°04'W, Chiapas, Mexico (Aug. 17, 1966; J., W. Ivie), deposited in AMNH (PBI\_OON 40887).

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

DIAGNOSIS: Males and females resemble those of *P. iviei* in having a distinctly constricted abdomen (figs. 25, 36) but have narrower dark markings on the pars cephalica (figs. 24, 32). Males have a much larger middle prong on the base of the embolus (fig. 29); females have the posterior receptaculum situated closer to the transverse bar connecting the apodemes (figs. 37, 38).

MALE (PBI\_OON 40887, figs. 24–31): Total length 1.58. Carapace orange-brown, with dark Y-shaped patch reaching from PLE to pars thoracica; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by more than their diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Abdomen constricted in middle. Dorsal scutum pale orange, with four transverse dark stripes; postepigastric scutum pale orange, with anterior and posterior pairs of lateral dark markings. Femora I, II with dorsally incomplete basal and distal dark rings; III with subbasal dark ring; IV darkened everywhere except basal ring; patellae II–IV with ventral darkenings; tibia IV ventrally darkened. Palp pale orange; embolus with long expansion on base, smoothly coiling around tip of bulb, with terminal, ventrally directed coil.

FEMALE (PBI\_OON 40887, figs. 32–38): Total length 1.59. Abdominal dorsum orange-brown, with seven white spots and posterior, transverse white band, sides ridged, iridescent. Anterior genitalic ducts with three coils around transverse, dumbbell-shaped duct; posterior receptaculum situated near transverse bar connecting apodemes.

OTHER MATERIAL EXAMINED: **Mexico:** *Chiapas*: hillside 5 mi NE Chiapa, 16°45'N, 92°58'W, Aug. 22, 1966 (J., W. Ivie, AMNH PBI\_OON 40882), 1 ♂, 1 ♀; Palenque, Jan. 29, 1976, Berlese, leaves and humus from cacao grove (C. Alteri, AMNH PBI\_OON 40886), 1 ♂; Pozo Numero Uno road, near Palenque, Jan. 23, 1976, Berlese, litter and grass from cattle field (C. Alteri, AMNH PBI\_OON 40885), 1 ♀; Sumidero, Barranca, NE Tuxtla Gutiérrez, Aug. 19, 1966 (J., W. Ivie, AMNH PBI\_OON 40881), 2 ♀; rim of canyon, Sumidero, 16°50'N, 93°05'W, July 30, 1966 (J., W. Ivie, AMNH PBI\_OON 40884, 40879), 1 ♂, 6 ♀; rim of canyon, 5 km S Sumidero, 16°48'N, 93°05'W, Aug. 17, 1966 (J., W. Ivie, AMNH PBI\_OON 40883), 5 ♂, 2 ♀; rim of gorge NE Tuxtla Gutiérrez, 2 mi S Sumidero, 16°48'N, 93°04'W, Aug. 17,

1966 (J., W. Ivie, AMNH PBI\_OON 40887), 11♂, 7♀. *Tabasco*: Pico de Oro, 17°58'N, 93°30'W, Aug. 12, 1966 (J., W. Ivie, AMNH PBI\_OON 40880), 1♀.

DISTRIBUTION: Southern Mexico (Chiapas and Tabasco).

***Pescennina ibarrai*, new species**

Figures 39–45

TYPE: Female holotype taken by beating branches of bushes and trees in a montane cloud forest remnant at an elevation of 2048 m at Municipio Unión Juárez, Ejido Talquián, 15°05'37.8"N, 92°06'05.7"S, Chiapas, Mexico (June 18, 2009; J. Maya, G. Ibarra, A. López, E. Senties), deposited in ECOT (PBI\_OON 562).

ETYMOLOGY: The specific name is a patronym in honor of Guillermo Ibarra-Núñez, one of the collectors of the holotype.

DIAGNOSIS: In having dark markings on both carapace and sternum, females of this species resemble those of *P. viquezi* and *P. fusca*, but have a much smaller posterior receptaculum (figs. 44, 45). The receptaculum resembles that of females of *P. sumidero*, which are also found in Chiapas, but the transverse bar connecting the apodemes has shorter extensions at the sides (compare figs. 37, 38).

MALE: Unknown.

FEMALE (PBI\_OON 562, figs. 39–45): Total length 1.85. Carapace brown, with scattered dark markings outlining elevated portion of pars cephalica and radiating from its edges; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by more than their diameter, PLE-PME separated by more than PME diameter. Sternum orange-brown, with scattered dark markings, surface rugose. Chelicerae, endites, and labium orange-brown. Abdominal dorsum brown, with transverse white stripe at about half its length, stripe much wider medially than laterally, enclosing dark area medially; postepigastric scutum brown. Femora I–IV darkened everywhere except base and tip; patellae I–IV darkened ventrally; tibiae I–III darkened ventrally, IV darkened everywhere except dorsum. Transverse portion of anterior genitalic ducts short; posterior receptaculum apparently with posterior extension.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Southern Mexico (Chiapas).

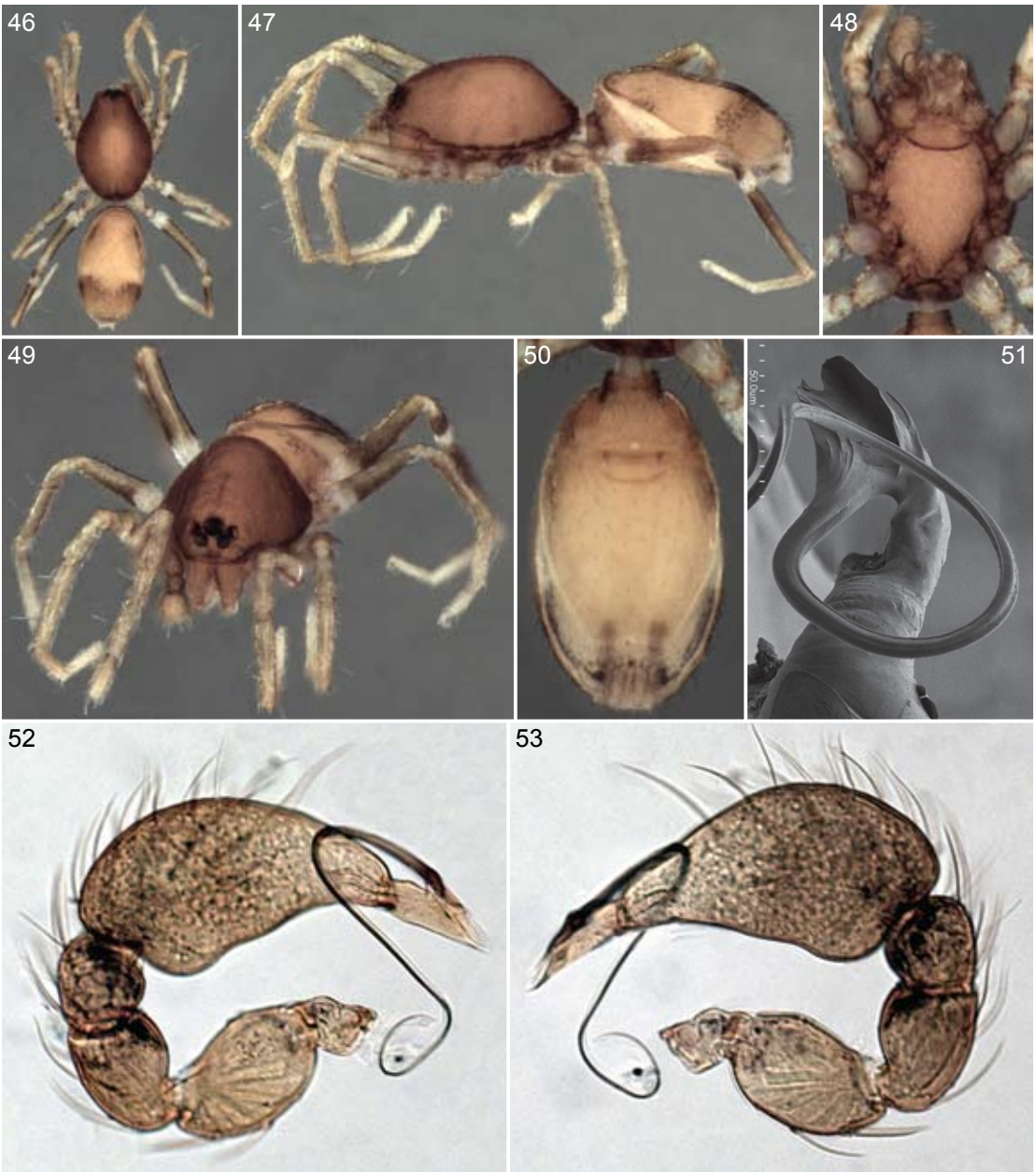
***Pescennina murphyorum*, new species**

Figures 46–60

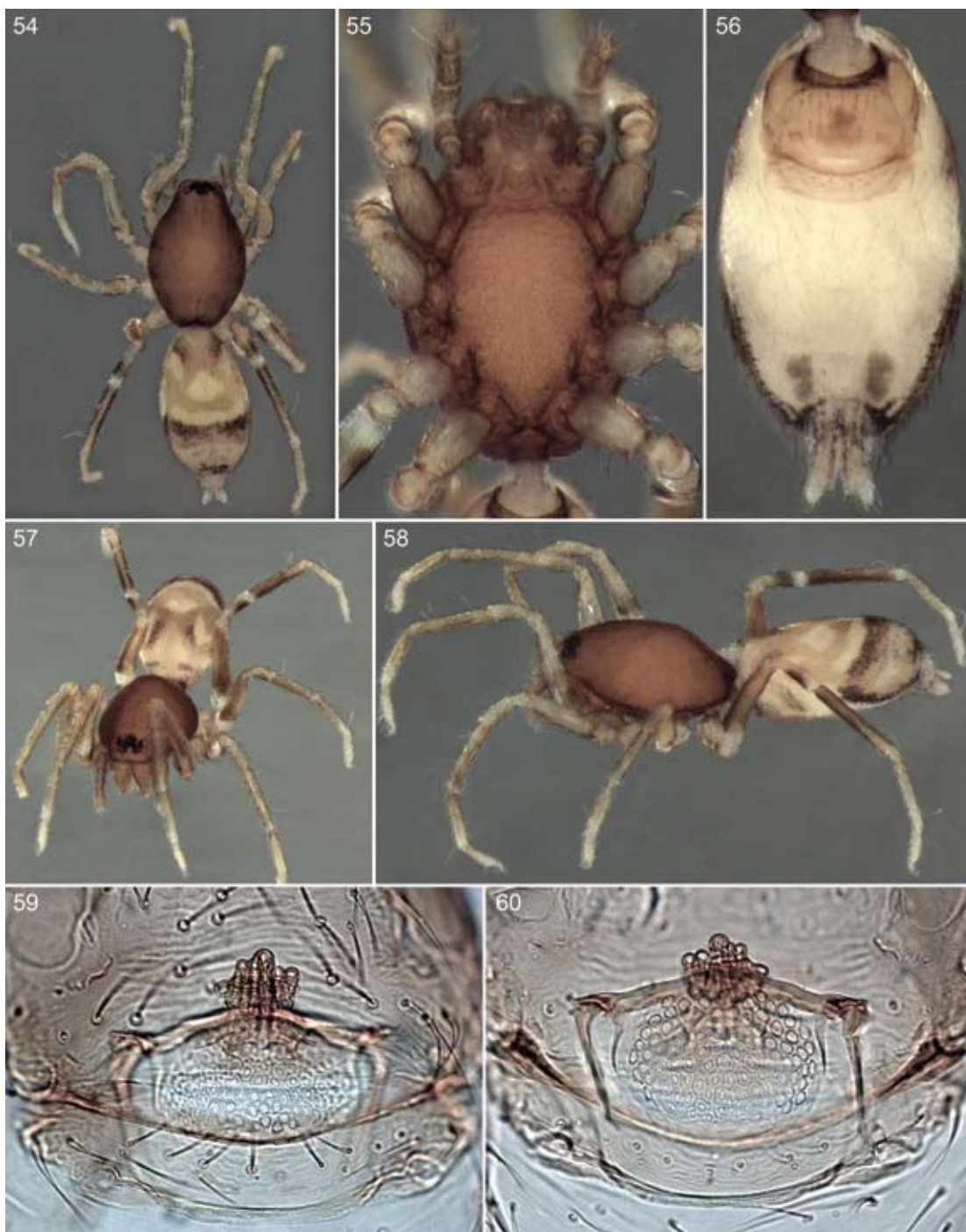
TYPES: Male holotype and female allotype taken in forest leaf litter at an elevation of 90 m at Cañas, Guanacaste, Costa Rica (Aug. 15, 1983; J., F. Murphy), deposited in AMNH (PBI\_OON 40909).

ETYMOLOGY: The specific name is a patronym in honor of John and Frances Murphy, collectors of the types.

DIAGNOSIS: Members of this species can be recognized by their distinctive carapace pattern, with two dark markings restricted to the midline (one anterior, just behind the eyes, and one posterior, on the pars thoracica, figs. 46, 54). Males resemble those of *P. viquezi* but have



FIGS. 46–53. *Pescennina murphyorum*, new species, male. 46. Habitus, dorsal view. 47. Same, lateral view. 48. Cephalothorax, ventral view. 49. Habitus, anterior view. 50. Abdomen, ventral view. 51. Embolar base of left palp, dorsal view. 52. Left palp, prolateral view. 53. Same, retrolateral view.



FIGS. 54–60. *Pescennina murphyorum*, new species, female. 54. Habitus, dorsal view. 55. Cephalothorax, ventral view. 56. Abdomen, ventral view. 57. Habitus, anterior view. 58. Same, lateral view. 59. Genitalia, ventral view. 60. Same, dorsal view.

the middle prong on the embolar base longer (fig. 51); females also resemble those of *P. viquezi* but have anteriorly narrower apodemes (figs. 59, 60).

**MALE** (PBI\_OON 40909, figs. 46–53): Total length 1.58. Carapace orange-brown, with narrow dark markings along midline, one extending from eyes to middle of pars cephalica, one extending most of pars thoracica length; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Abdomen very slightly constricted in middle; dorsal scutum pale orange, with anterolateral dark markings, posterior transverse dark stripe; postepigastric scutum pale orange. Femora I, II with basal darkening on prolateral side, ventral longitudinal darkening; III, IV with prolateral and retrolateral longitudinal dark stripes; patellae III, IV with prolateroventral darkenings at about half their length; tibiae III, IV with prolateral and retrolateral longitudinal dark stripes. Palp yellow-brown; embolar base sinuous, with long terminal triangle, embolus making loose coil with terminal coil at right angle.

**FEMALE** (PBI\_OON 40909, figs. 54–60): Total length 1.63. Abdominal dorsum yellow-brown, with pair of anterolateral longitudinal dark stripes and two posteriorly situated transverse dark stripes, four anterior white spots, and posterior transverse white stripe situated anterior to most anterior transverse dark stripe. Anterior genitalic ducts making about five coils around narrow transverse portion of duct; posterior receptaculum relatively wide, short.

**OTHER MATERIAL EXAMINED:** **Costa Rica:** *Guanacaste:* Cañas, Aug. 15, 1983, forest leaf litter, elev. 90 m (J. F. Murphy, AMNH PBI\_OON 40909), 1 ♀; Parque Nacional Santa Rosa, Apr. 5–9, 1983, leaf litter, deciduous forest, elev. 250 m (D. Ubick, CAS 38438, PBI\_OON 35299), 1 ♂, 1 ♀, May 19, 2007, Berlese, leaf and log litter from humid forest (J. Louderman, C. Grinter, FMNH PBI\_OON 10642), 1 ♂, June 28, 2007, same (FMNH 34866, PBI\_OON 10583), 1 ♂. **Nicaragua:** *Granada:* Volcán Mombacho, El Progreso #2, Sept. 30, 1998, malaise trap, nonorganic coffee plantation (J. Maes, MCZ 35539, PBI\_OON 26682), 1 ♂.

**DISTRIBUTION:** Southern Nicaragua and northern Costa Rica.

### *Pescennina laselva*, new species

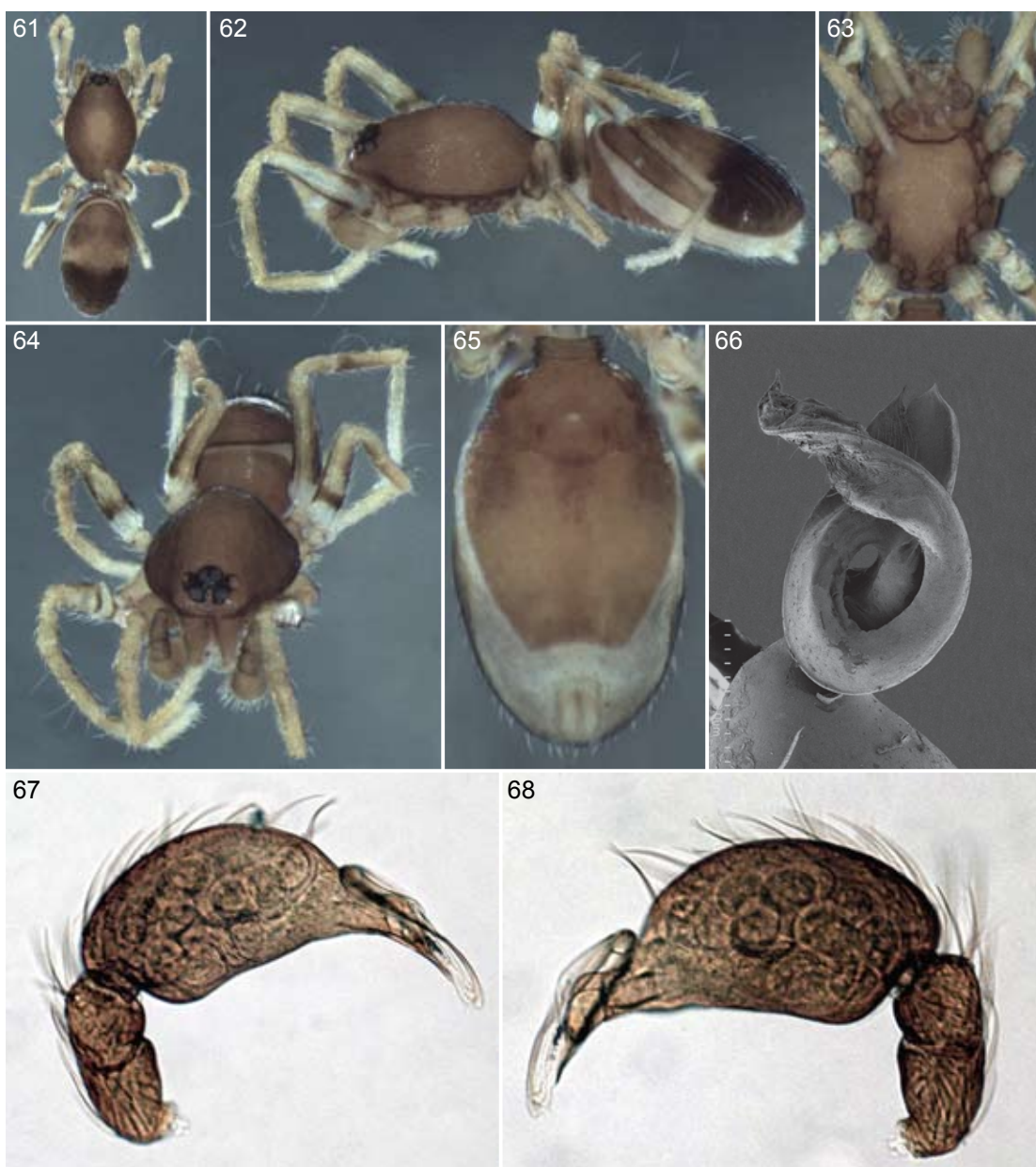
Figures 61–75

**TYPE:** Male holotype taken by fogging from *Virola koschnyi* tree at an elevation of 50–150 m at the Estación Biológica La Selva, 10°26'N, 84°01'W, Heredia, Costa Rica (Feb. 1993), deposited in INBIO (PBI\_OON 40804).

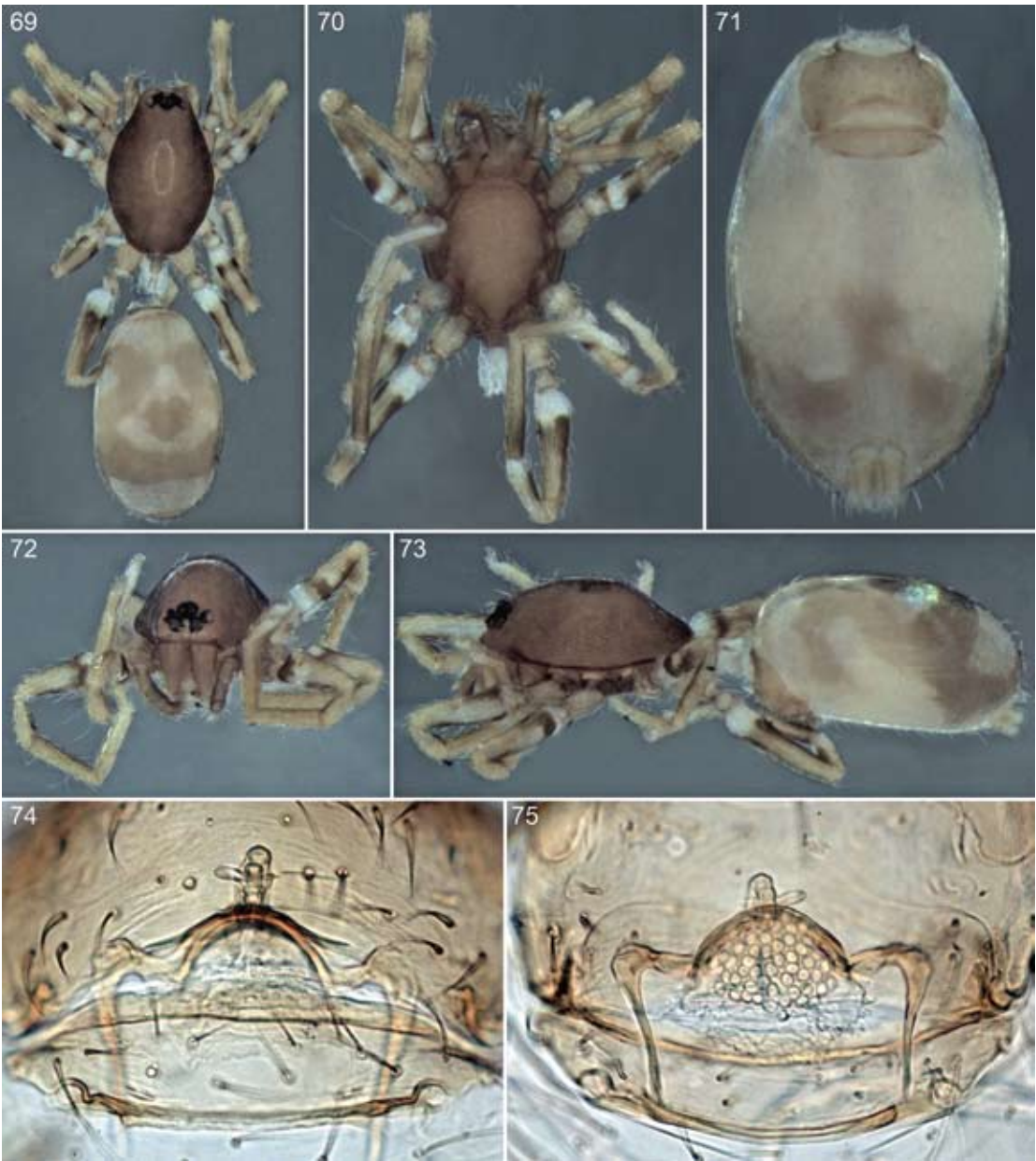
**ETYMOLOGY:** The specific name is a noun in apposition taken from the type locality.

**DIAGNOSIS:** Males resemble those of *P. gertschi* in having a distinctively short, thick embolus, but differ in having a distally bifid embolar base (fig. 66). Females of *P. gertschi* are unknown, but those of *P. laselva* have a distinctively rounded anterior margin of the posterior receptaculum (figs. 74, 75).

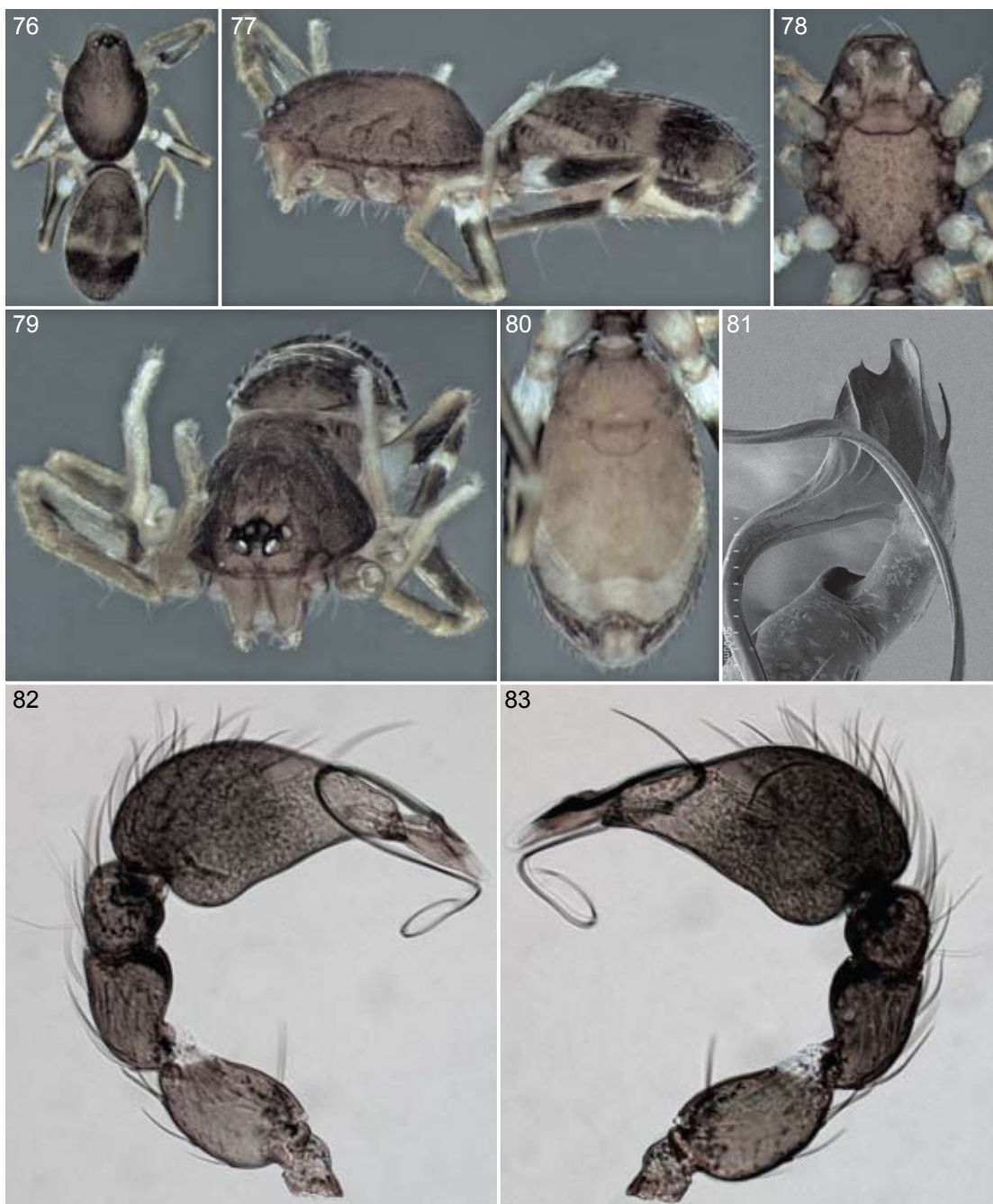
**MALE** (PBI\_OON 40804, figs. 61–68): Total length 1.46. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Abdomen



FIGS. 61–68. *Pescennina laselva*, new species, male. **61.** Habitus, dorsal view. **62.** Same, lateral view. **63.** Cephalothorax, ventral view. **64.** Habitus, anterior view. **65.** Abdomen, ventral view. **66.** Embolar base of left palp, dorsal view. **67.** Left palp, prolateral view. **68.** Same, retrolateral view.



FIGS. 69–75. *Pescennina laselva*, new species, female. **69.** Habitus, dorsal view. **70.** Cephalothorax, ventral view. **71.** Abdomen, ventral view. **72.** Cephalothorax, anterior view. **73.** Habitus, lateral view. **74.** Genitalia, ventral view. **75.** Same, dorsal view.



FIGS. 76–83. *Pescennina viquezi*, new species, male. 76. Habitus, dorsal view. 77. Same, lateral view. 78. Cephalothorax, ventral view. 79. Habitus, anterior view. 80. Abdomen, ventral view. 81. Embolar base of left palp, dorsal view. 82. Left palp, prolateral view. 83. Same, retrolateral view.



FIGS. 84–90. *Pescennina viquezi*, new species, female. 84. Habitus, dorsal view. 85. Cephalothorax, ventral view. 86. Abdomen, ventral view. 87. Habitus, anterior view. 88. Same, lateral view. 89. Genitalia, ventral view. 90. Same, dorsal view.

slightly constricted in middle. Dorsal scutum yellow-brown, anterior portion slightly darkened, posterior portion greatly darkened; postepigastric scutum yellow-brown, long. Femora I, II with basal darkening on prolateral side, less pronounced darkening on ventral surface; III, IV with prolateral and retrolateral longitudinal dark stripes everywhere except basal portion; patellae III, IV with ventral darkenings; tibiae IV with basal darkenings. Palp yellow-brown; embolar base with rounded distal protrusion bearing two tubercles at tip, embolus making tight coil leading to short, untwisted tip, with wide, translucent conductor.

**FEMALE** (PBI\_OON 40805, figs. 69–75): Total length 1.59. Abdominal dorsum gray with seven white spots in three transverse rows of two, three, and two, plus posterior transverse white stripe; postepigastric scutum pale orange; patellae I–IV with ventral darkenings. Anterior genitalic ducts with only two coils, transverse duct short, not symmetrical; posterior receptaculum with rounded anterior margin.

**OTHER MATERIAL EXAMINED:** **Costa Rica:** *Heredia:* Estación Biológica La Selva, 10°26'N, 84°01'W, Feb. 1993, fogging *Virola koschnyi*, elev. 50–150 m (INBIO 225072, PBI\_OON 40805), 1 ♀, May 7, 1993, same (INBIO 276159, PBI\_OON 40806), 1 ♂, Sept. 4, 1993, same (INBIO 236043, PBI\_OON 29667), 1 ♂. **Panama:** *Colón:* San Lorenzo Protected Area, 9°16.779'N, 79°59.468'W, Oct. 8, 2004 (ZMUC, PBI\_OON 40892), 1 ♂, Oct. 13, 2004, fogging (ZMUC 12519, PBI\_OON 40894), 1 ♂.

**DISTRIBUTION:** Costa Rica and Panama (known only from canopy fogging).

*Pescennina viquezi*, new species

Figures 76–90

**TYPES:** Female holotype and male allotype taken in litter from river side of remnant semi-dry forest at an elevation of 866 m at the Puente de Mulas, Río Virilla, San Antonio de Belén, 9°58.365'N, 84°11.027'W, Heredia, Costa Rica (June 23, 2010; C. Viquez, M. Solís), deposited in INBIO (PBI\_OON 565).

**ETYMOLOGY:** The specific name is a patronym in honor of Carlos Viquez, one of the collectors of the types.

**DIAGNOSIS:** In having dark markings on both the carapace and sternum, members of this species resemble those of *P. ibarra* and *P. fusca*. Males of those species are unknown, but those of *P. viquezi* have a long, spiniform prong on the right side of the embolar base and have the middle prong much longer than the left prong (fig. 81); females resemble those of *P. ibarra* in having the apodemes straight, rather than convergent, but have a much larger posterior receptaculum (figs. 89, 90). The male palp is very similar to that of *P. murphyorum*, but the wider middle prong on the embolar base extends much farther beyond the left prong than in that species.

**MALE** (PBI\_OON 565, figs. 76–83): Total length 1.40. Carapace orange-brown, with marginal dark stripe, other dark markings behind eyes, submarginally at sides, and along midline of pars thoracica; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by more than their diameter, PLE–PME separated by more than PME diameter. Sternum orange-brown, with scattered dark markings, surface rugose. Chelicerae, endites, and labium yellow-brown. Abdomen very slightly constricted in middle. Dorsal scutum gray, anterior portion with vague traces of lighter markings, distinct white transverse band at

about half of length; postepigastric scutum yellow-brown. Femora I, II with subbasal prolateral darkening and ventral dark stripe, III, IV with prolateral and retrolateral dark stripes everywhere except base; patellae with ventral darkenings; tibia IV with prolateral and retrolateral dark stripes everywhere except base. Palp brown; embolar base with long, sinuous, spiniform, right prong, almost entire length of embolus in same plane as base.

**FEMALE** (PBI\_OON 565, figs. 84–90): Total length 1.58. ALE-PLE separated by less than ALE radius. Abdominal dorsum dark purplish gray with pair of elongated, paramedian anterior white spots reaching almost to median white spot situated at about half of abdomen length, followed posteriorly by two lateral white spots situated anteriorly of median spot, almost connected laterally to transverse, procurved white stripe situated at about three-fourths of abdomen length; posterior portion with subterminal, transverse, light purple stripe. Tibiae I–III with weak ventral darkenings. Anterior genitalic ducts highly coiled around relatively narrow, laterally unexpanded transverse duct; posterior receptaculum ovoid, occupying about half of apodeme length.

**OTHER MATERIAL EXAMINED:** **Costa Rica:** *Heredia:* Puente de Mulas, Río Virilla, San Antonio de Belen, 9°58.365'N, 84°11.027'W, June 23, 2010, litter from river side of remnant semidry forest, elev. 866 m (C. Viquez, M. Solis, INBIO PBI\_OON 566), 1 ♂, 1 ♀. *San José:* San José (E. Schmidt, AMNH PBI\_OON 1775), 1 ♀.

**DISTRIBUTION:** Northern Costa Rica (Heredia, San José).

### *Pescennina fusca*, new species

Figures 91–97

**TYPE:** Female holotype taken from a riddled stage 3 log in a coffee plantation at an elevation of 860 m at Escopeta, along the Río Escopeta, Chiriquí, Panama (Jan. 9. 1981; M. Suter), deposited in FMNH (PBI\_OON 40899).

**ETYMOLOGY:** The specific name refers to the dark markings on the carapace and sternum.

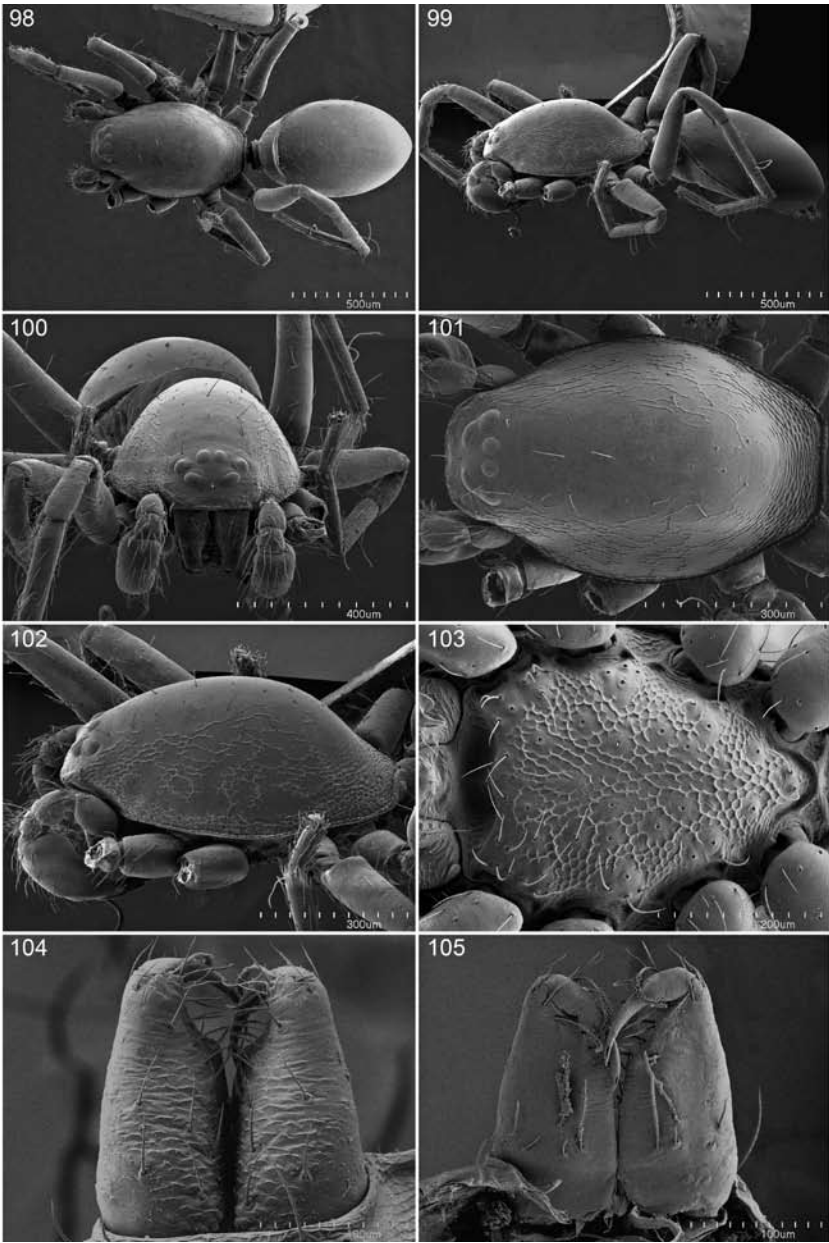
**DIAGNOSIS:** In having dark markings on both the carapace and sternum, members of this species resemble both *P. ibarra* and *P. viquezi*, but females can be distinguished by the posteriorly convergent apodemes (figs. 96, 97).

**MALE:** Unknown.

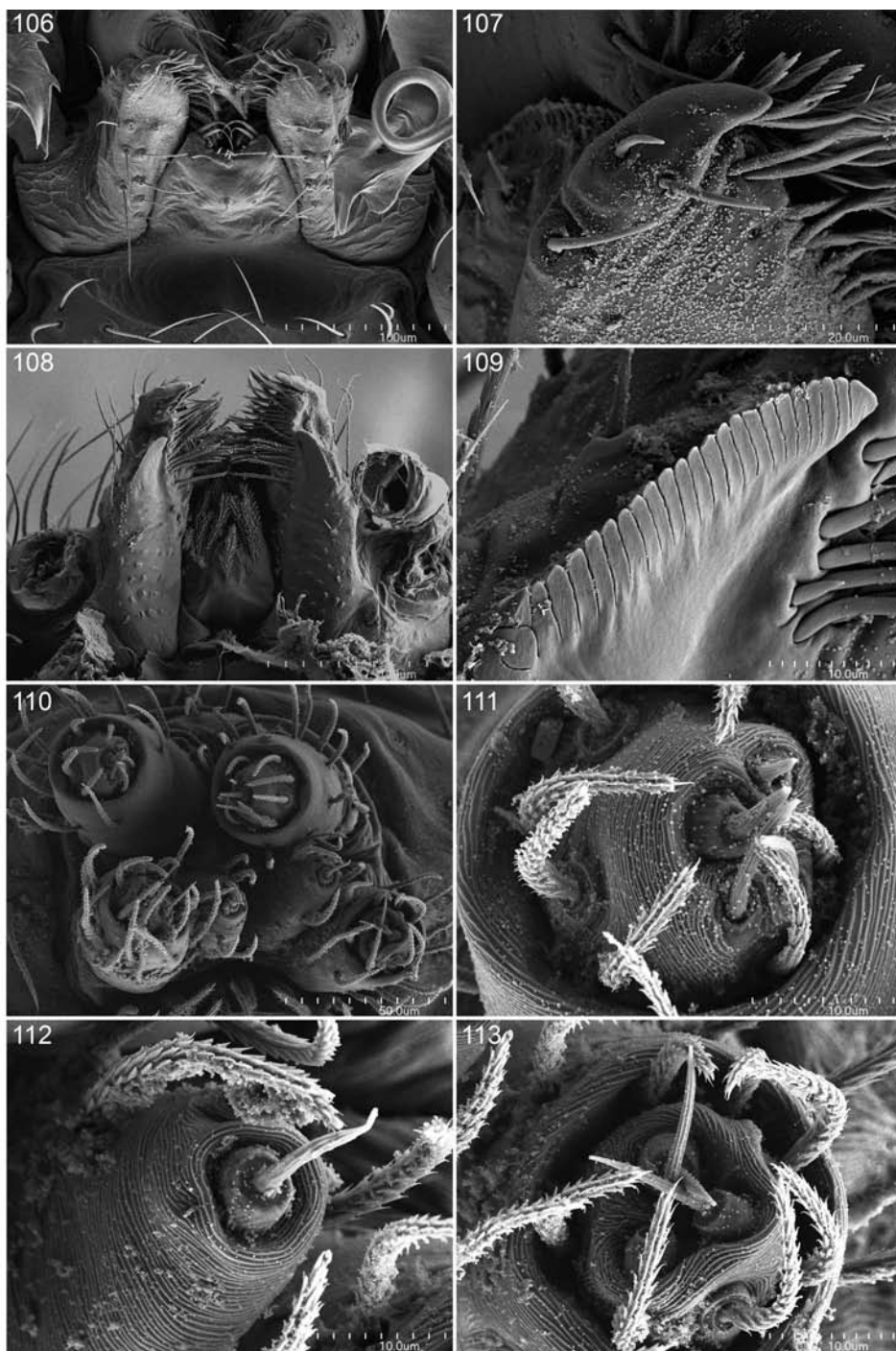
**FEMALE** (PBI\_OON 40899, figs. 91–97): Total length 1.83. Carapace orange-brown, with marginal dark stripe, other dark markings behind eyes, submarginally at sides, and along midline of pars thoracica; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by more than their diameter, PLE-PME separated by more than PME diameter. Sternum orange-brown, with scattered dark markings, surface rugose. Chelicerae, endites, and labium yellow-brown. Abdominal dorsum gray, anterior half with seven white spots in rows of two, three, and two; postepigastric scutum yellow-brown. Femora I, II with subbasal prolateral darkening and ventral dark stripe, III, IV with prolateral and retrolateral dark stripes everywhere except base; patellae with ventral darkenings; tibia IV with prolateral and retrolateral dark stripes everywhere except base. Anterior genitalic ducts with about five coils around dumbbell-shaped transverse duct scarcely separated from bar



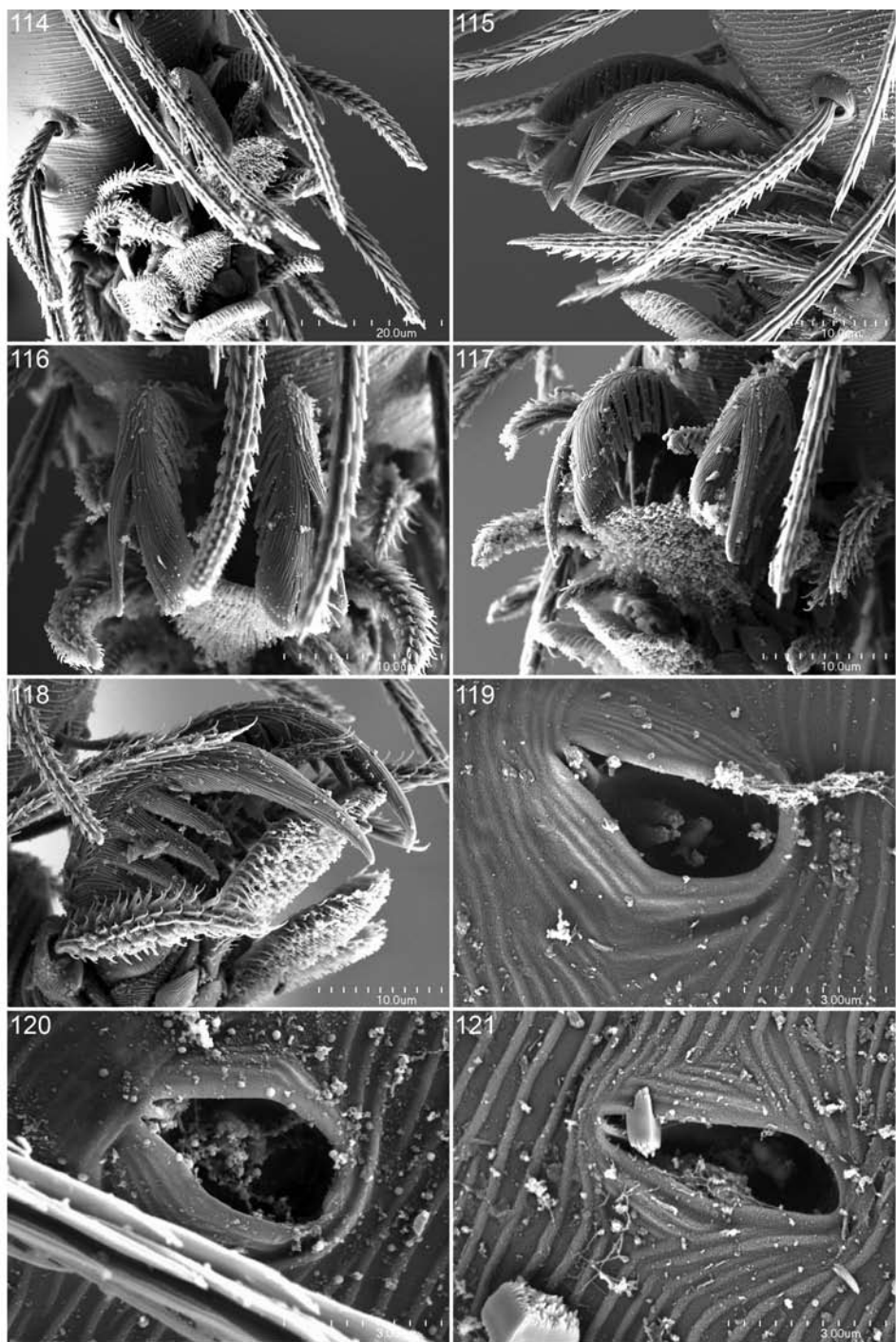
FIGS. 91–97. *Pescennina fusca*, new species, female. 91. Habitus, dorsal view. 92. Cephalothorax, ventral view. 93. Abdomen, ventral view. 94. Habitus, anterior view. 95. Same, lateral view. 96. Genitalia, ventral view. 97. Same, dorsal view.



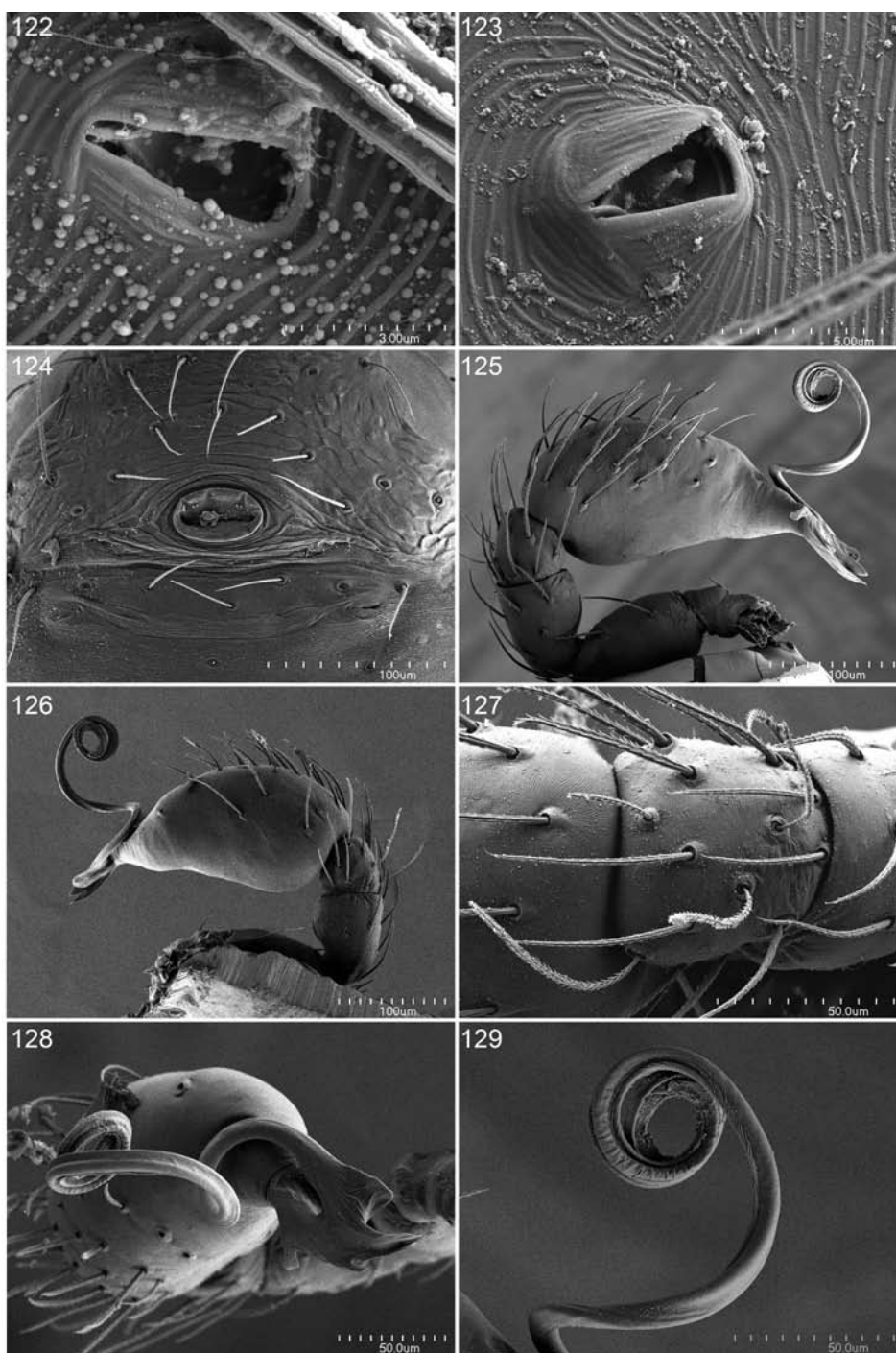
FIGS. 98–105. *Pescennina arborea*, new species, male. **98.** Habitus, dorsal view. **99.** Same, lateral view. **100.** Same, anterior view. **101.** Carapace, dorsal view. **102.** Carapace, lateral view. **103.** Sternum, ventral view. **104.** Chelicerae, anterior view. **105.** Chelicerae, posterior view.



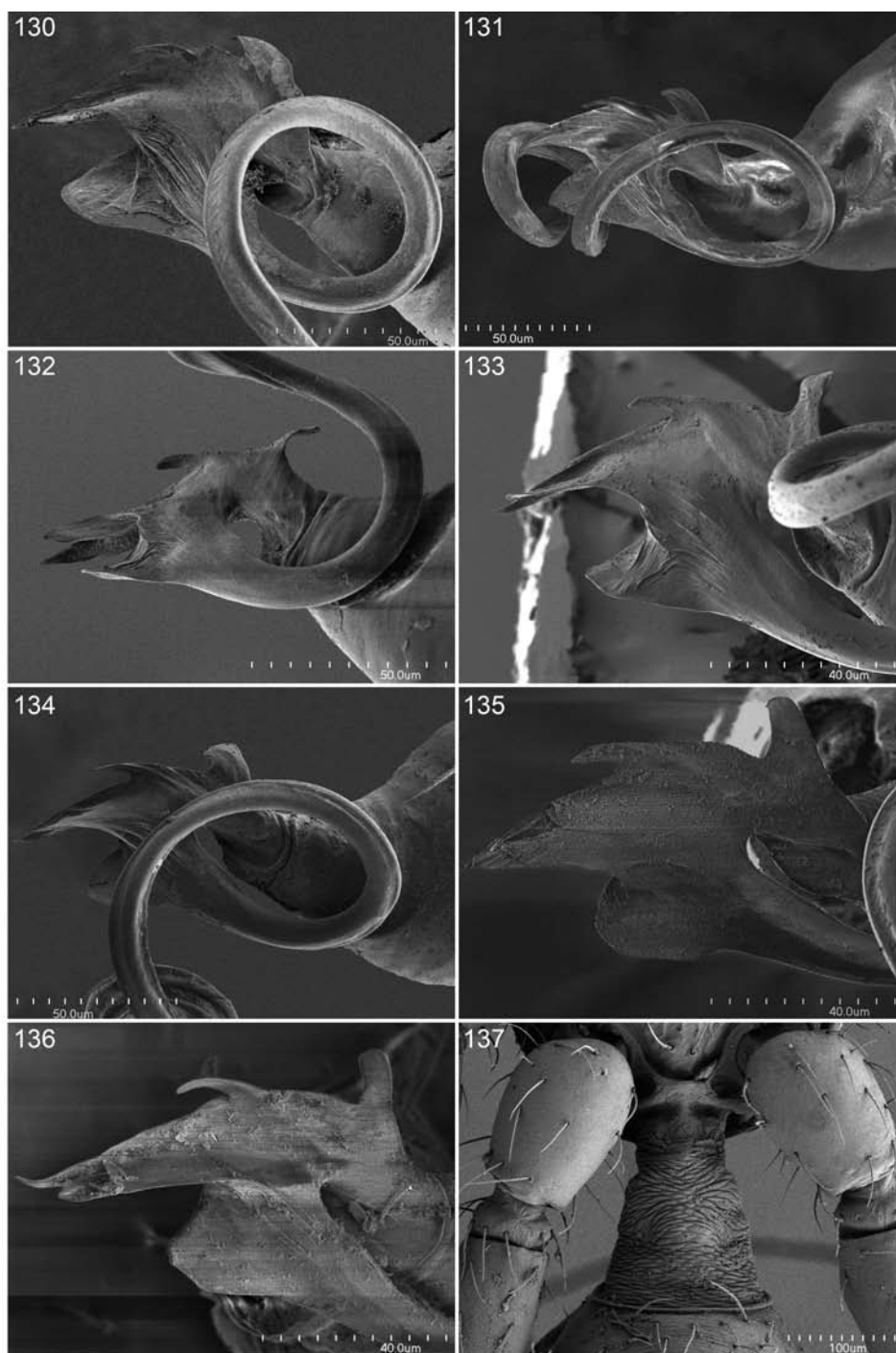
FIGS. 106–113. *Pescennina arborea*, new species, male. **106.** Labium and endites, ventral view. **107.** Anterior process on endite, ventral view. **108.** Labrum and endites, dorsal view. **109.** Serrula, dorsal view. **110.** Spinnerets, apical view. **111.** Anterior lateral spinneret, apical view. **112.** Posterior median spinneret, apical view. **113.** Posterior lateral spinneret, apical view.



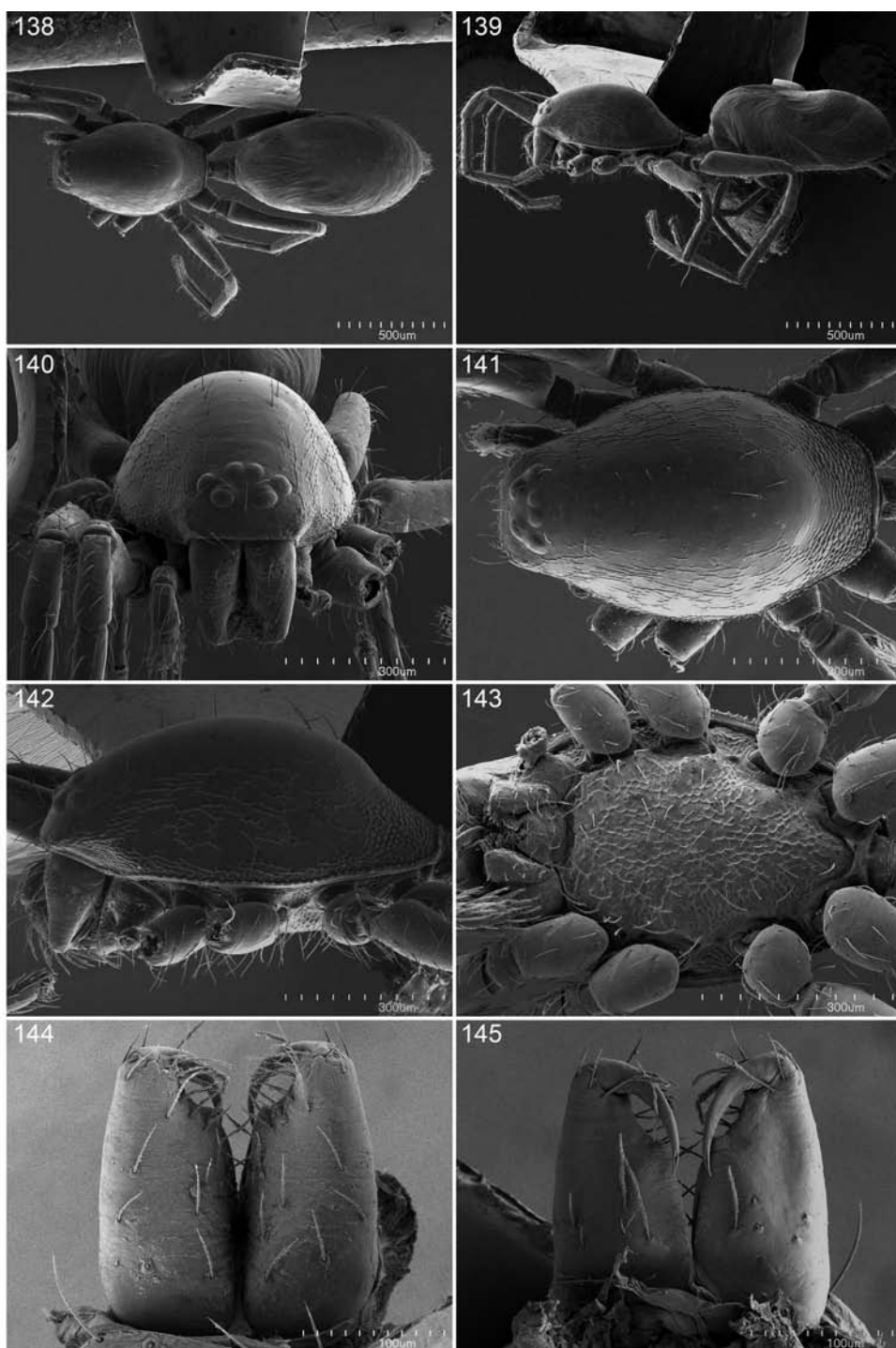
FIGS. 114–121. *Pescennina arborea*, new species, male. 114. Claws of leg I, apical view. 115. Claws of leg II, lateral view. 116. Same, apical view. 117. Claws of leg III, apical view. 118. Claws of leg IV, lateral view. 119. Tarsal organ of leg I, dorsal view. 120. Same, leg II. 121. Same, leg III.



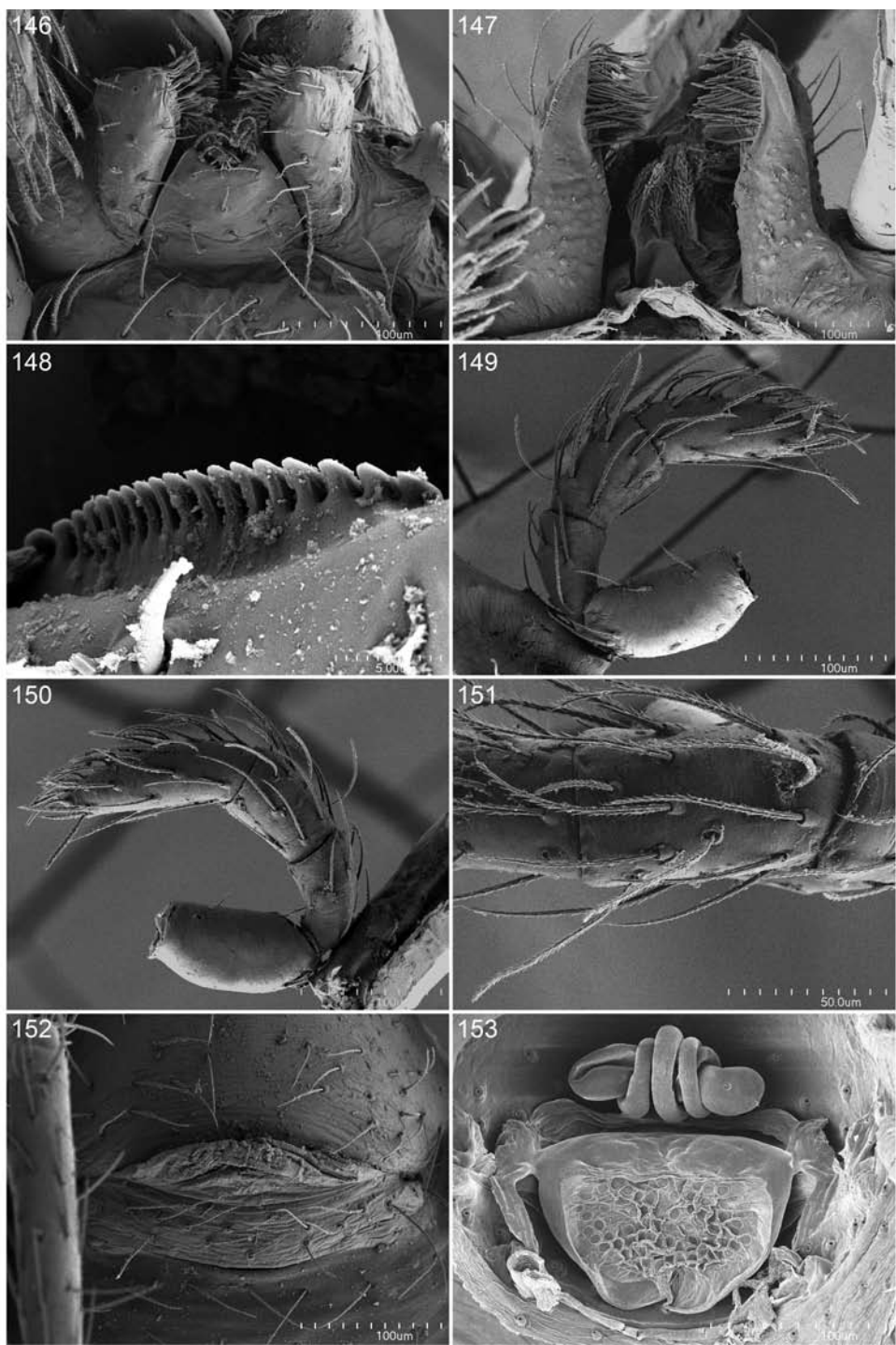
FIGS. 122–129. *Pescennina arborea*, new species, male. 122. Tarsal organ of leg IV, dorsal view. 123. Same, palp. 124. Sperm pore, ventral view. 125. Left palp, prolateral view. 126. Left palp, retrolateral view. 127. Palpal tibia, dorsal view. 128. Bulb of left palp, ventral view. 129. Embolus, prolateral view.



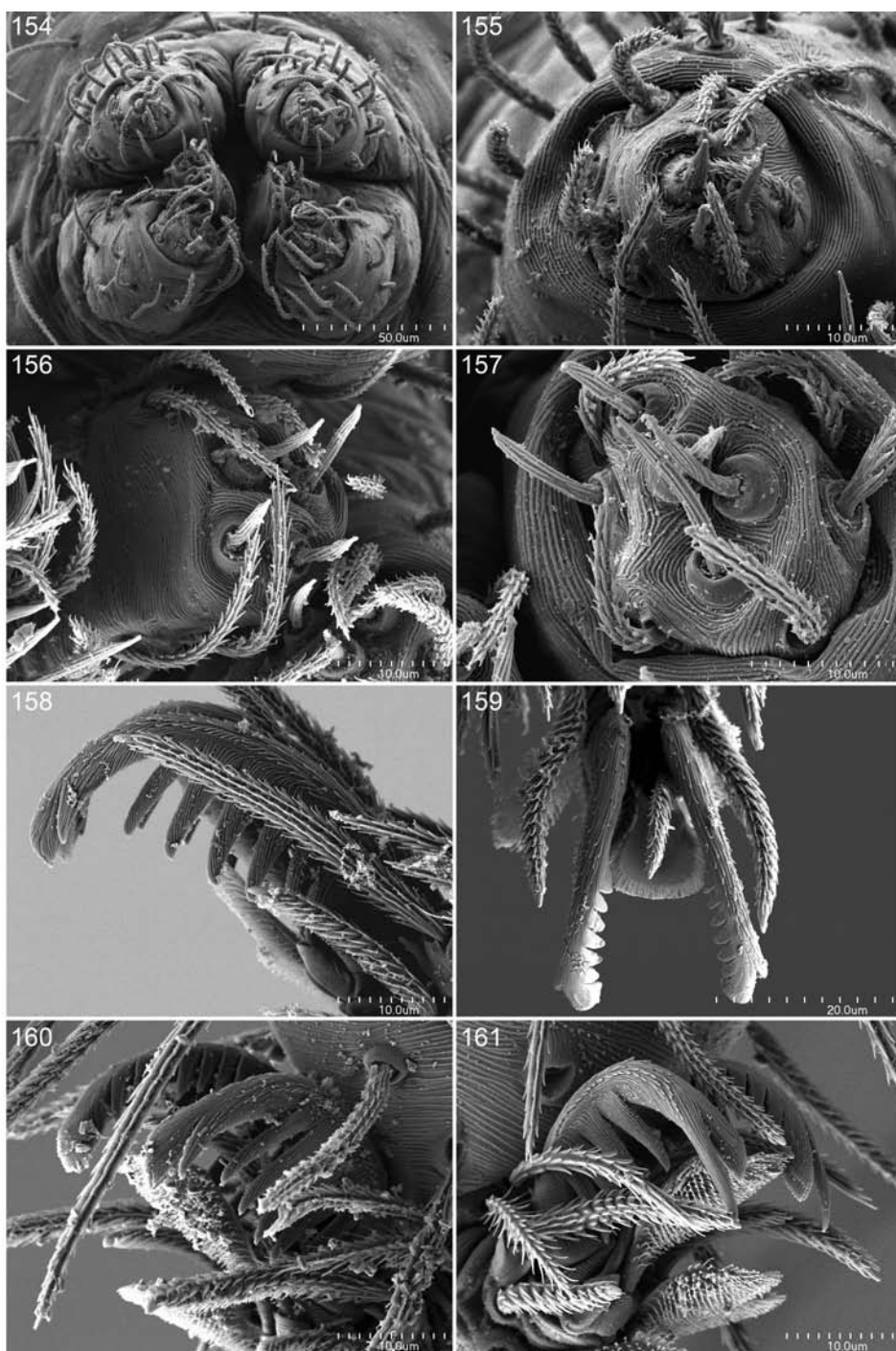
FIGS. 130–137. *Pescennina arborea*, new species. 130–136. Embolar base of left palp, dorsal view. **130.** PBI\_OON 27902 from Panama. **131.** PBI\_OON 27905 from Panama. **132.** PBI\_OON 40830 from Ecuador. **133.** Same, shifted slightly prolaterally. **134.** PBI\_OON 40835 from Ecuador. **135.** PBI\_OON 40839 from Ecuador. **136.** PBI\_OON 40827 from Ecuador. **137.** Female, pedicel, ventral view.



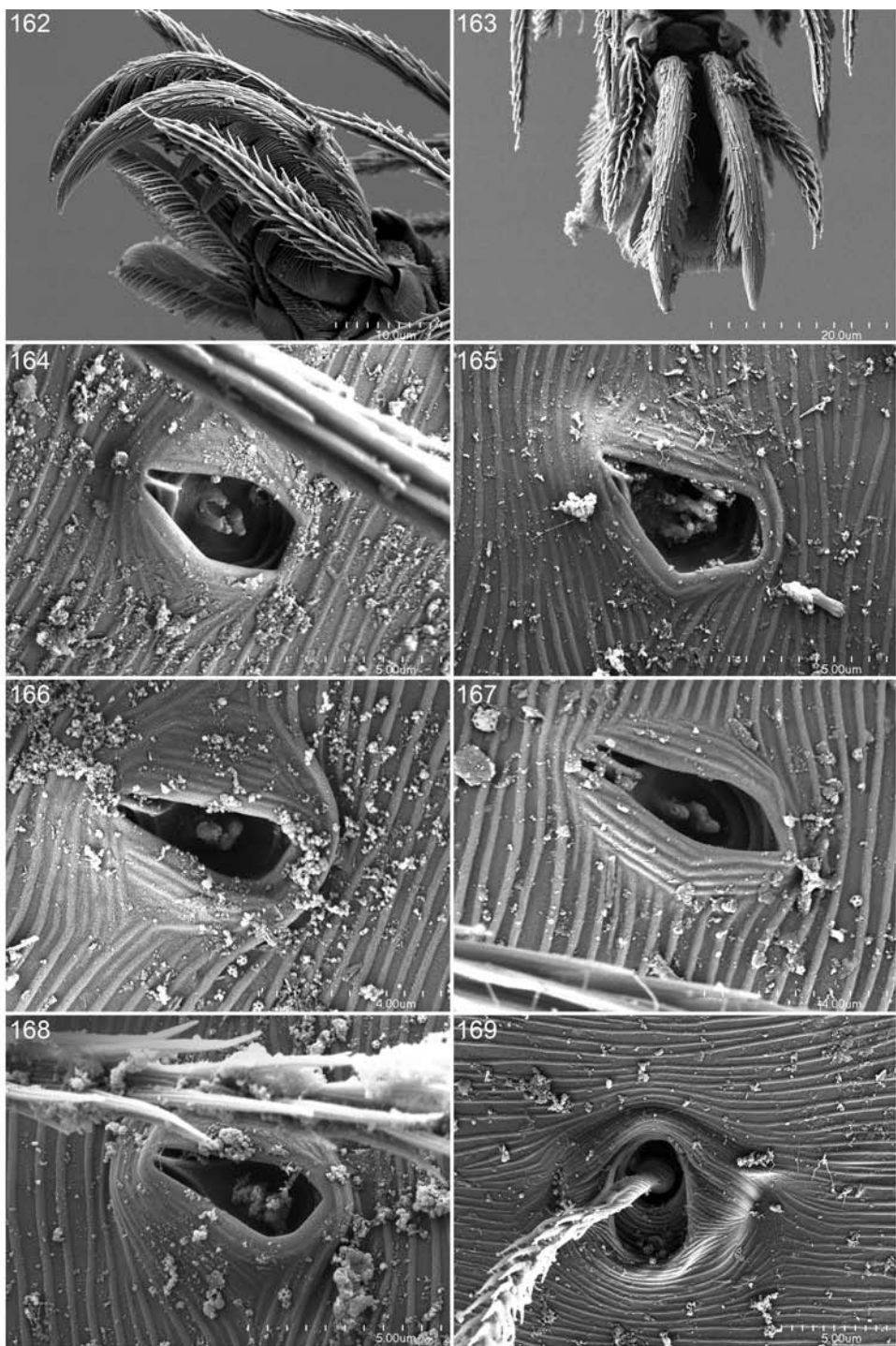
FIGS. 138–145. *Pescennina arborea*, new species, female. 138. Habitus, dorsal view. 139. Same, lateral view. 140. Same, anterior view. 141. Carapace, dorsal view. 142. Same, lateral view. 143. Sternum, ventral view. 144. Chelicerae, anterior view. 145. Chelicerae, posterior view.



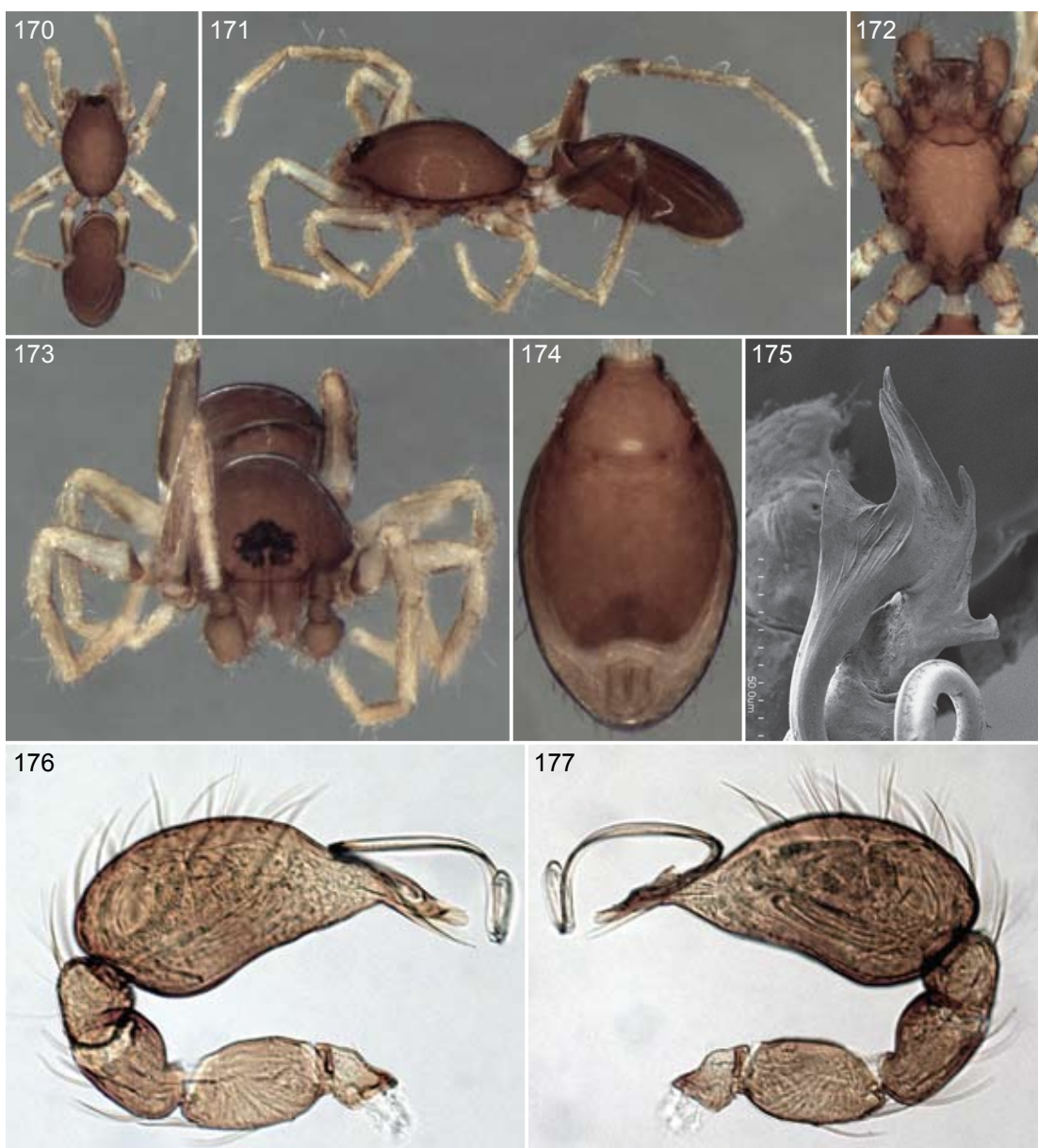
FIGS. 146–153. *Pescennina arborea*, new species, female. **146.** Labium and endites, ventral view. **147.** Labrum and endites, dorsal view. **148.** Serrula, dorsal view. **149.** Palp, prolateral view. **150.** Same, retrolateral view. **151.** Palpal tibia, dorsal view. **152.** Epigastric region, ventral view. **153.** Internal genitalia, dorsal view.



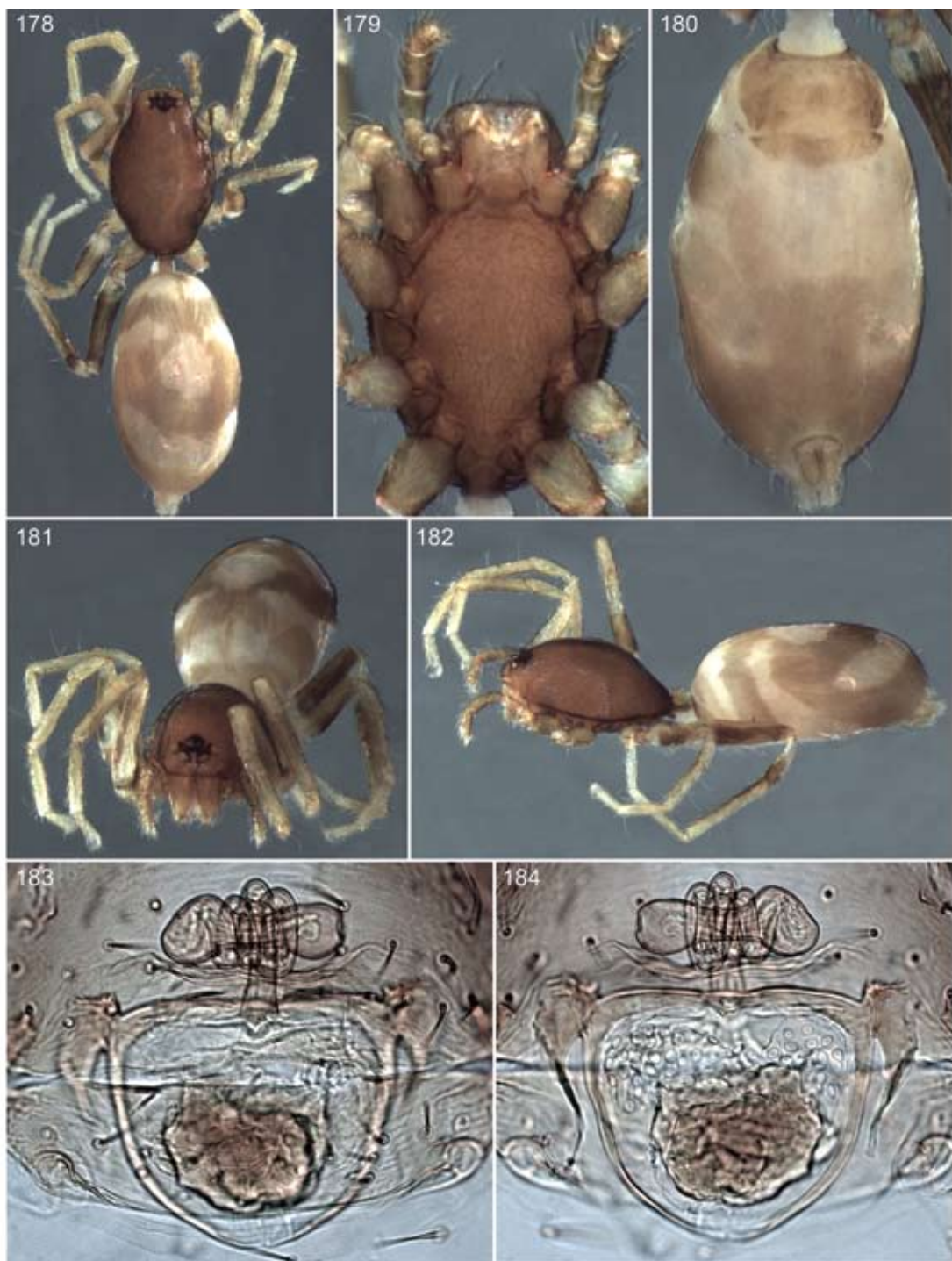
FIGS. 154–161. *Pescennina arborea*, new species, female. **154.** Spinnerets, apical view. **155.** Anterior lateral spinneret, apical view. **156.** Posterior median spinneret, apical view. **157.** Posterior lateral spinneret, apical view. **158.** Claws of leg I, lateral view. **159.** Same, apical view. **160.** Claws of leg II, lateral view. **161.** Claws of leg III, lateral view.



FIGS. 162–169. *Pescennina arborea*, new species, female. **162.** Claws of leg IV, lateral view. **163.** Same, apical view. **164.** Tarsal organ of leg I, dorsal view. **165.** Same, leg II. **166.** Same, leg III. **167.** Same, leg IV. **168.** Same, palp. **169.** Trichobothrial base from tibia I, dorsal view.



FIGS. 170–177. *Pescennina arborea*, new species, male. 170. Habitus, dorsal view. 171. Same, lateral view. 172. Cephalothorax, ventral view. 173. Habitus, anterior view. 174. Abdomen, ventral view. 175. Embolar base of left palp, dorsal view. 176. Left palp, prolateral view. 177. Same, retrolateral view.



FIGS. 178–184. *Pescennina arborea*, new species, female. 178. Habitus, dorsal view. 179. Cephalothorax, ventral view. 180. Abdomen, ventral view. 181. Habitus, anterior view. 182. Same, lateral view. 183. Genitalia, ventral view. 184. Same, dorsal view.

connecting apodemes; posterior receptaculum large, triangular, almost entirely enclosed by convergent apodemes.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Northern Panama (Chiriquí).

*Pescennina arborea*, new species

Figures 98–184

TYPES: Male holotype and female allotype taken by canopy fogging in a humid forest at Colón, Colón, Panama (July 2–14, 1979; E. Broadhead et al.), deposited in USNM (PBI\_OON 27902).

ETYMOLOGY: The specific name refers to the canopy habitat of the species.

DIAGNOSIS: Males can be recognized by the two proximal prongs on the right side of the embolar base and the bifid tip of the middle prong on that base (figs. 130–136, 175). The female genitalia resemble those of *P. fusca* but have fewer coils in the anterior ducts (figs. 183, 184).

MALE (PBI\_OON 40840, figs. 98–136, 170–177): Total length 1.57. Carapace brown, without any pattern; surface of elevated portion of pars cephalica smooth, sides striated. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum orange-brown, surface rugose. Chelicerae, endites, and labium orange-brown. Abdomen not constricted but with deep depression just behind anterior margin of dorsal scutum. Dorsal scutum brown, without color pattern; postepigastric scutum brown. Femora I, II with basal darkening on prolateral surface, less pronounced darkening on ventral surface; darkening less pronounced but longer on III, prolateral and retrolateral sides of IV darkened; patellae I, II with ventral darkening; IV with distal darkening. Palp brown; embolar base complex, with two proximal right prongs and distally bifid middle prong; embolus making two 90° turns, then 180° turn, then two distal 90° turns.

FEMALE (PBI\_OON 40875, figs. 137–169, 178–184): Total length 1.83. Abdominal dorsum and sides with distinct pattern of dark and light areas (figs. 178, 182); postepigastric scutum yellow-brown. Tibia IV with basal half of ventral surface darkened. Anterior genitalic ducts with dumbbell-shaped transverse duct surrounded by three coils; posterior receptaculum with heavily sclerotized margins.

OTHER MATERIAL EXAMINED: **Panama:** Colón: Colón, July 2–14, 1979, canopy fogging, humid forest (E. Broadhead et al., USNM 2046648, PBI\_OON 27903–27906), 3♂, 3♀. **Colombia:** Cesar: Socorpa Mission, Sierra de Perijá, Aug. 1–22, 1968, beaten from dry foliage, elev. 1300–1400 m (B. Malkin, AMNH PBI\_OON 40896), 1♀. **Ecuador:** Orellana: 1 km S of Onkone Gare Camp, Reserva Etnica Waorani, 0°39'25.77"S, 76°27'10.8"W, elev. 216 m (all collected by T. Erwin et al., in USNM), Oct. 6, 1994 (PBI\_OON 40826, 40835, 40843, 40844, 40864, 40876), 5♂, 3♀, July 6, 1995 (PBI\_OON 40868), 1♀, Oct. 4, 1995 (PBI\_OON 40827, 40832, 40836, 40838, 40841, 40855, 40856, 40871), 5♂, 5♀, Oct. 5, 1995 (PBI\_OON 40858), 1♂, Oct. 7, 1995 (PBI\_OON 40837, 40840), 1♂, 1♀, Oct. 8, 1995 (PBI\_OON 40828, 40830, 40831, 40857, 40859, 40861), 4♂, 3♀, Feb. 4, 1996 (PBI\_OON 40849, 40852), 2♂, Feb. 5, 1996 (PBI\_OON 40872), 1♂, Feb. 7, 1996 (PBI\_OON 40829, 40842, 40865, 40873), 1♂, 3♀, Feb. 8, 1996 (PBI\_OON 40833), 1♂, June 25, 1966 (PBI\_OON 40846, 40850, 40866, 40874), 1♂, 3♀, June 26, 1996

(PBI\_OON 40847, 40848, 40851, 40854, 40860, 40863, 40867, 40869, 40875), 5♂, 5♀, Oct. 2, 1996 (PBI\_OON 40834), 1♂, Oct. 4, 1996 (PBI\_OON 40853), 1♀; Tiputini Biodiversity Station, near Yasuni National Park, 0°37'55"S, 76°08'39"W, elev. 220–250 m (all collected by T. Erwin et al., in USNM), July 1, 1998 (PBI\_OON 40845, 40862), 2♀, July 4, 1998 (PBI\_OON 40839), 1♂, Oct. 24, 1998 (PBI\_OON 40870), 2♂.

**DISTRIBUTION:** Panama south to Amazonian Ecuador, taken by beating foliage and canopy fogging.

*Pescennina cupida* (Keyserling), new combination

Figures 185–199

*Oonops cupidus* Keyserling, 1881: 299, pl. 11, fig. 20 (two male syntypes from Colombia, as “Neu-Granada,” in BMNH; examined).

*Opopaea cupida*: Simon, 1893: 299.

*Marsupopaea sturmi* Cooke, 1972: 92, figs. 6–11 (male holotype from Páramo de Monserrate, Cundinamarca, Colombia, in AMNH; examined). **NEW SYNONYMY.**

*Marsupopaea cupida*: Platnick and Dupérré, 2009a: 4.

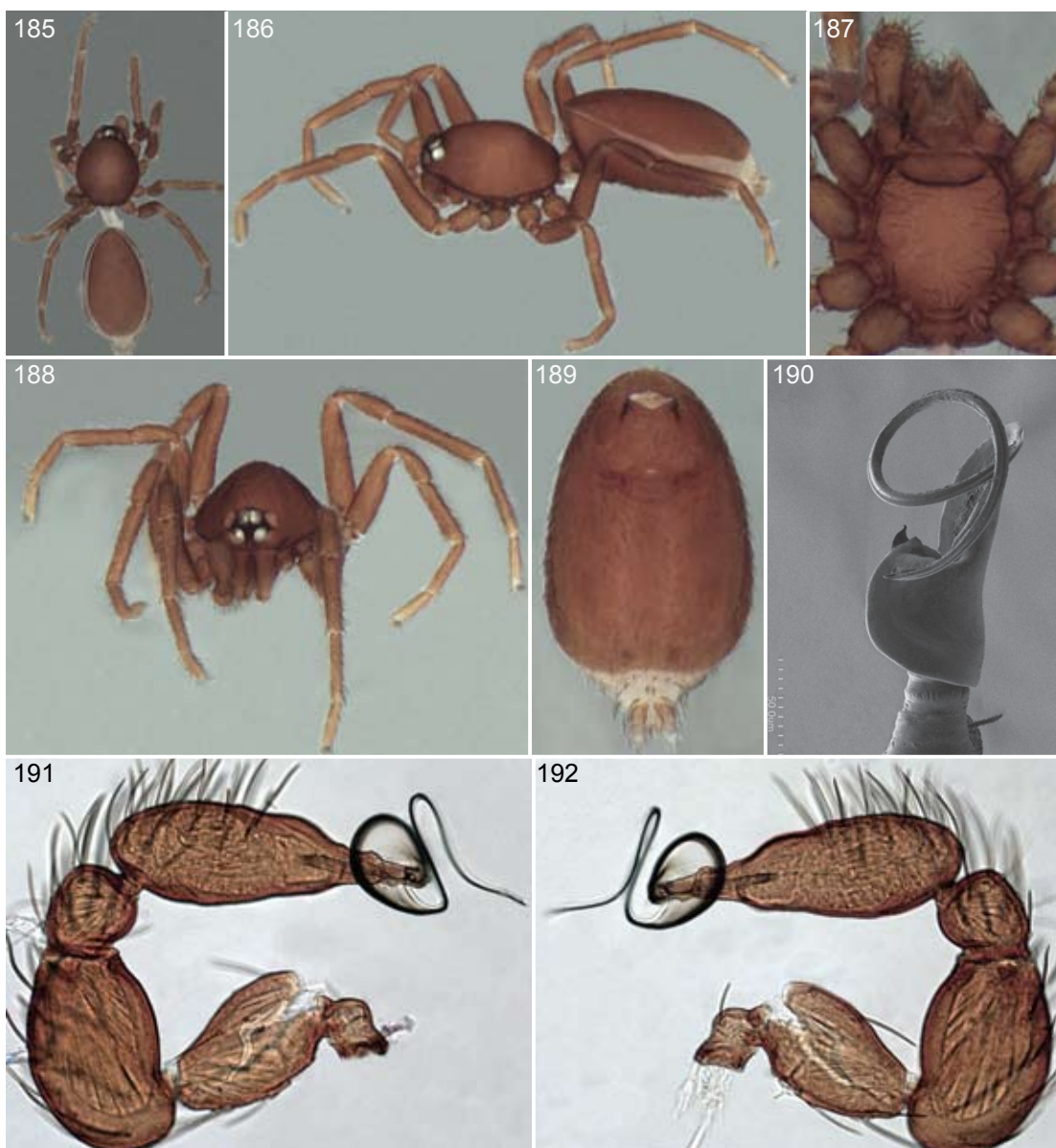
**DIAGNOSIS:** In having relatively large eyes, members of this species resemble only those of *P. orellana*. Males of *P. cupida* have a much longer embolar base (fig. 190); females have shorter apodemes (fig. 199).

**MALE** (PBI\_OON 476, figs. 185–192): Total length 2.34. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides granulate. ALE separated by their radius to diameter, PLE-PME separated by less than PME radius. Sternum orange-brown, surface finely reticulate. Chelicerae, endites, and labium orange-brown. Abdomen cylindrical; dorsum soft portions white. Dorsal scutum orange-brown, without color pattern but with reticulate surface; postepigastric scutum orange-brown. Legs orange-brown, without darkenings. Palp pale orange; femur enlarged, attaching to patella subbasally, patella longer than femur, enlarged; embolar base with narrow extension, embolus accompanied basally by wide conductor.

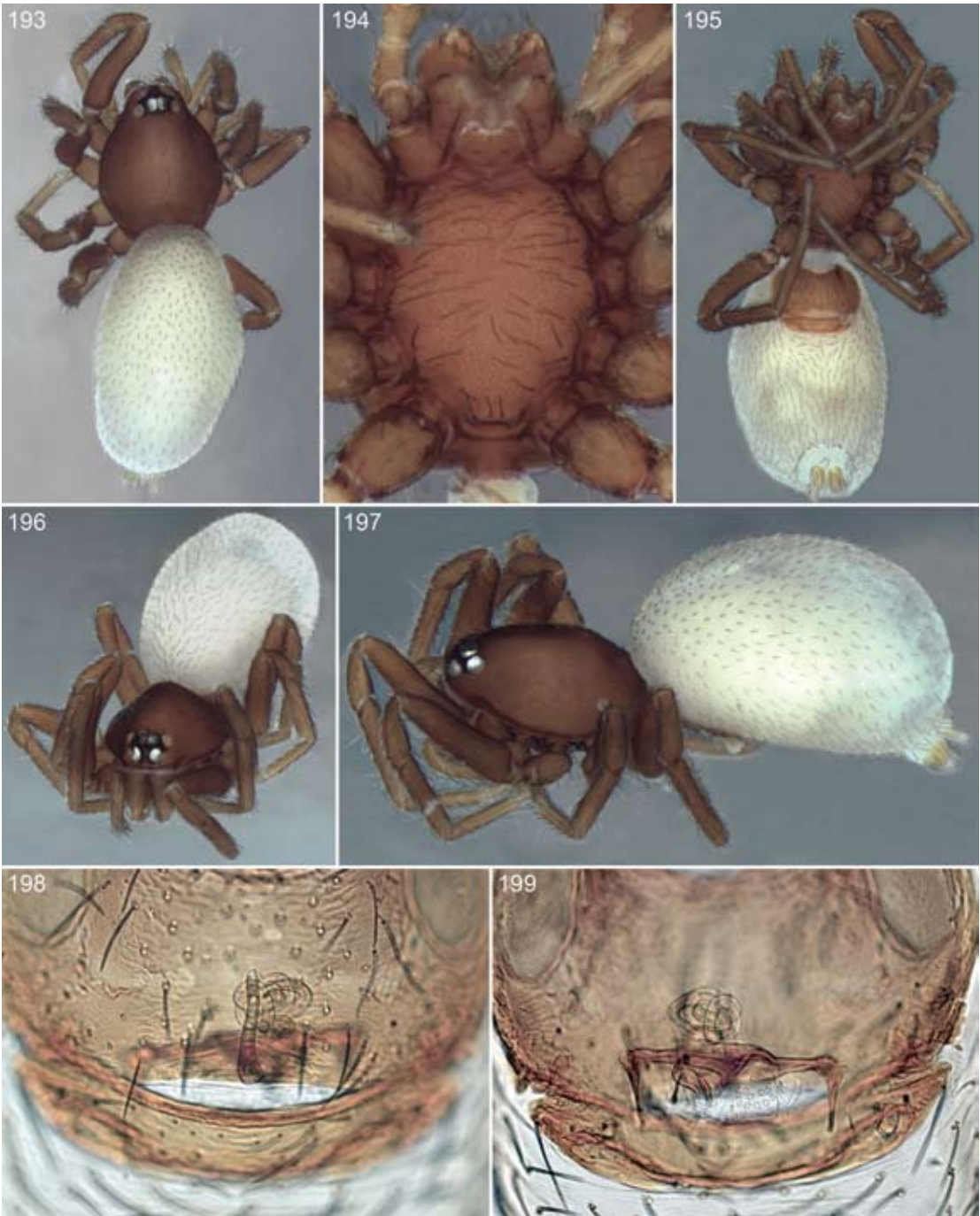
**FEMALE** (PBI\_OON 476, figs. 193–199): Total length 2.55. Abdominal dorsum white, without color pattern. Anterior genitalic ducts with long longitudinal ventral portion followed distally by transverse coils; apodemes short, widely separated.

**MATERIAL EXAMINED:** **Colombia:** No specific locality (“Neu-Granada”), BMNH PBI\_OON 474), 2♂ (syntypes). *Cundinamarca:* 15 km E Bogotá, Mar. 16, 1974, elev. 3300 m (L. Herman, AMNH PBI\_OON 60), 1♂; Páramo de Cruz Verde, between Bogotá and Choachí, 4°34'30"N, 74°01'11"W, Feb. 21, 2010, between dry leaves of the composite *Espeletia grandiflora*, elev. 3367 m (E. Florez, D. Luna, C. Mattoni, A. Sabogal, ICN 3552, PBI\_OON 476), 1♂, 1♀; Páramo de Monserrate, Bogotá, May 31, 1968, between leaves of the composite *Espeletia grandiflora*, elev. 3200 m (H. Sturm; AMNH PBI\_OON 8918), 1♂ (holotype); Páramo El Granizo, Nov. 15, 2001, elev. 3200 m (S. Sendoya, ICN 4104, PBI\_OON 475), 1♂.

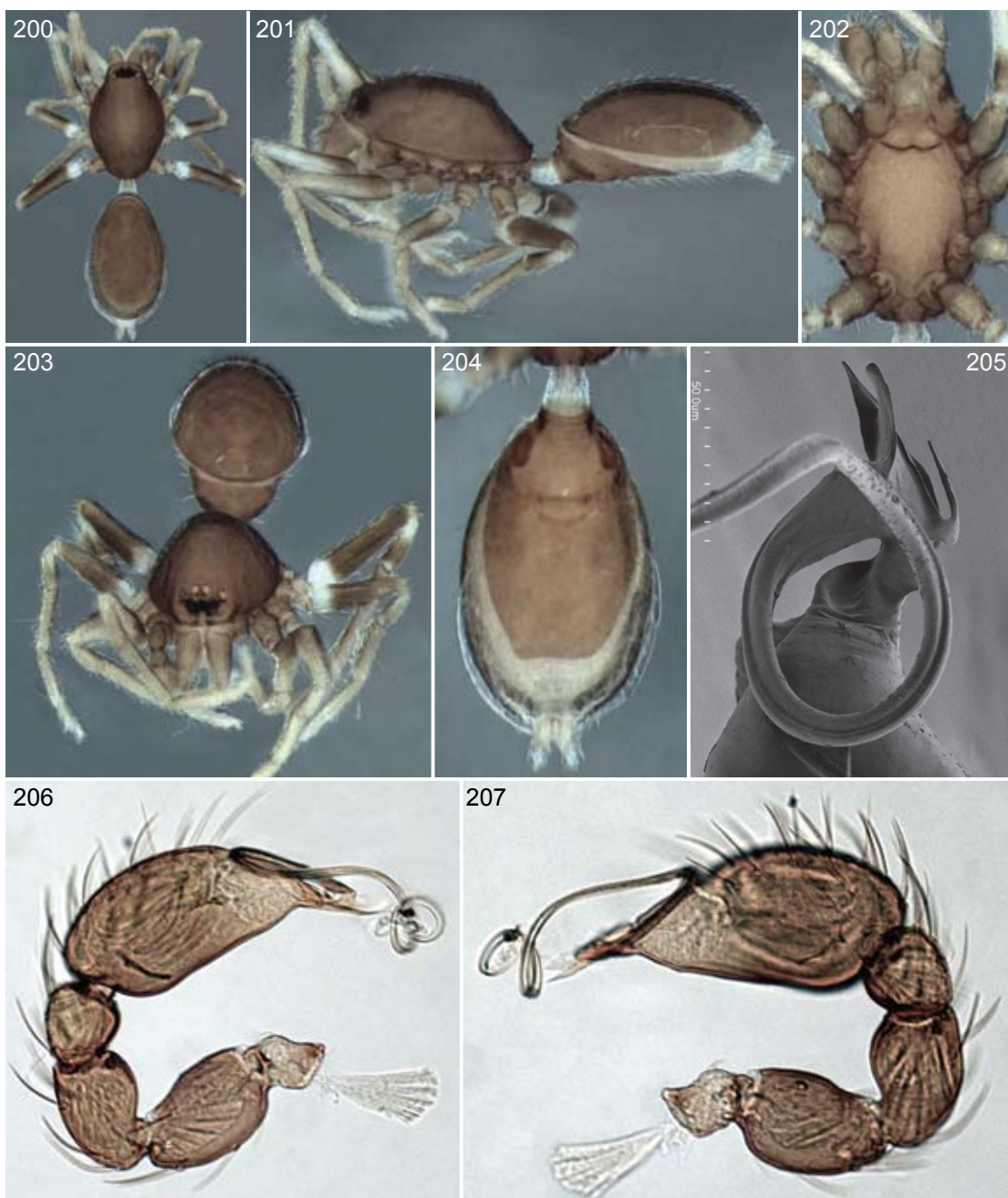
**DISTRIBUTION:** Known only from paramo habitats at elevations of 3200–3367 m near Bogotá, Colombia.



FIGS. 185–192. *Pescennina cupida* (Keyserling), male. **185.** Habitus, dorsal view. **186.** Same, lateral view. **187.** Cephalothorax, ventral view. **188.** Same, anterior view. **189.** Abdomen, ventral view. **190.** Embolar base of left palp, dorsal view. **191.** Left palp, prolateral view. **192.** Same, retrolateral view.



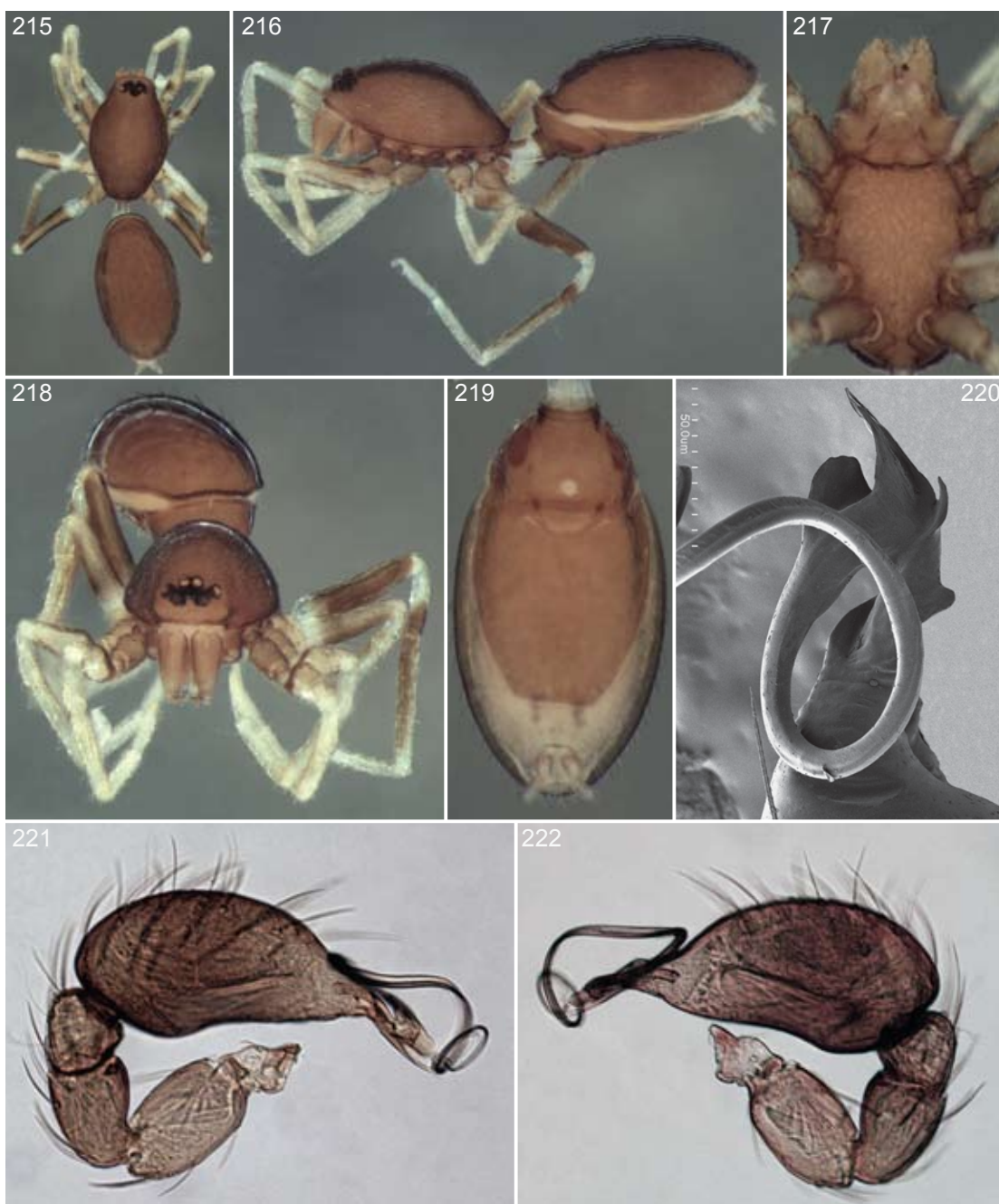
FIGS. 193–199. *Pescennina cupida* (Keyserling), female. **193.** Habitus, dorsal view. **194.** Cephalothorax, ventral view. **195.** Habitus, ventral view. **196.** Same, anterior view. **197.** Same, lateral view. **198.** Genitalia, ventral view. **199.** Same, dorsal view.



FIGS. 200–207. *Pescennina magdalena*, new species, male. **200.** Habitus, dorsal view. **201.** Same, lateral view. **202.** Cephalothorax, ventral view. **203.** Habitus, anterior view. **204.** Abdomen, ventral view. **205.** Embolar base of left palp, dorsal view. **206.** Left palp, prolateral view. **207.** Same, retrolateral view.



FIGS. 208–214. *Pescennina magdalena*, new species, female (208, 210, 212 are from allotype, others from PBI\_OON 40897). **208.** Habitus, dorsal view. **209.** Cephalothorax, ventral view. **210.** Abdomen, ventral view. **211.** Cephalothorax, anterior view. **212.** Same, lateral view. **213.** Genitalia, ventral view. **214.** Same, dorsal view.



FIGS. 215–222. *Pescennina sasaima*, new species, male. **215.** Habitus, dorsal view. **216.** Same, lateral view. **217.** Cephalothorax, ventral view. **218.** Habitus, anterior view. **219.** Abdomen, ventral view. **220.** Embolar base of left palp, dorsal view. **221.** Left palp, prolateral view. **222.** Same, retrolateral view.

*Pescennina magdalena*, new species

Figures 200–214

TYPE: Male holotype and female allotype taken at Tayrona-Park, Bahía de Cinba, western beach, ca. 35 km E of Santa Marta, Magdalena, Colombia (Apr. 1986; H. Müller), deposited in MHNG (PBI\_OON 10506).

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

DIAGNOSIS: Males have a long, narrow right prong on the embolar base that reaches about half the length of the bifid middle prong (fig. 205); females have a short, wide posterior receptaculum, and a sinuous transverse bar connecting the apodemes (figs. 213, 214).

MALE (PBI\_OON 10506, figs. 200–207): Total length 1.78. Carapace pale orange, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium yellow. Dorsal scutum orange-brown, without color pattern, with deep depression just behind anterior margin; postepigastric scutum orange-brown. Femora I, II with basal darkening on prolateral surface, longitudinal darkening on ventral surface; III, IV with basal portion unmarked but with prolateral and retrolateral sides darkened; patellae IV distally darkened; tibiae IV ventrally darkened. Palp yellow-brown; embolar base with long, spiniform, right prong, embolar tip highly coiled.

FEMALE (PBI\_OON 10506, figs. 208–214): Total length 1.86. Abdominal dorsum gray with anterior, median, and posterior transverse white stripes; postepigastric scutum yellow. Anterior genitalic ducts with transverse duct medially narrow, almost as wide as posterior receptaculum; posterior receptaculum short, wide, posteriorly invaginated.

OTHER MATERIAL EXAMINED: **Colombia:** *Magdalena*: mouth of Río Fundación, SE Ciénaga Grande de Santa Marta, Aug. 29, 1985 (H. Müller, MHNG PBI\_OON 40893), 1 ♂. *Valle del Cauca*: 6 mi W Cali, Mar. 20, 1955 (E. Schlinger, E. Ross, CAS PBI\_OON 40897), 1 ♀.

DISTRIBUTION: Colombia (Magdalena, Valle del Cauca).

*Pescennina sasaima*, new species

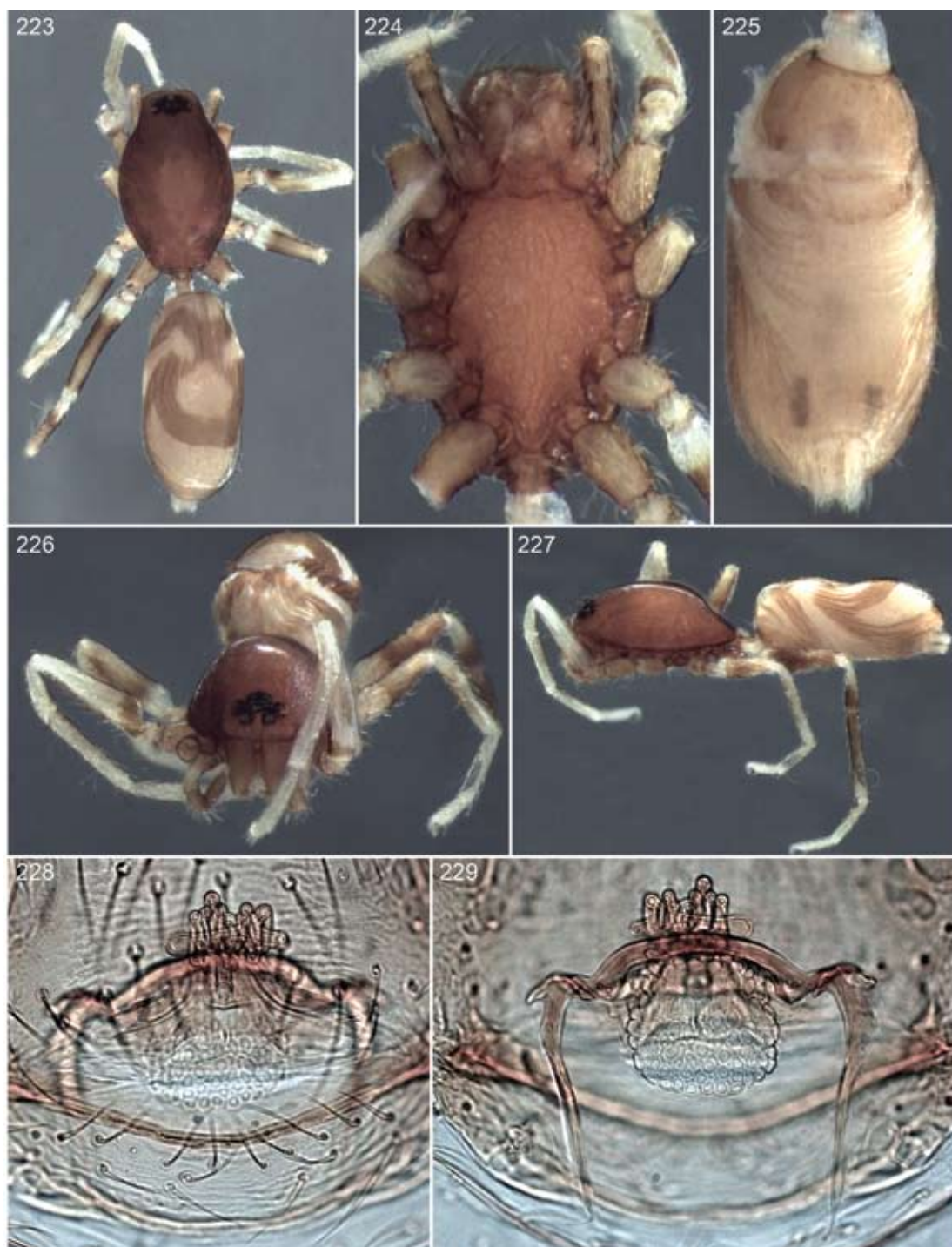
Figures 215–229

TYPE: Male holotype taken in open-air patio on roof posts at Finca Bella Vista, near Sasaima, Cundinamarca, Colombia (Apr. 15, 1965; P. D. Craig), deposited in CAS (PBI\_OON 46492).

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

DIAGNOSIS: Males have two short right prongs on the embolar base, one situated proximally, the other at about half the length of the base (fig. 220); females have a short posterior receptaculum and winglike extensions on the sides of the transverse bar connecting the apodemes (figs. 228, 229).

MALE (PBI\_OON 46492, figs. 215–222): Total length 1.74. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica smooth, sides striated. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange.



FIGS. 223–229. *Pescennina sasaima*, new species, female. 223. Habitus, dorsal view. 224. Cephalothorax, ventral view. 225. Abdomen, ventral view. 226. Habitus, anterior view. 227. Same, lateral view. 228. Genitalia, ventral view. 229. Same, dorsal view.

Dorsal scutum orange-brown, without color pattern, deeply depressed immediately behind anterior margin; postepigastric scutum pale orange. Femora I, II with basal darkening on prolateral surface, longitudinal darkening on ventral surface, III, IV with basal portion unmarked but with prolateral and retrolateral sides darkened; patella IV distally darkened; tibiae III, IV ventrally darkened. Palp yellow-brown; embolar base with two right prongs, two distal prongs.

**FEMALE** (PBI\_OON 40898, figs. 223–229): Total length 1.80. Abdomen slightly constricted in middle; dorsum gray with almost complete anterior transverse white stripe, followed posteriorly by two lateral white stripes, then large median white spot, posteriorly with wide, procurved, transverse white stripe; postepigastric scutum yellow-brown. Anterior genitalic ducts with transverse duct scarcely expanded at sides, most central coil extending posterior of thickened bar connecting apodemes; posterior receptaculum relatively small, occupying only central portion of space between apodemes.

**OTHER MATERIAL EXAMINED:** **Colombia:** *Cundinamarca*: Cachipay, Feb. 24, 2002, litter, elev. 1450 m (H. Pulido, ICN 1725, PBI\_OON 40895), 1 ♂; near highway below Finca Bella Vista, toward Sasaima, Apr. 17, 1965, under stones on steep cliff above highway (P. D. Craig, CDU PBI\_OON 40898), 1 ♀.

**DISTRIBUTION:** Colombia (*Cundinamarca*).

*Pescennina epularis* Simon

Figures 230–243

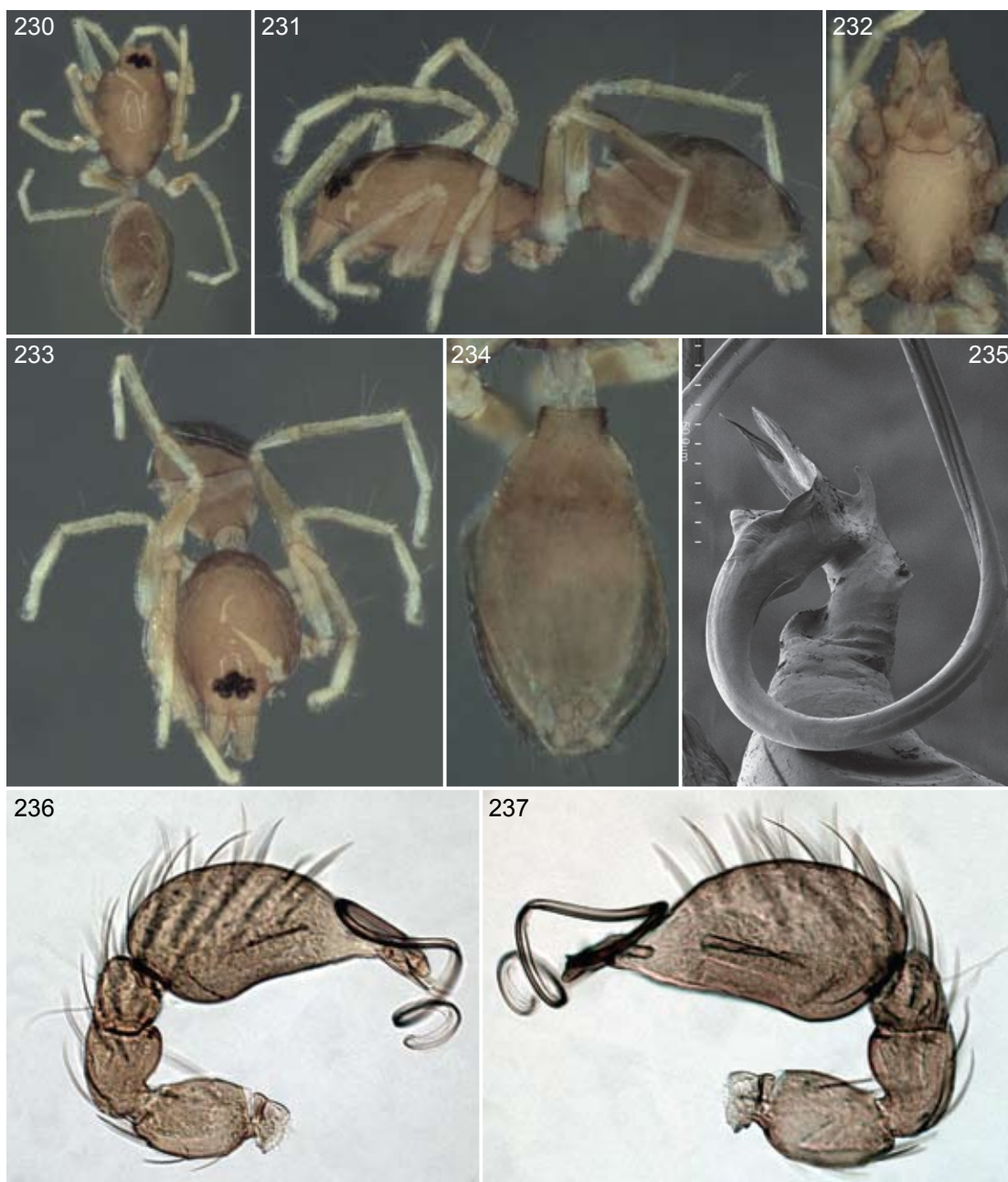
*Pescennina epularis* Simon, 1903a: 33 (female syntype from Caracas, Distrito Federal or San Esteban, Carabobo, Venezuela, in MNHN; examined).

**NOTE:** As already reported by Roth (1988), the only specimen of the genus that has been located in the Simon collection is labeled “*Pescennina dives*,” a manuscript name that Simon apparently changed prior to publication.

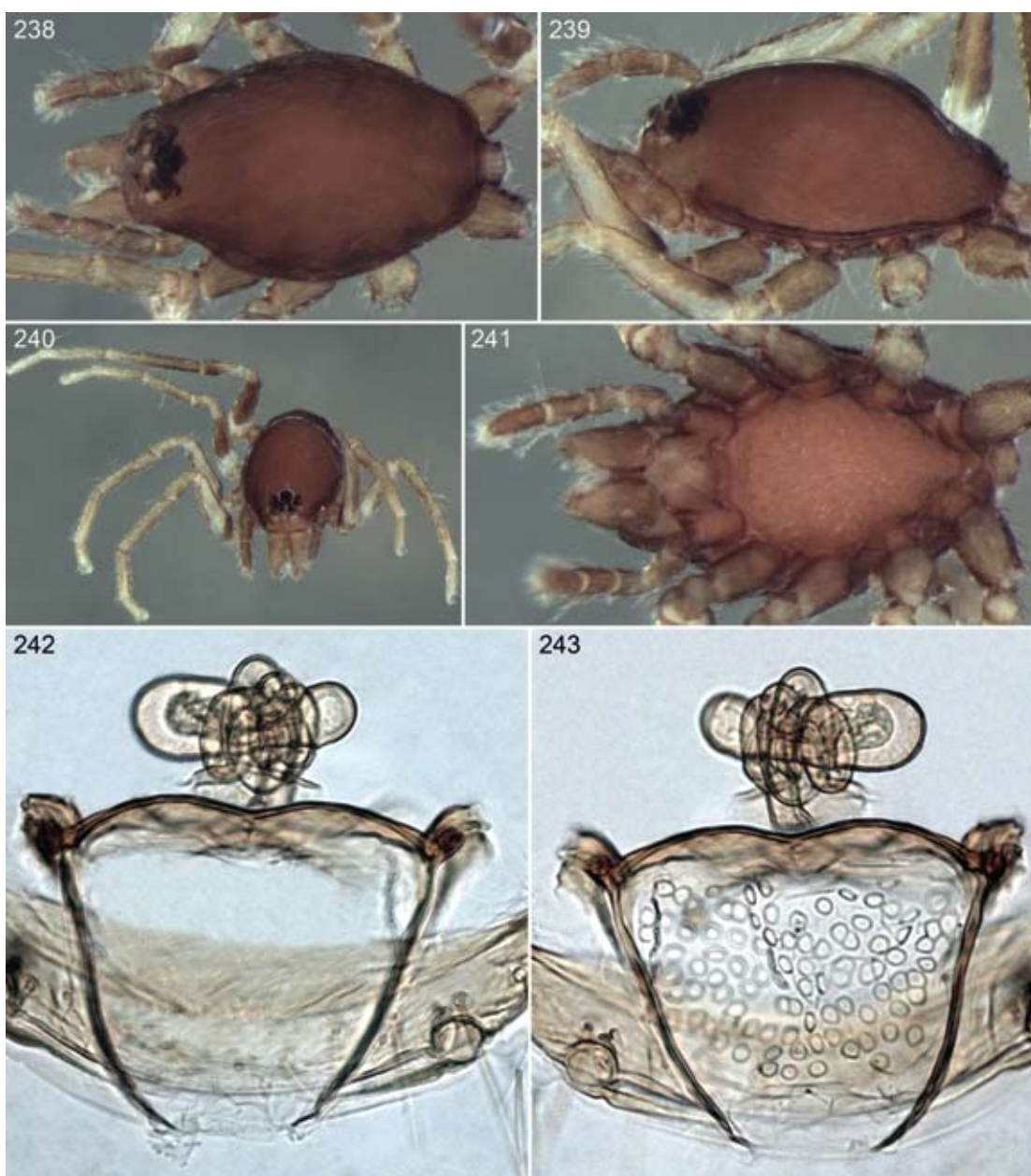
**DIAGNOSIS:** Males have three terminal prongs on the embolar base, with the right one much shorter than the others (fig. 235); females have a heart-shaped posterior receptaculum almost completely enclosed by the apodemes (figs. 242, 243).

**MALE** (PBI\_OON 21, figs. 230–237): Total length 1.64. Carapace yellow-brown, without any pattern; surface of elevated portion of pars cephalica smooth, sides striated. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum yellow, surface rugose. Chelicerae, endites, and labium yellow. Dorsal scutum yellow-brown, without color pattern, with deep depression immediately behind anterior margin; postepigastric scutum yellow-brown. Specimen teneral, only certain leg color pattern is femur IV basally white, remainder with longitudinal prolateral and retrolateral dark stripes. Palp yellow; embolar base with two distal prongs but right one reduced to tiny triangle.

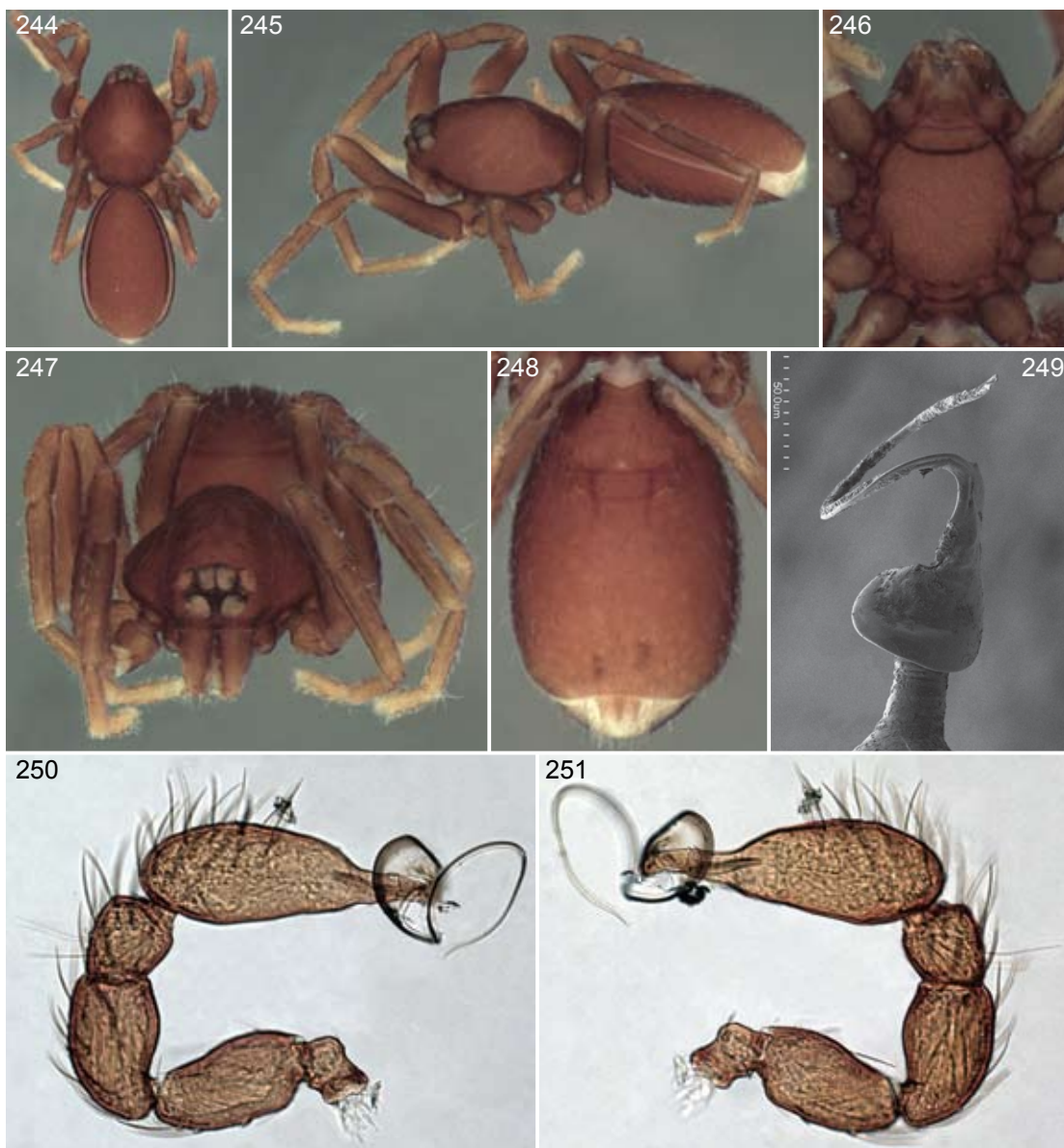
**FEMALE** (PBI\_OON 1789, figs. 238–243): Carapace length 0.75 (abdomen damaged). Carapace and sternum orange-brown. Chelicerae, endites, and labium yellow-brown. Both available females have abdomen too damaged to be able to determine its color pattern or whether it has a constriction; postepigastric scutum yellow. Femora I, II with basal darkening on prolateral



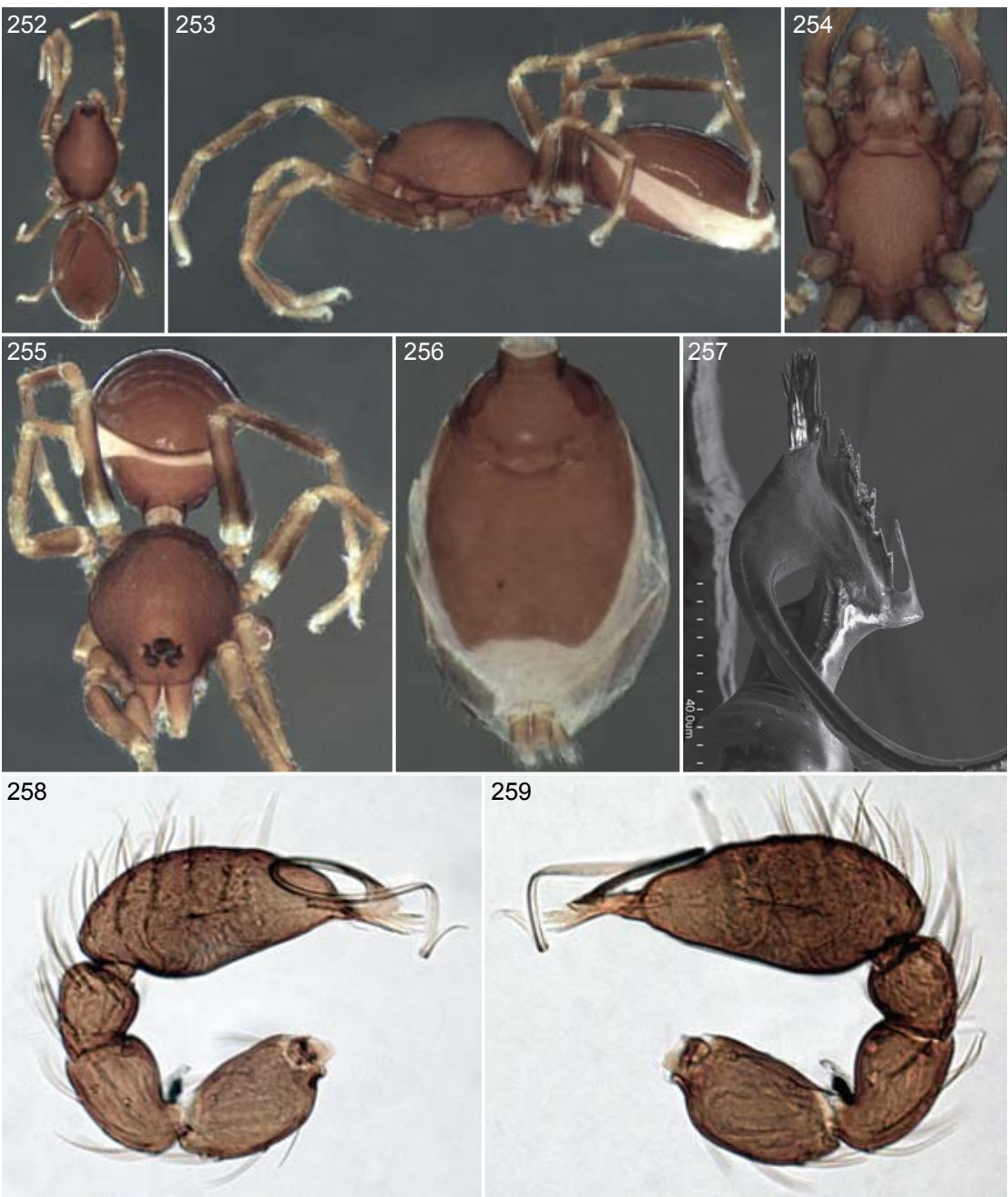
FIGS. 230–237. *Pescennina epularis* Simon, male. 230. Habitus, dorsal view. 231. Same, lateral view. 232. Cephalothorax, ventral view. 233. Habitus, anterior view. 234. Abdomen, ventral view. 235. Embolar base of left palp, dorsal view. 236. Left palp, prolateral view. 237. Same, retrolateral view.



FIGS. 238–243. *Pescennina epularis* Simon, female. 238. Carapace, dorsal view. 239. Same, lateral view. 240. Same, anterior view. 241. Cephalothorax, ventral view. 242. Genitalia, ventral view. 243. Same, dorsal view.



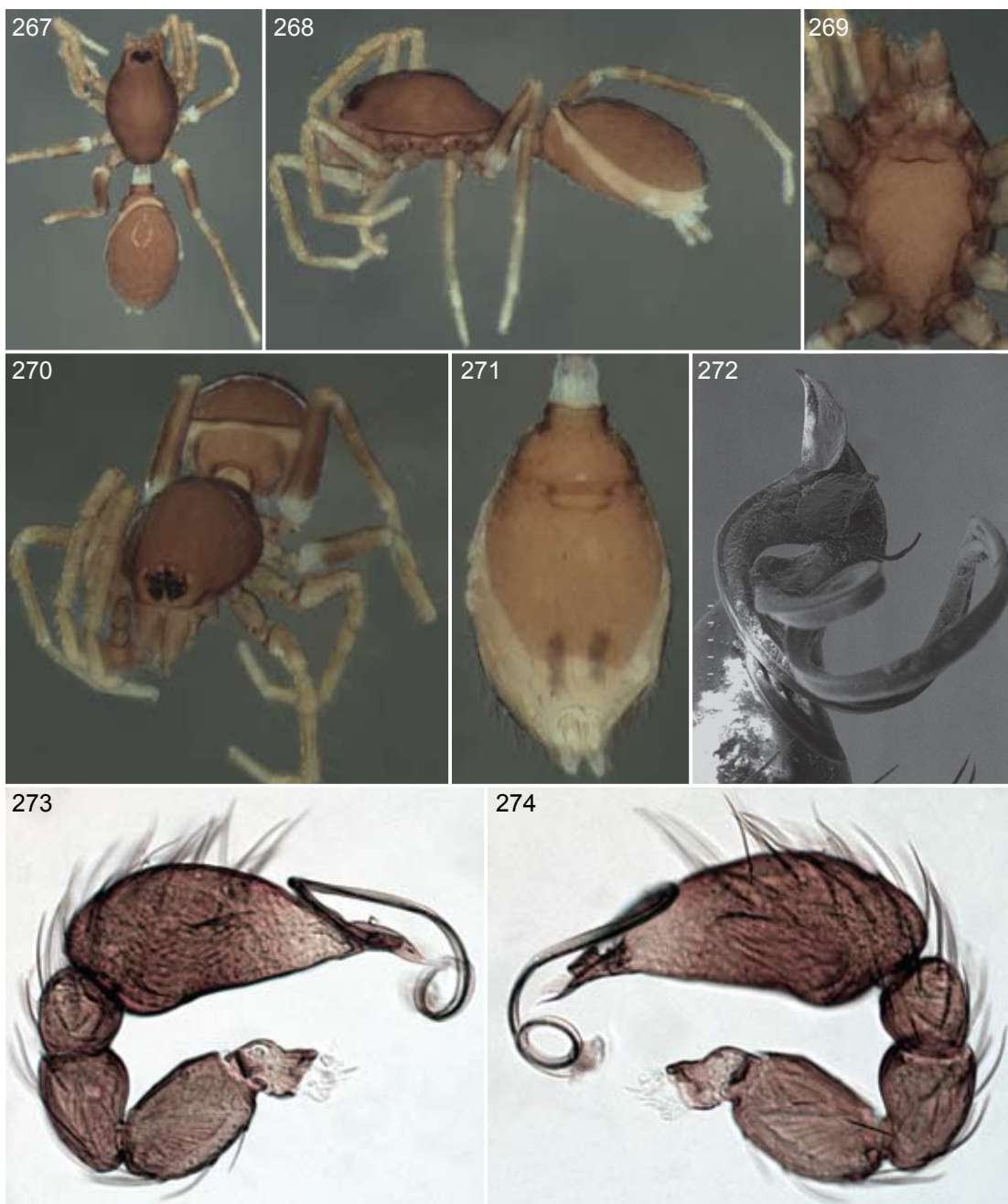
FIGS. 244–251. *Pescennina orellana*, new species, male. 244. Habitus, dorsal view. 245. Same, lateral view. 246. Cephalothorax, ventral view. 247. Habitus, anterior view. 248. Abdomen, ventral view. 249. Embolar base of left palp, dorsal view. 250. Left palp, prolateral view. 251. Same, retrolateral view.



FIGS. 252–259. *Pescennina piura*, new species, male. 252. Habitus, dorsal view. 253. Same, lateral view. 254. Cephalothorax, ventral view. 255. Habitus, anterior view. 256. Abdomen, ventral view. 257. Embolar base of left palp, dorsal view. 258. Left palp, prolateral view. 259. Same, retrolateral view.



FIGS. 260–266. *Pescennina piura*, new species, female. **260.** Habitus, dorsal view. **261.** Cephalothorax, ventral view. **262.** Abdomen, ventral view. **263.** Habitus, anterior view. **264.** Same, lateral view. **265.** Genitalia, ventral view. **266.** Same, dorsal view.



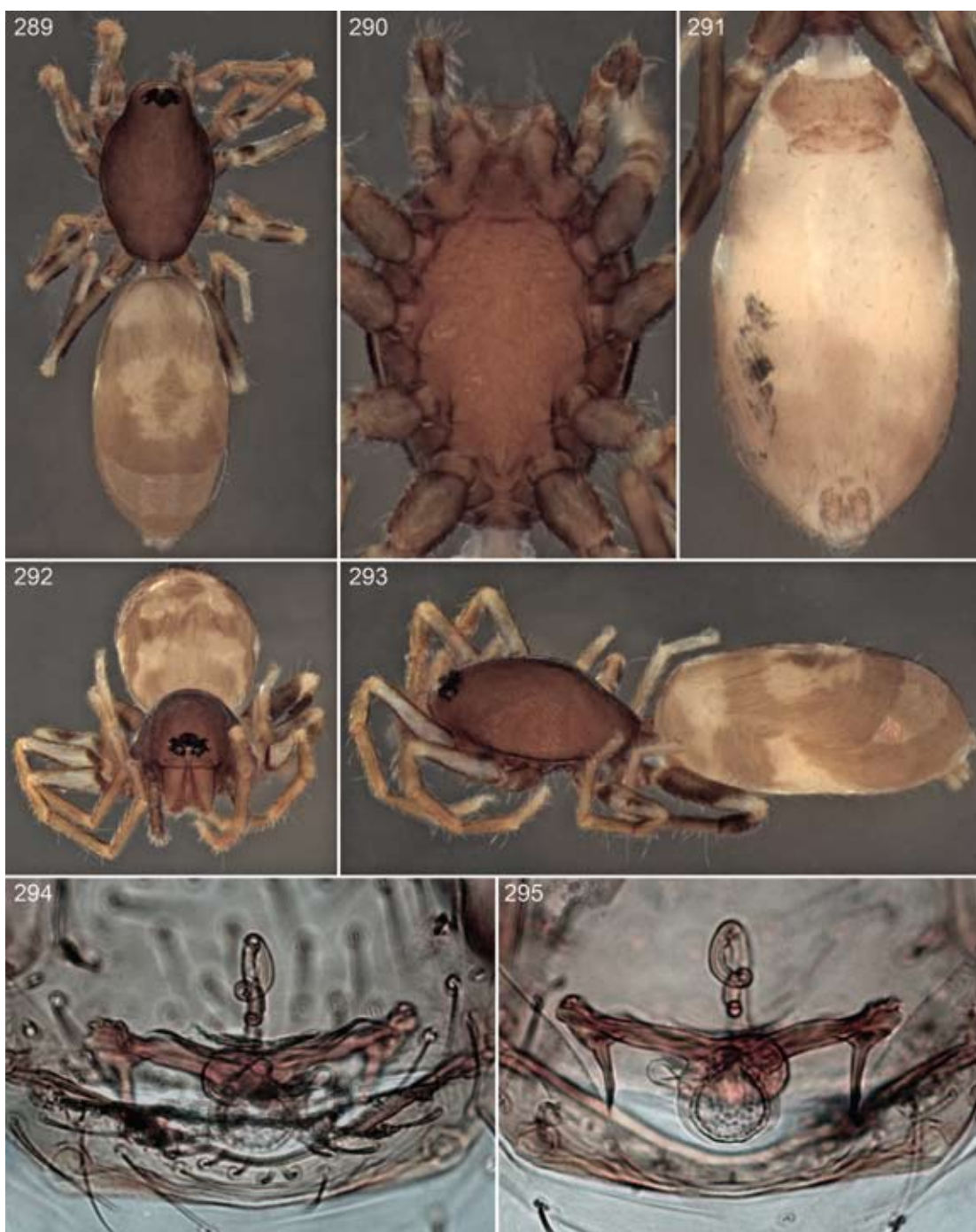
FIGS. 267–274. *Pescennina loreto*, new species, male. 267. Habitus, dorsal view. 268. Same, lateral view. 269. Cephalothorax, ventral view. 270. Habitus, anterior view. 271. Abdomen, ventral view. 272. Embolar base of left palp, dorsal view. 273. Left palp, prolateral view. 274. Same, retrolateral view.



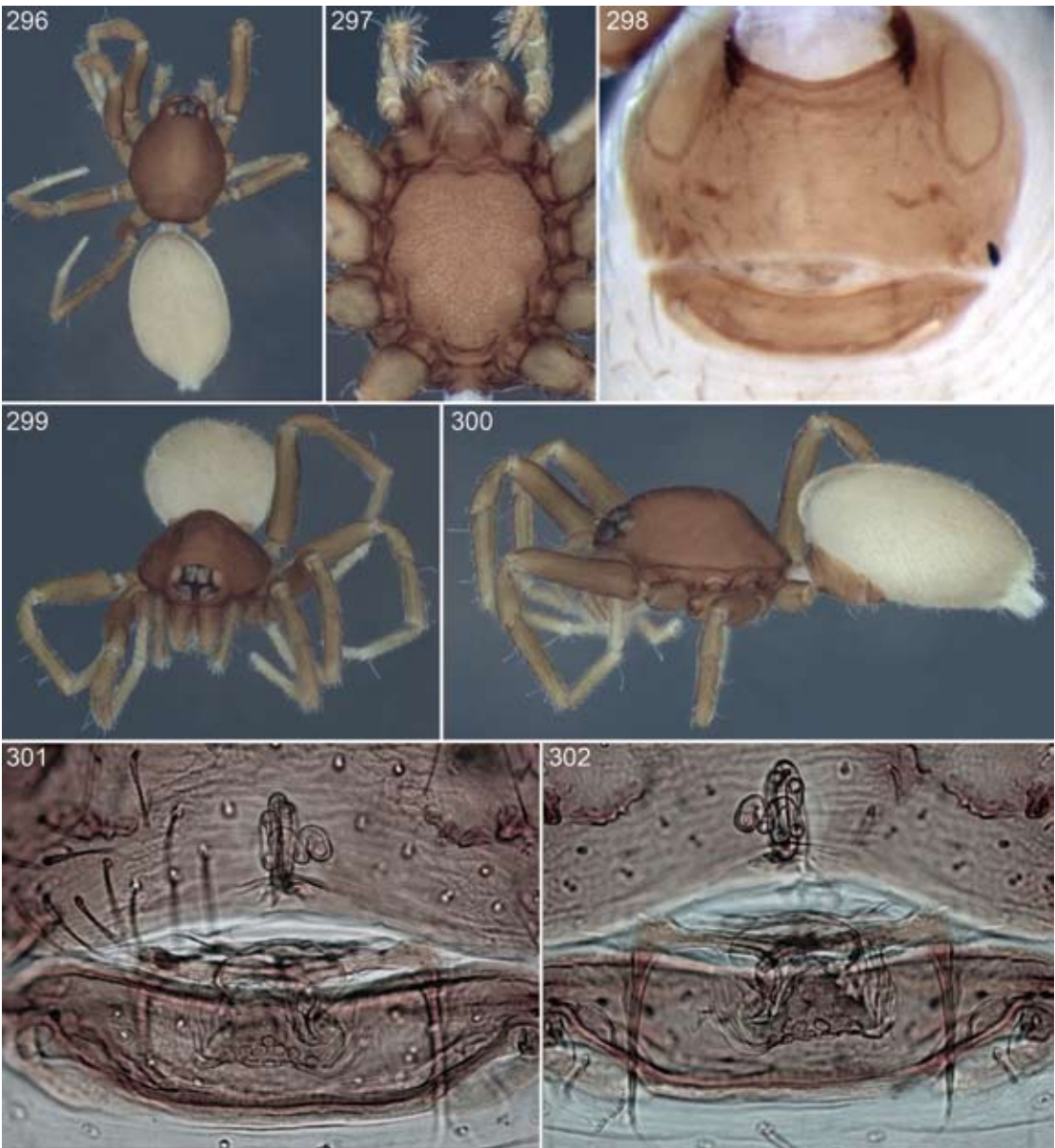
FIGS. 275–281. *Pescennina loreto*, new species, female. 275. Habitus, dorsal view. 276. Cephalothorax, ventral view. 277. Abdomen, ventral view. 278. Habitus, anterior view. 279. Same, lateral view. 280. Genitalia, ventral view. 281. Same, dorsal view.



FIGS. 282–288. *Pescennina grismadoi*, new species, female. **282.** Habitus, dorsal view. **283.** Cephalothorax, ventral view. **284.** Abdomen, ventral view. **285.** Habitus, anterior view. **286.** Same, lateral view. **287.** Genitalia, ventral view. **288.** Same, dorsal view.



FIGS. 289–295. *Pescennina otti*, new species, female. **289.** Habitus, dorsal view. **290.** Cephalothorax, ventral view. **291.** Abdomen, ventral view. **292.** Habitus, anterior view. **293.** Same, lateral view. **294.** Genitalia, ventral view. **295.** Same, dorsal view.



FIGS. 296–302. *Pescennina orellana*, new species, female. 296. Habitus, dorsal view. 297. Cephalothorax, ventral view. 298. Anterior portion of abdomen, ventral view. 299. Habitus, anterior view. 300. Same, lateral view. 301. Genitalia, ventral view. 302. Same, dorsal view.

surface, longitudinal darkening on ventral surface, III, IV with basal portion unmarked but with prolateral and retrolateral sides darkened; patella IV distally darkened; tibia IV ventrally darkened. Anterior genitalic ducts making four coils around only slightly dumbbell-shaped transverse duct; posterior receptaculum heart shaped.

**MATERIAL EXAMINED:** **Venezuela:** Uncertain locality, either Caracas, Distrito Federal or San Esteban, Carabobo (MNHN 3629, PBI\_OON 239), 1 ♀ (syntype). *Miranda:* El Lucerno, Parque Nacional Guatopo, 28 km N Altigracia, June 7, 1987, flight intercept trap in ravine, elev. 700 m (S., J. Peck, AMNH PBI\_OON 1789), 1 ♀, June 8, 1987, rotted log litter, elev. 700 m (S., J. Peck, AMNH PBI\_OON 21), 1 ♂.

**DISTRIBUTION:** Northern Venezuela.

***Pescennina orellana*, new species**

Figures 244–251, 296–302

**TYPE:** Male holotype taken at an elevation of 216 m at a site 1 km S of Onkone Gare Camp, 0°39'25.77"S, 76°27'10.8"W, Reserva Etnica Waorani, Orellana, Ecuador (Oct. 8, 1995; T. Erwin et al.), deposited in USNM (PBI\_OON 477).

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

**DIAGNOSIS:** In having a relatively wide carapace, large eyes, and a narrow dorsal scutum, males resemble those of *P. cupida*, but have a much shorter embolar base (fig. 249); females also resemble those of *P. cupida* but have longer apodemes (fig. 302).

**MALE** (PBI\_OON 478, figs. 244–251): Total length 1.83. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides granulate. ALE separated by their radius to diameter, PLE-PME separated by less than PME radius. Sternum orange-brown, surface finely reticulate. Chelicerae, endites, and labium orange-brown. Abdomen cylindrical, dorsum soft portions white. Dorsal scutum orange-brown, without color pattern but with reticulate surface; postepigastric scutum orange-brown. Legs orange-brown, without darkening. Palp pale orange; basal portion of embolus with wide, translucent conductor.

**FEMALE** (PBI\_OON 645, figs. 296–302): Total length 1.97. Abdominal dorsum white, without color pattern. Anterior genitalic ducts with long longitudinal ventral portion followed distally by irregular coils; apodemes large, widely separated.

**OTHER MATERIAL EXAMINED:** **Ecuador:** *Orellana:* 1 km S Onkone Gare Camp, 0°39'25.77"S, 76°27'10.8"W, Reserva Etnica Waorani, Oct. 5, 1995, elev. 216 m (T. Erwin et al. USNM PBI\_OON 479, 645), 2 ♂, 1 ♀, June 21, 1996, elev. 216 m (T. Erwin et al., USNM PBI\_OON 478), 1 ♂.

**DISTRIBUTION:** Known only from a lowland Amazonian site in Orellana province, Ecuador.

***Pescennina piura*, new species**

Figures 252–266

**TYPE:** Male holotype from Pariamarca, Río Blanca, Piura, Peru (July 13, 2006; M. Deza), deposited in MELM (94, PBI\_OON 14816).

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

**DIAGNOSIS:** Males can easily be recognized by the serrated right edge of the embolar base

(fig. 257), females by the short, triangular posterior receptaculum that is completely enclosed by the apodemes (figs. 265, 266).

**MALE** (PBI\_OON 14816, figs. 252–259): Total length 1.86. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE separated by their radius to diameter, PLE-PME separated by more than PME diameter. Sternum orange-brown, surface rugose. Chelicerae, endites, and labium orange-brown. Dorsal scutum orange-brown, without color pattern, with deep depression immediately behind anterior margin; postepigastric scutum orange-brown. Femora I, II with basal darkening on prolateral and retrolateral surfaces, III, IV with basal portion unmarked but with prolateral and retrolateral sides darkened; patella IV distoventrally darkened; tibia IV ventrally darkened. Palp orange-brown; side of embolar base with series of serrations.

**FEMALE** (PBI\_OON 2370, figs. 260–266): Total length 1.85. Abdominal dorsum gray with anterior pair of paramedian white spots, followed posterior by two lateral white spots, then median wide spot, posteriorly with procurved white stripe; postepigastric scutum yellow-brown. Anterior genitalic ducts with transverse duct not expanded at sides; posterior receptaculum short, triangular.

**OTHER MATERIAL EXAMINED:** **Peru:** *Lima:* Pantanos de Villa, 12°12'24.8"S, 76°59'19.4"W, Mar. 20, 2005, beating, elev. 20 m (W. Paredes, MUSM PBI\_OON 523), 1 ♂. *Piura:* near Mallares, Río Chira, Jan. 4, 1942 (D., H. Frizzell, CAS 25861, PBI\_OON 2370), 1 ♀.

**DISTRIBUTION:** Western slopes of the Peruvian Andes (Lima, Piura).

### *Pescennina loreto*, new species

Figures 267–281

**TYPES:** Male holotype and female allotype taken by canopy fogging at Pithecia, 5°11'S, 72°42'W, Loreto, Peru (May–June 1990; T. Erwin, D. Silva et al.), deposited in MUSM (500078, PBI\_OON 519, 29540).

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

**DIAGNOSIS:** Males can easily be recognized by the narrow, sinuous, laterally directed right prong on the embolar base (fig. 272), females by the wide, rectangular posterior receptaculum (figs. 280, 281).

**MALE** (PBI\_OON 29540, figs. 267–274): Total length 1.61. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica smooth, sides striated. ALE separated by their radius to diameter, PLE-PME separated by PME radius to PME diameter. Sternum pale orange, surface rugose. Chelicerae, endites, and labium pale orange. Dorsal scutum orange-brown, without color pattern, with deep depression immediately behind anterior margin; postepigastric scutum orange-brown. Femora I, II with basal darkening on prolateral surface, longitudinal darkening on ventral surface, III, IV with basal portion unmarked but with prolateral and retrolateral sides darkened; patella IV distally darkened; tibia IV ventrally darkened. Palp orange-brown; embolar base skewed medially, with narrow right prong.

**FEMALE** (PBI\_OON 519, figs. 275–281): Total length 2.01. Abdominal dorsum gray with anterior pair of paramedian white spots, followed posterior by two lateral white spots, then median wide spot, posteriorly with procurved white stripe. Anterior genitalic ducts highly

coiled; posterior receptaculum wide, rectangular, posteriorly invaginated.

OTHER MATERIAL EXAMINED: **Peru:** *Madre de Dios*: Zona Reservada Pakitza, 11°56'S, 71°17'W, June 1992, fogging, elev. 356 m (T. Erwin, D. Silva et al., MUSM 501558, 501568, 501572, PBI\_OON 520–522), 1♂, 6♀.

DISTRIBUTION: Amazonian Peru (Loreto, Madre de Dios), known only from canopy fogging.

*Pescennina grismadoi*, new species

Figures 282–288

TYPE: Female holotype taken by beating foliage in a disturbed Amazonian forest at an elevation of 330 m at Concesión Forestal La Chonta, Guarayos, 15°42'42"S, 62°46'20"W, Santa Cruz, Bolivia (Oct. 26–30, 2010; C. Grismado, M. Vacaflores, M. Pérez), deposited in MACN (PBI\_OON 43140).

ETYMOLOGY: The specific name is a patronym in honor of Cristian Grismado, one of the collectors of the type.

DIAGNOSIS: Females can easily be recognized by the greatly thickened transverse bar connecting the apodemes (figs. 287, 288).

MALE: Unknown.

FEMALE (PBI\_OON 43129, figs. 282–288): Total length 1.74. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica finely reticulate, sides finely reticulate. ALE-PLE separated by ALE radius to ALE diameter, PLE-PME separated by more than PME diameter. Sternum yellow-brown, surface rugose. Chelicerae, endites, and labium orange-brown. Abdominal dorsum gray, with pair of mostly fused anterior spots, followed posteriorly by pair of lateral transverse stripes almost reaching median white spot; wide, pro-curved transverse white stripe occupying most of posterior third of abdominal length; postepi-gastric scutum yellow-brown. Femora I, II with basal darkening on prolateral surface and ventral dark stripe, III, IV with basal white rings, IV with middle third of article darkened on sides; patella IV, tibia IV darkened except at base. Anterior genitalic ducts with four coils around transverse duct distinctly expanded at sides; transverse bar connecting apodemes much wider than apodemes, posterior receptaculum rectangular.

OTHER MATERIAL EXAMINED: Four females taken with the type (MACN), three by beating foliage (PBI\_OON 43129, 43130, 43135), and one by sifting leaf litter (PBI\_OON 43137), in the same locality.

VARIATION: The single female taken from litter has longer apodemes and a longer posterior receptaculum than do the specimens taken by beating foliage, and it could conceivably represent a different species; males from both habitats are needed to answer that question.

DISTRIBUTION: Eastern Bolivia.

*Pescennina otti*, new species

Figures 289–295

TYPE: Female holotype taken by fogging at Fepagro, Maquiné, Rio Grande do Sul, Brazil (Apr. 2006; R. Ott et al.), deposited in MCN (47349, PBI\_OON 563).

**ETYMOLOGY:** The specific name is a patronym in honor of Ricardo Ott, one of the collectors of the holotype.

**DIAGNOSIS:** Females can easily be recognized by the lack of a transverse portion of the anterior genitalic ducts, together with the very small, circular posterior receptaculum (figs. 294, 295).

**MALE:** Unknown.

**FEMALE** (PBI\_OON 563, figs. 289–295): Total length 1.60. Carapace orange-brown, without any pattern; surface of elevated portion of pars cephalica smooth, sides finely reticulate. ALE separated by more than their diameter, PLE-PME separated by more than PME diameter. Sternum orange-brown, surface rugose. Chelicerae, endites, and labium orange-brown. Abdomen slightly constricted in middle; dorsum white, with dark gray markings outlining anterior pair of paramedian white spots, followed posteriorly by lateral pair of white spots, white circle with gray interior, and sharply delimited posterior, transverse white stripe; postepigastric scutum, yellow-brown. Femora I, II darkened prolaterally at base, ventrally for most of length, III, IV darkened on sides; patella IV darkened; tibia IV darkened ventrally and on sides. Anteriorly directed genitalic duct almost straight, with posteriorly directed portion making two loose loops, without transverse duct; posterior receptaculum small, round, with asymmetrical anterior margin.

**OTHER MATERIAL EXAMINED:** **Brazil:** *Rio Grande do Sul:* Fepagro, Maquiné, Jan. 2006, fogging (R. Ott, et al., MCN 47348, PBI\_OON 564), 1 ♀.

**DISTRIBUTION:** Southern Brazil (known only from canopy fogging).

## ACKNOWLEDGMENTS

This study is part of the oonopid PBI project supported by the U.S. National Science Foundation (grant DEB-0613754) and organizations in several other countries. The assistance of the many participants in that project is immensely appreciated. As always, we thank the many curators of collections that have supplied specimens: Janet Beccaloni (BMNH), Jonathan Coddington (USNM), Mariajosé Deza (MELM), Eduardo Florez (ICN), Gonzalo Giribet and Laura Leiben-sperger (MCZ), Charles Griswold and Darrell Ubick (CAS, CDU), Guillermo Ibarra-Núñez (ECOTAAR), Ricardo Ott (MCN), Martín Ramírez and Cristian Grismado (MACN), Christine Rollard (MNHN), Nikolaj Scharff (ZMUC), Peter Schwendinger (MHNG, material sorted by Yvonne Kranz-Baltensperger), Petra Sierwald (FMNH), Diana Silva (MUSM), and Carlos Viquez (INBIO). We are especially indebted to Eduardo Florez and Ligia Benavides for their successful efforts to find the first female of *Marsupopaea sturmi* and make it available for study, to Darrell Ubick for first suggesting the possible relation between *Pescennina* and *Marsupopaea*, to Steve Thurston for composing the plates, to Don Cameron for advice on etymology, and to Alexandre Bonaldo, Ricardo Ott, and Darrell Ubick for their very helpful reviews.

## REFERENCES

- Baehr, B.C., and D. Ubick. 2010. A review of the Asian goblin spider genus *Camptoscaphiella* (Araneae: Oonopidae). *American Museum Novitates* 3697: 1–65.

- Birabén, M. 1954. Nuevas Gamasomorphinae de la Argentina (Araneae, Oonopidae). *Notas del Museo de La Plata Zoología* 17: 181–212.
- Caporiacco, L.di. 1934. Aracnidi dell'Himalaia e del Karakoram raccolti dalla Missione Italiana al Karakoram (1929-VII). *Memorie della Società Entomologica Italiana* 13: 113–160.
- Cooke, J.A.L. 1972. A new genus and species of oonopid spider from Colombia with a curious method of embolus protection. *Bulletin of the British Arachnological Society* 2: 90–92.
- Fannes, W., and R. Jocqué. 2008. Ultrastructure of *Antoonops*, a new, ant-mimicking genus of Afrotropical Oonopidae (Araneae) with complex internal genitalia. *American Museum Novitates* 3614: 1–30.
- Keyserling, E. 1881. Neue Spinnen aus Amerika. III. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien 31: 269–314.
- Platnick, N.I., and N. Dupérré. 2009a. The goblin spider genera *Opopaea* and *Epectris* (Araneae, Oonopidae) in the New World. *American Museum Novitates* 3649: 1–43.
- Platnick, N.I., and N. Dupérré. 2009b. The American goblin spiders of the new genus *Escaphiella* (Araneae, Oonopidae). *Bulletin of the American Museum of Natural History* 328: 1–151.
- Platnick, N.I., and N. Dupérré. 2010a. The goblin spider genus *Scaphiella* (Araneae, Oonopidae). *Bulletin of the American Museum of Natural History* 332: 1–156.
- Platnick, N.I., and N. Dupérré. 2010b. The Andean goblin spiders of the new genera *Niarchos* and *Scaphios* (Araneae, Oonopidae). *Bulletin of the American Museum of Natural History* 345: 1–120.
- Roewer, C.F. 1955. *Katalog der Araneae*: 2: 1–923. Brussels: Institut Royal des Sciences Naturelles de Belgique.
- Roth, V.D. 1988. American Agelenidae and some misidentified spiders (Clubionidae, Oonopidae and Sparassidae) of E. Simon in the Muséum national d'Histoire naturelle. *Bulletin du Muséum National d'Histoire Naturelle*, series 4, 10 (A): 25–37.
- Simon, E. 1891. On the spiders of the island of St. Vincent. Part 1. *Proceedings of the Zoological Society of London* 1891: 549–575.
- Simon, E. 1893. *Histoire naturelle des araignées*. Paris: Roret, 1: 257–488.
- Simon, E. 1903a. Descriptions d'arachnides nouveaux. *Annales de la Société Entomologique de Belgique* 47: 21–39.
- Simon, E. 1903b. *Histoire naturelle des araignées*. Paris: Roret, 2: 669–1080.

Complete lists of all issues of *Novitates* and *Bulletin* are available on the web (<http://digitallibrary.amnh.org/dspace>). Inquire about ordering printed copies via e-mail from [scipubs@amnh.org](mailto:scipubs@amnh.org) or via standard mail from:

American Museum of Natural History—Scientific Publications  
Central Park West at 79th Street  
New York, NY 10024

Ⓒ This paper meets the requirements of ANSI/NISO Z39.48-1992 (permanence of paper).