

The Neotropical goblin spiders of the new genus *Reductoonops* (Araneae, Oonopidae)

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ABSTRACT

A new genus, *Reductoonops*, is established for a group of New World soft-bodied oonopine spiders, found from Mexico south to Chile, characterized by reduced size, a flattened clypeus, loss of the posterior median spinnerets, and often by loss of the four posterior eyes. Members of this group resemble those of *Stenoonops* Simon but lack the clump of short setae found on the dorsal surface of the palpal tarsus of both sexes in that genus, and often have four pairs of deep channels at the sides of the sternum, the most anterior pair of which demarcate a short, trapezoidal, anterior portion of the sternum. A total of 34 new species are described from Mexico (*chamela*, *armeria*, *niltepec*, *real*, *nubes*, *jabin*), Costa Rica (*monte*, *lucha*), Costa Rica and Panama (*naci*), Panama (*almirante*, *escopeta*, *bayano*), Jamaica (*ferry*), Curaçao (*hato*), Martinique (*diamant*), Colombia (*marta*, *sasaima*, *meta*, *leticia*), Ecuador (*tandapi*, *pichincha*, *tina*, *domingo*, *otonga*, *palenque*, *napo*, *jatun*, *hedlite*, *molleturo*, *celica*, *yasuni*), the Galapagos Islands (*pinta*), Peru (*carpish*), and Chile (*elqui*).

INTRODUCTION

Eye reduction is a phenomenon that has seemingly occurred multiple times within the goblin spider subfamily Oonopinae. The most obvious examples are the species that are entirely blind; they are sufficiently uncommon that, when found, they have often been placed in monotypic genera, and their relationships are therefore often enigmatic. The first such species was described as *Blanioonops patellaris* Simon and Fage (1922), based on females taken in a cave in Tanzania and never restudied. The second blind oonopid to be reported was described as *Wanops coecus*

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by Chamberlin and Ivie (1938), based on a male taken in a cave in Yucután, Mexico; those authors considered their species to be related to *Oonops* Templeton, and the male palp has a terminal embolus that does indeed resemble those found in several normal-eyed Neotropical species currently misplaced in *Oonops* (e.g., *Oonops reticulatus* Petrunkevitch and its relatives).

A third species, *Dysderoides typhlos* Fage (1946), was based on a single female taken in a cave in northern India; Fage also transferred into *Dysderoides* a six-eyed species from Venezuela originally described as *Telchius micans* Simon (1893). The Indian species has since been studied in detail by Grismado et al. (2014), who also described several related species from caves in northern India and Thailand; all those species seem to be completely blind, although one of the Indian species shows what appear to be remnants of the eyes, beneath the cuticle. The normal-eyed Venezuelan species transferred to *Dysderoides* by Fage is not at all closely related to these taxa, and belongs to a new Neotropical genus studied by Bolzern (2014).

In a series of papers, Benoit (1964, 1975a, 1975b, 1976, 1977) described no fewer than 11 blind species from central and southern Africa; one was assigned to *Oonops* by default, but the others were placed in new genera (*Caecoonops*, *Termitoonops*, *Anophthalmoonops*, *Hypnoonops*, and *Zyngoonops*). Interestingly, these species are not troglobitic, but were taken either from leaf litter or (in the case of the first three genera) from termite mounds. However, Benoit's description of *Zyngoonops clandestinus* Benoit (1977) as lacking eyes was erroneous (see Fannes, 2013).

The past two decades have seen the addition of at least 19 additional blind species, including two species of *Camptoscaphiella* Caporiacco from China and New Caledonia (Deeleman-Reinhold, 1995; Baehr and Harvey, 2013), yet another new genus, *Cousinea* Saaristo (2001), established for a blind species from the Seychelles that has subsequently been studied in detail by Fannes (2010), and a remarkable fauna, including two cavernicolous species of *Opopaea* Simon and 14 subterranean species of *Prethopalpus* Baehr et al. from Western Australia (Harvey and Edward, 2007; Baehr et al., 2012).

Although one of the new species described below as *Reductoonops jabin* is blind, eye reduction is obviously not an all-or-nothing phenomenon. Most obviously, oonopids with only two eyes, rather than the normal six, have been known since O. P.-Cambridge (1908) described the aptly named *Diblemma donisthorpei*, based on a male taken in a greenhouse at Kew Gardens in London. It was not until Saaristo (2001) rediscovered this animal on the Seychelles that the likely source of the introduction to Great Britain was revealed. Since 1908, several additional two-eyed oonopids have been described, especially among hard-bodied ("gamasomorphine") taxa belonging to the *Zyngoonops* complex, including two species of *Zyngoonops* (see Benoit, 1977; Fannes, 2013) and four of *Coxapopha* Platnick (see Platnick, 2000; Ott and Brescovit, 2004). The two-eyed, hard-bodied Argentine species described as *Dysderina caeca* Birabén (1954) is obviously misplaced in that genus and probably also belongs to *Coxapopha* or a closely related member of the *Zyngoonops* complex.

Most of the animals described below as members of the new genus *Reductoonops* are soft-bodied and have only two eyes; all four of the posterior eyes have been lost entirely (figs. 4, 58). Only one genus including two-eyed, soft-bodied forms has been described: *Xyccarph* Brignoli (1978), of which three species with eyes of this type are now known, all from Brazil (Höfer and Brescovit, 1996). The members of *Xyccarph* differ in numerous characters from the taxa described

below, however; they have numerous leg spines (which are lacking in the members of *Reductoonops*), show bifid male endites, lack sternal grooves, and have the male palpal bulb and cymbium fully fused. In *Reductoonops*, there is usually an obvious seam between the bulb and cymbium, but in three species (*R. real* from Mexico, plus *R. palenque* and *R. jatun* from Ecuador) the seam is obvious only ventrally, and in two other species (*R. domingo* from Ecuador and *R. pinta* from the Galapagos Islands), the seam is represented at most by a series of pores.

Other taxa are known in which eye reduction is present, but less obvious, as the posterior median and lateral eyes are reduced in size but still present. Notable among these taxa are two groups from the Neotropics: the Andean genus *Niarchos* (Platnick and Dupérré, 2010b) and two species from southern Brazil, closely related to each other, that were misplaced in *Opopaea* Simon by Ott (2003). One of those misplaced species is of special interest as only two of the posterior eyes are still present, making these animals one of the very few known examples of spiders with only four eyes.

The oonopids described below have long been known in collections, where they have commonly been placed as close relatives of *Stenoonops* Simon, and they do seem to be members of the *Stenoonops* complex of genera, sharing with other genera in that complex characters such as a lightly sclerotized cephalothorax paired with an unsclerotized abdomen, lateral extensions of the sternum that protrude between the leg coxae (especially coxae II and III), a tarsal organ on which the distalmost receptor is distally bifid, with two lobes protruding from a common base (figs. 25–29, 84–88), a subdistal constriction on the dorsal surface of the leg femora that is marked by a transverse row of setae (figs. 39, 89, 90), and distal setae with fork-shaped tips on the endites (fig. 9).

One reason that these species may have been neglected in prior literature is their diminutive size. Adult males are under 1.2 mm in total length, and adult females are under 1.7 mm; the small size and pale coloration make them exceptionally difficult to study. As in *Stenoonops*, the larger females often have the abdominal contents significantly smaller than the cuticle, so that (at least in preserved specimens), some parts of the abdomen appear empty (as in fig. 545). In extreme cases, even one-third of the abdominal length can appear empty, and these are probably females that were preserved shortly after laying eggs.

It seems clear that most of the two-eyed species described below form a monophyletic group, as they are united by several unique and presumably synapomorphic characters. Perhaps their most obvious feature is in sternal morphology. It is common for oonopids to have three pairs of depressions extending inward from the sternal margin between legs I and II, legs II and III, and legs III and IV; in some groups, such as *Stenoonops*, these depressions have become narrow but distinct grooves (Platnick and Dupérré, 2010a: figs. 7, 18, 46, 55). Typical members of *Reductoonops* have the sternal depressions present as channels, with two steep sides, rather than as simple grooves (figs. 2, 56), and they have an additional, fourth pair of sternal channels extending inward between leg I and the endites. These anterior sternal channels demarcate a distinct, trapezoidal anterior portion of the sternum, making the animals easy to recognize (figs. 44, 270). The sternal modifications are often, but not always, accompanied by the presence of a deep, longitudinal, median incision in the labium of males (figs. 8, 242), which sometimes occurs in females as well, and the taxa lacking that deep incision in one or both sexes may thus represent the most plesiomorphic of the typical species.

The typical species of *Reductoonops* are found from Mexico south to Chile and are also united by a characteristic male palpal morphology. The palpal bulb is reduced in size, so much so that adult males could easily be mistaken for females if not studied in detail (as happened, for example, in the case of the genus *Cousinea*; see Saaristo, 2001; Fannes, 2010). The cymbium is dorsally shortened and ventrally elongated, forming a cup-shaped structure that cradles the bulb (figs. 49, 51). The terminal elements are complex, with a sinuous embolus that bears numerous spikes at its tip (fig. 36). The female genitalia are also characteristic, with a long, narrow anterior genitalic process that typically bears dorsal projections, probably of glandular nature (figs. 70, 71).

These small species have a somewhat flattened body, most obviously anteriorly, where the clypeus has become almost flat, rather than vertical (figs. 5, 59). The small size and flattened bodies suggest that these animals probably live deeper in leaf litter than do most other oonopids, and the eye reduction may well be part of a suite of adaptations for living in the smaller interstitial spaces that are available in deep litter, where little light penetrates.

In addition to the species sharing most or all of this suite of characters (reduced body size, flattened clypeus, loss of the posterior eyes, and the extra, anterior pair of sternal channels), there are some species from the northern part of the generic distribution range that lack some of these features. In *R. real* from Chiapas, Mexico, for example, both sexes have only two eyes, but neither has the extra pair of sternal channels. The genitalia resemble those of the other species; the male palp has a sinuous embolus, but it seems to bear only one spike at the tip. Thus it seems likely that this species may be the sister group of the more typical *Reductoonops* (i.e., those united by the presence of anterior sternal channels and several spikes on the embolus tip).

There are six additional species, from southern Mexico, Panama, Curaçao, and Colombia, that are even more different from typical *Reductoonops* members. In addition to lacking the anterior sternal channels, they still retain all four of the posterior eyes. In three species from Mexico, the male palp is much simpler, with only an embolus and a conductor, which originate from a common base (figs. 110–113), and the tip of the embolus bears no spikes; the anterior genitalic process of females is shorter and bipartite (figs. 119, 120). Although these three species seem closely related to each other, it isn't likely that all the six-eyed species together form a monophyletic group. The other three species are each known from only one sex. The male of the species from Colombia has a palp that resembles the typical species in having three terminal elements (a palpal apophysis as well as the embolus and conductor), even though the embolus seems to bear no terminal spikes. Similarly, the female of the species from Curaçao has genitalia that seem closer to those of the typical species than to those of the three Mexican species or the one from Panama.

Despite retaining the normal eye number, these six species are each united with the more typical members of the genus by at least one additional character, spinneret number. Most oonopids resemble other spiders in having three pairs of spinnerets. The only exceptions that have been noted to date occur in the genus *Escaphiella* Platnick and Dupérré (2009b); in that genus, several species are known in which the posterior median spinnerets have fused into a single structure, which may either retain or lose functional spigots, and there is one relatively large-bodied species in which those spinnerets have been lost entirely. Although we have not been able to examine males and females of every species by scanning electron microscopy, so far as we have been able to determine, all the species assigned below to *Reductoonops* have only four spinnerets; the pos-

terior median spinnerets are missing entirely, and we regard this as a synapomorphy for the group, paralleled (so far as we know) only within the distantly related genus *Escaphiella*.

Obviously, reduction characters are not ideal as evidence of monophyly, as it is certainly possible that the loss of the posterior median spinnerets has occurred more than once within the *Stenoconops* complex. But we know of no potentially synapomorphic features that would ally any of the six-eyed species with any group other than the remaining species of *Reductoonops*. The possibility remains, of course, that even if monophyletic, *Reductoonops* as here delimited could be simply a highly autapomorphic lineage within some other group, for which the best candidate would presumably be *Stenoconops*. There is one genitalic similarity that might support that hypothesis. Although most males of *Stenoconops* have palps with a dorsally elongated cymbium, there are three species, namely *Stenoconops petrunkevitchi* Chickering (1951) from Costa Rica and Panama, plus *Stenoconops tayrona* Platnick and Dupérré (2010a) and *Stenoconops kochalkai* Platnick and Dupérré (2010a) from Colombia, in which the cymbial shape resembles somewhat that of *Reductoonops*. Nevertheless, those *Stenoconops* species all seem to retain six spinnerets, and have the distal clump of setae on the palpal tarsus of both sexes that unites all the members of *Stenoconops*, but is not found in *Reductoonops* species, which have short but widely separated setae in that position. In addition, the females of those species, where known, show no special genitalic similarities to those of *Reductoonops*. Thus, until additional characters are found that might ally the species treated below with just some subgroup of *Stenoconops*, we regard both genera as putatively monophyletic. They may be sister taxa, but several other genera belonging to the *Stenoconops* complex have not yet been studied in detail, and hypotheses about the number and relationships of the genera belonging to that complex would be premature.

One character that has sometimes been used in the higher classification of goblin spiders is whether the leg claws have one or two rows of teeth. In most oonopids, there are two rows of teeth on the superior claws, one on the outer margin and one on the inner margin, and those rows often have teeth that differ greatly in both size and position. However, several examples are known in which one or both sexes have only a single row of teeth. At least *R. yasuni* is notable in that regard, as both males and females have two rows of teeth on the anterior legs, but only a single row of teeth on the posterior legs (figs. 17–24, 76–83).

Our methods follow those of Platnick and Dupérré (2009a); only differences from the males (beyond the obvious lack of male endite modifications) are mentioned in the descriptions of females. Scans were sometimes taken from uncoated right male palps; in those cases, the images were flipped for consistency. All measurements are in mm. Species are discussed in geographic order, beginning in Mexico and continuing south. Unless otherwise indicated, all new specific names are nouns in apposition taken or shortened from the type locality. High-resolution versions of the images, a sortable version of the geocoded locality data, 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>). Users should note that the relatively small published images are merely avatars for the actual image files on the website, which can each be enlarged several times before pixelating; in many cases, the website hosts significantly more images for a given species than are presented here. Similarly, the maps made available on the website, via discoverlife.org, are more useful than printed versions would be, as each dot can be associated with the actual specimen data it represents.

COLLECTIONS EXAMINED

AMNH	American Museum of Natural History, New York, NY
CAS	California Academy of Sciences, San Francisco, CA
CDU	Darrell Ubick Collection, San Francisco, CA
FMNH	Field Museum of Natural History, Chicago, IL
INBIO	Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, MA
MNHN	Muséum National d'Histoire Naturelle, Paris, France
QCAZ	Museum of Invertebrates, Pontificia Universidad Católica, Quito, Ecuador
TMM	Texas Memorial Museum, Austin, TX
USNM	National Museum of Natural History, Smithsonian Institution, Washington, DC

Reductoonops, new genus

TYPE SPECIES: *Reductoonops yasuni*, new species.

ETYMOLOGY: The generic name refers to the reduced size, eyes, and spinnerets, and is masculine in gender.

DIAGNOSIS: Members of this genus resemble those of *Stenoonops* and other members of the *Stenoonops* complex, but are reduced in size, have a flattened clypeus, have only four spinnerets, and lack the distinct clump of short setae on the dorsal surface of the palpal tarsus of both sexes that characterizes *Stenoonops*; they often have only two eyes, and four pairs of deep channels at the sides of the sternum, the most anterior pair of which demarcate a short anterior portion of the sternum (figs. 44, 270). They differ from those of *Xyccarph* in lacking leg spines and usually in having the male palpal cymbium and bulb separate, rather than fused.

DESCRIPTION: Total length of males 0.8–1.2, of females 0.9–1.7. Carapace, sternum, mouthparts pale orange, without pattern, ventral abdominal scuta, legs yellow, without pattern, abdomen soft portions white, without pattern. **Cephalothorax:** Carapace piriform in dorsal view (figs. 1, 43, 55), anteriorly narrowed to 0.49 times its maximum width or less, pars cephalica flat in lateral view, anterolateral corners with slightly sclerotized triangular projections, pars thoracica with rounded posterolateral corners, without depressions or radiating rows of pits, posterolateral edge without pits, posterior margin not bulging below posterior rim, posterolateral surface without spikes, surface of elevated portion of pars cephalica usually smooth but finely reticulate in at least some six-eyed species, at least sometimes with distinct platelets (figs. 1, 55), sides finely reticulate; fovea absent, lateral margin undulate (figs. 5, 59), rebordered, without denticles; plumose setae near posterior margin of pars thoracica absent; marginal, nonmarginal pars cephalica, pars thoracica setae dark, needlelike, scattered. Clypeus margin strongly rebordered, sinuous in front view, sloping forward in lateral view (figs. 5, 59), high, ALE separated from edge of carapace by their radius or more (figs. 4, 58), median projection absent; setae dark, needlelike. Chilum absent. Eyes usually two, sometimes six or zero; when present eyes well developed, when present, ALE largest, oval, PME squared, PLE oval; when present, posterior eye row straight from both above and front, ALE-PLE touching, PME touching throughout most of their length, PLE-PME touching. Sternum lon-

ger than wide, apparently fused to carapace at anterior end, surface smooth, finely reticulate, or with pits, median concavity, hair tufts absent, radial furrows between coxae I–II, II–III, III–IV smooth, additional radial furrow often present between endites and coxae I (figs. 2, 44, 56), radial furrow opposite coxae III absent, sickle-shaped structures absent, anterior margin unmodified, posterior margin extending posteriorly beyond anterior edges of coxae IV as single extension, without posterior hump, anterior corner unmodified, lateral margin without infracoxal grooves, distance between coxae II and III greater than distance between coxae I and II, or coxae III and IV, extensions of precoxal triangles absent, lateral margins with three pairs of lateral projections; setae sparse, usually densest laterally but evenly spread in *R. tandapi* and *R. hedlite*, dark, needle-like, originating from surface. Chelicerae straight, anterior face unmodified; without teeth on promargin or retromargin; fangs 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 (fig. 6, 60), posterior surface unmodified, promargin with row of flattened setae (fig. 7, 61), inner margin unmodified, laminate groove absent. Labium triangular, not fused to sternum, with anterior margin indented or deeply incised at middle (fig. 8), same as sternum in sclerotization; with six or more setae on anterior margin, subdistal portion with unmodified setae. Endites same as sternum in sclerotization, distally not excavated, serrula apparently present in single row in females (figs. 63, 64), absent in males (fig. 10), anterior portion with distally fork-shaped setae (fig. 62), with projecting lobes and modified setae in males (fig. 9), posterior portion unmodified. Labrum with broad basal lobe bearing setae with basal spurs (figs. 11, 65). Female palp without claw or spines (figs. 67, 68); tibia with three trichobothria (fig. 66), patella without prolateral row of ridges, tarsus unmodified.

Abdomen: Cylindrical, without long posterior extension, in females contents often shrunken (at least in preserved specimens, fig. 45), rounded posteriorly, interscutal membrane without rows of small sclerotized platelets; dorsum often iridescent, possibly because of scattered platelets (figs. 3, 45, 57). Booklung covers large, ovoid, without setae, anterolateral edge unmodified; posterior spiracles connected by groove. Pedicel tube short, unmodified, scutopedicel region unmodified, abdomen not extending anterior of pedicel; plumose hairs, matted setae on anterior ventral abdomen in pedicel area, cuticular outgrowths near pedicel all absent. Dorsal scutum absent. Epigastric scutum weakly sclerotized, not surrounding pedicel, not protruding, small lateral sclerites absent, without lateral joints in females. Postepigastric scutum weakly sclerotized, yellow, short, only around epigastric furrow (figs. 12, 69), not fused to epigastric scutum, anterior margin unmodified, without posteriorly directed lateral apodemes. Spinneret scutum, supraanal scutum both absent. Abdominal setae dark, needlelike, epigastric area setae not basally thickened (fig. 52); dense patch of setae anterior to spinnerets absent. Colulus present. Spinnerets four, posterior median pair absent (figs. 14, 73); anterior lateral spinnerets bisegmented, basal segment with oblique membranous strip (figs. 13, 72), typically with one major ampullate gland spigot and three piriform gland spigots (figs. 15, 74), posterior lateral spinnerets bisegmented, typically with two terminal spigots (figs. 16, 75). **Legs:** Femora with subdistal constriction on dorsal surface, accompanied by straight row of setae (figs. 39, 89, 90); femur IV not thickened, same size as femora I–III, patellae and tibiae at least sometimes with platelets of varying shape (figs. 40–42, 93–96), patella plus tibia I shorter than carapace, tibia I unmodified; tibia IV specialized hairs on ventral apex, ventral scopula, meta-

tarsi I, II mesoapical comb, metatarsi III, IV weak ventral scopula all absent. Leg spines absent (figs. 91, 92). Tarsi without inferior claw. Superior claws scanned only in *R. yasuni*, those on anterior legs with three large teeth on outer margin (figs. 21, 22, 80, 81), long series of small, closely spaced teeth on inner margin of males (figs. 17, 18), those teeth longer in females (figs. 76, 77), posterior legs with three large teeth on outer margin (figs. 23, 24, 82, 83), without teeth on inner margin (figs. 19, 20, 78, 79). Trichobothrial base with numerous parallel grooves (fig. 30). Tarsal organs with three receptors on legs I, II (figs. 25, 26, 84, 85), two receptors on legs III, IV, palps (figs. 27–29, 86–88), distalmost receptor bifid, with two lobes originating on common base. **Genitalia:** Male epigastric region with sperm pore not visible; furrow without Ω -shaped insertions, without specialized setae. Male palp minute, not strongly sclerotized, right and left palps mirror images, proximal segments, cymbium, bulb yellow; embolus light, prolateral excavation absent; trochanter normal size, unmodified; femur normal size, two or more times as long as trochanter, without posteriorly rounded lateral dilation, attaching to patella basally; patella shorter than femur, not enlarged, without prolateral row of ridges, setae unmodified; tibia with three trichobothria (fig. 33); cymbium ovoid in dorsal view, forming cup-shaped base for palpal bulb (figs. 31, 32, 46–51), usually not fused to bulb but sometimes fused with seam obvious, sometimes fused with seam reduced (at least dorsally) to row of pores, not extending beyond distal tip of bulb, plumose setae, stout setae absent, with shortened distal setae not clumped into distinct patch (fig. 34); bulb longer than cymbium, slender, elongated; embolus typically basally sinuous, bearing numerous terminal spikes (figs. 35, 36), accompanied dorsally by conductor, ventrally by palpal apophysis (figs. 37, 38), but spikes sometime absent, palpal apophysis and/or conductor sometimes fused with embolus, palpal apophysis sometimes absent. Female genitalia with distinct anterior process, typically bearing dorsal projections (fig. 71), process set in boat-shaped structure (figs. 53, 54, 70).

DISTRIBUTION: Mexico to Chile, Galapagos Islands, Jamaica, Curaçao, Martinique.

Key to Species

1. Six eyes 2
 - Two or no eyes 10
2. Males (those of *bayano* and *hato* unknown) 3
 - Females (those of *meta* unknown) 6
3. Palp with three terminal elements (fig. 350); Colombia *meta*
 - Palp with only two terminal elements (as in fig. 111); Mexico 4
4. Common base of embolus and conductor relatively long (figs. 111, 158) 5
 - Common base of embolus and conductor relatively short (fig. 133) *armeria*
5. Common base of embolus and conductor relatively narrow (fig. 113) *chamela*
 - Common base of embolus and conductor relatively wide (fig. 160) *niltepec*
6. Anterior genitalic process long, narrow (fig. 297); Curaçao *hato*
 - Anterior genitalic process much shorter (as in fig. 120) 7
7. Tip of anterior genitalic process greatly expanded (fig. 145) *niltepec*
 - Tip of anterior genitalic process slightly expanded (as in fig. 120) 8
8. Abdomen with strong setae (fig. 281); Panama *bayano*
 - Abdomen with weak setae (figs. 118, 138); Mexico 9

9. Posterior portion of anterior genitalic process relatively short (fig. 120)..... *chamela*
 – Posterior portion of anterior genitalic process relatively long (fig. 140) *armeria*
10. No eyes (figs. 192, 193); Mexico *jabin*
 – Two eyes 11
11. Eyes enlarged, highly reflective (figs. 370, 503); Ecuador 12
 – Eyes small, not highly reflective (as in fig. 43) 13
12. Males with long extension on embolar base (fig. 498); females with tip of anterior genitalic process narrowed (fig. 505) *hedlite*
 – Males with short extension on embolar base (fig. 365); females with tip of anterior genitalic process rounded (fig. 372) *tandapi*
13. Males (those of *diamant*, *elqui*, *escopeta*, *ferry*, *leticia*, *marta*, *nubes*, and *pichincha* unknown) 14
 – Females 30
14. Anterior margin of labium indented at middle (as in fig. 164) 15
 – Anterior margin of labium deeply incised at middle (as in fig. 8) 20
15. Conductor very narrow, paralleling embolus (figs. 390, 535)..... 16
 – Conductor wider (figs. 173, 412, 461, 483) 17
16. Palpal apophysis with basal projection (fig. 390) *tina*
 – Palpal apophysis without basal projection (fig. 535) *celica*
17. Conductor much wider than embolus (figs. 412, 483) 18
 – Conductor narrower (figs. 173, 461) 19
18. Palpal apophysis relatively narrow (fig. 412)..... *domingo*
 – Palpal apophysis relatively wide (fig. 483)..... *jatun*
19. Conductor relatively short (fig. 173); Mexico *real*
 – Conductor relatively long (fig. 461); Ecuador *napo*
20. Embolus, conductor, and palpal apophysis largely fused (figs. 555, 556); Galapagos Islands *pinta*
 – Embolus, conductor, and palpal apophysis separate..... 21
21. Palpal apophysis with basal projection (figs. 251, 264) 22
 – Palpal apophysis without basal projection..... 23
22. Basal portion of embolus directed distally (fig. 251); Costa Rica *lucha*
 – Basal portion of embolus directed laterally (fig. 264); Panama *almirante*
23. Basal portion of embolus directed laterally (figs. 36, 427, 449, 523)..... 24
 – Basal portion of embolus directed proximally (figs. 211, 234, 336, 569) 27
24. Palpal apophysis very narrow (fig. 449)..... *palenque*
 – Palpal apophysis much wider (figs. 36, 523) 25
25. Palpal bulb with projection near base of terminal elements (fig. 523)..... *molleturo*
 – Palpal bulb without such a projection (figs. 36, 427)..... 26
26. Base of embolus with elevated ridge (fig. 427) *otonga*
 – Base of embolus without elevated ridge (fig. 36) *yasuni*
27. Palpal apophysis excavated (figs. 211, 336, 569)..... 28
 – Palpal apophysis flattened, leaflike (fig. 234)..... *naci*

28. Embolar base enlarged, with lateral projection (fig. 336) *sasaima*
 – Embolar base smaller (figs. 211, 569) 29
29. Palpal apophysis relatively narrow (fig. 211); Costa Rica *monte*
 – Palpal apophysis wider (fig. 569); Peru *carpish*
30. Anterior margin of labium deeply incised at middle (as in fig. 8) 31
 – Anterior margin of labium indented at middle (as in fig. 164) 36
31. Tip of anterior genitalic process expanded (figs. 278, 323, 380) 32
 – Tip of anterior genitalic process narrowed (figs. 54, 218, 577) 34
32. Tip of anterior genitalic process short (figs. 323, 380) 33
 – Tip of anterior genitalic process longer (fig. 278); Panama *escopeta*
33. Anterior genitalic process basally wide (fig. 323); Colombia *leticia*
 – Anterior genitalic process basally narrow (fig. 380); Ecuador *pichincha*
34. Anterior genitalic process relatively wide (fig. 577); Peru *carpish*
 – Anterior genitalic process relatively narrow (figs. 54, 218) 35
35. Anterior genitalic process abruptly narrowed at tip (fig. 218); Costa Rica *monte*
 – Anterior genitalic process gradually narrowed at tip (fig. 54); Ecuador *yasuni*
36. Anterior genitalic process basally wide (fig. 340); Colombia *sasaima*
 – Anterior genitalic process basally narrower 37
37. Anterior genitalic process relatively short, wide (figs. 183, 313, 473, 547, 582) 38
 – Anterior genitalic process relatively long, narrow (as in figs. 198, 223, 273, 468) 42
38. Anterior genitalic process with a distal cap (figs. 313, 473, 547, 582) 39
 – Anterior genitalic process without a distal cap (fig. 183); Mexico *real*
39. Cap of anterior genitalic process much wider than rest of process (fig. 547); Galapagos
 Islands *pinta*
 – Cap of anterior genitalic process not much wider than rest of process (figs. 313, 473, 582) . . 40
40. Cap of anterior genitalic process relatively long (fig. 313); Martinique *diamant*
 – Cap of anterior genitalic process shorter (figs. 473, 582) 41
41. Anterior genitalic process narrowed behind cap (fig. 473); Ecuador *jatun*
 – Anterior genitalic process not narrowed (fig. 582); Chile *elqui*
42. Anterior genitalic process distinctly narrowed at tip (figs. 188, 198, 273, 439) 43
 – Anterior genitalic process at most slightly narrowed at tip (figs. 223, 297, 318, 397, 402,
 434, 468, 510, 542) 46
43. Middle portion of anterior genitalic process greatly widened (fig. 188); Mexico *nubes*
 – Middle portion of anterior genitalic process not widened (figs. 198, 273, 439) 44
44. Anterior genitalic process bulging on one side (figs. 198, 273) 45
 – Anterior genitalic process not bulging (fig. 439); Ecuador *palenque*
45. Anterior genitalic process set in relatively long boat-shaped structure (fig. 198); Costa
 Rica *lucha*
 – Anterior genitalic process set in relatively short boat-shaped structure (fig. 273); Panama
 *almirante*
46. Anterior genitalic process with widened tip (figs. 397, 402, 468) 47

- Tip of anterior genitalic process not widened (figs. 223, 297, 318, 434, 510, 542) 49
- 47. Tip of anterior genitalic process with pair of lateral extensions (fig. 468) *napo*
- Tip of anterior genitalic process without lateral extensions (figs. 397, 402) 48
- 48. Anterior genitalic process sinuous (fig. 397) *tina*
- Anterior genitalic process straight (fig. 402) *domingo*
- 49. Anterior genitalic process set in boat-shaped structure with steep sides (figs. 318, 434) . . 50
- Anterior genitalic process set in boat-shaped structure with low sides (figs. 223, 297, 510, 542) 51
- 50. Tip of anterior genitalic process rounded (fig. 318); Colombia *marta*
- Tip of anterior genitalic process squared (fig. 434); Ecuador *otonga*
- 51. Tip of anterior genitalic process rounded (fig. 542) *celica*
- Tip of anterior genitalic process not rounded (figs. 223, 297, 510) 52
- 52. Anterior genitalic process relatively short, wide (fig. 297); Jamaica *ferry*
- Anterior genitalic process relatively long, narrow (figs. 223, 510) 53
- 53. Anterior genitalic process set in relatively long boat-shaped structure (fig. 510); Ecuador *molleturo*
- Anterior genitalic process set in relatively short boat-shaped structure (fig. 223); Costa Rica and Panama *naci*

***Reductoonops chamela*, new species (figs. 97–120)**

TYPES: Male holotype, female allotype, two male paratypes, and two female paratypes taken from a Berlese sample of forest litter taken at an elevation of 150–300 ft in the Estación de Biología Chamela, at km 59 on Route 200, north of La Barra de Navidad, Jalisco, Mexico (Apr. 4–7, 1985; R. Schuh, B. Massie), deposited in AMNH (PBI_OON 1463).

DIAGNOSIS: Members of this species resemble those of *R. armeria* and *R. niltepec* in retaining the four posterior eyes. Males differ from those of *R. armeria* in having a much longer base subtending both the embolus and conductor, and from those of *R. niltepec* in having that base narrower (figs. 110–113). Females differ from those of *R. armeria* in having the posterior portion of the anterior genitalic process much shorter, and from those of *R. niltepec* in having that portion of the process wider distally than proximally (figs. 119, 120).

MALE (PBI_OON 1463, figs. 97–113): Total length 0.95. Surface of elevated portion of pars cephalica finely reticulate. Eyes six; ALE touching. Sternum without anterior channels, surface finely reticulate, without pits, microsculpture only at sides; setae densest laterally. Labium anterior margin indented at middle. Anterolateral edge of endites with sharply pointed, laterally directed projection. Embolus and conductor originating from single long, wide base; cymbium not fused with bulb.

FEMALE (PBI_OON 1463, figs. 114–120): Total length 1.31. Anterior genitalic process bipartite, posterior portion about twice as long as anterior portion, widest anteriorly.

OTHER MATERIAL EXAMINED: MEXICO: **Jalisco:** La Manganilla, 12 mi NW La Barra de Navidad, Sept. 23, 1973, Berlese, litter near logs with fungus (A. Newton, FMNH 56114, PBI_OON 10724), 4♂.

DISTRIBUTION: Mexico (Jalisco).

Reductoonops armeria, new species (figs. 121–140)

TYPES: Male holotype and male paratype from Las Humedades, Armería, Colima, Mexico (Jan. 19, 1943; F. Bonet), deposited in AMNH (PBI_OON 31161).

DIAGNOSIS: Members of this species resemble those of *R. chamela* and *R. niltepec* in retaining the four posterior eyes. Males differ from those of *R. chamela* and *R. niltepec* in having a much shorter base subtending both the embolus and conductor (figs. 132–135). Females differ from those of *R. chamela* in having the posterior portion of the anterior genitalic process much longer, and from those of *R. niltepec* in having that portion of the process wider distally than proximally (figs. 139, 140).

MALE (PBI_OON 31161, figs. 121–136): Total length 1.02. Surface of elevated portion of pars cephalica finely reticulate. Eyes six; ALE touching. Sternum without anterior channels, surface finely reticulate, without pits, microsculpture only at sides; setae densest laterally. Labium anterior margin indented at middle. Endite tip with rounded, laterally directed lobe. Combined base of embolus and conductor short, conductor narrow, embolus sharply bent at three-fourths its length; cymbium not fused with bulb.

FEMALE (PBI_OON 37320, figs. 137–140): Total length 1.19. Anterior portion of anterior genitalic process subdistally expanded, planaria shaped.

OTHER MATERIAL EXAMINED: MEXICO: **Colima**: 12 mi E Manzanillo, 19°01'N, 104°10'W, May 11, 1963 (W. Gertsch, W. Ivie, AMNH PBI_OON 37320), 2♂, 2♀.

DISTRIBUTION: Mexico (Colima).

Reductoonops niltepec, new species (figs. 141–160)

TYPES: Male holotype and male paratype taken 2 miles southeast of Niltepec, 16°32'N, 94°33'W, Oaxaca, Mexico (Aug. 16, 1966; J., W. Ivie), deposited in AMNH (PBI_OON 37321).

DIAGNOSIS: Members of this species resemble those of *R. chamela* and *R. armeria* in retaining the four posterior eyes. Males differ from those of *R. armeria* in having a much longer base subtending both the embolus and conductor, and from those of *R. chamela* in having that base wider (figs. 157–160). Females differ from those of *R. chamela* and *R. armeria* in having the posterior portion of the anterior genitalic process wider proximally than distally (figs. 144, 145).

MALE (PBI_OON 37321, figs. 141, 146–160): Total length 1.03. Surface of elevated portion of pars cephalica finely reticulate. Eyes six; ALE touching. Sternum without anterior channels, surface finely reticulate, without pits, microsculpture only at sides; setae densest laterally. Labium anterior margin indented at middle. Endite tip with squared, anteromedially directed lobe. Embolus and conductor originating from long, wide common base; cymbium not fused with bulb.

FEMALE (PBI_OON 21105, figs. 142–145): Total length 1.15. Anterior genitalic process with long posterior portion wider posteriorly than anteriorly, short anterior portion greatly widened.

OTHER MATERIAL EXAMINED: MEXICO: **Oaxaca**: 20 mi S Juchetenango, May 29, 1971, Berlese, oak litter, elev. 6000 ft (S. Peck, AMNH PBI_OON 21105), 2♀; 11.6 km N junction Routes 190 and 135, on 135, July 21, 1987, Berlese, wet oak forest (R. Anderson, FMNH 61606, PBI_OON 10892), 1♂; 3 mi SE Tlacolula, 16°56'N, 96°25'W, Aug. 30, 1966 (J., W. Ivie, AMNH PBI_OON 37322), 1♂.

DISTRIBUTION: Mexico (Oaxaca).

***Reductoonops real*, new species (figs. 161–183)**

TYPE: Male holotype from El Real, Chiapas, Mexico (July 3, 1950; C., M. Goodnight), deposited in AMNH (PBI_OON 1432).

DIAGNOSIS: Members of this species resemble those of the majority of species in having only two eyes, but show no trace of the anterior sternal channels found in most of those species (figs. 163, 176, 177). The male palp shows the typically sinuous embolus, but the embolus tip bears only a single projection (best seen in dorsal view, fig. 175), rather than the group of projections found in other species. The female anterior genitalic process is of the typically unipartite form, but is shorter and more ovoid than in other species (figs. 182, 183).

MALE (PBI_OON 1432, figs. 161–176): Total length 1.22. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum without anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with slight lobe, laterally protruding, anteromedially directed macroseta. Embolus sinuous, tip with single spur; cymbium fused with bulb but with clearly defined seam between.

FEMALE (PBI_OON 1467, figs. 177–183): Total length 0.98. Anterior genitalic projection relatively short, unipartite, torpedo shaped.

OTHER MATERIAL EXAMINED: MEXICO: **Chiapas**: 5 mi NE Chiapa, 16°45'N, 92°58'W, Aug. 26, 1966, hillside (J., W. Ivie, AMNH PBI_OON 1467), 2 ♀; Ruinas de Palenque, Apr. 3, 1974 (C. Alteri, AMNH PBI_OON 1466), 1 ♀; Plateau 6 mi S Tuxtla Gutiérrez, 16°42'N, 93°07'W, Aug. 21, 1966 (J., W. Ivie, AMNH PBI_OON 1468), 3 ♀.

DISTRIBUTION: Mexico (Chiapas).

***Reductoonops nubes*, new species (figs. 184–188)**

TYPE: Female holotype from Berlese sample of litter taken in a coffee grove at an elevation of 5800 ft at Las Nubes, Volcán de Tacana, Chiapas, Mexico (Aug. 6, 1950; C., M. Goodnight), deposited in AMNH (PBI_OON 1447).

DIAGNOSIS: These females have two eyes (separating them from *R. chamela*, *R. armeria*, and *R. niltepec*, which have six eyes, and from *R. jabin*, which lack eyes) and anterior sternal channels (separating them from *R. real*). The anterior genitalic process is long and greatly narrowed anteriorly (figs. 187, 188).

MALE: Unknown.

FEMALE (PBI_OON 1469, figs. 184–188): Total length 1.46. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent, setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic projection unipartite, basally ovoid, distally narrowed.

OTHER MATERIAL EXAMINED: MEXICO: **Chiapas**: Cacahuatán, Las Nubes, Aug. 6, 1950, Berlese, coffee area, elev. 5800 ft (C., M. Goodnight, AMNH PBI_OON 1675), 1 ♀ (without abdomen, so genitalia not examined); Unión Juárez, Aug. 11, 1950 (C., M. Goodnight, AMNH PBI_OON 1469), 1 ♀.

DISTRIBUTION: Mexico (Chiapas).

Reductoonops jabin, new species (figs. 189–196)

TYPE: Female holotype from Cenote (sinkhole) Jabin, 1.5 km W Kaua, Yucatán, Mexico (Jan. 5, 2003; J. Reddell, M. Reyes), deposited in TMM (34502, PBI_OON 21100).

DIAGNOSIS: Members of this species differ from those of all other *Reductoonops* in being completely blind (figs. 192, 193). The anterior genitalic process is relatively short and wide (figs. 195, 196). One other completely blind oonopid has been described from Yucatán, *Wanops coecus*, but that species is very different, lacking sternal channels and having highly spinose legs.

MALE: Unknown.

FEMALE (PBI_OON 21100, figs. 189–196): Total length 1.66. Surface of elevated portion of pars cephalica smooth. Eyes absent. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic projection relatively short, wide.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Mexico (Yucatán).

Reductoonops monte, new species (figs. 199–218)

TYPES: Male holotype and female allotype taken by sifting leaf litter at an elevation of 1500 m at Monteverde, Puntarenas, Costa Rica (Feb. 23–27, 1991; H., A. Howden), deposited in AMNH (PBI_OON 1435).

DIAGNOSIS: Males can be recognized by the hook-shaped process on the palpal apophysis, best seen in prolateral view (fig. 210), females by the very wide arms at the base of the anterior genitalic process (figs. 217, 218). The species occurs sympatrically with *R. naci*, but differs from that and all other known species in these characters.

MALE (PBI_OON 1435, figs. 199–213): Total length 0.95. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endites with bipartite distal lobe situated beside short, modified seta situated at anterolateral corner. Palpal apophysis with hook-shaped projection; cymbium not fused with bulb.

FEMALE (PBI_OON 1435, figs. 214–218): Total length 1.34. Anterior genitalic process long, narrow, base with wide arms bearing relatively straight anterior margin.

OTHER MATERIAL EXAMINED: None

DISTRIBUTION: Costa Rica (northern Puntarenas).

Reductoonops naci, new species (figs. 219–238)

TYPES: Male holotype, male paratype, female allotype, and two female paratypes taken from humus at an elevation of 950 m in the Nacimiento Parque Municipal, 9°58'57"N, 84°10'28"W, Heredia, Costa Rica (Jan. 27–28, 2010; C. Viquez, B. Hernandez, A. Solis), deposited in INBIO (PBI_OON 1618).

DIAGNOSIS: Males can be recognized by the distally pointed apophysis on the palp (figs. 233–238), females by the bowl-shaped arms at the base of the anterior genitalic process (figs. 222, 223).

MALE (PBI_OON 1618, figs. 224–238): Total length 0.97. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endites with bipartite distal lobe situated beside short, modified seta situated at antero-lateral corner. Palpal apophysis leaf shaped, with distal point; cymbium not fused with bulb.

FEMALE (PBI_OON 1618, figs. 219–223): Total length 0.99. Labium anterior margin indented at middle. Anterior genitalic process very long, narrow, set in bowl-shaped base.

OTHER MATERIAL EXAMINED: COSTA RICA: **Cartago:** Estación Biológica Barbilla, Parque Nacional Barbilla, Jan. 19, 2001, humus, elev. 600 m (W. Arana, INBIO PBI_OON 30982), 1 ♂, 1 ♀; Parque Nacional Tapanti, June 4, 1997, litter, tropical montane evergreen forest, elev. 1500 m (R. Anderson, INBIO PBI_OON 30983), 1 ♀; Reserva Forestal Río Macho, km 70, Inter-American Highway, 9°39'N, 83°51'W, Mar. 22–26, 1999, sifting forest litter, elev. 2850 m (J. Miller, USNM PBI_OON 27798), 2 ♀. **Limón:** Finca Alberto Moore, Hone Creek, July 8–11, 2005, humus, cacao/cordia/banana (C. Viquez, INBIO PBI_OON 29683), 1 ♀; Valle del Silencio, Mar. 23, 2003 (C. Viquez, INBIO 73778, PBI_OON 49622), 1 ♀. **Puntarenas:** Estación Biológica Las Cruces, 8°46'N, 82°58'W, Mar. 14, 1973, Berlese, sawdust on and under slabs, old sawmill site, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33528, PBI_OON 10035), 2 ♂, 4 ♀, Mar. 14–15, 1973, Berlese, leaf litter, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33523, 33530, 71271, PBI_OON 10030, 10037, 10630, 10649, 38427, 43489), 5 ♂, 17 ♀, Mar. 16, 1973, forest floor litter above stream, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33521, ex 56586, PBI_OON 10028, 37035, 37976), 3 ♂, 10 ♀, Mar. 18, 1973, Berlese, virgin forest floor litter, moderate slope, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33514, 56584, PBI_OON 10021, 10799), 11 ♀, Mar. 19, 1973, Berlese, leaf litter in stream bed, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33529, PBI_OON 10036), 1 ♀, Berlese, under bark, rotten log galleries, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33515, PBI_OON 10022), 1 ♀, Mar. 20, 1973, Berlese, sawdust under plank, elev. 4000 ft (J. Wagner, J. Kethley, FMNH 33517, PBI_OON 10024), 2 ♂, 6 ♀, Mar. 21, 1973, Berlese, mixed floor litter, elev. 4700 ft (J. Wagner, J. Kethley, FMNH 33519, PBI_OON 10026), 4 ♂, 8 ♀; Estación Sirena, Península de Osa, May 18–30, 2001, humus (A. Azofeifa, INBIO PBI_OON 30978), 1 ♀; Fundación Neotrópica, 10 km W Rincón, Península de Osa, 8°42'30"N, 83°31'30"W, June 23, 1997, ridge forest litter, elev. 180 m (R. Anderson, INBIO PBI_OON 51308), 1 ♂, 1 ♀; Isla del Coco, Apr. 19, 2013 (C. Viquez, INBIO 106123, PBI_OON 49621), 1 ♂; Monteverde, Aug. 24, 1983, roadside scrub, elev. 1500 m (J. F. Murphy, AMNH PBI_OON 36826), 1 ♂, Feb. 23–27, 1991, sifting leaf litter, elev. 1500 m (H., A. Howden, AMNH PBI_OON 49605), 1 ♂; Parque Nacional Manuel Antonio, June 19, 1976 (C., M. Goodnight, AMNH PBI_OON 1430), 2 ♀; Quepos, Cerro Nara, 9°29'03"N, 84°09'12"W, Aug. 2002, under rock, elev. 900 m (C. Viquez, INBIO PBI_OON 30981), 1 ♀; Rancho Quemado, Península de Osa, Mar. 1992 (F. Quesada, INBIO 45746, PBI_OON 30979), 1 ♀. **San José:** Parque Nacional Braulio Carrillo, Apr. 28–30, 1983, nature trail along a cloud forest/rainforest transect, elev. 1100 m (D. Ubick, CDU PBI_OON 3635), 1 ♀. PANAMA: **Chiriquí:** Cerro Punta, Mar. 6, 1959, Berlese, old mossy log, elev. 6250 ft (H. Dybas, FMNH 56888, PBI_OON 10831), 1 ♀; on road to Cerro Punta, Mar. 8, 1959, Berlese, damp litter near spring, elev. 5600 ft (H. Dybas, FMNH 33660, PBI_OON 10162), 1 ♂; 2 km E Cerro Punta, June 2, 1977, moss and lichens on trees, elev. 2400 m (H., A. Howden, AMNH PBI_OON 37062), 1 ♂; 5 mi W El Hato del Volcán, Aug. 10, 1983, rainforest edge, elev. 1000 m (J. F. Murphy, AMNH PBI_OON 36827), 1 ♀; 12 km W El Hato del Volcán, June 27, 1976, Berlese, cloud forest litter, elev. 4500 ft (A. Newton, MCZ 72911, PBI_OON 28118), 2 ♀; El Volcán, Feb. 19, 1936 (W. Gertsch, AMNH PBI_OON 1464), 1 ♀, Aug. 9–14, 1950 (A. Chickering, MCZ PBI_OON 51313), 2 ♀; Finca Hartmann, 15 km NW Santa Clara, May 20, 1977, elev. 1200 m (S., J. Peck, FMNH 33645, PBI_OON 10147), 2 ♂, 1 ♀; Finca Lerida, near Boquete, Mar. 17, 1959, Berlese, concentrated forest floor litter, elev. 7800 ft (H. Dybas, FMNH 56508, PBI_OON 10750), 1 ♂, 3 ♀, Berlese, forest floor litter under palms, elev. 7750 ft (H. Dybas, FMNH PBI_OON 51314), 1 ♂, Mar.

18, 1959, Berlese, concentrated floor debris in damp ravine, elev. 6900 ft (H. Dybas, FMNH 56559, PBI_OON 10778), 1 ♀; Finca Palo Santo, W Nueva California, Mar. 5, 1959, Berlese, chips, lead mold at base of cut stump, elev. 4750 ft (H. Dybas, FMNH PBI_OON 10182), 1 ♀, Mar. 9, 1959, Berlese, forest floor litter in deep ravine, elev. 4900 ft (H. Dybas, FMNH PBI_OON 51312), 1 ♂, Mar. 10, 1959, Berlese, forest floor litter at base of log and cut stump, elev. 5000 ft (H. Dybas, FMNH PBI_OON 51311), 2 ♂, 5 ♀; Parque Nacional Volcán Barú, 5.9 km E Cerro Punta, June 14, 1995, oak ridge bamboo forest litter, elev. 2400 m (R. Anderson, AMNH PBI_OON 51310), 1 ♀. **Darién:** Chucanti, Nov. 11–14, 2009 (R. Miranda, S. Fernandez, INBIO PBI_OON 51316), 3 ♂, 1 ♀.

DISTRIBUTION: Widespread in Costa Rica (including Cocos Island) and Panama.

Reductoonops lucha, new species (figs. 197, 198, 239–253)

TYPES: Male holotype, three male paratypes, female allotype, and female paratype taken at an elevation of 1500 m at the Project Darwin base camp, La Lucha, Cerro Amuo, 9.114388°N, 83.093421°W, Puntarenas, Costa Rica (Feb. 19–27, 2008; C. Viquez), deposited in INBIO (PBI_OON 31133).

DIAGNOSIS: Males resemble those of the Panamanian species *R. almirante* in having a triangular palpal apophysis, but have a much less sinuous embolus (figs. 250–253); females also resemble those of *R. almirante* in having an asymmetrical anterior genitalic process, but that process is longer and is situated on a much longer base (figs. 197, 198).

MALE (PBI_OON 31133, figs. 239, 242–253): Total length 1.06. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with narrow, posteromedially directed lobe situated distal to short, modified seta on enlarged base. Palpal apophysis triangular, embolar base only slightly sinuous; cymbium not fused with bulb.

FEMALE (PBI_OON 30980, figs. 197, 198, 240, 241): Total length 1.45. Labium anterior margin indented at middle. Anterior genitalic process long, asymmetrical.

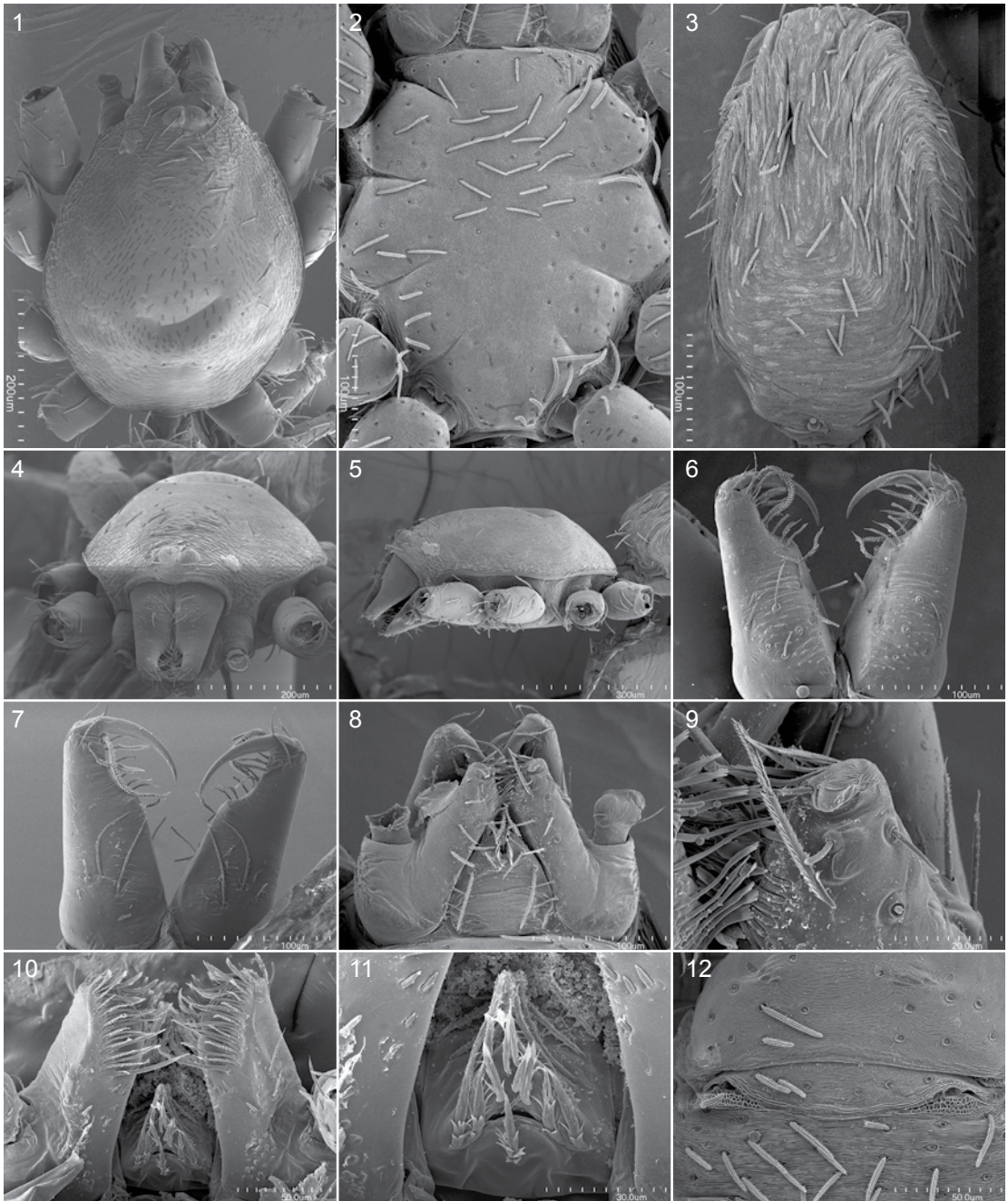
OTHER MATERIAL EXAMINED: COSTA RICA: **Puntarenas:** Cerro Frantzius, Feb. 26–28, 2005, elev. 2200 m (R. Anderson, INBIO PBI_OON 30980), 1 ♀.

DISTRIBUTION: Costa Rica (southeastern Puntarenas).

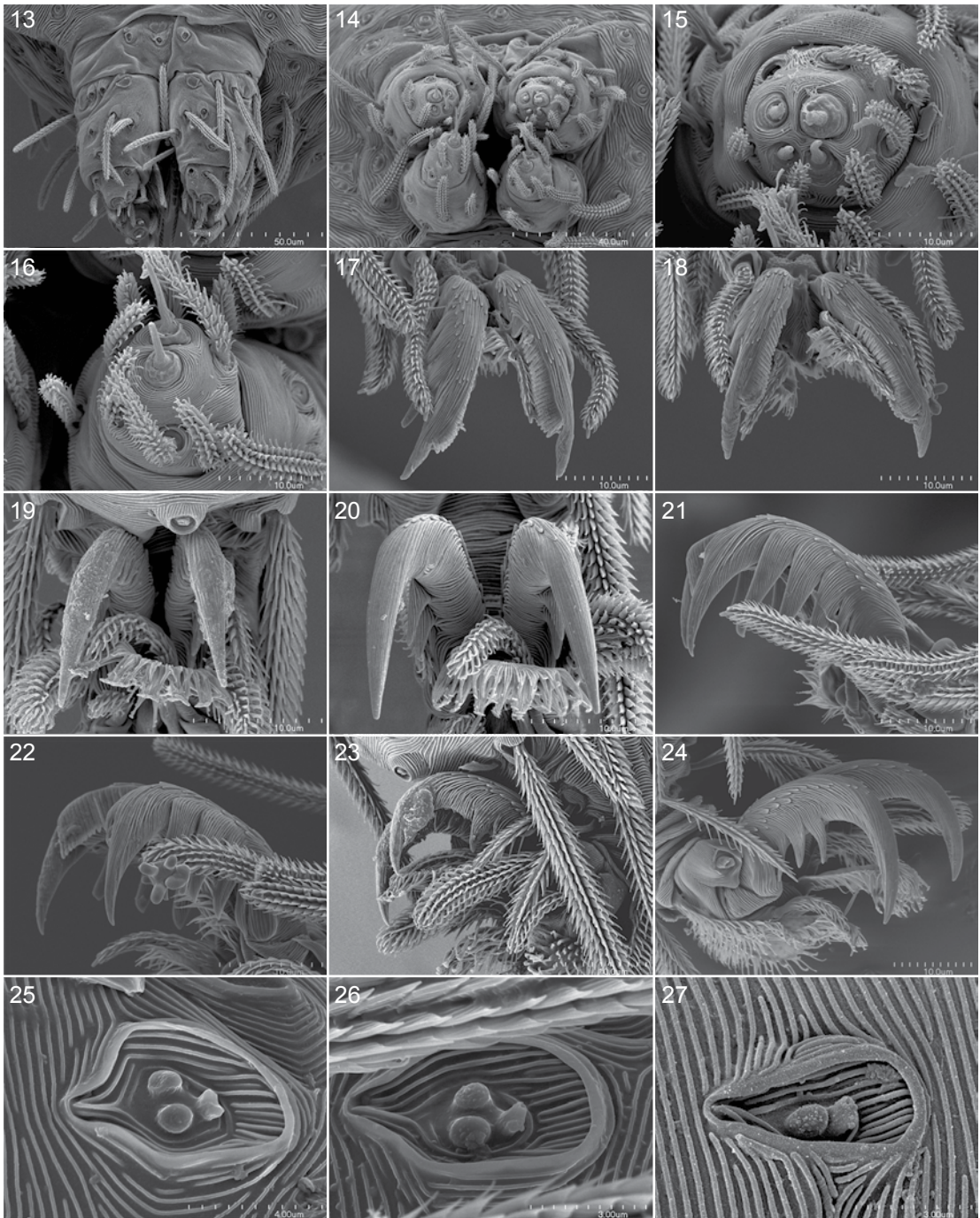
Reductoonops almirante, new species (figs. 254–266, 269–273)

TYPES: Male holotype, male paratype, female allotype, and female paratype from Berlese sample of overflow of debris on ground from split tree hole 6 ft up on the trail to the dam on Nigua Creek, Almirante, Bocas del Toro, Panama (Mar. 25, 1959; H. Dybas), deposited in FMNH (PBI_OON10395).

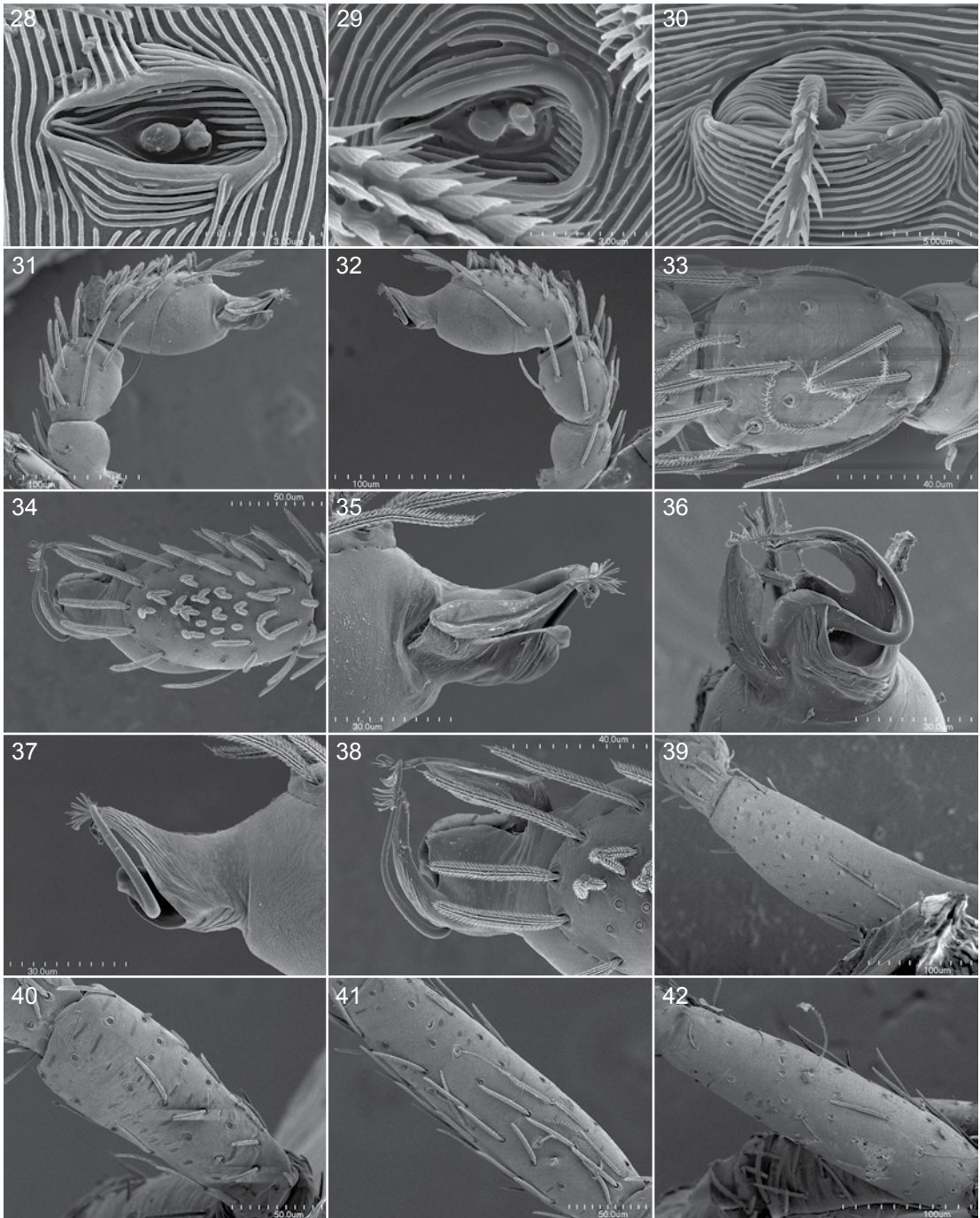
DIAGNOSIS: Males resemble those of the Costa Rican species *R. lucha* in having a triangular palpal apophysis, but have a much more sinuous embolus (figs. 263–266); females also resemble those of *R. lucha* in having an asymmetrical anterior genitalic process, but that process is shorter and is situated on a much shorter base (figs. 272, 273).



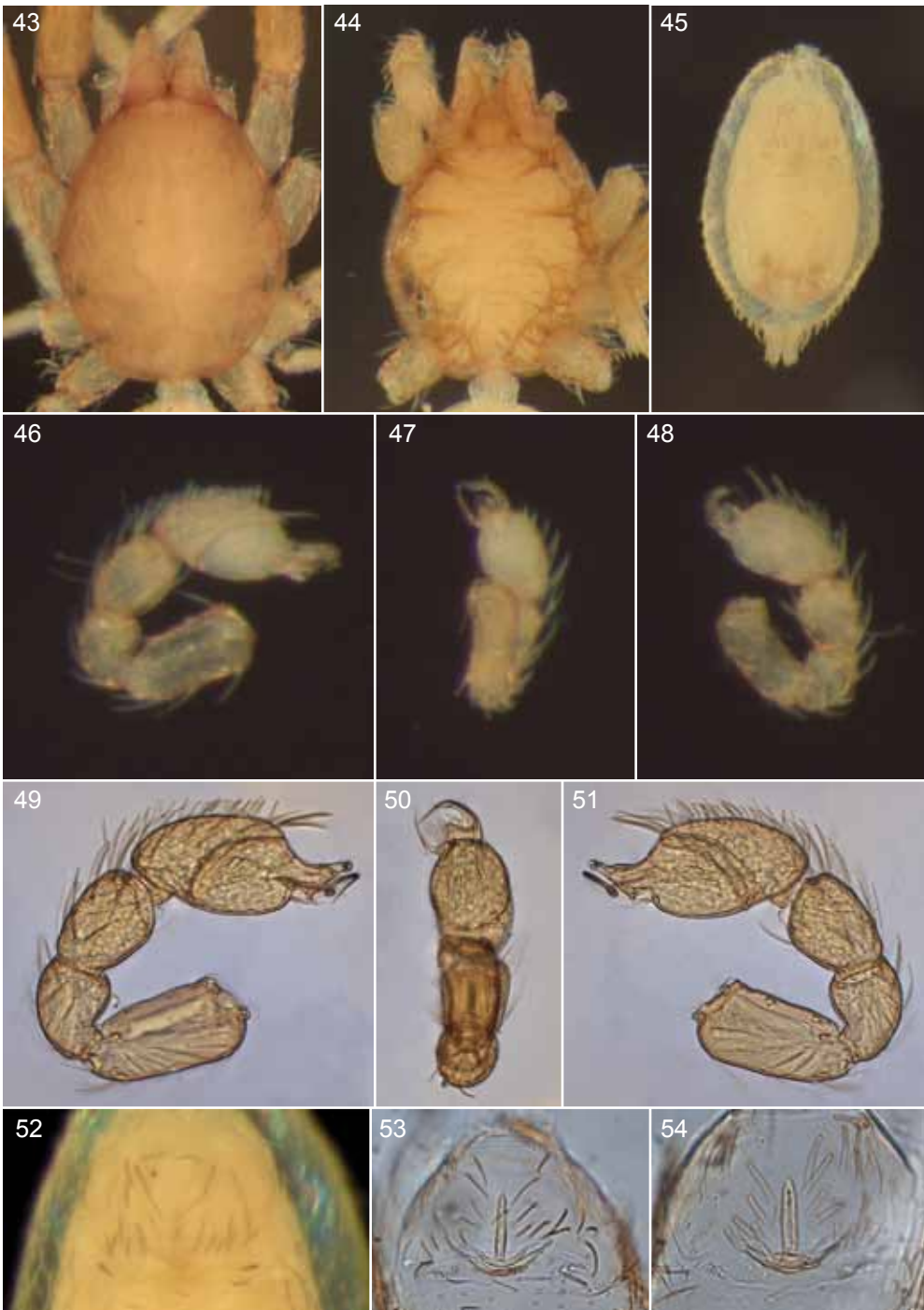
FIGURES 1–12. *Reductoonops yasuni*, new species, male. 1. Carapace, dorsal view. 2. Sternum, ventral view. 3. Abdomen, dorsal view. 4. Carapace, anterior view. 5. Same, lateral view. 6. Chelicerae, anterior view. 7. Same, posterior view. 8. Labium and endites, ventral view. 9. Tip of endite, ventral view. 10. Labrum and endites, dorsal view. 11. Labrum, dorsal view. 12. Epigastric region, ventral view.



FIGURES 13–27. *Reductoonops yasuni*, new species, male. 13. Spinnerets, ventral view. 14. Same, posterior view. 15. Anterior lateral spinneret, posterior view. 16. Posterior lateral spinneret, posterior view. 17. Claws of leg I, apical view. 18. Same, leg II. 19. Same, leg III. 20. Same, leg IV. 21. Claws of leg I, lateral view. 22. Same, leg II. 23. Same, leg III. 24. Same, leg IV. 25. Tarsal organ from leg I, dorsal view. 26. Same, leg II. 27. Same, leg III.



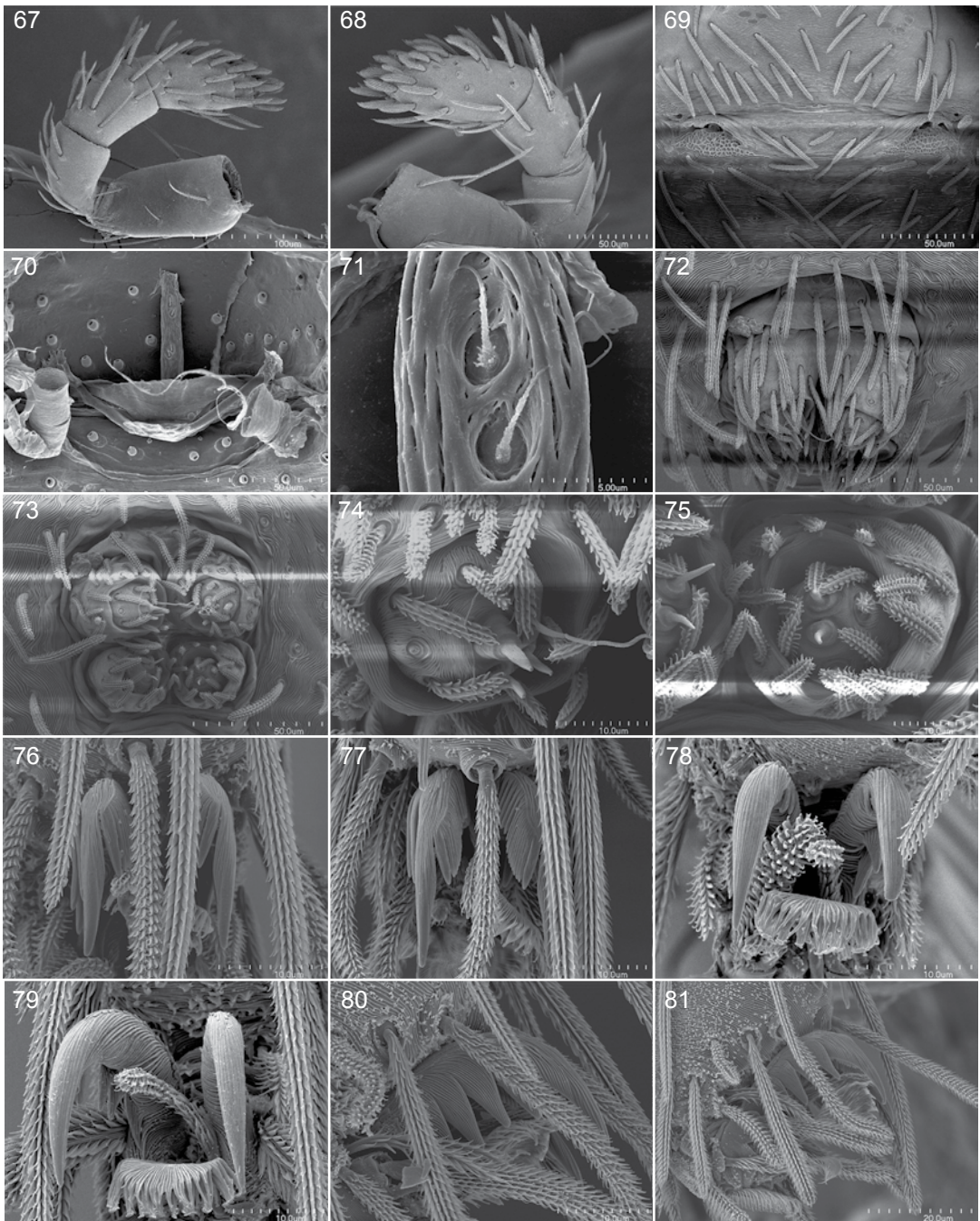
FIGURES 28–42. *Reductoonops yasuni*, new species, male. 28. Tarsal organ from leg IV, dorsal view. 29. Same, palp. 30. Trichobothrial base from metatarsus II, dorsal view. 31. Palp, prolateral view. 32. Same, retrolateral view. 33. Palpal tibia, dorsal view. 34. Palpal tarsus, dorsal view. 35. Embolus, prolateral view. 36. Same, ventral view. 37. Same, retrolateral view. 38. Same, dorsal view. 39. Femur IV, dorsal view. 40. Patella I, same. 41. Tibia I, same. 42. Tibia IV, same.



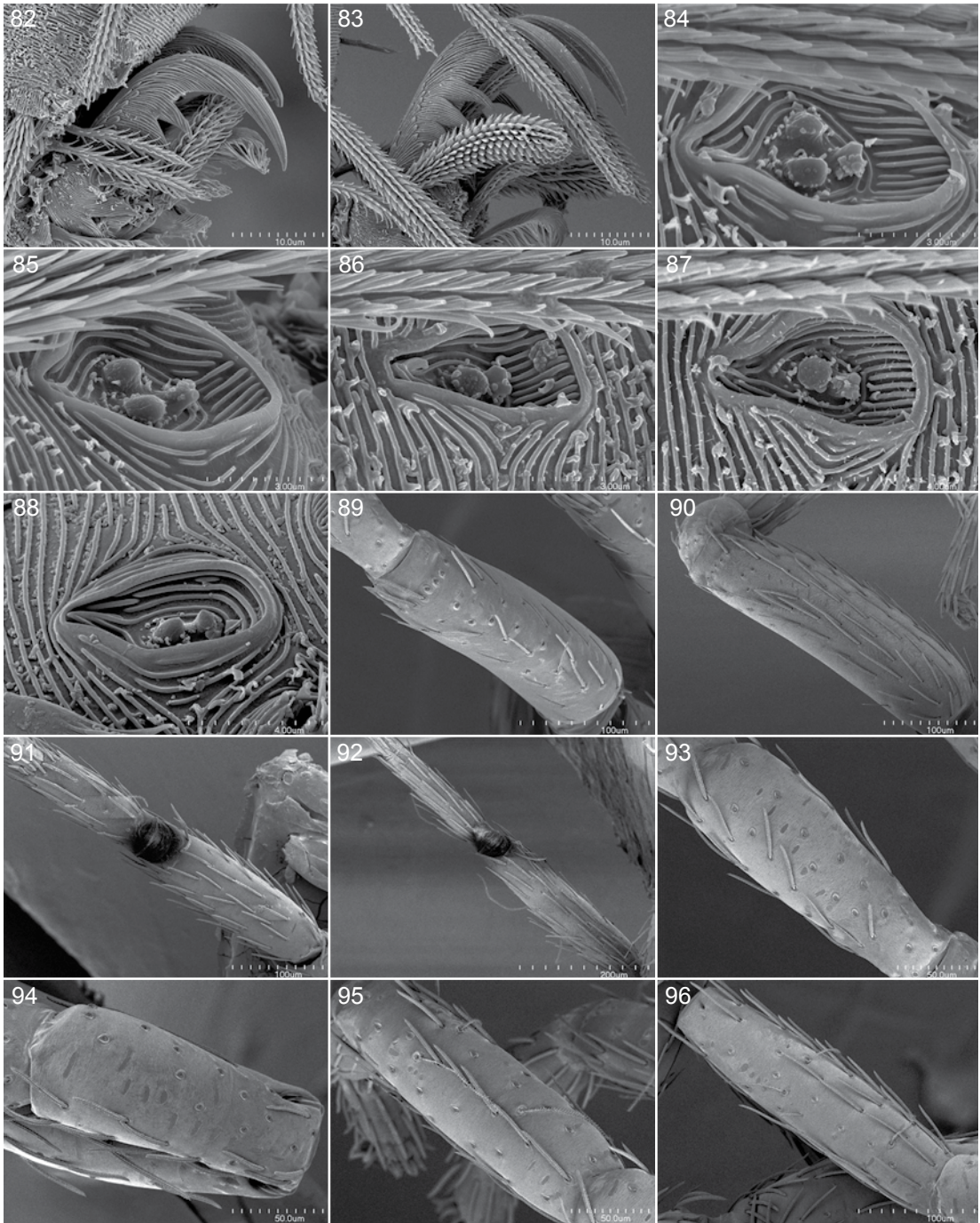
FIGURES 43–54. *Reductoonops yasuni*, new species, male (43, 44, 46–51) and female (45, 52–54). 43. Carapace, dorsal view. 44. Sternum, ventral view. 45. Abdomen, ventral view. 46, 49. Palp, prolateral view. 47, 50. Same, ventral view. 48, 51. Same, retrolateral view. 52. Epigastric area, ventral view. 53. Genitalia, ventral view. 54. Same, dorsal view.



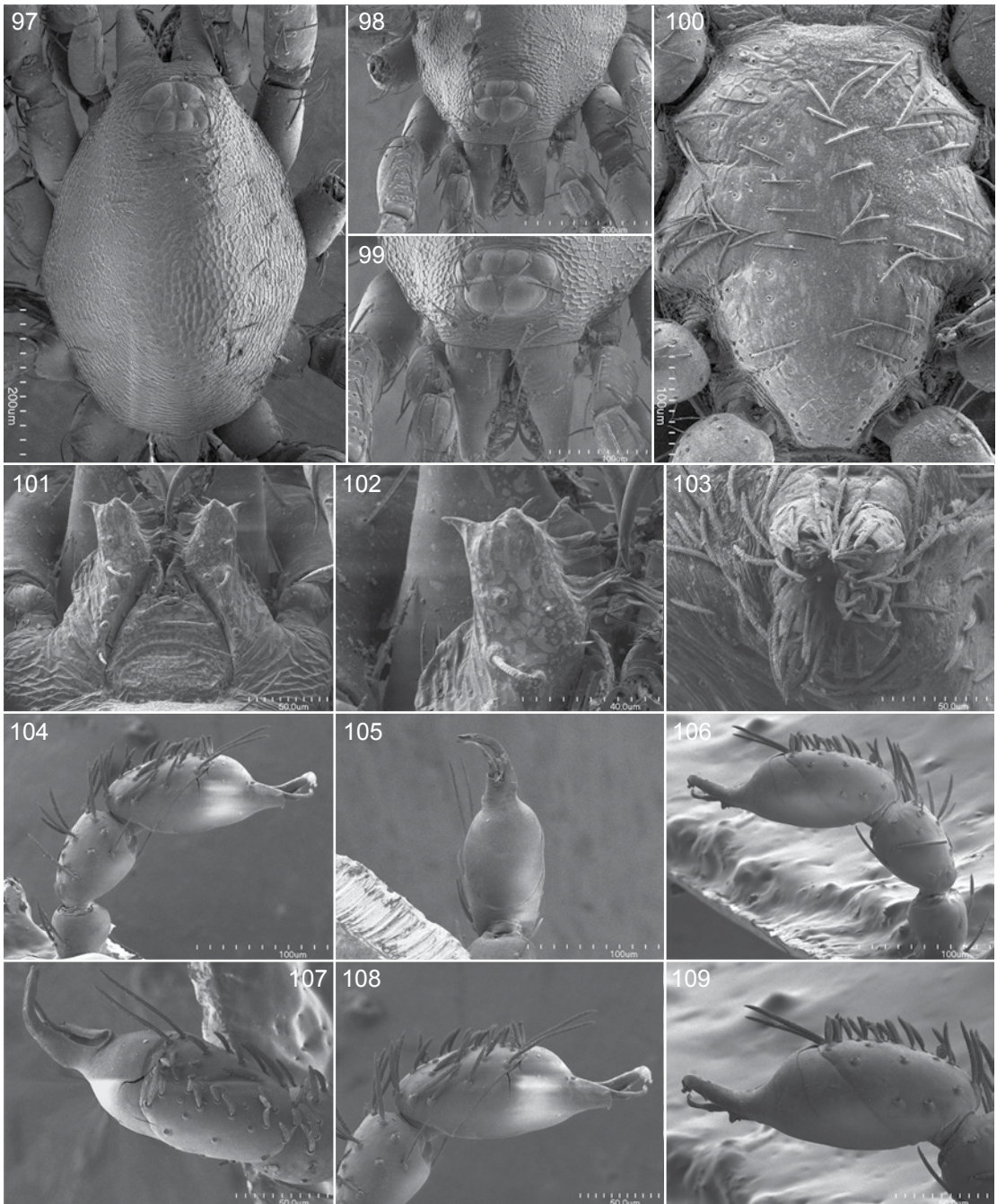
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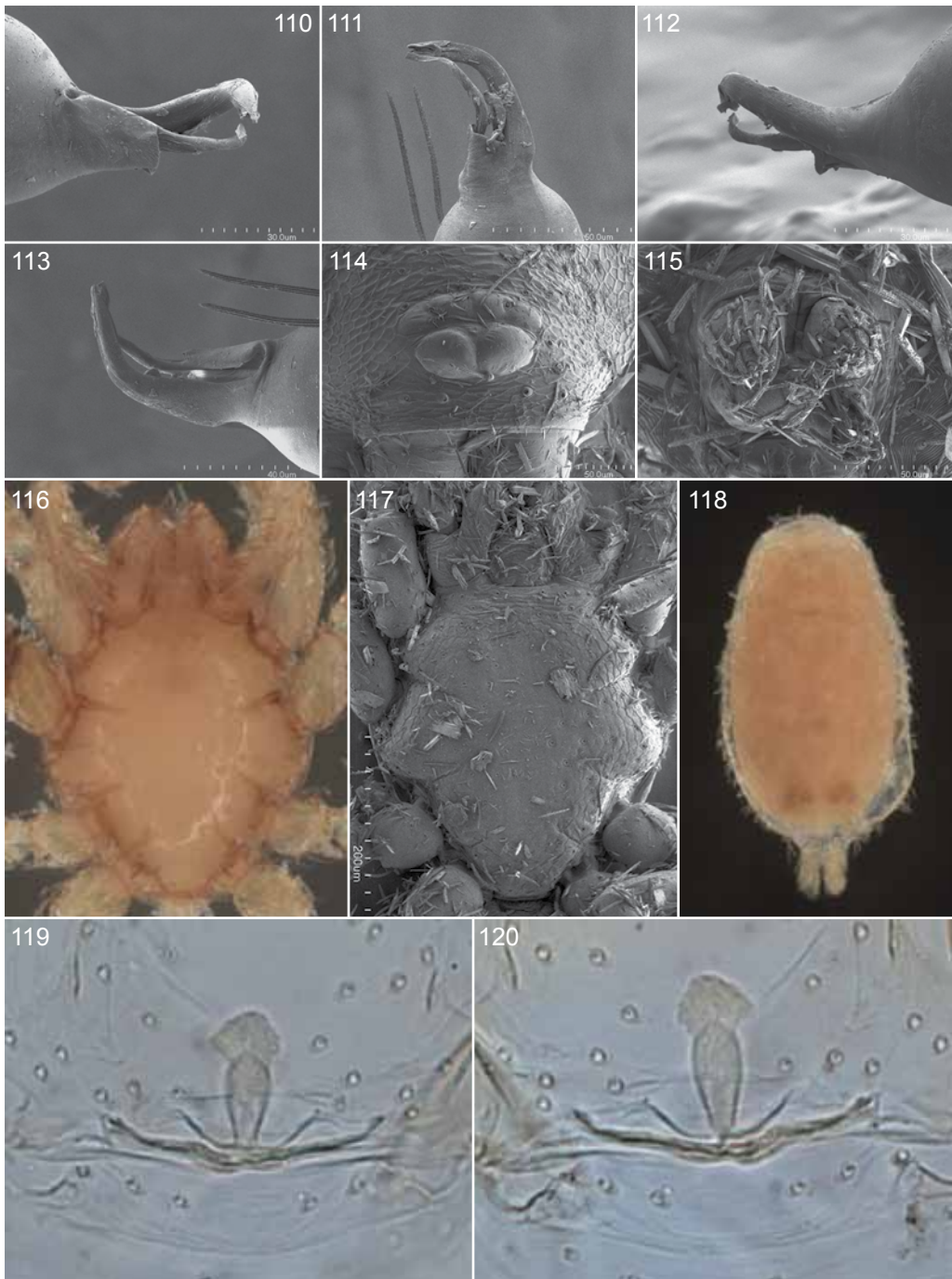
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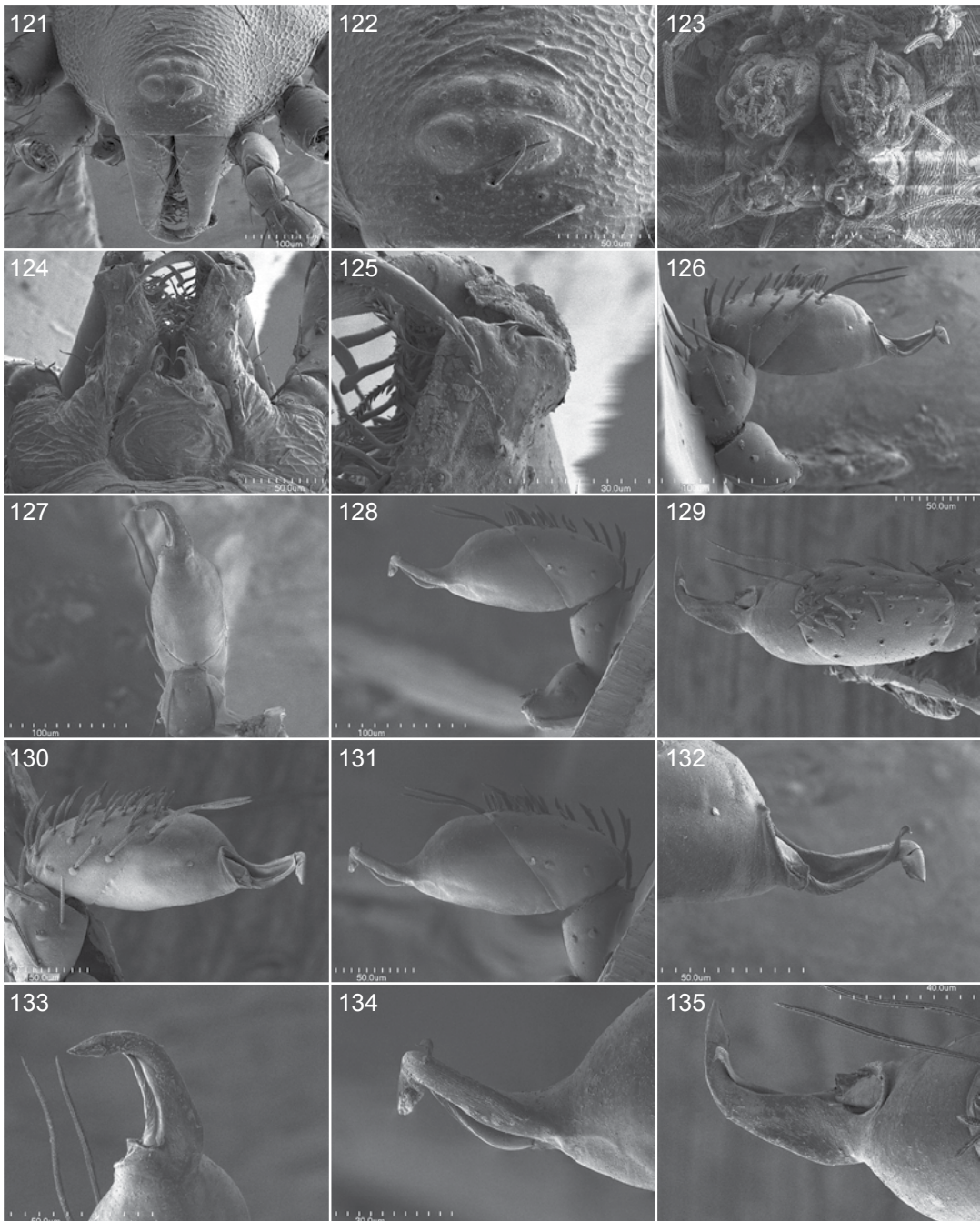
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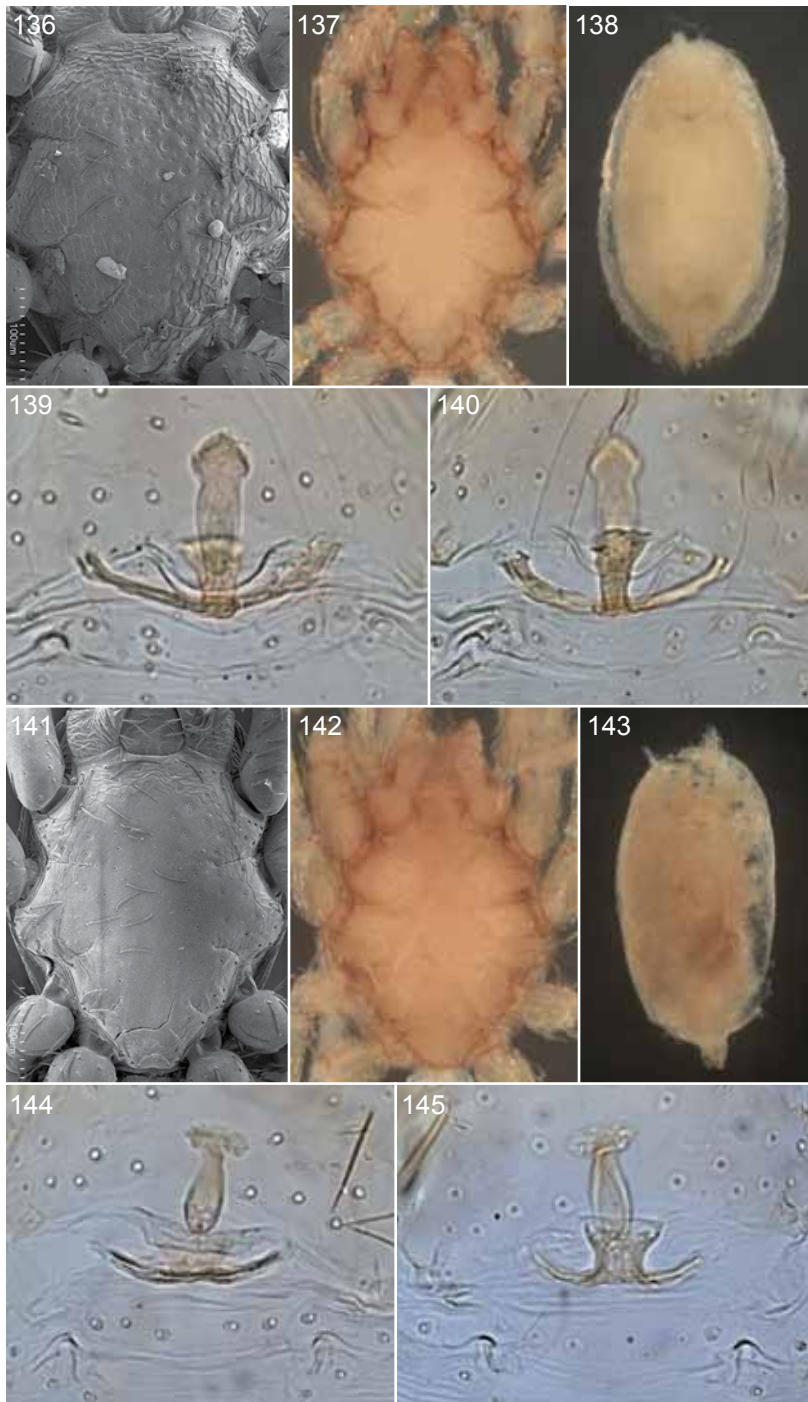
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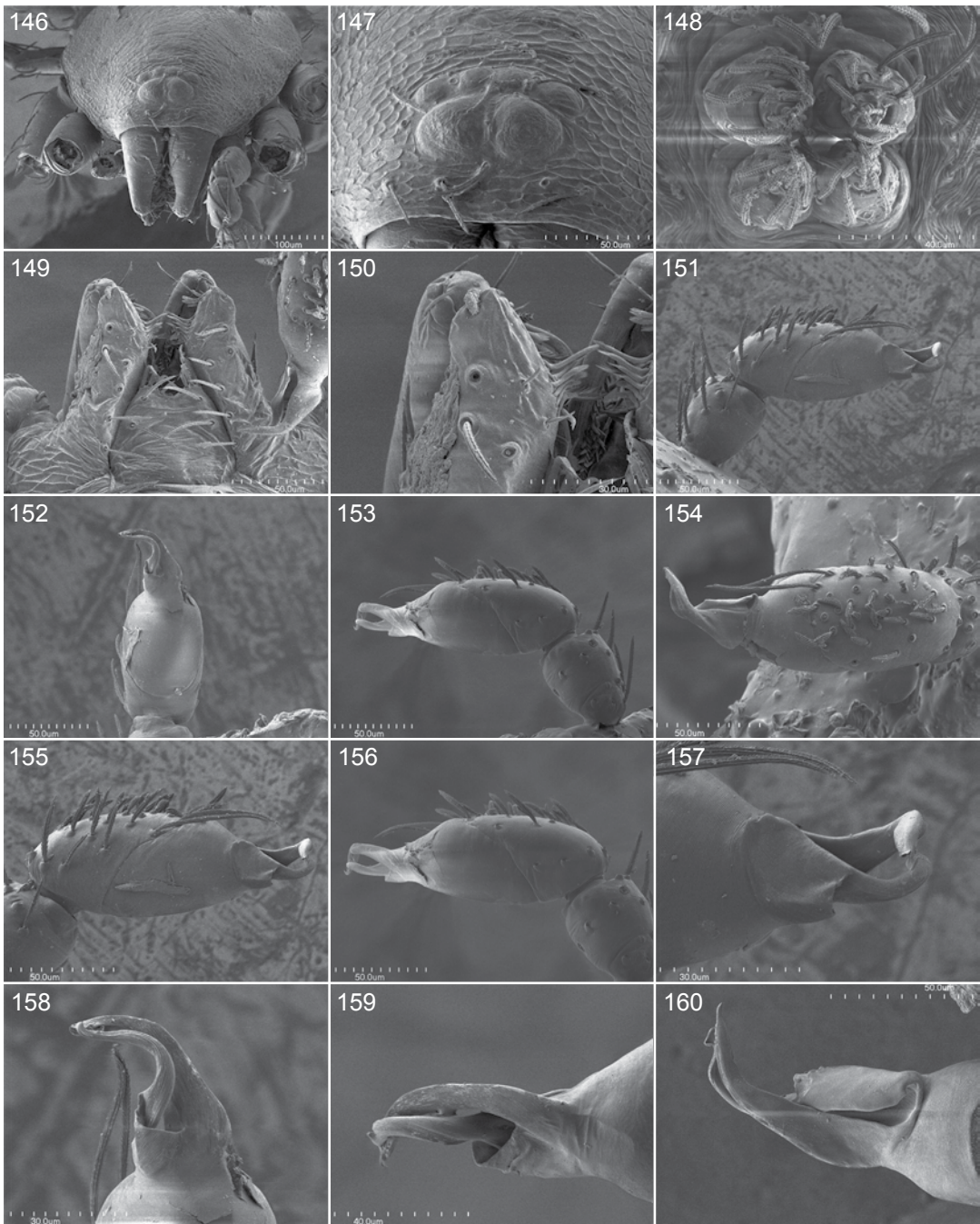
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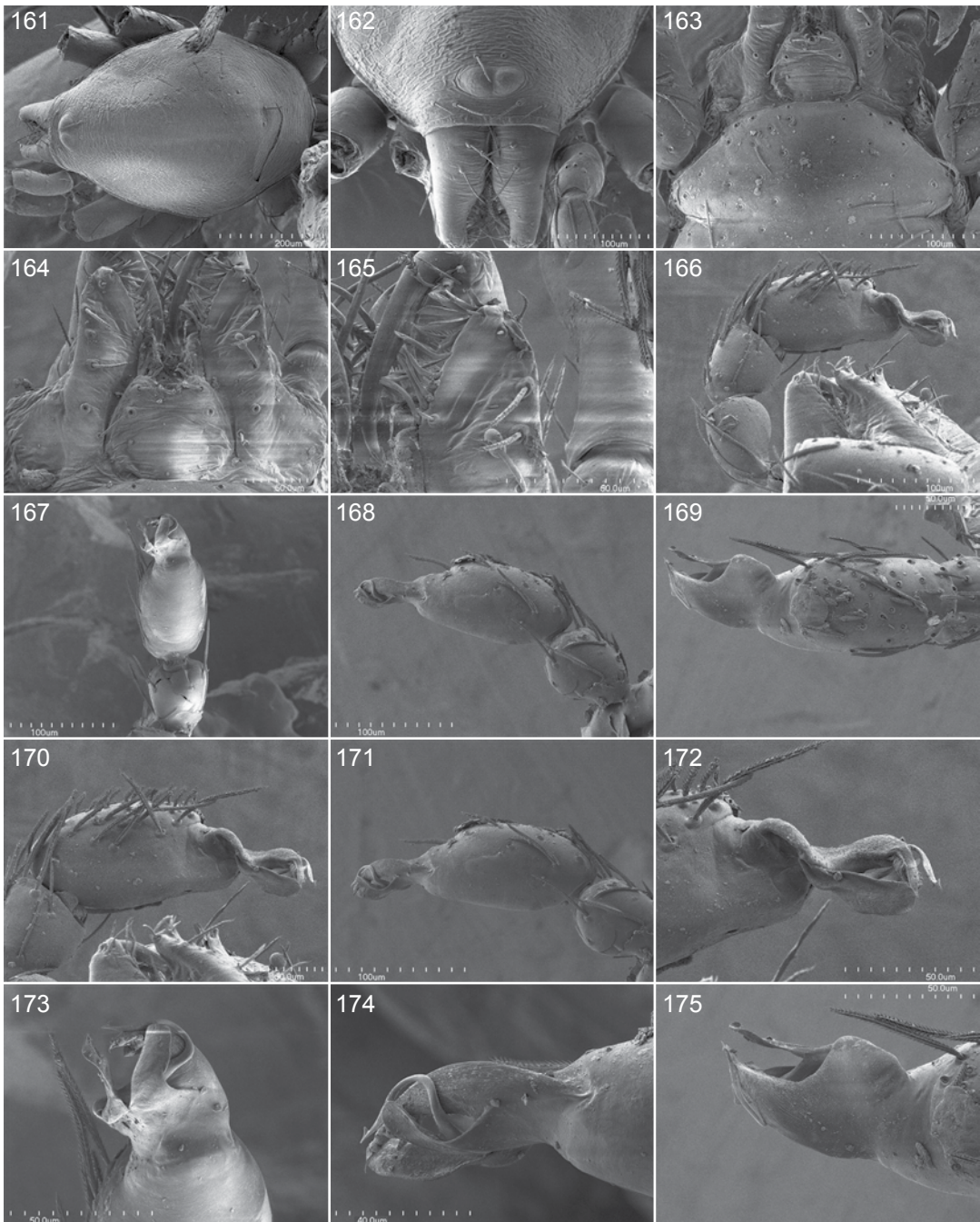
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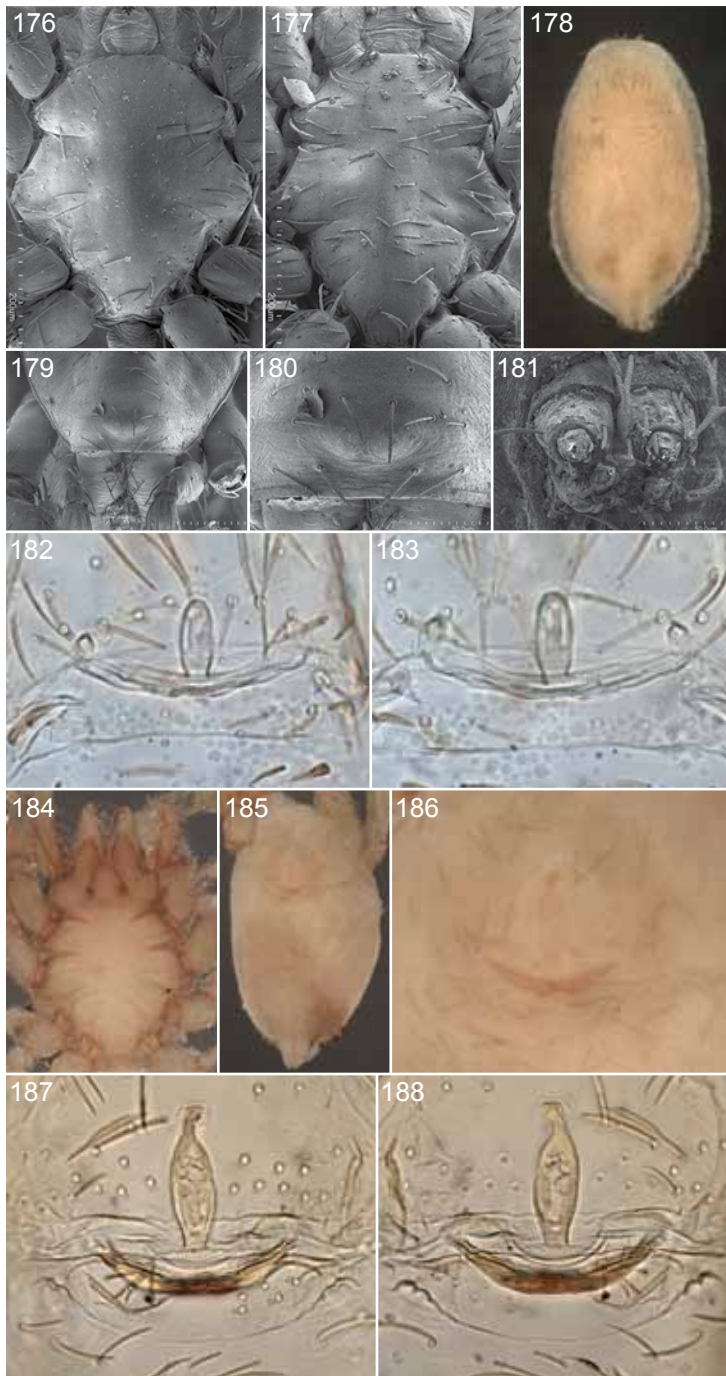
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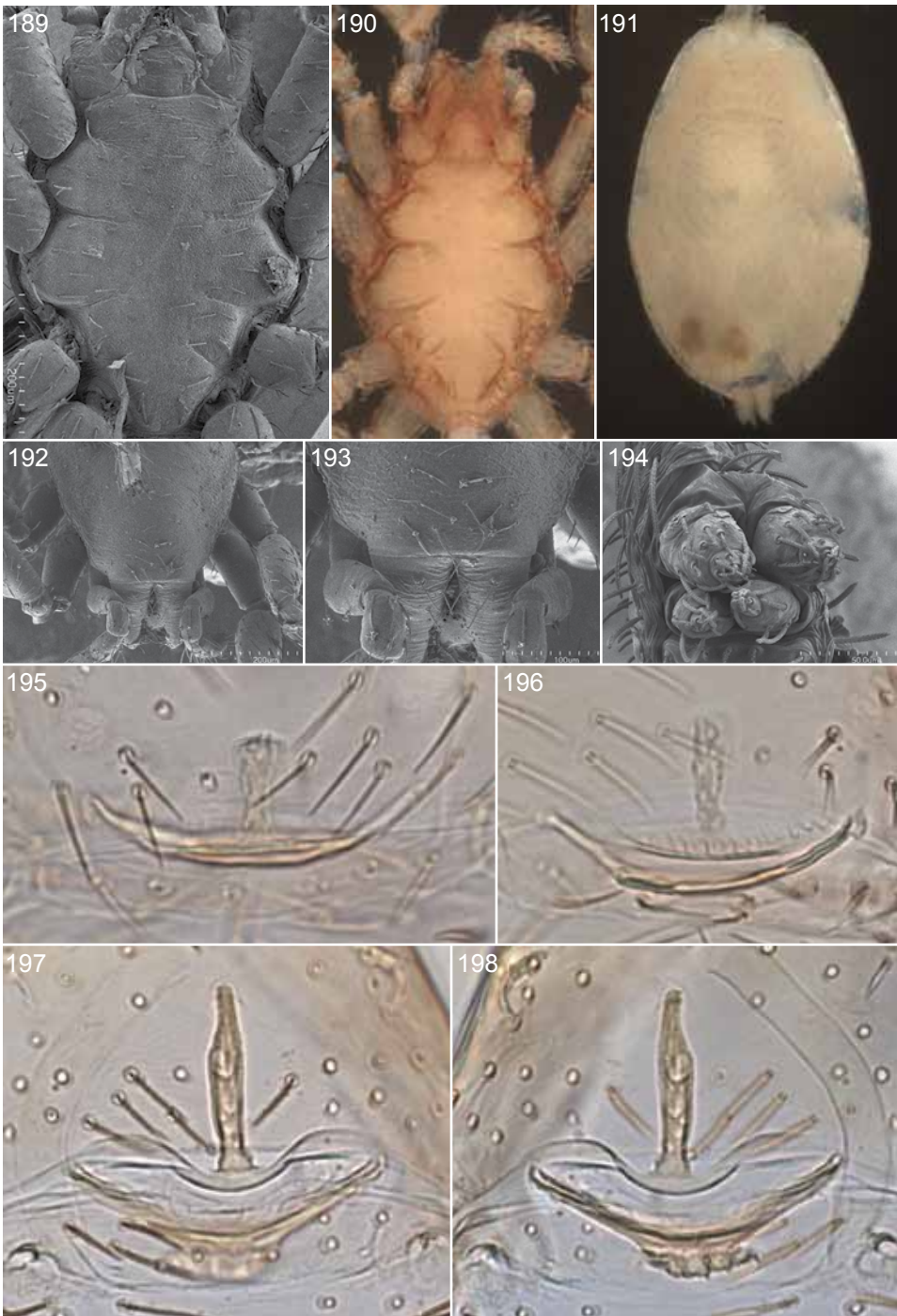
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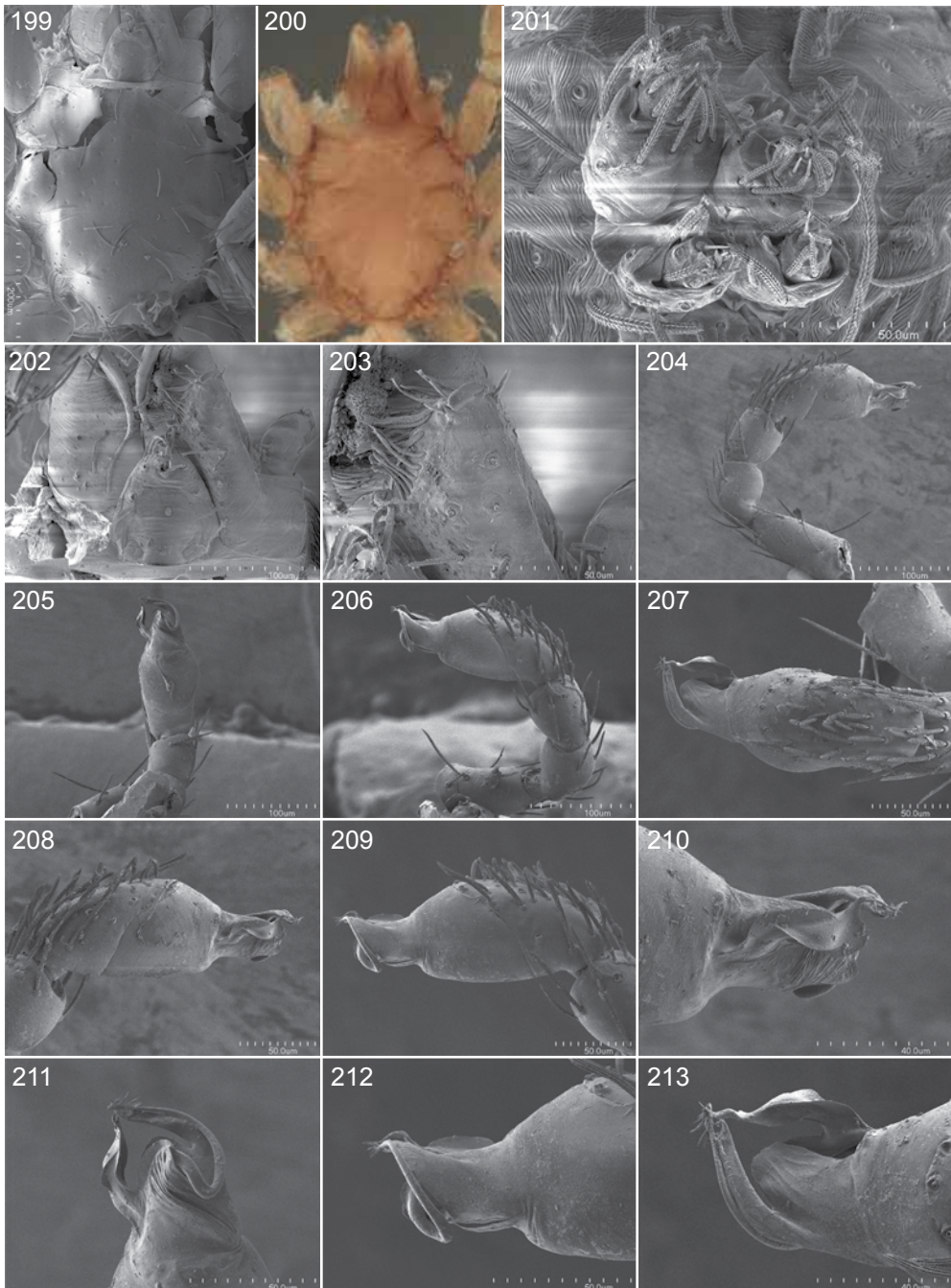
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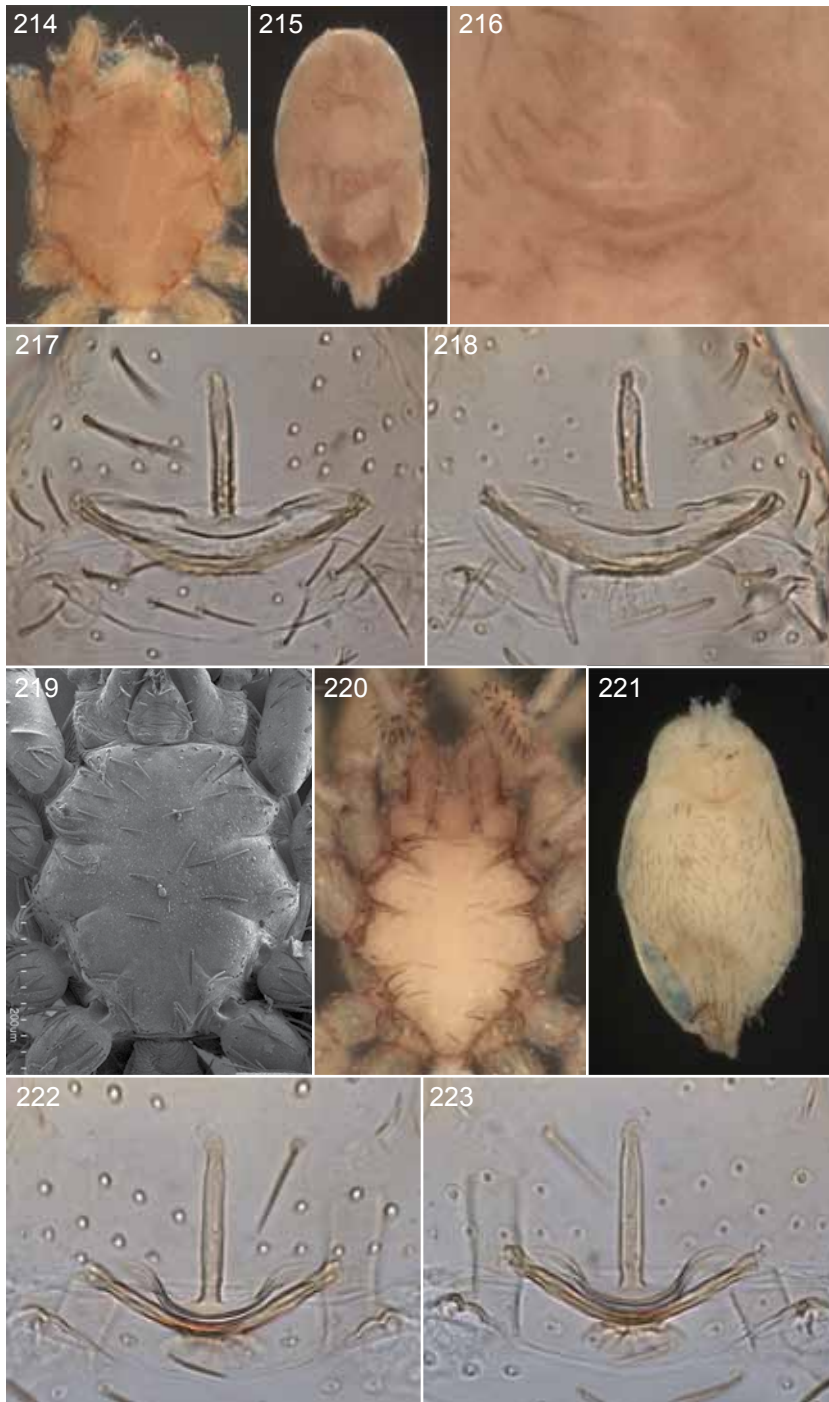
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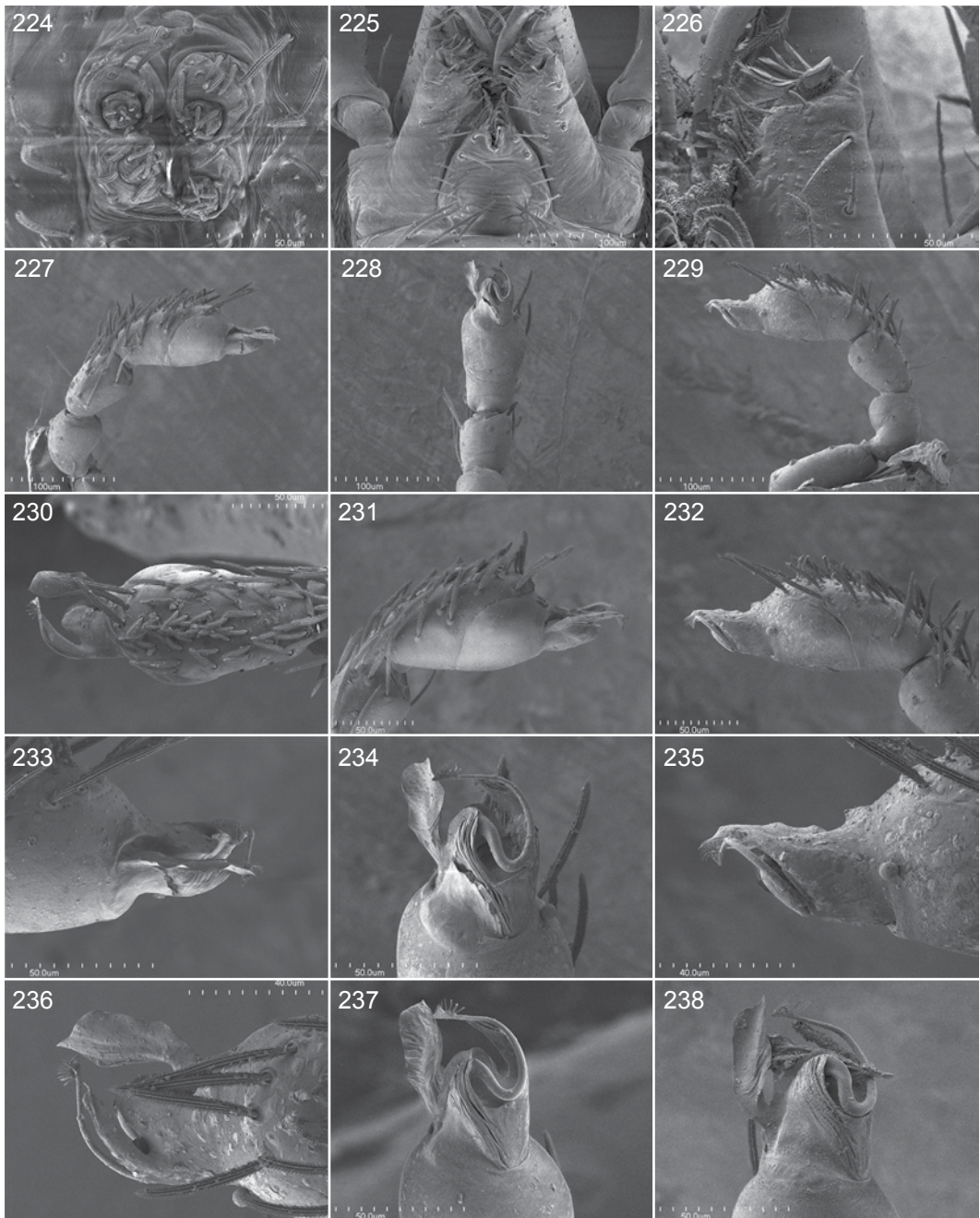
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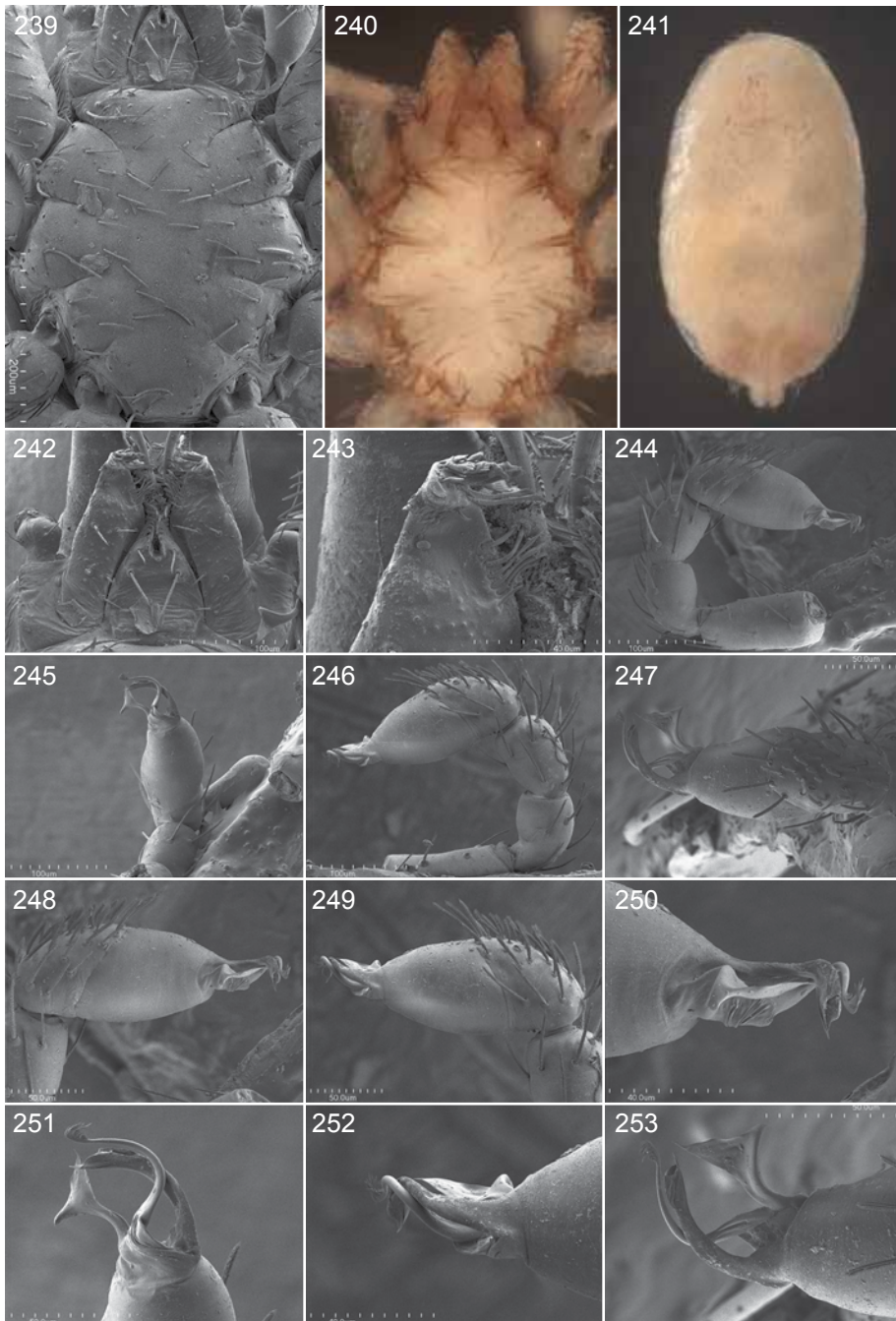
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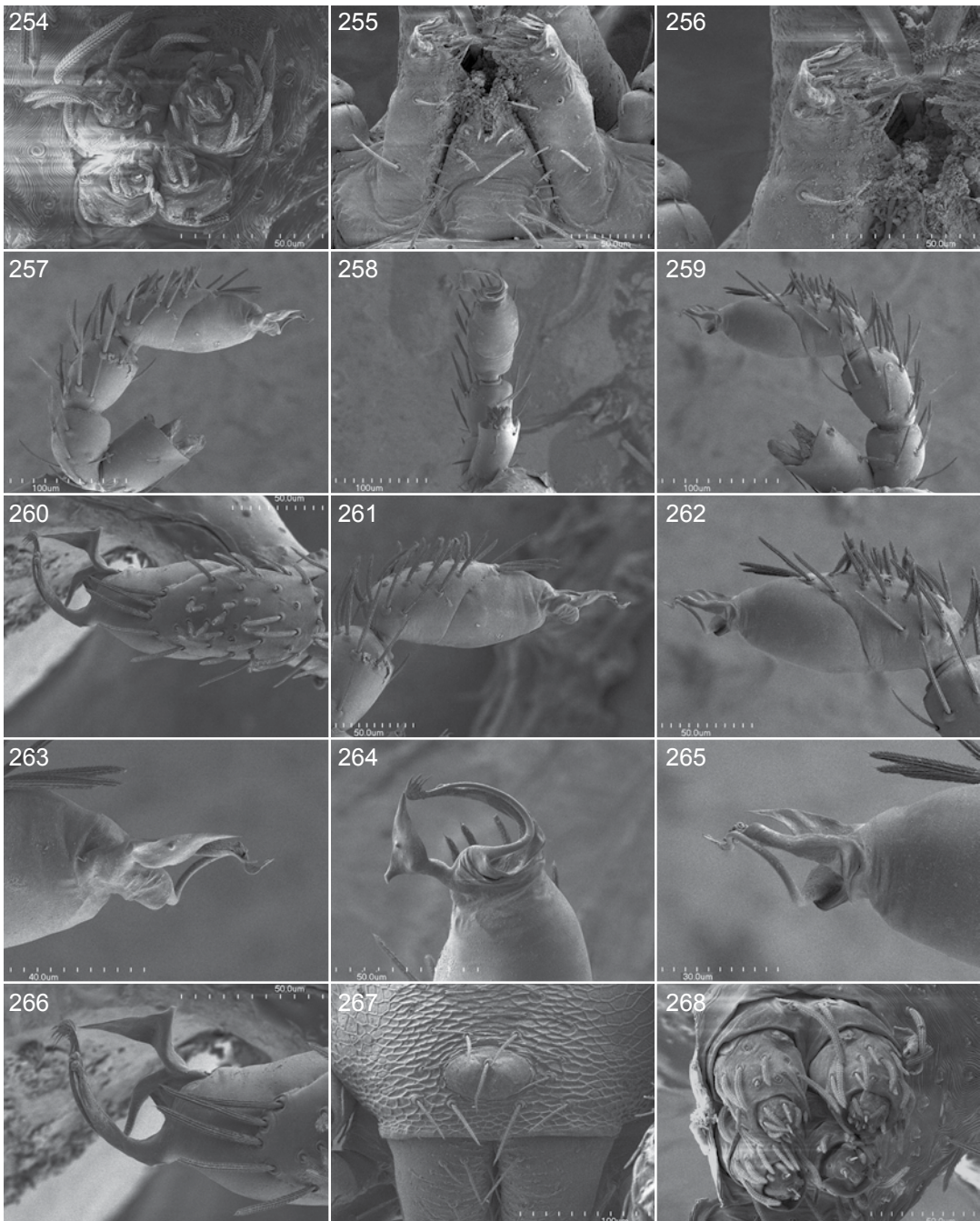
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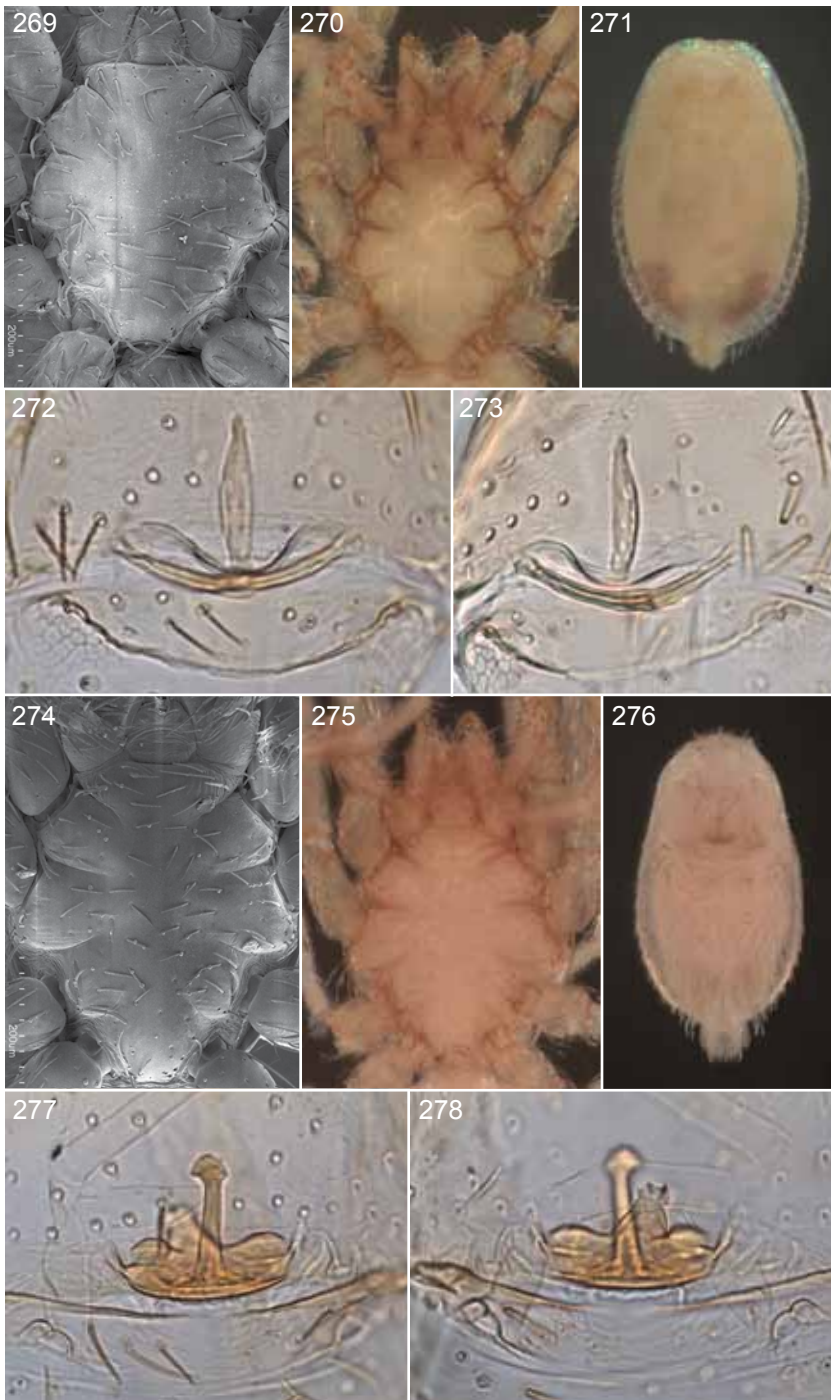
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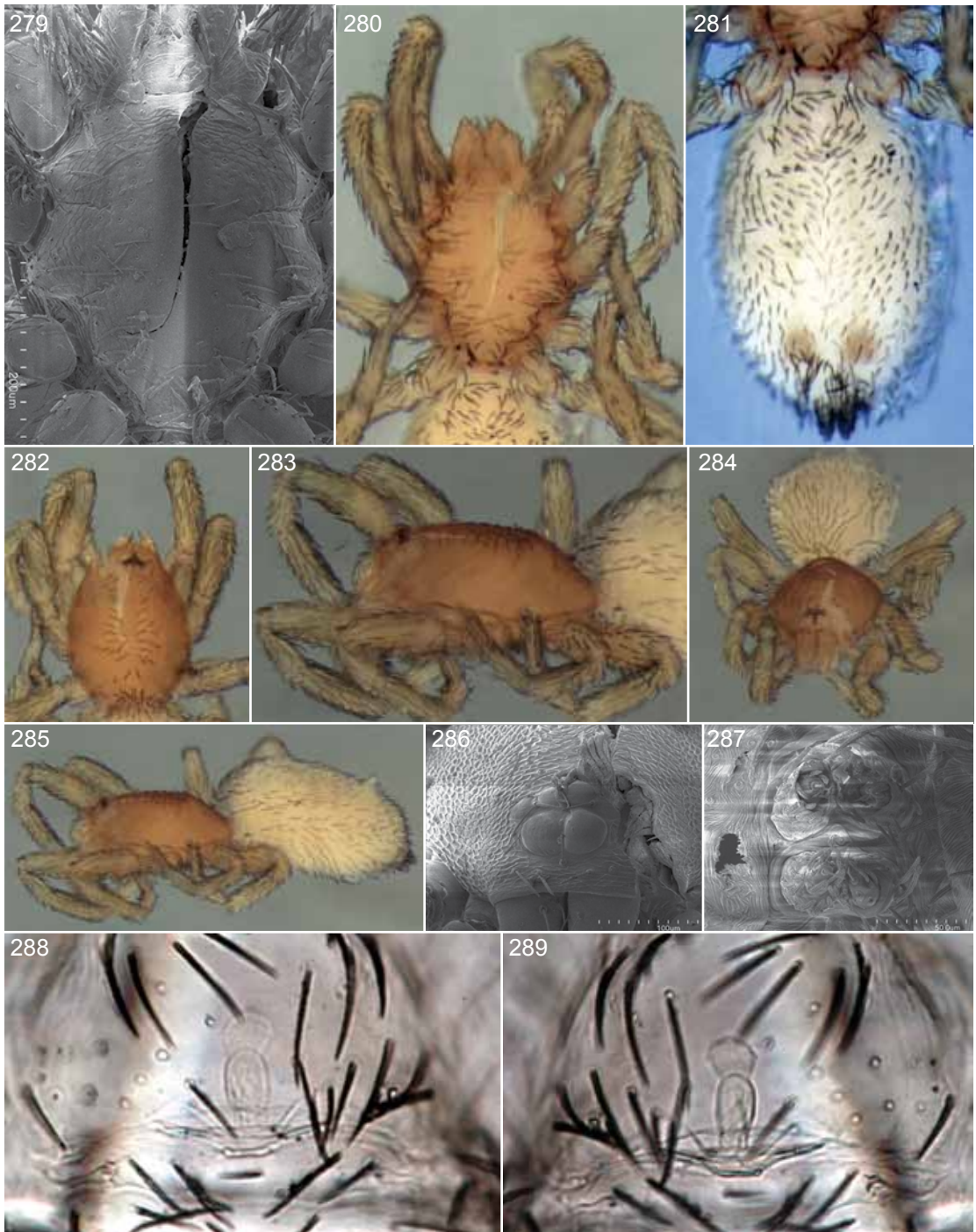
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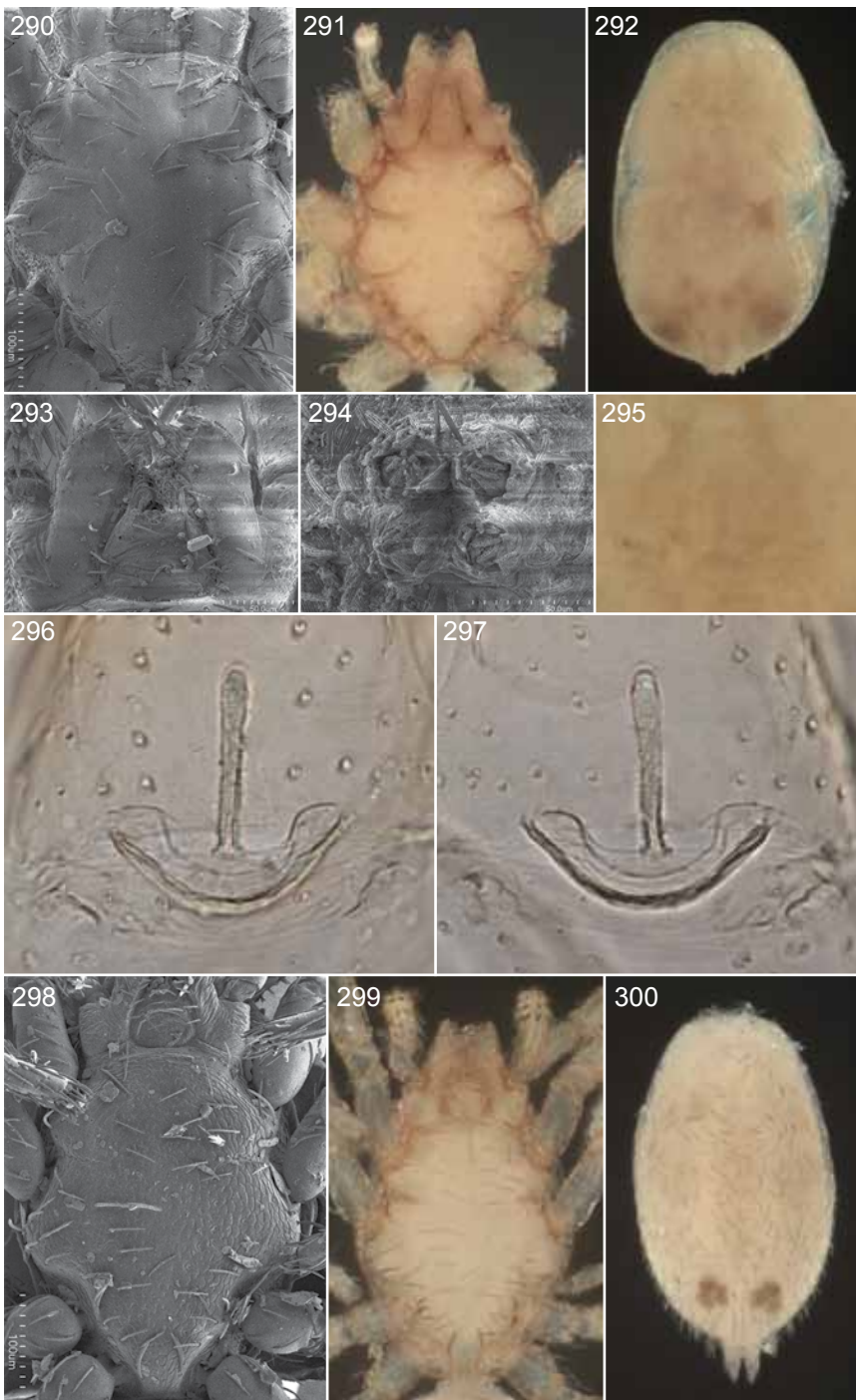
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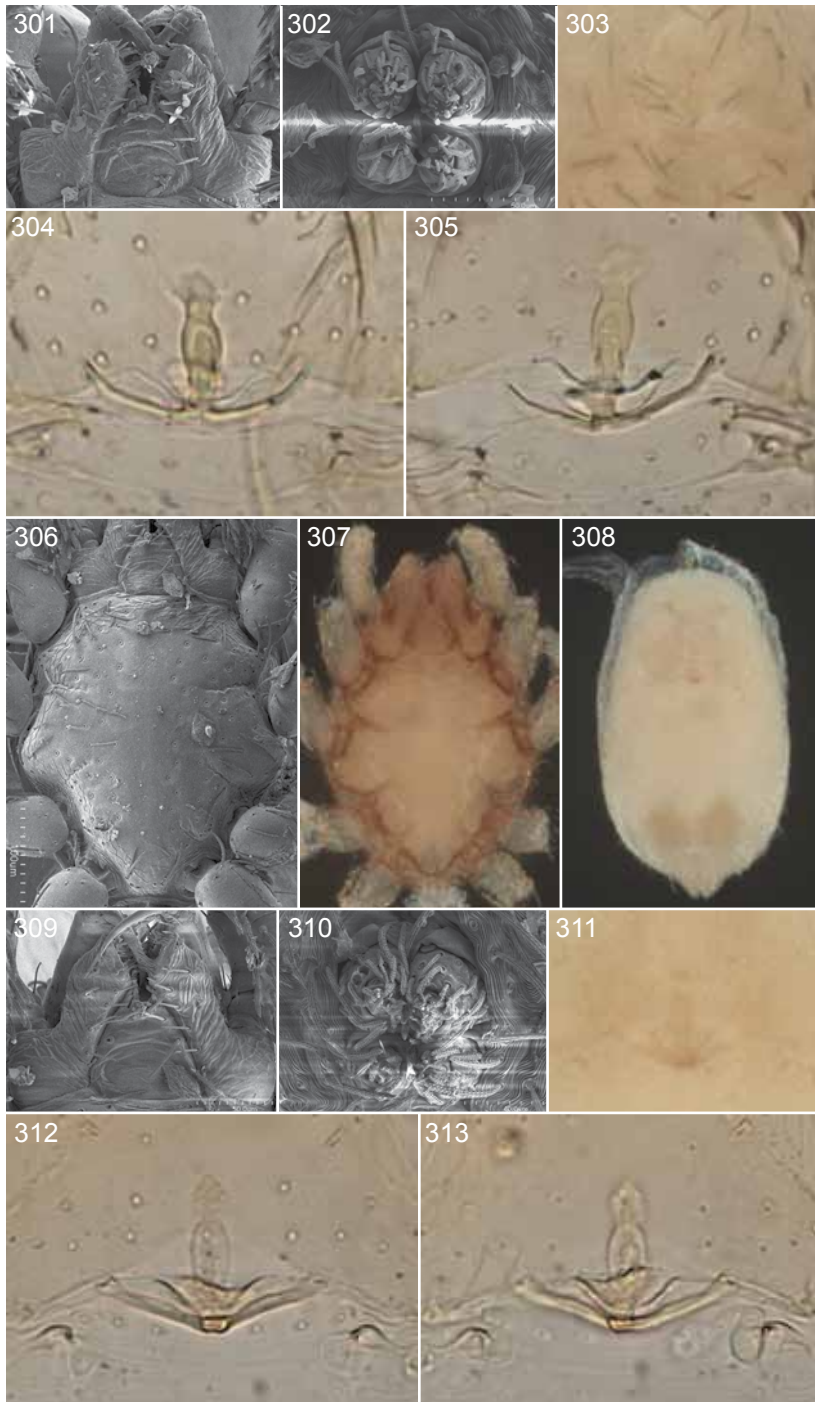
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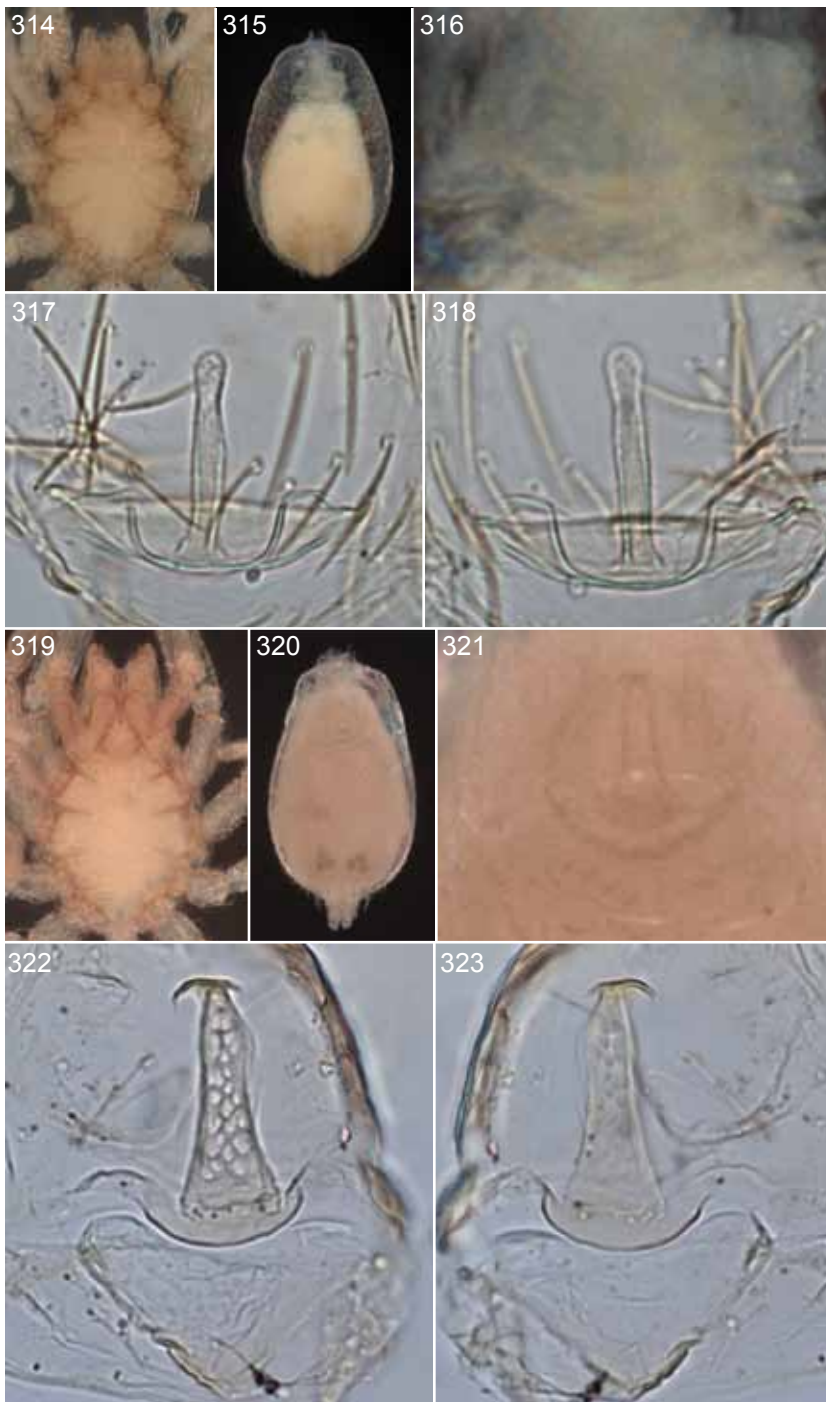
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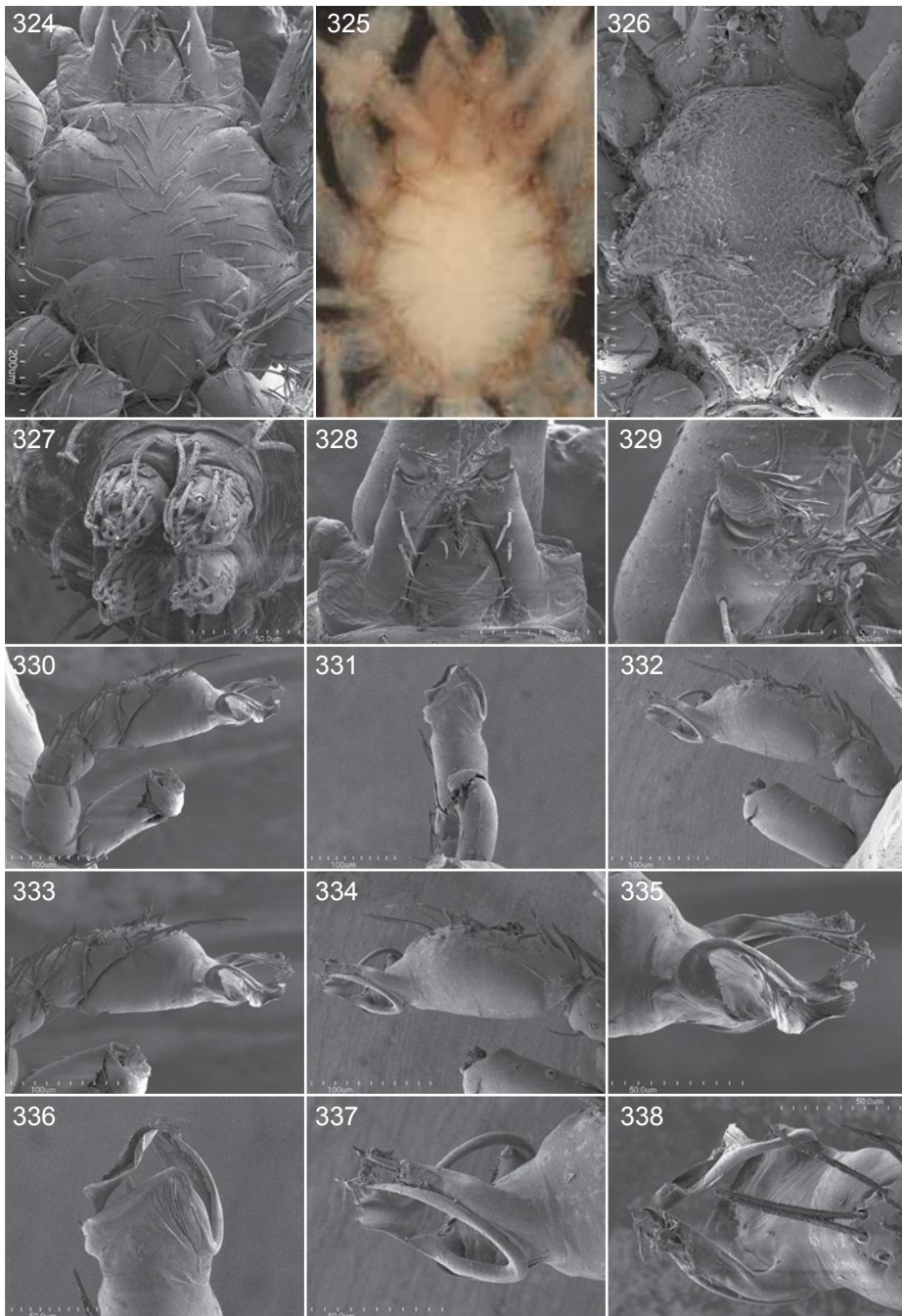
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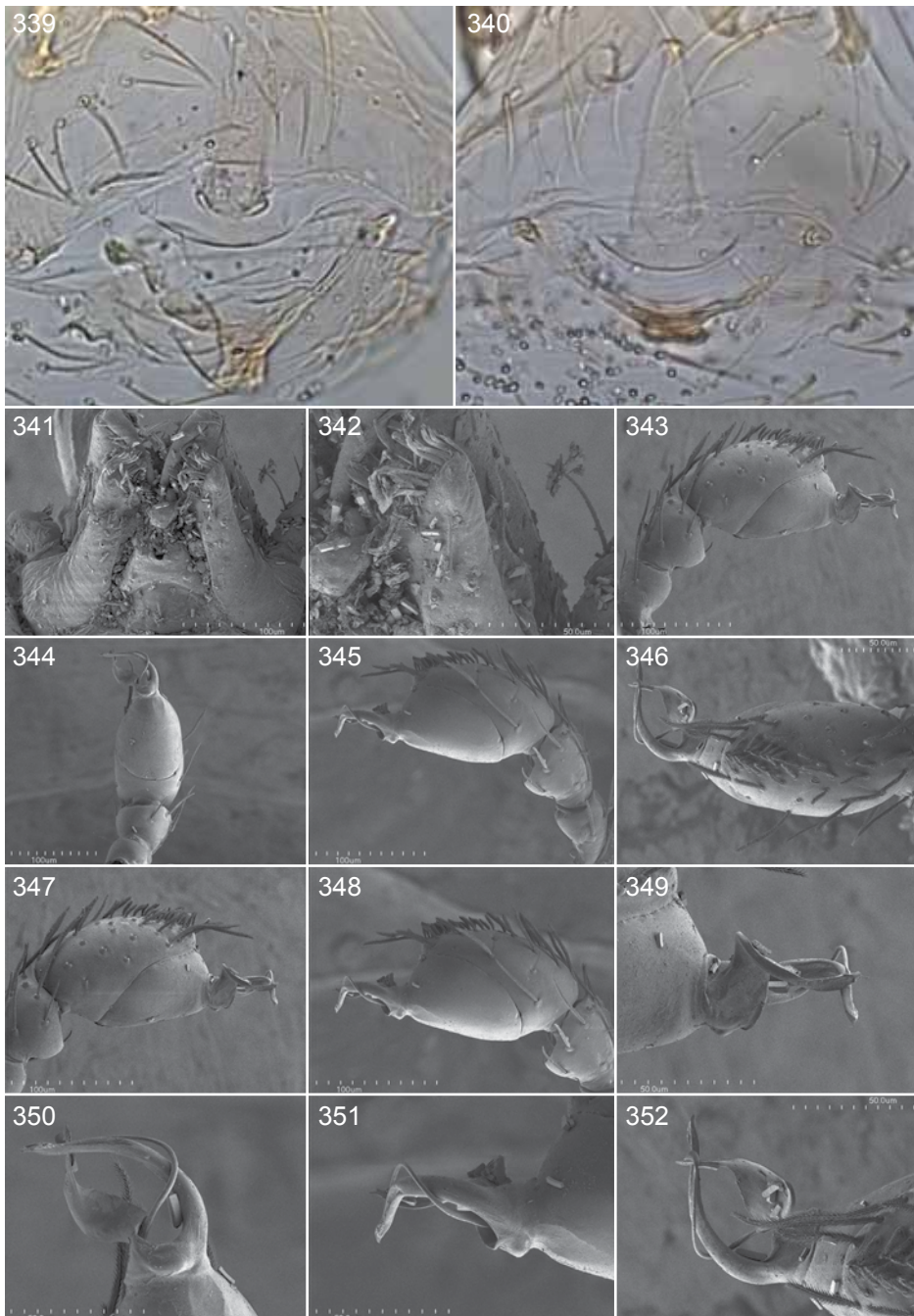
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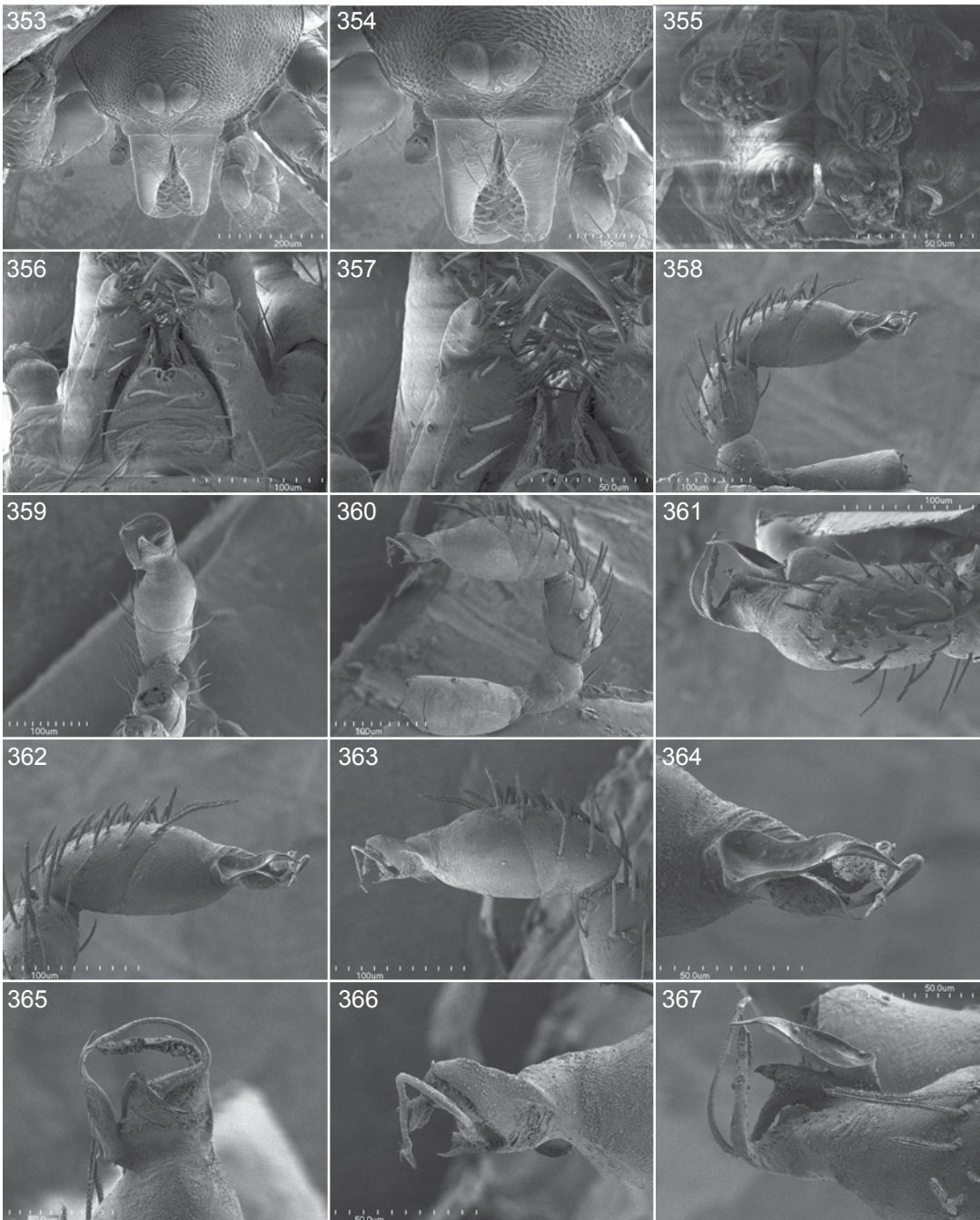
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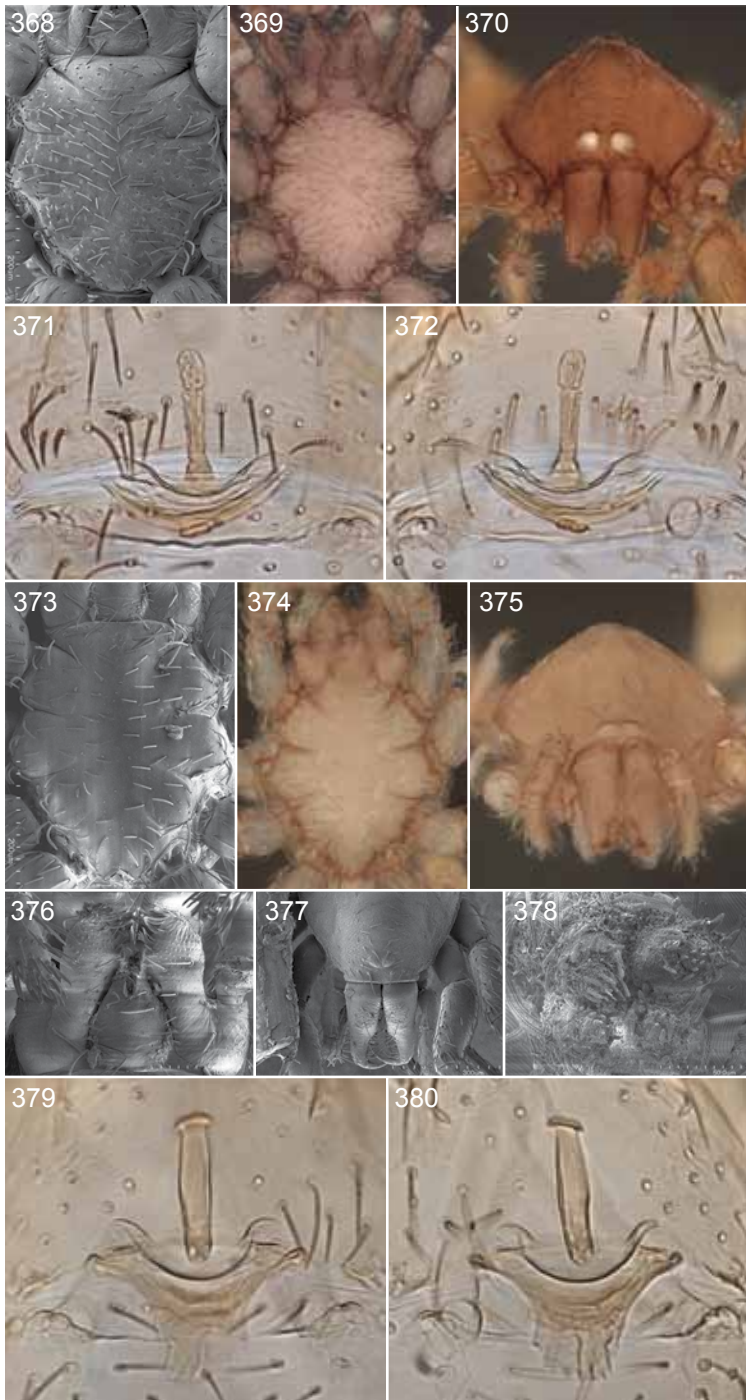
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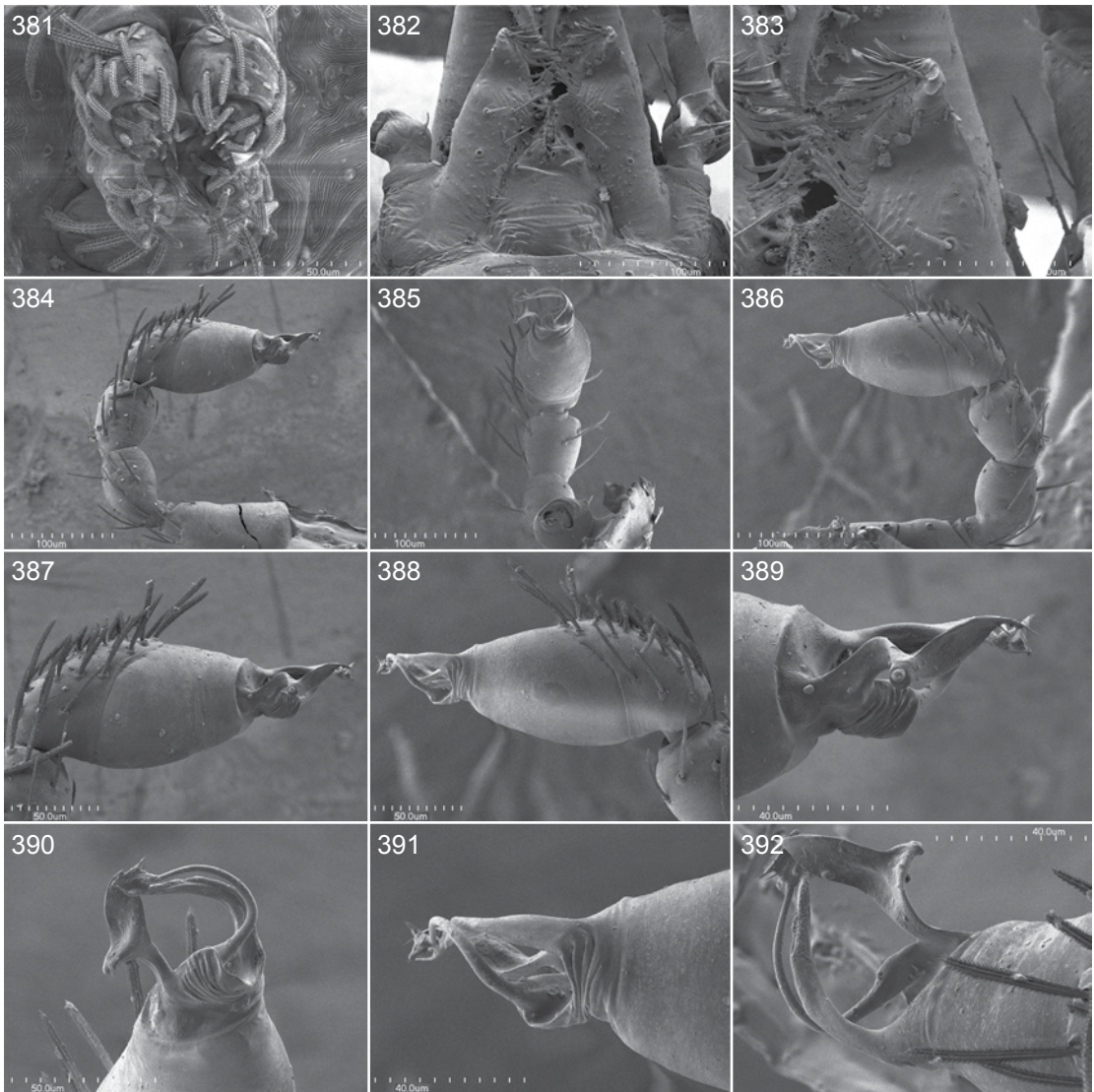
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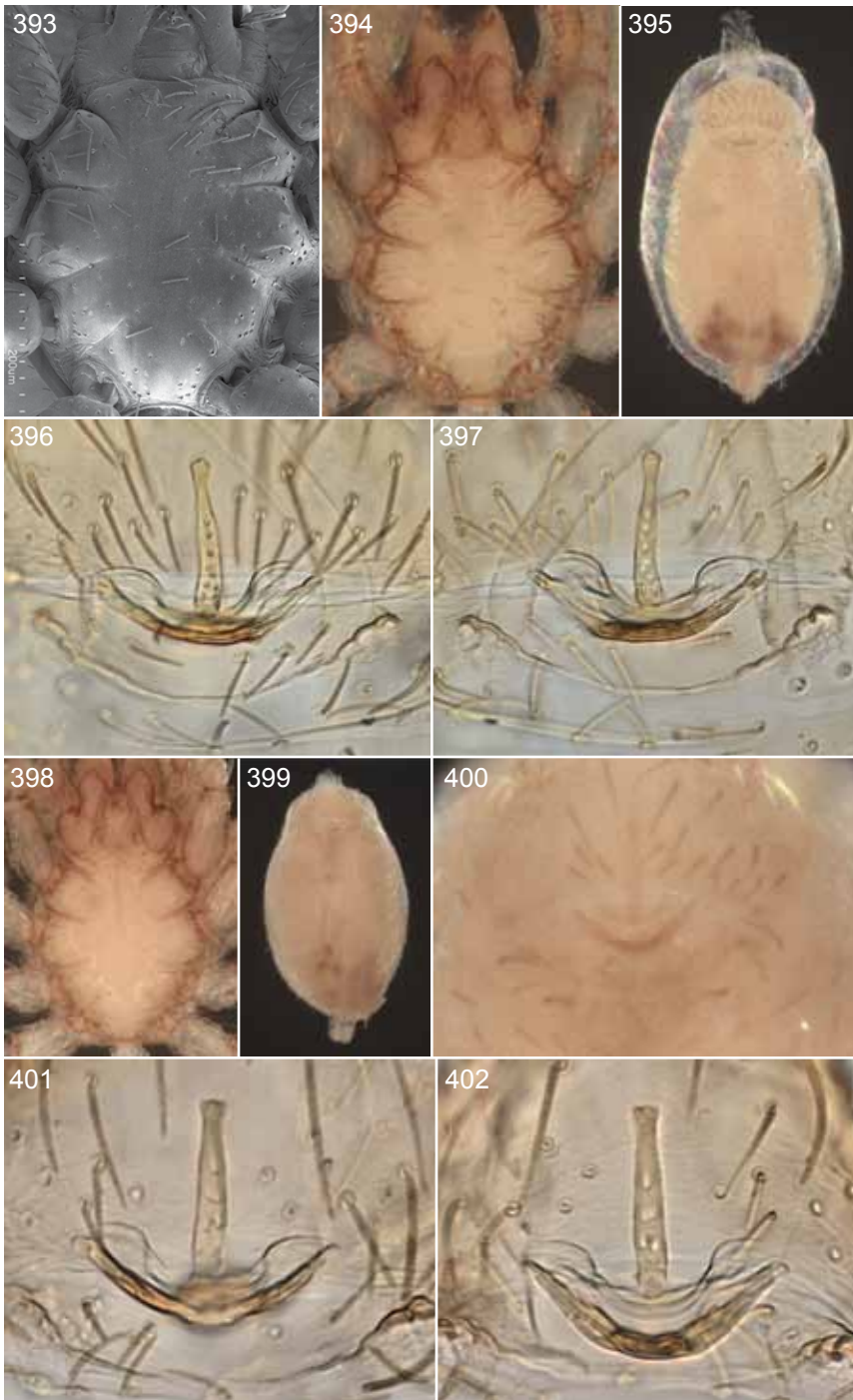
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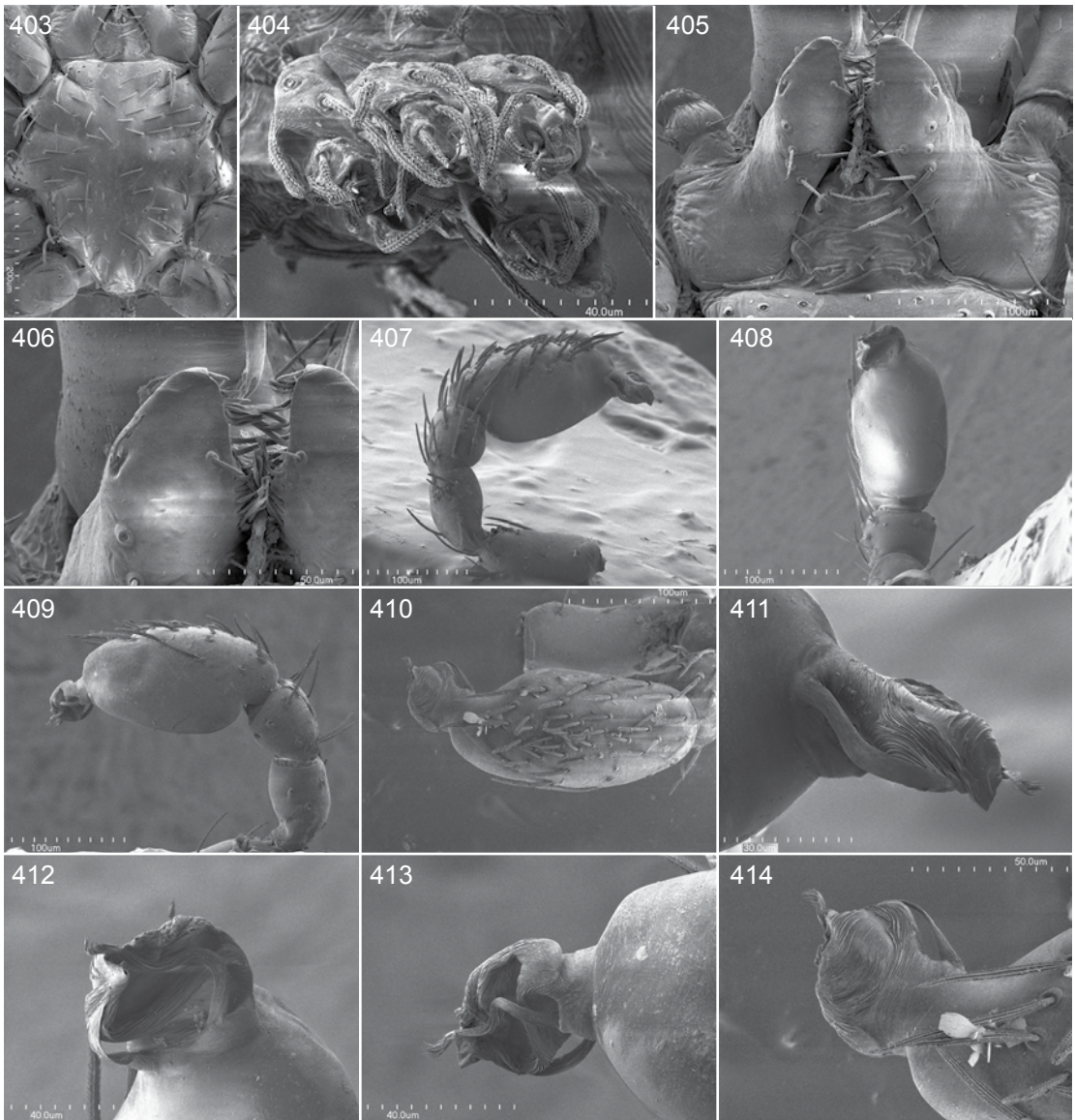
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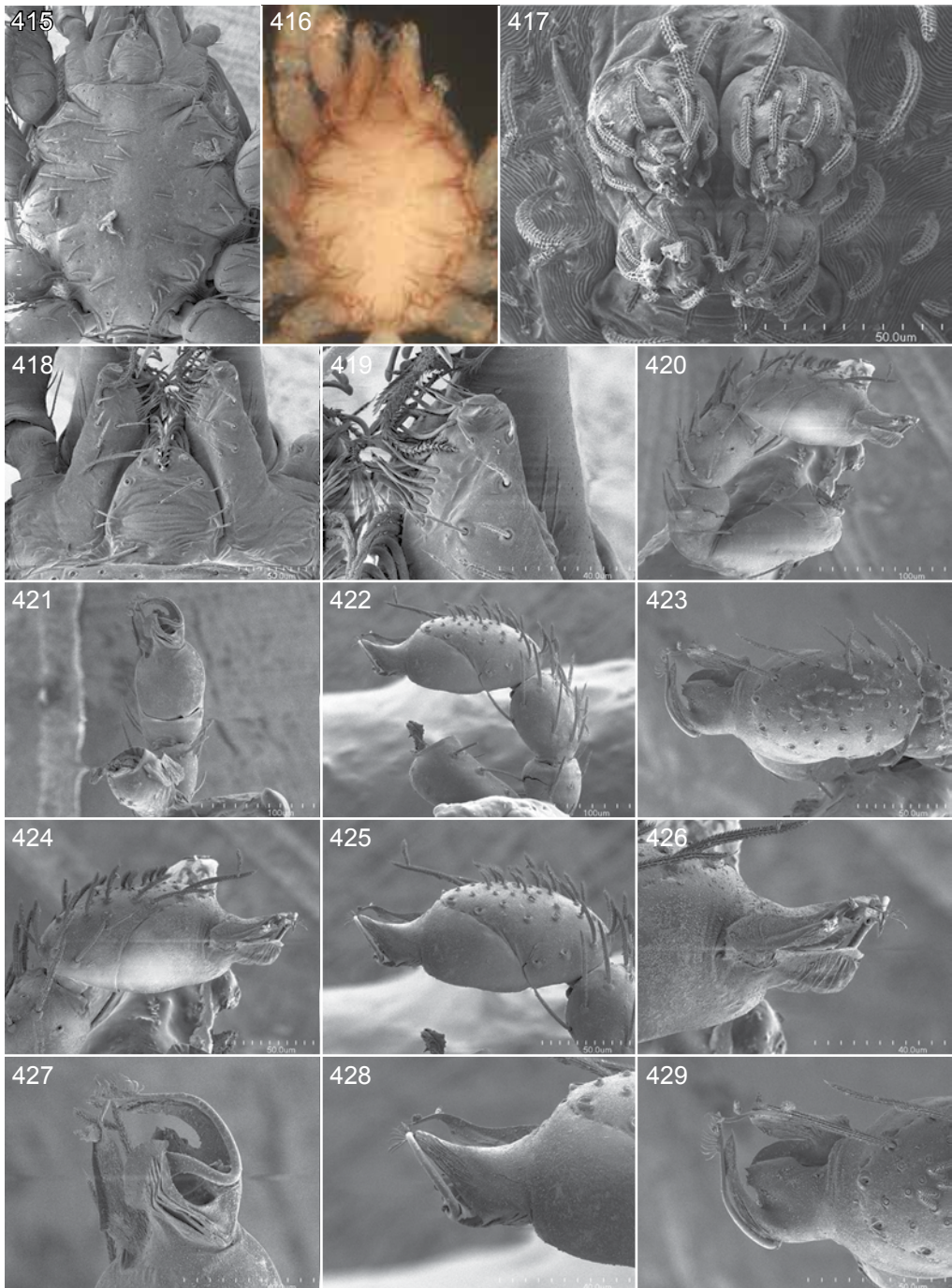
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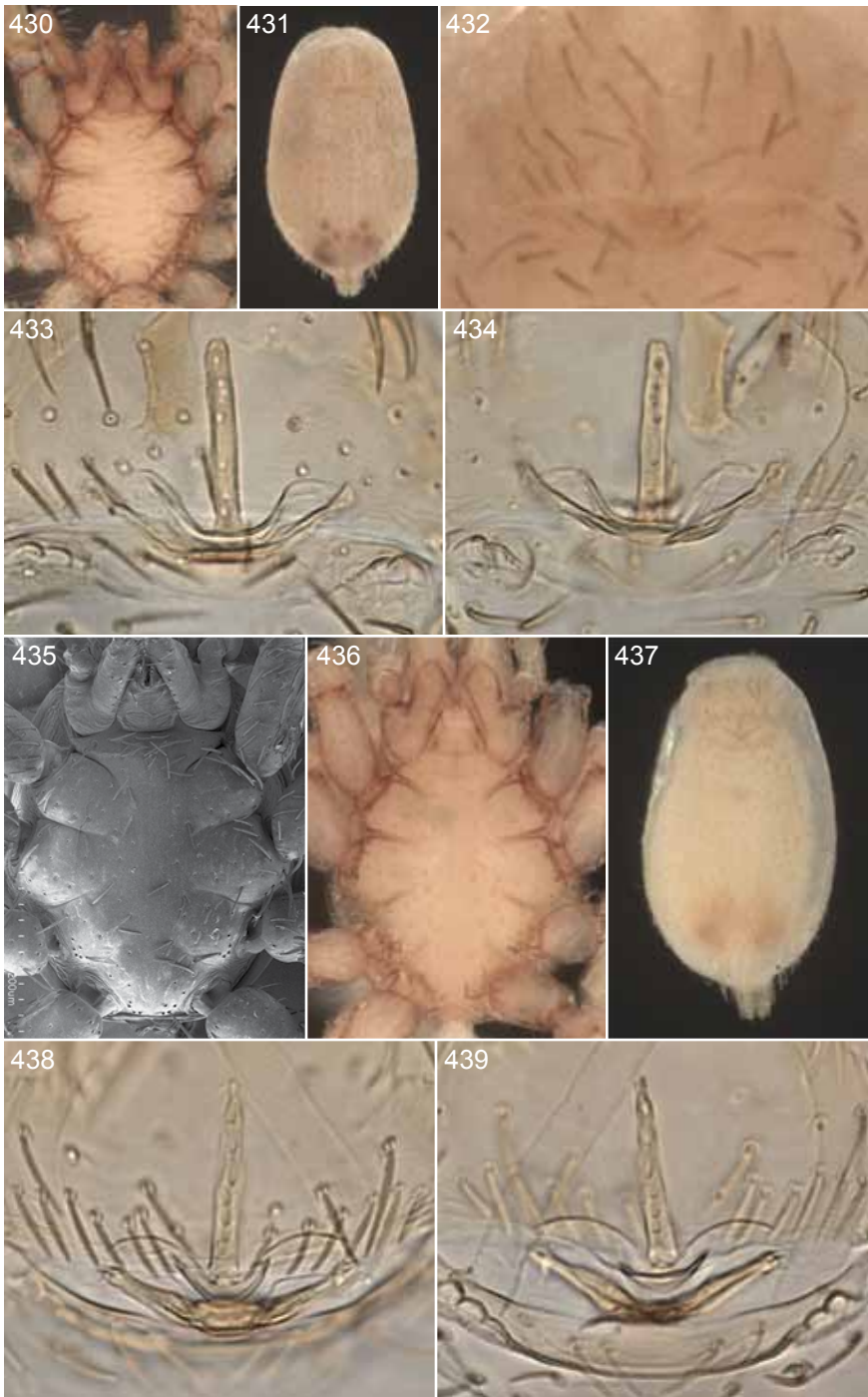
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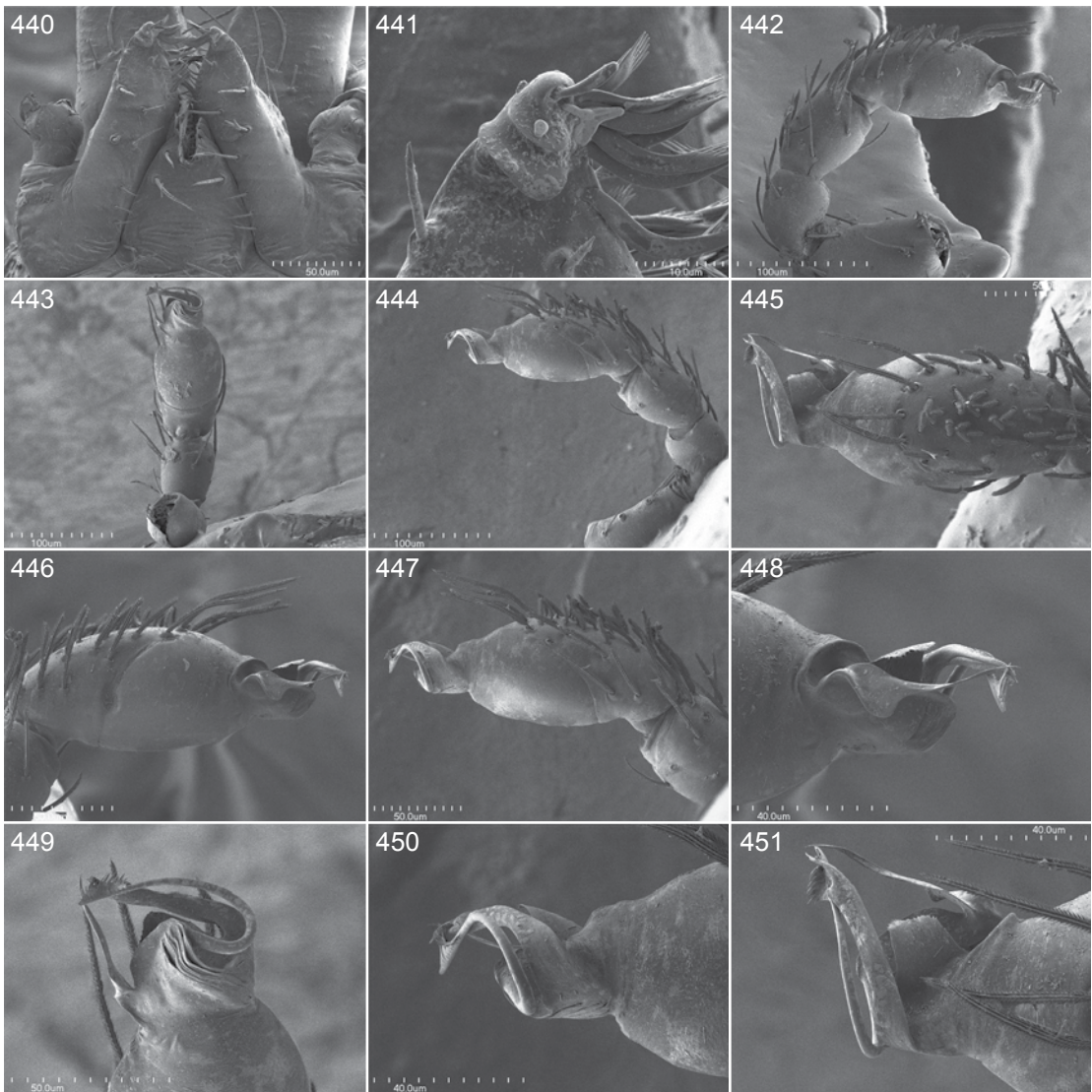
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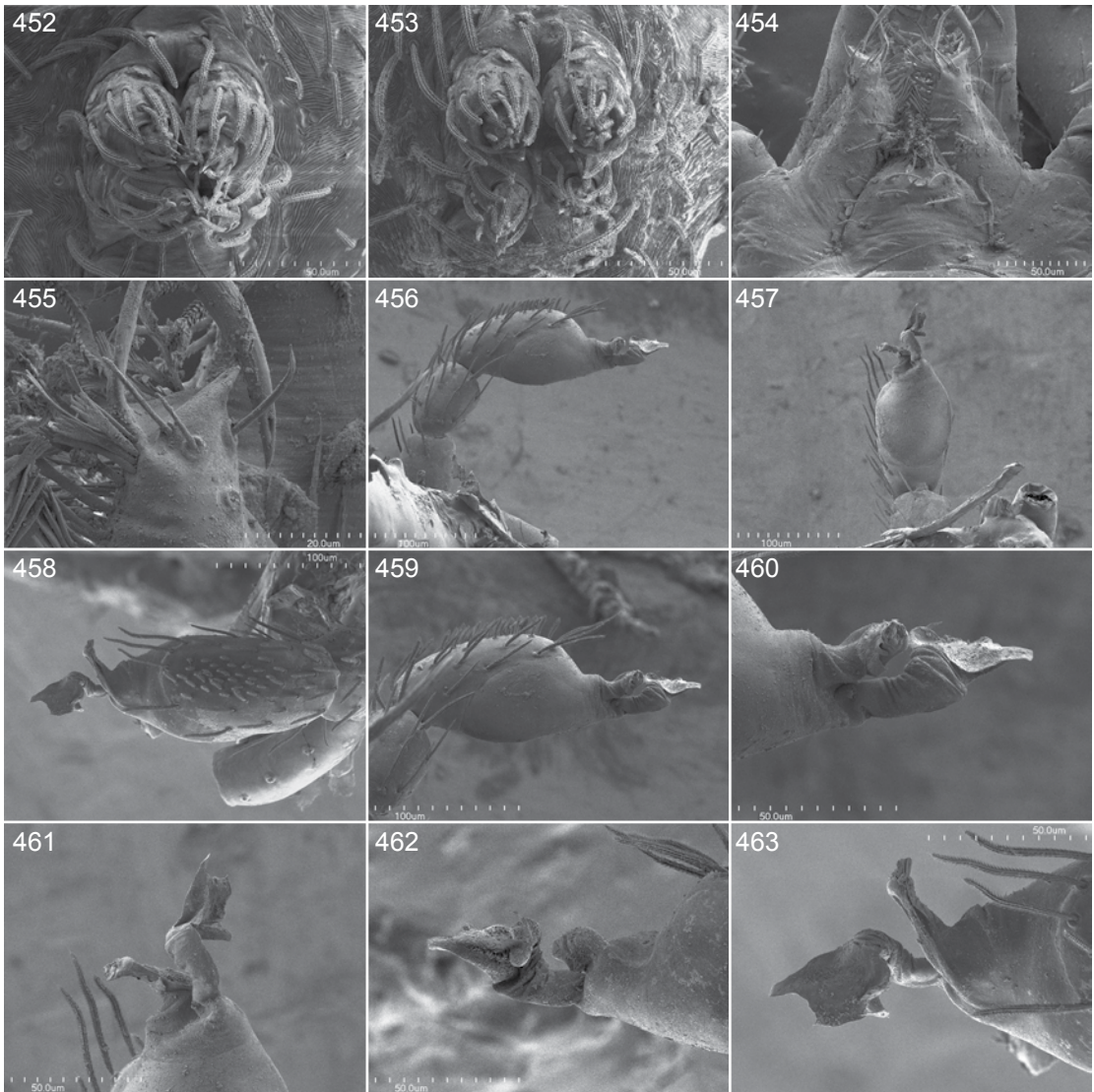
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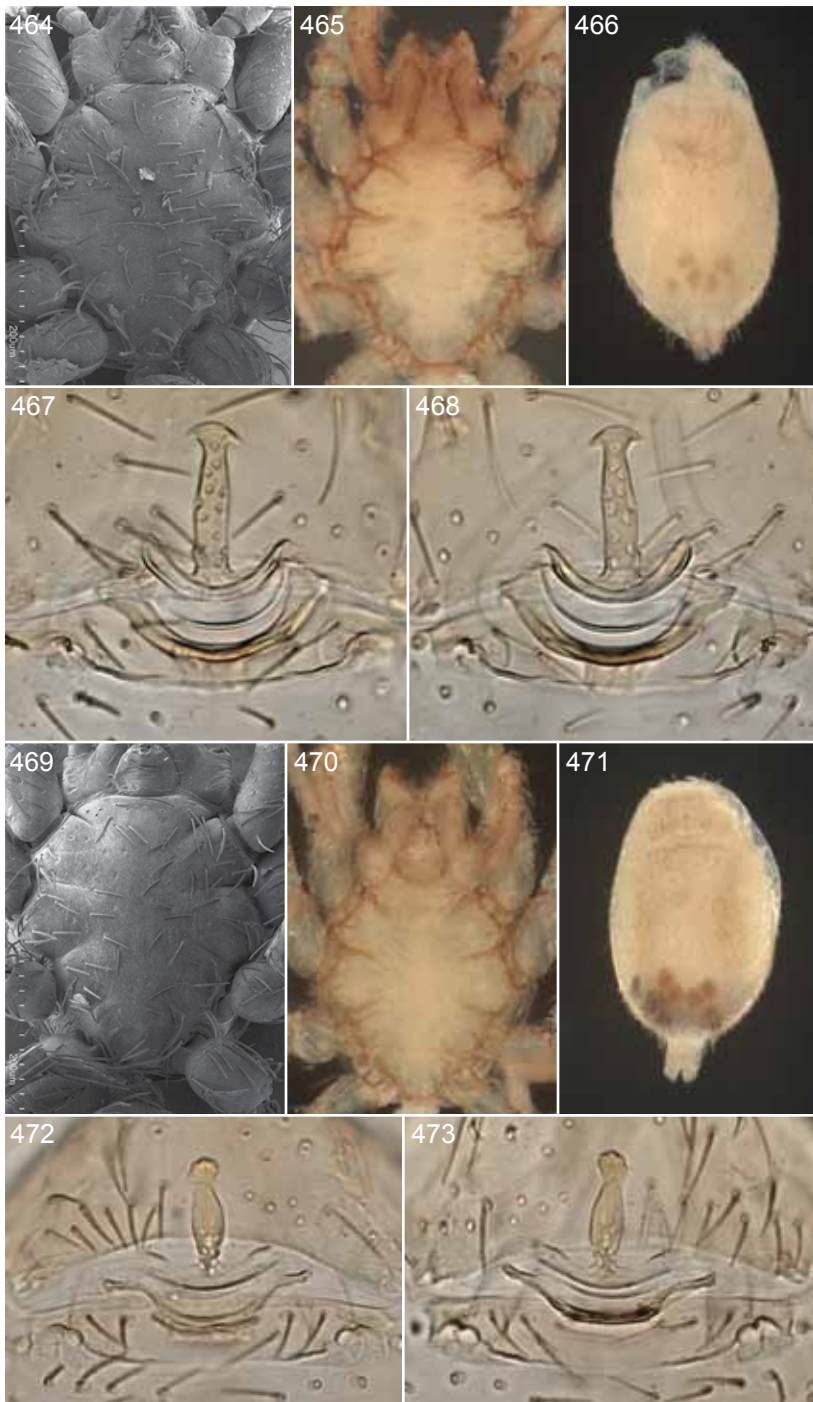
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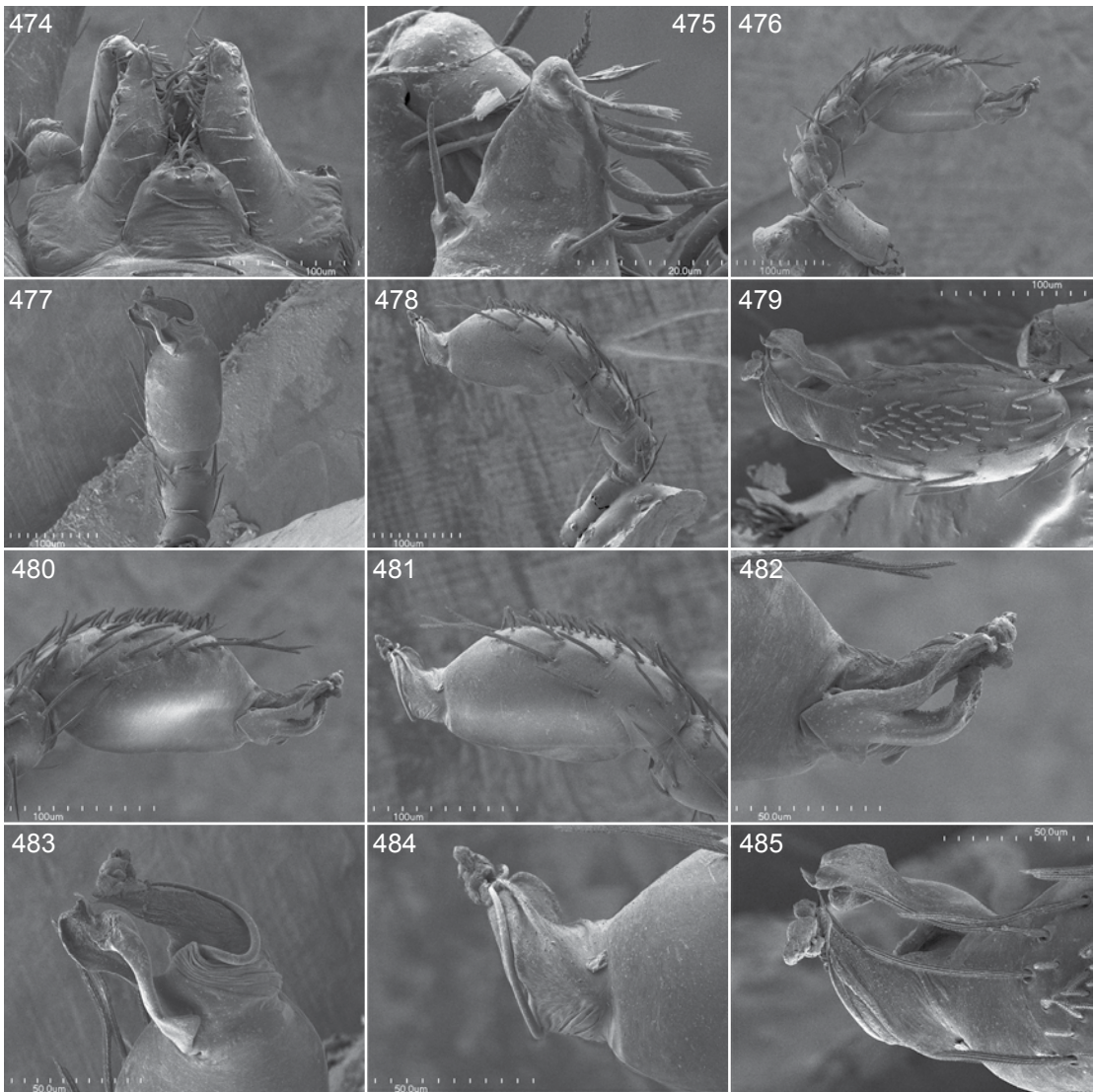
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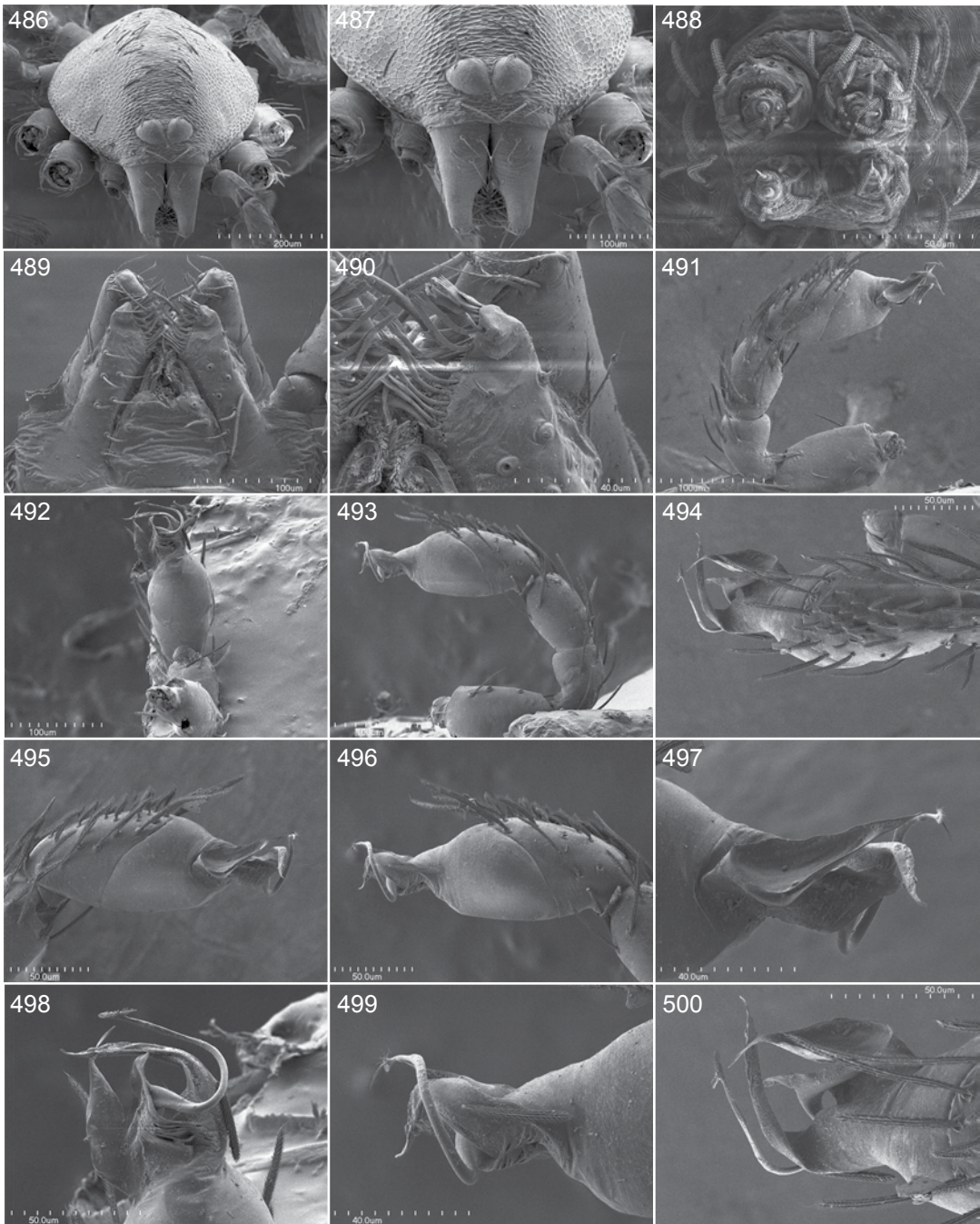
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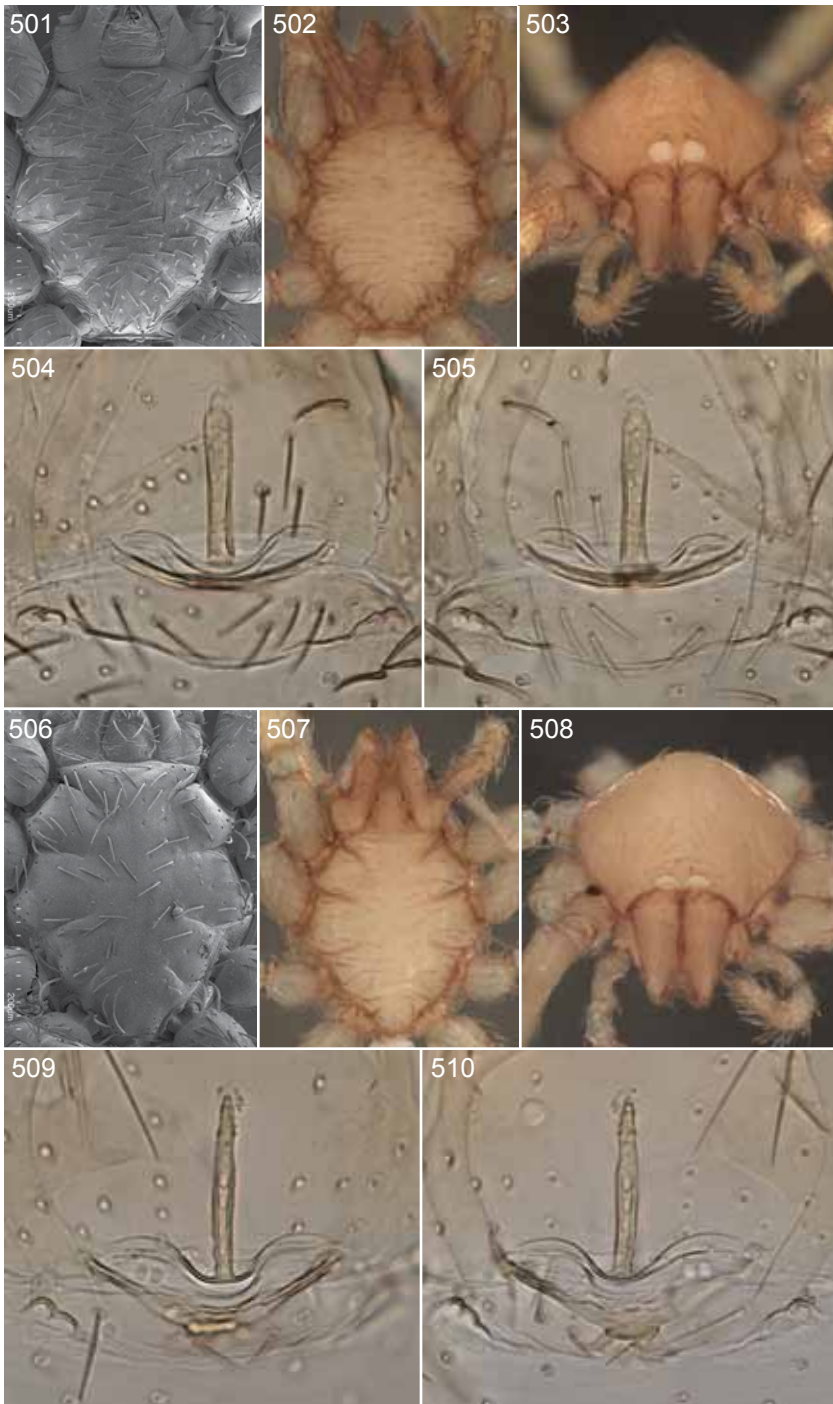
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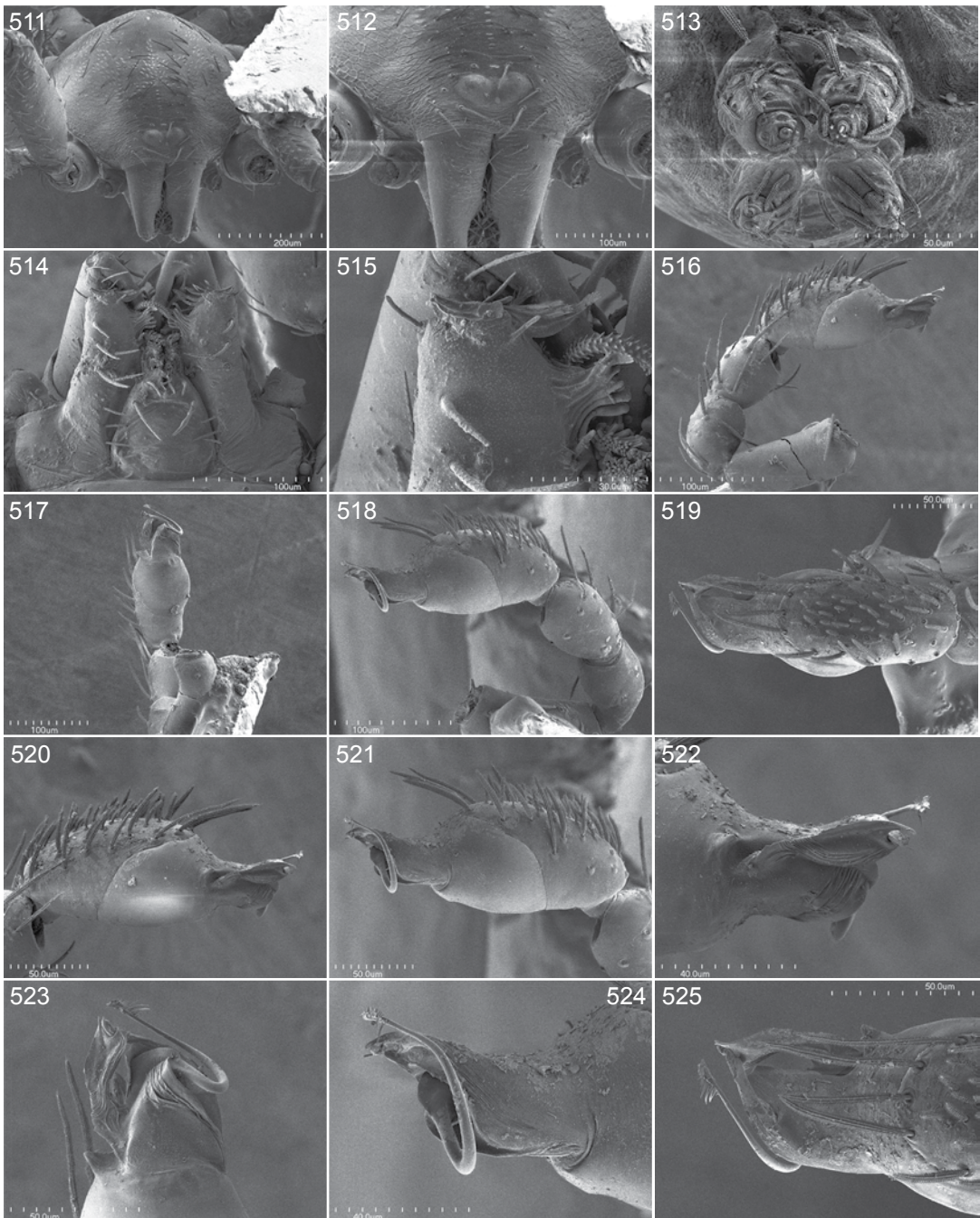
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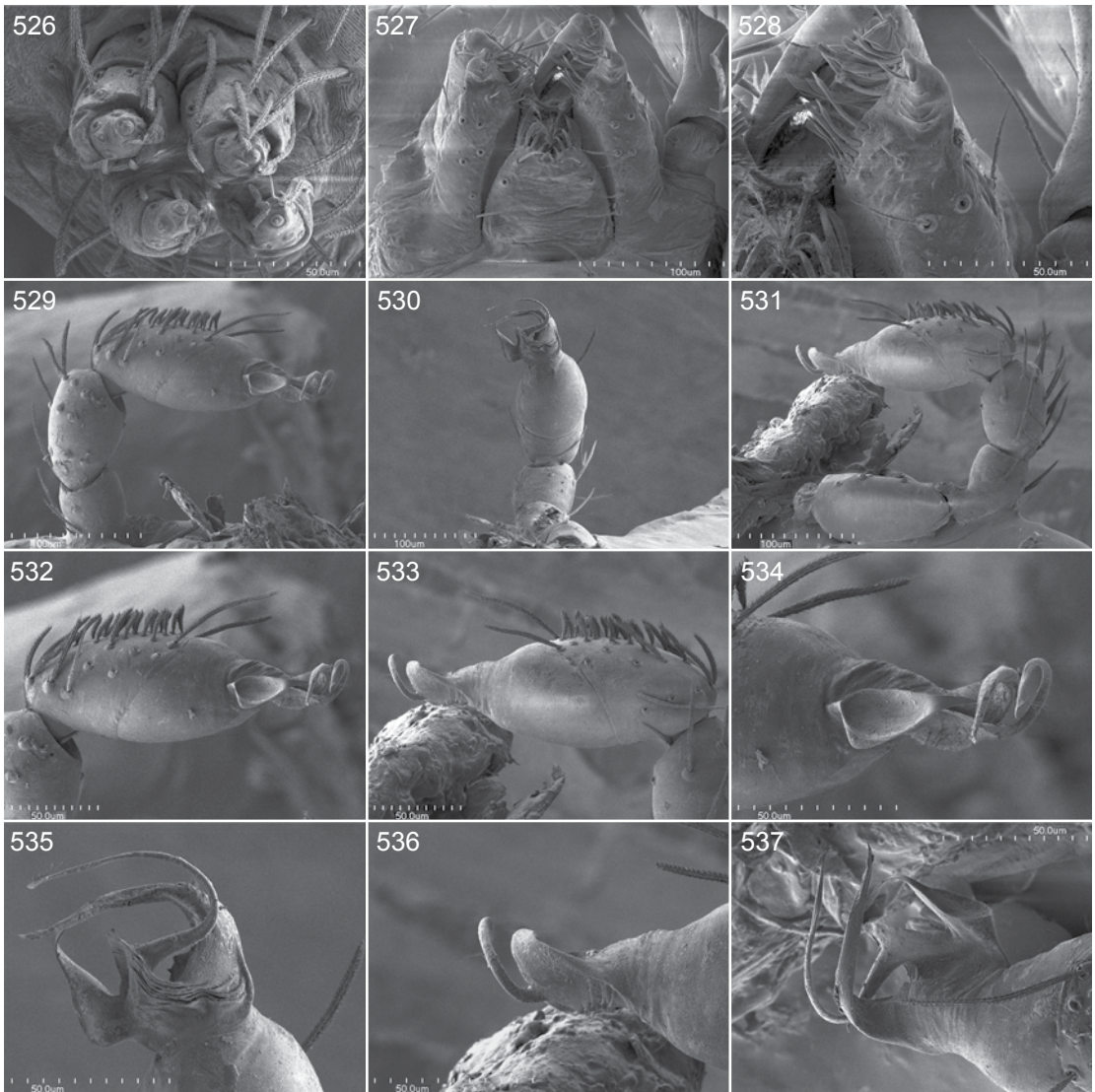
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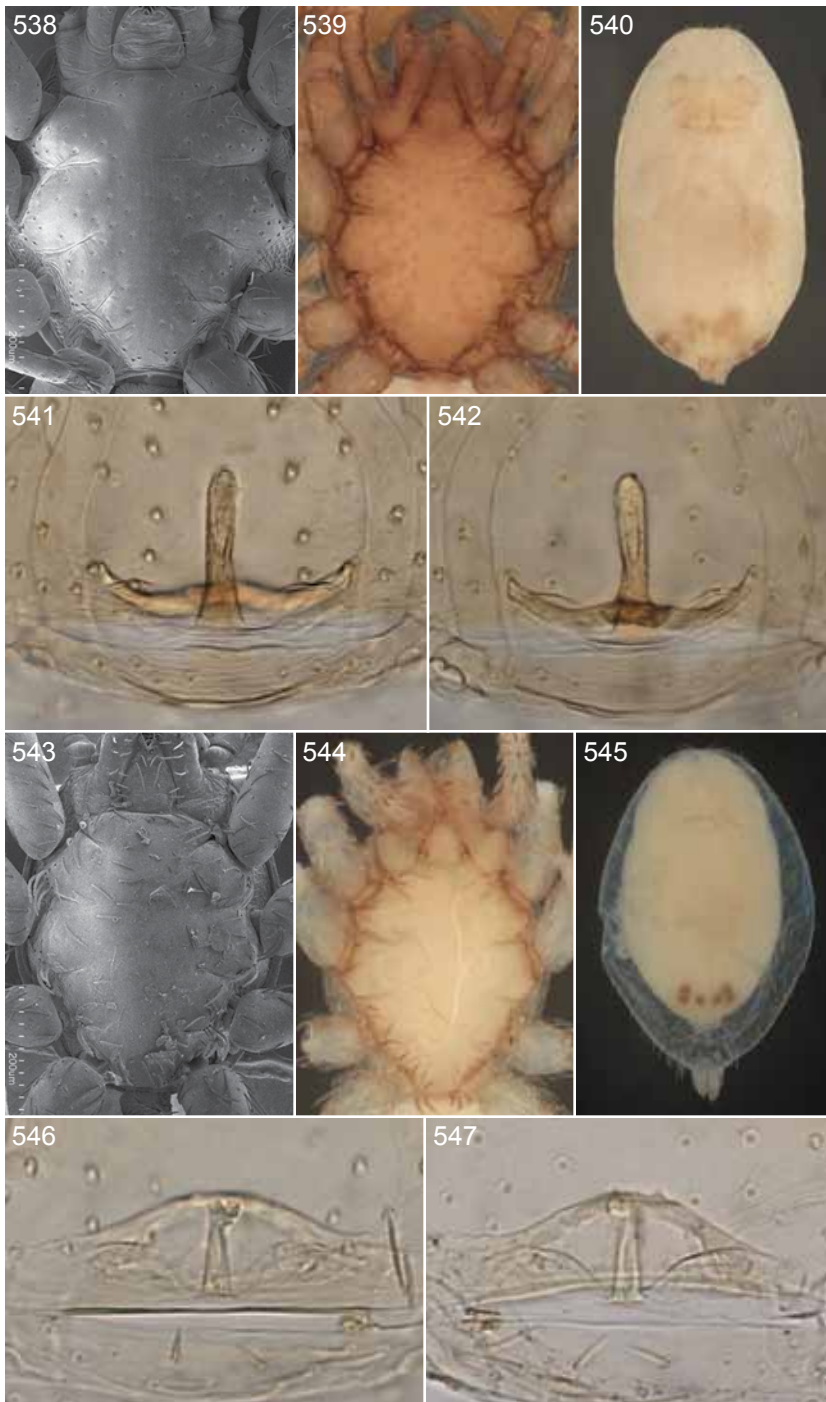
FIGURES 501–510. 501–505. *Reductoonops hedlite*, new species, male (501) and female (502–505). 506–510. *R. molleturo*, new species, male (506) and female (507–510). **501, 502, 506, 507.** Sternum, ventral view. **503, 508.** Carapace, anterior view. **504, 509.** Genitalia, ventral view. **505, 510.** Same, dorsal view.



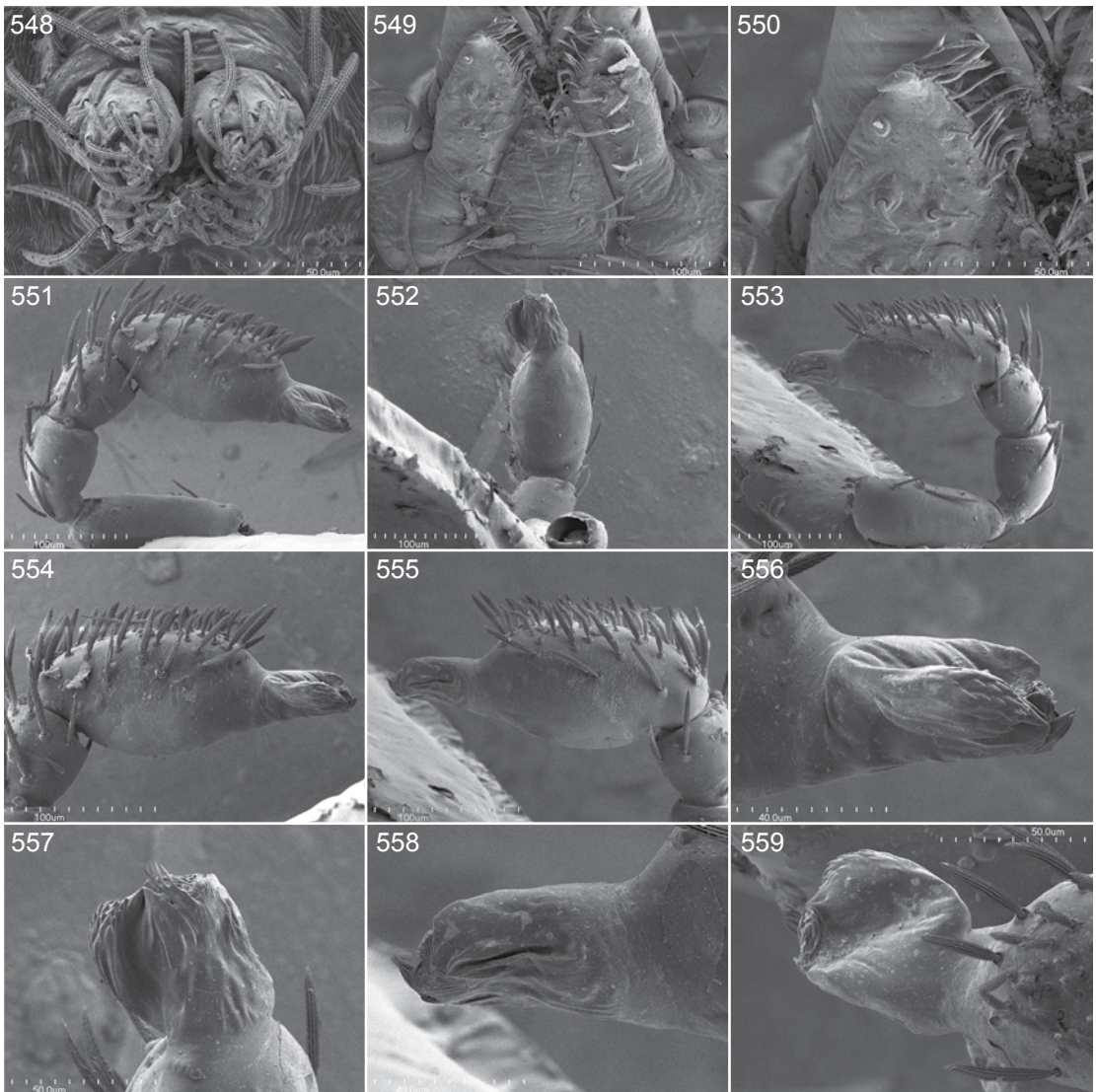
FIGURES 511–525. *Reductoonops molleturo*, new species, male. **511.** Carapace, anterior view. **512.** Eye group, anterior view. **513.** Spinnerets, posterior view. **514.** Labium and endites, ventral view. **515.** Tip of endite, ventral view. **516.** Palp, prolateral view. **517.** Same, ventral view. **518.** Same, retrolateral view. **519.** Same, dorsal view. **520.** Palpal bulb, prolateral view. **521.** Same, retrolateral view. **522.** Embolus, prolateral view. **523.** Same, ventral view. **524.** Same, retrolateral view. **525.** Same, dorsal view.



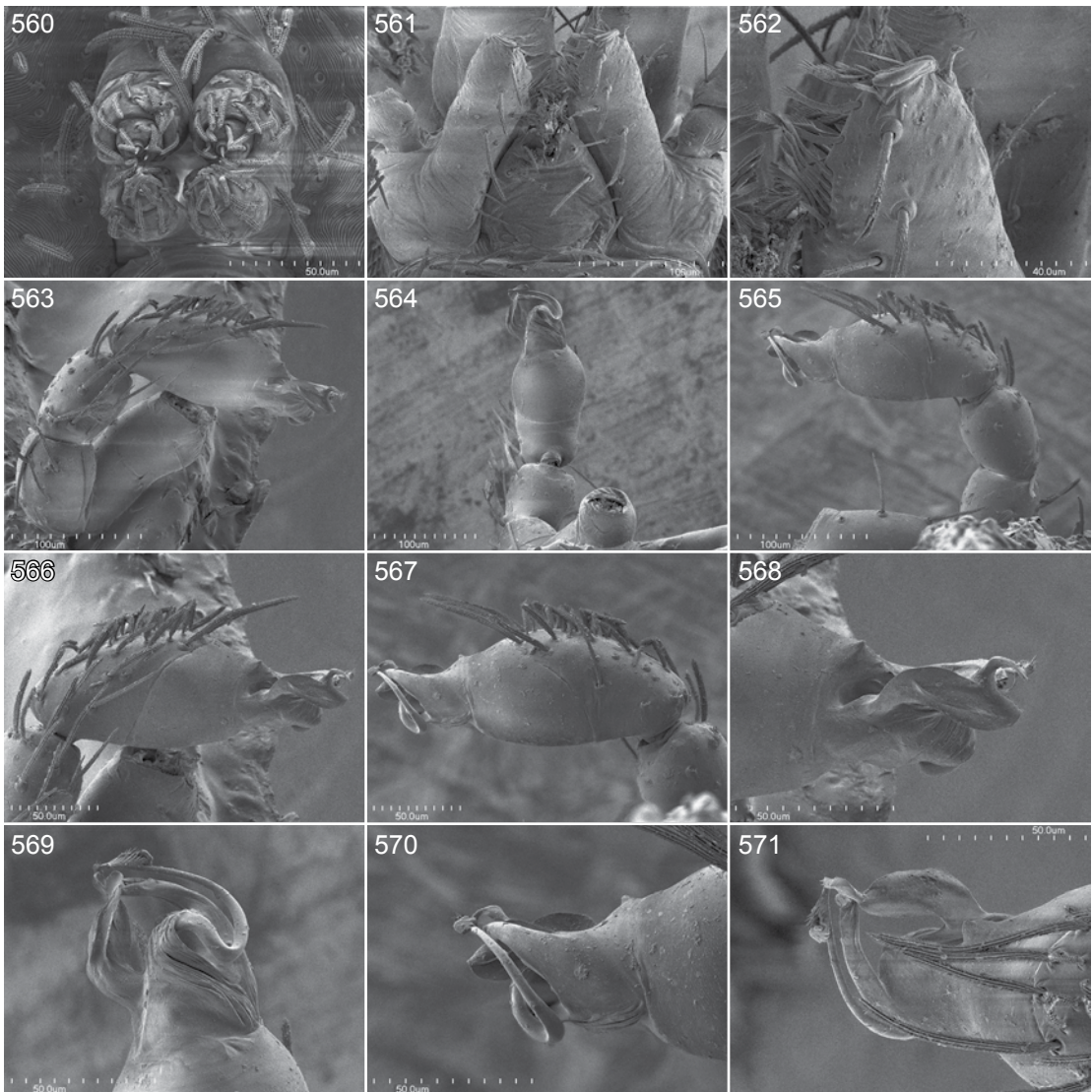
FIGURES 526–537. *Reductoonops celica*, new species, male. 526. Spinnerets, posterior view. 527. Labium and endites, ventral view. 528. Tip of endite, ventral view. 529. Palp, prolateral view. 530. Same, ventral view. 531. Same, retrolateral view. 532. Palpal bulb, prolateral view. 533. Same, retrolateral view. 534. Embolus, prolateral view. 535. Same, ventral view. 536. Same, retrolateral view. 537. Same, dorsal view.



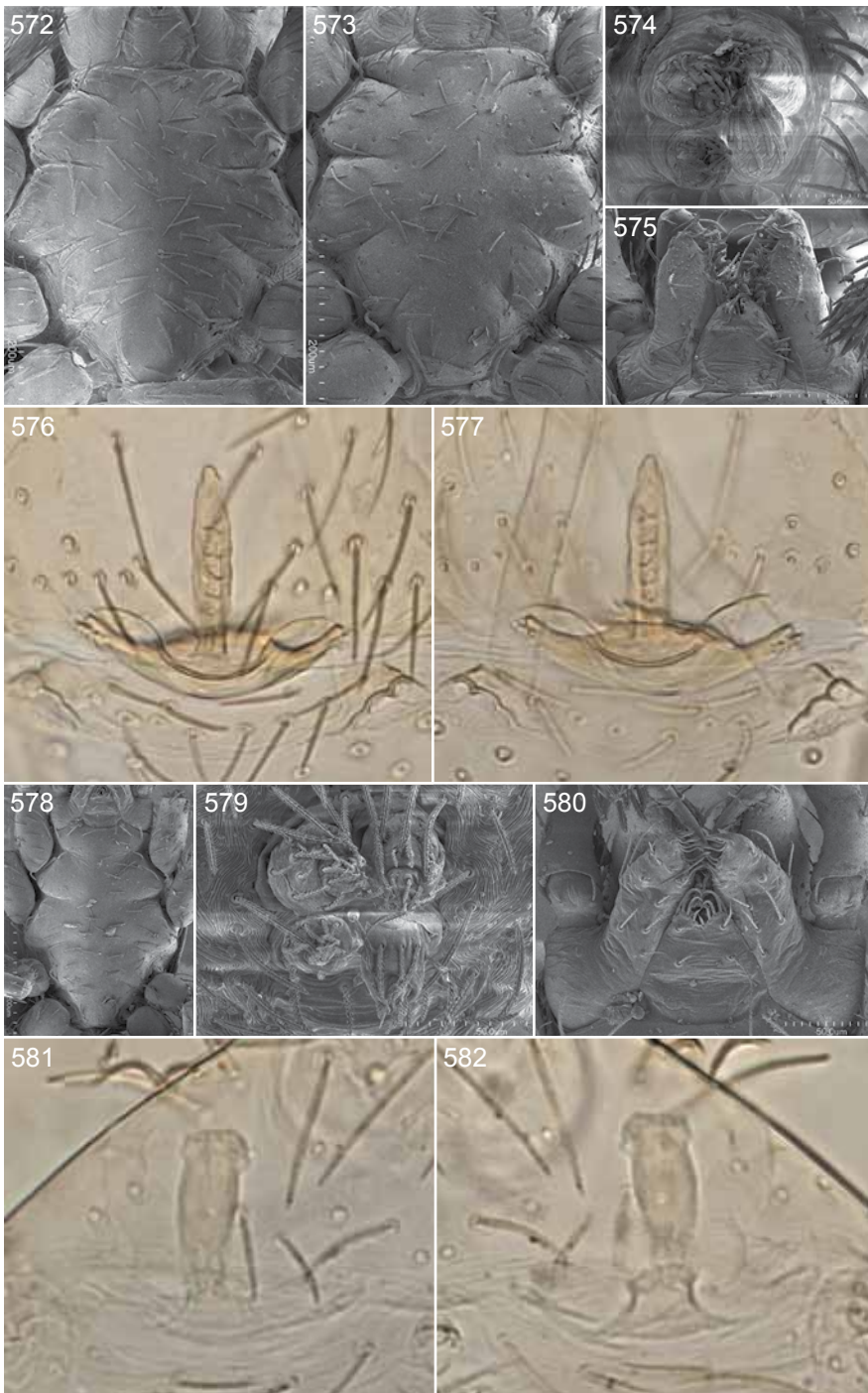
FIGURES 538–547. 538–542. *Reductoonops celica*, new species, male (538) and female (539–542). 543–547. *R. pinta*, new species, male (543) and female (544–547). 538, 539, 543, 544. Sternum, ventral view. 540, 545. Abdomen, ventral view. 541, 546. Genitalia, ventral view. 542, 547. Same, dorsal view.



FIGURES 548–559. *Reductoonops pinta*, new species, male. 548. Spinnerets, posterior view. 549. Labium and endites, ventral view. 550. Tip of endite, ventral view. 551. Palp, prolateral view. 552. Same, ventral view. 553. Same, retrolateral view. 554. Palpal bulb, prolateral view. 555. Same, retrolateral view. 556. Embolus, prolateral view. 557. Same, ventral view. 558. Same, retrolateral view. 559. Same, dorsal view.



FIGURES 560–571. *Reductoonops carpish*, new species, male. **560.** Spinnerets, posterior view. **561.** Labium and endites, ventral view. **562.** Tip of endite, ventral view. **563.** Palp, prolateral view. **564.** Same, ventral view. **565.** Same, retrolateral view. **566.** Palpal bulb, prolateral view. **567.** Same, retrolateral view. **568.** Embolus, prolateral view. **569.** Same, ventral view. **570.** Same, retrolateral view. **571.** Same, dorsal view.



FIGURES 572–582. 572–577. *Reductoonops carpish*, new species, male (572) and female (573–577). 578–582. *R. elqui*, new species, female. 572, 573, 578. Sternum, ventral view. 574, 579. Spinnerets, posterior view. 575, 580. Labium and endites, ventral view. 576, 581. Genitalia, ventral view. 577, 582. Same, dorsal view.

MALE (PBI_OON 10395, figs. 254–266, 269): Total length 1.00. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture; setae densest laterally. Labium anterior margin deeply incised. Endites with bipartite terminal lobe, proximal portion with two modified setae. Palpal apophysis triangular, basal portion of embolus highly sinuous; cymbium not fused with bulb.

FEMALE (PBI_OON 10395, figs. 270–273): Total length 1.17. Labium anterior margin indented at middle. Anterior genitalic process asymmetrical, situated on short base.

OTHER MATERIAL EXAMINED: PANAMA: **Bocas del Toro**: Almirante, Apr. 1, 1959, Berlese, thatch on nest of snapping ant (H. Dybas, FMNH 33890, PBI_OON 10392), 1 ♂; Almirante, trail to left of trail to dam on Nigua Creek, Mar. 30, 1959, Berlese, concentrated floor litter on hill (H. Dybas, FMNH PBI_OON 10402), 1 ♀.

DISTRIBUTION: Panama (Bocas del Toro).

Reductoonops escopeta, new species (figs. 267, 268, 274–278)

TYPE: Female holotype taken under a riddled stage III log in a coffee plantation at an elevation of 860 m at a site north of Escopeta, along Río Escopeta, Chiriquí, Panama (Jan. 9, 1981; W. Suter), deposited in FMNH (ex 33661, PBI_OON 51315).

DIAGNOSIS: Females can easily be recognized by the arrow-shaped distal portion of the anterior genitalic process (figs. 277, 278).

MALE: Unknown.

FEMALE (PBI_OON 51315, figs. 267, 268, 274–278): Total length 1.19. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Anterior genitalic process relatively short, gradually narrowing anteriorly until widely expanded into arrow-shaped tip.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Panama (Chiriquí).

Reductoonops bayano, new species (figs. 279–289)

Stenoonops canita (misidentification): Platnick and Dupérré, 2010a: 31, figs. 185–194 only (female only).

NOTE: When *Stenoonops canita* was described by Platnick and Dupérré (2010a), those authors indicated that the single known female, which has six eyes, was not collected with the male holotype, that males and females differ in sternal morphology, and that they were tentatively matched only on the basis of geography. Subsequent study has shown that although the male holotype of *S. canita* has the normal complement of six spinnerets, the female has only four, and also has a bipartite anterior genitalic process closely resembling those of the Mexican six-eyed species described above. We therefore here place that female in *Reductoonops* rather than *Stenoonops*.

TYPE: Female holotype from the upper Río Majé, Bayano region, Panamá, Panama (June 18, 1976; L. Kirkendall), deposited in AMNH (PBI_OON 21102).

DIAGNOSIS: The female resembles that of *R. chamela*, but the anterior genitalic process is wider posteriorly than in that species (figs. 288, 289).

MALE: Unknown.

FEMALE (PBI_OON 21102, figs. 279–289): Total length 1.23. Surface of elevated portion of pars cephalica finely reticulate. Eyes six; ALE touching. Sternum without lateral channels, surface finely reticulate, microsculpture only at sides; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic projection clearly divided into longer proximal and short, rounded distal portions.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Panama (Panamá).

Reductoonops ferry, new species (figs. 290–297)

TYPE: Female holotype from moist mixed tree litter taken at a site 2 mi northwest of Ferry, St. Catherine, Jamaica (May 17, 1956; C. Hoff), deposited in MCZ (68339, PBI_OON 26442).

DIAGNOSIS: Females can be recognized by the extremely long anterior genitalic process, which is set inside a boat-shaped structure with steep sides (figs. 296, 297).

MALE: Unknown.

FEMALE (PBI_OON 27364, figs. 290–297): Total length 1.09. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum without anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic process very long, with expanded base, set in wide boat-shaped structure with steep sides.

OTHER MATERIAL EXAMINED: JAMAICA: **St. Catherine**: 2 mi W junction Red Hills Road and road to Spanishtown, Nov. 1957 (A. Chickering, MCZ 72297, PBI_OON 27364), 1 ♀.

DISTRIBUTION: Jamaica.

Reductoonops hato, new species (figs. 298–305)

TYPE: Female holotype from Winkler sample of sieved litter from under shrubs with tiny leaves taken near an airport runway on Hato plain, 12°10'53"N, 68°58'20"W, Curaçao: (Sept. 22–24, 2011; R. Jocqué, E. Tybaert), deposited in AMNH (PBI_OON 51499).

DIAGNOSIS: Females of this six-eyed species can be recognized by the shape of the anterior genitalic process, which has a subdistal constriction but is then greatly expanded at the tip (figs. 304, 305).

MALE: Unknown.

FEMALE (PBI_OON 51499, figs. 298–305): Total length 0.99. Surface of elevated portion of pars cephalica finely reticulate. Eyes six; ALE touching. Sternum without anterior channels, surface finely reticulate, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic process with subdistal constriction, tip greatly expanded.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Curaçao.

Reductoonops diamant, new species (figs. 306–313)

TYPES: Female holotype and female paratype taken near La Diamant, Martinique (Nov. 29, 1978; Thibaud), deposited in MNHN (PBI_OON 27527).

DIAGNOSIS: Females resemble those of *R. hato* but have a longer tip on the anterior genitalic process (figs. 312, 313), and only two eyes.

MALE: Unknown.

FEMALE (PBI_OON 27527, figs. 306–313): Total length 1.02. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with only slight traces of anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Basal portion of anterior genitalic process torpedo shaped, distal portion expanded.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Martinique.

Reductoonops marta, new species (figs. 314–318)

TYPE: Female holotype taken in a shady creek bed at an elevation of 100 m at the base of mountains at Digraera, near Santa Marta, Magdalena, Colombia (July 23, 1976; C. Kugler, W. Brown), deposited in MCZ (72940, PBI_OON 28125).

DIAGNOSIS: The female resembles those of *R. naci*, but the boat-shaped structure at the base of the anterior genitalic process is much more angular (figs. 317, 318).

MALE: Unknown.

FEMALE (PBI_OON 28125, figs. 314–318): Total length 1.24. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic process long, rounded at tip, boat-shaped structure at its base with angular lateral arms.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Colombia (Magdalena).

Reductoonops sasaima, new species (figs. 324, 325, 327–340)

TYPES: Male holotype, male paratype, female allotype, and two female paratypes taken under damp leaf mold at Finca Bella Vista, near Sasaima, Cundinamarca, Colombia (May 5, 1965; P. Craig), deposited in CAS (PBI_OON 35777).

DIAGNOSIS: Males can be recognized by the enlarged, anteroventrally directed lobe at the tip of the endites (figs. 328, 329) and the 180° bend at the base of the embolus (figs. 335–338); females resemble those of *R. leticia* in having a basally enlarged, triangular anterior genital process, but its tip has shorter lateral projections than in that species (figs. 339, 340).

MALE (PBI_OON 35777, figs. 324, 327–338): Total length 0.92. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with enlarged, anteroventrally directed lobe. Base of embolus making 180° turn; cymbium not fused with bulb.

FEMALE (PBI_OON 35777, figs. 325, 339, 340): Total length 1.17. Labium anterior margin indented at middle. Anterior genitalic process enlarged, basally widened, triangular, tip with short lateral projections, dorsal surface apparently with several glandular ducts.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Colombia (Cundinamarca).

Reductoonops meta, new species (figs. 326, 341–352)

TYPE: Male holotype (lacking abdomen) from Berlese sample of forest litter taken at an elevation of 500 m at Villavicencio, Meta, Colombia (Mar. 1–4, 1972; S., J. Peck), deposited in FMNH (33605, PBI_OON 10112).

DIAGNOSIS: Males of this six-eyed species can easily be recognized by the basally enlarged palpal apophysis (figs. 349–352). The sternum is deeply pitted (fig. 326), with the anterior sternal channels seemingly reduced; sternal pits have not been observed in any of the other species, and both the ocular and sternal differences make it unlikely that this could be the male of *R. marta*.

MALE (PBI_OON 10112, figs. 326, 341–352): Abdomen missing, carapace length 0.58. Surface of elevated portion of pars cephalica smooth. Eyes six; ALE separated by about their radius. Sternum with only vague traces of anterior channels, surface smooth, covered with small round pits, microsculpture covering entire surface; setae densest laterally. Labium anterior margin deeply incised. Endite tip with low mound. Palpal apophysis with enlarged base, embolus narrow throughout its length; cymbium not fused with bulb.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Colombia (Meta).

Reductoonops leticia, new species (figs. 319–323)

TYPE: Female holotype taken 7 km north of Leticia, Amazonas, Colombia (Feb. 20–25, 1972; S. Peck), deposited in AMNH (PBI_OON 37066).

DIAGNOSIS: Females resemble those of *R. sasaima* in having a basally enlarged, triangular anterior genital process, but its tip has longer lateral projections than in that species (figs. 322, 323).

MALE: Unknown.

FEMALE (PBI_OON 37066, figs. 319–323): Total length 1.22. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Anterior genitalic process enlarged, base greatly widened, tip with long lateral extensions, dorsal surface with numerous glandular openings.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Colombia (Amazonas).

Reductoonops tandapi, new species (figs. 353–372)

TYPES: Male holotype and male paratype sorted by hand from cloud forest litter taken at an elevation of 2150 m at a site 21 km north of Tandapi, on the main road from Tandapi to Quito, 00°27'20.3"S, 77°45'15.5"W, Pichincha, Ecuador (Dec. 7, 2009; N. Dupérré, E. Tapia, Niarchos Exped.), deposited in QCAZ (PBI_OON 51317), plus male paratype, same data, deposited in AMNH (PBI_OON 49613).

DIAGNOSIS: Males can be recognized by the shape of the palpal apophysis, which in ventral view is moderately wide at its base and for about two-thirds of its length, with a narrowed distal portion (fig. 364–367); females have the anterior genitalic process wider at the tip than at its

middle, placed in a relatively wide, shallow boat-shaped structure, but lack lateral expansions on the tip of the anterior genitalic process (figs. 371, 372). Compared to the sympatric species *R. pichincha*, these animals have much larger eyes (figs. 353, 354, 370), and more widespread sternal setae (figs. 368, 369).

MALE (PBI_OON 51317, figs. 353–368): Total length 1.17. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE separated by less than their radius. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae evenly scattered. Labium anterior margin indented at middle. Endites with anterolateral edge enlarged, rounded. Palpal apophysis moderately wide for two-thirds its length, then abruptly narrowed distally; cymbium not fused with bulb.

FEMALE (PBI_OON 51318, figs. 369–372): Total length 1.19. Anterior genitalic process wider at tip than at middle but tip without lateral expansions, process placed in relatively wide, shallow boat-shaped structure.

OTHER MATERIAL EXAMINED: ECUADOR: **Pichincha:** 15 km E Tandapi, June 7, 1976, Berlese, moss, forest litter, elev. 2300 m (S. Peck, FMNH PBI_OON 10565), 1 ♂, 2 ♀; 21 km N Tandapi, on main road from Tandapi to Quito, 00°27'20.3"S, 77°45'15.5"W, Dec. 7, 2009, Berlese, cloud forest litter, elev. 2150 m (N. Dupérré, E. Tapia, Niarchos Exped., AMNH PBI_OON 51318), 1 ♂, 2 ♀.

DISTRIBUTION: Ecuador (Pichincha).

Reductoonops pichincha, new species (figs. 373–380)

TYPES: Female holotype and female paratype sorted by hand from cloud forest litter with palm taken at an elevation of 1495 m at Tandapi, 2 km from the main road from Tandapi to Quito, 00°23'17"S, 77°49'04"W, Pichincha, Ecuador (Dec. 7, 2009; N. Dupérré, E. Tapia, Niarchos Exped.), deposited in QCAZ (PBI_OON 51319), plus female paratype, same data, deposited in AMNH (PBI_OON 49612).

DIAGNOSIS: Females resemble those of *R. napo* in having lateral expansions on the tip of the anterior genitalic process, but the process is narrower than in that species (figs. 379, 380). Compared to the sympatric species *R. tandapi*, these animals have much smaller eyes (fig. 375), and the sternal setae are concentrated on the sides of the sternum (figs. 373, 374).

MALE: Unknown.

FEMALE (PBI_OON 51319, figs. 373–380): Total length 1.63. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Anterior genitalic process with short, cap-shaped tip bearing lateral expansions.

OTHER MATERIAL EXAMINED: ECUADOR: **Pichincha:** 21 km N Tandapi, on main road from Tandapi to Quito, 00°27'20.3"S, 77°45'15.5"W, Dec. 7, 2009, cloud forest litter, elev. 2150 m (N. Dupérré, E. Tapia, Niarchos Exped., AMNH PBI_OON 49604), 1 ♀.

DISTRIBUTION: Ecuador (Pichincha).

Reductoonops tina, new species (figs. 381–397)

TYPES: Male holotype, female allotype, and female paratype from Berlese sample of forest litter taken at an elevation of 720 m at Tinalandia, 16 km southeast of Santo Domingo,

00°17'56"S, 79°03'09"W, Santo Domingo de Los Tsáchilas, Ecuador (Dec. 6, 2009; N. Dupérré, E. Tapia, Niarchos Exped.), deposited in QCAZ (PBI_OON 51321), plus one male and one female paratypes, same data, deposited in AMNH (PBI_OON 49611).

DIAGNOSIS: Males can be recognized by the shape of the palpal apophysis, which in ventral view is basally narrow, greatly expanded at about half its length, and then abruptly narrowed (figs. 389–392); females have a sinuous anterior genitalic process with a subdistally narrowed tip (figs. 396, 397).

MALE (PBI_OON 51321, figs. 381–393): Total length 0.93. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with enlarged, ridged, anterolateral lobe. Palpal apophysis, in ventral view, basally narrow, greatly expanded at about half its length, then abruptly narrowed; cymbium not fused with bulb.

FEMALE (PBI_OON 51321, figs. 394–397): Total length 0.95. Anterior genitalic process long, narrow, sinuous, subdistally narrowed.

OTHER MATERIAL EXAMINED: ECUADOR: **Santo Domingo de Los Tsáchilas:** Tinalandia, 16 km SE Santo Domingo, 00°17'56"S, 79°03'09"W, June 15, 1975, Berlese, leaf litter, elev. 680 m (S. Peck, FMNH PBI_OON 31190), 3 ♀, June 5, 1976, Berlese, forest litter, elev. 700 m (S. Peck, FMNH PBI_OON 10558), 1 ♀, Berlese, debris from termite nests, elev. 700 m (S. Peck, FMNH 33707, PBI_OON 10209), 1 ♀, Dec. 6, 2009, hand collecting, forest litter, elev. 720 m (B. Baehr, Niarchos Exped., AMNH PBI_OON 51320), 2 ♂, 3 ♀, including E. Gaublomme sequencing voucher.

DISTRIBUTION: Ecuador (Santo Domingo de Los Tsáchilas).

***Reductoonops domingo*, new species (figs. 398–414)**

TYPES: Male holotype, female allotype, and male paratype from Berlese sample of rain-forest litter taken at an elevation of 1700 ft at a site 4 km east of Santo Domingo, Santo Domingo de Los Tsáchilas, Ecuador (June 22, 1975; S. Peck), deposited in FMNH (PBI_OON 10569).

DIAGNOSIS: Males resemble those of *R. pinta* in having a greatly expanded palpal conductor, but differ in having the embolus still separate from both the conductor and the palpal apophysis (fig. 411–414); females have a distinctively W-shaped tip on the anterior genitalic process (figs. 401, 402).

MALE (PBI_OON 10569, figs. 403–414): Total length 1.09. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface finely striated, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with triangular lobe bearing medially directed seta. Conductor fused with palpal apophysis, embolus separate, sinuous; cymbium completely fused with bulb, no seam visible.

FEMALE (PBI_OON 10569, figs. 398–402): Total length 1.40. Anterior genitalic process relatively wide at base, subdistally narrowed, tip W-shaped; process set in laterally folded boat-shaped structure.

OTHER MATERIAL EXAMINED: ECUADOR: **Santo Domingo de Los Tsáchilas:** 4 km SE Santo Domingo, June 8, 1976, Berlese, termite nest in rotten log, elev. 500 m (S. Peck, FMNH PBI_OON 31189), 1 ♀.

DISTRIBUTION: Ecuador (Santo Domingo de Los Tsáchilas).

***Reductoonops otonga*, new species (figs. 415–434)**

TYPES: Male holotype, female allotype, and female paratype collected by hand from forest litter taken at an elevation of 855 m at Otongachi, 00°19'15"S, 78°57'06"W, Santo Domingo de Los Tsáchilas, Ecuador (Dec. 6, 2009; B. Baehr, Niarchos Exped.), deposited in QCAZ (PBI_OON 51322), plus female paratype, same data, deposited in AMNH (PBI_OON 49610).

DIAGNOSIS: Males resemble those of *R. yasuni* but have an elevated ridge on the base of the embolus (fig. 427); females resemble those of *R. domingo*, but the anterior genitalic process is relatively uniform in width throughout its length (figs. 433, 434), rather than basally widened and subdistally narrowed.

MALE (PBI_OON 51322, figs. 415–429): Total length 1.20. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with bipartite, medially directed lobe. Palpal apophysis straight, embolar base with elevated ridge; cymbium not fused with bulb.

FEMALE (PBI_OON 51322, figs. 430–434): Total length 1.11. Labium anterior margin indented at middle. Anterior genitalic process relatively uniform in width throughout most of its length, only slightly narrowed distally.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Ecuador (Santo Domingo de Los Tsáchilas).

***Reductoonops palenque*, new species (figs. 435–451)**

TYPES: Male holotype, 13 male paratypes, female allotype, and 24 female paratypes from Berlese sample of forest litter taken at an elevation of 700 ft at the Centro Científico Río Palenque, 47 km south of Santo Domingo, Los Ríos, Ecuador (May 18–30, 1975; S., J. Peck), deposited in FMNH (33701, PBI_OON 10203).

DIAGNOSIS: Males can be recognized by the extremely long, narrow, flattened palpal apophysis (figs. 448–451), females by the extremely long anterior genitalic process, which arises from a very narrow boat-shaped structure (figs. 438, 439).

MALE (PBI_OON 10203, figs. 435, 440–451): Total length 1.05. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with triangular lobe bearing ventral ridge and two highly modified setae. Palpal apophysis long, narrow throughout most of its length, conductor long, narrow; cymbium fused with bulb but with clearly defined seam between.

FEMALE (PBI_OON 10203, figs. 436–439): Total length 1.10. Labium anterior margin indented at middle. Anterior genitalic process very long, gradually tapering toward tip, set in very narrow boat-shaped structure.

OTHER MATERIAL EXAMINED: ECUADOR: **Los Ríos:** Centro Científico Río Palenque, 47 km S Santo Domingo, May 18–30, 1975, Berlese, forest litter, elev. 700 ft (S., J. Peck, FMNH 33703, PBI_OON 10205), 2 ♀, Feb. 25, 1976, Berlese, litter under decaying fruit, elev. 260 m (S. Peck, FMNH 33725, PBI_OON 10227), 1 ♂.

DISTRIBUTION: Ecuador (Los Ríos).

Reductoonops napo, new species (figs. 453–468)

TYPE: Male holotype taken at an elevation of 1005 m in the Parque Nacional Napo-Galeras, 00°44'00"S, 77°28'07"W, Napo, Ecuador (Nov. 27, 2009; Niarchos Exped.), deposited in QCAZ (PBI_OON 51323).

DIAGNOSIS: Males and females have not been taken together and are only tentatively matched here, but they show similarly odd and seemingly autapomorphic genital characters. Males can easily be recognized by the lobate palpal apophysis (figs. 460–463), females by the sharply pointed cap on the tip of the anterior genitalic process (figs. 467, 468).

MALE (PBI_OON 51323, figs. 453–464): Total length 1.07. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with sharply pointed, diagonally directed projection. Palpal apophysis lobate, embolus and conductor apparently fused; cymbium not fused with bulb.

FEMALE (PBI_OON 51325, figs. 465–468): Total length 0.90. Anterior genitalic process relatively wide, tip rounded, with sharply pointed lateral extensions.

OTHER MATERIAL EXAMINED: ECUADOR: **Napo**: Sacha Wagra Lodge, Río Hollín, 00°57'18"S, 77°44'51"W, Nov. 29, 2009, elev. 665 m (Niarchos Exped., AMNH PBI_OON 51324), 2 ♀, Berlese, litter from humid forest with karstic rocks, elev. 750 m (M. Ramírez et al., Niarchos Exped., MACN PBI_OON 51325), 2 ♀.

DISTRIBUTION: Ecuador (Napo).

Reductoonops jatun, new species (figs. 452, 469–485)

TYPE: Male holotype taken at an elevation of 410 m at the Fundación Jatun Sacha, 01°03'57.5"S, 77°37'00.2"W, Napo, Ecuador (Dec. 2, 2009; Niarchos Exped.), deposited in QCAZ (PBI_OON 51326).

DIAGNOSIS: Males can be recognized by the prolaterally excavated palpal apophysis (figs. 482–485), females by the relatively short anterior genitalic process, which is sharply narrowed subdistally (figs. 472, 473).

MALE (PBI_OON 51326, figs. 452, 469, 474–485): Total length 1.10. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with small lobe bearing modified seta, two other modified setae situated more proximally, one of those jutting out to side of endite. Palpal apophysis prolaterally excavated, embolus and conductor separate; cymbium fused with bulb but with clearly defined seam between.

FEMALE (PBI_OON 51327, figs. 470–473): Total length 0.97. Anterior genitalic process relatively short, curvaceous, set in very shallow boat-shaped process.

OTHER MATERIAL EXAMINED: ECUADOR: **Napo**: Fundación Jatun Sacha, 01°03'57.5"S, 77°37'00.2"W, Dec. 2, 2009, Winkler (A. Santos, C. Rheims, Niarchos Exped., AMNH PBI_OON 51327), 2 ♀.

DISTRIBUTION: Ecuador (Napo).

***Reductoonops hedlite*, new species (figs. 486–505)**

TYPES: Male holotype, male paratype, female allotype, and female paratype taken at an elevation of 1910 m at Cuenca Molleturo, Luz María, 02.68918°S, 79.41537°W, Azuay, Ecuador (Jan. 25, 2010; E. Tapia), deposited in QCAZ (PBI_OON 10793), plus one male and one female paratypes, same data, deposited in AMNH (PBI_OON 49609).

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

DIAGNOSIS: Members of this species resemble those of *R. tandapi* in having enlarged eyes (figs. 486, 487, 503) and widespread sternal setae (figs. 501, 502); males differ in having a prolonged embolar base (figs. 497–500), females in having an abruptly narrowed tip on the anterior genitalic process (figs. 504, 505).

MALE (PBI_OON 10793, figs. 486–501): Total length 1.06. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE separated by less than their radius. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae evenly scattered. Labium anterior margin indented at middle. Endite tip with small lobe bearing modified seta, two other modified setae situated more proximally, one of those jutting out to side of endite. Base of embolus with distal protrusion, conductor very narrow; cymbium not fused with bulb.

FEMALE (PBI_OON 10793, figs. 502–505): Total length 1.36. Anterior genitalic process long, with abruptly narrowed tip.

OTHER MATERIAL EXAMINED: ECUADOR: **Azuay:** Molleturo, Yumate, via Pan de Azúcar, 02.76757°S, 79.43222°W, Jan. 23, 2010, elev. 2450 m (E. Tapia, QCAZ PBI_OON 10791), 1 ♀.

DISTRIBUTION: Ecuador (Azuay).

***Reductoonops molleturo*, new species (figs. 506–525)**

TYPES: Male holotype, female allotype, and three female paratypes taken at an elevation of 1910 m at Cuenca Molleturo, Luz María, 02.68918°S, 79.41537°W, Azuay, Ecuador (Jan. 25, 2010; E. Tapia), deposited in QCAZ (PBI_OON 49603), plus one male and four female paratypes, same data, deposited in AMNH (PBI_OON 49608).

DIAGNOSIS: Males can be recognized by the shape of the palpal apophysis and embolus (figs. 522–525); females resemble those of *R. palenque* but have the anterior genitalic process set in a somewhat wider boat-shaped structure (figs. 509, 510). Specimens of both sexes can easily be separated from the those of the sympatric species *R. hedlite* by their smaller eyes (fig. 508), and by having the sternal setae concentrated at the sides of the sternum (figs. 506, 507).

MALE (PBI_OON 49603, figs. 506, 511–525): Total length 1.10. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with wide, distally scooped lobe. Palpal apophysis with prolateral ridge; cymbium not fused with bulb.

FEMALE (PBI_OON 49603, figs. 507–510): Total length 1.14. Labium anterior margin indented at middle. Anterior genitalic process very long, very narrow, set in narrow boat-shaped structure.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Ecuador (Azuay).

Reductoonops celica, new species (figs. 526–542)

TYPES: Male holotype, three male paratypes, female allotype, and two female paratypes taken at an elevation of 2100 m at Celica, 04.09896°S, 79.97994°W, Loja, Ecuador (Feb. 25, 2010; E. Tapia), deposited in QCAZ (PBI_OON 51328), plus three male and two female paratypes, same data, deposited in AMNH (PBI_OON 49607).

DIAGNOSIS: Males can be recognized by the prolaterally excavated palpal apophysis (figs. 534–537), females by the relatively short, thumb-shaped anterior genitalic process (figs. 541, 542).

MALE (PBI_OON 51328, figs. 526–538): Total length 1.10. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE separated by less than their radius. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Endite tip with large lobe bearing procurved ridges. Palpal apophysis prolaterally excavated; cymbium not fused with bulb.

FEMALE (PBI_OON 51328, figs. 539–542): Total length 1.36. Anterior genitalic process relatively short, thumb shaped.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Ecuador (Loja).

Reductoonops yasuni, new species (figs. 1–96)

TYPES: Male holotype from leaf litter taken at an elevation of 200 m in the Estación Científica Yasuni, Río Tiputini, 0.67111°S, 76.4002°W, Orellana, Ecuador (Dec. 1, 2009; Niarchos Exped.), deposited in QCAZ (PBI_OON 892).

DIAGNOSIS: Males can be recognized by the bipartite conductor (figs. 35–38), females by the spear-shaped tip of the anterior genitalic process (figs. 53, 54).

MALE (PBI_OON 891, figs. 1–44, 46–51): Total length 0.84. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface finely striated, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with rounded, posteriorly directed lobe. Cymbium not fused with bulb.

FEMALE (PBI_OON 891, figs. 45, 52–96): Total length 1.13. Anterior genitalic process long, relatively wide, originating from bowl-shaped sclerite.

OTHER MATERIAL EXAMINED: ECUADOR: **Orellana**: Estación Científica Yasuni, Río Tiputini, 0.67111°S, 76.4002°W, Dec. 1, 2009, leaf litter, elev. 200 m (Niarchos Exped., AMNH PBI_OON 893), 1 ♀, 0.067428°S, 76.39764°W, Dec. 1–5, 2009, Berlese, litter, humid forest, elev. 295 m (M. Ramírez, Niarchos Exped., MACN PBI_OON 886–889, 891, 894–896, 49575, 49576), 13 ♂, 14 ♀; 1 km S Onkone Gare Camp, 00°39'25.7"S, 76°27'10.8"W, Reserva Etnica Waorani, Oct. 4, 1995, elev. 216 m (T. Erwin et al. USNM PBI_OON 37077), 1 ♂, June 22, 1996 (same, USNM PBI_OON 37078), 1 ♂; Parque Nacional Yasuni, 00°40'16"S, 76°24'18"W, Dec. 1–5, 2009, pitfall, elev. 230 m (B. Baehr, Niarchos Exped., AMNH PBI_OON 890), 1 ♂.

DISTRIBUTION: Ecuador (Orellana).

Reductoonops pinta, new species (figs. 543–559)

TYPES: Male holotype and male paratype from *Pisonia* litter taken on a southern slope with dry substrate at an elevation of 380 m on Isla Pinta, Galapagos Islands (Jan. 20, 1977; W. Reeder), deposited in TMM (57873, PBI_OON 36961).

DIAGNOSIS: Males can easily be recognized by having all the terminal palpal elements fused into a single structure (figs. 556–559), females by the hourglass-shaped anterior genitalic process (figs. 546, 547).

MALE (PBI_OON 36961, figs. 543, 548–559): Total length 1.18. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with narrow, laterally directed lobe. Palpal apophysis, conductor, and embolus apparently fused into single structure, process on embolus still visible; cymbium completely fused with bulb, no seam visible.

FEMALE (PBI_OON 36959, figs. 544–547): Total length 1.69. Labium anterior margin indented at middle. Anterior genitalic process short, hourglass shaped.

OTHER MATERIAL EXAMINED: GALAPAGOS ISLANDS: **Isla Pinta**: Jan. 19, 1977, from dry litter and mineral soil at base of *Pisonia*, southern slope, camp area, elev. 250 m (W. Reeder, TMM 30400, PBI_OON 36960), 1 ♀, July 18, 1977, screened from damp *Zanthoxylum* and *Salvia* litter 2–4 cm above ash soil, elev. 400 m (W. Reeder, TMM 57874, PBI_OON 36959), 2 ♀.

DISTRIBUTION: Galapagos Islands (Isla Pinta).

Reductoonops carpish, new species (figs. 560–577)

TYPES: Male holotype and female allotype from Berlese sample of litter taken in a montane rain forest at an elevation of 1920 m on the north side of Cerro Carpish, near Chinchao, 09°40'S. 76°04'W, Huánuco, Peru (Jan. 12, 1983; A. Newton, M. Thayer), deposited in FMNH (61581, PBI_OON 10884).

DIAGNOSIS: Males can be recognized by the elongated tip of the palpal apophysis (figs. 568–571), females by relatively wide anterior genitalic process, which has a distinct longitudinal portion bearing the dorsal glandular projections (figs. 576, 577).

MALE (PBI_OON 10884, figs. 560–572): Total length 1.24. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, without pits, microsculpture absent; setae densest laterally. Labium anterior margin deeply incised. Endite tip with broad, recurved lobe flanked on either side by modified seta. Palpal apophysis with narrow, elongated tip; cymbium not fused with bulb.

FEMALE (PBI_OON 10884, figs. 573–577): Total length 1.52. Anterior genitalic process relatively wide, with distinct, longitudinal median portion bearing presumably glandular dorsal projections.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Peru (Huánuco).

Reductoonops elqui, new species (figs. 578–582)

TYPE: Female holotype taken at an elevation of 5 m on a beach 6 km south of Cruz Grande, 29°29'S, 71°19'W, Elqui, Region IV (Coquimbo), Chile (Nov. 11, 1993; N. Platnick et al.), deposited in AMNH (PBI_OON 51329).

DIAGNOSIS: Females can be recognized by the elongated anterior portion of the sternum (fig. 578) and the relatively short, wide anterior genitalic process, which has a short distal cap (figs. 581, 582).

MALE: Unknown.

FEMALE (PBI_OON 51329, figs. 578–582): Total length 1.22. Surface of elevated portion of pars cephalica smooth. Eyes two; ALE touching. Sternum with anterior channels, surface smooth, microsculpture absent; setae densest laterally. Labium anterior margin indented at middle. Anterior genitalic process relatively short, wide, with short distal cap.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Chile (Elqui).

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: Jonathan Coddington (USNM), Gonzalo Giribet and Laura Leibensperger (MCZ), Charles Griswold and Darrell Ubick (CAS, CDU), Clifford Keil and Mauricio Vega (QCAZ), Martín Ramírez (MACN), James Reddell (TMM), Christine Rollard (MNHN), Petra Sierwald (FMNH), and Carlos Viquez (INBIO). We also thank Steve Thurston for composing the plates, and Cristian Grismado and an anonymous reviewer for helpful comments on a draft of the manuscript.

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