

## New Species of the Spider Genus *Platyoides* from Madagascar (Araneae: Trochanteriidae)

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**Two new species of *Platyoides* are described from Madagascar: *P. ravina*, known only from the male, and *P. vao*, known only from the female. The previously unknown male of *Platyoides mailaka* Platnick is newly described and additional records for that species are provided.**

In his revision of the trochanteriid genus *Platyoides*, Platnick (1985) described the species *P. mailaka* on the basis of a single female specimen. As a consequence of the ongoing inventory of the Malagasy spider fauna, many additional records of this species have turned up and include many specimens of both sexes. In addition, two other species, here described as *P. ravina* and *P. vao*, are newly discovered.

### MATERIALS AND METHODS

Examination of specimens and drawings was made using a Leica MZ 12.5 Stereo Dissecting Microscope equipped with a camera lucida. Photographs were taken with a Nikon digital camera attached to a Leica MZ16 stereomicroscope and montaged with the Syncroscopy® Auto Montage System. The female epigynum was digested with either KOH under a heat lamp for 3 to 8 hours or a proteinase (trypsin or “ReNu”: Enzymatic contact lens cleaner, Bausch & Lomb, Inc.) overnight. For SEM, parts were removed and soaked overnight in 100% EtOH, cleaned with an ultrasonicator, critical point dried with liquid CO<sub>2</sub>, sputter coated with AuPd, and scanned with a Hitachi S-520 and Leo 1450VP Scanning Electron Microscope. All available specimens of *Platyoides mailaka*, *P. ravina*, and *P. vao* were measured. All measurements are in mm and were taken using an Olympus SZH10 dissecting microscope. Species distributions were mapped using ArcGIS 9.

ABBREVIATIONS USED.— AE = anterior eyes, ALE = anterior lateral eyes, ALS = anterior lateral spinnerets, AME = anterior median eyes, AMS = anterior median spinnerets, bc = base of cymbium, c = conductor, CAS = California Academy of Sciences, co = copulatory openings, e = embolus, eb = embolus base, fd = fertilization duct, LE = lateral eyes, ma = median apophysis, MNHN = Museum National d’Histoire Naturelles, MOQ = median ocular quadrangular, MOQAW = median ocular quadrangular anterior width, MOQPW = median ocular quadrangular posterior width, pd = paramedian duct, PLE = posterior lateral eyes, PLS = posterior lateral spinnerets, PME = posterior median eyes, PMS = posterior median spinnerets, rta = retrolateral tibial apophysis, ta = tegular apophysis.

***Platyoides mailaka* Platnick**

Figures 1–5.

*Platyoides mailaka* Platnick, 1985:15, fig. 47–48. (Female holotype from Antsiranana [= Diégo-Suarez], Madagascar [no date; J. Millot], in MNHN, Paris, not examined).

**MATERIAL EXAMINED.**— MADAGASCAR: **Antsiranana Province:** Forêt d'Anabohazo, 120 m, 14°18'32"S, 47°54'52"E, tropical dry forest, beating low vegetation, 11–16 March 2001, B.L. Fisher, C.E. Griswold & al., 1 ♂, 7 juveniles (CAS), CASENT9007480. Réserve spéciale de l'Ankarana, 80m, 12°54'32"S, 49°6'35"E, tropical dry forest, beating low vegetation, 10–16 February 2001, B.L. Fisher, C.E. Griswold & al., 2 juveniles (CAS), CASENT9006990. **Mahajanga Province:** Parc National d'Ankarafantsika, Forêt d'Ampijoroa, 130 m, 16°19'15"S, 46°48'38"E, 26 March–1 April 2001, tropical dry forest, beating low vegetation, B.L. Fisher, C.E. Griswold & al., 1 ♀ (CAS), CASENT9007556. Parc National d'Ankarafantsika, Forêt d'Ampijoroa, 130 m, 16°19'15"S, 46°48'38"E, 26 March–1 April 2001, tropical dry forest, general collecting, J.-J. Rafanomezantsoa & al., 1 ♂ (CAS), CASENT9003108. Réserve d'Ankoririka, 210 m, 16°16'2"S, 46°2'55"E, 9–14 April 2001, tropical dry forest, pitfall trap, B.L. Fisher, C.E. Griswold & al., 1 ♂, 1 ♀ (CAS), CASENT9007761. Réserve d'Ankoririka, 210 m, 16°16'2"S, 46°2'55"E, 9–14 April 2001, tropical dry forest, sifted litter, B.L. Fisher, C.E. Griswold & al., 2 ♂, 2 ♀ (CAS), CASENT9007780.

**DIAGNOSIS.**— Male most closely resembles that of *Platyoides grandidieri* Simon in having an extremely long retrolateral tibial apophysis (Fig. 1c) but can be distinguished by the form of the embolus, which is thin, straight and with a platelike basal process (curved and without basal process in *grandidieri*); median apophysis long, and stout (short and curved in *grandidieri*); and the presence of a conical sclerotized tegular process (absent in *grandidieri*) (Fig. 1d). Female diagnosed in Platnick, 1985.

**DESCRIPTION.**— MALE (Forêt d'Anabohazo, Antsiranana, Madagascar): Carapace grayish brown, cephalon lighter, black at margins. Chelicerae and pedipalp grayish brown. Legs yellow basally, brownish from patella to tarsi; coxae and trochanters yellowish white. Labium and endites grayish brown, darker basally, slightly lighter apically. Sternum yellow brown, darker near margins. Abdomen yellowish white, dorsum with a U-shaped dark gray median mark, and dark gray marginal bands (Fig. 2a).

Carapace about as long as wide, widest between coxae II and III, narrowed anteriorly, cephalic groove pronounced near eye region, fovea represented by posteriorly pointed thin, deep, and dark triangular depression. Eyes subequal, in two almost straight rows; AE and PLE circular, dark, surrounded by black pigmentation; PME oval, light, not ringed with black; LE on small tubercles; MOQ narrowed in front; clypeus low, about one half diameter of an AME.

Chelicerae laterally divergent, bearing long curved fangs, promargin with one large tooth, retromargin with two dark teeth. Labium slightly longer than wide, narrowed distally, notched basally. Endites obliquely depressed, with long apical scopulae. Sternum flat, scarcely longer than wide, subcircular, truncated at posterior margin, straight along anterior margin, with precoxal sclerites. Abdomen flattened, covered with short setae. Spinnerets small and slightly thinner compared to those of the female, ALS longest, conical, with one large major ampullate gland spigot on the anterior part and four piriforms on the posterior (Fig. 3D); PMS very small with one large minor ampullate spigot on the middle surrounded by three widely separated large aciniforms along the lateral and postero-margin, PLS with one large aciniform spigot; five epiandrous spigots on the epigynal furrow (Fig. 3E); colulus represented by only few setae (Fig. 3F). Legs laterigrade, folded over the body, lacking spines (Fig. 2a–b). Metatarsi and tibiae with single dorsal row of trichobothria; tarsi with two rows of dorsal trichobothria, with two claws, lacking claw tufts, lightly scopulate, with scopulae extending over half length of tibia. Trochanters unnotched, trochanter IV much longer than the others.

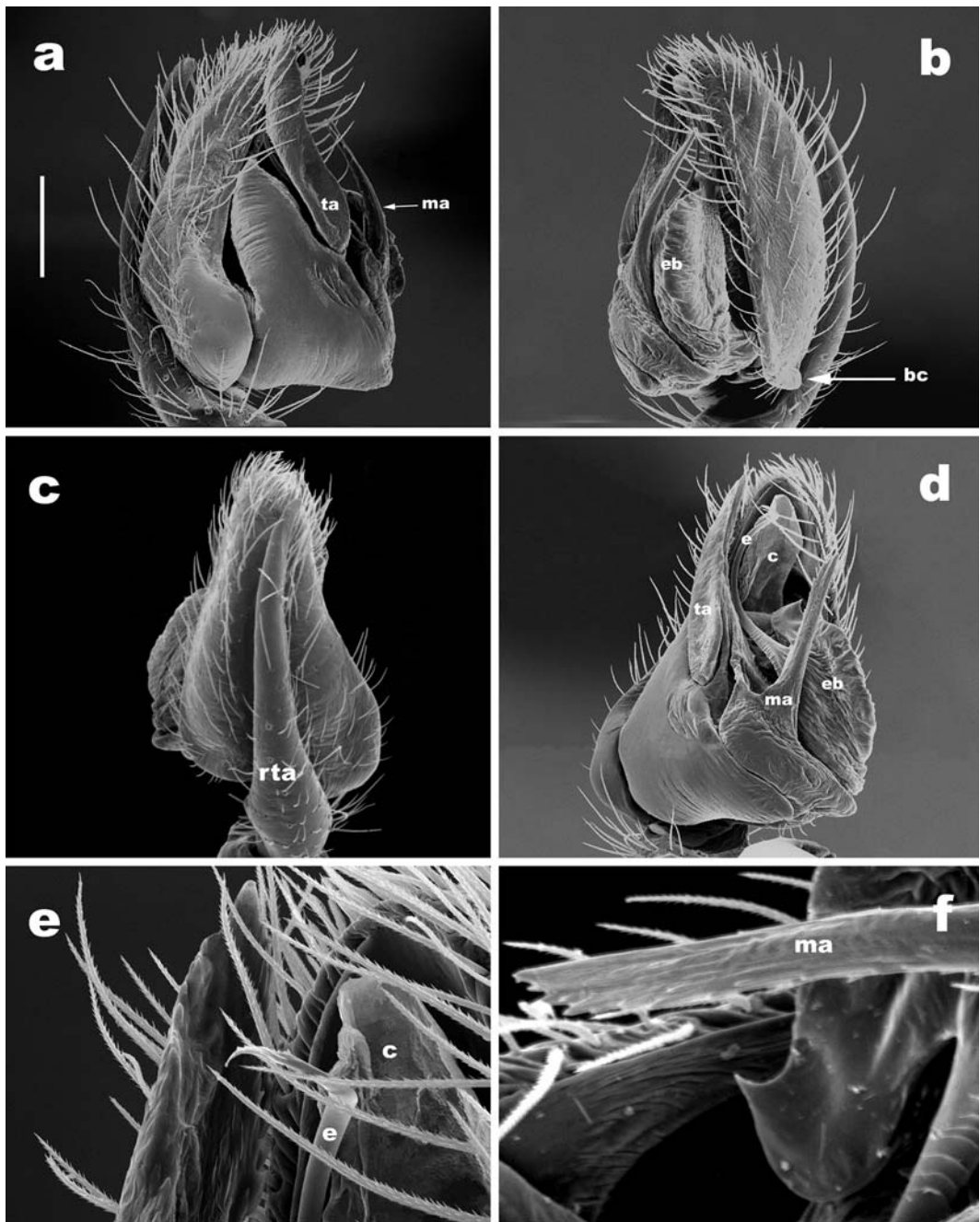


FIGURE 1. *Platyoides mailaka*. Male right palp. a. retrolateral. b. prolateral. c. dorsal. d. ventral. E. ventral, close up showing embolus and conductor. f. ventral, close up showing wrinkled tip of median apophysis. Scale bars for a–d = 200 $\mu$ m, e–f = 50 $\mu$ m.

Total length, not including the chelicerae 3.9. Carapace 1.80 long, 1.74 wide. Abdomen 2.10 long, 1.3 wide. Femur II 2.3 long. Eyes sizes and interdistances: AME 0.10, ALE 0.10, PME 0.10; PLE 0.08; AME-AME 0.06, AME-ALE 0.08, PME-PME 0.14, PME-PL 0.20, ALE-PL 0.12; MOQ length 0.31, MOQ front width 0.46, MOQ back width 0.59. Palp with long, blunt-tipped retrolateral tibial apophysis, only slightly separated from cymbium (Figs. 1b–c, 4); embolus elongated with semicircular flat disk-shaped base (Figs. 1d, 4); tip of the embolus bent; median apophysis long and thick with wrinkled tip (Fig. 1f); bulb with elongate membranous conductor and additional conical tegular process (Fig. 1d), base of the cymbium (cb) forming a lobe that is directed outwards (Fig. 1b).

**VARIATION.**— MALE (n=5): total length 3.8–4.05; carapace length 1.5–1.80; carapace width 1.6–1.75; abdomen length 2.10–2.60; abdomen width 1.10–1.45; ratios of carapace length/width 0.94–1.03; ratios of abdomen length/width 1.51–2.18; ratios of MOQAW/MOQPW 0.77–0.84; ratios of AME/PME 0.83–1.25; ratios of femur II/carapace width 1.25–1.32; ALE 0.08–0.10; PME 0.08–0.12; PLE 0.08–0.10; AME-ALE 0.05–0.08; PME-PME 0.10–0.14; PME-PL 0.16–0.21; ALE-PL 0.10–0.12.

**FEMALE** (described in Platnick 1985). Additional description: (Female from Réserve d'Ankorririrka, Mahajanga, Madagascar): Similar to male, but slightly larger. Color as in male except for one specimen with abdomen completely yellowish white, lacking markings. ALS conical, separated about less than one third of the diameter at base, about two times the length of PLS, with two major ampullate spigots on antero-lateral side and five piriform glands on prolatero-median side (Fig. 3A); PMS very small and hidden by ALS and PLS, bearing 6 cylindrical gland spigots (Fig. 3B); PLS with two large cylindricals on the antero-median side, one giant minor ampullate spigot on the retrolatero-median, surrounded by 12 small aciniform spigots (Fig. 3C). Epigynum as shown in Figs. 4.4–4.5. Also described in Platnick (1985).

**VARIATION.**— FEMALE (n = 4): total length 4.3–4.6; carapace length 1.25–2, width 1.65–1.9; abdomen length 2.05–2.6, width 1.10–1.6. Ratios: femur II/carapace width 0.92–1.33; total length/carapace width 2.38–2.78; MOQAW/MOQPW 0.77–0.82.

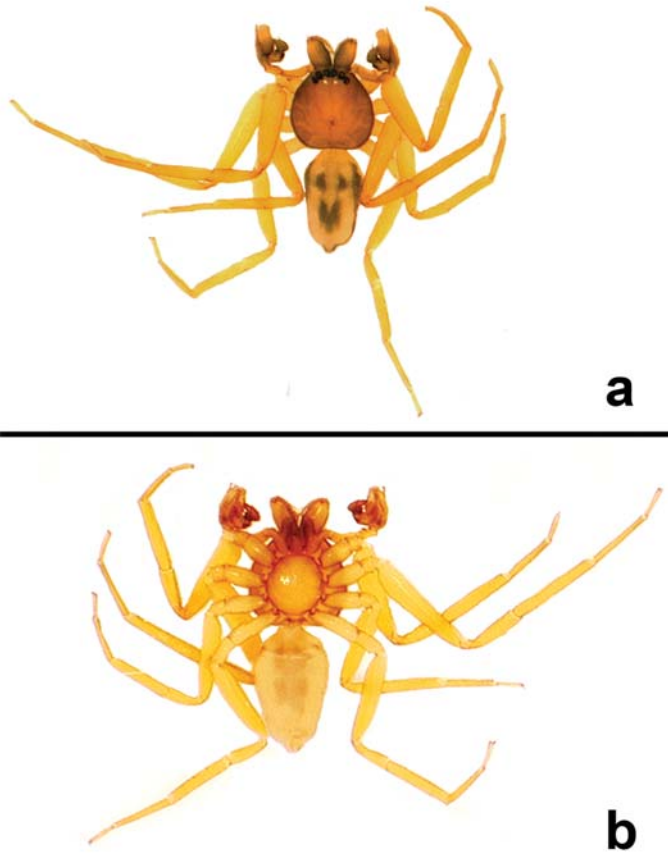


FIGURE 2. *Platyoides mailaka*. Male. a. habitus, dorsal. b. habitus, ventral.

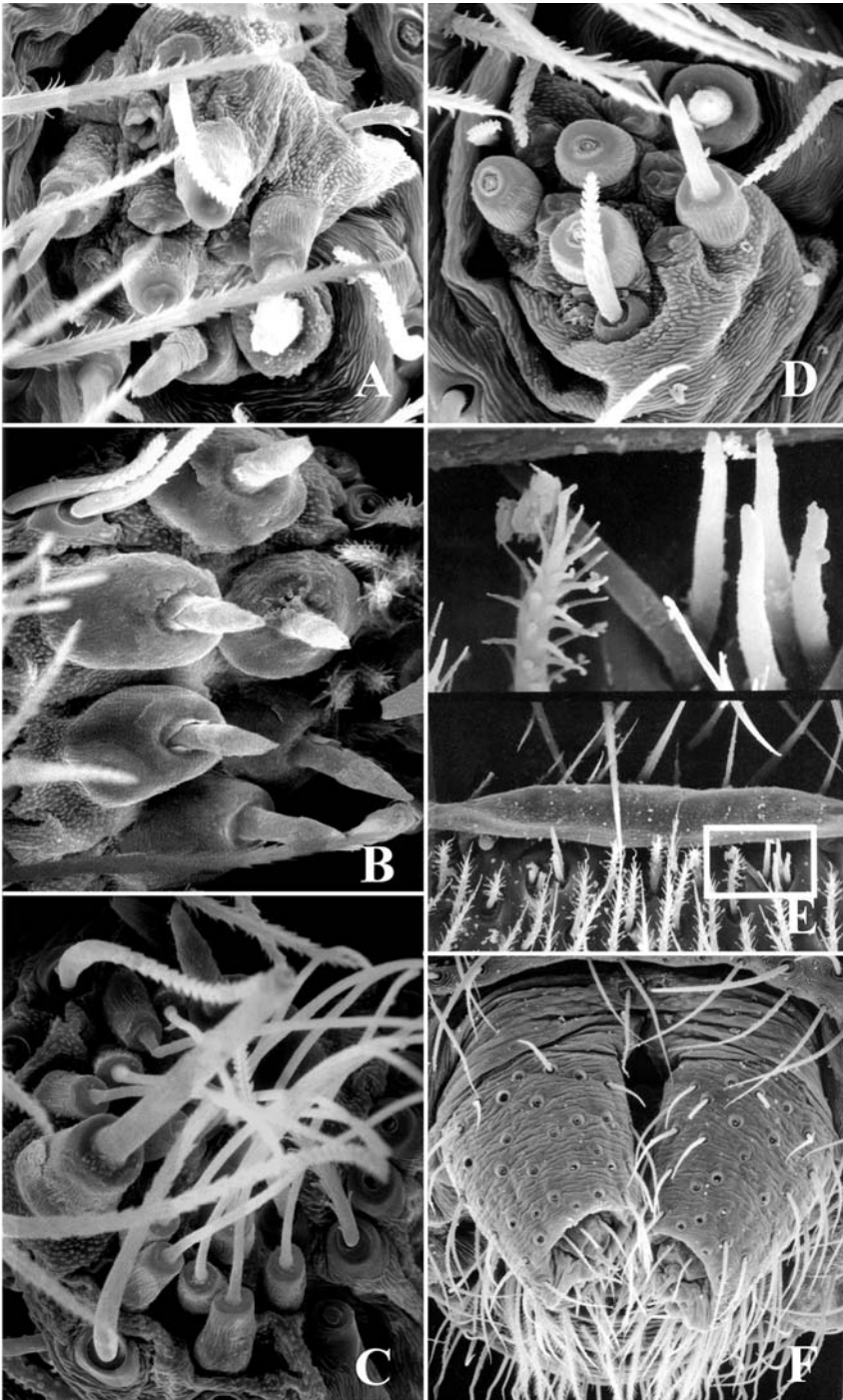


FIGURE 3. *Platyoides mailaka*. Male and female spinning organ. Female. a. right anterior lateral spinneret. b. right posterior median spinneret. c. left posterior lateral spinneret. Male. d. left anterior lateral spinneret. e. epiandrous gland spigots. f. spinnerets, dorsal view. Scale bars for a, d = 20  $\mu$ m, b, c = 30  $\mu$ m, e = 43  $\mu$ m, f = 100  $\mu$ m.

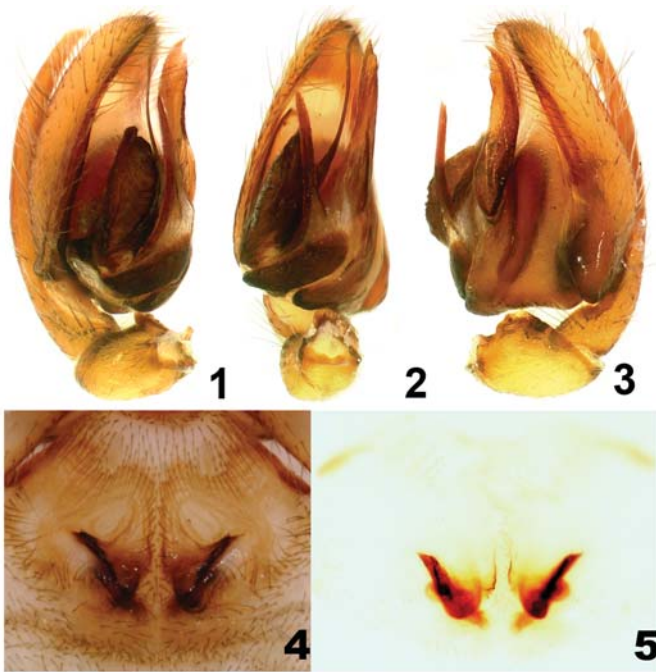


FIGURE 4. *Platyoides mailaka*. Male palp and female epyginum. Male palp. 1. retrolateral. 2. ventral. 3. prolateral. Female epyginum. 4. dorsal. 5. ventral.



FIGURE 5. *Platyoides mailaka*, *Platyoides ravina*, *Platyoides vao* distribution in Madagascar.

**Note.**— The two juveniles from Réserve Speciale de l'Ankarana very closely resemble those of *Platyoides mailaka* in form and color pattern and are tentatively assumed to belong to *mailaka*.

**DISTRIBUTION.**— Known from northwestern Madagascar (Fig. 5).

***Platyoides ravina* Andriamalala and Ubick, sp nov.**

Figures 6–8.

**MATERIAL EXAMINED.**— MALES (HOLOTYPE AND PARATYPES). MADAGASCAR: **Tolira Province:** Forêt d'Analavelona, Antanimena, 12.5 km NW Andranoheza, 1500m, 22°40.7'S, 44°11.5'E, transitional mid altitude forest, pitfall traps, 9-15 March 1998, S. Goodman, ♂ holotype and 2 ♂ paratypes (CAS), CASENT 9014022.

**ETYMOLOGY.**— The species name is from the Malagasy word “Ravina” which means leaf but also refers to a Malagasy pudding “Koba ravina” made with banana fruit, similar to the shape of the embolus in this species.

**DIAGNOSIS.**— The male can be distinguished from *Platyoides mailaka* Platnick by the short and straight retrolateral tibial apophysis (Figs. 6c, 7.3), the banana shaped embolus (Figs. 6d–e, 7.1–7.2), the median apophysis projecting from a round and flat base (Figs. 6b–f, 7.1–7.3), and palp lacking additional prongs (Fig. 6)

**DESCRIPTION.** — MALE (Holotype from Forêt d'Analavelona, Antanimena, 12.5 km NW Andranoheza, Toliara, Madagascar): Carapace and chelicerae dark reddish, darkened on margins, pedipalp orange. Legs yellowish orange. Labium and endites orange, slightly lighter apically. Sternum yellowish orange, darker along margins. Abdomen yellowish white, dorsum with a median single longitudinal band, and dark gray on margins (Fig. 8).

Carapace wide (compared to *P. mailaka* male), widest between coxae II and III, narrowed ante-

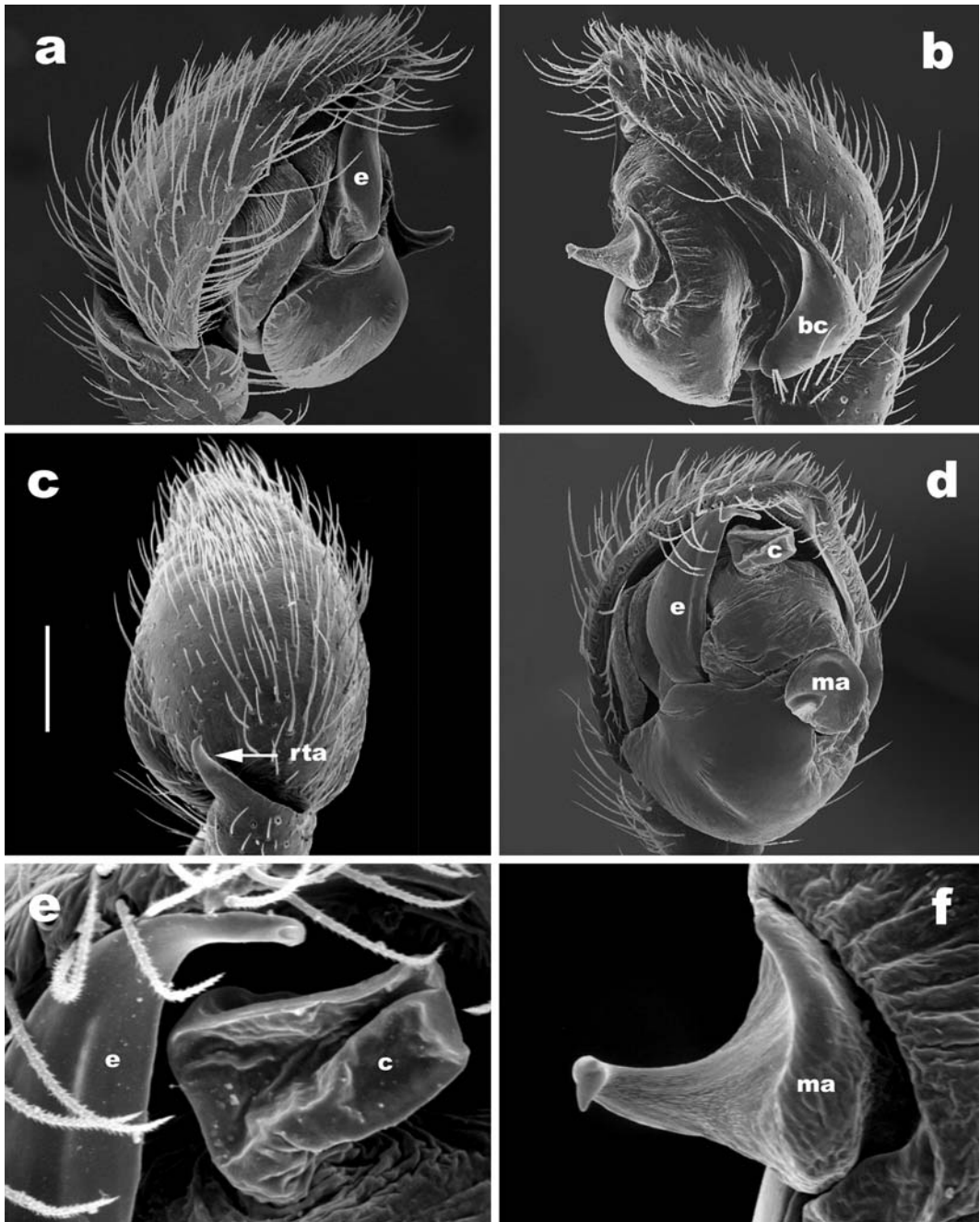


FIGURE 6. *Platyoides ravina*. Male holotype, left palp. a. prolateral. b. retrolateral. c. dorsal. d. ventral. e. ventral, embolus and conductor. f. retrolateral, median apophysis. Scale bars for a–d = 200 $\mu$ m, e = 45  $\mu$ m, f = 60 $\mu$ m.

riorly, cephalic groove pronounced near eye region, fovea forming posteriorly directed triangular depression. Eyes subequal in size, in two rows, almost straight; AE and PLE circular, dark, and raised on small tubercles; PME oval, light, irregular, and not ringed with black pigmentation; LE

also on small tubercles; MOQ narrowed in front; clypeus low, about one half diameter of an AME. Chelicerae laterally divergent, bearing long curved fangs. Labium longer than wide, not narrowed distally, notched basally. Endites obliquely depressed, with long apical scopulae. Sternum slightly convex, almost circular, with precoxal sclerites. Abdomen flattened, covered with short setae. Colulus represented by only few setae. Legs laterigrade, folded over the body, lacking spines. Metatarsi and tibiae with single dorsal row of trichobothria; tarsi with two rows of dorsal trichobothria, with two claws, lacking claw tufts, lightly scopulate, scopulae extending over half length of tibia. Trochanters unnotched, trochanter IV much longer than the others.

Total length 6 (not including the chelicerae). Carapace 2.6 long, 2.5 wide. Abdomen 3.4 long, 2.1 wide. Femur II 3.3 long. Eyes sizes and interdistances: AME 0.13, ALE 0.12, PME 0.16; PLE 0.14, AME-AME 0.14, AME-ALE 0.14, PME-PME 0.22, PME-PLE 0.28, ALE-PLE 0.12; MOQ length 0.44, MOQ front width 0.44, MOQ back width 0.50. Cheliceral promargin with one large distal tooth, retromargin with two proximal teeth. Palp with a straight, long, blunt-tipped retrolateral tibial apophysis, slightly separated from the cymbium; embolus fat and arc like a banana fruit; median apophysis formed by round and flat disque bearing a long projection, which is bent at its apex (Fig. 6f), base of the cymbium forming a large lobe that is oriented toward the tegulum (Fig. 6b).

**VARIATION.**— MALE (n = 3): total length 5.3–6; carapace length 2.2–2.7; carapace width 2.2–2.6; abdomen length 3.1–3.5; abdomen width 1.9–2.55; ratios of carapace length/width 1–1.04; ratios of abdomen length/width 1.37–1.63; ratios of MOQAW/MOQPW 0.88–0.9; ratios of AME/PME 0.81–1; ratios of femur II length/carapace width 1.22–1.32; ALE 0.12–0.14; PME 0.14–0.16; PLE 0.12–0.14; AME-ALE 0.09–0.14; PME-PME 0.10–0.14; PME-PLE 0.21–0.24; ALE-PLE 0.12–0.14.

**DISTRIBUTION.**— Known only from the South of Madagascar (Fig. 5).

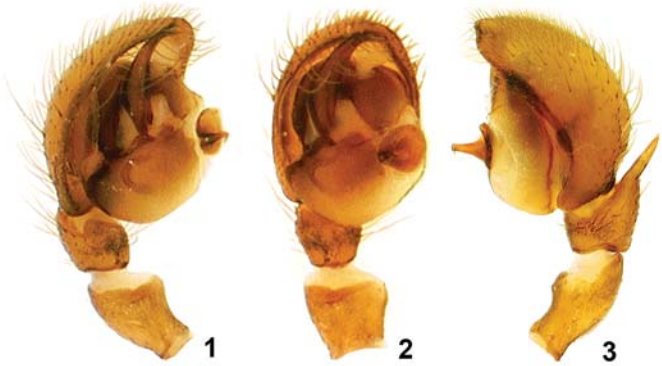


FIGURE 7. *Platyooides ravina*. Male holotype, left palp. 1. prolateral. 2. ventral. 3. retrolateral.

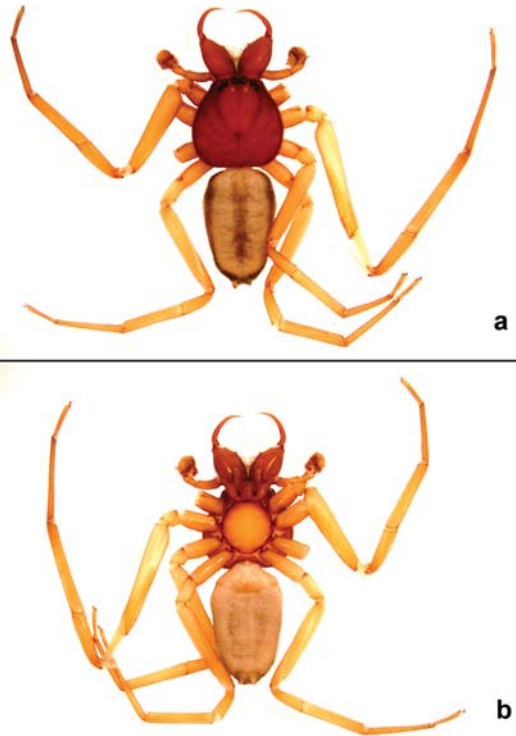


FIGURE 8. *Platyooides ravina*. Male holotype. a. habitus, dorsal. b. habitus, ventral.



***Platyoides vao* Andriamalala and Ubick, sp nov.**

Figures 9–11.

**MATERIAL EXAMINED.**— FEMALE (HOLOTYPE): MADAGASCAR: **Toliara Province:** Réserve Speciale Cap sainte Marie, 12.3 km 262° W of Marovato, 200 m, 25°34'S, 54°11.5'E, spiny forest (thicket), general collecting (ground), 11–15 February 2002, B.L. Fisher et al., 1 ♀ (CAS), CASENT 9012701.

**ETYMOLOGY.**— The species name is from the Malagasy word “vao” which means new but also is a common name for a girl.

**DIAGNOSIS.**— Epigynum distinctive, with one median pair of large globular spermathecae. Posterior ducts widely separated and on lateral sides of spermaphicae. Paramedian ducts anteriorly very long, dilated, curly, and translucent. Copulatory openings situated posterolaterally (Fig. 9).

**DESCRIPTION.**— FEMALE (Holotype from Réserve Speciale Cap sainte Marie, 12.3 km 262° W of Marovato, Toliara, Madagascar): Carapace orange brown in the middle and becoming darker to black near margins. Both legs and leg segments are yellowish orange. Labium and endites orange slightly lighter apically. Sternum yellowish orange, slightly convex. Abdomen dark gray, dorsum with multitude of horizontal yellowish stripes and two parallel dark median longitudinal areas. Posterior margins darker (Fig. 10).

Carapace widest between coxa II and III, thoracic groove not well defined, fovea forming a round depression. Eyes in two rows, anterior row slightly recurved, posterior row straight; ALE and PLE circular, dark, surrounded by black pigmentation; PME oval, light, not ringed with black; AME round, slightly darker; LE raised on small tubercles; MOQ narrowed in front; clypeus low, about one half diameter of AME. Chelicerae laterally divergent, bearing long curved fangs promargin with three widely equally spaced medium sized teeth on promargin, and a retromarginal bare (Fig. 11). Labium slightly longer than wide, narrowed distally. Endites obliquely depressed, bearing few hairs at tips. Sternum yellow, slightly darker near margins, slightly convex, scarcely longer than wide, subcircular, truncated at anterior margin, with precoxal sclerites. Abdomen flattened, covered with short setae. Spinnerets small and shorter compared to those *P. mailaka* and *P. ravina*, ALS longest, more or less cylindrical, more closed at their base and then separated at tips. Legs laterigrade, folded over the body, lacking spines and with few setae. Tarsi with a row of dorsal trichobohria, two claws, lightly scopulate, lacking claw tufts. Trochanters unnotched, trochanter IV much longer than the others.

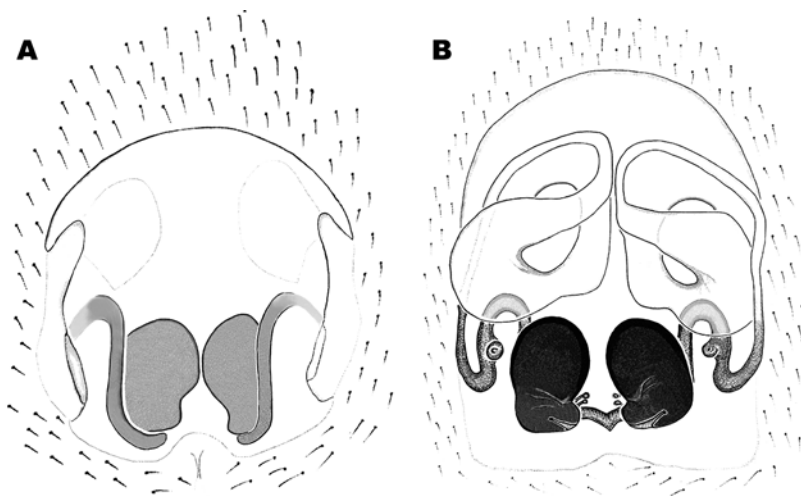


FIGURE 9. *Platyoides vao*. Female holotype, epigynum. A. dorsal. b. ventral.

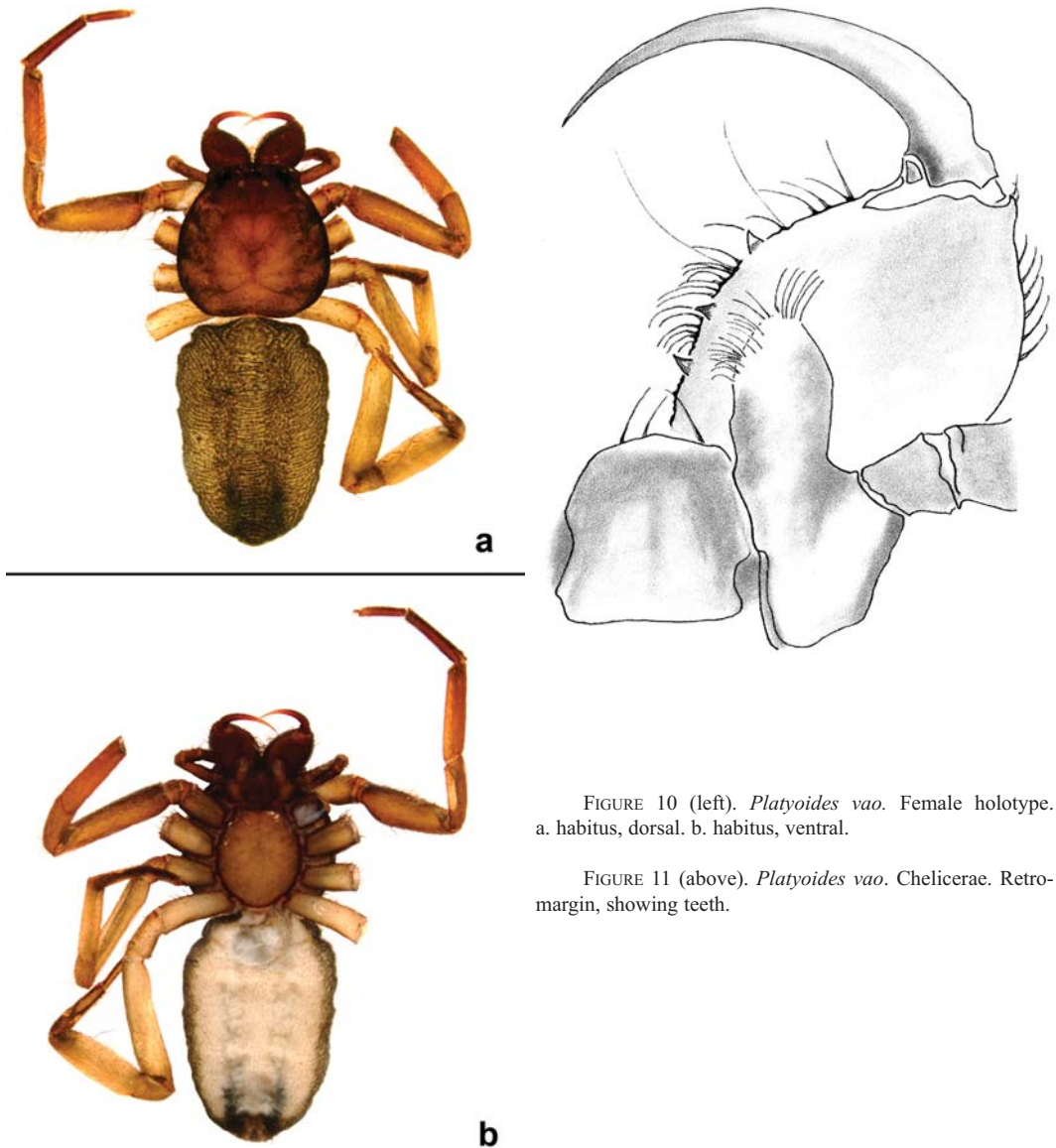


FIGURE 10 (left). *Platyoides vao*. Female holotype. a. habitus, dorsal. b. habitus, ventral.

FIGURE 11 (above). *Platyoides vao*. Chelicerae. Retro-marginal, showing teeth.

Total length 3.8 (not including the chelicerae). Carapace 1.80 long, 2 wide. Abdomen 3 long, 2 wide. Femur II 1.9 long. Eyes sizes and interdistances: AME 0.10, ALE 0.85, PME 0.80; PLE 0.10; AME-AME 0.06, AME-ALE 0.21, PME-PME 0.21, PME-PL 0.29, ALE-PL 0.14; MOQ length 0.27, MOQ front width 0.27, MOQ back width 0.40; ratios of carapace length/width 0.9; ratios of abdomen length/width 1.5; ratios of MOQAW/MOQPW 0.67; ratios of AME/PME 0.12; ratios of femur II length/carapace width 0.95. Chelicerae with three widely equally spaced medium sized teeth on promargin, and a retromarginal bare (Fig. 9).

**DISTRIBUTION.**— Known only from the South of Madagascar (Fig. 5).

ACKNOWLEDGMENTS

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