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# A new species of Acanthopinae from Peru: *Miracanthops eseejja* n. sp. and notes on *Acanthops occidentalis* Lombardo & Ippollito, 2004 (Mantodea: Acanthopidae)

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## Abstract

A new species of *Miracanthops* Roy, 2004 from Tambopata, Peru is described: *Miracanthops eseejja* n. sp. The diagnosis of the genus *Miracanthops* is also completed, with the description of the male, which was previously unknown. Based on the characters of the male, *Acanthops occidentalis* Lombardo & Ippollito 2004 is transferred to *Miracanthops* as *M. occidentalis* (Lombardo & Ippollito 2004) n. comb.

## Key words

Mantodea, Acanthopidae, Acanthopinae, mantid, *Miracanthops*, Peru, asymmetry

## Introduction

The Acanthopinae (Acanthopidae) includes some of the most cryptic and bizarre-looking mantids of the neotropics. As far as is known, all the species resemble dead leaves and other such decaying plant material. At present, seven genera (including the enigmatic and poorly known genus *Astollia* Kirby) are included in the Acanthopinae, clearly representing a monophyletic group. The latest 2 additions to this subfamily were made recently by Roy (2004), who described 2 new genera: *Lagrecacanthops* and *Miracanthops*.

The genus *Miracanthops* was based on 2 peculiar species from the tropical rainforest of South America: *Miracanthops lombardoi* Roy, 2004 from Ecuador (Sarayacu and Napo) and *Miracanthops poulaini* Roy 2004 from Peru (Genaro Herrera and Panguana). The character states of *Miracanthops*, which is currently known only from females, are remarkable. One of the most striking morphological attributes shown by the females of this genus is the exaggerated development of the apical lobe of the mesothoracic wings and the unusual narrowness of these structures. These features, among others, have no match within the Acanthopinae and clearly justify the generic status of *Miracanthops*.

In this contribution, I describe a third, very distinctive species of *Miracanthops* from Peru. The series described herein includes one male, which allows me to complete the diagnosis of the genus. Furthermore, I am able to establish that *Acanthops occidentalis* Lombardo & Ippollito 2004 is more appropriately assigned to *Miracanthops*.

## Materials and Methods

The material examined is deposited in the Mantodea collection of the "Klaus Raven Buller" Entomological Museum, Universidad Nacional Agraria "La Molina" (UNALM) in Lima, Peru. The illustra-

tions were made by the author using a camera lucida attached to a Wild M5-51801 stereoscopic microscope. The photographs were taken with a digital camera, Canon PC1089 PowerShot G6.

## *Miracanthops* Roy 2004

*Miracanthops* Roy 2004: 494.

*Type species*.— *M. poulaini* Roy 2004 (original designation).

*Diagnosis*.—Male morphology similar to that of the female, except for the usual differences associated with sexual dimorphism (*i.e.*, more slender body, relatively smaller size and well-developed wings). The most obvious differences are found in the wings. The male fore wings (Fig. 5) are not as elongated and narrowed as those of the female (Fig. 17) and, unlike the females, the apical lobe is totally absent. The costal margin is uniformly curved (at least on its basal 3/4) and no double sinuosity is observed, as shown by the closely related genus *Acanthops* Burmeister. The tips of the hind wings (Fig. 6) are truncated and show small projections where the longitudinal veins reach the wing margin. The pronotum (Fig. 3) is slender, the lateral margins of the metazone are flat and somewhat expanded. Unlike the female, the brown spots on the sides of the metazone are only slightly evident. The middle and hind femora exhibit marked sexual dimorphism: the genicular lobes are short and rounded (Fig. 7), whereas the same structures in the females are elongated and pointed (Fig. 18); this sexual difference is apparently unique within the Acanthopinae, though evident to a lesser extent in *Acanthops tuberculata* Saussure, 1870 (Roger Roy pers. comm.). The abdomen (Fig. 8) is similar to that of females, but relatively slender, the lateral projections less developed, but still noticeable; the projections of the distal margin of the urosternites are also distinctive and useful to accurately separate the males of *Miracanthops* from *Acanthops*.

## *Miracanthops eseejja* n. sp. (Figs 1-20)

*Holotype*.—♂: PERU: Madre de Dios: R[eserva] N[acional] Tambopata (lago Sandoval), 31 X 2000, (R. Acosta leg.); deposited UNALM.

*Paratype*.—♀: PERU: Madre de Dios, Puerto Maldonado, Tambopata (vicinity of Posada Amazonas), 28 IX 2001, (M. Deza leg.); deposited UNALM; the distal portion of the fore tibia is missing and the right hind leg is disproportionately smaller than the other limbs, which indicates a former regeneration.

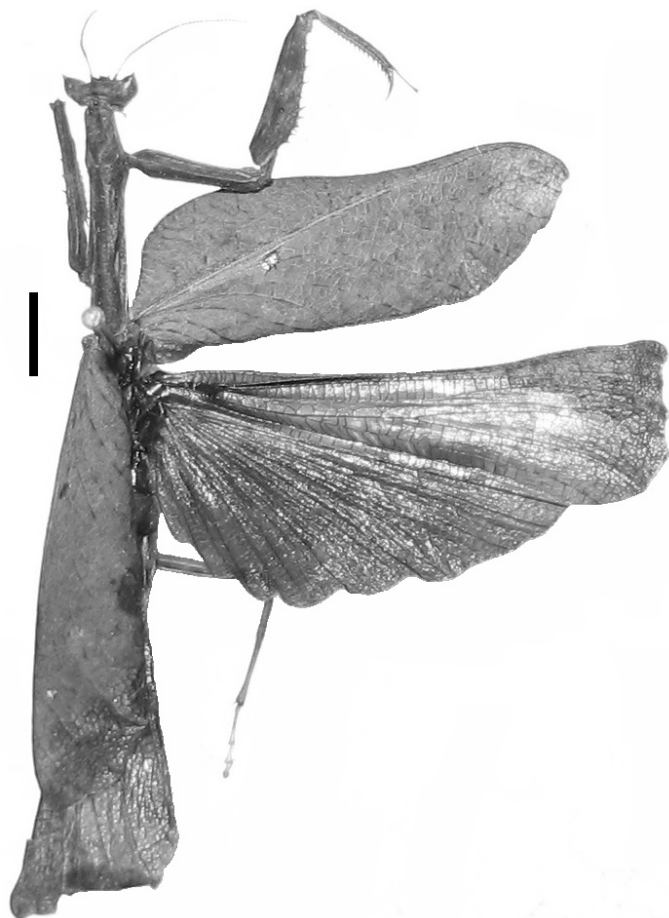


Fig. 1. *M. eseejja* ♂ (Holotype), dorsal habitus, (scale = 5 mm).

**Description male.**— (Figs 1-12) **Head:** (Fig. 2) face with a longitudinal brown band in the middle. Frontal shield with its upper angle bifurcate and projected forward. Antenna moniliform, half as long as length of pronotum, and with short, sparse hairs. Vertex elevated as shown in Fig. 2. **Thorax:** pronotum (Fig. 3) elongated and relatively slender (ratio length metazone to length prozone = 2.7); prozone bearing a few minuscule granulations on the surface and metazone with inconspicuous dark areas on sides; lateral margins smooth. **Fore coxae** slender, their dorsal margin with minuscule denticulations and the surface bearing a few small granulations. **Fore femora:** (Fig. 4) elongated and with small, sparse granulations on their surface; dorsal margin barely sinuated, almost straight; basal dorsal lobe almost inconspicuous; internal margin with 16 spines, external margin with 6 spines (with 3-5 small denticles between them). **Fore tibiae** with their dorsal margin straight; internal margin with 18 spines; external margin with 21 and 23 spines (left and right tibia respectively). All spines on femora and tibia with brown tips. Middle and hind limbs smooth, without lobes or granulations (although the middle and hind tibiae show a rudimentary carina distally). Pleuron, meso- and metasternum, as well as the middle and hind legs, with dense, golden pilosity. Mesothoracic wings (Fig. 5) dark brown and opaque (except for a small hyaline spot close to the tip of the discoidal area). Costal field with basal three quarters wide, its margin uniformly curved, distal quarter narrowing progressively toward the tip; anal area dark brown and hyaline. Stigma visible and darker than rest of wing. Metathoracic wings dark brown (except for a small lighter portion distally). Costal field with a few small

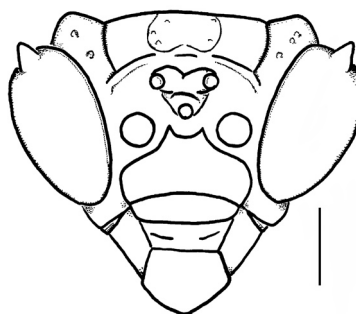


Fig. 2. *M. eseejja* ♂, head (frontal view) antennae omitted (scale = 1mm).

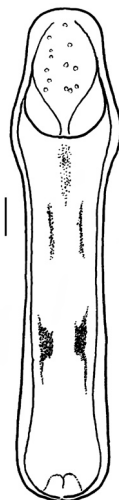


Fig. 3. *M. eseejja* ♂, Pronotum (dorsal view) (scale = 1 mm).

opaque spots along its length; discoidal field with opaque distal portion, the rest of the wing hyaline; apex of the metathoracic wings as shown in Fig. 6. Genicular lobe of both middle and hind femora with a rounded apex (Fig. 7). **Abdomen:** slender, with carina-like parallel striations ventrally (Fig. 8). Distal margin of urosternites with 3 small triangular projections (1 medial and 2 lateral), increasing in size distally (in urosternites VII and VIII, medial projection shorter than lateral ones). Small lateral (foliaceous) projections on sides of middle segments. Both supra-anal and subgenital plates with apex incised (incision markedly deeper on the latter, see Fig. 8). Last joint of cerci bearing short pilosity, rectangular in shape, markedly elongated (as long as the other joints combined) and with apex incised (Fig. 9). **Genitalia:** ventral phallomere (Fig. 10) length greater than width; apical process elongated and curved, with acute and sclerotized apex; left margin deeply emarginate distally; anterior process well developed, elongated, robust, with apex truncate and bearing a short, acute process on its right side. Left phallomere (Fig. 11) with phalloid apophysis distally sclerotized, elongated, and somewhat constricted at its base; ventral lamina elongated, its right margin sinuous; anterior process elongated and distally curved. Right phallomere with finger-like ventral process and ventral plate well sclerotized, bearing several conspicuous and irregular plates (Fig. 12).

**Measurements.**— (mm) Body length, 40; pronotum length, 12.5; head width, 4; fore femora length, 9.2; fore tibia length, 5; mesothoracic wing length, 25; costal field length, fore wing, widest part, 5; metathoracic wing length, 28; hind femur length, 7.1; hind tibia length, 7.5.

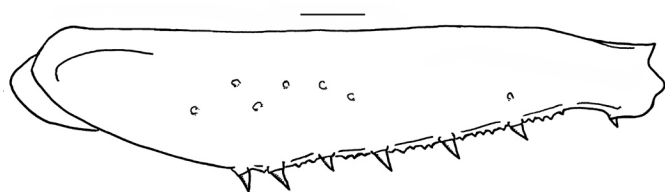


Fig. 4. *M. eseejja* ♂, right fore femur (lateral view) (scale=1 mm).



Fig. 6. *M. eseejja* ♂, tip of the right metathoracic wing (dorsal view) (scale = 5 mm).

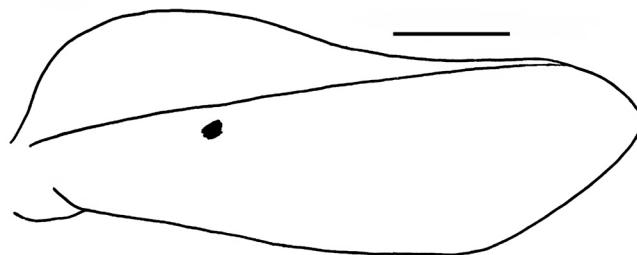


Fig. 5. *M. eseejja* ♂, right mesothoracic wing (dorsal view, venation omitted) (scale = 5 mm).

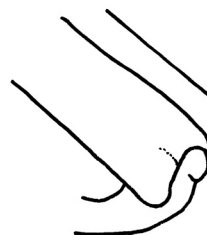


Fig. 7. *M. eseejja* ♂, articulation of the posterior femur and tibia (note the rounded apical lobe of the femur) (Lateral view) (scale = 1mm).

**Description female.**— (Figs 13-18) Similar to the male but differing as follows: **Head:** (Fig. 14) elongated, vertex more developed than that of male and with sparse granulations. Frontal shield with upper angle less projected compared with male. Antenna approximately as long as width of head. **Thorax:** pronotum (Fig. 15) elongated (ratio length metazone to length prozone = 2.9), robust, with a few granulations on its surface, especially aggregated on the prozone. Prozone with lateral margins bearing very small, inconspicuous, denticles; metazone with conspicuous denticles on lateral margins and possessing 2 obvious oblique brown bands on sides of posterior half, as well as other less indicated stripes and spots. Fore coxae and trochanter with granulated surface. **Fore femora** (Fig. 16) with granulated outer side and serrated dorsal edge; basal dorsal lobe slightly more developed than that of males; 16 spines on internal margin and 6 spines on external margin. **Fore tibiae** with 23 spines on internal margin. Mesothoracic wings asymmetrical (?), brown, opaque; costal field somewhat wider basally than discoidal field at the same level; apical lobe of right mesothoracic wing (Fig. 17) exceptionally elongated (in accordance with genus), whereas such a lobe is absent on left mesothoracic wing. Metathoracic wings small, yellow-colored and with small brown spots in middle of cells; brown spots particularly abundant in anal area, where they occupy almost its entire area, whereas those on discoidal area are mainly restricted to distal portion. Genicular lobe of both middle and hind femora with a pointed apex (Fig. 18). **Abdomen:** similar to that of the male, but dilated and with more developed lateral prolongations. Cerci like those of male.

**Measurements.**— (mm) Body length, 46; pronotum length, 17.5; head width, 5.5; fore femora length, 13; fore tibia length, 8.1; mesothoracic wing length, 50 (right), 27 (left); metathoracic wing length, 19; hind femur length, 9; hind tibia length, 10.

**Etymology.**— a noun in apposition, the new species is named after the Eseejja people, the principal indigenous community inhabiting the Tambopata National Reserve where the type specimens were collected.

**Distribution.**— Known only from southern Peru.

## Remarks

The known distribution of the genus *Miracanthops*, with its now 4 species, is Ecuador and Peru (Fig. 21).

The new species superficially resembles *M. lombardoi*, mainly due to similarities in coloration and size. However, *M. eseejja* is easily distinguishable from the other known species on the basis of its remarkable cercal morphology. While these structures are oval shaped and about 1.5 times as long as wide in *M. lombardoi* and *M. poulaini* (Figs 19 and 20 respectively), the same structures in *M. eseejja* are rectangular in shape and about 2.5 times as long as wide (Fig. 9).

Another interesting attribute of *M. eseejja* (or at least of the single female examined) is the elongated lobe occurring only on the right mesothoracic wing; this lobe is totally absent on the left side. I have examined the specimen carefully and have not found any evidence or sign of damage on this portion of the wing that would explain the absence of the lobe. Wing asymmetries in Mantodea are rarely documented and, as far as I know, the only record of wing asymmetry in mantids deals with coloration rather than with shape (Barabás 1999). Whether this asymmetry represents individual variation or is a specific trait of *M. eseejja*, remains to be determined after the examination of additional specimens.

In a recent paper by Lombardo & Ippollito (2004), the genus *Acanthops* Burmeister was reviewed in detail and 17 spp. recognized by the authors. However, one particular species, *Acanthops occidentalis*, described as new by the authors and based on 2 male specimens from Ecuador (holotype) and Peru (paratype), evidently belongs to *Miracanthops*. The shape of the male genitalia and the indented posterior margin of the urosternites are attributes also exhibited by the male of *M. eseejja* and clearly exclude *M. occidentalis* from *Acanthops*. Accordingly, the species is more appropriately referred to as *Miracanthops occidentalis* (Lombardo & Ippollito, 2004) n. comb. This modification has been corroborated by Roger Roy (Muséum National d'Histoire Naturelle, Paris), who in a personal communication, also pointed out the possibility that *Miracanthops lombardoi* from Ecuador is actually a synonym of *Miracanthops occidentalis* (the paratype of *occidentalis* from Peru probably belongs to a different species). This last issue will remain open pending examination of further material.



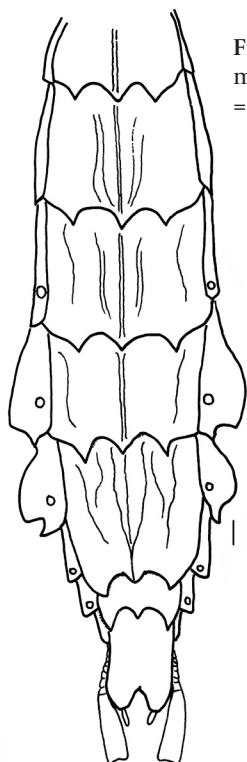


Fig. 8. *M. eseejja* ♂, abdomen (ventral view) (scale = 1 mm).

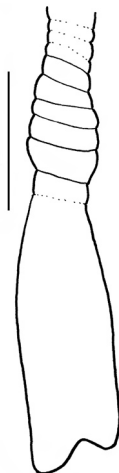


Fig. 9. *M. eseejja* ♂, cercus (pilosity omitted) (scale = 0.5 mm).

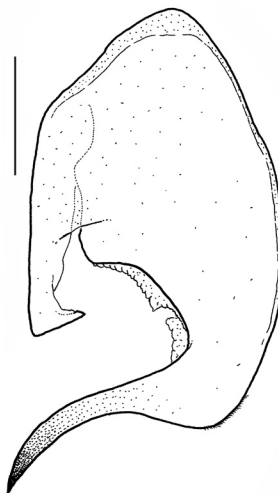


Fig. 10. *M. eseejja* ♂, ventral phallosome (scale = 0.5 mm).

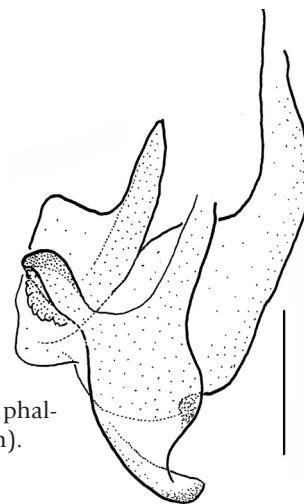


Fig. 11. *M. eseejja* ♂, left phallosome (scale = 0.5 mm).

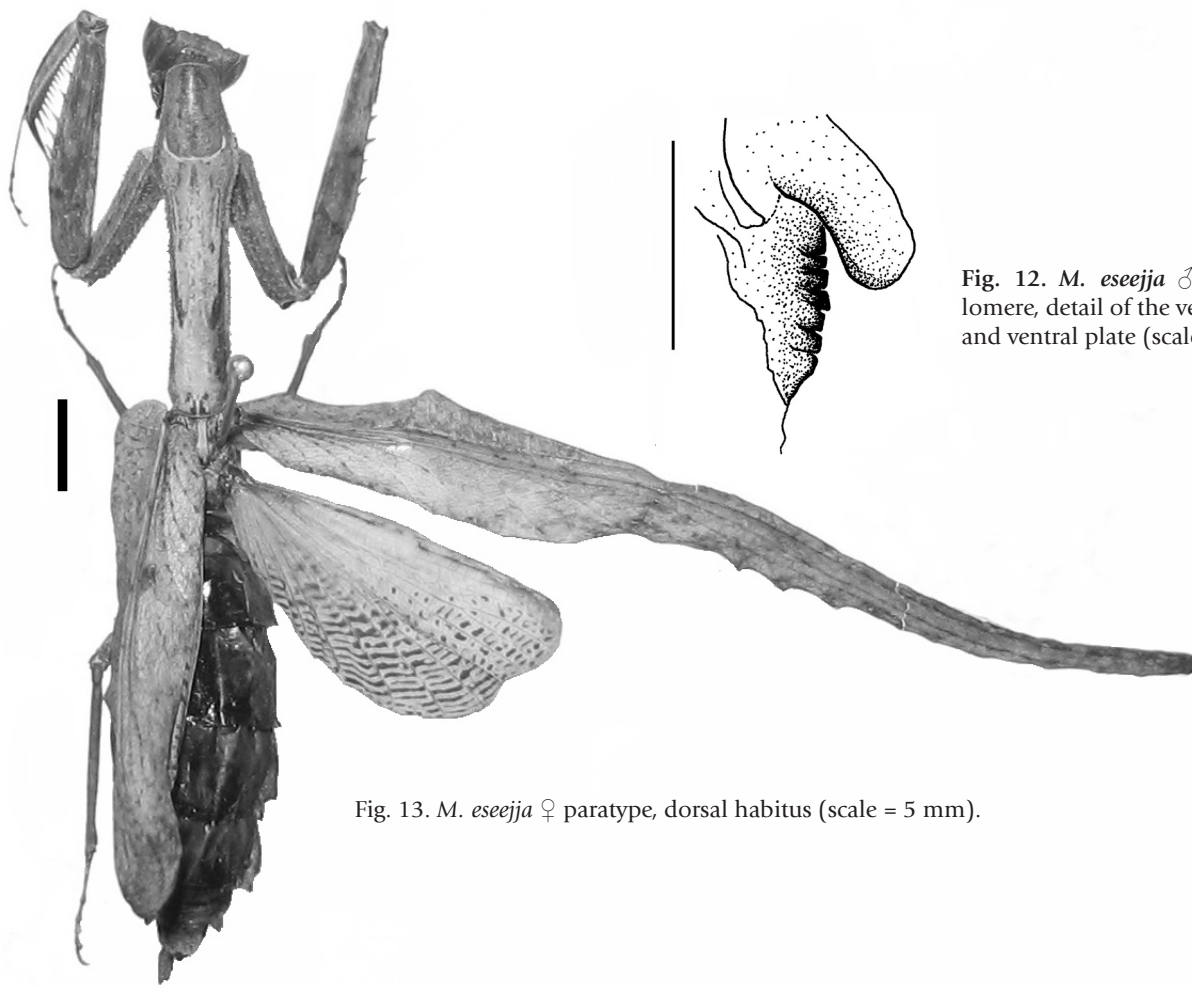


Fig. 12. *M. eseejja* ♂, right phallosome, detail of the ventral process and ventral plate (scale = 0.5 mm).

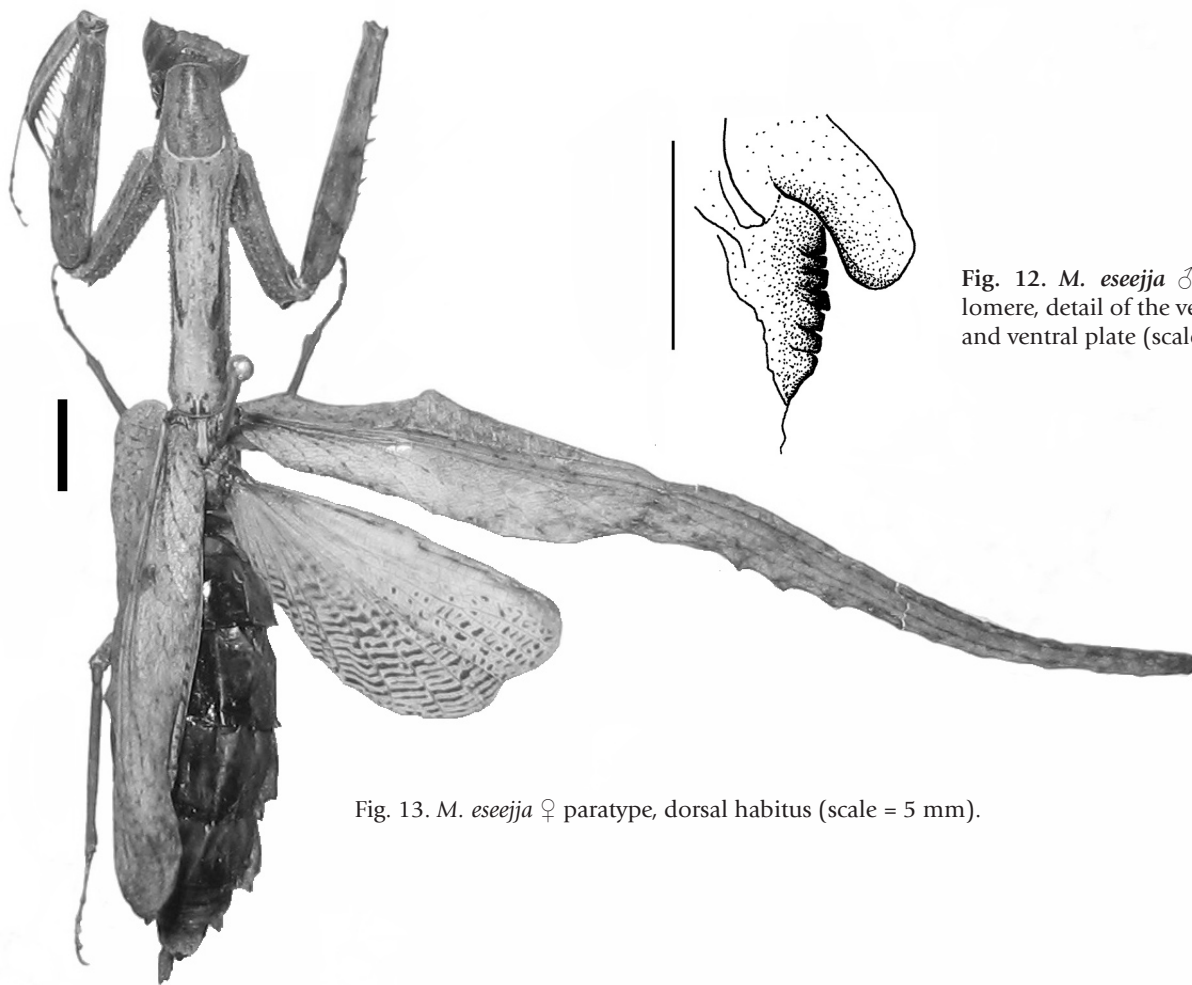


Fig. 13. *M. eseejja* ♀ paratype, dorsal habitus (scale = 5 mm).

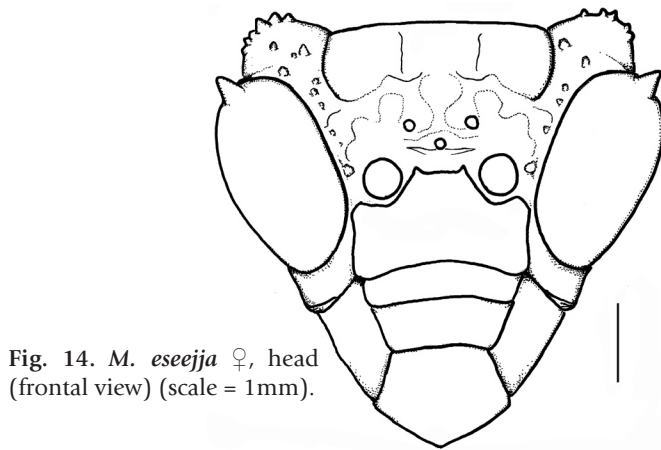


Fig. 14. *M. eseejja* ♀, head (frontal view) (scale = 1mm).

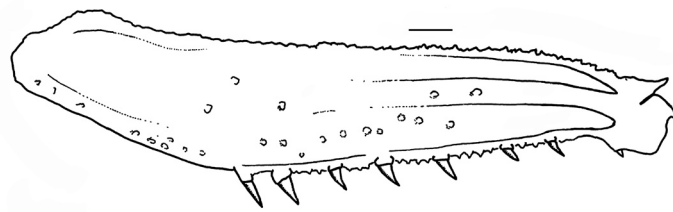


Fig. 16. *M. eseejja* ♀, right fore femur (lateral view) (scale = 1mm).



Fig. 17. *M. eseejja* ♀, right mesothoracic wing (dorsal view, venation omitted) (scale = 5 mm).

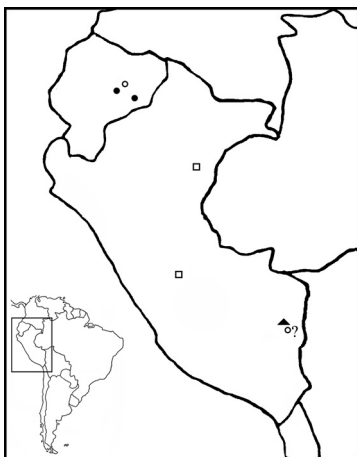


Fig. 21. Distribution of *Miracanthops* species:

- ❖ triangle (▲), *M. eseejja*
- ❖ solid circle (●), *M. lombardoi*
- ❖ open circle (○), *M. occidentalis*
- ❖ open square (□), *M. poulaini*.

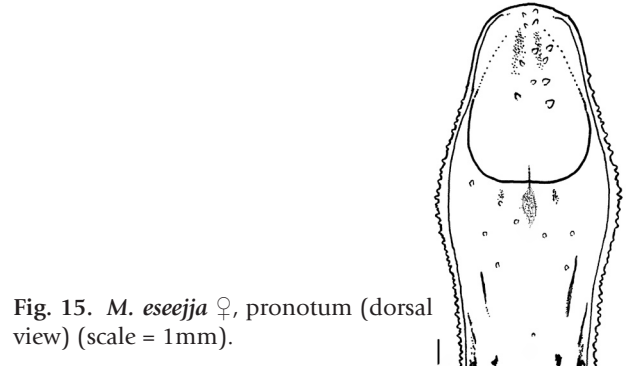


Fig. 15. *M. eseejja* ♀, pronotum (dorsal view) (scale = 1mm).



Fig. 18. *M. eseejja* ♀, articulation of the posterior femur and tibia (note the pointed apical lobe of the femur) (Lateral view) (scale = 1mm).



Fig. 20. *M. poulaini* ♀, cercus (redrawn from Roy 2004) (scale = 0.5 mm).



Fig. 19. *M. lombardoi* ♀, cercus (redrawn from Roy 2004) (scale = 0.5 mm).

In the future, mantid taxonomists must take special care when assigning new species to *Miracanthops*, mainly because its remarkable sexual dimorphism has proven to be problematic for making taxonomic decisions. This holds true for *Acanthops* as well as for the Acanthopinae in general.

## Conclusion

*Miracanthops* includes the following species: *M. poulaini* Roy, 2004, from Peru, *M. occidentalis* (Lombardo & Ippollito 2004) from Ecuador, *M. lombardoi* Roy 2004 (perhaps a synonym of *occidentalis*) from Ecuador and (doubtfully) Peru, and *M. eseejja* Rivera n. sp. from Peru.

## Acknowledgments

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