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New species of the genera *Mimogonus* and *Mimogonia* (Coleoptera: Staphylinidae: Osoriinae) from the Neotropical Region

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Abstract. Two new species of the genus *Mimogonus* Fauvel, 1903, *M. clavicornis* sp. nov. and *M. curtus* sp. nov., are described from the eastern slope of the Andean range in Ecuador. Three species of *Mimogonus* Fauvel, 1903 are now known from the Neotropics, including *M. fumator* (Fauvel, 1889) from the West Indies. Similarities between the two new *Mimogonus* species and the African species, *M. curtipennis* Fagel, 1959 and *M. fumator* (Fauvel, 1889), are discussed. Additionally, three new species of the genus *Mimogonia* Coiffait, 1978, *M. longipes* sp. nov., *M. amazonica* sp. nov. and *M. paraensis* sp. nov., are described from the Brazilian states of Amazonas and Pará. Including these new species, a total of 17 *Mimogonia* species is now known from South America. A key to the species group of *Mimogonia* characterised by large prominent eyes is provided.

Keywords. Staphylinidae, Osoriinae, *Mimogonus*, *Mimogonia* new species, zoogeography, identification keys, Ecuador, Brazil, Neotropics

Introduction

In the recently studied material of Neotropical Osoriinae from the American Natural History Museum, a new species was found that was difficult to attribute to any of the described genera of the Neotropical Region. Another similar, clearly congeneric species was collected only one hundred kilometeres to the east of the locality of the former species in the lower mountainous region of Ecuador by M. Fikáček and J. Skuhrovec from the National Museum, Prague. Both species resemble the genus *Mimogonus* Fauvel, 1903 in regards to the shape of the protibiae, the lateral margin of pronotum, and both species possessing a deep emargination in front of the posterior angles of pronotum. In the genus *Mimogonus* 17 species exist in all tropical regions except the Australian tropics (Herman 2001). According to Herman (2001), Africa accounts for the highest species richness with 11 species, whereas Central and South America only have one species, *Mimogonus fumator* (Fauvel, 1889), which has been recorded, hitherto. However, compared to this species, the new species are characterised by

a crenate lateral margin of the pronotum, a clearly different morphology of the endophallus of the aedeagus, short elytra, and a pronotum that is distinctly wider than it is long. The two new species are more similar to the African *Mimogonus* species described by FAGEL (1959), based on the large width of pronotum and short length of elytra.

Furthermore, several new species of the genus *Mimogonia* Coiffait, 1978 from Brazil were found in the material of the American Museum of Natural History, New York, and of the Natural History Museum, London. The present paper will give the descriptions of the new species and keys to the genus *Mimogonus* and to the species of *Mimogonia* related to the new species.

Material and methods

The material was kindly provided by the America Natural History Museum, New York, the National Museum, Prague, and the Natural History Museum, London.

The following abbreviations are used:

AMNH American Natural History Museum, New York, U.S.A.;

BMNH The Natural History Museum, London, Great Britain;

NMPC National Museum, Prague, Czech Republic;

QCAZ Museo de la Pontificia Universidad Catolica del Ecuador, Quito, Ecuador;

UIC Urlich Irmler private collection.

For the measurement of total length, the inter-segmental space of abdominal segments was considered. The lengths of individual tagmata were determined along the midline, their widths at the widest part of the respective tagmata. For the photographs, a Makroskop M 420 (Wild, Herbrugg) was used in combination with a digital camera (Nikon D100).

Taxonomy

Genus Mimogonus Fauvel, 1903

Mimogonus curtus sp. nov. (Figs. 2 a-c, 6 B)

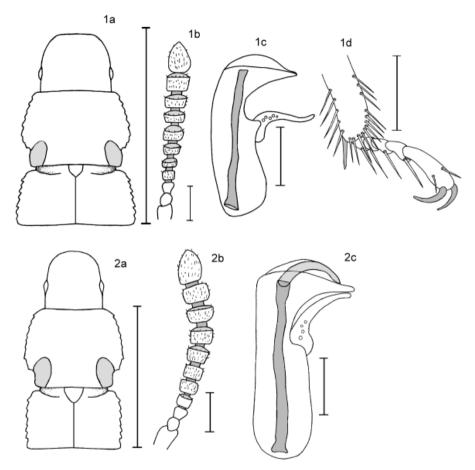
Type locality. Ecuador, Tungurahua, 22.7 km E of Baños, 1417 m a.s.l.

Type material. HOLOTYPE: ♂, 'Ecuador: Tungurahua Prov., 22.7 km E. Baños, 4650 ft. elevation, 22.5. 1993, leg. L. Herman, #2737, collected in litter near stream' (AMNH). PARATYPES: 1 ♂, 1 ♀, same data as holotype (AMNH, UIC).

Diagnosis. This species is highly similar to *M. clavicornis* sp. nov. It is slightly larger and of yellow colouration (*M. clavicornis*: dark red). In contrast to *M. clavicornis*, the pronotal midline is indistinct at the anterior and posterior edges. The aedeagus, including the endophallus, is quite similar, too. Antennae in *M. curtus* sp. nov. are less clavate than in *M. clavicornis*; in particular the 6th antennomere is only slightly wider than it is long, whereas it is at least twice as wide as it is long in *M. clavicornis*.

Description. Length: 2.6 mm. Colouration: dark-yellow; legs pale-yellow.

Head 0.25 mm long, 0.50 mm wide; eyes small, composed of 10 ommatidia; not prominent; temples as long as eyes; setiferous punctation dense and deep; setae long and yellow; approximately 3 times as long as the diameter of punctures; distance between punctures less



Figs. 1–2. 1 – *Mimogonus clavicornis* sp. nov.; 2 – *Mimogonus curtus* sp. nov. (a – fore body; b – antenna; c – aedeagus in lateral aspect; d – metatarsus). Scale bars: 1 mm (a), 0.1 mm (b–d).

than ¼ as wide as diameter of punctures; surface of disc between punctures polished and without microsculpture; only anterior part of clypeus with weak microsculpture, but surface nevertheless shiny.

Antennae short, stout, and longer than length of head and half of pronotal length combined; 2^{nd} antennomere globular; 3^{rd} antennomere conical and not longer than 2^{nd} ; 4^{th} antennomere short and slightly smaller than proceeding antennomeres; twice as wide as long; following antennomeres larger and wider than antennomeres I–IV, and of subequal width; penultimate antennomere 1.5 times as wide as long.

Pronotum 0.47 mm long, 0.73 mm wide; widest in the middle; without distinct anterior angles; with deep emargination in front of posterior angles; posterior angles with indistinct depressions with same length as lateral emargination; lateral margin fine; setiferous punctation as on head and surface without microsculpture, glossy.

Elytra 0.37 mm long, 0.67 mm wide; with denticulate margin; setiferous punctation as on head; surface between punctures with weak isodiametric microsculpture, but nevertheless, shiny.

Abdomen with setiferous punctation as dense and as deep as that of elytra and pronotum except 6th visible segment, where punctation is weaker and sparser than that of preceding segments.

Aedeagus with median lobe forming a more or less right angle apically; paramera reaching apex of median lobe; endophallus long and straight.

Etymology. The specific name derived from the Latin word meaning short and refers to the short elytra of the species.

Mimogonus clavicornis sp. nov.

(Figs. 1 a-d, 6 A)

Type locality. Ecuador, Napo, 6.9 km E of Puerto Napo, 1°01.48'S, 77°43.58'W, 500 m a.s.l.

Type material. Holotype: ♂, 'Ecuador: Napo Prov., 6.9 km E of Puerto Napo (1°01.48'S, 77°43.58'W), 500 m elevation, 24.11.2006, leg. M. Fikáček & J. Skuhrovec, collected in primary forest with sparse understory vegetation, shady, sifting of leaf litter and rotten branches at various sites along the trail' (QCAZ). Parataypes: 2 ♀♀, same data as holotype (NMPC, UIC); 1 ♀, 'Napo Prov., 33 km N Tena, 8-29 km E on Loreto Rd. XI-2-88, 1200-1500 m elevation, litter, leg. L. Herman' (AMNH).

Diagnosis. This species resembles *M. curtus* sp. nov. in shape and punctation. The aedeagus, also, shows no significant differences between the two species. *Mimogonus clavicornis* sp. nov. is smaller and darker in colour than *M. curtus* and the pronotal midline is distinct throughout its total length. Moreover, the antennae in *M. clavicornis* are more clavate than in. *M. curtus*, in particular the 6th antennomere is short and at least twice as wide as it is long in *M. clavicornis*, while it is stouter and only slightly wider than it is long in *M. curtus*.

Description. Length: 2.2 mm. Colouration: dark red; legs and antennae pale red.

Head 0.25 mm long, 0.35 mm wide; eyes small, composed of 10 ommatidia; eyes not prominent; temples as long as eyes; setiferous punctation of disc dense and deep; setae long and yellow; setae as long as 3 times the diameter of punctures; distance between punctures less than ½ as wide as diameter of punctures; surface between punctures polished, with weak net-like microsculpture; elevations at base of antennae without punctation and microsculpture, glossy.

Antennae longer than length of head and half of pronotal length combined; 2^{nd} antennomere globular; 3^{rd} conical and as long as short 2^{nd} antennomere; following antennomeres increasing in width; 4^{th} antennomere slightly wider than long; penultimate antennomeres between 1.5 and 2 times wider than long.

Pronotum 0.35 mm long, 0.52 mm wide; widest in the middle; without distinct anterior angles; posterior half with deep emargination; lateral margin denticulate, including posterior emargination; posterior angles with indistinct depression; setiferous punctation as dense as that of head, but slightly deeper and larger; distance between punctures less than half as wide as diameter of punctures; indistinct impunctate midline present; surface between punctures glossy.

Elytra 0.30 mm long, 0.50 mm wide; lateral margin deeply denticulate; setiferous punctation slightly weaker than that of pronotum and surface between punctures with weak microsculpture; less glossy than pronotum.

Abdomen with similar punctation as that of elytra; microsculpture of anterior abdominal segments more distinct than that of posterior segments; last visible abdominal tergite bifurcate.

Shape of aedeagus as in *M. curtus*; paramere as long as apical part of median lobe; endophallus long and straight.

Etymology. The specific name refers to the thick and clavate shape of antennae and is a combination of the epithet *clava*, derived from the same Latin word meaning club, and *cornu*, meaning the antenna of beetles.

Key to the Neotropical Mimogonus species

- Lateral margin of pronotum fine, smooth, in dorsal aspect only visible in its posterior part (Fig. 6C); pronotum approximately 1.25 times as wide as long; endophallus of the aedeagus with several torsions.
 M. fumator (Fauvel, 1889)
- 2 Smaller species, 2.2 mm long, colouration dark red, pronotal midline distinct throughout its total length (Fig. 6A), and lateral margin of pronotum crenate, 6th antennomere at least twice as wide as long.

 M. clavicornis sp. nov.
- Larger species, 2.6 mm long, colouration yellow, pronotal midline indistinct anteriorly (Fig. 6B), lateral margin of pronotum undulate, 6th antennomere only slightly wider than long.
 M. curtus sp. nov.

Genus Mimogonia Fauvel, 1903

Mimogonia longipes sp. nov.

(Figs. 3 a-c, 6 D)

Type locality, Brazil, Pará, 14 km S of Vijia.

Type material. Holotype: \lozenge , 'Brazil: Pará: 14 km S. Vijia, May 30, 1973, leg. R.T. Schuh, collected in soil litter layer in "campo de caimbé" (AMNH). Paratypes: 8 $\lozenge\lozenge$ 10 $\lozenge\lozenge$, same data as in the holotype (AMNH, UIC).

Diagnosis. This species can be easily distinguished from the other species of the genus by the extremely large and prominent eyes. The head width / pronotum width ratio is the greatest of all known *Mimogonia* species (1.18). The head thus resembles that of a small *Stenus* species. Large eyes are also found in *M. elytrata* Irmler, 2005 from French Guiana and *M. longoelytrata* Irmler, 2005 from Peru, but the head width / pronotum width ratios are smaller in these species, ranging only between 1.00 and 1.09. Furthermore, antennae of *M. elytrata* are shorter than length of the head and the pronotum combined, whereas they are longer than this distance in *M. longoelytrata* and *M. longipes* sp. nov. Hind legs of *M. longipes* are relatively longer than those of *M. longoelytrata*. The metatibia of *M. longipes* is distinctly longer than the length of the anterior three visible abdominal segments combined, whereas metatibia of *M. longoelytrata* is only as long as the length of the anterior three abdominal segments combined. The punctation of *M. elytrata* and *M. longoelytrata* is denser, in particular that of the head. Thus, the surface of the fore-body is matt in appearance in *M. elytrata* and *M. longoelytrata*, whereas it is shiny in *M. longipes*.

Description. Length: 2.2 mm. Colouration: yellow; head darker on disc than light yellow clypeus and pronotum also darker reddish than yellow anterior $\frac{2}{3}$ of elytra; posterior third of elytra brown; 5^{th} and 6^{th} visible abdominal segments darker than proceeding yellow segments; legs and antennae yellow.

Head 0.30 mm long, 0.47 mm wide; eyes distinctly prominent and large; more than four times as long as short temples; sides in front of eyes strongly narrowed to anterior edge of clypeus; punctation irregular and with wide space in centre of disc impunctate; clypeus also without punctures; setiferous punctures large and deep; distance between punctures on average \(^{1}\)4 as wide as diameter of punctures; surface without microsculpture and shiny.

Antennae as long as length of head and pronotum combined; 2nd antennomere longitudinally oval; longer than conical 3rd antennomere; 4th antennomere quadrate and as wide as preceding antennomere; following antennomeres wider and increasing in width; penultimate antennomere slightly wider than long.

Pronotum 0.35 mm long, 0.40 mm wide; lateral margins of anterior half parallel; deeply emarginate anterior to posterior angles; setiferous punctures dense and deep; distance between punctures on average half as wide as diameter of punctures; with wide longitudinal impunctate midline; surface without microsculpture, shiny.

Elytra 0.57 mm long, 0.50 mm wide; with large coriaceous setiferous punctation; surface with weak irregular microsculpture; surface matt.

Abdomen with setiferous punctation as deep and large as that of pronotum; with weak microsculpture; surface slightly shiny.

Legs long; tibiae slightly longer than length of anterior visibile 3 segments combined; mesotibia with long spines on outer edge and without emargination or comb on inner edge.

Median lobe of aedeagus with apical part forming a rectangular angle to the basal part; paramera as long as apical part of median lobe; endophallus with four torsions.

Etymology. The specific name *longipes* (Latin) is a noun in apposition and refers to the long legs of the species.

Mimogonia amazonica sp. nov.

(Figs. 4a-c, 7A,C)

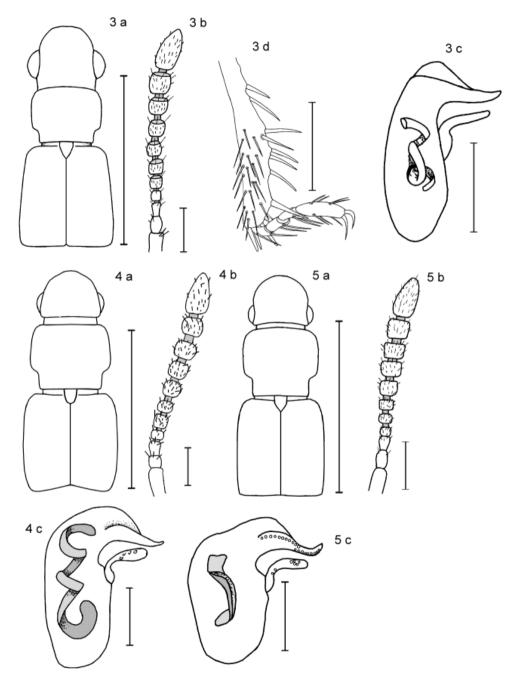
Type locality. Brazil, Amazonas, 26 km NE of Manaus, Reserva Ducke.

Type material. Holotype: β , 'Brazil: Amazonas: Reserva Ducke, 26 km NE of Manaus, flight intercept trap, 1995-1996, BMNH {E} 2003-84' (BMNH). PARATYPES: 9 $\beta \beta$, 5 $\varphi \varphi$, same data as the holotype (BMNH, UIC).

Diagnosis. By the head width / pronotum width ratio (1.00), this species resembles *M. elytrata* and *M. longoelytrata*, whereas the ratios are either smaller or larger in all other *Mimogonia* species. It particularly resembles *M. elytrata* (head width / pronotum width ratio 1.00), but differs in the larger size and the brown colour of the pronotum (the colouration in *M. elytrata* is yellow). *Mimogonia amazonica* sp. nov. and *M. longoelytrata* can be easily differentiated by the different ratios between the length and width of the elytra. In *M. longoelytrata*, elytra are longer than wide; in *M. amazonica* the elytra are approximately quadrate.

Description. Length: 2.8 mm. Colouration: most of body brown with the exception of elytra being a slightly lighter reddish brown; legs and antennae reddish.

Head 0.35 mm long, 0.50 mm wide; eyes prominent; laterally with dense setiferous punctation, but impunctate midline on disc; distance between punctures on average less than ½ as wide as



Figs. 3–5. 3 – Mimogonia longipes sp. nov.; 4 – Mimogonia amazonica sp. nov.; 5 – Mimogonia paraensis sp. nov. (a – fore body; b – antenna; c – aedeagus in lateral aspect; d – mesotarsus). Scale bars: 1 mm (a), 0.1 mm (b–d).

diameter of punctures; punctate surface of disk with dense microsculpture between punctures; surface slightly shiny; impunctate midline without microsculpture; surface polished.

Antennae longer than head and pronotum combined; 2nd antennomere oblong; 3rd conical and shorter than 2nd; following antennomeres increasing in width; 4th small, equal in width of 3rd, 10th 1.5 times as wide as long.

Pronotum 0.40 mm long, 0.50 mm wide; densely and coarsely punctate; in front of posterior edge coriaceously punctate; with wide impunctate midline; distance between setiferous punctures on average $\frac{1}{4}$ as wide as diameter of punctures; space between punctures with weak netlike microsculpture; surface shiny.

Elytra 0.63 mm long, 0.65 mm wide; with dense, but even setiferous punctation; partly with coriaceous punctures; microsculpture more distinct than that of pronotum; surface less shiny.

Abdomen with finer setiferous punctation, but denser and deeper microsculpture than that of elytra; surface less shiny than that of elytra.

Legs of normal length; shorter than pronotum; mesotibia with no sexual dimorphism in male.

Median lobe of aedeagus elongate in basal part and acute in apical part; endophallus with 3 spirals.

Etymology. The specific name *amazonica* (adjective) is derived from the Brazilian state Amazonas where the species was collected.

Mimogonia paraensis sp. nov.

(Figs. 5a-c, 7B,D)

Type locality. Brazil, Pará, 8 km E of Belém.

Type material. Holotype: &, 'Brazil: Pará: 8 km E. Belém, Ananindéua, April 20-29, 1973, leg. R.T. Schuh', (AMNH).

Diagnosis. The eyes of *M. paraensis* are smaller and less prominent than in *M. elytrata*, *M. longoelytrata*, *M. longipes* sp. nov., and *M. amazonica* sp. nov. (the head width / pronotum width ratio of *M. paraensis* is 0.93). In this respect this species resembles *M. unicolor* Irmler, 1981, *M adisi* Irmler, 2007 and *M. hangarthi* Irmler, 2007. Having a small endophallus, the aedeagus of *M. paraensis* resembles that of *M. tricolor* Irmler, 1981; in contrast to *M. tricolor* the endophallus of *M. paraensis* is not distinctly spiral. Moreover, the elytral punctation of *M. tricolor* is distinctly finer and the microsculpture less distinct than in *M. paraensis*.

Description. Length: 2.3 mm. Colouration: light reddish brown; legs and antennae yellow.

Head 0.30 mm long, 0.40 mm wide; with slightly prominent eyes; with large setiferous punctures; punctation laterally dense, but with impunctate wide midline on disc; distance between punctures half as wide as or narrower than half width of diameter of punctures; microsculpture on punctate areas weak; surface shiny; surface of impunctate areas glossy.

Antennae as long as head plus $\frac{3}{4}$ of pronotum; 2^{nd} antennomere oblong; 3^{rd} conical as long as 2^{nd} antennomere; antennomeres 4 to 10 increasing in width, but all more or less quadrate or slightly wider than long.

Pronotum 0.35 mm long, 0.43 mm wide; with coarse setiferous punctures; distance between punctures on average ½ as wide as diameter of punctures; with wide impunctate midline; netlike microsculpture weak; surface shiny.

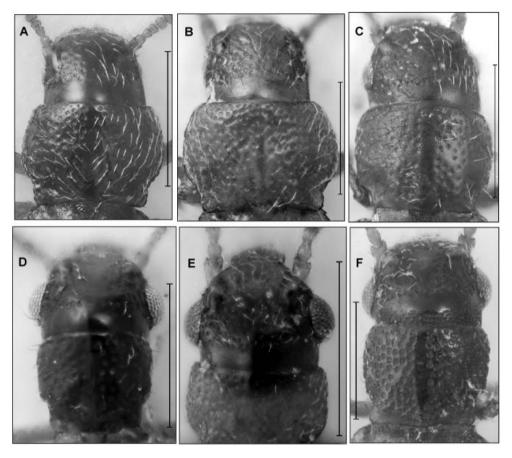


Fig. 6. Head and pronotum of *Mimogonus* and *Mimogonia* species showing the shape, surface, setation and proportion of eyes. A – *Mimogonus clavicornis* sp. nov.; B – *Mimogonus curtus* sp. nov.; C – *Mimogonus fumator* (Fauvel, 1889); D – *Mimogonia longipes* sp. nov.; E – *Mimogonia elytrata* Irmler, 2005; F – *Mimogonia longoelytrata* Irmler, 2005. Scale bar: 0.5 mm.

Elytra 0.50 mm long, 0.50 mm wide; with dense setiferous punctation; punctures large and coarse and partly coriaceous; distance between punctures less than ½ of diameter of punctures; microsculpture more distinct than on pronotum; surface less shiny.

Abdomen with distinctly finer punctation than those of pronotum and elytra, but with more distinct microsculpture; surface less shiny than that of elytra.

Legs shorter than pronotum; mesotibia without sexual dimorphism.

Median lobe of aedeagus with sinuous apical part and short endophallus with no distinct spirals.

Etymology. The specific name *paraensis* is an adjective derived from the state of Pará, where this species was collected

Key to Mimogonia species with large prominent eyes

(ratio between head width including eyes / pronotal width ≥ 0.90)

In all other *Mimogonia* species, head width / pronotum width ratios range between 0.74 and 0.86 because the eyes are smaller than in the species included in the following key.

- 1. Ratio of head width including eyes : width of pronotum \geq 1.0 (Figs. 6D–F, 7A). 2
- Ratio of head width including eyes: width of pronotum is 0.9 to 1.0 (Fig. 7B). 6
- Body longer than 2.0 mm, elytra longer than wide, ratio of elytral length: width between 1.09 to 1.12, antennae longer than combined length of head and pronotum, 2nd antennomere distinctly longer than wide.

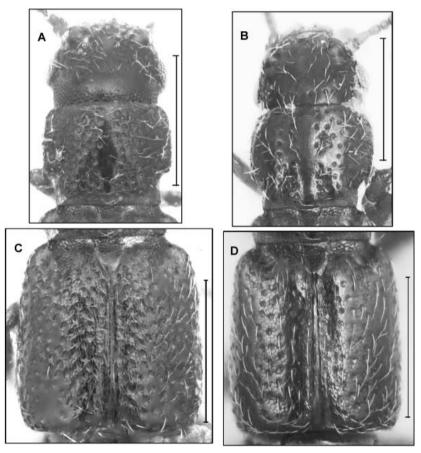


Fig. 7. Head, pronotum (A, B) and elytra (C, D) of Mimogonia species showing punctation and microsculpture. A, C-M. amazonica sp. nov.; B, D-M. paraensis sp. nov. Scale bar: 0.5 mm.

Body smaller, 2.1–2.2 mm, elytra yellow with dark posterior edge; punctation of pronotum finer and sparser, with weak microsculpture (Fig. 6D); surface shiny (eastern Amazon Valley Pará). M. longines sp. nov. Body larger than 2.5 mm, elytra reddish or brown; punctation of pronotum dense and coarse, with dense and deep microsculpture (Fig. 6F, 7A); surface matt or slightly shiny 4 Elytra distinctly longer than wide, pronotum and elytra with dense microsculpture (Fig. Elytra approximately as long as wide, head and pronotum with weaker microsculpture (Figs. 7A,B), surface slightly shiny (Central Amazon valley, Amazonas). M. amazonica sp. nov. Pronotum vellow, punctation of elytra fine, microsculpture deep and dense; punctation nearly invisible in the deep microsculpture. 8 Pronotum brown, punctation of elytra coarser, microsculpture dense and deep, but punctation distinctly visible. 7 Elytra dark brown with coarse punctation and deep and dense microsculpture; surface Elytra lighter reddish with distinct, but not coarse punctation; microsculpture weaker; Very small species, body approximately 1.7 mm long, punctation of elytra extremely Larger species, body approximately 2.0 mm long, punctation of elytra fine, but clearly visible in the dense microsculpture (western Peru, Ucavali).

Discussion

In the Neotropical Region, *M. fumator* is only recorded from the West Indian islands and from Mexico, but is widely distributed in the Indo-Pacific region. This discontinuous distribution has been explained with a recent introduction into the Neotropical Region by log imports (IRMLER 1981). Thus, the two new species represent the first indigenous Neotropical *Mimogonus* species.

They show that a larger number of species of this genus might be expected in the Neotropics. However, the locatalities of the two new species at the eastern slope of the Andean range in Ecuador suggest a relict distribution, since the extreme eastern region of the Amazon basin in Ecuador is part of the Napo Region, which is known for a high number of endemic species in birds and other animals (Haffer 1969, Müller 1974). In the Osoriinae subfamily, too, other endemic species are known from this region, e.g. *Lispinuncus pulcher* Irmler, 2005. Based on the high number of endemic species in several Neotropical regions, i.e. the Napo Region, Haffer (1969) formulated the theory of dispersal centres of tropical rainforest species after the Ice Ages. These dispersal centres are supposed to be relict regions, from where only a part of the species dispersed to adjacent regions. For example, according to Santos et al. (2009), the diversification of amphibians exhibited in late Miocene from Andean lineages and

Quarternary endemisms can be referred to Miocene paleographic events. It can be inferred from the hypothesis of dispersal centres that the genus *Mimogonus* was more widely distributed and more diverse in the Amazon basin before the Holocene. The short elytra and the absence of hind wings might indicate an adaptation to the mountainous region of the Andean range and the soil habitat. However, it also prevents the species from dispersing under better climatic conditions. The presence of two very similar, geographically close species underlines the low dispersal potential of the species.

Including the three new species, the genus *Mimogonia* accounts for 17 species exclusively known from South America with the exception of one species from Portugal (Coiffait 1978). The localities of the new species underline the hypothesis of Irmler (2005) that the genus *Mimogonia* is restricted to the South American continent. Moreover, the species seem to be restricted to small distribution ranges. None of the 17 species were recorded from more than two proximate locations, whereas other Osoriinae genera, e.g. *Lispinus* (Irmler 2009) include species with pan-neotropical distributions. The localities of the new species *M. longipes* sp. nov., *M. paraensis* sp. nov., and *M. amazonica* sp. nov. in the Brazilian states of Pará and Ama zonas are located either nearest to French Guiana, where records of one species are known, or the Central Amazon, where four species have been recorded.

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