

Taxonomic revision of the genus *Cyphopsis* Roelofs (Coleoptera, Curculionidae)

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Received December 2005, accepted June 2006

Published online 12 October 2006

With 19 figures

Key words: Taxonomy, weevils, Naupactini, *Cyphopsis*, new synonymy, *Miocyphus*.

Abstract

Cyphopsis Roelofs (Entiminae: Naupactini) is herein considered a senior synonym of *Miocyphus* Hustache, including two species: *C. clathrata* Roelofs (syn. n. of *C. jekelii* Roelofs) and *C. laticeps* (Hustache) comb. n., ranging in Brazil and French Guiana. The genus characterizes by a truncate-conical pronotum with lateral tubercles, and a spermatheca with long horn-like nodulus, never seen in other Naupactini. This contribution includes a redescription of *Cyphopsis* and its two species, a dichotomous key, habitus photographs and line drawing illustrations of genitalia.

Introduction

This contribution deals with two genera of broad-nosed weevils (Curculionidae: Entiminae: Naupactini) including three nominal species from Brazil and French Guiana: *Miocyphus*, described by Hustache (1939) based on the species *M. laticeps*, and *Cyphopsis*, created by Roelofs (1879) for the species *C. jekelii* and *C. clathrata*. These genera were never revised and their species descriptions are very incomplete, lacking of illustrations and information on characters of the female and male genitalia. The main objectives of this paper are to redescribe *Cyphopsis* as a senior synonym of *Miocyphus*, to discuss its similarity with other genera of Naupactini, to redescribe and illustrate its species, and to provide a key for their identification. This information will contribute to reconstruct the phylogeny of this weevil tribe, which is the main goal of our research.

Materials and methods

All species studied are poorly represented in collections, thus attesting to their relative rarity in nature. This study was based upon examination of specimens borrowed from the following institutions:

AMNH	American Museum of Natural History, New York, USA. Lee Herman.
BMNH	The Natural History Museum, London, UK. Christopher Lyal.
CWOB	Charles W. O'Brien Collection, Tallahassee, FL, USA. Charles W. O'Brien.
DZUP	Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, PR, Brazil. Germano Rosado-Neto.
MZSP	Museu de Zoologia da Universidade de São Paulo, SP, Brazil. Sergio Vanin.
NZAC	New Zealand Arthropod Collection, Auckland, New Zealand. Richard Leschen.
MNHN	Museu Nationale d' Histoire Naturelle, Paris, France. Hélienè Perrin.
USNM	National Museum Natural History, Smithsonian Institution, Washington D.C., USA. Richard Gordon.

Dissections were made according to standard entomological techniques. Photographs and drawings were done with a digital camera and a lucid camera adapted to a stereoscopic microscope, respectively.

Measurements were taken with an ocular micrometer. The length of the body was obtained by measuring along the midline. Other measurements, with their abbreviations are as follows:

A1	length of funicular articles 1;
A2	length of funicular articles 2;
LC	maximum length of club;
WC	maximum width of club;
LR	length of rostrum;
WF	width of frons between anterior margin of eyes;
WR	width of rostrum measured across apex (excluding scrobes);
LP	maximum length of pronotum;
WP–	width of pronotum at anterior margin;
WP+	width of pronotum at posterior margin;
LE	maximum length of elytra;
WE	width of elytra near middle.

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Results

Cyphopsis Roelofs

Cyphopsis Roelofs 1879: LII; Roelofs 1880:34 (redescription); Dalla Torre et al. 1936: 8 (catalogue); Emden 1944:512 (in key); Hustache 1947: 7 (in key); Blackwelder 1947:792 (checklist); Wibmer & O'Brien 1986:52 (checklist); Alonso-Zarazaga & Lyal 1999: 164 (catalogue). Type species: *Cyphopsis clathrata* Roelofs 1879: LII, herein designated.

Myociphus Hustache 1939: 38 (in key); Emden 1944: 519 (in key); Blackwelder 1947: 795 (checklist); Alonso-Zarazaga & Lyal 1999: 165 (catalogue). Type species: *Miocyphus laticeps* Hustache 1939: 38 by original designation **syn. n.**

Miocyphus; Hustache 1947: 15 (in key) (emendation); Wibmer & O'Brien 1986: 52 (checklist).

Diagnosis. Integument dark-brown, shiny, mostly visible, with pattern of pearl, oval scales. Antenna short, with funicular article 2 as long as, to slightly longer than funicular article 1. Pronotum truncate-conical, tuberculate on flanks. Elytral base strongly bisinuate, humeri prominent, with or without a tooth. All tibiae with row of denticles on inner face. Metatibial apex simple or with narrow outer bevel. Sternite VIII subtriangular, about as long as, to slightly longer than apodeme. Spermatheca with long tubular horn-like nodulus; spermathecal duct strongly sclerotized.

Redescription. Species medium sized (female 10.67–15.10 mm long; male 7.80–10.77 mm long). Integument dark-brown, shiny, mostly visible; vestiture composed of pearl, oval, overlapped scales and recumbent seta-like scales. Pronotum with two or three longitudinal squamose stripes; elytra with similar stripes or with irregular maculae. Legs and venter covered with seta-like scales and fine setae. Rostrum (Figs 6–7) short to moderately long (LR/WR: 0.80–1.35), slightly to moderately truncate-conical (WF/WR: 1.09–1.40), with or without thickened borders; dorsum flat to depressed; median groove linear, slightly exceeding hind margin of eyes; epistome covered with small oval scales; scrobes slightly visible dorsally, ending in front of eyes; gular angle about 90°, to obtuse. Eyes moderately convex; preocular impression distinct or indistinct; postocular constriction feeble. Frons medially or laterally depressed; vertex slightly to moderately convex. Antennae (Figs 8–9) setose, short; scape reaching to slightly exceeding hind margin of eyes; funicular article 2 as long as, to slightly longer than article 1 (A2/A1: 1–1.62), articles 3 to 7 slightly longer than wide; club oval to fusiform (LC/WC: 2.17–3.70). Pronotum (Figs 1–3) truncate-conical (WP + /WP–

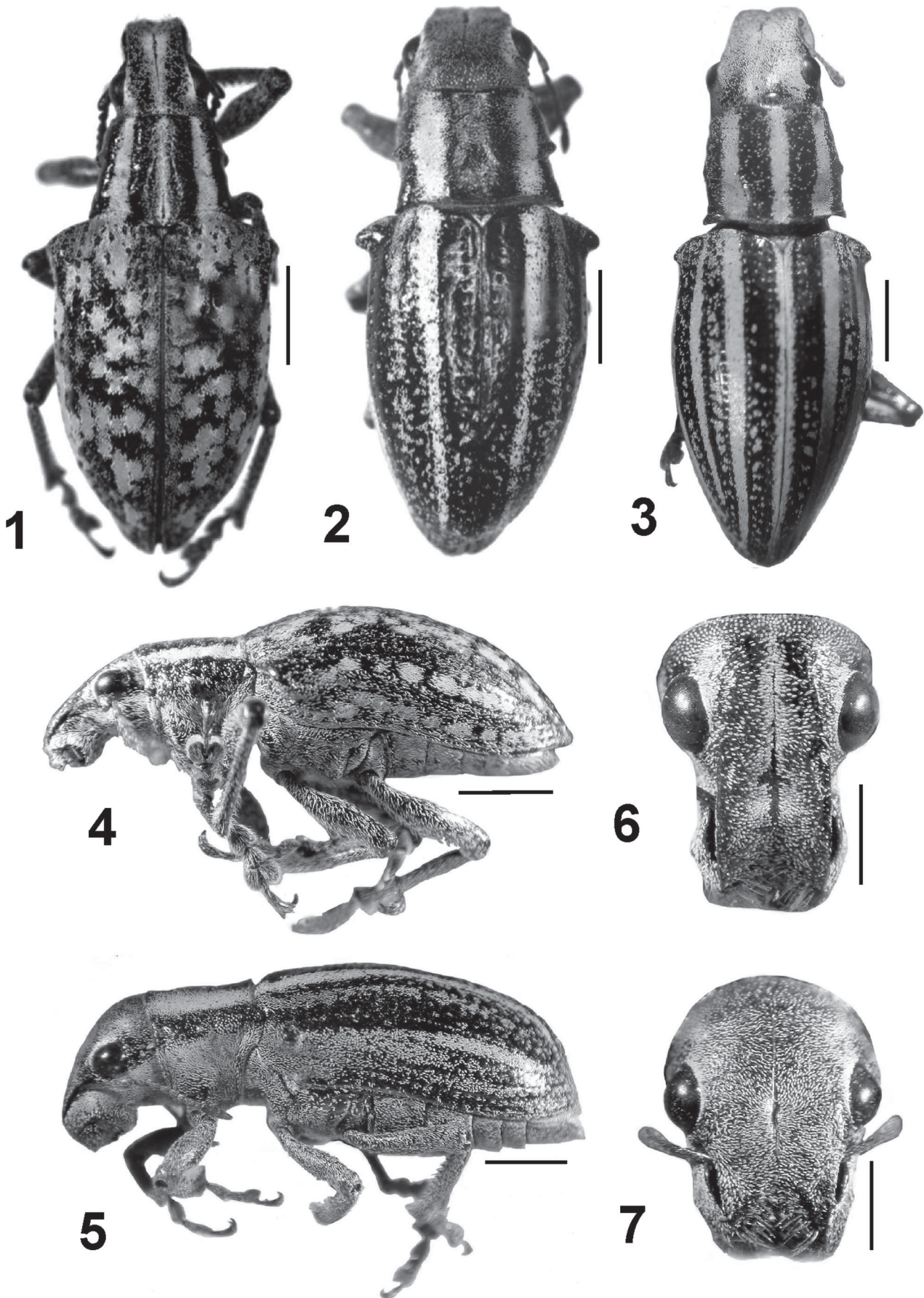
1.19–1.44); disc flat, median groove feeble or deep; front margin thickened; flanks with a tubercle on middle; hind margin strongly bisinuate; posterior angles strongly projected, with basal depressions. Scutellum distinct, covered with whitish scales. Elytra (Figs 1–5) slightly to moderately elongate; base strongly bisinuate; humeri strongly prominent, with or without a tooth; apex entire (not bifid), moderately acute; apical declivity slight to moderately abrupt; punctures of striae moderate to broad; striae 9 and 10 slightly closer on posterior third; intervals flat. Legs. Fore coxae contiguous, slightly closer to anterior margin than to posterior margin of prosternum; three pairs of tibiae with row of denticles on inner face and strong mucro; tarsite 2 subtrapezoidal or subquadrangular; metatibial apex simple or with narrow outer bevel; apical comb slightly longer than dorsal comb. Abdomen. Intercoxal portion as long as, to slightly narrower than cavities of hind coxae; ventrite 2 slightly longer than ventrites 3 + 4.

Female genitalia. Sternite VIII (Figs 10–11) broad, subtriangular, about as long as, to slightly longer than apodeme, sclerotized at base, with apical setae. Ovipositor (Figs 12–13) short (about 0.4 × as long as abdomen), widened towards base; hemisternites strongly sclerotized; baculi broad, without distinct limits, divergent toward proximal end; styli short to vestigial. Spermathecae (Figs 14–15) large, subcylindrical, with tubular, horn-like nodulus, longer than spermathecal body; moderately developed ramus, and moderately long cornu; spermathecal duct strongly sclerotized, about 2 × as long as spermathecae.

Male genitalia. Aedeagus (Figs 16–19) about as long as abdomen; tube slightly longer than apodemes, slightly curved in lateral view, with acute apex and large ostium. Endophallic armature present, horseshoe-shaped, ejaculator duct wide.

Distribution and plant associations. *Cyphopsis* ranges in Brazil and French Guiana. Nothing is known about host plants, except that one specimen of *C. clathrata* was collected on Fabaceae. This is the most frequent plant association for the Naupactini ranging in the biogeographic provinces of the Cerrado and Chaco.

Nomenclatural notes. *Myociphus* was created by Hustache (1939) based on the type species *M. laticeps*. Emden (1944), Blackwelder (1947) and Alonso-Zarazaga & Lyal (1999) men-



Figs 1–7. External morphology of *Cyphopsis*. 1–3 Habitus, dorsal; 4–5 habitus, lateral; 6–7 head and rostrum, frontal. 1, 4, 6 – *Cyphopsis clathrata*, female; 2, 5, 7 – *Cyphopsis laticeps*, syntype female from French Guiana; 3 – *Cyphopsis laticeps*, female from Brazil. Scales: 2 mm (habitus); 1 mm (rostrum and head).

tioned this genus name as it was originally spelled, but Hustache (1947) and Wibmer & O'Brien (1986) corrected it as *Miocyphus* without providing a justification for the emendation according to article 33(b) of the ICZN (1999). We consider that "*ciphus*" is an incorrect spelling for *Cyphus*, that means "humped" and referred to a closely related genus of Naupactini with humped elytra. Consequently the alternative corrections are *Miocyphus*, from mio = less and *Cyphus* (with elytra less humped than *Cyphus*) or *Myocyphus*, from myo = muscle and *Cyphus* (*Cyphus* with longitudinal stripes along the elytra). Both options are correct in their grammar but we prefer the former because it was already used by previous authors.

Cyphopsis was created by Roelofs based on two species, *C. jekelii* (named after Jekel also cited as *jekeli*) and *C. clathrata* (also referred as *C. clathratum* and *C. clathratus*). The type species was never designated, as it was remarked by Alonso-Zarazaga & Lyal (1999), thus we designate *Cyphopsis clathrata* as such.

Remarks and comparative notes. *Cyphopsis* and *Miocyphus* share numerous characters such as those of the integument and vestiture, the proportions of the antennal articles, the shape of the pronotum, bearing a single lateral tubercle on each flank, the bisinuate elytral base

expanded in well developed humeri, and the three pairs of tibiae having strong teeth on their inner margin. The very large spermathecae, with a long horn-like nodulus following the same direction of the spermathecal body, was never seen in other Naupactini (Figs 14–15). The broad triangular sternite VIII attached to a short apodeme is also typical of these nominal genera (Figs 10–11), as well as the strongly sclerotized ovipositor with not clearly delimited baculi (Figs 12–13). Since *Miocyphus* and *Cyphopsis* are both monotypic and the diagnostic characters to separate them are usually variable at species level in other genera of Naupactini (e.g. *Teratopactus* Heller, see Lanteri et al. submitted), we propose to treat them as a single genus, being the valid name *Cyphopsis* by priority.

The morphologically most similar taxon to *Cyphopsis* is *Acyphus* Heller, a monotypic genus ranging throughout Argentina, Brazil, Paraguay and Uruguay (biogeographic province of Chaco). Despite the similar appearance of *Cyphopsis clathrata* and *Acyphus renggeri* (Labram & Imhoff) the latter clearly differentiates by its stout antennae, the presence of extra-numeral elytral striae, the absence of tubercles on pronotal flanks and tibial denticles, and the characters of the female genitalia (shape of sternite VIII, ovipositor and spermatheca) (Lanteri & del Río, submitted).

Key to species of *Cyphopsis*

1. Elytra with irregular pattern of squamose maculae. Rostrum moderately slender with thickened borders. Gular angle obtuse. Antennae broad, with funicular article 2 as long as, to slightly longer than article 1, and oval club. Pronotum strongly truncate-conical. Humeri lacking distinct tooth. Metatibial apex with narrow outer bevel. Tarsite 2 subtrapezoidal *C. clathrata* (Figs 1, 4, 6)
- 1'. Elytra with pattern of longitudinal squamose stripes. Rostrum very stout and short, lacking thickened borders. Gular angle about 90°. Antennae moderately slender, with funicular article 2 distinctly longer than article 1, and fusiform club. Pronotum slightly truncate-conical. Humeri with distinct tooth. Metatibial apex simple. Tarsite 2 subquadrangular *C. laticeps* (Figs 2–3, 5, 7)

Cyphopsis clathrata Roelofs

Figs 1, 4, 6, 8, 10, 12, 14, 16–17

Cyphopsis clathrata Roelofs 1879: LII; Roelofs 1880: 36; Dalla Torre et al. 1936: 8 (catalogue); Blackwelder 1947: 792 (checklist); Wibmer & O'Brien 1986: 52 (checklist).

Cyphopsis jekelii Roelofs 1879: LII; Roelofs 1880:35; Dalla Torre et al. 1936: 8 (catalogue); Blackwelder 1947: 792 (checklist); Wibmer & O'Brien 1986: 52 (checklist). **syn. n.**

Thoracocyphus calderai Bondar 1949: 174; (syn. of *C. clathratus*, Kuschel 1955:278).

Redescription. Species medium sized (female 10.67–15.10 mm long; male 9.55–10.77 mm

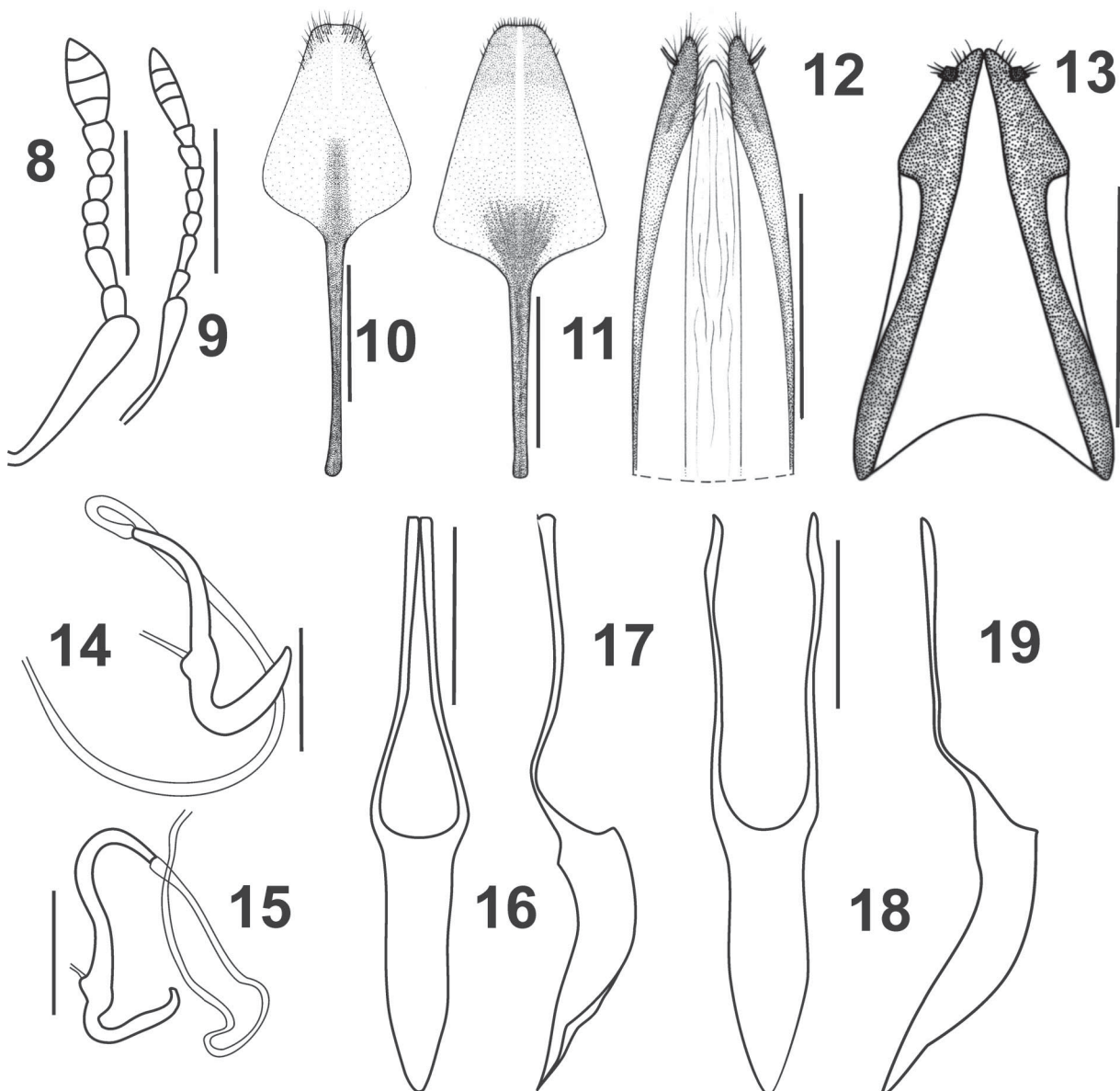
long). Integument dark-brown, shiny, mostly visible; vestiture pearl or cream with golden or orange reflection, composed of oval, overlapped scales and recumbent seta-like scales. Dorsal pattern as follows: pronotum with two or three (Fig. 1) longitudinal stripes extended along head and base of interval 3; elytra with squamose maculae, especially along intervals 2–4, and 7–9; surface underneath stripes and maculae somewhat depressed. Legs and venter covered with seta-like scales and scatter suberect setae. **Rostrum** (Fig. 6) moderately long (LR/WR: 1.16–1.35), slightly truncate-conical (WF/WR:

1.09–1.30), with seta-like scales directed transversally regarding median groove; borders thickened; dorsum strongly depressed on each side of median groove; epistome triangular, broad; gular angle obtuse. Preocular impression distinct, triangular; frons medially depressed; vertex slightly convex. Antennae (Fig. 8) moderately stout; scape robust, slightly exceeding hind margin of eyes; funicular article 2 as long as, to slightly longer than article 1 (A2/A1: 1–1.20); club oval (LC/WC: 2.17–2.41). Pronotum (Fig. 1) strongly truncate-conical (WP + /WP–: 1.33–1.44); front margin anteriorly curved; median groove deep; longitudinal squamose stripes strongly depressed. Scutellum small. Elytra (Fig. 1) slightly elongate

(LE/WE: 1.45–1.60), humeri with posterior constriction but lacking tooth; punctures of striae broad; apical declivity slight (Fig. 4). Legs. Three pairs of tibiae with row of 6–9 moderate denticles on inner face; tarsite 2 subtrapezoidal; metatibial apex with narrow, squamose, outer bevel.

Female genitalia. Sternite VIII (Fig. 10) about as long as apodeme, with long apical setae. Ovipositor (Fig. 12) with vestigial styli. Spermatheca (Fig. 14) with tubular nodulus about 1.5 × as long as spermathecal body, curved in the direction of ramus and gland.

Male genitalia. Aedeagus as in Figs 16 and 17.



Figs 8–19. Antennae and genitalia of *Cyphopsis*. 8–9 Antennae; 10–11 sternite VIII; 12–13 ovipositor, ventral; 14–15 spermathecae; 16–19 aedeagi, ventral and lateral. 8, 10, 12, 14 – *Cyphopsis clathrata*, female; 16, 17 – *Cyphopsis clathrata*, male; 9, 11, 13, 15 – *Cyphopsis laticeps*, female; 18, 19 – *Cyphopsis laticeps*, male. Scales: 1 mm (antennae, sternites VIII, ovipositors and aedeagi); 0.5 mm (spermathecae).

Sexual dimorphism. Scarcely marked. Male slightly more slender and smaller than female.

Distribution. *Cyphopsis clathrata* is endemic to Brazil, ranging throughout the biogeographic province of the Cerrado, sensu Morrone (2002).

Type material studied. 1 syntype of *C. clathrata*, Brazil, Bahia, Jacobina, Coll. Bovie thru Buchanan (USNM). 1 syntype male of *Thoracocyphus calderai*, Brazil, Bahia, Riacho de Santana, 21-X-1947, in leguminosa, Gregorio Bondar Collection, David Rockefeller Donor (AMNH). The holotype of *C. jekelii* comes from Brazil and it is probably in Brussels (Museum of Natural Sciences). The species was based on this single specimen. We were not able to see it but we studied authoritatively identified material deposited at the NZAC.

The description of *Cyphopsis clathrata* was based on several specimens of the Castelnau collection (Roelofs 1880) and *T. calderai*, on 13 specimens collected by the author and distributed in several museums (American Museum Natural History, Chicago Natural History Museum, and Commonwealth Institute of Entomology, London) (Bondar 1949). We did not designate lectotypes for *C. clathrata* and *T. calderai* because we did not see all the syntypes.

Other material studied. BRAZIL no loc. (4 BMNH, 2 NZAC). Bahia: no loc. (3 MZSP); Maracas, 19-XI-1965, Oliveira leg. (1 DZUP); Encruzilhada, 960 m XI-1972 (1 CWOB). Ceará: Itaçaba, IV-1940 (1 DZUP, 8 MZSP), Russas, I-1940 (2 MZSP).

Remarks. Herein we confirm a previous synonymy of *Cyphopsis clathrata* Roelofs with *Thoracocyphus calderai* Bondar established by Kuschel (1955) and we decided to establish a new synonymy with *Cyphopsis jekelii* Roelofs. The separation of these nominal species was mainly based on the color pattern of the dorsal vestiture and the development of the humeri and the pronotal tubercles (stronger in *C. jekelii* than in *C. clathrata*). We interpret that the characters used by Roelofs to separate these species correspond to intraspecific variation, similar to that seen in *C. laticeps* (see Figs 2–3), and other species of Naupactini (e.g. *Teratopactus tuberculatus* (Arrow) and *T. nodicollis* (Boheman), see Lanteri et al. submitted).

Cyphopsis laticeps comb. n.

Figs 2–3, 5, 7, 9, 11, 13, 15, 18–19

Myociphus laticeps Hustache 1939: 38 (in footnote); Blackwelder 1947: 795 (checklist); Alonso-Zarazaga & Lyal 1999: 165.

Miociphus laticeps; Wibmer O'Brien 1986: 52 (checklist).

Redescription. Species medium sized (female 1.28–1.40 mm long; male 1.25 mm long). Integument dark-brown, shiny, mostly visible; vestiture pearl or cream with golden or orange reflection, composed of oval, overlapped scales and recumbent seta-like scales. Dorsal pattern as follows: pronotum with two (Fig. 2) or three (Fig. 3) dis-

tinct longitudinal stripes extended along elytral interval 3 and suture; one additional stripe along interval 5 usually distinct; a marginal stripe from rostrum to apex of intervals 8–9 (Fig. 5). Legs and venter densely covered with seta-like scales. Rostrum (Fig. 7) very stout, short (LR/WR: 0.80–0.97), moderately truncate-conical (WF/WR: 1.25–1.40), with seta-like scales directed towards center of median groove; borders not thickened; dorsum flat to depressed on sides; epistome narrow; gular angle about 90°. Preocular impression absent; frons wide, with pair of lateral depressions; vertex moderately convex. Antennae (Fig. 9) moderately slender, short, setose; scape reaching to slightly exceeding hind margin of eyes; funicular article 2 slightly longer than article 1 (A2/A1: 1.33–1.64); club fusiform (LC/WC: 3.36–3.70). Pronotum (Figs 2–3) slightly truncate-conical (WP + /WP–: 1.19–1.29); front margin posteriorly curved; median groove feeble; longitudinal squamose stripes slightly depressed. Scutellum, medium sized. Elytra (Figs 2–3) moderately elongate (LE/WE: 1.62–1.75); humeri moderately to strongly prominent, with a distinct tooth; punctures of striae medium-sized; apical declivity moderately abrupt (Fig. 5). Legs robust and short. Three pairs of tibiae with row of 10–12 strong denticles on inner face (denticles of same size in the three pairs); tarsite 2 subquadrate; metatibial apex simple.

Female genitalia. Sternite VIII (Fig. 11) about 1.3× as long as apodeme, with short apical setae. Ovipositor (Fig. 13) with short, lateral styli. Spermatheca (Fig. 15) with tubular nodulus about 2× as long as spermathecal body, curved in the direction of cornu.

Male genitalia. Aedeagus as in Figs 18 and 19.

Sexual dimorphism. Scarcely marked. Male slightly more slender and smaller than female.

Distribution. *Cyphopsis laticeps* ranges in northern Brazil and French Guiana. This area correspond to the humid forests of the Amazonian subregion, according to the biogeographic scheme of Morrone (2002).

Type material studied. 1 type, French Guiana, Pariacabo, Riviere de Kourou, coll. Le Moul, Museum Paris 1949, Col. A. Hustache (MNHN).

Other material studied. BRAZIL No loc. (1 NZAC). FRENCH GUIANA: no loc. (1 NZAC). Pariacabo: Riviere de Kourou, coll. Le Moul (1 MNHN).

Remarks. *Cyphopsis laticeps* differentiates from *C. clathrata* mainly by the distribution of the body vestiture of scales (with elytral stripes

instead of maculae), the stout rostrum (resembling that of *Ericydeus* Pascoe), the moderately slender antennae, the humeri ending in a strong tooth, the open corbel plate, the shorter apodeme of the sternite VIII, the well developed styli of the ovipositor, and the spermathecal nodulus curved in the same direction of the cornu.

Cyphopsis laticeps shows two distinct varieties or morphotypes, one with a pair of white longitudinal stripes along the pronotum and elytral interval 3 (Fig. 2), and another with a third median stripe along midline of pronotum and elytral suture (Fig. 3). The former corresponds to the type specimen and occurs in the French Guiana; the latter was found in Brazil and is associated to specimens with larger body size, smaller tibial denticles, and smaller tubercle on the pronotal flanks and teeth on elytral humeri. The study of more specimens will be necessary to establish if these morphotypes corresponds to subspecies in the sense of geographical races.

Acknowledgments

We wish to express our appreciation to all the specialists and curators that loaned us specimens for study, and/or facilitate the examination of material, and to the "Consejo Nacional de Investigaciones Científicas y Técnicas" (CONICET) from Argentina, for its continuous financial support.

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