

## New species and a new subgenus of South American *Neoathyreus* Howden and Martínez (Coleoptera: Geotrupidae: Athyreini)

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### Abstract

Five new species of South American *Neoathyreus* Howden and Martínez are described and figured, these include: *N. julietae*, **n. sp.** from Bolivia; *N. antennatus*, **n. sp.** from Bolivia; *N. moraguesi*, **n. sp.** from Brazil; and *N. fallolobus*, **n. sp.** from Peru. A fifth species is placed in the new subgenus, *Mesoathyreus*, of *Neoathyreus* with *N. (M.) guyanensis*, **n. sp.** from French Guiana, as its type species.

**Key words:** South America, Geotrupidae, *Neoathyreus*, new subgenus, new species

### Introduction

In my revision of the South American *Neoathyreus* (Howden 1985) 44 species were recognized. Of these, 17 species were represented by fewer than 6 specimens, 13 by 6 to 11 specimens, and 14 by more than 11 specimens. At the time, the lack of a series for many of the species caused a number of difficulties, including determining species limits versus geographic variation. Most specimens at that time (before 1985) were taken "at light". A few brightly colored, greenish or bicolored species were taken flying during the day, but they were the exception, as most species are crepuscular or nocturnal.

Since that time the lack of series has been slightly improved by the use of flight interception traps (FITs). Unfortunately, habitat destruction in many areas usually limits FIT usefulness to patches of forest, often widely separated. So what may appear to be disjunct sibling species may actually be clinal variation in a single species, the disjunction being the result of human disturbances. With these factors in mind, although I know of a number of undescribed species of *Neoathyreus*, I have limited descriptions of new species to those represented by five or more specimens, particularly when they are very closely related to other species. Even then, as more specimens become available, some of these may prove to be only geographic variants of one species. Several of the species described

below have been represented in my collection for years; only now has sufficient material become available to give me some confidence in describing them.

## Material and methods

### Collections cited and their curators

ABTS — Andrew B. T. Smith collection, Ottawa, Canada.

CMNC — Canadian Museum of Nature Collection, Ottawa, Canada. François Génier.

FSCA — Florida State Collection of Arthropods, Gainesville, U.S.A. Paul Skelley.

GMC — Gérard Moragues Collection, Paris, France.

HAHC — Henry & Anne Howden Collection, Ottawa, Canada.

MZSP — Museu de Zoologia, São Paulo, Brazil. U. Martins

NKMC — Museo de Historia Natural “Noel Kempff Mercado”, Santa Cruz, Bolivia.  
Julieta Ledezma.

WBWC — William B. Warner Collection, Chandler, U.S.A.

### *Neoathyreus julietae*, new species (Figs. 1–3)

**Holotype.** Male, length 10.9 mm, greatest width 7.4 mm. Dorsally with labrum, clypeus, and lateral edges of pronotum near foveae reddish brown, remainder of pronotum black tinged with brown; elytra black; ventral surfaces varying from reddish brown to dark brown. Labrum coarsely rugose, particularly across basal third. Clypeus coarsely rugose, transverse carina defined by row of irregular transverse tubercles; anterior oblique carinae absent; posterior transverse clypeal carinae distinct on each side of median tubercle, tubercle only slightly higher and anterior to lateral tubercle on each side. Vertex very slightly depressed between eyes, surface coarsely, contiguously granulate; between granules surface with numerous erect, pale tan setae. Gena with outer margins elevated, outer anterior angle slightly acute, surface of gena granulate. Pronotum (Fig. 1) with small fossa on each side contiguous with anterior marginal bead posterior to eye; width of fossa approximately equal to width of adjacent bead; between fossae margin gradually elevated to midline, midline with indistinct tubercle on bead; tubercle extending posteriorly as low, narrow, glabrous ridge for approximately 0.7 mm. Pronotum with inner and outer carinae well-defined, inner carinae moderately thick with anterior ends separated by distance approximately equal to distance between outer edges of eyes; inner pronotal carinae from anterior ends almost straight, gradually converging, becoming parallel at posterior end of pronotal concavity, terminating 0.5 mm before posterior margin. Pronotal concavity deepest medially between anterior ends of inner carinae, surface granulate-punctate anteriorly, becoming smooth in posterior fourth of concavity; setose in anterior third between granules and near inner edge of carinae. Outer pronotal carina on each side in

posterior half 1.7 mm long, curved, slightly closer to pronotal margin than to inner carina. Lateral pronotal fovea on each side shallow, elongate, surface mostly smooth; pronotal marginal bead absent in indentation below fovea. Pronotal surface laterad to inner carinae closely, coarsely granulate, posteriorly granules contiguous; many long, erect, pale tan setae arising from bases of granules. Elytron with several vague striae indentations near base of disc, surface of disc coarsely, contiguously granulate, granules near base transversely oval, becoming elongate in apical third; numerous tan or black, almost-erect setae arising between granules. Pygidium brown, apex broadly rounded. Metasternum between middle coxae slightly convex, anterior edge near midline obliquely angulate, midline represented by narrow, depressed line, surface on either side relatively uniformly setose-punctate. Foretibia (Fig.1) with five teeth on outer edge. Genital capsule with apex of ventral lobe rounded, fringed with setae, flattened surface of lobe glabrous. Genitalia as in Figs. 2, 3.

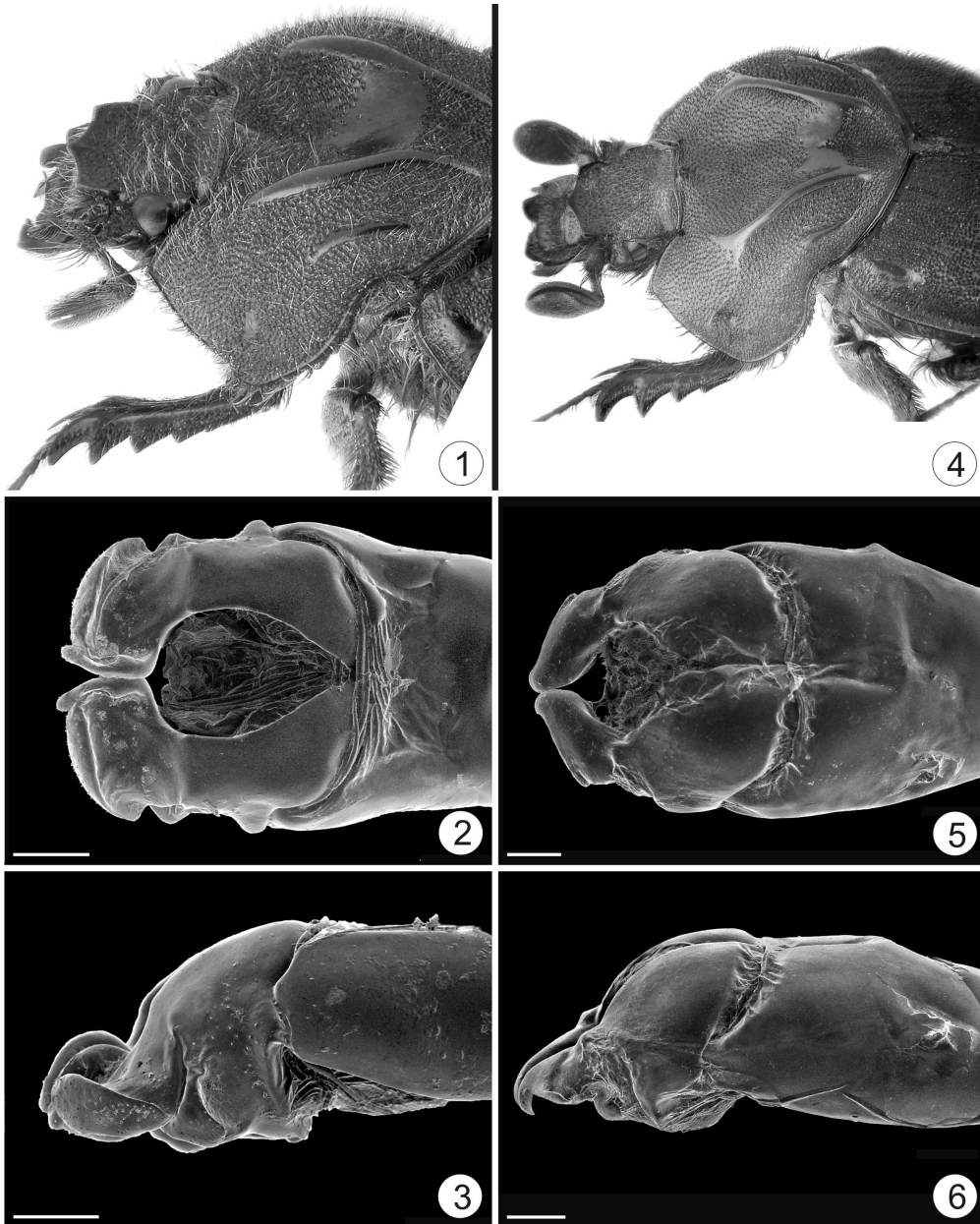
**Allotype.** Female, length 10.5 mm, greatest width 6.7 mm. Dorsally lacking reddish brown areas on head and pronotum, these areas black tinged with brown, elytra black. Similar to holotype except as follows: clypeus with irregular transverse carina very close to apical margin; median tubercle on clypeus less developed, no higher than lateral tubercles; pronotal concavity reduced in depth, posterior smooth area no more than half length of that of male.

**Type Series.** Holotype, male, Bolivia, Dep. Sta Cruz, Buena Vista, 1922, R. C. Robert, Howden coll. ex A. Martínez coll. (CMNC). Allotype, female, Bolivia, D° Sta. Cruz, Pica Ichilo, Buena Vista, Tacu, III.[19]51, Martínez, Howden coll. ex A. Martínez coll. (CMNC). Paratypes, 8 males, 13 females. **Bolivia:** Cochabamba, 2 males, 1 female, 67.5 km E Villa Tunari, Est. Biol. Valle Sajta, Univ. San Simon, 300 m, 17° 06' 19" S 64° 46' 57" W, 9–13.II.1999, F. Génier, lowland rain forest, ex FIT, 99-068,9; Dpto. Sta. Cruz: 4 males, 9 females, 5 km SSE Buena Vista, Hotel Flora y Fauna, 440 m, 17° 29.925' S 63° 39.128' W, 6–15, 15–24, 24–31.XII.2003, S. & J. Peck, forest FIT; 2 females, 3.7 km SSE Buena Vista, Hotel Flora y Fauna, 17° 29' S 63° 33' W, 28.IV–2.V, 7–12.V.2004. A. R. Cline, FIT; 1 male, Ichilo, P[arque] N[acional] A[mboró] (Saguayo), 500 m, 8–12.III.1991, Pablo Bettella; 1 female, San Pedro, 26.VI.1990, C. J. Pruett. **Peru:** 1 male, near Satipo, Junin, >1000 m (Yungas), XII.2004, flying at dusk.

Paratypes are in: ABTS, CMNC, HAHC, NKMC WBWC.

**Remarks.** Variation in the type series is moderate. Length varies from 9.5 to 11.0 mm, and greatest width from 5.5 to 7.0 mm. The transverse anterior clypeal carina may be vague or distinct; the posterior clypeal carina and associated tubercles are reduced in height in small specimens. The inner pronotal carina and concavity are both reduced in small specimens; the height and thickness of the carinae are less and the depth and posterior smooth area of the concavity are similarly reduced; in one specimen the smooth area is almost absent. In one specimen the lateral marginal bead of the pronotum is complete. The reddish brown color on the head and sides of the pronotum is lacking in

more than half of the series, these being brownish black to black. The number of teeth, five, on the foretibia is quite constant, but there are six teeth in one female. There are also slight differences in the shape of the apical lobes of the male genitalia but this is, at least partly, because of distortion when dry or differences caused by positioning.



**FIGURES 1–6.** *Neothyreus* spp. Figs. 1–3. *N. julietae*, n. sp.: 1, Head and pronotum; 2, Male genitalia, dorsal view; 3, Male genitalia, lateral view. Figs. 4–6, *N. moraguesi*, n. sp.: 4, Head and pronotum; 5, Male genitalia, dorsal view; 6, Male genitalia, lateral view. Scale lines for genitalia = 0.2 mm.

*Neoathyreus julietae* will usually key to couplet 44 in Howden (1985). In that couplet most specimens would key to *N. inermis* Howden, but differ from that species by having fewer teeth on the foretibia, 7 or 8 for *N. inermis*; also the male genitalia are radically different. The other species in couplet 44, *N. lanuginosus* (Klug), is close to *N. julietae* in key characters, but differs in dorsal color and in the shape of the male genitalia. Both *N. lanuginosus* and *N. julietae* occur in the Buena Vista region of Bolivia.

While the two species that key out to couplet 44 may be somewhat related to *N. julietae*, the most closely related species is probably *N. obscurus* Howden, described from four specimens from Brazil. In my 1985 key, *N. obscurus* will key to couplet 30; this includes species with four teeth on the foretibia. This species should also have been keyed to species with five teeth on the foretibia as one paratype has a very small fifth tooth. A small series of *N. obscurus*, recently collected in Mato Grosso, Brazil, by F. Génier, all have a small fifth tooth on the foretibia, as do most *N. julietae*. Externally the two species are not always separable because of variation in the teeth of the foretibia and in the marginal pronotal bead. The bead is usually complete in *N. obscurus* and broken in *N. julietae*; however, in the series at hand, the reverse is true for one specimen of each species. The only certain way to distinguish the two species is by the differences in the male genitalia and, as far as is known, by the different ranges of the two species. This complex is a good example of the desirability of having a good series when dealing with closely related species.

**Etymology.** This species, *N. julietae*, is named for Julieta Ledezma, Curator, Entomology, NKMC, Santa Cruz, Bolivia, who was extremely helpful to my wife and me during our visit to Bolivia. She has shown the same consideration to other entomologists visiting Bolivia.

#### ***Neoathyreus antennatus*, new species (Figs. 7–11)**

**Holotype.** Male, length 12.8 mm, greatest width 8.3 mm. Dorsally reddish brown. Clypeus with both oblique anterior and posterior carinae well developed; median tubercle almost twice height of lateral tubercle on each side, anterior surface slightly slanted posteriorly; posterior carina on each side not depressed below level of lateral tubercles. Vertex between eyes almost flat, coarsely, closely granulate. Gena sparsely granulate near base, glabrous laterally, margin reflexed. Antenna with unusually thickened club (Fig. 9), appearing oval in both lateral and ventral views, club not unlike those of many bolboceratines. Pronotum (Figs. 7, 8) with small fossa on each side contiguous with marginal bead posterior to eye; fossa approximately equal in diameter to width of adjacent bead. Anterior pronotal margin between fossae elevated to distinct tubercle on bead at midline. Pronotum with inner carina on each side arising approximately 1.0 mm posterior to fossa, carina anteriorly abruptly elevated to rounded, abruptly obtuse angle, angle not slanted inwardly, carina posterior to angle not broken, gradually bowed inwardly to termination about 0.6 mm from

posterior margin; pronotal concavity deepest between obtuse angles, becoming shallow posteriorly, midline in median half of pronotum narrowly glabrous, remainder of concavity punctate-rugose, many punctures each with erect, inconspicuous, tan seta. Outer carinae obsolete. Lateral pronotal fovea on each side small, circular; margin below fovea not indented, bead uninterrupted; surface laterad to inner carinae granulate, setose. Elytron lacking distinct striae or elevated intervals, four striae indicated at base by vague indentations, two intervals indistinctly elevated; surface of elytral disc granulate-punctate, most punctures each with semi-erect seta. Metasternum between middle coxae very slightly convex, midline slightly impressed, anterior edge medially forming wide, obtuse angle; metasternal surface setose-granulate. Foretibia with six teeth on outer margin. Genitalia as in Figs. 10, 11.

**Allotype.** Female, length 11.2 mm, greatest width 7.5 mm. Differing from male as follows: clypeus with anterior carina on each side bowed upward to midline, forming sharp, obtuse angle; from obtuse angle carina then extending posteriorly along midline to median tubercle; this tubercle only slightly anterior to lateral tubercle on each side, tubercles of equal size; posterior carina on each side only slightly bowed and elevated to median tubercle, length of median and posterior carinae approximately equal; vertex slightly more granulate; pronotum with tubercle on anterior median marginal bead less elevated; inner pronotal carina with obtuse angle lower, less rounded, separated by 0.8 mm less than in holotype (function of size); concavity reduced in width and depth; elytron with no indication of elevated intervals; foretibia with basal sixth tooth minute.

**Type Series.** Holotype, male, Bolivia, Do. Sta Cruz, Pica Ichilo, Buena Vista, Oct. 1949, coll. Martínez. H. & A. Howden coll. ex A. Martínez coll. (CMNC). Allotype, female, same data as holotype (HAHC). Paratypes, 4 males, 2 females. Bolivia: 4 males, 1 female, Prov. Ichilo, Depto Santa Cruz, 3–5 km SSE of Buena Vista, ±440 m, Febr. 5–12, 2000, 17° 29' 96" S 63° 39' 13" W. W. B. Warner; 1 female, Santa Cruz, Lomas de Arena Bol. Pk. 10.II.1999, L. A. Stange. Paratypes are in: FSCA, HAHC, NKMC, WBWC.

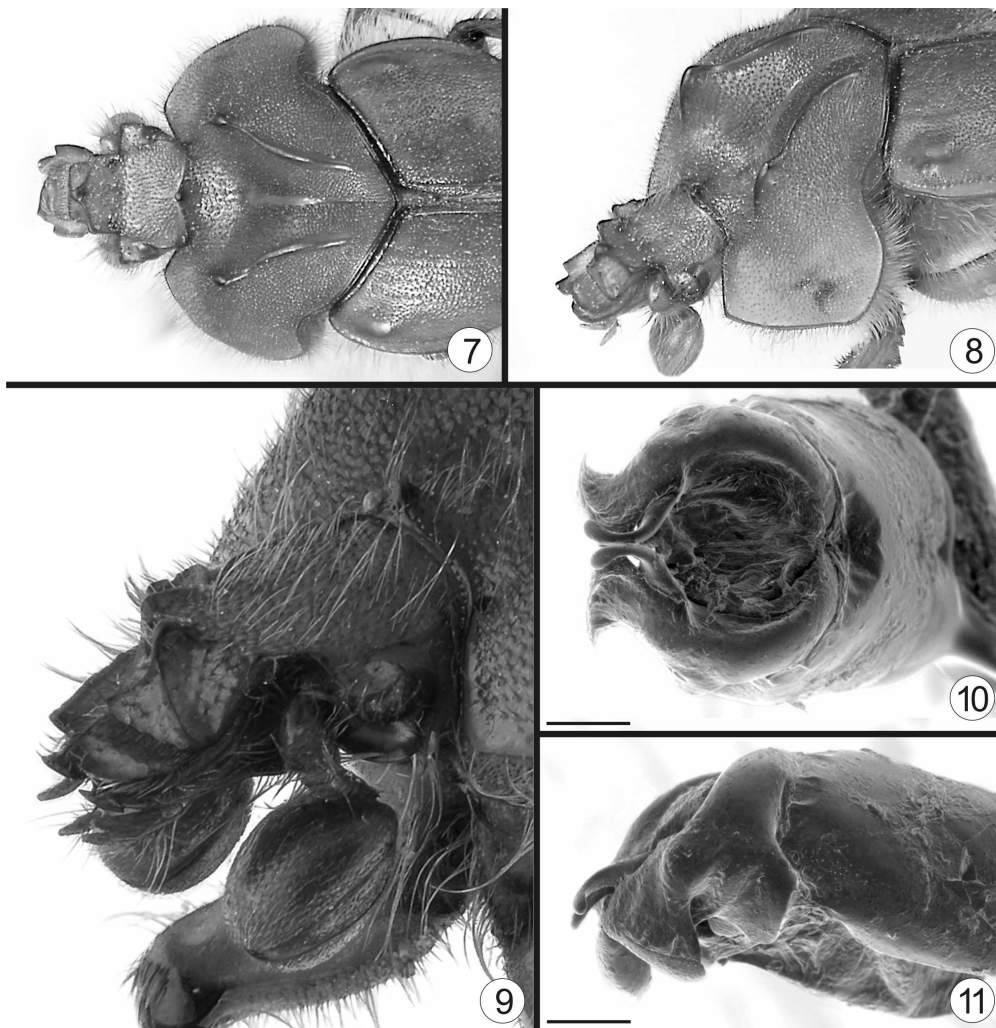
Excluded from type series (see remarks): 1 female, Argentina, Corrientes, Alto Parana, Ituzaingo, Oct. 1975, coll Martínez (HAHC).

**Remarks.** The four male paratypes range from 10.5 to 11.3 mm in length and from 6.8 to 7.5 mm in greatest width. The single female paratype is 11.1 mm in length and 7.5 mm in greatest width. In two males the outer pronotal carina on each side between the inner carina and the posterior angle is vaguely indicated by an indistinct elevation or small glabrous area. In the smallest specimen the pronotal cavity is shallower than the others and the anterior angle of the inner carina on each side is abruptly obtuse. One small male has only five teeth evident on the foretibia. The apical lobes of the male genitalia vary slightly in size and shape, but all have the outer angle sharply acute. Other variation is minimal.

The single female from Corrientes, Argentina, is almost certainly *N. antennatus*, but because of the distance between Corrientes and the type locality, a male is needed to verify its identity. Also, there is the possibility that the specimen is mislabeled.

*Neothyreus antennatus* and the related species, *N. goyasensis* (Boucomont), are, as far as I know, the only two described species in the genus that have the antennal club greatly thickened and oval in both sexes. In *N. goyasensis* the inner pronotal carina posterior to the anterior angle of the carina is interrupted for a short distance; it is complete in *N. antennatus*. Although the male genitalia of the two species differ mainly in the shape of the inner part of the apical lobes, the known range of the two species will separate them. The species, *N. acutus* Howden, which is partly sympatric with *N. antennatus* and superficially resembles it, lacks the thickened antennal club and has the outer pronotal carinae distinct. No other described species is likely to be confused with *N. antennatus*.

**Etymology.** The name “antennatus” refers to the unusual antennal club.



**FIGURES 7–11.** *Neothyreus antennatus*, n. sp.: 7, Head and pronotum, dorsal view; 8, Head and pronotum, lateral view; 9, Antenna; 10, Male genitalia, dorsal view; 11, Male genitalia, lateral view. Scale lines for genitalia = 0.2 mm.

*Neothyreus moraguesi*, new species (Figs. 4–6)

**Holotype.** Male, length 10.1 mm, greatest width 6.5 mm. Dorsally reddish brown. Clypeus trituberculate, median tubercle only very slightly larger than lateral tubercles, anterior in position, face slanted posteriorly; anterior carina on each side complete, slanted upward to merge with median tubercle; posterior carina on each side distinct, joining posterior edge of median tubercle. Vertex nearly flat between eyes, surface coarsely, closely granular. Gena wider than long, outer edge narrowly reflexed. Antennal club elongate-oval, not dorsoventrally thickened. Pronotum on each side behind eye with small circular fossa contiguous with marginal bead, diameter of fossa approximately equal to width of bead; between fossae, margin gradually elevated to small median tubercle just posterior to and contiguous with bead. Inner pronotal carina (Fig. 4) on each side with anterior end arising about 0.6 mm posterior to anterior margin; carina briefly sinuate, curved laterally, then broadly, inwardly arcuate to posterior third, then almost parallel, slightly converging posteriorly to end about 0.5 mm from posterior margin. Each inner carina about 0.5 mm from anterior end with poorly defined side branch directed toward lateral fovea, branch vague, lateral end indicated by slight ridge just anterior to fovea, ridge not extended to margin; lateral margin not indented below fovea, marginal bead complete, unbroken. Pronotal concavity between inner carinae broad and relatively shallow, midline impressed, surface on both sides of carinae closely granular with short, pale setae; carinae and small area between posterior fourths of inner carinae glabrous. Outer carina on each side arcuate, 1.0 mm long, slightly closer to posterior angle than to inner carina; anterior half relatively broad, tapering in posterior half to narrow end. Elytral disc with four slightly impressed striae and two vaguely elevated intervals; surface punctate-rugose, most punctures each with moderately short, semi-erect, tan seta. Metasternum very slightly convex, midline very shallowly indented, surface moderately punctate, punctures distinctly separated, many each with short, upright seta; apical end of metasternum broadly oblique. Foretibia with four teeth on outer margin. Genitalia as in Figs. 5, 6.

**Allotype.** Female, length 12.0 mm, greatest width 8.0 mm. Similar to male, differing slightly as follows: inner pronotal carinae more widely separated anteriorly, more arcuate, slightly higher (all a function of larger size), anterior side branch as in male; outer carina on each side more developed, distinctly higher and wider in anterior half; pygidium apically broadly rounded, surface slightly more convex.

**Type Series.** Holotype, male, [Brazil], Goias, Monjolin P. O, XI.1945, Barreto leg., Howden coll. ex A. Martínez coll. (CMNC). Allotype, female, Brazil, Minas Gerais, Uberaba, XI.1951, Howden coll. (CMNC). Paratypes, 9 males, 14 females; Bresil, (Mato Grosso), 14° 15' 50.80" S, 59° 14' 02.05" W, Chapada dos Parecis, 30 km N. Uirapuru Usine Alcomat, A. Foucart leg.: 2 males 1–15.XII.2000; 4 males, 12 females 1–15.XII.2001; 3 males, 2 females 1–15.XII.2002. Paratypes are in: HAHC, GMC, MZSP.

**Remarks.** Length in the series varies from 8.8 to 12.0 mm, and greatest width from



5.4 to 7.9 mm. In most small specimens the inner pronotal carina on each side is only slightly arcuate in the anterior half and the slightly developed anterior branch extending toward the lateral fovea may be absent. In larger specimens, 10 mm or over, the lateral branch (Fig. 4) is indicated and the inner carina is distinctly arcuate. The outer carina in specimens over 10 mm is distinctly wider and higher in the anterior half, becoming lower and tapering to end in the posterior half. The four teeth on the outer margin of the foretibia are constant.

*Neoathyreus moraguesi* will not easily key out in my 1985 revision as it does not readily key through either couplet 20 or 24. *Neoathyreus moraguesi* has a well-developed oblique clypeal carina as mentioned in couplet 20, but the median tubercle is only slightly higher than the lateral ones. However, it should key to couplet 21 and thence to couplet 24. Since all of the series at hand measure 12 mm or less, specimens should key to couplet 25; however the anterior median pronotal tubercle is more developed than in the other small species and could cause a problem if some specimen should measure over 12 mm. In couplet 25 (the most likely couplet the species will key to), there are two species listed as choices: *N. corinthius* (Klug) and *N. bidentatus* (MacLeay). The former has five teeth on the foretibia and is black or bicolored, whereas in the latter the median clypeal tubercle is higher and the outer carinae are poorly developed, low and have relatively uniform width or, often, obsolete. These characters will separate both species from *N. moraguesi*; also, all three species differ in the shape of the male genitalia. The combination in *N. moraguesi* of the following characters should distinguish the species from any other in the genus: low median clypeal tubercle with pronounced oblique carina on each side; moderately developed anterior median pronotal tubercle; outer pronotal carina tapering posteriorly; anterior branch of the inner carina in specimens over 9 mm, and the carina bowed in anterior half; four teeth on the outer margin of the foretibia and, in males, the shape of the male genitalia.

**Etymology.** *Neoathyreus moraguesi* is named for Gérard Moragues, who kindly furnished me with most of the specimens belonging to this species.

#### *Neoathyreus fallolobus*, new species (Figs. 12–15)

**Holotype.** Male, length 14.9 mm, greatest width 8.7 mm. Dorsally black, surface with scattered, erect, pale setae. Clypeus (Fig. 12) with longitudinal, median horn arising anteriorly and extending length of clypeus; lateral horn or tubercle on each side above antennal insertion almost same height as median horn; anterior carina on each side curved abruptly upward near median horn and extending up one-half anterior face of horn; posterior carina on each side arcuately depressed between horns; surface of clypeus on each side shallowly concave, contiguously punctate-rugose. Vertex punctate-rugose anteriorly near horns, closely granulate elsewhere, surface slightly convex between eyes. Gena with slightly reflexed outer margin, anterior lateral angle with small tubercle, surface

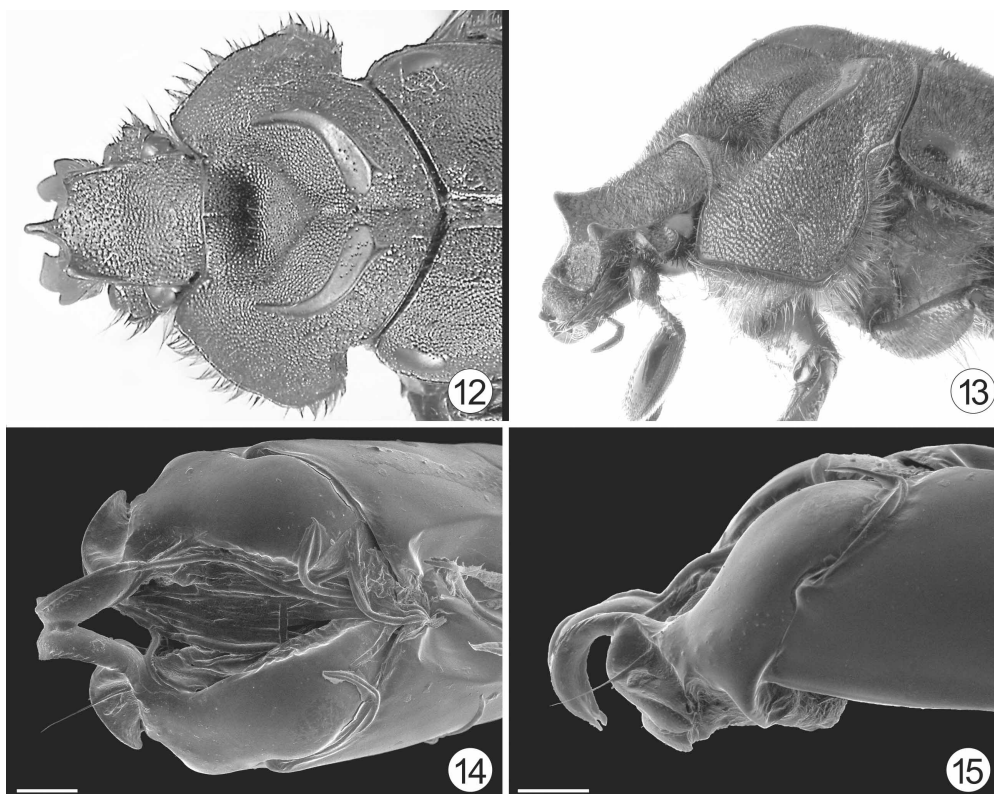
of gena tuberculate. Pronotum (Fig. 12) with small, shallow fossa on each side behind eye adjacent to margin, fossa slightly wider than width of marginal bead; anterior marginal bead gradually, arcuately raised between fossae, midline constricted by very small indentation, lacking tubercle or angulation. Pronotum with inner carina on each side arising about 1.0 mm posterior to fossa; carina gradually bowed inwardly and becoming wider to rounded end about 0.3 mm from posterior midline; outer edge of carina elevated; between inner posterior edges of carina with very small tubercle on midline. Concavity (Fig. 12) between inner carinae deep in anterior half, abrupt, posterior edge of deep depression broadly v-shaped, extending in posterior half as shallowly impressed midline, posterior half of concavity shallow, sloping evenly to midline. Outer carina on each side 1.0 mm long, very narrow, about 0.1 mm wide or less, slightly sinuous, inconspicuous. Lateral pronotal marginal bead complete, not broken or obviously indented; entire surface of pronotum except for carinae closely, rather coarsely granulate. Elytron with several striae slightly indicated at base, surface closely punctate-rugose except for smooth surface of humeral umbone. Metasternum between middle coxae slightly convex, midline shallowly impressed; anterior end of metasternal midline sharply, almost acutely angled, angle becoming broadly obtuse; surface on either side of midline punctate, most punctures separated by about two diameters; some punctures each with long seta. Foretibia with five teeth on outer margin. Male genitalia as in Figs. 14, 15, similar to those of male *N. lobus* Howden.

**Allotype.** Female, length 13.6 mm, greatest width 8.1 mm. Similar to male except as follows: median clypeal horn (Fig. 13) reduced to large tubercle at anterior edge of clypeus, extending posteriorly as low ridge along midline to join slightly developed posterior carina; carina bowed downward between lateral horn or large tubercle on each side, horn 2–3 times height of median tubercle; posterior carina near midline only slightly developed. Pronotum with tubercle between posterior ends of inner carina reduced to low, rounded swelling no higher than inner edge of adjacent carina; outer carina almost obsolete, represented by narrow row of 4–5 fused tubercles. Pygidium more broadly rounded, briefly emarginate medially.

**Type Series.** Holotype, male, Peru, Cusco: San Pedro, 13° 03'15" S 71° 32' 54" W, 1500 m, 17,18.XI.1999, T. Larsen, Cloud forest, F.I.T. 1 (CMNC). Allotype, female, Peru, Cusco: Iskaybamba coffee plantation, 1835 m, 13° 30' 16.3" S 70° 53' 58.7" W, 29,30.V.2000, T.Larsen, F.I.T. (HAHC). Paratypes, 3 males: 1, same data as holotype except 19,20.XI.1999; 2, same data as holotype except 18,19.XI.1999, F.I.T. 2. Paratypes are in: HAHC.

**Remarks.** Variation in the length of the three male paratypes ranges from 10.0 to 12.5 mm and greatest width from 6.5 to 7.6 mm. The smallest male is dark brown (possibly teneral) and has the clypeus shaped like the allotype; the lateral horns are reduced to tubercles, smaller than in the allotype. In two of the three males, both small, the anterior pronotal depression in the concavity, while still evident, is reduced in depth and the inner

carinae are only slightly wider posteriorly. In the largest male paratype the posterior pronotal tubercle between the ends of the inner carinae is only represented by a smooth granule; in the smaller males the tubercle is absent. The lateral carinae are absent in one male and only slightly indicated in the other two. Dorsal setae vary in density, perhaps because of immersion in the F I T fluid or because of abrasion. There are also slight differences in the positioning in the apical lobes of the male genitalia.



**FIGURES 12–15.** *Neoathyreus fallolobus*, n. sp.: 12, Male head and pronotum, dorsal view; 13, Female head and pronotum, lateral view; 14, Male genitalia, dorsal view; 15, Male genitalia, lateral view. Scale lines for genitalia = 0.2 mm.

Large males and possibly some large females will key, with some difficulty because of their uniform black color, to couplet 16 in my 1985 revision; this couplet includes *N. corniculatus* (Felsche) from Venezuela and *N. lobus* Howden from Argentina. Smaller specimens that lack the posterior pronotal tubercle will not key beyond couplet 13, and specimens that also lack the outer pronotal carinae will not key beyond couplet 10. However, *N. fallolobus* can be identified by the following combination of characters: uniform dorsal color, unusual clypeus with longitudinal median ridge, lack of an anterior pronotal tubercle and with small or no posterior tubercle, deep depression in the anterior

half of pronotal concavity, surface of pronotum, except carinae, closely granulate or punctate, lateral pronotal marginal bead unbroken, and with five teeth on outer edge of foretibia. No other described species of *Neoathyreus* has this combination of characters.

The “lobus” complex of forms in southern South America presents some interesting problems, possibly related to geographic variation. The type locality of *N. lobus* is the Argentine province of Catamarca; other typical specimens have been taken in Tucumán. All of these specimens have the anterior pronotal marginal bead medially thickened and with a median, posteriorly directed, obtuse angulation. In specimens from northern Salta and Jujuy, Argentina, the anterior pronotal bead is only slightly thickened and lacks the obtuse angulation. All Argentine specimens dorsally are either bicolored light to dark brown or entirely brown to dark brown. In Cochabamba, Bolivia, on the eastern slopes of the Andes, specimens are dorsally uniformly black, the anterior pronotal bead is uniformly thin, and the posterior pronotal tubercle is pronounced but slightly more slender than in Argentine specimens. All of these “forms” have similar genitalia, as does *N. fallolobus*. With the material at hand, it is obvious that more material from different localities is needed to determine if the variation is clinal or if several species are involved.

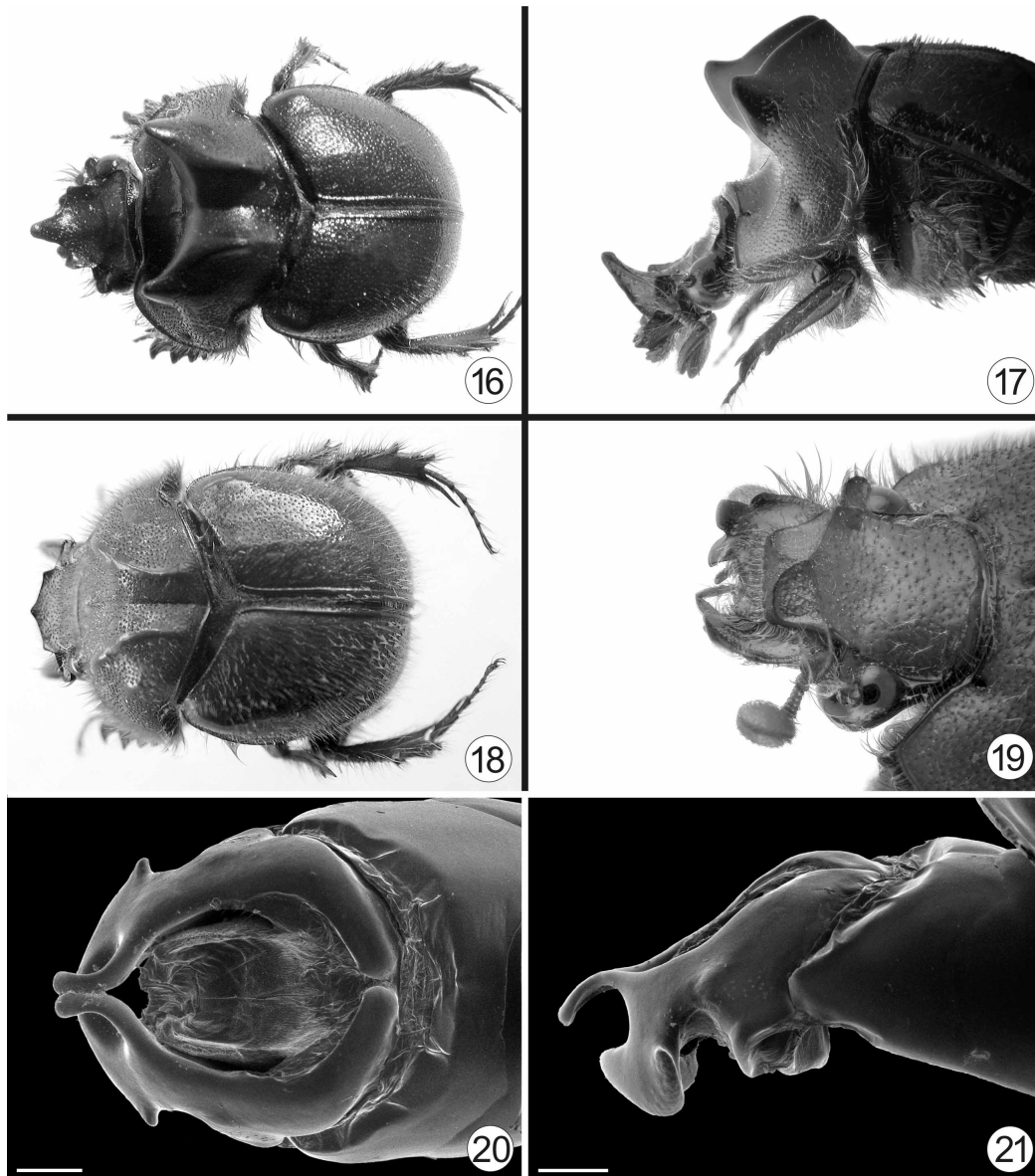
**Etymology.** The combination of “fallo” meaning “false” and “lobus”, referring to the posterior pronotal tubercle in the described species, is intended to indicate the relationship between these two species based on a comparison of morphological characters.

#### *Neoathyreus (Mesoathyreus)*, new subgenus (Figs. 16–21 )

Type species: *Neoathyreus (Mesoathyreus) guyanensis*, new species, here designated.

Size moderate, 11.0 to 15.0 mm in length. Sexually dimorphic; male (Figs. 16, 17) with distinct clypeal horn and elevated inner pronotal carinae; female (Figs. 18, 19) with trituberculate clypeus, median tubercle small, only slightly higher than lateral tubercles (typical for many *Neoathyreus*); pronotum with low, rounded inner and outer carinae. Characters similar in both sexes: right mandible trilobed, apical tooth broad, not narrowed into acute, slender tooth; left mandible bilobed, apical lobe lacking acute tooth, apex blunt. Labrum narrow, broadly emarginate, anterior edge briefly angulate or tuberculate medially. Clypeus with both anterior and posterior carinae extending onto median tubercle or horn. Vertex transversely concave in anterior half, surface punctate, punctures separated by about one diameter or more, most punctures each with small anterior tubercle; surface between obscurely, minutely granulate. Gena narrow, twice as wide or wider than anterior-posterior length, outer anterior angle rounded. Pronotal marginal bead unbroken, tubercle lacking medially on anterior margin; pronotal midline at least partially impressed; pronotal surface, except carinae and concavity in large males, punctate, many punctures each with small anterior tubercle with seta at base; lateral fovea on each side deep, almost circular. Scutellum small, narrow, at least twice as long as wide. Elytron lacking any trace of basal marginal bead; several slight irregularities near base only indication of striae; elytral disc

punctate, not tuberculate, most punctures each with short, erect, pale seta; punctures usually separated by one diameter or less, surface between finely alutaceous, shiny. Foretibia with six teeth on outer margin, minute basal seventh tooth often present. Forecoxa closed, with small spine at outer posterior margin (similar to *Neoathyreus*). Metasternum slightly convex, midline represented by narrow, indented depression; anterior of metasternum rounded, very slightly angulate at anterior edge of midline. Hind tibia and tarsi resembling those of some *Neoathyreus*.



**FIGURES 16–21.** *Neoathyreus (Mesoathyreus) guyanensis*, n. sp.: 16, Dorsum of male major; 17, Male major, head and pronotum, lateral view; 18, Dorsum of female; 19, Head of female, note right mandible; 20, Male genitalia, dorsal view; 21, Male genitalia, lateral view. Scale lines for genitalia = 0.2 mm.

**Remarks.** While *Mesoathyreus* has a distinctive appearance, most of its characters can be found in one or more of the species of *Neoathyreus*. In establishing the genus *Neoathyreus* Howden and Martínez (1963) stated that “The genus could be further divided, but really distinct groups warranting even subgeneric status are not evident at this time”. While this is largely still true, *Mesoathyreus* has several characters that distinguish it and seems to warrant subgeneric status, at least until other groupings are established. The one consistent character that distinguishes both sexes of *Mesoathyreus* from species of *Neoathyreus* is the shape of the apical lobes of the mandibles, these being blunt in *Mesoathyreus* (Fig. 19); narrow, with an acute tip in *Neoathyreus*. The punctate, rather shiny dorsum, lack of elytral striae and the sexual dimorphism (only noticeable if both male majors and females are present) are characters that also may distinguish *Mesoathyreus*, but are not entirely unique, hence my proposal of a new subgenus rather than a genus.

**Etymology.** The subgeneric prefix “meso” = middle and is meant to indicate that *Mesoathyreus* should be placed between *Athyreus* and *Neoathyreus*. The name *Mesoathyreus* is masculine in gender.

***Neoathyreus (Mesoathyreus) guyanensis*, new species (Figs. 16–21)**

**Holotype.** Male, length 14.5 mm, greatest width 9.0 mm. Dorsally shiny reddish brown. Clypeus (Fig. 17) with pronounced, erect horn, 2.1 mm long from anterior edge of clypeus to apex; anterior clypeal carina on each side extending medially up anterior face of horn, joining 1 mm from apex of horn; posterior carina on each side extending up posterior side of horn to apex. Lateral clypeal tubercle on each side above antennal insertion small; clypeal surface between carinae with scattered small punctures. Vertex slightly convex medially anterior to shallow, transverse depression between eyes; surface with widely scattered, small punctures. Pronotum (Fig. 16) at anterior margin behind each eye with small fovea, diameter slightly more than width of adjacent marginal bead; anterior half of pronotum transversely concave for distance equal to width of head; surface of concavity anterior to ends of inner carinae with scattered punctures, surface of anterior half of concavity between carinae alutaceous, impunctate, posterior to that surface with scattered small punctures; most pronotal punctures each with short, fine, erect seta. Outer pronotal carina on each side indicated by irregular, impunctate, very slightly elevated area; lateral pronotal margin not indented below lateral fovea. Scutellum, elytra, and ventral characters as described in subgeneric description. Genitalia as in Figs. 20, 21.

**Allotype.** Female, length 14.6 mm, greatest width 9.0 mm. Differing from male as follows: clypeus (Figs. 18, 19) lacking horn, median tubercle about twice height of lateral tubercle on each side, anterior carina on each side joining medially just anterior to apex of median tubercle; surface of clypeus and vertex more closely punctate than in male, punctures small, usually separated by two or more diameters, most punctures each with

small anterior tubercle and short, fine central seta; pronotum (Fig. 18) with low, rounded inner and outer carinae, inner carinae slightly more elevated in anterior half of length; pronotal concavity shallow; except for carinae, entire pronotum punctate-tuberculate as on vertex, spacing closer, particularly on pronotal sides; pronotal margin below lateral fovea slightly sinuous; pygidium apically more widely rounded than in male; foretibia with seven teeth on outer margin, minute eighth basal tooth indicated on right tibia.

**Type Series.** Holotype, male, [Guyane =French Guiana], Dd. Saramaca Pk. Rte des Compagnons, Guyane Fse, 11.IX.1984, M. Duranton Recolt. (CMNC). Allotype, female, Dd. Saramaca, Mgne des Singes, Guyane Fse, 8.IX.1984, M. Duranton Recol. (HAHC). Paratypes, 1 male, 2 females: 1 female, same data as allotype except VIII.1985; 1 male, Guyane Francaise, Kourou RN 1 Pk84, cryldé, 30.X.2001, M. Duranton coll.; 1 female, same data as male paratype except Pk 71, X.2001. Paratypes are in: HAHC.

**Remarks.** Variation between the two female paratypes and the allotype is slight, the two paratypes measure 13.5 and 14.3 mm in length and 8.0 and 9.0 in greatest width. The smaller female has six teeth on the foretibia, the larger one seven. The larger female has a slightly deeper pronotal concavity, but other variation is not obvious. The one male paratype measures 12.5 mm in length and 7.1 mm in greatest width. Its small size, making it a minor male, causes it to resemble a female rather than the major male holotype. It is similar to the females except that the median clypeal tubercle is distinctly higher, three or more times the height of the lateral tubercles. The pronotal concavity resembles those of the larger females, and there is a small, almost impunctate, alutaceous area near the middle of the concavity. Other dorsal characters resemble those of a female. The outer margin of the foretibia has seven teeth. The male genital characters resemble those of the holotype.

The minor male and the females will key to couplet 26 in my 1985 revision of *Neoathyreus*. The male major, lacking a distinct outer carina, will not key past couplet 10, partly because it does not fit the generic description of either *Neoathyreus* or *Athyreus*. The sexual differences, a character of *Athyreus*, and the unique blunt apical lobe of each mandible (Fig. 19) distinguish this species from any other *Neoathyreus* and it is therefore placed in the separate subgenus, *Mesoathyreus*.

**Etymology.** The species name “guyanensis” refers to French Guiana, the area in which the species occurs.

### Acknowledgments

I am greatly indebted to a number of people. In addition to the collections and their curators, specimens were given to me by Trond Larsen, Princeton University, New Jersey; Yannig Ponchel, Paris, France; and Jim Wappes, San Antonio, Texas. The specimens furnished by all of the above made this study feasible. Invaluable help with the illustrations was given by Henri Goulet and Jennifer Read, both Canada Agriculture, Ottawa. I also thank my wife, Anne Howden, for correcting many errors in the manuscript. Many thanks to all of the above.

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