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Revision of *Philoscaptus* Brèthes, 1919 and description of a new genus (Coleoptera, Melolonthidae, Dynastinae)

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Abstract

Morón Rios MA, Grossi PC. 2015. Revision of *Philoscaptus* Brèthes, 1919 and description of a new genus (Coleoptera, Melolonthidae, Dynastinae). Entomotropica 30(1): 1-11.

The genus *Philoscaptus* Brèthes, 1919, is revised and found to be monotypic, including *P. bonariensis* (Burmeister) a species found mainly in open areas along the Paraná River basin, in Brazil, Uruguay, Argentina and Paraguay (new country record). The new genus *Saccharoscaptus* is described for *P. laminifer* Dechambre, differentiated by mandibles with one weak rounded apical tooth, apex of clypeus with no denticles, frons excavate, male with blade like process on clypeus and small pronotal tubercles. A key for males of the Neotropical Pentodontini genera is given and the current status of *Ligyrus* Burmeister and *Tomarus* Erichson is discussed and a checklist with the known species included in each genus is also provided.

Additional key words: *Ligyrus,* Pentodontini, *Saccharoscaptus*, South America, taxonomy, *Tomarus*.

Resumen

Morón Rios MA, Grossi PC. 2015. Revisión de *Philoscaptus* Brèthes, 1919 y descripción de un nuevo género (Coleoptera, Melolonthidae, Dynastinae). Entomotropica 30(1): 1-11.

Se revisa el género *Philoscaptus* Brèthes, 1919, que de acuerdo con el presente estudio es monotípico, que incluye a *P. bonariensis* (Burmeister), especie distribuída en áreas abiertas de la cuenca del río Paraná, en Brasil, Uruguay, Argentina y Paraguay (nuevo registro). El nuevo género *Saccharoscaptus* se describe para *P. laminifer* Dechambre, el cual se distingue por tener mandíbulas con un diente apical poco redondeado, ápice del clípeo sin dentículos, frente excavada, y los machos con un proceso laminar en el clípeo y pequeños tubérculos pronotales. Se incluye una clave actualizada para los machos de los géneros de Pentodontini Neotropicales, y se discute el estado actual de *Ligyrus* Burmeister, 1847 y *Tomarus* Erichson, 1847 con una lista actualizada de las especies asignadas a cada uno de estos géneros.

Palabras clave adicionales: *Ligyrus,* Pentodontini, *Saccharoscaptus*, Sudamérica, taxonomía, *Tomarus*.

Introduction

Pentodontini is a worldwide tribe of Dynastinae, the American Pentodontini comprises 30 genera, being more diverse in South America with 21 genera (Krajcik 2012), and almost all lacking studies or comprehensive taxonomic studies after the revisions of Endrodi (1969, 1985). *Philoscaptus* Bréthes, 1919 has been known by two species, *P. bonariensis* (Burmeister, 1847) from open areas in Southern Brazil, Uruguay, and Northern Argentina, while *P. laminifer* Dechambre, 1979 was known from unique male specimen collected during XIX century with vague location "Para, Brazil". *Philoscaptus* as other genera in Pentodontini is a small to medium sized brownish beetle with body convex and simply striated elytra, and with frontal small tubercles on head. The concise morphological diagnosis makes it difficult to identify the genus.

The status of *Philoscaptus* is reviewed for the two species included in the genus. Based on a series of morphological characters we transfer *P. bonariensis* to a new genus here described, add new distributional data and discus its distribution and agricultural relevance. A key to the American Pentodontini is incorporated to and includes the genera *Ligyrus* Burmeister, 1847 and *Tomarus* Erichson, 1847, with comments on the polemic synonymic status of these genera proposed by Ratcliffe (2002) and a preliminary checklist of the species assigned to each one.

Material and methods

We use the classification of families of Scarabaeoidea proposed by Endrödi (1966), Morón (1997) and Cherman and Morón (2014). Diagnostic characters and terminology used in the descriptions follows in part Endrödi (1969), Dechambre (1979) and Ratcliffe (1981). A total of 24 specimens were studied by us from the following collections:

CEMT: Coleção Zoológica do Mato Grosso, Universidade Federal do Mato Grosso, Cuiabá, Brazil (Fernando Zagury Vaz-de-Mello).

DZUP: Coleção Entomológica Padre Jesús Santiago Moure, Universidade Federal do Paraná, Curitiba, Paraná, Brazil (Lúcia Massutti de Almeida).

EPGC: Everardo and Paschoal Grossi Collection, Nova Friburgo, Rio de Janeiro, Brazil.

FCUR: Facultad de Ciencias, Universidad de la República. Montevideo, Uruguay (Enrique Morelli).

IOC: Instituto Oswaldo Cruz, Rio de Janeiro, Rio de Janeiro (Jane Margareth Costa).

MNRJ: Museu Nacional do Rio de Janeiro, Rio de Janeiro, Brazil (Marcela Laura Monné).

MZUSP: Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Sônia Aparecida Casari).

MXAL: Miguel A. Morón Collection, Xalapa, Veracruz, Mexico.

Philoscaptus Brèthes, 1919

Type species: *Podalgus bonariensis* Burmeister 1847: 118 (by monotypy).

Diagnosis. Mandibles exposed, with three rounded teeth on outer border; apex of clypeus narrowed, with two short denticles; frons convex with small tubercle; pronotum widely convex; sexual dimorphism only in pygidium and last sternite.

Body: Stubby, somewhat oval, wider posteriorly; dorsal surface convex. **Head:** Small with frontal tubercle present, narrow, high, and weakly incised; clypeus convergent, with apex bidentate and elevate (Figure 1). Mandibles external border clearly tridentate with upturned apex (Figure 2); teeth rounded, inner tooth narrower and longer. Maxilla slender, elongated, apex narrowly rounded and with one or two hooklets

on internal margin of lacinia (Figure 3). Mentum strongly tapering anteriorly, emarginated or not. Antennae 10 joined, club short. **Pronotum:** Small sized, less than half of elytral length, narrower than both elytron together; surface simply convex with no tubercle. **Elytra:** Shape subparallel, distinctly diverging posteriorly and wider than pronotum. Scutellum triangular, with subequal sides, smooth or with scattered punctures. **Venter:** Surface densely setose; prosternal process elongate, blade-like, apex rounded. **Legs:** Anterior tibiae tridentate, teeth equidistant; protarsi not swollen in either sex; middle tibiae slender with two external carinae, proximal weakly marked, distal strongly crenulated, apical border with four teeth, being one longer ventrally; posterior tibiae with apical border expanded, irregularly notched, with 3–4 truncate distal teeth. **Sexual dimorphism:** Pygidium of male more convex than in female; last sternite of female twice longer than in male. **Male genitalia:** Parameres symmetric, stout, elongate, curved ventrally (Figure 5).

Remarks. *Philoscaptus* includes only *P. bonariensis* (Burmeister) and looks similar to some species of *Hylobothynus* Ohaus, 1910, but it can be distinguished from these by the last segment of maxillary palps, not triangularly expanded. It also can be confused with *Neoryctes* Arrow, 1908, but it differs in the mandibles broadly curved and basal margin of pronotum absent or incomplete.

Philoscaptus bonariensis (Burmeister, 1847)

(Figures 1–5, 15-18)

Podalgus bonariensis Burmeister, 1847: 118

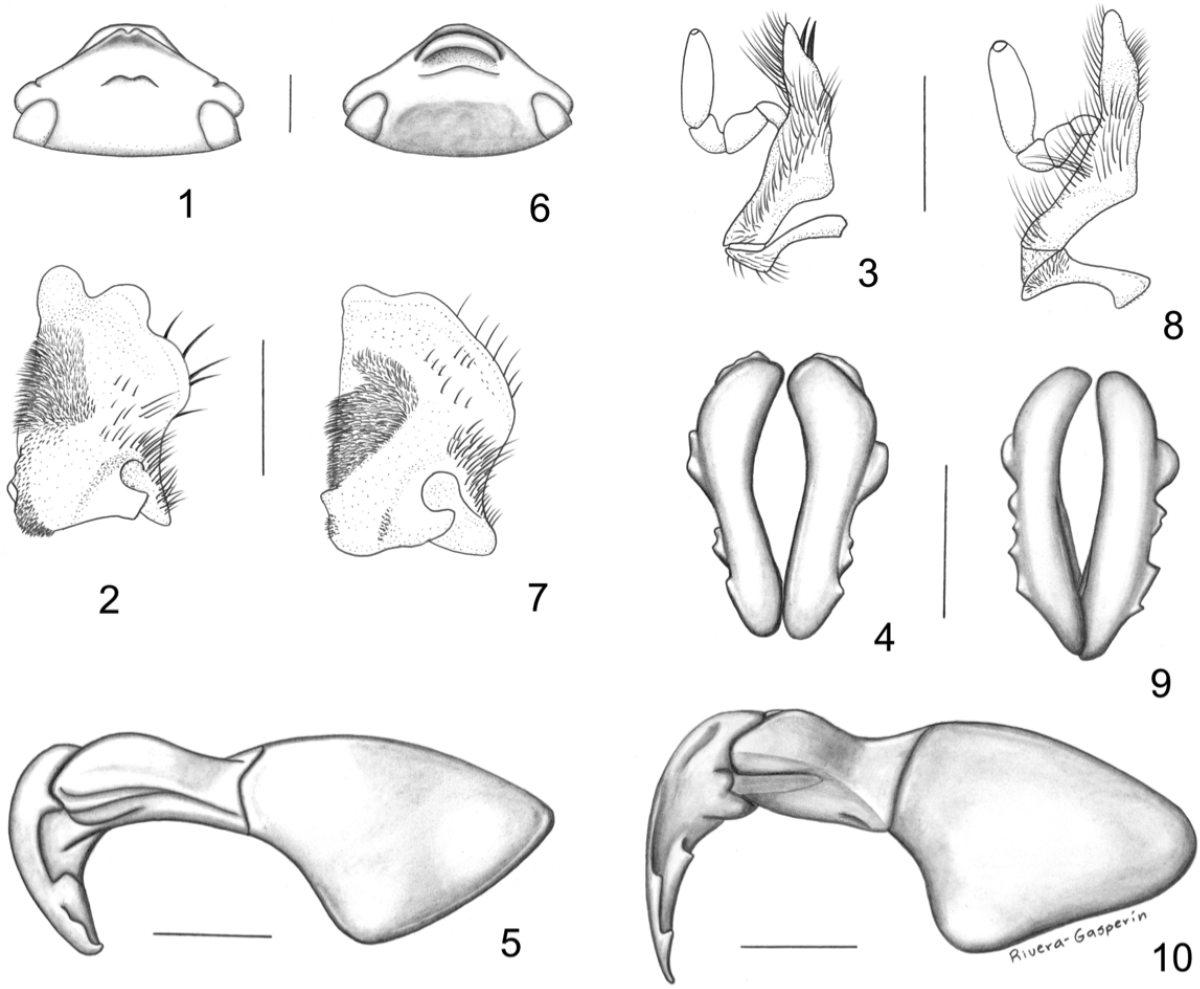
Material examined: BRAZIL: Rio Grande do Sul, Pelotas, 30-x-1962 (3 females) (DZUP and EPGC); São Leopoldo, no more data (1 specimen) (MZSP). **PARAGUAY:** Guairá, Villarrica, xii-1924 (2 males) (FIOC). **URUGUAY:** Canelones, Las Piedras, 07-x-1967 (1 male, 5 females) (CEMT, MXAL).

Diagnosis. Apex of clypeus with two small denticles; frons convex with bifid or transverse tubercle; pronotum widely convex in both sexes.

Redescription. Length: 16.8–20.3 mm. **Width:** 9.8–12.0 mm. **Body:** Wider posteriorly, 1.6–1.7 longer than wide; sides weakly convergent posteriorly (Figures 15-16). *Color:* Light to dark brown, ventrally usually lighter. *Head:* 2.4–2.7 times narrower than pronotal width; frons with dorsal surface flat to slightly concave. Apex of distal maxillary palps subconical. Antennal club short, as long as antennomeres 2–7 together. **Pronotum:** Surface completely punctate, densely at pronotal declivity; punctures rounded, c-shaped and sometimes converging; anterior border with wide margin and translucent blade; posterior margin absent. **Elytra:** Surface convex and moderately punctate by rows of shallow and "o" shape punctures; elytral epipleural margin ascending and reaching humeri. **Abdomen:** Prepygidium posterior border with scarce rugosities (stridulatory surface). Pygidium 2.2 times wider than long, apical border slightly prominent in female, widely rounded in male. **Male genitalia:** Parameres with rounded apex, briefly toothed on lateral borders (Figures 4–5, 17-18).

Distribution. Argentina: Buenos Aires (Buenos Aires); Santa Fé (Santa Fé). **Paraguay:** Guairá (Villarrica) (**New Country Record**). **Brazil:** Rio Grande do Sul (Pelotas and São Leopoldo). **Uruguay:** Canelones (Colonia, Tacuarembo) (Figure 13).

Biology. According to Morelli (1997) the larvae of *P. bonariensis* live under soil of native grasslands and gramineous crops in Uruguay, feeding on roots and organic debris, and may be located in vertical galleries at 25 cm depth. Second and third instar were collected at the same time with young adults in the soil during the same season that suggests overlapping of 2 year life cycle generations.



Figures 1-10. *Philoscaptus bonariensis*: head dorsal view (1), right mandible dorsal view (2), right maxilla dorsal view (3), parameres distal view (4), parameres lateral view (5). *Saccharoscaptus laminifer*:head dorsal view (6), right mandible dorsal view (7), right maxilla dorsal view (8), parameres distal view (9), parameres lateral view (10). Scale lines 1 mm.

Saccharoscaptus Morón & Grossi n. gen.

(Figures 6–12)

Type species: *Philoscaptus laminifer* Dechambre, 1979.

Diagnosis. Mandibles exposed, with one weak rounded apical tooth; apex of clypeus narrowly rounded, with no denticles; frons excavate; male with blade like process on clypeus and one pair of small pronotal tubercles.

Description. Body: Stubby, suboval, wider posteriorly; dorsal surface convex. **Head:** Small; frontal carina absent, frons excavate; clypeus convergent, rounded and weakly reflexed (Figure 6). Mandibles almost flat, with external edge notched and with one apical rounded tooth (Figure 7). Maxillae slender, elongated, apex digitiform, without hooklets on internal margin of lacinia (Figure 8). Mentum weakly tapering anteriorly. Antennae 10 joined. **Pronotum:** Small sized, less than half of elytral length, narrower than both elytron together. **Elytra:** Shape subparallel, distinctly diverging posteriorly and wider than pronotum. Scutellum triangular, with subequal sides and v-shaped deep impression. **Venter:** Surface densely setose;

prosternal process strong, elongated, nearly semi-columnar, apex rounded. **Legs:** Anterior tibiae tridentate, teeth equidistant, protarsi not swelling in both sexes; middle tibiae slender with two external carinae, proximal weakly marked, distal moderately crenulated, apex with 4–5 teeth, being one longer laterally; posterior tibiae with apex nearly truncate, briefly expanded, with 7–8 small teeth. **Sexual dimorphism:** Strongly evident on head and pronotum. **Male genitalia:** Parameres symmetric, flattened, elongate, and curved ventrally (Figure 10).

Remarks. *Saccharoscaptus* can be confused in a first view with some species of *Bothynus* Hope, 1837, but is readily distinguish from it by its mandibles only weakly notched externally, and strongly tridentate in *Bothynus*. This character also differentiates *Saccharoscaptus* from *Philoscaptus,* as well as the clypeus not dentate and a bituberculated pronotum. This genus includes only *S. laminifer* (Dechambre).

Etymology. Derived from the Greeks words *saccharon*, sugar and *scapto* to dig (Jaeger 1955) in reference to the larval habits recently observed in Bolivia (Copa-Bazan and Morón 2014), where they feed on roots of sugar cane.

Saccharoscaptus laminifer (Dechambre, 1979) new combination

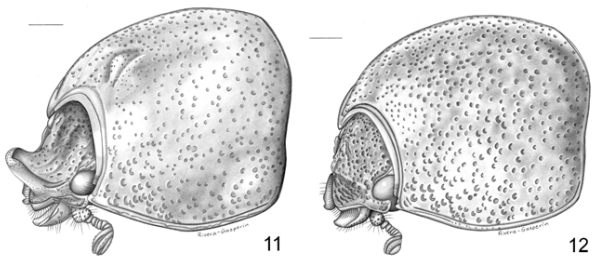
(Figures 6-12, 19-22)

Philoscaptus laminifer Dechambre 1979: 103

Examined material. BRAZIL: Pará, Jacareacanga, ii-1970 (2 males) (DZUP and EPGC); **BOLIVIA:** Santa Cruz, Warnes, El Naranjal, La Jupia, 308 m, viii-2011 (5 males, 5 females) (MXAL, EPGC).

Diagnosis. Clypeus with rounded apex and blade-like preapical projection in male; frons widely concave in male, and scarcely concave in female; pronotum widely convex in female, with small pair of tubercles in male.

Redescription. Length: 19.1–22.4 mm. **Width:** 9.5–10.4 mm. **Body:** Wider posteriorly, 2.0–



Figures 11-12. Dorso lateral view of head and pronotum of *Saccharoscaptus laminifer*: male (11), female (12). Scale lines 1 mm.

Figure 13. Distribution of *Philoscaptus bonariensis*.

Figure 14. Distribution of *Saccharoscaptus laminifer*.

Figures 15-18. *Philoscaptus bonariensis*, dorsal habitus of male from Villarica, Paraguay (15), distal view of parameres (16), lateral view of parameres (17), dorsal habitus of female from Pelotas, Brazil (18). Scale lines 5 mm, except figs. 15-16 = 1 mm.

Figures 19-22. *Saccharoscaptus laminifer* male from Jacareacanga, Brazil, dorsal habitus (19), lateral habitus (20), distal view of parameres (21), lateral view of parameres (22). Scale lines 5 mm, except figs. 21-22 = 1 mm.

Table 1. Differential characters of adults of *Philoscaptus* and *Saccharoscaptus*.

Characters	*S. laminifer*	*P. bonariensis*
External border of mandibles	Rounded with weak notch	With 3 rounded teeth
Apex of clypeus	Rounded, briefly projected	Narrowed with 2 short teeth
Male pronotum	With 2 small tubercles	Convex
Male clypeus	With blade like projection	Without projections
Male frons	Broadly excavate	Convex, with transverse tubercle
Female frons	Shallowly excavate	Convex, with transverse tubercle
External border of paramere	With 2 well defined teeth; distal part expanded	Sinuate, with weak tooth; distal part narrowed

2.2 longer than wide; sides weakly convergent posteriorly (Figures 19-20). **Color:** Dark brown to black, ventrally dark reddish brown. **Head:** 2.2–2.3 times narrower than pronotal width; dorsal surface widely concave in male to slightly concave in female (Figures 11–12). Apex of distal maxillary palpus rounded. Antennal club slightly longer than antennomeres 2–7 together in male; slightly shorter than same antennomeres in female. **Pronotum:** Shape convex, with scattered deep, round punctures, denser in females, males with two weak tubercles near the middle of anterior half; anterior border with wide margin and translucent blade; posterior margin absent. **Elytra:** Surface convex and moderately punctate by rows of deep and ocellate punctures; elytral epipleural margin ascending and weakly reaching humeri. **Abdomen**: Prepygidium densely covered with small, shallow punctures, without rugosities on the middle of posterior border. Pygidium 2.7 times wider than long, apical border slightly prominent in female, widely rounded in male. Parameres with flattened, acute apex, strongly toothed on lateral borders (Figures 9–10, 21-22).

Remarks. This species was originally described in *Philoscaptus* in which it clearly does not belong based on the character commented above (Table 1). Female is examined by the first time, and distinctive characters are commented in the diagnosis and redescription. Sexual dimorphism is much more accentuated than in *Philoscaptus.*

Distribution. Brazil (Pará); **Bolivia** (Santa Cruz) (**New Coutry Record**). (Figure 14).

Biology. According to Copa-Bazan and Morón (2014) during 2011 an important increase in the larval populations of *S. laminifer* living in the soil of sugar cane fields in northern of department of Santa Cruz, Bolivia was recorded. Important damage to the roots of sugar cane in a wide surface of such fields was observed, with 150–200 larvae/m^2 in combination with an unusual dry season. Regions of Jacareacanga, Pará and Santa Cruz are separated by more than 1 300 km in straight line, so that, it is much probable that this species has a wide distribution along the southern part of the Amazonian biome.

Key to genera of american Pentodontini based on males

1. Propygidium with stridulatory surface..... 2
1' Propygidium without stridulatory surface 10
2 Pygidium much shorter than prepygidium..... 3
2' Pygidium as long as prepygidium or longer than it 4
3 Foretibia tridentate. Pronotum with apical tubercle and pit. Apex of clypeus narrowed, with 2-4 teeth ..... *Bothynus* Hope, 1837

3' Foretibia bidentate. Pronotum simply convex. Apex of clypeus narrowly rounded ....*Heteroconus* Kolbe, 1900 (= *Parabothynus* Endrödi, 1968).
4 Body length less than 15 mm ....*Heteronychus* Burmeister, 1847
4' Body length greater than 15 mm. 5
5 Pronotum with wide hollow and rounded tubercles ..... *Gillaspytes* Howden, 1980
5' Pronotum simply convex 6
6 Antenna with 9 segments. Frons with short horn in males; females with frons convex..... ..... *Eremobothynus* Ohaus, 1910
6' Antenna with 10 segments. Frons with transverse carina or tubercles..... 7
7 External border of mandibles with three teeth or rounded lobes 8
7' External border of mandibles simply curved ... 9
8 Apical segment of maxillary palp expanded, triangular ..... *Hylobothynus* Ohaus, 1910
8' Apical segment of maxillary palp cylindrical..... .....*Philoscaptus* Brèthes, 1919
9 Pronotum with basal margin complete..... .....*Neoryctes* Arrow, 1908
9' Pronotum without basal margin ....*Indieraligus* Dechambre, 1979
10 Mandibles exposed dorsally..... 11
10' Mandibles mostly hidden under clypeus..... 26
11 External border of mandibles without projections 12
11' External border of mandibles with 2-3 teeth, or wide lobes..... 21
12 Clypeus with transverse carina immediately behind apex of clypeus..... 13
12' Clypeus without transverse carina behind apex of clypeus..... 14
13 Clypeal carina tridentate. Body length 15-17 mm ..... *Aphonus* LeConte, 1856
13' Clypeal carina entire or sinuate. Body length 18-30 mm .....*Orizabus* Fairmaire, 1878
14 Pronotum simply convex, without tubercle or fovea 15
14' Pronotum convex, but with fovea or protuberances on anterior half..... 20
15 Frons simply convex 16
15' Frons convex with protuberances 18
16 Fronto-clypeal keel absent. Body length 13-15 mm. .....*Euetheola* Bates, 1888
16' Fronto-clypeal keel transverse or swelling present. Body length 20-23 mm 17
17 Elytra convex with striate surface. Abdominal spiracles small.....*Aphonides* Rivers, 1889
17' Elytra swollen with surface nearly smooth. Abdominal spiracles large..... ..... *Gorditus* Ratcliffe, 2010
18 Frons with prominence on disc..... 19
18' Frons with two tubercles on fronto-clypeal keel .....*Denhezia* Dechambre, 2006
19 Frons with a small truncate tubercle..... .....*Endroedianibe* Chalumeau, 1981
19' Frons with a conical acuminate tubercle..... ..... *Hiekeianus* Endrödi, 1978
20 Head with dimorphic structures. Pronotum with small or large tubercles, but without subapical fovea 21
20' Head similar in both sexes. Pronotum with small apical tubercle and subapical fovea ....*Tomarus* Erichson, 1847, revised status
21 Male with conical horn on head and bifurcate tubercle on pronotum. Female when known with small tubercle on clypeus 22
21' Male with truncate, short horn on clypeus, and concave frons. Female with transverse keel on clypeus..... *Saccharoscaptus*, new genus
22 Clypeus with a triangle shaped apex, truncate. Elytra without distinct striae and punctures..... ..... *Heteroglobus* Dupuis & Dechambre, 2006
22' Clypeus with a triangle shaped apex, emarginated or bidentated. Elytra with distinct striae and punctures ..... *Thronistes* Burmeister, 1847
23 Clypeal apex acute, unidentate .... *Oxygrylius* Casey, 1915
23' Clypeal apex bidentate or rounded 24
24 External border of mandibles with rounded lobes ..... *Barutus* Ratcliffe, 1981
24' External borders of mandibles with 3 teeth... 25
25 Pronotum convex, but with small apical tubercle and subapical fovea. Apex of clypeus narrowed . .....*Ligyrus* Burmeister 1847, revised status.
25' Pronotum simply convex. Apex of clypeus bidentate.....*Aceratus* Prell, 1936
26 Clypeal apex truncate or rounded..... 27
26' Clypeal apex acute .....*Oxyligyrus* Arrow, 1908
27 Posterior femur greatly thickened..... ..... *Pentodina* Endrödi, 1968
27' Posterior femur not thickened..... 28
28 Apex of clypeus rounded 29

28' Apex of clypeus broadly truncate..... 30
29 Center of head with strong, transverse keel .....
..... *Collagenus* Ratcliffe & Hardy, 2005
29' Center of head slightly tumid.....
..... *Coscinocephalus* Prell, 1936
30 Head lacking horns of tubercles .....
..... *Parapucaya* Prell, 1934
30' Head with small horns or tubercles next to eyes. Pronotum declivous anteriorly at middle.....
.....*Pucaya* Ohaus, 1910

The genera *Ligyrus* and *Tomarus*

Following Escalona and Joly (2006) we disagree with the synonymy of *Ligyrus* Burmeister, 1847 under *Tomarus* Erichson, 1847 according with the month of publication (Ratcliffe 2002), because such emendation is unnecessary, is not justified with names in wide usage during decades, and cause confusion instead to promote stability (International Code of Zoological Nomenclature 1999: article 23). But the study of many species allowed us to confirm that both names really correspond to related but distinct genera. The morphological characters traditionally used in keys and generic descriptions, as well as ambiguous taxonomic criteria, offer dichotomical options to reach the genus *Ligyrus* by two different ways (Ratcliffe 1981, Ratcliffe and Hardy 2005), results that in part support the existence of two valid genera. Detailed systematic studies based on adults and larvae are necessary to support an accurate revision of both genera, but in the meantime a preliminary checklist is proposed as follows.

***Tomarus* Erichson, 1847**

Type species *Scarabaeus ebenus* DeGeer, 1774.

Outer side of mandibles simply curved; pronotum with a pit; larva undescribed.

Group A: Protarsi enlarged.

Tomarus ebenus (DeGeer 1774:317).

T. similis (Endrödi 1968: 166).

Group B: Protarsi normal.

Tomarus bituberculatus (Palisot de Beauvois 1805: 103).

T. maimon Erichson 1847:96 revised status.

T. gyas Erichson 1848:561 revised status.

T. laevicollis (Bates 1888:316) new combination

T. subtropicus Blatchley 1922:30 new combination.

T. maternus Prell 1937:89 new combination.

T. pumilus Prell 1937:90 new combination.

T. selanderi Cartwright 1959:537 new combination.

T. rosettae Endrödi 1968:168 new combination.

T. discrepans Escalona & Joly 2006:125 new combination.

***Ligyrus* Burmeister 1847**

Type species: *Scarabaeus gibbosus* DeGeer, 1774

Outer side of mandibles with 2 teeth

Group A (or subgenus *Ligyrus s.str.*). Pronotum with or without pit; protarsi normal; larva without septula on raster.

Ligyrus gibbosus (DeGeer 1774: 322).

L. cuniculus (Fabricius 1801: 1801).

L. fossor (Latreille 1833: 11).

L. villosus (Burmeister 1847: 120).

L. nasutus (Burmeister 1847:120).

L. neglectus (LeConte1847: 87).

L. rubripes (Boheman 1858: 57).

*L. burm*eisteri Steinheil 1872: 560.

L. bidentulus Fairmaire 1892: 244.

L. scitulus Casey 1915: 20.

L. cicatricosus Prell 1937: 90.

L. pullus Prell 1937: 89 new combination

L. gianucai Dechambre & Lumaret 1985: 107.

L. adoceteus Ratcliffe & Cave 2010: 7 new combination.

Group B (or subgenus *Ligyrodes* Casey, 1915). Pronotum without pit; protarsi enlarged; Larva with septula on raster.

L. relictus (Say 1825: 194).

L. sallaei Bates 1888: 318.

L. peruvianus Endrödi 1970: 106.

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References

Cherman, MA, Morón MA. 2014. Validación de la familia Melolonthidae Leach, 1819 (Coleoptera Scarabaeoidea). *Acta Zoologica Mexicana* 30(1): 201–220.

Copa-Bazan F, Morón M A. 2014. Importancia del gusano blanco (Coleoptera: Melolonthidae; Dynastinae) en cultivos de caña de azúcar en Santa Cruz, Bolivia. pp. 31–44. En: Pérez-Domínguez, J. F. y A. Aragón (eds.).Memoria IX Mesa Redonda sobre Plagas Subterráneas. Guadalajara, Jalisco, México. Publicación especial INIFAP y BUAP, México.

Dechambre RP. 1979. Nouveaux Dynastidae Pentodontini américains (Coleoptera Scarabaeoidea). *Revue Francaise d'Entomologie* 1: 101–105.

Endrödi S. 1966. Monographie der Dynastinae (Col. Lam.) I Teil. *Entomologische Abhandlungen* 33: 1–457.

Endrödi S. 1969. Monographie der Dynastinae. 4. Tribus: Pentodontini (Coleoptera, Lamellicornia). *Entomologische Abhandlungen* 37: 1–145.

Endrödi S. 1985. The Dynastinae of the World. Dr. W. Junk Publ. Dordrecht. 800 pp.

Escalona H E, Joly L J. 2006. El género *Ligyrus* Burmeister, 1847 en Venezuela (Coleoptera: Scarabaeidae: Dynastinae: Pentodontini). *Boletín de la Sociedad Entomológica Aragonesa* 39: 111–137.

ICZN. 1999. International Code of Zoological Nomenclature, 4th edition. International Trust for Zoological Nomenclature, London. 306 pp.

Jaeger EC. 1955. A source-book of biological names and terms. Third Edition. Charles C. Thomas Publisher, Springfield, Illinois. 323 pp.

Krajcik M. 2012. Checklist of the world Scarabaeoidea. Animma. X supplement 5. Plzen, Czech Republic. 278 pp.

Krell FT. 2002. Case 3202 *Podalgus* Burmeister, 1847 and *Philoscaptus* Bréthes, 1919 (Insecta, Coleoptera): proposed conservation by the designation of *Podalgus cuniculus* Burmeister, 1847 as the type species of *Podalgus*. *Bulletin of Zoological Nomenclature* 59(2): 93–95.

Morelli E. 1997. Descripción de los estados inmaduros y notas sobre la biología de *Diloboderus abderus* Sturm y *Philoscaptus bonariensis* Burmeister (Coleoptera: Melolonthidae: Dynastinae). *Acta Zoológica Mexicana* 71: 57–70.

Morón MA. 1997. Capítulo 1. Antecedentes. [pp.1-8]. En: Atlas de los Escarabajos de México. Coleoptera Lamellicornia. Vol. I. Familia Melolonthidae. (M. A. Morón, B. C. Ratcliffe y C. Deloya, editores) CONABIO y Sociedad Mexicana de Entomología, México. 280 pp.

Ratcliffe BC. 1981. *Barutus hartmanni*, a new genus and species from Panama with a key to the New World genera of Pentodontini (Coleoptera: Scarabaeidae: Dynastinae). *The Coleopterists Bulletin* 35: 463–472.

Ratcliffe BC. 2002. Dynastinae Mac Leay 1819 pp.64–67. In: American beetles, Volume 2 (R. H. Arnett, M. Thomas, P. E. Skelley and J. H. Frank, editors) CRC Press, Boca Raton, FL. 861 pp.

Ratcliffe B C, Hardy M. 2005. *Collagenus dasysternus*, a new genus and species of Dynastinae from eastern Venezuela with a key to the New World genera of Pentodontini (Coleoptera: Scarabaeidae: Dynastinae). *The Coleopterists Bulletin* 549(1): 143–150.

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