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Antillipeltis, a new genus of Antillean Trogossitidae (Coleoptera: Cleroidea) with a key to the Cleroidea

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Abstract

Antillipeltis gen. nov. is described based on the following six new extant species and two new fossil species from Hispaniola and Puerto Rico: *A. alleni* **sp. nov.** (Dominican Republic, Miocene), *A. darlingtoni* **sp. nov.** (Haiti), *A. iviei* **sp. nov.** (Dominican Republic, Miocene), *A. maculata* **sp. nov.** (Dominican Republic), *A. minuta* **sp. nov.** (Dominican Republic), *A. nitida* **sp. nov.** (Puerto Rico), *A. portoricensis* **sp. nov.** (Puerto Rico), and *A. pubescens* **sp. nov.** (Dominican Republic). The genus is placed in Cleroidea, as currently delimited, based on the presence of a distinctive type of aedeagus occurring primarily in this superfamily, plus a combination of features excluding it from other cucujiform superfamilies. Within Cleroidea, the genus is tenatively placed in the family Trogossitidae and subfamily Lophocaterinae, but it differs from all other Trogossitidae in the presence of ventral membranous lobes with adhesive setae on tarsomeres 1–4 and in a combination of 9-segmented antennae, weak 3-segmented antennal club consisting of slightly elongate antenomeres, lack of postcoxal processes on the pronotal hypomera, and unique leg modifications. A key is provided for major groups of Cleroidea and all described genera of Peltinae and Lophocaterinae, with the exception of Rentoniini, based in part on the literature and in part on dissections of adult males. *Antillipeltis* is one of three endemic West Indian genera of Coleoptera that is both extant and known from Dominican amber.

Key words: Trogossitidae, Lophocaterinae, *Antillipeltis*, Hispanola, Puerto Rico, amber fossils, Cleroidea

Introduction

This work is based mainly on Antillean specimens collected more than 75 years ago by P. J. Darlington, Jr. and contemporary collectors. These were discovered more than 40 years ago by one of us (JL) in the major beetle collections in Cambridge, New York and Washington. The long hiatus between discovery and publication was due in part to the very short series of each species and the hope of discovering more specimens. However, only two additional specimens and two amber fossils have turned up in the past 30 years. Given difficulty of access and destruction of habitat, some of the interesting montane species described below may be already extinct, and the time seems right to finally describe the limited material available before the senior author also becomes extinct.

The eight species described below are placed into a new genus within the trogossitid subfamily Lophocaterinae, a group characterized mainly by larval characters. Due to the lack of larval material and some confusion surrounding the classification of Trogossitidae, placement of the new Antillean genus proved difficult. Therefore, a key is provided to the families of Cleroidea, the subfamilies and tribes of Trogossitidae and the genera contained in Lophocaterinae and most Peltinae.

Material and methods

The morphological terms used in keys and descriptions are those found in recent general works on Coleoptera (Lawrence *et al.* 2010, 2011; Lawrence & Ślipiński 2013a) and may differ from those used in recent studies of

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32(31). Anterior pronotal angles produced and rounded; lateral pronotal carinae with edges simple; apex of labrum truncate (K05, pl. 28, fig. 3); outer edge of mandible abruptly curved mesally; mola sub-basal and weakly tuberculate; prostheca absent (K05, pl. 28, fig. 2); lacinia with bifid uncus at apex (K05, pl. 28, fig. 1); elytral carinae continuous; Holarctic (K13, fig. 12A). . . . . **Lophocaterinae: *Grynocharis* Thomson**

- Anterior pronotal angles acute; lateral pronotal carinae densely denticulate; apex of labrum rounded (K05, pl. 33, fig. 5); outer adge of mandible gradually curved mesally; mola basal, transversely ridged (K05, pl. 33, fig. 4); prostheca a brush of hairs; lacinia with one subapical spur; elytral carinae interrupted; India . . . . . **Lophocaterinae: *Indopeltis* Crowson**

33(27). Antennae 7-segmented with 1-segmented club; elytra each with 7 longitudinal carinae; mandibular mola present; length less than 2.3 mm; southeastern U.S.. . . . . **Lophocaterinae: *Lycoptis* Casey**

- Antennae 9- or 10-segmented with 2- or 3-segmented club; elytra each without or with 3 longitudinal carinae; mandibular mola absent; length greater than 2.3 mm **34**

34(33). Antennae 9-segmented **35**

- Antennae 10-segmented **37**

35(34). Antennal club 3-segmented; anterior pronotal angles not or weakly produced; base of mandible simple; elytral punctation seriate, occasionally with longitudinal carinae; frontoclypeal suture distinct (K13, fig. 12G) . . . . . **Lophocaterinae: *Peltonyxa* Reitter**

- Antennal club 2-segmented; anterior pronotal angles strongly produced forward; base of mandible with brush of hairs. . . . **36**

36(35). Terminal antennomere (9) partly subdivided (K05, pl. 46, fig. 3); outer apical angle of protibia with enlarged, curved spur; lacinia without dark spurs (K05, pl. 46, fig. 4); lateral pronotal carinae with edges finely crenulate; elytral epipleura moderately broad and complete to apex; pretarsal claws not dentate; Australia (introduced to New Zealand) (K13, fig. 11H) . . . . . **Lophocaterinae: *Neaspis* Pascoe**

- Terminal antennomere (9) not subdivided (K05, pl. 26, fig. 3); outer apical angle of protibia without enlarged, curved spur; lacinia with 3 dark spurs (K05, pl. 26, fig. 4); lateral pronotal carinae simple; elytral epipleura narrow; pretarsal claws with basal tooth (K05, pl. 27, fig. 10); Myanmar. . . . . **Lophocaterinae**: ***Grynocharina* Reitter**

37(34) Elytra seriate, with rows of tuberculate window punctures and with 3 distinct longitudinal carinae on each elytron; outer edge of mandible sharply bent mesally; mandibular cutting edge usually with several teeth (appearing as undulations when worn) (K05, pl. 41, fig. 3); mesoventrite with paired longitudinal carinae; apices of all tibiae with larger curved spur at outer angle and smaller one at inner angle; males with inflated femora and greatly enlarged mandibles (K06, pl. 14, fig. 6); South America (K13, fig. 11G) . . . . . **Lophocaterinae: *Leptonyxa* Reitter**

- If elytra seriate, then without window punctures; longitudinal elytral carinae, if present, at least 5 on each elytron; outer edge of mandible gradually curved mesally; mandibular cutting edge without or with one tooth; mesoventrite with single, transverse, subtriangular prothoracic rest; outer apical angles of all tibiae with one or more small teeth only; males without mandibular and femoral modifications. **38**

38(37). Elytral punctation confused; anterior edge of clypeus truncate; mesal edge of mandibular base with brush of short hairs (K05, pl. 30, fig. 1); lacinia without dark spurs; apical maxillary palpomere short, broad and obliquely truncate (K05, pl. 30, fig. 2); tibial apices without enlarged spurs; New Zealand (K13, figs 10H–I). . . . . **Lophocaterinae: *Grynoma* Sharp**

- Elytral punctation seriate; anterior edge of clypeus angulate or with small median tooth (KZ10, fig. 1); mesal edge of mandibular base with tuft of long hairs (K05, pl. 11, fig. 2); lacinia with apical and subapical dark spurs (K05, pl. 11, fig. 3); inner apical angle of protibia with enlarged curved spur (K05, pl. 12, fig. 8); widely distributed in Old World (K13, figs 11A–F) . . . . . **Lophocaterinae: *Ancyrona* Reitter**

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References

Arias, E.T., Slipinski, A., Lawrence, J.F. & Elgueta, M. (2009) A review of the Chilean Egoliini (Coleoptera: Trogossitidae)

with description of a new species of *Necrobiopsis* Crowson. *Zootaxa*, 2170, 37–45.
Barron, J.R. (1971) A revision of the Trogositidae of America north of Mexico (Coleoptera: Cleroidea). *Memoirs of the Entomological Society of Canada*, 75, 1–143.
http://dx.doi.org/10.4039/entm10375fv
Barron, J.R. (1975) A review of the genus *Lycoptis* Casey (Coleoptera: Trogositidae). *Canadian Entomologist*, 107, 1117–1122.
http://dx.doi.org/10.4039/ent1071117-10
Beutel, R. & Pollock, D.A. (2000) Larval head morphology of *Phycosecis litoralis* (Pascoe) (Coleoptera: Phycosecidae) with phylogenetic implications. *Invertebrate Taxonomy*, 14, 825–835.
Beutel, R. & Ślipiński, S.A. (2001) Comparative study of head structures of larvae of Sphindidae and Protocucujidae (Coleoptera: Cucujoidea). *European Journal of Entomology*, 98, 219–232.
http://dx.doi.org/10.14411/eje.2001.039
Bocakova, M., Constantin, R. & Bocak, L. (2012) Molecular phylogenetics of the melyrid lineage (Coleoptera: Cleroidea). *Cladistics*, 28 (2), 117–129.
http://dx.doi.org/10.1111/j.1096-0031.2011.00368.x
Bouchard, P., Bousquet, Y., Davies, A.E., Alonso-Zarazaga, M.A., Lawrence, J.F., Lyal, C.H.C., Newton, A.F., Reid, C.A.M., Schmitt, M., Ślipiński, S.A. & Smith, A.B.T. (2011) Family-group Names in Coleoptera (Insecta). *ZooKeys*, 88 (Speicial Issure), 1–972.
http://dx.doi.org/10.3897/zookeys.88.807
Crowson, R.A. (1964) A review of the classification of Cleroidea (Coleoptera), with descriptions of two new genera of Peltidae and of several new larval types. *Transactions of the Royal Entomological Society of London*, 116 (12), 275–327, pl. 1.
http://dx.doi.org/10.1111/j.1365-2311.1964.tb02298.x
Crowson, R.A. (1966) Further observations on Peltidae (Coleoptera: Cleroidea), with definitions of a new subfamily and four new genera. *Proceedings of the Royal Entomological Society of London*, Series B, 35 (9–10), 119–127.
http://dx.doi.org/10.1111/j.1365-3113.1966.tb00523.x
Crowson, R.A. (1970) Further observations on Cleroidea (Coleoptera). *Proceedings of the Royal Entomological Society of London*, Series B, 39 (1–2), 1–20.
http://dx.doi.org/10.1111/j.1365-3113.1970.tb00247.x
Dajoz, R. (1975) Coléoptères Colydiidae et Tenebrionidae anophthalmes nouveaux de la région Néotropicale. *Acta Biologica Paranense*, 4 (1, 2), 91–124.
Darlington, P.J. (1970) Carabidae on tropical islands, especially the West Indies. *Biotropica*, 2, 7–15.
http://dx.doi.org/10.2307/2989782
Freude, H. (1955) Die Monommiden der amerkianischen Region. *Entomologische Arbeiten aus dem Museum G. Frey*, 6, 684–763.
Gimmel, M.L. & Leschen, R.A.B. (2014) A new species of mycophagous *Rentonium* (Coleoptera: Cleroidea: Trogossitidae) based on larvae and adults, and a catalogue of Rentoniinae. *Journal of Natural History*, pp. 1–18.
http://dx.doi.org/10.1080/00222933.2013.839846
Grimaldi, D.A. (1996) The age of Dominican amber. *In*: Anderson, K.B. & Crelling, J.C. (Eds), *Amber, Resinite and Fossil Resins*. American Chemical Society, Washington, D. C., pp. 203–217.
Hlavac, T.F. (1969) A review of the species of *Scarites* (*Antilliscaris*), (Coleoptera: Carabidae) with notes on their morphology and evolution. *Psyche*, 76 (1), 1–17.
http://dx.doi.org/10.1155/1969/92908
Iturralde-Vinent, M.A. & MacPhee, R.D.E. (1996) Age and paleogeographical origin of Dominican amber. *Science*, 273, 1850–1852.
http://dx.doi.org/10.1126/science.273.5283.1850
Klimaszewski, J. & Watt, J.C. (1997) *Fauna of New Zealand. Number 37. Coleoptera: Family-Group Review and Keys to Identification.* Manaaki Whenua Press, Lincoln, Canterbury, New Zealand, 199 pp.
Kolibáč, J. (1989) Further observations on morphology of some Cleridae (Coleoptera) (I). *Acta Scientiarum Naturalium Academiae Scientiarum Bohemoslovacae*, Brno, 23 (1), 1–50.
Kolibáč, J. (1992) Revision of Thanerocleridae n. stat. (Coleoptera, Cleroidea). *Mitteilungen der Schweizerischen Entomologioschen Gesellschaft*, 65, 303–340.
Kolibáč, J. (1998) Classification of the subfamily Hydnocerinae Spinola, 1844 (Coleoptera: Cleridae). *Acta Musei Moraviae, Scientiae Biologicae* (Brno), 73, 127–210.
Kolibáč, J. (1999) Comparative morphology of mandible, epipharynx and alimentary canal in larval and adult Cleroidea (Coleoptera). *Acta Musei Moraviae, Scientiae Biologicae* (Brno), 84, 11–69.
Kolibáč, J. (2003) A review of Australian genera of Korynetinae (Coleoptera, Cleridae). *Entomologica Basiliensia*, 25, 41–97.
Kolibáč, J. (2004) Metaxinidae fam. nov., a new family of Cleroidea (Coleoptera). *Entomologica Basiliensia*, 26, 239–268.
Kolibáč, J. (2005) A review of the Trogositidae. Part 1: Morphology of the genera (Coleoptera, Cleroidea). *Entomologica Basiliensia et Collectionis Frey*, 27, 39–159.
Kolibáč, J. (2006) A review of the Trogositidae. Part 2: Larval morphology, phylogeny and taxonomy (Coleoptera, Cleroidea). *Entomologica Basiliensia et Collectionis Frey*, 28, 105–153.
Kolibáč, J. (2007) Further observations on the tribe Ancyronini Kolibáč, 2006 (Coleoptera, Trogossitidae, Peltinae). *Entomologica Basiliensia et Collectionis Frey*, 29, 53–76.
Kolibáč, J. (2008) Morphology, taxonomy and phylogeny of *Phloiophilus edwardsi* Stephens, 1830 (Coleoptera, Cleroidea).

Entomologica Basiliensia et Collectionis Frey, 30, 105–133.
Kolibáč, J. (2010) *Trichocateres fasculifer*, a new genus and species of Trogossitidae: Lophocaterini (Coleoptera). *Zootaxa*, 2353, 34–42.
Kolibáč, J. (2013) Trogossitidae: A review of the beetle family, with a catalogue and keys. *ZooKeys*, 366, 1–194. http://dx.doi.org/10.3897/zookeys.366.6172
Kolibáč, J. & Leschen, R.A.B. (2010) 9.2 Trogossitidae Fabricius, 1801. *In*: Leschen, R.G., Beutel, R.G. & Lawrence, J.F. (Eds), *Handbook of Zoology. Arthropoda: Insecta. Coleoptera, Beetles. Vol. 2. Morphologyand Systematics (Elateroidea, Bostrichiformi, Cucujiformia partim)*. DeGruyter, Berlin, pp. 241–247.
Kolibáč, J & Zaitsev, A.A. (2010) A description of a larva of *Ancyrona diversa* Pic, 1921 and its phylogenetic implications (Coleoptera: Trogossitidae). *Zootaxa*, 2451, 53–62.
Lawrence, J.F. (1980) A new genus of Indo-Australian Gempylodini with notes on the constitution of the Colydiidae (Coleoptera). *Journal of the Australian Entomological Society*, 19, 293–310.
Lawrence, J. F. & Britton, E.B. (1991) Coleoptera (beetles). *In*: CSIRO (Ed.), *The Insects of Australia. A Textbook for Students and Research Workers. Second Edition*. Melbourne University Press, Carlton, Victoria, pp. 543–683.
Lawrence, J.F. & Newton, A.F. Jr. (1995) Families and subfamilies of Coleoptera (with selected genera, notes, references and data on family-group names). *In*: Pakaluk, J. & Ślipiński, S.A. (Eds.), *Biology, Phylogeny and Classification of Coleoptera: Papers celebrating the 80th birthday of Roy A. Crowson.* Muzeum I Instytut Zoologi PAN, pp. 779–1006, 1–48.
Lawrence, J.F. & Ślipiński, A. (2013a) *Australian Beetles. Vol. 1. Morphology, Classification and Keys.* CSIRO Publishing, Collingwood, Victoria, viii + 561 pp.
Lawrence, J.F. & Slipinski, A. (2013b) *Globorentonium*, a new genus of rentoniine Trogossitidae (Coleoptera: Cleroidea) from Australia and Brazil. *Zootaxa*, 3710 (3), 257–270. http://dx.doi.org/10.11646/zootaxa.3710.3.4
Lawrence, J.F., Beutel, R.G., Leschen, R.A.B. & Ślipiński, A. (2010) 2. Glossary of morphological terms. *In*: Leschen, R.A.B., Beutel, R.G. & Lawrence, J.F. (Eds.), *Handbuch der Zoologie/Handbook of Zoology. Band/Volume IV Arthropoda: Insecta Teilband/Part 38. Coleoptera, Beetles. Vol. 2. Morphology and Systematics (Polyphaga partim)*. W. DeGruyter, Berlin, pp. 9–20.
Lawrence, J.F., Slipinski, A., Seago, A.E., Thayer, M.K., Newton, A.F. & Marvaldi, A.E. (2011) Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici*, Warsaw, 61 (1), 1–217. http://dx.doi.org/10.3161/000345411x576725
Leschen, R.A.B. & Lackner, T. (2013) Gondwanan Gymnochilini (Coleoptera: Trogossitidae): generic concepts, review of New Zealand species amd long-range Pacific dispersal. *Systematic Entomology*, 38, 278–304. http://dx.doi.org/10.1111/j.1365-3113.2012.00661.x
Leschen, R.A.B., Lawrence, J.F. & Ślipiński, S.A. (2005) Classification of basal Cucujoidea (Coleoptera: Polyphaga): cladistic analysis, keys and review of new families. *Invertebrate Systematics*, 19, 17–73. http://dx.doi.org/10.1071/is04007
Majer, K. (1987) Comparative morphology and proposed major taxonomy of the family Melyridae (Insecta, Coleoptera). *Polskie Pismo Entomologiczne*, 56, 719–859.
Majer, K. (1994) A review of the classification of the Melyridae and related families. *Entomologica Basiliensia*, 17, 319–390.
Majer, K. (1995) Revision of the family Mauroniscidae (Insecta: Coleoptera: Cleroidea). *Entomologische Abhandlungen Staatliches Museum für Tierkunde Dresden*, 57 (3), 57–89.
Majer, K. (2002) Subfamilial classification of the family Malachiidae (Coleoptera, Cleroidea). *Entomologica Basiliensia*, 24, 179–244.
Paulian, R. & Howden, H.F. (1982) Un nouveau genre des Cératocanthides des Antilles (Col. Scarabaeoidea). *Bulletin de la Société Entomologique de France*, 87, 78–85.
Peck, S.B. & Perez-Gelabert, D.E. (2012) A summary of the endemic beetle genera of the West Indies (Insecta: Coleoptera); bioindicators of the evolutionary richness of this Neotropical archipelago. *Insecta Mundi*, 0212, 1–29.
Penney, D. (2008) *Dominican Amber Spiders: A Comparative Palaeontological Approach to Identification, Faunistics, Ecology and Biogeography.* Siri Scientific Press, Manchester, UK, 178 pp.
Reitter, E. (1876) Systematische Eintheilung der Trogositidae. (Familia Coleopterorum). *Verhandlungen des Naturforschenden Vereines in Brünn*, 14, 3–69, pls. 1–2.
Schmied, H., Wappler, T. & Kolibáč, J. (2009) A new barkgnawing beetle (Coleoptera, Trogossitidae) from the middle Eocene of Europe, with a checklist of fossil Trogossitidae. *Zootaxa,* 1993, 17–26.
Ślipiński, S.A. (1992) Larinotinae a new subfamily of Trogossitidae (Coleoptera), with notes on the constitution of Trogossitidae and related families of Cleroidea. *Revue Suisse de Zoologie*, 99 (2), 439–463.
Tait, S.M., Dahlsten, D.L., Gill, R.J. & Doyen, J.T. (1990) Life history of the Incense Cedar Scale, *Xylococculus macrocarpae* (Homoptera: Margarodidae), on Incense Cedar in California, with a description of the larvae of one of its common predators, *Eronyxa expansus* Van Dyke (Coloeoptera: Trogositidae). *Hilgardia*, 58 (2), 1–19.
Woods, C.A. & Sergile, F.E. (2001) *Biogeography of the West Indies: Patterns and Perspectives.* CRC Press, Boca Raton, Florida, 608 pp.
Yu, Y., Leschen, R.A.B., Ślipiński, A.S., Pang, H. & Ren, D. (2012) The first fossil bark-gnawing beetle from the Middle Jurassic of Inner Mongolia, China (Coleoptera, Trogossitidae). *Annales Zoologici,* 62 (2), 245–252. http://dx.doi.org/10.3161/000345412x652765