



## Nomenclatural notes for some Australian Erotylinae (Coleoptera: Erotylidae)

PAUL E. SKELLEY<sup>1\*</sup>, RICHARD A. B. LESCHEN<sup>2</sup> & ZHENHUA LIU<sup>3,4</sup>

<sup>1</sup>Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, 1911 SW 34th Street, Gainesville, FL 32608, USA.

<sup>2</sup>New Zealand Arthropod Collection, Manaaki Whenua—Landcare Research, Private Bag 92170, Auckland, NEW ZEALAND.

✉ [leschenr@landcareresearch.co.nz](mailto:leschenr@landcareresearch.co.nz); <https://orcid.org/0000-0001-8549-8933>

<sup>3</sup>Australian National Insect Collection, CSIRO, GPO Box 1700, Canberra, ACT 2601, AUSTRALIA

✉ [liuzhh22@mail2.sysu.edu.cn](mailto:liuzhh22@mail2.sysu.edu.cn); <http://orcid.org/0000-0002-2739-3305>

<sup>4</sup>Key Laboratory of Biodiversity Dynamics and Conservation of Guangdong Higher Education Institute, The Museum of Biology, School of Life Science, Sun Yat-sen University, Guangzhou 510275, CHINA.

\*Corresponding author. ✉ [Paul.Skelley@FDACS.gov](mailto:Paul.Skelley@FDACS.gov); <https://orcid.org/0000-0003-2687-6740>

### Abstract

In the subfamily Erotylinae (Coleoptera: Erotylidae), several nomenclatural concerns in the Australian fauna are corrected for upcoming publications. Spelling and attribution of the genus “*Aulacochilus*” is discussed and is correctly cited as *Aulacocheilus* Dejean, 1836. The species *Episcaphula tetrastica* Lea, 1921, becomes *Aulacocheilus leai* (Mader, 1934), **new combination**.

Through a previous synonymy of *Tritoma australiae* Lea, 1922 with *Hedista tricolor* Weise, 1927, and the subsequent transfer of *T. australiae* into *Spondotriplax* Crotch, 1876, the genus *Hedista* Weise, 1927 is recognized as a synonym of *Spondotriplax* Crotch, 1876, **new synonymy**.

*Cosmoscaphula* Heller, 1920, a subgenus of *Episcaphula* Crotch, 1876, is discussed. The type species, *E. (C.) tamburinea* Heller, 1920, was found to have two **new synonyms**: *Episcaphula (Cosmoscaphula) clatrata* Heller, 1920 and *Episcaphula rufolineata* Wilson, 1921. A **lectotype** is here designated for *E. (C.) tamburinea* Heller, 1920.

Two genus-species combinations used in museum and internet-based lists have not been formally published. They are discussed, illustrated, and officially proposed here: *Hoplepiscapha laticollis* (Carter, 1908) and *Neothallis bizonata* (Macleay, 1887), **new combinations**.

**Key words:** Australia, Cucujoidea, nomenclature, ICZN, pleasing fungus beetles

### Introduction

Working toward the chapter on Erotylidae (Coleoptera) for the next volume of *Australian Beetles* (Lawrence & Ślipiński 2013; Ślipiński & Lawrence 2019) and for other projects, we discovered some taxonomic issues needing clarification or correction to stabilize nomenclature. The first case explains the correct spelling and attribution for a genus following ICZN (1999) as established in recent literature. The next two concerns are based on different authors making separate nomenclatural acts for the same taxa without knowledge of the others’ actions, and their implications. The fourth issue regards the neglected subgenus and species descriptions for an Australian taxon that result in species synonymies. Lastly, the generic placement of two names in various internet-based lists have never been officially proposed and are confirmed here.

### Materials and methods

Materials or photographs provided for specimens cited are deposited in the following institutions: **ANIC**—Australian National Insect Collection, CSIRO, Canberra City, ACT, Australia (Adam Ślipiński); **MVMA**—Museums Victoria, Melbourne, Victoria, Australia (from on-line database, Kristy Hoath); **SAM**—South Australia Museum,

Adelaide, South Australia, Australia (Ben Parslow); **SDEI**—Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (Mandy Schröter).

Label data are quoted verbatim. Double quote marks “ ” enclose each label. Different labels are separated by a double forward slash //. On each label separate lines of information are separated by a single forward slash /. Comments are in brackets [ ].

## Nomenclatural discussion

### I. *Aulacochilus* vs. “*Aulacochilus*”

#### *Aulacochilus* Dejean, 1836

*Aulacochilus* Dejean 1836: 429. Type species: *Erotylus quadripustulatus* Fabricius (1801: 6), by monotypy.  
*Aulacochilus* [sic] of *Aulacochilus* Dejean 1836: 429.

**Comments.** There has been much confusion over the spelling of this genus (*Aulacochilus* vs. *Aulacochilus*) and more recently over its authorship (Chevrolat vs. Dejean vs. Lacordaire), date of valid publication (1837 vs. 1842) (Bousquet & Bouchard 2013: 6; Skelley 2020: 3), and type species.

*Aulacochilus* “Lacordaire 1842: 245–246” [with the subsequently cited type species: *Erotylus* (*Aulacochilus*) *javanus* Guérin-Méneville (1841: 155–156)] was first emended to “*Aulacochilus*” by Redtenbacher (1858: 374), which eventually became the spelling in prevailing use (Chûjô & Chûjô 1989: 75–76). An immediately notable problem is that Guérin-Méneville’s use has priority over Lacordaire’s. In their catalog, Chûjô & Chûjô (1989: 76) referenced Dejean’s (1837) catalog (a reprinting of previous versions, see Bousquet & Bouchard 2013) by stating “*Aulacochilus* (Chevrolat) Dejean, Cat. Col. ed. 3, 1837, p. 453 (nom. nud. !)”.

However, there is an earlier use of the name by Dejean (1836: 429). Bousquet & Bouchard (2013: 98) recognized that *E. quadripustulatus* Fabricius (1801) was an available species at the time it was listed under *Aulacochilus* Dejean, 1836. Thus, the name and original spelling of *Aulacochilus* Dejean, 1836 with a type species by monotypy is available by indication (ICZN 1999: Article 12.2.5) and has priority over other spellings, attributions, and type designations.

### II. *Episcaphula tetrastica* Gorham, 1883 vs. *Episcaphula tetrastica* Lea, 1921

#### *Aulacochilus* (*Aulacochilus*) *leai* (Mader, 1934), new combination

*Episcaphula tetrastica* Lea 1921: 362.

*Episcaphula leai* Mader 1934: 40, new name for *Episcaphula tetrastica* Lea, 1921; not *Episcaphula tetrastica* Gorham (1883: 253–254).

*Episcaphula* (*Episcaphula*) *leai* Mader. Chûjô & Chûjô 1988: 164 (subgenus placement).

*Aulacochilus* [sic] *tetrastica* (Lea). Lawrence 1988: 53 (combination).

**Comments.** Two species, *Episcaphula tetrastica* Gorham, 1883 and *Episcaphula tetrastica* Lea, 1921, are primary homonyms. Recognizing the homonym, Mader (1934) proposed a new name, *Episcaphula leai*, for *E. tetrastica* Lea, 1921. The name *E. leai* Mader, 1934 was the name used in the catalog of Chûjô & Chûjô (1988: 164).

Unaware of Mader (1934), Lawrence (1988) studied the type of *E. tetrastica* Lea, 1921, recognized it was as a member of *Aulacochilus* and transferred it to that genus becoming *Aulacochilus tetrastica* (Lea, 1921). A dorsal photograph of the type of *E. tetrastica* Lea, 1921 (SAM) is available at Atlas of Living Australia (2020). We agree with Lawrence (1988) that it belongs in the genus *Aulacochilus*, but the species name provided earlier by Mader (1934) must be used.

### III. *Tritoma australiae* Lea, 1922 vs. *Hedista tricolor* Weise, 1927

#### *Spondotriplax* Crotch, 1876

*Spondotriplax* Crotch 1876: 469. Type species: *Spondotriplax endomychoides* Crotch (1876: 470), by original designation.  
*Hedista* Weise 1927: 33, **new synonymy**. Type species: *Hedista tricolor* Weise (1927: 34), by monotypy.

**Comments.** *Spondotriplax* is characterized as a genus of Tritomini with ovoid body shape, finely faceted eyes, elongately pentagonal mentum, and an antennal club of 5 antennomeres with the terminal antennomeres broadened.

#### *Spondotriplax australiae* (Lea, 1922)

*Tritoma australiae* Lea 1922: 295–296.

*Hedista tricolor* Weise 1927: 34. Lawrence 1988: 53 (synonymy).

*Hedista australiae* (Lea). Lawrence 1988: 53 (generic combination).

*Spondotriplax australiae* (Lea). Chûjô & Chûjô 1990: 54 (generic combination).

**Comments.** *Hedista* Weise, 1927 was described and compared with *Aulacocheilus* by Weise (1927). It was placed near *Aulacocheilus* in the Encaustini in all subsequent catalogs. Lawrence (1988) studied the holotypes of both *Tritoma australiae* Lea, 1922 (Tritomini) and *Hedista tricolor* Weise, 1927 (Encaustini) and synonymized the two as *Hedista australiae* (Lea, 1922). Apparently unaware of this, Chûjô & Chûjô (1989: 89) retained *Hedista tricolor* in the Encaustini and, the following year, moved *T. australiae* into *Spondotriplax* Crotch, 1876 (Tritomini) (Chûjô & Chûjô 1990: 54).

The combination of Lawrence's (1988) species synonymy and Chûjô & Chûjô's (1990) transfer of *T. australiae* into *Spondotriplax*, resulted in the unrecognized synonymy of *Hedista* Weise, 1927 with *Spondotriplax* Crotch, 1876. We confirmed that *Hedista* has all of the diagnostic characters that place it solidly in *Spondotriplax*. Until there is a revision of *Spondotriplax*, we agree with the placement of *T. australiae* in *Spondotriplax* and officially make the generic synonymy.

### IV. *Episcaphula* (*Cosmoscaphula*) Heller, 1920

#### *Episcaphula* (*Cosmoscaphula*) Heller, 1920

*Episcaphula* (*Cosmoscaphula*) Heller 1920: 105. Type species: *Episcaphula* (*Cosmoscaphula*) *tamburinea* Heller (1920: 105), by subsequent designation (Chûjô & Chûjô 1988: 161).

#### *Episcaphula* (*Cosmoscaphula*) *tamburinea* Heller, 1920

*Episcaphula* (*Cosmoscaphula*) *tamburinea* Heller 1920: 105–106. Chûjô & Chûjô 1988: 161.

*Episcaphula* (*Cosmoscaphula*) *clatrata* Heller 1920: 106, **new synonymy**. Chûjô & Chûjô 1988: 161.

*Episcaphula rufolineata* Wilson 1921: 35, **new synonymy**.

*Episcaphula* (*Episcaphula*) *rufolineata* Wilson 1921: 35. Chûjô & Chûjô 1988: 165 (subgenus combination).

**Comments.** Heller (1920) published a large work on the Erotylidae of the Indo-Australian region with an emphasis on the Philippines. The Australian taxa described in this work have been overlooked by previous Australian workers. Some need clarification and nomenclatural corrections.

The subgenus *Cosmoscaphula* Heller (1920: 105–106) is recognized as an *Episcaphula* Crotch, 1876 with an enlarged lobe or callus between the eye and antennal base. Heller (1920) placed two species in the subgenus: *E. (C.) tamburinea* Heller, 1920 and *E. (C.) clatrata* Heller, 1920, stating that *E. clatrata* may be a “var. ?” of *E. tamburinea*. Both species were from Tamborine Mountain, near Brisbane, Queensland, Australia. The following year,

Wilson (1921) described *Episcaphula rufolineata*, also from Tamborine Mountain, noting the same lobe in front of the eyes, sexual dimorphism, and variation in color pattern.

While Heller (1920) only discussed one specimen for *E. clatrata* (SDEI, Figs. 3–4), he mentioned two depositories for *E. tamburinea*. Since his types are generally deposited in SDEI, the male specimen (SDEI, Figs. 1–2) with the following label data is **here designated as the lectotype** for *Episcaphula (Cosmoscaphula) tamburinea* Heller, 1920: “[white paper, hand-written] S. Queensland / Mt. Tambourine” // “[red paper, typed] Syntypus” // “[white paper, hand-written] Coll. Hacker” // “[white paper, hand-written] Episcaphula / (Cosmoscaphula) / tambourinea n. / [typed] Det. K M Heller 1918” // “[lavender paper, black border, hand-written] tam- / bourinea / Hell.” // “[white paper, typed] SDEI Coleoptera / # 302836” // “[red paper, typed] **LECTOTYPE** ♂ / *Episcaphula (Cosmoscaphula) / tamburinea* Heller / des. Skelley, / Leschen, Liu 2020”. Paralectotypes may exist but were not studied.

Wilson (1921) discussed multiple specimens of *E. rufolineata* from multiple localities, but stated “Type in author’s collection”, explicitly indicating that only a single specimen was used to describe the species. The Museums Victoria website hosts an image of this holotype (Figs. 5–7; Hoath 2020a, MVMA).



**FIGURES 1–7.** *Episcaphula (Cosmoscaphula)* Heller, types and labels. **1–2)** *Episcaphula (Cosmoscaphula) tamburinea* Heller, lectotype male (SDEI); **3–4)** *Episcaphula (Cosmoscaphula) clatrata* Heller, holotype female (SDEI); figures 1–4 courtesy Laura Marrero-Palma and Mandy Schröter, Senckenberg Deutsches Entomologisches Institut; **5–7)** *Episcaphula rufolineata* Wilson, holotype female (MVMA), courtesy Kristy Hoath (2020a), Museums Victoria.

Examination of these images clearly show Heller’s types represent a male and female with extremes of the color pattern variation as discussed by Wilson (1921). Males of the species have a notched clypeal margin, dilated protarsomeres, a slightly more elongated pronotum, and more strongly curved tibiae.

Because they are from the same locality and share all morphological characters, it is clear they are conspecific and are here synonymized. With Heller considering *E. clatrata* as a possible variety of *E. tamburinea* and since evidence is lacking to invoke prevailing use rules to maintain *E. rufolineata* (ICZN 1999: Article 23.9.1), we use the name *E. tamburinea* for this species.



**FIGURES 8–13.** Type specimens with labels. **8–10**) *Hymaea laticollis* Carter, 1908, holotype male with curved protibia and toothed profemur (MVMA), courtesy Kristy Hoath (2020b), Museums Victoria; **11–12**) *Thallis bizonata* Macleay 1887, syntypes (ANIC); **13**) *Thallis bizonata*, ventral habitus (ANIC).

## V. Unpublished generic transfers

Two species appear in various internet pages and collection lists with generic combinations that we are unable to verify in the primary literature. Lawrence (1988) corrected some taxonomic issues with Australian erotylids. He subsequently maintained notes on nomenclatural updates to the fauna and has no knowledge of the following combinations ever being published (Lawrence, *in litt.*, September 2020). We were able to study images or photographs of the types and agree with these placements. We formalize these combinations here by proposing the following new combinations.

### *Hoplepiscapha laticollis* (Carter, 1908), new combination

*Hymaea laticollis* Carter 1908: 410.

**Comments.** The genus *Hoplepiscapha* Lea, 1922 is characterized as a Dacnini genus near *Thallis* Erichson (1842) with elongate antennomeres. The holotype of *Hoplepiscapha longicornis* Lea (1922: fig. 337), and holotype of *Hymaea laticollis* Carter (1908) (Figs. 8–10; Hoath 2020b) are clearly congeneric. The transfer of *H. laticollis* into *Hoplepiscapha* is here validated.

## *Neothallis bizonata* (Macleay, 1887), new combination

*Thallis bizonata* Macleay 1887: 328. Chûjô & Chûjô 1988: 151.

**Comments.** *Neothallis* Fauvel (1891) is a genus of Dacnini unique from other genera in having a concave meso-ventrite with a broad prosternal rest allowing the prosternal process to nearly touch the metaventrite, and sublateral pronotal sulci (Delkeskamp 1961). *Thallis bizonata* (Figs. 11–13) clearly shows both of these characters and the transfer is here validated.

## Acknowledgments

For making material and photographs available for study, we thank Adam Ślipiński (ANIC), Kristy Hoath (MVMA), Ben Parslow (SAM), and Laura Marrero-Palma and Mandy Schröter (SDEI). For presubmission reviews, we thank Joseph V. McHugh (University of Georgia, Athens, GA, USA) and James A. Robertson (USDA-APHIS-PPQ, Beltsville, MD, USA). For post-submission reviews and discussions, we thank Andrew Smith (Canadian Museum of Nature, Ottawa, ON, Canada) and Italo Pecci-Maddalena (Departamento de Zoologia, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil). This work was supported by Florida Department of Agriculture and Consumer Service's Division of Plant Industry. Rich Leschen was supported in part by the Core funding for Crown Research Institutes from the Ministry of Business, Innovation and Employment's Science and Innovation Group.

## References

- Atlas of Living Australia (2020) *Aulacochilus tetrastica* (Lea, 1921). Available from: <https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:90fafac9-8147-4ed7-e044-00144f3b4a43#overview> (accessed 25 July 2020)
- Bousquet, Y. & Bouchard, P. (2013) The genera in the second catalogue (1833–1836) of Dejean's Coleoptera Collection. *ZooKeys*, 282, 1–219.  
<https://doi.org/10.3897/zookeys.282.4401>
- Carter, H.J. (1908) Revision of the genus *Seriotrana*, together with descriptions of new species of other Australian Coleoptera. *Proceedings of the Linnean Society of New South Wales*, 33 (2), 392–422.
- Chûjô, M. & Chûjô, M. (1988) A catalog of the Erotylidae (Insecta, Coleoptera) from the Old World (excl. the Ethiopian Region). *Esakia*, 26, 139–185.
- Chûjô, M. & Chûjô, M. (1989) A catalog of the Erotylidae (Insecta, Coleoptera) from the Old World (excl. the Ethiopian Region). *Esakia*, 28, 75–96.
- Chûjô, M. & Chûjô, M. (1990) A catalog of the Erotylidae (Insecta; Coleoptera) from the Old World (excl. the Ethiopian Region) III. *Esakia*, 29, 1–67.
- Crotch, G.R. (1876) A revision of the coleopterous family Erotylidae. *Cistula Entomologica*, 1, 377–572 [1–196].
- Dejean, P.F.M.A. (1836) *Catalogue des coléoptères de la collection de M. le Comte Dejean. Troisième édition revue, corrigée et augmentée. Livraisons 1–4.* Méquignon-Marvis Pères et Fils, Paris, 384 pp.  
<https://doi.org/10.5962/t.173109>
- Dejean, P.F.M.A. (1837) *Catalogue des coléoptères de la collection de M. le Comte Dejean. Troisième Édition. Revue, corrigée et augmentée. Livraison 5.* Méquignon-Marvis Pere et Fils, Paris, pp. 385–503.  
<https://doi.org/10.5962/t.173109>
- Delkeskamp, K. (1961) Revision der Gattung *Neothallis* Fauvel. 28. Beitrag zur Kenntnis der Erotyliden (Coleoptera: Erotylidae). *Mitteilungen aus dem Zoologischen Museum in Berlin*, 37 (2), 253–269.
- Erichson, W.F. (1842) Beitrag zur insecten-fauna von Vandiemensland, mit besonderer Berücksichtigung der geographischen Verbreitung der Insecten. *Archiv für Naturgeschichte*, 8, 83–287, 2 taf.  
<https://doi.org/10.5962/bhl.part.21657>
- Fabricius, J.C. (1801) *Systema eleutheratorum. Secundum ordines, genera, species: Adiectis synonymis, locis, observationibus, descriptionibus. Vol. 1 & 2.* Impensis Bibliopolii Academici novi, Kiel, 506 & 687 pp.
- Fauvel, A. (1891) Les Coléoptères de la Nouvelle-Calédonie et dépendances, Avec descriptions, notes et synonymies nouvelles. *Revue d'Entomologie*, 10, 148–182.
- Gorham, H.S. (1883) Note XXIX. On the Coleoptera Phytophaga (Cassidae-Coccinellidae) collected by Mr. Engelhard in Saleyer. *Notes from the Leyden Museum*, 5, 253–256.
- Guérin-Méneville, M.F.E. (1841) Description de quelques espèces nouvelles d'Erotylides. Extraite du manuscrit du texte explicatif de l'Iconographie du Règne Animal. *Revue Zoologique par la Société Cuvierienne*, 1841, 153–161.
- Heller, K.M. (1920) Beitrag zur Kenntnis der Erotyliden der indo-australischen Region mit besonderer Berücksichtigung der

- philippinischen Arten. *Archiv für Naturgeschichte*, 84 A (8), 1–121, 2 pls. [dated 1918]
- Hoath, K. (2020a) *Episcaphula rufolineata*, T-2397, holotype. Available from: <https://collections.museumsvictoria.com.au/specimens/1022925> (accessed 1 August 2020)
- Hoath, K. (2020b) *Hymaea laticollis* Carter, 1908, T-3845, holotype. Available from: <https://collections.museumsvictoria.com.au/specimens/1005033> (accessed 1 August 2020)
- ICZN [International Commission on Zoological Nomenclature] (1999) *International Code of Zoological Nomenclature. 4<sup>th</sup> Edition. Adopted by the International Union of Biological Sciences*. International Trust for Zoological Nomenclature, The Natural History Museum, London, xxix + 306 p. Available from: <https://www.iczn.org/> (accessed 28 August 2020)
- Lacordaire, J.T. (1842) *Monographie des Erotyliens, Famille de l'Ordre des Coléoptères*. Roret, Paris, xiv + 543 pp. <https://doi.org/10.5962/bhl.title.11129>
- Lawrence, J.F. (1988) Notes on the classification of some Australian Cucujoidea (Coleoptera). *Journal of the Australian Entomological Society*, 27 (1), 53–54. <https://doi.org/10.1111/j.1440-6055.1988.tb01144.x>
- Lawrence, J.F. & Ślipiński, A. (2013) *Australian Beetles. Vol. 1. Morphology, Classification and Keys*. CSIRO Publishing, Collingswood, 561 pp. <https://doi.org/10.1071/9780643097292>
- Lea, A.M. (1921) Descriptions of new species of Australian Coleoptera. Part xvii. *Proceedings of the Linnean Society of New South Wales*, XLVI, Part III (No. 183), 351–369. <https://doi.org/10.5962/bhl.part.14024>
- Lea, A.M. (1922) On Australia Coleoptera. *Records of the South Australian Museum*, 2, 271–308, pl. 4.
- Macleay, W. (1887) The insects of the Cairns District, Northern Queensland. *Proceedings of the Linnean Society of New South Wales*, Series 2, 2, 213–328. <https://doi.org/10.5962/bhl.part.29181>
- Mader, L. (1934) Coleopterologische Notizen II. *Entomologischer Anzeiger*, 14 (3), 39–40.
- Redtenbacher, L. (1858) *Fauna Austriaca. Die Käfer, nach der analytischen methode bearbeitet. 2<sup>nd</sup> Edition*. Druck und Verlag von Carl Gerold's Sohn, Wien, cxxxvi + 1017 pp., 2 taf. <https://doi.org/10.5962/bhl.title.9570>
- Skelley, P.E. (2020) Nomenclatural Notes for the Erotylinae (Coleoptera: Erotylidae). *Insecta Mundi*, 0767, 1–35.
- Ślipiński, A. & Lawrence, J.F. (2019) *Australian Beetles. Vol. 2. Archostemata, Myxophaga, Adephaga, Polyphaga (part)*. CSIRO Publishing, Collingswood, 784 pp. <https://doi.org/10.1071/9780643097315>
- Weise, F. (1927) Über bekannte und neue Chrysomeliden und Coccinelliden aus dem Reichsmuseum zu Stockholm. *Arkiv för zoologi*, 18A (34), 1–34. [dated 1926]
- Wilson, F.E. (1921) New Australian Coleoptera with notes on some previously described species, Part I. *Proceedings of the Royal Society of Victoria*, New Series, 34 (1), 33–41.