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Remarks on *Figulus canaliculatus* Nagel, 1941, designation of its neotype and a new synonym (Coleoptera: Lucanidae)

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Abstract. *Figulus canaliculatus* Nagel, 1941 is a New Guinean stag beetle species, uncommon in collections. It has a unique feature within the genus *Figulus* Macleay, 1819: the presence of a tuberculate stria along the elytral suture. The holotype of the species was destroyed during World War II, along with the entire Nagel's collection; therefore, the neotype is designated herein, and the taxon is illustrated for the first time. Based on the evidence presented in this study, *Figulus lawrencei* Reid, de Keyzer, Beatson, 2025 is treated here as a junior synonym of *F. canaliculatus* Nagel, 1941. The localities currently known for the species are listed, including the first records from Indonesia (Papua Province) and Australia (Queensland); an updated distribution map is also provided.

Riassunto. *Note su* Figulus canaliculatus *Nagel, 1941, designazione del Neotipo e nuovo sinonimo (Coleoptera: Lucanidae). Figulus canaliculatus* Nagel, 1941 è una specie di Lucanide della Nuova Guinea, poco comune nelle collezioni. Ha una caratteristica unica nell'ambito del genere *Figulus* Macleay, 1819: la presenza di una stria tubercolata lungo la sutura elitrale. L'olotipo della specie risulta essere stato distrutto durante la Seconda Guerra Mondiale insieme a tutta la collezione Nagel, per cui viene qui designato il neotipo e il taxon viene illustrato per la prima volta. Sulla base delle evidenze presentate in questo studio, *Figulus lawrencei* Reid, de Keyzer & Beatson, 2025 è considerato un sinonimo di *F. canaliculatus* Nagel, 1941. Vengono elencate le località finora note per la specie, inclusa la prima segnalazione per l'Indonesia (Papua Province) e l'Australia (Queensland); viene inoltre fornita una mappa di distribuzione aggiornata.

Abstrak. *Catatan tentang* Figulus canaliculatus *Nagel, 1941, penetapan neotipenya dan sinonim baru (Coleoptera: Lucanidae). Figulus canaliculatus* Nagel, 1941 adalah spesies kumbang rusa Nugini yang jarang ditemukan dalam koleksi. Spesies ini memiliki ciri unik dalam genus *Figulu*s Macleay, 1819 dengan adanya stria tuberkulat di sepanjang sutura elytra. Holotipe spesies ini hancur ketika Perang Dunia II bersama dengan seluruh koleksi Nagel, maka neotipe ditetapkan di sini dan takson ini diilustrasikan untuk pertama kalinya. Berdasarkan bukti yang disajikan dalam penelitian ini, *Figulus lawrencei* Reid, de Keyzer, Beatson, 2025 diperlakukan di sini sebagai sinonim baru dari *F. canaliculatus* Nagel, 1941. Lokasi yang saat ini diketahui untuk spesies ini tercantum, termasuk catatan pertama dari Indonesia (Provinsi Papua) dan Australia (Queensland); peta distribusi yang diperbaharui juga disediakan.

Key Words. Coleptera, Lucanidae, *Figulus*, New Guinea, taxonomy, neotype.

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Introduction

Figulus Macleay, 1819 belongs to the tribe Figulini Burmeister, 1847 (Coleoptera: Lucanidae: Lucaninae); the genus includes more than one hundred species with very homogeneous morphological characters and generally absent or reduced sexual dimorphism. Species of this genus occur in the Palaearctic, Afrotropical, Oriental and Australian regions. During an entomological survey in Papua Province (formerly Irian Jaya) conducted in 2024 by our friends Rossano Papi and Carlo Arrigo Casadio, several specimens of *Figulus* were collected and we had the opportunity to examine them, identifying eight specimens belonging to an interesting species: *Figulus canaliculatus* Nagel, 1941. Remarks on this species, the designation of its neotype and the establishment of a junior synonym are the subject of this short note.

Acronyms

AMS	Australian Museum (Sydney, Australia)
CCM	Collection Cinzia Monte (Albizzate, Varese, Italy)
CLB	Collection Luca Bartolozzi (Florence, Italy)
CRP	Collection Rossano Papi (Castelfranco di Sopra, Arezzo, Italy)
IRSNB	Institut Royal des Sciences Naturelles de Belgique (Brussels, Belgium)
MHNG	Muséum d'Histoire Naturelle (Geneva, Switzerland)
MZUF	Museo di Storia Naturale dell'Università, Zoologia "La Specola" (Florence, Italy)
NHM	Natural History Museum (London, United Kingdom)

Taxonomy

Figulus canaliculatus Nagel, 1941

Figulus canaliculatus Nagel, 1941: 69; Didier & Séguy, 1953: 180; Benesh, 1960: 24; de Lisle, 1972: 8; Bomans, 1988: 7; Maes, 1992: 36; Krajcik, 2001: 9; Krajcik, 2003: 74; Bomans, 2007: 379; Bartolozzi et al., 2011: 44; Schoolmeesters, 2024; Maes, 2025.
Figulus lawrencei Reid, de Keyzer, Beatson, 2025: 335; Schoolmeesters, 2024. New synonym.

Figulus canaliculatus was described by Nagel (1941) based on a specimen labeled "Nova Guinea, Coll. Nonfried"; the holotype was preserved in his collection in Germany and was reported to have been lost during the World War II by Krajcik (2003: 74). In his paper Nagel provided a detailed description of the species as well as a figure (Fig. 1). There is no precise collecting locality, and we can only suppose that Nagel's type specimen, which came from the old Nonfried's collection in Hannover, was most likely collected in the German New Guinea (Deutsch-Neuguinea, 1884-1919) which consisted of the northeastern part of the island of New Guinea. According to Paulsen (2017: 13) "The stag beetle primary types from Hannover were taken to Hamburg for study by Paul Nagel (A. Eichler, Niedersächsisches Landesmuseum, Hannover, Germany, pers. comm.) where they were destroyed during bombing in WWII". The destruction of Paul Nagel's collection was also confirmed by Huang & Chen (2023) who wrote: "These specimens were destroyed during the 1943 bombing of the Zoologischen Instituts und Zoologischen Museums der Universität in Hamburg (Weidner, 1976), where Nagel's personal collection was deposited earlier that year (Groll, 2017)". Due to the loss of Nagel's types, Monte & Bartolozzi (2005) designated the neotype of *Figulus decipiens* Albers, 1884, therefore the designation of a neotype for *Figulus canaliculatus* is also needed, and we decided to use a freshly collected male specimen for this purpose.

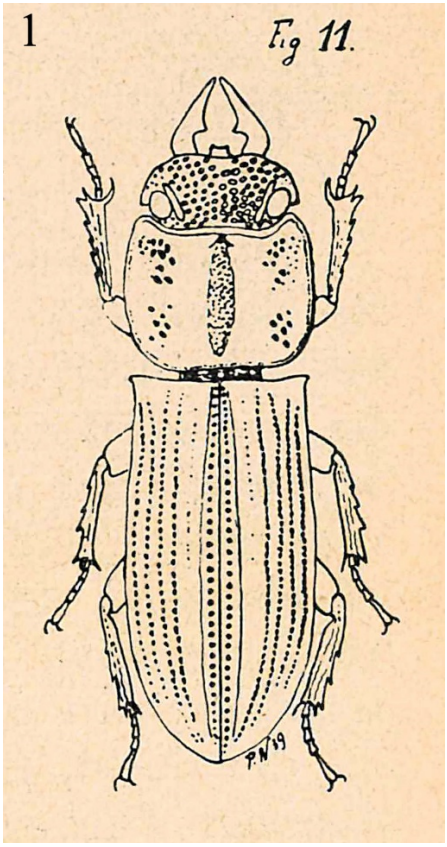

Fig. 1. *Figulus canaliculatus* Nagel, dorsal habitus, after Nagel (1941).

Neotype of *Figulus canaliculatus* Nagel, 1941 here designated on a male specimen labeled: Indonesia, Papua Province (formerly Irian Jaya), Selatan Jayapura, 2.565231\140.64453, 200 m, 6.III.2024, legit R. Papi & C.A. Casadio (MZUF, collection number 114044). The habitus of the specimen is illustrated in Fig. 2A–B; the mentum in Fig. 2C and the genitalia in Fig. 3A–C.

Reid et al. (2025) described *Figulus lawrencei* based on a single female specimen collected at a coastal site near the Iron Range, north Queensland, and labeled as follows: "Holotype, female/ Lloyd Bay, 3mi N Claudie R mouth [vic 12.793S 143.358E], Qld 14 Jan 1972/ mv lamp [mercury vapor lamp] D.K. McAlpine & G.A. Holloway/Australian Museum K293245/*Figulus lilliputanus* Westw. Det. C. Monte, M. Zilioli & L. Bartolozzi 2016/*Figulus lawrencei* Reid *et al*. 2025 Holotype ♀/ (AMS)". We compared *F. canaliculatus* with the published images of *F. lawrencei* and found no significant differences in either external morphology (mainly for its distinctive elytral features) and female genital characters (Fig. 4). We therefore regard *F. lawrencei* as a junior synonym of *F. canaliculatus* (**syn. novus**).

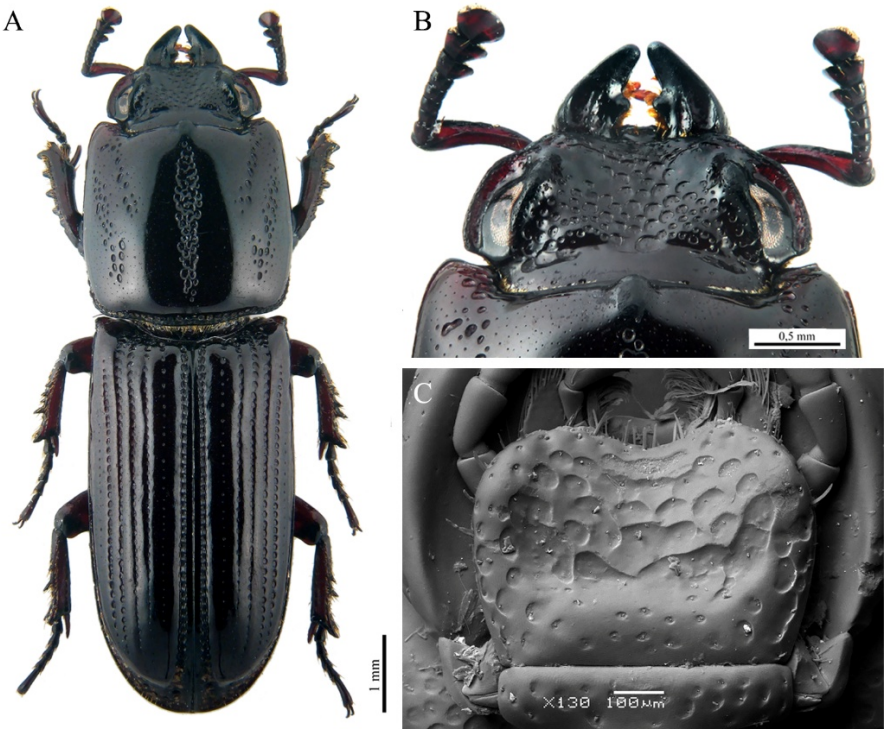

Fig. 2. *Figulus canaliculatus* Nagel, neotype (MZUF): (A) dorsal habitus; (B) head, detail; (C) mentum, SEM picture.

Fig. 3. *F. canaliculatus* Nagel, neotype (MZUF), aedeagus: (A) dorsal, (B) ventral, (C) lateral view.

Fig. 4. *F. canaliculatus* Nagel, female genitalia.

Remarks

According to literature, *Figulus canaliculatus* was recorded only from a few localities on the island of New Guinea (BOMANS, 1988): 1 specimen, North East New Guinea, Wau, 30.VIII.1971, legit R.W. Hornabrook; 1 specimen, Bulolo River, 600 m, 19.II.1962, legit R.W. Hornabrook; 2 specimens, Madang, 14.VI.1970, legit R.W. Hornabrook; 2 specimens, Karkar Island (incorrectly quoted as "Korker"), 28.IV.1969 and 14.IX.1970, legit R.W. Hornabrook. The new synonymy with *F. lawrencei* extends the distributional range of the species to North Queensland, Australia (Lloyd Bay, 3mi N Claudie R mouth [vic 12.793S 143.358E], Qld 14 Jan 1972/ mv lamp [mercury vapor lamp] D.K. McAlpine & G.A. Holloway/Australian Museum K293245).

Additional records: 2 specimens, Mailu, Brit. N. Guinea, July 1895, Anthony leg., ex coll. Bomans, det. H. Bomans 1973 (NHM, CLB); 1 male, 3 females, Indonesia, Papua Province (Irian Jaya), Selatan Jayapura, 2.565231\140.64453, 200 m, 6.III.2024, legit R. Papi & C.A. Casadio (CLB, CRP); 2 males, 1 female, Indonesia, Papua Province (Irian Jaya), Waena Jayapura, 4-12.III.2024, legit R. Papi & C.A. Casadio (CCM, CLB); 1 female, Irian Jaya, Fakfak, Mambuni-Buni, VII.1994, ex coll. Benoit (CCM); 1 specimen, Papua New Guinea, Mainyanda, I.1980, 25 km W Bulolo, legit W.G. Ulrich, ex MNHG, 600 m (CCM); 1 female, Papua New Guinea, W Sepik (= Province Sandaun), 3.IV.1971, F.R. Wyllie (NHM); 1 male, Papua New Guinea, Morobe,

5.XII.1972, F.R. Wyllie & P. Shanaban (NHM); 1 specimen, West New Guinea, Vogelkap, Kebar Valley, I.1962, S. Quate, D. Lawrence & W. Quate (NHM); Nouvelle Guinée, Baie de Goelvink, 1878, A. Raffray & D. Mainon (NHM); 1 specimen, Papua New Guinea, Morobe, 15.VII.1981, W.G. Ulrich (NHM); 1 specimen, Neu Pommern, 1932, P.J. Schneider (NHM); 1 specimen, New Britain (NHM); 7 specimens, Papua New Guinea, Mainyanda, I.1980, 25km W Bulolo, legit W.G. Ulrich 600 m (MNHG); 1 specimen, Papua New Guinea, Finschhafen, Heldsbach, XI. 79, legit W.G. Ulrich (MNHG); 1 male, Papua New Guinea, Canopy Mission, Madang Province, Baiteta, Light AR [sic], 03.VI.1996, legit O. Missa (IRSNB); 1 male, Papua New Guinea Canopy Mission, Madang Province, Baiteta, Light AR 16 [sic], 08.VI.1996, legit O. Missa (IRSNB); 1 male, Papua New Guinea Canopy Mission, Madang Province, Baiteta, Light MF 29 [sic], V.1996, legit. O. Missa (IRSNB); 1 male, Papua New Guinea Canopy Mission, Madang Province, Baiteta, Light AR 8 [sic], 16.VII.1996, legit O. Missa (IRSNB); 1 male, Papua New Guinea Canopy Mission, Madang Province, Baiteta, Light AR 7 [sic], 05.VI.1996, legit O. Missa (IRSNB).

The records from Papua Province are the first published ones from the Indonesian part of the Island of New Guinea (Fig. 5).

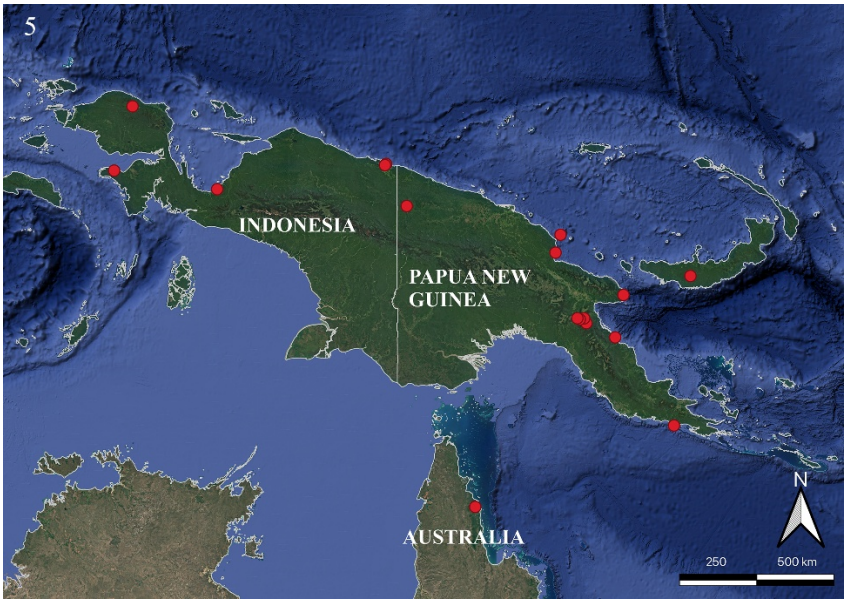

Fig. 5. *F. canaliculatus* Nagel, distribution map.

Figulus canaliculatus belongs to the group of *Figulus* species with 9-articulated antennae. Bomans (2007: 377) separated the species with only 9 antennal articles (instead of 10) into the subgenus *Figulinus* Bomans, 2007, which was later synonymized with *Figulus* by Huang & Chen (2017). Bomans (2007) listed the species with 10- and 9-articulated antennae; he also noted that the species with 9-articulated antennae are generally smaller (less than 10 mm), with symmetrical mandibles, a smaller scutellum, and sometimes bear hairy areas on the ventrites in males. One of the main diagnostic characters of *Figulus canaliculatus* is the presence of a stria of small, flattened tubercles along the elytral suture, which to our knowledge is unique within the genus *Figulus*. The tuberculate stria results from the first elytral stria, which is depressed relative to the elytral surface and consists of a longitudinal row of large punctures. These punctures are

slightly larger in the basal third, very closely spaced and partially confluent, thereby forming a flattened, tuberculate ridge along the elytral suture (Fig. 6A–C).

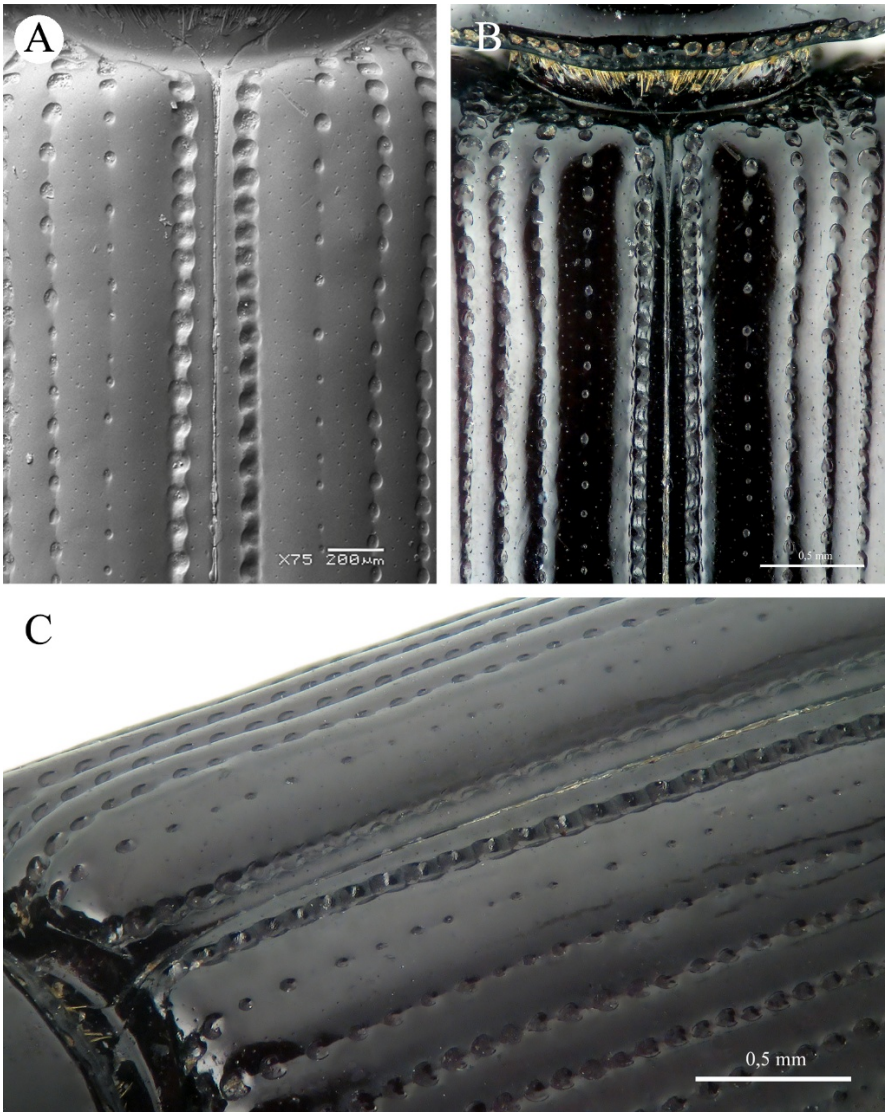

Fig. 6. *F. canaliculatus* Nagel, neotype (MZUF), tuberculate stria along the elytral suture: (A) SEM picture, detail; (B) dorsal view; (C) lateral view.

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