

The discovery of the syntypes of *Trophon birileffi* Lischke, 1871 (Gastropoda: Muricidae: Ergalataxinae), its taxonomic implication and note about the distributional records

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ABSTRACT. The intricate history of *Trophon birileffi* Lischke, 1871 is analyzed. A lectotype is designated from 36 syntypes discovered in the Zoological Institute of the Russian Academy of Sciences in St. Petersburg, Russia. The species is redescribed and other specimens as well as the protoconch and the radula are illustrated. Two species, *Sistrum alfredensis* and *Fusus pachyrhaphis* formerly considered as synonyms of *Trophon birileffi*, are removed from its synonymy.

Introduction

The genus *Bedevina* was described by T. Habe [1946] for *Trophon birileffi* Lischke, 1871. This species was analyzed [Claremont et al, 2013] and seems to be well supported in Ergalataxinae.

Bedevina was synonymised with *Bedeva* Iredale, 1936 by G. Radwin and A. D'Attilio [1976] who didn't retain any differences between *Bedeva* and *Bedevina*. However, their illustration of "*Bedeva birileffi*" is erroneous [Ibid., pl. 2, fig. 8] and represents *Bedeva paivae* (Crosse, 1864).

Trophon birileffi was described from Japan and thereafter illustrated by W. Kobelt [1878], but the original material consisting of numerous specimens (*sic* C. Lischke, [1871b]) was never located. This lot was now discovered in the Academy of Sciences, St. Petersburg, Russia and corresponds to the species described by Lischke and illustrated by Kobelt.

Material and Methods

Abbreviations of depositories:

RH: Collection Roland Houart.

USNM: National Museum of Natural History, Washington, D.C., U.S.A.

ZIN: Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia.

Terminology used to describe the spiral cords and the apertural denticles [after D. Merle 2001, 2005] (Figs. 1-2).

Spiral cords

P: primary cord

s: secondary cord

t: tertiary cord

IP: infrasutural primary cord (primary cord on subsutural ramp)

adis: adapical infrasutural secondary cord (on subsutural ramp)

abis: abapical infrasutural secondary cord (on subsutural ramp)

P1: shoulder cord

P2-P6: primary cords of the convex part of the teleoconch whorl

s1-s6: secondary cords of the convex part of the teleoconch whorl

example: s1 = secondary cord between P1 and P2; s2 = secondary cord between P2 and P3, etc.

ADP: adapertural primary cord on the siphonal canal

MP: median primary cord on the siphonal canal

ABP: abapertural primary cord on the siphonal canal

ads: adapertural secondary cord on the siphonal canal

ms: median secondary cord on the siphonal canal

abs: abapertural secondary cord on the siphonal canal

Aperture

D1 to D5: abapical denticles;

ID: Infrasutural denticle.

Systematics

Family Muricidae Rafinesque, 1815

Subfamily Ergalataxinae Kuroda, Habe,
Oyama, 1971

Genus *Bedevina* Habe, 1946

Type species by original designation: *Bedevina birileffi* (Lischke, 1871), Japan.

Bedevina birileffi (Lischke, 1871)
(Figures 1, 2, 3 A, C-F, 4 A-L)

Trophon birileffi Lischke, 1871a: 39.

C. Lischke [1871a] described *Trophon birileffi* from the Bay of Nagasaki, Japan. A few months later the original description was issued again [Lischke, 1871b], together with a detailed description in German, but still without any illustration. The same description was then published by W. Kobelt [1878: 299, pl. 75, figs 7-8] who illustrated a specimen which was, according to the author [1878: 300], from the Löbbecke collection.

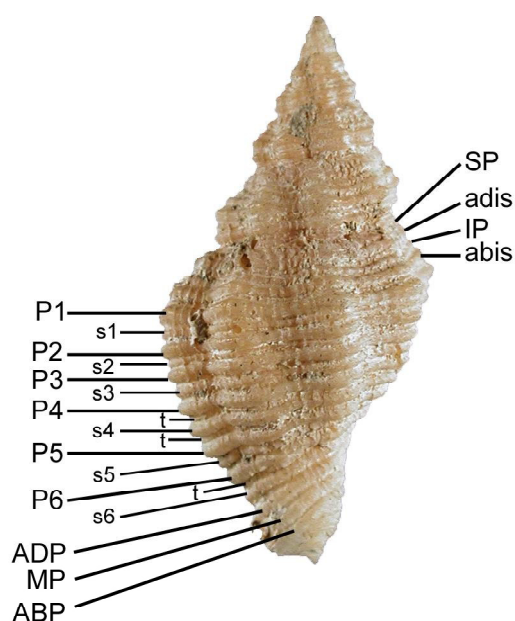


FIG. 1. *Bedevina birileffi* (Lischke, 1871): Spiral cord morphology.

РИС. 1. *Bedevina birileffi* (Lischke, 1871): Морфология спиральной скульптуры

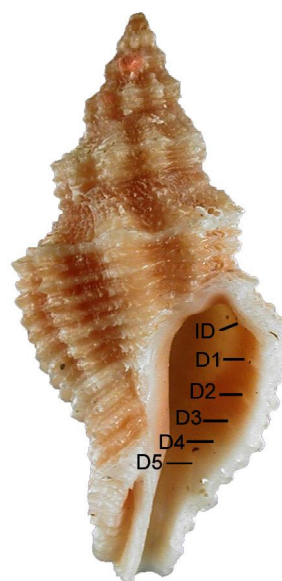


FIG. 2. *Bedevina birileffi* (Lischke, 1871): Apertural denticles.

РИС. 2 *Bedevina birileffi* (Lischke, 1871): Зубцы устья.

W. Kobelt wrote: “Aufenthalt an der japanesischen Küste; es lagen mir die Lischke’schen Original-exemplare aus der Löbbbecke’schen Sammlung vor.”

(While staying on the Japanese coast; I had before me Lischke’s original specimens from the Löbbbecke collection).

As most of Lischke’s species are in the Löbbbecke Museum in Düsseldorf (Germany), and partly misled by this sentence, in 1995, one of us (RH) wrote to Dr. Joseph Boscheinen, then curator of Geology and Malacozoology in the Löbbbecke Museum, to inquire about the possible presence of the type material of *Trophon birileffi* in Düsseldorf. Unfortunately, three months later, the answer was negative, the type material of *Trophon birileffi* Lischke, 1871 could not be located. It seemed to be lost. No other attempt to locate the material was made since then.

Beginning of 2013, having received a few specimens from Japan, and in order to determine once and for all the exact identity of *Trophon birileffi*, he (RH) looked again at the original description and subsequent papers and realized that C. Lischke wrote in his introduction:

“Die folgenden voraussetzlich neuen Arten befinden sich in einer dem kaiserlichen Museum zu St. Petersburg angehörigen, mir von Herrn Dr. Leopold von Schrenck in freundlichstem Entgegenkommen zu wissenschaftlicher Benutzung anvertrauten, sehr interessanten Sammlung, welche Herr Nic. Birileff, während er sich als Capitain eines russischen Kriegsschiffes in der Bucht von Nagasaki befand,

dasselbst gemacht und dem genannten Museum geschenkt hat” [Lischke, 1871a: 39].

(The following presumably new species are to be found in one of the museums attached to the Imperial Museum at St. Petersburg. They were confided to me for scientific use in a most friendly fashion by Mr. Leopold von Schrenck, a very interesting collection which was assembled by Mr. Nic. Birileff while he was in the Bay of Nagasaki as a captain of a Russian warship and he donated it to the above mentioned museum).

A single lot containing 36 specimens labelled *Trophon birileffi* was then located at the Zoological Museum of the Zoological Institute of the Russian Academy of Sciences in St. Petersburg. The shell sizes are of about 8.5 to 19.5 mm. The specimens were accompanied by a handwritten label mentioning “*Trophon Birileffi* Lischke, Nagasaki. Lke.” (Fig. 3 A). C. Lischke wrote “Diese in mehreren Exemplaren vorliegende Art...” [Lischke, 1871b: 32] which means that many specimens were found, thus 36 specimens is certainly possible.

After having compared the handwriting on the label with a copy of a dedication in Lischke’s handwriting published by von Cosel [1998: 14, fig. 7] (Fig. 3 B) and other labels reproduced there, no doubt remains that it is Lischke’s handwriting and these are the original specimens studied by C. Lischke and thus the syntypes.

The only thing that doesn’t fully match is the size of the shells. While C. Lischke [1871a, b]



FIG. 3. *Bedevina birileffi* (Lischke, 1871). A – Type lot with 36 specimens (ZIN No. 1/61891) and original label written by C. E. Lischke; B – Dedication in Lischke's handwriting; C – Reproduction of figures 7 and 8 from Kobelt (1878); D – Protoconch from specimen figured in Fig. 4 K-L (scale bar 500 µm); E – Lectotype ZIN No. 1/61891, 17 mm; F – radula from specimen figured in Fig. 4 A-B (scale bar 100 µm). *Bedeva paivae* (Crosse, 1864), Brisbane, Australia: G – radula (scale bar 100 µm).

РИС. 3. *Bedevina birileffi* (Lischke, 1871). А – Типовая серия из 36 экземпляров (ZIN № 1/61891) и оригинальная этикетка написанная С. Е. Лишке; В – Посвящение, написанное рукой Лишке; С – Рисунки 7 и 8, из Kobelt, 1878; D – Протоконх экземпляра, изображенного на Рис. 4 К-Л (масштабная линейка 500 мкм); Е – Лектотип ZIN № 1/61891, 17 мм; F – радула экземпляра, изображенного на Рис. 4 А-В (масштабная линейка 100 мкм). *Bedeva paivae* (Crosse, 1864), Бризбен, Австралия: G – радула (масштабная линейка 100 мкм).



FIG. 4. *Bedevina birileffi* (Lischke, 1871). A-B – Japan, Kagoshima Prefecture (radula illustrated Fig. 3 F), 18.5 mm (RH); C – Japan, Mukaishima, 23.1 mm (RH); D-E – Japan, Kusui, Nada-Cho, Wakayama Prefecture, 20.5 mm (RH); F – Sumatra, near Tanjung Pinang, in approximately 36 m, 19.7 mm (RH); G-J – W Borneo, Tanjung Batu, 46 m (RH) G-H – 16.3 mm, I-J – 14.6 mm; K-L – Near Belintung Isю, Carima Straits, 15-20 m, 14.8 mm (protoconch illustrated Fig. 3 D) (RH).

РИС.4 *Bedevina birileffi* (Lischke, 1871). А-В – Япония, префектура Кагосима (радула изображена на Рис. 3 F), 18.5 мм (RH); С – Япония, Мукаисима, 23.1 мм (RH); D-E – Япония, Кюсю, Нада-Чо, префектура Вакаяма, 20.5 мм (RH); F – Суматра, вблизи Таньунг Пинанг, на глубине около 36 м, 19.7 мм (RH); G-J – Запад Борнео, Таньунг Бату, 46 м (RH) G-H – 16.3 мм, I-J – 14.6 мм; K-L – Вблизи о-ва Белинтунг, пролив Карима, 15-20 м, 14.8 мм (протоконх изображен на Рис. 3 D) (RH).

mentioned 24 to 27 mm in length, the length of the specimens in the original lot of syntypes varies from 8.5 to 19.5 mm.

One specimen measuring 17 x 9 mm, very close to the shell illustrated by W. Kobelt [1878: figs 7-8] (Fig. 3 C) was extracted from this lot. It is here designated as the lectotype ZIN No 1/61891 (Fig. 3 E). Consequently, the remaining 35 specimens are designated as paralectotypes ZIN No 2/61892

Description

Shell up to 23 mm in length at maturity with conical protoconch of 3.25 whorls (Fig. 3D) and weakly or moderately shouldered, broadly convex teleoconch whorls.

Axial sculpture of last teleoconch whorl consisting of 8 or 9 broad, low ribs. Spiral sculpture of strong, narrow, primary and secondary and a few tertiary cords: SP, adis, IP, abis, P1, s1, P2, s2, P3, s3, P4, s4, P5, s5, P6, s6, ADP, ads, MP, ms, ABP, abs, and erratically placed tertiary cords between a few primary and secondary cords.

Aperture ovate or broadly ovate. Columellar lip narrow, smooth, adherent to the shell, with low, elongate, parietal tooth at adapical extremity. Outer lip crenulated with 6 elongate denticles within (ID-D5), occasionally split. Siphonal canal short, narrow, open.

Creamy white, light tan or light brown, occasionally with lighter coloured axial ribs.

Radula of three dimensional type (Fig. 3F), central tooth with a narrow, long, elongate, central cusp, a very short, narrow, lateral denticle and short, broad, lateral cusp on each side, low folds on marginal area and very short double marginal cusps. Lateral tooth sickle shaped, broad, with a slightly broader base.

Distribution. Malaysia (Singapore, Batam island, Sumatra, West Java [Dharma, 2005], Borneo), Vietnam [Thach, 2012] and southern Japan, living at 18-46 m.

Discussion

As mentioned above, *Bedevena* was considered as a synonym of *Bedevea* by Radwin and D'Attilio [1976], but the authors misidentified *Bedevena birileffi* and illustrated a specimen of *B. paivae*. The radula of *Bedevena birileffi* is clearly ergalataxine, of three dimensional type (Fig. 3F), compared to the flattened type in *Bedevea* (Fig. 3G), a genus now classified in *Haustrinae* Tan, 2003. The protoconch of *Bedevena birileffi* is conical, of sinusigera type, with 3.25 smooth whorls while *Bedevea paivae* has a broad, rounded protoconch consisting of 2-2.15 whorls.

The lectotype of *B. birileffi* here designated shows axial and spiral sculpture similar to the other

studied specimens. The protoconch is partly broken, with only the last two whorls remaining.

We chose this specimen as lectotype because it is very close to the specimen illustrated by W. Kobelt [1878: figs 7-8], here refigured (Fig. 3 C).

The geographical distribution seems interrupted between Vietnam and southern Japan, but this is certainly due to misidentification of the species. There is no reason that *Bedevena birileffi* should be absent in the Philippines and in Taiwan.

The shell morphology is quite similar throughout the geographical distribution as can be seen in specimens from Japan (Fig. 4A-E) and from Malaysia (Fig. 4F-L).

The holotype and the paratype of *Sistrum alfredensis* Barstch, 1915 described from South Africa are both in USNM (USNM 272130). It was synonymised with *B. birileffi* (as *Orania birileffi*) in WoRMS (Appeltans *et al.*, 2012) but a recent examination of the digital images of the type material prove it to be a probable junior synonym of *Orania ficula* (Reeve, 1848).

Fusus pachyrhaphes Smith, 1879 considered as another synonym in WoRMS is a valid species from Japan but the genus for this species (*Bedevena* or *Orania*) remains uncertain. It is here temporarily included in *Orania* Pallary, 1900.

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- Обнаружение синтипов of *Trophon birileffi* Lischke, 1871 (Gastropoda: Muricidae: Ergalataxinae), таксономические последствия и сведения о распространении
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- РЕЗЮМЕ.** Проанализирована сложная история *Trophon birileffi* Lischke, 1871. Лектотип, обозначенный из 36 синтипов, обнаружен в Зоологическом институте Российской Академии наук в Санкт-Петербурге. Приводятся описание вида и изображения протоконха и радулы.

