

# Bivalve collection of C.E. Lischke in the Zoological Institute, St. Petersburg: Mytilidae, Ungulinidae and Tellinidae

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## ABSTRACT

In addition to the Arcidae (Lutaenko, 2015), a collection of Mytilidae, Ungulinidae and Tellinidae from Japan, identified by the German malacologist C.E. Lischke, was found and studied at the Zoological Institute, Russian Academy of Sciences, St. Petersburg. This collection is very important for regional malacological studies in Japan, Korea and China as it contains type material and vouchers. Syntypes of *Mytilus atratus* Lischke, 1871 (= *Xenostrobus atrata* (Lischke, 1871)) and vouchers of *Tellina diaphana* Deshayes, 1855 (= *Serratina diaphana* (Deshayes, 1855)), *Tellina nitidula* Dunker, 1860 (= *Nitidotellina hokkaidoensis* (Habe, 1961)), and “*Diplodonta orbella* Gould, 1851” (= *Diplodonta gouldi* Yokoyama, 1920)) are figured with taxonomic and nomenclatural comments. No other voucher or type specimens used in the compilation of the *Japanische Meeres-Conchylien* were located in the entire bivalve collection.

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**Key words:** bivalve mollusks, Mytilidae, Ungulinidae, Tellinidae, Japan, C.E. Lischke collection, type material.

## INTRODUCTION

Carl Emil Lischke (1813-1886) published the three-volume *Japanische Meeres-Conchylien* (Lischke, 1869; 1871b; 1874), describing the Japanese molluscan fauna and was extensive and detailed book on the mollusks of Japan and adjacent regions such as Korea and China at that time. R. von Cosel (1998) discussed the life and malacological contribution of C.E. Lischke, and provided a list of 64 species of Japanese marine mollusks introduced by him, along with illustrations of 20 types of 36 taxa which were found in the Löbbecke Museum at Düsseldorf (now the “*Aquazoo Löbbecke*

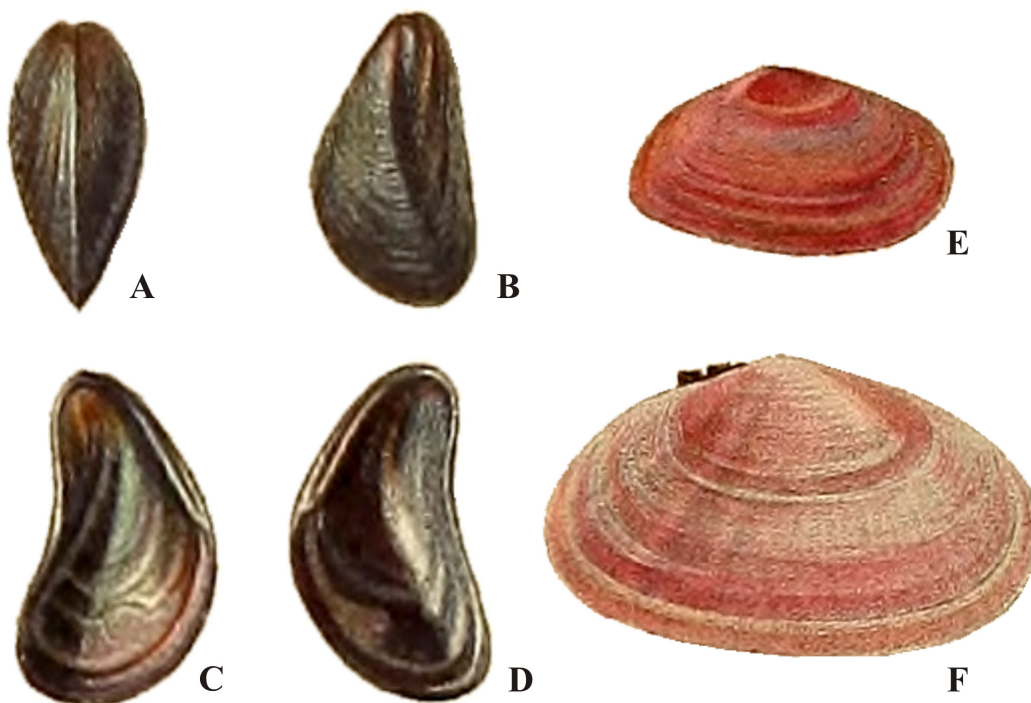
*Museum*” (<http://www.duesseldorf.de/aquazoo/>). Another part of the Lischke collection is stored in the Zoological Institute, Russian Academy of Sciences in St. Petersburg (hereafter, the ZIN) and was collected by the Russian Captain Nikolay Alekseevich Birilev (1829-1882) (also spelled as “Birileff”), a Russian rear-admiral (Lutaenko, 2014; 2015). Lischke had received the Birileff material on loan from the St. Petersburg Zoological Museum (former name of the ZIN) through an arrangement with Dr. Leopold von Schrenck (Lischke, 1871b) and described this collection in the second volume of the *Japanische Meeres-Conchylien*. Subsequently, Lischke returned most of materials to the Zoological Museum after study except for some duplicates. Lutaenko (2015) had enumerated 21 species of bivalves with the locality “Nagasaki, Birileff”, mentioned in the second volume, to indicate their possible presence in the collection of the ZIN, and located seven of Lischke’s original arcid species (Arcidae) (in modern nomenclature, six species) in the ZIN collection, and reviewed and illustrated them. It is of interest that among Lischke arcids, we

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**Fig. 1.** Original illustrations of *Mytilus atratus* Lischke, 1871 (**A-D**: Lischke, 1871b, S. 146, Taf. 10, Fig. 4, 4a, 5, 5b) and *Tellina nitidula* Dunker, 1860 (**E, F**: Lischke, 1871b, S. 113, Taf. 10, Fig. 10, 11) in Lischke books.

have found five species, described in the first volume and not belonging to Birilev's collection, indicating that Lischke sent part of his own collection to St. Petersburg, perhaps as a gift or for exchange. Unfortunately, further extensive search for the rest of the Birilev-Lischke materials brought to light only four species, and among those syntypes of one species. With the aim of documenting this historically important collection, we provide data on these species as below, with illustrations and taxonomic remarks.

Abbreviations used throughout the text as follows: **ZIN** - Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia; **USNM** - United States National Museum, Washington D.C., USA; **NHM** - the Natural History Museum, London, UK; **ANSP** - Academy of Natural Sciences of Drexel University (formerly, Academy of Natural Sciences of Philadelphia), Philadelphia, USA; **NSMT** - National Museum of Nature and Science (formerly, National Science Museum, Tokyo), Tokyo/Tsukuba, Japan; **SMF** -

Natur-Museums Senckenberg, Frankfurt am Main, Germany. "Material" section means only Birilev-Lischke collection in the ZIN.

## SPECIES ACCOUNT

Family Mytilidae Rafinesque, 1815

*Mytilus atratus* Lischke, 1871

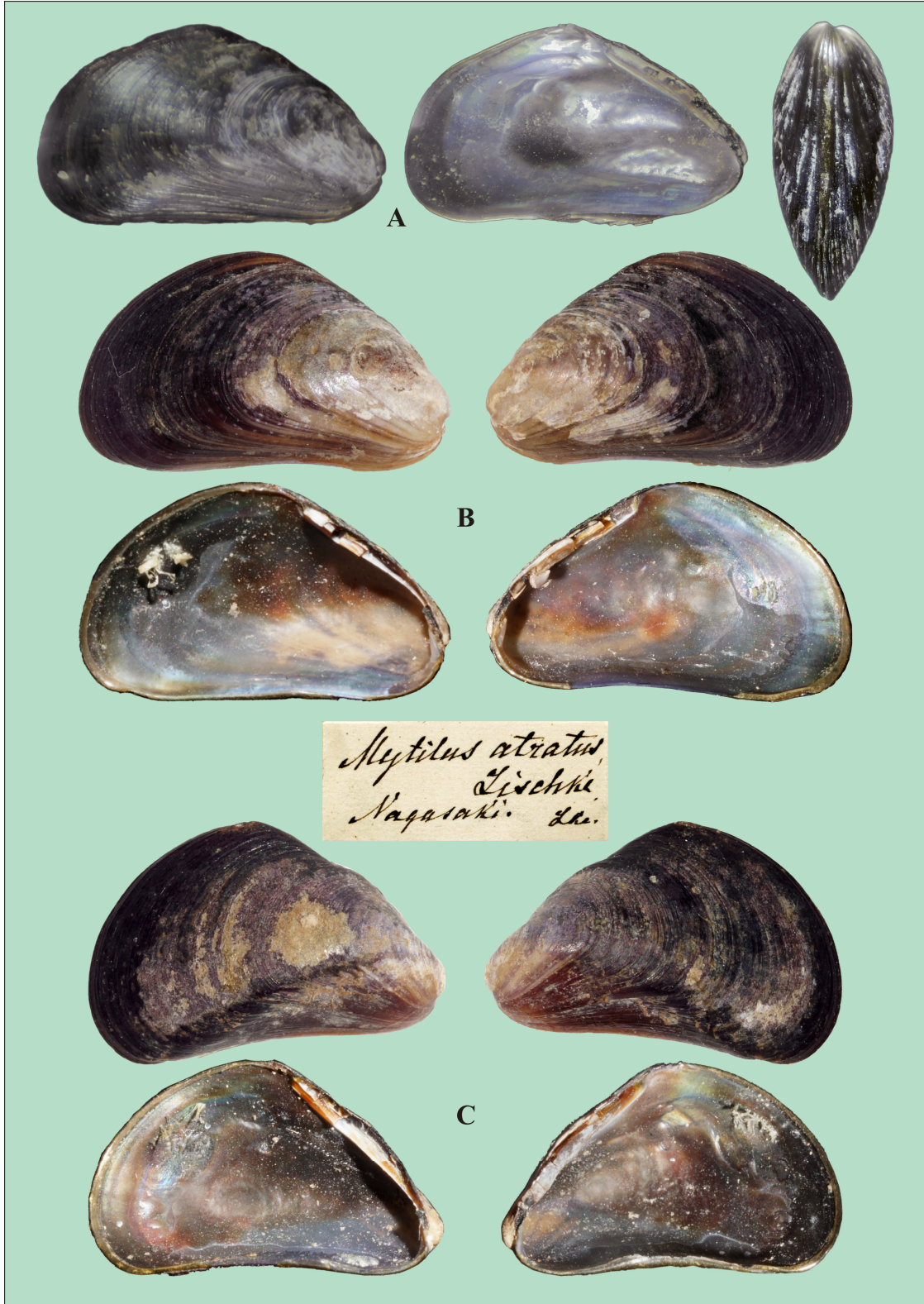
Figs. 1, A-D; 2, A-C

*Mytilus atratus* Lischke: Lischke, 1871a: 44; Lischke, 1871b: 146, Taf. 10, Fig. 4, 4a, 5, 5b (ad Nagasaki; "Birileff'schen Sammlung" in German text).

**Material:** 45 specimens (26 complete shells and 19 valves); ZIN no. 2/111; syntypes; Nagasaki.

**Modern status:** *Xenostrobus atratus* (Lischke, 1871) (type locality-Japan).

**Synonyms:** *Modiola aterrima* Dall, 1871 (type locality-"Bay of Yeddo, Japan" [Tokyo Bay]).



**Fig. 2.** Syntypes of *Mytilus atratus* Lischke, 1871 in the collection of the ZIN (Nagasaki, Japan), ZIN no. 2/111: **A**-shell length 9.4 mm, shell width 4.1 mm; **B**-shell length 9.2 mm; **C**-shell length 9.4 mm.

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**Original description:** “Testa parva, solidula, ovato-oblonga, tumidiuscula, subcarinata, concentric denseque striata, margine ventrali plus minusve sinuato, fusco-violacea, sub umbonibus tumidis, remotiusculis, margini anteriori brevissimo appositis, saepius pallidior, epidermide crassa atra, in pullis fusco-cornea, obducta; cardo prorsus edentulus; impressiones musculares lineaque palliaris distincte expressae; margarita livida, nitida, marginem versus vivide iridescens.-Long. 12 mill., alt. 7, lat. fere 5” (Lischke, 1871a, S. 44).

**Comments:** The holotype of *Modiola aterrima* Dall, 1871 (USNM 185505) is figured by Higo *et al.* (2001, p. 148), and its morphology does correspond to *Xenostrobus atratus*. The latter name has priority over *M. aterrima*, as Lischke’s (1871a) paper was published in January, while Dall’s (1871) paper was published on November 2, 1871 (Coan *et al.*, 2000). Although Higo *et al.* (1999) indicate the type locality as the “Bucht von Nagasaki”, the original description (Lischke, 1871a) mentions only “Birileff’schen Sammlung”; the label of the ZIN syntypes bears “Nagasaki”.

The morphology and anatomy of *X. atratus* were described by Kimura (1996); according to him, its shell morphology is similar to *X. balani* Ockelmann, 1983 and *X. mangle* Ockelmann, 1983 from south-eastern Asia (Ockelmann, 1983). Previous association of *X. atratus*, as well as other allied species, with the genus *Limnoperna* Rochebrune, 1862 (Beu, 2006) was later abandoned (Beu, 2012). *X. atratus* is the type species of *Vignadula* Kuroda et Habe in Kuroda *et al.*, 1971 which is believed to be a synonym of *Xenostrobus* Wilson, 1967 (Ockelmann, 1983; Kimura, 1996; Beu, 2006).

**Distribution:** Subtropical species: Japan (northeastern Honshu and southwards, western Kyushu), Yellow Sea, Korea, northern South China Sea (Higo *et al.*, 1999; Okutani, 2000; Qi, 2004; Min *et al.*, 2004).

Family Tellinidae Blainville, 1814  
*Tellina diaphana* Deshayes, 1855  
Fig. 3, D, F-G

*Tellina diaphana* Deshayes: Lischke, 1871b: 113 (Nagasaki, Birileff !).2

**Material:** 3 specimens (1 complete shell and 2 valves), ZIN no. N 79/150, Nagasaki.

**Modern status:** *Serratina diaphana* (Deshayes, 1855).

**Synonyms:** *Tellina (Merisca) pristiformis* Pilsbry, 1901.

**Original descriptions:** *T. diaphana*-Deshayes (1855, p. 364) (type locality-Japan); *T. pristiformis*-Pilsbry (1901, p. 400, pl. 19, fig. 8) (type locality-Inland Sea of Japan [Seto Inland Sea]).

**Comments:** A possible syntype of *Tellina diaphana* Deshayes, 1855 (NHM 1996474) and a syntype of *T. pristiformis* Pilsbry, 1901 (ANSP 71029) are figured by Higo *et al.* (2001, p. 170). According to a recent revision by Ujino and Matsukuma (2013), the species complex of *Serratina capsoides* (Lamarck, 1818), based on molecular and shell morphology analyses, consists of three groups referred to as *S. capsoides*, *S. diaphana* (Deshayes, 1855), and *S. pristis* (Lamarck, 1818), previously synonymized with *S. capsoides* (e.g., Boss (1969); Higo *et al.* (1999)). *S. diaphana* differs from *S. capsoides* and *S. pristis* in having weaker radial furrows, and from *S. capsoides* in having variably stronger lirae (Ujino and Matsukuma, 2013). The populations of *S. capsoides* reported from mainland Japan are actually *S. diaphana*, which has a very limited distribution and is at a comparably higher risk of extinction (Ujino and Matsukuma, 2013). A specimen from Busan figured as “*Merisca capsoides* (Lamarck, 1818)” (Lutaenko and Noseworthy, 2012, pl. 49, figs. G, H) belongs instead to *S. diaphana*.

**Distribution:** Tropical-subtropical species: mainland Japan, Korea and southern China (Ujino and Matsukuma, 2013).

*Tellina nitidula* Dunker, 1860

Figs. 1, E, F; 3, C, E

*Tellina nitidula* Dunker: Lischke, 1869: 129 (Nagasaki, Decima, Jokohama); Lischke, 1871b: 113, Taf. 10, Fig. 10, 11.

**Material:** 2 specimens (1 complete shell and 1 valve);



**Fig. 3.** Voucher specimens of the Lischke-Birilev collection in the ZIN: **A, B**—*Diplodonta orbella* Gould, 1851 (= *Diplodonta gouldi* Yokoyama, 1920), Nagasaki, Japan, ZIN no. 1/151, shell length 19.5 mm (A) and 18.7 mm (B); **C, E**—*Tellina nitidula* Dunker, 1860 (= *Nitidotellina hokkaidoensis* (Habe, 1961)), Nagasaki, Japan, ZIN no. N 1/149, shell length 13.9 mm (C) and 10.4 mm (E); **D, F, G**—*Tellina diaphana* Deshayes, 1855 (= *Serratina diaphana* (Deshayes, 1855)), Nagasaki, Japan, ZIN no. N 79/150, shell length 23.2 mm (D), 172 mm (F), and 17.2 mm (G).

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ZIN no. N 1/149, Nagasaki.

**Modern status:** *Nitidotellina hokkaidoensis* (Habe, 1961).

**Synonyms:** *Nitidotellina dunkeri* Bernard, Cai et Morton, 1993 (*nom. nov. pro Tellina nitidula* Dunker, 1860).

**Original descriptions:** *T. nitidula*-Dunker (1860, p. 236) (type locality-Japan); *Fabulina hokkaidoensis*-Habe (1961, p. 137, app. 39, pl. 62, fig. 6) (type locality-Oshoro, Otaru City, Sea of Japan side of Hokkaido).

**Comments:** *Fabulina hokkaidoensis* Habe, 1961 was described as a new species (Habe, 1961), and, obviously, it replaced the preoccupied *T. nitidula* of Dunker (non *Tellina nitidula* Deshayes, 1857); however, it is not a *nom. nov.* The holotype of *F. hokkaidoensis* (NSMT-Mo 38571) is figured by Higo *et al.* (2001, p. 171). Later, in several printings of the *Shells of the Western Pacific in Color*, vol. 2 (English version of the original Japanese book by Habe (1961) where this species was first described), this taxon was treated as a subspecies (*Fabulina nitidula hokkaidoensis* or *Nitidotellina nitidula hokkaidoensis*) (Callomon and Petit, 2004). *T. nitidula* is the type species of *Nitidotellina Scarlato*, 1965 (Scarlato, 1965, p. 85). A possible holotype of *T. nitidula* (SMF 315953) is figured by Janssen (1993, Taf. 9, Fig. 63).

**Distribution:** Tropical-subtropical species: Japan (southern Hokkaido and southwards, Kyushu); Yellow Sea, East China Sea, Korea, South China Sea, Taiwan, Hainan, Indonesia (Scarlato; 1965; Higo *et al.*, 1999; Min *et al.*, 2004; Qi, 2004; Lutaenko and Noseworthy, 2012).

Family Ungulinidae Gray, 1854

*Diplodonta orbella* Gould, 1851

Fig. 3, A, B

*Diplodonta orbella* Gould: Lischke, 1871b: 133 (Iedo, Nagasaki) (non Gould, 1851).

**Material:** 2 specimens (2 valves); ZIN no. 1/151, Nagasaki.

**Modern status:** *Diplodonta gouldi* Yokoyama, 1920.

**Original description:** Yokoyama (1920, 132. pl. 10, fig. 5) (type locality-Kami-miyata, [Miura City, Kanagawa

Prefecture (near Tokyo)], Pleistocene).

**Comments:** *D. orbella* (synonym-*Sphaerella tumida* Carpenter, 1864) is a northeastern Pacific, American species living from Monterey, California to and throughout the Golfo de California (Coan *et al.*, 2000). Huber (2015) includes *D. gouldi* in the genus *Zemysina* Finlay, 1926, along with 11 other species. The allied species to *D. gouldi* is *Diplodonta semiasperoides* Nomura, 1932 (as *D. "asperoides"* in Okutani (2000), *laps. cal.*) distributed in the northwestern Sea of Japan (Russia), eastern South Korea, and south-western Hokkaido and southwards and western Kyushu (Scarlato, 1981; Higo *et al.*, 1999; Lutaenko and Noseworthy, 2012).

**Distribution:** Subtropical species: Japan (southern Hokkaido and southwards, Tsugaru Peninsula, Pacific coast of Honshu to Kyushu, Sea of Japan, western Kyushu); Korea (Higo *et al.*, 1999; Lee and Min, 2002; Min *et al.*, 2004).

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