



On *Lambis lambis* (Linnaeus, 1758) from the type locality (Indonesia, Ambon) and the recognition of *Lambis camelus* (J. E. Gray in King, 1826) (Gastropoda, Strombidae)

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ABSTRACT

Five live-collected specimens of *Lambis lambis* (Linnaeus, 1758) from the type locality, Ambon, Indonesia, were preserved in 96% ethanol for future research. The species is redescribed based on these topotypic specimens and compared with *Lambis camelus* (J. E. Gray in King, 1826), herein recognized as a valid species from India. Recent molecular evidence indicates that *L. lambis* represents a complex of at least three species, with *L. camelus* forming one member of this complex. Lectotypes are designated for *Strombus lambis* Linnaeus, 1758 and *Strombus camelus* J. E. Gray, 1826.

Key words – Strombidae, *Lambis*, taxonomy, Indonesia, India

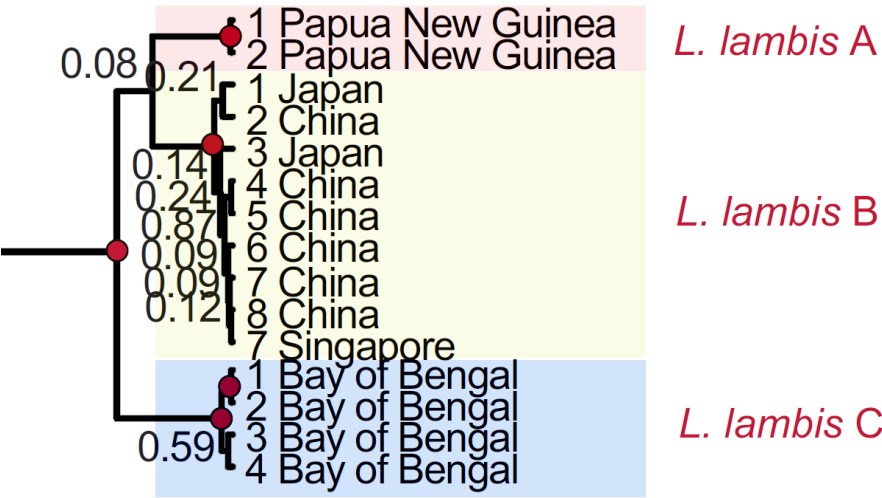
INTRODUCTION

Lambis lambis (Linnaeus, 1758) is among the most common and widely distributed species of *Lambis* Röding, 1798. It is also one of the few marine gastropods in which shell characters show pronounced sexual dimorphism beyond size. Male shells are usually about 60% the size of female shells, although the degree of dimorphism varies geographically. It is strongest in the Caroline Islands and in many, though not all, parts of the Philippines, Indonesia, Queensland and the Solomons, and less evident in the Indian Ocean and at the eastern edge of the range, including New Caledonia, Fiji and Tonga. In extreme male specimens, the three lowest labial digitations are short and posteriorly hooked; in females, these digitations are two to three times longer and strongly curved upward. Females usually also bear a large, pinched, somewhat bilobed knob on the dorsal shoulder, whereas males have two small, similarly sized



nodules. The two posterior-most digitations are generally more widely separated in females than in males (Abbott, 1961: 151).

As currently interpreted, the common species *Lambis lambis* represents a complex of several species. Although this may seem unexpected to many Strombidae researchers, close examination of numerous shells from different localities reveals substantial variation that corresponds with regional distribution, as already noted by Abbott (1961). It is therefore plausible that *L. lambis* comprises several closely similar species, a conclusion also supported by the molecular study of Indo-Pacific specimens by Irwin et al. (2024) (Text fig. 1).



Text figure 1. The split of *Lambis lambis* in three different species. Figure adapted from Irwin et al. (2024: fig. 2), based on Bayesian analysis of COI sequences. *Lambis lambis* C is herein considered to be *Lambis camelus* (J. E. Gray in King, 1826).

Lambis lambis is known for sexual dimorphism: males have smaller shells with shorter digitations, whereas females have larger, more robust shells, often with upward-curved digitations. Of the many synonyms of *L. lambis*, nearly all refer to male shells (Abbott, 1961: 153). The female shell has received only one other name, *Strombus camelus* Chemnitz, 1788 [non-binomial], which was validated by J. E. Gray in King in 1826 (Abbott, 1961: 153). This name is not recorded in MolluscaBase (accessed 2026-06-22) and is discussed below. The present article provides a basis for further study of the *Lambis lambis* complex.

ABBREVIATIONS

AMD	(the collection of) Aart M. Dekkers, Purmerend, the Netherlands
MNHN	Muséum national d'Histoire naturelle, Paris, France
L	shell length
LA, Length A	measured from first digitation (near apex) to end of anterior spine
Length B	measured from tip of the apex to end of anterior spine
W	width of the shell at its broadest point, outside lip



METHODS

For several years, the first author has collected shells of *L. lambis* from as many Indo-Pacific localities as possible for research and comparison. This year, through a Dutch friend travelling in Ambon, Indonesia, we obtained five shells with animals preserved in 96% ethanol for illustration and future molecular analyses. Ambon was designated by Abbott (1961: 153) as the type locality of *L. lambis*. The specimens were collected by snorkeling with local people who gather this species for food, from a nearshore reef at 0.5–2 m depth. Immediately after collection, the animals were removed from the shells and preserved in 96% ethanol. For transport to the Netherlands, the animals were removed from the alcohol and frozen; after thawing, they were returned to alcohol. The shells were cleaned only superficially. Three animals with their corresponding shells were donated to the MNHN: MNHN-IM-2019-54322, MNHN-IM-2019-54323 and MNHN-IM-2019-54324.

Using Abbott's (1961) treatment of *Lambis lambis* and the molecular results of Irwin et al. (2024), which indicate at least three species within the *L. lambis* complex, we reviewed the existing literature to assess this taxonomic problem.

TAXONOMY

Superfamily Stromboidea Rafinesque, 1815

Family Strombidae Rafinesque, 1815

Genus *Lambis* Röding, 1798

Type species *Strombus lambis* Linnaeus, 1758, by absolute tautonymy

Pterocera Lamarck, 1799. Type species *Strombus lambis* Linnaeus, 1758, by monotypy

Heptadactylus Mörch, 1852. Type species *Strombus lambis* Linnaeus, 1758, by subsequent designation Abbott, 1961

Millepes Mörch, 1852. Type species *Strombus scorpius* Linnaeus, 1758, by subsequent designation Kobelt, 1878

Harpagus Vernus, 1892. Junior homonym. Type species *Strombus scorpius* Linnaeus, 1758, by monotypy

***Lambis lambis* (Linnaeus, 1758)**

(Text Fig. 2, Pls 2-7)

Strombus lambis Linnaeus, 1758: 743.

Lambis lamboides Röding, 1798: 66.

Lambis cerea Röding, 1798: 66.

Lambis maculata Röding, 1798: 67.

Lambis lobata Röding, 1798: 68.

Lambis hermaphrodita Röding, 1798: 68.

Lambis laciniata Röding, 1798: 68.

Uncertain synonym, see Remarks: *Lambis adamii* Bozzetti & T. Cossignani, 2003: 3-5



Redescription. – Shell rather small for the genus, relatively broad, short-spired and heavy for its size. Spire whorls concave, with a strong cord just above the suture. The first, upper digitation is not attached to the spire; the upper whorls are free and visible only in dorsal view. Last whorl broadly expanded toward the apertural rim, with strong, blunt nodules on the shoulder: two dorsally and one laterally. A second strong cord bears more numerous but weaker blunt nodules, and a third cord below it is evenly spaced from the preceding one. The strong cords continue into the digitations, with the shoulder cord ending in three digitations; only the first, upper digitation lacks cord support. Labial digitations short, thick and bent backward, especially along the labrum. Aperture nearly straight and narrow, bright orange within. The hollow interior of the large left dorsal knob is clearly visible in the upper part of the aperture. Columella covered by a broad, thick enamel layer; apertural rim broad and thickly calloused. Anterior canal broad, short and strongly twisted. Periostracum light brown and thick when not obscured by algal growth. Shell colour beige, with irregular brown maculations.

Types. – Although Abbott (1961: 153) restricted the type locality to Indonesia, Amboina (Ambon), he did not select a lectotype from the syntypes, nor did later authors. The syntypes are the specimens studied by Linnaeus and shells figured in his cited literature references.

Linnaeus cited (1758: 743):

Barrel. rar. 1326. f. 7.

Bonan. recr. 3, t. 315.

Rumph. mus. t. 35. f. E. F.

Gualt. test. t. 35. f. C. t. 36. f. A.

Argenv. conch. t. 17. f. E.

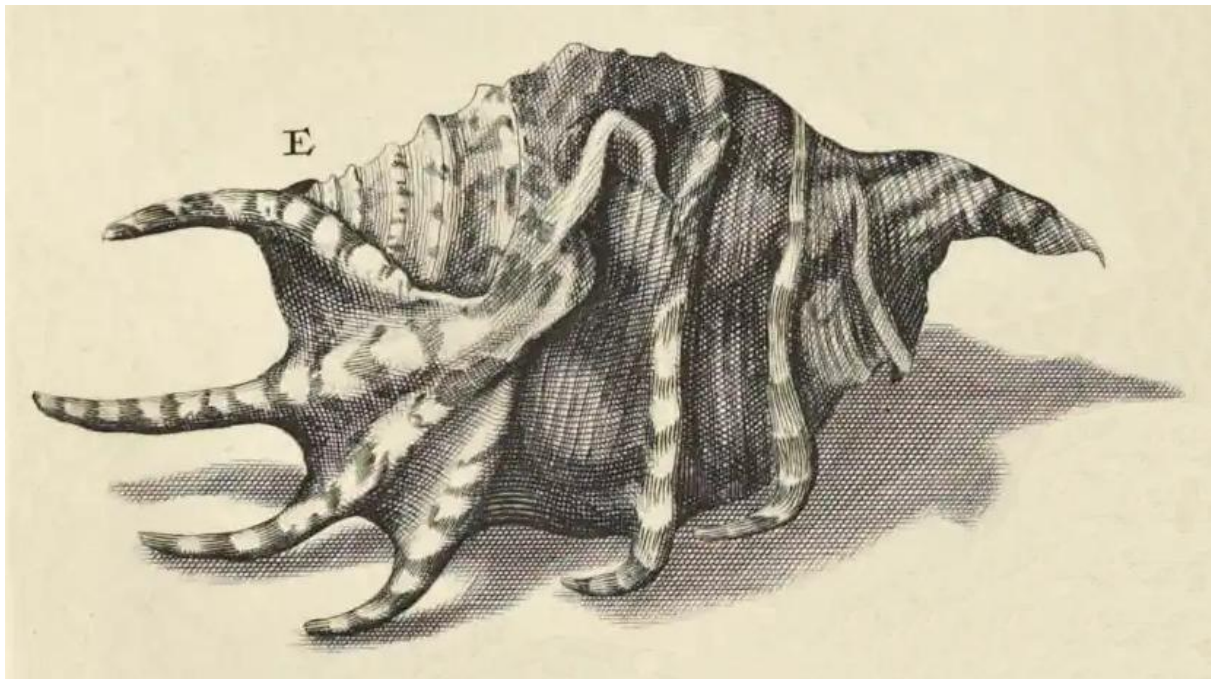
Kratzenst. Regenf. 16. t. 4. f. 45.

Here we select as lectotype the shell figured by Rumphius, 1705: pl. 35 fig. E (Text fig. 2).

Topotypes. – All from the type locality Ambon, with animal preserved in 96% ethanol. Three in collection MNHN (MNHN-IM-2019-54322, MNHN-IM-2019-54323, MNHN-IM-2019-54324) and two in AMD. The location where these five animals were collected is Indonesia, Ambon, north side of Baguala Bay, desa Suli, Pantai Sopapei (Pl. 1). Their measurements are listed in Table 1.

Deposit	Shells	Lenght A	Lenght B	Width	B/Width
MNHN-IM-2019-54322	(Plate 2)	84.7	71.5	40.5	1,77
AMD STR4631	(Plate 3)	93.2	81.3	51.5	1,58
MNHN-IM-2019-54323	(Plate 4)	118.3	108.3	66.4	1,63
AMD STR4632	(Plate 5)	102.3	92.7	ca 55	1,69
MNHN-IM-2019-54324	not illustrated	103	96.6	55.5	1,74

Table 1. Measurements of the *Lambis lambis* topotypes.



Text figure 2. *Lambis lambis*. Rumphius, 1705, pl. 35 fig. E. Lectotype, herein selected.

Type locality. – "Habitat in Oceanus Asiae" (Linnaeus, 1758). Further restricted to Indonesia, Ambon by Abbott (1961: 153). This restriction is based on Rumphius (1705), one of the references Linnaeus mentioned.

Distribution. – The distribution of *L. lambis* remains uncertain because the limits and ranges of the species within the complex are not yet resolved. At present, the species can be confirmed only from the waters around Ambon; specimens from other localities may belong to different species.

Comparison. – At present, comparison of *L. lambis* with other possible members of the complex is meaningful only in relation to *L. camelus*; see the account of that species below. The five available shells of *L. lambis* are all relatively small (Table 1). Their small size may reflect local collecting pressure, as larger shells provide more meat, but no ecological data are available to confirm this. The collection site, on the north side of Baguala Bay (= Teluk Baguala), Pantai Sopapei (Pl. 1), is a weed-covered reef enclosing a sandy lagoon near the coast. The bay is relatively clean and usually calm, offering no obvious explanation for the small size of the specimens. Alternatively, small size may be characteristic of the species if *L. lambis* proves to be a local, possibly endemic, Moluccan species. This hypothesis should be tested using sequences from the animals preserved in the MNHN wet collection.

Remarks. – Because of its small size and isolated distribution in the southernmost part of Mindanao, Philippines, *Lambis adamii* Bozzetti & T. Cossignani, 2003 may represent a valid species. It has not yet been recorded from Indonesia; Sulawesi is the nearest Indonesian island, but no records from there are known to us. Shells sold internationally as *L. adamii*

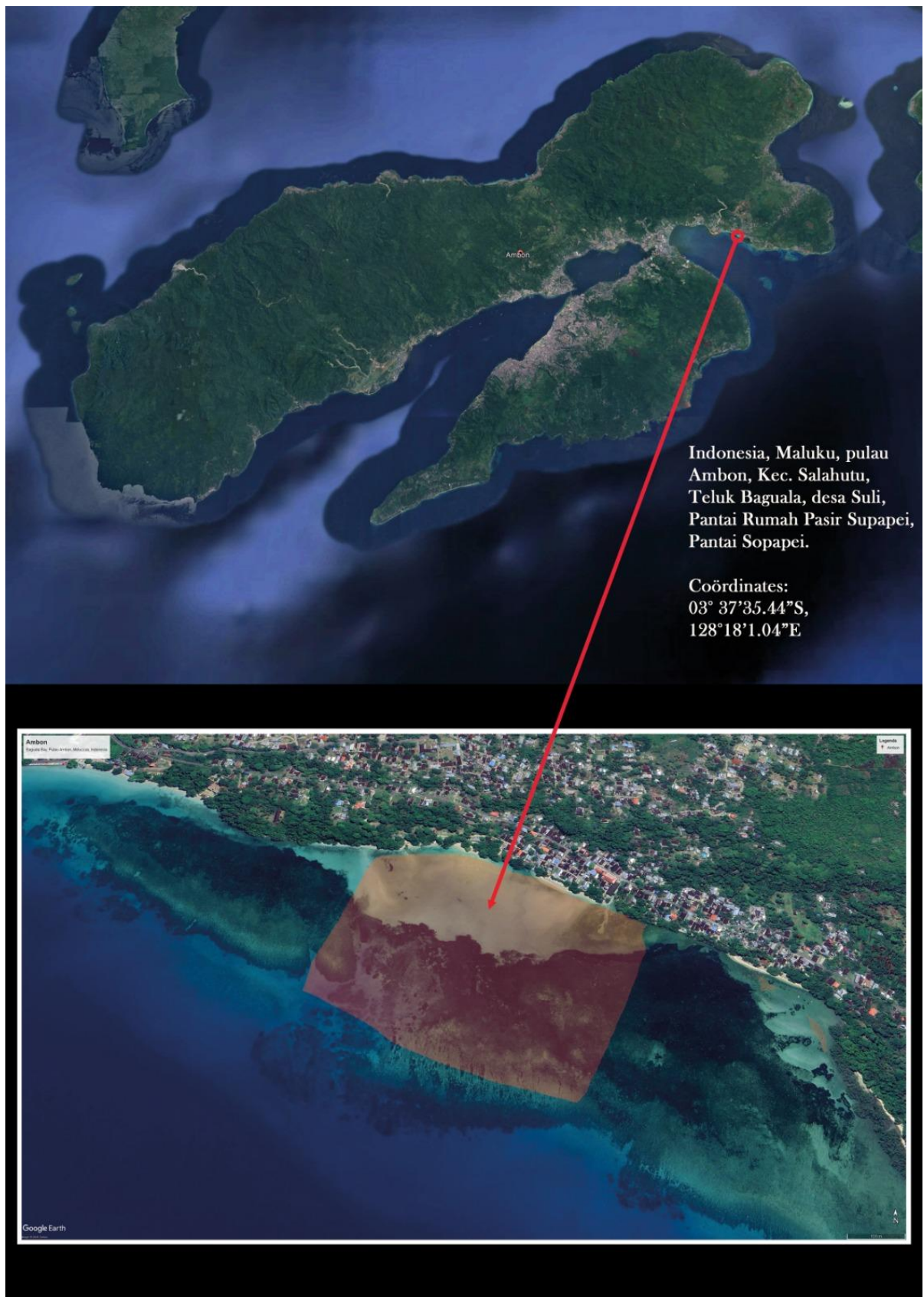


Plate 1. The collection site of topotypes of *Lambis lambis*.



vary considerably in form. In addition to typical *L. adamii*, some specimens resemble small, slender Philippine *L. lambis* and may represent another species within the *L. lambis* complex. Given the small but distinctive true *L. lambis* from Ambon, and the molecular evidence of Irwin et al. (2024) indicating at least three distinct species in the complex, these shells may indeed represent a separate species.

***Lambis camelus* (J. E. Gray in King, 1826)**
(Pls 8-10)

Strombus camelus Chemnitz, 1788: 205, pl. 155 fig. 1478 [non binomial].

Strombus camelus “Chemnitz” Gray, 1826: 490 (Text fig. 3).

Strombus camelus Chemnitz – Menke, 1830: 72.

Strombus camelus Gray in King, 1826 – Abbott, 1961: 153.

Strombus camelus Chemnitz, 1788 – Martynov, 2002: 5, pl. 2 figs C-D.

Lambis (Lambis) lambis – Subba Rao, 2003: 148, pl. 27 figs 3-5

Lambis lambis – Apte, 2014: 59, pl. 6 fig. 3

Lambis (Lambis) lambis – Dey, 2016: 183, figs 357-358

Lambis lambis – Patterson Edward et al., 2022: 142, text fig.

Lambis lambis C – Irwin et al. 2024: 8, Supplementary Material S2: MH908185, MKH908189.

91. PTEROCERA LAMBIS, *Lam. Hist.* vii. 196.

Strombus Lambis, *Gmel. Syst. Nat.* 3508.

Icon. Lister. Conch. t. 866. f. 21. *Martini, Conch.* iii. t. 87.
f. 858, 859.

This shell is very distinct from *Strombus Camelus* of Chemn. x.
t. 155. f. 1478.

Text figure 3. The validation of the name *Strombus camelus* by J. E. Gray in Appendix B, Mollusca, in King (1826: 490).

Description. – “*Strombus Camelus*, testa ovata, alata, gibbere maximo inter congeneres distincta, septem dactylis feu digitis longissimis aduncis instructa, fauce laevissima lutescente, parietibus internis faseia castaneo- coffea coloratis.” Chemnitz, 1788: 205.

Translated: The shell is ovate, winged, with a very distinct hump discriminating it among congeners, equipped with seven very long, hooked dactyls or fingers, aperture very smooth and yellowish, interior walls colored in a chestnut-coffee shade.

Additional description. – Shell large for the genus. Spire whorls rather flat, with a strong ridge just above the suture on the earlier whorls; this ridge becomes obsolete on the later spire



whorls, which are therefore nearly flat. First digitation attached to the spire. Digitations relatively slender, straight and sharply pointed.

Types. – There are two syntypes in the Zoological Institute of St. Petersburg, Russian Federation. One syntype is figured in Chemnitz (1788: pl. 155 fig. 1478) and by Martynov (2002: pl. 2 figs C-D). This figured shell is herein selected as lectotype (Pl. 8 figs 1a-b). The second syntype, a not fully adult shell, becomes the paralectotype (Pl. 9 figs 1a-b).

Other material studied. – Sri Lanka: AMD STR2887, 118 mm. India, Tuticorin: dived, 2-5 m, covered with a tick honey-brown periostracum, AMD STR2888, STR2889, STR2890 (Pl. 10 figs 1a-b), STR2891.

Type locality. – Nicobar Islands. Chemnitz, 1788: 206, “Fast vor wenig Jahren hat man diese Gattung gefleckter Krabben, welche einen so ungleich großen Höcker oder Buckel und so lange starkgekrümmte Zacken haben, bei den Stränden der Nicobarischen Eilande entdeckt”. Translated: Just a few years ago, this species of spotted crab, which has such unevenly sized humps or bumps and such long strongly curved spines, was discovered on the beaches of the Nicobar Islands.

Distribution. – India, Sri Lanka (both AMD), Nicobar Islands (Chemnitz, 1788).

Etymology. – *Camelus* refers to the prominent dorsal humps, which resemble those of a camel.

Comparison. – This species is relatively large for the genus. The first spine is attached to the spire, whereas in *L. lambis* from Ambon the first digitation is free from the spire. Ambon specimens of *L. lambis* are small and broad, with a strong spiral cord above the suture that extends along the entire spire and does not become obsolete as it does in *L. camelus*. *Lambis lambis* from Ambon has rather thick, short labral digitations that curve backward, whereas those of *L. camelus* are longer, straighter, more slender and sharply pointed.

Remarks. – The name was validated by J. E. Gray (1826: 490) (Text fig. 3), based on a figure in Chemnitz (1788). Part of Johann Chemnitz’s well-known collection, described in his *Conchylien Cabinet*, was rediscovered in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg (Martynov, 2002). This material includes the shells of *Strombus camelus*, which remain available for study. Although the shells were not examined directly, the two sequences used by Irwin et al. (2024: 8) from the Bay of Bengal (Supplementary Material S2: MH908185, MKH908189) are here attributed to *Lambis camelus*, as this species appears to be the only representative of the *Lambis lambis* complex in those waters.

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Plate 2. *Lambis Lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei, LA 84.7 mm, MNHN-IM-2019-54322.



Plate 3. *Lambis lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei, LA 93.2 mm, AMD STR4631.



Plate 4. *Lambis lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei, LA 118.3 mm, MNHN-IM-2019-54323.



Plate 5. *Lambis lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei. Not fully adult, but with light brown periostracum. LA 102.3 mm, AMD STR4632.



Plate 6. *Lambis lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei. Animals. Fig. 1. MNHN-IM-2019-54322. Fig. 2. AMD STR4631. Fig. 3. MNHN-IM-2019-54323.



Plate 7. *Lambis lambis* (Linnaeus, 1758). Indonesia, Ambon, north side of Baguala Bay, Pantai Sopapei. Animals. Fig. 1a-b. AMD STR4632. Fig. 2a-b. MNHN-IM-2019-54324.



Plate 8. *Lambis camelus* J. E. Gray, 1826. Lectotype herein designated, on the beaches of the Nicobar Islands (Chemnitz, 1788), L. 192 mm, Zoological Institute of St. Peterburg, nr. ZIN No. 12.



Plate 9. *Lambis camelus* J. E. Gray, 1826. Paralectotype, on the beaches of the Nicobar Islands (Chemnitz, 1788), Zoological Institute of St. Peterburg, nr. ZIN No. 11.



Plate 10. *Lambis camelus* J. E. Gray, 1826. India, Tamil Nadu, Tuticorin, dived at 2-5 m, with periostracum, LA 191 mm, AMD STR2890.