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Terebra knudseni sp. n. from North Borneo (Mollusca, Gastropoda, Terebridae)

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Abstract. The status, bionomics and distribution of *Terebra* are briefly summarized. *T. Knudseni* **sp.n**, superficially smilar to *T. babylonica* Lamarck, 1822 and *T. deshayesii* Reeve, 1860, is described from North Borneo.

INTRODUCTION

Though terebrids are one of the most confusing groups among the larger gastropods, little work has been done on them in the last hundred years. There were three comprehensive illustrated reviews or monographs in the preceding century. Hinds (1944) in his monograph of the Genus *Terebra* listed 109 species he considered valid. Reeve (1860) raised the number to 155. Tryon (1889), placing many names in synonymy, reduced the figure to 120 species. That was the last monograph of the Terebridae. With the advent of Scuba diving, the increased ease of reaching hitherto isolated areas, and collecting by dredging and trawling, we now have on record about 250 species of living Terebridae.

Terebridae have slender, many-whorled shells, with species ranging from 6 to 274 mm in length. They have a small aperture, a sturdy, well developed columella which may bear a plication, a short anterior canal, and a siphonal fasciole. The operculum is of a moderately thin chitinous brownish or yellow material and has a terminal nucleus. Some species lack eyes, and it is suggested that they locate food by chemosensory means. Others have eyes on short eye stalks. The sculpture of some species is limited to spiral rows of grooves, cords, nodes, or punctations. Others have only axial sculpture. Most have a combination of the

two, some being cancellate with axial and spiral sculpture of equal value. Some species are completely smooth, and many have variable sculpture. Most have a subsutural band marked by a groove or punctations.

In 1895 Dall said, "This genus is one of the most difficult to handle from the inexhaustible tendency to variation the species exhibit, and which renders it frequently almost impossible to come to any satisfactory conclusion as to the relative rank and permancy of the mutations exhibited."

Terebrids are sand dwellers, with some species being limited to clean coral sand and others preferring a mixture of sand and mud. Some species live on surf-swept beaches, appearing briefly, usually at the turn of the tide, as the wave recedes, then disappearing in the sand. Others live a few mm beneath the sand by day in depths to 330 m., often crawling on the surface of the sand at night. They are carnivorous, with some species having harpoon-shaped radular teeth and a poison gland and radula. Many species are prey-specific, enabling several species to live in the same area without direct competition. Although the radula and poison gland is similar to that of the Conus, there have been no reports of injury or death to humans due to *Terebra* stings.

The sexes are separate with some species mating beneath the sand and others on the surface. The eggs develop into planktonic veligers in the greater number of terebrids, but many species have direct development. Of 204 species checked, 123 have planktonic development, and 81 have direct development.

Terebra thrive in warm tropical waters, the greatest number being found in the central Indo-Pcific area. A few species are found in the cool waters off the coasts of California, New Zealand, the Peruvian province, and Argentina. Their geologic record goes back to the Eocene.

Linnaeus placed all *Terebra* with the Buccinidae. When Bruguière (1789) proposed the genus *Terebra* for this group, it was accepted by most authors, though *Buccinum* was still used by some. In 1798 Röding placed all terebrids in the Epitoniidae, but this placement was not accepted by subsequent authors. Since Mörch proposed the family Terebridae in 1852, there have been 52 genera and subgenera proposed for the family, two of which have been subsequently moved to the Columbellidae upon discovery that they have a columbellid radula.

So great is the varibility within this family that shell characters blend into each other by gradual transition. It appears impossible to devise grouping based on shell characters alone where there is little or no doubt as to which group a species belongs. Under many of the present genera and subgenera proposed, a single specimen can fall in one genus when young and another when mature, or the two ends of variability within a single species fall into two genera.

Much more anatomical work needs to be done, and the animals of many species are not available for study. Unlike many species of mollusks, the shell of the *Terebra* must be cracked and destroyed to obtain the animal for dissection and radular study. Groupings by Miller (1970), separating species according to their anatomy and feeding methods, cut across shell characters and could not be correlated with any single shell feature. A satisfactory generic division must wait until more work is done.

Three species of pinkish-beige to orange-red terebrids inhabit the Indo-Pacific area. This color is uncommon in terebrids. All three species are of approximately the same size, and all have pinkish-orange apertures. One is the common, well known *Terebra babylonia* Lamarck, 1822. One is the rare *T. deshayesii* Reeve, 1860. The third, until now, has remained undescribed.

Family Terebridae Mörch, 1852
Genus ***Terebra*** Bruguiere, 1789

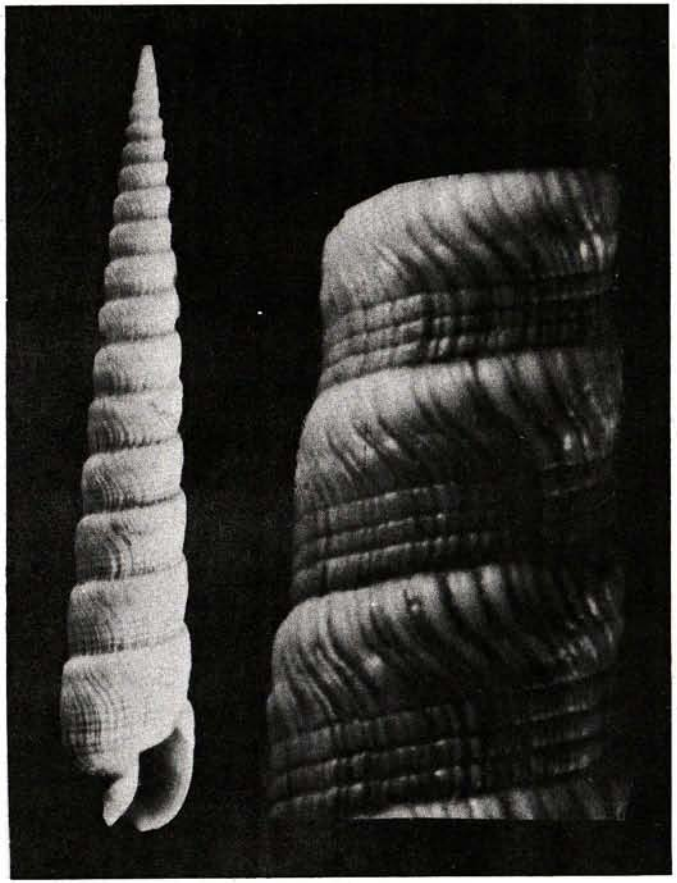

Fig. 1. *Terebra knudseni* sp.n.

Terebra knudseni Bratcher, **sp.n.**

Diagnosis. A moderately large pinkish-beige terebrid with a broad subsutural area, marked with crowded, uneven flexuous axial grooves, that occupies more than half the whorl.

Description. Size moderately large; color, pinkish-beige; outline of whorls concave in early whorls, flat in later ones; protoconch of 1 1/2 mamillate whorls; swollen subsutural band on early whorls of teleoconch with a double row of flat squarish nodes, occupying more than 1/2 the whorl; flat area anterior to band broken into small squares; later whorls with swollen subsutural area unmarked by subsutural groove and sculptured with many crowded, flexuous, unevenly spaced axial grooves, 84 on penultimate whorl; spiral sculpture of 3 unevenly spaced grooves cutting through axial grooves, forming small, flat rectangles; body whorl with axial grooves becoming obsolete anterior to periphery; spiral grooves increasing to 5 posterior to and 2 anterior to periphery; aperture quadrate; columella curved; siphonal fasciole large, striate, with posterior keel.

Dimensions. Holotype 41.4 x 8.1 mm. Paratypes from 50 to 54.5 mm in length.

Type locality. Malawai Island, Kudat District, North Borneo.

Type material. Holotype, Universitetets Zoologiske Museum, Copenhagen. Paratypes, Academy of Natural Sciences of Philadelphia no. 35249 (1); United States Museum of Natural History no. 658631 (1); Bratcher collection (1); Cernohorsky collection (1); Los Angeles County Museum of Natural History no. 1363 (1).

Distribution. North Borneo.

Discussion. The holotype evidently is not quite mature as it lacks a parietal callus which is found on mature shells of this species. There is some variation in color, ranging from yellowish-beige to orange-peach. The apertures of most individuals are orange-pink.

Terebra knudseni should be compared with *T. babylonia* Lamarck, 1822, as both have the same range of color. The sculpture of the early whorls of the teleoconch is similar, but *T. babylonia* has a multiwhorled protoconch while that of *T. knudseni* is mamillate. The axial sculpture of *T. babylonia* is of wide-spaced grooves. *T. deshayesii* Reeve, 1860, could more easily be mistaken for *T. babylonia* than for *T. knudseni,* though all three have similar size, shape, and color and somewhat similar early whorls of the teleoconch. Closer examination of *T. deshayesii* shows the axial lines to be in color only, not grooves. In addition it has three spiral rows of punctations per whorl.

Etymology. This species is named in honor of Dr. Jørgen Knudsen, Curator at the Zoological Museum of the University, Copenhagen.

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