

IDENTITY PROBLEMS:

Synonymy of *Terebra robustum* and *T. lingualis* Questioned

by GEORGE P. CUMMINGS, JR.

In the second edition of Dr. Myra Keen's superb *Sea Shells of Tropical West America* (Stanford University Press, Stanford, California, 1971), *Terebra lingualis* Hinds, 1844 is placed in synonymy with *T. robustum* Hinds, 1844. My personal observations of the shell morphology and local habitat/distribution of the two forms in the Canal Zone fail to support the synonymy.

A comparison of specimens of both forms reveals constant morphological differences regardless of specimen size. The early whorls of both forms are heavily sculptured, and at first glance appear to be very similar if not identical. Examination with a lens, however, shows slight, but constant, differences.

The sculpture of each early whorl of *Terebra robustum* consists of two posterior beaded cords separated by a distinct incised line and — anteriorly — strong, curved, axial ribs which extend from the scalloped incised line separating them from the anterior cord to the anterior suture. The interstices between the ribs are unsculptured and approximately one-and-one-half times as wide as the ribs themselves.

The early sculpture of *Terebra lingualis* consists of a subsutural beaded cord which is separated by an incised line from weak axial ribs extending to the anterior suture. Each rib bears a strong node at its posterior end. These nodes, in sum, create the impression of a second beaded cord; however, clear separation of rib and node is lacking. In addition, examination of uneroded specimens under magnification reveals that the beads, ribs, and interstices are all crossed by fine spiral threads which are absent in *T. robustum*.

The early sculpture typical of *T. robustum* becomes in later whorls totally obsolete. That of *T. lingualis* is, however, replaced by discrete subsutural nodes which persist to the body in almost all specimens. These nodes impart a distinctive tabulate appearance to each whorl. In contrast, *T. robustum* is devoid of macroscopic sculpture in its later whorls.

In *T. lingualis* the sides of each whorl are virtually parallel. As a result its diameter is constant from the subsutural nodes to the anterior suture. The whorls of *T. robustum*, on the other hand, are markedly inflated with the greatest diameter of each whorl occurring near the middle.

Another morphological difference which appears constant in the specimens I have examined is the fine incised line which occurs anterior to the subsutural nodes of *T. lingualis*. It persists on all whorls and produces a slight compression on the outer lip toward the posterior end of the aperture. This line is absent in *T. robustum*.

My experience indicates that any one of the contrasting characteristics described above can be considered to be diagnostic.

The apical angle also reveals what I consider to be a significant and constant difference between the two forms: that of *T. lingualis* varies from ten to twelve degrees while that of *T. robustum* varies from the fourteen to eighteen degrees of a typical specimen to the more than twenty degrees of the form *dumbauldi* Hanna & Hertlein, 1961.

Although admittedly not diagnostic by itself, none of hundreds of specimens of *T. lingualis* I have examined has approached the size of an average *T. robustum*. I have collected or observed the former ranging in size from 25 to 75mm with an average specimen measuring about 60mm. The latter ranges from 25 to 135mm with an average specimen at about 110mm. Throughout the common size range the morphological differences mentioned above remain constant — a strong indication that the *lingualis* form does not develop into the *robustum* form with an increase in size/age. Furthermore, I have never observed transitional forms: regardless of size, every specimen is, in my opinion, quite clearly one or the other.

Given the taxonomically frustrating intra-specific variability of the phylum, perhaps more significant than the morphological differences are the following remarks based on field observations of habitat and distribution made primarily in two collecting stations in the Canal Zone throughout a two-and-one-half-year period.

Station "A" is on the east side of the causeway which forms the eastern bank of the Pacific approach to the Panama Canal. It is an extensive tidal flat grading from coarse sand, pebbles and shell fragments shoreward, through muddy sand, to soft mud and ooze at subdatum levels seaward. Although generally calm, the water is virtually opaque on an ebbing tide due to the large quantity of suspended silt.

The molluscan fauna there, in comparison with that of other stations, is quite sparse and limited in the intertidal zone primarily to *Polinices bifasciatus* (Griffith & Pidgeon), *Nassarius luteostoma* (Broderip & Sowerby), *Conus patricius* Hinds, *T. robustum* Hinds, *T. robustum* form *dumbauldi* Hanna & Hertlein, *T. larcaeformis* Hinds, *T. strigata* Sowerby, and various species of *Mactridae* and *Veneridae*. The *Terebridae* are found exclusively in mud and sandy mud at the lower end of the tidal range. Notably absent during all seasons at this station is *T. lingualis*.

Station "B" lies approximately 3.5 miles southwest of Station "A". It is the eastern side of a sandbar and rocky reef which extends 1.6

miles seaward, linking the mainland with Venado Island when exposed at low tide. Isolated portions, consisting of volcanic rock, are exposed even at high tide. The remainder grades from coarse sand at the higher levels and at the base of the rocks to fine, clean sand at subdatum levels at the seaward end of the reef, and sandy mud toward the shore. The water is calm at all seasons and remains comparatively clear even at low tide.

The molluscan fauna is extremely rich, with almost all endemic gastropod families abundantly represented. The *Terebridae* found, listed in decreasing order of relative abundance, are: *T. lingualis* Hinds, *T. strigata* Sowerby, *T. armillata* Hinds, *T. larcaeformis* Hinds, *T. bridgesi* Dall, *T. robustum* Hinds, and *T. ornata* Gray.

Terebra robustum is infrequently found at this station, and almost exclusively at the shoreward end where sandy mud prevails. *T. lingualis*, on the other hand, is not found close to shore, but in clean sand at the seaward end of the reef. As at Station "A", all the *Terebridae* are most abundant at the lower end of the tidal range.

Based on the almost total absence of *T. lingualis* in the muddy habitat of Station "A" where *T. robustum* is commonly found, and the confinement of *T. robustum* to the muddier areas of Station "B" where *T. lingualis* is not found, I have concluded that the two forms flourish in two distinct and only narrowly overlapping habitats. This conclusion is consistent with observations — admittedly less frequent and less intensive — at other stations both on the mainland and on offshore islands in the Gulf of Panama.

The morphological and environmental factors discussed above have led me to conclude that the placement of *Terebra lingualis* in synonymy with *T. robustum* is perhaps premature, and that further study, preferably anatomical and in the field, is indicated.

Recognizing the limited geographical extent of my observations, I would welcome comments from field collectors elsewhere in the Panamic Province which would tend to confirm or refute my conclusions.

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