

THE GENUS *TRUNCARIA* (GASTROPODA:BUCCINIDAE)
IN THE ESMERALDAS BEDS OF NORTHWESTERN ECUADOR

EMILY H. VOKES
TULANE UNIVERSITY

In collections made in the Early Pliocene Esmeraldas fauna, Onzole Formation, of northwestern Ecuador, there are four examples of a species of the genus *Truncaria* Adams and Reeve, 1850, which previously has been known only from the Recent fauna. Wenz (1941, p. 1194) included in the synonymy of *Truncaria*, the Eocene genus *Coptaxis* Cossmann (1901, p. 226; proposed as a replacement name for *Buccinopsis* Deshayes, 1865, *non* Conrad, 1857) and cited the genus as occurring in the Eocene of Europe with one species in the Recent. There is no more than a familial similarity between these two totally disjunct occurrences and *Truncaria* has not been recognized previously as a fossil.

Initially I thought that these specimens were referable to the Esmeraldas species Olsson named *Metula nephale* (1964, p. 161, pl. 38, fig. 6), but examination of the holotype of that species (USNM 644040) shows it to be a larger, more strongly ornamented shell, lacking the truncated columella of *Truncaria*. It is not as strongly cancellate as most species of *Metula* and may prove to be referable to *Bartschia* Rehder, 1943, when better material is available. In any case, it is not the same as the species described here.

The genus *Truncaria*, which Olsson (1971, p. 62) described as "a curious genus and readily recognizable by the shape of the shell, its smoothish, spirally lined sculpture, and especially by the oblique truncation of its columellar end" was named by Adams and Reeve (1850, p. 33) for the species *Buccinum filiosum* Adams and Reeve, 1850, originally described as being from the "China Sea." However, Olsson, after examining the holotype of *B. filiosum* (Plate 1, fig. 1) in the collections of the British Museum (Natural History) concluded (1971, p. 63) that the locality "China Sea" is incorrect and the species is, in fact, the Panamanian one subsequently named *Cominella brunneocincta* (Plate 1, fig. 2) by Dall (1896, p. 11; figured as *Truncaria brunneocincta*, Dall, 1908, p. 304, pl. 2, fig. 6; holotype figured in color by Abbott and Dance, 1982, p. 170).

The problem of mislocated Adams and Reeve species was discussed in an earlier work by Pilsbry and Olsson (1935, p. 121), wherein the bivalve species *Maetra thracoides* Adams and Reeve, 1850, also described in the *Voyage of the Samarang* (1850, p. 81, pl. 23, fig. 8) from the "Eastern Seas," was demonstrated to be a native of the coast of Peru. The authors suggest that Sir Edward Belcher, who was captain of the *Samarang* during the voyage in 1843-46, had acquired the material on his previous voyage, that of H.M.S. *Sulphur*, which surveyed the coast of western America from Peru to Sitka during the years 1836-1842, just prior to the voyage of the *Samarang*. They note that Captain Belcher was a shell collector himself and often held out some of the best specimens for himself.

In the same paper in which he placed *T. brunneocincta* in the synonymy of *T. filiosa*, Olsson (1971, p. 62) noted that there were fragments of a Caribbean shell "suggestive of *Truncaria*" in the collections of the Rosensteil School of Marine and Atmospheric Sciences, University of Miami. These were subsequently named *Truncaria lindae* by Petuch (1987, p. 103, pl. 21, figs. 16-18), who explained: "I felt it was important that this new species be described, even from fragments [two fragments, one 16 mm, the other 13 mm in length], in order to establish a Caribbean member of the genus and to remove *Truncaria* from the list of paciphilic genera." However, I am not aware of any fossil species of *Truncaria* in the Caribbean fauna, a necessary condition to have a true "paciphile."

The Esmeraldas specimens, although similar to the living Panamanian *T. filiosa*, are sufficiently distinct to merit naming. As noted previously, in a study of the muricid fauna of the Esmeraldas Beds (Vokes, 1988, p. 9), the molluscan fauna of these Early Pliocene beds has its greatest affinity with the Recent fauna of the eastern Pacific. But, also as noted, many of the species present in the Esmeraldas are not found so far south today. The living species has been reported only from the Bay of

Panama (Keen, 1971, p. 572, as *T. brunneocincta*, fig. 1151 [after Dall, 1908, pl. 2, fig. 2]; name changed to *T. filosa*, p. 854; and Olsson, 1971, p. 63).

TRUNCARIA PITTI E. H. Vokes, n. sp.

Plate 1, figure 3

Description: Shell elongate, protoconch probably of one large smooth whorl, usually broken and plugged by animal (three of four specimens in type lot); approximately seven teleoconch whorls in adult. Ornamentation on early teleoconch whorls formed by intersection of spiral and axial grooves, both on the order of 5/mm, giving rise to small raised squares; these losing prominence as shell grows, causing a linen-like texture in adult. On spire whorls about 12 to 15 spiral grooves, on body whorl between 40 and 50 grooves, of varying strength, only approximately alternating between weaker and stronger. Axial grooves decreasing in strength as shell size increases, somewhat "puckered" toward suture, spreading out over periphery of shell. Suture deeply incised, set more anteriorly on each successive whorl, causing increased elongation as shell enlarges. Aperture teardrop-shaped, narrower posteriorly, wider anteriorly. Inner lip smooth, appressed; at anterior end a single columellar plication, almost parallel to axis of shell. Outer lip slightly thickened, faint denticles on inner side, that at posterior end the strongest. Siphonal canal truncated, turned parallel to the apertural opening, in the direction opposing the outer lip. Color pattern of reddish-brown spiral bands, approximately 15 on body whorl, separated by wider non-colored bands.

Holotype: USNM 453854; height 32.1 mm, diameter 13.6 mm.

Type locality: TU 1397, Esmeraldas Beds, Upper Onzole Formation; Quebrada Camarones, cut-bank on east side of canyon, which is at

east edge of village of Camarones, 20 km (by road) east of the bridge over Río Esmeraldas, at Esmeraldas, or approximately 10 km east of the mouth of Río Esmeraldas, Prov. of Esmeraldas, Ecuador.

Discussion: In the four specimens comprising the type lot of this new species, not one has the early whorls well preserved. However, one example does have the protoconch remaining and it appears to be identical to the living *T. filosa*. The ornamentation on the early teleoconch whorls is cancellate, becoming smoother with each successive whorl. The differences between *T. pitti* and *T. filosa* are minimal; the most conspicuous is the color pattern, which is well preserved in all the fossil specimens and must have been much more brilliant than in the Recent species. In *T. filosa* there are fewer spiral grooves (about 20 to 25 on body whorl) and the narrow color bands follow every other spiral groove. In the fossil species the color bands cover the area between two spiral grooves and are separated by three spiral grooves. The Recent species also has a series of colored flamules on the sub-sutural area and a very faint wider colored band around the periphery; the fossil shells give no evidence of having had such markings. Although both species begin life with a cancellate surface ornamentation, the Recent *T. filosa* soon loses most of the axial grooves, leaving the body whorl much smoother and more polished in appearance than the linen-like *T. pitti*.

The type specimen of *Truncaria brunneocincta* was taken at a depth of 102 meters, and Olsson's material was from 77-79

PLATE 1

Figures

1. *Truncaria filosa* (Adams and Reeve, 1850)
BMNH 1878.1.28.13 (holotype); height 28.6 mm, diameter 11.5 mm.
Locality: "China Sea."
2. *Truncaria filosa* (Adams and Reeve, 1850)
USNM 123009 (holotype-*Cominella brunneocincta* Dall, 1896); height 31.5 mm, diameter 13.6 mm.
Locality: U.S. Fish Comm. Station 3390, Gulf of Panama, 56 fms (102 m).
3. *Truncaria pitti* Vokes, n. sp.
USNM 453854 (holotype); height 32.1 mm, diameter 13.6 mm.
Locality: TU 1387, Esmeraldas Beds, Ecuador.
(All illustrations X 1 1/2 except 2e, f, and 3d, e, X 3; figures 2c-e, and 3a, b, d, whitened to show details of ornamentation)

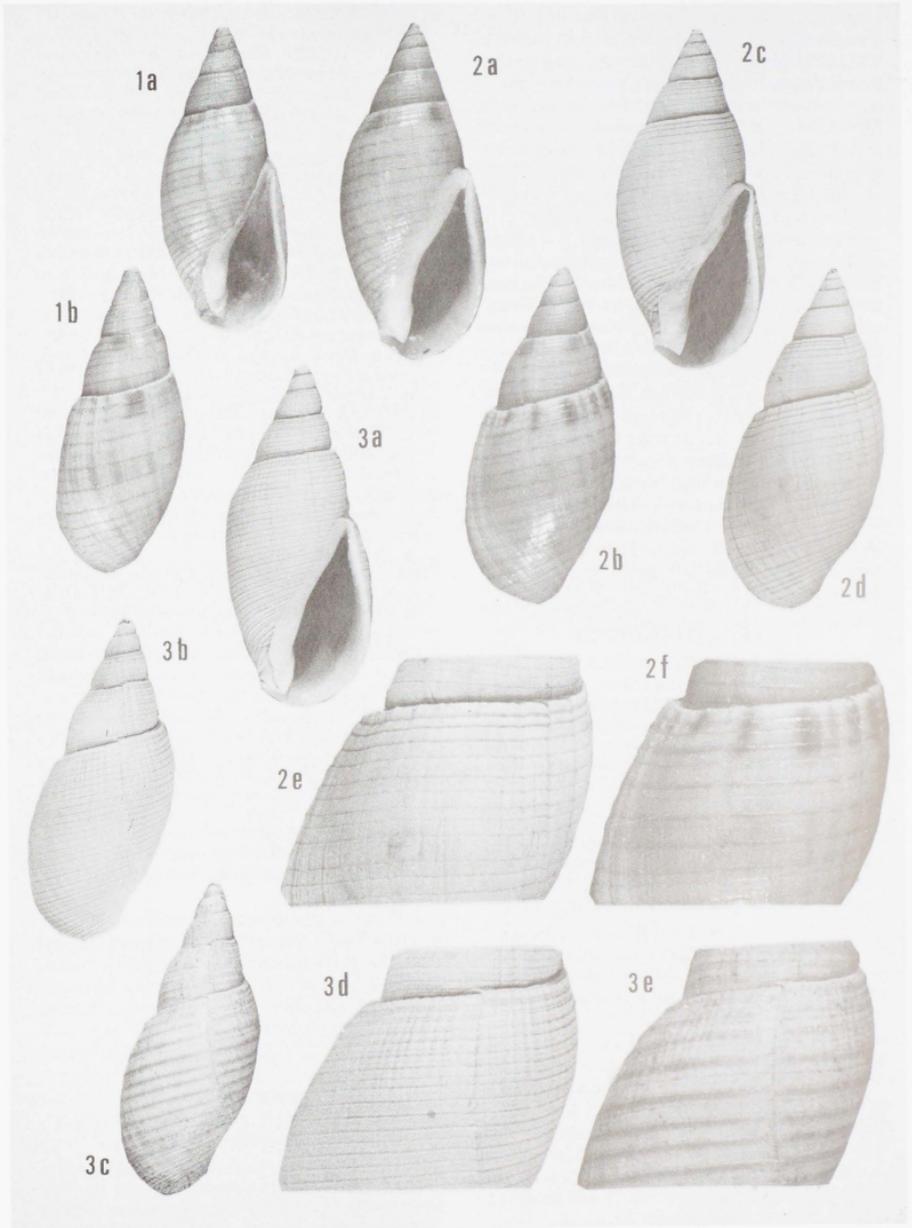


PLATE 1

meters, all from the Bay of Panama. Our Esmeraldas specimens came from locality TU 1397, Quebrada Camarones, and so the living depth of the Recent species corroborates an earlier statement (Vokes, 1988, p. 8), wherein it was noted that the gravity slide, which brought the Esmeraldas fauna into the deep-water (ca. 1000 meters) clays of the Onzole Formation, began in shallower water, on the order of 75 meters.

The species is named for my colleague and co-worker on the Esmeraldas fauna, William D. Pitt, of Sacramento, California, who identified the species as being *Truncaria* sp. aff. *brunneocincta* (Dall). He also provided the type specimen, the best of the four in our combined collection.

I wish to acknowledge my gratitude to Kathie Way, British Museum (Natural History), and M.G. Harasewych, United States National Museum, who loaned the type specimens of *T. filosa* and *T. brunneocincta*, figured here. Thomas R. Waller, also of the United States National Museum, loaned the type of *Metula nephale* Olsson, for comparative purposes. Thanks go to all of them.

LITERATURE CITED

- ABBOTT, R. T., and S. P. DANCE, 1982, Compendium of seashells, a color guide to more than 4,200 of the world's marine shells. E. P. Dutton, Inc., New York, 411 p., 4,200+ unnumbered colored illustrations.
- ADAMS, A., and L. A. REEVE, 1848-1850, Mollusca, in The zoology of the voyage of H.M.S. *Samarang*, under the command of Captain Sir Edward Belcher . . . 1843-1846 (A. Adams, ed.) Reeve, Benham, and Reeve, London, x + 87 p., pls. 1-24 [p. 1-24, pls. 1-9, Nov. 1848; p. 25-44, pls. 10-17, May 1850; p. 45-87, pls. 18-24, Aug. 1850].
- COSSMANN, M., 1901, Essais de Paleontologie comparée, v. 4, p. 1-293, pls. 1-10.
- DALL, W. H., 1986, Diagnoses of new species of mollusks from the west coast of America: U. S. Natl. Mus., Proc., v. 18, no. 1034, p. 7-20.
- DALL, W. H., 1908, Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission steamer "Albatross," during 1891... XXXVII. Reports on the scientific results... XIV. The Mollusca and the Brachiopoda: Harvard Mus. Comp. Zool., Bull., v. 43, no. 6, p. 205-487, pls. 1-22.
- KEEN, A. M., 1971, Sea shells of tropical west America, marine mollusks from Baja California to Peru. Second Edition. Stanford University Press, Stanford, California, xiv + 1064 p., 22 color plates, ca. 4000 figures, 6 maps.
- OLSSON, A. A., 1964, Neogene mollusks from northwestern Ecuador. Paleontological Research Institution, Ithaca, New York, 256 p., 38 pls.
- OLSSON, A. A., 1971, Mollusks from the Gulf of Panama collected by R/V *John Elliott Pillbury*, 1967: Bull. Marine Sci., v. 21, no. 1, p. 35-92, figs. 1-103.
- PETUCH, E. J., 1987, New Caribbean molluscan faunas. Coastal Educ. & Resh. Found. (CERF), Charlottesville, Virginia, 154 + 4 p., 29 pls., 1 text-fig.
- PILSBRY, H. A., and A. A. OLSSON, 1935, New mollusks from the Panamic Province: Nautilus, v. 48, no. 3, p. 116-121, pl. 6.
- REHDER, H. A., 1943, New marine mollusks from the Antillean region: U. S. Natl. Mus., Proc., v. 93, no. 3161, p. 187-203, pls. 19, 20.
- VOKES, E. H., 1988, Muricidae (Mollusca:Gastropoda) of the Esmeraldas beds, northwestern Ecuador: Tulane Stud. Geol. Paleont., v. 21, no. 1, p. 1-50, pls. 1-6, 15 text-figs., 1 table.
- WENZ, W., 1941, Handbuch der Paläozoologie, v. 6, pt. 1 - Gastropoda, lief. 5, p. 959-1200, figs. 2788-3416.