NOTES ON THE FAUNA OF THE CHIPOLA FORMATION–XXXVIII
TWO NEW SPECIES OF THE GENUS *TURBO* (GASTROPODA:TURBINIDAE)

GARY W. SCHMELZ
NAPLES, FLORIDA

According to Hickman and McLean (1990, p. 57), the genus *Turbo* first appears in Upper Cretaceous rocks and reached its highest level of diversity in the Cenozoic. Today, members of this genus thrive in shallow tropical and subtropical marine environments where they have a strong affinity for calcareous substrates (Hickman and McLean, 1990, p. 57).

Examination of Chipola Formation fossils has revealed the presence of two new species of *Turbo*. Both species were found in association with coral reef deposits along the Chipola River and Farley Creek. In addition, two opercula belonging to the genus *Turbo* were found in the Tulane collection. Both appear to belong to the same species, but neither was collected in association with a shell. One was obtained from TU 1048 and the other from TU 555. Both opercula are illustrated in Plate 1 (figures 4 and 5).

Family TURBINIDAE Rafinesque, 1815
Genus TURBO Linnaeus, 1758

Turbo LINNAEUS, 1758, Systema Naturae, ed. 10, p. 761.

Type species: *Turbo petholatus* Linnaeus, 1758, by subsequent designation, Montfort, 1810.

Subgenus HALOPSEPHUS Rehder, 1943

Halopsephus REHDER, 1943, Proc. Biol. Soc. Washington, v. 56, pp. 41-46.

Type species: *Turbo pulcher* Rehder, 1943, by original designation (*T. pulcher* Rehder, 1943, *non T. pulcher* Dillwyn, 1817 = *T. haraldi* Robertson, 1957).

TURBO (HALOPSEPHUS?) CHIPOLANUS Schmelz, n. sp.
Plate 1, figures 1, 2

Description: Shell medium-sized, turbinate in form, imperforate. Protoconch planate, glossy, about two whorls. Postnuclear whorls five; suture distinct. Aperture rounded, columellar portion thickened and slightly reflexed anteriorly. First three teleoconch whorls shouldered, remainder rounded. Faint, beaded spiral cords cover first three teleoconch whorls and adapical end of penultimate whorl. Body whorl and abapical end of penultimate smooth, except for numerous faint oblique growth lines. Well-preserved specimens with rows of dark spots on teleoconch whorls, as well as vertical, wavy, dark and light bands.

Holotype: USNM 484398; height 19.4 mm, maximum diameter 16.4 mm.

Type locality: TU 555, Chipola Formation, east bank of Chipola River, about 1,000 feet above Fourmile Creek (SW 1/4 Sec. 29, T1N, R9W), Calhoun County, Florida.

Paratype: USNM 484399; height 22.6 mm, maximum diameter 19.0 mm; locality TU 555, east bank of Chipola River, about 1,000 feet above Fourmile Creek, Calhoun County, Florida.

Additional unfigured paratypes: Five specimens from TU 555 (Tulane collection) and two specimens from TU 1048 (one from the Tulane collection and one from the Schmelz collection).

Discussion: Turbo chipolanus is the more common of the two new species from the Chipola Formation. This species has no counterpart among fossil forms but is most similar to the rare Recent *Turbo haraldi* Robertson, 1957, which is described and figured by Abbott (1974, p. 58, text-fig. 478). Both *Turbo chipolanus* and *Turbo haraldi* are similar in size, have planate protoconchs, are imperforate and possess smooth body whorls. The major difference between the two species is that *Turbo haraldi* has two carinae on the early postnuclear whorls (*versus* one for *Turbo chipolanus*) with the upper one bearing short, flattened spines. According to Abbott (1974, p. 58) *Turbo haraldi* lives on gravel and sponge bottom in tropical and subtropical waters from the Bahamas to Panama.

Subgenus TAENEATURBO Woodring, 1928

Taeneaturbo WOODRING, 1928, Carnegie Inst. Washington, Publ. 385, p. 408.

Type species: *Turbo canaliculatus* Hermann, 1781, by original designation.

TURBO (TAENEATURBO) PACTILIS Schmelz, n. sp.
Plate 1, figure 3

Description: Shell medium-sized, thin, turbinate in form, imperforate. Protoconch submerged, about two whorls. Postnuclear whorls about five; suture distinct with an adjacent deep

channel at adapical end of penultimate and body whorl. Aperture severely damaged in all specimens, probably oval in shape. Teleoconch whorls rounded, sculptured with numerous, well-developed, beaded spiral costae of approximately equal size. Spiral costae separated by evenly spaced spiral grooves. Beaded pattern caused by oblique growth lines crossing over costae and grooves. Well-preserved fragments with vertical, wavy, dark and light bands extending across whorls.

Holotype: USNM 484400; height 27.0 mm, maximum diameter 23.2 mm.

Type locality: TU 555, Chipola Formation, east bank of Chipola River, about 1,000 feet above Fourmile Creek (SW 1/4 Sec. 29, T1N, R9W), Calhoun County, Florida.

Additional unfigured paratypes: One incomplete specimen from TU 547 (Tulane collection) and three fragments from TU 1048 (Tulane collection).

Discussion: Turbo pactilis is an extremely rare species with only one nearly complete specimen available for examination. Among fossil forms it bears some similarity to *Turbo dominicensis* Gabb, 1873 (p. 242; figured by Pilsbry, 1922, pl. 42, figs. 16, 17), from the Mio-Pliocene Cercado Formation of the Dominican Republic. It differs, however, from this species in that it has a submerged rather than planate protoconch, possesses conspicuous, nearly equal-sized, beaded cords over each teleoconch whorl, lacks the prominent beaded spiral cord just below the suture, and has a deep channel next to the suture on the penultimate and body whorl. Among extant forms *T. pactilis* is most like *Turbo canaliculatus* Hermann, 1781 (figured and described in Abbott, 1974, p. 58, pl. 2, text-fig. 475). However, *T. pactilis* differs from *T. canaliculatus* by the fact that it has a much narrower channel next to the suture and much more prominent beaded spiral cords covering the teleoconch whorls.

ACKNOWLEDGMENTS

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LOCALITY DATA

The following Tulane University localities are all in the Chipola Formation, Calhoun County, Florida:

547. West bank of Chipola River, about 2,000 ft. above Fourmile Creek (SW 1/4 Sec. 29, T1N, R9W).

555. East bank of Chipola River, about 1,000 ft. above Fourmile Creek (SW 1/4 Sec. 29, T1N, R9W).

1048. Farley Creek, south bank, about 0.8 mile east of bridge of Florida Highway 275 (NE 1/4 Sec. 21, T1N, R9W).

LITERATURE CITED

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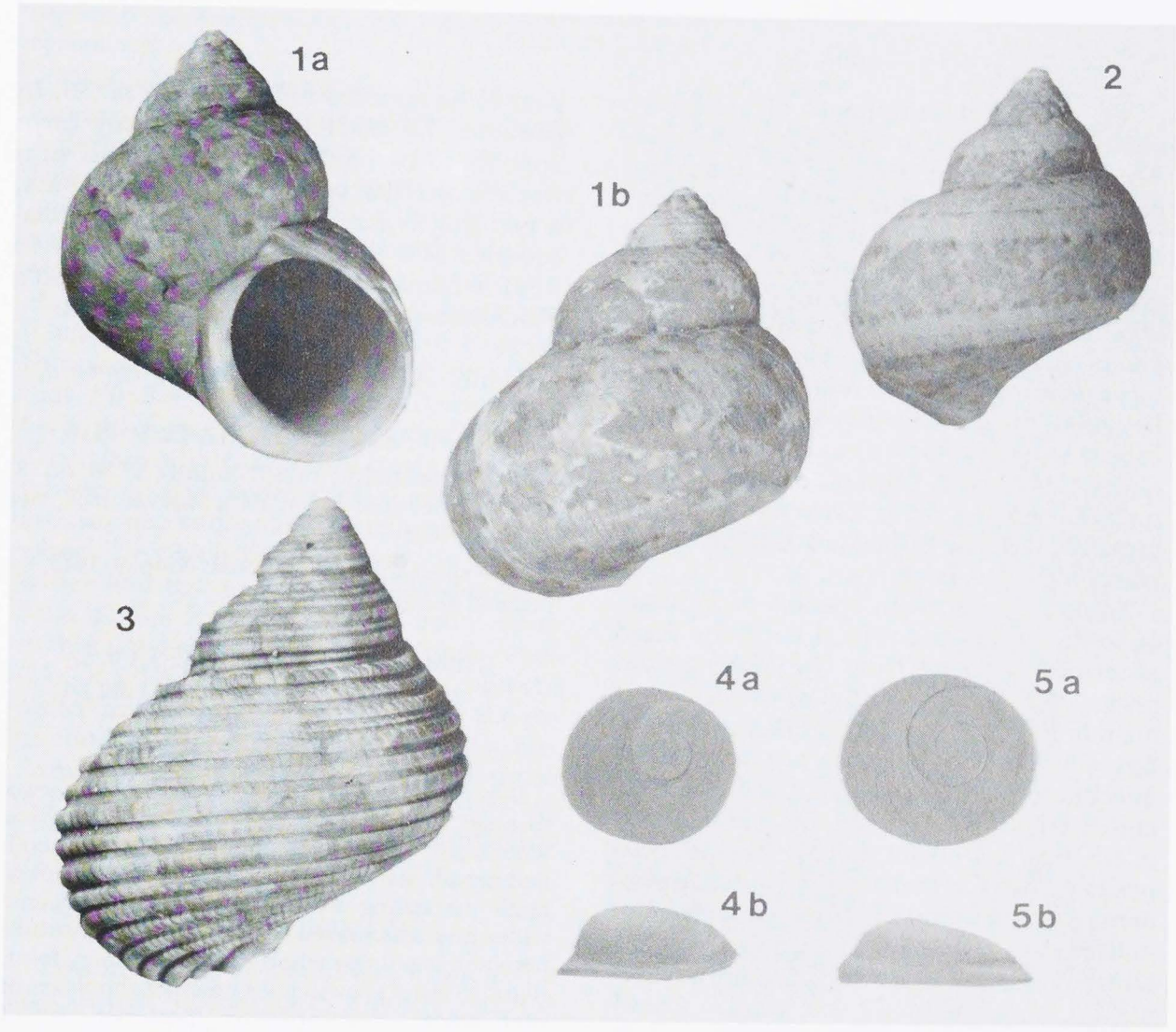

PLATE 1

Figures

1, 2. *Turbo (Halopsephus?) chipolanus* Schmelz, n. sp. (X2)
   1. USNM 484398 (holotype); height 19.4 mm, diameter 16.4 mm.
      Locality: TU 555, Chipola Formation, Florida.
   2. USNM 484399 (paratype); height 22.6 mm, diameter 19.0 mm.
      Locality: TU 555, Chipola Formation, Florida.

3. *Turbo (Taeneaturbo) pactilis* Schmelz, n. sp. (X2)
   USNM 484400 (holotype); height 27.0 mm, diameter 23.2 mm.
   Locality: TU 555, Chipola Formation, Florida.

4, 5. *Turbo* opercula (X2)
   4. USNM 484401; maximum diameter 9.5 mm.
      Locality: TU 555, Chipola Formation, Florida.
   5. USNM 484402: maximum diameter 10.5 mm.
      Locality: TU 1048, Chipola Formation, Florida.