

NOTES ON THE FAUNA OF THE CHIPOLA FORMATION - IV

A NEW SPECIES OF *NERITOPSIS* (MOLLUSCA: GASTROPODA)

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Collections from the Chipola Formation made by the writer and friends at two localities along the Chipola River were found to contain rare specimens of *Neritopsis*, an unusual genus heretofore unknown in the New World. This genus apparently originated in Europe during the Mesozoic Era and attained its maximum development in the Jurassic Period, assuming many forms of ornamentation. Cossmann (1925, p. 89) stated that "formes sillonnées, formes treillissées, formes variqueuses et épineuses, à côtes écartées" all occur at the same time, showing the extreme initial variability of this genus. However, by the end of the Cretaceous Period the sculpture had more or less stabilized to that of granulated spiral cords. In addition to the shells, workers have based taxa on the calcareous, trapezoidal opercula, which also occur in the fossil state.

The advent of the Eocene epoch resulted in a marked decline in the number of *Neritopsis* species. Prior to the Eocene over fifty species had been described but, according to Cossmann, investigation of European Eocene beds have yielded only six species: *N. parisiensis* Deshayes; *N. acutispira* Cossmann; *N. pustulosa* Bellardi; *N. vidali* Doncieux; *N. agassizi* Bayan; and *N. radulaeformis* Oppenheim. Differences in strength of the granulations on the spiral cords, width of interspaces, height of spires, and overall size of adult specimens are the characters used for the separation of these species. There are no recorded Oligocene forms. *N. radulaeformis* Oppenheim from Monte Grumi was originally considered to be of Oligocene age, but the Priabonian beds, formerly considered Oligocene, have been reassigned to the upper Eocene. Another species, described as *Neritopsis lorioli* Cossmann and Lambert, from the Oligocene is actually a *Nerita*. The Miocene forms are *N. moniliformis* Grateloup, *N. subpustulosa* Sacco and perhaps another as yet unnamed species. Some workers feel that these latter species are so similar that the genus is represented in the Miocene by but a single variable species.

The genus has disappeared from the European area since Miocene time and the only known Recent species, *N. radula* (Linné), is uncommon in the Indo-Pacific region. It should be noted that although Cossmann (1925) gave the genotype as *N. radula* (Linné) this is incorrect, as the original description by Grateloup included only the fossil species *N. moniliformis*, making it type by monotypy. The figure of *N. radula* used by Wenz (1938, p. 412, fig. 1001) and copied in the *Treatise on Invertebrate Paleontology* (v. I) is decidedly inaccurate as it does not show the peculiar apertural notch, which is the important distinguishing morphological feature of the genus.

The Recent *Neritopsis* is a coral reef dweller in the tropical Indo-Pacific seas. The type locality of the new species from the Chipola Formation was also at the time a coral reef. However, it cannot be assumed as a scientific fact that the Old World fossil species required a similar habitat. Nevertheless, geological changes in the Old World resulted in migration of the genus to other areas, relocations involving thousands of miles distance and not explainable by the theory of "ocean basin spreading" or other types of continental drift. Perhaps the most reasonable explanation of this problem is that of larval drifting as advanced by Vokes (1965, p. 206). *Neritopsis* being a warm water, shallow dwelling, primitive marine gastropod with larvae capable of remaining pelagic for long periods of time, might have migrated in this manner.

Order ARCHEOGASTROPODA Thiele, 1931

Superfamily NERITACEA Rafinesque, 1815

Family NERITOSIDAE Gray, 1847

Subfamily NERITOPSINAE Gray, 1847

Genus NERITOPSIS Grateloup, 1832

Neritopsis GRATELOUP, 1832, Actes Soc. Linn. Bordeaux, v. 5, p. 129; [1847] Conchyl. Foss. Bassin Adour, Neritines, pl. 1 [pl. 5], figs. 36-38. Type species: *Neritopsis moniliformis* Grateloup, by monotypy, [= *Radula* Gray, 1842; and (based on opercula) *Peltarion* Deslongchamps and

Deslongchamps, 1858; *Cyclidia* and *Scaphandia* Rolle, 1862; *Rhynchidia* Laube, 1868].

NERITOPSIS VOKESORUM

R. C. Hoerle, n.sp.

Text figure 1

Diagnosis: Shell heavy, globose. Nucleus of about one and one-half smooth whorls; three and one-half rapidly enlarging post-nuclear whorls in adult. Seventeen to nineteen finely beaded, narrow, spiral cords cover the entire shell, commencing immediately with the first post-nuclear whorl. Wide interspaces between spiral ribs, ornamented by scabrous incrementals. Aperture circular; outer lip sharp, crenulated by spiral ribs, thickened interiorly and with numerous short lirations. Inner lip heavily calloused with an elongated excavation in central area. Slight suggestion of an umbilicus.

Dimensions of holotype: height 14.0 mm, diameter 12.8 mm.

Holotype: USNM 646934.

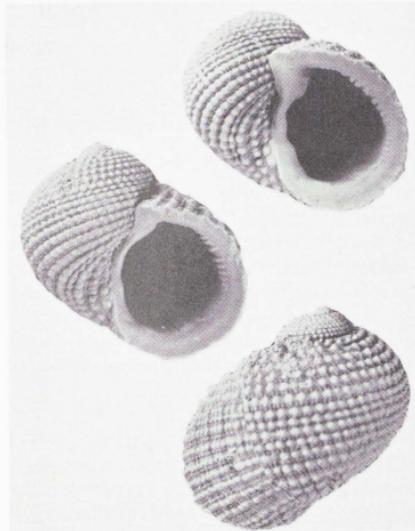
Type locality: TU 555, east bank of Chipola River, about 1000 feet above Four Mile Creek (SW ¼ Sec. 29, T1N, R9W), Calhoun County, Florida.

Occurrence: Chipola Formation, Florida; late lower Miocene.

Figured specimen: USNM 646934 (holotype). Other occurrence: TU locality no. 547.

Discussion: *Neritopsis vokesorum* shows a greater affinity to *N. moniliformis* Grateloup than to the Recent species *N. radula* (Linné). The resemblance of *N. moniliformis* to *N. radula* has led numerous authors in the past to synonymize the two species but other authors have disagreed. Recently Seiber (1958, p. 128) referred the Tortonian form to *N. radula* but Glibert (1962, p. 96) stated that a clear separation of the two species was evident, basing his conclusion on the wider interspaces between the beaded spiral cords on the fossil species. The writer concurs with Glibert's observation.

The first representative of the genus *Neritopsis* in the New World, although closely related to the Old World fossil species, is distinguished from *N. moniliformis* by the beading being more closely set on the spiral cords and by the slight umbilicus. Several criteria distinguish *N. vokesorum* from *N. radula*. Specimens of *N. vokesorum* have consistently higher spires. The more finely beaded spiral cords are narrower, with this ornamentation commencing on the first post-nuclear whorl, as opposed to the smooth spiral cords on the corresponding whorl of *N. radula*. Also, the interspaces are wider on *N.*



Text figure 1. *Neritopsis vokesorum* R. C. Hoerle, n. sp. USNM 646934 (holotype), X 2½.

vokesorum than on the Recent species and the former shows a tendency to form an umbilicus resulting in decreased callus in the parietal area.

This species is named for Drs. Harold E. and Emily H. Vokes of the Department of Geology, Tulane University, to whom the writer is indebted for their constant encouragement, patience and understanding. Without their valuable assistance this contribution would not have been possible.

LITERATURE CITED

- COSSMANN, A. E. M., 1925, *Essais de paléozoologie comparée*, v. 13, 345 p., 11 pls.
 GLIBERT, MAXIME, 1962, *Les Archæogastropoda fossiles du Cénozoïque Étranger: Mém. Inst. Roy. Sci. Nat. Belg.*, (Ser. 2), fasc. 68, p. 1-131.
 SEIBER, R., 1958, *Systematische Übersicht der jungtertiären Gastropoden des Wiener Beckens: Ann. Naturh. Mus. Wien*, v. 62, p. 123-192.
 VOKES, E. H., 1965, *Note on the age of the Chipola Formation (Miocene) of northwestern Florida: Tulane Stud. Geol.*, v. 3, no. 4, p. 205-208.
 WENZ, W., 1938, *Handbuch der Paläozoologie*, v. 6: *Gastropoda. Part 1—Prosobranchia*, Teil 1, lief. 2, p. 241-480, figs. 472-1235.