NOTES ON THE FAUNA OF THE CHIPOLA FORMATION – XX
A SECOND SPECIES OF *PETRICOLA (PETRICOXENICA)* (MOLLUSCA: BIVALVIA)

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While the writer's recent (Vokes, 1976) description of the new petricolid subgenus *Petricola (Petricoxenica)* and its Pliocene type species, *P. (P.) concoralla,* was in press, a collecting trip was made to the type area of the Chipola Formation in Calhoun County, Florida. At that time a large head of a poritid coral was secured that contained numerous boring and nestling bivalve species, one of which proved to be a second species of *Petricoxenica.* This find prompted a careful examination of the extensive Tulane Chipola collections and four more valves were found, representing three additional localities. This new species, from strata of late lower Miocene (Burdigalian) age, is here described. On the basis of the evidence that it affords, together with additional information obtained from specimens of the subgenotype species found at a second locality (TU 1177) approximately six miles west of the original site, opportunity is taken to modify somewhat the original subgeneric diagnosis. Mr. and Mrs. Hoerle, West Palm Beach, Florida, collected several pairs of *P. (P.) concoralla* from crevices in a porous coralline lime-rock, thus confirming the nestling habit of that species.

Family PETRICOLIDAE Deshayes, 1839
Genus PETRICOLA Lamarck, 1801

Type species, by subsequent designation (Schmidt, 1818): *Petricola costata* Lamarck = *Venus lapicida* Gmelin. Pliocene to Recent, South Carolina to Texas, the Antilles and Caribbean regions.

Subgenus PETRICOXENICA H. E. Vokes

Petricoxenica VOKES, Tulane Stud. Geol. Paleont., vol. 12, no. 1, p. 47.

Type species: *Petricola (Petricoxenica) concoralla* H. E. Vokes,* Pliocene, Caloosahatchee Formation (?), Florida.

*The formal designation of the type species of the subgenus as *Petricolaria [sic] (Petricoxenica) concoralla* was an obvious and regrettable *lapsus* on the part of the writer.

The present species suggests that the heavily pustulate ornamentation is a significant subgeneric character but that the nodes, which appear subsequent to the development of the pustules, are probably of lesser importance than was originally believed. In the Chipola specimens nodes appear to be present only in the latest (gerontic ?) stages of growth.

It is also to be noted that *P. concoralla* attains a size considerably larger than that of the holotype specimen. One pair of valves from TU 1177 has a length of 52.3 mm, height 32.4 mm, and a diameter of 23.0 mm, being 60% greater in length and 77% greater in height. In this specimen, as well as in the four known left valves of the Chipola species, the median left cardinal tooth, which is bifid in the smaller holotype specimen, is entire through broadened and with a median groove on its dorsal surface.

PETRICOLA (PETRICOXENICA) HOERLEAE H. E. Vokes, n. sp.

Text figures 1-3

Diagnosis: Shell elongate-ovate, moderately inflated; umbones low, not prominent, situated at the anterior fourth of the length of the valve; anterior margin rounded, ventral margin broadly and regularly arched and rounding sharply, almost subangulately, to the gently convex posterior end; dorsal margin straight, slightly ascending. A low, relatively inconspicuous groove extending from the posterior side of the umbone to the middle of the posterior end of the valve. Surface ornamented by well-developed pustulation over the entire area except the immediate umbonal region, which is smooth, although one immature example suggests that area was originally also pustulose with the pustules being lost as a result of subsequent abrasion. At about mid-growth the valves are marked by strong concentric growth lamellations, which in the later stages toward the valve margins tend to develop an irregularly nodose outer surface; in the paratype right valve these pustulations becoming elongated toward the postero-ventral edge in a manner suggestive of irregular radial ribbing.

Hinge and interior typical of the subgenus.

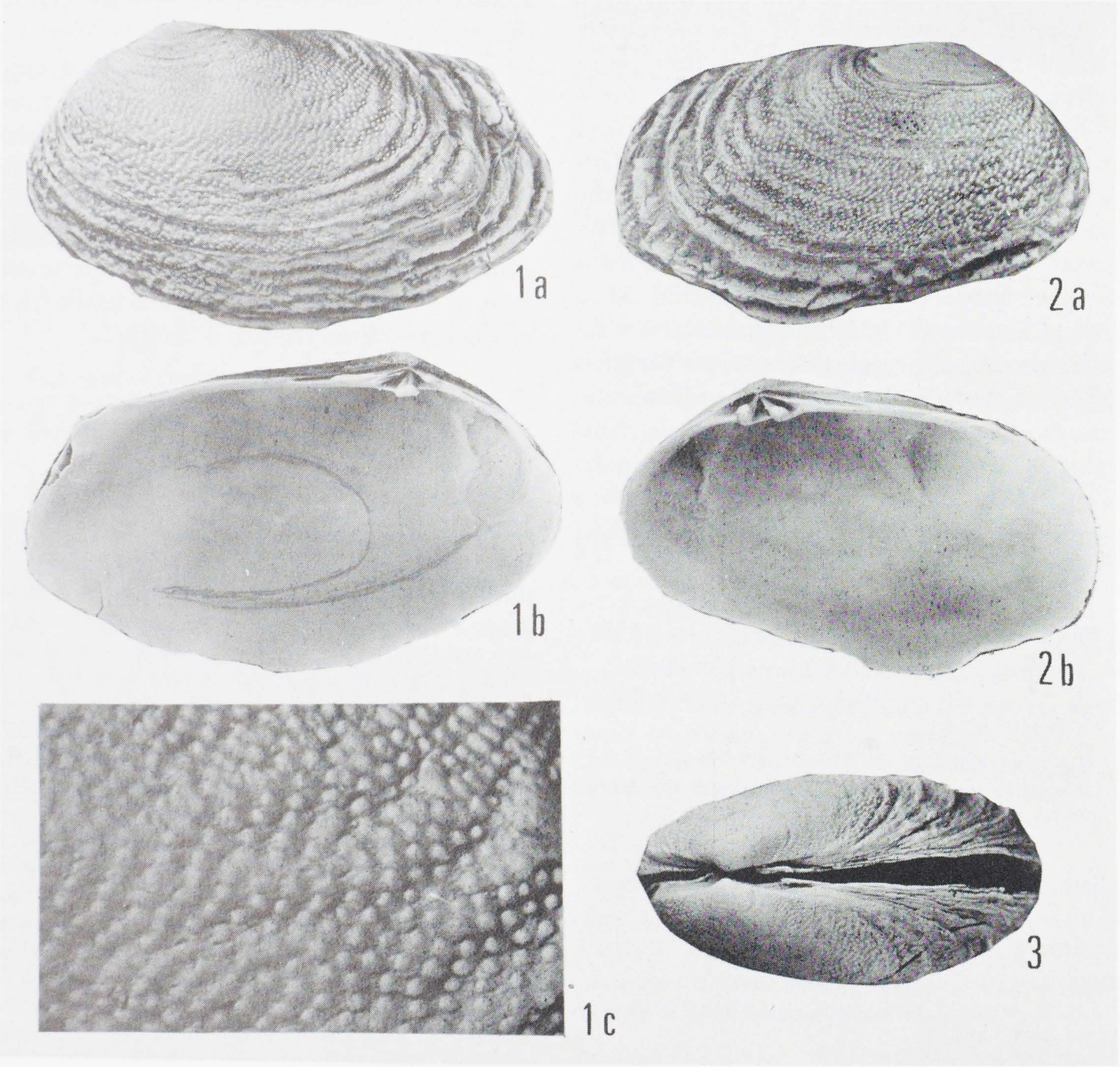
Holotype: USNM 647713; length 41.0 mm, height 24.2 mm, diameter (left valve) 7.9 mm. Locality: TU 548.

Paratype A: USNM 647714; length 36.0 mm, height 20.5 mm, diameter (right valve) 7.0 mm. Locality: TU 459.

Paratype B: USNM 647715; length 31.3 mm, height 15.5 mm, diameter (paired valves) 15.6 mm. Locality: TU 1196.

Remarks: Petricola (Petricoxenica) hoerleae, n. sp., differs most noticeably from *P. (P.) concoralla* Vokes, type of the subgenus, in the absence of the strongly nodose ornament that marks almost the entire surface of the valves in that species; other characters are essentially identical.

The specific epithet for the Pliocene species, *concoralla,* was applied because it was collected from a coral-rich faunal association in a spoil bank pile dredged from a drainage canal. The type lot was not found in an association such as to demonstrate beyond doubt that it was a nestling species, as are so many of the forms assigned to the genus *Petricola.* However, as noted above, subsequent specimens have confirmed that it was a nestler. The small, rather worn, paired valves of Paratype 647715 were found in place in a bored hole in a coral head, thus establishing beyond question the nestling habit for both presently known species of *Petricoxenica.*



Text figure 1, USNM 647713, holotype; a) exterior left valve; b) interior left valve; c) portion of exterior ornamentation, greatly enlarged. Text figure 2, USNM 647714, paratype A; a) exterior right valve; b) interior right valve. Text figure 3, USNM 647715, paratype B; dorsal view, paired valves. (All specimens except 1c magnified X 1½)

It gives me much pleasure to dedicate the present species to Mrs. Robert C. Hoerle of West Palm Beach, Florida, who sent the specimens upon which the present subgenus is based.

LOCALITY DATA

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

459. Steep bank on east side of Chipola River about 1500 feet above the mouth of Taylor Lake Branch (NW ¼ Sec. 29, T1N, R9W).

548. West bank of Chipola River at bend about 1800 feet south of mouth of Farley Creek (NW ¼ Sec. 29, T1N, R9W).

825. Farley Creek at abandoned mill about ¼ mile west of bridge at Florida Highway 275 (SW ¼ Sec. 21, T1N, R9W).

1196. North bank of Farley Creek about 0.8 mile (map distance) east of bridge of Florida Highway 275 (NE ¼ Sec. 29, T1N, R9W).

1177. Caloosahatchee Fm., Mule Pen Quarry, north of Florida Highway 846 and 9.1 miles east of U.S. Highway 41 at Naples Park (SE ¼ Sec. 24, T48S, R26E), Collier County, Florida.

LITERATURE CITED

VOKES, H. E., 1976, A new subgenus and species of *Petricola* (Mollusca:Bivalvia) from the Pliocene of southern Florida: Tulane Stud. Geol. Paleont., vol. 12, no. 1, p. 47-48, text fig. 1.

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REVIEW

THE STUDY OF TRACE FOSSILS, A Synthesis of Principles, Problems, and Procedures in Ichnology, edited by Robert W. Frey. Published by Springer-Verlag, New York, Heidelberg, and Berlin, 1975, xiv + 562 pp., illus., 8 pp. errata, $57.80

In this work, a comprehensive view of Ichnology is presented in a well organized and coherent textbook approach to this highly significant subdiscipline of paleontology. Each chapter is written by one or more contributors selected for their expertise in the subject and has been reviewed by two or more competent critics. Unlike so many multiple author works, however, each chapter has been extensively edited by Mr. Frey to establish a more-or-less uniform literary style throughout and to insert cross-references to other portions of the text, thus rendering it much more comprehensible.

Part I – Introduction to Ichnology, includes five chapters beginning with the history of Invertebrate Ichnology and its scope and definition. Other portions treat the classification and preservation of trace fossils, and the last deals with false or misleading traces. In Part II, the Geological Significance of Trace Fossils, including the paleontological, stratigraphical, sedimentological, paleoecological and environmental significance of ichnofossils, is considered.

The chapters in Part III – Selected Groups of Trace Fossils include, plant trace fossils, borings as trace fossils and the processes of marine bioerosion, boring microorganisms and microborings in carbonate substrates, traces of predation, vertebrate fossil traces and impressions, vetebrate burrows, unusually large burrows, trace fossils in carbonate rocks, and trace fossils at omission surfaces. In Part IV – Recent Aquatic Lebensspuren, the recent as a potential key to the past is considered, including recent lebensspuren in nonmarine aquatic environments, recent biocoenoses and ichnocoenoses in shallow-water marine environments, and animal traces on the deep sea floor. In Part V – Techniques in the Study of Lebensspuren, the main emphasis is upon methodology, its experimental approaches and the techniques utilized in study of fossil and recent traces.

This volume is very well designed and handsomely illustrated. Only the rather high price of the book will prevent its being widely used as a supplementary text in paleontology curricula. It is a highly useful reference volume in a subject which is becoming increasingly important in paleontological study.

—H.C.S.