

A NEW PLICATULID BIVALVE FROM THE LATE
CENOZOIC OF SOUTHERN FLORIDA

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ABSTRACT

A new fossil plicatulid, *Plicatula hunterae*, is described, figured, and illustrated. This new species is erected on the foundations of five taxonomic characters, length, width, thickness, length/width/thickness ratios, and plication counts, measured from a suite of 61 specimens.

southern Florida was probably an undescribed species. This new species was among a large collection of fossils donated to the Florida State Museum by Coastal Petroleum Company, Inc. Additional specimens of the undescribed species of *Plicatula* have been collected by the senior author and by H. K. Brooks and his students from the University of Florida.

INTRODUCTION

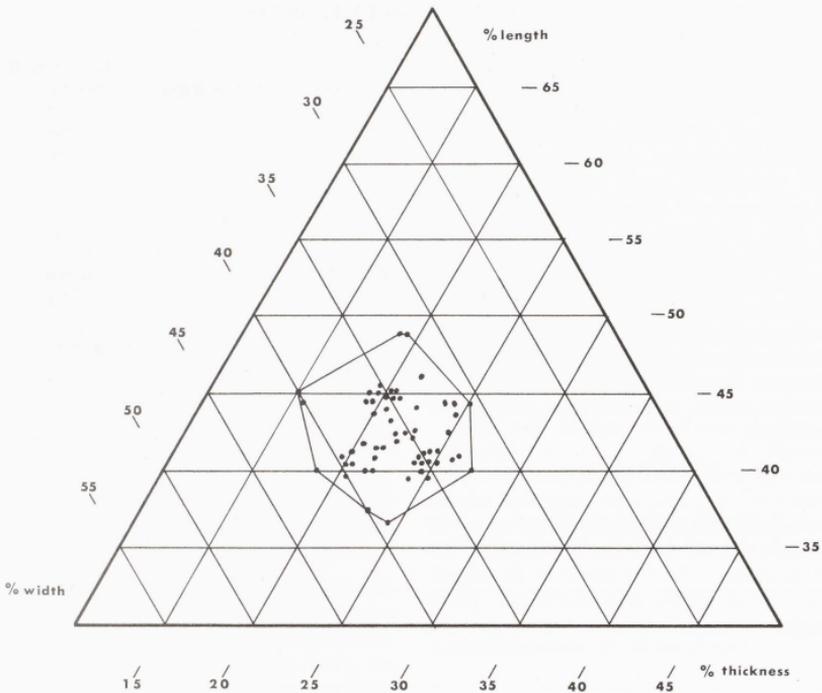
M. E. Hunter pointed out to us that a large *Plicatula* she and J. E. Banks collected from

There is a difference of opinion as to the stratigraphic placement and geologic age of the collecting horizons. The particular zones in which the undescribed species of *Plicatula*

TABLE 1: Summary of measurements taken from 61 specimens of *Plicatula hunterae* n. sp. from the Late Cenozoic of southern Florida.

	Length*	Width*	Thickness*	Total*	%L	%W	%T	RIBS R L
Total	3005.9	2541.7	1529.8	7078.4	2590.98	2191.00	1316.99	1216 1195
Mean	49.3	41.7	25.1	116.0	42.48	35.92	21.59	20 20
Median	50.3	42.7	25.5	---	42.00	36.00	21.00	19 20
Mode	bi- modal	bi- modal	bi- modal	—	42.00	36.00	21.00	19 20
Variance	0.525	0.399	0.254	2.829	4.920	5.676	5.545	15.928 17.412
Standard deviation	0.724	0.631	0.504	1.682	2.218	2.382	2.354	3.991 4.172
Standard error	0.092	0.080	0.064	0.215	0.284	0.305	0.301	0.511 0.534
Range	21.8- 60.4	23.6- 57.2	14.2- 39.5	78.0- 144.1	37- 48	31- 42	15- 13- 27 28	12- 27

*Length, width, and thickness measurements are in millimeters.



Text figure 1. Length, width, and thickness triangular graph showing per cent of each value for 61 specimens of *Plicatula hunterae* n. sp.

is found at both localities are recognized as Pleistocene Caloosahatchee Formation by H. K. Brooks (personal communication) and Pliocene Pinecrest Beds by M. E. Hunter (personal communication). Thus, we refrain from making an exact stratigraphic placement and age determination.

This difference of opinion as to the exact age of many of the upper Cenozoic formations in the southern part of peninsular Florida has become a common occurrence.

For at least the past ten million years, the rate of deposition of sediments in this region has been exceedingly slow (G.M. Griffin, Jr., personal communication). It would take a minimum of reworking, channel filling, sinkhole filling, and like processes to thoroughly mix together, in the same beds, fossils of Pliocene and Pleistocene age. Even the most detailed stratigraphic sections may not solve the problem of age determination of some of the beds in this region.

PLATE 1

Plicatula hunterae Shaak and Nicol, n. sp.

Figures

- 1—2. Holotype FSM 3655, length 59.7 mm, width 52.0 mm. Fig. 1, left valve exterior; Fig. 2, right valve exterior.
3—6. Paratype FSM 3656, length 55.4 mm, width 43.1 mm. Fig. 3, left valve exterior; Fig. 4, right valve exterior; Fig. 5, left valve interior; Fig. 6, right valve interior.

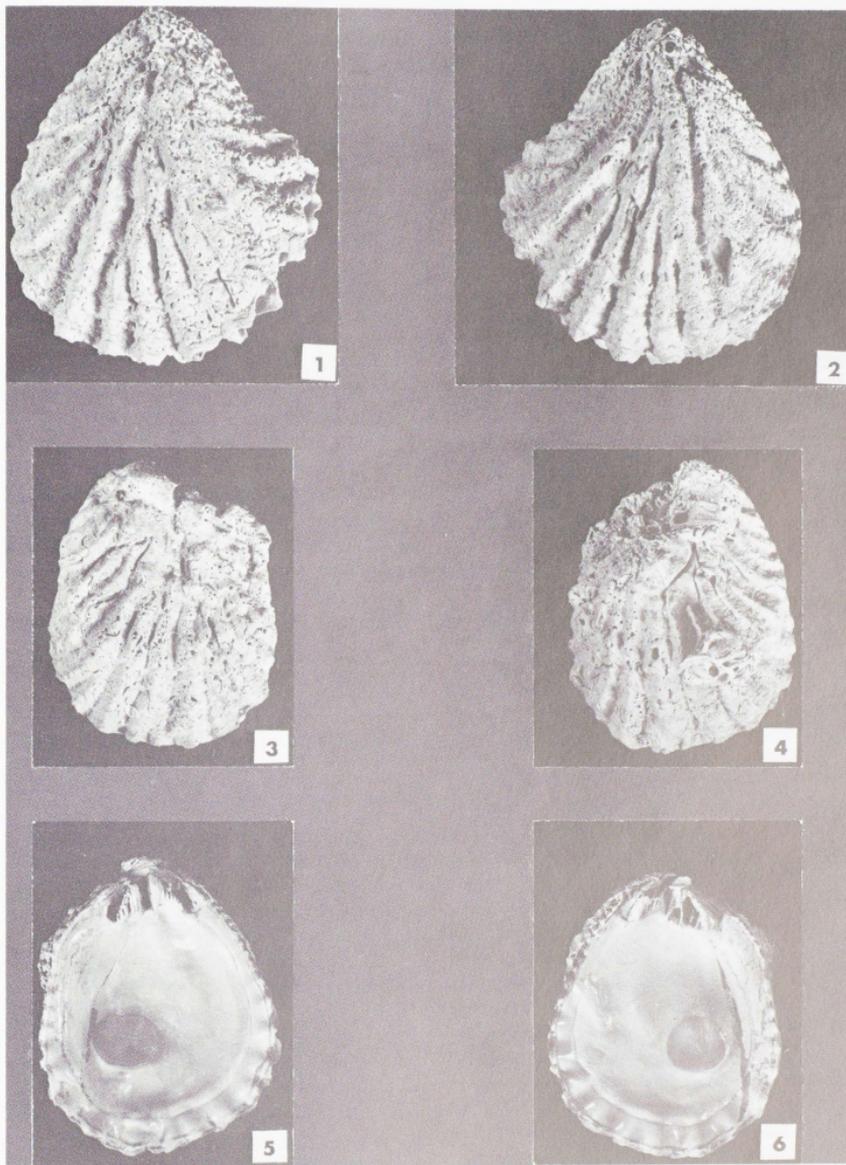


PLATE 1

SYSTEMATIC PALEONTOLOGY

Family PLICATULIDAE Watson, 1930

Genus PLICATULA Lamarck, 1801

Type species: *Spondylus plicatus* Liné, 1758; subsequent designation Schmidt, 1818 (according to Cox and Hertlein, 1969, p. N377). Recent.

PLICATULA HUNTERAE

Shaak and Nicol, n. sp.

Plate 1, figures 1-6

External features: Shells subtrigonal to irregular, subequally biconvex, compressed, inequivalved; averaging 49.3 mm in length, averaging 41.7 mm in width, averaging 25.1 mm in thickness (Table 1), length, width, and thickness ratios averaging 42, 36, and 22 per cent, respectively (Table 1, Text-figure 1); right valve larger and more convex; attachment scar on right valve generally near umbonal area; coarsely costate in a radial manner, changing to plicate near commissure, costae and plicae commonly bifurcating near commissure; both valves averaging 20 plicae intersecting commissure (Table 1); infrequent semitubular spines extending from plicae; prominent imbricating growth lamellae; several shells showing residual traces of color pattern.

Internal features: Cardinal area restricted; isodont crura, straight, diverging away from cardinal area, crenulated; resilium elongate triangular, deeply incised; monomyarian musculature, adductor scar posterior of midline; pallial line integripalliate, closely paralleling commissure.

Comparisons: There is only one species of *Plicatula* that resembles *P.hunterae*. Hertlein and Strong (1946, pp. 63-64) call this similar species *P.spondyloopsis* Rochebrune, and it ranges from Pliocene to Recent in the Panamic Province. This species is well figured by Hertlein and Strong (pl. 1, figs. 15-16). Durham (1950, pl. 15, fig. 2) also figures this species as *P.spondyloopsis*. However, Keen (1971, figs. 209, p. 95) figures Rochebrune's type specimen of *P. spondyloopsis*, which is very different from the Hertlein & Strong and the Durham figured specimens of *P. spondyloopsis*. Keen's figures are that of a round and flat *Plicatula* with many fine radial ribs. There is a probable undescribed species from the southern Florida Plio-Pleistocene that is similar to Keen's figures of *P. spondyloopsis*. Unfortunately, we have only three valves of this species. Rochebrune's original description of *P. spondyloopsis* (1895, p. 242) consists of a brief Latin diagnosis, and he does not figure the species. The measurements Rochebrune gives would most certainly fit Keen's figured specimen, but not those figured by Hertlein and Strong nor by Durham.

Keen (1971, p. 94) claims that *Plicatula spondyloopsis* of Hertlein and Strong and of Durham is actually *P. inezana* Durham 1950. Durham's figures of *P. inezana* (pl. 13, figs. 1,3,6) do not appear to be the same species as the figures of *P. spondyloopsis* given by Hertlein and Strong and by Durham. *P. inezana* seems to be a smaller-sized species, and the much more inflated right valve is unlike our specimens of *P. hunterae*. Specimens of *P. hunterae* resemble the upper two figures of species 207, page 95, of *P. inezana* by Keen but not the lower two figures of species 207, which are copies of two of the three figures of *P. inezana* figured by Durham in 1950. Whatever the proper name of the large Panamic species of *Plicatula* it differs from *P. hunterae* mainly in having more rounded and flatter radial ribs and a much more trigonal outline than almost all specimens of *P. hunterae*. *P. hunterae* is two or three times larger than almost all of the extant and extinct species of *Plicatula* that we have seen.

This species is named for Muriel E. Hunter.

Type specimens: Holotype FSM 3655 (figured); five paratypes USNM 647305; five paratypes PRI 29589-93; paratype FSM 3656 (figured), FSM 3751 balance of paratypic suite (USNM=United States National Museum; PRI=Paleontological Research Institution; FSM=Florida State Museum).

Localities: Warren Brothers Marl Pit, east of Sarasota, in Sec. 13, T36S, R18E, Sarasota County, Florida (type locality); spoilbank, at junction of levee 29, section one, and level 28, section five, ½ mile north of 40 Mile Bend, west of Miami on route 41, in sec. 16, T54S, R35E, Dade County, Florida.

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