

Systematics and Distribution of Western Atlantic *Ervilia*

(Pelecypoda : Mesodesmatidae)

with Notes on Living *Ervilia subcancellata*

BY

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(3 Plates; 2 Text figures)

INTRODUCTION

THE TYPE SPECIES of the bivalve mollusk *Ervilia* Turton is *Mya nitens* Montagu, 1808 by monotypy. The genus occurs in tropical and temperate waters, with fossil forms known from the Tertiary.

As part of this study I examined all *Ervilia* material in the Museum of Comparative Zoology (MCZ), Cambridge, Massachusetts; U. S. National Museum (USNM), Washington, D. C.; and the Academy of Natural Sciences of Philadelphia (ANSP). Diagnostic criteria were established for the genus and for western Atlantic species, and all unlabeled and erroneously identified material was re-identified according to these criteria. Type specimens of *E. concentrica*, *E. maculosa* and *E. rostratula* were studied.

During the summer of 1966 I collected living specimens of *Ervilia subcancellata* at the Bermuda Biological Station, which provided the first opportunity to study live material of this species.

anterior to the midpoint. The umbo is not pronounced, and the valves are somewhat laterally compressed. The exterior is sculptured with equally prominent concentric ridges. The right valve has a prominent cardinal and chondrophore pit; the left valve has 2 small projections (not true cardinals) bracing the chondrophore. There are no lateral teeth, but the left valve has a groove on its dorsal margin which receives the corresponding marginal ridge of the right valve.

The posterior and anterior muscle scars are about equal. The pallial sinus is deep, extending almost beneath the umbo. Along the posterior ventral margin, the lower edge of the sinus and the pallial line combine to bend sharply outward before terminating near the ventral margin of the valve. This sudden outward sweep of the pallial sinus margin is an important diagnostic feature of the genus (DAVIS, 1967).

SYSTEMATICS

Generic Features: The shell is small, usually inequilateral, and rather fragile, seldom exceeding 12 mm in length. The posterior of the shell is often extended, placing the umbo

KEY TO WESTERN ATLANTIC SPECIES OF *Ervilia*

- 1 Posterior part of shell significantly rostrate (extended); radiating striae especially prominent on rostrate portion but often present over entire shell *E. subcancellata*
- Posterior part of shell not significantly rostrate; radiating striae restricted to posterior portion or absent 2
- 2 Concentric ridges especially prominent; radiating striae very much reduced or absent *E. concentrica*
- Concentric ridges reduced; radiating striae present but confined to posterior part of shell *E. nitens*

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² This study was supported in part by a Grant-in-aid of Research from the Society of the Sigma Xi.

Ervilia nitens (Montagu, 1808)

(Figure 1)

Mya nitens Montagu, 1808. Supplement to Testacea Britannica. p. 165 (Scottish Coast).

Ervilia nitens. Turton, 1822. Conchylia Dithyra Insularum Britannicarum. p. 55; plt. 19, fig. 4 (on the Scottish Coast).

It is likely that the type material was adventitious, perhaps originally carried there in ballast. FORBES & HANLEY (1853) commented on the matter as follows:

"A West Indian shell [referring to *Ervilia nitens* as being spurious], introduced by Montagu as taken near Dunbar by Mr. Laskey. It is not unimportant to remark, as accounting in some measure for the very considerable number of exotic shells introduced from the neighbourhood of Dunbar by Mr. Laskey, that several vessels from foreign ports had, just before that gentleman's investigation, visited his subsequent dredging-ground, and their ballast was in all probability the fertile source of most of his additions to British Conchology, as it has in like manner added not a few spurious species to the Flora of the neighbouring district."

There are no later records of *Ervilia nitens* being taken in the waters of Great Britain, or indeed of the Eastern Atlantic. It is, therefore, strongly suggested that the Forbes and Hanley interpretation is correct. THIELE (1935) makes reference to "*E. nitens* (Laskey)," apparently referring to Mr. Laskey mentioned in the Forbes and Han-

ley discussion. Apparently, Mr. Laskey did the collecting, but Montagu did the diagnostic and descriptive work as well as authoring the resulting publication. As a result, Laskey has no taxonomic importance.

The genus is represented by a different species, *Ervilia castanea* Montagu, 1803 in the Eastern Atlantic. Its range extends from the south coast of England (Cornwall, Scilly Isles) to Brittany, Portugal, the Azores and Madeira. Possibly, erroneously identified specimens of *E. castanea* have led in the past to claims that *E. nitens* occurred on both sides of the Atlantic. There is no existing justification for this assumption, and unquestionably the distributional range of *E. nitens* is confined to the tropical and subtropical waters of the western Atlantic.

Diagnosis: Fairly large (frequently about 12 mm long), valves inequilateral and somewhat elongate but non-rostrate. Shells usually glossy white with occasional tints of pink concentrated in the umbo. Radiating striae often reduced and usually confined to the dorso-posterior part of the valve.

Distribution:³ FLORIDA (U. S. A.): Boynton (ANSP, USNM); Miami (USNM); Fowey Light (USNM); Soldier Key (MCZ); Conch Key (USNM); Bahia Honda Key (ANSP). BAHAMA ISLANDS: Little Abaco Island (M

³ Names in this and subsequent distributional lists indicate general localities, not specific collecting sites.

Explanation of Figures 1, 2

Figure 1: *Ervilia nitens*. Paired valves selected from MCZ 21071, St. Thomas, Virgin Islands. Length 6.4 mm, height 4.6 mm; a, exterior, right valve; b, interior, right valve; c, exterior, left valve; d, interior, left valve.

Figure 2: *Ervilia concentrica*. Lectotype of *Mesodesma concentrica* Holmes, selected by DAVIS (1967) from AMNH 11291 and subsequently catalogued AMNH 11291/1:1 and AMNH 11291/1:2. Length 6.6 mm, height 4.3 mm; a, exterior, right valve; b, interior, right valve; c, exterior, left valve; d, interior, left valve.

Explanation of Figure 3

Figure 3: Comparison of *Ervilia concentrica* and *E. maculosa*. Left column: paired valves, small specimen of *E. concentrica* selected from MCZ 262704, 34°20'30" N, 75°57'30" W. Length 4.0 mm, height 2.7 mm. Shell margin abraded. a, exterior, right valve; b, interior, right valve; c, exterior, left valve; d, interior, left valve. Right column: valves selected from syntypes of *E. maculosa*, USNM 92153, USFC Station 2610, 24 miles SE ½ S of Cape Lookout, North Carolina. Valves are not paired but rather selected

because of essentially identical dimensions. Length 3.1 mm, height 2.2 mm; e, exterior, right valve; f, interior, right valve; g, exterior, left valve; h, interior, left valve. Valves of right column photographed atop a millimeter scale which shows through the valves as a vertical dark bar in (e) and (f) and as a horizontal bar in (h). Apparent difference in shell proportions between left and right columns is caused by greater length of left column valves; they are 0.9 mm longer.

a



b



c

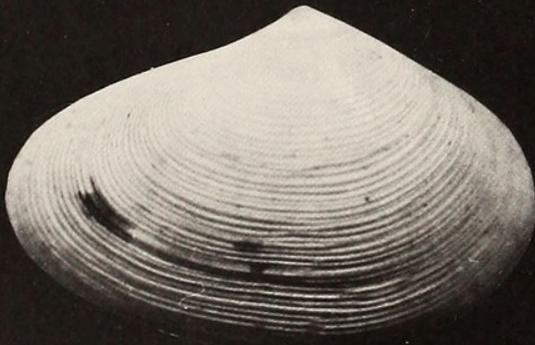


d



Figure 1

a



b



c



d

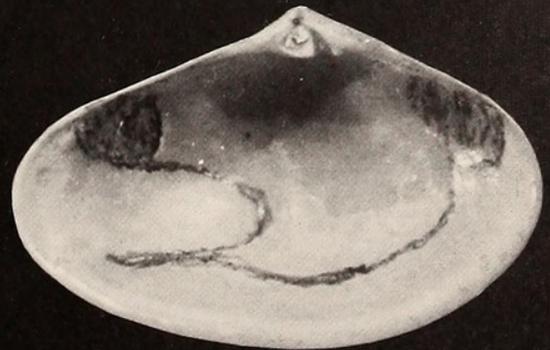


Figure 2

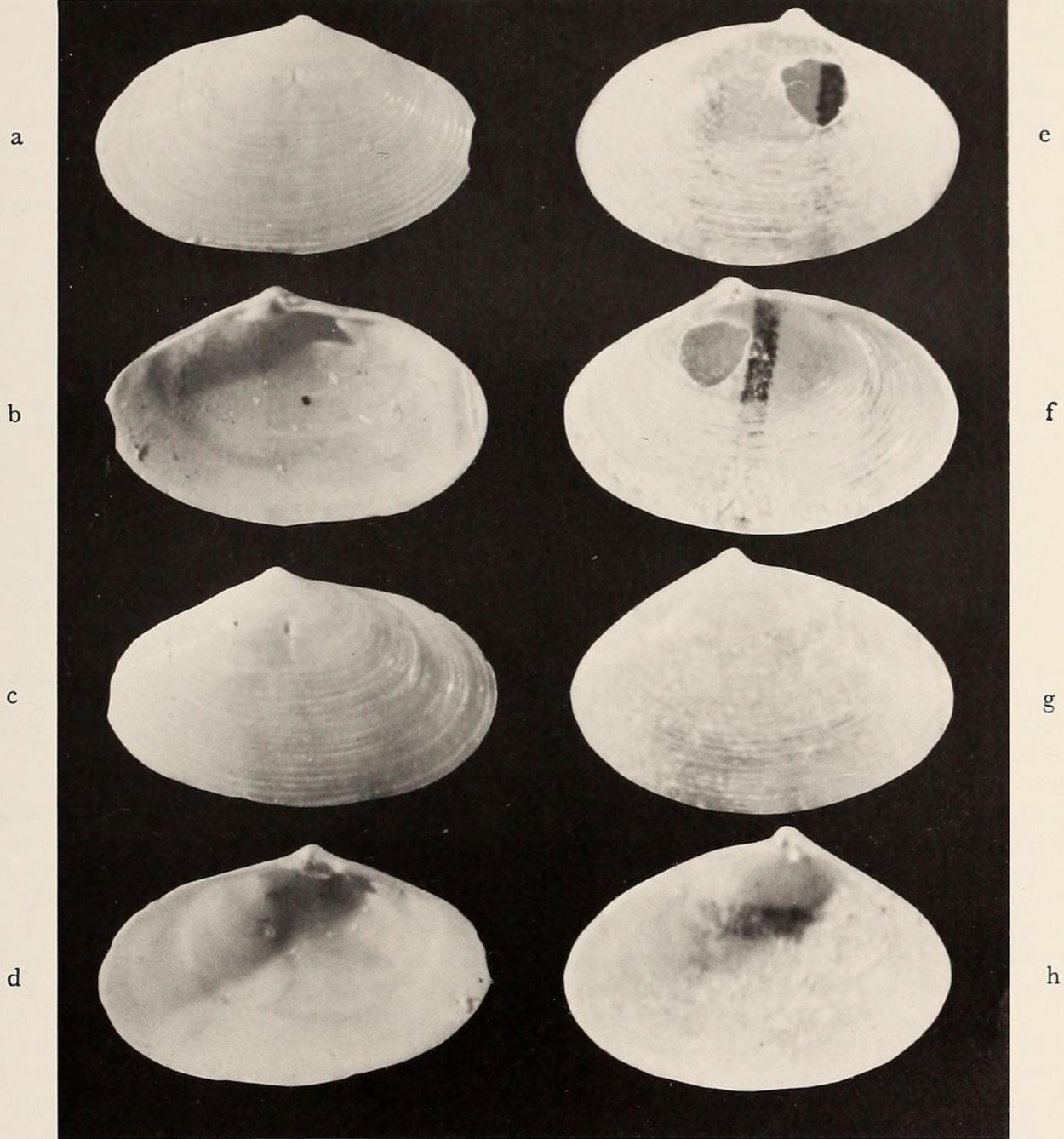


Figure 3

CZ); Nassau, New Providence Island (MCZ). CUBA: Habana (MCZ); Santa Maria Key (MCZ). PUERTO RICO (ANSP). VIRGIN ISLANDS: St. Thomas (ASNP, MCZ, USNM). BARBUDA (MCZ, USNM). ANTIGUA (USNM). GUADELOUPE (MCZ, USNM). DOMINICA (USNM). CAYMAN BRAC (ANSP). GRAND CAYMAN ISLAND (ANSP). BRITISH HONDURAS: Pompion Cay (ANSP). BRASIL: Touros (ANSP) and Natal (ANSP), Rio Grande do Norte.

Ervilia concentrica (Holmes, 1860)

(Figures 2a to 2d)

Mesodesma concentrica Holmes, 1860. Post-Pleiocene Fossils of South Carolina. p. 44; plt. 6, fig. 10. (Simmons Bluff, Yonges Island, South Carolina, St. Pauls). Lectotype by DAVIS (1967), AMNH⁴ 11291/1:1, AMNH 11291/1:2 (right and left valves respectively).

Ervilia concentrica. Gould, 1862a. Proc. Boston Soc. Nat. Hist. 8: 281 [not figured]. (Coast of North Carolina). GOULD, 1862b, Otia Conchologia. p. 239 [not figured]. (Coast of North Carolina). Lectotype by JOHNSON (1964), Bull. 239, U. S. Nat. Mus., p. 58; plt. 24, fig. 2. MCZ 169092. Paratypes: MCZ 169093, USNM 611263.

Ervilia maculosa Dall, 1896. Nautilus 10: 26 [not figured]. (Off Cape Lookout, North Carolina, 22 fms., U. S. Fish Commission). Syntypes USNM 92153.

As indicated, there are several syntypes in the U. S. National Museum identified as *Ervilia maculosa*. This material is in no way distinctive or unique and, furthermore, meets all diagnostic criteria for inclusion in the species *E. concentrica*. Because of this similarity and because the *E. maculosa* came from the North Carolina coast (*E. concentrica* is the only species of the genus known from the area), I assume that the *E. maculosa* syntypes are small specimens of *E. concentrica* (see Figure 3 for comparison).

Diagnosis: Seldom more than 10 mm long. Valves are opaque, with concentric ridges of equal height. Radiating striae are absent, valves are moderately compressed and unequilateral. Posterior end is fairly rostrate. Shells are usually chalky white. See DAVIS (1967) for additional detailed discussion of this species.

Distribution: NORTH CAROLINA (U. S. A.): Off the coast (MCZ, USNM); Cape Lookout (MCZ, USNM); Cape Hatteras (USNM); Cape Fear (USNM); Pamlico Sound (MCZ). GEORGIA: Off the coast (USNM). FLORIDA: Frying Pan Shoals (ANSP, USNM); Miami (USNM); Fowey Light (USNM); Ajax Reef (USNM); Sand Key (USNM); Sugarloaf Key (MCZ); Big Pine Key (ANSP); Little Duck Key (ANSP); Bahia Honda Key (AN

SP); Key West (USNM); Dry Tortugas (ANSP, USNM); Sanibel Island (MCZ); Boca Grande Key (USNM); Clearwater (ANSP); St. Joseph Bay (ANSP); St. Andrews Bay (ANSP, USNM); Destin (MCZ); Pensacola (USNM). BAHAMA ISLANDS: Great Inagua Island (MCZ). CUBA: Bahia Honda (USNM). GRAND CAYMAN ISLAND (ANSP).

Ervilia subcancellata Smith, 1885

(Figures 4a to 4d)

Ervilia subcancellata Smith, 1885. Report on the Lamelli-branchiata collected by H. M. S. *Challenger* during the years 1873-76. Part 35, p. 80; plt. 6, figs. 2, 2a, 2b. The following syntypes are located in the British Museum (Natural History) under the following station and registration numbers: Sta. 33, No. 1887.2.9.2512 (2½ valves); Sta. 113A, No. 1887.2.9.2513a-15a (3 complete shells and 3 separate valves); Sta. 120, No. 1887.2.9.2511 (1 valve). Station 33 is off North Rock, Bermuda, 435 fathoms.

Ervilia rostratula Rehder, 1943. Proc. U. S. Nat. Mus. 93: 189; plt. 19, figs. 1, 2. (Lake Worth, Florida). Holotype USNM 517059.

REHDER (1943) described *Ervilia rostratula* from material taken at Lake Worth, Florida. The holotype is 4.5 mm long, 3.3 mm high and 2.3 mm wide, but many specimens exceed 7 mm in length. Distinctive features are the pronounced rostration and a relatively greater height.

While spending 5 weeks at the Bermuda Biological Station working on *Ervilia* I found it impossible to distinguish *E. subcancellata* from *E. rostratula*. Bermuda was the source of the first part (Sta. 33, *Challenger* Collections) of the syntype material from which Smith described *E. subcancellata*, and much of the subsequent *Ervilia* material from Bermuda has been deposited in museum collections as either *E. subcancellata* or *E. rostratula*.

In Bermuda, living specimens of *Ervilia* were found only at Ferry Reach. Empty valves were collected at other localities in the Bermuda Islands. The group of right valves in Figure 5 was selected from a sample taken at Shelly Bay to demonstrate how rostration of the posterior margin increases as the clams increase in size. Smaller specimens accord with descriptions and figures of *E. subcancellata*; larger specimens resemble typical specimens of *E. rostratula*. Therefore, I conclude that Smith based his description on small specimens, and Rehder based his on large specimens of the same species. Distribution of the synonymized *E. subcancellata* has been determined by sorting out museum material showing significant rostration of the posterior margin.

Diagnosis: Smaller than *Ervilia nitens* or *E. concentrica*. Distinct rostration of the posterior margin producing a

⁴ American Museum of Natural History, New York City, N. Y.



Davis, J D. 1973. "SYSTEMATICS AND DISTRIBUTION OF WESTERN ATLANTIC ERVILIA PELECYPODA MESODESMATIDAE WITH NOTES ON THE LIVING ERVILIA-SUBCELLATA." *The veliger* 15, 307-313.

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