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A Photographic Guide to the Gelasian (Early Pleistocene) Mollusca of Southeastern North Carolina

2021

Waccamaw Mollusca Review Copy Pt. IX: Ungulinidae, Chamidae, Cyrenidae, Veneridae, Mactroidea, Myida, & Anomalodesmata

Timothy Campbell

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*A Photographic Guide to the
Gelasian (Early Pleistocene)
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Southeastern North Carolina*

Timothy Campbell

Review Copy Pt. IX:
Ungulinidae, Chamidae,
Cyrenidae, Veneridae,
Mactroidea, Myida &
Anomalodesmata

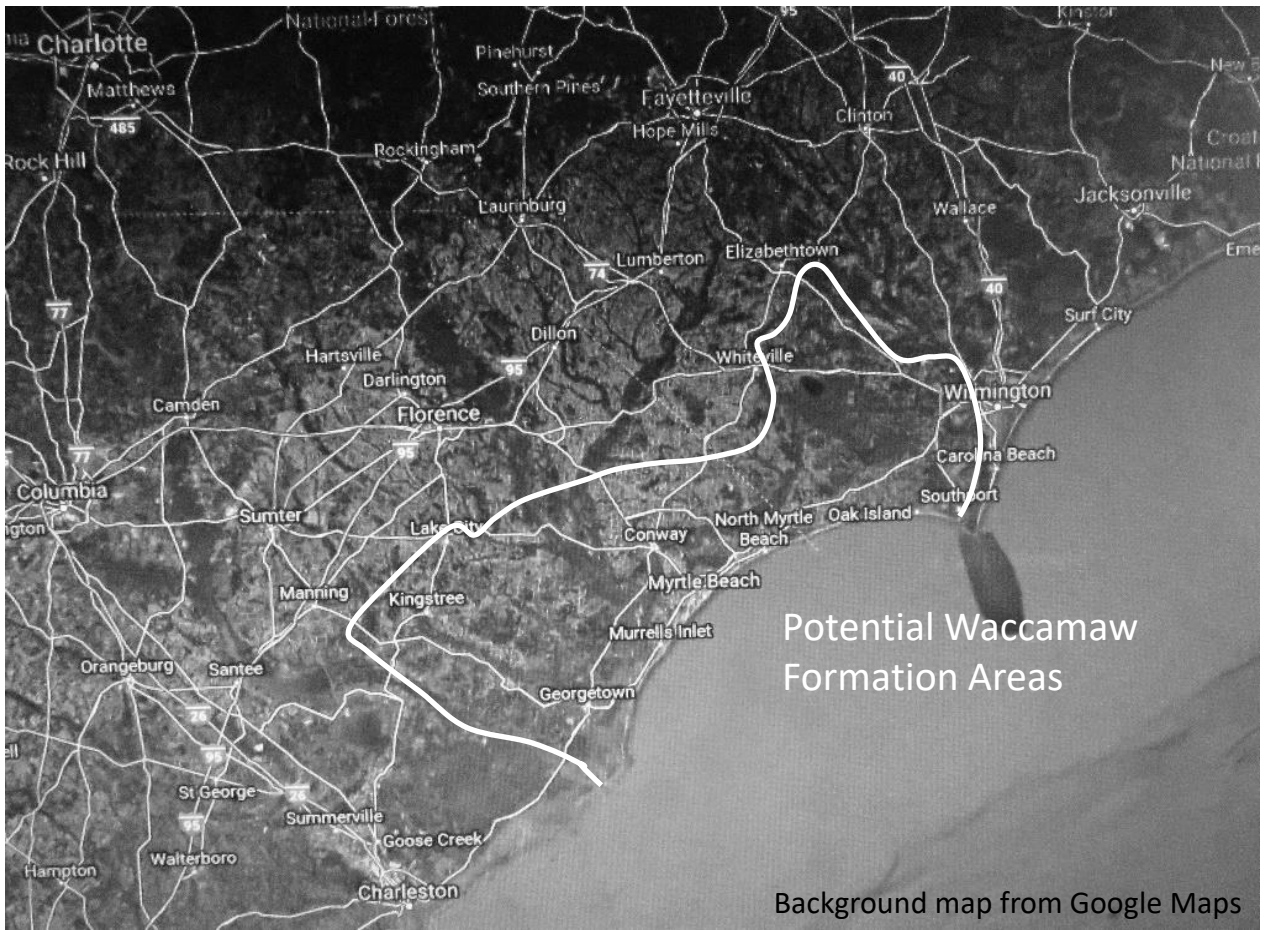
Introduction

Location

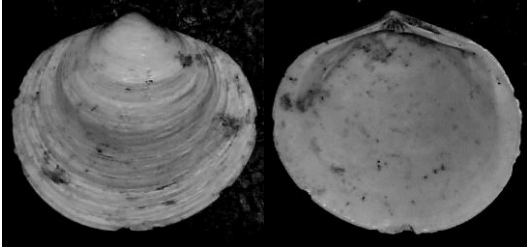
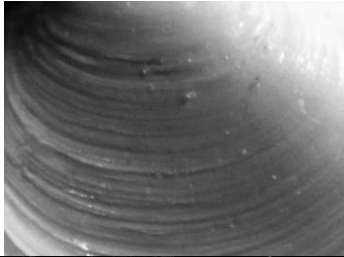
The Lower Waccamaw Formation contains a rich basal Pleistocene (early Gelasian, 2.4-2.0 million years old) fauna with an extreme abundance and diversity of mollusks (>90% of the fossils and 900+ species) in addition to various echinoderms, arthropods, annelids, corals, bryozoans, and vertebrates. Based upon the ranges of the extant species, the climate seems to have been warmer than today. This diverse subtropical fauna can be found in patches in southeastern North Carolina and northeastern South Carolina. It is roughly equivalent to the modern fauna of central South Carolina to North Florida, however, there was dramatic faunal turnover about 1.7 MYA and the modern Carolinian fauna is much more similar to the modern Caribbean fauna than the Waccamaw Formation fossils are to equivalent age Caribbean faunas.

Fossils have been known from the Lower Waccamaw Formation since prehistory. Although the first scientific study was Tuomey and Holmes, 1856, no single monograph exists.

Roughly 40% of the species are extant. The species derive from multiple habitats, including 30-50 m sandy-bottom shelf, cementing bivalve reef, 10-20 m sandy-bottom shelf, surf to subtidal, saltmarsh, muddy-bottom sound, and freshwater to brackish.



Ungulinidae I

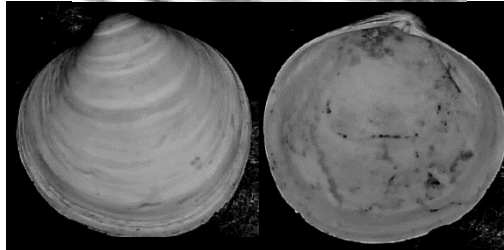
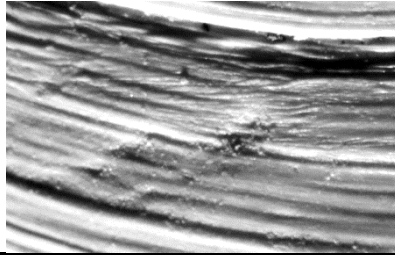


Ungulinidae n. gen. n. sp. 1
 10.5 x 8 mm; view 2.0 x 1.5 mm
 Asymmetrical;
 Broad commarginal sculpture



Ungulinidae n. gen. n. sp. 2
 11 x 10 mm
 Asymmetrical;
 Fine commarginal sculpture

Ungulinidae II

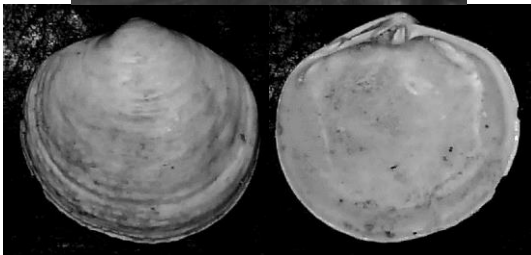
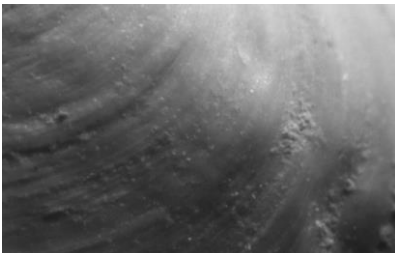


cf. Timothyus sp.

18.5 x 18 mm; view 2.35 x 1.5 mm LM

Highly inflated;

Diagonal striation microsculpture

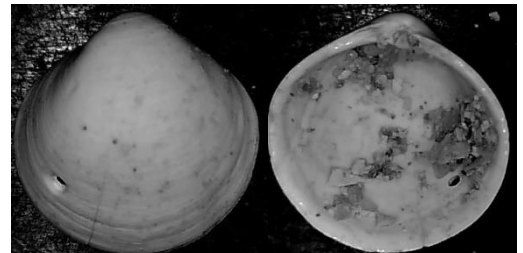


Foveamysia cf. soror

(C. B. Adams, 1852)

5.7 x 5.5 mm; view 1.45 x 2.3 mm

Small; Visibly pustuled



Diplodonta nucleiformis

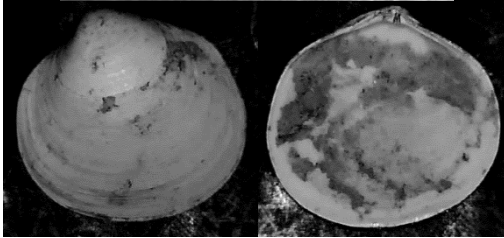
(Wagner, 1838)

6 x 5.5 mm

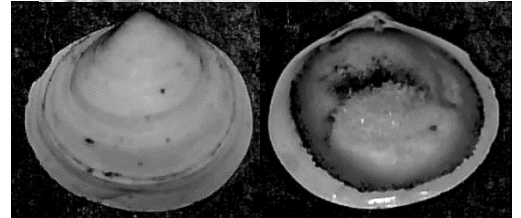
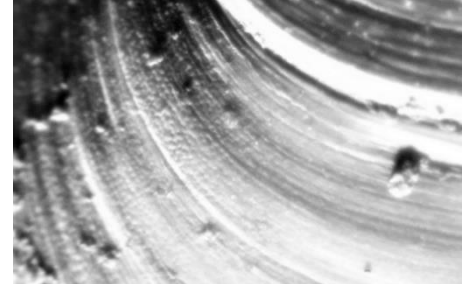
Small, Highly inflated;

Very little microsculpture

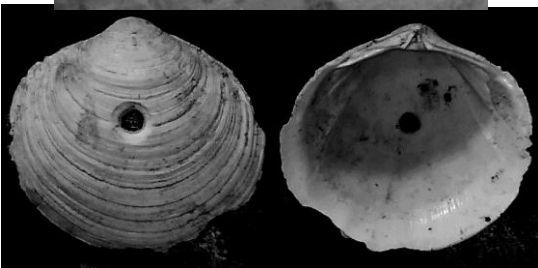
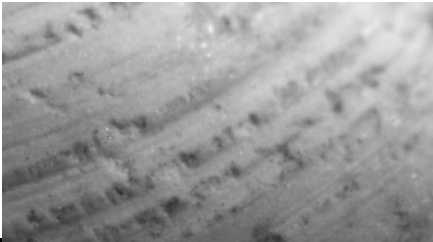
Ungulinidae III



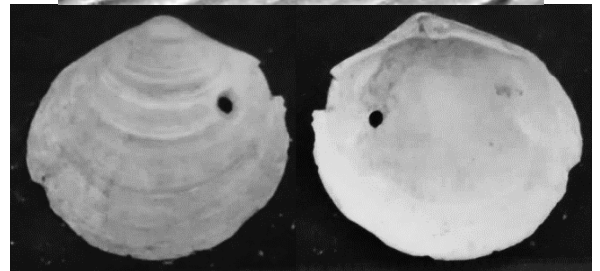
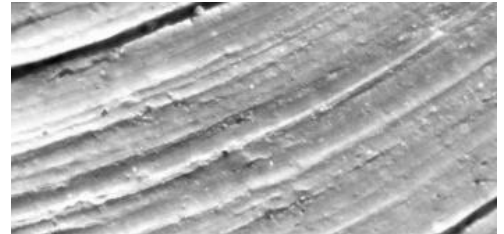
Diplodonta sp. 1
9.8 x 8.6 mm; view 2.35 x 1.6 mm
More squared off;
Finer bump microsculpture



Diplodonta sp. 2
6.5 x 5.7 mm ; view 2.7 x 1.7 mm
More rounded;
Larger bump microsculpture

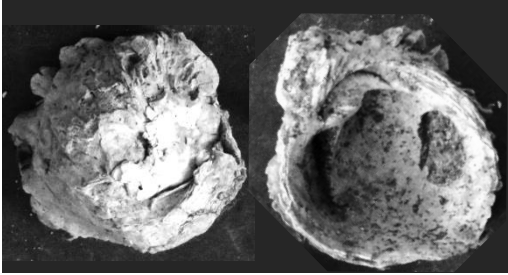


Diplodonta sp. 3
26 x 22 mm; view 2.5 x 1.4 mm
More symmetrical & inflated;
Extremely fine microsculpture



Diplodonta acclinis
(Conrad, 1832)
30 x 27 mm ; view 2.9 x 1.4 mm
Flatter;
Very little microsculpture

Chama



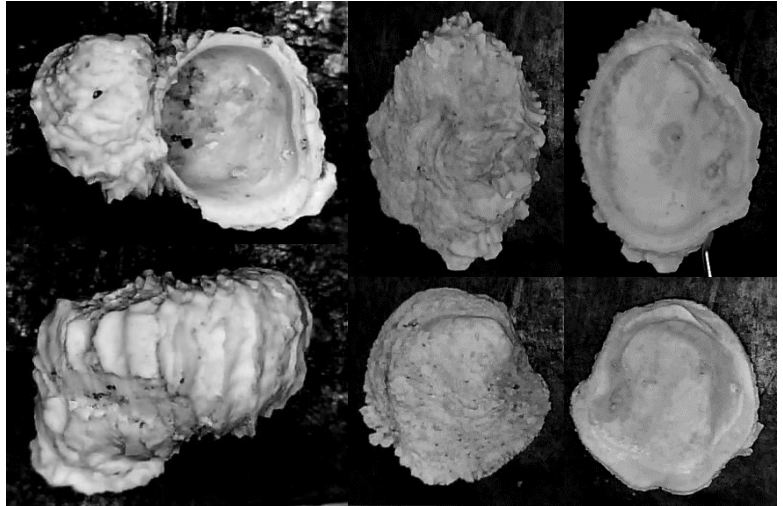
Chama caloosana

Dall, 1903

65 x 61 mm

Highly distinctive folds;

Right valve attached



Chama congregata

Conrad, 1833

Left; Right Valve

6.5 x 4 mm; 18 x 26 mm; 18 x 19 mm

No indent



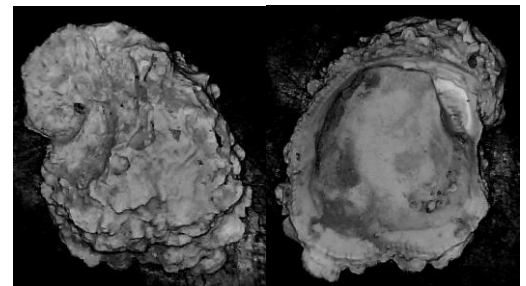
Chama emmonsii

Nicol, 1953

Left; Right Valve

19 x 21 mm; 16 x 21 mm

Indented on left side



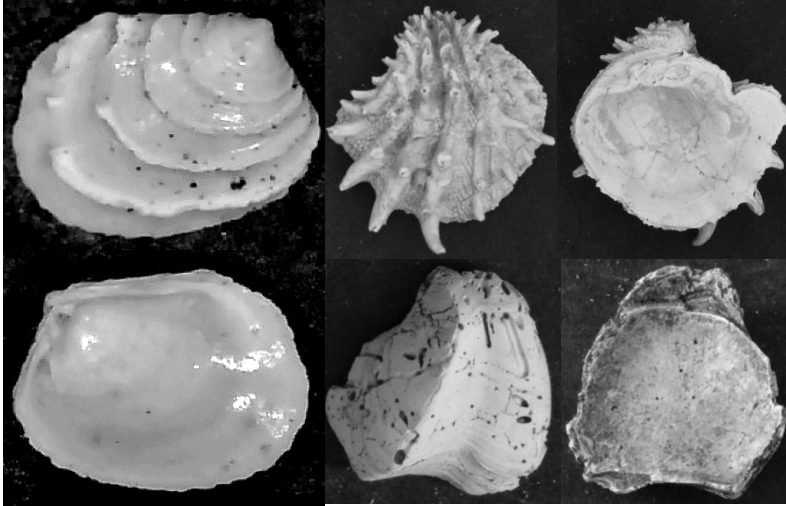
Chama macerophylla

Gmelin, 1791

22 x 26 mm

Friilly sculpture

Arcinella & Cyrenidae



Arcinella cornuta

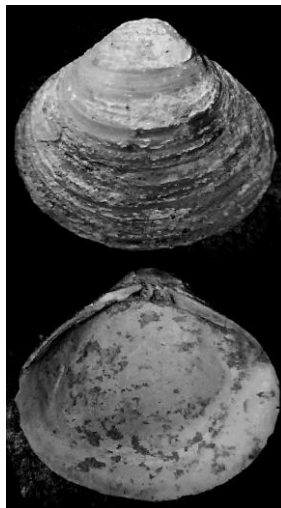
Conrad, 1866

Prodissoconch; Normal; Outside broken off

2 x 1.5 mm; 52 x 49 mm; 28 x 28 mm

Distinctive Shape; Highly distinctive spines;

Distinctive shape



Corbicula densata

(Conrad, 1844)

33 x 27 mm; max ~45 x 35 mm

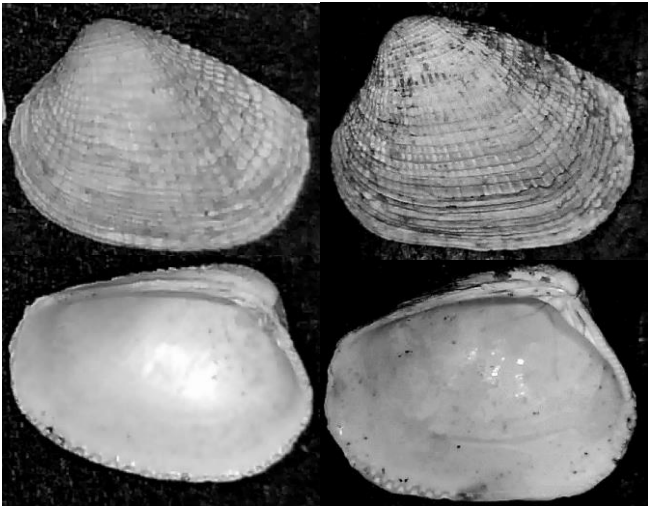
Distinctive shape;

Compare unguinids

Chioninae I



Chione cf. mazyckii
Dall, 1902
13 x 10 mm
More rounded

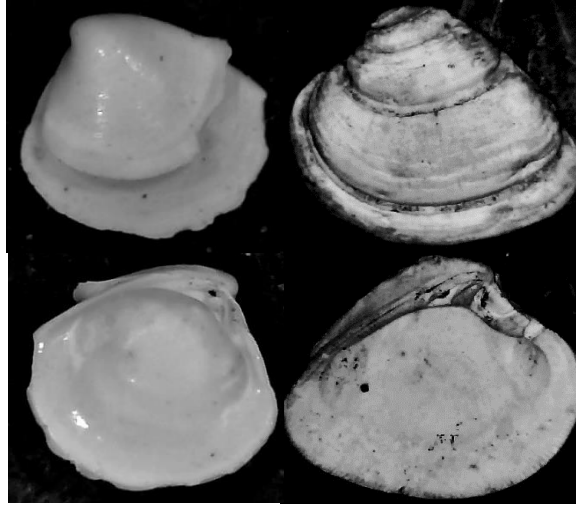


Chioneryx grus
(Holmes, 1858)
8.6 x 6.7 mm; 9.5 x 7 mm
More angled

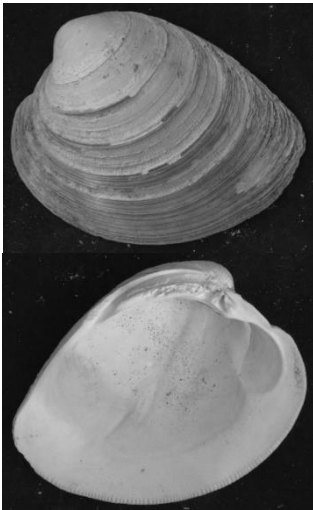


Chionopsis cribraria
(Conrad, 1843)
5 x 4.8 mm; 44 x 39 mm
Highly distinctive sculpture

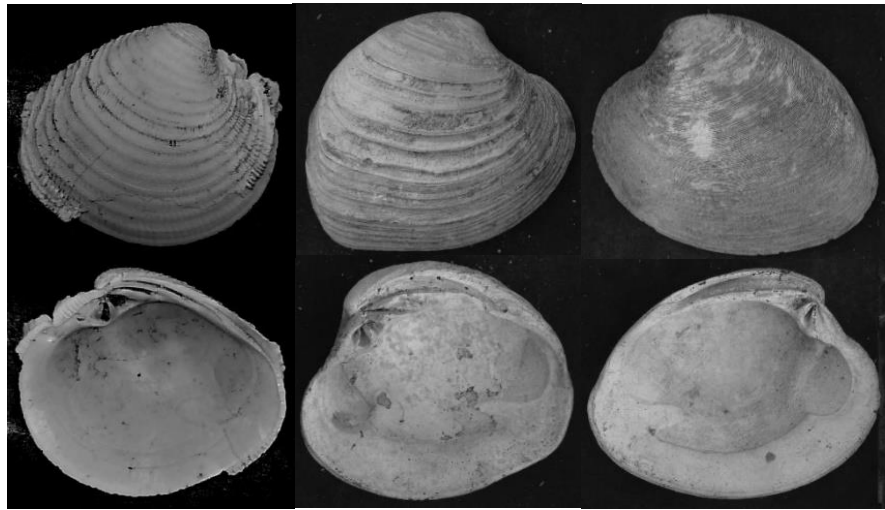
Lirophora & *Mercenaria*



Lirophora varicosa
(G. B. Sowerby II, 1853)
2.1 x 1.8 mm; 35 x 28 mm
Highly distinctive sculpture



Mercenaria mercenaria
(Linnaeus, 1758)
98 x 76 mm
More pointed; Thinner shelled



Mercenaria campechiensis
(Gmelin, 1792)
Juvenile; Injured; Normal
19 x 18 mm; 98 x 84 mm; 149 x 118 mm
More rounded; Thicker shelled

Dosinia, *Gemma* & *Macrocallista*



Dosinia discus

(Reeve, 1850)

Broken

49 x 54 mm

15 commarginal lines per cm



Dosinia elegans

(Conrad, 1846)

Pair

116 x 115 mm

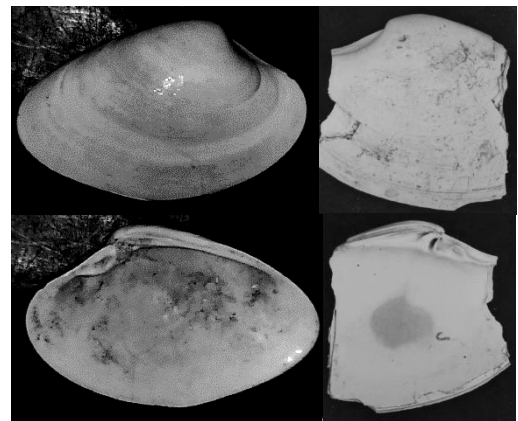
7 commarginal lines per cm



Gemma magna

4.8 x 4.2 mm

Highly distinctive shape



Macrocallista greeni

Ward & Blackwelder, 1987

Juvenile: Broken

23 x 12 mm; 61 x 63 mm; max ~75 x 150 mm

Very smooth

Callocardiinae I



Megapitaria maculata
(Linnaeus, 1758)
Juvenile
12 x 7 mm
Distinctive shape



Callocardiinae incertae sedis 1
5.2 x 3.8 mm; max ~11 x 7 mm
Distinctive shape



Callocardiinae incertae sedis 2
6 x 4 mm
More elongate



Callocardiinae incertae sedis 3
5 x 4.3 mm
Less elongate

Artiploma, Gouldia & Transennella



Artiploma sayana
(Conrad, 1833)
Juvenile; Subadult; Adult
5.4 x 4.7 mm; 24 x 15 mm; 35 x 28 mm
Distinctive shape



Artiploma sp.
5 x 4.1 mm
Distinctive shape



Gouldia floridana
Olsson & Harbison, 1953
9 x 7 mm; max ~19 x 16 mm
Cancellate on margins

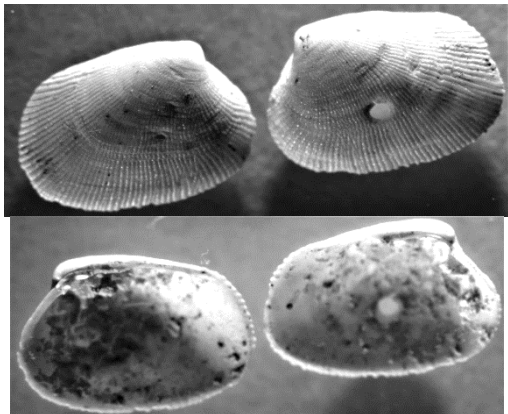


Transennella sp.
12 X 10 mm
More elliptical



Transennella carolinensis
Dall, 1903
6.5 x 6 mm; 11 X 9 mm
More trigonal

Petricolinae, *Hemimactra* & *Mactrotoma*



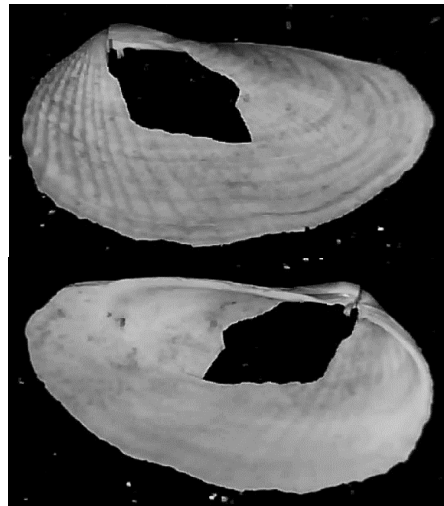
Choristodon pectarosa

(Conrad, 1834)

Pair, Juvenile

3.7 x 2.7 mm; max ~18 x 10 mm

Faint radial sculpture



Petricolaria carolinensis

(Conrad, 1863)

Broken

23 x 13 mm; max ~32 x 17 mm

Highly distinctive shape



Hemimactra ravenelli

(Conrad, 1831)

Juvenile; Subadult; Typically broken

35 x 24 mm; 56 x 45 mm; max ~90 x 60 mm

Sloping sides



Mactrotoma fragilis precursor

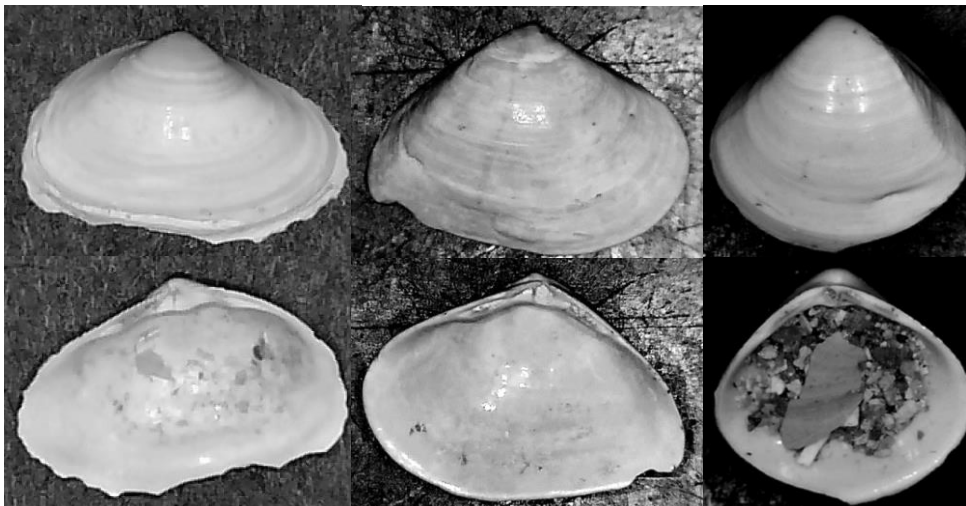
(Gardner, 1944)

Broken

80 x 61 mm

Highly distinctive shape

Mulinia & Rangia



Mulinia cf. lateralis

(Say, 1822)

9 x 5.9 mm; 11 x 6.5 mm; 6 x 5.5 mm

Highly distinctive shapes

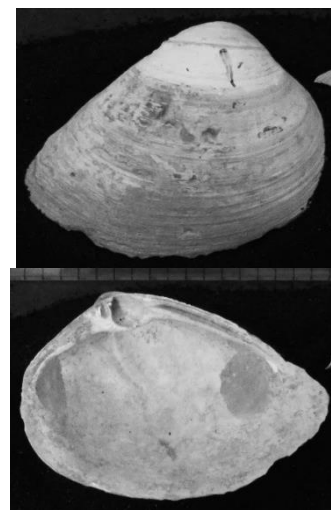


Mulinia lateralis

(Say, 1822)

10 x 7.8 mm

Highly distinctive shape



Rangia clathrodonta

(Conrad, 1833)

84 x 68 mm

Highly distinctive shape

Anatinellidae



Anatina anatina
 (Spengler, 1802)
 Broken; Broken
 17 x 11 mm; 19 x 25 mm
 Highly distinctive sculpture



Raeta cf. plicatella
 (Lamarck, 1818)
 Broken
 18 x 13 mm; 12 x 5 mm
 Highly distinctive sculpture

Pholadidae



Cyrtopleura cf. arcuata
(Conrad, 1841)

Pieces of hinges

11 x 5.5 mm; 10.5 x 10.5 mm

Distinctive curled hinge



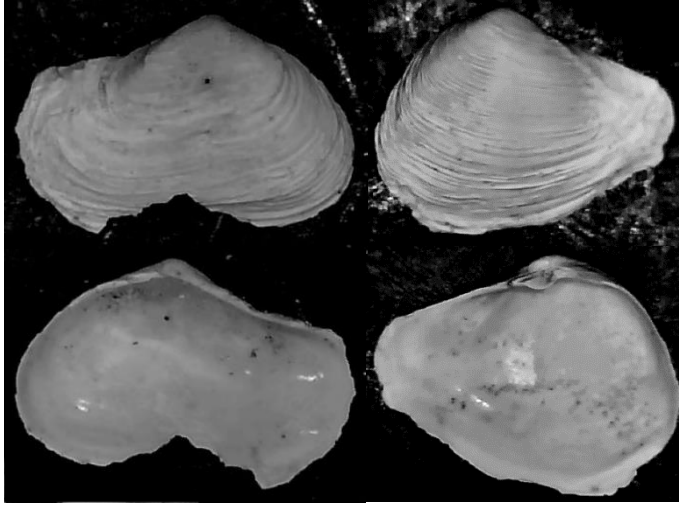
Pholas memmingeri
(Tuomey & Holmes, 1856)

Broken

21 x 10 mm

Distinctive hinge

Myidae & *Vokesula*

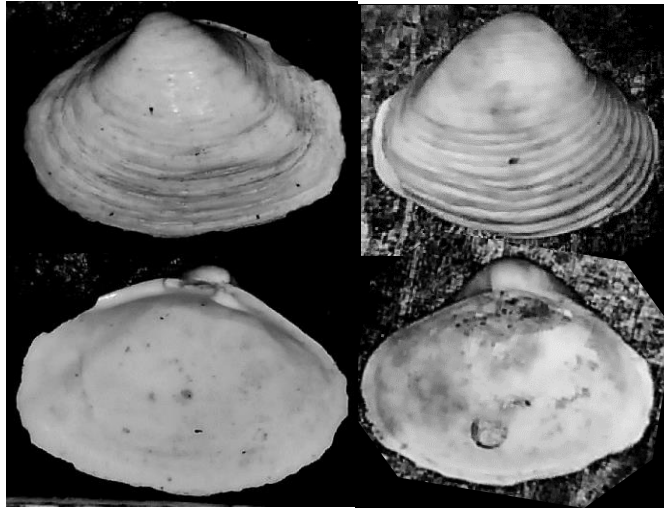


Sphenia dubia

(H. C. Lea, 1843)

2.1 x 1.3 mm; 9.3 x 7.5 mm 2LM

Distinct wing



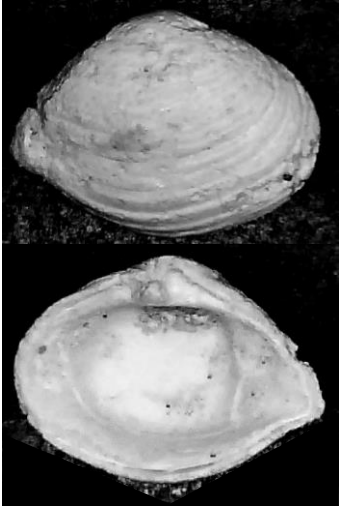
Vokesula caloosae

(Dall, 1898)

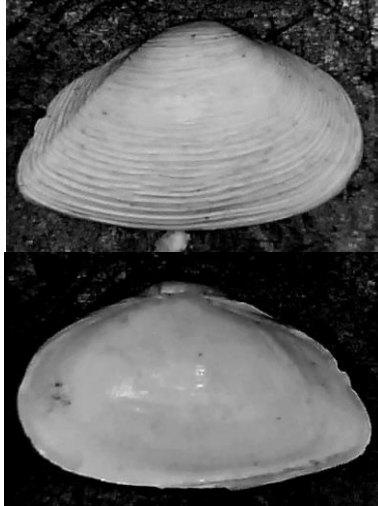
6 x 4.5 mm; 9.8 x 7.7 mm

Highly distinctive shape

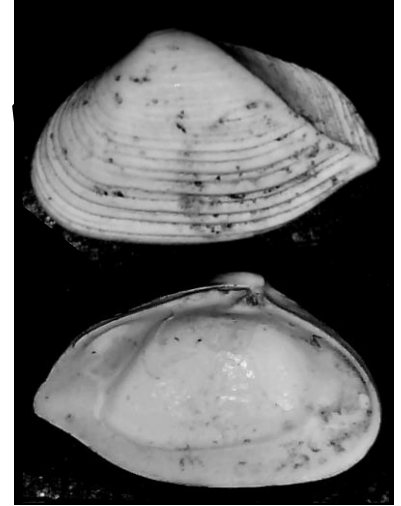
Caryocorbula I



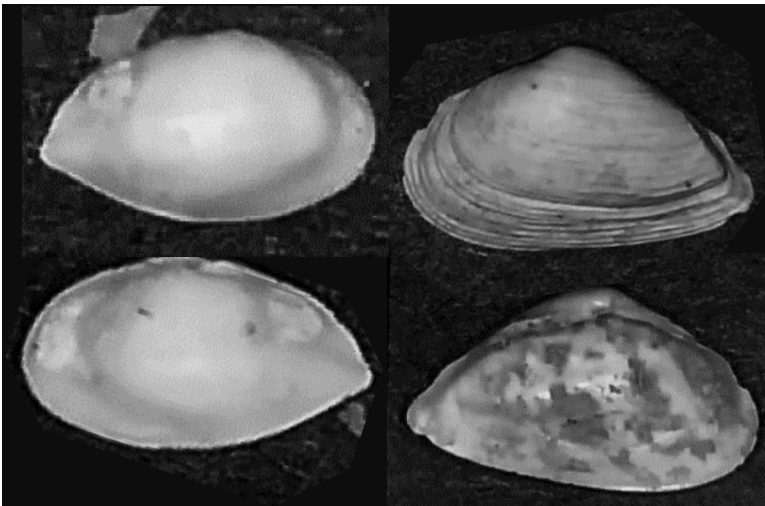
Caryocorbula sp. 2
6.5 x 5 mm
Very short wing



Caryocorbula sp. 3
8 x 5 mm
Fine sculpture; blunt wing



Caryocorbula cf. *barrattiana*
(C. B. Adams, 1852)
7.5 x 4.5 mm
Broader wing



Caryocorbula retusa ssp.
(Gardner, 1944)
Juvenile, outside worn off; Adult
4.8 x 2.7 mm; 9.2 x 5.7 mm
Smaller wing



Caryocorbula retusa retusa
(Gardner, 1944)
10 x 6.5 mm
Coarse sculpture

Caryocorbula II



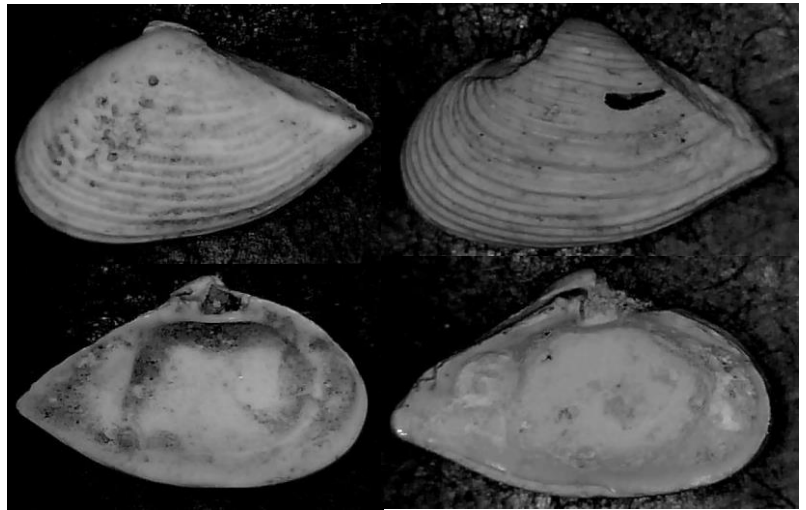
Caryocorbula sp. 1
5 x 3 mm; 7 x 4 mm
Narrow wing



Caryocorbula cf. *contracta*
(Say, 1822)
7 x 5.3 mm
Finer Lines

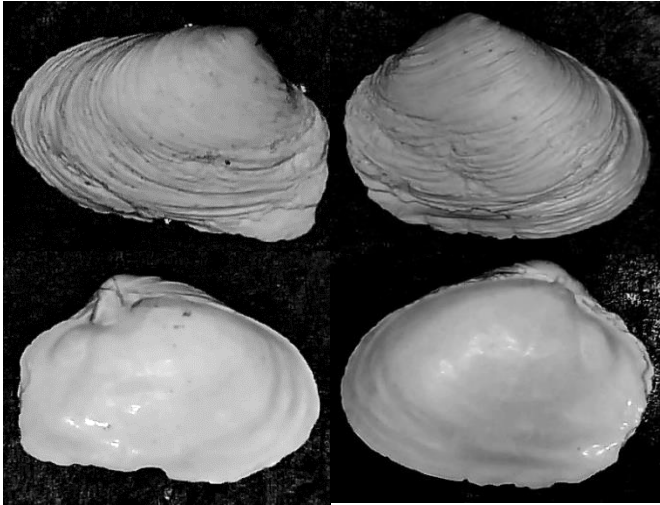


Caryocorbula cf. *cuneata*
(Say, 1824)
9.5 x 6 mm
Large wing



Caryocorbula *swiftiana*
(C. B. Adams, 1852)
8.5 x 6 mm; 9.5 x 5.7
Very pointed wing

Thracioidea & Lyonsiidae



Thracia sp.

6.1 x 4 mm; 6 x 4.5 mm 1LM

Highly distinctive shape

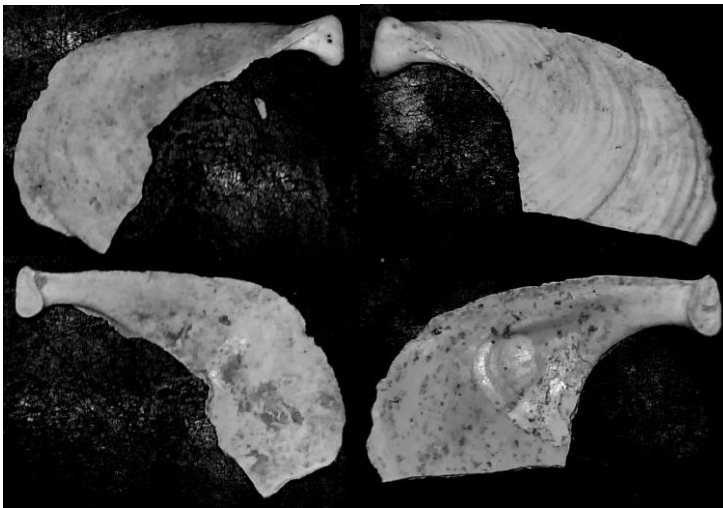


Thracia brioni

Ward & Blackwelder, 1987

5 x 2.3 mm

Highly distinctive shape



Cochlodesma cf. *antiqua*

(Conrad, 1834)

Broken; Broken

18 x 11 mm; 21 x 11 mm

Distinctive hinge



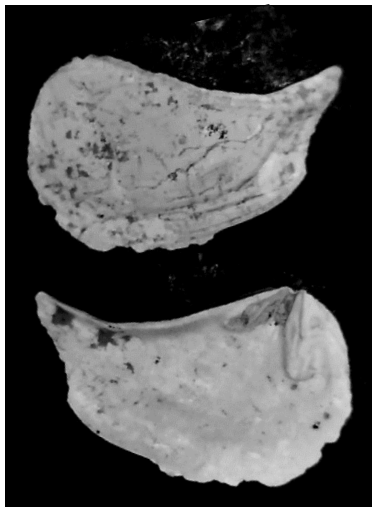
Lyonsia sp.

2.5 x 1.3 mm

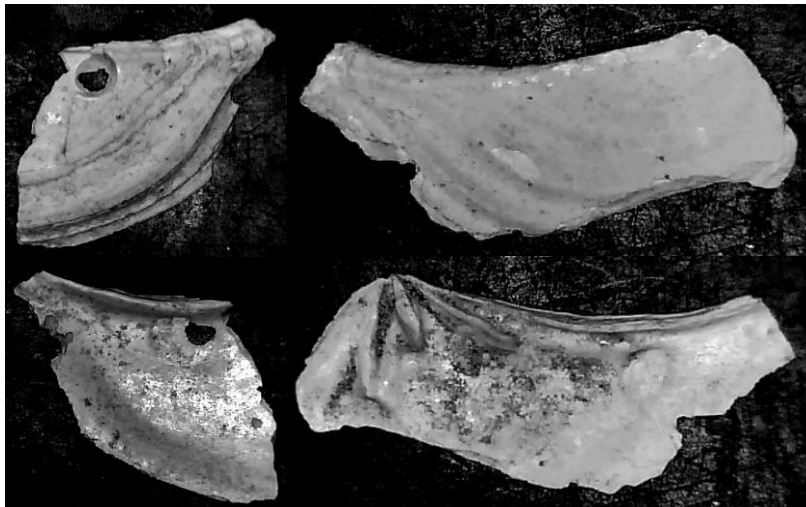
Juvenile

Highly distinctive shape

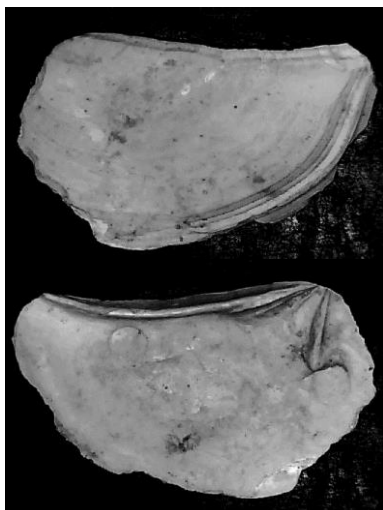
Pandoridae



Pandora sp. 1
27 x 17 mm LM
Strongly curved



Pandora cf. *tuomeyi*
Gardner & Aldrich, 1919
Broken; Broken
15 x 12 mm; 21 x 8 mm
Less curved



Pandora sp. 2
22 x 14 mm
More trigonal

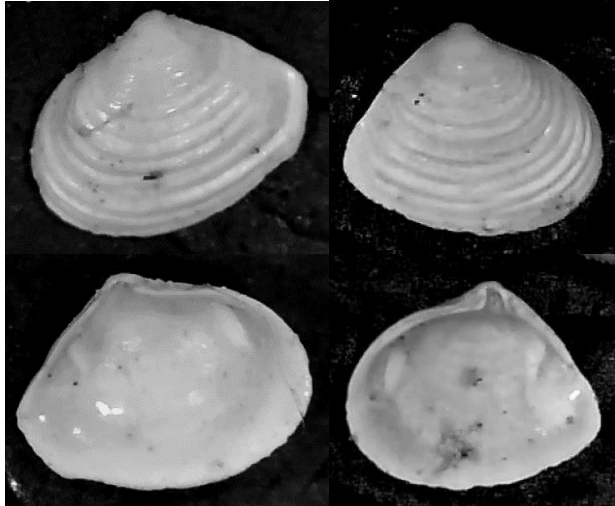


Pandora cf. *prodromos*
Gardner & Aldrich, 1919
Broken
21 x 14 mm
Broader



Pandora *crassidens*
Conrad, 1838
Broken
29 x 18 mm
Somewhat curved

Poromyida



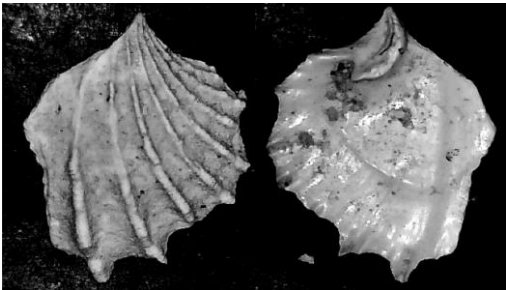
Grippina gibberosa

(Gardner, 1944)

Juvenile; Juvenile

1.4 x 1.2 mm; 1.7 x 1.5 mm

Highly distinctive shape



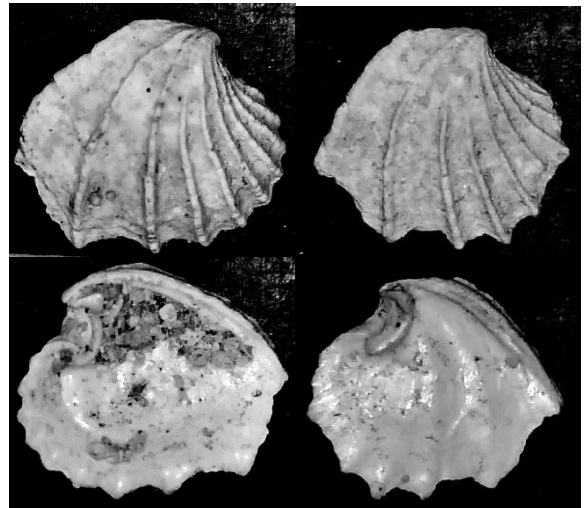
Trigonulina cf. chowanensis

(Gardner, 1944)

Broken

5 x 6 mm

Less elongate



Trigonulina lockei

(Ward & Blackwelder, 1987)

5 x 4 mm; 6.4 x 5.8 mm

More elongate