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

2021

Lower Waccamaw Formation Review Copy Pt. III: Neogastropoda incertae sedis, Buccinoidea, & Muricidae

Timothy Campbell

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

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Review Copy Pt. III:
Neogastropoda incertae sedis,
Buccinoidea & Muricidae

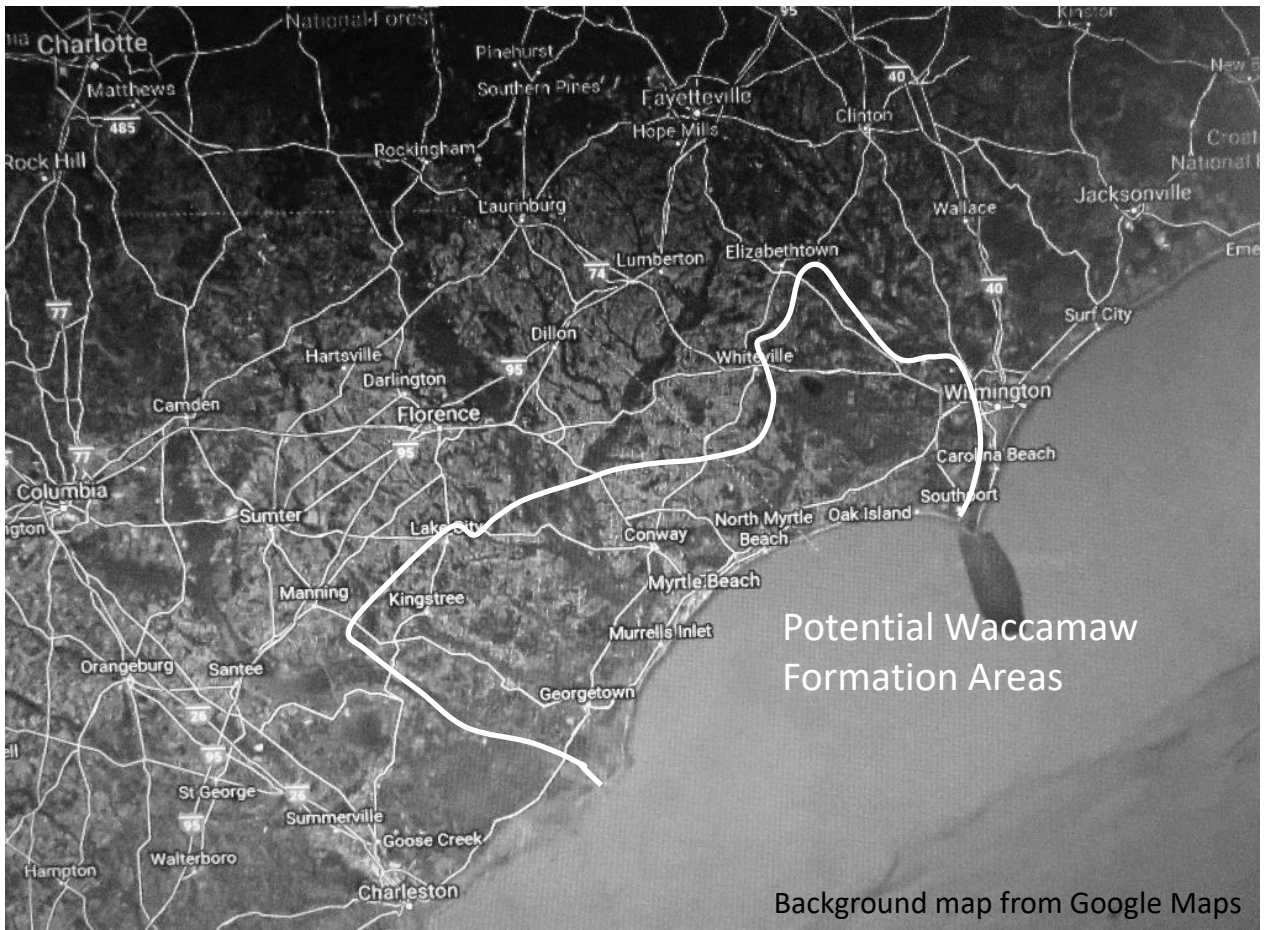
Introduction

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.



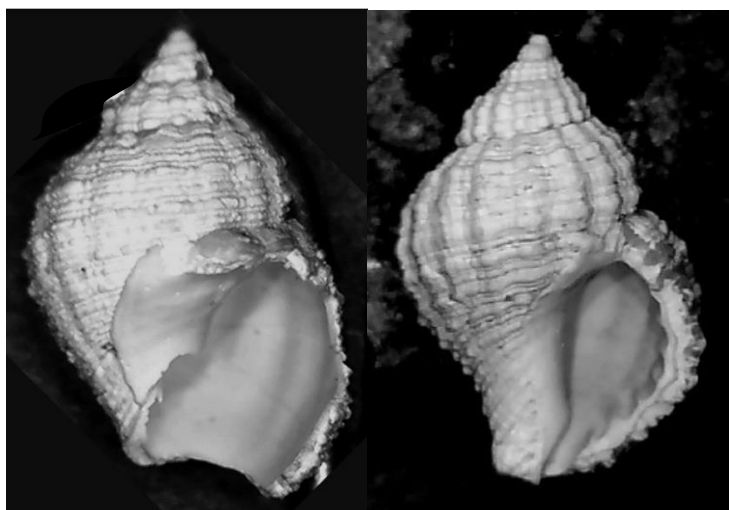
Neogastropoda *incertae sedis*



Neogastropoda *incertae sedis* 1
 Broken
 8.5 mm
 Highly distinctive sculpture



Neogastropoda *incertae sedis* 2
 Broken
 5.7 mm
 Faint axial sculpture

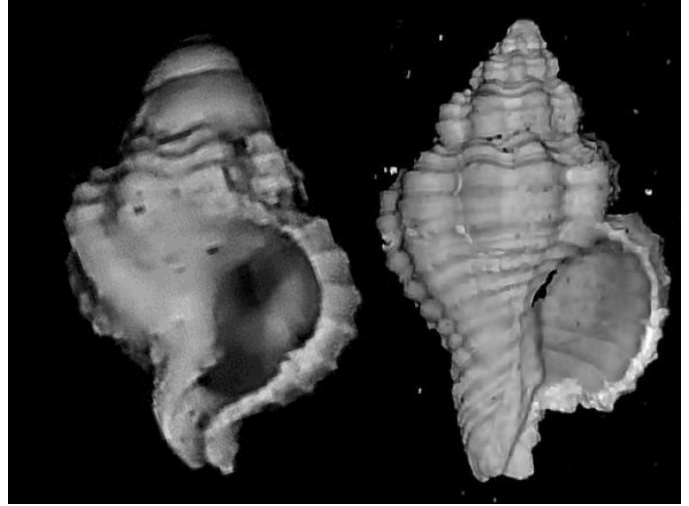


Neogastropoda *incertae sedis* 3
 Broken
 9.2 mm; 13 mm
 Lower spired than *Urosalpinx*

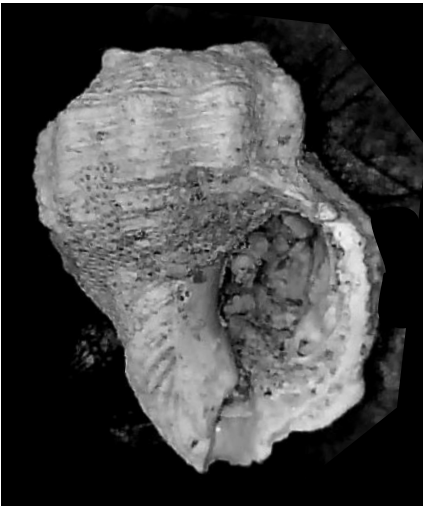
Pisaniidae



Cantharus sp.
29 mm
Straight outer lip



Hesperisternia cf. *filicata*
(Conrad, 1843)
Juvenile; Adult
1.6 mm; 19 mm
Highly distinctive shape



Gemophos ? sp.
Broken
17 mm
Short siphon



Gemophos cf. *tinctus*
(Conrad, 1846)
24 mm; max ~28 mm
Highly distinctive shape

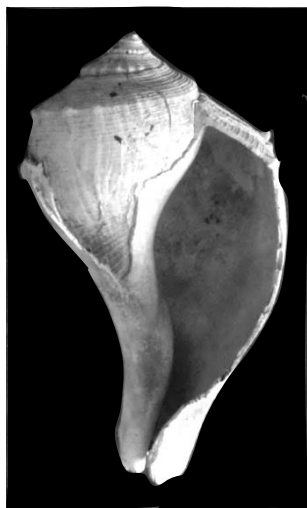
Busycon & *Busycotypus*



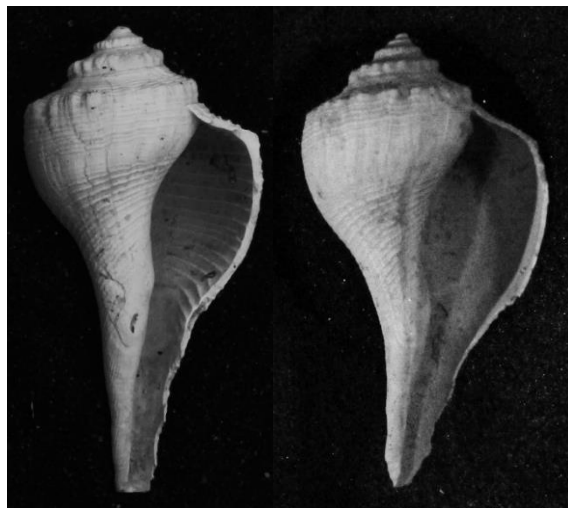
Busycon contrarium caloosahatcheensis
(Petuch, 1994)
47 mm
Sinistral; Low-spired



Busycon contrarium contrarium
(Conrad, 1840)
280 mm
Sinistral

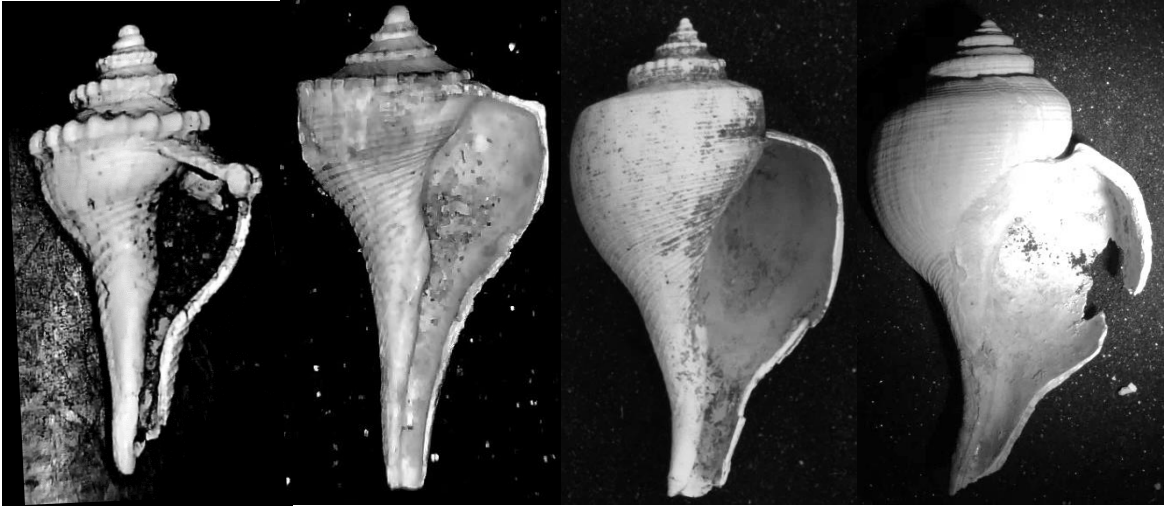


Busycon cf. carica
(Gmelin, 1791)
Broken
126 mm; max ~200 mm
Slightly channeled; Smooth-spired



Busycotypus concinnum
(Conrad, 1873)
Subadult; Subadult ?
50 mm; 76 mm
Long Siphon

Pyruella & Fulguropsis



Pyruella bladenense

(Gardner, 1948)

var. 1; var. 2; var. 1; var. 3

22mm; 27 mm; 72 mm; 115 mm 20D

Very strongly stepped spire



Fulguropsis floridanum

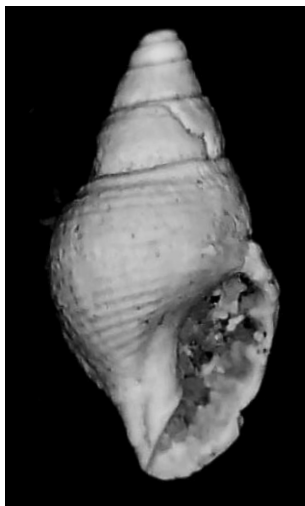
(Olsson & Harbison, 1953)

Subadult

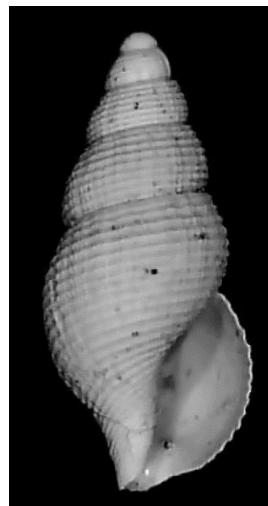
97 mm OD

Very strong channel

Columbellidae I



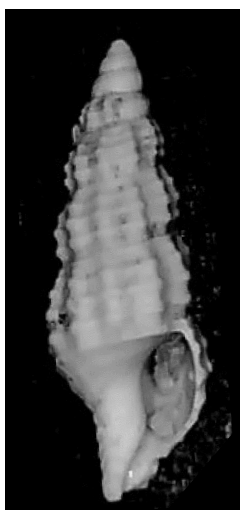
Columbellidae *Incertae sedis*
6.2 mm
Distinctive shape



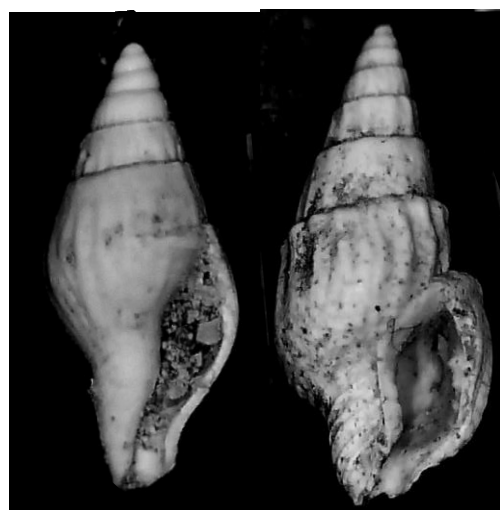
Juliamitrella gardnerae
(Ward & Blackwelder, 1987)
4.3 mm
Highly distinctive sculpture



Nassarina n. sp.
6 mm; max ~8 mm
More spiral sculpture



Nassarina cf. *glypta*
(Bush, 1885)
4.5 mm
Highly distinctive shape

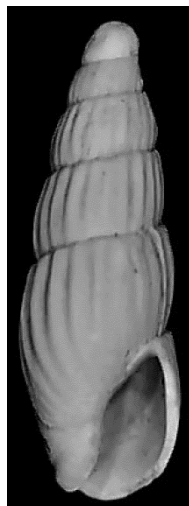


Strombina gunteri
(Mansfield, 1930)
4.8 mm; 7.5 mm
Highly distinctive sculpture

Aesopus



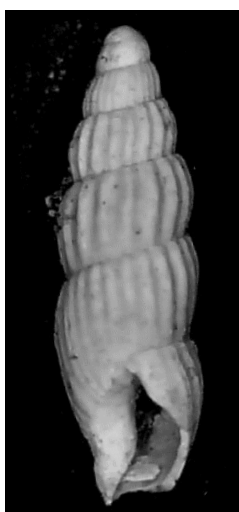
Aesopus n. sp.
7.5 mm; 9.5 mm
32-36 fine axial ridges



Aesopus sp. 1
4.5 mm
20-24 axial ridges;
Straighter sided



Aesopus emmonsii
(Conrad, 1862)
Juvenile; Broken
3.3 mm; 7 mm; max ~8 mm
~24-28 axial ridges



Aesopus ithitoma
(Dall, 1890)
4.8 mm
22 axial ridges;
More convex whorls

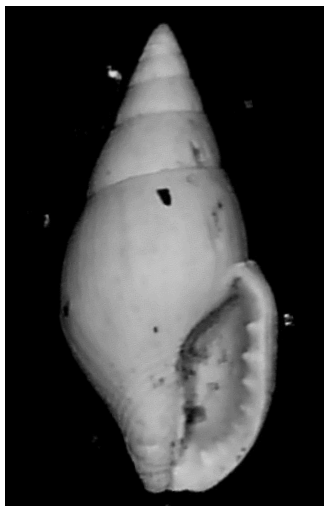


Aesopus sp. 2
5 mm
Fainter spiral sculpture

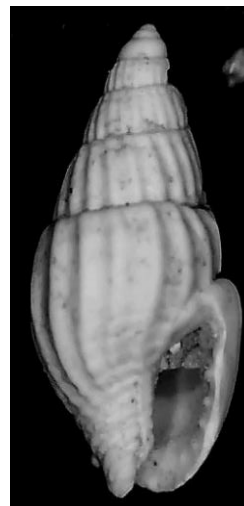


Aesopus stearnsii
(Tryon, 1883)
Subadult; Broken; Adult
3.2 mm; 4.5 mm; 4.5 mm
Faint spiral lines

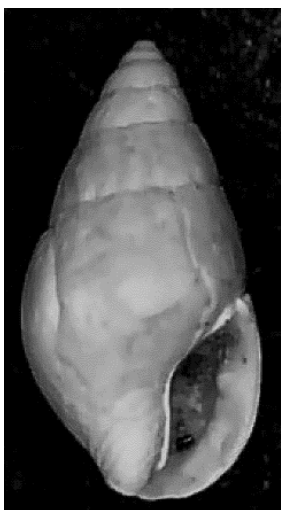
Anachis, *Parvanachis* & *Astyris*



Anachis gardnerae
Olsson & Harbison, 1953
9 mm; max ~15 mm
Larger; 7 labral teeth



Parvanachis obesa
(C. B. Adams, 1845)
5.5 mm
Highly distinctive sculpture



Astyris n. sp.
3.2 mm; max ~3.6 mm
Smaller; Stouter

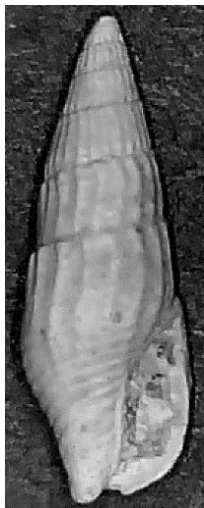


Astyris waccamawensis
(Gardner, 1948)
3.9 mm
Larger; 7 labral teeth

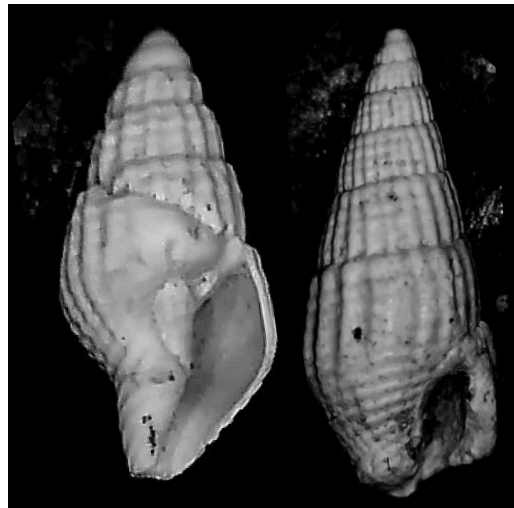
Costoanachis



Costoanachis sp.
Broken
10 mm
Faint spiral sculpture



Costoanachis clavatula
(Olsson & Harbison, 1953)
9.5 mm
Narrower; 14-16 axial ridges



Costoanachis parvula
(H. C. Lea, 1843)
Broken
3.6 mm; 12 mm
Stronger spiral sculpture

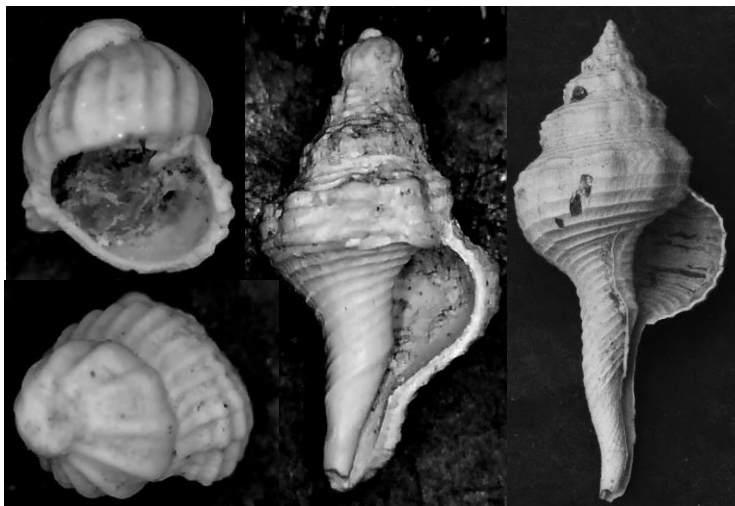


Costoanachis camax
(Dall, 1890)
9.5 mm; 16 mm
Broader; 12-16 axial ridges



Costoanachis caloosaensis
(Dall, 1890)
Broken
14.5 mm; 15 mm; max ~18 mm
Finer sculpture

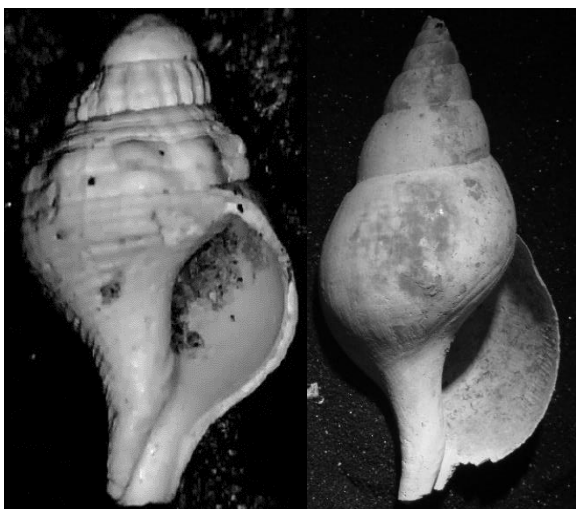
Heilprinia, Polygona & Cinctura



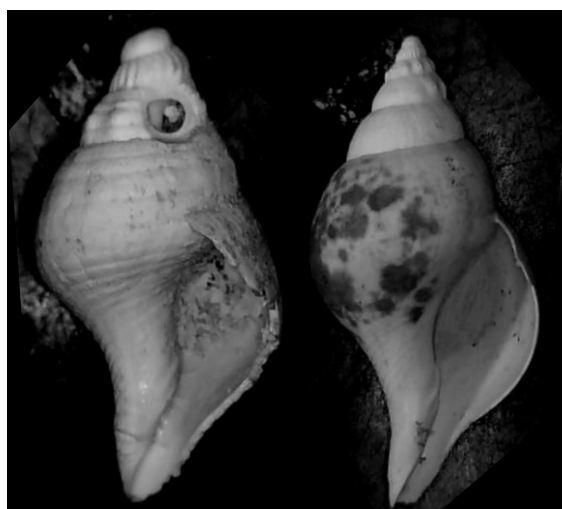
Heilprinia caloosaensis carolinensis
(Dall, 1892)
Protoconch; Adult
2.1 mm; 10.5 mm; 76 mm
Highly distinctive shape



Polygona cf. maxwelli
(Pilsbry, 1939)
32 mm
Shorter siphon

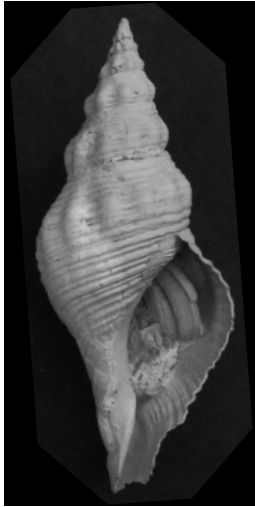


Cinctura apicina
(Dall, 1890)
Juvenile; Adult
10.6 mm; 88 mm; max ~96 mm OD
Larger protoconch

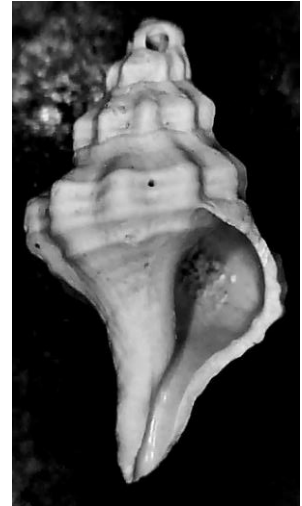


Cinctura cf. beaufortensis
(Ward & Blackwelder, 1987)
Juvenile; Subadult
13.5 mm; 43 mm; max 56 mm
Smaller protoconch

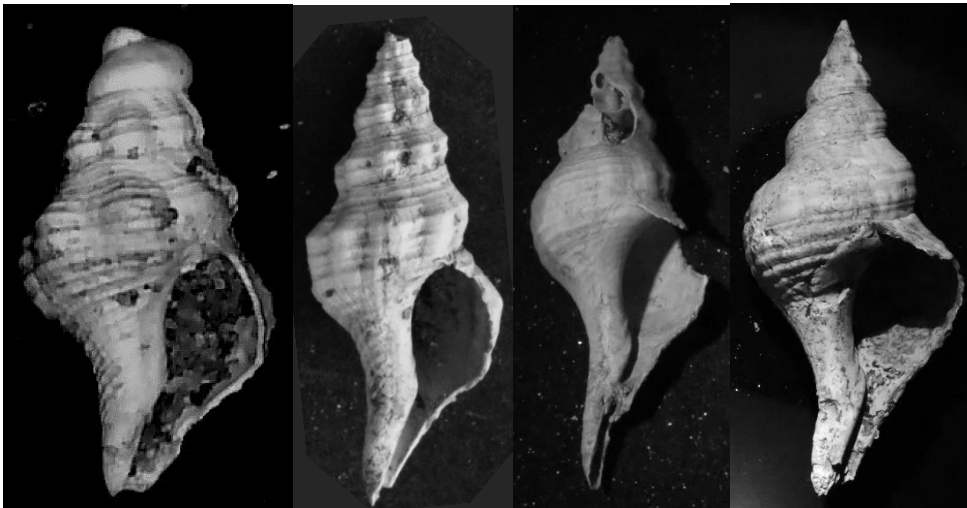
Pliculofusus & *Triplofusus*



Pliculofusus sparrowi
(Emmons, 1858)
138 mm
Narrower; Shorter siphon



Triplofusus cf. cronlyensis
(Gardner, 1948)
Juvenile
8 mm
Broad; Strongly sculpted



Triplofusus giganteus
(Kiener, 1840)
Juvenile; Juvenile; subadult; subadult
10 mm; 46 mm; 95 mm; 219 mm; 3&4OD
Common sculptured fasciolarine

Phrontis I



Phrontis sp. 2
10 mm; 13 mm
Very Tall



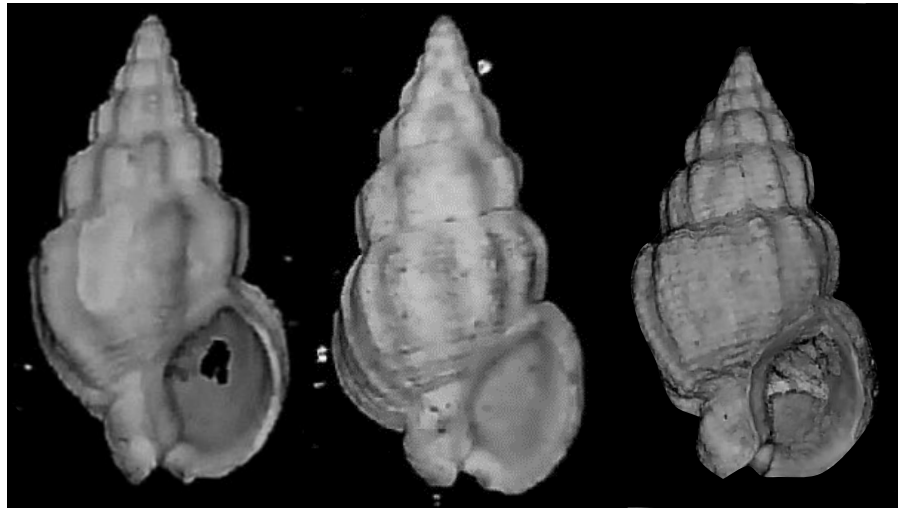
Phrontis cf. *floridensis*
(Olsson & Harbison, 1953)
9 mm
More rounded whorls



Phrontis sp. 4
9 mm
Strong spiral sculpture

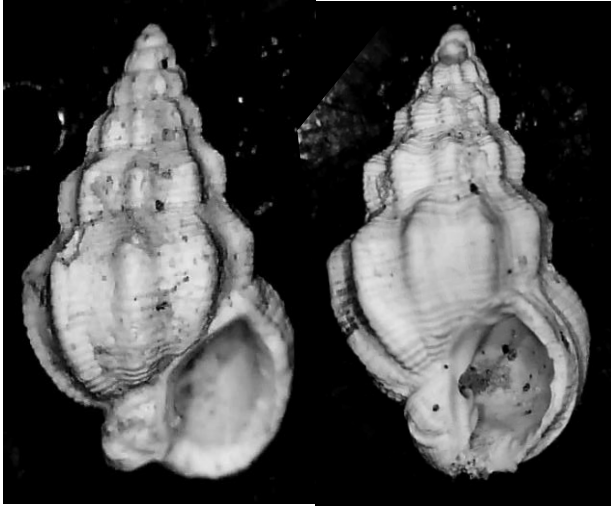


Phrontis cf. *fargoi*
(Olsson & Harbison, 1953)
9 mm
Somewhat angular ribs



Phrontis *alba*
(Say, 1826)
12 mm; 13 mm; 15 mm; max ~17.5 mm
Common larger *Phrontis*

Phrontis II



Phrontis cf. consensa
(Ravenel, 1861)
9 mm; 10.5 mm
9 angular axial ribs



Phrontis cf. antillarum
(d'Orbigny, 1847)
7.5 mm
Very angular ribs



Phrontis sp. 1
4.9 mm
Stronger axial sculpture;
Finer spiral sculpture



Phrontis cf. caloosaensis
(Dall, 1890)
4.9 mm
Very weak spiral sculpture

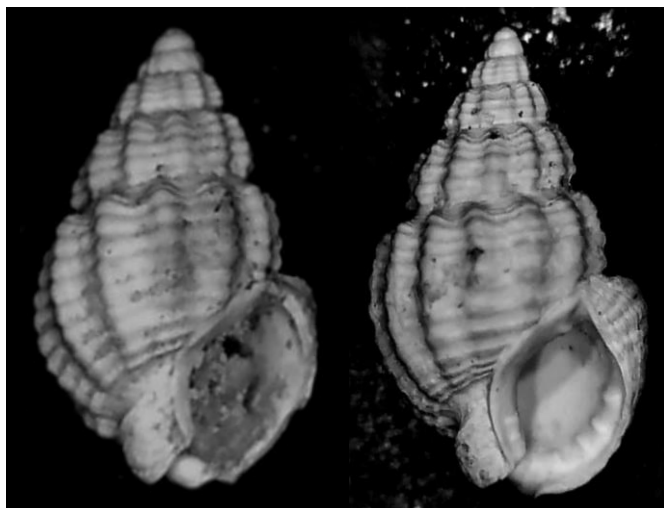
Phrontis III



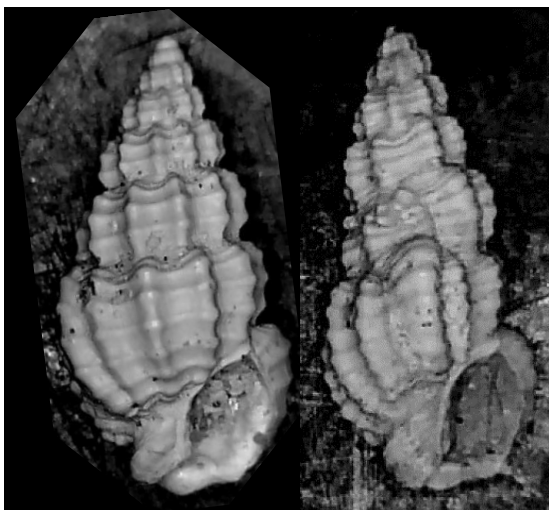
Phrontis sp. 3
8.7 mm
Nodular ribs



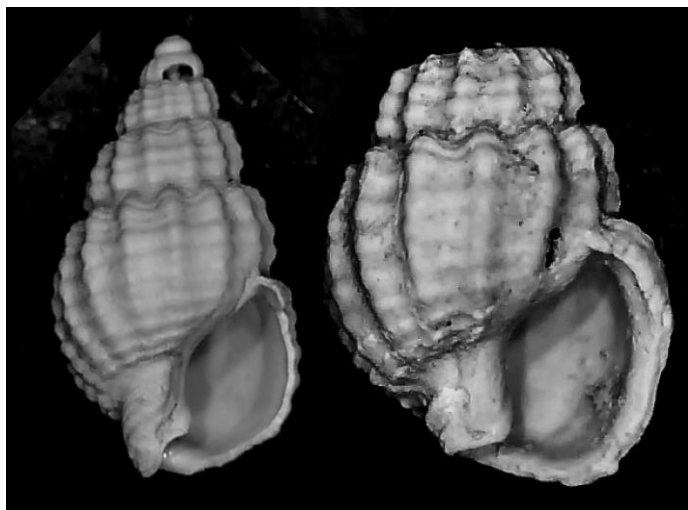
Phrontis cf. *chowanensis*
(Gardner, 1948)
11 mm
Broad spiral ridges; Taller



Phrontis cf. *consenoides*
(Olsson, 1916)
6.8 mm; 8.5 mm
Stronger spiral ridges; Shorter

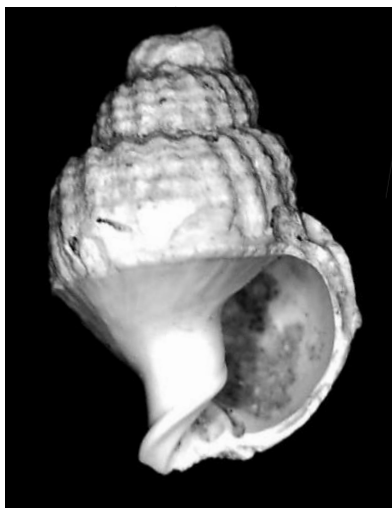


Phrontis *lapenotirei*
(Dall, 1890)
10 mm; 10.6 mm; max ~13 mm
Broad spiral interspaces



Phrontis cf. *neogenensis*
(Gardner & Aldrich, 1919)
Broken
5.5 mm; 9 mm
15 axial ridges; Broader

Tritia I



Tritia harpulooides

(Conrad, 1844)

Broken

7.5 mm

Highly distinctive sculpture



Tritia johnsoni

(Dall, 1892)

Broken

18 mm

More rounded whorls



Tritia porcina

(Say, 1824)

31 mm

Highly distinctive shape



Tritia scalaspira

(Conrad, 1868)

24 mm

Highly distinctive sculpture



Tritia schizopyga

(Dall, 1892)

Broken

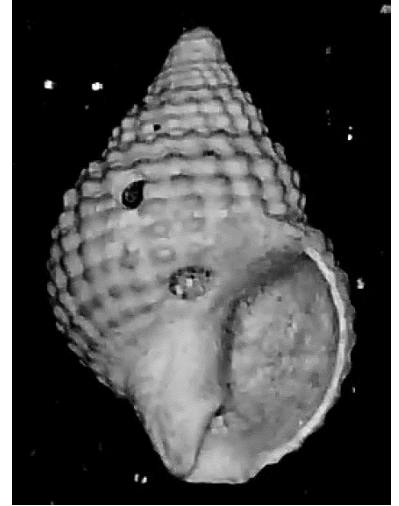
24 mm

More stepped spire

Tritia II



Tritia irrorata
(Conrad, 1863)
22 mm
Highly distinctive sculpture

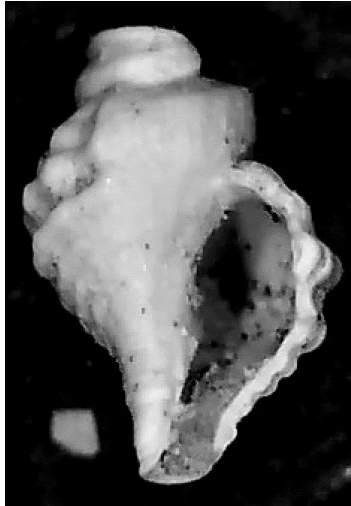


Tritia irrorata var.
(Conrad, 1863)
Juvenile
11.5 mm
Highly distinctive sculpture

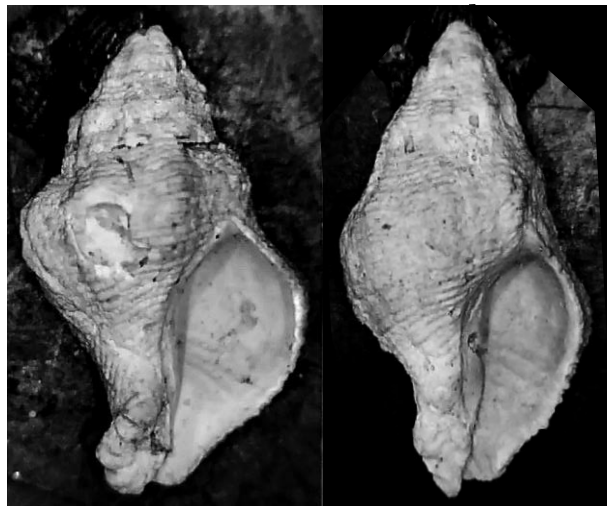


Tritia cf. *arata*
(Say, 1824)
22 mm; 33 mm 1LM
Highly distinctive sculpture

Muricidae *incertae sedis*

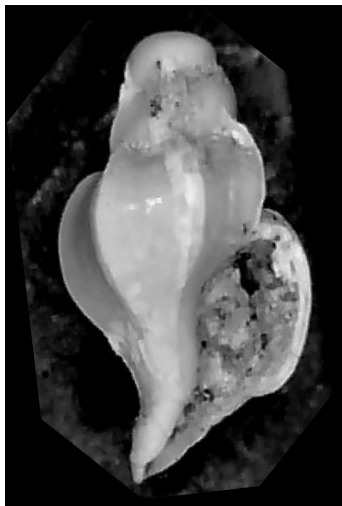


Muricidae *incertae sedis* 1
Juvenile
2.3 mm
Highly distinctive sculpture

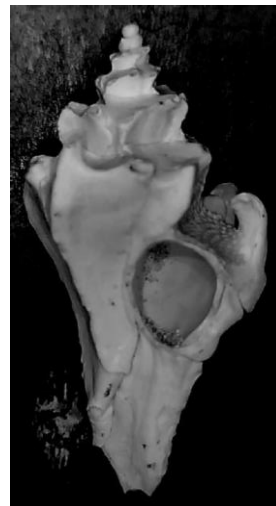


Muricidae *incertae sedis* 2
Subadult; Adult
15 mm; 19 mm
Highly distinctive sculpture

Muricidae II



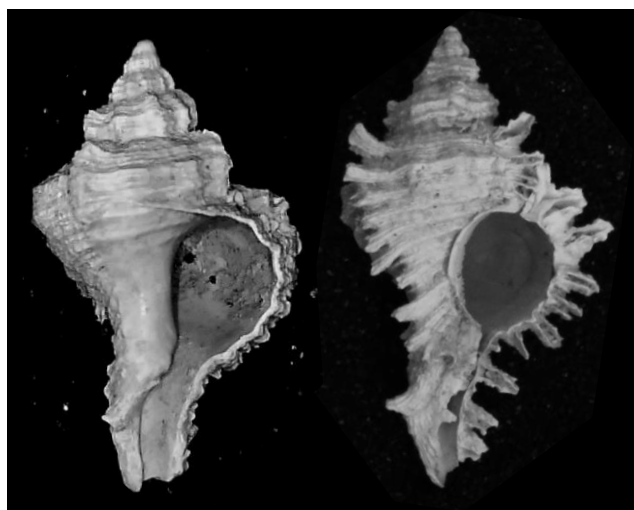
Aspella senex
Dall, 1903
Tiny juvenile
2.5 mm
Highly distinctive sculpture



Rugotyphis floridanus carolinensis
(Olsson & Petit, 1964)
20 mm
Highly distinctive shape

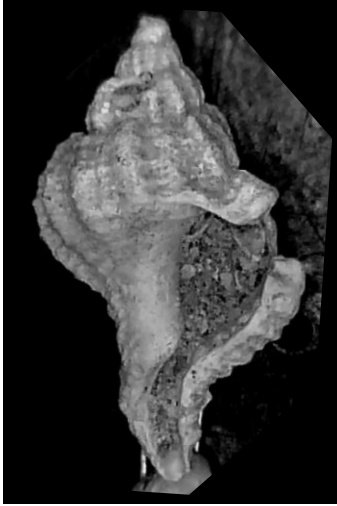


Hexaplex fulvescens
(Sowerby II, 1834)
Juvenile
50 mm CS
Highly distinctive sculpture

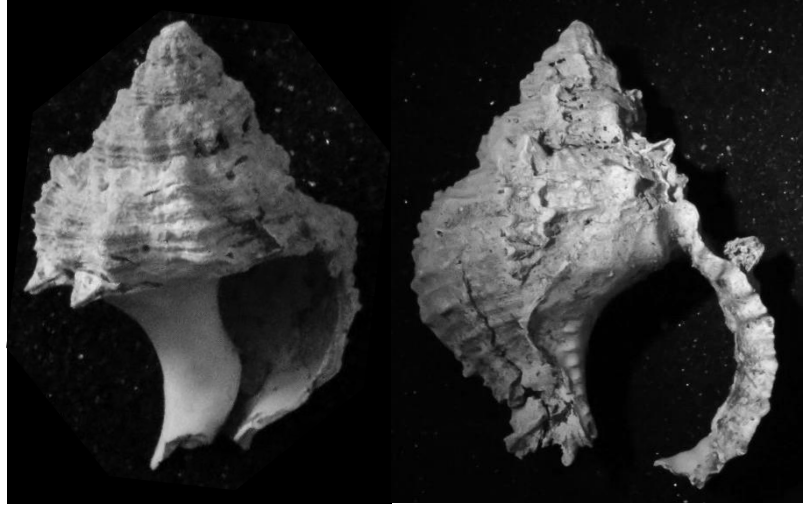


Chicoreus floridanus
E. Vokes, 1965
Subadult
21 mm; 41 mm
Highly distinctive sculpture

Phyllonotus & *Favartia*



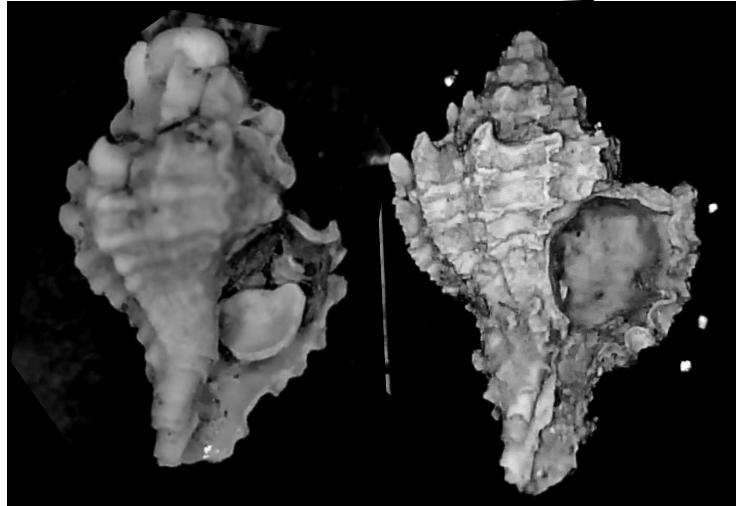
Phyllonotus sp.
Adult ?
18 mm
Three stronger varices



Phyllonotus globosus
(Emmons, 1858)
Broken
33 mm; 85 mm 2OD
Highly distinctive shape

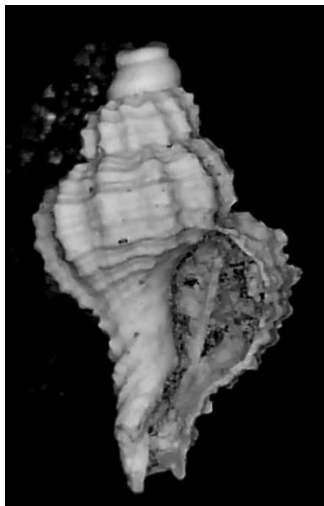


Favartia cf. *macgintyi*
(Smith, 1938)
15.3 mm
8 varices per whorl



Favartia cf. *shilohensis*
(Heilprin, 1888)
2.3 mm; 19 mm
12 varices per whorl

Murexsul & *Ocenebrinae* I



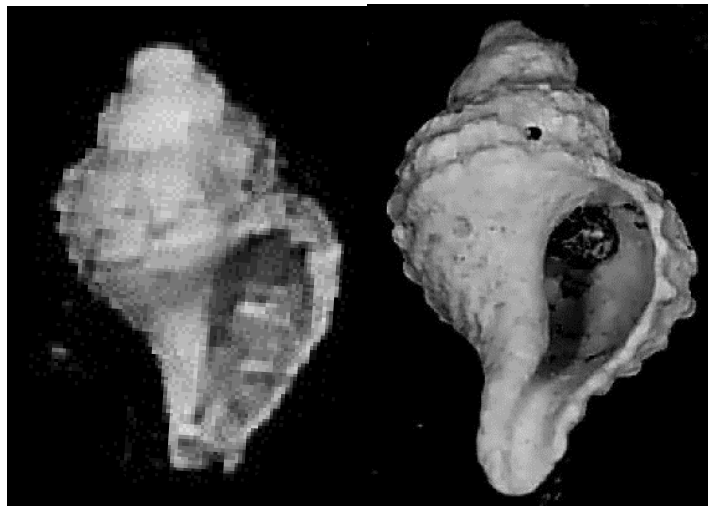
Murexsul cf. comptulus

Vokes, 1994

Subadult

7 mm

Highly distinctive sculpture

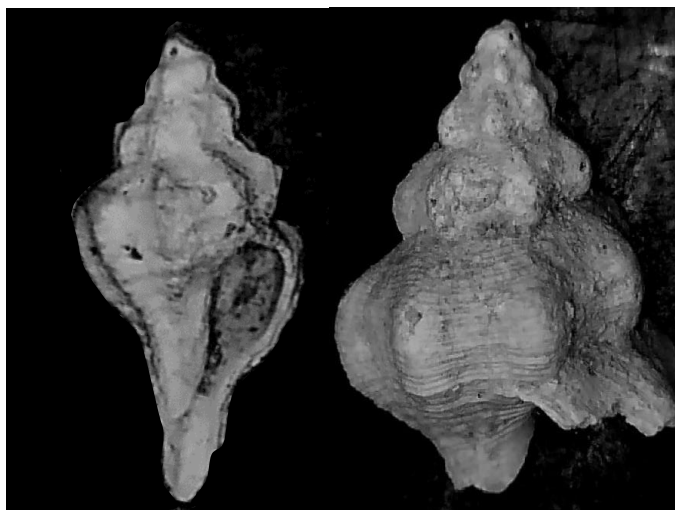


Ocenebrinae incertae sedis 1

Juvenile; Unknown

0.9 mm; 2.9 mm

Distinctive spiral sculpture



Calotrophon ostrearum

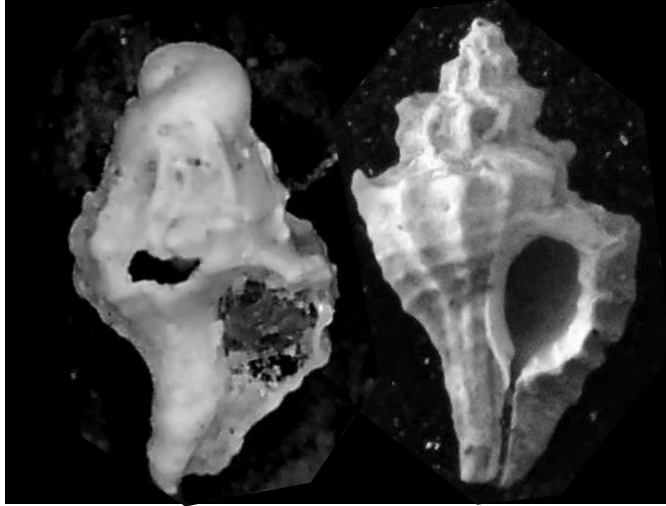
(Conrad, 1846)

Subadult; Broken

9.5 mm; 22 mm

Highly distinctive sculpture

Eupleura & *Pterorytis*



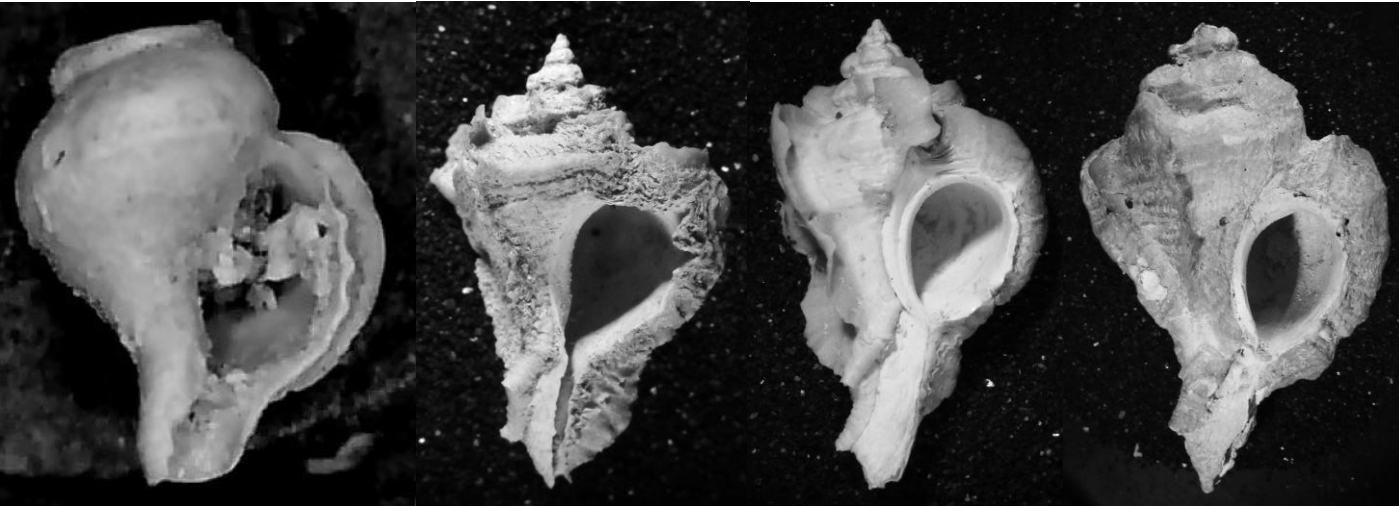
Eupleura caudata

(Say, 1822)

Juvenile; Adult

1.7 mm; 25 mm

Highly distinctive sculpture



Pterorytis fluviana

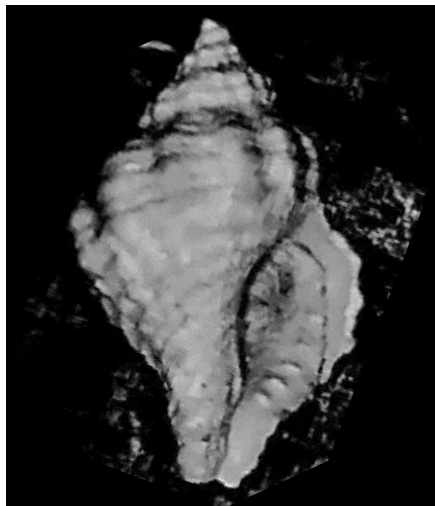
(Dall, 1903)

Juvenile; Adult

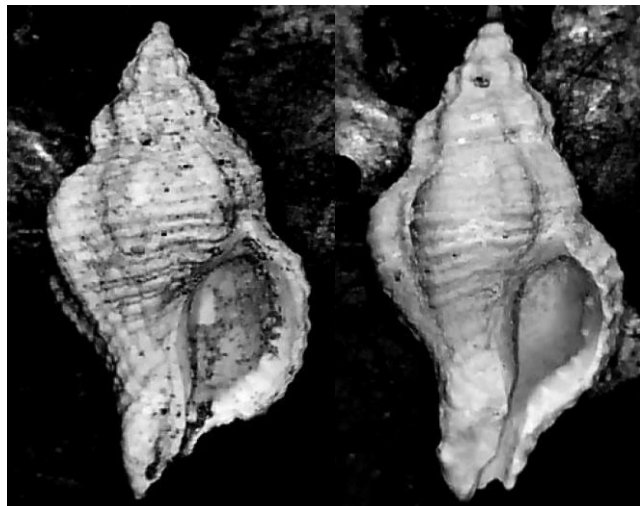
2 mm; 25 mm; 31 mm; 57 mm

Pinwheel-like varices

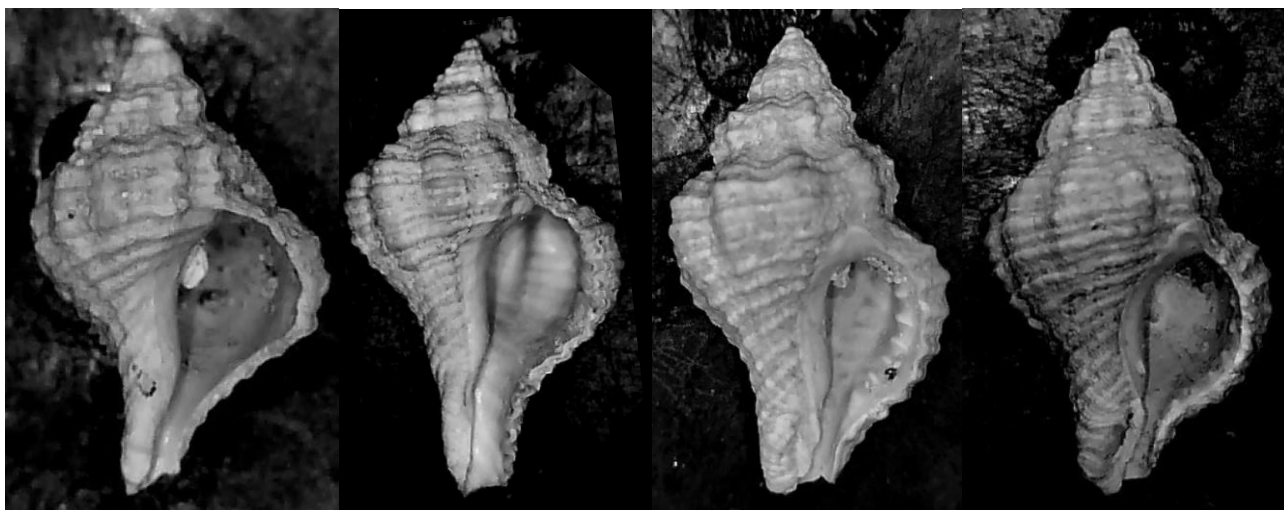
Urosalpinx I



Urosalpinx sp. 1
Broken
8.3 mm
6 labral teeth

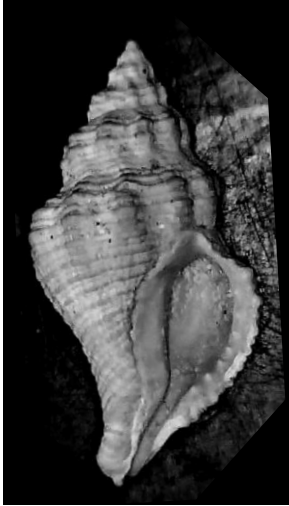


Urosalpinx sp. 4
Broken; Complete
13 mm; 17 mm
8 axial ribs



Urosalpinx sp. 3
Juvenile; Subadult; Adult; Adult
6.2 mm; 12.5 mm; 15 mm; 17 mm
Broad; Long siphon

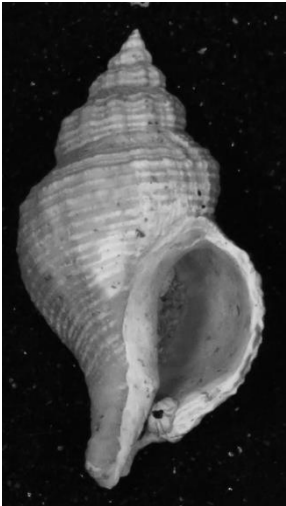
Urosalpinx II



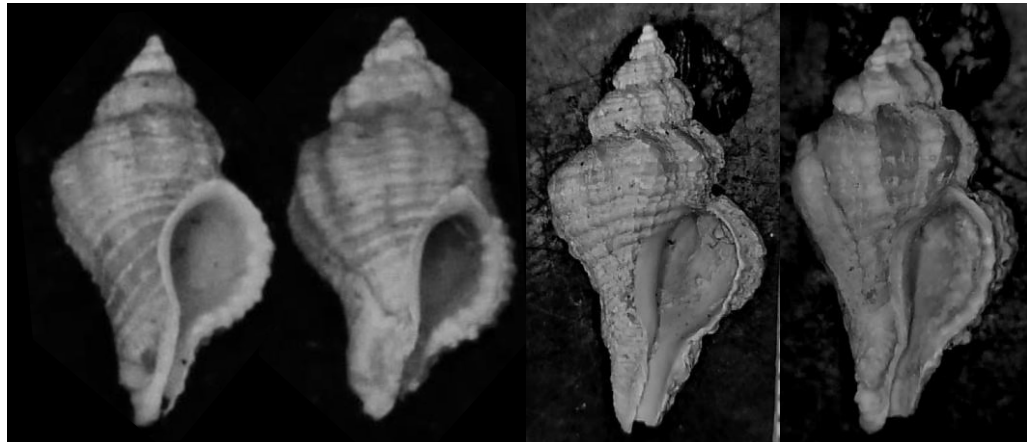
Urosalpinx sp. 2
30 mm
Curved siphon; Smaller
protoconch than *Cantharus*



Urosalpinx subsidus
Dall, 1890
7.6 mm; 20 mm
Distinctive beaded sculpture



Urosalpinx gardnerae
Campbell, 1993
41 mm LM
Highly distinctive shape



Urosalpinx lepidota var. 1; var. 2; var. 3
(Dall, 1890)
21 mm; 21 mm; 19 mm; 16 mm
Common *Urosalpinx*;
Extra large varices;
Curled varices