



SHELL-O-GRAM

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January-February 2010

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Programs

Due to a mix-up in the Southeast Branch Public Library's schedule, the January, 2010 meeting of the Jax Shell Club has been **changed to Wednesday the 27 at 7:00 PM**. The Shell-of-the-Month will be presented by Charlotte Thorpe, who found what has to be the largest *Neverita delessertiana* (Récluz in Chenu, 1843) ever recorded. Char will also tell us a bit about the interesting taxonomic history of this species. The main program will be given by Harry Lee, who will present a preview of his planned talk for the first annual meeting of FUM (Florida United Malacologists) meeting at the Bailey-Matthews Shell Museum on Sanibel Is. His topic will be the Florida Liptooths, a group of landsnails endemic to our state.

The club will next meet at 7:00 PM at the same place on the usual fourth Thursday (February 25, 2010). Brian Marshall will present the Shell-of-the-Month, *Daedalochila bicornuta* (Pilsbry, 1900), the Two-horn Liptooth. Limited in distribution to five counties in NW peninsular Florida, this species is as misunderstood as it is spectacular. Charlotte Lloyd will present a talk on the conesnails she has collected and/or photographed over the years. Anyone the least bit familiar with Charlotte's diving, collecting, and photographic expertise knows this will be an informative and entertaining experience.

Cedar Key Exploration

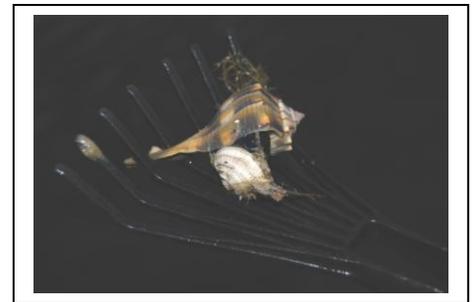
Below are some of the shells observed during the 30 Dec-Jan 1 trip to Cedar Key.



A whelk laying an egg case



Banded tulip shells
mating



A Lightning whelk eating a
Crossed-bar Venus

Jacksonville Shell Club, Inc.
1010 N. 24th Street
Jacksonville Beach, FL 32250

Membership: Charlotte Thorpe
E-mail: charlloyd@bellsouth.net

Editor: Richard Edwards
E-mail: rozedwards@bellsouth.net

This club meets each month at the Southeast Branch of the Jacksonville Public Library, 10599 Deerwood Park Blvd., Jacksonville, Florida. Please address any correspondence to the club's address above.

The *Shell-O-Gram* is issued bimonthly and mailed to all regular members. Annual membership dues are \$15.00 individual and \$20.00 family (domestic) and \$25.00 (foreign). Lifetime membership is available. Please send checks for dues to the above address and made out to the Jacksonville Shell Club.

We encourage members to submit articles for this publication. Closing date for article submission is two weeks prior to the first of each month of publication. Articles may be republished provided full credit is given the author and this newsletter and one copy of the complete publication in which the article appears is sent to the above address.

President's Corner

President's Message

Greetings,

The Holidays are behind us at last. I hope everyone had a great Christmas and New Year. I was thrilled to have so many here for the Shell Club Christmas Party. I wish I had found time to visit with everyone. Wish the rains were not a factor.

With the Holidays behind us, we need to settle down to work on the Shell Show and other projects. I trust that we will get a good start at the board meeting on January 10th. They are predicting rain the 10th at this time, but who knows.

Here's to a great new year,
 Barbara

Membership Dues are Due Now

**Please send in your dues: Individual \$15.00 Family
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**Charlotte Thorpe
 1010 24th St. N**

Jacksonville Beach, FL 32250

**Want to know your due date? Look at your S-O-G
 address tag and if the date has passed or is close to
 today's date -Your Dues are Due**



What is this?
 Answer is on the last page

East meets West, a look at two Florida malacofaunas

Today the Gulf of Mexico (GOM) is separated from northeast (NE) Florida marine waters by the peninsula of Florida (FL), and that geographic barrier spans some five degrees of latitude southward before its waters meet those of the Atlantic. This junction lies in an essentially tropical marine ecosystem, supporting a radically different shallow-water malacofauna from the basically Carolinian assemblage inhabiting both sides of northern FL. In fact, most authorities place the FL Keys faunistically in the Caribbean Province, in the shallow waters of which Carolinian elements often fail to prosper.

Thus there are substantial barriers to the commingling of marine molluscan fauna of NE FL and that of northwest (NW) FL. However, on a geological scale, these barriers have not been in place very long; Pleistocene fluctuations in sea level over the last few 100,000 years variously have erased and replaced them repeatedly. This earth history scenario helps raise some fundamental questions about the isolation of faunas and the generation of biodiversity - particularly for the marine mollusks which have lived through, or originated during, these vicissitudes. Understanding how the marine shells found on or near the coast on each side of northernmost Florida resemble and differ from each other may shed some light on uncertainties in the evolutionary processes of extinction and origination.

Since the 1970's amateur students of north Florida malacology have been actively collecting and recording their local mollusks. In the FL Panhandle, members of the Gulf Coast Shell Club (GCSC), initially in collaboration with the Northwest Florida Shell Club NWFSC published a list of 182 species members had collected from Pensacola to Port St. Joe (GCSC and NWFSC, 1984). This was followed by the GCSC's incrementally expanded lists (Brunner and Brunner, 1984, 1989; GCSC, 1997), reaching 497 taxa before the end of the millennium. On Nov. 2, 2009, the Brunners shared an unpublished ms containing 504 taxa. The collective efforts of the GCSC closely paralleled those of the Jacksonville Shell Club (JSC), which have been chronicled elsewhere (Lee, 2009b). Just as the JSC, the GCSC even exploited the bycatch of a locally-operating scallop fishery operating out of Carrabelle in Wakulla Co., which innovation added many offshore species which would have otherwise eluded detection.

During these halcyon years of these collective shelling enterprises, Dr. Jim Keeler left Cleveland, Ohio on his retirement from Westinghouse and moved to Tallahassee. Already an accomplished field malacologist, Jim quickly forged bonds with the Appalachian National Estuarine Research Reserve (ANERR), Jack Rudloe of Gulf Specimens and Marine Aquarium, Panama, FL, and other government agencies operating in and around Appalachian Bay. I had the pleasure of collecting with Jim in the 1990's while on vacation on St. George Is., and I recall very well his thoroughness and meticulous attention to the micromollusks, his specialty. Jim, together with John Robertson, a fellow field-worker, produced an inventory of the ANERR "and adjacent areas," which included St. Joe Bay and Panama (Keeler and Robertson, 1994). This list of 368 taxa certainly reflected Jim Keeler's attention to the microfauna.

After vetting these two NW FL inventories (reconciling them to my taxonomy and deleting varietal taxa), I changed their sequences from alphabetical to phylogenetic (following Turgeon, Quinn *et al.*, 1998 and Lee, 2009a). That produced an edited tally of 495 for the Brunners and 366 for Keeler and Robertson, very few of which require confirmation (preceded by a "?" in the list below). As expected from the barely-overlapping geographical limits of the two collection enterprises coupled with difference in collection methods and emphasis, the two lists had more differences than stochastic forces alone would have generated. This strategic complementarity produced a combined count of 590 species spread among five molluscan classes: 7 chitons, 206 pelecypods, 7 scaphopods, 370 gastropods, and 1 cephalopod.

The next step in the analysis was to compare the 808 (Lee, 2009a; plus four addenda since publication) NE FL taxa to the 590 from NW FL. A total of 156 species-level taxa emerged as unique to the latter collections. Following that was a scrutiny of that cadre of taxa to determine which ones are **true Gulf of Mexico endemic**, meaning limited in distribution to a part, maybe with a little "spill-over" to adjacent area(s), of the GOM. By determining the overall geographic range of each it should be possible to determine whether their absence from the NE FL inventory is attributable to factors such as undersampling or local ecological vagaries. Drawing from personal observations and my collection, which includes 247 Plio-Pleistocene species from the Nashua Formation, near Palatka, Putnam Co., NE FL* liberally supplemented by the western Atlantic marine molluscan database, Malacolog 4.1.1 (Rosenberg, 2009), I then made the following delineations on the 156 NW FL species-level taxa mentioned above:

Ischnochiton hartmeyeri Thiele, 1910 [Also known from E FL]

Ischnochiton niveus Ferreira, 1987 [Also known from E FL]

Ischnochiton striolatus (Gray, 1828) [Also known from Brazil]

Lepidochitona liozonis (Dall and Simpson, 1901) [Widespread in Caribbean Province]

Acanthochitona pygmaea (Pilsbry, 1893) [Also known from E FL]

***Geukensia granosissima* (G.B. Sowerby III, 1914)** [Sibling species, *G. demissa* (Dillwyn, 1817), in NE FL]

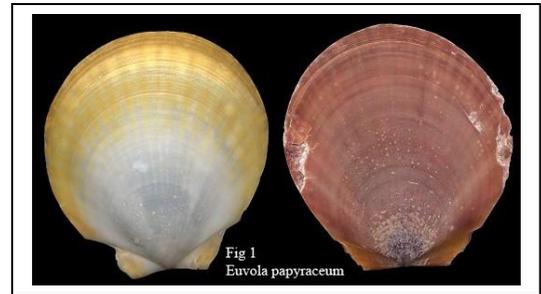
Lithophaga aristata (Dillwyn, 1817) [Widespread in Caribbean Province]

***Lunarca ovalis* (Bruguère, 1789)** [This is a special case. Although recorded from NE and NW FL, those from NE FL are easily distinguished by a consistently greater rib count]

Isognomon bicolor (C.B. Adams, 1845) [Widespread in Caribbean Province]

***Limaria locklini* (McGinty, 1955)**

Limea bronniana Dall, 1886 [Also occurs in NC and E FL]
Limatula subauriculata (Montagu, 1808) [Also occurs from Greenland southward to E FL]
***Euvola papyraceum* (Gabb, 1873)** [GOM records for this taxon actually refer to an undescribed endemic species] **Fig. 1.**
Spondylus ictericus Reeve, 1856 [Widespread in Caribbean Province]
Codakia orbicularis (Linnaeus, 1758) [Widespread in Caribbean Province]
Divaricella dentata (Wood, 1815) [Widespread in Caribbean Province]
Phacoides pectinatus (Gmelin, 1791) [Widespread in Caribbean Province]
***Stewartia floridana* (Conrad, 1833)** [Also occurs in NE FL as a fossil: Cracker Swamp, Plio-Pleistocene, Nashua Formation] *Diplostoma soror* C.B. Adams, 1852 [A problematic species; type locality: Jamaica]



***Aligena texasiana* Harry, 1969**
Oorbitella floridana (Dall, 1899) [Also occurs in the S Caribbean]
***Carditamera floridana* Conrad, 1838** [Straggles to SE FL; ancestral taxon, *C. arata* (Conrad, 1832), occurs in the Nashua Formation, Plio-Pleistocene, near Palatka, NE FL]
***Cuna dalli* Vanatta, 1904**
Laevicardium sybariticum (Dall, 1886) [A problematic taxon but generally considered widespread in the W Atlantic]
Nemocardium transversum Rehder and Abbott, 1951 [A problematic taxon. Considered by many to be a GOM endemic, but I think it = *N. tinctum* (Dall, 1889); see Lee (2009a: 35)]
Angulus probinus (Boss, 1964) [Also occurs in NC and E FL]
Angulus tampaensis (Conrad, 1866) [Although absent from E FL, occurs deep into the Caribbean]
Cymatoica orientalis (Dall, 1890) [Widespread in the Caribbean]
Eurytellina tayloriana (G.B. Sowerby II, 1867) [Also occurs in the Nashua Formation, Plio-Pleistocene, near Palatka, NE FL]
***Eurytellina lineata* (Turton, 1819)** [Although *Tellina decussatula* C. B. Adams, 1945 from Jamaica is a suspected synonym, this species seems not to stray far from the GOM]
Leporimetis intastriata (Say, 1826) [Widespread in Caribbean Province]
***Donax dorotheae* Morrison, 1971** [Sibling species, *D. parvulus* Philippi, 1849, in NE FL]
***Donax texasianus* Philippi, 1847**
***Cumingia vanhyningi* Rehder, 1939** [Straggles to Cuba, Central America, and the Bahamas; sibling to *C. tellinoides* (Conrad, 1830) of NE FL]
Coralliophaga coralliophaga (Gmelin, 1791) [Widespread in Caribbean Province, including Bermuda]
***Polymesoda maritima* (d'Orbigny, 1842)** [Straggles to Cuba and Quintana Roo]
***Agriopoma texasiana* (Dall, 1892)** [Limited to the northern shores of the GOM]
Chione elevata (Say, 1822) [Although much more characteristic of the GOM, it ranges to NC]
Transennella conradina (Dall, 1883) [Also occurs in NC and Bahamas]
Spengleria rostrata (Spengler, 1783) [Widespread in Caribbean Province, including Bermuda]
***Hiatella azaria* (Dall, 1881)**
Hiatella striata Fleuriau, 1802 [Widespread in the W Atlantic; may be a synonym of *H. arctica* Linné, 1767)]
Bankia gouldi Bartsch, 1908 [Cosmopolitan]
Pandora arenosa Conrad, 1834 [Also occurs in NC]
Graptacme eboreum (Conrad, 1846) [Although widespread in the Caribbean Province, NE FL shells, once thought to be conspecific, are now identified as *G. lepta* (Bush, 1885)]
? *Diodora dysoni* (Reeve, 1850) [Widespread in Caribbean Province]
Calliostoma marionae Dall, 1906 [Also occurs in NC, SC, and Cuba]
***Calliostoma tampaense* (Conrad, 1846)**
Smaragdla viridis (Linnaeus, 1758) [Widespread in Caribbean Province, including Bermuda]
Modulus lindae Petuch, 1987 [A problematic taxon: questionable validity; type locality is Palm Beach Co., FL]
? *Echinolittorina angustior* (Mørch, 1876) [Previously unknown in GOM; widespread in Caribbean Province; probably *E. placida* Reid, 2009]
Echinolittorina ziczac (Gmelin, 1791) [Previously unknown in GOM; widespread in Caribbean Province]
Rissoina multicosmata (C.B. Adams, 1850) [Widespread in Caribbean Province]
Rissoina striosa (C.B. Adams, 1850) [Widespread in Caribbean Province]
Truncatella pulchella L. Pfeiffer, 1839 [Widespread in Caribbean Province]
Circulus multistriatus (A.E. Verrill, 1884) [Also occurs in NC and the S Caribbean]
***Circulus suppressus* (Dall, 1889)** [Although reported from NC, I have never seen a specimen collected outside the GOM]
Caecum clava de Folin, 1867 [Widespread in Caribbean Province]
Caecum textile de Folin, 1867 [Widespread in Caribbean Province]
Meioceras cornucopiae Carpenter, 1858 [Widespread in Caribbean Province]
Strombus gallus Linnaeus, 1758 [Widespread in Caribbean Province]
Hipponix incurvus (Gmelin, 1791) [Also occurs in NC and Caribbean Province]
***Crepidula maculosa* Conrad, 1846** [Occurs in the Nashua Formation, Plio-Pleistocene, near Palatka, NE FL]
Crepidula plana Say, 1822 [Recent taxonomic advances rule this nominal taxon out as a GOM species; some possibility it's endemic]
Capulus ungaricus (Linné, 1767) [this and other W Atlantic records, including Bermuda and Colombia, represent an un-named congener]
Petalocochus varians (d'Orbigny, 1841) [Widespread in Caribbean Province to Brazil]
Dendropoma corrodens (d'Orbigny, 1841) [Widespread in Caribbean Province, including Bermuda and Brazil]
Pseudocyphoma intermedium (G.B. Sowerby I, 1828) [Widespread in Caribbean Province to Brazil]
Lamellaria leucosphaera Schwengel, 1942 [Problematic taxon: identification difficult, appears to be widespread in Caribbean Province]
Natica livida L. Pfeiffer, 1840 [Widespread in Caribbean Province]
***Neverita delessertiana* (Récluz in Chenu, 1843)** [May straggle to SE FL] **Fig. 2.**



- Sconsia grayi* (A. Adams, 1855) [Several synonyms include *Cassis striata* Lamarck, 1816 non J. Sowerby, 1812; widespread in Caribbean Province]
- Cymatium femorale* (Linnaeus, 1758) [Widespread in Caribbean Province]
- Cymatium raderi* D'Attilio and Myers, 1980 [Widespread in Caribbean Province]
- Cymatium vespaceum* (Lamarck, 1822) [Widespread in Caribbean Province]
- Cerithiopsis iontha* Bartsch, 1911 [Widespread in Caribbean Province, including Bermuda]
- Amæa mitchelli* (Dall, 1896) [Widespread in Caribbean Province]
- Epitonium celesti* (Aradas, 1854) [Synonym: *Epitonium pourtalesii* (A.E. Verrill and S. Smith in A.E. Verrill, 1880); also found from NJ and widespread in the Caribbean Province]
- Epitonium frielei* (Dall, 1889) [Also found from NC to SE Brazil]
- ? *Epitonium eburneum* Potiez and Michaud, 1838 [a European taxon; this name has probably been applied to a plump relative of *E. rupicola* and is considered endemic to the GOM]
- Epitonium matthewsae* Clench and Turner, 1952 [Straggles to SE FL; probably sibling to *E. multistriata* (Say, 1826)]
- Opalia crenata* (Linnaeus, 1758) [Widespread in the Caribbean Province to SE Brazil]
- Janthina globosa* Swainson, 1822 [Pelagic; widespread]
- Janthina janthina* (Linnaeus, 1758) [Pelagic; widespread]
- Janthina pallida* W. Thompson, 1840 [Pelagic; widespread]
- Microeulima hemphillii* (Dall, 1884) [A problematic species; un-named NE FL relative differs, but the species does occur in SE FL (Hutchinson Is.)]
- Attiliosa philippiana* (Dall, 1889) [Also occurs in the S Caribbean; *Acanthotrophon striatoides* E.H. Vokes, 1980, in NE FL inventory is frequently misidentified as this species]
- Dermomurex elizabethae* (McGinty, 1940)
- Eupleura sulcidentata* Dall, 1890 [Reaches SE FL and the Bahamas; probably originated in the GOM]
- Murexiella macgintyi* (M. Smith, 1938) [Widespread in Caribbean Province]
- Stramonita canaliculata* (Gray, 1839)**
- Urosalpinx perrugata* (Conrad, 1846)**
- Urosalpinx tampaensis* (Conrad, 1846)** [Also introduced to the Indian River of E FL with mariculture transplants (Marlo Krisberg, personal communication; *vidi*)]
- Vokesimurex rubidus* (F.C. Baker, 1897) [Also occurs in NC and widespread in the Caribbean Province]
- Vasum muricatum* (Born, 1778) [Widespread in Caribbean Province]
- Bailya milleri* Nowell-Usticke, 1959 [Widespread in Caribbean Province]
- Hesperisternia multangula grandana* (Abbott, 1986)**
- Pisania* species [? *Anna florida* Garcia, 2008] [Widespread in Caribbean Province]
- Solenosteira cancellaria* (Conrad, 1846)** [Pliocene and/or Pleistocene fossil in NE FL; see Lee (2009a: 108)]
- Busycon lyonsi* Petuch, 1987** [A problematic species, but a definite GOM endemic] **Fig. 3.**
- ? ***Busycotypus spiratus plagosus* (Conrad, 1863)**
- Nassarius hotessierianus* (d'Orbigny, 1842) [Probably not that taxon but a similar species; see Lee (2009a: sp. 532, p. 111)]
- Nassarius scissuratus* (Dall, 1889) [Probably not that taxon but a relative not yet found in NE FL but occurring in Barbados]
- Nassarius* species** [An un-named species also found in the deeper waters off LA by Emilio García] **Fig. 4.**
- Fasciolaria branhamae* Rehder and Abbott, 1951** [not known from the NE GOM; this and/or one or more of the following is *F. bullisi* Lyons, 1872; all four are GOM endemics]
- ? ***Fasciolaria liliium* Fischer, 1807** [not known from the NE GOM; this and/or the one above and below is *F. bullisi* Lyons, 1872; all four are GOM endemics]
- ? ***Fasciolaria liliium tortugana* Hollister, 1957** [not known from the NE GOM; this and/or one or more of the above two is *F. bullisi* Lyons, 1872; all four are GOM endemics]
- Fusinus heleneae* Bartsch, 1939** [Record from Colombia dubious]
- Heilprinia timessa* (Dall, 1889)** [Straggles to SE FL and Cuba] **Fig. 5.**
- Hemipolygona carinifera* (Lamarck, 1822)** [probably an un-named congener endemic to GOM]
- Columbella rusticooides* Heilprin, 1887** [Reaches Honduras but found throughout the GOM]
- ? ***Costoanachis hotessieriana* (d'Orbigny, 1843)** [not that species but quite possibly an unnamed taxon known to us from that area]
- Costoanachis semiplicata* (Stearns, 1873)** [I have seen this once from Jupiter Inlet]
- Parvanachis ostreicola* (Melvill, 1881)**
- Steironepion minus* (C.B. Adams, 1845) [Occurs from NC to Brazil]
- Olivella lactea* Marrat, 1871** [*O. adelae* Olsson, 1956 is considered synonymous; although recorded from NC and Colombia, I consider those records dubious]
- Olivella inusta* G.B. Sowerby III, 1915** [Occurs in the Nashua Formation, Plio-Pleistocene, near Palatka, NE FL]
- Olivella perplexa* Olsson, 1956 [Widespread in Caribbean Province]
- Eratoidea hematita* (Kiener, 1834) [Widespread in Caribbean Province]
- Prunum succinea* (Conrad, 1846)** [Appears to be limited to W FL] **Fig. 6.**
- Agatrix agassizii* (Dall, 1889) [Occurs in NC and Puerto Rico]
- Cerodrillia perryae* Bartsch and Rehder, 1939 [Widespread in Caribbean Province]
- Cerodrillia schroederi* Bartsch and Rehder, 1939**
- ? *Crassispira tryonii* (Dall, 1889) [Widespread in Caribbean Province; not otherwise known from the GOM]
- Splendrillia brunnescens* (Rehder, 1943)** [although synonymized with the next species, it appears distinct]
- Splendrillia moseri* (Dall, 1883) [Also Occurs in NC to Brazil]
- Terebra arcas* Abbott, 1954** [Also Occurs in NC to Brazil]

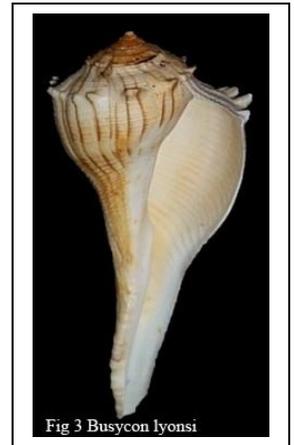


Fig 3 Busycon lyonsi



FIG 4 Nassarius species

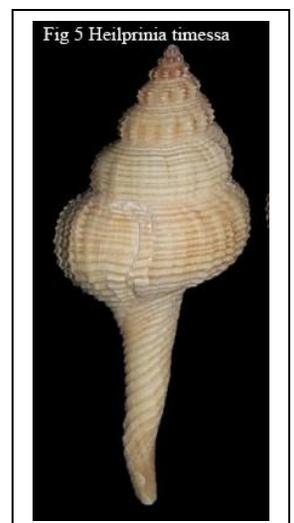


Fig 5 Heilprinia timessa

Terebra vinosa Dall, 1889 [Also Occurs in NC]

Compsodrillia eucosmia (Dall, 1889) [Widespread in Caribbean Province]

Polystira florencae Bartsch, 1934 [Widespread in Caribbean Province]

***Polystira tellea* (Dall, 1889)**

Pyrgospira tampaensis (Bartsch and Rehder, 1939) [I believe it is the same as *P. ostrearum* (Stearns, 1872), which occurs in NE FL; see Lee (2009a: 127)]

***Zonulispira crocata* (Reeve, 1845)**

Conus armiger Crosse, 1858 [Also occurs S to Surinam]

Conus atractus austini Rehder and Abbott, 1951 [Also occurs S to Surinam]

Conus philippii Kiener, 1845 [Also occurs S to Panama (as *Conus ernesti* Petuch, 1990)]

Daphnella corbicula Dall, 1889 [Also occurs from NC to Brazil]

Daphnella reticulosa Dall, 1889 [Also occurs in Barbados]

Kurtziella perryae (Bartsch and Rehder, 1939) [Although absent from E FL, it occurs in the Caribbean and Brazil]

Mitrolumna biplicata (Dall, 1889) [Widespread in Caribbean Province to Brazil]

Pyrgocythara filosa Rehder, 1943 [Also in Central America and Colombia]

Pyrgocythara plicosa (C.B. Adams, 1850) [Although strangely rare in E F, occurs from MA to the Caribbean Province]

***Pyrgocythara hemphilli* Bartsch and Rehder, 1939** [A tough call; straggles to the Bahamas and Brevard Co., E FL.

Probably originated in the GOM]

***Pyrgocythara* species** [This taxon is known to us from collections elsewhere in W FL and TX and has not been seen from outside the GOM]

***Stellatoma stellata* (Stearns, 1872)** [Record from Brazil based on misidentification] **Fig. 7.**

Tenaturris dysoni (Reeve, 1846) [Widespread in northern Caribbean Province]

Boonea seminuda (C.B. Adams, 1837) [Widespread along the E coast of the USA]

***Eulimastoma harbisonae* Bartsch, 1955**

Eulimastoma teres (Bush, 1885) [Type locality: NC; possible synonym of *E. engonium* (Bush, 1885)]

Odostomia gibbosa (Bush, 1909) [Also occurs as far N as MA]

Odostomia laevigata (d'Orbigny, 1842) [Widespread in Caribbean Province]

Petitilla crosseana (Dall, 1885) [Also occurs in SC and the Bahamas]

Sayella fusca (C.B. Adams, 1839) [Also occurs as far N as MA]

Sayella hemphilli (Dall, 1884) [A problematic species: also occurs in SE FL (Hutchinson Is.). NE FL close relative, probably un-named, is distinct]

? *Haminoea solitaria* (Say, 1822) [Found along the NE coast of the USA]

Umbraculum umbraculum (Lightfoot, 1786) [Widespread in Caribbean Province]

In the course of this evaluation, I found that the definition of “endemic” was a bit elusive. It’s easy enough when a species is confined to a small part of the GOM, e.g., *Agriopoma texasianum*, *Prunum succinea*, *Olivella inusta*, and *O. lactea*, or seems otherwise never to set foot outside the GOM, e.g., *Stewartia floridana*, *Parvanachis ostreicola*, *Costoanachis* species, or *Fusinus helenae*, but what to do with taxa that seem to “straggle” outside the boundaries? I tried to analyze these situations based on what percentage of the range lay outside vs. inside the GOM. When there was a distinct dominance of the “inside” component, I tended to concede endemism. On the other hand, if there was a credible record for NC or north, GOM endemism was ruled out. Thus I only found a third (51) of 156 listed taxa to be **endemic to the GOM**. Ignoring the very few unconfirmed identifications, I have indicated that somewhat over 8.6 percent of the entire (590 taxa) NW FL inventory is comprised of GOM endemics. Thus it appears certain that the GOM is an important center of origination for molluscan species. It may also be a retreat for species that were more widespread in the Carolinian Province in earlier times; see comments at *Eurytellina tayloriana*, *Crepidula maculosa*, *Solenosteira cancellaria*, and *Olivella inusta*. The relative contribution of each process may be further clarified by a more thorough analysis of the fossil record.

One might ask for explanations for the JSC not turning up the remainder (105) of the listed species in NE FL. Are the tropical (Caribbean Province) elements more likely to survive/prosper in the waters of Mexico Beach than Mayport? Maybe yes; maybe no. Of the intertidal fauna, NW FL has *Smaragdia viridis* and *Littorina ziczac*, but NE FL has *Nerita fulgurans* Gmelin, 1791 and *Nassarius polygonatus* (Lamarck, 1822); see Lee (2009a). As for the discrepancies of the NE and NW FL offshore faunas, a thorough analysis will not be pursued, but a claim can easily be made for a multifactorial distributional model, including water temperatures, currents, larval history, ecological vagaries, etc., for northward dispersal and survival, which in the ultimate analysis produces a non-random but hard-to-predict mosaic, a biogeographic crap-shoot, on each side of the peninsula. At present, differences in the intensity of collecting efforts alone easily account for most of the NE FL surfeit.

On a more practical level, the average NE FL shell collector can now be reassured, with the facts and figures, that a trip W across the state is bound to open new horizons once he wets his feet in the GOM. The expectation of encountering an almost ten percent increment in the marine molluscan diversity is real! Now we have the numbers to prove it!

In an upcoming issue of the *Shell-O-Gram*, I’ll try to demonstrate what benefits await a GOM shell collector in NE FL by applying the above approach with (1) a recently-published GOM marine malacofauna inventory, which includes over 2000 species (Rosenberg, Moretzsohn, and Garcia in Felder and Camp. 2009) and (2) the Jacksonville Shell Club’s cumulative checklist of Cedar Keys mollusks, which has just reached 318 species, online at <<http://www.jaxshells.org/cedarkey.htm>> vs. the 808 species found in northeast Florida (Lee, 2009a).



Fig 6 Prunum succinea

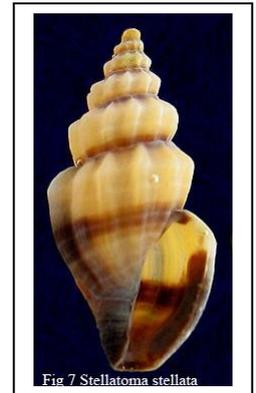


Fig 7 Stellatoma stellata

* USA: Florida, Putnam Co., Hastings Quadrangle, SE¼, SW¼, SEC.24, T9S, R27E: Cracker Swamp Ranch 01 (PU0004). Spoil from two acre borrow pit, 10 to 15 feet stratum. Four visits: Harry G. Lee (HL)! 6/9, 6/25, 7/9/96; Roger Portell *et. al.* (Florida Museum of Natural History, Gainesville [FLMNH])! 6/25, 7/9, 7/21/96. All material was placed in the collections of HL and FLMNH.

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The picture on page 2 is a partially buried sand dollar.