# SHELL·O·GRAM

Official Publication of the
**JACKSONVILLE SHELL CLUB, INC.**

**September-October, 2003** **Volume 44(4)**




## September Meeting

The Thursday, September 25th meeting of the Jacksonville Shell Club will be held at the Southeast Branch Public Library at 7:00 PM.

The program will be a special one - all in attendance are asked to participate. Bring your favorite shell or species (represented by one or more specimens) and be prepared to give an informal two-minute talk on that shell or species. This is not a scientific exercise; the intent is to get a sense of what inspires and gives pleasure to each individual collector. The more participants, the more viewpoints will be expressed. This process should allow all in attendance to get a better sense of how others (and themselves) are enriched by the collecting and curating of shells. Bill Lyerly will serve as moderator.

Mary Reynolds will give the Shell-Of-The-Month on *Littoraria irrorata* (Say, 1822), the Marsh Periwinkle.

## October Meeting

The Thursday, October 23rd meeting of the Jacksonville Shell Club will be held at the usual time and place.

For the educational program Charlotte Lloyd will give us a glimpse of shelling in the Sea of Cortez (Gulf of California for the more prosaic). She will be freshly-returned from her first collecting trip to that destination and will be able to contrast the fauna with that of Pacific Panama, about which she spoke at the March, 2003 meeting.

The Shell-Of-The-Month will be given by Harry Lee on the genus *Stosicia* in the western Atlantic. Read a little (?) about these little snails in this issue of the *Shell-O-Gram.*

### Diving for Shark Teeth Offshore of South Carolina

By Charlotte Lloyd

I guess if you are a true "collector" then your interests probably extend to more than one area. For over 40 years I have been avid about seashells, however, I also love and collect antiques and have always had an interest in fossils. For several years now my sons Jimmy and Brian have been fishing/diving the reefs offshore of Georgetown, South Carolina and coming home with large fossilized shark teeth. For several years I have been planning a trip to dive with them and join the hunt. In August I finally got the chance.

The day before I was to drive up to South Carolina my son called and said, "Mom, you better bring a wetsuit because it is chilly on the bottom." As much as I hate it, I would bring the dreaded suit and of course a collecting bag for all of the shark teeth I was going to find. **[Continued on page 4.]**

**Jacksonville Shell Club, Inc.**
**1865 Debutante Dr.**
**Jacksonville, FL 32246-8645**
**E-mail: bill@jaxshells.org**

## www.jaxshells.org

**The Shell-O-Gram is issued bimonthly and mailed to all regular members. Annual membership dues are $12.50 individual and $15.00 family (domestic), and $20.00 (foreign). Lifetime membership is available.**

**Send dues to: Charlotte M. Lloyd**
**1010 N. 24th Street**
**Jacksonville Beach, FL 32250-2883**

**The club meets each month, excluding December, at the Southeast Branch Public Library, 10599 Deerwood Park Blvd., Jacksonville Florida. Please address any correspondence to the club's address shown above.**

**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 mailed to Editor at the above address.**

### Founding Member Undergoes Surgery

Jacksonville Shell Club founding member Gertrude Moller recently had heart surgery and is doing well. She is now in the Heartland Rehabilitation Center of Jacksonville, Room 207. Her phone number is 419-2569 for friends that would like to contact her.

### September Election

The Jacksonville Shell Club nominating committee, chaired by Claire Newsome, has proposed the following slate of officers for 2003-2004:

-President – Billie Brown
-Vice-President – Harry Lee
-Secretary – Ellen Reid
-Treasurer – Charlotte Lloyd

At the September meeting the nominating committee will present their slate for the Board of Directors. Following this action, nominations from the floor will be entertained, followed by the election. Mark your calendar now, and plan to attend this important meeting.

### It's That Time Again
### Membership Dues Are Now Due

Jacksonville Shell Club membership dues for club fiscal year 2004 were due for a vast majority of club members on September 1st.

You can determine when your membership expires (or when it expired) by checking the numerical entry that appears before your name on your newsletter mailing label. An entry of "8/03" would indicate that your membership expired on the last day of August, 2003.

Don't delay – mail your check to the Club Treasurer, Charlotte Lloyd, whose address appears on this page.

### U. S. Naval Station Invaded

Despite unprecedented security over the past two years that has included troops armed with automatic weapons, the initiation of armed patrols even on the beach, searches, immobile barriers, and intense identification verification, Mayport Naval Station was recently invaded by a foreign foe – a molluscan foe that is.

The invasive Asian Green Mussel [*Perna viridis* (Linnaeus, 1758)] has been confirmed living in Duval County waters for the first time at Mayport Naval Station. During a shelling trip to the naval station beach on July 28th your editor found the species living in numbers on the granite boulders of the south St. Johns River Jetty. The largest specimen collected measured just over two inches in length (55 mm.). However, it should be noted that under optimal conditions (such as in their native range in the Indian Ocean and Southwest Pacific) Green Mussels might grow to a length of nearly 6 inches (about 150 mm.) The specimens at Mayport were duly photographed, and several dozen were collected as voucher specimens.

**Asian Green Mussels collected at Mayport Naval Station.**

My curiosity aroused, I conducted further trips to the north St. Johns River Jetty in Huguenot Memorial Park (July 31st) and the south St. Mary's River Jetty at Ft. Clinch in Fernandina Beach (August 11th). In both locales a healthy population of Green Mussels was found growing both on the ocean and river sides of the jetty – in each instance in concert with our native species *Brachidontes exustus* (Linnaeus, 1758) [Scorched Mussel].

After having so much success in finding this alien invader on local structure, I took additional trips to the rip-rap jetty in the Ft. George River (August 12th), the "Black Rock" structure at Big Talbot Island (August 25th), and various types of structure near Matanzas Inlet in southern St. Johns County (August 27th). No Green Mussels were found at any of these locations nor were any Scorched Mussels suggesting that the two species share a common habitat preference – at least in Northeast Florida.

This exotic species was first discovered in Florida during July of 1999, when divers from the Tampa Electric Company (TECO) were performing routine maintenance on the cooling water intake pipes at one of its power generating stations in Tampa Bay and found that the screens on the pipes were partially clogged with the mollusks. It appears likely that the species was transported to Tampa Bay in the ballast water of commercial shipping with the Tampa port being the 11th busiest in the country.

Since the initial discovery, prevailing currents have spread the mussels southward along the southwest Florida coast to Naples Beach in the Gulf of Mexico (November, 2001). According to the U. S. Geological Survey, this is the first known infestation by this species in the United States although previously the species has been recorded from the waters off Trinidad (1990) and nearby Venezuela (1993) in the Western Hemisphere.

The presence of the mussels on local jettys is not entirely unexpected. Early this year Dr. W. Henry McCullagh found a moderate number of living adult *Perna viridis* stranded along with benthic green algae, to which the mytilids were attached at Crescent Beach, St. Johns Co., Florida. Subsequently during the third week or March, an additional stranding of live specimens was discovered by Ms. Betty DeMarco (Harry Lee's lab technician) on Atlantic Beach in Duval Co. - some 50 miles north of the initial discovery by Dr. McCullagh. Then on May 12th your editor discovered a recently dead specimen on the beach at Mayport – a location only about 50 meters distant from where the living specimens were ultimately found during July.

There is no conclusive evidence that the presence of the mussels in northeast Florida is directly related to the initial population in Tampa Bay – especially since the Port Of Jacksonville too gets its share of international shipping traffic. However, it has been theorized that shipping traffic between the west coast of Florida and northeast Florida is in fact responsible for this proliferation.

The presence of *Perna viridis* in northeast Florida is only the second known instance of an exotic marine species being found in our waters. The only other instance occurred during the summer of 1986 when *Mytella charruana* (d'Orbigny, 1846), a species normally found in tropical west America, which we might call the "Charru Mussel," was found to be clogging the water intake pipes of the Jacksonville Electric Authority's Northside Generating Station. It too was believed to a result of foreign shipping. Fortunately for us Duval County taxpayers, the species apparently didn't survive the cold winter temperatures during 1986-1987 and was not observed again.

Whether the Asian Green Mussel will survive the northeast Florida winter remains to be seen. However, the wife is researching stir-fry recipes for mussels just in case!

## Another Faux Sinistral Gastropod From The Philippines

By Harry G. Lee

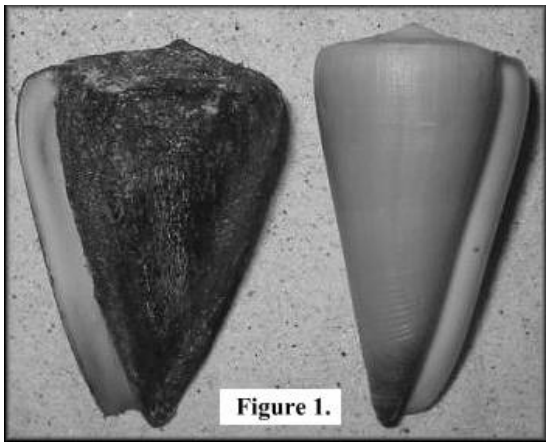


Figure 1.

Recently Rick McCarthy, well-renowned, at least to me, as the finder of a sinistral *Haustellum bellegladeense* (E. Vokes, 1963) from the bycatch of a Port Canaveral scallop boat in 1983, emailed me with a question. He attached a digitized photo of a pair of cone shells collected in the Philippines to the missive. One specimen was left-handed and measured 64 mm. It came from a vendor in Dumaguete City, Negros Oriental Province, and Rick was a bit suspicious of its legitimacy - in part due to the fact that a unfamiliar, dense, tenacious periostracum encased almost all the shell.

Furthermore, the shape wasn't particularly characteristic of any readily-identifiable species. It is depicted in figure 1 alongside a normal *Conus virgo* Linnaeus, 1758. Having had a disappointing but enlightening experience with a faux sinistral *Cymatium pileare* (Linnaeus, 1758), see **http://www.jaxshells.org/faux.htm**, I admonished Rick to obtain an Xray of the two specimens for analysis of authenticity.

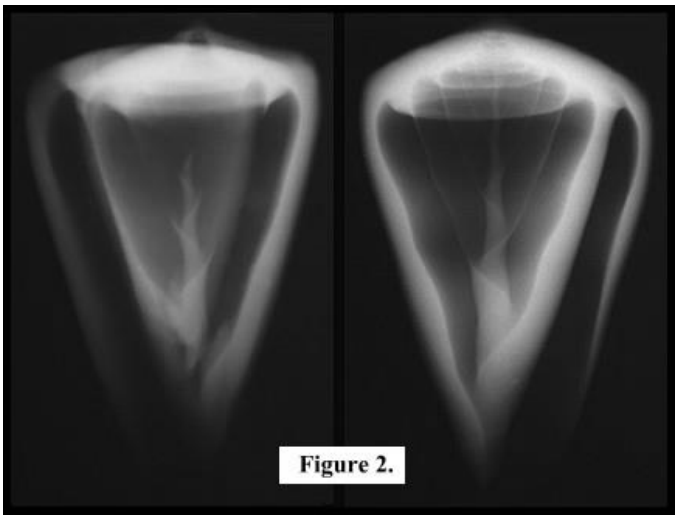


**Figure 2.**

**Figure 3.**

Dr. Paul Kaiser, a chiropractor friend of Rick's performed the radiography, and I received the films in short order. They reveal another instance of counterfeiting! Figure 2 shows the Xray images of two cone shells (the "sinistral" one on the left, a normal *Conus quercinus* Lightfoot, 1786 on the right). The image of the "sinistral" shell appears to be a "double exposure," quite unlike that of the *C. quercinus*. Note the spires on each image. That on the left is irregular and offset to the viewer's right. Note the symmetry of the image on the left; it has an "aperture" shadow on both sides of the body whorl. Finally, note that the columellar axis has a clockwise growth pattern in both images. Now look at figure 3, which is an "flipped" (mirror-image) version of the original (normal) *C. quercinus* image. This is how an authentic sinistral cone shell radiograph should look.

How did our crafty artisan fabricate this ruse? Well, the process is rather different that the one employed with the *Cymatium pileare*, in which three separate shells were cannibalized, and an inverted aperture was in-installed. Given the cone shell's near perfect bilateral symmetry, one need only bisect a larger shell lengthwise and shell out all but the dorsal half of the body whorl (like eviscerating a grapefruit). This produces a topless cone with a "lip" on each side. A somewhat (maybe 20%) smaller dextral example can then be inserted into the (viewer's) right side of the cavity thus created. There has to be a bit of filing of the new "lip" (viewer's left), etc., with caulking to follow, but I think you can see how this proceeds. There will always be that slight asymmetry of the spire, but a generous slathering of "periostracum" (as with the *C. pileare*) will conceal most of the careful handiwork.

I thank Rick McCarthy for providing all the images used here, and for his unflagging pursuit of all kinds of sinistrals.

## Diving Offshore South Carolina [Continued]

**The teeth are show as found with the sealife still attached.**

I met their boat *F/V Reef Raider II* at 6:00 AM at the dock with my dive gear, camera, lunch, and high hopes. We were soon under way and headed out Black River to Waynea Bay, the entrance to Georgetown from the open sea. The trip to the coast takes about one and a half to two hours depending on which way the current is running. This trip takes one by a wildlife preserve at North Island and the Georgetown Lighthouse, where

scheduled boat trips take folks to collect shells. Once we saw South Rock Jetties, we headed ESE for the 30-mile run to 110 feet of water.

The dive spot was located, the boat anchored, and we suited up to dive. Over the years I had done a lot of diving for shells offshore of the Charleston/Georgetown area and remembered the pretty reefs with *Spondylu*s, tropical fish, and warm water. At the surface the water temperature was a pleasant 78 degrees. On the way down the anchor line we went through a thermocline of cold water at about 45 feet. We encountered another at 80 feet with a drastic loss of visibility. By the time we reached the bottom the water temperature registered about 62 degrees and visibility had dropped to 6 to 10 feet. Not pleasant diving conditions! It is very easy to lose your dive partner, the anchor line, and become disoriented in dirty cold water. I had been told to search the areas away from the reefs and to look in rubble where currents had washed away the sand. If I found a tooth, I knew to search the area nearby because if the shark had died and fossilized in that spot the chances of finding more teeth were greatly increased. This proved to be true; I found two 5-inch teeth within three feet of each other. Later in the dive I located a smaller 4-inch tooth. My second dive of the day only produced chill bumps for me, but my experienced sons found several nice specimen teeth.

The teeth we found are from an extinct giant shark, *Carcharodon megalodon* (Agassiz, 1843), which was probably 50 feet or more in length. *Carcharodon* (meaning "rough tooth") or *Carcharocles*. There is currently some debate as to whether the megalodon's genus should be *Carcharocles* or *Carcharodon*. Megalodon was once thought to be a direct ancestor of the white shark, *Carcharodon carcharias*, and so was put in the same genus; new evidence indicates that it is not ancestral to the great white shark, so Megalodon was assigned to a new genus, *Carcharocles*.) Megalodon teeth up to 6.5 inches (17 cm.) long have been found in Europe, India, Oceania (the general area around Australia including New Zealand, New Caledonia, etc.), North America, and South America. Megalodon lived from roughly 25 to 1.6 million years ago, during the Miocene and Pliocene epochs. It is now extinct, but the exact time of its extinction is hotly debated.

Next year I hope to again dive for teeth, maybe the water will be clearer, warmer, and lady luck will bestow us with more exceptional finds.

## *Stosicia* (Gastropoda: Rissoidae) in the western Atlantic

by Harry G. Lee

**Abstract**

The marine gastropod genus *Stosicia* is represented by two Recent species in the tropical western Atlantic Ocean. The conchology, taxonomy, nomenclature, zoogeography, and evolution of *S. aberrans* (C. B. Adams, 1850) and *S. houbricki* Sleurs, 1996 are discussed. Several new records for these two taxa, including the first U. S. occurrence for the latter, are reported. Key words: *Stocisia*, western Atlantic, Rissoidae, Florida.

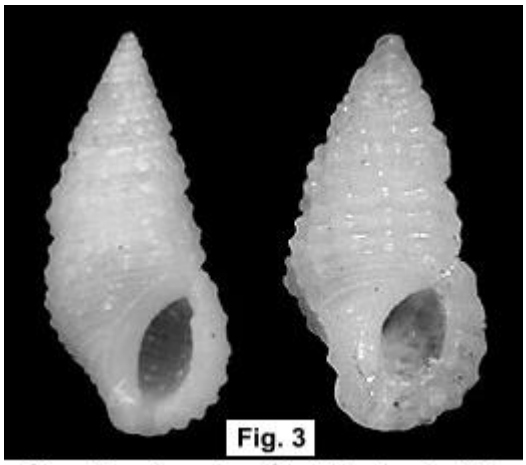

Fig. 1

**Introduction**

In April, 1850 Charles Baker Adams (1814-1853) named *Rissoa aberrans* based on a shell collected in Jamaica, possibly by himself, during a visit in the winter of 1848-49, just five years before he died of yellow fever on his third Caribbean field trip. It appears that Prof. Adams, writing from his desk at Amherst College, selected the trivial name because of a conchological character atypical for the genus in which he placed the taxon, an anterior (siphonal) canal in the aperture. He wrote "This species connects the genus with those Cerithia, in which the canal is reduced to a notch." In fact this feature calls to mind *Cerithium lutosum* Menke, 1828, which at first glance might be mistaken for a giant specimen of Adams' species. A century later Clench and Turner (1950) illustrated the holotype (and, for that matter, Adams' species) for the first time **[fig. 1]**. The shell is worn and is missing its apex.

For a century and a third this four to six mm white shell was occasionally mentioned in the conchological literature, where it was moved from *Rissoa* to *Alvania* to *Rissoina* by authors. Ponder (1984) saw that it was related to a group of rissoids which was represented principally in the Indo-West-Pacific in the Recent and in geologic history from the lower Miocene of Europe (type species *Rissoa buccinalis* Grateloup, 1828) and

the central Pacific, *Stosicia* Brusina, 1878. He placed it with the genera *Rissoina* and *Zebina* in the Rissoininae, a subfamily of the Rissoidae. *Stocisia aberrans* (C. B. Adams, 1850) was said to be the only member of its genus surviving in the Atlantic Ocean. Unfortunately he appears to have lacked intact material as he strongly implied the species had a paucispiral protoconch (*vide infra*).



*Stosicia aberrans* *Stosicia houbricki*

Sleurs (1996) reviewed the Recent species of *Stosicia* and included 16 species including five previously unknown taxa, two of which he named. A second Caribbean species, reported only from Belize, was added to the roster, *S. houbricki* - all the others were from the Indo-West-Pacific or adjacent parts of Australia.

In the late 1990's I recognized a single shell in a lot of *Stosicia aberrans* collected in Broward Co., Florida as that of a distinctive congener **[fig. 3, right]**. In ignorance of Sleurs' work, in May, 2003 I began to prepare a report describing this new taxon, and the present study is the outcome of that effort.

**Materials and Methods**

A search of the western Atlantic molluscan literature, including electronic media, was undertaken. Dry material from my personal collection, that of John Chesler (Plantation, FL), Dr. Emilio García (Lafayette, LA), Peggy Williams (Tallevast, FL), and the Florida Museum of Natural History (FLMNH) was studied using a Swift Stereo eighty microscope at 10 to 40 X. Measurements were performed using an eyepiece gauge calibrated to a stage micrometer (nearest 0.01 mm). Whorl counts were performed according to Pilsbry (1939, p. xi). Records from the Academy of Natural Sciences Philadelphia (ANSP) were confirmed by examination of digital images provided by Dr. Gary Rosenberg. Digital images of Dania specimens of S*tosicia aberrans* and *S. houbricki* in my collection were made with a Kodak DC290 digital camera using 3x and 7x diopters. The images of *Rissoa aberrans, Stossichia serrei*, and *Stosicia houbricki* (paratype) were taken from the original descriptions using a HP 5370C ScanJet flatbed scanner. The pair of *S. houbricki* from Roatan in my collection were scanned directly with the same device. The image of *Rissoa corilea* was provided by Dr. Rosenberg, who scanned the original figure; Colin Redfern likewise provided the type figure of *Stosicia fernandesgarcesi*. All images were edited with JASC Paint Shop Pro software by Bill Frank.

**Results**

*Stosicia aberrans* (C. B. Adams, 1850)

*Rissoa aberrans* C. B. Adams, 1850 **[fig. 1]**
*Rissoa corilea* "d'Orbigny" G. B. Sowerby II, 1876 **[fig. 4]**
*Stossichia Serrei* Bavay, 1922 **[fig. 2]**

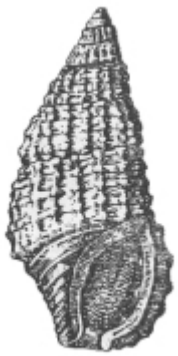


Fig. 2

**Description**

Protoconch with acuminate apex, conical, 2.25 whorls, smooth; teleoconch about six whorls, sculptured with 18-21 (median 19) axial ribs on the penultimate whorl, strong from initiation, weakening on the anterior half of the body whorl; these are crossed by slightly narrower spiral ridges which form rather regular nodules at the intersections; three on the spire whorls, faint initially, stronger on following whorls, usually three (but up to five) on the penultimate, and eight to 12 (median eleven) on the body whorl, faint secondary spirals not easily seen. Aperture ovate with roundly angulate columellar aspect, thickening anteriorly near the narrow, deep, and short anterior channel; no posterior canal; labrum with three evenly-spaced denticles arising a short distance within, not reaching the labral margin, which is slightly reflected. Immediately before the labrum is a broad, thick, but diffuse varix bearing the spiral ridges. Color, snow white to light brown; solitary live-collected shell is homogeneous light chocolate brown; fresher shells somewhat glistening. Size, based only on intact adult shells (n=56): 3.98 to 6.05 mm [but see Grenada record below]; L/W ratio variable; mean: 2.24.

**LITERATURE RECORDS**

GULF OF MEXICO (northeast). 28°35'N, 84°18'W; 25.6-38.1 m [14-21 fm]; reef outcrop, in sediments in rocky basin on reef crest (i.e., depth about 25-26 m) [43 shells] FDNR. Turgeon and Lyons (1978); W. G. Lyons, pers. comm. 26 June, 2003.

GULF OF MEXICO (northwest). 22 to 92 m (eight to 51 fathoms. [6 lots, no live material; HMNS] Odé, 1986.
MEXICO, Campeche, Yucatan, Quintana Roo. Common; several localities. Vokes and Vokes (1984).
CUBA. Common. Espinosa, Fernández-Garcés, and Rolán (1994).
CUBA. G. B. Sowerby II (1876). Type locality of *Rissoa corilea* **[fig. 4]**.
PUERTO RICO. Uncommon in beach drift. Warmke and Abbott (1961); de Jong and Coomans (1988).
PUERTO RICO. Vieques. A. H. Riise! Krebs (1864, p. 53) [see Clench, Aguayo, and Turner (1947, p. 80)].
VIRGIN IS. St. Thomas. Scholten, Riise. Mørch, (1876, p. 120).
VIRGIN IS. St. Croix. Rare, Ham Bay. Nowell-Usticke (1959).
JAMAICA. C. B. Adams (1850); see Clench and Turner (1950). Type locality of *Rissoa aberrans* **[fig. 1].**
BELIZE. Carrie Bow Cay, 4 shells. Sleurs (1996).
HONDURAS. Roatan Is., Carib Bight. 1.3 to 2.4 m, under rubble. E. García! 2/94 [six shells] Lee collection.
COSTA RICA. Limon Prov., Portete. Beach drift; uncommon. Houbrick (1968).
PANAMA. Bocas del Toro. Olsson and McGinty (1958).
PANAMA. Colon. Sand, shore. Type locality of *Stossichia Serrei* [sic; sic] Bavay (1922), a junior synonym **[fig. 2]**.
PANAMA. Payardi Is. Radwin (1969).
ARUBA. Rather common. de Jong and Coomans (1988).
CURACAO. A few specimens. de Jong and Coomans (1988).
BRASIL. Pará to Rio de Janeiro. Lives on sand bottoms and on *Sargassum*. Rios (1994).
[GUADELOUPE. Record (Pointier and Lamy 1998; p. 45) is based on a misidentification of a *Nassarius* species]
[COLOMBIA. Record (Diaz and Puyana, 1994; sp. 416) is based on a misidentification of a *Manzonia* species].
[BAHAMAS. no other records (Robertson, R., ms, 1999; Redfern, 2001)].
[BERMUDA. apparently absent (Jensen R. and T. Pierce, ms, 2002)].

**MATERIAL EXAMINED**
FLORIDA, Broward Co., Dania. Drift (with *S. houbricki*), John U. Lloyd State Park (beach renourishment site). R. Pace! 1990 [twelve shells]. Lee collection **[fig. 3, left]**.
BAHAMAS. Eleuthera, 300 m. N. Current Cut. Beach drift. H. Lee! 5/76 [Several shells]. Lee Collection; loan apparently never returned by the late Dr. Donald Moore, University of Miami.
HISPANIOLA. Dominican Republic, Bayahibe. 1.6 m, under rubble G. Duffy! 1/91 [two shells; one live-collected]. Lee collection.
VIRGIN IS. St. Croix. Long Reef, Christiansted, G. Nowell-Usticke! 7/63 [three shells]. FLMNH 152233.
JAMAICA. Tryall. In reef rubble, 24 m. J. Chesler! 11/89 [seven shells]. Chesler Collection.
GRENADINES. SW Grenada, off Whale House, Grand Anse Beach. Filamentous algae, 1.6 m, R. A. & V. O. Maes! 3/9,11/96 [one broken shell; 6.3 mm.]. ANSP 313726. [G. Rosenberg image via Internet].
HONDURAS. Roatan Is., East side of entrance to Carib Bight. Abundant (with *S. houbricki*) as crabbed specimens under 10 to 20 cm of rubble. E. F. García! 12/93 [thirteen shells]. Seven shells in García Collection 13902; six shells in Lee collection.
HONDURAS. Roatan Is., East side of Carib Bight. Under coral rubble covered with light-brown algae (with *S. houbricki*). E. F. García! 5/25/93 [nine shells]. Seven shells in García Collection 12941; two shells in Lee Collection.
PANAMA. Bocas del Toro. Devil's Beach, Toro Pt. T. McGinty! *Ex* McGinty [three shells]. Chesler Collection.
PANAMA. Bocas del Toro. Colon Is. T. McGinty! 1951 [one shell]. FLMNH 231573.
PANAMA. Bocas del Toro. North Colon Is. A. A. Olsson! *Ex* McGinty [five shells]. FLMNH 160498.
PANAMA. Bocas del Toro. East side Colon Is. T. McGinty! 5/53 [three shells]. FLMNH 155105.
BRASIL. Estado Alagoas, Maceio, Ponta Verde. P. Cardosa! *Ex* McGinty [17 shells, small for species]. FLMNH 152234.
BRASIL. Estado Bahia, Ihla Itaparica. Beach drift. F. F.L. Neto! 5/85 [one shell]. García Collection 11202.
BRASIL. Estado Bahia, Archipelago Abrohlos. In reef rubble, 18-21 m [three shells, large for species]. Chesler Collection.
BRASIL. Estado Espirito Santo, Nova Almeida. Beach drift. J. Collela! 11/77 [one shell]. Lee collection.
BRASIL. Estado Santa Catarina, Porto Belo. Among broken shells. J. C. Tarasconi! 1/88 [one shell]. Lee collection.

*Stosicia houbricki* Sleurs, 1996 **[fig. 6**, paratype**]**
*Stosicia fernandesgarcesi* Espinosa and Ortea, 2002 **[fig. 5**, holotype**]**

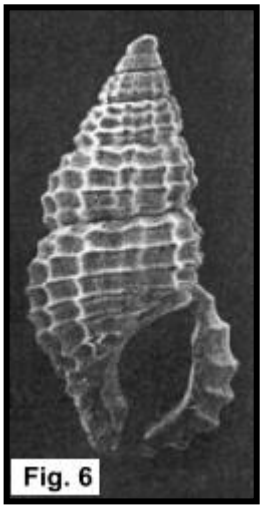


Fig. 6

**Description**

Protoconch blunt, globular, 1.25 whorls; teleoconch 4 to 5 whorls, teleoconch sculpture, coloration, and luster similar to *S. aberrans* but with **fewer** and sometimes less erect **axial ribs** (8 to 14; median 12 on the penultimate whorl), spirals regular and consistent in each specimen, but varying in number (four to six above the prevarical suture), elevation, and breadth from conspicuous to rather indistinct, making reticular sculpture less apparent in shells with the latter character **[see figs. 3 right, 5, 6, 7]**; usually more convex whorls, more **impressed sutures** (early sutures not narrowly channeled as in *S. aberrans*); **labrum** differs **in lacking denticles**, produced beyond the pre-labral varix - **not reflected**, and having **posterior notch** near the suture,. Pre-labral **varix** much narrower yet **more expanded**, well-defined, and abrupt at its origin, which appears demarcated by an **axial crease**. Size (n=20): 3.14 to 4.08 mm; L/W ratio variable; mean: 2.11.


Fig. 5

**LITERATURE RECORDS**

CUBA. Santa Fe, Playa, Havana, sediment from 35 m [five shells] Espinosa and Ortea (2002). Type locality of *S. fernandesgarcesi*, a junior synonym **[fig. 5**, holotype**]**.
BELIZE. Carrie Bow Cay. Reef flat [15 shells] Sleurs (1996). Type locality of *S. houbricki* **[fig 6**, paratype**]**.

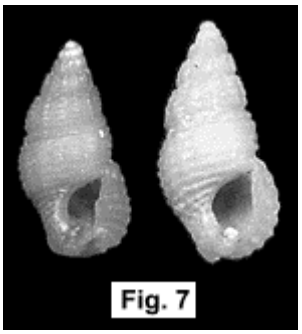


Fig. 7

**MATERIAL EXAMINED**

FLORIDA. Broward Co., Dania. Drift (with *S. aberrans*), John U. Lloyd State Park (beach renourishment site) R. Pace! 1990 [one shell]. Lee collection **[fig. 3, right]**.
VIRGIN IS. St. Croix Is., Ham Bay. G. Nowell-Usticke! [two shells]. FLMNH 152232.
ANTIGUA. Half Moon Bay. C. W. Sheafer! 5/63 [two shells] FLMNH 152231.
GUADELOUPE. 1 mi. NW of Pointe des Chateaux. From seaweed on coral rock, 1-3 m, R. A. & V. O. Maes! 2/67 [three broken shells, one with protoconch] ANSP313872. [G. Rosenberg image via Internet].
HONDURAS. Roatan Is., east side of entrance to Carib Bight. Abundant (with *S. aberrans*) as crabbed specimens under 10 to 20 cm of rubble. E. F. García! 12/93 [three shells]. García Collection 13902.
HONDURAS. Roatan Is., East side of Carib Bight. Under coral rubble covered with light-brown algae (with *S. aberrans*), two feet. E. F. García! 5/25/93 [nine shells]. Seven shells in García Collection 12941; two shells in Lee Collection **[fig. 7]**.
HONDURAS. Roatan Is. In rubble, 18 m J. Chesler! 1/95 [three shells]. Chesler Collection.

**Discussion**

The synonymy of the treated taxa is generally straightforward, but *Rissoa corilea* "d'Orbigny" G. B. Sowerby II, 1876, here considered a synonym of *Stosicia aberrans*, warrants some review. The type illustration **[fig. 4]** is accompanied by a scale line 5.8 mm. long, and Cuba is given as the habitat. Tryon (1887; pp. 363-364) considered Sowerby's name a simple misspelling of d'Orbigny's *Rissoa caribaea* and used d'Orbigny's figure (1842[?]; t. 11, *bis* fig. 32) to illustrate the two taxa. However, that action misidentifies *Rissoa corilea*. Although Sowerby's illustration and text feature the anterior canal, there is no such **character** in the type figure of *Rissoa caribaea* d'Orbigny, who gives (1842; pp. 21-22) the size of his shell as "2 millim." and mentions "deux carènes... bandes brun... Bouche ovale" which clearly relate to the species presently known as *Manzonia caribaea* (d'Orbigny, 1842), which is not even a congener [but see de Jong and Coomans, 1988 and Redfern, 2001 for differing interpretations at the species level]. Rosenberg (2003 *et a priori*) was the first to point out this peculiar synonymy.


Fig. 4

The taxonomic and zoogeographic relationships between these two *Stosicia* species and among all the congeners invite speculation as to the evolutionary scenario of their origin and deployment. Clearly *S. aberrans* and *S. houbricki* are quite closely related; the illustrations of these and other *Stosicia* in Sleurs (1996) attest to this propinquity. It therefore seems likely that the two share a common ancestor. I looked high and low for any fossil evidence of the presence of *Stosicia* (in any of its conceivable nomenclatorial iterations) in the western Atlantic but

could find none. Thus, it also seems likely that the ancestor was probably an immigrant from either the Eastern Atlantic or the Indo-West-Pacific in post-Miocene times, likely not long ago at all. On analysis of protoconchs, if the immigrant ancestor were closer to *R. aberrans*, it would have planktotrophic larvae with the ability to disperse over large oceanic expanses unlike the case with *S. houbricki* with its inferred lecithotrophic (crawl-away) larvae. What little we know of the ancestral forms in *Stosicia* (e.g. *S. planaxoides* Grateloup, 1838, a senior synonym of the type species; see Sleurs) suggests that they had multispiral protoconchs (planktonic larvae) like that of *S. aberrans*, yet many of the Recent taxa from the Indo-Pacific (and *S. houbricki*) have paucispiral protoconchs, which infer a lecithotrophic larval habit (crawl-away young). Which came first in our evolutionary scenario?

If we look at other groups in which sympatric pairs of closely-related marine snails having utterly different protoconchs much as do our two species, a few instances in the Caribbean fauna leap to mind in which the teleoconchs are actually even more similar: *Alvania auberiana* (d'Orbigny, 1842) / *A. faberi* de Jong and Coomans, 1988, *Retilaskeya emersonii* (C. B. Adams, 1845) / *R. bicolor* (C. B. Adams, 1839), and *Iniforis turristhomae* (Holten, 1802) / *I. casta* (Hinds, 1845). In these cases of so-called didymous species pairs, it is not entirely clear to me which is the ancestral and which the derived condition, but, in a group taxonomically close to the *Stocisia*, Verduin (1977) looked at European *Rissoa* species and concluded that the lecithotrophic species was the descendant (apomorphic), and the planktotrophic was ancestral (plesiomorphic). Similar conclusions were reached in a wider taxonomic and/or paleontological context in *Ficus* (Smith, 1945), *Trophon* (Bouchet and Warén, 1985), Nassariidae (Martinell and Cuadras, 1977), Neogastropoda in the early Tertiary and Volutidae in the Cenozoic to Recent (Hansen, 1983), Terebridae (Bouchet, 1981), and Turridae (Bouchet, 1990). To my knowledge, no instances of the opposite pattern of evolution has been reported. In fact, Strathman (1978) concluded that plankotrophic development was ancestral to the lecithotrophic condition among all marine invertebrates with such life histories, and that the reversal of this process was much less frequent, even unlikely. A relatively limited geographic distribution of lecithotrophic species and their tendency to be less long-lived (in a geological sense) than their planktotrophic congeners has been noted by several workers including Jablonski (1982, 1986) and Hansen (1983).

Thus, taking into account the evidence above and considering the substantial range *S. aberrans* and probable recent appearance of *Stosicia* in western Atlantic waters, we may create a scenario of planktonic larval waifs swimming into the Caribbean, aided by the Gulfstream from the eastern side of the Atlantic (where its parent stock subsequently perished) or, more likely, based on geochronology, invading America from the Indo-West Pacific and traversing the straits that were to become the isthmus of Panama sometime in, say, the late Pliocene epoch. It then dispersed widely and rapidly. Somewhat later a mutant population, the new species *S. houbricki*, arose in the northern Caribbean. That new species spread on a lesser scale, now occupying a smaller geographic range with perhaps its most prodigious leap being across the Gulf Stream to southeastern Florida. It probably has very similar habits except for its reproductive strategy. Having crawl-away young may endow that new species with a selective advantage which allows it to prosper yet not outcompete the sympatric (?syntopic) *S. aberrans*, the plesiomorphic form borne as a juvenile in the plankton and thus more akin to, quite possibly conspecific with, the immigrant ancestor. Likely the same pattern of speciation accounts for the deployment of the seven lecithotrophic species of *Stosicia* in the Indo-Pacific, five of which have limited ranges. Two of these non-planktotrophic species have rather wide geographic distribution possibly reflecting an earlier origin in geologic time, a factor not unexpected in a basin where the genus is known to have a fossil record dating to the Miocene.

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**Acknowledgements**

The author thanks Bill Frank for technical and editorial assistance - in particular for his fine digital photography and other work on the illustrations. Paul Callomon, John Chesler, Dr. Emilio García, Bob Pace, Richard E. Petit, Colin Redfern, Dr. Gary Rosenberg, John Slapcinsky, and Peggy Williams deserve my thanks for provision of specimens or images.