



SHELL-O-GRAM

Official Publication of the
JACKSONVILLE SHELL CLUB, INC.

May-June, 2021

Volume 62 (no. 3)

Jacksonville Shell Club, Inc.
4132 Ortega Forest Drive
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Although meetings are currently suspended until further notice, the club customarily meets monthly at the Southeast Branch of the Jacksonville Public Library, 10599 Deerwood Park Blvd., Jacksonville, Florida <<https://www.jaxpubliclibrary.org/locations/southeast-regional>>. Please address any correspondence to the club's address above. Annual membership dues are \$15.00 individual, \$20.00 family (domestic) and \$25.00 (overseas). Lifetime membership is available. Please remit payment for dues to the address below and make checks payable to the Jacksonville Shell Club. The club's newsletter and scientific journal, the *Shell-O-Gram* (ISSN 2472-2774) is issued bimonthly and mailed to an average of 15 regular members and friends by specific request and no less than ten scientific institutions with permanent libraries. An electronic (pdf) version, identical except for "live" URL's and color (vs. B&W) images, is issued the next day and sent to about 200 individuals who have demonstrated an interest in malacological research. These pdf's (ISSN 2472-2782) have also been posted to <<http://jaxshells.org/letters.htm>> since November, 1998. We encourage members and friends to submit articles for publication. Closing date for manuscript submission is two weeks before each month of publication. Articles appearing in the *Shell-O-Gram* may be republished provided credit is given the author and *Shell-O-Gram* Editor-in-Chief. As a courtesy, the editor and author should receive a copy of the republication. Contents of the *Shell-O-Gram* are intended to enter the permanent scientific record.

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Harry G. Lee, Treasurer, JSC
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Update on the COA 20/20. The Sheller's Family Reunion

Alan Gettleman

Registrations for the COA 20/20 Return of Human Space Flight and the COA to the Florida Space Coast show a good initial response as well as reservations for the Hilton Rialto in Melbourne, Florida. We are optimistic that we will be able to have a convention in June. Florida has already reopened major attractions such as Walt Disney World, Sea World and Universal Orlando with social distancing and other health precautions. The space program continues in full launch mode with manned and other launches and we hope for a space launch around convention time. Unfortunately, it appears the cruise industry may not get to the approval to resume cruises from the Cape Canaveral port before our convention.

Registrations and latest information can be found on the COA website at <https://conchologist-sofamerica.org/> We can answer specific questions by contacting lychee@cfl.rr.com.

The convention begins with a tour of the Kennedy Space Center on Monday, June 14. Your local club guide will be a NASA retiree who worked on several Space Shuttle missions, including the two flights that included mollusks, and the Mars Pathfinder mission of the landers that culminated with Perseverance in February. We have a Harbor Branch Oceanographic and McLarty Treasure museum tour on Tuesday, June 15. Both are full day tours.

We hope to have evening turtle hatching tours on those evenings, but we will not find out until later if we can receive reservations for those spectacular oceanside events.

The convention begins at 1 pm on Wednesday, June 16th with programs/silent auctions. Special shells will be door prizes for each program. Wednesday evening is our Welcome Party. Since we are on the Space Coast we ask attendees to dress as their Favorite Astronaut, Favorite Space

Character, or Favorite Space Creature. The best in each category will get a space related prize. The sky is not even the limit for your imaginations of costume.

Thursday continues with silent auctions, programs and door prizes. Thursday night is the premier COA oral auction of spectacular and rare shell items. We are still looking for donations of premium items for the auction which is one of the primary funding sources for COA. Contact Dave Green, Oral Auction Chair at dgreen2@entouch.net Friday continues and meetings conclude with the COA business meeting and that evening the COA banquet with a guest speaker from the space program.

The world famous Bourse with the premier shell dealers on Saturday (1pm-8pm) and Sunday (9am-2pm). We also have the COA raffles that includes a spectacular 18" diameter Sailor's Valentine made by a COA member which comes upon a detachable 26" stand.

Our hotel is the Hilton Rialto in Melbourne with rooms rate or \$125 per night. Junior suites are available for available for \$145. All rooms have refrigerators, in room safe, and free wi-fi. The hotel offers pool, hot tub, tennis courts, and an indoor exercise gym. ALL events (except of course for field trips) are located on the first floor of the hotel- easy access to all of the meeting events.

COA has weathered interesting challenges with conventions. Our second convention scheduled on a cruise ship that blew up before the convention. The first Key West COA was interrupted by a hurricane.

The conventions did go on and the attendees had a great time. We know you will have a great time at the Sheller's Family Reunion to meet and celebrate at the only national shell convention which will be held in the U.S. this year.

Does the Giant African Snail need protection? — nomenclatorially, that is

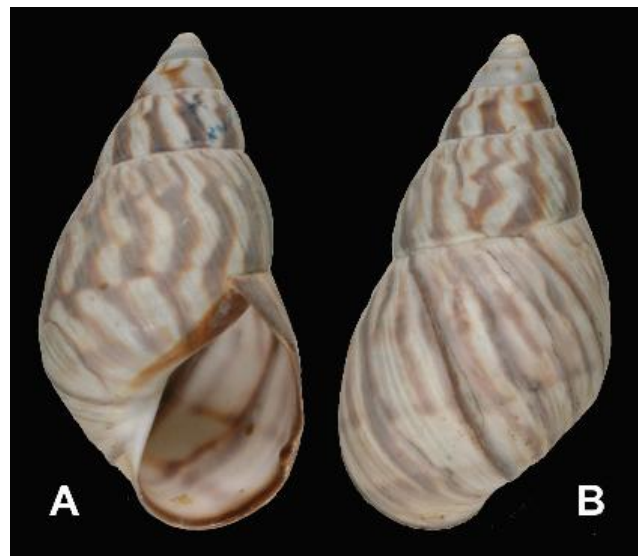
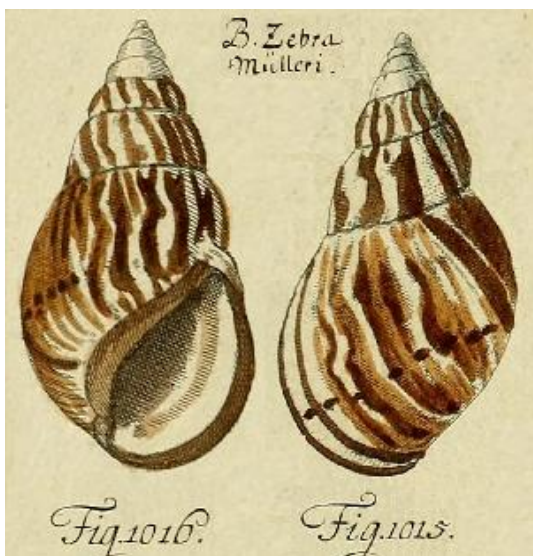
by Harry G. Lee and Benjamin Diekmann¹

On February 8, B.D. emailed H.G.L. with an inquiry concerning (1) earlier usage of the species epithet "*fulica*" before 1822, and (2) citation of the **Lister, 1692: table 578, fig. 33; [below, L]**, which authorities, e.g., Bequaert (1950), agree to be the first depiction of the Giant African Snail - 140 years before its formal name, *Achatina fulica* was made available (Bowdich, 1822). Hypothetically, either situation might pose a threat to the validity of one the most-cited land snail binomina in history!

Bequaert (1950: 55) pointed out that Férussac (1821: 49) made only one indication for his *Helix (Cochlitoma) fulica*: **Lister (1692: table 578, fig. 33)**, but he placed a question mark after it. This bit of punctuation made the taxon a *nomen nudum*, clearing the path for Bowdich's usage the following year to be valid.

The only mention of the species epithet prior to 1821 seems to be ***Helix fulica* Röding** (1798: 107, species 1367, *Helix* species 6). The Latin "*fulica*" is a type of water bird, probably a coot and in German might have been translated as a "*Wasserhuhn*", a "water chicken". The German text "*Die bunte Henne*" could be translated as "*the colored hen*," which somehow fits to the Latin name. *Selten*" means "*rare*" and "*1 St.*" means that one specimen was for sale. Although Röding is accepted as author of about 130 species and 60 genera of molluscs mentioned in his sales catalogue, his *Helix fulica* is unavailable because its author provided nothing more than a name and its translation – another *nomen nudum*. So much for the potential *fulica* conflict!

Now to the Lister figure... *Buccinum zebra* Müller (1774: 138-140, species 331), was a composite taxon with seven unique indications, five in Lister, including the first citation of **Lister (1692: table 578, fig. 33)** in an available work and others depicting at least one different species with a holostomatous aperture (no columellar notch as seen in achatinines, e.g., **L above**). The first attempt at fixing the nominal taxon was by Chemnitz (1786 part 2: xxii-xxiii; 24-25; pl. 118, figs. 1015-1016 [**L below**]), who had studied the Spengler Collection, in which Müller stated his type material was located.



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Regrettably, the figured shell was not a true type but a shell selected from the Chemnitz collection. Despite being designated the type of *Orthalicus* Beck (1837: 59) by the subsequent designation of Herrmannssen (1847: 159) and of *Zebra* Shuttleworth (1856: 60) by tautonymy, Winckworth (1945: 137 [excerpted **below**]) even designated *Buccinum zebra* Müller, 1774 the type of *Ampulla* Röding, 1798, a heterogeneous assembly. He apparently overlooked Pilsbry (1908: 83), who had already bestowed that status on *Ampulla priamus*, Gmelin, 1791, a volute!

AMPULLA, 110. Includes nine species with references to *Bulla achatina* Gm., *B. zebra* Gm. and *B. stercus pulieum* Gm., i.e. species of *Achatina*, *Cochlitoma* and *Halia*. Type, here selected, *A. zebra* R. = *Buccinum zebra* Müller, 1774. This supplies a name for *Cochlitoma* Pilsbry, 1904, which according to Kennard 1942 is not *Cochlitoma* Férussac. Gray 1847 gives no type, but mentions 'Ampulla Bolten sp.' as a synonym of *Halia*.

Appreciating its resonant position in taxonomic hierarchy and to rectify the concatenation of inconsistent treatments of *Buccinum zebra* Müller 1774 by 19th Century workers, Rehder (1945: 29) attempted to fix its identity by reviewing the original description, citing Chemnitz (*Idem*) [*vide supra*], and narrowing the historic geography of conchological exploration. He concluded that Müller's species was what had later described as *Bulimus maracaibensis* L. Pfeiffer, 1856: 186-187. At the [R bottom of preceding page] is a photograph (after Breure, 2013) of a syntype of *Zebra maracaibensis jamaicensis* Strebel, 1909 in the Museum für Naturkunde, Berlin [ZMB 21848a; 54.9mm], a synonym. Despite the evidence slowly accruing over two centuries, Breure & Schouten (1985: 55) considered the species a *taxon inquirendum* [identity not demonstrable], and to this day *Buccinum zebra* Müller 1774 in its current generic placement remains thus, e.g., <[Molluscabase - Orthalicus zebra \(O. F. Müller, 1774\)](#)>. Dr. Breure (pers. comm.) informs me that there may more to the story.

Gmelin (1791: 3431, sp. No 31) also cited **Lister (1692: table 578, fig. 33)**, but, as he did with several congeners, he was simply reassigning Müller's *Buccinum zebra* to the genus *Bullanot* creating a new species. The binomen remains attributable to Müller.

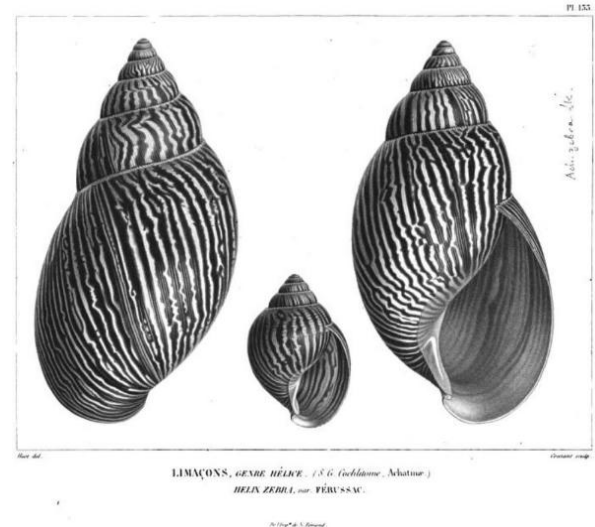
To limit (or not) any extra confusion, it now seems appropriate to point out that the following year the name ***Bulimus zebra*** was made

N° 354. ZEBRA, CHEMNITZ.
Buccinum achatinum, ε, MULLER.
Bulla Zebra, CHEMN., IX, tab. 118, fig. 1014.
Chersina Zebra, HUMPHREY, *Mus. Calonn.*
Bulimus Zebra, BRUGUIÈRE.
Achatina Zebra, MONTFORT.
 α) *Bulla achatina*. β) VON BORN, tab. 10, fig. 1.
Bulimus Zebra, PERRY.
Habit. Madagascar. α) La Cafrerie, le pays des Hottentots, sous les buissons des montagnes de sables, DELALANDE.

available by Bruguière (1792: 357). Like so many other species in this analysis, it is a composite taxon, including an indication of Seba (1758: pl. 71, figs. 4, 5), good likenesses of *L. fulica* (Bowdich). Férussac (*Idem*: 50, species no.

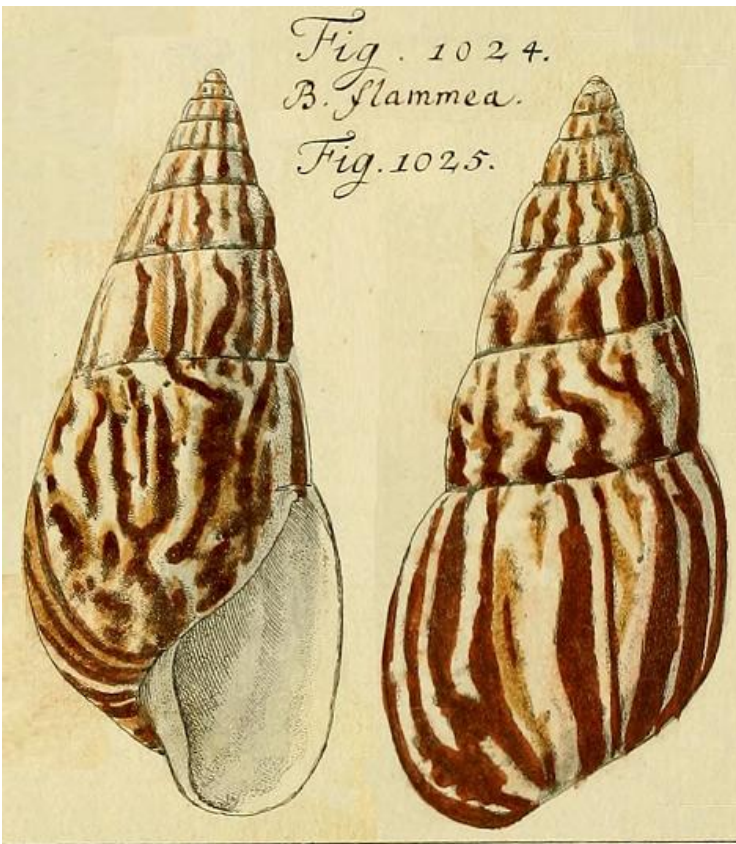
354; [L]) restricted *B. zebra* Bruguière to southern Africa and oversaw the illustration of that species ten years later (1832: livraison 28, pl. 133 [R, above]; incorporated into Férussac & Deshayes, 1819-1851). This species is now known as ***Cochlitoma zebra* (Bruguière, 1792)**.

As cited by Férussac in the passage above, another indication by Gmelin for his *Bulla zebra* is Born, 1780: pl. 10, fig. 1, *Bulla achatina* Linnaeus. Resembling *Cochlitoma zebra* (Bruguière, 1792), it is certainly not *L. fulica*



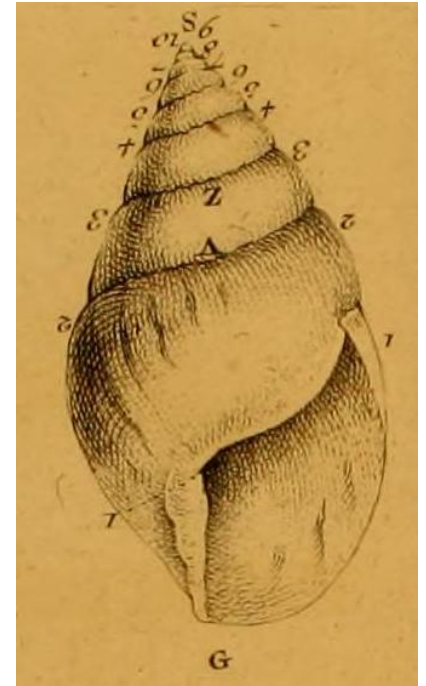
(Bowdich, 1822). The same applies to Perry (1811: 33, fig. 3).

To make things more complicated, *Ampulla kambeul* Röding (1798: 110, sp.1418) is indicated by Lister (1692: table 578, fig. 33), *Bulla zebra* Gmelin and one other indication – figs. 1024 & 1025 in “Martini” [actually Chemnitz], Bruguière (1792: 322, species 40) had already applied the name *Bulimus kambeul* to a species first described by Adanson (1757¹: 14-18; pl. 1) as “le Kambeul” from Senegal [R]. It seems most likely that Röding’s binomen was intended to be Bruguière’s species, simply reassigned to the new genus *Ampulla*, however, the inclusion of indications shown to be different species makes this assumption untenable. Since the other indications have been identified, at least by some authorities, as valid species [*Orthalicus zebra* (Müller, 1774); *Limnicolaria flammea* (Müller, 1774); and *Lissachatina fulica* (Bowdich, 1822)]. Bequaert (1945: 55 footnote 2) prudently restricted the Röding taxon to the Chemnitz figures [below], which he identified as



Limnicolaria kambeul (Bruguière, 1792).

[The inscription on the Chemnitz figures above is here considered a misidentification.]



Röding further “stirred this stew” with no less than four other taxa indirectly linked to Lister (1692: table 578, fig. 33)! He indicated *Bulla zebra* Gmelin and the Chemnitz (1786: pl. 118: figs. 1015, 1016; see p. 3) for *Helix Rallus* Röding (1798: 107, no. 1369), therefore a subjective synonym of *Buccinum zebra* Müller, 1774. *Bulla zebra* Gmelin is the sole indication for *Ampulla Quagga* Röding (1798: 111, no. 1421) making it a subjective junior synonym of the Müller taxon. Bequaert (1950: 11, footnote 1) remarked “*Ampulla Zebra* ([boldface added] 1798: 111 no. 1419) was based only on Chemnitz 1786, Syst. Conch-Cab 9 pt 2 Pl 118 fig. 1014, which represents the South African *Achatina* [now

Cochlitoma] *zebra* (Bruguière 1792),” making the Röding name a junior synonym. *Helix Ustulago* Röding (1798: 108, no. 1394) was indicated by figs. 1024 & 1025 in Chemnitz [above] and *Helix flammea* Gmelin (1791, sp. 88), in turn a composite species, the only available name of which was *Helix flammea* Müller (*Idem*: 87). Its identity has not been restricted, but it must be either *Limnicolaria flammea* (Müller) or *L. kambeul* (Bruguière). *Ampulla kambeul* Röding (1798: 110, no. 1418) has been treated above. To summarize: **none of these six Röding species is valid.**

¹ Adanson, although his work was pre-Linnaean (*ipso facto* unavailable), was another worker who indicated Lister (1692: table 578, fig. 33) for “le Kambeul.”

To summarize, B.D.'s inquiry and our research revealed one usage of the species epithet *fulica* before 1821: *Helix fulica* Röding (1798: 107, species 1367), a nude name. Direct or indirect citation of **Lister (1692: table 578, fig. 33)**, or its likeness in Seba (1758: pl. 71, figs. 4, 5), occurred at least **eleven times** before being tentatively applied to the Giant African Snail by Férussac (1821: 49). These indications were made for eight unavailable or invalid taxa; two others, ***Bulimus kambeul* Bruguière, 1792 [now *Limnicolaria*]** and ***Bulimus zebra* (Bruguière, 1792 [now *Cochlitoma*])**, are consensus valid taxa; and one, ***Buccinum zebra* Müller, 1774 [now *Orthalicus*]**, the type of that orthalicid genus, is considered by experts to remain a *taxon inquirendum* despite persuasive published arguments for its identity. The current situation finds the nomenclatorial status of *Lissachatina fulica* (Bowdich, 1822) and the typology of *Orthalicus*/Orthalicidae under a bit of a cloud. As noted above, however, the forecast may indicate a change in weather; so **stay tuned!**

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APPENDIX: Current status and homonymy of the two *zebra* taxa treated herein

- *Buccinum zebra* Müller, 1774: *Orthalicus zebra* (O. F. Müller, 1774) [*taxon inquirendum*]
- *Buccinum zebra* Lamarck, 1822: primary jr. homonym of *B. zebra* Müller, 1774, now *Inquisitor zebra* (Lamarck, 1822)
- *Buccinum zebra* Megerle von Mühlfeld, 1816 primary jr. homonym of *B. zebra* Müller, 1774, now *Hinea lineata* (da Costa, 1778)
- *Buccinum zebra* Wood, 1828: primary jr. homonym of *B. zebra* Müller, 1774. INVALID, now *Anachis miser* (G. B. Sowerby I, 1844)
- *Bulimus zebra* Bruguière, 1792 now *Cochlitoma zebra* (Bruguière, 1792)
- *Bulimus zebra* Olivier, 1801 primary jr. homonym of *B. zebra* Bruguière, 1792. INVALID, now *Chondrus zebrulus* (Férussac, 1821)

JSC Special Award Winners in the 55th Northeast Florida Regional Science and Engineering Fair

by Judges Harry G. Lee and Rick Edwards

JUNIOR DIVISION: Alan Alwakeel St. Joseph Catholic Middle, Jacksonville, FL

Stimulants and Depressants: What They Are, How They Work, and Their Effects



The purpose of this project is to investigate how stimulants and depressants affect the heart. This was accomplished by testing the effects of different doses of caffeine and ethanol and the built-up tolerance overtime on the heart rate of *Daphnia magna*. For each dose of caffeine and ethanol, I tested 5 *Daphnia magna* by placing each in the designated concentration for 15 seconds, then measuring its heart rate, repeating once every hour for four hours. My hypothesis for this project was that the higher the dose of caffeine, the higher the heart rate of the *Daphnia magna*. The higher the dose of ethanol, the lower the heart rate of the *Daphnia magna*. Repeated exposure at the same doses should result in a heart rate indistinguishable from the control. The results of

the experiment showed that when the dose of caffeine increased, the heart rate of the *Daphnia magna* increased, when the dose of ethanol increased, the heart rate decreased, and when the *Daphnia magna* took the same dose of the substance being tested once per hour for four hours, the heart rate was indistinguishable from the control. The results show that my hypothesis was correct.

SENIOR DIVISION: Jordan Harrow Episcopal, Jacksonville, FL

Demonstrating *Daphnia pulex* as environmental buffers to acetylcholinesterase inhibitors on *Hydra littoralis*.



The purpose of this experiment was to determine efficacy of lab-engineered pesticide resistant *D. pulex* as environmental buffers against the effects of Malathion on *H. littoralis*. Pesticide resistant *D. pulex* could act as environmental buffers that protect freshwater organisms from the effects of pesticides. Success of resistance buffering allows for a decrease in mortality rates of exposed organisms because of pesticide resistant *D. pulex*. It was hypothesized if *H. littoralis* were exposed to malathion in the presence of resistant and sensitive *D. pulex*, then *H. littoralis* with resistant *D. pulex* would have lower mortality rates than *H. littoralis* with sensitive *D. pulex*. Within 4 groups of *D. pulex*, resistant groups received pesticide additions while sensitive groups did not. After 63 days, all groups received pesticide

addition. Additionally, exposure groups were placed with *H. littoralis* and survival rates were monitored. After addition, results showed that *H. littoralis* exposed to malathion and resistant *D. pulex* had a 50% lower mortality rate than *H. littoralis* exposed to malathion and sensitive *D. pulex*. This shows that the presence of resistant *D. pulex* increased survival of *H. littoralis* in the presence of pesticides, demonstrating environmental benefits of resistant *D. pulex*. The results suggest that pesticide resistant *D. pulex* create effective environmental buffers for freshwater organisms against the effects of pesticides, creating a method to decrease freshwater organism mortality due to pesticide runoff.

Upcoming meetings



The **May** meeting of the JSC **may** be held on the **fourth** Thursday (the 20th) at the Southeast Branch, Jax Public Library <<https://www.jaxpubliclibrary.org/locations/southeast-regional>>. The venue continues to be Function Room D, and President Jones will rap the gavel at 7:00 PM. Harry Lee will present the Shell-of-the-Month, *Orectospira babelica* (Dall, 1905) [L; credit USNM]. The monotype of *Orectospira* Dall, 1925, it is a one to two inch deepwater Japonic marine snail with a murky systematic placement. Rick and Roz Edwards are back from a Caribbean cruise COVID-19-free and able to share their shelling experiences with us. They went go ashore in Labadee, Haiti; St. Thomas; and St. Martin, where Rick assembled an impressive collection of beach shells. Many of his species cannot be found here, so be prepared for some Antillean novelties.

Our first summer meeting of the year **may** be **on Thursday June 22** at the customary time and place. We'll first hear from Paul Jones, who has selected *Asaphis deflorata* (Linnaeus, 1758) as his Shell-of-the-Month. This 2-3 inch variably-colored clam is found only S of us on the Florida coast and points beyond. Paul has been an outspoken proponent of bivalve collecting, and he intends to show us why. Harry Lee will present a discussion of the valid species proposed in 1786 by Rev. John Lightfoot. The topical publication, an auction catalogue of curios left behind by the late Duchess of Portland (U.K.), has a long and somewhat tortured history in the annals of malacology.



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