



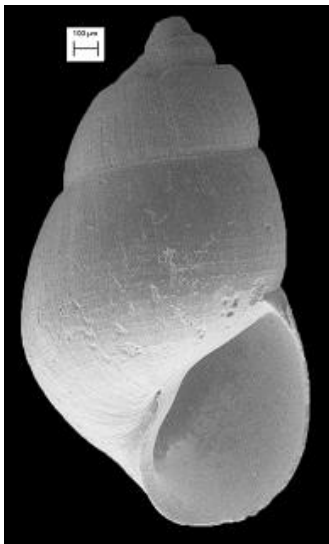
SHELL·O·GRAM

Official Publication of the
JACKSONVILLE SHELL CLUB, INC.

March-April, 2023

Volume 64 (no. 2)

Upcoming meetings

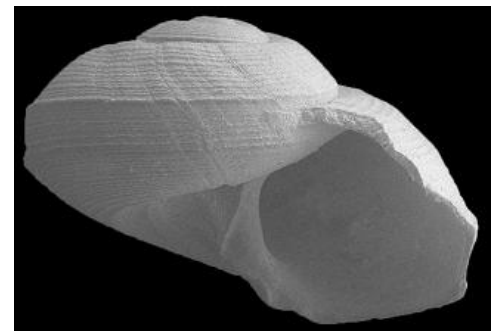


The Jacksonville Shell Club, Inc. (JSC) customarily meets on the **fourth** Thursday of each month except for November (a week earlier due to Thanksgiving) and December (traditional Xmas get-together) in Function Room D of the Southeast Branch, Jax Public Library <https://www.jaxpubliclibrary.org/locations/southeast-regional>. The main program on **March 23th** is titled “Late Cenozoic Pyrams of Florida: Odostomiinae Part II (of 2)” and will be presented by Harry Lee. Neontologists needn’t cringe, the time frame includes the Recent, and all save a dozen of the 21-odd genera to be treated are living in our waters today. Seven genera, one uniquely modern (**L**), the rest Plio-Pleistocene, e.g., **R**, appear to be unnamed as do at least twice that number of species. The focus will be on the many new geographic (FL) and stratigraphic (Pliocene, Pleistocene) records among the hundred-



odd species covered. Collections or cullings made by JSC members Rick Edwards, Paul Jones, and Harry account for all of these novelties. January attendees will recall the program was too long to presented all at once, so only the first (alphabetically-ordered) half of the genera went down at that time. The shell-of-the-month will be presented by Rick Edwards, who will discuss the Northern Quahog, a tasty clam with a backstory set in Cedar Key, FL.

In **April** we’ll reconvene on the **27th** at the usual time and place. The shell-of-the-month will be given by Harry Lee on *Agathistoma hottesierianum* (d’Orbigny, 1842). This pretty trochid is misinterpreted in virtually all the popular literature; **L** is an SEM of a 1.81mm juvenile. Paul Jones will give the main program on shells of the Panamic (marine) Province. We who’ve attended the periodic shell get-togethers in and around Paul’s garage will remember the collection of the late JSC member James Knight of Middleburg, the emphasis of which was this region, where he collected a prodigious number of specimens. Paul took possession of this great resource after Jim’s passing a few years ago, and, with the help of club members, has recurated these treasures and now can share the products of Jim and his labors with the rest of us. Don’t miss this vicarious trip to tropical western America and its malacofauna.



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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 about two days later and sent to about 200 individuals who have demonstrated an interest in malacological research and/or Florida mollusks. These pdf's (ISSN 2472-2782) have also been posted to <http://jaxshells.org/letters.htm> since November, 1998. We encourage members and other 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 original and republication version respectively. Contents of the *Shell-O-Gram* are intended to enter the permanent scientific record. The club is a chartered corporation in the State of Florida and a non-profit educational organization under the provisions of Section 501(c)(3) of the US IRS Code.

Membership Dues are payable in **September** each year.

Many of you have complied, but if you're in arrears, please send in your dues:

Individual \$15.00; Family \$20.00, to

Harry G. Lee, Treasurer, JSC

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Jacksonville Shell Club's first 2023 shell ID party held on March 4

The JSC will reprise the December 10, 2022 (and previously) shell-cleaning, ID, swap, and give-away party. A report will appear in the next issue of the *Shell-O-Gram*. To keep abreast of the scheduling, which can be on short notice vis-à-vis the circulation of the *Shell-O-Gram*, we recommend getting on Paul's emailing list. Sign up at <jonesp0854@gmail.com>.

Atlantilux exigua redux

by Robert R. Fales¹



In the December 2022 issue of *American Conchologist*² (Fales, 2022), I reported on a significant northerly range extension for the costellariid gastropod *Atlantilux exigua* (C.B. Adams, 1845), the Meager Miter.³ In early December 2021 I was using a hand dredge in two to three feet of water over shelly sand and sea grass at the northeast corner of the “island” at the west end of Fred Howard Causeway, Fred H. Howard Park, Tarpon Springs, Pinellas County, Florida (28.15617, -82.80510). The causeway extends about 0.75 mile into the Gulf of Mexico at the junction of Anclote Anchorage and Saint Joseph Sound. On December 7 and 8, respectively, while dredging 1 to 2 hours after a -0.8 foot low tide, I found an empty shell of this species as well as one with animal remains. The larger of the two shells (L; Fales photo) is 7mm in height and 2mm in width.

The purpose of this report is to confirm the presence of *A. exigua* in the area. On November 26, 2022, I returned to the west end of Fred H. Howard Park for more hand dredging. In the same area as the previous year, the

northeast corner of the park “island,” I dredged three additional empty shells of *A. exigua* in approximately 6 to 18 inches of water over shelly, silty sand, Turtlegrass, and other sea grasses about an hour after a minus 0.8 foot low tide. A pleasant surprise came about 90 minutes later when I dredged another empty shell in similar conditions at the southwest corner of the “island” (28.15286, -82.80666). The four shells ranged in size from 5mm x 1mm to 6mm x 2mm. Thus, it appears there is an established population of *A. exigua* somewhere in the immediate vicinity of Tarpon Springs.

¹ Edison, NJ <fales@verizon.net>

² The official journal of the Conchologists of America (COA)

³ No “official” vernacular name is provided by Turgeon, Quinn *et al.* (1988), but Bob’s choice is certainly faithful to C.B. Adams’ Latin.

Literature cited

Fales, R.R., 2022. Confirmed northerly range extension for *Atlantilux exigua* (C.B Adams, 1845), (Gastropoda, Costellariidae). *American Conchologist* 50(4): 32-33.

Turgeon, D.D., J.F. Quinn, Jr., et al., 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: mollusks, 2nd edition. *American Fisheries Society, Special Publication 26*, Bethesda, Maryland. ix + pp. 1-509 + 16 pls. [un-numbered]

Southeast freshwater champion receives 2022 E.O. Wilson Biodiversity Award

Jim Williams, Ph.D, an icon of research and advocacy for endangered species in the American southeast, is the 2022 recipient of the Center for Biological Diversity's annual E.O. Wilson Award for Outstanding Science in Biodiversity Conservation.

"The rivers of the Southeast and the vast diversity they harbor have had a lifelong and tireless champion in Jim Williams," said Kierán Suckling, executive director at the Center. "It's a joy for us to recognize his monumental contribution to describing and protecting freshwater species."

As a biologist in the U.S. Fish and Wildlife Service Office of Endangered Species, Williams wrote many of the earliest Endangered Species Act listing decisions for freshwater mussels and fishes, including the snail darter declared recovered earlier this year. He went on to become chief of the biodiversity branch of the Fish and Wildlife Service and U.S. Geological Survey.

"E.O. Wilson's call for scientists to act to protect biodiversity resonated with my own passion for safeguarding underappreciated wildlife," said Williams. "I am honored to receive this award named for a fellow Alabaman naturalist and nature defender."

A force to be reckoned with well into his retirement, Williams continues to advocate for endangered species, dam removal, better invasive-species control, and scientific integrity.

Williams is a primary author of the key tomes describing the diversity of the Southeast, including *Freshwater Mussels of Alabama and the Mobile Basin*, *Freshwater Mussels of Florida*, and *Fishes in the Fresh Waters of Florida*. He volunteers with the Florida Museum of Natural History, Florida Fish and Wildlife Conservation Commission, and U.S. Geological Survey Wetland and Aquatic Research Center.

In 2011 Williams was awarded the Freshwater Mollusk Conservation Society Lifetime Achievement Award. In 2000 he was honored with the American Fisheries Society Distinguished Service Award. The Center presents the E.O. Wilson Award yearly to a scientist who has made an outstanding contribution to conservation. It is named after renowned scientist Edward O. Wilson of Harvard University, known as "the father of biodiversity." Wilson's career was focused on inspiring people to understand and protect plant and animal diversity worldwide, and he was the world's leading authority on ants. The seven previous recipients of the award were Naomi Fraga for her advocacy for plants, ornithologist and poet J. Drew Lanham for his work to make conservation more relevant and inclusive, Rebecca Hernandez for advancing sustainable renewable energy; the late Lincoln Brower for monarch butterfly conservation; Aradhna Tripathi for groundbreaking research on climate change; Tyrone Hayes for safeguarding people and wildlife from pesticides; and the late James Deacon for protecting freshwater desert species.

The Center for Biological Diversity (CBD) is a national, nonprofit conservation organization with more than 1.7 million members and online activists dedicated to the protection of endangered species and wild places.

ed. note: Jim Williams has made a point of acknowledging the contributions of amateur scientists, including members of the JSC, e.g., the late W.H. McCullagh, Jr., whose collection he put to extensive use in some of his monographic works, to our understanding of the aquatic malacofauna of the American southeast. The above report is taken largely from a CBD press release of December 22, 2022.



[L to R]: E.O. Wilson, Herbert Boschung, and Jim Williams (2014). Credit: C. Kenneth Dodd, Jr.
[Below] 2022 E.O. Wilson Award for Biodiversity Conservation statue.



JSC Award Winners at the 57th annual NEFSEF

After missing last year's event due to COVID-related considerations, Rick Edwards and Harry Lee judged the Northeast Florida Science and Engineering Fair (NEFSEF) on Monday February 13th at the Episcopal School of Jacksonville. As has been customary, our criteria included excellence in malacology and/or invertebrate biology and/or marine and aquatic science in that order of preference.



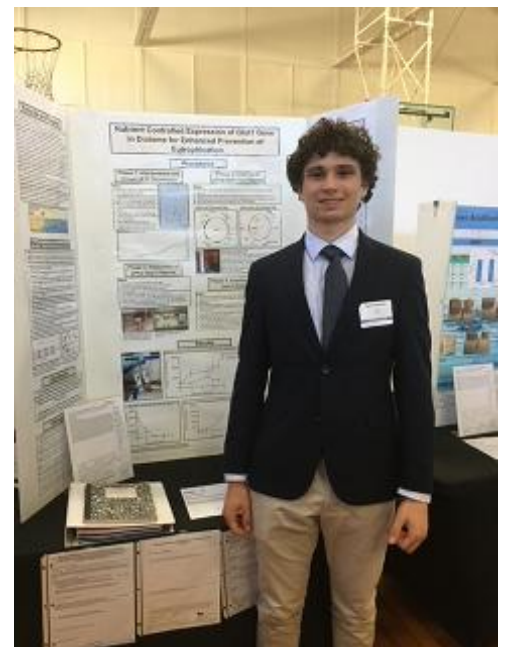
Winner of the Junior Award was Noah Neihaus [L], an eighth grader at Martin J. Gottlieb Day School. Using young Spike-top Applesnails, *Pomacea diffusa bridgesi* Blume, 1957 [<http://www.jaxshells.org/bridge.htm> including footnote], he maintained selected numbers of snails, each group in four gallons of water over four weeks. Each five gallon bucket contained 0, 1, 5, or ten snails. One half a food pellet of was administered daily per snail to each of the three experimental cultures (none to the control). He changed out one gallon of each bucket's contents daily. Using simple testing systems on a daily basis, Noah measured the concentrations of ammonia, nitrite, and nitrate in a water sample in each bucket. He found that each of the three nitrogen compounds appeared in that succession only in the experimental buckets and that the time to first appearance of each was dependent on the number of snails it contained. The concentration of the compounds rose above the upper limits of the instrument capacity only in the ten-snail bucket. Noah concluded that the evolutions of the nitrogen cycle was driven in

proportion to the number of snails in a fixed volume and that there was a limit to the capacity of the experimental system.

Noah received a JSC check for \$50.00. His preceptor was Mrs. Mendenhall, who helped us with certain details of the project.

Ryan Napoleon of Episcopal High School [R] received the Senior Award. Using CRISPR-like technology, he was able to insert the human gene, *Glut1*, into a species of the diatom *Phaeodactylum tricornutum* Bohlin, 1897, which is common in aquatic sediments. This unicellular organism is able to reduce nitrate (see above) an important deleterious nutrient linked to eutrophication of fresh waters, to nitrogen, but these very conditions can eventually keep light from reaching these bottom-dwelling organisms, which are dependent on it to drive that metabolic action. However, the transgenic *Glut1*-enabled strain he made allowed the diatom colony to prosper in darkness using anaerobic glucose break-down while the control (wild; un-enhanced phenotype) failed to do so. The implications for remediation of toxic algal blooms are apparent and could help all adversely-impacted aquatic life, including the Mollusca.

Ryan received a JSC check for \$75.00. Marion Zeiner, who also served as NEFSEF Director this and previous years, was Ryan's preceptor.



Florida Mollusca Exotica: Part 1: Background and Bivalves by Robert R. Fales¹

Back in November 2022, I began an e-mail conversation with Dr. Harry Lee about two particular species of mollusks not native to Florida, which led to a challenge to me to produce some text concerning non-native mollusks in Florida in general. I finally accepted the challenge, not knowing that it would lead to “magnum opus.” After some initial research, my intent became to show how many known non-native species there are, or have been, in Florida and add some highlights, rather than detailed reviews, for each species (although in some cases, “brief” became a relative term). I finally identified **nine** bivalves and **50** gastropods that reasonably fit a definition of “non-native” to Florida, and generated summaries on origin, introduction to Florida, and potential environmental, economic, or health impacts, where the information was available.

Before presenting any results, I should provide background information on how I arrived at the numbers above. I began by visiting the web pages of the Jacksonville Shell Club for all issues of *Shell-O-Gram* available (<http://www.jaxshells.org/letters.htm>), the Florida Land Snail Gallery (<http://www.jaxshells.org/728aaa.htm>), and Northeast Florida Slug Page (<http://www.jaxshells.org/807b.htm>) to obtain an early idea of non-native species. I then performed serial internet searches using the following terms on each of three search engines - Google, Bing, and DuckDuckGo:

“Florida mollusks, Florida mollusks” (both spellings)
combined with each of: “exotic, introduced, invasive, non-endemic, non-indigenous, non-native.”

I searched down the equivalent of three pages of results of each query for sites that would provide the evidence that I sought and reviewed each site for applicability. Most of the useful sites were reviews or summaries that pointed to additional sites with additional details. In a few cases, I was able to access original articles, but many were hidden behind paywalls, or I was simply not able to find them on the Internet and had to make do with summaries.

Finally, Harry provided me with links from which I was able to harvest several additional species: <http://jaxshells.org/checklis.htm> and <http://jaxshells.org/northeas.htm>.

Before proceeding, we need to specify a few caveats:

- I do not represent the list that I generated to be definitive: you cannot know everything. Somewhere there is published information about a non-native species that I failed to identify, and someone else knows about it or will find it. “Non-native” to me means that there is reasonable evidence that the species’ native range does not include Florida. I included cryptogenic species if the evidence suggested that Florida was not included in the origin. Some readers may disagree.
- I included non-native species that do not currently have established populations in Florida so long as there was at least one credible published observation in Florida (e.g., *Littorina littorea* (Linnaeus, 1758)), or the species appears and disappears at intervals [e.g., *Cittarium pica* (Linnaeus, 1758)]. There will be disagreement about what “credible” means.

¹ Edison, NJ <fales@verizon.net>

- What are species, anyway, and how do we identify them? Some taxa have been the subject of much debate about how many species there are in the group (e.g., the *Pomacea* applesnails, *Corbicula* spp. Asian clams). Some species can only be differentiated by dissection and anatomical analysis (e.g., *Zachrysia* terrestrial snails, certain slugs). The expertise of those reporting becomes extremely important. The advent of genomic analysis provides the opportunity to split species based only on genetic evidence (e.g., *Macoma balthica* vs *Macoma petalum*), and to hypothesize incipient speciation (e.g., *Perna viridis* residing in the eastern Pacific vs western Atlantic). There are always the questions of how much genetic difference between populations is required to determine that they are separate species, and whether the sample of the genome that we investigate appropriate for determining species. Some readers may disagree with some “species” on the list.
- Taxonomy: I used the names found in MolluscaBase as of February 28, 2023 (<https://www.molluscabase.org/index.php>). Some readers will find that their favorite names have been superseded or not included (e.g., *Mytella strigata* (Hanley, 1843) instead of *Mytella charruana* (d’Orbigny, 1846), *Gulella bicolor* instead of *Huttonella bicolor* (both T. Hutton, 1834), and *Pomacea canaliculata* (Lamarck, 1822) does not appear because it is part of a species complex, and *P. canaliculata* s.s. is not likely found in Florida).
- Bias in recognizing and studying non-native species: Species that cause damage of some kind, or that are “larger,” are more likely to be recognized and investigated than smaller or more innocuous species, but there are exceptions (e.g., awlsnails). I could find no evidence of investigation of non-native Aplacophora, Polyplacophora, Scaphopoda, or Cephalopoda in Florida. Does that mean that there are no non-native species in Florida, or that they do exist, but have not risen to our level of awareness, or simply are not sought?
- Literature summaries: Summaries are prepared by different people with different levels of expertise at different times making different interpretations with different available information. I found that in more than a few instances, there were differences between summary information about a species, and I had to use my own interpretation to make decisions about the material presented.
- While ordering the species in the list, I tried to keep like with like and follow a rough phylogenetic progression (emphasis on “rough”). Some readers will definitely disagree with my choices. This caveat is here not to advocate any particular scheme, rather to inform readers that I am simply answering the question “Why did you put them in that order?”
- Finally, my summaries are not meant to be new, original interpretations. In many instances, I copied word-for-word from the literature cited so as not to reduce or increase the import of the authors’ presentations.

The *Shell-O-Gram* editor and I agreed that there was too much information, even with only a brief presentation for each species, to include in one issue of the newsletter, so in upcoming issues I’ll simply present a list and notes for each bivalve and gastropods species.



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