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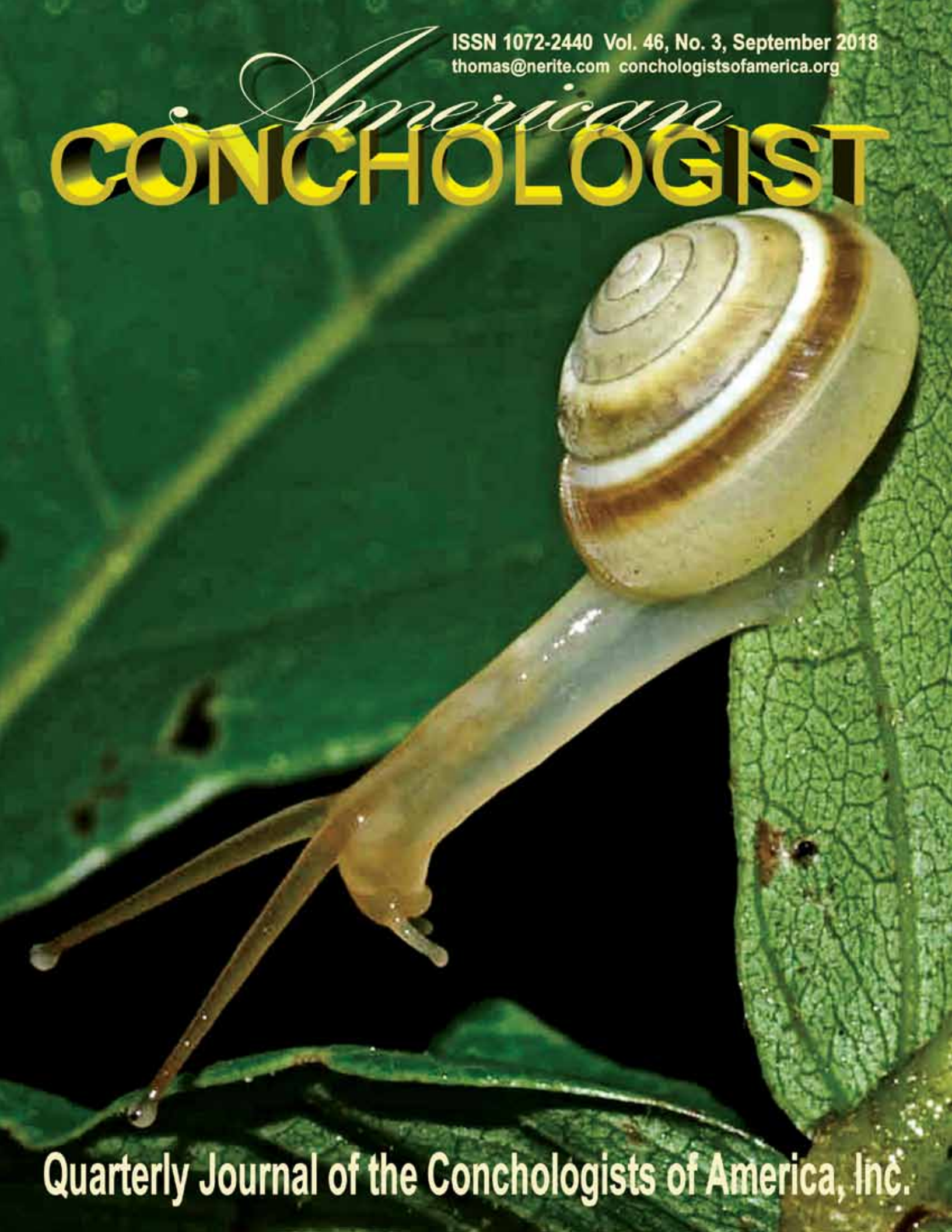

Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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Editor's comments: If you did not make it to the COA convention in San Diego, then you missed a great event. We had perfect weather the entire time and a plethora of activities to keep up the group's interest. It obviously took place too late for this issue, but I will have a bit more on the convention in the December issue.

Before I get into this issue's contents, I have a couple of very important reminders for COA members. First, the 2019 COA convention on Captiva Island (celebration of R. Tucker Abbott's 100th birthday) is scheduled for 17-23 June 2019 (17-18 field trips and 19-23 convention). This is two months earlier than this year's San Diego convention, so we will have to move a bit quicker with reservations and travel plans. Don't delay. Second, this earlier convention directly impacts nominations for the ***Neptunea* Award**. In order to process the results and prepare the awards for the convention, **the *Neptunea* Award nomination deadline is 15 April 2019**. Remember, you can, and in fact are encouraged to, re-nominate a deserving person. Page 12 of this issue has the suggested format, but whatever format you choose, get those nominations in to Everett Long (nlong3@earthlink.net) before tax day! Bruce Neville was the very deserving 2018 *Neptunea* Award winner.

Now for this issue. Both covers are indications of future events: an article by Simon Aiken in the December issue and a new book by Charles Rawlings. Both individuals have contributed greatly to *American Conchologist* over the years. They, like Marcus and Jose Coltro of www.femorale.com, and Guido and Philippe Poppe of www.conchology.be, have **always** said yes to any request for photographs or shell information. These folks keep this journal alive -- thank you all.

We are lucky with this issue to have a 'little' mystery by Bruce Neville, an adventure by Amy Dick, several COA Grant Reports, some shell show results, and lots of book reviews. Hopefully, there is something for everyone. If not, take out a pen!

Front cover: *Suavitas leucoraphe* (Pfeiffer, 1851) photographed by Simon Aiken (www.simons-specimen-shells.co.uk) 8 miles SE of La Cumbre, Dominican Republic. The shell of this animal is less than 10mm and it is no small feat to find, much less photograph. Simon will have a special article in the December issue on the snowflake snail.

Back cover: *Haminoea* sp. photographed by Charles Rawlings at night off of Olango, Philippines. This is another small, though rather colorful mollusk that seems to be rarely encountered. Charles had a great piece in the June issue on Sri Lanka and by the time this issue is published will have his third 'coffeetable' shell book in print.

A mystery (partly) solved

Bruce Neville

Figures 1 (left) - 2 (above). *Moerchia* sp. A, 2.47mm greatest diameter, trawled in 220m, Aliguay Island, Philippines, coll. BDN #9089. Both images are my mystery shell. The left image was taken with a low power microscope and the right image with a flatbed scanner.

A few months ago on an online auction, the strange, unidentified shell shown in Figures 1 and 2 attracted my attention. Always up for a challenge, I bid on and managed to acquire the specimen. Then the real fun began.

Since it was from the Philippines, I initially hoped that Poppe's excellent four-volume* set might hold a clue to its identification. Alas, such was not to be the case. Okutani's *Marine Mollusks in Japan* is also very good for micros, and I hoped it might at least get me in the neighborhood. Again, there was nothing close.

Since I didn't have any other good literature sources for micros, I turned to that other comprehensive source, Harry Lee. I managed to stump even Harry, but he did provide an important clue. He suggested that it looked like some sort of strange tornid. (If you can't identify a micro, it's probably a strange tornid.) I had already been looking at the Tornidae, as a couple other micros that I picked up from the same dealer in the same auction turned out to be tornids.

So, I did a Google image search on "philippines tornid," and I found the shell, complete with animal! It was labeled *Uzumakiella* species 01. WoRMS lists a single species of *Uzumakiella*, *Uzumakiella japonica* Habe 1958. That should have been in Okutani, so how could I have missed it? Going back to Okutani, the photo of *Uzumakiella japonica* is very different from the one on the Internet. So, who is right? At a recent COA, Phil Fallon in another context, admonished us, basically, to "trust, but verify," and check the

Fig. 3. *Cyclostrema (Morchia) obvoluta* A. Adams 1860, as figured in A. Adams (1860: pl. 255).

type. So, I needed to see the type of *Uzumakiella japonica*. I requested Habe's original paper on interlibrary loan, and it showed that Okutani's interpretation of *Uzumakiella* is correct. That species shares the down-turned aperture, but not nearly to the degree of my shell or the one in the web photograph. Furthermore, *Uzumakiella* has a rounded periphery and base and strong spiral ribs, while my shell has a strong carina at the periphery, a very flattened base, and no strong spiral ribs. So, it was back to the drawing board, or at least back to Google.

---

*When I wrote this article, there were only four volumes in the set. In the fifth volume (2017), Sheila Tagaro illustrates two Philippine specimens of *Moerchia* as *Moerchia morleti* P. Fischer 1877. Because they lack the characteristic beaded carina of Fischer's species, which he considered an important diagnostic character, I don't believe they are that species. Figure 6 shows the distinct sculpture of *M. deformata* Rubio and Rolán 2014. Figure 7 lacks the sculpture and matches my specimen and the specimen illustrated in Geiger et al. (2007), which I believe to be still unnamed.

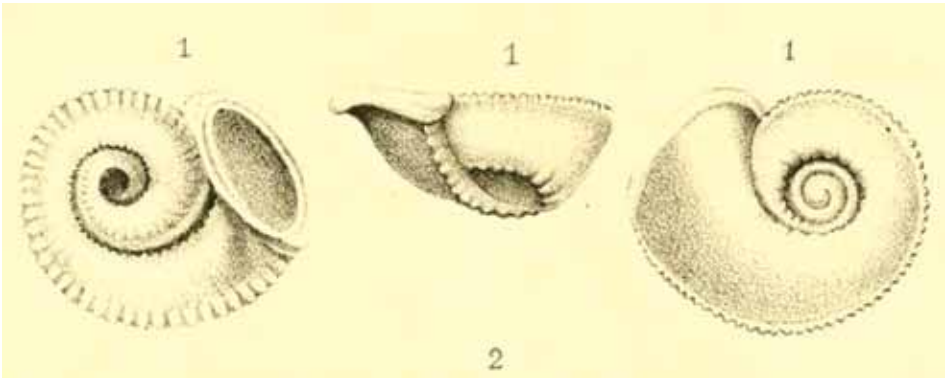

Fig. 4. *Mörchia moreleti* Fischer 1877: pl. 4.

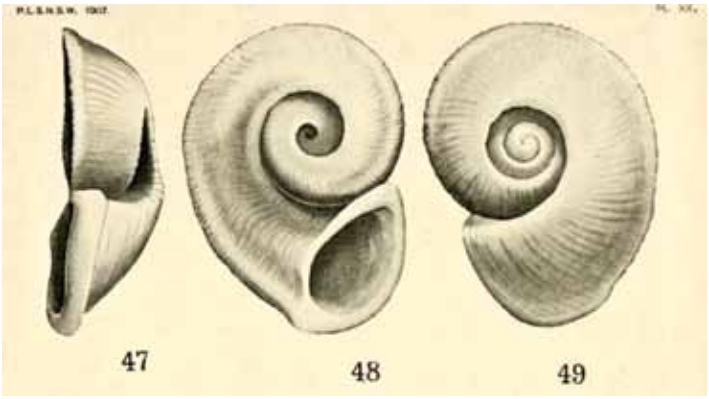

Fig. 5. *Moerchia introspecta* Hedley 1907: pl. 20.

This time, the same search hit on *Moerchiella moreleti* P. Fischer 1877. Could that be my shell? WoRMS lists *Moerchiella* Thiele 1924 as an unnecessary replacement name for *Mörchia* A. Adams, April 1860, non *Mörchia* Albers in Martens December 1860. Adams's name has been emended to *Moerchia*, according to Art. 32.5.2.1 of the ICZN, although this is probably an unjustified emendation, as Mörch was Danish, not German.

Adams included a single species, *Mörchia obvoluta* A. Adams 1860, from the Straits of Korea, which becomes the type species by monotypy. Adams did not figure his species in the original description, but he contributed the monograph on *Cyclostrema* to Sowerby's *Thesaurus* (Adams 1866), where it was included and figured as *Cyclotrema (Mörchia) obvoluta*. His illustration (Fig. 3) shows the down-turned aperture, but it, too, has a more rounded periphery than my specimen.

The next author to describe a species of *Mörchia* was P. Fischer, who described two species from China. He figured one species, *M. morleti* P. Fischer 1877, which is very close to my specimen, except for the beaded carina on the periphery (Fig. 4). His other species, *M. biplicata* P. Fischer 1877, is unfigured and has not been seen nor heard from since. Hedley named *Moerchia introspecta* Hedley 1907 from Queensland, which looks even more like my specimen (Fig. 5).

Finally, Rubio and Rolán (2014) described two new species of *Moerchia*, *M. deformata* and *M. perforata*, from the Solomon Islands and reviewed the known species. The holotype of *M. perforata* has a strong carina on the top of the whorl. The holotype of *M. deformata* is more similar to my specimen, but has fine, though clearly visible concentric ribbing all along the shell. Recent availability of living specimens allowed Rubio and Rolán to transfer the genus to the family Pyramidellidae.

Geiger et al. (2007) illustrate a specimen of a *Moerchia* from Panglao, Philippines, that they identify only as "*Moerchia* sp." My specimen appears to match Geiger et al's specimen, but it does not yet appear to be named. Specimens of *Moerchia* still appear to be uncommon. Until more specimens are known that can give us a better understanding of interspecific variation and distribution, I think I'll be satisfied with their identification of "*Moerchia* sp."

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Members of the CenPenn Beachcombers (sometimes called the CenPenn Shell Club), celebrated at their annual picnic in August outside of Lancaster, PA. It was reportedly a "balmy 93°" after a previous two days of rain totaling some five inches. According to the club website (www.cenpennbeachcombers.org): "Founded in 1982, our club is a group of seashell enthusiasts and collectors in the Susquehanna Valley region of Pennsylvania, between Philadelphia and Harrisburg. We promote the study of mollusks, shells, and shell collecting. Through our yearly auction we provide financial support to the local North Museum of Natural History and Science in Lancaster, PA, and to the Bailey-Matthews Shell Museum in Sanibel, FL. We also support natural resource conservation and are members of the Lancaster County Conservancy. And we contribute to the Grants to Malacology of the Conchologists of America." Photograph by Barb Vanderstappen, a professional wedding photographer.

Sitting L-R: Henry Spafford, Vangie Spafford (Secretary), Cheryl Steigerwald, Pat Price, Bob Ruth, and Sharon Ogden.

Standing L-R: John & Jamie McCune, Rusty Baughman (President), Phil Dietz, Sue Hobbs, Tom Grace, Judy Rence (VP), Al Wentzel, John Wolff (Treasurer), Liz Zizzi, Barry Norbeck, and Pete & Barb Vanderstappen.

Attention

Convention in Captiva for 2019 is two months earlier next year.

Neptunea Award

Voting will take place two months earlier

Deadline for nominations is 15 April 2019

Attention

Report on a dredging expedition off the Louisiana coast including surprising geographical extensions

Emilio F. García

The University of Louisiana at Lafayette has been conducting explorations in the Gulf of Mexico for more than two decades, concentrating mainly on crustaceans and algae. I have been invited to "tag along" to document the mollusks collected during such expeditions. The findings have been reported in García (2000, 2002a, 2002b, 2005, 2006, 2007a, 2007b, 2008a, 2008b, 2008c, 2010, 2011a, 2011b, 2011c, 2012, 2013a, 2013b, 2013c, 2015a, 2015b, 215c) and García and Lee (2002, 2003).

Last May we had the opportunity of engaging the R/V *Pelican* on another cruise to collect in offshore Louisiana waters, from the Mississippi Delta to near the Louisiana-Texas border. Unfortunately, for reasons beyond our control, we were not able to bring with us the Benthic Skimmer, a large, specialized dredge to sample soft-bottomed, deep benthos (see García, 2007a), so we were restricted to collecting on the hard bottom tops of the pinnacles, from roughly 55 to 90m from the surface.

These areas produced the usual suspects reported elsewhere, including, among others *Isara ulala* (García, 2011) (formerly placed in *Mitra)*, *Conus* sp. aff. *daucus* Crosse, 1858 (see Kohn, 2014:232), *Morum dennisoni* (Reeve, 1842), *Fusinus couei* (Petit de la Saussaye, 1853), *Haliotis pourtalesii* Dall, 1881, *Fenimorea petiti* Tippet, 1995 (fig. 1), *Astralium phoebium* (Röding, 1798) (red color), and *Siratus consuela* (A.H. Verrill, 1950) (yolk-yellow). We also collected two specimens of *Ranularia rehderi* (A.H.Verrill, 1950), an uncommon species that we reported from the southern Gulf of Mexico for the first time in 2005, and from the northern Gulf in 2007. With the addition of these two specimens, the species seems to be well established in Louisiana, after having been collected at five stations, from 91º02'W to 92º27'W, in 64 to 79m.

Also of great interest was a "crabbed" specimen of *Bursa ranelloides* (Reeve, 1844) (fig. 2). A live specimen of this species was obtained by Charlotte Thorpe (see http://www.jaxshells.org/brand.htm) during a 2008 expedition on *The Pelican*, sponsored by the well-known collector and student of Conidae, Bill Cargile; the specimen recently collected is only the second known from Louisiana waters. This population differs from most Atlantic specimens of *B. ranelloides*, a form previously known as *B. r. tenuisculpta* Dautzenberg & Fischer, 1906) because of its much smaller and more numerous nodes; however, this taxon is now considered to be only a form of the nominal species (Beu,2010: 55). The Louisiana form is very similar to the holotype of *B. ranelloides*, as well as to the western Atlantic population from the island of Guadeloupe (Beu, 2010: 348-349, pl, 4, figs. 2). 4). Moreover, as Beu points out, *Bursa benvegnuae* Penna-Neme & Leme, 1978*,* from Brazil, is an intermediate form.

Also collected on this trip was a second specimen of a *Mathilda* sp. aff. *hendersoni* Dall, 1927 (fig. 3), a species that had been collected off Louisiana in 2003 and which was reported by Lee (2009: 135) together with his own sample(s) (his fig. 658). As Lee stated, this species differs from *M. hendersoni* mainly in its conspicuous axial sculpture, a character not described by Dall. It does not seem to be an ecological form of *B. hendersoni* as, besides Lee's sample(s), I have photographed the same morph from Contoy Light, Yucatán, Mexico, in the Sunderland collection. Also, the specimen pictured by Rios as *M. hendersoni* (1994; sp. no. 953) is this form.

Not recorded from Louisiana waters before this cruise was the worm shell *Thylacodes decussatus* (Gmelin, 1791) (previously *Serpulorbis*) (fig. 4). The fully adult specimen was collected in 68m of water, which seems to be a record depth for a live-collected specimen. Although reported by Rosenberg (2009) and Rosenberg et al. (2009) as occurring in Texas, neither Parker & Curry (1956) nor Tunnell et al. (2010) report it. The species identified as *Dendropoma irregulare* (d'Orbigny, 1841) in the latter publication however, may be *S. decussatus*.

Before I leave the top of the pinnacles to more muddy regions I should report that our last four stations were on top of Sackett Bank, approximately situated at 28º38'N, 89º33'W, that is, about 20 miles from Southwest Pass, at the Mississippi Delta. It has been a very popular fishing ground for Louisianians for decades. When we sampled this pinnacle in 2004 we obtained 81 lots of live and empty shells; in 2011 the yield was 25; in 2014, 6, and in 2018, after 4 dredging attempts, two species were collected: *Arca zebra* Swainson, 1833, and *Pseudochama corrugata* (Broderip, 1835). We dredged many live specimens of the former, all smallish of just over an inch in length, and two live specimens of the *Pseudochama*. The rubble had that blackish tint

that is a telltale of an unhealthy habitat, and neither my algae nor my crustacean colleagues did any better.

As mentioned above, we did not have at our disposal the use of the Benthic Skimmer for deeper, muddy environments; however, there were certain stations from former trips that were very good for mollusks, so I asked Dr. Suzanne Fredericq, the principal investigator, if we could try them, even though we knew they would not be propitious for algae (her specialty) and would probably fill up right away with that indescribable thick, dark, sticky mud so characteristic of the Louisiana benthos. She agreed, so on the 5th of May we set the box dredge down for a haul of five minutes each at three stations. We knew that it was going to be intensive hard work when the dredge came up, since it would be packed with mud with the consistency of wet cement. Would it be worth it?

One of the hauls, in 110m of water, produced a *Favartia hidalgoi* (Crosse, 1869), only the second time we have dredged it in Louisiana; one *Isara straminea* (A. Adams, 1853) (formerly in *Mitra*); a *Compsodrillia haliostrephis* (Dall, 1889), and a *Diodora aguayoi* Pérez- Farfante, 1943 (fig. 5). This species had not been reported from the Gulf of Mexico *per se* (Rosenberg et al., 2009), only from Bermuda, Cuba, and south. Also in the haul came a specimen of what seems to be a dwarf population of *Cyphoma mcgintyi* Pilsbry, 1939 (fig. 6). It is the third such specimen collected in the north-central Gulf of Mexico; the second, an empty shell, was collected in 75.8m, and the third, a live specimen, in 1972 by the Lafayette SCUBA divers Mike and André Stansbury in approximately 27m of water on a reef "just" 40 miles from shore.

Another mud haul, in 150m, brought up a *Solariella multirestis* Quinn, 1979 (fig. 7), a new record for Louisiana and the northern Gulf of Mexico. The type locality for this species is off the island of Saint Vincent, in the Lesser Antilles; a second specimen, "in poor condition" (Quinn, 1979:39) was collected off Sombrero Light, Florida Keys. This Louisiana specimen seems to be only the third recorded specimen of the species. In the same haul as the *Solariella*, came up a puzzling "turrid," which I could not identify, even at the generic level. I sent an image of the shell to the well-known turrid student Phil Fallon, who suggested it might be an undescribed *Strictispira* (fig. 8).

When we went on a *Pelican* cruise in 2000, we missed the target in one of the pinnacle stations, and went down the edge to 155m. When the dredge came up, it was filled with the type of mud described above, and a live *Perotrochus amabilis* (F. M. Baker, 1963). In this trip we tried to duplicate the 2000 feat by dredging in the same general area and, of course, mud came up; and an empty small *Perotrochus amabilis* (F. M.Bayer, 1963) (fig. 9); and a 31.6mm *Fusinus aepynotus* Dall, 1889 (WR?; fig. 10), a species not reported from the northern Gulf before; and a *Personopsis grasi* (Bellardi in Ancona, 1872)(fig. 11); and *Bathyferula* cf. *delannoyei* Stahlschmidt, Lamy and Fraussen, 2012 (fig. 12). What?! I'll explain.

Beu (2010:99), says that *Personopsis grasi* is one of the largest and widest species yet recorded of *Personopsis*. It is in the family Personidae and is a rare, deep-water species in the Recent fauna. It has been obtained from fishermen traps set in 300m off Guadeloupe, French West Indies, and in seamounts in the central Atlantic. I have also in my collection "crabbed' specimens from Curaçao, Netherlands Antilles, collected in 213m. This record from Louisiana is the first from the Gulf of Mexico and the westernmost in the Atlantic Ocean.

Bathyferula delannoyei is the single species assigned to the "turrid" genus *Bathyferula (*Stahlschmidt et al., 2012). The five known specimens, all from empty shells, were collected in the Lesser Antilles (Martinique, Guadeloupe and St. Martin), and off Roatán Island, northern Honduras, at depths of 232 to 750m. The fact that these two shells of *Bathyferula cf. delannoyei* dredged off Louisiana were obtained in the same haul, seems to indicate that there is an established population of this species in the northwestern Gulf of Mexico. They are somewhat different from the described species and will be studied further.

Recapitulating, the approximate total of 15 minutes taken to sample three "muddy" stations off Louisiana produced four dramatic range extensions: *Diodora aguayoi, Solariella multirestis, Personopsis grasi* and *Bathyferula cf. delannoyei*. It also produced an extended geographical distribution for *Fusinus aepynotus* in the Gulf of Mexico, as well as a presumptively undescribed *Strictispira sp.* So, how much more is there to be discovered?

A complete list (and many photos) of mollusks we retrieved from offshore Louisiana waters can be found at http://www.jaxshells.org/efg1030.htm. The website www.jackshells.org is owned, created and maintained by Bill Frank.

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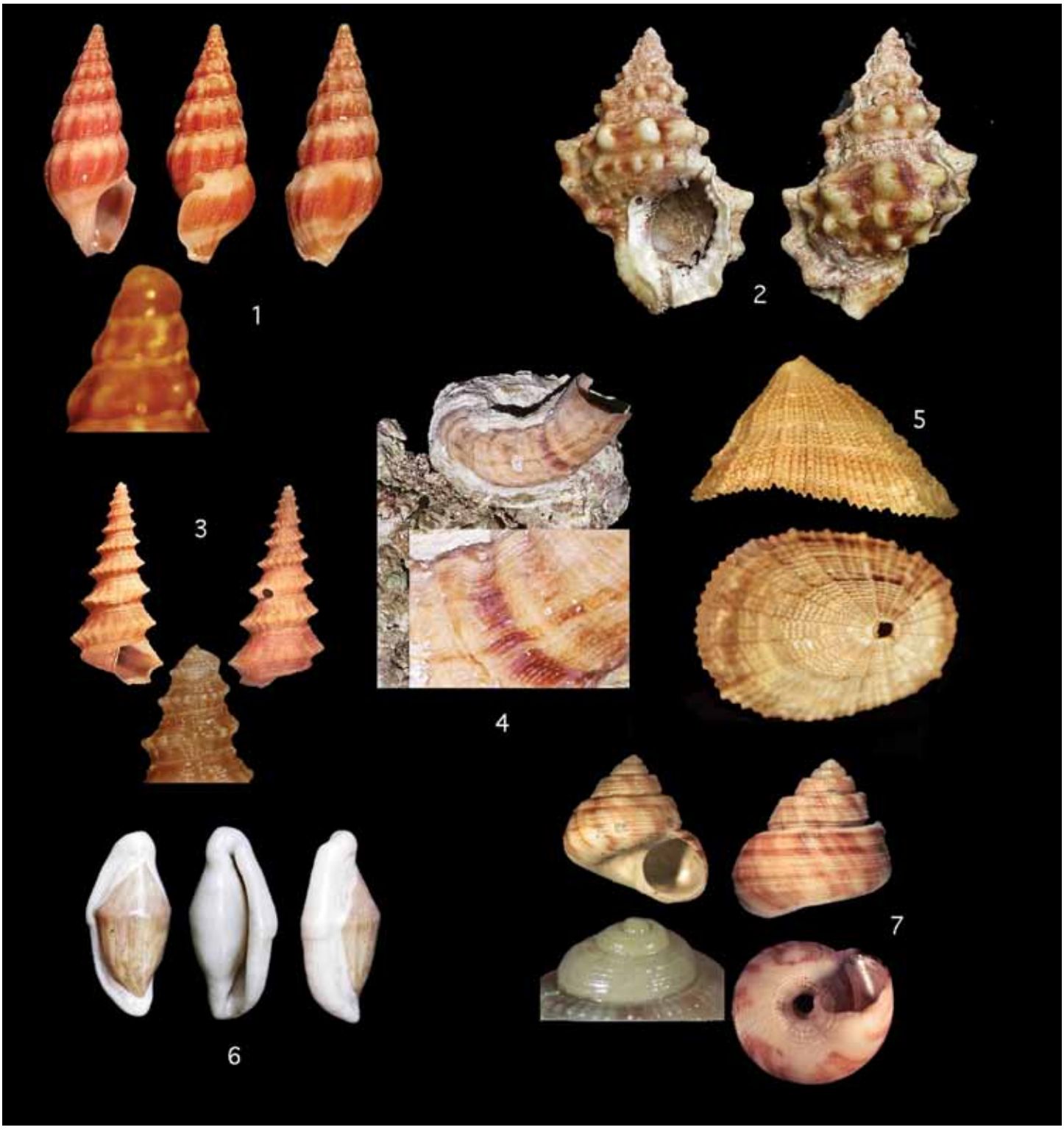

Plate I: 1. *Fenimorea petiti* Tippett, 1995, 28º05.019'N, 91º01.067'W to 28º05.047'N, 91º00.578'W, in 80m in fine rubble, 12mm. 2. *Bursa ranelloides* Dautzenberg & Fischer, 1906, 27º58.594'N, 91º39.768'W to 27º58.511'N, 91º39.744'W, 68m, medium rubble, 43.8mm. 3. *Mathilda* sp. aff. *hendersoni* Dall, 1927, 27º58.594'N, 91º39.768'W to 27º58.511'N, 91º39.744'W, 68m, medium rubble, 12.4mm. 4. *Thylacodes decussatus* (Gmelin, 1791) 28º05.212'N, 91º00.628'W to 28º05.328'N, 91º00.883'W, in 68m, fine rubble, diameter of opening 13.6mm. 5. *Diodora aguayoi* Pérez-Farfante, 1943, 28º05.068'N, 91º11.360'W to 28º04.754'N, 91º11.264'W, in 110m, packed mud, 17.1mm. 6. *Cyphoma* cf. *mcgintyi* Pilsbry, 1939, 28º05.068'N, 91º11.360'W to 28º04.754'N, 91º11.264'W, in 110m, 19.9mm. 7. *Solariella multirestis* Quinn, 1979, 27º53.560'N, 91º21.644'W to 27º53.405'N, 91º21.907'W, 150m, 10mm.

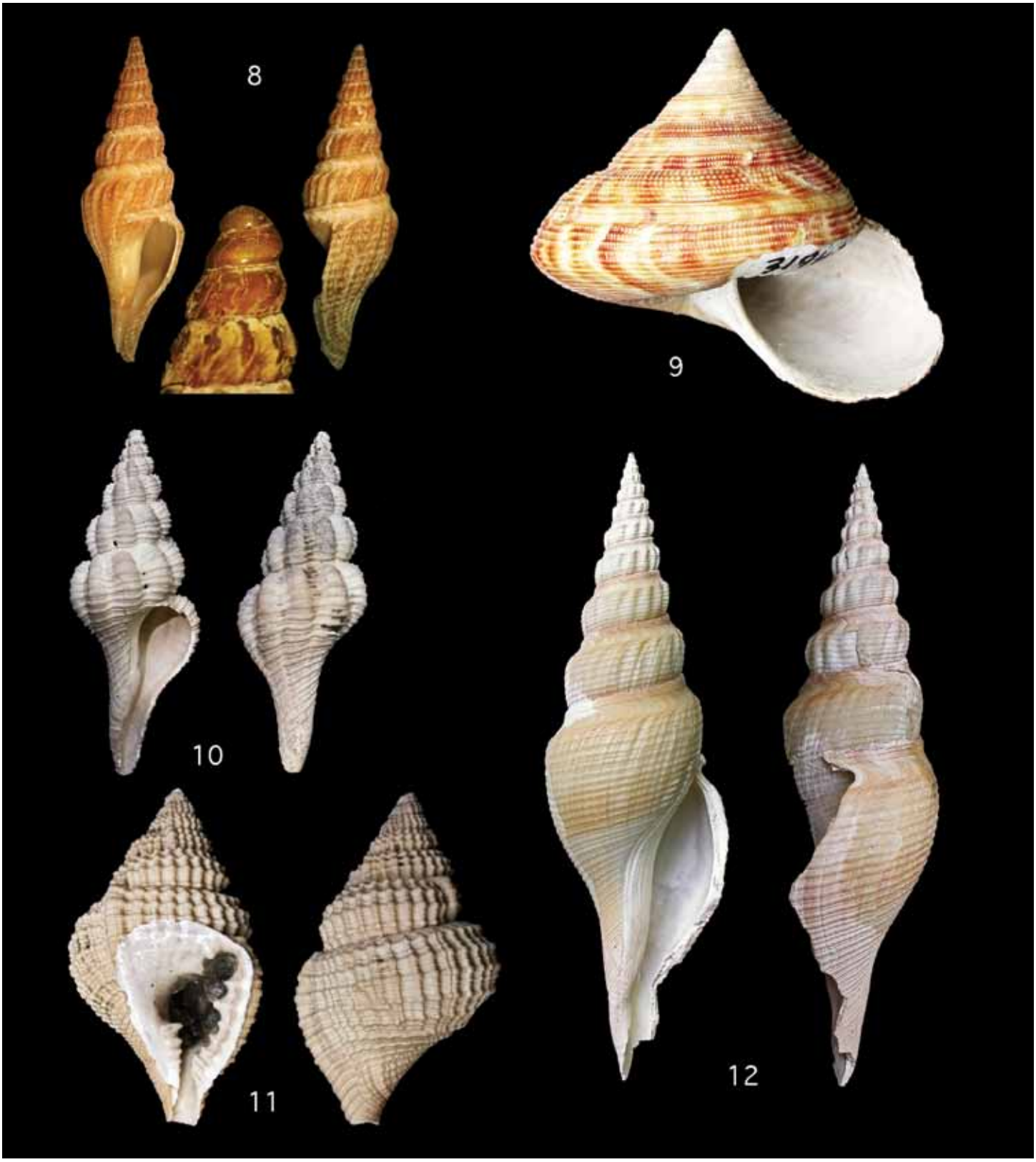

Plate II: 8. *Strictispira* sp.?, 27º53.560'N, 91º21.644'W to 27º53.405'N, 91º21.907'W, 150m, mud & shell fragments, 27.5mm. 9. *Perotrochus amabilis* (F. M. Bayer, 1963), 27º52.809'N, 91º21.048'W to 27º53.252'N, 91º20.973'W, 215m, 45.6mm. 10. *Fusinus aepynotus* Dall, 1889, 27º52.809'N, 91º21.048'W to 27º53.252'N, 91º20.973'W, 215m, 31.6mm. 11. *Personopsis grasi* (Bellardi in Ancona, 1872), 27º52.809'N, 91º21.048'W to 27º53.252'N, 91º20.973'W, 215m, 25.7mm. 12. *Bathyferula* cf. *delannoyei* Stahlschmidt, Lamy & Fraussen, 2012, 27º52.809'N, 91º21.048'W to 27º53.252'N, 91º20.973'W, 215m, 70.4mm.

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COA *Neptunea* Award

Dear Members,

Many of us are beginning to plan for the 2019 COA Convention in Captiva, Fl. One of the many events on the agenda will be the annual COA *Neptunea* Award(s), and it is my privilege at this time to call for nominations. It is never to early to submit your nomination. Early convention in 2019 means early submissions are needed.

The consensus of the COA Board is to reopen nominations with a "clean slate" annually. **Nominees not selected in previous years are certainly welcome for consideration if renominated - in fact their renomination is encouraged.** For the present cycle, nominations will close on April 15,, 2019 so as to allow ample time for deliberation before the convention.Please note that members of the Board of Directors are not eligible to receive the *Neptunea* Award while actively serving on the Board. Also, your nominee must be a member of COA.

By way of background, the *Neptunea* Award (Brunner, 2000; Lipe, 2000) was established at the midyear (1999-2000) meeting of the COA Board in order to recognize outstanding and distinguished service to conchologists and malacologists in recognition of:

1. Service to the Conchologists of America. AND/OR 2. Service to the scientific interests of Conchologists of America. AND/OR

3. Service to the science of Malacology as it applies to conchologists anywhere.

Although notable exceptions have been made, the COA Board, which serves as the jury for the *Neptunea* Award, has traditionally weighed its consideration for award recipients toward (1) amateurs: those not currently pursuing a principal career involving collection, study, or commerce of mollusks, (2) individuals "working behind the scenes" and relatively unrecognized in the COA world, for their contributions, and (3) active members of the COA. Up to three awards have been made at our annual conventions beginning with the Houston event in 2000 (see below). Nomination(s) for the *Neptunea* Award may be made by any COA member, and the format is simple:

Name of nominee:

This person deserves this award because (Here a somewhat detailed paragraph will suffice.)

..... Signed .....

and either snailmail or email that nomination to me, the COA *Neptunea* Award Coordinator:

Everett Long
422 Shoreline Drive
Swansboro, NC 28584-7204
<nlong3@earthlink.net>

Previous *Neptunea* Award winners:

2000 (Houston, TX): Ross Gunderson, Ben and Josy Wiener, Debbie Wills
2001 (Port Canaveral, FL): Emilio Garcia, Harry Lee, Lynn Scheu
2002 (Sarasota, FL): Richard Petit, Bernard and Phyllis Pipher
2003 (Tacoma, WA) Jim and Linda Brunner, Kevin Lamprell, Doris Underwood
2004 (Tampa, FL): Bobbi Houchin
2005 (Punta Rassa, FL): Richard Forbush, Anne Joffe, William Lyons
2006 (Mobile, AL): Jack Lightbourn, Betty Lipe
2007 (Portland, OR): none given
2008 (San Antonio, TX): Bill Frank, Archie Jones
2009 (Clearwater, FL) none given
2010 (Boston, MA): none given
2011 (Port Canaveral, FL): Alan Gettleman
2012 (Cherry Hill, NJ): Gary Rosenberg, Martin Avery Snyder
2013 (Sarasota, FL): David and Lucille Green, Marlo Krisberg, and Charles Rawlings
2014 (Wilmington, NC): Colin Redfern, Tom Rice
2015 (Weston, FL) John and Cheryl Jacobs; Kevan and Linda Sunderland
2016 (Chicago, IL) Rich Goldberg, Homer Rhode, Charlotte Thorpe,
2017 (Key West, Fl) Robert (Bob) Janowsky
2018 (San Diego) Bruce Neville

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Lipe, B[etty], 2000. Presidents Message. *American Conchologist* 28(4): 2. Dec.

In Advance I thank you for taking time to submit your nominee for consideration.
Everett Long
Award Coordinator

Book Review "Cowries..." in *American Conchologist* 46(2): 43 by Richard Kent

A response by Felix Lorenz

On reading Richard Kent's detailed review of my Cowrie Book Volume 1 (2017), it becomes apparent that a lot of collectors would have preferred a smaller book with more pictures and less text, and in this particular case, an illustrated dealer's price list.

Fair enough, but it was not my intention to write a best-seller, but a comprehensive treatise portraying where we stand in the research of cowries, from my "splitter" standpoint. The beauty of this standpoint is that now there is a lot of material on the table that we can discuss, dismiss, synonymize, and eventually drag back for discussion when new information becomes available or alternative views take over once again. The Introduction of Volume 1 goes into detail on this subject.

This is an ongoing process and also, this is what makes the whole issue so exciting. Therefore, I am taking this occasion to address a delicate subject that I am aware must have puzzled many collectors: the treatment of *tigris*. I do have my "favorites," as Kent correctly noticed, and I had to cut back on them, simply because a lot of research on the four subspecies was published by Meyer and Tweedt (2017) and there were other groups that needed more attention.

The criticism concerning my treatment of *tigris pardalis,* therefore, is a welcome opportunity to briefly clarify my standpoints, or in other words, talk facts and correct some of the statements Kent made.

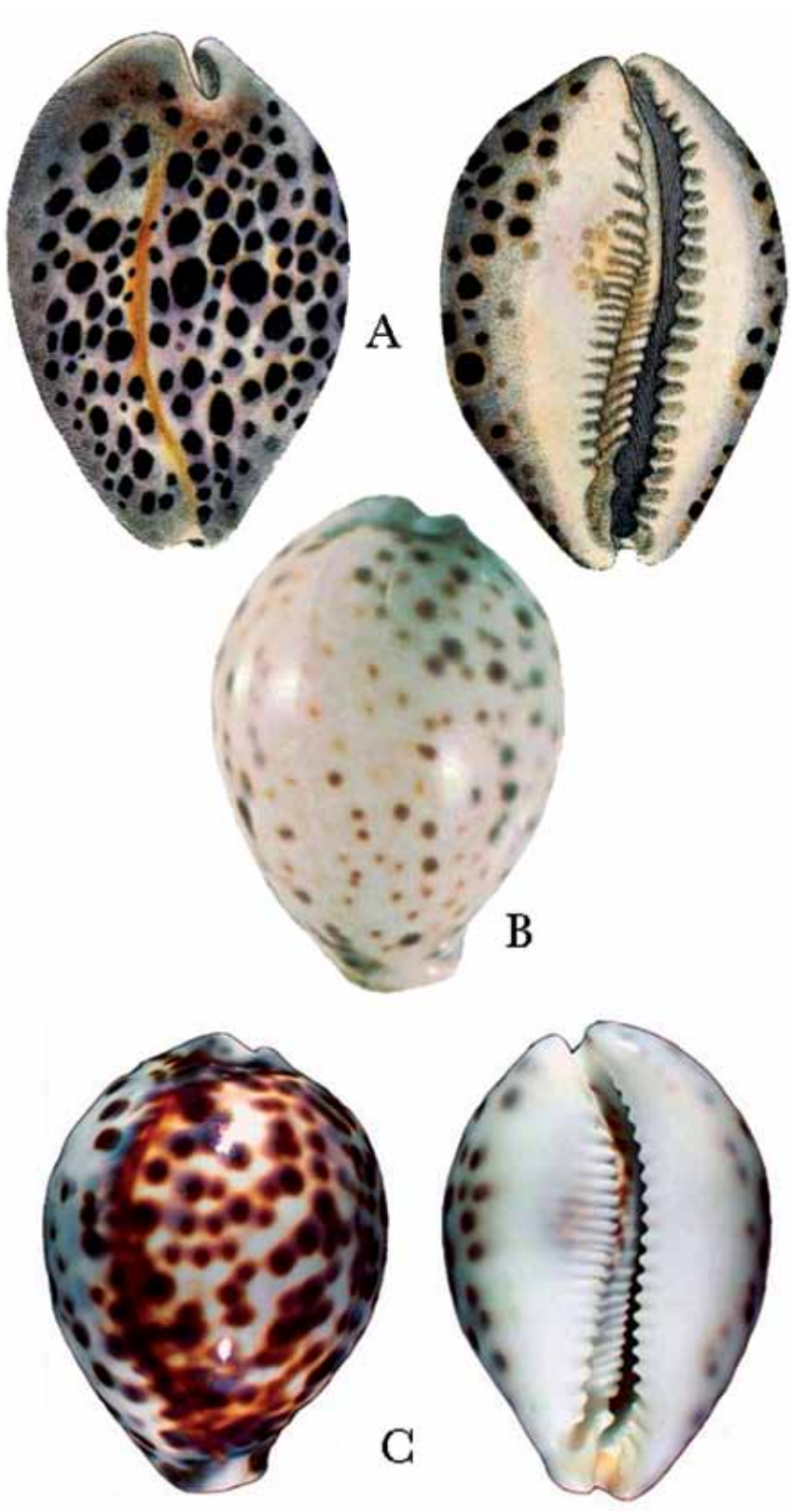

Figure A: The type figure of *pardalis* from Shaw (1794) (mirrored).
Figure B: The shell that is supposedly a typical *pardalis* depicted in Burgess (1970) pl. 22, fig. B, that Kent refers to.
Figure C: My interpretation of what a typical *pardalis* should look like (Cowries p. 283).

Kent quotes me as follows: "according to Lorenz... *Cypraea tigris pardalis* is the Philippine variety." This is untrue. I never wrote, said, or thought that. What I did was simply use *pardalis* as the name for the Western to Central Pacific subspecies in general (in accordance with Schilder (1965) and all later authors, except Burgess, who incorrectly used *pardalis* as varietal name for very pale and sparsely spotted shells, in the case of his 1970 book for a shell from New Hebrides and not The Philippines (see Figure B).

Furthermore, Kent states: "...but he fails [sic!] to quote the original descriptions and type specimens to back this up." Also this statement of his is simply untrue! As for all taxa, I do quote the original reference for *pardalis* and where its type figure can be found (see Figure A).

My approach is the same as in all monographs: if readers want to gain a deeper understanding of all the facts that led to the presentation of taxa, they will have to refer to the information offered, such as the original reference, further references on a paricular subject (which are also listed in my book), and then do their homework by looking up the source itself, which is usually available online. In the case of *tigris* and *pardalis*, I did not have to "back up" my point any further, as my assignments of names agreed with those done by authors in the past, e.g. F. A. & M. Schilder (1952), Steadman & Cotton (1946), and C. N. Cate (1960).

Finally, Kent states: "Having dealt with shell dealers for years, *pardalis* is an all white tiger with minimal black spotting and no dorsal line, just like the one illustrated in the groundbreaking Burgess book." Well, after dealing with shells and shell dealers for decades myself, I would never question their competence when it comes to interpreting names. Jokes aside: the original illustration of *pardalis* shows a shell that has dense, large spots and a distinct reddish dorsal line. The concept of the name is based on this picture. Neither "years of shell dealer's experience," nor the illustration in Burgess can alter these facts.

The molecular analysis is the modern approach to taxonomy and a universally accepted tool for differentiating between species. For the cowries, it was conducted by Dr. Christopher P. Meyer (2003, 2004, and numerous personal communications). His studies revealed that the populations of *tigris* from the Western to the Central Pacific should be distinguished from Indian Ocean ones on subspecific level, as they represent separate, evolutionary significant units. The same is true for the subspecies of *Zoila marginata*, and many other seemingly "polymorphic" species, to suggest for readers the interesting articles by Mr. Okon and Mr. Weir in the same issue of *American Conchologists.* In my Cowrie book, Volume 1, there is a long chapter on how molecular data can be aligned with traditional taxonomy, and I provide numerous examples.

In my discussion of the taxa of the *tigris*-group, I explicitly state that: "This variable and widespread species is split into four subspecies, of which three are supported genetically, but difficult to distinguish conchologically. The Indian Ocean is inhabited by the nominate *tigris*. Along the border between the Eastern Indian Ocean and the Pacific, interbreeding with the Pacific *pardalis* takes place. There is no way to safely distinguish shells from the Indian Ocean and the western Pacific...." And in another instance: "The individual variability of the tiger cowrie shell makes it impossible to determine features that safely distinguish individual specimens from the Indian Ocean and the Pacific. This characterization is based on comparisons of many specimens from different populations. The genetic distance between them is considerable, and the data suggests that *tigris* and *pardalis* split at approximately the same time that *pantherina* split from *tigris*." I outline the general morphological trends that can be observed, however, even if they do not show up in every individual specimen (see table below).

Shaw's name *pardalis* is the oldest available out of the long synonymy for *tigris* that most likely refers to a Pa-

Cypraea	***t. tigris***	***t. pardalis***	***t. lorenzi***	***t. schilderiana***
Distribution	Indian Ocean	Pacific except Marquesas and Hawaii	Marquesas	Hawaii
Shape	pyriform, slightly inflated		oval, depressed	pyriform, inflated
Columellar teeth	rather long		rather short	short!
Aperture	narrow		wider!	narrower
Base	rather convex		concavely sloping at aperture!	rather convex
Columellar ridge	less produced	slightly produced	well produced!	well produced
Fossula / denticles	steep / finer	less steep / coarser	sloping / coarse	less steep / coarser
Dorsal line	narrow, less distinct		broad, blurred	conspicuous, distinct!
Spotting	small, dense	larger, dense	larger, confluent	large, distinct, framed with blue!

cific specimen, and its illustration supports this. As Schilder (1965) has comprehensively dealt with the assignment of type localities to existing names, I did not see the necessity to defend using *pardalis* for Pacific populations.

The shell I chose to represent the name is certainly more adequate than the pale off-color one shown by Burgess (actually, the varietal name *chionia* Melville, 1888, can be used for such shells). Whether or not other authors or collectors agree with my concept of distinguishing a subspecies that cannot always be reliably characterized by shell features, but merely by DNA, is a totally different question and not part of the taxonomical issues addressed herein.

Concluding, I encourage collectors to get your *tigris* (with ascertained data) out and make four piles: separate Indian Ocean ones from those from Hawaii, the Marquesas, and the rest of the Pacific. Then, study the sets side by side, ignoring their variability, but focussing on those morphological features compared in the table. You will find that there are differences between these four goups that may not be well displayed by some individual shells, but they do exist when the populations are examined as a whole.

Many thanks to Michael A. Mont for proofreading, and to Richard Kent for starting what can become a lively discussion.

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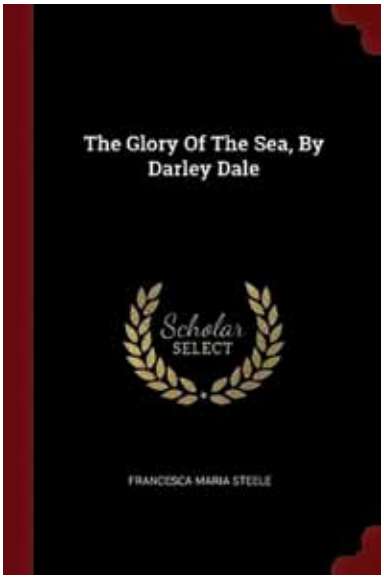

The Glory of the Sea

by Darley Dale [pseudonym for Francesca Maria Steele]
1887 [reprinted 2015]
Paperback, Nabu Press (December 8, 2013),
ISBN-10: 129338111X
ISBN-13: 978-1293381113
Product Dimensions: 7.4 x 0.5 x 9.7 inches, 228 pages

This is not your standard shell book, but it is a gem nonetheless. A few months ago a shell friend (Bruce Neville) emailed and said he had just reread *The Glory of the Sea* and quite enjoyed it. Having benefited from other recommendations from Bruce, I checked Amazon.com and sure enough, there it was, $14.95 softcover. I did not know quite what to expect from an 1887 (approximately) novel about shells, but thought I could devote a couple hours to it at least. It was not what I expected.

The story revolves around a young 'crippled' girl named Polly. Her affliction is a curved spine and back then that meant spending most of the day and night, painfully chained, yes chained, to a bed to try and straighten the spine. In the first couple pages you learn that Polly has inherited a rather extensive shell collection from a Miss Crabbe. **Unknown** to Polly, Miss Crabbe's will stipulates that if Polly keeps the collection intact and actually adds at least 20 specimens by her 21st birthday, she will also inherit the old lady's fortune. If Polly sells off the collection, she gets £500.

The rest of the book involves Polly slowly gaining an appreciation for conchology as she learns about various shells and families of shells in the collection. Of course, this means you as the reader also get a shell education. You will be amazed at how much they got right 131 years ago. There are also some interesting errors. Thus you will find *Ianthina* used instead of *Janthina*, a common misspelling of Röding's original genus. The section on the golden cowrie is also interesting.

The title comes from a missing *Conus gloriamaris*, which at that time would have been a big deal as it was an alomst priceless shell in the 1800s. To find out what happened to the pricey cone and indeed, to Polly, you will have to read the book, also available as a free pdf at Google books: https://books.google.com/books?id=fWMUAAAAQAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Tom Eichhorst
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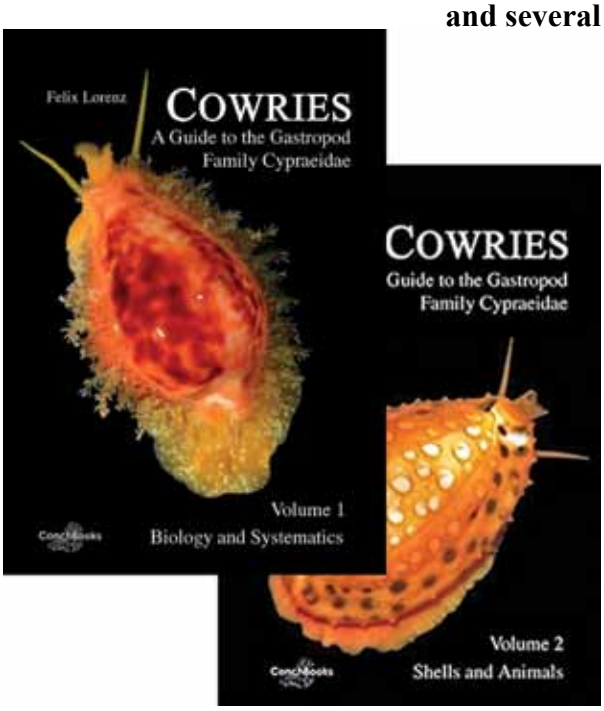
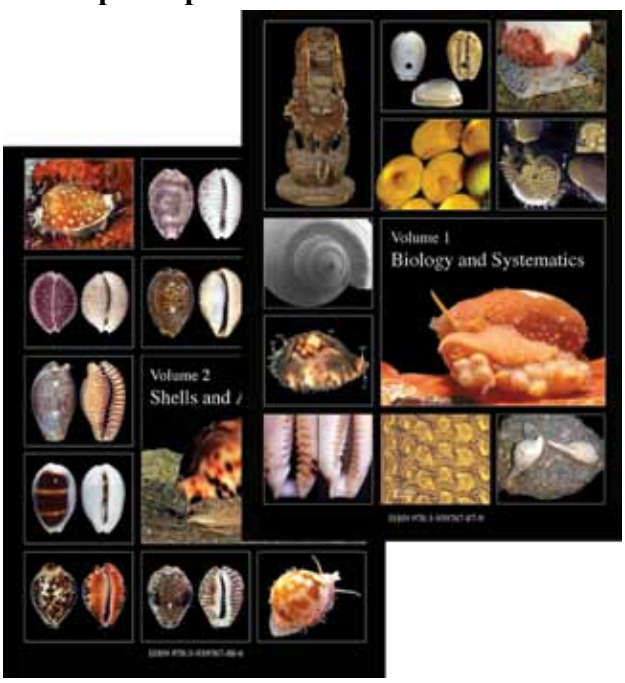
COWRIES: A Guide to the Gastropod Family Cypraeidae

By Felix Lorenz
Published in two volumes

Volume 1: ISBN 9783939767879 Published in 2017, ConchBooks, Harxheim, Germany, hardcover, 8 by 11.75 inches, 644 pages fully illustrated with color plates, maps and charts

Volume 2: ISBN: 978-3-939767-88-6, published in 2018, ConchBooks, Harxheim, Germany, hardcover, 8.25 by 11.75 inches, 715 pages including 345 pages of full sized, high quality photographic plates in color and several black and white photo plates





This two-volume set is the third book that Dr. Lorenz has written covering the cowrie shells, which far and away is the most popular group of shells for collectors. To simply say that these new books are a remarkable achievement does not even come close to giving these books the praise that they deserve. The books represent many years of research in the field and in the lab by the author and with the help and input from a host of worldwide cowrie enthusiasts, both amateur and professional malacologists. There are two questions that may come to your mind before you think of adding these books to your library, since they are rather expensive. You may wonder if you need them since you already own one of the two earlier editions of "A Guide to Worldwide Cowries" by Lorenz and Hubert that were published in 1993 and 2002. The answer here is an unequivocal "yes." The new books go into far greater detail than the earlier works and also introduce some important modifications to the systematics of these mollusks. The second consideration may be, do I want both volumes or will volume 1, which covers the biology and systematics of the family suffice? Here things become a bit more problematic. Volume 1 thoroughly covers the biology and the systematics of the family. This can serve as a complete work on the cowries. It contains descriptive material, distribution maps, charts and tables, and photographs of specimens that best represent each of the species and subspecies of these shells. The second volume is a photographic iconography of the shells. In this book you can see figured many shells of each of the taxa which can be compared to one another and to other shells that appear almost similar to one another but which are assigned to separate classifications. For many collectors this volume will be the first one that they turn to help classify their specimens. Both of the books cover a limited number of fossil cowries and the first volume has a chapter by Dr. Christopher Meyer on the DNA and the molecular structure of cowrie shells.

These books can be purchased from ConchBooks in Germany for about 175 Euros plus shipping for each volume and from MdM Shell Books in the USA for $199.95 plus shipping for each volume. Each volume can be purchased separately and these books will stand for a very long time as the "last word" on the cowrie shells.

Review by Bob Janowsky
mail@mdmbooks.com

The Seychelles: Our amazing Indian Ocean adventure

Amelia Ann Dick

February 19, 2017: Victoria, Mahé, Seychelles

My overwhelming desire to visit Seychelles became a reality on February 19, 2017. My husband and I boarded an Emirates plane from Dubai, U.A.E., to Victoria, Mahé, Seychelles, in the Indian Ocean. After a 4+ hour flight, we arrived, went through Customs, and were transported to the Eden Blu Hotel on Eden Island. We were escorted a short walking distance away to the Eden Island Marina and embarked the *Crystal Esprit*. The *Crystal Esprit* is a small luxury ship catering to adventure seeking travelers. She has 31 suites which equates to a maximum capacity of 62 guests. Unlike other cruise ships requiring large ports, the *Crystal Esprit* offers an incredible cruising experience with the capability of accessing hard to get to bays, coves, and uninhabited islands. This advantage rewards her guests with the bonus of exclusivity, allowing one to truly experience nature first hand, uncompromised and uninterrupted. A list of species that were self-collected and those that were purchased from a fisherman are included at the end of the article.

The larger of the 115 islands that comprise the Seychelles.

First, a brief geological history lesson. The Seychelles are an exotic and remote archipelago located some 1,000 miles off the coast of Kenya, Africa. The Seychelles' uniqueness began approximately 66 million years ago when a part of the granitic Mascarene Plateau broke off from the Indian Plate. Out of the 115 islands comprising the Seychelles Archipelago only 45 are granitic. They are referred to as the Inner Islands and consist of the major islands of Mahé, Praslin, LaDigue, and Silhouette. This is the area we cruised. The remaining islands in the archipelago are coralline in nature and are referred to as the Outer Islands. The Inner Island group of Seychelles are the world's only oceanic islands of granite rock.

February 20, 2017 / Moyenne Island off St. Anne Island

After breakfast, we traveled to Moyenne Island, off St. Anne Island. Our zodiac made a beach landing and we were dropped off at what actually was a sand bar at low tide to swim and snorkel. We snorkeled for a short while but soon concentrated our shelling efforts on that temporary tiny strip of sand. We did find some nice shells in good condition interspersed amongst sea weed. There was an assortment of very nice gastropod and bivalve species with a few of the bivalves having washed up with both valves intact. After two hours we were picked up by zodiac and transported back to the *Crystal Esprit*. That afternoon we cruised to our second day's destination and prepared for a very tropical, humid walking tour, with a warning to apply huge amounts of mosquito spray.

February 20, 2017 / Cousin Island Special Reserve

This tour offered an amazing opportunity for discovery, education, and adventure. Cousin Island is uninhabited except for the few people who live there to protect the welfare of the island and care for animals when necessary. Also, they are invaluable guides who intimately know and understand the rhythm and needs of this special place.

Seychelles is big on birds and this is one of the best islands to see these beautiful creatures in a natural environment and who have no fear of humans. Our guide explained the uniqueness of several. Fairy terns don't make nests. They lay their egg(s) on "forked" tree branches and limbs of trees. We saw many white-tailed tropicbirds and learned that they lay their egg(s) in nests on the ground against the

Fig. 1 A nesting white-tailed tropicbird on Cousin Island Special Reserve, doing a great job of ignoring the small group of people taking pictures.

bases of trees. Even though our group was within 1-2 feet of the parent, it remained still, quiet, and obviously content. With the help of the guide we were able to see a juvenile bird underneath a nesting parent. A pretty white ball of fuzz and fluff. We observed the endemic Seychelles magpie and saw wild lavender orchids along with many large terrestrial hermit crabs flaunting some pretty nice gastropods on their backs. We witnessed a female loggerhead turtle making her way up the beach to dig a nest to lay her eggs. The most thrilling event of the afternoon, however, was being greeted by one of the Aldabra giant tortoises. The most famous and friendly is a very old fellow named "George." He is social and inquisitive, and enjoys interacting with people. He followed us around like a dog for a short time on the beach. I sat down on a cinder block to pet his head and he "came in for a closer look" nearly knocking me off of my perch. I was wearing a bright multi-colored green top that day and my husband said he must have thought I was a big salad. "George" always seemed to have a smile on his face which makes him the most wonderful animal ambassador I have ever met.

February 21,2017 / Anse Lazio Beach, Praslin Island

Mid-morning, we take a tender ride to a pier on Praslin and are lucky to see a green-backed heron. It was taking advantage of a fish feeding opportunity offered by a visitor throwing potato chips in the water. We boarded our tour bus traveling over the mountainous interior and arrived at Anse Lazio Beach. Unfortunately, it was not a good snorkeling day. The sky was overcast and the waves rough and crashing over the smooth orange colored granite boulders dotting the shoreline. After successfully beachcombing for shells, we wandered toward those granite pinnacles in hopes of finding something pretty. We weren't disappointed.

Fig. 2 A watchful but unafraid fairy tern nesting on a broken branch, Cousin Island Special Reserve.

Right before our eyes clinging to the rock surface, we found nerites, monodonts, periwinkles, limpets, and chitons. We were also surprised to see skipper fish jumping from rock to rock as we approached. A first for us. I also found a nice collection of sea glass treasure. Our time passed by very quickly. After nearly four hours of sheer bliss, including taking some time out to lie underneath a palm tree, we boarded our bus back to the pier and transferred to the *Crystal Esprit*.

February 22, 2017 Coco Island and Félicité Island, off LaPasse, LaDigue

This afternoon we boarded a private tour boat which took us snorkeling off Coco Island and Félicité Island. Again, the water was rough. We jumped in and slowly snorkeled to Coco Island. It is sad to say how much broken dead coral littered the bottom here. Every now and then we saw a few extremely small healthy colorful corals, but they were few and far between. The water was filled with beautiful tropical fish species such as powderblue surgeonfish, convict

Fig. 3 Granitic boulders, Coco Island, off La Passe, La Digue, Seychelles – one of the four larger inner islands.

Fig. 4 The giant spider conch, *Lambis truncata*, displaying vivid colors only seen with the living animal. There are now three accepted subspecies of *Lambis truncata*.

tangs, parrotfish, and the extravagant Picasso fish to name a few. The needle-spine urchins had colonized the bottom. I saw a trumpetfish for the first time. The tiny island is very picturesque with a beautiful assortment of granitic monoliths and palms. We did collect serpent-head cowries with worn lavender dorsa. Most shells were pretty banged up. After a while, we snorkeled back to the boat, which took us to Félicité Island. Here, again, we are greeted by a very tiny beach, rough waves, and slim pickings. I did find a few shells, sea glass, and some very small attractive pieces of dead coral. I was more determined for better results on the following day.

February 23, 2017 / Laraie Bay, Curieuse Island

The weather greatly improved overnight and we had sunny skies and calm water. Once again, the zodiac maneuvered a successful beach landing, right onto Laraie Beach. This is an amazingly beautiful destination. Once on shore, we donned our snorkeling gear and immersed ourselves in tranquil blue water. We found lollyfish and greenfish hiding in sea grass. Very peculiar creatures. We see many of the fish species we did the day before and add the scissortail sergeant fish to the list, along with squirmy red needle-spine brittlestars under rocks. As a person concerned with water quality, I am happy to say that this location has a huge diversification of healthy sea grasses. In most places, much of the bottom was so heavily covered it looked like an underwater forest. There were myriad shades of green. The most stunning was a spectacular bright emerald green. Healthy sea grasses serve as safe havens for sea life and also as nurseries for young, providing hiding places from possible predators. I found several cone and cowrie species amongst scattered rocks and coral in less than 6 feet of water. The most wonderful surprise of the day, however, were the four giant spider conchs we discovered in less than 10 feet of water. We admired and played with the most beautiful one, bringing it up to the surface for photographs. I had no idea this species could possess such a rich and vibrant color palette consisting of burgundy and gold. This was the first live specimen I had ever seen. The giant spider conch shell will lose its beautiful colors very quickly within a matter of days once taken. This explains why the specimens you see on dealer's tables at shows are pale and off-white in color. After enjoying our spectacular find, we returned it to its watery home.

After a few hours in the water, I walked a small portion of that gorgeous beach with those tall, smooth granite boulders at the shoreline. It is here that I left some of my mother's ashes. She traveled extensively during her lifetime and would be very happy knowing she still continues to fly jets around the world visiting some of the loveliest places on Earth.

Back on board, the thrills continued as we had tickets to board the *Genting Explorer*, *Crystal Esprit's* underwater submersible. She is truly a sight to behold, painted a shiny bright red. She carries two guests and a captain. It was such a thrill to be inside that large glass bubble looking out at the seascape underneath the waves. I have never seen such large schools of fish as I did that afternoon. A symphony of synchronized swimmers suddenly moving from one direction to another like characters in a well-rehearsed choreographed underwater ballet. We also had a very close encounter with a curious star pufferfish which swam right in front of the glass taking a closer look at us. Just as soon as we got relaxed staring out at the view, our 20 minutes were up – and so were we, breaking topside. A truly exciting and

Fig. 5 We pose for a quick photo in front of the submersible, *Genting Explorer* on board *Crystal Espirit*, off Curieuse Island, Seychelles. The submersible had room for only two plus the pilot - it was a grand adventure.

Fig. 6 A terrestrial hermit crab in its turban shell quarters (a bit of a tight fit). We ran into this critter on Aride Island National Park, Seychelles.

memorable day to say the least.

February 24, 2017 / Aride Island National Park

In the morning we were swiftly transported by zodiac to the shore of Aride Island. As with Cousin Island, Aride is protected and overseen by a few souls who live there to protect this natural resource and treasure. We met our knowledgeable guide who took us hiking up a mountain. While on our way we saw some fascinating creatures, some endemic to the Seychelles. We found the Seychelles land crab, Wright's skink and brown noddy bird. The guide also pointed out a beautiful tree in full bloom. The flowers of this tree reminded me of the flower of the mimosa tree. The flower is fragrant, with numerous, showy, soft, long, white needle-like spikes with pink colored tips, but this is where the similarities quickly end. He told us the name of the tree is the "fish poison tree" and it comes from Asia. He says all parts of the tree are poisonous. The seeds are ground into a powder and used to stun or kill fish, leaving the flesh of the fish unaffected. The seeds are capable of traveling ocean currents and can survive up to 15 years adrift. Amazing! Shortly after, we began our ascent to the top. The uneven dirt trail was slick from rain the day before. Everyone carefully watched the placement of each footstep. A couple of guests carried heavy camera equipment with large zoom lenses. Their climb up was much more difficult as they only had one free hand to help them access a tree limb or a sturdy rock to help with balance. Along the way our guide picks up a giant millipede for us to see and we encounter numerous damselflies and butterflies. There were many white-tailed tropicbirds sitting on nests. Eventually, everyone successfully maneuvered the climb and we were rewarded with a most stunning view. As we had accomplished our goal, we were happy in the knowledge of knowing that it is harder going up than it is going down. After our descent to level ground we were once again back on the beach. We found limpets and eroded lavender capped serpent-head cowries. Not much in the way of shells, but the natural beauty of this pristine place made up for that. We boarded the zodiac back to the ship, had lunch and prepared for our afternoon adventure.

February 24, 2017 / Grand Soeur Island (Big Sister Island), Coco Anse, Coco Bay

Big Sister Island is a private island with a total population of 2 permanent inhabitants. We wish we knew them! The ocean side has a gorgeous beach, tall palms, large granite boulders, and teal/turquoise water. It is considered to be one of the most beautiful beaches in the world and is seen in many travel photographic layouts depicting the Seychelles. We concentrated our time snorkeling on the opposite side in Coco Bay. The day was perfect with sunny skies and light breezes. This is an incredible island to visit, with permission, which offers many exciting snorkeling opportunities. In addition to the tropical fish species already mentioned, we can add sightings of batfish and Moorish idols. Coral is prolific and seems to be thriving along with needle-spine urchins. We turned over many rocks looking for shells. Again, we found red needle-spine brittlestars as well as serpent-head cowries which were plentiful. We also found gold-ringer cowries and money cowries, the latter in both smooth and knobby forms, and a pretty *caurica* cowrie with a bluish tint. All of these shells were found in less than six feet of water under and between rocks and coral. All

Fig. 7 Buying shells in the open air Sir Selwyn-Clarke Market in Victoria.

rocks were returned to the position in which initially found. Incredibly, to my complete amazement, while snorkeling in the surf at the shoreline, I found two vermiculate cones and three Hebrew cones. All were clinging to a smooth granite bottom. If I had been walking the shoreline, I probably would have stepped on them. We came ashore and did some beachcombing. Didn't find much in the way of shells, however, we were rewarded with some very pretty coral fragments and sea glass before jumping into a zodiac and returning to the *Crystal Esprit*. This was the last water day on the trip.

February 25, 2017 / Victoria, Mahé Island

This morning, our tour begins with a stop at the largest open-air market in Victoria, named Sir Selwyn-Clarke Market. It was Saturday – the busiest shopping day of the week. We stepped inside and encountered an amazing variety and selection of fish, octopuses, fruits, vegetables, spices, and, of course, souvenirs. I asked our tour guide if she knew of anyone who sold shells. She said "Yes, follow me." I was introduced to a fisherman who had a large selection of cleaned shells for sale. I had twenty minutes and made quick work out of the assortment he placed in front of me. After I had chosen the thirty-two shells I wanted, he wrapped them for me, wrote up a paper receipt and quoted me the price he wanted which was in rupees. We converted the rupees into American dollars. The price was extremely modest. I paid him and then he picked out a few more shells he wanted me to have and gave them to me. He, I am sure, was happy I came that day and I was even happier!

Next, we traveled up a steep mountain road to see the ruins of what was originally named "Venn's Town." Today it is known as the "Mission." It was a boarding school founded in 1875 by the Rev. William Chancellor, to care for and educate children of freed slaves. There is a very commanding view from the top offering scenic views of the island and the Indian Ocean. It is here we saw tea plants and smelled the bark of cinnamon trees.

Our last stop is the Seychelles Botanical Gardens. It is one of the oldest national monuments in the Seychelles, dating back more than a century. It is filled with an assortment of established plantings set in natural landscapes with many specimens being endemic to Seychelles, such as the coco de mer, whose seed is the largest in the plant world. On very tall trees we saw the Seychelles fruit bat hanging upside down. It was a perfect photo opportunity for the flower enthusiast with most plants being in bloom. It wasn't long before I spied a few visitors that are not welcome in such a lovely floral setting. Giant African snails, *Achatina immaculata*, were happily plying their way through ground foliage. Big rascals! Soon, we entered an enclosure with several Aldabra giant tortoises. The staff handed us several long-stemmed leaves so we could feed them. I didn't know I was in for another surprise. I turned my head and saw a juvenile *A. immaculata* hitching a ride on the back of one of the tortoises. I quickly plucked it off and wrapped it in a paper towel. It resides in my collection accompanied by this very funny story. Soon, we met up with our tour guide and returned back to the *Crystal Esprit*.

The next day, we said good-bye and disembarked the luxurious *Crystal Esprit*. We checked into the Eden Blu Hotel on Eden Island for the day until our Emirates flight departed later that evening for Dubai, U.A.E. Our Seychelles Indian Ocean adventure was inspiring, rewarding and more than we had hoped for. A paradise found and a naturalist's dream come true.

Amelia Ann Dick
amelia-ann@msn.com

SPECIES SELF-COLLECTED IN SEYCHELLES:

Anodontia edentula (Linnaeus, 1758)
Monetaria annulus (Linnaeus, 1758)

Barbatia candida (Helbling, 1779)
Monetaria caputserpentis (Linnaeus, 1758)

Canarium mutabile (Swainson, 1821)
Monetaria moneta (Linnaeus, 1758)

Cardita variegata Bruguière, 1792
Modiolus auriculatus (Krauss, 1848)

Cellana radiata (Born, 1778)
Morula uva (Röding, 1758)

Codakia tigerina (Linnaeus, 1758)
Nassarius arcularia plicatus (Röding, 1798*)*

Conus (*Pionoconus*) *catus* Hwass in Bruguière, 1792
Nassarius conoidalis (Deshayes, 1832)

Conus (*Virroconus*) *chaldaeus* (Röding, 1798)
Neocancilla clathrus (Gmelin, 1791)

Conus (*Virroconus*) *ebraeus* Linnaeus, 1758
Nerita (*Theliostyla*) *albicilla* Linnaeus, 1758

Diodora singaporensis (Reeve, 1850)
Nerita (*Ritena*) *plicata* Linnaeus, 1758

Divaricella chavani Cosel, 2006
Palmadusta asellus (Linnaeus, 1758)

Donax cuneatus Linnaeus, 1758
Phasianella solida (Born, 1778)

Drupa morum Roding, 1798
Phenacolepas asperulata A. Adams, 1858

Drupa ricinus (Linnaeus, 1758)
Ranularia gallinago (Reeve, 1844)

Naria helvola (Linnaeus, 1758)
Scissulina dispar (Conrad, 1837)

Erronea caurica dracaena (Born, 1778)
Siphonaria atra Quoy & Gaimard, 1833

Gafrarium dispar (Holten, 1802)
Tonna canaliculata (Linnaeus, 1758)

Littoraria coccinea glabrata (Philippi, 1846)
Stomatella orbiculata A. Adams, 1850

Littoraria scabra (Linnaeus, 1758)

Trochus maculatus Linnaeus, 1758

Vanikoro cancellata (Lamarck, 1822)
Va*sticardium flavum* (Linnaeus, 1758)

*Monodonta australis (*Lamarck, 1822)
Scutellastra exusta (Reeve, 1854)

Nerita (*Linnerita*) *polita* Linnaeus, 1758
Terebralia palustris (Linnaeus, 1767)

Stomatia irisata (Dufo, 1840)

SPECIES PURCHASED AT MARKET

Atrina vexillum (Born, 1778)
Lambis truncata ([Lightfoot], 1786)

Canarium erythrinum (Dillwyn, 1817)
Latirolagena smaragdulus (Linnaeus, 1758)

Colubraria muricata (Lightfoot, 1786)
Mancinella tuberosa (Röding, 1798)

Conus (*Dendroconus*) *betulinus* Linnaeus, 1758
Mancinella alouina (Röding, 1798)

Conus (*Gastridium*) *obscurus* Sowerby I, 1833
Mauritia histrio (Gmelin, 1791)

Conus (*Harmoniconus*) *musicus* Hwass in Bruguière, 1792

Conus (*Pionoconus*) *striatus* (Linnaeus, 1758)
Mimachlamys sanguinea (Linnaeus, 1758)

Conus (*Virgiconus*) *virgo* Linnaeus, 1758
Minnivola pyxidata (Born, 1778)

Cypraea tigris Linnaeus, 1758
Phalium fimbria (Gmelin, 1791)

Filifusus filamentosus (Röding, 1798)
Pinctada margaritifera (Linnaeus, 1758)

Harpago arthriticus (Röding, 1798)
Polinices mammilla (Linnaeus, 1758)

Hemifusus ternatanus (Gmelin, 1791)
Turbo argyrostomus Linneaus,1758

COA GRANT DONATION PROGRAM

2018 EDITION

SUPPORT OUR GRANT PROGRAM

- HAVE A GRANT IN YOUR NAME -
SINGLE DONATION OF $1,000.00 OR MORE

- HAVE YOUR NAME ON A PERPETUAL GRANT -
DONATION OF $10,000 OR MORE AS AN ENDOWMENT

Pursuant to the COA objectives, academic grants were given to various molluscan related research projects totaling $24,499.72 for the current year 2018 (details inside.) Notable recent donation to our endowment program has been the massive Weiss collection received in 2016 through the generosity of Emily and Susan Weiss. As of the end of 2017, the partial disposition of this collection has generated a gross proceeds of $118,973.00, thus significantly adding to our endowments balance.

We also want to highlight the continuing support of our donation program by two shell clubs, the Sanibel-Captiva Shell Club and the Central Penn Shell Club, and two very significant personal donations by Anne Joffe and the D. Dan Charitable Trust, for which we are most grateful. For these latter donations, we have established two new named academic grants, the Anne Joffe Award and the Toto Olivera & Donald Dan Award.

► SHELL CLUB DONATIONS ARE MOST WELCOME ◄

HERE IS YOUR CONTACT:
DONALD DAN, Endowments Director
6704 Overlook Drive, Ft Myers, FL 33919, USA
Tel.: (239) 481-6704 • e-mail: donaldan@aol.com

GRANTS AND DONATION GUIDELINES

COA's Grants are processed through a committee of three professional malacologists. This committee actively solicits and reviews grant applications. Selected applications are then presented annually to the COA's Board of Directors for approval. Individuals and groups, including shell clubs, can participate in this process through donations to COA:

GIFTS BELOW $1,000

All donations below $1,000, whether from organizations or individuals will be directed to COA's Walter Sage Fund, an established perpetual endowment, income from which is distributed for Board approved grants.

GIFTS ABOVE $1,000

For gifts of $1,000 or more, a donor has the option of specifying the money be entered into the Walter Sage Fund or be included in the general grant budget, in total or in part. The donor also has the option of naming a grant for that particular sum that is included in the general grant budget.

GIFTS ABOVE $10,000

A further option is to establish a named endowment by giving a sum of $10,000 or more. This amount may be given as a lump sum, or over period of up to ten years, with a minimum initial gift of at least $1,000. If someone wishes to start a named endowment but does not reach the $10,000 level within ten years, including accrued interest, the money will revert to the Walter Sage Fund.

Once an endowed fund has reached $10,000, COA will use half of the income to award grants, and reinvest the other half of the income to grow that endowment. As a conservative assumption, consider that a $10,000 fund earns 5% interest. The annual income will be $500, half of which can go to grant, and half of which is reinvested in the fund. This $10,000 endowment could therefore generate a $500 grant fund every other year, with incremental growth thereafter.

COA's by-laws have rules for the investment of funds controlled by the organization. Endowed funds will be pooled for investment purposes, but the principal and interest of each fund will be tracked separately. Donors may suggest that money be given to specific research or types of research. COA will try to match grants to the stated interests, but cannot guarantee exact match.

COA has a 501-C3 non-profit tax status, TAX ID: 112541695 US donors may claim tax deduction on money given to COA. Additional reading on our Grant Program is available on COA's web site at
http://www.conchologistsofamerica.org

Lahillia larseni: Survivor of the Cretaceous-Paleogene Extinction

Rachel Mohr

Historical Background and Introduction

In 1892, Captain Larsen of the Swedish South Polar Expedition found a fossil bivalve on Seymour Island, on the northeastern tip of the Antarctic Peninsula (Zinsmeister, 1988). Later identified as *Lahillia larseni* (Sharman and Newton, 1898), this was one of the first fossils ever collected from Antarctica. The significance of this bivalve species would not be fully realized until more than 100 years later, when more thorough paleontological investigations of Seymour Island would reveal that *L. larseni* was one of the few mollusks at this location to survive the Cretaceous-Paleogene (K-Pg) extinction event 66 million years ago (Zinsmeister and Macellari, 1988). Although the K-Pg extinction is best known for its role in the demise of the dinosaurs, it was also responsible for the disappearance of many important mollusk groups, including the ammonites and the rudist and inoceramid bivalves (Schulte et al., 2010). *L. larseni,* however, not only survived the K-Pg extinction, but was also extremely abundant and successful during this time. Fossil shells of *L. larseni* collected from Seymour Island can be used to reconstruct the life histories of these bivalves and the environmental changes they experienced across this extinction interval.

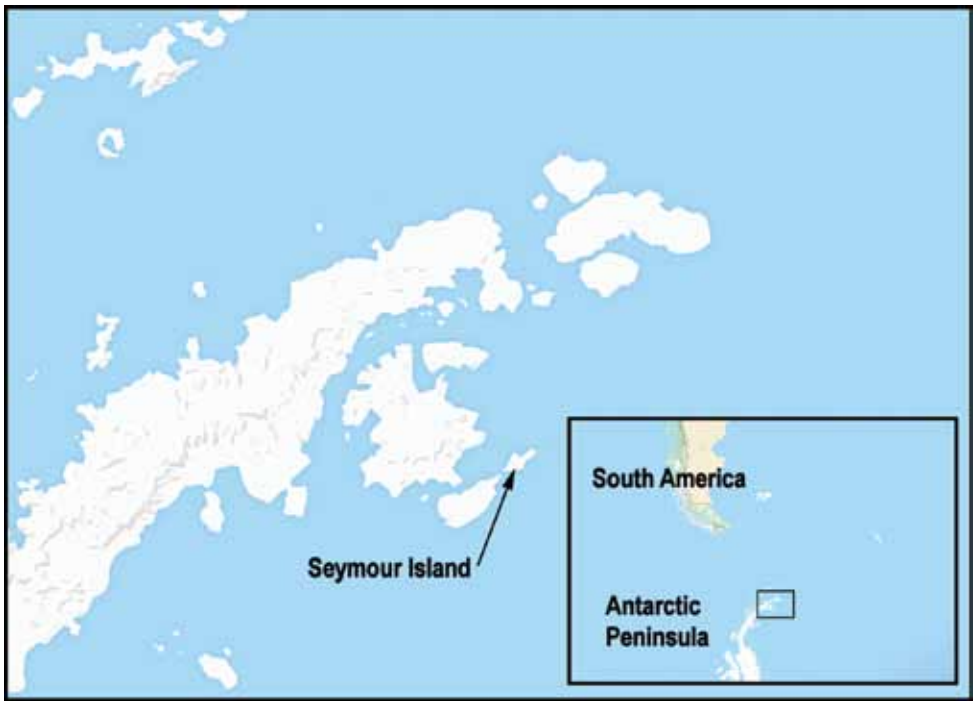


Fig . 1: Map indicating the location of Seymour Island, Antarctica.

Living on the Edge

The now-extinct *L. larseni* survived and thrived in a relatively stressful and unstable marine environment during the latest Cretaceous and early Paleogene. *L. larseni* lived at high southern latitudes that are characterized by seasonal extremes in sunlight availability, limiting primary productivity mostly to the austral summer. Additionally, recent studies suggest that this location was subject to frequent intervals of oxygen-deprived waters enriched with toxic hydrogen sulfide (Schoepfer et al., 2017). Rapid climate change across the K-Pg interval may have also been a significant environmental stressor in this location.

Stable Oxygen and Carbon Isotopes in Bivalve Shells

Like other bivalves, *L. larseni* grew an accretionary carbonate shell that precipitated in chemical equilibrium with the surrounding seawater. Ontogenetic stable oxygen and carbon isotope ($\delta^{18}O$ and $\delta^{13}C$) sampling of these shells can provide sub-annual records of environmental conditions when the bivalves were alive and can provide a window into the life histories of these bivalves. Stable oxygen isotopes in these shells can be used to reconstruct seawater temperatures, determine the preferred season of shell growth, and confirm whether growth bands represent annual intervals. Stable carbon isotopes are significantly more complex but provide a variety of opportunities to investigate environmental conditions such as levels of primary productivity or terrestrial inputs of organic material, or life history variables such as rates of metabolism or reproductive behaviors.

As part of my master's thesis research at the University of Alabama, I have isotopically sampled 20 shells of *L. larseni* from across the K-Pg interval (Figure 3). Figure 4 shows the high-resolution sampling strategy used to collect carbonate powder for isotopic analysis. For each specimen, ontogenetic $\delta^{18}O$ and $\delta^{13}C$ profiles were produced (see Figure 5), with the $\delta^{18}O$ values converted into temperature values (°C). Isotopic analyses were funded with the support of a generous grant from the Conchologists of America.

Oxygen Isotope and Temperature Profiles

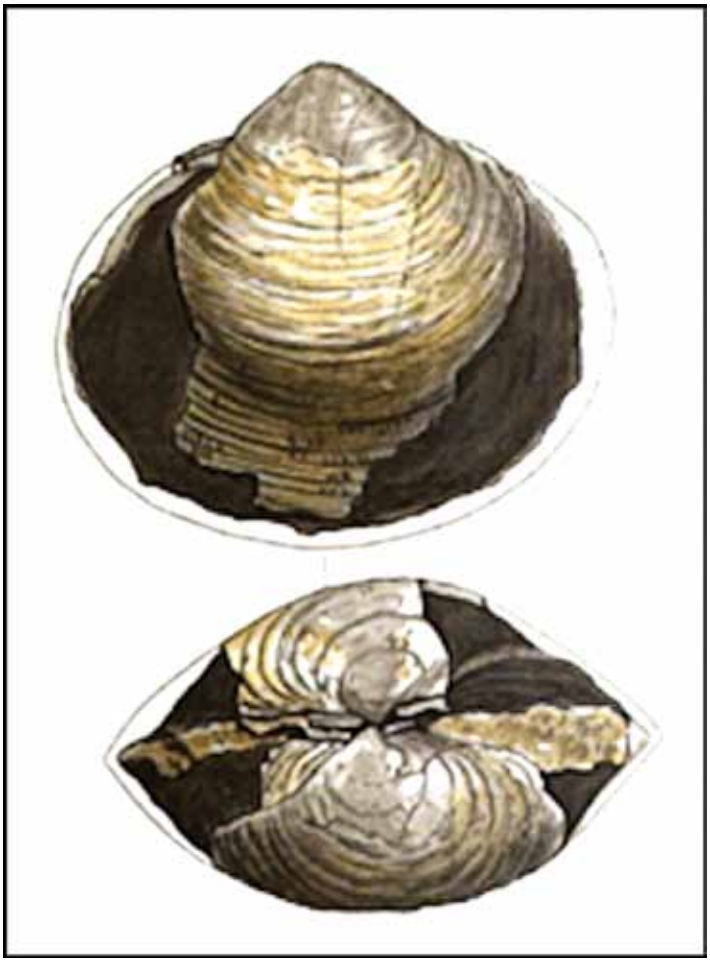


Fig. 2: Illustration of the specimen of *Lahillia larseni* collected from Seymour Island by Captain Larsen in 1892. Image from Sharman & Newton 1898.

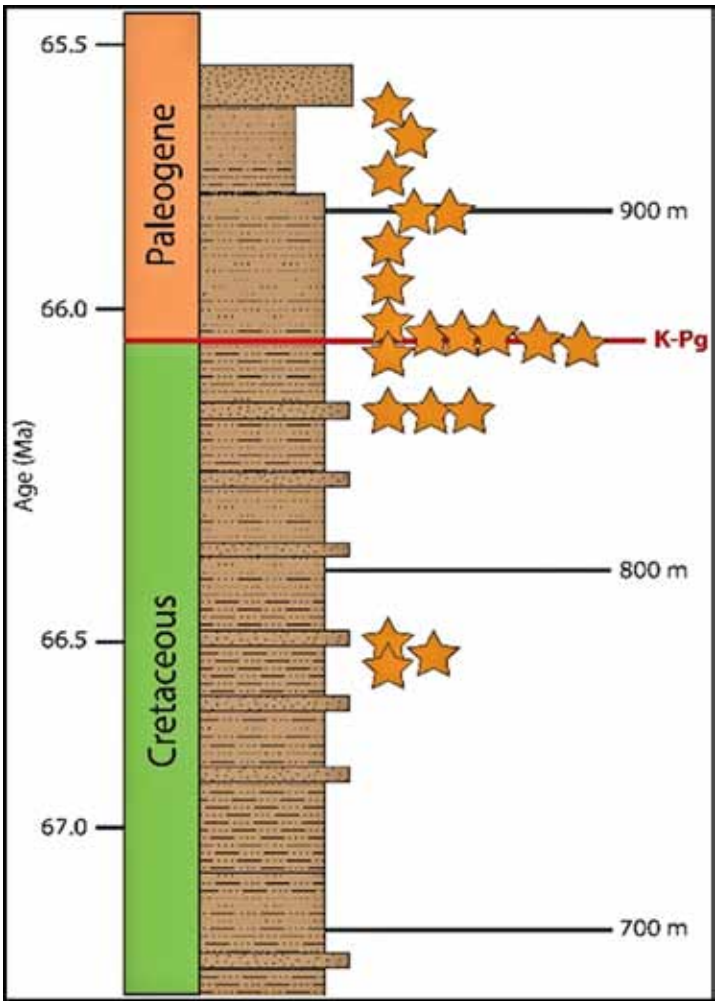


Fig. 3: Stratigraphic column indicating the relative positions and ages of 20 sampled shells of *L. larseni*.

The $\delta^{18}O$-derived temperature records from these shells reflect the warmer greenhouse conditions of the Cretaceous Antarctic, with calculated seawater temperatures typically around 6-12°C, as compared to typical temperatures around 1-2°C in the modern Antarctic Ocean (Clarke, 1988). The low range of temperature variation within each shell and the generally cuspate pattern of the temperature profiles indicates that *L. larseni* likely only grew its shell during a small portion of the year. Given the extreme seasonality of their high-latitude environment, the lack of year-round growth for *L. larseni* is not surprising. Very low levels of sunlight in the austral winter would have limited the populations of primary producers which were likely an important source of food for filter feeders such as *L. larseni*.

The cuspate pattern of the temperature profiles is also the first clear evidence that the growth bands in *L. larseni* represent annual intervals. A recent study by Moss *et al.* (2017) used growth-band counting to determine the age of some *L. larseni* individuals (58 and 42 years old), based only on the assumption that the growth bands are annual in this species. With this new isotopic evidence for the annual occurrence of these growth bands, we can have more confidence in the accuracy of these determined lifespans.

Carbon Isotope Profiles

The carbon isotope records from the shells of *L. larseni* are highly cyclical, with higher $\delta^{13}C$ values measured in the middle of growth intervals and much lower values recorded at growth bands, when shell accretion was slowing down. This pattern may reflect the seasonal variation of $\delta^{13}C$ values in the seawater due to the seasonal cycle of primary production. Primary producers preferentially remove isotopically light C-12 from the surrounding water, leaving the seawater enriched in C-13, resulting in more positive $\delta^{13}C$ values recorded in accretionary carbonate shells.

Ongoing Work

The bulk of the results from this study are still being interpreted. The temperature and isotopic profiles of all of the sampled shells will be used to reconstruct a record of environmental conditions for a nearly 1 million-year-long span of time across the K-Pg extinction interval. Evaluating the

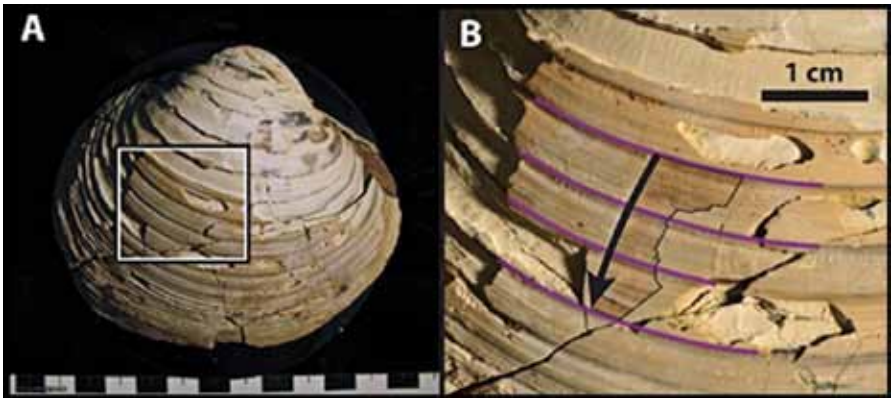


Fig. 4: A sampled specimen of *L. larseni* (A) with inset (B) of the sampled area, outlined in black. Purple lines highlight the locations of growth bands, and the black arrow indicates the direction of growth.

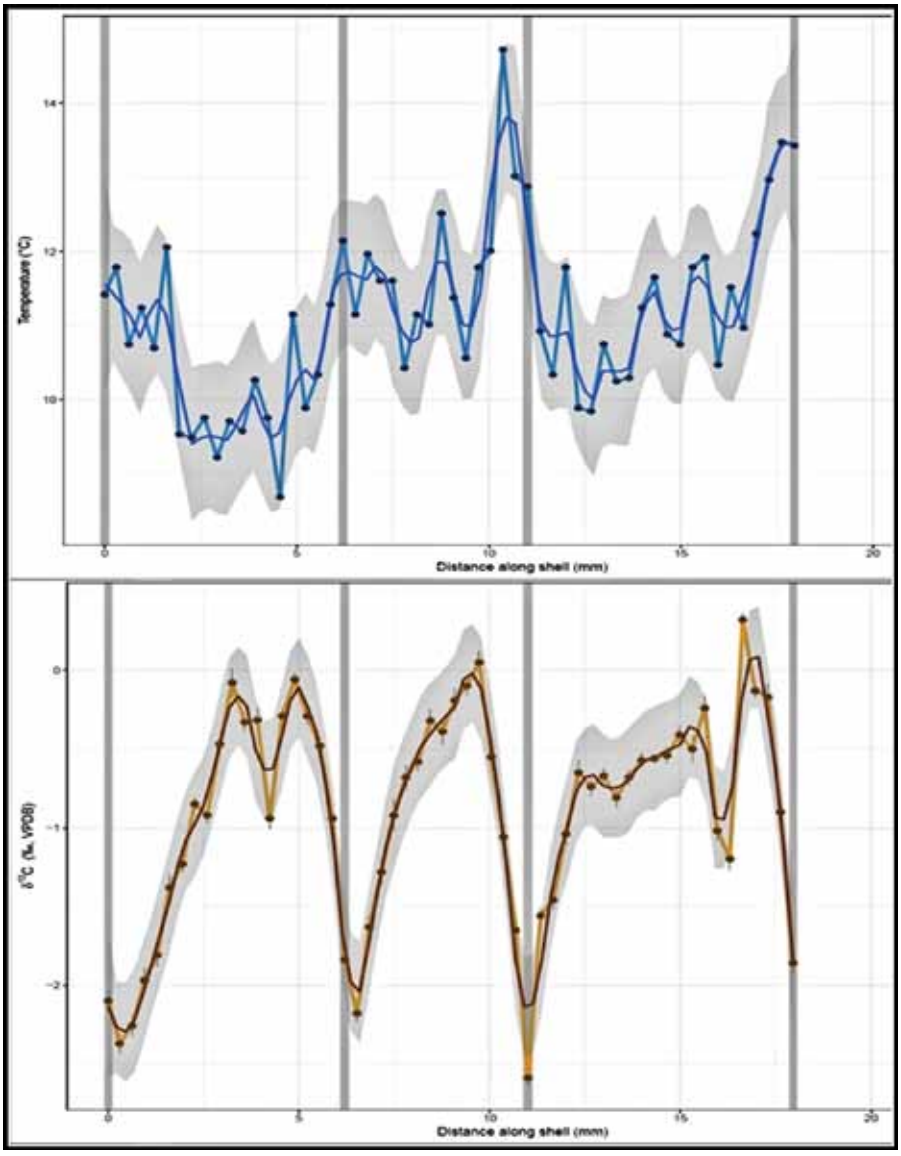


Fig. 5: Ontogenetic temperature (top) and carbon isotope (bottom) profiles from the specimen of *L. larseni* pictured in Fig. 4.

temperature and $\delta^{13}C$ profiles measured from each shell will allow me to determine the extent to which *L. larseni* utilized adaptive plasticity to survive the K-Pg extinction (e.g. whether it changed its season of growth to continue growing within a preferred temperature range during a period of climate change). Complete results of this study will form the manuscript of my master's thesis and will ultimately be published in a peer-reviewed journal.

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Population genetics of *Phidiana hiltoni* O'Donoghue, 1927

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Phidiana hiltoni, a species of nudibranch, is known for its pugnacious behavior as it often attacks and eats other aeolids along with its more common diet of hydroids (McDonald, 1983). A paper by Goddard et al. (2011) focused on this particular species of nudibranch and highlighted new findings regarding the range expansion of this species into Northern California. Not only did they provide evidence of the presence of *Phidiana hiltoni* in an area much further north than its previously recorded range, but also showed that this particularly voracious species of sea slug was having a marked impact on the ocean benthos community it invaded. With both indirect impacts from competition for the hydroid food source and direct impacts by attacking and consuming native species of sea slugs, the paper brought to light a very pressing question - how did *Phidiana hiltoni*, with a historic range consisting of the Northeastern Pacific, from Baja California, Mexico, to the Monterey Peninsula, California, make it as far North as Bodega Bay, California?

My research project attempted to answer where this new population of *Phidiana hiltoni* originated. This information could then possibly shed some light on whether the species was introduced to the area by artificial means or if the temperate water-dwelling sea slug was taking advantage of warming coastal waters and expanding its range northward.

The first step in answering this question was to gather specimens from along its new and historic range. A permit was obtained to collect specimens from the field and generous colleagues and museums like the Natural History Museum of Los Angeles County, were enlisted to help by lending previously collected specimens. After over 100 specimens were gathered from locations along the California coast line, the collected specimens were preserved in 95% ethanol and a small portion of tissue was removed for DNA extraction using DNeasy kits. On these specimens, some quite old and some very new, the CO1 mitochondrial gene was analyzed using standard PCR reaction conditions and in-house and universal primers in hopes of getting a better analysis of the population genetics of the species. After it was determined that CO1 might not provide enough detail, a single specimen was used for the generation of a genomic library that was sequenced in an Illumina platform. This data was used for primer design for microsatellite regions. A custom PCR protocol was created with the newly made primers. The process was successful, however, and together, the mitochondrial and microsatellite data, were able to shed some light on the invasive sea slug. Full results and analysis are in the process of publication.

Goddard, J.H.R., T.M. Gosliner & J.S. Pearse. (2011. Impacts Associated with the Recent Range Shift of the Aeolid Nudibranch *Phidiana hiltoni* (Mollusca, Opisthobranchia) in California. *Marine Biology* 158: 1095–1109.

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***Phidiana hiltoni* O'Donoghue, 1927, is a voracious predator that grows to about 50mm.**

COA Academic Grant Brief Report: morphological variation assessment among lucinid bivalves

Broc S. Kokesh

South Dakota School of Mines and Technology – M.Sc. Paleontology '18

Objective of Research Project

The major goal for this research project was to assess morphological variation among commonly synonymized lucinid bivalves within the genus *Ctena* Mörch, 1861. Specifically, *Ctena orbiculata* (Montagu, 1808) and *Ctena imbricatula* (C.B. Adams, 1845), both native to the Western Atlantic, were targeted as recent molecular analyses have distinguished the species (Taylor et al., 2011; 2016). Specimens of both species housed at the Bailey-Matthews National Shell Museum (BMSM) were imaged and digitized for geometric morphometric analyses to identify morphological features that best distinguish these species (Figure 1). While at BMSM, in-house specimens of *Ctena mexicana* (Dall, 1901), an Eastern Pacific species, were also investigated to expand the scope of the study, as there is much less information on this species and its relationships to the Western Atlantic species.

Major Findings

All three species of *Ctena* exhibited significantly different mean shell shape (Table 1). Visualizing shape variation with a canonical variate analysis (CVA) demonstrated prominent separation among the three species along CV1, which explained 93.7% of the variation (Figure 2). Shape change along CV1 describes an elongation of the anterior adductor muscle scar in *C. imbricatula* and *C. mexicana*, which generally agrees with qualitative comparisons of the species (e.g. Taylor and Glover, 2016). Jackknife cross-validation resulted in a 91.7% classification accuracy, supporting the separation of species based on shape (Table 2).

In addition to shape, shell size was compared among the three species, using centroid size values extracted from geometric morphometric analyses. Median size was significantly different among the species (Kruskal-Wallis, W=0.92, p=0.01) (Figure 3). *Ctena orbiculata* was the smallest species, while *C. mexicana*, and *C. imbricatula* were larger in stepwise fashion.

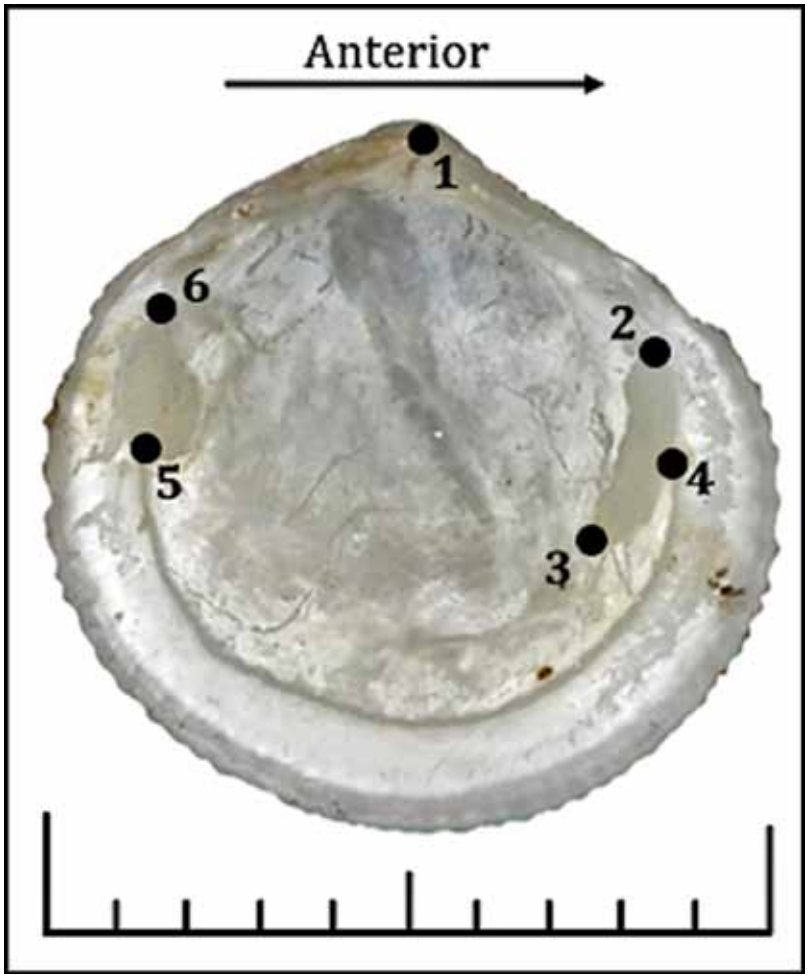

Fig. 1. Fixed landmark configuration used in this study over a *Ctena orbiculata* specimen. Landmarks represent the following anatomical features: 1. beak of the shell, 2. maximum dorsal curvature of the anterior adductor muscle scar, 3. maximum ventral curvature of the anterior adductor muscle scar, 4. junction between the anterior adductor muscle scar and the pallial line, 5. junction between the posterior adductor muscle scar and the pallial line, 6. maximum dorsal curvature of the posterior adductor muscle scar. Anterior direction oriented to the right. Scale bar = 1 cm.

Table 1. Summary statistics for single-factor MANOVA testing for shape differences among species with 1,000 permutations.

	Df	SS	MS	R^2	F	Z	P
Species	2	0.151	0.075	0.629	27.96	5.223	**0.001**
Residuals	33	0.089	0.003				
Total	35	0.240					

Df – degrees of freedom, SS – sum of squares, MS – mean sum of squares, R^2 – coefficients of determination, F – critical value, Z = effect size, P – significance

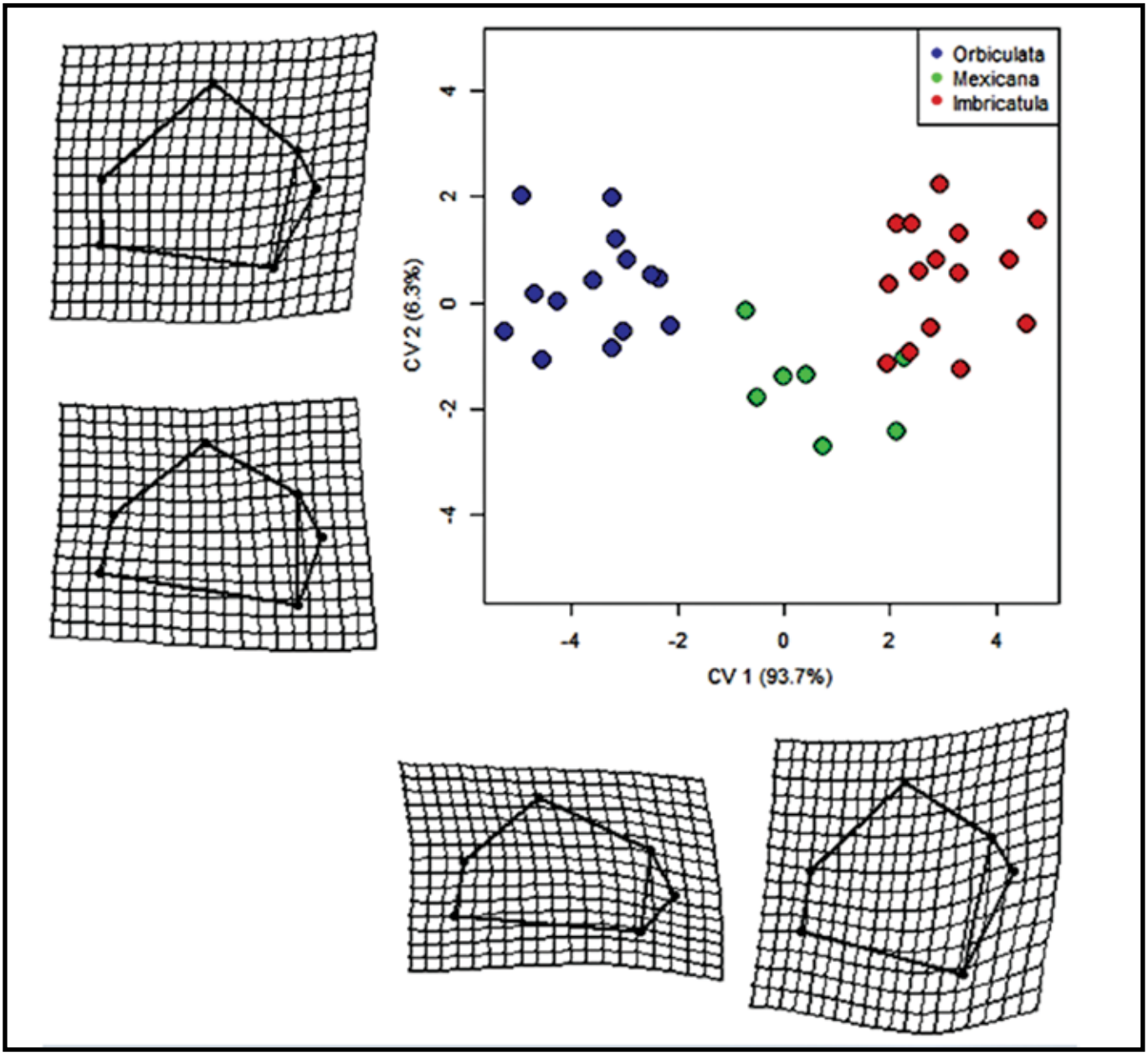

Figure 2. CVA ordinating shape variation among species. Groups include *Ctena orbiculata* (n=14), *Ctena mexicana* (n=7), and *Ctena imbricatula* (n=15). CV1 accounted for 93.7% of the variation while CV2 accounted for 6.3%. TPS grids correspond to shape change along each end of each axis from the overall average configuration.

Table 2. Jackknife cross-validated classification results, including counts and rounded percentages. Bolded values are correctly classified specimens. Overall classification accuracy was 91.7%.

Original Group	Reclassification Assignments		
	C. orbiculata	*C. mexicana*	*C. imbricatula*
C. orbiculata	**14 (100%)**	0 (0%)	0 (0%)
C. mexicana	1 (14.3%)	**5 (71.4%)**	1 (14.3%)
C. imbricatula	0 (0%)	1 (6.7%)	**14 (93.3%)**

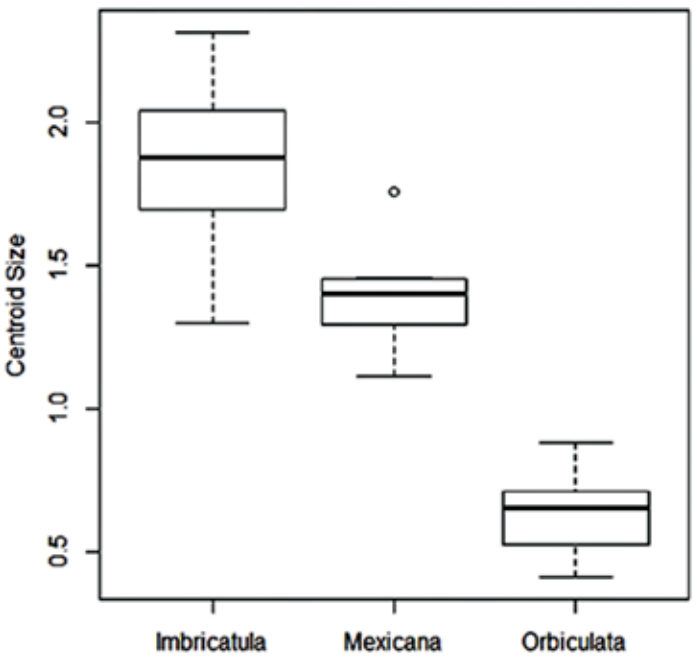

Figure 3. Boxplot of centroid sizes for each species. Bars represent standard error and dots represent outliers. Groups include *Ctena orbiculata* (n=14), *Ctena mexicana* (n=7), and *Ctena imbricatula* (n=15).

Significance of Findings

These results demonstrate patterns in both shape and size that are useful for distinguishing species of *Ctena* based on shell features. As many researchers do not have molecular data to support determinations of shell collections, reliable shell characteristics are essential for improving taxonomic accuracy. Geometric morphometrics also has the capacity to better improve morphological descriptions, which in the case of Western Atlantic *Ctena* have relied on characteristics relative to the other species. This can be problematic, as intraspecific morphology can vary widely from one population to another.

One important consideration that this research has led me to suggest is to use only the largest specimens in a sample for comparisons. Using very small, even larval specimens, makes these morphological trends difficult to observe. In the case of *C. orbiculata* collections at BMSM, I actively avoided using smaller specimens that could not be confidently identified, as some samples may include *C. imbricatula*. In this study, the 14 largest specimens of *C. orbiculata*, compared to the 15 available specimens of *C. imbricatula*, effectively distinguish each species by morphology.

While beyond the scope of this study, there also appears to be a phylogenetic signal in size and shape data. Specifically, molecular data suggest that *C. mexicana* is the sister taxon to *C. imbricatula*, despite geographic separation across the Isthmus of Panama (Taylor et al., 2011). These patterns are worth exploring in greater detail, as the evolutionary history of *Ctena* is poorly understood and it is likely that established species actually represent species complexes we have yet to identify (Taylor et al., 2013). Similar biogeographic and phylogenetic questions exist for other lucinid genera in the Western Atlantic-Eastern Pacific (e.g. *Lucina*, *Lucinisca, Parvilucina*), opening possibilities for this study to be expanded to other clades.

Professional Development

This study was designed to overcome a pertinent question in my master's thesis: which species of *Ctena* am I working with? My thesis research investigated intraspecific morphology of *Ctena* specimens from marine lake habitats on San Salvador Island, Bahamas. Because *C. orbiculata* and *C. imbricatula* overlap in geographic range in the Bahamas, accurate species identification was a crucial preliminary issue. With the aid of the morphological dataset created from this study, I determined that my specimens were most likely *C. orbiculata*.

Working at the BMSM also allowed me to connect with other conchologists and exposed me to a new museum archival system. As I continue my education in paleontology, this exposure will prove valuable as I further develop my skills in museum studies.

The results reported here are expected to be presented at scientific conferences in the coming year, primarily the Geological Society of America's annual conference. I am also investigating how to expand this project (include more species, incorporate molecular data, etc.) so that it may contribute to peer-reviewed publications on lucinid morphometrics, phylogenetics, and biogeography. I also recently received digitized images of type specimens for each species, which will be integrated into the morphological dataset to test how well their shapes represent the full scope of morphological variation within these species.

Acknowledgements

I thank the Conchologists of America for their financial support of this project. I would also like to thank Dr. José Leal and the staff at the Bailey-Matthews National Shell Museum for their hospitality, access to collections, and helpful discussions.

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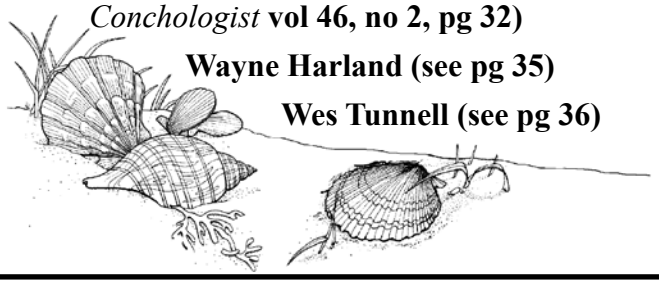
In memoriam:

Paula Della Bosca (see pg 37)

James Cordy (see "James Cordy, a life of shells" by F. Matthew Blaine in *American Conchologist* vol 46, no 2, pg 32)

Wayne Harland (see pg 35)

Wes Tunnell (see pg 36)



Wayne McGraw Harland (17 July 1946-12 June 2018)

Captain Wayne McGraw Harland, also known by friends and family simply as 'Bubba,' age 71, passed away after a very adventurous life. Born in Washington, DC, he was the son of the late John Harland and Jane (Miller) Harland. He served his country in the Marine Corps and the Vietnam War. He spent much of his professional career working with computers, but Wayne was an adventureous man and avid collector. A few of the items Wayne collected, restored, and sold, included Corvette Stingrays, model trains, shells, and ancient shell books. He traveled the world scuba diving to study and collect shells. He was passionate about the shelling community, joining the Broward Shell Club, showing his finds at shell shows, and then becoming an esteemed judge at such events in Florida and elsewhere. He discovered several new marine shells, most notably *Conus harlandi*. He is survived by his loving family including his first wife Donna Harland, his daughter Kimberly Beare and her husband Danial and their children Danny, Jacob and Jacqueline of Marshville, NC, son-in-law Michael Levy, his wife Brooke, and their two daughters Maddix and Hunter of Carver, MA. He was preceded in death by his wife, the former Annie Levy.

***Conus harlandi* Petuch, 1987**

I think I first met Wayne at a Broward Shell Club Show in the late 1980s. It was immediately apparent that the ingrained cognomen 'Bubba,' however apt for a man of his physical dimensions and social informality, belied an aptitude for intensive natural history field work and scholarly pursuits. As noted in the text above, drawn liberally from published obituaries, Wayne steered MV *Ragamuffin*

to shelling destinations, dove, and traveled far and wide, and thus was able to illuminate a corner of the natural world before, and for, any of the rest of us. With near obsession, he reconciled his finds with what was known by experts, held in museums, and was treated in the literature. It was in the latter labor he made an enduring mark.

Later he wrote of how he soon became aware that many of the species he found (or sought after) were named a long time ago, that these old published works were scarce and, when available, often only with great inconvenience, "waiting for a book was not my idea of a productive day," he opined. Thus he set out to build a library of classic works in conchology. A decade and a half later, early in 1998, James A. Findley, Librarian of the Bienes Center for the Literary Arts, affiliated with the Main Ft. Lauderdale Public Library, convinced Wayne to make a major public exhibit. Accordingly, Bubba selected 39 antiquarian (1684-1912) conchological iconographies from his library and displayed each, opened to the appropriate page, with which he juxtaposed a matching actual specimen(s) from his collection. He wrote a companion 24-page exhibit catalogue, which provided not only the bibliographic underpinnings of each work but often key aspects of the historical context, printing and illustration methodologies, accuracy of the taxonomy, even personal aspects of an author's life. Fellow bibliophile Dr. Alan Kabat pointed out to me that this exhibit catalogue, which was offered for sale and must have met with sufficient demand to have caused its disappearance from the internet marketplace, may well be the only scholarly shell book ever **to contain a genuine shell** and that each of (at least his three) the copies contained a different species. The first text page of a Kabat copy had a Philippine pulmonate terrestrial snail (Bradybaenidae: Helicostylinae, see image below).

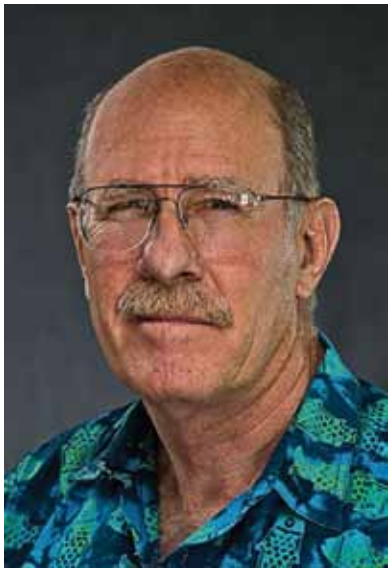
Bubba's wit was swift and sophisticated. Although a gifted raconteur, he was at his best with situational one-liners. Once when a retired airlines pilot in our company declared a preference for a proprietary drug over the "genetic" equivalent, Wayne launched a riposte in nanoseconds: "What kind of plane did you fly, a malaprop?"

Wayne Harland was a quintessential citizen conchologist, from field to curation to library. He was no stranger to hard work, a staunch and exemplary advocate of good times, and an engaging companion. Mutual friend, Dr. Jerry Harasewych said shortly after Wayne's death: "I will bet that toasts to Wayne will be raised in Moscow, France, and Argentina tonight, and many other places as well." I think Bubba would approve.

Harry Lee

Wayne Harland's book with an actual shell.

John "Wesley" Tunnell, Jr. (2 May 1945–14 July 2018)

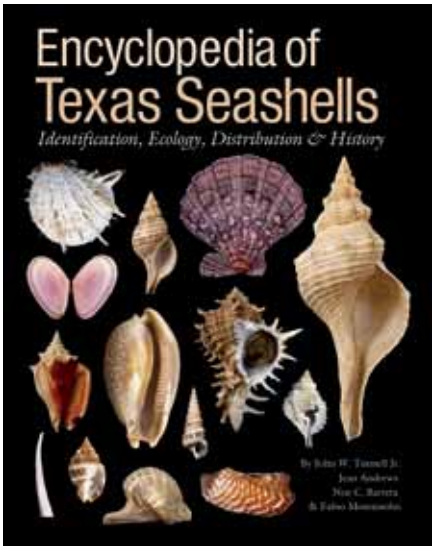


Texas and the Gulf of Mexico region lost a beloved marine biology professor after a prolonged battle with cancer. Many know him from his Texas shell books, but he was also interested in corals, biodiversity, conservation biology, and many other topics. Wes was an inspiration to students; he paid attention to each person, believed in them, and made everyone feel important. He was honest, stern, but fair. He was my mentor and a friend; he was a good man.

Wes was born in Biloxi, MS, while his father, a Texan from Gregory, served in the U.S. Army Air Force during World War II, at Keesler Field, Biloxi, MS. His family moved back to Texas and settled in Taft, a town of 3000 people in South Texas. Both of his parents were medical doctors, Drs. John W. Tunnell and Rosalie N. Tunnell; together, they treated all in town and delivered babies for decades. Wes married his high school sweetheart, Kathryn Aldridge, in 1966. They had three kids: Stephanie, James and Jace, who gave them five grandkids. He was family-oriented, with a strong Christian faith, and was a proud South Texan.

Tunnell attended Texas A&I University, Kingsville (now Texas A&M University-Kingsville) and graduated with a BS in Biology (Chemistry minor) in 1967, followed by a MS in Biology (Geology minor) in 1969, studying the marine mollusks of 7½ Fathom Reef, a small but diverse reef near Corpus Christi. Between 1969-1971 he served in the U.S. Army at Ft. Baker, Sausalito, CA. He then went back to Texas and attended Texas A&M University, College Station, and studied the mollusks of Lobos and Enmedio coral reefs in Campeche Bank, Mexico, receiving his PhD in Biology in 1974. Tunnell joined Texas A&I University (now Texas A&M University-Corpus Christi, TAMU-CC), a small school at the time, as the single faculty in the department of Science and wore many hats. He retired as Emeritus Professor in 2015, but continued to work on a part-time basis until the end of his life.

Tunnell had an accomplished 41-year academic career. He advised or co-advised, trained, and mentored 71 master's students, seven Ph.D. students, and four postdocs, besides thousands of undergraduate students who took some of the 18 courses he taught over the years. Among his classes was Coral Reef Ecology, the most popular course on cam-



pus. Over a 32-year period, Tunnell took hundreds of students to dive and study coral reefs in Mexico. Biology of the Mollusca was a popular graduate course, with field trips to the Texas coast. Many of his students moved on to work in academia and industry. Wes often formed life-long bonds with students.

Tunnell co-founded the Center for Coastal Studies in 1984 and served as its director until 2009. He developed two bachelor programs, four master programs, and two Ph.D. programs. He was essential in the creation of the Harte Research Institute for Gulf of Mexico Studies in 2000; he served as Associate Director (2001-2015), and Endowed Chair for Biodiversity and Conservation Science since 2011. His 150+ grants and projects totaled over $20M and resulted in 115 scientific publications, 69 technical reports, and seven books, including the *Encyclopedia of Texas Seashells*. He also created and was the editor of two book series at Texas A&M University Press: the *Harte Research Institute for Gulf of Mexico Studies* series, with 14 books, and the *Gulf Coast Books*, with 31 books published to date.

Tunnell served in many national and international committees related to marine issues, including coral reefs, conservation, oil spill, coastal development, etc. He was also Adjunct Curator of Malacology and Marine Biology (2007-2014) and Curator of Marine Biology (2014-2015) in the Houston Museum of Natural Science, and together with Tina Petway, designed and developed the Coastal Texas Exhibit, of which he was very proud. Despite his many accomplishments, he was very humble and always pointed out that his success was the fruit of collaborations.

I feel honored to have worked closely with Wes since he recruited me as a postdoc in 2004 to work on the Biodiversity of the Gulf of Mexico project, the *Encyclopedia of Texas Seashells*, and many other projects. He was the single most influential figure in my professional life, and I am greatly indebted to him. It was heartwarming to learn that many people at his packed memorial and celebration of life service cited Wes as a major force in their lives as well. He will be missed dearly. His vast legacy will move on.

Fabio Moretzsohn
Life Science Department
Texas A&M University-Corpus Christi.

Paula Della Bosca (12 July 1956-15 April 2018)

Paula was the life partner of Merv Cooper and supported him in all of his endevours in Australia and abroad. The image is of Merv and Paula enjoying a day on the beach. She will certainly be missed.

COA Academic Grant Report: Under Pressure: The Physiological Effect of Multiple Stressors on *Mytilus edulis*

Kristen Hosek and Dr. Mackenzie Zippay

Intertidal communities face unique challenges brought on by the daily tidal flux and seasonal temperature variation. The specialized adaptations displayed by many intertidal mollusks, such as hypoxia/anoxia strategies and elevated temperature tolerance, makes them an ideal study system to better understand physiological adaptations in a variable environment (McMahon 1988). While the effects of abiotic factors (such as oxygen availability or temperature elevation) have been studied extensively, little is known about how those environmental stressors work in tandem with biotic stressors such as species interactions. Intertidal communities are complex and dynamic, and different species exhibit differential susceptibility to environmental stress (Somero 2002), so our project sought to elucidate the complicated interplay between abiotic and biotic stressors.

To determine the interactive effect of multiple stressors, we performed a multi-factorial study of the cellular mechanisms that underlie the putative effects of feeding history, temperature elevation, and predation risk on a dominant intertidal organism. We chose to work with the blue mussel, *Mytilus edulis* Linnaeus, 1758, which inhabits the low intertidal zones of the southern Gulf of Maine. These mussels are currently experiencing some of the fastest warming waters (Pershing et al. 2015) and significant population decline, so understanding their plasticity in response to the changing environment will be essential for conservation efforts, as these organisms are both commercially and ecologically important (Sorte et al. 2016).

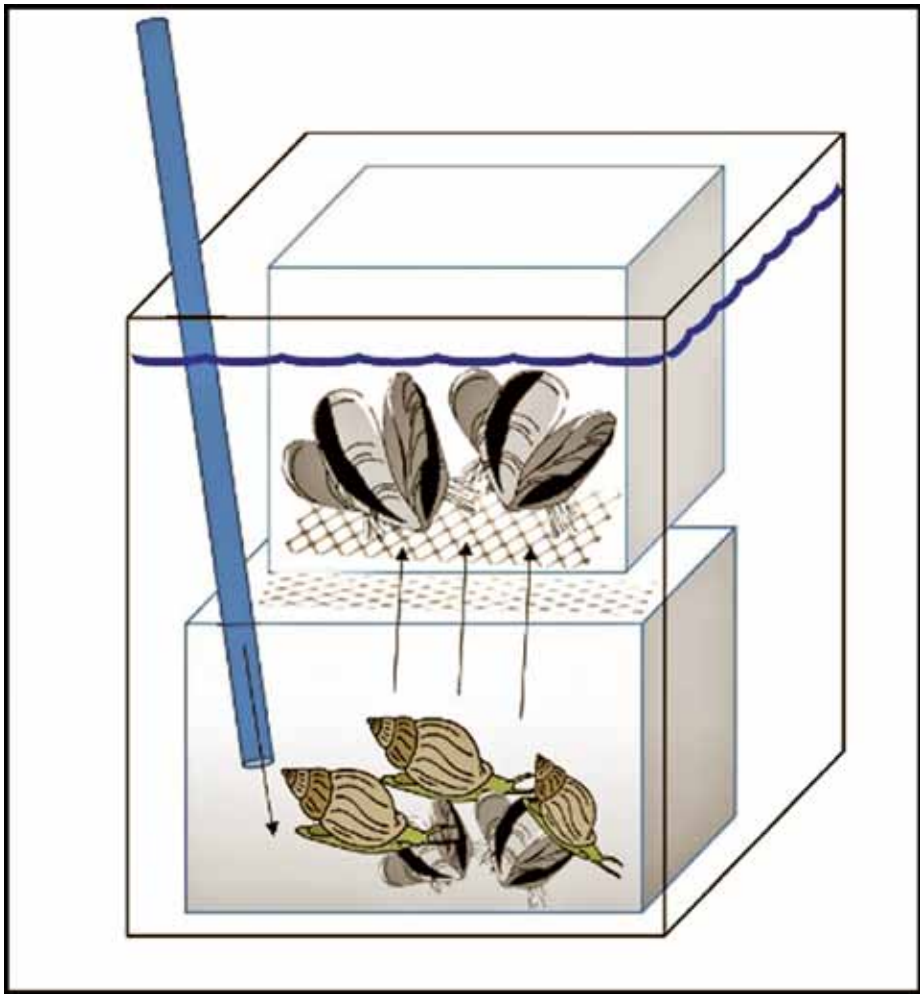


Fig. 1 Visual of mesocosm set-up. Predator cue was created by *Nucella lapillus* feeding on juvenile conspecifics. Seawater flowed down a hose and pushed predator cue up to the experimental mussels.

Mussels were collected in July 2017, and taken to the Marine Science Center at Nahant, MA, where they acclimated for 2-3 weeks under ambient temperatures (15-16°C). Half were maintained in coarsely filtered sea water and fed *Isochrysis* as a supplement, while the other half were starved during this period. Mussels from both feeding groups (starved and fed) were exposed to the presence or absence of predator cues (see fig.1) at five water temperatures (15.5, 23.5, 25.5, 27.5, and 30.5 °C, ± 0.5°C) across four short-term time points (between 0-60 minutes) to examine their *initial* cellular response under acute stress events. The experiment was run repeatedly for a total of n=5 replicates at each temperature, food, and predator combination. Samples were frozen and taken back to Sonoma State University in Rohnert Park, CA for biochemical analyses.

We measured the activity levels of key metabolic enzymes and antioxidant defense capabilities to expound the effects of abiotic and biotic stressors on physiological processes. Citrate synthase (CS) is a rate-limiting enzyme of the Krebs cycle and indicative of aerobic respiration. The interactive effect of predation risk and temperature in the short time frame of an hour had a significant effect on CS activities as predator exposure seemed to cause inverse strategies of aerobic respiration (see fig.2). Total antioxidant capacity (a suite of enzymes and macromolecules that counteract damaging reactive oxygen species) was primarily affected by temperature elevation, with higher temperatures causing an up-regulation of defenses (ANOVA, $F_{4,199}=4.045$, $p=0.0036$). The responses to a combination of stressors are graded and complex. Our results demonstrate the ability of *Mytilus edulis* to make biochemical adjustments to meet energetic needs under acute stress events and provides insight into the physiological strategies of this important ecosystem engineer.

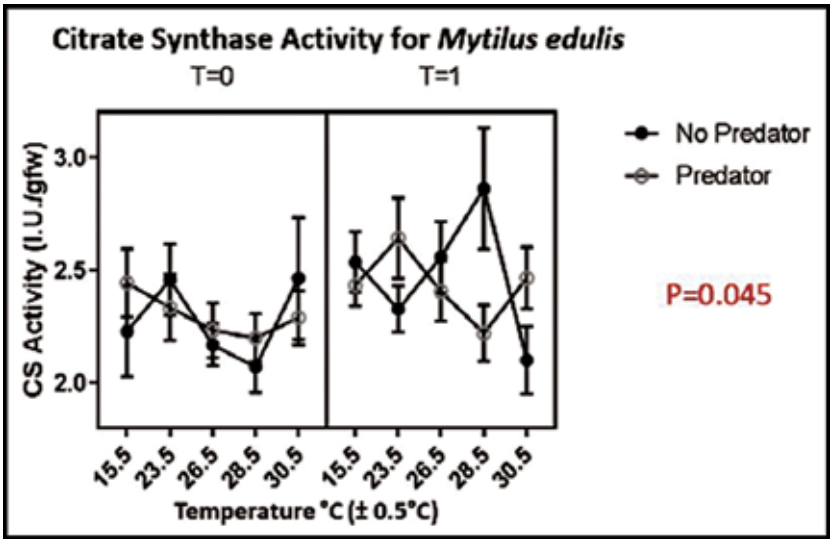


Fig. 2 Linear mixed model of the effects of temperature and predation risk on CS activity levels (mean ± SEM, n=10) comparing T=0 and T=1 hour of exposure ($F_{10,189}=1.9105$, $p=0.045$).

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***Mytilus edulis* Linnaeus, 1758 (blue mussel) in a typical intertidal aggregate grouping. Image by Andreas Trepte, Wikipedia. com.**

Philippines Convention Fulfilled

David Kirsh

This April, the Philippines had its first sheller's convention ever, and it was an unconventional convention. Led by Mark and Elgie Reekie, the conventioneers converged from all over the world – 18 nations – to do something we all enjoy: find shells. That, and swim with a whale shark, snorkel, do some sightseeing, eat lots of great food, peruse the dealers' bourse, and meet all the other fascinating people. And yes, there was a bit of convention-like sitting in the museum during talks on shells (and crabs and echinoderms), and shell exhibiting for awards, but most of the convention was outdoors.

Mark Reekie, who has led numerous shell tours in the Philippines, put together this ambitious package designed for collectors to have fun. He couldn't have done it without the moxie of his wife Elgie, however, who confesses with her infectious smile that she is known as a mother hen. Elgie's entire family rolled up their sleeves for food preparation, transportation, shell cleaning, boating, etc. Their friendly hospitality and industriousness was extraordinary.

The 2018 Philippines Seashell Convention was held on the island of Siquijor (pronounced see-key-HOR), which is the dot at the bottom of the exclamation point of Cebu (see-BOO) island. Conventioneers mostly stayed at the lushly landscaped Coco Grove resort and met 1/8 mile away for most events at Marelle's Shell Museum, where there was a respectable display of Philippines shells with an attached restaurant/bar. The museum was entirely constructed by Elgie. Mark says he never saw it until it was finished.

Conventioneers flew in to Cebu City, which now has over three million inhabitants. After an initial night or two in this bustling industrial port, the shellers boarded the Ocean Jet ferry for the four-hour trip to Siquijor.

The Reekies all the while, were attentive to arrangements for travel and outfitting of all the guests. To be able to attend to the needs of 65 people in a narrow time frame was no mean feat. For example, it was Elgie who guided me to and through the nearby Cebu mall to be able to get a good rate of exchange from dollars to pesos, with a stop thrown in to pick up flip-flops which I'd neglected to pack. There was much more of this kind of detailed guidance offered by the Reekies to ensure a good experience.

I'm known as a micro man, obsessed with shells 5mm or less. Yet, once on Siquijor, I was certainly pleased to find a large live *Ovula ovum* beside two *Calpurnus verrucosus* on one snorkel outing. There were many other finds of common species within easy access. There is a reef flat right in front of Coco Grove teeming with small creatures; much of it is off-limits for collecting, but an adjoining area

A rather nice room at the Coco Grove resort, Siquijor.

Above: Marelle's Shell Museum from the front walkway.

Below: Some of the colorful and extensive displays found within the museum. All done by Elgie Reekie.

***Liroceratia sulcata* (O. Boettger, 1893) 1.1mm, Siquijor, drift line grit.**

***Zafra troglodytes* (Souverbie, 1866) 2.8mm, Siquijor drift line grit.**

Roasting chitons on the Siquijor shoreline.

is fair game. I was able to recognize many of the common small Indo-Pacific species such as *Cypraea moneta* and *C. annulus*, and *Conus coronatus* and *C. ebraeus*, within a few minutes among the seastars and urchins.

Not only were there outings for snorkeling and checking the haul from tangle nets, but also a land snail hunt in the mountainous center of the island. Due to dry weather, the terrestrials were scarce, but I found a *Pythia scarabaeus* in the soil at over 2,000 feet elevation (just slightly lower than Asheville, NC). Finding this shore-dwelling ellobiid might be testimony to the uplifting of the island thousands of years ago.

My default collecting habit is scanning the drift line hunched over with my hobby loupe. I did find a diversity of shells at the ends of several beaches, especially by locating the small hermit herds, but also inspecting the coral rubble.

Other delegates wanted to dive and (at their own expense) Elgie arranged with a nearby dive shop for night diving on several nights. Those guys got the choicest shell booty. Unfortunately, I haven't been able to dive for the past dozen years, but there was no lack of shelling opportunities and when guests wanted to they could relax at the resort.

At the end of the convention, most delegates returned to Cebu, where our shells got official Filipino permitting for international transport. We visited local tourist attractions and the facility of Guido Poppe's Conchology, Inc—a treat for any shell collector to behold. Guido also graciously treated us to a good-bye banquet at the Radisson Blu.

This brief description can't do justice to the experience of being in Siquijor at the convention. At the request of many of the guests, Mark and Elgie were asked to "do it again," so they're already planning for next year. If you're interested, feel free to contact them. For information contact them at seashelldude@gmail.com or marellesuwwmuseum@gmail.com

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St. Petersburg Shell Show 22-23 Feb 2018

Anne Joffe won the Conchologists of America Award at the St. Petersburg Shell Show. Her display was about how mollusks heal themselves of various injuries.

One of the 'hospitalized' shells in Anne Joffe's display, a truly bizarre *Tectus maculatus* Linnaeus, 1758.

Carolyn & Earl Petrikin won Shell of the Show, self-collected, for *Melongena corona* (Gmelin, 1791).

Pat & Bob Linn won the DuPont Trophy and Shell Show first place for worldwide Olividae.

John Jacobs won Shell of the Show, any manner, for *Scutellastra mexicana* (Broderip & G.B. Sowerby I, 1829) (giant Mexican limpet).

Gulf Coast Shell Show 2-3 June 2018

Gene Everson won both the COA Award and the DuPont Trophy for his displays at the Gulf Coast Shell Show. The COA Award was for his Naticidae display and the DuPont Trophy for his display of self-collected Australian Seashells. Gene is presently in Mozambique and Madagascar for a month of shell collecting. It will be interesting to see his displays for 2019.

The man behind the world's largest private shell collection

Catalina Ruiz & Paul Ramey

Volunteer Harry Lee has been transferring shells to the Florida Museum one car load at a time for eight years

Volunteer Harry Lee, in his usual attire of a festive Hawaiian shirt, uses a microscope in Dickinson Hall to examine micromollusks. Florida Museum photo by Kristen Grace.

This *Mikadotrochus beyrichii* (Hilgendorf, 1877), is one of numerous specimens donated by Harry Lee. Florida Museum photo by Kristen Grace.

Nearly every Wednesday at 7:05 a.m. for the past eight years, Dr. Harry G. Lee drives 90 minutes from his home in Jacksonville to volunteer in the Florida Museum of Natural History Invertebrate Paleontology Division, usually accompanied by a trunk full of shells. Lee began donating his shell collection to the museum on the University of Florida campus in 2010, and continues to personally transport increments of a collection that is, by some estimates, perhaps the largest private collection in the world.

"The ability of museums to absorb a collection is limited by the manpower and other resources of a department," Lee said. "Especially with a collection of this magnitude."

Today, Lee, a self-proclaimed museum rat and citizen scientist, considers his collection to be an educational resource for future researchers. Florida Museum Malacology Collection Manager John Slapcinsky wholeheartedly agrees.

"Harry's website posts species lists of mollusks for many sites in Florida, and because his identifications and data are so well trusted, these lists are a valuable resource," Slapcinsky said. "UF students in our lab and in the invertebrate paleontology lab often use them to guide identifications of their own research specimens."

Lee began collecting shells at the age of 6, while visiting his grandmother in South Orange, New Jersey. Her next-door neighbor, Max Hammerschlag, a retired scissors-maker, collected shells and taught Lee how to properly document and catalog different species. Hammerschlag gave the young Lee shells to take home and examine, and he started his collection in 1947. Although his dedication was minimized by the distractions of athletics and girls in high school, he knew he would continue to collect shells.

"It was the one great continuum in my life," Lee said.

As an attending physician in internal medicine, Lee's true passion never faltered. Every night he would return from a tiring day at the hospital and office, strip off his lab coat and get to work on his shells. During weekends and vacations, he traveled to distant lands hoping to discover hidden, rare shells, and would regularly scale cliffs, dive in deep oceans, and trudge through swamps on his days off. His travels took him to Australia, Fiji, Hawaii, Kenya, Mexico, the Philippines, Somalia, Tahiti, Tanzania, and numerous West Indian islands, to name just a few.

"Wherever the mollusks are, I will go," Lee said.

The most important discovery of his career, however, occurred while crawling in his own backyard in Jacksonville, in 1980. Lee found a new-to-science species of

The *Siratus alabaster* (Reeve, 1845), is a large delicate murex usually found in East Asia. Florida Museum photo by Kristen Grace.

carrot glass snail, *Dryachloa dauca*. It is the only species in its genus, and Lee and the late Florida Museum curator Fred Thompson described and named it that same year.

Lee's collection is stored mostly in his basement, where every inch of wall space is covered with bookshelves and cabinets that hold the precious specimens. These include his sentimental favorites: the 36 shells Lee named and the 18 shells named after him.

His most highly prized shell is the left-handed variant of the sacred shell of Hinduism, the Indian chank. This species is rare, with only 1 in 600,000 shells coiling in the opposite direction.

Lee said he loves uncovering a shell's story and believes that "shells are intrinsically beautiful." "They form templates of evolution in beautiful, mosaic patterns," he said.

This belief and his collection also resulted in the creation of his book, "Marine Shells of Northeast Florida." In a joint effort with about 50 shell club members over more than two decades, the Jacksonville Shell Club published the book in 2009. With the profits from book sales, in 2010, Lee and the other members created a $2,000-$2,500 academic grant for master's and doctorate students, awarded annually by the Conchologists of America Inc., an international society for shell enthusiasts.

After seven years, only about one-third of the collection has been transported to the museum, and Lee does not know when he will finish. "It's a work in progress," he says.

Volunteer of the Year

Lee has volunteered more than 2,000 hours integrating his shells into the museum's collections and also working with fossil micromollusks, defined as shells less than 5.5 mm in diameter. He removes and identifies these specimens from sediments he and others collect and photographs them with a scanning electron microscope.

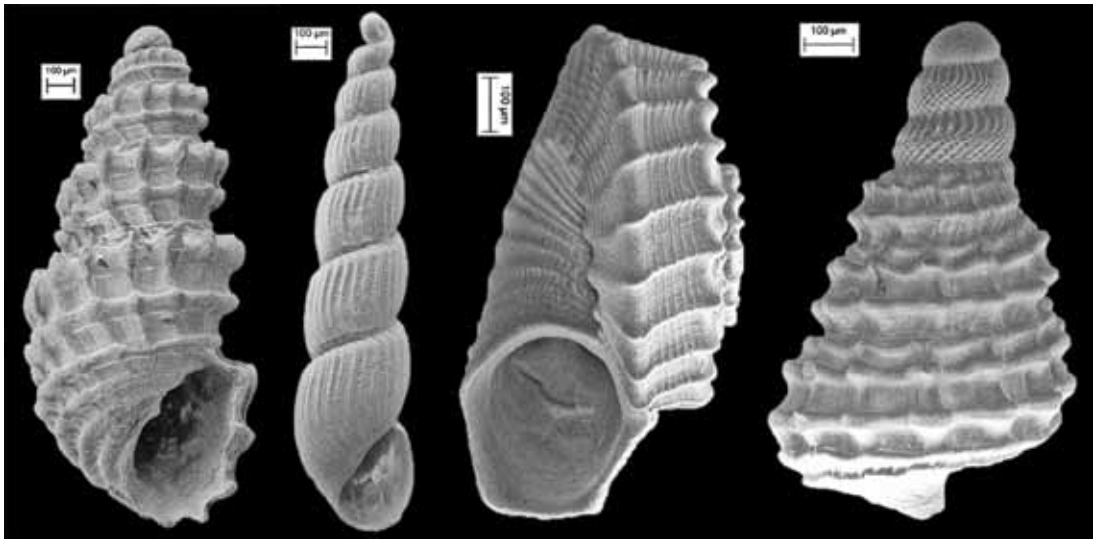
This rare specimen from Harry Lee's collection shows left-handed coiling of the *Turbinella pyrum* Linnaeus, 1758, or sacred chank. Only 1 in 600,000 shells of the scared chank coils in this direction. Florida Museum photo by Kristen Grace.

In 2017, he was honored as the museum's James Pope Cheney Volunteer of the Year for research and collections, nominated by museum malacologist Slapcinsky and Roger Portell, the museum's invertebrate paleontology collection director. Slapcinsky said Lee is well-known nationally and internationally among the malacology community as one of the most giving and knowledgeable amateurs.

"Almost every molluscan collection by a mollusk enthusiast that has been donated to the (Florida Museum) Malacology Division in the last 40 years bears Harry's fingerprints in the form of his identification labels," Slapcinsky said. "He has corresponded with numerous amateurs and professionals, not only helping with identifications, but tracking down rare publications, sharing specimens and facilitating interactions between the lay community and the professional community."

Portell said Lee is responsible for building the museum fossil micromollusk collection into an invaluable resource. "Micromollusks are not common in museum collections because of the time and effort it takes to sort and

identify them," Portell said. "Harry has spent countless hours looking through a microscope picking through hundreds of thousands of pieces of shell hash, sorting out thousands of whole shells of 500 species. He imaged over a thousand of these fossils using electron microscopy and also identified the species, many of which are new to science, further enhancing the importance of this collection. His contributions are appreciated more than most people could imagine."



Harry Lee volunteers much of his time discovering micromollusks like these under a microscope. The µm measurement used for scale stands for a micrometer or a micron. The average cross-section of a human hair is 50 microns. The scale bars are 100 microns. Florida Museum image by Kristen Grace.

Slapcinsky said he has benefitted personally from Lee's help many times. "While Harry has not been volunteering in the Malacology Division directly, he is a walking encyclopedia," Slapcinsky said. "He is well versed in Latin, and is a fount of historical, taxonomic, and other arcane knowledge, which he shares generously. Harry also is a tremendous asset to the molluscan community, as he answers questions on molluscan listservs, judges shell shows, serves as editor and writer for the Jacksonville Shell Club newsletter, '*The Shell-O-Gram*,' served as a board member for the Bailey-Matthews National Shell Museum (on Sanibel Island), is the current president of Conchologists of America, and is a scientific adviser and contributor for the JaxShells website.

Roger Portell, Florida Museum Invertebrate Paleontology Collections Director, from left, and volunteers Harry Lee and Rick Edwards study shells in the collections at Dickinson Hall on the University of Florida campus. Florida Museum photo by Kristen Grace.

Lee is humble about the praise and receiving the Volunteer of the Year award, saying he is thankful to the museum for making his retirement entertaining. "It goes without saying that I find working at the Florida Museum quite gratifying," he said. "Working among dedicated and talented scientists gives one a sense of camaraderie and common purpose."

Sources:
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R. TUCKER ABBOTT'S 100TH BIRTHDAY AND YOU ARE ALL INVITED TO THE PARTY

Anne Joffe

Blow up the balloons, put on a Happy Face, and get ready for a fun-filled birthday celebration. This will happen June 17-23, 2019, at South Seas Plantation Island Resort on the beautiful island of Captiva, Florida.

There will be two days of terrific field trips (17 and 18 June), including flats and beach shelling, a thriller of a boat ride, trips to Cayo Costa and Useppa Islands, a Tour of Edison's Lab, and a variety of other activities for everyone. Opening day, Wednesday (19), will bring silent auctions, programs, as well as a surprise event before the Welcome/Birthday reception. Dress code is everyone must wear a shell shirt. On Thursday (20), more silent auctions, programs, and bringing back the Snail Parade. So start polishing up your snail collection and watch for more on this. Our oral auction ends this perfect day. Friday brings more of the same, plus the annual business meeting, a preview of next year's meeting, and the banquet/birthday party will be the icing on the cake, birthday cake that is. No presents required, just your presence. Saturday and Sunday (22-23), will be the world famous Shell Bourse, with dealers from all over the world selling shells and other related items. This is open to the public, so make sure you tell all your friends to join in.

Our condo accommodations consist of one bedroom, one bath units, full kitchens, balconies, and living rooms with hide-a-beds, so each room can sleep four very nicely. The rate is $179 plus tax, including the resort fee, and all amenities to the resort. They are located right next to our meeting area, so it's a very short walk to the hall. Or, we have two bedroom, two bath units as well. Contact me for information on these units. The resort boasts 6 restaurants on site, and within a short walk on Captiva, there are 9 other places to dine. Many will come pick you up.

There is a championship golf course right on the sea, full fitness center, shuttle bus to take you around the property, all types of water activities, fishing, and boating. The resort is surrounded by miles of white sand beaches, something for everyone. This is the perfect place to bring your whole family.

So, you can now book your rooms. To do so, call: 239-472-5111, or toll free US and Canada: 800-282-3402, or online: www.southseas.com. You must use the group code COA. This rate is good for three days before and three days after, but will only be offered until May 18th, 2019, so call early. After that date, rooms will be given only if available.

South Seas Plantation Island Resort