Vol. 43, No. 3, September 2015

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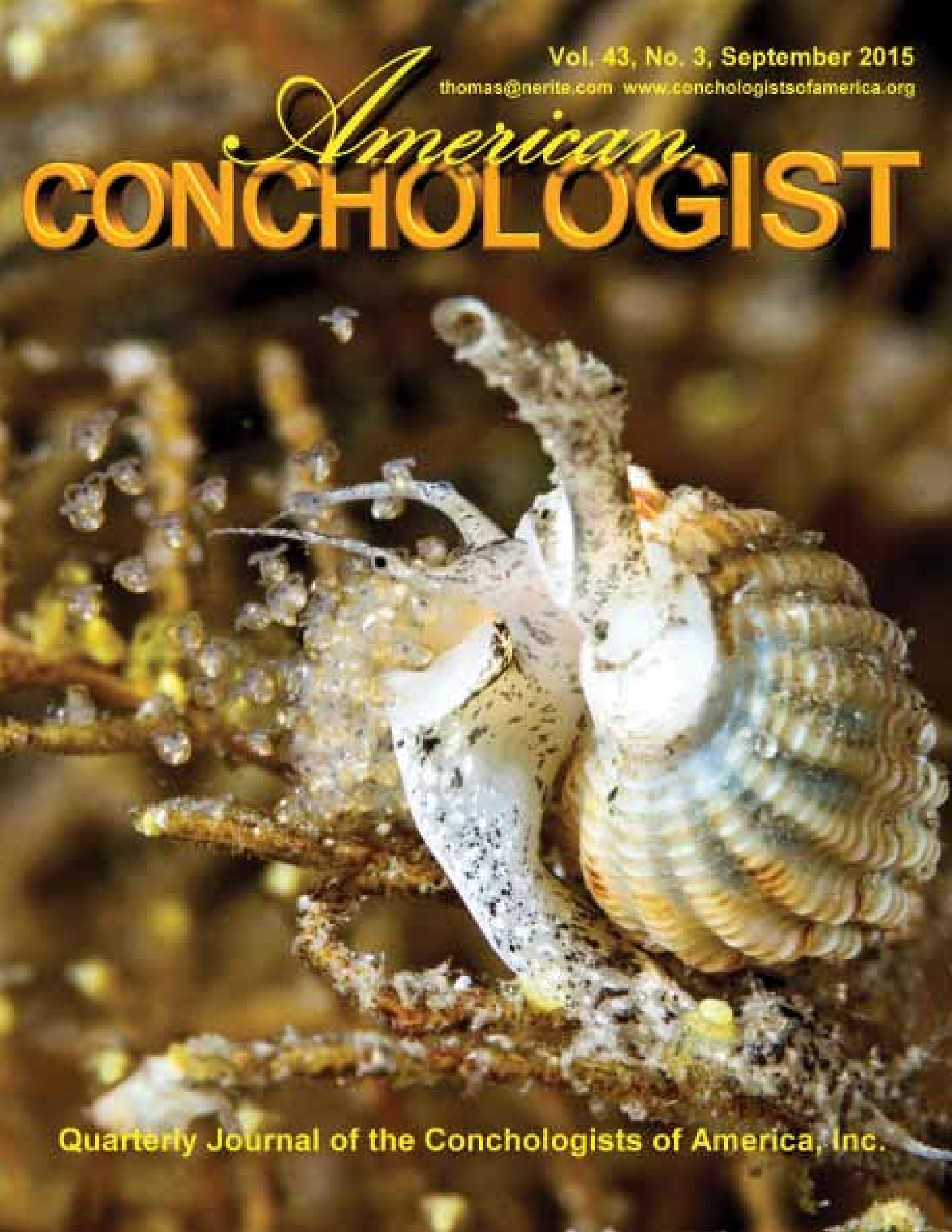
American CONCHOLOGIST



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.

AMERICAN CONCHOLOGIST, the official publication of the Conchologists of America, Inc., and issued as part of membership dues, is published quarterly in March, June, September, and December, printed by JOHNSON PRESS OF AMERICA, INC. (JPA), 800 N. Court St., P.O. Box 592, Pontiac, IL 61764. All correspondence should go to the Editor. ISSN 1072-2440.

MEMBERSHIP is for the calendar year, January-December, late memberships are retroactive to January. 2010 DUES: $25; postal surcharge: USA none ($5 additional for USA first class), $5 for Canada and Mexico (total of $30), $15 for all other countries (total of $40). New members apply to Debbie Freeman, Membership Director. Please pay in U.S. dollars ($), or with a check on a U.S. bank with Transit Enrouting and Account Numbers printed at the bottom, or with money order. Make checks payable to: CONCHOLOGISTS OF AMERICA. Notify Membership Director with change of address.

BACK ISSUES are available from Doris Underwood, Membership Director. Prices: prior to 1999, $3 each, 2000 to 2008 $4 each, 2009 to current, $5 each; postage extra.

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In This Issue

Front Cover: *Nassarius albus* of authors, non (Say, 1826), sensu Kaicher (1982: card 3234). As can be seen by the listed name, this common western Atlantic and Caribbean species comes with a bit of confusion over its name (or present lack thereof). None-the-less, this amazing photograph shows a rare, possibly unique, instance of ovoviviparous birth in a gastropod (eggs hatched within the body, so the young are born alive but without placental attachment, as in certain reptiles, fishes, and oysters). This amazing photograph was taken by Susan Mears.

Back Cover: *Monoplex aquatilis* (Reeve, 1844), in situ from the Red Sea, courtesy of Moti Kovalis. This common species is popular with collectors and is found almost worldwide.

Editor's comments: To begin, the cover photograph by Susan Mears of what is usually (though incorrectly) listed as *Nassarius albus*, was forwarded to me by Dr. Harry Lee (who also noted the important nature of the image and the confusion surrounding the actual identity of the shell). Ovoviviparous birth has seemingly never before been recorded for a gastropod. So this is a rather important first. The back cover photograph of *Monoplex aquatilis* (was *Cymatium aquatile*) by Moti Kovalis is one I have had on file for a few years. Although it is a common and widespread species, nice specimens (such as this) are certainly welcome additions to any shell collection.

As for inside the covers, we have our usual eclectic mix of conchological material. After getting some COA business out of the way (publishing the slate of nominees for COA elected offices, thank you, Alan Gettleman), we have a nice tribute to perhaps the best known American sheller, R. Tucker Abbott. I believe Regis D'Angiolini presents a well-balanced portrait of our premiere sheller. This is followed by Lori Schroeder who explores the trials and tribulations of keeping small landsnails in the home. Keeping a freshwater snail in an aquarium, no problem – keeping a landsnail in a terrarium, not quite as simple – as she points out. Then sit back and enjoy our travelogue by Amelia Ann Dick, who reports on shelling and shopping in French Polynesia.

We have three separate reports in this issue by recipients of COA grants. Dorottya Angyal et al. hunt for a long-lost landsnail in Albania and Kosovo. Readers will note many parallels between these countries of today and Cuba of the 1930s. Then Ayu Savitri Nurinsiyah takes us to Java to hunt for landsnail species that may now be endangered by cement mining. Finally, we have a rather technical presentation of how some nudibranches collect and use cnidocytes. Nudibranches ingest these specialized cells of their prey and then incorporate them into their own body, forming a defensive system that can discharge venom-filled barbs called nematocysts.

In the middle of these reports are the results of the 2015 Gulf Coast Shell Show and a book review of *Spirals in Time: The Secret Life and Curious Afterlife of Seashells* by Helen Scales. This is a small inexpensive book with more shell facts, stories, trivia, and natural history per page than any other similar endeavour. Most of us share a wonder of shells, Helen Scales has put in print much of why we have this wonder.

We close with a report of the 2015 COA Convention in Florida, by Anne Joffe. As she is the person responsible for COA scheduling and coordination of these events, it is fitting to have her report on this very successful gathering. It was a lot of fun – now plan on Chicago.

Tom Eichhorst

July 20, 2015

Dr. José Leal, President

Conchologists of America

Sanibel, FL

Dear President Leal:

A Nominating Committee consisting of Doris Underwood, Everett Long, and Alan Gettleman was established to report a slate for the elected offices to be voted at the 2016 annual meeting of the Conchologists Of America (COA) convention to be held in Illinois.

The proposed slate of officers is:

President: Harry G. Lee, M.D.

Vice President: Wayne Humbird

Secretary: Phyllis Gray

Treasurer: Steven Coker

Trustee: Everett Long

All candidates agreed to serve for the offices nominated (COA Bylaws Chapter Two, Section C). The candidates for President and Vice-President have served, or are presently serving, on the Board of Directors (COA Bylaws Chapter Two, Section B). This report is submitted more than 30 days prior to the election for the purposes of informing members of the proposed slate (COA Bylaws Chapter Two, Section C).

A subcommittee of the Nominating Committee consisting of Doris Underwood and Alan Gettleman solicited the candidate for Trustee.

The slate reflects individuals who have been involved in the Conchologists of America by serving in offices and/or actively involved in working on working on individual COA conventions. They represent workers actively promoting the goals of the organization.

Thank you.

Sincerely,

Alan Gettleman

Nominating Committee Chair

Cc:

COA Nominating Committee

COA Board of Directors

The 'popularizer' of shell collecting:

The Philadelphia Shell Club looks back at the life of R. Tucker Abbott in celebration of our 60th year

Regis D'Angiolini

Tom Grace was a teenager when he discovered the name R. Tucker Abbott. The young collector was seeking information on seashells; Abbott, the author of a number of books on conchology, was the one who delivered. Grace became an avid reader of Abbott's books, describing them as "the best source of shell information in their day for the amateur collector."

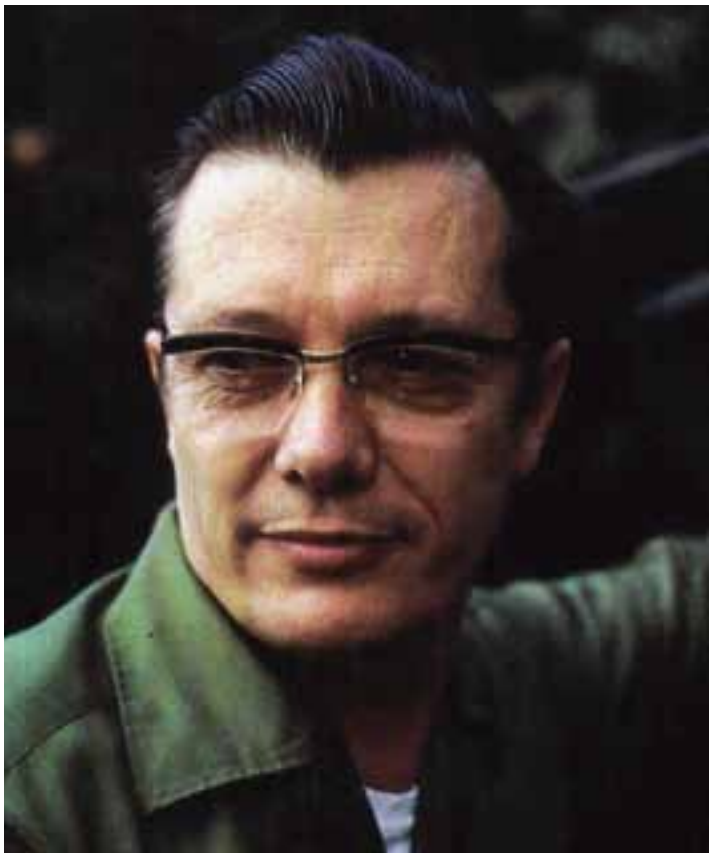
It wasn't until years later, at the Sheller Jamboree in Clearwater, FL, that Tom Grace actually met the acclaimed malacologist. Abbott sat down at Tom's table, asked him how he liked the event, and told him about his Sanibel museum project, for which he was developing exhibits.

"He asked what I liked to collect and then listened to me go off for a while," Tom recalled. "During the next half-hour, I told him about growing up and diving in California, and how I enjoyed collecting abalone shells and Indian artifacts made of shells. Before getting up to go, he asked if I might have a few shell artifacts I could part with for use in an indigenous peoples display for the museum – that being one of the exhibits he was thinking about."

After Tom returned home, he sorted through his collection, chose abalone and clam beads from California, and *Mercenaria* clam beads from Pennsylvania, and mailed them to Abbott. "About a year later, after I had completely forgotten about sending this material to Sanibel, I received a small package from Tucker," Tom said. "Inside was a thank-you note along with a pair of *Gazas*, one was an *G. olivaceus* and the other a *G. superba*. A nice thank-you indeed!"

Tom's experience is among the many fond memories Philadelphia Shell Club members have of Abbott – one of the most admired conchologists of the 20th century and one of the founding members of the Philadelphia Shell Club, now in its 60th year.

A native of Watertown, MA, Abbott began collecting shells as a youth and went so far as to create his own shell museum in his basement. He later attended Harvard University and developed the journal *Johnsonia*, which focused on western Atlantic mollusks. After college, Abbott entered the military as a U.S. Navy bomber pilot and later



Malacologist R. Tucker Abbott as he appeared in 1971. Photo by Robert Robertson.

became a medical research unit officer. While stationed in Asia during World War II, he studied the freshwater snails of the genus *Oncomelania* in the rice fields of China's Yangtze River Valley, as well as the parasitic worm they carried that caused the infectious disease schistosomiasis (also known as bilharziasis or 'snail fever').

After the war, Abbott married fellow malacologist Mary M. Sisler and became assistant curator and then associate curator of the Department of Mollusks at the National Museum of Natural History at the Smithsonian in Washing-

R. Tucker Abbott enjoys the 1957 Philadelphia Shell Club picnic—the club's second—with his wife and children. Photo courtesy of the Academy of Natural Sciences of Drexel University.

Pictured are (clockwise from top left), some of the books written by R. Tucker Abbott: *Seashells of the Northern Hemisphere* (first edition, 1991), *Compendium of Seashells* (coauthored with S. Peter Dance, later edition, original published in 1982), and *Seashells of the World* (2002 edition). Photo by author.

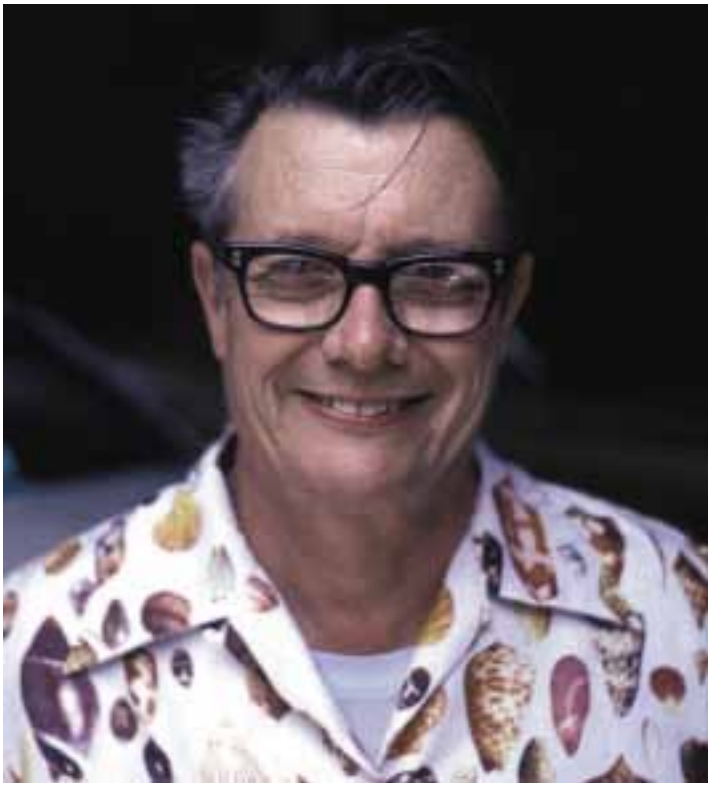
ton, D.C. During this time period he earned his master's and Ph.D. from George Washington University. He also wrote the first edition of *American Seashells*, one of over 30 books he authored on malacology. Other books he authored include: *Seashells of the World* (1962), *The Shell* (1972), and *The Kingdom of the Seashell* (1972).

"One thing Tucker was well known for was that he never passed up an opportunity to sign one of his books," said Philadelphia Shell Club member Al Schilling. "I have his signature in *American Seashells*, and he signed my copy of *Compendium of Seashells*, which he coauthored with Peter Dance, as follows: 'Best Wishes from the senior author.' He didn't lack for ego. The standard joke among shell collectors was that if you had one of his books that wasn't signed, it would be worth quite a bit."

An active member of the American Malacological Union (now American Malacological Society) and Conchologists of America, Abbott succeeded Henry A. Pilsbry as chair of the Department of Mollusks at the Academy of Natural Sciences, Philadelphia, in 1954, under the newly created Pilsbry Chair. The two helped found the Philadelphia Shell Club in 1955, an achievement that increased local attention and support for the Academy among shell collectors.

Abbott's efforts at raising awareness for the Academy did not stop there. His shelling expeditions to the Indian and Pacific oceans and other projects added to the Academy's reputation forged under Pilsbry. While at the Academy, Abbott actively edited the journal *The Nautilus*, of which he became editor-in-chief in 1971, and he also began a separate journal, *Indo-Pacific Mollusca*.

In 1969, Abbott left the Academy to accept the DuPont Chair of Malacology at the Delaware Museum of Natural History. There, he became assistant director and head of the Department of Mollusks. Abbott was succeeded at the



R. Tucker Abbott displays the love he had for his lifelong passion with a shell shirt in an undated photo. Photo by Robert Robertson.

Academy by Robert Robertson, an expert on Bahamian mollusks and molluscan anatomy. Abbott had hired Robertson as assistant curator at the Academy in 1960.

"Tucker was an extraordinarily gifted popularizer

Members of the shell community welcome R. Tucker Abbott with a dinner party before the October 1993 Jersey Cape Club meeting. Pictured are, back row from left, Phil Dietz, J.B. Sessoms, Abbott, Gary Rosenberg, former Jersey Cape Shell Club President the late Dr. Marty Bortner, and former Jersey Cape member Greg Fulginiti holding George the Cat. Seated from far left are the late Angela Bortner, Sue Hobbs, Eliza Dietz, and Roberta Sessoms. Photo courtesy of Sue Hobbs.

The Bailey-Matthews National Shell Museum in Sanibel, FL. – an R. Tucker Abbott dream come true.

for shell collectors," Robertson said. "He was a marvel with amateurs, bringing out the best in people. At the same time, he was a good researcher, publishing prolifically, not only papers and monographs, but a series of excellent books, notably *American Seashells*. His *Kingdom of the Seashell* has a nice natural history slant to it, including some of my photos."

Perhaps Abbott's ultimate achievement was the founding of The Bailey-Matthews National Shell Museum in Sanibel, FL. The project, which saw planning begin in the 1980s, became a legacy of love for Abbott. One year after the 1992 ground-breaking, Abbott spoke before the Jersey Cape Shell Club at the Wetlands Institute in Stone Harbor, NJ. His topic, "The Wonderful World of Land Snails," was promoted in the club's October 1993 newsletter. Editor J.B. Sessoms described Abbott as a "molluscan Johnny Appleseed."

"Wherever [Abbott] goes, shell clubs seem to spring up," Sessoms wrote. "He is listed as cofounder or honorary life member of at least 19 of them. We could go on and on, but the simple fact is, if you're a shell collector, this is a man you should meet."

For this talk, Abbott stayed at the home of Sue Hobbs and Phil Dietz who hosted a dinner party in his honor. In attendance were Gary Rosenberg, J.B. and Roberta Sessoms, and other local members of the shell community. "Tucker arrived mid-afternoon and when I suggested he might like a snooze before dinner, he readily agreed," Sue recalled. "He was a charming guest and at the time was looking for some genuine wampum beads for The Bailey Matthews Museum. Tucker was launching his new book, *Compendium of Landshells*, and had copies for sale at the meeting."

Sadly, Abbott passed away in 1995 just two weeks before The Bailey-Matthews Museum opened. He is buried at Arlington National Cemetery.

Today, the Philadelphia Shell Club remembers this icon of malacology with the R. Tucker Abbott Award at each year's Philadelphia Shell Show. Given for the best exhibit by a member of the Philadelphia Shell Club, the award honors Abbott's legacy as an inspiration to generations of amateur collectors and professional malacologists.

Additional reading on R. Tucker Abbott:

Peck, Robert McCracken, & Patricia Tyson Stroud. 2012. *A Glorious Enterprise: The Academy of Natural Sciences of Philadelphia and the Making of American Science, Philadelphia.* University of Pennsylvania Press, 400.

R. Tucker Abbott. Wikipedia: The Free Encyclopedia, http://en.wikipedia.org/wiki/R._Tucker_Abbott

Scheu, Lynn. 1995. *Robert Tucker Abbott: September 28, 1919 - November 3, 1995*. The Conchologists of America website, http://www.conchologistsofamerica.org/articles/y1995/9512_scheu.asp

Sessoms, J.B. (ed.) 1993. *Newsletter of the Jersey Cape Shell Club*, October 1993, Stone Harbor, NJ.

Report on two *Anguispira alternata* (Say, 1817), flamed tigersnail, after two years in captivity.

L. Schroeder (photos by author)

Left: *Anguispira alternata* (Say, 1817), the flamed tigersnail as found in the wild. The angular or carinate shape of the shell periphery is quite evident.

Right: The same specimen after light cleaning. The bubbles are produced whenever the snail is disturbed.

Prologue:

You will notice in the first paragraph that this article was written almost three years ago. The manuscript was misplaced and long forgotten until a recent conversation with colleagues John Slapcinsky, Invertebrate Collections Manager, Florida Museum of Natural History, Gainesville, FL; Dr. Harry Lee, Jacksonville, FL; and Alan Getteleman, Merritt Is., FL; while examining wet and dry lots of *Anguispira* spp. in the museum's collection during the recent gathering of Florida Unified Malacologists (FUM). During the intervening years, work on other projects related to the Bernheim Arboretum and Research Forest Landsnail Inventory (BARFLI), has greatly advanced my understanding of land snails and their ecology.

Snails in Captivity:

In October of 2009, during a late season field trip to a productive snailing spot, several species of land snails were collected for the purpose of obtaining live animal shots. Bad weather befell the following week, making optimal conditions for digital photography impossible. After several days it became apparent that some sort of food offering should be attempted. Broccoli and carrots were available and thus began the keeping of land snails in captivity for observation. That was October 25, 2009, and it is now April 25, 2012. The last two remaining snails to survive in captivity are two *Anguispira alternata* (Say, 1817), (the flamed tigersnail – Turgeon, Quinn, et al., 1998).

With no background in snail husbandry to fall back upon, an initial search on Google yielded little more than links to rearing freshwater snails for use in ponds and the aquaria trade, and raising giant African land snails. Fresh carrots and broccoli seemed to satisfy until proper photographs could be obtained. A quick scan through the table of contents of *The Mollusks: A Guide To Their Study, Collection, and Preservation*, yielded better results. A chapter on 'Rearing Terrestrial Gastropods' looked promising. Tracking down cited articles online proved challenging, but Table 23.1. 'Foods for Rearing Some North American Land Snails,' in addition to a source of calcium seemed to answer my needs. Specific recommendations for *Anguispira* spp. lists the following: lettuce, oatmeal, dried maple leaves, fish food, carrots, (Elwell and Ulmer 1971, Pearce 1997, Orstan, unpublished), but the *Anguispira* were either opportunistic feeders, or non-discriminating as they seemed well sated on what was readily available. Dried leaves were added, which initiative soon became problematic. Setting the book aside after looking over the table, I never completed the chapter. This was a huge mistake on my part as it would have better prepared me for the second hurdle, which came sooner, rather than later.

In addition to the *Anquispira* [Eupulmonata: Stylommatophora: Discidae], species representing two other families were collected. A *Mesomphix vulgatus* H.B.

Images of both *Anguispira* showing the variable colors of the foot and mantle. Both shells also have slight hues matching the animals. The snails were not collected around the same escarpment. Perhaps different limestone or available food source might account for the striking differences.

Baker 1933, (common button – Turgeon, Quinn, et al., 1998) [Eupulmonata: Stylommatophora: Zonitidae] lasted the shortest time in captivity. Records indicate the *Mesomphix* made it just days short of fourteen months. An *Inflectarius inflectus* (Say, 1821), (shagreen – Turgeon, Quinn, et al., 1998) survived eighteen months and a *Mesodon thyroidus* (Say, 1817), (white-lip globe – Turgeon, Quinn, et al., 1998) both [Eupulmonata: Stylommatophora: Polygyridae] died March 31, 2012, after 29 months, leaving the two *Anguispira*. The longevity of land snails living in captivity far exceeded my expectations.

At first the two snails were easily identifiable by the different colored foot and mantles. One snail was yellow and the second a dark rust. As time passed, both snails morphed to the dark rust color, but first let's go back to when all the captives were introduced into the vivarium...

During the first three or four days, items were introduced into the multi-species terrarium. The *Anguispira* staked out their territory around a limestone rock. Broken egg shells were left to provide a second source of calcium. Sticks and leaves were also added to mimic their natural environment. The road to Hell is paved with good intentions, and an oversight on my part almost led to the demise of the vivarium. Every individual inside the terrarium soon became horribly infested with spider mites. The sheer number of mites crawling on the animals looked grotesque. The predicament led to, "How does one eradicate spider mites living on land snails in captivity?" Not a topic easily Googled either. If only I had read a little further in Chapter 23 of "*The Mollusks*" I might have been better informed, but then again, if I had read the pertinent paragraphs I may have become discouraged and not attempted an eradication protocol on my own.

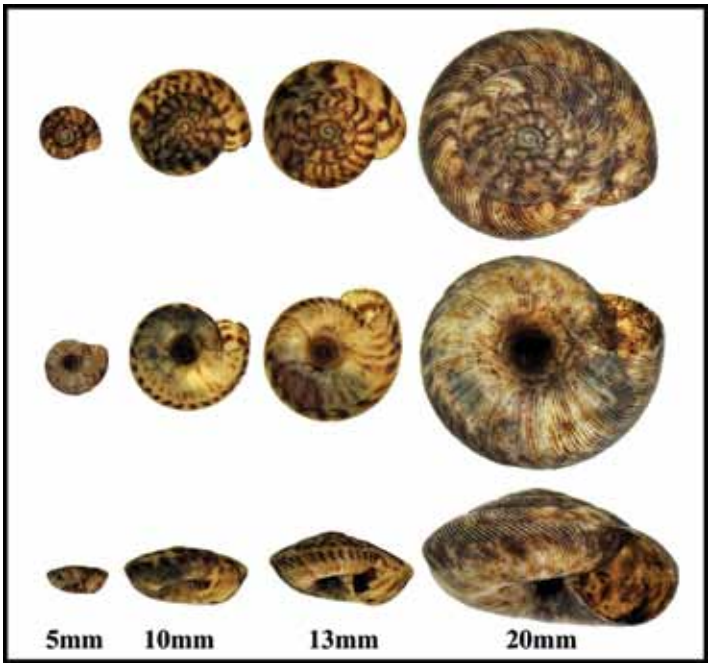
The mites were observed retreating inside the shells when disturbed. The only plan of action that seemed non-lethal to both humans and mollusks was to rinse the animals under the faucet while the mites were actively crawling outside the shells. By holding the snails completely still and using a deft hand maneuver, a fair number of mites could be rinsed off in a swift lateral move while rinsing under a running faucet. This procedure was repeated five times a day for approximately one week until no more mites were observed. Only one juvenile succumbed to the infestation, a juvenile *Mesodon* sp. No further native plant material collected in the wild was placed inside the terrarium, although it would probably work if the introduced material was dried in an oven beforehand.

Back to the last two survivors... Measurements were first obtained on November 6, 2009. "Rusty-foot" (Specimen A) was 20.72mm and "Yellow-foot" (Specimen B) was 19.67mm. After a six month interval a second round of measurements were taken which showed significant growth by both individuals. Specimen A had reached 23.65mm, an increase of about 3mm. Specimen B measured 22.30mm, which was also an increase of 3mm. Materials used for measuring were electronic digital calipers and as shown in Burch (1962) in Fig. 13 (d).

Carrots and broccoli were mainstays of their diet. Lettuce and mushrooms were popular, but within days the mushrooms would develop "fungus" and broccoli became quite malodorous after a few days, so lettuce and carrots became the bulk of their diet.

To mark the one year anniversary, a third set of measurements were recorded on December 20, 2010. Specimen A registered 23.54mm, which is slightly less than the previous reading. Specimen B measured in at 22.96mm, only a slight increase. According to Dourson [2010], the diameter (maxD) of *Anguispira alternata* ranges from 15-

Eggs discovered on lunch break, with a magnified view of two of the larger eggs – less than 2mm.



The shells used to construct the growth series were all collected on the same date and same location as the live specimens. Immature shells have an almost flat dorsum giving the snail an acutely sharp or carinate periphery. As the snail matures the dorsum becomes more inflated and the angled periphery becomes less evident. The umbilicus is funnel shaped.

30mm, which is the same as listed in Burch (1962). Walker (1928) does not mention size in his discussion of *Anquispira*. In Pilsbry (1948) three specimens are documented from New York and Ontario, which is not representative of the middle states, with sizes of 18 to 23.9mm. Due to the likelihood my snails are lacking the proper nutrition they would find in the wild and considering the sizes previously listed, I felt the snails had probably reached maturity. For that reason no measurements were taken in 2011.

On December 23, 2010, during a lunch-time blitz to clean the terrarium before the Christmas holiday, I found ova inside the terrarium next to Specimen A. The ova were removed from the adult terrarium and segregated into a separate nursery for hatching. In all, seven eggs were counted and measured. Somewhat variable in size, the smallest to largest was 1.41mm to 1.99mm. My notes indicate the smallest ovum did not look viable, but lack any notation as to why. Between Dec. 23, 2010, and January 1, 2011, one ovum disappeared. Another was looking precariously on the edge of breaking apart. A short period later the ova began morphing into a liquid state. Using microscopic enhancement at 10X, no developing embryo was observed *in ovo.*

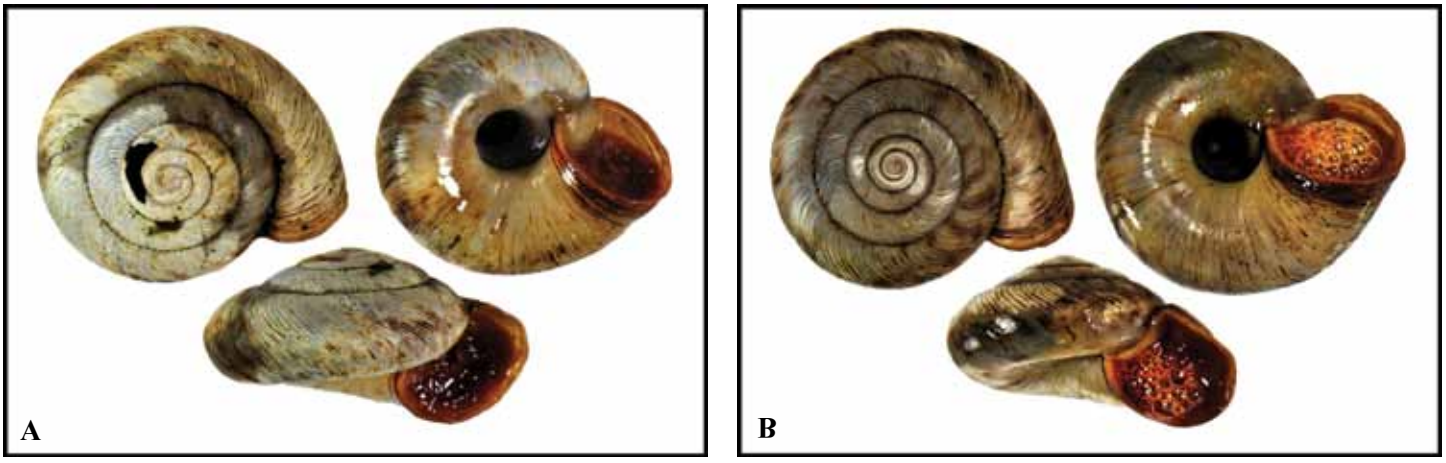
On April 5, 2012, shell damage appeared on one of the *Anguispira*. After several years the snails are looking old and worn with age. Not knowing how long snails survive in captivity, or how much longer the *Anguispira alternata* would remain living, I took a final set of measurements on April 6, 2012, after a photo session. Specimen A came in at an impressive 27mm and Specimen B was a mere 24mm. Sixteen months later the snails had indeed grown, not quite reaching the maxD of 30mm.

A few observations of note. *Anguispira* are sedentary during the day and nocturnal as far as their activity. I know they move around, but rarely have I seen this during the day. Not a true calciphile species according to Hubricht, 1985 (a species with a narrow habitat tolerance), the two exhibited a preference for limestone. Neither snail ventured any distance from the rock inside the terrarium. A species contrasting with the *Anguispira* would be *Mesodon thyroidus,* which was highly active and would escape the terrarium nightly if the lid was not properly secured. Both snails had different colored mantles, but over time the lighter-hued snail eventually turned darker. I don't know what to make of the bubbles or staining mucus. Are the bubbles a byproduct secreted as the snail suddenly retracts inside its shell? Is the mucus a way, perhaps, of making the snail unpalatable to predators. No radular markings were observed on the limestone rock. How do snails extract calcium from limestone unless the mineral naturally leaches out.

	11/06/09	05/15/10	12/20/10	04/06/12
Specimen A	**20.72**	**23.65**	**23.54**	**27.47**
Specimen B	**19.67**	**22.30**	**22.96**	**24.19**

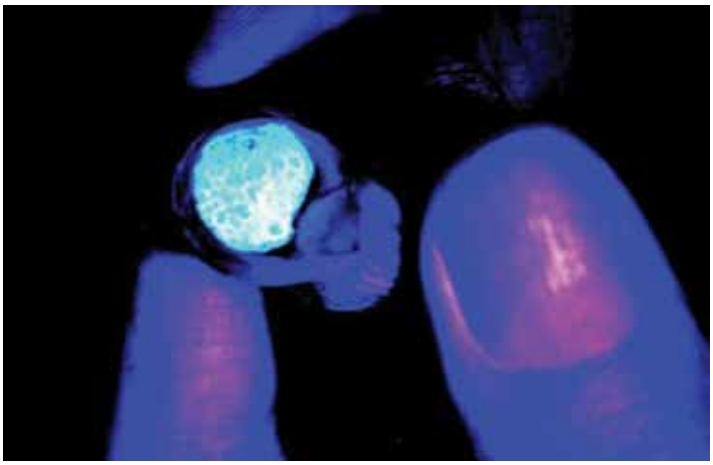
Table 1. Measurements recorded at intervals. Sizes are in mm.

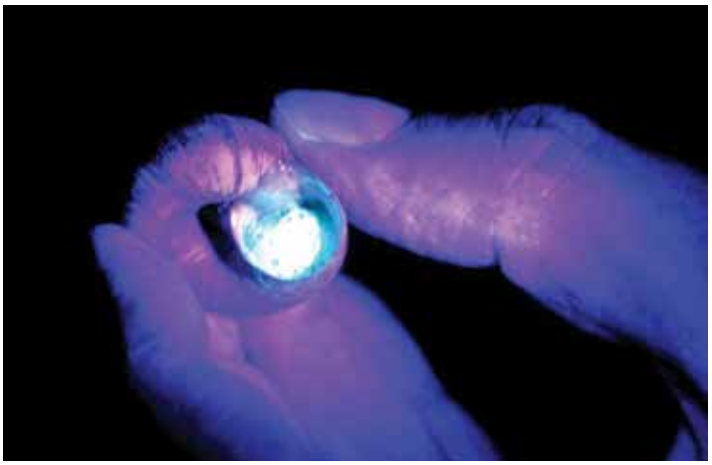
The photos above were taken in May of 2010 . The *Anguispira* on the right (Specimen B) has a slight yellowish hue as opposed to the more reddish snail on the left (Specimen A). Both snails are blowing bubbles. The periostracum is intact but showing signs of wear. The shoulder exhibits a slight carinate periphery. The striae are well defined and somewhat coarse. The colored blotches are hard to distinguish as they bleed somewhat into each other forming two bands around the exterior.



The images above demonstrate the current (April 25, 2012) condition of these live geriatric land snails. The shell on the left (Specimen A) was fine on April 1, 2012, but now shows evidence of trauma or possible internal resorption. Since both snails very rarely stray from their rock, this poses a mystery as to how the damage occurred. Both snails will produce bubbles when disturbed as exhibited by the specimen on the right. The substance secreted by the snails will stain, though it does wash off fingers easily. Neither aperture is uniform or regular in shape.

Three problems arose during the past couple of years. What to feed the snails to keep them alive and how to deal with the spider mites were solved by searching the Internet, scouring bibliographies, and by using practical materials at hand. William Frank, Jacksonville, FL, maintains a "Kentucky Land Snail Gallery" (http://www.jaxshells.org/kentmain.htm) at his (www.jaxshells.org) website. While researching material for the article, I came across a third issue. A taxonomic trend concerning the discrepancy of the year named with the taxon author. Say (1816) is used in most references versus Say (1817), the latter infrequently cited but adopted by jaxshells.org and Dr. Harry Lee. I was able to





***Anguispira kochi* (L. Pfeiffer, 1846), (banded tigersnail), shown under a ultraviolet (UV) light, the snail's defensive mucus is exhibiting fluorescence.**

***Anguispira alternata* in a similar experiment. It was easy to get the snail to emit defensive bubbles, but it took many tries and several weeks to elicit the even less than moderate response on the right.**

track down Say's original description in Binney (1858). This excerpt from Binney left me unsatisfied: "Note. – I have personally consulted all the works referred to above, with the exception of the first American edition of Nicholson's Encyclopedia. This I have not been able to find. I give its date as 1816, on the authority of Férussac, Mag. de Zool. 1835, cl. v. 59, 60, p.11. I believe its species to be the same as in the second edition. The dates in the text and index are invariably of the publication of the various papers, without reference to the time they were read before any society. In the journal of the Academy, I have been forced to adopt the date of the general title page of each volume, unless with the signature, or as the commencement of the various parts, some other date is given."

Reaching a high level of frustration an SOS was sent out to Dr. Lee to help clear the lacuna of the taxing problem of the dates. Here's the advice of the good doctor: "on the matter of 'Author/Year,' I urge you to follow the tenet of Thomas Jefferson: 'In matters of style, swim with the current; in matters of principle, stand like a rock.' I suspect you're aware of this: I consider taxonomic nomenclature a matter of principle.... All I can do with the Say date(s) is the following (and strongly urge you not to follow the vast herd of sheep to slaughter)." After reading the extensive bibliography cited by Dr. Lee, particularly Binney (1864: 277-278) and Johnson (1975), concerning this issue, this amateur conchologist is led to adopt *Anguispira alternata* (Say, 1817) as the correct year named, which work includes *Mesodon thyroidus* (Say, 1817), also related to the BARFLI project.

Epilogue:

In October of 2014, David Kirsh, Durham, NC, collected a live *Anguispira kochi* (L. Pfeiffer, 1846), (banded tigersnail), at Bernheim Arboretum and Research Forest (BARF) in association with a "Land Snail BioBlitz." Shown here under a UV light, the snail's defensive mucus is exhibiting fluorescence

Would another member of the Discidae family exhibit the same? With the aid of a UV light, an experiment was conducted with a live *Anguispira alternata* collected at

BARF to test the theory. Early results were inconclusive. The defensive mucus turned an ugly gangrenous-putrid shade of green, but not the glowing-neon version. The snail would also arbitrarily secrete regular (non-biofluorescent) mucus or defensive (biofluorescent) mucus. After several weeks and numerous attempts, the following images were obtained to document the phenomenon of biofluorescence in *Anguispira alternata*.

Acknowledgments:

I am deeply indebted to Dr. Harry Lee, Jacksonville FL, for assistance with taxonomic issues. His enthusiastic support of the "BARFLI" project has greatly advanced the knowledge of the biodiversity of the land snails relating to the Knobs Region of Kentucky. To my husband Jeff Schroeder for technical assistance, photography, and unwavering support of my research. William Frank, Jacksonville, FL, Dr. Harry Lee, and Jeff Schroeder for the *Anguispira alternata* growth series composite.

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It is not too early to start making plans for next year's COA convention in Chicago, 2016. Field trips are planned for 25-26 July, the actual convention is 27-31 July, and the bourse is 30-31 July. The hotel is the Crown Plaza with a free shuttle from the airport. Regular rooms are $148 (suites $248) with a reservation made before 6 July 2016. Tentative field trips include a visit to the Shedd Aquarium, a background tour of the Field Museum of Natural History, a Chicago River and Lake Michigan boat tour, and an evening dinner-cruise on Lake Michigan. See you there.

The best exotic South Seas snorkeling adventure

Amelia Ann Dick (photos by author except as noted)

Bora Bora in French Polynesia. A sparkling green gem. Photo anon.

Although my title may sound similar to the name of a popular Hollywood movie, this is the real thing! In December 2014, a long-time dream of mine came true. My husband and I took the best exotic French Polynesian adventure, which surpassed even my own Tahitian dreams! French Polynesia is an area that comprises 118 geographically dispersed islands and atolls over an expanse of l,609 square miles located in the South Pacific Ocean. We visited three of the island groups out of the five that compose this part of the world: the Society Islands, the Marquesas Islands, and the Tuamotu Archipelago – which encompass a fascinating and unique array of diverse geology. Also noteworthy to mention is that December is a summer month there. Most of the days were punctuated with warm intermittent brief showers and to our delight most of the plants were in full bloom. I do believe the most beautiful flower in French Polynesia is the Tahitian Tiaré, a small white gardenia with a remarkably alluring, unforgettable fragrance.

Our magical vacation began on December 6, 2014, with a stay at the Tahiti Intercontinental. The island of Tahiti is the largest in the Society Islands and its tallest mountain, Mt. Orohena, rises to a height of 7,352 feet above sea level, making it the highest peak in all of French Polynesia. After touring the bustling town of Papeete, we embarked on the all-

The Tahitian Tiaré (*Gardenia taitensis*) is a tropical shrub that can grow to more than four meters tall. The fragrant white flowers have from five to nine petals in a pinwheel shape and are are used to make monoi oil, an ingredient in perfume and skin care products. This is the national flower of French Polynesia. Photo anon.

Exploring the beach and enjoying mild weather with overcast skies. That's me on the right - enjoying it all.

inclusive, seven hundred guest capacity, Regent Seven Seas Mariner on December 7, 2014. We continued our magical mystery tour with visits to Mooréa, Raiatea, and Bora Bora. These three islands mystify with their worn, tall, craggy peaks, their myriad palette of exotic greens seen in their tropical rainforests, and their mind-blowing kaleidoscope of blue hues in their famous lagoons.

THE SOCIETY ISLANDS

MOORÉA - December 8, 2014

We arrive at Mooréa on an overcast morning and cruise alongside the island witnessing her astonishing beauty firsthand. Mooréa is a volcanic island by origin and is situated 11 miles northwest of Tahiti. Her tall peaks and spires include Mt. Tahiiea, the highest at 3,959 feet above sea level, and the famous Mt. Roa, or "Bali Hai," from the movie South Pacific, which tops out at 2,499 feet. The unique geology of this island forms two spectacular bays. Opunohu Bay is located on the west side of the island and Cook's Bay on the east. The ship anchored in Opunohu Bay just off the village of Papetoai. Our tour destination today is a lagoon location northwest of Opunohu Bay and included some up close and personal introductions to the local stingrays, which were fed little fish by the tour guides. I love touching them. Black-tipped sharks also show up trying to take advantage of a free fish snack. They do not like being touched and with amazing speed dart off, only to quickly return. What Fun!

Afterwards we concentrate on snorkeling in the lagoon and find some very pretty shells. We gather *Gibberulus gibbosus* (Roding, 1798); *Terebra subulata* (Linnaeus, 1767), *Oxymeria maculata* (Linnaeus, 1758), *Conus pulicarius* Hwass in Bruguière, 1792, *Moneteria obvelata* (Lamarck, 1810), and *Monetaria moneta* (Linnaeus, 1758). The biggest thrill for me, however, was when I looked down and spied that distinctive conical shape, took a deep breath and dived, and then rose to the surface with two live *Conus imperialis* Linnaeus, 1758. The largest is approximately 54mm and the slightly smaller one is around 53mm. All of the shells were taken in less than six feet of water, on sand and silt bottom with coral rubble. Also, of environmental concern and noteworthy to mention is that most tour operators did not allow diving fins while snorkeling in any of the island lagoons. This step is taken as a deterrent to minimize coral destruction. We liked that.

RAIATEA – December 9, 2014

We arrive under cloudy skies at Raiatea which is the second largest island in the Society Islands. What I remember most is the lush and green rainforests and those breathtaking eroded mountain spires. The *RSS Mariner* docked at Uturoa on the east coast, which was the only port-of-call on our itinerary with a pier. We selected a tour that visited the Faaroa River with snorkeling on a motu. The Faaroa River is the only navigable river on the island and is considered the original source of migration by the Maori people. When exploring the area, Captain Cook noted that logs were floated down the river to build the numerous ships under construction. The Faaroa River flows into Faaroa Bay with its massive fjord-like indentation carved deep into the shoreline.

Still traveling east, the bay enters the lagoon and we arrive at our snorkeling destination – the Iriru Motu. The shells we found here were in less than six feet of water, on sand and silt bottom littered with coral rubble. Here we found the same species as we did the day before on Mooréa, with the addition of dead *Fragum fragum* (Linnaeus, 1758) and *Tridacna maxima* (Röding, 1798). Saving the best news for last, the biggest thrill for me today is the discovery of three live *Conus quercinus* [Lightfoot], 1786. Two were side-by-side on the bottom and the third one was less than three feet from the pair. What a bonanza! They measure approximately 49mm, 50mm, and 57mm. Cleaned and saved with operculum. We were on a real "shell" high.

BORA BORA – December 10 and 11, 2014

It was slightly overcast this morning as we arrive in Bora Bora. The ship dropped anchor in the bay off the village of Vaitape. This is the one I have been waiting for and dreaming about for so long. My Mom, who has travelled

quite extensively, told me it was "the most beautiful island she had ever seen" – AND IT IS! Bora Bora was formed by a volcanic eruption some four million years ago and 'discovered' by Captain Cook in 1769. It is a ring-shaped island encircled by a glinting turquoise lagoon with soaring rainforest covered basaltic peaks. At a height of 2,385 feet, Mt. Otemanu is the tallest mountain on Bora Bora and commandeers the island skyline. We will have two days here. Today, December 10, 2014, we take another tour similar to the one on Mooréa which includes close encounters with stingrays and black-tipped sharks, but most importantly, we will enjoy our time snorkeling in the infamous lagoon. As a note, we liked this tour so much we repeated it on December 11, 2014. Compared to other tours being offered, it gave us the most time in the lagoon, which is where we wanted to be. The lagoon bottom was very similar to Mooréa and Raiatea.

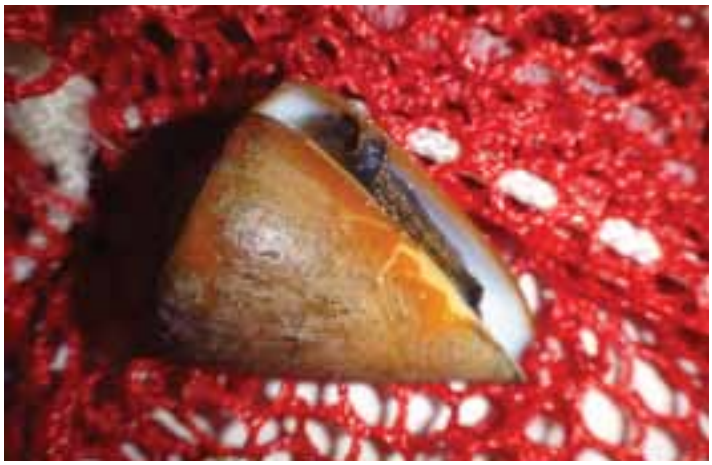
Once again, between the two of us, we got some very nice shell booty. We took three live *Mitra mitra* (Linnaeus, 1758); two live *Conus leopardus* (Röding, 1798), a live *Conus eburneus* Hwass in Bruguière, 1792, and a live *Tectus niloticus*, (Linnaeus, 1767). We made fast friends with one of the tour guides and discreetly expressed our interest in finding shells. At the end of the tour he secretly pulled out of his pocket a live *Cypraea tigris* Linnaeus, 1758 and a live *Lyncina vitellus* (Linnaeus, 1758). Both shells were absolutely beautiful! We were giddy with delight. George tipped him for the shells and we were wondering what tomorrow would bring.

December 11, 2014, a sunny morning greeted us. Once again, in the lagoon, we enjoyed all the colorful species of tropical fish swimming around us and the varied coral species, which comprised large coral gardens. I absolutely loved seeing the *Tridacna maxima* living inside coral heads with those glamorous teal, purple, and brown mantles. We found some pretty shells, including another Episcopal miter, but nothing could compare to what our guide found and pulled, once again, out of his pocket at the end of the tour – another live tiger cowrie. We were surprised to see another tour guide had brought up a large dead commercial top shell for us. Obviously there had been some quiet conversation between them. Again, we happily tipped them both for their finds and we were off. What a lovely day in Paradise! This evening the *RSS Mariner* sets sail for Nuku Hiva, Marquesas, and tomorrow, December 12, 2014, is a day at sea.

THE MARQUESAS

NUKU HIVA – December 13, 2014

Grand, brooding, powerful and charismatic: that pretty much sums up the largest island in the Marquesas – Nuku Hiva. The ocean thrashes towering sea cliffs, sharp basalt pinnacles project from emerald forests and scalloped bays are blanketed with desert arcs of white or black sand. The *RSS Mariner* arrives at 1:00 p.m. and drops anchor off Taiohae, the island capital, boasting a great black sand beach

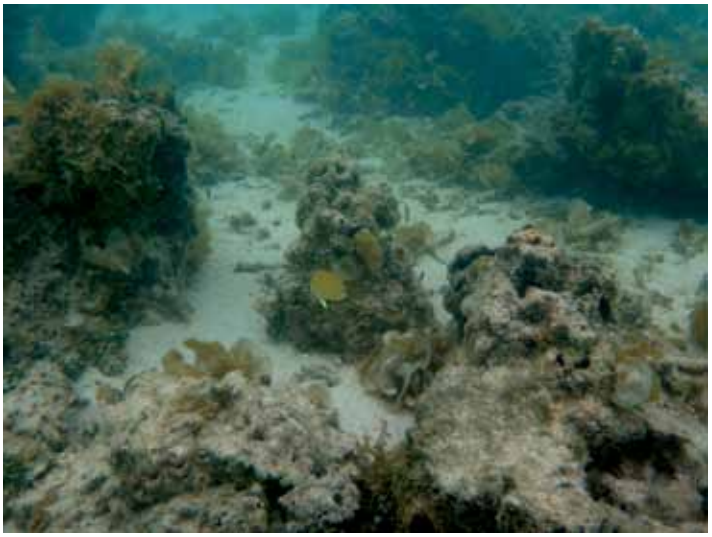


***Conus quercinus* fresh from the sea. It was a real joy to find this understated beauty crawling on the bottom in shallow water.**

on a horse-shoe shaped bay. Arriving onshore and departing the tender pier, we are greeted by traditionally dressed islanders who cheerfully point us in the direction of the souvenir market. On our walk over, I was mystified with and captivated by, the tiki-tiki (sacred statues) and tohua (open air gathering places) created by the original inhabitants. The market had many tables with a wide variety of hand-made jewelry, hand-carved tiki-tiki, and bottles filled with tiaré oil. I was also delighted to see many shell species being offered for sale at the whopping price of 4 for one U.S. dollar! A 25 cent shell is hard to find these days. I really made out! *Mauritia maculifera martybealsi* Lorenz, 2002; *Mauritia mauritiana* (Linnaeus, 1758) (both juvenile and adult shells); *Erosaria bellatrix* Lorenz, 2009; *Conus marchionatus* Hinds, 1843; *Cypraeacassis rufa* (Linnaeus, 1758); *Harpa major ivojardai* Cossignani, 2013; *Harpa kolaceki* Cossignani, 2011; *Lambis pilsbryi* Abbott, 1961; and *Mancinella armigera* Link, 1807. This last shell was a gift, I think for being a good customer. Can you believe after this it was only going to get better? Well it did.

I had an afternoon appointment with Xavier Curvat, the owner of the dive shop Polynices de Plongee in Taoihae. I was going to take a look at some specimen shells he had collected on his recent dives. He had some outstanding beauties to choose from, which happily are now in my collection. The Marquesas Islands provide a great shell collecting opportunity as many species are endemic to these islands.

The next day, December 14, 2014, we take an island tour of the Taipivai Valley. We leave Taoihae and travel up a winding mountain road to a scenic overlook, providing everyone picturesque camera shots of the town and bay. Our tour continues onward and we come to the Taipivai Valley where Herman Melville of Moby Dick fame hid after deserting his ship. Next, the caravan arrives at the small



A lone butterfly fish swimming amongst the coral.

A purple *Nerita plicata* was a surprise find. This very common nerite is usually white or pinkish white, with rare individuals showing some spiral charcoal bands or even an occasional red band. A shell with a soft pastel purple color is rare indeed.

village of Hooumi nestled on Controller Bay. Here we have a short stopover to stretch our legs and another opportunity to spend more $ at the local wares market. I am so glad we did, as I found a very dark *Lambis pilsbryi* for $19.00. After my purchase, I wandered around and discovered a tiny white sand beach. I found a very nice *Aplustrum amplustre* (Linnaeus, 1758), approximately 18mm. The color bands are a rich deep chocolate. Here our caravan turned around and went back to town. We had a short good-bye visit with Xavier and his wife and returned to the ship. December 15, 2014, is a day at sea enroute to Fakarava, the Tuamotu Archipelago.

THE TUAMOTU ARCHIPELAGO

FAKARAVA – December 16, 2014

French Polynesia takes a geologic "turn on her head" at the Tuamotu Archipelago. Her islands are coral atolls and Fakarava, being one of the largest, is essentially one giant beach. This narrow coral sliver shelters an expansive lagoon on one side from the mighty South Pacific Ocean on the other. A stunning feature here is a pink sand beach made from powdered coral rock rather than crushed seashells. A bright sunny day greets us as we begin another day in paradise. There were no tours offered at this location and so we are on our own. We arrive at the tender pier in the village of Rotoava where we are greeted by warm and friendly islanders. We make a bee-line toward the many tables draped with colorful batik fabrics and filled with items for sale. I was overwhelmed to see the most beautiful hand-made shell jewelry I have ever seen in my life. Remarkable quality, attention to every detail and unique design concepts puts this tropical jewelry in an exceptional category all by itself, with only the best shells being used. A feast for the eyes – and your neck. We saw some very nice *Lentigo lentiginosus* (Linnaeus, 1758), also known as the silver conch, priced at $3.00 U.S. dollars. Each one was flaunting a brilliant orange and cream aperture. Another very good buy!

We walked a little way down a long sandy road (the main highway) to find a good lagoon snorkeling spot where we saw species we hadn't encountered before on the reinforced rock slab shoreline. Here we plucked *Drupa morum* Röding, 1798; *Drupa ricinus* (Linnaeus, 1758); *Morula uva* (Röding, 1798); *Menathais tuberosa* Röding, 1798; *Nerita plicata* Linnaeus, 1758; and *Nerita polita* Linnaeus, 1758. The *Nerita plicata* was quite different from the normal white and pink variety. We leisurely delighted in taking many shell, fish, and coral pictures.

Knowing our time was growing short, we turned our sites to the ocean to see what we might find. This lonely small strip of white sand was so blanketed with shells you could barely find space to step. Shell Nirvana! We made the best of our 30 minute time frame to beach comb this idyllic place. *Cerithium columna* G.B. Sowerby I, 1834; *Nassarius graniferus* (Kiener, 1834); *Mammilla sebae* (Récluz, 1844); an assortment of unidentified colorfully patterned juvenile cones, limpets, ceriths, and a few more I still have no clue as to a correct identification. We hastily walk back to the tender pier all the while wishing Fakarava had been an overnight port-of-call.

RANGIROA – December 17, 2014

A perfect summer Polynesian day greets us with the sun casting an intense bright white light on everyone and everything. The surface of the lagoon seemed to be sprinkled with sparkling diamonds. Rangiroa is the largest coral island in the Tuamotu Archipelago and comprises 415 motus, islets and sandbars. The *RSS Mariner* drops anchor in the bay and we visit the village of Avatoru. One cannot travel this far and not seek out one of the most highly prized and desirable objects available only from the South Seas. Today is my last and only chance to check out this highly coveted product of nature – the black Tahitian pearl. From Avatoru, we take a

Closing shot – wouldn't you rather be there right now?

tour to the pearl farm, Gauguin Pearl Farm, to learn about the cultivation process of these "black beauties." The black-lipped oyster, *Pinctada margaritifera* (Linnaeus, 1758), is the creator of these intriguing gems and the pearls come in a wide range of natural colors, including: silvery gray, peacock, and pistachio green. We were fascinated to learn that the nucleus inserted into the appendix of the mollusk comes from a mussel species found in the Mississippi River. Also, it takes nine years for the animal to produce the largest and most expensive pearls. Complete with a jewelry shop on premises, one can choose their perfect pearl or pearls, which will provide unforgettable memories of the day. This evening, the *RSS Mariner* returns to Papeete, Tahiti and we disembark the morning of December 18, 2014.

In conclusion, our French Polynesian magical mystery tour turned out to be the "trip of a lifetime," in every way possible. As I write these words, all I can do is smile. It's going to be very hard to top this one.

Amelia Ann Dick
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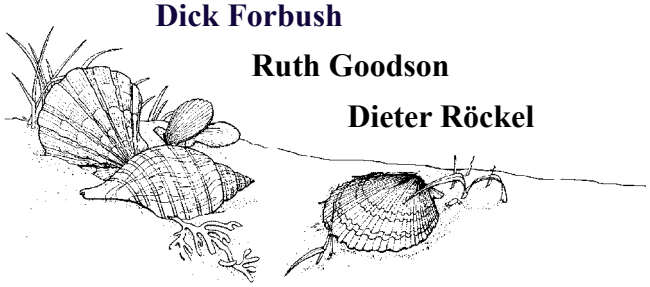
In memoriam:

Jane Colburn

Dick Forbush

Ruth Goodson

Dieter Röckel



Remembering Jane from *Suncoast Shorelines* by Carolyn Petrikin

Jane Colburn, a native of St. Petersburg, and her husband Ed, who passed away ten years ago, were both among the founding members of Suncoast Conchologists. Jane's love for collecting shells began in the late 60's while they were living in Kwajalein in the Marshall Islands. There she would spend many hours walking the reefs in search of local specimens. Her family remembers numerous pots of shells cooking on the stove and others stored in the freezer to be cleaned later when there was more time. While at Kwaj, Jane made good friends with a serious collector who insisted she learn to dive in order to find different species, especially cowries. And if she wanted to collect a "Golden," she would need to go at night. Daytime diving was one thing, but becoming used to the dark was something else! Jane made one attempt which proved to be enough - there was success and a beautiful *Cypraea aurantium* was brought home.

After six years overseas, Jane, Ed, and family returned to Florida, first locating in Oldsmar, and then the local collecting began! About ten years later, the Colburns moved to Tarpon Springs. Besides collecting shells, Jane also collected snails – figurines of all colors, shapes, and sizes. Her collection must have been in the hundreds.

Shortly after Ed retired, he began business as "The Sign Man." Of course Jane was right there helping create the name badges and pins. For the first Suncoast Conchologists Shellers' Jamboree, they suggested making magnets with the club logo as favors, and this idea was readily accepted by the committee. Their smaller snail was most popular with everyone who entered the Snail Parade competition. She will be greatly missed.

Richard W. Forbush, 91, of Venice, FL, passed away June 3, 2015. Richard was born April 17, 1924, in Cleveland, OH, to Minnie and Henry Forbush. He had a full life that included family, friends, church, and numerous volunteer services throughout his life. He served in the armed service, spent time in local government, and helped with youth organizations. He was an avid seashell collector traveling with his wife all over the globe to pursue his passion and served as President of COA in the 1980s with Anne Joffe as his Vice President. Both he and Anne received the Neptunea Award in 2005. He donated his shell collection to the Florida Museum of Natural History, Gainsville, FL. Survivors include his beloved wife of 69 years, Jane A. Forbush; children: Bruce & Heide Forbush, of Elmhurst, IL, Steven & Trudy Forbush of Conway, AR, and Carl & Jennifer Forbush, of Dublin, OH, as well as his 4 grandchildren, Gary, Scott, Ryan, and Aaron Forbush.

We must sadly inform of the recent passing away of **Dr. Dieter Röckel**, a well-known German malacologist and cone specialist. He authored a very large number of papers, in different publications and also two important books: *Cone Shells from Cape Verde Islands* – a difficult puzzle (with Emilio Rolán and António Monteiro) (1980, private publication, 156 pp., 8 color plates) and *Manual of the Living Conidae. Vol. 1: Indo-Pacific Region* (with Werner Korn and Alan J. Kohn) (1995, Verlag C. Hemmen, Germany, 517 pp., 84 color plates). Dieter described several cone species and his name was honored in *Africonus roeckeli* (Rolán, 1980) and *Bathyconus dieteri* (Moolenbeek, Zandbergen & Bouchet, 2008). From *The Cone Collector*, #27, Aug 2015.

18th Gulf Coast Shell Show

Sponsored by the Gulf Coast Shell Club at the Panama City Beach Senior Center, Panama City Beach, Florida, on 13-14 June 2015 (Photos are by Walt Baldwin)

Jim & Linda Brunner with their COA Award for their display, "Fossils of the Chipola Formation." The display had 9 cases covering over 19 feet with a wonderful presentation of 18 million-year-old molluscan fossils. The scientific judges at this year's event were Dr. Harry Lee and Alan Gettleman.

Scientific Division

Conchologists of America Award: "Fossils of the Chipola Formation," Jim & Linda Brunner

DuPont Trophy: "Muricinae: Beautiful Predators," Linda & Jim Brunner

Helen Norton Trophy: "Northwest Florida Shells," Al Johnson

Frozen Dip Net Award: "Self-collected Beach Shells of Northwest Florida and Ireland," Elizabeth Gibb

Most Educational: "Collecting Freshwater Mussels in China," Leslie Crnkovic

Self-collected Shell-of-the-Show: *Panopea bitruncata* (Conrad, 1872) (the Atlantic geoduck), Al Johnson

Shell-of-the-Show: *Tonna chinensis* (Dillwyn, 1817), Gary Gordon

Founders Award: "Musing on Shell Club History through Shell Club Pins," Leslie Crnkovic

Jim Brunner accepts the COA Award for the display, "Fossils of the Chipola Formation" from scientific judges Dr. Harry Lee (R) and Alan Gettleman (L).

Linda Brunner accepts the DuPont Trophy for "Muricinae: Beautiful Predators," from scientific judges Dr. Harry Lee (R) and Alan Gettleman (L).

Judges Special Award: "Monsters of the Deep," Gary & Earlene Gordon

Judges Special Award: "Rocky Seas," Kris Tiger

Awards by Category

Novice: 1st: Charlie Meyerriecks

Northwest Florida: 1st: Al Johnson, 2nd: Linda BeHage

One Large Family: 1st: Linda Brunner, 2nd: Kris Tiger, 3rd: James Redding, Hon. Mention: Al Johnson

One Small Family: 1st: Wayne & Patty Humbird, 2nd: Linda Walker

Florida-Caribbean: 1st: Ernie Bernard

One Genus: 1st: Gary & Earlene Gordon, 2nd: Al Johnson

Self-collected: 1st: Carol Mitchell, 2nd: Gary & Earlene Gordon, 2nd: Serena Saye (ties?)

Specialized: 1st: Leslie Crnkovic

Single Specimen: 1st: Wayne & Patty Humbird, 2nd: Wayne & Patty Humbird, 2nd: Linda Brunner, Honorable Mention: Kris Tiger

Educational: 1st: Leslie Crnkovic, 1st: Wayne & Patty Humbird, 2nd: Walt Baldwin, 2nd: Luke Cooley

Non-Marine Mollusks: 1st: Leslie Crnkovic

Sea Life: 1st: Al Johnson

Fossil: 1st: Jim & Linda Brunner

Creative: 1st: Carol Mitchell

Beach Shells: 1st: Elizabeth Gibb

Over 300 people attended this year's show.

Al Johnson accepts the Helen Norton Trophy from scientific judges Dr. Harry Lee (R) and Alan Gettleman (L). He also won Self-collected Shell of the Show and several category awards.

Miss Olivia Carney (L) accepting the Student Award from artistic judge Leanne Shell.

Adventures in the field and in the lab – investigation of an enigmatic door-snail species, *Montenegrina apfelbecki* (Sturany, 1907)

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Introduction

In the frame of the Conchologists of America 2014 Academic Grant, the first author had the possibility to organise a field trip to Albania and neighbouring Kosovo, in order to collect *Montenegrina* taxa/populations needed for the systematic revision and molecular phylogenetic reconstruction of this genus. Aside from some other localities, our primary target was the Shënt Mountain in Northern Albania, where we expected to find the species most in demand, *Montenegrina apfelbecki* (Fig. 1).

The need for a systematic revision of *Montenegrina*

Montenegrina is a genus of terrestrial, obligate rock-dwelling gastropods, distributed in the western part of the Balkan Peninsula (SE Europe). Due to the patchy distribution of their special habitat type (they live on bare limestone cliffs), the genus comprises several small range endemic taxa. According to the current system (Bank 2012), there are 88 known subspecies, which are classified into 22 species. Moreover, due to the intensive fieldwork activity of the researchers of the Hungarian Natural History Museum (HNHM) (Fehér et al. 2004, Fehér & Erőss 2009, Murányi et al. 2011) there are several recently discovered populations, some of which are presumed to be new taxa, which remain to be described. The systematics of the door-snails in the Mediterranean region were almost exclusively set-up on a conchological basis (Nordsieck 2007), however, our preliminary molecular studies revealed that most of the conchological traits, which were once considered taxonomically important, might have arisen several times independently and many 'species' in the current system might be paraphyletic. Thus for the taxonomic revision of this group, a sound molecular phylogenetic footing seems necessary.

Figure 1. *Montenegrina apfelbecki* (Sturany, 1907), syntype specimen collected by Buljubašić in 1905 (NHMW 41166). Note the mummified body showing through the shell.

Figure 2. The abbey of Oroshi in Sturany's time and today. Black and white photo is an illustration from Sturany's travelogue from 1905.

Following the footsteps of our forefathers

In 1905, Dr. Rudolf Sturany, curator of the mollusk collection of the Natural History Museum, Vienna (NHMW) and Viktor Apfelbeck, curator of the entomological collection of the museum in Sarajevo, performed a fieldtrip to Albania (Sturany 1905). They were accompanied by Latif Buljubašić, 'museum servant' from the Sarajevo museum. It took them several days to reach Albania, where they spent most of their time on mule-back. At that time, Albania was still under the Ottoman Turkish rule, however, their force barely intruded into the mountain settlements, which were dominated by Albanian tribes in constant conflict with each other. Wading across several rivers, the 50 km ride from Shkodra to Oroshi – center of 'darkest Albania' – lasted two days. While exploring the nearby mountains and their fauna, they were hosted by the local bishop (Fig. 2). Shortly afterwards the two curators left, but Buljubašić stayed in Oroshi for further, more extensive sampling of that area. During his two-months-long, hazardous stay (e.g. he survived an earthquake, in which the bishop's residency perished), he managed to collect a huge amount of invertebrate samples from the Shënt (Fig. 3), Munela, Zebë, and Koritnik mountains. A large part of this material was deposited and can still be found in the scientific collections at the NHMW. In his first travel report, Sturany (1905) mentioned a strange-looking and most probably new door-snail species, which was formally described just two years later, as *Clausilia apfelbecki*. Unfortunately, Buljubašić provided rather incomplete locality data for the collected material, namely, "Mal i Shëit bei Oroshi, Merdita, in einer Höhe von zirka 1500 m."

The progress of the zoological exploration of the northern Albanian territories did not become easier after this beginning. Due to the 1st World War, the Italian invasion, the 2nd World War, and finally the communist regime, it was very difficult for naturalists to reach that region until the 1990s (Dhora & Welter-Schultes 1996). Thus, hardly any zoologists have collected there in the past 110 years and, to our knowledge, nobody has ever managed to collect this species since it was originally collected. A few taxa have been described from northern Albania as subspecies of *M. apfelbecki*. Preliminary molecular analyses, however, indicate that these taxa are paraphyletic. Their systematic positions (and their correct taxonomic names) could only be defined after clarifying the phylogenetic relationship of the nominate taxon first.

Figure 3. The Shënt Mts. 110 years ago and now. Black and white photo is an illustration from Sturany's travelogue from 1905.

Our expedition in 2014

Before starting this project the majority of the known *Montenegrina* taxa were already available for DNA analysis (as recently collected and alcohol-stored museum lots). Thus, during the project's field campaign we aimed to obtain only the few missing taxa, among others, the enigmatic *M. apfelbecki.*

Our 10-day-long field trip started from Budapest. Participants in the expedition were Zoltán Erőss (HNHM) and Zoltán Fehér (NHMW), malacologists; Jozef Grego, malacologist and speleologist; his son, Maroš Grego, responsible for photo documentation during the trip; and Dorottya Angyal (HNHM), speleobiologist (Fig. 4). As the type locality of *M. apfelbecki*, as well as most of the other planned collecting sites, could be reached only on rugged backcountry roads, the 4WD Toyota Hilux of the HNHM was our indispensable companion (Fig. 5).

Figure 4. Zoologists of the expedition, (Tërthorë pass).

Figure 5. Night shelter in Montenegro and the Hilux, our 'best friend' during the trip.

Figure 6. Prokletije Mts., Tërthorë pass: one of the most beautiful places in Albania.

Figure 7. Entrance to the newly discovered 'Strawberry Cave' in Shënt Mts.

Figure 8. Double curse – double tire puncture far away from civilization.

Figure 9. First *Montenegrina* specimen collected by the expedition in the Tropojë Gorge, north of Tropojë village (northern Albania).

We reached Albania from the north, through Montenegro. After a short stop at the stunning Thertorë pass (Prokletije Mts., Fig. 6), we proceeded to the plateau of the Shënt Mts., where we stayed for three days and checked several sites that seemed suitable habitats for rock-dwelling snails (Fig. 3). We found rare and endemic gastropod species, like *Napaeopsis merditanus* (Sturany, 1907) and *Cochlostoma georgi* (A. J. Wagner, 1906), but despite our efforts, we could not manage to find any *Montenegrina* specimens. We discovered a previously unknown vertical cave on the plateau and collected some noteworthy cavernicolous macroinvertebrates from its walls and wooden debris (Fig. 7). Continuing our misadventure, we suffered a double tire puncture in the mountains, a couple of hours walk from any inhabited settlement (Fig. 8). Due to a very helpful local family we finally managed to fix the car and get down from the mountain. The main goal of the expedition – to find *M. apfelbecki* – seemed to be a failure and we already had more than a half-day delay. Therefore we had to strictly adhere to the schedule for the rest of the trip. We tried our luck in Kosovo, in the Bistrica valley, the type locality of *Montenegrina janinensis sporadica* H. Nordsieck, 1974, near a monastry closely guarded by the KFOR military legion. We were unsuccessful again, the desired subspecies remained elusive. Our luck finally turned only on the fifth day of the trip, when we discovered a new *Montenegrina* species in the vicinity of Tropojë in the gorge of the Tropojë Creek (Figs. 9, 10). We then headed south for some interesting sites in the Shpat, Kurveleshi, Kendrevicë, Lunxherisë, Nemerçkë, and Vallamarë Mountains. Our last campsite was on the shore of Lake Ohrid (Fig. 17), which is the oldest and one of the most spectacular lakes in Europe, hosting a large number of endemic freshwater molluscs.

Figure 10. Enroute through the Tropojë Gorge (northern Albania), the site of the new *Montenegrina* species.

Figure 11. Despite great poverty, people in small villages of the Albanian mountains seem to live in harmony and satisfaction. This old man picked oregano for us in Fushë Bardlë village.

Albania is a biodiversity hotspot for not only gastropods, but other groups as well (Fig. 16). We collected numerous millipedes, chilopods [centipedes], crustaceans, freshwater insects, harvestmen, beetles, and other invertebrates, which now enrich the collections of the NHMW and the HNHM.

The duality of the crowded cities with all of their technical achievements and the untouched nature of the mountain areas with their modest, near-natural inhabitants assigns a unique atmosphere to Albania (Figs. 13, 14, 15), making it a great adventure and chance to meet local people with their unusual customs and history (Figs. 11, 12).

Figure 12. According to Albanian superstition, hanging puppets on windows or doors helps to keep away wicked ghosts, called 'vojtans'.

Figure 13. Civilization has yet to touch some of the mountain ranges of Albania, preserving them in near natural condition.

Figure 14. Living as they have for centuries, in many Albanian villages breeding of goats for milk and meat is still practised.

Figure 15. Mules are extensively used in everyday life in Albania.

Figure 16. Remarkable creatures of our trip. Scorpion (*Euscorpius* sp.), Hermann's tortoise (*Testudo hermanni*), long-nosed, horned, or sand viper (*Vipera ammodytes*) and bush crickets (*Poecilimon jonicus*). The venomous but not overly aggressive long-nosed viper is protected.

Figure 17. Lake Ohrid, the final station of our journey.

"Resurrection of the mummies" – extracting DNA from 110 years old samples

Our previous material, together with the material collected during this field trip, enabled an almost comprehensive molecular phylogenetic reconstruction, making the absence of *M. apfelbecki* especially disappointing. In utter desperation we tried another way, attempting to extract DNA from the almost 110 year-old syntype specimens kept in the Natural History Museum in Vienna.

Whether and how DNA is preserved in museum-stored materials depends on how these animals were dispatched and preserved. Fortunately, Buljubasić collected a large sample, including several living specimens. In some of the shells we found desiccated bodies coiling around the columella. This made us believe that the samples were well-ventilated after collecting and that the animals had slowly mummified after an aestivation period. This gave us hope that we would be able to extract usable DNA after 110 years.

We applied the method of Thomsen et al. (2009) optimized to gastropods by Páll-Gergely et al. (2015). DNA yield and quality was tested by agarose gel electrophoresis, indicating that we got a large amount, but of highly fragmented, DNA. After some unsuccessful attempts to amplify other standard DNA markers from the extracts, we finally got positive result with a short fragment of the 16S rRNA gene. This sequence helped us to approximate the position of this species in the phylogenetic tree, and with the DNA knowledge of the presumed relatives, we designed internal primers for the widest used barcoding marker, the subunit I of the mitochondrial cytochrome c oxidase (*COI*) gene. Internal primers were designed based on sequences of related taxa, in the way that three overlapping sections of 230–250 base pairs were defined by three primer pairs. All three of these sections were successfully amplified and sequenced, and then, like the pieces of a puzzle, they were fit together. *COI* showed (reinforcing what the short 16S fragment indicated) that the closest relatives of *M. apfelbecki* are far in the south, in Greece, and *M. apfelbecki* is not conspecific with any of the previously presumed "*M. apfelbecki*" subspecies in Northern Albania.

Although a lot of knowlegde has been gained recently, there is still information missing. For example, it is not known where the species lives within the Shënt Mts., nor if it still exists. Another conundrum is how it got there in the first place.

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Photos: Dorottya Angyal, Zoltán Fehér, Jozef Grego, & Maroš Grego

Land Snail Fauna of the Sukolilo karst in Java (Indonesia)

Ayu Savitri Nurinsiyah

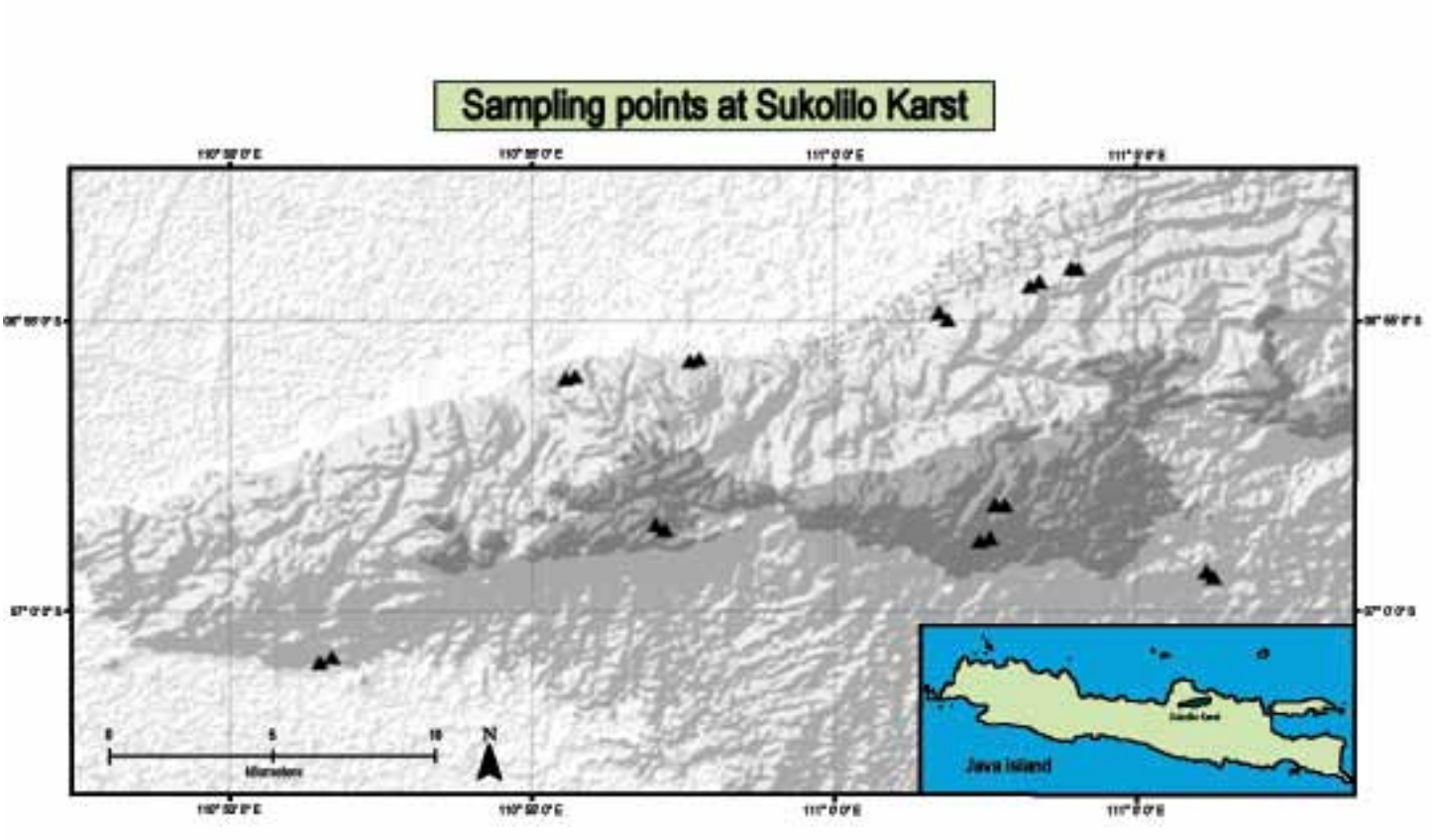
Karst Sukolilo is situated in the northern Tertiary zone of Java, Indonesia, which was formed in the Miocene to Pliocene (Balázs, 1968). It covers a 194.72 km^2 area in the northern part of Central Java, mainly in Grobogan and Pati Districts. The karst area comprises many hills (>10 hills/km^2) ranging from 61-530 m above sea level (Ruswanto et al., 2008; Wacana et al., 2008). There is an urgent need for a survey of the land snail fauna of that area because of a threat by limestone mining.

Sukolilo karst area in the distance. Photo by author.

This survey for land snails in Sukolilo was conducted in August 2014. My aim was to investigate the land snail species richness and composition within the karst area. I randomly selected 20 plots of 10 m x 10 m, the most distant plot was 27 km (see map). Living slugs and snails as well as their empty shells were collected by two researchers for one hour at each plot. In addition, a total of 100L (5L from each plot) of soil and litter samples were sampled, dried, sieved and sorted.

In total, 1,123 land snail specimens were collected during the field work. The specimens belong to 13 families, 25 genera, 33 species, and 2 subspecies. The number of species found in each plot ranged between 5 to 18 species, and 14 to 137 specimens. Euconulidae (27%) and Camaenidae (24%) were found to be the most abundant in the area. The ratio of prosobranch to pulmonate species found in the area was 1:11. One species is a new record to Java, *Nesopupa novopommerana* Rensch, 1932. There are four endemic species (*Amphidromus filozonatus* (von Martens, 1867), *Amphidromus heerianus* (Pfeiffer, 1871), *Japonia convexum* Möllendorff, 1897, *Gyliotrachela fruhstorferi* (Möllendorff, 1897))

(Above): Lowo Cave, Sukolilo; photo by author. (Below): Ngesong Cave, Sukolilo; photo by Handoko. Many such caves have formed throughout this limestone formation.



Plot near Watu Payung, Sukolilo; photo by author.

and one endemic subspecies (*Alycaeus crenilabris crenilabris* Möllendorff, 1897). We found the highest number of land snail species and abundance on the soil surface and in the top soil, whereas the fewest species were found on dead wood.

Tropical limestone areas are rich in land snail species and, in a taxonomic sense, are among the least studied in the world (Wong et al., 2001). Karst Sukolilo is inhabited by diverse fauna (Rahmadi and Wiantoro, 2007; Widi, 2014). The current preliminary investatigon of terrestrial molluscs in Sukolilo karst revealed 17% of the total land snail species known in Java. The number is slightly lower compared to Mt. Ciampea (West Java) with 34 species (18%; Nurinsiyah, unpublished), which also suffers severe limestone quarrying. The species richness is also lower compared to South Malang karst (East Java) with 55 species (29%) (Nurinsiyah et al., 2015). Although the species richness in Sukolilo karst is lower than the other two sites, the land snail species diversity index shows a rather high point — 2.88.

Karst regions usually contain high numbers of endemic land snail species, many of which are restricted to limestone habitats because of their high calcium requirements and low dispersal capability (Schilthuizen, 2004; Clements et al., 2006). Small range sizes and low dispersal capabilities make such land snail species extinction prone. The extinction risk in the area increases due to massive limestone quarrying. Until 2009, 12,000 tons limestone were quarried per year in the Grobogan district (http://bppt.grobogan.go.id/potensi/pertambangan.html) and many small cement companies still continue to quarry limestone in Sukolilo karst. The present study contributed to the scientific exploration of the biodiversity of Sukolilo karst. The gathered data will hopefully be useful for Sukolilo karst's conservation management.

Species List

Family Species

Achatinidae – *Achatina fulica* Bowdich, 1822
Achatinidae – *Allopeas clavulinum* (Potiez & Michaud, 1838)
Achatinidae – *Allopeas gracile* (Hutton, 1834)
Achatinidae – *Paropeas achatinaceum* (Pfieffer, 1846)
Ariophantidae – *Parmarion pupillaris* Humbert, 1929
Camaenidae – *Amphidromus filozonatus* (von Martens, 1867)*
Camaenidae – *Amphidromus heerianus* (Pfeiffer, 1871)*
Camaenidae – *Landouria ciliocincta* (Möllendorff, 1897)
Camaenidae – *Landouria rotatoria* (Von Dem Busch, 1842)
Camaenidae – *Landouria winteriana* (Pfeiffer, 1841)
Charopidae – *Discocharopa aperta* (Möllendorff, 1888)
Charopidae – *Philalanka nannophya* Rensh, 1932
Cyclophoridae – *Alycaeus crenilabris crenilabris* Möllendorff, 1897**
Cyclophoridae – *Cyclotus* (*Pseudocyclophorus*) *discoideum* G.B. Sowerby I, 1843
Cyclophoridae – *Cyclophorus perdix perdix* (Broderip & G.B. Sowerby I, 1830)
Cyclophoridae – *Japonia ciliocinctum* (von Martens, 1865)
Cyclophoridae – *Japonia convexum* Möllendorff, 1897*
Cyclophoridae – *Leptopoma perlucidum* (de Grateloup, 1840)
Diplommatinidae – *Diplommatina nevilli* (Crosse, 1879)
Dyakiidae – *Elaphroconcha javacensis* (Férussac, 1821)
Euconulidae – *Coneuplecta microconus* (Mousson, 1865)
Euconulidae – *Microcystina chionodiscus* Vermeulen, 1996
Euconulidae – *Microcystina gratilla* Van Benthem-Jutting, 1950
Euconulidae – *Microcystina sinica* Möllendorff, 1885
Euconulidae – *Liardetia convexoconica* (Möllendorff, 1897)
Euconulidae – *Liardetia dolium* (Pfeiffer, 1846)
Euconulidae – *Liardetia scandens* (Cox, 1872)
Euconulidae – *Queridomus fimbriosus* (Quadras & Möllendorf, 1894)
Helicarionidae – *Helicarion albellus* von Martens, 1867
Helicinidae – *Geophorus oxytropis* (Gray, 1839)
Valloniidae – *Pupisoma dioscoricola* (C.B. Adams, 1845)
Veronicellidae – *Semperula* spec.
Vertiginidae – *Gyliotrachela fruhstorferi* (Möllendorff, 1897)*
Vertiginidae – *Nesopupa malayana* (Issel, 1874)
Vertiginidae – *Nesopupa novopommerana* Rensch, 1932

* species endemic to Java
** subspecies endemic to Java

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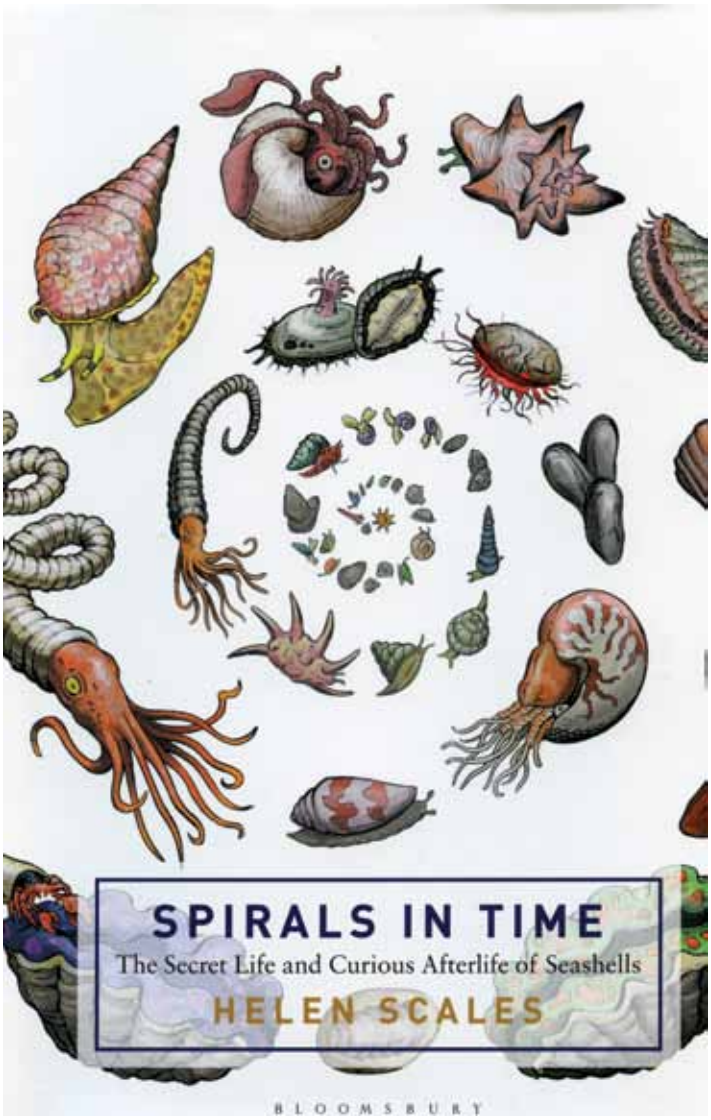
Acknowledgements: Prof. Bernhard Hausdorf as supervisor; Tedi Setiadi M.Sc for the map; Fitri Jatmika, Fia Irsyad, Ela Nurlela, Gun Retno, Mbah Handoko, Omah Kendeng for the help during fieldwork; Conchologist of America, Universität Hamburg, and Indonesia-German Scholarship Program (IGSP) for financial supports.

Spirals in Time: The Secret Life and Curious Afterlife of Seashells by Helen Scales

Bloomsbury Publishing, London & New York
2015, 304 pp., 33 color photos
ISBN (hardback) 978-1-4729-1136-0 ($22)
ISBN (paperback) 978-1-4729-1138-4 ($12.50)
ISBN (ebook) 978-1-4729-1137-7 ($9.99)



Avoiding any suspense, I will begin this review with the statement that I really, really like this book. Helen Scales has done far more than gather an eclectic collection of facts, trivia, tales, and natural history about shells. Eclectic? You bet. This book covers the gamut from how shells are constructed and what the structure means for the continued existence of the species, to how humans have used shells in religion and commerce and abused shells with over-consumption, to the individuals who have studied and classified shells and the ones who used shell products for commerce and art. Throughout each subject (and there are hundreds spread through the ten chapters) the writing displays the author's expertise (she is a marine biologist with a PhD), her fascination with shells, and her comfortably dry sense of humor. A reader new to the world of shells will find the writing clear, concise, and most importantly, easy to understand – and yes, often lightly spiced with a bit of humor. Fun to read. A professional malacologist will appreciate those features, plus the wealth of detail and science and the incredible breath of coverage. And while those of us involved for some time in the world of shells will recognize the facts, tales, events, and personages in this book, I dare say, even the most knowledgeable will note a new revelation or two, or appreciate a new take or approach to a given subject. There is an amazing amount of material in this small book and, while it is not a picture book, the author provides some very interesting and well-chosen color images to illustrate some of what is presented in the text.

Spirals in Time takes the reader on several investigative journeys. If asked, "What is sea-silk?" I would guess the majority of shellers would respond that it is the byssus from pen shells – the threads that hold the shell to the substrate. Most of us would also relate how this was the basis for ancient writings of a "golden cloth" and probably the "golden fleece." This is, however, a complex story with centuries of incorrect translations of Hebrew and Greek. In this book you will find the 'real' story, including the recent investigation by Daniel McKinley ("*Pinna* and her silken beard: a foray into historical misappropriations", *Ars Textrina* 29: 9-223, 1998). It is an amazing tale. Similarly, from the writings of Pliny the Elder, to the tomes of the Sowerbys and Reeve, to modern day research of Philippe Bouchet – it is all here. All of us know about the use of the money cowrie (*Monetaria moneta* (Linnaeus, 1758)) as hard currency, but did you know how and who instigated the use of the golden-ringer (*Monetaria annulus* (Linnaeus, 1758)) as currency? Read this book. An entire chapter is devoted to the fascinating natural history of *Argonauta*. Another to the attempts to explain shell structure through mathematics. Yes, yes, the "golden spiral," but there is much more. There are also none-too-subtle hints about the dark future of mollusks as the world ignores global warming and sea acidification. The last chapter is, "The Sea Butterfly Effect." Her hunt for and description of pteropods ('sea butterflies" and 'sea angels") is a tremendous read, but as these tiny graceful creatures may be the first to go with a changing climate, it is also a bit disturbing. Finally, the author includes a bibliography for each chapter, plus a useful index. I started this review with the hardcover version of the book, but recently bought the ebook version as well. I want this data available on my Kindle for more immediate access. This is a gem of a book – buy it, read it, enjoy.

Sea slug thieves: A nudibranch defensive strategy

Jessica Goodheart

Figure 1. *Flabellina rubrolineata* from Madang, Papua New Guinea. Photo by author.

Figure 2. *Dondice occidentalis* on a hydroid from West Palm Beach, Florida, U.S.A. Photo by author.

Nudibranchs, a shell-less clade of gastropods, have evolved bright, striking color patterns over millions of years. These particular slugs are especially popular with divers and underwater photographers due to their interesting color patterns. These beautiful color patterns are useful for more than just an eye-catching photo (Figure 1). Bright colors often deter predators, warning them that these nudibranchs are armed with toxins and other defenses that could cause harm. This method of alerting potential predators using bright colors is called aposematism (Rosenberg, 1989; Tullrot, 1994). Within Nudibranchia, several types of defensive strategies exist to counterbalance the loss of the protective shell. One apparent defense mechanism is found in a group of nudibranchs called aeolids, that steal the defensive abilities of the animals they feed on - jellyfish, corals and others that sting (Figure 2; Greenwood, 2009).

Jellyfish, sea anemones, hydroids and their Cnidarian relatives sting predators and capture food with special cells called cnidocytes, which line their tentacles. These cause the pain, rashes and swelling associated with jellyfish stings by discharging small, venom-filled barb-like structures called nematocysts into their predators' tissue (Oppegard et al., 2009). Nematocysts are extremely effective in deterring most predators of cnidarians, but some predators, like aeolid sea slugs, are able to not only defeat the venomous weapons, but also use these defenses to their advantage.

When aeolids feed on corals, anemones and hydroids, the first thing they have to do is prevent the stinging organelles from firing. They seemingly do this using their mucus: certain chemicals are present that protect them from getting stung (Greenwood et al., 2004). Once ingested, some unfired nematocysts are excreted as waste, but other nematocysts are passed through the branched digestive tract to the cerata of the animal, which are dorsal appendages that can be released if the slug perceives that it is in danger. Each ceras contains a diverticulum of the digestive tract. Once the nematocysts reach the ceras, they are confined within a sack that houses multiple nematocysts, called a cnidocyst. The cnidocyst then passes into the cnidosac at the tip of the ceras through a sphincter, where it remains until the nematocysts are released (Conklin and Mariscal, 1977).

The release of nematocysts is dependent upon non-motile, sensory cilia on the external surface of the ceras. Once the signal is received, they are extruded through the cnidopore. When the nematocysts reach the external environment, they are then fired from their capsule (Conklin and Mariscal, 1977). Figure 3 shows an illustration of the inside of a single ceras, and Figure 4 is a stained histological section of a ceras from the aeolid *Aeolidia papillosa*.

Though we know that aeolid nudibranchs steal and store these nematocysts, how do we know that they use the nematocysts to defend themselves? The simple answer is that we don't know for sure. Aeolid slugs will release the stored stinging organelles when they are threatened, and the nematocysts do sting and damage predators - so it is likely that the stolen nematocysts are used for defense (Aguado and Marin, 2007; Edmunds, 1966) peregrina. There is difficulty, however, in establishing the effect of nematocysts from

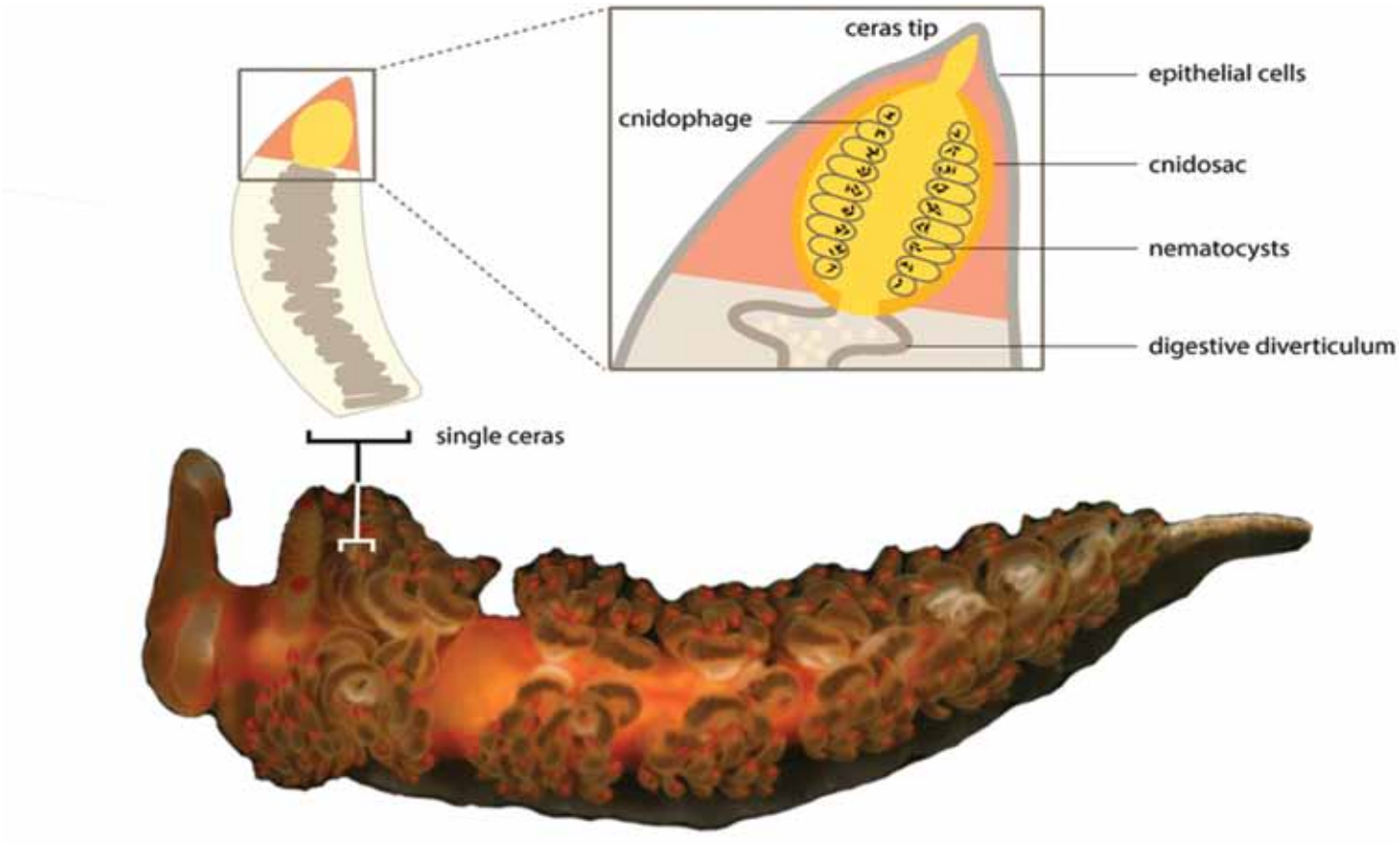


Figure 3. Illustration of the internal anatomy of an aeolid ceras (plural: cerata).

the cerata on predators, so multiple authors have suggested that we cannot yet know for sure whether or not they serve a defensive purpose (Edmunds, 2009; Marin, 2009; Penney, 2009). In a particular case where aeolid nudibranchs feed on corals known to have less effective defensive cells, the nudibranchs have cnidosacs that no longer function. In the genus *Phyllodesmium*, species have switched to Octocorallia as a food source and do not obtain nematocysts from their food (Bogdanov et al., 2014). This tells us that effective stinging organelles are likely used in the nudibranchs, but they are not necessary for the survival of all aeolids.

As a PhD student at the University of Maryland and a graduate fellow at the Smithsonian National Museum of Natural History I am studying the evolutionary processes that have allowed nudibranchs to steal and store cnidarian nematocysts. In order to do so, I need to complete two main parts. First, I have to generate a phylogeny for the group, which is a way of mapping the evolutionary relationships between families, genera, and species within Cladobranchia, the group containing aeolids. I am currently doing this using molecular sequence data. Second, I will need to map anatomical and histological information associated with the theft of nematocysts on that evolutionary tree. In this way, I will hopefully be able to see how the evolution of this ability occurred. Certainly more research into the specific mecha-

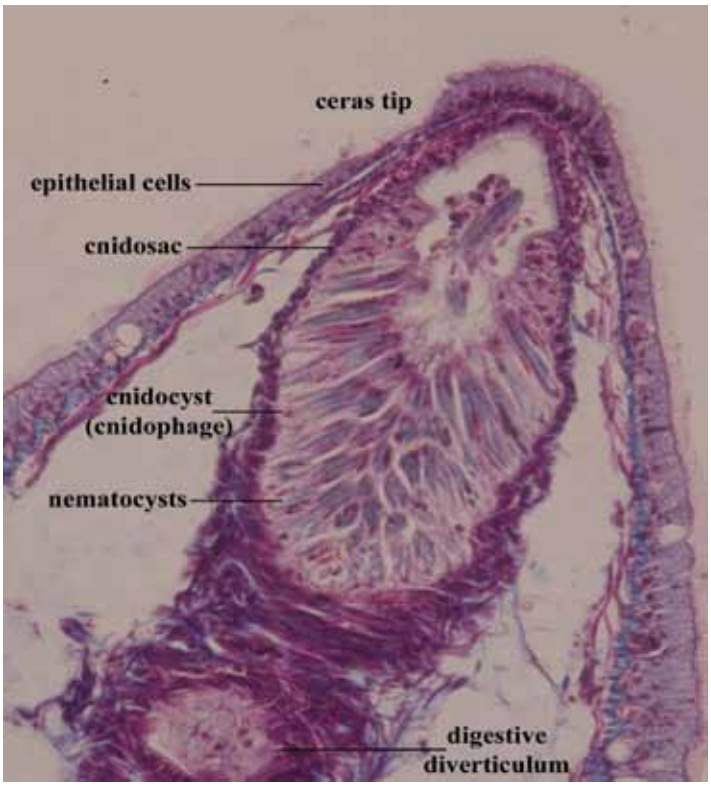


Figure 4. Stained longitudinal section of a ceras (labelled) from *Aeolidia papillosa*.

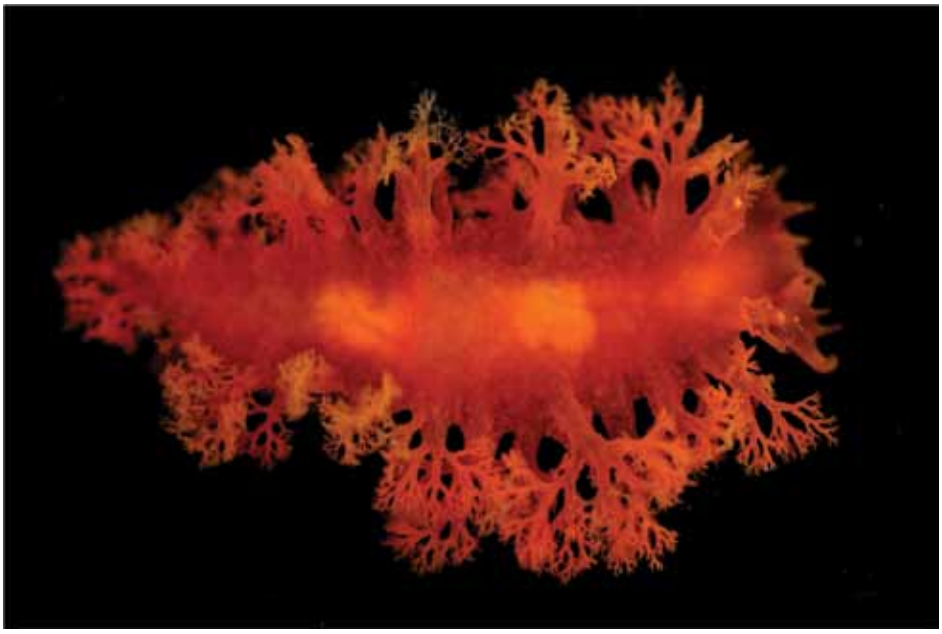


Figure 5. *Tritoniopsis frydis* from Florida, U.S.A. Photo by author.

nism of the stolen stinging cells is needed, but learning more about these colorful sea slugs' evolutionary history will show us how aeolids acquired this unique defensive strategy and where it came from.

The funding that I received from the Conchologists of America has been an integral part of my initial research. With it, I was able to collect samples of aeolids and closely related species (Figure 5) from Florida and develop a histological procedure for identifying nematocysts and other, related structures within the cerata. From there, I will be able to create a database of histological and anatomical data for members of this group, which I will use to continue my research. Thank you for the opportunity to study these amazing creatures!

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COA 2015 GALA IN THE GLADES (and it was)

Anne Joffe, convention coordinator

The July 12-18, 2015, 'COA Gala in the Glades' meeting was held at Bonaventure Resort, Weston, Florida. The two-day pre-meeting field trips attracted many members and featured tours of the Flamingo Botanical Gardens, Everglades Wildlife Sanctuary, behind the scenes at a local university, snorkeling trip to Peanut Island, fossiling, Everglades airboat ride, a trek to see our Florida endemic Everglades snail (*Liguus fasciatus*), and the evening dinner boat ride on the *Jungle Queen*, complete with variety show.

The meeting opened at 1:00 pm on Tuesday and featured a local historian who related tales of early Broward County. After a welcome by COA Convention Co-Chair, Nancy Galdo and COA President, José Leal, programs were underway. Carole Marshall did an outstanding job of getting varied and informative programs that featured many "guest" speakers not usually heard at our meetings. These included: Jerry Harasewych, Paula Mikkelsen, Gene Coan, and several local speakers. Each program was informative and made for an interesting meeting.

The Everglades welcome party was held that same evening and, as requested on our invitations, some came dressed for a trip into the Everglades. Many wore designed hats for the occasion and the committee selected several hats to be entered into the competition, with the audience voting by applause for the three prizes awarded. It was a fun evening, complete with alligator bites and conch ceviche – a great way to get our annual gathering underway.

Wednesday was spent listening to programs and bidding on excellent silent auction items. That same evening was the Oral Auction, with everyone receiving a catalog of outstanding color pictures of the goods. Many thanks to Kevan and Linda Sunderland for their excellent photography of the shells. Lively bidding with Hank Chaney and Jim Brunner as auctioneers helped make this a very successful fundraiser.

Hats designed to scare snails into near immobility for ease of collection. From the left: Best of Show – Anne Joffe, Most Original – Sheila Neugent, Funniest Hat – Caryln Morgan.

Thursday brought another great day of programs, followed by the annual business meeting and the presen-

Jim Brunner (left) and Hank Chaney (right) kept the audience involved as they auctioned off over 100 shells and shell items. Moneys go to the COA grant program.

Each dinner guest got a one-of-a-kind shell alligator made by Bob Pace.

The always popular bourse – common to rare shells from around the world and lots of buyers looking for that perfect shell or a great deal.

John and Cheryl Jacobs receive their much deserved *Neptunea* Award from Harry Lee.

Kevan and Linda Sunderland were also shown the appreciation of COA by the award of the *Neptunea*, again presented by Harry Lee.

Carole Marshall did an outstanding of lining up informative programs and then was lucky enough to win the raffle prize of about $2,000 worth of autographed books.

tation by the Chicago shell club showing the highlights of the 2016 meeting. It was announced that the 2017 meeting would be held in Key West, Florida. Since there is no shell club to host, many of our members have come forth to volunteer for key positions and to just help in any way they can. If you are interested in joining in this "Keys Committee," please let me know. The Chair will be Greg Curry, a local Conch, and he was the chair in 1980, the only other time we have met in Key West.

The banquet Thursday evening was a wonderful affair, the dinners were great, and each guest received a chocolate alligator made by James Redding, as well as a one-of-a-kind shell alligator made by Bob Pace (who spent well over three months making them for us, when he was not identifying and labeling silent auction shells).

The *Neptunea* Award was presented by Chair, Harry Lee. This year the recipients were two couples:

Kevan and Linda Sunderland were recognized for their many years of articles and shell centerfolds for the *American Conchologist*.

John and Cheryl Jacobs were recognized for their years of assisting with various COA activities, such as silent auctions, numerous and varied shell club shell shows, and helping as official convention photographer these many years.

Both are certainly deserving couples and both couples were obviously surprised.

Our program for the evening was given by Kevan Sunderland, who has become a well known and accomplished photographer of birds and wildlife. His presentation of the wildlife of the Everglades was spectacular and featured some almost unbelievably gorgeous images of Florida wildlife. It was a wonderful way to end this evening.

Friday morning, the club rep breakfast was held with 22 club reps attending. As usual, the main subject was how to attract new and younger members to our clubs.

At 1:00 pm the doors opened for the 2015 Dealers Bourse, well represented by dealers from Australia, Philippines, Vietnam, Taiwan, Hawaii, Italy, China, and the USA. The bourse continued on Saturday and then it was time to say goodbye to another wonderful COA convention.

A huge thank you to Nancy Galdo and Linda Sunderland, the hard working co-chairs, and to the Broward club members who went beyond the call of duty.

See you all in Chicago.

Tentative Convention Schedule

Monday, July 25
Field Trips

Tuesday, July 26
Early Registration, Field Trips

Wednesday, July 27
Registration, Opening Ceremonies, Programs, Silent Auctions, Welcome Party

Thursday, July 28
Programs, Silent & Oral Auctions

Friday, July 29
Programs, Silent Auctions, Banquet

Saturday, July 30
Silent Auctions, Bourse

Sunday, July 31
Bourse, Enjoy Chicago

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Quarterly Journal of the Conchologists of America, Inc.