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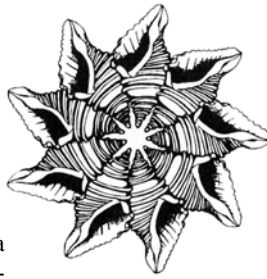
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American
CONCHOLOGIST



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.

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Editor's comments: This seems to be another eclectic issue. We begin with some great cover images. On the front cover is a bright and colorful *Lobatus gigas* from Ellen Bulger. On the back cover is an unusual and quite striking photo of a living *Nodipecten nodosus fragosus* by Vicky Wall. Then we get another great article by Andre Meredith, this time covering the elegant but large and solid, *Thersistrombus thersites*. Definitely a prize for a stromb collector. Lindsey Dougherty (a COA grant recipient) provides a review of her research into the life of the “disco clam.” Linda Zylman Holzinger shares her experience with lots of stranded *Janthina*, and Joquin Inchaustegui finds hidden treasure at a shell auction. A new contributor, Sylvia M. Vélez-Villamil, shares her experience, including some great photos, with a three-eyed queen conch. Marcus Coltro then shares another of his shelling adventures. This time we travel with Marcus on a ‘well-planned’ trip through South Korea. We next have the award of the *Neptunea* (Colin Redfern and Tom Rice), a couple of shell show results (Gulf Coast and Keppel Bay), and a report on the 2014 COA convention by Jeannette Tysor and Ed Schuller. We close off the issue with a report of a mystery epitoniid species by Lenny Brown.

Next year's convention will be in Broward County, Florida (see page 31). The venue of the Bonaventure looks to be a special one, so plan now on spending 14-19 July 2015 in sunny south Florida.

Finally, my annual request for articles for upcoming issues. The well is pretty much dry (or there would have been more pages this time). Remember, the readership of American Conchologist is varied and it seems every facet of conchology appeals to some of our readers. So keep those cards and letters coming in!

Tom Eichhorst

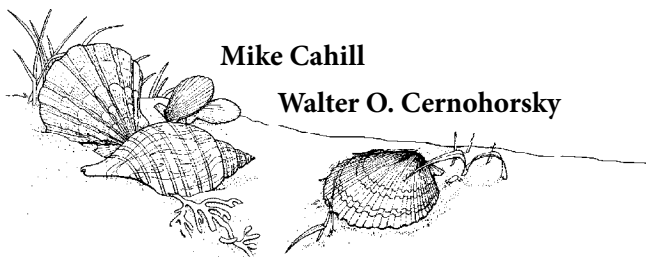
Front Cover: This image of *Lobatus gigas* (Linnaeus, 1758), the pink or queen conch, is adapted from a photograph taken by Ellen Bulger at Tarpum Bay, Eleuthra, Bahamas, in 2013. The vivid aperture colors of this shell will quickly fade until only the typical pink remains. Still a prize shell.

Back Cover: *Nodipecten nodosus fragosus* (Conrad, 1849), hard limestone reef bottom, Panama City, Florida, by Vicky Wall from Mayodan, North Carolina. I have wanted to use this superb photograph for a cover for quite some time, but the image orientation was wrong for a front cover, so this is the next best thing, a back cover to show the details of this very interesting scallop.

In memoriam:

Mike Cahill

Walter O. Cernohorsky



Thersistrombus thersites: Ivory Gem of the Pacific

Andre Meredith

Thersistrombus thersites (Swainson, 1823) is the sole species attributed to subgenus *Thersistrombus* Bandel, 2007, within the Strombidae family. Up until around 2010, the species was known under the taxonomic name *Strombus thersites* Swainson, 1823, but unique genetic and morphologic characters provided sufficient merit for it to be placed within its own genus.

T. thersites is one of two very similar, sought-after species of “strombids” found within the western Pacific, the other being *Sinuistrombus taurus* (Reeve, 1857). Both species inhabit the western Pacific (although *T. thersites* seems to have much a wider distribution), both are solid for their size (but *T. thersites* trumps out here), both exhibit similar problems with dorsal erosion, and both exhibit similar behavior regarding “herding,” habitat and feeding.

Of the two, *S. taurus* is most popular with collectors, primarily due to its elegant shape, resplendent with its two posterior spines, and its more vibrant dorsal coloration in uneroded specimens. *T. thersites*, however, presents its own allure:

- It is less “popular,” so fewer are in circulation with shell vendors, making finding one more of a challenge and a “rarer find,” with the exception of self-collecting.
- Finding a true “gem” specimen can be a major challenge, whether shopping on-line or self-collecting – acquiring one is a rare find indeed.
- The sheer weight and solidity adds to its desire.
- The species exudes elegance, with its shiny aperture, white porcelain-like appearance, ivory coloration, slender body, and long spire.
- Its tropical habitat is reminiscent of island wonderlands and oceanic splendor – it is a true treasure!

The type locality is New Caledonia. The species inhabits the tropics of the western Pacific and has been reported from the following areas:

- The Coral Sea
- Eastern Great Barrier Reef
- Coral Sea Islands
- New Caledonia regions
- Eastern Papua New Guinea
- Solomon Islands
- Philippine Sea

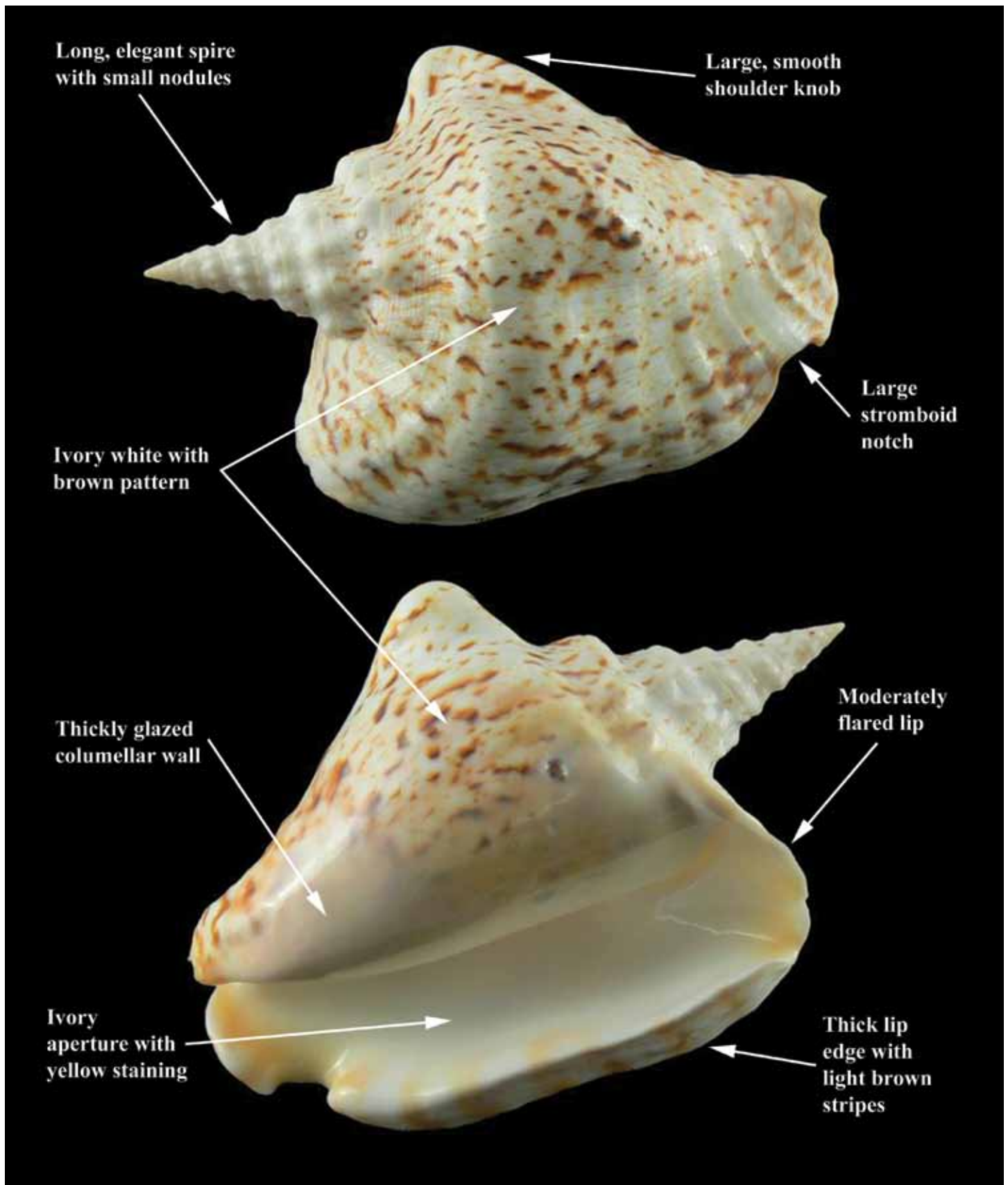
- Mariana Islands
- East China Sea
- Ryukyu Islands
- Southern Japan
- Taiwan
- Kermadec Islands
- Vanuatu
- Fiji
- Tonga
- Niue Island
- Cooks Islands
- Society Islands
- Tuamotu Archipelago

T. thersites seems to be constrained to the southwestern and western Pacific, travelling northward from the south Coral Sea, past eastern Papua New Guinea, towards the East China Sea, around the southern extremities of Japan, typically Okinawa. A few specimens have been reported from southeastern Vietnam, but specimens from the South China Sea area (including the Philippines) are undoubtedly very rare.

As far as the eastern distribution is concerned, specimens have been reported from the Society Islands and Mururoa Atoll, making this a very remote location for the species. One Society Island specimen used to belong in the collection of Hugh Cuming, and now resides in the British Museum, so authenticity should be affirmed (as there have been issues concerning the locality data of some Cuming specimens). It is therefore possible that the southern distribution is from the southwestern Coral Sea area, all the way to the Tuamotu Archipelago, and perhaps beyond.

T. thersites lives at a moderately shallow depth of around 8 to 30 meters. Adult shell sizes range from around 120 to 160mm, the current reported and registered World Record Size measures 170mm. It is predominantly associated with coral reefs, coral rubble, and sand. It has been reported that the species often congregates in large “herds,” that move en masse across the sea floor, similar to behavior seen with *S. taurus*.

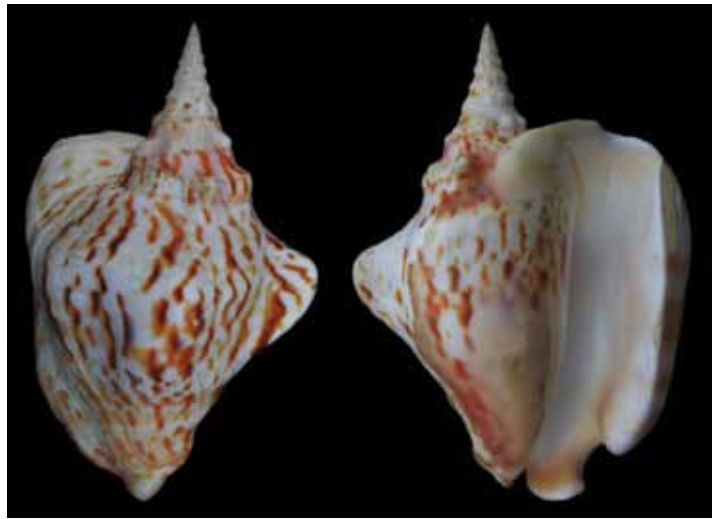
As far as identifying characters are concerned, the shell body is ovoid in shape, with a long, rather slender spire. The spire is adorned with small nodules, becoming fewer but larger towards the body whorl. The body whorl contains three large, smooth nodules, two of which are very flat and



Thersistrombus thersites, gem, 152mm, Marion Reef, Coral Sea, Queensland, Australia (coll. Andre Meredith); an example of a gem-grade specimen with perfect spire and clean, well patterned dorsum.

barely visible. The middle one often very pronounced, but smooth. The columella is pronounced and thickly glazed, often reaching onto the side of the dorsum. The lip is moderately flaring; adult specimens display a very thick lip edge, often adorned with broad, light brown stripes perpendicular to the aperture. It has a large stromboid notch. The color is predominantly ivory white, and good quality specimens, without erosion, display narrow, irregular brown markings on the dorsum, often repeating all the way to the columellar wall. The inner aperture is white to yellow, the columella white to yellow and sometimes peach, and at times revealing the underlying shell pattern. *T. thersites* is a very heavy, solid shell for its size.

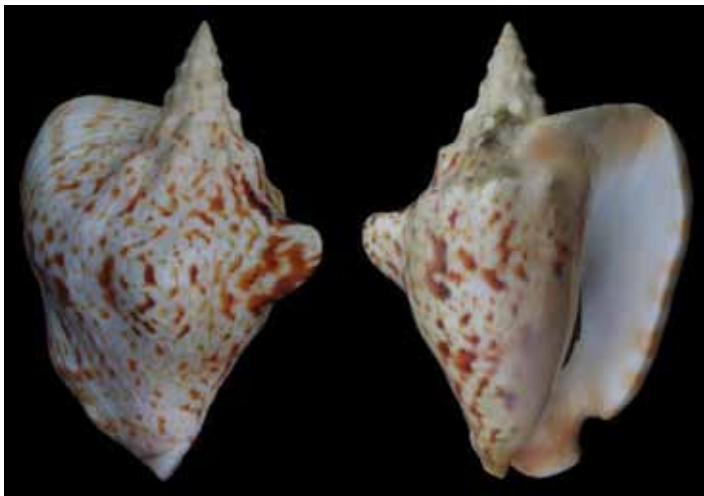
T. thersites thrives on calcareous algae, and, as such, is predominantly found in calcium-rich water. As a result, most specimens exhibit a heavily eroded dorsum and spire, thickly coated with calcifications or eaten away by calcium deposits. Spires are also very often chipped or broken off. On rare occasions, the shells are free of encrustations, calcifications, and erosion, displaying perfect spires and a clean, smooth, well-patterned dorsum. These are true rarities and sought-after oceanic treasures. Acquiring such specimens from the most remote of islands or atolls is truly special, and can be likened to finding a true oceanic gem. No wonder it has been aptly named one of the “Princes of the Pacific.”



Thersistrombus thersites, 139 mm, Dumbéa Passage, Nouméa, New Caledonia (coll. Andre Meredith); this specimen is solid and vividly patterned, but the last spire whorl was evidently damaged at some point, or it could be due to a growth defect.



Thersistrombus thersites, 145 mm, Poindimié, New Caledonia (coll. Andre Meredith); this is an example of a very heavy, solid specimen adorned with strong spire nodules.



Thersistrombus thersites, 126 mm, Lihou Reef, Coral Sea, Queensland, Australia (coll. Andre Meredith); this gem-grade specimen displays some algal discoloration where the lip merges with the spire, which has been completely covered over with shell material by the animal.

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A plethora of *Janthina*

Linda Zylman Holzinger



In late March, my husband David and I were walking the beach with our house guests, on Hutchinson Island, off Stuart, Florida. It was a fresh and windy day, with the wind coming straight off the ocean. The "Portuguese man o' war" (*Physalia physalis*) were plentiful on the beach, along with many "by-the-wind-sailors" (*Velella velella*). We were thrilled to see that there were also *Janthin*as, with their bubble rafts still attached, washed up all over the beach! We walked for 2 hours, continually picking up *Janthin*as. David and I could have stayed for many more hours, but our guests were less enthused! We ended up collecting 182 *Janthina janthina* (Linnaeus, 1758) and 5 *Janthina pallida* W. Thompson, 1840. I sent the attached photos to our friend Sue Hobbs and she suggested that I share the photos with the readers of *American Conchologist*, as they would enjoy seeing the unique structure of these shells and their little bubble rafts.

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Mechanisms, ultrastructure and behavioral flashing in *Ctenoides ales*: “disco clams”

Published Manuscript:

Dougherty LF, Johnsen S, Caldwell RL, Marshall NJ. 2014 A dynamic broadband reflector built from microscopic silica spheres in the ‘disco’ clam *Ctenoides ales*. *J. R. Soc. Interface* 11: 20140407.

<http://dx.doi.org/10.1098/rsif.2014.0407>

The Conchologists of America Grant I received in June of 2013 enabled me to conduct field work in Indonesia and Australia during the summer of 2013. What follows is a description of both lab and field work results obtained as a result of my funding.

Summary

Dynamic visual displays throughout the animal kingdom are often bright and dramatic. They can be produced through a variety of photic processes including bioluminescence, the use of chromatophores, and structural coloration. Here we describe the mechanism underlying the striking display of the “disco” or “electric” clam, *Ctenoides ales* (Limidae), the only species of bivalve known to have a behaviorally mediated photic display and whose flashing is so vivid that it has been repeatedly confused for bioluminescence. The flashing display occurs on the mantle lip, where electron microscopy revealed two distinct tissue sides; one highly scattering side containing dense aggregations of spheres composed of silica, and one side containing a strongly absorbing pigment. High-speed video confirmed that the two sides of the mantle lip act in concert to create a vivid broadband reflectance that rapidly alternates with strong absorption in the blue region of the spectrum. Optical modeling suggests that the diameter of the spheres, but not their packing density, is nearly optimal for scattering visible light. This simple mechanism produces a remarkable optical effect that may function as a signal.

The photonics of structural coloration are of particular interest in biomimetics, where nanostructure influences countless technologies derived from natural design. The use of structural coloration and scattering by various taxa in the ocean’s euphotic zone is especially interesting as long wavelengths are absorbed rapidly with depth, light attenuates with suspended solids, and available light varies between habitats. *Ctenoides ales* lives as deep as 50m underwater and inside small crevices, where ambient light is dim and wavelength-restricted. Despite this, the species evolved a reflective mantle edge that emits vivid light, resulting in the common name “disco” or “electric” clam. Preliminary research in spectrometry (Figure 3), high speed video, electron microscopy (Figure 4), elemental analysis (Figure 5) and particle modeling (Figure 6) has deduced how the photic display is produced; tissue composed of silica nanospheres is rapidly exposed then concealed to create a dynamic broadband reflectance that is optimized for a light-restricted environment. The behavioral purpose of the flashing display, however, remains unknown. Three hypotheses are being tested - that the display acts as (i) a signal facilitating the recruitment of conspecifics, (ii) a phototactic prey lure, and/

or (iii) a deimatic anti-predator display. Research interests center around the proximate mechanisms that produce the display (how) and the ultimate behavioral purpose of the flashing display (why).

Behavioral observations and ecological analysis in 2013 provided a solid context within which to conduct follow-up experiments in the field in 2014. Behavioral observations showed that organisms lived in clumped situations, which may result from conspecific recruitment. Predatory encounters were never observed, although valves with obvious whelk or octopus predation were common. The study sites, population densities, operational setup plans and data analysis were cemented after exploratory dives last summer. Additionally, the 2013 summer field season resulted in several new collaborations, including stable isotope analysis of silica origins and optical research into the clams’ visual abilities.

In addition to the field work on behavior, a collaboration investigating the optical capabilities of the species has been established with researchers at the University of Wisconsin and the University of Maryland. TEM (Transmission electron microscopy) analysis of the eyes, and molecular



Fig. 1. *Ctenoides ales* (Finlay, 1927) is called the “electric clam” or “disco clam” by divers because of its flashing display that looks like bioluminescence. It is in the family Limidae (file clams) and is typically around 50-60 mm in size. It is found throughout the tropical waters of the central Indo-Pacific, from Indonesia to New Caledonia. Photo from Wikipedia.com.



Fig. 2. *Ctenoides ales* as it is more commonly encountered in shell collections. While the dried and cleaned shell lacks the color, flashing display, and wavy tentacles of the living animal, it still has an interesting sculture and classic overall shape.

testing for the expression of opsins will be conducted. The visual abilities of the clam are important when considering potential communication with conspecifics.

Significance of Research

Optical biomimetics focuses on structurally-based coloration produced by photonic nanostructures. Research in this area has broad applications including anti-reflective lenses, solar panel surfacing, polarization and angular anti-counterfeiting devices, paints, coatings, tuneable lasers, and cell culturing for nanostructures. Behavioral uses of structural colors are diverse, including species and sex recognition, mate choice, ornamentation, aposematic coloration and orientation, and schooling and flocking behavior. Structural colors have also been proposed to result in non-communicative functions, including thermoregulation, friction reduction in burrowing organisms, water repellency, structural strengthening, photoprotection and vision enhancement. There is a wide diversity of organismal light use in the euphotic zone of the ocean, ranging from circularly polarized light signals in stomatopods, which led to the commercial development of quarter-wave retarder plates, to the use of reflective

proteins by *Tridacna* giant clams to optimize the photosynthesis of symbiotic algae.

Expected outcomes of this research include insight into the behavioral function of the photic display as well as comprehension of the molecular and evolutionary position and radiation of *C. ales*. This research involves a unique type of reflective structure that operates in conditions atypical of traditional reflectance, and it has the potential to advance the field in low-light and restricted wavelength reflectance potential. The widespread occurrence of structural colors coupled with their diverse functionality make this an important research area, contributing insight into biological function, physical optics, and biomimetic technological applications for society. With a broad array of biological and engineering applications and a study organism popular in aquaria and with associated conservation implications, this research appears to be of great public interest.

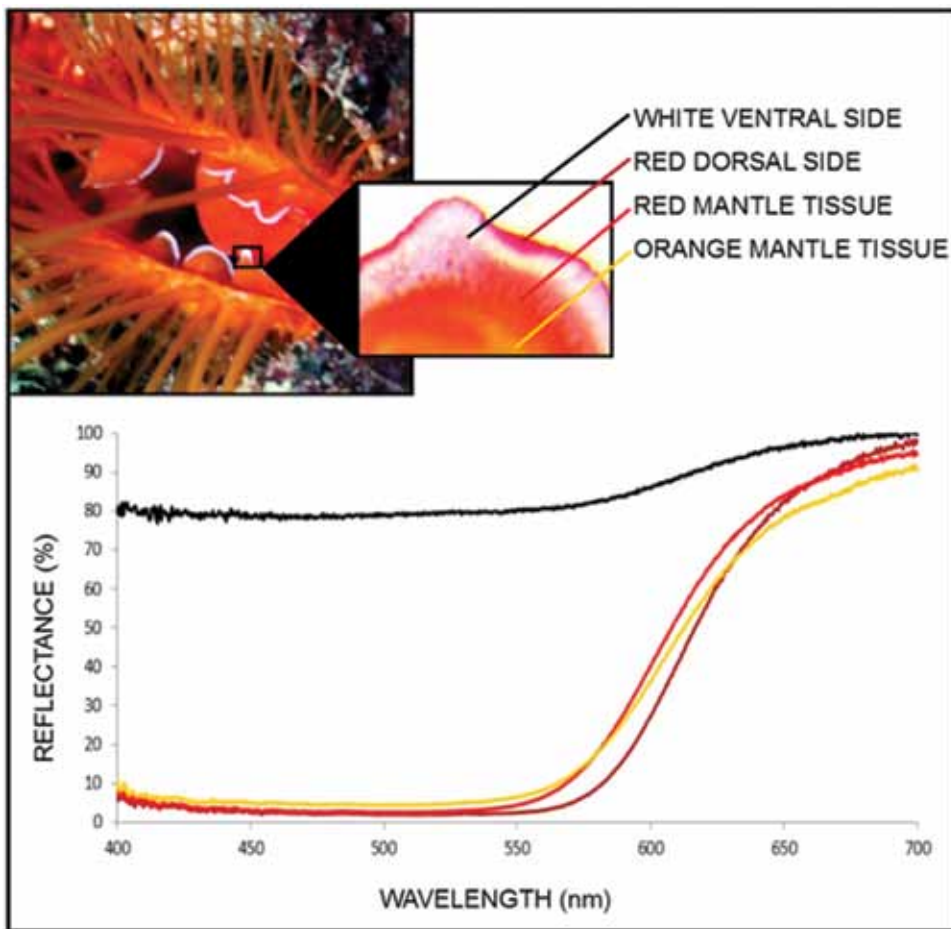


Fig. 3. Spectrometry on Mantle and Lip Tissue. Top: *C. ales* and microscope photo of tissue (inset) showing points of measurement for spectrometry. Bottom: Percent Reflectance for points of measurement. The white wavy areas in the above image are the flashing displays.

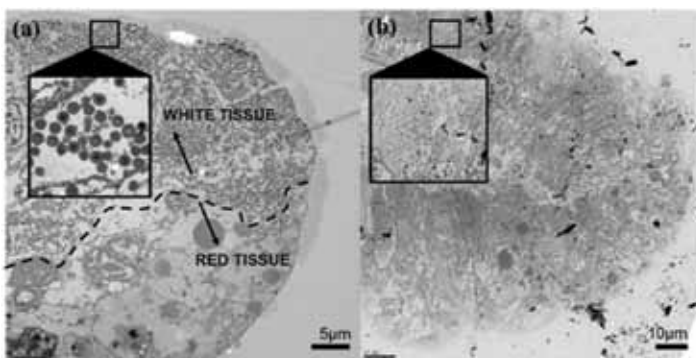


Fig. 4. Transmission Electron Microscopy Species Comparison (A) TEM of *C. ales* inner mantle fold marginal edge showing electron-dense spheres (inset) in the white ventral side, and a lack thereof in the red dorsal side. (B) TEM of congener *C. scaber* lacks any similar electron-dense spheres.

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Lindsey Dougherty

Disco Clams

Editor's comments: For more on the disco clam and the research and discoveries by Lindsey Dougherty, visit the University of California Museum of Paleontology website at: <http://ucmp.berkeley.edu/blog/archives/3831>

On the UCMP website are several links, including one that shows a short video that includes images of the actual flashing by these clams. The link is available on the UCMP website or you can go directly to the ABC website at: <http://abc7news.com/science/uc-berkeley-researchers-study-colorful-disco-clams/210149/#&cmp=fb-kgo-post-210149>

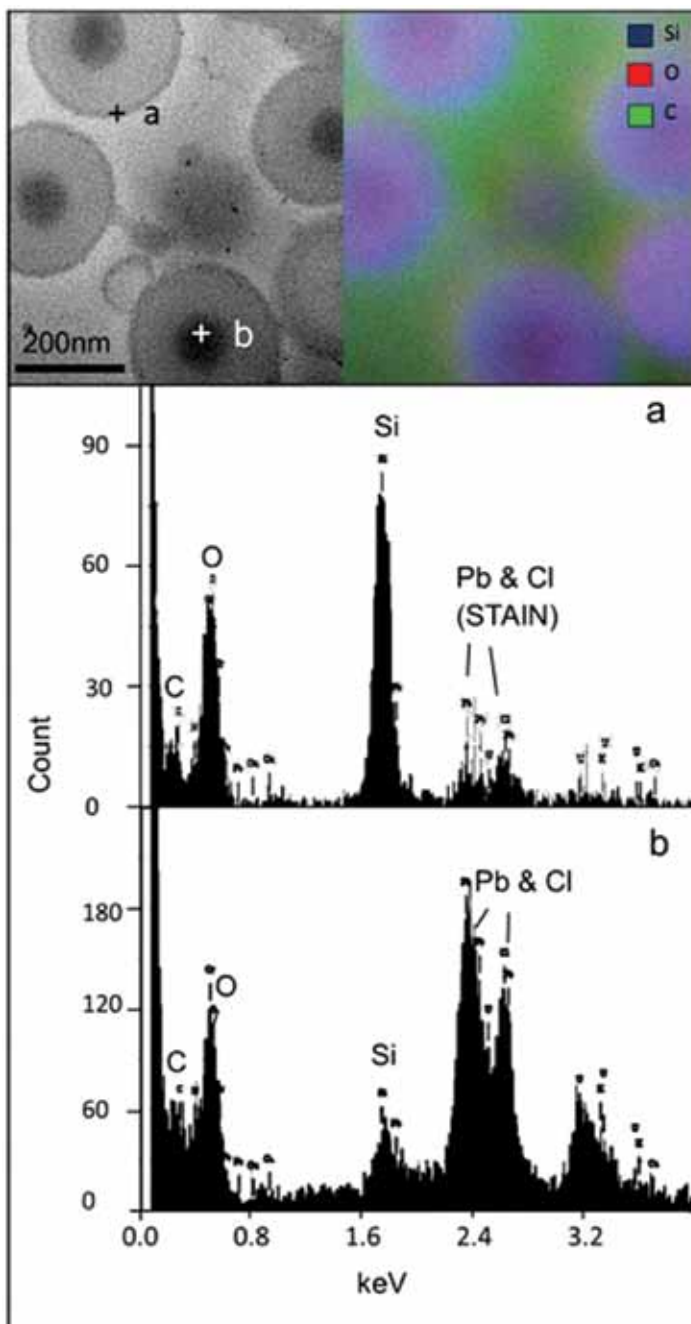


Fig. 5. Energy Dispersive X-Ray Spectroscopy (EDS). EDS elemental analysis shows the composition of the reflective spheres. Blue (Silicon) and red (Oxygen) combine to form the purple, amorphous silica spheres (SiO_2), while green (carbon) composes the underlying tissue. Both the outer shells (A) and the cores (B) of the spheres are composed of silica (silicon 1.70-1.80 keV, oxygen 0.40-0.60keV).

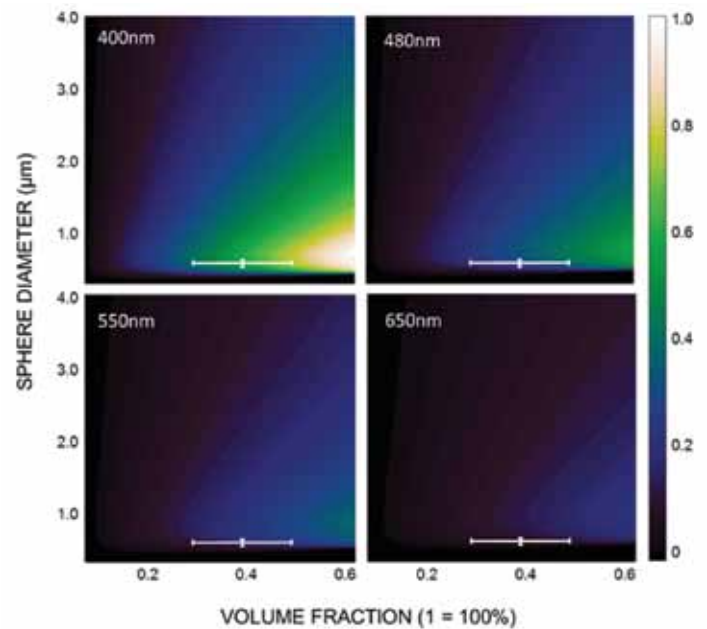


Fig. 6. The Effect of Sphere Diameter and Density on the Total Amount of 400nm, 480nm, 550nm and 650nm Angle-Weighted Scattered Light from a Dense Collection of Spheres (arbitrary units). The mean values (dots) and error bars show the range of the parameters found in *C. ales* tissue at four different wavelengths. The size of the spheres found in *C. ales* is close to optimal for maximal light scattering at 400nm and 480nm. Units are normalized to one for the maximum angle weighted scattering for 400 nm light.



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Does lightning strike twice?

Joaquin M. Inchaustegui

At the annual auction of the Houston Conchologist Society I was the only bidder for a bag labeled “#84 Cerith Collection.” I won the bag for a bid of \$1.00 and when I got the 10 or so shells home I identified and labeled most of them, but one of the larger shells that at first glance looked like the ceriths I had collected in French Polynesia, Fiji, Tahiti, and Tonga, in the 1970s puzzled me. I searched through all my books for that area of the South Pacific and, sure enough, there were several ceriths that looked similar to my mystery shell, but none matched exactly, so I labeled it “*Cerithium sp.*, H.M.S. #84 Cerith Collection.” I put it in one of the boxes with the shells obtained at the auction for further study at a later time. By taking an average I estimate this shell cost me about 10 cents.

There the unknown cerith remained until months later when Dr. Emilio Fabian García traveled from his home in Lafayette, La., to my home in Sugar Land, TX. to spend some time helping me with my shell identification. He brought with him a gift box with rare or uncommon shells valued at approximately \$600. These were: *Schilderia achatidea* (Sowerby, 1837); *Morum dennisoni* (Reeve, 1842); *Acesta rathbuni* (Bartsch, 1913); *Murexiella hidalgoi* (Crosse, 1869); *Pterynotus bednalli* (Brazier, 1877); *Pterynotus miyokoae* Kosuge, 1979; *Ancilla rubiginosa* Swainson, 1823; and *Perotrochus teramachi* Kuroda, 1955. Truly a generous house guest.

He worked with my collection for six days, examining each of my unidentified shells, determining the genus and species, and then I would complete the label with the family, the author and date, the collector (if known), and the date I obtained the shell. In the six days we completed the I.D. of about 50 shells. This would have taken me about a month of Sundays without Emilio’s help.

During one of our rest breaks, we examined some of the shells named after Dr. Garcia. These include: *Conus garciai* da Motta, 1982; *Vokesimurex garciai* Petuch, 1986; *Cerithioclava garciai* Houbriek, 1986; *Voluta garciai* (Petuch, 1987); *Opalia garciai* Kilburn, 1994; *Sinezona garciai* Geiger, 2006; *Scaphella garciai* Bail, 2007; *Vexillum garciai* Salisbury & Wolff, 2009; *Stocisia garciai* Rolan, Fernandez-Garces, & Lee, 2009; *Anatoma emilioi* Geiger, 2011; *Haplocochlias garciai* Rubio, Fernandez-Garces, & Rolan, 2013; *Fusilaria garciai* Snyder, 2013; and *Ferrocina garciai* Taylor & Glover, 2013. He then opened a file in my computer and showed me how to navigate the P.C. to access images of these, and other, shells. My first interest was to find an image of *Conus garciai*, which we did, and then on the screen was a large view of a *Cerithioclava* and I immediately

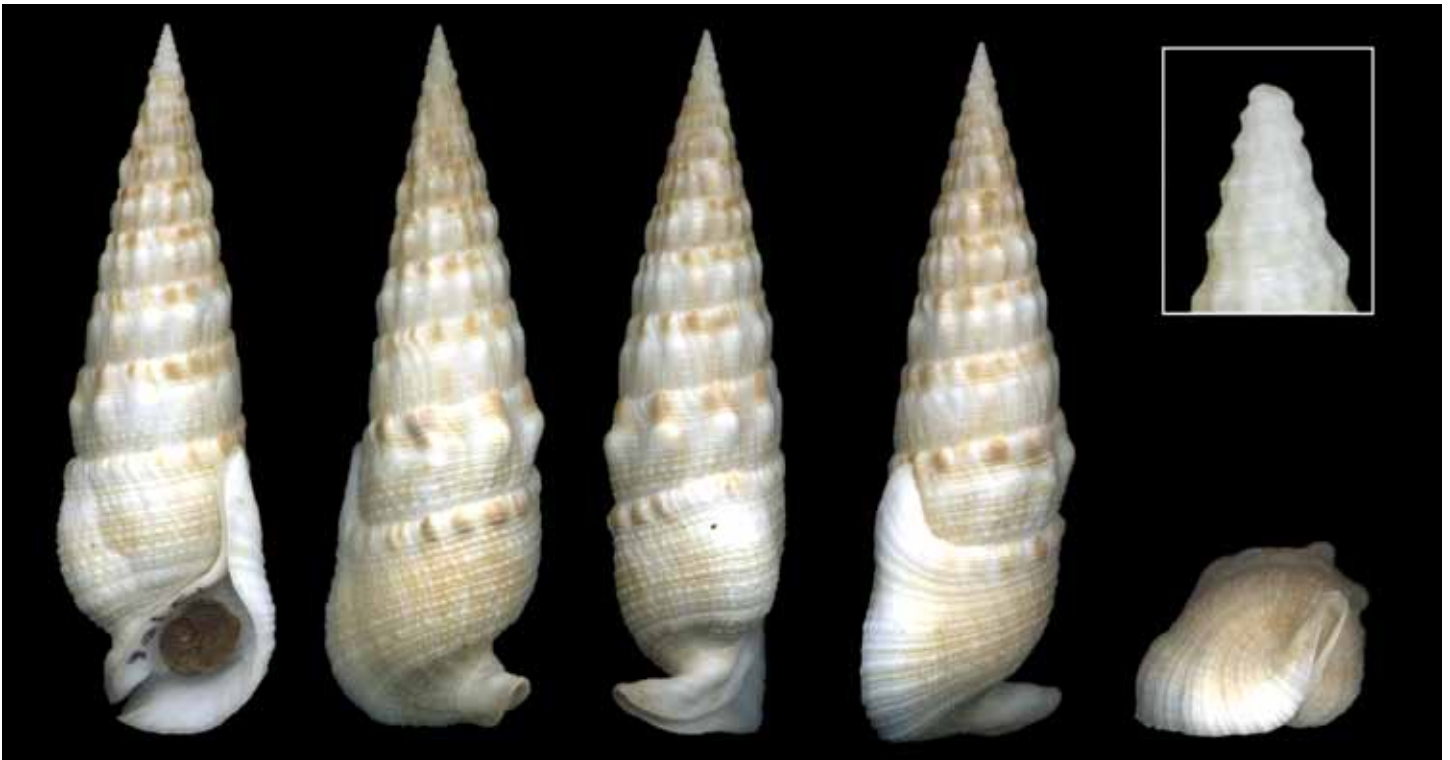
recognized it, practically yelling as I jumped to my feet. “I have that shell!” Emilio was incredulous and asked to see it. I went to the large box where I believed I had put it and after a minute or so I dug out the mystery cerith from the auction and handed it to him to compare with the *Cerithioclava* on the P.C. screen. After a few moments he said “Joaquin, there you go again, jumping to conclusions! This is not ‘*Cerithium sp.*’ with an unknown locality somewhere in the South Pacific, at all! You have an \$80 to \$100 shell, if you can find one for sale. It is *Cerithioclava garciai* Houbriek, 1986, and there are not many to be found for sale, especially one like this, gem quality and with its operculum”. He then explained that it is found only in a restricted area east of Roatan, Honduras. The genus was considered extinct by many experts for years and that when Dr. Houbriek saw the specimens sent to him by Dr. García, he was amazed that it was a Recent shell from the Western Caribbean and not a fossil. It represented a totally new, living example of the genus *Cerithioclava* that had, up to that time, only been known from fossil records of the Tertiary Caloosahatchian Province of Florida. Dr. Houbriek published in 1985, “The discovery of a new living *Cerithioclava* species in the Caribbean (Mollusca: Prosobranchia: Cerithiidae)” with nine pictures of *C. garciai* from Nicaragua and Honduras.

On a closing note, when Emilio was finished up and prepared to leave for Houston and then on to his home in Lafayette, he promised to send me an article prepared by Dr. Houbriek on *Cerithioclava garciai* and one prepared by A.J. da Motta on *Conus garciai*. I had no literature on either of these species and I was quite interested in both as well as the men who first described them.

Conus garciai (now placed in *Gradiconus* by some authorities) is compared by da Motta to *Conus angulatus* Lamarck, 1810, but it differs by having distinct channeled sutures and other distinct characters. Da Motta lists *Conus cancellatus* Hwass, 1792, and *Conus floridensis* Sowerby, 1870, as similar to *Conus garciai* with “...an equally pronounced turreted spire, but which is sharply crenated at the shoulder.”

In “The Cone Collector” issue #0 dated October, 2006, Antonio Monteiro wrote an “obituary” for his friend Antonio Jose da Motta, (almost 3 years after his death) who he describes as “...dynamic, kind and of convivial nature, with a genuine love for shells and for their study.” Da Motta’s family originated in northern Portugal. Monteiro goes on to say “Da Motta described a number of species, not all of them accepted by the international community as valid...”

Dr. Richard S. Houbriek (1937-1993) entered a



Cerithioclava garciai Houbrick, 1986, 70.1 mm, from the Caribbean. This was thought to be a fossil genus until the discovery of this species by Emilio García. Photo by Tom Eichhorst.

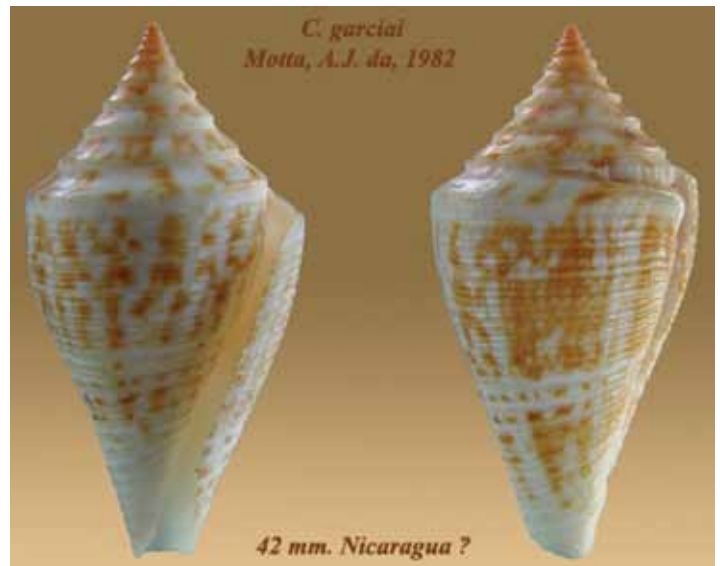
seminary and was ordained a Catholic Priest in 1964 and was a monk for eleven years. He later left the seminary to pursue his doctorate in biology which he achieved in 1971. He specialized in the systematics, anatomy and reproductive biology of prosobranchs, especially the Cerithiidae. I also have in my literature file "The family Cerithiidae in the Indo-Pacific Part 1: The Genera *Rhinoclavis*, *Pseudovertagus* and *Clavocerithium*" by Richard S. Houbrick, published December 15, 1978. Therein are many pictures of *Rhinoclavis*, *Pseudovertagus* and *Clavocerithium* but naturally none of *Cerithioclava*, believed by many experts for many years to be an extinct fossil genus.

Joaquin M. Inchaustegui
Joaquininc@aol.com

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Conus garciai da Motta, 1982, 42mm, from Nicaragua (?). Maybe the second lightning strike? Image by Alexander Medvedev, on Wikipedia Commons.


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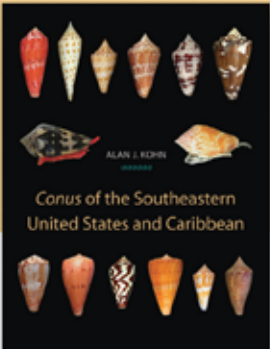
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The three-eyed *Lobatus gigas*

Sylvia M. Vélez-Villamil

I am a professor of marine botany and I took my class on a field trip last March to Las Cabezas de San Juan, Fajardo, Puerto Rico. The purpose was to collect and study some marine algae and to give the students the opportunity to participate in fieldwork. We spent some time snorkeling, as I usually search for other things to show the students. In all honesty I enjoy the “ooh” and “wow” when I show them something different. On this occasion I collected a young *Lobatus gigas* or queen conch (in Puerto Rico it is commonly called “carrucho”). When the animal extended its head, it was evident it had three eyes. I do not have to mention who said “woooow” this time. I took a couple of photographs of this interesting creature and then released it (local law forbids the killings of these animals).

Sylvia M. Vélez-Villamil
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Juvenile *Lobatus gigas* (Linnaeus, 1758) with three eyes, see close up below. Older references will be *Strombus gigas*. Photos by author.



A Korean shelling adventure

Marcus Coltro

Have you noticed that there are almost no shells from South Korea offered by the various shell dealers? It seemed to be a good place to go and look for shells! I went via Dallas – a 14 hour flight. Thank God I was able to fly business class using my mileage with American Airlines.

My travel agent suffered a bit to get me hotels and a car at Incheon Airport since he had never before sold any tickets to South Korea. Unfortunately, I was not able to get the car as they require an international driver's license, which I do not have, so I had to change my plans completely. I got information on how to get to Busan, South Korea's second largest city, located in the south end of the country. The best travel alternative was by bus, since the train station was in Seoul, some 40 km away.

I took a cab to a hotel near the airport and quickly realized that most people do not speak any English at all, even taxi drivers. I showed him my reservation and he did not understand anything, the same way westerners do not understand the Korean alphabet, but he was able to call the hotel and get directions. By the way, it was a very good thing that he called as the "hotel" was not a hotel per se, but rather an apartment rented by a guy who lives in the building. He asked the taxi driver to talk to me so he could give me a password to open the door (no physical key to open the door).

Busan

The next morning I went back to the airport where I took a bus to Busan, about 6 hours on a very comfortable bus. I expected that people would understand a bit English, but nope, in most cases they did not understand a word, not even the basics. Well, I needed to expand my mimic abilities anyway! I arrived at the hotel in Busan. It was an old place, but very well located. The nearby streets were packed with restaurants and stores, and it was fairly close to Jagalchi Fish Market – the main reason for going to Busan.

Jagalchi is a big fish market, with several booths offering all sorts of fishes, shells, urchins, and other marine animals to locals and restaurants – all live in tanks filled with running refrigerated salt water. I was the only westerner there and they barely looked at me, until I bought some shells and had a plastic bag in my hands. Then all of them



Jagalchi Fish Market in Busan. Image from Wikipedia Commons.



Some shells from the Jagalchi Fish Market. Image by author.



One of the vendors in the fish market on Yeongdo-gu Island, south Busan. Image by author.

started “talking” to me (I looked back and smiled in Korean). People walk up to a stand and choose a live fish from the tank, then take it and kill with a club. I guess it is quite inconvenient to carry home something struggling inside a bag.

All the streets around the market have shops selling the same type of live “merchandise.” There is that odor in the air that we collectors are used to smelling when cleaning our catch. I bought several bivalves, as well as *Haliotis*, *Buccinum*, and other shells. The problem is that 90% of the material is badly broken, and to pick the good ones you must stick your hands inside the tanks, prompting some of the sellers to yell “no touchy!” Or something to that effect. After I had some bags filled with shells from other sellers they got easier on me and allowed my western hands inside the tanks to pick the best specimens (and to freeze my fingers).

It was my intention to fly to the Philippines in a week to participate in the anniversary of Conchology Inc., with my friend Guido Poppe, and of course to buy a lot of shells there as well. I could not fill my luggage with heavy and large bivalves since I needed the space for shells from the Philippines. I had to carefully choose each species and not take all that many. I would also have to clean all of the shells and there was no microwave at the hotel. The most expensive shell was the *Haliotis discus*; most restaurants have it on their menus. I’ve tasted it and found it was not very good, chewy and served whole with the guts. Not like the ones from California, tender and delicious. The most expensive of the bivalves was *Meretrix lusoria*. The taste must be good, although I did not find any restaurant offering it on their menus. Well, to be honest, I was not able to communicate very well in any restaurant to order something specific, so I always ordered based on pictures on the menu and I did not see anything that looked like a *Meretrix*.

I went back to the hotel and tried to buy some isopropyl alcohol, but no one knew what I was talking about, even after I showed them the translation on my cell phone. So I bought vodka instead, which did not work quite as well. It was so cheap that I did not dare take a taste. The night life around the hotel was very active, with lots of tourists on the street buying at shops and eating at restaurants or at a street fair with many food carts. To western eyes, most of the food looked like something found in an Indiana Jones movie, dried squids, fishes, and other things I was not able to identify. I tasted some and most was very good.

The next day I went to Yeongdo-gu Island, just in front of Jagalchi market. I checked a map and wanted to go to the furthest point of the island. I took a map with me and showed it to a taxi driver. He looked at the map and drove 5 minutes, then stopped the car and “told” me he did not know how to get there, so I had to leave the cab. Yes...communication can be a problem. I did not give up, however, and tried another taxi. I showed him the map and he “mimically” explained to me that there were no roads that went that far, so I asked him to get me as close as possible to a marine museum on the island, which he did. The museum looked very nice, too bad it was Monday and most museums are not open, but I looked once again at the map and it seemed it was not too far to a beach, about 2 km. To walk 2 km is not much, except for the fact that it was very hot. It seemed the sun was melting the asphalt. I got to the beach, a rocky place with many kiosks selling basically the same things I found at the Jalgachi market. I saw some rocks at the end of the beach and went there, finding only a few *Littorina*. I spotted a trail going up the mountain and went there looking for land shells. None. I guess they were all cooked by the sun. After losing most of the water from my body I decided to go back. I stopped at a small restaurant on the way and

had a delicious octopus stew. Again, no one spoke any word in English. When I signaled that the food was very good at the end, she misunderstood thinking I wanted to smoke and pointed to the door.



Small bowls with various types of food are called “banchan.” Image by author.

Ulsan

Back in Busan, I called a dealer in Ulsan (someone had given me the phone number). I took a bus and went to downtown Ulsan. It took a lot of time since it was an urban bus, stopping at every single bus stop on the way. Too bad I did not know that his store was actually much closer to Busan than to Ulsan’s downtown area. The cab I took cost much more than the bus trip and as much time, much of it retracing my earlier route. Ulsan’s Maritime Museum and shop is a very nice place, well organized by Mr. Han-ho Park and his son Choong-hoon. Mr. Park has collected shells and corals his whole life and in 2010 he inaugurated his nice museum. Sadly, the only shells I could find in his store were from the Philippines. Choong-hoon took me to lunch in a very nice restaurant, where we ate crabs and other sea food. At most Korean restaurants they serve banchan, small bowls with various types of food such as algae, dried fish, peanuts, and kimchi, a very spicy way to prepare some vegetables. I love spicy food, so I was quite happy!

After lunch Choong-hoon left me at a beach near his shop where I collected several small shells on the rocks and saw several large orange jellyfish near the shore. It was very windy and felt much nicer than the previous day on Yeongdo-gu Island. Choong-hoon offered to drive me half-way to Busan, where I could take a local bus and it would be much faster than going back to Ulsan.



Above: The Maritime Museum in Ulsan. The *Tridacna* shells are really quite large, but nothing like the gastropods at the top of the steps!

Below: A closer look at the helmet shell. Images by author.



Danyang

I stayed one more night in Busan and then went to Danyang the next day, where I wanted to look for land shells. The city is near Gosu Cave (http://en.wikipedia.org/wiki/Gosu_cave), one of many caves in the region. The place receives many tourists and has small shops and restaurants. I visited the cave and then walked down a road to a small nearby river where I found some thiarids and on the side of the road I found some tiny land shells. The heat was again quite intense, so I had to stop for a beer, and lunch of course. This time it was a bit more difficult to order since the restaurant did not have a menu with pictures, only a banner on the wall with the name of the meals and the price below. The waiter (an elderly man) did not understand even the word “beer.” I had to go with him to the fridge and point to a beer. He asked me what I wanted to eat (I think), and since I do not know anything but “bulgogi” (meat prepared in a sweet



A large formation inside the Gosu Cave in Danyang. Image from Wikipedia Commons.

sauce) that was what I asked for. He yelled at the kitchen, where the cook then yelled louder, something I imagine was close to “tell this crazy foreigner we do not have such thing.” After all of this, I simply pointed to something on the wall and hoped I was not ordering anything that had once barked or meowed. It was a soup with meat and very good, as was the banchan that came with it.

Leaving the restaurant, I found a few more land snails and decided to walk further along the road. I saw another smaller road going up the mountain and followed it. It was abandoned and very steep. I did not find a single shell and was starting to feel dizzy due to the heat, so I returned to the main road. I stayed there the whole day and had to go back to the hotel to clean a few more shells I had purchased in Busan. They were quite rotten by then. I wonder what the cleaners thought after I left my room...”this stinky westerner!”

I intended to stay one more day in Danyang, but the next morning started with a thunderstorm so I went back to Seoul, from where I would fly to the Philippines in a couple of days. In Seoul I went to another fish market and bought several shells. I had to resist purchasing too many since I would only have a few hours to clean them before



Last minute shell cleaning behind the locked bathroom door at the Seoul Airport. Image by author.

leaving the country. I put them in alcohol (which I was able to purchase at a drugstore) so I could clean them the next day at the airport. Yes, the only place I would have time to do it was at the airport. I found a restroom with a sink and locked myself in for one hour. People must have thought I was not feeling well due to the smell and the time I spent behind the locked door. After I cleaned all of the shells I packed them and went to the line to take my flight to Cebu.

As usual my trip was less than perfectly planned. I had booked everything one week earlier, but to my surprise the attendant at Korean Airlines told me I could not board the plane because my passport was valid for only five months, instead of the six months required by the Philippines! The worse thing is that even my travel agent was not able to find this requirement on the internet. It was only after I got back to Brazil that I found a website where I could confirm this information. So now what? I am used to changing plans at the last minute, so I was not too stressed. I went to an information booth at the airport and talked to a very nice girl (who thankfully spoke perfect English). She booked a hotel for me in Seoul and suggested going to Sokcho, a large and beautiful city in the northwest.

Sokcho

Of course I was very sad to miss out on the 10th anniversary of Conchology Inc., but at least I was able to find another interesting place to look for shells. Sokcho is very beautiful, has many things to do, including a fantastic park, Seoraksan National Park. Thousands of tourists go there every year to climb or simply walk on its nice trails along the small stream inside the park.

When I arrived at the bus station I found an information booth for tourists – and another nice English speaking attendant who was very helpful, setting me up with the best hotel on the trip for only US \$85 per night! The Class



Expo Tower in Sokcho. It looks like a giant, twisted “Slinky.” Image from Wikipedia Commons.

300 Hotel is a relatively new hotel with modern and spacious rooms. The bathroom was fantastic, with a full electronic toilet (heated seat, washes and dries your ...) and with a window to the room so you could take a bath looking at the beautiful view of the sea! The top floor restaurant is another place worth the stay, for US \$18 dollars you eat as much as you want for breakfast, a delicious buffet!

Sokcho is the capital of dried fish of South Korea. They have a huge market selling all sorts of dried fish and squid, live as well. I found several species of *Buccinum* and many bivalves at a fish market downtown and at another one near the sea. I also collected several shells near the place where they dump dead shells, but it was near a sewer, stinky and with rats...so I soon had to give it some distance, or risk losing my lunch. I walked all over the city, quite a nice place. I have never seen so much dried sea food in my life!

Another interesting place was Dae-po Port, where you can eat raw fish and other specialties from the region. On the last day I went to a small museum near the beach. It had lots of interesting minerals and a collection of shells - all from the Philippines and arranged in an aesthetic manner (lots of incorrect names though), but worth a visit.



Above: Some of the dried fish in the Sokcho Market. Image by author.

Below: The Sokcho Natural History Museum. Image by author.



The shells I picked up at the Sokcho Market. Image by author.



Above: A nice view of Seoraksan Park, unfortunately it is often over-crowded with tourists. Image anon.

Below: Crowds of people climbing the rocks for a view in Seoraksan Park. Image from Wikipedia Commons.



Seoraksan Park

On the second day in Sokcho I went to Seoraksan Park. The first thing I did was take a cable car to visit one of the peaks. I was impressed to see many elderly people climbing to the top – a very dangerous, steep rock! I am used to this kind of thing and I was concerned for myself. After coming back down, I knew I would not have time enough to see much, so I picked a trail on the map (they have great maps everywhere in Korea!) to follow until I was tired enough to go back. At the entrance there was a chart with a toughness scale for each of the trails. It advises that elderly people and pregnant woman should skip the more difficult trails. On the first part of the trail I saw many people – too many for the kind of trip I am used to, but as I went on the fewer people I saw. When the sky got dark with thunder rumbling, I saw many people coming back and the trail looked much better. I was able to walk in parts without



Above: Assorted bivalves at the Sorae Market in Incheon. Image by author.

Below: More assorted bivalves on display with a spray of cold water. Image by author.



any tourists at all, but I had to return as the rain was getting stronger. I stopped at a shop about halfway back, where many other tourists were waiting for the rain to stop. Instead it got worse and they sounded a siren to make sure everyone got to a safe place. After the rain stopped the sun came out and it was like nothing had happened, even the birds started to chirp again!

I walked for seven hours and just saw a small part of the park, so I imagine it would take at least a week to visit most of it.

It was then back to Seoul where I only had a few hours to prepare the shells for the trip. I was going to stop for a couple days in Miami, so I did not want to get expelled from my condominium due to the “parfum” coming from the apartment! All worked out well. South Korea is a beautiful country and worth a visit for a longer period!

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2014 *Neptunea* Awards



Colin and Janet Redfern, enjoying life on a boat in the Bahamas.



Tom Rice with one of his many parrots, in this case a rainbow lorikeet (*Trichoglossus haematodus*), in Rawai Beach, Thailand.

The 2014 *Neptunea* Awards were presented to Colin Redfern and Tom Rice. Both of these individuals are well known to members of COA and over the years have contributed greatly to the advancement of our organization as well as the knowledge of conchology and malacology. Both gentlemen are well-deserving of this recognition. Tom's award is shown below as an example of the *Neptunea*.

Colin Redfern lives in Boca Raton, Florida, and is perhaps best known for two superb volumes on Bahamian mollusks. The first, titled "Bahamian Seashells: A Thousand Species from Abaco, Bahamas," was published in 2001 and set a new and very high benchmark for area molluscan studies. Aside from great illustrations (many a particular species for the first time and all by the author, except the SEM images), over half the book contains descriptive text covering each species. This book quickly became THE reference for western Atlantic and northern Caribbean Mollusca. Then, in 2013 came, "Bahamian Seashells: 1161 Species from Abaco, Bahamas." This is much more than a revision of the first book; black and white photos became color photos, species were added, images were added, the format was redesigned to make it more user friendly, and many of the species are now shown as living creatures, not just dried shells. Colin truly surpassed himself. Colin also maintains a web site for updates and errata for both books. As a closing remark, Colin recently donated his shell collection (including voucher specimens from the books) to the Bailey-Matthews National Shell Museum in Sanibel, Florida.



Tom Rice lives in Rawai Beach, near Phuket, Thailand, and is perhaps best known for publication of the shell magazine, *Of Sea And Shore*, (108 issues, 1970-2007). During this period, *Of Sea And Shore* was THE shell magazine and has now been digitized on disc. He also published: *The Catalog of Dealers Prices for Shells: Marine, Freshwater and Land* (23 editions, 1965-2007), *A Sheller's Directory of Clubs, Books, Periodicals and Dealers 1965-2007* (27 editions), *Directory of Conchologists/Malacologists* (6 editions); *Additions and Corrections to A. Myra Keen: Seashells of Tropical West America* (1968), *Checklist of the Marine Gastropods from the Puget Sound Region* (1968), *A Checklist of Mollusks on Postage Stamps* (6 editions), *A Checklist of the Shelled Marine Molluscs of the Oregonian Faunal Province* (2000), *Marine Shells of the Pacific Northwest* (1972), *What is a Shell* (1972), and *Beach Banquet* (1993). Tom is a founding member of COA, hosted two COA conventions, and served as President in 1974. Tom moved to Thailand after retirement. Before that he lived in Port Gamble, Washington, where he was a drawbridge tender and proprietor of the "Of Sea and Shore Shell Museum" in Port Gamble.

2014 Gulf Coast Shell Show

The COA Award at the 2014 Gulf Coast Shell Show went to Vicky Wall for her exhibit, "The Family Personidae." Her display covered 10 feet in 5 cases and presented a comprehensive view of the shells and characteristics of this family, with its often bizarrely-shaped shells. This year's show



was attended by almost 400 people and had over 200 feet of display area. Judges were Dr. Emily Vokes and Dr. Emilio García. The shell show chairpersons were Jim and Linda Brunner. The show was held on 19-20 July 2014 at the Panama Beach Senior Center in Panama City Beach, Florida. The shell of the show was *Stellaria lamberti* (Souverbie, 1871). This New Caledonia endemic is the rarest (at least in terms of availability to collectors) of the Xenophoridae (carrier shells). The self-collected shell of show was *Hexaplex fulvescens* (G.B. Sowerby II, 1834), one of the more impressive shells from Florida waters. The DuPont Trophy was won by Jim and Linda Brunner for "Fossils of the Chipola Formation." Linda Bruuner won the "most educational" exhibit for "The eye of the sheller."

The Gulf Coast Shell Club meets at 7:00 pm on the second Tuesday of each month (except June and December, which are reserved for social activities) at the Lake Huntington Club House, 3504 W. 15th Street, Panama City, FL. Annual dues are \$8 for a single and \$12 for a family. New members are always welcome and can participate in several field trips as well as the meetings and shell show.



Dr. Emilio García (L) presents the COA Award to Vicky Wall (C), who is holding the Helen Norton Award, while Dr. Emily Vokes (R) presents Vicky with the "Shell of Show."



The beginning case for the winning display by Vicky Wall. The x-ray image certainly shows the twisted nature of the shells in this family.



Left: An example of *Stellaria lamberti* (Souverbie, 1871), 50mm, New Caledonia, the species selected as "Shell of Show." *S. lamberti* is found on seamounts around New Caledonia, and much of this area is now closed to fishing.

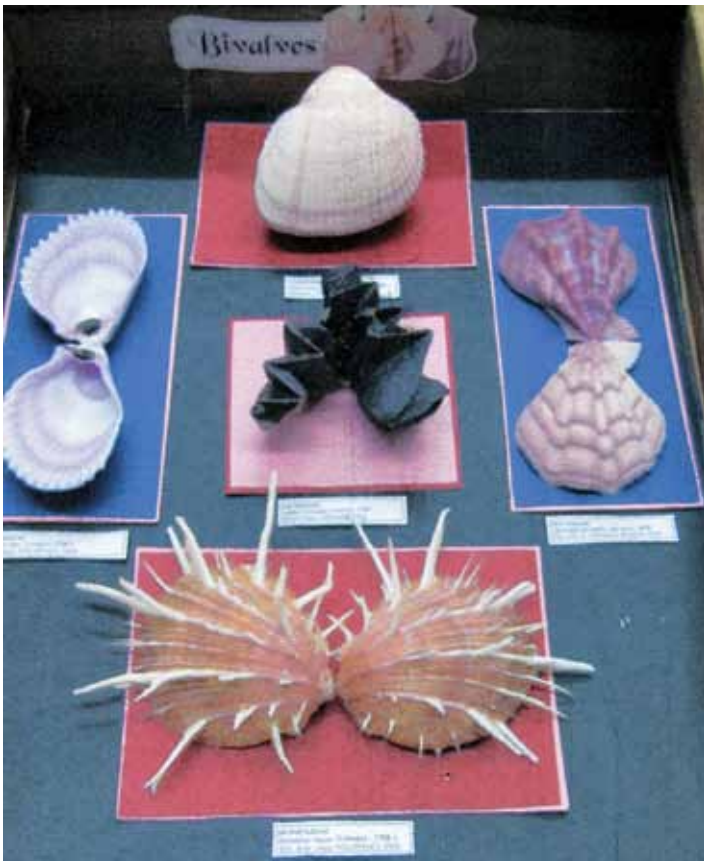
2014 Keppel Bay Shell Show

This year's winner of the COA Award at the annual Keppel Bay Shell Show was Heather Smith with her display of "Worldwide Large Bivalves." It was a well-attended event and featured over 25 categories of competitive events. Some categories were restricted to a molluscan family like Cypraeidae or Conidae, or a genus like *Lambis*, while others were more general like bivalves or land snails. Shells of the show included the gastropod *Trigonostoma milleri* Burch, 1949, displayed by Robert Ellis, and the bivalve *Amiantis purpurata* (Lamarck, 1818), displayed by Thora Whitehead.

The Keppel Bay Shell Club was formed in 1962 with 39 members. The first shell show was held in 1967 and took place over an eight day period! The club membership is now approximately 150 and this year's show, held on 12 and 13 July 2014, celebrated the club's 50th anniversary. The event was held at the Yeppoon Show Grounds in Central Queensland, an area renowned for its tropical climate and beautiful beaches. The club publishes a newsletter, the *Keppel Bay Tidings*. Membership is Au\$20 for single or a family of two. Junior membership is Au\$3.



Heather Smith (R) is presented with the COA Award by club President Ena Coucom (L).



Part of Heather Smith's display of large bivalves at the 2014 Keppel Bay Shell Show.



The Keppel Bay Shell Club meets in this dedicated facility in Yeppoon, Central Queensland, Australia.

A North Carolina Whelkome at the COA Convention

by Jeannette Tysor and Ed Shuller

The 2014 COA Convention hosted by the North Carolina Shell Club and held in Wilmington, North Carolina, was a tremendous success with 204 registered attendees and 36 guests. More than 160 people participated in the pre-convention tours featuring two historical tours, two dinner cruises, a tour of Airlie Gardens, and a visit to Cameron Art Museum, which features works of local artists. A tour of Fort Fisher and the NC Aquarium was a “washout” due to a strong storm. In the spirit of generosity, the group chose to donate their refund to COA.

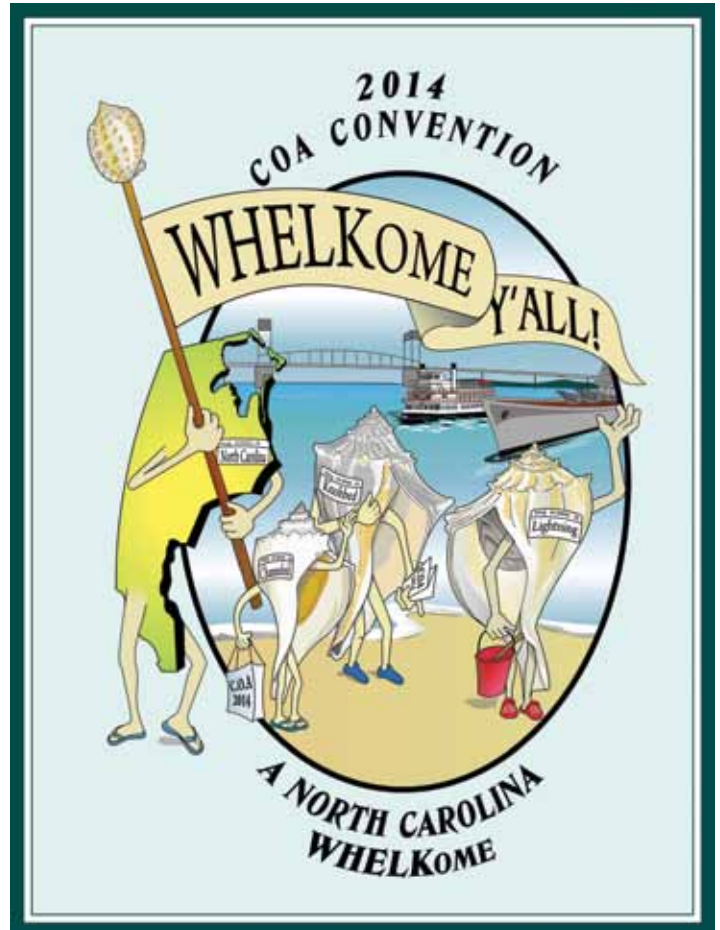
The Convention officially opened Monday morning with remarks by Jose Leal, COA President, and NC Shell Club President, Susan O'Connor. The first three days featured a series of outstanding programs and all were well attended. Included in the presentations was a 6-part symposium on the molluscan diversity of North Carolina. Other programs provided updates on taxonomic changes, foreign shell shows and museums, interesting shelling trips, and travel in exotic lands.

New to COA this year was a Poster Session presented by students and members on their research or other shell related topics. Eight posters were entered with themes such as a rare shell find by a NC Shell Club junior member, the Herb Athern collection of freshwater mollusks at the NC Museum of Natural Sciences, oyster reef restoration, the terrestrial molluscan fauna of Vietnam, and shell club pins.

Monday evening's Welcoming Party with its “Scotch Bonnet Fling” theme honored the NC state shell and the Scots-Irish heritage of North Carolina. The costume contest was great fun. Judges Mary Louise Spain and Jean Newell presented winners Anne Joffe, Linda Sunderland, Betsy Bluethenthal, Matt Blaine, and Bob Pace, with Scotch Bonnets filled with tiny “shell flowers.” A unique musical presentation by the pipers and drummers of the Port City Pipers was both moving and inspiring.

The Mini-Shell Show on Tuesday and Wednesday had an impressive 71 entries in nine categories. Expert Judges Anne Joffe and Hank Chaney had a difficult job. Winners were Vicky Wall, John Timmerman, Betsy Bluethenthal, Amy Dick, Tom Grace, Richard Edwards, Karlynn Morgan, Nancy Timmerman and Irmgard Cate. Trophies were awarded by John Timmerman at the Wednesday night banquet.

Tuesday evening the widely advertised and much anticipated Oral Auction was held. Featured were over 40 items donated from the Walter Paine collection with many



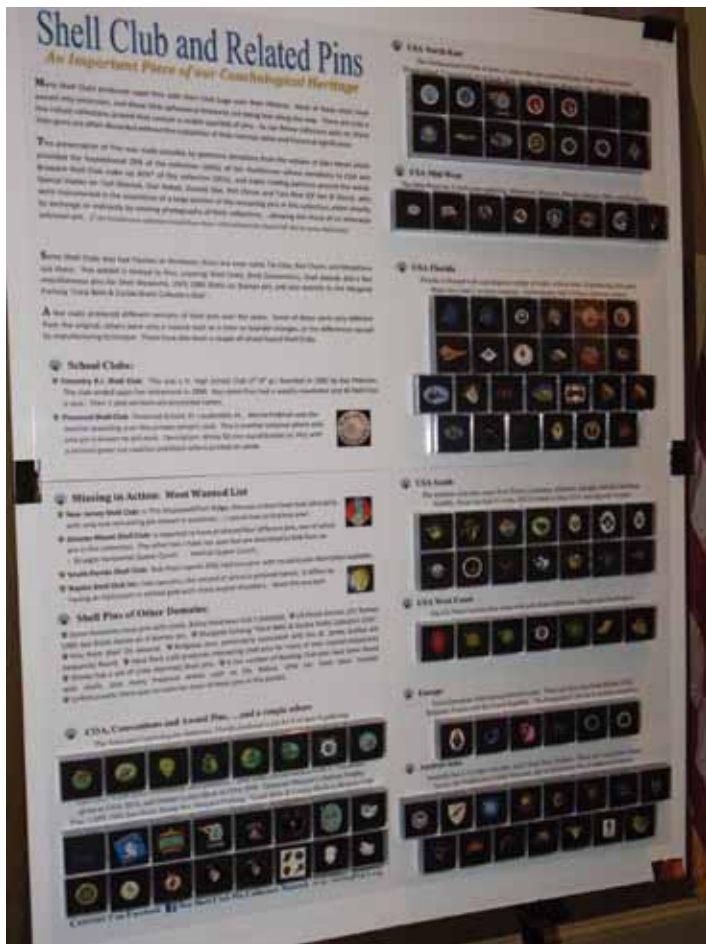
One of the winning entries in the Mini-Shell Show was this *Cancellaria (Sveltia) gladiator* (Petit, 1976) (gladiator nutmeg) from Isla Santa Cruz, the Galapagos Islands. The shell was dredged at 200 meters and was displayed at the show by Tom Grace. Photo by John Jacobs.



The USS North Carolina was moored across the river from the hotel. This is one of eight US battleships on display as floating museums. The 16-inch guns (inside diameter of each tube) fired a round equivalent to the weight of a Volkswagen beetle. Photo by John Jacobs.



The entrance to the Cotton Exchange, one of many interesting stops on the historical tour of downtown Wilmington. Photo by John Jacobs.



There were many superb posters at the convention. One of the more unusual posters was this entry by Leslie Crnkovic on shell club pins from around the world. Those are the actual pins on display. Photo by John Jacobs.

rare and seldom-seen shells. Amazing donations were also received from the Alice Monroe estate, vendors, and members. The quality of offerings made for lively bidding and premium prices. Harry Lee, Charlotte Thorpe, and Paul Callomon did a fantastic job as auctioneers bringing in more than \$14,600 for COA's scholarship and grant programs.

On Wednesday the program sessions concluded with the COA Business Meeting. After the reading of the minutes, financial reports and announcement of 2014 grant recipients, the session ended with a promotional presentation for the "Gala in the Glades," the 2015 COA Convention to be held July 14-19 at the Bonaventure Resort & Spa in Weston, FL.

Wednesday night's Lighthouse Banquet was a big hit. After a delicious meal, Charles Rawlings, one of last year's *Neptunea* Award winners, awed the audience with his wonderful photographs of living mollusks in situ. Following the program Harry Lee announced the 2014 winners of the *Neptunea* Award: Tom Rice and Colin Redfern. Raffle winners were drawn, mini-shell show trophies presented, and lighthouse favors and table prizes given. The evening concluded with many thanks to all participants, contributors, organizers, and to the host club. Co-Chairs Ed Shuller and Jeannette Tysor were presented copies of the convention logo printed on canvas from their shell club in appreciation for their work on the event.

Silent Auctions were held Monday, Tuesday, and Wednesday, with the final auction comprised entirely of items from the Walter Paine Collection. So much material was donated for auctions that on Thursday morning a "Cheap Shell Sale" was held prior to the opening of the bourse. Also a used book sale was held in the bourse room on Thursday and Friday. Together the silent auctions and sales tables raised more than \$10,000.

The last two days of the Convention were devoted to the bourse. There were 34 dealers from the US and abroad, in two ballrooms, offering shells, jewelry, fossils, paintings, books, and most everything else shell related. There was lots of activity in both rooms.

What a wonderful fun filled week! Wilmington, NC was an ideal place to hold a convention with lots to see and do. It was a great time to visit and share with old and new friends. The COA Convention offers all this and more! Start planning now to attend "Gala in the Glades" in 2015. See Y'All there!



Dorrie Hipschman (L) from Sanibel, Florida, and Bob Lipe (R) from St. Petersburg, Florida, examine some of the items prior to the auction. Photo by John Jacobs.



The auction this year had some real treasures with the addition of 40 specimens from the Walter Paine collection. At the lectern is one of our hosts from North Carolina, John Timmerman. John is introducing this year's auctioneers, Charlotte Thorpe (L), Harry Lee (M), and Paul Callomon (R). Photo by John Jacobs.



Doris Underwood (L), COA Membership Director, and Steven Coker (R), COA Treasurer, keep the accounts as the auction tally mounts. Photo by John Jacobs.



These two lamps, filled with specimens of *Scaphella dohrni*, were donated by Harold Brown and Ed Schuller. They were sold separately and caused quite a storm of bidding. Photo by John Timmerman.



Some auction items, including: several *Melo* shells and a *Syrinx aruanus* donated by John Timmerman and a large bright red *Nodipecten magnificus* donated by Marcus and Jose Coltro of Femorale. Photo by John Jacobs.



Looking down the Cape Fear River from the hotel. Photo by John Jacobs.



One of the two rooms with bourse tables. Photo by John Jacobs.



Above: sculpture of the carnivorous Venus flytrap (*Dionaea muscipula*) on the river walk by the hotel. Although this plant is now grown in green houses around the world, its original habitat is in poor wet sandy or peaty soil in North and South Carolina - within a 60 mile radius of Wilmington! Photo by John Jacobs.

Right: Dennis Sergeant (L) and Larry Strange (R) sit back and relax after a tough day of talking, showing, buying, and selling shells at the bourse. By all accounts this was a great convention. Make plans now to attend next year, 14-19 July 2015 at the Bonaventure in Broward County, Florida. Photo by John Jacobs.



New to the bourse this year, John Taylor with fossil *Megalodon* teeth. Photo by John Jacobs.





2015 CONCHOLOGISTS OF AMERICA CONVENTION

Dates: Tuesday-Saturday, July 14-19, 2015 Field Trips: July 12-13, 2015
Hotel: Bonaventure Resort & Spa, Weston, Broward County, Florida

The Broward Shell Club cordially invites you to attend the 2015 COA Convention in Weston, Florida on the edge of the unique Florida Everglades. The Bonaventure Resort & Spa, a AAA Diamond Award Hotel, with its beautiful rooms and excellent convention facilities, will provide a wonderful setting for our exciting week of shells and friends. Set on 23 acres, the Bonaventure has a full service spa, three pools, fitness facilities, two golf courses and four in-house eating establishments, including the AAA Four Diamond Ireland's Steak House.

COA planned field trips will include a snorkeling trip, an Everglades/land snail adventure and an Everglades/airboat ride adventure. Additionally, there are many exciting attractions and restaurants to take advantage of including beautiful Ft. Lauderdale beaches and the Seminole Hard Rock Casino/concert hall. Sawgrass Mills, the largest outlet and value retail shopping destination in the United States with more than 350 stores, is located five miles from the hotel.

We look forward to sharing our beautiful South Florida weather and warm hospitality with you for a memorable week in paradise!! See you there!!



www.conchologistsofamerica.org/conventions

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www.2015coaconvention.com

Some notes on an interesting epitoniid species from the eastern Pacific

Leonard Brown

Introduction

In 2011, Mr. George Sangioulglou contacted me and requested I look at an unidentified epitonium he acquired from Cocos Island, an island off Costa Rica. Since Helen DuShane had spent years studying the Epitoniidae found in the Panamic-Galapagan faunal province and published a series of papers summarizing her findings, I expected it would be a straightforward matter to identify his specimen. To my considerable surprise, I received the specimen pictured in fig. 1. According to the data accompanying the shell, it was collected by a diver at a depth of 10 ft. and was found at the base of an anemone. This is typical habitat for epitoniums since they are predators or parasites of corals and anemones.

Bruce D. Neville subsequently sent me, on loan, specimens from his collection including a second example of this unidentified epitoniid. His specimen came from Las Perlas Islands in the Gulf of Panama. See fig. 2.

Taxonomy

The combination of well-rounded non-lamellar costae, spiral cords, and the strong basal ridge present in this unidentified epitoniid is unlike any species I have seen from the eastern Pacific. I initially thought this specimen might be an example of *Epitonium rhytidum* Dall, 1917, a species known from a single specimen dredged off the Galapagos at a depth of 40 to 634 fathoms [73-1160 m]. I obtained photographs of the holotype of *E. rhytidum* that are reproduced in Fig. 3. While both *E. rhytidum* and this unidentified epitoniid from the eastern Pacific are strongly sculptured, they are clearly not the same species. The spiral sculpture on the teleoconch whorls of *E. rhytidum* is much weaker and it has a basal disk whereas the specimen from Cocos Is. has a strong basal ridge and the costae continue across the base of the shell. Another difference is the costae themselves. Under magnification, one can see the costae of this unidentified epitoniid consist of numerous thin plates fused together.

This unidentified epitonium most closely resembles *Scalaria zelebori* Dunker, 1866, a common species found intertidally in the southwestern Pacific and *Epitonium (Boreoscala) blainei* Clench & Turner, 1953, from the western Atlantic. Neither one of these latter two species was reported by DuShane from the eastern Pacific.

Dunker in Dunker & Zelebor (1866: 912) described *Scalaria zelebori* from New Zealand. The whereabouts of the type material is unknown. Clench and Turner (1953: 361) described *Epitonium (Boreoscala) blainei* from Florida. The holotype in the Museum of Comparative Zoology, no. 189246, was found 45 miles southwest of the lighthouse,

Boca Grande Florida at a depth of 22 fathoms [= 40 m]. A paratype was found at Bear Cut, Crandon Park, Miami, Florida.

I compared the unidentified specimens from the eastern Pacific with the examples of *zelebori* (n=16) as well as examples of *blainei* (n=6). They were indistinguishable. See fig. 4 and 5 for representative examples of *zelebori* from New Zealand and *blainei* from Florida, respectively.

The fact that costae consist of numerous fused plates, together with the strong spiral cords and the basal ridge led me to conclude that this unidentified species appears to be referable to *Cirsotrema* Mörch, 1852 (type species *Scalaria varicosa* Lamarck, 1822). This is consistent with Beu (2011: 22) who referred *Scalaria zelebori* Dunker, 1866 to *Cirsotrema*. Since both *Epitonium blainei* and the austral species *Scalaria magellanica* Philippi, 1845 have similar sculpture, it is my opinion these latter two species are also referable to *Cirsotrema* Mörch, 1852.

Concluding Remarks

The relationship between *C. zelebori*, *C. blainei*, and this *Cirsotrema* species from the eastern Pacific is an unresolved question.

The maps on page 35 illustrate documented records of these species in my collection as well as Bruce D. Neville's collection. While certainly not definitive range maps, they illustrate nicely the apparently discontinuous ranges of these species.

Per Beu (2011: 25), *C. zelebori* is known "... throughout New Zealand." Bruce D. Neville has acquired voucher specimens documenting that *C. zelebori* occurs off New Caledonia and Vava'u, Tonga, sites northwest of New Zealand. See fig. 6 and 7. To date, however, *C. zelebori* has not been reported from Hawaii or other sites in the central and eastern Indo-Pacific faunal province. That suggests *C. zelebori* is restricted to the southwestern Pacific. Per the MALACOG database, *C. blainei* is known from east Florida, the Florida Keys, and west Florida, USA, a range that is completely disjunct from the range of *C. zelebori*. Therefore, I consider *C. blainei* and *C. zelebori* to be different species with similar shells. This is in contrast to *Gyroskala lamellosa* (Lamarck, 1822), and *Gyroskala xenicima* (Melvill & Standen, 1903), two species widely distributed across the Indo-Pacific faunal province from Hawaii, west to South Africa, as well as the western Atlantic. See Kilburn (1985: 261) for comments on the distribution of *G. lamellosa* and Garcia (2003: 21) for comments on the distribution of *G. xenicima*.



1. *Cirсотrema* sp. Cocos Island, Costa Rica. Diver, 3 m, at base of anemone. Length, 11.8 mm. L. Brown collection no. 1018.



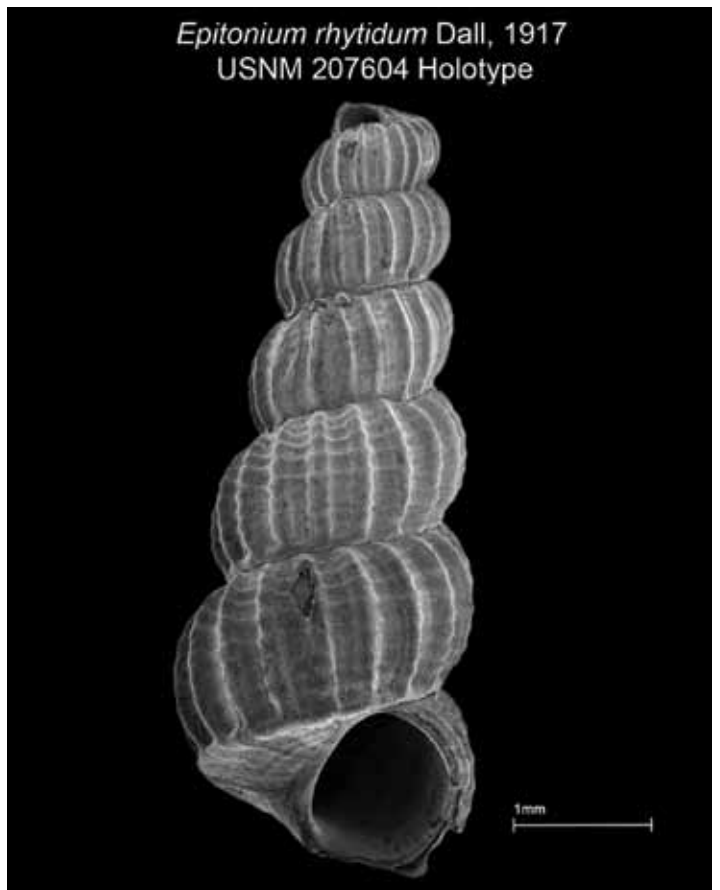
2. *Cirсотrema* sp. Las Perlas Islands, Gulf of Panama, Panama. Dredged in mud/sand, 25 m. Length, 18.6 mm. B. Neville collection no. 6833.



4. *Cirсотrema zelebori* (Dunker, 1866), Mount Maganui, Bay of Plenty, North Island, New Zealand. Length 21 mm. L. Brown collection no. 21.



5. *Cirсотrema blainei* (Clench & Turner, 1953), Dry Tortugas, Florida, USA. Lobster trap, 12 m. Length 12.9 mm. L. Brown collection no. 843.



3. *Epitonium rhytidum* Dall, 1917, length, 5.2 mm. USNM 207604 (holotype).



6. *Cirsotrema zelebori* (Dunker, 1866), southwest lagoon, Grande Coude, New Caledonia. Diver, 10-25 m, sand. Length 26.2 mm. B. Neville collection.



7. *Cirsotrema zelebori* (Dunker, 1866), Vava'u, Tonga, dredged, coral rubble bottom, 3-8 m. Length 13.8 mm. B. Neville collection no. 5898.

While this *Cirsotrema* sp. from the eastern Pacific could be *C. blainei* that was transported through the Panama Canal, or, in a less plausible scenario, *C. zelebori* that was transported from the southwest Pacific, there is another possibility.

The closure of the Isthmus of Panama separating the Caribbean from the Pacific Ocean resulted in a number of cognate molluscan species, species known to occur in the Caribbean that have an analog in the eastern Pacific. In the Epitoniidae, such cognate species pairs include *Amaea retifera* (Dall, 1889), *Gyroscala rupicola* (Kurtz, 1860) and *Epitonium novangliae* (Couthouy, 1838), all from the western Atlantic, and their eastern Pacific counterparts, *Amaea deroyae* DuShane, 1970, *Gyroscala purpurata* (Dall, 1917) and *Epitonium minuticostatum* (de Boury, 1921), respectively.

It is possible this *Cirsotrema* species from eastern Pacific is the Panamic-Galapagan analog of *C. blainei* from the western Atlantic. Clearly, further research is needed to resolve the questions posed in this article.

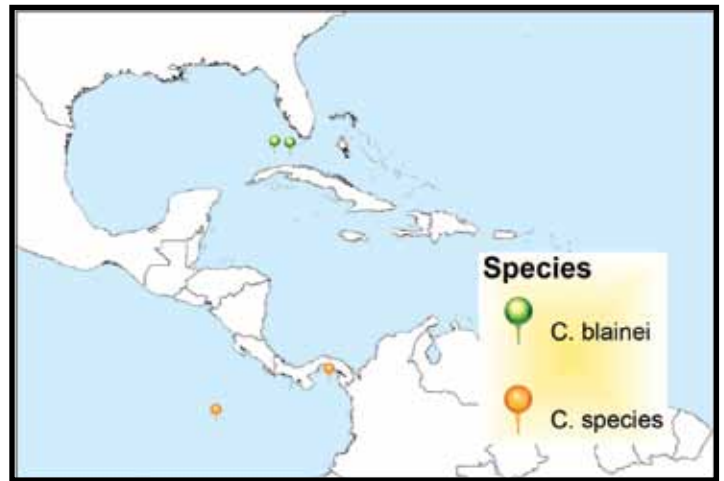
Acknowledgements: I want to thank George Saniouloglou who brought this *Cirsotrema* species to my attention, Ms. Yolanda Villacampa, Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution ("USNM") who photographed the holotype of *Epitonium rhytidum*, Bruce D. Neville who made voucher specimens available for study including a second example of this *Cirsotrema* sp. and compiled data for the maps, Elvis Takow of the TAMU Map & GIS library who created the three maps and last, but not least, Tom Eichhorst who photographed the illustrated specimens and prepared the plates for this article.

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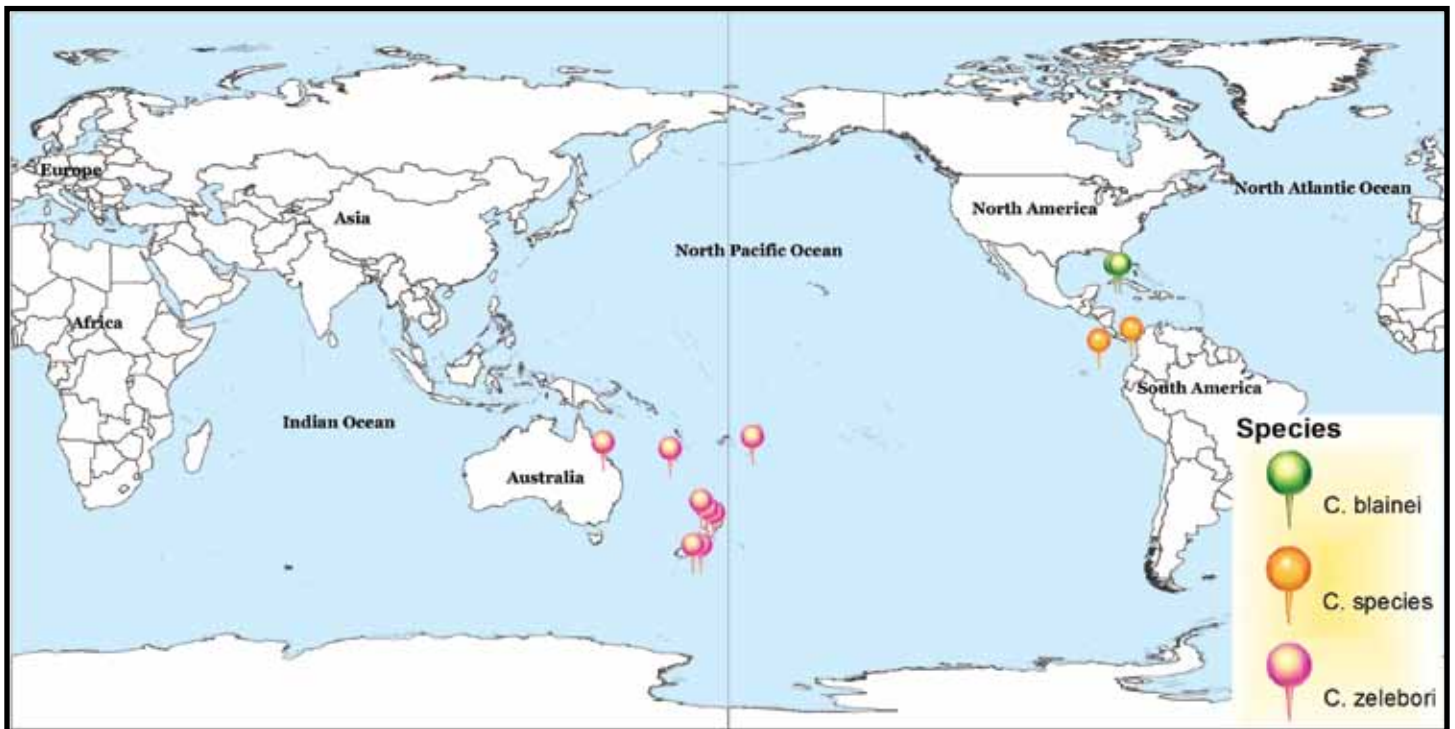
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Documented occurrences of *Cirsotrema zelebori* based upon specimens in the author's and Bruce D. Neville's collections.



Documented occurrences of *Cirsotrema blainei* and *Cirsotrema* species, based upon specimens in the author's and Bruce D. Neville's collections.



Documented occurrences of *Cirsotrema blainei*, *Cirsotrema zelebori*, and *Cirsotrema* species, based upon specimens in the author's and Bruce D. Neville's collections.

