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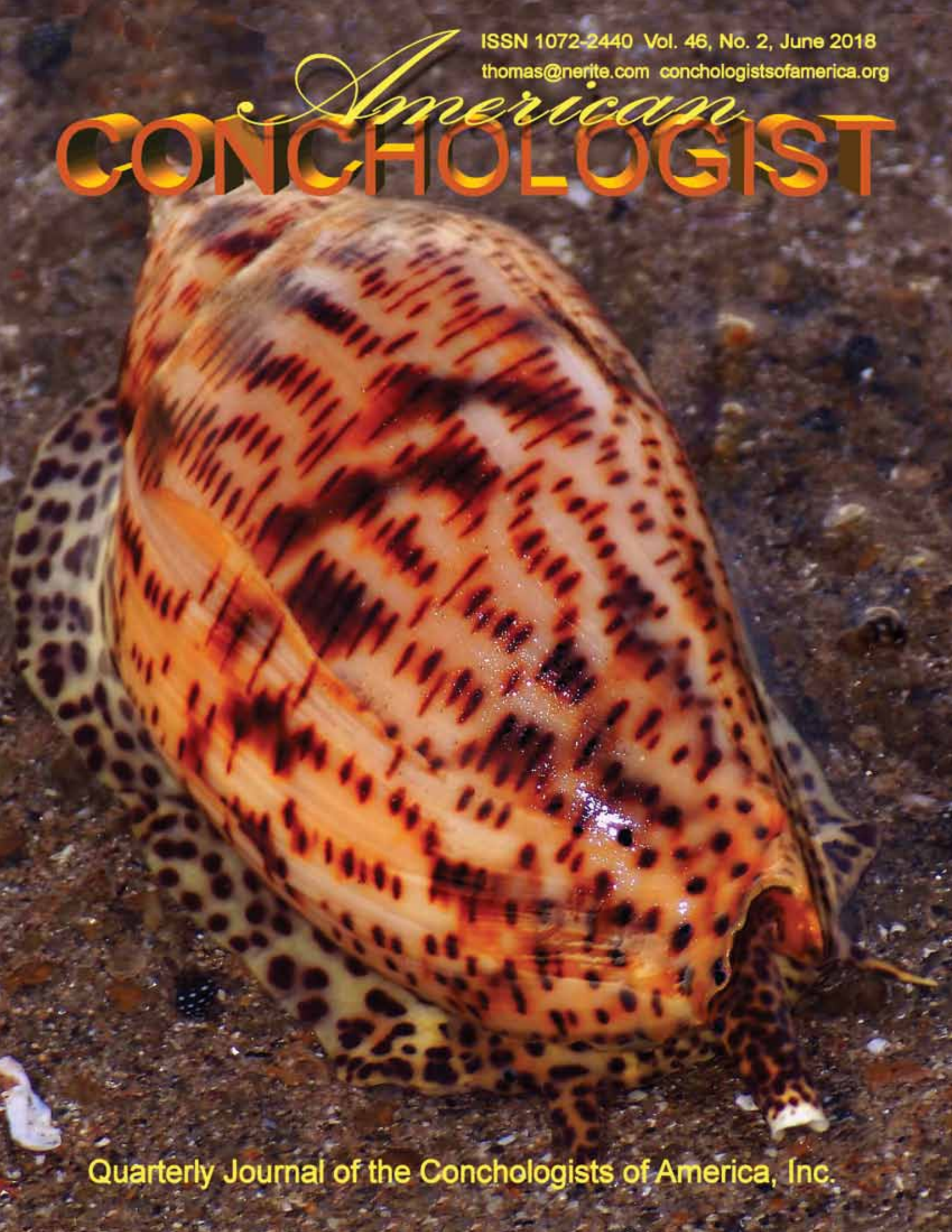
# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

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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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# In This Issue



**Editor's comments:** If this issue feels a bit heavier than normal, it is! This is our first 48 page issue. Because of a lot of work by a number of volunteers, we have come a long way from the original black & white type-written four to eight page *Conchologists of America Bulletin*, first edited by Frank Nelson. Frank was editor from 1972 to 1976. That year, Tom Rice took over editorship, until 1978, when the helm was taken by Richard Goldberg. In 1982, Gary Rosenberg started as editor, but then passed the baton to Charles Glass and Robert Foster. These stalwart gentlemen saw in the first use of color – a painting of *Cypraea* (now *Perisserosa*) *guttata* Gmelin, 1791, by Patty McGeene. Lynn Scheu took over as editor in 1987 and changed the 'bulletin' to *American Conchologist* (not without a bit of a battle). Color was still quite expensive, so the journal was mostly black & white with occasional use of color. Lynn took the page count from 20, to 24, then to 32, and instituted a full color cover and four full color pages as standard. In 2002, after 15 years, Lynn stepped down and I took over as editor. Within a few years, digital printing meant that color was now reasonably priced, so the journal became full color. The page count began to increase when we found a new printing company that combined great pricing and quality printing.

The seven individuals I've mentioned as editor have by no means operated alone. There are countless unsung COA volunteers who make this all possible. Without the many authors, this journal would be dead before it began, but there are many other very important, if not critical, tasks performed, often thanklessly, that make this all happen. Lynn Scheu, along with husband Richard, is still involved and mails out each issue. Linda Powers stepped up when needed and prepares all of the mailing labels and corrects addresses. Amelia Ann Dick volunteers to chase down dealers and handle the advertising. And last, but far from least, Bruce Neville continues to proofread every issue and double check my English and use of scientific names. **I thank you all.**

**Front cover: *Harpulina lapponica* (Linnaeus, 1767) photographed *in situ* by COA member Charles Rawlings. This volute was photographed in the waters off Sri Lanka, 2018 (see associated article on page 16). Of interest is the pattern difference between the animal and the shell – but both strikingly vivid. The other volute of interest during his trip(s) is of course, *Harpulina arausiaca* (Lightfoot, 1786). We have a couple great images of this uncommon volute (see page 19). Again, note the pattern and color difference between the animal and the shell. Our thanks to Charles for once again providing an interesting story and some magnificent images.**

**Back cover: *Vokesimurex donmoorei* (Bullis, 1964) feeding on a bivalve. Another great photograph by Charles Rawlings. This one was taken in 2011 during a diving trip to Trujillo Bay, Honduras.**

# SHELLS DO NOT KNOW THEIR NAMES

## An introduction to molluscan taxonomy

**Martin Avery Snyder**

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Mollusks present special opportunities to study evolution and radiation of living and extinct organisms. These studies are facilitated by describing features that distinguish groups of similar organisms (*species*) and placing them into groups of related species (*genera* or higher categories), collectively called *taxa*. *Phylogeny* entails arranging taxa into an evolutionary tree, where individual species may be twigs on branches. *Taxonomy* examines what separates one twig from another and entails deciding what characterizes a particular species, in order to facilitate placing related species together. The degree of relationship of species to one another may be deduced by the proximity of their location on this tree. Finally, *nomenclature* involves giving names to the various branches and twigs of the tree. The use of Latin *scientific names* facilitates universal communication, transcending language and local customs. This paper briefly describes how this is done.

Before considering the nature of the discipline of systematics (phylogeny and taxonomy) it is useful to briefly digress into mathematics. Some of mathematics deals with what one might call *actual facts*, exemplified by the trillionth digit of π. This digit may or may not be known, but it has a definite value that can be determined, and everyone will agree with the result. This fact is independent of whatever mathematical apparatus is used to uncover it, nor will it depend upon the particular person who carries out the investigation. This digit of pi is an actual fact.

Much of mathematics is comprised of abstract constructs, such as the notion of parallel lines. After positing this abstract notion we can use known procedures to prove theorems about parallel lines. These theorems present facts, but of a different nature than the trillionth digit of π. These facts are not independent of our investigations, and as was found in the first half of the 19th century (non-Euclidean geometry) the theorems that result depend upon the assumed underlying geometry. The point is that these are not actual facts, but instead are *created facts* which do not exist independently of our mathematical efforts.

Systematics tries to closely mirror evolution and the branching of groups. Phylogeny has to address the question raised by our mathematical example: is there some underlying classification of mollusks which can be discovered or are we choosing to create and impose this order in an attempt to model evolutionary relationships? The latter is the case and shells really do not know their names. We must assign names and erect a classification framework to be able to address the questions of radiation and evolution mentioned


**The International Commission of Zoological Nomenclature (ICZN) is available online at: www.iczn.org.**

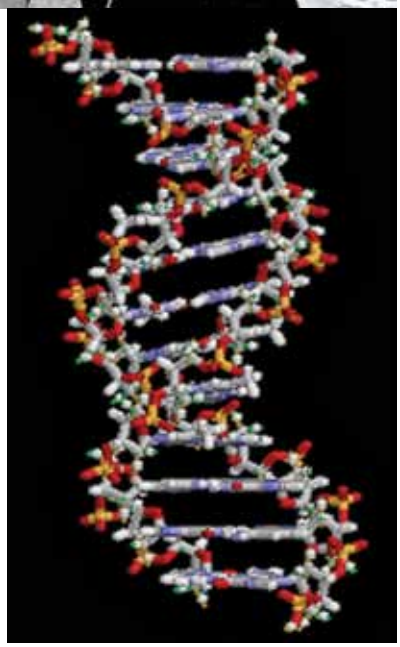
above. Although this exercise is not entirely arbitrary, different workers in the field may (and often do) arrive at somewhat different conclusions. We hope that the names we assign and our classification schemes will facilitate the consideration of questions such as these: When species migrate from one area to another what is their response to this new environment? How much must these species adapt and change before they are regarded as a new species (requiring a new name)? Can we track a group of mollusks over millions of years from ancient fossil material to material alive today? Do these studies have implications concerning Earth's climate and how adaptable these animals are to climate changes? Taxonomy is a discipline whose results constantly undergo revisions (usually of minor points) as new material (specimens) permits better agreement with Nature, and improves the accuracy of predictions which can then be tested, as is true of almost every science. Ultimately different methodologies lead to results that hopefully represent broad consensus views.

Since 1905 the nomenclature used to classify plants and animals has been organized and governed by the International Commission of Zoological Nomenclature (ICZN), which publishes a Code with rules to be followed to produce valid names. This code addresses the question of universality, but the correctness and usefulness of the resulting taxonomy described by the names is the domain of the individual practitioner. Early molluscan taxonomy was based on the animal's exoskeleton, the calcium carbonate shell, and this approach persists to the present time, although some workers starting in the early nineteenth century referred to the anatomy of the animals as well. Conveniently, this shell-based taxonomy permits similar treatment of both living and fossil species, the latter known only from their empty shells, containing no DNA. This is an important point.

In the later part of the 19th century, dredging and trawling produced more living mollusk material, and in 1945, Jacques Cousteau introduced SCUBA (self-contained underwater breathing apparatus, now usually written as scuba), facilitating underwater collection of live material by individuals. Notwithstanding, the emphasis of most molluscan taxonomy remained shell based, with a possible mention of the corneous operculum and the radula (teeth) of the animal, if this information was available. Morphology based taxonomy can go beyond a consideration of shell characters, and often will entail consideration of anatomical features discovered by dissection of the animal.


**The International Barcode of Life project (iBOL) is also available online, www.ibol.org.**

**In Paris during the winter of 1942–1943, two Frenchmen, the engineer Émile Gagnan and Naval Lieutenant ("lieutenant de vaisseau") Jacques Cousteau (above), invented the aqua-lung. Image from Wikipedia.com.**



**(Above): Francis Crick (L) and James Watson (R) at Cambridge University deduced the double helix structure of DNA that is so well known today. Image from Cold Spring Harbor Laboratory (www.dnalc.org), creative commons authorization.**

**(Right): Stylized representation of the double helix structure of DNA. Image from Wikipedia.com**

Building on early 20th century work, Watson and Crick deduced in 1953, the intertwined double helical structure of the deoxyribonucleic acid molecule (DNA) that governs the genetics of an organism. In what has become a fairly common and reasonably priced procedure this molecule (or parts of it) can be sequenced. A particular gene, cytochrome c oxidase subunit 1 (COX1 or MT-CO1), can be used to determine to what degree of confidence two specimens represent the same or different species. This gene mutates fairly quickly and is used as the *barcode of life*. Other genes are often examined as well and used as markers. This sequence can lead to identification of a specimen if it has a barcode that matches a known named species (if its barcode is known), but generally the procedure can produce no more than comparative taxonomic information. To facilitate genetic identification of material the International Barcode of Life project (iBOL) collects gene sequences for a large variety of species together with an image of the actual specimen from which the genes were obtained. Until (and if) the iBOL library is large enough to include a majority of living species it will not be a definitive tool for species identification. At the present time the existing genetic databases are not large enough.

Most genetic analysis is used to affirm or reject taxonomic hypotheses, and these hypotheses are usually formed by classic morphological analysis of shells. Here is the usual process:

* Material is analyzed and, based on comparison of shell characters, is provisionally identified as species X or possibly as a new species, both in genus Y. This is classic taxonomy, and this analysis produces a hypothesis with conclusions which are often published, subject to confirmation or modification based on genetic analysis of the animal. The radula and operculum are often examined and may be broadly confirmatory.

* If properly preserved animal tissue is available, DNA is removed and sequenced. This process is now fairly simple and inexpensive. The DNA sample is usually prepared in an external laboratory and analyzed with the aid of publicly available computer programs. The results are presented together with already known genetic information from other related species, and often with one or two *outlier* species, not in genus Y, to check the analysis. Standard (packaged) statistical tools are used to indicate the statistical confidence that one can have in the original hypothesis, or to suggest new relationships beyond those hypotheses.

The important point is that one can seldom draw information directly from a DNA analysis as to whether one's material represents a new species. It can only determine *relationships* and verify hypotheses (unless it is already in the Barcode of Life library). Usually these hypotheses come from morphological analysis. The takeaway is that the well-equipped taxonomist will be able to formulate hypotheses based on morphological analyses and then, for Recent material, verify these hypotheses using genetic analyses. The resulting classifications are just a construct to facilitate discussion, and the shells do not know their names.

Several people read drafts of this paper and offered helpful criticism and suggestions which improved the paper. I wish to thank Philippe Bouchet (MNHN), Paul Callomon (ANSP), Bill Lyons (St. Petersburg, FL), Gary Rosenberg (ANSP) and Geerat Vermeij (UC Davis).

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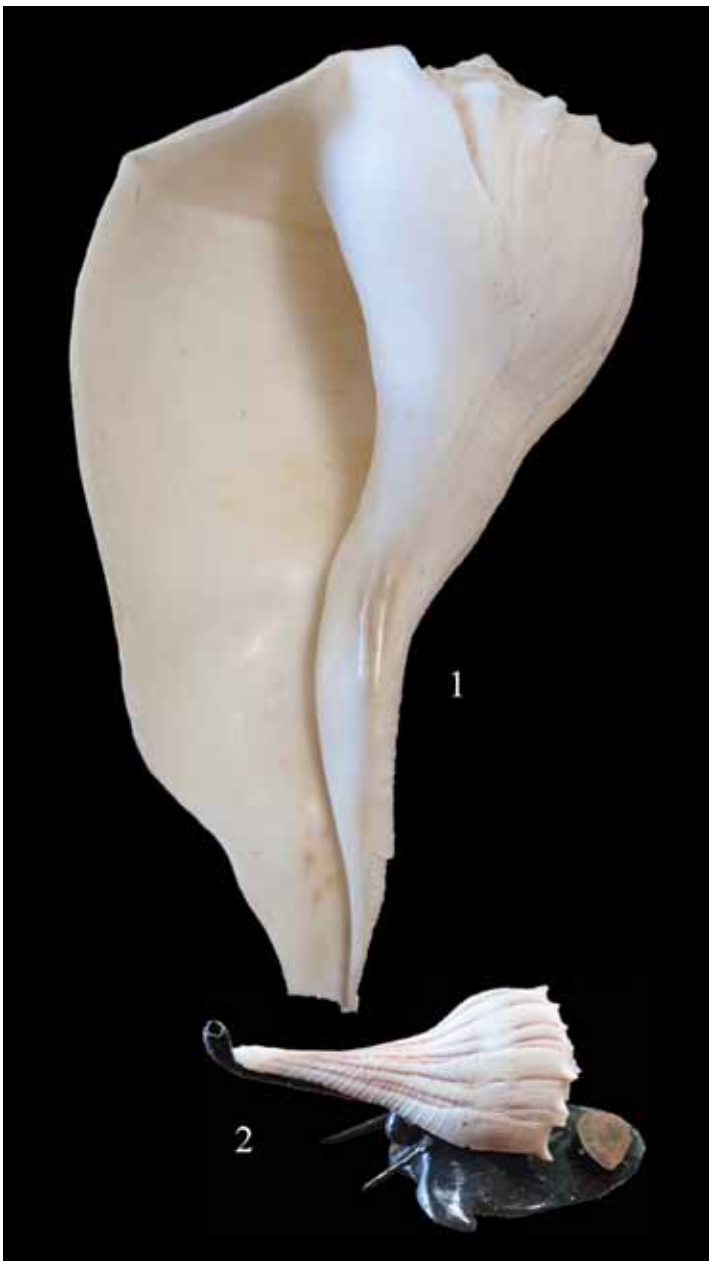
# A *Busycon* 'name game'

**Thomas E. Eichhorst**

There was recently a question asked on the list-serve *Conch-L* about the status of the family name Busyconidae. The 'name game' can be both confusing and frustrating to both the amateur shell collector and the professional malacologist. As Martin Snyder writes in this issue of *American Conchologist*, SHELLS DO NOT KNOW THEIR NAMES - An introduction to Molluscan Taxonomy (p. 4). Whether cataloging a shell drawer at home or a specimen cabinet in a museum, or preparing labels for a local shell show or working on nomenclature for a professional research paper or book – changes in systematics (phylogeny and taxonomy) usually impact nomenclature. The International Commission of Zoological Nomenclature (ICZN) has, since 1905, regulated "...the correct use of scientific names of animals" and provides "...a set of rules for the naming of animals and the resolution of nomenclatural problems." What this means is there is a set of agreed upon written rules that must be followed for a scientific name to be valid and available (following the ICZN rules and properly published). This does not mean, however, that such a name (even if following all of the rules) will be accepted as the correct name for a particular animal. It could be unaccepted because there is an earlier valid taxon, making it a junior synonym, or because the proposed name is one which the 'community' refuses to accept. As an example of this last, the genus *Conus* has been split into four or even 119 genera (see Walls, J.G., March 2016, *Cone Shells*: Mumblings 36-plus years later, *American Conchologist* 44: 2). General acceptance of the higher number has not followed and most dealers and collectors probably still use a single genus.

So back to Busyconidae and its status. The first response referenced the World Register of Marine Species (WoRMS) at: http://www.marinespecies.org, where it is listed as a subfamily, Busyconinae, within the family Buccinidae. WoRMS has become widely recognized as THE molluscan taxonomic resource. It is not perfect, but it is constantly updated and self-correcting. What does this mean to the average shell collector? A lot!

Let us suppose you have a lightning whelk in your collection. If it is used as a planter on a window sill, then you may not care about the shell's proper scientific nomenclature. You know it is a lightning whelk and that is sufficient data for a curio. If you are like most of us, however, you maintain a data slip on your whelk with locality data, date collected, and the scientific name. You also probably have it catalogued in a larger database with the scientific names grouped by genus under the family name. Changes in species, genus, or family name can cause a bit of confusion in your nice catalogue scheme; and changes in each of these have certainly been the norm with the familiar lightning whelk.




**1. Lightning whelk in the author's collection (15 in.), collected by a shrimp trawler off Port St. Joe, FL., 1969. at unknown depth.**
**2. Model of a living lightning whelk (92mm), artist unknown (sadly, not the late Bobbi Cordy).**

To illustrate this, let us assume that you collected the lightning whelk shell in the 1960s from a shrimper in

Florida (as I did). To identify your new acquisition you may have used a popular book by Julia Ellen Rogers, *The Shell Book* (1937). Here on page 66 (illustrated a few pages later, plate un-numbered) you would have found the name *Fulgur perversa* (Linnaeus, 1758) with a listed range of "Florida," in the family Buccinidae. The author Linnaeus is in parentheses because he originally named the species in the genus *Murex*. So here is our first data slip:

Family: Buccinidae
Scientific name: *Fulgur perversa* (Linnaeus, 1758)
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Then you are told by a friend that you have the name incorrect. So you purchase a newer shell book by R. Tucker Abbott, *American Seashells* (1954). On page 236 (illustrated on plate 23(k) you find your lightning whelk has the scientific name of *Busycon contrarium* (Conrad, 1840) with a listed range of "South Carolina to Florida and the Gulf States" and the family is now Melongenidae. Abbott warns his readers not to confuse *B. contrarium* with the more rare *Busycon perversum* (which had different names if "... left-handed (formerly known as [*Flugar*] *kieneri* Philippi, 1848) or right-handed (formerly known as [*Fulgur*] *elicians* Montfort, 1810)." What has happened? First, Busyconidae Wade, 1917 (1867), was replaced by Melongenidae Gill 1871 (1854).[1] The genus *Fulgur* Monfort 1810, was replaced by *Busycon* Röding, 1798, as the earlier valid name.[2] Furthermore, Abbott (and others) determined the species name *perversa* applied only to a rarely encountered species differentiated mainly by a mid-whorl bulge. Abbott does not mention that Conrad's *B. contrarium* was named as a Miocene fossil and is unaware that Hollister (1958), in his revision of the genus *Busycon*, will determine that the fossil type specimen of *B. contrarium* was significantly different from the Recent lightning whelk species for which he proposes the name *Busycon sinistrum* Hollister, 1958. Hollister also introduces the subgenus *Sinistrofulgur*, which was ignored for several years, but 50 years later (now) shows up as the accepted genus for the lightning whelk. If you, as a collector, were aware of the Hollister work, you had a decision to make - *B. contrarium* or *B. sinistrum*. It means changing


**The range of *Busycon contrarium* (Conrad, 1840) according to Abbott (1954), South Carolina to Florida and the Gulf States."**

the data slip either way, but Abbott's use of *B. contrarium* seems to be the most common usage, so we will go with that - as did many others. Abbott's was thought of as the conservative approach compared to Hollister (Pain, 1962: 515). We now have hints of the turmoil surrounding the scientific name of the lightning whelk beyond the changes in Abbott (1954). Your updated data slip looks like this:

Family: ~~Buccinidae~~ Melongenidae
Scientific name: ~~*Fulgur perversa* (Linnaeus, 1758)~~
*Busycon contrarium* (Conrad, 1840)
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

By the 1970s, you might have purchased a small book by Jean Andrews (1971), titled *Sea Shells Of The Texas Coast*. Here you find more hints of turmoil over the scientific name of the lightning whelk. Dr. Andrews is aware of the Hollister paper, but argues that the Miocene fossil name *B. contrarium* is the valid name for the Recent species instead of Hollister's *B. sinistrum* and that the form found in Texas waters is *Busycon pulleyi* Hollister, 1958. This will eventually make its way into Texas state law (passed in 1987) as *B. perversum pulleyi* - the Texas state shell. To make matters

[1]According to Article 40 (2) of the ICZN, a family name cited with two dates (the second in parentheses) means the name "...was replaced before 1961 because of the synonymy of the type genus, the replacement name is to be maintained if it is in prevailing usage. A name maintained by virtue of this Article retains its own author [and date, the first date] but takes the priority of the replaced name [the date in parentheses]..."

[2]Röding authored a shell manuscript, *The Museum Boltenianum*, in 1798, that was ignored for many years, often incorrectly attributed to Bolten as the author, and when recognized it was dismissed as being just a catalogue with no nomenclatural validity. In 1915 William Healey Dall wrote *An Index to the Museum Boltenianum*, wherein he established Röding as the author and demonstrated the validity of many of the taxa in Röding's work. Röding's genus *Busycon* was deemed synonymous with the genus *Fulgur* and as the earlier (senior) name had priority.

just a bit more confusing, the second and much improved edition of Abbott's tome (1974) retains the taxonomy of his first edition, but with a few important caveats. First, he now mentions that Conrad's *B. contrarium* was named as a fossil, and he distinguishes two forms in the living specimens: a smooth shouldered form called *B. aspinosum* Hollister, 1958 and a spined shouldered form called *B. sinistrum* Hollister, 1958. About this latter he admits, "...some workers may wish to consider it a separate species." Second, he ends his paragraph on the lightning whelk with, "Some authorities feel that the common Lightning Whelk should be called *perversum* Linn**é**, an idea not without technical merit." (Abbott, 1974: 222) Third, he considers *B. perversum pulleyi* a valid subspecies that "...occurs from Breton Sound, Louisiana to Texas, and to the north Mexican coast...and in the northern part of its range, this subspecies blends in with *contrarium*, giving rise to the possibility that this complex is one species, namely *perversum* Linné." (Abbott, 1974: 223)

Also during this time frame, Percy A. Morris published the widely popular *A Field Guide to Shells of the Atlantic and Gulf Coasts and the West* Indies, 1973. Morris agrees with Abbott's use of *B. contrarium*. S. Peter Dance published his *The Collector's Encyclopedia of Shells*, 1974), where he also agrees with Abbott's use of *B. contrarium*, but limits the range to "Caribbean (Florida)." The taxonomic waters around the common lightning whelk have become a bit muddied, but our data slip stays as written.


**The range of *Busycon contrarium* according to Dance (1974), "Caribbean (Florida)."**

Still in the 1970s, William Emerson and Morris Jacobson (*Guide To Shells*, 1976) agreed with Hollister that the Miocene fossil *B. contrariun* was an extinct species and not the correct name for the Recent lightning whelk, which they called *B. perversum*. They brought back the name *B. kieneri* (Philippi, 1848) for what Abbott and Hollister called *B. perversum* (these two considered *B. kieneri* a junior synonym of *B. perversum*). Now we have some data slip changes:

Family: ~~Buccinidae~~ Melongenidae
Scientific name: ~~*Fulgur perversa* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
*Busycon perversum* (Linnaeus, 1758)
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Moving into the 1980s, we begin with two popular shell books published in 1981. There was Jerome Eisenberg's, *A collector's guide to Worldwide Seashells* in 1981, and the Abbott and Dance tome, *Compendium Of Seashells*, also first printed in 1981. If you did not want to change your data slip, you went with Eisenberg, who named the lightning whelk, *B. perversum*. On the other hand, if you followed Abbott and Dance, then you had to go back to the *B. contrarium* name. Since we are talking of contrary and perverse, let's say we went with Eisenberg, thus no data slip changes needed. Also in the 1980s was Vaught's *A classification of the living Mollusca* (1989) wherein she laid out the classification of Mollusca for genera and above. She kept *Busycon* in the family Melongenidae. So our data slip is still good, unless your lightning whelk was collected along the Texas coast. In that case the "correct" name is *B. perversum pulleyi* (according to 1987 Texas state law). Our shell was collected in Florida, so we can stay with the *B. perversum* name and not have to change our data slip, but certainly this situation cannot last.

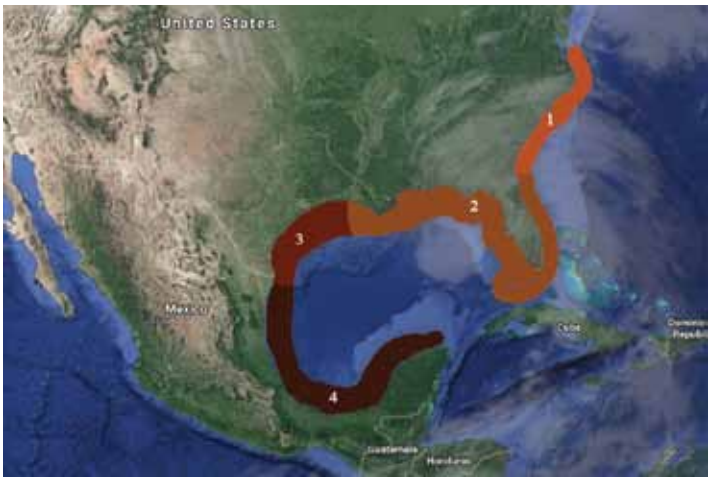
Through the 1990s the *B. contrarium* name seems to have held sway (thus adding pressure for yet another data slip change), as evidenced by the online listing of the Smithsonian Marine Station, which also lists a range of "... along the North American coastline from New Jersey to Texas. They are commonly encountered in estuaries, creeks and around oyster bars." A very nicely illustrated book by Kenneth R. Wye (*The Encyclopedia of Shells*. 1991) lists *B. contrarium* with a range of the "Southeastern USA." Surprisingly, neither Gary Rosenberg in his 1992, *The Encyclopedia of Seashells*, nor Abbott in his 1993, *Seashells of the Northern Hemisphere*, mention the lightning whelk, both listing just the channeled whelk, *Busycotypus canaliculatus* (Linnaeus, 1758) and Abbott adding the knobbed whelk, *Busycon carica* (Gmelin, 1791). So bowing to the weight of written evidence we once again change our data slip:

Family: ~~Buccinidae~~ Melongenidae
Scientific name: ~~*Fulgur perversa* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
~~*Busycon perversum* (Linnaeus, 1758)~~
*Busycon contrarium* (Conrad, 1840)
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Now in the 2000s, we can start using some Internet sites to 'help' us with our shell identification. Let's start with a site recognized for its excellence - The Academy of Natural Sciences, Malacolog, now up to version 4.1.1 (http://www.malacolog.org). The Malacolog site was established by Gary Rosenberg in the early 1990s as "...a database for research on the systematics, biogeography and diversity of mollusks...in the western Atlantic from Greenland to Antarctica." It is constantly updated and improved. It lists our lightning whelk as *Busycon sinistrum* Hollister, 1958, with synonyms that include: *Busycon contrarium* auct. non Conrad, 1840; *Busycon aspinosum* Hollister, 1958; and *Sinistrofulgur sinistrum* (Hollister, 1958). The site goes on to state, "Comments: Misidentification; *Busycon contrarium*, often used for this species, is an extinct fossil species." There is also a reference to findings by Wise et al., 2004, which we will get to later, and a given range for this species that is important, "...East Florida, West Florida, Florida Keys...Alabama." This leaves room for separate species ranging up the Atlantic coast and down to the Yucatan Peninsula. Indeed, Malacolog lists four sinistral lightning whelk species: *Busycon laeostomum* Kent, 1982[3], from New Jersey to Georgia; *Busycon sinistrum* from East Florida to Alabama; *Busycon pulleyi* as occurring from Louisiana and Texas, to Mexico; *Busycon perversum* from Campeche to Yucatan, Mexico. So due to the locality data on our shell, the data slip changes yet again. A bit of added support comes from Tunnell et al. (*Encyclopedia of Texas Seashells*, 2010). The authors describe *B. pulleyi* as a standalone species, fully agreeing with the Malacolog listing of sinistral *Busycon* species known as lightning whelks.

Family: ~~Buccinidae~~ Melongenidae
Scientific name: ~~*Fulgur perversa* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
~~*Busycon perversum* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
*Busycon sinistrum* Hollister, 1958
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Just to throw in a quick wrinkle, Wise et al. (2004), consider the nominate species to be *B. perversum*, occurring from Mexico to New Jersey, with *laeostomum*, *sinistrum*, and *pulleyi* as subspecies. Malacolog argues against this interpretation based upon the same DNA and morphological findings, and subgenera determination. So if you decide Wise et al. is the way to go you have a single species, *B.*




**The 'lightning whelk' ranges according to Malacolog and WoRMS: 1. *Busycon laeostomum* Kent, 1982, from New Jersey to Georgia; 2. *Busycon sinistrum* from East Florida to Alabama; 3. *Busycon pulleyi* from Louisiana and Texas, to Mexico; 4. *Busycon perversum* from Campeche to Yucatan, Mexico.**

***Busycon perversum* (238mm), Yucatan Peninsula, and a living specimen lacking the shoulder spines and mid whorl bulge. Courtesy of www.jaxshells.org.**

[3]Many readers will not be familiar with *Busycon laeostomum*, named by Kent in 1982, from specimens occurring from New Jersey to Virginia, with the appearance of a sinistral *B. caurica* (Gmelin, 1791) and other traits like *B. perversum*, or *B. sinistrum*, or *B. pulleyi*, etc. This is not a common species and there have been questions about its status. It is presently accepted on WoRMS as *Sinistrofulgur laeostomum* (Kent, 1982). Harry Lee and Bill Frank (a) (online, no date) cover this quite thoroughly (http://www.jaxshells.org/blaeosto.htm). They also provide a succinct discussion of the taxonomic woes surrounding the lightning whelk (http://www.jaxshells.org/trava.htm).

*perversum* that covers the entire range with various forms. If you choose Malacolog, then you have four species that cover this same range. Since we just changed the data slip to *B. sinistrum*, let's stay with that and avoid a change back to *B. perversum*.

The most recent published attempt to straighten out the phylogeny of the *Busycon* whelks is Petuch et al., (2015, not seen), The living and fossil *Busycon* whelks: Iconic mollusks of eastern North America. The authors pretty much follow the Malacolog layout, except they elevate Hollister's subgenus *Sinistrofulgur* to full genus status. A final check with WoRMS lists the same four species found on Malacolog, but with *Sinistrofulgur* instead of *Busycon* as the genus and the family is now Buccinidae with Busyconinae as a subfamily. My data slip now has text on both sides, with the reverse side carrying a comments section about lightning whelk phylogeny and nomenclature.

Family: ~~Buccinidae Melongenidae~~ Buccinidae
Subfamily: Busyconinae
Scientific name: ~~*Fulgur perversa* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
~~*Busycon perversum* (Linnaeus, 1758)~~
~~*Busycon contrarium* (Conrad, 1840)~~
~~*Busycon sinistrum* Hollister, 1958~~
*Sinistrofulgur sinistrum* (Hollister, 1958)
Common name: Lightning whelk or left-handed whelk
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Four sinistral closely related whelks: *Sinistrofulgur laeostomum* (Kent, 1982), occurring from New Jersey to Georgia; *S. sinistrum* (Hollister, 1958), Florida to the Gulf States; *S. pulleyi* (Hollister, 1958) Texas and surroundings, and *S. perversum* (Linnaeus, 1758), Yucatan Peninsula and surroundings.
The 'old' name *Busycon contrarium* (Conrad, 1840) is a fossil species.

Should you now run to your shell collection and relabel your lightning whelks? In answer I give you a comment by Paul Callomon of the Academy of Natural Sciences of Drexel University. In a recent email posting on this very subject, he wrote: "Which one you prefer in any given case should ideally reflect your informed judgment having reviewed the evidence for all the alternatives, but of course most of us will just adopt the one whose author we happen to know." (Conch'L posting, Busyconinae, 13 May 2018, 2:03 PM) Paul followed up with: "The old adage 'If you want to hear God laugh, tell him your plans' could be modified to 'If you want to see Nature smile, show her your phylogeny'…" (Conch'L posting, Busyconinae, 14 May 2018, 11:54 AM). So rest assured, this is not the last data slip change for this species. Label your specimens in a manner that makes sense to you. The shell names are there for us – a way of making sense and providing some order. In the end, the name may be the least important piece of information on the data slip.

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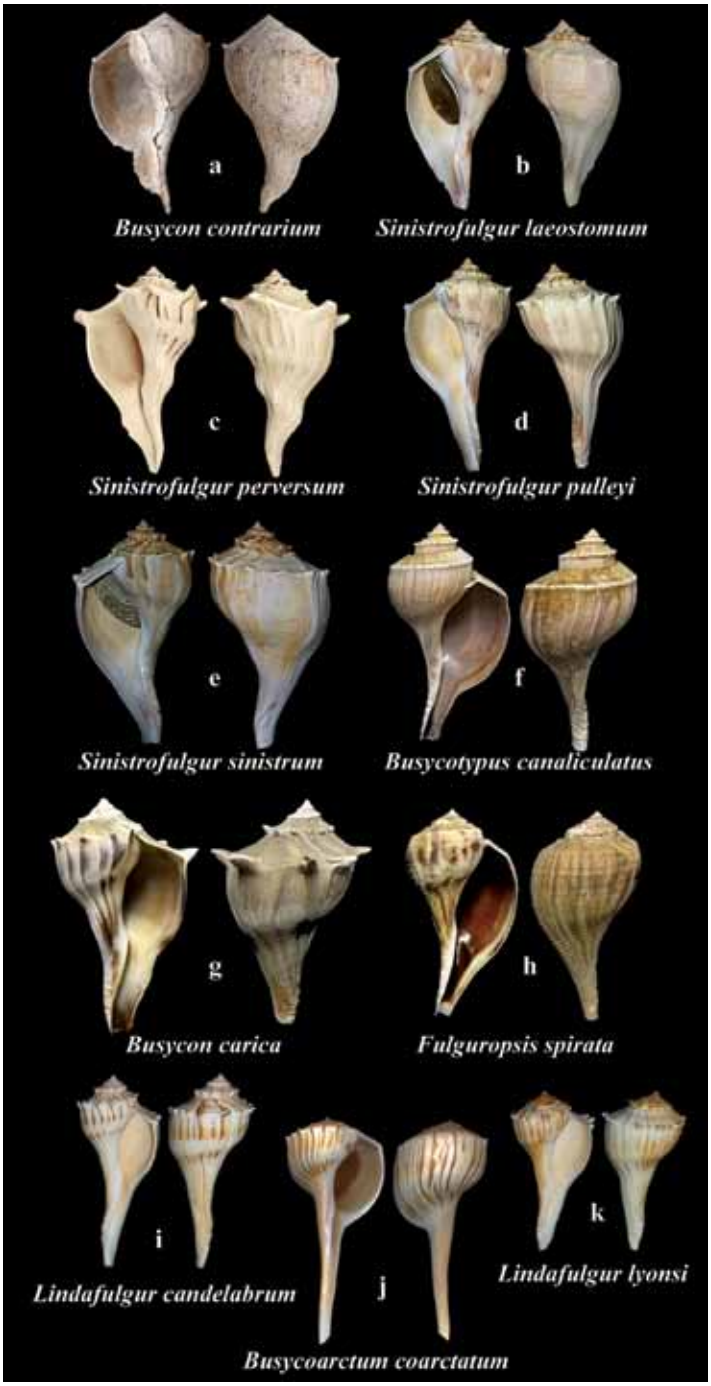


## '*Busycon*' whelks (names according to WoRMS)

**a. *Busycon contrarium* (Conrad, 1840) lightning whelk (Tertiary, Pliocene fossil) 240mm, La Belle, FL (image by H. Zell, Wikipedia Commons); b. *Sinistrofulgur laeostomum* (Kent, 1982), lightning whelk, 206mm, Wildwood, New Jersey (image, www.jaxshells.org); c. *Sinistrofulgur perversum* (Linnaeus, 1758), lightning whelk, 238mm, Yucatan, MX (image, www.jaxshells.org); d. *Sinistrofulgur pulleyi* (Hollister, 1958), lightning whelk, unknown size, Texas (image, www.jaxshells.org); e. *Sinistrofulgur sinistrum* (Hollister, 1958), lightning whelk, 200+mm, FL (image, www.jaxshells.org); f. *Busycotypus canaliculatus* (Linnaeus, 1758), channeled whelk, 150mm, FL (image, www.jaxshells.org); g. *Busycon carica* (Gmelin, 1791), knobbed whelk, unknown size, NC (image, www.jaxshells.org); h. *Fulguropsis spirata* (Lamarck, 1816), pear or fig shell, unknown size, FL: i. *Lindafulgur candelabrum* (Lamarck, 1816), splendid whelk, 125mm, Yucatan, MX (image, www.jaxshells.org); j. *Busycoarctum coarctatum* (G.B. Sowerby I, 1825), turnip whelk, 170mm, Yucatan, MX (image, www.jaxshells.org); k. *Lindafulgur lyonsi* (Petuch, 1987), lyon's whelk, 96mm, Tampa Bay, FL (image, www.jaxshells.org).**

# "Ariel," or Love at First Sight

**E. Shary Almasi**

In February of 1992, Trevor Roberts and I made our way, once again, to Panama, for another shelling adventure with James Ernest. After a restful night we were up at 7 AM, a breeze blowing as usual and another beautiful day; we headed for Gobernadora Island. We dredged all day off Gobernadora in 60-80 feet of water. We found *Murexiella lappa, M. laurae*, *Pterotyphis lowei*, *Typhis coronatus*, *T. grandis*, *T. clarki*, *Favartia incisa*, *Corbula amethystina*, and then I spotted a shell I had never seen before; neither had James. It was love at first sight. Later, when we got back to James' home, he and his right-hand man, Rafael, gave me the name after they looked it up in Myra Keen's *Sea Shells of Tropical West America* (1971). It was a specimen of *Neoteron ariel* (Pilsbry & H. N. Lowe, 1932), which seems to be a very rare species. It measures 11 mm. x 7 mm. Although Rafael does not read English, he has looked at Myra Keen's plates innumerable times and I believe he has almost memorized them. Both James and Rafael were very pleased with my 'find' and I got the impression that it was the first they'd seen.

***Neoteron ariel* (11mm) collected by the author in Panama in Feb. 1992. There have been a number of issues with the name of this species – see related article p. 14. Image is a composite from photographs by Greg Perrault.**

After I got home I looked for *N. ariel* in Tom Rice's Prices and found nothing…and for 26 years I've just kept it in a drawer and admired it on a regular basis. In December, at our Pacific Northwest Shell Club meeting, we were asked to share our favorite shells. I took the *Neoteron* and shared. George Holm, editor of *The Dredgings,*, our newsletter, did an article with pictures (The Dredgings:Volume 58 No.1). Will Ritter, a member from Astoria, Oregon, saw the article and was interested in my 'find' and contacted me, asking for location, etc. This led me to try to find out about it on the Internet, but not much was there, and the available image was the same old, drilled, dead specimen shown by Myra Keen. That led me, via Emilio Garcia, to an article by Emily Vokes, The Genus *Trajana* (Mollusca:Gastropoda) in the New World (1969). Vokes states in her article that "Those gastropods possessing a short, slightly recurved, closed siphonal canal, a circular aperture surrounded by a raised peristome, and a single terminal varix have presented a problem to writers for many years." Although when it was first described it was considered a subgenus of "*Hindsia*," Vokes (1969:76) thought it distinct enough to elevate *Neoteron* to a full, though monotypic, genus closely related to *Trajana*, and continues, "The spiral ornamentation crossing the terminal varix is markedly similar in *Neoteroni* and *Trajana*." Cernohorsky (1981) placed *Neoteron* in the family Buccinidae; however, later workers place it in Nassariidae. (WoRMS, 2018)

My affair with *Ariel* continues undiminished. I've cherished this shell from the day that I found it and find it exciting that I'm learning about it after 26 years.

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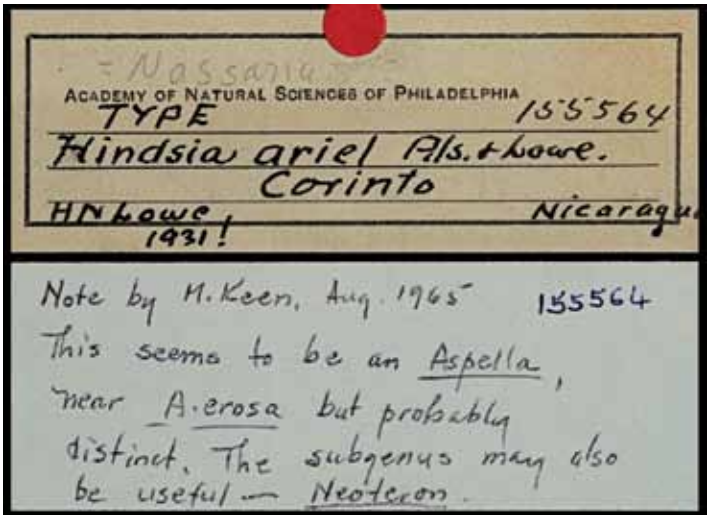
E. Shary Almasi -- Pacific Northwest Shell Club

# A bit more of the 'name game' with *Neoteron ariel*

**Thomas E. Eichhorst**

After reading Shari Almasi's story (p. 13) of finding and identifying her rare shell – *Neoteron ariel* (Pilsbry & Lowe, 1932) – it seemed only natural to chase down the taxonomic trail of this species. It was originally described in Buccinidae, but eventually moved to Nassariidae. At first, second, or even third glance, it really doesn't look like it fits into either family very well. I think many collectors would at first assume it is some form of a muricid, maybe *Favartia* or *Aspella*, as noted by Myra Keen (see the data slip in the second image), so you would be in really good company. The question is, how does a shell that looks like a muricid, is originally described as a buccinid, end up classified as a nassariid? Here is an abbreviated rendering of the road taken from the original name: *Hindsia ariel*, to the present name: *Neoteron ariel*. There are probably subtle steps and inferences I have missed, but I believe this is the core of the taxonomic actions concerning this species.

**The holotype of *Neoteron ariel* (Pilsbry & Lowe, 1932) at the Academy of Natural Sciences of Drexel University (ANSDU). This specimen is over 21mm and was collected in Nicaragua by H.N. Lowe in 1931. This image is a composite of the ANSDU images on http://clade.ansp.org/malacology/collections/**




**This is the data slip for the holotype of *Neoteron ariel*, catalogued under the original name of *Hindsia ariel*, no. 155564. The accompanying comments by Myra Keen in 1965 note that the specimen appears similar to *Aspella*, "...but probably distinct." She also points out that the subgenus *Neoteron*, "...may also be useful..." an indication of the specimen's poor fit in *Hindsia*.**

The sequence of events as best I can determine:

**1932 - Pilsbry & Lowe** name *Hindsia* (*Neoteron*) *ariel* as a buccinid.

**1962 - Clench & Turner** list all 5,680 names created by Pilsbry, *Neoteron* is listed (p. 103) with no indication of whether it is a genus or subgenus, type listed as *Hindsia ariel*.

**1969 - Vokes** determines that *Hindsia* is inappropriate for a west coast species and elevates the Pilsbry & Lowe subgenus *Neoteron* to a full genus, admitting it is monotypic and related to *Trajana* (a nassariid), but different enough to deserve its own genus. This is the first hint that it may be a nassariid.

**1971 - Keen** agrees with Vokes on the new genus, but leaves the species a buccinid.

**1971 - Radwin** reports, "Traditionally, West Coast workers have referred two species with new world affinities to *Hindsia*, an Indo-Pacific genus. Dell (1967) arrived at the conclusion that *Hindsia* can only be used for its type species, *Neptunea pusilla*. All other Indo-Pacific "*Hindsia*" he places in *Benthindsia* Iredale, 1936. As explained by Vokes (1969), '*Hindsia*' *perideris* and '*H.*' *acapulcana* should be placed in *Trajana* Gardner, 1948. Based on a fossil species, this genus is nassariid and is apparently limited to the new world." (p. 30)

**1975 - Keen & Coan** update Keen's "Sea Shells of Tropical America" and move *Neoteron ariel* from the buccinid part of the book to the nassariid part, based upon "fide Radwin (in Litt.)." [p. 33]

**1981 - Cernohorsky** in his monograph on Pacific buccinids treats *Neoteron* as a monotypic buccinid genus.

**1981 - D'Atillio** reports in *The Festivus* and illustrates for the first time the radula of *Neoteron ariel* and continues with the nassariid affinity.

**1992 - Skoglund** extends the range and reports Cernohorsky moved it back to Buccinidae in 1981. Actually, Cernohorsky just reported it as a buccinid and ignored or was unaware of the buccinid vs. nassariid issue.

**2010 - Landau & Marques da Silva** name *Neoteron emilyvokesae* as a fossil member of what was a monotypic genus.

**2016 - Galindo, et al.** in "The Phylogeny and systematics of the Nassariidae revisted," confirm *Neoteron* as a nassariid.

**2018 - WoRMS** lists *Neoteron* as a nassariid.

From WoRMS:

Kingdom: **Animalia**

Phylum: **Mollusca**

Class: **Gastropoda**

Subclass: **Caenogastropoda**

Order: **Neogastropoda**

Superfamily: **Buccinoidea**

Family: **Nassariidae**

Subfamily: **Photinae**

Genus: ***Neoteron***

Species: ***Neoteron ariel* (Pilsbry & Lowe, 1932)**

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# India and Sri Lanka: tigers, leopards, whales, and snails

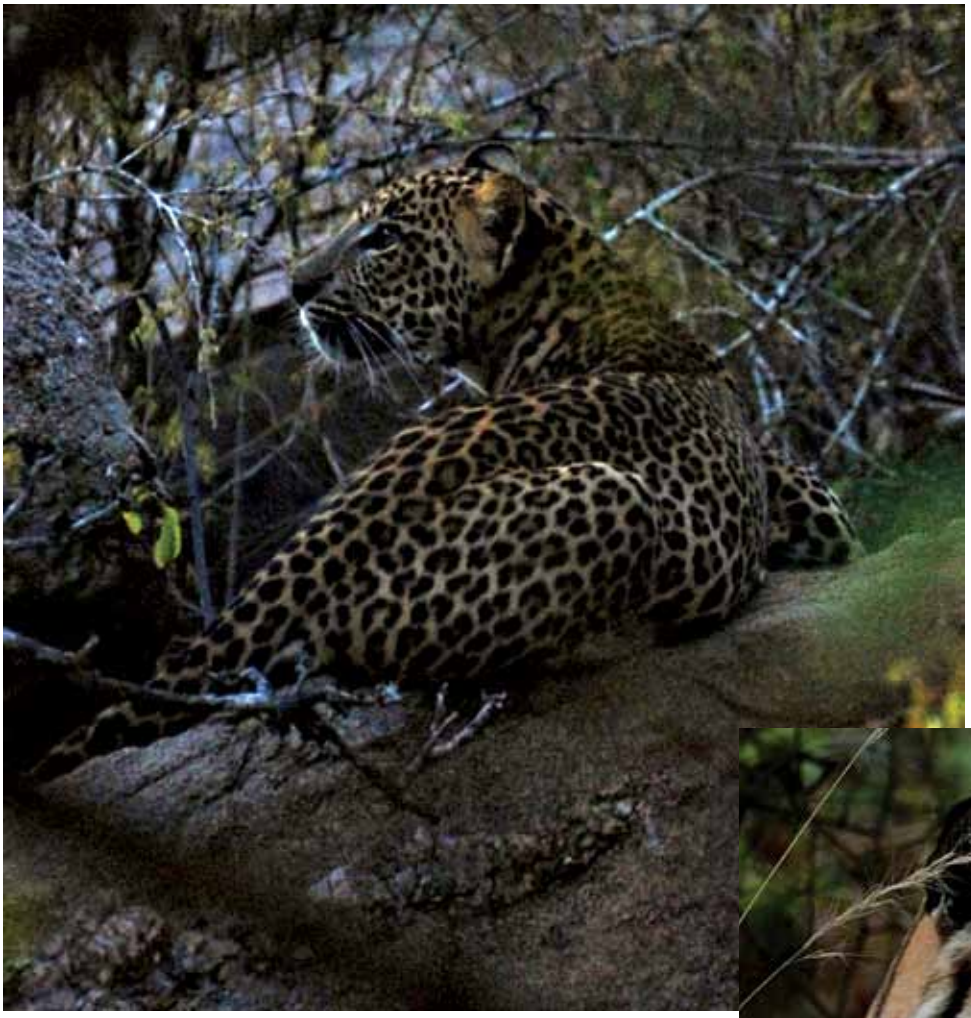
**Charles E. Rawlings**


I am looking at a bucket full of living *Harpulina arausiaca* (Lightfoot, 1786); well actually, the bucket isn't totally full, but does contain at least three of them, all living and crawling around. The animal, unlike most volutes, looks nothing like the shell; but then how could it. The shell itself is typically volute in shape, but is characterized by brilliant orange stripes, which can be a deep golden ranging to a brilliant red orange color – thus the common name golden lined volute. These particular ones had brilliant red orange stripes. So these living shells needed to be photographed and photographed soon. That really did not seem to be a problem since they were still alive four days after they were collected, but I digress, let's start at the beginning of my Sri Lanka shell saga and my attempts to photograph these shells alive – what could easily be the first photographs living *Harpulina arausiaca*.

I arrived in Trincomalee in August 2017; ready, willing, and equipped to photograph living Sri Lankan shells. After a day or so, I was introduced to a group of shell divers. Well, they dove for shells as well as spear fishing, whatever would pay the bills and was needed on that particular day. As an aside, they were Muslim, but they invited me to their mosque for the 5 PM service. They explained that in Sri Lanka, Allah really didn't care if you were Muslim, Buddhist, or Christian – all were welcome in the mosque. What a unique concept to most Americans. After mosque, I returned to their houses and explained what I was trying to do, photograph living mollusks. I showed them several photos and explained that I was extremely interested in *Harpulina arausiaca*. I was met with enthusiasm; oh yes, they knew *arausiaca*; they found them frequently; they brought out multiple shells, a few of which I purchased, but, and this was the huge but, they hadn't seen one since April/May of that year. They had a season, so if I returned during their season they could almost guarantee a photograph. Well just great! In the meantime, come diving with us and we will find plenty of shells. I did and we did – beautiful *Chicoreus palmarosae*. I vowed to return for photos in the spring. I also showed them *Harpulina lapponica*; sure, that was an easy shell, on the opposite coast. Well, that was an interesting prospect.

If I was going back to Sri Lanka in March 2018, then I decided I must stop in India to photograph tigers (a bucket list item) plus try photographing blue whales off Mirissa (another bucket list item), all of which just happened to be in season. As a result, I found myself sitting in Philadelphia after having been blown off the runway in a landing attempt at JFK. I was stranded and my flight to India was scheduled to leave that evening from JFK at midnight. Well, me on that flight was obviously not going to happen. Long story short, I re-arranged my itinerary, spent two nights in Manhattan, then left for India 48 hours later. Luckily, the tigers waited for me.

Landing in Delhi is like being in Los Angeles on steroids. I arrived around 5 AM and the traffic was still horrendous. All around was cacophony and the worst pollution



**(Left): The Sri Lankan National Park of Yala, contains environments varying from ocean beaches to jungle and from to scrub lands to arid desert. After three days of searching and not until dusk of my final day there, was I able to finally capture this image of the elusive leopard, *Panthera pardus*.**

**(Below): The people who live in and around the Indian National Park of Bandhavgarh are protective of their population of Bengal tigers, *Panthera tigris tigris*. This is the most numerous of the tiger subspecies, but all are listed as endangered by the International Union for Conservation of Nature (IUCN: www.iucn.org).**

in the world or at least in my experience. Thankfully my plane to Jabalpur was on time, and I was off to Bandhavgarh National Park with only a short stay in Delhi. Bandhavgarh has the largest concentration of Bengal tigers in India, and they are still extremely elusive. Luckily my sightings were incredible, including one making a kill and then another female coming within three feet of my jeep. As an aside, everyone associated with Bandhavgarh, including the adjacent villages, are extremely protective of "their" tigers. Their livelihood depends upon the tourist trade, and anti-poaching brigades are always evident.

After Bandhavgarh, I flew from Delhi to Colombo, Sri Lanka, and then to Negombo. I met my friend and fellow shell collector, Lynn Murphy, for what we thought would be a shelling adventure. The following day we traveled up to the Kalpitiya Peninsula, searching for living shells. Those we found but not the ones I was searching for – *Harpulina arausiaca* and *Harpulina lapponica*. *H. lapponica* was theoretically from this region, but now we were told they were even further north, closer to Mannar. Great, Lynn collected a bucketful of awesome Sri Lankan species, including several species of textile cones, tiger and map cowries, as

**Not easy to photograph, the blue whale, *Balaenoptera musculus*, as the largest living animal on the planet, is certainly an impressive and unforgetable sight. Hunted almost to extinction, they were afforded protection only in 1966 and have since rebounded in population to an estimated 10,000 to 25,000 individuals according to the IUCN Red List (http://www.iucnredlist.org/details/2477/0).**

well as *Chicoreus palmarosae* (Lamarck, 1822). I left word that I was interested in *lapponica* if they could find them. Since Lynn had been in the country several days and needed to leave within 48 hours, we traveled back to Negombo. I then headed to Yala, to photograph leopards before my blue whale adventure.

Yala is a uniquely situated Sri Lankan National Park that has beaches within its confines and includes jungle, scrub, and arid regions, which make it a unique ecosystem. More importantly, within its confines is one of the highest densities of leopards in the world. For almost three days I would leave my cabin at 5 AM, climb into a jeep and ride the rough trails of Yala looking for leopards. I was able to photograph an incredible array of wild life, but not until dusk of the last day did we spot a leopard posing for a photograph. I was ecstatic for I was to leave for Mirissa and the blue whales the next day.

On the way to Mirissa, you pass through such classic fishing and sailing ports as Galle and Tangalle. All of these towns have a history rich in fishing and recently whale watching. Mirissa is probably most famous for its blue whales, the largest creature to ever live on earth, due to the fact that Mirissa has a unique continental shelf topography. The shelf itself, which averages between 80 and 180 feet in depth, extends only about six miles from the coastline. At that point the seafloor plunges along a cliff face to approximately 12,000 feet in depth. Moreover, a deep undersea canyon cuts into this cliff face and points almost directly at the Mirissa port. In other words, you only need to travel for four to six miles out of Mirissa and you are located along the plunging face of a deep sea canyon.

Along this face is where the blue whales congregate from December to March. They deep dive along the cliffs feeding upon schools of squid and fish. The population is a bit transient, but on a good day you can usually spot eight to ten individuals within a ten square mile area. You spot them by their blows or expelled breaths on the surface. Once you see a blow, you have approximately 60 seconds to position the boat and roll into the water with your adrenalin under control and poised for a photograph. Blue whales have a mind of their own. They are never curious about humans like humpback whales, who can spend hours around one human. The blues are solitary, care little about your presence, and are very uncooperative photo subjects. These photos were a result of multiple attempts over three full days in the water with the whales. My captain had never seen the eye of a blue whale in a photograph prior to this one.

I arrived in Bentota exhausted by my blue whale adventure. Word arrived that fishermen (and by that I mean Sri Lankan shell collectors) had living *H. arausiaca* in a bucket

**The end result of a lot of miles traveled and a fasinating exposure to the wildlife of India and Sri Lanka. *Harpulina arausiaca* certainly deserves its popularity with collectors.**

**Showing a sharp contrast between the shell color and pattern and that of the body, these may be the first images of living *Harpulina arausiaca.***

**Although an accessable and common species, *Harpulina lapponica* shows off a fasinating pattern contrast between shell and animal.**

**The green bee-eater, *Merops orientalis*, is an abundant species that ranges from Africa, through India, to Asia. They catch their prey on the wing, removing the stingers of bees and wasps prior to eating them.**

***Harpulina arausiaca* in a bucket, the end of 'interesting' trips with blue whales, tigers, sea shells, and snow! Quite an experience, all tied to a moderately-sized, orange-striped volute.**

**A female black-necked stork, *Ephippiorhynchus asiaticus*. Although widespread throughout India, Asia, New Guinea, and Australia (different subspecies), the population of Sri Lanka is limited to about 50 individuals.**

for me. We have now come full circle in our narrative. The *H. arausiaca* were indeed still alive after their trip from Trincomalee, as you can see in the photograph. The living shell's color is incredibly vibrant, but wait, that's not all. A group of *Harpulina lapponica* also made it back alive from Mannar on the west coast. These had been wrapped in wet cloth and paper, but were still alive. Luckily, the animal was not completely traumatized; in fact, the animal graciously emerged from its shell for its photographic session.

So there you have it, tigers, leopards, whales, and snails. From a Nor'easter blizzard in New York, to begin my trip, to living *H. arausiaca* in a bucket, the trip was definitely different than most of my prior expeditions. I could only smile as I reviewed my photographs and just shake my head over the efforts of myself and my guides. The efforts that lead to a snarling tiger, the eye of a Blue Whale, and living *H. arausiaca* and *lapponica*. Who knows that will come next?

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# Subspecies in Cypraeidae: the case for the prosecution

**Moshe Erlendur Okon**

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It was Carl Linnaeus who in 1758 formally devised the binominal nomenclatural system we use today for naming species in the 10th edition of his *Systema Naturae* (Fig. 1). According to this system, each species is awarded a binomen consisting of the genus (capitalized) and the species (lowercase), and nowadays often followed by the name of the author of the species and the year it was authored: e.g. *Homo sapiens* Linnaeus, 1758. The same name cannot be given to more than one species, but each genus can contain several species, e.g. *Homo erectus* (Dubois, 1892). The parentheses indicate that Dubois originally used a different genus name (*Pithecanthropus*). Incidentally, the first taxonomist was also the first man, "And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field." (*Bible*, 2, 20)

When Linnaeus introduced the binominal method, used *inter alia* for naming mollusks, and thus described species (many already known then, but not named in accordance with his brilliant new scheme), he did not designate a 'holotype' as such (a single type specimen upon which the description and name of a new species are based). Apart from the short verbal description (Fig 2), Linnaeus also referred to earlier works in which those shells were illustrated. It is clear that these old black and white illustrations are not always a very useful tool in determining exactly which shells Linnaeus had in mind (Fig. 3).

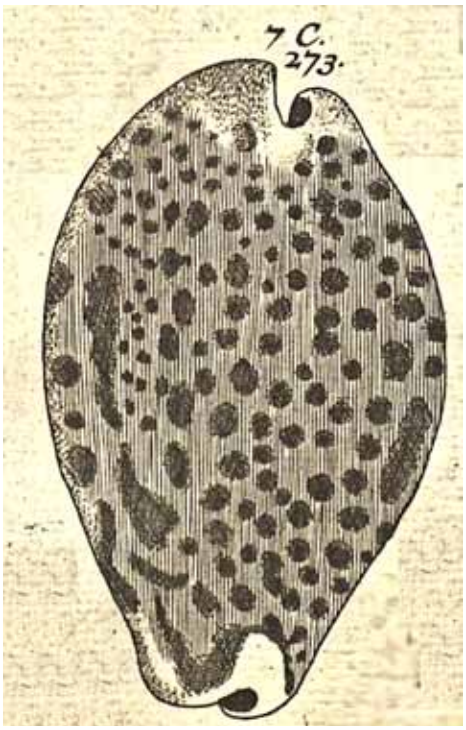
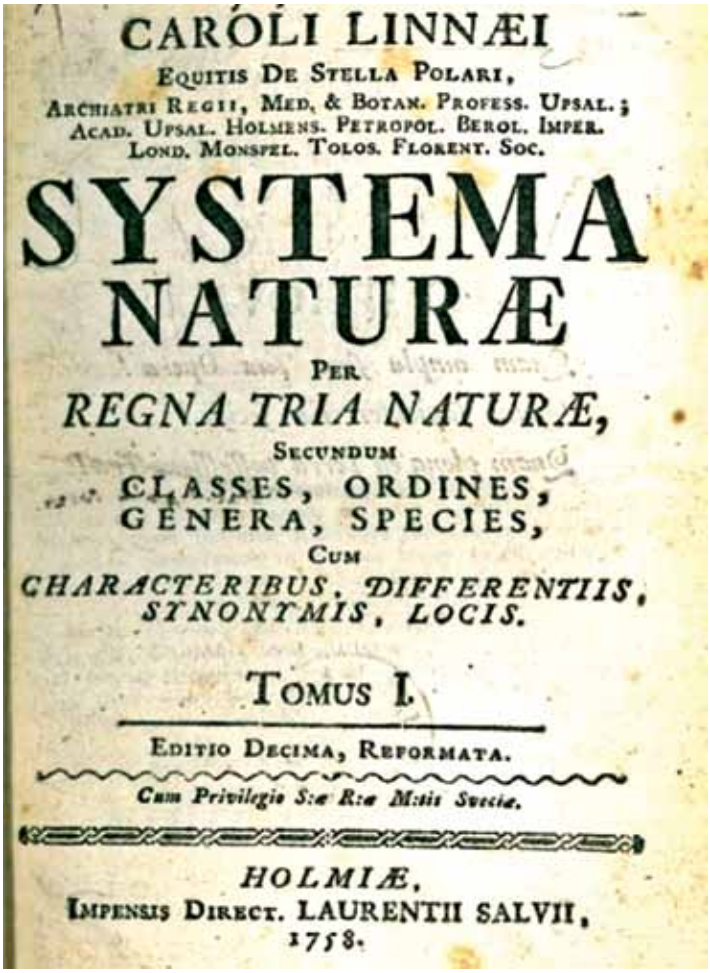



**Fig. 3: This is one of the illustrations referenced by Linnaues for his *Cypraea tigris*. In this case, the 1702 work by James Petiver, listed by Linnaeus as: "*Pet. gaz. t. 96, f. 7.*"**


CAROLI LINNÆI
EQUITIS DE STELLA POLARI,
ARCHIATRI REGII, MED. & BOTAN. PROFESS. UPSAL.;
ACAD. UPSAL. HOLMENS. PETROPOL. BEROL. IMPER.
LOND. MONSPEL. TOLOS. FLORENT. SOC.

SYSTEMA NATURÆ

PER
REGNA TRIA NATURÆ,
SECUNDUM
CLASSES, ORDINES,
GENERA, SPECIES,
CUM
CHARACTERIBUS, DIFFERENTIIS,
SYNONYMIS, LOCIS.

TOMUS I.

EDITIO DECIMA, REFORMATA.

*Cum Privilegio S:æ R:æ Mtis Suecia.*

HOLMIÆ,
IMPENSIS DIRECT. LAURENTII SALVII,
1758.

**Fig. 1: The 10th edition of the *Systema Naturae* by Carl Linnaeus established the binominal system of scientific nomenclature used today.**

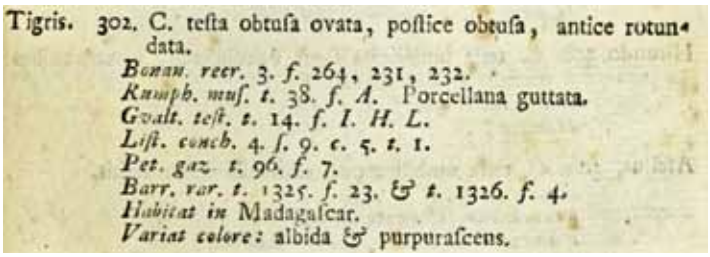

Tigris. 302. C. testa obtusa ovata, postice obtusa, antice rotundata.
*Bonan. recr. 3. f. 264, 231, 232.*
*Rumph. mus. t. 38. f. A.* Porcellana guttata.
*Gualt. test. t. 14. f. I. H. L.*
*List. conch. 4. f. 9. c. 5. t. 1.*
*Pet. gaz. t. 96. f. 7.*
*Barr. var. t. 1325. f. 23. & t. 1326. f. 4.*
*Habitat in* Madagascar.
*Variat colore:* albida & purpurascens.

**Fig. 2 (above): The original description of *Cypraea tigris* Linnaeus, 1758. Linnaeus did not have illustrations in his *Systema Naturae*, but rather referenced illustrations in earlier publications.**

**Fig. 4: One of two *Cypraea tigris* (P-Z 0010831) from the Linnean collection in London, about 65 mm. Courtesy of The Linnean Society in London (http://linnean-online.org/).**

**Fig. 5: Toothless *Cyplraeovula edentula* (Gray, 1825), 22mm.**

**Fig. 5: Toothless *Afrozoila teulerei* (Cazenavette, 1845), 50mm.**

Linnaeus, however, also had shells for reference: either in his own collection or in the collection of the Queen of Sweden. Part of his collection was sold by his widow and is kept today by the Linnean Society in London. It can be viewed on the Society web site (http://linnean-online.org/) (Fig 4). The collection underwent handling and curating over the years – by notables such as S. Peter Dance, one of the most prominent conchologists of our time. Other shells examined by Linnaeus are now in the Uppsala University, Museum of Evolution, Zoology Section.

In zoology, one of the several definitions for 'species' is: "...groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups" (Mayr, 1942). While it is possible that animals belonging to one species do copulate with those of another, their offspring will most likely be sterile. For conchologists, however, this is not a very practical tool, since it is usually impossible to test whether one group of mollusks does indeed interbreed with another and whether or not their offspring are fertile.

And so, several different, more workable, definitions have been proposed – some focus on shell morphology only, while others combine additional features such as DNA sequencing, radula studies, reproductive organ examination, etc. For most conchologists, amateurs and professionals alike, there is usually only an empty shell to contemplate. Even if the animal was properly preserved – dissecting it, mounting the radula, or performing DNA tests, are not always feasible options (or totally impossible if the specimen belongs to an extinct species, i.e. fossilized). This is why the morphological definitions come in handy, despite their limitations.

One such definition of species states that: a group of cowries will belong to the same species, if they all share at least one characteristic, which (sometimes together with other characteristics) distinguishes them from any other group. This is sometimes referred to as the Main Diagnostic Shell Character (MDSC). Thus, a toothed aperture will not be sufficient to define a group of cowries as one species (since almost all cowries have teeth), nor will the absence of teeth, since both *Cypraeovula edentula* (Gray, 1825) (Fig. 5) and *Afrozoila teulerei* (Cazenavette, 1846) (Fig. 6) lack them. On the other hand, the basal pattern of *Perisserosa guttata* (Gmelin, 1791) (Fig. 7) or the uniform orange dorsum of *Callistocypraea aurantium* (Gmelin, 1791) (Fig. 8), for instance, are in themselves sufficient MDSCs to allocate cowries possessing them to those species. Absence of teeth, together with the dorsal pattern, shape and size, can serve as combined MDSCs to distinguish *C. edentula* from *A. teulerei*.

**Fig. 7: *Perisserosa guttata* (Gmelin, 1791), 62mm.**


**Fig. 9: a. Macrocypraea cervinetta (Kiener, 1843), 77mm; b. *Macrocypraea cervus* (Linnaeus, 1771), 82mm; c. *Macrocypraea zebra* (Linnaeus, 1758), 80mm.**

**Fig. 8: *Lyncina aurantium* (Gmelin, 1791), 92mm.**

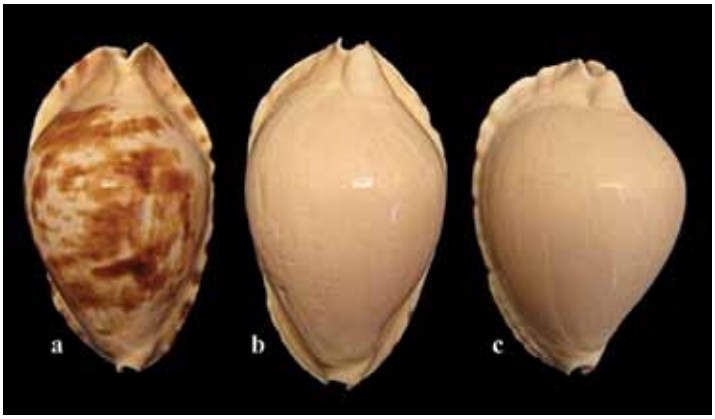



**Fig. 10: a. typical *Zoila marginata* (Gaskoin, 1849), 55mm, from Carnac Island, West Australia; b. pale *Z. marginata* from Perth, Western Australia, which cannot be called *albanyensis*, even though this subspecies was named for its pale shells; c. pale *Z.marginata* '*albanyensis*' from Albany, West Australia.**

Taxonomy and nomenclature do not stop at the species level. Whereas 'species' is both a natural and taxonomic concept, 'subspecies' is not, and has little biological meaning, although recognized by Article 45 of the ICZN (International Code of Zoological Nomenclature) as a valid rank (the lowest). Its use became common during the mid 19th century. The common definition used for subspecies states that cowries within a species will constitute a subspecies, if the population they belong to is geographically (or otherwise) separated from other populations of that species, and if the majority of the individuals of that group differ in some manner from the individuals of the other populations of that species.

Some believe that subspecies may be on the verge of becoming a new species at some future point in time, when the isolation and evolution change them to such an extent that they can no longer be associated with the parent species. This may have happened with the ancestors of *Macrocypraea cervinetta* (Kiener, 1844), in the East Pacific and *Macrocypraea cervus* (Linnaeus, 1771) and *Macrocypraea zebra* (Linnaeus, 1758), in the West Atlantic, after the Panamanian isthmus closed (Fig. 9). Many species did, of course, evolve in this manner, but we have no way of knowing which subspecies will and which will not. Some authors do not recognize subspecies in their works at all.

So what information does the subspecific rank afford us besides locale? While there are several populations of the recognized Western Australian species *Zoila marginata* (Gaskoin, 1849), many of those found in the Albany area have a pale, colorless dorsum, and were awarded the subspecific rank of *Zoila marginata albanyensis* L. Raybaudi, 1985, although some synonymize it with *Z. marginata marginata*. While the information implied by the subspecific

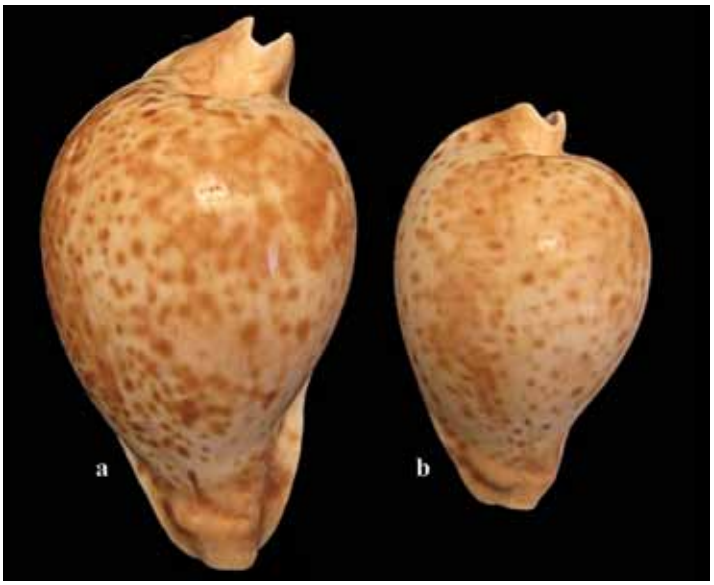



**Fig. 11: a. *Umbilia hesitata* Jousseaume, 1884, 95mm; b. *Umbilia hesitata* '*beddomei*,' 65mm.**

rank is indeed important (i.e. that the Albany area *Z. marginata* population is typically colorless), a pale shell from Perth cannot be called *Z. marginata albanyensis* (Fig. 10) but a dark shell from Albany can!

The fact that there are pale *Z. marginata* could have also been relayed in a different manner, e.g., by describing a form, which has no taxonomic standing, but which could have a more descriptive name, such as 'albata' and would apply to all pale *Z. marginata*, regardless of origin. One can also publish a variability study of *Z. marginata*.

Another point to take into consideration is that subspecies nomenclature is quite haphazard, depending on the type locality of the nominate species. For instance, Gmelin named *Cypraea* (now *Naria*) *acicularis* Gmelin, 1791, from the western Atlantic coast. Later on, Schilder named a subspecies from St. Helena Island: C. *acicularis sanctaehelenae* Schilder, 1930, making *C. acicularis acicularis* the nominate subspecies, but if Gmelin had used a shell from that same island to describe his new species (instead of a coastal one), that island population would be named *C. acicularis acicularis*, and the western Atlantic coast population would perhaps be called *C. acicularis* '*braziliensis*.'

Size has also been used as a parameter for naming a subspecies. *Cypraea tigris schilderiana* Cate, 1961, comes to mind (large tiger cowries from Hawaii). Another example is *Umbilia hesitata beddomei* (Schilder, 1930), viewed by some as a synonym of *U. hesitata* (perhaps a smaller female morph) (Fig. 11). Then there is *Mauritia arabica immanis* F. A. Schilder & M. Schilder, 1939, a subspecies name for the western Pacific population of *Mauritia arabica* (Linnaeus, 1758). The name implies huge size, which produces funny (if not meaningless) statements, such as: "There is also a dwarf variety in southwest Africa and Mauritius." How big (or small) is a dwarf giant?

Cowries are perhaps the most popular group of shells collected. They are beautiful, pleasant to handle, and some, either very rare or hard to obtain, also command high prices on the shell market. Well over fifteen hundred names have been given over the years and about 250 species are currently recognized. Subspecies in Cypraeidae are numerous, indeed the plethora of new names attributed to geographical populations is unprecedented in any other molluscan family. Many collectors will surely pay more for a 'new species or subspecies' than for a mere 'form,' and naming a 'new species or subspecies' sets one's name down for posterity. Yet, as I have tried to demonstrate here, there are better (albeit less glamorous) ways of handling infraspecific variability.

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(Fig. 5-11 collection & photo M.E. Okon)

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# Subspecies in the Cypraeidae: witness for the defense

J. C. WEIR

**This letter was first published in *The Linnean* (Vol. 34, No. 1, April 2018) and is republished here with the permission of The Linnean Society of London.**

It was with great interest that I read Mr Okon's (2017) recent article on the naming of sub-species in the Cypraeidae. It is a group with which I am regrettably unfamiliar and, typically, I would therefore hesitate in venturing any refutation of what he has said. However, it seems to me that, although firmly grounded in this specific group of mollusks, his remarks are in fact illustrative of broader and more far reaching taxonomic problems, related to the description and categorisation of within-species phenotypic variation. Indeed, many of the points he made are applicable, at least in principle, to my own group, the Lepidoptera, and there are one or two that I feel I must offer an alternative perspective on.

My principal objection lies with his argument that "[w]hereas species is both a natural and taxonomic concept, subspecies is not, and has little biological meaning". I think that this could not be further from the truth. Species are indeed "natural" in that our classifying them as discrete entities reflects true isolation in a state of nature—under Mayr's definition of a population of freely interbreeding organisms, reproductively isolated from other such populations, a species might be thought of simply as an isolated pool of genes, cut off from mixing with other such pools; the unique genetic composition of the pools, resultant from this isolation, gives each species their distinctive phenotypic characteristics. These, in turn, form the basis of any morphological means of species determination.

I would argue that, in a similar manner, the term "sub-species" is an attempt to taxonomically acknowledge geographical variation, resulting from local adaptation and random genetic drift, and provide a context in which it can be described and classified. We can imagine populations or groups of populations as being present at different points on an axis of speciation, from total genetic interchange and homogeneity (a single species) to complete genetic isolation and divergent gene pools (new daughter species). In this sense, then, the category "sub-species" is surely as biologically valid as "species" in that it too reflects a natural distinction; an isolated, phenotypically distinct population, albeit to a lesser degree and more modestly advanced along the road to speciation than full species.

I can, however, sympathise with the criticism that many populations or within-species variants are entirely inappropriately described as "sub-species". In the Lepidoptera, for instance, the geographically distinct populations of *Coenonympha tullia* which occur in Britain, named *scotica, polydama,* and *davus,* have been called sub-species, despite it being not at all uncommon for individuals resembling one "sub-species" to occur in the distribution of another. Indeed, localities are known where individuals belonging to all three "sub-species" fly together (Ford, 1953). It seems to me that local adaptation is certainly at work – there is a discernible general pattern of geographical phenotypic variation (Dennis, 1992) – but to name these groups sub-species, and at least implicitly suggest that they are in some way incipient full species, is I think very difficult to justify. This is a far softer form of divergence, with much continued gene flow, closer to the single species end of the axis I outlined above.

***Coenonympha tullia* (Müller, 1764), known as the large heath or common ringlet, has three named "subspecies," which do not fit within the accepted definition of a sub-species. Image from Wikipedia Commons.**

This approaches the heart of the issue as I see it—not a problem with sub-species as a concept, but rather a lack of any other recognised taxonomic categories for describing different types of within-species variants. I have proposed the resurrection of the term "race", once used commonly by entomologists, for weakly divergent populations of the kind illustrated by *C. tullia* (Weir, 2016). Similarly, Mr Okon eloquently illustrates the absurdity of calling what is plainly a polymorphic variety of *Zoila marginata,* of limited geographical distribution, a sub-species.

I am not, however, of the opinion that it is a waste of time to formally name within-species taxa. Rather, for those interested in intraspecific variation, such names are

***Lysandra coridon* (Howarth, 1973), the chalk hill blue, has 446 named forms. Image from Wikipedia Commons.**

often as necessary as those of species, and for entirely the same reasons: to prevent repeated, lengthy and potentially confusing written descriptions. I believe that with a broader range of categories, that could be specified with prefixes to the formal names, so much more biological information could be conveyed: distinction could be made at a glance between weakly or strongly divergent geographical populations; polymorphic varieties; seasonal forms; rare mutants; and, so on. I have argued this case at some length previously (Weir, 2016).

To conclude, sub-species is not only a meaningful category, it is essential if we wish to taxonomically describe biological reality. In fact, I regard the pre-eminent problem with naming intraspecific variants as being a lack of formal, taxonomic recognition for the different types of within-species variation evident in nature. Finally, I would emphasise that I do not make this recommendation for more complex naming lightly – lepidopterists have, more than most, been seduced by the allure of inventing new names and I suggest that the 446 named aberrations of the British lycaenid *Lysandra coridon* (Howarth, 1973), make 1500 names among 250 cypraeid species somewhat lose its sting.

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# Conchologists of America Annual Business Meeting

## Tortuga Ballroom, Grand Key Resort Doubletree by Hilton Key West, FL

The annual business meeting was called to order in the Tortuga Ballroom at 3:18 PM by President Harry G. Lee, who welcomed all in attendance. He introduced himself and the other 12 attending board members and committee chairmen, as follows:

Harry G. Lee, President; Wayne Humbird, Vice President (*in absentia*); Steven Coker, Treasurer; Phyllis Gray, Secretary; Everett Long, Trustee; Karlynn Morgan, Membership Chair; Donald Dan, COA Awards and Endowments; Marcus Coltro, Website Coordinator; Tom Eichhorst, editor; Dr. José Leal, Immediate Past President; and Members at Large, Dr. Doug Wolfe, Jim Brunner, and Ed Schuller.

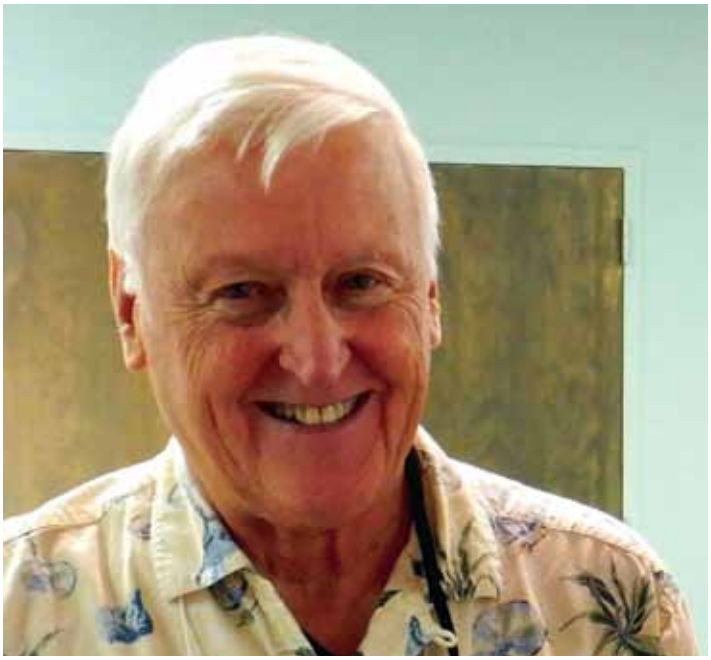
Minutes of the previous Annual Business Meeting at the 2016 COA Convention in Rosemont, Illinois, were in the convention packet of all registrants. Alan Gettleman moved, and Ron Bopp seconded, a motion to accept the minutes as distributed. Motion carried.

Steven Coker, Treasurer, presented the 2016 Financial Report and the 2017 Budget. He noted in 2016 receipts of $92,731.60 which included the delayed arrival of 2015 convention proceeds; disbursements of $45,218.44 with a year-end balance of $255,139.40, which was a net increase of $48,000.00. He mentioned that the increase in total assets of COA will require COA to use the more complicated IRS Form 990 in the future. He also reported the 2017 oral auction total exceeded $81,000 (prior record was $25,000) and an estimated silent auction total of $13,000 revenue which will add $65,000 to the Grant Endowment. He announced the board adopted the 2017 operating budget.

Tom Eichhorst moved, and Jim Brunner seconded a motion to accept the Financial Reports. Motion carried.

The 2017 Academic Grant Committee report was sent by its chair, Dr. Jann Vandetti. In her absence, Dr Leal made a PowerPoint presentation noting the 12 recipients, their institutions, project titles, and awards, which totaled $25,652.41. A copy of this tabulation was included in the convention packet of all registrants. Among the 12 were five eponymous awards, including the inaugural Frederic Weiss Award. Dr. Leal thanked attendees for their support of the awards program and buying at the oral auction thus making the future of professional conchology more secure.

*American Conchologist* Editor, Tom Eichhorst, reported an extra issue, Supplement 1, had been issued this year. The next issue (September) will feature an article by Dr. Emily Vokes, to be followed by an article by Colin Redfern. He thanked all for their support, noting circulation is approaching 900, around the world.



**COA President – Harry G. Lee**

Anne Joffe has been appointed Property Manager to handle hardware and publications.

Donald Dan, Endowment Chair, reported that the COA Award had been presented at ten domestic and four overseas shell shows in 2016. As an ancillary function, he coordinated printing of the COA Grant Donations brochure, listing ten recipients. He acknowledged John Timmerman for the design and composition of the Convention Oral Auction catalogue. Donald also assisted in printing the trifold brochure for the 2018 Convention. He also released dates of shell shows and events twice last year as has been his custom. He thanked Everett Long for orchestrating the successful 2017 Oral Auction the previous evening.

Proceedings were interrupted in order for President Lee to recognize Donald Dan for his efforts on behalf of COA pertaining to preparing the Weiss Collection, and Larry Strange for his 55 page appraisal to the Weiss family. Donald commented he wished to again acknowledge appreciation to John Timmerman for designing the Oral Auction Catalogue as well as to Ed Schuller for the online distribution of the catalogue, and for the efforts of Cheryl and John Jacobs in preparing and running the Silent Auctions.

The Audit Committee report, prepared by Dave Green and Wayne Humbird, was received by President Lee, and it stated the COA financial books to be accurate.

Anne Joffe, Convention Coordinator, thanked Chicago for last year's convention. The 2017 challenge was no active shell club, so she went to North Carolina and Florida people to produce the team, which will also continue to assist as needed for the 2018 San Diego effort. In 2019 she will chair the convention to be held at South Seas Plantation in Captiva, Florida. Dates will be in June, to avoid the hurricane season. Resort includes a 35,000 s.f. ballroom and a room rate of $179 nightly. This is timed as the 100th anniversary of the birthday of Dr. R. Tucker Abbott. After speaking to five clubs outside of Florida unsuccessfully, she announced the 2020 convention will be in the Port Canaveral (Melbourne), Florida area, which is experiencing a resurgence of the Space program, with Alan Gettleman as chairman. She invited everyone to help with these conventions.

Karlynn Morgan, Membership Chair, reported 674 individual members and 39 Shell Club memberships. Six members died since the last convention. She will email members to ask participation in online renewal rather than mail. PayPal is an option. Karlynn encouraged members to invite friends and, especially, young people to join COA.

There was no response for new business from the attendees. President Lee noted that two new documents (COA Gift-in-Kind Policy and Procedures as well as COA Leadership Code of Ethics) were posted on the Jacksonville Shell Club website and would be transferred to the COA website and printed in *American Conchologist*.

Changes in COA leadership were announced by President Lee. Jim Brunner resigned as Member at Large and was commended for his 25 years of leadership. Harry announced Amy Dick would join the Board as Member at Large, and would also assume the Advertising Manager role for *American Conchologist*.

COA has a biennial cycle of elections. The Nominating Committee for the 2018-2020 term was appointed: Chairman, Dave Green; Tom Grace; and Rick Edwards. The slate will include nominees for President, Vice President, Treasurer, Secretary, and Trustee.

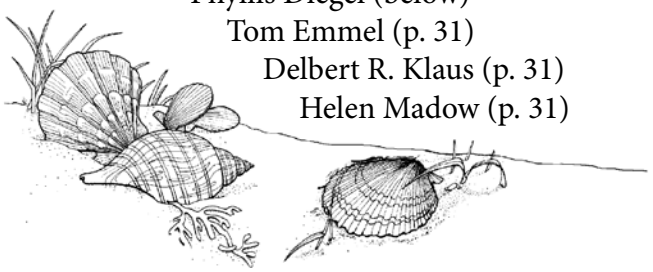
Steven Coker made, and Dave Green seconded a motion to adjourn. The motion carried. The annual business meeting was adjourned at 4:04 PM.

Addendum: There followed a presentation by Dave Berschauer and Dave Waller, who will co-chair the 2018 COA Convention in San Diego. Dates are August 28 – September 2, 2018. The convention logo by artist Lisa Lindall (SDSC Secretary and board member) was printed on the back cover of the convention program book. Check the COA website for hotel location and registration, which is scheduled to be open about September 1, 2017.

Phyllis Gray
COA Secretary
Draft October 31, 2017
Edited by H.G. Lee 29 January 2018
Draft finalized April 2018

## In memoriam:

Paula Joy Della Bosca
Phyllis Diegel (below)
Tom Emmel (p. 31)
Delbert R. Klaus (p. 31)
Helen Madow (p. 31)



**Phyllis Diegel** was a long-time member of COA, joining in the 1970s. She was also a member of various local shell clubs and supported each with dedication. She was an avid snorkeler and collected a wide variety of marine and terrestrial mollusks. Always soft-spoken and unassuming, she had a great sense of humor and made many friends in COA. When Phyllis heard I was writing a book on nerites, she went out of her way to help. All of a sudden I was getting packages from Phyllis with nerites she purchased at different local shell club shell auctions. This included a specimen that proved to be the largest recorded *Nerita* to date. Phyllis refused any payback for the cost of the shells or postage. She said she just wanted to help if she could, thinking it a worthwhile project. Thanks again Phyllis!

Tom Eichhorst

***Mitrella phyllisae* Duerr, 2008, 8mm Miocene fossil from Florida, named for Phyllis (as were some five other fossils).**

**Tom Emmel** passed away in what is surely sad news for Lepidopterists and Malacologists. Tom, "an expert on Lepidoptera and Land Snails," passed away on May 29th while in Brazil. Tom was a quiet dynamo of research on Lepidoptera and just a month ago had a new species of butterfly, that he collected 60 years ago, "discovered" as a new species and named after him. He collected the only known specimens of what is now *Cyllopsis tomemmeli* Warren & Nakahara, 2018, as a 17 year old during a three month expedition through southern Mexico and Honduras. He was also an expert on *Liguus* land snails and conducted research on them as well as butterflies. He was a genuinely nice guy and brilliant. He will be missed. One of his papers on *Liguus* is:

**Emmel, T. C. and A. J. Cotter. 1995.** A summary of historical distribution and current status of the Florida tree snail, Liguus fasciatus. FL Game and Fresh Water Fish Comm. Nongame Wildlife Program Project Report, 467pp + viii. Tallahassee, FL.

Matt Blaine

**Helen Madow** began collecting shells in earnest in the early 1970's. In the beginning, it was just at the beaches of Long Island, New York. As opportunity and finances permitted, she and husband Stanley vacationed to collect, first to Sanibel Island, FL, and then the Caribbean, and beyond. A longtime member of the Long Island Shell Club, Helen's exhibits won several blue ribbons, and one year their Laura Atkinson Memorial Trophy. Her exhibit of local shells resided for a time at a public Information Center along the Southern State Parkway on Long Island. She prepared an informative slide show about mollusks that she presented at several venues over the years. A perennial visitor to the COA Conventions, she especially enjoyed meeting and learning from so many knowledgeable people. Her passion for shells brought her many dear friends and enriched her life greatly. Helen passed away on April 1, 2018. Her sizeable collection has been donated to a high school in New Jersey, overseen by an enthusiastic science teacher.

**Delbert R. Klaus** was born to Elsie and Delbert Klaus of Burton, Texas on September 11, 1937. The family moved to Houston were he grew up and attended Reagan High School. He quit high school to join the Navy at the age of 17. He met his wife of 58 years, Kathleen (Kay) Marie Kujala at a wedding in Painesville, Ohio. Delbert and Kay where married at Bethlehem Lutheran Church in Houston on July 21, 1959. Delbert spent 23 years in the Navy, serving on a range of ships and in various commands before retiring as a Chief Petty Officer. After retiring from the Navy in 1977, Delbert went on to a second career as a Civilian Defense Contractor, retiring a second time in 2000 in San Diego. Delbert and Kay moved to Fredericksburg in 2001.

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# James Cordy, a life of shells

F. Matthew Blaine

**Jim and Bobbi Cordy.**

**(Above & below): Jim Cordy with some of his collection and the many awards he has won.**

James Cordy, (hereafter referred to as Jim), is a man of few words and those words are almost always about shells. I first met Jim about 15 years ago when my wife and I sailed down the East Coast of the United States in our sailboat *Grace*. We stopped in Melbourne, Florida, to visit my wife's parents for a few days and noticed a sign on the side of a road that advertised a shell show put on by the Astronaut Trail Shell Club. We decided to see what a shell show was like. It was there that we met Jim Cordy. Eventually we joined the club. After joining we went on three of Jim and Bobbi Cordy's shelling expeditions. The Cordys also invited us to visit their home to see their magnificent collection.

Jim was born in October, 1932, in a small town in southern Arizona, near the Mexican border. When he was around 5 years old, he and his family moved to California. As a young boy he was mildly interested in insects and even started to collect a few, but that interest did not stick. He graduated from Glendale High School and after graduation, joined the US Army where he worked on cracking code in the Korean War. He was in the Army from 1953 to 1956. After that he was able to get a Civil Service job, his first job, at White Sands, New Mexico. He met his future wife, Bobbi at a wedding there. They married in 1959. James matriculated at San Francisco State College and earned a degree in Mathematics in 1960. A few years later, in 1963, their daughter Denise was born.

His next job was at U. S. Naval Missile Facility, Point Arguello, California, which was later to become South Vandenberg AFB. There was a beach nearby their home where he and his family would take walks. One day they collected some shells that had washed up on the shore and they brought them home. This first collection of shells was displayed in a bowl on the dining room table. Jim started checking the tide tables and timed their walks so that they would be at low tide, which made collecting better. He joined a local shell club, The San Diego Shell Club. They only used binominal Latin names which he quickly learned. Along with this growing interest he became a certified scuba diver and began diving for shells along the California coast. He had the bug and Bobbi was right there with him.

When his job in California ended, he applied to NASA and got a job at Titusville, FL. Taking the job re-

quired a move across the country, but once settled in, he and the family continued collecting shells and they joined the Astronaut Trail Shell Club. He earned his scuba qualification as a Master Diver and made many scuba dives off Boynton Beach, Florida. There he was able to collect excellent specimens for his collection.

This was happening around the time when the scallop shell dump mounds were open for shellers to collect. He spent many hours digging for specimens in those hot smelly mounds. Jim was at the dump so much that he was crowned "Mayor of the Scallop Dump" by his fellow shell collectors.

While he had many delightful experiences diving and collecting shells in Florida, he found his job at NASA, which was writing programs, was becoming extremely stressful. This was due to the pressure of constant deadlines. He decided to take early retirement and spend his time building his expanding shell collection. By this time Jim had amassed a large and diverse collection by self-collecting and by swapping shells with other collectors and dealers. He proudly will tell you if asked, that he has never "bought" a shell. From that point on, his time would be spent collecting, cleaning, and arranging his shells into an extraordinary collection. He also built displays to enter in various shell shows where he won many trophies.

While Jim was collecting and exhibiting shells, Bobbi was a full partner in his endeavor. She helped make labels, wrote a booklet on how to enter a shell show competition, helped set up shell shows, and worked on her own shell craft projects. Eventually she began accurately sculpting the animal that lived inside of shells. She used the shell and then after extensive research, modeled the animal. She placed the sculpted animal in the shell depicting the appearance of the living animal. Bobbi used colored palmer clay for this. Bobbi also helped organize the trips that they took to Eleuthera and other Bahamian islands. They began taking a couple trips a year to Eleuthera. Jim has continued to do this for at least 20 years now. Currently he has more firsthand local knowledge of the shells of Eleuthera than any other living person.

He made two discoveries of new species from Eleuthera. The first is *Volvarina jimcordyi* and the second is *Volvarina cordyorum.* Shortly after the shells were named there was an article in the local newspaper about Jim and the two new species that he found. He received a telephone call from the Brevard Museum of Natural History telling him that they had a collection of shells donated to them by Johnny Johnson. They asked if he


**One of Bobbi's mollusk models, in this case a fine representation of *Festilyria duponti* Weaver, 1968. These 'living sculptures' proved quite popular among collectors.**

**Two marginellids named for Jim. Above is *Volvarina jimcordyi* Cossignani, 2007, 8mm, Eleuthera. To the left is *Volvarina cordyorum* Cossignani, 2009, 8mm, Bahamas.**

**One of the Cordys' cabinets in the Cordy Johnson Hall of Mollusks at the Brevard Museum of Natural History.**

**One of the museum cabinets, displaying a rather wide assortment of shells from small turrids to giant cassids.**

**Part of a scallop disply in the Cordy Johnson Hall of Mollusks. Color and size were carefully selected to appeal to the public.**


**Closeup of a display with *Terebra maculata* (Linnaeus, 1758) and what appears to be *Cerithium nodulosum* Bruguière, 1792, in the foreground.**

would like to take a tour of that collection. He and Bobbi did want to do that. They went to the museum to find the Johnny Johnson shells housed in the basement, which was not readily available to museum goers. Bobbi asked if they could set up a display for the museum so that people could see the shells. Her idea was that they could make a shell museum. Jim was all for it.

The museum allowed them to take one of their huge rooms to set things up. It would be part of the larger museum but was called the Cordy Johnson Hall of Mollusks. It incorporated many of the larger shells in the Johnson collection and many shells that Jim donated. Jim realized that most of the shells in the Johnny Johnson collection were small. These are of high interest to collectors and scientists, but he didn't think they were the kind of thing to interest the general public. He commissioned four custom cabinets and donated them to the museum. He also used three other cabinets and two cases that contained 24 drawers for housing the growing collection. He and Bobby worked every Saturday for over a year, arriving at the museum in the morning and working until three or four in the afternoon. They put the shells in the different display cabinets and cataloged the collection. They also made labels for each shell and some large posters that showed how the families of shells were related. Eventually, in November of 2010, the museum had a grand opening party for the Cordy Johnson Hall of Mollusks.

For several years this huge display of shells was open to the public at the Brevard Museum of Natural History. Like many other museums the Brevard Museum of Natural History began having financial problems and was close to bankruptcy. Eventually the Florida Historical Society took over the museum, thus saving it from bankruptcy. After taking over, The Society had an opportunity to acquire a display on the Hubble Telescope from NASA. Thinking

**Jim working on shells at the dining room table – dinner will have to be elsewhere.**

**One drawer of Jim's collection.**

**Another drawer of Jim's collection.**

**Jim and Bobbi Cordy.**

such a display would attract more people to the Museum, they decided to use the room in which the Cordy Johnson Hall of Mollusks was located to install the new display. Jim was informed that they would have to move the shells out of the room. As a result The Cordy Johnson Hall of Mollusks was disassembled and lost.

Some of the shelves in cases are still on display, however. They are on the first floor of the museum and can be seen by the public. Unfortunately as a result, many of the shells once on display are now in storage in the basement. They are inaccessible to the public along with all of the posters and other material that the Cordys made and donated to the museum. The original room had seven large glass cases with two cabinets containing 24 or so drawers all filled with shells. Most of the small shells are also now inaccessible to the public. One other disconcerting result found when visiting the museum recently was a basket of very expensive specimen shells sitting on top of the cabinet there for kids to pick up and play with!

After Bobbi's death and a major health issue occurring post procedure to improve his knee, Jim is back in good health and spirits. He leads trips to Eleuthera and Mexico, where he continues to collect shells and improve his personal collection. He enters many shell show competitions with winning entries. Jim Cordy is still pursuing his lifelong passion for collecting shells.

**Credits:**
Photographs of *Volvarina jimcordyi*, *Volvarina cordyorum*, and the model of *Festilyria duponti* by James Cordy. All other photographs, F.M. Blaine.
Dona W. Blaine for suggestions and proofreading.

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# Philippine helicostyline land snail diversity, distribution and areas of endemism: an effect of forest type? (COA Academic Grant Brief Report)

**Gizelle A. Batomalaque**

***Background***

The terrestrial malacofauna of the Philippines has received little attention in terms of biodiversity studies, or even assessments for conservation. Among the most speciose groups of land snails in the Philippines is the subfamily Helicostylinae. This project aimed 1) to determine whether areas of endemism coincide with different forest types based on distributions, and 2) to compare species assemblages (including non-helicostyline land snails) in different forest types. Through the Conchologists of America research grant, I conducted fieldwork in several sites in the Philippines, especially the southcentral region of Mindanao Island. The grant covered transportation expenses for myself and one to three volunteers (depending on the site).

Due to a few problems in permit requirements and communication with potential contact persons in the different places, most of the target sites were not visited. Alternative sites, however, were visited. In late April through June, and early August of 2016, I traveled to ten sites to collect land snails (Figure 1): Mt. Data National Park and Mt. Pulag National Park in the Cordillera region, northern Luzon Island; Mt. Labo in Camarines Sur, southern Luzon; Sibalom Natural Park in Miag-ao, Panay Island; K'laja Karst, Sitio Kangko, and Lake Holon in southcentral Mindanao Island; Balut Island and Olanivan Island of the Sarangani Province, and Bongao, Tawi-Tawi. For each site, we spent one to three days in search of snails. Travel time to the sites varied from half to a whole day.

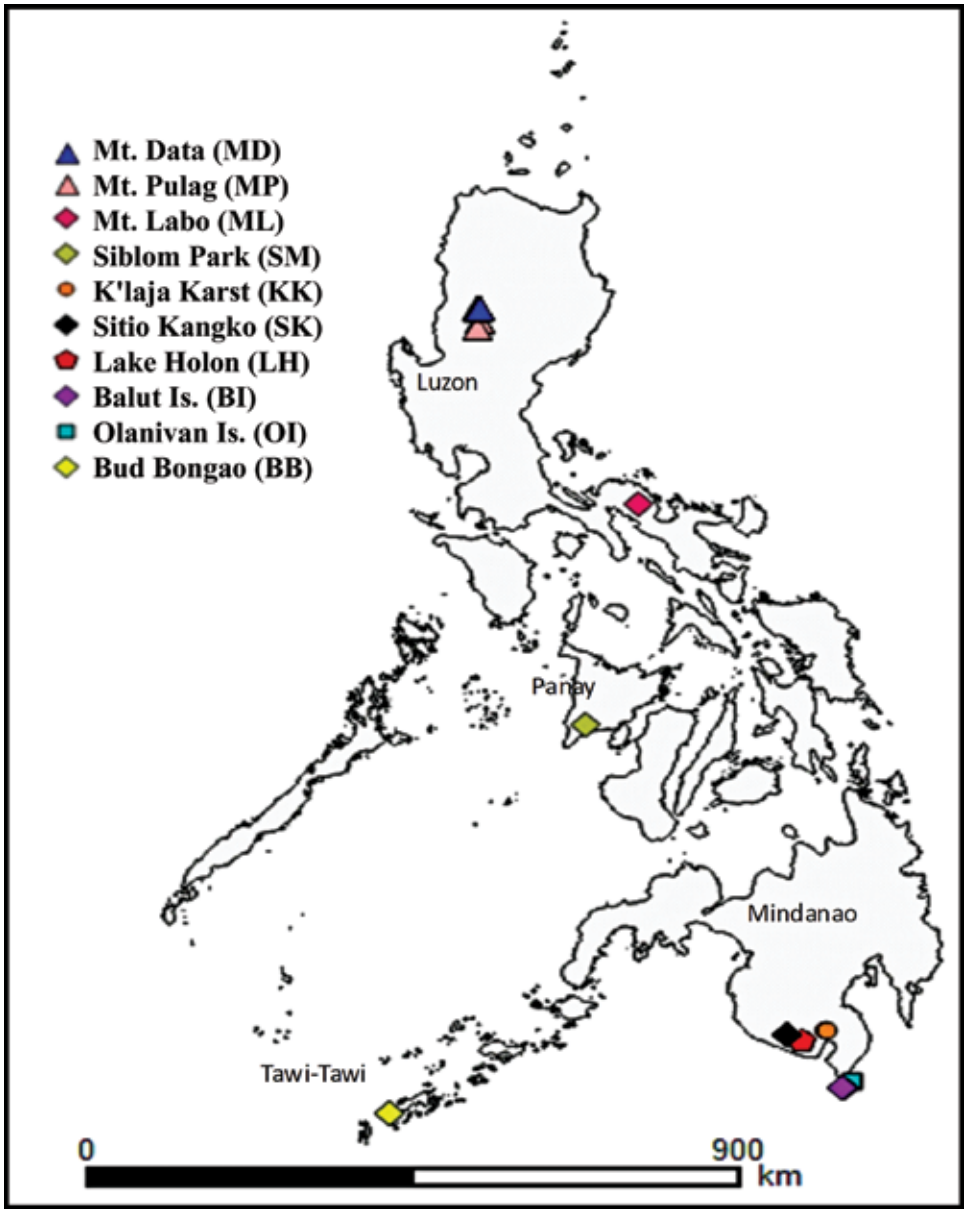


**Figure 1. Map of collection sites, color-coded according to locality. The shapes represent their respective forest types: triangle – mossy forest, diamond – tropical lowland evergreen forest, circle – forest over limestone karst, pentagon – tropical montane forest, square – moist deciduous forest. For each site, we spent one to three days searching for snails.**

The collection sites were varied in terms of forest type and climate type. Mt. Data and Mt. Pulag are both mossy forests whose climate is relatively dry from November to April, and wet during the rest of the year. These forests are bordered by agricultural land. Mt. Labo is considered a tropical lowland evergreen forest, and has no dry

season with very pronounced rainfall from November to April. Sibalom Natural Park is also a tropical lowland evergreen forest with a climate that has two pronounced dry (November to April) and wet (May to October) seasons. The sites in Mindanao Island and its nearby islands have similar climate types, wherein rainfall is evenly distributed throughout the year. K'laja Karst, as the name suggests, is a forest over limestone karst, though the current forest is very patchy due to vast agricultural land. Sitio Kangko is an area where agro-forestry is being practiced. That is, the dipterocarp forest is maintained, but the understory is a plantation of *abaca* (*Musa textilis*, a type of banana). Lake Holon, on the other hand, is a tropical lower montane forest surrounding a crater lake. Balut Island is a tropical lowland evergreen forest, where some patches have also been converted to *abaca* plantations. Olanivan Island is a very small with a small patch of tropical moist deciduous forest; most of the island's area has been converted to a coconut plantation.

A total of 56 species belonging to 14 families were collected from the sampling sites (Table 1). These are currently stored in the Academy of Natural Sciences (ANS) Malacology Department. This does not include microsnails, which are yet to be sieved from the top soil and leaf litter samples. Mt. Data and Mt. Pulag shared five species, which was expected. Although vast areas of agricultural land separate these sites, both are part of a continuous chain of mountains and are both mossy forests. Species in Mt. Labo and Sibalom Natural Park were different from the other sites despite having similar forest types as Balut Is. and Bud Bongao. In Mindanao Island, four species were found in more than one site. Only one species was common to Balut and Olanivan Islands, while Bud Bongao did not share common species with the rest of the sites. It is possible that similar microsnail species will be found once the soil samples have been sieved and sorted.

The differences in forest types reflected the different assemblages, and with more extensive sampling, more defined species distributions will be observed. Due to the el niño season in 2016, only a few of the larger snails (camaenids and bradybaenids) were found alive, and instead were empty shells. The presence of Achatina *fulica* even in the mountains was not surprising because of the extent of land conversion for agriculture.

For my thesis, which deals with the phylogeny and biogeography of helicostylines, DNA was successfully extracted from seven species of live helicostyline land snails collected during the fieldwork. These were sent for sequencing, and together with previously collected samples, will be used for further phylogeographic analyses.

The top soil and leaf litter samples are yet to be sifted and sorted for microsnails. The samples were deposited in the Institute of Biology, in UP-Diliman. I am currently preparing for another fieldwork this summer to visit priority areas, which are Sibuyan Island, Catanduanes Island, and Eastern Mindanao. With the collation of data from this coming fieldwork and the previous trips, I will be able to come up with comprehensive comparisons of species assemblages in different types of forests across the Philippines. Furthermore, the distributions of helicostyline species entered on a map of forest types will be able to show whether forest associations are present.

Acknowledgements

I would like to thank the Conchologists of America for the student grant, which enabled me to conduct fieldwork in different sites. I also thank the following local government and DENR representatives from the local units of each collecting site for the accommodation and assistance: Brgy. Captain E. Awasen and Park Superintendent M. Bayagen (Mt. Data National Park), Municipal Mayor G. Todiano and Park Superintendent E. Albas (Mt. Pulag National Park), Dr. A.M. Hadjinasser and M.R. Suraong (DENR-Region 12, Allah Valley Protected Area- Sitio Kangko and Lake Holon), and Municipal Mayor V. Cawa (Sarangani Province- Balut Is. and Olanivan Is.). Finally, I thank my field volunteers L. and M. Batomalaque, H. Lipae, R. Pedales, D. Ramos, and J.G. Roño, and local guides for their helping hands.

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**A portion of mossy forest adjacent to vegetable gardens in Mt. Pulag National Park. Photo by G. Batomalaque.**

**Table 1.** List of species and their respective sites of occurrence: Mt. Data National Park (MD), Mt. Pulag National Park (MP), Mt. Labo (ML), which are on Luzon Island; Sibalom Natural Park (SM), which is on Panay Island; K'laja Karst (KK), Sitio Kangko (SK), and Lake Holon (LH), which are on Mindanao Island; Balut Island (BI) and Olanivan Island (OI), found south of Mindanao; and Bud Bongao (BB), in the Tawi-Tawi region, southwest of Mindanao.

| **Species** | **MD** | **MP** | **ML** | **SM** | **KK** | **SK** | **LH** | **BI** | **OI** | **BB** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Family Helicinidae** | | | | | | | | | | |
| *Sulfurina citrinella* | | | | | **X** | | | | | |
| **Family Cyclophoridae** | | | | | | | | | | |
| *Cyclophorus daraganicus* | | | | | | **X** | | **X** | | |
| *Cyclophorus lingulatus* | | | | | **X** | | | | | |
| *Cyclotus variegatus* | | | | | | | | | | **X** |
| *Japonia* sp. | **X** | **X** | | | | | | | | |
| *Leptopoma concinna* | | | | | | | | **X** | | |
| *Leptopoma marginellus* | **X** | | | | | | | | | |
| *Leptopoma pyramis* | | | | | | **X** | | | | |
| *Platyraphe coptoloma* | | | | | **X** | | | | **X** | |
| **Family Rathouisidae** | | | | | | | | | | |
| *Atopos semperi* | | | | | | | | **X** | | |
| **Family Ellobiidae** | | | | | | | | | | |
| *Pythia scarabaeus* | | | | | | | | | **X** | |
| **Family Achatinidae** | | | | | | | | | | |
| *Achatina fulica* | | **X** | | | **X** | **X** | | | | |
| **Family Subulinidae** | | | | | | | | | | |
| *Curvella quadrasi* | | **X** | | | | | | | | |
| *Lamellaxis* sp. | | | | | | | | | | **X** |
| *Paropeas acutissimum* | | | | | | **X** | | | | |
| **Family Euconulidae** | | | | | | | | | | |
| *Coneuplecta olivacea* | | | | | | | | **X** | | |
| *Coneuplecta turrita* | | | | | | | **X** | | | |
| *Euconulus* sp. 1 (smooth) | **X** | | | | | | | | | |
| *Euconulus* sp. 2 (ribbed) | | | | | | **X** | **X** | | | |
| *Microcystis* sp.1 | **X** | **X** | | | | | **X** | | | |
| *Microcystis* sp. 2 (larger) | | | | | | | | **X** | | |
| **Family Trochomorphidae** | | | | | | | | | | |
| *Videna repanda* | | | | | | | | **X** | | |
| **Family Helicarionidae** | | | | | | | | | | |
| *Eurybasis sylvanus* | | | | | | | | | | **X** |
| *Helicarion cumingii* | | | | | | | | **X** | | |
| *Helicarion planulatus* | | | **X** | | | | | | | |
| *Helicarion tigrinus* | **X** | | | | | **X** | | | | |
| *Helicarion* sp. (w/ tubercles) | **X** | **X** | | | | | | | | |
| *Kaliella* sp. | **X** | | | | | | | | | |
| *Pseudohelicarion mollis* | | | | | | **X** | **X** | **X** | | |

**Table 1. continued.**

| Species | MD | MP | ML | SM | KK | SK | LH | BI | OI | BB |
|---|---|---|---|---|---|---|---|---|---|---|
| **Family Ariophantidae** | | | | | | | | | | |
| *Macrochlamys* sp. | X | | | | | | | | | |
| *Mariaella philippinensis* | | | | | | | | X | | |
| *Pliotropis subterraneus* | | | | | | | X | | | |
| *Vitrinula excentrica* | | | | | | X | | | | |
| **Family Chronidae** | | | | | | | | | | |
| *Hemiglypta globosa* | | | | | | X | | | | |
| *Ryssota dvitija* | X | X | | | | | | | | |
| *Ryssota mindanaiensis* | | | | | X | | | | | |
| **Family Camaenidae** | | | | | | | | | | |
| *Amphidromus basilanensis* | | | | | | X | | | | |
| *Amphidromus pallidulus* | | | | | X | | | | | |
| *Obba begonia* | | | | | | X | X | | | |
| *Obba gallinula* | | | X | | | | | | | |
| *Obba moricandi* | | | | | X | | | | | |
| *Obba worcesteri* | | | | | | | | X | X | |
| **Family Bradybaenidae** | | | | | | | | | | |
| *Bradybaena fodiens* | | X | | | X | | | | X | |
| *Calocochlia dattaensis* | X | X | | | | | | | | |
| *Calocochlia mainitensis* | | | | | X | | | | | |
| *Calocochlia mindanaiensis* | | | | | | X | | | | |
| *Chloraea indusiata* | | | | | | | | X | | |
| *Chloraea intorta* | | | | | | | | X | | |
| *Chloraea reginae* | X | | | | | | | | | |
| *Helicostyla leopardus* | | | X | | | | | | | |
| *Helicostyla mirabilis* | | | X | | | | | | | |
| *Helicobulinus sarcinosa* | | | | X | | | | | | |
| *Helicostyla fulgetrum* | | | | X | | | | | | |
| *Trachystyla cryptica* | | | | | | X | | | | |
| *Tricheulota spinosissima* | | | | | | | | X | | |
| **Family Limacidae** | | | | | | | | | | |
| *Limax* sp. | X | | | | | | | | | |

**Inside the mossy forest in Mt. Pulag. We experienced very heavy rains during sampling in this site. Photo by G. Batomalaque.**

**A small patch of forest on K'laja Karst, Southcentral Mindanao. The bare areas are sugarcane plantations that were recently cleared for new crops. Photo by G. Batomalaque.**

**Sorting of shells collected in K'laja Karst. The rainy season hasn't set in yet during the time of sampling, which may be the reason why most of the shells collected were empty. Photo by D. Ramos.**

***Mariaella philippinensis* Semper, found on the underside of a tree fern leaf. This species was found in abundance on Balut Is. Photo by G. Batomalaque.**

***Helicostyla* (*Calocochlia*) *mindanaensis* (Pfeiffer, 1842), collected in the abaca plantation on Sitio Kangko, south-central Mindanao. Photo by G. Batomalaque.**

# *REVISED CLASSIFICATION, NOMENCLATOR AND TYPIFICATION OF GASTROPOD AND MONOPLACOPHORAN FAMILIES*

**by**

**Philippe Bouchet & Jean-Pierre Rocroi**
**Bernhard Hausdorf, Andrzej Kaim, Yasunori Kano, Alexander Nützel, Pavel Parkhaev, Michael Schrödl & Ellen E. Strong**

**MALACOLOGIA, 2017, 61(1–2): 1–526**

**book review by David Campbell**


If you want to have the latest classification for your collection, this will be a valuable asset. The publication has two parts. The Nomenclator and Typification, by Bouchet and Rocroi, is an exhaustive catalogue of all 2604 family-level names published in Gastropoda and Monoplacophora, from Abbottellinae to Zygopleurinae. By the rules of the International Commission on Zoological Nomenclature, family-level names includes subtribes, tribes, supertribes, subfamilies, and superfamilies, as well as families. Major points of relevant ICZN rules are reviewed, providing a helpful reminder or introduction. Reading through the list of names also will give several pointers on the rules, as the reasons behind decisions about the names are discussed when the name is invalid or when issues arise. There's a helpful table of several common genus endings in mollusks that have potentially unexpected forms when you make them into family names, and some statistics on the dates of publication and geologic ages of the names. Each name has a full bibliographic reference, the type genus and type species of type genus, and notes such as whether the name is officially available to use and if there have been changes in usage (such as promoting a subfamily to a family). In addition, names above the family level (such as orders and subclasses) are included in a second catalogue. The ICZN code does not regulate names above the family level, so official validity is not an issue, but they include discussion on how names have been used and changed, if applicable. Thus, the Nomenclator and Typification tells you exactly what family names are available to use according to the ICZN rules and why. However, the ICZN rules only tell us what names are nomenclaturally available – whether the names are legal by the official rules. This does not tell us whether the names are actually useful in classification, just that they could be put to use if they seem to be useful.

The Classification, with different sections by each of the authors, takes the 2124 names that meet the legal requirements for a scientific name (out of the 2604 total) and organizes them into a classification, judging which are subjective synonyms. In other words, here is where they have decided which of those 2124 names apply to groups that are actually different enough from others to be worthwhile to recognize. This decision is necessarily subjective. Some groups have received detailed recent study, giving high confidence in the classification; others are quite poorly

known, and the best available classification might still be a preliminary arrangement. So this classification is certainly not the final word, but it is the latest word. In particular, the results of many new molecular analyses are incorporated into the classification. It's not easy to keep up with all the studies, so this paper provides a very helpful update on recent developments in classification. Decisions made in the classification are extensively explained by almost 400 footnotes.

Not surprisingly, in the course of making such a large compilation, several problems will be discovered. A few new names were created, either to replace invalid ones or because none was available for an important group. Several problems are being submitted to the ICZN for formal decisions.

The previous edition is available at: https://www.biodiversitylibrary.org/item/81069#page/5/mode/1up . Besides the 12 years of updating, the previous version did not have the type species of the type genera identified. One hundred and ten additional families are recognized as valid in the new edition. A few of these are due to the inclusion of Monoplacophora, but most reflect new discoveries or revised classifications within the Gastropoda.

The bibliography is particularly valuable. Of course, you can use it to find complete references for the cited publications. But the citation is much more detailed than usual, making this a valuable guide to many important publications. Several major monographs, especially in the 1800s, were published in parts, and identifying the actual date of a particular section can be quite difficult. Rather than simply citing something like "Adams, 1841-1853", they include tables documenting which pages and figures were published when. If you are trying to track down the proper citation of a particular genus or species, a quick check of the bibliography here can settle many of the most common puzzles about the date of publication.

I have regularly referred to the first edition of the catalogue and classification, keeping both print and electronic versions handy. I also used it as the basis for the systematic arrangement of the Gastropoda in cataloguing the collections at the Paleontological Research Institution. I've already been making use of the new edition and will be referring to it frequently, until the next edition!

The volume is available from ConchBooks (https://www.conchbooks.com/) or from Malacologia (malacologia@gardner-webb.edu)

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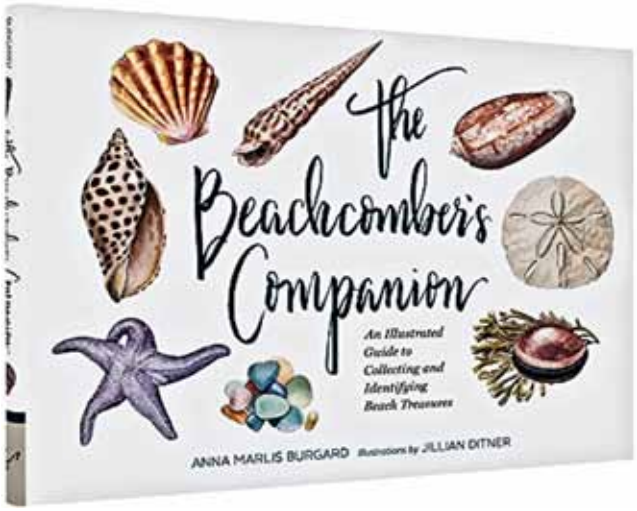


# *The Beachcomber's Companion*

**by Anna Marlis Burgard**
**illustrations by Jillian Ditner**
**Published in 2018 by Chronicle Books, LLC, CA**
**128 pages, illustrated with water colors,**
**ISBN: 9781452161167**
**Book review by Tom Eichhorst**

This is a gorgeously illustrated guide for, as the title states, beachcombers. This little book is written by a hardcore beachcomber for anyone who happens to find themselves walking a beach. For those who think the term «hardcore» might be a bit strong, here are the author›s own words about beachcombers. "We're curious, compulsive, and can be a little covetous when someone finds our Holy Grail shell or sea bean or ocean-polished shard of glass. We also tend to be protectors of wildlife... Sounds hardcore to me.

The book has a fair bit of beachcomber lore and general knowledge about different mollusks and other beached items, but the heart of the book is the double page presentation of descriptive text and colorful art of some 40 shells and other beach artifacts (sea glass, sharks' teeth, sea beans, sea stars, crabs, etc.). Common names are used and this is obviously meant for appreciation of the act of beachcombing rather than a field guide. That being said, there are some nice little hidden gems as the author relates stories about her experiences with the different objects described. The artwork is accurate as well as beautiful. Our readers will easily recognize each shell depicted. The book ends with a rather extensive and well thought out index. This is a fun book and you might learn something! I found it for sale online at Target for $11.70 and at Barnes and Noble for $8.48. So skip one Starbuck's coffee and give *The Beachcomber's Companion* a try.

Tom Eichhorst
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# *Cowries - A Guide to the Gastropod Family Cypraeidae*

## Volume 1: Biology & Systematics

### by Felix Lorenz

**Published in 2017 by ConchBooks, Harxheim, Germany, hardcover in laminated boards, A4 size, about 21 by 29.75 cm., or 8 by 11.75 inches, 644 pages fully illustrated with color plates, maps and charts.**

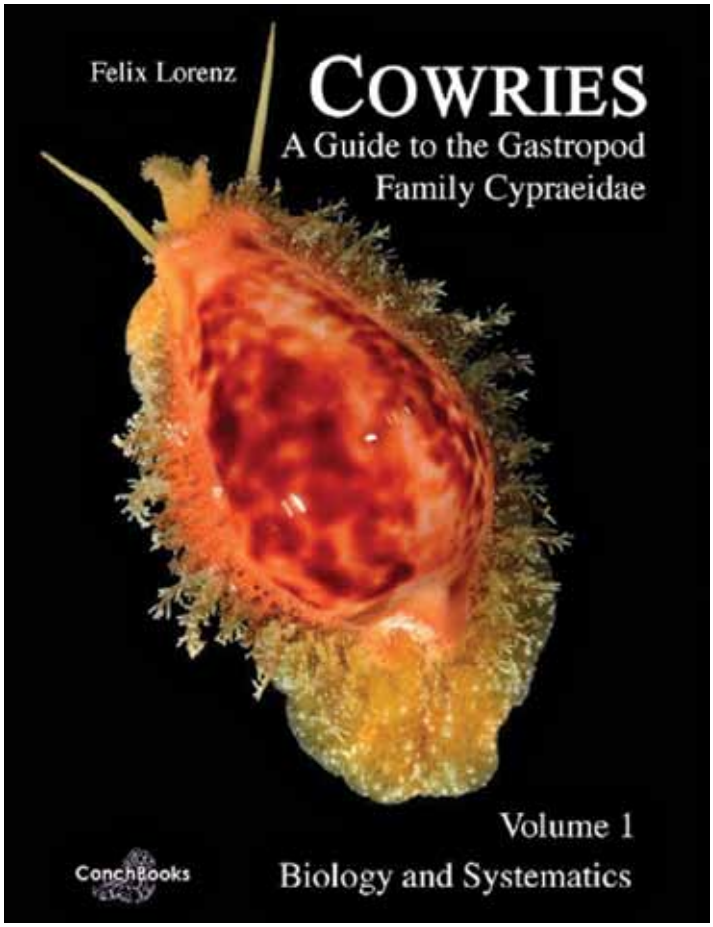
**Book Review by Richard Kent**

Finally the highly anticipated sequel to *The Guide to Worldwide Cowries* by Lorenz and Hubert has been published. There is both good and bad news about the new book. We need to point out that, *Cowries, A Guide to the Gastropod Family Cypraeidae* by Felix Lorenz and published by Conch Books, is split into two volumes. At this time only Volume 1 is available.

First the good news. Everything one could possibly want to know about Cowries, live and extinct, is thoroughly discussed. This is the definitive book on the subject. The bad news. It's 644 pages of exhaustive text are intended for the advanced collector. Photographs are minimal; Volume 2 will be the photo book. The price is a whopping $199 retail. The way the volumes are split up, readers will need to purchase both.

The first 181 pages cover in seven chapters: Cowries and Man, Animal Morphology, Reproduction and Development, The Adult Shell, Habitat and Distribution, DNA, and Cowrie Evolution. It's fascinating and essential reading that one needs to make the most out the second half of the book. The balance of the book is a systematic Cowrie Identification Guide, updating the original "Guide" to the present with numerous new subspecies and species. Collectors will especially get new insight on South African and Australian Cowries. Every species is given scientific name, synonyms, cited references, size range, habitat, distribution and a discussion. The descriptions are concise, cut and dry. One misses the flair that Wells had in his book on Cones. There are also comparison charts and maps. Lorenz illustrates each species and subspecies with a photo of the dorsum and base of a typical specimen. All are shown the same size so the minute *Cypraea microdon* is illustrated at an identical size as *Cypraea tigris*. Even though all are shown the same size, the length of the discussion for each species varies greatly. It is obvious Lorenz has his favorites! He chooses to devote much space to discussions on nomenclature and DNA. Lorenz is what is known as a "splitter" (as opposed to "lumper") and has introduced dozens of new names himself. At times the detail in these discussions can be overwhelming, even to an advanced collector.

Collectors could find much that is controversial and open to debate. One of several instances that stood out to me is that according to Lorenz, *Cypraea tigris tigris* is an Indian Ocean cowrie whereas *Cypraea tigris pardalis* is the Philippine variety, but he fails to cite the original descriptions and type specimens to back this up. Having dealt with shell dealers for years, *pardalis* is an all white tiger with minimal black spotting and no dorsal line, just like the one illustrated in the groundbreaking Burgess book. It would be interesting to see if one dozen tigers from various populations in the Indian Ocean were mixed with one dozen from the Pacific, if any expert could correctly separate them. Lorenz says they have different DNA.




I read the book cover to cover taking a full week. Because I am an advanced collector I find the book essential. It greatly added to my understanding and enjoyment of the hobby. I can't wait for volume 2 with all the photos to be published.

A word to Mr. Lorenz - take only the information that is essential to the beginning and casual collectors and publish a condensed, concise photo guide. The hobby needs such a book. It will be a best seller!

Richard Kent
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# *Natural History Collector: Hunt, Discover, Learn*!

**by Michael Sanchez**

**Published in 2018 by Quarry Books, The Quarto Group, Beverly, MA. softcover, 8.5 x 11.8 inches, 127 pages, ISBN: 978-1-63159-367-3, available for $19.99 at www.quartoknows.com and The New Mexico Museum of Natural History and Science.**

**Review by Tom Eichhorst**

This little gem of a book is mainly intended for kids and has a wealth of information to offer concerning collecting natural history objects. As Mike states, "Natural history collections often begin with a single object that catches your eye. It might be an interesting rock, a fossil, or an iridescent shell. Perhaps you take it home and try to find out more about it. ...you find another example. ...the beginning of an amazing adventure." What follows is then an orderly discourse in collecting: preserving, storing, displaying, labeling, and collecting courtesy, with pages dedicated to shells, fossils, insects, minerals, plants, flowers, animal tracks, etc. Each section discusses the objects being collected with where and how to find them, collect them, curate them, and display them.

Since we are mostly interested in shells, I'll cover that section, but first I should point out, that like many readers of this journal, I am also interested in other aspects of natural history. I recently acquired a few incredible specimens of rhinoceros beetle. They needed 'relaxing' and pinning to properly prepare them for display. On a chance, I checked Mike's book and sure enough, he provides complete instructions for preparing my specimens. Okay, back to shells. The short section on shells begins with, "Meet the Mollusks," then "How To Build Your Collection," "Be A Savvy Collector," "Be A Conscientious Collector," "Collector's Checklist," "Caring For The Collection," and a craft project for a display box. This is really well presented and thought out, and might be the perfect introduction to shell (or other items of natural history) collecting for youngsters. If the interest continues, then it is maybe time for Abbott's "Golden Guide."

You know a youngster interested in the natural world? I don't think you can go wrong with this colorful little book. It can be a bit difficult to find on the publisher's web site - just search for the title.



Tom Eichhorst
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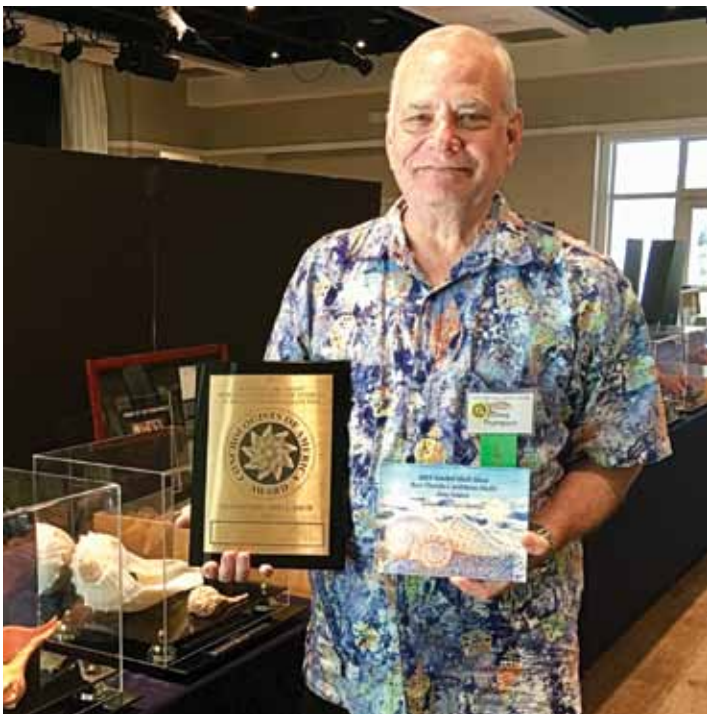
# Sanibel Shell Festival – 1-3 March

**The 81st Annual Sanibel Shell Show was a wonderful success. All the Scientific Division and Artistic Division exhibits were outstanding, the weather was perfect, and the visitors expressed surprise and wonder as they wound their way through the exhibit halls. See the club web site for complete results: https://sites.google.com/site/thesanibelcaptivashellclub/annual-shell-show/2018-shell-show.**

**The du Pont Trophy for "Most Outstanding Entry in Show," was won by Gregory Curry, Sr., of Key West, FL**



**Doug Thompson of Lynn Haven, FL, won the Conchologists of America Award for "Pride of the Panhandle," with 40 feet of display in 20 cases, showing species found by scuba in NW Florida Gulf of Mexico.**

# Broward Annual Shell Show – 13-14 Jan


Amy Tripp won the du Pont Award and the Jim Vunkannon Memorial Award.

Ron Bopp of Bradenton, FL, walked off with the Conchologist's of America Award for "Cone Shells," a 36 foot display of 16 cases of Conidae, including explanations of cone toxins and other interesting aspects of this family.

(Above): Gene Everson had yet another winning display, this time winning the Len Hill Memorial Trophy.

(Below): Scientific Judges (L) Kevan Sunderland and (R) Harry Lee.

(Above): Joyce Matthys took home the American Museum of Natural History Award and the Gerrit de Graff Memorial Trophy.

(Below): Anne Joffe won the Neil Hepler Most Educational Award for a display explaining mollusks and their shells.

# Sarasota Shell Club Shell Show

The Sarasota Shell Club Shell Show (9-11 Feb) moved to a new venue this year – central Sarasota. We had 27 scientific entries for our judges (Dave Green and Bernie Peterson) to view and evaluate. The new venue (the Potter Building, next to the Robert's Arena) brought in more visitors (1,280) and shell enthusiasts than in the last five years.

**Pat and Bob Linn won the Conchologists of America Award for an 18 foot display of 7 cases titled, "The Olive Shells of the World."**

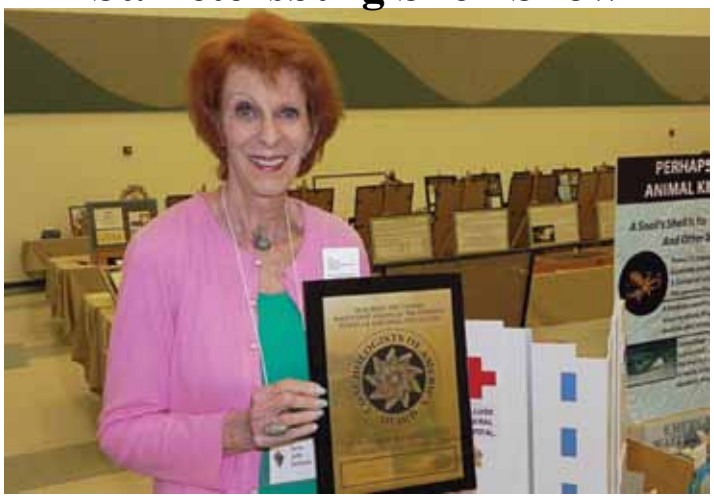
**Ron Bopp won the du Pont Award for his cone display.**


**John Jacobs won Best Small Scientific, for his display of giant limpets!**

**(Below, left): Anne Joffe won the Conchologists of America Award at the St. Petersburg Shell Show. More on this show in the next issue.**

**(Below, right): Mary Ann Duke won the Conchologists of America Award at the Marco Island Shell Show.**

## St. Petersburg Shell Show



## Marco Island Shell Show