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CONCHOLOGISTS



OF AMERICA, INC.

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

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In This Issue

Letters and Comments -----	3
In the thick of it: the jungles of the Solomon Islands by Simon Aiken -----	4
Threetooth ID ruminations open a centuries-old amphi-Atlantic Pandora's Box by Harry G. Lee -----	13
Dealer Directory -----	18
Mid-Atlantic Malacologists Meeting by Elizabeth Shea, Leslie Skibinski, & Aydin Örstan -----	20
2011 Sarasota Shell Club Shell Show by Ron Bopp -----	22
2011 Broward Shell Club Shell Show by Nancy Galdo -----	24
St. Petersburg Shell Club Shell Show -----	25
October 2010 British Shell Collectors' Club Shell Show -----	26
Oregon Society of Conchologists Shell Show -----	27
What is a shell worth? by Tom Rice -----	27
Historical notes on a sinistral sacred chank: <i>Turbinella pyrum</i> by Harry G. Lee -----	28
SCUM XV: Southern California Unified Malacologists by Lindsey T. Groves -----	30
Interesting boring by He Jing -----	32
Book Review: "Mattheus Marinus Schepman (1847-1919) and His Contributions to Malacology" -----	37
Book Review: Compendium of Florida Fossil Shells, Volume 1, Middle Miocene to Late Pleistocene Marine Gastropods -----	38
Book Review: Shells of the Hawaiian Islands, Vol. 1, The Sea Shells; Vol. 2, The Land Shells -----	39

Front Cover: *Placostylus strangei* (Pfeiffer, 1855) a rather handsome tree snail in the family Bulimulidae on a tree in the Solomon Islands. For more about these islands and the land snails and other wildlife that abound there, see Simon Aiken's article on page 4.

Back Cover: *The Shell Collectors*, acrylic on canvas, 36" x 60," painted by COA member David Herman of East Meadow, New York. Regretfully, it had to be cropped a bit to fit the back cover, but I think it still conveys a sense of the expanse of a seashore.

Editor's Comments: This is the first 40-page issue of *American Conchologist*; thanks to Johnson Press of America, Inc., of Pontiac, IL, and to the many folks who submitted articles. My thanks to all who submitted articles and apologies to those who I had to bump back to the next issue. Hang in there, I will get to everybody.

After the last issue, I received a couple of interesting letters from Tom Rice. Some of what he had to say is summarized below and some resulted in the article on page 27, "What is a shell worth," by Tom. One of the expensive shells he mentions is a rare cowrie, *Austrasiatica alexhuberti* (Lorenz & Hubert, 2000). The other shell he mentions is a sinistral *Turbinella pyrum* (Linnaeus, 1758). The *Turbinella* or sacred chank, is discussed in Tom's article and in a great follow-on article by Harry Lee, one of the very few people who actually owns a sinistral sacred chank (page 28). For those who may wonder what one of the most expensive shells in the world looks like, you can see a left-handed *Turbinella pyrum* on page 28 and the *Austrasiatica alexhuberti* below, courtesy of Felix Lorenz, who has probably handled more of these than anyone else in the world.



Dear Tom,

Just received the March *American Conchologist* and have enjoyed all the articles. Especially George Metz's on parasitic mollusks. I would like to draw attention to another group, referred to as kleptoparasitic mollusks in the family Trichotropidae. Erika Lyengar has studied these and we have an article and video on our web site concerning them: www.ofseaandshore.com/news/kleptopaper/kleptopaper.php

Re: "Conch shells on coins" by Jesse Todd in *American Conchologist* 39(1). A previous article might be of interest to *Amer. Conch.* readers, "Mollusks on Coins" by Wolfgang Fischer. Originally it appeared in *Club Conchyliæ Informationen* 31(1-2) 1999, and was reprinted in *Of Sea and Shore* 23(1): 37-42 (2000). That issue of *OS&S* (as well as Vol. 1 #1 through Vol. 23 #3) can be accessed on our web site (better, clearer images of all issues Vol. 1 #1 through Vol. 27 #4 available on DVD as well - info on web site).

Tom Rice -- Rawai Beach, Phuket, Thailand

In the thick of it: The jungles of the Solomon Islands

Simon Aiken

“But we have nobody to cook!” exclaimed the owner of the town’s only restaurant, excusing why they were closed at dinner time. No doubt this delicious ambiguity was unintentional, in a country notorious for cannibalism well into the 20th Century, but it shows what the modern traveler in the Solomon Islands must expect. And I was in the third largest town in the country.

In a previous *American Conchologist* (March 2011, vol. 39, no. 1) I wrote of my quest for seashells in the Solomon Islands, a huge archipelago almost untouched by tourism. Flying over the larger islands reveals steep mountains covered in dense jungle with no roads and almost no inland settlements. Except in a few areas, there has been little deforestation, so 90% of the country is rainforest. It is challenging terrain, to be sure, but very promising for the landsnail collector. A good machete is essential; a relaxed attitude to hygiene is helpful. Swampy areas in the jungle are popular with leeches; innocuous looking plants such as the *nalato* and *hailasi* will cause serious blisters if touched. The jungle is divided by fast-flowing streams and rivers, and trails are prone to flashflooding. The ‘roads’ (apart from in Honiara) are still made from dead coral – they were constructed by US Navy Seabees in the 1940s and there has been no reason to upgrade them.

The Marau area of Guadalcanal holds the dubious title of the second wettest place on earth. A year’s rainfall here can be 500 inches – ten times the annual drenching of Florida. The soil is rich and volcanic, with some limestone areas. Promising habitats for snails, certainly, and one must wonder how many exotic species await discovery in these almost impenetrable rainforests. I could say that my most successful landsnail collecting was in the rain, but it was almost always raining!

The range of molluscan fauna in the Solomons bears similarities to New Guinea and the Bougainville Islands, but there is a high proportion of endemic species. The colorful *Papuina* and *Megalacron* are varied and conspicuous and many are endemic to just one island. The migration of species has generally been eastwards – from Malaysia, through New Guinea, and then down through the Solomons.

There are relatively few mammals in these islands. There are several species of rat, but the larger tree-climbing ones (bigger than domestic cats!) are endangered or extinct. The main predators of snails are presumably birds, and the Solomons certainly has a rich ornithological fauna. The 3-foot-long Blyth’s hornbill (*Aceros plicatus* Forst, 1781) is common in the forest canopy, especially in New Georgia province. This noisy omnivorous bird is the most easterly of the world’s hornbills.

Most Solomon Islanders live in small villages on the coast. The rainforest is so dense that travel between villages is by dug-out canoe. The median size of a settlement is just 41 people



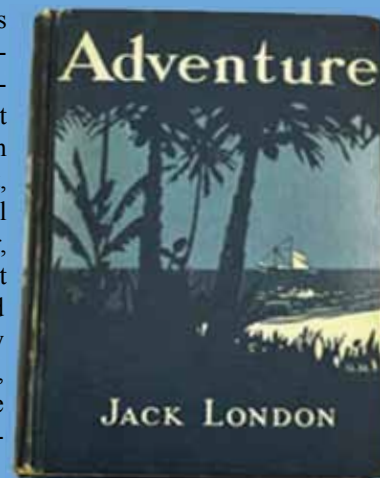
and perhaps it is this emphasis on small close-knit communities that has helped preserve many traditional aspects of their life. Society is matrilineal, with land inherited through the female line, a tradition stemming from head-hunting days when so many young men died violent deaths. There is no electricity outside of a handful of towns, and no running water. Houses are still built of raw materials from the jungle. A few years ago there was a little migration from coastal villages to inland sites in response to

Printed Red

A century ago, the author Jack London warned of the dangers:

“The Solomons ought to be printed red on the charts – and yellow, too, for the diseases.” (Adventure, 1911)

Head-hunting and cannibalism were real dangers then, particularly in New Georgia – but, thankfully, not any more. Tropical diseases certainly remain a concern for the modern traveler though. The Solomons is one of the worst countries in the world for malaria, with drug-resistant strains abounding. Even with hospital treatment, malaria is often fatal here. For any visitor, preventative treatment with atovaquone and proguanil is strongly recommended. Typhoid, hepatitis A, and dengue fever are also widespread.



the devastating 2007 tsunami. So sometimes the traveler comes across a ‘clearing’ in the jungle with a couple of hastily erected shelters and a small area of crops. Mostly though, the Solomons has a distinctly ‘time-warp’ feel about it.

The Solomons had its place on the world stage in the 1940s. The Japanese built an airfield on the coast of Guadalcanal which would threaten Allied territories as far away as Australia. American landings on Guadalcanal eventually pushed the Japanese off the island (December 1942), but at terrible cost to both sides. That airfield – renamed Henderson Field – is still the only international airport in the Solomons. It is not much to look at, as airports go, without so much as a vending machine. Historically though it is one of the world’s most significant airports, because the Japanese never recovered from that defeat. Admiral Raizō Tanaka of the Imperial Japanese Navy stated: “On that insignificant shore, inhabited only by islanders, Japan’s doom was sealed.” (*Japan’s Losing Struggle for Guadalcanal*, R. Tanaka with R. Pineau, Part II, “USNI Proceedings,” August 1956).

In 1943, the Japanese remained entrenched in New Georgia, where they had built an airbase at Munda. To supply their Munda troops, Japanese warships used ‘The Slot’ – the strip of deep water that divides the Solomons into two parallel island chains. We now call it the New Georgia Basin. It’s a significant geographic feature because it separates the quite different molluscan faunas on each ‘side’ of the Solomon Islands. In the jungles of Munda it was sobering to think that I was collecting snails on the site of some of the most brutal and messiest close-quarter fighting of WWII. It was surreal to cut through the thickest jungle and then suddenly encounter barbed wire – 1940s barbed wire, of course. Any traveler here should certainly see the Peter Joseph WWII Museum, which houses a remarkable collection of artifacts from both sides of the conflict. Exploring in this jungle will certainly turn up war-related items, even now. At the museum I saw bags of human bones, recently collected and awaiting repatriation.

In this article I illustrate some of these islands’ most beautiful snails, many of which I was fortunate enough to photograph in their natural habitats. For a scientific treatise on Solomons landsnails, the reader should seek the books of André Delsaerd. Volume 1 of “Land Snails on the Solomon Islands” (L’Informatore Piceno, Ancona, 2010) covers the *Placostylus* and volume 2 (Camaenidae) is expected at the end of this year.

Kastom and tabu

Few societies are as rich in tradition and beliefs as the Solomons. The visitor frequently hears the word ‘*kastom*’ (custom), which can refer not just to tradition but to special sites and lands and also to the levy that must be paid to visit these *kastom* sites. The shell collector must be aware that almost all land, including beaches and reefs, is privately owned and the owner very likely expects a ‘*kastom* fee’ for just walking there. Often permission is granted after a gift of fruit or betel nuts. Similarly, the visitor must be aware that life here is governed by many *tabus* and the penalties for breaches are severe. It is typically *tabu* for women to visit skull shrines and in some villages menstruating women are confined to a special hut that is strictly *tabu* for the men and children.



(Above) *Crystallopsis hunteri* (Cox, 1872) is one of the many exotic representatives of family Camaenidae in the Solomons. This specimen was in dense foliage near the village of Suhu, in the Marau district of southern Guadalcanal. The shell is transparent and fragile, so perfect specimens are rare. Sub-adults appear green, because of coloration of the animal.

(Below) “*Oe! Oe!*” In the ‘Are’Are language of the Marau people, a snail is ‘*oe*.’ A conspicuous Marau snail is *Megalacron sellersi* (Cox, 1872). The upper-right specimen is the typical form (18.2mm) and below it is a variation (18.9mm).





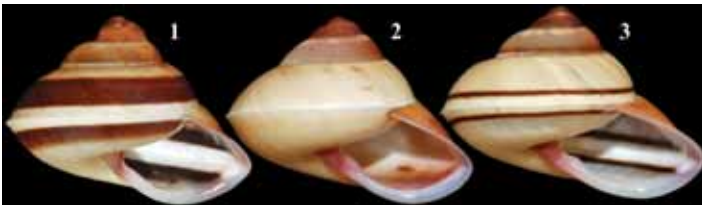
(Above) Most references describe this species as *Papuina vexillaris*, but the true name is *P. fringilla* (Pfeiffer, 1855) – a long-standing confusion that has been perpetuated by shell dealers. Two contrasting forms are well known, shown here with the live animals in the jungle several miles from Munda, New Georgia. The best-known form has a prominent purple/rose lip and a similarly colored apex. Alternatively, the whole shell is cream with a white lip, often with a less-rounded body whorl. I was, however, able to find other important variations. Some purple-lipped specimens do indeed have a white apex (top row, second specimen), and I found two specimens with a purple apex but white lip (top row, fifth specimen). Multi-banded forms (bottom row) or shells with brown or pink body whorls are also rare. The variations shown here range from 19mm to 25mm.

“The War Is Over!”

The Solomons...this is the country where it took until 1965 to convince Japanese soldiers that WWII was over. There were reports of aged Japanese soldiers ‘holding out’ in the jungle as late as 1989. Such are the difficulties with linguistics, transport, and impenetrable jungle that communicating across this island nation has always been problematic. Nowadays, phones are rare outside Honiara; internet access is difficult in Honiara and impossible elsewhere; there are only a handful of post offices spread across half-a-million square miles of Oceania; and there are 63 official languages. It is perhaps *because* of the communication problems that traditional village life survives in the Solomons.



(Above) This is the ‘real’ *Papuina vexillaris* (Pfeiffer, 1855), also from Munda (24–25mm). Although the shells familiar to collectors are pure white, in life the shell is covered in a layer of algae – which presumably aids camouflage. Very careful cleaning can preserve much of this green algae (top right).



(Above) These are three of the rarer *Papuina* I collected in New Georgia: (1) *Papuina lienardiana* Cross, 1864, 18.5mm; (2) *P. eros* Angas, 1867, 18.5mm; (3) *P. eddystonensis* (Reeve, 1854), 19.9mm. Each is remarkably similar in shape.



(Above) A highlight of the trip was finding this *Papuina* in dense jungle a few miles from Munda. It appears to be an undescribed species. Unfortunately I found only two adult specimens, but the species will be described this year by André Delsaerdt. The specimen shown here (24.4mm) will be a paratype. Finding a new land species just a few miles inland makes one wonder how many new species await discovery in these islands.



(Above) *Chloritis eustoma* Pfeiffer, 1842 (18.7mm) has a flaky brown periostracum, covered in tiny hairs. The few live specimens I found in Guadalcanal and New Georgia proved difficult to clean without damaging the periostracum.

(Below) In the Roviana language of Munda, a snail is ‘*suloco*.’ The most conspicuous *suloco* to the townspeople of Munda is *Dendrotrachus helicinoides cleryi* (Récluz, 1851), which lives on trees and bushes in the town itself. The specimens here (13.7–19.2mm) show the range of colors, patterns, and size. In Guadalcanal, I collected the relatively unpatterned nominate form.





(Above) This ‘semi-slug’ in the jungles of New Georgia belongs in family Helicarionidae. The coiled internal shell is clearly visible. The damage to the leaves is largely due to grasshoppers, not to mollusks!



(Above) A colorful grasshopper nymph poses obligingly in New Georgia. The Solomons are a paradise for students of entomology and have so far been rather poorly documented.



(Above) These *Partula* from two different provinces show consistent differences in shape, but are considered the same species: *P. flexuosa* Hartman, 1885. (1) Guadalcanal specimen, 14.6mm; (2) New Georgia specimen, 15.3mm. The live animal was photographed in Marau. Both Pilsbry and Crampton used the distribution of *Partula* species across the Pacific islands as evidence of a former Late Paleozoic or Early Mesozoic continent in the middle of what is now the Pacific Ocean.



(Above) The typical view of *Placostylus strangei* (Pfeiffer, 1855) for the collector is “looking up at it” (see front cover). These are from New Georgia: (1) normal adult (50.5mm) with a rich brown periostracum; (2) specimen with a deformed lip (43.7mm). The Solomons is home to 39 described species and subspecies of *Placostylus*, all endemic and many confined to just one island. In 1893, Charles Hedley postulated *Placostylus* distribution as evidence of a former ‘Melanesian Continent’ – a theory long-since disproved by geological studies. The dispersal of the *Placostylus* species is still poorly understood and seems to be from south-east to north-west, opposite the direction taken by other flora and fauna in the Solomons.



(Above) Beautiful trochomorphids are found in the Solomons. *Trochomorpha deiopéia* (Angas, 1869) (left images, 19.1mm) is easily confused with the much better known *Trochomorpha meleagrís* Pfeiffer, 1855 (center images, 20.3mm, and live animal). The spire elevation is the surest way to distinguish these two species which coexist in New Georgia.



(Above) *Trochomorpha xiphias rubianaensis* Clapp, 1923 is one of the most beautiful of its genus. These shells (17.7–18.9mm) were collected around the town of Munda.



(Above) The operculate family Cyclophoridae is well represented in the Solomons. This easily overlooked species is one of the smallest: *Pseudocyclotus levis* (Pfeiffer, 1855). The cleaned shell is only 7.3mm and was collected in the jungles of New Georgia.



This widespread but inconspicuous snail is *Omphalotropis nebulosa* (Pease, 1872), in the prosobranch family Assimineidae. I collected specimens on bushes in Munda town. At 9.1mm, this specimen is a veritable giant!



(Above) The widely distributed *Palaeohelicina moquiniana* (Récluz, 1851) is found in three distinct color forms in the Solomons. These specimens (8.6–8.9mm) are from the Munda area in New Georgia.



(Above) “If you go down to the woods today,” even after 68 years have passed, you may well come across one of these. This particular ‘specimen’ was found in thick jungle while hunting *Papuina*. Controlled detonations of WWII bombs are an almost weekly occurrence around Munda. Coke bottles from the 1940s are still strewn throughout the jungle and relics such as ‘dog tags’ are often found.



(Above) *Palaeohelicina spinifera* (Pfeiffer, 1855) is a much more secretive species, inhabiting dark and damp corners in the jungle. There are several contrasting color forms. The three specimens here (13.6–15.0mm) were collected in Marau; the live animal is slightly sub-adult.



(Above) The author examines *Leptopoma woodfordi* Sowerby, 1889 on a leaf in the jungle of Marau. At right: (1) *L. woodfordi*, 16.9mm; (2) *L. dohrni* (Adams & Angas, 1864), 16.4mm, also from Marau; and (3) *L. perlucida* (Grateloup, 1840), 13.4mm, from New Georgia. The animal of *L. perlucida* is a striking yellow color.



(Above) In Suhu village, Marau, a boy shins up a coconut palm, an essential skill for Solomon Islanders. Coconuts are grown in most coastal regions. There are, however, very few 'plantations,' except on the plains region of northern Guadalcanal. The coconut palm is integral to the islanders' way of life. The 'milk' is a readily available and cooling drink. As well as eating the flesh, it is dried into 'copra' in each village, which is the principal cash crop. The fronds become building materials and the 'coir' (husk fiber) is made into rope.



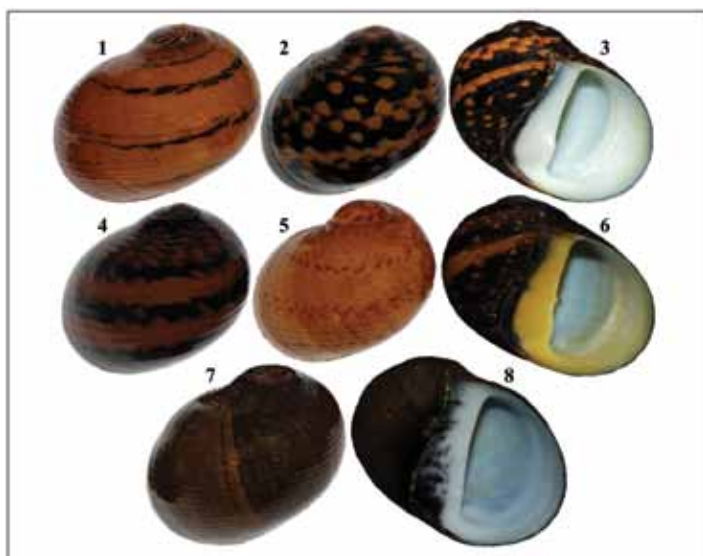
(Above-left) A typical Marau house in Vutu village. Traditional building materials and methods are still the standard. The tropical rain is so heavy that flash floods are common throughout the year, hence all houses are built on 'stilts.' The frequent flooding means there are rather few ground-dwelling molluscan species in the Solomons. One exception is *Subulina octona* (Bruguière, 1792), shown on the right. In this 20.9mm specimen, two eggs are clearly visible.



(Above) The Solomons is a delight for arachnophiles. *Argiope keyserlingi* Karsch, 1878, is often known as the "St Andrew's Cross spider." Spiders of this genus typically hold their legs in pairs so as to form an 'X' shape, with their head pointed downwards.



(Above) George from Suhu village collects in the Marau jungle. The shell he is reaching – at 8ft off the ground – is the ‘fresh-water’ snail *Neritodryas cornea* (Linnaeus, 1758). A complete surprise in this habitat was that a supposed freshwater species exploited such a niche; live *Neritodryas* were common among this vegetation, a considerable distance from flowing water.



(Above) Variation in *Neritodryas cornea* (1–6; 21–25mm) from the Marau jungle. It is likely that the variety with a yellow aperture (6) will be described as a separate species in the future. *Neritodryas subsulcata* (Sowerby, 1836) (7, 8; 24mm) is a related species that can easily be confused with *N. cornea*. The black mottling on the parietal shelf of *N. subsulcata* is characteristic. Both of these species are primarily arboreal, yet there are plenty of data slips in existence that incorrectly list “fresh-water stream” or “lake” as the habitat. On the other hand, little is known of the reproductive traits of this genus and it is probable that they return to water to lay eggs.



(Above) This bizarre spiny-backed orb-weaver (*Gasteracantha* sp.) was widespread and common. The islanders believe it is venomous.



(Above) *Thiara cancellata* Röding, 1798, is neither rare nor endemic to the Solomons. Finding specimens with their spines intact was truly satisfying, however. This 30.7mm specimen is from the Vilavila River in Guadalcanal. As the river flows out into Marau Sound it joins the Vainihaka River and several interesting freshwater species are found: *Thiara winteri* von dem Busch, 1842; *Tarebia granifera* (Lamarck, 1822); *Melanoides aspirans* (Hinds, 1847); the ubiquitous *Faunus ater* (Linnaeus, 1758); *Neripteron dilatatum* (Broderip, 1833); *Neritina variegata* (Lesson, 1831); long-spined *Clithon donovani* Recluz, 1843; *Septaria porcellana* (Linnaeus, 1758); and the endemic bivalve *Hyridella guppyi* (Smith, 1885).



(Above) The giant helmeted katydid (*Phyllophorella woodfordi* Kirby, 1899) is an expert at camouflage. This individual was spotted in a thickly-forested swamp in Marau.



(Above) A green-bellied tree skink, *Eomoia cyanogaster* (Lesson, 1826), in the jungle on New Georgia. A much larger cousin of this small lizard is the endemic Solomon Islands skink *Corucia zebtrata* Gray, 1856, a nocturnal herbivore with a prehensile tail. At 31 inches it is the largest skink in the world.



Throughout my travels in the Solomons I found the villagers friendly, very hospitable, and more than willing to help collect shells – especially the children. This photo shows the people of Suhu village, gathered on the beach after a day of collecting *oe*. My sincere thanks to the people of Suhu, Vutu, and Hautahe in Marau, especially Morris, Priscilla, George, and Joe, and all the villagers of Kiapatu in New Georgia, especially Sycamore and his family. For assistance with this article I thank Tom Eichhorst, Mike McCoy, and G. Thomas Watters. In particular, I thank André Delsaerd for his expert help with the identification of Solomon Island landsnails.

All photographs appear courtesy of Simon's Specimen Shells Ltd (www.simons-specimen-shells.com)

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Threetooth ID ruminations open a centuries-old amphi-Atlantic Pandora's Box

Harry G. Lee



Triodopsis messana Hubricht, 1952, pinhole three-tooth, Georgia, Upsom Co., Thomaston, Roland Rd., ca. 7 miles W town, under fallen limb resting on cleared area immediately adjacent to lawn. Collected by Billie Brown, 30 October 2010.

The genus *Triodopsis* Rafinesque, 1819: 425, as currently interpreted (Emberton, 1988), is widely distributed in eastern North America, particularly the southeastern US. The type species of the genus, *T. lunula* Rafinesque, 1831 (= *Helix tridentata* Say, 1817), is a story in itself. (See the note on the type of *Triodopsis* beginning on p. 14.) The conchological identification of the slightly fewer than 30 species of these so-called “threetooths” is based on apertural dentition, tightness of coil, umbilical diameter, axial sculpture, pigmentation of fresh material, and zoogeography (see <<http://www.jaxshells.org/triodopsis.htm>>). That may seem simple enough, but other factors add a degree of difficulty possibly unique to this genus. There is convincing evidence of hybridization among species and, consequent in part to the ability of some taxa to prosper in human-altered environments, numerous anthropogenic introductions have confused what was certainly a more orderly zoogeographic mosaic before the European immigration. Furthermore, significant intraspecific variation, evident even within a single population, may add complexity.

On the other hand, last year Bill Frank and I created a simple compendium of single images of each of the 28 generally-recognized species of threetooths (cited above), so I thought identification of four living threetooths taken by Jacksonville Shell Club (JSC) member Billie Brown in Thomaston, Georgia, would be greatly facilitated. Hours later, I realized that “greatly” was a bit a generous for a description of the ultimate campaign. For openers, these snails didn’t quite match anything in the website portfolio! After ransacking my library, I found a much better match - es-

entially perfect: paratypes of *T. affinis* Hubricht, 1954, figured by Grimm (1975: fig 2D). *T. affinis* is regarded by certain authorities as a stable hybrid between *T. fallax* (Say, 1825) and *T. alabamensis* (Pilsbry, 1902) and not recognized by Turgeon, Quinn, et al. (1998: 153). Almost satisfied, I then delved a little deeper and found that Hubricht (1954: 28-30) stated “the only difference between *T. messana* Hubricht and *T. f. affinis* is in the color.” As unusual as this dependence on shell coloration struck me, Grimm (1975) seemed to have been in agreement. Next, the original descriptions were consulted. Hubricht (1952: 80-81) characterized *T. messana* as “reddish brown” [later “dark red-brown to walnut brown” by Grimm (1975)]. The largest in his cited type series (five) was 15.0mm in maximum diameter, and he remarked on the variability of the outer lip tooth, in some “pointed and little if any inflected; in others broadly rounded and deep-seated.” He cited Pilsbry (1940: 810: fig. 480 C), but did not otherwise figure this species. In his description of *T. fallax affinis* (Hubricht, 1954), he used “deep olive buff to wood brown” to describe the shell, the largest of his cited type series (five) was 13.3mm, and no figure was provided.

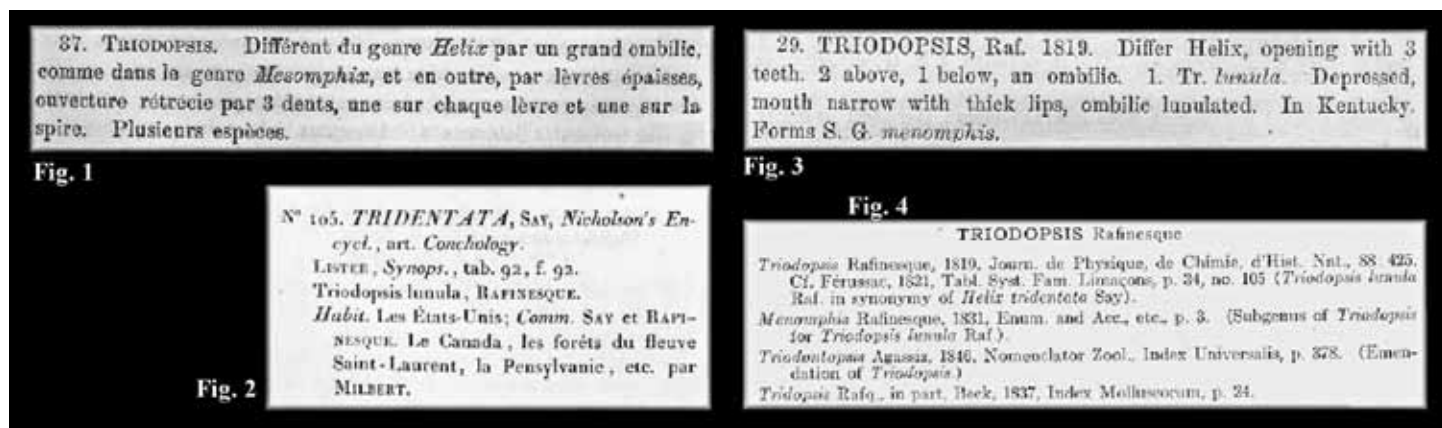
Both the latter taxa are anthropochorous, meaning able to live in human-altered environments (Hubricht, 1952, 1954, 1971, 1984, 1985; Grimm, 1975), which is consistent with the habitat in which Billie collected her snails. Both species potentially occur in Upson Co., GA (Hubricht, 1985), where the topical specimens were found, and neither seems to have an authentic figure other than those cited, all graytones. On the one hand, her shells match

T. affinis more than they do *T. messana* based on figures in Pilsbry (1940: fig 480 c) and Grimm (1975; figs. 1E, 1F, 2D) in having a more laterally-expanded aperture and a tighter coil. On the other hand, (1) shell color, definitely red brown and darker than the tones indicated for *T. affinis*, (2) size (from 13.3 to 14.7mm; three of them over 14.0mm), (3) outer lip tooth variability (strikingly evident in these four shells), and (4) Hubricht's (1954) remark about the remarkable similarity between the two taxa, impel me to conclude that Billie's shells are better referred to *T. messana*. I feel reasonably confident, based on years of observing variability in

this genus, that this is a true instance where a taxonomic determination is better made relying on the salients in the written description than with primary reliance on (authentic) illustration(s). The images provided with this report are intended to add a dimension to the identity of *Triodopsis messana*, a valid bio-species with a confusing assortment of characters, some variable and others constant. *T. messana*, misleadingly dubbed the "pinhole threetooth," apparently based on the relative size of the umbilicus as seen in the type figure. Nonetheless, this is one of those variable characters.

- A note on the type species of *Triodopsis* -

Although Rafinesque (1819: 425; taken from Binney and Tryon, 1864: 27, my Fig. 1 below) gave an adequate description of the genus and mentioned "plusieurs espèces," he cited none by name. André Étienne Just Pascal Joseph François d'Audebard, Baron de Férussac (1786-1836) was in correspondence with Rafinesque, who apparently sent material to him in Paris. He introduced Rafinesque's manuscript name, *Triodopsis lunula*, in the synonymy of *Helix tridentata* Say, 1817 (Férussac, 1821: 34, species 105; my Fig. 2). Presently *T. lunula* Férussac is treated as an unavailable name. A relevant provision in the *Code* (ICZN, 1999) is Article 11.6 Publication as a Synonym, which reads: "A name which when first published in an available work was treated as a junior synonym of a name then used as valid is not thereby made available." One relevant exception immediately follows (11.6.1): "However, if such a name published as a junior synonym had been treated before 1961 as an available name and either adopted as the name of a taxon or treated as a senior homonym, it is made available thereby but dates from its first publication as a synonym." Although Rafinesque's (1831: 3; from Binney and Tryon, 1864: 68, my Fig. 3) usage, is iffy since he didn't cite Férussac, to date it appears that no one, including Pilsbry (1930: 322-323; Pilsbry, 1940: 790; Fig. 4) seems to have "adopted" (treated as valid) *T. lunula* Férussac, 1821, "as the name of a taxon." The reference to *Helix tridentata* Say as a synonym is not treatment as valid. Further, no author has ever produced an indication for *T. lunula* other than this synonymy, and authorities would probably regard the binomen as a nude name and thus unavailable for taxonomic nomenclature.



Also without description, the Baron cited other (Rafinesque manuscript) names as belonging in *Triodopsis*, e.g., *T. clausa* Raf. and *T. scabra* Raf., but he did not indicate a type for the genus. In fact he considered them all to belong to his *Helix* (*Helicodonta*), now considered to be an Old World species-group. The type of *Triodopsis* was designated by its original author twelve years after its introduction: *Triodopsis lunula* Rafinesque, 1831 (Fig 3) in a rarely-witnessed nomenclatorial act, "subsequent monotypy." The appearance that Rafinesque never gave consideration to the nominal taxon *Helix tridentata* Say is misleading. Quite possibly it resulted from a nomenclatorial convention of the day, and utilized frequently in his opera, of replacing the species epithet when a taxon was reassigned from its original genus. He was certainly aware of Say (1817) as he often cited it in his other works and he may have thought it to be synonymous with his *T. lunula*.

Since there was apparently no relevant name-bearing Rafinesque specimen ever presented in the literature (e.g., Pilsbry, 1930: 322-323; Pilsbry, 1940: 790-797), an inquiry was placed on 10 November 2010, at the Muséum National d'Histoire Naturelle, Paris (MNHN), the repository of much of the Baron's collection (Sherborn, 1940: 51). It seemed to me that should the shell(s) he called "*Triodopsis lunula* Raf." belong to a species other than *T. tridentata* (Say, 1817) (i.e., what if the Baron's synonymy was incorrect?) another chapter in this byzantine chronicle might be necessitated.

Mirabile dictu; not too long afterward, Virginie Héros, MNHN Chargée de Conservation, Collection Mollusques, located two shells (Figs. 5a, 5b) belonging to Férussac and labeled *Triodopsis lunula* Rafinesque, the earlier probably in the Baron's hand (Figs. 6a, 6b). There are two important discoveries here: (1) This two-specimen lot is composed of different species: Fig. 5a: *Triodopsis tridentata* (Say,

1817) and Fig. 5b: *T. vulgata* Pilsbry, 1940. (2) The specimens almost certainly originated with Rafinesque. At the time he likely sent the shells to the Baron (ca. 1820), Rafinesque was in north-central Kentucky, and it was likely here that he collected 5b. The label appears to read “at. labiata.” Does this mean “at[que] [forma] *labiata*?” indicating Rafinesque knowingly included a second form, likely collected in Kentucky, in this lot? We’ll probably never know. Nonetheless, since the genus *Triodopsis* is based on this lot, it seems prudent to declare that only shell 5a., not 5b, is *T. lunula* Rafinesque, which species authors have come to regard as a synonym of *Helix tridentata* Say, and the type of *Triodopsis* Rafinesque, 1831. In other words, we’re cutting the Baron some slack on his synonymy and preventing potential fallout which would destabilize the taxonomy and nomenclature of both the genus *Triodopsis* and the species *T. vulgata*. Although Say’s description and figure are inadequate to define *T. tridentata*, and he apparently left no type material, Pilsbry (1940: 796; Fig. 474a) removed any doubt as to its identity by designating a neotype from SE Pennsylvania in the collection of the Academy of Natural Sciences, Philadelphia (ANSP).

The author is indebted to Billie Brown for her unflinching attention to landsnails during her many peregrinations, to Philippe Bouchet (MNHN), Dick Petit (North Myrtle Beach, SC), and Gary Rosenberg (ANSP) for enlightening discussions related to the taxonomic and nomenclatorial quirks involved in this probe. Virginie Héros and Philippe Maestrati (MNHN) provided vital curatorial and photographic contributions (respectively), and Bill Frank (Jacksonville) gave technical assistance in several aspects of the preparation of this report. Deft editing by Tom Eichhorst and Bruce Neville greatly improved this report from its manuscript form.

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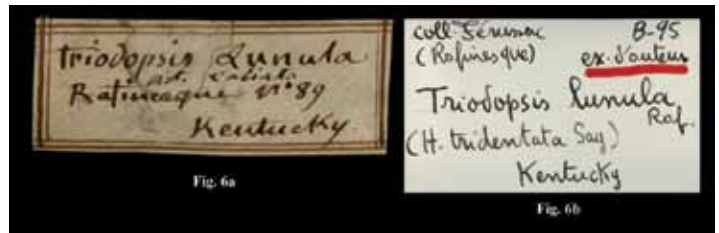
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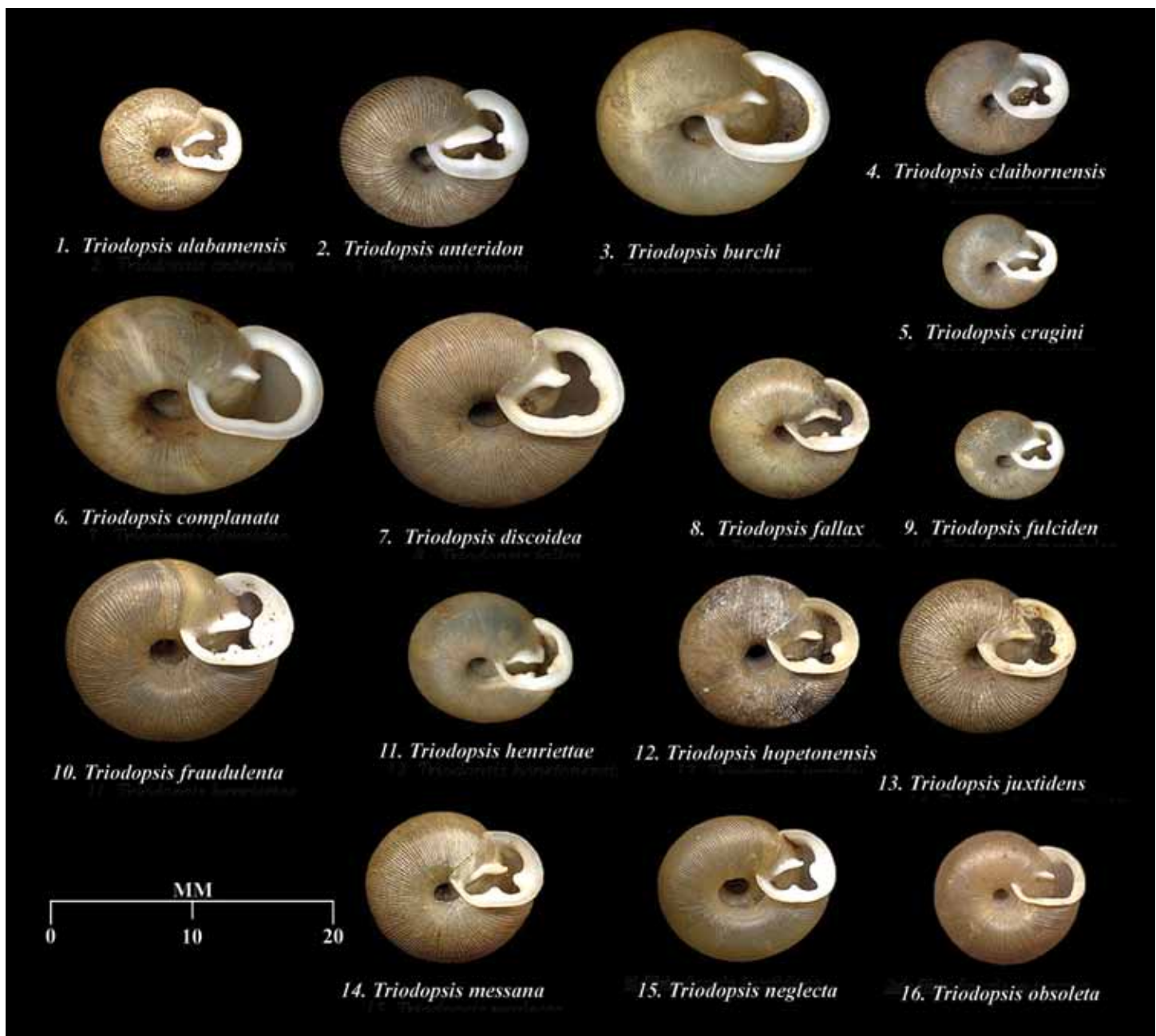
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An electronically-enhanced and slightly expanded version of this report is available at <<http://www.jaxshells.org/messana.htm>>.



1. *Triodopsis alabamensis* (Pilsbry, 1902), Alabama Threetooth (Putnam Co., GA) [S VA to SE TN & SE AL].

2. *Triodopsis anteridon* Pilsbry, 1940, Carter Threetooth (Wyoming Co., WV - Field Museum of Natural History (FMNH) 264768) [E KY, SW WV & VA to NE TN].

3. *Triodopsis burchi* Hubricht, 1950, Pittsylvania Threetooth (Roanoke Co., VA - FMNH 266240) [VA & NC].

4. *Triodopsis claibornensis* Lutz, 1950, Claiborne Threetooth (Campbell Co., TN - FLMNH 264399) [NE TN].

5. *Triodopsis cragini* Call, 1886, Post Oak Threetooth (Claiborne Parish, LA - FMNH 266248) [SW MO & SE MO to E TX & W LA].

6. *Triodopsis complanata* (Pilsbry, 1898), Glossy Threetooth (Pulaski Co., KY - FMNH 266277) [SC KY & NC TN].

7. *Triodopsis discoidea* (Pilsbry, 1904), Rivercliff Threetooth (Crawford Co., IN) [SW OH to SE MO].

8. *Triodopsis fallax* (Say, 1825), Mimic Threetooth (Camden Co., NJ) [PA to TN & NC].

9. *Triodopsis fulciden* Hubricht, 1952, Dwarf Threetooth (Catawba Co., NC - [PARATYPE] FMNH 266316) [SW NC].

10. *Triodopsis fraudulentata* (Pilsbry, 1894), Baffled Threetooth (Rockbridge Co., VA) [PA, WV, & VA].

11. *Triodopsis henriettae* (Mazÿck, 1877), Pineywoods Threetooth (Brazos Co., TX - FMNH 266325) [NE TX].

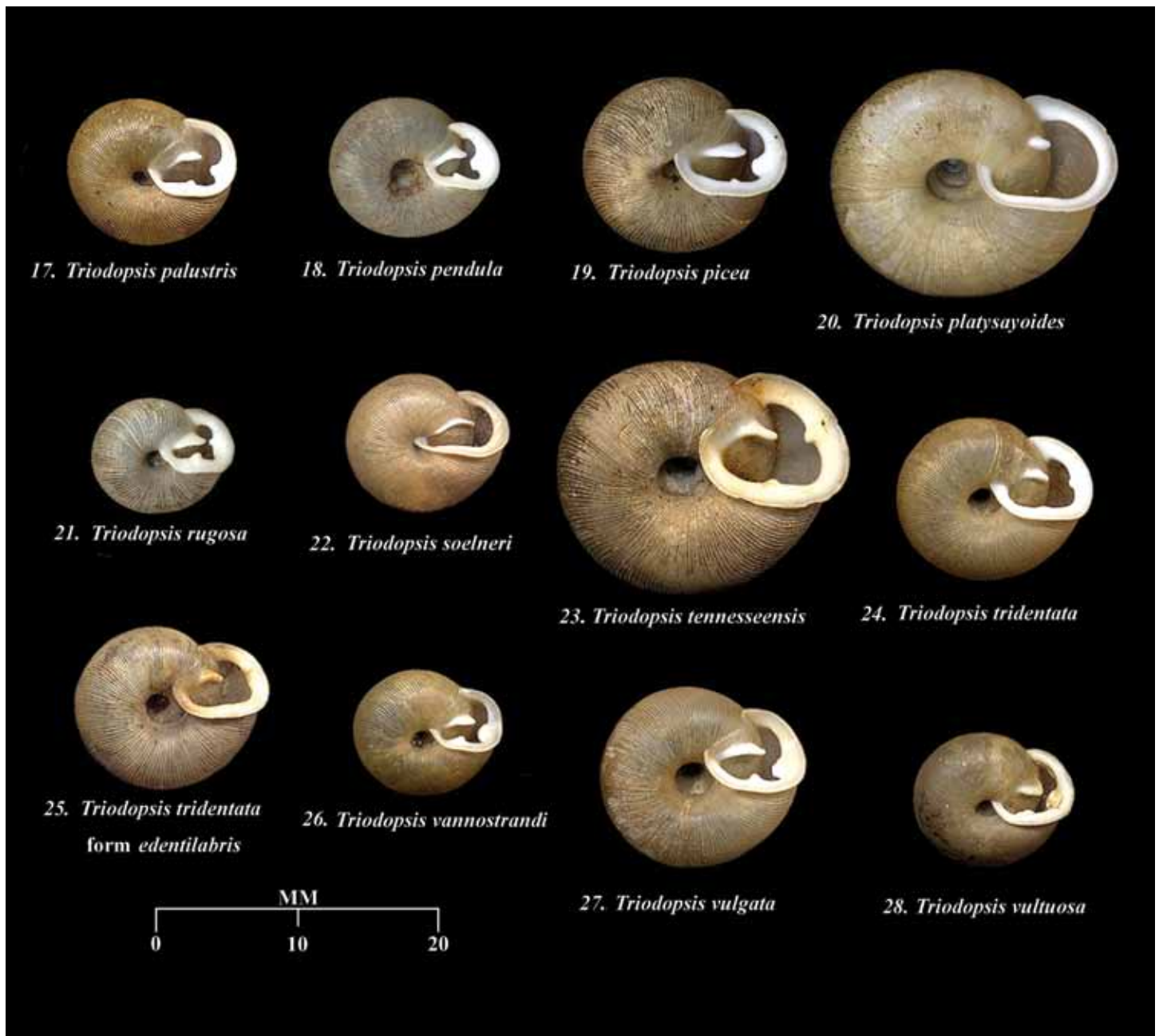
12. *Triodopsis hopetonensis* (Shuttleworth, 1852), Magnolia Threetooth (Davidson Co., TN) [most of the SE].

13. *Triodopsis juxtidentis* (Pilsbry, 1894), Atlantic Threetooth (Durham Co., NC) [NJ to WV & GA].

14. *Triodopsis messana* Hubricht, 1952, Pinhole Threetooth (Horry Co., SC) [VA to FL].

15. *Triodopsis neglecta* (Pilsbry, 1899), Ozark Threetooth (Barry Co., MO) [MO, KS, OK, & AR].

16. *Triodopsis obsoleta* (Pilsbry, 1894), Nubbin Threetooth (Dare Co., NC) [MD to E NC].



17. *Triodopsis palustris* Hubricht, 1958, Santee Threetooth, (Long Co., GA) [E SC to NE FL].

18. *Triodopsis pendula* Hubricht, 1952, Hanging Rock Threetooth (Iredell Co., NC - FMNH 266352) [WC NC].

19. *Triodopsis picea* Hubricht, 1958, Spruce Knob Threetooth (Pocahontas Co., WV - FMNH 266426) [SW PA & WV].

20. *Triodopsis platysayoides* (Brooks, 1933), Cheat Threetooth (Monongalia Co., WV - FMNH 266693) [N WV].

21. *Triodopsis rugosa* Brooks and MacMillan, 1940, Buttressed Threetooth (Logan Co., WV - FMNH 264690) [SW WV].

22. *Triodopsis soelneri* (Henderson, 1907), Cape Fear Threetooth (Columbus Co., NC) [SE NC];

23. *Triodopsis tennesseensis* (Walker and Pilsbry, 1902), Budded Threetooth (Cleburne Co., AL) [SW VA & SE TN to E AL].

24. *Triodopsis tridentata* (Say, 1816), Northern Threetooth (Mitchell Co., NC) [NH & MI to GA & MS].

25. *Triodopsis tridentata* (Say, 1817), form *edentilabris* Pilsbry, 1894, Northern Threetooth [toothless morph] (Haywood Co., NC) [sporadic NH & MI to GA & MS].

26. *Triodopsis vannostrandii* (Bland, 1875), Coiled Threetooth (Okaloosa Co., FL) [SC to FL & AL].

27. *Triodopsis vulgata* Pilsbry, 1940, Dished Threetooth (Nelson Co., KY) [W NY & WI to GA & MS].

28. *Triodopsis vultuosa* (Gould, 1848), Texas Threetooth (Marion Co., AR) [E TX & SW LA].

I thank Drs. Jochen Gerber and Stephanie Clark of the Field Museum of Natural History (Chicago) for curatorial and technical assistance in the production of this plate. Bill Frank and Tom Eichhorst provided further editorial services. The geographic ranges [in brackets] are based on Hubricht (1985) with minor modifications based on unpublished data. Harry G. Lee

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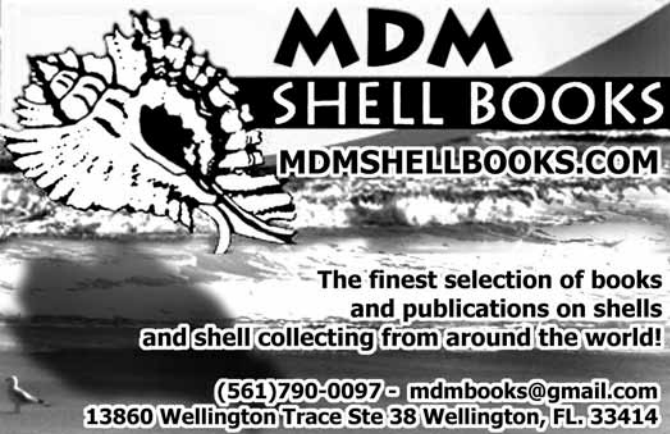
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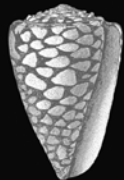
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Mid-Atlantic Malacologists Meeting

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Fig. 1 Mid-Atlantic Malacologists participants photographed outside the Delaware Museum of Natural History. Picture courtesy of Happy and Robert Robertson.

Back row: Bill Fenzan, Charlie Sturm, Phil Fallon, Colleen Sinclair Winters, Tim Pearce, Tom Grace, Makiri Sei, Paul Callomon, John Kucker, John Wolff, Kevin Ripka, Matt Blaine, Clem Counts

Middle row: Francisco Borrero, Robert Robertson, Al Spoo, Adam Baldinger, Leslie Skibinski, Paula Mikkelsen, Amanda Lawless, Elaina McDonald, Judy Goldberg, Lois Kucker, Happy Robertson, Dona Blaine

Front row: Megan Paustian, Laura Zeller, Liz Shea, Marla Coppolino, Aydin Örstan, Beysun Örstan

The Mid-Atlantic Malacologists (MAM) Meeting was held on March 19, 2011, at the Delaware Museum of Natural History in Wilmington, DE. Thirty-four professional, amateur, novice, and experienced malacologists were in attendance (Fig. 1). As usual, we drew from a large geographical range, with participants from Norfolk, VA, Cambridge, MA, and Cincinnati, OH, included in our definition of Mid-Atlantic.

This informal meeting, and its sister-meetings: Southern California Unified Malacologists (SCUM), Bay Area Malacologists (BAM), Ohio Valley Unified Malacologists (OVUM), and now the Florida United Malacologists (FUM), serve as a mixing bowl of molluscan people and topics. Emeritus curators mix with artists and university faculty meet shell club members. The talks are always an eclectic mix of What's Happening Now in malacology. This year was no exception – we heard an audio recording of land snails eating carrots, learned about designing snail identification software for an iPhone (there's an app for that!), and how the Academy of Natural Sciences in Philadelphia is using "Wall-E," a computer with voice recognition software lashed to a hospital cart to inventory their collection for the first time in 200 years. All in

all, 16 full talks and 1 poster were presented, and 10 people used the Mollusk collection and library.

The following list of speakers and brief summaries of their presentations, known as the "Bootleg Transactions," can be found on Aydin's blog: <http://snailstales.blogspot.com/2011/03/bootleg-transactions-of-13th-mam.html>

Additional comments are welcome!

- **Marla Coppolino** (New York): Marla played the rasping sounds of her pet snails' radulae recorded while they were eating a carrot. The snails were *Mesodon zaletus*.
- **Charlie Sturm** (Carnegie Museum of Natural History, Pittsburgh): Charlie, the current President of the American Malacological Society, is organizing the 77th meeting of the society to take place 23-38 July 2011 in Pittsburgh, PA. Be there!
- **Paul Callomon** (Academy of Natural Sciences, Philadelphia): The mollusk collection of the ANSP is being recataloged with the help of voice-recognizing software.
- **Paula Mikkelsen** (Paleontological Research Institution, Ithaca): Paula presented an overview of the history of publish-

ing in malacology. In 1959, 485 papers containing the word “mollus*” were published, while in 2009 their number had gone up to 2058.

- **Tim Pearce** (Carnegie Museum of Natural History, Pittsburgh): Tim presented his ideas on the evolution of slugs from snails. He is trying to answer the question, “Why is it good to be a semi-slug?”
- **Lynn Dorwaldt** (Wagner Free Institute of Science, Philadelphia): History of the Wagner Free Institute of Science and also the bivalves from Isaac Lea’s collection that are kept at the Institute. Some 19th century malacology books from the Institute’s library were passed around (Fig. 2).
- **Robert Robertson** (Academy of Natural Sciences, Philadelphia): According to Gunner Thorson’s (1950) shell apex theory, protoconch morphologies reflect modes of larval development. Robert’s research shows that the theory doesn’t apply to the Pyramidellidae.
- **Tom Grace** (Pennsylvania): New records of freshwater mussel *Margaritifera* in the headwaters of the Schuylkill River.
- **Aydin Örstan** (Carnegie Museum of Natural History, Pittsburgh): Aydin presented his developing ideas on the breathing anatomy of semi-terrestrial snails in the superfamily Rissooidea.
- **Bill Fenzan** (Virginia): The 1st International Cone Meeting was in Stuttgart, Germany in October 2010. The next meeting will be in La Rochelle, France in September 2012 (for more info see *The Cone Collector*: <http://www.theconecollector.com/>).
- **Makiri Sei** (Academy of Natural Sciences, Philadelphia): Makiri talked about her ongoing project with Gary Rosenberg on the phylogeny of Jamaican Annulariidae based on DNA sequences.
- **Kevin Ripka**: Kevin, a birder who recently got interested in snails, is developing an iPhone application for Northeast U.S. land snails.
- **Adam Baldinger** (Museum of Comparative Zoology, Harvard University): Adam talked about the various mollusk models at MCZ among which are a large number of glass mollusks and other invertebrates made by Leopold and Rudolf Blaschka (Fig. 3).
- **Megan Paustian** (Carnegie Museum of Natural History, Pittsburgh): Megan talked about the ecology and species of the slugs in the genus *Meghimatium* in Japan. She also showed slides from her trip there.
- **Francisco Borrero** (Cincinnati Museum Center): Francisco and his colleague Abraham Breure are studying the taxonomy and biogeography of the Orthalicoidea from Colombia and adjacent areas.

MAM was originally intended to travel from venue to venue, extending the reach and the mix of participants. If you have been lurking and would like to consider hosting the meeting, please get in touch with Liz (eshea@delmnh.org) or Leslie (lskibinski@delmnh.org) to discuss the planning process.

See you next year for another Molluscan March Madness!



Fig. 2 William Wagner founded the Wagner Free Institute of Science in Philadelphia, PA. His strong interest in conchology, along with a commitment to public lectures and free education form a lasting legacy of the Wagner. Photo by Tom Crane.

Fig. 3 Adam Baldinger described the restoration of the glass Blaschka models at the Museum of Comparative Zoology. The pelagic *Argonauta argo* Linnaeus, 1758, and her egg case are one of many spectacular cephalopod displays. Courtesy of Museum of Comparative Zoology, Harvard University.



2011 Sarasota Shell Club Award Winners

Ron Bopp, President and Awards Chairman

Sarasota Shell Club



The Sarasota Shell Club Shell Show moved to a new venue for 2011. This meant more room, more displays, more vendors, and in general, an excellent show. Attached are some photos of some of the winners and displays. The Sarasota Shell Club meets on the second Thursday of each month from September through April. The agenda includes a program of interest to shell collectors and a short business meeting. Meetings start at 7:00 p.m. and are held at the Mote Marine Laboratory.

Contact: info@sarasotashellclub.com



Sandy Pillow presents the COA Award to Jeanette Tyson and Ed Schuller for their presentation, "Mystery of the Migrating Mollusk."



Mote Gold Trophy: Martin Tremor & Conrad Forlor, "Helmets and the Bonnets of it all"



COA Trophy: Jeannette Tyson & Ed Schuller, "Mystery of the Migrating Mollusk."



DuPont Trophy: Martin Tremor & Conrad Forlor, "Behold the Lovely Abalone."



The Hertweck Fossil Trophy went to Ron Bopp (SSC member) for "Sagittal Sections of Fossil Shells."



Best Self-collected Exhibit Trophy: James & Bobby Cordy, "Shells of Eleuthera."



Fossil Shell of the Show: Dale Stream, *Siphocypraea griffini*.



Best of Art with Shell Motif Trophy: Charles Barr, "Big Eye" photograph.



Fran Schlusemann Best of Member's Art Trophy: Carolyn Madden, "Single Valentine."



June Bailey Best of Shell Art Trophy presented by Sandy Pillow to Carl Hichman (SSC Member) for "Bridal Bouquet."

Images not available for Sarasota Shell Club Members Trophy: Lynn Gaulin, "North & South American Epitoniums" and Best Small Scientific Exhibit Trophy: Lynn Gaulin (SSC Member), "North & South American Epitoniums."



2011 Broward Shell Show

Nancy Galdo



The 2011 Broward Shell Show was one of the Broward Shell Club's best ever... a record breaking show! Our membership increased by 1/3 and attendance was up this year with regulars and South Florida residents alike. There were many new newcomers who discovered the wonder of shells for the first time. The show's success can be credited to

the incredible effort put forth by the entire Broward Shell Club membership. Thanks to each person who contributed their time, effort, and donations. The exhibitors, dealers in attendance, Broward club members, and volunteers make this event possible.

SHELL SHOW AWARDS

--Scientific--

AMERICAN MUSEUM OF NATURAL HISTORY: Sheila L. Nugent, "Gulf of Maine/Bay of Fundy EcoRegion"

CONCHOLOGISTS OF AMERICA: Norman Terry, "It's A Small Small World"

THE DUPONT TROPHY: Harry Berryman, "Family Costellariidae"

BEST FLORIDA/CARIBBEAN EXHIBIT: Bob Pace, "29 Species of Marine & Land Shells Found In About 45 Minutes"

NEIL HEPLER MEMORIAL TROPHY FOR EDUCATIONAL EXCELLENCE: Carole Marshall, "Gods, Goddesses, Shells and Money"

BETTY HAMANN FOSSIL AWARD: Valentino Leidi, "South Florida Fossils"

LEN HILL MEMORIAL AWARD FOR MOST BEAUTIFUL EXHIBIT: Norman Terry, "It's A Small Small World"

BEST OF THE BEST: Gene Everson, "Seashells of the New Millennium 2000-2009 - Self-Collected"

SHELL OF SHOW (self-collected): Bob Pace, *Bursa grayana*

SHELL OF SHOW (any manner): Sonny Ogden, *Tridacna gigas*

BEST STUDENT EXHIBITOR: Valentino Leidi, "South Florida Fossils"

PEOPLE'S CHOICE AWARD – SCIENTIFIC: Jonathan Galka, "Fossil Mollusks of South Florida"

BEST BEGINNING EXHIBITOR – SCIENTIFIC: Sonny Ogden, *Tridacna gigas*

STUDENT (grades K through 6, any manner): Katherine Albert, "Fossilized Turban Shell"

STUDENT (grades 7 through 12, any manner): Valentino Leidi, "South Florida Fossils"

ONE REGION (self-collected): Bob Pace, "29 Species of Marine & Land Shells Found In About 45 Minutes"

ONE REGION (any manner): Sheila L. Nugent, "Gulf of Maine/Bay of Fundy EcoRegion"

ONE FAMILY (MAJOR, any manner): Kenneth Brown, "Sampling of Family Cypraeidae"



The 46th annual Broward Shell Club Shell Show was held at the Emma Lou Olson Center, in Pompano Beach, Florida. This is also where the club holds its monthly meetings on the second Wednesday of each month at 6:45 p.m. Annual dues are \$18 for an individual or family, \$5 for a student (up to high school), and \$20 international.

ONE FAMILY (MINOR, any manner): Harry Berryman, "Family Costellariidae"

ONE SPECIES (any manner): Blue - Sheila L. Nugent, *Nucella lapillus*

Red - Ken Curry, Sr., "See the many faces of *Scaphella junonia*"

SINGLE SHELL WORLDWIDE (self-collected): Blue - Sonny Ogden, *Tridacna gigas*

Red - Gene Everson, *Conus gauquini*

SINGLE SHELL WORLDWIDE (any manner): Blue - Gene Everson, *Eupleura volkesorum*

Red - James Cordy - *Nodipecten*

SINGLE SHELL - FLORIDA CARIBBEAN (self-collected): Blue - James Cordy

Red - Bob Pace, *Bursa grayana*

White - Amy Tripp, *Arcinella cornuta*

Judge's Special Merit Ribbon & White: Hugh Andison, albino horse conch

FOSSILS (any manner): Blue - Harry Berryman, *Placanticersa placenta* (fossil ammonoid)

Red - Jonathan Galka - Fossil Mollusks of South Florida

LAND or FRESH WATER SHELLS (any manner): Judge's Special Merit Ribbon & Blue - Harry G. Lee, "Terrestrial Pulmonata"

EDUCATIONAL: Blue - Carole Marshall, "Gods, Goddesses, Shells & Money"

--Artistic--

BEST BEGINNING EXHIBITOR (artistic): Jo-Ann Connolly, mirror wreath



Norman Terry won the COA Award as well as the Len Hill Memorial Award (for most beautiful exhibit) for his exhibit, "It's a Small Small World."

- BEST STUDENT EXHIBITOR (artistic, made by exhibitor): Katherine Albert, "Simply Paradise"
- BEST IN SHOW – HOBBYIST (made by exhibitor): Bob Pace (novelties category), "Animal Caricatures"
- BEST IN SHOW – PROFESSIONAL (made by exhibitor): Jae Kellogg, flower arrangement on driftwood
- BEST IN SHOW – SAILOR'S VALENTINE (any manner): Brandy Llewellyn
- FAY MUCHA MEMORIAL TROPHY BEST COLLECTIBLES (any manner): Linda Zylman Holzinger, hand carved antique pearl oyster in olivewood frame from Jerusalem
- PEOPLE'S CHOICE AWARD - ARTISTIC DIVISION: Brandy Llewellyn, "Sailor's Valentine"

--Hobbyist--

- STUDENT (Grades K – 6): Blue - Katherine Albert, "Simply Paradise"
- MIRROR: Blue - Jo-Ann Connolly
Red - Jo-Ann Connolly
- DÉCOR – TABLETOP ONLY: Red - "Shell Encrusted Head"
- PHOTOGRAPHY: Judge's Special Merit Ribbon & Blue - Kevan Sunderland, "Willet with *Melongena*"
Red - Sheila L. Nugent
White - Anne Dupont
- JEWELRY and PERSONAL ACCESSORIES: Blue - Sue Burns & Mario Piras
Red - Elaine Alvo
- NOVELTIES: Blue - Bob Pace, "Animal Caricatures"
Red - Elaine Alvo, "The Collector"
- SPECIAL: Blue - Sue Burns & Mario Piras

--Professional--

- FLOWER ARRANGEMENT (6" or less, tabletop): Blue - Brandy Llewellyn
- FLOWER ARRANGEMENTS (greater than 6," tabletop): Judge's Special Merit Ribbon & Blue - Jae Kellogg
- SAILOR'S VALENTINE (single, tabletop): Blue - Brandy Llewellyn
- MIRROR (wall hung): Blue - Heather Strawbridge
- SHELL TABLES or TRAYS: Blue - Jon Ogden
- DÉCOR (wall hung): Red -Heather Strawbridge
- DÉCOR (tabletop): Blue - Heather Strawbridge

--Collectibles--

- Blue – Linda Zylman Holzinger, hand carved antique pearl oyster in olivewood frame from Jerusalem
- Red – Heather Strawbridge, Princess Charming purse collection
- Red – Richard Sedlak & Michael Hickman, *Nautilus* representations



St. Petersburg Shell Club Shell Show



The 64th Annual Shell Show of the St. Petersburg Shell Club was held in Seminole, Florida, on 26-27 February 2011. As usual there were a great number of crowd-pleasing shell displays. The St. Pete Shell Club was formed over 70 years ago and meets on the second Friday of each month (except March when it is the third Friday) at 7:00 p.m. at the Seminole Rec Center, 9100

113th Street, North Seminole, FL. The meetings provide a venue to share knowledge and keep updated on the latest in the world of malacology. Throughout the year the club sponsors field trips, picnics, and an annual dinner. The club newsletter *Tidelines* is published quarterly and is available online. For more information : www.stpeteshellclub.org.



Martin Tremor Jr. (left) and Conrad Forler (right) won the COA Award for their exhibit "Behold the Lovely Abalone: Abalone of the West Coast of North America and Mexico."



October 2010 British Shell Collectors' Club Shell Show



The British Shell Collectors' Club was founded in 1972 and held its first exhibition in 1976. The 2010 show was a rousing success with lots of great shells in both scientific and artistic displays. A listing of award winners includes:

One Species

1st Koen Fraussen: *Neobuccinum eatoni* (won Peter Oliver Cup)

2nd Kevin Brown: *Trachycardium isocardia*

One Genus/Family

1st Mick Davies: British Buccinidae (won the Scotia Shield)

British

1st Graham Saunders: "Nomad Gene Pool"

2nd Dave Rolfe: "Variation in the Common Limpet"

Foreign

2nd Graham Saunders: "Signature Species"

Self-Made Shell Art

1st Selina Wilkins: Shell Flowers (won the COA award)

2nd Lucy Pitts/Loretta Spridgeon: Shell Montages

Shell Photography (member ballot)

1st Paul Wilkins: *Ensis americanus*

2nd Sara Cannizzaro: "Shellfish"

Shellomania

1st Dave Rolfe: "A Mystery"

2nd Carl and Craig Ruscoe: "Back to Front Shells" (included Walter Karo Award winning sinistral *Trichia hispida*)

3rd Angela Marsland: Self-collected Florida Fossils

Junior: age 12 - 16

1st Theo Tamblyn: Unionid mussels (won John Fisher Trophy)

Junior: 11 & under

1st Christopher Wilkins: Moving Molluscs

Dealer Shell of the Day (member ballot)

1st Fernand de Donder & Rika Goethaels: *Nodipecten magnificus*

Shell of the Show

1st Carl & Craig Ruscoe: sinistral *Trichia hispida* (Linnaeus, 1758)



British Shell Collectors' Club President Derek Howlett presents the COA Award to Selina Wilkins for her shell art exhibit titled "Shell Flowers."



Above: Carl Ruscoe holds the Walter Karo Award for Shell of the Show, a sinistral *Trochulus hispida* (Linnaeus, 1758) the hairy helicellid. This small land snail (7.9mm) was collected in flood debris by the River Ribble, at Samlesbury, near Preston, Lancashire, England, by Carl and Craig Ruscoe. Often listed as *Trichia hispida*, a junior generic homonym that was disallowed by the ICZN (see H. Lee comments and an image of this shell at: <http://www.jaxshells.org/dr29s.htm>)

Left: These shell montages by Lucy Pitts and Loretta Spridgeon took second place in the 'Self-Made Shell Art' category.



Oregon Society of Conchologists Shell Show



The Oregon Society of Conchologists Shell Show was held 26-30 April 2011 in the main viewing area of the Oregon Museum of Science and Industry in Portland. Total attendance at the museum over these

dates was 17,168 and estimates by museum staff are that at least 90% visited the shell exhibit. John Mellott was show chair, and it was a most successful shell show. The COA Award was won by Judy Barrick with an exhibit titled "Latiaxis Shells." Judy had 35 species of Coralliophilinae on display in six feet of cabinets. She also took "Best Single Shell" of the show with a specimen of *Babelomurex yumimarumai* Kosuge, 1985. Other major awards were: the DuPont Award to Jonathan Reid for his exhibit "Cowries of the World," and the Jean McCluskey Award (most educational display) to Judy Barrick (she really had quite a display) for "Latiaxis Shells." The Oregon Society of Conchologists is a non-profit organization founded in 1965. Monthly meetings are held at various localities throughout northwestern Oregon. Membership is over 70 and varies from beginners to professionals. Club President is Joyce Matthys; information at: www.oregonshellclub.com.



Judy Barrick wins the COA Award with "Latiaxis Shells." Her display featured 35 species of these often intricately sculptured shells, now considered a subfamily of Muricidae.



What is a shell worth?

Hi Tom,

As editor, for many years (23 editions), of *A Catalog of Dealers' Prices for Shells*, I have often been asked, "What is the highest price ever paid for a single shell?" I have never been able to feel confident in a reply to this question, however, I have reliable information that a Bangkok collector recently (December 2010) paid \$45,000 (U.S.) for a sinistral specimen of *Turbinella pyrum* (Linnaeus, 1758).

I also heard of an offer of 30,000 Euros (made this year) for a specimen of a very rare Cypraeidae, *Nesiocypraea alexhuberti* Lorenz & Hubert, 2000 (now placed in the genus *Austrasiatica*). The offer was apparently rejected by the owner of the specimen.

Tom Rice

Rawai Beach, Phuket, Thailand



Three *Turbinella pyrum* or sacred chank shells that have been intricately carved for possible use in religious ceremonies (image courtesy of Wikipedia.com). These are common right-handed or dextral specimens and are not nearly as rare as left-handed or sinistral specimens. The sacred chank was discussed by Jesse Todd in his article "Conch shells on coins," *American Conchologist*, vol. 39, no. 1 (March 2011). For more information about a rare sinistral specimen, see Harry Lee's article "Historical notes on a sinistral sacred chank: *Turbinella pyrum*," in this issue.

Historical notes on a sinistral sacred chank:

Turbinella pyrum

Harry G. Lee

I have had the sinistral sacred chank, *Turbinella pyrum* (Linnaeus, 1758) shown here (with a normal dextral specimen, details at: <http://www.jaxshells.org/pyrum1t.htm> and <http://www.jaxshells.org/reverse.htm>) since 1986. It was a gift and, with all my shells, will be in the Florida Museum of Natural History (FLMNH) within 20 years.

It was probably collected before the twentieth century - possibly by one of the Calverts. Its ownership passed from the Calvert Collection through a concatenation of deals to Maxwell Smith (1888-1961), thence to the University of Alabama, and ultimately the FLMNH. To better understand its history I dug up what I could about the specimen's itinerary on this side of the puddle from the UK, where it had languished for about four decades (Cooper,* pers. comm. Sept. 19, 2002).

My friend, Tony D'Attilio (1909-1997) actively worked with the collection from its landfall in N.Y.C. in 1938 (*teste* Cooper) or 1939 (D'Attilio, 1950). He described a collection of almost incredible proportions (300 large cases; one of which contained 3,000 specimens of *Conus*), and indicated that Ehrman [Martin Ehrmann (1904-1972 *teste* Cooper)] failed in his attempts to sell the entire collection - including a tender to the city of Baltimore (the Lord of that name was an ancestor of a succession of the collection's owners; see below) [this "offer" was one of Calvert's many lies *teste* Cooper]. Considering the extent, historical, scientific, and plain old conchological value *vis a vis* the price Ehrmann paid (about \$20,000.00 *fide* Dance, 1986: 173, 207 [\$8,000 *teste* Cooper], even the inflation of the U.S. dollar fails to explain this disconnect.

Anyway, sales of small lots and individual shells continued well into 1940, when Hugh K. Milliken bought the remainder (the vast majority of what Ehrman started with, apparently). I have a manuscript (2 pp. double-spaced 8.5 X 11 in. typescript; undated, but probably 1940 or 1941) "info-mercial" over Milliken's by-line which states the collection was begun, "...in the middle of the seventeenth century by Lady Ann Arundel, wife of Cecilius Calvert, second Lord Baltimore, first governor of Maryland.... Although the collection was handed down from father to son for generations it was not until it came into the possession of John Calvert [1825-1897 *teste* Cooper], the great grandson of the sixth and last Lord Baltimore [John Calvert's noble lineage was probably sheer fantasy *teste* Cooper] that it reached its present great importance... he was the first to discover gold in New South Wales and in New Zealand... He explored New Guinea, the Indian Archipelago [?] and many of the Pacific islands.... On all these travels he took ad-



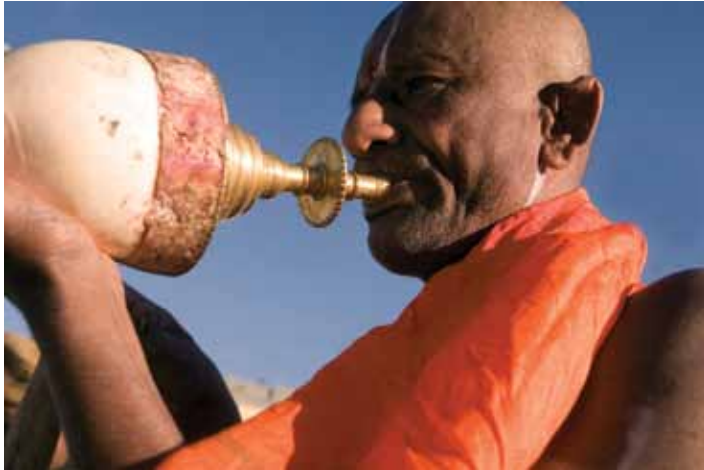
The very rare left-handed or sinistral sacred chank (left) and the more common right-handed or dextral form. Specimens of *Turbinella pyrum* can be found in many shell collections worldwide, but as only 1 in 600,000 are sinistral, the number of sinistral specimens in collections is only a handful (estimated at three in the U.S.). Both of the shells in this photograph are in the collection of Harry Lee. Image courtesy of Jacksonville Shell Club Website: www.jaxshells.org (Bill Frank webmaster).

vantage of every opportunity to increase his collection of shells... The minerals and gems have been sold separately; the small but interesting fossil collection and the million or more shells from every country in the world are now being unpacked little by little so that they may be more carefully classified and arranged."

Tony worked with Milliken (at 115 East 94th St.) until 1942, with continued desultory sales (including some to the U. S. National Museum). Shortly afterward Milliken fell ill and the collection was transferred to the home of Milliken's brother in Old Lyme [of Lyme Disease fame], Connecticut. Later Heathcote Woolsey bought the collection and Tony again took measure of it; that's as much as he wrote in 1950.

* Michael Cooper (1946-2008), then Registrar at the Nottingham Free Museum [UK] (pers. comm., Sept. 16 and 19, 2002 [Conch-L] < <http://www.listserv.uga.edu/cgi-bin/wa?A2=ind0209c&L=conch-l&F=&S=&P=543> >; < <http://www.listserv.uga.edu/cgi-bin/wa?A2=ind0209c&L=conch-l&F=&S=&P=4206> >), indicated he was working on a biography of John Calvert, who apparently led a "scurrilous life" including being a prodigious liar and huckster. Cooper disputes the accuracy of some of the information above, and I have indicated all inconsistencies. This Calvert biography appears not to have been published at the time of this writing (May 2011).

How and when Maxwell Smith obtained his Calvert material is unknown to me, but labels (possibly other archival materials) in the FLMNH may hold some clues. Smith's collection went to the University of Alabama, which institution was so grateful it rewarded its benefactor with a D. Sci. (Abbott, 1973)! Regrettably the university later felt it was unable to maintain the collection and it was ceded to the FLMNH in the mid-1980's and placed in Fred G. Thompson's stewardship.

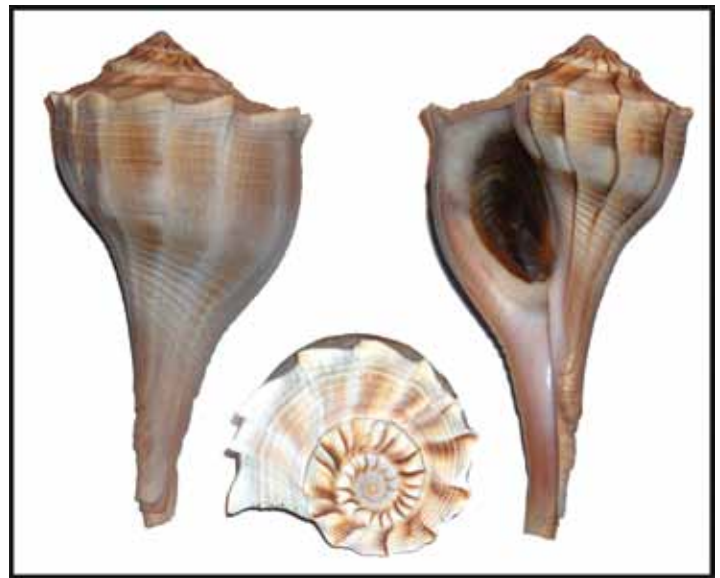


Hindu priest blowing a “trumpet” made out of a large chank shell - *Turbinella pyrum*. Shells used in this manner are often intricately carved and heavily decorated with brass and silver. Image from Wikipedia.com.

There is a long and well-studied relationship between Hindu scripture (and folklore) related to *Turbinella pyrum* and, in particular, the sinistral mutant. This unique chapter in “ethnoconchology” is nicely summarized by Rose (1974). It is written that Vishnu, or one of his avatars, hid sacred liturgical scrolls inside a sinistral chank. While there are great numbers of shell collectors (and postage stamp printers) who cannot distinguish a sinistral from a dextral snail shell, a good Hindu knows the difference! A consequence of this unusual familiarity and affinity is a demand for ownership which amplifies the market value beyond Western conchological benchmarks. Thus, there are probably hundreds of these specimens in Indian households and, to the best of my knowledge, only three in American shell collections!

Beyond the scriptural chronicle above, I believe that the often-trivialized act of (a human) decanting the liquid contents of a sinistral shell (seldom available in *T. pyrum*; characteristic in *Busycon perversum sinistrum* Hollister, 1958) using his **right** hand (vs. the opposite set-up) reinforces the virtue of the sinistral chank and may be intertwined with the scriptural and liturgical Hinduism. This simple act is ceremonial in many religions and implications of right and left hand usage are even more widely appreciated, conspicuously in India. Demand for *B. perversum* shells in that country is astoundingly high vs. the conchological value we Westerners attach to this common species.

Rarely do we get a numerical handle on the frequency of reversal of gastropod coil, but owing to the economic importance of the chank fishery in southern India, the British Colonial Government kept scrupulous records. It turned out that only 1 shell in 600,000 was left-handed (Hornell, 1916). Compare that with 1:283 (*Busycotypus canaliculatus* embryos: Lee, <<http://www.jaxshells.org/canalsin.htm>>), 1:440 (*Prunum apicinum*: Lee, 1979), 1:760 (*Hyalina philippinarum*: Coovert and Lee, 1989), and ~1:100,000 (*Cerion* species: Lee, 2011).



The common lightning whelk, *Busycon perversum sinistrum*, found along the eastern coast of the United States and throughout the northern Caribbean. Larger specimens of this typically sinistral shell are often completely white and sometimes sold in India for high prices. Image courtesy of Wikipedia.com.

The infrequency of sinistral sacred chanks alone warrants a certain status in the pantheon of rare natural history objects, but the added mystique may be what is needed to make this the most sought after of all shells.

Priceless, however, is holding such an object, however temporarily, and knowing it has a chain of ownership reaching back to at least Victorian Era (ig)Nobility and reflecting on the assortment of characters who shepherded it to its ultimate repose, intended to be the FLMNH.

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Harry G. Lee - shells@hglee.com



SCUM XV: Southern California Unified Malacologists

Lindsey T. Groves



Standing (l to r): Lindsey Groves, Ananda Ranasinghe, Scott Rugh, James Jacob, James McLean, Kelvin Barwick, Ángel Valdés, Shawn Weidrick, Bill Tatham, Jessica Goodhart, Rich Nye, Dieta Hanson, Bob Dees, John Ljubenkov, Jillian Walker, Don Cadien.

Kneeling (l to r): Joanne Linnenbrink, Zoe Allen, Lance Gilbertson, Jackson Lam, Pat LaFollette, Bob Moore.

Present at SCUM XV but not in photo: James Preston Allen, Doug Eernisse, Suzanne Matsumiya. (Image by Doug Eernisse with the author's camera)

The 15th annual gathering of Southern California Unified Malacologists (SCUM) was held at the headquarters of the Southern California Coastal Water Research Project (SCCWRP), Costa Mesa, CA. Twenty-five professional, amateur, and student malacologists and paleontologists attended the event on Saturday, March 5th, 2011. An unanticipated local power outage at scheduling time forced a later than usual gathering this year. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped that the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), Mid-Atlantic Malacologists (MAM), Ohio Valley Unified Malacologists (OVUM), and FUM (Florida Unified Malacologists) will encourage more regional groups of malacologists and paleontologists to meet in a likewise manner.

SCUM XV host Kelvin Barwick welcomed the group and in SCUM tradition all present were given the opportunity to introduce themselves and give a short update about current mollusk related activities and interests. Most presentations were informal but several were more detailed. John Ljubenkov presented an interesting program on hydroids that attach to mollusk shells,

many of which are deep water species (ie., *Halitholus cirratus* on the deep water bivalve *Acila castrensis*). Most hydroids seem to prefer appear attachment to dead mollusk shells rather than living shells. Jessica Goodhart, Jillian Walker, Jackson Lam, and Dieta Hanson, who work with Ángel Valdés at Cal Poly Pomona, made presentations on their research. As always, in addition to his busy teaching schedule, Doug Eernisse (Calif. St. Univ. Fullerton) updated everyone on his extensive research projects with his colleagues and grad students. Pat LaFollette presented an update on pyramidellid literature acquisitions via internet resources. Scott Rugh presented research on comparisons of modern environments to those of the late Pliocene San Diego Formation environments. Numerous discussions and comments resulted from these presentations. SCUM XVI will be hosted by John Ljubenkov at the Cabrillo Marine Aquarium, San Pedro, CA, in January of 2012.

SCUM XV participants and their respective interests and/or activities:

James Preston Allen (San Pedro, CA): Attending SCUM XV with daughter Zoe Allen and publisher of *Random Lengths*, an independent newspaper in San Pedro, CA.

Zoe Allen: High school student and volunteer at the Cabrillo Marine Aquarium, San Pedro, CA.

Kelvin Barwick (Orange Co. Sanitation District): Continues research on mollusk and polychaete faunas of the Southern California Bight and current Treasurer of the Western Society of Malacologists.

Don Cadien (L.A. Co. Sanitation District): Currently researching environmental biology of bathyal and abyssal invertebrates of southern California.

Bob Dees (San Diego Shell Club): Former President of Orange Coast College but continues to collect shells and is current Vice-President of the SDSC.

Doug Eernisse (Calif. St. Univ. Fullerton): In addition to teaching duties Doug has a myriad of research projects with professional and grad student colleagues including: Phylogenetics and affinities of *Fissurella volcano*; *Ostrea* phylogeny and phylogeography in the Gulf of California; new species of brooding chitons from Santa Catalina Id., California Channel Islands; DNA bar-coding of Indonesian chitons; research on new species of the sea star genus *Henricia*; and shield limpet habitat analysis.

Lance Gilbertson (Newport Beach, CA): Research Associate at the Nat. Hist. Mus. L.A. Co. continues with research on terrestrial mollusks of the southwest.

Jessica Goodhart (Cal. Poly. Pomona): Researching life cycle and development of *Haminoea vesicula* and comparison to the invasive species *H. japonica* in California.

Lindsey Groves (Nat. Hist. Mus. L.A. Co.): Continues as Collection Manager at NHMLAC. Has recently published a paper with descriptions of 11 new cypraeid species from the Cantaure Formation of northern Venezuela and has a paper in press on new cypraeoideans from the Paleogene of Washington, California, and Baja California Sur, Mexico.

Dieta Hanson (Cal. Poly. Pomona): Researching *Haminoea japonica* and its affects on the native cephalaspidean species in San Francisco Bay and its phylogeny.

James Jacobs (College of Borrego, Borrego Springs, CA): Interested in fossil faunas of the area.

Pat LaFollette (Nat. Hist. Mus. L.A. Co.): Continues rearranging the Pyramidellidae in the NHMLAC malacology collection and continues to acquire pertinent pyramidellid literature via the internet. More recently has collected numerous micro-gastropods from Miocene deposits in the San Gregorio Pass area, Riverside County, many of which may be undescribed species.

Jackson Lam (Cal. Poly. Pomona): Researching deep-sea *Armina* nudibranchs many from expeditions to New Caledonia by the Paris Museum, particularly their reproductive systems, jaws, and radulae. Presented a short video exhibiting a strange feeding behavior in *Armina*.

Joanne Linnenbrink (Cal. St. Univ., Long Beach): Currently an undergraduate student preparing to attend Calif. St. Univ., Fullerton, and work with Doug Eernisse.

John Ljubenkov (Pauma Valley, CA): Self proclaimed "industrial taxonomist." Currently studying hydroids that grow on living and dead mollusk shells in deep and shallow water.

James McLean (Nat. Hist. Mus. L.A. Co.): Jim continues work on his eagerly anticipated volumes on North Pacific shelled gastropods. His monograph of worldwide Liotiidae is nearly complete.

Suzanne Matsumiya (San Pedro, CA): Attending SCUM XV with daughter Zoe Allen.

Bob Moore (Nat. Hist. Mus. L.A. Co.): Volunteer at NHMLAC and avid shell collector who is currently curating material collected by urator Emeritus James McLean in South Africa.

Rick Nye (Calif. St. Univ., Fullerton): Researching the limpet *Lottia scabra* and its distribution in northern California versus that in southern California, particularly near Pt. Conception, Santa Barbara County, a natural faunal barrier.

Ananda Ranasinghe (SCCWRP): Because he volunteered to allow access to the meeting facility on a day off, Ananda was made an honorary SCUM member.

Scott Rugh (Escondido, CA): Currently doing contract work with the US Geological Survey making a comparison of modern off-shore faunas to those of the late Pliocene San Diego Formation.

Bill Tatham (Pacific Conchological Club): First-time SCUM attendee with an interest in Conidae.

Ángel Valdés (Cal. Poly. Pomona): Teaches Evolutionary Biology and continues phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces.

Jillian Walker (Cal. Poly. Pomona): Researching *Aplysia* in southern California and its reproductive strategies.

Shawn Wiedrick (Pacific Conchological Club): Current President of the PCC and interested in all areas of shell collecting. Volunteers at the Nat. Hist. Mus. of L.A. Co. identifying micro-turrids of the Indo-Pacific.

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Interesting boring

He Jing



Fig. 1 A bivalve shell with a bored hole.

Introduction

I often recall the days when I started shell collecting, over two decades ago. One of the scenes that often plays back in my memory is the first time I picked up a bivalve shell on the seashore and found a hole on it. My curiosity drove me to find its cause. Fortunately there was an easy answer; the hole is left after a predator drilled into the shell. The boring differs a lot from the smaller pinholes caused by an octopus or the chipping caused by fish and crabs. The hole bored into a shell is a regular circle. It is neat and beveled, with chamfered edges.

After I started working as a professional shell dealer I had the chance to visually inspect and handle a great number of unsorted shells. I began setting aside shells with boring marks and quickly had a great many such shells. I thought other collectors might be interested, as many collectors do not get to examine shells before a dealer has sorted them and culled the “unsightly”



Fig. 2 A *Turbo chrysostomus* showing several boring attempts.

specimens. I am unable to present any scientific conclusion in this short article, but I hope to offer some interesting examples of shells that have suffered boring attacks.

Struggle for life

When I observe shells with indications of boring, they seem to provide a capsule documentary that vividly presents the brutal struggle for survival by our colorful creatures of the sea. Many shells have incomplete borings and many have multiple borings. I found a cone with four borings, none of them completed.



Fig. 3 A cone with four borings.

Why so many borings in a single shell? Apparently the cone was doing its best to escape while at the same time the predator refused to give up easily. The repeated attacking and defense resulted in the multi-borings.

Is there any chance that more than one predator drilled in the same time? I believe the answer is yes. I had an olive specimen that had two completed holes bored into the shell. If these were bored by the same predator, why would it drill the second hole after succeeding with the first? One assumption could be that the olive escaped just after the predator completed the first hole, leaving it no time to enjoy the result of its labor. The predator then had to do it again. This assumption leads to another question. If both borings were from the same attacker, why not search out and use the finished hole for the second attack - unless it was placed incorrectly. Or the predator may not remember where it drilled for

its first attempt. It is certain that no conclusion can be reached by just looking at the end result on a shell - as interesting as it might be.



Fig.4 An olive specimen with 2 completed borings.

Nevertheless, the specimens I have gathered clearly show that life in the sea is tough. The drilled shells either lose their lives or fight tenaciously and live with scars. As for the predators, they certainly do not seem assured of victory with each attack.

How to drill?

A number of books discuss the mechanics involved in drilling into a shell. First, the predator gets control of the prey, then secretes a variety of chemicals called carbonic anhydrases. The drilling lasts a few hours to several days. I have not done a study of the chemicals involved or the duration of the boring process. From the specimens I have collected, however, it seems that the predator does not always have a good control of its intended prey. Some of the prey are quite large in comparison to smaller predators. It would seem there is no control by the predator in such situations, but rather a smaller *Murex* or *Natica* just “hangs on” while boring through the victim’s shell. Another interesting phenomenon is the position of the boring. It seems the position is not decided by the predator, instead, it is more likely determined by the shape of the prey’s shell.



Fig 5 a A large turban specimens with borings. Note the serrations around the perimeter of the boring.

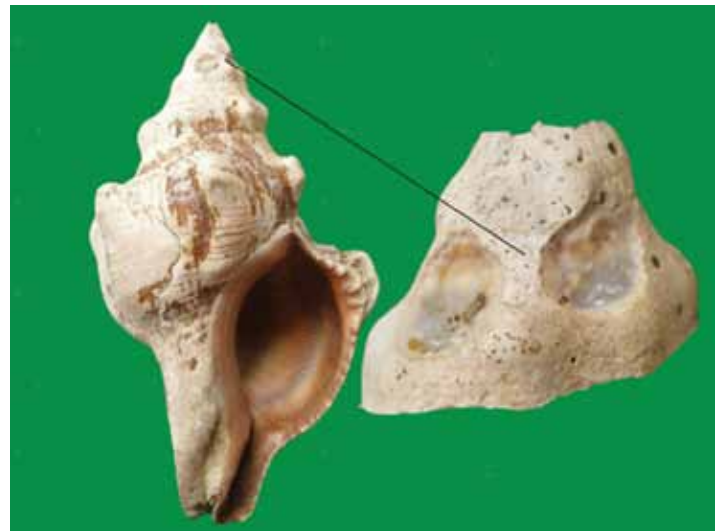


Fig 5 b A large fasciolarid specimen with borings on the spire.

The drilling position among certain prey species is almost identical. This may indicate a vulnerable spot on the shell or just the most available area for an attack.



Fig. 6 A group of olives showing that in all but one case, the same point of attack was used.



Fig.7 A group of turbans with drill attempts.

The boring position of gastropod shells is typically just behind the aperture on the ventral surface of the shell, about one whorl in from the outer lip. This position is probably where the animal inside the shell is accessible and thus vulnerable. A hole drilled on the dorsal surface would likely find an empty shell as the inhabitant can withdraw deeper into the shell. This ventral drilling position is quite close to the aperture of the victim, indicating

little threat from the prey animal (biting or other self-defense actions). In contrast, I found that bivalve shells are usually attacked and drilled at the rear portion of the shell near the hinge, but even this is variable and the images I have provided show borings into bivalve shells in many different areas.



Fig.8 Borings near the hinge on bivalves.



Fig.9 Borings on the thick spire section of strombids.

Not all drill holes are found in the same area of a given species. Architectonicid shells seem to be attacked on both the dorsal (most often) and ventral surfaces. It looks like the predator may not know where it should attack. The illustrated example (Fig. 12) shows a shell with the drill hole in the apex.

The thickness of the shell area portion does not seem to be a deterrent to drilling as predators seem to focus more on the accessibility of the prey's flesh after the shell is bored open. This may explain why cones and strombs frequently show boreholes at the thickened shoulder area.

I have a murex specimen which is densely covered by barnacles (Balanidae). Apparently the barnacles around the boring position were cleared by the predator to enable it to have enough room to start its bore hole. I have no idea how the predator cleared the barnacles or why it prepared such a spacious site, an area seemingly much larger than needed to bore into the shell.

With shells like turbans with their thick shells and opercula, it is quite understandable that attackers dominate them by drilling. They seem well protected against others avenues of attack. Yet many victims with bore holes have thin shells, seemingly



Fig.10 A boring worksite amidst barnacles on a murex.

easily broken. They are drilled into in much the same way as their thicker-shelled neighbors.

Some tiny shells also show signs of being bored into, maybe indicating even smaller attackers.



Fig.11 Micro shells (size between 1mm to 4mm) also show signs of boring attacks.

Boring attacks also happen in the deep sea. I have collected many shells from the East China Sea at 100+ meters with indications of boring attacks.

Most literature lists muricids and naticids as predators, but in fact they are often victims and often show evidence of boring attacks. I have collected many other shells with evidence of boring attacks, but have yet to find a specimen of cephalopod



Fig.12 Borings on various specimens from deep water.



Fig. 15 Borings on Scaphopoda shells.



Fig.13 Naticidae shells with borings.



Fig. 16 Borings at Bivalvia shells



Fig.14 Muricidae shells with borings.

or chiton with evidence of bore-holes. It is certain that gastropods, bivalves, and scaphopods are vulnerable.

The thing that puzzles me most is that I have never found a single cowrie with a bore-hole. I have handled thousands of *Cypraea miliaris* and *Cypraea hungerfordi*, and inspected them one

by one. In 2007 during my journey to Hainan Island I asked workers of a shellcraft workshop to check a batch of *Cypraea moneta*, the weight of which approached one ton. None was found with any evidence of a boring attack. I also asked fishermen to collect cowries with bore holes for me, but what eventually turned up were small pinholes, not borings. My search will continue.

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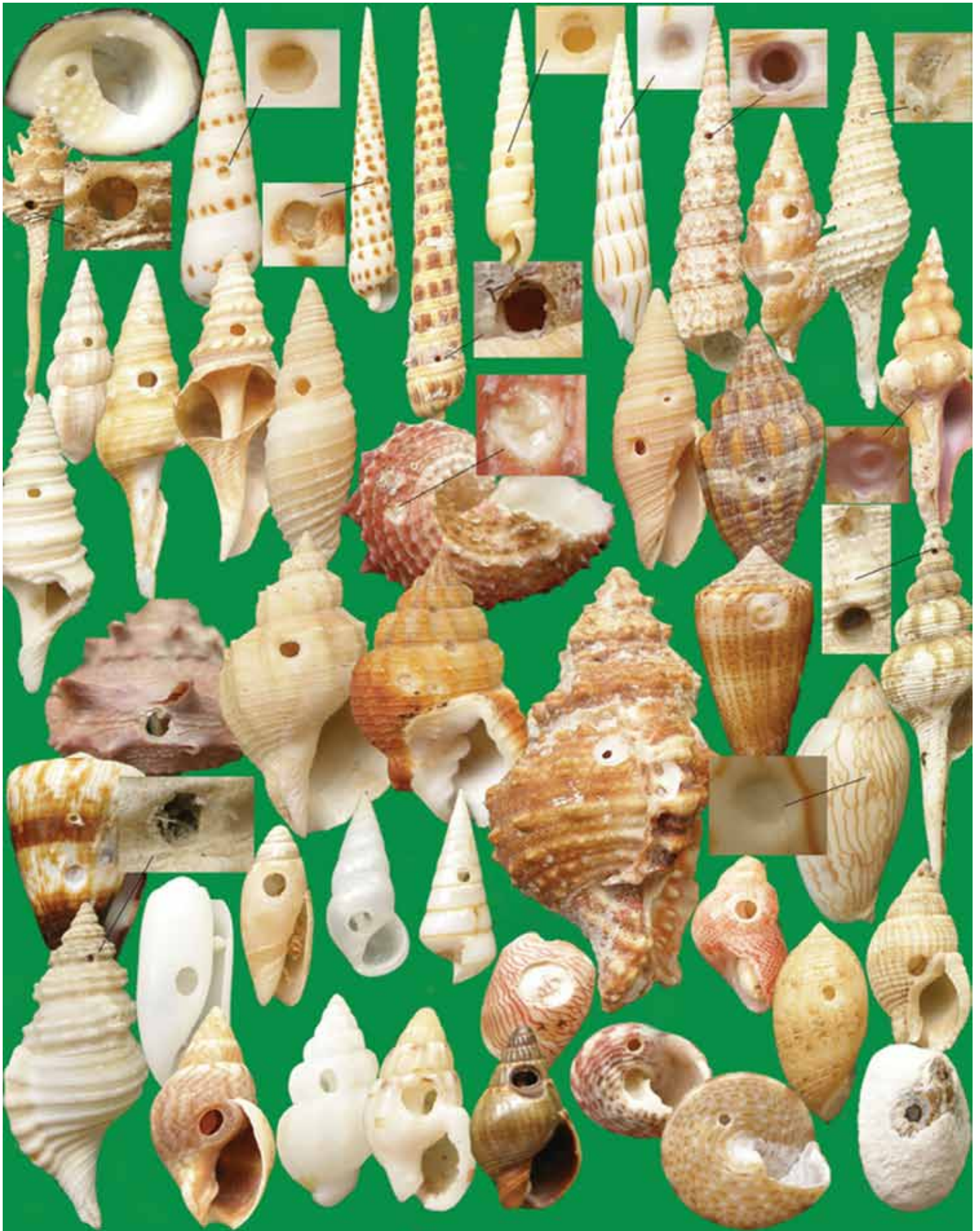


Fig.17 Various gastropods with evidence of boring attacks.

Mattheus Marinus Schepman (1847-1919) and His Contributions to Malacology

by A.N. Van Der Bijl, R.G. Moolenbeek, and J. Gould

2010, Netherlands Malacological Society, Leiden, 200 pages, ISBN 978-90-815230-11, \$50 at anvdbijl@xs4all.nl

As early as the 1500s, shell collectors in the Netherlands were at the vanguard of a growing interest in natural history fueled by the wonders brought back from expeditions around the world. Dutch interest in conchology continues today, as evidenced by shell publications and the Nederlandse Malacologische Vereniging [Netherlands Malacological Society]. This society was begun in 1934 and in celebration of its 75th anniversary, a special book was published in honor of and about Mattheus Marinus Schepman, one of, if not the most, important shell collectors of his country and certainly one of the top collectors in Europe. M. Schepman combined the fascination and wonder of shells as objects of natural history with a scientific approach that made his collection of great value to the entire malacological community. Schepman amassed an extensive shell collection by self-collecting, trade, and purchase. More importantly, he was selected by M.W.C. Weber, Director of the Zoölogisch Museum Amsterdam (ZMA), to identify and describe the malacological specimens collected during the Siboga Expedition (1899-1900). This expedition collected flora and fauna samples from 322 sites among islands in the Indo-Malaysian Archipelago. Mollusks from a previous similar expedition had been identified by K.E. Von Martens, who probably recommended Schepman for the work on the second expedition. From 1908 to 1913, Schepman published descriptions in seven volumes of some 1,235 species of shelled mollusk, many new to science. All totaled, he identified over 2,500 mollusk specimens. This work established Schepman's credentials as a conchologist. He continued to aggressively build his private collection and after his death the Schepman collection was purchased in 1920 by the Zoölogisch Museum Amsterdam (University of Amsterdam, Amsterdam, the Netherlands). For f6,205, the museum obtained a collection of shelled marine, freshwater, and land mollusks totaling approximately 9,000 species in 1250 genera. Also included were 10 large oak cabinets and an extensive library.

This present work provides a quick review of Schepman's life, and then adds texture, color, and interest, by including: transcripts and images of letters to and from dealers and other well-known shell collectors, images of his collection and data slips, images of his contemporary malacologists, and a complete bibliography (he wrote over 60 malacological publications). This is followed by a lengthy section on "New Taxa Introduced by Mattheus Marinus Schepman." Here the authors have provided de-



scriptions and superbly detailed illustrations (many published for the first time) of some 450 taxa introduced by Schepman. When there is no illustration, it is because the described specimen is from the Siboga Expedition, and all 32 plates from this expedition are included in a later chapter. Thus every taxon is illustrated. Just having available this treasure trove of type illustrations is of great value, but the authors have gone further by listing type localities and by providing a detailed analysis of questionable type status. The authors also provide a listing of taxa named after Schepman, taxa he named after other persons (including etymologies), and separate listings of the Schepman taxa sorted alphabetically by family (and then species), by genus (and then species), and by complete name (family, genus, species, subspecies).

This is a well-researched, well-written, and richly illustrated addition to conchological literature. It is not intended for the casual shell collector, but it provides a needed window into an important part of conchological (or malacological) history as well as a needed reference tool. For anyone who aspires to a more detailed knowledge of shelled mollusks, this book is a most welcome addition.

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Compendium of Florida Fossil Shells Volume 1

Middle Miocene to Late Pleistocene Marine Gastropods

by Edward J. Petuch & Mardie Drolshagen

2011, MdM Publishing, Wellington, FL, DVD in slim plastic "jewel case" - \$19.95 from Mal de Mer Books, MDSHELLBOOKS.COM



This is an intriguing concept of a DVD combined with a hard copy book version to be published at a later date. There are pluses and minus to both media, so hopefully this combination will allow readers to benefit from the pluses of each. This is a planned series of six volumes on fossil shells of Florida by Edward J. Petuch and Mardie Drolshagen, who earlier combined their talents on "Molluscan Paleontology of the Chesapeake Miocene." Dr. Edward Petuch of Florida Atlantic University provides the fossil expertise while Mardie Drolshagen of Black Diamond Photography provides meticulous and detailed photographs of the taxa being discussed as well as some interesting Florida scenery.

The planned six volumes are divided by 'stratigraphic importance,' with volumes one to four covering the more important (stratigraphically characteristic) and abundant marine gastropod fossils, while the last two volumes cover marine and freshwater gastropod fossils more rarely encountered as well as bivalve fossils. Over the course of the planned publications, more than 400 gastropod and bivalve genera will be described and illustrated. This includes more than 300 new species and 20 new genera.

Florida has become rather well known for its rich fossil assemblages with over 1,500 molluscan fossil species (over 5mm in length) having been discovered to date. The 1994 publication of the "Atlas of Florida Fossil Shells" by Edward Petuch has been somewhat overcome by the discovery of hundreds of new species. The planned six volume publication should do much to resolve this issue. This first volume reviews seven gastropod families: Strombidae, Cypraeidae, Ovulidae, Eocypraeidae, Triviidae, Conidae, and Conilithidae. Also provided in some detail is a review of Florida geology with discussions of regional stratigraphic formations, coastal paleoceanography, and the paleoecology of Neogene Southern Florida.

The "book" (I have not yet seen the hard copy version, but I assume it will be substantially the same as the DVD version) begins with a short general history of fossil collecting in southern Florida and then covers specific collecting areas. Many of these areas are now closed to public collecting, but interested fossil hunters can often work through local shell clubs to obtain access. While I am not personally familiar with these names, I am sure many fossil hunters in COA will recognize names such as: Mule Pen Quarry, Brantley and Cochran Pits, Rucks Pit, Griffin Brothers Pit, etc. Each is analyzed for its fossil origins, richness, diversity, and originating geological formation. This introduction to the collecting areas of southern Florida is followed by a listing of the 119 new species named in this volume. These and an additional 172

related species are all illustrated in volume 1.

All of the above is introduction. Chapter one is a detailed coverage of the "Geologic Framework of Southern Florida," including specific details about some dozen major Florida geologic formations. This is followed in chapter two by a step back in time to the now long-gone Okeechobean Sea, the Paleocene formation that is now the Everglades. Most recognize the defining nature of Florida's Everglades, but here is a fascinating journey back to the Eocene to review the geology of the area and how it came to provide such a rich molluscan environment during the Paleocene. All of this, from the introduction onward is accompanied by photographs that bring additional life to the text.

The remaining chapters are dedicated, one or two families per chapter (grouped by genus), to the molluscan families covered in this volume. Each species is thoroughly described, illustrated, and details provided as to type measurements, location, stratigraphic range, and name etymology. The species descriptions end with a general discussion where additional details are provided, such as comparisons to similar species. Almost all of the photographs are black and white, but considering the lack of color in most fossils and the added sharpness of a B&W photograph, this is certainly not a detracting aspect.

Now back to the nature of such a publication on DVD. A thorough index is provided, but it can still take some time scrolling to the page desired. Here a book would be much handier. On the other hand, the images can be enlarged to show an incredible amount of detail. Because of this, I believe amateur collectors interested in Florida fossils as well as professionals will undoubtedly want both hard copy and electronic versions. Those unsure of their interest in this area can purchase the DVD for the relatively inexpensive price of \$19.95. If the DVD suits your needs, then you are done (until the next volume). If you decide you would also like the hard copy (there is something after all inherently "right" about a book - at least to those of us born in the previous century), the purchase of the DVD includes a coupon that entitles you to a discount off the book price (\$89.95), dropping the price to \$60. I do not know if this will be true for later volumes.

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Shells of the Hawaiian Islands

Vol. 1, The Sea Shells; Vol. 2, The Land Shells

by Mike Severns

2011, Conchbooks, Hackenheim, Germany, pp. 564, pl. 225 (sea shells) & pp. 460, pl. 186, 363 maps (land shells), ISBN 978-3-939767-35-0, for both volumes in slip case: ISBN 978-3-939767-33-0; Vol. 1 approx., \$297, Vol. 2 approx., \$235, both vol. in slip case, approx., \$431.

Allison Kay published "Hawaiian Marine Shells" in 1979 and listed 966 valid species of shelled marine mollusks in Hawaii. A lot has happened since then. The present work by Mike Severns lists 1,333 valid species of shelled mollusks in the islands and as Philippe Bouchet states in the introduction to Severn's work (p. 31), "...there is still a long way to go to a 'complete' inventory of Hawaiian marine molluscs." In the meantime, we have a superbly written and lavishly illustrated work that is much more than an update on Kay's work. The color plates are 8.5 x 11.5 inches, which means many of the shells are illustrated at much greater than life size. An 11mm specimen of *Triphora earlei* Kay, 1979, is shown at better than 100mm! A 4mm specimen of the Hawaiian endemic *Smaragdia bryanae* (Pilsbry, 1917) is shown at 55mm. These are sharp, definitive images with details of sculpture and protoconch, as well as subtleties of color pattern evident as never before. Species from streams, shallow intertidal waters, coral reef habitats, and deep water are all represented with the name, size, a quick comment about where the specimen was collected, and a crystal clear color image. Vol. 1 also includes an introduction to the Hawaiian biota by Philippe Bouchet. He discusses endemism and the difficulty of any mollusk arriving at and settling in Hawaii.

Vol. 2 completes this marvelous set with more details about the development of the Hawaiian Islands and a history of land snail collecting and research on the islands (by Bernhard Hausdorf). Recorded land snail species climbed steadily from the initial descriptions by Captain Cook and Captain Dixon in the early 1800s to a known 750 species (most endemic) by the late 1940s. Sadly more than 75% of the land snail species on Hawaii are now extinct. The causes are many and fairly well-known (e.g. habitat destruction and introduction of alien species), but that does not bring back any of those lost species. Interestingly, the author almost accomplished this feat. The land snail genus *Partulina* was thought by many authorities to have become extinct on Hawaii. Our author proved that not only was it not extinct, but that there were a number of thriving populations on the different islands. It was literally a case of endless searches through thick rain forest, only to find the quarry in the tree under which he had been parking his jeep. Since then he has spent several decades documenting this genus and other rare land snails in Hawaii. Another interesting aspect of Hawaiian land snails: of the voucher specimens in island museums, perhaps 20% are as yet undescribed!

With both volumes, Mike Severns contacted authorities around the world to ensure his data were correct and up-to-date.



For example, the Cypraeidae section was reviewed and comments provided by Felix Lorenz; Mitridae by Richard Salisbury, Muricidae by Roland Houart, etc. Our knowledge of the molluscan world is growing daily, with hundreds of new species named each year and new research methods providing a better insight into the status of different species. Because of his meticulous preparation and research, as well as illustrations second to none, these books are well worth the price. Yes, they are a bit expensive, but once in hand you will realize that the excellence of the work drove the price and that no better references can be found for Hawaiian Island sea and land snails.

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