

# HAWAIIAN SHELL NEWS

AN EDUCATIONAL PUBLICATION OF THE HAWAIIAN MALACOLOGICAL SOCIETY

VOL. XLII NO. 6

JUNE 1993

NEW SERIES 407

## THE MALACOFAUNA OF A VOLCANIC LAKE Terrestrial and Aquatic Snails in a Nicaraguan Ecosystem

By Al Lopez, S.J.\* and Mijail Perez\*\*

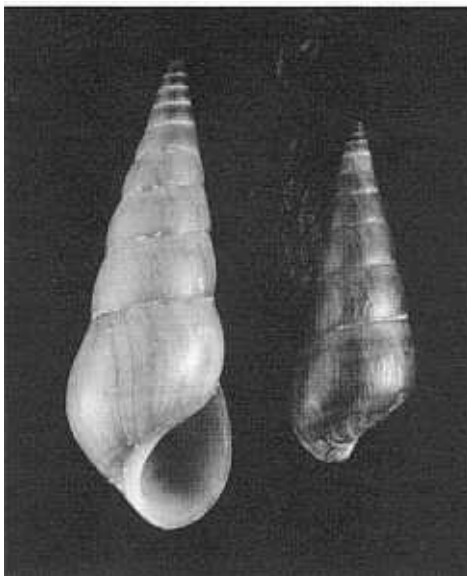
MANAGUA — Faunistic studies of ecosystems are important for obtaining basic information on interaction between species of a specific locality. Modern malacology is concerned with this type of research since it is the only way of finding truly scientific solutions to taxonomic and biogeographical problems and to questions regarding the proper use and control of natural resources (cf. Aguayo, 1944).

This article presents some of the 33 species of gastropods we have collected in and around Apoyo Lake (Laguna de Apoyo), in southwestern Nicaragua. The complete list being prepared for publication includes four new species yet to be described and illustrated. Additional research of the ecosystem is in progress by a joint team of investigators from the University of Central America in Managua (UCA) and the University of Maryland. It includes flora and fauna, especially the taxonomic and behavioral study of the endemic cichlid fishes.

Apoyo is a truly spectacular lake of crystal-clear blue water, 20 km in circumference. As one comes suddenly upon the brink of the caldera and gazes down at the surface 300 m below, the panorama is breathtaking. The lake was formed in a Krakatao-type explosion of which there is no native memory. Its sides are precipitous. We have measured depths to 300 m, the limit of our depth meter. The bottom apparently is well beyond that point.

The water has a high mineral content, it corrodes metals to a mushy powder and it is unfit for drinking. In places, hot water and gas bubble up continuously. One well we dug gave abundant and extremely hot but foul tasting water. In

1. *Pachychilus largillierti* (Philippi, 1843). Apoyo Lake feeder streams. Two specimens: 46.1 × 15.8 mm.; 33.7 × 12.0 mm, max l. & w.



2. *Neocyclotus nicaraguense* Bartsch, 1942. Apoyo Lake, all around the coast from the water line to the top. One operculum and 2 specimens: 20.8 × 17.5 mm; 20.2 × 16.8 mm, max. diam. & height.

spite of all this, cichlid fishes thrive in the lake, supplying the community with tasty protein. But there are no bivalves and only one gastropod, *Pyrgophorus coronatus* (Pfeiffer, 1839), well known for its capacity to live in highly toxic or polluted waters.

The collecting stations are scattered around the lake, some in the water itself, others among the aquatic plants, some among sand and stones at the water's edge. Other stations are at different levels all the way up to the rim of the crater, in open fields or under trees and rocks. Small spring-fed brooks that run into the lake and their banks were also searched. The collecting stations were visited repeatedly from 1987 to April 1992.

The total number of species found was 33, divided into 17 families and 22 genera. This should be considered as an unusually rich fauna for such a restricted area. Solem and Climo (1985) held that small communities of molluscs are generally made up of from 5 to 12 species.

Among the Prosobranchs were the following: *Pachychilus largillierti* (Philippi, 1843), (fig.1). About 20 specimens were found, living in the small feeder streams, but not in the lake. This species is common in the mountain streams of Nicaragua, especially in the Chontales hills, and is a popular source of food.

*Pyrgophorus coronatus* (Pfeiffer, 1839). The only mollusc living in the lake waters, but found in countless millions, the empty shells coloring white the sand and fine gravel at the edge of the lake. Semi-fossil specimens line the ground along the shore to a height of some 30 m above the present water level, giving proof of where the water reached to some fifty years ago, and confirmed by one of the oldest inhabitants of the lake shore. The sculpture of this shell varies from glossy smooth to granulate and heavily striated, keeled and coronated specimens, making it hard to believe they could all be the same species.

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All photos: Dick Meier, LACM Dept. of Photography, June 1992.

(Cont'd on Page 6)

# REEFCOMBING

## Florida-bound



Concluding a five-year tour in Hawaii with the U.S. Air Force, HMS member John Jacobs in April received his Associate's degree in Applied Science in Intelligence and Imagery Analysis from the Air Force Community College. The commencement exercise was held at Hickam Air Force Base, Honolulu.

John accomplished his studies while actively working with the Society on such projects as the HMS Fiftieth Anniversary shell show and auction last year. He doffs his hat to Cheryl Jacobs, the Society's office manager for the past three years, for putting up with his long hours of study. Cheryl in turn expresses great pride in her husband's academic success.

"Besides," she adds, "it means a pay raise."

The Jacobses leave Hawaii in July for duty in Florida, where John hopes to continue studying toward a Bachelor of Science degree.

"Cheryl and I will certainly miss Hawaii," John admits, "but we are looking forward to Florida and my new assignment."

This endemic Hawaiian tree snail figured on page nine of HSN last month was an *Achatinella* sp. (not a *Partulina*). It is an endangered species with an extremely restricted habitat in the mountains behind Honolulu.



## A NEW OFFICE MANAGER

With the pending departure from Hawaii of Cheryl Jacobs, the job as Office Manager for the Hawaiian Malacological Society is being taken over by Dwayne Minton, a graduate student in zoology at the University of Hawaii, Manoa (Honolulu) under Dr. E. Alison Kay. Dwayne received his bachelor's degree in science from Southampton College on Long Island, New York.

Barbara Kuemper, originally designated for the office job, was unable to accept due to other commitments.

## PROGRESS AT SANIBEL

An all-day open house for the public and the press marked the official opening of the Bailey-Matthews Shell Museum Preview Center on Sanibel Island, Florida in mid-April. The center is to be open Mondays through Fridays while construction is under way on the museum proper.

The initial display at the center is "The Scallop, Queen of Conchology," a five-panel display on the scallop's biology and its prominence in art, history and religion.

Meanwhile, "confusion" (as the Museum Foundation put it rather delicately) in securing a development permit has been overcome and the site has been cleared of hundreds of Brazilian peppers, an ancient car body, a pig pen and discarded tires. Several hundred special trees and ferns have been moved to another site.

## LIVING TO A RIPE OLD AGE

Many intertidal invertebrates reach ripe old ages. The anemone *Anthopleura xanthogrammica* seemingly lives indefinitely.

*Pisaster ochraceus*, the predatory ochre star, can live at least 20 years. It is eaten occasionally by seagulls, anemones and sea otters, but then only partially, which permits regeneration. This may contribute to its impressive lifespan. Its mussel prey, *Mytilus californianus*, may be only three or four years old, whereas the Hinnites scallop may exceed fifty years.

A large lobster can reach sixty to a hundred years.

A legal-size abalone, *Haliotis* spp., may be around perhaps seven to ten years, while *Tegula funebris*, the black turban snail, lives twenty to thirty years and the tiny *Littorina* five to ten.

California's red and purple sea urchins, *Strongylocentrotus purpuratus*, and *S. franciscanus*, range from ten to thirty years. Even *Tetraclita rubescens*, the red barnacle, although it matures in two years, can live for fifteen.

Consider the rate of growth and replacement of animals the next time you find their shells underfoot.

Steve Vogel in *Tidelines*, publication of the Cabrillo Marine Museum in San Diego, California.

## Hawaiian Shell News

ISSN 0017-8624

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**Hawaiian Shell News** is printed by Fisher Printing Co. of Honolulu.

# A SPECIAL SHELL TO CATCH A WHALE

By E.R. Cross\*

Two thousand years ago the Old World-spanning Roman Empire was beginning a slow decline from the peak of its power. In Central and South America the first great Meso-American civilizations were approaching their zenith. China's Han Dynasty was pushing westward into Central Asia and establishing links with Europe.

Far from these seats of power, at a tiny Makah Indian village facing the cold, rainy Pacific Ocean at what is now the northwesternmost corner of the United States, "Citku," a young Makah, completed the strict traditional training required to become a whale diver. Citku (Makah for dolphin) was about to take his place as a key member of the tribal whaling crew. The last step in his schooling and the first in his new role was to dive for the big mussel shell that was an integral part of successful whaling.

No one knows for sure when the first native people of the Pacific Northwest began hunting whales. Some clues, however, have been found in the ruins of the Makah village of Ozette, buried some 600 years ago when a huge, violent mudslide almost instantly covered everything and protected it from deterioration. In recent decades archaeologists have recovered more than 50,000 artifacts from Ozette for study.

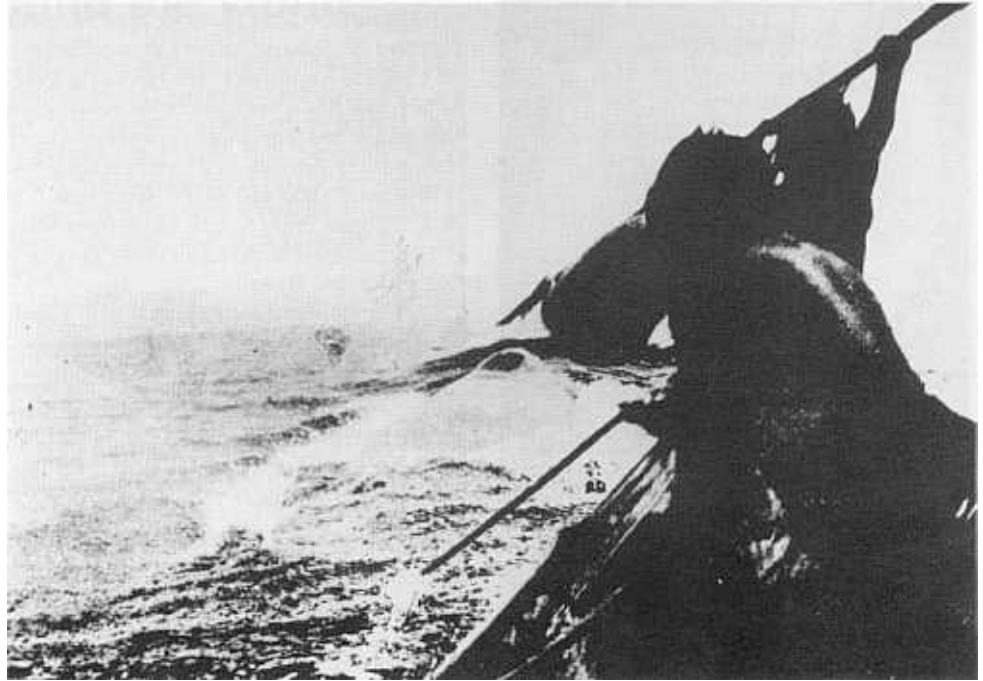
"The tradition of hunting sea animals, including fur seals, [seems to have] continued with little detectable change for at least 2,000 years," according to Dr. Gustafson, one of the Ozette researchers.

Oral history and the Makahs' own whaling lore indicate the crews' equipment and whaling technique have changed little in even more thousands of years.

The recorded legends and songs, and the recovered artifacts, reveal the Makahs' long-standing maritime culture. They excelled in many aspects of surviving in a difficult and demanding environment, dominated by wind, rain and North Pacific storms. Their economy was based on the resources of the sea that they faced and of the forests at their back. Sea-mammal hunting, as well as fishing for halibut and salmon in season, were their main sources of food, with marine molluscs as an important supplement. Shells served as tools, dishes and cooking utensils. For the whalers, however, certain shells were critically important.

A Makah whale hunt was divided into several phases. First, the whalers had to prepare themselves, both spiritually and physically, to face the "great one." Putting to sea in a canoe hewn from the trunk of a single cedar tree required the utmost dedication. They had to secure the huge tree and haul it to the water's edge where some fashioned the craft while others prepared the whaling tools and equipment they would need.

\* P.O. Box 1267, Port Angeles, WA 98362



The Makah Indian harpooner rises to plunge his shell-tipped lance into a gray whale. In the foreground the diver awaits the signal to go into the sea to secure the whale's huge jaw for towing to shore.

From the collection of the Jefferson County (Wash.) Historical Society, Port Townsend, WA.

Then it was necessary for the village chief to perform rituals that would determine when the hunt would start. Finally, when all was right for the enterprise, the new canoe was launched, equipped and made ready for sea.

Later, when the hunters returned in triumph with a whale in tow, there would be a ritual division of the catch.

Each canoe had eight men on board, one of whom would be the diver. All eight needed great strength and stamina to capture and kill a 30- to 40-ton whale at sea, often in foul weather, then tow it back to the village. The Makah men met this challenge with a long process of physical conditioning, ritual cleanliness and ceremony.

As the designated diver of a Makah whaling crew, Citku would have a particularly difficult and dangerous job. His station was in the bow, just to the right of the harpooner. At the critical moment he was expected to plunge overboard with his clamshell weapon to secure the harpooned whale alongside the canoe for the long paddle home. Failure from fear or clumsiness or slow work or just bad luck could mean loss of much-needed food for the village, or the canoe, or its whole crew.

To assure a successful hunt for his crew — and his own survival — Citku had undergone years of physical conditioning and spiritual indoctrination that had started in his early 'teens.

Let Citku tell his own story:

"For four out of every fourteen days I walked and bathed in many rivers. Then I would stay in my house for ten days and again walk and bathe in another river. I did not eat during those walks.

In all, I bathed in ten different rivers before I felt purified enough to meet the Great One."

Diver Citku knew that a mere human could not capture such a great animal without supernatural help.

"As I walked [he went on] I sang my songs to the whale spirit, telling how much good the whale would do for my people, and how much it would be appreciated. I also promised to deposit its bones back in the sea so that the Great Whale Spirit could put new flesh on them."

The whale diver's equipment was special, particularly the harpoon points on which Citku was working. Each had a shaft 14 to 18 feet long, usually made from a yew sapling, a pair of points sometimes made of sharpened deer antlers but more often crafted from mussel shells, and long ropes twisted together from small cedar branches he had gathered from the forest.

As his companions completed preparations for his first "cruise" as a whale diver, Citku walked to the windswept shore to seek the special shells he needed. Once he had these he would be prepared to face the sea's hazards and the power of the Great One.

The shells for the harpoon head would be from the *Modiolus flabellatus* (Gould, 1850) that we today call the great or fan horse mussel. Thick and strong, up to seven inches long, one could easily be crafted into the cutting point of a harpoon. As he walked the shingle beach, Citku found several scallop shells of the sort Makah women used to make jewelry. He put them in his collecting box and deposited it above the high-tide line. Then he followed a few trails



A *Modiolus flabellatus* (Gould, 1850) valve found in Ozette Village, the raw material for a harpoon point.

in the sand to gather a handful of *Olivella buplicata* (Sowerby, 1825), a small purple animal he liked as an after-dive snack.

Finally at a likely spot on the beach, he entered the water and swam out to a depth of twenty to twenty-five feet where he began his search for horsemussels. Along the Pacific Coast this species grows singly, almost buried in sand or mud, not in colonies as many other members of the genus do. Citku would have had to make many dives to find five shells large and heavy enough for the job. Returning to shore, he retrieved his collecting box and walked to a special house where he could continue the preparations for his first whaling venture.

By the next evening the big canoe was ready to put to sea. Wearing his bearskin robe, the village chief emerged from the forest where he had been praying to "the great chief above" (the sun) to "give me a whale," and to the "chief under the sea" for help in getting the animal ashore. The villagers meanwhile had been asking their household spirits for support.

Beside the big canoe, the chief finally dropped the special harpoon and a set of sealskin floats; the preparations for the whale hunt were complete.

As the sun began its slow drop into the sea the canoe moved out into the open ocean under the powerful strokes of the eight paddlers. Citku would have been nervous, but not afraid. After all, he had prepared well.

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To be continued

HSN editor emeritus Ellis Cross, now retired and living only a few miles from rediscovered Ozette village, will continue his story of the part Citku and his special shells played in subduing his first whale and getting it back to the Makah shore some 2,000 years ago.

### 40,000 MICRO SHELLS BUT WHO'S COUNTING?

HMS members are likely to think of Joanne Lightfoot of Sedona, Arizona as a collector of the Caecidae exclusively (see HSN July 1992). In fact, she has a very extensive collection of both marine and terrestrial micromolluscs representing many families. In 25 years it has grown to between 20,000 and 40,000 specimens from the Caribbean, the U.S. East Coast from Maine to Georgia, the Pacific Coast from Oregon to Costa Rica, and Hawaii.

Ms Lightfoot became interested in tiny shells while summering with her small children on a lake in northern Michigan, she recently explained to the Red Rock News of Sedona.

"We would sit on the beach and pick up freshwater shells," she said. "To find their names, I bought a book on shells, but it didn't show the little ones."

In 1970 the Lightfoots bought a beach place at Sanibel Island, Florida, where Joanne met other collectors and began showing her collection.

"I have a lot of curiosity and lots of patience," she explained. "The shells are so different and so perfect. It's never boring."

She realized early in her hobby that microshells are an overlooked category. About 30 percent of its species, she estimates, have never been described.

"They are so tiny they are overlooked."

A resident now of Arizona, she spends a great deal of her time at her microscope, identifying, cataloging and arranging her micromollusc collection. A veteran member of HMS, Joanne Lightfoot visited Honolulu in the summer of 1992 when she displayed her Caecidae collection at the Society's 50th anniversary shell show. S.S.-S.L.



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**OBSERVATIONS**

By Sid Sneidar\*

HMS member Scott Johnson's discussion of *Cypraea talpa's* mantle-color variations (HSN October 1992) sent me searching for slides taken during my two tours on Guam in the Western Pacific during the 1970s. The exercise brought wonderful memories.

Having finished building *Scubado*, my diving barge (see photo, HSN Sept 1992, p.10), I was actively diving on the sheltered western side of Guam, including Apra harbor. Anyone familiar with Guam will recall that Apra has an inner and an outer harbor. You can always dive there, even when the water is rough 'outside.'

On just such a day, with my diving partner Jim Rogers, I anchored *Scubado* just off the edge of the reef on the south side of the outer harbor in about 20 feet of water. We dropped to about 15 feet and swam parallel to the beach. To our right, the bottom dropped steeply (about 70°) to the harbor bottom at 120 feet.

I began removing some large clumps of dead algae that covered the staghorn coral. Soon I had cleared about one square metre of colonial zoanthid coelentrate *Palythoa* with a central depression. Within the depression was a "clutch" of about eight *Cypraea talpa*.

After the first rush of my excitement had subsided, I made several observations of the group. Three seemed important:

1. There were two mantle colors — one jet black (Fig. 1) and the other a smoky translucence with iridescent greenish white dots (Fig. 2).

2. The numbers of *C. talpa* with each variation were about equal.

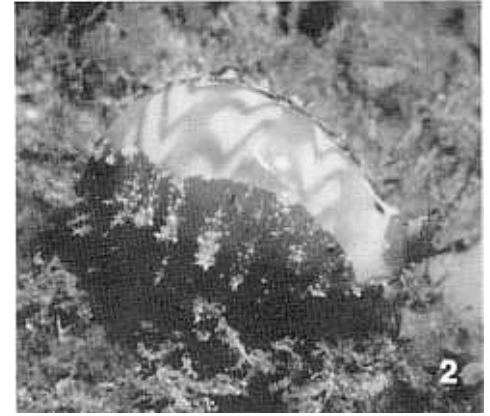
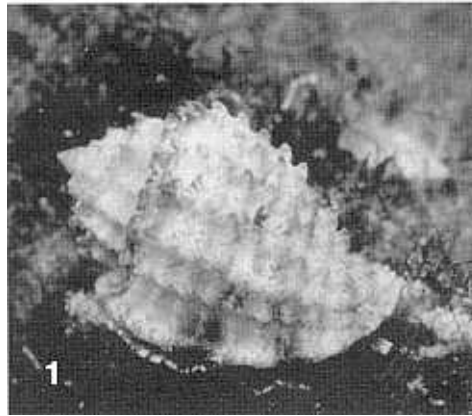
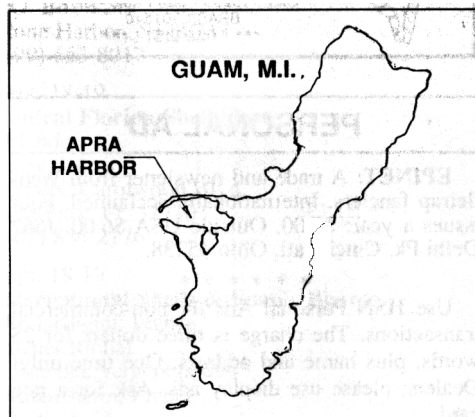
3. The animals with jet-black mantles were without exception smaller than the others.

Was this an example of sexual dimorphism?

It was the mating season and I was reluctant to disturb the rendezvous. Nevertheless I removed two animals from the group to install in my home aquarium.

Occasional subsequent dives in the same area produced no single or group finds of *C. talpa*. We did not, however, dig far into the reef which is where I suspect the *C. talpa* spend their lives.

\*1328 Ulupuni St., Kailua, HI 96734.



Both photos: Johnson

1. Grunge-collected *Morum macdonaldi* on the move. 2. Live *Cypraea ziczac* from Kwajalein. The mantle is beautiful orange red with dendritic white papillae and scattered black blotches. The whitish siphon is fringed with short black processes, and the tentacles are orange red.

**Sometimes It Pays To Bear A Grunge**

By Scott Johnson\*

KWAJALEIN — Occasionally on our two- or three-tank dives at this mid-Pacific atoll, we pick up a bag of "grunge" at the end of the first or second dive. While waiting on the boat for our bodies to get rid of enough nitrogen to allow another long dive to 50 or 60 feet, we pick through the grunge. Although this naked-eye sorting doubtlessly misses some of the real small material, we still pick out a nice assortment of triphorids, turrids, columbellids, and other interesting small shells.

Sometimes, though, something a little bigger shows up.

After one dive to 100-plus feet, I dumped a handful of grunge onto my sorting tray (actually, an old bucket lid) and saw a live 17mm. *Morum macdonaldi* Emerson, 1981, staring me in the face. One of the rarest of the genus, *M. macdonaldi* was described from Kwajalein and, except for a fresh-dead specimen found at Pohnpei, in the Caroline Islands, by Stan Jazwinski, has been collected only here.

Although very rare, specimens occasionally are found during the day in sandy rubble or, at night, in dropoff caves, usually those with fine sandy bottoms. Almost all previous specimens were found in the 50- to 60-foot range. The grunge-collected specimen, which was alive, is the deepest to date. It was also just barely mature and had the finest, most intricate sculpture on its perfectly clean shell I've ever seen.

Recently, a grunge sample collected by Jeanette Johnson, also at just over 100 feet, yielded a living *Cypraea ziczac* Linnaeus, 1758. This may not sound like much, but *C. ziczac* is one of Kwajalein's rarest cowries. Despite all the shelling activity out here, only three other specimens have been found in the past four years.

\*Box 325, APO AP, APO 96555.

**WHAT GOES AROUND . . .**

Long-time HMS member Scott Johnson, now a resident of Kwajalein Atoll in the Marshall Islands of the Central Pacific but still a frequent contributor to *Hawaiian Shell News*, sent an article last year with photos of a *Mitra nivea* (Broderick, 1836) attempting to devour what appeared to be a sipunculan ("peanut") worm (HSN May 1992, p.9).

The miter dropped its meal when Johnson fanned its sand cover away, allowing the tide to carry the worm off and making full identification impossible. ("It might have been an echiurian," he explained.)

Subsequently, somewhere on the U.S. Mainland an editor of *Discover Magazine* saw the HSN photo. He phoned Honolulu to ask Scott's permission to use it. What? He wasn't in Hawaii? It took time to convince him that Kwajalein is some 2,000 miles from here. Eventually the editor accepted Scott's APO address as the best HSN could do.

The picture (in color, this time) appeared in *Discover*, with a somewhat more picturesque version of the miter's capture.

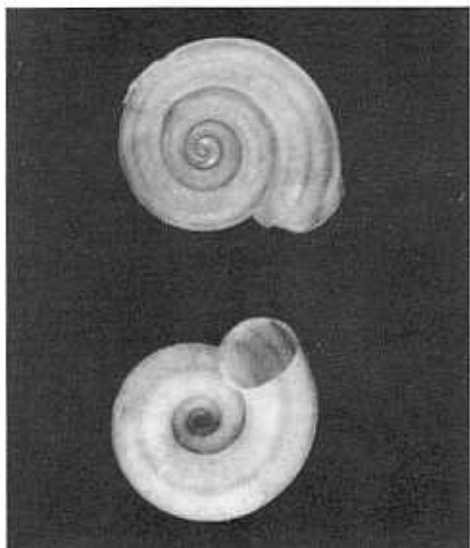
Comes now further word from Scott:

"[After the report appeared in HSN] Dr. John Taylor of the Natural History Museum, London sent me a paper\* on the diet of coral-reef Mitridae. It appears that many specialize on sipunculan (peanut) worms. (This applies to the Mitridae only; species in the other large 'miter' family — the Costellariidae — have a much wider diet that appears to include both worms and molluscs.)

"So the fact that *Mitra nivea* eats peanuts is not all that unusual. Even so, catching one actually devouring such a large worm is a rare find."

\*Taylor, J.D. 1979. "The Diet of Coral Reef Mitridae (Gastropoda) from Guam . . ." *Journal of Natural History* 23:261-278.

## THE MALACOFUNA OF A VOLCANIC LAKE (Cont'd from Page 1)



3. *Averellia (Trichodiscina) coactiliata* Deshayes in Ferussac. Apoyo Lake under rocks, near water. Two specimens: 11.4 × 5.0 mm; 10.8 × 4.4 mm, max. diam & height.

*Neocyclotus nicaraguense* Bartsch, 1942, (fig.2). Many specimens, to 25 mm, have been found at practically all the collecting stations around the lake.

Among the pulmonates we have found are these species:

*Gastrocopta servilis* (Gould, 1843). Very abundant, but hard to see because of its small size and color which blends with the ground. According to Pilsbry it is an Antillean species, and this is the first record of the shell in Nicaragua.

*Gastrocopta pellucida* (Pfeiffer, 1841). Often found with the previous species. It ranges from the southern United States to Ecuador, but there was no previous record for Nicaragua.

*Succinea hyalina* Shuttleworth. *Succinea* have thin delicate shells — *hyalina* means glassy — and are usually found in wet habitats or even in water, but the specimens collected in Apoyo, whether empty or live, were all in very dry locations.

*Bulimulus unicolor* (Sowerby, 1833). This species is quite common everywhere in Nicaragua, either on the ground or low on bushes or rocks.

*Drymaeus (Drymaeus) multilineatus* (Say, 1825). Found on the bark of trees, especially in citrus orchards, its range is from Florida to Venezuela.

*Cecilioides (Karolus) consobrinus* (Orbigny, 1855). This and the next species are found together, living in the soil well under the surface, even to a depth of 2 m. The shells are small and only 0.5 mm thick; the animals are blind. This is a first record for Nicaragua.

*Cecilioides (Geostilbia) gundlachi* Pfeiffer, 1850. Very similar to the previous species. Also a first record for Nicaragua.

*Lamellaxis gracilis* (Hutton, 1834). This snail is found practically all over the world in temperate and tropical climates and is widespread in Nicaragua.

*Lamellaxis micra* (Orbigny, 1835). Also found practically anywhere in the American continent in temperate zones.

*Lamellaxis strebeliana* (Pilsbry, 1906). The species was described from Polvón, Nicaragua, and we have found it in several localities in Central Nicaragua.

*Leptinaria lamellata* (Orbigny). The distinctive columellar lamella of this species is sometimes missing or very feeble in adult specimens. Juveniles are almost spherical.

*Opeas beckianum* (Pfeiffer, 1846). Lives in colonies on the surface and also buried in the soil, often in company with the next species. Common in different parts of the Americas.

*Opeas sinistra* (Martens, 1890). Quite similar to the previous species, but sinistrally wound. Described from a single juvenile specimen from Polvón, Nicaragua. We have no knowledge of later reports, but have collected some ten adult specimens in Apoyo, and more in other localities of Central Nicaragua. It could be simply a sinistral form of *O. beckianum*, with which it is often associated.

*Euglandina cumingi* (Beck, 1837). A predatory snail. We have observed it eating other snails and *Veronicella* slugs in captivity. Pilsbry (1906) put it in synonymy with *E. rosea* (Ferussac) and *E. petiti* (Deshayes), but in our opinion it is a bona fide species found all over Nicaragua.

*Chanomphalus elegantulus* (Pfeiffer). Fairly common all over Nicaragua, on the surface of the ground, under rocks.

*Glyphialinia indentata* (Say, 1822). The genus *Glyphialinia* Martens, was defined for American Zonitidae species, while *Retinella* is for European species.

*Glyphialinia stollii* (Martens, 1890). Similar to the last, but smaller and with a much wider umbilicus. The animal is bright yellow and very active and fast (for a snail, that is!).

*Praticolella griseola* (Pfeiffer, 1841). Its preferred habitat is ground level, but it is also happy on shrubs and trees and walls of buildings. Very abundant everywhere in Nicaragua.

*Averellia (Trichodiscina) coactiliata* Deshayes in Ferussac, (fig 3). Discoidal and adorned with two dark circular bands. Found in three other Nicaraguan localities, and always in the vicinity of large bodies of water.

### BIBLIOGRAPHY

- AGUAYO, C.G. 1944. "Posibilidades de la investigación malacológica en Cuba." *Revista de la Soc. Malacol.* 2(1):31
- MARTENS, E. von 1900. *Biologia Centrali-Americanae. Land and Freshwater Mollusca*, 1-44.
- PILSBRY, H.A. 1906. *Manual of Conchology*, vol. 18.
- SOLEM, A. and F. CLIMO 1985. "Structure and habit correlations of sympatric New Zealand land snail species." *Malacologia*, 26(1-2):1-30.

## A REPEAT HONOR FOR E.R. CROSS

HSN editor emeritus Ellis Cross has received his second *NOGI* Award from the Underwater Society of America, this time for distinguished service to the diving industry. Two decades ago, Cross received the 1973 *NOGI* Award for leadership in scuba sports education.

The annual *NOGI* Awards were established in 1960. Nominations and awards are made by previous *NOGI* recipients throughout the United States. *Skin Diver Magazine* contributes the statuette each winner receives.

Cross is one of the nation's earliest scuba professionals, having entered the field after World War II following more than a decade of service as a U.S. Navy "hard-hat" salvage diver. At one time he operated a successful scuba school in Southern California and later was supervisor of tanker anchorages and oil pipelines in Hawaii. On the side, he was active as a scuba sheller and deepwater collector. Three molluscan species and one subgenus of *Cypraea* have been named for him.

Retired since the late 1980s, Cross now lives on Puget Sound.

See his article on Page 3 of this issue.

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## SHELL SHOWS AND MEETINGS June to November, 1993

Where will the shell show and meeting action be this year? HMS Counselor Donald Dan of Friendship, Maryland compiled the following international calendar.

Did we miss anyone?

Jun. 27-Jul. 1

**Western Society of Malacologists**  
San Diego, California  
Contact: Douglas Eernisse  
Museum of Zoology, Dept. of Biology  
University of Michigan  
Ann Arbor, MI 48109  
(313) 747-2193

Jul. 12-16

**Conchologists of America Convention**  
Panama City, Florida  
Linda & Jim Brunner,  
P.O. Box 8188  
Southport, FL 32409  
(904) 265-5557

Jul. 17-18

**Keppel Bay Shell Show**  
Yeppoon, Queensland, Australia  
Jean M. Offord  
277 McDougall St.  
N. Rockhampton, Qld. 4701  
(79) 283-509

Jul. 24-Aug. 1

**Oregon Shell Show**  
Maxine Hale, Show Chairman  
347 N.E. 136 Ave.  
Portland, OR 97230  
(503) 253-5379

Jul. 31-Aug. 1

**Townsville Shell Show**  
% Von Vandenburg  
12 Lillipilli St.  
Vincent 4814  
Townsville, Qld., Australia  
(77) 75-6275

Aug. 14-15

**Cairns Pacific International Shell Show**  
Babara Collins  
House of 10,000 Shells  
32-34 Abbott St.  
Cairns 4870  
Queensland, Australia  
(70) 51-3638

Aug. 19-21

**Jersey Cape Shell Show**  
Jersey Cape Shell Club  
P.O. Box 124  
Stone Harbor, NJ 08247  
(609) 653-8017

Sept. 18-19

**Central Florida Shell Show**  
Orlando  
Larry Stiles  
1505 N. Carolwood Blvd.  
Fern Park, FL 32730  
(407) 834-2176

Sept. 18-19

**International Shells & Fossils Bourse**  
Ottmarsheim, France  
Michel Rioual  
2 Rue des Vergers 68490  
Ottmarsheim, France  
89-26-16-43

# Far from the Sea, a Conch Tells a 1,600-Year-Old Story



Photo courtesy of National Museum of American Indian Smithsonian Institution

Among the more than one hundred objects of Native American culture featured at a "Pathways of Tradition" exhibition mounted last year at the Alexander Hamilton Custom House in New York City was a unique 13-inch conch incised with an image of a "falcon priest" or "eagle dancer." The marine shell was bleached white by time and the sun, and the image itself was faded.

Although its cultural significance was not explained, the object is calculated to be between 1,100 and 1,600 years old.

The incised shell, according to the **Smithsonian Runner**, is the work of people of the Mississippian Culture, the Temple Mound Builders, whose center was Cahokia, a five-square-mile community of at least 10,000 persons close to the Mississippi River near today's St. Louis. Founded about A.D. 600 and occupied for some 700 years, Cahokia was marked by more than 100 mounds, the largest rising 100 feet.

At mound 72, just south of the city, archeologists found the burial site of the "falcon priest."

Similar mounds have been found from Wisconsin to Florida, and as far west as Oklahoma. The Falcon Priest Conch was at Spiro, Oklahoma, 500 miles from Cahokia and about 400 miles from the nearest salt water at Port Arthur, Texas.

John Jacobs

## ALMOST ALL ABOUT HAWAII

The 1991-1992 **Hawaii Marine Directory** was prepared for the Ocean Resources Branch of the Hawaii State Department of Business, Economic Development & Tourism by the University of Hawaii Sea Grant Extension Service. The 120-page directory is in two parts. Part One is a Subject Matter Listing, organized by county (Hawaii has four). Each business or organization is listed in up to three categories. Only names and telephone numbers are included in this section.

Part Two is an alphabetical listing with complete information. The entries are grouped into four categories: (1) private firms, (2) associations, clubs and "nonprofits", (3) research and education organizations, and (4) government. You will find HMS on Page 104, between the Hawaiian International Billfish Association and the Hawaiian Surfing Federation.

This directory contains a wealth of information about hundreds of groups and establishments. For a copy or further information, contact the Department of Business, Economic Development & Tourism, P.O. Box 2359, Honolulu, Hawaii 96804. Tel: (808) 587-2680, Fax (808) 587-2777.

Oct. 8-10

**Annual German Shell Fair**  
Berlin  
Klaus Passan  
Ostseestr. 41  
O-1055 Berlin, Germany  
(40) 294-669

Oct. 30

**British Shell Collectors' Club Show**  
London  
Kevin Brown  
12 Grainger Road  
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(81) 568-8333

Nov. 6-7

**Philadelphia Shell Show**  
Al Schilling  
419 Linden Ave.  
Glenside, PA 19038  
(215) 886-5807  
(or 1-800-274-8530, toll free)

### BACK ISSUES OF HSN

The Hawaiian Malacological Society stocks HSN back issues from 1960. Some, however, are in xerographic form. For information on availability and charges, write HMS, Attn: Back Issue Manager, P.O. Box 22130, Honolulu, HI 96823-2130, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106-1346.

## SPEAKING OF BOOKS

**THE GENUS *CHICOREUS* AND RELATED GENERA (GASTROPODA: MURICIDAE) IN THE INDO-WEST PACIFIC.** By Roland Houart. Paris: Editions du Museum Paris. 1992. 188 pp, 480 figs. Price not stated. (Order from Universal Book Services, Dr. W. Backhuys, P.O.Box 321, 2300 AH Leiden, The Netherlands)

Reviewed by E. Alison Kay\*

Muricids, along with cowries and cones, have received more than their fair share of taxonomic treatment over the years. Linnaeus' genus *Murex* might be thought of as a dumping ground for a large number of gastropod species. Radwin and D'Attilio (1976) suggest perhaps as many as 2,500 presently recognized species.

It wasn't until the nineteenth century that Lamarck and other conchologists restricted "Murex" to what is today considered to be the Family Muricidae, with as many as 800 named species (Ponder and Vokes 1988).

Perhaps the best known of recent treatments of the Muricidae is that of Radwin and D'Attilio (1976). More recently, Ponder and Vokes (1988) revised the Indo-West Pacific fossil and Recent species of *Murex* s.s. and *Haustellum*, treating 55 species. Comes now Roland Houart who deals with *Chicoreus* and the related *Naquetia* and *Chicomurex* in the Indo-West Pacific. Houart's work continues the high standard of taxonomic revision set by Ponder and Vokes (1988).

All muricids are difficult, but *Chicoreus* is especially so because the shells are so variable as to lead one to see either too many species or too few. Houart approaches the problem from several different aspects and ends up with a readable, informative and objective treatment.

Among the major characters he utilizes is the protoconch. Indeed, he says from the outset that "with an intact protoconch, the presence of the first teleoconch whorl, and with good locality data, it is usually possible to determine a species with considerable exactitude."

The major differences in protoconch type are whether it is acutely conical, indicating planktotrophic development (that is, the veliger larva is in the ocean for a long time), or is composed of relatively few and large whorls, indicating either a very short larval period or metamorphosis within the capsule. Houart illustrates 85 different protoconchs.

Radular characters were studied for only 17 species; two basic types of radulae are recognized in *Chicoreus*; *Naquetia* and *Chicomurex* each have distinctive radulae.

The systematic section of the work deals with species in each of the subgenera of *Chicoreus*, with mention of the type species, etymology, type locality, location of type material, distribution and a clear, concise description of the shell. The descriptions are accompanied by maps indicating distribution and at least one figure of the shell. The black-and-white figures are very successful; the color figures less so as there is a conspicuous brown tinge to the color plates.

Houart's distribution records for *Chicoreus*, *Naquetia* and *Chicomurex* complement those of



Nora Foster is author of this 152-page **Guide to the Common Bivalves of Alaska**, published by the University of Alaska Press in Fairbanks. It covers the coast of the 49th State from Ketchikan in the south, westward through the Bering Strait then northward to the Arctic Ocean. More than 100 of Alaska's most common bivalves are listed and described, with information to help identify species.

Ponder and Vokes (1988) for *Murex* and *Haustellum*.

It may come as a surprise that there are relatively few species of these very showy shells associated with Pacific islands. Of the approximately 60 living species of *Chicoreus*, *Naquetia* and *Chicomurex* in the Indo-West Pacific, only about fifteen occur on the Pacific Plate. Ten are widespread in both the Pacific and the Indian Oceans, including *Chicoreus laqueatus* (Sowerby, 1841), which Earle (1980) called "Hawaii's rarest *Murex*." Two occur only in the Pacific — *Chicoreus rubescens* in New Caledonia, Wallis Island and Tahiti, and *C. maurus* in New Caledonia, Tahiti, the Tuamotus and Marquesas — while two are endemic to island groups: *C. thomasi* (Crosse 1872) in the Marquesas, and Hawaii's *C. insularum* Pilsbry, 1921.

Of the 43 living species of *Murex* and *Haustellum* found in the Pacific, Ponder and Vokes (1988) record only two as far west as the Marshall Islands and only three additional species on the western edge of the Pacific in Tonga and/or the Ryukyu Islands.

Houart's *Genus Chicoreus* . . . is well worth having. The book has a nice "feel." It has an attractive soft cover, moves easily from species to species, and identifications are easily made from both descriptions and figures.

### REFERENCES

- Ponder, W.F. and E.H.Vokes. 1988. "A revision of the Indo-West Pacific Fossil and Recent Species of *Murex* s.s. and *Haustellum* (Mollusca: Gastropoda: Muricidae)." *Records of the Australian Museum Supplement* 8.  
 Radwin, G. and A. D'Attilio. 1976. *Murex shells of the World, an Illustrated Guide to the Muricidae*. Stanford University Press.

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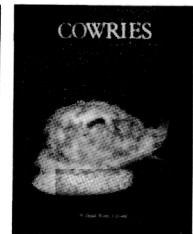
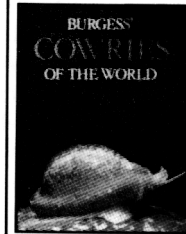
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## News of New Species:

# Volutes From Around the World

By Dwayne Minton\*

Because of their size, great beauty and relative rarity, volutes are a favorite among collectors. Their popularity probably is exceeded only by that of cones and cowries. This month, I present several new volute species.

Shells of the Family Volutidae are generally slender with a large body whorl and low spire. The whorls are often coronated with nodules or spines, and the columella almost always has well-developed plaits or folds. The animals are



Fig. 1

usually brilliantly patterned with complex designs.

Many volutes are deep-water species, but they also inhabit coral reefs and shallow coastal waters. They tend to hide in the sand and emerge only to forage for food.

The life history of this animal, however, is what makes it particularly interesting. Volutes attach a very large egg mass to the sea bottom. From the egg capsules, small crawl-away young emerge. There is no planktonic larval stage and this may account for their rarity or total absence from oceanic islands such as Hawaii.

The presence of crawl-away young may also result in species rarity. Individuals don't migrate very far. Therefore, species can be restricted to very narrow ranges. If the exact location of the population is not known, then the shell could be difficult, if not impossible, to find.

Such isolation, in turn, may also account for the enormous amount of variation within volute species. Isolation among populations can lead to a variety of forms en route to speciation.

G.T. Poppe (1992) presents three new volute species, one from South Africa and two from Queensland, Australia. As seems to be the case with many new species, the shells Poppe describes have been present in private collections for several years. So go back to your shell cabinet and dig through it; you may find one of these new species.

*Fusivoluta lemaitrel* Poppe, 1992 (Fig. 1)

\* Department of Zoology, University of Hawaii  
Honolulu, HI 96822

According to Poppe, this shell has often been confused with *F. pyrhostoma* Watson, 1882 and has been incorrectly figured in popular shell magazines since 1986 (but hopefully not in HSN!). *F. lemaitrel* differs from *F. pyrhostoma* in that it is more slender and the axial ribs are wavy, whereas in *F. pyrhostoma* they are straight.

Dredging in mud and mud/sand bottom near the Swain Reefs off Queensland, Australia might turn up either of the following volutes. *Nannamoria gotoi* Poppe, 1992 (Fig. 2) is a small solid shell with a low spire and three or four teleoconch whorls that have a sculpture of spiny shoulder knobs. Eight to ten of these knobs are found on the last whorl. The columella is slightly curved and has eight or nine plaits. The shell is creamy white overlaid with a pattern of dark brown irregular axial lines.

Australian volutes are highly variable and for this reason several collectors have regarded this new species as a new form of *N. parabola* Garrard, 1960. Numerous differentiating character-



Fig. 2

istics are present, however, according to Poppe; *N. gotoi* has a different color pattern, thicker outer lip and different protoconch.

*Notovoluta hoskense* Poppe, 1992 (Fig 3) has no close relatives among living Volutidae of its area. This shell is very thick and solid and has three or four teleoconch whorls, with the final whorl measuring about two-thirds of the total shell length. The outer lip is thick and just above the fourth columellar plait there is a projection of the columellar callus giving the impression of a fifth plait. As all of the specimens were collected dead, color and shell-pattern descriptions can not be considered accurate.

was dredged off Cape St. Blaize, near the southern tip of Africa, from mud at depths between 70 and 360 meters. It is a fusiform, high spired and solid volute, with five or six teleoconch whorls covered by heavy, wavy axial lines. The outer lip is slightly effuse, but not thickened as in other species in the genus. It is creamy brown, sometimes with a paler zone just below the periphery. A fine olive-green periostracum is present.



Fig. 3

Bouchet and Bail (1991) describe a new volute from Saya de Malha Bank in the Indian Ocean, approximately 1000 km northeast of Mauritius. The specimens were in dredge material recently obtained from Russia. *Lyria doutei* Bouchet and Bail, 1991 (Fig. 4) is large, fusiform and solid. Teleoconch whorls have axial ribs, and the last rib forms a thick labial varix behind the outer lip. There are eight columellar plaits and a short siphonal canal. The shell is creamy beige with a complex pattern of brown flammules and lines arranged in spiral bands.

*L. doutei* is similar to two other Indian Ocean volutes: *L. lyraeformis* Emerson and Sage, 1986 and *L. cloveriana* Weaver, 1963. It is differentiated by a smaller protoconch.

This new species is particularly interesting from an evolutionary viewpoint. Saya de Malha Bank is isolated by 2000 km of deep water from the African continent and its closest relative, *L. lyraeformis*. How it dispersed so far is uncertain, but at some time in the past it may have been more mobile than it is today. It could then have used the seamounts to the south of Saya de Malha Bank and the islands of Mauritius and Reunion as stepping stones.

It will be interesting to see if this new species or a close relative is found on either Mauritius or Reunion. So all you collectors out there, keep your eyes open. And good luck.

## REFERENCES

- Poppe, G. T. 1992. "New species and a new subspecies in Volutidae (Mollusca: Gastropoda)." *Malacologia Monstra Mondiale Cupra Marittima* 11. 22 pp.  
Bouchet, P. and P. Bail. 1991. "Volutes from Saya de Malha Bank: the saga of *Lyria surinamensis* and a new species." *Nautilus* 105(4): 159-64.



Fig. 4

## SHELLETTERS

ROME

I owe apologies to my friends Dieter Roeckel and W. Korn for what was expressed as my concern in A.J. da Motta's article, "A Tragicomedy of Taxonomic Acrobatics" (HSN April 1993). The fact is that da Motta's paper had been submitted to *Hawaiian Shell News* almost a year before it was published and that several important developments had occurred in the interim.

In May 1992 I submitted to da Motta for his review an article intended for *Hawaiian Shell News*. It happened that da Motta had much to say on the same subject, and we agreed he would include my points in his paper [which eventually appeared as "A Tragicomedy . . ." etc.]. However, I must make it clear that:

1. The point of my original article, "*C. hyaena*: a species or a species-complex?", differed from da Motta's main thesis.

2. My objection to Roeckel and Korn's article was confined to their unexplained change of "type." Although this was justified by Dr. Alan Kohn's subsequent selection of a specimen in the British Museum of Natural History, I could not understand their use of a not-yet-published lectotype, a different author and date from the commonly cited one. In fact, at the time the representative of the holotype (or of the lectotype) of *C. unicolor* Sowerby, 1834 (sic; see below) was still the original figure indicated by Tomlin and by Coomans, Moolenbeck and Wils in 1985: "the whereabouts of the specimen are unknown . . . For the identification of *C. concolor* only the type figure is available . . ."

That figure had been attached to so many different taxa in the literature that, in my opinion, it should have been regarded as a *nomen dubium*. In proposing a new status, Roeckel and Korn were the actual revisers and should at least have explained themselves.

My unpublished article concluded with a lament about generally unilateral selections of dubious lectotypes or neotypes and a wish that Dr. Kohn (in his forthcoming work) would provide previous revisers of *C. concolor* with a satisfactory explanation for his lectotype, so different from the original figure.

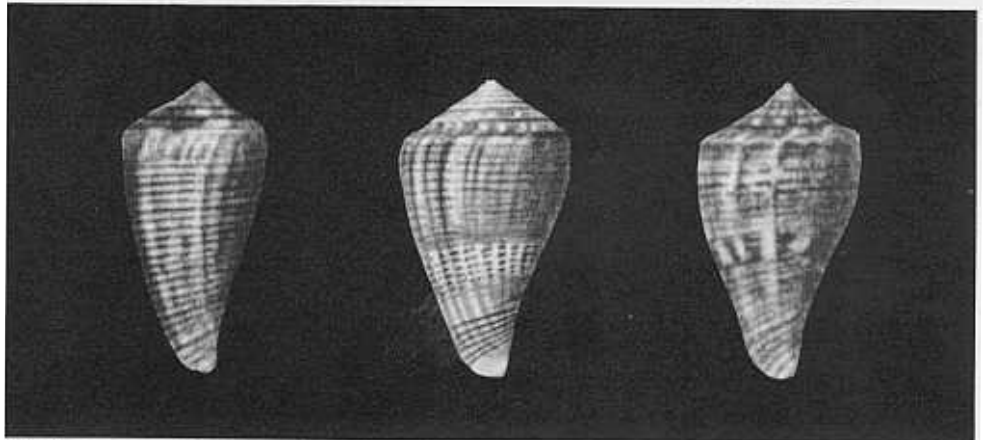
After his book appeared I queried Dr. Kohn directly and he was kind enough to explain his decision (pers. com.):

Perhaps my explanation of the lectotype of *C. concolor* Sowerby, 1841 [not 1834!] was not sufficiently clear. I concluded that the BMNH specimen is almost certainly the one illustrated [in *Conchologia Iconica*] and thus I selected it as lectotype. The shell and figure are almost identical in size and colour pattern. In the book (fig. 505) I illustrated only the aperture view, because it provides more information. Unfortunately in their 1992 article Roeckel and Korn also used only my photo of the aperture view. Also unfortunately, I have only a poor photocopy of the C.I. illustration but, if I recall correctly, it shows a repair scar in the same position as on the shell.

So I believe this solves the nomenclatural problem of *C. concolor* Sowerby, 1841. Of course it does not solve the biological problem of its species determination; Roeckel and Korn addressed this in their article.

I thank Dr. Kohn for the explanation. I consider this chapter closed.

Gabriella Raybaudi Massilia

Three Views of *Conus mutabilis*

The three syntypes of *C. mutabilis* Reeve, 1844. (Length, respectively: 39; 56; 34 mm.) "Habitat: unknown" (Conch. Icon. I, Pl. 45, Sp. 248.).

On the basis of evidence now available I consider [the taxon] *C. mutabilis* Reeve to belong to *C. hyaena*. Exactly which, however, is *C. mutabilis*? Reeve figured three specimens (above) that to this day are three syntypes [that], although quite different in shape and size, all represent the taxon. But which populations do they represent? Reeve himself apparently regarded this species as highly variable. And let us not forget that Reeve had mistaken Hwass's *C. hyaena* for *C. biliosus*!

The only syntype specimen now available, and therefore the only possible selection as lectotype, would appear to be the specimen of Reeve (fig. 249c), measuring 34 x 20 mm. It seems

likely that the nominal taxon *C. mutabilis* Reeve may be an objective junior synonym of *C. hyaena* Hwass.

The last word on *C. hyaena* (as well as on many other Conidae taxa) is still to be uttered. When it comes, it probably will be from neither da Motta nor Roeckel and Korn, nor in Kohn's new monograph. Certainly not from me!

Our store of knowledge increases daily and even the most authoritative writing may be refuted. No hypothesis is "wrong;" it simply is overtaken by new evidence. Constructive criticism is always needed and must not be treated as a personal attack.

Gabriella Raybaudi Massilia

## SHELLETTERS

BOULDER, COLORADO

It is indeed welcome news that live-shell collection on Mauritius has been brought under control (HSN March 1993, p.6). It is unfortunate, however, that the same item . . . perpetuates the myth that the removal of *Charonia tritonis* from a reef causes an outbreak of the crown-of-thorns starfish, *Acanthaster planci*.

The hypothesis was first voiced in the late 1960s (Endean and some of his co-workers were its most outspoken proponents) that *C. tritonis* is a major predator of *A. planci* and that its over-collecting leads to an *A. planci* outbreak causing major damage to the coral reefs they inhabit (Endean, 1974; Endean & Stablum, 1975).

On the other hand, Cheshier as early as 1969 reported that when a triton and a starfish were kept in an aquarium, only a portion of the starfish was eaten before it escaped and ". . . lived to regenerate the lost parts." Furthermore, he pointed out, ". . . large populations of the sea stars occur in parts of Palau and Rota which are seldom visited by shell collectors and where these gastropods [*C. tritonis*] are common." (Cheshier, 1969).

Similar comments have been made by Birkeland concerning starfish outbreaks on the unpopulated north shore of Tutuila Island, American Samoa (Birkeland & Lucas, 1990) and by Grigg in a recent issue of *Coral Reefs*: ". . . today, most scientists agree that [*A. planci*] - population fluctuations are more likely due to natural year-class variations caused by high fe-

cundity and variable recruitment success" (Grigg, 1992).

While none of the above is meant to suggest that collecting live molluscs is any more acceptable than collecting Hawaiian honeycreepers for their feathers, I do hope that I have dispelled the notion that the periodic damage done to coral reefs by the starfish is the result of triton over-collecting.

Carl Brandauer

## REFERENCES

- Birkeland, C. & J.S. Lucas (1990). *Acanthaster planci*: major management problem of coral reefs. Boca Raton, FL: CRC Press.
- Cheshier, R.C. (1969). "Destruction of Pacific coral by the sea star *Acanthaster planci*." *Science*, 165, 280-283.
- Endean, R. (1974). "*Acanthaster planci* on the Great Barrier Reef." In: A.M. Cameron, B.M. Campbell, A.B. Cribb, R. Endean, J.S. Jell, O.A. Jones & F.H. Mather. *Proc. 2nd Int. Coral Reef Symp.* Vol. 1, (pp.563-576). Brisbane: Great Barrier Reef Committee.
- Endean, R. & W. Stablum (1975). "Population explosions of *Acanthaster planci* and associated destruction of the hard-coral cover of reefs of the Great Barrier Reef, Australia." *Environ. Conserv.*, 2, 247-256.
- Grigg, R.W. (1992). "Coral reef environmental science: truth versus the Cassandra syndrome." *Coral Reefs*, 11, 183-186.

## Building the Education Fund

The Hawaiian Malacological Society is recognized by the U.S. Internal Revenue Service as a non-profit educational organization. Contributions in cash or in kind to the HMS Education Fund or to support *Hawaiian Shell News* may be deductible on U.S. income tax returns.

## THE CORAL BUSTER STRIKES AGAIN

By Scott Johnson\*

KWAJALEIN — Why do so many live colonies of branching coral (*Acropora*) have their central branches all broken out? I have wondered for quite a while what could be doing it?

Most of the shell collectors around here seem pretty good about not wrecking live coral or too seriously changing the habitat. But people come and go all the time. Could new shellers, unaware that shells really don't like live coral, be using hammers and wrecking bars on the living reef to search for prizes? I figured I'd better keep my eyes open.

Recently, I caught the culprit. It was an insidious hunter, all right, but he wasn't after shells alone and he was definitely not human.

I was on the reeftop breathing the last of my third tank of scuba air that day, having been forced into shallow water by the ever-diminishing "Time Remaining" number on my dive computer. Nearing the boat, I heard a sharp "crack."

A quick check revealed my bones to be intact, and the faceplate of my mask still held out water. Puzzled, I looked around just in time to see a large trigger fish, *Balistoides viridescens*, move in and bite the central area of a bush of *Acropora*. Another "crack" and the fish backed away with an entire coral branch in his jaws.

He spit this out and moved back in for another. As the coral colony was opened up, this piscine wrecking bar, along with opportunistic wrasses, feasted on the scurrying crabs, shrimp and small gobies, and even munched down a vermetid mollusk that lived among the coral branches.

Watching the big trigger demolish the living coral brought back memories of Enewetak Atoll where, for over two years, I visited a particular reef each week to count nudibranchs. This reef had a resident trigger who became very tame. Every time I was in the area, he accompanied me from rock to rock. When I turned over the rocks to look underneath for nudibranchs, the trigger would come in to look for dinner.

To keep him from munching on snails (and also to keep his nasty big teeth and strong jaws away from my tender flesh), I would feed him one of the spiny black sea urchins (*Echinothrix*), common under the rocks. An urchin (well, sev-

## Looking for a Shell? Ask Woody and Ron

Have you ever gone scuba diving in search for a particular species of shell — and found one? A great feeling, what? Three members of the Hawaiian Malacological Society recently pulled off that trick — and have pictures to prove their success.

Dave "Woody" Woodman and Ron Beckwith

of Honolulu, both experienced local divers and collectors, displayed a video of their triumph at the May meeting of the Society. The exceptionally fine, clear and convincing footage was taken by a new HMS member, Val Darkin of Vladivostok, a Russian scientist who recently visited Honolulu (see HSN April 1993, p.10).

Woody and Ron took Darkin on the dive specifically to show him the habitat of *Homalocantha anatomica* (Perry, 1911), known familiarly to Hawaii folks as the Pele Murex. "Peles" are found on ledges around the island of Oahu (Honolulu) at depths of 40 to 50 feet.

*Murex pele* usually is elaborately camouflaged with calcareous deposits so that it is almost indistinguishable from the rock and dead coral on which it lives.

"To find a 'pele,' you have to move very slowly and look carefully for anything [on the substrate] that doesn't look like it belongs there, or is out of place, something as small as a single bump," explained Beckwith.

He searched a dozen square feet of "Pele Ledge" off Leeward Oahu for 20 minutes to find two shells. They were virtually undetectable.

During their hour-long search for the benefit of Darkin and his video camera, Beckwith and Woodman said, they found about 20 specimens, of which only two were good enough to keep. The others, either too small or too heavily encrusted, were returned to the ledge.

On the same dive, they were able to show Darkin the habitat of *Cypraea granulata* Pease, 1862 and *C. tessellata* Swainson, 1822, both local favorites.

For their second dive with their visitor, Ron and Woody went to Kahana Bay on the Windward side of Oahu.

"We worked in 25 to 45 feet of water," they said, "but we didn't collect many shells. We did see some tiger cowries (*C. tigris schilderia* Cate, 1961) under the ledges. You can't miss them. They look like big light bulbs."

Their final dive was on Fort Kamehameha Reef in the Pearl Harbor entrance channel in about 15 feet of water, with reduced visibility and heavy surge. As a consequence, the video quality was low but the shelling results were high.

"We were able to show Darkin the habitats of several cowry species under coral and in the rubble," said Woodman. He mentioned *Cypraea schildera* Iredale, 1939, *C. granulata*, *C. tessellata*, *C. semiplota* Mighels, 1845, and *C. isabella* Linnaeus, 1758. All were visible on the screen.

The presentation was far superior to most underwater video efforts in both lighting and stability. Darkin, who did the camera work, uses a Sony Camcorder, the speakers said.

Dwayne Minton

## Biggest *gloriamaris* of Them All?



Honolulu Fire Captain and veteran HMS member Mel Pang displays a "perfect" eight inch (20mm) *Conus gloriamaris*, obtained recently at a local "swap meet" (flea market). It is a startlingly realistic ceramic copy of one of the world's highest priced shells.

eral) a day kept the trigger busy.

The fish had two ways to get through the spines and into the edible innards: he would either blow water on the urchin to turn it over, exposing its shorter-spined and more vulnerable underside, or he would slowly bite down the spines until he could reach and crunch the central body shell.

As soon as he'd finish off an urchin, he'd come right back to stare at me with those big, impatient eyes and open and close his mouth in what sure looked like heavy breathing. Often he'd have spines stuck in his lips from the previous snack. He was a formidable sight; it kept me motivated to find him more urchins.

The havoc wreaked by single trigger fishes drives home the point that biological processes on a living reef are not all constructive. They can be destructive as well. As fast as something gets built out there, something else comes along to tear it down!

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### BACK ISSUES OF HSN

The Hawaiian Malacological Society stocks HSN back issues from 1960. Some, however, are in xerographic form. For information on availability and charges, write HMS, Attn: Back Issue Manager, P.O. Box 22130, Honolulu, HI 96823-2130, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106-1346.

# DONATIONS STRENGTHEN BISHOP MUSEUM COLLECTIONS

By Regina Kawamoto\*

The Bernice Pauahi Bishop Museum in Honolulu has acquired about a dozen major marine mollusc collections in the past couple of years and has integrated them in its already extensive holdings.

In step with the refurbishing of the Museum's Pacific landshell collection (see HSN May 1993) and the arrival of a new collection manager and two technicians to rehouse the land snails, curatorial work on the marine molluscs is being continued.

One of our major recent donors is long-time Hawaiian Malacological Society member Wesley M. Thorsson of Honolulu. He deposited 4,242 specimens of the Turridae, 5,226 Mitridae, 1,891 Costellariidae, 225 Cypraeidae, more than 1,150 specimens of Terebridae, 536 Pyramidellidae, 249 other gastropods and 37 bivalves, all collected from the Hawaiian Islands, mainly Oahu (Honolulu).

In addition, Thorsson donated 221 marine molluscs from Samoa, plus 22 binders of field and specimen notes, along with photos.

The Bishop Museum is further fortunate to be a repository for type specimens from Dr. James H. McLean, Malacologist at the Los Angeles County Museum of Natural History, from Clay Carlson of Guam, and Fabio H.A. Costa of California. These are welcome additions to our already important collection of more than 590 holotypes, paratypes and other designated "types" from such renowned malacologists as Jens Ostergaard, H.A. Pilsbry, Harald Rehder, Harry S. Ladd, C.M. Burgess, E. Alison Kay, Crawford Cate, Walter O. Cernohorsky, Charles Edmondson, Winston Ponder and Michael Hadfield.

Dr. McLean has donated 130 specimens of hydrothermal vent limpets of which 125 are paratypes (*Lepetodrilus elevatus*, *L.e. galriften-*

A rejuvenated and augmented display of mostly Hawaiian molluscs is in the works for the Bishop Museum's Polynesian Hall. It will be based on a collection created more than 40 years ago by HMS pioneer Karl Greene and augmented later by William Christensen for the original Honolulu Children's Museum. Over the years, many HMS members contributed to the collection, which in the 1970s was at the Bishop Museum. Preparation of the new display is in the hands of Museum malacologist Rob Cowie, collection technician Regie Kawamoto, George Cook, Vela Beckwith, E. Alison Kay, Dwayne Minton, all HMS members, backed by collection technician Nancy Young, Dave Kimble and Marge Wong of the Exhibits section and Roseanne Brown in the Museum's educational O'hia Project.



Bishop Museum Collection Technician Regina Kawamoto and HMS veteran Wesley Thorsson at the Malacology collection.

*sis*, *L. fucensis*, *L. ovalis* and *L. pustulosus*, all McLean, 1988). Dr. Carl J. Berg Jr.'s generous gift of 1,464 thin-section slides and 444 preserved specimens of the giant bivalve *Calyptogena magnifica* Boss and Turner, 1980, the limpet *Neomphalus fretterae* McLean, 1981, and several still-undescribed species collected from the Galapagos Rift and the East Pacific Rise complement McLean's donation.

Type material of Guam's opisthobranchs, *Ilbia mariana*, *Halgerda malesso*, *H. guahan*, and *H. brunneomaculata*, all described by Clay Carlson and Pat J. Hoff, 1990, along with a paratype of *Cancellaria ghiorium* Costa from Fabio Costa, has been entrusted to the Bishop Museum.

Two significant private collections — one of June and Horace Tuttle (via their son, Dr. Merlin Tuttle of Austin, Texas) and the other of Manson and Anna Valentine of Florida — were acquired in 1990. The Tuttle collection of 604 marine molluscs, mainly from Hawaii between 1928 and 1955, includes material from such well-remembered "old timers" as Thaanum, Spicer, Burgess and "Chuck" Allen. The well-kept collecting data accompanying the specimens greatly enhances the value of this collection.

The Valentines, in addition to giving a large collection of land snails from Florida and Cuba, donated more than 3,500 marine specimens from Hawaii, Australia, Mauritius, Panama, Italy, Fiji, the West Indies, the Galapagos, and many other places. Included are specimens gathered by one of Hawaii's pioneer shell collectors, Ted Dranga, who was Anna Valentine's first husband. These now complement the extensive Ditlev Thaanum collection of Hawaii marine molluscs already in the Museum.

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Other acquisitions being curated came from Dr. Tom and Beatrice Burch of Honolulu, active members of the Hawaiian Malacological Society, who presented some 4,271 cypraeids collected by Tom's mother, the late Mrs. Rose L. Burch (see HSN March 1993, p.9), who brought them to Hawaii from her California home in 1987.

HMS founding member Charles Allen donated more than 1,300 local marine molluscs, many collected in Hawaiian waters a half-century or more ago. Undocumented specimens are to be used in the HMS and the Museum's educational programs in Allen's name.

Eighteen specimens of Hawaiian and Floridian Caecidae, figured last year in *Hawaiian Shell News* (see HSN July 1992), came from Joanne Lightfoot of Sedona, Arizona. From Far Eastern Russia, four marine molluscs were brought to Honolulu by Val Darkin of Vladivostok (see HSN April 1993). They have been identified as *Pecten jessoensis*, *Boreotrophon candelabrum*, *Tritonalia (Oceanebra?) japonica*, and *Neptunea lyrata*.

HMS director Richard May offered a Nuculidae from Korea, while Domingo Cravalho of the plant quarantine service of the Hawaii Department of Agriculture presented a *Chlamys hercuis*.

To date, more than 80 percent of the foregoing donations have been processed and are available for research. The remainder, along with earlier backlogs, are being sorted, identified, documented and prepared for the permanent collection.

A catalog of marine mollusca types deposited at the Bishop Museum is expected to be completed soon and submitted for publication, according to collection technician Regie Kawamoto. A database using some of the recently acquired specimens is being tested.

## PUBLICATION NOTICES

### Papers on Neogene Molluscs

The late Axel Olsson (1889-1977) is widely regarded as one of this century's most important authorities on Cenozoic molluscs of the western hemisphere.

A facsimile reprint of three of Olsson's most sought-after works — "Some Neogene Mollusca from Florida and the Carolinas," by Olsson and R.E. Petit (1964), "Some Tertiary Mollusks from South Florida and Caribbean," by Olsson (1967), and "Notes on Siphocypraea," by Olsson and Petit (1967) — has been announced by the Paleontological Research Institution (PRI) of Ithaca, New York. Richard Petit has written a new foreword, and Donald Moore has prepared a complete Olsson bibliography.