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Mollusc Species Introduced in Hawaii. from paper by Vernon E. Brock in 1960.

Northern Australia Micro Shells

by

Patty Jansen*

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I created an internet site out of love for the microshell fauna of Australia. because so few people are interested in these beautiful little shells, because there is there is no popular literature available to identify them, and because very few people know anything about them. I am sharing part of my home page here for persons who may not have viewed it yet. You may desire to print it for your permanent use. My home page URL is http://www.internetnorth.com.au/filejest please visit as the site is constantly being expanded to include more micro shells.

All images were scanned from my original line drawings or photographs. The shells are in my collection unless otherwise stated.

The microshells of northern Australia are mostly unknown. Only a few articles have been published about them; and almost no microshells are mentioned in any of the popular books. Yet, the northern Australian fauna is part of the Indo-Pacific region and shares many species with southeast Asia and further afield.

If you feel that I have incorrectly identified a species or if you know a particular species by another name, please let me know. After all, that is why the illustrations are here.

Superfamily Pleurotomariacea Family Scissurellidae

The species belonging to this family have minute (< 2mm), turboid, thin, mostly translucent white shells. At or above the periphery of the last half to one-and-a-half whorl, there is a furrow **(selenizone**) which ends in a slit or a hole (**foramen**). Herbert (1986) has revised the Scissurellidae of South Africa, reviewing the existing genera. He has recognized the following three genera:

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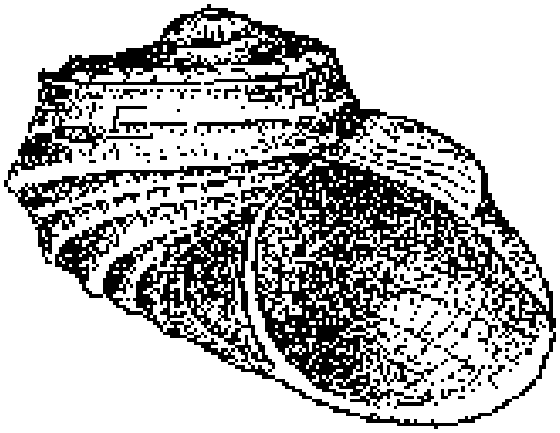
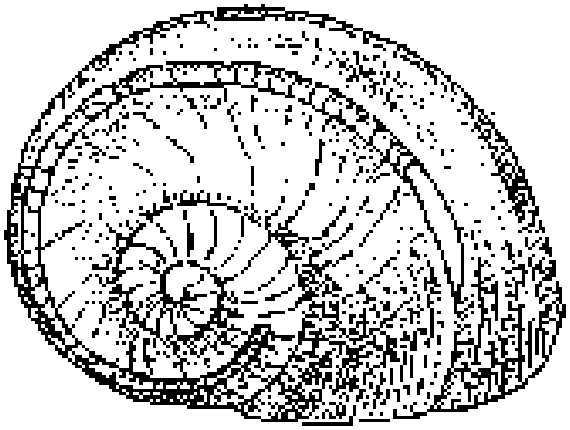
1. Anatoma - selenizone at the periphery.
2. Scissurella - selenizone ending in a slit at the outer lip.
3. Sinezona - selenizone ending in a hole behind the outer lip.

In addition, McLean (1989) divided the family into four subfamilies and described several new genera and species.





Sinezona atkinsoni (Tenison-Woods), 1877)

This shell is a depressed turboid and is narrowly umbilicate. The shell surface is weakly and irregularly spirally ribbed with the ribs becoming progressively stronger on the base. The interstices between the ribs on the base are crossed by fine axial lamellae. The selenizone is on the shoulder of the last whorl, bordered by two sharp ribs and ends in an elongate hole. The protoconch is axially ribbed. The colour is translucent white.
Size: 2 mm. Range: Southern Queensland to southern Western Australia, including Tasmania, New Zealand.
Remarks: *Sinezona beddomei* (Petterd, 1884) differs in that it has strong axial ribs and no spiral sculpture.

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Scissurella ornata May, 1908

The shell is a depressed turboid and is umbilicate. The sculpture consists of strong axial ribs with the interstices between ribs finely spirally ribbed, a feature becoming stronger on the base of the shell. The selenizone is at the shoulder of the last half of the last whorl and ends in a slit in the outer lip. The colour is translucent white.

Size: 1 mm. Range: Central New South Wales to Victoria, including Tasmania.

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Family Olivellidae

This family, formerly a subfamily of the Olividae, is characterized by very small to small, relatively high-spired shells, which differ from those of the Olividae in the absorption of the inner walls of earlier whorls. The animals have marginal teeth in the radula and have an operculum lacking in Olividae.

Belloliva exquisita Angas, 1871

The shell is short-spired and blunt compared with the other species. The sutures are incised; the whorls are rounded. The colour is yellowish, with weak patterns of dark brown zigzag lines organized in broad spiral bands. The base of the last whorl and the outer lip are white.

Size: 8mm. Range: New South Wales.

Remarks: The Columbellid, *Pseudamycla dermestoidea* Lamarck, 1822, which is extremely common on ocean beaches, has a similar appearance.

Belloliva triticea Duclos, 1835

The shell is narrow and high-spired. The whorls are slightly rounded. The shell surface is completely smooth. The colour is very characteristic: three rows of brown spots encircle the last whorl on a white background. Sometimes there is a black encircling line between the second and the third row of spots.

Size: 9mm. Range: Central New South Wales to southern Western Australia, including Tasmania.

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Cupidoliva nympha A. Adams & Angas, 1864

The shell is thin and high-spired. The sutures are slightly incised; the sides of the whorls are almost straight. The shell is completely smooth. The colour is white, translucent in fresh specimens.

Size: 9mm. Range: Central New South Wales to South Australia, including Tasmania.

Olivella leucozona A. Adams & Angas, 1864

The shell is thin and high-spired. The whorls are rounded; the sutures are slightly indented, deep and very clearly visible. The shell surface is completely smooth and polished. The colour is yellowish with some very weak rows of darker spots, especially just below the sutures, and a white band around the periphery.

Size: 15mm. Range: Southern Queensland to Victoria, including Tasmania.

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Family Rissoidae

The family Rissoidae has many species worldwide. All are small to minute, which accounts for the lack of attention this family has received in the popular literature. The shells are elongate, their height larger than their width. The sculpture is variable: lacking, spiral, axial or both, weak or strong. There is no umbilicus. The aperture is oval to "D"-shaped. The outer lip is often thickened and continuous. The main diagnostic feature for the Rissoidae is the unusual shape of the central tooth of the radula, which has a prominent serrated cusp and one or two pairs of spines further down (Ponder, 1985).

Most animals live in shallow water in a wide range of habitats.

Laseron has revised the New South Wales (Laseron, 1950) and the tropical (Laseron, 1956) Rissoidae. Many species described under the Rissoidae by Laseron are now placed in other families, such as Anabathridae and Epigridae.

Ponder (1985) has revised the Rissoidae at generic level based on the anatomy and morphology of the animal. His work supports the division of the family into two subfamilies, based on anatomical evidence. Shell shape and sculpture are not very useful for separating the subfamilies, although the Rissoininae tend to have a well-developed posterior angulation in the aperture,

Rissoina (Rissoina) efficata Brazier, 1877

Shell with a typical cancellate sculpture on early whorls, fading to a spiral sculpture on later whorls and with just one spiral groove below the suture on the last whorl. However, some specimens are ribbed all over.

Size: 6 mm. Range: Northern Territory to northern Queensland.

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Rissoina fractura (Laseron, 1956)

The shell is thick and stout. The protoconch is planorbid; giving the shell apex a blunt appearance. The shell is sculptured with seven spiral ribs on the last whorl (four on the visible part of the previous whorls), crossed by strong axial ribs, with small nodules at the intersections.

Size: 4 mm. Range: Northern Territory to northern Queensland.

Rissoina (Rissoina) spirata (Sowerby, 1820-4)

A very large shell for the family, typically with a slightly convex spire and a flaring aperture. The spire has an irregular appearance due to the fact that some of the earlier whorls have convex sides. Earlier whorls are axially ribbed, but later whorls are smooth.

Size: 14 mm or even larger Range: Northern Territory to northern Queensland.

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Research on Abalone Taxonomy
Using Radulae to Differentiate Groups

by

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I am graduate student in the Marine Biology Department at the Allan Hancock Foundation Building, University of Southern California, Los Angeles. I am also a student associate at the Los Angeles County Museum of Natural History - Malacology.

I started my graduate studies in December 1993 and advanced in the meantime to ABD/cand. Ph.D. I received my "undergraduate" degree from University of Basel in Switzerland, working on the three dimensional growth of the ctenostome Bryozoan Bowerbankia imbricata. My research interest is in the phylogeny of abalone (Gastropoda: Prosobranchia: Vetigastropoda: Haliotidae) using a total evidence approach.

The measurement of information content is intriguing, getting away from bootstrapping to g1 and decay index. Equally, the idea of increasing the signal-to-noise ratio in molecular data by using the appropriate level in the data structure (DNA - protein -

functional groups) is quite interesting.
Malacolgy is one of those fields of science in which non-professionals have made, and are making today, a rather significant impact. I had been introduced to the fascination of mollusks, not at a university, but in the private circle of fellow shell collectors. Here in Los Angeles I am as a budding professional still involved with friends in the shell collector's circle. I am currently proud to be president (1997) of the oldest shell collector club in the United States: The Conchological Club of Southern California.

Aside from my regular activities as a graduate student, I am also the founder and past editor of the paper-based, snail-mailed, quarterly newsletter **ABALONE NEWS**. Currently, the further existence of the newsletter is questionable, so please hold back your inquiries.

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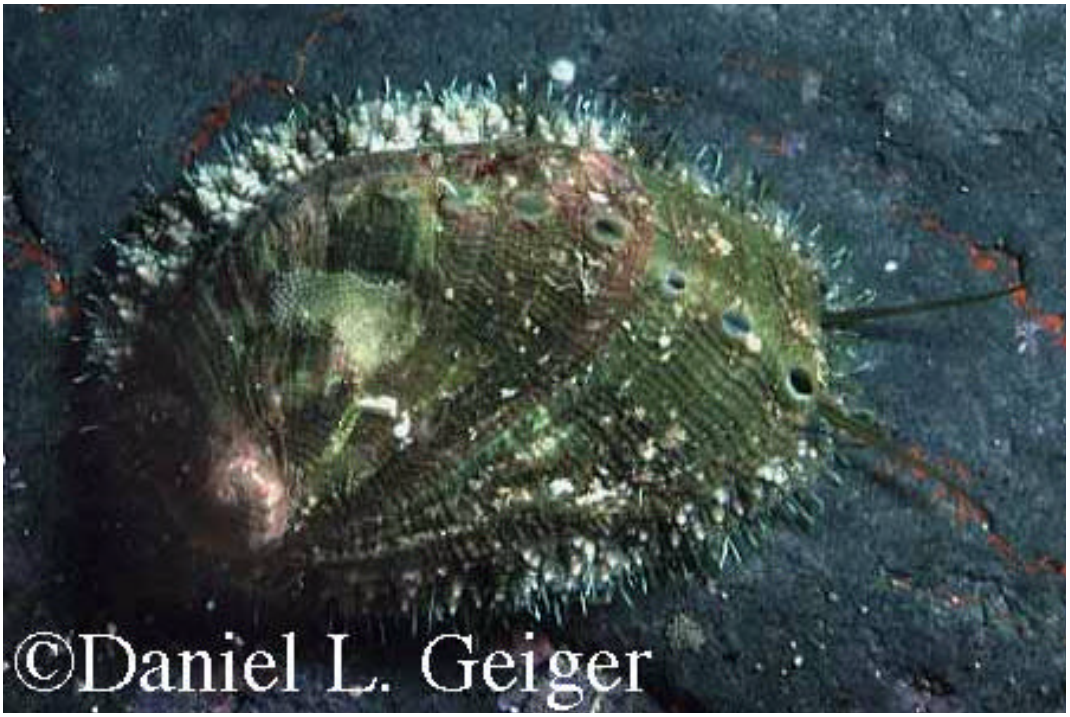
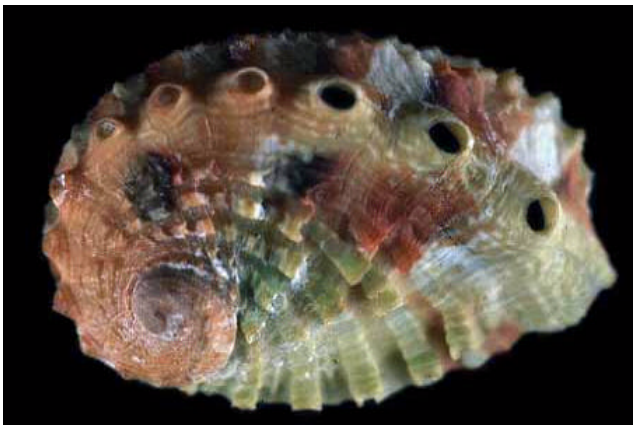
Haliotis radulae used in differentiating species



Haliotis tuberculata above is a European species found under rocks at Baleares, Menorca Illa d'en at 11 meters depth. When found, it typically first stays clamped down for a minute or so, and then dashes off, preferably to the underside of the same rock. The frilly margin seen here is called the epipodium and is one of the characters that I use in the cladistic analysis of the family Haliotidae.



To the left is the shell of *Haliotis jacnensis* found in the Philippines. Generally, tropical Haliotis are much smaller than those from cold water.

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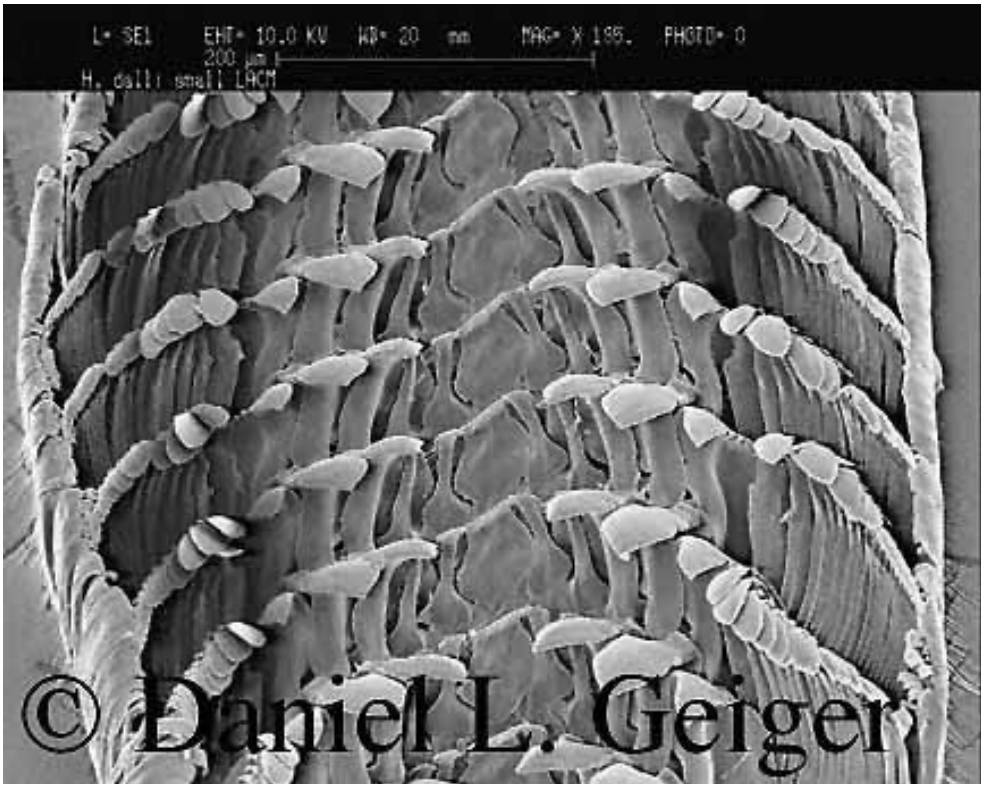
Haliotis radulae used in differentiating species

Introduction:

One of the characters I am using in differentiating between Haliotidae species is its radulae. It had been stated by earlier investigators that the rhipidoglossan radula of abalone is of no use for species-level distinction within the family. After spending considerable time on these organisms I have come to a quite different conclusion which I illustrate below with some selected examples. I will partition into three areas: The central field; The lateral teeth 3-5; and The marginal teeth.



Overview

Above you see the full width of the radulae of *Haliotis dalli* Henderson, 1915, from the Galapagos Islands. The radula in this species has very narrow laterals as you will be able to compare in the picture on the next page showing some additional species. You can clearly see that the two sides of the radula form a zipper-like arrangement, i.e. the teeth of one half of the radula fold neatly in the space between 2 rows on the other side.

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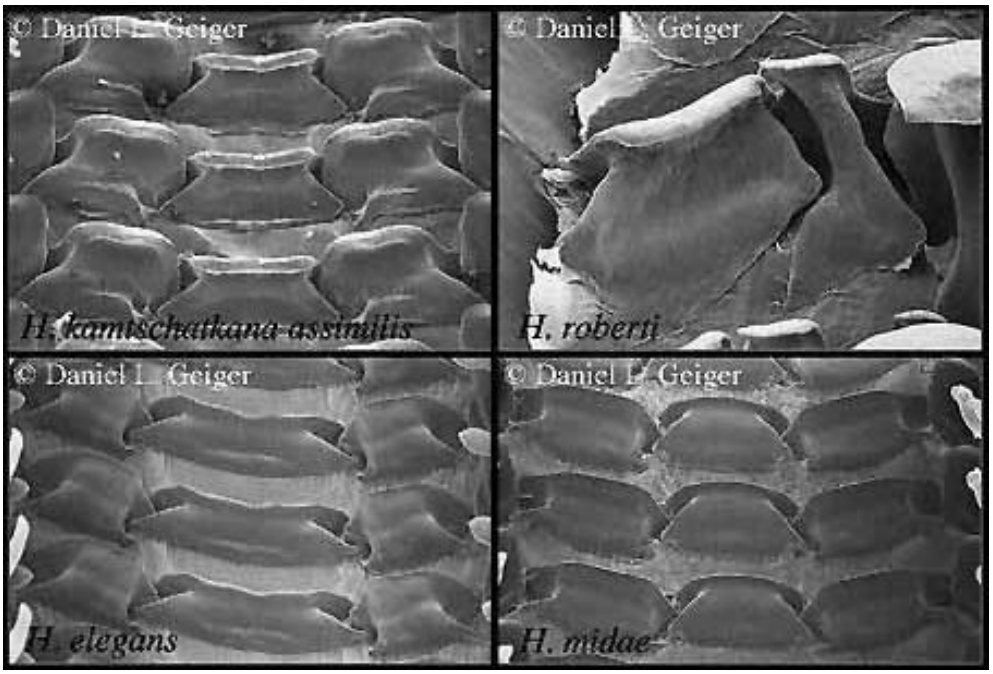
Haliotis radulae used in differentiating species

Central Field: Rachidian and Lateral Tooth 1

In the four sample pictures below, you can note a number of differences between the four species. *Haliotis kamtschatkana* has the normal width of the rachidian tooth which does not have a basal projection as in *H. roberti*. *H. elegans* has an extremely wide rachidian tooth, however, this character state is currently based on a single specimen of this rather uncommon species, hence needs verification. Note also that neither of the 2 species at the bottom have a basal projection of the rachidian tooth.

On the lateral tooth 1 you note in *H. kamtschatkana* a concave depression on the ridge which is a continuation of the cutting edge of the rachidian and the lateral tooth 1. This depression cannot be found in either of the two species shown at the bottom of the picture; these are rather convex. As already mentioned, *H. dalli* has a special condition, in that the lateral tooth 1 is extremely narrow, a synapomorphy it shares with



The central radulae are shown above for:
Upper Left *H. kamitschatkana assimilis*: Upper right *H. roberti*,
Lower left *H. elegans*, and lower right *H. dalli*

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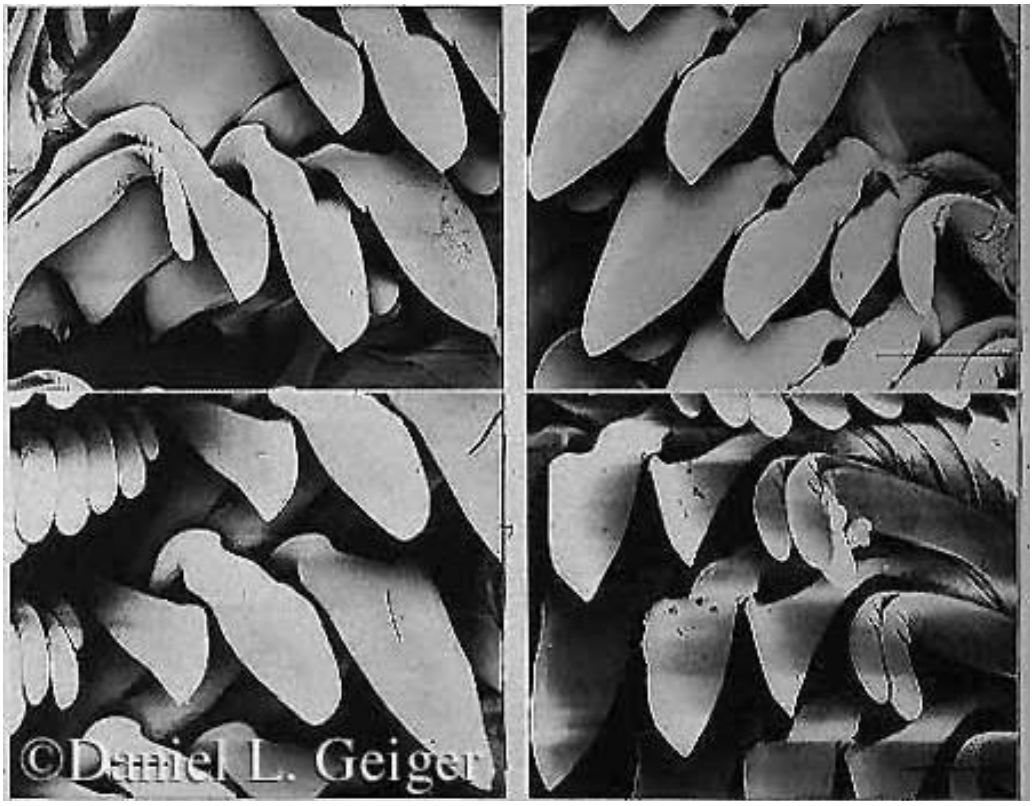
Lateral Teeth 3 to 5

On the lateral teeth 3 to 5 only a single unique character could be extracted so far: The presence and absence of denticles on the outer margin of these teeth. I have illustrated this character with two pairs of examples. In the top two panels the denticles are visible, [as projecting points near left center of teeth on left photo and right center of teeth in the right photo] whereas the lower two panels do not show them



Lateral Teeth 3 to 5

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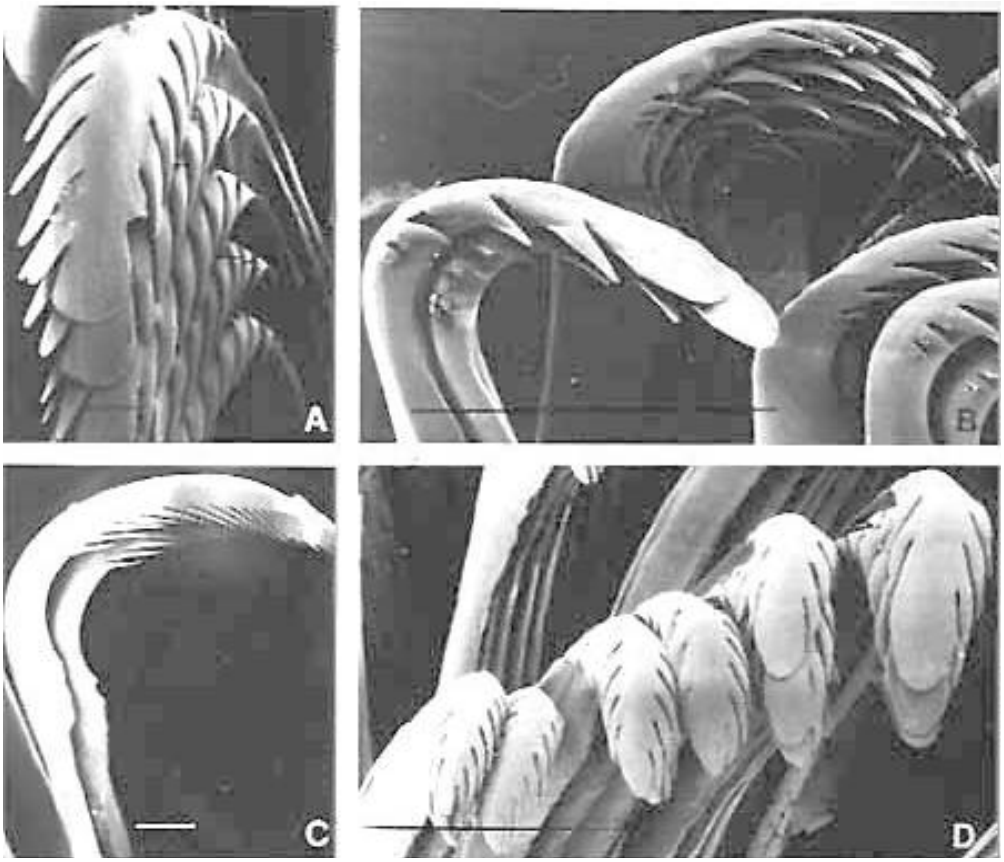
Haliotis radulae used in differentiating species

Marginals

On the marginal teeth I found 1 three-state character. In most species the denticles are symmetrical, i.e. the first denticle on either side of the cusp are on the same level as viewed on the longitudinal axis of the cusp (panel A). In some species the denticles are off by a count of 1, and in a single species so far (Haliotis asinina Linné, 1758) it is off by 2: the first denticle on one side is at the same level as the third on the other side (Panel D). Note that the number of denticles increased progressively while they become located further from the middle of the radula. Panel C shows a intermediate marginal in lateral view.



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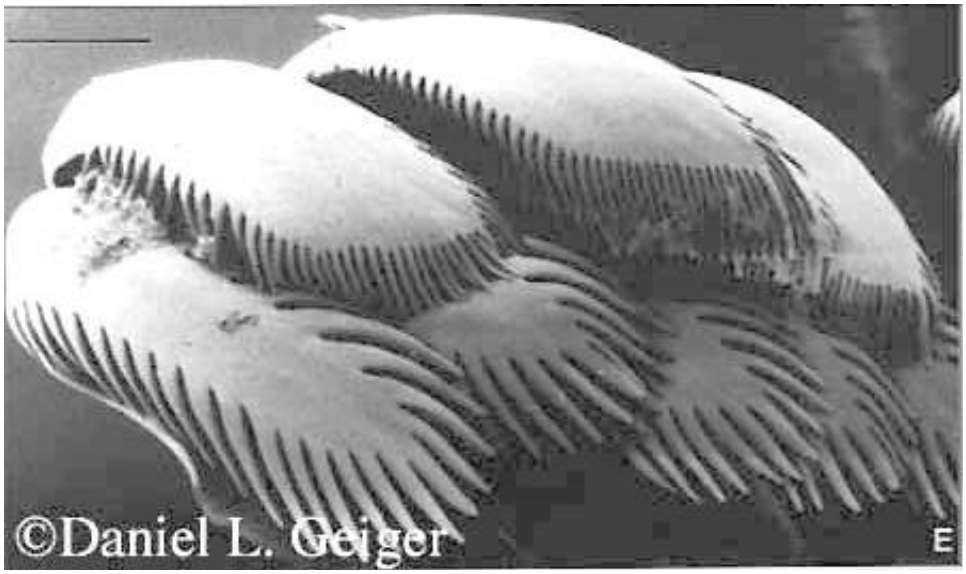
Haliotis radulae used in differentiating species

Outer Marginals

Panel E shows outer marginals with very fine brush shaped denticles even surrounding the tip of the cusp. Note however, that the median denticle is a bit stronger developed into a bristle. The outermost marginals have a further derived morphology not illustrated here.



Conclusion

I hope I have successfully dispelled the myth, that the rhipidoglossan radula of the Haliotidae is of no use for species level systematics. So far only a dozen characters could be extracted from the radula, so a phylogenetic analysis of the 55 species cannot be based upon the radula alone. However, I have shown its usefulness as part in a total evidence cladistic analysis.

Acknowledgments

I would like to acknowledge the support by the Labor für Rasterelektronenmikroskopie of the University of Basel, where I could do some of the initial observations on the intra- and inter-specific variability of the radula of abalone. Further work in conjunction with my ongoing research for my dissertation project at the University of Southern California was supported by a Student Research Grants from the Hawaiian Malacological Society and the Lehrner-Gray Fund for Marine Research (American Museum of Natural History

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Book Reviews

The Sanibel Kaleidoscope by Whittkopf, Harlan E., 1997

Reviewed by Beatrice L. Burch*
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The Sanibel Kaleidoscope, a view of sea shell variations in color, pattern, and structure, including a shelling Instructional Guide using actual beach photographs focused on live Sanibel gastropods. Shell Island Resources, Inc., Contributors to Conchology. 216 Robinson Drive, Algona, Iowa 50511. 69 pp, 120 figs, $12.95.

This comprehensive title is a brief synopsis of the contents of the book. This is written for the general reader and collector of Atlantic species. Twenty-seven Sanibel gastropod species are beautifully illustrated with variations of 14 of the common species. While local common names are supplied for all species described, scientific genera and species names are given for only the large species, although author, year of publication, or references are not mentioned.

This is an informative book of a renowned shell beach area emphasizing seldom-mentioned field observations possible of differences between specimens of the same species. The brief and useful index is helpful in locating species. The author's admiration and appreciation of Dr. Tucker Abbott and his help is gratefully acknowledged. Obviously, the author's support for the Bailey-Matthews Shell Museum must have been sincerely appreciated by the original director of the museum as well as by the current director, Dr. Jose H. Leal.

Included too are instructions for shelling at Sanibel beaches as well as the current collecting laws prohibiting collection there of live molluscan material. More regional shell books should follow this trend of including local shell restrictions with their guides as so often federal, state, or regional restrictions are not easily available.

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Travel Information for shellers.

Travel for Shell Collectors

by

Betty Jean Piech

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In the travel section of our local newspaper several weeks ago was an article about information the US Government was furnishing on the Internet for travelers.

Its URL is http://travel.state.gov

And, if there is one thing most shellers do, it is travel.

Since I have a tentative trip planned to the Solomons, I decided to check it out and I was amazed. Under U.S. Dept. of State Consular Affairs I found more than I would ever have thought to ask - Country Description, Entry Requirements, Medical Facilities, Embassy Location (the closest one is in New Guinea), diseases and medications (even specified which kind of malaria pill to take), & recommendations for various pre-trip injections. Also included is information on criminal penalties (so behave yourself). Plus many other things that so far I have not even bothered to investigate. It was last updated December ll, 1996.

Some of you may already be aware of this site, but if you are not you might want to check it out

Betty Jean Piech

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HMS Members Attend COA Anniversary Convention

by **George Cook**
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The 25th (Silver *Anniversary)* Annual Convention of the Conchologists of America was held July 12 through 18, 1997 at the South Seas Plantation Resort on Captiva Island, Florida. There were over 400 people in attendance with backgrounds and interests ranging from academic research and museum collection management to the amateur shell collector. A well balanced schedule of eighteen informative programs were presented with something of interest for everyone.

There was a meeting of COA Representatives [from local clubs with George & Bunnie representing the HMS] devoted to the topics of improving the vitality of clubs through sharing interesting programs and responding to environmental controls of shell collecting by government agencies. There was also a discussion on selecting future Convention sites that would be less costly and benefit the younger generation of conchologists/malacologists.

George Cook HMS Rep.
President, HMS

Chairperson Anne Joffee and her many dedicated volunteer assistants from the Sanibel-Captiva Shell Club and from the Fort Myers area are to be congratulated for a superbly organized and smooth functioning convention.

Special recognition was given to Lynn Scheu for her ten years of devoted volunteer service as Editor of the COA Journal, **American Concholoqist**.

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HMS Members Attend COA Convention

A major event was the half-day open house visit to the newly opened Bailey-Matthews Shell Museum on Sanibel Island with the opportunity to see the shell exhibits at a leisurely pace and also see behind-the-scenes areas devoted to curating the collection and their reference library. Our gracious host was Dr. Jose H. Leal, who was recently appointed Director following the death of R. Tucker Abbott, the prime mover/motivator in developing the Museum.

Bailey-Matthews Shell Museum Shell Exhibits
Pictures from Museum brochure.

There were several shallow water field trips by boat and two scuba dives scheduled - - all well attended. A dinner trip to off shore Cabbage Key (one hour by boat) was an interesting introduction to life on a remote Key. The former home of author Mary Roberts Rinehart has been converted to a restaurant featuring, of all things, a famous celebrity cheeseburger. Of course, things have to be simple when you must create your own water source and generate your own electricity.

The Banquet Program was a One Woman show stunningly performed by Rusty Brown who recreated moments in the life of Anne Morrow Lindbergh based on Lindbergh's diaries, letters and her book **Gift from the Sea**. The book was inspired by fond memories of her stays on Captiva Island and an appreciation of the shells collected on its beaches.

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HMS Members Attend COA Convention

The fund raising activities from oral and silent Auctions plus sales of raffle tickets for shells and shell related items produced over $8,000. for the COA scholarship fund.

There were 44 participants in the Bourse, including several HMS members from Honolulu. The bourse included enough tables for display to fill the Lobby, Ballroom and Meeting Room. This is always an exciting opportunity to get that needed specimen to complete a family in your collection or identify a mystery shell you have puzzled over by comparing it with those displayed. One never ceases to be amazed at the variety and beauty of shells that have been created for our enjoyment and entrusted to our care.

Dave Woodman (HMS) (right) and Charles Carden on left examine a table of shells.

From HMS, Melvin Pang (Left) & Chris Takahashi (center) with Al Denzer on right with shell display.

Val; Darkin on left, an annual visitor to Honolulu from Russia with Chris Takahashi on right enjoying the food.

Photos on this page by Chris Takahashi

The 1998 COA Convention will be held in Orlando, Florida July 19 to 23 and hosted by the Central Florida Shell Club.

George Cook, HMS Representative to COA

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JULY, 1997 COA CONVENTION

by Carole P. Marshall
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COA convention Day 1 Sunday

We are sorry for all of you who couldn't make the convention this year. Save your nickels and vacation time and hopefully next year you all can come. I will try again to give you a brief version of some of the things going on here at the Convention

There were many countries represented here including Australia, Russia, and our lovely friends from Italy and La Conchiglia magazine. The convention room was a good size for us and after being welcomed by Anne Joffe, Jose Leal and Dave Green we had the start of our programs. The programs were as, usual, excellent and through the eyes of our speakers we traveled the world.

We saw a preview of the Sanibel Shell Museum from Jose, heard about the successes in clam aquaculture from Cesar, went on a trip to the Spice Islands with Richie Goldberg and saw slides of some wild terrain that we will never actually be able to see in real life. We also traveled with Betty Jean Piech down memory lane and her 37 years of shelling and shelling trips.

There was plenty of food at the welcome party and if anyone complained of being hungry, they weren't paying attention. There was nice guitar music throughout the party which was just nice for background music, but not intrusive on conversations. And of those conversations: there was plenty of talking, talking and talking. We are a communicative bunch.

We also had a conch-L get together and it was nice to put faces with communication handles. [Not all COA members are subscribers on the CONCH-L list] We all got a little pink conch with a" -L" on it to paste on our convention badges to identify the group. Very clever Rosalie!!! Alas, day one ended. The very nicest part for me is seeing so many familiar faces and meeting new people who came for their first convention. Herb Young looked really well for as ill as he has been and we were glad to see he is recovering nicely. It was nice to see Gary Rosenberg's wife and daughter again. I could go on and on.

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The South Seas convention site is a very nice place: they have a buffet set up for lunch at a reasonable price. You could get a 6-inch submarine sandwich for about $3.50 or the special convention buffet lunch for $5.50. I am going to try the buffet on Wed. There are a lot of stores right in the complex. The management want to make sure they fill all your needs so you don't have to go anywhere else. Very convenient...

Day 2 Monday
After the door prizes and announcements etc. Tom Watters gave a most interesting talk on Freshwater Mussels. It was a very informative talk and we learned a little more about the reproductive techniques of those sneaky little mussels. It was also somewhat depressing as Tom showed us species becoming extinct virtually right before our eyes. I thought it was especially depressing as there is basically nothing we can do about it. See it and weep.

Doug Jones, the new director of the Florida State Museum in Gainesville, Fl. gave a very informative talk on the ages of shells including the fact that growth rings don't always signify a years growth in mollusks and that the study of the oxygen and hydrogen in shell material can be used to tell if shell material was added in summer or winter.

Everyone was then invited to an open house at the Bailey-Matthews Shell Museum. We were able to go through the museum, see the library, exhibits and have some snacks. (We are the eatingest bunch) We got to see the prototype of the CD ROM Ross Gunderson is putting together. WoW!!! He has even got little clips in it of live action shells. Donax digging into the sand, a Polinices crawling and burying itself in the sand, information about the shells and the animals and more than I can tell you about.

When we convened at the convention center we heard Harry Lee speak about the dove shells (Columbellidae). Seeing slides of new unnamed species and those that have been named but are not included in any shell books was a learning experience. I just wish my brain would have retained more.

Dr. Jerry Harasewych took us on a journey to see slit shells (Pleurotomariidae). Due to a slight problem with the video projector, he was held up slightly and gave his program in two parts. During the slide portion, he gave us information on the Pleuro-

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tomariidae, showed some live animals and made most of us groan when he described crushing the shell to get access to the animal.

In order to keep to the schedule, Brian Hayes gave us an overview of South African rarities. Brian is a wonderful photographer and his live animal shots of very rare mollusks were breathtaking.

Since we still had some time before the boats left for Cabbage Key, Jerry showed us the video portion of his program and took us shell hunting in a submarine. Except for the queasy stomachs from the roiling seas, we were there!!! Seeing what he saw, Pleurotomariids crawling everywhere, eating glass sponges, crawling up walls and being buffeted about on ascent in the little yellow submarine.

Pardon my lack of suitable adjectives but all the programs were interesting, informative and well worth seeing. Many people left for Cabbage Key amid thunder, lightening and raindrops. I did not go but was pleased to see that after only about an hour of rain, the sun came out and the weather turned clear. Hopefully those who went had a wonderful time after all.

Day 3 Tues:
At the annual business meeting we learned that COA gave the third installment of a $1,500 grant to the Bailey Matthews Shell Museum and we gave out 9 other grants for a total of $5,700. Our slate of officers that was voted upon are the same people that were voted in last year. The time our members have been collecting shells is from 11-40 years, and we have roughly 1,232 paid members of COA. The member with the most COA conventions under his belt is Herb Young who has attended 23 conventions.

A nice tribute was given to all of our COA past presidents that were in attendance.

U.S. bulk rate mail takes a long time to reach some of us. This caused a frenzy in making reservations for this COA convention. The board has decided to offer us the option of paying an extra $5 per year and having our bulletins sent 1st class starting with our March, 1998 issue. There was a lot more, but you will have to wait till someone who has a better memory than I reports the details. It was a very good business meeting. After the meeting, a special tribute book was presented to Lynn Scheu. This lovely memory book was compiled by Richie Goldberg from letters with many

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personalized notes sent to him from many people, thanking Lynn for 10 years of editing the **American Conchologist**. Do I have to say Lynn was slightly damp around the cheeks?

Following all that emotion was the excitement of our COA auction. Anyone who hasn't seen our auction masters, Hank Chaney and Dick Petit in action has missed a good show. Both are masters of the quick quip and fast comeback and we not only made money for our educational grants, but were highly entertained as well. I have seen them in action together a few times before, and they have the wit that competes with the likes of Seinfeld, Abbott and Costello and maybe even W.C. Fields.

To top all of that, we had a panel discussion about new products to help keep our shells safe, dry and free from Byne's disease. Hank Chaney, from the Santa Barbara Museum, gave a slide program about museum collections and was assisted by Alice Monroe and Jose Leal in telling us what **not to do** with our collections as well as what **to do**. Product samples were shown, as well as some tips for cleaning shells. One thing that was emphasized, was to keep our collections in an environment with as little moisture as possible; if you soak your shells in Clorox, COMPLETELY rinse them of all chlorine residue; keep them dry; check them regularly for bugs; if there is a vinegar smell be alert and when possible wash and dry your shells again. Use a silicone type coating or spray after bleaching your shells. Do not use cotton for shells, a polyfill is better; never use rubber cement on shells; watch for bugs eating labels with glue on the back. Henry Chaney added that cotton can etch glass vials and also recommended NOT gluing the opercula to anything.

There was a night dive trip tonight! Although all was not roses and honey, shells were found: but not before a severe storm sidelined the boat and divers till it passed. The divers did not get back to the hotel until 6 AM Wed. We sure didn't see any of them for the 7 AM representatives meeting on Wed.

Day 4 Wednesday.

COA representatives meeting. You should hear all about that from your COA representative. Some good ideas were exchanged.

We had a couple of program changes for the remainder of the day as Ross Mayhew couldn't be here. Kermit Pearson gave us a program about his days on Kwajalein and

some lovely photos of live shells he found there. Peggy Williams took us shelling in Baja. Harold Vokes had unfortunately fallen and broken his hip so Emily and Harold could not be here. Emilio Garcia, in her stead, gave us a program about collecting some unusual shells. Henry Chaney gave us an unusual and often humorous look at the history of dredging in the Pacific.

That ended the programs for the day. Ah, the best was yet to come. At 3 P.M. the doors opened on the annual shellers' feeding frenzy called the Bourse. Lots of dealers and lots of wonderful shells, shell stamps, shell coins, shell ornaments, shell clothes, and lovely shell pictures. Well You name it, it was there, wish you all were too!!! Short, short night and long, long day. Did I really only get 4 hours sleep?

The COA might consider printing abstracts of the talks for those of us who have terrible memories and can't write fast enough. Any ideas on that? I sure wish I could have remembered more about Harry Lee's talk about the Columbellids, as there was a lot of information there.

I do have to say thanks to Alice Monroe, who gave a talk on the last day about shell structure. Alice does give out handouts and they are great. (For those of us who can't remember things, that is). Since I am rambling, I have to say the Talks given on the last day were interesting. As I mentioned, Alice Monroe's talk on shell sculpture was preceded by Hank Fogiino's talk on the same subject. Hank's talk could also have been an episode of Fractured Fairy Tales. Some real information interspersed with a little hoopla!!! You all know Hank!!! Then to end the programs, Gertrude Moller's shell cartoon endings that had us all laughing. Thanks Gert, we needed that.

The annual Banquet was a somewhat unusual banquet fare as it was actually edible and really very good! The dessert tart was excellent and a most unusual banquet program was presented: Rusty Brown's production of **A Celebration of Anne Morrow Lindbergh with Gifts From the Sea**, recited almost verbatim from the book. Ann Joffe and her committee did a stupendous job on the decorations. Ann told me last year she wanted people to come into the banquet room and gasp at the decorations. Anne managed to elicit the gasps she was hoping for. From the black silk covered chair backs with silver bows, to the silver and black balloons floating along the walls, to the plants in the corners decorated with little white lights. The crowning glory was Goz Goslin's inspired silver-glittered floral presentation with white sand dollars, sea stars and shells, sprinkled with tiny lights and silver stars. Table centerpieces were

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placed on a large mirror with tiny candles around them and glittery number 25's all over the table. Thanks to Bill Cargile from California who won the centerpiece at our table and couldn't take it with him, I am the proud owner of one. I love it!!! Even though I can't describe it.

And so another year ends. Is there anything more desolate than a convention room after the convention? Friday after the field trip I had occasion to go into the building that housed most of our activities. Where once just a short time before, the walls rang with chatter and laughter, all was silent..... Till next year then, the COA convention is just a memory.

Bye for now,
Carole M

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American Malacological Union/ Western Society of Malacologists

1997 Combined meeting

By

Beatrice L. Burch*

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The American Malacological Union/Western Society of Malacologists Combined meetings were held June 21-27 at the Radisson Hotel In Santa Barbara, California.

There were 200 participants from 15 countries and 17 states at the 63rd annual meeting of the AMU and the 30th annual meeting of the WSM with 115 papers and posters presented. Naturally, a great part of the activities was meeting old friends and making new ones. There were the usual fine and not-so-fine talks and posters and a group photograph. This year's T-shirts and sweatshirts featured the beautiful art of Sue Stephens of Morum and Lima, which soon blossomed on many participants.

There were 15 entries for the Best Student Paper competition, which was won by Steven Longhart and Jeff Byers, two West Coast students. The AMU and WSM had separate business meetings-one after the other. Evening events included the Reception hosted by the two Presidents, a workshop on cladistics, a visit to a nearby winery, slide show by members, an auction with that fine auctioneer, Dick Petit, and the banquet held at the Santa Barbara Museum of Natural History. There was a field trip to the Channel Islands and a paleontology trip, both of which gave delight to those hardy participants.

Symposia presented covered the deep sea in various talks, cephalopods of the North Pacific, and phylogenetic systematics with contributed papers on biology and ecology, taxonomy and evolution divided into morning and double afternoon sessions which were held admirably to stated time frames so that movement between sessions was facilitated. When my husband, Tom, and I attend complex meetings such as this, we usually separated so that we are able to cover topics that interest each of us. Naturally there were a few times when we both attended the same topics, such as those on Aplacophora and Dreissena polymorpha (the molluscan pest devastating the Northern Hemisphere freshwater fauna.)

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Our compliments are extended to the organizers of this smoothly-run complex joint meeting organized by AMU president, Dr. Eugene Coan of Palo Alto, California and the WSM president, Dr. Henry Chaney of Santa Barbara; their consistently helpful registrar assistants; evening event organizers; session chairmen and field trip organizers. The careful projectionist for each talk in the host hotel was great. We wish to thank especially our many foreign participants for their fine talks and time-consuming trips from very far away. Countries represented were Canada, Mexico, Russia, Belgium, Spain, Japan, Guadeloupe, French West Indies, Germany, Denmark, Switzerland, Venezuela, Great Britain, France and from the Smithsonian's Tropical station in Panama. Participants came from 17 USA states: California, Texas, Illinois, Washington, Pennsylvania, Nevada, Hawaii, Michigan, Massachusetts, New York, Alaska, Arkansas, Alabama, Delaware, Virginia, and the District of Columbia.

Individual topics ranged from paleontological to geologically recent, as well as from squid anatomy to anatomy of deep-sea cocculinid limpets and *Aplacophora*; and from phylogeny inference to molluscan pests of freshwater bivalves and those of exotics infesting California abalones and snails.

The more specialized talks ranged from chromosome electrophoretic characteristics of freshwater Mexican *Pomacea* to cephalopod diversity; and from epithelial sensory structures on trochoidean gastropods, to diel (daily) vertical migrations of a nearshore kelp gastropod, *Norrisia norrisi*; and to taxonomic problems with tropical Haliotis and fossil abalones.

Other talks covered gastropods as predators or prey; molecular and phylogenetics in molluscan systematics; patterns of movement based on phylogenetic inferences in Patellogastropda; a molecular survey of Eogastropoda and their differences in shallow water or in deep sea. Study areas included tropical rain forest land, Hawaiian freshwater, and open ocean areas (finned octopod biology, and sepiolids with their luminous bacterial symbionts).

If you missed this enormous array of mental overload on mollusks, aim to attend and meet other molluscan speakers next year in Washington DC for the combined AMU-

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European UNITAS meeting along with many WSM members. These combined meetings will stimulate forever how you look at mollusks. Exhausting, yes, exhilarating and immensely satisfying too.

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Shelling People in the News

by Bill Ernst

Recently two University of Hawaii professors were named the 1997 recipients of the Hung Wo and Elizasbeth Lau Ching Award in recognition of their roles in strengthening ties between the University of Hawaii campuses and the Community.

One was our very own Biology Professor Don Hemmes, who has been teaching at the Hilo campus of the UH. He was cited as having given over 200 talks to school classes, civic clubs and other organizations about subjects varying from reef and tidepool organisms to mushrooms. In the past six years he also created two botanical gardens for the public.

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In the shelling world, Don has performed equally well, being at least an annual speaker at Hawaiian Malacological Society meetings. His articles on Columbellidae and Triphoridae were landmarks of informative and useful articles in the printed Hawaiian Shell News. The Triphorid articles were repeated in the January to June Internet HSN issues and have been of great use to many shellers.

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R. Wayne Stevens Obituary.
By Steve McMahan

On June 21, 1997 Wayne Stevens passed away after a short illness. He was fine man who made many genuine friends in and out of the field of conchology. Wayne was born in Portland Oregon on September 13th., 1911 and married Marjorie in 1936. He attended Northwest Law School and in 1951 Wayne, by now a legal bibliographer, started his own business, R. Wayne Stevens Law Books.. In 1980 he was elected President of the COA and served for 1 year. After Wayne retired he and Marjorie spent much of their time in Hawaii as well as their cabin on the Oregon Coast. Wayne and Marjorie have two children, six grandchildren, and two great grandchildren.

In his life Wayne impacted and inspired people to higher goals. Rich Goldberg remembers, "Wayne and Marjorie were significant in my becoming active in COA. I first met them at the 6th COA convention held on Long Island, New York, in 1977. At the time I was editor of the Long Island Shell Club and with Wayne's encouragement became editor of the COA bulletin and later to become COA president. Wayne did more for COA than most, and helped shape the early years of the organization. His presence at recent conventions has been missed."

I remember Wayne from our monthly meetings of the Oregon Society of Conchologist. When he entered, everyone would light up and instantly the room would fill with laughter and smiles. He always had a story to tell, usually about his latest trip to Hawaii (which he would always correct your pronunciation by saying "Havahee"). Tom Hale, a good friend of many years, recalls whenever Wayne would get back from Hawaii Tom would call him up and ask him just one question, "How many?" Wayne would always respond "How many what?" This referring to the number of Cypraea he and Marjorie had collected.

I'll always remember Wayne as a man who could light up a room just by entering and who could draw us together and make us all feel at home.

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Molluscan Species imported into Hawaii

Facts summarized by Wesley Thorsson from

The Introduction of Aquatic Animals into Hawaiian Waters

by

Vernon E. Brock*

Int. Revue ges. Hydrobiol. 45 - 4 - 1960 - 463 - 480

* Fishery Research Biologist, U.S. Bureau of Commercial Fisheries, Honolulu, Hawaii

In my search for regulations regarding molluscs, Domingo Cravalho Jr., the Invertebrate and Aquatic Biota Specialist at the Hawaii Dept. of Agriculture Plant Quarantine Branch, and I discussed species of molluscs introduced into Hawaii. For example, I knew that at some time *Trochus niloticus* Linnaeus, 1758 had been introduced and Hawaiian legislation forbade their collection. I mentioned that I had not seen any for quite a few years and he said he had never seen them live, but had seen many empty shells at Coconut Island, which is a nature reserve inside Kaneohe Bay, Oahu. Cravalho kindly sent me a copy of a paper by Vernon E Brock written in 1960.

Brock discussed the difficulties in successful introduction of aquatic animals (mostly fish). Of 61 species listed, 54 were deliberately introduced, 1 open sea species, 0 reef species, 8 Estuary, 19 pond species and 9 Stream species became established. 3 open sea species, 1 Reef species, 5 Estuary, 5 Pond, and 4 Stream species did not become established. 10 reef species may become established. Most were introduced to provide food sources or provide game fishing. Oysters and Clams are not naturally very available in Hawaii in sizes and quantities suitable for commercial harvesting.

In Mollusca, 3 species became established:

(1) Venerupis philippinarium (Adam & Reeve): 10 barrels were brought in and planted in Pearl Harbor, Kaneohe Bay and off Kalihi, Oahu in 1920. It was reported to have been established in Molokai before 1930. It is presently well established on Oahu, Molokai, and Hawaii Island, and possibly on Maui and Kauai. In 1979, E.A. Kay listed Tapes japonica Deshayes, 1853 with Tapes philippinarum okupi Bryan, 1919 as a synonym and indicated it was introduced as reported by Thaanum in 1921.
(2) *Cythera meretrix* Linnaeus (common name Japanese clam). The first shipment consisted of some 10 gallons of clams was imported from Japan in 1926 and were planted in Kaneohe Bay and off Kalihi on Oahu. A second shipment of 20,000 small seed clams was planted in 1939 in Kaneohe Bay and Mokapu, Oahu. The species is well established on Oahu and possibly on other islands (Brock statement). (Genus --)

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meretrix is not mentioned by E. A. Kay, but does describe Tapes japonica Deshayes, 1853 as an introduced species, citing Thaanum, 1921. Abbott & Dance illustrate Meretrix lusoria (Roding, 1798) on page 355 of **Compendium of Seashells**. Vaught lists a Cytherea as a synonym of Genus Periglypta in Venerinae and Meretrix as a genus under Meretricinae.

(3) Crassostrea virginica (Gmelin). An oyster of eastern U. S. was reported to have been imported in 1871, and apparently was not successful. A shipment of 300 from San Francisco in 1883 planted off Kalihi, Oahu also was not successful. 1000 were imported from San Francisco in 1893 and 38,614 in 1895 and planted at Manana, Ewa in Pearl Harbor and became established. Subsequent shipments were made but did not apparently contribute to its establishment. There has been some evidence of successful spawning through the appearance of spat.

Species that may be established:

(1) Haliotis cracherodii Leach. 35 were introduced from California in 1927-1928, but some may have been Haliotis rufescens. There is no evidence of survival. In 1958 167 black abalones from California were planted off Rabbit Island, Oahu. There was evidence of poaching. In 1959 in August and September 728 black abalones were planted off Pyramid Rock, Oahu. In a later check, 19 were found moribund and 20 in excellent shape. The survivors seemed to be those which were able to find adequate shelter. These were 2.5 to 7.5 cm in diameter and were from southern or Lower California.

NOTE: Finding live Haliotis in the open ocean or reef has not been reported to HMS There has been aquaculture rearing of Haliotis in recent years on the island of Hawaii that reportedly reared specimens successfully using deep ocean waters pumped up in thermal energy projects.

Introduced species that probably did not survive.

(1) Ostrea lurida Carpenter. 3,000 were brought in from San Francisco to Manana, Pearl Harbor in 1893.

(2) Crassostrea gigas (Trunberg). A small shipment was made in 1926 to Kalihi, Oahu and 2,500 in 1938 from Japan and planted at Pearl Harbor and Mokapu, Oahu. In 1939 2,150,000 were set out at Coconut Island, and Mokapuu in Kaneohe Bay

(3) Crassostrea amasa (Iredale). Two importations of 3 bushels in 1928 and 24 bushels in 1929 from Port Stephens, New South Wales, Australia and planted at Coconut Island, Kaneohe Bay, and seemed to do well with some still living in 1959, but

there was no evidence of reproduction.
(4) Crassostrea commercialis (Iredale & Roughley). Two importations of 3 and 24 bushels were made in 1929 from New South Wales Australia and planted in various locations on Oahu including Mokapu, Oahu.
(5) Pinctada martensii (Dunker). A small shipment was placed in a holding area in Kewalo Basin channel in 1956.
(6) Tivela stulttorum (Mawe). Two shipments of 218 pismo clams were made in 1927 and 1928 from California and planted at Kahana and Kailua, Oahu.
(7) Tridacna erosa Lamarck. Sixty were brought in from Rose Island, Samoa in 1951 and placed in holding ponds at Coconut Island, Kaneohe Bay. A few were alive in 1959, but there was no evidence of reproduction.

For more information see E. A. Kay's Hawaiian Marine Shells, page 19.

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Humor

Probably originated by Lois Finello <afn12742@afn.org>
Forwarded several times to various parties
with selected items here..

Human "genius" at work:
I worked with an Individual who plugged her power strip back into itself and for the life of her could not understand why her system would not turn on.

1st Person: "Do you know anything about this fax-machine?"
2nd Person: "A little. What's wrong?"
1st Person: "Well, I sent a fax, and the recipient called back to say all she received was a cover-sheet and a blank page. I tried it again, and the same thing happened."
2nd Person: How did you load the sheet?"
1st Person: "It's a pretty sensitive memo, and I didn't want anyone else to read it by accident, so I folded it so only the recipient would open it and read it."

I recently saw a distraught young lady weeping beside her car. "Do you need some help?" I asked. She replied, "I knew I should have replaced the battery in this remote door unlocker. Now I can't get into my car. Do you think they [pointing to a distant convenience store] would have a battery for this?" "Hmmm, I dunno. Do you have an alarm, too?" I asked. "No, just this remote 'thingy,'" she answered, handing it and the car keys to me. As I took the key and manually unlocked the door, I replied, "Why don't you drive over there and check about the batteries - it's a long walk."

Tech Support: "What does the screen say now?"
Person: "It says, 'Hit ENTER when ready'."
Tech Support: "Well?"
Person: "How do I know when it's ready?

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My friend called his car insurance company to tell them to change his address from Texas to Vermont. The woman who took the call asked where Vermont was. As he tried to explain, she interrupted and said, "Look, I'm not stupid or anything, but what state is it in?"

Several years ago we had an intern who was none too swift. One day he was typing and turned to a secretary and said, "I'm almost out of typing paper. What do I do?" "Just use copier machine paper," she told him. With that, the intern took his last remaining blank piece of paper, put it on the photocopier and proceeded to make five blank copies.

I was working the help desk. One day one of the computer operators called me and asked if anything "bad" would happen if she dropped coins into the openings of her PC. I asked her if this was something she was thinking of doing. She said, "never mind" and hung up. So I got out my trusty tool kit and paid her a visit. I opened her CPU case and sure enough - there was 40 cents.

One of our servers crashed. I was watching our new system administrator trying to restore it. He inserted a CD and needed to type a path name to a directory named "i386". He started to type it and paused, asking me, "Where's the key for that line thing?" I asked what he was talking about, and he said, "You know, that one that looks like an upside-down exclamation mark." I replied, "You mean the letter "i"?" and he said, "Yeah, that's it!"

I called a company and asked to speak to Bob. The person who answered said, "Bob is on vacation. Would you like to hold?"

Here's the set up:
I rented a movie from Blockbuster. Before the movie begins a message comes on the screen saying, "This movie has been altered to fit your television screen." Comment from person: "How do they know what size screen I have?

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