**Southern California Association of Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

September, 2002

# SCAMIT Newsletter

Vol. 21, No. 5

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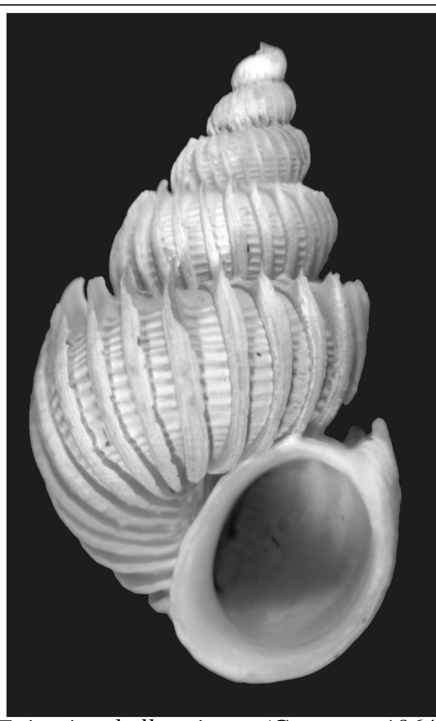
| **SUBJECT:** | Biolink; taxonomic databases |
| **GUEST SPEAKER:** | Steve Shattuck |
| **DATE:** | 14 November 2002 (Thursday) |
| **TIME:** | 9:30 a.m. to 3:30 p. m. |
| **LOCATION:** | Natural History Museum of Los Angeles County<br>Times Mirror Room<br>900 Exposition Blvd |



*Epitonium bellastriatum* (Carpenter 1864)
Station:CSD I22(2),1/4/02, 91 ft.
Image by K. Barwick 10/02

**DEATH IN THE FAMILY**

As you all must know by now we recently lost one of the noteworthy biologists of the last century. Stephen J. Gould died on 20 May 2002. One of the many commentaries on him (Lindberg 2002) emphasizes part of his life which is less well known, his work as a molluscan taxonomist. Greatly familiar through his graceful writings in Natural History magazine in a column which spanned decades (many of which were gathered into a series of books), Gould was more than just a philosopher and popularizer of biology – he was also a practitioner at many levels. His early study of the land snail genus *Cerion* contributed to the perception of variation in natural populations which would color all his work. Lindberg's brief, informative commentary should be read and savored by all SCAMIT members.

Apropos of S. J.G's appreciation of systematics and taxonomy's place in the world is the following (quoted from his 1996 book Full House); "But classifications are not passive ordering devices in a world objectively divided into obvious categories. Taxonomies are human decisions imposed upon nature – theories about the causes of nature's order. The chronicle of historical changes in classification provides our finest insight into conceptual revolutions in human thought. Objective nature does exist, but we can converse with her only through the structure of our taxonomic systems."

Though he will be missed, particularly as a champion of evolution against a resurgent creationism, he left a legacy of prose that we can draw from in continued contemplation of our world and our place in it. Thanks, and farewell.

## SOME THOUGHTS FROM THE PRESIDENT

SCAMIT has accomplished much in the past 20 years. This includes the creation and maintenance of the species list, countless voucher sheets and monthly taxonomic standardization meetings, and the web site, just to name a few. This remains at the heart of what SCAMIT does. However, what of the challenges for the future? As we celebrate our past accomplishments what about the next 20 years? Our role in the digital future and the apparent attrition of our profession are just two examples of the new opportunities and challenges facing SCAMIT. I'm sure as you read this you will think of others.

To my knowledge this has not been discussed before, at least not in any formal way. Therefore, I would like to convene a general meeting of the membership in order to begin the debate. I have asked the vice president to set aside the regularly scheduled 10 February meeting, to be held at SCCWRP. The topic: Future directions for SCAMIT. I envision the meeting to be part brainstorming session and part policy debate. As president I will lead the meeting but it is the responsibility of the membership to determine what direction(s) to take. It is your input that I'm seeking. I have no agenda. Unfortunately, not everyone that is interested will be able to attend. For those of you who can't make it I strongly suggest that you submit your suggestions either to the SCAMIT list server or, if you would prefer, to me directly. The list server could be a good place to begin this discussion. At any rate I will see to it that your ideas are introduced and discussed at the meeting.

What do I hope to get out of this meeting? Once a consensus is reached I hope to come away with not only a set of long term and short term goals but a plan for achieving said goals. This may be a little overly ambitious for one meeting. It will really depend on what is decided. However I'm confident we can come away from this meeting with concrete proposals that we can then move ahead on. I look forward to a spirited debate on the future of our fine organization.

## NEW LITERATURE

While polychaete workers may find the following chilling, there is no avoiding the fact that polychaetes-in-the-tube is a tasty dish for one group of predatory isopod crustaceans. Anthurid isopods are quite varied in their food spectra, but at least one group, the genus *Eisothistos*, seems specialized on tube-dwelling polychaetes. Just to add insult to injury they attack the best defended tubes, those composed of hard calcium carbonate deposits. The attack is by stealth, however, and comes from the open end of the tube rather than by brute force through the side of the tube. No drilling; no breakage; just entry into the tube end and frontal assault on the prey. In species with operculi serving as tube closures the attack must come while the animal is out feeding at the mouth of the tube. In non-operculate species the isopod, which is very narrow, can crawl down into the aperture and begin to gnaw on the worm alive in the tube.

The attack is always head first. This serves the purpose of leaving the pleopods exposed outside the tube to aid respiration. It also brings the isopod mouthparts into action against the soft tissues of the polychaete. A series of very small species in this genus which attacks spirorbid polychaetes is described by Knight-Jones and Knight-Jones (2002) from various locations. We have two undescribed species known from the Eastern Pacific (Cadien and Brusca 1993), and more undoubtedly await discovery in the Panamic region to the south. Distasteful as it is, polychaete workers are entreated to stay on the lookout for long narrow isopods in their serpulid and spirorbid bearing samples. Any found would be of interest. Please contact Don Cadien (dcadien@lacsd.org) with news of specimens.

Predation is also a concern for the large fleshy sea-pen *Ptilosarcus gurneyi* which we take locally in trawl samples. Weightman and Arsenault (2002) experimentally examined the defensive response of the sea-pen in the presence of three species of sea stars. One of these three (*Pisaster ochraceus*), is not a *Ptilosarcus* predator; one (*Pycnopodia helianthoides*) is a generalist predator, and one (*Dermasterias imbricata*) specializes on this prey species. The authors found that this sea-pen relies on physical contact with potential predators prior to any response, and did not respond to waterborne chemical cues released by nearby potential predators. Not surprisingly they also found that response was appropriate to risk, with the response (in this case complete colony withdrawal below sediment surface) greatest for the specialist predator, intermediate for the generalist, and equal to non-biological control stimulus for the non-predator.

Two important review articles grace the most recent issue of Advances in Marine Biology; Mikkelsen (2002) on shelled opisthobranch mollusks, and Zardus (2002) on protobranch bivalve mollusks. Not that the other articles in this issue are not of interest; but both the cited reviews are major contributions to problem areas.

Shelled opisthobranchs have had a confused history of research. Recent cladistic analyses have suggested major alterations of the relationships historically posited between groups, and transfers of taxa between major groups. Mikkelsen reviews the history, identifying the controversies and adopting positions based on her own research. She then proceeds to discuss each of the component groups (although pteropods, acochlidiaceans and runcinids are excluded) in terms of major organ systems. The result provides a firm basis for the consideration of the character states explicitly provided at the end of the article, and used in a new cladistic analysis by the author combining characters and character states applied in recent previous cladistic treatments of particular groups.

The emphasis of Zardus is less on protobranch phylogeny than on a summation of knowledge on the group. He discusses anatomy, morphology, diet and feeding, reproduction, development, physiology, ecology, evolution and zoogeography. This summary is a great complement to the detailed and (for the first time) complete treatment of all North Eastern Pacific group members by Coan, Valentich Scott, and Bernard (2000).

Another major review article, on the families of valviferan isopods, is that of Poore (2001). Erection of three new family level taxonomic units herein is based on cladistic analysis of the suborder. With over 500 species and 81 generic level units (currently) the valviferans are a large and fairly diverse group whose distribution centers in cooler waters. They are well represented locally, mostly by species of

Pentidotea and Syniotea, and several arcturids. Poore provides a key to the families and discusses a number of characters used in the identification of these animals.

In a seminal paper in 1991, Chapman and Carlton discussed the global distribution of a species broadly distributed by human agency, *Synidotea laevidorsalis*. As part of this they introduced a series of characteristics of "invasive" populations which are still used by those seeking to identify introduced species. While the case for *S. laevidorsalis* and the taxonomy of *Synidotea* has been debated without ultimate resolution, the introduced species criteria they suggested in their paper have found broad acceptance. Not all introduced species are difficult to distinguish, however, requiring close examination of life history and ecology in addition to morphology. Some just stand out like a sore thumb.

This is the case of one export from the North Eastern Pacific, an area better known for importation than exportation of taxa. The nudibranch *Polycera hedgpethi* has now been detected in New Zealand. Actually they were reported from New Zealand waters as early as 1975, but a description of the form from New Zealand has finally been released (Miller 2001). *P. hedgpethi* is easily distinguished from other local species and the introduced *P. fujitai* from Japan in New Zealand, but is much more closely similar to a suite of tropical American species from the Panamic (*P. gnupa*) or the Caribbean (*P. hummi*, *P. aurisula*). The author describes variants in color and pigment patterns in individuals from several geographic sources.

The small nest building clam *Musculista senhousia* is another introduced taxon both well known and easily recognized in southern California bays and harbors where it has profoundly affected some areas. Mistri (2002) describes the occurrence and behavior of the animal in Italy. The population described is from a brackish lagoon on the Po River Delta in the Northern Adriatic and has apparently been in place since the beginning of the 90's. Comparison of Mistri's data with that on other populations of this invader are instructive, as each population seems to behave a bit differently. This has been a particularly densely established population, reaching up to 10,000/m2 at some times. The present paper contributes to our knowledge of the reproductive ecology of this species, as well as to understanding of the growth and mortality rates which this invader may exhibit.

**SEPTEMBER 09 MINUTES**

Ron Velarde started the epitoniid portion of the meeting with two hand-outs, one concerning the genus *Epitonium* and the other the genus *Opalia* (these hand-outs, along with digital images by K. Barwick, are attached at the end of the newsletter). The charts he provided were based on the work of DuShane 1979 and McLean 1996, and were limited to just those species which are currently extant in Southern California. The generic placement of the species is open to debate and varies from one authority to another. The family is in need of a complete taxonomic review to resolve the valid genera and which species belong to each one. Therefore, the two charts were made to characterize the species and the generic placement is up to the user. There is also a new book out, "The Wentletrap book: Guide to the Recent Epitoniidae of the World" Weil et al 1999, which provides many beautiful pictures of these animals. Although all of the species are listed in named genera and subgenera, there are no justifications for their generic and/or subgeneric placement and thus again, open to debate.

He briefly reviewed their life history, stating that for the most part they feed on cnidarians. However, he stressed that they are a poorly known group with few internal characters having been studied. He suggested that looking at the radula and other body characters would be a wonderful graduate project for some eager young malacologist. Currently the taxonomy of the group is based on shell characters.

We then proceeded to look at specimens of *Epitonium* and *Opalia* and compare them to Ron's chart. Species examined included *Epitonium bellastriatum*, *E. lowei*, *E. politum*, *E. sawinae*, *E. tinctum*, and several *Opalia*. Most of these were digitally captured by Kelvin Barwick for future reference. After completing our epitoniid discussion it was time to break for lunch.

Upon our return we dealt with *Neosimnia* as best we could. The primary references Ron uses are, Cate 1969 and 1973, and McLean 1996. The four species known locally are; *N. aequalis*, *N. barbarensis* (is *N. catalinensis* in Cate '69 key), *N. bellamaris* (found on *Renilla*, off San Diego only, to date), and *N. loebbeckeana* (there is a conflict between Cate and McLean with regards to presence or absence of spiral sculpturing in this species). In San Diego's monitoring program we commonly find *N. barbarensis* on the sea pen *Acanthoptilum*. At the end of our discussion of the *Neosimnia* it was agreed that we need to have a meeting at the Natural History Museum of Los Angeles County (or possibly the San Diego Natural History Museum?) and look at specimens in their collection(s) to get a better idea of the taxonomy of this group. There is a feeling that we may be getting various morphs of the same species in our monitoring programs, or that we continue to be confused by existing confusion in the literature.

## ASCIDIAN CORRECTIONS

- following is a series of emails I received from Gretchen Lambert in regards to the ascidian minutes and corrections in the June (Vol 21 No. 2) and July (Vol 21 No. 3) newsletters, respectively. – M. Lilly

"Hi Megan,
I just got around to downloading the June newsletter and read the part about the ascidian workshop. The *Microcosmus* in southern Calif. is not *M. exasperatus*; it is *M. squamiger*. Please see Lambert, C. C. and Lambert, G. 1998. Non-indigenous ascidians in southern California harbors and marinas. Mar. Biol. 130: 675-688. I would appreciate it if you would put an addendum in the next newsletter. There are a couple errors in the paper, unfortunately. The *Symplegma brakenhielmi* was actually a small sample of *S. reptans* so there is only one species of *Symplegma* in southern California. Secondly, I was very late in recognizing the presence of *Botrylloides violaceus* so it is missing from the paper. We have a sequel paper now in review in Mar. Ecol. Progress Series which includes data on many of the same southern Calif. harbors for the year 2000, and the paper also has a separate listing of the species data for each of the different marinas within the big bays like SD Bay and Mission Bay (we combined sites within bays for the 1998 paper). In our sequel paper we have corrected the errors listed above and re-examined the *Botrylloides diegensis* data in order to distinguish which records were for *B. diegensis* and which were actually *B. violaceus*. I will try to remember to send you an email when the paper gets published, which won't be for a while since it is still in review.
Best wishes, Gretchen"

- Part II -

"Hi Megan,
… the July correction is not quite correct either. It says, "This name [*Microcosmus exasperatus*] is no longer in use and the animal is now *Microcosmus squamiger*." These are 2 valid species. It happens that the one in southern Calif. is *M. squamiger*. *M. exasperatus* is very widespread, common in Florida, Hawaii, Guam, the Mediterranean and many other places. These 2 are easily confused but are different. I made the original mistake in identifying the southern Calif. species as *M.*

*exasperatus* a number of years ago, but during the '90's when we did our Sea Grant study (published in the Mar. Bio. paper of 1998) I sent specimens to Dr. Patricia Kott in Australia and she set me straight and pointed out how to tell the difference between these 2 spp.
Best wishes, Gretchen"

## AN ADDITIONAL OCCURENCE

- Ron Velarde sent an email requesting inclusion of the following information.

"…On page 5 of Vol.21, No. 4 under *Nicon moniloceras* add: City of San Diego. We have collected this species from the SCBPP samples in 1994 and from our outfall monitoring stations off Point Loma, San Diego, CA."

## DIGITAL CONFUSION RESOLUTION

Rick Rowe's and Kelvin Barwick's information packed SCAMIT presentation on digital microscopy gave everyone much to think about when planning to make and use digital images. Recently, Microscopy Today published a concise guide for acquiring and manipulating digital images. Jerry Sedgewick, Director of the microscopy/digital imaging facility at the University of Minnesota, wrote this article. A brief highlight summary is below:

Cheaper digital cameras use "mosaic" type chips.

Photoshop "throws out" about 1/3 of all pixels in its "channel" creation for color intensity.

JPEG formats typically reduce resolution by color averaging.

High magnification light microscopy loses more resolution from its own optics and specimen nature than by how pixels are manipulated.

Photoshop's "Image Size" (upper box) width/ height counts represent "true" image resolution, while the lower box labeled "resolution", represents the resolution when printed.

Many printers measure resolution as "dots per inch" or "lines per inch" and do not correlate with "pixels per inch" in Phototshop.

Images acquired by digital camera or by flat bed scanner are each handled differently by Photoshop. Photoshop arbitrarily assigns resolution of 72 or 96 ppi because the user of a digital camera does not preset output resolution. Flat bed scanner acquired images allow for this custom pre-set and avoid this arbitrary limit. The dogma that "72 is too low" often causes users to reset the value to 300 pixels per inch. "Don't do it". You should retain original data if you wish to follow Good Laboratory Practices.

Uncheck "Resample" in the Image Size box in Photoshop to protect the original image state.

If attempting to squeeze additional images into a PowerPoint file, do not change the number of pixels in "Height and Width" boxes, instead save the original image as TIFF or PSD format and make a duplicate in JPEG for use in PowerPoint.

When submitting an image for publication or printing from a photographic or dye sublimation printer, open the Image Size box and check "Resample".

When printing to an ink jet printer, do not check "Resample". Change instead the Height and Width values. Laser jets reinterpret images and do not provide accurate results and should not be used for evaluation of an image.

These guidelines help to maintain original pixel resolution.
Tom Parker (CSDLAC)

## NOTES FROM THE DELTA WORKSHOP

Between the 7th and 15th of October the Fifth Crustacean DELTA Workshop was held at the Natural History Museum of Los Angeles County [a description of this workshop is available on the web at http://crustacea.nhm.org/delta]. SCAMIT was well represented with participants from the City of San Diego (Eric Nestler), the City of Los Angeles (Jim Roney), and the County Sanitation Districts of Los Angeles County (Don Cadien and Lisa Haney). Other members involved were Todd Haney (UCLA and NHMLAC) who was the workshop organizer, Regina Wetzler (NHMLAC), Jody Martin (NHMLAC), and for several days, SCAMIT VP, Leslie Harris.

Additional involvement occurred on the first day, which was an introductory presentation open to all interested parties and well attended by SCAMIT members who could not devote the full week. The instructors, Dr Terry Macfarlane from the Western Australian Herbarium and Dr. Jim Lowry of the Australian Museum, are both longtime users who have been party to the development and refinement of the programs involved. On the first day they presented an overview and introduction to the DELTA program and discussed its application and the nature of inputs to and outputs from the program. As their presentation ended they asked for and received numerous questions leading to a further protracted discussion of the program, its limitations and advantages, and its relationship with other available programs. The group broke up for lunch and discussions continued through until early afternoon when morning attendees departed.

The workshop was a "hands-on" event. Each participant arrived with a laptop computer to load the program onto, and to work on their own databases. The program(s) [DELTA is actually one base program with several peripheral programs which tailor input or output to the main program] were distributed on CD to each of the participants so we all could explore them at our leisure. Once distributed for a fee, DELTA is now freeware. Information on the program and its availability is available at the following web address

http://biodiversity.uno.edu/delta

While southern California was well represented among the participants, this workshop was a truly international affair, with attendees from New Zealand, South Korea, Brazil, Mexico, and Michigan (pretty foreign turf for an Angeleno). We met each day for a combination of tutorial lectures and supervised database development efforts. Along the way many problems were encountered and nearly all resolved. This workshop, as the four that preceded it, was devoted to crustaceans because of a large project of the Australian Museum revolving around http://crustacea.net. DELTA is, however, a program which can as easily be used for any group of organisms, either plant or animal. Part of our distributed example database resource was a database using grasses, for instance. Workshop participants concentrated on a variety of groups of crustaceans including marine and groundwater amphipods, cumaceans, freshwater crabs, marine shrimp, and both marine and freshwater isopods.

As a participant I was delighted to find a versatile and very flexible tool ready made for me to learn. As with all versatile tools, there is a learning curve. At least at the bottom (where I started) it wasn't too steep, and by the second day of the workshop my own database was established and being used as a learning tool. Missteps there were, but not too many, and not too severe. I began not knowing the program at all and ended by being excited about how it could be applied to the day-to-day operations of our laboratory, and how it might be used by other groups who participate in SCAMIT. I urge others who didn't have the chance to participate in the workshop (or who were excluded by its crustacean emphasis) to actively consider this program. It may not be what SCAMIT members eventually decide to use for morphological databasing, but it is a very strong candidate for that position, and one that each interested party should try personally.

Workshop participants have already begun to share their experience with their co-workers. Please look into the issue, I am sure you will find it rewarding.
Don Cadien (CSDLAC)

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**Please visit the SCAMIT Website at:** http://www.scamit.org

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If you need any other information concerning SCAMIT please feel free to contact any of the officers at their e-mail addresses:


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Volumes 1 - 4 (compilation)................................ $ 30.00
Volumes 5 - 7 (compilation)................................ $ 15.00
Volumes 8 - 15 ............................................... $ 20.00/vol.

Single back issues are also available at cost.

Compiled by Ron Velarde from DuShane, 1979 and McLean, 1996
September, 2002

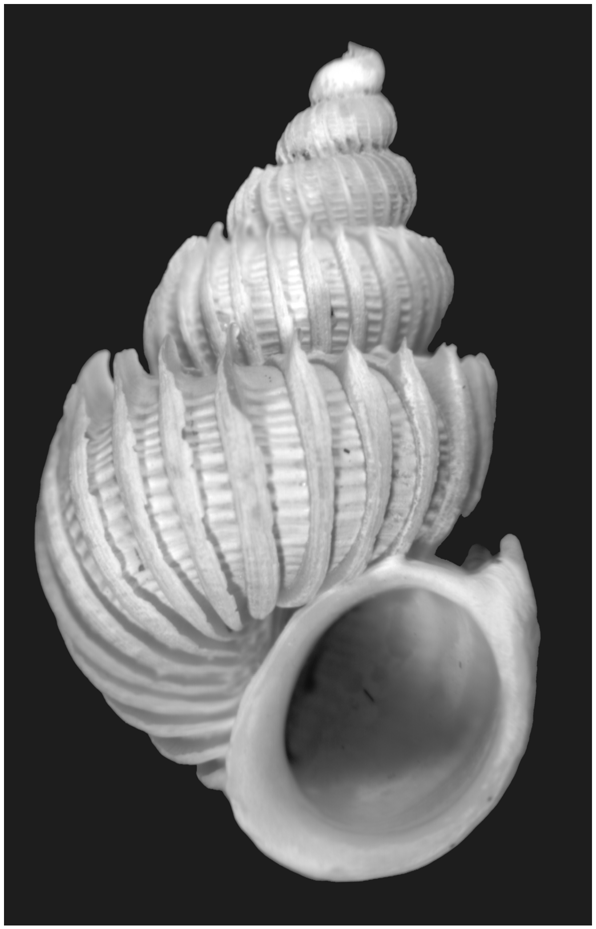
## Epitonium Group (21 subgenera worldwide)

axial costae thin, basal disk absent, spiral sculpture not punctate

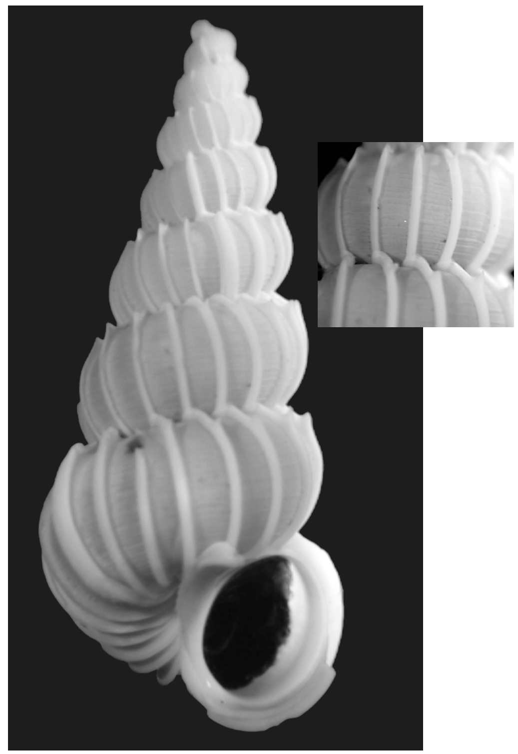
| Species | Length (mm) | Width (mm) | Spiral Sculpture | Whorls* | Number of Costae/Whorl | Axial Costae Reflected | Shoulder | Umbilicus | Depth (m) |
|---|---|---|---|---|---|---|---|---|---|
| ***bellastriatum***** | 3 -20 | 2.33 - 11 | present: 20 -25 / whorl | 3 + 6 -7 | 15 - 17 (20) | yes | strong | yes | 18 - 103 |
| ***lowei***** | 3 - 30 | 1.5 - 9 | present: fine | 4 + 5 - 9 | 25 - 32 | yes | slight to strong spine | yes | 25 - 171 |
| ***minuticosta***** | 3 - 35 | 1.5 - 17 | present: 20 | 3 + 7 - 8 | 13 -21 | yes | short, sharp | yes | 18 - 137 |
| ***berryi*** | 3 - 22 | 0.75 - 8 | absent | 3 + 9 - 10 | 19 - 30 | no | no | yes | 20 - 360 |
| ***californicum*** | 4 - 11 | 2 - 4.5 | absent | 3 + 6 - 7 | 9 - 12 | yes | small, sharp | no | 0 - 36 |
| ***hindsii***** | 3 - 26 | 1.5 - 10 | absent | 3 + 7 - 11 | 8 - 14 | yes | slight to strong spine | no | 0 - 195 |
| ***indianorum*** | 7.4 - 38 | 3.3 - 12 | absent | 8 - 10 | 10 - 17 | slight | no(rare) | no | 0 - 120 |
| ***politum***** | 9 - 22 | 3.5 - 5 | present or absent: fine | 3 -5 + 7 - 12 | 9 - 5 (low) | no | slight | no | 11 - 393 |
| ***sawinae***** | 3.5 - 24 | 1 - 8 | absent | 2 - 3 + 7 - 12 | 14 - 21 | yes | pronounced | no | 18 - 360 |
| ***tinctum*** | 4 - 15 | 1 - 5 | absent | 3 + 4 - 8 | 11 - 14 | slight | no | no | 0 - 40 |

* formula = number of nuclear whorls + Range of the number of post nuclear whorls
** species examined at SCAMIT meeting

Epitoniidae
September, 2002
Images by K. Barwick



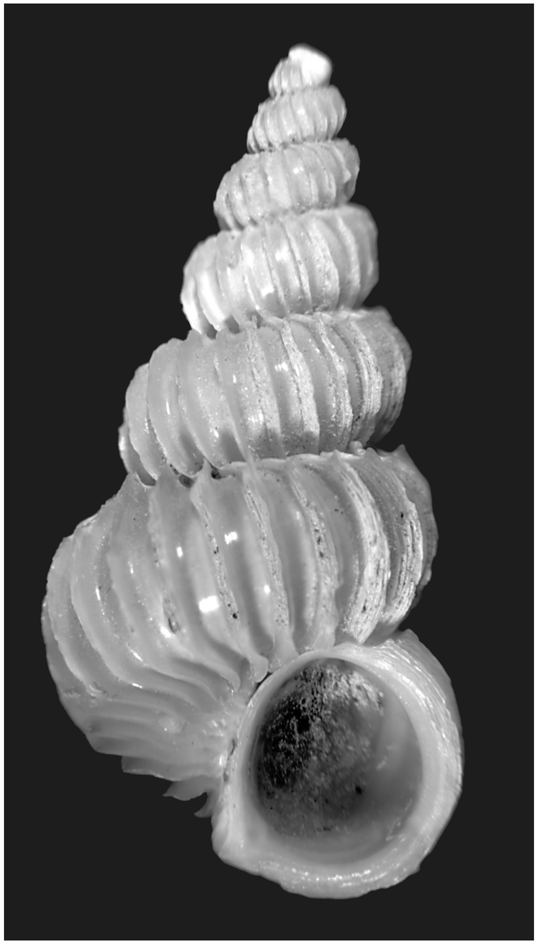
*Epitonium bellastriatum* (Carpenter, 1864)
Station: CSD I22(2), 1/4/02, 91 ft.
Lenght: 7.6 mm
Width: 4.4 mm



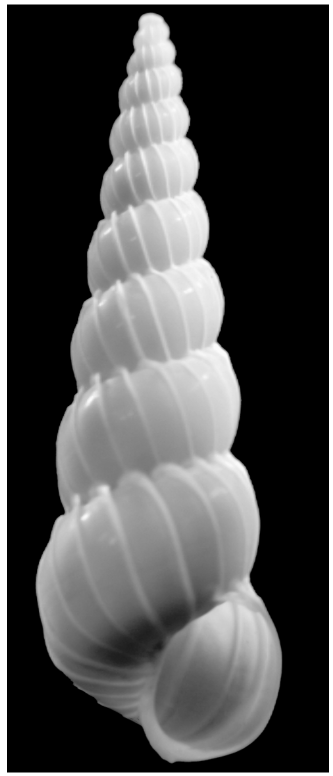
*Epitonium minuticosta* (DeBoury, 1912)
inset: shell detail
Station: CSD I28(1), 1/3/01, 185 ft.
Lenght: 16.3 mm
Width: 6.8 mm

*Epitonium lowei* (Dall, 1906)
Station: CSD B10(2), 10/12/93, 387 ft.
Length: 15.5 mm
Width: 7.9 mm

Epitoniidae
September, 2002
Images by K. Barwick



*Epitonium sawinae* (Dall, 1903)
Station: CSD B13(1), 2/7/92, 380 ft.
Lenght: 8.2 mm
Width: 4.2 mm



*Epitonium politum*
(G.B. Sowerby II, 1844)
LACSD

*Epitonium hindsii* (Carpenter, 1856)
Station: B'98 2252, 7/29/98, 10.9 m
Lenght: 19.1 mm
Width: 6.9 mm

Compiled by Ron Velarde from DuShane, 1979 and McLean, 1996
September, 2002

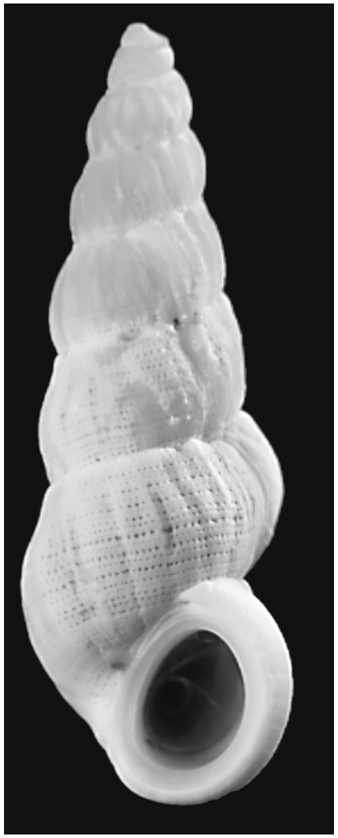
## Opalia Group (4 subgenera)

axial costae thick, basal disk usually present, punctate spiral sculpture

| Species | Length (mm) | Width (mm) | Whorls* | Ribs/Whorl | Basal Disk | Depth (m) |
|---|---|---|---|---|---|---|
| ***borealis*** | 6.5 - 43 | 3 - 13 | 1.5 + 8 - 11 | 7 | present | 0 - 180 |
| ***funiculata***** | 5 - 17 | 3 - 8 | 3 - 4 + 5 - 7 | 12 - 16 | present | 0 - 30 |
| ***infrequens*** | 7 - 12 | 2 - 4 | 2 + 8 | 15 - 20 | present | 0 - 36 |
| ***montereyensis*** | 2.5 - 16 | 1.5 - 5 | 1.5 + 7 (6 - 9) | 8 - 10 | present | 0 - 90 |
| ***spongiosa***** | 7 - 13 | 2.5 - 5.5 | 2.5 + 7 (8 - 9) | 10 - 15 | weak | 18 - 72 |

* formula = number of nuclear whorls + Range of the number of post nuclear whorls
** species examined at SCAMIT meeting

Epitoniidae
September, 2002
Images by K. Barwick



*Nodiscala spongiosa* (Carpenter, 1864)
Station: CSD I3(1), 7/5/00, 86 ft.
Length: 10.1 mm
Width: 3.7 mm

*Opalia funiculata* (Carpenter, 1857)
Station: SCBPP 1739, 7/28/94, 21 m
Length: 4.3 mm
Width: 2.5 mm