Southern California Association of Marine Invertebrate Taxonomists

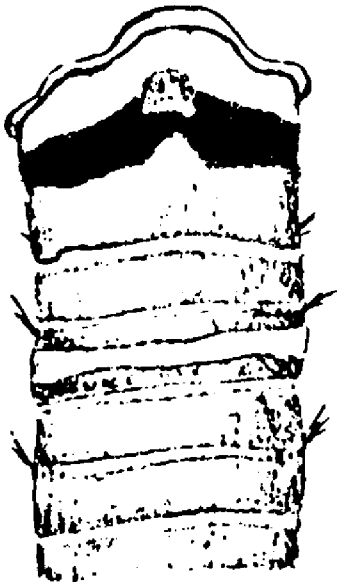
3720 Stephen White Drive
San Pedro, California 90731

May, 1999

SCAMIT Newsletter

Vol. 18, No. 1

SUBJECT:	Cnidaria: A review of the MMS Atlas Vol. 3 with the authors
GUEST SPEAKER:	Dr. Eric Hochberg and John Jlubenkov
DATE:	18 June 1999
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	Dancing Coyote Ranch 20355 Hwy 76 Pauma Valley, CA



Chone mollis - staining pattern

The next meeting will be our long delayed and much anticipated Cnidarian meeting. Speakers will be Dr. Eric Hochberg from the Santa Barbara Museum of Natural History, and John Ljubenkov. We will be going over our questions, comments and suggestions on the cnidarian volume of the Taxonomic Atlas of the Santa Maria Basin series. Other cnidarian questions arising from B'98 sampling will also be discussed; including counting conventions for colonial organisms, *Tubularia* vs. *Ectopleura*, *Thesea* spp., and other gorgonians. The meeting will be held at John & Julie Ljubenkov's Dancing Coyote Rancho at the foot of Mt. Palomar. This meeting is on 18 June, a Friday rather than a Monday. Those wanting to stay over at the rancho, or arrive early, are welcome. Accommodations are limited, however, and you should contact John or Julie at (760)742-2238 or via e-mail at **ljubenko@pacbell.net** to let them know.

FUNDS FOR THIS PUBLICATION PROVIDED, IN PART BY
THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.

ELECTION RESULTS

We were a bit slow in getting out the ballots (the fault of the editor I'm afraid) for the recent SCAMIT Election of Officers. In consequence we accepted ballots for a full two weeks after the nominal closing date. There were no surprises. Turnout was light, in the American tradition, and the full slate of officers was elected. Three were returnees, with Ron Velarde (CSDMWWD) returning as President, Megan Lilly (CSDMWWD) as Secretary, and Ann Dalkey (CLAEMD) as Treasurer. Don Cadien did not run again for Vice-President, and Leslie Harris (NHMLAC) was elected as your new Vice-President. Several write-ins were received, but the one vote for each did not mount a serious challenge to the listed candidates. Members used the bottom of the ballot to forward a series of suggestions for meeting topics during the next year. These are being forwarded to the new Vice-President for her consideration and action. At the last minute an additional candidate for Vice-President was identified, but his candidate statement was not received in time for the election. Hopefully he will choose to run next year. All members are encouraged to consider running for office, and serving if elected. We are a small organization, and must include as much diversity as possible to remain viable. Please consider contributing to SCAMIT by running and serving; it really is not demanding of too much time, and we all benefit from broadening the scope of our officer pool.

With the beginning of the new SCAMIT year our By-Law amendment takes effect, and the job of Newsletter Editor is no longer the responsibility of the Vice-President. We now have an appointed Newsletter Editor who is appointed by, and serving at the discretion of, the Executive Committee. Don Cadien has been offered, and has accepted the job. He will serve until removed by the Committee, or he resigns.

NEW LITERATURE

One of the suggested topics for the next year of SCAMIT meetings was a revisitation of the rationale for and methodology of formalin fixation of our biological materials. There are other ways of dealing with fixation, including the method of going straight into ethanol which is preferred for leaving the tissues suitable for later DNA analysis. Beladjal & Mertens (1999) discuss the dark side of alcohol "fixation" [alcohol does little to fix the sample, it only preserves it]. They report on a case where the method of specimen handling determined what species the specimens would prove to be. Not marine, but interesting and apropos.

The subject of introduced species has frequently graced these pages. It is a "hot topic" and gets press in all the right places. Ruiz et al (1997) review the entire subject in a paper that was part of a symposium on Non-Indigenous Species (NIS). In a field where information accumulates so fast it is useful to have summary review articles quite frequently, if only to gather together the recent references in one place. The authors consider the consequences of NIS invasions for both the receiving environment, and for man's exploitation of it. There is also the added dimension of human health effects which comes into play with some introduced species.

Accidental introductions such as that of the abalone boring sabellid tube worm which has impacted California abalone rearing efforts can have major unforseen effects on a resource and/or its utilization. Such challenges always dare researchers to be innovative. Leighton (1998) describes experimental heat treatment of abalone which is a fairly efficacious means of damaging the polychaete without serious compromise to the snail.

The stress of dealing with a detrimental introduced species is just one factor in the survival - or failure- of any population or species. In some cases a series of impacts all hammer the same population. This is

apparently what happened to the white abalone *Haliotis sorenseni* in California waters. Impacts of both recreational and commercial harvest combined with prolonged warm water intrusions have lead to virtually a total collapse of the white abalone population. Recent census has found the species at a perilously low ebb, perhaps without the minimal spawn size to guarantee any successful reproduction. Davis et al (1998) suggest that the situation, while dire, is not hopeless. They list a series of steps to be taken if the species is not to be driven to extinction. Though these all succeed as hoped, the return from devastation is a slow process. Captive breeding and field release of other abalone species, combined with large areal closures of both the sport and commercial fisheries have yet to yield even one significant recovery in a California abalone stock.

Coan (1999) adds yet another chapter to his ongoing series of treatments of bivalve families on a regional basis. This time he addresses the Sportellidae. A small family, but one with it's share of nomenclatural problems. This is probably a preview of one section of the on-the-verge-of-completion Bivalves of California, a project of Dr. Coan and Paul Valentich Scott on a base of work by the late Dr. Frank Bernard. The author provides a comparison table of distinguishing characters for all regional species in the family. While none of these small clams are among the species we usually take during near-shore monitoring efforts, we should be aware of them, and this paper is a definite help in a fairly obscure corner of the local biota.

Human transport, the usual agent of detrimental NIS movement, is also used for establishing non-native food organisms, both now and in the past. Man has moved some species around so often, that it is very difficult to determine their origin, or even what they are (as geograhically isolated non-interbreeding populations are brought into contact by transport, some species boundaries may blur or dissolve). Gene pools have been stirred vigorously for groups like oysters, by human transport and farming worldwide. The advent of molecular analyses has now made it feasible for researchers to attempt to unravel such puzzles, determining what the morphological boundaries of the various species are, and tracing their history via their DNA. Three recent papers (Josefowicz & O' Foighil 1998, O' Foighil et al 1998, and O' Foighil et al 1999) are just such attempts. The first deals with the entire "flat oyster" group (subfamily Ostraeinae), and provides phylogenetic analysis of 41 taxa, including a group of 4 outgroup species from the related subfamily Lophinae. Not surprisingly the results of the molecular analysis differ markedly from the existing morphology based classification of the subfamily, and the authors suggest some changes. The other two papers deal with specific taxa, and attempt to track down their origins and dispersal.

Use of a negative character, shell loss, is examined by Mikkelsen (1998) in both 'traditional' and phylogenetic analyses. Shell reduction and loss has occurred several times in the gastropod mollusks, and has been used as a key character in definition of some groups. Reductions in other hard parts such as radula and operculum are also considered. The nature of, and caveats necessary in use of such characters is the subject of the article. The author demonstrates, through different treatments of three existing data sets, the impact of coding choices on the analytic result.

Once having lost the protective outer shell, or reduced and/or internalized it, mollusks must find some other protection from predators. Many of the shell-less or internally shelled gastropods have adopted chemical defenses instead, producing poisonous, noxious, or just plain distasteful substances from special glands. Others have become adept at producing copious mucus at a moment's notice, a truly disgusting prospect for many potential predators, and quite an effective defense. Still others (including cephalopods) opt for stealth

and concealment as their weapons of choice in the battle not-to-get-eaten. Octopus, who must go out 'shopping' for prey themselves, must contend with the subsequent predator exposure. Hanlon et al (1999) provide a discussion and fascinating video/still camera documentation of behaviors adopted by foraging coral reef octopuses in the Indo-Pacific. All the tricks of quick change and deception practiced by these soft-bodied predators are on display in this paper.

"It all depends on how you look at it" can be paraphrased without alteration of meaning to "it all depends on what data you use". Price et al (1999) examine the effect of scale on perception and analysis of asteroid diversity in the Atlantic.

On a small scale Deheyn & Jangoux (1999) have detected a sibling species hiding amidst the variability of color and bioluminosity in *Amphipholis squamata*. The authors determined that the differences were fully heritable, and represented different genotypes. The authors, while demonstrating the presence of the second form, did not provide it with a name, or associate it with an existing name within the synonymy of *A. squamata*.

A different take on the variability in color and bioluminescence was provided by Deheyn et al (1998) who investigated the effect of symbionts on the color and luminosity of *A. squamata*. They did find an effect exerted by nearly all symbionts on the intensity/and or kinetics of light production in A. squamata, but found that the effects were expressed independent of the color of the ophiuroid (and thus in 'light' of the preceding article) regardless of which sibling species was being examined.

3 MAY MINUTES

The meeting was held at the Los Angeles County Museum of Natural History Worm Lab and was called to order by President Ron Velarde. He relayed a message from Don Cadien that very few ballots for the SCAMIT election had been turned in so far. Don will accept ballots until mid May, so please, if you haven't voted yet, now is the time to do so. A ballot is available on the SCAMIT website.

The SCAMIT website has undergone some updates and changes recently. Please take a look if you haven't visited recently, and give your feedback to our webmaster Jay Shrake.

Due to an initial interest from Cheryl Brantley and Ron Velarde regarding the taxonomy of *Aphrodita*, Larry Lovell is setting aside specimens within this genus while going through the collections at his new job at Scripps. If anyone has additional material, it would be very welcome, and it can be sent or given to Larry. They plan on re-examining this group in the future.

By the way, congratulations to Larry Lovell on his new position at Scripps Institution of Oceanography. As of March 1, Larry is the Museum Scientist in charge of the Benthic Invertebrates Collection at SIO. He can be reached via phone or e-mail:

Lawrence L. Lovell
Museum Scientist
Benthic Invertebrates Collection
Scripps Institution of Oceanography
9500 Gilman Drive
La Jolla, CA. 92093-0206
(619) 822-2818
llovell@sio.ucsd.edu

It has been quite awhile since the last polychaete meeting (January), so attendees brought numerous specimens from their Bight 98 samples to examine. A brief discussion about paraonids encountered in the Bight samples ensued. A general clarification was made that paraonid specimens previously identified as *Acmira* nr *similis*, then *Acmira* sp C, will now be identified as *A. lopezi*.

The next family discussed was nephtyids. Rick Rowe has a relatively new key which includes 2 new species, *Nephtys* sp SD 2 and *Nephtys simoni*. Rick commented that he has identified similarly-sized *N. ferruginea* and *N. simoni* from the same sample. Tony Phillips found that he can observe the brain morphology of juvenile *Nephtys* by simply staining the entire animal with methyl green. However, larger specimens must be dissected first and then stained.

Capitellidae was the next family considered. There has been some confusion with specimens that we have been calling *Notomastus tenuis* Moore, 1909 locally. The type specimen of *Notomastus hemipodus* Hartman, 1947 has been examined by Leslie Harris. Leslie originally noted at a SCAMIT meeting (August 12, 1996) that when she methyl green stained the type specimen of *N. hemipodus* the double, midventral racing stripe pattern was present. When she stained Moore's type specimen of *N. tenuis* no staining pattern was revealed. Although not reported by Moore, 1909 in the original description, Leslie also noted that the first setiger in *N. tenuis* is uniramous. Based on Leslie's examination of both type specimens and her familiarity with our local fauna, she reported that Moore's *Notomastus tenuis* is probably a shallow, bay, mudflat, and harbor species and *Notomastus hemipodus* stains like our common offshore species. But since *N. hemipodus* was originally described from shallow waters in North Carolina use of that name locally requires further investigation. To avoid confusion reporting data for the Bight 98 project, we will continue to report the offshore species (the "double, ventral racing stripe" staining pattern specimens) as *Notomastus tenuis*. Rick Rowe has offered to produce a voucher sheet(s) for the embayment species using the name(s) *Notomastus* sp SD 1 (sp SD 2, etc.). Clarification of the proper names to apply to our local species of *Notomastus*, including the correction of the misuse of *N. tenuis*, will be considered at a future SCAMIT meeting.

Next, Tony Phillips showed us a specimen of *Pseudoleiocapitella* that he identified using Fauchald 1977. In this genus, the thorax has ten segments, there is one asetigerous segment, and the first setiger is complete. On Tony's specimen, there was a mixture of capillary and hooded hooks on setiger 10.

Larry Lovell notified everyone that he has been getting *Amastigos acutus* at some shallow water stations. This species is small and threadlike with hooded hooks only (no capillary setae present). Tony Phillips has been encountering specimens of *Anotomastus gordiodes* in his bay samples. This species has a distinct prostomium, the thorax has 17-18 setigers with capillary setae, and the cuticle has a sheen to it. A methyl green pattern is solid staining on setigers 5-17, followed by a banding stain pattern from setiger 17 to about setiger 30.

Leslie passed around a new journal article by Eijiroh Nashi (1999) titled "Redescription of *Mesochaetopterus selangolus* (Polychaeta: Chaetopteridae), based on type specimens and recently collected material from Morib Beach, Malaysia". This article contains a table which compares characters of 12 species of *Mesochaetopterus*, including our local California species, *M. taylori* and *M. ricketsii*. The table should prove to be useful in our identifications of *Mesochaetopterus.* SCAMIT hopes to include this table as an attachment to the Newsletter in a future edition, but first, permission to distribute the table must be attained from Pacific Science.

The next group discussed was scaleworms. Cheryl Brantley brought in a very nice specimen of *Malmgreniella sanpedroensis* from station 2204, west of White's Point, Palos Verde, 76 m. Rick Rowe showed us some excellent digital images of *M. sanpedroensis*, and we discussed some of the distinguishing characteristics of this species. There are red pigmented spots on the ventral cirri and on the supra-acicular lobes. Most specimens also

have “clumps” of red pigment at the base of the dorsal cirri, although these are not present in all specimens. Pettibone (1993) does illustrate these red spots.

Cheryl Brantley showed us an unknown scaleworm, small, with transparent elytra, a wide prostomium, and brown speckled pigment on the posterior of the prostomium. This specimen is from station 2205, off White’s Point, Palos Verde, 64 m. We speculated that it might be a new species of *Malmgreniella*. Cheryl continued her investigation the next day at her lab and posted a note to the Bight 98 Taxonomic Listserver (May 4, 1999) regarding this specimen. She examined several specimens of *Ysideria hastata* and believes this specimen is a juvenile, and the large distinctive superior neurosetae are not fully developed yet. “The bifid teeth on the neurosetae and the serration on the shaft match very closely.” Thank you, Cheryl, for continuing your investigation and reporting back to us.

The next polynoid up for discussion was *Harmothoe* “*imbricata*”. There is considerable variation in the color and color pattern of the elytra of this species complex. Tony Phillips had a specimen from LA Harbor that exhibited a black-grey mottled pattern on the elytra. Larry Lovell reported that a specimen from Newport Harbor had black-grey pigment that formed a longitudinal, mid-dorsal band on the elytra. Both of these color morphs are figured in Pettibone 1953. Imajima (1997) has recently published a paper describing 6 new species of *Harmothoe* having sub-ventral eyes. We need to carefully compare our different color morphs of *H*. “*imbricata*” to see if they match one (or more) of Imajima’s new species.

Next, Leslie Harris showed us an interesting spionid that was collected in Puget Sound. It was similar to *Spio filicornis* of Maciolek with the following differences: 1) the specimen had nuchal organs that were in a zig zag configuration and 2) the pigmentation didn’t match. Leslie had also seen these same specimens from local waters as well as from Vancouver. Let’s keep our eyes open for this little spionid in the Bight 98 samples.

We then moved on to syllids. Tony Phillips had a *Typosyllis* collected from Fish Harbor in Los Angeles Harbor. Ron Velarde had a second similar specimen collected from San Diego Bay (station 2224). Leslie Harris identified both of these specimens as *T. nipponica*. She had pulled thousands of specimens off the docks in Richmond Harbor, San Francisco Bay. Upon a return visit, after the El Nino, these worms were gone, along with many other species, due to the flushing of the Bay with large amounts of freshwater.

Ron Velarde brought a little syllid that was collected offshore of San Diego at a depth of 98 ft. It looked like a *Typosyllis farallonensis* except for a strange additional character. There were golden-colored caps covering the ends of some of the setae. We don’t know what this substance is, and we couldn’t tell by looking at the specimen whether they were secreted at the time of setal formation or were somehow added or accumulated later.

We then examined a couple of specimens from the family Eunicidae. The first was a *Marphysa* brought in by Tony Phillips collected from Dana Pt. Harbor. It had palmate branchiae, and using Hartman’s Atlas, keyed out to the couplet with *M. mortenseni* and *M. sanguinea*. The specimen had some characters of each species and had tentacles that were intermediate in length. We found spinigers on this specimen (like *M. sanguinea*) but no falcigers. Larry Lovell brought a juvenile *Marphysa* from Newport Bay (station 2137), and we initially wondered whether it was the same species as Tony’s *Marphysa*. The juvenile specimen had only 3 antennae. Upon close examination, we did find falcigers on

Larry's small specimen, confirming that it was different than Tony's specimen. The adult *Marphysa* specimen will be described as *Marphysa* sp 1.

We then moved on to the family Sabellidae. Tony brought some *Chone* specimens for us to look at. The first specimen was his *Chone* sp 1 from Santa Cruz Island (station 2519). It had a large, non-staining half moon on the collar. Leslie Harris identified the specimen as *Chone minuta* and said the relatively large size of the non-staining area was within the range for this species. We next looked at Tony's *Chone* sp 2. He had found them from Catalina (11 meters), Long Beach Harbor (16 meters), Santa Cruz Island (66 meters), and Santa Monica Bay (45 meters). These specimens had a high collar with a non-staining band all the way around the top. The setae were similar to *C. mollis* in that they were spatulate with mucronate tips. There was an interesting plaque on the collar; it stained darkly and evenly with methyl green. After further investigation at the meeting and looking at Banse 1972, we concluded that it was one of the two "morphs" of *C. mollis* that were described in Banse 1972. Tony's specimen matched Banse's *C. mollis* from Tomales Bay which is different in staining pattern from the *C. mollis* we typically encounter in S. California.

24 MAY Meeting

The meeting was called to order by Ron Velarde, at approximately 9:40 a.m.. Unfortunately the only people in attendance were Ron Velarde (CSDMWWD), Megan Lilly (CSDMWWD) and Don Cadien (CSDLAC) with brief morning visits by Kelvin Barwick (CSDMWWD) and Kathy Langan (CSDMWWD).

During the business meeting Ron updated us on SCAMIT's financial status. Our treasurer, Ann Dalkey, has transferred the SCAMIT savings into a CD with a higher annual yield.

We were then reminded of the upcoming WSM at Cal State Fullerton from June 13 - 17. Ron passed around an annoucement for the meetings.

Don Cadien will soon have a list of duplicate reprints for sale from his Jan Stock collection. The cost will consist of 1cent per page for reprints and 3 cents per page for originals. These are likely to appeal only to crusty folks, as virtually all deal with crustaceans. Contact him if you think you might be interested, and he can send you the list (well over a thousand entries).

In response to the recent article resurrecting the shrimp *Eualus subtilis* from it's synonymy with *E. lineatus* (see last months NEW LITERATURE section), Ron Velarde has gone back and reviewed specimens of *Eualus* encountered by the City of San Diego's Ocean Monitoring Program. He found the species taken off San Diego was *E. subtilis.* Ron is preparing a table of separatory characters for the three species of *Eualus* we might encounter. When completed it will be placed in the taxonomic tools section of the website.

Next an in-depth discussion ensued on what to do with the *Amphioplus hexacanthus* problem. Hendler synonomized *A. hexacanthus* with *Dougaloplus amphacanthus* back in 1996, based on reexamination of the type specimens. However, many taxonomists at the various agencies feel that they are getting a distinct species from *D. amphacanthus.* This distinct species has an oral papillae pattern similar to *D. amphacanthus*, but has no superficial structures on the aboral surface of the disk. It has been called *A. hexacanthus* by most local taxonomists, but due to the synonomy, this name is no longer available. Therefore, what to do with this species? Kathy Langan and Megan Lilly have been collecting *D. amphacathus*, *D. sp A*, and *A. hexacanthus* since the SCAMIT meeting held with Dr. Hendler in '97 and have sent them off for his examination. Until Dr. Hendler can examine

the animals and give a recommendation as to how to treat what we've been calling *A. hexacanthus*, that name will continue to be used for the sake of data consistency, not just within the City of San Diego's lab but for interagency calibration as well.

Some of our continuing problems with these animals can be laid at the feet of H. L. Clark, whose original description of the animal was based on disk-less specimens. He as much as stated in his description that his material was insufficient to define the species, but then went ahead and gave a new species name to his disk-less specimens. When Hendler reexamined them he found himself unable to separate them from specimens of *Dougaloplus amphacantha*. Perhaps with the material collected and submitted by CSDMWWD he will locate additional characters which will allow Clark's species to be resurrected, even with such imperfect type material. If not, action should be taken to remove *Amphioplus hexacanthus* from the synonymy of *D. amphacantha*, and declare it a nomen inquirendum, since the type material is not sufficient to determine the species accurately. Dr. Hendler may undertake such an action if he is convinced that there is a second species in the area with identical arm and oral field morphology, but with different disk morphology. As part of the discussion on this issue we came to the realization that we didn't know with certainty what genus should receive the species currently being referred to as "*A. hexacanthus*". We will await guidance from Dr. Hendler following his examination of the material.

During the taxonomic list server exchanges which preceded this meeting it was suggested that there might be a problem with separation of *Amphioplus* "*hexacanthus*" from *Amphioplus* sp A. The latter species was synonymized with *Amphiura diomedeae* implicitly by Hendler (1996, pg. 147), as he listed among the material of *A. diomedeae* examined the primary voucher of *Amphioplus*

sp A from Phase I of the MMS Santa Maria Basin study, the same specimen used to establish the provisional name [in effect the "type" of *Amphioplus* sp A].

The rest of the day was spent discussing and comparing some sipunculids (*Nephasoma eremita* taken by CSDLAC and CSDMWWD and *Golfingia margaritacea* taken by CSDMWWD), a flatworm from San Diego Bay (a *Eurylepta* species, but too small for firm species level recognition), and one from offshore Seal Beach (Polycladida sp. 27 of MEC), and urochordates. Some of the urochordates were species encountered among the Voucher QC lots examined by Megan Lilly from the B'98 trawls, while several others were from the B'98 benthic sampling. The most interesting was a large animal with the branchial structure of *Ascidia* combined with the thick opaque rugose tunic typical of a *Styela*.

BIBLIOGRPAHY

Banse, Karl. 1972. Redescription of some species of *Chone* Kroyer and *Euchone* Malmgren, and three new species (Sabellidae, Polychaeta). Fishery Bulletin 70(2):459-495.

Beladjal, Lynda & Johan Mertens. 1999. Direct preservation in alcohol causes deformation of taxonomic key-characters in Anostraca (Crustacea). International Review of Hydrobiology 84(1):17-22.

Coan, Eugene V. 1999. The eastern Pacific Sportellidae (Bivalvia). Veliger 42(2):132-151.

Davis, Gary E., Peter L. Haaker, & Daniel V. Richards. 1998. The perilous condition of white abalone *Haliotis sorenseni*, Bartsch, 1940. Journal of Shellfish Research 17(3):871-875.

Deheyn, Dimitri & Michel Jangoux. 1999. Colour varieties as sibling species in the polychromatic ophiuroid *Amphipholis squamata* (Echinodermata): evidence from inheritance of body colour and luminescence characters. Journal of Experimental Marine Biology and Ecology 234(2):219-234.

Deheyn, Dimitri, Nikki A. Watson, & Michel Jangoux. 1998. Symbioses in *Amphipholis squamata* (Echinodermata, Ophiuroidea, Amphiuridae): geographical variation of infestation and effect of symbionts on the host's light production. International Journal for Parasitology 28(9):1413-1424.

Fauchald, Kristian. 1977. The polychaete worms. Definitions and keys to the orders, families, and genera. Natural History Museum of Los Angeles County, Science Series 28:1-190.

Hanlon, Roger T., John W. Forsythe, & David E. Joneschild. 1999. Crypsis, conspicuousness, mimicry and polyphenism as antipredator defenses of foraging octopuses on Indo-Pacific coral reefs, with a method of quantifying crypsis from video tapes. Biological Journal of the Linnean Society 66(1):1-22.

Hendler, Gordon. 1996. Chapter 7. Class Ophiuroidea. Pp. 113-179 IN: Blake, James A., Paul H. Scott and Andrew Lissner (eds.). Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and the Western Santa Barbara Channel. Volume 14 - Miscellaneous Taxa. Santa Barbara Museum of Natural History, Santa Barbara, California. 305pp.

Imajima, Minoru, 1997. Polychaetous annelids from Sagami Bay and Sagami Sea collected by the Emperor Showa of Japan and deposited at the Showa Memorial Institute, National Science Museum, Tokyo. Families Polynoidae and Acoetidae. National Science Museum Monographs No. 13. 131pp.

Jozefowicz, Christopher J. & Diarmaid O' Foighil. 1998. Phylogenetic analysis of southern hemisphere flat oysters based on partial mitochondrial 16S rDNA gene sequences. Molecular Phylogenetics and Evolution 10(3):426-435.

Leighton, David L. 1998. Control of sabellid infestation in green and pink abalones, *Haliotis fulgens* and *H. corrugata*, by exposure to elevated water temperatures. Journal of Shellfish Research 17(3):701-705.

Mikkelsen, Paula M. 1998. Review of shell reduction and loss in traditional and phylogenetic molluscan systematics, with experimental manipulation of a negative gain character. American Malacological Bulletin 14(2):201-218.

Moore, J. Percy. 1909. The polychaetous annelids dredged by the U.S.S. Albatross off the coast of Southern California in 1904. 1. Syllidae, Sphaerodoridae, Hesionidae and Phyllodocidae. Proceedings of the Academy of Natural Sciences of Philadelphia 61:321-351.

Nashi, Eijiroh. 1999. Redescription of *Mesochaetopterus selangolus* (Polychaeta: Chaetopteridae), based on type specimens and recently collected material from Morib Beach, Malaysia. Pacific Science 53(1):24-36.

O' Foighil, Dairmaid, P. M. Gaffney, A. E. Wilbur, & Thomas J. Hilbish. 1998. Mitochondrial cytochrome oxidase I gene sequences support an Asian origin for the Portuguese oyster *Crassostrea angulata*. Marine Biology 131(3):497-503.

O' Foighil, Diarmaid Marshall Bruce A., Thomas J. Hilbish, & Mario A. Pino. 1999. Trans-Pacific range extension by rafting is inferred for the flat oyster *Ostrea chilensis*. Biological Bulletin 196(2):122-126.

Pettibone, Marian H. 1953. Some scale-bearing polychaetes of Puget Sound and adjacent waters. 89 pp., 40 pls. University of Washington Press: Seattle.

Pettibone, Marian H. 1993. Scaled polychaetes (Polynoidae) associated with ophiuroids and other invertebrates and review of species referred to *Malmgrenia*. Contributions to Zoology No. 538. 92 pp.

Price, A. R. G., M. J. Keeling, & C. J. O'Callaghan. 1999. Ocean-scale patterns of 'biodiversity' of Atlantic asteroids determined from taxonomic distinctness and other measures. Biological Journal of the Linnean Society 66(2):187-203.

Ruiz, Gregory M., James T. Carlton, Edwin D. Grosholz, & Anson H. Hines. December 1997. Global invasions of marine and estuarine habitats by non-indigenous species: Mechanisms, extent, and consequences. American Zoologist 37(6):621-632.

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

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers e-mail address

President	Ron Velarde	(619)692-4903	rgv@mwharbor.sannet.gov
Vice-President	Leslie Harris	(213)763-3234	lhharris@bcf.usc.edu
Secretary	Megan Lilly	(619)692-4901	msl@mwharbor.sannet.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

Back issues of the newsletter are available. Prices are as follows:

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.