



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

June, 1999

SCAMIT Newsletter

Vol. 18, No. 2

SUBJECT:	Recent Research on the Crustacea of Mexico
GUEST SPEAKER:	Dr. Michel Hendrickx
DATE:	5 July 1999
TIME:	9:30 a.m. to 3:30 p.m.
LOCATION:	Los Angeles County Museum of Natural History Molecular Biology Lab 900 Exposition Blvd. Los Angeles, CA



Alabina phalacra (Carpenter, 1864)
(ID not fully confirmed) B'98 2240,
4 August 98, 3.3 m. Image by K.
Barwick 9 Apr 99

Our next meeting will be on 5 July (a holiday, unfortunately, for many) where Dr. Michel Hendrickx, director of the Mazatlan Marine Station, will discuss with us his recent research on crustaceans, and other matters. He, and his family, are “just passing through” on their way to Belgium, the Hendrickx ancestral home, and found time to talk to SCAMIT en route. This would be a particularly good time to deal with any questions on decapods and stomatopods which have arisen during B'98 sampling. We hope that you can attend the meeting, and enjoy our guest speaker, despite the holiday. The meeting will be held at the Molecular Biology Lab (adjacent to the Worm Lab) of the Natural History Museum. The museum staff will also be on vacation that day, but access will still be possible through the staff entrance

and the guard station at the rear of the building (as usual). There will be a second July meeting on 12 July to continue discussion of B'98 related polychaete problems.

NEW LITERATURE

In honor of the cnidarian subject of our last meeting, the literature presented there (and here) concentrates on that phylum.

Studies of rift, seep, and mid-ocean ridge biotas have provided a base of new data on the inhabitants of deep sections of the ocean that is not commonly available. In some cases these efforts have taxonomic or nomenclatural ramifications in our own shallower-water fauna. Calder (1996, & 1997) and Calder & Vervoort (1998) all deal with the deep-water hydroid fauna of the Atlantic. Calder (1998) provides an interesting examination of depth zonation in the hydroid fauna from shallow coastal shelf waters into the deep sea off Bermuda, which helps show how the shallow and deep fauna differ, and where they are similar. For the most part there is no direct relationship with the hydroid fauna of the Bight, but the discussion of *Ectopleura* vs. *Tubularia* in Calder & Vervoort is apropos to our own fauna.

The natural history of one hydroid is addressed by Cerrano et al (1998), who examine the hermit crab associated *Podocoryna exigua* from the Mediterranean. The authors' careful observations in the laboratory demonstrate that presence of the hermit crab is necessary for the colonial commensal development of the hydroid, and that once the crab leaves the shell, a healthy active hydroid colony rapidly regresses. If a crab is reintroduced to the shell the colony remnant resumes its earlier active growth. Despite this, the relationship is not obligate, as solitary polyps are found in sediments. Observations of the hydroid feeding showed that different parts of a colony fed on

different prey, with buried polyps selectively ingesting sediment particles, while exposed polyps feed more normally on plankters at the sediment/water interface.

During regression of abandoned colonies the authors confirmed earlier observations that hydractinid spines are formed by polyp regression, and represent sites at which polyps were earlier situated. In *Podocoryna* the spines lasted only a few weeks before being abraded away.

The crabs apparently benefit from the association as well (although the hydroids were observed to feed on newly released crab larvae) by stealing zooplankters caught by zooids near the aperture of the shell.

Morphological variability in soft corals and the ability to detect the limits of variability in a given species were discussed by Benayahu (1998) and McFadden (1999). As many cnidarians adopt different ecophenotypes depending on the hydrodynamics of their attachment site, recognition of species boundaries is a continuing subject of debate in the group. Benayahu describes lobe variation in one soft coral, stressing the need to pay attention to the morphology of the entire colony when making species distinctions. McFadden also draws in genetic testing (examination of allozyme distributions) to "ground truth" morphology based observations. Both their discussions are useful in considering variability of local octocorals.

Predator/prey interactions can also alter soft coral appearance and behavior. In addition to stinging cells (cnidae), production of toxic compounds to deter predators is often used by various cnidarians, not always successfully. Slattery et al (1998) discuss the uptake and sequestration of a soft-coral produced diterpene by an aeolid nudibranch. This mollusk has been able to co-opt the cnidarian's defense to its own use, offering the soft bodied nudibranch protection from fish predation.



The relationship between local and regional scale variables and processes and resulting local and regional scale species richness in coral communities was examined in two recent papers (Karlson & Cornell 1998, 1999). Their analyses suggest that in many areas reef habitats are not species saturated, and that the reasons for this are not the traditional ones of competition and dominance. Their analyses indicate that larger scale factors are at least as important in determining saturation and community richness as are local factors. Both need to be taken into account when comparing community structure between different areas.

The even larger scale issue of the development of symmetry was addressed by Martindale & Henry (1998). The derivation of bilateral symmetry from radial or biradial symmetry was an early and major event in the history of the Metazoa. The authors discuss how it may have happened.

Kim et al (1999) provide another entry in the "lower metazoan relationships" cladistic sweepstakes. They use 18S rDNA sequences as their data of choice. The analysis upsets no applecarts, and instead offers good support to a "traditional" perception of this group of taxa. Poriferans were basal, with ctenophores the basal group of metazoans at tissue grade with a nervous system, and a monophyletic Cnidaria.

MYSTERY SOLVED

Several years ago a CSDLAC trawl sample yielded a small tubicolous amphipod scraped from debris caught in the net. This was not legitimate trawl catch, so was never reported. When time permitted this was examined and found to be a *Corophium* with an interesting double tooth on the 4th article of antenna 2, and interesting telsonic armature. It couldn't be identified as anything at the time, so was given the name *Corophium sp A*, and set aside. While working on the voucher sheets from B'98 infaunal sampling I came across a slide of a partially dissected specimen, and decided to try and identify it using the Bousfield and Hoover

(1997) *Corophiinae* paper. This proved fairly easy, with the animal turning out to be *Monocorophium californiense*. This is the first Southern California Bight record, with the previous range from Monterey Bay north to British Columbia. Since it was taken in a routine monitoring sample, I'll add it into the next edition of the SCAMIT listing. Another provisional bites the dust: Hooray!! - Don Cadien

WSM MEETING

The annual Western Society of Malacologists meeting was held June 13-16 at Cal. State Fullerton. The three symposiums were entitled; Recent Advances in Molluscan Research, Invasive Molluscs: Environmental and Conservation Impacts, and Current Research on West Coast Molluscan Paleontology. SCAMIT President Ron Velarde attended for one day and found the talks quite informative.

BIGHT'98 UPDATE FOR OUR FRIENDS SOUTH OF THE BORDER

The Mexican group working on the Bight'98 project collected both chemistry and benthic samples. They are going to work up the benthic samples and the data might be included with the main Bight'98 report or as an addition to the main report. In order to determine the level of expertise of the group participating in the identifications the San Diego Lab has volunteered to give 3 samples from their lab to the Mexican group for re-identification. That way if the Mexican group needs some intercalibration, the San Diego lab can provide it before work on the Mexican portion of the Bight samples begins. Resulting data will better coordinate with the southern California data if we are all on the same page taxonomically.



18 JUNE MEETING

Secretary Megan Lilly was the OIC for this meeting, the President and Vice-President being unable to join us. She reminded attendees of the next two upcoming SCAMIT meetings - 5 July, a meeting with Michel Hendrickx regarding Crustacea at LACMNH and 12 July a B'98 problem polychaete meeting probably at LACMNH. The floor was then given to Don Cadien who reminded attendees of the upcoming B'98 intercalibration cruise on 29 June hosted by CSDLAC. Don also brought up a query he'd seen on the Crustacea list server by Dr. Judith Weiss on how to successfully tether glass shrimp out in the field. Dr. Weiss had tried numerous techniques and all had failed. There has subsequently been a flood of helpful comments and suggestions from folks with experience in shrimp bondage. If you have a need for this type of experimental deployment consult the archives on this thread [<http://www.vims.edu/~jeff/archive.htm>].

Eric Hochberg then made a suggestion for an upcoming newsletter. With his help we will be following the Oregon State University (OSU) benthic collections of retiring Dr. Andrew Carey, which have been distributed to several west coast institutions. The collections have been split between Cal Academy, SBMNH, and LACMNH. Dr. Hochberg has a list of which taxa went to which institutions. Much of the material is deep water in its origin. Although each institution will probably make a list of the materials it has received, SCAMIT will provide a list of the entire distribution. The entire polychaete collection now resides at the Natural History Museum of Los Angeles along with collections of most crustacea, gastropods, and echinoderms. Smaller phyla groups have been split between the other two institutions. Also obtained by LACM were some of Dr. Carey's unsorted samples. Most of these animals are from deep water off Oregon (Cascadia Abyssal Plain), Alaska, and the Bering and Chukchi Seas.

With the business aspect of the meeting completed, John Ljubenkov plunged into the Cnidaria. He started by discussing the historical assumption that hydrozoan taxa could be separated on the basis of whether or not medusae were generated during an animal's life cycle. He feels, along with a number of other workers, that this is an incorrect assumption. Medusa retention is an adaptation to keep larvae close to the adult in areas where they would otherwise be lost to sub-optimal or unacceptable habitat. It has occurred repeatedly in many lineages (is homoplaseous), and should not be used as a character in either a phenetic or cladistic analysis. One genus can have members with freely liberated swimming medusae, medusae which develop sessilely on the adult and drop off to metamorphose nearby, and total suppression of the medusoid generation. A rather animated discussion ensued on the whole concept of poecilogony and the ability of animals to modify their reproductive modes to meet various ecological/environmental pressures.

John then referred to a paper by Peterson (1990) which discussed the differences between *Ectopleura* and *Tubularia*. According to this paper, everything we're getting here on the West Coast is now in the genus *Ectopleura*. Although *Tubularia* is still a valid taxon, none of the species we encounter belong to it. These generic categories are not viewed identically by all authors, however. The generic definitions of Calder & Vervoort (1998) parallel, but do not completely overlap those of Peterson.

We also have considerable difficulty with specific separation within the west coast representatives of the genus. Peterson corrects the earlier usages of Fraser, who confused the species, and has confused us in turn.

A request was then put forth by Eric Hochberg for people to send him specimens of *Virgularia*, *Acanthoptilum*, and *Stylatula*. He would appreciate, when possible, if people



would take notes when they see these organisms whether or not eggs are present, time of year and size of the animal. As well, he would like to see these animals with their commensals and/or predators still attached. In other words, preserve together the branch of the pen and the nudibranch, ovulid, etc.. Do not remove the commensal/predator and preserve it separately. He would also appreciate any specimens of *Clavularia* or *Alcyonium* that people may have and could spare. These animals are rocky substrate organisms not commonly seen in POTW's monitoring programs. If you should run across any, please consider sending them to Eric.

The request for pennatulid specimens is in support of a new examination of the west coast fauna; a continuation of the treatment in the Atlas. This will involve Dr. Gary Williams of the California Academy of Sciences as well. He has reviewed most, if not all, of the important types which are still extant. He has also recently been working on virgulariids from New Zealand and is now ready to tackle our problem ridden local species.

We next discussed the Cnidaria volume of the Taxonomic Atlas series. Since our comments on the first two chapters, authored by Eric and John, were generally only editorial we decided to list them and send them along to Eric for correction in any future second edition. Our comments on the third chapter, the Anthozoa, were more critical and much more substantial. We generally felt, for instance, that the use of illustrations of related species, or of representatives of putatively wide ranging species from other oceans, was ill-advised. We also felt that the effort was particularly light in areas where much information is available locally, such as the edwardsiids. This may reflect the nature of the collection examined, but left us very unsatisfied. It was concluded that our issues and requests need to be clearly spelled out and forwarded to Daphne via Eric.

A wonderful, healthy lunch of sandwiches and fruit was enjoyed by all outside on John's property. The entertainment was provided by a mass of hummingbirds which swarmed John's house in order to partake of the large feeders he had provided. These feisty little guys give new meaning to "eating like a bird"; they drain several gallons of sugar-water each week.

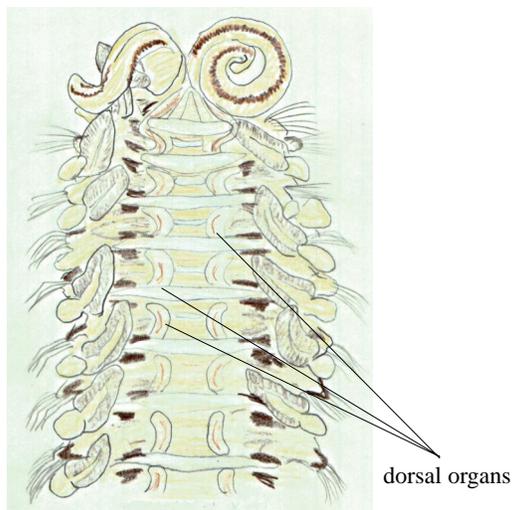
The afternoon was spent examining specimens, mostly anthozoa. Among which were many *Thesea*, including the form called *Thesea* sp A in the B'98 sampling by CSDLAC. As it turns out John never had a *Thesea* sp A, he started by adopting the *Thesea* sp B used by Dave Harden. This then became our commonly encountered form. A voucher sheet will be prepared by Don Cadien for *Thesea* sp A, a substantially more robust form than any other *Thesea* encountered locally. We also examined several uncommonly encountered anemones, and an odd gorgonian from about 90m on the rocky shelf off San Miguel Island. This was initially interpreted as similar to *Gersemia*, but both John and Eric recognized it as an early stage of a briariid gorgonian, probably in the genus *Suberia*. A similar form is illustrated by Kükenthal (1924, pg. 33). We also reviewed a few hydroids, including a large clump of "Tubularia" to illustrate the morning *Tubularia* vs *Ectopleura* discussion.

21 JUNE MEETING

We began the Bight'98 polychaete meeting discussing dorsal organs in spionids, a topic that Vice President Leslie Harris raised during a recent (2 June 99) posting to the Taxonomic Discussion List. Dorsal organs occur on the dorsum of several different genera and species of Spionidae. The structures are ciliated sideways "U" shaped or longitudinal structures that run down the dorsum of some spionids. These dorsal organs are neither sex-linked nor do they occur on any particular setiger. These organs are quite obvious when they do occur. They have been found on species of *Spio* and *Microspio* but these structures are not to be



confused with extended nuchal organs or intra-segmental transverse ciliated dorsal structures, which are seen in male *Pygospio elegans* (see Schlötzer-Schrehardt 1991). These dorsal organs may be a very worthwhile diagnostic character, although several past authors have not made mention of their presence and among the authors that have, opinions vary as to their origin and homology. Below is an illustration of *Spio* sp. A of Harris showing the distinct sideways “U” shaped dorsal organs. While this particular animal fits Maciolek’s 1990 description of *Spio filicornis* (Müller 1776) the dorsal organs of Leslie’s *Spio* sp. A are quite different from those illustrated for *S. filicornis* by Söderström 1920 & 1927 and also by Orrhage 1964. SCAMIT members may want to keep an eye open for these unusual organs on their spionids. If anyone does happen to notice these structures on one of their animals please bring it to a future SCAMIT polychaete meeting for show and tell.



Although Tom Parker was unable to attend he sent several of his provisional polychaete species from the Bight’98 along with voucher sheets for members to examine. We first looked at a syllid referred to as *Odontosyllis* sp LA2. It was from station 2522 (86m), E. of Santa Cruz Island. Its distinguishing features included a reduced prostomial flap that barely

covered 1/3 of the prostomium. It had a distinct pigment pattern consisting of 3 vertical rows of dorsal spots running down the body. Both Leslie Harris and Tony Phillips recognized this animal immediately. Tony has reported it for several years in Santa Monica Bay as *Odontosyllis* sp 1 of Harris 1977. However a description of *Odontosyllis* sp 1 of Harris has not been distributed thru SCAMIT and it is not on the SCAMIT species list so many members were unaware of its presence. Leslie mentioned that larger sized animals often have their spots connected forming 3 vertical lines running down the body where the center line is often the darkest.

Next we examined another syllid of Tom’s referred to as *Plakosyllis* sp LA1 from station 2490 (75m), W. of San Miguel Island. It had a very flat broad body with rounded or globular dorsal cirri. Eyes both dorsal and ventral and a proventricle 3 - 4 segments long. It also had several simple spines on the 2nd to the last segment. No SCAMIT members present had seen anything like this. Leslie had a few undescribed *Plakosyllis*, one from a rocky area and one from shallow soft sediments but neither looked like this. It will remain as *Plakosyllis* sp LA1.

Tom had also sent to the meeting an ampharetid, *Schistocomus* sp LA1. Anteriorly the body was broad and it tapered narrowly in the posterior. The prostomium was flared out as a shelf off the body. The animal was very pigmented with the dorsum crossed by orangish colored transverse bars and the base of each parapod with a dot of pigment. The branchia were also pigmented and the prostomium had a pigment “mask”. The lower lip had lateral and central pigmentation. When Leslie Harris examined the animal at the meeting she recognized this highly pigmented animal as *Schistocomus* sp A of SCAMIT 1987. She said that a live specimen of this species had all this pigmentation. Often strong pigmentation fades in alcohol, but not always.



Next we examined an interesting phyllodocid of the genus *Eteone* from a Bight'98 station in San Diego Bay that Ron Velarde brought to the meeting. It was from 3.3 m depth in sand. After comparing the specimen to Blake's described species *Eteone brigitteae* 1992 in volume 4 of the MMS Atlas it seemed this animal most closely fit the related *Eteone aestuarina* Hartman-Shröder 1959 which was originally described from a shallow water estuarine habitat in El Salvador. So, perhaps another introduced species. However, without being able to compare this animal against the type it was decided by SCAMIT members to call the specimen *Eteone* cf. *aestuarina* for now.

We also examined another phyllodocid of Ron's from a sandy habitat in 171 ft from San Diego's ITP survey station I-7. There were 3 specimens total. They belong to the genus *Protomystides*. Most species described from this genus come from the deep sea and hydrothermal vents. There are very few described from California. In volume 4 of the MMS Atlas Blake includes one of his species *Protomystides mariaensis* described by him in 1992. These 3 animals don't fit that description. Although this hasn't been seen in any Bight'98 stations yet it may turn up so a voucher sheet will be forthcoming referring to the animal as *Protomystides* sp SD1.

After lunch we examined another one of Tom Parker's provisionals, an unusual *Glycera* from station 2490 (75m) west of San Miguel Island. Initially Tom was unable to see the dorsal ramus of the parapodia but finally did determine, after several dissections, it was biramous. The dorsal ramus was just very small. The specimen had a single large pointed presetal lobe with the postsetal lobe a minimum size to completely absent. The ventral cirri were large and pointed with the dorsal cirri up on the body wall. The proboscideal organs were of 2 kinds, both smooth walled types, most numerous were long and thin ones, with fewer shorter thicker ones.

The most conspicuous character was the very large shafts of the compound setae. None of these diagnostic features seemed to fit any of the locally described *Glycera* so this was left as *Glycera* sp LA1.

Another of Tom's provisionals was a maldanid, *Rhodine* sp LA1. It was in two pieces, one included the prostomium and the other the pygidium. The head end was reduced in size and seemed to have been regenerated. The members present, after examining this specimen, concluded the prostomium and the pygidium were from different animals. So it was left as *Rhodine* sp.

The last provisional of Tom Parker's that we examined at the meeting was a *Lacydonia* from station 2491(95m) west of San Miguel Island. The specimen had two large eyes and 5 antennae. There were pigment granules on the parapodia and pigment on the pygidium. Only one species has been described off California, *Lacydonia hampsoni* by Blake in volume 4 of the MMS Atlas, but it was found in very deep water, 985-1990m. Tom's specimen actually more closely matched *Lacydonia miranda* except that this species was originally described from the Mediterranean and had been reported from all over Europe and even one report (Gathof 1984) from shallow water off western Florida. It seemed likely that there might be several species going by the same name, *Lacydonia miranda*, because the several authors described different parapodial structures with some even lacking eyes and median antenna. The San Diego lab had reported 2 specimens of *Lacydonia* from off the mouth of San Diego Bay from 62 ft station I-34 (not a Bight'98 station). They were smaller than Tom's specimen and not as pigmented, but they did have eyes. For now Tom's provisional will be referred to as *Lacydonia* sp LA1.



We then compared a couple of acrocirrids of Cheryl Brantley's from 2 stations in Bight '98 with a few of Rick Rowe's from San Diego's ITP survey. Cheryl found a total of 5 specimens from station 2490 (75 m) west of San Miguel Island and 2 specimens from station 2491 (95 m) also west of San Miguel. Rick's were from 63 ft and 171 ft both near the Mexican border. Despite Cheryl's specimens being a little larger they seemed to be the same species. They most closely fit Hartman's Atlas description for *Acrocirrus crassifilis* Moore 1923 except the notosetae were serrated and started on the same setiger as the neurosetae. Also, the small papillae on the ventrum didn't appear to be in exact rows, but more scattered. *A. crassifilis* was described from much deeper water, 400- 600m. Rick had a partial voucher sheet already done on these acrocirrids. He will finish the sheet and distribute it to SCAMIT members. The unknown acrocirrids will be referred to as *Acrocirrus* sp SD1.

CAN'T DODGE THIS BULLET

Over the past two decades it has become increasingly apparent that the European edible mussel *Mytilus edulis*, which was routinely reported from the Pacific coast in popular accounts, in monitoring studies, and in the scientific literature, is not that species. At least two other species are known to occur on the Pacific coast (McDonald & Koehn 1988, Koehn 1991), both routinely identified as *M. edulis* until recent years. We have not had reason to be too concerned with this change, as POTW monitoring efforts normally do not encounter any species of *Mytilus* in their community sampling. B'98 samples specifically targeted areas frequented by mussels, however, and *Mytilus* were taken by several of the participating agencies. We finally have to consider how to differentiate the three species *Mytilus edulis*, *M. galloprovincialis*, and *M. trossulus* [as well as their hybrids]

where they occur along the Pacific coast of North America (see distributional information in McDonald et al 1991, and Suchanek et al 1997).

The most definitive methods are DNA analyses or allozyme analysis of tissues from each mussel (Comesaña et al 1999), but this is both prohibitively time consuming and expensive in a non-research context. Several authors have proposed and attempted to apply morphometric characters to separate the species where they co-occur (McDonald et al 1991; Seed 1972, 1974; Gardner 1996; Kepel & Ozolinsh 1992).

Those members with an interest in *Mytilus* identifications should acquire and digest the above publications. We will attempt to deal with the issue when we can schedule a meeting with Paul Valentich Scott on bivalves. By that time we should all be prepared with specimens, literature, and experience in applying the suggested morphological discriminators. Until then we're on mussel watch, and we should probably refer to them as *Mytilus* sp in our data. Those of you who have a number of *Mytilus* to identify, and/or who have mixed lots with more than one of the species should speciate them as best you can, but make sure you keep a record of the separatory criteria used for later consideration.

POLYCHAETES PLUS

During the nemertean meeting at the Santa Barbara Museum of Natural History in February long-time member Sue Williams joined us for the first time in some years. She has been busy in the interim, mostly concentrating on education related work, although occasionally continuing her consulting work. She would be happy to renew old contacts and make new ones, although she's not eager to leave Ventura to venture onto the L.A. Freeways. Her work in recent years has extended her interests far beyond polychaete taxonomy into wetland ecology and even to intertidal insects. It was great to see her



again, and hopefully it will happen more often in the future. Her help in interpreting labels at the nemertean meeting was invaluable, and Sue is a major resource in such arcana, as she was involved in most of the major monitoring activities in our area for decades. You can reach her at (805) 648-2628.

PLAN AHEAD

The first announcement of the Xth International Colloquium on Amphipoda has been sent out. It will be held at Heraklion, Crete, Greece on April 16-21, 2000. It is open to anyone with interests in any aspect of the Amphipoda. Information on the gathering is available on the Amphipod Web Site at either

<http://www.odu.edu/~jrh100f/amphome/>

http://www.imbc.gr/whats_new/index.html

For specific questions contact Wanda Plaiti (wanda@imbc.gr) or Adam Baldinger (abaldinger@oeb.harvard.edu).

ATTACHMENTS

Dean Pasko (CSDMWWD) was kind enough to provide taxonomic identification sheets on some of the new/difficult animals he's been encountering in the B'98 samples. See the taxonomic tools section of the SCAMIT web site.

BIBLIOGRAPHY

- Benayahu, Y. 1998. Lobe variation in *Sinularia nanolobata* Verseveldt, 1977 (Cnidaria: Alcyonacea). *Bulletin of Marine Science* 63(1):229-240.
- Blake, James A. 1994a. Family Phyllodocidae Oersted, 1843. Pp. 100-172 IN: Blake, James A., Brigitte Hilbig & Paul H. Scott (eds.). *Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and the Western Santa Barbara Channel, Vol. 4. The Annelida Part 2 - Oligochaeta and Polychaeta: Phyllodocida (Phyllodocidae to Paralacydoniidae)*. Santa Barbara Museum of Natural History, Santa Barbara, California.
- . 1994b. Family Lacydoniidae Bergström 1914. Pp. 179-184 IN: Blake, James A., Brigitte Hilbig & Paul H. Scott (eds.). *Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and the Western Santa Barbara Channel, Vol. 4. The Annelida Part 2 - Oligochaeta and Polychaeta: Phyllodocida (Phyllodocidae to Paralacydoniidae)*. Santa Barbara Museum of Natural History, Santa Barbara, California.
- Bousfield, E. L. & P. M. Hoover. 1997. The amphipod superfamily Corophioidea on the Pacific Coast of North America. Part V. Family Corophiidae, Corophiinae, new subfamily. *Systematics and distributional ecology. Amphipacifica* 2(3):67-139.
- Calder, D. R. September 1996. Hydroids (Cnidaria: Hydrozoa) recorded from depths exceeding 3000 m in the abyssal western North Atlantic. *Canadian Journal of Zoology - Revue Canadienne de Zoologie* 74(9):1721-1726.
- . 1997. Synopsis of hydroids from 1000 m and deeper in the western North Atlantic. *Proceedings of the 6th International Conference on Coelenterate Biology*:85-90.



- . 1998. Hydroid diversity and species composition along a gradient from shallow waters to deep sea around Bermuda. *Deep Sea Research Part I. Oceanographic Research Papers* 45(11):1843-1860.
- & W. Vervoort. 1998. Some hydroids (Cnidaria: Hydrozoa) from the Mid-Atlantic Ridge, in the north Atlantic Ocean. *Zoologische Verhandelingen* 319:1-65.
- Cerrano, C., G. Bavestrello, S. Puce, & M. Sara. 1998. Biological cycle of *Podocoryna exigua* (Cnidaria : Hydrozoa) from a sandy bottom of the Ligurian Sea. *Journal of the Marine Biological Association of the United Kingdom* 78(4):1101-1111.
- Comesaña, A. S., J. E. Toro, D. J. Innes & R. J. Thompson. 1999. A molecular approach to the ecology of a mussel (*Mytilus edulis* - *M. trossulus*) hybrid zone on the east coast of Newfoundland, Canada. *Marine Biology* 133:213-221.
- Gardner, J. P. A. 1996. The *Mytilus edulis* species complex in southwest England: effects of hybridization and introgression upon interlocus associations and morphometric variation. *Marine Biology* 125:385-399.
- Gathof, J. M. 1984. Chapter 34 - Family Lacydoniidae Bergström, 1914. Pp. 1-5 IN: Uebelacker, J. M. & P. G. Johnson (eds.). *Polychaetes of the Northern Gulf of Mexico*, Vol. 5. Barry A. Vittor & Associates, Inc., Mobile, Alabama.
- Hartman, Olga. 1969. Atlas of the Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California, Los Angeles. 828pp.
- Karlson, R. H. & H. V. Cornell. 1999. Integration of local and regional perspectives on the species richness of coral assemblages. *American Zoologist* 39(1):104-112.
- Kepel, A. A. & A. V. Ozolinsh. 1992. Morphometric analysis of species from the genus *Mytilus* (Mollusca, Bivalvia, Mytilidae) of Russian Seas. *Zoologicheskii Zhurnal* 71(9):33-40.
- Kim, J. H., W. Kim, & C. W. Cunningham. 1999. A new perspective on lower metazoan relationships from 18S rDNA sequences. *Molecular Biology and Evolution* 16(3):423-427.
- Koehn, Richard K. 1991. The genetics and taxonomy of species in the genus *Mytilus*. *Aquaculture* 94:125-145.
- Kükenthal, Willi. 1924. Coelenterata Gorgonaria. *Das Tierreich* 47:1-478.
- Maciolek, Nancy J. 1990. A redescription of some species belonging to the genera *Spio* and *Microspio* (Polychaeta Annelida) and descriptions of three new species from the Northwestern Atlantic Ocean. *Journal of Natural History* 24:1109-1141.
- Martindale, M. Q. & J. Q. Henry. 1998. The development of radial and biradial symmetry: The evolution of bilaterality. *American Zoologist* 38(4):672-684.
- McDonald, J. H. & R. K. Koehn. 1988. The mussels *Mytilus galloprovincialis* and *M. trossulus* on the Pacific coast of North America. *Marine Biology* 99:111-118.
- , R. Seed & R. K. Koehn. 1991. Allozymes and morphometric characters of three species of *Mytilus* in the Northern and Southern Hemispheres. *Marine Biology* 111:323-333.
- McFadden, C. S. 1999. Genetic and taxonomic relationships among Northeastern Atlantic and Mediterranean populations of the soft coral *Alcyonium coralloides*. *Marine Biology* 133(2):171-184.
- Orrhage, Lars. 1964. Anatomische und morphologische studien über die Polychaetenfamilien Spionidae, Disomidae und Poecilochaetidae. *Zoologische Bidragen frå Uppsala* 36(3):335-405.
- Peterson, K. W. 1990. Evolution and taxonomy in capitate hydroids and medusae (Cnidaria: Hydrozoa). *Zoological Journal of the Linnean Society* 100:101-231.



- Slattery, M., C. Avila, J. Starmer, & V. J. Paul. August 1, 1998. A sequestered soft coral diterpene in the aeolid nudibranch *Phyllodesmium guamensis* Avila, Ballesteros, Slattery, Starmer and Paul. *Journal of Experimental Marine Biology and Ecology* 226(1):33-49.
- Schlötzer-Schrehardt, Ursula. 1991. Ultrastructural differences of nuchal and dorsal organs during post-embryologic and sexual development of *Pygospio elegans* Claparède (Polychaeta: Spionidae). *Ophelia Supplement* 5:633-640.
- Seed, R. 1972. Morphological variations in *Mytilus* from the French coasts in relation to the occurrence and distribution of *M. galloprovincialis* Lmk. *Cahiers de Biologie Marine* 13:357-384.
- . 1974. Morphological variations in *Mytilus* from the Irish coasts in relation to the occurrence and distribution of *M. galloprovincialis* Lmk. *Cahiers de Biologie Marine* 15:1-25.
- Söderström, A. 1920. Studien über die Polychaetenfamilie Spionidae. Diss. Almqvist & Wiksell, Uppsala, 1-286.
- . 1927. Über segmental wiederholte "Nuchalorgane" bei Polychaeten. *Zoologische Bidragen frå Uppsala* 12:1-18.
- Suchanek, T. H., J. B. Geller, B. R. Kreiser, & J. B. Mitton. 1997. Zoogeographic distributions of the sibling species *Mytilus galloprovincialis* and *M. trossulus* (Bivalvia: Mytilidae) and their hybrids in the North Pacific. *Biological Bulletin* 193:187-194.



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	lharris@bcf.usc.edu
Secretary	Megan Lilly	(619)692-4901	mssl@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.

