Southern California Association of
Marine Invertebrate Taxonomists

May/June, 2004 **SCAMIT Newsletter** Vol. 23, No. 1&2

SUBJECT:	**Slope fauna: 500-1000m**
GUEST SPEAKER:	**LACSD staff**
DATE:	**18 October 2004**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Los Angeles County Museum of Natural History** **900 Exposition Blvd**

Metridium farcimen
B'03 trawls CSD

The following newsletter is a May/June combination newsletter as there was no meeting in May. It was assumed that all good SCAMITeers attended the SCAS meetings in lieu of a SCAMIT gathering that month. There were many promises of a written critique/ review of the meetings, which would have made for a nice May newsletter, but since no such review has crossed my desk in the last few months, I shall go with what I have.
- M. Lilly

CAVEAT LECTOR [Reader Beware]

The minutes below are Megan Lilly's interpretation of the hydroid discussion from the June meeting. There is a great potential for error in this interpretation. Unfortunately, John Ljubenkov has been unable to wrestle time from his B'03 samples to edit the minutes. Therefore, use this information with caution. It is hoped that in a future newsletter we will be able to print an addendum with John's comments and edits.

For additional, helpful (and probably more accurate) information please see the Cnidarian issue of the Taxonomic Atlas Series, Volume 3. Some of the things discussed below are detailed and illustrated in this volume. In addition I have attached John's powerpoint presentation to the end of this newsletter.

JUNE 04 MINUTES

The Cnidarian meeting in June was held at Dancing Coyote Ranch and hosted by John Ljubenkov. It is always fun to have meetings at John's place where we can not only work on marine invertebrates of interest, but can also enjoy the varied and plentiful flora and fauna that call the ranch home.

With only one officer present (myself), and not much business to discuss, we dove right into the topic of the day, Hydroids.

We started with colonial forms which are found on mollusk shells. The key in identifying many of these species is to note the location of the reproductive structures.

The two common shallow water species are *Rhizorhagium formosum* and *Leuckartiara octona*.

R. fromosum is what we formerly called *Perigonimus formosum.* The reproductive structures will be found on the hydrorhiza ("hydroid root").

L. octona is what we formerly called *Perigonimus repens* and the reproductive structures are found on the hydrocaulus (stalk) of the hydroid.

If no reproductive structures can be observed then the identification of "*Perigonimus* sp" will suffice (John discussed that "*Perigonimus*", historically, has been a "catch all" genus. He will need to elaborate on this when his comments are published, as there is a good chance I misunderstood this discussion). It was also suggested and requested by John that we makes notes as to what mollusk species the hydroids are colonizing.

Next we discussed some of the deeper water species:

Perigonimus yoldiarcticae has the reproductive structures on the hydrorhiza, as in *P. formosum*, but in contrast it has a hydrocaulus which is long and jointed. This species is usually encountered on *Acila*.

Perigonimus abyssi has the reproductive structures on the hydrorhiza and the hydrocaulus. It is a very small animal, and is also found on *Acila*.

Clytia longitheca has reproductive structures on the hydrocaulus and also has a hydrotheca (not sure this is correct) present around the polyp. This animal is usually seen on *Cyclocardia*.

Oplorhiza gracilis has reproductive structures found off the hydroriza and has a hydrotheca which encloses the polyp. It is found growing among *Thesea* communities.

And finally, *Monobrachium parasitum* which is found usually at 60m or deeper, has reproductive structures which look like "striped balloons" and are found among the polyps. This species is usually found on *Axinopsida serricata*.

Finishing with colonial hydroids John then gave an overview of the more common solitary species we may encounter which fall in the grouping of Corymorphids. This topic has been covered in a previous SCAMIT newsletter, Vol. 15, no. 12, but I will do a brief overview to refresh our memories. Also there is a key to the Corymorphine hydroids as part of John's powerpoint presentation.

The two primary genera are *Euphysa* and *Corymorpha*. They can be separated by the location of the growth buds and the nature of the tentacles.

Euphysa will have the growth buds located just below the hydranth and will have tentacles ranging from moniliform (beaded) to capitate. The *Euphysa* species include:
Euphysa sp A - has capitate oral tentacles and moniliform aboral tentacles. It is found offshore.
Euphysa sp B - has tentacles which are all moniliform. To date it has only been seen off Pt. Arguello.

Corymorpha, in contrast, has the growth buds located at the bottom of the hydrocaulus and will have tentacles which are all villiform (smooth).
The *Corymorpha* species include:
Corymorpha bigelowi - which is our common offshore species.
Corymorpha palma - which lives in bays and estuaries. *C. palma* has a cryptomedusa stage which looks like a banana. The cryptomedusae stay attached and planulae develop internally. Once developed they are released and drop to the sediment below.

It was at this point that John pointed out that the corymorphine lineages which have moved into bay and estuary habitats have evolved modified reproductive structures which eliminate the pelagic phase of development and keep the young nearby in a habitat which is suitable. A general discussion then ensued as to this pattern being seen across different phyla. An example was given by Megan Lilly who pointed out that the two octopus species, *Octopus bimaculoides* and *Octopus bimaculatus* show a similar pattern. The two species, externally, look very similar and are often confused. However, they prefer different habitats, with *O. bimaculoides* usually found in bays and estuaries and *O. bimaculatus* preferring rocky subtidal habitat. When looking at the reproductive strategies of the two, they are quite different, with *O. bimaculoides* producing few (in the hundreds), large eggs which hatch large, benthonic young who take up residence in local waters. *O. bimaculatus*, in contrast, lays thousands of very small eggs, hatching small paralarvae which spend time in the plankton before settling.

With that we broke for a lunch of home made sandwiches to be enjoyed outside with the hummingbirds and the lizards.

We spent the afternoon examining animals, and not all of them cnidaria. People had brought various B'03 miscellaneous phyla FID's for comparison. All in all it was a very informative and useful meeting.
- M. Lilly

DOIN' IT BY THE NUMBERS

D. Cadien – CSDLAC

In a recently circulated draft of a new key by Gary MacDonald of Moss Landing Marine Labs he finished his key with a list of the California nudibranch species. This list incorporated a number of changes over recent years in the nomenclature of well established species. Some, like the submergence of *Hopkinsia* within *Okenia* (see Gosliner 2004) seem regrettable, but unavoidable. Others seem less well founded. Among these is a change of long standing (see MacDonald 1983 p. 154) from use of the replacement name *Cadlina luteomarginata* MacFarland 1966 to use of the original name *C. marginata* MacFarland 1905. In his discussion, MacDonald (1983) states that MacFarland's reason for proposal of the replacement name is not well founded, and therefore it should be rejected in favor of the original name. A look into the Code of Zoological Nomenclature (Edition 4 1999) suggests otherwise. As presented by Turgeon et al (1998, p. 281) the case rests on the provisions of Article 57(c) [now Article 57.3.1 in the current edition of the Code] which stipulates that junior secondary homonyms are invalid. Provision of a substitute or

replacement name for *Cadlina marginata* MacFarland 1905 non *Doris* [now *Cadlina*] *marginata* Linnaeus 1767 is thus an appropriate and defensible act under the Code. Notwithstanding the lack of use of Linnaeus' name, or its current standing as a synonym of *Cadlina laevis* (Montague 1804), it remains nomenclatorally available and thus creates the homonymy to which MacFarland proposed a solution. MacFarland's replacement name *Cadlina luteomarginata* is therefore valid and should not be displaced by resurrection of the 1905 homonym *C. marginata*.

LITERATURE

Gosliner, Terrence M. 2004. Phylogenetic systematics of *Okenia*, *Sakishimaia*, *Hopkinsiella* and *Hopkinsia* (Nudibranchia: Goniodorididae) with description of new species from the tropical Indo-Pacific. Proceedings of the California Academy of Sciences 55(5):125-161.

Hochberg F. G., and John C Ljubenkov. 1998. Chapter 1. Class Hydrozoa. Pp. 1-54 *in* Scott, Paul H., and James A. Blake eds. Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and the Western Santa Barbara Channel. Volume 3. The Cnidaria: Santa Barbara Museum of Natural History, Santa Barbara, California. 150 pp.

Internatijonal Commission on Zoological Nomenclature. 1999. International Code of Zoological Nomenclature, Fourth Edition. 306pp.

MacDonald, Gary R. 1983. A review of the nudibranchs of the California coast. Malacologia 24(1-2):114-276.

MacFarland, Frank Mace. 1966. Studies on opisthobranch mollusks of the Pacific coast of North America. Memoirs of the California Academy of Sciences 4:1-546.

Turgeon, Donna D., James F. Quinn Jr., Arthur E. Bogan, Eugene V. Coan, Frederick G. Hochberg, William G. Lyons, Paula M. Mikkelsen, Richard J. Neves, Clyde F. E. Roper, Gary Rosenberg, Barry Roth, Amelie Scheltema, Fred G. Thompson, Michael Vecchione, and James D. Williams. 1998. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada. Mollusks (second edition). American Fisheries Society Special Publications 26:1-526.

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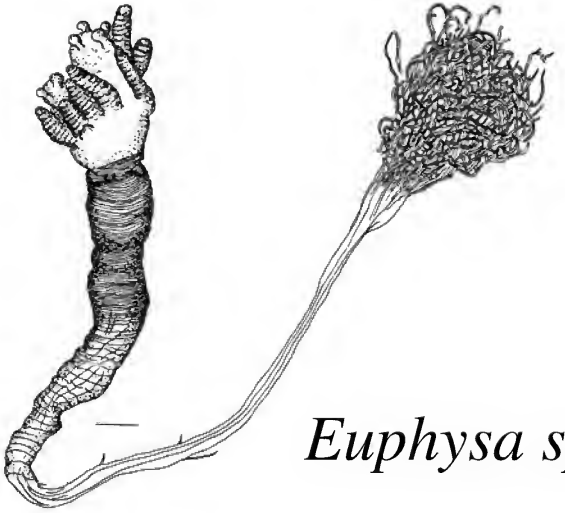
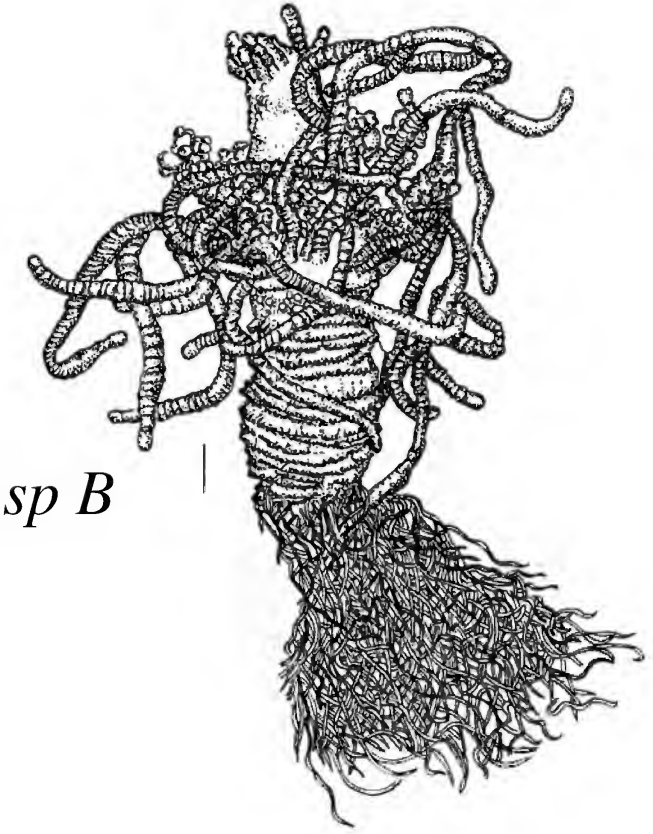
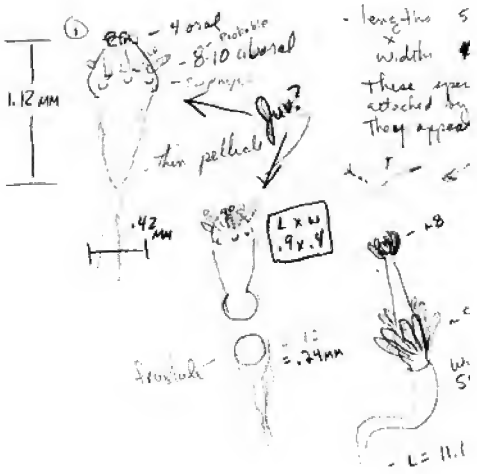


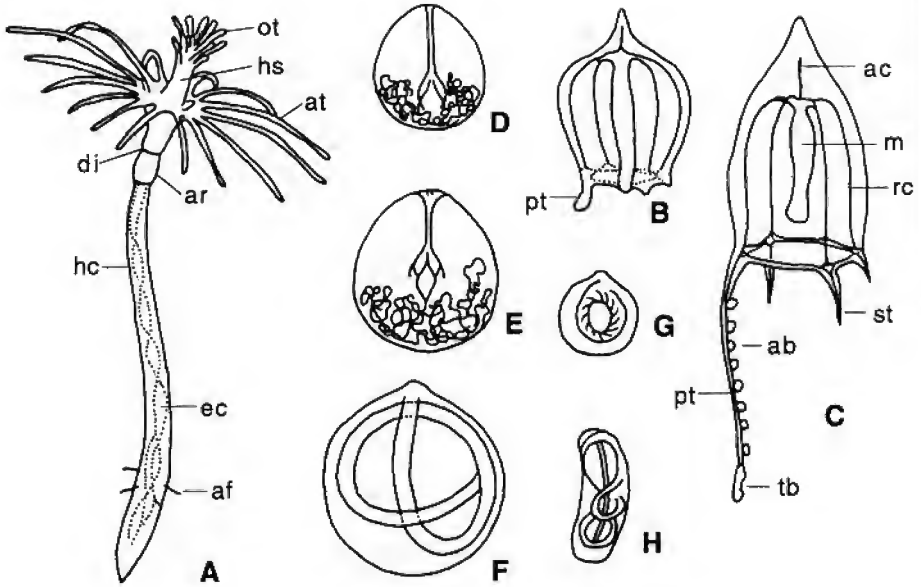
Euphysa sp A



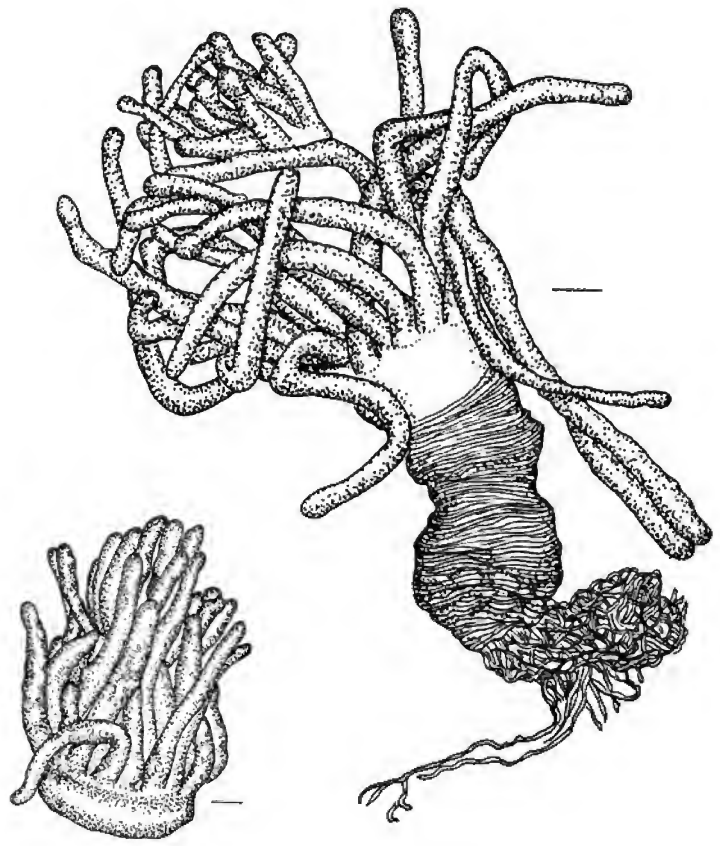
Euphysa sp B



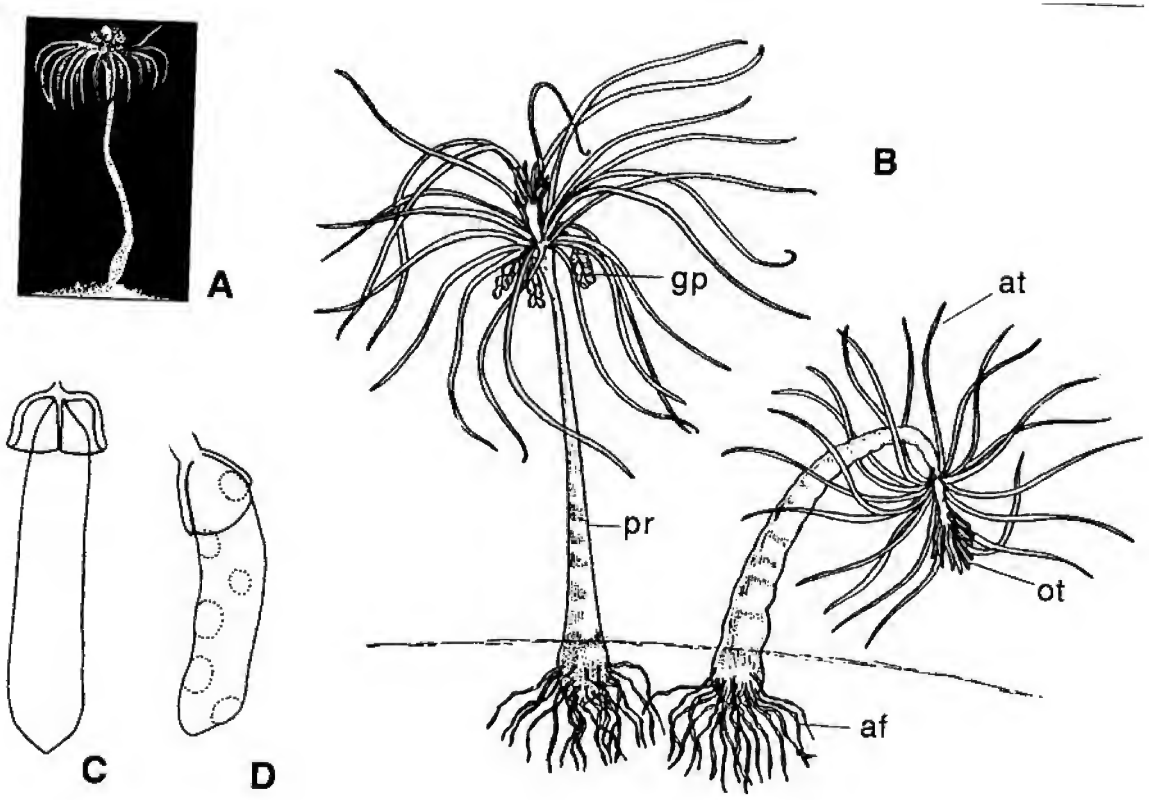
Euphysa sp C



Corymorpha bigelowi
(Maas, 1905)



Corymorpha sp A
and actinula larva



Corymorpha palma
Torrey, 1902

A KEY TO CORYMORPHINE POLYPS

1. Both whorls filiform to serially bulbous, tips bulbous; papillae at base of hydrocaulus .....*Corymorpha* 2

1. Aboral whorl moniliform, capitate; oral whorl capitate, sub- to moniliform; papillae at top of hydrocaulus, below line of demarcation..... *Euphysa* 3

2. Gonangia are cryptomedusae (elongate, fusiform bodies) ..... *Corymorpha palma*

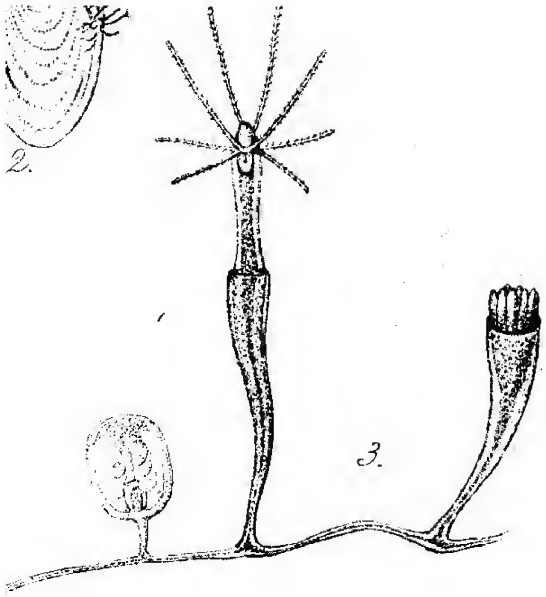
2. Gonangia are quadrate eumedusoids with one tentacle longer...*Corymorpha bigelowi*

2. Hydranth equal to or larger than hydrocaulus...*Corymorpha sp A*

3. Oral whorl tentacles profuse, long, sub- to moniliform, capitate; quadrate eumedusoids with 4 equal tentacles .... *Euphysa sp B*

3. Oral tentacles 4-9, short and capitate; hydrocaulus tapering; hypostome short and blunt; quadrate hydromedusa with 1 longer tentacle; about 1mm.....*Euphysa sp A*

3 Oral tentacles 3-7, short and capitate; hydrocaulus thin with uniform diameter; hypostome ovoid; buds polyps not hydromedusae.....*Euphysa ruthae*



Perigonimus serpens from Hincks 1868

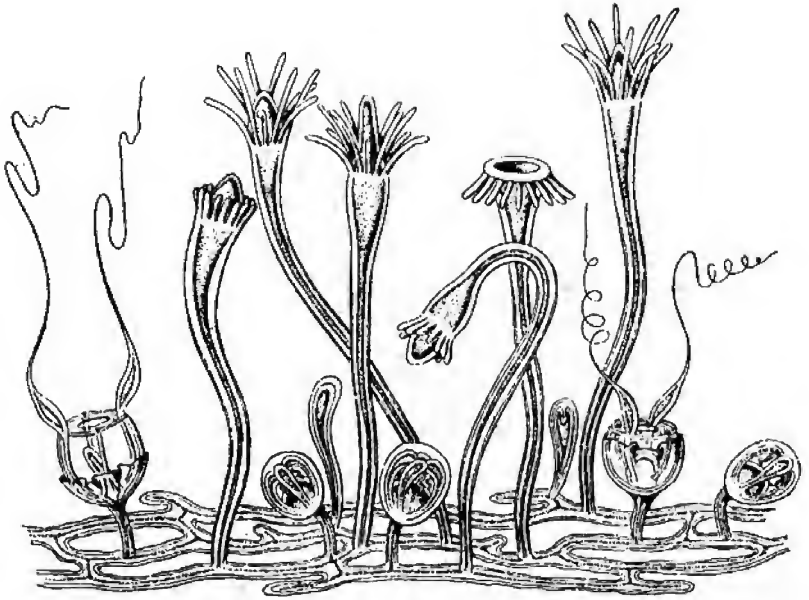
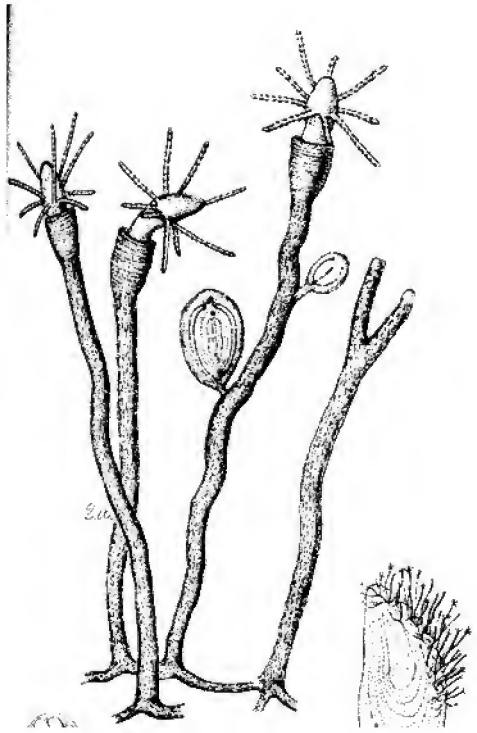


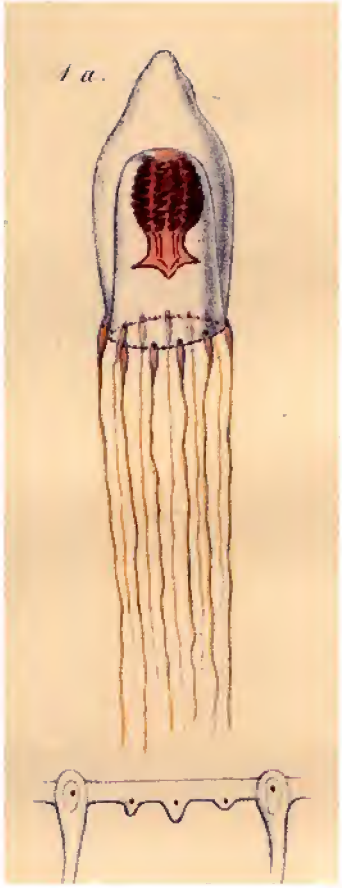
FIG. 59.—*Perigonimus "serpens,"* after Allman, in Ray Society, 1871–72.

Perigonimus serpens after Allman 1871-1872

Rhizorhagium formosum (Fewkes, 1889)



Perigonimus repens
from Hincks 1868



Oceania octona from Forbes 1847

Leuckartiara octona (Fleming, 1823)

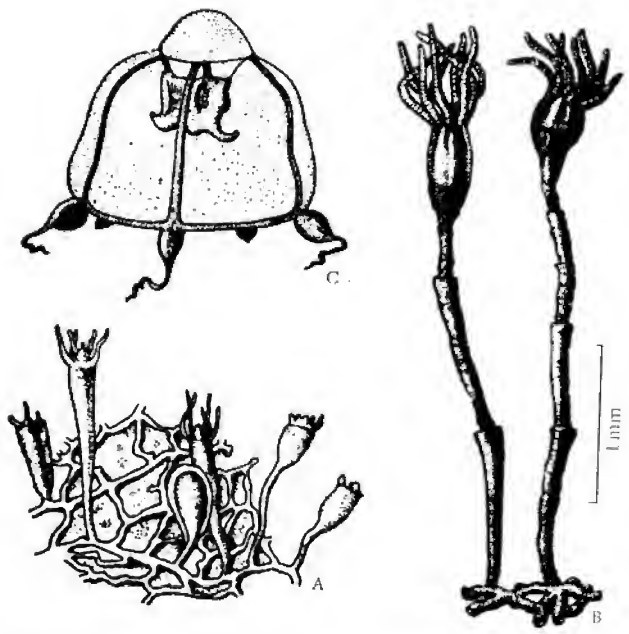


FIGURE 67. Perigonimus yoldia-arcticae Birula:

A — young colony from Baltic Sea; B — two polyps of old colony from White Sea; C — young medusa (A, C — after Hartlaub, magnified?; B — after Jäderholm).

Perigonimus yoldiarcticae Birula, 1897

Medusae budded off hydrorhiza

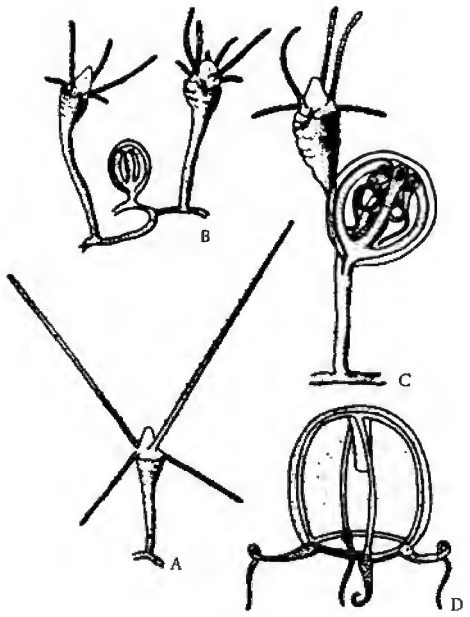


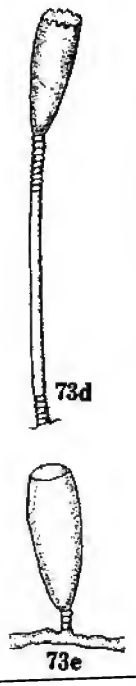
FIGURE 70. Perigonimus abyssi G.O. Sars:

A — sterile polyp; B — section of colony with two polyps and gonophore on the hydrorhiza; C — polyp with gonophore; D — young medusa. (After Rees, magnified?).

Perigonimus abyssi G.O. Sars, 1874

Medusae budded off from both pedicel and hydrorhiza

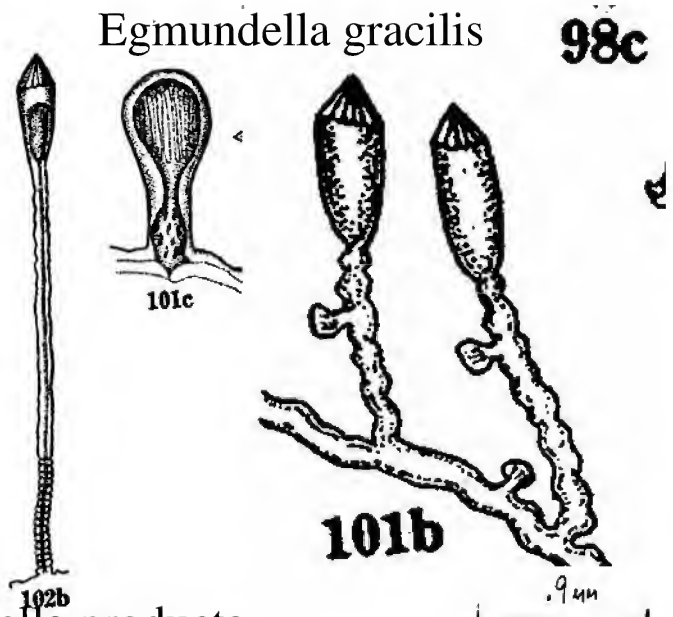
Both Species on *Acila castrensis*



Clytia longitheca (Fraser,1914) on Cyclocardia sp

from Fraser 1938

Egmundella gracilis

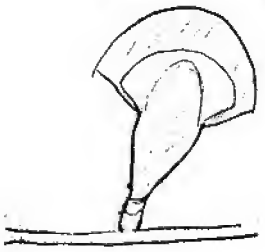


Lovenella producta

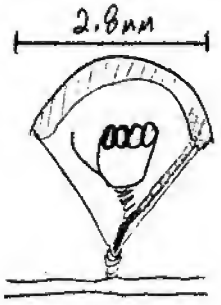
Oplorhiza gracilis (Stechow, 1921) in Thesea community

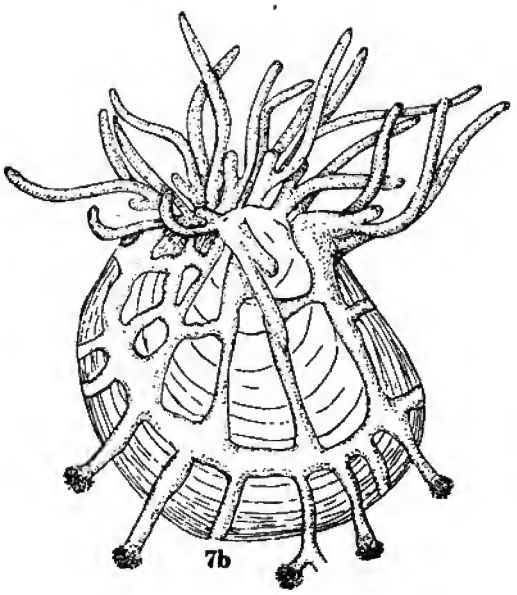
Reproductive structures :

Young



Old developing medusa





Monobrachium parasitum
Mereschkowsky, 1877

Southern California Association of
Marine Invertebrate Taxonomists

July/August 2004 **SCAMIT Newsletter** Vol. 23, No. 3&4

SUBJECT:	**Crustacea Part I - Ampeliscids, Oedicerotids Phoxocephalids & Lysianassids**
GUEST SPEAKER:	**Meeting Lead: Lisa Haney**
DATE:	**8 November 2004**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Los Angeles Co Museum of Natural History 900 Exposition Blvd.**

***Cladonema*?**
from the CSD display tank
approx 2-3 mm

Due to the fact that the July meeting was canceled (the enormous work-load imposed by the B'03 project was taking its toll) and obviously there are no minutes for that month, this volume is a combined July/August issue.

AUGUST MINUTES

The day began with some general discussion. It was remarked by a number of members that there has been a lot of press coverage of the worm *Osedax* spp. found by MBARI. For more info, see their web site at;

http://www.mbari.org/news/news_releases/2004/whalefall.html

As for upcoming meetings, Don mentioned the meeting of AMPHIPODOLOGISTS will be in Cork, Ireland at the National University of Ireland on July 24-27, 2005.

We then moved on to the topic of the day. Our speaker, Kimo Morris, a PhD candidate at UCLA gave a great talk entitled: Oceanic Fronts: A Meeting Place. He is currently studying the affect of oceanic fronts on zooplankton populations.

He began his talk with a brief history of two influential people in the field of early zooplankton research. Ernst Haeckel, well known to most biologists for his work on phylogeny, began as a zooplankton researcher. He developed very careful techniques for capturing delicate pelagic organisms, such as radiolarians and jellyfish, for observation and illustration. He used small boats and fine meshed nets. The delicacy of his methods are exemplified by his illustrations published in "Kunstformen der Natur" (Art Forms of Nature) 1899-1904.

In contrast to Haeckel, Victor Hensen (1823-1924) was a professor of physiology at the University of Kiel in Germany with little previous experience with zooplankton. Hired by the Kiel Commission on north Atlantic fisheries, Hensen set out to describe and quantify plankton diversity and spatial arrangement. Hensen put forward the idea of using big nets towed by large vessels in extensive arrays throughout the ocean. However, since this method tends to count only the hardiest species, e.g., crustacea, it leads to the under-reporting of the more delicate groups such as gelatinous zooplankton. Additionally, Hensen averaged his plankton volumes over very large distances, which gave the false impression that plankton are spread evenly throughout the ocean in low abundances. Haeckel intensely criticized Hensen's approach, however in the end, Hensen won. Well into the 1960s, Hensen's view persisted, where the pelagic realm was seen as a homogenous mix of low-density plankton with jellyfish as insignificant contributors. To this day, Hensen's techniques are still included in plankton manuals as "the" standard method of quantifying plankton.

Jump forward to the 1970's. William Hamner, an ornithologist by training, began to ask why there were no in situ observations of zooplankton. Hamner noted that gelatinous zooplankton were often considered a nuisance when they were captured in the large plankton nets and usually discarded. In response, Hamner and others pioneered blue water diving techniques resulting in the first rigorous observations and quantification of gelatinous zooplankton.

Kimo's contention is that zooplankton does not occur homogenously across the open ocean. Everything in the ocean is patchily distributed. One of the areas in the ocean where they appear to concentrate is along water mass boundaries or fronts. This also results in the concentration of the animals that feed on them. Kimo has looked at three different types of fronts in his research.

The first is an area of upwelling in Monterey Bay. There, the colder water from upwelling meets the relative warmer water mass circulating, counterclockwise, within the bay. This boundary is predictable and can be followed with remote sensing. Using vertically towed nets Kimo has shown that the highest concentration of zooplankton is found on the boundary between the two water masses. This is confirmed with ROV observation near the surface. In the video clip he showed one can see large aggregations of *Chrysaora melanaster* oriented along the same water mass. He used an attached CTD to orient the ROV along the front.

His second investigation involved a near shore front in Santa Monica Bay. This front results from the meeting of the relatively stratified water mass offshore and the tidally mixed water near shore. The two water masses do not mix, thus forming a front. This front acts as a boundary or barrier. Kimo is looking at two things: characterizing the physical dynamics of the front, and also the larval transport across the front. Preliminary results reveal the

existence and extent of a front as described above and that there appears to be a strong correlation with plankton species assemblages and the inshore and offshore water masses.

Thirdly, Kimo has been investigating short-lived, or ephemeral fronts. This is a phenomenon evidenced by slicks of calm water at the surface. These ephemeral fronts are generated, in part, by wind interacting with the ocean surface or by swirling eddies. The waters in Santa Monica Bay around the Palos Verdes peninsula were chosen for Kimo's investigations. Past researchers have noted that a number of shore birds gather at these areas feeding on fish egg aggregations. Here large aggregations of salps, dolphins, and ocean sunfish have also been observed. While his research is still incomplete, he has hypothesized that these zones concentrate zooplankton, e.g., salps, as an important food source for large animals. In the course of his study Kimo has developed modifications of Hamner's blue water diving techniques for quantifying macrozooplankton assemblages along these ephemeral fronts.
For a more information on Kimo's research visit his website at:

http://pukashell.net/kimo/ucla/

NEW LITERATURE

It has been months since I have provided information on new literature to readers. It has continued to accumulate, and I will start mining the pile now that B'03 field and lab work is virtually complete.

First on the docket is a wonderful compendium of information on the organisms associated with hermit crabs (Williams & McDermott 2004). The mollusk shells they have appropriated often form a complete biocenosis; a mini-rock on soft bottom substrates. The authors draw together on extensive literature (the initial table of relationships runs to 48 pages and lays out crab species, associated species, type of association, habitat where it occurs and source of information). Between this and the extensive bibliography (20 pp.) the authors have prepared a nice summarization, discussing both what is currently demonstrated, and what remains to be determined or proven.

A small subsection of this territory is also covered by Daly et al (2004), who describe a new sea-anemone and review the taxonomy of those anemones known to produce carcinoecia. These structures are the plastic-like artificial shells secreted by the anemone to entice it's commensal partner hermit crab not to leave in search of a larger shell. In cases where the two partners find each other early, nearly all of the "shell" occupied by the adult hermit crab may actually be faux shell secreted by the anemone. These persist for some time after the death of the two parties and can be most confusing to a conchologist contemplating the resultant empty structure. Similar shell enlargements formed by milliporine corals and bryozoans are not covered here, but are covered in the more generalized presentation of Williams & McDermott.

Another class of modification to the appearance of animals by associates is dealt with by Gillan & Dubilier (2004) and Gillan, Ribese & de Ridderv (2004). This time it is the ferruginous deposits seen on the setae and appendages of peracarid crustaceans. These are often found on local *Ampelisca* species, but those on the burrowing *Urothoe poseidonis* are described by Gillan, Ribesse & de Ridder. While they report on a protozoan epibiont too, most of the information presented dealt with a group of filamentous bacteria. These appeared to be involved in the production of the ferrous sulphate deposits which formed on the amphipod. This process probably assists in control of sulphide in the waters the animal inhabits. Similar iron deposits are also observed in bivalves (Gillan & de Ridder 1997, 2001), usually near the siphons.

In both these cases it is likely that this is a mutualist association, with the bacteria deriving benefit from living room, and exposure to enhanced water movement, while the amphipod or clam gets a boost in its ability to control exposure to toxic sulfide by bacterial enhanced (or mediated) iron deposition. Ah, the convoluted joys of commensal interactions!

Switching gears back to taxonomy Ocaña, Sánchez-Tocino, and García (2004) consider ontogenetic variability in the radulae of the opisthobranch genus *Tjamba*. Previous work with other gastropods has shown that tooth shape can be affected by wear, and that different food substrates affect these wear patterns. This alone makes taxonomic discrimination of related congeners on the basis of radular structure more risky. Once the sort of ontogenetic changes reported by the present authors are factored in, even greater caution is indicated. Minor differences in denticle count, exact plate shape and cusp length should be recorded and evaluated with a large grain of salt. Radular variability seems as common as shell variability, and is probably just as unpredictable; some species hardly ever showing significant variation in shell shape and ornamentation while others vary extensively. Additional investigations in other opisthobranch groups should be performed along the lines used here, testing for developmental differences in radular detail along the road to adulthood.

Ron Velarde brought the following paper to my attention at a recent SCAMIT meeting. It is available on-line at

http://www.mnhn.fr/publication/zoosyst/z01n3som.html

It is authoritative but incomplete, being merely a summary list of literature (and personal research results of the authors) derived status of the current supraspecific taxa within the molluscan class Scaphopoda. Steiner & Kabat (2001) don't provide the evidence and rationale for the current status (where it differs from recent contrary decisions by themselves and others), so caveat emptor. I personally would place a great deal of trust in their results and what they present here (although it necessitates major reorganization of the SCAMIT list) because the authors have contributed greatly to refining and improving the scaphopod taxonomic framework for many years. But, plenty of controversy still remains, so each reader should review and evaluate what is presented here for themselves. The authors plan a species level treatment in the future. Fortunately they give a species allocation in the current paper, but don't deal with specific level synonymy.

We often see lovely video of loliginid squid jetting around in midwater and cuttlefish hanging motionless in the hyperbenthos or motoring slowing through the lower parts of the water column. What we don't see much is non-octopoid cephalopods in association with the bottom itself. Anderson, Mather & Steele (2004) describe such behavior in our local *Rossia* species. Their observations are based on aquarium maintained specimens.

Reimer et al (2004) look at molecular evidence for speciation (or lack thereof) among a group of four described congeners in the cnidarian genus *Zoanthus*. These are often massive, clonal forms which can dominate intertidal and shallow subtidal substrates in tropical and sub-tropical areas. The authors used the mitochondrial cytochrome oxidase subunit 1 gene, used widely in molluscan molecular systematics at the species level. They examined four field morphotypes, previously considered four discrete species, and found nearly 100% correspondence in base pair sequences in three of them. The fourth differed by just over 1% of the sequence and may be a separate species. They suggest a reevaluation of the criteria used in species level taxonomy of *Zoanthus* and other zoanthids: good call!

The last article I will mention is an even more massive compendium than the first, but covering a much different subject...the selection of character states used in cladistic analysis (Jenner 2004). The author has been critically reviewing numerous aspects of cladistic methodologies as a friendly and interested practitioner, not as a critic of the enterprise per se. He presents the remarks in the current report as constructive criticism, and hopes they will be taken in that fashion. Nearly every recent cladistic analysis of metazoan phylogeny is brought into question here, however, for use of characters whose conception, definition, or coding are not fully defensible. In many cases he finds that the authors have not used a truly unbiased selection of characters for their analysis (either unintentionally or intentionally) leading to a lack of falsifyability of the results and a consequent failure to achieve the goals of this type of analysis. Everybody gets a bloody nose here. Hopefully the value of an apraisal of this type will be in forcing much more critical character evaluations in future analyses. The author would be gratified at such a result, but has undoubtedly bruised a few egos along the way to this end-point. This is not a paper to read, like a novel, from end to end. The commentary is too dense and (sadly) repetitive for that, as similar mistakes are made over and over by many different investigators.

Of course, others may rise to the defense of particular actions or take exception to the analysis presented here by Jenner. All to the good! Controversy and discussion of the issues raised should be fruitful and further improve the developing subdiscipline of character selection in cladistic phylogenetic analysis.

- D. Cadien

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Marine Invertebrate Taxonomists

September, 2004 **SCAMIT Newsletter** Vol. 23, No. 5

SUBJECT:	**Future of SCAMIT - Part II**
GUEST SPEAKER:	**Discussion Lead: Kelvin Barwick, SCAMIT President**
DATE:	**10 January 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**SCCWRP**

Pannychia moseleyi
Body wall ossicles

SEPTEMBER O4 MINUTES

The September SCAMIT meeting opened with President Kelvin Barwick discussing a few business items. First and foremost, Kelvin wanted to inform members that if they conduct a google search on SCAMIT one of the links leads to a website which is selling subscriptions to the SCAMIT newsletter for $40. Kelvin has sent the company running the site (they call themselves business facilitators) a letter asking them to cease and desist. We will keep you updated. Don Cadien suggested that we post a warning on our website to member hopefuls not to fall for this subscription scam and to simply become a member (much cheaper than $40) and enjoy the monthly newsletters.

Kelvin then announced the results of the SCAMIT elections, with all SCAMIT officers being unanimously re-elected.

Ron Velarde then had the floor and wanted to inform of us of upcoming non-SCAMIT meetings. The next SCUM meeting will be in January of 2005 and is being hosted by the City of San Diego. There is a flyer attached at the end of this newsletter.

Don Cadien then delighted us by revealing that he is back in the groove of writing up his reviews of new literature for the NL. I know we will all be looking forward to his insightful and often amusing prose. His first installment is below.

With that it was time for the Echinoderm portion of the meeting to begin.

Megan Lilly started off by reviewing the *Brisaster towsendi* versus *B. latifrons* issue raised originally by Rich Mooi of Cal Academy many moons ago.

B. townsendi and *B. latifrons* were originally described by Agassiz in 1898 (within the genus Schizaster). In 1917 Clark did a further review of the two species and described *B. townsendi* as having posterior petaloids that were at least 1/2 as long as the anterior petaloids, whereas *B. latifrons* had posterior petaloids that were 1/3 as long as the anterior petaloids.

Mortesen in his 1951 Monograph discussed the two species but expressed some doubt citing that it seemed odd that all the large specimens were one species (*B. towsendi*) and all the juvenile specimens were the other (*B. latifrons*).

McCauley reviewed these two species in 1967 and found the posterior/anterior petaloid ratio character (3:1 vs 2:1) to be unreliable with regards to separating the two species and synonomized the two. He worked with specimens from Oregon at depths of 100-840m and also looked at animals from the Albatross collections.

This brings us to Hood and Mooi (1998). A detailed examination was conducted on both species. Great variation was seen in the length of the posterior petaloids and they agreed with McCauley in that this character could not be used to separate the two taxa. However, their morphometric multivariate analyses gave a good separation of the two species based on posterior petaloid width. They feel that *B. townsendi* is distributed in the southern range of *B. latifrons*. It is theorized that the most recent species of *Brisaster* originated in the north Pacific with *B. townsendi* and *B. latifrons* only recently diverging.

The obvious problem here for those of us working at monitoring agencies is the applicability of the posterior petaloid width as a reliable field character. Don Cadien stated that we have to be able to see a difference in the field in order to distinguish the species. LACSD, for instance, can catch "hundreds" of *Brisaster* in a single trawl. It is not feasible for each animal to be examined with a pair of calipers to measure posterior petaloid width. In addition, the animals are live, with spines intact and usually covered with a wonderful mixture of mud, slime and fish puke, making it almost impossible to see the petaloids much less measure them. And, throw into this whole mess the fact that it is a distinct possibility the *B. townsendi* and *B. latifrons* could hybridize. So, the dilemma persists. Don Cadien has been gracious enough to offer that the people at his lab would be willing to bring some *Brisaster* specimens in from the field and take a closer look. They will work on the basis that if an animal "looks different" or "off" it will be subjected to a closer morphometric examination. In addition, Boris Savic has recently introduced himself to SCAMIT members and is willing and able to help do some work on the heart urchins. He may get more than he bargained for. We will keep you updated on the status of this project but there is a good possibility that we will end up having to back off to *Brisaster* spp as an ID for our field caught animals.

Speaking of strange heart urchins, Lisa Haney brought some images of a bizarre specimen. She had originally shown it to Don and Megan and we had both breezily blown it off with a "looks like a weird *Brissopsis pacifica*". Luckily Lisa persevered and we have to agree at this point that the animal is distinct. It does have a subanal fasciole, but it's very faint. In addition the spines and petaloids look different from those of either *Brissopsis* or *Brisaster*. For the moment Lisa is calling it *Brisaster* sp LA 1 and the animals have been sent to Rich Mooi for examination. There will be a voucher sheet coming out in a future newsletter.

Megan Lilly had prepared a power point presentation showing specimens she wanted reviewed as well as images and voucher sheets Lisa Haney had sent down to be included. Some of those voucher sheets will be included at the end of this newsletter, others are still in press.

We took at moment to look at some fossil echinoid photos that Boris had been kind enough to share. *Lovenia hemphilli* is a large and more robust looking version of our modern day *L. cordiformis*. Also, *Brisaster townsendi var waynari* was shown and again, it is very robust version of our modern day *Brisaster* species.

The first holothuroid to be discussed at some length was a trawl voucher specimen from LACSD. It was originally ID'ed by Lisa Haney as *Pentamera pediparva*. During the QA/QC for some of the trawl vouchers, Megan felt this was incorrect and called it *P. rigida*, based on the introvert ossicles and the overall gestalt of the animal. However, Lisa was unhappy with this ID and, as it turns out, justifiably so. Therefore, neither Lisa nor Megan felt they were correct in their ID of this animal. It is a *Pentamera*, of that much we feel fairly certain. The body wall ossicles are star-shaped, the supporting ossicles are somewhat similar to those found in *P. populifera* and the introvert ossicles are those seen in *P. populifera* and *P. rigida*. It was the opinion of some that the animal was simply a larger (2cm), strange looking, *P. populifera*. This could be, but both Lisa and Megan have some hesitancy with this ID as the overall gestalt of the animal does not suggest this species. For the moment the ID is pending.

Next up was Lisa's *Pentamera* sp C. It looks remarkably similar to *P. pseudocalcigera* externally, though much more "wrinkly" in appearance. Supporting tables in the tube feet resemble those of *P. beebei* depicted in Deichmann, 1941 Pl. 15 #5 and #6, although the body wall tables are very different. The body wall plates look more similar to *P. populifera* and *P. lissoplaca*. A voucher sheet is attached at the end of the newsletter.

Megan then showed a specimen of *Pentamera* on which she was waffling between *P. lissoplaca* and *P. psuedocalcigera*. It was collected at B'03 station 5002 at a depth of 319m. The final consensus (and with an email input from Philip Lambert) was that this was *P. pseudocalcigera*. The ID sheet is attached at the end of the newsletter.

A strange looking *Cucumaria* brought by Lisa was discussed next. This animal has body wall plates that are irregular in shape and perforated with large holes and scalloped edges, similar to those depicted for *C. frondosa japonica*, but without bumps on the surface. The ring canal, however, is most similar to the illustrations for *C. piperata*. Although Lisa had put together extensive slides and descriptions, there was no input from the audience on what this animal could be. It is being called *Cucumaria* sp A and the voucher sheet is attached at the end of the newsletter.

A mystery animal from the B'03 project was *Synallactes alexandri*. This holothuroidean was caught on a trawl survey and was immediately of interest. Lisa took copious pictures and sent these off with descriptions of the animal to various researchers world-wide. Francis Solis-Marin from Mexico City replied and provided

the ID. He had just recently completed a revision of the Synallactidae and a redescription of *S. alexandri*. The only other reported Synallactid from southern California is *S. challengeri* of which there is no way this specimen could be confused. *S. challengeri* has long pointed papillae dorsally and the ossicle tables are different in form, though the spires of both of these animals are similar. This fun but strange looking cucumber came from 500m off the Palos Verdes Shelf. A voucher sheet is included at the end of the newsletter.

Megan then showed a few slides of a *Pannychia moseleyi* specimen. Although this species had been seen by LACSD and described, the specimen that Megan examined was different looking in that it was white (versus, the normal purple that LACSD sees) and the podia looked slightly different. However, all present agreed, based on the ossicles, that it was a variable *P. moseleyi*.

Lisa Haney had brought an unusual ophiuroid specimen for us to examine. It was collected at B'03 trawl station 4110 from Orange County, at a depth of 150m. At first glance, with its flattened and spatualate arm spines, it appeared to be an *Ophiopteris papillosa*, though a closer look soon revealed that was not the case (the jaws told a different story). The jaw structure very clearly places this beast in the genus *Ophiacantha*, however, the arm spine morphology is yet to be like any known species in this group. This rather large specimen (roughly 1 inch disk diameter) was taken to the Los Angeles County Natural History Museum to be examined by Gordon Hendler. After much investigation and searching through various literature, an ID could not be established. Lisa will be designating this animal *Ophiacantha* sp. LA 1 and a voucher sheet will be distributed in the near future.

She also presented a cucumber, Phyllophoridae sp B that she could not place to genus. This specimen does not look externally similar to other known Phyllophorids from southern California. It is a large animal (measuring 6.5 cm), thin body wall, and has very short conical tube feet in double rows. The ossicles found in this animal are also unique. No tables were found in the body tissue or the introvert. Instead the animal is packed full of plates of all sizes that are located near the surface and can easily be seen without a prep mount. Supporting tables of various morphologies can be found in the tube feet and are distinct. A voucher sheet is attached.

Another animal that Lisa talked about was a familiar ophiuroid that had been surrounded by confusing nomenclature. Many people confused this animal with *Amphioplus hexacanthus*, because it had a scaled disk and forked arm spines. *Amphioplus hexacanthus* is a nomen dubium though. (Not a valid name due to lack of complete type material and inability to distinguish it as something different). Lisa explained that the type material for *A. hexacanthus* lacked disks but possessed forked arm spines. Without the disks and with the presence of forked arm spines, these specimens could not be distinguished as different from *Dougaloplus amphacanthus*. For this reason, *A. hexacanthus* was synonomized with *D. amphacanthus* (Hendler, 1996). With the information at hand at that time, the only known species to have forked arm spines, within this group of brittlestars, was *D. amphacanthus*, so the synonymy was appropriate. However, with recent information on this new species with a scaled disk and forked central arm spines, it is Lisa's recommendation that the synonymy be revoked and the name *Amphioplus hexacanthus* be designated as a nomen dubium. Either way, the name *A. hexacanthus* is unavailable and would not be appropriate to use. The forked arm spines are considered a species-specific character and are not part of the diagnosis for either of the two genera.

This new species, *Amphioplus* sp. LA1, is similar to both *A. strongyloplax* and *Dougaloplus amphacanthus* but may be distinguished easily from the two by the combined presence of a scaled disk **and** forked arm spines. To ensure that the presence or absence of forked arm spines were not related to growth stage, Lisa did an extensive review of the LACM collections to determine variability in arm spine morphology through all growth stages of *A. strongyloplax* and *D. amphacanthus*. In no observed specimens, of any size, were forked arm spines present in the collections of *A. strongyloplax*. In all individuals with a disk diameter of 3 mm or greater, forked arm spines were visible and spines present on the disk (even regenerated disks) for specimens of *D. amphacanthus*. With this information, Lisa feels strongly that *Amphioplus* sp. LA1 is a stand alone species and easily distinguished. A voucher sheet is just about complete and will be distributed shortly.

And finally, Megan had prepared a comparison sheet of *Dougaloplus amphacanthus* and *Dougaloplus* sp SD 1. Most attendees had already seen this sheet, but it is being attached at the end of the newsletter for those of you who have not.

In conclusion, Don Cadien talked about the Asteroid fauna of the B'03 trawls. In general, there was a low diversity as most of the trawls were shallow. One interesting find was *Odontaster crassus*. It looks similar to a "cookie cutter star", but has the distinctive feature of a large, spine like tooth at the apex of each jaw.

In the spirit of attaching voucher sheets, Megan has included her Phyllophoridae sp SD 1 sheet and is submitting, it at the end of this newsletter for SCAMITization as Phyllophoridae sp A. She also has a comparison sheet describing it side by side with *Havelockia benti*, which in Megan's opinion, it is not. If anybody is interested please contact her for that sheet.

NEW LITERATURE

At the September 2004 meeting a few articles were circulated for the attendees to examine. Most dealt with crustaceans, but Karr and Chu (1997) discussed a very basic issue: why are we monitoring the biota? Their explanation is well reasoned and a useful restatement of the value of biotic monitoring in ecological risk assessment. I find their approach a bit too rigid however. Repeatedly during the article the authors insist on focusing exclusively on changes resulting from anthropogenic impact. I think this is ill-advised. The effects of anthropogenic and natural stressors on a system are additive rather than unrelated, and it is very useful to consider them jointly. Karr is a very old hand at this, however, and has been instrumental in the conceptual development of monitoring methodology. His recommendations bear weight and should not be casually discarded. I suggest you read this paper and reach your own conclusions.

Last year's revision of the corophioid amphipod group, which came out at the beginning of the hyperactive sampling season for B'03 (and was set aside for later consideration), was brought up again. We will be devoting a meeting to this (Myers & Lowry 2003) in February 2005. It is important that all interested workers read, digest, consider, and decide how they feel about what the authors propose. We will conclude during next year's meeting what we will use of this revision in the SCAMIT list Ed. 5 and in other SCAMIT activities. Until then (i.e. in the B'03 Synoptic Data Review) we will not be adopting any of the proposed changes.

Two recent on-line publications were distributed for examination, both from the journal Organisms Diversity & Evolution (Berge 2003, and Malyutina 2003). The papers are available printed in the journal and in an expanded form in the Electronic Supplement to the journal. Berge reexamined the small amphipod genus *Stilipes* and proposed a new

species. Our local representative *S. distinctus* Holmes, 1908, is included in the key and briefly discussed. He refers readers to Shoemaker (1964) for a description of Holmes' species.

Malyutina performs major surgery on the large and heterogeneous munnopsid isopod genus *Storthyngura*, carving out three new genera and redistributing species among them. In this paper in particular one should plan on downloading the electronic supplement, as the printed version is only a brief summation and lacks the detail necessary to evaluate the revision fully. Unfortunately one of her proposed new genera (*Vanhoeffenella*) was a homonym of an earlier name in Foraminifera. She has replaced it with *Vanhoeffenura* (Malyutina 2004).

Boxshall (2004) provides the kind of detailed and comprehensive view of an issue one might expect of him. The subject is both large and contentious: evolution of arthropod limbs. Of course the available fossil evidence is marshaled along with observations of recent organisms. For anyone at all interested in the subject this is a very valuable (if somewhat pithy) read.

Two papers not circulated at the meeting are added here, Prenter et al (2004) and Pitombo (2004). There has been some confusion over the reaction of parasites to pollution, or perhaps no confusion, just a variety of responses in different taxa. The same breadth of possible responses and interpretations seems available when considering the specific case of parasites in invasive species (Prenter et al 2004). Given our increasing interest in the ecology of local invasives, we need to ponder the parasite/host relationships in the invaders we have seen so far. This paper will help rationalize our observations and broaden our conceptual approach to the issue.

Barnacle taxonomy has metamorphosed severely since the convenient treatment offered in Light's Manual (the old third ed., not the new one). Pitombo (2004) provides the results of his recent phylogenetic analysis of the Balanidae and addresses many of these changes. This is a morphology based phylogeny which does not consider molecular evidence. Pitombo introduces and codifies a number of new or underutilized characters having to do with plate coupling, tergal fine structure, and details of plate radial sutures. As a bonus he provides an appendix listing all currently valid names in the family. It was here, for instance, I learned that *Balanus pacificus* was now more correctly *Paraconcavus pacificus*.

A NEW CUCUMBER "FRIEND" *PARASTICHOPUS* SP A

- Lisa Haney, LACSD

Four known species of the genus *Parastichopus* (Clark, 1922) are regularly found in the waters of the northeast Pacific, (*P. californicus* (Stimpson, 1857), *P. johnsoni* Theel, 1886, *P. parvimensis* (H.L. Clark, 1913) and *P. leukothele* Lambert, 1985). *P. californicus* is the species of this genus most often collected by the LACSD off the Palos Verdes Peninsula. However, in 1998, the LACSD collected an unusual holothuroid from a trawl at 305 meters as part of our regular monitoring effort. At first inspection, the animal looked as if it may have been partly digested. The specimen was white in color, three inches in length, and its body was flaccid. It also lacked prominent dorsal papillae and had a "fluffy" appearance. The animal was vouchered and taken to the lab for further examination. Also during the Bight '98 surveys, three more individuals, whose appearance was very similar to the initial one collected, were taken off the east end of Catalina Island at 80 meters and vouchered with SCCWRP. These specimens possessed tube feet only on the ventral surface, an

elongate body and peltate tentacles. The specimens were all assigned to the genus *Parastichopus* and recorded as *Parastichopus* sp. A.

In 2002, an additional specimen of this strange holothuroid was taken from the same 305 meter station in the LACSD survey grid. This second individual provided an opportunity for further examination and comparison in the laboratory with the first specimen collected. Full dissections and ossicle mounts were undertaken and revealed that both animals possessed distinguishing characters of the genus *Parastichopus*, with a rudimentary and fragile ring canal and characteristic plates, buttons, and C-shaped rods. All local *Parastichopus* taxa have similar ossicle morphology, which has made it difficult to determine species on ossicle characters alone. Differences in body morphology have been well documented though variation has been recorded among life-stages, also making identifications at times difficult. Lambert (1985), with his description of *P. leukothele*, spent much time resolving this issue by measuring various ossicle morphometerics. His table of ossicle differences between the local taxa allowed comparison with ossicles of *Parastichopus*. sp. A. Slide mounts of the two LACSD specimens were made and over sixty ossicles per individual were evaluated. Their ossicle measurements were close in range with one another but did not match any species outlined in Lambert's 1985 review of the genus.

During sampling for Bight'03, nine additional specimens from 454 meters on the slope of the San Pedro Sea Shelf were vouchered and sent to SCCWRP. Though white and flaccid like the other individuals, several of the nine specimens possessed tiny pink dots while others had small black dots on the surface of the epidermis. This pigmentation was quickly lost once preserved. Ossicle measurements again fell within the same range as the previously sampled specimens. More individuals have recently been identified from Bight '03 samples off Anacapa Island at 80 meters and Orange County at 215 meters. Specimens have a recorded depth range of 80 – 454 meters and a geographical range as far north as Anacapa Island, west to Catalina, and south to Orange County.

Digital images of ossicle morphologies were captured and a detailed voucher sheet constructed and subsequently distributed over both the SCAMIT and Bight '03 list servers for comment and review. To date, no other monitoring agencies have reported such animals. Digital images and a discussion sheet were also sent to Dr. Phil Lambert for comment. He concluded, based on the information given to him and without observation of an actual specimen, that the unusual cucumbers seem to be an unrecognized species of *Parastichopus*.

Since 1998 this white cucumber has been documented in the LACSD database and the SCAMIT species list as *Parastichopus* sp. A, without a formal voucher sheet. To resolve this, per SCAMIT guidelines, the taxonomic information regarding this taxon has been distributed for discussion, a voucher sheet made, and now published recognition of this taxon in the SCAMIT newsletter makes the process complete. Detailed comparisons and digital images are provided within the composed voucher sheet and it is published as a hardcopy in this newsletter. The voucher sheet will also be made accessible as a PDF on the SCAMIT website. A CD with information sheets, a voucher sheet, and with additional digital images is also available to any agency that would like to request one. Contact Lisa Haney at LACSD for more information.

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The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

Cucumaria sp. A SCAMIT Vol.23, No.5
Family: Cucumariidae

Synonymy: none

Date Examined: 25 August 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS **CUCUMARIA:**

1. Cucumber shaped.
2. Body wall soft and pliable.
3. Tentacles 10-20. 10 dendritic tentacles equal in size or 2 ventral tentacles smaller.
4. Tube feet in 5 distinct rows or scattered all over body.
5. Calcareous ring with anterior processes only.

IDENTIFYING CHARACTERS OF SPECIES ***A***:

1. Tube feet in five distinct rows only.
2. Color white/light yellow.
3. Supporting tables in tube feet variable but each with one large central hole in spire and irregular shaped projections emerging on top.
4. Irregular shaped supporting rods prevalent
5. Irregular and lattice shaped body wall plates present.

RELATED SPECIES AND CHARACTER DIFFERENCES

The body wall plates are irregular in shape and perforated with large holes and scalloped edges, similar to those depicted for *Cucumaria frondosa* japonica, but without bumps on the surface. The ring canal, however, is most similar to the illustrations for *Cucumaria piperata.*

DEPTH RANGE:

102.3 meters

HABITAT AND DISTRIBUTION:

Taken from the Channel Islands, sand substrate

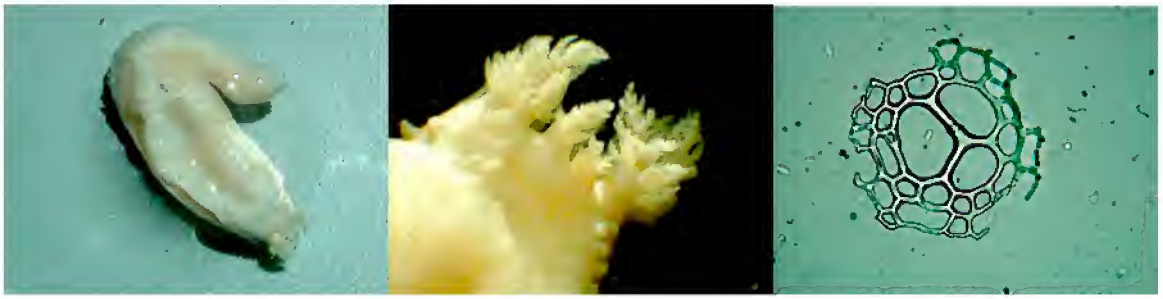
LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Cucumaria sp A

Haney 2004 §

This animal is white/yellow and 5.5 cm in length. There are ten dendritic tentacles of various sizes. The ring canal is characteristic of Cucumariidae and the specimen has retractable tube feet that look like dimples when retracted.



Whole Animal Tentacle Mass Body Wall Plate

Various styles of tube feet supporting tables

Various morphologies of plates found in the body wall

Digital images taken by Lisa Haney Los Angeles County Sanitation Districts 2004

Parastichopus sp. A SCAMITVol. 23, No.5
Group: Stichopodidae

Synonymy: Same as *Parastichopus sp. A* in SCAMIT list from 1998 Date Examined: 25 September 2003
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS ***PARASTICHOPUS***:

1. Peltate tentacles.
2. Tube feet located only on the ventral side.
3. Body of animal elongate and tapering at both ends.
4. Gonads present in two tufts.
5. Dorsal side usually, but not always, with papillae.
6. Ossicles are predominately present as tables, C-shaped rods, and buttons

IDENTIFYING CHARACTERS OF SPECIES ***A***:

1. Body elongate, almost cylindrical, several times longer than broad.
2. Tentacles nearly equal in size, average twenty in number, large circular discoidal ends.
3. Ossicles are similar to all species within the genus *Parastichopus* and are represented by tables, C-shaped rods, and buttons. (Number of holes in tables varies, as is the case in all *Parastichopus* species).
4. Color in alcohol and in live material is bright white, with small dots of pink or black on the surface, terminal parts of the tentacles and pedicels yellowish.
5. Terminal part of the tentacles covered with minute papilla-like projections
6. Calcareous ring rudimentary and fragile.
7. Body wall flaccid with no large extending papillae or warts.

RELATED SPECIES AND CHARACTER DIFFERENCES

Parastichopus sp. A differs from *P. parvimensis*, *P. californicus*, *P. johnsoni*, and *P. leukothele* in overall body size, shape and color, ossicle morphometrics, absence of large or noticeable tubercles dorsally and lacking musculature of the body wall.

Species Name	Diameter of disk (μm)	No. of holes in disk	No. of spines on spire	Height of spire (μm)
P. californicus	82.5 ± 10.8	9.7 ± 3.8	15.1 ± 4.1	82.0 ± 9.7
P. johnsoni	138.3 ± 17	18.3 ± 3.3	16.3 ± 4.4	107.5 ± 11.9
P. leukothele	113.4 ± 14.5	16.6 ± 6.3	8.1 ± 2.3	96.6 ± 13.4
P. parvimensis	54.8 ± 4.5	5.9 ± 1.4	4.7 ± 1.7	47.7 ± 5.2

Taken from Lambert, 1986

P. sp. A	≈ 55	22 ± 6	≈ 12	≈ 65

DEPTH RANGE: 80 - 454 m

HABITAT AND DISTRIBUTION: Taken from the Palos Verdes Peninsula in Los Angeles, California within the slope environment and one specimen is know from the east end of Catalina Island. Muddy substrate.

LITERATURE:

Lambert, Philip. 1985. Northeast Pacific holothurians of the genus *Parastichopus* with a description of a new species, *Parastichopus leukothele* (Echinodermata). Canadian Journal of Zoology ; Vol 64: 2266-2272.

Subclass Aspidochirotacea

Diagnosis. 10-30 leaf like or shield like oral tentacles, lacks retractor muscles, tube feet present. (e.g., *Enypniastes, Holothuria, Isostichopus, Parastichopus, Pelagothuria, Scotoplanes, Stichopus*)

Order Aspidochirotida Grube, 1840

Diagnosis. Tentacles peltate, 15-30 in number. Respiratory trees present. Gonads in 1 or 2 tuffs. Ossicles usually include tables.

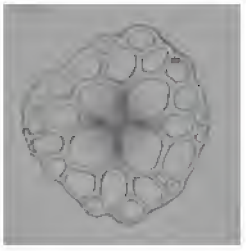
Family Stichopodidae Haeckel, 1896

Diagnosis. Peltate tentacles, tube feet ventral, tapered ends, gonads in 2 tuffs, dorsal side usually with papillae or warts. Ossicles as tables and sometimes C-shaped rods and buttons.

Parastichopus sp. A **(SCAMIT, 2004)**

General Body Design:

General Ossicle Morphology:



Parastichopus sp. A (SCAMIT, 2004)

Fig. 1: Calcareous plate (Enlarged)

Fig. 2: Calcareous plate (Enlarged)

Fig. 3: Plates

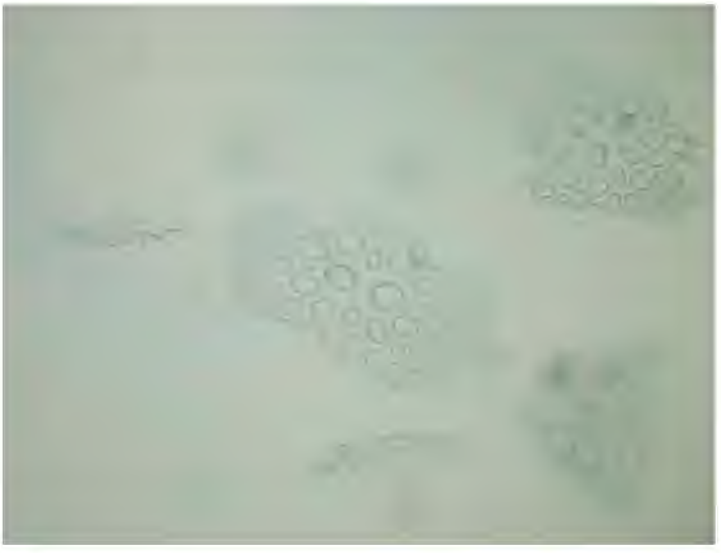


Fig. 4: Supporting tables

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Parastichopus sp. A (SCAMIT, 2004)

Fig. 1: Plates and Button

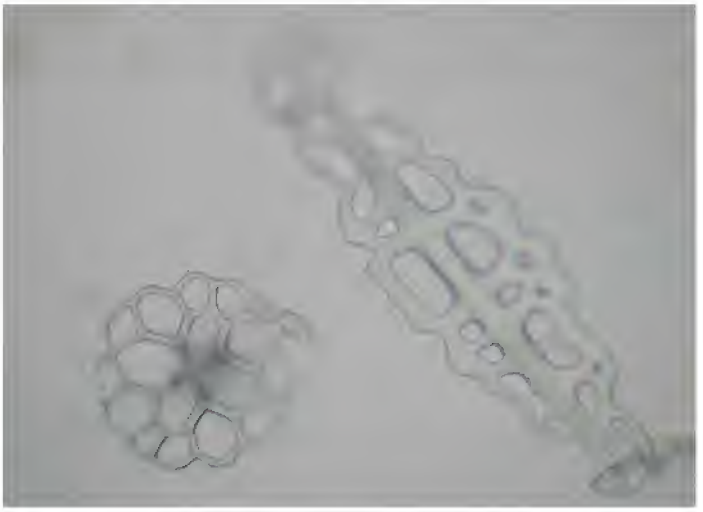


Fig. 2: Plates and Button (Enlarged)

Fig. 3: Side view of plate spires

Fig. 4: Calcareous plate (Enlarged)

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Parastichopus sp A.

Fig. 5: Side view of spire

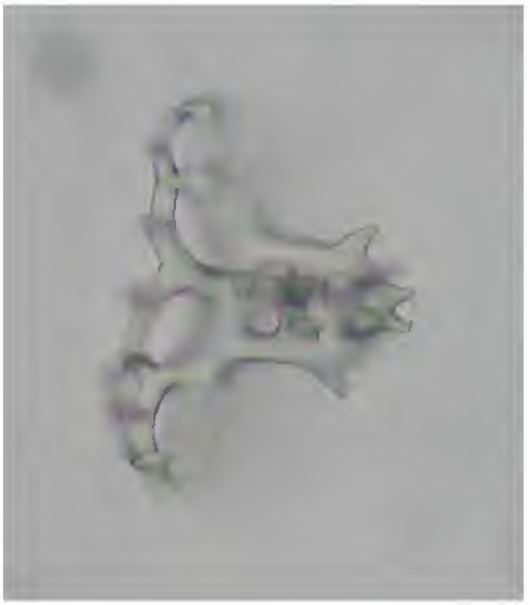


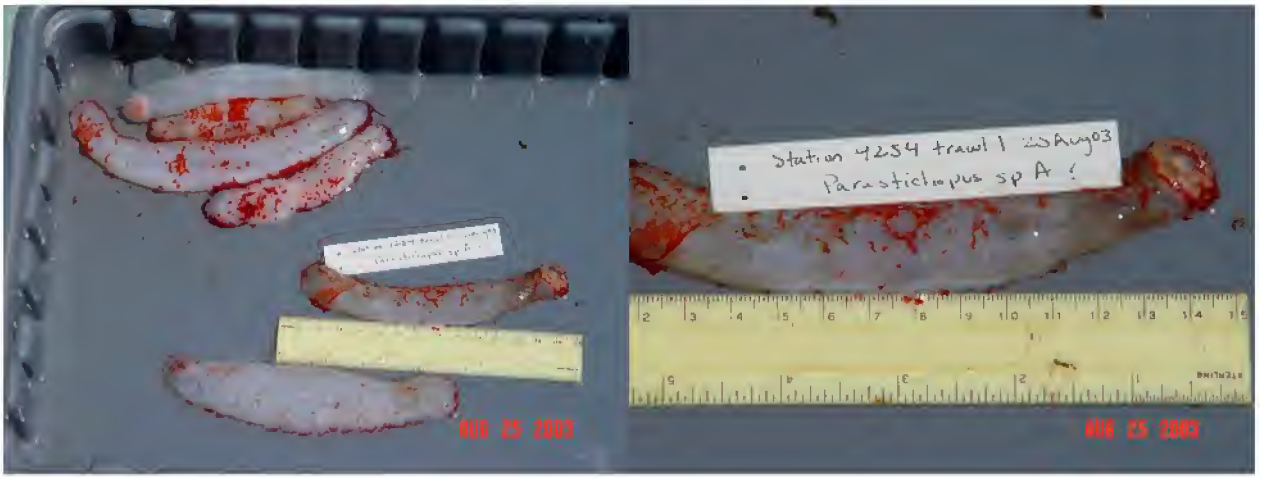
Fig. 6: Side view of spire

Fig. 7: Side view of spire

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Fresh Specimens

(in good condition)



Pentamera sp. C SCAMIT Vol.23, No.5
Family: Phyllophoridae

Synonymy: none

Date Examined: 25 August 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS **PENTAMERA:**

1. U-shaped.
2. Body tapers at posterior end.
3. 10 dendritic tentacles (2 ventral tentacles smaller).
4. Tube feet non-retractable in 5 distinct double rows.
5. Calcareous ring with long processes divided into pieces.

IDENTIFYING CHARACTERS OF SPECIES ***C***:

1. Body white with yellow tube feet rows and a somewhat wrinkly appearance.
2. Five double rows (that are widely separated) of tube feet with no tube feet scattered in between.
3. Retractable tentacles.
4. Supporting tables in tube feet.
5. Only plates in the body wall and introvert, large and small.

RELATED SPECIES AND CHARACTER DIFFERENCES

Looks externally similar to *Pentamera pseudocalcigera* though much more "wrinkly" in appearance. Supporting tables in the tube feet resemble those of *Pentamera beebei* depicted in Deichmann, 1941 Pl. 15 #5 and #6, although the body wall tables are very different. The body wall plates look similar to *Pentamera populifera* and *Pentamera lissoplaca*

DEPTH RANGE:

305 meters

HABITAT AND DISTRIBUTION:

Palos Verdes Pennisula. Olive silt substrate.

LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Deichmann, 1941. The Holothurioidea Collected by the Velero III during the Years 1932 to 193. Allan Hancock Pacific Expeditions Vol.8 (3): 158-159.

Pentamera sp. C

Table Plate in Body Wall Spires on a Table Plate Body Wall Plate

Variations of supporting tables in tube feet

Tentacle Whole Animals

Digital images taken by Lisa Haney Los Angeles County Sanitation Dsitricts 2004

Phyllophoridae sp. B SCAMIT Vol. 23, No.5

Family: Phyllophoridae

Synonymy: none

Date Examined: 25 July 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE FAMILY **PHYLLOPHORIDAE:**

1. U-shaped.
2. Body tapers at posterior end.
3. 10 dendritic tentacles (2 ventral tentacles smaller).
4. Tube feet non-retractable in 5 distinct double rows.
5. Calcareous ring with long processes divided into pieces.

IDENTIFYING CHARACTERS OF SPECIES ***B***:

1. Body white/cream.
2. Five double rows of tube feet with tube feet also scattered in between rows.
3. Retractable tentacles.
4. Supporting tables in tube feet only (diverse morphologies).
5. Only plates in the body wall and introvert, plates are various sizes and shapes.

RELATED SPECIES AND CHARACTER DIFFERENCES

This specimen does not look externally like any of the other known Phyllophorids from southern California. It is a large animal (measuring 6.5 cm), thin body wall, and has very short conical tube feet in double rows. The ossicles found in this animal are also unique. No tables were found in the body tissue or the introvert. Instead the animal is packed full of plates of all sizes that are located near the surface and can easily be seen without a prep mount. Supporting tables of various morphologies can be found in the tube feet and are distinct.

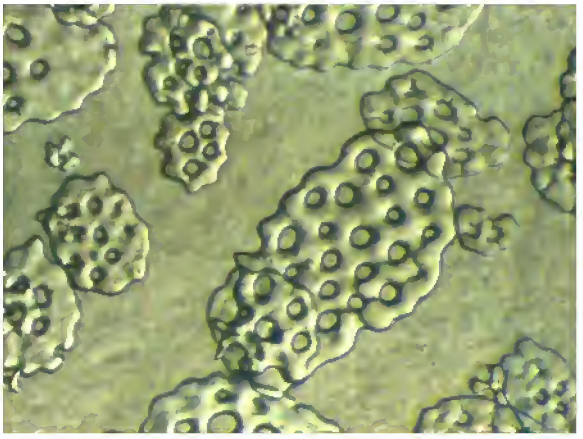
DEPTH RANGE: 56m

HABITAT AND DISTRIBUTION: Channel Islands

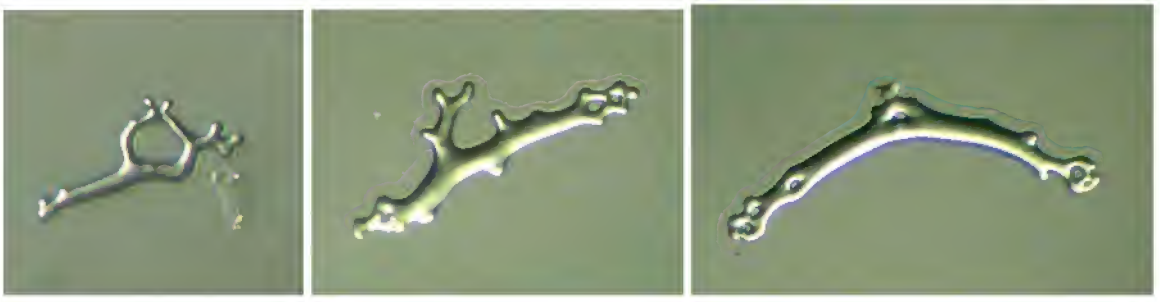
LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Phyllophoridae sp. B



Body Wall Ossicles



Diversity of Tube Feet Supporting Tables

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Phyllophoridae sp. B

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Synallactes alexandri SCAMIT Vol. 23, No.5

Group: Synallactidae

Synonymy: none

Date Examined: 25 September 2003
Vouchered By: Lisa Haney LACSD

IDENTIFYING CHARACTERS:

1. Body elongate, almost cylindrical, and similar in form to Pannychia.
2. Peltate tentacles nearly equal in size, average twenty in number, large circular discoidal ends.
3. Ossicles are in the form of tables with long thin spires and a needle like opening towards the top. Also present are C-shaped supporting rods in the tentacles and small club-shaped ossicles in the tube feet.
4. Color in alcohol and in live material is brown/grey.
5. Terminal part of the tentacles covered with minute papilla-like projections
6. Smooth dorsal body wall with small projections/bumps.
7. Body wall rigid and well formed with large tube feet located ventrally only.
8. Calcareous ring very poorly calcified with neither long anterior or posterior extensions.

RELATED SPECIES AND CHARACTER DIFFERENCES:

The only reported Synallactid from southern California is *Synallactes challengeri* of which there is no way this specimen could be confused. *Synallactes challengeri* has long pointed papillae dorsally and the ossicle tables are different in form, though the spires of both of these animals are similar.

DEPTH RANGE: Taken from 500 m

HABITAT AND DISTRIBUTION: Taken from the Palos Verdes Peninsula in Los Angeles, California within the slope environment. Muddy substrate.

LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Ludwig, 1893. Ludwig, H. 1893. Vorläufiger Bericht über die auf den Tiefsee-Fahrten des "Albatross" (Frühling, 1891) im ostlichen Stillen Ocean erbeuteten Holothurien. Zoologischer Anzeiger 16;177-186 (May, 1893). Abstract, J.R. Micr. Soc. 1893, pp.484-486.

Solis-Marin, 2004. Revision of the Synallactidae. In press.

CLASS HOLOTHOROIDEA

Prepared by Lisa Haney/LACSD

Subclass Aspidochirotacea

Diagnosis. 10-30 leaflike or shieldlike oral tentacles, lacks retractor muscles, tube feet present. (e.g., *Enypniastes, Holothuria, Isostichopus, Parastichopus, Pelagothuria, Scotoplanes, Stichopus*)

Order Aspidochirotida Grube, 1840

Diagnosis. Tentacles peltate, 15-30 in number. Respiratory trees present. Gonads in 1 or 2 tuffs. Ossicles usually include tables.

Family Synallactidae

Diagnosis. Body with tube feet in rows ventrally, papillae dorsally. Body wall soft and pliable. Twenty equal, peltate tentacles. Tentacle ampullae absent. Retractor muscles absent. Rete mirable absent. Posterior mesentery attached to right ventral body wall. Gonad single tuft, of double tuft. Cuvierian organs absent. Calcareous ring simple; not a mosaic of smaller pieces. Typical skin ossicles: Tables or C-shaped bodies.

Synallactes alexandri

General Body Design:	General Tentacle Morphology:

Larvae Morphology:	General Ossicle Morphology:

General Ring Canal Morphology:

Synallactes alexandri

Fig. 1: Tube feet ossicles

Fig. 2: Body wall ossicles

Fig. 3: Tentacle mass

Fig. 4: Tentacle ossicles

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Synallactes alexandri

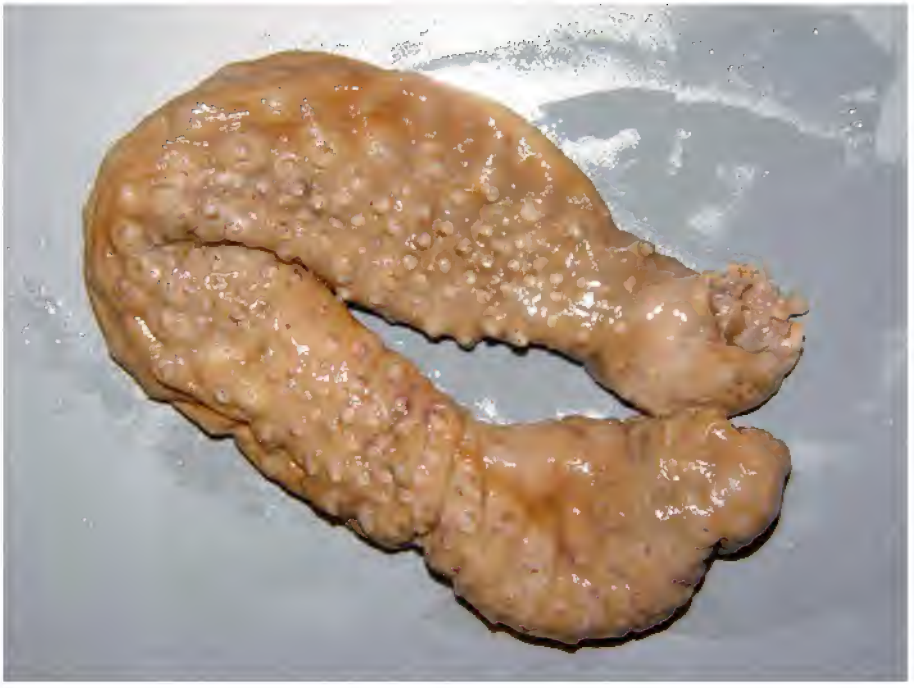
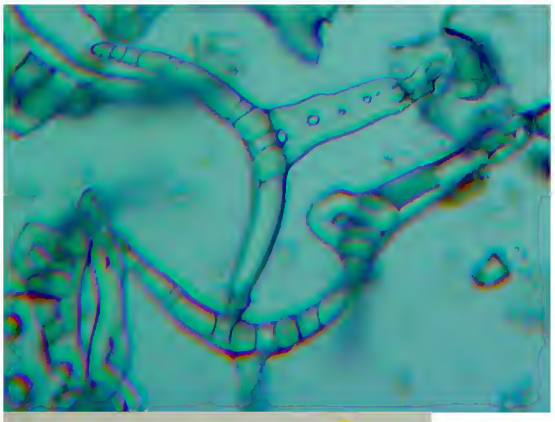
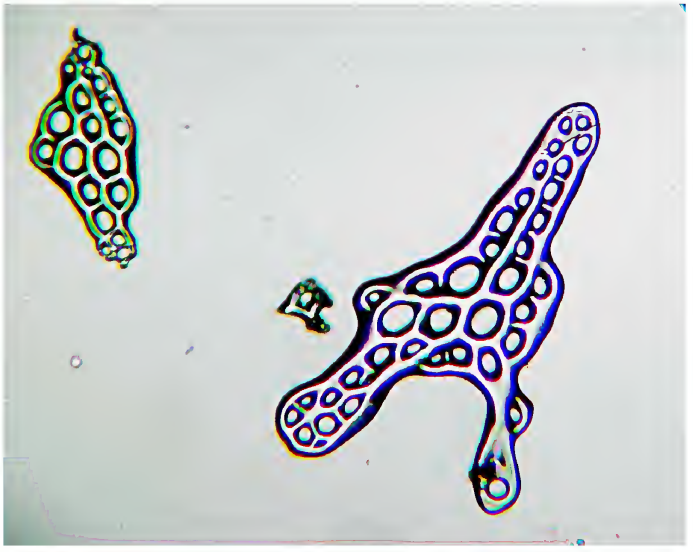


Fig. 1: Ventral view

Fig. 2: Dorsal view

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA





B'03 station 5002
1 August 2003,
319m - M. Lilly 2004

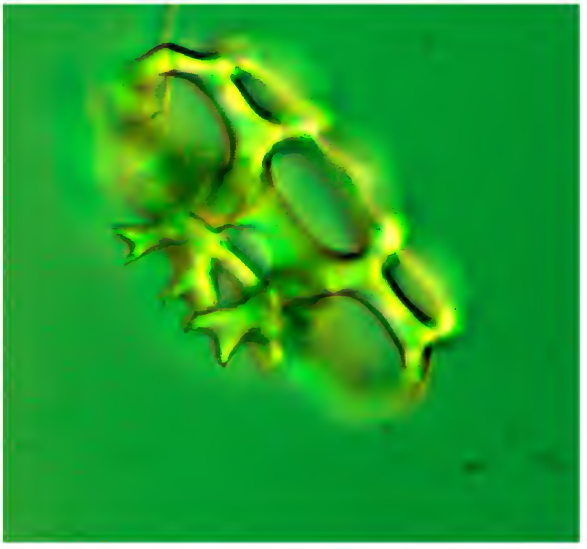
Phyllophoridae sp A (= Phyllophoridae sp SD 1) **SCAMIT Vol 23 No. 5**

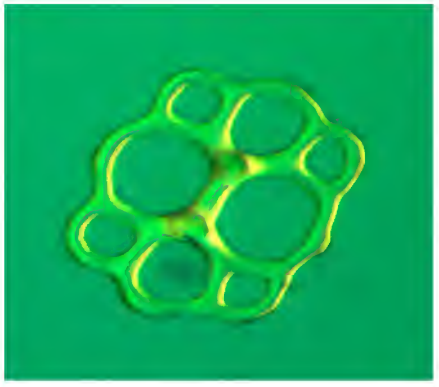
M. Lilly

Description:
Color is mostly white with slight tinge of color at anterior and posterior ends (could be sediment);I have since discovered one at station I-6 that had almost an orangish tinge to the tube feet (ferric oxide?).
Five bands of podia (two rows per band)
Long extensions on calcareous ring

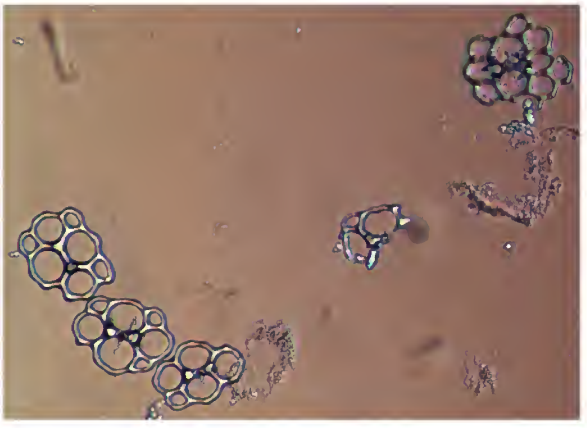
Collected from: ITP Stations, I-21(1), 7-5-01, 134 ft. and, I-6(2) 1-02, 83 ft. It is occuring at the coarse, relict red sand stations.

Comments: Looks similar to our common *Pentamera populifera* at first glance (although gestalt is subtly different). However, an ossicle mount will reveal tables of a different nature. The tables are much more delicate in appearance, often with four large holes at the center. To date I have been unable to find any supporting tables.
Ossicles shown below are all from body wall/podia mounts.





20x



20x

Dougaloplus amphacanthus
note the sharp-tipped, evenly tapering, disk spines

***Dougaloplus* sp SD 1**
note the blunt-tipped, "base-ball-bat" shaped disk spines, i.e., they can taper in the middle of the spine but tend to flare towards the apical tip.

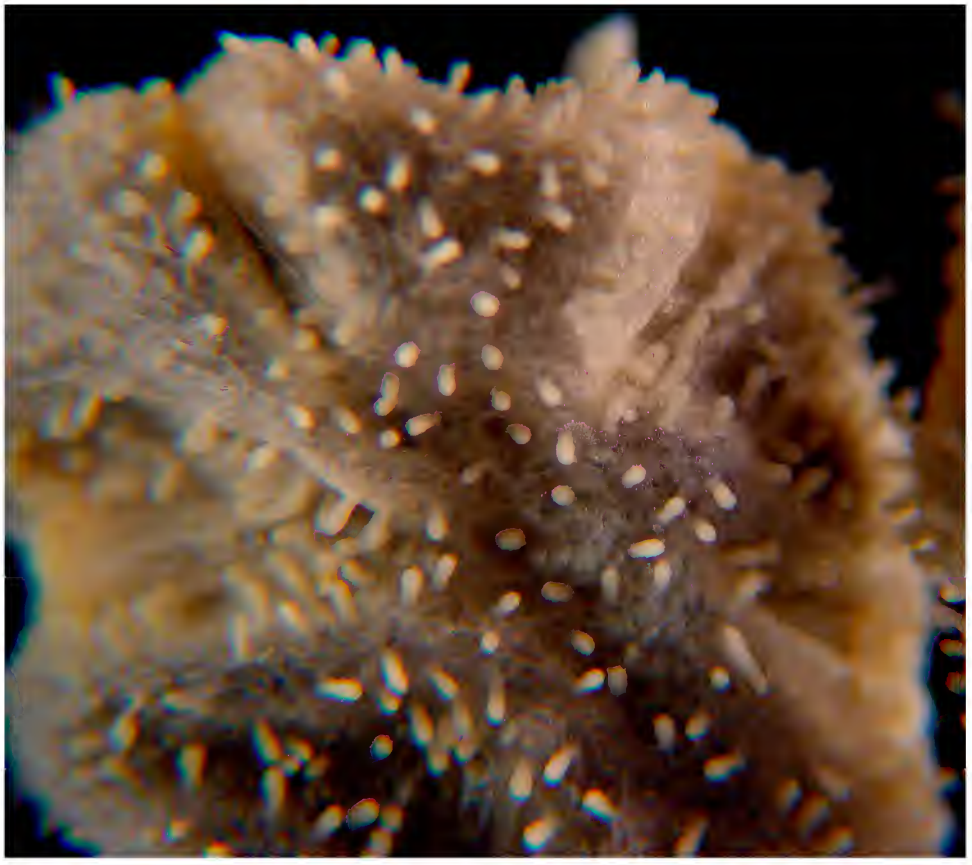
Dougaloplus amphacanthus
B'03 station 4581, 169m

These species have been known to co-occur in our samples and actually both species were collected at B'03 station 4159, but a better example of *Dougaloplus amphacanthus*, from B'03 station 4581, was used for comparative purposes. For all intents and purposes the two species look alike with the exception of the shape of the superficial disk structures (caveat - the author has not done an exhaustive, pain-staking, detailed examination of arm spines etc., perhaps one day...). Be warned that occasionally we see animals with disk spines which fall between these two types; not evenly tapering and pointed but not completely blunt and flared either (hybridization?). Good luck.

M. Lilly 4/04

Dougaloplus sp SD 1

B'03 Station 4159, 71m



SCUM IX
January 22, 2005
8:00 AM – 3:30 PM
At the City of San Diego's Environmental Monitoring &
Technical Services Laboratory
2392 Kincaid Road
San Diego, California

The ninth annual meeting of the **S**outhern **C**alifornia **U**nified **M**alacologists will be held this year at the City of San Diego's new Environmental Monitoring and Technical Services Laboratory building (see attached map). This state of the art building houses the City's Ocean Monitoring Program. The co-sponsor for this years event will be the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT).

SCUM is an informal association of southern California professional, amateur, and student malacologists and paleontologists who are active or interested in molluscan research. The purpose of the annual gatherings is to facilitate contact and keep one another informed of research current activities and opportunities. There are no dues, no officers, and no publications. SCUM is patterned after the Bay Area Malacologists (BAM), which is hosted at different institutions each year.

The doors will open at 8 AM for donuts and coffee. The meeting will begin about 9 AM. Lunch can be delivered to the meeting venue at a small cost to the participants. There is nothing within walking distance. There is very limited refrigerator space if you wish to bring your own.

The agenda:*

8:00 – 9:00 AM Meet and greet
9:00 – 11:30 AM Introductions and short informal presentations
11:30 – 12:00 AM City's Ocean Monitoring Program presentation and tour of the facility
12:00 – 1:30 PM Lunch and Prize drawings (Prizes provided by SCAMIT)
1:30 PM Group Picture
1:30 – 3:30 PM Continue presentations

For presentations there will be a video projector and PC laptop available for those of you with PowerPoint presentations. A 35mm slide projector, VHS video player and overhead projector will also be available. For more information contact:

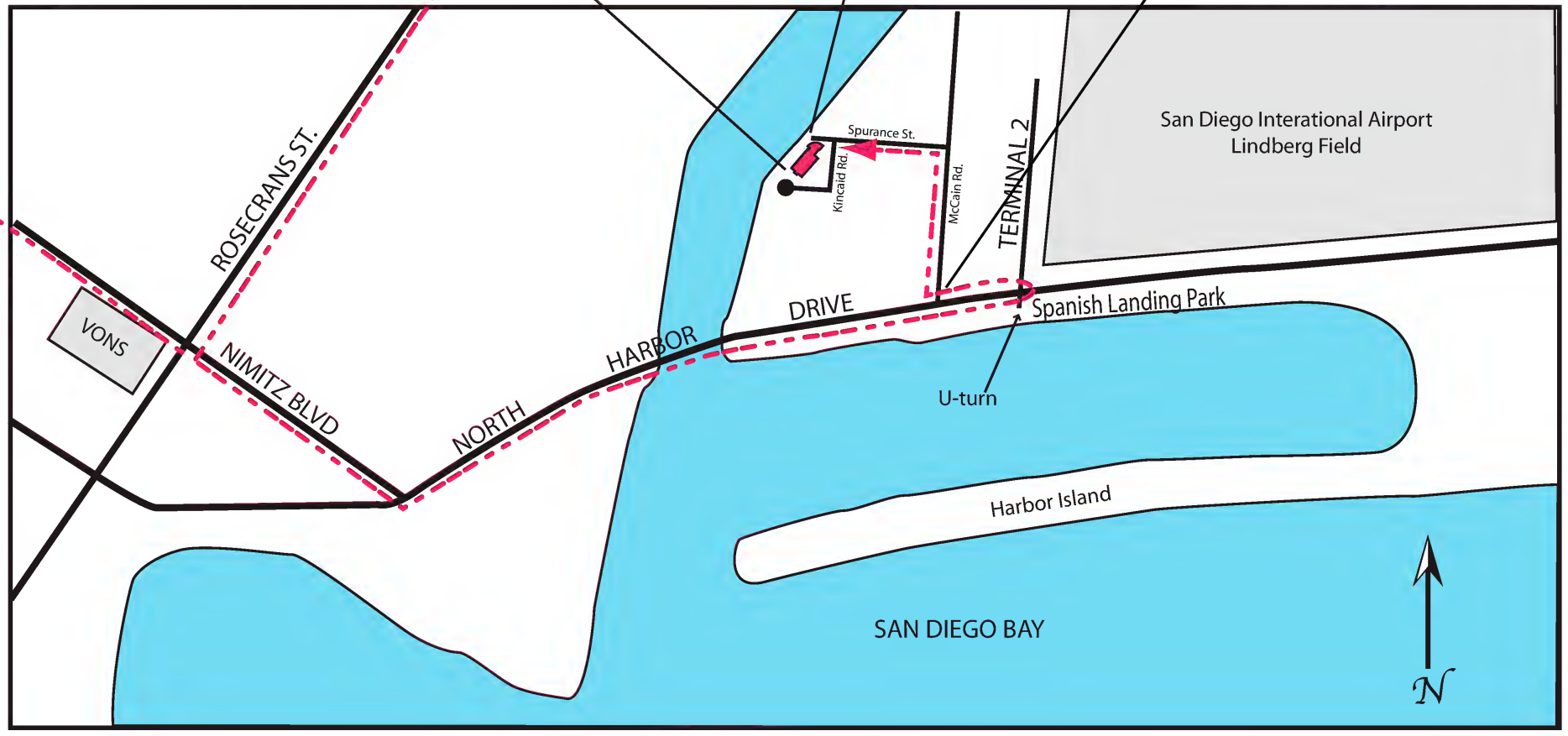
Ron Velarde (619)758-2331 Rvelarde@sandiego.gov
Kelvin Barwick (619)758-2337 Kbarwick@sandiego.gov

*subject to change

City of San Diego's
Environmental Monitoring & Technical Services Division Laboratory
2392 Kincaid Road
619-758-2300

Turn right, just pass this sign, at McCain Road.

From I5 going south or I8 going west
take the Rosecrans St. exit

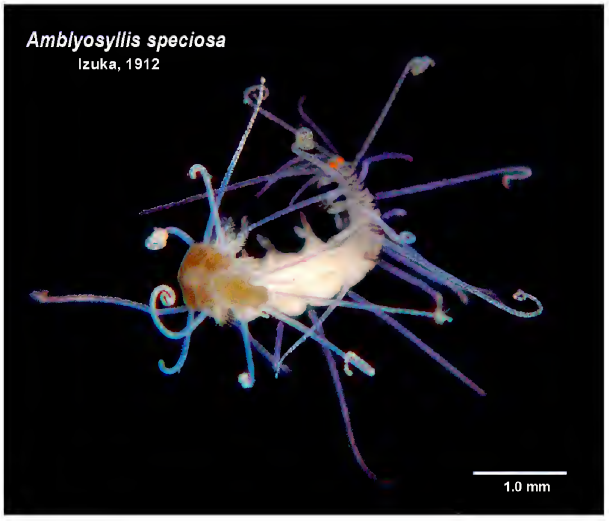


From I5 going north
take I8 west to Nimitz Blvd.

Southern California Association of
Marine Invertebrate Taxonomists

October, 2004 **SCAMIT Newsletter** Vol. 23, No. 6

SUBJECT:	**Corophoidae**
GUEST SPEAKER:	**John Chapman**
DATE:	**14 February 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Natural History Museum of Los Angeles County**



CSD Lab Display tank
Photo by R. Rowe 1/05

OCTOBER MINUTES

At the SCAMIT meeting on October 18th, Todd Haney (UCLA/ NHMLAC) and Cheryl Brantley (LACSD) gave a PowerPoint presentation on two recent research cruises aboard the R/V *Atlantis*. Both cruises were led by Dr. Janet Voight of Chicago's Field Museum, their purpose being to survey the diversity of invertebrates associated with hydrothermal vents in the East Pacific. The first 3-week cruise was to the East Pacific Rise in November, 2003, and Todd served as the crustacean biologist on that cruise. The second 1-week cruise was to the Gorda and Juan de Fuca Ridges in September, 2004. Todd and Dr. Jody Martin were the crustacean biologists, and Cheryl was the polychaete biologist.

Todd began the presentation with an overview of the cruise missions and some general information on the ship and crew, including images of the R/V *Atlantis* and a narrated video clip describing the DSMV *Alvin* operations.

Todd then described his experience aboard the ship during cruise 11-03 to the East Pacific Rise. He shared some of the color images that he had produced while working in the shipboard lab, which were primarily digital photos of a variety of vent-associated invertebrates.

Sixteen dives were made during the cruise. Two of the dive sites were exploratory areas of very diffuse venting, where *Alvin* cruised just above a striking seafloor of pillow basalts, sheet flows and crevices. The two other areas sampled were well-studied sites (9N, 13N), where organisms and rocks were sampled directly from vents. Regarding those animals observed and/or collected during the deep-sea dives, Todd made the following comments. *Nematocarcinus* was the most abundant decapod crustacean observed during exploratory dives in areas of diffuse venting, although large numbers (400+) of the galatheid crab *Munidopsis* and of the vent crab *Bythograea* were also observed each dive. At least 10 species of gammaridean amphipods were recorded, ranging from eusirids found on the hexactinellid sponge *Caulophacus* to pardaliscids, such as *Halice hesmonectes*, that are more tightly associated with vents. Asellotan isopods were present at the vents but were rare. Hundreds of specimens of the leptostracan *Dahlella* were added to the known collections.

Dr. Meg Daly (Ohio State University) participated in the cruise as a specialist on Cnidaria and was richly rewarded by collections of stauromedusae, octocorals and several species of anemones. Among many observations she made, Meg noted that one of the anemones commonly identified as a cerianthid actually was not a member of that group. The discovery of a field of stauromedusae at depth was only the second or third report of its kind, and the animal represented a new species.

Two species of tubeworms, *Riftia* and *Tevnia*, were collected. The Pompeii worm *Alvinella* was collected in large numbers as well as polynoid polychaetes (scale worms), which were the focus of science party member Dr. Stephane Hourdez.

The most common and conspicuous echinoderms encountered were brisingid seastars and ophiuroids, although an unidentified holothuroidean was also collected.

The molluscan fauna ranged from gastropods to the vent octopus *Vulcanoctopus*. Todd showed some interesting video footage of a vent octopus approaching *Alvin* and that was later narrated by Janet Voight. A cirrate octopus was also collected. The most abundant molluscs were the limpets (*e.g.*, *Lepetodrilus* and *Eulepetopsis*). An abbreviated gallery with images of some of these animals is available on-line via

http://crustacea.nhm.org/gallery

Finally, Todd noted that the cruise was impressive as a highly collaborative effort among geologists from UC Davis, chemists from the University of New Hampshire, and a team of taxonomists from multiple institutions. Although the survey of invertebrate diversity held priority, a significant amount of data was collected from water and basalt samples. Additionally, while organisms were studied in the shipboard lab, the UC Davis team was busy throughout the night using *Atlantis'* Sea Beam multi-sonar system to produce detailed maps of the area's bathymetry. Janet Voight offered an exceptionally well-organized and productive research cruise. The biological material collected is currently housed at the Field Museum. For more information on the cruise to the East Pacific Rise, one can visit the Expeditions webpage hosted at the Field Museum. A short article describing the cruise

and written by the science party is also available in the April 2004 issue of the Ridge 2000 Events Newsletter (see the taxonomic tools section of the SCAMIT web site).

Cheryl was up next and focused her presentation on the second week-long cruise that left from Astoria, OR. She began her presentation with the *Atlantis* leaving the dock and showed a small video clip of the harbor pilot being transferred back to the Pilot boat after navigating the ship thru the channel. A few photos of the interior cabins and laboratory spaces on the ship were shown. Cheryl had many photos of the launch and recovery of *Alvin* from the *Atlantis*. She described the launch procedure which included a small *Avon* boat, and two swimmers that assist with closing the hatch and securing the manipulator arms before and after each dive. She also showed photos of the basket on the front of the *Alvin* that holds all the "bioboxes" and suction samplers where the collections of animals and sediment are stored during dives. Much to the delight of the audience, a small video clip of Jody's baptism of ice water after his first dive in the *Alvin* was also shown.

One of the main goals of the second cruise was to retrieve blocks of wood that were placed at the same 4 dive sites two years previously by Dr. Voight. The hope was that these blocks would act as settling plates for some of the unique animals that live in and around the hydrothermal vents. These blocks were in mesh dive bags with large plastic floating markers tied to the bags. With excellent navigation by the *Alvin* pilots and "top lab," all of the blocks were retrieved.

Cheryl was able to photograph many of the live worms that came off the wood blocks and sediment samples, and showed them during the presentation. These included the tubeworm, *Ridgeia*, several species of branchiate scaleworms, capitellids, *Amphisamytha galapagensis*, a common vent ampharetid, and *Paralvinella sulfincola* with its distinct yellow coloring. She commented that it was more challenging than she had expected to photograph thru a microscope on a moving ship.

Cheryl also showed a DVD of actual dive footage taken from the *Alvin*. It included highlights from each of the 4 dives. Besides seeing the topography of the vent sites with the sulfide mounds and huge clumps of tubeworms, it was very interesting to see the manipulator arms in action using the temperature probes, push cores, suction samplers and collecting the wood blocks. The DVD also showed galatheid and oregoniid crabs, deep-sea octopus, pycnogonids, scaleworms, anemones, sea cucumbers and brittlestars.

The presentation concluded with slides of the *Atlantis* going thru the Hiram Chittenden locks in Seattle and docking at the University of Washington. Cheryl commented that it had been a great cruise with good weather and excellent food, especially since no cooking or clean up was involved. She now felt very spoiled for work-at-sea onboard LACSD's *Ocean Sentinel*.

The presentations by Cheryl and Todd concluded the morning portion of the meeting. After lunch we were treated to a talk by Don Cadien (LACSD) on the slope fauna of the B'03 project. Don has been kind enough to write a synopsis of his presentation and it is included below.

Preliminary Report on the Benthic Infauna of the Continental Slope within the Southern California Bight based on samples collected in the Bight'03 Regional Monitoring Project – D. B. Cadien, CSDLAC 18 October 2004 SCAMIT Meeting, NHMLAC

Bight'03 is the third regional monitoring project drawing on the combined efforts of the major ocean dischargers in southern California, academia, and regulatory agencies. It was preceded by the proof-of-concept trial Southern

California Bight Pilot Project in 1994, and the B'98 Regional Monitoring Project in 1998. All sampling was performed in the summer of 2003, from July to September. The design of this project included a sampling stratum covering depths of 200-500m on the upper slope. This is an area not sampled by either of the two preceding regional efforts. Physical and chemical sampling was scheduled for performance in a further stratum, between 500 and 1000m at a limited number of stations (32) to provide data for mass-balance modeling of chemical inputs. This sampling was performed by staff of the Channel Islands National Marine Sanctuary augmented by SCCWRP (Southern California Coastal Water Research Project).

As these samples were gathered it became obvious to those in the field that biological samples could be retained from the collected sediments, and might prove of value if funds and/or volunteers could be found to cover their processing. In consequence 32 samples from between 480 and 960m were collected for analysis of benthic infauna as well as physical and chemical sediment characteristics. The infaunal samples were taken and processed using the standard shipboard and laboratory protocols described in the Bight'03 Field Manual and Bight'03 Laboratory Manual. The results of this sample analysis would therefore, be fully compatible with the results of the other portions of the Bight'03 project, and could be included in a combined analysis. We are currently finalizing the last bits of data from sample processing and identification. Quality control analyses are complete, and a synoptic review of the taxonomic data on the infaunal invertebrates collected has been performed. Small pockets of data from analysis of particular groups by specialists are not quite available yet (with one exception). Full data analysis has not yet been performed. In consequence the present report is very preliminary, and the only analysis is on the bathymetric distribution of the animals and the communities they constitute as seen in the current non-final dataset.

The laboratory processing of the collected samples was put up for grabs. Samples were offered to any of the participating groups who were interested, and three took some of them. Unanticipated scheduling difficulties forced both MEC Applied Analytical Systems and the Municipal Wastewater Department of the City of San Diego to withdraw their processing offers. The County Sanitation Districts of Los Angeles County lab had only a small portion of the overall project samples allocated to it for infaunal analysis. In consequence, they were able to devote time to these samples, and ended up processing (sorting and identifying) all 32. The present report is intended to tell the rest of you what you missed, and show you some examples.

Background Preparation –

Prior to processing the collected samples, I prepared a background inventory of infauna which we at CSDLAC had seen in a series of 118 slope samples over the past 5 years. All the materials included came from deeper than 200m, and the listing was intended as a "heads up" for those who would be processing material collected at between 200 and 500m for the first time. Fortuitously I included bathymetric distribution records for animals from samples as deep as 860m in this initial background faunal list. I have used that list as a means of presenting what we did find, and what we thought we might and did not. The original list has been modified to exclude those taxa taken at greater than 200 and less than 500m which did not occur in the 32 deep samples collected by CINMS. It is therefore, a very selective list derived from a small sub-sample of sites. It does not include distributional information from the literature, but only that directly observed by CSDLAC staff.

The list is attached at the end of the newsletter. There are columns which show number of collections prior to B'03 in our restricted data set, the depth range of the sites where that

taxon occurred, and a matching pair of columns for materials taken in the 500-1000m stratum during Bight'03. Taxa which were not included in the original list and which were added as a result of these samples are **SHOWN IN BOLD**. Please remember the bathymetric distribution shown is based only on those collections included in the initial list (118 samples taken by CSDLAC in the last 5 years) and 32 Bight'03 samples from the deep stratum. They are not a valid representation of the distribution of the species based on other sources in the published or grey literature. There are, however, extensions of the reported bathymetric range in several animals, and more will probably be detected as we get further into analysis of the data.

NEW LITERATURE

The following were not distributed at the meeting, but are included here to alert readers to their existence.

POTWs, as sites of organic enrichment, often have a shallow RPD (redox potential discontinuity – where sediments change from oxic to anoxic) and support populations of animals with chemosymbionts. Both hot vents and cold seeps offer natural analogs to the POTW situation and support chemosymbiotic associations, often with clams. Goffredi et al (2004) describe such associations at cold seep sites in Monterey Bay between several species of vesicomyid clams and chemosymbiont bacteria. The authors investigated the symbiosis with various chemical and physical methods. While the symbionts were not the same in the seven vesicomyid species, they were genetically similar and all were gamma Proteobacteria. A series of detailed TEM images shows the relationship between the bacteria and host tissue.

The bivalve family Pectinidae has been a taxonomic problem for years since adult morphology is strongly influenced by environmental factors. A series of competing classifications has been proposed. Barucca et al (2004) sequenced the mitochondrial 16S and 12S rRNA genes of a cross-section of family members in an attempt to choose which, if any, of the current phylogenetic hypotheses is correct. They found that the classification proposed by Waller based on juvenile shell structure and sculpture was the best representation of the DNA evidence. Waller's arrangement seems very similar to that used in the Coan, Valentich Scott & Bernard west coast bivalve volume, so no changes from our current usage should be required.

More and more qualification seems necessary for some types of morphological evidence. The environmentally induced adult shell variation seen in the pectinids is not common, and neither is sexual dimorphism, which also occurs in at least some gastropods. Normally such sexual variability is evident in the shell. Mutlu (2004), however, found noticeable variation in radular morphology between male and female *Conomurex persicus*, a strombid gastropod from the Mediterranean. Previous studies have found dimorphism in some other families, but this is the first record for a strombid. Combined with the variation due to food substrate demonstrated for a lacunid by Padilla (discussed in a previous newsletter) this additional type of radular variation diminishes one's trust that radular evidence is definitive. Things just keep getting more complicated the more knowledge we have!

Evolutionary radiation of barnacles is addressed by Pérez-Losada et al (2004). Using both molecular and morphologically based information they evaluate a series of timing hypotheses on the evolutionary history of the group. They found good correspondence between the lines of evidence, and concluded that the four-plated ibloids were the most primitive thoracicans. All thoracicans were, however, derived from a stalked lepadomorph ancestral form (with the plateless Heteralepadomorpha as sister group). The lepadomorphs are monophyletic. Best estimates of the timing of divergences is

Heterolepadomorpha/Iblamorpha 530MYA, Iblamorpha/Lepadomorpha 340MYA, and Lepadomorpha/Verrucomorpha 120MYA. The balanomorphs diverged from the verrucomorphs considerably more recently. All the above are variable, and are rough consensus estimates of several methods. The paper should be consulted for a fuller discussion of the timing issues, and the caveats associated with the various hypotheses.

The increasing use of molecular data to help unravel phylogenetic questions where morphology is equivocal is a wonderful development in taxonomic technique. Unfortunately it is seldom available for organisms from the deep sea. Such forms are usually small, difficult to obtain, and taken remotely. Taxonomic determinations of such material often happen many years after the samples are obtained and fixed in formalin. Such formalin preserved tissues present particular problems in recovery of DNA data. In many cases attempts have not even been made to recover DNA from formalin preserved tissues. Boyle et al (2004) present a nice synthesis of the results of attempts at recovery of molecular data from a variety of formalin preserved archival materials, some over 100 years old. While recovery rates were lower than for fresh material, they were not uniformly bad. Many samples could be successfully sequenced despite initial preservation in formalin. Combined with other recent how-to methodological papers (listed and summarized here), grounds for use of formalized samples as semi-reliable molecular source material are laid in this paper.

Local participants in the Southern California Bight regional monitoring studies in 1998 and 2003 are familiar with the Benthic Response Index (BRI) developed on the basis of the initial regional pilot sampling in 1994 (Smith et al 2001). A very similar new index is proposed by Rosenberg et al (2004 – yes, the same Rosenberg as in the Pearson-Rosenberg model). Interestingly the index applies a very similar developmental method to a somewhat different basic approach. In the BRI a pollution gradient was established on the basis of analysis of a large number of locally collected samples. The population center-point of a species is then projected onto the gradient to produce a "pollution tolerance score". In the new index the relative "pollution tolerance" of a given animal is determined by scoring the point at which 95% of a species population can no longer tolerate ambient conditions. The two indices are thus polar opposites: as the BRI rises it reflects degradation of the environment, while a rising Benthic Quality Index (BQI proposed in the present paper) indicates increasingly good conditions. Each index seems a good candidate for validation of the other; a most delightful prospect. The BQI, since it is not as locally tied as the BRI, may prove much easier to use in adjacent areas.

UPCOMING MEETING

THE FOURTH INTERNATIONAL MARINE BIOINVASIONS CONFERENCE will be held in Wellington, New Zealand from August 23-26, 2005.

The Conference will address a wide range of issues about marine invasions, including ecological and evolutionary consequences, transport vectors, patterns of dispersion, management strategies (prevention, control, and eradication), economic impacts, education and outreach initiatives.

Co-hosts are Biosecurity New Zealand (Ministry of Agriculture and Forestry) and the MIT Sea Grant Program (USA). The meeting will be held in conjunction with the New Zealand Marine Sciences Society.

Please watch for the website and additional announcements to be posted in early January.

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Barucca, Marco, Ettore Olmo, Stefano Schiaparelli, and Adriana Canapa. 2004. Molecular phylogeny of the family Pectinidae (Mollusca: Bivalvia) based on mitochondrial 16S and 12S rRNA genes. *Molecular Phylogenetics and Evolution* 31(1):89-95.

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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.

The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

List of species taken in 115 CSDLAC slope samples prior to B'03, and in 32 500-1000m samples from B'03

Phylum Class Family	Species	N (occ)	Z (m)	B'03 N >500m	B'03 Z (m)
Annelida					
Polychaeta					
Acoetidae	Polyodontes panamensis	1	600	-	
Ampharetidae	Ampharete acutifrons	2	296-830	-	
	Amphicteis scaphobranchiata	3	253-660	-	
	Asabellides lineata	-		1	600
	Eclysippe trilobata	24	305-860	11	480-850
	Glyphanostomum pallescens	7	600-830	-	
	Lysippe sp A	2	660-826	-	
	Lysippe sp B	2	576-643	1	600
	Melinna heterodonta	27	294-643	3	780-850
	Melinna oculata	1	840	-	
	Mooresamytha bioculata	5	253-826	-	
	Mugga wahrbergi	1	643	-	
	Paralysippe annectens	23	542-860	7	600-850
	Paramage scutata	-		2	830-900
	Rhodine bitorquata	-		1	700
	Sabellides manriquei	-		1	600
	Samytha californiensis	3	295-797	-	
	Ampharetidae sp SD1	1	643	-	
Amphinomidae	Chloeia pinnata	33	253-466	1	850
Arabellidae	**Drilonereis falcata**	-		1	850
Capitellidae	Anotomastus gordioides	1	502	-	
	Dodecamastus mariaensis	19	502-800	1	635
	Heteromastus filobranchus	15	290-660	-	
	Mediomastus ambiseta	1	506	-	
	Notomastus magnus	3	294-660	-	
	Notomastus sp base 1	1	553	-	
Chaetopteridae	Phyllochaetopterus limicolus	27	253-860	-	
	Spiochaetopterus costarum	8	298-860	6	628-990
Cirratulidae	Aphelochaeta glandaria CMPLX	37	253-830	-	
	Aphelochaeta monilaris	45	253-404	2	480-792
	Aphelochaeta petersenae	-		2	650-780
	Aphelochaeta williamsi	2	353-506	-	
	Aphelochaeta sp base 1	1	826	-	
	Aphelochaeta sp LA2	-		1	630
	Chaetozone corona	-		1	650
	Chaetozone gracilis	-		1	868
	Chaetozone sp LA1	-		1	610
	Monticellina cryptica	3	253-813	11	480-960
	Monticellina tesselata	16	295-857	1	900
	Protocirrineris sp B	1	825	-	
Cossuridae	Cossura candida	2	300-506	1	960
	Cossura pygodactylata	1	643	-	
	Cossura sp. A	6	292-643	-	
Fauveliopsidae	**Fauveliopsis glabra**	-		6	480-868
Flabelligeridae	Brada villosa	12	434-643	1	628
	Diplocirrus sp LA1	-		1	600
	Pherusa neopapillata	3	305-506	-	
Glyceridae	Glycera branchiopoda	4	713-830	-	
	Glycera nana	26	253-506	-	
Goniadidae	Glycinde armigera	38	290-840	1	600

Hesionidae	Gyptis sp alpha	1	506	-	
	Podarkeopsis glabrus	3	298-305	1	719
Lumbrineridae	Lumbrineris index	5	292-506	-	
Maldanidae	Euclymeninae sp A	3	294-680	2	780-868
	Maldane californiensis	3	553-643	8	610-794
	Maldane sarsi	39	253-580	5	480-757
	Petaloproctus ornatus	-		1	700
	Sonatsa carinata	-		3	660-754
Nereididae	Gymnonereis crosslandi	2	253-580	-	
Nephtyidae	Nephtys caecoides	2	300-600	-	
	Nephtys cornuta	43	253-830	2	606-610
Opheliidae	Ophelina acuminata	1	553	-	
	Ophelina farallonensis	-		1	850
Orbiniidae	Califia calida	1	680	2	650-792
Oweniidae	Galathowenia oculata	1	680	-	
	Myriochele gracilis	4	321-643	6	610-750
	Myriochele olgae	3	294-643	-	
Paraonidae	Aricidea (Acmira) catherinae	2	295-298	1	610
	Aricidea (Acmira) horikoshii	1	840	-	
	Aricidea (Acmira) lopezi	4	294-660	-	
	Aricidea (Acmira) rubra	1	860	-	
	Aricidea (Acmira) simplex	3	797-830	-	
	Aricidea (Allia) sp A	1	253	1	480
	Aricidea (Allia) sp beta	1	643	-	
	Levinsenia gracilis	5	253-305	5	606-780
	Levinsenia multibranchiata	3	295-305	1	610
Pectinariidae	Pectinaria californiensis	50	290-502	-	
PIlargidae	Ancistrosyllis groenlandica	24	294-580	1	700
	Sigambra tentaculata	5	506-643	2	606-610
Polynoidae	Eucranta anoculata	1	713	-	
	Harmothoe fragilis	1	826	-	
	Hesperonoe laevis	2	295-797	-	
	Malmgreniella scriptoria	5	292-306	1	600
	Malmgreniella sp.	2	506-511	-	
	Subadyte mexicana	12	290-656	-	
Sabellidae	Chone sp C	1	502	-	
	Euchone incolor	-		1	650
	Fabrisabella sp A	2	294-576	1	780
	Fabrisabella sp LA1	-		1	610
	Potamethus sp A	1	600	-	
	Sabellidae sp LA1	-		1	700
Serpulidae	Protula superba	1	826	-	
Siboglinidae	**Siboglinum veleronis**	-		1	868
Spionidae	**Dipolydora caulleryi**	-		1	650
	Laonice cirrata	17	290-830	2	635-850
	Laonice nuchalis	6	290-797	1	700
	Leitoscoloplos panamensis	-		2	650-700
	Paraprionospio pinnata	61	290-576	-	
	Prionospio (Prionospio) ehlersi	19	292-580	-	
	Spiophanes duplex	3	253-353	1	780
	Spiophanes fimbriata	17	253-860	1	830
	Spiophanes wigleyi	5	800-860	1	830
	Spiophanes sp K	-		1	894
Terebellidae	Lanassa gracilis	3	600-703	-	
	Phisidia sanctamariae	2	600-660	1	600
	Phisidia sp base 1	4	543-660	-	

		Pista wui	45	290-840	3	610-850
		Proclea sp A	1	580	-	
	Trichobranchidae	Artacama coniferi	1	600	-	
		Artacamella hancocki	1	580	-	
		Terebellides californica	5	580-840	3	600-850
		Terebellides reishi	2	294-660	-	
		Trichobranchidae sp LA1	-		2	610-792
Cnidaria						
	Campanulinidae	Oplorhiza polynema	1	660	-	
	Edwardsiidae	Metedwardsia sp A	3	840-857	-	
	Pennatulidae	Pennatula californica	1	703	-	
	Stachyptilidae	Stachyptilum superbum	3	542-826	-	
	Virgulariidae	Virgularia agassizii	1	749	-	
Sipuncula						
	Golfingiidae	**Golfingia sp 1**	-		1	650
	Sipunculidae	**Sipunculus nudus**	-		1	700
Echiura						
	Echiurida					
	Thalassematidae	Arhynchite californicus	13	295-800	-	
Mollusca						
	Bivalvia					
	Carditidae	Cyclocardia ventricosa	12	295-580	-	
	Cuspidariidae	Luzonia walleri	7	480-749	1	628
	Galeommatidae	Divariscintilla sp A	1	506	1	600
	Hiatellidae	Saxicavella pacifica	12	295-580	-	
	Lucinidae	Lucinoma annulatum	3	294-790	1	610
		Parvilucina tenuisculpta	48	215-643	-	
	Montacutidae	Rochefortia compressa	9	295-660	-	
		Rochefortia tumida	8	295-800	-	
		Rochefortia sp LA1	-		2	635-750
	Mytilidae	Dacrydium pacificum	6	502-840	1	719
	Neilonellidae	**Neilonella mexicana**	-		2	780-960
		Neilonella ritteri	11	486-643	9	600-960
	Nuculanidae	Nuculana conceptionis	18	215-576	-	
	Pectinidae	Delectopecten vancouverensis	6	294-857	4	850-900
	Solemyidae	**Solemya reidi**	-		1	660
	Thyasiridae	Adontorhina cyclia	10	253-848	7	480-960
		Adontorhina lynnae	-		5	610-960
		Axinodon redondoensis	9	542-830	14	480-868
		Thyasira flexuosa	4	253-502	-	
	Verticordiidae	Dallicordia alaskana	1	576	1	700
	Vesicomyidae	Vesicomya elongata	1	790	-	
		Vesicomya lepta	2	703-790	-	
	Gastropoda					
	Cerithiidae	Lirobittium rugatum	13	294-502	-	
	Columbellidae	Astyris permodesta	23	300-857	5	606-830
	Gastropteridae	Gastropteron pacificum	16	292-680	-	
	Philinidae	**Philine polystrigma**	-		1	868
	Retusidae	Volvulella californica	2	309-553	-	
	Ringiculidae	Microglyphis brevicula	5	290-713	-	
	Rissoidae	Alvania rosana	6	486-643	1	600
	unknown	Bullomorpha sp A	1	790	1	894
	Scaphopoda					
	Gadilidae	Polyschides californicus	3	327-378	1	792
		Polyschides tolmiei	40	215-860	11	600-900
	Laevidentaliidae	Rhabdus rectius	16	215-826	3	600-635

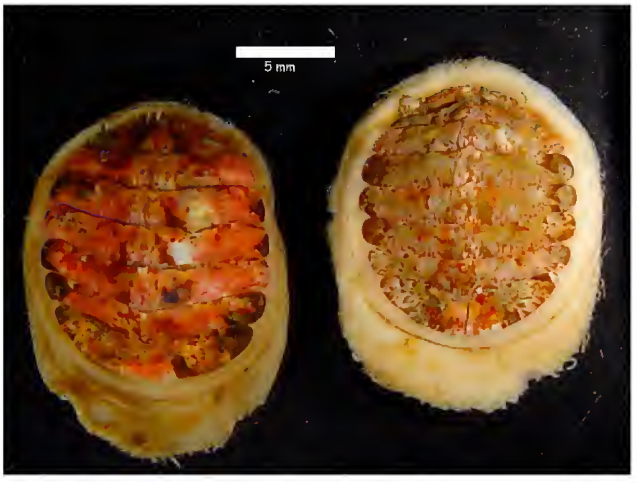
Aplacophora						
	Chaetodermatidae	Chaetoderma hancocki	5	553-830	8	579-794
		Chaetoderma sp A	-		1	660
	Falcidentidae	Falcidens hartmanae	13	309-703	20	310-960
		Falcidens longus	6	292-321	27	21.5-660
		Furcillidens incrassatus	1	749	3	610-668
	Limifossoridae	Limifossor fratula	44	215-660	26	131-750
	Prochaetodermatidae	Spathoderma californica	5	580-660	2	610
		Chevroderma sp LA1	2	643	-	
Nemertea						
Anopla						
	Lineidae	Cerebratulus californiensis	22	294-830	3	630-750
		Micrura wilsoni	1	800	-	
	Tubulanidae	Tubulanus nothus	2	294-797	-	
		Tubulanus polymorphus	9	297-857	1	610
	unknown	Palaeonemertea sp D	13	294-860	1	700
Enopla						
	Amphiporidae	Amphiporus cruentatus	1	857	-	
Arthropoda						
Ostracoda						
	Cylindroleberididae	**Bathyleberis sp LA1**	-		1	757
	Philomedidae	Euphilomedes producta	13	292-576	-	
		Philomedes sp LA1	-		1	780
Mysidacea						
	Mysidae	Boreomysis californica	1	643	-	
Cumacea						
	Diastylidae	Diastylis pellucida	29	290-502	1	480
		Diastylis sp C	1	576	-	
		Leptostylis calva	2	580-600	-	
	Lampropidae	Hemilamprops sp A	4	576-703	4	719-960
	Leuconidae	Eudorella pacifica	6	253-506	1	719
		Leucon bishopi			6	610-780
		Leucon declivis	7	466-840	-	
		Leucon magnadentata			5	660-960
	Nannastacidae	Campylaspis canaliculata	5	553-713	1	628
		Campylaspis sp A	3	295-703	-	
Tanaidacea						
	Apseudidae	Carpoapseudes caraspinosus	2	506-580	3	650-868
	Leptocheliidae	Leptochelia dubia	1	680	-	
Isopoda						
	Antheluridae	**Ananthura luna**	-		1	868
	Eurycopidae	Eurycope californiensis	5	502-703	3	610-700
	Munnopsidae	Belonectes sp A	3	280-502	-	
		Ilyarachna acarina	1	309	5	480-960
		Munnopsurus sp A	5	309-600	-	
Amphipoda						
	Aeginellidae	n.gen. n.sp.	7	302-797	8	630-960
	Ampeliscidae	**Ampelisca coeca**	-		1	868
		Ampelisca plumosa	8	553-860	-	
		Ampelisca unsocalae	44	253-680	7	480-960
		Byblis barbarensis	-		9	600-960
	Eusiridae	**Oradarea longimana**	-		1	757
	Ischyroceridae	**Jassa slatteryi**	-		1	757
	Liljeborgiidae	Listriella albina	13	294-830	4	600-750
	Lysianassidae	Lepidepecreum n. sp	1	643	-	
		Orchomene pacifica	1	580	1	780

	Oedicerotidae	Bathymedon pumilus	8	294-542	2	635-719
		Monoculodes glyconica	-		1	794
		Oediceropsis elsula	-		1	757
	Pardaliscidae	**Halicoides synopiae**	-		1	960
		Nicippe tumida	10	294-576	1	600
		Pardaliscella symmetrica	-		1	868
	Phoxocephalidae	**Cephalophoxoides homilis**	-		3	480-660
		Harpiniopsis emeryi	-		1	754
		Harpiniopsis epistomatus	3	353-580	7	610-850
		Harpiniopsis fulgens	6	215-327	2	700-754
		Harpiniopsis niadis	1	643	-	
		Harpiniopsis similis	-		1	868
		Heterophoxus affinis	1	303	3	480-850
		Heterophoxus ellisi	17	215-486	2	660-700
		Leptophoxus falcatus icelus	-		1	780
		Rhepoxynius abronius	1	680	-	
	Podoceridae	Dulichia remis	1	576	-	
	Synopiidae	Syrrhoe longifrons	3	253-326	1	850
	Decapoda					
	Ctenochelidae	Callianopsis goniophthalma	2	656-800	-	
	Hippolytidae	Spirontocaris sica	6	309-825	-	
	Pinnotheridae	Pinnixa occidentalis	3	294-576	-	
Echinodermata						
	Ophiuroidea					
	Amphiuridae	**Amphiodia diomedeae**	-		2	719-780
		Amphipholis squamata	-		1	894
	Asteronychidae	Asteronyx longifissus	1	656	1	610
	Ophioscolecidae	**Ophioscolex corynetes**	-		1	610
	Ophiuridae	Ophiospalma jolliensis	1	656	2	610-700
	Echinoidea					
	Brissidae	Brissopsis pacifica	8	215-580	-	
		Brissopsis sp LA1	-		2	600-830
	Schizasteridae	Brisaster latifrons	18	215-580	-	
	Holothuroidea					
	Molpadiidae	Molpadia intermedia	1	300	1	850
Chordata						
	Hemichordata					
	Balanoglossidae	Balanoglossus sp.	-		1	750
	Harrimaniidae	Saccoglossus sp.	2	656-703	-	
		Stereobalanus sp.	17	600-860	4	610-850

Southern California Association of
Marine Invertebrate Taxonomists

November, 2004 **SCAMIT Newsletter** Vol. 23, No. 7

SUBJECT:	**Corophoidae**
GUEST SPEAKER:	**John Chapman**
DATE:	**14 and 15 February 2004**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Natural History Museum of Los Angeles County**



Placiphorella mirablis Clark 1994
Collected off San Diego, 1994
Photo by K. Barwick, CSD

CORRECTION

The last newsletter listed the next meeting as being on the Corophoidae on 14 February at the LACMNH with John Chapman as the guest speaker. All of this remains true, however, it is a **two day workshop** and the dates should be **February 14 AND 15**. Please note the change in your calendars and plans.

8 NOVEMBER 04 MINUTES - AMPELISCID WORKSHOP

Lisa Haney started the workshop by presenting the results of her investigation into *Ampelisca hancocki* Barnard 1954 and the validity of SCAMIT's designation of the taxa as a complex. Confusion over the taxon can be traced to Dickinson (1982) where *A. hancocki* is described as having a tooth on the posterior ventral margin of coxae 1–3. Barnard (1954) describes *A. hancocki* as having "slits" on coxae 1 and 2, but not teeth. Representatives from the various agencies in attendance

(Hyperion, LACSD, MEC Analytical, CSD) had reviewed specimens from their own sampling efforts prior to the meeting and were all in agreement that specimens from the SCB had neither slits or teeth on the coxae, although Doug Deiner (MEC Analytical) reported occasionally finding teeth on the anterior coxae. In addition, Lisa had reviewed the type material, held at the Natural History Museum of Los Angeles County, and found that coxae 1–3 of the type specimen were also without slits or teeth. The type material was in excellent condition: a relatively large specimen, intact and well preserved. Lisa noted that the specimen matched Barnard's original description in all characters except for the presence of slits on coxae 1-2. Ron Velarde pointed out that the holotype material was collected from Port Parker, Costa Rica — a far cry from the SCB. Discussion of the issue continued and the group eventually decided that given the apparent variability of the coxal characters, and the absence of any other definitive characters to distinguish Dickinson's description from Barnard's, and apparently strong agreement of SCB specimens with the holotype, specimens from the SCB would be relegated to *A. hancocki* Barnard irrespective of the presence or absence of slits or teeth on coxae 1–3.

With this issue resolved, the group moved on to the discussion of another problem taxon: *Ampelisca cristata* and its nominal subspecies *A. cristata microdentata*. Discussion of this taxon was prompted by early confusion of characters that reliably discriminate between the two forms, and Lisa's concern of whether the two could be distinguished in her revised key. The first thought was to look at the distribution of the taxa and determine if there might be ecological data that would warrant their continued separation. Eric Nestler (CSD) provided handouts of the distribution of the two taxa over five years (1999–2003) of regional surveys of randomly selected stations off San Diego. The data showed general overlap in depth, with a fairly strong division with the percentage of fine material in the sediments. *A. cristata cristata* tended to be distributed in samples consisting of coarser sediments (i.e., lower percentage of fine sediments), while *A. cristata microdentata* was more abundant at stations where the sediments contained more fine materials. Lisa Haney then provided a similar look at the distribution of *A. cristata* over a 30 year period, with the later five years including *A. cristata microdentata* abundance. The distribution of the two taxa was limited primarily to the 30m transect, although specimens were also collected along the 60m transect. Unfortunately, the distribution of the two taxa overlapped considerably and there was no apparent separation of the two subspecies based on particle size as was found in the SD data. The data from LACSD however did suggest a possible seasonal difference. These potential ecological separations will have to be investigated further once the taxonomic resolution (see below) is better understood by SCAMIT members operating in the SCB.

Again, discussion among the representatives from the various agencies and consultants in attendance provided valuable information. The two taxa are known to co-occur in samples from northern Mexico to Ventura, in harbors and shallow shelf waters to about 60m. Members of the San Francisco laboratory currently do not discriminate between the two forms. However, a review of the one specimen brought by Dot Norris was determined to be *A. cristata cristata*. Don Cadien raised the issue that sympatric subspecies are inherently contradictory (like "compassionate conservatism"); the two could not be considered subspecies if they co-occurred. He suggested that they be separated at the level of species, rather than sub-species, or not at all.

Most people in attendance were in general agreement that specimens with a small tooth on epimeron 3 also possessed a rounded (or at most, quadrate) epimeron 2, while those with a prominent tooth on epimeron 3 typically

possessed an acute corner or distinct tooth on epimeron 2. The problem is that the size or degree to which the postero-ventral corner of the epimera are produced vary. Several people expressed a method of first looking at epimeron 3. If that tooth was "small" they would confirm *A. cristata microdentata* by the absence of any tooth on epimeron 2. There was general agreement that the two taxa should be considered as separate, and left as such in the key. However, there was an obvious need to find additional characters that could be used to distinguish the two. Diener and Pasko proposed several characters in 1998 prior to the Bight'98 regional survey (see Table 1 attached at the end of the newsletter). They offered to revisit these characters, as well as others, and attempt to find something that could be used reliably to distinguish between them.

Next, the group considered *Byblis veleronis* and *B. millsi*. *B. millsi*, along with many other taxa, was also erected by Dickinson (1983) and has resulted in some confusion as to reliable characters to distinguish among various taxa. At the Bight'03 data resolution meeting, Dean Pasko noted that, with some exceptions, most participants acknowledged recognition of *Byblis veleronis* and *B. millsi*, although some confusion remained regarding which characters were appropriate to use in distinguishing the two. The characters used in the proposed key by Haney and Pasko were drawn from Dickinson (1983), Barnard (1954), and Chapman (in press). These characters however, have proven to be initially problematic. For example, San Diego tested the characters proposed by Haney and Pasko and found conflicting character states in equally sized males and females (7.5 mm and 7.0 mm, respectively) of *B. millsi*. For example, a male specimen had the following character states: antenna 1 flagellum reaching beyond the antenna 2 peduncle; coxae 2 & 3 were considered to be rounded or squared-off (at least not distinctly obliquely truncated); coxae 1 and 2 were sub equal; the anterior edge of coxa 1 was straight; and the outer ramus of uropod 1 was bare. In the accompanying female, the antenna 1 flagellum did NOT reach the end of antenna 2 peduncle; coxae 2 and 3 were also rounded or squared-off (not distinctly truncated); coxa 1 was distinctly longer than 2; the anterior edge of coxa 1 was noticeably concave (at least proximally); and the outer ramus of uropod 1 had a row of dorso-lateral spines AND a row of lateral setae. Consequently Dean reviewed a number of additional specimens of the two species from San Diego collections side-by-side. He noticed that the length of the uropod 1 peduncle relative to the uropod 2 peduncle was distinctive between the two and seemed to hold for males and females. The question remains as to how well this character works with juvenile specimens, but the examination of many immature *B. millsi* specimens suggests that it should hold for smaller specimens. The pedunclular article of uropod 1 of *B. veleronis* is short and reaches to slightly beyond the mid-line of the uropod 2 peduncle, whereas in *B. millsi* the uropod 1 pedunclular article is long and reaches to the end of the uropod 2 peduncle. These characters are clearly illustrated in Barnard (1954), Plate 37, Figure e, and Dickinson (1983), Figure 6, female and Figure 7, male urosome. Specimens of the two species were compared and everyone agreed that this was an easy character to see.

After lunch, the group went through the proposed key of Haney and Pasko and discussed wording, character states, and took various specimens through the key. The discussion was lively and informative, resulting in many constructive suggestions. Some of the problem taxa raised during this session included *Byblis bathyalis* (included in key) vs. *B. thyabilis* (not in key). Dickinson (1983) commented that the two species are closely related and questioned whether or not they were distinct. John Byrne collected a specimen of *B. bathyalis* during the Bight'03 survey. Unfortunately, the specimen wasn't available for review, but will be reconsidered back at the CSD Laboratory. Another set of

closely related species was *Ampelisca indentata* and *A. pugetica*. Characters related to the condition and shape of the cephalon will be added to the key to assist in distinguishing between these species.

Several specimens were reviewed. A specimen tentatively identified as *A. shoemakeri* by Carol Paquette was examined and determined to be *A. hancocki*. This raised the question of whether or not *A. hancocki* and *A. shoemakeri* were indeed different. This question was not satisfactorily resolved and needs to be reviewed. A specimen tentatively designated as A. *macrocephala* from the San Francisco laboratory was reviewed and determined to be *A. careyi*. Additionally, Lisa Haney discovered two specimens of *A. mexicana* during the QA/QC process of a Bight'03 sample from 36.7 m identified by Dean Pasko. The species had previously been unreported from the SCB by the member agencies so the discovery was significant and raised the question of whether the species had been missed previously, especially since it was found at a depth commonly sampled by monitoring agencies operating in the SCB. *A. mexicana* can be readily distinguished by the enlarged postero-ventral lobe of pereopod 7, article 4. Unfortunately (for Dean) this species was not recorded by him in any of his samples. Also unfortunate, was the fact that the original data was unavailable at the time, so the group couldn't determine what Dean had originally called these specimens.

Finally, as the time for horrible LA traffic neared, the meeting rapidly wound down, but not without a flurry of two hastily distributed provisional voucher sheets. One distinguishing *Americhelidium* sp SD1 (Amphipoda: Oedicerotidae) from other forms of *Americhelidium* "*shoemakeri*" in the SCB. Dean found several tested and reliable characters to separate out this one unique species and revised his earlier voucher sheet to include these new characters. In addition, Dean distributed a voucher sheet for *Pachychelium* sp SD1 (Amphipoda: Lysianassidae). This species has been collected twice and appeared to have some slight differences from *P. davidis* Stephensen 1925.
Dean has since revised the sheets again and the two latest editions are attached at the end of this newsletter. Please replace earlier versions with those provided here.

NEW LITERATURE – NOVEMBER 8

Several pieces of literature were circulated at the meeting. Treasurer Cheryl Brantley brought forward two articles dealing with the status of taxonomy and its practitioners.

Hopkins & Freckelton (2002) examine the downtrend not only in professional taxonomy, but also that in amateur taxonomy. Most of us production taxonomists in SCAMIT straddle the line, although some fall on one side or the other. The authors here use a definition of institutional association which would exclude many from the professional ranks per se. Their investigation focused on Britain and insects, but their results are applicable throughout the taxonomic community. They examined publications in the Entomological Monthly Magazine since 1918 and found long declines in the ranks of both amateur and professional taxonomists, with present activity levels much lower than in the past. They did see a recent upswing in amateur activity, but attribute this to active retirements of previous professionals rather than to work by new taxonomic "recruits". This is, sadly, the same old story of decline covered by so many, and leads to the same end point: calls for increased emphasis on taxonomy. This is based on the essential nature of taxonomic expertise in conservation biology, which cannot effectively conserve what it cannot recognize. Let us hope the calls are heard and heeded this time.

Taxonomic data quality and its evaluation is the subject of Stribling & Moulton (2003). They cover much the same ground as did Ranasinghe et al (2003). We have all grumbled, but ultimately complied, with the additional

effort at quality assurance and quality control in our regional monitoring. The above publications deal with why such additional effort is both valuable and warranted. Our existing methodologies serve to meet the requirements envisioned by Stribling & Moulton for appropriate quality control. Anyone who has already forgotten what those are should consult the Laboratory Manual for the Bight '03 Regional Monitoring Program. Substantially the same sort of effort is to be expected in the next regional iteration.

Don Cadien added a series of other publications to Cheryl's list . The first, (Hughes et al 2000), deals with another aspect of EMAP monitoring. Our WEMAP program dealt with regional marine and estuarine assessments, but the EMAP project in this paper deals with inland surface waters. It is both interesting and instructive to see how the programs resemble and differ from one another. The authors make an interesting comparison of the expected cost of annual EMAP monitoring (5-10 million) reporting it equal to federal subsidies for promotion of the almond and popcorn industries overseas in 1997.

Coleman (2003) provides information to assist publication of taxonomic papers. He provides a how-to guide to creation of perfect line drawings on computers. Since so many find electronic publication increasingly attractive, this technique is a boon. He suggests scanning original pencil drawings into the computer, then inking them digitally by use of a digitizer board through the computer's USB port. The cost of the digitizer is not trivial, but it offers large increases in proficiency and throughput in production of figures.

Secondary structure (habitat modifications produced by biological activity within or upon primary structure) is a fascinating aspect of community ecology. Cocito (2004) addresses the impact of secondary calcareous structure on community diversity and function in the marine environment. She discusses the entire spectrum of calcareous structures but her concentration is on those produced by bryozoans. While she found that in nearly all cases reviewed, the bryozoan bioconstruction resulted in increased diversity, she found it poorly quantified. Additional and more complete characterization of the fauna associated with bryozoan bioconstructions remains to be performed.

Two papers (Dawson 2003; Marques & Collins 2004) were circulated dealing with cnidarians. Dawson dealt with morphological variation in species of the jellyfish *Aurelia*. Over the past few years molecular data has pointed to the existence of multiple cryptic species in what was once considered only one or two species. Earlier workers had described multiple species, but these were later placed in synonymy as their boundaries proved too variable to retain their separation. New taxa are not designated here, but the nature of morphological variation in these sibling species is investigated as a preparation for future work on the genus. Note that we have several genetically separable species in the North East Pacific.

The entire Medusozoa was analyzed cladistically by Marques & Collins. This subphylum of the Cnidaria contains all classes except the Anthozoa, which lack medusae in their life cycle. The authors propose, as a result of their analysis, a new class of cnidarians within the Medusozoa, the Staurozoa. This would contain two orders; the extant Stauromedusae, and the extinct Conulatae. This new class would bring to five the number of classes within Cnidaria: Anthozoa, Staurozoa, Cubozoa, Scyphozoa, and Hydrozoa. The authors provide descriptions of the 87 characters used in the analysis, as well as the scoring of the characters for each of the considered groups. Their results largely agreed with earlier analyses based on molecular data.

Molluscan phylogeny, specifically the euthyneuran gastropods, was analyzed by Grande et al (2004) based on molecular data (using a series of mitochondrial genes). Their analysis indicated that monophyly of the Opisthobranchia was rejected because of the inclusion of the pulmonate Siphonaria. The monophyly of the Pulmonata was strongly rejected, suggesting a reevaluation of morphological data (which supports monophyly of the Pulmonata) is necessary. It is heartening that the analysis showed the Opisthobranchia as monophyletic with the exception of the *Siphonaria* inclusion. More thorough taxon sampling of the various pulmonate clades might produce differing results in a re-analysis. Basommatophora and Systelommatophora were both represented by a single taxon in the present analysis. Perhaps even more enlightening would be a re-analysis combining multiple lines of evidence (including both molecular and morphological) and broader pulmonate taxon sampling in a single dataset.

Using both 16S and 18S rDNA data combined with reproductive mode, Nygren & Sundberg (2003) examine the phylogeny of the autolytine syllids. They found the molecular and reproductive patterns to be congruent, suggesting a realignment of species among genera in some cases. Epigamous species of *Autolytus* would be placed in a new genus, while *Autolytus* species with other reproductive modes would move to *Myrianida* (which has priority). These and other nomenclatural actions are not performed in the present paper, but evidence in support of these actions is presented. A further paper will pursue the nomenclatural issues derived from the analysis.

Occasionally, several investigators focus independently on a single taxon almost simultaneously. The lysianassoid amphipod genus *Valettiopsis* received such treatment from Serejo & Wakabara (2003) and Horton (2004). Our local fauna contains *Valettiopsis dentata* Holmes 1908, and both these papers discuss the species. Horton provides additional information on the taxon, including illustration of the gnathopods, based on reexamination of the holotype. Both also provide keys to the genus world-wide, and both describe additional taxa within the genus. Fortunately Horton was aware of the earlier paper and did not redescribe one of their taxa as has happened in so many earlier overlapping publications.

As we continually are forced to acknowledge the degree of variability of many character states in most species, what we see is poorly assessed. It is difficult to grasp under these circumstances how much variation may lurk undetected in local populations. While certain characters may be almost invariate through a population, others may vary widely with no apparent environmental cause. Within and between population variation in the distribution and abundance of setae in the isopod *Saduria entomon* is reported by Lajus et al (2003). While this is not a taxon which we encounter locally, a study such as this helps frame the questions we need answered for our own local populations.

NOVEMBER 17 04 MINUTES

The meeting began with our President discussing upcoming SCAMIT meetings. I will not bother to list those here as they have been covered in previous newsletters and are posted on our website.

A non-SCAMIT meeting of some interest to members is the Southern California Academy of Sciences (SCAS) Annual Meeting. It will be held from May 20-21, 2005 at Loyola Marymount University in Los Angeles. There will be diverse symposia covering such subjects as Nearshore Reef Ecology, Wetland Ecology, and Watersheds and Pollution, to name a few. Please see their website for more information.

http://scas.jsd.claremont.edu/

Don Cadien then discussed a new trend in monitoring. We are starting to see less of an emphasis on "end of pipe" sampling and more on new types of programs directed at answering specific research questions. This was the recommendation of the National Research Council based on their review of monitoring in southern California. It was picked up and incorporated in the Model Monitoring Program, and adopted by the State Water Quality Control Board. This approach may affect the requirements of newly issued discharge permits.

We then welcomed the guest speaker for the day, Roger Clark. Roger routinely publishes a field guide for the National Marine Fisheries Service entitled: "West Coast Shelf and Slope Invertebrates. Juan de Fuca Strait to Baja California. NMFS Trawl Field Guide".

Roger started his presentation for the day by showing us a wonderful slide show of all the various species he encounters. He trawls with NMFS and samples from Canada to Baja California within a depth range of 200-1200m.

He started with slides of sponges. Some species in the northern Pacific actually form a "reef-like" system. One reef-building species, *Aphrocallistes vastus* has suffered from anthropogenic impact in the Oregon/ Washington area and most of the reefs now consist of dead skeleton. However, further north, in Alaska and British Columbia there are still massive, live reefs created by this sponge. Roger pointed out that either dead or alive, the sponge provides a good habitat for other invertebrate species.

He proceeded through all the taxa from this point and I stopped trying to write down the name of every species he showed as the newsletter would, at that point, simply be a listing of species. The slides themselves were the informative aspect and unfortunately, I can't reproduce them here. However, by the end of the slide show, many members present had noticed a slight "paucity" in some of his slides with regards to our very southern friends at this end of the pacific. Based on our comments, Roger has a "Wanted" list and would like live photos of the following species:

Crustacea - *Sicyonia penicillata*, *Schmittius politus*, *Pagurus spilocarpus* (he photographed one in CSD's display tank so this is potentially no longer needed), *Cancer antennarius* and *C. jordani*

Molluscs – *Octopus rubescens* and *O. veligero* (M. Lilly gave him a photo)

Echinoderms – *Luidia armata*, *Astropecten ornatissimus* (M. Lilly gave him a photo, but if someone has a better one it would be appreciated), *Ophiopholis bakeri* (M. Lilly provided a photo, but the quality was mediocre), *Ophiura luetkenii*, *Dendraster terminalis* (he photographed a preserved specimen, but a live photo would be preferable), and *Parastichopus* sp LA 1.

Roger will be returning to San Diego, probably this summer, to go on trawls and try to catch some of these more elusive animals on film. If any of you reading this have good, live images of the animals mentioned, I'm sure Roger would love to hear from you.

After the slide show we all broke for lunch, agreeing to start the Chiton session afterwards.

Roger spent the afternoon giving a wonderful slide show on "chitons he has known". Again, although I took copious notes, the information was mostly anecdotal and related to the slide being viewed at the time. He discussed species ranging from Baja up through northern California and Oregon and ranging from the intertidal to subtidal in habitat. I shall not provide a species list here (if someone really wants it they can email me and I will provide a

copy for them). Roger, I believe, is working on a guide to the chitons which is still in press. Keep an eye out for it.

- M. Lilly, CSD

NEW LITERATURE - NOVEMBER 17

Four papers were distributed to the attendees for their consideration. One (Christensen 2004) dealt with reports of one of our common North East Pacific ophiuroids, *Ophiactis simplex*, from Texas. The species was first noted there in 2001, and observations on substrate, size, appearance, and regeneration state (the species is fissiparous) were kept from that point to the present publication. The identity of the specimens was verified by Dr. Gordon Hendler at NHMLAC, therefore this is not a mistaken report. Method of introduction to the Gulf Coast is unknown.

The other three papers dealt with phylogeny of mollusks. Klussmann-Kolb (2004) examined phylogeny of the sea-hare family Aplysiidae. She found the traditional morphological division of the family into sections Longicommissurata and Brevicommissurata (incorrectly characterized in the paper as Suborders) no longer supportable. The four subfamilies of Aplysiidae suggested by Beeman are retained in this analysis. In several respects this morphology and histology based analysis differed from a previous one based on molecular evidence, suggesting that more work on character selection needs to be undertaken.

Molecular phylogenetic analysis of Scaphopoda using 18S rDNA sequences was reported by Steiner & Dreyer (2003). The authors attempted to achieve two goals; definition of relationships between families within the Scaphopoda, and a decision as to the relationship of the Class to other Classes in the Mollusca. They concluded that their taxon sampling was not complete enough to clarify within class relationships, but found support for a Scaphopoda+Cephalopoda concept of higher level molluscan relationships. This corresponds to the Helcionellid concept espoused by Waller (1998), and offers no support for competing hypotheses of class relationships within Mollusca. Another attempt, with broader taxon sampling will undoubtedly be forthcoming from these or other authors to decide the issue of within scaphopod family relationships.

As part of the specialty taxonomy assessments for Bight '03, Kelvin Barwick and Don Cadien have been working on the aplacophore mollusks. One of the most difficult parts of this work has been trying to determine what the higher classification of the group should be. There are two major competing schools of thought; one headed by Salvini-Plawen, and the other by Scheltema. Both agree the Caudofoveata (chaetodermatomorphs) and the Solenogastres (neomeniomorphs) are quite different, but placement of the two groups relative to the rest of the Mollusca differs widely between these schools. Salvini-Plawen (2003) gives the most recent discussion of evidence for his position on higher classification. Another synthesis of evidence in support of the opposing view will undoubtedly be out shortly from Scheltema. Both have considerable evidence to support their point of view, leaving most of us in a quandary: who should I follow? I'll be watching for the next salvo from each side, and plan to reach some sort of decision for Edition 5 of the SCAMIT Taxonomic Listing. The new edition will have substantial representation of the aplacophorans for the first time based on the taxa taken in Bight '03 and other recent deeper water samplings by contributing agencies.

- By the way, send any additions or changes to the Edition 4 Taxonomic Listing to dcadien@lacsd.org for inclusion in Edition 5.

TROPICAL SPONGE WORKSHOP

The Smithsonian Tropical Research Institute, Bocas Research Station Presents A Short-Course In TAXONOMY AND ECOLOGY OF CARIBBEAN SPONGES August 15 - 25, 2005

Bocas Research Station, Bocas del Toro, Panama.
Registration Fee: $400 (some fellowships are available).
Instructors: Dr. Cristina Diaz, Smithsonian Institution,and Dr. Robert W. Thacker, University of Alabama at Birmingham

Over 100 species of marine sponges have been reported in the Bocas del Toro region of Panama. This course will focus on morphological taxonomy, enabling field identification of the common Caribbean species. We will also conduct field surveys to provide baseline data for conservation at the Bocas Research Station and in the Isla Bastimentos marine reserve. In addition, students will complete independent projects aimed at stimulating interest in conducting future research at the Bocas Research Station.

Application: This course is directed towards graduate students and advanced Licenciado candidates and will be conducted in English. Please e-mail your CV, 1 letter of recommendation, and a 1-2 page statement explaining your background and reasons for taking the course to Dr. Rachel Collin at: CollinR@naos.si.edu before March 1, 2005.

Enrollment is limited to 10 students. For more information see:

http://striweb.si.edu/taxonomy/

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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 at their e-mail addresses:

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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.

The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

	Ampelisca cristata cristata	*Ampelisca cristata microdentata*
Epimeron 3	postero-ventral corner with relatively large broad, acute tooth	postero-ventral corner with very small tooth
Epimeron 2	postero-ventral corner acutely produced	postero-ventral corner quadrate to rounded
Head	produced antero-distally into small "dome" (e.g., similar to *A. careyi*, but smaller)	unproduced antero-distally
Urosomal crest	rounded on the ends, middle portion horizontal	less rounded on ends, posterior portion higher than anterior
Pereopod 7	basis squared along ventral margin	basis with more rounded ventral margin
Gills	narrowed distally and relatively small (see J.J. Dickinson, 1982: Fig 20, *A. brevisimulata* or *A. hessleri*)	cylindrical (i.e., not narrowed distally) and relatively large (see J.J. Dickinson, 1982: Fig 20, *A. cristata*)

Table 1. Morphological characters which may be used to differentiate Ampelisca cristata cristata and A. cristata microdentata. The top three characters (in bold) appear to be the most reliable and easily distinguished characters. A more detailed review of both species is required to confirm the reliability of the secondary characters. Compiled by Doug Deiner (MEC Analytical) and Dean Pasko (CSDMWWD).

City of San Diego

PROVISIONAL SPECIES VOUCHER SHEET

Provisional Name: *Americhelidium* sp SD1
Authority:
Common Synonyms:
Americhelidium shoemakeri Type A

Taxon: Amphipoda: Oedicerotidae **Taxonomist:** Dean Pasko
Date: 5 March 2001; **Revised: 1 February 2005**

Specimen(s):

	STATION	DATE	DEPTH	STORAGE LOCATION	VIAL#
ITP Reg.	2727	7/10/00	152 ft	dp	
	2729	7/6/00	142 ft	dp	

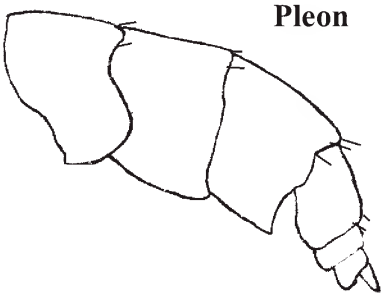
Characters:

Generally similar in form to *Americhelidium shoemakeri* (Mills 1962) and *A. rectipalmum* (Mills 1962).

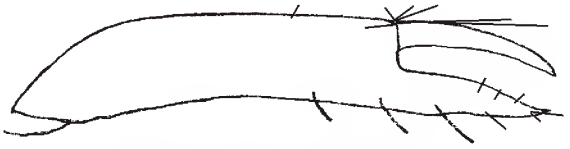
Rostrum downturned at ~90°, tip of rostrum reaching distal end of peduncular article 1, antenna 1
Eyes fused dorsally, filling much of anterior portion of head, but not extending onto rostrum
Mandibular palp, article 3 ≤1/2 of article 2
Maxilliped inner plate with 3–4 distal spines; outer plate with 10–12 outer marginal spines
Gnathopod 1 subchelate, palm convex making it appear only slightly oblique, and more similar to *A. rectipalmum* than *A. shoemakeri* which has a distinctly oblique palm; coxa 1 ventral margin with ~15 long and ~5 short setae
Gnathopod 2 chelate, propod subequal to article 2, relatively robust (L~5.5 X W); dorsal margin of propod typically bare, occassionaly 1–2 short setae, and with 4–6 distal setae, one of which extends length of dactyl; ventral margin with 2–3 setae, rarely 4–5 (excluding distalmost); dactyl relatively long (~25% of propod length); posterior margin of coxa 2 with 1 large spine and one short spine distal to it.
Pereopod 7, basis with distinct postero-distal lobe that extends 1/2 to 2/3 the length of ischium
Pleonites1–3 and urosomite 1 with paired, dorso-lateral setae – these sometimes broken; epimeron 2 with blunt (sub-quadrate) postero-distal tooth
Uropods 1 and 2 terminate together, tip of Ur3 falls short of tip of Ur1; Ur1 peduncle long and slender, reaching slightly beyond distal end of Ur2 peduncle; Ur1 outer ramus with 2–5 short, stout spines, inner ramus typically with two slender spines
Telson apically rounded (i.e., not emarginate)

Illustrations:

Pleon

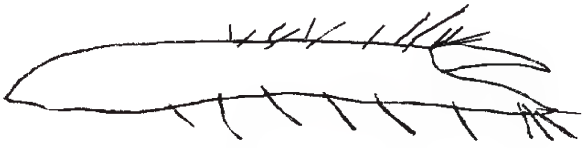


Gnathopod 2

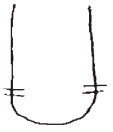


Americhelidium sp SD1

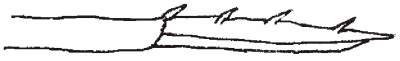
vs.



Americhelidium shoemakeri



Telson



Uropod 3

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City of San Diego

PROVISIONAL SPECIES VOUCHER SHEET

Provisional Name: *Americhelidium* sp SD1 **Taxon:** Amphipoda: Oedicerotidae **Taxonomist:** Dean Pasko
Authority: **Date:** 5 March 2001; Revised 1 February 2005
Common Synonyms:
Americhelidium shoemakeri Type A

Related Species & Other Comments:
This species is one of several forms of *Americhelidium shoemakeri* complex present in shelf waters off Point Loma and Imperial Beach, CA. *Americhelidium* sp SD1 can be distinguished from the other forms of the complex by a suite of characters, the most reliable of which include: the presence of distinct, paired setae on the pleonites that are typically missing in other members of the *A. shoemakeri* complex; a distinctly more robust gnathopod 2 propod (L: W = 5.5 vs 7.5 in *A. shoemakeri*) that is sparsely setose along the dorsal and ventral margins (1–4 setae vs 5–10 in *A. shoemakeri*); the presence of one or two distinctively long distal setae on the propod that run the length of dactyl (vs ≤1/2 the length of the dactyl in *A. shoemakeri*); and a relatively long dactyl (25% the length of the propod vs ≤20% in *A. shoemakeri*) (See comparative Figures).

Americhelidium sp SD1 can also be distinguished from *A. micropleon* by the downturned rostrum (vs scarcely down-turned in *A. micropleon*); more robust gnathopod 2 (vs L:W = 7.5 in *A. micropleon*); by Ur3 which reaches to the distal end of Ur1 (vs only to mid-point of Ur1 in *A. micropleon*).

Americhelidium sp SD1 may also be confused with *Americhelidium rectipalmum* because both species have a convex palm of gnathopod 1 which can make it seem transverse; rather similary robust gnathopod 2 propod and dactyl; and paired setae on the pleonites. *Americhelidium rectipalmum* can be readily distinguished by a much reduced lobe on the basis of pereopod 7 (virtually absent to <1/3 the length of the ischium); the absence of long distal setae that extend the length of the dactyl on the propod of gnathopod 2; and a rounded epimeron 2.

Finally, *Americhelidium* sp SD1 would likely be confused with *Americhelidium setosum* Bousfield & Chevrier 1996 or *Americhelidium gurjanovae* Kurdrjaschov & Tzvetkova 1975 when using the key in Bousfield & Chevrier (1996). *Americhelidium setosum* differs in having 30–40 setae on the ventral margin of coxa 1, the more rounded epimeron 2, and the absence of paired dorsal setae on the pleonites. *Americhelidium gurjanovae* differs in the reduced setation of the propod of gnathopod 2, including the absence of long distal setae that extend the length of the dactyl, and the reduced basal lobe of pereopod 7.

City of San Diego

PROVISIONAL SPECIES VOUCHER SHEET

Provisional Name: ***Pachychelium* sp SD1** **Taxon:** Lysianassidae **Taxonomist:** D. Pasko / E. Nestler

Authority: **Date:** 7 April 2003; Revised 1 February 2005

Common Synonyms:

Specimen(s):

STATION	DATE	DEPTH	STORAGE LOCATION	VIAL#
B-11 (2)	22-Jan-03	88 m	CSD-Voucher Collection	
B'03 Sta 4029	21-Jul-03	75 m	CSD-B'03 V#4737.1	

Characters:

Small, elongate specimen (much like *Prachynella* or *Pachynus*)

Maxilliped palp 3-articulate; inner plate absent

Gnathopod 1 uniquely shaped with carpus attached to hind margin of enlarged propodus (see figure); propod slightly produced at antero-distal margin of palm; basis and ischium not greatly enlarged; coxa large, broader than deep, with blunt antero-distal tooth

Gnathopod 2 reduced, dactyl small, vestigial

Coxa 4 similar to coxa 1–3, not excavate and without lobe

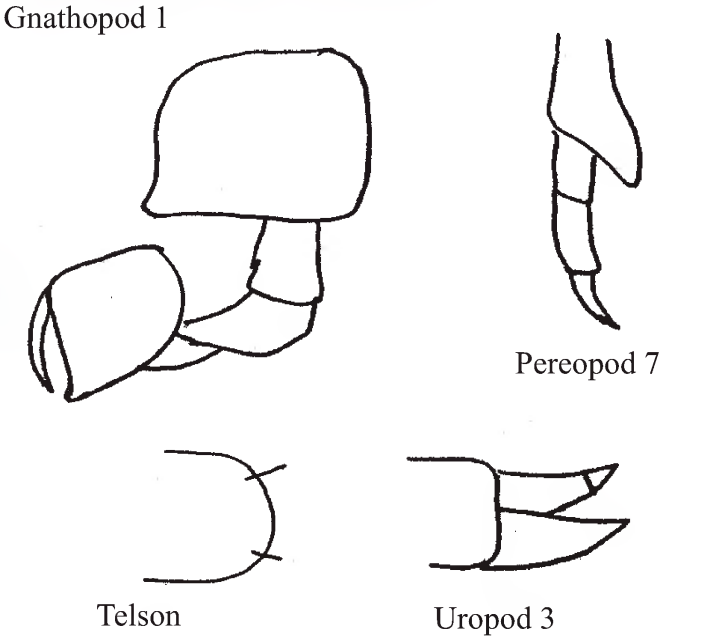
Pereopod 7, similar in shape to pereopods 5 and 6; merus postero-distally produced; basis broadly rounded

Pleon, epimeron 2 with blunt tooth; epimeron 3 rounded

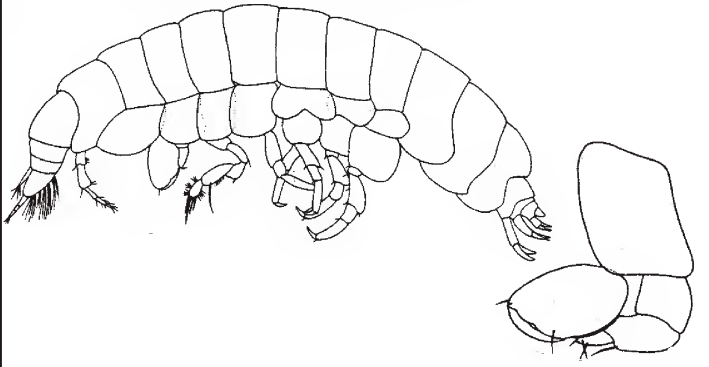
Uropodal rami naked; Ur3 rami subequal, inner ramus composed of two articles, the distal-most being the smallest

Telson ordinary, broadly rounded with one pair of disto-lateral setae

Illustrations: *Pachychelium* sp SD1



Pachychelium davidis (from Barnard 1969)
whole animal & gnathopod 1



Related Species & Other Comments:

The uniquely shaped first gnathopod distinguishes this species as being closely related to the *Acheronia* and *Pachychelium* genera of the Pachynid group (see Lowry 1984). It differs from *A. pegasus* Lowry 1984 in the absence of an antero-ventral lobe on coxa 4 and the uni-articulate inner ramus of uropod 3, which is approximately 1/4 the length of the outer. It appears to be more closely aligned to *Pachychelium davidis* Stephensen 1925 and *P. antarcticum* Schellenberg 1926. It differs from the former in posessing an antero-distal process on the propodus and coxa of gnathopod 1, as well as the postero-distal process on the merus of pereopod 7. It differs from *P. antarcticum* by the absence of small inner plates on the maxilliped. *Pachychelium* sp SD1 is also intermediate between *P. schellenbergi* Lowry 1984 and *P. nichollsi* Lowry 1984 for some characters (e.g., size of basis and ischium of gnathopod 1 and relative shape of pereopods 5–7), but differs from both by the 3-articulate maxilliped palp.

Two important character states could not be verified due to the condition of the specimens examined. The teeth of the outer plate of maxilla 1 could not be reliably distinquished as smooth or spined, and the presence or absence of a complex spine on gnathopod 1 remains in question. Additional material is required to confirm these character states. *Pachychelium* has been reported from the Arctic and Antarctic, so its presence in southern California requires careful consideration.

Southern California Association of
Marine Invertebrate Taxonomists

December, 2004 **SCAMIT Newsletter** Vol. 23, No. 8

SUBJECT:	**B'03 Anemones**
GUEST SPEAKER:	**John Ljubenkov**
DATE:	**14 March 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Dancing Coyote Ranch (contact Megan Lilly for directions)**

The barnacle *Conchoderma virgatum* taken from near the surface on an oceanographic mooring off Palos Verdes in January 2005 (Photo John Miller, CSDLAC). The blue color is natural, not added, and was more intense when fresh.

6 DECEMBER MINUTES

This month's SCAMIT meeting was organized by Dean Pasko and hosted by the City of San Diego. The past Bight '03 project generated numerous new animals to discuss as well as the need for taxonomic resolution for many of the taxa in several crustacean groups. For this reason, four SCAMIT meetings have been scheduled between November 2004 and June 2005. This month's December meeting was the second in the series.

Kelvin opened the meeting at 9:10 am with the business end of things by reading off a list of the upcoming SCAMIT meetings. The 2005 SCAMIT topics can be accessed on the SCAMIT webpage: www.scamit.org. Currently the schedule has been flushed out through October of next year on a variety of taxa/ topics. If anyone would like to volunteer to present or host a meeting or be placed on the schedule for 2005, please contact Leslie Harris from the Natural History Museum of Los

Angeles County. If there is sufficient interest and need, arrangements can probably be made to accommodate more than one SCAMIT meeting per month. 2005 will continue a particularly busy schedule for SCAMIT that resulted from the Bight '03 sampling efforts and the great new animals and interesting taxonomic dilemmas they brought.

From here, the meeting ventured forward with discussion from Don Cadien on recent relevant literature. What a valuable and appreciated contribution! His literature review for this month follows the minutes in the newsletter.

The meeting at this time was turned over to Dean Pasko who mentioned that the City of San Diego would be acquiring a new 48 ft monitoring vessel from Monarch, scheduled for delivery in the spring of 2005. He then proceeded to give a summary on the City of San Diego's sediment mapping project (see below).

San Diego Sediment Mapping Study

Maps are often used to convey information to decision makers since they are easily displayed, self-explanatory, and give the viewer context over entire areas of interest. In addition, maps of environmental conditions at the same location over time can generate useful assessments of trends in spatial extent (e.g., is a problem growing or shrinking?). The need to create such maps with known levels of confidence for Southern California Bight (SCB) coastal areas was a primary recommendation of the Model Monitoring Program for Large Ocean Discharges in Southern California (Schiff et al., 2001). Consequently, in 2004 the City of San Diego (City) began a 2-phase "Sediment Mapping Study" of the coastal shelf off San Diego in collaboration with the Southern California Coastal Water Research Project (SCCWRP). Additional input into the study's design was provided by scientists from Colorado State University, the International Boundary and Water Commission (IBWC), the San Diego Regional Water Quality Control Board (SDRWQCB), and the United States Environmental Protection Agency (USEPA). Although the program targets sediment quality primarily near the City's Point Loma Ocean Outfall and the joint City/IBWC South Bay Ocean Outfall, other areas of interest are also included (e.g., the LA-5 dredged materials disposal site). The impetus for the study arose from the need of the City, IBWC, SDRWQCB and USEPA to have scientifically defensible maps that define sediment conditions off San Diego. The entire project is expected to take about 54 months with completion of Phase 2 scheduled for June 2008.

The principal aim of the mapping project is to develop a general understanding of spatial variability off San Diego and to convey information on the spatial extent and magnitude of local environmental conditions to decision makers and the public. A broader goal is to provide sampling design guidelines that other SCB monitoring agencies can use to capture the necessary spatial information to construct defensible statistical maps of environmental conditions for their regions. More specifically, Phase 1 of the San Diego study has three primary objectives: 1) create variograms of spatial variance as a function of distance between two sites; 2) use variograms to establish the most efficient sampling density for creating maps (i.e., in Phase 2); and 3) use kriging techniques to generate maps of sediment chemistry and biological condition. Sampling for Phase 1 occurred in July and August 2004 with the collection of approximately 112 samples of both sediments and macrofauna from sites near the Point Loma outfall and about 107 samples from sites surrounding the South Bay outfall. These samples will be analyzed for grain size, total organic carbon, total nitrogen, trace metals, chlorinated pesticides, PCBs, and macrobenthic community structure. The data from Phase 1 will then be used to assess spatial variability and determine the optimal sampling distances that will be employed in Phase 2.

Phase 2 sampling is scheduled for the summer of 2006, and these data will be analyzed to create specific maps with known levels of confidence for various parameters. For further information on the San Diego Sediment Mapping Study, interested individuals should contact Tim Stebbins at the City (tstebbins@sandiego.gov) or Ken Schiff at SCCWRP (kens@sccwrp.org).

With official business complete, we began our second installment of the four part Crustacea series. Our first topic was the amphipod genus *Americhelidium*. This has been an extremely difficult group due to a variety of plastic characters that make identification to species level almost impossible. However, it didn't start out that way. When SCAMIT was a new organization this genus was known as *Synchelidium*. Members reported two nominate species, *S. rectipalmum* Mills 1962 and *S. shoemakeri* Mills 1962. They were relatively easy to distinguish based on configuration of the G1 palm. We were also aware that there were other undescribed forms present in our area, and that Dr. J. L. Barnard (Smithsonian) was working on them. He eventually described a third species, *S. micropleon* (J. L. Barnard 1977), from intertidal sands in southern California. Unfortunately, Jerry Barnard eventually threw up his hands and stopped working on the group. He passed on a partial manuscript dealing with the still undescribed forms he had separated from the voluminous AHF material. He wished well to whoever chose to take up the group, and walked away.

The challenge was not taken up locally or immediately. Things remained the same until publication of the first portion of a multi-part review of North East Pacific oedicerotids by Bousfield and Chevrier (1996). Their treatment was based mainly on collections made in the temperate and boreal regions of the western U. S. and Canada. Little material, if any, was examined from below Point Conception. *Americhelidium* n. gen. was erected to contain all described species of "*Synchelidium*" from the North Pacific and the American coast of the Atlantic, restricting *Synchelidium* to European waters. Four new species in *Americhelidium* were also described: *millsi*, *pectinatum*, *variabilum*, and *setosum*; and existing species allocated to the new genus were discussed.

Initially we thought some of these might be among the forms diagnosed in the Barnard manuscript, but this proved a vain hope. There was not enough relevant detail in the MS to allow any of Barnard's names to be recognized among the newly described forms (other than *A. micropleon*, which he had published earlier).

The trouble was that while many characters of southern California specimens matched the new species described from Western Canada, no local specimens matched all characters of any one species. This led to a brief flurry of erecting local provisional *Americhelidium*, all but a few of which have fallen into disuse because the characters used appear to be too variable for reliable application of the provisional names or the names of those species described from other areas.

General practice has been to leave animals not clearly referable to either *A. rectipalmum* or *A. micropleon* at *Americhelidium* sp. Dean Pasko however, has recognized a new *Americhelidium* species that can be easily distinguished from the remaining problematic group. A voucher sheet was passed around and reviewed with agreement from everyone that this was indeed a taxon that could be identified to species level and was sufficiently different than what is currently known from southern California. The characters that help distinguish this species are the following: the outer plate on the maxilla of *A*. sp SD1 is unique, with 10–12 simple teeth compared to other species of the "*shoemakeri*" group that have only 5–6 simple teeth or multi-cusp teeth as found in *Americhelidium pectinatum*. Eric Nestler presented ecological data comparing depth and sediment distributions for *A*. sp SD1 and specimens identified as *A. shoemakeri.* Both

species overlapped in shallower depths, however, *A. shoemakeri* notably extended beyond *A*. sp SD1 into deeper waters (100m or more). Dean mentioned that he would like to add additional mouthpart characters for *A*. sp SD1 and will be modifying the circulated voucher sheet for posting to the SCAMIT website (Taxonomic Tools section) sometime soon.

There still remained no resolution for reliably identifying other known *Americhelidium* taxa. After much discussion, the group decided that the best way to resolve this problem, for now, is to refer to this group as "*Americhelidium shoemakeri* CMPLX", excluding Dean's new species *Americhelidium* sp SD1. This would allow Dean's new species to be pulled out for the purposes of resolving its habitat preferences and also standardize among agencies how the rest of the *Americhelidium* group is reported. The recognized and differentiable species *A. rectipalmum* and *A. micropleon* are not included in the complex.

Another new species brought to our attention was *Pachychelum* sp SD1, recognized by Dean. A voucher sheet was again distributed and discussed. This will be another amphipod species for us all to keep a look out for.

The next little beast that Dean brought forward was the amphipod Lysianassidae sp SD1. This proved to be a most challenging animal and required most of the morning to come to some sort of consensus. Dean had difficulty assigning the 2.5 millimeter adult male to a genus and was not even confident that he had assigned it to the proper family. His initial efforts led him to think that this animal might belong to the genus *Socarnopsis*, however, gnathopod 2 was not "minutely chelate" and did not really correspond to that description. Everyone gathered to take a glimpse of the unusual animal and much effort was put forth in rigorously searching the literature for some sort of match with consensus going back and forth regarding its placement in the Lysianassidae. The animal was finally run through a family key to amphipods posted on www.crustacea.net. Through this analysis, the animal keyed out to indeed be a member of the Lysianassidae. Shortly afterward though, under further examination by Eric Nestler, it was realized that one of the characters had initially been misinterpreted. The length of the ishium on gnathopod 2 was short! This was not concordant with one of the diagnostic characters of Lysianassidae, an elongate ishium! At this point, we all agreed that the animal did not match any known amphipod family and may belong to a new family, yet to be described. Other characters that supported the exclusion of membership to the Lysianassidae were the lack of an accessory flagellum on antenna 1 and the presence of a rather large rostrum, not typical of that group. Additionally the morphology of a subchelate palm and dactyl with deeply incised tip forming a long slender tooth, and a subsequent smaller tooth located just beneath that, was highly unusual. Three to four large bi-fid spines protruded from the anterior face of the propodus and a large process at the base of the dactyl was obvious. These interesting aspects of G2 led to a reexamination of gnathopod 1. The propodus and dactyl configuration on this appendage were also found to be extremely interesting. A large spine projected proximally from the propodus and formed a scissor like combination in conjunction with the dactyl. This pincher morphology proved to be rather ornate with complex setae protruding from the dactyl and four nodules present along the distal end near the tip.

Upon further reflection and examination of Barnard & Karaman (1991) and Gurjanova (1951), Don Cadien suggested that the beast might turn out to be an iphimediid. It seems particularly close to the group containing *Odius*, which was separated off into its own family, the Odiidae. P. G. Moore (1992) treated these in the NEP in a paper on stegocephaloids. He described two new taxa from our waters, an *Odius* and one in a new genus *Imbrexodius*.

Don recommended that Dean compare his specimen with *Imbrexodius oclairi* Moore 1992. None of the existing genera seem to have quite the same structure on gnathopod 1 as this peculiar little guy, however, and a new genus may prove necessary. Unfortunately, more material and larger specimens are needed before that can happen, and this specimen will have to remain a SCAMIT provisional taxon! The beast was collected from 75m near Anacapa Island. Several images were captured during the meeting and an updated voucher sheet with these images will soon be posted to the Taxonomic Tools section.

By this time Scott Harrison from Scripps Institute of Oceanography had arrived to give his presentation "Phylogeny and Biogeography of *Pinnixa*". Scott had previously worked under Mary Wicksten for his PhD and is currently completing a second post-doc at SCRIPPS, continuing his work on Pinnixid crabs as well as investigating the sensational genetic variability that exists for the copepod *Tigriopus californicus* up and down the coast of North America.

Scott's talk on the phylogeography of Pinnixids reviewed various evolutionary strategies found among members of this group related to geography. His initial studies on the *Pinnixa cristata* complex (now *Austinixa*) in the Gulf of Mexico and western North Atlantic, showed that vicariance was the major cause of speciation. In the cladogram, most species were separated by long branches, reflecting well-established lineages with significant genetic modifications. Having demonstrated this he wondered if other species groups of pinnotherids might not reveal other mechanisms of speciation. He decided to test the North East Pacific species of *Pinnixa* next. All members of the *Austinixa* group were associated with callianassid shrimp, but the *Pinnixa* utilize a broad spectrum of hosts. Initial run results showed much shorter branches for the *Pinnixa* group, and a prominent separation based on hosts. All tested pinnotherids came out very close together, reflecting recent origin and only limited genetic modification. This included *Scleroplax granulatus*, which fell out in the cladogram within the *Pinnixa* cluster. This would suggest that the differentiation of the two genera has no basis, and argue for a movement of *S. granulatus* back into *Pinnixa*. The upshot of Scott's results was that the speciation mechanism in the *Pinnixa* group seemed to be host shift rather than vicariance. This sort of a difference was what Scott had hoped to find. It seems to make good ecological sense given the nature of commensal/host relations in the two clades.

During the Bight '03 Synoptic Data Review meeting, Dean called into question the validity of *Pinnixa scamit*, stating that he believed this was most likely the same thing as *Pinnixa occidentalis*. The statement surprised Lisa Haney, noting the obvious ratio differences described in pereopod 4 for each species. Lisa and Dean both sent representative samples of each species to Scott for a genetic comparison. Upon finishing his talk, Scott informed us of these results. He only had time to run gels on the specimens that Lisa had sent and used the primer sequence for 16S. These results showed that both taxa had identical sequences, suggesting that the two might actually be the same species. Scott mentioned that he would like to do some further work on this and use the Cytochrome B gene to determine if there might be more recent divergence that would not be detected with the use of 16S. We await his analysis. If the two taxa indeed prove to be the same species, a short note will need to be published and *Pinnixa scamit* would then become a synonym of *P. occidentalis*.

It was decided that we would skip the amphipod group Phoxocephalidae, as well as the Ostracods and Pycnogonid groups, since we were running low on time. All three groups will be postponed to the fourth crustacean SCAMIT meeting scheduled for June 2005.

The meeting continued with a PowerPoint Presentation by Don and Lisa on Gnathid Isopods and the taxonomic tools they found for linking females with males.

A handout was distributed covering the topic addressed in the presentation, and giving more details (accessible as a Taxonomic Tool on the SCAMIT website). The presentation dealt with the two local *Caecognathia* species. Connections were also drawn between praniza larvae, females, and males of one of the two, *Caecognathia crenulatifroons.* The basics of gnathiid development were revisited (two larval forms: zuphea, which upon feeding becomes a praniza, which then moults into another zuphea). Three cycles of this zuphea to praniza change were documented for one local species, and photographs were shown of each of the six larval forms (zuphea cycle 1, 2, and 3, and praniza cycle 1, 2, and 3). The additional intermediate male moult which occurs between praniza cycle 3 and adult male was also shown. Photographs of both sexes of each of the *Caecognathia* species (*crenulatifrons* and *sanctaecrucis*) as well as an undescribed *Gnathia* from off Oregon were shown. Morphological details allowing the various morphs of each species were discussed and demonstrated. The hope is that examination of further material will allow similar connections to be established for the remaining six gnathiid species known from the North East Pacific. We also examined males of several other species of gnathiids (*G. tridens*, *G. productitridens*, *G. trilobata*) from the collections of the San Diego Lab.

Remaining on the topic of isopods, Dean presented *Munnogonium* sp SD1. This animal looked very much like *Munnogonium tillerae* but was much smaller in size and lacked any evidence of eye structures at 40X magnification. Dean provided a preliminary voucher sheet listing additional character differences, such as pereopod 1 with oblique palm, P2 with dactyl sub-equal to propod and basis not enlarged. Don Cadien suggested that this animal strongly resembled *M. tillerae* except in being blind, and recommended more investigation before reaching a conclusion.

Dean then brought out another isopod specimen he labeled *Asellota* sp SD1. Don immediately recognized this as being very similar to *Paramunna quadratifrons*. It differed in the shape of the frons, lacking the quadrate angles, but was clearly, closely related. Everyone agreed that this was definitely a *Paramunna* and should be recognized as *Paramunna* sp SD1. A preliminary voucher sheet was also passed around for this animal, but we look forward to an updated version soon. If prepared as a SCAMIT animal this would be *Paramunna* sp B, as *P.* sp A of SCAMIT already exists.

At this point, Eric brought up the topic of hermit crabs stating that 122 *Pagrus hartae* were found in an individual sample during the Bight ’03 survey. Formerly this taxon had been referred to as *Parapaguruodes hartae*. A recent publication transferred this species to the genus *Pagurus* (McLaughlin & Asakura 2004). Eric suggested that the Haig hermit crab key be redone and updated taxonomically to reflect current nomenclature. Hermit crabs continue to be a difficult group and an updated key would be highly beneficial. Is anyone volunteering to take on this challenge? Don? Eric?

The last topic of the day was Cumaceans. Eric presented *Cumella* nr. *californiensis*. He mentioned the lack of exopods on any of the female pereopods and that without this character it did not fall within the diagnosis of the genes *Cumella*. Upon further research, it was determined that this specimen belonged to the genus *Elassocumella* created by Watling (1991) for another species lacking exopods in the female, and should therefore be recognized as *Elassocumella* sp SD1 Nestler 2004§.

Dean then brought out another unrecognized *Cumella*, *Cumella* sp, with no associated voucher sheet. This was another interesting find from Anacapa Island collected as part of the Bight '03 effort. Don agreed that it was a new species of *Cumella* but would leave it in Dean's hands to be described. It was already 3:30 and time for people to get back on the road.

All in all, it was a great meeting. Some things were resolved, others need further investigation. The next crustacean meeting will be in February, 2005, where a review of Corophoidae nomenclature will take place with John Chapman (Hatfield Marine Science Center, Oregon) as our special guest. We hope to see all the same smiling faces and more.

NEP PLEUSTID AMPHIPODS
D. Cadien CSDLAC

Over the past decade a significant series of papers has greatly increased our knowledge of the pleustid fauna of the Northeast Pacific, Northwest Pacific, and arctic coasts of Asia and North America. These have come from workers examining material collected in Canada who reviewed previous reports and collections of pleustids from further west and further south. Two major papers in 1994 (Bousfield & Hendrycks 1994a, b) initiated the series, followed fairly closely by Bousfield & Hendrycks 1995. Ill health of the senior author intervened, and it wasn't until earlier this year that their treatment and comprehensive review of the family could be completed (Hendrycks & Bousfield 2004).

Because these treatments have resulted in description of many new species of pleustids I thought it necessary to put them all together and produce a heirarchical list of pleustids from the NEP including their additions and revisions. In a few cases species from the Arctic or East coast of North America have been inadvertently retained on this list. Many of the taxa are only found well outside the coverage area of SCAMIT, but all reported from the NEP have been retained.

I encourage all amphipod workers to review this list. You may find that some of the nomenclature in your data has been rendered invalid by recent actions. Take your time, we won't be discussing this family until at least June 2005, if then. The changes will be reflected in the next (5th) edition of the SCAMIT Taxa List. If you disagree with any of the actions taken by Bousfield and Hendrycks in these papers, please contact Don Cadien (dcadien@lacsd.org) and argue your point of view. The list is appended to this Newsletter, and was distributed to participants in the 6 December 2004 SCAMIT meeting on Crustacea.

NEW LITERATURE

Invasive species have a variety of experiences during their attempts at insinuating themselves into an ecosystem. In some cases they are able to take advantage of an existing situation to co-opt an open niche (as with *Philine auriformis* on our coast), in others they just force their way in like *Caulerpa taxifolia* in the Mediterranean. Rilov et al (2004) relate a very different history for a Lessepsian migrant invasive mussel in the eastern Mediterranean. The species was first detected in the Mediterranean in 1876, seven years after the opening of the Suez Canal. It very slowly spread north and westward along the coast, reaching Sicily by 1970. During this century it remained rare, although its spread indicated a tenuous toe-hold in the Mediterranean ecosystem. During the 1990's a change in vermetid populations of subtidal platforms off the Israeli coast allowed dense beds of the invasive *Brachidontes pharaonis* to become established where no mussel beds had existed previously. Once this occurred the species was able to invade more competitively dominated intertidal situations by larval swamping of the

indigenous species. The authors document this latter rapid shifting in dominance over a four year period. Thus, the preceeding slow spread and accumulation of *B. pharaonis* prepared it to react decisively as a strongly invasive form once the right conditions were presented. A most interesting invasion scenario; sort of a paranoid's "sleeper-cell" attack from within approach. Invasion dynamics are multifaceted, and deserve some prolonged contemplation by us all.

The sponge family Clionidae (now emended to Clionaidae to relieve a homonymy problem with the pteropod mollusk family Clionidae) has traditionally consisted of species which bore or excavate calcareous structure. This was revised to include other forms of non-excavating massive sponges which shared a unique fatty acid with more traditional boring members (Vicente et al 1991). Later cladistic analysis (Rosell & Uriz, 1997; Rützler 2002) reallocated some species, and reestablished the family Spirastrellidae, which had been subsumed within Clionaidae by Vicente et al. Carballo et al (2004) examine the clionaid fauna of the Pacific coast of Mexico, and describe several new species. They also treat *Speciospongia* as a clionaid as a result of the above revisions. While we shouldn't expect most of these species in our area, they may show up during ENSO periods, and are worth watching for.

Opisthobranch mollusks are an exceedingly diverse group. Wägele (2004) presents and discusses the impact of a series of potential key innovations in the evolution of the group. She considers 1) acquisition of cuticular gizzard plates in Cephalaspidea, 2) kleptoplasty in Saccoglossa, 3) kleptocnidy in aeolids, 4) algal symbiosis in the aeolid *Phyllodesmium*, and 5) mantle structure in chromodorids, are all mentioned. Such key innovations have served as the spurs to rapid radiation and speciation for the group in the author's opinion.

Taxonomists are perennially declining in number and availability as so few are produced by our educational and employment systems. Their services are in demand, and full taxonomic analysis of environmental samples doesn't come cheap. In consequence, regulators and program managers are always seeking alternatives to full analysis. One fairly new wrinkle is selection of a single "surrogate" group to serve instead of full community analysis. Olsgard and Somerfield (2000) suggest that polychaete worms are the appropriate surrogate in point-source pollution investigations. They do, however, recommend that the complete community be analyzed to create a baseline for comparison with surrogate monitoring information. Olsgard et al (2003) extend the surrogate concept into rapid-assessment methodology for conservation biology, touting the Terebellida as particularly useful as a subset of polychaetes reflecting trends in all polychaetes and in marine communities as a whole. I feel that use of surrogates, as was the case with identification to Family or higher level only, creates an unacceptable level of information loss. As a non-polychaete worker I have an innate bias against such suggestions, but the authors' analysis should be evaluated to determine if it offers something of interest.

A number of papers in recent years have dealt with the production of halogenated compounds by marine worms as a defense mechanism. Efficacy of such attempts is usually not seriously evaluated. Kicklighter et al (2004) evaluate whether production of brominated compounds confers some defense from predation in 16 species of "worms". Only the enteropneust, *Saccoglossus kowalevskii,* was found to be unpalatable to fish and crab predators. Production and release of brominated compounds may, however, be more directed at competitors than predators, and has been shown in some instances to be effective at controlling behavior of settling larvae around a bromine producing organism.

While we are often concerned with local patterns of biodiversity as indicators of ecosystem health around point-source discharges, we tend to ignore the larger scale patterns of biodiversity. Gage et al (2004) examine the pattern in the cumaceans of the Atlantic at the largest scale: for the entire Atlantic Ocean. One of the major problems of large-scale examinations is taxonomic standardization of the disparate sources included. This was not an issue with their examination as all the samples used in the analysis were identified by Norman Jones prior to his death. Gage and co-authors provide the analysis which Jones had in progress but was unable to finish. They compare their results with other examinations of diversity patterns in the Atlantic using other taxonomic groups. Available cumacean data clearly validates earlier findings that the deep water fauna of the Nordic Seas is impoverished relative to other Atlantic regions.

The mysids, or opossum shrimp, have received little attention with regard to their genetic sequencing and phylogeny. Remerie et al (2004) perform an analysis based on 18S ribosomal RNA sequences from 25 species of mysids. Their results demonstrate that all is not well in mysid morphology based taxonomy. This is particularly true within the subfamily Mysinae within the Mysidae. The current analysis indicates that the Mysinae resolve into three monophyletic groups, one corresponding fairly closely to the Leptomysini and the other two as yet unnamed. The subfamilies Siriellinae and Gastrosaccinae appear to be monophyletic. A more diverse taxon sampling utilizing data from other mysid families and from more taxa within the Mysidae may provide better resolution in the future. The subfamily Mysinae, however, seems clearly polyphyletic based on current analysis.

We have only one species of the amphipod genus *Cymadusa* present in local waters, *Cymadusa uncinata*, the kelp curler. Peart (2004) revises a related group within the genus without directly addressing any issues related to *C. uncinata*. Her analysis is of considerable value to us as a demonstration of character variability within the genus, and should be consulted with that in mind.

Greg Jensen (2004) revisits the reported variability of the hippolytid shrimp *Eualus pusiolus* and decides that there is more than one species confused under that name. He erects a new species, *Eualus butleri,* previously confused with *E. pusiolus*. He reports this new species to be found with hexactinellid sponges *Rhabdocalyptus dawsoni* and *Aphrocallistes vastus*, both of which occur within the Southern California Bight. Previous reports of *E. pusiolus* in this association reflect misidentified *E. butleri*. *Eualus pusiolus* is free-living on sand, clay, calcareous or algal bottoms. The two differ morphologically as well, and are clearly separable in a revised key to Eastern Pacific members of the genus provided by the author. The total number of hippolytid species in the area remains constant as Stamatiou and Jensen (2004) reduce *Heptacarpus littoralis* to a synonym of *H. sitchensis*.

ONBOARD THE RV ATLANTIS

In the last newsletter the minutes discussed Cheryl Brantley's and Todd Haney's presentations of their recent experiences with deep sea investigations off the RV Atlantis. Dr. Jody Martin (NHMLAC) was also along and sent back a series of e-mail "postcards" which described activities aboard the vessel. They are reproduced below, with his permission, and give a personal view to augment the minutes.

No. 1 – 30 Aug04
Hi everyone,
Todd Haney and I are aboard the Atlantis, the mother ship for the deep submergence vehicle (DSV) Alvin. This expedition is being led by Dr. Janet Voight, a curator at the Field Museum, and it is funded by a grant from the National Science Foundation to study the diversity of deep-sea life.

We flew up on Thursday to the Seattle Airport and took a bus the next morning (Friday) down to Astoria, Oregon, a scenic fishing town (OK, I am sure it used to be more scenic than it is now, but it is still pretty despite being a bit touristy now) on the Columbia River. The Columbia River is huge and impressive, but fortunately it was not that turbulent when we left, which is a good thing for those of us who get a little seasick just taking a bath (yes, it's true, even marine biologists can get amazingly seasick, and I am one of the worst).

We boarded the Atlantis Friday night, and it left port on Saturday morning, crossing the bar at the mouth of the Columbia River, one of my biggest worries for the entire trip, at about 9:30. But as I said above, it was pretty calm. We have been steadily heading out to sea since, with the exception of one stop to deploy a CTD device (which measures conductivity, temperature, and depth, and collects water samples at various depths, among other neat tricks) for scientists from the University of Washington.

Our first Alvin dive is tomorrow (Monday) at 8:00 am, and I am scheduled for that dive, weather permitting. Todd is scheduled for a dive later in the week. Tomorrow's dive is on the Gorda Ridge, and our primary mission is to locate some wood blocks that were placed here in 2002 to see what kinds of organisms would colonize them. The blocks are approximately 50 meters north of a hydrothermal vent that is characterized by small colonies of tube worms (mostly in the genus *Ridgeia*, I think). Lots of invertebrates are attracted to wood in the deep sea, and we are anticipating a lot of worms, snails, and (I hope) small crustaceans. The depth of this first dive will be at 3220 meters when we first land on the bottom, increasing to 3250 meters later in the dive when we visit other areas of the ridge. We will be using a suction arm on the DSV Alvin to "vacuum" small invertebrates from beneath the wood blocks, and then we will use the Alvin's claw arm to pick up the blocks and put them in the basket on the front of the sub. If, of course, we can find the blocks. After two years, it is very possible that sediments will have covered everything.

If any of you have questions, or need to ask me something, that's fine, but please keep it fairly short - I am charged for all incoming and outgoing e-mail messages, and the longer ones cost more. And no attachments please (the ship will reject them). I hope everything is going well there. With all best wishes,
- Jody Martin

No. 2 — 31 Aug04
Hi everyone,
I am writing this on Tuesday, August 31, but because the ship sends out e-mail only three times daily you probably will not be reading this until Wednesday morning.

The first Alvin dive was extremely successful. We were diving in the Escanaba Trough region of the Gorda Ridge, and our maximum depth was 3258 meters. (Definitely a depth record for me, since my previous SCUBA record was somewhere in the vicinity of 40 meters or so!). Janet Voight of the Field Museum was the port-side observer, and I was the starboard side observer. Our pilot was Anthony Tarantino.

Our main objective on this dive was to retrieve some samples of wood that had been placed here roughly 2 years ago. It is known that animals are attracted to wood in the deep sea, and one hypothesis is that as the wood begins to decay, it might attract the same guild of deep-sea creatures that are found at hydrothermal vents, which are also reducing environments. If so, pieces of waterlogged wood could serve as potential "stepping stones" for vent organisms.

It took us 2 hours to reach bottom. Then we sat there for another hour while the mother ship Atlantis took readings to better ascertain where we were, so that they could then give us more exact coordinates for reaching our target area. Thus, although our dive began at 8:00 am, we

did not really move off the sea floor until around 11:00. We had landed only about 57 meters away from the wood targets, and found them rather easily. This in itself is a neat trick, as from the small windows of the sub, it is very hard to get your bearings, and the sea floor all begins to look the same. The wood had been marked with floating markers (large pieces of white plastic), making the job a little easier. Our pilot did an amazing job of navigating. The wood was also still in a mesh bag (somewhat reminiscent of how we used nylon bags to enclose the ARMS structures in the Caribbean) to retain associated organisms.

The pieces of wood (both oak and pine, to see what effect the hardness of the wood might have on colonization and decay at this depth) were picked up using Alvin's mechanical claw arm, operated quite skillfully by the pilot (Anthony). These were loaded into the "bio-boxes" on the front platform of the Alvin. Then we used the suction arm of the Alvin to more or less vacuum up the dark sediment that was under the blocks, on the assumption that the organic matter of the blocks might attract small invertebrates that would hang out under the wood. After doing this, we took off to find and observe the actual vents themselves, about 24 meters away.

It is hard to describe the feeling of looking out the tiny window of the Alvin and seeing actual hydrothermal venting just a few feet away. We took some still photos and video footage, and I will hope to be able to show some of these images after I return. These were relatively low temperature diffuse vents (our highest recorded temperature was around 215 degrees C) compared to higher temperatures sometimes found at chimney vents far to the south. We took some temperature measurements, and grabbed a small sample of the tube worms (genus *Ridgeia*) and made a few more collections (mostly anemones) using the arm of the Alvin.

We also used 6 "push cores," which consists of Alvin's arm picking up a push core device from the front of the platform and sticking it into the nearby sediment, then pulling it out and loading it back into its holster on the Alvin's front platform.

By the time we had completed those small tasks, it was around 3:00 in the afternoon. A 2-hour transit back to the surface would get us back to the Atlantis by 5:00 pm, so we had to depart. Time goes very quickly when you are in the submarine, unfortunately.

Upon the return we unloaded the samples and spent most of the evening sorting and identifying them, until midnight or so. I was particularly tired - probably a combination of being hunched over in a 7-foot diameter steel sphere with two other people for 9 hours, plus the combination of high CO-2 and low oxygen (they keep the Alvin at only 16-17% oxygen to reduce the risk of fire on the sub) combined with adrenalin and caffeine. At any rate I am pretty worthless today.

Meg Daly (an anemone expert from Ohio State) and Jim McClain (a geo-physicist from UC Davis) are in Alvin today, and we will be expecting their arrival (with more specimens to sort) at about 5:00 pm. In the meantime, Todd and I and most of the other scientists are still working on the samples brought up yesterday. All for now - I will hope to write more tomorrow. Best wishes to everyone there,
- Jody

No. 3 — 2 Sept04
Hi everyone,
I have lost track of the messages that I have sent from the ship, but I think this is the fourth. Yesterday (Wednesday) was a transit day in order for us to reach the Juan de Fuca Ridge. Today the chief scientist (Janet Voight) dived in Alvin with a graduate student from Canada in an area called the Endeavour Segment of the Juan de Fuca Ridge. The depth of the hydrothermal vent field here is roughly 2400 m, much shallower than the original dive on

the Gorda Ridge. The Endeavour Segment has enormous chimneys, some as high as 45 meters, to the extent that remotely operated vehicles do not like to dive here, as there is a good chance of tangling their communication cable on one of these giant towers. But for Alvin it is much easier, since there are no cables connecting the sub to the mother ship. Some of the vents on these gigantic towers are spewing water as hot as 300 degrees (C), as compared to the relatively low heat and diffuse vents at Gorda.

Here, as with the other sites, our primary mission is to gather blocks of wood that were set out about 2 years ago to see what colonizes them. Interestingly, we are seeing a very different fauna here from what we saw on Gorda Ridge. The new genus and species of leptostracan that Todd was hoping to find is here (we did not find it at the previous 2 sites), and so he is able to increase the number of specimens (before this trip there were only 4 known individuals). Many of the deep-sea beasts are very strange looking, and much of our time is spent trying to figure out what some of these things are.

In addition to gathering wood, we are also using a variety of collecting devices. Alvin has two "claw arms," and using these we can sample with push cores, plankton tows, suction arms, and other devices, and of course Alvin can also just grab things with its claw (though delicate organisms do not fare too well that way). On today's dive, they captured one seep-sea octopus (Janet's specialty group) and several anemones, in addition to locating and loading the wood set out 2 years ago.

Tomorrow (Friday) is our fourth and last dive. Todd will be on Alvin, along with a postdoc from Texas A & M (and the Alvin pilot, of course). Sometime late tomorrow night, we should begin the long haul back toward Seattle, which we hope to reach by late Saturday afternoon. With all best wishes,
- Jody

No. 4 —3Sept04
Hi everyone,
The last Alvin dive was today. Todd was the port-side observer, and Kim Larsen (from Texas A & M, and a fellow crustacean biologist) was the starboard-side observer. The pilot was Bruce Strickrott. One of the exciting aspects of today's dive was that Todd was allowed to actually drive the Alvin around (he and Bruce switched places for a while), a really rare and wonderful experience.

Today's dive was interesting for several reasons. First, it was on a low elevation seamount, but it was not associated with any hydrothermal venting. The location of the seamount, for those of you who would like to look it up on a map, is: 47° 47.08713'N 127° 41.47649'W and the depth was 2,656 meters.

The seafloor here is not that interesting compared to some of the other sites — mostly just lots and lots of sediment, with very few landmarks. Four packets of wood had been placed here in 2002, and the concern was that it would be quite challenging to locate them again, with such a flat and relatively uniform seafloor. Fortunately, the Alvin located the wood almost as soon as they reached bottom, at around 10:30 am. That left the Alvin free to scout around and pick up assorted creatures at will, which they did. In fact, they came back early because they had loaded all of Alvin's containers with either wood or creatures, and they surfaced at about 4:15pm. They had filled all 6 of the push core devices (some of which they turned sideways and used as long scoops to get more animals from the first few inches of the sediment), all of the bio-boxes (these are large crates with lids on the front platform of Alvin), the pelagic and suction sampling devices, and the plankton net as well. Collecting anything more would mean opening a biobox to put it in, and each time they tried to do that, one of the swimming sea cucumbers would swim out of the box, so finally they just called it a (very productive) day.

All told, they collected an interesting assortment of anemones, sea cucumbers, sea stars, and other creatures, and of course there were also the animals collected along with the wood blocks, so we will be sorting and preserving specimens into the night.

Because this was the last dive of this cruise, after the specimens and people had been removed from all of the collecting devices of the Alvin, we stripped the outer fiberglass "skin" off of the Alvin and hosed everything down. They do this anytime that the Alvin is going to sit for a while (it will be 6 weeks until it dives again) to be sure to get all of the seawater out of every place where water could accumulate. Beneath the plain white skin of the sub, it is an amazingly complex machine, as every part of it has to be able to withstand pressures equivalent to a depth of 4,000 meters. Thus, all cables are filled with liquids so that nothing can be compressed, all electronics have to be sealed in oil-filled cases, and so on. It truly looks like something from outer space.

This will be the last message from us in the field, since it is now Friday evening, and so anything further that I write would not reach you until Tuesday anyhow (with the Monday holiday). And from this point on, our trip should be uneventful. We have about 24 hours ahead of us to reach Seattle, and another several hours of cleaning up and packing out once we get there. We will stay on Atlantis one last night and then catch a taxi early on Sunday morning for our flight back to LA.

I hope you have enjoyed hearing about the expedition as much as we have enjoyed taking part in it (and I apologize for overloading the mailboxes of those of you who are not interested). This sort of large-scale, ship-based collecting is logistically complicated and very expensive, and it is a pleasure to be part of such a well-organized trip. Every objective of every dive was met, spectacular collections were made, and nobody was injured.

Because of the Field Museum's clear commitment to the expansion and upgrading of their collection space and the growth of the collections themselves, they have laid the groundwork for further grants of this scale, and it will be interesting to see where they go from here. I look forward to seeing you on Tuesday!
With all best wishes,
- Jody

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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 at their e-mail addresses:

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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.

The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

Revised compostion of the family Pleustidae in the Northern Pacific
including revisions through 2004 (B & Hendrycks 1994a & b, 1995, Hendrycks & Bousfield 2004) dbc 26Apr04

Subfamily ***Gen*** **Sp** Synonyms

Atylopsinae
- ***Myzotarsa***
  - **anaxiphilius Cadien & Martin 1999**

Stenopleustinae
- ***Stenopleustes***
  - **malmgreni (Boeck 1861)**
    - Amphithopsis malmgreni Boeck 1861
  - **eldingi Gurjanova 1930**
  - **latipes (M. Sars 1858)**
    - Amphithoe latipes M. Sars 1858
  - **nodifer G. O. Sars 1893**
  - **olriki (Hansen 1887)**
    - Amphithopsis olriki Hansen 1887
- ***Arctopleustes***
  - **ramyslovi (Gurjanova 1951)**
  - **glabricauda (Dunbar 1954)**
- ***Gracilipleustes***
  - **monocuspis (J. L. Barnard & Given 1960)**
    - Stenopleustes monocuspis J. L. Barnard & Given 1960

Mesopleustinae
- ***Mesopleustes***
  - **?abyssorum (Stebbing 1888)**
    - Pleustes abyssorum Stebbing 1888

Pleustoidinae
- ***Pleustoides***
  - **carinatus Gurjanova 1972**
  - **quadridens (Bulycheva 1955)**
    - Sympleustes quadridens Bulycheva 1955

Eosymptinae
- ***Eosymtes***
  - **minutus Bousfield & Hendrycks 1994**

Pleusymtinae
- ***Pleusymtes***
  - **glaber (Boeck 1861)**
    - Amphithopsis glaber Boeck 1861
  - **brevipes Ishimaru 1985**
  - **buttoni (Dunbar 1954)**
    - Sympleustes buttoni Dunbar 1954
  - **derzhavini (Gurjanova 1938)**
    - Neopleustes derzhavini Gurjanova 1938
  - **glabroides (Dunbar 1954)**
    - Sympleustes glabroides Dunbar 1954
  - **japonica (Gurjanova 1938)**
    - Sympleustes japonicus Gurjanova 1938
  - **kariana (Stappers 1911)**
    - Sympleustes kariana Stappers 1911
  - **karstensi (J. L. Barnard 1959)**
    - Sympleustes karstensi J. L. Barnard 1959
  - **margulisae Tzvetkova & Golikov 1990**
  - **mucida Ishimaru 1985**

ochrjamkini (Bulycheva 1952)
Sympleustes ochrjamkini Bulycheva 1952
pacifica Hendrycks & Bousfield 2004
Pleusymtes sp of Staude 1996
Sympleustes subglaber of Austin 1985 non J. L. Barnard & Given 1960
pulchella (G. O. Sars 1893)
Amphithopsis pulchella G. O. Sars 1893
quadrangularis (Margulis 1963)
Sympleustes quadrangularis Margulis 1963
similis (Margulis 1963)
Sympleustes similis Margulis 1963
suberitobia (Gurjanova 1938)
Sympleustes suberitobius Gurjanova 1938
subglaber (J. L. Barnard & Given 1960)
Sympleustes subglaber J. L. Barnard & Given 1960
uncigera (Gurjanova 1938)
Sympleustes uncigera Gurjanova 1938
uschakovi (Bulycheva 1952)
Sympleustes uschakovi Bulycheva 1952
sp of Hendrycks & Bousfield 2004
Sympleustes uncigera of Shoemaker 1955 not Gurjanova 1938
sp 1 of Hendrycks & Bousfield 2004
sp 2 of Hendrycks & Bousfield 2004
Anomalosymtes
coxalis Hendrycks & Bousfield 2004
Budnikopleustes
vasinae (Budnikova 1995)
Pleusymtes vasinae Budnikova 1995
Heteropleustes
setosus Hendrycks & Bousfield 2004
brachypalmus (Ishimaru 1984)
Pleusymtes brachypalma Ishimaru 1984
Holopleustes
aequipes Hendrycks & Bousfield 2004
Kamptopleustes
coquillus (J. L. Barnard 1971)
Pleusymtes coquilla J. L. Barnard 1971
kamui (Ishimaru 1985)
Pleusymtes kamui Ishimaru 1985
spinosus Hendrycks & Bousfield 2004
Pleustomesus
media (Goes 1866)
Paramphithoe media Goes 1866
Pleustes medius Stebbing 1906
japonicoides Gurjanova 1972
?palmata (Margulis 1963)
Sympleustes palmata Margulis 1963
Pleustostenus
displosus Gurjanova 1972
Rhinopleustes
acuminatus Hendrycks & Bousfield 2004
Dactylopleustinae
Dactylopleustes
echinoicus (Tzvetkova 1975)
Parapleustes echinoicus Tzvetkova 1975

echinoides Bousfield & Hendrycks 1995
Dactylopleustes echinoicus of Austin 1985 non Tzvetkova 1975
obsolescens Hirayama 1988
sp A SCAMIT 1988§

Pleustinae

Pleustes (Pleustes)
panoplus (Kroyer 1838)
Amphithoe panopla Kroyer 1838
acutirostris Bousfield & Hendrycks 1994b
gurjanovae Bousfield & Hendrycks 1994b
lawrencianus Bousfield & Hendrycks 1994b
obtusirostris Gurjanova 1938
occidentalis (Stimpson 1864)
Amphithonotus occidentalis Stimpson 1864
sibiricus Gurjanova 1972
tuberculatus Bate 1858

Pleustes (Catapleustes)
angulatus Shoemaker 1955
Pleustes panopla angulata Shoemaker 1955
constantinus Bousfield & Hendrycks 1994b
japonensis Gurjanova 1972
paradoxus Gurjanova 1972
victoriae Bousfield & Hendrycks 1994b

Thorlaksonius
brevirostris Bousfield & Hendrycks 1994b
amchitkanus Bousfield & Hendrycks 1994b
borealis Bousfield & Hendrycks 1994b
carinatus Bousfield & Hendrycks 1994b
depressus (Alderman 1936)
Pleustes depressus Alderman 1936
incarinatus (Gurjanova 1938)
Pleustes incarinatus Gurjanova 1938
obesirostris (Bulycheva 1952)
Pleustes obesirostris Bulycheva 1952
platypus (J. L. Barnard & Given 1960)
Pleustes pltypus J. L. Barnard & Given 1960
subcarinatus Bousfield & Hendrycks 1994b
truncatus Bousfield & Hendrycks 1994b
sp (Nagata 1960)
Pleustes sp Nagata 1960

Pleusirinae

Pleusirus
secorrus J. L. Barnard 1969

Neopleustinae

Neopleustes
pulchellus (Kroyer 1846)
Amphitoe pulchellus Kroyer 1846
Parapleustes pulchellus Dunbar 1954
boecki (Hansen 1887)
Paramphithoe boeckii Hansen 1887
carinatus Margulis 1963
columbianus Hendrycks & Bousfield 2004
euacanthoides Gurjanova 1972
kussakini (Budnikova 1995)
Parapleustes kussakini Budnikova 1995

Shoemakeroides

cornigera (Shoemaker 1964)

Sympleustes cornigera Shoemaker 1964
Parapleustes cornigerus Karaman & J. L. Barnard 1979
Stenopleustes cornigera Gurjanova 1972

gagarae (Gurjanova 1972)

Stenopleustes cornigera gagarae Gurjanova 1972
Parapleustes gagarae Karaman & J. L. Barnard 1979

Parapleustinae

Parapleustes

americanus Bousfield & Hendrycks 1995

Parapleustes pacifica (?) of Austin 1985

gracilis Buchholz 1874

Paramphithoe brevicornis G. O. Sars 1895
not Parapleustes gracilis of Ishimaru 1984

ishimarui Bousfield & Hendrycks 1995

Parapleustes gracilis of Ishimaru 1984

Chromopleustes

johanseni (Gurjanova 1951)

Parapleustes johanseni Gurjanova 1951
Parapleustes oculatus of J. L. Barnard & Karaman 1991 (in part)

lineatus Bousfield & Hendrycks 1995

Parapleustes oculatus of Bousfield 1985 (in part)

oculatus (Holmes 1908)

Neopleustes oculatus Holmes 1908
Parapleustes oculatus J. L. Barnard & Given 1960 (in part)

sp. 1 Bousfield & Hendrycks 1995

Parapleustes oculatus of J. L. Barnard & Given 1960 (in part)

Commensipleustes

commensalis Shoemaker 1952

Gnathopleustes

pugettensis (Dana 1853)

Iphimedia pugettensis Dana 1853
Neopleustes pugettensis of Stebbing 1906
Parapleustes pugettensis of J. L. Barnard 1969
not Incisocalliope newportensis J. L. Barnard 1959
not Parapleustes pugettensis of J. L. Barnard & Given 1960

den (Barnard 1969)

Parapleustes den J. L. Barnard 1969

pachychaetus Bousfield & Hendrycks 1995

serratus Bousfield & Hendrycks 1995

Parapleustes pugettensis of Shoemater 1964

trichodeus Bousfield & Hendrycks 1995

Incisocalliope

newportensis J. L. Barnard 1959

Parapleustes pugettensis of J. L Barnard & Given 1960 (in part)

bairdi (Boeck 1871)

Paramphitoe bairdi Boeck 1871
Neopleustes bairdi Stebbing 1906

derzhavini (Gurjanova 1938)

Neopleustes derzhavini Gurjanova 1938
Parapleustes derzhavini J. L. Barnard & Karaman 1991

dilatatus (Ishimaru 1984)

Parapleustes dilatatus Ishimaru 1984

filialis (Hirayama 1988)

Parapleustes filialis Hirayama 1988

makiki (J. L. Barnard 1970)

Parapleustes derzhavini makiki J. L. Barnard 1970

nipponensis Bousfield & Hendrycks 1995

Parapleustes derzhavini of Ishimaru 1984 not Gurjanova 1938

Trachypleustes

vancouverensis Bousfield & Hendrycks 1995

trevori Bousfield & Hendrycks 1995

Micropleustes

nautilus (J. L. Barnard 1969)

Parapleustes nautilus J. L. Barnard 1969

behningi (Gurjanova 1938)

Neopleustes behningi Gurjanova 1938

Pleustes behningi Gurjanova 1951

Parapleustes behningi Ishimaru 1984 (in part)

behningioides Bousfield & Hendrycks 1995

Parapleustes behningi Ishimaru 1984 (in part)

longimanus (Ishimaru 1984)

Parapleustes longimanus Ishimaru 1984

nautiloides Bousfield & Hendrycks 1995

Parapleustes species "A" J. L. Barnard 1969

ASSOCIATE DEAN FOR MARINE SCIENCE PROGRAMS
(Administrator III)

Humboldt State University invites nominations and applications for the position of Associate Dean for Marine Science Programs. The Associate Dean for Marine Science Programs is responsible for coordination, promotion, management and development of marine science facilities, and for providing institutional visibility and leadership for marine science programs at HSU. The Associate Dean has facilities management responsibilities for the Fred Telonicher Marine Laboratory, an interdisciplinary instructional and research facility, and the vessel fleet (including the 95 ft oceangoing RV Coral Sea), which is associated with the academic programs in the marine sciences. Coordination, promotion, and development of marine science education and research programs will be accomplished through representation of HSU at various multi-institutional meetings, through preparation of grant proposals to support marine science programs and facilities, and by working closely with marine sciences faculty. The Associate Dean reports to the Dean of the College of Natural Resources and Sciences.

Humboldt State University, located in the rural redwood forest region of the California coastal range, is the northernmost of the 23 campuses of the California State University. A faculty of over 400 works with approximately 7,500 students. Additional information about the University can be found at http://www.humboldt.edu/.

Minimum Qualifications: Ph.D. in marine science-related scientific discipline. Significant record of accomplishment in obtaining and administering research and/or contract grants from governmental or related agencies. Significant work experience in higher education comparable to a tenured faculty appointment. Evidence of commitment to an academic institutional environment that combines undergraduate teaching excellence with collaborative research endeavors involving academic and government scientists. Some knowledge in the operation and maintenance of oceanographic vessels is preferred. Ability to work with faculty, staff, and management personnel representing diverse and competing interests.

Compensation: The position is a full-time, twelve-month appointment. The position is covered by the California State University Management Personnel Plan, and has an excellent benefits package. Under this plan, incumbents are subject to normal management reviews and serve at the pleasure of the University President. Salary is competitive and commensurate with experience and qualifications. Additional Management Personnel Plan information can be found at the following website: http://www.calstate.edu/HRAdm/policies/mpp.shtml.

Application Procedure: To apply, please send curriculum vitae, all transcripts of academic work, three representative publications, and two recent letters of recommendation to:

Chair, Associate Dean for Marine Science Programs
c/o Human Resources Department
Humboldt State University
1 Harpst Street
Arcata, CA 95521-8299
Phone: (707) 826-3626
Fax: (707) 826-3625

Application Deadline: Application materials received or postmarked by Friday, March 18, 2005 will be given first consideration. Applications received after March 18, 2005 may be considered if the position is not filled.

Humboldt State University is committed to achieving the goals of equal opportunity and endeavors to employ faculty and staff of the highest quality reflecting ethnic and cultural diversity of the State. Additional information about Humboldt State University can be found at http://www.humboldt.edu/. Humboldt State University is an Equal Opportunity/Title IX employer. Applications from and nominations of qualified women, minority candidates, veterans with covered veteran status and disabled persons are particularly encouraged. Humboldt State University hires only individuals authorized to work in the United States.

Southern California Association of
Marine Invertebrate Taxonomists

January, 2005 **SCAMIT Newsletter** Vol. 23, No. 9

SUBJECT:	**B'03 Anthozoa**
GUEST SPEAKER:	**John Ljubenkov**
DATE:	**14 March 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Dancing Coyote Ranch** **contact M. Lilly for directions**

Rhizochilus antipathum **found on the black coral** ***Antipathes dendrochristos.*** **Collected near Hurricane Bank at approximately 420 feet.**

Bill Schneider with his specimen of *Antipathes dendrochristos*

JANUARY 10 2005 MINUTES

The meeting was hosted by SCCWRP and began with the business portion. President Kelvin Barwick announced the upcoming 9th Annual SCUM meeting to be held on January 22nd at the San Diego Lab. Member Dot Norris sent an announcement for the 4th Annual Bioinvasions Conference to be held in New Zealand on August 23-26, 2005. Kelvin then announced upcoming SCAMIT meetings which can be found on the SCAMIT website.

Treasurer Cheryl Brantley introduced Bill Furlong who is a new employee at the CSDLAC Lab. He will be working on sponges and decapods. Cheryl also introduced Seth Jones from Merkel & Associates in San Diego who is somewhat of a newcomer to SCAMIT meetings.

Member Don Cadien requested that additions and emendations for the SCAMIT Species List Edition 5 be sent to him.

Ananda Ranasinghe had the floor next and extended a thank you to Dave Montagne for all his work in overseeing and handling the Bight '03 data, and to the taxonomists who worked so hard in processing the samples. He also thanked everyone in the room for completing their work on this project. We finished a year earlier than the previous Bight '98 survey.

The purpose of this meeting was to follow up on the February 2003 meeting that focused on future directions for SCAMIT. The summary for that meeting is in the SCAMIT Newsletter, Vol. 21, No. 10. Before we engaged in specific topics, Dave Montagne took the floor and expressed some ideas on how he and others perceive SCAMIT. He felt it might provide context for the day's discussion on the development of a taxonomic database and other tools. Dave's view of SCAMIT has evolved as his responsibilities have shifted from those of a taxonomist, to tasks more focused on policy and regulation. His original view of SCAMIT was as an organization with a local focus on mutual education and assistance among taxonomists working on NPDES monitoring within the region. While SCAMIT was regional in nature, the benefits derived from participation were realized in application to individual monitoring programs. The impetus for its formation and activities was the individual desire of its active members to grow and perfect their skills as taxonomists and to produce monitoring data within their individual programs of the highest possible quality. The value of SCAMIT as a regional program was not fully realized until the initiation in 1994 of true regional monitoring with the SCBPP. SCAMIT was able to seamlessly step into the role of a regional taxonomic resource because we had our program of activities and products in place. In subsequent regional programs SCAMIT has continued to play this important role of providing valuable quality assurance to the task of assessing biological integrity of infaunal and epifaunal invertebrate communities in the SCB.

This truly regional role for SCAMIT, in what are very high-visibility surveys, has greatly elevated our organization's profile. SCAMIT is frequently mentioned as a model for regional taxonomic QA by state and federal agencies addressing the development of biologically-based habitat quality assessments. Regulatory agencies have become increasingly sensitive to the dependence of such bioassessments on accurate and consistent taxonomy. Dave noted that there has been a gradual shift away from a sole reliance on contaminant-based criteria to assess habitat quality. New standards are being developed that include biological metrics that rely upon quantitative, species-level descriptions of marine and aquatic invertebrate communities. For instance, the BRI (Benthic Response Index), developed as part of the SCBPP, is highly dependent on good taxonomy. Dave noted that approximately 70 similar indices of biointegrity have been developed worldwide, many relying on species-level taxonomy. Within California, statewide Sediment Quality Objectives for enclosed bays and estuaries, are being developed by the State Water Resource Control Board that will include infaunal community assessment as a key component. These new objectives, which will become important regulatory tools affecting all wastewater and stormwater dischargers upstream of bays and estuaries (within the state) as well as dredging operations within ports and harbors, will increase the demand for the type of services and activities provided by SCAMIT.

This trend towards the increasing reliance on taxonomy-based indices is also seen in the freshwater world. California is developing biological tools for the assessment of surface waters. For instance, Jim Harrington and his group from California Fish and Game Aquatic Bioassessment Laboratory have developed an index for streams that relies upon the condition of the benthic macrofauna. They have concluded that there is a need for statewide, standardized taxonomic practices to assure that these assessments are accurate. To provide for

that need they have created the California Aquatic Bioassessment Laboratory Network (CAMLnet). This organization is in its infancy but will expand rapidly as these new tools become required elements in the assessment of surface waters in the State. Harrington has cited SCAMIT as the model for CAMLnet's development. Dave concluded that we should be aware of these issues and the fact that others are looking to us as a model for implementing regional taxonomic standards and QA as we discuss the future of SCAMIT.

At this point, others joined in the discussion. Cheryl commented that some freshwater people have joined SCAMIT recently. Ananda explained that SCCWRP is involved in studies that expand upstream into freshwater because those processes affect what happens in the ocean.

Kelvin was asked by the North American Benthological Society if SCAMIT has a certification process for taxonomy. They have proposed a model and more information about it can be found on their website:

www.benthos.org/Classified/index.cfm/AdID/1222/task/display.

Rick Rowe said the San Diego Stream Team has a certification program for taxonomy that involves a training program for their personnel to insure they are capable of working up the samples. He commented that a certification program at work may be a motivational factor for employees to improve their performance.

Ananda pointed out that we should first decide what we want to "be" (e.g. what we're willing and capable of) and then offer our services. Rick suggested expanding the distribution of the SCAMIT species list from border to border. Tony Phillips (City of Los Angeles) explained some significant changes in their new permit that commences in March. The program, with regards to ocean sampling, will be cut in half while they expand sampling into wetland areas. This will incorporate new habitats and depths and they most certainly will see an increase in their species list.

At this time, we returned to the agenda for the meeting. Rick initiated the discussion for the first item, an online taxonomic database. He summarized the work he has done including searching for products that already exist, defining what information we want to include, and researching the idea of an "interactive species list". Ananda asked, "Who's the audience or target?" and suggested that we keep that in mind while developing the database. Lisa Haney (CSDLAC) commented that such a product would be very valuable to the newer taxonomists as several of our experienced taxonomists approach retirement.

Todd Haney (UCLA/NHMLAC) then described his prospective contribution to the database project. He provided a handout titled "A Funding Opportunity for the Development of Digital Taxonomic Products" and then presented the idea of writing a proposal to NSF, or another appropriate agency, for funding of the database project. In order to make any progress on this project, we must have supporting funds. Most of any award received would go towards salary. A computer scientist (programmer) would be hired, and time for work by participating taxonomists and others would be compensated by pay. With most active members having full-time employment in addition to occasional taxonomic work on a contractual basis, funds would be needed in order to compensate taxonomists for their time and contributions to the database project. Todd noted that he considered the strength of such a proposal to be the high degree of collaboration, the widespread utility of the product in both applied and academic settings, the general reliability of much of the data that have been produced by 30 years of monitoring efforts, the potential for training activities, and the special knowledge of the regional fauna that is shared

among the SCAMIT membership. Discussion followed about the issues of restricting information and obtaining certification. A condition of any NSF award would be that any products resulting from the project must be made freely available to all. SCAMIT would focus on the benthic invertebrate fauna of southern California, using the 4th edition of its taxonomic listing as a "backbone," and include ecological data as well as taxonomic data. Todd explained that it might be prudent to first contact agencies to identify the most appropriate source of funding, given the nature of the project, and then apply for a small grant in support of planning and the completion of a full proposal. Todd noted that it would be worthwhile to begin considering details now for the submission of a proposal in 2006.

Shelly Walther suggested talking with Karen Stock of OBIS (Ocean Biogeographic Information System). Ananda pointed out that "SCAMIT needs to decide what SCAMIT wants to do", not what other agencies might want us to do. It was asked if the executive committee has discussed a NSF proposal. Cheryl replied they have discussed this project and the executive committee did not want to make a decision for such a large project by themselves. They want the input of members. All members present at today's meeting were in favor of proceeding with this proposal.

It was decided that a committee needed to be formed. Dean Pasko added that he felt this committee should be committed to both the proposal and taxonomic certification. It was agreed that the committee will consider the relationship between these issues; however, it is important to start on the NSF proposal first. The volunteers for the committee are: Todd Haney, Kelvin Barwick, Dave Montagne, Dean Pasko, Tony Phillips, Rick Rowe, and Shelly Walther. The committee will hold its first meeting Monday, January 24th, at 9:30 a.m. at SCCWRP.

Next Cheryl suggested a change for the newsletter. Perhaps the newsletter should be published bi-monthly, and there are several reasons to support this change. It would save time and money (postage). Also, it takes time to get feedback for the minutes and to produce voucher sheets and other taxonomic tools, so allowing 2 months to do this would lead to newsletter production in a timely manner. For important information that needs to be distributed soon, members can use the list-server or website.

After lunch, Don initiated a discussion about provisional species in databases. We questioned whether any existing databases include provisional species and how we might include ours. SCAMIT has many provisional species and dealing with these is part of our goal. This led to a suggestion by Lisa that SCAMIT should publish more species descriptions. It was commented that Mas Dojiri had a workshop on just this topic several years ago. Members were reminded that SCAMIT has some money for publishing, specifically for page charges and illustrations.

We moved on to our next item, Recruitment/ Training. This committee consisted of Lisa Haney, Megan Lilly, and Shelly Walther. One suggestion was development of a power point presentation that can be shown to classrooms and outreach programs and perhaps on the website. The presentation would include information about SCAMIT and the science of taxonomy. Lisa Haney volunteered to produce the presentation, and she will present a draft at the June SCAMIT meeting. Another suggestion was sponsor a prize for a science fair project that has similar interests as SCAMIT.

Shelly Walther reported back on her efforts concerning Advocacy of SCAMIT. She contacted Dr.Vicki Pearse, editor of Invertebrate Biology to discuss the idea of SCAMIT starting a journal on alpha-taxonomy of the Southern California region. Dr. Pearse felt that such a journal would not be inclusive

enough. It was suggested that SCAMIT members submit manuscripts to the journals Southern California Academy of Sciences and Zoological Taxa. Along those same lines, it was suggested that we schedule a SCAMIT meeting on electronic publishing of manuscripts.

Cheryl passed along a tip for posting taxonomic tools such as images and keys. Please e-mail Jay Shrake (our webmaster) directly to have him post it on the website. Cheryl also reported that Jay is looking into finding a new web host, and the officers should get together with Jay to discuss this.

The next topic of discussion was the SCAMIT library. The library currently resides in Don Cadien's office and consists of approximately 12 boxes of reprints. We discussed different ideas about what to do with the library. It was agreed that it is not getting used much, if at all, and that most of the reprints are duplicates of what exist in our own libraries. The idea of selling it was put forth which was then followed by the question whether it is worth someone's time to catalogue it first. This Hurculean task has since been accomplished by Don Cadien and John Miller of LACSD. Members will get first choice at purchasing reprints (probably $1 each), and the remainder will be sold in one batch. Don agreed to pick a day for members to peruse the library.

Shelly initiated a discussion on the topic of un-SCAMITized provisional species. It was proposed at the first Future of SCAMIT meeting that they be tackled and made into SCAMIT species. It was pointed out that many provisional species only have one or two specimens to represent the species, and SCAMITizing these may not be appropriate. Rick suggested that people should at a minimum get some documentation out to other taxonomists via the Taxonomic Tools section of the website. Lisa suggested the Taxonomic Tools section be split into two sections, "SCAMIT Species" and "Works in Progress".

And with that the meeting was adjourned for the day.

SCUM DROPPINGS

The Ninth annual SCUM meeting took place on 22 January 2005 at the San Diego Lab, hosted by Kelvin Barwick. As usual things were informal. After introductions we had presentations from several people including a report on multiannual population changes at a deep water site in the central pacific. Jim McLean gave us an update on his progress and expected publication dates for his two volume treatment of the mollusks of the NEP from Mexico to Puget Sound (Vol. 1) and from Puget Sound to the Russian Arctic (Vol. II). These will complement the recent bivalve monograph of Coan, Valentich Scott & Bernard. A number of workers gave us brief synopses of their recent work. Kelvin gave a presentation on the work of the Wastewater Lab that stimulated a good discussion of waste disposal. One of the attendees showed us a most remarkable artifact he had snagged on one of our offshore banks. It was about 6-7 feet tall, and unfortunately not alive when taken. It was a black coral skeleton of very bush like appearance. There were interesting mollusks and corals attached to this colony, and many gave it close scrutiny (see cover photo). We had a nice lunch and then were given a facilities tour by Kelvin. After a group photo folks dissolved into smaller groups for separate discussion.

In a fairly unlikely case of serendipity a paper describing the black coral, whose skeleton we had a chance to examine, came out in Zootaxa. It is available as a free downloadable PDF document and is titled: Opresko, Dennis M. 2005. A new species of antipatharian coral (Cnidaria: Anthozoa: Antipatharia) from the southern California Bight. Zootaxa 852:1-10 (available from www.mapress.com/zootaxa/content.html)

SCUM (Southern California Unified Malacologists) meet but once a year in January to reconnect, find out who's up to what, and generally hobnob with fellow mollusk enthusiasts. Anyone interested in attending the next meeting should contact Dan Geiger at the Santa Barbara Museum of Natural History, who will host the meeting next year.
Don Cadien (CSDLAC)

JOB OPPORTUNITY

The Santa Barbara Museum of Natural History is seeking a database specialist to develop and implement an online database of specimen and taxonomic data on California beetles. Responsibilities will include enhancing an existing MS Access database, porting data to MS SQL Server, developing a web interface for secure database access, and applying biodiversity informatics community standard protocols (DiGIR, XML) to permit database interoperability with other online services. The position requires thorough understanding of relational databases, including MS Access and MS SQL Server, Structured Query Language, OBDC standards, the use of XML to transport data between database systems, protocols for providing database access online, and web page construction, including HTML, PHP, JavaScript, CSS, and web ready imagery.

This is a full time, temporary position lasting up to one year. To apply send resume and description of qualifications, including URLs of online databases previously implemented to Human Resources - CDS, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Rd., Santa Barbara, CA 93105.

A more detailed job description is posted at

www.sbnature.org/visitors/hr.php.

For additional information email Dr. Michael Caterino at mcaterino@sbnature2.org.
Michael S. Caterino
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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 at their e-mail addresses:

President	Kelvin Barwick	(619)758-2337	kbarwick@sandiego.gov
Vice-President	Leslie Harris	(213)763-3234	lharris@nhm.org
Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Cheryl Brantley	(310)830-2400x5500	cbrantley@lacsd.org

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.

The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

Application for Student Participation

Second International Marine Bivalve Workshop

Kungkraben Bay, Thailand

21 August to 4 September 2005

In July 2002, a two-week field workshop on marine bivalves was held in the Florida Keys (see http://peet.fmnh.org/Workshops.html). Students worked one-on-one in research teams with some of the world's leading marine bivalve experts, culminating in a series of joint publications in a dedicated issue of the internationally recognized journal, *Malacologia* (see http://peet.fmnh.org/Images/Cov1.pdf and http://peet.fmnh.org/Images/Cov4.pdf).

We are pleased to present, again in association with our U. S. National Science Foundation grant from the Partnerships in Enhancing Expertise in Taxonomy (PEET) program (http://peet.fmnh.org), the Second International Marine Bivalve Workshop (IMBW2). This event will be held as part of "Marine Molluscs of Kungkraben Bay, Thailand," being organized by Drs. Kashane Chalermwat and Pichai Sonchaeng (Burapha University), Dr. Fred Wells (Perth, Western Australia), and us.

Kungkraben Bay is located in the Ta Mai District in Chantaburi Province (12°32'N to 12°41'N, 101°52' to 101°57'E), 230 km southeast of Bangkok, west of the city of Chantaburi. The area is part of a Royal Conservation Project in the northern Gulf of Thailand, and was not affected by the devastating tsunami last December. The bay is 4.6 km long and 2.6 km wide, with a fringing mangrove forest 30-200 m wide on the inner bay side, and up to 20 m high. The mangroves are mixed, with *Rhizophora, Sonneratia, Avicennia* and other genera occurring. Much of the bay dries during spring tides. The center of the bay is soft sediment with a variety of sediment sizes, ranging from fine muds to coarser sands. Two species of seagrass are found in small quantities in the center of the bay. The deepest part of the bay is 8 m. The headlands are both rocky, with a diverse assemblage of molluscs. The outer margins of the bay are sandy shores, with a fisheries research station on the eastern shore. A small coral reef occurs in shallow water near the shore about 1 km south of the fisheries station. In addition to operations originating from shore, we plan to also have a limited amount of trawling from commercial fishing boats and some diving.

As previously, the emphasis of IMBW2 will be on the taxonomy and anatomy of selected shallow-water bivalves. Students will again be paired with practicing bivalve researchers, with the goal of producing publishable peer-reviewed manuscripts. We hope also to include presentations by the participating scientists, invited guests, and by each student on the research conducted at the workshop.

Full student funding for the workshop will be provided to selected candidates, including assistance with air transportation to and from Bangkok and the workshop fee (which includes basic accommodation (at Chanthaburi Campus of Burapha University), meals, local transportation [land and sea], laboratory space, limited lab equipment, and collecting permits). Travel visas and medical insurance are the personal responsibility of each participant.

Requirements are a bachelors-level degree (masters preferred), proficiency in English, the ability to swim (preferably to snorkel; scuba diving is optional and dependant on certain conditions), a willingness to work long hours in field collecting and laboratory work, plus a strong interest and career goals in organismal biology and malacology. Prior experience with marine bivalves is useful but not required – one of the goals of the workshop is expose new students to this field of malacology.

There are 4 available slots for students from outside Thailand (an additional 4 for Thai students will be chosen by separate panel in Thailand – we will forward Thai applications accordingly). Your application must include:

- Up-to-date Curriculum Vitae, including full name, institutional address, academic status, phone number, and email.
- Description of your prior experience with marine invertebrates and/or mollusks, plus a statement of your interest in participating in the workshop and how it can advance your research goals (max. 5 pages).
- One supporting email or letter of recommendation from your major advisor or another professional who is familiar with your record and abilities.

Send all materials (email submission strongly preferred) to Dr. Mikkelsen (address and email below). All materials must be received **by 20 March 2005**.

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Southern California Association of
Marine Invertebrate Taxonomists

February, 2005 **SCAMIT Newsletter** Vol. 23, No. 10

SUBJECT: **TBA**

GUEST SPEAKER:

DATE: **TBA (the 9 May Polyclad Flatworm meeting with Tony Phillips has been postponed; periodically check the website for upcoming meeting announcements)**

TIME: **9:30 a.m. to 3:30 p. m.**

LOCATION:

Rudilemboides stenopropodus
photo by D. Pasko, CSD

FEBRUARY COROPHIID WORKSHOP

John Chapman distributed his bibliography for Light's Manual, complete with references to all citations for each species listed in the Amphipod chapter. He also distributed draft keys for the families Corophiidae, Isaeidae, Ischyroceridae, Aoridae, Ampithoidae, Podoceridae, Ampeliscidae, Phoxocephalidae, and Haustoriidae for beta-testing by the participants. He's hoping for feedback and corrections and/or additions from us all.

During the initial discussion/introduction and summary of the project, several problem taxa were mentioned.
John believes that *Sinocorophium japonicum* (Hirayama 1984) *(=Corophium volutator japonica* Hirayama 1984) may be the same as *Corophium multisetosum* Stock 1952.

He also suspects that *Pachynella lodo* J. L. Barnard 1964 and *Pachynus barnardi* Hurley 1963, are the same species, and represent male and females. His perception is due to the overall similarity in body and gnathopods of these two and to his experience of always finding them together in samples. Protandry in lysianassoids has been established for various species. Don Cadien will discuss this later in this newsletter.

The reliance of presence/absence of seta to distinguish species of *Jassa* (see Conlan 1989, 1990) is questionable since *Jassa* (and many ischyrocerids) have complex life histories that affect morphology (e.g., the number of females present in a population affects male morphology).

Over the next two days, reviews of specimens and Light's Manual chapters produced some of the following conclusions:

Corophiidae

Specimens of *Hirayamaia mortoni* (Hirayama 1986) from Gray's Harbor (originally identified by Dean Pasko) were reviewed and considered to be *Monocorophium acherusicum* (Costa 1857). The potential mis-identifications resulted from a urosome without lateral notches. The absence of this notch lead to the conclusion that uropod 1 was "mainly" ventrally inserted, leading to the generic identification of *Hirayamaia* using the key in Bousfield and Hoover (2002). *Monocorophium,*by contrast, is defined as having a notch for the lateral insertion of uropod 1. Images were taken of the two contrasting conditions, and in the end, there was general agreement that the Gray's Harbor specimens possessed a urosome where the lateral notch was not apparent. However, John Chapman explained that those genera with truly "ventral" insertions of uropod 1 have urosomites with upturned lateral margins (e.g., *Laticorophium*). Initial review of *H. mortoni* at the meeting indicated that it had a very similar spine pattern to that of *M. acherusicum*. Dean will review additional specimens to verify this and report on his results.

Specimens from Gray's Harbor and the Bight'03 survey previously identified as *M. acherusicum*, *M. insidiosum* (Crawford 1937), and *Americorophium salmonis* (Stimpson 1857) were taken through John's key, and the identifications confirmed. The characters that John employed included patterns of antennal spination, among others, and were generally easy to interpret. For example, several closely related species that tend to co-occur (*M. acherusicum*, *M. insidiosum*, *M. uenoi* (Stephensen 1932), and *A. brevis* (Shoemaker 1949)) can all be separated by the pattern of spines that line the ventral margin of antenna 2.

Several specimens of *Corophium heteroceratum* Yu 1938, were also reviewed. Jim Roney brought some specimens from LA Harbor originally identified as *Sinocorophium* sp. These were large specimens that were originally considered to have fused urosomites. Upon re-examination, those involved determined that the ursomites were separate, and the specimens then easily keyed to *C. heteroceratum*. These large specimens showed an additional, distal tooth on the inner margin of antenna 1, article 1. Other specimens of *C. heteroceratum* from San Francisco Bay had a single tooth located mid-way along the length of the article. Carol Paquette brought specimens from Long Beach Harbor that also had one tooth, except for one relatively large specimen that had a distal "bump" that was interpreted as being an emerging process/tooth. Chapman maintains that the genus *Sinocorophium* erected by Bousfield & Hoover is invalid and must be ignored.

Phoxocephalids

Dean commented that he questioned the validity of *Foxiphalus cognatus* (J. L. Barnard 1960). LACNHM specimens identified as *F. cognatus* were considered late Monday

evening. The first lot (Lot 81925, BF-1) included two specimens that turned out to be *Rhepoxynius* sp (not taken further) and *F. golfensis* J. L. Barnard & C. M. Barnard 1982. The second lot (Lot 81921, BF-1) included a single specimen of *F. obtusidens* (Alderman 1936). Dean contends that there has not yet been a "true" *F. cognatus* identified in samples from southern California other than the original. Barnard and Barnard (1982) commented that upon reexamination of the holotype, *F. cognatus* differed from *F. similis* (J. L. Barnard 1960) by the smaller epistomal cusp and a stouter displaced spine on the molar, adding: "…but no other qualitative differences are apparent." Every lot of *F. cognatus* that Dean has seen at the LACNHM (several have been examined), and every specimen reviewed as part of the three regional sampling efforts, have turned out to represent other species, and most commonly *F. obtusidens* with slightly produced but pointed epistomes. The holotype of *F. cognatus* was reviewed and commented on by SCAMIT in October 2001 (see SCAMIT NL Volume 20, No. 6).

Foxiphalus obtusidens and *Majoxiphoxus major* (J. L. Barnard 1960) were considered. Museum specimens identified as *F. obtusidens major* were examined and compared to others identified as *F. obtusidens*. The "major" specimens were significantly larger than the largest *F. obtusidens*, although some equally sized specimens were found and compared. A couple of distinguishing characters were confirmed. *M. major* has a maxilliped palp with an "inflated" article 2 relative to *F. obtusidens* and the illustrations that John selected for Light's Manual clearly showed this difference. Additionally, the placement of a pair of plumose setae on the telson differed. In *M. major* these setae are positioned extremely basally on the telson–approximately one setal length from the base–and hidden by the upward (dorsal) extension of urosomite 3 that surrounds the base of the telson. In *F. obtusidens* the setae are positioned much further away from the base of the telson and beyond urosomite 3 extensions.

Ischyroceridae

Ischyrocerus anguipes Krøyer 1838 and *I. pelagops* J. L. Barnard 1962 were reviewed by Ron Velarde and John. *I. anguipes* is distinguished by few (3–5) large teeth, plus the large slightly re-curved imbedded distal spine on the outer ramus of uropod 3. In addition, *I. anguipes* has a uropod 3 outer ramus that is 1.5 times the thickness of the inner ramus. *I. pelagops* was found to have 6–8 smaller teeth on the outer ramus of uropod 3, a smaller distal, imbedded spine that was nearly straight, and the two rami were similar in thickness. John feels that these two species are equivalent to the *Ischyrocerus* sp A and sp B of Barnard (1967).

Some members of the group needed clarification of what distinguishes *Jassa* from *Ischyrocerus*. John described *Jassa* as being a stout, squat *Ischyrocerus*. *Jassa* is distinguished in possessing a stout, distinctly hooked spine imbedded in the outer ramus of uropod 3 and several irregularly sized teeth. There was no discussion of *Microjassa* or *Neoischyrocerus* during the workshop (see Conlan, 1995 concerning these two genera in the NEP). Several *Microjassa* are included in the new key, but *Neoishyrocerus claustris* (J. L. Barnard 1969) does not fall within the geographic coverage of Light's Manual.

Aoridae

The *Protomedia articulata* "complex" was considered. After some discussion, review of the literature and specimens from CSD, it was determined that males can reliably be identified using the key in Conlan (1983), while the females were currently indistinguishable. Jim Roney pointed out the utility of the tooth on the inner margin of coxa 2 of male *P. prudens* J.L. Barnard 1966, (see Conlan 1983: Figure 15,

whole animal, page 31; couplet 6, page 26). This process is absent in *P. articulata* J. L. Barnard 1962. Several lots of CSD specimens were examined, and all but the smaller, immature males possessed this tooth on coxa 2. What members need to do now is find samples with male *P. articulata* (or other species) accompanied by females and compare the females for differences that may be used to distinguish the species. Jim also pointed to the differences between *P. articulata* and *P. prudens* and relationship of antenna 1, article 3 relative to article 1. In *P. articulata*, article 3 is greater than half the length of article 1 (see Conlan 1983: page 27 and Figure 12, page 28), where as in *P. prudens* article 3 is distinctly less than one-half of article 1 (see Figure 15, page 31, and diagnosis, page 33).

In an email correspondence, Sandy Lipovsky of British Columbia said that she finds male *P. articulata* and *P. grandimana* Brüggen 1905. John C. commented that he believed *P. grandimana* to represent a late-stage *P. fasciata* Krøyer 1842. However, a quick review of Figures 13 and 14 (Conlan 1983: pages 29 and 30, respectively), revealed that *P. grandimana* has stout spines on uropod 3 where *P. fasciata* has thin setae. Perhaps Sandy can help resolve these questions.

Aoroides secundus Gurjanova 1938 collected by CSD during Bight'98 were reviewed and confirmed using John's Aorid key and figures supplied by Lisa Haney and Don Cadien. *A. secundus* can be distinguished from the other species included in SCAMIT Ed 4 Species List (i.e., *A. columbiae* Walker 1898, *A. intermedia* Conlan and Bousfield 1982, *A. inermis* Conlan and Bousfield 1982, *A. exilis* Conlan and Bousfield 1982, *A. spinosa* Conlan and Bousfield 1982, and *Aoroides* sp A SCAMIT 1996) by the absence of a distal process on uropod 2 peduncle, and the combination of setal bundles on the dorsal margin of article 5 of male gnathopod 1, which is also wider than the basis. This combination (setose article 5 wider than the basis) is unique among the six species recorded in SCAMIT Ed 4 or described in Conlan and Bousfield (1982) (See Figure 11, page 95). *A. secundus* was also contrasted with *Aoroides* sp A, which has a very reduced inter-ramal process on uropod 2 that is difficult to see and sometimes interpreted as being absent. *Aoroides* sp A differs by the absence of setae on the anterior margin of article 5 on male gnathopod 1 and an article 5 that is equal in width to the basis. In addition, *Aoroides* sp A is unique in having a mandibular palp article 2 that is bare and uropod 3 rami without stout spines.

Jim Roney brought specimens of *Rudilemboides stenopropodus* J. L. Barnard 1959 for review. These specimens represented males that were larger than those used in the original description and show a distinct widening of the basis in males. This character was not noted by J. L Barnard in his original description (Barnard in J. L. Barnard and Reish 1959), and caused these specimens to be originally designated as a provisional species (*Rudilemboides* sp HYP1) during Bight'98. Specimens of *Rudilemboides* sp A SCAMIT 1998 were also considered. It is distinguished by the single large tooth on articles 5 and 6 of male gnathopod 1. Unfortunately, however, the females of the two species remain indistinguishable, although *R. stenopropodus* is largely a bay species found no deeper than 20 m, while *Rudilemboides* sp A is a coastal shelf species found between 25–270 m. A voucher sheet for the species is available at the SCAMIT website, taxonomic tools section.

Isaeidae

After polling those in the room about their usage of his key to SCB *Photis*, Dean said that he would go through with a planned revision that will update problematic characters, incorporate editorial suggestions from past users, and include a couple of additional provisional taxa.

THE SECOND DAY

On the second day, before we considered the corophioid revision, Vice-President Leslie Harris presented a very interesting report on her recent activities in Fiji. Her class for University of the South Pacific and Natural Resources staffers was well attended and received. Over the five days of the class/ workshop the students had a fairly thorough review of the living appearance of reef related invertebrates through Leslie's extensive collection of live photographs (her own, as well as some from the internet), spent several days in the field collecting, and spent several days in the lab working up their samples. Much remains for future interactions, but the group was both receptive and enthusiastic. One of the most important possible outcomes of such trips by highly trained taxonomists and field ecologists, is the training of a local cadre of workers to participate in further information gathering. Local expertise is of great value, and superior to intermittent visits by foreign specialists.

The ARMs (Artificial Reef Modules) deployed there last year were partially harvested this trip. They had a very different type of inhabitant than seen when these structures were previously deployed in the British Virgin Islands. Much of the difference resulted from the amount of silt input into the bay by erosion from the highlands. This is the same type of effect expected with the large construction project planned for the Bay, but has already been going on for many years. In consequence there are high volumes of suspended silt in some areas, and the cavities of the ARMs were largely silted in. Only in the reference site least affected by siltation was the community relatively normal, with high diversity and biomass.

The hosts took very good care of the researchers, who had welcoming or celebration dinners and kava ceremonies every time anything happened. It is surprising anyone could get work done. The rainy season made transport a bit of a problem too, but enough people can push a Land Rover out of the mud.

MEYERS AND LOWRY 2003

Meyers and Lowry's 2003 re-arrangement of the Corophiidea was considered. Don first presented a table of how the proposed reclassification would affect the SCAMIT Ed 5 species listing. Few of the members were happy with the proposed changes. Among other criticisms, such as having over 50% of identified clades based on homoplasy, the paper was generally criticized for not being very representative of natural variation within a group (i.e., not including more than one taxa per genus), and not being wholly representative of the taxa that comprise various families and genera used in the analysis. Todd Haney, with the help of Regina Wetzer, re-entered the data matrix used in Meyer and Lowry's publication and performed a second analysis. Todd presented the results of this abbreviated analysis (short run time) in the form of an unrooted strict consensus tree rather than a most parsimonious tree. Their analysis differed in some significant ways from that presented by Meyers and Lowry, although both shared the same high level clades. In short, adoption of the proposed re-classification was considered premature. It is a provocative preliminary analysis, albeit, with well supported major clade structure. It should be confirmed or modified by reanalysis using broader taxon sampling in poorly represented clades, and with a reconsideration of characters used. The dominance of characters which reflect convergence in the analysis renders the results difficult to interpret with confidence. Other characters with less ambiguous phylogenetic information should be sought. Perhaps inclusion of molecular data in a combined evidence analysis could circumvent

the character convergence problem. This preliminary analysis gives us plenty to consider as we await further attempts at resolution of this thorny issue. At the least we should give thought to the well supported caprellidan clade which included the ischyrocerid, photid, isaeid, cyamid, podocerid, dulichiid, and neomegamphopid clades (among others) along with the caprelliid clade.

Another recent cladistic analysis of a large infraordinal group of families by Serejo (2004), who analyzed the talitroideans, can fruitfully be compared with Myers and Lowry. Comparison of the degree of homoplasy and how it influences the analysis may be of value in deciding how much is too much.

At the end of the workshop on the 15th, John Byrne (CSDMWWD), distributed a new key to the *Bathymedon* of southern California and Dean Pasko (CSDMWWD) distributed a key to the species of the *Monoculodes* complex recorded by SCAMIT member agencies. We all look forward to applying these new tools to our specimens.

ARE *PACHYNUS* AND *PRACHYNELLA* THE SAME SPECIES?

D. Cadien, CSDLAC

Further consideration of John Chapman's suspicion that *Pachynus barnardi* Hurley 1963 and *Prachynella lodo* (J.L. Barnard 1964) were conspecific is warranted. First of all, those present at the workshop other than John did not share his experience that the two always occur together. Quite the contrary, our recollections were that they almost never occur together. This will need to be checked against past data before it can be confirmed.

The literature on protandrous hermaphroditism in lysianassoids is not voluminous. Evidence is best presented by Lowry and Stoddart (1986), and deals with the conicostomatin group, a small portion of the overall lysianassoids. Lowry and Stoddart (1997) also mention protandry as a possible explanation for the presence of two male morphs of their new genus and species *Eclecticus eclecticus*. They conclude that while this may represent a case of protandrous hermaphroditism, the evidence is not yet available to support such a judgement. They place *Eclecticus* among the Lysianassidae *sensu stricto*, in the Lysianassinae. While the family level analysis of the lysianassoids discussed by Lowry and Stoddart 1983 is not yet finalized a number of working "groups" which may eventually be recognized as family - or subfamily-level taxa are in use. The conicostomatins is one of these. Since the case for *Eclecticus* is not proven, the conicostomatins are the only group with established life history patterns of protandrous hermaphroditism. Neither *Pachynus* nor *Prachynella* are within this group. They are instead in the pachynid group (Lowry 1984). The closeness of relationship between the various groups of lysianassoids has yet to be determined, but this group is treated as a full family by Myers, McGrath & King (2005) (see www.amphipoda.com).

Lowry (1984) subdivides the pachinids into two groups based on the nature of the terminal spines on maxilla 1. *Pachynus* falls into one group, and *Prachynella* into the other. The genera *Sheardella* and *Drummondia* are most closely related to *Prachynella* on the basis of maxilla morphology, and both have elongate bodies, but this elongate body morphology also occurs in the other group (e.g. *Figorella*). It remains possible that the present taxonomy reflects too much splitting on too insignificant grounds, and that different sexes of a single species may have been placed in different genera. None of these animals have been sampled in large numbers so that a clear idea of developmental trends between molts can be traced. The hypothesis John suggested can only be definitively disproven by demonstration of females having the morphology of *Pachynus barnardi* and females having the morphology of *Prachynella lodo*, or the equivalent for males. This awaits the time to revisit past

collections and seek such animals. If some reader finds the material to show that the morphology of these two is not related to sex, please notify both John Chapman (john.chapman@oregonstate.edu), and Don Cadien (dcadien@lacsd.org).

A follow-up note will be prepared once collections have been revisited and evidence has been tabulated regarding occurrence and sex of individuals taken by local agencies. Don Cadien (CSDLAC)

DENSE LIVING

Tom Parker – CSDLAC

Infrequently invertebrate specimens will contain endoparasitic or symbiotic polychaetes. Martin and Britayev (1998) authored a major work on these and other polychaete symbiotic relationships.

Parasitic *Drilonereis* specimens (Oneonidae) are sometimes collected while buried inside and also partially extruded from their host worms. Typically these parasites are found in Cirratulidae hosts such as *Aphelochaeta* sp. They are striking, as their body size is often equal to or greater than their host worm. This condition was illustrated and discussed in the SCAMIT voucher sheet of *Drilonereis* sp A from newsletter volume 16 (10). Taxonomic identifications of these specimens have been uncertain due to the morphological changes that occur when a worm migrates to its free-living condition. Poulin (2001) also examined the changes in body size and segmentation density of endoparasitic oneonids. From his observations, Poulin concluded that endoparasitic forms have more segments and smaller segments than free-living oneonids. Attached at the end of the newsletter is an image of a *Drilonereis* specimen making its debut from a novel host species (Fig. 1). This parasite is emerging from the paraonid worm, *Aricidea* (*Acmira*) *horikoshii*. Posteriorly there is a second burst site in the host body wall. Also included is an image of a *Drilonereis* emerging from a sabellid host, *Chone mollis* (Fig. 2).

Hartman described the polychaete *Capitella capitata ovinocola* as living clumped inside gelatinous egg masses from squid. A recent collection of squid eggs contained dozens of the nereid worm, *Platynereis bicanaliculata*. This is likely the first record of a squid egg mass habitat for *Platynereis*. Attached is a photograph of one specimen with an unhatched squid (Fig. 3). Also included is an image of this nereid's distinctive notosetae (Fig. 4). When alive, these worms were observed actively moving thru the gelatinous material inside the squid egg mass.

JOB OPPORTUNITIES

Larval Fish Taxonomist - Preliminary Position Description

Mote anticipates hiring a larval fish taxonomist in the coming months. The position may be needed as early as April 2005. This is a full time position including fringe benefits and will be offered for a minimum of one year with additional years possible depending on annual performance evaluation and funding. Salary rate will be based on a senior biologist rate and will be commensurate with experience. Must have either a Masters degree or a Bachelors degree with at least 1 year of experience working with ichthyoplankton and other zooplankton. Applicant must be either a U.S. citizen or U.S. resident with a valid green card.

Responsibilities include supervision of plankton collections in southwest Florida bays and estuaries and at power plants. The successful applicant will need to be familiar with plankton sampling techniques, laboratory sample sorting and identification protocols for collection, enumeration and identification of local estuarine ichthyoplankton and some larval stages of commercially or recreationally important invertebrates. Other duties include

the supervision of plankton sorters, identification of ichthyoplankton and selected zooplankton to the lowest possible taxon, selected zooplankton measurements, and enumeration. Familiarity with data entry, flowmeter calibration, and a basic statistical background very helpful.

Mote Marine Laboratory is a private nonprofit 501(c)(3) research and educational institution located in Sarasota, Florida. Normal laboratory hours involve an 8 hour day from 8:00 am to 5:00 pm with an hour lunch from 12:00 pm to 1:00 pm. Field work may involve some overnight work and odd hours. Must be available to travel frequently to sampling sites and have or be able to obtain a valid Florida drivers licence.

Applicant must be able to trailer and operate a small outboard boat and be able to lift all sampling gear, pumps, and samples.
Contact: Karen Burns
Mote Marine Laboratory
1600 Ken Thomson Parkway,
Sarasota, Florida 34236
(941) 388-4441x236, Fax (941) 388-4312
kburns@mote.org

Paleontology Collections & Teaching Position

The Santa Barbara Museum of Natural History is collaborating with a private school in an effort to create a "museum school" that endeavors to inspire in students a passion for science through hands-on engagement.

Students will work with collections and scientists on the full range of collections care and research activities that typically occur in natural history museums. In this context, we are looking for a dynamic paleontologist who, besides his/her research ambition, also has a genuine interest in working with high school students and fully engage them in his/her work.

The ideal candidate should have a Ph.D. or be very close to having finished his/her dissertation. Specialization within paleontology is open, though it would be helpful if the candidate could pursue some field research in the American West. The candidate should have a background and experience in collection management and curation.

The school is interested in recruiting quickly and looking for a candidate who would be available immediately or as soon as possible. Interested candidates should contact:
Karl Hutterer, Executive Director
Santa Barbara Museum of Natural History
2559 Puesta del Sol Rd
Santa Barbara, CA 93105
Phone: (805)682-4711 ext. 101
Fax: (805)569-3170
E-mail: khutterer@sbnature2.org.

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

SCAMIT OFFICERS:

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Treasurer	Cheryl Brantley	(310)830-2400x5500	cbrantley@lacsd.org

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.

The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org. Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

“Dense Living” - T. Parker, Associated Figures

Figure 1. *Drilonereis* emerging from *Aricidea* (*Acmira*)*horikoshii*

Figure 2. *Drilonereis* emerging from *Chone mollis*

Figure 3. *Platynereis bicanaliculata* with an unhatched squid

Figure 4. Notoseta of *P. bicanaliculata*

Southern California Association of
Marine Invertebrate Taxonomists

March, 2005 **SCAMIT Newsletter** Vol. 23, No. 11

SUBJECT:	**Crustacea - Part II**
GUEST SPEAKER:	**Discussion Lead - Dean Pasko**
DATE:	**13 June 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**City of San Diego EMTS Lab**

Stomphia vinosa
Collected off Santa Rosa Island, July 04
Photo by D. Cadien, LACSD

14 MARCH MINUTES

We held a brief business meeting as Megan Lilly was the only officer present. The idea of an "on-line auction" situation for the sale of the SCAMIT library, versus having a "first come, first serve basis" sale was discussed. Some people felt an auction would allow people more of a chance to purchase the literature they wanted. However, this idea was not adopted and the library will be sold as originally promised to the members.

Nick Haring mentioned that a new coral had been discovered in the SCB (Opresko 2005). John then showed us how to use his 3-D viewer to examine photos in the "Scleractinia of the Temperate North Pacific" (Cairns 1994). John claimed this is "the" paper to use when trying to ID local corals.

We then proceeded into another room where John showed us a power-point presentation entitled, "New Anthozoa from Bight 03 and other interesting Cnidarians". A CD of the

presentation was given to a representative from each agency present. A printed version of the presentation will not be made available through the newsletter, as printing it in color would be cost prohibitive. The presentation is referenced frequently in the following minutes and readers are encouraged to either download a version from the Taxonomic Tools Section of the SCAMIT website or contact John Ljubenkov or Megan Lilly to receive a copy.

The first animal to be discussed was *Stomphia vinosa* (McMurrich, 1893). This animal was originally seen by Don Cadien (LACSD) and was being referred to as simply the "lozenge anemone" for its appearance after being trawled up from depth. However, once relaxed in water, the animal takes on a different and characteristic look (see cover photo). It has a very wide foot that is reminiscent of a skirt around the base of the animal. There is an initial bare zone around the oral disk and then a series of inner tentacles which are longer than the outer series. This animal was originally seen from the Albatross material.

Stephanauge annularis Carlgren 1937 was the next animal to be viewed. John showed photos of the animal wrapped around gorgonians, as well as living on *Boreotrophon bentleyi*. It is also commonly found on plastic snack-food containers and other bits of trash. John felt, from his experience with the animal, that it had a decided preference for "cheese crackers with peanut-butter filling"… This little pink anemone is fairly distinctive with its bumpy surface and pedal disk that flattens out and covers or wraps around whatever object on which it is living.

Next up was a strange, undescribed anthozoa, Actiniaria sp 10. One thing to look for is the presence of a capitulum. It also has distinctive mesenteries which John said were consistent in appearance. There was some concern over confusing it with *Halianthella* sp A as the external appearance was very similar. The tentacles of Actiniaria sp 10, however are located near the anterior end of the animal, even after preservation. In *Halianthella* sp A the tentacles are located approximately half way down the length of the animal due to the fact that it possesses a long scapulus which is capable of retraction; a character not shared by Actiniaria sp 10. To date, it has been collected in 75m and 160m.

John reviewed Actiniaria sp 49, which is better known as the "brown tent" anemone. This animal is usually easy to recognize because of its distinctive flat nature and if viewed ventrally is transparent. Most members present had seen it as it's been collected occasionally in southern California in rocky substrate on the outer shelf.

The familiar *Pentactinia californica* was discussed next. This large (up to 3 cm as an adult) gravel/sand covered anemone, with a physa, is fairly recognizable, although some of us present expressed our concerns about confusing juveniles (or fragmented individuals; a common condition) with large specimens of *Halianthella* sp A. However, there are differences, the primary one being that *P. californica* has 10 mesentaries (5 pairs) whereas *H.* sp A has 12 (6 pairs) and the body wall of *P. californica* is thinner and less muscular. *P. californica* enjoys coarse sediments, often with shell debris present.

Speaking of *Halianthella* sp A, it was up next for examination. We were reminded that there is often a purplish color associated with the tentacles (after preservation). It is one of our more common anemones and one that most people felt fairly comfortable identifying (although perhaps not as much after the meeting…read on for more details).

Staying in the mode of *Halianthella* John has erected a new one – *Halianthella* sp B (Actiniaria 109). It is fairly distinctive looking and consistently has a strange "ruffled" margin. It gets up to 4cm in length. It was found fairly shallow – 23m and 45ft. However, Dean Pasko, Megan Lilly and Shelly Walthers, all agreed

that they would have leaned towards calling this animal *Zaolutus actius*. It was large, white, semi-rugose, and had many tentacles which were pigmented internally. John assured us it was not *Zaolutus*, but we weren't all totally convinced.

We then reviewed *Anemonactis* sp A. This animal has distinctive capitate tentacles, numbering 12-16 even at larger sizes, and has a rugose column. An animal that can be similar in appearance is *Zaolutus actinus*, but this animal usually has 20 or more tentacles and they are not capitate.

John found a strange little Edwardsiid anemone present in large numbers in some of the WEMAP samples from Morro Bay. They are variable in nature and John has yet to put together a description of them.

An animal that caused a bit of a stir (this happened a few times during the day) was *Gonactinia prolifera*. It is the simplest anemone in the order Actiniaria. It has 8 mesentaries in a "bag" with a few large tentacles. It is found shallow, 10-15m, and is a recent exotic introduction to the area and is doing well, thanks. The uproar was that Megan and Dean (both CSD) felt that they could confuse it with a juvenile *Zaolutus*. Although the tentacle count was less (8-12?), there were little "purplish spots" within the tentacles, as seen in *Zaolutus* and the overall gestalt of the animal was similar (white column which was papillated exteriorly). One interesting aside however is the tentacles of *Gonactinia prolifera* are non-retractile, which I don't believe is the case for *Zaolutus*.

There were two strange anthozoans examined next, Zoanthidea sp A and Zoanthidea sp B. They are small and encrusted/cemented with sand and forams. Internal examination via a longitudinal section of the entire animal, shows them to be mostly empty internally with the exception of a few tentacles near the anterior end. The primary difference between Z. sp A and Z. sp B is the presence of a flattened base with a limbus in the former and a rounded base with no limbus in the latter.

Next up were the sea pens. The first animal to be discussed was *Virgularia* sp B. This animal is unique in that it has only 2-7 polyps per leaf as in *V. agassizii*, but the polyps are darkly pigmented as in *V. californica*. Another difference is that the pigment extends onto the leaf part of the rachis as well as the rachis itself. So far it has been collected at 46m on Island shelves.

Another undescribed *Virgularia* was discussed. John left the ID at *Virgularia* sp. This animal was collected in deeper waters, 800+ meters. The animal is white and there are only 2 polyps per leaf with the leaves arranged in sub-opposite pairs. There is just a slight staggering to their insertion on the rachis.

One of the more bizarre creatures of the day was *Pennatulacea* sp A. It was collected at 630m. It has only one polyp per leaf and has large, needle-like spicules throughout the flesh. Although the specimen collected is obviously a juvenile, John feels it is indicative of the adult form, which doesn't match anything we've previously sampled in the SCB.

To finalize the day, John quickly reviewed colonial hydroids that could be found on mollusk shells. Two of the more common species are *Leuckartiara octona* and *Rhizorhagium formosum*. They are differentiated on the basis of the location of their reproductive structures, with *L. octona* having structures on the hydranth pedicel and *R. formosum* having structures on the hydrorhiza. For more information on this, see the SCAMIT NL Vol 23 no. 1&2 (a compendium newsletter).

That ended the discussion and the morning. After breaking for sandwiches outside we returned for a round of "taxonomy wrestling" in which we all took turns staring at anemones

and arguing about the identifications. Like I always say, "anemones bring out the best in people". Dean Pasko and Megan Lilly, in particular drove John crazy by trying to call everything either *Zaolutus actinus* or *Halianthella* sp A. Although, it must be said, that Shelly Walther, LACSD, agreed with us on a few specimens and would have identified them the same way if left to her own devices. John was able to usually win the argument, but not without some effort. He had us "mostly" convinced by the end of the day.

The cnidarians are a difficult group at best and meetings such as this are necessary to keep us all on the same taxonomic page.
- M. Lilly

CANDIDATE STATEMENTS

(The following candidates were just recently nominated at May's meeting, but I'm "time-traveling" and including their statements with this newsletter in order to get us back on track for elections...sort of...)

PRESIDENT
Kelvin Barwick

I graduated with a B.S. degree in wildlife and fisheries sciences from Texas A&M University in 1983. Currently I work for the City of San Diego's Ocean Monitoring Program as a marine biologist/taxonomist. My taxonomic specialties are Mollusks and Polychaetes. In the past I have worked both as an independent taxonomic consultant, and for private environmental consulting firms, accumulating over 14 years experience in invertebrate taxonomy. I have been an active participant in SCAMIT for over 10 years and served as its Secretary in 1991-1992. I hope to continue to develop our goals and plans for the future.

VICE-PRESIDENT
Leslie Harris

Collections manager of the Allan Hancock Foundation Polychaete Collection, at the Los Angeles County Museum of Natural History. Ongoing research centers on taxonomy of the polychaete fauna of pacific North America, polychaete-algal associations (especially in *Macrocystis*), introduced species, and Caribbean reef polychaetes.

SECRETARY
Megan Lilly

Graduated from Humboldt State University in 1991 with a B.S. in Marine Biology. From 1991-1993, worked at the Santa Barbara Museum of Natural History where the taxonomy of marine mollusks was studied. Currently working as a marine biologist for the City of San Diego's Ocean Monitoring Program. Specialties include echinoderms, miscellaneous phyla and mollusks with an emphasis on cephalopods.

TREASURER
Cheryl Brantley

Cheryl is a marine biologist with the County Sanitation Districts of Los Angeles County. She has worked for the Districts for over 16 years, primarily as a polychaete taxonomist. She graduatedwith her B.A. degree in Aquatic Biology from the University of California, Santa Barbara in 1985. She has formerly served as Secretary of SCAMIT from 1994-1998.

JOB ANNOUNCEMENTS

Please peruse the three job announcements that are attached at the end of the newsletter. All three positions are located within southern California.

BIBLIOGRAPHY

Cairns, S. 1994. Scleractinia of the Temperate North Pacific. Smithsonian Contributions to Zoology no. 557.

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 at their e-mail addresses:

President	Kelvin Barwick	(619)758-2337	kbarwick@sandiego.gov
Vice-President	Leslie Harris	(213)763-3234	lharris@nhm.org
Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Cheryl Brantley	(310)830-2400x5500	cbrantley@lacsd.org

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SCAMIT
C/O The Natural History Museum, Invertebrate Zoology
attn: Leslie Harris
900 Exposition Boulevard
Los Angeles, California, 90007

San Diego Stream Team
Position Announcement

Background
The San Diego Stream Team (SDST) is a San Diego County-based non-profit organization dedicated to monitoring water quality in local creeks and streams using California Rapid Bioassessment protocols. The SDST mission is to increase citizen involvement in stream monitoring and produce quality data to address water quality problems.

Position Title
Program Coordinator

Position Definition
The Program Coordinator will perform various technical and administrative tasks related to the coordination of a citizen-based rapid bioassessment monitoring program, using benthic macroinvertebrates (BMI) as indicators of water quality. The successful candidate will lead the coordination of sampling activities, develop and disseminate event information and maintain records and reports. This position will report to the Board of Directors.

Primary Job Duties
Typical tasks and essential skills required of this position are as follows:

1. Perform outreach duties related to specific program needs and volunteer/intern recruitment.
2. Prepare, recruit and train volunteers in approved sampling techniques and protocols.
3. Coordinate biological assessment workshops for citizen monitors.
4. Coordinate field sampling crews in the collection and handling of BMI samples.
5. Coordinate laboratory sample processing of BMI samples.
6. Purchase supplies and equipment needed to conduct sampling and processing.
7. Coordinate posting of information on the San Diego Stream Team website.
8. Prepare public dissemination documents including newsletters, press releases and event announcements.
9. Compile, compute, review, present and analyze data in an organized fashion
10. Maintain records and financial data to track project costs.
11. Present to public and private groups the SDST mission, its goals and needs
12. Additional duties as directed

Experience
Experience in coordinating the activities of a non-profit organization is required. Experience in bioassessment is helpful, but not necessary. Successful candidate will have a working knowledge of Microsoft Office programs to manage data, generate reports, and produce presentation and promotional materials. (Word, Excel, Explorer, Power Point)

Compensation
This is a part-time, temporary position at 20 hours per week for 24 months at a rate of $23 per hour.
Additional grant funding may extend the position and increase hours.

Contract and Application
The full contract period is 24 months beginning approximately June 2005 at 20 hours per week with contractor working from their personal home. Employee will be provided with a computer and compensated for internet and telephone service. Personal transportation will be provided by the employee and compensated for mileage. Some evening and weekend hours are required.

Applicants should send a cover letter, resume and names of three references by 5:00 PM, June 1, 2005 to:

Email: sdstreamteam@earthlink.net
Or by FAX to: 760-940-1347
Or by MAIL to: Lilian Busse
13330 Portofino Drive
Del Mar, CA 92014

STAFF ENVIRONMENTAL SCIENTIST OR ENGINEER
AQUATIC FOCUS

Anchor is seeking an Environmental Scientist or Engineer to work in its San Diego or Irvine, CA office. The position will provide expertise in sediment management and support in permitting of maintenance dredging and natural resource projects in Southern and Northern California. Other responsibilities include managing tasks from beginning through completion; sediment and water collection field work; report production and coordination; assisting in the development of new work opportunities; and general project administrative duties associated with a small office. Qualified candidates will be interested in being a part of a growing office, and be able to function independently and proactively with minimal supervision. Master's degree is preferred with 3-5 years related work experience. A chemistry or biological background, knowledge of sediment testing regulations (Green Book, ITM, PSDDA), CEQA/NEPA and/or sediment remediation concepts is a plus.

Anchor is an environmental science and engineering consulting firm. We offer an excellent benefits package including employer-sponsored health care, 401(k) + match, and Incentive Pay Program. Please email your resume and salary requirements to careers@anchorenv.com with *Irvine/San Diego Staff Environmental Scientist/Engineer* in the subject line.

www.anchorenv.com

We are an Equal Employment Opportunity Employer

IRVINE SR. ENVIRONMENTAL PROFESSIONAL
AQUATIC FOCUS

Anchor is seeking a full-time Senior Environmental Professional to work in its **Irvine**, CA office. Technical expertise may be in sediment management, aquatic toxicology, waterway engineering, or natural resources. In addition to managing projects and clients, the position is responsible for business and staff development as part of a geographic expansion of our Seattle-based company. Candidates should have a minimum of 8 -10 years experience and a Masters. Strong leadership and communication skills are a must.

Anchor is an environmental science and engineering consulting firm. We offer an excellent benefits package including employer-sponsored health care, 401(k) + match, and Incentive Pay Program. Please email your resume and salary requirements to careers@anchorenv.com with *Irvine Sr. Environmental Professional* in the subject line.

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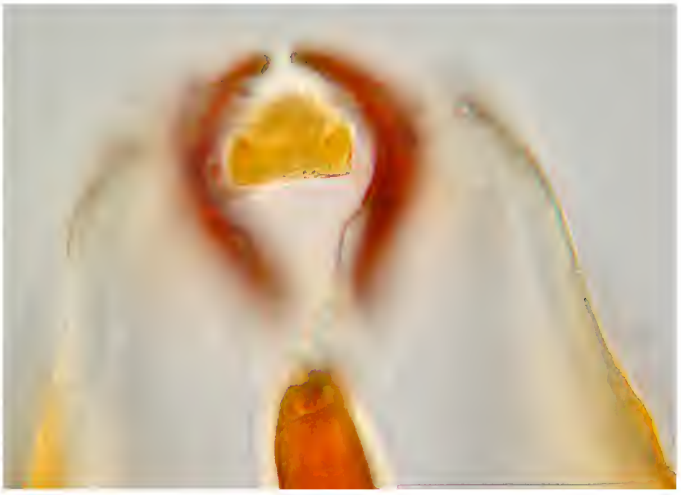
Southern California Association of
Marine Invertebrate Taxonomists

April, 2005 **SCAMIT Newsletter** Vol. 23, No. 12

SUBJECT:	**Echinoderms, with special emphasis on Spatangoida**
GUEST SPEAKER:	**Boris Savic**
DATE:	**11 July 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**Los Angeles County Museum of Natural History Worm Lab**



Triangular plate and jaws from the radula of *Falcidens longus*. 400X. Photo by K. Barwick.

SUMMARY MINUTES OF APRIL 2005

Aplacophore Mollusks of the 2003 Regional Monitoring Survey of the Southern California Bight - Kelvin Barwick (CSDMWWD) and Don Cadien (CSDLAC)

Survey design of the benthic infaunal portion of the Bight '03 Coastal Ecology program included stations below 200m. Previous regional programs have not included sampling with this depth range. In consequence members of the molluscan class Aplacophora were very infrequently encountered. Their infrequency was reflected in a lack of interest in their specific level identification. Only one aplacophore species level taxon could be reliably identified by Bight '98 program participants, *Limifossor fratula*. All other taxa were lumped under Chaetodermatidae.

The group is more difficult to work with than most mollusks because its members lack a shell. These are the "worm-mollusks", elongate animals which possess a radula and bear dermal scales (or spicules) of aragonite rather than a shell. Most local taxonomists have not expended much effort in their identification, since they are relatively rare. It was our goal to produce a tool to provide reliable and definitive identifications based on external features. Hopefully we have succeeded, although radular examination remains necessary in some cases to provide confirmation of identifications based on external body features.

Within the next month we will be publishing the results of our work. It includes: twenty pages of introductory text with color illustrations, 16 voucher sheets with accompanying color plates, and an extensive bibliography. Because of the need to use color it will be a published as a SCAMIT supplement on a CD-ROM available to the hard copy members. As always electronic members will be able to download it from the web site. Additional copies of the CD will be made available at cost.

SCAMIT DATABASE COMMITTEE

SCAMIT's Database Committee has been active since it was formed last January. The Committee originally consisted of seven members, each with an interest in designing a database schema and computer-based taxonomic tools for SCAMIT. It currently is comprised of 10 individuals, representing five agencies, and has met monthly since February. The Committee's progress is outlined as follows:

1) Currently, members are improving upon a third draft of a database schema, which is represented as a detailed, annotated Visio-based flowchart. The Taxonomic Listing currently serves as the core of the database, and the design incorporates modules that would include everything from interactive taxonomic keys, nomenclatural information and ecological data. One module that is being designed, referred to as Assessment Tool Support, would permit users to calculate "biointegrity indices" that have proven helpful in making regulatory decisions regarding water quality.

2) Additionally, the Taxonomic Listing (4th ed.) of 2,174 species has been digitized and soon will be made available on SCAMIT's website in a form that will be searchable.

3) Using both of the above as centerpieces for discussion, members are reaching a consensus on both the design of the desired database and the set of taxa that should be included in the initial phases of the project.

4) Members have met with a representative of OBIS and have defined mechanisms for collaboration with that more global initiative.

5) The members actively are seeking funding for the development of the database and taxonomic tools. Such monies are needed for the professional services of computer science specialists and, in large part, as compensation for the content that will be provided by marine invertebrate taxonomists. SCAMIT has submitted a preliminary proposal to a funding agency for $350k, which if awarded, would cover an initial two-year effort to make data and extensive tools available on-line for 25% of the taxa included in the Taxonomic Listing. Additional funding opportunities have been identified, so members are elaborating upon the first proposal with the intent of submitting a second request for funding in late June.

For additional information, contact a SCAMIT officer or Todd Haney (haney@ucla.edu).

SEEING VISUAL CUES IN THE NEWS

Accurate visual inspection of specimens is at the heart of original taxonomic description and any subsequent identification of additional specimens. Many SCAMIT members have re-examined type material and discovered an author had somehow overlooked a different

taxonomic feature in a few of the paratype specimens. This results in some paratype specimens being removed from the original listing and transferred to a different or even a new taxa name. During QA/QC reviews of regional survey specimens, some counts of species will be slightly modified when it is confirmed that a few specimens of a particular taxa were incorrectly identified when a key feature was not initially recognized.

These changes to taxa listings or data records are usually considered an error without explanation. Why do these kind of errors seem to occur so widely across many decades of taxonomic research and regardless of the taxonomists involved? Speculation may conclude that technology has improved the ability to inspect specimen morphology and thus previous errors are detected during specimen comparisons. Possibly there may just be some undefeatable background error that has to be controlled in magnitude.

In the May 26, 2005 issue of *Nature*, researchers Wolfe, Horowitz, and Kenner describe how the rarity of a visual target in a series of inspections impacts the accuracy of recognizing the target's presence. Through a series of experiments they demonstrate that " if observers do not find what they are looking for fairly frequently, they often fail to notice it when it does appear". Even with special incentives to discourage errors, almost all errors were "misses" of targets that were present and rarely were errors detections of the target when it was absent.

The rate of error is tied closely to the prevalence of the visual target in the sample. If a target's prevalence (number of targets) is 50 %, failure to notice it was measured at 7%. Consistently, as the target's prevalence was reduced and made more rare, the error rate of misses increased. A visual target with a 10 % prevalence results in 16 % error, while a prevalence of 1% produced errors of 30%.

When mixing three different visual targets at common (44%), rare (10%), and very rare (1%) prevalences; observers missed 11%, 25%, and 52 % of the visual targets.

Some of their results may help to explain the events acting on Type collections found to contain mixed lots of species; or re-examinations of taxonomic survey specimens resulting in updated final frequency values and taxa scores.
Tom Parker, CSDLAC

ELECTION

Attached at the end of this newsletter the reader will find the ballot for the election of 2005-2006 SCAMIT officers . I apologize for the tardiness of the distribution, but please take a minute to vote.

BIBLIOGRAPHY

Wolfe. J. M., T. S. Horowitz, and N. M. Kenner. 2005. Rare items often missed in visual searches. *Nature* Vol. 435 pp 439.

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BALLOT FOR SCAMIT OFFICERS 2005-2006

Vote for one (1) nominee for each office. Please mail or return the completed ballot to Leslie Harris by July 11th 2005. You may return it to the Secretary or other attending officers at the July meeting. The address to mail it to is:

Attn: Leslie Harris
Worm Lab
Los Angeles County Museum of Natural History
900 Exposition Blvd
Los Angeles, CA 90007

President – The president presides at all meetings and represents SCAMIT in external business affairs.

_____ Kelvin Barwick
_____ Write in: _____

Vice-President – The Vice-President chairs ad hoc committees, supervises the specimen exchange, tabulates election ballots, and fills in for the President as necessary.

_____ Leslie Harris
_____ Write in: _____

Secretary – The Secretary keeps minutes of the meetings, is responsible for the newsletter, and preparation of the ballots.
_____ Megan Lilly
_____ Write in: _____

Treasurer – The Treasurer collects dues, makes disbursements, keeps financial records, and makes an annual statement of the financial status of SCAMIT.
_____ Cheryl Brantley
_____ Write in: _____

2005-2006 SCAMIT Meeting Topics – Please suggest any topics you deem worthy of a SCAMIT meeting.

_____

_____