Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

May, 1994 Vol. 13, No.1

NEXT MEETING:	Nemerteans, Platyhelminthes, and Parvilucina (revisited)
GUEST SPEAKER:	none
DATE:	June 13, 1994
TIME:	9:30am - 3:00pm
LOCATION:	Cabrillo Marine Aquarium San Pedro, CA

JUNE 13 MEETING

The main goal of the June meeting will be to consider and attempt to standardize provisional names in the Nemertea and Platyhelminthes prior to sampling during the SCBPP. This will include any taxa taken from within the 10-200m zone examined in the pilot project, and not just taxa already on the SCAMIT Taxa List.

Please bring any voucher sheets you have created, and specimens, if possible, along with specimens of any taxa in these groups to which you apply names with uncertainty. It is intended that voucher sheets for provisionals will be duplicated and distributed at the meeting so that we are all prepared to recognize these species if we encounter them. If time permits we will return to the question of whether or not two distinct species of *Parvilucina* occur in our sampling area.

Cerebratulus lineolatus (from Coe 1905)

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

Announcement
(passed on by Tom Parker, CSDLAC)

A call was received from Mr. Zack Hymanson, a member of the California Coastal Commission staff, requesting volunteers to participate in resource evaluations for the Commission. They particularly need assistance in the southern California area with sessile biota of rocky substrata. Potential evaluations should be in intertidal, subtidal or wetlands habitats. If you are able to help them contact him @ (415)904-5253.

Call For Specimens

President Velarde received a request from Dr. C. O. Coleman in Germany for amphipod specimens in the families Argissidae, Hyperiopsidae and Vitjazianidae. He requires ten or more specimens from each family (location, species unimportant) to further his studies of functional morphology of the gut in amphipods. I can supply him specimens in the Argissidae (and will do so), but I can't help with the other two families. Specimens can be sent to Don Cadien at CSDLAC for forwarding, or directly to Dr. Coleman at:

Dr. Charles Oliver Coleman
Morphologie der Tiere
Fakultät für Biologie
Universität Bielefeld
P.O.Box 100131
D-33501 Bielefeld
Germany

Adoption of SCAMIT Taxa List Nomenclature

Please recognize that there are database ramifications of adopting the nomenclatural base of the SCAMIT Taxonomic Listing for use in continuing programs. Immediate adoption may not be the best option. The list contains numerous changes, and once adopted will require that some data bridge be constructed to allow connection of the old and newly modified taxa names. At CSDLAC we change the name in the historic database to conform to current usage. Other methods are also workable.

MINUTES FROM MEETING ON MAY 9

Dr. Jodi Martin, curator of Crustacea at NHMLAC, gave a workshop on biological illustration. He outlined several methods of illustration. They are:

1) Grid
This method involves placing a specimen under a microscope that has a fixed ocular grid in it. Enlarged graph paper is then used to draw on. By drawing the image a square at a time an accurate illustration can be achieved. This method works well for animals that are flat, like amphipods, but is very time consuming.

2) Wall projector
This method involves using a special wall projector that attaches to a microscope and projects the image of the animal from the microscope to the wall. This helps to see details better and then the organism can be more accurately traced. The major drawback of this method is that you need to have access to a wall projector.

3) Photograph
Another general method that can be used is tracing from a photograph. The photograph could even be enlarged to see details or specific areas of interest. The drawbacks are the time involved to take and develop the photographs and the expense.

4) Camera lucida or drawing tube
This is probably the most common method used for biological illustrations. A drawing tube that attaches to a microscope and superimposes the image of your hand and the pencil in the microscope over the image of your subject, so you can trace the animal on to paper placed next to the scope. This method is not always good for large animals because they have to be drawn in sections requiring movement and realignment of your paper.

Below are some **tips and techniques** suggested by Dr. Martin for use with a drawing tube.

1. The animal that you are drawing should be in some sort of liquid. The liquid not only keeps the animal from drying out, but helps reduce glare. Glycerol is the best. The animal will be more stationary in glycerol than alcohol. The animal must be completely covered with liquid or distortion will be evident around the high points.

2. The lighting of the subject and drawing surface must be balanced. It's best to set the light on the paper first and then adjust the lighting on the microscope, as needed.

3. The biggest problem with a drawing tube is parallax. This can be overcome by finding a medium point of focus and drawing as much as you can without readjusting the focus. If you shift the focus between different body parts their proportions will be altered. For areas that are slightly out of focus draw points to indicate lengths and draw the general outline of the area and wait to fill in the detail later away from the drawing tube.

4. Before making your drawing you should consider the size. The drawing shouldn't be larger then twice the intended published size. This is because detail will be lost when it is reduced.

5. The drawing tube can be very tiring and causes eye strain if used for more than an hour or two. Because of this Dr. Martin finds it very useful to take lots of notes directly on the drawing paper and use these to help him fill in the detail later. He also finds it easier to only draw one side of a seta, hair, or spine to show the length and point of insertion and later, when away from the drawing tube, he fills in the other side. Be careful not to draw in structures that aren't there, like broken setae. If a structure is broken or missing it should be drawn that way. This is especially important when referring back to the specimen after the illustration has been completed and published.

6. You might want to consider drawing only diagnostic body parts, instead of the whole animal. This might save a great deal of time, especially if the whole animal is not needed for scientific purposes.

7. Dr. Martin prefers to draw the first image on xerox or photocopy paper with a regular #2 pencil and then he traces over it in ink.

8. And last, but not least, Dr. Martin feels it is much more important to be accurate and fast on any scientific illustration, than aesthetically pleasing.

After the first image is drawn Albanene tracing paper size 11 x 14 can then be used to trace over the image in ink. Use either a rapidograph or some other sort of permanent ink pen. Dr. Martin prefers a pen made by Faber-Castel, which has a top that unscrews so tap water can be added to keep it from clogging. CSDLAC has found great success using Pigma Micron pens from BioQuip. They are available in a 6-pack nib size assortment from 005 to 08 for about $4.95. They can also be purchased separately. These pens are also great for labelling and are not only waterproof and fadeproof, but permanent in alcohol. Here is BioQuip's address and phone for those of you not familiar with it.

BioQuip
17803 LaSalle Avenue
Gardena, CA 90248-3602
Phone: (310) 324-0620
Fax: (310) 324-7931

(And for those of you wondering, neither CSDLAC nor SCAMIT are getting any kickbacks for this free advertisement. At least not yet.)

As for nib size Dr. Martin uses 000 and 0. It is not wise to go below a 000 because it will not reproduce well. The best suggestion is to find an ink pen you like that works with the paper you prefer and STICK WITH IT!

For mistakes made on an ink drawing White-out or Liquid Paper works great. Try to get it as flat as possible and be aware that it is very

absorbent and this could slightly change the diameter of your lines and points. White tape can be used if larger areas must be blocked out.

Dr. Martin cautioned SCAMIT members in the use of stippling in illustrations. It needs to be made clear in the illustration what the stippling has been used for, whether it is for contouring and shading or to indicate the coloring on the specimen. This can be done by using different size pens or by using cut-out stippling paper for the contours and an ink pen to indicate the pigment areas of the animal.
Also, the nature of the stippling could be directly stated in the text.

After the ink drawing is completed it is ready for mounting. This is done by using a spray adhesive. 3M makes one that is less sticky, allowing your drawing(s) to be repositioned if needed. After it is mounted it is wise to photocopy and reduce it to actual publication size. This allows you to see if it looks fine the way it will be published. Also, you should always compare your final drawing with the actual specimen to check for accuracy.

As for labelling, the journal of publication needs to be considered because often there are requirements or restrictions. The most commonly used alphabet sets are Chartpak and Letraset. However, a cheaper way to go is to use a laser printer and print out as many individual letters as needed and use spray adhesive to attach them.

Eric Vetter on leptostracans

In addition to the scheduled presentation by Dr. Martin, we were addressed by Eric Vetter (Scripps Institution of Oceanography) on his investigations with leptostracans. Eric distributed preprints of a paper describing a second species in the genus *Nebalia* from local waters. This paper has been accepted by *Crustaceana*, but will not be published for several years yet. In consequence we will not distribute the preprint with the newsletter (copies may be available from the author), and will refer to this new species as *Nebalia sp A* of SCAMIT until the paper is published. A SCAMIT voucher sheet for this taxon is in preparation, and will be distributed with the next newsletter.

Eric indicated that during his ecological investigations of leptostracans he had encountered three distinct species in our area. One of these is the taxon we have been calling *Nebalia pugettensis*. Eric suspects that this is actually a complex of forms, none of which fully correspond to the true *Nebalia pugettensis* of the Oregonian Province. They occur in extremely high densities in localized areas of organic enrichment.

The second species (*Nebalia sp A* of SCAMIT) is fairly easily differentiated from members of the *N. pugettensis* complex by the structure of the eye in both sexes. In *N. sp. A* the eye has a long supraorbital plate which extends out over the entire length (♀) or most of the length (♂) of the eye stalk. The eye itself is different in shape in sp. A, being flattened distally with a small inferior process and a large superior process flanking the flattened portion. It is also less heavily pigmented than in members of the *N. pugettensis* complex.

The third species occurs with "*Nebalia pugettensis*" in strongly organic sediments. It can be differentiated in the ♂ by the straight rather than strongly geniculate antennal peduncles. The females are not yet reliably separable.

Nebalia sp A is not attracted to strongly organic sediments, but can survive in them if placed there. It is also not attracted to baited traps which attract the other two species. *Nebalia sp A* is typically found (off La Jolla) in clean sandy sediments of relatively low organic content at depths of ca. 20m. It has also been taken off Palos Verdes to depths of 30m.

THANK YOU

Although President Ron Velarde and Treasurer Ann Dalkey are staying on for another term, two of our officers have stepped down, passing their SCAMIT duties to others. Our thanks to both Vice-President Larry Lovell and Secretary Diane O'Donohue for all the time and effort they put into maintaining and

improving the Newsletter, and our monthly programs. Even though they remain active members, they will be missed as officers.

Diagnostic Difficulties in Polychaetes and the Impact upon Species of the Genera *Pista* and *Glycera*

Thomas Parker
Marine Biology Laboratory
L. A. County Sanitation Districts

Observed differences in polychaete anatomy cannot always be reliably used as diagnostic characters for species distinction. Pleijel (1988) states that correct species level identifications are rare in many museum collections for the genus *Phyllodoce*. This is accounted for by reliance upon inadequate descriptions and that "determinations generally appear to be based on the traditions of different institutions." As a result "the characters used for separating the species in both keys and descriptions often merely add to the confusion."

Hilbig (1992) noted that the original description of *Glycera nana* was either incorrect or the treatment of a mixture of two species. Hartman (1950) synonomized *G. nana* with *Glycera capitata* based on specimen lots collected from northern and southern sites. Hartman additionally commented that if these were distinct species, the northern specimens would be *G. nana*, while the southern forms would be *G. capitata*. Hilbig has re-examined material and found them to be distinct species but opposite to the allocation suggested by Hartman. Thus the southern form specimens now belong to *G. nana* and the northern form specimens belong to *G. capitata*. Not surprisingly most current records for *Glycera* in Southern California have relied upon Hartman's earlier work and are therefore in need of change.

Identification of local *Pista* species also suffers from some diagnostic inadequacies. These difficulties are the result of confusion about the characters used for species diagnosis. Terminology and descriptions used for *Pista* in the literature are typically non-uniform and open to interpretation by the reader. SCAMIT (Vol.4. No.11) attempted to clarify the confusion surrounding some *Pista*. Characters used for diagnosis include presence or absence of numerous eyespots on the tentacular lobe, the size and shape of lappets on anterior segments, staining patterns, body shape, collection depth, branchial shape and structure, and the "handle" or shaft length on the thoracic uncini.

Emphasis in the literature (Hutchings and Glasby, 1988; Uebelacker & Johnson, 1984; Hobson & Banse, 1981; Hartman, 1969; Fauchald, 1977) has been placed on the use of branchia, lappets, and uncinal shafts as diagnostic characters. Various terms describe branchia. Unfortunately, this terminology is never defined and requires subsequent authors and readers to interpret what was the actual condition of the branchia and how it matches to the material they are examining. Terms such as branched, bushy, dendritically branched, plume shaped, clubbed, arborescent, tufted, richly branched, dendritically branched, and digitiform have all been relied upon as self-evident conditions. This level of non-uniform terminology obviously confounds efforts to produce reliable identifications.

The shaft length of the thoracic uncini has been routinely relied upon as less variable than soft tissue such as lappets or branchia. Confusion over diagnostic use of these shafts is now obvious. The early report by Moore (1923) describes the base of posterior thoracic uncini in *P. disjuncta* as a "delicate ligament." In a discussion on the generic characters of *Pista* and the contradictory descriptions of *Pista cristata*, Banse (1980) includes Day's (1967) statement that only uncini of the anterior thorax have posterior handles. However Banse later notes ". . . these elongations can usually be seen in the tori with double rows of uncini **only after macerating the dissected series of setae mechanically or chemically** (emphasis added); Therefore it is possible that the methods used by those authors failed to find the posterior handles." Glasby and Hutchings (1988) point out that most *Pista* species are known to possess long handled uncini in the anterior thoracic segments and that

most existing descriptions **do not include** (emphasis added) descriptions of posterior thoracic uncini. They speculate that "perhaps this feature is more widespread than appears." They describe long handled uncini as "pronounced chitinized shafts." Safronova (1988) commented: "The degree of chitinization of the setal (shaft) . . . is variable in both the genus and in species . . . (The degree varies with age in *P. bansei*) . . . this indicates that the taxonomic significance of this character . . . has been greatly overestimated."

Re-examination (shown below) of the original specimens used to create the SCAMIT voucher sheets for *Pista disjuncta* and *Pista* nr *disjuncta* reveals these specimens do not best fit these designations.

Specimen OC 60

size	70mm x 5mm
eyes	none
shafts	present and as long as head of uncini

Specimen OC 61

size	7mm x 1.5mm
eyes	present
shafts	present and approx. 2/3 as long as uncini head

Much of this problem arises from the method used to observe the uncinal shafts. Thoracic uncini dissected from the body wall often seem to possess little or no embedded shafts. The difficulty in viewing these handles clearly is the result of their being obscured by adjacent uncini and body wall tissue. Tightly packed double rowed uncini often are overlapped upon each other and obstruct viewing the base of the uncini. The refraction of light through soft tissue also seems to obscure the embedded shafts. However, if the same dissected fascicle is turned over on the microscope slide so the fascicle is viewed from the interior body wall perspective or fully dissected into individual uncini, then long handles are evident. Numerous dissections of uncini from *Pista disjuncta* specimens have shown that nearly all possess long straight uncinal shafts. Based solely upon the possession of long handled shafts on posterior thoracic uncini, these specimens better fit the published description for *Pista fasciata.*

Additionally, the use of descriptions based upon relative lappet size and shape, presence of eyespots, and general body dimensions and robustness have been attempted as diagnostic features of *Pista* species. Lappets listed in publications as large, small, subtriangular, elongate, short, well-developed, rounded, or reduced have all been applied by authors. SCAMIT emphasized lappet size and the degree of distal roundness or pointedness. Eyespots are more commonly seen in small specimens (<20 mm), but the degree to which they are seen in larger specimens is not known and they are uniformly absent from the largest specimens. These conditions need to be more accurately illustrated and critically evaluated against body size and shape before they are accepted as diagnostic conditions.

Little confusion exists for taxa with drastically unique morphologies (e.g. *Pista alata*). Diagnosis may be much more difficult for species such as *P. disjuncta* and *P. fasciata*. Their descriptions are based upon less distinct morphologies, inadequately studied characters, or poorly defined terms. Possibly all designations of *P. disjuncta*, *P. fasciata*, and *P.* nr. *disjuncta* have been applied to a sibling species group. It is also possible that all these designations have fallen into the trap described by Pleijel.

Knowlton (1993) comments that sibling species are common partly due to inadequate morphological studies. She also concludes that any single character is inadequate to reliably separate closely related species because such a character may be defining the species in one situation, but only represent a polymorphism in another situation. If we speculate that *Pista* diagnosis problems are the result of confusion over a group of sibling species, we are still left with published descriptions that do not match the names applied to specimens examined. As long as taxonomists are willing to rely upon one or two characters for attempted diagnosis of *Pista* species,

we must recognize what is currently the published description and re-examine material.

Though *Pista disjuncta* was originally described from Southern California material and *Pista fasciata* was described from the Red Sea, the current published description of *Pista fasciata* better fits the local material routinely referred to *Pista disjuncta*. It is recommended the name *Pista fasciata* be used for those specimens that are now commonly identified as *Pista disjuncta*. A more complete resolution to this diagnostic problem will require a re-examination of type or paratype specimens for contrast to local *Pista* specimens.

Recent review of both *Pista disjuncta* and *Glycera capitata* occurred as part of the process to create the newly issued species list from SCAMIT (1994). This review concluded that neither *G. capitata* nor *P. disjuncta* are currently valid names for this region.

Literature Cited

Banse, K. 1980. Terebellidae (Polychaeta) from the northeast Pacific Ocean. Can. J. Fish & Aquat. Sci. (37): pp 20-40.

Day, J. H. 1967. Polychaeta of South Africa. Sedentaria. Publ. Br. Mus. (Nat. Hist.) 656: 459-878.

Fauchald, K. 1977. The Polychaete Worms. Definitions and Keys to the Orders, Families, and Genera. LACMNH Science Series 28.

Hartman, O. 1950. Goniadidiae, Glyceridae, Nephtyidae. AHF Expeditions (15): 1-181.

Hartman, O. 1969. Atlas of the Sedentariate Polychaetous Annelids from California. AHF.

Hilbig, B. 1992. New polychaetous annelids of the families Nereididae, Hesionidae, and Nephtyidae from the Santa Maria Basin, California, with a redescription of *Glycera nana* Johnson, 1901.

Hobson, K. D. and K. Banse. 1981. Sedentariate and archiannelid polychaetes of British Columbia and Washington. Can. Bull. Fish & Aquat. Sci. (209).

Hutchings, P. , C. Glasby. 1988. The Amphitritinae (Polychaeta: Terebellidae) from Australia. Rec. Aust. Mus. (40) 1-60.

Knowlton, N. K. 1993. Sibling species in the sea. Annu. Rev. Ecol. Syst. (24): 189-216.

SCAMIT. 1994. A taxonomic listing of soft bottom macroinvertebrates from monitoring programs in the Southern California bight. Edition 1. 72 pps.

SCAMIT TREASURY SUMMARY, 1993-94

During the past fiscal year, April 1993 thrugh March 1994, the major expense was the newsletter for printing, postage, and supplies, $2314.32. The contract with SCCWRP for creating a list of southern California soft bottom species, awarded in January 1993, was completed and paid in full in December 1993. This money will be used for SCAMIT's publication support program. SCAMIT's secondary source of income, $1230.00, came from membership dues. The following is a summary of the expenses and income:

Expenses	
Newletter	$1856.90
Workshops	345.00
Miscellaneous	18.58
Total	**$2677.79**
Income	
SCCWRP Contract	$15000.00
Dues	1230.00
Interest	238.17
T-Shirts	14.00
Donations	0
Miscellaneous	60.00
Total	**$16542.17**
Account balances (March 31, 1994)	
Checking	$ 711.81
Savings	19782.72
Total	**$20494.53**

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

June, 1994 Vol. 13, No. 2

NEXT MEETING:	Sea Pens
GUEST SPEAKER:	Dr. Gary Williams of California Academy of Sciences
DATE:	July 11, 1994
TIME:	9:30am - 3:00pm
LOCATION:	MEC - Marine Ecological Consultants 2423 Impala Dr., Carlsbad (see map on pg. 6)

Ptilosarcus sp. (from Brusca 1980)

JULY 11 MEETING

This meeting will be on the biology of sea pens. The guest speaker will be Dr. Gary Williams of the California Academy of Sciences. All members interested in sea pens are encouraged to attend and bring along any problem specimens.

MINUTES FROM MEETING ON JUNE 13

This was the first of many intercalibration meetings for the SCBPP. These meetings should provide members involved with this project a chance to compare and discuss their findings to improve consistency of taxonomic

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

usage. At this meeting we attempted standardization of provisional names in the Nemertea and Platyhelminthes in preparation for the SCBPP sampling to take place next month. Representatives from several POTWs and consulting firms brought specimens and voucher sheets to the meeting to compare with each other. A few changes were made to the SCAMIT Taxa List and are noted below. Some voucher sheets for the provisional species on the SCAMIT Taxa List were distributed at the meeting. Interested parties who could not attend should contact the authors of the taxa for copies of these sheets. Authors of provisional taxa are listed in the SCAMIT Taxonomic Listing.

A technique essential for identification of both flatworms and nemerteans is that of clearing, or removing the opacity of the tissue. Using methyl salicylate (oil of wintergreen) seems to be the most common way of clearing in both these phyla. Taxonomists who commonly work with these phyla agree that typical squash mounts are insufficient for species level identification. There are three reasons for this: 1) without clearing, eyes cannot be reliably differentiated from glands and/or tissue granules; 2) genital structures cannot be seen without clearing; and 3) details of nemertean stylets cannot be seen in uncleared specimens.

Although oil of wintergreen is the most commonly used clearing agent, other aromatic oils including cedarwood oil, oil of clove, and bergamot oil can also be used. Regardless of the agent chosen the specimen must first be dehydrated in alcohol (with absolute alcohol as the last step) prior to clearing. Depending on the size and tissue density of the specimen it may be necessary to leave the specimen in the clearing agent for up to a day. For small, thin, or lightly muscled animals 45 minutes to an hour will probably suffice. The examination of the specimen must be done in the clearing agent, as transfer to another solution will rapidly render the animal opaque again.

As a result of the meeting two of the provisional taxa on the SCAMIT Taxonomic Listing have been further identified. Polycladida sp. H Phillips 1987 becomes a synonym of *Cryptocelis occidentalis*, and Polycladida sp. O of Phillips 1990 becomes *Acerotisa sp.*

POLYCHAETE WORKSHOP
JUNE 22, 1994

A one day workshop was held at the worm lab of the Natural History Museum of L.A. County. The guest speaker was Dr. Sergio I. Salazar-Vallejo from CIQRO in Mexico. He spoke about the professional history of the eminent polychaetologist, Dr. E. Rioja and the current status of Rioja's collection.

Dr. Rioja trained in Spain and was influenced by the work of Fauvel and other French researchers. Early in his career, Rioja erected the family Oweniidae and proposed the Order Sabellida. By the 1930's he had written extensively and published invertebrate texts, science books for children, and was actively involved in issues of science education. In 1935 he rose to the position of Minister of Education for Spain.

During the subsequent Franco revolution many highly trained Spanish citizens fled their country. By 1938, Rioja had immigrated to Mexico and was teaching high school biology. Soon afterwards he was also writing science text for Mexican publishers and also working as a part time researcher.

He made numerous trips to areas such as Acapulco and Vera Cruz and made faunistic surveys and observations. Many of these works supported the Fauvelian philosophy of cosmopolitan species and utilized existing European species names. He published papers on various families such as Serpulidae and Syllidae. In addition he investigated

phylogenetics. Near the end of his life he published an average of 11 papers per year.

For many years it has been assumed that Rioja's type specimens were lost or destroyed. Recently, his polychaete collection has been relocated. Unfortunately, Dr. Rioja did not voucher his type specimens and these samples will require re-identification and designation of neotype specimens.

Correspondence with Dr. Salazar-Vallejo is encouraged. His address is Dr. Sergio I. Salazar-Vallejo, Depto. Ecología Acuática, CIQRO, Apdo, Postal 424, Chetumal QR 77000, Mexico.

SCAMIT and the SCBPP

Members who have not been able to attend recent meetings are probably unaware that SCAMIT is intimately involved in the Southern California Bight Pilot Project (SCBPP) to be performed in the next 12 or so months. You may have heard the acronym before, or an associated one (EMAP), and not known what they refer to. I will briefly present what the project is, how it will be performed, who will perform it, and how SCAMIT is involved.

Regional Monitoring

For years regional monitoring in the Southern California Bight has been the Holy Grail of many agencies; desirable but unattainable. The recent recommendations of the National Research Council for adoption of regional monitoring as a means to reduce costs, while maintaining or increasing data utility, provided the impetus lacking in previous attempts. EMAP provided the last ingredient in the mix of need and desire for regional monitoring; a basic design and administrative framework which could be adopted without years of preparation. EMAP (Environmental Monitoring and Assessment Program) is an EPA program designed to gather basic data about all ecosystems (both terrestrial and aquatic) encountered in the U.S.A. It uses a standard statistical design; standardized sampling, sample handling, and analytical protocols; standardized data analysis; and comprehensive QA/QC procedures. Although EMAP is a national program, EPA has found it desirable to join with local agencies to pursue monitoring which meets national and regional goals simultaneously. This combination of forces is embodied in the SCBPP, an experiment to test the suitability of the EMAP model as a means of monitoring point and non-point source impacts in the coastal waters of the Bight.

Who's Involved

In December of 1993 a proposal outlining the SCBPP was submitted to EPA-ORD seeking EPA EMAP funds to support the project. Agencies involved in the preparation of this proposal (and in the project) were SCCWRP; EPA Region IX; The California State Water Resources Control Board (and Regional boards from Los Angeles, Santa Ana, and San Diego); and the four major dischargers into the Bight - The City of Los Angeles Bureau of Sanitation, The County Sanitation Districts of Los Angeles County, The County Sanitation Districts of Orange County, and the City of San Diego Metropolitan Wastewater Department. The proposal was adopted, and EPA funds were added to funds from the Santa Monica Bay Restoration Committee to contract services not to be provided by the participating agencies. Manpower and material to perform most of the field and laboratory activities are being provided by the staffs of the dischargers on a revenue neutral basis. In other words, the participating regulatory agencies have allowed the dischargers to redirect their current monitoring efforts to perform the sampling and analyses called for in the SCBPP proposal. EPA-ORD

is also involved as more than a funding source. Considerable guidance is being provided both by the EPA-EMAP staff, and by their contractor Versar. Numerous scoping/planning meetings have been held involving representatives of the four dischargers, SCCWRP personnel, EPA Region IX personnel, and Versar staff.

Purpose of the SCBPP

The project purpose is described in the proposal: "The ... SCBPP will apply EMAP assessment approaches to provide synoptic information about the ecological condition of reference, treated wastewater and nonpoint discharge areas on the mainland shelf. The SCBPP will evaluate the EMAP assessment approach as an alternative design for compliance monitoring programs. The SCBPP will also test EMAP indicators in an open coastal environment and will test indicators specific to the SCB that have not been used in EMAP studies to date."

Sampling Design

The basic sampling design is unmodified from previous EMAP use. In this design a hexagonal grid is placed randomly over a map of the sampling area, and one sample is obtained at a randomly selected site within each grid cell. The design allows subdivision of each hexagon to provide greater sample density in subpopulations of interest. Six subpopulations have been defined: 1) Geographic Zones - northern (Pt. Conception to Pt. Dume), central (Pt. Dume to Dana Pt.), and southern (Dana Pt. to Mexico); 2) Depth Zones - shallow (10-25m), mid-depth (25-100m), and deep (100-200m); 3) outfall areas of the four largest POTWs treated together; 4) outfall areas off the eleven largest stormwater discharges treated together; 5) Santa Monica Bay; and 6) Hyperion outfall area. About 40 samples are necessary within each of these subpopulations to achieve the desired precision goal. Sampling stations have been distributed to allow this goal to be met.

Although a number of abiotic parameters of both water and sediment will also be measured, the benthic biological monitoring (both infauna and trawled megafauna) is of most interest to SCAMIT members. Unreplicated benthic samples will be taken at 264 sites within the defined boundaries of the sampling area (10-200m depths in the open coastal zone between Pt. Conception and Mexico). One hundred and forty trawl stations will be occupied (from among the 264 benthic sites), and both fish and invertebrates will be identified, counted, weighed, and examined for disease and anomalies. Benthic infauna will be sampled with a Van Veen grab, trawls will be performed with a 7.6m otter trawl. Sampling will be performed between 11 July and 26 August 1994.

Quality Assurance and Quality Control

SCAMIT involvement (as an organization) with the SCBPP will be in the area of QA/QC. In addition to the adoption of the SCAMIT Taxonomic Listing of Soft Bottom Macroinvertebrates as the consensus taxonomic standard for the SCBPP, SCAMIT will be an integral part of the project's QA/QC plans. As part of the pre-analysis quality assurance effort taxonomists from the participating laboratories will be required to attend special SCAMIT/SCBPP workshops focusing on the taxonomy of troublesome groups, or those with numerous provisional species. These workshops are intended to promote uniform taxonomic treatment by the laboratories involved in the SCBPP.

Once sample analysis begins (in August), SCAMIT/SCBPP workshops will continue with at least monthly frequency to address taxonomic problems encountered with SCBPP specimens. Regular monthly SCAMIT meetings will be diverted to this end.

Although guest speakers may still present programs at these meetings, their main purpose will be examination of SCBPP problem taxa.

Meetings from August through at least December will be part of the quality control program of the SCBPP. These meetings form a mechanism for mutual assistance and information exchange among the taxonomists involved in the SCBPP. This is, in effect, only an intensification of the normal SCAMIT approach. After all samples have been analyzed and all problematic species have been dealt with in SCAMIT/SCBPP workshops, a synoptic data review will be performed. This review is intended to catch systematic differences between the participating laboratories which were not detected in a 10% QC exchange/reanalysis of samples.

SCAMIT Officers/Members Roles

As with other aspects of SCAMIT, our involvement in the SCBPP will be directed by the president. While the vice-president will be responsible for the SCAMIT/SCBPP workshops, the president will oversee involvement of SCAMIT members on taxonomic review teams, will nominate members to serve as expert referees in resolving differences between laboratories discovered during 10% QC reidentification, and will control the general level of SCAMIT involvement in the SCBPP. Although SCAMIT is a volunteer organization, the involvement of SCAMIT members employed by participant agencies/groups will be compulsory, as an aspect of the special (and temporary) modifications to their monitoring programs authorized by the regional water quality boards. I hope that others who are not usually able to attend meetings will take this opportunity to come to meetings and participate in the SCAMIT/SCBPP workshops. Just remember, specimens taken during the SCBPP will receive first attention at these workshops, problem specimens from other areas or programs will only be examined once all SCBPP related taxa have been discussed.

Those of us who will be involved in this program through our agencies are looking forward to it. We will be examining sites we have not visited previously, and expect to encounter some animals different from those we usually see in our monitoring areas. Should this demonstration be successful, the basic approach to monitoring used over the last 20+ years may eventually be changed. While it is very likely that location specific data associated with point source discharges will continue to be gathered, SCBPP type regional data will increasingly provide interpretive context.

Many aspects (and most details) of the SCBPP have not been addressed here. If you are interested in further information on this program contact either the Project Manager - Dr. Jeff Cross @ SCCWRP, 7171 Fenwick Lane, Westminster, California, 92683; or Dr. Mary Bergen (Benthic Infauna) at the same address (Phone 714 894-2222)..

Don Cadien, CSDLAC

NOMENCLATURAL CHANGES TO CALIF. AMPHIPODS IN AMPHIPACIFICA

The new journal *Amphipacifica* has provided us with a flurry of major revisionary regional monographs on amphipods. In both the first and second issues the emphasis has been on the families Pleustidae and Phoxocephalidae. The forms described and illustrated as variants of *Heterophoxus oculatus* (Holmes 1908) by Barnard (1960) are accorded specific status in the revision. This yields four possible species of *Heterophoxus* in southern Californian waters; *H. oculatus* (Holmes 1908), *H. affinis* (Holmes 1908), *H. nitellus* (Barnard 1960), and *H. sp. 1.* Other nomenclatural actions bearing

on southern California amphipod taxonomy are summarized below.

Pleustes depressus Alderman 1936 = *Thorlaksonius depressus* (Alderman 1936)

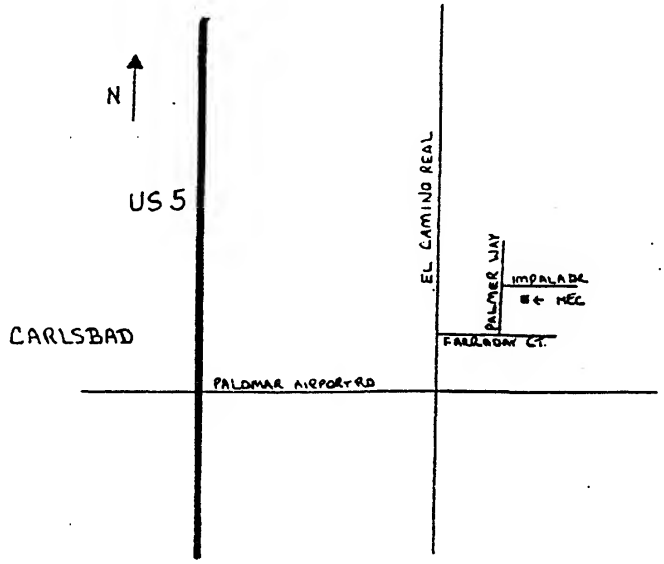
Pleustes platypa Barnard & Given 1960 = *Thorlaksonius platypus* (Barnard & Given 1960)

Foxiphalus major (Barnard 1960) = *Majoriphoxus major* (Barnard 1960)

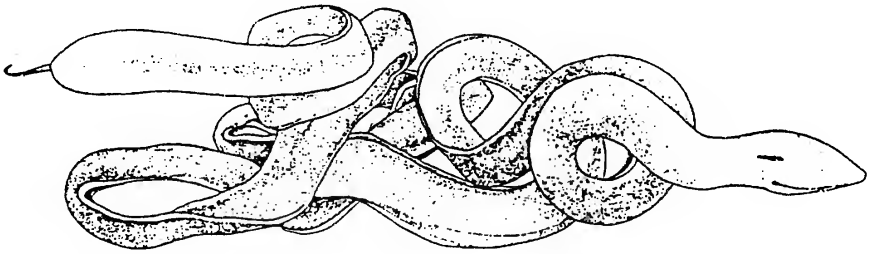
Eyakia calcarata Gurjanova 1938 [of Barnard 1960 & Barnard & Barnard 1981] = *Eyakia sp. 2* of Jarrett & Bousfield 1994

Paraphoxus oculatus (Sars 1879) [of Barnard 1960] = *Paraphoxus sp. 1* of Jarrett & Bousfield 1994

Parametaphoxus fultoni (Scott) [of Barnard 1960] = *Parametaphoxus quaylei* Jarrett & Bousfield 1994



Map to Marine Ecological Consultants (MEC)



Cerebratulus sp. (from Bayer and Owre 1968)

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619) 692-4903
Vice-President	Don Cadien	(310) 830-2400 ext. 403
Secretary	Cheryl Brantley	(310) 830-2400 ext. 403
Treasurer	Ann Dalkey	(310) 648-5611

SCAMIT Specialty List

This list includes all SCAMIT members and their areas of special interest. Members who are interested in consulting work are indicated by a "Y", those marked with a "N" are not.

Y Don Arnold
310 Harrison Ave
Cambell CA 95008
Crustaceans (West coast and Alaska)
H(408)378-1875
W(408)495-5300

Y Dr. William C. Austin
Khoyatan Marine Laboratory
4635 Alder Glen Road
Cowichan Bay BC V0R 1N0
Canada
Sponges, ophiuroids
( )748-5020 Fax( )748-4410

N Cheryl Brantley
LA County Sanitation Districts
24501 S. Figueroa Ave
Carson CA 90745
(310)830-2400
Polychaetes

N Mary Bergen
7171 Fenwick Lane
Westminster CA 92683
646 W Pacific Coast Hwy
(714)894-9222 FAX (714)894-9699
Holothuriods

Y Thomas Biksey
Baker Environmental Inc
Airport Office Park - Bldg 3
420 Rouser Road
Coraopolis PA 15108
(412) 269-6048
Polychaete intertidal-slope and rise

Y James A Blake
SAIC
89 Water Street
Woods Hole MA 02543
(508) 540-7882
Polychaetes

Y Sheila C Byers
Department of Invertebrate Zoology
Royal Ontario Museum
100 Queen's Park
Toronto Ontario M5S 2C6
CANADA
(416)586-8041
Polychaete taxonomy and conservation; marine invertebrate perservation

Y Don Cadien
LA County Sanitation Districts
24501 Figueroa Ave
Carson CA 90745
Crustaceans, molluscs
(310) 830-2400

N James T. Carlton
Williams College - Mystic Seaport
PO Box 6000
Mystic Conneticut 06355-0990
Biological invasions, introduced species, mollusc taxonomy
(203)572-5359

John Chapman
Hatfield Marine Science Center
Oregon State University
2030 S Marine Science Drive
Newport OR 97365-5296
(503)867-0100 FAX(503)867-0138
Internet HMSCdiro@ccmail.orst.edu

N Sherri Charter
3342 Karok Ave
San Diego CA 92117
(619)438-8968
Crustaceans and larval fish

Y Ernesto Calix
Marine Ecological Consultants
2433 Impala Drive
Carlsbad CA 92008
Crustaceans, mollusks, cnidarians
(619)931-8081

Y C. Allan Child
Dept Invert Zoology
NHB W323 Stop 163
Smithsonian Institution
Washington DC 20560
Pycnogonida, taxonomy and systematics, worldwide

N Faith Cole
Environmental Protection Agency
2111 SE Marine Science Drive
Newport OR 97365-5260
(503) 867-4023
Polychaetes

N Ann Dalkey
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310) 648-5317

N Greg Deets
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310) 648-5317
Parasitic crustacea, systematics and phylogenetic theory and methodology

Y Douglas Diener
3048 Rainbow Glen Road
Fallbrook CA 92028
(619) 728-1510
Crustacea, echinoderms

N Susan Dixon
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara CA 93105

N Dr. Masahiro Dojiri
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310) 648-5195
Crustacean systematics and pycnogonids

N Margaret Dutch
8540 Darwin Lane NW
Olympia WA 98502
Polychaeta

N Ross Duggan
Marine Biology Lab
4077 N Harbor Dr MS #45
San Diego CA 92101
(619)692-4900

N Jim Elliott
934 Birchview Drive
Encinitas CA 92024
Polychaete taxonomy, intertidal and subtidal ecology
H(619) 436-1291 W(619)294-9770

N Dr D V Ellis
Biology Dept
PO Box 1700
University of Victoria
Victoria BC CANADA V8W 242
Training taxonomists
(604)721-7106

Y Jack Engle
Marine Science Center
University of California
Santa Barbara CA 93106
Field identification and ecology of Channel Islands marine species
(805) 893-8547

N Martina Fanizza
8552 Oasis Ave
Westminster CA 92683
Mollusks and echinoderms
H(714)895-3904
W(714)962-2411 x3564

N April P Ford
Los Angeles County Sanitation District
24501 S Figueroa Street
Carson CA 90745
Polychaete and fish taxonomy
(310) 830-2400 ext 400

Y Allan Fukuyama
7019 157th St SW
Edmonds WA 98026
(206)745-3349
Mollusca taxonomy and ecology

N Cindy Fuller
MEC Analytical Systems Inc
2433 Impala Drive
Carlsbad CA 92009

N Susan P. Garner
University of Hawaii
Dept of Oceanography
Honolulu HI 96822
Peracarids

N Robin Gartman
1660 El Camino Real #G207
Encinitas CA 92024
(619) 632-8532
Polychaetes, echinoderms, water quality

N Marissa Gaumond
Kinnetic Laboratories, Inc
5225-H Avenida Encinas
Carlsbad CA 92008

Y Tom Gerlinger
PO Box 1225
Costa Mesa CA 92628-1225
H(714)241-7737 W(714)962-2411
Polychaetes, SCUBA, 24 ft boat,
"Making waves"

Y Robert Gilmour
Pentec Environmental Inc
120 W Dayton Suite A7
Edmonds WA 98020
(206)
Crustaceans

Y Fred Grassle
Institute of Marine and Coastal Sci
Cook College, Rutgers University
New Brunswick NJ 80903-0231
Polychaetes

Y Constance C Gramlich
4253 Mentone Street
San Diego CA 92107-1117
Subtidal ecological surveys of southern
California and northern Baja California,
collection and maintenance
(619)594-4676

Y Karen Green
MEC Analytical Systems
2433 Impala Dr
Carlsbad CA 92009
or 1537 Camino Corto
Fallbrook CA 92028
Polychaetes, sponges
(619)728-1510
(619)724-1819

Y Leslie Harris
Allan Hancock Foundation
University of Southern California
Los Angeles CA 90089-07321
Polychaetes, marine algae
(213) 740-5157

N Elizabeth Harrison-Nelson
MRC 163
Smithsonian Institution
Washington DC 20560
Amphipods
W(202)357-4675, H(703)451-4785

N Dr Irwin Haydock
11570 Aquamarine Circle
Fountain Valley CA 92807-3550
Rotifers, Marine Polyclad flatworms

Y Gordon Hendler
LACO Natural History Museum
900 Exposition Blvd
Los Angeles CA 90007
Echinodermata
(213)744-6391

Y Brigitte Hilbig
SAIC
89 Water Street
Woods Hole MA 02543
Polychaetes, especially Eunicida
(508)540-7882

Y Daniel A. Ituarte
10786 Cederwood Terrace #B
Santee CA 92071
Polychaetes, Crustacea
W(619)962-4900, H(619)562-9528

Y Howard R Jones
Marine Taxonomic Services
5125 NW Crescent Valley Dr
Corvalis OR 97330-9721
Polychaetes, Arctic Alaska to Central California
(503)753-7609

Y Kinnetic Laboratories Inc
307 Washington Street
Santa Cruz CA 95061
(408)426-3900 FAX(408)426-0405
Gary Gillingham, crustaceans (west coast and Alaska)
Jonathan Toal, crustacea, especially Harpacticoid copepods
Jay Shrake, see below for address and specialty

Y Roy Kropp
Battelle Ocean Sciences
397 Washington Street
Duxbury MA 02332
H(617)585-1865
W(617)934-0571
Arthropods

N Hans G Kuck
Crustacea
Natural History Museum LA CO
Los Angeles CA 90007
Crustacea (Decapoda, Stomatopoda)
Collection preservation, and management
(213)744-3450

Y Gretchen Lambert
Biology Department
Calif State University, Fullerton
Fullerton CA 92634
Ascidians, colonial and solitary
W(714)773-3481
H(714) 870-6327

Y Joseph A LeMay
Aquatic Testing Laboratories
2810 Bunsen Avenue Unit A
Ventura CA 93003
Bioassays

Y Sandy J Lipovsky
PO Box 1001
Royston BC V0R 2V0 Canada
(604)335-0714
Benthic invertebrate taxonomy, general

Y Linde Looy
#16-9324 128th Street
Surrey BC Canada V3V 6A4
Phytoplankton, periphyton, and zooplankton; fresh water and marine
(604)588-9738

Y John Ljubenkov
Marine Ecological Consultants
2433 Impala Drive
Carlsbad CA 92009
Cnidaria, others
(619)931-8081

Y Larry Lovell
1036 Buena Vista Dr
Vista CA 92083
(619)945-1608
Polychaetes

N Dr. Alan Mearns
NOAA/HMRAD
7600 Sand Point Way NE
Seattle WA 98115

N Thomas McDonnell
Brown & Caldwell
Marine Science Division
16735 Von Karman
Irvine CA 92714
Amphipods, Polychaeta
(714)660-1070

Y Tim Mikel
Aquatic Bioassay & Consulting Labs
29 N Olive Street
Ventura CA 93001
(805)643-5621
Misc taxonomy, bioassay, field work

N Dave Montagne
Los Angeles County Sanitation District
24501 South Figueroa Street
Carson CA 90745
Polychaeta, and diving surveys
(310) 830-2400

Y Nancy Mountford
Cove Corporation
SR 2 Box 10 Breeden Rd
Lusby MD 20657
(310)326-4577
(310)326-4767 FAX

N Ros Muller (415)842-0132
Beth Johnke (415)842-1570
U.S.A., Inc.
2003 Diamond Boulevard
Room 33282
Concord, CA 94520

N Arleen Navarret
Bureau of Water Pollution Control
3500 Great Highway
San Francisco CA 94124

N Diane L O'Donohue
City of San Diego
Marine Biology Lab MS-45A
4077 N Harbor Drive
San Diego CA 92101
(619)692-4900
Polychaetes

N Dr Larry C Oglesby
Department of Biology
Pomona College
Claremont CA 91711
Annelids, sipunculids, prosobranch gastropods
(714) 621-8000 x2950

N Tom Parker
Los Angeles County Sanitation Dist.
24501 S Figueroa
Carson CA 90745
Polychaetes

Y Dean Pasko
4918 N Harbor Dr, Suite 101
San Diego CA 92101
(619)692-4900
Hyperiida Amphipods

N Carol Paquette
MBC Applied Sciences
3040 Redhill Avenue
Costa Mesa CA 92626
Molluscs, arthropods, bryozoans
(714)850-4830
FAX (714) 850-4840

Y Tony Phillips
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310)648-5197
or 10151 Barbara Circle
Buena Park CA 90620
(714) 821-0412
All phyla

N Marine Biology Lab
City of San Diego
4077 N Harbor Dr MS #45
San Diego CA 92101

Y Patricia Pocklington
Arenicola Marine
19 Guy Street
Dartmouth, Nova Scotia
B3A 2P4 Canada
(902)464-0300
Polychaete taxonomy and distribution, NW Atlantic

Y Richard I Pratt
2112 NW 199th Street
Seattle WA 98177
(206)542-1275
Polychaetes

N Sheldon D Pratt
Graduate School of Oceanography
Narrangansett RI 02882
(401)792-6699
Communitites, shelf and stuaries

N Dr Donald J Reish
Department of Biology, CSULB
1250 Bellflower Boulevard
Long Beach CA 90840
Inverts especially polychaetes
(310) 498-4846

Y Dr Janet W Reid
Dept of Invert Zoology, NHB-163
Natl Hist Museum Nat History
Smithsonian
Washington DC 20560
Free-living freshwater Copepoda, marine Harpacticoida
(202)357-4674

Y Jim Roney
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310)648-5196
Crustaceans

Y Ruff Systematics
Eugene Ruff
249 S Highway 101, Suite 401
Solana Beach CA 92075
(619) 755-9187
Polychaetes

N Rick Rowe
Point Loma Wastewater Laboratory
4077 N Harbor Dr MS #45
San Diego CA 92101
(619)692-4900

Y Gary Rosenthal
EVS Consultants
200 West Mercer Street Suite 403
Seattle WA 98119
Polychaete taxonomy
Benthic community analysis
(206)328-4291

N John Shisko
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(310)648-5269
Polychaetes

Y Amelie H. Scheltema
Woods Hole Oceanographic Inst
Woods Hole MA 02543
(508)548-1400 ext2337
(508)457-200 x2337 (touchtone)
Aplacophorans

Y Paul Scott
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105
(805)682-4711 ext 319
Marine bivalve mollusks

Y Ken Shiff
Kinnetic Laboratories Inc
5225 Avenida Encinas Suite H
Carlsbad CA 92008

N Jay Shrake
Kinnetic Labs, Inc
5225 Avenida Encinas Suite H
Carlsbad CA 92008
(619)438-8968
Marine mollusks, aplacophorms

Y Peter Slattery
47 Vista Drive
Salinas, CA 93907
(408) 663-5583
Amphipods, peracarids

N Craig P Staude
Friday Harbor Laboratories
620 University Road
Friday Harbor WA 98250
Crustacea, especially gammarideans
and in NEP
(206)378-2165

Y Pete Striplin
5520 78th Ave NW
Olympia WA 98502
H(206)866-8343 W(206)866-2336
Polychaeta, mollusca, ophiuriodea

N Dr Ichiro Takeuchi
Otsuchi Marine Research Center
Ocean Research Center
University of Tokyo
Akahama, Otsuchi, Iwate
028-11 Japan
TEL 0193-42-5611
FAX 0193-42-3715
Amphipoda (Caprellids), Ecology of
Sargassum zone community

Dr. James D. Thomas
NHB 163 - Crustacea
Smithsonian Institution
Washington DC 20560
(202)357-4664
FAX(202)357-3043
Amphipods

Bruce Thompson
308 N San Pedro Court
San Rafael CA 94903-2863

Y David Tsukada
SCCWRP
7171 Fenwick Lane
Westminster CA 92683
646 W Pacific Coast Hwy
(714)894-9222 FAX (714)894-9699
Molluscs, nemerteans, ophiuroids

Y Ronald G Velarde
Point Loma Wastewater Laboratory
4077 N Harbor Dr MS #45
San Diego CA 92101
(619)692-4900
or 9808 Carlton Hills
Santee CA 92071
H(619) 562-7246
All phyla, especially polychaetes

N Eric Vetter
UCSD 0208
Sripps Inst Oceanography
La Jolla CA 92093
Leptostracans, benthic ecology
(619) 546-8875
(619) 534-2077

N David Vilas
23441 Caminito Juanico
Laguna Hills CA 92653
Polychaete taxonomy

N WA ST Department of Ecology
Environ Invest & Lab Services
Benthic Ecology Laboratory
PO Box 47710
Olympia WA 98504-7710

Y Susan Weeks
37592 Zeolite Hills Road
Corvallis OR 97330
(503)745-4436
Mollusk taxonomy

Raymond Wells
583 West 40th STtreet
San Pedro CA 90731
Rocky intertidal/kelp forest community ecology
(310)548-0240

Y Regina Wetzer
University of Charleston
Grice Marine Biological Laboratory
205 Fort Johnson Road
Charleston SC 29412
(803)762-5550, FAX (803)762-5555
Technical translation: German to English
Invertebrates with emphasis on Crustacea

Y Mary K Wicksten
Dept of Biology
Texas A & M University
College Station TX 77843
NEP Decapod Crustaceans
(409) 845-3388

Y Isabelle P Williams
PO Box 308
Woods Hole MA 02543
(508) 548-6450
Tanaidacea

Y Susan Williams
392 S Catalina St
San Buenaventura CA 93001
Polychaete taxonomy/environmental education
(805) 648-2628

Y Russell Winchell
Ocean's Taxonomic Services
948 Head of the Bay Road
Plymouth MA 02360
Oligochaete and crustaceans
(508)759-7668

Y Roberta E Woods
306 Shoemaker Hall Dept Biology
University of Mississippi
University MS 38677
Marine harpacticoid copepods
W(601)232-5760 H(601)236-4975

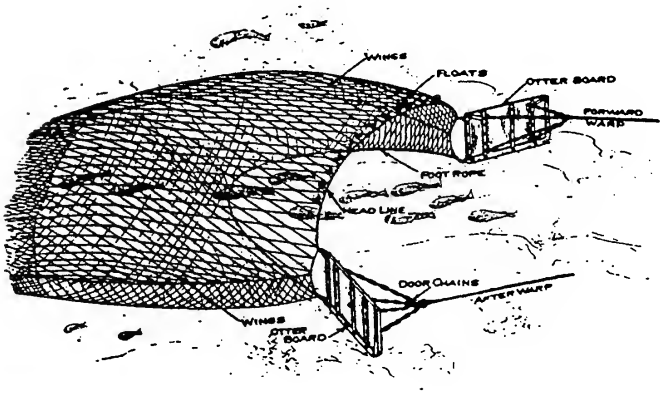
Y Sandra Renee Zane
Pacific Taxonomic Consulting
1560 SE Alexander St
Corvallis OR 97333
Crustacea
(503) 752-4605

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

July, 1994 Vol. 13, No.3

NEXT MEETING:	SCBPP Trawl Caught Invertebrates
GUEST SPEAKER:	None
DATE:	August 8, 1994
TIME:	9:30am - 3:30pm
LOCATION:	Cabrillo Marine Aquarium 3720 Stephen White Drive San Pedro



(from Hedgpeth, 1957)

AUGUST 8 MEETING

This meeting will be on SCBPP trawl caught invertebrates. It will be a general meeting for members to bring any voucher specimens or problem specimens from their SCBPP trawl surveys for discussion and help with identification.

SEPTEMBER MEETING

The September meeting will be a polychaete meeting on the *Polydora-Boccardia* complex given by Larry Lovell. This meeting was postponed from earlier this year. Please be prepared to bring your *Polydora* and *Boccardia*

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

specimens for discussion. This is still a SCBPP problem/workshop meeting, but is focused on the group in question. Problem SCBPP specimens from other groups should also be brought to this meeting.

MEMBER NOTES

SCAMIT recently received a letter from one of our long time members, Dr. Susan Williams. Since leaving her position as Polychaete Collections Manager at the Allan Hancock Foundation she has lived in the Ventura area. Working as a consultant, teaching at a number of local colleges, working with the Ventura Parks and Recreation Dept., and now serving as a National Park Ranger at Channel Islands National Park has kept Sue busy over the last few years. With three or four write-ups in local papers she is becoming a high-profile personality whose tide-pool, bird, and botanical talks are in demand. Stop and see her if you visit the National Park Headquarters in Ventura. Good luck Sue, and thanks for the letter.

MINUTES FROM MEETING ON JULY 11

At this meeting a cautionary note was addressed to those members working with the polychaete family Nephtyidae. The southern California species, *Nephtys ferruginea* may actually be *Nephtys signifera* Hilbig, 1992. Several SCAMIT members noticed upon re-examination of material originally identified as *N. ferruginea* that 20 distal papillae were found on the proboscis rather than 22, as described by Olga Hartman in her original description of *Nephtys ferruginea*. In Brigitte Hilbig's 1992 paper entitled, "New Polychaetous Annelids of the Families Nereididae, Hesionidae, and Nephtyidae from the Santa Maria Basin, California, with a Redescription of *Glycera nana* Johnson, 1901" that appeared in *Proc. Biol. Soc. Wash.* vol. 105 no. 4, she describes a new species, *Nephtys signifera,* and compares it to other Nephtys species, including *Nephtys ferruginea*. It was proposed that members should check the distal papillae counts of their *N. ferruginea* and report back their findings at the September polychaete meeting. If the proboscis was not extended during the preservation of your specimens a ventral slit can be made on the animals and setiger 8 or 9 can be examined for the distal papillae at the end of the proboscis.

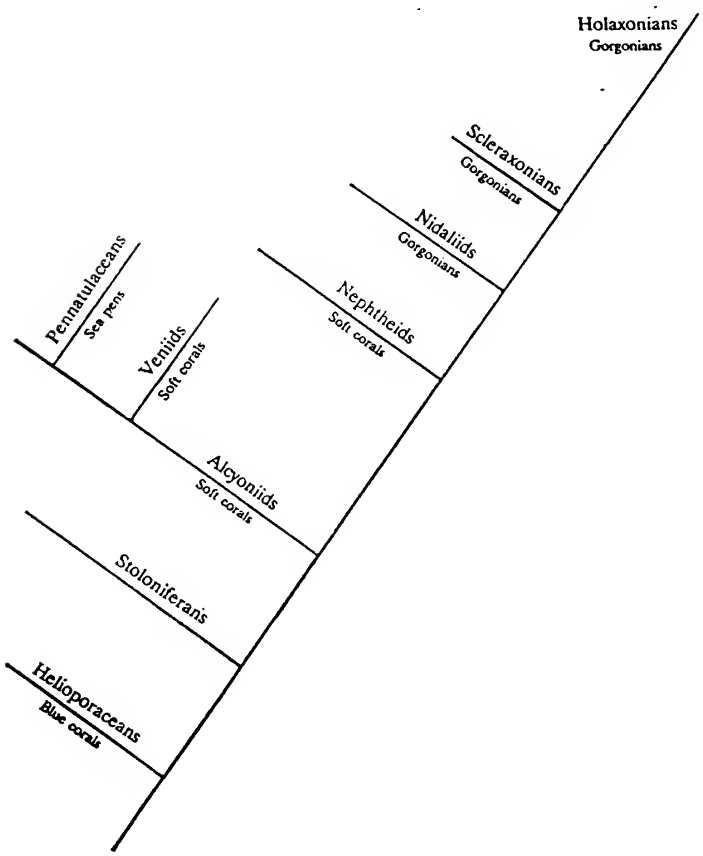
Dr. Terry Gosliner (Cal Acad of Sci.) and Dave Behrens (PG&E) dropped in for the beginning of the meeting. Terry indicated that he has found a "home" for Cephalaspidea sp. A in the genus *Parviplustrum*, and that this will be covered in his portion of the Santa Maria Basin Invertebrate Atlas due out later this year. The animal apparently will have to have it's own family. He will be examining other local cephalaspids, and, hopefully, will give a SCAMIT program on them in future.

Octocorallia

Dr. Gary Williams, curator of invertebrates at the California Academy of Sciences gave a very informative talk on octocorals and then examined several of our local species to help resolve some of the taxonomic problems SCAMIT members have found working within this group.

The Octocorallia includes soft corals, sea pens, and gorgonians, all of which have polyps with 8 pinnate tentacles. Since there are very gray lines between sea pens, gorgonians, and soft corals it is best to just refer to them all as octocorals.

Here is a **cladogram** of the Octocorallia.



4 Kinds of Corals

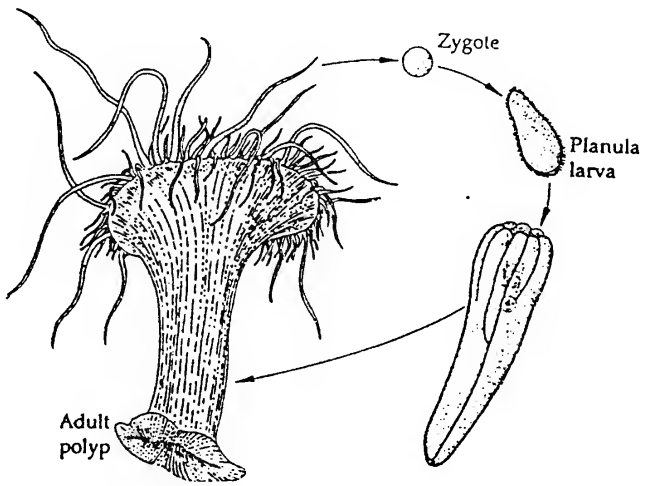
1) **Hydrocoral** - a hydrozoan which is composed of colonies of hydroidlike polyps that build rock-hard, massive skeletons of calcium carbonate

2) **Black or thorny coral** - an anthozoan which gets its common name from the black color of the thorny or spiny internal skeleton; the polished black skeleton is used for making jewelry

3) **Hard or stony coral** - solitary or colonial polyps with massive calcium carbonate exoskeleton; mostly these are tropical reef builders

4) **Octocorals** - this group of corals is composed of the sea pens, soft corals, and gorgonians; all of which have polyps with 8 pinnate tentacles

Anthozoan Life Cycle



No free swimming medusa stage.

(from Bayer and Owre, 1968)

Octocorals are found at all latitudes and depths because they are well adapted to a variety of environments since they feed on plankton and detrital matter that rains down from the water above. They are able to catch the plankton with the pinnules of their polyps outstretched. Octocorals also have siphonozooids, which are a type of polyp that drives currents of water through the colony.

Where octocorals live depends on their type of holdfast. Some gorgonians and soft corals need to attach to hard substrates because their holdfasts are simple disk shaped structures, so most live in shallower water where rocky, hard substrate occurs. Other soft corals and gorgonians have more of a rootlike structure

and can attach to deeper, soft bottoms. Sea pens, however, are best adapted to soft substrates because they have a peduncle. Although sea pens are adapted to a variety of substrates they are not very speciose. The greatest majority of species is on the continental shelf, 0 - 100m depth. Few range into the intertidal zone.

Shallow water endemic species are often just different color morphs of the same species, but aren't always recognized as such and sometimes appear in the literature as separate species.

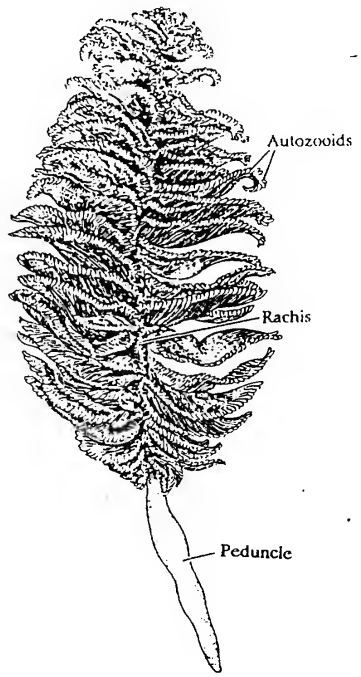
In the Indo-Pacific the triangular area of most diversity for octocorals is between the Philippines, Borneo, and Papua New Guinea. There is ten times the diversity here than there is in the Caribbean.

Blue coral is restricted to the shallow waters of tropical Indo-Pacific. The live colonies look brown because of all the zooxanthellae they contain, but the skeleton is blue.

Primitive sea pens look more like soft corals because they are unbranched. The autozooids, or feeding polyps, and reproducing polyps are directly on the rachis rather than on the branchs.

In the most primitive sea pens (for instance the Veretillida) the pattern of symmetry is still radial. As we move towards more advanced forms in the Echinoptilidae we find a combination of radial and bilateral symmetry. In families such as the Virgulariidae symmetry is always bilateral, with leaves arranged laterally and the rachis naked along the dorsal midline.

Here is a diagram of a typical sea pen showing the peduncle, rachis, and autozooids.



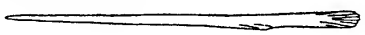
(from Bayer and Owre, 1968)

Spicules, or sclerites, as they are referred to in octocorals are the calcium carbonate structures that provide skeletal support. Most are under a tenth of a millimeter in size. When identifying octocorals to species level you must look at the sclerites. This can be complicated by the fact that there is a high degree of variation and degradation in the sclerite types. Because the sclerites are made of calcium carbonate care must be taken not to leave octocorals in formaldehyde for long periods of time because the sclerites will dissolve.

There are basically 2 types of sclerites in sea pens.

1) dog biscuit shaped 

2) needle shaped



(from Kukënthal, 1915)

Most of the variation in sclerite shape is between these two.

There is a very useful guide in French, German, and English on literature terms used to describe octocorals. It is the *Illustrated Glossary of Morphological and Anatomical Terms Applied to Octocorallia*, 1983, F. M. Bayer, M. Grasshoff, and J. Verseveldt (eds.)

It is theorized that sea pens probably developed in shallow water tropical areas and then adapted to deeper water. Evidence to support this theory comes from the fact that primitive sea pens don't have a central axis from which "leaves" of polyps branch off. Primitive sea pens are also restricted to continental shelfs. Over time sea pens developed a better system of adapting to deeper water and soft bottoms. The ability of sea pens to retract their polyps is a much more highly developed adaptation. In fact, many voucher specimens in alcohol retract so much they look nothing like their living forms. Sea pens also developed bilateral symmetry from radial symmetry. *Renilla*, the sea pansy, found only in North and South America, is a representative of a sea pen that has started to show bilateral symmetry.

Dr. Williams has done a world-wide revision of pennatulacean genera due out next year in the Journal of the Linnean Society.

He had a list of 31 species of pennatulids which have been reported to occur along the Pacific coast of North America. A number of these do not occur north of Mexico, and nearly a third are known only from deep water.

In the afternoon we adjourned to John Ljubenkov's office to examine specimens of the sea-pens most often taken by the SCAMIT membership. We found that there had probably been some confusion in the use of the name *Virgularia bromleyi*. Several agencies had been applying this name to the large robust form normally encountered on the shelf, and had been using the name *V. sp A* for the smaller more gracile form. Gary Williams suggested that *V. sp A* corresponded to the description of *V. bromleyi*, and that *V. galapagensis* was the correct identity of the larger form which had been called *V. bromleyi*. Although Gary intends to examine types (where available) to support this, the case seems sufficiently strong for SCAMIT to accept the revised usage now.

We also examined the two local species of *Stylatula*. There appeared to be no problems with the identity of *Stylatula elongata*, but *Stylatula sp A* provided some controversy. Gary equated it with *Stylatula gracilis* even though there was a considerable difference in number of zooids per leaf in the two taxa. Pending examination to type material SCAMIT will continue use of *Stylatula sp A* for the form which has only a few zooids per leaf and between 5 and 8 leaves per inch of rachis. *Stylatula columbiana*, which was also a potential senior synonym of *Stylatula sp A*, has even more zooids per leaf than *S. gracilis* and is not equivalent to *S. sp A*.

The species of *Acanthoptilum* require clarification only available by examination of types. Gary was of the opinion that there were only two species on the Pacific Coast, and that both of Nutting's 1909 names will fall as synonyms. SCAMIT will continue to use *A. annulatum* and *A. gracile* for the two forms we take here, but these names may change once the types are examined.

The collections of the California Academy of Sciences, which had been placed in storage during a renovation and earthquake retrofit of the facility, are now back at the Academy in Golden Gate Park. Arrangements to work in them as a visiting investigator should be made with Collections Manager Robert Van Syoc at the Department of Invertebrate Zoology and Geology, California Academy of Sciences, Golden Gate Park, San Francisco, CA., 94118

[telephone (415)750-7080]. They have full facilities for the use of visitors, and encourage use of the collections. Communications for Terry Gosliner, Gary Williams, Dustin Chivers, and Rich Mooi use the same address and telephone given above.

Review of Diagnostic Differences between the Genera *Amphisamytha* and *Mooresamytha* (Ampharetidae, Polychaeta)

Thomas Parker
Marine Biology Laboratory
L. A. County Sanitation Districts

During a recent SCAMIT meeting, several ampharetid specimens were examined which previously were labeled as similar to, but not matching, either *Mooresamytha* or *Amphisamytha*. A more extensive examination of 26 different specimens collected from 30 meters depth in silty-sandy sediments is now completed.

Williams (1987) erected *Mooresamytha* as a new genus. She stated: "The most striking difference between *A. japonica* and *M. bioculata* is the branchial arrangement.....as being inserted in three anterior and one posterior pair"(i.e., *Amphisamytha*). "*Mooresamytha bioculata* has the branchia arranged in two anterior and two posterior pairs. Branchial configuration seems to be a consistent generic character within the Ampharetidae and is the main reason for removing Moore's species from *Amphisamytha*." In addition, Williams commented that *Amphisamytha japonica* lacked dorsal abdominal cirri, while *Mooresamytha bioculata* had distinct glandular cirri on the abdominal notopodial rudiments.

Nearly half of the 26 specimens examined here (from 8 different samples) possess the branchial arrangement of two anterior and two posterior(2+2), while the remainder had branchia arranged with 3 anterior and 1 posterior(3+1). Interestingly, in almost all cases the 2+2 arrangement was found in specimens with robust and stout (from base to tip) branchial shapes. The 3+1 arrangement was typical for specimens with branchia that have narrow bases and thin walls along their length, thus giving them a thin appearance.

Additionally, none of these specimens seem to possess notopodial rudiments and all clearly lack distinct dorsal abdominal cirri. Diagnosis between these two genera is currently based upon branchial insertion and local specimens may need to be re-examined and interpreted to better fit the published description of the taxa. The diagnosis of described species such as *M bioculata* or *A. japonica* does not match well some local specimens. These need to be collected in greater number and differentially compared for taxonomically significant features.

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

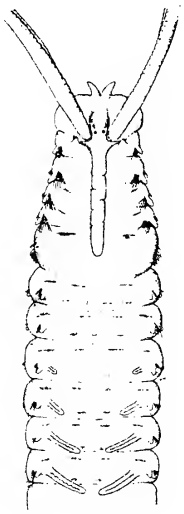
President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

August, 1994 Vol. 13, No.4

NEXT MEETING:	Polydora-Boccardia Complex of Polychaetes
GUEST SPEAKER:	Larry Lovell
DATE:	September 19, 1994
TIME:	9:30am - 3:30pm
LOCATION:	Larry's Home 1036 Buena Vista Dr. Vista, CA (see enclosed map)



(from Blake, 1971)

SEPTEMBER 19 MEETING

The September meeting will address polydorid polychaetes. Larry Lovell has been examining specimens provided by members, and from his own material, for several months. He is now ready to share his findings, and attempt to resolve problems experienced with these animals. Polydorids will probably occupy the entire meeting, but if you have problem SCBPP specimens of other groups, bring them in case there is time for them.

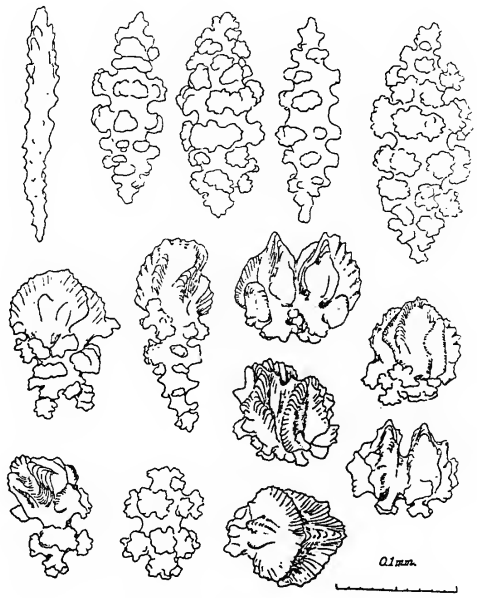
FUNDS FOR THIS PUBLICATION PROVIDED, IN PART, BY THE ARCO FOUNDATION, CHEVRON USA, AND TEXACO INC.

MINUTES FROM AUGUST 8 MEETING

The business portion of the meeting was very brief, consisting of an update on the status of the SCBPP participation of represented agencies. A recent publication was also brought to the attention of the attendees. In the latest issue of the Proceedings of the Biological Society of Washington (Vol. 107(2)) Jody Martin and Debby Zmarzly described a new pea-crab named *Pinnixa scamit*. Our thanks are due the authors for the honor of this patronym. They give SCAMIT a nice pat on the back in their explanation of the etymology of the name. The animal is the first taxon separated out of the *Pinnixa occidentalis* species complex.

Since there was no scheduled speaker the meeting was fairly free-form. We proceeded on a phylum by phylum basis starting with the Cnidaria. The first problem had to do with a sea-fan taken by all three of the agencies which had already completed trawling (Hyperion's trawls were scheduled to start later in the week). It had been identified in the field as *Adelogorgia phyllosclera*, but differed in appearance from a form which John Ljubenkov (MEC) had previously applied that name to. The form taken during the SCBPP trawls had relatively narrow branches (2-4mm), was dark red and had yellow-orange polyps in life. The branches were quite knobby in most of the specimens, and all had prominent black spots which surrounded each polyp's calyx. Colonies were up to 50cm high in one trawl off Pt. Loma, but most were 15-20cm tall. The form which John Ljubenkov had taken previously had broader branches, and lacked the dark pigment around the polyps.

Sclerite preparations had been made prior to the meeting. Examination of them showed that the SCBPP material had the characteristic assortment of knobby spindles, double wheels, and leaf clubs for Bayer's monotypic genus



(from Bayer 1958)

Adelogorgia. The original description of *A. phyllosclera* was at hand, as was Bayer's key to worldwide genera. The colonies keyed to *Adelogorgia*, and matched the original description quite well, except for branch diameters which fell on the low end of the range listed in the original description. The black spots so prominent in fresh collected, dried, frozen, and preserved material were also not mentioned in the description.

It was decided that we should treat this SCBPP form as a potential new species of *Adelogorgia* and refer to it as *Adelogorgia sp A* of SCAMIT. We continue to assume that the form John Ljubenkov had taken on Short Bank in Santa Monica Bay was the true *A. phyllosclera*. Gary Williams (California Academy of Sciences) got a section of that colony when he presented our July program. We will send him examples of *Adelogorgia sp A* for comparison as well. A colony of this species is living on a rock in the aquarium at the City of San Diego Water Utilities Dept. Biology Laboratory, and is being observed by their staff.

A second species of gorgonian was taken in a trawl along the shelf break at the outer edge of the San Pedro Sea Shelf by CSDLAC. This species is white in life, has broad branches with the outer layer loosely attached, and colorless sclerites. The sclerite complement was not like that of any gorgonian previously reported from Bight waters, and featured relatively large helically twisted spiny spindles and shorter warty spindles with a tendency to form tetrads. The upper limb of these tetrads is usually heavily and complexly elaborated into spines and lamellae reminiscent of thorn scales. The animal would not key in Bayer's worldwide generic key, and is of unknown family allocation. It will be called Gorgonian sp A of SCAMIT, and forwarded to Gary Williams for his consideration.

Other sea-fans taken during the SCBPP trawls included *Lophogorgia chilensis*, *Muricea californica*, *Eugorgia rubens*, and *Thesea sp B*. It was noted that no *Heterogorgia tortuosa* were encountered in the SCBPP trawls.

Sea-pens were also discussed. It was noteworthy that neither of the *Stylatula* species known from the area were common in the trawl samples, despite the number of shallow sandy stations occupied. The status of *Virgularia bromleyi* and *Virgularia galapagensis* seems to have been resolved to the satisfaction of the members at the July meeting. Both species were taken during the SCBPP trawls, in about equal numbers. The status of the species of *Acanthoptilum* was not suitably settled at the July meeting, and so for the purposes of the SCBPP trawl sampling we are referring all of them to *Acanthoptilum* sp pending reexamination of type material and resolution of the standing of the available names.

The only other pennatulids taken were *Pennatula phosphorea* and *Ptilosarcus gurneyi*. The characters separating these two were - fewer, larger, and longer polyps on the leaves of *P. phosphorea*; much fatter peduncle in *P. gurneyi*; much larger leaves in *P. gurneyi*; and color - purple in *P. phosphorea*, light pink in *P. gurneyi*. There is also normally a bathymetric separation between the two, with *P. gurneyi* found in shallow shelf depths and *P. phosphorea* at lower slope and basin depths.

The nomenclatural status of *Metridium "senile"* was briefly discussed, but the use of the name was consistent among the members. No other anemones were taken in SCBPP trawls except some attached to a gorgonian colony taken off Orange County by MEC. John Ljubenkov will be working those up.

Sponges were the next group discussed. Few were taken during the program. MBC had taken three species in the Santa Barbara Channel; *Speciospongia confoederata*, *Hemectyon hyle*, and *Myxilla parasitica*. San Diego had taken a species thought to be *Craniella arb*. During the discussion it became apparent that this required verification: the colonies lacked the characteristic long spicule crown of *Craniella* and were usually found on gastropod shells borne by hermit crabs. This raised a suspicion that they might actually be a species of *Suberites*, either *S. suberea* or *S. ficus*. San Diego staff will do spicule preps on the vouchers and investigate the situation further. The only other sponge taken was a flat hexactinellid sponge taken by CSDLAC at the shelf break off Huntington Beach in 116m. It has been tentatively identified as *Poecillastra tenuilaminaris*, but should be examined by Karen Green for positive identification.

Annelids were only briefly considered. No group had encountered any legitimately trawl caught worms other than aphroditids. CSDLAC had taken *A. refulgida*, and San Diego had taken a large specimen with the long setae characteristic of *A. armifera*. The animal was reputed to have been roughly one foot long, but was neither photographed nor

retained. The size report was received skeptically by the membership present.

Mollusks were the next group to be discussed. Most of the animals examined were in the show-and-tell category. Specimens of *Platydoris macfarlandi*, *Babelomurex oldroydi*, *Pteropurpura macroptera*, and an *Armina california* which was bright orange in life were circulated by CSDLAC, and a *Nipponotrophon scitulus* was shown by San Diego.

A specimen identified by San Diego as *Lischkea cidaris* was examined. It was left at that, but with misgivings. The number and nature of the tubercles ornamenting the shell were atypical. It will be examined further, and the result reported at a future meeting. The species should be assigned to the genus *Cidarina* according to Hickman and McLean 1990 (Systematic Revision and Suprageneric Classification of Trochacean Gastropods. Natural History Museum of Los Angeles County, Science Series #35).

MBC had several specimens of *Calliostoma turbinum* taken in the Santa Barbara Channel. They had been identified as *C. supragranosum*, but bore the characteristic orangeish iridescence of *C. turbinum*. San Diego reported taking a number of *Calliostoma canaliculata* from amongst algae at a shallow trawl station off Pt. Loma.

None of the other species of gastropods taken required discussion. All the bivalves taken were infaunal, and not considered as valid members of the trawl catch. MEC had one or two chitons they had taken in the trawls, but the specimens were not brought to the meeting and will need to be considered at a later session. Some discussion was made of the available literature on chitons, and it was suggested that the best available key and descriptions were to be found in Barry Putman's 1980 Taxonomic Identification Key to the Described Species of polyplacophoran mollusks of the West Coast of North America (north of Mexico). This was issued by Pacific Gas and Electric, and may be available from them still.

Cephalopods discussed and examined were *Octopus californicus* and *O. rubescens*. No *O. dofleini*, *O. bimaculatus* or *O. bimaculoides* had been taken by any of the participating groups. The squids *Rossia pacifica* and *Loligo opalescens* were taken, but presented no difficulties. Distinctions between the two octopods considered are much easier in the field with live material, but even in the preserved specimens *O. californicus* had larger eyes, shorter arms, and a shorter web than *O. rubescens*. Specimens of both species from the Santa Barbara Channel were examined during the meeting, as well as specimens from the San Pedro Sea Shelf. The enlarged suckers near the base of the arms of ♂ *O. rubescens* (at the level of the web) were seen in one of the specimens examined. All present seemed to be identifying octopods equivalently.

Arthropods were also primarily show-and-tell. Nearly all of the considered species were decapods. The sole exceptions were some of the larger fish-lice (isopods) which met the 1cm inclusion criterion for trawl caught organisms. The only species examined was *Livoneca vulgaris*.

Two penaeid shrimp species were taken, *Sicyonia ingentis* and *Penaeus californiensis*. A specimen of *Penaeus* was circulated. No specimens of the target shrimp *Sicyonia penicillata* were taken during the trawls. None of the participating agencies had large catches of the smaller shrimp in the families Crangonidae and Hippolytidae. Crangonids reported from the SCBPP trawls included *Metacrangon spinosissima*, *Neocrangon zacae*, *Neocrangon resima*, *Crangon alaskensis*, and *Crangon nigromaculata*. None of these species appeared to present any difficulty to the participants. Hippolytids taken have, for the

most part, not been identified in the laboratory, and will be discussed at a future meeting.

None of the participants reported taking any thalassinid shrimp in the SCBPP trawls.

Hermit crabs likewise seemed to have not presented any problem. The only species examined turned out to be *Enallopaguropsis guatemoci*, two specimens of which were taken in the Santa Barbara Channel by MBC. Other species taken during the trawls included *Phimochirus californiensis*, *Orthopagurus minimus*, *Pagurus spilocarpus*, *Paguristes turgidus*, *Paguristes ulreyi*, *Parapagurodes laurentae*, and *Parapagurodes makarovi*.

Other crabs taken were the calappid *Platymera gaudichaudii*, the leucosiid *Randallia ornata*, the parthenopiid *Heterocrypta occidentalis*, the Portunid *Portunus xantusii*, and several majids and cancrids.

Considerable effort was expended in examination of several juvenile *Loxorhynchus* using the information presented in Garth 1958 (Brachyura of the Pacific Coast of America - Oxyrhyncha). Although there are supposed differences in the degree of deflection of the rostrum between the two species, this is hard to apply in practice. We suggest that the simplest method for definitive separation is the presence of one hepatic spine in *L. crispatus*, and two in *L. grandis*. These are arranged one above the other, and both can be felt through the "decorations" on a living animal if the specimen is squeezed at the level of the hepatic spines between the thumb and fore-finger. The hepatic spines are the first lateral pair of spines following the post ocular spines.

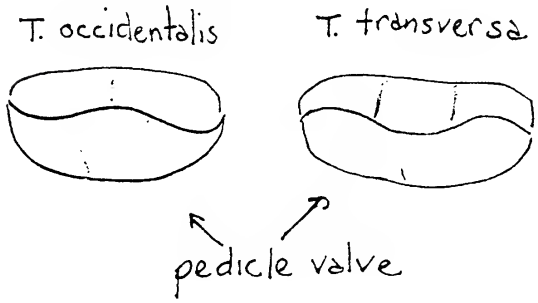
A specimen of *Podochela lobifrons* taken by MBC in the Santa Barbara Channel was examined and confirmed.

A specimen of a very rare species of xanthid crab was taken by San Diego. They collected a single specimen of *Xanthias* (now *Micropanope*) *latimanus*. The species is keyed and briefly described in Schmitt 1921 (Decapods of California), and the specimen conformed to this description. The species remains unillustrated, however, and there are many inadequacies in the available descriptions. The original description of Lockington (1877) was not available at the meeting. The identity of this specimen must remain in question at this time. It will be reported on at a later meeting.

Before starting echinoderms we took a look at brachiopods. Several of the agencies had encountered brachiopods in the SCBPP trawls. The most diverse group was taken by CSDLAC at the shelf break off Huntington Beach in 116m. The bottom here was apparently flat shale, with a very thin veneer of coarse shell hash, small pebbles, and coarse sand. Specimens of *Laqueus californianus*, *Terebratulina crossei*, and *Terebratalia occidentalis* were examined during the meeting. Literature consulted included Eric Hochberg's recent summary of brachiopods from the SCAMIT Newsletter (Vol. 11 #10), Bernard's 1972 "The living Brachiopoda of British Columbia", and Hertlein & Grant's 1944 "The Cenozoic Brachiopoda of Western North America."

Following conversations with Eric Hochberg, Ron Velarde had suggested that the *Terebratalia* we were finding in the Bight might be *T. occidentalis*. As this species is not included in the key distributed in the newsletter (which was drawn from Bernard 1972), the key to the genus in Hertlein and Grant was used. It clearly indicated that it was indeed *T. occidentalis* we had taken. The key external difference between *T. occidentalis* and *T. transversa* is the nature of the mesial flexure of the valves. In *T. occidentalis* the mesial flexure of the pedicle valve (the one with the hole for the pedicle to exit) is concave, and in

T. transversa it is convex (see figure below). One must be careful in interpreting this: we are talking about the flexure of the valve, not the profile of the lip (the two are exact opposites - if the flexure is concave, the profile of the lip is convex).



The mesial flexure is not equally prominent in all specimens. At least one of those examined had a very weak mesial flexure, actually appearing convex both in the pedicle and the branchial valves. The strength of the ribbing, and number of ribs on the shell was also quite variable, even in the eight or so specimens examined.

In the field the *Terebratulina* were initially taken to be light colored variants of *Laqueus*. They are similar in size to small *Laqueus*, are within the range of shape variablility in *Laqueus*, and are similarly inflated. On closer examination, however, they were clearly separable from the larger, redder *Laqueus*. Small specimens of *Terebratulina* are prominently ribbed (*Laqueus* are smooth), although the ribs are much more subtle than in *Terebratalia*. Small specimens are also more elongate than *Laqueus* of the same size.

As they mature the color differences in the shells intensify, with *Laqueus* becoming increasingly red, and *Terebratulina* tending to a dirty light tan. In most specimens the mantle canals on the underside of the valves are clearly visible. If they are, mixed lots of *Laqueus* and *Terebratulina* can be easily separated. *Laqueus* has a pair of branching red canals, while *Terebratulina* has a pair of net-like anastomosing white canals. The canals are not well marked in small specimens, but external shell characters can be used to separate them.

There are two species of *Terebratulina* reported to occur in the Bight, *T. crossei* and *T. unguicula*. The two species are quite similar, but can be separated by the character of the ribbing, which produces marginal crenulations and is usually dichotomous near the shell margin in *T. unguicula*. In the present specimens of *T. crossei* the radial ribbing is reduced to very fine striations, and produces no crenulation of the valve margins. Both species are included in the key in the SCAMIT Newsletter Vol 11 #10.

The last group considered was the echinoderms. LACSD took the nudibranch-like holothuroid *Psolus chitonoides* at the same shelf-break station where brachiopods were comon. Several groups had encountered species of *Cucumaria/Pseudocnus* which could not be identified without examination of dermal ossicles. Their identity will be reported on at a later meeting. Neither *Parastichopus johnsoni* or *P. leucothele* were seen in the SCBPP trawls.

Ophiuroids were not discussed much beyond noting that if they met the size criterion for inclusion in the trawl (greater than 1cm in any dimension) they should be counted and reported. One of the trawls taken in the Santa Barbara Channel by MBC contained a huge collection of large *Ophiura luetkeni* (estimated at 12,000 individuals). The large euryalan *Gorgonocephalus eucnemis* was taken several times in the Santa Barbara Channel by MBC, but not further south. Seven ophiuroid species were taken in the LACSD trawling area from south Santa Monica Bay to the San Pedro sea-shelf, most of which could be identified in the field because of their relatively large size.

Echinoids presented few problems, although in Santa Barbara Channel collections juvenile *Strongylocentrotus purpuratus* were taken mixed with *Lytechinus pictus*. There seemed to be ambiguity in the application of the term "secondary spines" in the key to regular echinoids of Word and Charwat (1975. Invertebrates of Southern California Coastal Waters I. Select groups of annelids, arthropods, echinoderms, and molluscs) which led to uncertainty over separation of these two taxa. The key refers not to just short spines as "secondary spines" but to spines in addition to the primary spine on each plate. Since plate margins are difficult or impossible to see without cleaning the test, this character has little utility in the field.

The two species can be distinguished in the field on the basis of both structure and color. The dorsal tube feet of *Strongylocentrotus* are both larger and much more numerous than those of *Lytechinus*. The color of the spines differs: green with purple tips in young *S. purpuratus*, and white to tan (sometimes banded) with white tips in *L. pictus*. The spines are of similar length and diameter under most conditions, but are longer in both species when the specimens are from quieter waters. As the *Strongylocentrotus* mature the spines become completely purple.

Most of the discussion centered on asteroids. All six local species of sand stars (3 *Astropecten* and 3 *Luidia*) were taken during the SCBPP trawls. On several occasions specimens of *Astropecten verrilli* were taken which were much lighter in color than their usual grayish purple. Several of these were collected for verification of identity, and they all proved to be just *A. verrilli*. Several *A. ornatissimus* were taken, some off Los Angeles Harbor, and some in the Santa Barbara Channel. Several small juvenile *A. armatus* were taken which showed that the laterally directed small tubercles on the supramarginal plates about 1/2 to 2/3 of the way out on the arms, are formed earlier than the large dorsally pointing tubercles on the supramarginal plates in the interambulacra. Check for the latter first, but if they are lacking check for the small laterally directed tubercles next. In specimens so young that these tubercles have not yet formed you are forced to rely on the relatively longer and more robust lateral spines, and the smaller arm length to disc diameter ratio to separate *A. armatus* from *A. verrilli*.

Some confusion still exists in the identification of *Luidia armata*, and adambulacral pedicellariae have proven to be difficult to detect, even with a hand lens, under field conditions. The characteristic differences in color pattern between *L. armata* and *L. foliolata* showed no intergrades in any of the specimens I (Don Cadien) observed on the CSDWUD, CSDLAC, or OCSD trawls. *Luidia armata* always had a blotchy "mosaic" pattern of multi-paxillar patches of white, purple, brown (sometimes light brown or tan), and *L. foliolata* had only scattered light colored individual paxillae on a darker field.

Identification of *Luidia asthenosoma* was uncontroversial for the most part, although some small *Luidia* from the Santa Barbara Channel tentatively identified as *L. asthenosoma* turned out to be *L. foliolata* when examined during the meeting. Most if not all of the *L. asthenosoma* taken in the SCBPP trawls were small, with an arm spread of less than three inches. Appearance of these juveniles differed from that of the adults only in that the arms were proportionally shorter in the juveniles (and consequently appeared less narrow).

Specimens of *Sclerasterias heteropaes* taken off Pt. Loma and off Los Angeles Harbor were also quite small. All had the characteristic color pattern of light and dark transverse banding of the arms.

Aside from the sand-stars, little difficulty was experienced in identification of starfishes in the field during the SCBPP trawls. A problem multiarmed starfish was taken by MBC in the Santa Barbara Channel which was darker and redder in color than the typical pink *Rathbunaster californicus*. There had been some concern in the field that this might be a light colored *Pycnopodia helianthoides*. Examination of the specimen at the meeting verified it as *R. californicus* based on the ratio of disc diameter to arm length, and the fragility of the arm attachment. In *P. helianthoides* the arms are only shed under very unusual circumstances, and are very well attached to the body. In *R. californicus* the arms are deciduous, and are very loosely attached to the central disk. The central disk of *P. helianthoides* is much larger than that in *R. californicus*, reaching almost a one to one ratio with the arm length.

Other species seen were *Pisaster brevispinus*, *Mediaster aequalis*, *Hippasteria spinosa*, *Henricia leviuscula annectens*, and *Leptasterias hexactis*, and *Asterina miniata*.

Several of the SCBPP collected echinoderms bore ectoparasitic mollusks when they came up in the trawl. All were eulimids, and all examined specimens were *Melanella rutila*. They were observed on *Astropecten verrilli*, *Pisaster brevispinus*, and *Parastichopus californicus*. One average sized *P. brevispinus* taken off Orange County was afflicted with more than 70 of these parasitic snails with no outward signs of distress or ill health.

Urochordates were not discussed at the meeting. If any turn up in FID materials returned to the laboratory for further processing, they will be treated in a future meeting.

TOPICS FOR FUTURE MEETINGS

Several groups where problems are likely to be encountered during identification of the SCBPP benthic samples have yet to be considered. Our next meeting will deal with one polychaete problem area, and Leslie Harris will be presenting the results of her reexamination of *Pista* types and material early in 1995 (probably January).

Mollusk problem areas include bullomorph cephalaspideans, solenogasters, scaphopods, and *Parvilucina* speciation among others. Please have these areas in mind as you work on your samples, and set aside material to be examined when the above areas are addressed. Be thinking of other problem areas SCAMIT members will have to deal with in the processing of the SCBPP samples and suggest them as focus topics for future meetings.

JOB ANNOUNCEMENT

Southern California Coastal Water Research Project has a current employment opportunity for a Research Technician. Please see the enclosed flyer for details.

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT
7171 FENWICK LANE WESTMINSTER, CA 92683-5218
714-894-2222 FAX 714-894-9699

EMPLOYMENT OPPORTUNITY

RESEARCH TECHNICIAN

Salary Range: $2,150-$3,220 per month

THE POSITION

The Research Technician serves as a member of the agency's Benthic Research Group, participating in research on the effects of sewage discharges and other anthropogenic impacts on marine benthic communities in southern California. Under the direction of the Benthic Laboratory Manager, the Research Technician will assist in the preparation of reports on research projects. The Research Technician will help analyze data, prepare graphs and tables, and write text. The Research Technician will also participate in field sampling and laboratory work, including sorting of benthic samples and measurement of specimens.

REQUIREMENTS

Gradation from an accredited college or university with a B.A. degree in Biology is required. A Master's degree in Marine Biology is preferred.

A minimum of two years of post-graduate work experience in biological research is also required. The successful candidate will have demonstrated experience writing biological reports and using computers. Experience with Dbase and Sigma Plot or similar software programs is preferred.

APPLICATION PROCESS

Resumes will not be accepted in lieu of the completed SCCWRP application. Applications are available by calling the SCCWRP Personnel Office at (714) 894-2222.

Applications must be accompanied by a 1-2 page statement of the applicant's knowledge, skills, and abilities as they relate to this position and a sample of the applicant's biological report writing.

The recruitment period will remain open until a sufficient number of applications have been received. Applicants are encouraged to submit their application materials as soon as possible. Applicants best meeting the requirements of the position will be invited to an interview.

SCCWRP IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

A Public Agency for Marine Environmental Research

ABOUT SCCWRP

Southern California Coastal Water Research Project (SCCWRP) is a joint powers government agency formed in 1969 by several agencies that recognized the need to determine the impacts of municipal wastewater discharges on the southern California coastal marine environment.

SCCWRP is governed by a nine-member Commission, consisting of representatives from the founding agencies, as well as regional, state, and federal regulatory agencies. SCCWRP's member agencies include the City of Los Angeles, County Sanitation District No. 2 of Los Angeles County, County Sanitation District No. 1 of Orange County, the City of San Diego, the California Regional Water Quality Control Board (Santa Ana, Los Angeles, and San Diego regions), the California State Water Resources Control Board, and the U.S. Environmental Protection Agency, Region IX.

SCCWRP's mission is to support the protection and conservation of coastal waters by providing information to the general public, local agencies, and regulators on the impact of waste discharges on the marine environment. SCCWRP's staff conducts extensive research to identify sources of contaminants, determine their fate and transport throughout the ecosystem, and evaluate their effects on marine organisms.

Southern California Coastal Water
Research Project
7171 Fenwick Lane
Westminster, CA 92683-5218

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

September, 1994 Vol. 13, No.5

NEXT MEETING:	SCBPP Trawl Caught Invertebrates (Final)
GUEST SPEAKER:	None
DATE:	October 17, 1994 (third Monday of the month)
TIME:	9:30am - 3:30pm
LOCATION:	SCCWRP 7171 Fenwick Lane Westminster

(from Word et al. 1977)

OCTOBER 17 MEETING

This will be the final meeting on SCBPP trawl caught invertebrates. Please bring any FID, voucher, or problem specimens from SCBPP trawl surveys for help with identification or just general discussion. Problems with trawl identifications need resolution so loading and analysis of trawl data can begin. Trawl voucher data will be examined to look for differences in usage between participating agencies. Bring along problem SCBPP infaunal organisms for discussion if time allows.

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

POLYDORID MEETING

The second half of the *Polydora-Boccardia* complex meeting has been postponed until November. This meeting will cover only species of the genus *Polydora*, and will be given by Larry Lovell at his home. Due to the holiday this will be on the 3rd Monday of the month.

A NOMENCLATURAL CHANGE

Kornicker (1994) transfers the local *Bathyleberis californica* to a new genus as *Xenoleberis californica*.

Kornicker does not mention either *B. garthi* or *B. hancocki*, restricting the composition of *Xenoleberis* to *X. californica*, *X. yamadai*, and *X. bex* (type). Neither *B. garthi* nor *B. hancocki* would fit in *Xenoleberis*, as both have a large exopodite on the mandible. These two species stay in *Bathyleberis* based on structure, and were implicitly excluded from *Xenoleberis* by Kornicker's composition statement.

TAXONOMIC LIST UPDATE

Although the following changes will not appear in the SCAMIT Taxonomic Listing of Benthic Invertebrates until its annual update, we will be needing to use them in our SCBPP data. In consequence please note: *Rhamphidonta* sp A of Cadien is *Rhamphidonta santarosae* (Dall 1916); *Pseudostylochus burchami* is *Koinostylochus burchami*; Cephalaspidea sp A of Cadien is *Parvaplustrum* sp A; *Aglaja* sp A of Cadien is a synonym of *Melanochlamys diomedea*.

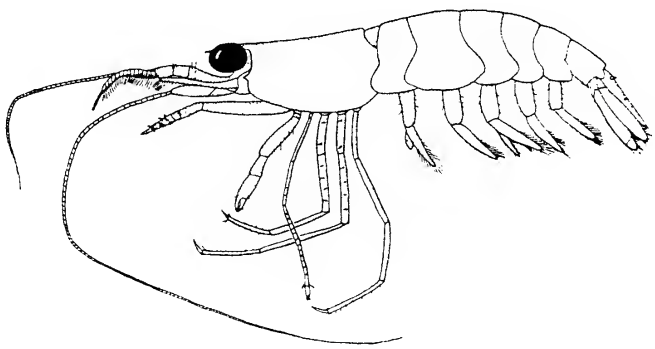
RARE XANTHID CRAB

The report of a collection of a small xanthid crab in San Diego, believed to be a second specimen of the rare *Micropanope latimanus*, prompted a letter from member Mary Wicksten. She sent along a copy of Rathbun's (1930) description of the taxon and commented "As far as a description goes, 'What you see is what you get'. There never has been an illustration of '*M. latimanus*'. Any type material of Stimpson or Lockington almost surely was destroyed by fire... Stimpson's collections burned up in Chicago, Lockington's in San Francisco. It is entirely possible that the species has been redescribed under another name. To make matters worse, rumor has it that the entire genus *Micropanope* is an artificial mess badly in need of revision. Are there any graduate students out there looking for a project?"

Since our last report the specimen has been examined by Jody Martin, Crustacean Curator at The Los Angeles County Museum of Natural History. He concluded that the specimen was not referable to either *Micropanope latimanus* of Lockington (1877) or of Stimpson (1871), but was probably yet another undescribed xanthid.

SOUTHERN SHRIMP IN SAN DIEGO

In the same letter Mary Wicksten reports that the processid shrimp *Ambidexter panamensis* Abele 1972 has been taken in San Diego Bay.



Ambidexter (from Abele 1972)

She indicates that the species will key to *Processa canaliculata* in Schmitt's 1921 key. The genera *Ambidexter* and *Processa* can be separated by the condition of the first pereopods; both chelate in *Ambidexter* [thus the name], only one in *Processa*. Specimens of *Ambidexter* would key to Hippolytidae in Word and Charwat's 1976 key, and would not key in Butler 1980. Neither key includes the family Processidae.

This is not a new record. Two specimens of this species were taken in San Diego Bay in the 1880's by David Starr Jordan. These were mentioned in Abele's 1972 description. Since none of the available shrimp keys will reliably place this animal, Mary's reminder serves to keep us aware of the presence of this rare shrimp in our sampling area.

[...PS **EDITOR'S NOTE**]

I thank Mary Wicksten for her letter, and encourage others to follow in her footsteps. The SCAMIT Newsletter can serve as a rapid distribution network for such notes, aiding both the contributor and the reader. I urge you to send in any such short distributional, taxonomic, or ecological notes for inclusion in the Newsletter. Other postings or notices are also welcome, for example - specimens wanted, help needed, positions open, etc. The more the membership participates, the more it benefits. We are especially happy to hear from members unable to attend meetings.

MINUTES FROM MEETING ON SEPTEMBER 19

The first half of the meeting was spent discussing a few problem annelid groups and sharing some odd polychaetes. It was decided to the leave the discussion of *Polydora* species until another meeting, as we would not have time to cover both *Polydora* species and *Boccardia*, *Boccardiella*, *Pseudopolydora*, and *Carazziella* species. The afternoon was spent discussing these other groups. The meeting was led by SCAMIT member and private consultant, Larry Lovell.

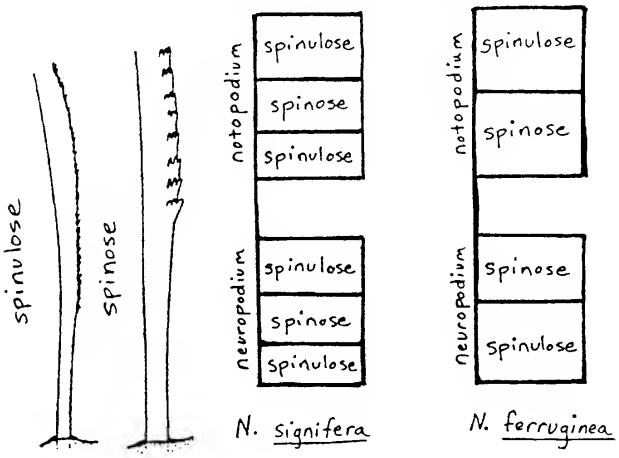
Problems with *Nephtys*

In the July newsletter (Vol.13 No.3) a cautionary note was addressed to members working with the polychaete family *Nephtyidae*. Several SCAMIT members had noticed upon re-examination of material originally identified as *Nephtys ferruginea* that 20 bifid distal papillae surrounded the proboscis rather than 22 as in Hartman's 1940 original description. It was thought that perhaps the southern California species *Nephtys ferruginea* was actually *Nephtys signifera* Hilbig 1992. However, this problem has been further investigated by Larry Lovell, who now believes that *Nephtys signifera* should be a junior synonym of *Nephtys ferruginea*. He is currently at work on a paper for publication detailing this. At the meeting Larry presented us with some of the evidence supporting this synonymy.

In Hilbig's original description of *Nephtys signifera* she describes a glandular area along the dorsolateral edges of the prostomium that stains with methyl green. Presence of this glandular area was viewed as a major differential character separating *N. signifera* from other related species. This glandular area has also been found in *Nephtys ferruginea*, but it is farther below the surface and not readily seen. The prostomium needs to be dissected to locate it. The distribution of spinose, spinulose, and smooth setae in the postacicular fascicles of the neuro- and notopodia also differed between *N. signifera* and *N. ferruginea*, according to Hilbig. Whereas, *N. signifera* is described as having smooth to spinulose setae in the upper and lower fascicles and spinose setae in the middle

fascicles of each ramus *N. ferruginea* has the same distributional pattern, only between the two rami.

Diagram of Parapodia Showing Distribution of Postacicular Setal Types



(illust. of setae from Hilbig, 1992)

Although, *N. ferruginea* is not described as having any smooth postacicular setae Larry believes this could be due to wear and tear on the setae making them look smooth, or perhaps the setae are not developed enough to have the fine spinules yet. It was also recently remarked by Hilbig (1994) that juvenile *N. ferruginea* have been mistaken for *N. signifera* because of their lack of *N. ferruginea*'s characteristic pigmentation. As mentioned previously *N. ferruginea* have 20 bifid distal papillae on the proboscis just as described for *N. signifera*. It is because of all this that Larry believes that *Nephtys signifera* are just underdeveloped or juvenile *Nephtys ferruginea*.

Larry gave some advice for examining nephtyids. When examining the parapodia one needs to make sure they are correctly mounted to show the postacicular setae rather than the preacicular setae, which are very different and have a cross-barred pattern to them. If not everted during preservation, the proboscis needs to be extended to count the distal papillae at its end. Making a ventral slit from the prostomium down to about the 9th or 10th setiger and pulling out the proboscis provides easy access to the distal papillae.

Larry also brought up a problem with the closely related *Nephtys caecoides* and *Nephtys parva*. In the past it has been assumed that *N. parva* was a synonym of *N. caecoides*. If an animal fit the description of *N. caecoides*, but was small and lacked a pigment pattern, it was just considered a juvenile *N. caecoides*. This synonymy may not be valid. The parapodial lobe shape needs to be carefully examined along with the interramal cirri. Larry suggested that some additions be made to the *Nephtys* key on page 571 in the errantiate volume of Hartman's *Atlas of Polychaetes*.

For couplet 10a - *Nephtys caecoides*
add the words "median parapodial lobes incised and well-developed; 22 bifid distal papillae and a single, median, unpaired, subdistal papilla on proboscis"

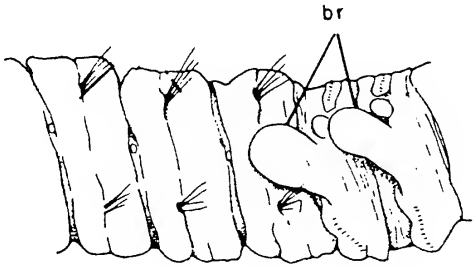
For couplet 10b - *Nephtys parva*
add the words "median parapodial lobes not incised and short; 20 bifid distal papillae and no single, median, unpaired, subdistal papilla on proboscis"

The type material of *N. parva* still needs to be examined and compared to small (10-13 mm) *N. caecoides* to be sure that these differences are not the result of ontogenetic changes. Larry requests anyone with small *Nephtys caecoides* to forward them to him for examination.

Problems with *Notomastus*

The capitellid species *Notomastus lineatus*, has recently been found by SCAMIT members in the southern California area. It has been reported off Orange County at 60m and also

off Point Loma and in Santa Monica Bay. A good illustration of *N. lineatus* is in Uebelacker (1984). This species has been confused with *Notomastus latericeus* in the past. However, they have distinct differences in the shape of the branchiae or branchial lamellae on the abdominal neuropodia. In *Notomastus lineatus* the branchiae are large, superiorly inflated and rounded, while the branchiae of *Notomastus latericeus* are triangular extensions of the neuropodia.

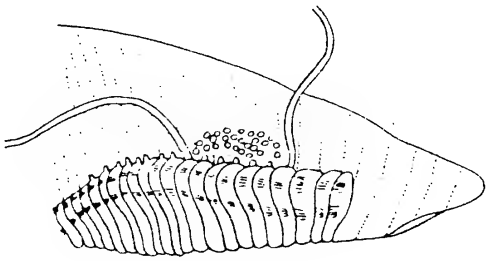


branchiae of *Notomastus lineatus*
(from Ewing in Uebelacker, 1984)

Notomastus lineatus also has a distinctive methyl green staining pattern. Anterior thoracic segments stain solid or slightly mottled blue-green, while the abdominal setigers exhibit dorsal banding. Vertical cross-barring sometimes appears along the sides of the worm, but is not consistently present.

A Possible *Timarete*

Point Loma has recently reported seeing an odd cirratulid with more than one anterior setiger with many branchiae. They have found 2 specimens both from about 320 ft. The branchiae are at the anterior end in 2 pocket-like areas, one on each side of the body. The branchial pockets sit in vertical grooves or excavated areas on each side of the animal dorsally. Ushakov (1955) has a description of *Timarete*, which this cirratulid keys out to. However, a timaretid is described as having short acicular setae posteriorly, which have not, yet, been seen on this particular cirratulid. SCAMIT members should be on the lookout for this odd cirratulid and, hopefully, we will be able to confirm it's identity in the future.



anterior end of a *Timarete*
(from Ushakov, 1955)

Maldanid Alert!

Two small (12mm) unusual polychaetes were collected from station 1328 of the Southern California Bight Pilot Project in 31 meters. They had some of the gross morphologies of Maldanidae (e.g.*Praxillura*) and Bogueidae, but lacked the specific setae needed to fit the descriptions for either group. A brief diagnosis is:

Conditions that fit both Bogueidae and *Praxillura*.

---- maldanid-like worm with arched head and gaping mouth

---- at least 28 setigers

Conditions that fit only Bogueidae.

---- acicular spines absent, capillaries include slightly bilimbate with frilled edges, and also thinner longer serrate capillaries

---- rostrate uncini present from first segment (young or juvenile)

---- no asetigerous preanal segments

---- pygidium simple cone with terminal anus

Conditions that fit only *Praxillura*

---- some pigment spots present dorso-lateral on anterior end

The diagnostic dilemma in assigning these specimens to either Bogueidae or *Praxillura* is that their current setal condition must be ignored and replacement of these setae with different setae assumed. Wolf (1983) discussed larval uncini replacement in Bogueidae and other polychaetes. He stated that rostrate uncini begin in setiger 1 for bogueids and later are lost and subsequently begin on setiger 4-5. Though similar replacement of uncini with acicular spines is unreported in *Praxillura*, Pt. Loma lab has found *Praxillura* (34mm) with as few as 5 setigers with spines (instead of 7-9). If your collections may contain additional specimens similar to these, please contact the SCAMIT editor so additional observations can be completed.

Spionids

The afternoon was spent examining spionids of the genera *Carazziella*, *Boccardia*, *Boccardiella*, and *Pseudopolydora*. First Larry handed out a copy of a very useful table from Blake and Kudenov (1978). This table clearly describes the distinguishing generic characters in the *Polydora*-complex. These genera are mainly discriminated by the presence or absence of branchiae before the modified 5th setiger and the types of major spines on that setiger. Since it is often difficult to examine the spines of the 5th setiger because of their placement in the body it is sometimes helpful to mount them on a slide with their ventral side up or view them ventrally under the dissecting scope.

The genus *Carazziella* is distinguished by having branchiae posterior to setiger 5 and 2 types of major spines, of which both types may bear bristles. Of the 11 species currently known, 9 of them have bristles of both types of spines. The characteristics that the taxonomist needs to look at when examining species of *Carazziella*, and all species of the *Polydora* complex, are:

1) The presence/absence of notosetae and neurosetae on setiger 1

2) The shape of the prostomium. Is it incised or entire?

3) The presence of eyes and their arrangement on the prostomium.

4) The setigers at which branchiae appear.

5) The setiger at which hooded hooks begin, whether they are bidentate or unidentate, and if the dentition changes along the length of the worm.

6) The shape of the spines of the modified 5th setiger.

7) How far the caruncle extends and if it is whole or divided.

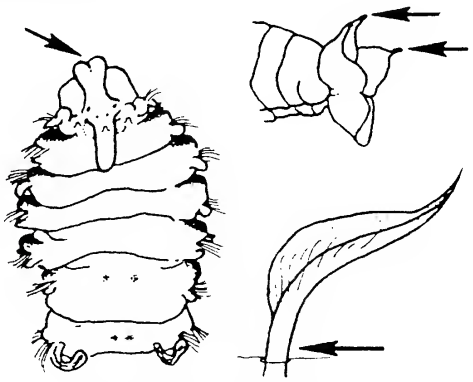
8) The presence of a "gizzard" in the digestive tract.

The common *Carazziella* reported in southern California does not fit the description of *Carazziella citrona*, whose type was described from Mission Bay. The main differences between the two are the setiger at which the hooded hooks start and the shape of the caruncle. The hooded hooks begin on setiger 10 for *C. citrona* and setiger 8 for the other. The caruncle is described as whole and entire for *C. citrona* and is split or divided for our common *Carazziella*.

Ron Velarde has looked at several specimens of our common *Carazziella* and finds that it most closely fits the description of the Australian species, *Carazziella phillipensis* Blake and Kudenov 1978. It was proposed at the meeting that our common *Carazziella* be called *Carazziella sp. A* of SCAMIT and Ron Velarde is currently working on a voucher sheet.

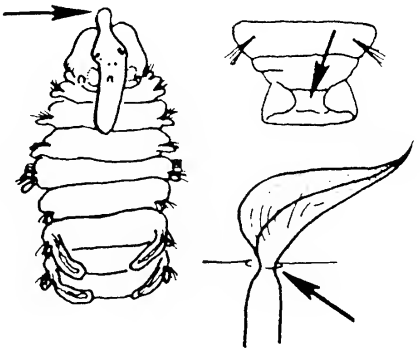
The genus *Pseudopolydora* has only a slightly modified setiger 5 and the branchiae begin posterior to it. The 2 types of major spines are arranged in double J- or U- shaped rows. The best literature sources for this genus are Light, 1978 and Blake and Kudenov, 1978. The two species of *Pseudopolydora* that we encounter in southern California are *P. kempi* and *P. paucibranchiata*. They are distinguished by the shape of their prostomia, the presence or absence of a distinct constriction on the shaft of the limbate setae of the modified 5th setiger, and the shape of their pygidia.

Pseudopolydora kempi has an incised prostomium, no constriction on the shaft of the limbate setae, and a pygidium with 2 well developed dorsal digitiform lappets. It also has major spines of the 5th setiger arranged in a double J-shaped row. Compared to *P. paucibranchiata*, *P. kempi* is a smaller and thinner animal.



Pseudopolydora kempi
(from Light, 1978)

Pseudopolydora paucibranchiata has an entire prostomium that is bluntly rounded, a distinct constriction on the shaft of the limbate setae, and a reduced pygidium shaped into a ring-like disk with a wide median dorsal gap. It also has modified spines that are arranged in a double U-shaped row. It is also found in shallower habitats, like Anaheim Bay.



Pseudopolydora paucibranchiata
(from Light, 1978)

The two genera, *Boccardia* and *Boccardiella* are distinguished from the other groups of the *Polydora*-complex by having branchiae present on setigers anterior to the modified 5th. *Boccardiella* has 1 type of major spine on the 5th setiger and *Boccardia* has 2 types.

Larry has modified the key from Hartman's Atlas to update it and include species of *Boccardiella*. This modified version has been included as one of the handouts with this newsletter. Larry showed us specimens of most of the species covered in the key from the Atlas and went over their distinguishing characteristics.

Boccardia columbiana (Berkeley, 1927)

- prostomium rounded
- two kinds of spines on the modified 5th setiger, falcate and brush-topped

- very prolonged, forward directed notosetae on the 1st setiger
- slight pigmentation on the lateral edges of the prostomium
- Habitat - rocky intertidal
- Literature references - Hartman, 1969 and Light, 1978

Boccardia proboscidea Hartman, 1940

- prostomium rounded
- 2 kinds of setae on the modified 5th setiger, falcate and brush-topped
- short notosetae on 1st setiger
- line of dusty pigment on each side of the prostomium
- Lit. ref. - Hartman, 1941; Light, 1978 and Woodwick, 1963

Boccardia pugettensis Blake, 1979

- prostomium incised and forming 2 distinct lobes
- notosetae present on setiger 1
- a reduced modified 5th setiger with falcate and brush-topped spines
- hooded hooks begin on setiger 7 and are bidentate but sometimes the apical tooth is lost or the hood is torn off
- Lit. ref. - Blake, 1979 original description and Hobson and Banse, 1981

Boccardia basilaria (Hartman, 1961)

- prostomium incised
- modified 5th setiger with 2 types of spines, falcate and brush-topped
- notosetae present on first setiger, but not prolonged
- hooded hooks are unidentate posteriorly, but may have a slight secondary tooth anteriorly
- Habitat - shallow; LA Harbor, Oxnard, Goleta at 60 ft.
- Lit. ref. - Hartman, 1961 and Light, 1978

Boccardia tricuspa (Hartman, 1939)

- prostomium entire
- modified 5th setiger with 2 types of spines, falcate and tricuspid

- no notosetae on setiger 1 only a small fascicle of neurosetae
- hooded hooks bidentate
- Lit. ref. - Woodwick, 1963; Hartman, 1969 and Light, 1978

Boccardia berkeleyorum Blake and Woodwick, 1971

- prostomium rounded
- 1st setiger lacks notosetae and a notopodial lobe only a small fascicle of neurosetae

- modified 5th setiger with 2 types of spines, falcate and brush-top
- bidentate hooded hooks
- posterior parapodia with simple acicular spines
- Lit. ref. - Blake and Woodwick, 1971 original description and Light, 1978

Boccardiella hamata (Webster, 1879)

- prostomium bifid
- only 1 type of major spine on modified 5th, falcate
- branchiae on setigers 2, 3, 6+, but missing from 4 and 5
- posterior notopodia with enlarged, recurved, falcate hooks
- Lit. ref. - Blake, 1966 and Blake and Kudenov, 1978

Boccardiella truncata (Hartman, 1936)

- bifid prostomium
- modified 5th setiger with only 1 type of spine, falcate
- branchiae absent on setigers 4 and 5
- posterior notopodia without enlarged, recurved, falcate hooks
- Lit. ref. - Hartman, 1969 as *Boccardia truncata*

Included in this newsletter is a copy of a table of *Boccardia* and *Boccardiella* species and their distinguishing characteristics. It was made by SCAMIT member Leslie Harris several years ago, but it is still valid and very useful. It has been distributed before, but for those members not familiar with it, here it is again.

A NEW PROBLEM

Users of specialty papers for labels in wet specimen storage have now been impacted by the discharge requirements placed upon paper manufacturers. For many years, museums, surveys, and collectors have relied upon *Resistall Paper* from Byron Weston Paper Company for archival labels used in wet collections. Specially formulated, this paper was useful in both alcohol and formaldehyde storage. Another Byron Weston paper, *Linen Record*, has also used and had consistently held up to wet storage conditions.

The Byron Weston Company has notified its customers that it will no longer manufacture *Resistall*. This is apparently the direct result of new and stringent discharge permits placed upon the manufacturer. *University Products* in Holyoke Massachusetts (order desk tel. 1 (800) 628-1912) currently has some supply of 28 pound *Resistall*. This represents the last available supply.

The L. A. County Sanitation Districts has successfully used *Linen Record* paper with watermarks through 1991 for wet storage labeling. Unfortunately, the 1993 version paper has apparently been greatly modified following these new discharge limitations.
The 1993 paper is unable to withstand even brief immersion in liquid (water, alcohol, etc) without sloughing and tearing. Small labels of less than 10 centimeters will tear under their own weight when handled.

There is currently no solution to this dilemma. A local supplier of Byron Weston papers has already contacted the Smithsonian for suggestions and is attempting to find a

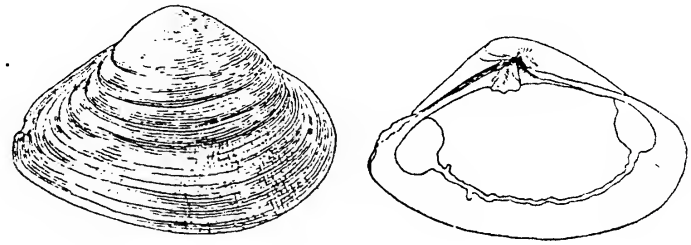
European or Japanese source of a suitable paper product. Others have placed notices on electronic bulletin boards seeking suggestions. If you have a suggestion or solution to this situation, please contact the SCAMIT Newsletter editor.

More
Regulations,
More Discharge Requirements,
More Biological Surveys and Analysis,
More Wet Storage of Specimens with Labels,
More Regulations on Paper Manufacturers,
No Paper for Wet Storage of Specimens,
No Voucher Collections for Analysis,
No Good Biological Surveys,
Violations of Permits,
More Regulations,
More?

WORKING VACATION

Being one of those biologists who enjoys what he does, your Editor (Don Cadien) took his son north along the coast into southern Oregon on vacation in late August. Numerous stops were made, among them - at Big Lagoon and Clam Beach above Eureka in Northern California, at Bodega Bay, and at the Cal. Academy of Sciences.

At Big Lagoon, while relaxing in the calm warm brackish water we examined the local biota. A bottom of mudstone and fine mud yielded *Corophium* sp., *Mytilus* sp., *Macoma balthica*, and a clam later identified by Terry Gosliner (Cal. Acad. Sci.) as *Potamocorbula amurensis*. This small clam, which has successfully invaded and now dominates much of the San Francisco Bay benthos, was not previously known from Big Lagoon, where it is now present in vast quantities. Terry sent off a sample to Jim Carlton, who tracks the distribution history of such introduced species.



Potamocorbula amurensis (from Habe 1949)

At Clam Beach, while frolicking in the surf, we saw small arthropods swash-riding on the waves sweeping over the beach. The way they burrowed into the sand made me believe they were phoxocephalid amphipods. They were easily caught with a cup and I collected some for later ID. They proved to be Barnard's *Dogielinotus loquax*, since transferred to *Proboscinotus* by Bousfield & Tzvetkova (1982). Happy to have finally found an animal I had long wanted to see, I became even happier when Clam Beach proved to be the type locality, making my specimens topotypes.

Later in the trip we camped for several days at Doran Beach on the spit that separates Bodega Bay from the open sea. Although tides were not good, we still had a considerable area of the south Bay exposed at low water. Molts of *Cancer magister*, *Cancer antennarius*, and *Cancer productus* were plentiful on the strand line, although the living animals stayed below the tide. Searching through the mixed green/brown algal mat which covered large areas of the south Bay yielded a surprising find: sand dollars living in algae! Subadult *Dendraster excentricus* were found both in the usual habitat (sand surface) and perched on thick mats of algae. These later animals seemed perfectly healthy and content, staying on the algal mat despite the nearby availability of sand. It is assumed they were carried onto the mat by the strong tidal flow near the baymouth. Why they stayed is a mystery,

although they may be waiting for the incoming tide to once again provide passive transport to open sand habitat.

One of the last stops on the trip was at the California Academy of Sciences for meetings with Gary Williams and Terry Gosliner. Numerous specimens of the gorgonian *Adelogorgia* were added to the Academy collection. These had been taken during the SCBPP trawling effort off San Diego in a net ripped by a reef. These specimens will help Gary pursue the question of whether there is more than one species of *Adelogorgia* on our coast. Material of several cephalaspid mollusks was left with Terry Gosliner for his examination. This material will assist in his reassessment of the California cephalaspids. Results of these investigations will be the basis of one or more SCAMIT meetings in 1995.

Our hosts gave us a tour of the Academy collections. Despite their size and coverage there are still gaps to be filled (they had no *Adelogorgia* prior to those we donated), and SCAMIT can have a role in connecting the Academy with specimens (particularly in trawls) taken during monitoring in southern California. I will be pursuing this with Gary, Terry, and collections manager Bob Van Syoc. A list of material needed will be prepared and distributed through the Newsletter.

PROPOSED WORKSHOP

The Department of Ecology for the State of Washington has a proposed workshop planned for early next year. The workshop will focus on taxonomic standardization of benthic invertebrate organisms from the Pacific Northwest region. Several of our SCAMIT members have been asked to lead the workshop. Enclosed in this newsletter is a questionnaire and a schedule of the suggested agenda.

LITERATURE CITED

ABELE, LAWRENCE G. 1972. A review of the genus Ambidexter (Crustacea: Decapoda: Processidae) in Panama. Bulletin of Marine Science 22(2):365-380.

BLAKE, JAMES A. 1966. On Boccardia hamata (Webster), New Combination (Polychaeta, Spionidae). Bulletin of the Southern California Academy of Sciences 65(3):176-184.

---. 1979. Revision of Some Polydorids (Polychaeta: Spionidae) Described and Recorded from British Columbia by Edith and Cyril Berkeley. Proceedings of the Biological Society of Washington 92(3):606-617.

BLAKE, JAMES A., and Jerry D. Kudenov. 1978. The Spionidae (Polychaeta) from Southeastern Australia and Adjacent Areas with a Revision of the Genera. Memoires of the National Museum , Victoria 39:171-280.

BLAKE, JAMES A., and Keith H. Woodwick. 1971. New Species of Polydora (Polychaeta: Spionidae) from the Coast of California. Bulletin of the Southern California Academy of Sciences 70(2):72-79.

BOUSFIELD, EDWARD L., and Nina L. Tzvetkova. 1982. Marine Invertebrates of Coastal Biocenoses of the Arctic Ocean and the Pacific Ocean. Studies on Dogielinotidae (Amphipoda, Talitroidea) from the shallow waters of the North Pacific region. Explorations of the Fauna of the Seas 29(37): 76-94.

BUTLER, T. H. 1980. Shrimps of the Pacific coast of Canada. Canadian Bulletin of Fisheries and Aquatic Sciences (202):1-280.

DALL, WILLIAM HEALEY. 1916. Diagnoses of new species of marine bivalve mollusks from the northwest coast of America in the collection of the United States National Museum. Proceedings of the United States National Museum 52(2183):393-417.

EWING, R MICHAEL. 1984. Chapter 14. Family Capitellidae Grube, 1862. *In*: Uebelacker, J.M., and P.G. Johnson (eds.): Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico. Barry A. Vittor and Associates, Inc. Volume 2: 14-23 to 14-26.

HABE, TADASHIGE. 1949. Erodontidae in Japan. Illustrated Catalogue of Japanese Shells (1):1-6.

HARTMAN, OLGA. 1940. Polychaetous Annelids Part II. Chrysopetalidae to Goniadidae. Allan Hancock Pacific Expeditions 7(3):173-286.

---. 1941. Some Contributions to the Biology and Life History Of Spionidae from California. Allan Hancock Pacific Expeditions 7(4):289-322.

---. 1961. Polychaetous Annelids from California. Allan Hancock Pacific Expeditions 25:1-224.

---. 1969. Atlas of the Sedentariate Polychaetous Annelids from California.

HILBIG, BRIGITTE. 1992. New Polychaetous Annelids of the Families Nereididae, Hesionidae, and Nephtyidae from the Santa-Maria Basin, California, with a Redescription of Glycera nana Johnson, 1901. Proceedings of the Biological Society of Washington 105(4): 709-722.

HILBIG, BRIGITTE. 1994. Family Nephtyidae pp. 329-362 *In*: Blake, James A. and Brigitte Hilbig (eds.): Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel Vol. 4. The Annelida Part 1. Oligochaeta and Polychaeta: Phyllodocida. Santa Barbara Museum of Natural History.

HOBSON, KATHARINE D., and Karl Banse. 1981. Sedentariate and Archiannelid Polychaetes of British Columbia and Washington. Canadian Journal of Fisheries and Aquatic Sciences 209:1-145.

KORNICKER, LOUIS S. 1994. Ostracoda (Myodocopina) of the SE Australian Continental Slope, Part 1. Smithsonian Contributions to Zoology 553

LIGHT, WILLIAM J. 1977. Spionidae (Annelida: Polychaeta) from San Francisco Bay, California: A Revised List with Nomenclatural Changes, New Records, and Comments on Related Species from the Northeastern Pacific Ocean. Proceedings of the Biological Society of Washington 90(1):60-88.

LOCKINGTON, W. N. 1877. Remarks on the Crustacea of the Pacific coast, with descriptions of some new species. Proceedings of the California Academy of Sciences 7:28-36.

RATHBUN, MARY J. 1930. The Cancroid Crabs of America of the Families Euryalidae, Portunidae, Atelecyclidae, Cancridae and Xanthidae. United States National Museum Bulletin 152:1-609.

SCHMITT, WALDO L. 1921. The Marine Decapod Crustacea of California, with special reference to the Decapod Crustacea collected by the United States Bureau of Fisheries Steamer 'Albatross' in connection with the Biological Survey of San Francisco Bay during the years 1912-1913. University of California Publications in Zoology 23:1-470.

STIMPSON, WILLIAM. 1871. Notes on North American Crustacea, in the Museum of the Smithsonian Institution. No. III. Annals and Lyceum of Natural History of New York 10: 92-136.

USCHAKOV, P. V. 1965. Polychaeta of the Far Eastern Seas of the U.S.S.R.

WOLF, PAUL S. 1983. A Revision of the Bogueidae Hartman and Fauchald 1971, and its Reduction to Bogueinae, a Subfamily of Maldanidae (Polychaeta). Proceedings of the Biological Society of Washington 96(2):238-250.

WOODWICK, KEITH H. 1963. Comparison of Boccardia columbiana Berkeley and Boccardia proboscidea Hartman (Annelida, Polychaeta). Bulletin of the Southern California Academy of Sciences 62(3):132-139.

WORD, JACK Q., and Danuta Charwat. 1974. Key to shrimp common in Southern california trawl catches. Southern California Coastal Water Research Project (SCCWRP), Technical Memorandum (221):1-41.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

TABLE 3

Some Taxonomic Characteristics of the Genera of the *Polydora*-complex

Genus	*Setiger 1*	*Setiger 5 modification*	*Setiger 5 major spines*	*Branchiae begin*	*Hooded hooks beginning; no. teeth*	*Hooded hooks Structure*
Pseudopolydora	Normal to achaetous	Slight to moderate	2 types, usually in J- or U-shaped double rows	Posterior to setiger 5	Setiger 8; bidentate	Secondary tooth closely applied main fang; with constriction on shaft
Polydora	With or without notosetae	Great	1 type, with or without companion setae	Posterior to setiger 5	Setigers 7-17; bidentate	With prominent angle between teeth; with or without constriction on shaft
Carazziella	With or without notosetae	Great	2 types in 2 rows, 1 or both may bear bristles	Posterior to setiger 5	Setigers 7-14; bidentate	With prominent angle between teeth; without constriction on shaft
*Tripolydora**	Without notopodia and notosetae	Slight	1 type, with companion setae	Setiger 2, present on setiger 5	Setiger 9; tridentate	Secondary teeth closely applied to main fang; no constriction on shaft
Boccardiella	With or without notosetae	Great	1 type, with companion setae	Setiger 2, present or absent on setiger 5	Setiger 7; bidentate	With prominent angle between teeth; without constriction on shaft
Boccardia	With or without notopodia and notosetae	Great	2 types in 2 rows, 1 may be bristle-topped	Setiger 2, absent on setiger 5	Setigers 7-8; bidentate	With prominent angle between teeth; without constriction on shaft

* Holotype of *Tripolydora spinosa* Woodwick, 1964 [Type-species] from Eniwetok was examined (USNM 254881).

(Table taken from Blake and Kudenov, 1978)

Modified Key from Hartman's Atlas

Boccardia Carazzi, 1895 and Boccardiella

Key to Species

. Fifth segment modified, with 2 kinds of setae (Boccardia) 4

. Fifth segment not modified, with one kind of setae (Boccardiella) 2

. Branchiae absent from setigers 4 to 6 . . . . . → Boccardiella ligerica

. Branchiae absent from setigers 4 and 5 3

. Posterior notopodia with enlarged falcigers (also) . . . . . Boccardiella hamata

. Posterior notopodia without falcigers . . . . . Boccardiella truncata

. Segment 5 with tricuspid and falcate spines . . . . . B. tricuspa

. Segment 5 with brush-topped and falcate spines 5

. First setiger with prolonged setae directed forward . . . . . B. columbiana

. First setiger with small, inconspicuous setal fascicles (or notosetae absent) 6

. Hooded hooks in posterior neuropodia are entirely falcigers . . . . . B. basilaria

. Hooded hooks in posterior neuropodia are distally bifid (or entire like B. pugettensis) 7

. Prostomium rounded at anterior margin 8

. Prostomium medially incised at anterior margin 9

8. Posterior notopodia with acicular spines (spines twice as thick as capillary setae) . . . . . B. berkeleyorum

8. Posterior notopodia without acicular spines . . . . . B. proboscidea

9. Notosetae present on setiger 1 . . . . . B. pugettensis

9. Notosetae absent on setiger 1 . . . . . B. polybranchia

BOCCARDIA

Leslie Harris
Los Angeles County Natural History Museum

Species	Prostomium	Eyes	Median antennae	Notosetae setiger 1	Companion setae, set 5	Spiniger type setiger 5	Post notop spines	Pygidium shape	Hooded hook constriction	Caruncle, to setiger	Start of notopod hook	# Hooks per row	Branchiae, from - to	Pigmentation	Habitat
Boccardia															
basilaria		+	-	-	-	3-5 falcat;e; 6 bristle-top w/ constricted neck	acicular	semi-circular disc, 2 ventral lappets	-	end of 3	7		2,3,4...6 absent post	dusky in front along parapodia	silt & sand, subtidal
berkeleyorum		-	-	-	-	falcate; bristle-top w/ accessory tooth	acicular	4 small lobes	-	end of 4	7	ant 5-6, (up to 7) post 3-4	2,3,4...6 absent post ¼ body	none	in hermit crab shells, clams, Lithothamnoid
chilensis		-	+	+	-	falcate; distal concavity	none	simple collar, ventral incision	-	into 2			2,3,4...6 present	none	intertidal and subtidal
columbiana		+	-	+ long	-	2- 5 falcate; 2-5 bristle-top	none	4 equal lobes	-	end of 3	7(8)		2,3,4...6 absent last few setigers	overall red-brown lateral along prostomium and edges of palpal grooves	boring in wood, algae, and shells
natrix		+		+	-	falcate; bristle-top with 2 heavy smooth bosses	none	4 lobes	-	end of 2	7	7-9 post 2-3	2,3,4...6 present	?	?
perata		+		+	-	falcate; bristle-top and ckub shaped	none	simple collar w/ several weak lobes	-	into 5			2,3,4...6 absent post ⅓	?	?
polybranchia		+/-	-	-	-	falcate; inverted bristle-top cone w/ obique base	none	disk-like	-	end of 3	7		2,3,4...6 absent post ½	life: green & red-yellow; preserv: dark along sides prost and palps	estuarine
proboscidea		+	-	+ short	-	falcate; bristle-top	none	4 lobes, dorsal smaller than ventral	-	end of 3	7		2,3,4...6 absent last few	laterally along pros & edges of palpal grooves	sand flats, bores in rocks among *Mytilus*
pseudonatrix		+		+	-	falcate; central cone w/raised margins	none	2 flattened glandular cushions	-	end of 2			2,3,4...6 absent post ⅓	palps barred	?
tricuspa		+	-	-	-	falcate; tricuspid	none	4 small lobes	-	end of 3			2,3,4...6 absent post ⅔	none	intertidal, boring or encrusting
pugettensis		+	-	+	-	simple, falcate; bristle-top	acicular	4 lobes, dorsal pair smaller than ventral	-	end of 2	7	5-6	2,3,4...6 to end of body	tan-brown, prost/ant set brown; small pr black spots on dorsum occasionally	shallow subtidal intertidal sands
sp.		+	+	-	?	simple, falcate	?	?	?	end of 3			2,3,4...6 absent post ½	?	?

BOCCARDIELLA AND SELECTED GENERA

Leslie Harris
Los Angeles County Natural History Museum

Species	Prostomium	Eyes	Median antennae	Notosetae setiger 1	Companion setae, set 5	Spiniger type setiger 5	Post notop spines	Pygidium shape	Hooded hook constriction	Caruncle, to setiger	Start of notopod hook	# Hooks per row	Branchiae, from - to	Pigmentation	Habitat
Boccardiella															
hamata		+	-	-	+	simple, falcate	long falcate, recurved hooks	small ring, 2 ventral lappets w/terminal process	-	end of 3	7(8)		2,3...6 absent post ¼	none	boring wood, algae and shells; encrusting in mud and sand
ligerica	 weak	+	-	-	+	simple, falcate	long falcate, recurved hooks	flattened plate w/2 terminal cirri	-	end of 2	7	ant 16 post 8-9	2,3...7 absent post ⅔	none	intertidal mud flats
truncata		+	-	-	+	7-10 falcate	none	disk-like w/ dorsal gap	-	end of 2	7(8)		2,3,4...6 absent post 1/5	life: greenish-brown dark spots behind parapodial bases	intertidal in sand-stone reefs
GENERA:															
Polydora				+/-	+/-	1	+/-		+/-		7-17 bidentate		post to 5		
Caraziella				+/-	-	2			-		7-14 bidentate		post to 5		
Boccardia				+/-	-	2	+/-		-		7-8 bidentate		start 2; absent on 5		
Boccardiella				+/-	+	1			-		7 bidentate		start 2; +/- on 5		

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600 • (206) 407-6000 • TDD Only (Hearing Impaired) (206) 407-6006

September 30, 1994

Dear Taxonomists Interested in Marine Benthic Invertebrates from the Pacific Northwest:

This letter is a follow-up to the Pacific Northwest Aquatic Taxonomy Meeting organized by Linde Looy (Fraser Environmental Services), Bill Duncan (B.C. Environment), Gordon Green (Royal British Columbia Museum), and others and held at The Royal British Columbia Museum in Victoria, B.C. in January of this year. As a preliminary organizational effort, the meeting was successful in bringing together the large group of aquatic taxonomists working in the Northeastern Pacific region and in raising many relevant issues concerning taxonomic work. Most participants felt that to be successful, any subsequent taxonomic workshops should be limited to smaller groups of taxonomists whose interests focus on a more restricted group of organisms.

The Marine Benthic Monitoring Unit of the Washington State Department of Ecology would like to pursue the development of a smaller series of workshops. These would focus on taxonomic standardization of benthic invertebrate organisms collected from the Pacific Northwest region, including coastal and estuarine systems from Oregon, Washington, British Columbia, and Pacific Alaska. Specifically, we would like to host the first of these workshops, beginning with the examination of some of the problematic polychaete species discovered in samples we have collected from Puget Sound.

This letter is being addressed to those individuals from the Taxonomists Working Group Membership Directory (1994-1995) that specifically indicated an interest in the taxonomy of coastal and estuarine benthic invertebrates from this area. The letter will also be published in the next Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) newsletter in an effort to reach anyone inadvertently overlooked in the mailing process. Participants should include any interested taxonomists from private consulting, government agencies, universities, or any other organization conducting research pertaining to the ecology and taxonomy of these organisms.

Ecology's Marine Benthic Monitoring Unit has participated in the long-term Puget Sound Ambient Monitoring Program (PSAMP) since 1988, collecting benthic invertebrates annually from 34 permanent and 42 rotational (3 sets of 14) stations located throughout Puget Sound, the Strait of Georgia, and the Strait of Juan de Fuca. From this work, a taxon list has been generated that includes 640 Polychaeta and other Annelida, 430 Arthropoda, 306 Mollusca, 74 Echinodermata, and 231 other taxa. Working with an extensive species list generated by over twelve taxonomists, Ecology recognizes the need for taxonomic standardization of the names of organisms found within Puget Sound as well as throughout Pacific Northwest waters. Such standardization serves to create compatible data sets between years of a program, as well as between various regional biological monitoring programs.

Mr. Larry Lovell, Mr. Eugene Ruff, and Mr. Tony Phillips, taxonomists from Southern California (all SCAMIT members) who have been identifying polychaetes for the PSAMP program, have cordially agreed to co-lead "SCAMIT-style" polychaete training sessions at our proposed workshop. Ms. Leslie Harris, the collection manager for the Los Angeles County Museum-Allan Hancock Foundation Polychaete Collection (LACM-AHF), will also co-lead the workshop. The LACM-AHF polychaete collection is second only to the Smithsonian's in size and contains the world's largest assemblage of eastern Pacific type and non-type lots. Leslie has offered to examine vouchers or problem material sent to her before the meeting. The specimens will be compared to types and authoritative material identified by Olga Hartman, Kristian Fauchald, and others. Samples to be verified by Leslie for discussion during the workshop must reach her before December 15th. For further information on how to send specimens, contact Leslie at:

Los Angeles County Museum of Natural History
Invertebrate Zoology/ Polychaetes
900 Exposition Boulevard
Los Angeles, California 90007
tel: (213) 744-3234 or (213) 740-5157
fax: (213) 746-2999
email: docker@netcom.com

The combined experience and skill of these four taxonomists should provide for lively and informative workshop sessions.

Enclosed you will find a questionnaire on which you may indicate your desire and willingness to participate in this proposed workshop, and a subsequent series of similar

workshops based on these interests. Tentative dates, times, and an agenda for the first workshop to be held at Ecology's headquarters in Olympia, Washington, have been suggested. Please complete and return the questionnaire and any agenda suggestions to me by October 31. After receiving your responses, a final schedule and agenda will be mailed in late November. Thank you for your time and attention. We hope to make this an interesting, informative, and successful event.

Sincerely,

Margaret Dutch

Margaret Dutch
Environmental Specialist
Ambient Monitoring Section

MD:kd
Enclosures

Questionnaire

Please RSVP and return questionnaire to the address below by October 31, 1994:

Margaret Dutch
WA State Dept. of Ecology - EILS
300 Desmond Drive
P.O. Box 47710
Olympia, WA 98504-7710

206-407-6021 (telephone)
206-407-6884 (FAX)

1. Do you think that a series of taxonomic standardization workshops, focused on the coastal and estuarine benthic invertebrates ranging from Oregon to Pacific Alaska, would be interesting and useful?

2. Would you participate in such a series of taxonomic standardization workshops?

3. Would you attend a Puget Sound Polychaete Workshop hosted by the Department of Ecology in Olympia, Washington on January 26 and 27, 1995?

4. If these dates are not suitable for you, would February 2 and 3, 1995 be better?

5. How far from your home would/could you travel to attend these workshops?

6. How many days/hours do you think are reasonable or would you be willing to spend on such a workshop?

7. Do you think more than one major taxonomic group (e.g., Polychaete, Mollusca, Arthropoda, Miscellaneous Taxa) could/should be presented at one meeting?

8. We are propocing that this series of workshops include coastal and estuarine benthic invertebrates with geographic distributions ranging from Oregon to Pacific Alaska. Do you think this is too broad a distribution? Should we limit our work to examination of specimens from a more limited geographical range? What range would you suggest?

9. Would your work place be interested in hosting the next in this series of regional taxonomic workshops?

10. Do you have any comments regarding the attached suggested agenda? What would you add to or delete from it? (Please use back of paper to make further comments)?

Your Name:

Affiliation:

Mailing Address:

SUGGESTED AGENDA

DAY 1

9:00 a.m. - Registration, coffee & donuts

9:30 - Welcome address (Ms. Margaret Dutch)
- taxonomic standardization - definition, need
- workshop goals
- brief review of workshop agenda
- introduction of Ecology personnel, workshop leaders from Southern California

9:45 - Introductions - everyone in room to participate:
- name
- affiliation
- taxonomic specialty
- reason for attending workshop

10:00 - Taxonomic Standardization - Historical perspective and resources
- Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) (Mr. Larry Lovell)
- Los Angeles County Museum - Allan Hancock Foundation Polychaete Collection (Ms. Leslie Harris)

10:30 - Break

11:00 - Puget Sound Ambient Monitoring Program - Department of Ecology's Marine Sediment Monitoring Program (Dr. Roberto Llansó)
- overview of program
- presentation of master species list

11:30 - Workshop Organization (Mr. Larry Lovell, Mr. Eugene Ruff, Mr. Tony Phillips, Ms. Leslie Harris)
- Outline the organization of afternoon and next day taxonomic workshop sessions

12:00 noon - Break for lunch, discuss supper plans, make supper reservations

1:00 p.m. - Polychaete workshop session to be co-lead by Mr. Larry Lovell, Mr. Eugene Ruff, Mr. Tony Phillips, and Ms. Leslie Harris. The sessions will begin with presentation of specimens by the co-leaders to the audience. The presentations will be interactive, with open and lively discussion between the co-leaders and the audience members. Audience members will also be encouraged to present their specimens and taxonomic problems to the group. At least one dissection and one compound microscope will be available with video display capability for viewing by the audience. Other dissection and compound scopes will be set up in the room for use by participants. Refreshments will be available throughout the day for informal breaks and for the comfort of participants.

4:30 p.m. - Break for the day

DAY 2

9:00 a.m.	-	Continuation of the polychaete workshop session to be co-lead by Mr. Larry Lovell, Mr. Eugene Ruff, Mr. Tony Phillips, and Ms. Leslie Harris.
12:00 noon	-	Break for lunch
1:00 p.m.		Continuation of the polychaete workshop session to be co-lead by Mr. Larry Lovell, Mr. Eugene Ruff, Mr. Tony Phillips, and Ms. Leslie Harris.
3:30 p.m.	-	Discussion of future Pacific Northwest invertebrate taxonomic workshops - workshop format and standardized agenda for future meetings - location of subsequent meetings - method of communication and costs - other details
4:30 p.m.	-	Adjourn

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

October, 1994 Vol. 13, No.6

NEXT MEETING:	2nd Half of *Polydora* Complex of Polychaetes
GUEST SPEAKER:	Larry Lovell
DATE:	November 21, 1994
TIME:	9:30am - 3:30pm
LOCATION:	Larry's Home 1036 Buena Vista Dr. Vista, CA (see enclosed map)

(from Light, 1978)

NOVEMBER 21 MEETING

The November meeting will be the second half of the *Polydora-Boccardia* complex given by Larry Lovell in September. This meeting will focus on the genus *Polydora* since the other genera of this complex were covered in the first meeting. Please bring specimens of this complex as well as any problem polychaetes which have turned up in the SCBPP benthic samples.

CHRISTMAS PARTY

It's THAT TIME AGAIN. Please reserve a space on your busy Yuletide calendar for a

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

gathering at the Cabrillo Marine Aquarium on Saturday, December 10th from 6 to 9 pm (or so) to celebrate the season, renew old friendships, make new ones, and generally have a good time with good folks. Of course there will be food and drink, and the facilities at our disposal. Please bring the family; what is a Christmas Party without children! SCAMIT will provide the refreshments, please plan to bring a pot-luck dish of some kind (coordinate with either Don Cadien or Cheryl Brantley). Hope we can all be there!!!

GOOD-BYE

SCAMIT member and private consultant, Gene Ruff is currently relocating to Tacoma, Washington. We thank him greatly for all of his participation at SCAMIT meetings during his brief stay in southern California.

NEW PUBLICATIONS

Included in this newsletter are order forms for 2 new publications. One is on sipuculids and the other is on sabellarid polychaetes.

Members should also be aware that another installment of the Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel has been released. Volume 2 - The Porifera, has just come out. It is available for $15.00 plus tax and handling from The Department of Invertebrate Zoology, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, California 93105.

MORE ON SHRIMP

In the last newsletter it was reported by Mary Wicksten that the processid shrimp *Ambidexter panamensis* ranged into our area, and should be checked for. This reminder proved most timely. I am happy to report that 15 of these rarely reported shrimp were recently taken in environmental monitoring samples from San Diego Bay. Attempts are underway to obtain these samples for the Crustacea Section of the Los Angeles County Museum of Natural History.

MINUTES FROM OCTOBER 17TH

The SCBPP trawl invertebrate voucher list generated by Mary Bergen of SCCWRP was reviewed by the members present. This list is a compilation of the trawl invertebrates vouchered from all the agencies involved in the Bight Project. Corrections, additions, and deletions were made to the list and those animals needing further taxonomic review were noted. There was some discussion over which animals to exclude from this list. It was decided that the criteria outlined in the SCBPP Field Manual were appropriate and would be followed. The Manual states "...organisms that are greater than 1 cm in any dimension will be identified. Colonial and pelagic organisms will be noted but not enumerated. Infaunal organisms will not be documented." While some agencies reported everything that was encountered in a trawl, other agencies followed the procedure from the field manual, and didn't record or make note of the presence of an organism not fitting the criteria outlined in the manual. Because of this, many exclusions needed to be made to standardize the list for future analysis of the data.

An announcement was made that SCBPP provisional species need to have their voucher sheets distributed to all agencies for review **as soon as possible**. This may be done thru Internet, by fax, or as a handout distributed at a SCAMIT meeting. One such handout on chitons was distributed at this meeting. Timothy Stebbins from the City of San Diego has put together a list of chitons reported from

has put together a list of chitons reported from Southern California Bight monitoring programs and given a description of a provisional species collected by San Diego during their SCBPP trawls. He notes that a voucher sheet will be forthcoming. A copy of this handout is included in the newsletter.

A bryozoan taxonomic name change was reported at the meeting. *Victorella argilla* is now *Cryptoarachnidium argilla*. We are still looking for the citation of this change (which happened a number of years ago), and will report it in a future newsletter.

John Ljubenkov of MEC brought 4 very different forms of the gorgonian *Adelogorgia* to the meeting. This provided SCAMIT members with a good example of the variation in colony morphology in this type of gorgonian. John made the comment that *Adelogorgia* has often been misidentified as *Muricea* when the identifications were made from photographs, and occasionally when they were made from specimens in hand. This confusion resulted from the assumption that the shallow-water rusty-red gorgonian with golden yellow zooids was a *Muricea*, and that *Adelogorgia* occurred only offshore. He also confirmed that *Adelogorgia* sp. A is only a form of *Adelgorgia phyllosclera*. The only sure way of correctly identifying these gorgonians is by examination of the sclerites.

Another provisional species that MEC vouchered as part of the SCBPP trawls for Orange County Sanitation was a very small anemone identified as *Amphianthus* sp. OC1, following the naming procedure in the SCBPP manual for infauna. It was found wrapped around the stem of *Adelogorgia* from deep water and was translucent pink in color.

The afternoon was spent examining specimens from the trawl invertebrate voucher list that needed resolution of their taxonomic identities.

IDENTIFICATION OF OPHIUROIDS

Don Cadien

Of the several thousand benthic invertebrate taxa living in the Southern California Bight, none has greater impact on data analysis than *Amphiodia urtica*. Yet this species remains difficult to separate, in many cases, from its congener *A. digitata*, and difficult to identify when juvenile. Production of comparable data on this species by a number of different laboratories requires not only strict intercalibration, but the establishment of reporting conventions to pre-standardize data input with data collected for the Southern California Bight Pilot Project (SCBPP). It was with such an aim that a special meeting was convened at SCCWRP on 12 October 1994. Representatives of each of the four major dischargers involved in the SCBPP were present, as were several SCCWRP staff members.

Dr. Gordon Hendler of the Los Angeles County Museum of Natural History provided us with tools for separation of *A. urtica* and *A. digitata* during a workshop on ophiuroids held at the museum in 1988. His method used characters not involving the degree of spination of the marginal disk scales. Since many ophiuroids have regenerated disk caps which may differ from the originals in scale shape, size, and placement, use of non-cap characters should allow identification of more individuals to species. Shape of dorsal arm plates seemed the most useful of the characters Hendler presented. The shape of the dorsal arm plates is expressed by Hendler as distal edge of dorsal arm plate nearly straight across arm (*digitata*), or distal edge of arm plate angled towards disc at sides of arm (*urtica*). Another interrelated character is presence of a gap between dorsal and lateral arm plates (*urtica*), vs. no gap between dorsal and lateral arm plates (*digitata*). Both of these are representations of the same basic shape difference.

In the cases where I have examined ophiuroids which have not regenerated their disks, these arm characters have corresponded to the more traditional disk cap spination characters. Dean Pasko (City of San Diego) mentioned at the meeting that when he has examined *A. digitata* with regenerated caps he has often found that they exhibit the typical arrangement of scales bearing hyaline points. Since it is not clear if this is always the case, the keys avoid reference to hyaline points on scales in specimens with regenerated caps.

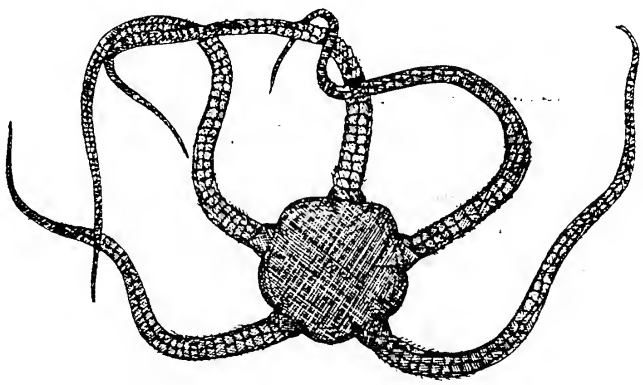
After considerable discussion of the terminology of oral papillae, and the nature of the keys put forward, we examined a variety of specimens. A SCBPP sample from the northern Santa Barbara Channel was used to test the various keys. Unfortunately, it did not contain any *A. digitata*. The generic key was tested with *Amphiura arcystata*, *Amphioplus strongyloplax*, and *Amphipholis squamata* as well as with *Amphiodia urtica*. The only specimen in the sample which could test the family key was an *Ophiuroconis bispinosa*.

This pointed out a weakness in the Ophiocomidae portion of the key, since *Ophiuroconis*, while an ophiocomid, does not have lateral arm insertion as the key stipulates. Other samples were examined from northern Santa Monica Bay, and from off Pt. Loma.

The SMB sample contained seven different species, including both *A. urtica* and *A. digitata*. The Pt. Loma sample also had both of these *Amphiodia* species, and with both regenerated and un-regenerated disk caps.

This was a particularly useful sample in that it was not dried. Attempting to apply the key characters based on shape of dorsal arm plates to these wet specimens proved impossible. Once dried, however, the structure of the dorsal arm plates was much clearer.

After adjustments to the wording of the keys the participants were in agreement that they could be applied within their laboratories and the meeting disbanded. Copies of the modified keys and the discussion of oral papillae terminology distributed at the meeting are attached.

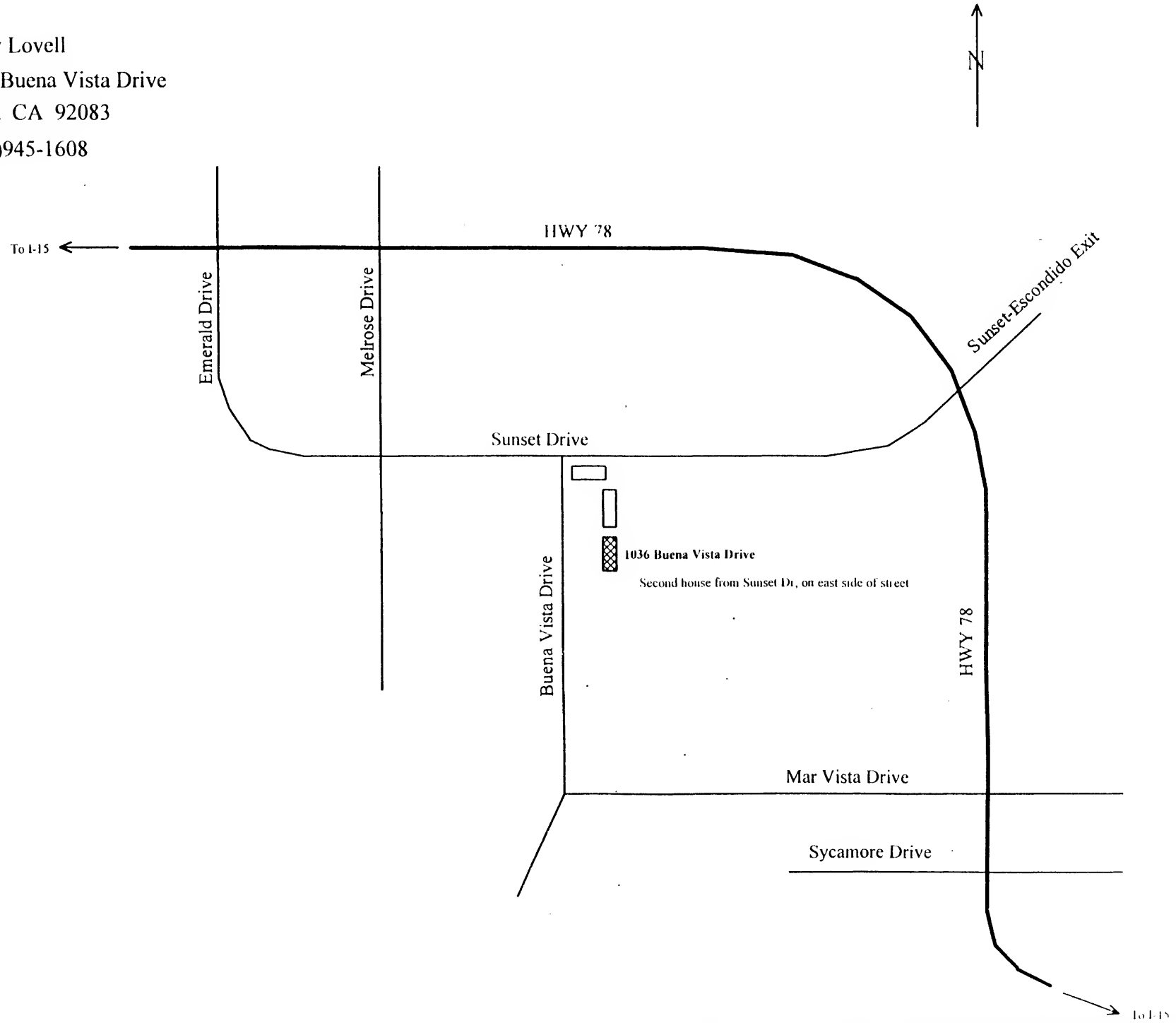


Ophioderma panamense
(from Brusca, 1980)

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

Larry Lovell
1036 Buena Vista Drive
Vista CA 92083
(619)945-1608



ANNOUNCING A NEW PUBLICATION FROM SABECON PRESS:

A REVIEW AND TAXONOMIC REVISION OF THE FAMILY SABELLARIIDAE Johnston, 1865 (ANNELIDA; POLYCHAETA)

By David W. Kirtley, Ph. D.

ABSTRACT

Kirtley, David W. *A Review and Taxonomic Revision of the Family Sabellariidae Johnston, 1865 (Annelida; Polychaeta).* Vero Beach, Florida, Sabecon Press, v + 223 pages, 1 plate, 212 figures, 1994. --The Family Sabellariidae is reviewed and revised, based on examination of type material, previously published reports, and original studies of new material. A chronological synopsis of the genera, a summary of general characteristics of the family, taxonomic keys, and brief descriptions of the characteristics of the various genera and species, along with their zoogeographic distribution as inferred from collection localities, are included. These sand-tube building annelids are recorded from a wide range of marine zoogeographic provinces and are particularly abundant in the surf zone along shorelines with mobile, sand size particles in recurrent turbulent suspension. Species are also recorded from the floors of continental shelves and slopes and from great depths in the ocean. According to the present analysis, interpretation, and account the family Sabellariidae contains 2 newly defined subfamilies, 12 genera, including 4 new genera, and 111 species, including 27 new combinations and 43 new species.

Scheduled publication date: October 15, 1994
First printing: 1000 copies
Printed by Sunrise Printing Services, Stuart, Florida

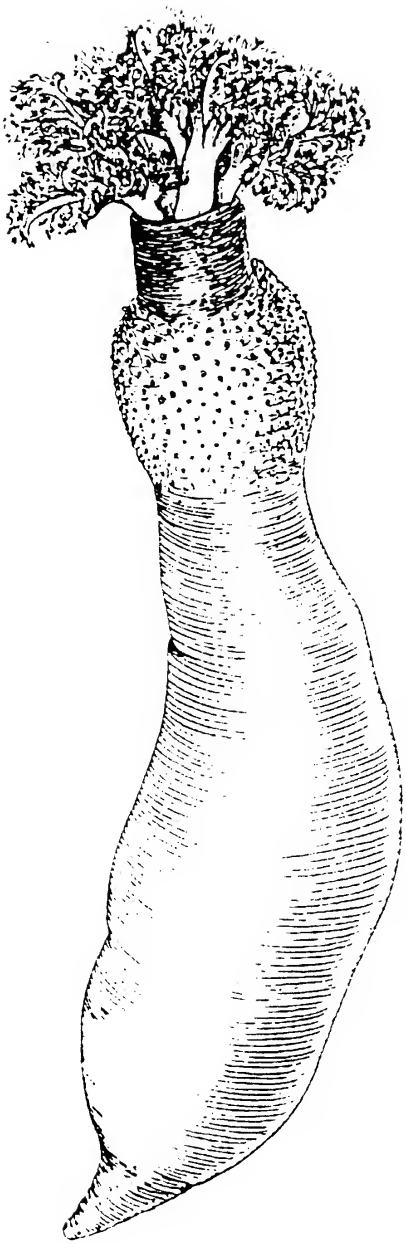
Copies of this publication can be purchased from:

Sabecon Press
P. O. Box 2713
Vero Beach, FL 32961-2713
Phone (407) 567-4417 - FAX (407) 778-2716

Price US$61.50 per copy plus postage and applicable sales tax

Please include sales tax identification or exemption number with purchase order
Wholesale discount on purchase orders for 10 or more copies

15% BONUS DISCOUNT ON ALL ORDERS RECEIVED BEFORE DECEMBER 1, 1994



The Sipuncula

Their Systematics, Biology, and Evolution

EDWARD B. CUTLER

The Sipuncula, a group of ocean-dwelling worms related to annelids and mollusks, play a significant role in the bioerosion of coral reefs and are useful indicators of environmental conditions. The 155 species live in a wide variety of marine habitats at all depths, in sand and mud, in burrows in soft rock and dead coral, and inside such protective shelters as mollusk shells. Important food items for fish and invertebrate predators, they also recycle organic wastes and function as bioassay tools for human diseases such as cystic fibrosis and acute cholera. Edward B. Cutler brings together in this volume everything that is known about the entire phylum.

An introduction, with practical information about collecting and handling the animals, is followed by Part One, which incorporates new systematic analyses made during the past twenty years and offers illustrated keys to all taxa, replacing the work of A. C. Stephen and S. J. Edmonds. Part Two reviews the past thirty years' work in such areas as ecology, muscular systems, blood chemistry, respiration, reproduction, and excretion. Part Three provides a new, synthetic perspective on the phylum's zoogeography and evolutionary relationships, both to other phyla and within the phylum. It utilizes information from the fossil record, paleo-oceanographic data, and comparative studies of immunology, physiology, embryology, and anatomy.

Edward B. Cutler is Professor of Biology at Utica College of Syracuse University, now on long-term leave at the Museum of Comparative Zoology, Harvard University.

A Comstock Book
October, 480 pages, 171 black-and-white illustrations
ISBN 0-8014-2843-2 $65.00 cloth

CORNELL UNIVERSITY PRESS
Sage House, 512 E. State St., P.O. Box 250 • Ithaca, New York 14851-0250

1. Orders from individuals must be accompanied by check or money order, or may be charged directly to Mastercard, VISA, or American Express. U.S. dollars only.
2. Institutions and libraries must enclose a signed purchase order.

EXAM COPIES. Requests for examination copies must be made in writing on institutional letterhead and must include a course name, semester, projected enrollment, and instructor's office telephone number. Paperbacks are available for a $4 service fee per book (limit 3 titles per request.) Please enclose a check or money order with your request (charge cards are not accepted for paperback examination requests.) Cloth copies (where paperback is not available) will be invoiced and shipped on a 60-day approval basis. The invoice will be canceled if we are notified within 60 days that 10 or more copies will be ordered for classroom use. Otherwise the book must be purchased or returned in salable condition, postage paid.

Name _____

Address _____

City _____ State _____ Zip _____

__ Check or money order enclosed __ AMEX __ Mastercard __ VISA Card number _____

Signature _____ Expiration date _____ Phone number _____

Card number, expiration date, phone number, and signature must accompany charge orders

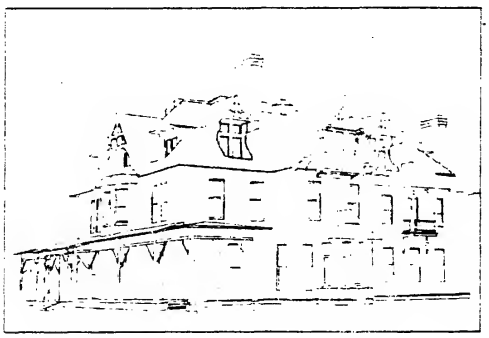
Please send me _____ copy(ies) of
The Sipuncula by Edward B. Cutler
Cloth ISBN 0-8014-2843-2 $65.00

Printed in the U.S. 8/94 PR:CFU

Amount $ _____
(New York State Residents please add 8% sales tax.) _____
(Canadian Residents please add 7% GST.) _____
Postage and handling (Domestic & Canada: $3.00 first copy $.50 each additional copy. Foreign: $4.00 first copy, $1.00 each additional copy.) $ _____
Total amount due $ _____

Cornell University Press
Sage House, 512 East State Street
P.O. Box 250
Ithaca, New York 14851-0250

Non-profit Org
U.S. Postage
PAID
Cornell U. Press



Announcing—

The Sipuncula

Their Systematics, Biology, and Evolution

EDWARD B. CUTLER

A Preliminary List of the Chitons (Mollusca: Polyplacophora) from Benthic Monitoring Programs in the Southern California Bight

Timothy D. Stebbins

City of San Diego
Marine Biology Laboratory
(October 1994)

Following is a list of the chiton fauna currently known from benthic monitoring programs in the Southern California Bight. Included are all species listed in SCAMIT (1994) plus additional species or provisional species collected by the City of San Diego (CSD) during regular NPDES monitoring or as part of the Southern California Bight Pilot Project (SCBPP).

	CSD Stations	SCAMIT (1994)	I° Reference
Family Lepidopleuridae			
Hanleyella oldroydi (Dall 1919)	NPDES		Ferreira, 1979b
Leptochiton rugatus (Pilsbry 1892)	NPDES	X	Ferreira, 1979b
Family Ischnochitonidae			
Ischnochiton sp	--	X	SCAMIT, 1994
Lepidozona mertensii (Middendorff 1847)	SCBPP		Ferreira, 1978
Lepidozona retiporosa (Carpenter 1864)	NPDES	X	Ferreira, 1978
Lepidozona sinudentata (Carpenter in Pilsbry 1892)	SCBPP	X	Ferreira, 1978
Family Callistoplacidae			
Callistochiton palmulatus Dall 1879	SCBPP		Ferreira, 1979a
Family Mopaliidae			
Placiphorella sp SD1	SCBPP		Clark, 1994

Notes on *Placiphorella* sp SD1:

The genus *Placiphorella* Dall, 1879, *ex* Carpenter MS has been recently revised and reviewed by Saito and Okutani (1989) and Clark (1994). Nine species are currently recognized: five from the eastern Pacific Ocean (*P. blainvillei*, *P. hanselmani*, *P. mirabilis*, *P. rufa*, *P. velata*), three from the western Pacific Ocean (*P. borealijaponica*, *P. borealis*, *P. stimpsoni*), and one cosmopolitan species (*P. atlantica*). Saito and Okutani (1989) treat the western Pacific species in detail, while Clark (1994) concentrates on species occurring in the eastern Pacific. Clark also provides a key to all nine species.

Four specimens of a *Placiphorella* species were collected off San Diego during trawls conducted as part of the SCBPP (1 specimen at Stn. 2001, 43 m; 3 specimens at Stn. 1774, 104 m). Based on my preliminary examination, this species could not be reliably aligned with recognized members

of the genus. Of the three species known from southern California waters (*P. atlantica*, *P. mirabilis*, *P. velata*), the SCBPP species differed in terms of valve characteristics (e.g., coloration, sculpturing) and/or girdle features (e.g., bristles, setae, scales). If one uses the key in Clark (1994), the SCBPP species keys out as *P. blainvillei* and appears to closely resemble this species in many details. However, a few discrepancies remain that will require comparison with actual specimens of *P. blainvillei*. In addition, *P. blainvillei* is known only off Peru and Costa Rica. Thus, the SCBPP species has been given the provisional name of *Placiphorella* sp SD1 according to SCBPP conventions. A voucher sheet is in preparation.

REFERENCES:

Clark, R.N. (1994). Review of the genus *Placiphorella* Dall, 1879, *ex* Carpenter MS (Polyplacophora: Mopaliidae) with descriptions of two new species. Veliger, 37: 290-311

Ferreira, A.J. (1974). The genus *Lepidozona* in the Panamic Province, with the description of two new species. Veliger, 17: 162-180

Ferreira, A.J. (1978). The genus *Lepidozona* (Mollusca: Polyplacophora) in the temperate eastern Pacific, Baja California to Alaska, with the description of a new species. Veliger, 21: 19-44

Ferreira, A.J. (1979a). The genus *Callistochiton* Dall, 1879 (Mollusca: Polyplacophora) in the eastern Pacific, with the description of a new species. Veliger, 21: 444-466

Ferreira, A.J. (1979b). The family Lepidopleuridae (Mollusca: Polyplacophora) in the eastern Pacific. Veliger, 22: 145-165

Ferreira, A.J. (1985). Three new species of *Lepidozona* (Mollusca: Polyplacophora) from the Gulf of California. Veliger, 27: 423-429

Pilsbry, H.A. (1892-1893). Polyplacophora, (Chitons) Lepidopleuridae, Ischnochitonidae, Chitonidae, Mopaliidae. In: G.W. Tryon, Manual of Conchology, 14: 1-350, plts. 1-68. Academy of Natural Sciences, Philadelphia.

Pilsbry, H.A. (1893). Polyplacophora, (Chitons) Acanthochitonidae, Cryptoplacidae and Appendix. In: G.W. Tryon, Manual of Conchology, 15: 5-133, plts. 1-17. Academy of Natural Sciences, Philadelphia.

Putman, B.F. (1980). Taxonomic identification key to the described species of polyplacophoran mollusks of the west coast of North America (north of Mexico). Pacific Gas and Electric Company Department of Engineering Research. Report No. 411-79.342. 165 pp.

Saito, H., and T. Okutani. (1989). Revision of the shallow-water species of the genus *Placiphorella* (Polyplacophora: Mopaliidae) from Japan. Veliger, 32: 209-227

SCAMIT. (1994). A taxonomic listing of soft bottom macroinvertebrates from infaunal monitoring programs in the Southern California Bight. Edition 1, 4 March 1994. Prepared for the Southern California Coastal Water Research Project and the U.S. Environmental Protection Agency, Region IX. Southern California Association of Marine Invertebrate Taxonomists, San Pedro, CA. 72 pp.

KEY FOR HIGHER LEVEL IDENTIFICATION OF SUBTIDAL BENTHIC OPHIUROIDS FROM SCBPP SAMPLES

(modified from Fell 1960)

D. B. Cadien, Marine Biology Lab, CSDLAC

15 Oct 1994

1a. plates of oral field not differentiated ..... Ophiuroidea, unid.
b. plates of oral field differentiated 2

2a. spiniform tooth-papillae forming a cluster at the apex of each jaw 3
b. single or paired infradental papillae at the apex of each jaw 4

3a. with oral papillae ..... Ophiocomidae
b. without oral papillae ..... Ophiotrichidae

4a. infradental papillae paired ..... Amphiuridae
b. infradental papillae single 5

5a. disk cap present 6
b. disk cap absent ..... Ophiuroidea, unid.

6a. arms inserted laterally into the disk cap and firmly fused to it 7
b. arms inserted ventrally below the disk cap and partly covered by it 8

7a. disk cap granulated dorsally and ventrally - often also on jaws .... Ophiodermatidae
b. disk cap scales not granulated ..... Ophiuridae

8a. free margins of jaw bear a continuous series of oral papillae 9
b. oral papillae not continuous ..... Ophiactidae

9a. dorsal scales bearing spines, granules, or spiny tubercles ..... Ophiacanthidae
b. dorsal scales without ornamentation ..... Ophionereidae

Note: this key is intended to standardize separatory characters used in processing of SCBPP benthic samples. It can not be reliably applied outside the Southern California Bight, or in other than benthic soft sediment habitats (ie. intertidal collections). If a specimen cannot be definitely placed in one of the family level taxa because of it's condition **IT SHOULD BE IDENTIFIED ONLY TO CLASS LEVEL.** Individual taxonomists may be able to identify such specimens to a lower taxon based on their experience or presence of a series of comparative specimens. Even if this is possible the reported identification should be based <u>only</u> on the above key. This restrictive procedure will serve the purpose of standardizing treatment between laboratories for the SCBPP.

GENERIC LEVEL ID KEY FOR SCBPP AMPHIURIDS

D. B. Cadien, Marine Biology Lab, CSDLAC, Oct 1994

1a. disk present 2
b. disk absent 7

2a. disk scales ornamented either dorsally, ventrally, or both 3
b. disk scales unornamented, not bearing spines or granules 4

3a. disk scales granulated ventrally . . . . . *Amphichondrius*
b. disk scales bearing spines both dorsally and ventrally . . . . . *Dougaloplus*

4a. buccal scale between oral plate and infradental papillae . . . . . *Amphioplus*
b. no buccal scale present on jaws 5

5a. jaws with 4 oral papillae . . . . . *Amphiura*
b. jaws with 6 or more oral papillae 6

6a. oral papillae subequal in size . . . . . *Amphiodia*
b. adoral shield spine much larger than other oral papillae . . . . . *Amphipholis*

7a. 4 oral papillae per jaw . . . . . *Amphiura*
b. 6 or more oral papillae per jaw 8

8a. jaws with buccal scale 9
b. jaws lacking buccal scale 10

9a. adoral shield spine tapering, acute, much longer than oral plate papilla . . . . . *Dougaloplus*
b. adoral shield spine quadrangular, blunt, subequal to oral plate papilla . . . . . *Amphioplus*

10a. adoral shield spine larger than oral plate papilla 11
b. adoral shield spine subequal to oral plate papilla . . . . . *Amphiodia*

11a. distal tentacle scale <or= to proximal on first few arm segments . . . . . *Amphipholis**
b. distal tentacle scale much larger than proximal on first few segments . . . *Amphichondrius**

* = This will not work with *Amphichondius laevis*, a southern species occuring as far north as Catalina Isl. If a specimen keys to *Amphipholis*, but has the distal oral papilla less than 2x the width of the oral plate papilla, you have *Amphichondrius laevis* and not *Amphipholis* sp.

Note: this key is intended to standardize separatory characters used in processing of SCBPP benthic samples. It can not be reliably applied outside the Southern California Bight, or in other than benthic soft sediment habitats (ie. intertidal collections). If a specimen cannot be definitely placed in one of the generic level taxa because of it's condition **IT SHOULD BE IDENTIFIED ONLY TO FAMILY LEVEL.** Individual taxonomists may be able to identify such specimens to genus or species level based on their experience or presence of a series of comparative specimens. Even if this is possible the reported identification should be based <u>only</u> on the above key.

KEY TO IDENTIFICATION OF AMPHIODIA SPP IN SCBPP SAMPLES
(partially based on Pascoe 1984)
D. B. Cadien - Marine Biology Lab CSDLAC, Oct 1994

1a. disk absent 2
b. disk present 5

2a. arm spines cylindrical, blunt, flattened . . . . . *A. occidentalis*
b. arm spines tapered, round or oval in cross-section 3

3a. arm spines bluntly pointed, lacking hyaline tips . . . . . *A. psara*
b. arm spines acute, often with hyaline tips 4

4a. distal margin of dorsal arm plates straight; no gap between lateral and dorsal arm plates . . . . . *A. digitata*
b. distal margin of dorsal arm plates angled up at the sides, producing a gap between the dorsal and lateral arm plates through which tissue is visible . . . . . *A. urtica*

5a. primary and mid-marginal scales little or not different in size from other disk scales (disk regenerated) . . . 6
b. primary and mid-marginal scales larger than other scales (original disk) 10

6a. some scales on disk produced into hyaline points . . . . . *Amphiodia* sp
b. no scales on disk producted into hyaline points 7

7a. disk less than 2mm in diameter OR disk consists of primary scales and few other small scales, OR # of marginal scales 2 or less on either side of the mid-marginal scale, OR # of marginal scales indeterminate . . . . . *Amphiodia* sp
b. disk greater than 2 mm diameter 8

8a. arm spines cylindrical, blunt, flattened . . . . . *A. occidentalis*
b. arm spines tapering, oval or round in cross-section 9

9a. arm spines bluntly pointed . . . . . *A. psara*
b. arm spines acutely pointed, often with hyaline tips . . . . . *A. urtica*

10a. some scales on disk produced into hyaline points 11
b. no scales on disk produced into hyaline points 14

11a. scales with hyaline points continuous in, <u>and</u> restricted to, marginal row . . . . . *A. digitata*
b. scales with hyaline points either not continuous in or not restricted to marginal row 12

12a. numerous rows of hyaline tipped scales present on disk, one of which may be marginal . . . . . *A. urtica*
b. no continuous rows of hyaline tipped scales on disk 13

13a. hyaline tipped scales restricted to margin of genital (bursal) slits . . . . . *A. urtica*
b. hyaline tipped scales present around bases of arms & scattered elsewhere on disk . . . . . *A. urtica*

14a. disk less than 2mm in diameter OR disk consists of primary scales and few other small scales, OR # of marginal scales 2 or less on either side of the mid-marginal scale, OR # of marginal scales indeterminate . . . . . *Amphiodia* sp
b. disk greater than 2 mm diameter 15

15a. arm spines cylindrical, blunt, flattened . . . . . *A. occidentalis*
b. arm spines bluntly pointed, oval or round in cross-section . . . . . *A. psara*

<u>PLEASE NOTE</u> - any specimen which fails to clearly fall into one of the choices in any couplet should be reported as *Amphiodia* sp. An undescribed species of *Amphiodia* occurs in this area according to Dr. Gordon Hendler. The species is from relatively coarse substrates in shallow water, and has probably been reported as *A. occidentalis* or *A. psara* in the past. It would probably key to one or the other of those species in the present key. Dr. Hendler has not seen southern California specimens of *A. occidentalis*, and believes the species does not occur here.

OPHIUROIDS REPORTED FROM THE SCBPP SAMPLING AREA
(based on data in Maluf 1988)

Family Asteronychidae
- *Asteronyx loveni* Müller & Troschel, 1842

Family Gorgonocephalidae
- *Gorgonocephalus eucnemis* (Müller & Troschel, 1842)

Family Ophiacanthidae
- *Ophiacantha diplasia* H. L. Clark 1911*@
- *Ophiacantha eurythyra* H. L. Clark 1935
- *Ophiacantha phragma* Ziesenhenne, 1940
- *Ophiacantha rhachophora* H. L. Clark 1911
- *Ophiophthalmus normani* (Lyman, 1879)

Family Amphiuridae
- *Amphichondrius granulosus* Nielsen, 1932*
- *Amphichondrius laevis* Ziesenhenne, 1940
- *Amphiodia digitata* Nielsen, 1932*
- *Amphiodia occidentalis* (Lyman, 1860)*
- *Amphiodia psara* H. L. Clark 1935*
- *Amphiodia sp A* of Hendler
- *Amphiodia urtica* (Lyman, 1860)*
- *Amphioplus hexacanthus* H. L. Clark 1911*
- *Amphioplus strongyloplax* (H. L. Clark, 1911)*
- *Amphioplus sp A* MBC 1985*
- *Amphipholis platydisca* Nielsen, 1932
- *Amphipholis pugetana* (Lyman, 1860)*
- *Amphipholis puntarenae* (Lütken, 1856)
- *Amphipholis squamata* (Delle Chiaje, 1828)*
- *Amphiura arcystata* H. L. Clark, 1911*
- *Amphiura carchara* H. L. Clark, 1911
- *Amphiura diomedeae* Lütken & Mortensen, 1899*
- *Amphiura seminuda* Lütken & Mortensen, 1899
- *Dougaloplus amphacanthus* (McClendon, 1909)*
- *Dougaloplus sp 1* Pt. Loma 1992*
- *Ophiocnida hispida* (Le Conte, 1851)

Family Ophiactidae
- *Ophiactis savignyi* (Müller & Troschel, 1842)()
- *Ophiactis simplex* (Le Conte, 1851)()
- *Ophiopholis aculeata* var. kennerlyi Lyman, 1860
- *Ophiopholis bakeri* McClendon, 1909*
- *Ophiopholis longispina* H. L. Clark, 1911

Family Ophiotrichidae
- *Ophiothrix rudis* Lyman, 1874
- *Ophiothrix spiculata* Le Conte, 1851*

Family Ophiocomidae
- *Ophiocoma alexandri* Lyman, 1860
- *Ophiopsila californica* A. H. Clark, 1921*
- *Ophiopteris papillosa* (Lyman, 1875)

Family Ophioneridae

Ophionereis amphilogus (Ziesenhenne, 1940)
Ophionereis annulata (Le Conte, 1851)*
Ophionereis eurybrachiplax H. L. Clark, 1911*

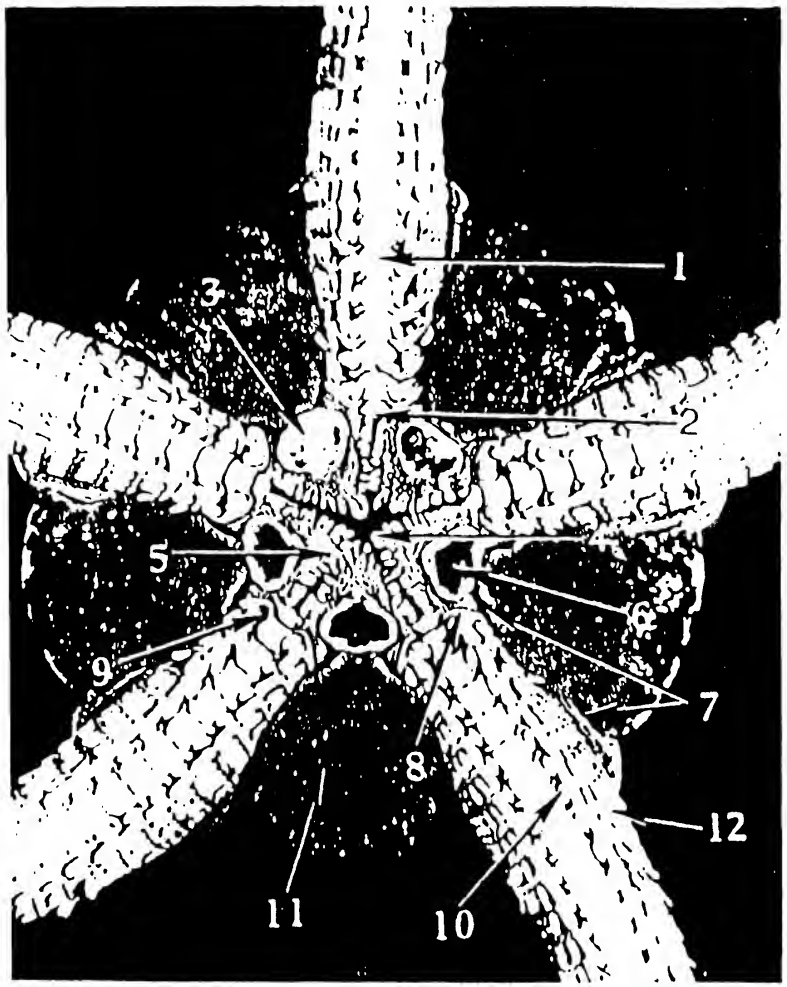
Family Ophiodermatidae

Ophiocryptus maculosus H. L. Clark, 1915
Ophioderma panamense Lütken, 1859
Ophioderma teres (Lyman, 1860)
Ophioderma variegatum Lütken, 1856
Ophioncus granulosus Ives, 1889
Ophiuroconis bispinosa Ziesenhenne, 1937*

Family Ophiuridae

Amphiophiura superba (Lütken & Mortensen, 1899)
Ophiomusium jolliensis McClendon, 1909*
Ophiomusium lymani Thomson, 1873
Ophioplocus esmarki Lyman, 1874
Ophiura flagellata (Lyman, 1878)
Ophiura kofoidi McClendon, 1909
Ophiura leptoctenia H. L. Clark, 1911*
Ophiura luetkeni (Lyman, 1860)*
Ophiura sarsi Lütken, 1855
Stegophiura ponderosa (Lyman, 1878)

*= on the SCAMIT list
@= Kyte (1982) suggests this properly belongs in *Ophiophthalmus*
()= genus on the SCAMIT list



1. *Ophioderma panamense*, diagnostic parts

l arm plate ventral arm plate
gle of mouth 1st ventral arm plate
dreporite
xial jaw tip of jaw
l papilla
l shield
7. genital slit
8. side arm plate lateral arm plate
9. tentacle pore
10. tentacle scale
11. interbrachial area of disc ventral interradius
12. arm spine

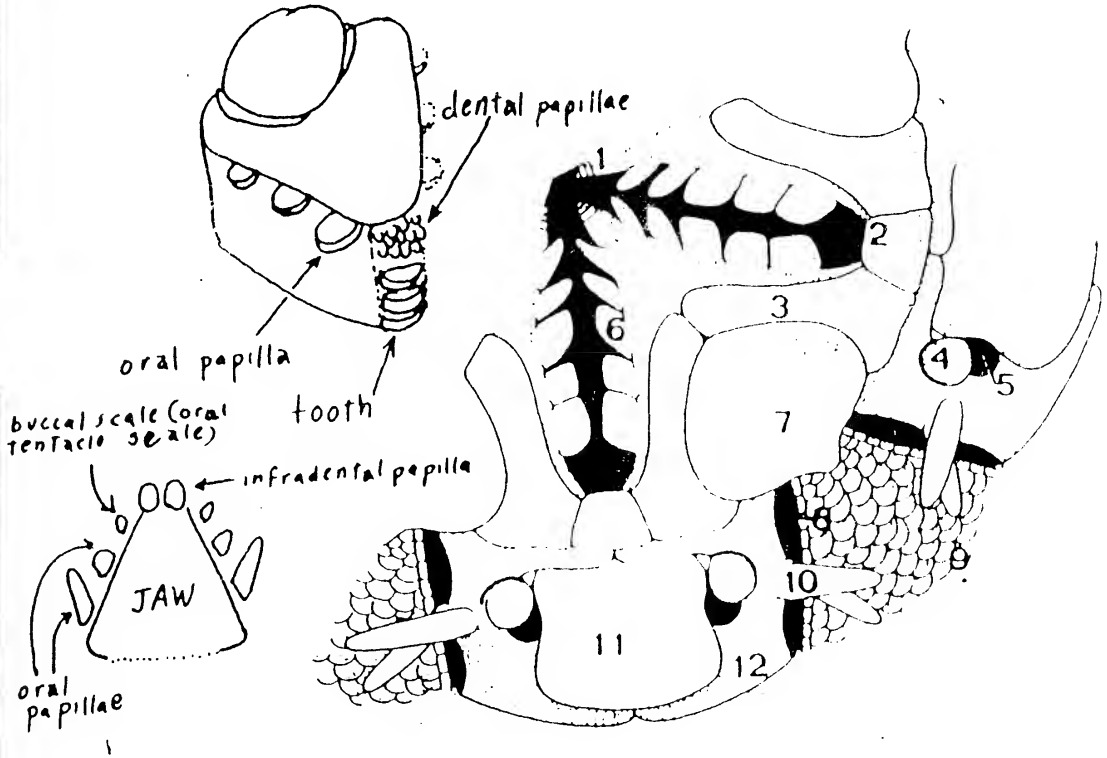


Figure 2. Two-fifths of oral aspect of a diagrammatic disc to show diagnostic parts

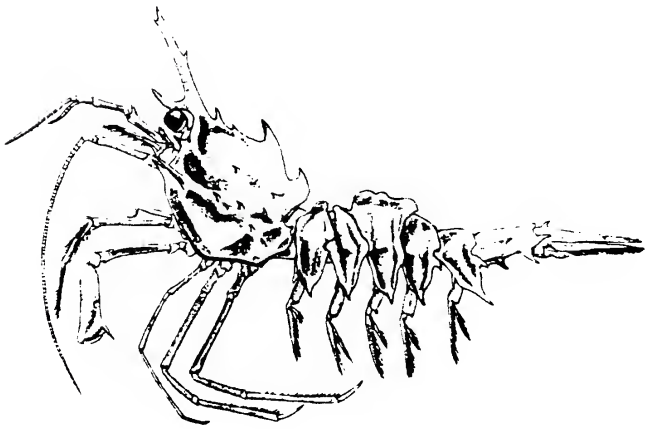
1. teeth
2. angle of mouth 1st ventral arm pl.
3. adoral plate adoral shield
4. tentacle scale
5. tentacular pit Tentacle pore
6. oral papilla
7. oral shield
8. genital slit
9. interradial portion of disc
10. arm spine
11. 1st oral arm plate 2nd ventral arm pl.
12. side arm plate lateral arm plate

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

November, 1994 Vol. 13, No.7

NEXT MEETING:	SCBPP Non-polychaete Problem Species
GUEST SPEAKER:	none
DATE:	December 19, 1994
TIME:	9:30am - 3:30pm
LOCATION:	MEC (Marine Ecological Consultants) 2423 Impala Dr. Carlsbad, CA 92004 (see enclosed map)



Paracrangon echinata
(from Butler 1980)

DECEMBER 19 MEETING

The December meeting will be the third Monday of the month at MEC. This meeting will be for non-polychaete SCBPP problem specimens, especially nemerteans, which seem to have caused the most problems so far. Also, Dr. Mary Wicksten of Texas A & M University will be a guest at the meeting. Please bring any questions you may have for her on decapods.

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

CHRISTMAS PARTY

Due to so many conflicts amongst members' busy Yuletide calendars the date of the SCAMIT Christmas Party has been changed to **December 17th.** We regret to make this change so late, but it was either this or no visit from Santa "John" Claus and we've all been *so good* this year. The time will still be from 6-9pm (or so). SCAMIT will be providing a Honeybaked ham along with refreshments. Along with your laughter please plan to bring a pot-luck dish and coordinate your menu selection with either Don Cadien or Cheryl Brantley at (310) 830-2400 ext.403.

NEW ADDRESS

SCAMIT member, R. Eugene Ruff, who recently relocated to Washington state from southern California, has a new address and phone number.

R. Eugene Ruff
1179 Meridian South Suite 401
Puyallup, WA 98373
(206) 770-7007

NEW PUBLICATIONS

The journal *Amphipacifica* is now three issues into it's inaugural year. The publishers have managed to hold the line, and subscription costs for the second volume will remain the same as for the first.

In addition to a very detailed discussion of amphipod classification by Bousfield & Shih the latest issue contains description of three new taxa from central Californian waters. These may also occur in the Southern California Bight, but have not yet been recorded there. The three taxa are the amphipods *Photis typhlops*, *Photis linearmanus*, and *Gammaropsis ocellata* all of Conlan, 1994. Two of these taxa were taken in the Phase I Santa Maria Basin project where *Photis typhlops* was just called "blind Photis", and *Gammaropsis ocellata* was identified as the closely related *Gammaropsis barnardi*. *Photis linearmanus* was taken at a single station in Phase II of the Santa Maria Basin monitoring. Conlan's descriptions were published to establish the names prior to her inclusion of these species in the amphipod section of the Taxonomic Atlas of the Santa Maria Basin and Western Santa Barbara Channel. This has yet to be published.

Taxonomic Atlas

Three volumes in this continuing series have already been published by the Santa Barbara Museum of Natural History. The latest, The Porifera (Vol. 2) [Green & Bakus 1994] was issued at the end of October. Information on the series, and on how to subscribe or purchase individual volumes is attached.

Coral Monograph

The first large scale monograph of the corals of the north Pacific since Durham and Barnard (1952) has just been published (Cairns 1994). In it Steven Cairns has completely reexamined the coral fauna of both the western north Pacific and the eastern north Pacific together in one volume. Each fauna is treated separately. He lists 25 species from the temperate northeastern Pacific (and another 102 species from the temperate northwestern Pacific). He provides descriptions of all taxa, a key to the species, and a wealth of SEM illustrations, many as stereo pairs affording 3D views of the corallites. [John Ljubenkov has a relatively easy way to see 3D stereo pairs without special optics. All one does is to either cross or defocus your eyes and allow

your brain to do the merging of the images which produces the effect. Although it is a bit of a strain on the eyes, the result is worth it.] This is bound to remain the standard north Pacific coral work for a long while; perhaps another 40 years. Anyone who works with coral identification or taxonomy will find this new synthesis of information on the corals of our area indispensable. Demand for this work will probably outstrip supply. Get a copy, it should be available either from the author, or through the U. S. Government Printing Office.

OLD LITERATURE

No matter how hard one tries to keep up with the literature some things always escape. In my most recent dive into the sea of published information I came across one of these escapees. Either I was not the only one to miss this, or it has been rejected by other workers in subsequent publications. Bouchet and Ortea (1983), in a paper describing a new species of *Hopkinsia* from the south Pacific, transferred *Okenia plana* Baba 1960 to the genus *Hopkinsia*. Although this species has only been taken sporadically in the Southern California Bight, it is a member of our fauna. Both genera are goniodoridid nudibranchs and have similar radulae.

For those who have been wondering where the change from *Hinnites* to *Crassadoma* took place it was in Bernard 1986 (see the bibliography for the full citation)

MINUTES FROM NOVEMBER 21

This meeting was spent examining specimens of the problematic *Polydora* genus. A new updated version of Leslie Harris' *Polydora* table was generated and is included in this newsletter. Larry Lovell showed members the main character distinctions between closely related species, especially those that we are likely to encounter in our SCBPP samples.

Probably the most useful characteristic in distinguishing between species of *Polydora* is the shape of the spines in the modified 5th setiger. It must be kept in mind that these major spines are in use, and therefore, subject to wear. They also rub against one another and get worn that way too. It is sometimes necessary to look at the spines in the 5th setiger from different angles to be able to see the shapes more clearly. Something else to keep in mind is that not all authors have been consistent in their use of terms to describe the spines of the modified 5th setiger.

Another character that has often been overlooked in the examination of polydorid species is the presence or absence of superior and inferior capillary setae on the modified 5th setiger. This character state has been added to the *Polydora* table.

Two shallow water species that are likely to be confused are *Polydora nuchalis* and *Polydora ligni*, which was synonymized with *Polydora cornuta* Bosc 1802, by Blake and Maciolek (1987). Blake and Maciolek consider *P. ligni* to be a junior synonym of *P. cornuta*. This synonymy had not been taken into account by SCAMIT members previously. The main difference between *P. cornuta* and *P. ligni* is the shape of the spines in the modified 5th setiger. *Polydora cornuta* has a small secondary tooth on the spine and *Polydora nuchalis* does not.

Polydora socialis is sometimes confused with *Polydora neocardalia* and *Polydora cardalia*. Light (1978) describes *Polydora cardalia* as being a much larger species and having packets of needlelike spines in the posterior notopodia. These spines are lacking in *P. socialis* and *P. neocardalia*. *P. socialis* and *P. neocardalia* are much harder to separate. At

the SCAMIT meeting Larry stained specimens of *P. socialis* and a specimen of *P. neocardalia* with methyl green to see if there was any noticeable difference. The specimens of *P. socialis* had dark banding on the dorsal side of the posterior half of the body. *P. neocardalia* had none of this. However, this was only one specimen, so staining should not be used as a definite way to differentiate between these species, yet. More work needs to be done and types need to be reexamined to determine if *P. socialis* and *P. neocardalia* are two distinct species. The two cannot be distinguished based on Hartman's original description (1961).

Larry also made the comment that the juvenile dorsal pigment spots that have been described as being retained in adult *Polydora socialis* become fainter as the specimen ages in alcohol. The presence or absence of these pigment spots is, therefore, not a reliable characteristic to base accurate identification on.

Two other species that may be confused are *Polydora limicola* and *Polydora narica*. Both have distinct dark pigment along the sides of their prostomium and bars, or spots, of pigment on their palps. The major difference between these two is the placement of the secondary tooth or accessory sheath on the spines of the modified 5th setigers. While *Polydora limicola* has more of a small tooth located on the concave side of the major spine, *Polydora narica* has the tooth on neither the concave nor convex side. Light's original description (1969) of *Polydora narica* has a very good illustration of the placement of the secondary tooth. Also, *Polydora narica* was described from Monterey, while *Polydora limicola* is reported locally in southern California.

Larry also showed members an odd polydorid from Solana Beach that he has recently seen. It was found at 13 and 17 meters depth. Those of us working on SCBPP samples may also encounter this animal. A brief description follows.

- incised prostomium
- eyes present or absent
- caruncle extends to setiger 3
- palps are thick with blunt tips and heavy papillar fringe
- notosetae is absent on the first setiger
- major spines of 5th setiger are falcate with a subdistal boss or thickening
- superior fascicle of capillary setae on the 5th setiger is absent
- plumose companion setae is present along with the major spines of the 5th setiger
- 5th setiger is broader in shape than other polydorid species
- neuropodial hooks begin on setiger 7 and have a constriction on their shaft
- branchiae begin on setiger 7
- pygidium is a flaring disk that is open dorsally
- juveniles have dark pigment spots between the parapodia and the pygidium has pigment around the flange with some papillae
- juveniles also have large eyespots; two on one side and one on the other
- very small juveniles may have paired dorso-lateral spots at the base of the notopodia

It was thought by members at the meeting that this may be *Polydora cirrosa* Rioja, 1943. Light (1978) reported as a footnote that *P. cirrosa* had been collected off Oceanside. Rioja's original description was not available at the meeting to make a comparison, so this will be done in the near future and reported in the SCAMIT newsletter.

THE PAPER CHASE

Several members have responded to the archival paper supply problem discussed in the September newsletter. Since there seem to be a number of solutions to this problem being used by one or another of our members we have decided to try and serve as a clearing house for information on the performance and availability of archival labeling materials. Please take a little time and fill in the attached questionnaire concerning your experience with the material you are presently using for wet specimen archival (and other materials you have tried in the past), and then send it to SCAMIT. Once we receive information from most (or all) of the membership we will report back the results in the newsletter.

EMPLOYMENT OPPORTUNITY

MBC Applied Environmental Sciences in Costa Mesa currently has a few positions available for qualified scientists and toxicologists. Please refer to the attached flyer for further information.

KEY TO CALIFORNIA SHRIMP FAMILIES

Don Cadien, CSDLAC

Developments over the past few years have rendered the key to families of natantian shrimp in Word and Charwat 1976 incomplete. Families not represented in that key have been taken from southern California waters at both shallow and deep stations. These records have been collected and ranges collated recently (Wicksten & Hendrickx 1992). Combined with the elevation of taxa previously considered subfamilies to full family status within the Penaeoidea this has resulted in 15 family level shrimp taxa being represented in the Southern California Bight; only 8 of these are keyed in Word and Charwat. The later family key of Butler (1980) also lacks several of the families reported to occur in the Bight. The following key, which stems from modification of keys produced by others (Chace 1972, Burukovskii 1974, and Dall et al 1990), offers more complete coverage of the southern California fauna. It will hopefully serve until the upcoming monograph on the decapods of California is completed and released. The classification used is that of Schram (1986).

Keys to the majority of these families are already available, and some do not yet require additions to include taxa recently added to the California fauna. The Hippolytidae have recently been covered by Wicksten (1990), as have the Palaemonidae (1989). Other families such as the Alphaeidae and Pandalidae have keys in need of updating. I will be attempting to produce these as time permits. In at least one case (Processidae) a family is represented locally by but a single species (*Ambidexter panamensis*), and requires no key beyond that provided here.

Where possible a second set of keys designed for use in the field with live animals will also be produced. Character states used in laboratory keys are often not visible in the field, or are only visible on the largest specimens. Shrimp laboratory and field keys will probably be as different as those produced by Haig (1977) and Wicksten (1977) for laboratory and field identification of hermit crabs.

LITERATURE CITED

BERNARD, FRANK R. 1986. Crassadoma gen. nov. for "Hinnites" giganteus (Gray, 1825) from the northeastern Pacific Ocean (Bivalvia: Pectinidae). Venus 45(1):70-74.

BLAKE, JAMES A., and Nancy J. Maciolek. 1987. A Redescription of Polydora cornuta Bosc (Polychaeta: Spionidae) and Designation of a Neotype. Bulletin of the Biological Society of Washington 7:11- 15.

BOSC, L. A. G. 1802. Histoire naturelle des vers, contennant leur description et leurs moers, avec figures dessinées d'àpres nature, volumes 1-3: 1-324. Deterville: Paris.

BOUCHET, PHILIPPE, and Jesus Ortea. 1983. A new Hopkinsia feeding on bryozoa in the south Pacific (Mollusca: Opisthobranchia). Venus 42(3):227-233.

BOUSFIELD, EDWARD L., and Chiang-tai Shih. 1994. The phyletic classification of amphipod crustaceans: problems in resolution. Amphipacifica 1(3):76-134.

BURUKOVSKII, R. N. 1974. Key to Shrimps and Lobsters. A. A. Balkema: Rotterdam.

BUTLER, T. H. 1980. Shrimps of the Pacific coast of Canada. Canadian Bulletin of Fisheries and Aquatic Sciences (202):1-280.

CAIRNS, STEPHEN D. 1994. Scleractinia of the Temperate North Pacific. Smithsonian Contributions to Zoology (557):1-150.

CHACE JR., FENNER A. 1972. The shrimps of the Smithsonian-Bredin Caribbean Expeditions with a summary of the West Indian shallow- water species (Crustacea: Decapoda: Natantia). Smithsonian Contributions to Zoology (98):1-179.

CONLAN, KATHLEEN E. 1994. New species of the amphipod crustacean genera Photis and Gammaropsis (Corophioidea: Isaeidae) from California. Amphipacifica 1(3):67-74.

DALL, W., B. J. Hill, P. C. Rothlisberg, D. J. Staples. 1990. Advances in Marine Biology Volume 27. The Biology of the Penaeidae. Academic Press Limited: London.

GREEN, KAREN D., and Gerald J. Bakus. 1994. The Porifera. Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel 2:1-82.

HAIG, JANET. 1977. A preliminary key to the hermit crabs of California. Proceedings of the Taxonomic Standardization Program 5(2)

HARTMAN, OLGA. 1961. Polychaetous Annelids from California. Allan Hancock Pacific Expeditions 25:1-224.

LIGHT, WILLIAM J. 1969. Polydora narica, New Species, and Pseudopolydora kempi californica, New subspecies, Two New Spionids (Annelida: Polychaeta) from Central California. Proceedings of the California Academy of Sciences XXXVI(18):531- 550.

---. 1978. Spionidae. (Polychaeta, Annelida). The Boxwood Press: Pacific Grove, Ca.

RIOJA, ENRIQUE. 1943. Estudios anelidologicos VIII. Datos acerca de las especies del genero Polydora Bosc, de las costas Mexicanas del Pacifico. Annales del Instituto Biologica de Mexico 14:229- 241.

SCHRAM, FREDERICK R. 1986. Crustacea. Oxford University Press: New York, New York.

WICKSTEN, MARY K. 1977. Artificial key to the hermit crabs of California. Proceedings of the Taxonomic Standardization Program 5(2)

---. 1978. The species of Plesionika from California and Western Mexico (Natantia: Pandalidae). Bulletin of the Southern California Academy of Sciences 77(2):84-87.

---. 1989. A key to the palaemonid shrimp of the Eastern Pacific Region. Bulletin of the Southern California Academy of Sciences 88(1):11-20.

---. 1990. Key to the hippolytid shrimp of the Eastern Pacific Ocean. Fishery Bulletin 88(3):587-598.

WICKSTEN, MARY K., and Michel E. Hendrickx. 1992. Checklist of penaeoid and caridean shrimps (Decapoda: Penaeoidea, Caridea) from the eastern tropical Pacific. Proceedings of the San Diego Society of Natural History 9:1-11.

WORD, JACK Q., and Danuta Charwat. 1974. Key to shrimp common in Southern california trawl catches. Southern California Coastal Water Research Project (SCCWRP), Technical Memorandum (221):1-41.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

MBC

MBC APPLIED ENVIRONMENTAL SCIENCES

POSITIONS AVAILABLE

MBC has immediate openings for qualified persons for the positions of **Senior Scientist** and **Project Scientist**.

Education: Senior Scientist: M.S. or Ph.D. in biological sciences with emphasis in marine fish ecology or coastal fisheries with 5 yrs. experience. Project Scientist: M.S. in biological sciences with emphasis in benthic or kelp bed ecology and 3 yrs experience.
Qualifications: Strong verbal and written communication skills; statistical base for the design of sampling programs and data analysis; ability to work effectively with teams of scientists in field and lab.
Position: Responsible for the development of proposals and job costing, implementation of applied research projects, direction of personnel, and interfacing with clients.

MBC also has an opening for a **Toxicologist.**

Education: Minimum of B.S. in biological sciences or related field with at least two years of project management experience.
Qualifications: Strong verbal and written communication skills, ability to design testing programs for use with effluents and dredged materials, statistical analysis of toxicity data, strong technical background.
Position: Responsible for the development of proposals and job costing; implementation of toxicity testing programs; direction of personnel; interfacing with clients and marketing.

Please send current resumes, examples of publications, and 3 references by 1 January 1995.

Personnel
MBC Applied Environmental Sciences
3040 Redhill Avenue
Costa Mesa, California 92626
(714) 850-4830 FAX (714) 850-4840

NATURAL HISTORY MUSEUM
of Los Angeles County

RESEARCH SEMINAR SERIES

New time! New day!

900 Exposition Boulevard
Los Angeles, California 90007

Monday 14 November 1994
12:00 Noon

Effects of hydrodynamics on algal metabolism in coral reef and kelp forest communities

Robert Carpenter
California State University, Northridge

Monday 5 December 1994
12:00 Noon

Deep sea mackerels? The evolution of the cutlassfishes

Javier Gago
University of Southern California

Monday 12 December 1994
12:00 Noon

Ethnoarchaeology among Modern Aka Pygmies: Looking for Links between Cultural Behavior and Zooarchaeological Remains

Jean Hudson
UCLA Institute of Archaeology

Tuesday December 20 1994
12:00 Noon

Cladistic analysis of molecular and morphological data: theoretical concerns and some empirical examples from bryophytes

Brent Mishler
University of California, Berkeley

George C. Page Museum, Hancock Park, 5801 Wilshire Boulevard, Los Angeles, California 90036, (213) 857-6311

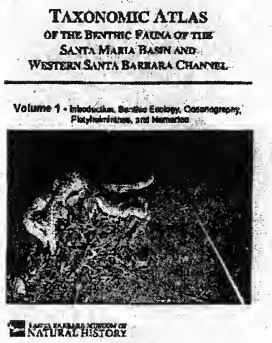
SANTA BARBARA MUSEUM OF NATURAL HISTORY

Announcing a new a monographic series
on the taxonomy of the marine invertebrates of Southern California, the

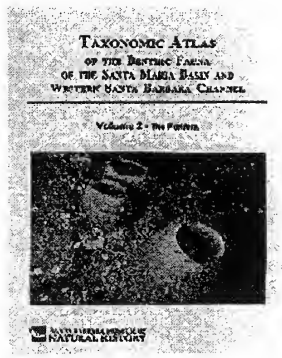
TAXONOMIC ATLAS

of the Benthic Fauna of the Santa Maria Basin and the Western Santa Barbara Channel

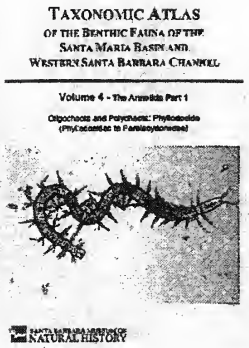
This 14 volume series describes and illustrates the marine invertebrates in the Point Conception region of southern California (35°N) at depths from 50 to 1000 meters. Each volume will include an introduction to the faunal group, collection and preparation methodology, glossary of terms, as well as descriptions, distributions and illustrations of all species. Listed below are currently available titles. Subscribers to the entire series will receive a **10% discount**.



Volume 1 - Introduction, Benthic Ecology, Oceanography, Platyhelminthes and Nemertea; Chapters by James Blake, Andrew Lissner, Suzanne Benech and Brigitte Hilbig. A "must have" volume describing the study region. 132 pages, 10 color plates, 26 text figures. ISBN 0-93649-06-9. Price $29.00, softbound.



Volume 2 - The Porifera by Karen Green and Gerald Bakus. Descriptions and illustrations of 43 species (including one new species), profusely illustrated glossary. 82 pages, 50 text figures. ISBN 0-963649-07-7. Price $15.00, softbound.



Volume 4 - Annelida, Oligochaeta & Polychaeta - Part 1 (Phyllodocidae to Paralacydoniidae); Chapters by James Blake, Christer Erséus and Brigitte Hilbig. Illustrated keys to the families, genera and species (including one new species); extensive glossaries. 377 pages, 128 text figures. ISBN 0-93649-09-03. Price $29.00, softbound.

Additional monographs will encompass; Volume 3 - **Cnidaria**; Volumes 5-7 **Annelida**; Volumes 8-9 **Mollusca**; Volumes 10-12 **Arthropoda**; Volume 13 **Bryozoa**; and Volume 14 remaining taxa (including a master species list of all taxa covered in the series).

For further information contact:

Department of Invertebrate Zoology, Santa Barbara Museum of Natural History
2559 Puesta del Sol Road, Santa Barbara, CA 93105 USA
(voice) 805-682-4711, ext. 319, (fax) 805-569-3170, (internet) inverts@sbmnh.rain.org

TAXONOMIC ATLAS
OF THE BENTHIC FAUNA OF THE SANTA MARIA BASIN AND WESTERN SANTA BARBARA CHANNEL

Subscribers Order Form

Name _____

Institution _____

Mailing Address _____

_____

_____

Phone number and fax number _____

Email address _____

I wish to have a standing order for the Taxonomic Atlas of the Santa Maria Basin and Santa Barbara Channel published by the Santa Barbara Museum of Natural History. I understand the the currently published volumes will be sent to me, and additional volumes will be sent to me as they are produced. I will receive a 10% subscribers discount off the list price of each volume. All invoices will be paid within 30 days of receipt of the volume. If the publication is deemed unsatisfactory, it may be returned at no cost.

Signature _____ Date _____

If you wish your credit card to be billed (Visa or Mastercard), please include the following:

Credit card number _____ Expiration Date _____

Please return to:

Paul Scott
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105
fax 805-569-3170

TAXONOMIC ATLAS
OF THE BENTHIC FAUNA OF THE SANTA MARIA BASIN AND WESTERN SANTA BARBARA CHANNEL

Non-Subscribers Order Form

Name _____

Institution _____

Mailing Address _____

_____

_____

Phone number and fax number _____

Email address _____

Quantity	Item	Price each	Total
	Taxonomic Atlas - Volume 1 - Introduction, Nemertea, Platyhelminthes	$29.00	
	Taxonomic Atlas - Volume 2 - The Porifera	$15.00	
	Taxonomic Atlas - Volume 4 - Polychaeta, Part 1, Phyllodocida	$29.00	
		subtotal	
		CA sales tax (7.75%)*	
		shipping & handling (@$3.00 per volume in US) (@$5.00 per volume non-US)	
		Total Enclosed	

* California mailing addresses only

Credit Card Payment (Visa or Mastercard)

Card # _____/_____/_____/_____

Card Expiration Date _____

Signature _____

Please return order to:

Paul Scott
Department of Invertebrate Zoology
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105
fax 805-569-3170

SANTA BARBARA MUSEUM OF NATURAL HISTORY

WET STORAGE LABEL PAPER QUESTIONAIRE
(please return to SCAMIT at Cabrillo Marine Aquarium when completed)

Organization_____

Respondant_____ Date_____

Paper Currently Used_____

_____ Weight_____

Length of Time Used_____

Experience With Paper_____

_____

_____

_____

_____

_____

_____

Supplier_____

_____

Approximate Cost_____ Availability_____

Papers Used Previously_____

_____

_____

Reasons No Longer Used_____

_____

_____

_____

_____

Additional Comments_____

_____

_____

_____

_____

_____

_____

_____

KEY TO SHRIMP FAMILIES RECORDED IN CALIFORNIA WATERS

D. B. Cadien, CSDLAC - 7 Dec 1994

(Modified from Chace 1972, Burukovskii 1974 & Dall et al 1990)

1. Third pereopods chelate. Pleura of second abdominal segment not overlapping that of first segment. Abdomen without a sharp curve [Suborder Dendrobranchiata] 2
   Third pereopods not chelate. Pleura of second abdominal segment overlapping that of first segment. Abdomen usually sharply curved ..... [Suborder Eukyphida] 6

2. Pereopods 4 and 5 well developed. Gills numerous ... [Superfamily Penaeoidea] 3
   Pereopods 4 and 5 reduced or absent. Gills few (<9) ..... Sergestidae

3. Antennular flagellae originate distally on the third 3rd segment, sub-equal in length; 5th pereopod lacking epipod 4
   Upper antennular flagellum markedly shorter than the lower and originates near the base of the 3rd segment: 5th pereopod bearing epipod ..... Aristaeidae

4. Cervical sulcus reaching less than two-thirds the distance from the hepatic spine to the top of the carapace; postorbital spine absent; 4th pereopod lacks epipod 5
   Cervical sulcus reaching the top of the carapace; postorbital spine present; 4th pereopod with an epipod ..... Solenoceridae

5. Third to 5th pleopods each with 2 rami; prosartema (eye brush) present; exopods on 2nd and 3rd maxillipeds ..... Penaeidae
   Third to 5th pleopods each with 1 ramus; prosartema absent; no exopods on 2nd & 3rd maxillipeds ..... Sicyonidae

6. Pereopod 1 subchelate 7
   Pereopod 1 chelate or simple (non-chelate) 8

7. Carpus of pereopod 2 unsegmented ..... Crangonidae
   Carpus of pereopod 2 multisegmented ..... Glyphocrangonidae

8. Pereopods 1 and 2 chelate; fingers with pectinate cutting edges ..... Pasiphaeidae
   Pereopods 1 and/or 2 chelate; fingers without pectinate cutting edges 9

9. Carpus of pereopod 2 unsegmented. Pereopod 1 with well-developed chela 10
   Carpus of pereopod 2 multisegmented, **OR** pereopod 1 nonchelate 11

10. Pereopods with exopods ..... Oplophoridae
    Pereopods without exopods ..... Palaemonidae

11. At least 1 of the pereopod 1 chelae well developed 12
    Pereopod 1 chelae very small or absent ..... Pandalidae

12. Rostrum edentate or dentate, but without subdistal tooth 13
    Rostrum with distal notch covered with bristles and forming subdistal dorsal tooth .. .. Processidae

13. Eyes borne on extremely long stalks, reaching nearly to end of antennular peduncle, and several times longer than the eye diameter . . . . . Ogyrididae
Eyestalks not unusually long, not or only slightly exceeding eye diameter 14

14. Eyes usually partially or entirely covered by carapace, incapable of free lateral movement; if not, rostrum lacking or represented by single spine . . . . . Alphaeidae
Eyes exposed and freely movable; rostrum well developed, toothed . . . Hippolytidae

KEY TO THE ALPHAEIDAE OF CALIFORNIA

D. B. Cadien CSDLAC - Dec 7 1994
(modified from Wicksten 1984)

1. Triangular movable plate articulated at posterolateral angle of sixth abdominal somite lateral to base of uropod 2
   No triangular movable plate articulated at posterolateral angle of sixth abdominal somite lateral to base of uropod 9

2. Rostrum prominent, orbital hoods armed with spines . . . . . *Alphaeopsis equidactylus*
   Rostrum absent, front without spines . . . . . *Betaeus* 3

3. Dactyls of walking legs slender and simple 4
   Dactyls of walking legs stout and bifid 6

4. Chelae of first legs with fingers longer than palm. Large male with gaping fingers of chelipeds . . . . . *Betaeus longidactylus*
   Chelae of first legs with fingers not longer than palm. Large male with heavier, stouter chelae, but without gaping fingers 5

5. Blade of antennal scale broad distally. Fixed finger of first cheliped decreasing in width evenly to sharp curved tip . . . . . *Betaeus harrimani*
   Blade of antennal scale narrow distally. Fixed finger of first cheliped truncate before sharp curved tip . . . . . *Betaeus ensenadensis*

6. Front curved, not emarginate. Commensal with sea urchins (*Strongylocentrotus* spp) . . . . . *Betaeus macginitieae*
   Front emarginate. Commensal with abalone, or free-living 7

7. Emargination of front shallow. Telson with posterolateral spines small or missing. Commensal with abalones (*Haliotis* spp) . . . . . *Betaeus harfordi*
   Emargination of front deep. Telson with posterolateral spines well developed 8

8. Peduncle of first antenna less than 0.5x carapace length. Merus of cheliped with lower inner ridge with long bristles, upper ridge ending in sharp tooth; chela with fingers subequal to palm; chela 3 times as long as wide . . . . . *Betaeus gracilis*
   Peduncle of first antenna subequal to carapace length. Merus of cheliped with lower inner ridge usually tuberculate, upper ridge with tuft of hair, chela with fingers longer than palm; chela twice as long as wide . . . . . *Betaeus setosus*

9. Eyes partially or fully exposed dorsally 10
   Eyes fully covered by carapace dorsally 12

10. Eyes fully exposed dorsally, rostrum shorter than eyestalks . . . . . *Automate* 11
    Eyes partially exposed dorsally, rostrum much longer than eyestalks . . . . *Salmoneus sp A*

11. Propodus of 3rd pereopod bearing spines on the posterior margin . . . . . *Automate dolichognatha*
Propodus of 3rd pereopod setose, but lacking spines on posterior margin *Automate sp A*

12. Pereopods without epipods. Dactyls of pereopods 3-5 bifid . . . . . *Synalpheus lockingtoni*
Pereopods with epipods. Dactyls of pereopods 3-5 simple . . . . . *Alpheus* 13

13. Dactyl of major chela closing horizontally. Merus of third pereopod with prominent inferior spine . . . . . *Alpheus clamator*
Dactyl of major chela closing vertically. Merus of third pereopod lacks prominent inferior spine 14

14. Orbital hoods with spines. Minor chela with prominent spine posterior to movable finger, movable finger flattened (lamellate) . . . . . *Alpheus bellimanus*
Orbital hoods without spines. Minor chela without prominent spine posterior to movable finger, movable finger not flattened . . . . . *Alpheus californiensis*

KEY TO THE PANDALIDAE OF CALIFORNIA

D. B. Cadien CSDLAC - 7 Dec 1994

(modified from Burukovskii 1974, Wicksten 1978, and Butler 1980)

1. Rostrum articulated to front of carapace . . . . . *Pantomus affinis*
   Rostrum not articulated, integral to carapace 2

2. Third maxilliped with an exopod . . . . . *Plesionika* 3
   Third maxilliped without an exopod 5

3. Second legs markedly unequal in length . . . . . *Plesionika mexicana*
   Second legs equal or subequal in length 4

4. Rostrum with 2-8 dorsal spines; with a slight upcurve in the distal ten percent of it's length . . . . . *Plesionika sanctaecatalinae*
   Rostrum with 11+ dorsal spines; proximally straight, then angled upwards for the distal 50-70% of it's length . . . . . *Plesionika sp* (nr. *trispinus*)

5. Discoid widening of inner margin of ischium of 1st leg prominent . . . . . *Pandalopsis ampla*
   Discoid widening of inner margin of ischium of 1st leg absent . . . . . *Pandalus* 6

6. Third abdominal segment carinated dorsally, carina forms a lobe in the posterior margin of the segment . . . . . *Pandalus jordani*
   Third abdominal segment not carinated dorsally 7

7. Dorsal spines confined to anterior half of carapace 8
   Dorsal spines extend to posterior half of carapace . . . . . *Pandalus danae*

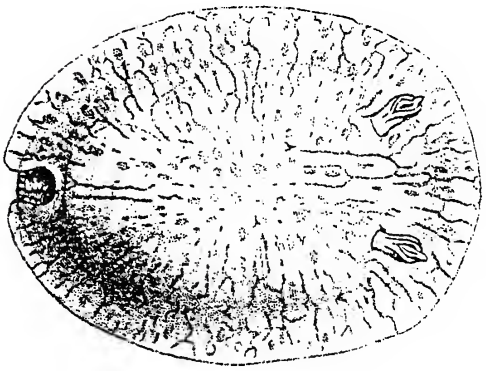
8. Sixth abdominal somite length ≥2X width . . . . . *Pandalus tridens*
   Sixth abdominal somite length <2X width . . . . . *Pandalus platyceros*

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

December, 1994 Vol. 13, No.8

NEXT MEETING:	SCBPP Non-polychaete Problem Species
GUEST SPEAKER:	none
DATE:	January 9, 1995
TIME:	9:30am - 3:30pm
LOCATION:	Cabrillo Marine Aquarium 3720 Stephen White Drive San Pedro



Quasicorambe pacifica (from MacFarland & O'Donoghue 1929)

JANUARY 9 MEETING

The January meeting will be back to the 2nd Monday of the month at the Cabrillo Marine Aquarium. It will be another non-polychaete SCBPP problem species meeting. Don't get discouraged, polychaete people, the February meeting is being planned for SCBPP problem polychaetes.

As in previous SCBPP-focus meetings, all problems are welcome. If you can contact Don Cadien prior to the meeting and indicate problem areas you wish to discuss, literature can be brought along to help.

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

FUTURE MEETINGS

On February 6th there will be a special SCAMIT meeting at the Santa Barbara Museum of Natural History with Dr. Eric Hochberg to resolve problems with octopus from the SCBPP trawl program. This meeting is in addition to our regular monthly meeting, which, due to the President's Day holiday may be on a Tuesday instead. This will be decided at the January meeting.

CORRECTIONS

R. Eugene Ruff's address was incorrectly given in the last newsletter. Here is the correct address.

R. Eugene Ruff
11719 E.(not S.) Meridian, Suite 401
↑ (missing from original address)
Puyallup, WA 98373
(206) 770-7007

Also, there was a mistake made in the last newsletter minutes for the November 21 meeting. In the fourth paragraph where the two shallow water species *Polydora nuchalis* and *Polydora cornuta* are being compared in the sentence, "The main difference between *P. cornuta* and *P. ligni* is the shape of the spines in the modified 5th setiger.", *P. ligni* should be *P. nuchalis*. Remember, *P. ligni* is now considered a junior synonym of *P. cornuta* due to Blake and Maciolek (1987). The secretary sincerely apologizes for this error.

CHRISTMAS PARTY

The Christmas party was a great success even though we regret many members were unable to attend. The food was truly scrumptious and the entertainment was outstanding. Larry Lovell and Ann Dalkey had some additions to their musical ensemble this year. They had help from John Shisko's daughters and family friend, along with SCAMIT friend Claire Arment. All of us non-musical SCAMIT members thank them greatly for their talent and participation.

We all must have been good this year because the evening ended with a jolly visit from Santa "John" Claus and his bag full of treasures. SCAMIT members also owe Vice-President, Don Cadien, a great big thanks for making the arrangements for such a fun party. Our thanks also go to the Cabrillo Marine Aquarium and it's staff, especially Ed Mastro, for providing us once again with a wonderful place for our Christmas festivities, and for their support throughout the year.

It has been suggested that perhaps SCAMIT should have its annual Christmas party in July or September next year when more of its members might be able to attend. Christmas being such a busy time for everyone and many people out of town. We have tried a beach party before during the summer which has been mildly successful. We hope members might have some ideas because we hate to put an end to a wonderful tradition. Please let Vice-President Don Cadien know of any thoughts or ideas you might have on this.

ELECTIONS

Nominations are now open for SCAMIT officers for the 1995-96 year. All four current officers will be running for re-election, but competition is always welcomed. Please contact Vice-President Don Cadien with your nominations. Ballots will be mailed out with the January newsletter and will be due by the March meeting.

NEW PUBLICATIONS

The collection of conference papers from the 4th International Polychaete Conference in Angers, France in 1992 is due out soon. Several papers pertinent to our area will be included.

A recent publication from Russia (Martynov 1994) resolves most, if not all, of the problems within the nudibranch family Corambidae. It is in Russian, but hopefully a translator can be found so the author's comments can be appreciated in full. The family was separated into two subfamilies; the Loyinae, with dermal spicules, and a non-deciduous notal cuticle; and the Corambinae, lacking dermal spicules, and having a deciduous notal cuticle. Changes to local taxa are as follows:

Corambe pacifica MacFarland & O'Donoghue 1929 becomes the type of the new subgenus *Gulbinia* within the new genus *Quasicorambe*, and is thus now *Quasicorambe pacifica* (MacFarland & O'Donoghue 1929).

Corambe thompsoni Millen & Nybakken 1991 becomes the type of the new genus *Psammodoris* in the subfamily Loyinae, and is thus now *Psammodoris thompsoni* (Millen & Nybakken 1991).

Doridella steinbergae (Lance 1962) becomes the type of the new subgenus *Suhinia* in the genus *Corambe*, and is thus now *Corambe steinbergae* (Lance 1962).

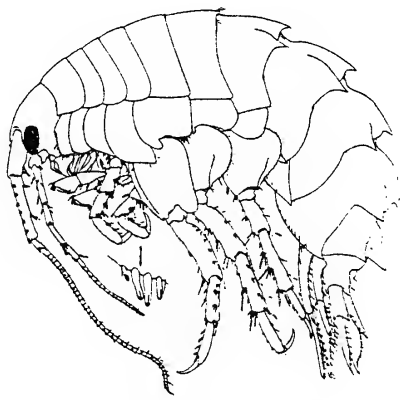
POLYCHAETE KEY

A new updated version of the non-polydorid spionidae key written by Larry Lovell and Dean Pasko for southern California species has been included in this newsletter. The new version has illustrations and members will find it very useful. This version also includes Larry Lovell's new species, *Pseudoathrospio fauchaldi*. Thanks to Larry and Dean for all their hard work.

AMPHIPOD MEETING - DEC. 15TH

On Thursday the 15th SCAMIT held a special meeting on amphipods at MEC with Dr. Jim Thomas of the Smithsonian Institution. Jim was visiting in the area for personal reasons, and graciously offered to assist SCAMIT members with any problem amphipods. Because of his other commitments we started in the afternoon. Representatives of all the SCBPP participating agencies, along with Brad Myers, joined Jim in this brief meeting. We discussed several species which had been covered in previous amphipod workshops, *Paradexamine* sp. and *Photis sp. D* of SCAMIT among them. Brad Myers brought in *Paradexamine* from samples collected this fall in Richmond Harbor, San Francisco Bay, apparently the first time that the species had been taken (or reported) from San Francisco Bay. The animals appeared the same as those from Catalina Island, the San Gabriel River tidal prism, and San Diego Bay examined previously.

To recap, this animal is surely introduced (in 1988, or perhaps earlier); may be one of about eight described species, or may be as yet undescribed. Dr. Thomas will be providing access to some particularly obscure literature we have not yet been able to see, including original descriptions of several species. A related species is illustrated below.



P. frinsdorfi (from Barnard & Karaman 19

Photis sp. D of SCAMIT is apparently not very common, and is infrequently encountered during sampling programs in southern California. Jim Roney of Hyperion brought in a wonderful adult male specimen which we examined. It was taken during SCBPP sampling in Santa Monica Bay. Several other *Photis* were also examined. Ernesto Calix of MEC brought some specimens which matched *P. californica* in morphology, but had a variant coloration from those normally seen. These specimens lacked the normal antennal pigmentation of the species (longitudinal dark purplish-black lines dorsally on articles one and two of antenna one), and had blotchy light pigmentation on the anterior pereopods. Dr. Thomas concluded they could not be separated from *P. californica* as described by Barnard (1962). Specimens identified as *Photis sp* LA1 also had blotchy pigmentation on the anterior pereopods, but also on the mouthparts. These animals were not the same as those taken by MEC, being closer to *P. brevipes* or *P. parvidons* than to *P. californica*.

A general discussion of character selection in *Photis* ensued, with no definitive result other than a dissatisfaction with the current suite of characters being used. It was agreed that it would be necessary to seek other characters which were less variable than configuration of the gnathopods, coxal shape and relative size, and setation of the coxae for use in separation of species within the genus. All of these characters are related strongly to size (and/or age), and are not documented in a developmental series for any of the species in the area. The strong sexual dimorphism in nearly all *Photis* complicates the matter further, with juvenile males varying little from the female configuration, and becoming increasing dimorphic in subsequent molts.

This will be a major undertaking, and will not be completed for many years, but it needs doing. In the interim, we probably should adopt a policy of separately designating variant populations until their place in the scheme of eastern Pacific *Photis* speciation is clear.

A problem of equal perplexity was the identity of the specimens of *Garosyrrhoe* found off southern California. *Garosyrrhoe bigarra* was described from coarse sediments off San Diego (as *Syrrhoites bigarra*) by Barnard in 1962. The second eastern Pacific species in the genus (*Garosyrrhoe disjuncta*) was described from the Gulf of California (Barnard 1969). The two species are similar, but were differentiated by Barnard (1972) on the basis of the dorsal teeth on pleonites 1 and 2, and on pereonite 7.

Unfortunately, the characters are not as clear-cut and invariate as the original descriptions would indicate. To complicate matters the holotypes of the two species are different sexes; that of *G. bigarra* a male, and that of *G. disjuncta* a female. It was initially hoped that the two would be found to be a single species, but examination of both males and females from southern California collections has shown that supposedly differential characters are not segregated by sex.

Rostral shape, head carination, eye dorsal confluence, dorsal tooth pattern, and serration of the hind margin of pleonite 3 all seem to be unreliable as separatory criteria for the two species. Reexamination of the types is clearly in order to establish the accuracy and adequacy of the original descriptions. Don Cadien will reexamine the holotype of *G. bigarra* at the Natural History Museum of Los Angeles County, while Jim Thomas will do the same for the type of *G. disjuncta* at the Smithsonian.

Towards the end of the meeting we examined specimens of *Pleusymtes* from Puget Sound. It had been assumed that these were variants of *P. coquilla* described from off Oregon by Barnard (1971). The most easily seen differences were in the configuration of the pleonites. The Puget Sound material differed

from *P. coquilla*, *P. subglaber*, and all of Hirayama's Japanese *Pleusymtes* in having the second pleonal epimeron larger than the third. Dr. Thomas was of the opinion that this constituted a new species, and not just a variant of *P. coquilla*. Hopefully it will be among the new species described by Bousfield & Hendrycks in their treatment of the subfamily Pleusymtinae (in prep.).

Doug Diener (who was unfortunately not able to participate) had mentioned previously that he had taken at least three species of *Heterophoxus* during the SCBPP sampling, *H. oculatus*, *H. affinis*, and *H. ellisi*. The genus was recently reexamined by Jarrett & Bousfield, with *H. affinis* removed from the synonymy of *H. oculatus* and *H. ellisi* described as new. A series of specimens taken near the Redondo Submarine Canyon and off Palos Verdes were examined during the meeting and found to be *H. affinis* using the new key to the genus (Jarrett & Bousfield 1994, pg. 126).

It was clear that there are still plenty of amphipod problems to be addressed in southern California. One of them is that we are increasingly dealing with a world fauna in our local waters. Introductions of crustaceans (as in most other groups) have been more and more evident in the last ten years, particularly in and near major ports such as San Francisco and the Los Angeles/Long Beach Harbor complex. Jim Thomas had an interesting comment to make regarding the reason for the increase. He suggested that U.S. regulations regarding the quality of ballast water discharged into U.S. waters have been in force for long enough that most vessels have been either constructed to comply with them, or modified to do so. In consequence, there are continual introductions of organisms which in the past would have succumbed to foul or anoxic conditions in the ballast tanks. We have cleaned ourselves into a problem, perhaps one far more disruptive to the local environment than the toxic ballast waters the regulations were designed to control. We all should begin to apply the criteria for recognizing introduced species proposed by Chapman and Carlton (1991). All of us will benefit from reviewing Carlton 1985 and Chapman 1988, both of which deal with amphipod introductions to our area, and the mechanisms involved.

MINUTES FROM DECEMBER 19

Dr. Mary Wicksten of Texas A & M University was a special guest at the meeting. She brought us up to date on her current projects. She is working with Dr. Janet Haig of the Allan Hancock Foundation on a monograph of decapods from California and Oregon that will include both marine and freshwater species and extend coverage to abyssal depths. Although this project is nominally an update of Schmitt's 1921 Decapods of California, it will include many more species. It is also based on examination of specimens and not on literature records and descriptions. Because this publication includes all original illustrations it has been very time consuming to produce, but they are nearing completion. Dr. John Garth of AHF completed most of the work on the brachyuran crabs for this project prior to his death nearly a year ago.

Dr. Haig has some new publications on hermit crabs that are due out very soon. Most of her time has recently been spent untangling the problems associated with galatheid crabs. She and Dr. Keiji Baba of Japan have been working together to resolve the difficulties with the north Pacific representatives of the family.

Dr. Wicksten also reported that *Heptacarpus pictus* is no longer valid. It was found to be a synonym of *Heptacarpus sitchensis*. A full discussion of this synonymy is in press, and should be out soon.

Mary also had a cautionary note for SCAMIT members working with crustaceans originally described by W. N. Lockington. Lockington didn't feel it was necessary to provide illustrations to accompany the brief descriptions of his new species. Most of his specimens, including the types, were burnt up in the 1906 San Francisco fire. Because of this many of his species have been redescribed under different names. She recently discussed problems with Lockington's species in a paper in the Bulletin of the Southern California Academy of Sciences (Wicksten 1994).

Dr. Wicksten noted that a mid-water pandalid recorded from off Baja California had been left out of the key to the Pandalidae of California from the last newsletter. This species, *Stylopandalus richardsoni*, could range into our area during ENSO events, and will be added to the next version of the key. She also noted that shrimp of the family Nematocarcinidae had been taken on the Cascadia Abyssal Plain off Oregon. These are, however, beyond the bathymetric coverage of the key to shrimp families included in the November newsletter.

Dr. Wicksten handed out a very useful diagram of a "complete" shrimp with a list of terminology used when describing these animals. The diagram is labelled with abbreviations for these terms. This is one of the materials she prepared for her students. She kindly allowed us to include it in the newsletter.

She also clarified the difference between a movable spine and a tooth. A movable spine inserts into a socket and a tooth doesn't. A broken tooth may be moved by manipulation, and a movable spine may be tightly socketed, and not very moveable. Examination of the juncture between the carapace and the feature should allow recognition of the two structures. Also, the difference between chelae and subchelae was discussed. Chelae are shaped like pinchers and subchelae are shaped like a switchblade. To be able to see the epipods the carapace needs to be lifted up.

It was also mentioned at the meeting that many shrimp have asymmetrical limbs. In some cases the left and right members of a leg pair may be dissimmilar in number of subdivisions of the carpus, may differ in length, or may differ in terminal article shape (one chelate, the other not). These asymmetries are usually consistent, and cause little difficulty. A more troublesome variation is in the number of epipods on the walking legs. It is frequently the case that one side of an animal will have epipods on more legs than the other. This often presents a problem because both sides are generally not reported in the original descriptions. Both sides of a shrimp should be examined for epipod counts, since asymmetry is not uncommon.

Dr. Wicksten commented that hippolytids seem to have a definite affinity for certain substrates and depths. She cautioned members that there are many discontinuities in species distributions related to the combination of habitat specificity and habitat patchiness.

Mary informed us that she welcomes problem shrimp species and that she has plenty of undergraduates that would be willing to help work on them. She also desires to review large suites of specimens to better define the degree of variability within west coast shrimp populations. Please send them to her at:

Dr. Mary Wicksten
Texas A & M University
Biology Department
315 Biological Sciences Building West
College Station, Texas 77843-3258

Dr. Wicksten also mentioned that Judy Wern of the Marine Biology Dept. at Texas A & M at Galveston has been working with nemerteans in the Gulf of Mexico and may be

able to help SCAMIT members with their nemertean problems.

During the afternoon Mary Wicksten examined decapod specimens brought by several of the members. Specimens from shallow water in south Santa Monica Bay, which Carol Paquette had thought *Heptacarpus palpator* were not. They belonged to an as yet undescribed species similar to *H. palpator* which Mary had seen from the Channel Islands. Specimens Carol had designated *Heptacarpus sp. A* of MBC were referred to *H. stimpsoni* by Mary.

Jim Roney brought specimens of *Ogyrides sp. A*. Mary had previously reported the animals occurring in southern California shallow waters as a northward extention of the Pacific population of *Ogyrides alphaerostris*, a species better known from the Atlantic. After examining Jim's specimens and drawings Mary agreed with him that this was a separate and undescribed species. Jim also mentioned an undescribed *Spirontocaris* from our area, but did not bring specimens for examination. He did, however, indicate that he had found a *Spirontocaris* which bore two segmented epipods; a most remarkable feature!

The problem of how to deal with *Turbonilla sp. A* and *Turbonilla spp.* in the SCBPP program was also addressed. Distinctive species can often be recognized within sampling areas, and Kelvin Barwick of SDMWD brought one such to the meeting. It is very likely, however, that there are four or five nominate species which might apply to any one form. Such uncertainty is magnified by the combination of data from different agencies within the SCBPP database. After some discussion it was suggested that pyramidellid identifications should probably be left at the generic level because treatment by the participating agencies is unlikely to be equivalent. Each agency can, of course, differentiate *Turbonilla* and *Odostomia* species further for their internal purposes, but for the SCBPP data analysis it is very likely that the additional detail will not be used.

LITERATURE CITED

BARNARD, J. LAURENS. 1962. Benthic Marine Amphipoda of Southern California: 1. Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podoceridae. Pacific Naturalist 3(1):3-72.

---. 1969. A biological survey of Bahia de los Angeles, Gulf of California, Mexico. IV. Benthic Amphipoda (Crustacea). Transactions of the San Diego Society of Natural History 15(13): 175-228.

---. 1971. Gammaridean Amphipoda from a deep-sea transect off Oregon. Smithsonian Contributions to Zoology (61):1-86.

---. 1972. A review of the family Synopiidae (=Tironidae), mainly distributed in the deep sea (Crustacea: Amphipoda). Smithsonian Contributions to Zoology (124):1-94.

BARNARD, J. LAURENS, and Gordan S. Karaman. 1991. The Families and Genera of Marine Gammaridean Amphipoda (except Marine gammaroids)[parts 1 and 2]. Records of the Australian Museum Supplement 13:1-866.

BLAKE, JAMES A., and Nancy J. Maciolek. 1987. A Redescription of Polydora cornuta Bosc (Polychaeta: Spionidae) and Designation of a Neotype. Bulletin of the Biological Society of Washington 7:11- 15.

CARLTON, JAMES T. 1985. Transoceanic and interoceanic dispersal of coastal marine organisms: the biology of ballast water. Oceanography and Marine Biology, an Annual Review 23:313-371.

CHAPMAN, JOHN W. 1988. Invasions of the northeast Pacific by asian and Atlantic gammaridean amphipod crustaceans, including a new species of Corophium. Journal of Crustacean Biology 8(3):364-382.

CHAPMAN, JOHN W., and James T. Carlton. 1991. A test of criteria for introduced species: the global invasion by the isopod

Synidotea laevidorsalis (Miers, 1881). Journal of Crustacean Biology 11(3):386-400.

JARRETT, NORMA E., and Edward L. Bousfield. 1994. The amphipod superfamily Phoxocephaloidea on the Pacific Coast of North America. Family Phoxocephalidae. Part II. Subfamilies Pontharpiniinae, Parharpiniinae, Brolginae, Phoxocephalinae, and Harpiniinae. Systematics and distributional ecology. Amphipacifica 1(2):71-150.

MACFARLAND, FRANK MACE, and Charles Henry O'Donoghue. 1929. A new species of Corambe from the Pacific coast of North America. Proceedings of the California Academy of Sciences, Series 4 18(1):1-27.

MARTYNOV, A. V. 1994. Materials for the Revision of Nudibranchiate Molluscs of the Family Corambidae (Gastropoda, Opisthobranchia) Taxonomy .1. Zoologicheskii Zhurnal 73(10):3-15.

SCHMITT, WALDO L. 1921. The Marine Decapod Crustacea of California, with special reference to the Decapod Crustacea collected by the United States Bureau of Fisheries Steamer 'Albatross' in connection with the Biological Survey of San Francisco Bay during the years 1912-1913. University of California Publications in Zoology 23:1-470.

WICKSTEN, MARY K. 1994. On the identity of snapping shrimp described and identified by W. N. Lockington, 1878. Bulletin of the Southern California Academy of Sciences 93(3):118- 126.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

KEY TO THE NON-POLYDORID SPIONIDAE FROM SOUTHERN CALIFORNIA (INTERTIDAL TO 500 METERS)

by

Lawrence L. Lovell and Dean Pasko

1. Branchiae absent; setiger 1 with 1 - 2 large recurved neuropodial spines in addition to capillary setae (Fig. 1) . . (*Spiophanes*) 2

   Branchiae present; setiger 1 without recurved neuropodial spines (see Fig. 13) 7

2. Prostomium rounded anteriorly, without lateral projections; prostomium with medial orange pigment spot; median antennae absent (Fig. 2) . . . . . *Spiophanes wigleyi*

   Prostomium bell or T-shaped, with short or long lateral projections (Figs. 3-7); prostomium without pigment spot; median antennae present or absent 3

3. Prostomium T-shaped with long lateral projections 4

   Prostomium bell shaped without lateral projections 5

4. Eyes present (Fig. 3) . . . . . *Spiophanes bombyx*

   Eyes absent (Fig. 4) . . . . . *Spiophanes anoculata*

5. Median antennae absent; peristomium poorly developed (Fig. 5) . . . . . *Spiophanes missionensis*

   Median antennae present; peristomium well developed (Fig. 6) . . 6

6. Prostomium flairs laterally at distal end; neuropodial glands in setigers 10 - 13 without pigment; ventrum of setiger 8 forms dark transverse band with methyl green stain; dorsal transverse membrane without fimbriae (Fig. 6) . . . . . *Spiophanes berkeleyorum*

   Prostomium straight or with a slight constriction distally; neuropodial glands in setigers 10 - 13 darkly pigmented; setiger 8 does not form transverse band of methyl green stain; dorsal transverse membrane with fimbriae (Fig. 7). . . . . *Spiophanes fimbriata*

7. Modified segment present in anterior region (Figs. 8 & 9) . . . 8

   Modified segment absent in anterior region 9

8. Setiger 5 modified . . . . . Polydorid complex (includes *Pseudopolydora, Polydora* (Fig. 8), *Carazziella* (Fig. 9), *Boccardiella, and Boccardia*)

   Setiger 16 modified . . . . . *Morants duplex*

9. Notopodial post-setal lamellae of first 2 - 3 parapodia with 1 or more lobes; accessory branchiae present (Fig. 10) . . . . . *Dispio uncinata*

Notopodial post-setal lamellae of anterior parapodia entire; accessory branchiae absent 10

10. Branchiae limited to middle and posterior setigers, except for a single pair on setiger 2 in males (Fig. 11) . . (*Pygospio*) 11

Branchiae beginning on setiger 1 or 2 and continuing for a variable number of setigers 12

11. Branchiae first present from setiger 17 - 21 (Fig.11) . . . . . *Pygospio californica*

Branchiae first present from setiger 11 - 12 (Fig.12) . . . . . *Pygospio elegans*

12. Prostomium conical, distally pointed, occassionally blunt with minute point; or conical and distally tapering (Figs. 13 & 14) . 13

Prostomium with distal lateral or frontal horns, broadly rounded, or incised on anterior margin (Figs. 19, 26, & 30) . . . 19

13. Branchiae fused to dorsal lamellae at least basally, continuing to end of body (Fig 14) . . . . . (*Scolelepis*) 1[illegible]

Branchiae completely free from dorsal lamellae, present on variable number of anterior setigers, absent posteriorly (Fig. 13) . . . . . *Aonides* spp.

14. Occipital cirrus (median antenna) present (Figs. 14 & 15) 15

Occipital cirrus (median antenna) absent (Fig. 17) 17

15. Setiger 1 with notosetae 16

Setiger 1 without notosetae. . . . . *Scolelepis* sp. 1 of Point Loma

16. Hooded uncini unidentate or bidentate (Fig. 14) . . . . . *Scolelepis occidentalis*

Hooded uncini multidentate (Fig. 15) . . . . . *Scolelepis (Parascolelepis) tridentata*

17. Notosetae absent on setiger 1; hooded hooks tridentate or multidentate 18

Notosetae present on setiger 1; hooded hooks uni-, bi- or tridentate (Fig. 16) . . . . . *Scolelepis squamata*

18. Eyes arranged in straight line; hooded hooks tridentate (Fig. 17) . . . . . *Scolelepis bullibranchia*

Eyes arranged in trapezoid; hooded hooks multidentate . . . . . *Scolelepis* sp. B of Rossi

19. Prostomium with lateral or frontal horns (variable for *Malacocerus*) 20

Prostomium broadly rounded or incised on anterior margin, without lateral or frontal horns 21

20. Branchiae beginning on setiger 1 (Fig. 18) *Malacoceros punctata*

Branchiae beginning on setiger 2 (Fig. 19) . *Rhynchospio glutea*

21. Branchiae present anteriorly only (Fig. 23) 22

Branchiae present throughout most of the body (Fig. 32) 31

22. Branchiae begin on setiger 1 23

Branchiae begin on setiger 2 24

23. One pair of apinnate branchiae, with dorsal ridge on setiger 2 (Fig. 20) . . . . . *Streblospio benedicti*

Three pairs of pinnate branchiae, with dorsal ridge on setiger 1 (Fig. 21) . . . . . *Paraprionospio pinnata*

24. Branchiae all cirriform, 6 or more pairs (Fig. 22) . . . . . *[Prionospio (Minuspio)]* 25

Branchiae a combination of pinnate and cirriform, 4 or 5 pairs (Figs. 25 & 26) 27

25. Prostomium with 2 pairs of large eyes, 6 - 8 pairs of branchiae (Fig. 22) . . . . *Prionospio (Minuspio) multibranchiata*

Prostomium with 2 pairs of small eyes, 6 - 12 pairs of branchiae. .26

26. Prostomium truncate anteriorly, triangular in appearance, sometimes with 1 medial peak; posterior dorsal lamellae rounded; 6 - 8 pairs of branchiae (Fig. 23) . . . . . *Prionospio (Minuspio) cirrifera*

Prostomium narrowly rounded anteriorly, with 5 marginal peaks; posterior dorsal lamellae triangular; 6 - 12 pairs of branchiae (most commonly ten) (Fig. 24) . . . *Prionospio (Minuspio) lighti*

27. First pair of branchiae cirriform; fourth pair pinnate with flat, plate-like pinnules (Fig. 25) . . . . *Apoprionospio pygmaea*

First pair of branchiae pinnate; pinnules digitiform (Fig. 26) . . . . . *[Prionospio (Prionospio)]* 28

28. Branchial pairs 2, 3 and 4 cirriform; interramal pouches present from setigers 2 - 4, continuing to mid-body (Fig. 26). . . . . *Prionospio ehlersi*

Branchial pairs 2 - 3 cirriform; interramal pouches absent . . . 29

29. Four pairs of branchiae; pairs 1 and 4 pinnate (Figs. 28 & 29) . 30

Five pairs of branchiae, pairs 1, 4, and 5 pinnate (Fig. 27) . . . . . *Prionospio heterobranchia*

30. Branchial pairs 1 and 4 pinnate, subequal, or with fourth pair longer than first; dorsal transverse membranes present from setiger 7 (Fig. 28) . . . . . *Prionospio* sp. A (*sensu* SCAMIT)

Branchial pairs 1 and 4 pinnate; first pair two to three times longer than fourth; dorsal transverse membranes absent (Fig. 29) . . . . . *Prionospio* sp. B (*sensu* SCAMIT)

31. Branchiae begin on setiger 1 32

Branchiae begin on setiger 2 34

32. Prostomium incised anteriorly; neurosetae of some anterior setigers with pseudoaristate setae; posterior neuropidal hooks with subdistal secondary tooth (Fig. 30) . . . . . *Pseudatherospio fauchaldi*

Prostomium distally entire; anterior neurosetae without pseudoaristate spines; posterior neuropodial hooks with small secondary tooth distal (Fig. 32) 33

33. **(Note: 3 choices)** Branchiae on setigers 1 and 2 subequal; prostomium with dark pigment; hooded hooks bidentate (Fig. 31) . . . . . *Spio filicornis*

Branchiae on setiger 1 longer than on setiger 2; first pair of branchiae pigmented, ciliated, and with distal swelling; prostomium without pigment; anterior dorsum pigmented; hooded hooks multi-dentate; nuchal organs form distinct zigzag pattern . . . . . *Spio* sp. A (*sensu* SCAMIT)

Branchiae on setiger 1 shorter than on setiger 2; prostomium without pigment; peristomium with patches of pigment; hooded hooks tridentate (Fig. 32) . . . . . *Spio maculata*

34. Interramal pouches present . . . . . (*Laonice*). 35

Interramal pouches absent . . . . . (*Microspio*). 36

35. Prostomium protrudes beyond peristomial wings; thoracic parapodial fascicles with dense, brassy colored setae (Fig. 33) . . . . . *Laonice appellofi*

Prostomium does not protrude beyond peristomial wings; thoracic parapodial fascicles sparce, pale yellow setae (Fig. 34) . . . . . *Laonice cirrata*

36. Prostomium bilobed, without pigment spot; notosetae absent on setiger 1 (Fig. 35) . . . . . *Microspio microcera*

Prostomium rounded, with a pigment spot; notosetae present on setiger 1 (Fig. 36) . . . . . *Microspio pigmentata*

NON-POLYDORID SPIONIDAE (POLYCHAETA)
FROM SOUTHERN CALIFORNIA
(INTERTIDAL TO 500 METERS)

Aonides sp.

Apoprionospio pygmaea (Hartman, 1961)

Dispio uncinata Hartman, 1951

Laonice appellofi Soderstrom, 1920

Laonice cirrata (Sars, 1851)

Malacoceros punctata (Hartman, 1961) (formerly *Spio*)

Microspio microcera (Dorsey, 1977) (formerly *Rhynchospio*)

Microspio pigmentata (Reish, 1959)

Morants duplex Chamberlin, 1919

Paraprionospio pinnata (Ehlers, 1901)

Prionospio (Minuspio) cirrifera Wiren, 1883

Prionospio ehlersi Fauvel, 1928

Prionospio heterobranchia Moore, 1907

Prionospio (Minuspio) lighti Maciolek, 1985

Prionospio (Minuspio) multibranchiata Berkeley, 1927

Prionospio sp. A (*sensu* SCAMIT)

Prionospio sp. B (*sensu* SCAMIT)

Pseudathrospio fauchaldi Lovell (in press)

Pygospio californica Hartman, 1936

Pygospio elegans Claparede, 1863

Rhynchospio glutea (Ehlers, 1897)

Scolelepis bullibranchia Rossi, 1982

Scololepis occidentalis (Hartman, 1961)

Scololepis sp. B of Rossi

Scololepis sp. 1 of Point Loma

Scololepis squamata (O.F. Muller, 1806)

Scolelepis (Parascolelepis) tridentata (Southern, 1914)

Spio filicornis (Muller, 1776)

Spio maculata (Hartman 1961)

Spio sp. A (*sensu* SCAMIT) [formerly *Microspio* sp. A (*sensu* Lovell/Harris)]

Spiophanes anoculata Hartman, 1960

Spiophanes berkeleyorum Pettibone, 1962

Spiophanes bombyx (Claparede, 1870)

Spiophanes fimbriata Moore, 1923

Spiophanes missionensis Hartman, 1941

Spiophanes wigleyi Pettibone, 1962

Streblospio benedicti Webster, 1879

Non-polydorid spionids not included in the list or key which may occur in southern California are: *Prionospio anuncata* Fauchald, 1972; and *Spiophanes lowai* Solis-Weiss, 1983.

Key to the Non-Polydorid Spionidae from Southern California

by Lawrence L. Lovell and Dean Pasko

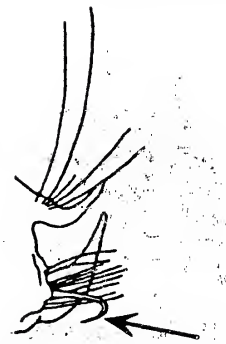


Fig. 1. Setiger 1, showing neuropodial spine of *Spiophanes*.

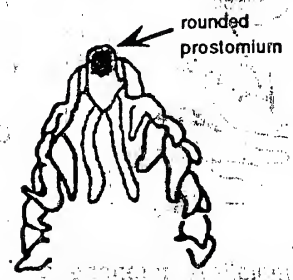


Fig. 2. *Spiophanes wigleyi*: anterior end, dorsal view.

Fig. 3. *Spiophanes bombyx*: anterior end, dorsal view.

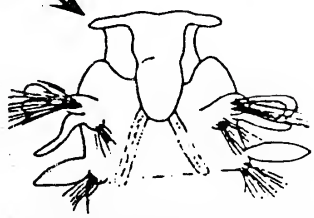


Fig. 4. *Spiophanes anunculata*: anterior end, dorsal view.

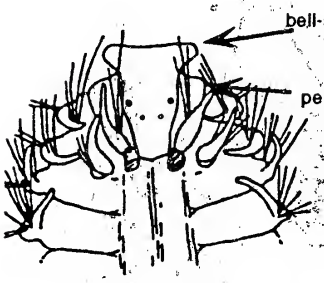


Fig. 5. *Spiophanes missionensis*: anterior end, dorsal view.

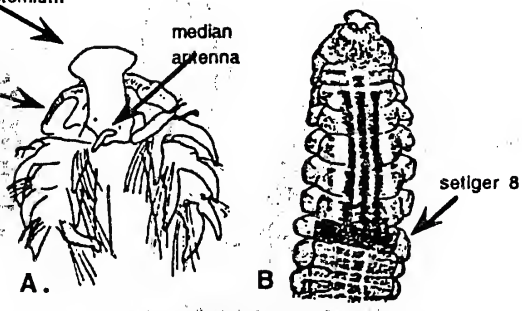


Fig. 6. *Spiophanes berkeleyorum*: A. anterior end, dorsal view; B. ventral view, showing methyl green staining pattern.

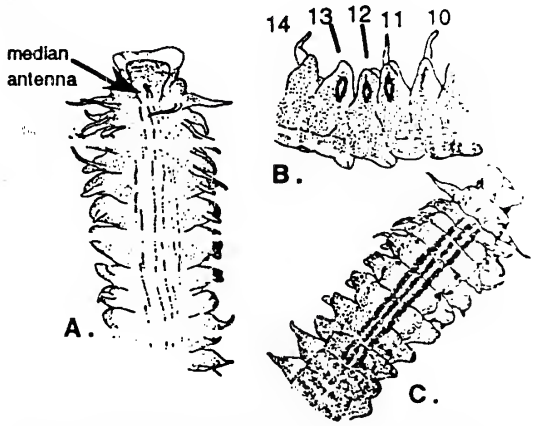


Fig. 7. *Spiophanes fimbriata*: A. anterior en dorsal view; B. lateral view of setigers 10-14; C. ventral view, showing methyl green staining pattern.

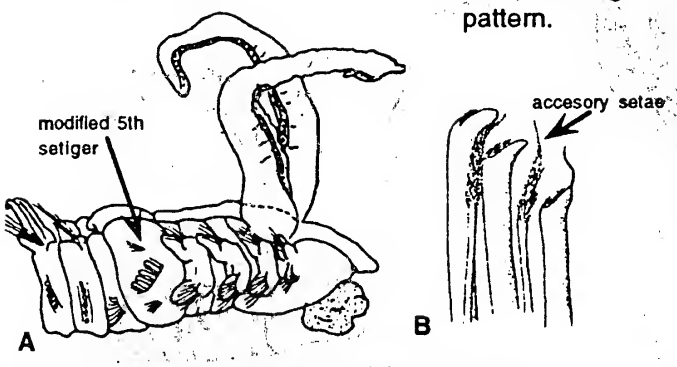


Fig. 8. *Polydora*: A. anterior end, lateral view showing modified 5th setiger; B. spines of modified 5th setiger.

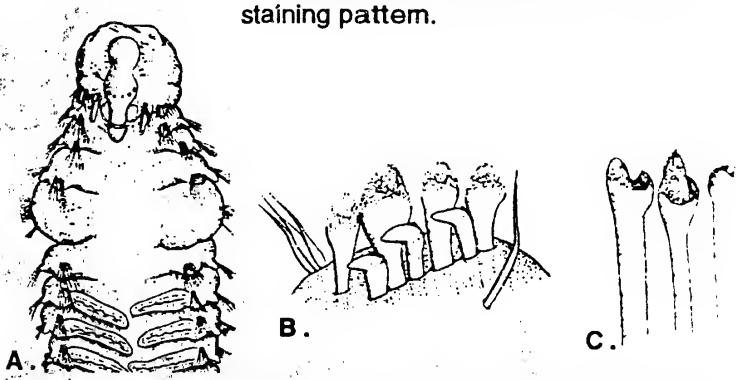


Fig.9. *Carazziella*: A, anterior end, dorsal view; B. modified 5th setiger showing double row of spines; C. brushtop spines typical of *Carazziella*.

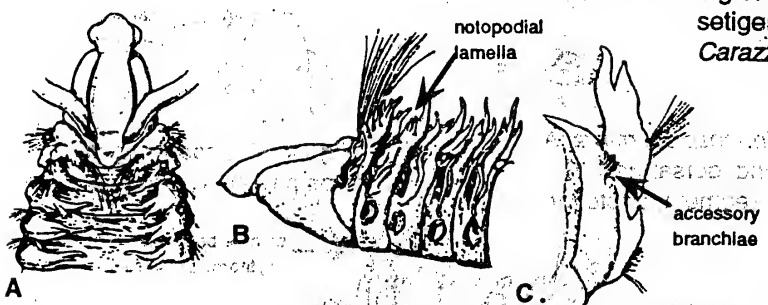


Fig. 10. *Dispio uncinata*: A. anterior end, dorsal view; B. anterior end, lateral view; C. mid-body setiger, posterior view showing accessory branchiae

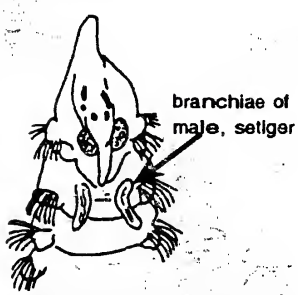


Fig. 11. *Pygospio californica*: male anterior end, dorsal view.

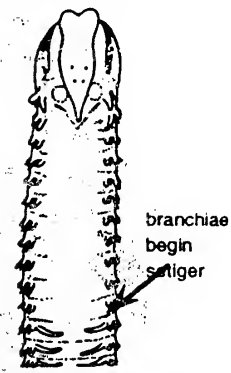


Fig. 12. *Pygospio elegans*: anterior end, dorsal view.

Key to the Non-Polydorid Spionidae from Southern California

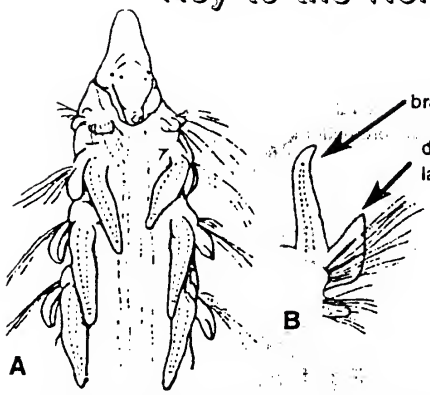


Fig. 13. *Aonides* sp.: A. anterior end, dorsal view; B. setiger 2, posterior view.

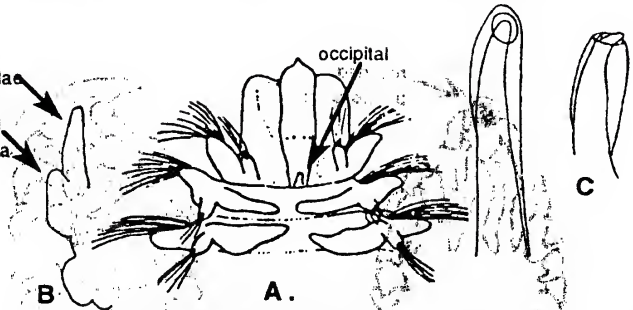


Fig. 14. *Scolelepis occidentalis* A. anterior end, dorsal view; B. diagrammatic representation of a parapod showing branchia fused to notopod; C. unidentate hooded hook; D. bidentate hooded hook.

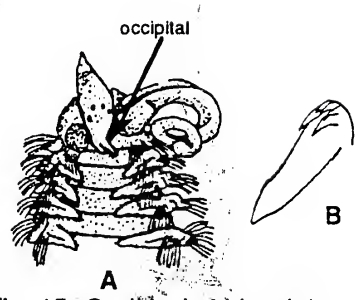


Fig. 15. *Scolelepis tridentata*: A. anterior end, dorsal view; B.head of multidentate hooded hook.

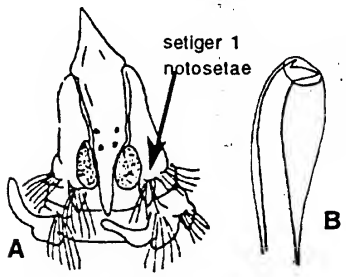


Fig. 16. *Scolelepis squamata*: A. anterior end, dorsal view; B. bidentate hooded hook.

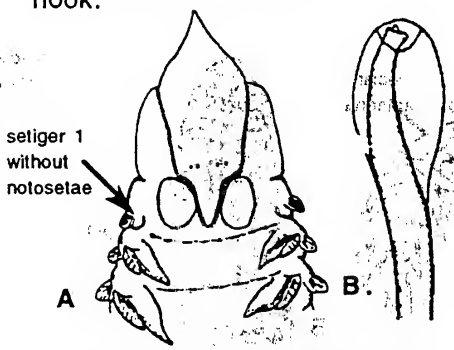


Fig. 17. *Scolelepis bullibranchia*: A. anterior end, dorsal view; B. tridentate hooded hook.

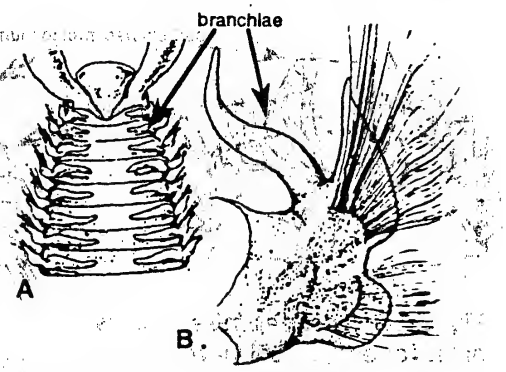


Fig. 18. *Malacocerus punctata*: A. anterior end, dorsal view; B. setiger 9, posterior view.

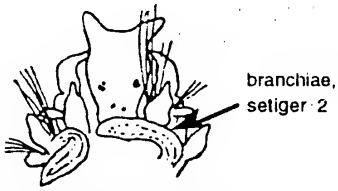


Fig. 19. *Rhyncospio glutea*: anterior end, dorsal view.

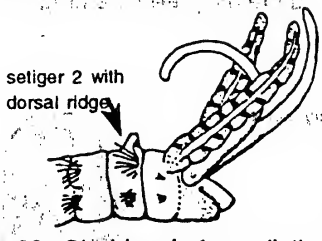


Fig. 20. *Streblospio benedicti*: anterior end, lateral view.

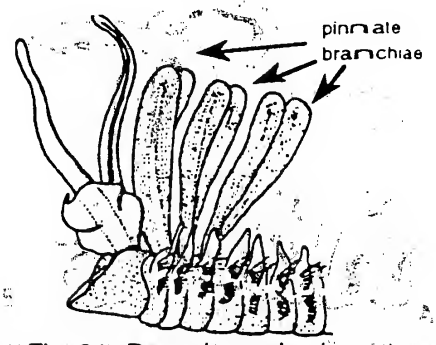


Fig. 21. *Paraprionospio pinnata* anterior end, lateral view.

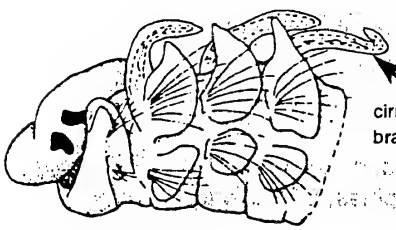


Fig. 22. *Prionospio multibranchiata*: anterior end, lateral view.

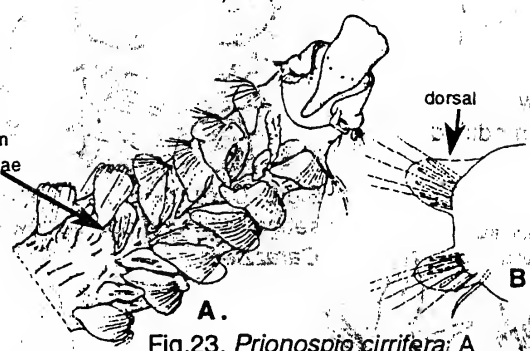


Fig.23. *Prionospio cirrifera*: A. anterior end, dorsal view; B. posterior segment, posterior view.

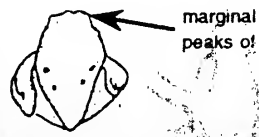


Fig.24. *Prionospio lighti*: prostomium, dorsal view.

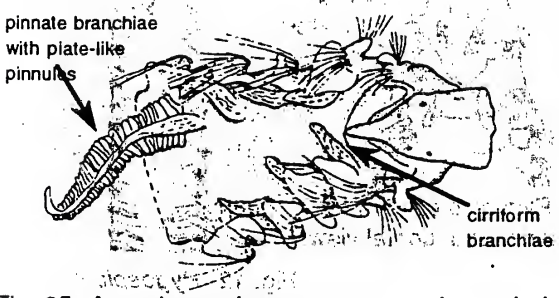


Fig. 25. *Apoprionospio pygmaea*: anterior end, dorsal view.

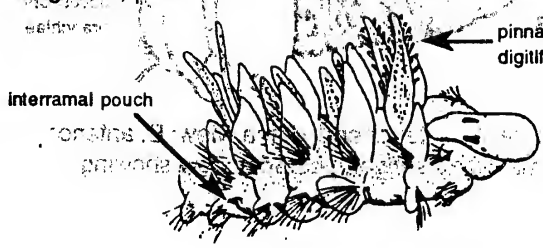


Fig. 26. *Prionospio ehlersi*: anterior end, dorsal view.

Key to the Non-Polydorid Spionidae from Southern California

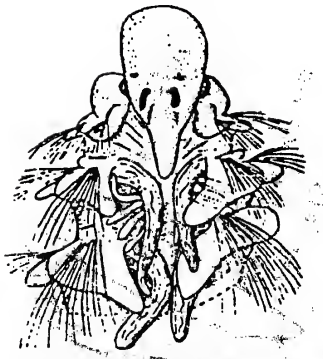


Fig. 27. *Prionospio heterobranchia*: anterior end, dorsal view.

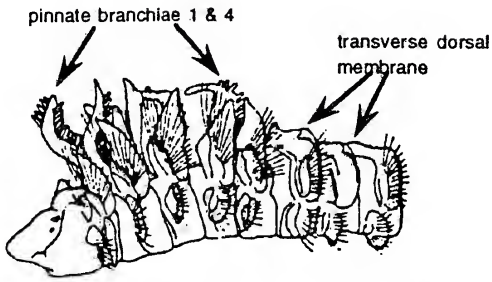


Fig. 28. *Prionospio sp. A*: anterior end, lateral view.

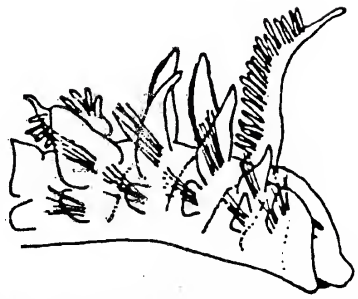


Fig. 29. *Prionospio sp. B*: anterior end, lateral view.

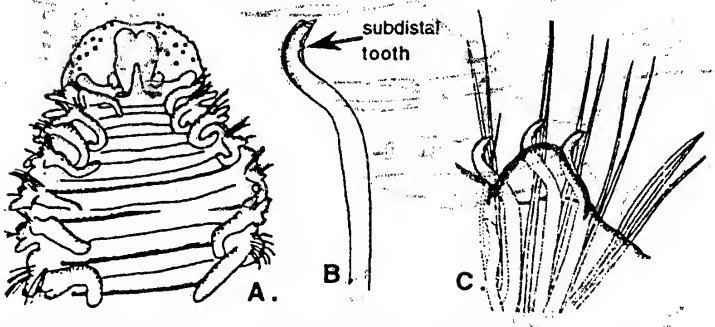


Fig. 30. *Pseudoatherospio fauchaldi*: A. anterior end, dorsal view; B. posterior neuropodial hook; C. posterior neuropodial fascicle.

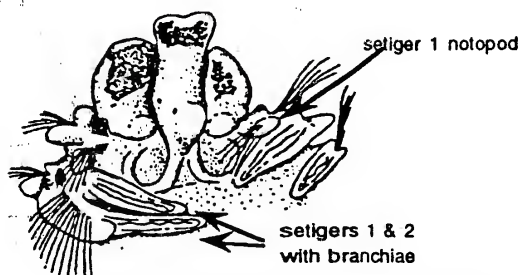


Fig. 31. *Spio filicornis*: anterior end, dorsal view.

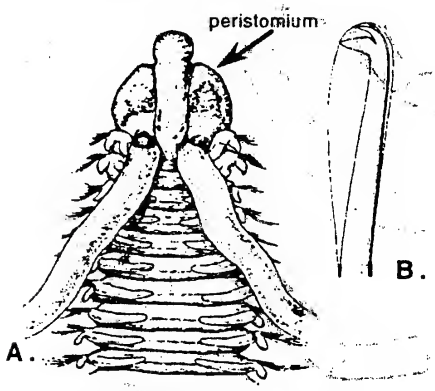


Fig. 32. *Spio maculata*: A. anterior end, dorsal view; B. tridentate hooded hook.

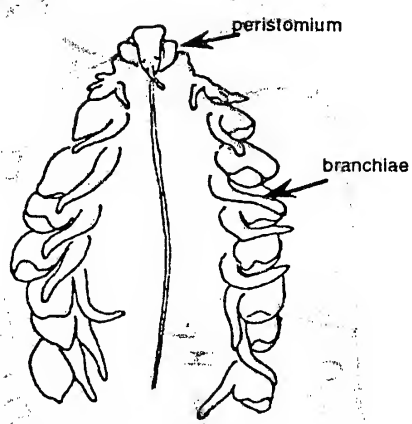


Fig. 33. *Laonice appellofi*: anterior end, dorsal view, (setae not included).

Fig. 34. *Laonice cirrata*: anterior end, dorsal view.

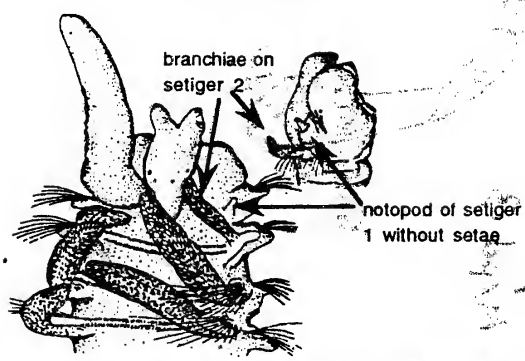


Fig. 35. *Microspio microcera*: A. anteior end, dorsal view; B. prostomium and setigers 1 and 2, lateral view.

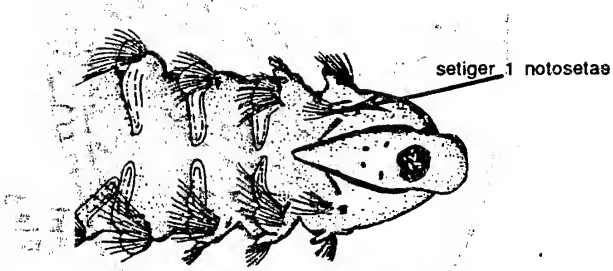
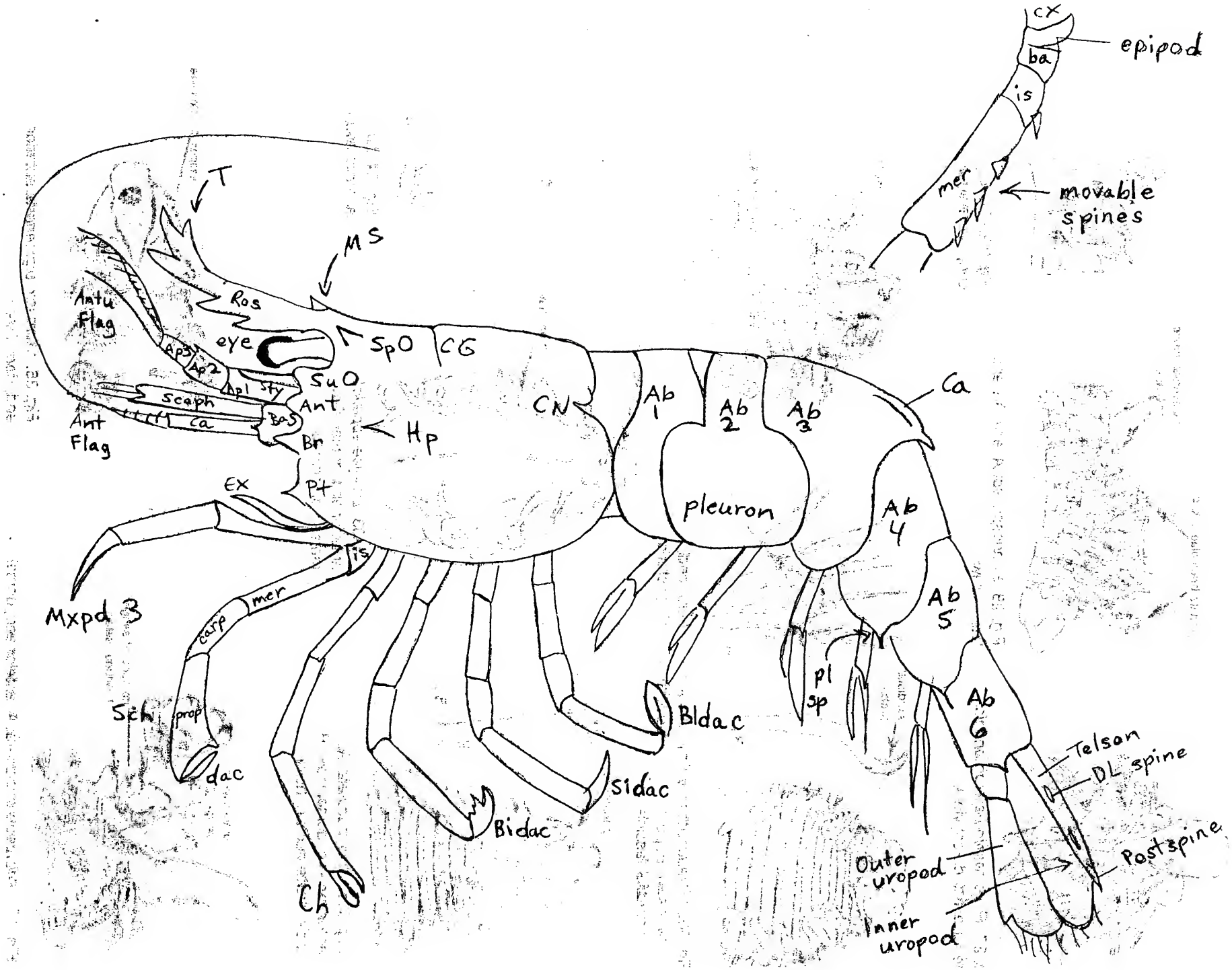
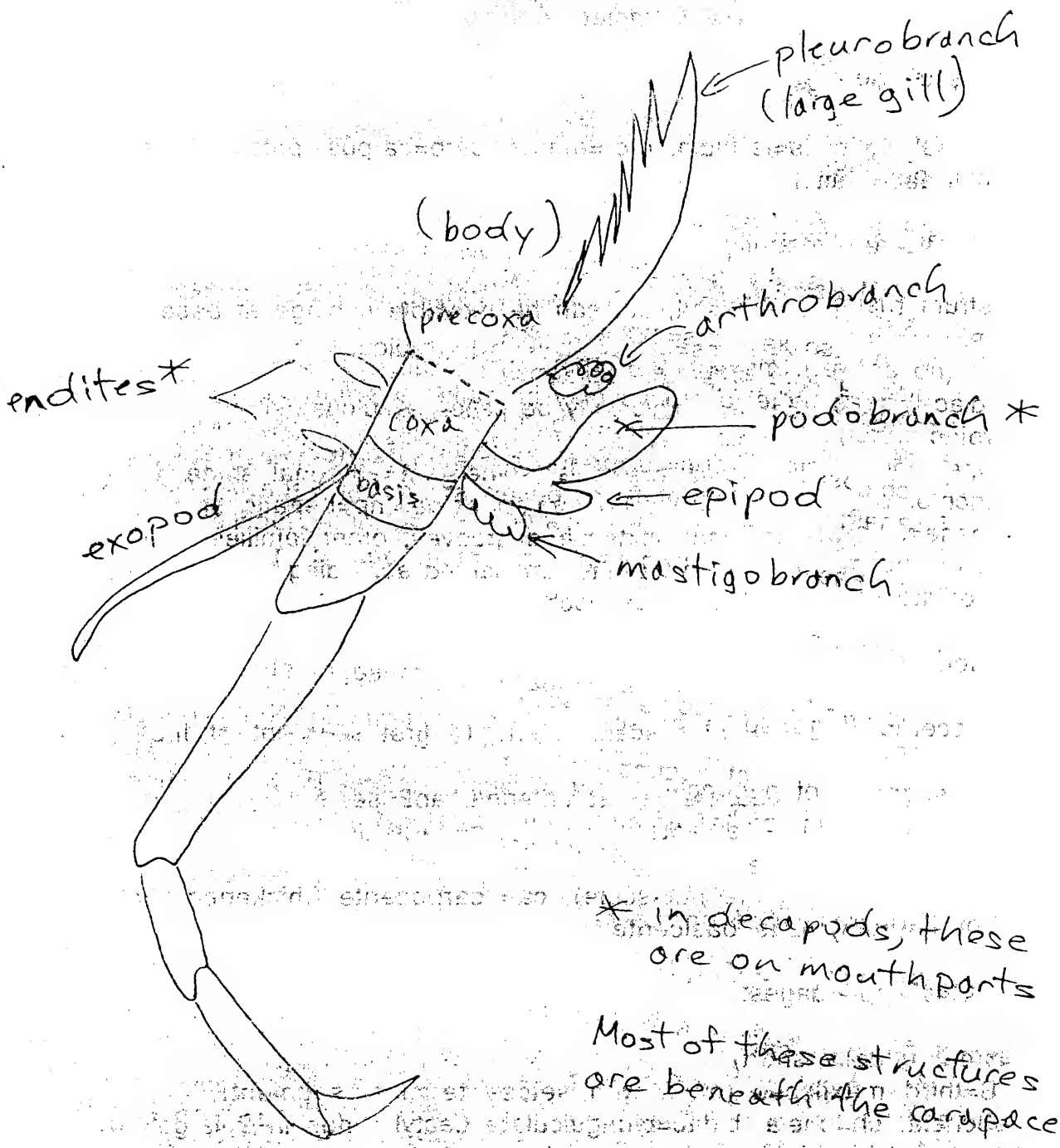


Fig. 36. *Microspio pigmentata*: anterior end, dorsal view.


T
MS
Ros
eye
SpO
CG
SuO
Ant
Br
Hp
Pt
EX
Antu Flag
Ant Flag
Ap3
Ap2
Apl
sty
scaph
ca
Bas
CN
Ab 1
Ab 2
Ab 3
Ab 4
Ab 5
Ab 6
pleuron
Ca
Mxpd 3
is
mer
carp
prop
dac
Sch
Ch
Bidac
Sidac
Bldac
pl sp
Telson
DL spine
Postspine
Outer uropod
Inner uropod
cx
ba
epipod
movable spines



* in decapods, these are on mouthparts

Most of these structures are beneath the carapace

The Complete Shrimp

Segments of the legs:

cx=coxa, ba=basis, is=ischium, mer=merus, carp=carpus, prop=propodus, dac=dactyl

The carapace and rostrum:

ros=rostrum (usually attached, but can be movable if hinge at base as in Pantomus)
t =tooth (no socket), ms=movable spine.
cg=cardiac groove (note: a groove may be called a sulcus).
cn=cardiac notch
spo=superorbital spine, suo=suborbital spine, ant=antennal spine, br=branchiostegal spine, pt=pterygostomian spine, hp=hepatic spine.
Note: peneids have additional spines and grooves; other families have carinae on the carapace. The carinae are named according to the region of the carapace where they occur.

The antennae:

sty=stylocerite (long spine or scale lateral to first segment of first antenna).
apl=first segment of peduncle of 1st antenna; ap2=second, ap3=third.
antu flag= flagellum of 1st antenna; atn flag=flagellum of second antenna
scaph=scaphocerite (=antennal scale), ca= carpocerite (thickened base of flagellum), bas=basicerite

The thoracic appendages:

ex=exopod (usually short)
mxpd 3=third maxilliped (often with setose terminal segment)
sch=subchela, ch=chela, bidac=biunguiculate dactyl (ends in 2 large hooks or claws), sidac=simple dactyl, bldac=bladed (or spatulate) dactyl.

The abdomen and tail fan:

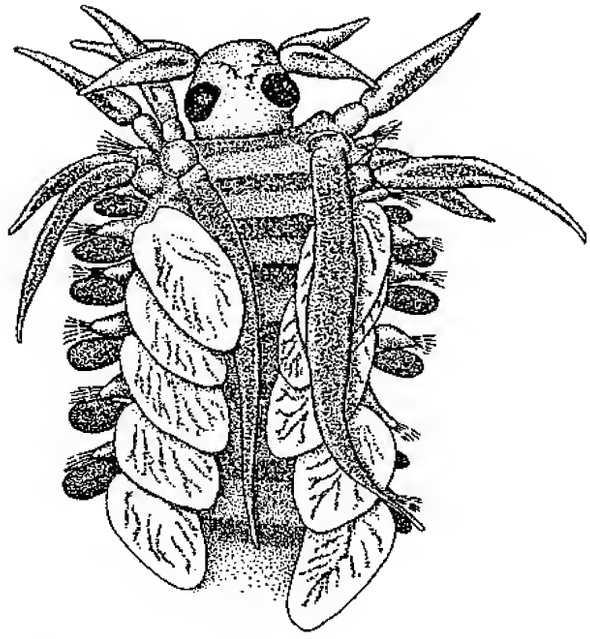
Segments are numbered from anterior to posterior.
ca=carina, pl sp =pleural spine, dl spine =dorsolateral spine, post spine=posterior spine.

Note: the outer exopod may bear additional lateral spines and/or a transverse fold.

Mary K. Wicksten, Biology Department, Texas A&M University, College Station TX 77843

January, 1995 Vol. 13, No.9

NEXT MEETING:	SCBPP Polychaete Problem Species
GUEST SPEAKER:	none
DATE:	February 13, 1995
TIME:	9:30am - 3:30pm
LOCATION:	Worm Lab at NHMLAC 900 Exposition Blvd Los Angeles



Nereiphylla castanea (ex Blake & Hilbig 1994)

FEBRUARY 13 MEETING

The February meeting will be on SCBPP problem polychaete species. The meeting will be at the worm lab at the Natural History Museum of Los Angeles and there will be no guest speaker. We will try to resolve any taxonomic problems with polychaete species found in SCBPP samples. Please bring your specimens, voucher sheets, and any literature that may be pertinent to your specimens.

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

OCTOPUS MEETING

On February 6th there is a special meeting at the Santa Barbara Natural History Museum to resolve the *Octopus rubescens* identification problem. Dr. Eric Hochberg examined octopods from the SCBPP trawl vouchers and found that some specimens that were identified in the field as *Octopus rubescens* were actually a Baja California species. Dr. Hochberg will be at this meeting to assist SCAMIT members with their octopod identification problems.

POLYCHAETE WORKSHOP

On January 26 and 27 the Puget Sound Polychaete Workshop hosted by the Department of Ecology in Olympia, Washington will be attended by several SCAMIT members that have been asked to lead the workshop. Larry Lovell, Tony Phillips, Eugene Ruff, and Leslie Harris will be leading the discussions. Approximately 30 people are expected to attend. It is anticipated that not all polychaete groups will be covered due to the limited time factor, but Larry, Tony, Gene, and Leslie will be discussing those families where their areas of expertise lie. We wish them much success and look forward to hearing about the workshop at the next SCAMIT meeting.

ELECTIONS

Nominations for SCAMIT officers for the 1995-96 year were made at the January meeting. All current SCAMIT officers were nominated again. No other nominations were received. Candidate biographies have been included with this newsletter along with ballots that are due by the March meeting. If you will be unable to attend the March meeting please send your ballots to Don Cadien at LA County Sanitation Districts.

SPECIES LIST

It is time to update SCAMIT's taxonomic listing of soft bottom macroinvertebrates. Members should submit all changes and additions they have along with justification and literature references at the February meeting or by mail or fax to Dave Montagne or Ron Velarde.

Dave Montagne
Marine Biology Laboratory
County Sanitation Districts
of Los Angeles County
24501 S. Figueroa Street
Carson, CA 90745
fax # (310) 834-7689

Ron Velarde
City of San Diego
Marine Biology Laboratory
4077 North Harbor Drive, MS 45A
San Diego, CA 92101
fax # (619) 692-4902

HELP!

While preparing for the upcoming polychaete meeting in Washington, Leslie Harris discovered she was missing some of her original color drawings of maldanid staining patterns. She needs these for the meeting and is requesting we all check among our notes and literature to find where they are hiding. It is suspected that these got mixed up in someone's papers at a recent SCAMIT polychaete meeting. At least two are missing; those for *Axiothella rubrocincta* and *Euclymeninae sp A*, although others may also have strayed. If found, please send these to her ASAP so they can be used at the meeting later this month.

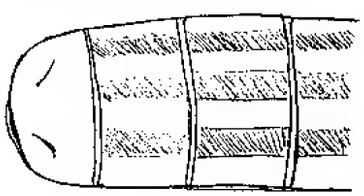
Leslie Harris
Collections Manager - Polychaetes
Natural History Museum of L.A. Co.

900 Exposition Blvd. Los Angeles
90007

MINUTES FROM JANUARY 9

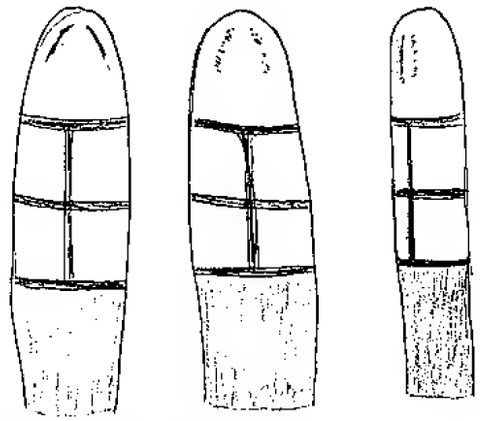
The meeting at Cabrillo Aquarium was spent discussing several non-polychate problem species from the SCBPP survey and sharing some of the rare benthic invertebrates that have been encountered so far. The first group discussed was nemerteans.

There seems to be some confusion concerning species of *Tubulanus*. The original description of *Tubulanus frenatus* (Coe 1904) seems to be unclear regarding pigment pattern. On the esophageal area of these animals, before the wide purplish fixation band, there are 3 dark pigmented longitudinal lines, one mediodorsal and two lateral. In *T. frenatus*, where the dark lines are narrow and widely separated, they can be easily interpreted. In the related *T. capistratus*, where the dark and light areas are nearly the same width, the pattern may also be interpreted as 4 white longitudinal stripes on a dark background. This is in addition to the dark rings that also encircle these animals. These rings occur in various degrees of pigment, from light to dark.



Tubulanus capistratus anterior end

What most SCAMIT members have in the past referred to as *Tubulanus frenatus* does not fit the original description because of the presence of ocelli. These ocelli can be seen underneath the anterior pigment patches when these animals have been cleared. They are seen most easily by viewing these organisms from the side.



Dorsal, cleared dorsal, and cleared lateral views of *Tubulanus frenatus*

This problem with *T. frenatus* was discovered after several POTW agencies involved in the SCBPP survey compared their specimens of this species. Everyone seems to have specimens that are slightly different. This may result from the way the animals were treated at the time of collection, whether they were relaxed or not, and how they were cleared. Also, the way the original description of *T. frenatus* has been interpreted along with other descriptions of *Tubulanus* species may have led to these differences amongst the various POTW agencies.

John Ljubenkov (MEC) has agreed to examine everyone's *Tubulanus frenatus* specimens and make comparisons to see if he can come up with a resolution. John believes that perhaps what we have all referred to as *T. frenatus* may even be in a different genus. It was decided that everyone should continue to identify their *Tubulanus* specimens the same way until John can make the comparisons.

The entire group of banded/striped *Tubulanus* species (including *T. frenatus*, *T. cingulatus*, *T. capistratus*, *T. sexlineatus*, and *T. albocinctus*) needs reevaluation of both their generic allocation and their specific standing. The presence of eyes in these species makes it likely that they do not belong in *Tubulanus*.

Many other nemertean groups also appear to

be inconsistently identified because of a lack of information on variability, and/or incompleteness of available literature. In the genus *Amphiporus*, for instance, it is suspected by both John Ljubenkov and Tony Phillips (HYP) that a number of the described species are only growth stages of other species. Eye number, in particular, is often an unreliable character as eyes may be added incrementally with growth.

Don Cadien (CSDLAC) has encountered several lineids which he has designated *Lineus* spp LA1, LA2, and LA3. These are largely featureless white thin nemerteans, with no eyes, and with thin cephalic slits. The three species were taken both on the San Pedro seashelf off Los Angeles Harbor in shallow sandy sediments, and in the Santa Barbara Channel. They are currently differentiated only by the relative length and general shape of their cephalic slits and mouth pores.

LA1 has very long slits, which reach the position of the mouth pore. The body anterior to the mouth is slightly narrower than posterior to it. It is suspected that this is the same animal which the San Diego biology lab refers to as Lineid 1. The proboscis pore in this form is slit-like and subterminal, while the mouth is heavily folded, large and muscular.

In LA2 the cephalic slits reach just over 1/2 the distance to the mouth, the proboscis pore is terminal, and the mouth is slit-like, without folded lips. The anterior end of this animal tends to be attenuate, is usually curved up, and tapers evenly from the mouth. This form also has a prominent loop in the esophagus of cleared specimens.

In LA3 the anterior end is somewhat hood-like, concave ventrally and convex dorsally, with the mouth situated at the end of the ventral concavity. The cephalic slits extend about 2/3 the distance to the mouth, and flare posteriorly so that they appear more wedge-like than slit-like.

All of the soft tissue characters mentioned above would either not be visible in unrelaxed animals, or would vary depending on degree of specimen contraction. None of these forms were noticed prior to the adoption of the SCBPP sample handling procedures. That the same forms were seen in samples processed by CSDLAC and the SCCWRP contractors suggests other samples handled with the same protocols should preserve these characters in collected specimens.

The pea-crab *Pinnixa occidentalis* has been increasingly regarded as a composite of several closely related species. Recently Martin & Zmarzly erected *Pinnixa scamit* in a first attempt to resolve this species complex. At the meeting a problem with *Pinnixa scamit* was brought up by Dean Pasko from the San Diego biology lab. He has several specimens from their benthic surveys and one from the SCBPP survey that form a ♂ growth series. Within this series the characters which separate *Pinnixa scamit* from *Pinnixa occidentalis* intergrade. As the male of *P. scamit* was unknown at the time the species was described, this represents new information.

Pinnixa occidentalis growth series for comparison to *Pinnixa scamit* (4 spms.)

	CW(mm)	P_4 propodus (L:W)	sub-hepatic spine	# spms.
A	6.2	1.85	absent (highly reduced)	1 ♂
B*	4.1	2.58	rounded knob	1 ♂
C	3.2	3.11	blunt tooth	1 ♂
D	2.8	3.25	Lrg, acute tooth	1 ♂

spms. from Pt. Loma 60 m transect, silty sediments
* SCBPP spm. from sta. PSDBE 1825, 71 m, 7/21/94

Prepared by Dean Pasko and Timothy Stebbins

A male *P. scamit* specimen from Santa Monica Bay identified by Jim Roney from Hyperion also fits in with this growth series.

Although more specimens need to be looked at, this observation should alert other members that the criteria used to distinguish *P. occidentalis* from *P. scamit* may not be as clear as previously thought.

Some rare specimens from the SCBPP survey were also brought to the meeting to share with members. Kelvin Barwick from the City of San Diego's Biology lab brought a small gastropod he identified as *Opalia funiculata*. The group of taxonomists present at the meeting agreed with him. It was collected from 21 m depth off San Diego.

Specimens of a small turrid gastropod were also examined. This seems to be an *Ophiodermella* close to or identical with *O. halcyonis*. The major difference is that both the radial and spiral sculpture become virtually obsolete by the fourth post-nuclear whorl in all the specimens seen by both Hyperion and the City of San Diego lab. Sculpture normally remains visible even in full adult *O. halcyonis* more than twice the size of the present specimens.

The first adult male of the cumacean *Glyphocuma* sp. A of SCAMIT was found at 97 meters from the SCBPP station 1794 off San Diego. It was identified by Dean Pasko, and confirmed by Tony Phillips. With this specimen Tony will finally be able to confirm or rule out synonym of *Glyphocuma sp A* with *Glyphocuma dentata* from South Australia. Should they prove to be the same, we have another interesting open ocean introduced species added to our fauna.

Don Cadien at LA County has also found an odd cumacean from 82 meters south of Pt. Mugu while working on SCBPP samples. It has a very different eye lens pattern and is not one of the commonly found provisionals. It belongs in the subgenus *Cumewingia* of the genus *Cumella*, just one of several undescribed members of the genus to occur in local waters.

Optic lobe of *Cumella* (*Cumewingia*) sp

Towards the end of the meeting the amphipod genus *Photis* was again considered. A specimen identified as *Photis linearmanus* from off Pt. Mugu was examined and compared with specimens of *Photis sp. D* from Santa Monica Bay and off Pt. Loma. The initial suspicion that the two species were the same was supported by the specimens. Don Cadien will pursue this further, but it appears that one more of our provisionals has finally found a name.

Ron Velarde brought in a *Photis* specimen which seemed to have a mixture of characters from several described species. It's most unique character was a small distinct tooth on the dactyl of gnathopod 2, differing in size, shape, and placement from that in both *Photis brevipes* and *P. parvidons*. More individuals are needed to define this form, but it may prove to be yet another undescribed species from our area.

The problems encountered in identification of the amphipods *Ampelisca caryi* and *A. unsocalae* during the amphipod meeting in December can be understood by examining the attached table prepared by Dean Pasko et al at San Diego. It is time to examine the types.

CHANGING RULES

Two subjects of considerable interest to SCAMIT members have recently been addressed in articles in the magazine Science. The first dealt with legal definition of the fair use doctrine in reproduction of copyrighted material (Lawler, A. 1994 [25 Nov] "Court says no to copying articles" - Science 266: 1315). The second reported on proposed changes in laws regarding international shipment of biological specimens (Stone, R. 1995 [6 Jan] "New Rule Could Squelch Shipments" - Science 267: 22).

In the past it has generally been assumed that making a single copy of copyrighted material for personal use rather than for profit or for redistribution was a "fair use" under the copyright laws. A recent court challenge to this interpretation was mounted by a group of publishers who felt such use denied them the benefit of their copyright, and should not be considered "fair". The test case involved a suit brought against a chemist working for a large company who routinely made copies of articles appearing in a journal received by his firm. He then placed the copies in files in his office for (presumably) easier access and future use.

The suit contended that unless these articles were immediately used for some legitimate academic or research purpose the copier was in effect building his own library, and should either 1) be subscribing to the journal himself or 2) be sending the stipulated fee into the Copyright Clearance Center to pay for his use of the materials. This fee is $1.00/article and 10 cents/page in addition to any charge for the copying itself.

The court sided with the plaintiffs in judging that such copying was indeed not included in the "fair use" provisions of copyright law. In view of this decision we all need to reexamine our document copying behavior for conformance with copyright law.

The U.S. Fish and Wildlife Service is seeking to modify regulations pertaining to transfer of biological specimens across U.S. borders. The intent is to reduce or (ideally) eliminate the traffic in rare and endangered species (or products derived from them such as ivory, rhino horn, skins, etc.). As they have proposed to modify the regulations, however, transfer of specimens between researchers and institutions would be severely impacted as well.

One provision was that all transfers of more than eight similar specimens be considered "commercial", and subjected to import duties and taxes. A second would require that all specimens be accompanied by documentation as to their species identity and origin. This would present an impassable barrier to the transfer of unsorted or unidentified lots such as bulk field collections.

Final rules have yet to be promulgated (they are due in July 1995), but it seems certain that at least some of the more onerous aspects of this regulatory change will survive the review process. We will have to wait and see. I suggest those most interested in these actions might wish to contact the local Fish and Wildlife Service office and request to be put on the mailing list for documents concerning the proposed rule changes.

The following table compares differences between *Ampelisca careyi* Dickinson 1982 and *A. unsocalae* J. L. Barnard 1960 (see Dickinson, 1982), with specimens of *A. unsocalae* (?) collected off Point Loma, CA. Characteristics of the Point Loma specimens are described from 10 individuals (both male and female), although several specimens were missing some structures (e.g., antennae).

Characters	*A. careyi*	*A. unsocalae*	Point Loma spms.
Head			
anterior margin	produced, dome shapped	unproduced	produced
lower front margin	concave	oblique and convex	slightly concave (as in *A. careyi*) to nearly straight (as in *A. pugetica*) (see below)
length of A1 relative to peduncle of A2	A1 ≥ A2 peduncle	A1 < A2 peduncle	we've found both conditions (more commonly A1 < A2 ped.) (6 of 7 spms)
length of A1 peduncular segment 2	> 2x the length of segment 1	2x the length of segment 1	≤2x the length of segment 1 (8 spms)
Pleon and Urosome			
tooth of pleonite 3	short, acute	long, slender	long (?), thick, acute
carina of urosomite 1	elevated, saddle-shaped	elevated, at rt. angle to urosomite 2	elevated, w/o saddle
length of rami of uropod 2 relative to peduncle	rami < peduncle	rami > peduncle	rami = peduncle (6 spms) or rami ≤ ped. (2 spms)
Telson			
shape of posterior end	laterally notched forming medial tooth	centrally notched forming lateral projection	variable: we've found both conditions
dorsal spines	3-4, long and scattered	5, long and scattered	3-5 long

Dickinson, J.J., 1982. The systematics and distributional ecology of the family Ampeliscidae (Amphipoda: Gammaridea) in the Northeastern Pacific region. I. The genus *Ampelisca*. National Museum of Canada, Publications in Biological Oceanography, No. 10: 1-40.

Figure A. *A. careyi* , male head. From Dickinson 1982, fig. 13.

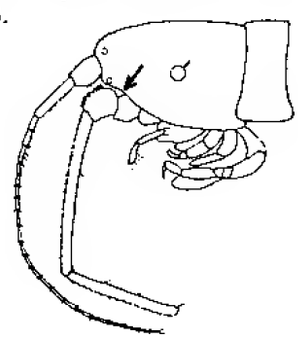
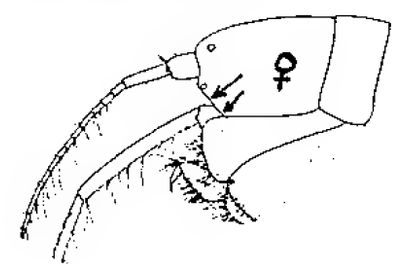


Figure B. *A. pugetica,* female head. From Dickinson 1982, fig. 10.



CANDIDATE BIOGRAPHIES

PRESIDENT

Ron Velarde

Ron is the current President of SCAMIT and a past Vice-President; he has been a Marine Biologist with the City of San Diego since 1983 and currently is the supervisor of Benthic Taxonomy for the Ocean Monitoring Program. His taxonomic interests include most groups, especially polychaetes and nudibranch mollusks. He earned his B.S. degree in Marine Biology from California State University, Long Beach, in 1976, and did post-graduate research on the systematics and ecology of autolytid polychaetes.

VICE-PRESIDENT

Don Cadien

Charter member of SCAMIT. Studied invertebrate taxonomy and biology at California State University, Long Beach, under Dr. D. J. Reish. Worked at Cabrillo Marine Museum, then at the L.A. County Museum of Natural History under Dr. J. H. McLean in Malacology. Spent 15 years at M.B.C. Applied Environmental Sciences as a taxonomist and later also Project Manager, leaving in 1989 as a Senior Marine Biologist to join the L.A. County Sanitation Districts' Marine Biology Lab. Specialties in taxonomy and biology of mollusks (particularly nudibranchs) and peracarid crustaceans. Currently a Research Associate in the Crustacea Section of the L.A. County Museum of Natural History.

SECRETARY

Cheryl Brantley

Cheryl is the current Secretary of SCAMIT and a marine biologist for the County Sanitation Districts of Los Angeles County. She has worked for the Districts since graduation with her B.A. degree in Aquatic Biology from the University of California, Santa Barbara in 1985. As a taxonomist in the Districts' Marine Biology Laboratory, Cheryl has specialized in polychaetes with emphasis on the Spionida, Eunicida and the Aphroditiformia.

TREASURER

Ann Dalkey

Ann is presently the Treasurer for SCAMIT and has held this position since SCAMIT was founded. Ann is a member of the water biology staff at the Hyperion Treatment Plant where she specializes in the identification of polychaetes and amphipod crustaceans. Prior to working at Hyperion, Ann was a member of the laboratory staff at the County Sanitation Districts of Orange County. She worked there for nearly 10 years, reaching a position of senior laboratory and research analyst. She received her B.S. from California State University Long Beach in Marine Biology in 1974 and her M.S. from the same university in 1982. Her thesis research pertained to polychaete bioassay.

BALLOT FOR SCAMIT OFFICERS 1995-96

Vote for one (1) nominee for each office. Please mail or return completed ballot to Don Cadien by March 31, 1995. You may return it to the Secretary or other attending officer at the March 13 meeting. The address to mail it to is:

Don Cadien
Marine Biology Laboratory
County Sanitation Districts
of Los Angeles County
24501 S. Figueroa Street
Carson, CA 90745

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

_____ Ron Velarde

_____ Write-in:_____

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

_____ Don Cadien

_____ Write-in:_____

Secretary - The Secretary keeps minutes of the meetings, is responsible for the newsletter, and preparation of the ballots.

_____ Cheryl Brantley

_____ Write-in:_____

Treasurer - The Treasurer collects dues, makes disbursements, keeps financial records, and makes an annual statement of the financial status of SCAMIT.

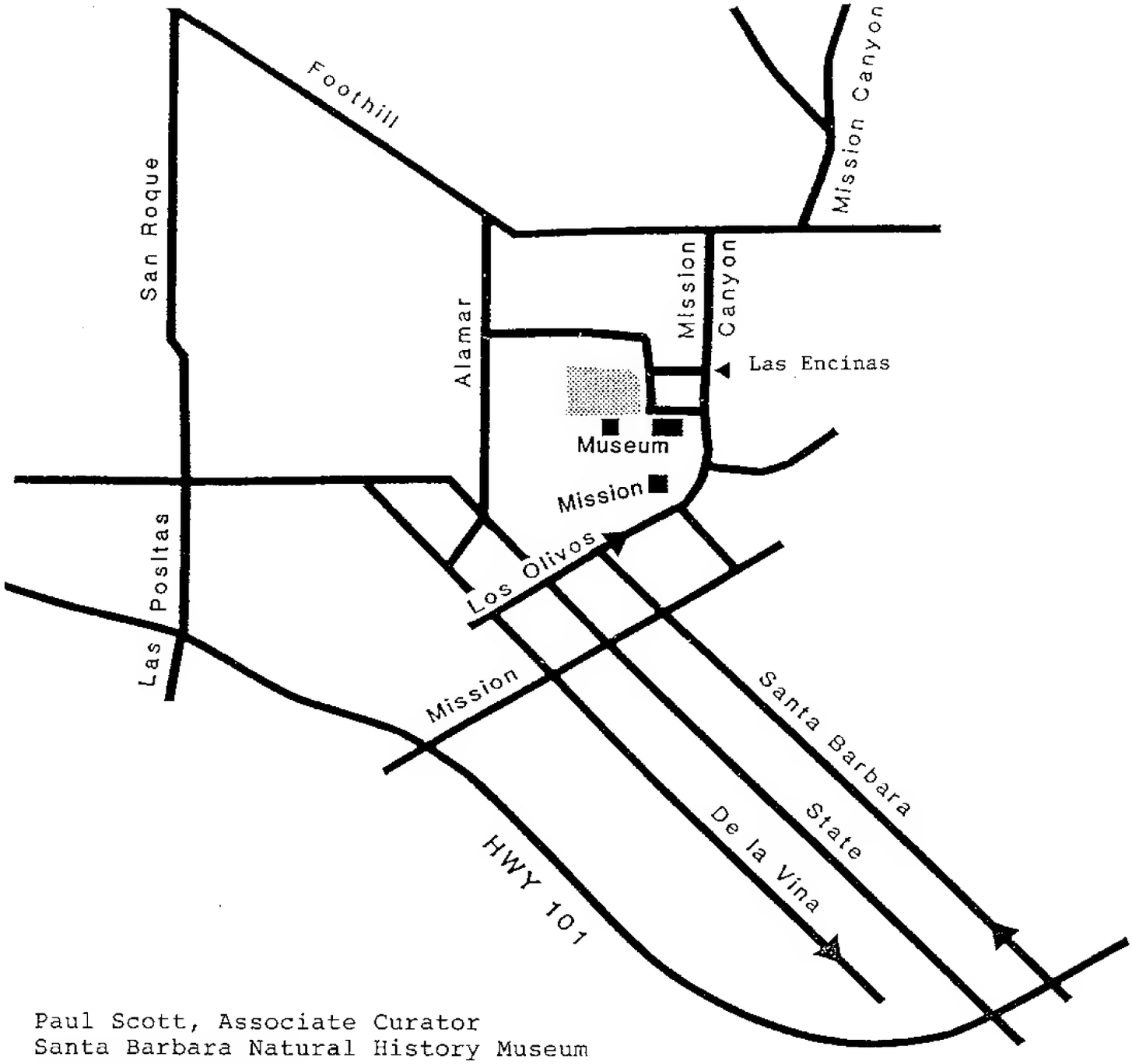
_____ Ann Dalkey

_____ Write-in:_____

1995-96 SCAMIT Meeting Topics - Please suggest any topics you deem worthy of a SCAMIT meeting.

_____

_____



Paul Scott, Associate Curator
Santa Barbara Natural History Museum
2559 Puesta Del Sol Road
Santa Barbara, CA
(805) 682-4711

Directions from the south to the Santa Barbara Museum

1) Proceed north on US 101 to Santa Barbara, turn right at the first signal (Santa Barbara St.).

2) Proceed up Santa Barbara St. about 3 miles, turn right on Los Olivos.

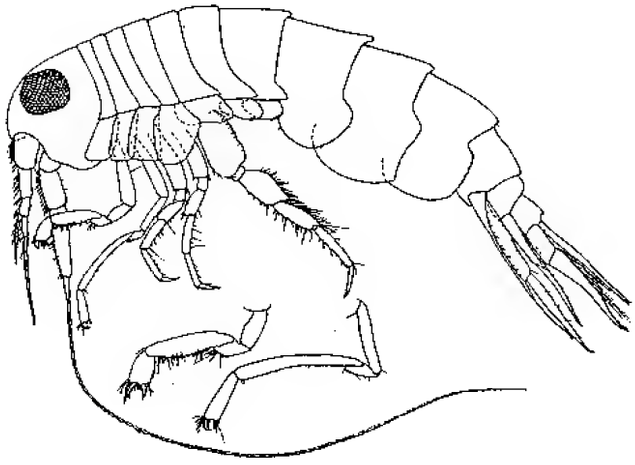
3) Go past the Mission, bear left at the "Y", proceed about half a mile.

4) Turn left on Las Encinas, turn left on Puesta del Sol, turn right into Museum parking lot.

5) Invertebrate Zoology is on the west side of the new Collection and Research Center (past the whale, west side of parking lot).

February, 1995 Vol. 13, No.10

NEXT MEETING:	SCBPP Problem Non-polychaete and Polychaete Species
GUEST SPEAKER:	none
DATE:	March 13 and March 20
TIME:	9:30am - 3:30pm
LOCATION:	See below



Garosyrrhoe bigarra (from Barnard 1962)

MARCH 13 & 20 MEETINGS

In March there will be two meetings on SCBPP problem species. One for non-polychaete species on Monday, March 13th at MEC in Carlsbad and one for polychaetes on Monday, March 20th at the Worm Lab at the Natural History Museum of Los Angeles County. Anyone needing directions to these locations may call the SCAMIT Secretary. The non-polychaete meeting will be addressing problems in the amphipod families Isaeidae, Aoridae, Ischyroceridae, and Bateidae. The polychaete meeting will be focusing on the families Cossuridae, Trichobranchidae, Onuphidae, Ampharetidae, Sabellidae, Capitellidae, Maldanidae, Glyceridae, and Syllidae. Please bring your specimens, voucher

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

sheets, and any literature that may be pertinent to your specimens to the meetings.

POLYCHAETE WORKSHOP

On January 26th and 27th several SCAMIT members participated in a polychaete workshop in Olympia, Washington. The workshop was hosted by the Marine Benthic Monitoring Unit of the Washington State Department of Ecology. The SCAMIT members that participated felt the workshop was a great success mainly due to the excellent organization provided by the Department of Ecology and the outstanding microscope and video equipment provided by a local Nikon distributor. They are anticipating setting up a local SCAMIT-like professional organization for the Pacific Northwest region if problems created by involvement of organizations from two different countries can be overcome.

The next proposed workshop for that region will focus on echinoderms and sponges and is to be hosted by the Khoyatan Marine Laboratory in Cowichan Bay on Vancouver Island. The proposed dates for this 2-day workshop are April 27 and 28 or 28 and 29. A flyer with all the details for this workshop has been included with this newsletter.

Handouts distributed at the workshop by Leslie Harris and Larry Lovell are attached for review and comment at the March 20th SCAMIT meeting.

OCTOPUS WORKSHOP

A special meeting to discuss problems with identification of trawled *Octopus* species was held at the Santa Barbara Museum of Natural History on 6 February 1995. The problems were detected by Megan Lilly (SDMWWD) during an earlier SCBPP trawled invertebrate meeting held at SCCWRP. She brought them to the attention of Dr. Eric Hochberg at the Santa Barbara Museum, who decided it was time for an update of the status of southern California octopods.

Among other projects Dr. Hochberg has been reexamining both the available material of local species, and the criteria used to distinguish these animals both in the laboratory and in the field. He summarized his results for a select group of SCAMIT members, and a researcher from the University of California, Santa Barbara, currently studying the taxonomy and ecology of *Octopus*. A full synopsis of the meeting will be presented at a later date, after Dr. Hochberg has resolved some points currently in dispute.

It is, however, clear that there is another species of *Octopus* taken in trawl catches; *Octopus veligero* Berry 1953. The live external appearance of this animal is not documented, but specimens taken in the Bight have been confused both with *O. rubescens* and with *O. californicus*. Preserved specimens can be distinguished from both of the above species by a number of features, but the configuration of the gill is the easiest to determine. Both *O. rubescens* and *O. californicus* have between 10-13 lamellae per demibranch on the gills, while *O. veligero* has 15-17. These counts are close, but Dr. Hochberg has found no overlap in the material he has examined.

Described from off Cabo San Lucas in Baja California, *O. veligero* had not previously been recorded from the Southern California Bight. Samples collected in the early 80's, and identified only to genus, were reexamined during the meeting and found to contain a few *O. veligero*. The animal is thus not a recent migrant, but may be a periodic member of the Bight fauna during and after ENSO events.

Attempts are currently underway to find field characters for separation of live *O. rubescens* and *O. veligero*. *Octopus californicus* can be

separated from both by its jet black ink (the others have reddish-brown ink), if the animal can be induced to ink. It can also be separated by its much shorter arms at a given size, by its skin patches (with cartilaginous supporting rods in *O. californicus*), and by its sluggish behavior when handled.

Initial results of these efforts were disappointing, with no *O. veligero* captured. During quarterly trawls in February, CSDLAC personnel noted living appearance of captured octopi, and separately preserved them for dissection to verify species. Field observations included the pattern of dorsal mantle papillae; patch and groove pattern of the skin; size, shape and color of pigmented areas; and presence and form of "startle" or "flash" marks exhibited under stress. All animals were identified as *O. californicus*, or *O. rubescens* in the field. Dissections confirmed the *O. rubescens* identifications, while the *O. californicus* were kept alive for research use.

An example of the data recording sheet used is attached. Please note that weight, gill count, and GLI (gill length index - gill length/dorsal mantle length X 100) are laboratory determinations, as is sex (unless field determinable by presence of a hectocotylus).

SCAMIT ELECTION

Ballots for the 1995-96 SCAMIT Officers are due at the March meeting. Please submit your ballot if you have not already done so. While voting please use the bottom of the ballot to suggest areas you would like addressed in future meetings.

NEW LITERATURE

The journal, *Actes de la 4ème Conférence internationale des Polychètes*, from the 4th International Polychaete Conference held in Angers, France in 1992 is currently available for purchase. It is available in English or French. To order please contact:

Universal Book Services
Dr. W. Backhuys
P.O. Box 321
2300 A.H. Leiden
The Netherlands
Tel: [31] (71) 17 02 08
Fax: [31] (71) 17 18 56

SCAMIT has faxed Dr. Backhuys for information about the price of this journal and will report on this in a future newsletter as soon as it is obtained.

A new paper on *Pisione* is available. It is entitled, "A New Species of Interstitial Genus *Pisione* from Coastal Beaches in Sonoma County, California USA". For a reprint contact author Cynthia L Stonick at:

Washington State Department of Ecology
EILS, 300 Desmond Dr.
P. O. Box 47710, Olympia, WA
98504-7710

Jose Orensanz has a new update of his evolving list of Benthic Polychaetes of British Columbia and Washington. He can be contacted for a copy at:

Jose Orensanz
School of Fisheries
University of Washington, WH-10
Seattle, WA 98195 USA
Phone: (206) 685-3609
Fax: (206) 685-3224
Email: Lobo@max.u.washington.edu

CONTINUING NEOCRANGON PROBLEM

SCAMIT recently received a letter from Dr. Mary Wicksten at Texas A & M University

updating us with her progress on the problem shrimp species *Neocrangon resima* and *Neocrangon zacae*, which she is having her graduate students work on. When she was here visiting Los Angeles in December she took a mixed sample of these two shrimp species from Santa Monica Bay to examine and hopefully find a better way of distinguishing between these two closely related species. Dr. Wicksten would like to have more specimens of these 2 species from other areas of southern California sent to her at:

Dr. Mary Wicksten
Texas A & M University
Biology Department
315 Biological Sciences Building West
College Station, Texas 77843-3258

E-MAIL

SCAMIT member Larry Lovell now has an E mail address he may be reached at and a new fax number. They are:

Email: lllpolytax@aol.com
Fax #: (619) 945-7817
Please note the fax is through his computer so you must call him first.

Also, the next SCAMIT directory will include E mail addresses so please include them, if you have one, on your next SCAMIT membership renewal form.

PAPER PROBLEM

We have had a few responses to the Wet Storage Label Paper Questionnaire that was sent out in a previous newsletter. The City of San Francisco's Biology Lab has found success using *Rite in the Rain* paper, sub 20 bond, supplied by the J.L. Darling Corporation in Tacoma, WA. The cost is approximately $14.50 per 200 sheets. They have found that they can print on this paper using a laser printer or a photocopier. However, they have only been using this paper for about a year, but so far no ink has faded and penciled information is still intact. Jay Shrake of Kinnetics labs indicated they were very satisfied with Rite in the Rain, and that in nearly a decade of use they found no deterioration or ink fading.

The City of San Francisco lab had previously used *Nalgene Polypaper*, but it could not be used in the laser printer because it crumpled under the heat. Also, using the Polypaper in the photocopier was time consuming since the copier had to be allowed to cool after each copy. Sometimes the toner was not fully fused, and the print rubbed off. The Invertebrate Zoology Dept. of the California Academy of Sciences has used the polypaper since the 1970's and found good results using a dot matrix printer. The approx. cost of the Polypaper is $39.50 per 100 sheets.

SCAMIT has been told that University Products representative, Christine Allen, is aware of this wet-storage paper problem and is currently looking for an alternative to the former *Resistall*. A potential substitute carried by University Products is *Tyvek*, a brand of polyethylene paper from Dupont. This paper can be marked on with pen or pencil, and is unaffected by water and most solvents. The approximate cost is $37.60 per 25 sheets and each sheet is 23" X 35" in size.

SCAMIT greatly appreciates all the responses it has received about the wet storage label paper problem, especially from those who took the time to fill out the questionnaire. There is much more to be said, so please continue to respond with additional information.

SCAS MEETING

Included in this newsletter is a flyer for the upcoming Southern California Academy of Sciences meeting to be held at California State University Fullerton May 5-6. This year's theme is "The Urban Environment". Two symposia that may be of particular interest to SCAMIT members are "Coastal Watersheds and their Effects on the Ocean Environment" and "Introduced Species".

MINUTES FROM FEBRUARY 13

This meeting was spent mainly discussing various problems encountered with polychaete species from the SCBPP survey. However, there was one report made of a strange animal from an SCBPP station that had been originally confused as a polychaete. It turned out to be a pterobranch, a class of hemichordates, far less commonly seen than enteropneusts (acorn worms). John Ljubenkov's keen eye caught this mistake. This pterobranch was found at SCBPP station 0245 off Coho Pt. at approximately 132 meters depth. So, SCAMIT members keep an eye out for these unusual animals.

Correction

At the meeting Larry Lovell brought to members attention a mistake in Hartman's Atlas. The description of the polychaete species *Aglaophamus dicirris* in the Atlas is incorrect in the number of paired papillae that terminate distally on the eversible proboscis. There are only 20 paired papillae and 2 unpaired papillae, one middorsal and one ventral. This differs from the 22 paired papillae described by Olga Hartman in her original description from 1950. Also, the name *Aglaophamus dicirris* is no longer valid. Knox (1960) synonymized *A. dicirris* with *A. verrilli* and this synonymy has been accepted by several authors since then. SCAMIT members decided that we should also accept this synonymy. This name change will be reflected in the second edition of SCAMIT's Taxonomic Listing of Soft Bottom Macroinvertebrates due out soon.

In November (Newsletter 13[7]) Larry Lovell reported an odd polydorid from SCBPP stations off Solana Beach at 13 and 17 meters depth. At the November meeting it was thought that it might be *Polydora cirrosa*, but it needed to be compared to Rioja's original description from 1943. In Leslie Harris' updated *Polydora* table it is referred to as *Polydora* sp. A. Larry has since compared this polydorid to Rioja's description and come to the conclusion that it is most likely *Polydora cirrosa*. Larry was not able to compare his polydorid to Rioja's types because they are unavailable for examination.

At the meeting many questions were raised about distinguishing between species of *Cossura*. Several members had notes on various staining patterns amongst the several local species of *Cossura*. Because there was so much confusion between what species of *Cossura* had what particular staining pattern it was decided that members should all bring their different species of *Cossura* to the next polychaete meeting in March. Members should also bring any notes or illustrations of the staining patterns they have observed along with their specimens.

There was some discussion at the meeting over the flabelligerid species *Piromis hospitis* and *Pherusa capulata*. *Piromis hospitis* is described from the Gulf of California by Fauchald (1972) and has a very thick, mucous coat as a body covering. It has bifid neurosetae from setiger 7 thru setiger 30, where then only the inferiormost neurosetae are bifid and the rest are unidentate. Larry Lovell has reported this animal from Encina at 45 m depth. *Pherusa capulata* is described as having bifid

neurosetae starting at setiger 2-4. However, there has always been some confusion as to whether the commonly reported *Pherusa capulata* should actually be referred to the genus *Piromis* and not *Pherusa*. This has yet to be resolved.

Tony Phillips at Hyperion brought a *Polydora* to the meeting that did not fit the descriptions of any of the species on the *Polydora* table. Its diagnostic characteristics are:

- bifid prostomium
- notosetae present on first setiger
- no eyes
- companion setae present
- spines of modified 5th setiger with a subterminal boss, not a tooth
- both inferior and superior clumps of limbate setae
- 5th setiger prolonged like *Polydora cirrosa*
- neuropodial hooks bidentate from setiger 7
- branchiae beginning on setiger 7
- caruncle extends to the posterior edge of set. 7 or the anterior edge of set. 8

It was found at SCBPP station 0929 at a depth of 35 meters.

Another odd specimen that was brought to the meeting was an *Ophelina* by Rick Rowe from the City of San Diego. It was from SCBPP station 0103 south of Pt. Conception at 93 meters depth. Rick thought it might possibly be *Ophelina breviata*. It's distinguishing characteristics are:

- branchiae begin on 2nd setiger
- large nuchal organs
- ventral groove down entire animal
- pygidium not a flange, but tube shaped with anal cirri

Larry Lovell has also seen this animal at SCBPP station 0245 near Coho Pt. in 132 meters of water. It was decided that this animal should be left as a provisional and a voucher sheet written up.

Tony Phillips also shared with the group a *Monticellina* from SCBPP station 0103 off Pt. Conception at 93 meters depth. This animal had a very pronounced ventral groove and compact setigers anteriorly. It also does not stain in methyl green. This animal is being left as a provisional for now.

Upstairs Updates

While most members were busy discussing polychaetes in the Worm Lab at the Natural History Museum of Los Angeles County, John Ljubenkov and Don Cadien trooped upstairs to meet with Dr. Jim McLean who had graciously offered to examine problem mollusks from the SCBPP trawls and grabs.

Residual trawl problems were resolved, with all voucher specimens of *Fusinus* proving to be just variants of *F. barbarensis*. Similarly, all *Solariella* proved to be variants of *S. peramabilis*. Several turrids taken in the grabs proved to be in the genus *Crockerella*, several new species of which have been found in our area by Dr. McLean. Examination of the odd looking *Ophiodermella* mentioned previously (Newsletter 13[9]), showed them to be *O. fancherae*.

The most interesting result was identification of a live collected specimen of *Alabina tenuisculpta*, known previously only from Pleistocene specimens, and presumed extinct.

The specimen was from off Pt. Loma at 380'. Ron Velarde thinks that they have not taken the animal previously, but will keep his eyes open for further specimens.

Toward the end of the day Don Cadien examined the type of *Garosyrrhoe bigarra* in an attempt to clarify it's position relative to *Garosyrrhoe disjuncta* (Newsletter 13[8]). Too little time was left for a complete evaluation, but it was determined that the dorsal teeth on the 3rd pleonite of *G. bigarra* are similar to those in *G. disjuncta*, although described originally as "with a few obsolete serrations" by Barnard (1962). The lyre shaped teeth are present, but poorly expressed in the *G. bigarra* holotype. The eyes meet along the dorsal midline of the head, but do not fuse to form a single mass. They are separated only by a thickened ridge of carapace, which may be directly equivalent to what Barnard later described as a crest in *G. disjuncta* (Barnard 1969). Further examination of the dorsal ornamentation of pereonite 7 and pleonites 1-2 is necessary; the epimera also require re-examination.

While the question is far from settled, this preliminary reexamination of the *G. bigarra* holotype suggests some of the details which appeared to separate it from that of *G. disjuncta* were left unreported by Barnard, or were described with differing language in 1962 and 1969.

STINK WORMS

First stink bugs, now stink worms! Over the past several years Tom Parker (CSDLAC) has been gathering local *Pista* for shipment to marine natural products chemists. This was prompted by Tom noticing a smell of "old dirty gym socks" during shipboard processing of a benthic sample. The odor was traced to a large catch of adult *Pista fasciata*. Testing by the natural products folks indicated that the malodorous substance was a brominated phenolic compound produced by the worm.

A recent publication indicated that such compounds, as well as an enzyme used in the production of brominated aromatic compounds, have now been detected in quantity in the capitellid *Notomastus lobatus* (Yoon et al. 1994). These authors suspect the aromatics are used as disappetitives to discourage fish predation since they are localized at the posterior end of the animal. The worms live head-down in the sediment, thus exposing their stinky rears to fish predators.

LACEY ACT

Last month (Newsletter 13[9]) we alerted members to some proposed changes in regulations pertaining to possession and international shipment of specimens. At that time we did not identify the legislation specifically. It is the Lacey Act, first enacted in 1900, and significantly modified in 1981. The act, and it's possible impact on scientific collections was discussed at length in the December 1994 issue of the ASC Newsletter (Vol. 22[6]), to which members are directed for more information. A recent update ("Breakthrough on Specimen Shipping" - Science, 27 January 1995, p. 443) indicates that protests from the systematic community have caused the U.S. Fish and Wildlife Service to amend their proposed rule changes, effectively removing barriers to transportation of specimens between academic and research institutions. Problems now stem from the U.S. Congress, whose stated objective of ceasing additional regulation may prevent the new rules from being implemented. We'll keep you posted.

OF RELATED INTEREST

While SCAMIT's interests reside mainly in taxonomy (with a bit of ecology thrown in on occasion) most members are also concerned to

some extent with physical measurements of ocean conditions.

Dean Pasko (SDMWWD) called our attention to two software programs for analysis of oceanographic data; OCEANATLAS and ATLAST. Both were favorably reviewed in an article in Oceanography (Vol. 7[2]: 63-64). We direct interested parties to that article.

NOT A BATH SPONGE

John Ljubenkov (MEC) drew our attention to a recent report (Adler, T. "Deep-sea sponge reaches out, devours". Science News February 4 1995) of a sponge that pursues a rather atypical feeding strategy. This undescribed deep water species uses a combination of slow movement, spicules, and thin body filaments to trap unwary microcrustaceans, which are then engulfed and consumed. As this particular sponge lacks a canal system and choanocytes, its discovery will require redefinition of the phylum.

A MODEST PROPOSAL

Leslie Harris (LACMNH) has prepared a prospectus for a proposed central information and specimen repository for environmental monitoring samples. The desirability of such a repository is evident, and the examples Leslie provides make it even clearer. The initial proposal is attached.

POSITION AVAILABLE

The Polychaete section of the Los Angeles County Museum of Natural History has a grant-funded two year position available for a CURATORIAL ASSISTANT to assist in movement to new home and recuration of the LACMNH-AHF Polychaete Collection. Salary is $2323/mo. Interested parties should contact Dr. Kirk Fitzhugh @ (213) 744-3233. A position announcement is attached.

LITERATURE CITED

BARNARD, J. LAURENS. 1962. Benthic Marine Amphipoda of Southern California: Families Tironidae to Gammaridae. Pacific Naturalist 3(1):73-115.

---. 1969. A Biological Survey of Bahia de Los Angeles Gulf of California, Mexico, IV. Benthic Amphipoda (Crustacea). Transactions of the San Diego Society of Natural History 15(13): 175-228.

BERRY, S. STILLMAN. 1953. Preliminary Diagnoses of Six West American Species of Octopus. Leaflets in Malacology 1(10):51-58.

FAUCHALD, KRISTIAN. 1972. Benthic Polychaetous Annelids from Deep Water Off Western Mexico and Adjacent Areas in the Eastern Pacific Ocean. Allan Hancock Monographs in Marine Biology 7:1- 575.

KNOX, G. A. 1960. Biological results of the Chatham Islands 1954 expedition. Pt. 3. The Polychaeta errantia. New Zealand Oceanographic Institute Memoirs 6:77-140.

RIOJA, ENRIQUE. 1943. Estudios anelidologicos VIII. Datos acerca de las especies del genero Polydora Bosc, de las costas Mexicanas del Pacifico. Annales del Instituto Biologica de Mexico 14:229- 241.

YOON, K. S., Y. P. Chen, C. R. Lovell, D. E. Lincoln, L. W. Knapp, and S. A. Woodin. 1994. Localization of the chloroperoxidase of the capitellid polychaete Notomastus lobatus. Biological Bulletin 187(2):215-222.

KHOYATAN
MARINE LABORATORY
R.R. 1, 4635 ALDER GLEN RI
COWICHAN BAY, B.C.
CANADA V0R 1N0
PHONE (604) 748-5020
FAX (604) 748-4410

A Proposal for an Echinoderm & Sponge Taxonomy Workshop

Proposers: Bill Austin, Khoyatan Marine Lab. & Phil Lambert, Royal BC Museum.

Sponsors: The Marine Ecology Station and the Royal B.C. Museum

Location: The Marine Ecology Station in Cowichan Bay, Vancouver Island

Duration: 2 days

Date: To be determined

Topics:
Examples of topics might include: definitions and nomenclature of spicules based on light and scanning microscope images; update on systematics of sponges of the NE Pacific; identification of ophiuroids from arm fragments; form and size of ossicles in infaunal holothuroids.

Facilities:
The Marine Ecology Station is a floating classroom/laboratory serving schools, colleges and other interest groups. Running seawater services a number of display aquaria as well as small aquaria mounted under dissecting microscopes. Our facilities could be used for workshops on identification of specific taxa of invertebrates. We have lab space for up to 30 people with 15 dissecting microscopes of good quality although at present limited to a maximum of 30x. We also have a high quality dissecting scope with dark field, and a good quality compound scope with phase optics. Other microscopes can be brought in on an as-need basis. Supporting equipment includes an overhead projector, Kodak Carousel projector, photocopier, blackboard, 5 Mac classics, a Mac IIsi, a scanner and laser printer, and one IBM compatible 486. A 35 inch monitor can be connected to a video camera mounted on either a compound or dissecting scope. We find this very useful in pointing out specimen characteristics to a group.

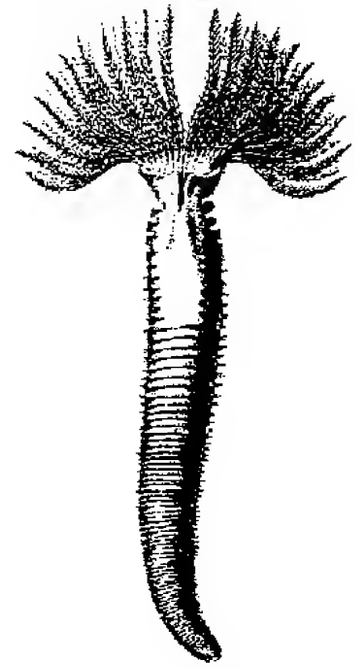
Reference collections of sponges and echinoderms either at the Station or the Royal BC Museum cover most known species from the Pacific northwest. We have an extensive literature collection on marine invertebrates as well as standard and not so standard keys.

Cost & Travel: [Canadian $$]
The Station is privately operated by a non-profit society so we would need to charge a user fee. This could be in the neighborhood of $20/pers/day if we had 10 or more people.

The Station is located in Cowichan Bay and is part of the Cowichan Bay Maritime Centre complex. It is about 45 minutes north of Victoria by road; and about 1hr. from the Swartz Bay ferry terminal. Those coming via Vancouver or Seattle could board the ferry as foot passengers and arrive by bus or launch. Moderately priced restaurants are located on either side of the Centre. Winter [Oct-Apr] rates at walking distance inns are about $27/bed double/triple & $9-11 additional for a kitchen.

NATURAL HISTORY MUSEUM of Los Angeles County

900 Exposition Boulevard
Los Angeles, California 90007



JOB ANNOUNCEMENT

CURATORIAL ASSISTANT: POLYCHAETE WORM COLLECTION

The Invertebrate Zoology Section at the Natural History Museum of Los Angeles County (LACM) invites applications for a new position: Curatorial Assistant, funded by the National Science Foundation. This position is open immediately, and will be filled in the Spring of 1995.

Minimum qualifications include a BS or BA in biology or museum science, with coursework in invertebrate zoology, or equivalent experience.

This full-time position is for 24 months, with the possibility of being extended pending future funding. The starting salary is $28,000 per year plus benefits. Duties will include the relocation, reorganization, and curation of the west coast's largest polychaete collection.

Applicants should submit a curriculum vitae and three letters of recommendation to:

Dr. Kirk Fitzhugh
Research & Collections Branch
Los Angeles County Museum of Natural History
900 Exposition Boulevard
Los Angeles CA 90007

For additional information regarding this position, contact Dr. Kirk Fitzhugh by phone: 213-744-3233, FAX: 213-746-2999, or e-mail: fitzhugh@bcf.usc.edu; or contact Ms. Leslie Harris by phone: 213-744-3234.

The LACM is an Equal Opportunity Employer

SOUTHERN CALIFORNIA ACADEMY OF SCIENCES

Call for Papers
1995 Annual Meeting
May 5-6
California State University Fullerton

"The Urban Environment"

ABSTRACTS DUE MARCH 15, 1995

Eligibility: Contributed papers and posters are invited in all areas of science from both PROFESSIONALS and STUDENTS. (Maximum poster size: 32"x40")

Theme: The theme for this meeting is Urban Environments. The meeting will focus on terrestrial landscapes, coasts, wetlands, tectonics of the Los Angeles Basin, social and cultural environments and other relevant topics.

Symposia: Symposia for this year's meeting include:
- Research and Management in the Mojave Desert Preserve
- Coastal Watersheds and their Effects on the Ocean Environment
- Urban Fishing
- Environmental Effects of Urban Earthquakes
- Introduced Species
- Response to Oil Spills: Can We Develop Standardized Protocols for Sampling Rocky Intertidal Biota?
- Urban Planning
- Uses of Computer and Electronic Technologies in Education
- Cultural Anthropology

Awards: Graduate and undergraduate papers are eligible for Best Papers awards. There are specified awards in some categories such as Zoology, Environmental Science, Fishery Research, Ecology and Botany. Co-authored papers are eligible as long as they are the work of the student(s) presenting. In the case of an award to a co-authored paper, the award will be made to the first author.

Registration: All presenters, whether invited or not, are required to register for the meeting. Presenters will be given the early registration rate for Academy members or students, whichever applies.

Junior Academy: Participants in organizations belonging to the Southern California Junior Academy of Sciences will present their papers at the meeting. Junior Academy sections will be scheduled to encourage professional (adult) Academy members to attend Junior Academy presentations without conflict with Academy meeting symposia.

Abstracts will appear exactly as submitted. Consequently, they must be clearly written and cleanly typed or word-processed. The format must be correct. Abstracts that fail to conform to the guidelines or are mailed after the deadline will not be included in the program book. **Faxed copies will not be accepted.**

Abstracts must be typed or word-processed and submitted on an 81/2" x 11" sheet. It will be copied at 100% of the original size. Therefore, use no smaller than 10 point. If using a word-processor, laser or ink jet-printed copy is preferred. Please do not use dot matrix printers. If using a typewriter, type must be clean. Use an electric typewriter with clean keys a and new or relatively new black or carbon ribbon. Do not erase.

Instructions for Abstracts

Arrange abstract as follows in a space 6" wide by 4" high. (See example below. Do **not** show the enclosing box.)

1. TITLE in all capital letters for papers and posters. Do not italicize except species names.
2. Underline author(s) name(s) listing the presenter first.
3. List the institution and department for each author.
4. On the next line, begin text with 5-space paragraph indentation.
5. List acknowledgment within parentheses following text.

With your abstract, submit the following information on a 3"x5" index card.

1. Full name of presenter, affiliation, mailing address and phone number (with area code).
2. Indicate whether student or professional, Academy member or non member.
3. Title of your paper.
4. Subject field or symposium in which you wish to present.
5. Indicate whether this is a paper or poster.

Abstract and index card due March 15, 1995

Mail to: Annual Meeting Program Chair
Southern California Academy of Sciences
900 Exposition Blvd.
Los Angeles, CA 90007

Sample Abstract

6"

4"

MICROBIAL ACTIVITY IN THE DIGESTIVE TRACT OF THE HALFMOON, *Medialuna californiensis*. J.S. Kandel[1], J.R. Paterek[2] and M.H. Horn[1]. [1]California State Univ. Fullerton, CA 92634 and [2]Agouron Institute, La Jolla, CA 92037.

We report the presence of a diverse microbial flora and of microbial fermentation products in the hindgut region of the halfmoon, *Medialuna californiensis*, a seaweed-eating fish from southern California coastal waters. Viable aerobic and anaerobic bacteria were found in all sections of the gut, but were of highest concentration (10^5-10^8/ml) in the hindgut. Microscopy revealed vibrios, spirilla, rod-shaped bacteria and flagellated protozoa in the midgut and hindgut, but primarily vibrios and rods in the stomach and foregut. Acetic, isobutyric and butyric acids, the volatile products of microbial breakdown of carbohydrates, were found only in the hindgut, as was ethanol, a nonvolatile product. These results provide the first evidence for microbial fermentation and its possible contribution to the energy supply in a north-temperate herbivorous fish.

Private and government environmental monitoring agencies, as well as research personnel, spend valuable funds, time, and energy collecting, processing, identifying, and analyzing environmental samples. Frequently, however, past efforts have been duplicated in subsequent surveys or research by other individuals or organizations. This practice is apparently typical, as project managers view collections as project specific, therefore not acknowledging the relevance of long-term sample storage to past and/or future surveys. Such a custom is unfortunate as specimens and taxonomic data arising from a collection may have value far beyond their original significance. For instance, samples may be unique with regard to collection location or the presence of undescribed taxa. Material from long-term surveys provide temporal data on population changes, affording the possible recognition of physical and chemical parameters affecting regional fauna. Similarly, long-term storage can provide intercalibration of data from one survey to another. Specimen storage in a central facility, along with taxonomic information or voucher sheets produced from these surveys, allow researchers to compare identifications of species previously collected, potentially minimizing needless duplication of effort. Researchers would be able to more readily and effectively delimit geographic distribution patterns.

One example of data loss comes from the Allan Hancock Foundation Polychaete Collection of the Los Angeles County Museum of Natural History (LACM-AHF). A polychaete specimen from the Persian Gulf collected nearly 20 years ago was selected by an Australian worker as the neotype of a very common, reportedly cosmopolitan species. The individual requested complete station information and additional specimens. We had neither, and the consulting company that conducted the original survey was contacted. We were told that the survey reports and data could not be found. We were also informed that voucher and bulk specimens were presumed to be either lost or discarded due to a lack of storage space, and at least one set of vouchers was thought to have been destroyed during the Persian Gulf War. At the time of the survey, taxonomic information for all species - described and provisional - had been compiled by company personnel. Except for some fragmentary information in the LACM-AHF polychaete section, this information is either unavailable or presumed lost. The Persian Gulf is a region which has been subjected to extreme levels of pollution during and after the Gulf War. Ironically, results of the earlier survey would have been an invaluable resource for the purpose of assessing damages resulting from the war. Such opportunities could, however, only be realized if these collections had been preserved and available.

Prolonged monitoring of an area can also suffer from a lack of continuity. Recently, a southern California area was repeatedly sampled by a series of different subcontractors. When the contracting agency began collating and analyzing the data, it found that taxonomic identifications were not equivalent between the different subcontractors. This resulted in additional work by yet another subcontractor to standardize the identifications. This latter effort could have been avoided had specimens and taxonomic data been placed in a discrete depository and made available to the various consultants.

It is extremely important for specimens and data from all kinds of biological studies be deposited into stable, well-funded collections. Even when the initial sytematic work is flawed, if the specimens themselves remain available to sciences the errors can be corrected. The attached "Report on the Accuracy of Identification of Material in the BLM Projects"shows how common misidentifications are, even among professional systematists. A sample of 221 lots of sabellids were examined by Dr. Greg Rouse, a specialist on the family. He did the work at the Smithsonian, with access to all available literature on the group as well as type or typotype specimens for all species found in the samples. He found a 88.7% percent error rate in identifications at the species level. His work also points out the need for uniform, strict quality assurance. This is only possible by the ability to compare archived samples and taxonomic data from one survey to another, as well as access to literature and types.

The LACM is in the process of moving the Allan Hancock Foundation Polychaete Collection into the Museum. The LACM polychaete collection area, designed to accommodate 20 years' projected growth of the collection, was recently completed. We now have the space, equipment, and committment necessary to function as a central

depository for the polychaete community. We would like to encourage all agencies and individuals to consider the LACM as a possible repository for specimens and taxonomic information generated by surveys and research projects. In an effort to minimize redundant and costly taxonomic analyses, yet maximize taxonomic information along the west coast, our ultimate goals are to develop the LACM-AHF polychaete collection into a central storage facility of taxonomic information, promote the sharing of taxonomic data among researchers, provide vouchers for comparative studies, and encourage the standardization of taxonomic identifications.

Unfortunately, the LACM and the polychaete section lacks the room or monetary resources to accept all collections, and the acceptance of collections must be made on a case-by case basis. All taxonomic notes and voucher sheets will be accepted without charge. Some voucher and bulk collections will be accepted without charge due to their unique nature or potential value to the research community. Other collections may be accepted only with the payment of fees designed to cover the cost of accessioning, cataloging, and handling.

For more information or to discuss the possibility of depositing specimens, please contact Leslie Harris, Polychaete Collections Manager, at the Los Angeles County Museum of Natural History, 900 Exposition Boulevard, Los Angeles, CA 90007; tel 213) 744-3234, fax 213) 746-2999, email docker@netcom.com.

REPORT ON THE ACCURACY OF IDENTIFICATION OF MATERIAL IN THE BLM PROJECTS

Appendix 1. Annual Report to Minerals Management Service and the National Biological Survey, Contract 14-35-0001-30519: "Disposition of Biological Specimens of the Outer Continental Shelf", 1 October 1994.

Greg Rouse
University of Sydney

The taxonomy of sabellids cannot be said to be in a worse state than any other polychaete group. They are highly visible polychaetes and the subject of considerable study. Therefore they can be regarded as a general indicator of the state of taxonomy of polychaetes.

I examined 221 lots of sabellids in the genera *Amphiglena, Desdemona, Oriopsis, Dialychone, Chone, Euchone,* and *Potamethus*. They had been identified as belonging to 14 species, several of which were characterized as sp. or cf.

Total number of specimens was not recorded but can be determined roughly from the catalogue number counts for each lot. I had all literature available on these genera as well as access to the type material or material from near the type localities for most of them.

The results can be examined in various ways.

1. Identification success

- At the species level: 196 lots had species names that were incorrect, an error rate of 88.7%. Included in this count are lots where either genus or family or both were also incorrectly designated. The 25 lots that were not directly "wrong" were mostly identified as 'sp.' or with the qualifier 'cf.' The number of lots truly correctly identified to species was 2 of the 221 lots examined. Correct identification rate to species is 0.009%.

- At the generic level: 41 lots were placed in the wrong genus, an error rate of 18.5%. This includes 1 lot placed in the wrong family and 12 lots with two genera in the same vial.

2. Sorting success

17 lots contained more than one species, leaving a sorting error of 7.7%

3. Estimation of biodiversity

Very little effort appears to have been made in assessing biodiversity. The effort seems to have been to place a species name on a taxon with the unfortunately low success rate outlined above. The 221 lots were identified as belonging to 14 separate species either with a formal species name, as a 'cf.', or as 'sp.' There was very little evidence of sorting into the various undescribed species that to me were clearly apparent.

My own estimate of the number of species was 22. Many of these species have never been described and the names applied to them were almost always incorrect, so that even if the diversity had been accurately estimated, the geographical distribution of the taxa would have been erroneously estimated. Several of the names used were for European or Californian species and were completely incorrect. Usually however, an incorrect name was given to a species that was actually undescribed. This represents a major underestimation of the global diversity of a given genus; it also represents a serious underestimate of the uniqueness in terms of species composition of the area investigated.

Another error was the splitting of what was clearly one species into two. The small juvenile specimens were labelled as one species and the mature adults as another, leading to an overestimate of the diversity in this case.

Conclusions

Any biogeographical or ecological conclusions based on the original identifications and data sets must be viewed as suspect. More alpha taxonomy is needed to document what species are actually present. More competent taxonomists need to be employed on these projects. Basic biology of the species needs to be documented to eliminate errors such as separating juveniles and adults of the same species.

CSDLAC
OCTOPUS LIVE APPEARANCE RECORD

Survey_____ Station_____ Depth_____ Date_____

Observer_____Photo#_____ Specimen #_____

Field Id_____ Sex _____ Ink Color_____

Head Bar (circle) Light Dark None Skin Patch Shape_____

Weight_____ Gill Count_____ Gill Length Index_____

Notes:_____

_____

_____

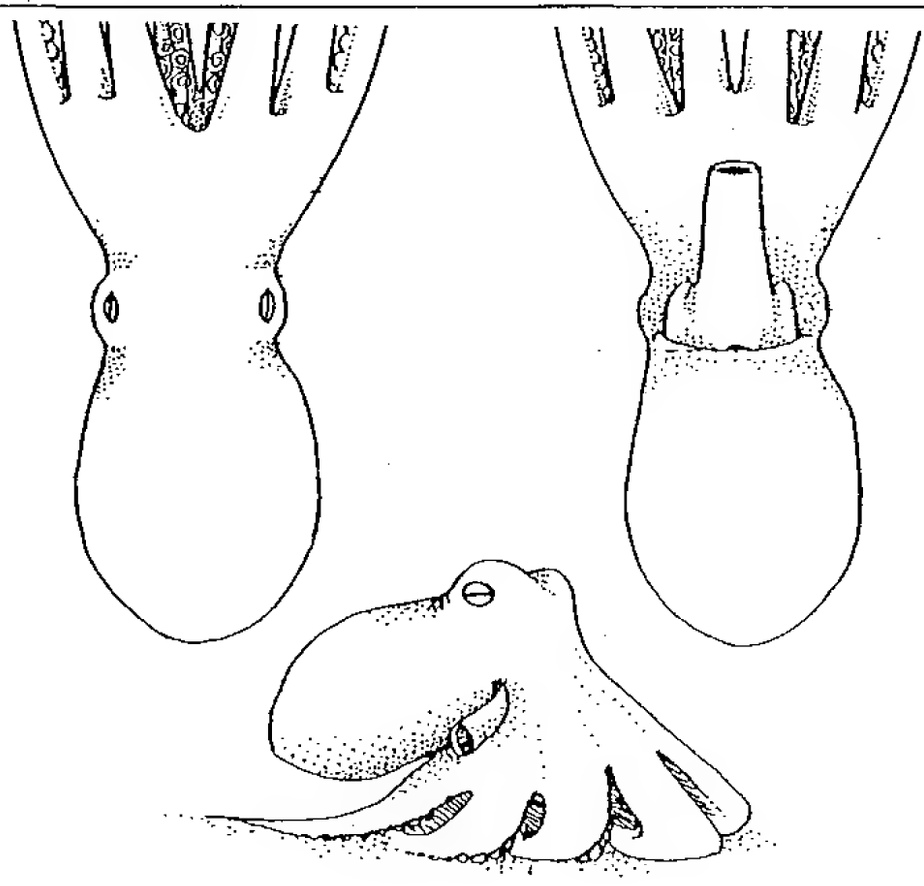
_____

_____

_____

_____

_____



COMPARISON OF EULALIA BILINEATA AND E.CALIFORNIENSIS

L. Harris, LACM-AHF, 213) 744-3234, 213) 746-2999 fax

CHARACTER	EULALIA BILINEATA (JOHNSTON 1840) PLEIJEL 1993	EULALIA CALIFORNIENSIS (HARTMAN 19 BLAKE 1994 (as E. bilineata)
Median antenna	anterior to eyes	near posterior margin (ill: posterior to mid-line of eyes)
Segment 1	ill: clearly separate from prostomium	vaguely separate from prostomium
Tentacular cirri	seg. 1 - reaches seg. 2-3 (ill: length equal to prostomium length) seg. 2 - dorsal reaches seg. 4-5 seg. 2 - ventral shorter than segment width (ill: 1/2 length of dorsal) seg. 3 - dorsal reaches seg. 5-6	seg. 1 -barely 1/2 length of prostomium (ill: reaches seg. 2-3) seg. 2 - ill: dorsal reaches seg. 4-5 seg. 2 - ill: ventral subequal to dorsal length seg. 3 - ill: dorsal reaches seg. 5-6
	Although the tentacular cirri appear to be the same length based on what segment they reach, measurement of the first six segments in the figures of Pleijel and Blake show that the length: width ratio for Pleijel's animal is 2.3:1 to 2.7:1, while that for Blake's is 4.3:1 to 5.3:1. The tentacular cirri of the european bilineata are twice as long as those of the Pacific species.	
Setigerous lobe	rounded	weakly bilobed
Setal shaft tip	number of rather large teeth, decreasing in size proximally	2 elongate spines and numerous smaller spinelets
Ventral cirri	rounded, thick, slightly longer than setigerous lobe	similar to but smaller than dorsal cirri and more pointed
Pigmentation	preserved animals yellowish to dark brown; on each side a longitudinal dark greenish brown band, usually retained when preserve	light to dark tan, with dark dorsolateral pigemented areas along length of body, sometimes forming longitudinal lines; dorsomedial pigmented area at posterior margin of most segments (may) also be present; small pigment granules on antennae tentacular cirri, dorsal & ventral cirri

PIGMENTATION OF PHYLLODOCE MACULATA, MUCOSA, AND WILLIAMSI

Area	PHYLLODOCE MACULATA	PHYLLODOCE MUCOSA	PHYLLODOCE WILLIAMSI
Prostomium	none anterior to eyes; light lateral pigment may be present	darkly pigmented anterior to eyes; lateral not mentioned	slight to dark anterior to eyes; dar dark lateral pigment present
Segment 1	unpigmented	darkly pigmented (only seen ventrally	darkly pigmented (seen only ventrally)
Segment 2	dorsally none or slightly near posterior border	unpigmented	dorsally none; dark bar ventrally
Segments 3 & 4	conspicuous dark bands	large dark intersegmental spots	conspicuous dark bands
Tentacular cirri	subdistal dark spots; cirrophores as for segments	subdistal spots not cited; cirrophores lightly	no subdistal spots; dark cirrophores all segments
Dorsum	dark spots centered on inter-segmental areas on segment 5 and after	large dark intersegmental may coalesce posteriorly	dark spots centered on inter-segmental areas on segment 5 and after
Dorso-laterally	running down body after seg. 5 (looks coalesced in figure)	running down body after seg. 5 (looks coalesced in figure)	distinct round spots centered on intersegmental areas in anterior; coalesce in median body
Dorsal cirri	dark spots in center	dark spots in center	dark spots in center
Cirrophores	dark after segment 5	dark after segment 5	dark
Ventrum	none mentioned	1(2) spots in segment center & at parapodia bases	very distinct: 2 rectangular spots in segment center; dark spots on parapodia bases, coalesce in posterior
Distribution	Scandinavia; North Sea; Greenland; Sea of Okhotsk; Sea of Japan	Scandinavia; British Isles; White Sea; France; Portugal	California & Puget Sound, WA

Information on P. maculata & P. mucosa taken from Pleijel 1993

Leslie Harris, Collections Manager LACM-AHF Polychaete Collection, 213) 744-3234, fax: 213)746-2999, email: docker@netcom.com

STAINING PATTERNS OF SELECTED PRAXILLELLA SPECIES

Leslie Harris, LACMNH-AHF, tel 213) 744-3234, fax 213) 746-2999

STAIN	AFFINIS modified rostrate uncini in setigers 1-3	GRACILIS distally bent acicular spines in setigers 1-3	PACIFICA distally bent acicular spines in setigers 1-3	PRAETERMISSA modified rostrate uncini in setigers 1-3	PRAETERMISSA VAR. MINOR same as praetermissa
SET. 1	band anterior to & around parapodia	band anterior to & around parapodia	band anterior to & around parapodia, occ. dark anterior rim	band anterior to & around parapodia	band anterior to & around parapodia
SET. 2	band anterior to & around parapodia	band anterior to & around parapodia	band anterior to & around parapodia, occ. dark anterior rim; OR solid	band anterior to & around parapodia	band anterior to & around parapodia
SET. 3	solid	band anterior to & around parapodia	band anterior to & around parapodia, occ. dark anterior rim OR solid	solid	solid
SET. 4	solid	solid	solid	band anterior to & around parapodia	band anterior to & around parapodia
SET. 5	solid	solid	solid	band anterior to & around parapodia	band anterior to & around parapodia
SET. 6	solid	solid	solid	band anterior to & around parapodia	band anterior to & around parapodia
SET. 7	solid	solid	solid	band anterior to & around parapodia	band anterior to & around parapodia
SET. 8	band anterior to & around parapodia	band anterior to & around parapodia	band anterior to & around parapodia	band anterior to & around parapodia	band anterior to & around parapodia
SET. 9	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	band anterior to & around parapodia

STAINING PATTERNS OF SELECTED PRAXILLELLA SPECIES

Leslie Harris, LACMNH-AHF, tel 213) 744-3234, fax 213) 746-2999

STAIN	AFFINIS	GRACILIS	PACIFICA	PRAETERMISSA	PRAETERMISSA VAR. MINOR
SET. 10	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 11	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 12	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 13	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 14	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 15	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 16	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 17	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 18	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
SET. 19	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles	around setal fascicles
PREA. 1	narrow band	narrow band	narrow band	narrow band	narrow band
PREA. 2	narrow band	narrow band	narrow band	narrow band	narrow band
PREA. 3	narrow band	narrow band	narrow band	narrow band	narrow band
PREA. 4		narrow band	narrow band	narrow band	narrow band
PREA. 5			narrow band		

Key to selected *Pista* from Puget Sound

By Lawrence L. Lovell Revised 2/95

1 A. With 1 pair of branchiae ---------- *Pista bansei*

B. With 2 to 4 pairs of branchiae ------ 2

2 A. With 2 pairs of branchiae ---------- 3

B. With 3 or 4 pairs of branchiae ----- 4

3 A. With lappets on segments 1-6,
lappets on segment 1 long --------- *Pista brevibranchiata*

B. With lappets on segments 1-4,
lappets on segment 1 short ---------- *Pista wui*

4 A. Branchiae elongate, with large
dorso-lateral lappets on segment 3 -- *Pista moorei*

B. Branchiae not elongate, with large
lateral lappets on segment 3, anterior
dorsum inflated ---------- "*Betapista*" *dekkerae*

Selected *Pista* from Puget Sound

By Lawrence L. Lovell Revised 2/95

	no. branchial pairs	size and position of lappets for segments 1-6					
		seg. 1 (peristomial)	seg. 2	seg. 3	seg. 4	seg. 5	seg. 6
Pista bansei Safronova, 1988	1	absent	long ventro-lateral	short lateral	absent	absent	absent
Pista brevibranchiata Moore, 1923	2	long ventro-lateral	short ventral	long dorso-lateral	short ventral	short ventral	short ventral
"Betapista" dekkerae Banse, 1980	3(?) or 4	long ventral	short ventral	long lateral	short ventral	short ventral	absent
Pista moorei Berkeley and Berkeley, 1942	3	long ventro-lateral	short ventral	long dorso-lateral	short ventral	absent	absent
Pista wui Safronova, 1988	2	short ventral	short ventro-lateral	long ventro-lateral	long ventro-lateral	absent	absent

Selected *Polycirrus* from Puget Sound

By Lawrence L. Lovell 1/95

	no, of thoracic setigers	notosetae plumose/ hirsute* (*one side)	dorsum rugose/smooth (macroscopically)	mid-ventral pads (+/-)	uncini start	pre/post setal lobes
Polycirrus californicus Moore, 1909	14-40+	hirsute	smooth	-	thor. 8-13	-/+
Polycirrus nr. *californicus*	20	hirsute	smooth	-	thor. 8	-/+
Polycirrus sp. I Banse, 1980	9-15	plumose, a few hirsute	smooth	-	abdom. 1-3	-/+
Polycirrus sp. II (lit) Banse, 1980	13	hirsute	?	?	abdom. 1	?/?
Polycirrus sp. III Banse, 1980	12	hirsute	rugose	+	abdom. 1	+/+
Polycirrus sp. IV Banse, 1980	20-24	hirsute	smooth	+	thor. 22-24	"dorsal"
Polycirrus sp. V Banse, 1980	12-13	hirsute	rugose	-	abdom. 1-3	-/-
Polycirrus sp. A Phillips	25-28	hirsute	smooth	-	thor. 6-7	-/+
Polycirrus sp. B Lovell	13	plumose	smooth	+	abdom. 1	-/+

Key to selected *Polycirrus* from Puget Sound

By Lawrence L. Lovell Revised 2/95

1 A. Thorax with 9-15 pairs of notosetae ---------- 2
B. Thorax with 20 to 40+ pairs of notosetae (except juvenile *P. californicus*, which can have as few as 14) ---------- 5

2 A. With plumose notosetae ---------- 3
B. With hirsute notosetae (one side) ---------- 4

3 A. With lateral peristomial appendages, post-setal lobes present in thorax ---------- *Polycirrus* sp. B
B. Without lateral peristomial appendages ------- *Polycirrus* sp. I

4 A. Dorsum with methyl green staining bands; notopodia without lobes; tentacular lobe incised dorsally; ventral pad with lateral methyl green staining areas -- *Polycirrus* sp. V
B. Dorsum without m.g. staining bands; notopodia with pre and post-setal lobes; tentacular lobe entire dorsally - *Polycirrus* sp. III

5 A. Notopodial lobes with post-setal lobes, uncini begin anterior to setigers 6-13 ---------- 6
B. Notopodial lobes with dorsal lobe cupping setal bundle, tapering ventrally, uncini begin setigers 22-24 -- *Polycirrus* sp. IV

6 A. Uncini begin setigers 6-7; dorsum reduced, notopodial lobes dorsally oriented; peristomial pad smooth ------- *Polycirrus* sp. A
B. Uncini begin setigers 8-13; dorsum not reduced, notopodial lobes oriented laterally; peristomial pad with folds ---- 7

7 A. Tentacular lobe well developed, projecting anteriorly ----- ---------- *Polycirrus californicus*
B. Tentacular lobe poorly developed, no anterior projection ---- ---------- *Polycirrus* nr. *californicus*

My work on *Polycirrus* from the Pacific Northeast is ongoing. Please communicate new information or problems with this key to me.

Selected *Terebellides* from Puget Sound

by Lawrence L. Lovell Revised2/95

	notosetae setiger one	no. thoracic neurosetae	no. abdominal setigers
Terebellides californica Williams, 1984	prolonged	7-30 +	30-35
Terebellides kobei Hessle, 1917	prolonged ?	15-25	30-35
Terebellides nr. lineata	equal	10	30-35 (45+)
Terebellides nr. horikoshii	equal ?	40+	30-35
Terebellides reishi Williams, 1984	short	7-18	40-55
Terebellides stroemi Sars, 1835	equal	12-35	32-38
Terebellides sp. 1 Phillips	equal	10-15	30

This additional provisional species from southern California erected by Tony Phillips is included for SCAMIT use.

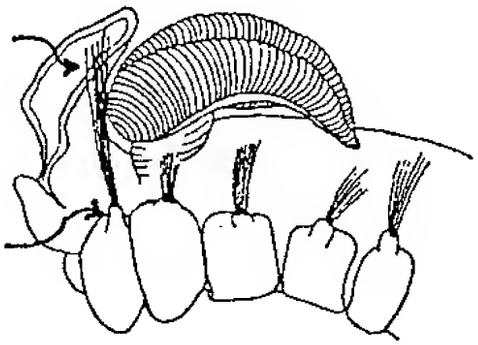
SPECIES OF *TEREBELLIDES* (Polychaeta: Trichobranchidae) FROM SOUTHERN CALIFORNIA

Terebellides californica Williams 1983

Characters:

Setiger 1 notopod prolonged
Setiger 1 notosetae prolonged

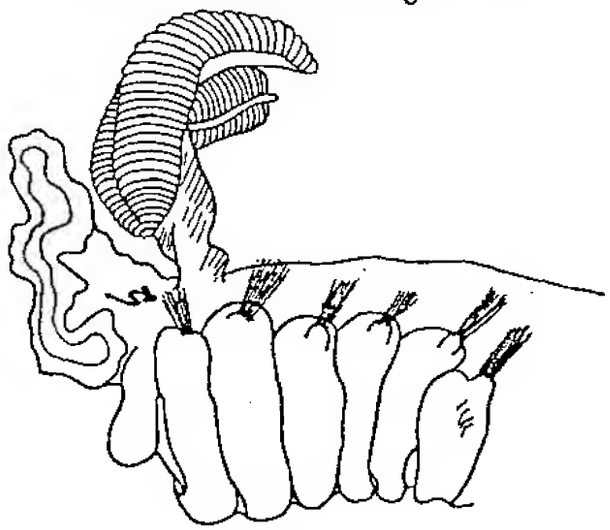
Number of abdominal setigers = 30 - 35



Terebellides sp. Type C Williams 1983

Characters:

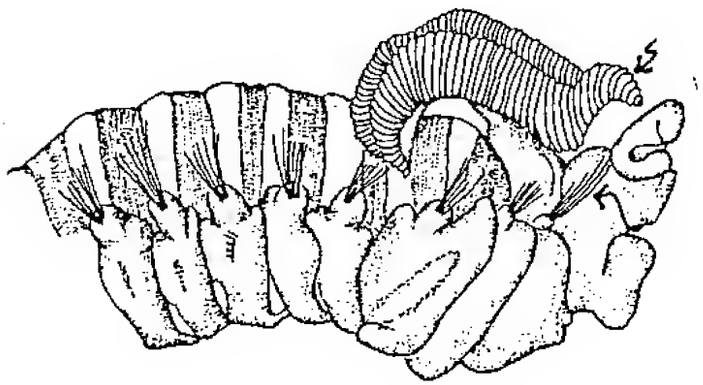
Setiger 1 notopod not produced
Setiger 1 notosetae moderate (≤ setiger 2 notosetae)
Number of abdominal setigers = 27- 31



Terebellides kobei Hessle 1917

Characters:

Branchiae extended anteriorly
Setiger 1 notopod slightly prolonged
Setiger 1 notosetae moderate to slightly prolonged
Setiger 3 with produced lobe ("lappet")
Number of abdominal setigers = 30 - 35



Terebellides reishi Williams 1983

Characters:

Setiger 1 notopod not produced
Setiger 1 notosetae reduced
Number of abdominal setigers = 40 - 55

No illustration available

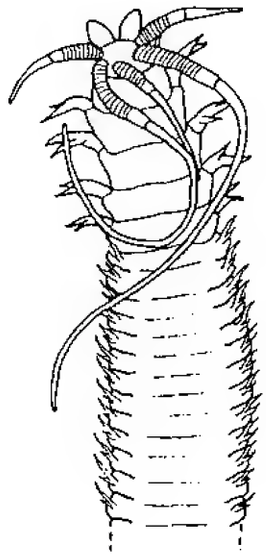
References:

Imajima, M. and S. J. Williams. 1985. Trichobranchidae (Polychaeta) chiefly from the Sagami and Suruga Bays, collected by R/V *Tansei-Maru* (Cruises KT-65_76). Bull. Natn. Sci. Mus., Tokyo, Ser. A, 11 (1), pp. 7-18.

Williams, S. J. 1984. The status of *Terebellides stroemi* (Polychaeta; Trichobranchidae) as a cosmopolitan species, based on a worldwide morphological survey, including description of new species. Hutchings, P. A., ed. Proceedings of the First International Polychaete Conference, Sydney, Australia, 1984: 118-142.

March, 1995 Vol. 13, No.11

NEXT MEETING:	SCBPP Problem Non-polychaete and Polychaete Species
GUEST SPEAKER:	none
DATE:	April 10 and April 24
TIME:	9:30am - 3:30pm
LOCATION:	See below



(from Banse and Hobson, 1974)

APRIL 10 & 24 MEETINGS

In March there will be two meetings on SCBPP problem species. One for non-polychaete species on Monday, April 10th at the Natural History Museum of Los Angeles County and one for polychaetes on Monday, April 24th at the City of San Diego's Marine Biology Lab. A map has been included with this newsletter for San Diego's lab. The non-polychaete meeting will be addressing problems in the amphipod families Isaeidae, Aoridae, Ischyroceridae, and Bateidae; reporting on progress since the March meeting, and continuing to problems unaddressed then. The polychaete meeting will be focusing on the families Cossuridae, Cirratulidae, Capitellidae, Maldanidae,

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

Syllidae, Owenidae, Sphaerodoridae and Terebellidae. Please bring your specimens, voucher sheets, and any literature that may be pertinent to your specimens to the meetings.

SCAMIT ELECTION

The election of SCAMIT officers for 1995-96 is now completed. Twenty ballots were received. There were no write-in's; reelection of the serving officers was unanimous. We thank you voters, and hope that you will continue to vote in future elections. We also hope that non-voters will participate in the future, although it is hard to get involved in an election when only a single choice is offered. The solution to that is, of course, for more members to allow themselves to be nominated, and to accept positions as officers.

Several respondents used the opportunity to provide feedback and suggestions for future meeting topics. Among the suggestions were; the polychaete family Lumbrineridae; the impact of El Niño, and physical oceanographic changes in general, on environmental monitoring; and the amphipod family Ischyroceridae. We have already acted on the last suggestion, addressing the genus *Ischyrocerus* during our March 13 meeting.

NEW LITERATURE

The journal, *Actes de la 4ème Conférence internationale des Polychètes*, from the 4th International Polychaete Conference held in Angers, France in 1992 is currently available in either English or French. Larry Lovell gave the price at the time he ordered during the March 13 meeting. Since his purchase, decline in the value of the dollar has led to a somewhat higher current price. Purchase price has most recently been quoted as $90.30 + #17.75 handling and postage (sea mail). Air mail shipping would be an additional charge. It is unclear if the quoted price is subject to modification through exchange fluctuation. To order please contact:

Universal Book Services
Dr. W. Backhuys
P.O. Box 321
2300 A.H. Leiden
The Netherlands
Tel: [31] (71) 17 02 08
Fax: [31] (71) 17 18 56

A new publication of interest to members has just become available: *Pacific Coast Crabs and Shrimp* by Gregory C. Jensen. Caridean and penaeid shrimp are included, as are both brachyuran and anomuran crabs. Coverage is restricted to shallow-water species (100 ft. or less) with smaller species also omitted. Over 160 species occurring from southeast Alaska to the Mexican border are discussed and depicted in a color photograph (most in situ). It is available from Sea Challengers for $21.95 +tax, and shipping.

Sea Challengers
4 Sommerset Rise, Monterey
California, 93940

Also, Larry Lovell's spionid paper, *Pseudatherospio fauchaldi*, a new genus and species of Spionidae (Polychaeta, Annelida) from southern California, USA, is now available as a reprint. A copy may be requested from him.

RETIREMENT

Recently, Larry Lovell had a phone conversation with Dr. Minoru Imajima who informed him that he had retired last year from the National Science Museum in Tokyo. However, he is still involved in polychaete research and may be able to obtain specimens from the museums collections. Larry will be writing to him soon and confirming this.

NEW CATALOG

BioQuip's new 1995 catalog is now available. BioQuip is located in Gardena at 17803 LaSalle Ave. Phone # (310) 324-0620. For members that live outside the Los Angeles area there is also a sister store called College Biological Supply in Escondido that carries many of the same products as BioQuip, just not so many entomological supplies.

WET STORAGE PAPER PROBLEM

Leslie Harris (NHM-AHF) has found an alternative source for label paper that was reported about in a recent newsletter of the Society for the Preservation of Natural History Collections. The Bishop Museum in Hawaii has been using *Forbon* 10VF Tagstock for over 25 years. It is a tough, dense, waterproof paper that is a vulcanized fibre made from cotton and contains no plastic fibres or 'plastic infusion'. It can be written on and used in a dot matrix printer, but is probably too stiff for a laser printer. It is available through University Products. Also reported about in this same article was *Tyvek*, a polyethylene paper made by DuPont. This paper was also mentioned in the last SCAMIT newsletter. It does melt in some laser printers and the long term durability of this paper in alcohol is uncertain. For specific product information about *Tyvek* call (800) 448-9835.

POLYCHAETE CONFERENCE

Attached to the newsletter is a news release from Dr. Pei-Yuan Qian of the Hong Kong University of Science & Technology about the upcoming International Polychaete Conference in July. This news release was obtained by Larry Lovell as E-mail thru Internet from the *Chaetozone* newsletter of America Online. It has been included in its entirety to assist those that will be attending the conference.

EXECUTIVE COMMITTEE MEETING

On 1 March an executive committee meeting was held at SCCWRP. All four officers were in attendance and were joined by member Dave Montagne.

The first topic discussed was life memberships. Several members have expressed an interest in obtaining a life membership. It was decided that it would be too difficult to determine a price for life memberships. We also don't know what the future holds for SCAMIT and might not be able to refund any money if something should happen. However, it was decided that members could pay for several years in advance if they preferred.

New SCAMIT brochures are currently being worked on by Treasurer, Ann Dalkey. They will hopefully be completed by the SCAS meetings. When they are finished we will include a new brochure for every member with the newsletter. These are for members to keep and refer to or pass on to potential new members.

The topic of indexing the newsletter by species name was also addressed at the meeting. All of the officers agreed this would be very helpful and has been done in the past with the first 4 volumes. SCAMIT is hoping to provide members with a past index for volumes 5-13 that would appear in volume 14. Also, we would hope to continue this index on a yearly basis.

It was decided at the meeting that back issues of the newsletter should be made available to those who wish to purchase them. If a whole volume is requested the prices are as follows:

Vols. 1 - 4 (compilation)	$ 30.00
Vols. 5 - 7 (compilation)	$ 15.00
Vols. 8 - 13	$ 20.00/vol.

Single back issues of the newsletter may also be purchased at cost. Anyone interested in

obtaining these back issues should contact Ann Dalkey.

The main issue discussed at the executive meeting was the update of the SCAMIT Taxa List of Soft Bottom Macroinvertebrates, which was do out this month. It has been decided that the list should be updated after the SCBPP is finished in order to incorporate all the taxonomic changes from the project. Also included will be an SCBPP trawl-caught megafauna list with a separate index. This list has already been compiled by Dave Montagne (CSDLAC).

MINUTES FROM MARCH 13

Before starting on our discussion of amphipods we covered several other groups. The first was the seastar genus *Luidia*. This was reviewed and discussed prior to the trawl effort in August 1994, but examination of vouchers from the trawls has pointed out some difficulties. A key was provided in the handout produced by Don Cadien and distributed at the pre-trawl meeting last year. It has since been found to only be workable with fully adult specimens, and to give bad identifications when applied to smaller specimens. It will be replaced with a new key in a future newsletter.

The problems were related to application of paxillae shape in separation of species. All species, when young, have stellate paxillae. In the key, presence of stellate paxillae would lead to identification as *L. asthenosoma*, while presence of quadrate paxillae would lead to the other two species. In consequence, many small *Luidia* were incorrectly identified as *L. asthenosoma* during the SCBPP trawls. Most of these specimens were actually *L. armata*, but some were *L. foliolata*. All the available voucher and FID specimens have been reexamined, and attempts are underway to correct field identifications where possible. Small specimens of all three species were examined during the meeting.

Megan Lilly (CSDMWWD) informed us that she will be undertaking close examination of trawl collected *Octopus*, and also videotaping them, in an effort to locate field marks for *Octopus veligero* (see discussion in last months Newsletter).

She also notified us of a new facility established in Texas by R. T. Hanlon for cephalopod research. The National Center for Cephalopod Research (NCCR), located at the University of Texas Medical Branch at Galveston, offers everything necessary for experimental work on living cephalopods. Facilities include four different field vessels (up to a 51-ft trawler), both wet and dry laboratory space, aquaria, and office space for visitors. An extensive cross-referrenced cephalopod library is available.

Three local squid species are available, *Lolliguncula brevis*, *Loligo plei*, and *Loligo pealei*. The squid *Sepioteuthis lessoniana* and the cuttlefish *Sepia officinalis* are cultured at the center, and are available year-round.

All these materials are not without cost. Fees are $250 for one or two days, $800 per week, or $3000 per month. Those wishing further information should contact the Center at

Marine Biomedical Institute
National Resource Center for Cephalopods
301 University Boulevard
Galveston, Texas 77555-1163
Phone: (409) 772-2133
Fax: (409) 772-6993
E-mail: hanlon@mbian.utmb.edu
or forsythe@mbian.utmb.edu

John Ljubenkov showed us specimens of the unidentified pterobranch mentioned in last months Newsletter. He also showed us two anemones recently taken, although not from SCBPP samples. The first was a cerianthid from 10m in Los Angeles Outer Harbor,

Botruanthus benedeni. This 1-1½ inch long form has a velvety purplish black column, and short tan tentacles without basal color spots. Internally it is characterized by presence of **botrucnids**, clusters of small grape shaped structures on the mesenteries. These are not present on very small specimens, but should be on at least a few of the mesenteries of sub-adult and adult specimens. One of the specimens had an internally budded second individual at it's base. This species was originally described from San Diego Bay (Torrey & Kleeberger, 1909).

John also presented specimens of *Halcampa crypta*, a very small species he has found in lagoons in northern San Diego County. Unlike *Halcampa decemtentaculata* from semi-exposed and exposed sandy subtidal areas, this estuarine animal never gets larger than 5mm in length.

After a brief recap of character selection in the genus *Photis*, we began discussion of species encountered in the SCBPP. The following were reported by the participants as being taken in SCBPP samples they had seen:

Photis bifurcata Barnard 1962
Photis brevipes Shoemaker 1942
Photis californica Barnard 1962
Photis lacia Barnard 1962
Photis linearmanus Conlan 1994
Photis macrotica Barnard 1962
Photis parvidons Conlan 1983
Photis viuda Barnard 1962
Photis sp C of SCAMIT
Photis sp LA1
Photis sp LA2
Photis sp OC1

Photis sp D of SCAMIT was again suggested as a senior synonym of *P. linearmanus*. Don Cadien is examining specimens identified as both in an attempt to confirm or refute this synonymy. He is also reexamining *Photis* sp LA 2, which bears a strong resemblance to *P. lacia*, and may only represent a variant pigmentation for that species.

Doug Diener (MEC) brought up the question of pigment pattern in the genus, and it's usefulness as a discriminatory character. He said his approach was that pattern was useful within a location or circumscribed area, but that it was not reliable for specimens from broadly separated locales. Carol Paquette (MBC) agreed with him. Don Cadien (CSDLAC) maintained that pigment patterns provide hypotheses of difference or identity which could be disproved by further morphological examination. He uses pigment for initial segregation of *Photis* species within a sample.

One group of specimens examined during the December 1994 amphipod workshop with Dr. Jim Thomas of the Smithsonian was reexamined during the meeting. When originally examined these specimens were considered only color variants of *Photis californica*. There proved to be several differences in morphology found during this reexamination which prompted erection of *Photis* sp OC1 as a provisional taxon for the specimens. They had, in addition to their speckled color pattern; a ♂ gnathopod 2 dactyl lacking distal swelling; a ♂ coxa 2 which was anterodistally produced, forming a rhombic rather than rectangular coxa; and a lack of the anterodistal process on article 2 of gnathopod 2 of the ♀.

The characteristic pigment pattern of dark purplish black lines dorsally on the first two segments of antenna one normally found on *P. californica* was replaced by scattered translucent brown spots/blotches on article one of antenna one. Article two in this form was without pigmentation. A voucher sheet on this species is being prepared by Doug Diener, and should be available for the April meeting.

Northeastern Pacific members of the genus *Ischyrocerus* were also discussed. Carol Paquette showed a specimen of her provisional taxon *Ischyrocerus sp C* of Paquette. This had a clear eye, without a dark core, like that of *I.*

litotes; third uropodal rami with numerous small teeth (also like *I. litotes*); and a ♂ gnathopod 2 like that of *I. claustris*.
This combination of characters seems to elimate all known northeast Pacific species, including the two undescribed forms *Ischyrocerus sp A* and *Ischyrocerus sp B* of Barnard 1969. Although there is a slight possibility that the ♂ gnathopod 2 is within the range of variability of *I. litotes*, this is unlikely. Carol is preparing a voucher sheet for this species which should be ready for the April meeting. She has taken this form only off Goleta, in 75-90 feet of water.

Don Cadien is working on a key to the genus from the northeast Pacific using characters of the eye and coxae so that specimens which have lost uropods or gnathopods can be identified. It will include the following species of *Ischyrocerus*: *anguipes*, *litotes*, *pelagops*, *claustris*, *sp A*, *sp, B*, *sp C*, and *serratus*.

Apparently none of the SCBPP collections have contained problem specimens of *Gammaropsis*. Doug Diener reported taking numerous *G. ociosa* from one or two western Santa Barbara Channel samples, but none of the other participants had encountered any *Gammaropsis* other than *G. thompsoni*. We will continue with *Photis*, and begin *Protomedeia*, *Ericthonius*, and bateiids at the next meeting.

MINUTES FROM MARCH 20

This meeting was for SCBPP problem polychaete species. The families discussed included Trichobranchidae, Onuphidae, Ampharetidae, and Sabellidae. It was decided to review the Cossuridae family at the next meeting. So far most taxonomists have been finding cossurids with the distinct staining pattern of Cossura sp. A of Phillips in their SCBPP samples. Members should bring their cossurids to the next meeting with illustrations of their staining patterns for comparisons.

The only problem with the Trichobranchidae family brought up at the meeting is an intermediate form that seems to be between *Terebellides californica* and *T. reishi*. Larry Lovell has seen a few of these in SCBPP samples. Except for this somewhat intermediate form *T. californica* and *T. reishi* should be readily distinguishable. *Terebellides kobei* has been reported by San Diego and is a possibility for the SCBPP samples. Except for these 3 species the rest of the species on Larry's *Terebellides* table from the last newsletter are generally found north of Pt. Conception.

A majority of the day was spent examining specimens of the Onuphidae family. *Mooreonuphis segmentispadix* (Shisko 1981) has been reported from SCBPP station 1120 off of Oceanside at approx. 160 meters depth. It has subacicular hooks from setiger 15. Compound spinigers from setigers 5-15. Dark pigment was present in very wide (two-thirds of segment), evenly spaced bands on the dorsum.

A *Mooreonuphis sp.* from SCBPP sta. 1903 at 111 meters depth was reported by San Diego and examined at the meeting. It had branchiae beginning on the 10th setiger, subacicular hooks from the 10th setiger, and pseudocompound hooks in the first 5 setigers. This does not fit the description for *M. segmentispadix* because the subacicular hooks start earlier on the specimen and it has pseudocompound hooks in the first 5 setigers rather than 4. Also using Fauchald's 1982 key this *Mooreonuphis* does not key to anything else. Therefore, it is being left as a provisional.

Ron Velarde (CSDMWWD) provided members at the meeting with some revisions for Fauchald's 1982 key to the species of *Mooreonuphis*. To couplet 1 this line may be added: Branchiae begin on setiger 9 - 15, are pectinate posteriorly, and subacicular hooks from setiger 15 .....*M. segmentispadix*. To

couplet 9 this line may be added: Branchiae begin on setiger 14 - 16 .....M. exigua.

There is a 2nd form or color morph of *Mooreonuphis nebulosa* that appears in Point Loma's Onuphidae key from SCAMIT newsletter vol. 11 no. 2. We examined a specimen of this form from San Diego to notice how the pigment spots differed from the common form. This second form looks as if the two pigment spots on each segment have grown together and started to form a band. CSDLAC has never seen nor reported this 2nd form from their monitoring area off Palos Verdes and has not seen it in any of their SCBPP samples. However, both San Diego and Orange County have reported this 2nd form of *M. nebulosa*.

Another *Mooreonuphis* that was examined from San Diego was *M. stigmatis* from sta. 2001 near the Mexican border at 43 meters. Upon examination at the meeting this specimen turned out to be *Onuphis eremita parva*. It has simple branchiae from setiger 1 that is pectinate posteriorly, pseudocompound hooks tridentate in the first 4 setigers and dark pigmentation. However, it also had interramal papillae present in setigers 4 - 10. This is a characteristic that has been overlooked by many taxonomists in the past. On smaller specimens of *O. eremita parva* these papillae are not easily seen, but on larger animals it appears as a small lobe. Fauchald (1982) does mention this characteristic in his description of *O. eremita parva*. CSDLAC also had several specimens of *O. eremita parva* from shallow water off the San Gabriel River that were also confirmed at the meeting.

CSDLAC had a few provisional specimens thought to perhaps be *Onuphis geophiliformis*. They were from SCBPP sta. 1170 and 1191 off King Harbor and Palos Verdes Point in 83m and 177m of water. Although, this species was described from Japan both Leslie Harris (NHM-AHF) and Tony Phillips (HYP) have reported this species from the area. These specimens from CSDLAC had branchiae beginning on setigers 3 and 4 and subacicular hooks from setiger 9 it was decided that they should be designated as *O. cf. geophiliformis* and a voucher sheet written up. Also San Diego had a similar specimen with branchiae beginning on setiger 3 and subacicular hooks from setiger 10.

Another odd onuphid from CSDLAC that was examined at the meeting from SCBPP sta. 1214 at 104 meters was *O. iridescens* with a regenerated anterior end. This specimen had *O. iridescens*' characteristic iridescent sheen but with a small prostomium and smaller lobes on the parapodia in the first couple of setigers. This process of regeneration in onuphids often causes branchiae, cirri, antennae, setae and parapodia to not occur as long as or as far forward on the specimens as it would on normal, unregenerated onuphids. This may often lead the taxonomist astray when identifying onuphids to species level.

At the meeting a few problem SCBPP ampharetids were examined. San Diego had two specimens from sta. 1774 at 103m and sta. 1794 at 97m. These specimens had 15 thoracic setigers, of which 12 were uncinigerous, 12 - 13 abdominal setigers, small paleae, crenulated lower lip of the peristomium, pigment patch on the dorsal side of the prostomium, and 2 long lateral cirri on the pygidium. This is being left as a provisional for now. CSDLAC also had an odd ampharetid that seemed to be *Samytha californiensis* only with 16 thoracic setigers rather than 17 as described for *S. californiensis*. This specimen also had shorter branchiae and it was not inserted like *S. sexicirrata*.

Two other ampharetid species that have been confused in the past are *Sosane occidentalis* and *Sosanopsis sp. A*. This is mainly due to the confusion between paleae and flabellum. They are not the same. Paleae is the thick modified, golden setae and flabellum is thin and capillary-like and directed forward. These

may both occur on an ampharetid or each may occur by itself depending on the species.

The most unusual specimen examined at the meeting was a sabellid from CSDLAC. It occurred at two SCBPP stations 0115 and 1340. It lacked an anterior peristomial ring collar and ventral filamentous appendages. It has long curved thoracic uncini and a manubrium is present in abdominal uncini. It also has 3 pairs of radioles and 1 pair of eyes in the pygidium and prostomium. Dr. Kirk Fitzhugh (NHM-AHF) examined the specimens and determined that it was the species *Pseudofabriciola californica* that he had previously described from off of Santa Rosa Island (Fitzhugh, 1991). This finding represents the second occurrence of this sabellid in the area.

CORRECTION

In the last newsletter ("Stink Worms" Vol. 13[10]) we erroneously reported that bromophenols were detected in the *Pista fasciata* samples analyses. They were specifically **not** found. The chemists surmised that these volatile compounds had been lost during handling of the specimens, as bromophenols had been identified previously in other *Pista*. The editor apologizes for this error.

MEMBER FEEDBACK

Dear Editor:

I read with interest your January 1995 discussion of "fair use" and violations of copyright laws. Unfortunately, you misinterpreted the court action as a challenge to the use of single copies for personal use. This was not the case and was subsequently explained in a letter-to-the-editor of *Science* (Feb 10, 1995).

The letter explained that Texaco's practice of xeroxing copyrighted material was not "a single copy for personal use", but instead a systematic practice by the corporation to avoid purchasing multiple subscriptions of copyrighted journals. Additionally, these copies were not "personal use", but specifically for Texaco's commercial activities. The letter further explained that other corporations such as Exxon and Mobil had long established practices where royalty fees are paid to the Copyright Clearance Center.

It seems clear that neither authors or publishers are willing to forgive their legal copyright royalties as a subsidy to someone else's commercial activities. The true tone of these rights can be understood when one reads the Scandinavian University Press statement: "No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Scandinavian University Press." Even locally, the Santa Barbara Museum of Natural History's prohibition states: "...may not be reproduced in whole or in part for any purpose whatever, without permission from the publisher" If in fact, publishers and authors wishing to forgo these rights, they can include authorization to copy in the frontpiece of each publication.

The "fair use" of copyrighted material still allows single copies for personal use. I'd send you a copy of the letter from Science, but don't want to pay the fee or violate the doctrine of fair use.

T. Parker (CSDLAC)

BIBLIOGRAPHY

BANSE, KARL, and Katharine D. Hobson. 1974. Benthic Errantiate Polychaetes of British Columbia and Washington. Bulletin of the Fisheries Research Board of Canada 185:1-111.

BARNARD, J. LAURENS. 1962A. Benthic Marine Amphipoda of Southern California: 1. Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podoceridae. Pacific Naturalist 3(1):3-72.

---. 1969. Gammaridean Amphipoda of the rocky intertidal of California: Monterey Bay to La Jolla. United States National Museum, Bulletin (258):1-230.

CONLAN, KATHLEEN E. 1983. The amphipod superfamily Corophioidea in the northeastern Pacific region. 3. Family Isaeidae: systematics and distributional ecology. National Museums of Canada Publications in Natural Sciences (4):1-75.

---. 1994. New species of the amphipod crustacean genera Photis and Gammaropsis (Corophioidea: Isaeidae) from California. Amphipacifica 1(3):67-74.

FAUCHALD, KRISTIAN. 1982. Revision of Onuphis, Nothria, and Paradiopatra (Polychaeta: Onuphidae) based upon type material. Smithsonian Contributions to Zoology 356:1-105.

FITZHUGH, KIRK. 1991. Systematics of several fabriciin fan worms (Polychaeta: Sabellidae: Fabriciinae) previously referred to Fabricia or Fabriciola. Journal of Natural History 25:1101-1120.

SHOEMAKER, CLARENCE R. 1942. Amphipod crustaceans collected on the Presidential Cruise of 1938. Smithsonian Miscellaneous Collections 101(11):1-52.

TORREY, HARRY BEAL, and F. L. Kleeberger. 1909. Contributions from the laboratory of the Marine Biological Association of San Diego. XXVII. Three species of Cerianthus from Southern California. University of California Publications in Zoology 6(5):115-125.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

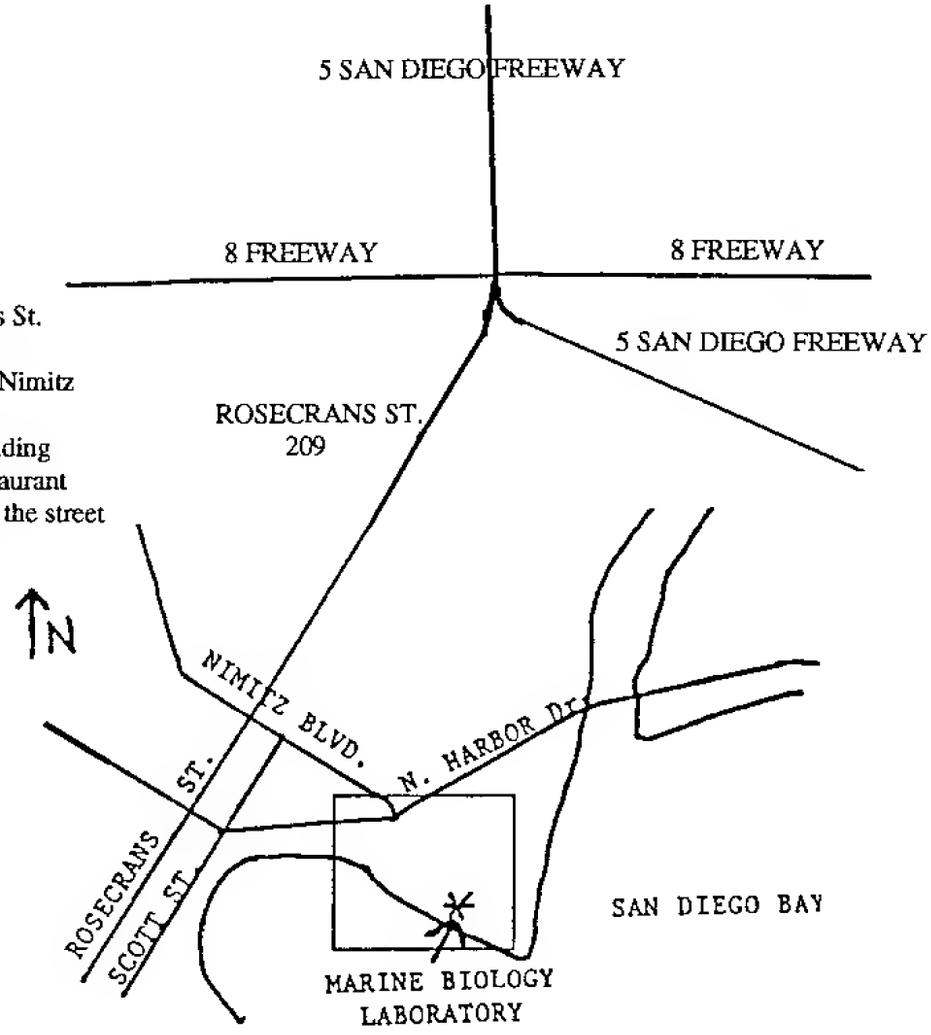
President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

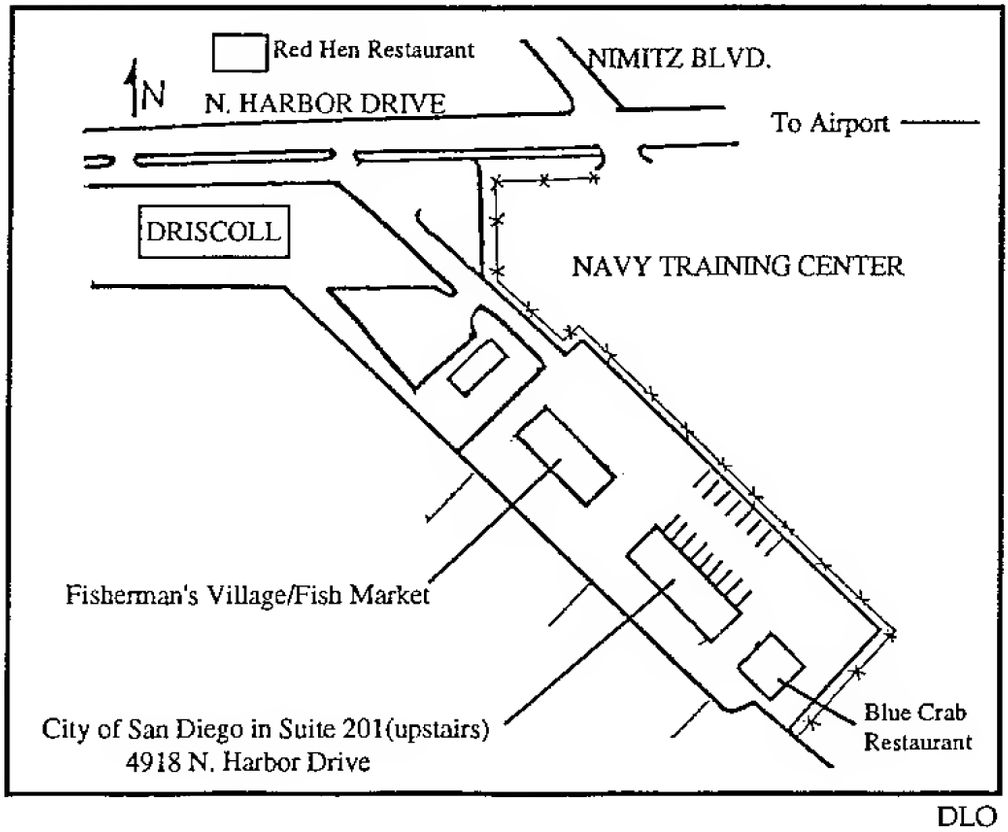
Back issues of the newsletter are available. Prices are as follows:

Volumes 1 - 4 (compilation).....$ 30.00
Volumes 5 - 7 (compilation).....$ 15.00
Volumes 8 - 13 .....$ 20.00/vol.
Single back issues are also available at cost.

CITY OF SAN DIEGO'S MARINE BIOLOGY LABORATORY

From North, take 5 South to Rosecrans St. (209)
Turn left on N. Harbor Dr. (light after Nimitz Blvd.)
The entrance will be after Driscoll building (America III), look for Blue Crab Restaurant sign; the Red Hen Restaurant is across the street





DLO

NEWS RELEASE NO. 1, 13 February, from the Secretary General of the 5th International Polychaete Conference.

Dear Polychaete Scientists,

There are only four months left before the July meeting in Qingdao. I would like to report to you that everything for the conference preparation proceeds as planned and the organisation committee is going to run at its full speed from now on. I will be [have been] in Qingdao from February 26 to March 6 to work closely with Professor Baoling Wu as well as the Chairman of the Science Council of Qingdao city (one of the local hosts). If you have any particular concerns about the conference organisation, please don't hesitate to contact me directly. I would appreciate your inputs very much.

The Conference will run between July 2-7 and post-conference tours start on July 8. Please disregard the weekday names in the 2nd Circular -- July 2 will be Sunday of course and July 7 will be Friday!

Recently, I have received a lot of requests about travel in China and post-conference tour booking. Although I have tried my best to accommodate each request, I think the following information may help other friends.

1. Many friends found difficulties in booking domestic flights in China through their travel agent. I suggest that all of you should contact the office of China Travel in your country, which is the best information source. Also, China Travel will be able to help you to book your flights in China (connect from Beijing (or Shanghai) to Qingdao. The transportation for your post-conference tours (flights or trains) will be taken care of by us.

2. If you have booked for the post-conference tours, your tour will start on July 8 (right after the conference) and end on the last day of your tour. So, if you want to book your flights, you can decide your own departure day (on last day of your tour). If you wish to stay in China longer, you should inform us so that we can help you to make special arrangements for your hotel. By now, we have about 40 people booked for tour 4 (Qingdao-Xian-Beijing) and about 10 people booked for tour 2 (Qingdao-Shanghai-Hangzhou-Shanghai). The number is going to increase as we are receiving late registrations every day.

3. For those of you who have not been able to submit your abstract before the deadline, please send me your abstract directly through e-mail (boqianpy@usthk.ust.hk) or fax (my fax number is 0852-2358-1559) immediately.

From Chaetozone Newsletter - Email

4. For many of you who have neither paid your deposit nor returned the registration form to us, please cooperate with us. It will help us to plan the conference tremendously. It may be very difficult for us to book your hotel or tours in summer as Qingdao is the summer resort of China, and all sorts of accommodation and the flights in or out of Qingdao will be booked by tourists long before the summer.

5. Receipts of your deposit will be ready for you to pick up on registration day at the registration desk.

NEWS RELEASE NO. 2, 13 March, from the Secretary General.

In my recent trip to Qingdao, China, I have held several meetings with local hosts of the conference, particularly with the Director and Deputy Director of the First Institute of Oceanography, SOA (Professor Wu's home institute), and Chairman and Vice Chairman of Science Council of Qingdao City (another host). After many discussions, we have appointed two deputy secretary generals (Deputy Director of the First Institute of Oceanography, and Deputy Chairman of Science Council of Qingdao City), and seven secretaries to form the whole secretariat of the conference. Each of those will be responsible for certain tasks of the conference (including meeting venues, accommodation, tours, and so on). The deputy secretary general will directly report to me the progress of all aspects and I will go back to Qingdao in May to check the preparations.

In the recent meetings, we have made the following decisions which will affect each of the participants:

1. In the reception evening, the conference will provide buffet dinner (original plan is for a light meal). The reception will be in Huanghai hotel where most of the participants are going to stay. It is totally free (including drinks).

2. The conference banquet will be held in Baidaguang Convention Centre (used to be the meeting venue for Chinese government leaders) with 10 courses of Chinese dishes. All the participants will attend free of charges (we decided not to ask you to pay for it). It is still scheduled on the last day of the conference.

3. After my visit to the university dormitories and guest house, I found that those rooms in the university are very good in terms of internal conditions and facilities, however, there are some inconveniences such as no hot-water supply after 8:30, no IDD phone, and no laundries. Also, it may be difficult for you to find a place for dinner. Then, I visited about 10 hotels near the university to see whether we can find a place in the price range but with much better service and more convenient. I went

Huanghai Hotel and had a number of negotiations with their manager. After hours of bargaining, I have been able to obtain 15 rooms in Huanghai Hotel for those who have registered for the university guest house. The 15 rooms will be on a lower level of the hotel (2nd-4th floors and without a good view), each room with 2 or 3 beds, IDD phone, TV, washroom with bathtub. In a word, a standard hotel room. The price will be USD 35 including breakfast. For those of you who have registered for the Beihai Hotel, you will also move to Huanghai Hotel. With unchanged price, you will have your standard rooms at the level of 5-9th floor of the hotel (much better than in Beihai Hotel). For those of you who have originally signed for the Huanghai Hotel, you will have rooms at 10th-21st floor level with much better views. Also, in your room, you have your own minibar. Huanghai is 3-star hotel with excellent service in all aspects. To experience the hotel's service, I actually moved to that hotel and stayed there for three nights. I tried their buffet breakfast, lunch, and dinners, used their IDD, haircut shop, bar and coffee shops, and duty-free shops. It appears that they are all quite good. There are four restaurants in the hotel serving different styles of Chinese food. The hotel (street address is 75 the First Yanan Road, 2 km away from the downtown area) is about 3-4 minute walking distance from the first bathing beach and faces the largest park in the city (Zhangshan Park) and about 7-8 minutes to Qingdao Aquarium, also about 5 minutes walk to Huiquan Hotel (4-star) where the rest of participants are going to stay.

4. All the participants will have breakfast in their hotels (we have tried to include the breakfast in your price and the conference will provide you with lunch (free of charges).

5. So far, about 120 overseas people have indicated that they definitely will come to the conference, but about 80 have paid their registration fee and booked their post-conference trips (the number may have changed in the last 7 days as the conference receives late registration forms every day). It is very difficult for the conference to plan the tours, banquet, reception, and accommodation as we need the actual number for these. Please do not expect to walk into Qingdao and get a hotel room, as Qingdao's hotel rooms will be fully booked up long before the summer starts. It will also be very difficult for us to arrange your post-conference trip.

6. The third circular and conference program will be separate this time. In fact, I am working on the third circular which will cover information on poster preparation, conference publication, slides, travelling information in Qingdao and so on. I expect that this will be sent to you in early April. The conference program and abstracts will be prepared and printed out in May. However, to save money and time, and also your effort to bring the program back to Qingdao, I will have the program and abstracts included in your registration package, which you will pick up

at the registration desk in Huanghai Hotel. However, a computer copy of the program will be available in May. Whoever wants to know the details about your presentation can contact me in May and I shall be able to forward you a computer copy of the program. (I have received about 75 abstracts so far). All the abstracts received have been reviewed. My technician is retyping the text (some can be scanned but a lot can't) and the editorial work on the abstracts from East European Countries will be done by myself with some help from my postdoc (native Canadian).

7. Due to the above changes, I have decided to extend the deadline of abstract submission to the first week of April. Please send me your abstract directly through the e-mail or fax (0852-2358-1559).

8. Eighty percent of the people who have registered have signed for the post-conference trips. Half of them have chosen trip four, ten have chosen the Shanghai-Hangzhou trip, and about twelve have chosen the Beijing trip. Only three have chosen the Hainan Island trip.

9. For spouses and children, the conference will have a special program for them for the whole week so that they can have chance to learn about Chinese culture. The program will include visiting factories (silk factory, beer factory,...), hospitals, daycares and schools as well as farms, boating, sightseeing, and of course, shopping in free-markets or department stores. Details of this program will be available in May.

10. Pick-up service from airport and train station will be provided for July 1 and 2. Please forward your flight number and arrival time (train number and arrival time) to us as early as possible. The person who will be in charge of your registration and pick-up will be: Professor M. Y. Zhu, Chairman, the Department of Marine Biology, The First Institute of Oceanography, State Oceanic Administration, Qingdao, China. He can be reached by fax: (86)-532-2867468 or by mail at the following address: 3A Hongdao Zhi Road, P. O. Box 98, P. C. 266003, Qingdao, China. Please contact him directly.

Thanks for your cooperation and we wish to meet you in Qingdao.

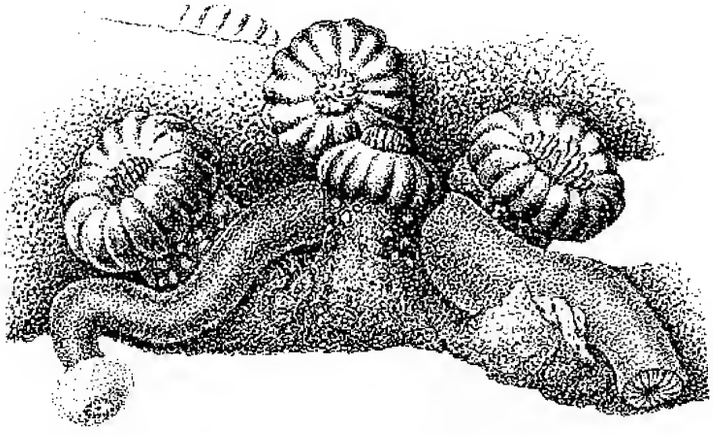
Pei-Yuan Qian
Secretary General, the Fifth Polychaete conference

Dr. Pei-Yuan Qian, Department of Biology, The Hong Kong University of Science & Technology, Clear Water Bay, Hong Kong, Tel: 852-2358-7331 (office), 852-2358-7336 (lab), 852-2346-3865 (home), Fax: 852-2358-1559, E-mail: boqianpy@usthk.ust.hk

*- SEEN ON INTERNET

April, 1995 Vol. 13, No.12

NEXT MEETING:	SCBPP Problem Non-polychaete and Polychaete Species
GUEST SPEAKER:	none
DATE:	May 8 and May 22
TIME:	9:30am - 3:30pm
LOCATION:	See below



(*Chaetoderma hawaiiensis* from Heath 1911)

MAY 8 & 22 MEETINGS

Our string of SCBPP related meetings continues in May, once again with separate meetings for polychaete and non-polychaete taxa. SCBPP nemerteans and chaetodermatid mollusks will be the subject of the May 8th meeting at MEC in Carlsbad. If you need a map contact the secretary. Problem polychaetes in the families Cossuridae and Cirratulidae will be covered during the May 22 meeting at the Worm Lab at the Natural History Museum of Los Angeles County. All members that have worked with cossurids for the SCBPP survey should come with voucher specimens of the different species of *Cossura*

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

encountered along with illustrations of both their dorsal and ventral staining patterns in methyl green. A sheet of blank cossurid outlines for coloring in these patterns has been provided for members by Rick Rowe (CSDMWWD) and is included with this newsletter. Rick has also included an example sheet of the stain patterns in *Cossura* that the San Diego lab has seen in their SCBPP samples. Members have no excuses now, cossurids will be finalized at this meeting. Also, we will attempt to finalize the *Aphelochaeta/ Monticellina* problems raised at previous meetings and discussed in this issue of the newsletter. An extra day of discussion for resolving just this issue is also anticipated for May 23 at the Worm Lab. Any other SCBPP problem polychaete species are also welcomed. For members not involved in the SCBPP we hope to resolve all the identification problems soon and will get back to more general and interesting meetings this summer. One such issue that needs to be addressed at a future meeting is the use, practice, and validity of staining patterns in polychaetes (See "Staining Patterns" in this issue). As usual please bring any related literature along with your specimens to the meetings.

NEW LITERATURE

Several articles were brought to members attention at the meetings. Of particular interest was the publication of the illustrated key to world sea pens (Williams 1995), which we had a preview of from Dr. Gary Williams (California Academy of Sciences) at our July 1994 meeting. In addition to providing keys to both families and genera world-wide, Gary provides abundant discussion of nomenclatural problems (and often their resolution), and lists the valid extant members of all but the largest genera.

Recent articles on metazoan phylogeny and the position of the lophophorate phyla (Halanych et. al., 1995), and on climatic warming and declining zooplankton abundances off California (Roemmich & McGowan, 1995) were also circulated for review by members present.

Another important piece of literature that has recently come to members attention is a revision of the genus *Mediomastus* (Warren et al., 1994). It includes some very useful tables for distinguishing between species of *Mediomastus*.

POLYCHAETE CONFERENCE

It was announced at the April 24th meeting that the papers that will be presented at the 5th International Polychaete Conference will be published in a future volume of the *Marine Science Bulletin*. There will be an eight page limit on these papers. Also, members that are attending the conference and going on tour #4 (Qingdao-Xian-Beijing) should note that this tour leaves on Friday, July 7th, the last day of the conference, and includes a 24 hr. train ride.

NEWSLETTER INDEX

SCAMIT member Faith Cole (EPA-Newport, OR) has been indexing the SCAMIT newsletter for several years for her own use and has agreed to not only provide members with a copy of the index, but also to continue to index future volumes. We hope to have this past index in one of the first issues of volume 14. We greatly thank Faith for sharing all of her hard work with us and agreeing to continue with future indexing.

NEW CURATORIAL ASSISTANT

The Worm Lab at LACM has recently hired a new curatorial assistant to help with the polychaete worm collection. His name is John Miller and he is from Sydney, Australia. He has a great deal of experience working with polychaetes, especially *Mesochaetopterus*. We all hope to meet him at the next SCAMIT meeting.

SUCCESSFUL RECRUITMENTS

Member Martina (Budris) Fanizza and her husband Steve became proud parents on the 27th of March with the delivery of their son Roman Vito Fanizza. For pool participants he was 8 lbs. 9 oz. and 21.5 inches long.

Member David Vilas and his wife Audrey became the proud parents of a baby girl named Madeleine Sachiko Vilas on April 25th. She weighed in at 8 lbs. 3 oz. and was 20.75 inches long.

CONGRATULATIONS TO ALL!!!!!!!

VACATED NICHE

Member Tony Chess (NMFS-Tiburon Lab) is calling it quits after a long and distinguished career in environmental science in federal government service. He will be retiring in June to somewhere in Mendocino County. Tony will be in a position to put his considerable experience to use as a taxonomic and environmental consultant. Once he is settled into his "retirement" digs we will pass on his new address and telephone through the Newsletter. Best of luck for a successful transition to a new phase of your life Tony!

CORRECTION

In the last newsletter (Vol.13[11]) on page 7 in the discussion of *Sosane occidentalis* and *Sosanopsis sp. A* the terms paleae and flabellum were briefly described. This description was misleading. The description of flabellum from Banse and Hobson (1981) reads, "the first bundle of capillary setae or paleae, anterior of the gills and directed forward, in some Ampharetidae". So, flabellum is not necessarily thin and capillary-like, it may also be the thick, golden paleae. It is only called flabellum if it is the first bundle of setae that is anterior of the gills and directed forward.

PSEUDATHEROSPIO FIND

Cheryl Brantley (CSDLAC) recently found 3 partial specimens of *Pseudatherospio fauchaldi* Lovell 1994 that had been mistakenly identified as *Malacoceros* sp. They were collected at 150 m depth off Malaga Cove on the Palos Verdes Peninsula during July 1991. Only one of the three specimens had enough of a posterior end to be able to see the distinctive neuropodial hooded hooks that are strongly curved and have a secondary subdistal tooth. Perhaps other specimens of this unusual species have also been misidentified?

MINUTES FROM APRIL 10

Prior to our beginning with non-polychaetes, Leslie Harris showed us an underwater photograph of a mystery animal from Truk lagoon which had been sent to her for identification. The photo showed an animal protruding from the end of a tube about one inch in diameter and constructed of cemented shell debris. The animal had a front end with an acutely pointed large median papilla or tubercle flanked by triangular lappets, and two very long palps or arms held in a V. Details of the animal were hard to see in the photo, but the long palp or arm like structures were surrounded by long hair-like structures which were not clearly whorled, but were present on all sides of the "palps". After she let us puzzle for a while, Leslie produced a jar containing a specimen that had finally been taken of this mystery organism. It proved to be a polychaete worm, a sabellariid in the genus *Lygdamus* (species still uncertain).

We examined several ophiuroids brought by Megan Lilly (CSDMWWD), including a *Amphiodia occidentalis* voucher suspected of being an *Amphiodia psara*, and a potential *Amphipholis pugetana*. The assistance of Dr. Gordon Hendler was obtained, and he was able to confirm both identifications. The *A. psara* keyed properly in the SCBPP *Amphiodia* key (SCAMIT Newsletter Vol. 13 no.6), but not in the in-house key used previously at the San Diego lab. Several key characters were evident on the specimen; arm spines were tapered to a blunt point, and presence of a large rosette of primary scales on the disc. Dr. Hendler still has not seen any authenticated *A. occidentalis* specimens from southern California. He added that the spines of *A. occidentalis* are not only truncated (rather than pointed) distally, but are often flared at the tip, making the truncation even more striking.

He also mentioned that there are now three undescribed *Amphiodia* from our area, all from the Channel Islands. None of these three species are as robust as *Amphiodia psara*, although two have blotchy dorsal arm pigmentation similar to that of *A. psara*. The arms of the new species are longer and more slender than in *A. psara*, and have less contrast between the pigmented and background colors of the arms (ie. the background color is not as white as in *A. psara*, tending to tan or grey).

Other characters will be detailed as these species are described, but the above brief notes should help us recognize these animals if encountered on the mainland.

Dr Hendler made a request for specimens of *Amphiodia psara*, indicating that the museum's holdings of this animal were very meager. If SCAMIT members can donate specimens of the species to the museum they would be welcomed, especially lots with more than a single individual. Contact Dr. Hendler at the museum @ 213) 744-6394.

Megan had several very large specimens of *Amphipholis* displaying the long paddle shaped median arm spines which characterize *Amphipholis pugetana*. She had recently decided that the species they encounter at San Diego is *A. squamata*, and was unsure what to do with these large and different specimens. Dr. Hendler confirmed that they were indeed what is now identified as *A. pugetana*, although he also commented that presence of elongate arm spines is dependant on relative maturity of the specimen. Young animals show almost no elongate median arm spines, and may be difficult to distinguish from *A. squamata*.

We began our examination of amphipods with *Protomedeia articulata/prudens*. Dean Pasko (CSDMWWD) had examined specimens of these two species from both the San Diego area and from off Palos Verdes, and concluded that the specimens from the two areas are the same. They have males with the morphology of *P. articulata* as described by both Barnard (1962) and Conlan (1983), and ♀s which differ from both the above descriptions, and approach ♀s of *P. prudens* (Barnard 1966). Tony Phillips indicated that the animals taken in Santa Monica Bay were the same. The ♀s are characterized by a cuspidate posterior margin of article 6 of G2, a condition specifically excluded for both ♀ *P. articulata* and *P. prudens* in Conlan (1983). Barnard (1962) describes the ♂, but figures both ♂ and ♀ in erecting *P. articulata* as a new species. He illustrates (figure 21 L and M) the ♀ gnathopods as lacking cuspidate posterior margins. We will continue to examine material of *Protomedeia* in an attempt to resolve this conflict, but no resolution was reached during the meeting other than all of the participants seemed to have the same material.

Dean and Ron Velarde (CSDMWWD) also indicated that there was a problem with the generic description of *Bemlos* of Myers, as reported in Barnard & Karaman 1991. In his diagnosis of the genus Myers indicates that

article three of the mandibular palp is either straight or slightly concave on it's posterior margin. In a specimen of *Bemlos* from the San Diego Area the palp was found to be distinctly convex.

Just prior to leaving for the meeting Don Cadien received a package from member Tony Chess (NMFS- Tiburon Lab) containing large numbers of microcrustaceans. The sample was one taken back in 1978, and consisted of materials collected from within a $0.25m^2$ quadrat in 40 ft of water with an airlift. It came from Albion, Mendocino Co., California. Included in the collection were some very large *Ischyrocerus* sp. Tony mentioned that he had seen my intent to produce a key to the local *Ischyrocerus* in the last newsletter, and thought these specimens should be included. He was right!

We examined a number of large ♂ and ♀ specimens, comprising a single species with a very spinose peduncle of U3. This article had a series of transverse spine rows. Starting at it's distal end these rows contained 4, 3, 2, and 1 spines. Laterally at the distal end of the peduncle was a vertical series of four sizeable spines. This configuration is not seen in any of the other *Ischyrocerus* species known from the coast. The telson also bore a set of three large spines on either side at about 60% of it's length, similar to that shown for *Ischyrocerus sp A* by Barnard (1969, figure 36g), and for several other *Ischyrocerus* by Gurjanova (1951).

Tony Chess also sent specimens of *I. litotes* which differed from Barnard's original description in the relative lengths of the first and second antennae. Although they were not examined or discussed during the meeting, the specimens from Albion had ♂ antenna one shorter than the peduncle of antenna two, while Barnard (1954b) reported the antennae as subequal. This may be a condition related to maturity in the ♂, so please examine your own material and report comments for inclusion in a future newsletter.

We also examined voucher specimens of *Ischyrocerus litotes* and *Ischyrocerus pelagops* from CSDMWWD. The former was correct, but there appeared to be a problem with the *I. pelagops* specimen. Examination of coxal plates suggested it lacked the pattern of *I. pelagops* (coxae 1-5 all of equal length). To check this we viewed the animal (a spawned ♀) as a whole body mount under the compound scope.

We examined one of the third uropods and found a broken (but strongly curved) main spine and a series of four large denticles near it's base. This configuration differs considerably from that of *I. pelagops*, where the main spine is little curved, and has a series of many small denticles at it's base. We then focussed up to the other third uropod to see if an unbroken main spine could be found. We instead found a regenerating ramus, which more closely resembled that illustrated by Barnard (1962) for *I. pelagops*. We assumed that the larger of the two uropods showed the true condition for the species. The coxal configuration was then determined by four observers, who agreed it was coxa 1 short, coxae 2-5 subequal, typical of *I. claustris* (Barnard 1969).

One aspect of the *I. litotes* specimen examined should be noted. This was a mature ♂ which had both the lumpy bulbous-based G2 shown by Barnard (1954b), and a flattened, elongate, sickle shaped G2 like that found in other members of the genus (ie. *I. claustris*; Barnard 1969 figure 40g). This specimen offers a bridge across the ♂♂ terminal molt, demonstrating that there is probably a sickle-shaped terminal ♂♂G2 in all or nearly all members of the genus. *Ischyrocerus litotes* has always stood out among it's congeners in having the lumpy bulbus ♂♂G2, apparently as the terminal form. This specimen allows us to reduce Carol

Paquette's (MBC) *Ischyrocerus sp C* from Goleta to a synonym of *I. litotes*. Her provisional was very close to *I. litotes*, but differed in the form of the ♂♂G2.

We next continued our discussion of the genus *Photis*, addressing only the confusion in the literature concerning *P. brevipes*, and *P. californica*. As pointed out by Dean Pasko at our last meeting, there is some confusion as to presence or absence of an anterodistal lobe on article 2 of G2. Conlan (1983) illustrates and describes a form she calls *P. brevipes* from southeastern Alaska, British Columbia, Puget Sound, and the outer coasts of both Washington and Oregon. While the ♂G2 of this form is very much like that of *P. brevipes* as it is known in southern California, and the female is also similar, there are some aspects of this form which require comment.

As illustrated by Conlan (op. cit., fig. 23) lobes are lacking distally on both the ♂ and ♀G2. No mention is made of distal G2 lobes in the text, but in her key (pg.45), Conlan makes use of the absence of an anterodistal lobe on article 2 of ♀G2 in *P. brevipes* to separate it from *P. californica*. In Shoemaker's (1942) original description the condition of the ♀G2 is addressed only by reference to the condition of the ♂; "Gnathopod 2 closely resembles gnathopod 1 of the ♂;...". Shoemaker's illustration of the ♂G1 (figure 9) shows an anterodistal lobe, and a larger one on G2. No figure of the ♀G2 is provided, but the ♀G1 is shown as lacking a lobe. Barnard's (1962) *P. brevipes* description does not illustrate the ♀G2 in figure 11, although I suspect that figure 13 (labeled *Photis californica* Stout) actually represents *P. brevipes* ♀s.

This suspicion is based on the nature of the G2 palms shown in figure 13c and d which are slightly and irregularly excavate matching the text description (pg. 33). Further the anterodistal lobe on article 2 of G2 in the juvenile ♂ (figure 13e) matches that shown in Shoemaker's original description.

We should also note that article 5 of ♂G1 is shown by Shoemaker with a posterior lobe much less than 1/2 the article length, while Conlan illustrates and describes a lobe which is about 60% the article length. Barnard's illustration of the ♂G1 (1962, figure 11) shows a posterior lobe about 40% the article length, like that of the original description.

Shoemaker does not illustrate or adequately describe the structure of the antennae in his original description, but both Barnard (1962) and Conlan (1983) illustrate ♂♂ antennae. Neither illustrates the antennal setation normally seen in southern California specimens called *P. brevipes* (with the characteristic subdactylar pigment spot), although Barnard's is much closer than Conlan's to our specimens.

In typical southern California material the antenna 1 peduncular articles each bear a series of setal groups which increase in length distad; that is, the most proximal group is the shortest, and the most distal group the longest. Each group normally has 2-3 setae which are longer than the article diameter, reaching 3x-6x article diameter in the most distal group. Additionally, articles 4 and 5 of antenna 2 are slightly geniculate, and in combination form an upward arch in the antenna. This is reasonably well illustrated in Barnard (1962, figure 11), which should be contrasted with figure 23 of Conlan showing these articles essentially linear.

One last difference between Barnard's and Conlan's *P. brevipes* is in the telson, which Conlan shows as truncate, and Barnard illustrates as medially subacute. This is particularly well shown in Plate 24 of Barnard 1954a (as *P. californica*). Conlan places this in the synonymy of *P. brevipes*, as had previous authors, without commenting on differences between the specimens illustrated by Barnard and her own.

The difference in size between the 8mm adults of the Southern California Bight, and the 4mm adults of Conlan's northern collections is also worthy of note. It's not just that some of the northern animals are small, ALL of the mature specimens top out at less than 5mm. Since the normal trend of clinal variation in size between southern and northern specimens of wide ranging Eastern Pacific species is for northern animals to be considerably larger than their southern counterparts, the "*P. brevipes*" situation is particularly abnormal.

As reported in the last newsletter, ♀s of both *P. brevipes* and *P. californica* from the Bight (identifications based on normal color pattern of subdactylar spots in *P. brevipes*, and lined antenna 1 peduncles in *P. californica*) have anterodistal lobes on G2. This has caused confusion because of conflicts with the literature, particularly Conlan's key. As shown above, the key requires modification, and Conlan's *P. brevipes* is probably not referable to Shoemaker's species, differing significantly in detail from the original description.

As these minutes were being finalized, another box was received from Tony Chess which contained *Photis* (among other things) collected on Baranoff Id., Southeast Alaska. Several ♂♂ *Photis* "*brevipes*" were included. These specimens were examined and found to conform to Conlan's "*brevipes*" only in size, differing in telson, posterior lobe of G1 article 5 length, and presence of lobes on article 2 of G1 and G2. The antennal setation also differed from that shown by Conlan, matching that seen in Southern California Bight specimens as described above. They did, however, have non-geniculate peduncular articles on antenna two, as shown by Conlan. Interestingly, the pigmentation pattern mentioned by Conlan (dark transverse bands on [pereonite] segments 1,5, and 7) was still visible after 15 years of preservation in alcohol. Both examined ♂♂ specimens also had a somewhat fainter dark band on pereonal segment 4, and one had a band on segment 6. Bight specimens identified as *P. brevipes* lack these bands. The subdactylar spot was also still visible on G1 of these males, although that on G2 (if initially present) had faded out.

Don Cadien suggests, since the diagnostic value of the color patterns in these species has yet to be fully determined, that the differences in ♀G2 palmar configuration be used as key diagnostic features of these two species. Female *P. californica* have a deeply excavate "stepped" palm, in which the posterior margin of article 6 is half (or less) the length of the anterior margin (Barnard 1962, figure 12i). Female *P. brevipes* have a slightly excavate nearly transverse palm, with the posterior palmar margin greater than half the length of the anterior margin (Barnard 1962, figure 13c,d).

Adult ♂s of *P. californica* and *P. brevipes* have been separated by the G2 dactylar tooth; large and oblique in *P. brevipes*, and absent in *P. californica*. The presence of *P. parvidons* in our area complicates things, as does the *P. californica* look-alike *P. sp OC1*. *P. parvidons* adult males (Conlan 1983, figure 30) have a small rectangular dactylar tooth easily separable from the large oblique tooth of *P. brevipes* (Barnard 1962, figure 11). Doug Diener is currently preparing a voucher sheet on *P. sp OC1*, and discussion should be deferred until it's completion.

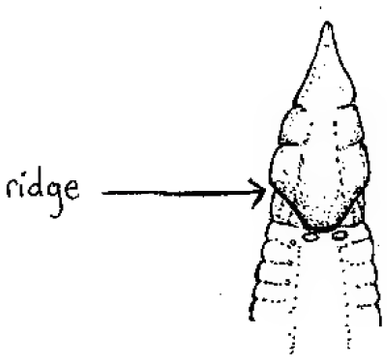
We should bear in mind, however, that the above comments are not based on examination of the types. In the case of Conlan's species reexamination of the types is probably unnecessary since the original descriptions were detailed. Examination of Shoemaker's U.S.N.M. holotype and paratypes of *P. brevipes* would provide much needed elaboration of his original description, and examination of Stout's type(s) of *P. californica* is a necessity. Their whereabouts are currently unknown to us, but inquiries are underway to locate them.

MINUTES FROM APRIL 24

At this polychaete meeting we discussed SCBPP problem polychaete taxa from the families Cirratulidae, Capitellidae, and Terebellidae.

Tony Phillips (HYP) gave the members present an update on the status of several species of cirratulids from a recent phone conversation with Dr. Jim Blake about the future polychaete volumes of the MMS atlas. It seems the names of several of our local taxa will be changing. Both *Monticellina dorsobranchialis* and *Monticellina tesselata* will change species names because our local species don't fit the original descriptions of these animals. After more extensive examination of our *Monticellina dorsobranchialis* (previously M. sp. A) by Dr. Blake he has decided that our local species is not the *M. dorsobranchialis* described from the Atlantic, but a new species that will appear in the MMS atlas. Blake also believes that what we refer to as *Monticellina tesselata* is not what Hartman described in her original 1960 description (as *Tharyx tesselata*). This is because the dorsal fold or ridge that appears between the palps was not described by Hartman.

Dorsal View



Monticellina tesselata showing prostomial ridge between palpal scars

Also, what we have recently been calling *Aphelochaeta marioni*, which has a distinct staining pattern, is most likely not *A. marioni*. The stain pattern appears as a large patch ventrally from setigers 5-17 (approx.) and then appears as a spot between the parapods . The type material of *Aphelochaeta marioni* that Jim Blake has seen does not have this stain pattern on the ventrum. He also told Tony that he feels these animals segregate by habitat so the idea of a cosmopolitan or universal *Aphelochaeta* species is not valid. Jim also said that our *Cirriformia luxuriosa* is most likely not *luxuriosa* either. Be prepared for numerous changes in the Cirratulidae with the publication of upcoming volumes of the MMS atlas.

Another *Aphelochaeta/Monticellina* complex issue addressed at the meeting is the serration on the setae and the length of the noto and neurosetae. For *Monticellina* the neurosetae become about 1/10th the length of the notosetae posteriorly. Also *Monticellina* should have serration on the neurosetae that looks like small teeth under 100X-400X power. If you need to examine the neurosetae under anything greater than this (1000X power or oil) to see any kind of serration and the setae appear as hairy or frayed then it is not a *Monticellina*.

While working on these SCBPP samples several taxonomists have reported the presence of a odd, dark, purplish-brown cirratulid thought to be a Timarete (Newsletter Vol.13[5]) This cirratulid is distinguished by multiple branchiae on approx. setigers 4-10 in an excavated or crevice like pocket on either side of the body dorsally. This animal is also described as having short acicular setae posteriorly which had previously not been seen on the partial specimens. Tony Phillips, however, found a whole animal and it did not have these spines posteriorly. He spoke with Blake about this animal and it fits a new genus called *Protocirrineris* that has all

capillary setae. Tony will do up a voucher sheet for this new SCBPP species.

With the recently published Revision of *Mediomastus* in hand we examined a few *Mediomastus* to assist members with distinguishing between the three species on our SCAMIT Taxa List. *Mediomastus acutus* is the only species to have paddle-like notosetae. This setae consists of an acicular spine surrounded by a hood that gives it the paddle shape. This notosetae is present from setiger 8 onward toward posterior end. Setiger 6-7 have notosetae that are long handled hooks. The first 5 setigers don't stain in methyl green. The next 3 setigers stain moderately and the 9th and 10th setigers stain very dark. The habitat for this species is shallow areas in fine sand and silt.

The two other Mediomastus species from our taxa list, *M. californiensis* and *M. ambiseta*, are much more likely to be confused because neither has distinct paddle-like notosetae. *M. californiensis* is much more robust than *M. ambiseta* and the difference between the thoracic and abdominal hooks is much more distinct in *M. ambiseta* than in *M. californiensis*.

The next species discussed at the meeting was *Polycirrus*. We examined a *Polycirrus* sp. V from Pt. Loma. Its characteristics included hirsute notosetae, a striated lower lip, mid-ventral pads and a rugose banded stain pattern on the dorsum. It was missing its tentacular lobe and so its identity was unclear. Larry Lovell thought that this was due to the fact that the prostomium was being regenerated.

Also a *Polycirrus* sp. from SCBPP sta. PLABE 1214 at 104 meters was examined at the meeting. It had been vouchered by Tom Parker (CSDLAC) because it didn't seem to fit *Polycirrus californicus* or *Polycirrus sp. A* using L. Lovell's key provided in Newsletter vol. 13(10). Upon examination Larry Lovell decided this specimen should be called *P. californicus* for several reasons. The specimen had a large peristomial flap that was longer than wide with the oral tentacles coming out laterally from the side of this flap. This large flap is typical of *P. californicus*. The notopodial post-setal lobes were large, also fitting the description of *P. californicus*. This specimen also had a small ventral pad on one side of setiger 7 that appeared to have an uncinal fascicle in it. This specimen's setiger 7 condition is not considered adequate to define it as *P.* sp. A.

Included in this newsletter is a voucher sheet for *Polycirrus* sp. A of SCAMIT done by Tony Phillips. *P.* sp. A is one of the common *Polycirrus* species seen by Hyperion and CSDOC in their SCBPP samples. It has a distinct staining pattern with a much lighter area anteriorly (refer to figure 1 of voucher sheet). Also, a revised copy of L. Lovell's *Polycirrus* key has been included in this volume. Please note that some changes have been made to couplet 6 to better define the distinction between *P. californicus* and *P.* sp. A.

The next terebellid group we examined was *Pista*. There has been a great deal of confusion amongst the species of *Pista* due to some mistakes Hartman made in the descriptions and illustrations in her atlas.
Member Leslie Harris tried to clarify for us at the meeting the differences between *Pista cristata*, *Pista brevibranchiata*, and *Pista disjuncta*. *Pista cristata* has reduced lappets where the 1st lappet is the most ventral, the 2nd is the largest and the 3rd is the most lateral. It also has two pairs of pom pom or club shaped branchiae, with one pair being larger than the other. The terminal branches of the individual branchiae (or pom pom) are arranged spirally. This is different than the branchiae in *Pista brevibranchiata* and *Pista disjuncta*. They do not have club shaped or pom pom like gills. They have branchiae that

are arborescent or branching in shape. This is different than what Hartman illustrated in her atlas for *P. disjuncta*. *P. brevibranchiata* also has lappets 1, 2, 3 very large and lappets 4, 5, 6 that are small, very thin, fragile and ventrolateral in position from the pad. *Pista disjuncta* has small lappets on setiger 2 and larger lappets on 3 with just a small frill on 4. Also, *Pista disjunctas* that are found inshore have a brown color at the anterior end and tend to be smaller in size.

STAINING PATTERNS

By Tom Parker (CSDLAC)

Staining polychaetes is often done to view patterns which form on the body or appendages. These patterns are sometimes relied upon to help define a species. These techniques commonly use methyl green stain. In the last few years many additional reports of staining patterns have been published and also reported in unpublished accounts. Locally, many polychaete taxa are now stained to assist viewing delicate surface features and to confirm, or even, establish species identities; including, spionids, sabellids, terebellids, cirratulids, maldanids, capitellids, ampharetids, sphaerodorids, cossurids, onuphids, nephytids, trichobranchids, and magelonids. There are probably many others.

This technique is becoming established as common taxonomic practice. It offers many attractive benefits. Specimens can be stained in one treatment. A specimen's delicate surface features become dramatically more obvious. Many patterns of stained or unstained tissue may be associated with particular segments or structures. Many specimens in the same genus, with nearly the same staining pattern are often judged to be the same species. Sample processing and questions of QA/QC might be dramatically improved.

Unfortunately, few if any published taxonomic descriptions rely upon staining pattern. This prevents results from being directly linked to published taxa. Additionally, a fundamental understanding of this technique is not well documented. Specific methodologies (protocols) have not been established. Variation in results may be expected due to this lack of control. Below are some questions needing resolution in order to reduce variable results and to allow this technique to be a reliable taxonomic tool. Included are also common comments I have heard during SCAMIT discussions about staining methods.

1. What stain is used? Methyl green, methyl blue, alcian blue, others? (common comment: any of these will do.)

2. What solvent is used in mixing the stain? Isopropanol, ethanol, denatured ethanol, other formulations? (common comment: any of these will do.)

3. How many grams of stain are mixed in what volume of solvent? (common comment: make it real dark or strong, a few grams)

4. Is this mixture filtered?

5. Are any mordants or destaining agents added to the stain?

6. How long are specimens stained in this mixture? (Common comment: a few minutes to over the weekend)

7. How long are specimens allowed to destain? What specific technique of destaining is appropriate?

8. What cells or tissues absorb the stain? Which do not? (common comments: muco-polysaccharide producing cells take up the stain strongest or generally glandular tissue takes up the stain or sometimes reproductive structures and branchia take up the stain

strongest.) On what are these specific understandings based?

9. Does ontogenic growth or sex influence the staining pattern? (common comment: No, polychaete segments are committed to their function at the time they are formed. Yes, more active life stages may produce greater glandular secretions and influence stain uptake. Yes, sexual dimorphism may influence some body segments stain uptake). On what are these specific understandings based?

10. What influence does habitat, gut contents, etc. have on the stain uptake?

11. Do published accounts demonstrate reproducible species specific staining patterns?

G. Humason in *Animal Tissue Techniques*, listed eight factors or conditions that affected staining properties:

A. strength of dye (actual dye content of commercial dyes may vary from 32-99%, may contain other colored compounds, and differ from batch to batch)

B. rate of ionization of tissue proteins and dyes

C. pH value of dye solution and tissue proteins

D. alcoholic or aqueous solution of dye

E. low or high temperature during reaction

F. simple or multiple combination of dyes

G. strong or weak concentration of dye in solution

H. permeability of tissues and dyes

It is clear from items A, C, D, and G, that need for standardization of technique is critical for consistent results. SCAMIT should begin a process for standardizing a polychaete staining technique. Criteria should be erected by SCAMIT for using staining patterns in conjunction with diagnostic morphological characters. Specimens with variable or unclear morphological characters should not be confirmed to a published species based solely upon a staining pattern, without staining of type material under a standardized staining protocol. Provisional species based solely on a staining pattern should not be establishment at this time, although staining patterns may be useful to segregate specimens which should be more thoroughly examined as potentional provisionals. A brief table of published polychaete staining is attached.

BIBLIOGRAPHY

BANSE, KARL. 1972. Redescription of Some Species of Chone Kroyer and Euchone Malmgren, and Three New Species (Sabellidae, Polychaeta). Fishery Bulletin 70(2):459-495.

---. 1979. Sabellidae (Polychaeta) Principally from the Northeast Pacific Ocean. Journal of the Fisheries Research Board of Canada 36:869-882.

---. 1980. Terebellidae (Polychaeta) from the Northeast Pacific Ocean. Canadian Journal of Fisheries and Aquatic Sciences 37(1):20-40.

BARNARD, J. LAURENS. 1954A. Marine Amphipoda of Oregon. Oregon State Monographs, Studies in Zoology (8):1-102.

---. 1954B. A new species of Microjassa (Amphipoda) from Los Angeles Harbor. Bulletin of the Southern California Academy of Sciences 53(3):127-130.

---. 1962. Benthic Marine Amphipoda of Southern California: 1. Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podoceridae. Pacific Naturalist 3(1):3-72.

---. 1966. Benthic Amphipoda of Monterey Bay, California. Proceedings of the United States National Museum 119(3541):1-41.

---. 1969. Gammaridean Amphipoda of the rocky intertidal of California: Monterey Bay to La Jolla. United States National Museum, Bulletin (258):1-230.

BARNARD, J. LAURENS, and Gordan S. Karaman. 1991. The Families and Genera of Marine Gammaridean Amphipoda (except Marine gammaroids)[parts 1 and 2]. Records of the Australian Museum Supplement 13:1-866.

BLAKE, JAMES A., and Brigitte Hilbig (editors). 1994. Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel. Volume 4: Oligochaeta and Polychaeta: Phyllodocida (Phyllodocidae to Paralacydoniidae).

CONLAN, KATHLEEN E. 1983. The amphipod superfamily Corophioidea in the northeastern Pacific region. 3. Family Isaeidae: systematics and distributional ecology. National Museums of Canada Publications in Natural Sciences (4):1-75.

FITZHUGH, KIRK. 1983. New Species of Fabriciola and Fabricia (Polychaeta: Sabellidae) from Belize. Proceedings of the Biological Society of Washington 96(2):276-290.

GIANGRANDE, A. 1992. The genus Chone (Polychaeta, Sabellidae) in the Mediterranean Sea with description of C. longiseta n. sp. Bollettino di Zoologia 59(4):517-529.

GURJANOVA, EUPRAXIE F. 1951. Bokoplavy morey SSSR i sopredel'nykh vod (Amphipoda-Gammaridea). Opredeliteli po Faune SSSR 41:1-1029.

HALANYCH, K. M., J. D. Bacheller, A. A. Aguinaldo, S. M. Liva, D. M. Hillis, and J. A. Lake. 1995. Evidence from 18S ribosomal DNA that the lophophorates are protostome animals. Science 267:1641- 1643.

HARTMAN, OLGA, and J. Laurens Barnard. 1960. The benthic fauna of the deep basins off Southern California. Allan Hancock Pacific Expeditions 22(2):1-297.

HEATH, HAROLD. 1911. Reports on the scientific results of the expedition to the tropical Pacific, in charge of Alexander Agassiz, by the U.S. Fish Commission Steamer "Albatross," from August 1899, to June, 1900, Commander Jefferson F. Moser, U.S.N., Commanding. XIV. The Solenogasters. Memoirs of the Museum of Comparative Zoology at Harvard College 45(1):9-179.

HILBIG, BRIGITTE. 1992. New polychaetous annelids of the Families Nereididae, Hesionidae, and Nephtyidae from the Santa-Maria Basin, California, with a redescription of Glycera nana Johnson, 1901. Proceedings of the Biological Society of Washington 105(4): 709-722.

HUMASON, GRETCHEN L. 1979. Animal Tissue Techniques, 4th edition. 661pp. W. H. Freeman & Co., San Francisco.

LOVELL, LAWRENCE L. Pseudatherospio fauchaldi, a new genus and species of Spionidae (Polychaeta, Annelida) from Southern California, USA. Pp.237-241. Dauvin, J. C., L. Laubier, and D. J. Reish Actes de la 4eme Conference Internationale des Polychaetes.

NATEEWATHANA, ANWAT, and Jergen Hylleberg. 1991. Magelonid

polychaetes from Thailand, the Andaman Sea, with descriptions of eight new species. Ophelia (Supplement 5):169-184.

ROEMMICH, D., and J. McGowan. 1995. Climatic warming and the decline of zooplankton in the California Current. Science 267: 1324-1326.

SHOEMAKER, CLARENCE R. 1942. Amphipod crustaceans collected on the Presidential Cruise of 1938. Smithsonian Miscellaneous Collections 101(11):1-52.

SOLIS-WEISS, VIVIANNE, Kristian Fauchald, and Arno Blankensteyn. 1991. Trichobranchidae (Polychaeta) from shallow warm water areas in the western Atlantic Ocean. Proceedings of the Biological Society of Washington 104(1):147-178.

WARREN, L. M., P. A. Hutchings, and S. Doyle. 1994. Revision of genus Mediomastus Hartman 1944 (Polychaeta: Annelida). Records of the Australian Museum 46(3):227-256.

WILLIAMS, GARY C. 1995. Living genera of sea pens (Coelenterata: Octocorallia: Pennatulacea): Illustrated key and synopses. Zoological Journal of the Linnean Society 113(2):93-140.

WILLIAMS, SUSAN J. 1984. The status of Terebellides stroemi (Polychaeta; Trichobrancidae) as a cosmopolitan species based on a worldwide survey including descriptions of new species. Pp.118- 142. Proceedings of the First International Polychaete Conference.

WINSNES, INGER M. 1985. The use of methyl green as an aid in species discrimination in Onuphidae (Annelida, Polychaeta). Zoologica Scripta 14(1):19-23.

WOLF, PAUL S. 1983. A revision of the Bogueidae Hartman and Fauchald 1971, and its reduction to Bogueinae, a subfamiliy of Maldanidae (Polychaeta). Proceedings of the Biological Society of Washington 96(2):238-250.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

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

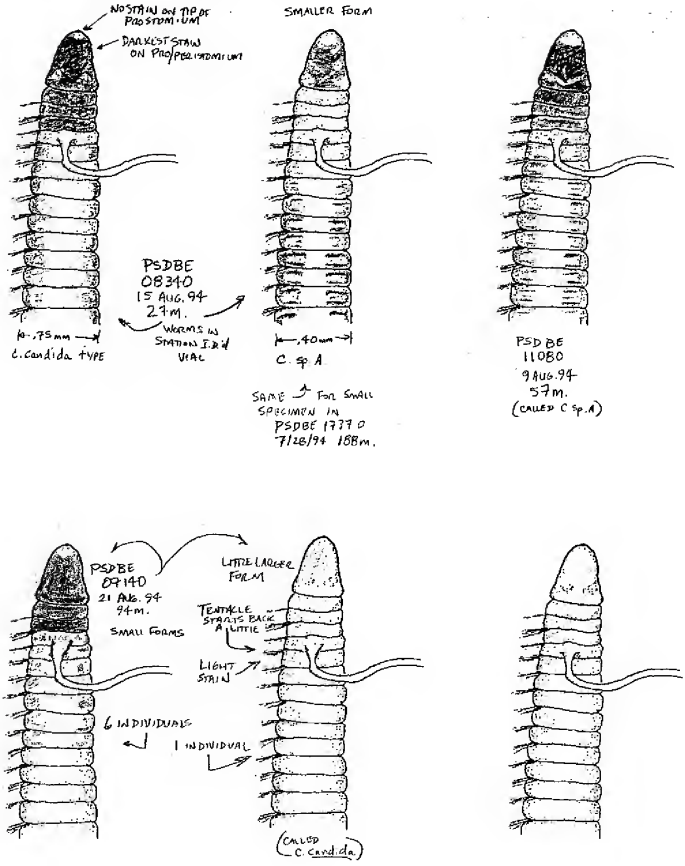
Volumes 1 - 4 (compilation).....$ 30.00
Volumes 5 - 7 (compilation).....$ 15.00
Volumes 8 - 13 .....$ 20.00/vol.
Single back issues are also available at cost.

SCAMIT TREASURY SUMMARY, 1994-95

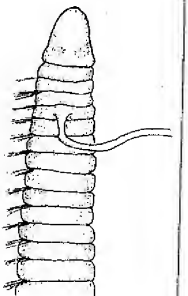
During the past fiscal year, April 1994 thrugh March 1995, the major expense was the newsletter for printing, postage, and supplies, $2163.60. SCAMIT's primary source of income, $2150.00, came from membership dues and nearly covered the costs for producing the newsletter. Grants and workshops will continue to be funded from the money collected for creating the Taxonomic Listing for SCCWRP during the previous fiscal year. The following is a summary of the expenses and income:

Expenses	
Newletter	$2163.60
Workshops	273.95
Grants	124.36
Miscellaneous	125.77
Total	**$2687.68**
Income	
Dues	$2115.00
Interest	399.63
T-Shirts	24.00
Donations	20.00
Miscellaneous	2.00
Total	**$2595.63**
Account balances (March 31, 1995)	
Checking	$ 265.01
Savings	20,182.35
Total	**$20447.36**

Cossura spp. STAIN PATTERN (METHYL GREEN)

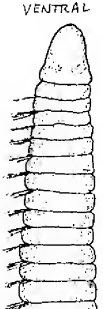


COSSURA SPP. STAINING PATTERNS (METHYL GREEN)

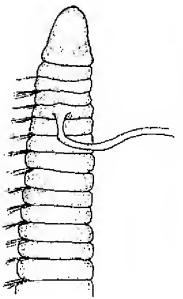


DORSAL

VENTRAL

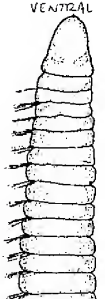


STATION DATA

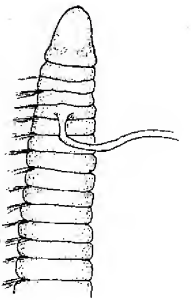


DORSAL

VENTRAL



STATION DATA



DORSAL

VENTRAL

STATION DATA

Key to selected *Polycirrus* from Puget Sound

By Lawrence L. Lovell revised 4-95

1A. Thorax with 9-15 pairs of notosetae.....2
B. Thorax with 20 to 40+ pairs of notosetae(except juvenile *P. californicus*, which can have as few as 14).....5

2A. With plumose notosetae.....3
B. With hirsute notosetae(one side).....4

3A. With lateral peristomial appendages, post-setal lobes present in thorax.....*Polycirrus* sp. B
B. Without lateral peristomial appendages.....*Polycirrus* sp. **I**

4A. Dorsum with methyl green staining bands; notopodia without lobes; tentacular lobe incised dorsally; ventral pad with lateral methyl green staining areas.....*Polycirrus* sp.**V**
B. Dorsum without m.g. staining bands; notopodia with pre and post-setal lobes; tentacular lobe entire dorsally.....*Polycirrus* sp. **III**

5A. Notopodial lobes with post-setal lobes, uncini begin anterior to setigers 6-13.....6
B. Notopodial lobes with dorsal lobe cupping setal bundle, tapering ventrally, uncini begin setigers 22-24.....*Polycirrus* sp. **IV**

6A. Uncini begin setigers 6-7; reduced post-setal lobes; last stained ventral lobes not separated by unstained, non-tumid area; overall body shape linear.....*Polycirrus* sp. A
B. Uncini begin setigers 8-13; pronounced post-setal lobes; last stained ventral lobes separated by unstained, non-tumid area; overall body shape expanded and not linear.....7

7A. Tentacular lobe well developed, projecting anteriorly.....*Polycirrus californicus*
B. Tentacular lobe poorly developed, no anterior projection.....*Polycirrus* nr *californicus*

My work on *Polycirrus* from the Pacific Northwest is ongoing. Please communicate new information or problems with this key to me.

SCAMIT Code:

Date Examined: April 25, 1995
Voucher by: Tony Phillips
Hyperion

Synonymy: Polycirrus sp. A Phillips
Polycirrus sp. A PSAMP (Puget Sound)

Literature: Banse, K. 1980
Holthe, T. 1986

Diagnostic characters:

1. Notosetae hirsute, at 400x hairs evident;
2. 22 - 27 pairs of notosetae;
3. short notopodial post-setal lobe present;
4. uncini start setiger 7;
5. uncinus with semicircle (7-8) of small teeth above secondary tooth;
6. peristomial pad small, slightly grooved;
7. nephridia present setigers 1-6, last three much larger than anterior three
9. methyl-green stain:
   dorsal - no stain evident
   ventral - very distinctive (figure 1)
   segment 3-4 (setiger 1-2) stain slightly lighter than segment 1 and 2 and posterior setigers
10. segment 1 and 2 form a continuous ventral central pad, no mid-ventral separation;
11. ventral pads on segments after 1 and 2 have a smooth appearance, are solidly stained between parapodia for next 6-10 segments before becoming reduced in size, pads do not show a tumid appearance, and are not visibly separated by a deep mid-ventral groove or cental pad;
12. first notopodia reduced in relation to other notopodia
13. body very linear in appearance

Related species (found in SCBPP) and differences :

Polycirrus californicus - notopodia all large, with pronounced post-setal lobe; uncini start setiger 8; peristomial pad large, deeply grooved; ventral stain pattern different (see Banse 1980), deep ventral groove starting setiger 2, small stained cental pad present; ventral pads tumid, becoming strongly separated by setiger 7 by a non-stained central pad.

Polycirrus sp. Type I Banse - dorsal stain pattern evident around notopodia, not present on central dorsum; ventral stain pattern with paired ventral pads, becoming reticulated by setiger 4, separated by narrow non-stained midventral area (Figure 2); 9-11 pairs of notosetae; plumose notosetae present; no thoracic uncini present.

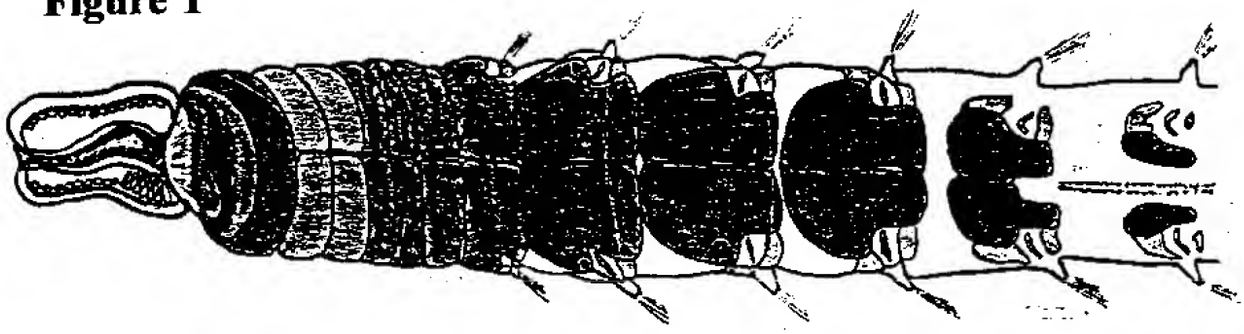
Polycirrus sp. Type V Banse - dorsal stain pattern reveals rugose bands transversing the dorsum for first 5-6 setigers; notopodia without post-setal lobes

Depth Range: 45 - 153 meters

Distribution: Southern California Bight - Santa Monica Bay to San Diego; Puget Sound

Remarks: A similar species to Polycirrus sp. A has appeared in some SCBPP samples from Santa Monica Bay. A cursory examination of the beast would result in a P. sp. A identification. The stain pattern and overall linear appearance is very similar (Figure 1), the notosetae are hirsute, and the first thoracic uncini appear on setiger 7. The uncini are similar. Several differences are detected upon closer examination. There is a distinct segment 2, separate from segment 1. There is no mid-ventral groove on this segment. The stain pattern is almost the opposite of P. sp. A. Segment 3 and 4 are darker than segment 2 and posterior segments. Segment 1 is as dark as segment 3 and 4. Only 17 - 19 pairs of notosetae are found. These animals are larger than the specimens of P. sp. A.

Figure 1



ventral

Figure 2