



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

June, 1992

Vol. 11, No. 2

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**NEXT MEETING:** Miscellaneous Phyla

**GUEST SPEAKER:** John Ljubenkov  
MEC Analytical Systems

**DATE:** July 13, 1992  
9:30am - 3:00pm

**LOCATION:** MEC Analytical Systems  
2433 Impala Dr.  
Carlsbad, California  
**\*map is included**

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**JULY 13 MEETING:** Remember to bring any rare and unusual specimens with you to the meeting. There will also be a discussion on the intercalibration of Miscellaneous Phyla name usage among agencies.

**MINUTES FROM MEETING ON JUNE 8:**

Tom Parker of LA County Sanitation District mentioned that he has noticed a particular smell (lemon and/or old sneaker ) from a Pista disjuncta collected in a trawl. If anyone has any additional reports of this smell in the field please contact Tom, additional information is included in this newsletter.

**Chaetopterid and Onuphid Workshop:** Dean Pasko and Ron Velarde reviewed commonly encountered Chaetopteridae and Onuphidae of southern California. Summary notes and keys have been included in this newsletter.

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SCAMIT newsletter is not deemed to be a valid publication for  
formal taxonomic purposes.

During the first half of the workshop SCAMIT decided that the species of Mesochaetopterus found at shelf depth in soft bottoms off Southern California may represent a new species. Specimens of Mesochaetopterus sp. that are in good condition may be sent to Dean Pasko at City of San Diego, Marine Biology Lab MS-45A, 4077 N. Harbor Dr., San Diego, CA. 92101. Additionally, Spiochaetopterus costarum found in Southern California does not match the original species description of Claparede (1870). Dean Pasko is reviewing the literature and original description to determine the status of the So. California material.

The second half of the workshop covered the Onuphidae. Two variations of color pattern on Mooreonuphis nebulosa have been recorded. One has the typical pair of dark pigment spots on the dorsum of the anterior and median segments; the other has various gradations of transverse banding that results from the possible merging of the dorsal pigment spots. These two variations probably do not represent separate species, but the problem requires further study.

Ron Velarde has been trying to resolve the Rhampobranchium cristobalensis vs. R. longisetosum issue (the validity of R. cristobalensis as a separate species). Data collected so far by Ron supports Paxton's (1986b) remarks, that R. cristobalensis represents a juvenile form of R. longisetosum. If anyone has any specimens in good condition please send them to Ron at City of San Diego, Marine Biology Lab MS-45A, 4077 N. Harbor Drive, San Diego, CA 92101.

Many inconsistencies were found with the members of the genus Onuphis; so when identifying specimens caution should be taken. This genus is particularly problematic due to developmental changes. See Dean's accompanying notes for further details.

#### FUTURE MEETINGS:

The meeting on August 10, 1992 will be a continuation of the May meeting on the master species list of the southern California benthos, the provisional species list, and the SCAMIT library. It will be held at the Cabrillo Marine Museum, San Pedro, California.

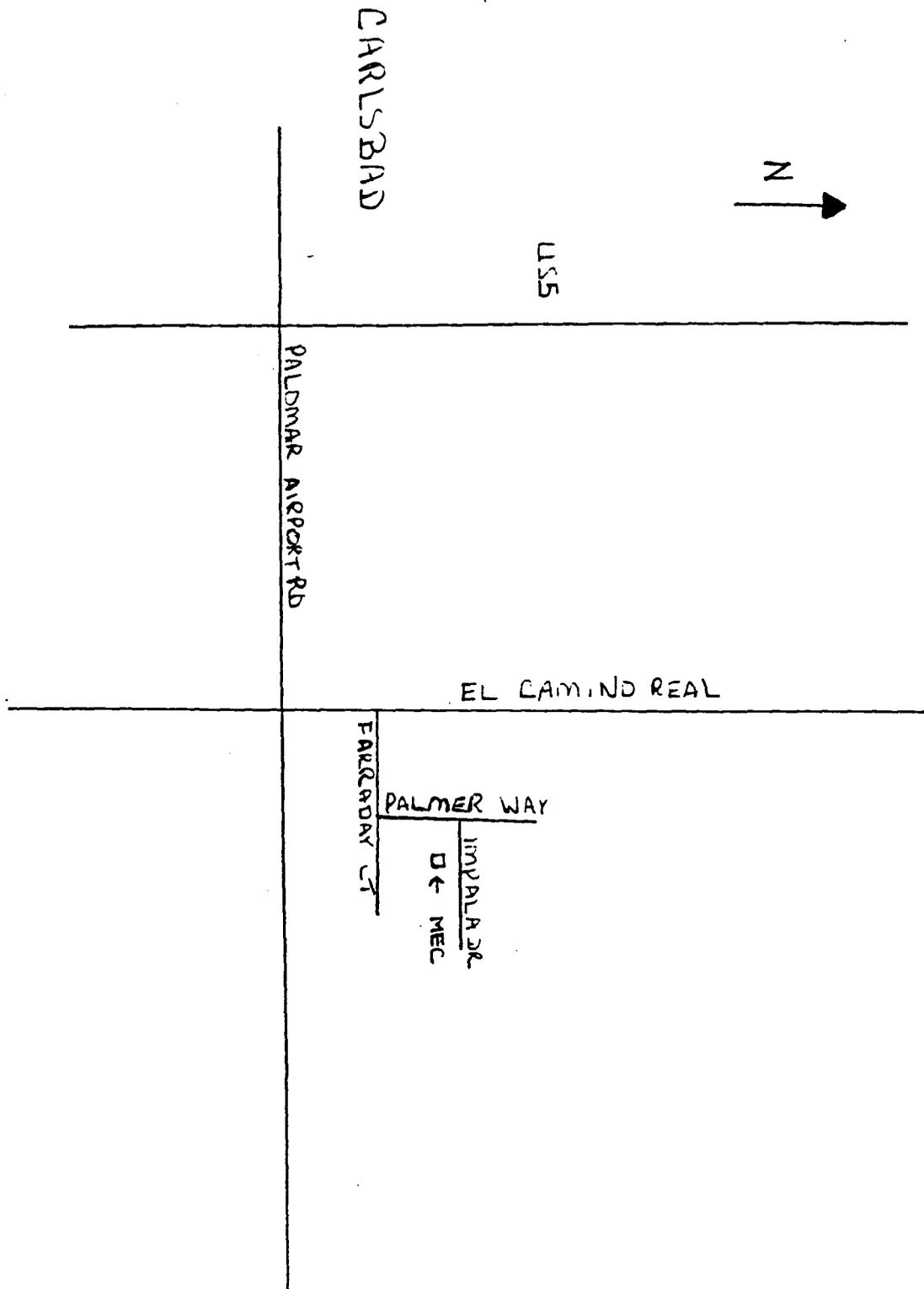
The September 14 meeting will have a report on the Third International Polychaete Conference by attending members of SCAMIT, Phillip Barrington of California Department of Fish and Game will give a talk on the Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, California and Drs. Mas Dojiri and Kirk Fitzhugh will lead a workshop on the preparation of taxonomic publications. This will be held at the Allan Hancock Foundation, University of Southern California, Los Angeles, California

SCAMIT OFFICERS:

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

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Secretary	Diane O'Donohue	(619) 692-4900
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MAP TO MAPINE ECOLOGICAL CONSULTANTS (MEC)



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March 31, 1992

Dear Colleague,

The response to the first issue of the CUMACEAN NEWSLETTER has been excellent; we received information, bibliographic references, and reprints from 32 colleagues representing 14 countries. We greatly appreciate your replies and helpful suggestions. Information about the Cumacean Newsletter was included in the March issue of "The Ecdysiast" (Vol. 11, No. 1) and the December issue of the "Isopod Newsletter" (No. 17). We are grateful to the editors of these publications for making this information available to carcinologists interested in Cumacea who were not included in the first mailing list of the Newsletter.

One of our colleagues has suggested that it would be helpful if we could include the mailing address of the first author for all the publications cited in the Newsletter. In response, we have included (when available) the address of those authors that are not directly involved in cumacean research, but whose publications mention or contain some data on this group. This address directly follows the citation and the remaining addresses may be obtained from the directory.

Again we wish to thank those who responded to our first request for information on current research interests and we look forward to hearing from those colleagues working on cumaceans who have not yet had an opportunity to write. As stated in first Newsletter, information on Cumacea dealing with (1) taxonomic and ecological studies, (2) new publications, manuscripts in press, and theses [including title and summary], (3) collections available for study and exchange of specimens, (4) current research interests and programs, and (5) changes in address, is requested. An information form is enclosed for this purpose.

If some colleagues are in position to make a small donation to help us with the publication and mailing costs of the Newsletter, we would be most grateful. Checks or money orders for donations should be made out to "Gulf Coast Research Laboratory" and mailed to Richard Heard.

Hoping to hear from you.

Richard W. Heard  
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June 15, 1992

Worms stink! Recently a number of large terebellid specimens have been collected from various benthic locations near the Palos Verdes Peninsula that have a distinct and unusual odor. I have been unable to find any notice or personal comment about the odor of local live terebellid worms. There was a recent publication in the Third International Polychaete Conference on the production of various bromophenol compounds in *Lanice* and other terebellid species. The odor of these compounds was not qualitatively described, but bromophenols, indoles, etc are known generally to be odiferous. The literature contains several references to other odiferous compounds in other groups as well.

These specimens can potentially be listed as either *Pista disjuncta* or *P. fasciata* depending upon how much interpretative effort is placed the structure of the posterior thoracic uncinial shafts. When the uncini are dissected and placed on a slide, the hooks appear to be tightly packed and lack any stem if viewed from the exterior of the body wall. If however, the same preparation is teased apart to separate the individual uncini, or the preparation is turned over so it is viewed from the inside of the body wall, then large and obvious stems are seen. These stems are nearly 1/5 the width of the uncinial crown and 1-3 times longer. These are not easily interpreted as "delicate ligaments".

The main differences relied upon to separate these two species is the presence or absence of long handles on the uncini in double rows on setigers (#8-17). However the description of *P. disjuncta* by Moore, 1923 contains the words " ..stout stem replaced by a delicate ligament".

The accompanying illustration adds to the confusion by depicting a simple line drawing of an uncinl with a long, obvious stem or shaft. SCAMIT voucher sheets also rely heavily on this written description to define *P. disjuncta* and are subject to interpretative variation when compared to the written and illustrated descriptions by other authors.

Ventral scutes are also found on thoracic segments #3 -15 . These scutes are illustrated in general by various authors. On previously preserved material the scutes have a pigmented band at the posterior half which is

slightly kidney shaped. Successive ventral segments possess deep pockets or invaginations segmentally separating each scute. On this more freshly preserved *Pista* material, known to possess this unusual odor, these scute structures are notably different. The kidney shaped portion at the posterior third of the scute is actually slightly raised, ruddier in shade than surrounding tissue, and seems to possess invaginations on the surface. These do not appear as mere epidermal wrinkles, but rather well organized invaginations on the surface of an area that looks "glandular" in nature.

Hutchins and Glasby (1989) describe *P. sinusa*, et al as possessing "well chitinized " uncinial shafts. The differences in uncini shaft structure recognized by local workers may have an explanation unrelated to taxonomy. The shaft or stem structure of the hooks may in fact be a sequential hardening of the chitinization mentioned by Hutchings and Glasby. Chitinization in other invertebrate groups has been investigated. It is well known that chitin is cured through the production of various organic compounds. This process requires the mixing of several precursor compounds to later be converted by polyphenol oxidase into the compound quinone which then actually "tans" or links polypeptide chains. This causes the protein to become harder, darker, and tougher. Though phenolic tanning is not universal for chitin, it has been used by various taxa, and might be one use of phenolic compounds in Terebellids. In these smelly terebellids the uncinial fascicle and the patch-shaped portion of each ventral scute is close together. If such compounds were carried or held to the setae by the mucous also secreted by these segments, a worm could reliably treat each fascicle with the compounds necessary to harden any non-cross linked uncinial ligament. Quite possibly the answer to such speculations can only be found once we all put our "noses to the grindstone".

For such an effort, please make some personal note of when you encounter live *Pista*/terebellids that produce a recognizable odor. Please forward these personal encounters to me at: T. Parker, Marine Biology Laboratory, 24501 S. Figueroa St. Carson CA 90745.

## NOTES FROM SCAMIT WORKSHOP, 6/8/92, ON THE CHAETOPTERIDAE AND ONUPHIDAE COMMON ALONG THE SOUTHERN CALIFORNIA SHELF

by Dean Pasko & Ron Velarde

6/11/92

The keys presented in this workshop were first developed to train new taxonomists in the City of San Diego's Ocean Monitoring Program. The keys were designed for the identification of specimens from shelf depths off Point Loma, San Diego, CA, and are valid for soft-bottom benthos from 45 m to approximately 120 m. They were intended to facilitate the enumeration of large numbers of specimens, and, whenever possible, use characters visible through dissection microscopes, such as color pattern or the presence/absence of eyes. Systematic affinities were retained whenever possible, but were sometimes compromised for the sake of efficiency.

The purpose of the workshop was to increase the breadth of the keys so that they become useful to the general SCAMIT membership working in the southern California Bight.

### THE CHAETOPTERIDAE

#### Problems Associated with Chaetopterid Taxonomy

To our knowledge, the Chaetopteridae have not been covered in previous SCAMIT meetings.

Kudenov (1975) recognized that the tubicolous habits of chaetopterids frequently causes poor preservation, making identification that relies primarily on soft body parts difficult. Hartman (1969), Hobson and Banse (1981), and Uebelacher and Johnson (1984), for example, use the shape of the notopodia in the mid-body region, the presence/absence of the small tentacles at the base of the palps, and the length of the palps to distinguish genera. They also use the shape and texture of the tubes for identification. We have found these characters unsatisfactory for identifying many of our chaetopterid specimens.

At Point Loma, we do not always have adequate preservation of animals within their tubes, nor do we ever get entire tubes - not only do the processes of sampling and screening destroy tubes, but in the process of sorting, many specimens are removed from their tubes or the tube is broken down to a smaller size that fits the animal. The attached key uses several characters, such as the presence or absence of a color pattern on the ventrum, the specific color pattern, the presence/absence of eyes, and the number of major spines on setiger 4, to distinguish the common species.

#### Variations in Color Patterns

Of the characters listed above, ventral color pattern may cause the greatest confusion. The color patterns that we describe differ somewhat from those listed in Hartman's Atlas. For example, Hartman (1969) states that the brown coloration of

*Phyllochaetopterus limicolus* occurs on setigers 3-5, whereas we describe the brown coloration on setigers 5 and 6. The setigers of several species are indistinct ventrally, and the setiger on which a pigment patch begins may be difficult to discern, consequently, the beginning or the end of a patch of color may not always appear as described. We tried to be consistent in describing each color patch from the setiger upon which its most anterior edge first appears when examining the ventrum of the specimen.

*Phyllochaetopterus prolifica* Potts, 1914

The specimens of *Phyllochaetopterus prolifica* common off southern California have the characteristics of the species as described in Potts (1914); however, they occur as single individuals whereas previous reports describe large mats of individuals from shallow water. Further work may show other structural or functional differences between the two.

*Spiochaetopterus* sp. A

Hartman (1969) describes *Spiochaetopterus costarum* as having a brown anterior ventrum, from the peristomium to setiger 6, with a white patch present on setigers 7 and 8, and a thickened peristomium that surrounds the prostomium. The specimens we examined had a dark brown band on setigers 6 and 7 and a white patch on setigers 7-11. Additionally, the peristomium has large "flaps" that project anteriorly over the prostomium which are not pictured in Hartman's illustrations (p. 219, Fig. 2). Initial review of Clapereide's original description suggested differences between our specimens and his description. A SCAMIT voucher sheet will be presented in the next newsletter documenting the differences and designating the southern California species as *Spiochaetopterus* sp. A.

*Mesochaetopterus* sp. A

Our specimens of *Mesochaetopterus* appear to be intermediate between *M. taylori* and *M. rickettsii* but they are poorly preserved and incomplete. Our specimens have six mid-body segments, whereas *M. taylori* has three and *M. rickettsii* is reported to have more than 10, and as many as 21. Additionally, Hartman (1969) reports *M. taylori* and *M. rickettsii* from intertidal sands, and low intertidal and estuarine muds, respectively, while our specimens have been collected from silty sediments at approximately 60 m. A SCAMIT voucher sheet will be presented in an upcoming newsletter - depending on the availability of additional specimens - documenting the distinguishing characters of what will be designated *Mesochaetopterus* sp. A.

*Chaetopterus cf. variopedatus*

*Chaetopterus variopedatus* (Renier, 1804) has been regarded as a monotypic, cosmopolitan species. Mary Peterson is presently working on a revision of the genus, apparently having documented several differences between north American specimens and the type material. Until the revision of the genus is published, *C. variopedatus* from southern California shelf depths should be referred to as *C. cf. variopedatus*.

Species list

The following species have been included in the key:

- Chaetopterus cf. variopedatus* (Renier, 1804)
- Spiochaetopterus* sp. A SCAMIT
- Mesochaetopterus* sp. A SCAMIT
- Phyllochaetopterus prolifica* Potts, 1914
- Phyllochaetopterus limicolus* Hartman, 1960

References

- Hartman, O. 1969. Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California, 812 pp.
- Hobson, K. D. and K. Banse. 1981. Sedentariate and archiannelid polychaetes of British Columbia and Washington. Canadian Bulletin of Fisheries and Aquatic Sciences 209: 144 pp.
- Kudenov, J. D. 1975. Sedentary polychaetes from the Gulf of California, Mexico. Journal of Natural History 9: 205-231.
- Potts, F. A. 1914. Polychaeta from the northeast Pacific. The Chaetopteridae. With an account of the phenomenon of asexual reproduction in *Phyllochaetopterus* and the description of two new species of Chaetopteridae from the Atlantic. Proceedings of the Zoological Society of London: 955-994.
- Uebelacher, J. M., and P. G. Johnson (Editors). 1984. Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico. Final Report to the Minerals Management Service, contract 14-12-001-29-91. Barry A. Vittor & Associates, Inc. Mobile, Alabama. Vol II: Ch. 11.

## THE ONUPHIDAE

### History of SCAMIT coverage and other relevant works

The onuphids have been covered in several prior meetings of the Proceedings of the Taxonomic Standardization Program (PTSP) of SCCWRP and SCAMIT. In 1978, Vol. 6 (1) of the PTSP newsletter, John Shisko of Hyperion and Fred Piltz of Allan Hancock Foundation compiled a list of characters for many species of the genera *Onuphis* and *Nothria*. Many of these species have subsequently been transferred to other genera. Voucher sheets for several species have appeared in the SCAMIT newsletter: *Mooreonuphis nebulosa* (as *Onuphis*) and *Onuphis iridescens* [Vol. 1 (3)]; and *Hyalinoecia juvenalis* [Vol. 1 (12)]. Sue Williams contributed a tabular key to the species of *Diopatra* in 1983 [Vol. 3 (12)]. A meeting was also held in August, 1983 (newsletter reference unavailable) in which a list of southern California species was presented along with a description of several taxonomically important characters. Most recently, a short note was printed in Vol. 10 (9). This note recounts a correspondence between Tom Parker of L.A. County Sanitation District and Dr. H. Paxton of Macquarie University, Australia, in which a previously undocumented condition, a bulbous tip on the aciculae of pre-branchial parapodia, is described in specimens of *Rhamphobrachium*.

The family was most recently reviewed by H. Paxton (1986a) and Fauchald (1982). These authors erected several new genera, created new specific combinations, and discussed the phylogenetic and cladistic relationships, and zoogeographic distributions of the family. The *Rhamphobrachium* complex was reviewed separately (Paxton, 1986b), and a review of the genus *Diopatra* is pending (in press?).

### Some taxonomic problems

Many characters have been used to identify onuphids. Problems arise in identification because several of the most frequently used characters can be ontogenetically influenced: e.g., dentition (bi- or tridentate) of the pseudocompound hooded hooks; setiger on which the subacicular hooks begin; and, the setiger on which the branchiae begin. Color has been cited as a useful character by various taxonomists; however, this feature changes with development and may require analysis of a large number of specimens to understand the variability inherent in color patterns. We were not able to reach a consensus about which specific characters are valid for distinguishing members of some genera, for example, *Onuphis*.

At Point Loma, we have become aware of several taxonomic problems, some of which have not yet been addressed by SCAMIT.

### *Mooreonuphis nebulosa*

The SCAMIT voucher sheet for this species [Vol. 1, (3)] states the variability of the branchiae and color patterns of this species. The branchiae may begin on setigers 6-8, and the color varies from a pair of dark pigment spots dorsally on the anterior

segments, to various gradations of transverse banding that result from merging of these pigment spots. Ron Velarde has noticed other differences as well, but these have yet to be documented. Both morphs of *Mooreonuphis nebulosa* may occur in the same sample, and as of yet cannot be distinguished as separate species. Please be aware of the two forms and note differences between them. Documented differences between the two forms may be sent to Dean Pasko of the Point Loma Monitoring Program, San Diego, CA: specimens are not necessary.

### The genus *Onuphis*

Hobson (1971) and Banse and Hobson (1974) noted that members of the genus *Onuphis* may be particularly problematic, mostly due to developmental changes. In juveniles, the branchiae may not begin until the second or third setiger, though they appear on setiger 1 in adults. The dentition of the pseudocompound hooded hooks and the placement of the subacicular hooks also vary. Examination of material from the Allan Hancock collection, particularly material deposited and/or examined by various authorities, revealed inconsistencies in taxonomic characters used to determine specific designations. Variations in all of the characters listed above were common, even in adult forms, as documented by Hobson (1971). The genus may require revision, and several species would require life history studies to document developmental changes of the "taxonomically important" characters. Consequently, SCAMIT recommends that you exercise extreme caution when speciating members of this genus: Speciate only those specimens that can be designated with 100% confidence.

SCAMIT decided to designate of *O.* "intermediates" of Hobson, 1971 as *Onuphis* sp. A SCAMIT. This species can be distinguished by first the appearance of the subacicular hooks, which consistently begin on setiger 9, and by a dorsal color pattern (as described in the accompanying key). Confusion may arise between *Onuphis* sp. A and some specimens of *O. iridescens*, however. The latter has subacicular hooks that vary in their first appearance, generally occurring at setiger 12 or thereafter in adults, but occasionally on setiger 10 in smaller specimens, and setiger 9 in juveniles (see Hobson 1971). Moreover the color patterns in onuphids are somewhat variable.

### The genus *Diopatra*

Species of *Diopatra* are frequently difficult to identify with confidence. The most reliable character for distinguishing *D. ornata* and *D. tridentata* remains the shape and texture of their tubes: *D. ornata* has a chitinized tube covered with shell and other debris; *D. tridentata* has a smooth, annulated, silty tube. However, problems may occur with small individuals as no one has yet documented ontogenetic changes in the construction of the tube. *Diopatra splendidissima* appears to be restricted to shallow water (to 20 m). Additionally, *D. splendidissima* can be distinguished by its coarsely serrated pectinate setae, where as *D. ornata* and *D. tridentata* have finely serrate pectinate setae.

The characters identified by Sue Williams [Vol. 3 (12)] are unreliable in that several of the features are size dependent. The presence/absence of tridentate hooded hooks has long been recognized as being inconsistent, even among adults. The shape and length of the peristomial cirri also vary, as does the presence/absence of a fifth ventral cirrus on the parapodia. Some taxonomists use the dentition of the pectinate setae and the color pattern of adults to distinguish *Diopatra* species. The usefulness of these characters was not discussed, however, because the meeting ended before these characters could be discussed. The value and consistency of these traits still need to be addressed and may follow as a half-day session in a subsequent meeting.

*Rhamphobrachium cristobalensis* vs. *R. longisetosum*?

*Rhamphobrachium cristobalensis* is distinguished from *R. longisetosum* by having fewer setigers with prolonged parapodia (2 vs. 3), fewer setigers with cirriform ventral cirri (2 vs. 3) and an earlier appearance of the branchiae (setiger 4 vs. setiger 8). All of these characters appear to be developmentally influenced, as Paxton (1986a) found for *R. ehlersi*. Paxton (1986b) remarks that "*Rhamphobrachium* (*S.*) *cristobalensis* is known only from two syntypes, both of which are juveniles. The specimens were collected within the geographic and depth distribution of *R. (S.) longisetosum* and may represent juveniles of that species." Preliminary observations of material from Point Loma by Ron Velarde, show that *Rhamphobrachium cristobalensis* is the juvenile form of *R. longisetosum*. Documentation of the developmental changes will be presented in a future SCAMIT newsletter.

Species list

The following species have been included in the key:

- Hyalinoecia juvenalis* Moore, 1911
- Nothria occidentalis* Fauchald, 1968
- Rhamphobrachium longisetosum* Berkeley and Berkeley, 1938
- Diopatra* spp.
- Paradiopatra parva* (Moore, 1911) (= *Sarsonuphis parva*)
- Mooreonuphis nebulosa* (Moore, 1911)
- M. stigmata* (Treadwell, 1922)
- Onuphis eremita parva* Berkeley and Berkeley, 1941
- O. elegans* (Johnson, 1901)
- O. iridescens* Johnson, 1901
- O. sp. A* (= *Onuphis* sp. "intermediates" Hobson, 1971)

## References:

- Banse, K., and K. D. Hobson. 1974. Benthic errantiate polychaetes of British Columbia and Washington. *Bulletin of the Fisheries Research Board of Canada* 185: 82-84.
- Fauchald, K., 1982. Revision of *Onuphis*, *Nothria* and *Paradiopatra* (Polychaeta: Onuphidae) based upon type material. *Smithsonian Contributions to Zoology* 356: 1 - 109.
- Hobson, K. D. 1971. Some polychaetes of the superfamily Eunicea from the north Pacific and north Atlantic Oceans. *Proceedings of the Biological Society of Washington*, Vol 83 (47): 527-544.]
- Paxton, H., 1986a. Generic revision and relationships of the family Onuphidae (Annelida: Polychaeta). *Records of the Australian Museum* 38 (1): 1-74.
- \_\_\_\_\_. 1986b. Revision of the *Rhamphobrachium* complex (Polychaeta: Onuphidae). *Records of the Australian Museum* 38 (2): 75-104.

## Acknowledgements:

We would like to thank David Vilas and Larry Lovell for supplying specimens of *Chaetopterus cf. variopedatus* and *Diopatra* spp., and for some helpful discussion on the identification of these two groups. Larry, in particular, provided Dean with the impetus to understand the chaetopterids. Thanks to Leslie Harris for allowing us the use of the Allan Hancock Foundation material and for providing valuable insight into the various problems associated with these two groups. Thanks to Debbie, Ross and Kelvin for proofing these notes.