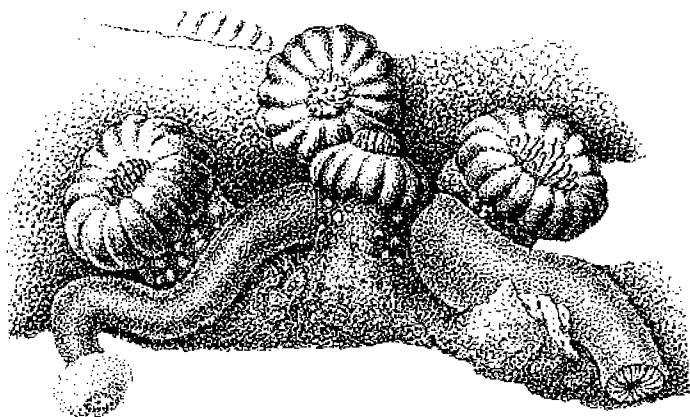


April, 1995

Vol. 13, No.12

<b>NEXT MEETING:</b>	SCBPP Problem Non-polychaete and Polychaete Species
<b>GUEST SPEAKER:</b>	none
<b>DATE:</b>	May 8 and May 22
<b>TIME:</b>	9:30am - 3:30pm
<b>LOCATION:</b>	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*

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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 its 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<sup>2</sup> 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 its 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 its 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 its 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 its 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 its 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 pereon

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).

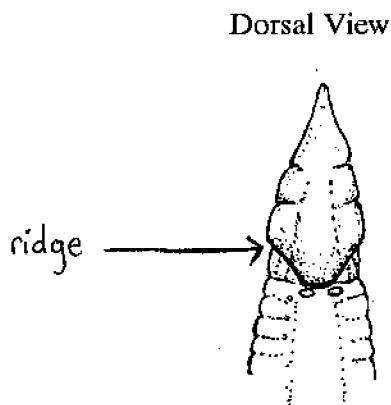
Adult ♂s of *P. californica* and *P. brevipes* have been separated by the G2 dactylar tooth; large and oblique in *P. brevipes*, and absent in *P. californica*. The presence of *P. parvidons* in our area complicates things, as does the *P. californica* look-alike *P. sp OCl*. *P. parvidons* adult males (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 OCl*, 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 tessellata* 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 tessellata* is not what Hartman described in her original 1960 description (as *Tharyx tessellata*). This is because the dorsal fold or ridge that appears between the palps was not described by Hartman.



*Monticellina tessellata* 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, malidanids, 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: mucopolysaccharide 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 potential 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 *Fabriciella* 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 s o p r e d e l ' n y k h v o d (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*, 4<sup>th</sup> 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 Blankenstejn. 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; Trichobranchidae) 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 subfamily of Maldanidae (Polychaeta). *Proceedings of the Biological Society of Washington* 96(2):238-250.

**SCAMIT OFFICERS:**

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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 through 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
<b>Total</b>	<b>\$2687.68</b>

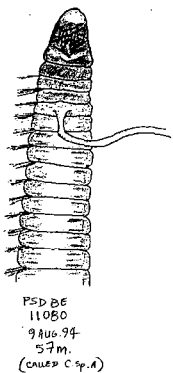
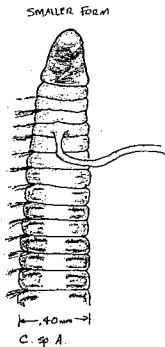
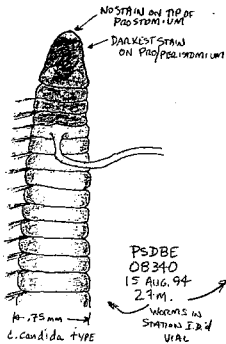
### **Income**

Dues	\$2115.00
Interest	399.63
T-Shirts	24.00
Donations	20.00
Miscellaneous	2.00
<b>Total</b>	<b>\$2595.63</b>

### **Account balances (March 31, 1995)**

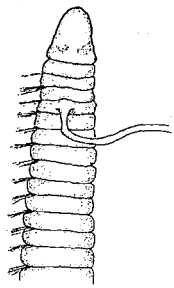
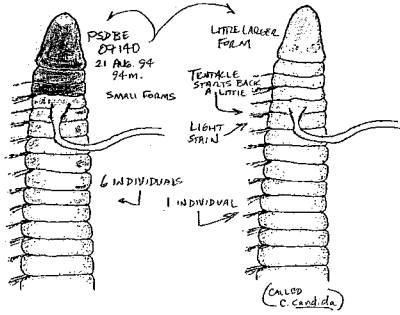
Checking	\$ 265.01
Savings	20,182.35
<b>Total</b>	<b>\$20447.36</b>

Cossura spp. STAIN PATTERN (METHYL GREEN)

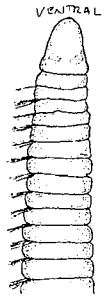
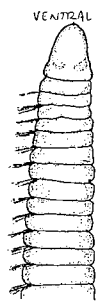
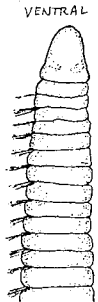
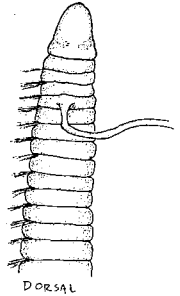
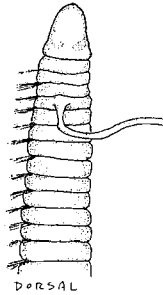
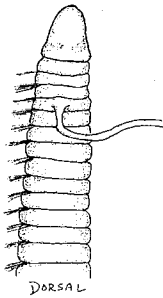


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COSSURA spp. STAINING PATTERNS (METHYL GREEN)



STATION DATA

STATION DATA

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 central 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 central 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.

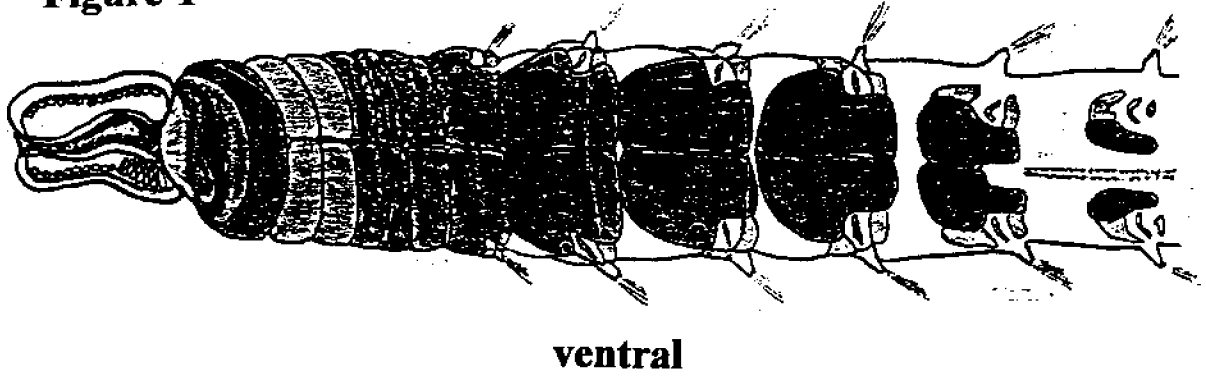
Polycirrus sp. Type V Banse - dorsal stain pattern reveals rugose bands transversing the dorsum for first 5-6 setigers; notopodia without post-setal lobes

**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**



**Figure 2**

