



## Southern California Association of Marine Invertebrate Taxonomists

February, 2005

### SCAMIT Newsletter

Vol. 23, No. 10

<b>SUBJECT:</b>	TBA
<b>GUEST SPEAKER:</b>	
<b>DATE:</b>	TBA (the 9 May Polyclad Flatworm meeting with Tony Phillips has been postponed; periodically check the website for upcoming meeting announcements)
<b>TIME:</b>	9:30 a.m. to 3:30 p. m.
<b>LOCATION:</b>	



*Rudilemboides stenopropodus*  
photo by D. Pasko, CSD

#### FEBRUARY COROPHIID WORKSHOP

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

During the initial discussion/introduction and summary of the project, several problem taxa were mentioned.

John believes that *Sinocorophium japonicum* (Hirayama 1984) (= *Corophium volutator japonica* Hirayama 1984) may be the same as *Corophium multisetosum* Stock 1952.

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

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

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

### Coroppiidae

Specimens of *Hirayamaia mortoni* (Hirayama 1986) from Gray's Harbor (originally identified by Dean Pasko) were reviewed and considered to be *Monocorophium acherusicum* (Costa 1857). The potential mis-identifications resulted from a urosome without lateral notches. The absence of this notch led to the conclusion that uropod 1 was "mainly" ventrally inserted, leading to the generic identification of *Hirayamaia* using the key in Bousfield and Hoover (2002).

*Monocorophium*, by contrast, is defined as having a notch for the lateral insertion of uropod 1. Images were taken of the two contrasting conditions, and in the end, there was general agreement that the Gray's Harbor specimens possessed a urosome where the lateral notch was not apparent. However, John Chapman explained that those genera with truly "ventral" insertions of uropod 1 have urosomites with upturned lateral margins (e.g., *Laticorophium*). Initial review of *H. mortoni* at

the meeting indicated that it had a very similar spine pattern to that of *M. acherusicum*. Dean will review additional specimens to verify this and report on his results.

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

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

### Phoxocephalids

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



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

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

surrounds the base of the telson. In *F. obtusidens* the setae are positioned much further away from the base of the telson and beyond urosomite 3 extensions.

### Ischyroceridae

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

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

### Aoridae

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



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

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

*Aoroides secundus* Gurjanova 1938 collected by CSD during Bight'98 were reviewed and confirmed using John's Aorid key and figures supplied by Lisa Haney and Don Cadien. *A. secundus* can be distinguished from the other species included in SCAMIT Ed 4 Species List (i.e., *A. columbiae* Walker 1898, *A. intermedia* Conlan and Bousfield 1982, *A. inermis* Conlan and Bousfield 1982, *A. exilis* Conlan and Bousfield 1982, *A. spinosa* Conlan and Bousfield 1982, and *Aoroides* sp A SCAMIT 1996) by the absence of a distal process on uropod 2 peduncle, and the combination of setal bundles on the dorsal margin of article 5 of male gnathopod 1, which is also wider than the basis. This combination (setose article 5 wider than the basis) is unique among the six

species recorded in SCAMIT Ed 4 or described in Conlan and Bousfield (1982) (See Figure 11, page 95). *A. secundus* was also contrasted with *Aoroides* sp A, which has a very reduced interramal process on uropod 2 that is difficult to see and sometimes interpreted as being absent. *Aoroides* sp A differs by the absence of setae on the anterior margin of article 5 on male gnathopod 1 and an article 5 that is equal in width to the basis. In addition, *Aoroides* sp A is unique in having a mandibular palp article 2 that is bare and uropod 3 rami without stout spines.

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

### Isaeidae

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





### THE SECOND DAY

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

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

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

### MEYERS AND LOWRY 2003

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



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

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

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

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

D. Cadien, CSDLAC

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

The literature on protandrous hermaphroditism in lysianassoids is not voluminous. Evidence is best presented by Lowry and Stoddart (1986), and deals with the conicostomatid group, a small portion of the overall lysianassoids. Lowry and Stoddart (1997) also mention

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

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



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

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

### DENSE LIVING

Tom Parker – CSDLAC

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

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

is a second burst site in the host body wall. Also included is an image of a *Drilonereis* emerging from a sabellid host, *Chone mollis* (Fig. 2).

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

### JOB OPPORTUNITIES

#### Larval Fish Taxonomist - Preliminary Position Description

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

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



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

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

Applicant must be able to trailer and operate a small outboard boat and be able to lift all sampling gear, pumps, and samples.

Contact: Karen Burns

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### **Paleontology Collections & Teaching Position**

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

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

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

The school is interested in recruiting quickly and looking for a candidate who would be available immediately or as soon as possible.

Interested candidates should contact:

Karl Hutterer, Executive Director

Santa Barbara Museum of Natural History

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If you need any other information concerning SCAMIT please feel free to contact any of the officers at their e-mail addresses:

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SCAMIT

C/O The Natural History Museum, Invertebrate Zoology

attn: Leslie Harris

900 Exposition Boulevard

Los Angeles, California, 90007



“Dense Living” - T. Parker, Associated Figures



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



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



Figure 3. *Platynereis bicanaliculata* with an unhatched squid



Figure 4. Notoseta of *P. bicanaliculata*