

**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



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*Odontosyllis phosphorea*  
 Monterey Bay  
 (c) Leslie Harris, 1999

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

**12 SEPTEMBER 2011, ENTEROPNEUSTA, LILLYPAD ENVIRONMENTAL**

Attendance: Megan Lilly, CSD; Dean Pasko, OCSO; Larry Lovell, LACSD; Terra Duvall, LACSD; Don Cadien, LACSD; John Ljubenkov, DCE; Wendy Enright, CSD; Ken Sakomoto, OCSO; Laura Terriquez, OCSO; Crissy Attardo, SCAMIT Intern.

The meeting was opened by Megan Lilly. She began by introducing Crissy Attardo, the new SCAMIT intern and discussed the project for which Crissy had been hired. Crissy will be working with biologists at the various agencies to collect personal ID or voucher

**UPCOMING MEETINGS**

Visit the SCAMIT website at: [www.scamit.org](http://www.scamit.org) for the latest upcoming meetings announcements.

sheets and information on species for which there is nothing in the Taxonomic Tools section.

Next to take the floor was Larry Lovell. He started with upcoming meetings. A new meeting has been added to the upcoming line-up. In October Jim Thomas will join us to work on Amphithoidae. He is planning a field trip to Newport Bay as it is the type locality for a rare local species. Also the date for the SCAMIT Christmas party is being narrowed down to either December 3 or 10. Final date will be announced in the future.

Larry then talked about topics for which we would like to have meetings in the future.

Dean Pasko's idea of having a meeting to address taxonomic conventions was raised again.

Additionally we would like to have a meeting to discuss curatorial and vouchering best practices. Maintenance, databasing, vouchering of specimens should all be covered. What are the various agencies doing? We could compare notes and ideas.

The taxonomic database project was covered at length with regards to the involvement of SCCWRP and how all the editions of the SCAMIT Species Listing will be available, back to the original Edition 1.

The annual SAFIT meeting will be 11 November in Davis, CA and Larry Lovell will be attending as the SCAMIT representative.

It was announced that emends for Ed 7 are being accepted. Members are asked to send any emend suggestions to Don Cadien. The suggestions will be discussed and reviewed by the Species List Committee before final inclusion in to Ed 7.

Dean Pasko then had the floor and talked about a presentation by Eric Stein at SCCWRP regarding the DNA project. Dean said it was a good, clear presentation which discussed such items as best preservation techniques for DNA work, and there was an emphasis on the continuing value of morphology based taxonomy.

With that it was time for the subject of the day, enteropneusts. Megan started out by discussing two papers she'd been reviewing (Cameron et al 2010 and Deland et al 2010) to try and determine if it would be possible, based on our current taxonomic abilities, to take our enteropneust specimens further than a genus level ID. Based on her research she felt there might be one or two characters that could be found without serial sectioning, but that they might be difficult to find and she was working on trying to test them out. At this point, Dean Pasko mentioned that some attendees might need Megan to back up a little and start with more basic enteropneust taxonomy and identification techniques.

Megan then stated that she felt the enteropneust chapter in the MMS Atlas (Woodwick 96) is the most useful literature for identifying specimens to genus level. She then reviewed the morphological features needed for identification and discussed the four common genera seen in the monitoring programs of most of the So Cal POTWs.



After reviewing the literature and discussing characters it was time to look at specimens. Most attendees had brought specimens for dissection and examination and the afternoon was spent looking at them. OCS D attendees had brought a very large specimen of the genus *Schizocardium* and it initially threw a few people. There is a “seam” or “groove” present in *Schizocardium* that becomes much more pronounced as they grow. If one is not careful it can at first glance be mistaken for a genital lappet or genital wing which would send someone the wrong direction in the key.

The other genus of interest was *Saccoglossus*, as some of the agencies don't see it often and wanted to clarify the circular muscle aspect of the proboscis. Additionally, this is one genus where species level ID might eventually be possible thanks to recent work.

All in all it was a productive afternoon and Megan hoped that most people returned to their offices with a better grasp of enteropneust morphology and taxonomy.

### 17 OCTOBER 2011, B'08 ENOPLA, OCS D

Attendance: Megan Lilly, CSD; Laura Terriquez, OCS D; Wendy Enright, CSD; Chase McDonald, LACS D; Don Cadien, LACS D; Tony Phillips, Independent consultant; Kelvin Barwick, OCS D; Larry Lovell, LACS D; Ken Sakomoto, OCS D; Dean Pasko, OCS D.

Larry started the day by announcing that the SCAMIT website has undergone some minor renovations and is currently up to date.

10 December has been decided upon as the date for the SCAMIT Christmas Party. It will be held again at the Cabrillo Marine Aquarium. It will be a joint holiday party between SCAMIT and SCAITE.

Don Cadien then took the floor to talk about the EPA's presence on the west coast to conduct a workshop during which they will begin to finalize a national benthic index for coastal reports. The EPA wants a standardized index for all coasts. There is a European index called AMBI. When AMBI was tested in southern California it did not work as well as in Europe, or as well as the local BRI index. The original premise was that an animal will behave the same regardless of location but this seems not to hold true. Larry and Don both are in the process of reviewing the national species list for taxonomic accuracy with regards to nomenclature.

With that it was time for Tony Phillips to start his presentation on the enoplans of the SCB based on his B'08 specialty taxonomist work. Tony had created thorough and useful voucher sheets for each species he encountered. His presentation consisted of discussing each of the species and showing us the information he had gathered on each one. He handed out a hard copy set of the sheets for each of the agencies represented at the meeting. Many of the sheets included colored drawings in addition to digital photos of the animal both in uncleared and cleared states. All of the information and sheets that Tony presented at the meeting can now be found on the SCAMIT website in the Taxonomic Tools section. Tony's voucher sheets on this notoriously difficult group will make it easier for us to maintain consistency in our identifications during the B'13 project.



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**14 NOVEMBER 2011, SYLLIDAE, NHMLAC**

Larry Lovell started the day with his usual business announcements regarding upcoming meetings. In addition, two new polychaete taxonomists-in-training who both were hired at the City of San Diego lab were introduced – Dr. Peter Vroom and Matt Nelson.

SCCWRP will now be partnering with SCAMIT on the development of the Taxonomic Database. Dr. Steve Steinberg, the new head of Computer Services and the CEDEN lead, will be directing their effort. Wendy Enright is getting the Ed 6 Species List into Access and ready for uploading. SCCWRP will then continue working with the Test Bed site Katja developed to further improve and add to it. Data being added to the database include historical Bight project data, POTW data sets, and website links. SCCWRP is particularly interested in developing a P-code name update tool and links to provide access to BRI and SQO instructions and tools.

There was discussion on the QA/QC effort to develop a unified QC plan for benthic sample processing (sorting and taxonomy) modeled on various in-house lab and past Bight program QC programs. SAFIT has a QC program in place with SWAMP for freshwater sample processing. We also discussed taxonomic QA and training/certification. SAFIT and SCAMIT both feel that certification is a weak approach to ensuring taxonomic sufficiency and that interaction at organizational meetings, workshops, and QC feedback are of more practical value to learning and staying current with taxonomic standard practice. CTAG has recently requested that SCCWRP become involved in helping POTW labs develop SWAMP compatible QA/QC protocols. Ken Schiff will be leading that effort.

Next Ron Velarde took the floor to begin his discussion of Bight'08 Syllidae. Ron had participated as a specialty taxonomist for Bight'08 identifying all Syllidae specimens collected. Ron was presenting information on the species identified.

Ron had handouts that he distributed to all present. He also provided digital files to those at the meeting with computers or thumb drives. Those digital files contained two major folders, one containing PDF's of many important published papers on the family, and the other with working folders on each subfamily with PDF's of pages from SCAMIT handouts and the local syllid literature pertaining to all the species in the current SCAMIT species list. Ron explained that there is ongoing revisionary work in the family and that he expects several changes to the species list next year.

Ron presented a PowerPoint overview of the family discussing the important character states and the subfamilies. What is a syllid? All syllids have a proventriculus. The Autolytinae are without ventral cirri. In Eusyllinae the dorsal cirri are not beaded and the proboscis is armed with a single tooth or trepan. Exogoninae is composed of smaller individuals and palps are fused in most. The Syllinae have beaded antennae, peristomial cirri, and tentacular cirri. The Anoplosyllinae, a newly erected subfamily containing *Syllides* and *Streptosyllis* locally, have a proboscis that is unarmed, curved dorsal simple setae, and dorsal cirri beaded or irregular.

Ron reviewed each subfamily commenting on all species, showing the PDF files with original descriptions or voucher sheets for provisionals. By afternoon's end, the group was thoroughly syllidized and requested that Ron follow up this literature review with a hands-on review of specimens ID'd from Bight'08. Ron agreed and an additional meeting will be scheduled for next spring.



**8 DECEMBER 2011, LEUCOTHOIDAE, NHMLAC**

Attendance: Ron Velarde, CSD; Chase McDonald, LACSD; Adam Wall, NHMLAC; Phyllis Sun, NHMLAC; Larry Lovell, LACSD; Katie Beauchamp, CSD; Doug Diener, Independent; Don Cadien, LACSD; Carol Paquette, MBC; James Thomas, NOVA

Jim Thomas presented his talk from the Aberdeen, Scotland Census of Marine Life meeting earlier this year. He then outlined the situation with the amphipod family Leucothoidae on the West Coast. Several species are reported to occur here, including *Leucothoe alata*, originally described from material collected in Newport Bay (J. L. Barnard in Barnard & Reish 1959). Earlier records also suggested *Leucothoe spinicarpa* occurred here, but following recent reinvestigations of this supposedly nearly “cosmopolitan” species by Jim, these records have fallen into question. Two other related species were also described from Newport Bay, *Leucothoides pacifica* and *Anamixis linsleyi*. These two are now recognized as the two sexes of one species, and should be reported as *Anamixis pacifica*.

In collections made in San Diego Bay in the spring of this year Jim Thomas had seen another unfamiliar color morph of *Leucothoe*, living in masses of *Ciona intestinalis* on buoys. He photographed this, and collected several individuals. Morphological examination confirmed that these were not the same as *L. alata*, but their identity was unclear. After further investigation and dissection they proved to be *L. nagatai* Ishimaru 1985, a species known from Japan, but not previously from California.

This species has an interesting nomenclatural history. It was originally reported by Nagata from Japanese waters as *L. alata* (Nagata 1965). Ishimaru (1985) later reexamined Nagata’s material and realized it was not true *alata*. He named the species after Nagata.

Early on the day of the meeting Jim Thomas, Don Cadien, Adam Wall and Phyllis Sun all ventured out onto the cold docks in Newport Harbor in an attempt to collect topotypic material of *L. alata* for comparison with the recent *L. nagatai* material and to confirm the details of Barnard’s original description. Numerous tunicates were examined on several different public docks in the Bay, although the original type location no longer exists. While there were not as many specimens collected as in San Diego, the docks did yield a number of *Leucothoe*. Initial examination suggested that several different color morphs were present, but existence of both *L. alata* and *L. nagatai* needed confirmation under the microscope. Upon return to the Natural History Museum for the meeting, we found that Ron Velarde had brought along a number of live specimens of leucothoids taken during sampling within San Diego and Mission Bays, and also offshore. The two samplings provided a fine base for reconsideration of the local fauna. Attendees also brought a number of preserved lots collected over the last few decades from the SCB.

**General Ecology of *Leucothoe***

Species in this genus are commensal in all known cases. Usually the host is a solitary ascidian, but some species are associated with social or colonial ascidians or sponges. The amphipods sit inside the lumen of the host body (if a solitary ascidian), within the vascular system (if a sponge), or on the surface of the host (compound/social ascidians). They are usually present in pairs or in pairs with offspring. Presence of additional adults often results in agonistic encounters in which the extra non-paired individuals are driven out or killed.



Feeding is by filtering the host respiratory current with setae on the enlarged second gnathopods. No damage is done to the host, and host tissues are not consumed. The exception is with compound/social ascidians, where surface refuges are formed by pulling the host tissue over the nestling amphipod, possibly resulting in some damage to the host. Feeding individuals may remain motionless within the host for some time, but animals also actively exit and reenter the host when they so desire.

Hosts for specimens examined included *Ciona intestinalis*, *Haliclona* sp, *Aplidium californicum*, *Ascidia ceratodes*, and *Styela plicata*.

Examination of specimens from SD Bay and Newport Bay.

In the combined material we expected to find both *L. alata* and *L. nagatai* and we did. We also found representatives of two other taxa, both seemingly undescribed. The first of these was from a San Diego PLOO station offshore from Pt. Loma in about 35m of water (*L. sp* SD1). This was represented by a single individual similar to *L. spinicarpa* in general appearance, but different in detail. This may be the same species previously reported as *L. spinicarpa* locally, or only one of several species reported under that name. Specimens of *L. nagatai* were examined from the morning collections in Newport Bay, from the live San Diego Bay samples Ron contributed, and from preserved specimens from southern San Diego Bay earlier in 2011 (SPAWAR), and from Los Angeles Harbor samples taken in 1979 and 1994 (Carol Paquette).

The second species was represented by one specimen and a partial molt in living material from Mission Bay (*L. sp* LAN). This species was in between *alata* and *nagatai*, and exhibited some characters best represented by Nagata's original figure of *L. alata* from Japan. Partial descriptions follow:

*L. sp* LAN. Mission Bay material – Male

G1 head margin evenly oblique; right mandible incisor less dentate than *L. nagatai* - more dentate than *L. alata*; raker row spines a series of 14-15 robust spined setae, none flattened into a lacinia-like process.

G2 carpal lobe dentate bluntly serrate, not crenulate as in *L. nagatai*; palm oblique from insertion of dactyl with 5 strong protuberances with gaps in between followed by 4 small protuberances; basis of anterior margin has 19-20 short widely spaced setae, posterior margin lacking setae, distal margin slightly crenulate in the lower 1/3.

Maxilliped inner plate ventral margin has two very stout setal spines, proximal margin has three stout deeply imbedded setal spines on either side. Viewed at 40X.

*L. sp* SD1 – PLOO – G1 dactyl long. R. Velarde. Morphological notes on this species will be provided later

*L. nagatai* - SD Bay July 2011. D. Cadien via T. Phillips.

This species has shorter antennae than the following, and the condition of the basal article of the flagellum of the first antenna provides a useful separatory criterion for the two. In *L. nagatai* this article is much smaller than in *L. alata*, being half or less the length of the second article. There are also differences in the relative proportions of the articles of the maxilliped. The two are definitively separated, however, on the structure of the mandibular raker row. In *L. nagatai* the distal 5 spines are flattened and broad, a condition not seen in *L. alata*. There are also differences in the mandibular incisor and in the lacinia mobilis of the right mandible. These differences were found in all examined material, including material from the Introduced Species Sampling (ISS) from throughout southern California, the live material from Newport, San Diego and Mission Bays, and historic collections from San Diego and Los Angeles Harbor.



*L. alata* - Redondo Beach intertidal. In *Haliclona* sp. May 1972.

Longer Ant 1 and 2.

G1 nail of dactyl longer, carpus anterior margin is minutely crenulate along entire margin, inflated per the figure, posterior margin of propodus minutely crenulate.

G2 - mesial side without setae, mediofacial with single row of sparse seta running whole length of carpal axis, carpal lobe marginally smooth, anterior margin of the basis with 3 very short widely separated setae, anterior ventral margin with 2 setae.

Maxilliped strongly alate, inner margin of outer plate not crenulate.

We also examined specimens closely matching the description of *L. alata* from Pequegnat's Reef, southeast of the mouth of Newport Bay off Laguna Beach in 1976. These collections contained fully adult males and females, and a good growth series of *L. alata*, allowing all details of the original description to be confirmed from other material. No specimens of *L. nagatai* were present in this sample, so it is assumed that the introduction of *L. nagatai* most likely took place sometime between 1976 and 1979. Examination of other historic samples in museums should allow this to be refined or verified.

### 12 DECEMBER 2011, PARAONIDAE, NHMLAC

Attendance: Ron Velarde, CSD; Larry Lovell, LACSD; Michael Reuscher, Texas A&M – Corpus Christi; Veronica Rodriguez-Villanueva, CSD; Cheryl Brantley, LACSD; Brendan Barrett, EcoAnalysts, Inc.; Leslie Harris, NHMLAC; Mike McCarthy, OCSD; Dot Norris, CCSF/PUC; Peter Vroom, CSD; Kelvin Barwick, OCSD; Kathy Langan, CSD

President Larry Lovell opened the meeting with announcements of upcoming meetings and other SCAMIT business.

The topic for the day was Paraonidae, and Dr. Michael Reuscher from Texas A&M, Harte Research Institute, gave the morning Power Point presentation. His work was performed in the Gulf of Mexico where paraonids make up 37.5% of the total macrofauna. Polychaetes occur in high densities, up to 10,000/sq. m. Paraonids can be motile or semi-sedentary and surface or subsurface feeders. Most species have separate sexes.

Michael described characteristics of the largest genera, *Aricidea*. Some species have long antennae; branchiae start on setiger 4; the first 2 segments have small notopodial lobes; some species have well developed neuropodial lobes; the notopodial lobes are usually well developed, except in the first 2 segments.

The differences in the modified setae in the post-branchial ventral fascicle were explained for the subgenera of *Aricidea*. In *Allia*, there are stout modified neurosetae and some species have spines. In *Aricidea*, some species have pseudocompound setae and some have a subterminal spine. In *Acmira*, there is a regular transition between the capillary setae and the spines. The spines can have hoods or different ornamentation. There are no modified setae in the subgenus *Aedicira*. A discussion ensued about the transition setae, variation within some species of *Aricidea*, and how wear and tear can affect the morphology of modified setae making species identifications difficult. Michael expressed an interest in using Scanning Electron Microscopy to aid in resolving some of these issues. There are problems with light microscopy regarding angle of view of the setae, e.g. bidentate versus 2 teeth.



The next two genera discussed were *Cirrophorus* and *Paradoneis*; species of both genera possess lyrate “harp-shaped” setae. They often start around setiger 3 or 4 and extend posteriorly. An inferior posterior view is the best for viewing the lyrate setae. There is no terminal sensory organ present on the prostomium. One difference between these genera is that *Cirrophorus* has a median antenna and *Paradoneis* has no antenna.

*Levinsenia* was the next genus addressed. Species have a terminal sensory organ at the tip of the prostomium which is sometimes withdrawn so the edge looks uneven. There are saber-type modified setae which can be fringed. SEM images reveal fibers splaying from the blade to create a fringed appearance. There are a variable number of pre-branchial setigers, but always more than three.

Characters of *Paraoides* include a terminal sensory organ on the prostomium, limited pairs of branchiae, and posterior segments with long notopodial lobes. There is some disagreement as to the presence of modified setae in the post-branchial neuropodial fascicles. The capillary setae become long, thin, and brittle. Some taxonomists consider these “modified”; others do not. There are only two species in the genus *Paraonis*. Branchiae start on setiger 6. Michael showed us images of the very unusual modified setae where the spines have thinner spines extending from the terminus, similar to an *Arista*.

There is one species of *Sabidius*, and the prostomium has 3-4 lobes. It is common in the Gulf of Mexico and specimens are small. It often has an everted proboscis and acicular setae.

To summarize, Michael listed the useful characters for generic diagnoses: 1) presence of an apical sensory organ, 2) presence of a median antenna, 3) development of notopodial lobes (distinguishes *Aricidea*), 4) presence of modified notosetae, and 5) presence and type of modified neurosetae.

The rest of the day was spent examining and discussing specimens of Paraonidae which attendees brought to the meeting.

Dr. Reuscher’s informative and entertaining PowerPoint presentation can be found (as a pdf document) on the SCAMIT website in the Taxonomic Tools section.

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### SCAMIT OFFICERS

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

President	Larry Lovell (310)830-2400X5613	<a href="mailto:llovell@lacsd.org">llovell@lacsd.org</a>
Vice-President	Leslie Harris (213)763-3234	<a href="mailto:lharris@nhm.org">lharris@nhm.org</a>
Secretary	Megan Lilly (619)758-2336	<a href="mailto:mlilly@sandiego.gov">mlilly@sandiego.gov</a>
Treasurer	Cheryl Brantley (310)830-2400x5605	<a href="mailto:cbrantley@lacsd.org">cbrantley@lacsd.org</a>

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