Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

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SCAMIT Newsletter

Vol. 19, No. 12

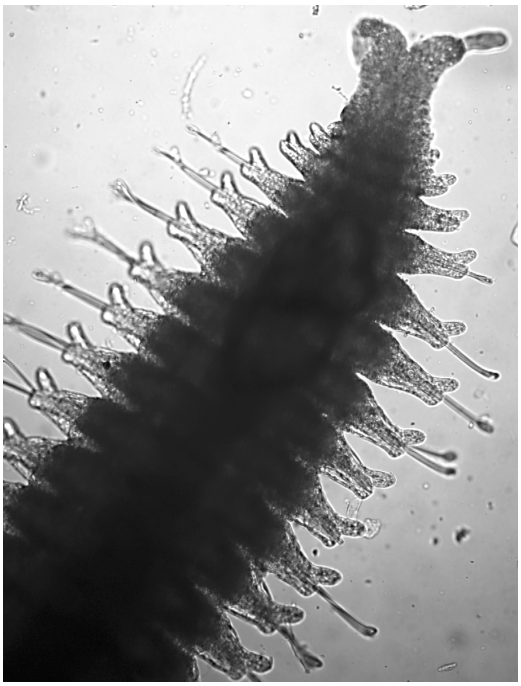
SUBJECT: No meeting in July; see below

GUEST SPEAKER:

DATE:

TIME:

LOCATION:



Lumbrineris nr *limicola* Hartman 1944
(posterior of animal with pygidium)

Next Meeting: No meeting will be held in July. The August meeting is not yet finalized. Details will be announed in the May NL. Those whom this leaves with time on their hands can do a final sweep of their data for changes, or comments, additions to and eliminations from the SCAMIT species list. Send any modifications to Don Cadien at **dcadien@lacsd.org**, call them in at 310-830-2400x5502, or mail them to Don Cadien, Marine Biology Lab - JWPCP, 24501 S. Figueroa St., Carson, CA., 90745.

ED. 4

Where is it? What in Hades is taking so long?!!! When will I have a copy to work with? All very good questions. Edition 4 of the SCAMIT listing of benthic invertebrates is still homing in on completion. It has been delayed by a number of factors, not the least of which was the desire to incorporate all changes resulting from the Taxonomic Atlas series published by the Santa Barbara Museum of

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Natural History. The discussions resulting from the last polychaete, and last series volume (Volume 7), are being held on 11 June as the topic of that month's SCAMIT meeting. This is the last input hurdle to be crossed. Once the conclusions (reached at the June meeting) regarding SCAMIT usage are available, Ed. 4 can be finalized. A number of members have contributed information concerning changes to Ed. 3, and all deserve our thanks. Any other comments are still welcome and actively solicited. Dale Calder, for instance, recently visited the Santa Barbara Museum and while there provided updates to the nomenclature used in the Atlas Cnidaria volume. These were forwarded by Eric Hochberg, and will be incorporated into Ed. 4. Production will take some weeks, but availability of the new edition is expected in August. Thanks for the patience you have already exhibited, and (in advance) for its continuation. Please avail yourself, within the next few weeks, of the opportunity to finalize and submit all changes which should be included in this new edition .

NEW LITERATURE

Earlier newsletters have introduced several papers dealing with the utility of nematocysts in cnidarian classification. Östman (2000) revisits this territory and provides an update to the nomenclature of nematocysts. A collection of images gleaned from both light microscopes and scanning electron microscopes are used to illustrate the types of nematocysts and the terms which describe them. Although few SCAMIT members routinely investigate the cnidom of cnidarians they seek to identify, it remains a useful (sometimes necessary) addition to other morphological characters.

In a paper dealing with several mysid species Fukuoka and Murano (2001) place *Acanthomysis brunnea* in the synonymy of *Columbiaemysis ignota*. Since *A. brunnea* was fairly recently described by Murano & Chess we can be sure this synonymy was not suggested lightly.

Living in Southern California we can anticipate, if not predict, the onset of another ENSO event in the near future. Having witnessed the influx of southern forms associated with the last strong ENSO event, we can also anticipate and prepare for a similar effect next time. The most obvious method of doing so is to become more familiar with the southern fauna. The isopod fauna of the adjacent tropical eastern Pacific region is summarized by Espinosa-Pérez & Hendrickx (2001). They document the southern range limits of species whose distribution is predominantly temperate, as well as providing a comprehensive listing of the taxa found in (usually) southern warm waters. Although some historic records are viewed as incorrect (and corrections provided for these erroneous accounts) 124 isopod species were viewed as occurring within the coverage area. The comprehensive bibliography also alerts us to numerous sources in the Mexican literature of which we may not have been familiar.

Aspects of the ecology of several local decapod species are examined by Dugan et al (2000). Three burrowing hippid crabs are compared with respect to their ability to burrow, and their behavior in response to intertidal water motion. The authors found that while burrowing speed in the sand crab *Emerita analoga* was not significantly affected by sediment type, that of the mole crab *Lepidopa californica* and the spiny mole crab *Blepharipoda occidentalis* was (it was reduced in coarse sediments). Their consequent habitat restriction to fine sands seems to support the "swash exclusion hypothesis" and limits the latter two species almost entirely to subtidal occurrence.

The relative value of "hard" (read shell and radula) vs. "soft" (read anatomy of tissues and organs) characters in both mollusk phenetic and phylogenetic analyses has long been a source of debate. As with any group possessing hard parts and, in consequence, a lengthy fossil record, there are always proponents of the idea that only hard structures

can be used if data from extinct taxa is to be included. Such direct evidence of the path of evolution within the group is highly valued. Others contend that local forces act primarily on the shell, and that shell features of taxa from different lineages tend to converge within habitat. This faction would minimize or eliminate hard part evidence, despite the sacrifice of most of the fossil record, to avoid homoplasy noise introduced by convergent shell structure. A number of authors have straddled this ideological fence and used data from all available sources. Schander and Sundberg (2001) weigh in with a new analysis examining a series of such studies using both hard and soft characters. Within each study the consistency and retention indices were calculated and compared for the two types of characters. They found no statistical evidence that homoplasy was greater in the shell than in the tissue characters used. They did point out that obviously homoplastic shell characters may have been rejected by the authors before analysis was undertaken. If we assume the 28 studies examined are fairly typical, there does not appear to be a sufficient rationale, on the basis of homoplasy, to ignore shell characters in the phyletic analysis of mollusks.

Rouse (2000) revisits evidence from larval feeding and its effect on phyletic analyses of metazoan relationships. His reconsideration points not to plesiomorphy of down-stream larval feeding, but rather repeated origination and loss. He concludes that it is more defensible to hypothesize lecithotrophy as the plesiomorphic larval nutritive mode in the Spiralia. Read the paper and see if you concur.

Research on the small and widely distributed ophiuroid *Amphipholis squamata* has been intensive in recent years. Deheyn has published many reports discussing bioluminescence and variations in color and color pattern within and between distant populations of the species (see meeting minutes concerning his presentation). Dupont et al (2000) test the link between genetic and morphological and physiological variations observed over the species' range. They found homogenous gene structure within each variant color pattern within each population, and variations between the same variant in distant populations. Resolution of this taxon into a complex of closely related species remains a possibility under investigation.

Multivariate analyses typically exclude that portion of the fauna which occurs only infrequently and/or at very low density. While the basis of this is generally that such small signals cannot be distinguished statistically from background noise, the unfortunate result is exclusion of virtually all rare species from analysis. This is repugnant not only on the philosophical basis of viewing the most inclusive analysis as best representing the community, but also because rare species have unique characteristics. While rarity is not a simple issue, it is often assumed that most rare species either require specialized habitats of limited availability (are stenotopic) or are less able to survive in suboptimal environments, such as those impacted by man (are sensitive). Their elimination skews perceptions of the community by only considering eurytopic species tolerant of perturbed and suboptimal habitats. This renders determinations of similarity between sites adjacent to and distant from anthropogenic inputs suspect, or at least less persuasive. There is evidence that when rarity results not from any character of the taxon concerned, but from competitive exclusion by other species, most rare species populations increase in response to disturbance of the competitive balance (Hawkins et al 2000).

Cao et al (2001) review the rare species situation in multivariate analyses conducted with newer analytic tools and procedures. They suggest that the theoretical justification for ignoring rare species is weak, and that adjustments to sample size and analytical procedure can facilitate their inclusion in

analysis. Although viewed from a freshwater perspective, the authors' comments should be considered by those using multivariate methods on marine benthic community data.

MINUTES OF APRIL 9 MEETING

The meeting was held at the Scripps Insititution of Oceanography. President Ron Velarde opened the business portion of the meeting. The Coastal Zone 2001 conference will be held in Cleveland, Ohio on July 15 through 19, 2001.

In San Diego, the newly formed position of Assistant Deputy Director of the Metropolitan Wastewater Department was filled by Lori Vereker.

Jobs available with the Coastal Commission are currently being advertised. Information on these positions is available on the Commission's web site,

www.coastal.ca.gov.

The guest speaker for the day was Larry Lovell. His presentation was on the polychaete family Lumbrineridae from the Bight'98 project. Larry was responsible for identifying all of the Lumbrinerids for that project. He provided the attendees with handouts of species lists and keys so we could follow along during his talk. The presentation began with an overview of the Bight'98 project.

Bight'98 sampled 343 benthic sites. 157,785 total individuals were collected and identified as 1429 taxa, of which 1071 were at species level. Lumbrineridae was the 4th most numerous polychaete family in the samples. There were 28,036 members of the family Spionidae; 9,635 Sabellidae; 9,242 Capitellidae; and 6,502 Lumbrineridae. The large numbers of individuals in these 4 families resulted from the numerous sample sites in bays and estuaries, prime habitats for these groups. Larry was asked to identify all the lumbrinerids in order to increase the accuracy and consistency of the data. Our previous experience with the 1994 Bight Pilot Project lumbrinerid identifications showed that in many cases we had to regress from species level to generic level due to identification inconsistencies between labs.

Larry presented a chart showing the species names, sum of abundances, and number of occurrences for each of the species. No specimens of *Lumbrineris index* were recorded for the Bight'98 project. He commented on a few changes, noting that *Lumbrineris erecta* should be moved to *Eranno*. In his identifications, Larry distinguished between *Scoletoma* sp A of Harris, *S.* sp B of Harris, *S.* sp C of Harris, and *Scoletoma tetraura* Cmplx. This resulted in a lower number of unidentified specimens being at the family level. Larry also corrected an error in the SCAMIT Species List, Ed. 3: on page 68, number 3358, change the author date for *Eranno bicirrata* (Treadwell 1922) to (Treadwell 1929).

"How much of an animal do you need to identify it to species?" Larry was asked. He replied about 20 segments were needed to identify animals to species level. Larry explained how field sampling methods and subsequent sample handling are very important factors in limiting fragmentation of lumbrinerids as well as other polychaetes. Field sampling methods are critical because they are the first step in sample handling . The samples should be screened gently and a relaxant should be used before the samples are fixed. The sorting process should be performed as gently as possible. At most labs, biomassing of the sample is the next and final step before the taxonomists receive the samples. Care must be taken during this process also. These are the main areas where fragmentation can happen. We concurred that the most damage probably happens during field sampling procedures. Varying sediments also play a part in fragmentation and can increase the difficulty of screening and sorting animals. This led to a discussion about the screening

procedures that are used by different labs, noting that some labs use float tables to sluice sediment onto a screen and others use a hose to wash sediment directly to a screen .

The question was asked, “at what size are lumbrinerids considered juvenile?” Larry defines a juvenile lumbrinerid as an individual 1mm in width and 10mm in length or smaller. But that may not be true for all species. Juvenile tends to be used as a catch-all term by Larry for specimens too small to speciate.

Larry’s keys to the genera and keys to the species were handed out. The definitions of black and yellow acicula were reviewed and we noted that there may be more than one acicula per parapodium in some specimens. *Lumbrineris* was the first genus to be discussed. We were referred to the images of *L. latreilli* and *L. limicola* in the MMS Atlas for comparisons of parapodial lobes in the anterior and posterior regions. At the bottom of the handout there were images of an unusual worm which Larry referred to as *Lumbrineris* nr *limicola*. These were smaller worms which Larry at first had called *L. latreilli* because the posterior postsetal lobes were short and rounded. His later re-examination revealed that while the post-setal lobes in the posterior region were short as in *L. latreilli*, the anterior segments had both pre- and post-setal lobes with the post-setal lobe being longer.

We reviewed the *Errano* key and Larry noted that specimens of *Eranno* tend to have a swollen buccal area. He reminded us of the inclusion of the new combination, *Eranno erecta*. The comment was made that *E. erecta* can also be orange-brown colored in the anterior, like *Scoletoma* sp C of Harris.

The *Scoletoma* key was next. There was a question about *Scoletoma minima* (Hartman 1944), as there was some confusion about its similarity to *S.* sp C Harris. This was probably due to a statement in Hartman (1944) that the simple hooks begin on setiger 13 on the type but that another specimen had hooks beginning on setiger 1. In the Atlas (1968) she only mentioned setiger 13. Leslie has examined all of the original material cited in Hartman 1944. The hooks actually start on setiger 10 on the type, and on setiger 9 on one other animal. The type lacks its posteriormost segments, however the postsetal lobes are longer than the presetal lobes at the end of the specimen. This is contrary to the statements in Hartman (1944 & 1968) that the presetal lobes are longer. The longer lobe in figure 308 in Hartman 1944 (and figure 4 in Hartman 1968) is actually the postsetal lobe.

We then welcomed Dr. Dimitri D. Deheyn from UCSD-Scripps Institution of Oceanography. He gave a presentation on “Shedding light on the subject of pollution: could bioluminescence of brittlestars be used in ecotoxicological research?”.

He started the talk by defining some of the terminology he would be using including pollution, ecotoxicology, biosensors, bioassays, sentinel organisms, biocenosis, biodiversity, bioconcentration, and bioavailability. There are different tools used to access and measure toxicity. An example of a test that is used is the Microtox® test. This test uses bioluminescent bacteria as the test organism and measures the decrease in bioluminescence with increased toxicity. The results of this test from single cell organisms tell us about toxicity and bioavailability but not accumulation and resulting bioconcentration.

The question was asked, can you take bacterial toxicity values and extrapolate them to metazoans? Metazoans can tell you about bioavailability and bioconcentration but not toxicity.

Dimitri gave examples of bioluminescence in several different phylogenetic groups. Bioluminescence is the production of visible light by living organisms. It is a physiological character sensitive to environment quality and is under nervous control in metazoans. Dimitri believes that it could be used as indicator of

toxicity, as used from the luminous bacteria. In the echinodermata there are examples of bioluminescent species in the Ophiuroidea, Crinoidea, Holothuroidea, and Asteroidea.

There are about 2000 species of ophiuroids and 35 have been found to bioluminesce, however, not all species have been tested. Ophiuroids make good test organisms as many live in the sediment, which is the end reservoir of pollutants and they are easy to maintain in an aquarium.

Dimitri discussed the possibility of using the bioluminescent ophiuroid *Ophiopsila californica* as a sentinel organism as they are abundant and easy to collect. In addition, they are widespread and found in the deep sea which is starting to be explored more frequently. The questions he was interested in were: 1) can they bioaccumulate pollutants?, 2) what is their tolerance to pollutants?, and 3) is their bioluminescence affected by contamination with heavy metals?

In one experiment, Dimitri exposed *Ophiothrix spiculata* and sediment to different concentrations of cadmium. The results showed a correlation between accumulation and contamination which was expected. The accumulation was about 10 times greater in brittlestars than in the sediment. He concluded that metals accumulated in brittlestars reflect bioavailable metal in the environment and indicate biomagnification of metal concentration.

Dimitri described the kinetics of metal bioaccumuation in an experiment where the animals were exposed to metal contamination for 40 days. He found that accumulation started after one day of exposure and was dose-dependent. After the contamination phase the animals were put back into normal sea water and decontamination followed for 30 days. It appeared that cadmium was slowly elimated by brittlestars into the water, not back into the sediments.

The next experiment Dimitri performed was in Portman, Spain. The area was a mining site that was highly contaminated with a gradient of heavy metals (Cd, Cu, Fe, Pb, Zn).

He collected *Amphipholis squamata* (a luminous brittlestar) from 3 different stations. The sediment contamination increased from station 0 to station 1 to station 2. He measured the bioluminescence and found that it was less intense and slower at the more contaminated sites.

In another experiment, Dimitri transplanted individuals from the least contaminated site (station 0) to the most contaminated site (station 2). After 3 days there was a decrease in bioluminescence intensity and an increase of bioluminescence kinetics (slower to flash). Although there were no statistically significant results, it was concluded that brittlestar bioluminescence seems to be sensitive to heavy metal contamination.

Dimitri has also investigated the effects of various metals on the bioluminescence of photocytes isolated from *Ophiopsila californica*. It was discovered that Ag, Cd, Cu, Hg had negative effects on light production, while Al, Cr, Fe, Mn, Pb, U, and Zn had no significant effect.

Aside from being interesting from a toxicological perspective, bioluminescence can also serve in escaping predators. Dimitri showed a movie of a crab attacking a specimen of *Ophiopsila califonica*. As the attack began the ophiuroid writhed and luminesced. The crab pulled an arm off the ophiuroid and while it manipulated the detached, bioluminescent arm, the rest of the ophiuroid escaped.

The conclusions of Dimitri's presentation were:1) brittlestars accumulate efficiently and can tolerate high concentrations in their tissues, 2) bioluminescence in luminous brittlestars is affected in a dose-dependent manner by certain

heavy metals, and 3) bioluminescence of luminous brittlestars could be used as luminous bacteria bioassays to assess physiological and overall toxicity of a pollutant in metazoans.

After eating lunch at the SIO snack bar and enjoying a spectacular view, we had another guest speaker. Sergio Salazar-Vallejo presented "Polychaetes from the Mexican Caribbean and beyond...?" This was a brief chronology of the main actions in the Program on Caribbean Polychaetes that Sergio lead in Ecosur-Chetumal. His handout is included as an attachment to this newsletter. Vice-President Leslie Harris commented that she hopes all of Sergio's students will give presentations of their work at future SCAMIT meetings.

We returned to lumbrinerids and viewed some specimens that Larry brought. Larry put the specimens under the microscope and Kelvin Barwick of the City of San Diego Lab digitized the images and projected them on a screen by interfacing with a slide projector. Kelvin also saved the images in a file for Larry's later use in producing voucher sheets.

The first specimens we examined were of the *Scoletoma tetraura* complex. According to Leslie Harris, there are at least three different local forms which will key out to this species. None of these can be attributed to *S. tetraura sensu stricto* until an accurate redescription of type or topotype material is published. Large, robust (up to 7 mm width) specimens with broadly conical prostomiums are found in shallow waters (embayments and intertidal to shallow subtidal); these are close to *S. tetraura sensu lato* (as in Hartman 1969). Specimens from deeper soft-bottom habitats are long, thin animals (up to 2.5 mm wide) with narrower, pointed prostomiums, and fall into two groups: the ones with posterior postsetal lobes 1-2 times longer than the parapodial lobes when fully extended also belong to *S. tetraura sensu lato*, while those with posterior postsetal lobes 2-4 times longer than the parapodial lobes when fully extended belong to *S. luti* (Berkeley & Berkeley 1945) (this name combination has not yet been published). Differences in jaw structure exist as well. Dot Norris commented that the specimens of what they call *Lumbrineris luti* from San Francisco look very similar to the southern California deep water specimen of *S. tetraura* complex . It was noted that *S. luti* has simple setae from the first setiger like *S*. sp C of Harris, but only the postsetal lobes are prolonged in the posterior whereas both pre- and post-setal lobes are prolonged in *S*. sp. C of Harris. We reviewed the *Scoletoma tetraura* description in the MMS Atlas and noted that no southern California material was examined by Hilbig. Hilbig's figures of setae and parapodia were copied from illustrations of specimens from Argentina and Uruguay (Orensanz 1973), and the setae in Figure 11.13. (page 310) did not resemble the setae on the Bight'98 specimen that we examined. Without examining Hilbig's MMS specimens we cannot know if they match any of our local species.

Next up on the microscope were *Scoletoma* sp A and *Scoletoma* sp B. They were both long, thin animals. Larry noted that it is sometimes difficult to get enough setigers for an identification. We first viewed a specimen of *S*. sp A from Bight'98 and examined setigers 9 and 10. The simple hooks can start from setiger 4-9; the average is 6-8. We then viewed the posterior of the specimen; it had prolonged postsetal lobes. Upon examining a median parapodium, we saw that the postsetal lobe was not as long, measuring about 1/2 the length of the posterior lobes and there was no presetal lobe. We then viewed a close-up of a hooded hook (from a median setiger) to compare to the hooded hook of *S. tetraura*.

We then examined *Scoletoma* sp B. A small palpode on the tip of the prostomium was discovered. Hooks were from setigers 4-9 with the average 6-8. We examined a simple hooded hook on setiger 7. A seta from the median posterior section of the worm had a

main fang with multiple teeth above. We viewed a parapodia from a median segment and noted that the postsetal lobe was somewhat prolonged, and the presetal lobe was just beginning to protrude. Further back the specimen had slightly more prolonged pre and postsetal lobes. A far posterior parapod had well developed prolonged pre and postsetal lobes.

We went back and viewed the prostomium of *Scoletoma* sp A; like *Scoletoma* sp B it also had a nipple-shaped palpode on the tip of the prostomium. We viewed a median posterior seta and noted the insertion points of the hood.

A specimen of *Scoletoma* sp C was examined next. The anterior and median areas of the worm were orangish in color. We viewed the posterior end, and there were prolonged pre and postsetal lobes. Hooded hooks started on setiger 1. *S.* sp C is usually collected in harbors and bays (SD Bay and Mission Bay). Next, we viewed a median parapodia; the lobes were just beginning to develop and the hooded hook had a main fang and multiple teeth. There was no obvious palpode on the prostomium of this animal.

We then examined a specimen of *Lumbrineris latreilli*. In the median segments, the postsetal lobes were only slightly developed. In the posterior segments, the postsetal lobes were rounded with blunt tips.

The next specimen we viewed was *Lumbrineris limicola*. In the medial segments, the postsetal lobes were somewhat tapered. In the medial posterior segments, the postsetal lobes were long, tapered, and digitate.

We then viewed a specimen of *Lumbrineris* nr *limicola* that was approximaely 15 mm in length and 1/2 mm wide. In the posterior end, the postsetal lobes were slightly prolonged and rounded. In the median segments, the postsetal lobe was longer and had a digitate presetal lobe. This specimen had yellow acicula. The presetal lobes were apparent in the middle section of the animal, but they disappeared by the posterior end. This pattern was opposite of most lumbrinerids. We concluded that Larry should make this a provisional species.

We examined the methyl green stain pattern of *Lumbrinerides platypygos*. There were unstaining "stripes" on the prostomium with two being dorsal and two being ventral.

The last animal we viewed was *Eranno erecta*. The simple hooks started on the first setiger. The maxillary apparatus fit the description for *Eranno.*

[The meeting handouts which Larry distributed, as modified by the discussions which took place at the meeting, are appended to this Newsletter.]

NEW JOURNAL

The following announcement was recently made on the internet. The subject is of considerable interest to SCAMIT members and other taxonomists.

A new journal named "ZOOTAXA" is being launched for rapid publication of taxonomic papers. Zootaxa is a forum for zootaxonomists to help each other in publishing their work. It is a fast and free outlet for publications on any aspect of animal taxonomy, including taxonomic monographs, systematic catalogues, checklists, bibliographies, identification guides, analysis of phylogenetic relationships and zoogeographical patterns of distribution, descriptions of taxa, etc. Unlike other journals, there is no restriction on the length of manuscripts. There is also no page charge. Zootaxa aims to publish each paper within one month after the acceptance. More info at:

www.mapress.com/zootaxa/

You are welcome to submit your mss to Zootaxa. For the first few papers, we will make them free online for everyone and publication can happen within a few weeks if it is suitable after review.

Thank you for your attention.
Z.-Q. Zhang
Editor, Zootaxa
www.mapress.com/zootaxa/

B'98 UPDATE

The analytic phase in handling of data generated during the Bight '98 program has begun. There are still a few residual data problems, but even so, analyses have started. Both Trawl and Benthic committees have been meeting for several months to address the data. In the benthic program the data collected by colleagues in Mexico has been completely analyzed, and is now being included with other sampled areas throughout the Bight in multivariate analyses. This represents a welcome first in handling of the regional biology, and should yield better understanding of the contiguous geographic communities as a whole. Initial classification analyses seem to cluster samples from similar habitats in the expected manner, with few surprises. Since the spectrum of environments investigated in B'98 was significantly broader than that in SCBPP, the analyses are particularly informative at showing the faunal relationships between these habitats.

Trawl data has also been examined via classification analysis, and the initial runs seem to provide station clusters based on habitat within depth. Depth was still the variable which seemed to provide the overarching structure of the dataset. Within depth, habitat variables seemed to account for most of the variability and sediment variables, a smaller proportion. About 30 different subpopulations are being investigated within the dataset. The trawl data is also being analyzed cladistically. Cladistic analysis of the environmental data was briefly considered during the SCBPP, but too late in the process to be pursued at that time. We are attempting it again (with thanks and considerable indebtedness to Greg Deets of CLAEMD for running the analyses) in parallel to the classification analysis. So far the results are generally similar, differing only in particulars. Since most members of the committee have either limited or no experience in this application of cladistics, Greg has made several tutorial presentations to help us interpret the results.

CARLTON COMMENTS

Dr. Jim Carlton is a newsletter reader who provides feedback on what he reads, much to the delight of the editor and the edification of other readers. His recent comments on the December NL are reproduced below.

"The December '00 SCAMIT newsletter (19(8)) was on my desk upon my return from a March trip to Washington, Oregon, and California. Two quick items:

(1): Re: unidentified Pt. Loma mottled green amphipods under the limpet *Lottia*:
There's a nice paper by Johnson (1968):
Samuel E. Johnson II. 1968. Occurrence and behavior of *Hyale grandicornis*, a gammarid amphipod commensal in the genus *Acmaea*. Veliger, volume 11, Supplement (The Biology of *Acmaea*), pp. 56-60.
"[at Pacific Grove] mottled grey-green amphipods were frequently encountered under the shell of [the limpets] *digitalis*, *limatula*, *pelta*, *scabra*, *scutum*, and *gigantea*.... Dr. J. Laurens Barnard... has identified the amphipods as immature specimens of *Hyale grandicornis* (Krøyer, 1845)". (There's a figure, and the paper goes on at length about the amphipod) [that name may have changed in the past 30+ years, of course [it hasn't - ed.]]

(2) Re: the cosmo sandy beach worm *Hesionides arenaria arenaria*: "This tiny worm proves to be a valid taxon with a very broad distribution. How this was established and maintained remains to be demonstrated, although anthropogenic influence in distribution of a sandy beach interstitial polychaete seems unlikely".

I have not seen the paper by Schmidt & Westheide (1999), so I don't know what they say about global dispersal mechanisms, but it's important to note that marine beach sand was used as ships' ballast for hundreds of years. It may have been a very effective transport vector."

Thanks to Jim for his continued feedback, and for the suggestions he forwarded. I, for one, had not considered beach sand as a ballasting agent. His comment on its earlier use is thought provoking.

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Polychaetes from the Mexican Caribbean and beyond...?

Sergio I. Salazar-Vallejo
9 April 2001
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This is a brief chronology to indicate the main actions in our Program on Caribbean Polychaetes that I lead in Ecosur-Chetumal. It will show how we have been increasing our regional focus from the Mexican Caribbean coasts, to the Grand Caribbean Sea, and then to the world, since this is perhaps the best way to address taxonomical problems.

1986. John Markham had a sabbatical year in CIQRO which was by then in Puerto Morelos, a small town some 30 km south from Cancun. He and Eduardo Donath started the Reference Collection and their sampling concentrated mainly on bopyrid isopods and cumaceans but they brought many invertebrates.

1988. Hurricane Gilbert crossed the Yucatan Peninsula and its eye moved over Puerto Morelos. The library, labs and research houses were completely destroyed and CIQRO was partly moved to Cancun.

1989. After a strike was finished upon the promises of the State Governor, the local authorities came and took up everything they found and brought everything to Chetumal. This was the second hurricane affecting the collections. Once in Chetumal, because most researchers had been fired, I was hired and asked to do Taxonomy but because of the heavy pressure on coastal environments, I decided to insist on coastal zone management because I thought the decision makers were needing some ecological advice. After several years talking to the walls, and realizing that what decision makers need is a different approach, my wife and I decided to finish this kind of activity.

1993. My wife and I co-edited a synthesis on marine and coastal biodiversity of Mexico; then I could return to taxonomy.

1994. In their second call for research projects by Conabio, we got funding to prepare a monograph on the Mexican Caribbean polychaetes. Our original timing was 3 years and the objectives included making a sort of Hartman's California Polychaetes set and increasing our Reference Collection. Conabio asked to cut the budget and timing by half and asked us to prepare a Data Bank on every single specimen in our collection. I did not pay attention to the fact that only the data bank would be enough but failed to remove our original objectives, so it is easy to anticipate some troubles.

1995. CIQRO was closed by a State Goverment decree; the key issue was to steal the coastal lands that it had and have the chance to sell them. Ecosur took charge of the building and hired most of the researchers. In the meantime, the Conabio 1.5 year period had finished and we had provided a couple of data banks but they were not 100% complete, they were 95% complete and, of course, the monograph was not finished. Our arguments were that we had noted that there were many taxonomical problems and that using Scandivanian names would be worse, so we did not want to increase the problems. During this time, I prepared the checklist and bibliography on polychaetes from the Grand Caribbean Sea. Conabio rejected our arguments and I got a red dot over my file and since then we have been unable to have any further funding. During that time, however, Soledad Jiménez and I could prepare the notes on Phyllodocidae, Nereididae, Amphinomidae (+ Euphrosinidae), Maldanidae, and Luis F. Carrera arrived and we prepared three notes on Eunicidae.

1997. Conacyt gave us funding for a research project on coastal benthos from southern Quintana Roo. Our objectives were to study the landscape variations and the benthic community structure in two spots that would have a different level of tourism development.

1998. Rolando Bastida came to Ecosur graduate program for his Master degree and he started studying the serpulids from the Grand Caribbean Sea.

1999. Luis enters the Master program and starts studying the lumberinerids. Rolando finishes his Master studies and his proposal for his doctoral degree is to review *Hydroides* from all over the world. I spent two months in Paris to sort out the Musorstom Expeditions polychaete materials and prepare a listing of its lots. Jennifer Ruiz finishes her Biologist thesis on Exogoninae.

2000. Conacyt provides us with additional funding for a project only on taxonomy of polychaetes; this would allow us to send the students to several museums and to bring some experts to work with some of us. Rolando and Patricia Salazar (who is working on Polynoidae), enter the doctoral program in Ecosur. Luis finishes his master degree and his proposal for his doctoral degree is to review *Lumbrineris* from all over the world. Patricia, Rolando, Luis and I spent one month in Miami to sort out the polychaete materials from the University of Miami Deep Sea Expeditions and prepared a list of its lots. Jennifer enters the Master program; she starts studying the Syllinae and Eusyllinae from the Grand Caribbean Sea.

2001. Victor Delgado, who is working on Spionidae, and Luis enter the doctoral program in Ecosur. Mario Londoño, a Colombian student who is working on Terebellidae, enters the Master program. We had the Taxonomy and Evolution of Polychaetes workshops with several experts on different groups: Lobo Orensanz, Kirk Fitzhugh, Fredrik Pleijel, Leslie Harris, Kristian Fauchald and Harry ten Hove.

Without my devaluation in Mexico, Conacyt funding will allow some visits in the near future. Hope we can have then this same success.

Current research topics in Chetumal

Jennifer Ruiz is studying the Syllinae and Eusylinae from the Grand Caribbean Sea. She has a manuscript with Leslie Harris on a new species. She is expected to spend one month in Madrid to work with Guillermo San Martín.

Patricia Salazar is studying the Polynoidae from the Grand Caribbean Sea. She has found an undescribed species confused with *Hermenia verruculosa* and a new genus and species from a bathypelagic harmothoin. She will spend two months in Washington to understand the phylogeny of these worms and will work with Kristian Fauchald.

Luis E. Gonález is just going to have his Biologist degree. He analysed the taxonomy and ecology of *Neries oligohalina* and we are describing a new species, and *Laeoneries culveri* over which he is preparing a paper with Paulo de Paiva.

Luis F. Carrera will review the *Lumbrineris* of the world; he has already restated *Cenogenus* Chamberlin which includes *Paraninoe* Levenstein, reviewed *Ninoe* with Lobo Orensanz, and made a revisionary note on *Hartmaniella tulearensis*. He must spend some time in either Paris or London later on this year or early in 2002.

Mario Londoño worked on mangrove root polychaetes and is now studying the Terebellidae. During 2001 he will have to pass the courses so he will return to the microscope in 2002.

Rolando Bastida is expected to spend one month in Sydney to finish his revision. He is almost finished with a couple of papers on *Hydroides*, one will cover species from the Western Atlantic and the other will include species from the Eastern Pacific. Both papers will be with Harry ten Hove.

Victor Delgado has finished a paper on a new species of *Minuspio* (Spionidae) with Leslie Harris; he is expected to spend some time working in Los Angeles Museum and in Pontal de Sul, to work with Vasily Radashevsky.

Sergio I. Salazar-Vallejo has a nearly complete revision of "*Synelmis albini*" of the world and is working on a paper on Eastern Pacific *Pilargis* with Leslie Harris. Other forthcoming papers will be on *Pseudoexogone* (including "*Synelmis dineti*") with Minoru Imajima, then, it would follow *Ancistrosyllis*, *Glyphohesione* and Nautillinielidae...

Because there is a limit of 4 graduate students for each researcher in Ecosur, and I already have six, it seems difficult that I would be allowed to have more students in the near future.

Thus, Luis González and María Ana Tovar, both very hard-working and bright students, would require another program to get their degrees. However, they could come back to Chetumal for their research. Luis would keep on working on nereidids and Maria Ana would be interested in working on sabellids with Kirk Fitzhugh.

Bight '98 Lumbrineridae

By Lawrence L. Lovell

Eranno bicirrata (Treadwell, 1929) (not 1922 as in Ed 3 list)
Eranno erecta (Moore, 1904) (new combination)
Eranno lagunae (Fauchald, 1970)

Lumbrinerides platypygos (Fauchald, 1970)

Lumbrineris californiensis Hartman, 1944
Lumbrineris cruzensis Hartman, 1944
Lumbrineris index Moore, 1911 *
Lumbrineris japonica (Marenzeller, 1879)
Lumbrineris latreilli (Audouin & Milne-Edwards, 1834)
Lumbrineris limicola Hartman, 1944
Lumbrineris sp. D of Lovell +

Ninoe tridentata Hilbig, 1995

Scoletoma luti (Berkeley and Berkeley, 1945) +
Scoletoma tetraura (Schmarda, 1861) +
Scoletoma sp. A of Harris
Scoletoma sp. B of Harris
Scoletoma sp. C of Harris

* This species was not reported in Bight '98 samples.
\+ These species were reported under other names in the Bight '98 project.

Key to the Bight '98 Lumbrineridae Genera

By Lawrence L. Lovell

1. Simple and composite hooks present . . . . . *Lumbrineris*

1. Simple hooks only 2

2. Simple hooks bidentate, prostomium prolonged . . *Lumbrinerides*

2. Simple hooks multidentate 3

3. Anterior parapodia with branchiae . . . . . *Ninoe*

3. Branchiae absent 4

4. M II 1/2 as long as M I, with sclerotized ligament . . . . . *Eranno*

4. M II subequal to M I, with thin ligament . . . . . *Scoletoma*

Key to the Species of *Eranno* Kinberg, 1865, emended Orensanz, 1990

By Lawrence L. Lovell

1. Acicula black . . . . . *Eranno bicirrata* (Treadwell, 1929)

1. Acicula yellow 2

2. Pre and postsetal lobes prolonged . . . . *Eranno lagunae* (Fauchald, 1970)

2. Postsetal lobes prolonged, erect . . . . *Eranno erecta* (Moore, 1904) (new combination)

Lumbrinerides Orensanz, 1973

Lumbrinerides platypygos (Fauchald, 1970)

Ninoe Kinberg, 1865

Ninoe tridentata Hilbig, 1995

Key to the Species of *Lumbrineris* Blainville, 1828

By Lawrence L. Lovell

1. Acicula black 2
1. Acicula yellow 4

2. Pre and postsetal lobes present, anterior segments with poorly developed lobes . . . .
. . . . *Lumbrineris californiensis* Hartman, 1944
2. Only postsetal lobes present, well developed in anterior segments
. . . . 3

3. Postsetal lobes short, not extending past setae . . . . .
. . . . *Lumbrineris japonica* (Marenzeller, 1879)
3. Postsetal lobes long, extending past setae . . . . . .
. . . . *Lumbrineris index* Moore, 1911

4. Pre and postsetal lobes long, presetal longer; anterior segments with poorly developed lobes . . . .
. . . . . *Lumbrineris cruzensis* Hartman, 1944
4. Postsetal lobes short, begin in anterior segments 5

5. Postsetal lobe with blunt rounded tip in median segments, presetal lobes absent . . . .
Lumbrineris latreilli (Audouin & Milne-Edwards, 1834)
5. Postsetal lobes with tapering tip, presetal lobes absent . . . .
. . . . *Lumbrineris limicola* Hartman, 1944
5. Postsetal lobes change from short in anterior and posterior segments, to prolonged in median segments; presetal lobes short in median segments . . . *Lumbrineris* sp. E of Lovell

Key to the Bight '98 *Scoletoma* Blainville, 1828, emended Frame, 1992

by Lawrence L. Lovell

1. Simple hooks begin from setiger 1 2

1. Simple hooks begin from setiger 4-9, usually 6-8 . . 4

2. Pre and postsetal lobes developed, body sometimes orangish colored . . . . . *Scoletoma* sp. C of Harris

2. Only postsetal lobe developed, especially in far posterior segments 3

3. Postsetal lobes directed obliquely upward in posterior segments, body robust, prostomium conical . . . . *Scoletoma tetraura* (Schmarda, 1861)

3. Postsetal lobes directed laterally, not upward; in posterior segments; body thin, elongate, prostomium triangular; maxillary apparatus seen through dorsum looking like eyespots . . . . . *Scoletoma luti* (Berkeley and Berkeley, 1945)

3. Posterior segments with prolonged pre and postsetal lobes . . . . . *Scoletoma* sp. B of Harris

4. Posterior segments with postsetal lobes only . . . . . *Scoletoma* sp. A of Harris

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