



## Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive  
San Pedro, California 90731

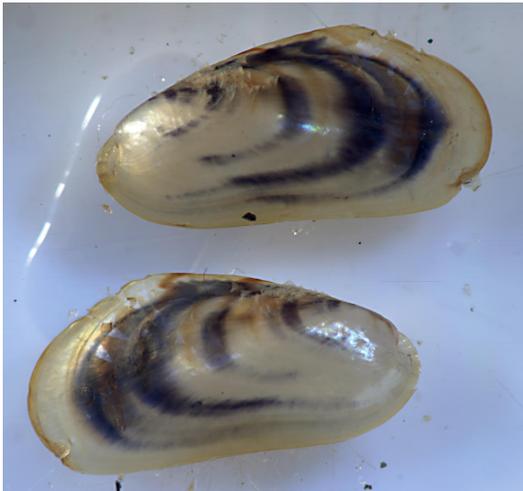
December, 2000

### SCAMIT Newsletter

Vol. 19, No. 8

<b>SUBJECT:</b>	Polychaeta: Autolytines
<b>GUEST SPEAKER:</b>	Arne Nygren (Univ. Goteborg, Sweden)
<b>DATE:</b>	8 January 2001
<b>TIME:</b>	9:30 a.m. to 3:30 p. m.
<b>LOCATION:</b>	City of San Diego Marine Lab 4918 N. Harbor Dr, Ste 201

#### NEXT MEETING



*Mytilus* sp., approximately 4.5 mm  
ITP Regional Station 2708(2), 7/17/00, 37 ft.  
Image by K. Barwick, 2/27/01

The next SCAMIT meeting is 8 January at the San Diego Lab. After a talk on autolytines by Arne Nygren (Uni. Goteborg, Sweden), we'll be discussing the smaller chapters in MMS Atlas Vol. 7. These chapters and their authors in the order we'll discuss them are: Fauveliopsidae by Blake & Petersen, Sternaspidae by Petersen, Acrocirridae, Scalibregmatidae, Opheliidae, Flabelligeridae, and Oweniidae by Blake, and Trichobranchidae by Hilbig.

The Fauveliopsidae and Sternaspidae are short and very well done, and we should be able to cover these quickly. I don't expect much discussion on Acrocirridae, Scalibregmatidae, or Opheliidae. Flabelligeridae, Oweniidae, & Trichobranchidae will provoke a much greater response and will take the longest. Please come prepared with your comments, corroborating literature, evidence, etc., so we

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can cover as much as possible during the day. It would be great if we got a majority of the local polychaete people at the meeting so we could get a solid consensus on each decision.

Families not covered during the day will be added to the agenda for the 2-day SCAMIT meeting 12-13 February. We'll be trying to get through the Ampharetidae & Terebellidae as quickly as possible to speed up completion of SCAMIT species list 4. The capitellid chapter and any remaining families will probably be covered at the March meeting on the 19<sup>th</sup> at the San Diego Lab. The meeting will be led by Karen Green, who has recently spent a considerable amount of time reexamining the capitellids in the process of preparing a treatment of the Capitellidae of Thailand.

[Editors note: this announcement was left as originally written, although subsequent delays have rendered a good portion of it obsolete]

### NEW LITERATURE

Karakassis and Hatziyanni (2000) analysed benthic disturbance from fish farm organic enrichment. The twist here is that they analysed how interpretations of the data differ at different levels of taxonomic resolution. Were the results different if data were only considered at the family rather than the species level? And what about data transformations, was there an interaction with level of identification? The answer in both cases was yes. While demonstrating that cost-benefit analysis could help in allocating scarce resources, the authors maintain that the preferred level is always to identify to species. They show that if analysed as if they were separate samples, different levels of taxonomic resolution track information loss across multivariate analysis plots. When the interaction with data transformation method is simultaneously represented we find the full identification ends of these tracks cluster more

closely than the phylum level ends. The authors examined three cases, one heavily enriched, one moderately enriched, and one with scant evidence of enrichment.

While past reports have indicated that Phylum level analyses were adequate to distinguish heavily impacted areas from reference areas, the present authors show that the greatest disparity in effect of data transformation was at the strongly enriched site. Thus, while species level identified data treated under different transformations all clustered tightly in multivariate space, the phylum level identified data spread widely through the space depending on the transformation applied. This is but the most recent in a series of investigations exploring the impact of taxonomic resolution. With money scarcity dictating declining expenditures in most if not all cases, more discussion of the issue will be forthcoming. Of course, the taxonomic resolution question assumes the ability to accurately distinguish species during species level analysis.

The cosmopolitan vs. cryptically speciated debate is rejoined in the cases of two interstitial polychaetes by Schmidt & Westheide (1999). A split decision ensued, with examined populations of "*Stygocapitella subterranea*" from the Mediterranean, the U.S. East coast and the U.S. West coasts being genetically distinct. The authors suggest each should receive full specific status based on the degree of their genetic differentiation.

Examined populations of *Hesionides arenaria arenaria*, however, proved indistinguishable over a broad geographic range. 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.



At a higher level Purschke, Hessling & Westheide (2000) discuss annelidan relationships based on recent phylogenetic analyses. Their particular focus is on absences used in character analysis, and the different results yielded by different interpretations of absence. They provide data which suggests that some absences are apomorphic, and represent loss of common structure in some clades rather than acquisition of characters previously not present (the plesiomorphic interpretation of absent characters in many cases). In particular they provide evidence that segmentation has been lost in Echiura, based on analyses of neural structure of larvae and young animals. They found clear evidence of repeated paired neural structures in several species which would suggest segmentation whose surface indications had been lost. This neural evidence is also lost by the time maturity is attained. The authors did not pursue the phylogenetic consequences of viewing lack of segmentation in echiurans as a shared derived character, preferring to address that in a subsequent publication.

Ernst Schrödinger must be chuckling in his grave (although we can't know this for sure). Collie, Escanero & Valentine (2000) provide more data indicating that trawling damages the bottom and effects our view of the community. The present paper confirms and extends the information provided by the same authors in an earlier paper (Collie, Escanero & Valentine 1997), as well as analyses provided by many others in the last few years. From the standpoint of fisheries and sustainable yield it is important to understand how the act of fishing itself impacts the carrying capacity of the exploited habitat. From the monitoring standpoint it is important to realize that with frequent trawling of the same areas, we are modifying the community whose structure we seek to document. As the frequency of sampling and/or the precision of trawl track

reoccupation are increased, so is the distortion of our view of the community. Recognition of this "observer effect" is half the problem, now we just need to figure a way around it.

Although treated previously as part of a review of the bivalve mollusk family Psammobiidae in the Eastern Pacific (Coan 1973) the genus *Gari* was recently reexamined (Coan 2000) to address problems left unresolved in the earlier paper. Results of examination of new material and new research by others after 1973 were included in the recent monograph on bivalves of the Northeast Pacific (Coan, Valentich Scott & Barnard 2000) for *Gari* species within the coverage area. This paper, then, proposes no changes to our existing approach to the genus. It does, however, provide considerable additional information and discussion of the species involved, their relationships to taxa with Panamic ranges, and a series of useful visual comparatives of the seven recent species in the genus.

On hearing the title of Helmut Debelius' book, *Crustacea of the World* (1999), my first response was "Yeah, Right; the crustaceans of the world in 321 pages!". My doubts proved well founded, only some of the crustaceans of the world are covered here. As Lipke Holthuis pointed out in the Foreward, the title should include "Vol. 1". Even so, quite a bit of territory is covered in this volume, and a wealth of interesting discussion and observation is reported. Those used to seeing only preserved specimens of the various crustacean species will be stunned by the magnificence of the animals in the live photographs which comprise the majority of the book. Debelius is, though a professional decapod worker, also an *amateur* [in the best sense of that term], and his love of his subjects comes through in his text. Some California forms are treated but the majority of the covered species are from tropical climes.



Another import item was also reviewed at the meeting, a Japanese opisthobranch faunal report by Suzuki (2000) on the Izu Peninsula. This is the long peninsula which separates Sagami Bay from Suruga Bay on the East coast of the island of Honshu. Despite all the attention paid to the fauna by Baba in his *Opisthobranchia of Sagami Bay* (1949) and the supplement to it (1955) there still remain a large number of undescribed species pictured in Suzuki's book. Many of these are quite strikingly colored and patterned, so should be quite visible to the observer. A number of cryptic species are probably also present. One of the more interesting aspects of this book is the documentation of change with growth it provides. Photographs of juveniles at several stages of development are available for some species. Variability in adult morphology and pigmentation is also documented in groups of photographs for some species. While the Japanese text is likely to be opaque for most users, the photographs are captioned in English, and an English Index to Scientific Names is also provided. There is a very slight overlap between the fauna covered in the book and that of the West coast of North America. The main appeal of the book to California workers is the WOW value; a number of truly outlandish and amazing species are resident in the area covered. Of course, if you are planning a diving excursion to this part of Japan the book is a must. It is available from Sea Challengers and probably elsewhere, although searches on mainline web book sources came up empty.

Mention was also made at the meeting of a report now available which should interest members (Thompson, Lowe and Kellogg 2000).

### 13 NOVEMBER 2000 MEETING

The meeting commenced with Brian Edwards giving us an overview of the collection methods and equipment used to gather the photographs and videos we would be perusing.

The box core used to collect sediment samples had been fitted with a still camera that would snap a picture 2m before the corer touched bottom and sampled. The majority of the pictures examined, however, were taken by a camera sled. The camera sled was equipped with both a 35mm still camera and a video camera. While video was rolling the still camera flashed pictures approximately every 30 seconds. The transects we were viewing via video and still images were all in Santa Monica Bay at various depths and areas. Brian commenced this introduction as a number of persons expected had not arrived by 9:30. Once everyone was present, we took a brief break to deal with SCAMIT business before actually starting the process of viewing video and examining pictures.

Ron Velarde had the floor first and announced the next SCAMIT meeting will be on 11 December at the City of San Diego's Marine Lab. Todd Haney from UCLA will be speaking on the subject of Lepostracans (*Nebalia*). People are also encouraged to bring questions/specimens of *Lophopanopeus*. In addition, Ron is calling for anyone who is reporting *Eualus lineatus* to bring specimens, as he suspects that is not the species we are actually seeing. The goal is to finish up the meeting by 2:00 or 2:30 at the latest so that attendees can join Bonnie Becker at the Cabrillo Marine Monument in her efforts to inventory the tide pools.

Next Ron announced that this year's Christmas party has been canceled. There will be a party of some sort in the spring or summer, hopefully at some outdoor venue such as a park or at the beach.

Leslie Harris then announced that she is translating, from the original German, the recent thesis monograph on *Typosyllis* by Frank Licher. She is not attempting the whole work at this time, but only the comparative



tables and the discussions of species from our local waters. Those interested in this information should contact her concerning its availability.

It was suggested that the January meeting should address the issue of reviewing Volume 7 of the MMS Atlas series. Don would like to see this volume reviewed before he completes and publishes edition 4 of the SCAMIT Species List. [It will take several months to adequately consider this volume, and meetings have been scheduled].

And Finally, Larry Lovell, it seems, is spending some time down "south". He joined an expedition to the Antarctic and had sent an email to Ron detailing the first few days of his journey. We hope that he will continue to send email updates which we can print as installments in upcoming newsletters [see "Out in the Cold" later in this issue; the first installment of Larry's communiques].

Following our business meeting we began reviewing film and still pictures, and continued doing so through the day. A list of the species identified was prepared and sent to Brian, who was most appreciative of the input he received. It was also a great treat for those present to view animals in action and in situ. We hope to repeat this experience again. It was suggested to Brian that an efficient method for him to glean input from many, without accumulating a lot of frequent flier miles, would be to burn a CD of particularly good images and circulate it through our group, allowing each to annotate images on which they had an opinion.

### 11 DECEMBER MEETING

The morning began with Ron Velarde discussing upcoming meetings. The next meeting will be on 8 January at the City of San Diego Marine Lab. Syllids and other polychaete groups from the MMS Atlas Vol. 7 part 4, will be reviewed. The following meeting is scheduled for two days, 12 and 13 of February. It will be held at the Los Angeles

County Museum of Natural History where the review of the polychaete groups covered in MMS Atlas Vol 7, part 4 will continue. It is the general hope that the review will be complete at these gatherings, but if not, the same topic will persist at the March meeting.

Leslie Harris had the floor next. She and Todd Haney, along with a handful of other scientists, participated in a survey of the intertidal fauna at the Cabrillo National Monument organized by Bonnie Becker. In the past, studies have been conducted on specific target species in the rocky intertidal, with most of the animals being large, obvious and well known. Therefore, Leslie concentrated on looking at smaller organisms previously lacking in study and inventory (mostly polychaetes and small crustaceans). Jim Lance participated as well and had information dating back as far as 1953. One notable trend was the decline in the number of species of nudibranchs.

The taxonomists who participated in the survey will provide a species list of the animals encountered. All samples collected will be deposited at the Los Angeles County Museum of Natural History. Leslie found this exercise productive and interesting and encourages others to contact Bonnie (Bonnie J. Becker, Natural Resource Science, Cabrillo National Monument, 1800 Cabrillo Memorial Drive, SD, CA 92106-3601, 619-557-7308, [Bonnie\\_Becker@nps.gov](mailto:Bonnie_Becker@nps.gov)) and offer their services. Bonnie herself dropped in during the meeting to introduce herself and alert the membership to the possibility of a productive partnership.

With that, the business portion of the meeting was concluded and Todd Haney began his presentation. He reviewed the current status of the leptostracans of the world, commenting on the higher level taxonomy of the group, and then proceeded to our local fauna. We currently have 4-5 taxa known from the West coast of North America; *Nebalia pugettensis*, *Nebalia daytoni*, *Nebalia hessleri*, *Nebalia n.*



*sp.* (In press), an as yet undescribed deep water form, and an as yet unnamed form from Puget Sound. The first of these taxa requires two things, selection of a lectotype, and description of the second species of *Nebalia* which co-occurs with *N. pugettensis* in the Puget Sound area. Once this has occurred we can further evaluate the status of *N. "pugettensis"* in the Southern California Bight. There are probably more species to come and Todd is actively collecting from shallow muddy areas up and down the coast. He is also finding a number of other new taxa in museum collections, and during Guana Island research trips to the British Virgin Islands. Things are heating up in leptostracan taxonomy as both Todd and a researcher in Australia attack the group.

Most of our local species can be distinguished based on structure of the eyes and rostrum. There is also considerable divergence in the structures of the first abdominal appendage. Todd pointed us to the PEET area of the Natural History Museum website

<http://www.nhm.org/~peet/>

where he has assembled a considerable amount of information on the group, including keys and summary of the described species.

Don Cadien brought live crustaceans that he had collected during the survey. These animals were viewed with much enthusiasm as live material is, unfortunately, so rarely seen by most of us. Examination of Pt. Loma intertidal arthropods taken Sunday by Don, began with phoxocephalid amphipods from intertidal sand pockets. Examinations continued with commensal isopods from *Strongylocentrotus purpuratus*. These were reviewed by member Tim Stebbins, who found they were *Colidotea rostrata*, the species on which his masters work focused. Characterized by commensalism with the urchin, and uniform blackish red

pigmentation with very pale coral pink tips to antennae (which look like tube feet of the urchin when viewed in situ), these animals are very distinctive.

Next viewed were commensal amphipods taken from the underside of the large intertidal limpet *Lottia gigantea*, between the side of the foot and the underside of the mantle. Dark green in life, mottled green when examined under the scope, these look to be *Allorchestis*, or other hyalids - not pontogeneoid or other groups such as isaeids that have known intertidal commensal relationships. Search of available literature yielded nothing definitive, although Barnard has mentioned in at least one publication that hyalids are commensal associates of some limpets. If anyone can add to this please contact Don Cadien at **dcadien@lacs.org** or via telephone, (310) 830-2400 x 402.

Recently, local *Eualus* species were reevaluated, and a species previously relegated to synonymy was revived by Jensen & Johnson 1999. They discovered that *E. subtilis* of Carvacho & Olson 1984, which had been confused with and synonymized with *E. lineatus*, was reliably differentiable.

Ron Velarde distributed a comparison table he prepared to help him distinguish *Eualus lineatus*, *E. pusiolus*, and *E. subtilis*. Only the first and last occur in the southern California Bight, *E. pusiolus* being found further north. Even *E. lineatus* seems mostly restricted to the area in the northern portion of the Bight, with *E. subtilis* in the central and southern portions. Ron has examined all material initially identified as *E. lineatus* in the San Diego program, finding them to be *E. subtilis* without exception. The same was true of material collected off Palos Verdes in the LACSD voucher collection, which he kindly evaluated. The sheet is appended here to allow others to perform their own reevaluation of specimens previously reported as *E. lineatus*.



Dean Pasko discussed the amphipod genus *Rudilemboides*. He and Tony Phillips compared notes and came to the conclusion that there were two undescribed species in our area and that all three species were differentiated in habitat. *Rudilemboides stenopropodus* was found in bays and estuaries, *R. sp. SD 1* was found offshore on open mainland coasts, and *R. sp. HYP 1* was found in coarse inner shelf sediments of low organic content in the northern Channel Islands. Dean has examined specimens reported from off Palos Verdes by CSDLAC as *R. stenopropodus*, and found them all to be his *R. sp. SD 1*, matching the distribution found for species in the San Diego area.

Dean also contributed some new observations in the continuing saga of *Americhelidium*. He circulated a sheet describing some differences in material he was seeing from the typical *Americhelidium shoemakeri*. Perhaps most striking was that one of the two forms had paired dorsal setae on pleonites 2 & 3 and on urosomite 2. One must apparently look carefully for these as they are not large, dark or thick. Differences were also noted in the second gnathopod, the uropod 3 ramal spination and uropodal proportions, the posterior marginal setation of coxa 2, and in the basis of P7.

We continue to work on sifting through the morass of variability in this genus, searching for the islands of stable character states which will tell us (hopefully) whether, in the genus locally, we have 3 or 30 species. All contributions and observations are welcome.

### OUT IN THE COLD

Member Larry Lovell recently took part in an expedition to the Antarctic Peninsula, sub-Antarctic Deception Island and environs in the South Atlantic. He sent back reports via e-mail which were enjoyed by many. He has allowed SCAMIT to release these to a larger audience and they will appear in the next few

newsletters. Larry himself has returned unharmed among us. Thanks to him for providing us a vicarious experience hard to come by.

“Today was just the greatest. A beautiful mostly sunny day cruising the Antarctic Peninsula. We are ahead of schedule and Palmer Station does not want us arriving until tomorrow morning, so the captain took us through some really beautiful areas to see the sights. I have never, ever seen so much snow and ice and to think this is just one small area of Antarctica. They say 90% of the earth’s fresh water is frozen here. Antarctica is the highest, driest, and coldest continent. The temp was around -1.0 degrees C most of the day and down to around -18 with the wind at times. I shot 4 rolls of film and shot about 1 hour of video tape. There were some really beautiful icebergs with blue ice around the edges. Mountains with exposed sides and then ice covered, what a contrast. We saw several penguin colonies and a few whales. There were also several small research stations on shore. Very isolated and nearly always by a penguin colony. You can tell where the penguin colonies are from far away by the orangish stain (from krill, their main diet) left by their excrement. They climb very high up the hillsides and you can see the trails going up. We saw some penguins swimming, too.

Yesterday we off-loaded four American (NOAA) scientists going to Cape Shirrif (sp.?) on Livingston Island. There were two zodiacs taking equipment and supplies ashore. Several of us got to go ashore to help. There were male fur seals (also one penguin, a Weddel seal and two elephant seals) already on the beach near where we were landing. We had to go through and around several seals to sled supplies to the camp, sometimes as close as 10 feet away. There were about 8-10 zodiac loads of gear including food and lab equipment including a microscope. I was charged by a fur seal briefly, but he stopped when I yelled and clapped my hands together. I took some video



and pictures there also. The wind started to come up, so we had to leave before we were ready. The trip back to the ship, into the wind, was exciting with a few big bounces. It was nice to get off the ship and ashore for awhile. The four Americans will be joined by several Chilean's to spend 4-5 months studying the seals and penguins that will breed and have their young there. They will attach sensors to some that will track the females while they are at sea feeding and record the location and depth of their food foraging. They will also pull a small tooth from a few to age them just like tree rings. Also, milk from some females will be collected and analyzed for nutritional content. Apparently they have done the lab work and can tell from the chemical makeup what they have been feeding upon.

The last two days have been much calmer and any thoughts of seasickness have gone away. "I have my sea legs now" and not taking any medication. They say it will be this way until we cross the Drake Passage on the way back home.

We will overnight at Palmer tomorrow and head for Deception on Sunday morning. We will arrive on Monday and begin sampling. I will be working on the MOCNESS (Multiple Opening Closing NEt Sampling System) crew the first three nights. Yes, we will be sampling starting at 23:30 and the net will fish with different net panels for 2 hours then process the catch, mostly krill. It will take until 4-5 AM to finish depending on the amount of the catch. Then we will switch to doing the same thing in the daytime beginning at 11:30. I will tell you more later about the krill and what other thing will be going on during the days after.

### ANOTHER LOSS

Nearshore environmental science and marine research in southern California lost another major contributor on 7 January 2001 when Dr. Mia Tegner died in a diving accident off San Diego. Details are still sketchy, but it appears

that she ran low on air, returned to the surface, then realized that she might get the bends, grabbed another tank, and returned to the bottom. She was not seen alive again.

Dr Tegner, whose research on kelp-forest ecology made her familiar to local workers and marine ecologists world-wide, was a very experienced diver. There are no easy answers to the many questions her death prompts. According to news reports her gear was not at fault and was working perfectly when retrieved. Her fellow Scripps scientist Conrad Limbaugh, an even more experienced diver, also drown while cave-diving a number of years earlier. Even experienced divers (Mia had over 4000 dives to her credit) eventually can fall prey to the risks associated with submerging, totally dependant on gear and technology, in water. Mia was fully aware of those risks and was a careful and thoughtful diver. Suffice it to say that she will be missed as a researcher, and as an acquaintance and/or friend to many SCAMIT members. By all accounts she was a delightful person. Our lives are again saddened by loss of a compatriot.

The following is reprinted with permission from the Scripps web site:

[www.sio.ucsd.edu](http://www.sio.ucsd.edu)

"We knew Mia when she was a young adult just beginning her scientific endeavors. She grew to maturity with us, and spent her life at Scripps," said Dr. Charles F. Kennel, director of Scripps Institution of Oceanography. "She dedicated more than 25 years of work to the ecology of the kelp beds off Point Loma in San Diego, and she developed a new and deep appreciation for this delicate, undersea rain forest. The ocean world has lost a treasure."

An experienced scuba diver, Tegner made more than 4,000 dives throughout the world during her 31 years at Scripps. Her main scientific research focused on the ecology of kelp forest communities and nearshore marine resources. She worked extensively on sea urchin natural



history and population dynamics, the ecology and restoration of abalone populations in southern California, and the effects of disturbances and climate change on kelp communities. She studied the Point Loma kelp beds for almost three decades, and her long time series of observations has been instrumental to scientists' understanding of the effects of ocean climate on nearshore ecosystems.

Tegner's most current research included studies of the effects of El Niño and La Niña events on the plants and animals of the kelp ecosystem. One project focused on the reproductive response of abalone populations to warm water, and how to incorporate environmental variability into fisheries management.

The San Diego wastewater treatment plant discharges treated sewage near Tegner's kelp bed study area, and since 1992 she has measured the effects of the sewage on the local marine life. She found great satisfaction in using the information she gathered on the health of the Point Loma kelp forest to promote a better understanding of the effects of sewage on marine organisms. The information she gathered assisted the state of California with the maintenance of state fisheries and provided citizens with the facts they needed to make informed decisions about environmental issues such as sewage treatment.

Tegner was born in Santa Monica, Calif., on July 7, 1947. She decided on a career in science after abandoning hopes of fire fighting in the third grade. She received a B.A. degree in biology from the University of California, San Diego, in 1969, and a Ph.D. in marine biology from Scripps in 1974.

She started studying sea urchins shortly after she joined Scripps in 1969 as a marine microbiology trainee. As a post-doctoral researcher, her interests shifted from the fertilization biology to the field ecology of sea urchins. In 1983 she began studies on El Niño and its effects on kelp beds.

With colleagues Paul Dayton, Peter Edwards, and Kristin Riser, Tegner was honored with the prestigious Cooper Ecology Award in August 2000. Marking a first for research in an oceanic system, the Cooper Award honored Tegner and her research team for their investigations of the Point Loma kelp forest communities. "These four researchers at Scripps Institution of Oceanography were able to address fundamental questions about sustainability of communities in the face of disturbance along environmental gradients," the Ecological Society of America noted in announcing the 2000 award.

In 1998, Tegner was awarded a fellowship in the Pew Fellow Program in Marine Conservation to develop an ecosystem approach to fisheries management for kelp forest species that takes into account the changing environment. Other recent awards included the 1998 Conservation Award from the Sonoma County Abalone Network and the 1986 University of California, San Diego, Distinguished Alumna of the Year award.

Tegner was a fellow of the American Association for the Advancement of Science, and was a member of the American Society of Limnology and Oceanography, the International Abalone Society, National Shellfish Association, the Southern California Academy of Sciences, and the Western Society of Naturalists.

She is survived by her husband, Eric Hanauer, of San Diego, Calif., a daughter, Sandi Hanauer, of Costa Mesa, Calif., her parents Oly and Allie Tegner of Palos Verdes, Calif. and a sister, Lars Palsson, of Palos Verdes, Calif. "

In lieu of flowers, donations in Mia Tegner's memory can be made to Scripps Institution of Oceanography to support kelp forest research. For more information, contact the Development Office, Scripps Institution of Oceanography, 858/822-1865.



### CALL FOR NOMINATIONS

Election time approacheth. Please submit in writing, via e-mail, by telephone, or at the next meeting, nominations for SCAMIT officers. I think we can all, by acclaim, renominate the existing roster of tireless public servants who currently occupy those positions. It is NEW

nominations we are seeking. If you feel you have the interest and time to be an officer, by all means nominate yourself, or have a friend [or enemy as the case might be], relative, or coworker nominate you. No organization long survives without member participation. If you would like this one to continue, consider running for office. Let YOUR voice be heard.

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If you need any other information concerning SCAMIT please feel free to contact any of the officers e-mail address

President	Ron Velarde	(619)758-2331	<a href="mailto:rgv@mwharbor.sannet.gov">rgv@mwharbor.sannet.gov</a>
Vice-President	Leslie Harris	(213)763-3234	<a href="mailto:lharris@bcf.usc.edu">lharris@bcf.usc.edu</a>
Secretary	Megan Lilly	(619)758-2336	<a href="mailto:mssl@mwharbor.sannet.gov">mssl@mwharbor.sannet.gov</a>
Treasurer	Ann Dalkey	(310)648-5544	<a href="mailto:cam@san.ci.la.ca.us">cam@san.ci.la.ca.us</a>

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# Differences in Species of Eualus from the Pacific Coast of North America

Ronald G. Velarde

11 December 2000

## SPECIES

### CHARACTER

### LINEATUS

### PUSIOLUS

### SUBTILIS

1) Antennular Spines  
-dorsodistal spines on first article  
of antennular peduncle

3 moderate

1

1 stout

2) Base of Stylocerite with Curved,  
Dorsal Tooth

present

?

absent

3) Suborbital Carapace Spine

present

present

absent

4) Meral Spines on Third Pereopod

1 (0-2)

1

3 (2-5)

5) Sexual Dimorphism

no

no

yes

6) Color Pattern

- broad orange  
bands against a  
translucent  
background

?

- thin red  
diagonal lines  
on carapace and  
1<sup>st</sup> abd. segments

Jensen & Johnson, 1999

Figure 5

Butler, 1980 Plate 1C

(as E. herdmanni)

Jensen, 1995 Figure #72

(as E. pusiolus)