



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

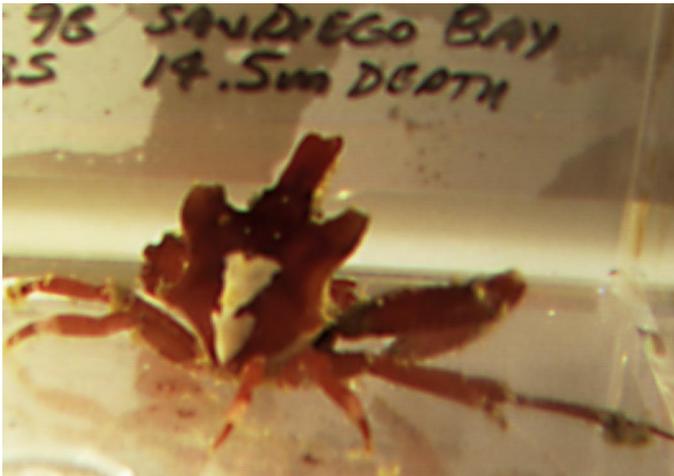
September, 1998

SCAMIT Newsletter

Vol. 17, No. 5

SUBJECT:	Bight '98 Trawl Invertebrates
GUEST SPEAKER:	None - Don cadien or Ron Velarde (CSDMWWD) Discussion Leader
DATE:	Monday, 19 October 1998
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	SCCWRP 7171 Fenwick Lane Westminister, CA

19 OCTOBER MEETING



This meeting will be the first to examine the collections from Bight'98 field sampling. Our first concern will be the invertebrates taken during otter trawling. Since sampling was conducted both in harbors and around the Channel Islands, we were expecting different things to be taken than in 1994. They were. Voucher specimens will be on hand for examination, but FID materials to be presented or discussed should be brought by participants. Those of us who found our sites routine will be surprised at the variety encountered by other agencies.

Epialtoides hiltonio (Rathbun, 1923) from San Diego Bay (Original photo by Rick Rowe CSDMWWD)

CHACE BIRTHDAY

Dr. Fenner Chace reaches his 90th birthday on 5 October 1998. A celebration will be held at the Smithsonian on that date to honor his 62 year record of contribution to science. He has been retired since 1978, but continues to function as an Emeritus Curator, occupying a corner office on the Crustacean floor. Letters of tribute, congratulations and good wishes from friends and colleagues are solicited for presentation at the gathering. If you have something to offer, please send it in as soon as you can to Dr. Kristian Fauchald, Chairman, Dept. of Invertebrate Zoology, NHB 153, Smithsonian Institution, Washington, D. C., 20560-0163. Late contributions would also be welcome, but would have less impact. We all owe Dr. Chace our gratitude for the myriad contributions he has made over the years, and is still making as this is written.

BOB OSBORN 1946-1998

In past pages of the NL we have mentioned the passing of prominent researchers, but we have had little occasion to lament the passing of our own. Now we do. Bob Osborn died in his home sometime before the 17th of September 1998. Many of us in SCAMIT knew Bob as a friend, co-worker or colleague (he was a member early in SCAMIT history). He was



Bob Osborn about to eat some worms with Sue Williams at a SCAMIT party in 1986

trained, as were many of us, in the lab of Dr. Donald Reish at Long Beach State (now California State University, Long Beach). He had studied earlier with Dr. Jules Crane at Cerritos Junior College. Bob then moved to the Allan Hancock Foundation, where he worked for a number of years in the Harbors Project under Dr. Dorothy Soule and Dr. Miki Oguri. He also took part in the BLM project in the late 70's under Dr. Kristian Fauchald and Dr. Gil Jones. Bob was a polychaete taxonomist, and did much of the polychaete identification in projects directed by Dr. Soule. When required he also identified other groups. He was also employed at the Cabrillo Marine Aquarium (then a Museum) for a time. When work slowed at USC, Bob joined Marine Biological Consultants for several years, identifying polychaetes there as well. Eventually he was forced into premature retirement by a lifelong affliction. On disability, and unable to accept employment, Bob volunteered his time at Cabrillo, keeping up the collections and displays from behind the scenes. He also engaged in a wide range of educational pursuits, and, to the extent his limited income allowed, collected unusual items. He is, for instance, the only person I know who had large and diverse collections of locks and scissors.

Growing up in Downey in the 50's, Bob acquired a deep affection for Doo-Wop which he never lost. His musical horizons were much broader, however, and I spent many happy hours listening to and talking about music with him. In part because of his illness, Bob was concerned with nutrition. Survivors of his grape juice and cheese diet can attest to the inventiveness of his approach to healthy foodstuffs. He lived a solitary life, but had many, many friends. The demands and limitations of his illness curtailed his sociability in recent years, and he traveled hardly at all. A combination of lack of funds, and persistent insomnia in unfamiliar locales kept Bob from getting around much. Many friends gradually lost touch, but few



ceased to care about him. He was a gentle soul, an interesting conversationalist, an observer and lover of the natural world, and a good friend. He is survived by his father, a sister, and a brother. —Don Cadien

ISOPOD NEWSLETTER

Number 31 of the Isopod Newsletter has been sent out to subscribers (a free subscription). Editor Brian Kensley is taking the Newsletter electronic, and will be distributing future issues via e-mail to all connected recipients. If you receive the Newsletter, and have not yet given him your e-mail address (or if yours has changed) contact him at kensley.brian@nsmh.si.edu. He is hoping to discontinue paper production, just as we are. This issue had a summary of activities at the Second International Isopod Conference, held in Amsterdam in conjunction with the Fourth International Crustacean Congress. Papers resulting from the conference will be collected and released as an upcoming number in the serial Crustacean Issues. Plans are underway for the next meeting, to be held in Sydney in 2001 in conjunction with the Fifth International Crustacean Congress (to be held in Melbourne).

LAST GASP

The Bight'98 field season came to an official end with a three day cruise around the Northern Channel Islands on the Channel Islands National Marine Sanctuary (CINMS) vessel Ballena. On board were the skipper Steve Beckwith, CINMS Research Director Sarah Fangman, CINMS volunteer Sarah McWilliams, Dario Diehl and David Tsukada from SCCWRP, and Don Cadien from CSDLAC. The cruise goal was collection of trawl and infaunal samples from a few remaining original sites and from a few replacement sites.

Since the majority of the bottom around the islands is rocky (especially inshore) the rate of successful sampling at occupied stations was relatively low compared to mainland areas. Long transit time from and to port in Santa Barbara the first and last days meant relatively short sampling days. Naturally the best had been saved for last, including sites NW of San Miguel Island which sea conditions had not allowed to be sampled in previous attempts, and sites on the Santa Rosa Ridge far from any land. We had tried to sample there earlier in the month, but had been weathered out. This time our luck held, and we were able to work for the full three days.

Substrate problems continued and several sites were visited, surveyed, and abandoned. Only one of the benthic sites could be sampled. It yielded a number of jars of relatively coarse medium sand/gravel/shell hash. The only large animals visible on the screen (large is used loosely here) were pagurids, one occupying an empty scaphopod shell.

The trawl catches proved more interesting, and produced several additions to the SCAMIT Ed 3 listing. Perhaps most exciting was from Station 2491 in 90m of water off the NW tip of San Miguel Island. This was the very westernmost portion of the Bight except for Point Conception itself. In this trawl, as in most over these island bottoms, some rock was encountered based on the animals taken. Several nudibranchs came up including a medium sized *Dendronotus iris*, a *Tritonia diomedea*, a lovely *Tochuina tetraquetra*, and two *Acanthodoris hudsoni*. This last item has the same base color pattern as *Cadlina luteomarginata* - yellow rhinophores, yellow gills, and yellow spots on the dorsum; but has elongate papillae on the back, not the low tubercles of *Cadlina*. This species is reported from the Bight, but is new to the SCAMIT list.



A number of small delicate spider crabs were taken which were a dirty ivory banded with brown on their elongate chelae and legs. These proved to be *Erileptus spinosus*, and nearly all were males. They adopted a curious and distinctive posture when handled. The body was held erect, with the rostrum in the air, and the chelae and legs were extended in a bundle pointed obliquely forward. Thus the crab had a clear view of what was approaching it from the front, and brought the long chelae into play within this visual field. This posture was rigidly held until the animals were ultimately preserved. The smaller female has much shorter limbs, a broader body, and a shorter rostrum. Were it not for their being collected together, the relationship between them would be difficult to see. This disparity is what led to their original description as different species in different genera.

Several other interesting species were taken including a fine large *Ophionereis eurybrachyplax*, a series of clumps of *Coenocyathus bowersi*, both hatched and still-occupied ratfish (*Hydrolagus colliei*) egg cases, and the empty egg case of a big skate (*Raja bioculata*). The egg case (nearly 10 inches long) was interesting in itself, but its contents were more so. Inside the spent egg case were several large flatworms (*Discosolenia burchami*), several small clams (*Kellia suborbicularis*), and a limpet. This proved to be *Addisonia brophyi*, a member of a family (the Addisoniidae) living exclusively on elasmobranch egg cases. Ron Velarde has seen this species in the San Diego area, but this is the first listing for SCAMIT. This is also the first record of the species from a rajiid egg case, all other records have been from scyllorhinid shark egg cases.

We took a specimen of the aegid isopod *Aega lecontii*, at one station, an as-yet-unidentified alcyonacean octocoral (near *Anthomastus*) at several others, and various sponges whenever we encountered rock. The hermit crab sponge, *Suberites suberea*, was not

taken during this cruise, although encountered on several others. We caught fish too, but I really can't comment on those since I was attentive to the invertebrates, and not to the fish catch.

The islands themselves were beautiful. Burned sere and brown by the summer and a general lack of water, they contrasted starkly with the blue of the sea and the white of the beaches. On our first night anchorage at Tyler Bight near the west end of San Miguel we were entertained (all night long I might add) by a chorus of sea lions and sea elephants hauled out on the beaches nearby. Hundreds of animals could be seen with binoculars, but they were just a bit too distant to see in detail. We saw none in the water near the Ballena. A nice way to end the field season, eh? Now to the FID bags, to finish the data.

P.S. - you should visit the CINMS website and read Sarah Fangman's journal entry on the trawl intercalibration exercise aboard the Ocean Sentinel just before Bight'98 trawling began. Find it at:

<http://www.cinms.nos.noaa.gov>.

NEW LITERATURE

During Bight'98 (and its precursor, the SCBPP) we have spent a great deal of time and effort on coordination and standardization between participants to generate comparable data from a number of different observers and programs. The same problems of observer bias are dealt with in a recent paper by Thompson and Mapstone (1997). Their particular interest is in fish visual counts and identifications by in situ observers but consideration of their approach to the problem of bias is instructive.

Cladistic reanalysis of relationships within and between groups continues to be a productive topic, as the technique is used to address problem areas in traditional



classifications. Weygoldt (1998) considers the relationships within the Chelicerata. He also places himself among those who consider the Arthropoda to still be the appropriate phylum level taxon for jointed legged animals. Although many of the included groups are terrestrial, and much of the argument in this paper concerns them, the position and derivation of the Pycnogonida is dealt with.

Lüter and Bartolomaeus (1997) review the phylogenetic position of brachiopods. Their analysis is based on consideration of both morphological and molecular data. The authors are still dissatisfied with the number of morphological characters available, and with the paucity of DNA and RNA molecular sequence data, and view their results as tentative. Since the two lines of evidence failed to converge, their reticence is well founded. They found evidence for both spiralian and deuterostome relationships in the brachiopods. Molecular data continues to suggest association with spiralian taxa such as Annelida and Mollusca, while morphological data (primarily embryological) supports deuterostome derivation. The authors were not able to fully resolve the discrepancies, but point out that such results call analyses based on only morphological or only molecular evidence into question.

Ever since chemically fueled communities were discovered around the Galapagos Rift the symbiosis of sulphur-oxidizing bacteria and other organisms has been a hot topic. Distel (1998) provides a nice summary of the endosymbiont system in bivalve molluscs. The evolutionary history of both the hosts and the symbionts is examined, and the antiquity of the relationship stressed. Their cladistic analysis of endosymbiont bacteria based on 1126 nucleotide positions suggested that symbiont acquisition has happened repeatedly in bivalves, and is not the result of a single event. Two main groups of symbionts were identified,

one associated with mytilid and vesicomid species, and a second associated with lucinids, solemyids, vestimentiferans, annelids and nematodes.

SCAMIT treasurer Ann Dalkey's description of the old *Lepedipecreum sp A* has now been published (Dalkey 1998). The species is now *L. serraculum*. Great job Ann, we all need to follow in your footsteps and finally get out those manuscripts that have been sitting around gathering dust. Our stock of provisionally named arthropods continues to diminish; a welcome trend. This paper was partially supported by the SCAMIT Publications Fund, and is SCAMIT Contribution No. (lucky) 13.

In the same issue of the Proceedings of the Biological Society of Washington Lambert (1998) describes two new species of *Pentamera* from the west coast, one occurring in the Bight. He includes both a key and tabular summary to the twelve described species occurring in the eastern Pacific, and provides whole body illustrations of both his new species - a welcome addition.

USED LITERATURE

Dr. Susan Williams has made a second donation of reprints to SCAMIT. They were for distribution to whatever members might wish to take and use them. During a recent meeting the stacks of reprints were gone through by those in attendance and a number of items were selected and taken home. The remaining items have been added to the SCAMIT Library, maintained at the Cabrillo Marine Aquarium. Our thanks to Sue for her generosity. We have all benefitted from it. Hopefully we will fully catalogue the Library contents in the future, making them much more accessible to the members. [By the way, Sue is fine. You can see her in the photo of Bob Osborn, which she kindly provided for inclusion in the brief reminiscence of him.]



Dr. Don Reish has also made a portion of his reprints available to SCAMIT members. He should be contacted with requests by interested parties.

MY BIOLOGICAL LIFE

Donald J. Reish

Chapter 10: The Hartman Years: Part 2

Fred Ziesenhenné had collected invertebrates before WWII. Hartman and I combined his collection of polychaetes with my masters thesis to produce the Marine Annelids of Oregon which was published in the Oregon State College Press. It was the only paper we did together.

Dr. Hartman did not go to scientific meetings. She said that if they wanted to see her they could come to Hancock Foundation; many did over the years, and even after I left the USC campus she often called to tell me that so and so was going to be in town. I was grateful to her for these chances to meet many polychaete workers over the years. She did, however, attend two meetings at Berkeley; one was an AAAS meeting and the other a pollution meeting. I also heard her give a lecture when USC honored her as Researcher of the Year. She often showed me letters or manuscripts submitted to her for evaluation. I can't remember of her ever approving a MS as submitted.

I do not think Dr. Hartman liked Dr. Pettibone. However, they had some things in common. They both taught in a private high school before starting on their doctoral work after the age of 30. She didn't want her doctoral thesis published by the University of Washington Press.

We never discussed personal matters. People asked soon after I arrived at Hancock if Hartman was married. I didn't know; it was two years or more after my arrival before I learned she was married to Anker Petersen, her artist. I admit I was puzzled since Petersen didn't come to work until 12 noon. Obviously,

they took turns baby sitting their daughter (Remember, I heard a baby crying when I talked to Dr. Hartman on the phone in 1948.). After Petersen quit his job at Hancock, how she got her drawings made became even more puzzling. (She had a microscope at home.). One day after Petersen had quit, I noticed that Dr. Hartman was wearing a wedding ring, but it was on her right ring finger which is customary among Danish people. Her husband was from Denmark. In later years she mentioned that the 3 of them had gone to Denmark. This was the only comment she ever made to me about her family.

A few days before I married Janice both Dr. Hartman and I went on a two day trip on Velero IV (her first trip aboard the vessel). She never mentioned my up-coming wedding during the cruise, but the crew made the usual joking comments. I had sent her a wedding invitation, but she didn't come. She did send a gift (a cook book). You can, therefore, sense that the relationship was very formal. It remained that way the 4 years I had space in room 30 and for 5 more years while I was in a lab nearby. According to Kristian Fauchald, she became less formal in later years. She appreciated my dedicating "Marine Life of Southern California" to her, Dr. Ivan Pratt, and Dr. John Mohr.

We had many disagreements, which were polite, but never really resolved. Most of them centered around my findings when I analyzed offspring of worms I had cultured. I published on the systematic of *Nereis grubei*, and placed 3 of her species (along with others) into synonymy. Offspring from one mating contained 3 of her species. She never accepted my findings. She was also unhappy when I published on the life history of *Nereis grubei* in the Hancock series. She said that I should not have published this material until I could go to Peru (type



locality) and work with the worm there. I have yet to go to Peru. After receiving my Ph. D. I cultured many polychaetes including *Capitella capitata*. I found offspring which matched her *C. ovincola*. I also found hermaphroditic *C. capitata* as well as the traditional form. All of these from a single female! She said that it was impossible. What would she say about Grassle's work with *Capitella*? I was timid about pursuing the speciation problem with *Capitella* in view of the "Queen's" comments. Don't get the wrong impression. I deeply respect Dr. Hartman, and I am grateful for the many things she did for me. I am attempting to capture the mood of the time.

One day in August 1951 I walked into room 30 and there was a pallet containing books. It was Dr Hartman's "Literature of the Polychaetous Annelids", which she published privately. I purchased the first copy, which I still have. This book saved me countless hours of typing reference cards. I could now just make notations in the book. I think the availability of this book was one of the main reasons why Keith Woodwick chose to work on polychaetes. He arrived at USC a couple of weeks after it was published. He had to choose between polychaetes and crustaceans (his only other choice). Again, little details played a major role. Keith got his students Jim Blake and Todd Bridges (and others, I think) to work on polychaetes.

Next—Chapter 11: Conclusion of the Hartman years and my dissertation.

21 SEPTEMBER MEETING MINUTES

The meeting was held in the Worm Lab at the Natural History Museum of Los Angeles County. President Ron Velarde (CSDMWWD) led us through the business meeting. Bight '98 sampling is complete. Don Cadien gave a brief summary of CSDLAC's sampling effort. Then Ron Velarde summarized CSDMWWD's

sampling effort and commented that the hermit crab *Parapagurodes makarovi* was one of the most unusual animals found. It was interesting that this hermit crab had an abdominal parasite *Stegophryxus hyphalus* Markham 1974, a bopyrid isopod which is a relatively deep water species. This specimen was collected at a depth of 107 meters. Everyone agreed that they saw an El Niño influence in the trawl species collected and that the population of their usual species were low compared to normal.

The 5th California Islands Symposium will be held March 29 - April 1, 1999 at the Santa Barbara Museum of Natural History. It is sponsored by the Minerals Management Service and SBMNH. The Western Society of Naturalists (WSN) meetings will be held December 26 - December 30, 1998 at the Hanalei Hotel in San Diego. You can check out the particulars of the conference at their website:

<http://www.csun.edu/wsn/WSN%20Newsletter.htm>.

Gary Williams and Lisa-Ann Gershwin are writing a proposal for a book on the planktonic and midwater fauna of California. They still need sections written on copepods, mysids, euphausiaceans, cladocerans, and leptostracans. Anyone who is interested in contributing to this book may contact Gary or Lisa-Ann.

Don Cadien passed around the new MMS Volume 8 which covers the Aplacophora, Polyplacophora, Scaphopoda, Bivalvia and Cephalopoda, and mentioned that Vol. 3 on the Cnidaria had also been published. He commented that we should have a SCAMIT meeting to review the contents of these volumes and then invite the authors to attend another SCAMIT meeting to discuss their respective chapters. Details on



availability of the 13 volumes issued to date, and publication schedule for the one remaining volume in the series can be obtained from their website at:

<http://www.sbnature.org/atlas/>

Kelvin Barwick gave a report on his use of Scheltema's laboratory methods for aplacophoran spicules in the MMS Atlas. He found that he got the best results viewing spicules by using a set of polarizing lens attached to his compound scope, as is suggested by Scheltema in her chapter. With the polarizers, the spicules display a variety of vibrant colors and are easy to view against a dark background. Now that Kelvin can "see" the spicules, we hope to next hear his comments on using Scheltema's key.

The 7th North American Oligochaete Conference will be held October 26 - October 28 at the Keys Marine Laboratory on Long Key, Florida. Following the conference, there will be a taxonomic workshop sponsored by the Florida Association of Benthologists (FAB). The focus will be on oligochaetes, polychaetes, and leeches associated with Florida estuaries.

As reported in Annelida (<http://www.bio.net/hypermil/ANNELIDA/9809/0001.html>), Marian Pettibone has left the Smithsonian. She is moving back to her hometown, Tacoma, Washington.

We were treated to a slide show by Todd Zimmerman, a graduate student at UCLA who is associated with the Crustacea section of the museum. Todd showed shots of Guana, the small island in the British Virgin Islands that he, Leslie Harris, Don Cadien, and Rick Ware are engaged in studying. We got an appreciation of the nature of the terrestrial habitat and vegetation, and the types of crabs that occupy both the land and adjacent marine areas. Benthic samples along transects were collected this July,

along with numerous samples of algal and invertebrate substrates from intertidal and shallow subtidal areas. These will be sorted, and identified to produce the beginnings of an inventory of the microbiota of Guana's intertidal and nearshore subtidal zones. The results should reveal a fauna similar to that in other nearby islands located on the Puerto Rican Plate such as Puerto Rico, Jan Van Dyke, Tortola, Anegada, and St. John. None of these areas has been extensively investigated except Puerto Rico. Guana is privately owned, and the owners have made it into a conservation zone. In conjunction with the British Virgin Islands government they have begun reestablishing locally extinct species on the island with the aim of returning it to its pre-human ecosystem.

Leslie Harris gave us a report on her experiences while attending the 6th International Polychaete Conference in Curitiba, Brazil. She said it was one of the best conferences she had ever attended. It was very well organized and the 120 attendees were well taken care of. After registration on the day of their arrival, the participants were treated to a wonderful folk concert in the theater. There was lively music, and, at one point, Kristian Fauchald was spotted joining the "conga line" as they danced their way amongst the audience. The conference itself was also held in the theater. There were many papers on cladistics, taxonomy, and ecology. Leslie considered the poster session also very well done, with posters of a high scientific quality. Of the 120 participants, about 30 were Brazilian polychaete workers. There was a one-day train ride for participants, starting at 1,000 meter elevation, traveling through a rain forest, then ending at a marine station on the beach. Following the conference, there was a cladistics workshop co-taught by Kristian Fauchald, Kirk Fitzhugh, Fred Pleijel, and Greg Rouse. Even though Leslie was not a participant in the actual workshop, she was working



nearby in the laboratory and was often privy to some lively debates. She presented a slide show of live worms photographed during her trip, from both Guana Island and Brazil. They displayed colorful pigment patterns which normally fade upon fixation and preservation. Also internal structures (e.g. pharynges of syllids) that are visible in the live animals may be difficult or impossible to see in preserved worms.

Leslie informed us of the recent acquisition of a large collection of invertebrates for the LACMNH. It consists of 240 five-gallon plastic buckets filled with sorted samples of invertebrates from 30 sites in Puget Sound. From 1974 through 1980 these 30 sites were sampled up to 4 times per year. There were originally over 500 buckets of samples stored at Friday Harbor. Leslie was involved in inspecting each bucket and determining which ones should be brought to the Museum. Many buckets contained species that were vialled separately and then placed into plastic bags for each station. Each bucket then held plastic bags for 4 or 5 stations. This collection considerably increases the holdings of marine invertebrates from the Puget Sound area in the museum. This material will provide many new opportunities for research projects once accessioned and curated.

The first specimen we looked at following the business meeting was *Chone* nr. sp C brought to the meeting by Ricardo Martinez-Lara. It had two dark lateral methyl green pigment patches anteriorly. Ricardo passed around some digital images of the specimen. The photos showed the methyl green staining pattern of *Chone* nr. sp C and also illustrated, for comparison, staining patterns of other species of *Chone*. We were able to put an identification on this species, *Chone duneri*, illustrated in Banse 1972, pp. 466-467, Figure 2b.

A couple of taxonomic aids were made available for attendees; Kelvin Barwick handed out a "Table of Characters for the Ampharetidae from the City of San Diego's Ocean Monitoring Program" revised by Kelvin Barwick and Rick Rowe in February 1997. Rick Rowe distributed the table "Separating the abbranchiate Amphitritinae Terebellidae of Pt. Loma" from November 1995. (See attachments.)

Next we viewed a specimen of *Chone* sp SD 1 brought to the meeting by Kathy Langan-Cranford. A San Diego voucher sheet for this species is included in this newsletter. This species occurs offshore of San Francisco at a depth of 25-30 meters and at the mouth of the Tijuana River, also in shallow water. At first glance, this species may be mistaken for *C. albocincta* since the methyl green staining patterns are similar. *Chone* sp SD 1 is unique in that it has a raised ridge in the shape of a tuning fork on the ventral side of the collar. This feature is more obvious in larger specimens.

Larry Lovell showed us a specimen of what he had been considering *Levinsenia oculata*. Earlier that morning, Larry had examined the holotype and several paratypes at the museum, stained them, and recorded their staining patterns. As luck would have it, the holotype and paratypes of *L. oculata* were actually *L. gracilis*; therefore, *L. oculata* would be proposed to be an objective junior synonym of *L. gracilis*, and unavailable. In the animals he had been calling *L. oculata* the anterior ends were inflated, dorsal intersegmental furrows were deeply invaginated postbranchially, and there were paired pigment dots of methyl green continuing to the posterior of the animal. SCAMIT will designate this *Levinsenia* sp B now that *L. oculata* is unavailable. On page 33 of the MMS Atlas, Volume 6, Blake comments that a voucher specimen of *L. gracilis* that he examined has "more posterior spines in a fascicle (ca. 12 instead



of 7) and arranged in two rows instead of a single row". Larry believes this specimen may represent *Levinsenia* sp B of SCAMIT. Material of *L. oculata* sensu Blake 1996 in the MMS Atlas needs to be re-examined.

We then examined *Levinsenia* sp A, and Larry handed out copies of his draft voucher sheet. *Levinsenia* sp A has a limited number of branchiae (most have 7) which are flattened and begin on setiger 7. The modified setae are neuropodial, acicular, and have strongly curved tips. The modified setae also have a subterminal hood which is an unusual character for *Levinsenia*. Setigers 1-5 are inflated, and there is a body transition at setiger 6. Methyl green stains dorso-lateral areas in the interramal area of anterior and branchial setigers.

The next paraonid for viewing was *Aricidea* sp A, with a voucher sheet prepared by Larry Lovell. This worm has a short median antenna and small red eyespots on the prostomium. The modified neurosetae begin on setiger 15-21. They are acicular with a subterminal arista. There are also 1-2 acicular neurosetae with a terminal arista in inferior positions. Kelvin Barwick and Larry Lovell provided us with draft copies of their updated paraonid key. We reviewed this draft at the meeting and provided them with comments and corrections (and sarcastic humor). We eagerly await their revised edition.

Tony Phillips then showed us a specimen of *Nephtys* that he thought might be *N. squamosa*. It had distinctive flaps that partially covered the notopodia. He encountered this specimen in a sample from the Channel Islands. Tony will compare his specimen to Ohwada's 1989 redescription of *Nephtys squamosa* and let us know the final identification at a future meeting.

PREFER® FIXATION - TEST RESULTS

Dean Pasko

Prefer® is a tissue fixative used primarily for histological and surgical applications. It is a bi-functional aldehyde (glyoxal), and was developed as a Formalin substitute by Anatech LTD. It is less volatile (low vapor pressure), slightly less toxic, and has the potential for disposal in the wastewater stream (i.e., hazardous waste disposal is not required). Price estimates showed that Prefer® could cost less than Formalin to use (depending on the concentration required for adequate fixation). Additional savings could result from the simplified disposal (i.e., not as hazardous waste). These potential savings combined with the lower volatility and toxicity lead CSDMWWD personnel to investigate its potential usefulness as a Formalin substitute in the City of San Diego Ocean Monitoring Program.

Benthic grab samples from 4 benthic stations were collected by 0.1 m² Van Veen benthic sampler, screened, combined (when necessary), then split into equal sub-samples. Sixteen ounce containers were filled one-quarter full (approx. 118 ml) with grab material and placed in relaxant (MgSO₄) for 30 minutes. After relaxation, the samples were fixed using one of four fixative formulations (10%, 20%, 38% Prefer®, or 10% buffered Formalin), and left in the fixative for one, three, and twenty days before changing to EtOH.

The quality of fixation was examined for a variety of samples. Representative specimens of each major taxa (polychaetes, crustacea, mollusks, echinoderms, and miscellaneous phyla) were pulled and examined for gross appearance, brittleness, pliability, and pigment retention. The intent was also to examine polychaetes for effectiveness of staining (Alcian blue & methyl green), and polyclad flatworms and



nemertean worms (Enopla) for the effectiveness of the clearing agent, methyl salicylate, but these tests became impractical (see below).

Gross analysis of eight samples revealed inferior (at best) and poor (at worst) preservation by Prefer® when compared to Formalin. For example, in 38% Prefer® with 3-day fixation, several polychaete specimens were reported as having parapodia that were “flaky”, and some specimens had most of their appendages and cuticle completely “flaking off”. The exoskeleton of Crustacea were fragile and brittle, while the flesh was soft. Echinoderms were also soft to the touch, yet brittle (the arms were easily broken when bent). The preservation of many mollusks, nemertean worms, and burrowing anthozoans was generally fair.

Additionally, the pigment of several taxa fixed in Prefer® appeared different. Many polychaetes (particularly glycerids and lumbrinerids) had a golden or bronze coloration that masked the color patterns seen with Formalin fixation. The flesh of ampeliscid amphipods was generally red, while the exoskeleton was transparent and soft. Ophiuroids, typically white in Formalin fixed samples, were yellow to cream colored when fixed in Prefer®.

Samples of 10% and 20% Prefer® produced even worse preservation. Extending the fixation period to 20 days did not yield better results.

On the other hand, fixation in 10% Formalin was adequate even at 1-day fixation, although, with this minimal exposure, polychaetes fixed within their tubes were a little “softer than normal”. At 20-day fixation, the Formalin samples yielded slightly more fragile mollusk shells.

In general, Prefer® inadequately preserved marine infaunal samples collected and treated by standard methodology. The cause of the less than adequate fixation may result from differences in acidity of Prefer® relative to buffered Formalin (pH of 3.75 - 4.25 vs. 2.8 - 4.0 respectively). Furthermore, Prefer® was developed for specific applications (i.e., histological and surgical uses) where the material being fixed is of a more uniform, predictable quantity (thickness) and quality, as opposed to the variable size, shape and density of marine infauna. Additionally, the external layers of many inverts (e.g., chitinous exoskeleton of arthropods, cuticle of polychaetes) may present additional obstacles to penetration of the glyoxal used in Prefer®.

Consequently, when compared to glyoxal, it appears that 10% Formalin remains the better “all purpose” fixative for marine infaunal samples.

NOTE: Additional information on methodology, formulations, cost estimates, etc. may be obtained from Dean Pasko, City of San Diego Ocean Monitoring Program - Marine Biology Laboratory, 4918 N. Harbor Drive Suite 101, San Diego, CA 92106. dip@sdcity.sannet.gov

ATTACHMENTS

This month's Newsletter contains numerous attachments. As previously mentioned in the newsletter, Kathy Langan's (CSDMWWD) *Chone* sp SD 1 voucher sheet, Kelvin Barwick's/Rick Rowe's (CSDMWWD) Ampharetidae table, and Rick Rowe's Amphitritinae table are all attached. Dean Pasko (CSDMWWD) has also included three new voucher sheets dealing with crustaceans. They are as follows: *Rudilembooides* sp A (the electronic version of this sheet has been delayed but will be available at a future date under the Taxonomic Tools section of the SCAMIT website), *Hartmanodes* sp SD 1, and



Erichthonius sp SD 1. Last of all, but definitely not least, the new SCAMIT Index has been produced (thanks to Faith Cole) and is the final attachment.

JOB OPPORTUNITY

Applicants are being sought for an opening in the Marine Biology Laboratory of the County Sanitation Districts of Los Angeles County. The Marine Biology Laboratory is part of the Districts' Ocean Monitoring Group and is responsible for the conduct of monitoring studies focused upon wastewater impacts on the Palos Verdes Shelf. The position offered is that of Laboratory Technician. Duties include both laboratory and field work at sea. See the accompanying announcement for details.

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- BLAKE, JAMES A. 1995. Chapter 2. Family Paraonidae Cerruti, 1909. Pp. 27-70 *IN*: Blake, James A., Brigitte Hilbig, and Paul H. Scott (eds). *Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel*. Vol. 6, The Annelida Part 3. Polychaeta: Orbiniidae to Cossuridae. 418pp.
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Please visit the SCAMIT Website at: <http://www.scamit.org>

SCAMIT OFFICERS:

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

President	Ron Velarde	(619)692-4903	rgv@mwharbor.sannet.gov
Vice-President	Don Cadien	(310)830-2400 ext. 403	dcadien@lacsdsd.org
Secretary	Megan Lilly	(619)692-4901	mssl@mwharbor.sannet.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

Back issues of the newsletter are available. Prices are as follows:

Volumes 1 - 4 (compilation).....	\$ 30.00
Volumes 5 - 7 (compilation).....	\$ 15.00
Volumes 8 - 15	\$ 20.00/vol.

Single back issues are also available at cost.



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
EMPLOYMENT OPPORTUNITY

Marine Biology Laboratory Technician, Ocean Monitoring Group

The County Sanitation Districts of Los Angeles County collectively are a non-civil service government agency separate from Los Angeles County government. The Districts are financially stable and nationally recognized for innovative engineering practices in wastewater treatment, solid waste management and power generation.

LOCATION: Joint Water Pollution Control Plant, Carson, CA

COMPENSATION & MAJOR BENEFITS: \$2857 - \$3835 per month, starting rate dependent upon qualifications. Paid retirement - including tax-deferred 7% paid into employee's account. Exemption from 6.2% Social Security deduction. Paid family medical/dental coverage, holidays, vacation, personal leave.

ESSENTIAL FUNCTIONS: To perform a variety of sampling activities at sea and conduct or support the laboratory analysis of marine biological samples.

EXAMPLES OF DUTIES: Conducts or participates in the collection at sea and the laboratory analysis of a variety of oceanographic samples (primarily biological). At sea, works aboard small craft and a 66 foot motor vessel; assists in the safe navigation and operation of small craft in coastal waters; operates oceanographic sampling gear and instrumentation; performs shipboard duties such as hauling lines, setting and pulling anchor, and operating hydrographic winches, and performs related duties as required. In the laboratory, sorts infaunal samples consisting of a wide range of invertebrate taxa and assists taxonomists in the analysis of infaunal samples, prepares specimens for taxonomic study; provides curatorial care of biological samples; performs organism resections; enters data into a computerized database; maintains laboratory records; acts as laboratory librarian; prepares standard solutions and reagents and performs related duties as required.

EXAMPLES OF ASSESSMENT CRITERIA: A knowledge of the principles of biology, oceanography and related sciences; the fundamental characteristics of the major animal classes found in marine habitats; the procedures and materials used in the collection of biological and oceanographic samples; standard techniques, equipment, and materials used in a laboratory conducting environmental studies of marine communities; basic seamanship. The ability to perform standard laboratory tasks; maintain records; and understand and carry out oral and written technical instructions; to work at sea aboard small craft under a variety of conditions, including rough and inclement weather; to swim; and to work at a microscope for extended periods of time.

MINIMUM REQUIREMENTS TO QUALIFY FOR TESTING: A valid California C driver's license AND completion of twelve units of college-level zoology.

DESIRABLE QUALIFICATIONS: Include experience aboard small craft in coastal waters; familiarity with oceanographic sampling gear; knowledge of the local marine environment and organisms; SCUBA certification and open ocean diving experience.

TO APPLY: Call LA County Sanitation Districts, 562-908-4242 or e-mail ejonas@lacsdsd.org Deadline to apply 10/23/98. EOE M/F/D

Table of Characters for the Ampharetidae from the City San Diego's Ocean Monitoring Program

Genus species	# of thoracic unciniigers	# of thoracic setigers (do not count palaeae)	Palaeae	Branchiae		Diagnostic characters		
				# of pairs	Shape/color (smooth & cirriform unless noted otherwise)	Anterior (Prostomium, peristome, etc....)	Thorax	Abdomen
<i>Sabellides manriquei</i> (= <i>Sabellides</i> sp SD1)	11	13	small (not obvious)	4	Minute pair of digitate processes between post median branchial pair	Darkish pigment spot(s) on prostomium; oral tentacles papillose		17 setigers; long cirri on abdominal unciniigers; pygidium w/2 long cirri
<i>Amage anops</i>	11	14	absent	4		No lateral "peristomial wings"		14 - 15 setigers
<i>Paramage scutata</i>	11	14	absent	4		Well developed "peristomial wings" on 2 segments anterior to first setae		10 - 11 setigers
<i>Anobothrus gracilis</i>	12	15 (first fascicle small, easily overlooked)	large	4		Retractile oral tentacles smooth	Setiger 11 (uncinger 8) with slightly elevated notopodia and glandular band across dorsum (highlight with blue stain)	
<i>Ampharete arctica</i>	12	14	large	4		Retractile oral tentacles papillose		13 setigers; only last few abdominal unciniigers with superior digitate process (cirrus); pygidium w/2 long cirri
<i>Ampharete labrops</i>	12	14	large	4		Retractile oral tentacles papillose; row of minute eyespots on ventral margin of prostomial lip		13 setigers; pygidium w/2 lateral cirri
<i>Ampharete acutifrons</i>	12	14	large	4		Retractile oral tentacles papillose		12 setigers; most abdominal unciniigers with superior digitate process (cirrus); pygidium with circle of several long cirri (up to 20)

Genus species	# of thoracic uncinger	# of thoracic setigers (do not count paleae)	Palaee	Branchiae		Diagnostic characters		
				# of pairs	Shape/color (smooth & cirriform unless noted otherwise)	Anterior (Prostomium, peristome, etc....)	Thorax	Abdomen
<i>Sosane occidentalis</i>	12	15	small (not obvious)	4			Modified 13 th setiger (10 th uncinger) with notopodia displaced dorsally and expanded	
<i>Eclystippe trilobata</i>	12	15	small (not obvious)	3	With brown crossbars (usually faded)	Prostomium rounded with patches of pigment (eyespot)	Setigers 11-15 obviously elongated with trilobed notopodia	
<i>Ampharetidae</i> sp SD1	12-13 (usually 12)	15-16 (usually 15)	small (not obvious)	4		Crescent shaped pigment patch on posterior dorsum of prostomium; lower "lip" crenulated		
<i>Schistocomus</i> sp A	12	15	absent	4	3 pair bipinnate; 1 pair filamentous			
<i>Schistocomus hiltoni</i>	12	15	absent	4	2 pair bipinnate; 1 pair unipinnate; 1 pair filamentous			
<i>Asabellides lineata</i>	12	14	absent	4		Methyl green patch stains behind branchiae, usually a row of 3-5 eyespots across posterior dorsum of prostomium		Superior digitate process (cirrus) above uncini
<i>Lysippe</i> sp. A	13	16	small (not obvious)	4	w/few dark cross bars	Lower "lip" faintly crenulated		
<i>Lysippe</i> sp. B	13	16	small (not obvious)	4	w/many white cross bars	Lower "lip" obviously crenulated with tips separated nearly halfway down lip		

Genus species	# of thoracic uncinnigers	# of thoracic setigers (do not count paleae)	Paleae	Branchiae		Diagnostic characters		
				# of pairs	Shape/color (smooth & cirriform unless noted otherwise)	Anterior (Prostomium, peristome, etc....)	Thorax	Abdomen
<i>Amphicteis scaphobranchiata</i>	14	17	large (w/tapering tips)	4	1 pair expanded, foliaceous, flattened with slender tips	Paleae long golden and conspicuous		
<i>Amphicteis mucronata</i>	14	17	large (w/mucronate tips)	4	All cirriform	Paleae long golden and conspicuous		
<i>Melinna oculata</i>	14	18	hooks	4	With brown crossbars (may be faded)	Nuchal hooks strongly curved; with fine needle-like spines in first four neuropodia	Transverse lobed membrane across middle of dorsum anterior to first normal notosetal fascicles	
<i>Melinna heterodonta</i>	14	18	hooks	4	Without color cross bars	Nuchal hooks nearly straight; with fine needle-like spines in first four neuropodia	Transverse lobed membrane across entire dorsum anterior to first normal notosetal fascicles	
<i>Mooreaanytha bioculata</i>	14	17	absent	4		Brownish pigmentation just under branchial base; lower lip faintly crenulated		
<i>Sammytha californiensis</i>	14	17	absent	3		Lower "lip" of prostomium produced slightly downward		Pygidium hoeshoe shaped

**SEPARATING THE ABRANCHIATE
AMPHITRITINAE TEREPELLIDAE OF PT. LOMA**

Lanassa gracilis / *Lanassa venusta venusta* / *Lanassa* sp D / *Proclea* sp A

SPECIES	UNCINI BEGIN ON SETIGER...	# OF SETIGERS WITH DOUBLE ROWS OF UNCINI WITH NOTOSETAE	TOTAL NUMBER OF NOTOSETIGERS	NOTOSETAL DISTRIBUTION
<i>Lanassa gracilis</i>	2 (1*)	8	15	Last setiger with double row of uncini with notosetae
<i>Lanassa venusta venusta</i>	2 (1*)	4	11	Last 4 setigers with double rows of uncini without notosetae
<i>Lanassa sp D</i>	2 (1*)	8	15	Last setiger with double row of uncini without notosetae
<i>Proclea</i> sp A	3 (2*)	9	16	Last setiger with double row of uncini with notosetae

(*)Number of anterior thoracic setigers with notosetae only

USE THESE CHARACTERS FOR SPECIMENS THAT DO NOT
POSSESS A DEFINITIVE STAINING PATTERN

 **CITY OF SAN DIEGO VOUCHER SHEET**

Species: *Chone* sp SD 1
Authority: Pt. Loma 1997
Common Synonyms:

Taxon: Annelida: Sabellidae
Date: February 13, 1998
By: K. Langan-Cranford
Voucher Specimen(s):

Station	Date	Storage Location	Voucher#
TJI-4	11 Aug 97; 58 ft.	KL	P-84
TJK-6	11 Aug 97; 51 ft.	DLZ	P-2013

Characters:

Collar slightly oblique.
 Branchial lobes not completely hidden by collar.
 6 pairs of radioles.
 Palmate membrane at least 2/3 radiole length.
 Raised ridge in the shape of a tuning fork on the ventral side of the collar (Fig. 1). This structure stains with methyl green.
 Setiger 1 fascicles are smaller than others, except in very small (3mm) specimens where they are the same size.
 Spatulate setae without pointed tips or with minute, hair-like filament.
 Long abdominal capillary setae, twice the length of an abdominal setiger.

Illustration:



Fig. 1

Full Description:

Specimen	Size (mm)	# of radioles	Size of notosetiger 1
San Francisco	5 cm	22 pairs	smaller than others
KL P-84	6 mm	6 pairs	slightly smaller than others
DLZ 2013	5.5 mm	no radioles	slightly smaller than others
Main P-31	3 mm	no radioles	same as others

Related Species:

Chone mollis of Banse 1972. This species does not have the collar ridge as shown in Fig. 1 and does not have long abdominal capillary setae.

Comments:

Specimens were first collected offshore of San Francisco in Feb. and Sept. 1995 at a depth of 25-30 meters. Specimens were subsequently collected at shallow stations offshore of the Tijuana River.
 See Kirk Fitzhugh's notes on "Characters used to distinguish *Chone* species according to Banse 1972". Notes in SCAMIT newsletter Vol. 10(4) August 1991.

References:

Banse, K. 1972. Redescription of some species of *Chone* Kroyer and *Euchone* Malmgren, and three new species (Sabellidae, Polychaeta). Fishery Bulletin 70(2):459-495.

Species: *Chonesp*SD 1

Taxon: Annelida: Sabellidae

Date: 11 February 1998

Additional Illustrations: K.Langan, 1997



Distribution—

Pt. Loma: TJI-4 (58 ft); TJK-6 (51 ft)

Geographic: Mouth of Tijuana River

Habitat:



CITY OF SAN DIEGO VOUCHER SHEET

Species: *Hartmanodes* sp SD1

Authority:

Common Synonyms:

Monoculodes sp SD1 of CSDMWWD

Taxon: Gammaridea: Oedicerotidae

Date: 15 May 1997

By: Dean Pasko

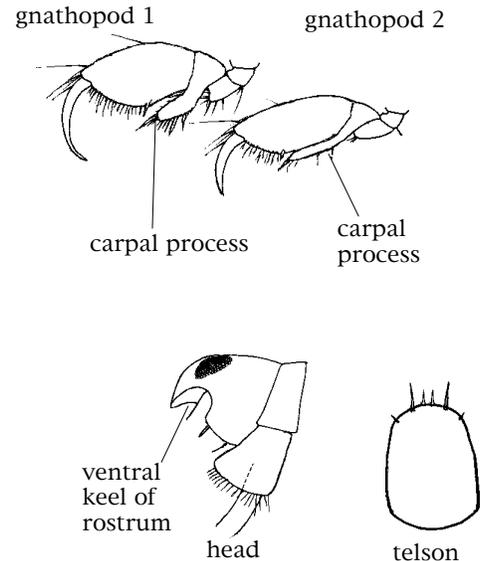
Voucher Specimen(s):

Station	Date	Storage Location	Voucher#
B-13	8 Jan 1997	Main	

Characters: (Female only. Male unknown.)

- White oedicerotid with well defined dorsal eye.
- Rostrum strongly deflexed (approx. 90 degrees), not acutely tapered, ventral keel slightly concave.
- Coxa 1, slightly produced antero-distally (ventrally broadened).
- Gnathopod 1, carpus (article 5) short (<1/4 article 6 as measured along anterior margin); carpal lobe narrow and elongate.
- Gnathopod 2 carpal process narrow and moderately long (i.e., may extend up to, but not beyond, defining corner of palm).
- Gnathopod 1 and 2 with article 6 relatively broad (length = 2.3X width).
- Telson convex, with 4 terminal setae/spines, and two short setae on outer margin.
- Pereopod 7 basis without posterior ventral lobe. Posterior margin somewhat produced with medium length setae.

Illustration: Digital images also available on the SCAMIT webpage: www.scamit.org



(See figures on page 2.)

Full Description:

Related Species:

The species can be easily confused with *M. emarginatus* or *M. hartmanae*.

Hartmanodes sp SD1 resembles *M. emarginatus* in the basic characters of the gnathopods (e.g., somewhat broadened propodus of gnathopods 1 and 2), but differs in the shorter carpus and a more elongate carpal lobe on gnathopod 1, a strongly deflexed rostrum (~90 degrees vs. <45 degrees in *M. emarginatus*), and a convex rather than emarginate telson. Compare to figures on page 2.

Hatmanodes sp SD1 also resembles *H. hartmanae* which possesses a strongly deflexed rostrum and short carpi of gnathopods 1 and 2. *M. hartmanae* differs primarily in the much more elongate and much narrower propodus and carpal process of gnathopod 2: the propodus is 3.25 longer than wide, and the carpal process extends beyond the palm. Additionally, *H. hartmanae* has a convex ventral keel on the rostrum, a coxa 1 that is not antero-distally or ventrally broadened (i.e., the sides are parallel), and a telson with a nearly straight posterior margin.

References:

Barnard, J.L. 1962. Benthic marine amphipoda of southern California: Family Oedicerotidae. Pacific Naturalist, 3:349-371.

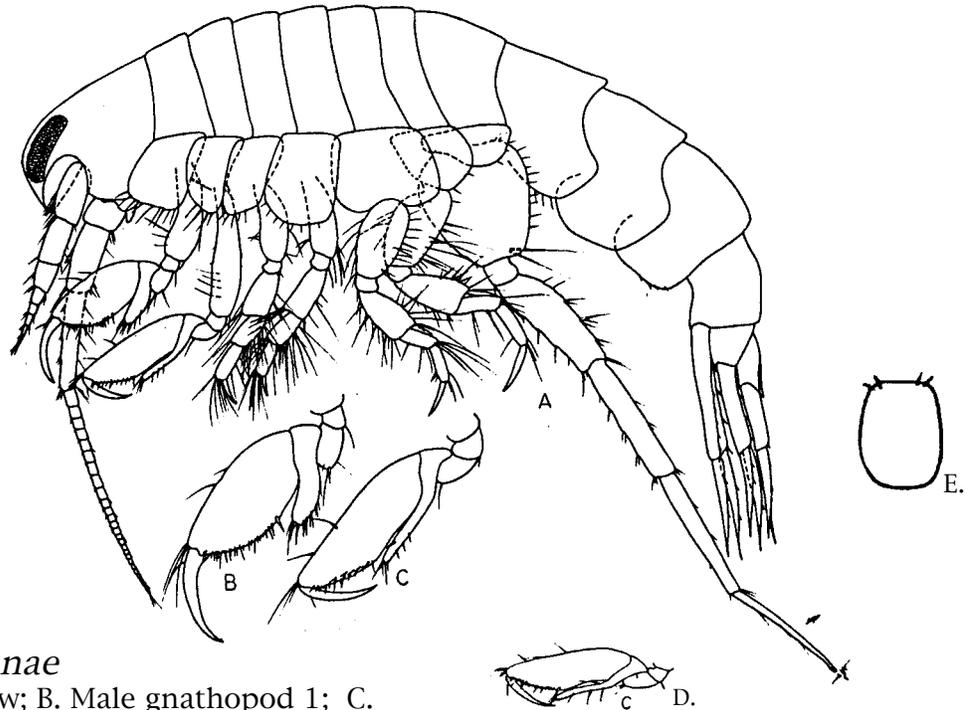
Bousfied, E.L. and A. Chevrier. 1996. The Amphipod family Oedicerotidae on the Pacific Coast of North America. Part 1. The Monoculodes and Synchelidium generic complexes: Systematics and distributional ecology. Amphipacifica. Vol 2 (2): 75-148.

Species: *Monoculodes* sp SD1

Taxon: Gammaridea: Oedicerotidae

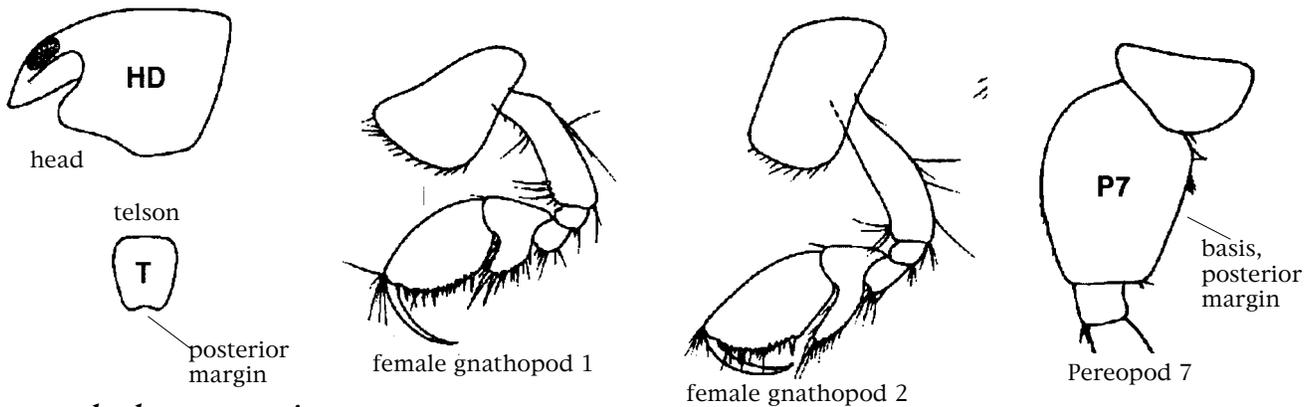
Date: 15 May 1997

Additional Illustrations: From J.L. Barnard, 1962.



Monoculodes hartmanae

A. entire male, lateral view; B. Male gnathopod 1; C. Male gnathopod 2; D. Female gnathopod 2; E. telson.



Monoculodes emarginatus

Distribution—

Pt. Loma: 100 - 320 ft; Imperial Beach to La Jolla, California

Geographic:

Habitat:



CITY OF SAN DIEGO VOUCHER SHEET

Species: *Erichthonius* sp SD1

Authority:

Common Synonyms:

?*Erichthonius brasiliensis* (juvenile)

Taxon: Gammaridea: Corophioidea: Ischyroceridae

Date: 22 April 1998

By: Dean Pasko

Voucher Specimen(s):

Station	Date	Storage Location	Voucher#
2121	7/9/96	D.Pasko	
2137	7/15/96	D.Pasko	

Characters:

A small species, approximately 2-3 mm in length at maturity.

Male gnathopod 2 with double defining tooth; coxa 2 much broader than deep, antero-ventral margin slightly concave, posterior margin strongly oblique; article 2 (basis) elongate (Figure 1).

Male coxa 1 anteriorly produced, narrow, much broader than deep (Figure 2).

Female coxa 1 anteriorly produced, gently rounded posteriorly (Figure 3).

Female coxa 2 anteriorly produced, ventrally stepped (or sinuous), with oblique posterior margin (Figure 4).

Uropod 3 peduncle equal to urosomite 3 (both male and female).

Illustrations: *Erichthonius* sp SD1

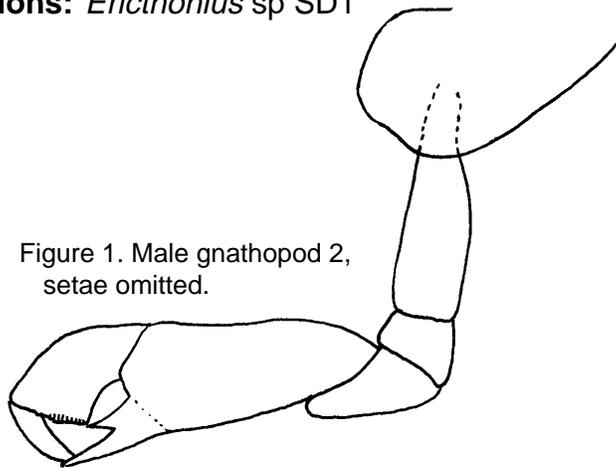


Figure 1. Male gnathopod 2, setae omitted.



Figure 3. Female coxa 1, setae omitted.



Figure 2. Male coxa 1, setae omitted.



Figure 4. Female coxa 2, setae omitted.

Related Species:

This species is very similar to *Erichthonius brasiliensis* in form of the gnathopods, mouthpart morphology, shape of coxa 5, length of uropod 3 peduncle (= urosomite 3), and uropod armature, etc. The species differs from *E. brasiliensis* in its consistently small size at maturity (approximately one-half the size of *E. brasiliensis*), the distinctive shape of coxae 1 and 2, and the more elongate basis of gnathopod 2 (male).

Comments:

It is possible that this species was previously mistaken for juvenile forms of *E. brasiliensis*, however, the consistently small size (2-3 mm) of ovigerous females and males with well developed penes, together with the few, but consistent differences listed above suggests that *Erichthonius* sp SD1 is a separate species.

(over)

Species: *Erichthonius* sp SD1

Taxon: Gammaridea: Corophioidea: Ischyroceridae

Date: 22 April 1998

References:

Bousfield, E.L. 1973. Shallow water Gammaridean Amphipods of New England. Cornell University Press, Ithaca, New York; 312 pp.

Barnard, J.L. 1975. Phylum Arthropoda: Crustacea, Amphipoda: Gammaridea. Pp. 313-366. IN: R.I. Smith and J.T. Carlton (eds), Light's Manual: Intertidal Invertebrates of the Central California Coast. Third edition, University of California Press, Berkeley, California.

Distribution—

Pt. Loma: 63 ft to 275 ft in sandy sediments

Geographic: San Diego, California

Habitat: