



Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

April 1989

Vol. 8, No. 1

NEXT MEETING: Bodotriidae of Southern California

DATE: Monday, May 8, 1989, 9:30 AM

LOCATION: L.A. County Museum of Natural History
 900 Exposition Blvd. rive
 L.A., CA

PRESIDENT'S STATEMENT

In 1982 SCAMIT established as its goals "the promotion of marine invertebrate taxonomy and the development of a regionally standardized taxonomy". As SCAMIT enters its 8th year, I am pleased to say that the organization continues to be vital and active in pursuit of these goals, holding 14 meetings and workshops during the past 12 months.

The continued vitality of our Association is due to the excellent support it receives from its members. I would like to take this opportunity to thank those members who, through generous contributions of their knowledge, time, and effort, have kept this Association a valuable asset to all of us working on marine invertebrate taxonomy in southern California. For SCAMIT, unlike many professional organizations, is fundamentally a working group and requires an unusual level of active participation of its members to be successful. The distribution and examination of specimens; production of descriptions, figures, and keys; compilation of bibliographies, are all time consuming tasks that many of our members carried out during this past year for the benefit of us all.

During the past 12 months, SCAMIT has also received the generous support of several individuals in the conduct of workshops or lectures. Drs. Kristian Fauchald, Les Watling, Anne Cohen, Gordon Hendler, Joel Martin, and James Carlton all made valuable contributions and have indicated interest in future participation. I wish to thank all these individuals

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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for formal taxonomic purposes.

for their valuable contributions. Special thanks go to Dr. J.L. Barnard for leading the 4th amphipod workshop. This has become an annual event to which all the peracarid-types in SCAMIT look forward. Dr. Barnard has agreed to conduct his fifth workshop in the coming year!

For the second year SCAMIT organized and conducted a very successful symposium at the annual meeting of the Southern California Academy of Sciences, held at CSU Northridge. This year's effort was titled "Structure and Change in Marine Communities in Southern California". The very excellent series of talks covering communities from salt marsh to deep slope drew a large and appreciative audience. Thanks to all those who assisted in organizing the symposium and to those who contributed papers.

The year closed with a meeting dedicated to a "Review of the Infaunal Trophic Index". In a departure from the strictly taxonomic topics usually pursued by SCAMIT, this day-long meeting discussed the theory, application, and use as a regulatory device, of the ITI. The approximately 30 biologists in attendance, representing various consulting firms, public agencies, and regulators, participated in a lively and thorough discussion of the issues surrounding the use of the index. I am particularly appreciative of the participation in this meeting of one of our out-of-region members, Jack Word. Because he was the originator of the index, his input was invaluable. SCAMIT is now following up on this meeting with the formulation of a set of recommendations concerning the application and interpretation of the ITI.

While this past year has been a busy and productive one for SCAMIT, the nature of our task leaves much more to be done. The most urgent need in terms of product, in my opinion, is an accelerated production of provisional species vouchers. This, followed by formal erection of new taxa, is the activity most useful to our members. It is also the activity most demanding of our contributing members' time and so may always fall short of our hopes. I remind the members that SCAMIT's publication support fund is available to them and encourage them to take advantage of the fund. In the past year we have increasingly ventured out from our home at the Cabrillo Marine Museum to involve other local institutions in our activities and take advantage of their resources and generosity. I feel this has added substantially to the value of our meetings and should continue in the future. We have increasingly relied upon the membership dues as the financial base for SCAMIT and have been successful. However, consideration should be given whether we should once again seek outside funding to support the activities of the Association.

As can be seen in the Agenda in this newsletter, SCAMIT's eighth year will be another full one. Besides our regular meetings, we are again planning workshops led by J.L. Barnard, Kristian Fauchald, and Les Watling, as well as a special meeting to review field sampling

techniques employed in benthic infaunal surveys in the region. So it will be an exciting and busy year for all of us in SCAMIT.

In closing, I thank all of the members for their assistance during the past two years that I served as SCAMIT's president. It has been a pleasure to fill this post, and I thank you for the opportunity. I also thank all the officers who served the Association in the past year. I am sure the members are appreciative, as I am, of all the hours you have contributed. Our thanks also go to the management and staff of the Cabrillo Marine Museum, who have so generously provided a home to our organization for the past five years. On behalf of the outgoing officers and the membership, I congratulate SCAMIT's newly elected officers and wish them good luck in the coming year and continued success to the Association.

Dave Montagne

TREASURER'S STATEMENT

During this past year, we utilized the Publication Support Program for the first time by paying for illustrations in Mary Bergen's forthcoming work on holothuroids. Also SCAMIT explored and then rejected an option of obtaining a second-class postal permit for mailing the newsletter. We concluded that compliance with the postal service requirements would be too cumbersome for our small organization. In 1988-89 the newsletter expenses (\$1109.14) were supported entirely by membership dues (\$1220.00).

The expenditures for the year totaled \$2217.85, and total income for the year was \$1763.52. The year-end checking and savings account balances were \$1045.58 and \$8686.43, respectively.

Ann Martin

MINUTES FROM MEETING ON APRIL 10, 1989

Next month's meeting will be a slight departure from our usual meetings. We will be meeting to work on specific areas of Bodotriidae taxonomy. This is being done as a working meeting, rather than as a presentation, to facilitate the workshop on Bodotriidae that will be run by Les Watling later this year.

NEW OFFICERS! This year's slate of officers pulled in votes from all over the west of the U.S. and Canada. Thank you all for voting and making this election a success.



1989-1990

PRESIDENT: Ron Velarde, City of San Diego
VICE-PRESIDENT: Larry Lovell, private consultant
TREASURER: Ann Martin, Hyperion
SECRETARY: Mas Dojiri, Hyperion

John Ljubenkov from MEC provided us with an extensive examination of anemones and sea pens from soft bottoms. Included in this newsletter are four new voucher sheets that can be used for local anemones. Along with Scolanthus sp. A, these represent the more common soft-bottom shelf forms. The situation for the sea pens is not as clear. John noted that many samples of sea pens are ruined when the spicules of the sea pens are damaged or destroyed. His anatomy sheet on the sea pens indicates the importance of determining the type of zooid and its arrangement on the stem. As a closing note, John reminded us that the original voucher sheet in Volume 2, #3 was issued as Isoedwardsia, but has since been reevaluated and changed to Scolanthus sp. A.

Humor file...or what passes for humor in Carlsbad.

"Why is the benthos like a park?"
"Because you can have a pycnogonid."

Are people with this kind of humor beyond rehabilitation, or what?

Agenda...agenda...agenda Finally we have an agenda for 1989-1990.

March	Review of the Infaunal Trophic Index
April	Anemones and Sea Pens of Soft Bottom Shelf Depths
May	Bodotriidae - LACMNH
June	Barnard/Amphipod Workshop - LACMNH
July	Pinnixa - San Diego Natural History Museum
August	Fauchald/Polychaete Workshop - tentative AHF
September	Pycnogonid - CMM
October	Bodotriidae - Les Watling - tentative date, LACMNH
November	Benthic Field Techniques - CMM
December	Open
January	Paraonidae
February	Open

As indicated in the agenda, this year we have made plans to hold the Barnard/Amphipod Workshop earlier than last year. The schedule for this year places the 2-3 day workshop on June 5th, 6th, and possibly 7th. SCAMIT will be sending out a separate flyer announcing this important meeting in the near future. In addition, there are plans being made for two other taxonomy workshops. Dr. Kristian Fauchald has offered to participate in a polychaete workshop to be held at AHF sometime in August. The dates for this meeting will be set at a later date around the time of the International Polychaete Conference.

Also Dr. Les Watling, Ira C. Darling Marine Center, University of Maine, is interested in participating in a cumacean workshop this coming fall. It is now tentatively scheduled for October. The goal of this workshop is to follow up on the work of the May bodotriid meeting, concentrating on the "Robert Given" species.

Also this fall we plan to hold a meeting to compare and discuss the field techniques utilized in the various infaunal surveys in Southern California. For the purposes of these discussions, field techniques will include all aspects of sample handling ranging from deployment of sampling equipment, sediment screening, and fixation of material.

The 7th Annual SCAMIT Picnic will be held at Doheny Beach on Saturday, August 19, one week after the International Polychaete Meetings. The picnic chairman and new VP, Larry Lovell, will be providing more details in upcoming newsletters.

SCAMIT will form an ad hoc committee to review and recommend interpretation of the Infaunal Trophic Index. If you would like to make written comments to this group please forward them to Ron Velarde:

Point Loma
Biology Lab
4077 North Harbor Drive
San Diego, CA
92101
(619) 221-6608

The following is excerpted from the Polychaete Research Newsletter: Arne Norrevang (Science Faculty, Svabosgota 7, FR-100 Torshavn, Faroe Islands), writes: "A large scale programme of investigation of the marine benthic fauna around the Faroe Islands will start this year, running for three successive years. The main topics will be faunistics, zoogeography and community structure. It is a joint



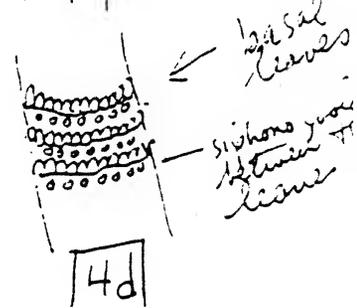
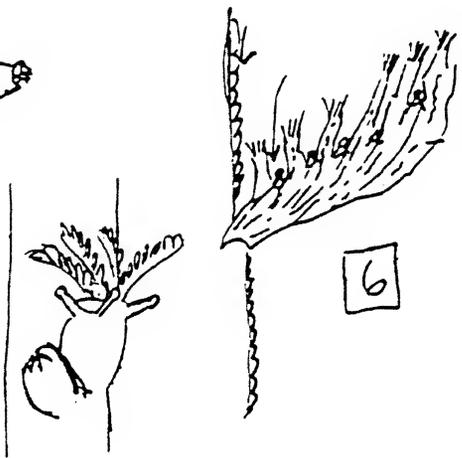
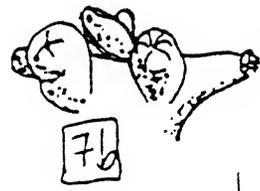
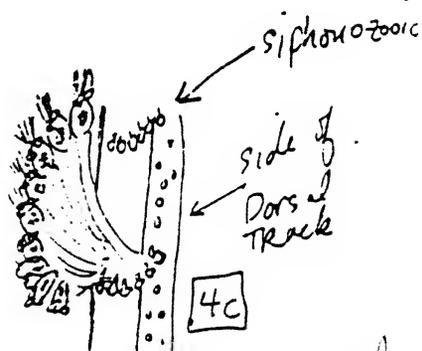
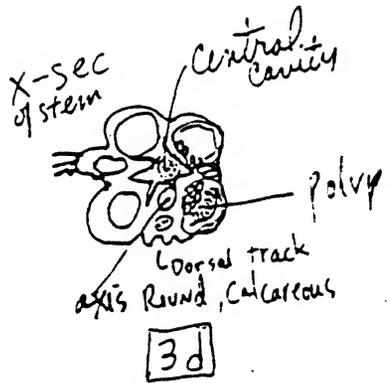
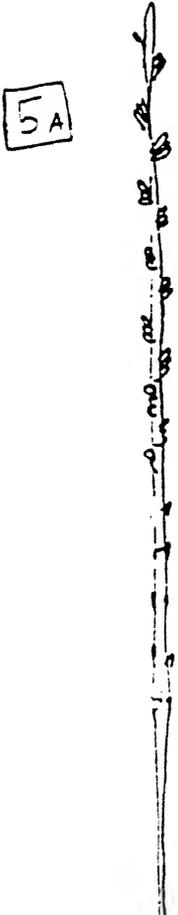
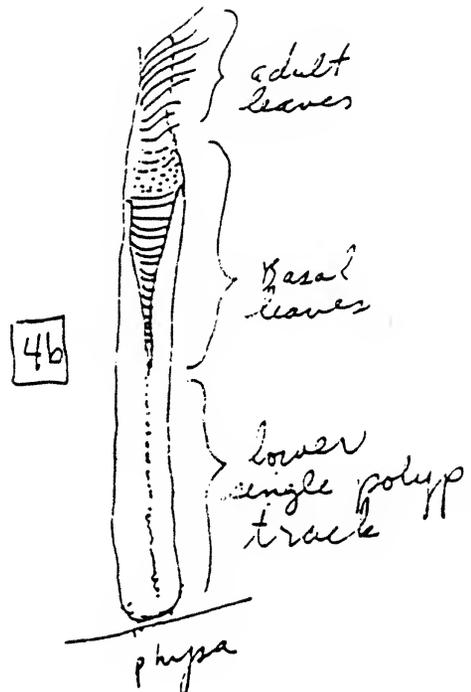
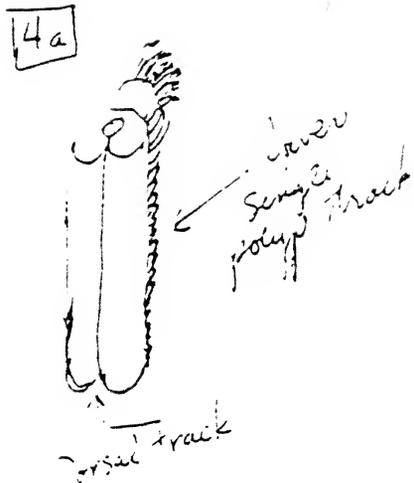
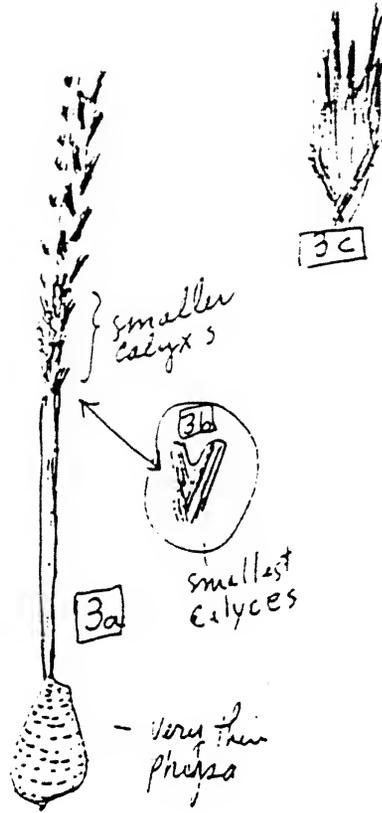
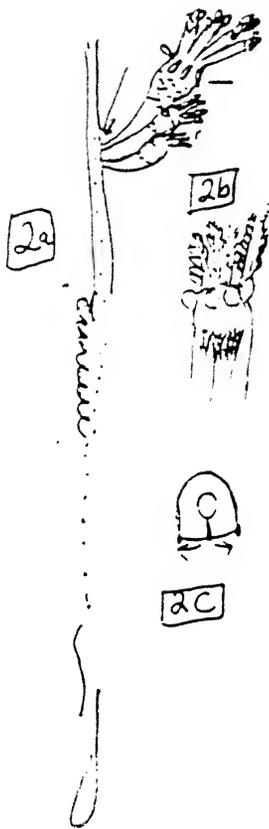
venture of the Nordic countries and a marine biological station will be built to do the sorting. Also there will be two scientists, one postgraduate and three technicians. So far I have several polychaetes not previously found in the area and also what maybe a new species of Polydora. This gives me serious trouble as there are almost no library facilities here." Reprints and copies of keys, or other guides to identification, are needed. Please send Arne any that may be useful to the laboratory.

The 24th European Marine Biology Symposium will be held on October 4-10. The theme is "Trophic Relationships in the Marine Environment". Please write to EMBS Symposium Office, Dunstaffnage Marine Research Laboratory, P.O. Box 3, Oban, PA34 4AD, Argyll, Scotland.

Seapen Anatomy

1. *Acanthoptilum* sp. A, one polyp per leaf; spines at base of leaf; spicules in calyx.
- 2a. *Virgularia* ?*tuberculata* - 3 polyps/leaf; leaf attached only at base;
b. typical *Virgulariine* polyp; c- x-sec. of stem.
- 3a. *Stachyptilum superbum*; note end bulb (physis) with cinclidges (pores) and single polyps whorled around stem;
b. small calyx;
c. large calyx with spiny margin;
d. x-sec of stem.
- 4a. *Virgularia* sp.; note dorsal track;
b. side view adult leaves; basal leaves; lower single polyp track;
c. siphonozooids in crescents; siphonozooids in dorsal track and typical leaf;
d. basal leaves and siphonozooids.
- 5a Sea Pen # 9 (*Virgulariidae*); b- polyps
6. *Virgulariid* leaf with siphonozooids between the autozooids.
- 7a. Sea Pen #13 (*Virgulariid*), polyp with symbiotic hydroid;
b. adnate leaf with contracted polyps.

PLEASE SEE ENCLOSED ILLUSTRATIONS OF SEA PEN ANATOMY



Synonymy: Anemone # 84 of Ljubenkov (MEC)

Literature: Calgren, O. 1949. A survey of the Ptychodactiaria, Corallimorpharia, and Actinaria. Kungl. Svenska Vetenskapskademiens Handlingar Fjarde Serien Band 1 N:01.

Diagnostic Characters:

1. Body very thin and elongate; extremely hard to tell which end is anterior or posterior.
2. Thin iridescent cuticle overlaying pinkish body core.
3. Mesenterial insertions visible but uncountable.
4. Tentacles are so far invisible to my eye, which explains provisional family name.
5. Oral region tinged with dark purplish.
6. A most distinctive anemone.

Distribution: OCSD 8724 34/I; Con1/1; 8606 4/3; Also MMS/Battelle Camp; Kinnetics/Encina; Pt Loma. 34 to about 100 meters in depth.

Comments: Common name is "thread anemone" of Ljubenkov.



(a)

Figure: a) whole anemone

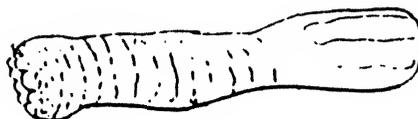
Synonymy: Anemone # 87 of Ljubenkov
?Nematostella vectensis sensu Ljubenkov

Literature: Calgren, O. 1949. A survey of the Ptychodactiaria, Corallimorpharia, and Actinaria. Kungl, Svenska Vetenskapskademiens Handlingar Fjarde Serien Band 1 N:01.

Diagnostic Characters:

1. Up to 1.8 cm long.
2. Column with a satin sheen. Top of column brownish grading to white below.
3. Flaring oral disc with a fosse between it and the tentacles.
4. 8 tentacles with large pores at the tips.
5. 10 perfect macrocnemes.
6. No sphincter.

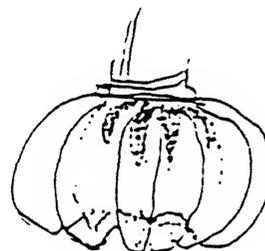
Distribution: OCSD 8606 5/1; 8503 CON1/5; 8609 37/1; 8501 37/2; CSA-COJO 4/C Oct 86. Depth 58-100 meters.



(a)



(b)



(c)

Figures: a) whole specimen contracted. b) another specimen. c) fully expanded base with mesenteries visible.

Synonymy: Anemone #96 of Ljubenkov

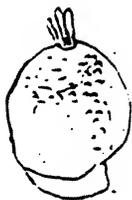
Literature: Calgren, O. 1949. A survey of the Ptychodactiaria, Corallimorpharia, and Actinaria. Kungl. Svenska Vetenskapskademiens Handlingar Fjarde Serien Band 1 N:01.

Diagnostic Characters:

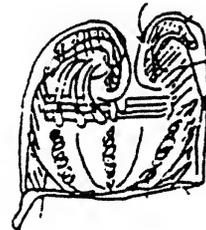
1. Hemispherical in contraction.
2. column white with very thin iridescent cuticle overall.
3. Distinct limbus and foot, therefore a thenarian anemone.
4. 12-18 tentacles with a dark spot in the center.
5. 1 siphonoglyph topped by a small conchula with 3-5 tentacular structures.
6. 6 pairs perfect fertile macrocnemes, + 4 pairs imperfect.
7. 1 mesogloal sphincter at the margin.

Distribution: OCSD 8501 9/3; MMS/Battelle Camp 1-2 PJ12/2, PJ#1; Camp 2-3 R1/1. Depth 60 meters--?

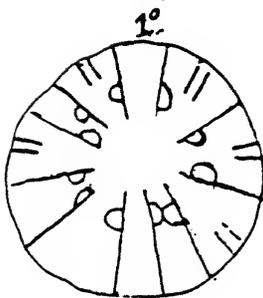
Comments: Probably a new genus.



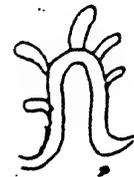
(a)



(b)



(c)



(d)

Figures: a) external view. b) x-section. c) mesenterial arraignment.
d) cochula.

Synonymy: Anemones #12, #81, #85, #88 of Ljubenkov.

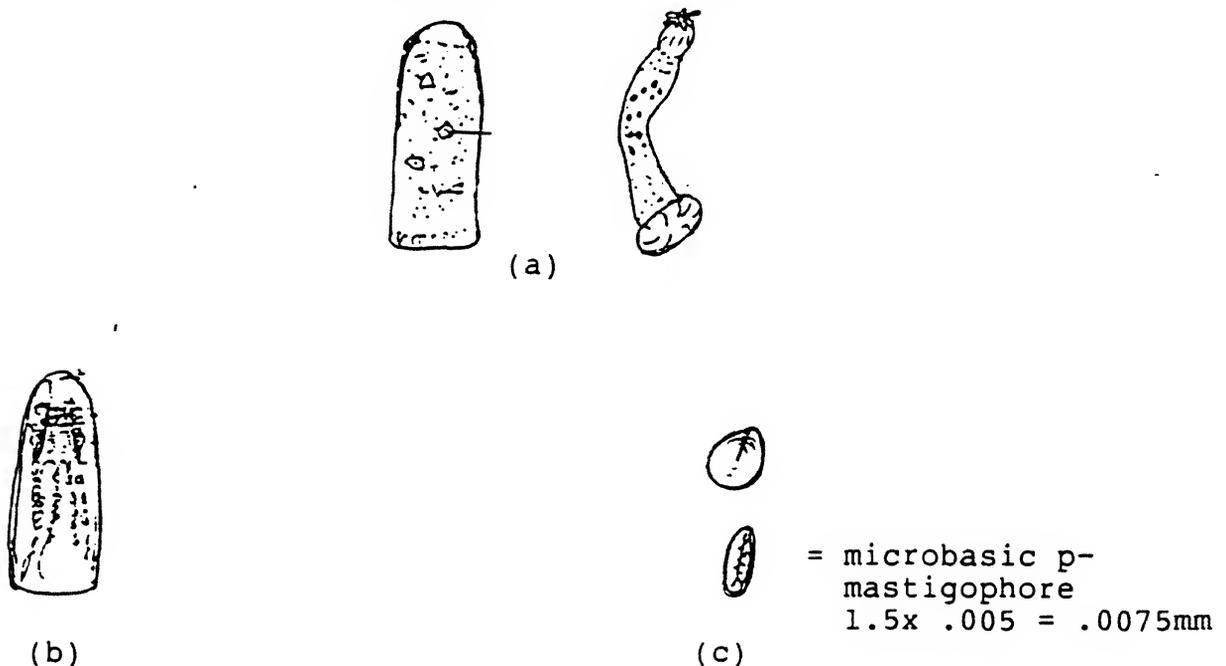
Literature: Calgren, O. 1949. A survey of the Ptychodactiaria, Corallimorpharia, and Actinaria. Kungl, Svenska Vetenskapskademiens Handlinger Fjarde Serien Band 1 N:01.

Diagnostic Characters:

1. Column divisible into physa, scapus, and scapulus, of which the first two are visible in contracted specimens.
2. Column covered by a rust colored "fluffy" cuticle with verrucae which hold quartz sand grains; column ususally thin, but in older specimens may be 0.2 mm thick.
3. 12 perfect fertile mesenteries (macrocnemes) and probably 12 microcnemes.
4. 24 tentacles in 3 cycles; inner larger than outer; hollow with a reddish-purple endodermal core.
5. Margin tentaculate; no fosse.
6. Probably 2 mesogloal sphincters, one at the margin, the other at the scapus/scapulus junction.
7. 2 weak siphonoglyphs; yellowed white actinopharynx in upper column; no conchula.

Distribution: Orange County to Pt. Conception

Comments: Keys out to Halianthella, Kwietniewski 1896. p 588.



Figures. a) 2 specimens, external view. b) general internal view. c) nematocysts of tentacles.

Synonymy: Anemone #92 of Ljubenkov

Literature: Calgren, O. 1949. A survey of the Ptychodactiaria, Corallimorpharia, and Actinaria. Kungl. Svenska Vetenskapskademiens Handlingar Fjarde Serien Band 1 N:01.

Diagnostic Characters:

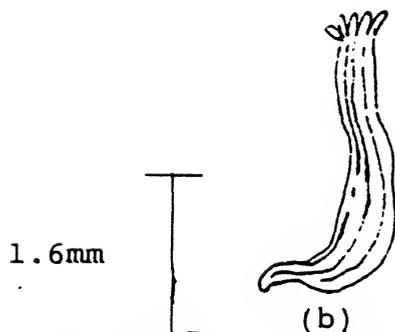
1. Column translucent; no verrucae or other adherent organs; smooth; color (ETOH) light brown to yellowed; to 1.6 cm in length.
2. 5 pairs perfect fertile mesenteries and one pair imperfect and infertile = 6 pairs of mesenteries.
3. 10 short blunt tentacles creased at the base (oral side).
4. Hypostome (mouth) a transverse slit.

Distribution: OCSD 8606 Con I/1; CSA parcel one 2-2/C. Depth 60-100M

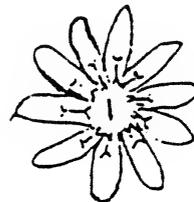
Comments: This appears to be Halcampa decententaculata Hand, 1954; but I would like to see larger specimens before making a synonymy.



(a)



(b)



(c)

Figures: a) contracted in ETOH. b) expanded. c) view of tentacles from above.

SCAMIT CODE: MEC 9

Date Examined: April 8 1989
Voucher By: John Ljubenkov, MEC

Literature: Carlgren O. 1949. A Survey of the Pthchodactiaria, Corallimorpharia and Actiniaria. Kungl. Svenska Vetensk. Handl. F.S. Band 1 No. 1.
Stephenson. 1928. The British Sea Anemones. Vol. 1, Ray Soc. #113 for 1927, London.
Carlgren, O. and Stephenson. 1928. The British Edwardsiidae. J. Mar. Biol. Assoc. (U.K.), Vol. 25, No. 1.

Diagnostic Characters:

1. Nemathybomes (nematocyst "blisters") scattered on upper column and present on physa.
2. Physa not delineated from body, base rounded, not a rosette and in general not tapering.
3. Outer surface a distinct rusty-brown color, even after preservation.

Related Species and Character Differences:

Edwardsia (Edwardsiella) californica McMurrich 1913 - a bay and estuary form (Mission Bay, San Pedro back bay before harbor development) - possibly in very shallow open ocean e.g. off San Onofre); rarely encountered.
Edwardsia sp. A - see Scamit Vol. 2, No. 3

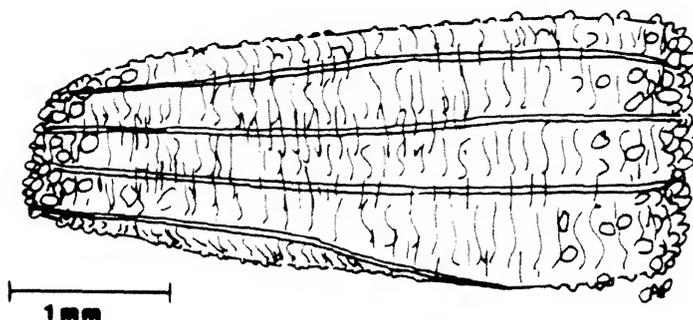
Variability: Color often grades to grayish in some specimens. Some specimens have a "cuticle" over the physal nemathybomes.

Common Synonyms: Often mistaken for a holothuroid.

Aids to Identification: 8 bands running length of body (=mesenterial insertions), scattered nemathybomes, physa not delineated from body.

Distribution: First occurs in deeper parts of harbors and bays, continues out to 100-120 m.

Comments: The most common infaunal anemone on the shelf.





Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

May 1989

Vol. 8, No. 2

NEXT MEETING: Amphipod Workshop

GUEST SPEAKER: Dr. J.L. Barnard, National Museum of Natural
History, Smithsonian Institution

DATE: Monday-Wednesday, June 5-7, 1989, 9:30 AM

LOCATION: L.A. County Museum of Natural History
900 Exposition Blvd.
Los Angeles CA 90007

MINUTES FROM MEETING ON MAY 8, 1989

SCAMIT Executive Meeting: An executive meeting of the past and new SCAMIT officers was held on April 28, 1989 at the Biology Lab of the Los Angeles County Sanitation Districts. Three major items were discussed:

- 1) the Infaunal Trophic Index and the formation of an ad hoc committee to address various issues of this index;
- 2) the Third International Polychaete Conference; and
- 3) discussions of the duties and responsibilities of the new SCAMIT officers, especially the detailed duties of the secretary.

Infaunal Trophic Index: The initial ad hoc committee meeting concerning the ITI will be held on Thursday, June 1, 1989, 9:30 AM, at the Orange County Sanitation Districts. The purpose of this committee is to discuss the relevant issues concerning the index, to invite suggestions from interested parties of SCAMIT, to reach an agreement on these issues, and to draft recommendations pertaining to the ITI. Jack Word, Battelle Northwest, is very interested in participating on this committee. This ad hoc committee would presumably consist of one appointed member from each interested institution or agency. Various regulatory agencies, e.g. EPA,

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Tetratich, etc. will be invited to attend, but their possible involvement is not yet known. An editor would probably need to be elected. Comments and suggestions from SCAMIT members would be submitted to the new president, Ron Velarde, Pt. Loma Biology Lab, City of San Diego, for consideration. A document consisting of various recommendations would be drafted and made available to each committee member and to Jack Word for editorial changes. A final draft would then be completed and sent to SCAMIT members and to target agencies, e.g. EPA. The vice-president, Larry Lovell, private consultant, will be the chairman of this ad hoc committee.

Third International Polychaete Conference: The International Polychaete Conference will be held on August 6-12, 1989 at California State University, Long Beach (see notice attached to April 1989 newsletter for detailed information). Dr. Donald J. Reish, CSULB, has requested volunteers to help in registration, lead field excursions for conference participants on board the R/V Yellowfin to Catalina Island, and to drive participants around town, e.g. CSULB to R/V Yellowfin dock. Volunteers should contact Dr. Reish at his CSULB office (213-985-4846).

Amphipod Workshop: Dr. J.L. Barnard, National Museum of Natural History, Smithsonian Institution, will lead the amphipod workshop which has become an annual event for SCAMIT. The 2-3 day workshop will be held at the Los Angeles County Museum of Natural History on June 5th, 6th, and possibly the 7th. SCAMIT members are encouraged to organize their specimens and prioritize problematical groups, so that the workshop can concentrate on a few selected groups. Don Cadien, Los Angeles Sanitation Districts, suggested the genus Photis. Sue Garner, Marine Ecological Consultants (MEC), mentioned Liljeborgiidae, Lysianassidae, and Bathymedon as possible groups to include in the workshop. An atlas of southern California amphipods is being planned by J.L. Barnard, but unfortunately has been delayed for various reasons. A work such as this would be very helpful to SCAMIT members.

Taxonomic Changes in the Tanaidacea: Tony Phillips, Hyperion Treatment Plant, informed attendees at the meeting that Dr. Jürgen Sieg, Universität Osnabrück, has published some nomenclatural changes within the tanaid family Leptognathiidae. The tanaid voucher sheets will be rewritten in order to accommodate these changes. Detailed information concerning these modifications will be provided in an upcoming newsletter. Tony also discussed a

recently published paper by Sieg and Dojiri (1989) in Zoologica Scripta concerning Araphura, Arhapuroides, and Tanaella. The full citation is as follows:

Sieg, J. and M. Dojiri. 1989. Remarks on Araphura Bird & Holdich (Crustacea, Tanaidacea) and allied genera, including descriptions of three new species.- Zoologica Scripta, 18: 115-137.

A limited number of reprints are available from the second author:

Mas Dojiri
Biology Laboratory
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293

Original Volumes of the Danish Ingolf Expedition: Don Cadien mentioned that the originals of the various volumes of Steenstrupia's Danish Ingolf Expedition are still available. He will get more information on the availability of the volumes so that we will be able to make a collective order.

Seventh International Echinoderm Conference: The International Echinoderm Conference will be held on September 9-14, 1990 in Atami, Japan. The first circular (attached to this newsletter) includes information concerning the meetings along with a pre-registration form.

Employment Opportunity: Dr. Gordon Hendler, curator of echinoderms at the Los Angeles County Museum of Natural History, is accepting applications for a curatorial assistant. Interested persons are referred to the attached job announcement. Applications will be accepted until the position is filled.

1988 Barnard/Amphipod Workshop: Notes from last year's amphipod workshop conducted by Dr. J.L. Barnard and held on September 13-15, 1988 at the Los Angeles County Museum of Natural History are available upon request from Mas Dojiri at the above address.

Bodotriidae Workshop: The remainder of the May 1989 meeting consisted of a workshop on the cumacean family Bodotriidae conducted predominantly by Don Cadien. Don distributed a handout entitled "Remarks on the family Bodotriidae" which includes a key to the subfamilies and a key to the species.

Don Cadien and Tony Phillips are currently preparing a manuscript describing Cyclaspis spp. A, B, and C. These three species correspond to the three new species described in Robert Givens (1970)



Ph.D. dissertation, University of Southern California. Robert Given will be included in the authorship of this manuscript. A new species of Glyphocuma, G. sp. A of SCAMIT, is currently being described for publication by Tony. An additional species of Cyclaspis, C. sp. D of MBC, has been collected in 10 ft of water off Huntington Beach; it is a gravid female measuring 2.37 mm in total length.

Don suggested that SCAMIT members get all the collections of Vaunthompsonia from the various agencies together in order to determine the actual number of valid species of this genus off our coast. He suggests that there may really only be two valid species off southern California. Don and Tony request locality collection records of Bodotriidae, especially Cyclaspis, from SCAMIT members. Please send this information to Tony:

Tony Phillips
Biology Lab
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293

Using video microscopy, the participants at the bodotriid workshop examined and discussed thirteen species of this family, representing the subfamilies Bodotriinae and Vaunthompsoniinae. Don Cadien's key was used to study the following California species:

Bodotriinae

Cyclaspis sp. A of SCAMIT
Cyclaspis sp. B of SCAMIT
Cyclaspis sp. C of SCAMIT
Cyclaspis sp. D of MBC
Cyclaspis nubila Zimmer, 1936
Cyclaspoides sp. A of Cadien

Vaunthompsoniinae

Bathycuma longicaudata Calman, 1912
Glyphocuma sp. A of SCAMIT
Leptocuma forsmani Zimmer, 1941
Vaunthompsonia sp. A of Diener
Vaunthompsonia sp. B of Cadien
Vaunthompsonia pacifica Zimmer, 1943

Remarks on the Family Bodotriidae

The bodotriids are a diverse family of 29 genera worldwide divided into three subfamilies. One of these, the Mancocuminae with three genera, has not been reported from the Pacific. The Bodotriinae, with eleven genera worldwide, is represented in the North Pacific by five genera but only by Cyclaspis and Cyclaspoides in the Northeast Pacific. The Vaunthompsoniinae, with 15 genera worldwide, is represented by four genera in the Northeast Pacific.

The subfamilies are separated on the basis of the number of pereopods with exopods, and by the number of pleopods in the male.

1. Exopods on only the first pair of pereopods.....Bodotriinae
Exopods on two or more pairs of pereopods.....2
2. Male with five pairs of pleopods.....Vaunthompsoniinae
Male with <five pairs of pleopods.....Mancocuminae

Along the west coast of North America the bodotriid fauna consists of 13 species at present, with an additional six known from the Gulf of California in the Panamic province. Only four of these species are described. Preliminary descriptions of three other species were provided by Given in his 1970 Thesis, but formal description is still pending. The known fauna is as follows:

BODOTRIINAE

- Cyclaspis sp. A of SCAMIT
- Cyclaspis sp. B of SCAMIT
- Cyclaspis sp. C of SCAMIT
- Cyclaspis sp. D of MBC
- Cyclaspis nubila Zimmer 1936
- Cyclaspoides sp. A of Cadien

VAUNTHOMPSONIINAE

- Bathycuma longicaudata Calman 1912
- Glyphocuma sp. A of SCAMIT
- Leptocuma forsmani Zimmer 1941
- Vaunthompsonia sp. A of Diener
- Vaunthompsonia sp. B of Cadien
- Vaunthompsonia sp. C of Diener
- Vaunthompsonia pacifica Zimmer 1943

BODOTRIIDAE

(updated as of 8 May 1989)

<u>Bathycuma longicaudata</u>	Calman 1912
<u>Cyclaspis sp. A</u>	SCAMIT (1986)
= <u>Cyclaspis a sp. n. of Given 1970</u>	
= <u>Cyclaspis sp. A of Myers and Benedict 1975</u>	
= <u>Cyclaspis sp. A of Diener</u>	
<u>Cyclaspis sp. B</u>	SCAMIT (1989)
= <u>Cyclaspis b sp. n. of Given 1970</u>	
= <u>Cyclaspis sp. B of Myers and Benedict 1975</u>	
<u>Cyclaspis sp. C</u>	SCAMIT (1986)
= <u>Cyclaspis c sp. n. of Given 1970</u>	
= <u>Cyclaspis sp. C of Myers and Benedict 1975</u>	
<u>Cyclaspis sp. D</u>	SCAMIT (1989)
= <u>Cyclaspis sp. D of MBC</u>	
<u>Cyclaspis nubila</u>	Zimmer 1936
<u>Cyclaspoides sp. A</u>	(of Cadien)
<u>Glyphocuma sp. A</u>	SCAMIT (1989)
= <u>Leptocuma sp. A of Phillips</u>	
= <u>Glyphocuma sp. A of Phillips</u>	
= <u>Vaunthompsonia sp. B of Given 1970</u>	
<u>Leptocuma forsmani</u>	Zimmer 1941
<u>Vaunthomsonia pacifica</u>	Zimmer 1943
= <u>Vaunthompsonia sp. A of Given 1970</u>	
<u>Vaunthompsonia sp. A</u>	(of Diener)
<u>Vaunthompsonia sp. B</u>	(of Cadien)
<u>Vaunthompsonia sp. C</u>	(of Diener)

Taxa from the Gulf of California and Southern Baja California

<u>[Cyclaspis b</u>	Donath 1985]
<u>[Cyclaspis c</u>	Donath 1985]
<u>[Cyclaspis d sp. n.</u>	Donath 1985]
<u>[Cyclaspis e n. sp.</u>	Donath 1985]
<u>[Cyclaspis f n. sp.</u>	Donath 1985]
<u>[Cyclaspis g n. sp.</u>	Donath 1985]

These 13 species can be separated by use of the following key:

1. Exopods on only the first pair of pereopods.....2
 Exopods on more than one pair of pereopods.....7
2. First three pedigerous segments fused with carapace.....
 Cyclaspoides sp. A
 All five pedigerous segments free.....3
3. Carapace with one or more teeth on the midline.....Cyclaspis sp. A
 Carapace lacking teeth on the midline.....4
4. Antennal sinus absent, both margins of uropodal peduncle setate in
 female.....Cyclaspis sp. D
 Antennal sinus evident, peduncle of uropods lacking setae along both
 margins in female (but inner margin may be serrate).....5
5. Carapace strongly pitted and sculptured, with depression antero-
 dorsally in both
 sexes.....6
 Carapace nearly smooth, with scattered small pits only, without
 depressed areas in either sex.....Cyclaspis sp. B
6. Carapace with trough-like depression extending obliquely back from
 the antennal sinus in both sexes.....Cyclaspis sp. C
 Carapace lacking trough-like depression behind the antennal sinus in
 both sexes.....Cyclaspis nubila Zimmer 1936
7. Carapace lacking teeth or denticles dorsally; lateral margins of 3rd
 (female) or 4th (male) abdominal segment overlapping those of
 adjacent segments..... Leptocuma forsmanni Zimmer 1943
 Carapace with teeth or denticles dorsally; lateral margins of 3rd or
 4th abdominal segment not overlapping those of adjacent segments....8
8. Pleonal segments ridged laterally, lacking eyes or pigmented ocular
 material.....Bathycuma longicaudata Calman 1912
 Pleonal segments not ridged laterally; with eyes.....9
9. Dorsal teeth or denticles in two parallel rows flanking the midline of
 the carapace.....10
 Dorsal teeth in a single row along midline.....Glyphocuma sp. A
10. Dorsal tooth rows running the full length of the
 carapace.....
 Vaunthompsonia pacifica Zimmer 1943
 Dorsal tooth rows restricted to the anterior half of the carapace.....11
11.Vaunthompsonia sp. A*
 Vaunthompsonia sp. B*
 Vaunthompsonia sp. C*

*These three taxa cannot be adequately separated yet

Date Examined: 8 May 1989
Voucher By Don Cadien

Synonymy: Cyclaspis sp. B of Myers & Benedict
Literature: Given 1970, Hale 1944

Diagnostic Characters:

1. Both sexes characterized by depression of thoracic somites: 3-5th somites of male, and 5th somite of female.
2. Carapace without distinct sculpture or pitting in male, female with weak pitting dorsally.
3. Middorsal carapace carina lacking in both sexes.
4. Carapace one third (male) or less (female) of total body length.
5. Uropodal peduncles unarmed both dorsolaterally and medially in the female; bearing 7-8 plumose setae medially in the male.
6. Uropodal rami subequal, with the endopod slightly longer.
7. Exopod biarticulate with article 1 about half article 2.
8. Exopod unarmed laterally and bearing three terminal spines in both sexes; medially with 1 seta in female and 3-4 in male.
9. Endopod sparsely setose on both margins in female, with 1 terminal and two subterminal pectinate spines; male endopod laterally bare, with two plumose setae and seven pectinate spines on medial margin, and one terminal spine.

Related Species and Character Differences:

Cyclaspis sp. A SCAMIT differs in possession of a denticulate middorsal crest. It is also a much larger species. *Cyclaspis* sp. B is ovigerous at a total length of less than 3mm, less than half the size of equivalent stage *Cyclaspis* sp. A. The depression of thoracic somites and virtual absence of carapace sculpture also separate *Cyclaspis* sp. B. from *Cyclaspis* sp. A.

Cyclaspis sp. C SCAMIT differs in having a highly calcified and highly textured carapace with flattened depressed areas anterodorsally and behind the antennal sinus in both sexes. The medial margin of the uropodal peduncles is serrate in *Cyclaspis* sp. C females, not plain as in females of *Cyclaspis* sp. B.

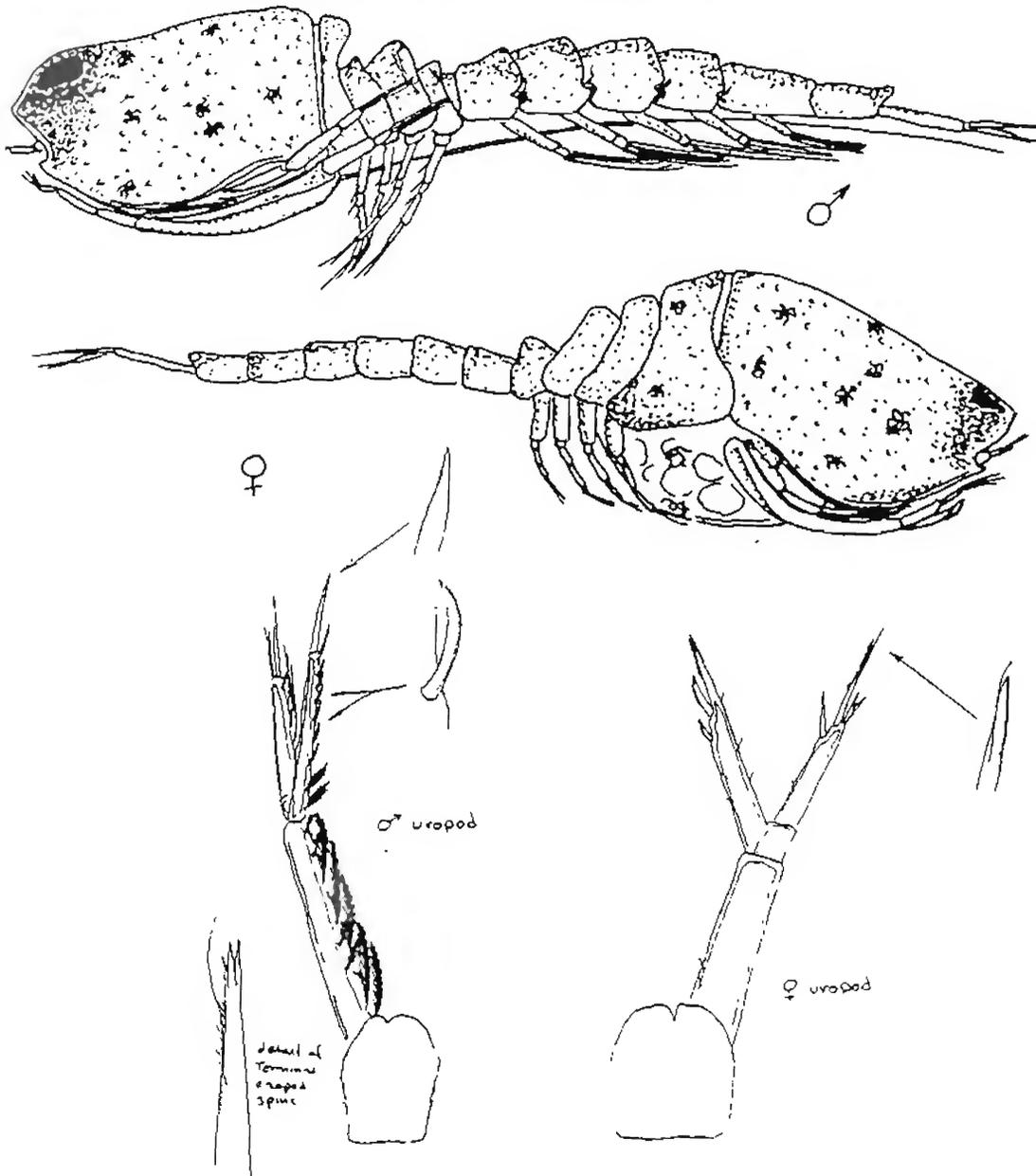
Cyclaspis sp. D SCAMIT differs in lacking a well defined antennal notch, and in lacking the dorsal depression of the thoracic somites which characterize *C.* sp. B. Females of the two species are otherwise similar in aspect, being small and nearly unsculptured. The male of *Cyclaspis* sp. D is not known.

Cyclaspis nubila Zimmer 1936 is much larger than *Cyclaspis* sp. B, being about the same size as *Cyclaspis* sp. A. Even in manca of *C. nubila* the carapace is more highly calcified and heavier than in adults of *Cyclaspis* sp. B. *Cyclaspis nubila* has a flattened depressed area on either side of the middorsal carina at the front of the carapace. This depression is lacking in *Cyclaspis* sp. B, as is the carina itself. Adult females of *C. nubila* lack spination and setation on both the medial and lateral margins of the uropodal peduncles as do those of *Cyclaspis* sp. B, but the peduncles are proportionately longer and the exopods are slightly longer than the endopods. The characteristic thoracic somite depression of *Cyclaspis* sp. B is not found in either sex of *Cyclaspis nubila*.

Cyclaspis sp. B SCAMIT
Bodotriidae

Distribution: Coronado Beach, San Diego to Goleta; 2.5-20m.

Comments: Like *Cyclaspis* sp. D this species is restricted to the surf zone, with nearly all records from depths less than 5m. Because of the unique depression of the thoracic somites this species is easily recognized by inspection even in 1.5 mm specimens.



Date Examined: 8 May 1989
Voucher By Don Cadlen

Synonymy: Cyclaspis sp. D of MBC

Literature: Given 1970, Hale 1944

Diagnostic Characters:

1. Antennal sinus lacking in female (male unknown).
2. Carapace without distinct sculpture or pitting.
3. Weak middorsal carapace carina.
4. Carapace 40% of total body length.
5. Uropodal peduncles armed with setae both dorsolaterally and medially.
6. Uropodal rami of equal length; endopod with 5 medial and no lateral spines, exopod with 1 mesial seta.
7. Exopod biarticulate with ratio of article lengths 3/11.

Related Species and Character Differences:

Cyclaspis sp. A SCAMIT differs in possession of a denticulate middorsal crest. It is also a much larger species. *Cyclaspis* sp. D is ovigerous at a total length of less than 2.5 mm, about one third the size of equivalent stage *Cyclaspis* sp. A. The absence of an antennal sinus and virtual absence of carapace sculpture also separate *Cyclaspis* sp. D from *Cyclaspis* sp. A.

Cyclaspis sp. B SCAMIT differs in having a well defined antennal notch in both sexes, and in the dorsal depression of the thoracic somites which characterize that species. Females of the two species are otherwise similar in aspect, being small and nearly unsculptured.

Cyclaspis sp. C SCAMIT differs in having a highly calcified and highly textured carapace with flattened depressed areas anterodorsally and behind the antennal sinus in both sexes. The antennal sinus itself is very well developed in sp. C. The medial margin of the uropodal peduncles is serrate in *Cyclaspis* sp. C females, not setose as in females of *Cyclaspis* sp. D.

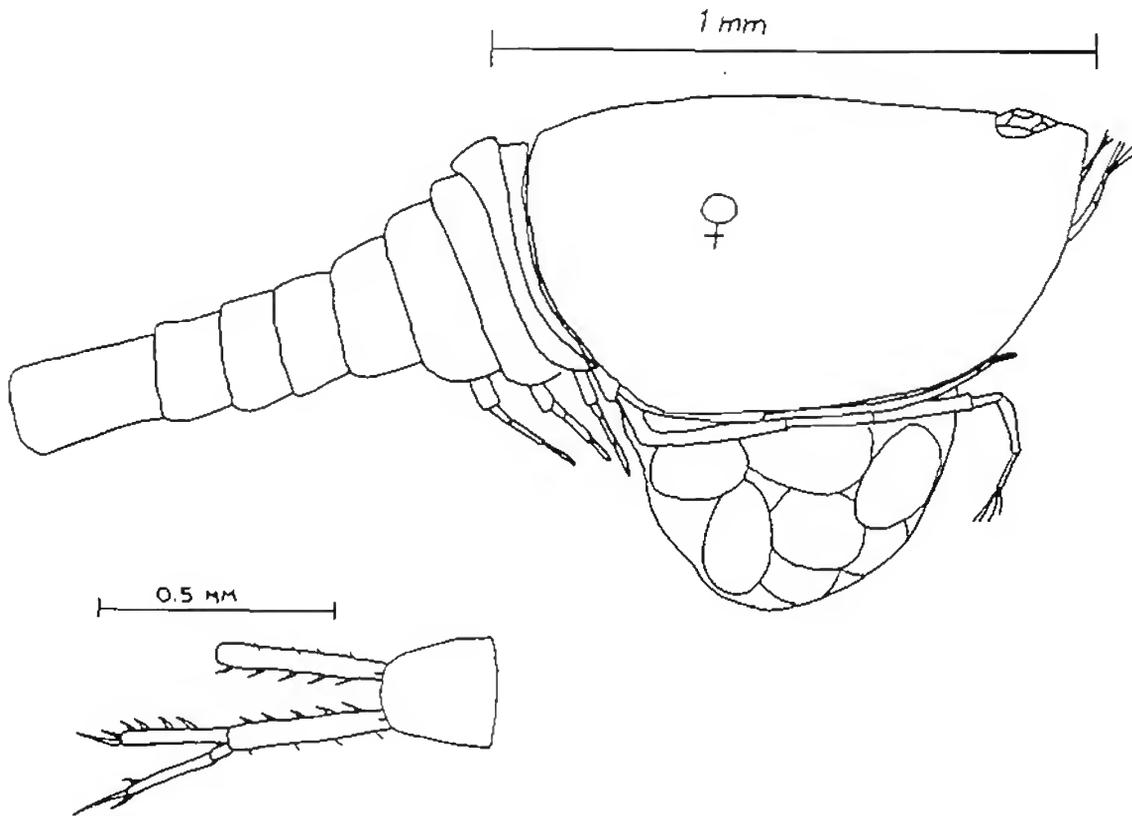
Cyclaspis nubila Zimmer 1936 is much larger than *Cyclaspis* sp. D, being about the same size as *Cyclaspis* sp. A. Even in manca of *C. nubila* the carapace is more highly calcified and heavier than in adults of *Cyclaspis* sp. D. From manca through adult *C. nubila* retains a well defined antennal sinus lacking in *Cyclaspis* sp. D. *Cyclaspis nubila* has a flattened depressed area on either side of the middorsal carina at the front of the carapace. This depression is lacking in *Cyclaspis* sp. D. Adult females of *C. nubila* lack spination and setation on both the medial and lateral margins of the uropodal peduncles.

Cyclaspis sp. D SCAMIT
Bodotriidae

VOL. 8, NO. 2

Distribution: Huntington Beach, Orange County, California; 3.1m.

Comments: The species is still known from a single ovigerous female collected
in 1976. Lack of further records from the area
(sampled annually since 1975) may indicate that the species
is restricted to the surf zone. As most sampling in this zone
uses a 1mm mesh screen this small species may not be taken.



SCAMIT CODE: HYP 81

Date Examined: May 18, 1989
Voucher By: Tony Phillips, HYP

Literature: Zimmer, C. 1943. Cumaceen Des Stillen Ozeans. Archiv der Naturgeschichte, 12:130-174.
Jones, N.S. 1969. The systematics and distribution of Cumacea from depths exceeding 200 meters. Galathea Reports, 10:99-180.
Given, R. 1970. The Cumacea of California. PhD Thesis. USC.

Diagnostic Characters:

1. Exopods present on pereopods 1-4, pereopod 4 exopod reduced in both male and female (figure 1a and 2a).
2. Pereopod 2 with distal brush of setae on propodus and dactylus, no spines present (figure 1c and 2c).
3. Basis of maxilliped 3 not greatly expanded (figure 1d and 2d).
4. Five pair of pleopods in male (figure 1a).
5. First free thoracic segment is not visible.
6. Lateral borders of the third (female) or fourth (male) thoracic segment are extended so that they overlap the neighboring segments.
7. Short, stiff setae trim the margin of the thoracic and first four abdominal segments; the first two visible thoracic segments in the female and first three thoracic segments directed anteriorly, the remaining segments posteriorly.
8. Eye present; some specimens difficult to see.

Related Species and Character Differences:

There are three other genera of the Vaunthompsoniinae found in our California fauna: Bathycuma, Glyphocuma and Vaunthompsonia. All three genera can be separated from Leptocuma by their toothed median longitudinal carina on the anterior half of the carapace, pereopod 2 with spines on at least the dactylus, lateral borders of the third thoracic segment do not overlap the second and fourth segments and the female pereopod 4 without an exopod.

Distribution: Rosarita Beach (Baja Calif.) to Santa Barbara, 2-10 meters in coarse sand; 1 individual 70m (Pt. Loma).

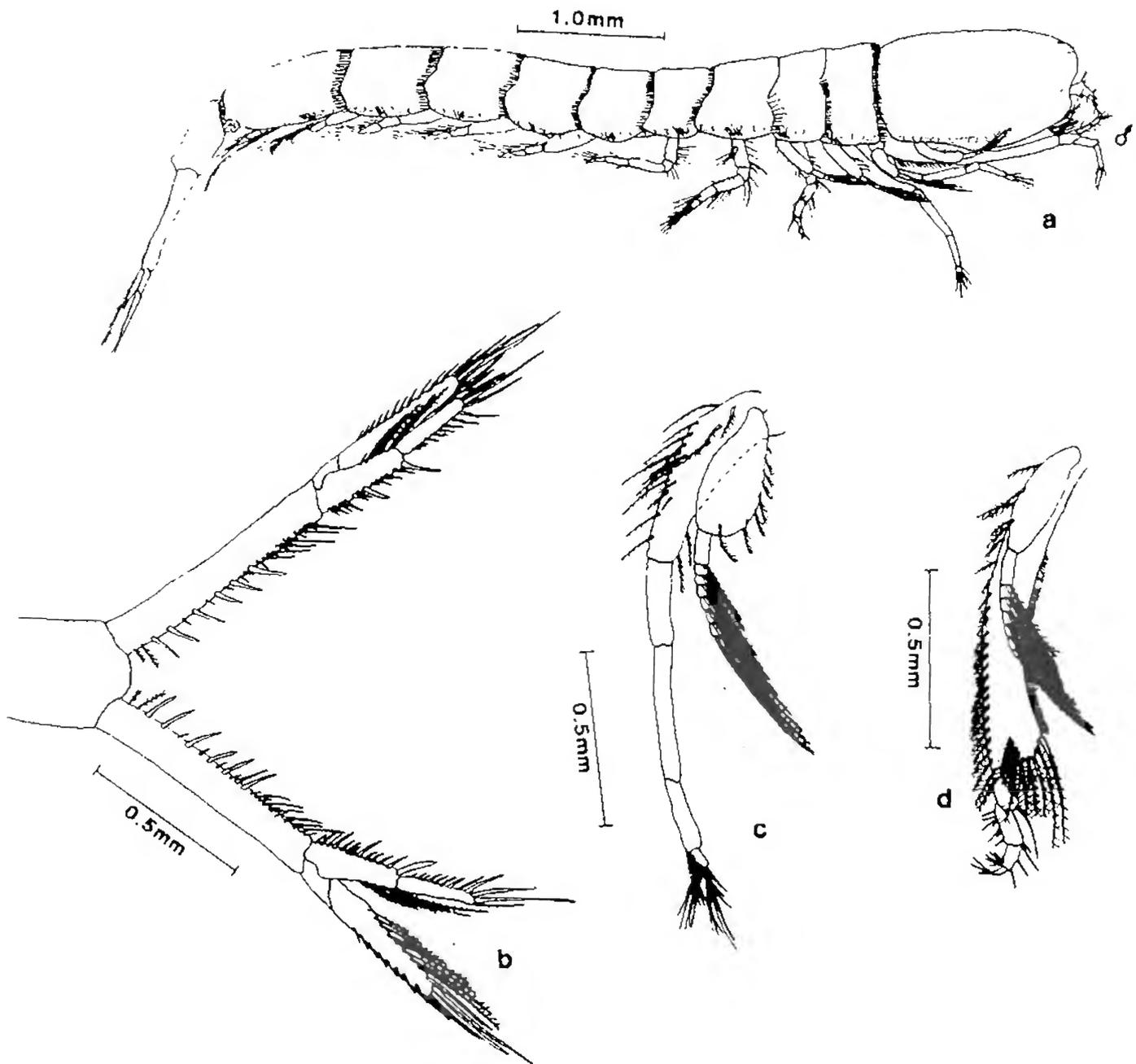


Figure 1. a. adult male; b. telson; c. pereopod 2; d. maxilliped 3.

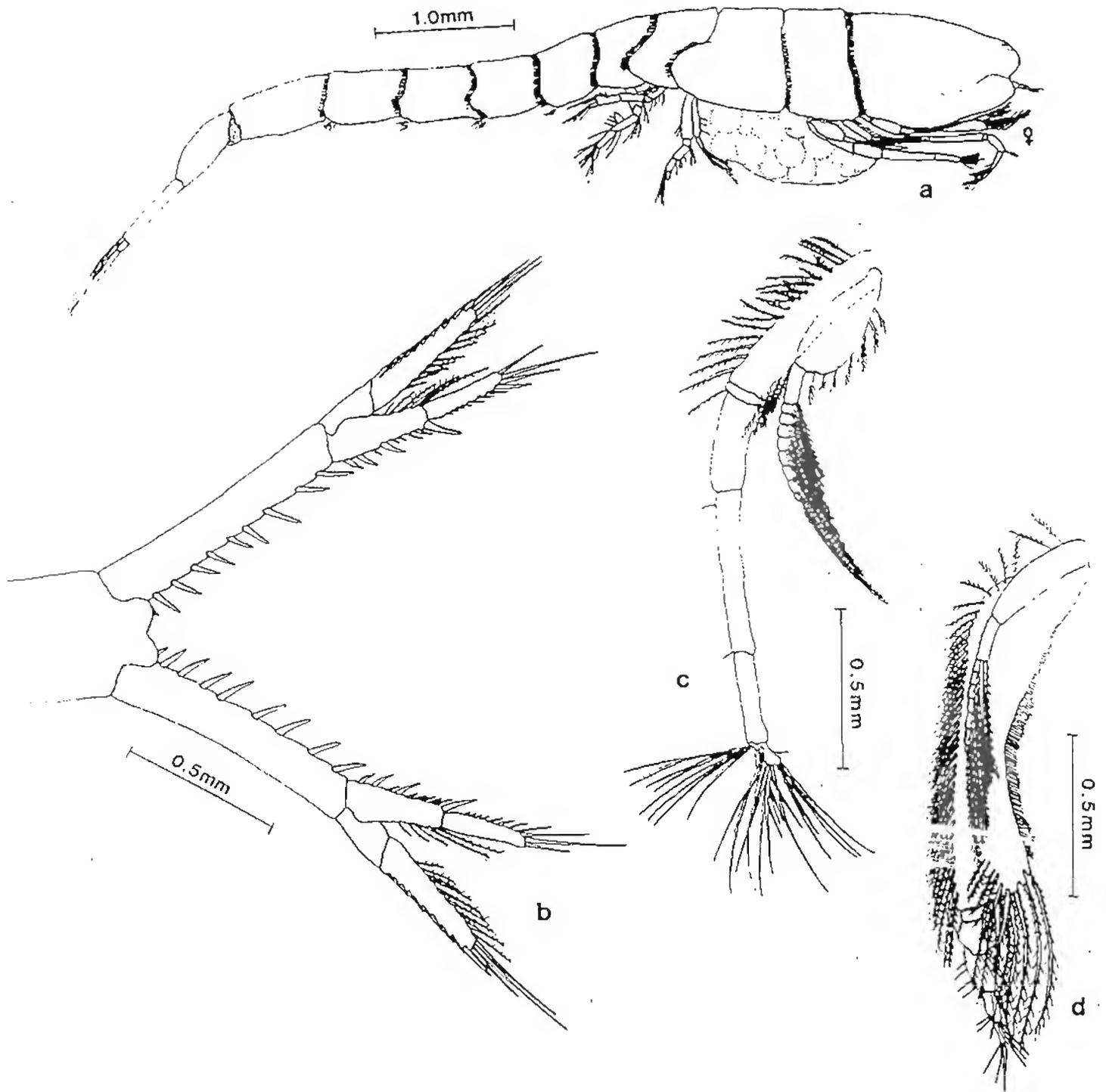


Figure 2. a. adult female; b. telson; c. pereopod 2; d. maxilliped 3.



Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

June 1989

Vol. 8, No. 3

NEXT MEETING: Pinnixa Workshop

GUEST SPEAKER: Dr. Debbie Zmarzly, Biology Laboratory,
Point Loma/City of San Diego

DATE: Monday, July 10, 1989, 9:30 AM

LOCATION: San Diego Natural History Museum
(El Prado in Balboa Park)
P.O. Box 1390
San Diego, CA 92112

MINUTES FROM MEETING ON JUNE 5-7, 1989

Dr. J.L. Barnard, National Museum of Natural History, Smithsonian Institution, presented his fifth annual amphipod workshop for SCAMIT. The first day began with a bird-watching excursion to Upper Newport Bay, which was followed by videotape viewing of gammarids at Cabrillo Marine Museum. The next two days of the workshop were held at the Los Angeles County Museum of Natural History, and consisted of the examination and identification of problematic gammarid species.

Don Cadien, Los Angeles County Sanitation Districts, distributed a list of provisional amphipod taxa from California and a handout entitled "Comments on the Isaeidae of Western North America".

Dr. Barnard announced that work on the catalog of southern California amphipods is delayed because Jan Clark is no longer working on the project. Elizabeth Harrison-Nelson, Dr. Barnard's new museum technician, will help complete the atlas. The world monograph, including keys to the gammarid genera and a list of all species of each genus, authored by J.L. Barnard, has been sent to Jim Lowry to be published by the Records of the Australian Museum.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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

Jim Lowry is completing a manuscript on the revision of the genera of the Lysianassidae. It includes the descriptions of the type-species of each genus, and a cladistic analysis of the lysianassids.

The notes on the 1989 Barnard/amphipod workshop, written by Don Cadien, Mas Dojiri, and Ann Martin, will be available from Mas in the near future. These notes will be sent to the participants of the workshop, but other SCAMIT members must telephone or send a written request to:

Mas Dojiri
Biology Laboratory
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey CA 90293
(213) 648-5193

Request for Pinnixa specimens: Dr. Debbie Zmarzly requests that the participants in next months workshop bring all their nominal species of Pinnixa with them. The workshop will consist of a round-table discussion of this decapod genus, and examination of specimens from the various participants.

7th Annual SCAMIT Picnic: All SCAMIT members are invited to attend the picnic to be held at Doheny Beach on Saturday, 19 August. Larry Lovell, the vice-president of SCAMIT and picnic chairman, is planning this extravaganza. Details of the event and a map to the site will be provided in the next newsletter. Let's all attend so that we can have a great time, eat some good food, and spank some volleyballs. Mark it on your calendar!



July 1989

Vol. 8, No. 4

NEXT MEETING: August SCAMIT meeting has been cancelled.
Next meeting is the Pycnogonid Workshop.

GUEST SPEAKERS: Don Cadien, Los Angeles County Sanitation
Districts and Tony Phillips and Mas Dojiri,
Hyperion Treatment Plant

DATE: Monday, September 11, 1989, 9:30 AM

LOCATION: Los Angeles County Museum of Natural History
900 Exposition Blvd.
Los Angeles, CA

MINUTES FROM MEETING ON JULY 10, 1989

Pinnixa Workshop: Dr. Debbie Zmarzly hosted a Pinnixa workshop at the San Diego Natural History Museum on 10 July 1989. Five work stations were set up with dissecting microscopes with one to several species of southern California Pinnixa at each station. Each participant identified the specimens to species using a key written by Debbie. This format was both informative for the participants and helpful in revising the key. The five stations consisted of the following species:

1) Pinnixa tomentosa, P. littoralis, and P. faba. The latter two species were indistinguishable. Either the specimens of P. faba on demonstration were incorrectly identified, or this species is synonymous with P. littoralis. Debbie promised to examine the type-specimens of P. faba, perhaps housed in the collections of the Academy of Sciences in Philadelphia, in order to resolve the problem. Pinnixa tomentosa exhibit a subtle anterolateral ridge bearing small granulations on the carapace.

2) Pinnixa occidentalis is easily identified by the obliquely, downward angled, fixed finger of the chela.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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

3) Pinnixa hiatus, P. longipes, and P. franciscana were easily identified by using the key.

4) Pinnixa weymouthi and P. tubicola were also easily identified using the key.

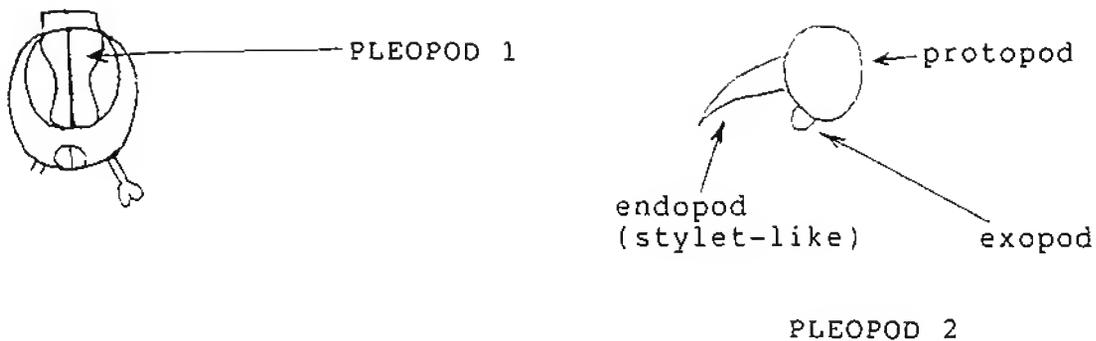
5) Pinnixa schmitti and P. barnhardti. The latter species has a subtle anterolateral ridge with granules on the carapace.

In the original descriptions, most species of Pinnixa were not well illustrated nor well described. Photographs in older papers did not show the morphological details necessary for taxonomic purposes. Debbie's new key, modified from Don Cadien's (see SCAMIT newsletter Volume 3, Number 3), worked extremely well for the southern California species; however, the P. littoralis/P. faba problem needs to be resolved. Also more knowledge must be gained concerning the geographic variations within the species and morphological variations between adults and juveniles. Although there are probably not many new species of Pinnixa in southern California yet to be discovered, Pinnixa sp. A, collected in 100 ft off Goleta may indeed be new to science. It is morphologically very similar to P. weymouthi except that the new species has very long, slender serrated fingers on the cheliped.

Asellota (Crustacea: Isopoda) Seminar: After the Pinnixa workshop, Dr. George Wilson, Scripps Institute of Oceanography, gave a short presentation on asellote isopods in which he reviewed the classification of the Asellota in the "Working List of California Marine Isopods" written by R.C. Brusca and R. Wetzer. Dr. Brusca incorporated the comments in a new revised draft of the "List" (see attached handout). Dr. Wilson then presented a general account of asellotes and gave more detailed information on the superfamily Janiroidea and the families Stenetriidae and Gnathostenetroididae.

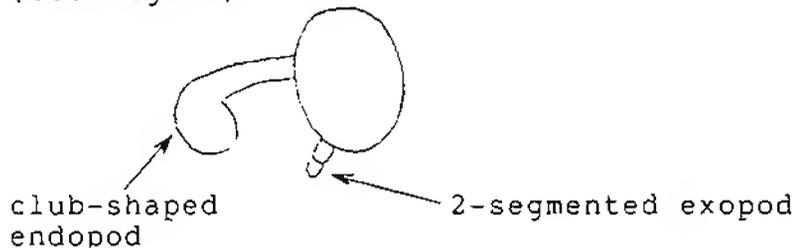
Asellotes can be recognized and distinguished from all other isopods by the presence of 2 short, free pleonites with the remaining pleonites fused to the telson to form the pleotelson. The members of this suborder do not use the pleopods for swimming, although the posterior pereopods can be used for this function. The two important functions of the pleopods in the asellotes are respiration and sex; the pleopods are also taxonomically important in this group.

Superfamily Janiroidea: the males of this superfamily have both pleopods 1 and 2 modified into opercula (see figure).



Family Stenetriidae: this family is known from the Antarctic and Subantarctic waters. Pleopod 3 is opercular. They may occur off our coast.

Family Gnathostenetroididae: the first pleopods are semi-opercular; pleopod 2 is small and pleopod 3 is opercular. In the males, the endopod is club-shaped and the exopod is 2-segmented (see figure).



In shallow water, asellotes are found in cryptic habitats, e.g. under rocks, underneath holdfasts of algae, etc. They are relatively small; consequently, they require small sieve screens for collection. Although they are very diverse in the deep-sea soft-bottom community, not much is known about the asellotes in the deep-sea hard-bottom fauna, except the hydrothermal vent areas.

If an isopod workshop would be helpful to SCAMIT members and if his schedule allows, Dr. Wilson agreed to host a workshop sometime in the future.

7th Annual SCAMIT Picnic: All SCAMIT members are invited to attend the picnic to be held at picnic area #2 at Doheny State Beach on Saturday, 19 August, starting at 10:00 AM until whenever. SCAMIT will provide the entree and soft drinks while members are asked to bring either hors d'oeuvres or a side dish. Beer is allowed on the premises, but will not be provided; BYOB! No glass containers are allowed. Parking is available at \$4.00 per day. A map to the picnic area is attached. Larry needs to know how many people will be there so he knows how much food and drinks to buy. RSVP as soon as possible directly to:



Larry Lovell
1036 Buena Vista Drive
Vista, CA 92083
(619) 945-1608

Keys to Marine Isopoda of California: Dr. Richard C. Brusca, San Diego Natural History Museum, announced that Regina Wetzer and he have just completed a draft of a handbook on marine isopods of California. He also distributed five handouts (attached to this newsletter) including 1) a key to the species of Cirolana known from California, 2) a provisional key to the species of Gnathia known from California, 3) a provisional key to California species of Limnoria, 4) a working list of California marine isopods, and 5) a classification of the suborder Flabellifera. The isopod keys are attached to this newsletter; the fourth handout can be obtained from Mas Dojiri upon request. Rick asked that the classification of the Flabellifera not be distributed because it still needs to be revised. He also writes, "This [number 4 above] is a preliminary working list of the marine isopods reported from, or expected to occur in California waters. It is based on a manuscript in preparation by Rick Brusca and Regina Wetzer (A Guide to the Marine Isopod Crustaceans of California). The list almost certainly has errors in it, and it is probably still incomplete; hence, Rick and Regina would greatly appreciate feedback from the SCAMIT community in order to continue correcting and revising it. In addition, Rick would greatly appreciate the donation of California isopod specimens for the synoptic collection being assembled at the San Diego Natural History Museum; even 'common species' would be appreciated." All specimens should be mailed to:

Dr. Richard C. Brusca
Deputy Director for Science
San Diego Natural History Museum
P.O. Box 1390
San Diego, CA 92112

Barnard/1989 Amphipod Workshop Notes: The notes from Dr. J.L. Barnard's 1989 amphipod workshop held on 5 June at the Cabrillo Marine Museum, and 6 and 7 June at the Los Angeles County Museum of Natural History are now available. Write or call Mas for a copy (see previous newsletter for address and telephone number).

Identification of Cancer (Crustacea: Decapoda) in Gut Analyses: Don Cadien suggested that a paper published by Menzies may be helpful for those of us who are conducting fish gut analyses and trying to identify dismembered parts of various species of Cancer. The paper is cited below:

Menzies, R.J. 1951. Pleistocene Brachyura from the Los Angeles area: Cancridae. *Journal of Paleontology*, 25(2).

Job Opportunity in Los Angeles County: L.A. County Sanitation Districts have an opening for a Marine Biology Laboratory Technician. Responsibilities include infaunal sample sorting, data entry, and sampling at sea. Salary range \$2048-\$2762/month, starting salary dependent upon qualifications. Contact Dave Montagne at (213) 830-2400, ext. 396 as soon as possible.

Job Opportunity in San Diego: There is an immediate opening for a half-time Curatorial Assistant in the Department of Marine Invertebrates at the San Diego Natural History Museum. Refer to job announcement attached to this newsletter for details.



KEY TO THE SPECIES IN THE GENUS PINNIXA
COLLECTED IN SOUTHERN CALIFORNIA MONITORING PROGRAMS

by D.L. Zmarzly
July 21, 1989

(Applies to either sex; sex specific comments so indicated; juvenile males of some species may resemble adult females more than males in certain features)

ATTACHED DIAGRAMS ILLUSTRATE LOCATION OF ANATOMICAL FEATURES AS WELL AS DICHOTOMOUS CHARACTER STATES

- 1A Inner margin of dactyls of WL1,2, and 3 traces a strongly curved line; adult specimens endo-symbionts of bivalves 2
(FIG. 1A)

- B Inner margin of dactyls of WL1,2, and 3 traces a straight or slightly curved line 3
(FIG. 1B)

- 2A Carapace 2X as wide as long, slightly angular at lateral aspect; orbit wraps around eye, almost enclosing it; MALE: fixed finger of chela slightly deflexed, relatively short, with a single notch near tip littoralis
(FIG. 2A & 11)

- B Carapace 1.5X as wide as long, with rounded protuberance at antero-lateral aspect; outer margin of orbit grades smoothly into anterior margin of carapace; MALE: fixed finger of chela horizontal, with numerous small teeth faba
(FIG. 2B & 12)

- 3A Fixed finger of chela angled obliquely downward relative to line defined by bottom of propodus (deflection stronger in males than females) occidentalis
(FIG. 3A & 13)

- B Bottom of propodus of chela sinuous or straight; fixed finger of chela approximately straight or curved upwards at the tip 4
(FIG. 3B)

- 4A Dactyl of WL4 shorter than or just reaches to distal end of merus of WL3 when both legs are extended 5
(FIG. 4A)

- B Dactyl of WL4 definitely exceeds end of merus of WL3 when both are extended 6
(FIG. 4B)

- 5A Posterior margin of ischium of WL4 without tubercles (best viewed by standing animal on its nose and looking directly down on posterior aspect of leg); WL4 without setae; propodus of WL3 approximately as long as wide (using maximum dimensions), and appears inflated relative to flanking segments tubicola
(FIG. 5A & 14)

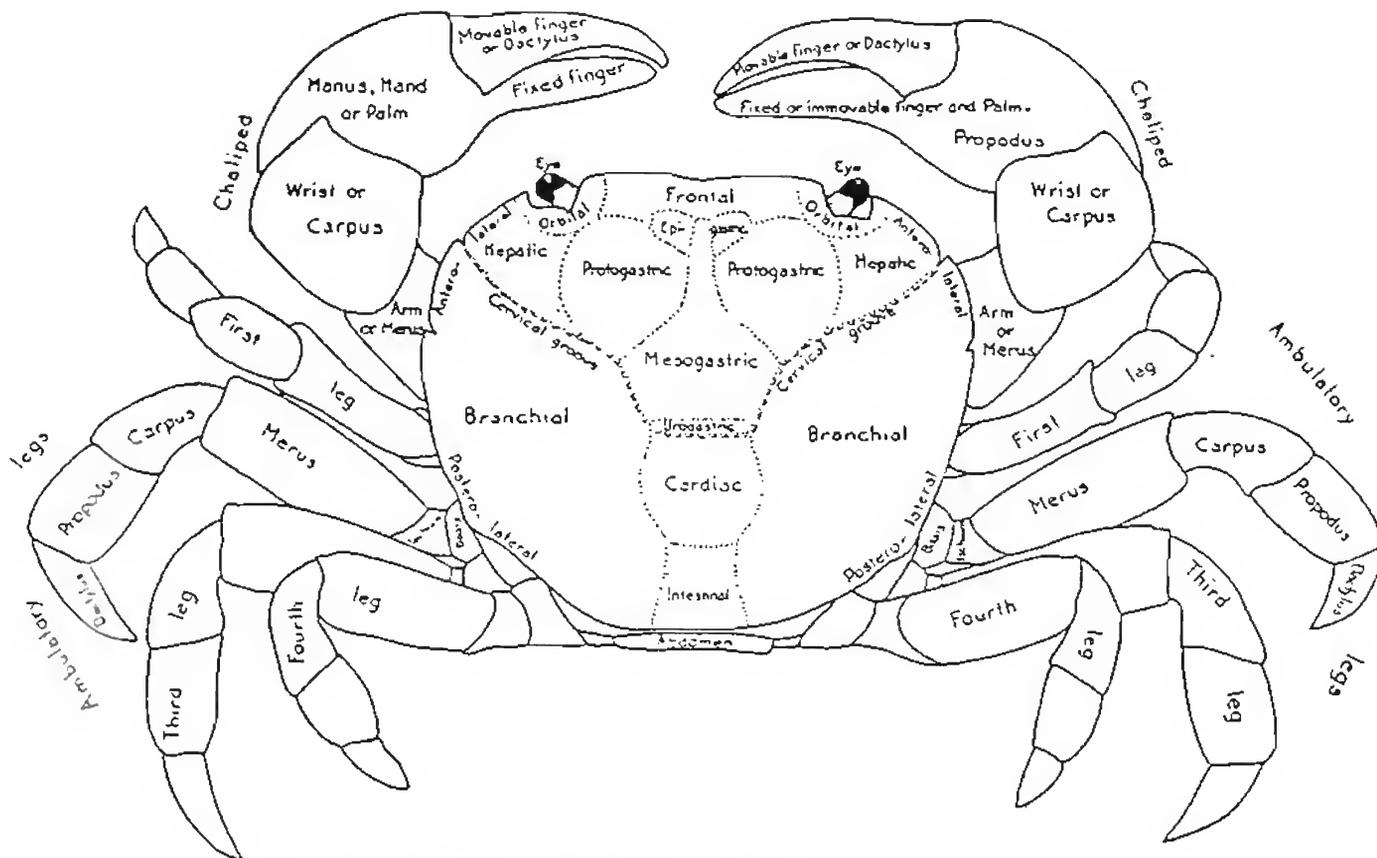
- B Posterior margin of ischium of WL4 with two large tubercles; WL4 completely surrounded by long setal fringe; propodus of WL3 distinctly longer than wide, more in proportion to segments flanking it longipes
(FIG. 5B & 15)
- 6A Antero-lateral aspect of carapace with line of granules, sharp serrations, or blunt serrations, sometimes on a distinct ridge (NOTE: in P. tomentosa and P. barnharti, granules are very fine) 7
(FIG. 6A)
- B Antero-lateral aspect of carapace smooth and round; no antero-lateral ridge weymouthi
(FIG. 6B & 16)
- 7A Anterior edge of merus of WL3 serrate or granulate, either lacking setae or sparsely setose 8
(FIG. 7A)
- B Anterior edge of merus WL3 smooth, with long dense fringe of plumose setae barnharti
(FIG. 7B & 17)
- 8A Dactyl of WL3 shorter than propodus tomentosa
(FIG. 8A 18)
- B Dactyl of WL3 approximately equal to or longer than propodus 9
(FIG. 8B)
- 9A Propodus of WL3 nearly square (i.e., nearly as wide as long); four tubercles on posterior edge of ischium of WL4 (medial one largest, outer 3 smaller); (based on female specimen; male specimen unavailable) hiatus
(FIG. 9A & 19)
- B Propodus of WL3 definitely longer (1.5 - 2X) than wide; posterior edge of ischium of WL4 smooth or may be granulate, but does not actually bear tubercles 10
(FIG. 9B)
- 10A Carapace pitted; MALE: with strong transverse ridge in cardiac region franciscana
(FIG. 10A & 20)
- B Carapace smooth; cardiac region may be slightly inflated, but no transverse ridge in either sex schmitti
(FIG. 10B & 21)

SELECTED PINNIXA REFERENCES

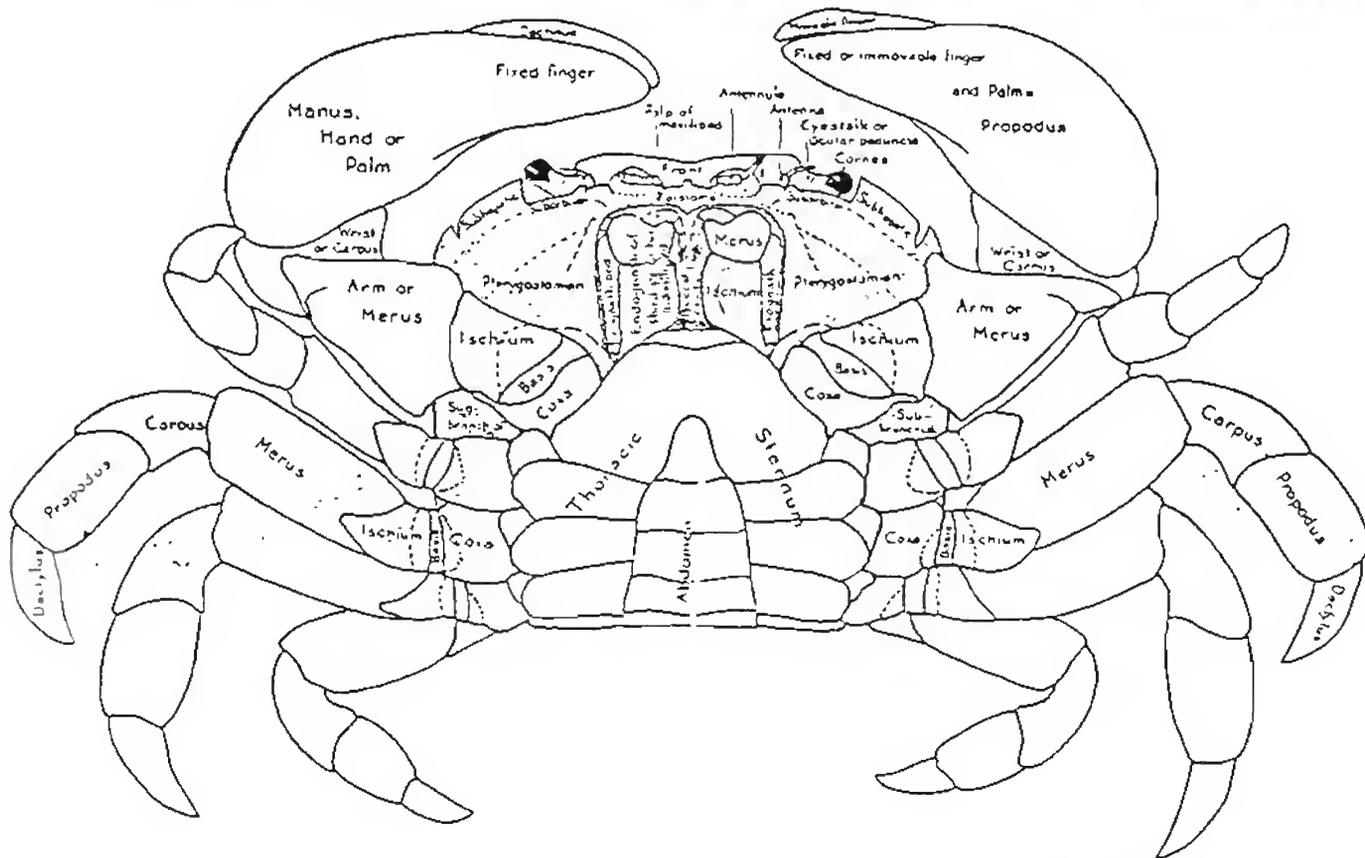
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GENERAL CRAB ANATOMY

Rathbun (1918)
 BULLETIN 07, UNITED STATES NATIONAL MUSEUM.

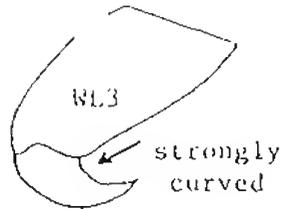


DIAGRAMMATIC DORSAL VIEW OF A GRAPSOID CRAB, SHOWING THE TERMS USED IN DESCRIPTION.

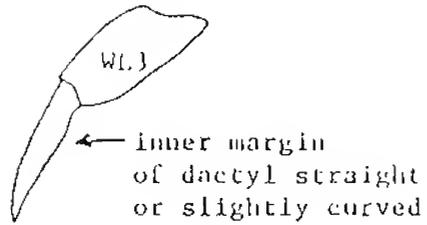


DIAGRAMMATIC VENTRAL VIEW OF A GRAPSOID CRAB, SHOWING THE TERMS USED IN DESCRIPTION.

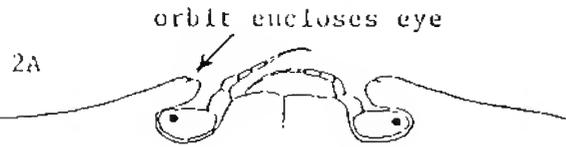
PINNIXA KEY - COUPLET ILLUSTRATIONS



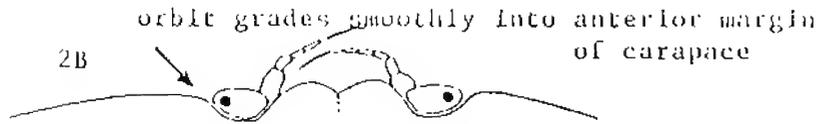
1A



1B

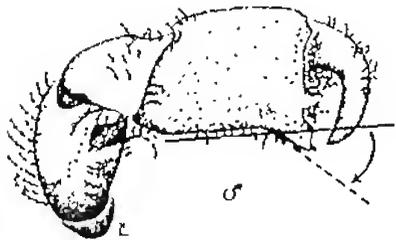


2A

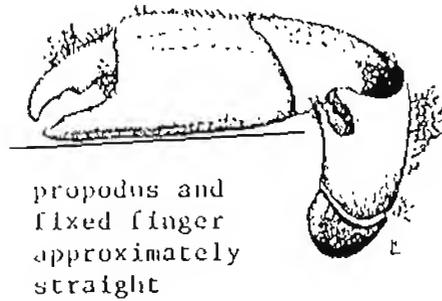


2B

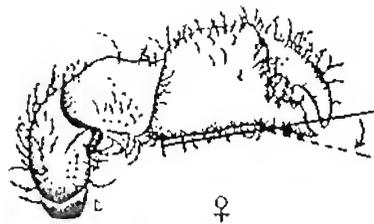
3A: fixed finger deflected downward relative to line of propodus



3B



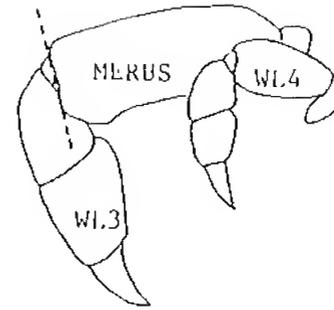
propodus and fixed finger approximately straight



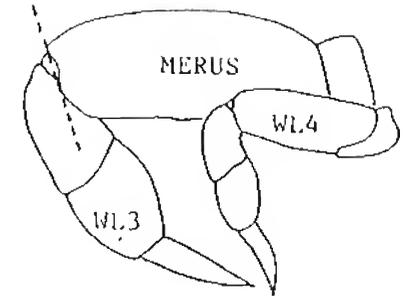
♀



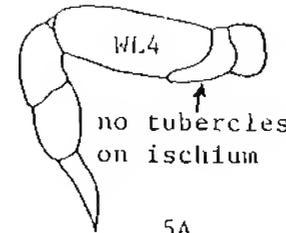
propodus and fixed finger sinuous; tip of finger curved upwards



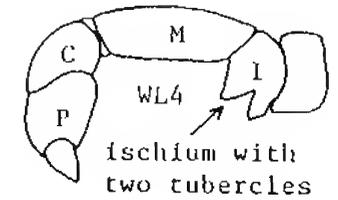
4A



4B

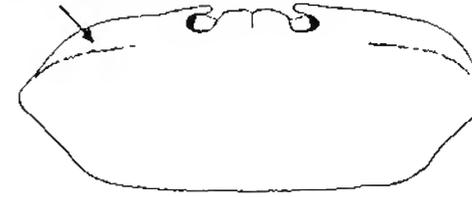


5A



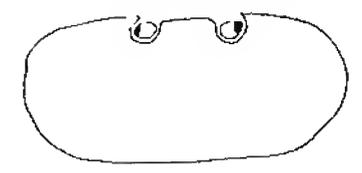
5B

antero-lateral aspect granulate or serrate



6A

no antero-lateral ridge

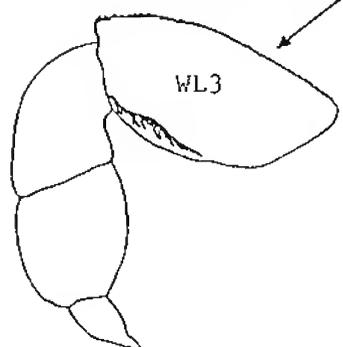


6B

PINNIXA KEY - COUPLET ILLUSTRATIONS

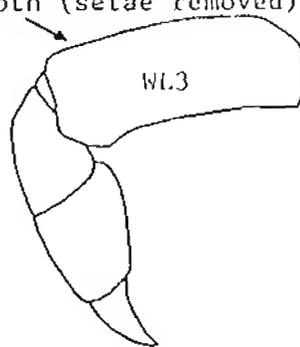
7A

anterior edge of merus
serrate/granulate

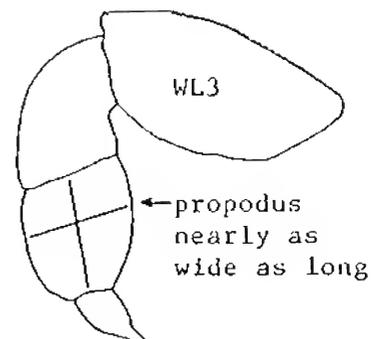


7B

anterior edge of merus
smooth (setae removed)

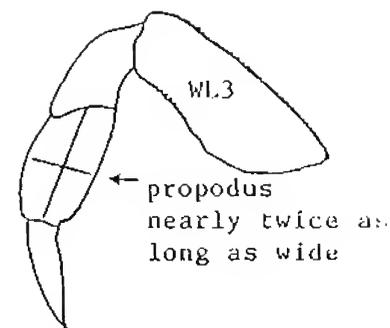


9A



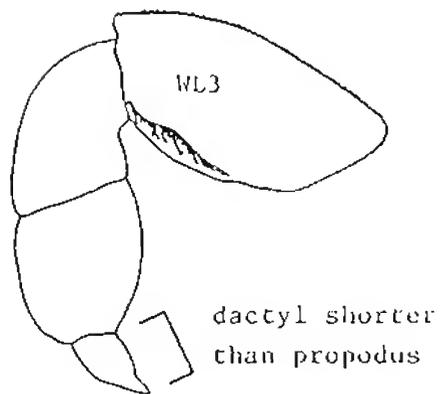
propodus
nearly as
wide as long

9B



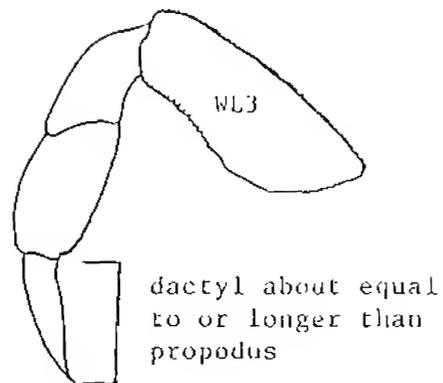
propodus
nearly twice as
long as wide

8A



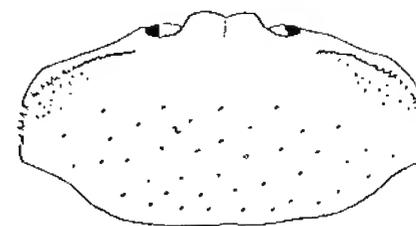
dactyl shorter
than propodus

8B

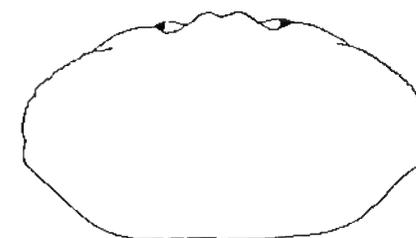


dactyl about equal
to or longer than
propodus

10A



10B



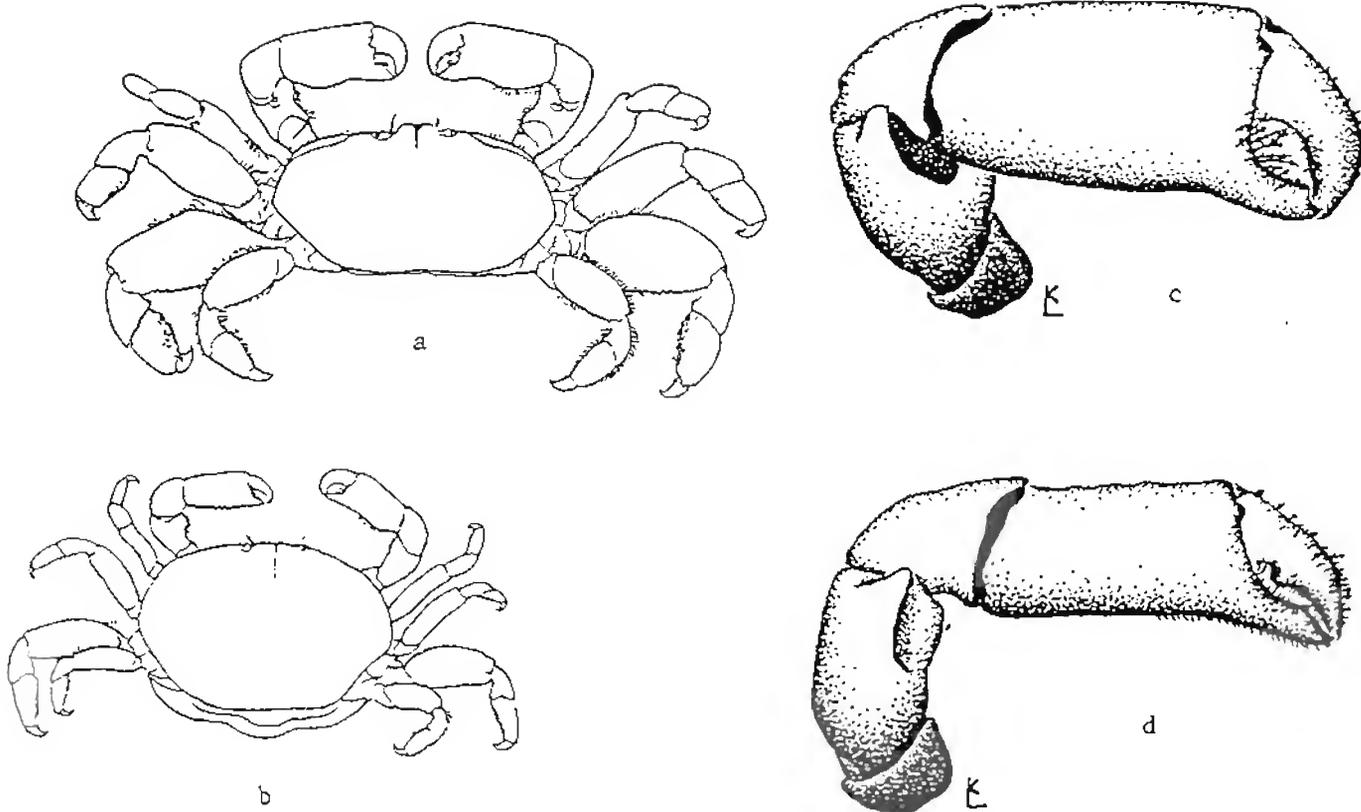


FIG. 11. *Pinnixa littoralis*: a, Male, dorsal view; b, Female, dorsal view (from Hart, 1982); c, Male, right cheliped, ventral view; d, Female, right cheliped, ventral view (drawings by K. Langan).

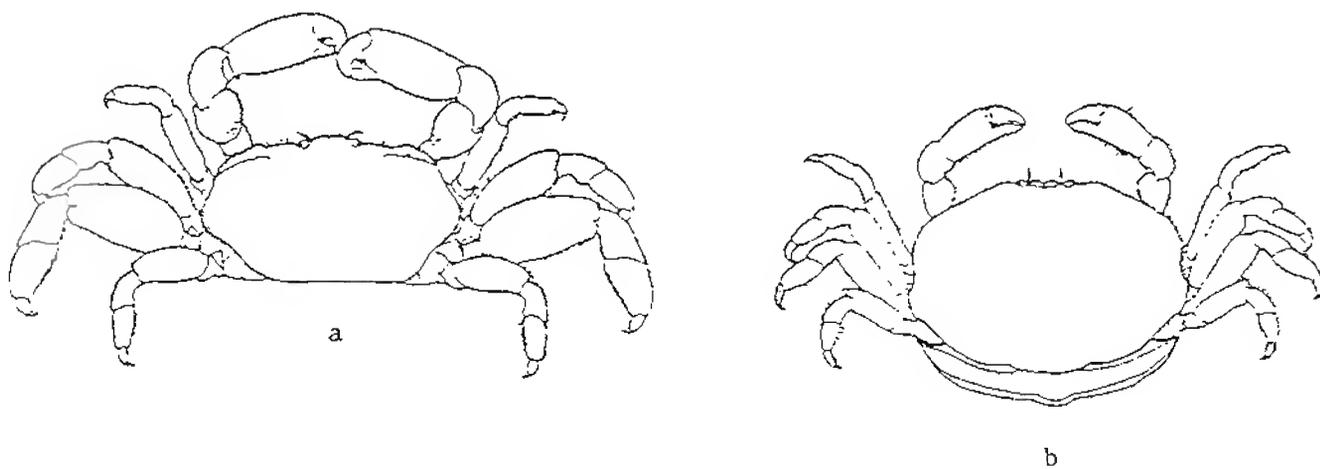


FIG. 12. *Pinnixa faba*: a, Male, dorsal view; b, Female, dorsal view (from Hart, 1982).

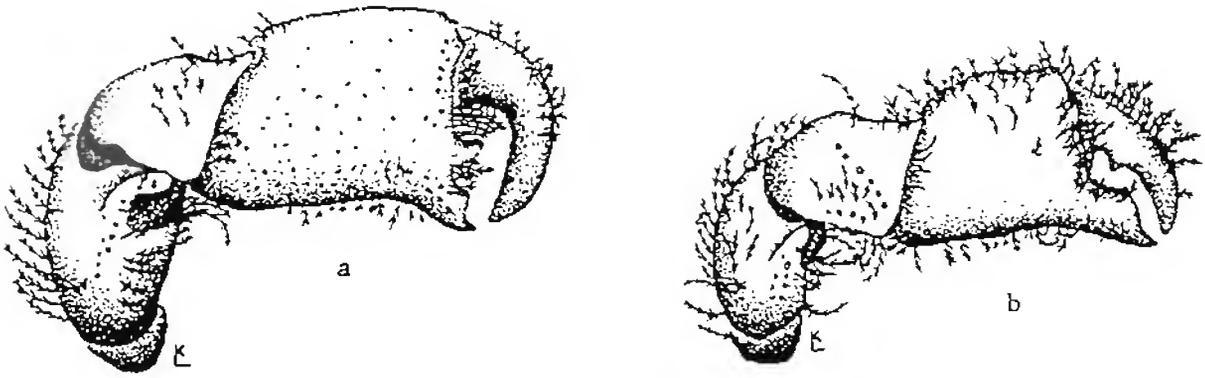


FIG. 13. *Pinnixa occidentalis*: a, Male, right cheliped, ventral view; b, Female, right cheliped, ventral view (drawings by K. Langan).

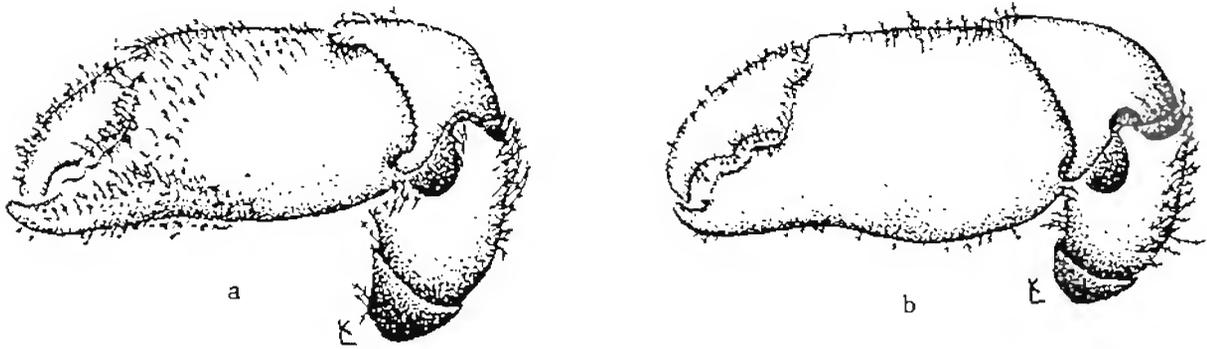


FIG. 14. *Pinnixa tubicola*: a, Male, left cheliped, ventral view; b, Female, left cheliped, ventral view (drawings by K. Langan).

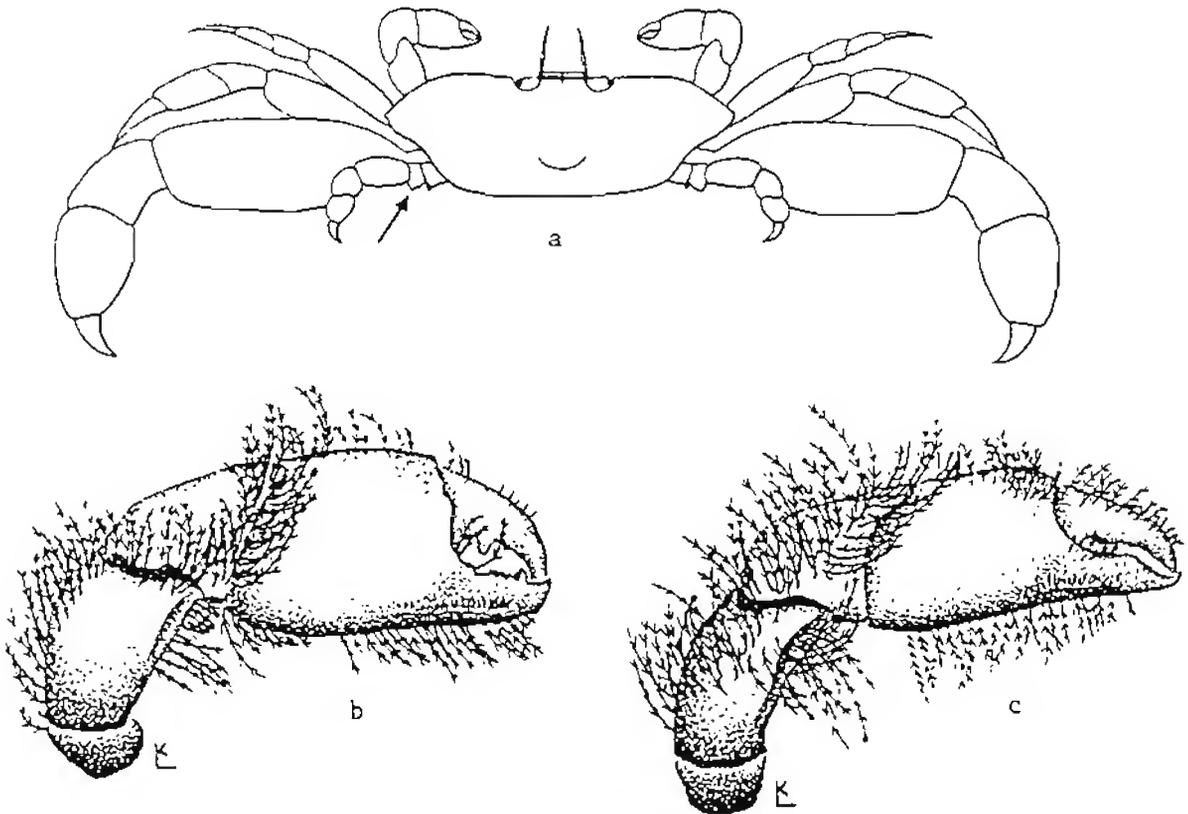


FIG. 15. *Pinnixa longipes*: a, General body outline (from Holmes, 1894); b, Male, right cheliped, ventral view; c, Female, right cheliped, ventral view (drawings by K. Langan).

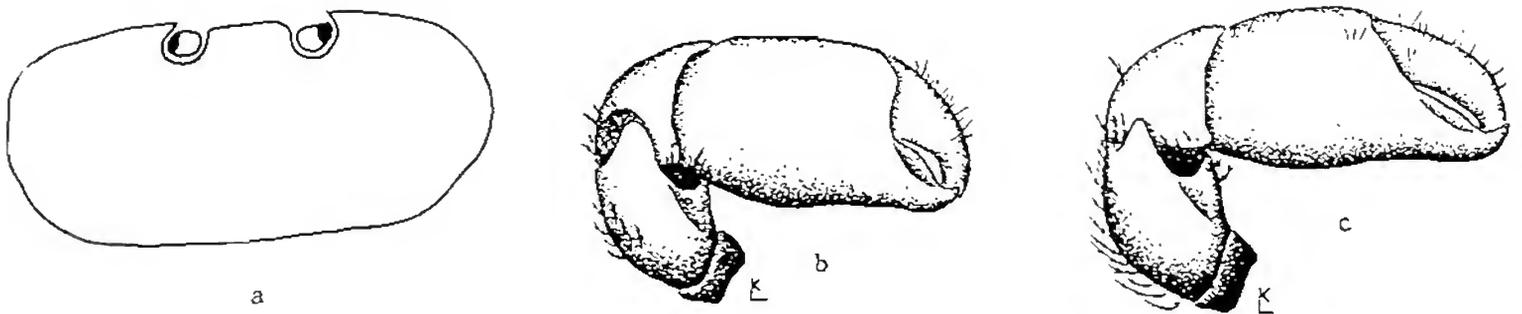


FIG. 16. *Pinnixa weymouthi*: a, Dorsal view of carapace; b, Male, right cheliped, ventral view; c, Female, right cheliped, ventral view (drawings by K. Langan).

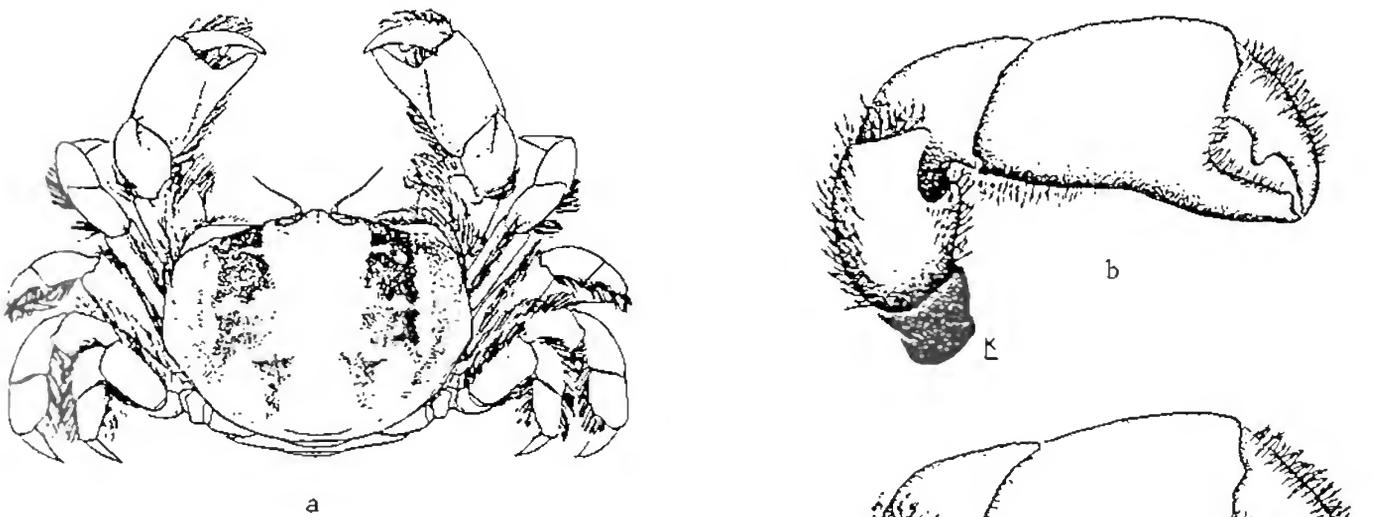


FIG. 17. *Pinnixa barnharti*: a, Whole specimen, dorsal view (from Allen, 1976); b, Male, right cheliped, ventral view; c, Female, right cheliped, ventral view (drawings by K. Langan).

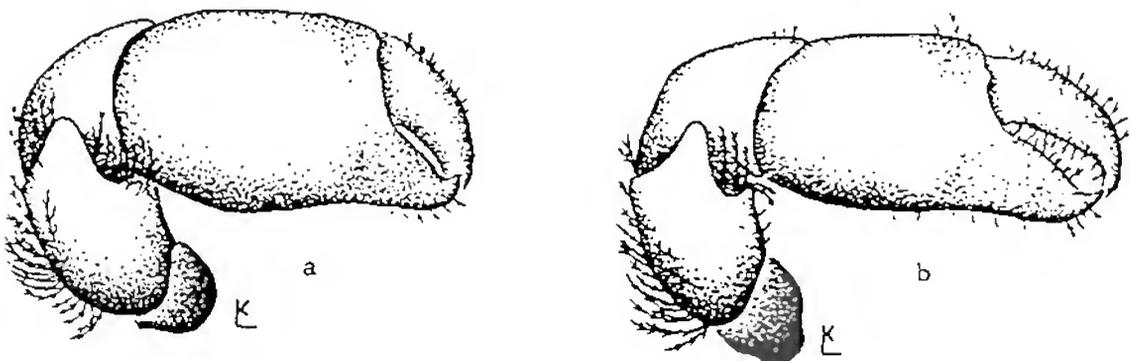


FIG. 18. *Pinnixa tomentosa*: a, Male, right cheliped, ventral view; b, Female, right cheliped, ventral view (drawings by K. Langan).

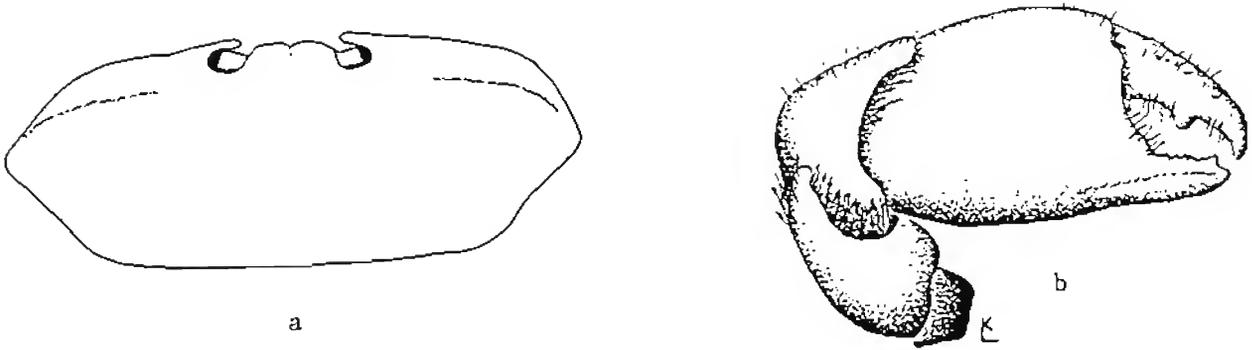


FIG. 19. *Pinnixa hiatus*: a, Female, dorsal view of carapace; b, Female, right cheliped, ventral view (drawings by K. Langan).

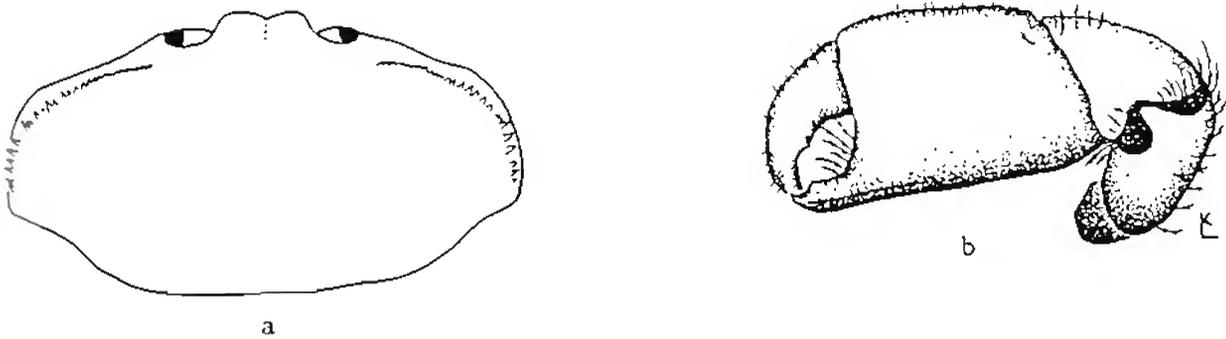


FIG. 20. *Pinnixa franciscana*: a, Small male, dorsal view of carapace; b, Male, left cheliped, ventral view; c, Female, left cheliped, ventral view (drawings by K. Langan).

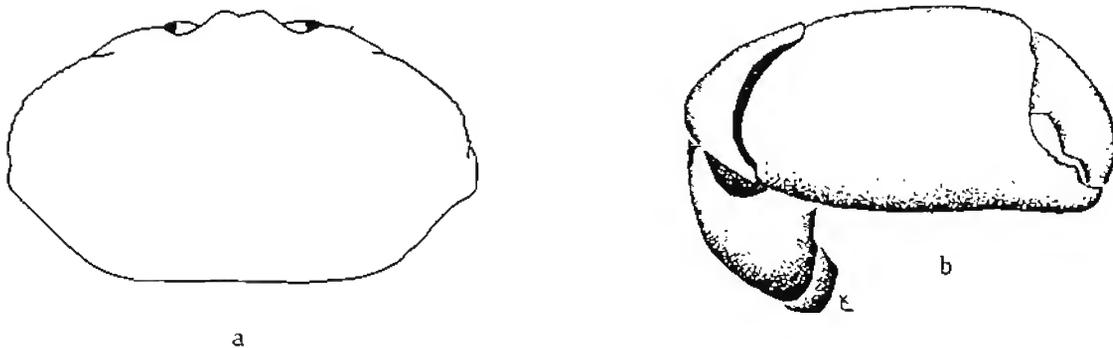
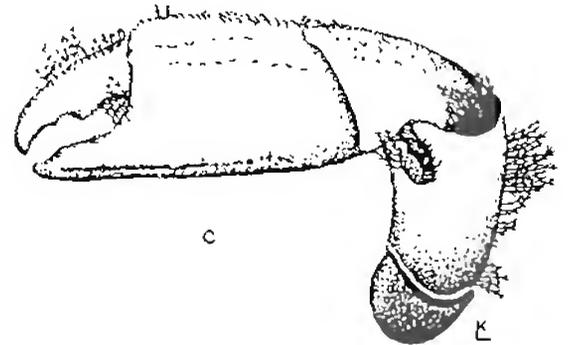


FIG. 21. *Pinnixa schmitti*: a, Male, dorsal view of carapace; b, Male, right cheliped, ventral view (drawings by K. Langan).

KEY TO THE SPECIES OF CIRQLANA KNOWN FROM CALIFORNIA

Richard C. Brusca, 1989

1. Uropodal rami without deep apical notch; margin of pleotelson with 10-36 spines; pleotelson of male with a pair of submedian dorsal tubercles C. harfordi
 - Both uropodal rami with deep apical notch; margin of pleotelson with 8-10 spines; pleotelson of male without dorsal tubercles 2

2. Penes small, set well apart on sternite 7, each set in line with the middle of the peduncle of the right and left first pleopods; apex of male appendix masculinum bluntly round to subacute; pleotelson with 8-10 spines; left maxilliped with 1 coupling hook, right with 2 coupling hooks
..... C. diminuta
 - Penes small, set close together on sternite 7, each set in line with the medial margin of the peduncle of the right and left first pleopods; apex of male appendix masculinum acute, often tapering to a filamentous distal thread; pleotelson with 8 spines; left maxilliped with 2 coupling hooks, right with 1 coupling hook C. parva

PROVISIONAL KEY TO THE SPECIES OF GNATHIA
KNOWN FROM CALIFORNIA

Richard C. Brusca 1989

1. Pleotelson triangular or subtriangular in outline 2
 - Pleotelson T-shaped 5
2. No epimeres visible on pleomeres in dorsal aspect; mandible with large, distinct, outer tooth; with well-developed eyes, never set on ocular peduncles, but may be on ocular lobes 3
 - Pleomeres with distinct epimeres, either small, truncate, and ventrally directed, or subacute and laterally directed; mandible without a lateral tooth, or with a minute, weakly-developed outer tooth; without eyes, or if eyes present they are set on distinct ocular peduncles 4
3. Body with distinct separation between pereonites 2 and 3; outer mandibular tooth large and crenulate on inner margin; dorsum of cephalon not tuberculate; pereon straight-sided (pereonites all about same width); eyes may be on ocular lobes G. steveni Menzies, 1962
(At least Redondo Beach to Bahia San Quintin, Baja; shallow water)
 - Body not separated between pereonites 2 and 3; outer mandibular tooth modest, without crenulate margin; dorsum of cephalon weakly tuberculate; pereon tapering posteriorly (pereonites narrowing posteriorly); eyes never on lobes or stalks G. tridens Menzies & Barnard, 1959
(At least Pt. Conception to San Clemente; perhaps to Alaska)
4. Without eyes; frontal margin of cephalon (frons) trilobed; pleonal epimeres small, truncate, and ventrally-directed; body without distinct separation between pereonites 2 and 3 G. coronadoensis Schultz, 1966
(So far reported only from southern California; 344-812 m)
 - With eyes; frontal margin of cephalon (frons) not lobed, but minutely crenulate; pleonal epimeres subacute, laterally directed; body with distinct separation between pereonites 2 and 3 G. crenulatifrons Monod, 1926
(At least Monterey Bay south to Oceanside; 9-1260 m)
5. Eyes set on distinct ocular peduncles; frontal margin of cephalon (frons) 4-lobed; pleonal epimeres in double pairs (a pair of ventrally-directed and a dorsally-directed epimeres on each pleomere) G. clementensis Schultz, 1966
(Reported only from the type locality, San Clemente Canyon; 162 m)

- Eyes not on ocular peduncles; frontal margin of cephalon (frons) 1 or 3-lobed; pleonal epimeres in single pairs (double pairs may be present in G. sanctacrucis) 6

- 6. Frontal margin of cephalon (frons) produced into a single large lobe; dorsum of cephalon (and entire body) strongly hirsute; pleotelson with a pair of large subapical setae; pleonal epimeres truncate G. sanctacrucis Schultz, 1972 (= G. hirsuta Schultz, 1966) (Reported only from the type locality, Santa Cruz Canyon; 218 m)
 - Frontal margin of cephalon (frons) trilobed; dorsum of cephalon not strongly hirsute; pleotelson with or without a pair of subapical setae; pleonal epimeres subacute 7

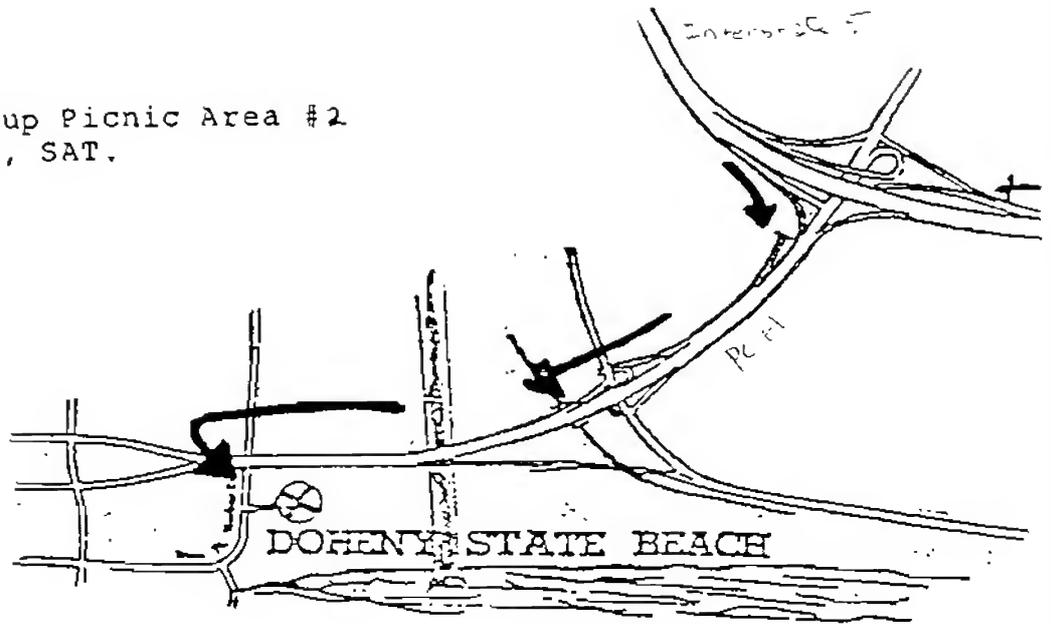
- 7. Dorsum of cephalon tuberculate; pleotelson without a pair of subapical setae; with or without eyes.....
 - G. triloba Schultz, 1966 (Reported only from the type locality, Coronado Canyon and La Jolla Canyon; 812-976 m)
 - Dorsum of cephalon not tuberculate; pleotelson with a pair of subapical setae (not set side-by-side, but off-set from one another); with eyes
 - G. productatridens Menzies & Barnard, 1959 (At least Pt. Conception to southern California; 23-200 m)

PROVISIONAL KEY TO THE CALIFORNIA SPECIES OF LIMNORIA
KNOWN FROM CALIFORNIA

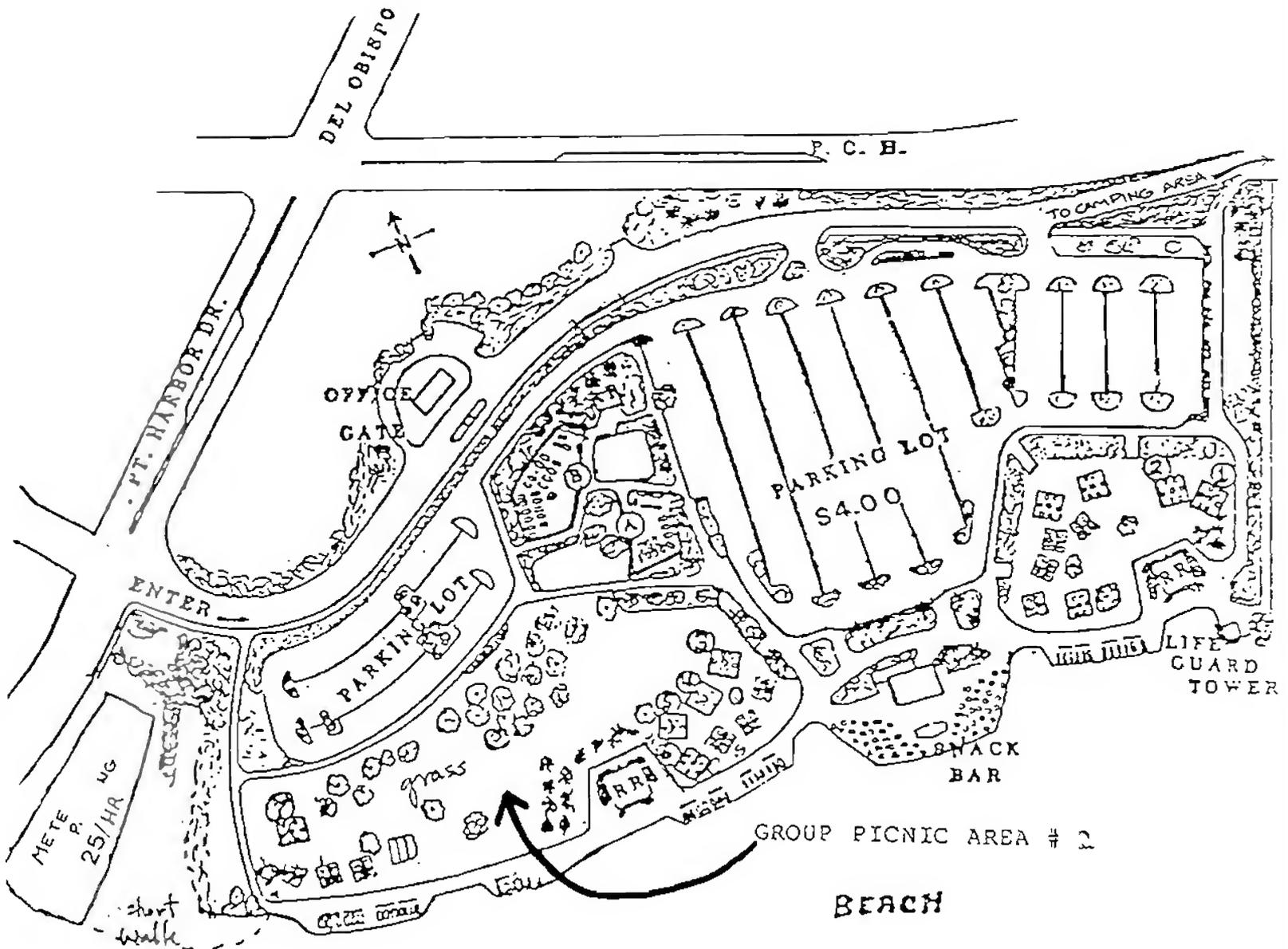
Richard C. Brusca, 1989

1. Left mandible without a rasp; antennal flagellum 5-
articulate; pleonite 5 with pair of longitudinal carinae
which converge posteriorly and are transversely connected
by a short raised carina; burrow into algal holdfasts
..... L. algarum
- Left mandible with a rasp; antennal flagellum 4- or 5-
articulate; pleonite 5 not as above; burrow into wood
..... 2
2. Antennal flagellum 4-articulate; pleonite 5 with a single
longitudinal carina L. lignorum
- Antennal flagellum 5-articulate; pleonite 5 with two
longitudinal carinae that converge or cross 3
3. Pleonite 5 with two carinae that cross in an X-shape, with
the anterior axes longer than the posterior axes;
pleotelson without a row of submarginal tubercles; uropod
peduncle without prominent lateral tubercles
..... L. quadripunctata
- Pleonite 5 with an anterior pair of nodes or broad puncta,
followed by carinae which converge posteriorly to a single
node; pleotelson with a row of submarginal tubercles;
uropod peduncle with prominent, blunt, lateral tubercles
..... L. tripunctata

SCAMIT has reserved Group Picnic Area #2
from 10 a.m. to 10 p.m., SAT.



Take Interstate 5
to the Pacific Coast Highway/Camino Las Ramblas off ramp.



NATURAL HISTORY MUSEUM



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The Department of Marine Invertebrates has an immediate opening for a half-time **CURATORIAL ASSISTANT**

The incumbent will perform a variety of both technical and routine duties involving specimen preparation, collections care, and office/lab maintenance. Routine assignments are of a continuing nature; new and special assignments may require initial supervision and guidance. The incumbent participates in professional curatorial activities under the general supervision of the Collection Manager or Curator.

RESPONSIBILITIES

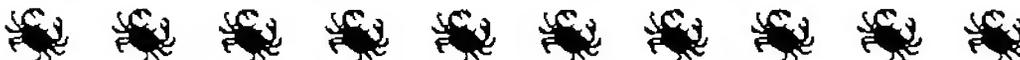
- Performs a variety of duties involving the physical curation and technical management of departmental collections, including participation in preserving, restoring, documenting, sorting, and identifying specimens.
- Assists in processing acquisitions, incoming and outgoing loans, exchanges, etc. Processes specimens for storage and files them in the appropriate area of the collection. Prepares specimen labels and accession and loan forms. May be charged with maintenance of departmental loan records and other record-keeping tasks.
- Prepares specimen catalogue data, using labels, field notes, expedition reports, and other sources as necessary. Computerizes data where applicable, and proofs catalogue entries and printouts at required stages of completion.
- Provides assistance to departmental visitors. Answers questions from the public and scientific community as requested.
- May supervise Museum Technicians and departmental volunteers.
- Assists in maintaining departmental library and other research resources.
- Other duties as assigned.

MINIMUM REQUIREMENTS

Bachelor's degree in biology (or equivalent) and two years of experience in collections care. This position requires an active interest in marine invertebrates, and the incumbent must have experience with or extensive knowledge of the techniques used in the study of molluscs and their contemporary collection care needs. The incumbent must be able to independently access relevant resources and should have both computer word- and data-processing experience. *Attention to detail, resourcefulness, initiative and self-motivation are essential.* The candidate must have a demonstrated ability to carry out assignments efficiently and independently with minimal supervision.

Our research collections comprise approximately 4.8 million invertebrate specimens (215,000 lots), of which 1.8 million are molluscs and 3 million are non-molluscs (mostly Crustacea). The emphasis is on adding wet preserved, expeditionary collected material. With approximately 20% annual collections growth, this curatorial position requires an incumbent to assist with some physical labor (e.g. climbing ladders, moving cases, etc.).

Please send letter of interest, resumé and 2 letters of reference to: Dr. Richard C. Brusca, Bailey Curator and Department Chairman, Department of Marine Invertebrates, at the above address. Hours may be flexible to accommodate academic schedule; salary \$6.50 per hour; position available immediately, open until filled.





Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

September 1989

Vol. 8, No. 5

NEXT MEETING: Paraonidae (Polychaeta: Annelida) Workshop

GUEST SPEAKER: Larry Lovell, vice-president of SCAMIT and private consultant

DATE: Tuesday, October 10, 1989, 9:30 AM

LOCATION: Marine Ecological Consultants (MEC)
2433 Impala Drive
Carlsbad, CA 92009

MINUTES FROM MEETING ON SEPTEMBER 11, 1989

Pycnogonid Workshop: Don Cadien, Los Angeles County Sanitation Districts, and Tony Phillips and Mas Dojiri, Hyperion Treatment Plant, hosted a pycnogonid workshop at the Cabrillo Marine Museum on 11 September 1989. Four work stations were set up with dissecting microscopes with several species of southern California Pycnogonida at each station. The specimens examined were provided by Battelle (Ventura), Cabrillo Marine Museum, County Sanitation Districts of Los Angeles, Hyperion Treatment Plant, Los Angeles County Museum of Natural History, Marine Biological Consultants, Marine Ecological Consultants, Moss Landing Marine Laboratory, and Point Loma (City of San Diego).

A list of southern California pycnogonids reported by various SCAMIT agencies was compiled by Tony Phillips, and keys to families, genera, and species of pycnogonids were modified from the literature by Mas Dojiri. Don Cadien provided an introduction to the Pycnogonida as well as a list of current synonymies. In addition, figures for each species presented in the keys were included. A copy of this compilation of material was given to each workshop participant. Specimens were then identified to species using the keys. Several

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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

problems were immediately recognized with this first draft of the keys, particularly in the first couplet of the family key and the Anoplodactylus key in general. These problems were inherited from the original literature from which the keys were obtained, or were due to inadequate original descriptions of the various species. A second draft, incorporating the corrections suggested by the workshop participants, is now available upon request from the secretary, Mas Dojiri. Please be warned that this second draft will still undoubtedly have some problems and errors associated with it. The keys to the species of Achelia, Tanystylum, and Ammothella have not yet been critically tested. Any corrections to the keys should be sent to:

Dr. Mas Dojiri
Biology Laboratory
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey, CA
90293

Roxanne Jordan, Moss Landing Marine Laboratory, brought a manuscript written by C. Allan Child, Smithsonian Institution, in which a new species of the pycnogonid genus Prototrygaeus was described; the species is to be named in honor of Ms. Jordan. She also had specimens of this new species with her at the workshop; the new species is identical to Genus A sp. A of SCAMIT. We will now have a taxonomic name to pin on this former SCAMIT provisional new species. The manuscript is submitted to the Proceedings of the Biological Society of Washington. Roxanne also provided us with a literature citation that includes a recent bibliography of the Pycnogonida. It is as follows:

Arnaud, F. and R.N. Bamber. 1987. In: Advances in Marine Biology. Volume 24, 95 pages.

Tony Phillips examined a publication by Hong and Kim (1987) in which Decachela dogieli was redescribed, and confirmed that Decachela sp A of SCAMIT was not identifiable with this species, but was indeed a new species.

Future SCAMIT Meetings: Ron Velarde discussed the upcoming SCAMIT meetings and workshops. They are listed below:

10 OCT: Paraonidae (Polychaeta)	Larry Lovell	MEC, Carlsbad
13 NOV: Sampling Standards	SCAMIT	Cabrillo
8 DEC: Holothuroidea	Mary Bergen	Cabrillo
9 DEC: SCAMIT X-mas party	5-10 PM	Cabrillo

Cumacean Workshop: The cumacean workshop to be presented by Dr. Les Watling and originally planned for October has been postponed until either January or February 1990.

Sampling Standards: The National Academy of Sciences is interested in standardizing sampling techniques. SCCWRP apparently conducted a survey concerning the various sampling techniques used by several

southern California agencies. Using SCCWRP's survey as a starting point, SCAMIT now plans to examine the recent techniques employed by the agencies. To this end, SCAMIT will host the "Sampling Standards" meeting on 13 November 1989. All agencies and consulting firms are invited to attend. A recommendation for the standardization will be written and presented to the National Academy of Sciences from SCAMIT.

Holothuroidea Workshop: This SCAMIT workshop will be hosted by Mary Bergen on 8 December. It is scheduled to coincide with the SCAMIT Christmas party, thus enabling Mary to also attend the Christmas festivities. Don Cadien requests that slides of holothuroid ossicles and tube feet be made prior to the workshop.

Infaunal Trophic Index Recommendations: SCAMIT and the Orange County Sanitation Districts hosted a discussion of the ITI on 29 March 1989. Several organizations were represented at this meeting, and each representative was given an opportunity to explain how he/she interpreted and calculated this index. An ad hoc committee meeting comprised of representatives from interested agencies met at the Orange County Sanitation Districts conference room on 1 June 1989. A final SCAMIT list of recommendations pertaining to the ITI is presently being written by Ron Velarde and Larry Lovell. Hopefully, a completed version will be done by the end of September.

SCAMIT Provisional New Species Project: Mas updated his recently proposed project concerning the descriptions of provisional new species and an illustrated guide to the marine invertebrates of southern California. He still encourages SCAMIT members to publish their provisional new species. If members need help in the taxonomic descriptions or review of the final manuscript, Mas can give interested SCAMIT members the names and addresses of taxonomists who have agreed to help SCAMIT. Also Dr. Joel Martin, L.A. County Museum of Natural History, Dr. Roy Kropp, Battelle (Ventura), and Mas have all agreed to act as unofficial reviewers of the manuscripts (i.e. reviewers before official submission to a journal). Additionally, if any SCAMIT member is having problems with the procedure in taxonomic investigations and steps in publication, any of the three people above are willing to help and answer questions.

The second part of the project, the illustrated guide, has been placed on the back-burner. Apparently, the MMS/Santa Maria Basin project may overlap with the second part of the proposed project. Although the two should complement each other more than conflict, the amount of overlap is unknown. In addition, there is a conflict in manpower (and womanpower) since many of the scientists to be used in the illustrated guide will be used by the MMS project.

Parasitic Copepoda: Dr. Ju-Shey Ho, California State University, Long Beach, and Mas Dojiri are planning an investigation of copepods parasitic on polychaetes. They already have collections from Hyperion, Orange County, and Pt. Loma. There are some interesting copepods in part of the collection, but some species are represented by a single specimen. Mas is also currently conducting some research on copepods



parasitic on southern California fishes. If you find any specimens of parasitic copepods on polychaetes or fishes, please send them along with available data to Mas. No additional specimens of the eye parasite, Phrixocephalus, on sanddabs are needed.

Original Volumes of the Danish Ingolf Expedition: Don Cadien is now taking orders for originals of the various volumes of Steenstrupia's Danish Ingolf Expedition. The present currency conversion rate is 7.5 kroner to the US dollar. Don has handed out a list of available reprints; make your orders directly with him.

New Parking Permits at Cabrillo Marine Museum: Cathy Crouch, Curator of Marine Invertebrates, Cabrillo Marine Museum, notified the pycnogonid workshop participants that new parking permits will be issued for the Museum's parking lot. She took note of what agencies needed the permits and promised to send them through the mail.

New Address for Sue Garner: Sue Garner, formerly of MEC, recently accepted a new position in order to work with Dr. George (Buzz) Wilson, at Scripps Institution of Oceanography. She will still be consulting for MEC in her "off hours". Congratulations and good luck Sue! Her new address is:

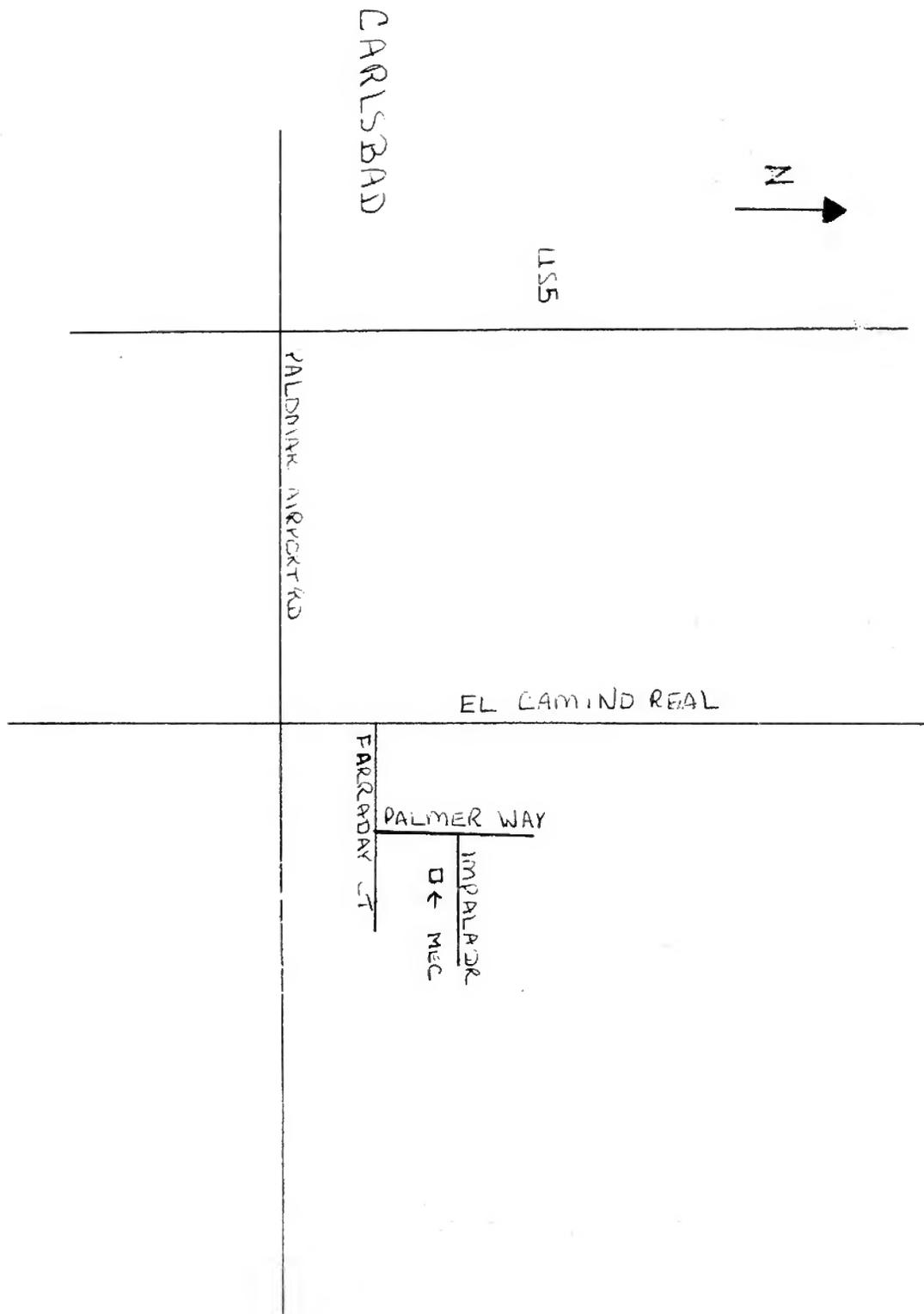
Marine Biology Research Division
A-002
Scripps Institution of Oceanography
La Jolla, CA 92093-0202
(619) 534-6692

SCAMIT Picnic: The picnic was mildly successful. Those of us who attended had a great time. Unfortunately, not many of us attended. It may be time to reevaluate the picnic. The question arises "Should we continue to hold these picnics?" Larry Lovell, vice-president of SCAMIT, continues to bust his anatomical lower-end in order to hold this extravaganza. It is a lot of work for so few people. Any suggestions? Please send them to:

Larry Lovell
1036 Buena Vista Drive
Vista, CA
92083

11th International Symposium on Ostracoda: The International Symposium on Ostracoda will be held in Warrnambool, Victoria in late July - early August 1991. See attached circular for details.

Seminars: Attached to this current newsletter are two circulars, one from California State University, Long Beach, and the other from the Natural History Museum of Los Angeles County, announcing their seminars to be presented in the Fall of 1989. All interested persons are invited to attend.



MAP TO MARINE ECOLOGICAL CONSULTANTS (MEC)

11th International Symposium on Ostracoda
OSTRACODA IN THE EARTH AND LIFE SCIENCES
Warrnambool, Victoria, Australia
late July -- early August 1991
FIRST CIRCULAR

Venue and Access. The Symposium will be held at the Warrnambool Institute of Advanced Education (W.I.A.E.) situated on the southern coastline of Victoria.

Warrnambool is the largest coastal city between Melbourne and Adelaide with easy and rapid access to these centres and the rest of Australia by rail, road and air. It is a notable tourist resort set in rich farming country and near large state owned forests. The Institute is the major regional provider of tertiary education and has all the facilities necessary for running conferences.

Theme and Timing. The major theme of the conference -- Ostracoda in the Earth and Life Sciences -- has been chosen to highlight the diverse applications of Ostracoda to problems in geology and biology.

Finalised dates of the symposium depend on the Institute schedule for 1991. They will be advised in the Second Circular.

Schedule and Publication. Details will be advised in the Second Circular.

Field Trips. Palaeozoic (Ordovician to Devonian) central N.S.W.; Mesozoic (Jurassic and Cretaceous) W.A.; Cainozoic (Eocene to Miocene, Pliocene) Vict.; salt lakes, Coorong area, S.A.; Recent marine, southeastern Australian coastline; Cainozoic, Mesozoic New Zealand (Kerry Swanson). Persons wishing to visit the Great Barrier Reef will be referred to Australian tour operators.

Poster Display. A special laboratory will be set aside at the Institute for posters.

Sample Exchange. Iradj Yassini will be the organiser. Interested persons should advise us when mailing the accompanying registration form.

Treatise Committee Meetings. Times will be arranged following correspondence with the chairpersons responsible for the Palaeozoic, post-Palaeozoic, and Freshwater groups.

Accommodation. A range of accommodations will be available either through the Institute or locally (motels, caravan park) on a twin-share or single basis. A deposit of A\$50 is required for booking accommodation. This will be forfeited if the accommodation is not taken up. Further details, including family arrangements, will be advised in the Second Circular.

Family Outings. The spectacular Great Ocean Road-coastline; Portland, earliest settlement in Victoria; Warrnambool Art Gallery and Maritime Museum; Tower Hill crater excursion; Sovereign Hill Gold Mine, Ballarat.

Useful Information. The weather is likely to be rather cold (frost or snow unlikely) and may be wet; as July/August are austral winter months. You will require a visa to enter Australia (New Zealanders excepted). The Australian dollar (A\$) will likely be worth 75--80 US cents.

Fees. Registration A\$150 (early), A\$200 (late); students and unemployed persons A\$50 (early), A\$65 (late); family members no charge; accommodation deposit A\$50; field trip deposit A\$50; symposium dinner A\$25. Registration includes the cost of the symposium volume; cancellation fee for registration is A\$25.

[Ref.IS091B]

QANTAS THE CONVENTION PROFESSIONALS

QANTAS is the Official International Carrier for the 11th I.S.O.

11TH INTERNATIONAL SYMPOSIUM ON OSTRACODA
Ostracoda in the Earth and Life Sciences
 WARRNAMBOOL, VICTORIA
 late July -- early August 1991

REGISTRATION

Name: Title: Prof./Dr./Mr./Mrs/Ms
 Address:

 Telephone: Telex: Fax:

Is it your intention to attend the 11th I.S.O.? Circle below.

YES PROBABLY MAYBE NO
 I will/will not be accompanied by my family (spouse, children).

I intend/do not intend to deliver a paper/poster.

Proposed title of paper/poster:

Suggestion(s) for session topic(s):

ACCOMMODATION (Indicate preference; a deposit of A\$50 is required).

1. Arranged through the Institute (much cheaper than motel).
2. Motel.
3. Caravan park or Private.

FIELD TRIPS (Indicate preferences; a deposit of A\$50 per field trip is required).

1. Palaeozoic (Ordovician to Devonian) central New South Wales.
2. Mesozoic (Jurassic and Cretaceous) Western Australia.
3. Cainozoic marine (Eoc., Mioc., Plio- Pleist.) Victoria.
4. Lacustrine (fresh and salt lakes, Coorong; Recent and Quaternary) South Australia and Victoria.
5. Recent marine, southeastern Australian coastline.
6. Great Barrier Reef (organised by tour operators).
7. Cainozoic and Mesozoic New Zealand.

FEES (circle choices).

Registration (Employed persons)	A\$150	Late fee*	A\$200
(Students and unemployed persons)	A\$ 50		A\$ 65
Accommodation deposit	A\$ 50		
Field trip deposit	A\$ 50		
Symposium dinner	<u>A\$ 25</u>		

Total A\$ * after 30 June 1990

Please write all cheques/bank drafts (in Australian dollars) for the **11th I.S.O., 1991** and mail them to: Dr K.G. McKenzie (Treasurer, 1991 I.S.O.) 'YUGEN' P.O. Box 759 WAGGA WAGGA N.S.W. 2650 AUSTRALIA.

SECRETARIAT. Dr P.J.Jones Bureau of Mineral Resources P.O. Box 378 CANBERRA CITY A.C.T. 2601 AUSTRALIA.
 Telephone (062)499737 Telex AA62109 Fax (062)488178

Final date for early registration, deposits on accommodation and field trips 30 June, 1990, after which the Second Circular will be posted to those who have responded to this circular.

Hope to see you in 1991 -- Organising Committee [Ref.ISO91A]

NATURAL HISTORY MUSEUM
of Los Angeles County

PLEASE POST/CIRCULATE

900 Exposition Boulevard
Los Angeles, California 90007

NATURAL HISTORY MUSEUM RESEARCH SEMINARS

SEPTEMBER - DECEMBER 1989

- 28 SEPTEMBER DAPHNE FAUTIN - California Academy of Sciences
THE ANEMONE-CLOWNFISH SYMBIOSIS
- 5 OCTOBER NICHOLAS D. HOLLAND - Scripps Institution of Oceanography
THE STRUCTURE AND BIOLOGY OF A SESSILE STALKLESS CRINOID
(Holopus rangii)
- 11 OCTOBER THOMAS A. EBERT - San Diego State University
THE BIOLOGY OF PURPLE SEA URCHINS: ADAPTIVE AND NONADAPTIVE
CHANGES FROM MEXICO TO CALIFORNIA
- 19 OCTOBER DAVID TAB RASMUSSEN - University of California-Los Angeles
EARLY TERTIARY HYRAXES FROM EGYPT, AND THE EVOLUTION OF THE
ORDER HYRACOIDEA
- 26 OCTOBER WILLIAM F. PERRIN - National Marine Fisheries Service
THE PLIGHT OF THE SMALL CETACEANS
- 2 NOVEMBER HENRY W. CHANEY - Santa Barbara Museum of Natural History
THALAMOPORELLIDAE: SYSTEMATIC DISCOVERIES IN A CHEILOSTOME
BRYOZOAN FAMILY
- 9 NOVEMBER FREDERICK R. SCHRAM - San Diego Natural History Museum
LATEST DISCOVERIES CONCERNING WEIRD COAL AGE CRUSTACEANS
- 16 NOVEMBER HOWARD J. SHORR - Reader, Huntington Library, and
L. A. Unified School District
RACE PREJUDICE IS NOT INBORN - IT IS LEARNED: THE
EXHIBITION CONTROVERSY AT THE LOS ANGELES MUSEUM OF
HISTORY, SCIENCE AND ART, 1950-1952
- 30 NOVEMBER DONALD J. REISH - California State University-Long Beach
EXPERIMENTAL ENVIRONMENTAL STUDIES WITH POLYCHAETOUS
ANNELIDS
- 7 DECEMBER BRIAN OBST - University of California-Los Angeles
TEMPEST IN A TEACUP: THE ECONOMICS OF SPINNING IN PHALAROPES
- 14 DECEMBER ANN SAKAI - University of California-Irvine
EVOLUTION OF DIOECY IN THE ENDEMIC HAWAIIAN GENUS Schiedea
(CARYOPHYLLACEAE)

ALL SEMINARS ARE AT 3:00 PM
Times Mirror Room - Natural History Museum
--ALL INTERESTED PERSONS ARE INVITED TO ATTEND--



Seminars in Biology

FALL 1989

- September 7 HISTORICAL CONTAMINATION OF THE PALOS VERDES SHELF:
RECONSTRUCTION USING SEDIMENT GEOCHEMISTRY.
Dr. R. P. Eaganhouse
Senior Environmental Specialist
Southern California Coastal Water Research Project
- September 14 PHYLOGENY AND THE EVOLUTION OF CLAM SHRIMP.
Dr. J. W. Martin, Curator
Los Angeles County Museum of Natural History
- September 21 AN OVERVIEW OF THE STATUS OF LYME DISEASE IN CALIFORNIA.
Dr. J. L. Webb, Specialist
Orange County Vector Control
- September 28 BLEACHING AND THE POPULATION DENSITY OF ZOOANTHELLAE IN
REEF BUILDING CORALS.
Dr. O. Hoegh-Guldberg
Postdoctoral Research Fellow
University of Southern California
- October 5 MECHANISM OF PHYTOPLANKTON BLOOM FORMATION:
ENVIRONMENTAL REGULATION AND MOLECULAR RESPONSE.
Dr. R. C. Zimmerman, Research Associate
Hopkins Marine Station
- October 12 THE HYDROTHERMAL FAUNA, A GLIMPSE OF ANTIQUITY? NEW AND
PRIMITIVE BARNACLES FROM THE WESTERN PACIFIC.
Dr. W. A. Newman, Professor
Scripps Institution of Oceanography
- October 19 ORIGINS OF MEDICINAL PLANT USE: a PHARMACOPOEIA OF THE
APES.
Dr. E. Rodriguez, Professor
University of California, Irvine
(A MARC/MBRS sponsored seminar)
- October 26 SILK AND PHEROMONES: THE ECOLOGY OF MALACOSOMA
CALIFORNICUM FRAGILE, A SUBSPECIES OF THE WESTERN TENT
CATERPILLAR.
Mr. W. P. Weaver Jr., Doctoral Candidate
University of California, Los Angeles
- November 2 TO BE ANNOUNCED
- November 9 THE SEASONAL PHOTOPHYSIOLOGY OF COLPOMENIA PEREGRINA
(PHAEOPHYTA) ACROSS A VERTICAL DISTRIBUTION GRADIENT AT
CATALINA ISLAND.
Dr. J. L. Matta, Postdoctoral Research Fellow
University of California, Santa Barbara
- November 16 THE AMAZON BASIN: BACKGROUND FOR ARTHROPOD DIVERSITY.
Dr. C. L. Hoag
Chief Curator of Entomology
Los Angeles County Museum of Natural History
- November 30 ECOLOGICAL STUDIES OF HETEROPODS FROM HAWAII.
Dr. R. R. Seapy, Professor
California State University, Fullerton
- December 7 METABOLIC ADAPTATIONS BY INVERTEBRATE LARVAE FOR NUTRIENT
ACQUISITION FROM SEAWATER
Dr. D. T. Manahan, Associate Professor
University of Southern California

THURSDAYS

SCL-48

4:00 PM

Co-sponsored by the Biology Students Association, Associated Student, and the
Biology Advisory Council



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

October 1989

Vol. 8, No. 6

NEXT MEETING: Sampling Standards Meeting

GUEST SPEAKERS: Representatives of SCAMIT agencies

DATE: Monday, November 13, 1989, 9:30 AM

LOCATION: Cabrillo Marine Museum
3720 Stephen White Drive
San Pedro, CA 92009

MINUTES FROM MEETING ON OCTOBER 10, 1989

Paraonidae Workshop: Larry Lovell, private consultant and Vice-president of SCAMIT, hosted a paraonid (Polychaeta) workshop on 10 October 1989 at the home of MEC (Marine Ecological Consultants) in Carlsbad. Four work stations were set up with dissecting and compound microscopes with 14 species of commonly occurring southern California paraonids at each station. Copies of a key to the genera were provided by Larry. It was discovered at the workshop that counts of branchia are not as taxonomically useful as originally thought. Their range is variable with age: increased number of branchia directly correlated with increased age. In addition, branchial shape is variable; consequently, this character was not included in the key. The most reliable taxonomic character is the modified setae, but appropriate body segments need to be intact for the neuropodial setae. These generally begin ten setigers posterior to the end of the branchia. The workshop was well received by the participants. The key to the genera has been submitted for publication in the Proceedings of the Third International Conference held at California State University, Long Beach during 6-12 August 1989. It will be available for distribution after publication. SCAMIT thanks Larry

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CHEVRON USA, AND TEXACO INC.

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

for an excellent job, and also gratefully acknowledges MEC for welcoming us into their new home.

Sampling Standards: The National Academy of Sciences and the Southern California Bight Review Committee are both interested in standardizing sampling techniques. SCAMIT will host a meeting concerning the standardization of benthic sampling techniques at the Cabrillo Marine Museum on 13 November 1989. The meeting will be held in the large lecture hall at the Museum, and will consist of 11 talks with each speaker given a 20-minute time slot. A general discussion will follow the end of the presentations. All agencies and consulting firms are invited to attend. RSVP as soon as possible to President Ron Velarde (619) 226-0164. A recommendation for the standardization will be written and presented to the National Academy of Sciences as a result of this SCAMIT meeting.

Holothuroidea Workshop: On 8 December of this year, Mary Bergen will host a SCAMIT workshop on the southern California Holothuroidea at the Cabrillo Marine Museum. Be sure to have slides of holothuroid ossicles and tube feet already prepared before the start of the workshop.

SCAMIT Christmas Party: This year's Christmas party will be held at the Cabrillo Marine Museum on 9 December from 5:00 - 10:00 P.M. The main dish and drinks will be provided by SCAMIT, but it's potluck on the side dishes and desserts. There will also be a surprise visit from the man in red, Big John Claus, for the kiddies and for us adults who never grew up. We need volunteers to help set up and clean up. RSVP to Larry Lovell, Ron Velarde, or Mas Dojiri, also indicate side dishes or desserts and whether or not you can help with the party.

Southern California Academy of Sciences Meeting: SCAMIT received a letter from Dr. Camm Swift notifying us that the 1990's meeting of the SCAS will be held at California State University, Dominguez Hills. A suggestion was made that SCAMIT actively participate at the meetings.

Caprellid Amphipods: Dr. Ichiro Takeuchi, a postdoctoral fellow at the University of Tokyo, recently visited the Biology Laboratory of the Hyperion Treatment Plant, and conducted a mini-workshop on caprellid amphipods. Since the workshop was an impromptu event, having been arranged by Mas Dojiri at the last minute, only three SCAMIT members, Tony Phillips, Don Cadien, and Carol Paquette, were invited to attend. The workshop proved to be informative and successful. We thank Dr. Takeuchi for sharing his knowledge of caprellids with SCAMIT during his very hectic North American visit. We look forward to further communication and collaboration with him.

Job Opportunity: Five full time positions are now open for lab processors to help work up invertebrate samples from the Exxon-Valdez oil spill, Alaska, at the University of California, Davis. Interested people are referred to the attached job announcement.

Correspondence from Dr. E.L. Bousfield: A letter sent to Hans Kuck, Collection Manager, Los Angeles County Museum of Natural History, from Dr. Bousfield is attached to this newsletter. It informs SCAMIT of work presently being conducted by Dr. Bousfield's research group and others concerning the taxonomy of gammarid amphipods from the northeastern Pacific.

MMS/Santa Maria Basin Project and the fate of SCAMIT provisionals: SAIC was recently awarded the MMS/Santa Maria Basin Project. Although several SCAMIT members are in charge of some of the taxonomic investigations, others have expressed some concern for the SCAMIT provisional new species that they have previously studied. Leslie Harris, Allan Hancock Foundation, is in contact with officers at SAIC in San Diego to protect the interests of our members. Dr. Jim Blake, SAIC in Woods Hole, Massachusetts, informed Mas Dojiri through a telephone conversation that he welcomes the expertise of SCAMIT members. He promised to include a short note in the next newsletter outlining the participation of SCAMIT in this project. Also, he plans to visit the Los Angeles area to speak directly to SCAMIT members in order to discuss the possible role of our association. His travel schedule has not yet been solidified, but he hopes to address SCAMIT sometime before the end of this year, possibly during our November or December meeting.





DIVISION OF ENVIRONMENTAL STUDIES

DAVIS, CALIFORNIA 95616

20 October 1989

Dear Colleagues,

I am writing to inform you of a research project I have initiated recently and announce some job openings that I anticipate filling in the very near future. I have accepted a P.I. position to conduct the biological impact assessment of the Exxon-Valdez Alaska oil spill on intertidal and shallow subtidal communities, especially in south-central Alaska in the region of the Shelikof Strait and Kodiak Island. This past summer we conducted field sampling in oiled and unoled regions and will be processing a vast number of benthic samples to determine impacts on these communities.

This project is expected to last at least 2-3 years, although the specific hiring periods for personnel involved in the project will likely run on a year-to-year basis. I anticipate hiring about 8-10 personnel on this project, mostly Post-Graduate Researchers (from UCD or elsewhere), and some graduate students and undergraduates from UCD. Salaries for the PGRs are anticipated to be in the mid \$20K range. There may also be some opportunity for graduate research directly on this project, but because of the uncertain nature of the funding, this would have to be evaluated on a case-by-case basis. I am anxious to receive applications from persons interested in full-time positions in residence at Davis. Responsibilities include, but will not be limited to: rough taxonomic sorting from benthic scrapings and sediment core samples, routine laboratory work, data entry into microcomputer and some data analysis. Most computer work will be done on Macintosh computers.

I have enclosed a flyer to announce these positions and would appreciate your help in posting this and/or copies of this flyer at strategic locations at your institution. If you or your students have further interest or would like more information on these positions, please contact me directly at my office (916) 752-9035 or FAX (916) 752-3350.

I would like to receive a C.V. or Resume, including a cover letter identifying strengths specifically in invertebrate zoology, ecology and computers. Please FAX or send this information to:

Thomas H. Suchanek
Division of Environmental Studies
University of California
Davis, CA 95616

Thank you for your help in finding well qualified personnel to conduct this research.

Most sincerely,

A handwritten signature in cursive script, appearing to read "Tom".

Thomas H. Suchanek

JOBS !!!

10/17/89

NOW

IN

MARINE INVERTEBRATE
ZOOLOGY/ECOLOGY

**LABORATORY PROCESSING OF INVERTEBRATE SAMPLES
FROM THE EXXON-VALDEZ OIL SPILL, ALASKA**

**ANTICIPATE IMMEDIATE HIRING
OF 5 LAB PROCESSORS**

*****(FULL TIME POSITIONS)*****

POSITIONS ALSO AVAILABLE FOR:

- > GRADUATE STUDENTS**
- > UNDERGRADUATES**

DUTIES INCLUDE:

- 1. Rough Sample Sorting**
- 2. Identification of Major Taxonomic Groups**
- 3. Data Entry on Micro-computers**
- 4. Preliminary Data Analysis**
- 5. QA/QC Procedures**
- 6. Potential for Alaskan Field Work (summer 1990)**

FOR DETAILS CONTACT: (immediately)

**Dr. Thomas H. Suchanek
Division of Environmental Studies
University of California
Davis, CA 95616
Tel: (916) 752-9035, FAX (916) 752-3350**

October 3, 1989

Dr. Hans G. Kuck
Invertebrate Zoology
National History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA.
90007

Dear Dr. Kuck:

I was most interested to read of the successful workshop on amphipod crustaceans held jointly at the Cabrillo and LAC Museums last June 5-7. Dr. Jerry Barnard's vast expertise in this discipline especially in the south-central California region, was undoubtedly stimulating to all delegates.

It was good to see that some reference was made to the work of my amphipod research group on north-eastern Pacific coastal marine waters and elsewhere. Work on all species of amphipods from Alaska to central California is nearing completion and will encompass more than 700 species, about 60 families, superfamilies and the three major suborders. You are aware of our previously published reports on Gammaroidea, various Corophioidea, Talitroidea, Annelischoidea, and Lysianassoidea of the 1982-83 NMNS PINS series, and perhaps more recent work on crangonyctids, and pontoporeiids and amphipod fish parasites, in other journals. However, your workshop participants may not be aware that work on about 25 other west coast family groups will appear in print during the next two years including full revisions of Phoxocephalidae, Melitidae, Hyalidae, Pleustidae, Calliopidae, Pontogeneiidae, Oedicerotidae and others that are dominant in the inshore benthos. This series of scientific papers has attracted contributors from around the world, including Jim Lowry (Australian Museum), Gordan Karaman (Yugoslavia), Jim Thomas (Florida), P.G. Moore (Great Britain), Moroshi Morino (Japan), as well as from Canadian museums including Kathleen Conlan, Norma Jarrett, Ed Hendrycks, John Dickinson, and Patrick Shaw. Nearly 300 species, many genera, and several subfamilies will have been described as new to science, all phylogenetically classified. Regrettably, much of it will probably appear subsequent to the opus magnum of Barnard and Karaman now being considered for publication by the Australian museum, and may render it largely

.../2

Dr. Hans Kuck
October 3, 1989
Page 2

obsolescent for the North American Pacific coast. For instance, west coast pleustids embrace 60+ species in nearly 40 genera and 10 subfamilies, mostly new to science. Fortunately, the entire amphipod fauna is to be summarized in a fully keyed and illustrated guide book that should appear by 1992 (3 years hence) and may be of value to your study group. You may wish to provide copies of this letter to your workshop participants (sample plate attached).

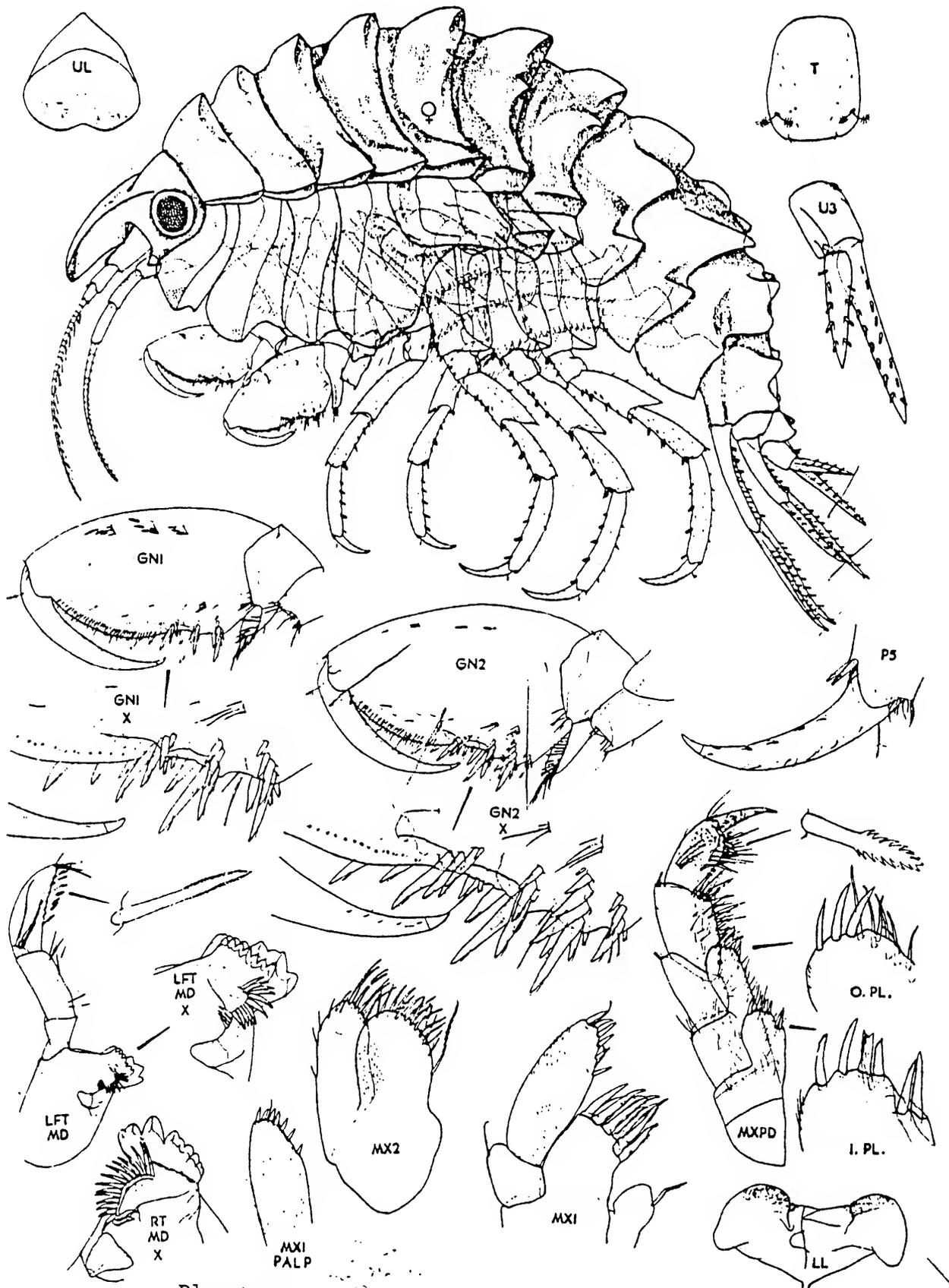
In the meantime we would be happy to exchange information and specimens that might be mutually helpful .

Yours sincerely,

A handwritten signature in cursive script that reads "E.L. Bousfield". The signature is written in dark ink and is positioned above the typed name and title.

E.L. Bousfield
Curator Emeritus

Encl:



Pleustes (Stimpson) Victoria
 region, V.I., B.C.
 ♀ br. II - 7.3 mm.



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

November 1989

Vol. 8, No. 7

NEXT MEETING: Holothuroidea Workshop

GUEST SPEAKER: Dr. Mary Bergen, California State
Lands Commission

DATE: Friday, December 8, 1989, 9:30 AM

LOCATION: Cabrillo Marine Museum
3720 Stephen White Drive
San Pedro, CA 92009

MINUTES FROM MEETING ON NOVEMBER 13, 1989

Sampling Standards Meeting: This meeting was conceived, organized, and chaired by Larry Lovell, Vice-President of SCAMIT. Larry began the meeting by introducing Dr. Suzanne Lawrenz-Miller, Director of the Cabrillo Marine Museum, who welcomed the participants and presented a short summary of the Museum and its close relationship with SCAMIT.

The purpose of this meeting was fourfold: 1) presentation of sampling procedures by various wastewater treatment plants and consulting firms, 2) discussion of similarities and differences among these various procedures, 3) discussion of advantages and disadvantages of each, and 4) discussion of possible recommendations for standardization. Differences in benthic sampling procedures do affect the data and present a problem when comparing data collected from various agencies. The National Academy of Sciences and the Southern California Bight Review Committee are interested in standardizing sampling techniques. Recommendations for standardization were not solicited from SCAMIT by these two groups; however, SCAMIT took the initiative to hold this meeting for the purpose of drafting such a document.

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for formal taxonomic purposes.

Eleven 20-minute talks were presented by representatives of various California agencies: 1) Dave Montagne, Los Angeles County Sanitation Districts, 2) Scott Johnson, Hyperion Treatment Plant, City of Los Angeles, 3) Doug Diener, MEC Analytical Systems, Inc., 4) Tim Rothans, Pt. Loma, City of San Diego, 5) Marilyn Smith, City and County of San Francisco, 6) Jim Laughlin, SCCWRP, 7) Skip Newton, Kinetics Labs, 8) Tim Mikel, ABC Labs, 9) Don Cadien for MBC Applied Environmental Services, 10) Larry Lovell for ECOMAR, and 11) Rick Ware for the City of Avalon (Santa Catalina Island Outfall). A summary gleaned from these seminars are presented below and tabulated (see attached pages).

Sampling is conducted on a quarterly, semiannual, or annual basis. Sampling stations are arranged in a grid array, with all agencies abandoning the formerly used rosette arrangement; the grid array is based on depth with stations located along certain isobaths. The stations are located by the use of predominantly Loran C, but to a lesser extent the Mini-ranger. In combination with the primary navigation system, most agencies utilize position buoys and/or visual line-ups. One agency occasionally even uses radar to verify station location. Buoys can be positioned at each station on a permanent basis as is the situation for ABC Labs at the Oxnard Outfall. Alternatively, marker buoys can be deployed on station to facilitate finding the exact location of the station for replicate sampling.

The most used sediment sampler is the galvanized single or double Van Veen. The Los Angeles County Sanitation Districts have a double cradle structure which supports their double Van Veen. A great deal of interest in this cradle was generated. Although there are certainly advantages to the double Van Veen, a question arose as to whether the second sample of this set-up is a true replicate. The participants agreed that it did not represent a true replicate. In any case, two samples are taken at each station: one used for biology, analyzed for infauna, and one used for chemistry and grain size. Five monitoring programs use teflon coating on the Van Veen with the only advantage appearing to be ease in cleaning and better penetration into the sediment. Kinetics Lab has a modified stainless steel Van Veen built by Battelle, Duxbury. This modified Van Veen has a superstructure built around it to ensure that the grab will work on slopes. The rigid Van Veen, with a superstructure, is the better choice for use on uneven surfaces such as slopes, but the increased mass makes it dangerous in rough seas. The free-swinging Van Veen is not as efficient on slopes, but the single Van Veen is less dangerous in rough seas. ABC Labs has replaced the chains with cable to prevent entanglement with the grab. Monitoring agencies should use the Van Veen best suited to their needs. Dr. Doug Diener, MEC, suggested checking two items: 1) an extra link or shackle in the take-up chain which causes the Van Veen to be partially, not completely ($1/10$ square meter) opened;

2) a large gap between axis and screened flap valves should not be present.

The City of Avalon uses a 1-liter core sampler and divers to collect samples. SCUBA divers ensure that the sampler penetrates into 10 cm of sediment.

There was a considerable amount of interest in box core samplers. MEC plans to run test trials on the samplers off Orange County in January. The results will be compared to the samples taken from a Van Veen. The advantage of the box core sampler is that it can be used in rough seas, e.g. 20 ft seas, which is not possible with the Van Veen; also, penetration depth may be adjusted by the addition or the subtraction of weights. This type of sampler has an added advantage over other bottom samplers because it doesn't disturb surface sediments. Unfortunately, it weighs about 100 lbs.

The minimum acceptance criteria varies greatly among the dischargers due to the type of sediments that prevail in the respective geographic areas. The more compact the sediment is the shallower the penetration depth. The shallowest acceptable penetration depth was reported by Morro Bay and Goleta at 4 cm and the deepest by Watsonville and Oceano at 14 cm. If penetration is a problem, a free fall can be employed in the last few meters of depth to ensure a deeper grab. For the majority of agencies, volume of sediment collected in each sample does not play a crucial role in the acceptance or rejection criterion. If the Van Veen has excessive leakage from cobble caught in the sampler, the sample is rejected. Instead of trying to estimate the volume of the sample when penetration is uneven, a pre-calibrated bucket can be used.

After the sample is brought on board, the sediment is usually washed into a sluice box, down to a weir, and eventually into a collecting screen. All agencies use a 1.0 mm screen or a nested 1.0 mm and 0.5 mm screen combination. When the nested combination is utilized, the organisms retained on the 1.0 mm screen are preserved in separate sample jars than those retained on the 0.5 mm screen. An in-line filter is employed to filter out contaminant organisms, e.g. plankton from wash water. A fan nozzle is attached to a garden hose in order to obtain a gentler spray so that animals aren't fragmented. The organisms retained on the screen are collected by a spatula, then finally forceps. The screen is inverted, then cleaned with a vegetable brush. The sediment used for chemistry analyses is taken from the middle of the sample, not avoiding^{FF} the sediment touching the inner surface of the Van Veen.

Kinetics Lab utilizes an elutriation device with a 1.0 mm screen; this essentially floats or percolates the sample. The elutriator can handle up to 15 liters at any one time and requires 8-10 minutes to complete. The organisms are retained on a 0.5-1.0 mm Nytex sock (screen). The advantages are obvious: the procedure is quick and clean.



Once the organisms are collected from the screen, they are placed in relaxants, fixatives, and preservatives. Six agencies use propylene phenoxylol as a relaxant. These agencies reported that the use of the relaxant does seem to make a difference in the preserved condition of the specimens, especially in the polychaetes and in some crustaceans. Objection to the use of propylene phenoxylol is its carcinogenic nature.

A 10% borax buffered formalin solution is the fixative of choice for the majority of agencies with the duration of fixation ranging from 24-168 hrs. The mode is approximately 48 hrs followed by preservation of the sample in 70% ethanol. Since the addition of 10% buffered formalin is diluted by the water retained between the sand and mud grains after decanting, Dr. Doug Diener recommended that the resultant solution of preservative in the sample should be 10-12% buffered formalin. Poison labels should mark the jars containing formalin. He also suggested buffering ethanol with marble chips since it is usually acidic, pH 5.5. The acidity will disintegrate small mollusk shells. Some agencies, i.e. Morro Bay, Goleta, and Santa Barbara, use 70-75% isopropanol, but a few participants at the meeting expressed dissatisfaction with this preservative. Apparently, isopropanol can cause crustaceans to become quite brittle.

Each time the sample is transferred to a solution, whether relaxant, preservative, or fixative, the sample should be screened with a 0.5 mm screen and the sample jar should be inverted several times to ensure that the added solution is well mixed throughout the sample. Labelling of the sample can be on the lid, on the inside, or on the outside of the container. Two agencies, Hyperion and Serra, require all three aforementioned labels. All other agencies, except one, utilize varying combinations of two of the above. After all these steps are taken, the samples are finally archived for subsequent identification. Rose bengal, a stain, is added to the sample by a limited number of agencies to facilitate sorting. Several participants complained about the use of stains because of subsequent identification problems associated with Rose bengal.

At the Hyperion Treatment Plant, a procedural checklist ensures that all appropriate steps have been taken on the sample in order to preserve, sort, and identify the organisms. Sample custody records provide a historical record of the steps to the final destination of the sample. If the sample is lost, the chain of custody helps to trace the lost sample.

Discussion

Formalin disposal was the subject of a short discussion. Several agencies, e.g. Hyperion Treatment Plant, MEC, and Los Angeles County Sanitation Districts pour the formalin down the drain with the

addition of copious amounts of water. The solution is already at 10%, then is further diluted by the addition of water. The City of San Francisco and Pt. Loma, City of San Diego, puts the used formalin in polyethylene containers for disposal by the hazardous waste group. Tom Parker, Los Angeles County Sanitation Districts, mentioned a paper that describes the breakdown of formaldehyde to CO₂ and several harmless compounds by the addition of ferric chloride and hydrogen peroxide.

Several similarities in sampling programs were mentioned by Dave Montagne. All agencies are sampling at the depths of the effluent discharge and on a grid basis. Most agencies use a single or double Van Veen with replicate samples taken. The sediment is put through a 1.0 mm screen with the material retained on the screen put in a fixative (10% formalin) and later preserved in 70% ethanol with a label identifying station, date, and other pertinent collection data.

Several topics were discussed:

- 1) Many agencies send their least experienced people out in the field. Unfortunately, field mistakes can't be rectified; information lost in the field can't be retrieved for that specific collection. It was suggested that the most experienced personnel should be sent in the field, not the least.
- 2) A fan nozzle should be used in washing the sediment through the screen to decrease water pressure to prevent damage to soft-bodied organisms, e.g. polychaetes.
- 3) In cases of body fragments, some agencies identify heads or significant posterior portions of organisms if no head exists. This procedure prevents the double counting of a single specimen. Some agencies count only heads, no other fragments. Either rule may be used, but consistency within a monitoring program is the most important rule.
- 4) A set of recommendations may be difficult to follow for agencies that have specific permit requirements and that are set in their ways. The participants of the meeting were reminded of a point of which they were all very much aware: "The permit determines the monitoring program; the monitoring program does not dictate the permit". SCAMIT can not unilaterally decide to standardize the sampling.
- 5) Dr. Bruce Thompson, SCCWRP, suggested that various agencies must first get the Regional Water Quality Control Board members to agree on the feasibility and possible acceptance of sampling standardization. Then, perhaps, a set of recommendations can be written and set forth. It must be emphasized that these recommendations are pertinent only to wastewater monitoring programs



and not to other scientific benthic sampling. SCAMIT certainly does not want to undermine such scientific investigations as the MMS/Santa Maria Basin Project which has a totally different objective than the wastewater monitoring groups. Dr. Thompson also warned SCAMIT not to venture too far from the original purpose of the association which is taxonomy. Many members agreed with this suggestion. Perhaps this suggestion as well as others presented here can be further discussed at an executive meeting of the SCAMIT officers.

6) The last suggestion was a laboratory analysis QA/QC meeting of SCAMIT.

Holothuroidea Workshop: On 8 December of this year, Mary Bergen will host a SCAMIT workshop on the southern California Holothuroidea at the Cabrillo Marine Museum. Be sure to have slides of holothuroid ossicles and tube feet already prepared before the start of the workshop.

SCAMIT Christmas Party: This year's Christmas party will be held at the Cabrillo Marine Museum on 9 December from 5:00 - 10:00 P.M. The main dish and drinks will be provided by SCAMIT, but it's potluck on the side dishes and desserts. There will also be a surprise visit from the man in red, Big John Claus, for the kiddies and for us adults who never grew up. We need volunteers to help set up and clean up. RSVP to Mas Dojiri, also indicate side dishes or desserts and whether or not you can help with the party.

Biological Illustrator Available for Free Lance Work: Therese Trebaol is available for free lance biological illustrations. Her education includes a Master's degree in medial illustration from University of California, San Francisco. She has worked extensively with pen and ink, stippling, carbon dust, acrylics, watercolors, and airbrush for publication in books, biomedical journals, and television. Pricing depends on the complexity of the illustration. Telephone: (213) 545-5176.

BENTHIC FIELD METHODS

DISCHARGER:	CITY OF S.F.	SANTA CRUZ	WATSONVILLE	OCEANO	MORRO BAY	GOLETA	SANTA BARB
FLOW RATE (MGD)	17	10-12	8	20	1.5	6	10-15
NAVIGATION							
Mini-ranger		X	X			X	
Diff. Loran C							
Loran C	X			X	X		X
Buoys	X						X
Depth					X		
Visuals				X	X		
Radar							
SAMPLER							
Single VanVeen		X					
Double VanVeen					X	X	
Smith-MacIntyre	X						
#3 Coffee Can Core			X	X			X
1-Litre Core							
Galvanized					X	X	
Stainless	X						
Teflon		X					
MINIMUM ACCEPT. RITERIA							
Penetration (cm)	7	9	14	14	4-10	4-10	14 +/-
Volume (l)			3	3			3
SCREEN SIZE							
1.0 mm	X	X	X	X	X	X	X
0.5	X						
LABELLING							
Top	X						
Inside	X	X	X	X	X	X	X
Outside		X	X	X	X	X	X
RELAXANTS							
MgCl ₂							
MgSo ₄							
Propylene phenoxytol		X	X	X			
Duration (min)		10	10	10			
FIXATIVE							
Formalin (%)	10	10	10	10	10	10	10
Borax buff	X	X	X	X			
Seawater buff					X	X	
Duration (hrs)	48	24-72	24-72	24-72	48-72	48-72	
PRESERVATIVE							
Ethanol (%)	70	70	70	70			
Isopropanol (%)					70	70	75

BENTHIC FIELD METHODS

DISCHARGER:	OXNARD	HYPERION	AVALON	LA CO.	SCCWRP	OR CO.	ALISO
FLOW RATE (MGD)	20	400	.6-.9	375		250	4.2
NAVIGATION							
Mini-ranger							
Diff. Loran C						X	
Loran C		X		X	X		X
Buoys	X	X				X	
Depth		X		X		X	X
Visuals		X	X	X			
Radar		X					
SAMPLER							
Single VanVeen	X	X			X		X
Double VanVeen				X		X	
Smith-MacIntyre							
#3 Coffee Can Core							
1-Litre Core			X				
Galvanized	X	X		X	X		X
Stainless							
Teflon						X	
MINIMUM ACCEPT. CRITERIA							
Penetration (cm)		5	10	10	8-10		10
Volume (l)	3		1			4	3
SCREEN SIZE							
1.0 mm	X	X	X	X	X	X	X
0.5 mm					X		
LABELLING							
Top	X	X		X	X	X	X
Inside		X	X		X	X	X
Outside	X	X	X		X		X
RELAXANTS							
MgCl ₂							
MgSo ₄						X	
Propylene phenoxytol		X					
Duration (min)		30				30	
FIXATIVE							
Formalin (%)	10	10	5	10	10	10	10
Borax buff		X	X	X	X	X	X
Seawater buff		X	X			X	
Duration (hrs)	24-48	48-96	48-120	48-168	24-48	72-120	48
PRESERVATIVE							
Ethanol (%)	70	70	70	70	70	70	70
Isopropanol (%)							

BENTHIC FIELD METHODS

DISCHARGER:	SERRA	OCEANSIDE	ENCINA	SAN ELIJO	SAN DIEGO
FLOW RATE (MGD)	19	16.5	20	22	190
NAVIGATION					
Mini-ranger		X	X	X	
Diff. Loran C					
Loran C	X	X		X	X
Buoys					
Depth	X		X		X
Visuals	X				
Radar					
SAMPLER					
Single VanVeen	X	X		X	X
Double VanVeen			X		
Smith-MacIntyre					
#3 Coffee Can Core					
1-Litre Core					
Galvanized	X				X
Stainless					
Teflon		X	X	X	
MINIMUM ACCEPT. CRITERIA					
Penetration (cm)	10	9		9	4-10
Volume (l)			4		
SCREEN SIZE					
1.0 mm	X	X	X	X	X
0.5					
LABELLING					
Top	X		X		
Inside	X	X	X	X	X
Outside	X	X		X	X
RELAXANTS					
MgCl ₂					
MgSo ₄			X		
Propylene phenoxytol		X		X	
Duration (min)		10	30	10	
FIXATIVE					
Formalin (%)	10	10	10	10	15
Borax buff	X	X	X	X	X
Seawater buff			X		X
Duration (hrs)	48	24-72	72-120	24-72	48-168
PRESERVATIVE					
Ethanol (%)	70	70	70	70	70
Isopropanol (%)					



Southern California Association of
Marine Invertebrate Taxonomists

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December 1989

Vol. 8, No. 8

NEXT MEETING: Pagurid Workshop

GUEST SPEAKER: SCAMIT Members

DATE: Monday, January 8, 1989, 9:30 AM

LOCATION: Cabrillo Marine Museum
3720 Stephen White Drive
San Pedro, CA 92009

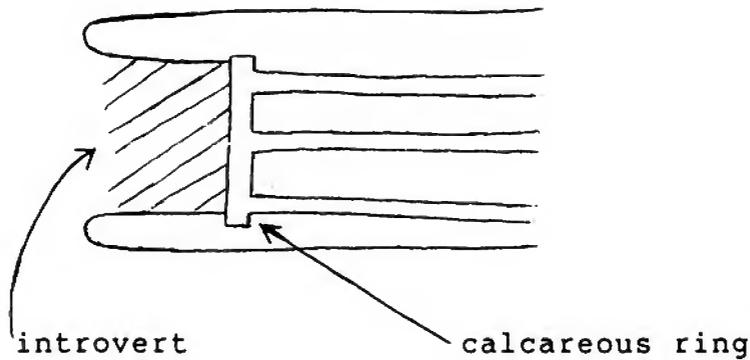
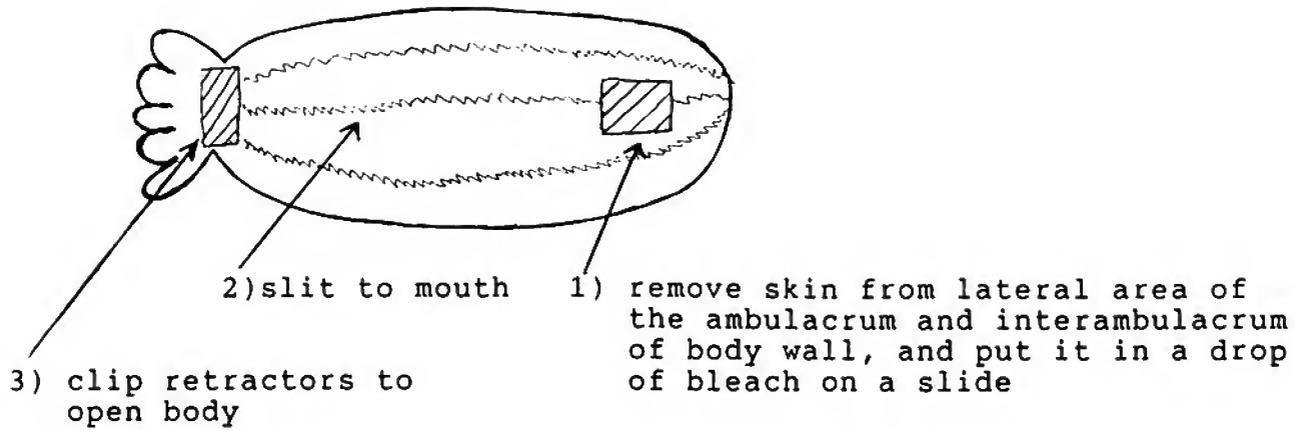
MINUTES FROM MEETING ON DECEMBER 8, 1989

Holothuroidea Workshop: Dr. Mary Bergen, California State Lands Commission, hosted a holothuroid workshop on 8 December 1989 at the Cabrillo Marine Museum. The SCAMIT video equipment attached to a compound and dissecting microscopes was used to examine the southern California holothuroids. Mary distributed artificial keys to the genera of shallow-water holothuroids and the Thyoninae from California (attached to this newsletter), and discussed dissections, classification, general morphology, and morphologic characters used in the keys.

Dissections should be done on the lateral areas of the body wall. The skin section should be taken from the ambulacrum and interambulacrum, and placed in a drop of bleach on a slide. The bleach will dissolve the body tissue leaving the spicules intact; this results in a cleaner slide preparation. An incision can be made up to the mouth, and the retractors can be cut to allow the body to be opened for examination of the internal anatomy. Because the introvert may have unique spicules, spicules from the introvert should be examined. Also, since various layers of ossicles may contain different shapes, all layers should be taken when thinning sections; only the muscles tissue should be discarded.

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Higher level classification of holothuroids in general is presently determined by morphology of tentacles and calcareous rings. Shallow-water holothuroids of California can be divided into three major groups by the presence or absence of tube feet and the morphology of the tentacles (see below).

TUBE FEET ABSENT (APODES)	TUBE FEET PRESENT	
	FEATHERY TENTACLES	FLATTENED TENTACLES
Synaptids (long, cylindrical, vermiform)	Dendrochirotes	Aspidichirotes
<u>Molpadia</u> (body tapers to a tail; phosphatic body present)	<u>Pentamera</u>	<u>Parastichopus</u>
<u>Caudina</u> (body tapers to a tail; phosphatic body absent)	<u>Cucumaria</u>	<u>Holothuria</u>
	<u>Eupentacta</u>	

Phosphatic bodies are degenerated plates that appear as red sand grains in the body wall. If the specimen is only 1 cm in length, it is probably a juvenile with some taxonomically important characters (used in the key) not yet developed.

Chiridota and Leptosynapta probably should not be identified to species since there are some taxonomic problems in species identification of these two genera. Studies on the internal anatomy must be done to resolve this problem. Illustrations of wheel-type spicules of Chiridota and anchors and anchor plates of Leptosynapta are provided in this newsletter.

Key to species of Lissothuria written by Dr. Dave Pawson, National Museum of Natural History, Smithsonian Institution has been published. Apparently, there are two species of Lissothuria found off southern California.

SCAMIT Christmas Party: The SCAMIT Christmas Party was held on Saturday, 6 December 1989 from 5:00-9:30 PM at the Cabrillo Marine Museum. It was a huge success with excellent food, especially the desserts, an entertaining snowman piñata, and a visit from the jolly Big John Claus. A great time was had by all. Wish you were there!

SCAMIT Executive Meeting: An executive meeting was held on 6 December 1989. Several topics were discussed:

- 1) SCAMIT meetings and workshop schedule,
- 2) cut-back of SCAMIT meetings to once/2 months,
- 3) SCAMIT's possible involvement with the MMS/Santa Maria Basin Project and Atlas,
- 4) future goals of SCAMIT,
- 5) SCAMIT funding of proposals,
- 6) donation to the American Association of Zoological Nomenclature,
- 7) Biodiversity Fair at the L.A. County Museum of Natural History, and
- 8) an offer to host a symposium at the Southern California Academy of Sciences.

Future SCAMIT Workshops: Some of the possible workshops are:

Paguridea-----	Janet Haig
Asellota-----	George Wilson
Cumacea-----	Les Watling
Tharyx/Cirratulidae-----	Jim Blake
Mysidacea-----	Velarde/Gleye
Flatworms-----	combined agencies
Odostomia-----	LaFollete
Mollusca/Bryozoa-----	Chaney
Amphipoda-----	Barnard

The tentative schedule is:

JAN 8-----	pagurid workshop (in order to isolate problems)
FEB 12-----	Janet Haig
MAR 12-----	<u>Photis</u> ?



This schedule may be modified by the substitution of the pagurid workshop by polychaete workshops presented by applicants from the short-list for the polychaete curatorial position open at the L.A. County Museum of Natural History. Leslie Harris has already spoken to Dr. John (Kirk) Fitzhugh concerning a cladistic workshop during his interview period.

Ann Martin suggested that voucher sheets be written by participants of a workshop during the workshop. This would ensure that voucher sheets are completed in time for inclusion in the appropriate newsletter. The conclusions about a specific species have been reached by the end of the workshop, and input from the participants can be included at that time. The idea seemed to be a good one, but we will consider this on a trial basis to see if it will work well.

A Suggestion For Less Frequent SCAMIT Meetings: Mas Dojiri suggested that SCAMIT meetings be held on a less frequent basis, perhaps once/2 months. This would ease the pressure on the executive committee to come up with new workshops and speakers to fill the dates. This would also allow the secretary sufficient time to write and prepare the newsletters, and allow SCAMIT members to work on research projects concerning SCAMIT provisional new species during the time slotted for SCAMIT meetings.

MMS/Santa Maria Basin Project: Discussion concerning the MMS/Santa Maria Basin Project and Atlas and SCAMIT's possible involvement in this project was held. Mas mentioned his previous telephone conversation with Dr. Blake, and mentioned that Dr. Blake seemed genuinely interested in SCAMIT's participation, and that this participation would take various forms: 1) conducting taxonomic research, 2) writing the manuscript, 3) reviewing a completed manuscript, 4) providing distributional data, etc. If the SCAMIT member helps conduct the taxonomic research and helps write the paper, then a coauthorship would result. If the individual helps review or provides additional distributional data, etc., then an acknowledgment would be in order. This would be decided on a case by case basis. Mas suggested that the taxa coordinator would be the person to contact.

Mas agreed to write a letter to Dr. Blake pertaining to SCAMIT's willingness to participate on the project, and its level of involvement. Then SCAMIT members can write letters to the individual taxa coordinators to discuss specific involvement.

Future Goals of SCAMIT: The Executive Committee discussed the future goals of SCAMIT. Our association was originally organized to discuss taxonomic problems pertaining to southern California marine invertebrates. The provisional new species were partially described in voucher sheets not only for ease in identification, but also for agreement on tentative names, e.g. Ampelisca sp. A. Many of the problematic species have been assigned the provisional new species

status; there is an unanimous agreement on many of these same species. Our initial goal seems to have been reached, and it is time for us to move on to loftier goals (without, of course, losing sight of our original one). With this in mind, Ann Martin suggested, with the agreement of the other SCAMIT officers, that the primary goal for SCAMIT should be to publish the provisional new species. This discussion provided a smooth transition into the next topic; that is, SCAMIT funding of proposals.

SCAMIT Funding: Two proposals will be funded by SCAMIT:

1) The first proposal was submitted by James D. Roney, Hyperion Treatment Plant for \$100.00 to cover the cost of reprints of a manuscript entitled "A new species of marine amphipod (Gammaridea: Ampeliscidae) from the sublittoral of southern California" and accepted for publication by the Bulletin of the Southern California Academy of Sciences. This new species was formerly known as Ampelisca sp. A. of SCAMIT, and is the second provisional to be published. (The first was a syllid polychaete coauthored by John Dorsey and Tony Phillips.) Since the guidelines for SCAMIT funding did not specifically state that reprint costs could be covered by the Fund, the Executive Committee voted to amend the guidelines to include this valuable part of publication. Don Cadien stated in support of funding that the dissemination of SCAMIT information, or any scientific information, is accomplished in large part by the exchange of reprints. The funding of a manuscript already accepted for publication would provide the first step in the move toward SCAMIT's next goal. It was unanimously agreed to support this proposal.

2) The second proposal was submitted by Dr. Deborah L. Zmarzly, Pt. Loma Treatment Plant, City of San Diego, for \$3,055.00 to cover the cost of illustrations for her manuscript entitled "Monograph of shallow-water California crabs in the genus Pinnixa (Decapoda: Brachyura: Pinnotheridae), with descriptions of two new species". The Executive Committee unanimously agreed that this was a worthy and necessary project. The Committee voted to partially fund this project in the amount of \$1,500.00, and hopes that Dr. Zmarzly can find matching funds from her place of employment, the City of San Diego, or a granting agency.

Mas asked about the possibility of travel expenses for Dr. Jurgen Sieg to host tanaid workshops for SCAMIT. The Committee answered that SCAMIT does not provide travel expenses, although it can pay for hotel and living expenses once the scientist is here in L.A.

Donation to AAZN: Dr. Ray Manning, National Museum of Natural History, Smithsonian Institution, sent SCAMIT a letter asking for financial support for the American Association for Zoological Nomenclature (AAZN). SCAMIT had supported this association in the past. Leslie Harris stated that if taxonomists do not support them,



who will? Her actual statement was more eloquent than just paraphrased, but the meaning is the same. The Committee agreed, and a check for \$50.00 will be forwarded.

Miscellaneous Topics: Requests were received by SCAMIT concerning the possibility of manning a booth at the Biodiversity Fair to be held at the L.A. County Museum of Natural History in April 1990, and sponsoring a symposium at the next meeting of the Southern California Academy of Sciences. For various valid reasons, the Committee declined.

Original Volumes of the Danish Ingolf Expedition: Don Cadien will send in an order for originals of the various volumes of the Steenstrupia's Danish Ingolf Expedition. He will be taking orders during the January SCAMIT workshop, so bring your order and money to this workshop or notify Don.

Dana Reports: The series of Dana reports, results of the Dana Expeditions, which include papers on many pelagic, marine organisms are for sale at a special reduced price through a nonprofit trust. For details, see Journal of Crustacean Biology, volume 9, number 4, p. 666.

Biological Illustrator Available For Free Lance Work: Deborah Allison Horn-Bostel is available for free lance biological illustrations. Her education includes a Bachelor's of Fine Arts from the California State University, Long Beach, and a Biomedical Illustration Certificate. She has experience with pen and ink, stippling, charcoal, acrylics, oils, tempura, watercolors, and computer graphics. Her work includes illustrations of a three volume marine biology textbook (in press), and published illustrations in vertebrate and invertebrate taxonomic papers. References are available. Telephone: (213) 322-2507.

Job Opportunity in San Diego: An NSF-funded half-time Research Assistant position will be available for 1-2 years, beginning around January 1990. The incumbent would work with Dr. Richard C. Brusca on various projects related to marine isopod systematics. Responsibilities would include all levels of systematic work, including: rough sorting of samples, preliminary identification of species, writing preliminary species descriptions, and perhaps a modest amount of scientific illustration. Experience in isopod systematics is desirable, although applications from persons with taxonomic experience primarily in other crustacean groups will also be considered. Although this position is structured for a graduate-level student, other persons with substantial crustacean taxonomic backgrounds will also be considered (e.g. taxonomically-oriented environmental consultants). Salary range is \$9,000-\$11,000/year (20 hours/week), depending on experience. For additional information, or to apply for this position, contact Rick Brusca at the San Diego Natural History Museum at (619) 232-3821 or (619) 696-6969.

CHIRIDOTA SP.

Wheel-type spicule from Chiridota sp.,
Station B-4, 260 ft., Point Loma.

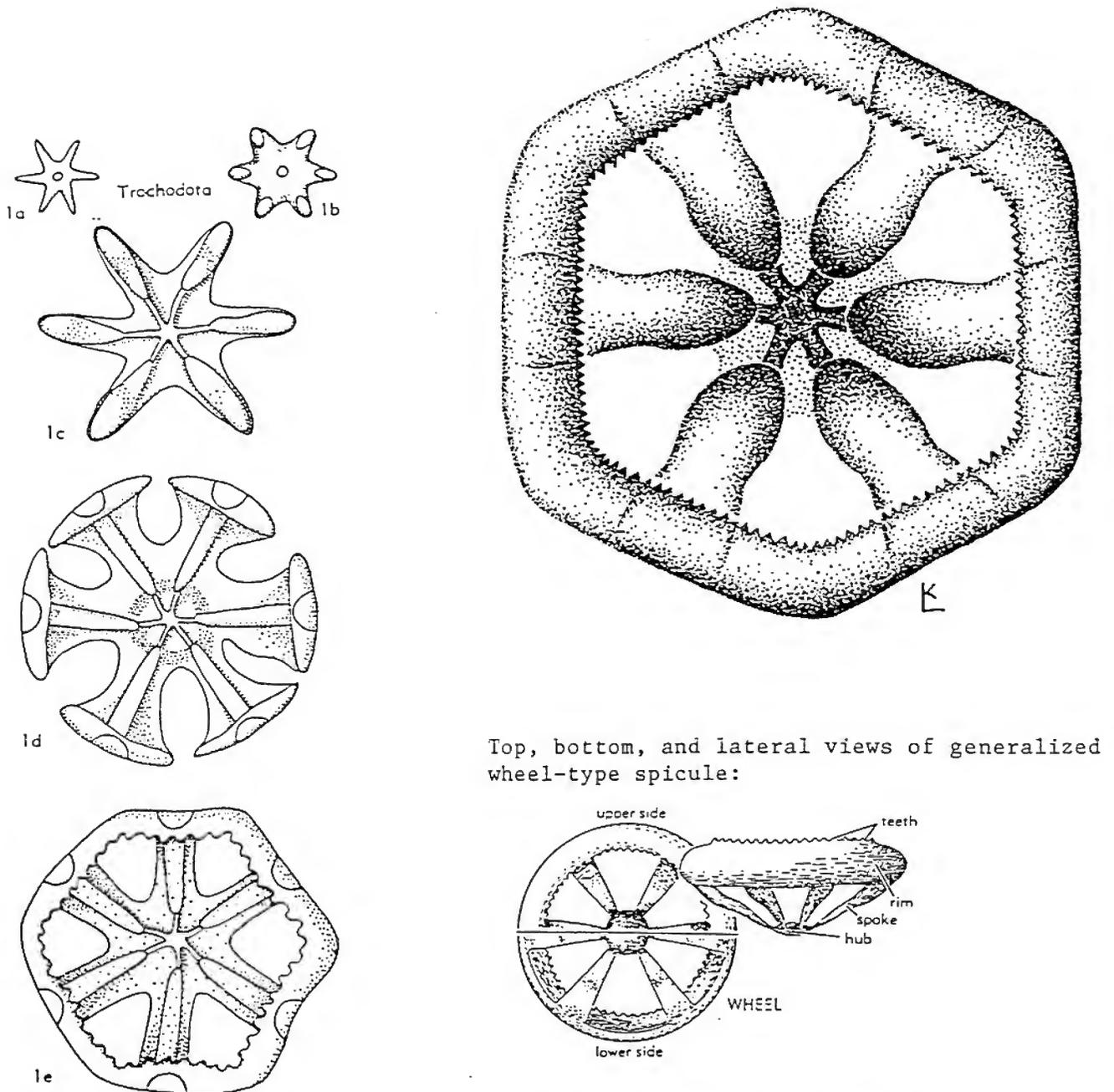


FIG. 522. Successive stages in development of *Chiridota*-type wheel, illustrated by *Trochodota venusta* (SEMON) (14, fig. 8a-e).

Top, bottom, and lateral views of generalized wheel-type spicule:

FROM: *Treatise on Invertebrate Paleontology*.
R.C. Moore (ed.) Part U, Echinodermata 3,
Vol. 2 (1966).

LEPTOSYNAPTA SP.

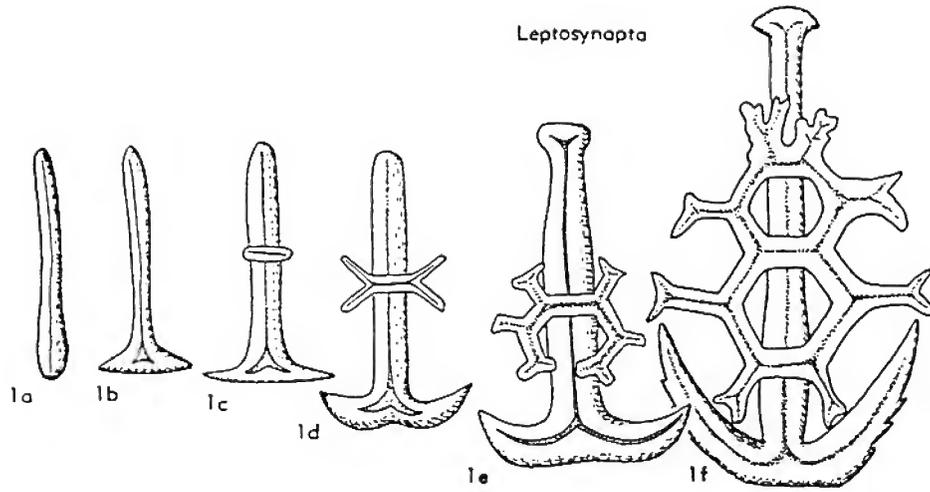
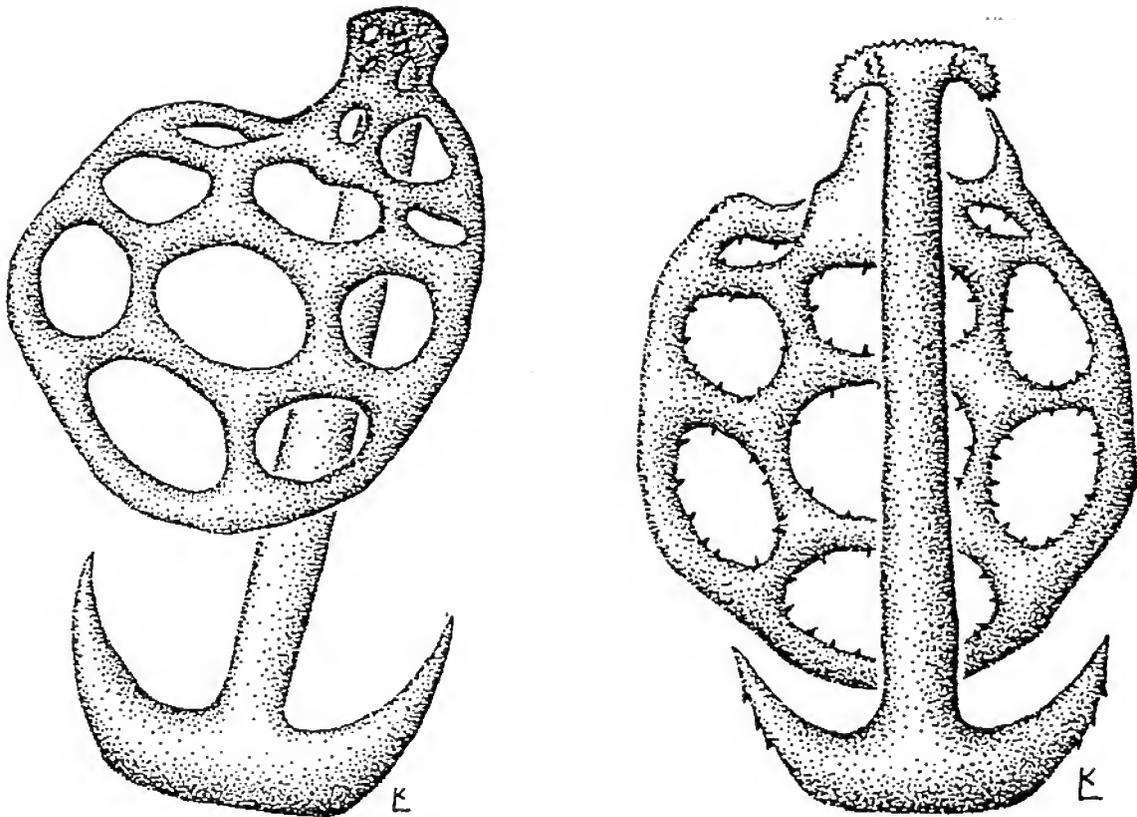


FIG. 521. Successive stages in development of anchor and anchor plate of *Leptosynapta inhaerens* (O. F. MÜLLER) (14, fig. 7a-f). = *L. albicans* (Selenka, 1867)



Dorsal and ventral views of anchor and anchor plates of *Leptosynapta* sp., Station B-4, 260 ft., Point Loma.

Artificial Key to Genera of Shallow-Water,
Holothuroidea from California

1. Tube feet and papillae absent..... 2
1. Tube feet and/or papillae present..... 7
2. Body cylindrical; spicules as anchors and plates or wheels or sigmoid bodies, but not as tables or phosphatic deposits..... 3
2. Body more or less tapering posteriorly to a caudal appendage; spicules as tables, fusiform rods or perforated plates, anchors sometimes present, wheels and sigmoid bodies absent, phosphatic bodies often present..... 6
3. Deposits as anchors and anchor plates..... 4
3. Deposits as wheels..... 5
4. Anchor plates elongate, irregular in outline.....
..... Rynkatorpa Rowe and Pawson, 1967.
4. Anchor plates oval, regular in outline.....
..... Leptosynapta Verrill, 1867.
5. Wheels with 8 or more spokes.....
..... Myriotrochus Steenstrup, 1851.
5. Wheels with 6 or less spokes.....
..... Chiridota Escholtz, 1829.
6. Tentacles with an unpaired terminal digit; phosphatic bodies present; spicules in caudal appendage as tables with round to fusiform disk or fusiform rods or as anchors and racquet-shaped plates.....
..... Molpadia Cuvier, 1817.
6. Tentacles lacking a terminal digit; phosphatic bodies absent; spicules as perforated plates or rods or, in juveniles, small tables; spicules often reduced or entirely lacking..... Caudina Stimpson, 1853.
7. Body flattened, bilaterally symmetrical; distinct sole present..... 8
7. Body cylindrical; distinct sole absent..... 9

* Do not use this key on specimens collected outside of California or in more than 200 m of water.

8. Dorsal scales present, but covered by a layer of deposits including hour-glass shaped spicules; tube feet present on the dorsal surface and in the midventral radius of the sole.....Lissothuria Verrill, 1867.
8. Dorsal scales naked; tube feet absent from the dorsal surface and the midventral radius of the sole.....Psolus Oken, 1815.
9. Tentacles peltate, ventrally placed; retractor muscles absent; tube feet restricted to ventral surface; dorsal surface with papillae.....Parastichopus H.L. Clark, 1922.
9. Tentacles dendritic, terminally placed; retractor muscles present; tube feet present on both the dorsal and ventral surface..... 10
10. Calcareous ring simple, lacking posterior processes.... 11
10. Calcareous ring complex, with paired or unpaired posterior processes..... 12
11. Spicules flat, rounded, sometimes with spines.....Cucumaria Blainville, 1834.
11. Spicules knobbed, three-dimensional, often with a dentate handle.....Pseudocnus Panning, 1949.
12. Processes short, cartilaginous, entire..... 13
12. Processes long, in pieces.....Thyoninae Panning, 1949
13. Tube feet restricted to ambulacra; spicules knobbed plates and baskets or cups.....Eupentacta Deichmann, 1938.
13. Tube feet not restricted to the ambulacra; spicules reticulated plates and regularly-knobbed 4-holed buttons; no baskets or cups present.....Pachythone Deichmann, 1941.

ARTIFICIAL KEY TO SHALLOW-WATER THYONINAE
FROM CALIFORNIA

1. Spicules in body wall predominantly plates..... 2.
1. Spicules in body wall mostly tables or a mixture of tables and plates..... 6.
2. Lozenge-shaped plates, 0.05-0.15 mm long, common; supporting tables in tube feet with well-developed spire..... Pentamera lissoplaca (H.L. Clark, 1924).
2. Lozenge-shaped plates rare or absent 3.
3. Spire on supporting tables in tube feet well developed 4.
3. Spire on supporting tables in tube feet reduced or lacking 5.
4. Spire on supporting tables with four pillars ending in a spiny mass; body wall spicules plates, usually oblong, often covered with spines and knobs Stolus trachyplaca (H.L. Clark, 1924).
4. Spire on supporting tables with two pillars, sometimes elongate and flattened; body wall spicules large, irregularly-shaped plates, 0.2-0.4 mm in diameter; star-shaped tables occasionally present..... Pentamera pseudocalcigera Deichmann, 1938.
5. Body wall spicules oval buttons with two central and up to eight marginal knobs Havelockia montereyensis Deichmann, 1938.
5. Body wall spicules flat, irregularly shaped plates and smaller, more delicate rectangular plates, often with two enlarged central holes; buttons sometimes present.Havelockia benti var. zaca (Deichmann, 1938).
6. Lozenge-shaped plates common..... 7.
6. Lozenge-shaped plates absent..... 8.
7. Tables delicate, 0.03-0.06 mm in diameter..... Pentamera lissoplaca (H.L. Clark, 1924).
7. Tables robust, 0.05-0.16 mm in diameter..... Pentamera deichmannae sp. nov.

- 8. Discs on tables oblong, regular in outline; spire long with 3-6 crossbars
..... Havelockia charlottae (Deichmann, 1938).
- 8. Discs irregular in outline; spire short with 1-2 crossbars 9.
- 9. Teeth on spire of supporting tables bifurcate
..... Pentamera pseudopopulifera Deichmann, 1938.
- 9. Teeth on spire of supporting tables not bifurcate... 10.
- 9. Four-holed tables common; star-shaped tables absent ...
..... Havelockia benti (Deichmann, 1937).
- 10. Four-holed tables not common; star-shaped tables present
..... Pentamera populifera (Stimpson, 1837).



Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

January 1990

Vol. 8, No. 9

NEXT MEETING: Pagurid Meeting

GUEST SPEAKER: Janet Haig, Allan Hancock Foundation,
University of Southern California

DATE: Monday, February 12, 1990, 9:30 AM

LOCATION: L.A. County Museum of Natural History
900 Exposition Blvd.
Los Angeles, CA 90007

MINUTES FROM MEETING ON JANUARY 8, 1990

Pagurid Workshop: Representatives from Hyperion Treatment Plant, Kinnetic Labs, MEC Analytical Systems, Marine Biological Consultants, Los Angeles County Sanitation Districts, Cabrillo Marine Museum, and Pt. Loma/City of San Diego met at the Cabrillo Marine Museum to discuss problems in taxonomic identification of the crustacean group Paguridea. These problems, once isolated, will then be presented to Janet Haig for possible solutions during the Pagurid Workshop. Don Cadien, LACSD, suggested using Mary K. Wicksten's "Artificial Key to Shallow-Water Hermit Crabs of California" for live specimens, and Janet Haig's "A Preliminary Key to the Hermit Crabs of California" for both live and preserved material. Eugene N. Kozloff's "Marine Invertebrates of the Pacific Northwest" can be utilized as an alternative key. A list of pagurid species identified from southern California, including synonymies, was compiled by Carol Paquette, MBC, and is included herein.

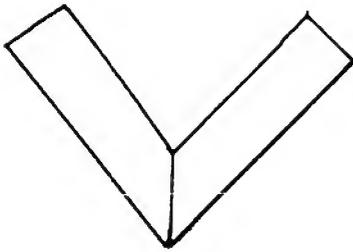
Several problems with Janet Haig's key were isolated:

Couplet 1: Illustrations of approximated versus widely separated maxilliped bases are needed. Without the figures, both character

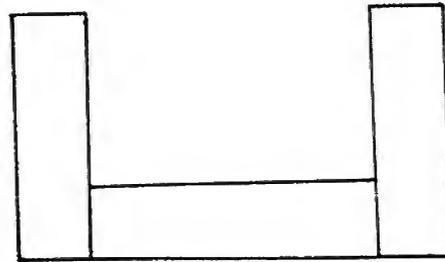
FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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

states need to be examined for comparative purposes. Rough schematic drawings of our interpretation are presented below.



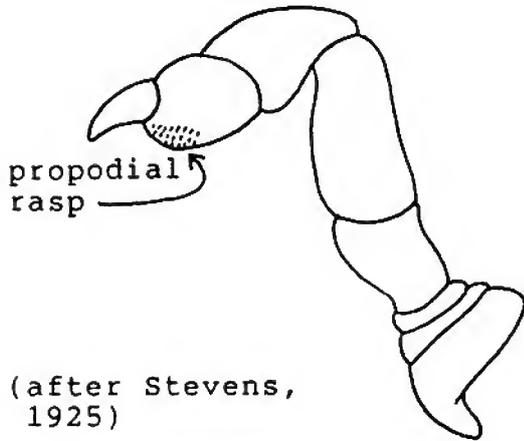
maxilliped bases
approximated



maxilliped bases
widely separated

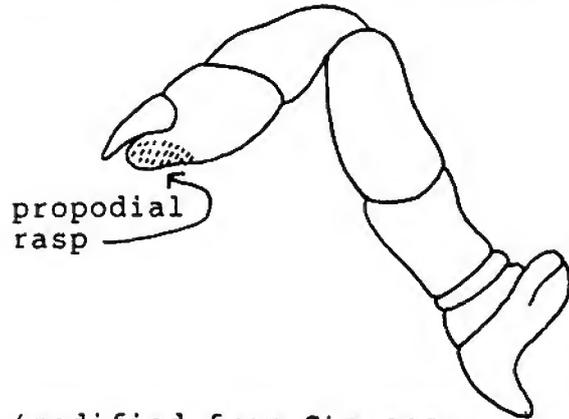
Couplet 2: The paired pleopods, if present, are located immediately posterior to the thorax, at the anteriormost portion of the abdomen. Carol Paquette has several specimens with numerous (more than two) pairs of pleopods in her collection. Since the couplet reads "Males with two pairs of pleopods, females with one pair...", these specimens can not be keyed further. Carol discovered that these specimens probably represent the first crab stage, which is often different in appearance from succeeding crab stages and may closely resemble the glaucothoe (megalopa) larval (final planktonic) stage (see attached figure of cf. Isocheles pilosus 1st crab stage). Don Cadien suggested that the key be changed with a beginning couplet to read "Abdomen symmetrical versus asymmetrical..."; this would distinguish the larval and 1st (and possibly 2nd) crab stages from the adults of the Paguridea. First crab stages have not been described or illustrated for West Coast species, and, at present, not much can be done with them. Patsy McLaughlin feels that Carol's specimen's are 1st crab stage I. pilosus, based on the position of the 3rd maxillipeds, weak development of the ocular acicles and sternite of P5, and equal pleopods (restricting it to the Diogenidae), and development of the dactyls and propodi of P4 (eliminating Paguristes). Carol has provided illustrations of adult Isocheles pilosus (attached to this newsletter).

Distinction between Isocheles and Paguristes: The fifth pair of legs in all members of the Diogenidae are subchelate. The fourth leg is also subchelate in Isocheles, but simple in Paguristes. Schmidt (1921) used this character in his key, but no subsequent author utilized these character states.



(after Stevens, 1925)

Paguristes (simple 4th pereopod; setation omitted)



(modified from Stevens, 1925)

Isocheles (subchelate 4th pereopod; setation omitted)

Paguristes undescribed species #1: Examination and preliminary illustrations of this species need to be done. This would give us a better impression of what is meant by a slender rostrum with a narrow base and a rostral tip reaching beyond the base of the eyescales.

Couplet 5: Illustrations of "chelae very broad, strongly convex on outer margin" versus "chelae relatively narrow, outer margin not strongly convex" need to be included. These character states are quite distinct once specimens of both Paguristes bakeri and P. turgidus are examined side by side. This couplet is, however, problematic for the novice taxonomist. Schematic illustrations are presented below.



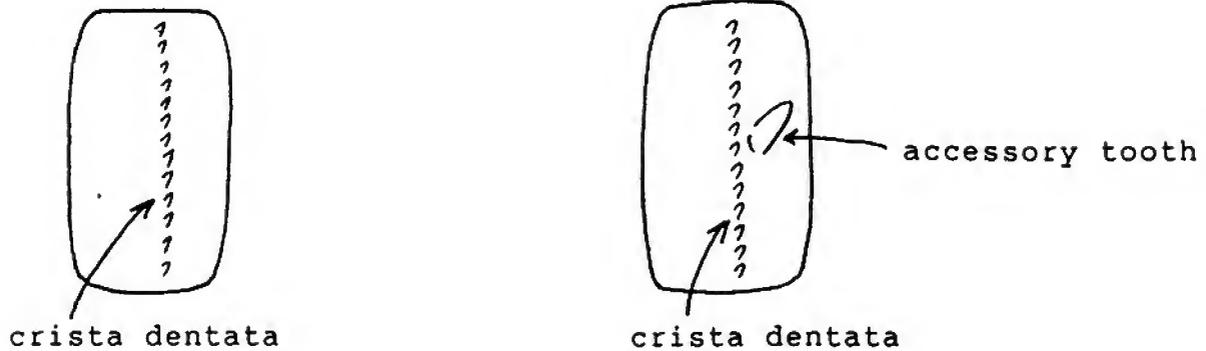
P. bakeri: chelae very broad, strongly convex on outer margin



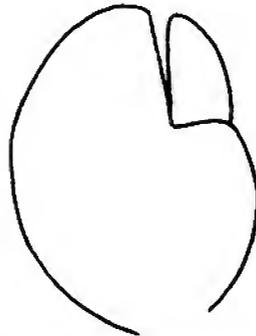
P. turgidus: chelae relatively narrow, outer margin not strongly convex



Couplet 7: Accessory tooth of crista dentata situated on the outer maxillipeds needs to be illustrated.



Couplet 8: An opercular cheliped is subcircular in outline and flat.



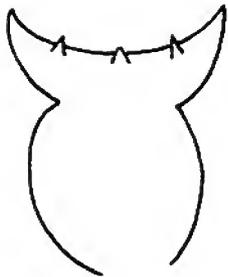
Couplets 9-11: No problems were encountered with these couplets; however, it is noted here that three species of *Pylopagurus* have been transferred to other genera by Patsy McLaughlin (1981). Only one species listed in this key, *P. holmesi*, is retained in this genus.

Couplet 12: If *Orthopagurus minimus* is in a coiled shell, the abdomen will not be straight, but the telson and uropods will still be subsymmetrical.

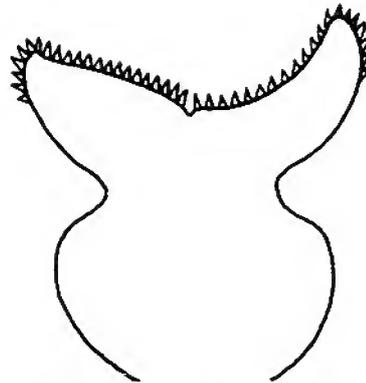
Couplet 13: This couplet pertains only to males. The distinction is the presence or absence of sexual tubes on the males. However, problems arise when attempting to identify female specimens using this key. Characters that distinguish the females need to be added in this couplet. Illustration of sexual tubes on the fifth leg should be provided.

Couplet 15: If the dorsal surface of the left chela is either convex or ridged, the chela is considered to be "elevated".

Couplet 16: The ornamentation of the posterior lobes of the telson need to be illustrated.



telson armed on terminal margins only



telson armed on terminal and lateral margins

Couplet 18: This couplet, which distinguishes the long slender spines of the chelae of Pagurus armatus from the moderately short, conical spines of Pagurus ochotensis, is difficult to use unless both species are examined at the same time. An alternative character that was suggested at the workshop is an acute (P. ochotensis) versus rounded (P. armatus) rostrum. McLaughlin's (1974) paper entitled "Northwest American Hermit Crabs" distinguished these two species by the ornamentation of the mesial surfaces of the left chela:

- ...palm and dactyl of left chela with mesial surfaces strongly armed with low spines or spinulous tubercles.. P. ochotensis
- ...palm and dactyl of left chela with mesial surfaces usually unarmed or with irregular row of small spines or tubercles approximating dorsomesial margin..... P. armatus

SCAMIT Picnic: Larry Lovell, Vice-President of SCAMIT, asked the pagurid workshop participants whether or not to continue the Annual Picnic held at Doheny State Beach. Apparently, there is still some interest in the annual event which will be held again at Doheny on a Saturday, sometime in August. Tentative arrangements will be made to reserve the picnic spot for 1990.

Natural History Museum Research Seminars: A list of the seminars to be presented from January-March 1990 at the Los Angeles County Museum of Natural History is attached to this newsletter. Please note that all seminars are at 3:00 PM in the Times Mirror Room.



Job Opportunity in Long Beach: A research technician position is now available at the Southern California Coastal Water Research Project (SCCWRP) located in Long Beach. Refer to job announcement attached to this newsletter for details.

Nominations for SCAMIT Officers: It is again time to elect new SCAMIT officers. Please send your nominations for President, Vice-president, Secretary, and Treasurer to the current secretary:

Dr. Mas Dojiri
Biology Lab
Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey, CA
90293

A list of nominees and ballots will be sent in the February newsletter. Ballots will be tallied, and new officers announced in the March newsletter. New officers will formally take office shortly thereafter.

Cladistics Seminar and Workshop: A cladistics seminar will be presented at the Los Angeles County Museum of Natural History on Wednesday, 14 February 1990 by Dr. Kirk Fitzhugh, Thorne Fellow, American Museum of Natural History. Additionally, Kirk has graciously agreed to present a SCAMIT workshop on cladistics at LACM on Friday, 16 February, 10:00 AM. For further information, please call Leslie Harris at (213) 743-2085.

SCAMIT pagurids, 8 Jan 90 meeting

Pagurid species of southern California

Family Diogenidae

Isocheles Stimpson 1858

Isocheles pilosus (Holmes) 1900

San Francisco, CA, to Estero de Punta Banda, outer Baja
Intertidal to 55 m, on sand.

Ref: Holmes 1900: description.

Haig 1974?: key

Schmitt, 1921: description and plate figure.

Wicksten 1977: artificial key.

Scanland 1964?: (as *Holopagurus*) description, key and diagrammatic
illustrations.

Forest 1964: Discussion; illustration of *I. pacificus* Bouvier.

Haig, Hopkins and Scanland 1970: discussion and key for Baja Calif.

Paguristes Dana 1851

Paguristes bakeri Holmes 1900

San Francisco, CA, to Gulf of California.

Shallow water to 232 m.

Ref: Holmes 1900: ?

Schmitt 1921: description and plate figures.

Glassell 1937: discussion.

Scanland 1964?: description, key and diagrammatic illustrations.

Haig 1974?: key.

Haig, Hopkins and Scanland 1970: discussion and key.

Paguristes parvus Holmes 1900

Catalina Island and San Pedro, CA, to northern outer Baja California.

3 to 6 m, rocky areas.

Ref: Holmes 1900: ?

Schmitt 1921: description, diagrammatic illustration and plate figure.

Scanland 1964?: description, key and diagrammatic illustration.

Haig, Hopkins and Scanland 1970: discussion and key.

Haig 1974?: key.

Wicksten 1977: artificial key.

Paguristes turgidus (Stimpson) 1857

Chukchi Sea and British Columbia to San Diego, CA.

Subtidal to 465 m.

Ref: Stimpson 1857: description (as *Clibanarius*)

Schmitt 1921: description and plate figures.

Stevens 1925: description, key and illustrations (whole body).

Scanland 1964?: description, key and diagrammatic illustration.

Hart 1971: range extension.

Haig 1974?: key.

McLaughlin 1974: description, key and illustrations.

Wicksten 1977: artificial key.

Kozloff 1987: key.

- Pagurus capillatus* (Benedict) 1892
 Arctic Ocean to Kamchatka and California.
 4 to 439 m.
 Ref: Benedict 1892: description (as *Eupagurus*).
 Schmitt 1921: description and illustrations (chela and anterior body).
 Stevens 1925: (as *P. setosus*) description, key and illustration (whole body).
 Makarov 1938: description.
 Hart 1971: range extension.
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Kozloff 1987: key and illustration (whole body).
- Pagurus caurinus* Hart 1971
 Kodiak, Alaska, to British Columbia.
 Littoral to 126 m, rock crevices or kelp holdfasts.
 Ref: Hart 1971: description and illustrations (incl. whole body).
 Haig 1974?: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.
- Pagurus granosimanus* (Stimpson) 1858
 Unalaska to Ensenada, Baja Calif.
 Littoral to 32 m
 Ref: Schmitt 1921: description and illustration (whole body).
 Stevens 1925: description, key and illustration (whole body).
 Makarov 1938: description.
 Scanland 1964?: description, key and diagrammatic illustration.
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Wicksten 1977: artificial key.
 Kozloff 1987: key and illustration (whole body).
- Pagurus hemphilli* (Benedict) 1892
 British Columbia to Monterey, CA.
 Intertidal to ?
 Ref: Benedict 1892: description (as *Eupagurus*).
 Schmitt 1921: description and illustration (whole body).
 Hart 1971: range extension.
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.

- Pagurus samuelis* (Stimpson) 1857
 British Columbia to outer Baja California (Rathbun's report from Sitka, Alaska, is a misidentification of *P. hirsutiusculus*).
 High intertidal to ?
 Ref: Stimpson 1957: description (as *Eupagurus*).
 Stimpson 1858: (as *Eupagurus*) description (in Latin). Schmitt 1921, description, illustration (whole body male and female) and plate figures.
 Makarov 1938, description
 Scanland 1964?: description, key and diagrammatic illustration.
 Hart 1971: range extension.
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.
- Pagurus setosus* (Benedict) 1892
 Kodiak, Alaska, to Santa Cruz Island, CA.
 9 to 480 m.
 Ref: Benedict 1892: description (as *Eupagurus*).
 Schmitt 1921: description and illustration (whole body).
 Makarov 1938: description and illustration (whole body).
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Kozloff 1987: key.
 not Stevens 1925.
- Pagurus spilocarpus* Haig 1977
 Zuma Beach, CA, to Punta Abreojos, Baja Calif.
 Low tide to 71 m.
 Ref: Haig 1974?: (as *P. sp. 1*) key.
 Haig 1977: description and illustrations.
 Wicksten 1977: (as *P. sp. 1*)
- Pagurus tanneri* (Benedict) 1892
 Pribilof Islands, Alaska, to San Simeon, CA.
 87 to 1120 m.
 Ref: Benedict 1892: description (as *Eupagurus*).
 Schmitt 1921: description and illustration (whole body).
 Makarov 1938: description.
 Hart 1971: range extension.
 Haig 1974?: key.
 McLaughlin 1974: description, key and illustrations.
 Kozloff 1987: key and illustration (whole body).
- Pagurus sp. 2* (Haig MS)
 Southern Baja Calif.
 106 to 116 m.
 Ref: is this *P. sp.2* of Haig, Hopkins and Scanland 1970?
 Haig 1974?: key.
 Wicksten 1977: artificial key.
- Pagurus sp. 4* (Hart MS)
 Ref: Haig 1974?: key.

Phimochirus McLaughlin 1981*Phimochirus californiensis* (Benedict) 1892

Santa Catalina Island and Monterey, CA, to Panama and Galapagos Isl.
Littoral to 129 m.

Ref: Benedict 1892: description (as *Eupagurus*).

Benedict 1892: description (as *E. mexicanus*).

Schmitt 1921: (as *Pagurus*) description and illustrations (whole body and anterior).

Glassell 1937: (as *Pagurus*) discussion.

Scanland 1964?: (as *Pagurus*) description, key and diagrammatic illustration.

Haig, Hopkins and Scanland 1970: description (as *Pylopagurus*) and key.

Haig 1974?: (as *Pylopagurus*) key.

Wicksten 1977: artificial key.

McLaughlin 1981b: description and plates (chelae).

Orthopagurus Stevens 1927*Orthopagurus minimus* (Holmes) 1900

British Columbia to San Diego, CA.

11 to 64 m.

Ref: Holmes 1900: (as *Pagurus*)

Schmitt 1921: (as *Pylopagurus*) description and plate figures.

Stevens 1927: description of species and new genus, keys and plates (whole body).

Makarov 1938: description.

Scanland 1964?: (as *Pylopagurus*) description and key.

Hart 1971: range extension.

Haig 1974?: key.

McLaughlin 1974: description, key and illustrations.

Wicksten 1977: artificial key.

Kozloff 1987: key.

Family Parapaguridae

Parapagurus Smith 1879*Parapagurus haigae* de Saint Laurent 1972

Ref: Haig 1974?: key.

Parapagurus pilosimanus benedicti de Saint Laurent 1972

Alaska to Gulf of Panama

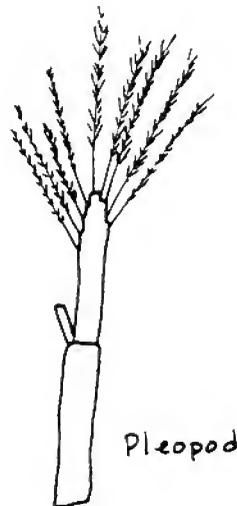
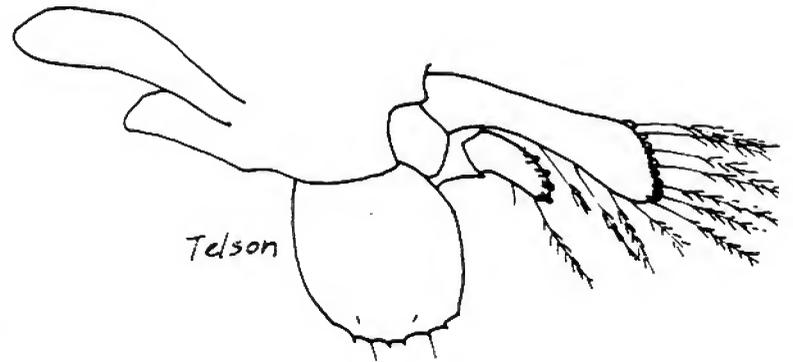
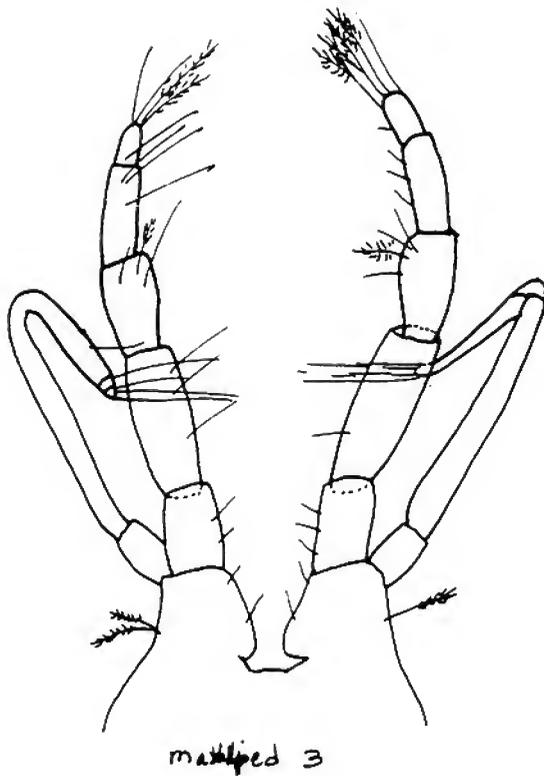
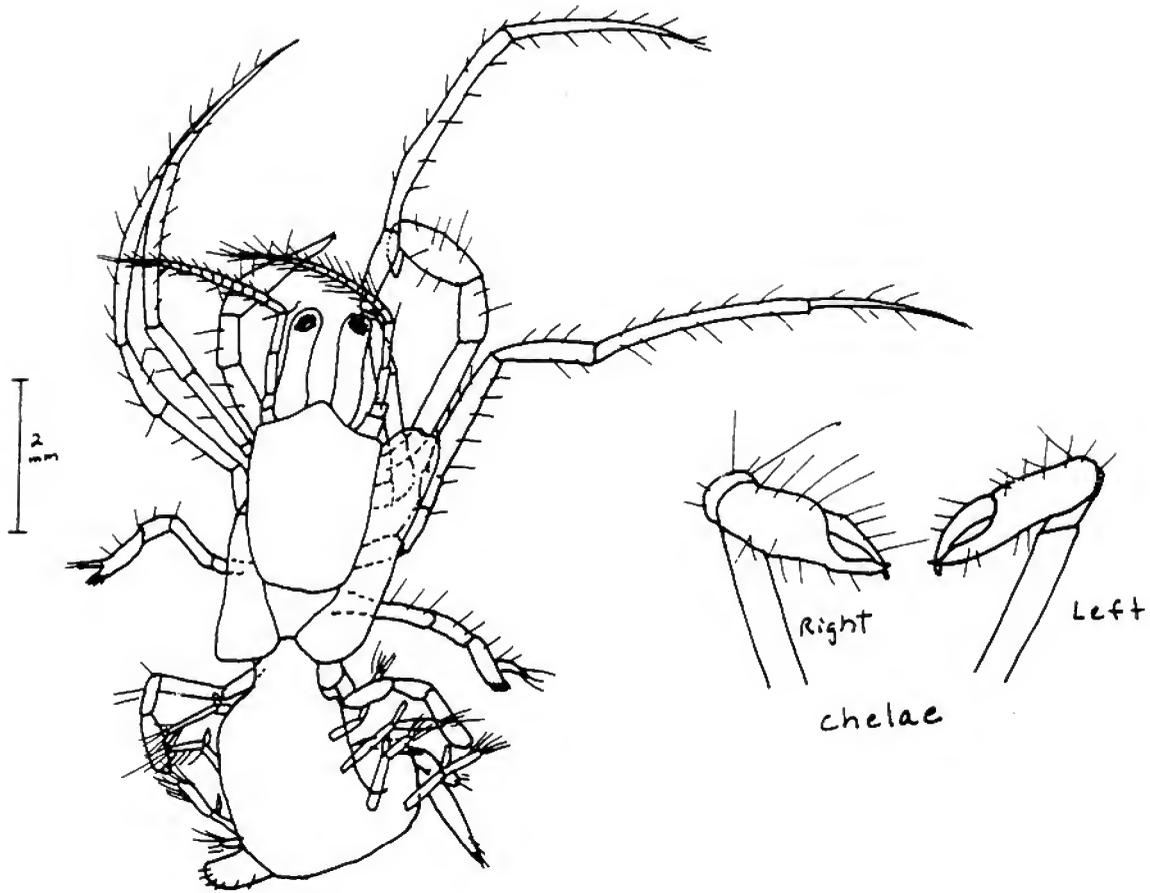
750 to 1902 m.

Ref: Haig 1974?: key.

McLaughlin 1974: description, key and illustrations.

Kozloff 1987: key.

cf. Isocheles pilosus, 1st crab stage

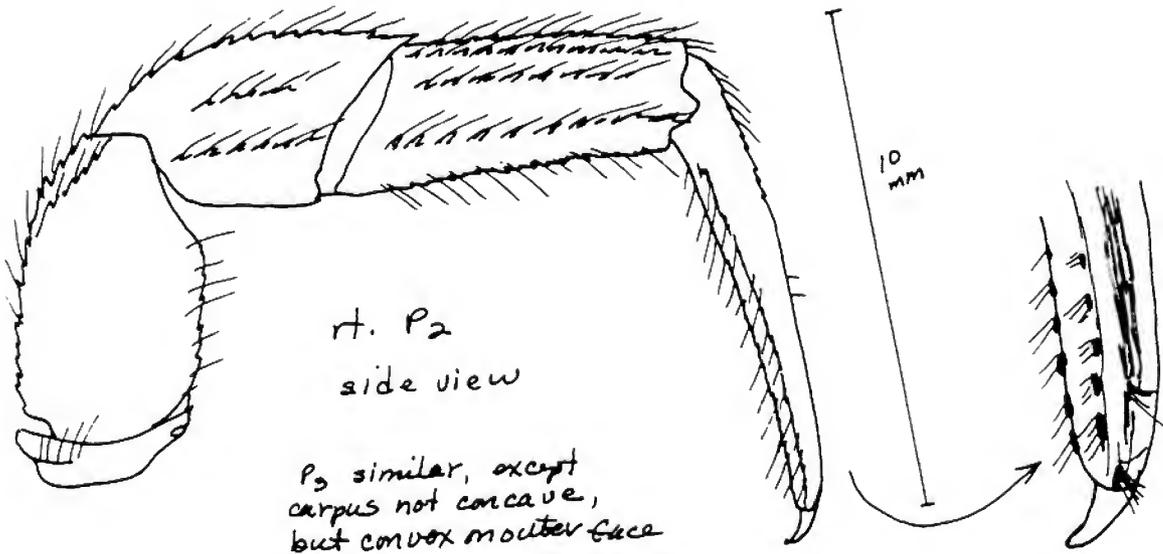
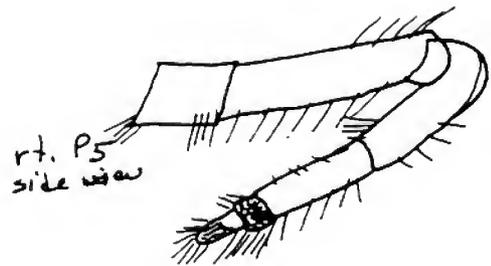
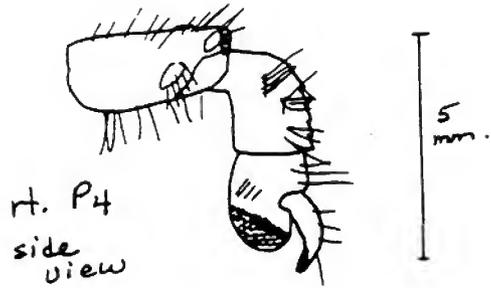
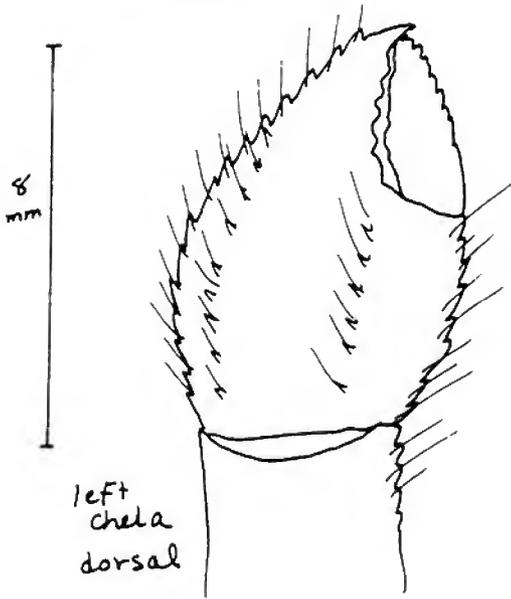
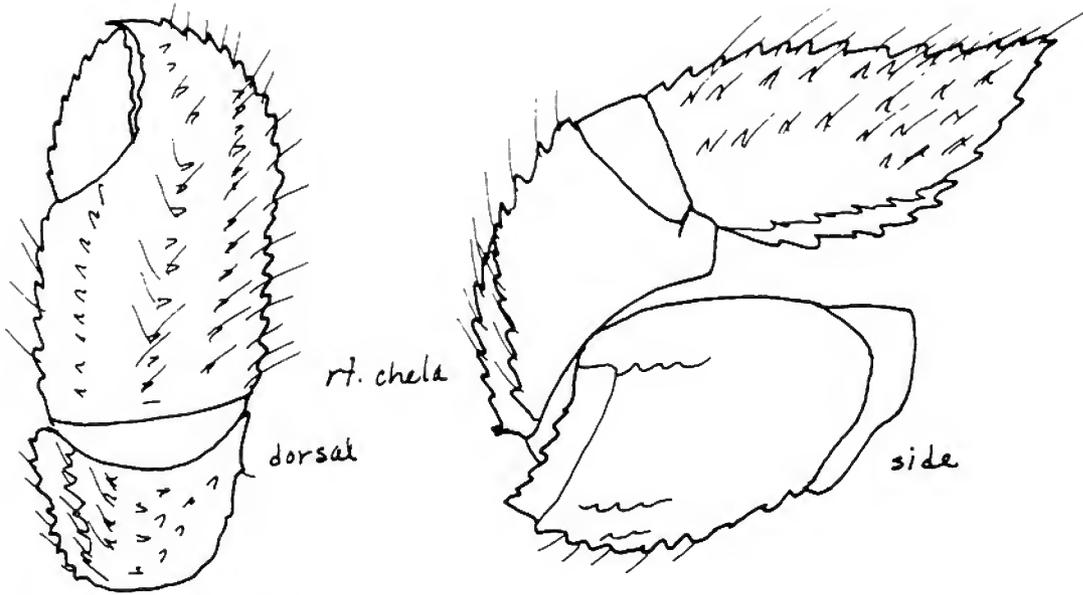


Huntington Beach NPDE
1E I, 1F III, 1D IX
1 Aug 89

in *Olivella baetica*
Neverita reclusiana
Epitonium, Alutia
other small and
mollusk shells

Isocheles pilosus, Adult

Huntington Beach 7E
G 11/71
SL = 8 mm



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NATURAL HISTORY MUSEUM RESEARCH SEMINARS

JANUARY - MARCH 1990

- 11 JANUARY DOUGLAS J. EERNISSE - University of Michigan
PHYLOGENETIC PATTERNS AMONG CHITONS
- 18 JANUARY NANCY J. BLOMBERG - LACM/Anthropology
SACRED FIGURES IN NAVAJO BLANKETS: A Re-evaluation of Time
Frame and its Implications for Cultural Change
- 1 FEBRUARY ANDREW R. CAMERON - California Institute of Technology
CELL LINEAGE RELATIONSHIPS DURING SEA URCHIN DEVELOPMENT
- 6 FEBRUARY DAVID JABLONSKI - University of Chicago
(TUESDAY) ON THE ORIGIN OF ORDERS: Ecological Patterns in the Origin
of Higher Taxa
- 8 FEBRUARY PETER C. WAINWRIGHT - UC-Irvine
MORPHOLOGY AND ECOLOGY: Functional Basis of Feeding
Constraints in Coral Reef Fishes
- 15 FEBRUARY GEORGE L. KENNEDY - LACM/ Invertebrate Paleontology
PALEOGEOGRAPHY AND GEOCHRONOLOGY OF PLEISTOCENE MARINE
TERRACE FAUNAS, PACIFIC COAST OF NORTH AMERICA
- 22 FEBRUARY GEERAT J. VERMEIJ - UC-Davis
EXTINCTION AND SURVIVAL IN THE COLD NORTHERN OCEAN: What is
so great about the Northwest Pacific?
- 1 MARCH ROBERT ORNDUFF - UC-Berkeley
THE SEX LIFE OF CYCADS
- 7 MARCH JAMES W. ARCHIE - CSU-Long Beach
(WEDNESDAY) MEASURING HOMOPLASY LEVELS AND EVALUATING ITS CONSEQUENCES
IN PHYLOGENETIC DATA
- 15 MARCH THOMAS C. COX - University of Southern California
THE GRASSHOPPER PLAGUE IN THE TRANS-MISSISSIPPI WEST,
1874-78: A Laboratory for Reform and Community Organization

ALL SEMINARS ARE AT 3:00 PM
Times Mirror Room - Natural History Museum
--ALL INTERESTED PERSONS ARE INVITED TO ATTEND--



POSITION ANNOUNCEMENT

RESEARCH TECHNICIAN

The Southern California Coastal Water Research Project (SCCWRP) has an opening in the benthic laboratory for an experienced research technician. Applicants must have at least a Bachelor's degree in biology. Experience in crustacean and/or echinoderm taxonomy, shipboard sampling of soft substrate habitats, aquarium culture and experimentation with marine invertebrates, data management, manipulation, analysis, and report writing are all desirable skills.

SCCWRP is a public agency that is nationally recognized for its research in marine environmental science. This is a full time position with excellent benefit package and salary commensurate with background. Please submit resume with the names and address of three references to:

**Dr. Bruce Thompson
Southern California Coastal Water Research Project
646 W. Pacific Coast Highway
Long Beach, CA 90806**



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

February 1990

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NEXT MEETING: Photis Workshop

GUEST SPEAKERS: SCAMIT Members

DATE: Monday, 12 March 1990, 9:30 AM

LOCATION: Cabrillo Marine Museum
 3720 Stephen White Drive
 San Pedro, CA 90731

MINUTES FROM MEETING ON FEBRUARY 12, 1990

Pagurid Meeting: Ms. Janet Haig, Allan Hancock Foundation, University of Southern California, hosted the pagurid meeting. Several problems concerning pagurid identification were discussed. Ms. Haig agreed with us that several corrections and additions, listed in the previous newsletter, need to be made to the key (Haig, J. 1977. A preliminary key to the hermit crabs of California. Proc. Taxonomic Standardization Program, So. Calif. Coastal Water Research Project, Vol. 5, No. 2, pp. 13-22). Don Cadien, Los Angeles County Sanitation Districts, agreed to rewrite this key, and Dean Pasko, Pt. Loma/City of San Diego, and Mas Dojiri, Hyperion Treatment Plant, plan to illustrate the characters included in the key. Many of these illustrations will be gleaned from the literature, but a few, by necessity, will be original. When completed, the illustrated key to the species of California hermit crabs will be distributed to SCAMIT members. SCAMIT gratefully acknowledges Janet Haig for hosting the meeting and for her helpful suggestions on the key.

Lists of synonymies and references for hermit crabs of southern California compiled by Carol Paquette, Marine Biological

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

Consultants, are attached to this newsletter. Apparently, the printer copied only every other page of the handout provided in the previous newsletter; therefore, the correct version is included herein.

Photis Workshop: SCAMIT members planning to attend the next workshop on Photis at Cabrillo Marine Museum on 12 March 1990 are encouraged to bring their specimens of Photis and microscopes with them. Although a few microscopes will be provided at the workshop, there will not be enough for all the participants.

SCAMIT Cladistic Workshop: Dr. J. Kirk Fitzhugh, American Museum of Natural History, presented a seminar entitled "Cladistics and Polychaete Systematics: Truth or Consequences" at the Natural History Museum of Los Angeles County on 16 February. Attached to this newsletter are definitions of some common terms used in cladistics, and a short note on HENNIG86, a PC-DOS program for phylogenetic analysis.

Election of New SCAMIT Officers: Nominations for new SCAMIT officers have been received and ballots, including candidate biographies, are enclosed herein. Please vote for the candidate of your choice for each office and mail your completed ballots to the Vice-President at the address provided on the ballot.

Light's Manual Update: "Text corrections and addenda for adding to 3rd printing" of Light's Manual, Intertidal Invertebrates of the Central California Coast, edited by Ralph Smith and James Carlton is available from Ralph Smith.

8th Annual SCAMIT Picnic: This year's picnic will be held at Area 7 (northern end of the park), Doheny State Beach, on Saturday, 18 August 1990. The picnic chairman will be providing more details in an upcoming newsletter.

SCAMIT pagurids, 8 Jan 90 meeting

Pagurid species of southern California

Family Diogenidae

- Isocheles* Stimpson 1858
 - Isocheles pilosus* (Holmes) 1900
 - Holopagurus pilosus* Holmes 1900
- Paguristes* Dana 1851
 - Paguristes bakeri* Holmes 1900
 - Paguristes parvus* Holmes 1900
 - Paguristes turgidus* (Stimpson) 1857
 - Clibanarius turgidus* Stimpson 1857
 - Eupagurus turgidus*: Stimpson 1859
 - Pagurus turgidus*: Williamson 1915
 - Paguristes turgides*: Gordan 1956
 - Paguristes ulreyi* Schmitt 1921
 - Paguristes occator* Glassell 1937
 - Paguristes* sp.1 Haig

Family Paguridae

- Discorsopagurus* McLaughlin 1974
 - Discorsopagurus schmitti* (Stevens) 1925
 - Pylopagurus schmitti* Stevens 1925
- Pagurus* Fabricius 1775
 - Pagurus aleuticus* (Benedict) 1892
 - Eupagurus aleuticus* Benedict 1892
 - Pagurus ochotensis aleuticus*: Makarov
 - Pagurus armatus* (Dana) 1851
 - Bernhardus armatus* Dana 1851
 - Eupagurus armatus*: Stimpson 1857
 - Eupagurus ochotensis*: Stimpson 1858
 - Eupagurus alaskensis*: Harrington and Griffin 1897
 - Pagurus ochotensis*: Holmes 1900
 - Pagurus beringanus* (Benedict) 1892
 - Eupagurus beringanus* Benedict 1892
 - Eupagurus newcombei* Benedict 1892
 - Pagurus newcombei*: Holmes 1900
 - Pagurus capillatus* (Benedict) 1892
 - Eupagurus pubescens*: Stimpson 1858
 - Eupagurus capillatus* Benedict 1892
 - Eupagurus trigonochirus*: Balss 1913
 - Pagurus setosus*: Stevens 1925
 - Pagurus* sp. [2]: McLaughlin 1963
 - Pagurus caurinus* Hart 1971
 - Pagurus setosus*: Hart 1940
 - Pagurus granosimanus* (Stimpson) 1858
 - Eupagurus granosimanus* Stimpson 1858
 - Pagurus hemphilli* (Benedict) 1892
 - Eupagurus hemphilli* Benedict 1892

- Pagurus hirsutiusculus hirsutiusculus* (Dana) 1851
Pagurus mertensii Brandt 1851
Bernhardus hirsutiusculus Dana 1851
Eupagurus mertensii: Stimpson 1857
Eupagurus hirsutiusculus: Stimpson 1857
Pagurus samuelis: Rathbun 1904
Pagurus hirsutiusculus venturensis Coffin 1957
Pagurus ochotensis Brandt 1851
Cancer bernhardus: Herbst 1791
Pagurus bernhardus
 var. *B. granulato-denticulata* Brandt 1851
 var. *C. spinimana* or sp. *ochotensis* Brandt 1851
Eupagurus bernhardus: Stimpson 1857
Eupagurus ochotensis: Stimpson 1858
Eupagurus alaskensis Benedict 1892
Pagurus alaskensis: Rathbun 1899
Eupagurus ortmanni Balss 1911
Pagurus alascensis: Balss 1911
Eupagurus spinimanus: Terao 1913
Pagurus ochatensis: Williamson 1915
Pagurus quaylei Hart 1971
Pagurus redondoensis Wicksten 1982
Pagurus sp. 3 Haig
Pagurus samuelis (Stimpson) 1857
Eupagurus samuelis Stimpson 1857
Pagurus setosus (Benedict) 1892
Eupagurus setosus Benedict 1892
Pagurus spilocarpus Haig 1977
Pagurus sp. 1 Haig
Pagurus tanneri (Benedict) 1892
Eupagurus tanneri Benedict 1892
Pagurus sp. 2 (Haig MS)
Pagurus sp. 4 (Hart MS)
Parapagurodes McLaughlin and Haig 1973
Parapagurodes laurentae McLaughlin and Haig 1973
? *Pagurus* [sp]: Menzies and Miller 1954
Parapagurodes makarovi McLaughlin and Haig 1973
Eupagurus mertensii: Benedict 1892
Parapagurus mertensii: Holmes 1900
Pylopagurus A. Milne Edwards and Bouvier 1891
Pylopagurus holmesi Schmitt 1921
Enallopaguropsis McLaughlin 1981
Enallopaguropsis guatemoci (Glassell) 1937
Pylopagurus guatemoci Glassell 1937
Haigia McLaughlin 1981
Haigia diegensis (Scanland and Hopkins) 1969
Pylopagurus diegensis Scanland and Hopkins 1969
Phimochirus McLaughlin 1981
Phimochirus californiensis (Benedict) 1892
Eupagurus californiensis Benedict 1892
Pagurus californiensis: Schmitt 1921
Pylopagurus californiensis: Haig, Hopkins and Scanland 1970

Orthopagurus Stevens 1927

Orthopagurus minimus (Holmes) 1900

Pagurus minimus Holmes 1900

Eupagurus "minimus": Alcock 1905

Parapagurus minimus: Hilton 1918

Pylopagurus minimus: Schmitt 1921

Family Parapaguridae

Parapagurus Smith 1879

Parapagurus pilosimanus benedicti de Saint Laurent 1972

Parapagurus armatus: Reinhard 1944

Sympagurus Smith 1883

Sympagurus haigae (de Saint Laurent) 1972

Parapagurus haigae de Saint Laurent 1972

SCAMIT pagurids, 8 Jan 90 meeting

Pagurid species of southern California

Family Diogenidae

Isocheles Stimpson 1858

Isocheles pilosus (Holmes) 1900

San Francisco, CA, to Estero de Punta Banda, outer Baja
Intertidal to 55 m, on sand.

Ref: Holmes 1900: description.

Rathbun 1910: distribution.

Schmitt, 1921: description and plate figure.

Forest 1964: Discussion; illustration of *I. pacificus* Bouvier.

Haig, Hopkins and Scanland 1970: discussion and key for Baja Calif.

Haig 1977a: key.

Wicksten 1977: artificial key.

Scanland unpublished: (as *Holopagurus*) description, key and
diagrammatic illustrations.

Paguristes Dana 1851

Paguristes bakeri Holmes 1900

San Francisco, CA, to Gulf of California.

Shallow water to 232 m.

Ref: Holmes 1900: ?

Rathbun 1910: distribution.

Schmitt 1921: description and plate figures.

Glassell 1937: discussion.

Haig, Hopkins and Scanland 1970: discussion and key.

Haig 1977a: key.

Scanland unpublished: description, key and diagrammatic illustrations.

Paguristes parvus Holmes 1900

Catalina Island and San Pedro, CA, to northern outer Baja California.

3 to 6 m, rocky areas.

Ref: Holmes 1900: ?

Rathbun 1910: distribution.

Schmitt 1921: description, diagrammatic illustration and plate figure.

Haig, Hopkins and Scanland 1970: discussion and key.

Haig 1977a: key.

Wicksten 1977: artificial key.

Scanland unpublished: description, key and diagrammatic illustration.

Paguristes turgidus (Stimpson) 1857

Chukchi Sea and British Columbia to San Diego, CA.

Subtidal to 465 m.

Ref: Stimpson 1857: description (as *Clibanarius*)

Rathbun 1910: distribution.

Schmitt 1921: description and plate figures.

Stevens 1925: description, key and illustrations (whole body).

Hart 1971: range extension.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Hart 1982: description and illustration (whole body).

Kozloff 1987: key.

Scanland unpublished: description, key and diagrammatic illustration.

Paguristes ulreyi Schmitt 1921

British Columbia to Gulf of California.

10 to 60 m.

Ref: Schmitt 1921: description and plate figures.

Haig, Hopkins and Scanland 1970: discussion and key.

Hart 1971: range extension.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Hart 1982: description and illustration (whole body).

Kozloff 1987: key.

Scanland unpublished: description, key and diagrammatic illustration.

Paguristes sp.1 Haig

Ref: Haig 1977a: key.

Family Paguridae

Discorsopagurus McLaughlin 1974*Discorsopagurus schmitti* (Stevens) 1925

Puget Sound and Arcata, CA

22 to 77 m.

Ref: Stevens 1925: (as *Pylopagurus*) description, key, illustrations and distribution.

McLaughlin 1974: description, key, illustrations and distribution.

Hart 1982: description and illustration (whole body).

Enallopaguropsis McLaughlin 1981a (description also in McLaughlin 1981b)*Enallopaguropsis guatemoci* (Glassell) 1937

Outer coast of Baja California.

83 m.

Ref: Glassell 1937: description (as *Pylopagurus*).

Walton 1954: description (as *Pylopagurus*), key and illustration of major manus.

Haig 1977a: (as *Pylopagurus*) key.

McLaughlin 1981a: reassignment.

Haigia McLaughlin 1981a*Haigia diegensis* (Scanland and Hopkins) 1969

Santa Catalina Island, CA, to Coronados Islands, Baja Calif.

3 to 20 m, rocky bottom.

Ref: Scanland and Hopkins 1969: description (as *Pylopagurus*) and illustration (anterior) and key.

Haig, Hopkins and Scanland 1970: discussion (as *Pylopagurus*) and key.

Haig 1977a: (as *Pylopagurus*) key.

Wicksten 1977: artificial key.

McLaughlin 1981a: reassignment.

Orthopagurus Stevens 1927*Orthopagurus minimus* (Holmes) 1900

British Columbia to San Diego, CA.

11 to 64 m.

Ref: Holmes 1900: (as *Pagurus*)Rathbun 1910: (as *Pagurus*) distribution.Schmitt 1921: (as *Pylopagurus*) description and plate figures.

Stevens 1927: description of species and new genus, keys and plates (whole body).

Makarov 1938: description.

Hart 1971: range extension.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Kozloff 1987: key.

Scanland unpublished: (as *Pylopagurus*) description and key.*Pagurus* Fabricius 1775*Pagurus aleuticus* (Benedict) 1892

Bering Sea to Oregon.

14 to 435 m.

Ref: Benedict 1892: description (as *Eupagurus*).

Benedict 1901: description, illustration (whole body) and key.

Rathbun 1910: distribution and short description.

Stevens 1925: description, key and illustration (whole body).

Makarov 1938: description (as *P. ochotensis aleuticus*) and figure (comparison of dactyls w/ *P. ochotensis*).

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Hart 1982: description and illustration (whole body).

Kozloff 1987: key.

Pagurus armatus (Dana) 1851

Unalaska, Alaska, to San Diego, CA.

10 to 146 m.

Ref: Stimpson 1857: discussion (as *Eupagurus*).Stimpson 1858: (as *Eupagurus ochotensis*, in part)Holmes 1900: (as *P. ochotensis*)Rathbun 1910: (as *P. ochotensis*) distribution.

Makarov 1938: description.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Hart 1982: description and illustration (whole body).

Kozloff 1987: key.

- Pagurus beringanus* (Benedict) 1892
 Bering Sea to Monterey, CA.
 Intertidal to 82 m.
 Ref: Benedict 1892: description (as *Eupagurus*).
 Benedict 1892: description (as *E. newcombei*).
 Rathbun 1910: distribution.
 Schmitt 1921: description and illustration (whole body).
 Stevens 1925: description, key and illustration (whole body).
 Makarov 1938: description.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.
 Scanland unpublished: description, key and diagrammatic illustration
- Pagurus capillatus* (Benedict) 1892
 Arctic Ocean to Kamchatka and California.
 4 to 439 m.
 Ref: Benedict 1892: description (as *Eupagurus*).
 Rathbun 1910: distribution.
 Schmitt 1921: description and illustrations (chela and anterior body).
 Stevens 1925: (as *P. setosus*) description, key and illustration (whole body).
 Makarov 1938: description.
 Hart 1971: range extension.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Kozloff 1987: key and illustration (whole body).
- Pagurus caurinus* Hart 1971
 Kodiak, Alaska, to British Columbia.
 Littoral to 126 m, rock crevices or kelp holdfasts.
 Ref: Hart 1971: description and illustrations (incl. whole body).
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.
- Pagurus granosimanus* (Stimpson) 1858
 Unalaska to Ensenada, Baja Calif.
 Littoral to 32 m
 Ref: Rathbun 1910: short description and distribution.
 Schmitt 1921: description and illustration (whole body).
 Stevens 1925: description, key and illustration (whole body).
 Makarov 1938: description.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key and illustration (whole body).
 Scanland unpublished: description, key and diagrammatic illustration.

- Pagurus hemphilli* (Benedict) 1892
 British Columbia to Monterey, CA.
 Intertidal to ?
 Ref: Benedict 1892: description (as *Eupagurus*).
 Rathbun 1910: distribution.
 Schmitt 1921: description and illustration (whole body).
 Hart 1971: range extension.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key.
- Pagurus hirsutiusculus hirsutiusculus* (Dana) 1851
 Pribilof Islands to San Diego, CA, and Japan.
 Intertidal to 110 fm.
 Ref: Stimpson 1857: discussion (as ?*Eupagurus mertensii*)
 Stimpson 1858: (as *Eupagurus*) synonymies.
 Rathbun 1910: distribution and short description.
 Schmitt 1921: description and illustration (whole body) and plate.
 Stevens 1925: description, key and illustration (whole body).
 Makarov 1938: description.
 Coffin 1957: plate figure.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Kozloff 1987: key and illustration (whole body).
 Scanland unpublished: description, key and diagrammatic illustration.
- Pagurus hirsutiusculus venturensis* Coffin 1957
 Monterey, CA, to San Diego, CA.
 Depth ?
 Ref: Coffin 1957, Description and plate figure.
 Haig 1977a: key.
- Pagurus ochotensis* Brandt 1851
 Siberia to San Diego, CA.
 Subtidal to 249 m.
 Ref: Stimpson 1857: (as *Eupagurus bernhardus*) discussion.
 Stimpson 1858: (as *Eupagurus*) synonymies.
 Benedict 1901: description, illustration (whole body) and key.
 Benedict 1901: description (as *P. alaskensis*), illustration (whole body) and key.
 Schmitt 1921: description and illustration (whole body).
 Stevens 1925: description, key and illustration (whole body).
 Stevens 1925: (as *P. alaskensis*) description, key and illustrations.
 Makarov 1938: description and comparison w/ *P. armatus*.
 McLaughlin 1974: description, key and illustrations.
 Haig 1977a: key.
 Wicksten 1977: artificial key.
 Hart 1982: description and illustration (whole body).
 Kozloff 1987: key.
 not Rathbun 1910.

Pagurus quaylei Hart 1971

British Columbia to Bahia San Quintin, Baja Calif.

2 to 97 m, gravel.

Ref: Hart 1971: description and illustrations (incl. whole body).

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Kozloff 1987: key.

Pagurus redondoensis Wicksten 1982

Redondo Beach and Santa Catalina Island to San Onofre, CA.

0 to 50 m, sheltered subtidal, among rocks or on sand near rocks.

Ref: Haig 1977a: (as *P. sp. 3*) key.

Wicksten 1977: (as *P. sp. 3*) artificial key.

Wicksten 1982: description and illustrations.

Pagurus samuelis (Stimpson) 1857

British Columbia to outer Baja California (Rathbun's report from Sitka, Alaska, is a misidentification of *P. hirsutiusculus*).

High intertidal to ?

Ref: Stimpson 1957: description (as *Eupagurus*).

Stimpson 1858: (as *Eupagurus*) description (in Latin). Schmitt 1921, description, illustration (whole body male and female) and plate figures.

Rathbun 1910: distribution.

Makarov 1938, description.

Hart 1971: range extension.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Wicksten 1977: artificial key.

Hart 1982: description and illustrations (whole body)(correction: Fig. 48c is merus of left chela).

Kozloff 1987: key.

Scanland unpublished: description, key and diagrammatic illustration.

Pagurus setosus (Benedict) 1892

Kodiak, Alaska, to Santa Cruz Island, CA.

9 to 480 m.

Ref: Benedict 1892: description (as *Eupagurus*).

Rathbun 1910: distribution and short description.

Schmitt 1921: description and illustration (whole body).

Makarov 1938: description and illustration (whole body).

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Kozloff 1987: key.

not Stevens 1925.

Pagurus spilocarpus Haig 1977

Zuma Beach, CA, to Punta Abreojos, Baja Calif.

Low tide to 71 m.

Ref: Haig 1977a: (as *P. sp. 1*) key.

Haig 1977b: description and illustrations.

Wicksten 1977: (as *P. sp. 1*)

Pagurus tanneri (Benedict) 1892

Pribilof Islands, Alaska, to San Simeon, CA.
87 to 1120 m.

Ref: Benedict 1892: description (as *Eupagurus*).
Rathbun 1910: distribution.
Schmitt 1921: description and illustration (whole body).
Makarov 1938: description.
Hart 1971: range extension.
McLaughlin 1974: description, key and illustrations.
Haig 1977a: key.
Kozloff 1987: key and illustration (whole body).

Pagurus sp. 2 (Haig MS)

Southern Baja Calif.
106 to 116 m.

Ref: is this *P.* sp.2 of Haig, Hopkins and Scanland 1970?
Haig 1977a: key.
Wicksten 1977: artificial key.

Pagurus sp. 4 (Hart MS)

Ref: Haig 1977a: key.

Parapagurodes McLaughlin and Haig 1973*Parapagurodes laurentae* McLaughlin and Haig 1973

Southern Calif. and Channel Isl. to Gulf of California.
16 to 475 m.

Ref: McLaughlin and Haig 1973: description, illustration and key.
Haig 1977a: key.

Parapagurodes makarovi McLaughlin and Haig 1973

Monterey, CA, to outer Baja Calif.
75 to 574 m. (LACoSan 61 m)

Ref: Holmes 1900: ? (as *Parapagurus mertensii*)
Makarov 1938: description (as *Parapagurus mertensii*, in part) and discussion.
McLaughlin and Haig 1973: description, illustrations and key.
Haig 1977a: key.

Phimochirus McLaughlin 1981a*Phimochirus californiensis* (Benedict) 1892

Santa Catalina Island and Monterey, CA, to Panama and Galapagos Isl.
Littoral to 129 m.

Ref: Benedict 1892: description (as *Eupagurus*).
Benedict 1892: (as *E. mexicanus*) description.
Rathbun 1910: (as *Pagurus*) distribution.
Schmitt 1921: (as *Pagurus*) description and illustrations (whole body and anterior).
Glassell 1937: (as *Pagurus*) discussion.
Haig, Hopkins and Scanland 1970: description (as *Pylopagurus*) and key.
Haig 1977a: (as *Pylopagurus*) key.
Wicksten 1977: artificial key.
McLaughlin 1981a: reassignment.
McLaughlin 1981b: description and plates (chelae).
Scanland unpublished: (as *Pagurus*) description, key and diagrammatic illustration.

Pylopagurus A. Milne Edwards and Bouvier 1891 (redescription in McLaughlin 1981a)

Pylopagurus holmesi Schmitt 1921

Channel Islands and San Pedro to Gulf of California.
2 to 460 m.

Ref: Schmitt 1921: description and illustrations (chela).

Walton 1954: description, illustration (whole body) and key.

Haig 1977a: key.

McLaughlin 1981a: assignment retained.

Scanland unpublished: description and key.

Family Parapaguridae

Parapagurus Smith 1879

Parapagurus pilosimanus benedicti de Saint Laurent 1972

Alaska to Gulf of Panama

750 to 1902 m.

Ref: de Saint Laurent 1972: short description and distribution.

McLaughlin 1974: description, key and illustrations.

Haig 1977a: key.

Kozloff 1987: key.

Sympagurus Smith 1883

Sympagurus haigae (de Saint Laurent) 1972

California (AHF sta. 993-39) to Gulf of Panama.

225 to 255 m.

Ref: de Saint Laurent 1972: (as *Parapagurus*) description, illustrations and distribution (incorrectly stated as Gulf of California).

Haig 1977: (as *Parapagurus*) key.

Lemaitre 1989: reassignment.

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Benedict, J.E., 1892, Preliminary description of thirty-seven new species of hermit crabs of the genus *Eupagurus* in the U.S. National Museum, Proc. U.S. Nat. Mus., Vol. 15.

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Forest, J., 1964, Sur un nouveau genre de Diogenidae (Crustacea Paguridea) de l'Atlantique sud-Americain, *Loxopagurus* gen. nov., etabli pour *Pagurus loxochelis* Moreira, Zoologische Mededelingen, Vol. 39.

Glassell, S.A., 1937, Hermit crabs from the Gulf of California and the west coast of Lower California, The Templeton Crocker Expedition, XI, Zoologica, Vol. 22, No. 16.

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SOME CLADISTIC TERMS

APOMORPHY (or APOMORPHIC): a derived or "advanced" character state, a state which shows a less general distribution among taxa; cf. plesiomorphy.

CHARACTER STATE: any of the conditions or expressions of a particular character. For example, "hair" is a character for which there might be three different states: blonde, red, brunette.

CHARACTER STATE POLARITY: the nature of states of a character in terms of being plesiomorphic or apomorphic; cf. out-group comparison.

CLADE: a branch on a cladogram, comprising a monophyletic group of taxa; e.g., the Order Amphinomida is a clade containing the Amphinomidae and Euprosinidae, defined by the presence of calcareous setae.

CLADISTICS (or CLADISM): a systematic method for discovering internested groupings or relationships of organisms in terms of synapomorphy.

CLADOGRAM: a branching diagram which graphically represents the distribution of characters and/or character states among a group of taxa.

CONVERGENCE: the putative independent acquisition in two or more taxa or clades of an apomorphic character state, each being derived from two different plesiomorphic states; cf. homoplasy.

HOMOPLASY: the occurrence of a character state more than once on a cladogram, usually attributed to either parallel or convergent evolution.

MONOPHYLY: a group (two or more species or higher taxa) hypothesized as being derived from a single, common ancestor and which contains all descendants. Evidence for monophyly is based on the presence of at least one character state acting as a synapomorphy.

OUT-GROUP COMPARISON: a procedure for determining plesiomorphic and apomorphic conditions of character states by comparison of the taxa under study (the ingroup) to their sister-group (the outgroup). In such a comparison, states present in the out- and ingroup are considered plesiomorphic (the generality or distribution of that state is such that it cannot provide evidence of relationship within the ingroup), whereas a state found only in the ingroup is apomorphic.

PARALLELISM: the putative independent acquisition in two or more taxa or clades of an apomorphic character state from the same plesiomorphic state; cf. homoplasy.

PARAPHYLY: a group (two or more species or higher taxa) hypothesized as being derived from a single, common ancestor and which contains some but not all descendants. By definition, a paraphyletic group is defined on the basis of symplesiomorphy. For example, the Serpulidae is paraphyletic if the Spirorbidae is maintained, the former being defined by the plesiomorphic occurrence of an uncoiled calcareous tube.

PARSIMONY: "the economy of explanation." The formulation of hypotheses which minimize the number of ad hoc assumptions. In cladistics this entails the construction of cladograms requiring the fewest number of homoplasious (cf. homoplasy) character state changes.

PLESIOMORPHY (or PLESIOMORPHIC): a "primitive" character state, a state which shows a more general distribution among taxa; cf. apomorphy.

POLYPHYLY: a group (two or more species or higher taxa) in which the hypothesized most recent common ancestor for the group is assigned to some other group. Thus, a polyphyletic group is usually defined by an homoplasious character; a claim of polyphyly is contingent upon identifying all other taxa which must be included in the group to effect monophyly. For example, the claim that the Polychaeta are polyphyletic is only true if it can be shown that there is some other taxon which must be included in the Polychaeta, say pogonophorans, which would result in the group being monophyletic.

REVERSAL: a character state change on a cladogram from an apomorphic state to a plesiomorphic state.

SISTER GROUP: a term denoting an exclusive relationship among two or more taxa relative to a third. For example, the Onuphidae and Eunicidae are sister taxa relative to the Nereididae.

SYMPLESIOMORPHY: a shared plesiomorphic state.

SYNAPOMORPHY: an apomorphic state shared by at least two taxa, which forms the basis for cladogram construction.

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HENNIG86

A PC-DOS PROGRAM FOR PHYLOGENETIC ANALYSIS

Hennig86 is a fully interactive phylogenetic analysis program designed to operate efficiently on inexpensive PC-compatible microcomputers. It requires less than 512K of RAM and needs no math coprocessor or graphics monitor. Being a single .COM file of less than 49K, it can easily be run on a system with no hard disk.

Despite its small size, Hennig86 supports large data sets and provides a wide range of facilities. Up to 180 taxa and 999 characters can be processed. Commands are included for setting the codings and weights of characters, for deleting and restoring characters, and for successive weighting. Trees can be read and saved in symbolic form, rerooted, plotted, and diagnosed. A tree editor, *Dos Equis*, allows trees to be interactively displayed, diagnosed and modified.

Most parsimonious trees can be calculated by extremely fast approximate methods, by iterative branch-breaking, or by implicit enumeration. The last provides the fastest available method for exact parsimony solutions. According to recent benchmarks by Platnick (*Cladistics*, 1989) Hennig86's exact calculations are up to 840 times faster than those of its nearest "competitor." Platnick also found that Hennig86 is both faster and more effective than other programs at approximate parsimony calculations.

Tree-calculating commands automatically delete arbitrary resolution and duplicate trees from results. The user never has to wade through listings that turn out to be 100 copies of the same tree. Unlike other available programs, Hennig86 fully supports multifurcating trees in input, output, and diagnosis. Over 10,000 trees can be stored (fewer with larger numbers of taxa), and these can be organized into multiple internal files.

A single-user license for Hennig86 costs \$50 plus \$5 shipping and handling. (\$10 s&h for orders outside U.S. All amounts are in U.S. Dollars.) All orders must be prepaid and must specify the user's name (the copies are personalized). Hennig86 may be ordered from:

James S. Farris
41 Admiral St.
Port Jefferson Station
New York 11776
United States of America

phone: (516) 331-1333



Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

March 1990

Vol. 8, No. 11

NEXT MEETING: Polychaete Open Forum

GUEST SPEAKERS: SCAMIT Members

DATE: Monday, 9 April 1990, 9:30 AM

LOCATION: Allan Hancock Foundation, Room 30
University of Southern California

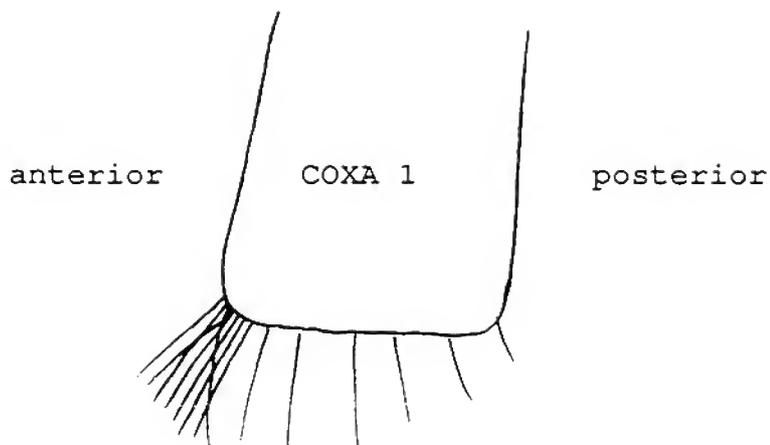
MINUTES FROM MEETING ON MARCH 12, 1990

Photis Workshop: The attendance at this workshop was extremely low; this situation made the workshop less productive than originally envisioned. The purpose of this workshop was to examine problematic species of Photis and to discuss possible characters that could be used to identify these species. In addition, several of the new species needed to be verified as such, and steps to provide voucher sheets for them needed to be taken. Due to such a poor attendance, these goals were not met. However, the participating members did examine in detail five species of Photis, and briefly discussed an additional one.

1) Doug Diener, MEC Analytical Systems, Inc., presented specimens tentatively identified as Photis sp. C of Diener which was collected off Orange County and station V6 of Hyperion. One of the characters noted at this workshop is a group of tightly bunched setae on the anterodistal corner of coxa 1 (see figure).

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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



Notes of this species from Barnard's Amphipod Workshop (6 June 1989) are reprinted below.

Photis sp. C. of Diener was verified as a new species of Photis from 50-60 m off Orange County. Doug recognizes this species most easily by its blotchy pigment and the extremely short first article of antenna 1, which barely exceeds the ocular lobe, and is subequal to article 1 of antenna 2. No males were available, but the female was quite distinct. G1 had a slight step in the palm, which was also relatively long and straight. There is a deep and nearly right angled palmar excavation in G2. This may be the stepped palm female that Carol Paquette has been noticing in nearshore (90 ft) samples from Goleta. Dr. Barnard commented that the species appeared to be somewhat neotenic in having sparsely setose coxae, but fairly apomorphic palmar structure. This new species is apparently similar in appearance to P. spinicarpa except P. sp. C does not have enough setules on the coxae and the G1 in the female is more deeply notched or incised on the palm.

2) Specimens labelled as Photis cf. parvidons by Diener were then examined. The males of these specimens were identified by Carol Paquette and Mas Dojiri as P. brevipes. The females in this lot, however, have a mixture of characters of couplet 3 in Conlan's key. No conclusions were reached on these females.

3) Carol Paquette, MBC Applied Environmental Sciences, presented Photis sp. A of MBC (the "suitcase" Photis) which is a very small species (gravid at 3 mm) with extremely long coxae. The specimens

are known from Goleta (90 ft) and ORCOSAN (1973?, 108? ft). All known specimens are female. Although a conclusion on the identification of these specimens was not reached, they look similar to P. fishchmanni Gurjanova (reported from Alaska); however, the gnathopods are different, as is the shape of coxa 5 and the density of the coxal setation (see illustrations). It keys to P. lacia in Conlan's Photis female key. The gnathopods are similar to those of female P. lacia, but the length and shape of the coxae are very different.

4) Photis sp. B of MBC is similar to P. macrotica except the eye in the former is smaller and the eyelobe is pointed (acuminate). Notes of this species from Barnard's Amphipod Workshop are reprinted below:

Photis sp. B. of MBC is apparently a valid new species with strong affinities to P. viuda. The specimen keys out to P. viuda using Conlan's key, but Photis sp. B has a conspicuous hump on the inner margin of the dactyl of G2. It's possible that this is a juvenile P. viuda; however, the presence of this character in a juvenile and its absence in the adult would be a unique and unexpected phenomenon. In addition, the type locality lists the depth at 218 fm for P. viuda, while P. sp. B was collected from algae in shallow water (85-95 ft). It is most likely a new species. See species description in SCAMIT Newsletter Vol. 7 No. 9. Note particularly the shape of the ocular lobe, the simple oblique palms of the female G1, and the double acclivities in the male G2 palm.

5) Photis sp. B of Myers collected from Santa Monica Bay was examined. Notes of this species from Barnard's Amphipod Workshop are reprinted below.

Photis sp. B of Myers, apparently a valid new species from a sandy substrate off Pt. Loma in 210 ft. The problem with this identification is that G2 of this specimen (male) is more Podoceropsis-like, but uropod 3 is biramous. The female keys out to P. macinerneyi using Conlan's key. The conclusion is that it is a new species.

6) Barnard (1962) has suggested that specimens of Photis elephantis may actually have been P. conchicola that were infected by parasites; this possibility was also mentioned in Barnard's Amphipod Workshop Notes, 1988.

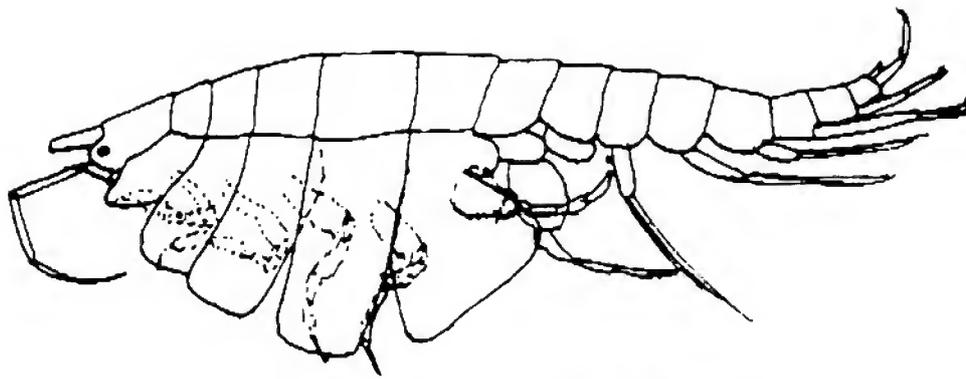


Polychaete Open Forum: The next SCAMIT meeting will concentrate on the problematic polychaete groups. A discussion on future polychaete workshops will be held in the morning, and polychaetes will be examined in the afternoon. All interested SCAMIT members are invited to attend, and are encouraged to bring their "problem" animals.

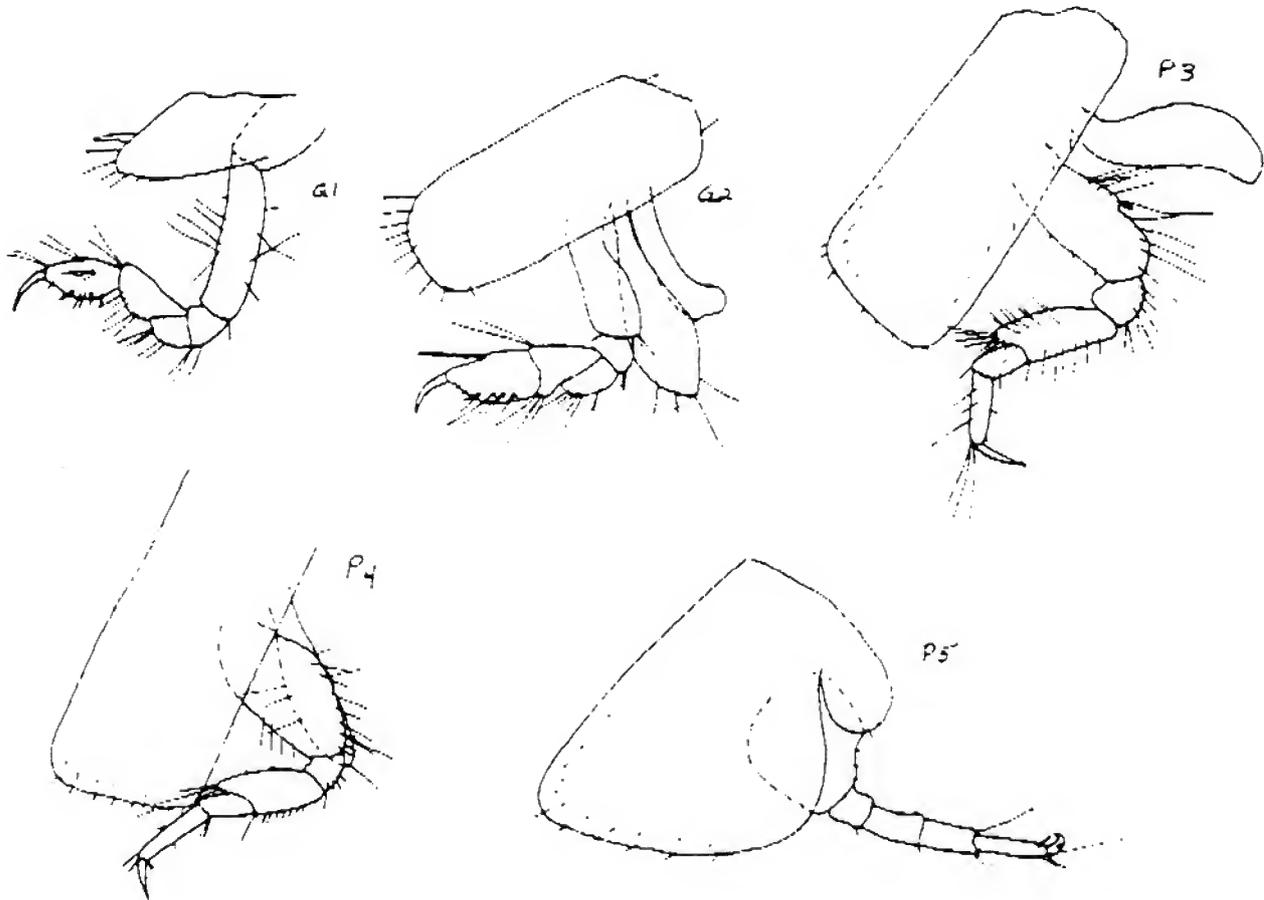
Ballots for New SCAMIT Officers: Completed ballots should be sent directly to the Vice-President Larry Lovell by 10 April 1990. Larry's address is provided on the ballot.

Seminars: Attached to the current newsletter is a circular from the Natural History Museum of Los Angeles County announcing the seminars to be presented from March through May 1990. All interested persons are invited to attend.

Earth Day at CMM: The Cabrillo Marine Museum will participate in the observance of Earth Day on Sunday, 22 April 1990. See attached notice for more information. The CMM also is hosting a few evening seminars. Unfortunately, two seminars have already been presented, but the third one concerning estuarine ecology will be presented on 21 April 1990. Please see attached form for details of this seminar.



♀ 2.8 mm



Photis sp. A of MBC (the "suitcase" Photis)

Illustrated By Carol Paquette, MBC Applied Environmental Sciences

NATURAL HISTORY MUSEUM
of Los Angeles County

PLEASE POST/CIRCULATE

900 Exposition Boulevard
Los Angeles, California 90007

CHANGE OF DATE
SEMINAR RESCHEDULED
NOTE NEW DATE:
NATURAL HISTORY MUSEUM - LOS ANGELES COUNTY
RESEARCH SEMINAR

PHYLOGENY & BIOGEOGRAPHY OF NORTH PACIFIC FISHES:
THE BAY GOBIES

CAMM C. SWIFT
LACM/Ichthyology

3:00 PM

→ WEDNESDAY - APRIL 4, 1990 ←
Times Mirror Room (Ground Floor)
Natural History Museum of Los Angeles County
900 Exposition Boulevard, Los Angeles, California

COFFEE WILL BE AVAILABLE IN THE SEMINAR ROOM
AT 2:45 PM.

--ALL INTERESTED PERSONS ARE INVITED TO ATTEND--



George C. Page Museum, Hancock Park, 5801 Wilshire Boulevard, Los Angeles, California 90036. (213) 857-6311
William S. Hart Museum, Hart Park, 24151 San Fernando Road, Newhall, California 91321. (805) 251-1584

PLEASE POST/CIRCULATE

900 Exposition Boulevard
Los Angeles, California 90007

NATURAL HISTORY MUSEUM RESEARCH SEMINARS

MARCH - MAY 1990

- 22 MARCH SARAH B. GEORGE - LACM/Mammalogy
THE FOX AND THE MOUSE: EVOLUTION & BIOGEOGRAPHY
OF CHANNEL ISLAND MAMMALS
- 28 MARCH ANTHONY ALAN SHELTON - Museum of Mankind (British Museum)
(Wednesday) and Smithsonian Institution
THE LIFE AND DEATH OF GODS: THE AESTHETICS OF EMPOWERMENT
- 5 APRIL CAMM C. SWIFT - LACM/Ichthyology
PHYLOGENY & BIOGEOGRAPHY OF NORTH PACIFIC FISHES:
THE BAY GOBIES
- 11 APRIL WILLIAM J. SCHOPF - University of California-Los Angeles
(Wednesday) THE RISE AND FALL OF THE PROTEROZOIC BIOSPHERE
- 19 APRIL E. LEO LYMAN - Victor Valley College & CSU San Bernardino
MORMON SAN BERNARDINO: IMPACT ON SOUTHERN
CALIFORNIA IN THE 1850's
- 26 APRIL SUSANNE LAWRENZ-MILLER - Cabrillo Marine Museum
WHERE HAVE ALL THE SEA-STARS GONE?
- 3 MAY MARGARET A. NEIGHBORS - LACM/Ichthyology
BUOYANCY MECHANISMS OF LANTERNFISHES FROM WATERS
OFF SOUTHERN CALIFORNIA
- 9 MAY ROBERT C. CARPENTER - Cal State University-Northridge
(Wednesday) HERBIVORE INDUCED DISTURBANCE, HYDRODYNAMICS, AND
Boardroom THE METABOLISM OF CORAL REEF ALGAE
- 17 MAY LAWRENCE G. BARNES - LACM/Vertebrate Paleontology
THE PHYLOGENY OF OTARIID PINNIPEDS (SEA LIONS AND
WALRUSES)
- 24 MAY DOUGLAS WILLIAM BIEDENWEG - Chadwick School
VILLAINS OF THE FLOWER WORLD: THE CRAB SPIDERS
- 31 MAY JAY A. BISNO - LACM/Anthropology
WHAT'S NEW AT JERICHO: OLD LIGHTS REKINDLED

ALL SEMINARS ARE AT 3:00 PM
Times Mirror Room - Natural History Museum
Unless Otherwise Noted
--ALL INTERESTED PERSONS ARE INVITED TO ATTEND--



CMM CELEBRATES EARTH DAY

DISCOVERY FAIR

Cabrillo Marine Museum will take part in the world-wide observance of Earth Day 1990 on Sunday, April 22, with a number of environmentally aware activities and programs from noon until 5:00 pm.

CMM and local environmental groups will answer questions and distribute information in the courtyard, and there will be films in the auditorium. A "Discovery Center" will be set up in the classroom featuring hands-on examples of southern California sea life, and from 1:00 to 2:00 pm, museum naturalists will lead tours of Salinas de San Pedro, Cabrillo Marine Museum's man-made salt marsh.

Join Us April 22 and Support Your Earth !



3720 Stephen White Drive
San Pedro, CA 90731
213/548-7563 STOP 644A

Museum Hours:

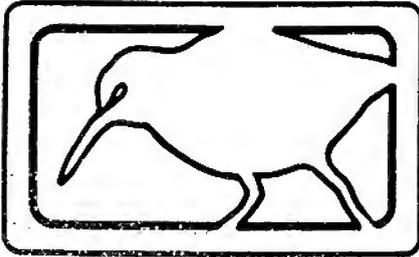
Tuesday thru Friday 12 noon to 5 pm.
Saturday and Sunday 10 am to 5 pm.
Open most holidays
Closed most Mondays,
Thanksgiving and Christmas.

Gift and Book Shop:

Open from 12 noon to 3:30 pm.

A facility of City of Los Angeles
Department of Recreation & Parks

C A L E N D A R



RICHARD KUST

FEBRUARY 3

7:30 PM

Birds of the Coast

Photographer Dick Kust sets up his cameras in Orange County where he is an active "birder" with Friends of Newport Bay and the Audubon Society. Native species as well as wintering visitors provide the focus for his slide presentation, which will include hints on bird recognition and identification.

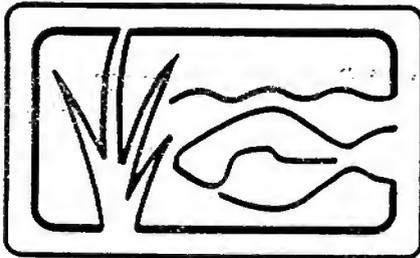
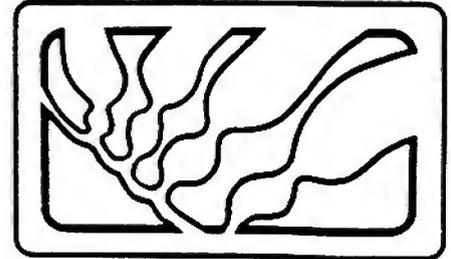
DR. STEVEN MURRAY

MARCH 24

7:30 PM

Seaweed and You

Prepare to be overwhelmed by the prosaic seaweed. Steven Murray of California State University-Fullerton will highlight the scientific attributes of these plentiful ocean plants in a presentation designed to educate and entertain. A follow-up visit to our temporary seaweed exhibit will demonstrate the fragile beauty of these surprisingly remarkable plants.



CHRIS NORDBY

APRIL 21

7:30 PM

Estuarine Ecology--The View From Below

As an introduction to CMM's April 22 "Earth Day" activities, Chris Nordby, Manager of the Pacific Estuarine Research Lab-San Diego State University, will offer a pictorial overview of the environmental changes occurring in our wetlands. From halibut to ghost shrimp, salt marsh inhabitants face a tenuous future, and Chris' research details the problems.

YES, I want to attend **Evening at CMM**, the Saturday series of programs at Cabrillo Marine Museum!

Please detach and send this form with your check or credit card information and a **stamped, self-addressed envelope** to: FRIENDS of CMM, 3720 Stephen White Drive, San Pedro, CA. 90731.

NAME _____

ADDRESS _____

CITY _____ ZIP _____ DAY PHONE _____

Series of Three Tickets	Amount
Member	\$10
Non-member	\$15

Individual Tickets	Amount
Richard Kust, February 3	
Member	\$4
Non-member	\$6

Steven Murray, March 24	
Member	\$4
Non-member	\$6

Chris Nordby, April 21	
Member	\$4
Non-member	\$6

Total Amount Enclosed \$ _____

AUDITORIUM SEATING IS LIMITED

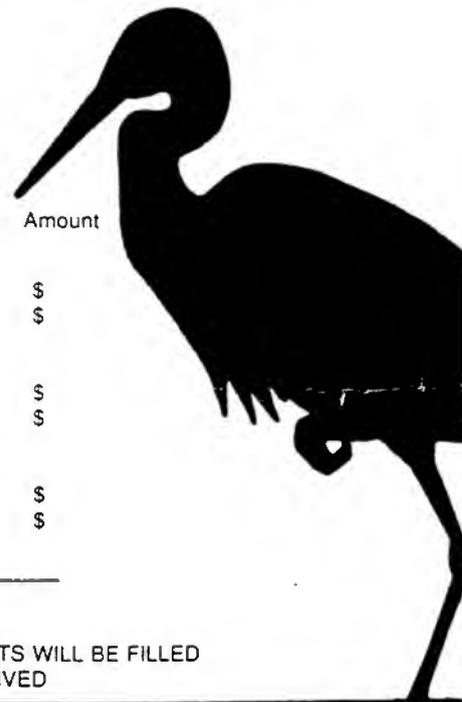
CIRCLE METHOD OF PAYMENT:

Check enclosed (Please make payable to FRIENDS of CMM)

Charge to (circle one): VISA Mastercard

Card # _____ Exp. Date _____

Signature _____



TICKET REQUESTS WILL BE FILLED
IN ORDER RECEIVED



**Southern California Association of
Marine Invertebrate Taxonomists**

3720 Stephen White Drive
San Pedro, California 90731

April 1990

Vol. 8, No. 12

NEXT MEETING: Open Forum for Problematic Taxa

GUEST SPEAKERS: SCAMIT Members

DATE: Monday, 14 May 1990, 9:30 AM

LOCATION: Cabrillo Marine Museum
3720 Stephen White Drive
San Pedro, CA 90731

MINUTES FROM MEETING ON APRIL 9, 1990

Polychaete Open Forum: Several polychaete families in need of discussion (and future workshops) are the Terebellidae, Ampharetidae, Spionidae, Syllidae, Hesionidae, Maldanidae, Cirratulidae, and the scaleworm families. Future discussions and workshops are not limited to the familial level, but may center around generic problems. Initial groups to be discussed, along with their tentative dates, are listed below:

Aug 1990	Scaleworms (non-Aphroditidae)	Ross Duggan
Nov 1990	Spionidae (non-Polydorid group)	Larry Lovell
Feb 1991	Hesionidae	Ron Velarde
Apr 1991	Cirratulidae (Tharyx)	Tony Phillips

The April meeting on problematic polychaete taxa also resulted in a list of taxa that commonly appear on species lists and, for various reasons, need a reevaluation of their taxonomic status. This list is presented below.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION,
CHEVRON USA, AND TEXACO INC.

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

Capitella capitata (Fabricius, 1780) - See the separate commentary written by Tom Parker and attached to this newsletter.

Chaetozone cf. setosa Malmgren, 1867 - This species was originally described from European waters, and the name was applied to west coast specimens in early studies. Leslie Harris examined specimens of C. setosa from Sweden and determined that the southern California species differs from the European species. The conditional designation, conferre (cf.), is added to the name to indicate a problem with this identity. Please see additional comments provided on a separate page.

Eteone spp. - Most of the species of this genus found off southern California are undescribed. Additional character states for this genus need to be established.

Marphysa sp. A (sensu Velarde) - It has been determined by Ron Velarde that this animal had previously been incorrectly identified in southern California as M. belli oculata Treadwell, 1921, which was originally described from Key West Harbor, Mangrove Key, Florida. Treadwell's holotype was 70 mm long, the branchiae began on the tenth setiger and yellow acicula were present. Hartman (1963) reported M. belli oculata from Catalina Canyon in 379 m that were 12 mm long, branchiae began on the tenth setiger and black acicula were present. Recent work on the developmental biology of the Eunicida by Kristian Fauchald indicates that the starting position of the branchiae changes with size. Thus, the branchiae starting on the same setiger for Treadwell's and Hartman's specimens does not seem logical. Ron is preparing a formal description of this new species.

Mediomastus spp. - Specimens of this genus fragment easily. Anterior fragments of the two most common species, M. ambiseta (Hartman, 1947) and M. californiensis Hartman, 1944 cannot be reliably differentiated, even with the use of methyl green staining. Mediomastus acutus Hartman, 1969 can, however, be identified from anterior fragments. Pat Hutchings and Linda Warren are working on a worldwide revision of the genus.

Ninoe sp. A (sensu Harris) - It has been determined by Leslie Harris that this animal has usually been incorrectly identified in southern California as N. gemma Moore, 1911, a more northern species, described from Monterey Bay. Character differences for N. sp. A and a table of local species were presented in Vol. 1, No. 12 of the SCAMIT Newsletter. A formal description of this new species is in preparation by Leslie.

Polydora spp. - There are many species of this genus and related genera (Boccardia, Boccardiella, Carazziella, and Pseudopolydora) reported from southern California. Character states for local species are poorly known and caution should be used when assigning species names. Recent work by Rice (in press) indicates that the setae of the modified 5th segment in P. ligni Webster, 1878 are variable and the presence of brush-topped companion setae is the result of setal wear. Further work is needed to determine what other species may have similar problems.

Tharyx spp. - The species of this genus are poorly known due to the lack of described diagnostic characters. Attempts to characterize abundant local species have been moderately successful. A revision of the genus is in preparation by Dr. Jim Blake. Dr. Blake indicates that the genus will be redescribed based on the presence of a previously undescribed setal type in the stem species. None of the local species will remain in Tharyx. Local species of Tharyx will be split into two genera based on the presence or absence of serrated capillary setae.

Typosyllis spp. - This genus has several species reported from southern California. Poor descriptions and keys to these species can lead to misidentification. Caution should be used in reporting Typosyllis species from southern California.

Other problematic taxa will be discussed in the future. If you are aware of southern California taxa (both polychaete and non-polychaete) that need to be included in SCAMIT workshops, please mail your suggestions to the following address:

Larry Lovell
1036 Buena Vista Drive
Vista, CA
92083

Telephone: (619) 945-1608

May SCAMIT Meeting: The upcoming meeting on May 14 at the Cabrillo Marine Museum will include a discussion of problematic taxa of crustaceans, mollusks, echinoderms, and minor phyla. Workshops on problematic groups within these major taxa will then be scheduled. We will also begin organizing the SCAMIT literature housed at Cabrillo, so that it is more accessible during meetings held there.

New Curator of Polychaetes: Dr. Kirk Fitzhugh has officially accepted a position at the Los Angeles County Museum of Natural History as the new curator of polychaetes. He will most likely start in early fall of this year.

A Former SCAMIT Provisional: The former SCAMIT provisional new species known as Prototrygaeus sp. A (Pycnogonida) has been published. Although the paper states that the species, named Prototrygaeus jordanae, has been found only in its type locality, the Biology Lab at the Hyperion Treatment Plant reports it from Santa Monica Bay. The full citation of this published work is provided below:

Child, C.A. 1990. Prototrygaeus jordanae, a new species of pycnogonid from Monterey Bay, California. Proceedings of the Biological Society of Washington, 103(1): 157-160.



New SCAMIT Officers: Results of the recent SCAMIT elections are final. The new officers, listed below, will take their posts starting in May. Congratulations to our new officers.

President	Ron Velarde
Vice-President	Larry Lovell
Secretary	Ross Duggan
Treasurer	Ann Martin

SCAMIT Grant: SCAMIT is pleased to announce that Karen Green's grant proposal for page charges to publish her manuscript entitled "Maldane californiensis, a new species (Polychaeta: Maldanidae) and a review of its relations" will be funded (SCAMIT Grant No. 90-1). The amount of the funding will not exceed \$250.00. The manuscript contains the description of a SCAMIT provisional new species, and has been accepted for publication in the Bulletin of Marine Science as a contribution in the Proceedings of the Third International Polychaete Conference.

SCAMIT Picnic: The annual SCAMIT Picnic will be held at Doheny State Beach in Area 7 (north end of the park) on Saturday, August 18, 1990. In addition to the usual food, drink, and conversation, there will be organized games for the young and old. Anyone willing to help with the picnic should contact Larry Lovell (619) 945-1608. Mark your calendar today!

Southern California Academy of Sciences Meetings: The SCAS Meetings will be held on May 11-12, 1990 at the campus of California State University, Dominguez Hills. A symposium on the status and effects of toxicants in California coastal waters is scheduled for Friday, May 11, and would be of particular interest to SCAMIT members.

Treasurer's Report: In 1989-90, total income was \$2275.53 and expenditures were \$1991.94. Year-end account balances were \$1008.29 and \$9128.96, respectively. The robust accounts enabled us to continue the Publication Support Program initiated during the previous fiscal year. SCAMIT officers decided to keep the awards in small amounts in order for the program to be available to as many members as possible. Tentative amounts awarded for the year included \$1500 for illustration costs (Debbie Zmarsly), \$100 for reprint fee (Jim Roney), and \$250 for page charges (Karen Green). Final amounts will be paid upon presentation of a bill from the recipient. These publications are in various stages of preparation and the publication dates will be announced in the SCAMIT newsletter.

A Precautionary Note on the Taxonomy of Capitella capitata
by
Thomas Parker, L.A. County Sanitation Districts

The major thrust of SCAMIT's efforts have been to improve taxonomic standardization of the local marine invertebrate species. Throughout this same period of time (1980-1990) there have been several published examinations of marine invertebrates using techniques of karyotyping and electrophoresis. These have demonstrated that morphological structures do not always differentiate one species from another. The polychaete, Capitella capitata, is common in benthic surveys and is considered ecologically important and useful as an indicator of disturbed or polluted conditions. It is also used in toxicity studies. Few, if any, data have been published in the last 10 years which supports the use of Capitella capitata as a single species. However, several papers have been published which have demonstrated that Capitella capitata is a complex of species differentiated by non-morphological characters.

Tsutsumi and Kikuchi (1984) concluded that morphological features should not be used to define adult worms as the species, Capitella capitata. Studies by Grassle, Gelfman, and Mills (1987) have clearly reinforced the separation of Capitella species by non-morphological characters. The diploid chromosome numbers of 8 different sibling species, identified morphologically as Capitella capitata, were found to be 18, 20, and 26. They also possessed karyotype differences. Among these species is a nearly complete lack of common allozymes, and marked differences in egg size, larval dispersal mode, and reproductive mode. These authors concluded that almost all aspects of these capitellid species examined were "sharply differentiated... except external adult morphology".

Traditionally, taxonomists have relied upon external morphology to define Capitella capitata species. The above research indicates that external morphology is inadequate to define Capitella species. Continued reports of this species in benthic data may be understood by many working taxonomists to represent a sibling species complex. However, such data may be used in environmental studies and regulatory decisions by non-taxonomists who may not be aware of these relatively recent advances in the knowledge of capitellid speciation. Rice and Simon (1980) provided this opinion: "It is no longer possible to accept a simplistic approach to the identification of species, especially in cases where national policies such as pollution control and abatement may be influenced by experimental results based upon organisms of uncertain identity".

Therefore, Capitella capitata, as previously known, represents a complex of sibling species that morphological features can not delineate. The use of the name Capitella capitata should be discouraged until further published data resolves the status of this complex.



Capitella capitata (Fabricius, 1780)

Literature:

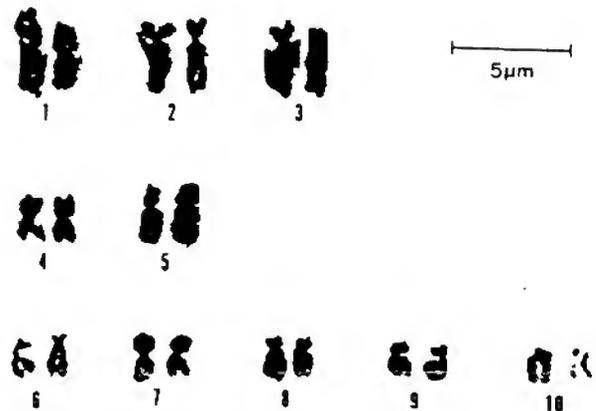
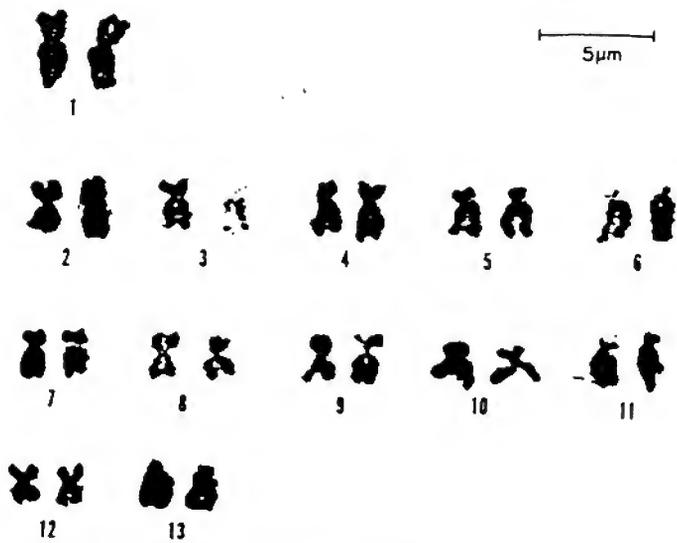
- Petraitis, P.S. 1988. Occurrence and reproductive success of feminized males in the polychaete, Capitella capitata (species Type I). Marine Biology (97) 403-412.
- Grassle, J.P., C.E. Gelfman, S.W. Mills. 1987. Karyotypes of Capitella sibling species, and of several species in the related genera Capitellides and Capitomastus (Polychaeta). Biol Soc. Wash. Bull. (7) 77-88.
- Rice, S.A., J.L. Simon. 1980. Intraspecific variation in the pollution indicator polychaete Polydora ligni (Spionidae). Ophelia 19 (1): 79-115.
- Swartz, R.C., F.A. Cole, D.W. Schultz, W.A. Deben. 1986. Ecological changes in the Southern California Bight near a large sewage outfall: benthic conditions in 1980 and 1983. Mar. Ecol. Prog. Ser. 31: 1-13.
- Tsutsumi, H., T. Kikuchi. 1984. Study of the life history of Capitella capitata (Polychaeta: Capitellidae) in Amakusa, South Japan including a comparison with other geographical regions. Marine Biology 80: 315-321.

Diagnostic Characters:

1. External adult morphology unreliable for discrimination of these species.
2. Diploid chromosome number of 18, 20, and 26 in different species.
3. Karyotype patterns markedly different in each species(see figures).
4. Species with diploid number $2N = 26$: one of these species has direct larval development, two of these species with lecithotrophic development, and one of these species with planktotrophic development.
5. Species with diploid number $2N = 20$: one of these species with planktotrophic larval development and three species with lecithotrophic development.
6. Species with diploid number $2N = 18$: one species with planktotrophic larval development.
7. All species with nearly complete lack of common allozymes (represents large genetic differences).
8. Egg size differences between species.
9. Males may transpose to hermaphrodites when females are rare.

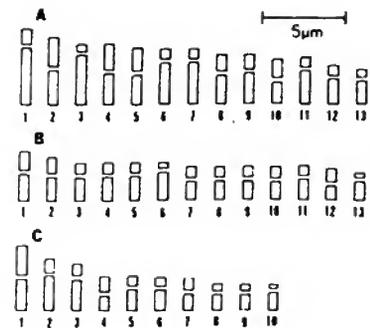
Comments:

Capitella capitata, as previously known, represents a complex of sibling species that morphological features cannot delineate. The name Capitella capitata should be used with caution and where appropriate accompanied by a note on its taxonomic status.



Karyotype for *Capitella* sp. II (Marseille), 2N = 26. The chromosomes of the set are arranged in four rows in descending order of length from 1 to 13. Pair 12 is metacentric, pairs 1-5 and 7-11 submetacentric, and pairs 6 and 13 acrocentric.

Karyotype for *Capitella* sp. I (Falmouth), 2N = 20. The chromosomes of the set are arranged in three rows in descending order of length from 1 to 10. Pairs 1 and 4 are metacentric, pairs 2, 3, and 10 are submetacentric, and pair 10 is acrocentric.



Idiograms of the karyotypes in Figs. 2-6. A, *Capitella* sp. II (New Bedford Harbor); B, *Capitella* sp. II (Marseille); C, *Capitella* sp. I (Falmouth).

Karyotype for *Capitella* sp. II (New Bedford Harbor), 2N = 26. The chromosomes of the set are arranged in four rows in descending order of length from 1 to 13. Pairs 4 and 10 are metacentric, pairs 1, 3, 6, 7 and 13 are acrocentric, and pairs 5, 8, 9, 11 and 12 are submetacentric.

CHAETOZONE SETOSA

Presented By: Leslie Harris, Los Angeles County Museum of Natural History

Reference: Christie, G. 1985. A comparative study of the reproductive cycles of three Northumberland populations of Chaetozone setosa (Polychaeta: Cirratulidae). Journal of the Marine Biological Association of the United Kingdom, 65: 239-254.

Very small specimens had small weakly bidentate acicular setae in the last five or fewer posterior setigers; these occurred as the most ventral setae in the neuropodia; setae are gradually replaced by unidentate acicular setae as the animal increases in size.

Chaetozone setosa sensu strictu has very long, fine capillary setae ("natatory setae") in anterior and mid-body notopodia. This is true only for gametogenic worms over 7 mm in subtidal populations; two intertidal populations lacked them.

Morphologically, the three populations can be distinguished by the relative positions of palpophores, first branchial filaments, and first setae. Several other characters are useful in distinguishing the populations: 1) presence or absence of deep constrictions between the posterior segments, 2) presence or absence of a complete ring (alternating with capillary setae) formed by the posterior acicular spines, 3) presence or absence of obvious spaces separating notopodial and neuropodial setae, and 4) number of acicular spines.

