Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

March 1988 Vol. 6, No. 12

NEXT MEETING:	April 14 and 15
	Polychaete Workshop
LOCATION:	Allan Hancock Foundation University of Southern California
GUEST TAXONOMIST:	Dr. Kristian Fauchald Smithsonian Institute

MINUTES FROM MEETING ON March 14, 1988:

SCAMIT recently submitted a letter to the Southern California Bight Review Committee. This letter commented on the needs of future benthic surveys and appropriate methods of standardizing the data and utilizing the specimens collected. This input was well received by the committee and will be used to help formulate monitoring features permitted by the State. Specific issues within this document will be further discussed and commented upon by committee attendees in the future meetings. A copy of the letter is enclosed. If you would like the opportunity to participate contact the Committee: Craig J. Wilson, Division of Water Quality, State Water Resources Control Board, P.O. Box 100, Sacramento, CA 95801, (916) 322-4506.

The Southern California Academy of Sciences meetings on May 6th and 7th will have contributed paper sessions and several symposia. One of these symposia will be hosted by SCAMIT and is titled "Structure and Changes in Marine Communities in Southern California." These presentations are not restricted to taxonomy and will give everyone an opportunity to hear talks from several specific disciplines.

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

Final Election Results. Officers for the 1988-1989 term are now officially installed and are:

President	Dave Montagne
Vice-President	Ron Velarde
Treasurer	Ann Martin
Secretary	Thomas Parker

Thank you for taking the time to send in your ballots.

Nomenclatural Notes. The shrimp listed in Glassell, 1938 as Homoriscus macginitiei should be listed in the family Laomediidae and genus Nauschonia. When identifying Callinassa or Axiopsis, comparison of the rostrum to that seen in Nauschonia should be made. For additional information refer to the following:

Glassell, S.A. 1938. New and obscure decapod crustacea from the west America coasts. Trans. San Diego Soc. Nat. Hist. Vol. 8 (33): 411-454.

Chase, F. 1934. On the systematic status of the crustacean genera Nauschonia, Homoriscus and Coralliocrangon. Ann. Mag. Nat. Hist. (Series 11) Vol. 3: 524-530.

Goy, J.W. and A.J. Prozenzano, Jr. 1979. Juvenile morphology of a rare burrowing mud shrimp Nauschonia crangonoides Kingsley, with a review of the genus Nauschonia (Decapoda: Thalassinidea: Laomediidae). Proc. Biol. Soc. Wash. Vol. 92 (2): 339-359.

1988-89 Agenda. The schedule of Exchange and Topic groups for February 1988 through February 1989 is included on a separate sheet in this newsletter. Note that the Fauchald Polychaete Workshop will take place of the regularly scheduled meeting in April.

Special Reminder. Those of you planning to attend the Fauchald Polychaete Workshop who haven't contacted Leslie Harris for reservations, please do so immediately. She may be contacted at the Allan Hancock Foundation, (213) 743-2085.

Chaetozone Key. Last month's newsletter included discussion of problems with keying Chaetozone armata in Hartman's Atlas. A new key was drafted at the January meeting and is now included in this newsletter.

List of Animals Examined on March 14, 1988

MBC 68	Parapleustes sp. A	SCAMIT, 1988
PL 76	Eusiridae sp. A	SCAMIT, 1988

WORM QUIZ #1: Choices, guesses, and attempts for the first question have been variously attempted. However, in honor of the Polychaete Workshop we will delay publishing the numerous shots people took at this question. To repeat, the first question is: What documented polychaete group possesses no setae? A hint: It also has no neuropodia or notopodia.

And please, stop guessing that this worm without setae is your mother-in-law, ex-spouse, or supervisor!

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SCAMIT TAXONOMIC STANDARDIZATION PROGRAM
AGENDA

FEBRUARY 1988 to FEBRUARY 1989

Feb exchange / March topic	Gammaridean Amphipoda (prov. spp.)
In lieu of April meeting	Fauchald Polychaete Workshop
April exchange / May topic	Bivalvia (prov. spp.)
May exchange / June topic	Ostracoda
June exchange / July topic	Phoronida/Hemichordata
July exchange / Aug topic	Gastropoda (prov. spp.)
Aug exchange / Sept topic	To Be Arranged
Sept exchange / Oct topic	Polychaeta (prov. spp.)
Oct exchange / Nov topic	Ophiuroidea
Nov exchange / Dec topic	Cumacea (prov. spp.)
Dec exchange / Jan topic	Caprellid Amphipoda (prov. spp.)
Jan exchange / Feb topic	Polychaeta (prov. spp.)

THE CITY OF

SAN DIEGO

EMPLOYMENT OPPORTUNITY FOR

BIOLOGIST I

SALARY STEPS: $1826 - $1913 - $2005 - $2098 - $2202/month.
Appointments may be made above the entry step.

NOTE: 5% additional salary may be paid when night or unusual shift work for an extended period of time is required.

THE JOB: There are currently several positions available in the Water Utilities Department. Biologists I perform routine biological and bacteriological tests of marine and aquatic organisms, pond samples and waste water; identify plants and animals; examine ocean, shore, and pond samples for bacteria, phytoplankton and zooplankton; design and implement scientific tests; collect and interpret data; explain biological studies and programs to scientific and lay groups; prepare reports; and perform other work as assigned. The list established by this examination will be used to fill existing and future vacancies.
Promotional Opportunities may include Biologist II, $2545 a month maximum.

MINIMUM REQUIREMENTS: You may qualify by meeting one of the following:

1) College graduation with a Bachelor's degree in a biological science (Biology, Botany, Microbiology, Zoology) or a closely related field, such as Environmental Science. **If your degree is in a closely related field, it must include basic microbiology and a minimum of one upper division course, including laboratory work, in invertebrate biology, fresh water biology, bio-oceanography, oceanography, bacteriology, microbiology, biology, botany, or zoology.**

2) If you do not meet the educational requirements, you may substitute one year of full-time experience performing laboratory analysis for each year of education lacked. **Qualifying experience must include conducting laboratory analyses, including any of the following: conducting marine and aquatic studies; testing and analyzing water or waste water samples for the presence of bacteria; identifying marine and fresh water microscopic organisms; examining marine organisms using the microscope; or analyzing biological samples.**

You are required to submit a copy of your college transcripts showing degree awarded **with your application.** Transcripts will be made available to the hiring department.

Graduating seniors in their final semester or quarter of college may apply but will be placed inactive on the eligible list until submitting proof of completing the educational requirement. Graduating seniors should submit transcripts covering courses up to their current term and should indicate their anticipated date of graduation.

License: A valid California Class 3 driver's license, which will allow you to drive an automobile, will be required at time of hire.

APPLICATION PROCEDURE: First date to apply: Friday, February 26, 1988. Applications will be accepted until further notice. Vacancies may be filled as soon as the first group of applicants has been processed. Recruitment will be terminated five days following closing notice by the Personnel Department.

NOTE: In addition to the Standard Application, you must submit the Supplemental Application. Applications submitted without a completed Supplemental Application will be rejected.

NOTE: Persons selected for employment will be required to present documents establishing personal identity and the legal right to work in the United States and must complete and sign a form verifying the authenticity of the documents presented before starting work.

EXAMINATION PROCESS: There is no written test or interview by the Personnel Department. All qualified applicants will be placed in **CATEGORY 1** on the eligible list, which will be in effect for one year and may be extended by the Civil Service Commission. As vacancies occur, the hiring department may interview as many candidates as necessary to make a selection.

(OPEN SERIES) #T8132 Biologist I
February 26, 1988
BIOLOGI.BUL

Fred Gallardo, Assigned Analyst
Terry Nelson, Supervising
Personnel Analyst

The City is an Equal Opportunity Employer and has an active Equal Opportunity Program for women, minorities and the handicapped. If appropriate, special testing arrangements can be made for handicapped persons by calling 236-6359 upon filing an application.

APPLICANT INFORMATION

PLACE TO APPLY

IN PERSON:

EMPLOYMENT INFORMATION COUNTER
CITY ADMINISTRATION BUILDING LOBBY
202 "C" STREET
SAN DIEGO, CALIFORNIA
PHONE: (619) 236-5753
Call 236-5627 (236-JOBS) for 24-hour job information.
For the hearing impaired, job information is available on TTY. Call 236-6950.

All required application materials must be received by the Personnel Department Employment Information Counter NO LATER THAN 5:00 P.M. ON THE FINAL FILING DATE. It is the applicant's responsibility to ensure that the application is received within the filing period. Applications postmarked on the final filing date but received after that date will not be accepted.

GENERAL REQUIREMENTS

All requirements must be met at time of application, unless another time is specified.

GENERAL: U.S. Citizenship or legal right to work status. After you are hired, you must live in San Diego County and sign a loyalty oath. Persons selected for employment will be required to present documents establishing personal identity and the legal right to work in the United States and must complete and sign a form verifying the authenticity of the documents presented before starting work. The minimum age for most full-time employment is 18, unless you are 17 and a high school graduate.

MEDICAL EXAMINATIONS

Before you are hired or promoted, you may be required to pass a City medical examination, and/or complete a comprehensive medical history questionnaire.

MAILING ADDRESS
JOBS
CITY OF SAN DIEGO
PERSONNEL DEPARTMENT
202 "C" STREET
SAN DIEGO, CA 92101

PROMOTIONAL OPPORTUNITIES

After six months of continuous service, with a performance rating which is other than "unsatisfactory", City employees may qualify to apply for promotional examinations which are not available to the general public.

VETERANS' PREFERENCE POINTS

NOTE: Anyone who has retired from military service on full pension or who has worked, even briefly since discharge, is not qualified to receive veteran's preference points.

The latest period for which qualified veterans may receive preference points is 6/24/48 to 6/30/73. Qualified veterans (and certain spouses) must present proof of dates of service and honorable separation, at time of application. Five preferential points will be granted to qualified veterans only after passing an open examination.

CONVICTION RECORD

Before you are hired, you must submit a Conviction Record Form specifying whether you have been convicted of a felony or misdemeanor. Failure to do so may result in disqualification.

EMPLOYEE BENEFITS

City employees are presently offered a variety of fringe benefits including paid holidays and annual leave, group health and life insurance, retirement and supplemental pension plan, as well as significant promotional opportunities. Employees hired on an hourly basis are not eligible for most fringe benefits.

Fringe benefits may change due to the annual employer-employee contract negotiations.

Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

26 January 1988

Craig J. Wilson
Southern California Bight Review Committee
Ocean Standards and Policy Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95801

Dear Mr. Wilson and Members of the SCBRC

Accompanying this letter is a document containing comments and recommendations prepared by our organization for the consideration of the SCBRC steering committee and its Monitoring Sub-Committee. This document addresses issues related specifically to the goal of increasing usefulness of monitoring data (in this case, primarily benthic infaunal data). This is a goal common to both SCAMIT and the SCBRC Monitoring Sub-Committee.

SCAMIT has confined its attention to issues that affect the quality of taxonomy as applied in surveys of the biota conducted under the auspices of the State and Regional Boards. Our recommendations are intended to promote two ends: (1) improve taxonomic accuracy and consistency of each survey, and (2) help assure that data from the many separate surveys underway in the southern California bight may be usefully viewed as parts of a bight-wide data base.

We appreciate the opportunity to contribute to SCBRC's activities. If your Committee desires, SCAMIT would be happy to expand upon these recommendations and participate in the formulation of plans to carry them out.

Sincerely,

David E. Montagne
President, SCAMIT 1987-88

Comments and Recommendations
to the
Monitoring Sub-Committee
of the
Southern California Bight Review Committee

January 1988

On behalf of the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT), the officers welcome this opportunity to submit comments and recommendations to the Southern California Bight Review Committee. It is clear to our membership that the goals and objectives of the SCBRC and its Monitoring Sub-Committee are closely congruent with those of SCAMIT.

History: SCAMIT and Its Goals

SCAMIT was formed in 1982 by a group of marine biologists who recognized the value of compatability of data between the many biological surveys of marine communities being conducted in southern California. SCAMIT's stated goals are the promotion of the study of marine invertebrate taxonomy and the development of a regionally standardized taxonomy. The underlying reason for forming the organization was, and continues to be, the recognition that much of the value of the vast data sets being accumulated on the region's biological communities was not being realized because of the lack of taxonomic standardization between the many labs responsible for the generation of the data. Compatability with the results of other surveys in the region provides the the opportunity to view one survey's results in the context of a much broader spatial and temporal setting. By developing, through regional cooperation and communication, a standardized taxonomy, SCAMIT's members hope to make the results of their individual surveys more powerful tools in discerning with confidence the biological impact of various uses of coastal waters.

Obviously, compatibility of survey results depends upon many factors besides taxonomy. Station locations, sampling frequency, gear, screen sizes, etc. are all important determinants of the nature of the resulting data. While SCAMIT's members are frequently involved and have interest in these and other aspects of survey design, as an organization SCAMIT confines its interest to issues that affect the taxonomic quality of the data.

The Problem: The Nature of Taxonomy-based Data

The utility of the results of a taxonomic survey of a community is determined by the degree to which the challenges inherent in such a survey are understood and addressed in the development of procedures. These challenges go beyond the requirement that all organisms be identified to species level and accurately enumerated. It is essential that the dynamic nature of the science of taxonomy be recognized and procedures developed to assure the continued value of the data despite unforseeable, yet inevitable, changes in taxonomy. This is not a trivial

matter. The communities being monitored are composed of thousands of species. A significant number of these are poorly known and dozens of new species are discovered every year. For instance, over 200 species of polychaete worms, 90% of which are yet to be formally described, have been added to the local fauna by a dozen taxonomists working on various surveys in southern California over the past 15 years. This is a 34% increase in the number of polychaete species when compared to the most recently published (1980) faunal listing for the region. The discovery of new species and revisions in the taxonomy of species groups, has already led to problems in other areas of biology. Much of the value of toxicity studies conducted on "well studied" Daphnia "species" has been called into question when they were discovered to be polyspecific. The frog Rana pipiens, commonly used as an experimental animal, is now recognized to be a complex of 20 species. A similar situation has arisen in benthic infaunal studies with the polychaete Capitella capitata. This widely recognized "pollution-tolerant species" has been routinely used to measure environmental and toxic responses in the benthos. Recent studies clearly demonstrate that this "species" is actually a complex of several species having distinctive reproductive and behavioral traits and differing in response to environmental stress. Other benthic taxa have undergone similar changes, both through the addition of new species and the splitting and redefinition of existing species. NPDES and other environmental surveys are frequently used to track temporal as well as spatial patterns. The on-going change in taxonomic understanding of the fauna being monitored quickly erodes the utility of the past results of these surveys.

Another consequence of the complexity and fluidity of invertebrate taxonomy is the difficulty of achieving consistency and uniformity of identifications both within and between the various surveys. This problem is compounded by the inevitable differences in expertise, experience, and opinion of the many taxonomists involved in the surveys. While the existence of well-documented published descriptions increases the likelihood that two taxonomists will agree on the identity of a specimen, it by no means assures agreement. In the frequent case of the specimen being a species for which no such descriptions exist or are available agreement is even less likely. Because of the frequency with which previously unreported species are encountered in benthic surveys, the taxonomist is faced with the necessity of erecting provisional species designations. These designations are typically unique to the individual taxonomist or their laboratory. Because these species may occur in areas being studied by other groups, there are frequently several such provisional names for a single species. The proliferation of these provisional names in data sets makes comparison of the data difficult and results in information loss.

The Solution: Archiving, Documentation, and Cooperation

To minimize the affects of these problems upon the value of the data it is necessary to provide, as part of the taxonomic analysis, procedures for QA/QC appropriate to the nature of taxonomic surveys. The primary element must be the retention and curation of the material (specimens) collected. Completion of the identification and enumeration of the specimens in a sample does not exhaust its value. It is the

specimens themselves that constitute the information reflected in the data. It is important in any survey, and essential in surveys intended to monitor temporal change, that the material be properly curated and archived to assure permanently its good condition and availability for subsequent examination. Many of the problems of maintaining the utility of a data set in the face of evolving taxonomy can only be resolved by the re-examination of samples. In the case where the responsibility for conducting a survey lies with a single organization for the life of the study, the material may be retained and curated with little logistic difficulty. The importance of careful consideration to curation/archiving requirements is heightened in those cases in which the organiztion responsible for conducting the survey changes during the life of a study. In either case upon the conclusion of a study, whether it has been underway for 20 years or for six months, provision must be made for the ultimate curation and archiving of the material. In order to facilitate taxonomic review, the ultimate repository should be a single institution within the region with a commitment to the maintenance of such collections. This maintenance must consist of proper storage, curation, and management of future access. Together, the State and southern California Regional Boards are in the best position to establish, designate, or negotiate for an archival repository that would serve as a single site for material collected during studies required by those boards. Since no potential repository is obligated to accept such collections, it is essential that the arrangements and conditions for the deposition of the material be considered as part of the original study design and procedures. The requirement for retention of material is currently a part of many but not all NPDES-required surveys. When included it is rarely given the attention it deserves nor is consideration given to the ultimate fate of the material. While our concern here is with invertebrate infaunal samples, similar needs may exist for samples collected for geological, chemical, or tissue analysis.

The creation and maintenance of a voucher collection is also an essential part of the QA/QC procedures. A voucher collection is an invaluable tool during the course of the study, when access to voucher specimens greatly assists the taxonomists in avoiding inconsistent identifications. Upon completion of a study, vouchers allow other workers to determine the identity of species as understood by the original taxonomist. Just as with the material collected, specific steps should be laid out at the initiation of a study to assure the availability of voucher collections to future workers. Ideally, the voucher collection and survey material collected should be retained together throughout the course of a study and be deposited in the same institution upon completion.

Another effective means of maximizing the utility of a taxonomic survey is written documentation of species. Such documentation should consist of descriptions and supporting figures of those species encountered in the course of a survey. While this documentation is not necessary for well-established species already supported by published descriptions, it is extremely useful when the specimens at hand differ in some way from the published and generally understood form. Documentation is essential in the case of provisional species for which there will exist no other source of information. As with any species collect-

ed in a study, specimens of provisional species must be placed in the voucher collection.

Finally, after the procedures above are instituted, there remains the need for regional cooperation and communication among the taxonomists responsible for the different surveys. The dissemination of information, particularly documentation of provisional species, newly encountered species, and heretofore undocumented variability, is a simple but highly effective way to assure the comparability of data coming from different sources. Regional cooperation is possible only if the agencies mandating the surveys appreciate its value and actively encourage the participation of those who are charged with conducting the surveys. This exchange of information cannot take place, however, if effort is not expended to properly maintain the samples, create useful voucher collections, and fully document the identity of the species reported. Without such efforts the full value of data being collected under the auspices of the State and Regional Boards will not be realized.

It is noteworthy that federal agencies, such as the Minerals Management Service, have recognized the value of the procedures discussed above and specifically addressed them in the design of biological surveys to be carried out by their contractors. The EPA has also included elements of these proceedures in some monitoring programs in which they have an interest.

The SWRCB and Taxonomy

In closing we observe that the SWRCB has a legacy of supporting the field of invertebrate taxonomy in southern California. It was the "State Surveys" of the late fifties, sponsored and funded by the then State Water Pollution Control Board that were the first comprehensive studies of the benthic communities of the southern California shelf. The taxonomic work that took place during those surveys formed the foundation of our current understanding of the diversity of life in our coastal waters. We encourage the current Board to continue these past efforts by assuring through careful survey design the full value of the efforts now being expended. To this end we applaud the creation of the SCBRC and its goals.

Summary Recommendations

A fundamental goal of biological surveys under the Ocean Plan should be to maximize the utility of the data collected by assuring that the design of the study:

1. Recognizes the value of the material collected and provides for its archiving and curation, both during the course of the study and permanently upon conclusion of the study. Such provision should assure proper maintenance of the material and future access by interested scientists. The State and Regional Boards of southern California should cooperate in the selection of a suitable institution that will serve as the common, ultimate repository for the region.

2. Provides for the creation and maintenance of voucher collections by the organization conducting the survey and provides for the transfer of such collections if the responsibility for the conduct of the survey passes to another organization. The voucher collection(s) should be assured permanent archiving and curation (with the material collected) at the conclusion of the study.

3. Provides for the documentation of all provisional species erected in the course of a study. Such documentation should consist of a written description and supporting figures. Documentation of variation in form of established species is also to be encouraged.

4. Provides for communication and cooperation between taxonomists responsible for other such surveys within the southern California region. This cooperation should minimally consist of the exchange of taxonomic documentation.

CHAETOZONE Malmgren, 1867

Key to species

1. Prostomium with paired transverse rows of eyes, resembling those of Cirratulus cirratus; acicular spines present from neuropodia 10 to 13 . . . . . C. multioculata

1. Prostomium without transverse series of eyes 2

2. Acicular spines present in neuropodia from first setiger 3

2. Acicular spines first present in more posterior setigers 4

3. Neuropodial acicular spines 1-2 in anterior setigers, increase in number to 6-9 per posterior fascicle, forming transverse series . . . . . C. corona

3. 3(4) small acicular spines in anterior neuropodia, decrease in number to a single, large curved spine per fascicle in posterior setigers . . . . . C. armata

4. Anterior neuropodial setae at segment 25 of two kinds, one short and limbate, the other usually prolonged and whiplike; no capillaries in last 20 segments . . . . . C. spinosa

4. Anterior neuropodial setae of one kind, none whiplike; capillaries present in posterior 5

5. Notopodial setae mostly capillary, up to 3 spines per fascicle in posterior setigers . C. gracilis

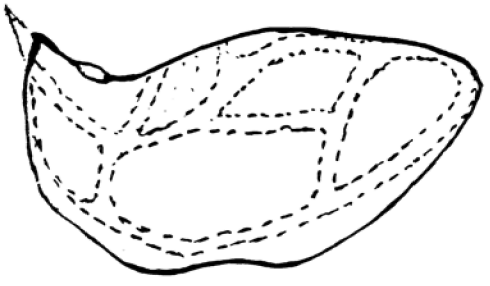
5. Notopodial setae mostly replaced by spines in posterior segments . . . . . C. setosa

Modified key by L. Harris & R. Velarde 8 February 1988

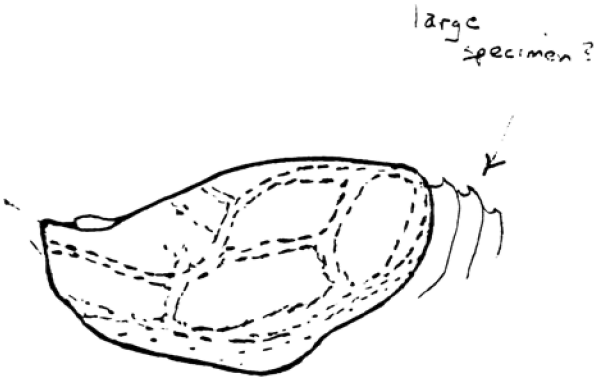
SCAMIT Code: HYP 52
also specimens-Pt. Loma

Date Examined: January 11, 1988
Voucher by: Doug Diener, MEC

Voucher Sheet: Vol. 4, No. 12



Female

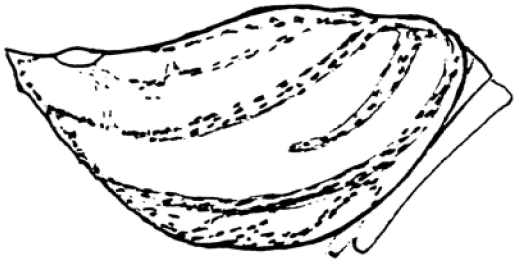


Male

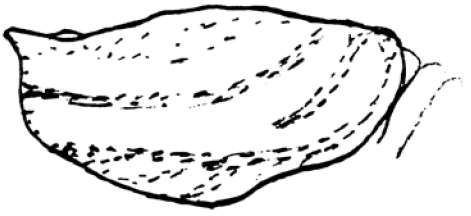
SCAMIT Code: LACO 67 (in part)
MEC 2
Also specimens DL-SONGS

Date Examined: January 11, 1988
Voucher By: Doug Diener, MEC

Voucher Sheet: Vol. 4, No. 12



Female



Male

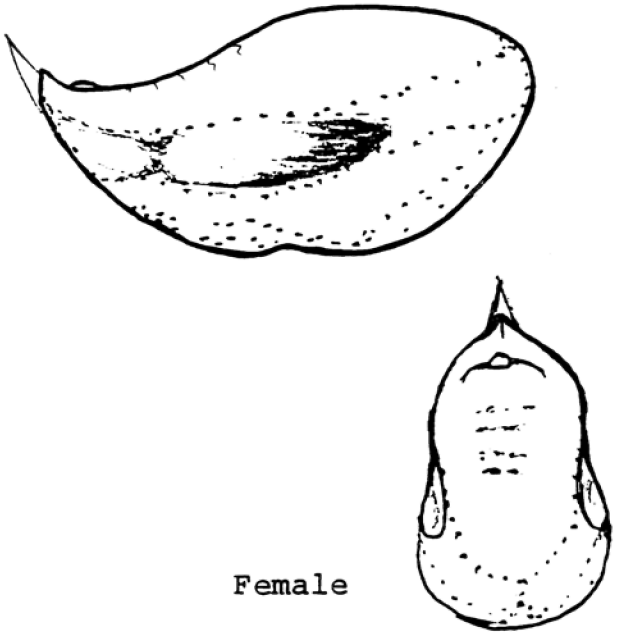
SCAMIT Code: LACO 68 (in part)
Also specimens-Pt. Loma
LACO
LAHD

Date Examined: January 11, 1988
Voucher By: Doug Diener, MEC

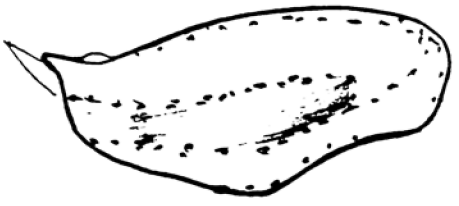
Voucher Sheet: Vol. 4, No. 12

Additional Characters:

1. Dots represent scattered light red pigment.
2. Large specimens posterior portions of sulcus deep.
3. Large pseudorostrum



Female



Male

SCAMIT Code: LACO 67 (e,f,g)
Also specimens-LACO Pt. Loma

Date Examined: January 11, 1988
Voucher By: Doug Diener, MEC

Synonymy: LACO 67 in part as C. rubromaculata Lie, 1969 (Vol. 4, No. 12)

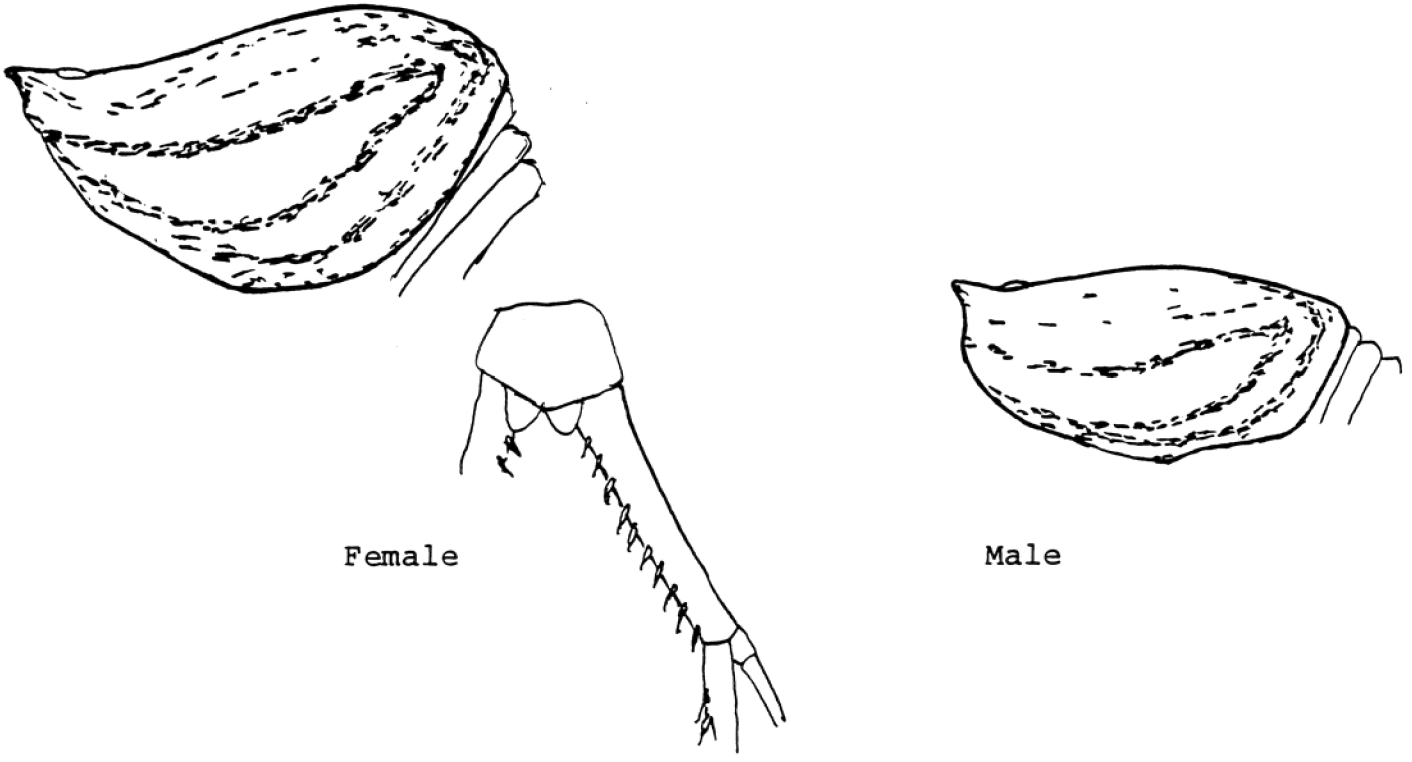
Literature:

Diagnostic Characters:

1. Middle pigmented ridge extends onto anterior half of the carapace and generally connects to lower ridge.

Related species and character differences:

The middle pigmented ridge in C. rubromaculata only extends about one-half the way down the carapace and ends unconnected; C. sp. D, however, extends much further and connects to other ridge.



Female

Male

SCAMIT Code: MEC 3

Date Examined: January 11, 1988
Voucher By: Doug Diener, MEC

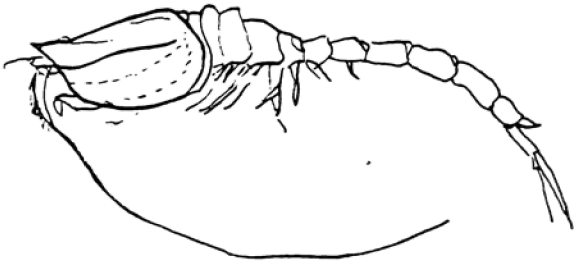
Synonymy: Petalosarsia decliuis (Sars, 1865), an Atlantic species

Literature: Jones, 1976. British Camacea

Diagnostic Characters:

1. Small species, with telson without spines.
2. "Pereopod 1 with ischium and merus united to form a cup for the large lamellar carpus, over the broad distal end of which the slender propodus and dactyl can be folded to form a subchelate arrangement" (Jones, 1976).

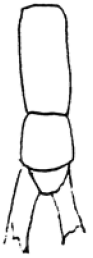
Distribution: Two specimens at 700 feet on platform Galex, Santa Barbara Channel, north of Anacapa Island.



♂

Pereopod 1

Female
Telson



Male
Telson