



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

March 1985

Vol. 3, No. 12

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|-------------------------|--|
| Next Meeting            | April 8, 1985  |
| Guest Speaker           | Dennis Lees (Westec):<br>Hydroid Assemblages of soft-bottom<br>habitats on the Hueneme Shelf, and<br>factors influencing their distribution. |
| Specimen Exchange Group | Oweniidae, Sabellariidae, Pectinariidae  |
| Topic Taxonomic Group   | None- time will be used to work on SCAMIT<br>voucher collection  |

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MINUTES FROM MARCH 11, 1985

Workshop on Amphipod Taxonomy, March 8-11, 1985: A resoundingly successful amphipod workshop was held at Cabrillo Marine Museum featuring Dr. Jerry L. Barnard from the Smithsonian Institution. Originally scheduled for two days, the workshop was extended to three days and met in conjunction with the regular SCAMIT meeting on the third day. SCAMIT members from San Diego to San Francisco were able to attend. For those members unable to attend, a video of the lecture is available (see the enclosed order form).

The workshop began with a lecture from Dr. Barnard telling us of his latest ventures in the world of amphipods. Dr. Barnard is an amphipod taxonomist with a special interest in Australian amphipods. Australian fresh water amphipods are an excellent group for studying amphipod ecology and also for illustrating the pangean connection of Australia through the other continents to North America. But lately Dr. Barnard has been involved with functional morphology of amphipods at MOTE Marine Biology Lab with Dr. James Thomas in Florida. The Smithsonian is matching funds with the Florida Department of Marine Resources for the Floridean taxonomy and functional morphology research.

His biggest project, since 1973, has been to redo the 1969 family key. Dr. Gordon Karamen, of Yugoslavia, has been involved with it and, at this time, the project is about 90% complete. Just the Talitroids, Corophoids and

introduction remain to be completed. The revised edition will feature an extensive glossary of terms, a discussion of the ecology of amphipods, illustrations of the distributions of all species as well as the key to families and keys to genera. The approach to the super organization of the order will be different. It will be divided into four sections: Gammarida, Corophiida, Hyperiida, and Ingolfiellida. The Corophiida includes all those amphipods with fleshy telsons that evolved from the primitive genus Gammaropsis such as the subfamilies Podocerinae and Dulichiinae. The Podocerinae (such as Podocerus and Cerapus) have lost the tube-building glands in their periopods where as the Dulichiinae still retain the tube-building glands. The Podocerinae line led to the more highly developed Caprogammaridae and the very highly evolved Caprellidae.

Dr. Barnard also is involved with SCRIPPS on the amphipods from the Galapagos deep sea vents. He has seen a giant Alicella, measuring in at 240 mm with juveniles ranging from 27 to 75 mm!

After reviewing the various people working in the field of amphipod taxonomy and viewing a slide show on the functional morphology of Floridean amphipods, we were ready to go to work. And did we ever! There turned out to be many new species, a few new genera, and even a new family in our collections. **Notes taken during workshop are available upon request.**

Special Taxonomic Workshops: Because the amphipod workshop was such a success, we would like to arrange a number of them every year. Please submit the names of those experts who you would like to see lead workshops to John Dorsey c/o SCAMIT, and we will plan future workshops.

SCAMIT Annual Picnic: Tom Gerlinger "volunteered" to chair the event this year. The location and date are as yet undecided - if you have preferences please let Tom know.

Video Tapes Now Available: Video tapes have been made of several of our guest speakers. These are available for rental to SCAMIT members using the order blank included in this newsletter.

American Association for Zoological Nomenclature: Included in this newsletter is an application for membership in the AAZN. SCAMIT wishes to support the AAZN. Although we cannot offer financial support at this time, we urge our membership to offer theirs.

Association of Systematics Collections: This organization is having its 1985 annual meeting in May. A registration form has been included in this newsletter along with the proposed agenda.

Department of Fish and Game Library: The Fish and Game Library, located in Long Beach, may be sold and the contents dispersed. It is one of the finest marine resources libraries in the United States and it would be a great loss to researchers, conservationists, legislators and the general public. Those who would like to see this resource retained by Fish and Game can express their concern by writing to:

Mr. Jack Parnell, Director  
California Department of Fish and Game  
1416 Ninth Street  
Sacramento, CA 95814

Amendments to the Constitution: It has been proposed that the duties of the President, Vice-President and Secretary be amended. See attached ballot for text changes. Please Vote!

Curatorial Committee: Cathy Crouch has been appointed to the Curatorial Committee at her request. Thanks Cathy! The other members of the committee are Don Cadien, Dave Montagne and Tony Phillips.

Karen Green on the Systematics of Polychaete Subfamily Maldaninae: Karen Green briefly reviewed the subfamily Maldaninae and defined it to contain species with cephalic and anal plaques, dorsal anus, biannulate anterior setigers, and rostrate uncini with apical teeth arranged in transverse rows above the main fang. Two genera of the subfamily, Maldane and Sonatsa, were recently revised by Green (1984, unpublished thesis; manuscript in press) and were the focus of her talk.

Maldane comprises those species with a long cephalic keel, 2 pre-anal asetous glandular pads, and short to moderate length nuchal organs with straight/gently curved tips. Two species of Maldane occur off southern California, M. sarsi and M. cuculligera subspecies A. Both species possess a convex cephalic keel and a dorsal glandular band behind the tori of setiger 5. Maldane cuculligera subspecies A differs from M. sarsi in having a ventral collar on the first setiger, a more tapered dorsal margin on the anal plaque, and a smaller ventral glandular pad behind the tori of setiger 6. Although M. cuculligera subspecies A and M. sarsi may co-occur, most collections off southern California of M. cuculligera subspecies A have been from approximately 300-600 m, whereas M. sarsi have been from 66-464 m.

Maldane glebifex has been reported from California, however, reexamined records have been M. sarsi. Maldane glebifex has been separated from M. sarsi in the literature on the basis of crenulation on the ventral margin of the anal plaque. However, degree of crenulation is not a reliable character and should not be used. A more reliable character is the dorsal glandular band behind the tori of setiger 5; unlike M. sarsi, M. glebifex lacks this character.

Sonatsa includes species with an enlarged ventral glandular pad on setiger 5. This gland is approximately 1.5 times the size of the other anterior glandular pads. Concomitant with the enlarged glandular pad are numerous neuropodial uncini (>50 uncini per side in specimens wider than 1.5 mm). Although the uncini may overlap due to crowding, they do not occur in multiple rows as described by Chamberlin (1919). One species of Sonatsa occurs off southern California. Originally described as Maldane carinata (Moore, 1923), the species was synonymized with M. cristata by Hartman and resurrected and reassigned to Sonatsa by Green (in press). Sonatsa carinata (name not yet available) has been collected from around the Channel Islands, Tanner Bank, and San Diego Trough in 851 to 1287 m.

Notes: During the taxonomic session of the meeting, Karen Green pointed out that considerable morphological variability occurs among specimens presently being referred to as Praxillura maculata. Karen would like anyone who has entire specimens to send them to her so that this variability can be further investigated.



Leslie Harris on the Systematics of Polychaete subfamily Euclymeninae

Arwidsson, 1907: The subfamily Euclymeninae contains the most poorly defined genera in the entire family Maldanidae. The characters are used to separate such genera as Clymenella Verrill 1873, Axiothella Verrill 1900, Euclymene Verrill 1900, and Praxillella Verrill 1881, are considered inadequate by some authors because of their variability or because the same characters are also used on the species level within these genera (Mangum 1962, Clark and Dawson 1963, Banse 1981). Another major problem is the vagueness of original and even emended descriptions, which adds to the difficulty of distinguishing between genera and assigning species. The most common Euclymenin in southern California is currently undescribed, in part because it does not satisfactorily fit into a genus.

The confusion surrounding Axiothella rubrocincta (Johnson 1901) is a typical example. To begin with, some authors feel that the genus Axiothella should be a subgenus of Clymenella at best, since the main point of separation is the absence of a collar on the 4th setiger, a variable character (Verrill 1900, Mangum 1962). Arwidsson (1907) separated the two by the presence or absence of glandular areas in bands and a raised pre-anal ring as well as the collar segment; he also placed Clymenella rubrocincta Johnson in yet another, unnamed new genus. Monro (1937) felt the presence of a collar on the 4th, a raised pre-anal ring and the form of glandular bands were not characters of generic importance. He separated those species with neuropodial acicular hooks, in the 1st three setigers into the genus Clymene Savigny 1818 (now considered indeterminable) and those with rostrate uncini into Axiothella. This has not generally been followed, although Berkeley and Berkeley (1941) and Hartman (1945, 1959) did put rubrocincta into Axiothella (see Clark and Dawson 1963 for a more complete account). A. rubrocincta appears in environmental survey reports as one of the most common maldanids in southern California, occurring on soft bottoms from the intertidal zone through canyon and basin depths. In reality, it is found mostly in very shallow water, rarely deeper than 20-30 meters. Specimens identified as this species have included four undescribed and three described species of the euclymeninae. The Hyperion SCAMIT specimens labelled A. rubrocincta comprised one good rubrocincta, one euclymeninae species B and eight euclymeninae species A. The specimens from the Cabrillo Marine Museum were all Axiothella sp. A.

When identifying euclymenins, it can be important but it is not always essential to have a whole worm. Clymenella complanata Hartman 1969, Isocirrus longiceps (Moore 1923) and Praxillella gracilis (Sars 1861) can be identified by heads alone. Praxillella pacifica Berkeley 1929, euclymeninae species A and B, and Euclymene grossa newporti Berkeley and Berkeley 1941 all have very distinctive methyl green stain patterns in the first 9-10 setigers, so anterior fragments of that length can be identified. Clymenura gracilis Hartman 1969 and C. columbiana (Berkeley 1929), although now in their own subfamily (see Imajima and Shiraki 1982) are often mislabeled as Axiothella, Euclymene or Praxillella, but they also have distinct stain patterns and anterior fragments of 9-10 setigers can be identified correctly. Other local euclymenins have similar anterior features and stain patterns, so the whole worm is needed, because the number of setigers and a setigerous pre-anal segments is often as necessary as the pygidium.

One essential character is the type of neurosetae in the first three setigers. Most dichotomous keys use the character of acicular setae versus rostrate uncini on both the generic and specific levels. This is misleading because even neurosetae with well-developed definition and a slight beard are considered acicular setae if the number of denticles is less than on median uncini. These setae are also referred to as rudimentary, reduced, acicular dentate, weak, or modified. In general, the anterior uncini should always be compared with median uncini to determine if the former are modified. The type of uncini in some species change with the age of the worm, so that modified uncini are present in juveniles and simple acicular hooks in adults.

Helpful Hints: Sue Williams has put together a chart comparing the southern California species of Diopatra (see attachment).

List of Specimens from March 11, 1985:

|          |  |
|----------|--|
| CMM5     | <u>Axiiothella</u> sp. A (submitted as <u>A. rubrocincta</u> )       |
| CMM6     | <u>Branchiomaldane vincenti</u> Langerhans, 1900                     |
| AHF31    | <u>Asychis disparidentata</u> (Moore, 1904)                          |
| AHF32    | <u>Rhodine bitorquata</u> Moore, 1923                                |
| AHF33    | <u>Praxillura maculata</u> Moore, 1923                               |
| HYP44    | Euclymeninae species A (mainly; submitted as <u>A. rubrocincta</u> ) |
| LAC047   | <u>Maldane sarsi</u> Malmgren, 1865                                  |
| LAC048   | <u>Asychis disparidentata</u> (Moore, 1904)                          |
| LAC049   | Euclymeninae species A (submitted as <u>Praxillella</u> sp.)         |
| MBC28    | <u>Praxillura maculata</u> Moore, 1923                               |
| MBC29    | <u>Notoproctus pacificus</u> (Moore, 1906)                           |
| PL58     | <u>Maldane sarsi</u> Malmgren, 1865                                  |
| PL59     | <u>Petaloproctus</u> - type posterior                                |
| SCCWRP53 | <u>Notoproctus pacificus</u> (Moore, 1906)                           |
| SCCWRP54 | Euclymeninae species A (submitted as <u>Praxillella pacifica</u> )   |

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Travels with Olga  
24 Queensberry Place S.W.7  
London, England  
19 August 1939

Dear Albert: Thank you so much for your inspiring and interesting letters. I enjoy them more than I can say, and hope that you will not neglect me even if I appear dilatory in return. If only I did not get fatigued, I could be so much more prompt and cordial.

I got back yesterday afternoon from a wonderful trip to Plymouth, and saw and heard a very great deal. The laboratory is a very exciting place, many interesting experiments are in progress, it is a very well equipped station, and is admirably situated to carry on work in the dynamics of the ocean. Its program in biological problems is particularly progressive. I was out two days in the field collecting with "Bill", the veteran at the station, one day at the historic Drake's Island (from which Sir Francis started on his famous world's voyages). Plymouth Sound, which we crossed several times in going to and from collecting points, is often the anchoring place of the "Queen Mary". I was a bit



surprised to see no docking ports for these larger boats, but found they must use lighters to transport their cargoes. While on the station boat, we made a trawl haul around part of the sound, primarily after one of the squids. The net came up, loaded with all sorts of things, including 10 squids, a good enough catch for these not-so-common creatures. Right now there are hundreds of large spider crabs on the bottom, undergoing molting, and they remain nearly motionless for about 2 weeks while their tests calcify. After that they are really formidable foes to lesser organisms. I secured some very fine collections in the littoral during 2 very low tides. But I liked most of all seeing the operations of the laboratories.

When I returned to the Brit. Mus. yesterday, I found an acquaintance from So. Australia (director of the Adelaide Museum) who had just arrived from America. We last met in Los Angeles in early June. He is going around the world, taking about 2 years at it, and we have some interesting discussions. He is an Englishman, but likes good coffee (which England does not serve. It is always this "cafe au lait" mixture, and tastes of chicory!) (Hale says it's muddy!)

I shall be delighted to look for your Schreiber, but should wait until I get to Germany. London (and Foyle's) is all right for books printed in London, but not for foreign. Even at that, the American dollar has depreciated too much in terms of the English pound, and therefore one cannot get the best of values. I believe that Foyle's advertisements are more "rosy" than their actual products. One must use them with caution. I have been there many times and find they have a lot of junk. I did buy two books today, on oceanography, but both are London publications which would be difficult to obtain elsewhere.

Yest, there were several explosions in London (and England), caused by the I.R.A. (Irish Republican Army), but this organization is largely composed of a lot of fisticuff Irishmen with destructive instincts. "The Irish Free State" does not want them any more than England, and they are hardly to be pitied. They think they have a cause, to make all of Ireland free from England, but those 6 northern Protestant countries which are England's will not easily join up with the other Catholic counties. There was a serious London explosion due to gas leakage, which blew out several buildings and a lot of windows, and did considerable damage to St. Paul's Cathedral, but the Irish had nothing to do with that. The Irish have been "planting" bombs, and the R.R. station actually went off, hurting a lot of innocent people. England is much too lenient with that mess.

I was at Wheldon and Wesley (second-hand bookstore) this morning and was somewhat startled to find one of my own papers listed, of which I have not yet seen copies. I suppose my reprints are now at Los Angeles. It is a paper dealing with stuff from the Presidential cruise (nothing much). Things I really want badly are hard to find and get. I have visited many shops in London, but many are useless for my purpose.

It is already bedtime and I have much to do tomorrow. Greetings and best wishes to you all.

Executive Summary of SCAMIT Activities  
April 1984 through March 1985

This has been a very good year for SCAMIT. The Cabrillo Marine Museum became our home, we received funding from Chevron and we hosted our first major workshop.

Highlights of the past year

- 1984 May            Guest Speakers Drs. Andrew Lissner, Wilson Hom (SAI): "Benthic Surveys off California: Status of Archive Samples and Reexamination of Existing Data Base."
- July                The Cabrillo Marine Museum became SCAMIT'S home. SCAMIT picnic in San Diego a success.
- August             Chevron pledges to support SCAMIT. Leslie Harris made a provisional loan of her non-polychaete literature.
- September        Guest speakers Barbara Berman, Nico Van der Meulen (A.G. Heinze): "Use and maintenance of microscopes."
- October            Roslyn Muller of Chevron flew down from San Francisco to attend our meeting. Both she and Beth Johnke have been staunch supporters of SCAMIT. Thanks!
- November          Received Chevron donation of \$2500!
- December          First Annual SCAMIT Christmas Party.
- 1985 January       Guest speaker Dr. Pat Hutchings (Australian Museum): "The Systematics of Mediomastus (Polychaeta, Capitellidae)."
- February           Guest speaker Dr. Richard Bray (CSULB): "Consumer Mediated Nutrient Transport in Rocky Subtidal Reefs."
- March              Amphipod workshop conducted by Dr. J. Laurens Bernard of the Smithsonian Institution.

I see a bright future for SCAMIT. One of continued growth and increased importance to the scientific community. I have tremendous enjoyment serving all of you as president in SCAMIT's early years. This time will be one that I'll always look back on in fondness.

## Proposed Amendments to the Constitution

### BYLAWS

#### Bylaw 2: Duties of Officers:

a) President - The president shall preside at meetings of the Association, represent the Association's interests in external business affairs, **present a written yearly summary of the Association's activities to the membership,\*** and perform such other functions as may be defined in the Constitution and Bylaws.

b) Vice-President - The Vice-President shall chair ad hoc committees, be responsible for tabulating and disseminating results of elections, votes on Bylaws, Amendments to the Constitution, for specimen exchange, **shall arrange the chair for the meeting workshops, coordinate the preparation of voucher sheets, edit voucher sheets and newsletters,** and shall perform duties of the President during any period(s) when the President is unable to fulfill his or her duties as President of the Association.

c) Secretary - The Secretary shall keep minutes for all meetings, issue notices for meetings, conduct the correspondence of the Association, and be responsible for mailing ballots. ~~and-present-a-written-yearly-summary-of-the-Association's-activities-to-the-membership.\*\*~~

Shall the constitution be amended as proposed.

YES

NO

\*Boldfaced type indicates proposed additions to the constitution.

\*\*Overstruck type indicates proposed deletions from the constitution.



1984-1985 Membership Renewal Application

It is time to begin renewing memberships. SCAMIT is beginning its third year in April. You may begin renewing now. Your membership expires 12 months after the date indicated on your mailing label. Notices will be given to those with expired memberships on the proper month.

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Type of Membership:

- Participating, \$15.00 per year  
 Correspondent, \$15.00 per year  
 Institutional, \$60.00 per year

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Area of Expertise \_\_\_\_\_

Would you like to be on SCAMIT'S list of people who do free-lance work?

YES

NO

Mail to: **Ann Martin**  
**Biology Laboratory**  
**Hyperion Treatment Plant**  
**12000 Vista del Mar**  
**Playa del Rey, CA 90291**

**SCAMIT ORDER FORM**

Video Tapes - These tapes of SCAMIT guest lecturers are available for viewing on VHS recorders. Price for renting is \$10.00 with a \$5.00 refund upon return of the tape.

- Tape 1. Dr. Andrew Lissner and Dr. Wilson Hom: Status of Benthic Archive Samples and Reexamination of Existing Data for California. (May 14, 1983)
- Tape 2. Dr. Pat Hutchings: Systematics of Mediomastus. (January 14, 1985)  
Dr. Richard Bray: Consumer mediated Nutrient Transport into Rocky Subtidal Reefs. (February 11, 1985)
- Tape 3. Dr. J.L. Barnard: Amphipod Workshop Morning Lecture (March 7, 1985). Also accompanied with transcribed notes from the discussions on March 6, 8 and 11, 1985).

T-Shirts - Price \$8.00 plus \$.95 for postage.

|        | MEN'S                    |                          |                          |                          | WOMEN'S                  |                          |                          | CHILDRENS                |                          |                          |
|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|        | S                        | M                        | L                        | XL                       | S                        | M                        | L                        | S                        | M                        | L                        |
| YELLOW | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| BLUE   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TAN    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- Mugs
- \$6.00 ea. + \$1.50 postage
  - \$12.00 set of four + \$2.00 postage
  - \$33.00 set of six + \$2.50 postage

**Mail To: Ann Martin**  
**Biology Laboratory**  
**Hyperion Treatment Plant**  
**12000 Vista del Mar**  
**Playa del Rey, CA 90291**

**TOTAL ENCLOSED:** \_\_\_\_\_

**1985 Annual Meeting  
of the  
ASSOCIATION OF SYSTEMATICS COLLECTIONS  
22-24 May, 1985  
Los Angeles County Museum of Natural History  
900 Exposition Boulevard \ Los Angeles, California 90007**

Wednesday May 22, 1985  
Evening  
**RECEPTION**

Thursday May 23, 1985 Morning

**COMMUNITY HEARINGS ON A NATIONAL BIOLOGICAL SURVEY**

INTRODUCTION AND OBJECTIVES OF THE SYMPOSIUM. — K.C. Kim and Lloyd Knutson.

SESSION I. **NATIONAL BIOLOGICAL SURVEY: RATIONALE AND LINKAGES.** — Michael Kosztarab, Moderator. — Department of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; (703) 961-6773.

\* **SCIENTIFIC BASES FOR A NATIONAL BIOLOGICAL SURVEY.** — History, rationale, goals and objectives of a national biological survey; applications of a national biological survey; improvement of research and manpower training.

K. C. Kim — 106 Patterson Building, The Pennsylvania State University, University Park, PA 16802; (814) 863-2863.

Lloyd Knutson — USDA, ARS, BARC WEST, Room 1, Building 003, Beltsville, MD 20705; (301) 344-3182.

\* **BIOSYSTEMATICS AND LONG-TERM ECOLOGICAL RESEARCH.** — The importance and relationships between a national biological survey and biosystematic and ecological research.

Barry Chernoff — Academy of Natural Sciences, Nineteenth and the Parkway, Philadelphia, PA 19103; (215) 299-1026.

\* **DIVERSITY AND NATURAL RESOURCES.** — The importance and linkages of a national biological survey to the conservation and management of biological diversity and natural resources.

Christine M. Schonewald-Cox — Western Regional Office, National Park Service, Biological Resources Division, c/o Department of Environmental Studies, Wickson Hall, University of California, Davis, CA 95016; (916) 752-7124.

**ENVIRONMENTAL PROTECTION.** — Inventory and monitoring of the North American biota and environmental protection.

Allan Hirsch — Office of Federal Activities, Environmental Protection Agency, 401 M Street, SW (A-104), Washington, DC 20460; (202) 382-5053.

\* **PLANT PROTECTION AND FOOD PRODUCTION.** — The importance and linkages between the production of food and fibers, agricultural research, and a national biological survey.

Waldemar Klassen — USDA, ARS, BARC West, Room 227, Building 003, Beltsville, MD 20705; (301) 344-3078.

G. Gregor Rohwer — USDA, APHIS, PPQ, Room 324-E, Administration Building, Dept. of Agriculture, Washington, DC 20250; (202) 447-7021.

Thursday May 23, 1985 Afternoon

SESSION II. **BIOLOGICAL SURVEY INFORMATION.** — Stanwyn Shetler, Moderator, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560; (202) 343-5715.

\* **BIOLOGICAL SURVEY DATA: INTRODUCTION.** — Nature, type, and acquisition processes of national biological survey collections and data; needs for improved procedures of collection and preservation.

Wallace A. Steffan — Bernice P. Bishop Museum, 1355 Kalihi Street, P.O. Box 19000-A, Honolulu, HI 96819; (808) 847-3511.

\* **DATA BASE STRUCTURE AND MANAGEMENT.** — Quality, quantity, and characteristics of national biological survey data and management strategies.

Orie Loucks — Holcomb Research Institute, Butler University, 4600 Sunset Avenue, Indianapolis, IN 46208; (317) 283-9421.

\* **COMPUTER-BASED DATA RETRIEVAL AND DISSEMINATION.** — Data retrieval and dissemination systems in relation to biological survey data users.

Melvin Dyer and Michael Farrell — Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37830; (615) 574-7840 and 574-7847.

\* **PUBLIC AND SCIENTIFIC DISSEMINATION OF NATIONAL BIOLOGICAL SURVEY DATA.** — How national biological survey data can be disseminated: regional vs. national; monographs, revisions, manuals, etc.; hard copy vs. electronic.

Nancy Morin — Missouri Botanical Gardens, P.O. Box 299, St. Louis, MO 63166; (314) 577-5100.

\* **APPLICATION AND USE OF BIOLOGICAL SURVEY DATA.** — How biological survey data can be used; identification of users.

Robert W. Jenkins — The Nature Conservancy, 1800 N. Kent Street, Arlington, VA 22200; (703) 841-5300.

\* **ADP TECHNOLOGICAL PERSPECTIVES OF BIOLOGICAL SURVEY SYSTEMS.** — Industrial and technological assessment of hardware, software, and system development for a national biological survey system.

H. Edward Kennedy & Maureen Kelly — Biological Information Services (BIOSYS), 2000 Arch Street, Philadelphia, PA 19103 (215) 587-4800.

Thursday May 23, 1985 Evening

BANQUET  
PRESENTATION OF ANNUAL AWARD FOR SERVICE TO THE SYSTEMATICS COMMUNITY

Friday May 24, 1985 Morning

SESSION III. LEGISLATIVE AND HISTORICAL PERSPECTIVES. — Stephen R. Edwards, Moderator. — Association of Systematics Collections, c. o Museum of Natural History, University of Kansas, Lawrence, KS 66045; (913) 864-4867.

\* FEDERAL ACTIVITIES. — Historical analysis of federal legislation and the mandates which involve national natural resources, fauna, flora, germplasm, conservation, endangered species, and agriculture.

Ronald B. Outen — Committee on Environment and Public Works, United States Senate, Hart Senate Office Building, Washington, DC 20510; (202) 224-7814.

\* STATE AND PRIVATE ACTIVITIES. — Assessment and analysis of state and private organizations involved with biological surveys, conservation, and other biota-related matters.

Paul G. Risser — State Natural History Survey of Illinois, Natural History Building, Urbana, IL 61801; (217) 333-6830.

SESSION IV. OVERVIEW, DISCUSSION, AND RECOMMENDATIONS. — Overview of current federal, state, and private activities pertaining to North American fauna and flora, and their relationships to a national biological survey; significance, problems, approaches, and organization of a national biological survey; consideration of participants' recommendations.

Lorin I. Nevling, Jr., Moderator — Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605; (312) 922-9410.

REGISTRATION FORM FOR 1985 ASC ANNUAL MEETING (22-24 May 1985)  
Los Angeles County Museum of Natural History

Name: \_\_\_\_\_

Registration fee (\$70; \$90 if received after 1 May 1985) includes Reception (Wednesday evening) and Banquet (Thursday evening).

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

MAKE CHECKS PAYABLE TO ASC and forward to: Association of Systematics Collections  
Museum of Natural History  
University of Kansas  
Lawrence, Kansas 66045  
(913) 864-4867.

Phone: \_\_\_\_\_

MasterCard # \_\_\_\_\_

VISA # \_\_\_\_\_

Bill me during the month of April \_\_\_\_\_

Expiration Date: \_\_\_\_\_

I plan to arrive on \_\_\_\_\_ at \_\_\_\_\_ am/pm

(Signature for Credit Card Charge) \_\_\_\_\_

and depart on \_\_\_\_\_ at \_\_\_\_\_ am/pm

ROOM ACCOMMODATIONS: Please make your room reservations directly with the University Hilton, 3540 South Figueroa Street, Los Angeles, California 90007. (213) 748-4141, and ask for Reservation Department.

Special ASC Meeting rates are: Single . . . \$55.00 Twin/Double . . . \$70.00  
(Rates are subject to a 10% Los Angeles City Occupancy Tax)

NOTE: Identify yourself as: "A participant in the ASC Meeting at the Natural History Museum."  
**RESERVATIONS MUST BE MADE PRIOR TO WEDNESDAY, MAY 1, 1985**  
*Rooms will be held until 6 pm on arrival date unless guaranteed.*

## AMERICAN ASSOCIATION FOR ZOOLOGICAL NOMENCLATURE

EVERYONE is faced with a plethora of organizations competing for time and funds. One may properly ask whether and why another group should be formed.

ZOOLOGICAL nomenclature is the basic grammar of scientific communication. More than ever, modern biology requires proper identification and the consistent use of scientific names to provide the foundation for laboratory and field studies and their application to society's needs. The organization of rules of nomenclature into the International Code of Zoological Nomenclature led to one of the finest literature retrieval systems invented, one ideally suited for the computer age. The system is based on voluntary adherence to the rules and is an outstanding example of international cooperation in science.

THE CODE has been interpreted and revised, as needed, by the International Commission on Zoological Nomenclature. Like a living organism, the Code has evolved through time. The prospect of a new edition of the Code makes this an appropriate time to form the American Association for Zoological Nomenclature, to promote understanding of this basic professional tool and to encourage scientific literacy in this area.

THE AAZN will provide an opportunity for those who use the names of animals to support the mechanism that governs the application of those names. It will offer an annual newsletter to exchange views on the status of nomenclature and focus on future concerns. It will help financially support the International Commission, and will assist in the wide distribution of the new edition of the Code. Other contemplated activities will depend on support from members and contributors.

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Euclymeninae and Clymenurinae of Southern California

|  | Cephalic Plaque   | No. Setigers/<br>Asetigers | Neurosetae<br>1st 3-4<br>Setigers                                      | Collars, Glandular<br>Bands, Shields,<br>Nephridia                               | Pygidium   | Notosetae<br>Neurosetae  |
|--|---|----------------------------|--|--|--|--|
| <u>Axiothella rubrocincta</u>          | Oval. Shallow lateral notches. Nuchal organs long, straight. Smooth proboscis. Eyespots. Deep middorsal notch.                            | 18/2-3                     | Rostrate spines. (Hartman 1969 uses rostrate spines instead of uncini) | No collar; anterior edge of set. 4 thick, raised. Nephridia on set. 7-9.         | Mid-ventral cirrus longest; 18-30 alternating long and short.  | 1) capillary<br>2) capillary with lateral <u>fimbriae.</u><br>Bearded,<br>large fang, 5-6 small teeth  |
| <u>Axiothella rubrocincta complexa</u> | 3-4 lateral notches on either side of flaring rim, otherwise as in stem species.  | 18/2-3                     | Rostrate spines.   | Low collar on 4th.   | As above.  | <u>As above.</u><br>As above.  |
| <u>Clymenella californica</u>          | Elongated. Anterior projecting palpode. Raised lateral margins. Small notches near posterior end. Nuchal organs long, parallel. Eyespots. | 27-27/1                    | 1-2 acicular spines.   | Conspicuous, smooth collar on set. 4.  | Ring of 22 nearly equal cirri. Anus on anal cone.  | <u>Capillary.</u><br>Set. 4 not bearded, m.f.+4*; from set. 5 bearded, m.f.+4-5.   |
| <u>Clymenella complanata</u>           | Flat, smooth, no lateral flange. Short straight nuchal organs. Transverse groove across middle of plaque.                                 | 21/4 or 22/3               | 1 acicular spine   | Collars on set. 4 and 5  | Slightly flaring funnel, 22 marginal papillae, all small. Anal pore centered, with circlet of small papillae, no asperities. | 1) Limbate capillary.<br>2) Spinous <u>capillary.</u><br>Rostrate, bearded, m.f.+5.  |
| <u>Clymenura columbiana</u>            | Oval, broad. Lateral and posterior notches. Palpode blunt, rounded. Nuchal organs short. Eyespots.  | 19/3                       | 1-2 heavy hooks or reduced uncini, 3-4 minute teeth, no beard.         | Constriction may simulate collars, but no true collars. Glandular shield set. 8. | Saucer-shaped pygidium with 18-20 cirri of equal length, + 1 longer midventral. Anal cone projects slightly.                 | 1) Simple capillaries in 1st 3 set., then 2 with types a) laterally fimbriated, b) very fine with hair-pencil tip.<br><u>Rostrate,</u><br>bearded, m.f.+5-6. |

|                                  |   |                 |  |   |   |   |
|----------------------------------|---|-----------------|--|---|---|---|
| <u>Clymenura gracilis</u>        | Elongate oval. Smooth flange, middorsal notch only. Nuchal organs straight, long. No eyes.  | 19/5-6          | Rostrate uncini, no beards.                                    | No collars. Ventral glandular bands set. 7 and 8.                                 | Funnel 18 long filaments, 1 small mid-ventral one.  | <u>Capillary</u><br>Rostrate, bearded, m.f. + 4-5.  |
| <u>Euclymene campanula</u>       | Entire flange with lateral and middorsal notches. Nuchal organs straight, parallel. Palpode small, semi-circular. No eyes.                | 19/7-8<br>(5-6) | Thick, smooth, falcate spines.                                 | Band at parapodial level on set. 4-8.   | Central anal pore covered by ventral flap; approx. 40 equal small papillae. Two pre-anal asetigers campanulate. | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 4.   |
| <u>Euclymene delineata</u>       | Semi-erect smooth flange lateral and $\pm$ middorsal notch. Nuchal organs straight, 3/5 of plaque.  | Unknown/3       | One acicular spine.  | No collars.   | 18 slender filaments, alternating long and short.   | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 4.   |
| <u>Euclymene grossa newporti</u> | Lateral notches; posterior part with 12 marginal lappets. Nuchal organs straight, 1/2 of plaque; posterior part with 6 transverse ridges. | 19/2            | One acicular spine.  | Band on ventrum of first set., surround set. 3-7. Nephridia set. 6-9. No collars. | Concave disc with approx. 20 equal, small, triangular lobes. Anal pore elevated, with coarse papillations.      | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 5-6. |
| <u>Euclymene reticulata</u>      | Smooth flange, lateral and middorsal notches. Nuchal organs long straight.  | Unknown/2       | One acicular spine.  | Tendency slight collar anterior margin set. 4, or none.                           | Circlet of equal long cirri.  | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 5-6. |
| ? <u>Heteroclymene glabra</u>    | Nearly circular, high margins. Lateral and middorsal notches. Nuchal organs long, very slender.   | Unknown         | One acicular unusually slender.                                | Glandular area on first segment.  | Unknown.  | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 5-6. |
| <u>Isocirrus longiceps</u>       | Elongated, oval. No lateral notches, but shallow crenulations corresponding to 4-5 transverse ridges. Nuchal organs short, inconspicuous. | 19/2            | One acicular spine.  | Membraneous collar on set. 4, extending over much of set. 3.                      | Anal collar with approx. 30-33 trim crenulations.   | <u>Capillary,</u><br>Rostrate, bearded, m.f. +4-5.  |
| <u>Maldanella catalina</u>       | Oval. Margin entire, no notches. Broad, straight palpode. Nuchal organs short, upside-down U's.   | 19/3            | First minus neuropodia and setae. Rostrate uncini 2nd and 3rd. | Bands at parapodial level set. 3-8.   | Funnel bounded by smooth flange. Margin with approx. 15 gentle crenulations no cirri.                           | <u>Capillary.</u><br>Rostrate, bearded.             |

|                                 |  |                  |  |  |   |   |
|---------------------------------|--|------------------|--|--|---|---|
| <u>Maldanella robusta</u>       | Wide flange. No lateral or middorsal notches. Nuchal organs short, upside-down V's.  | 19/2             | No neurosetae in first; second and third with rostrate uncini. | Traces of collars on set. 1-7, best on set. 3-6.                     | Campanulate, deeply cupped. Outer and inner surface fluted. Margin with approx. 39 blunt teeth.                             | 1) Limbate<br>2) Slenderer distally.<br><u>Rostrate, bearded, m.f. + 5.</u>   |
| <u>Microclymene nr. caudata</u> | No notches. Rim entire, only slight margin. Plate almost flat. Nuchal long, straight, 3/4 of plaque.                             | 33/0             | Single acicular spines.  | Low margins set. 2-4; margin of set. 2 protrudes anterior-ventrally. | Funnel-shaped with smooth posterior margin. Anal cone protrudes, with one cirrus arising ventrally and extends beyond cone. | 1) Limbate with marginal hairs. 2) Geniculate with minute hairs distally. 3) Bilimbate with smooth prolonged tips.<br><u>Rostrate, bearded, m.f. + 5.</u> |
| <u>Praxillella pacifica</u>     | Deep smooth flange; deep middorsal and lateral notches. Palpode semicircular or conical. Eyespots. Nuchal organs V-shaped, long. | 18/2-5           | 1-2 acicular   |  | Circler of 18 marginal lobes and longer midventral; Anal cone projects beyond funnel, anal pore above mid-ventral flap.     | 1) Smooth capillary.<br>2) Laterally <u>hirsute.</u><br>Rostrate, bearded, m.f. + 6.  |
| <u>Praxillella gracilis</u>     | Lateral and middorsal notches. Nuchal organs long, parallel. Palpode prolonged. Eyes in juveniles. Proboscis papillated.         | 18/4             | 2-3 (4-5) acicular.  |  | Circler of 21-23 prolonged papillae and one longer mid-ventral. Anal cone projecting.                                       | 1) Limbate capillary. 2) Laterally <u>hirsute.</u><br>Rostrate, bearded, m.f. + 5.  |
| <u>Praxillella trifila</u>      | Lateral and middorsal notches. Nuchal organs long, straight.   | Unknown, ?19/3-4 | One acicular spines.   |  | Three long cirri-form processes arising from anal cone.   | <u>Capillary.</u><br>Rostrate, bearded, m.f. + 6.   |

\*Dental formula expressed as m.f. + 4 means main fang with four smaller teeth above. There are usually also denticles or accessory teeth present.



Neurosetae

"A" figures are setae from the first three setigers; "B" are from median setigers. All illustrations are taken from Imajima and Shiraki, 1982.

1a = acicular spines

2a, 3a = acicular hooks

3a, 4a, 10a = highly reduced uncini or acicular dentate setae

5a, 6a, 8a, 9a = modified or reduced uncini

7a = modified uncini (because the dentition and beard are less developed than the 7b).

1. Lumbriclymene japonica

2. Clymenura aciculata

3. Praxillella gracilis

4. Clymenura columbiana

5. Clymenura japonica

6. Praxillella praetermissa

7. Asychis biceps

8. Axiothella rubrocincta

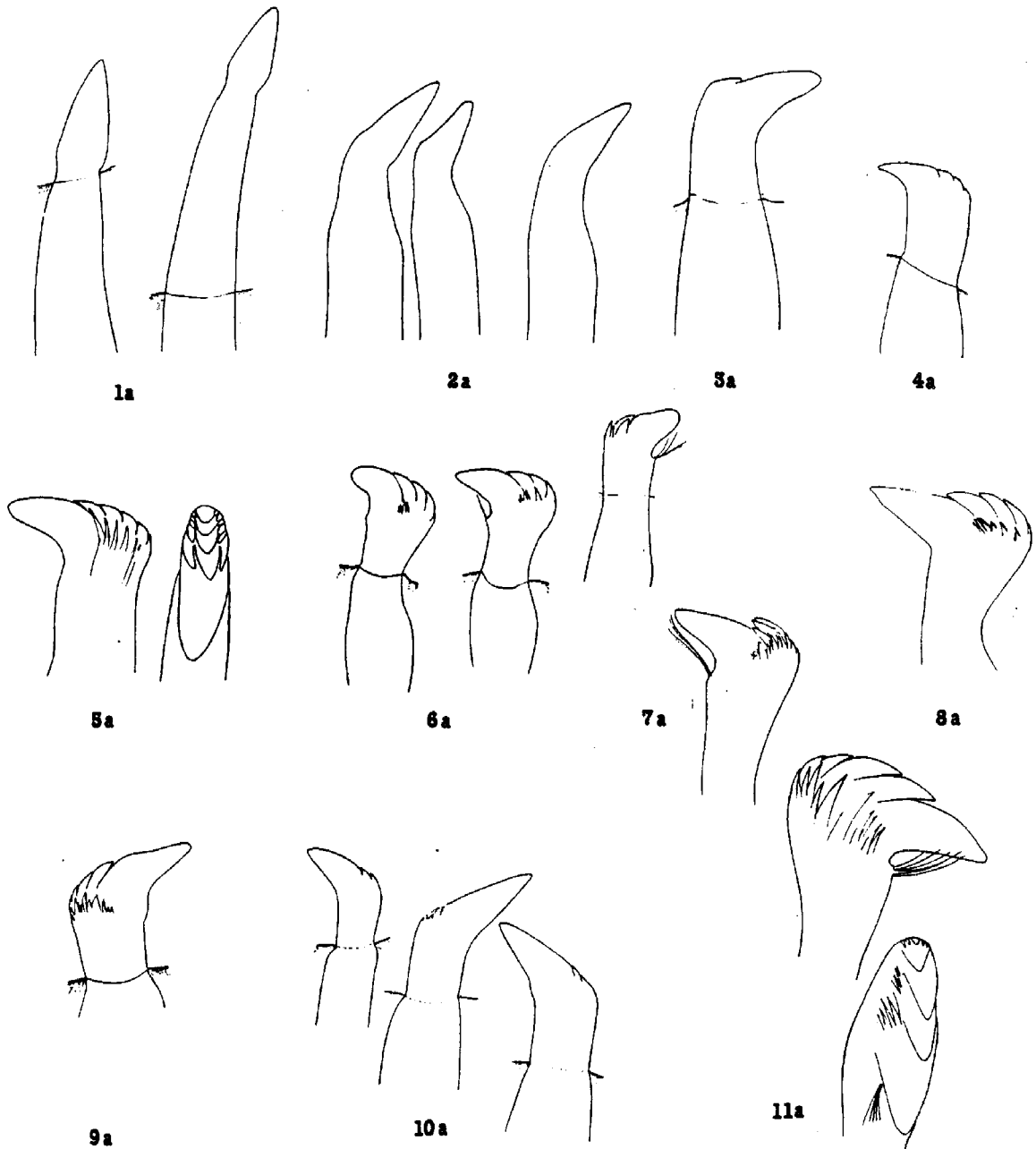
9. Euclymene uncinata

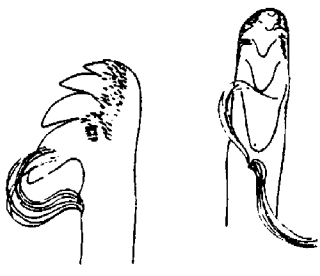
10. Euclymene oerstedti

11. Clymenura longicaudata

12. Axiothella quadrimaculata

13. Rhodine loveni

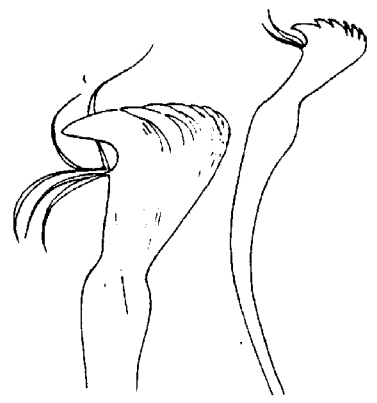




1b



4b

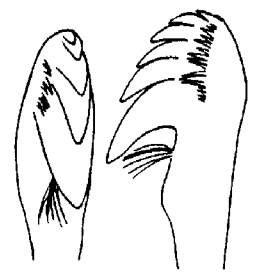


5b

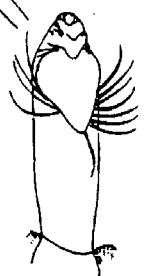


7b

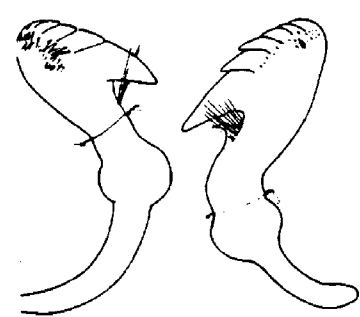
10b



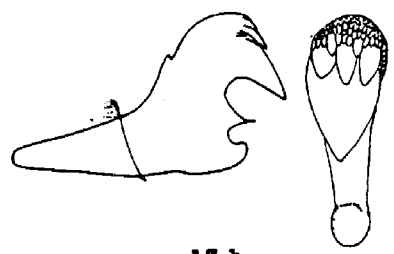
11b



6b






12b



13b

Sue Williams  
3-11-85

Comparison of Southern California Diopatra Species

| Species   | Ventral Cirri  | Annuli on Ceratophores | Subacicular hooks start | Peristomial Cirri  | Pairs Branchiae, etc.   | Pectinate Setae  | Tube   |
|---|--|------------------------|-------------------------|--|---|------------------|--|
| <u>Diopatra tridentata</u><br>Note: interior hooks may be bidentate | Cirriiform on setigers 1-4, then broadly padlike.                                | Approx. 8              | Approx. setiger 10      | Short, conical, tapering<br> | Approx. 33 pair. Spiralled with several filaments. Abruptly decrease to few filament(s) for 1-2 setigers then stop. | Many fine teeth  | mud  |
| <u>Diopatra ornata</u>  | Cirriiform on setigers 1-4; on setiger 5 small and round; then broadly pad-like. | Approx. 8              | Approx. setiger 13      | Long, cirriiform<br>         | Small specimen had 33 pair - with gradual reduction over several setigers to a single filament                      | Many fine teeth  | Parchment, highly ornamented with shell, algae, etc. |
| <u>Dipotra splendidissima</u>                                       | Cirriiform on setigers 1-4, then pad-like  | Approx. 8-10           | Approx. setiger 15/16   | Long, cirriiform<br>      | Large specimen had 64 pair. Spiralled for 35-40 setigers, then reduced to 1-2 filaments.                            | Few coarse teeth | Parchment with little to moderate decoration         |

Note: on all species, branchiae started on setiger 4.

CHECKLIST OF WEST COAST MALDANIDAE

Leslie H. Harris  
MBC Applied Environmental Sciences  
947 Newhall Avenue  
Costa Mesa, CA 92627

Karen D. Green  
Marine Ecological Consultants  
531 Encinitas Blvd., Suite 110  
Encinitas, CA 92024

Subfamily Clymenurinae Imajima & Shiraki, 1982

CLYMENURA Verrill, 1900

= LEIOCHONE Saint-Joseph, 1894; ex auctore

CLYMENURA (CEPHALATA) Imajima & Shiraki, 1982

CLYMENURA (CEPHALATA) COLUMBIANA (Berkeley, 1929)

= LEIOCHONE COLUMBIANA Berkeley, 1929

[TL\*:Departure Bay, British Columbia, 8-25 fm]. Western Canada; Japan, 180-860 m (I & S '82). Listed in Hobson & Banse, 1981 without specific locality. Off Estero Bay and Purissima Point, central California, on rocks, 105-123 m (L. Harris).

CLYMENURA (CEPHALATA) GRACILIS Hartman, 1969

= Euclymeninae Hartman, 1961, 1963

[TL: Santa Monica Bay, 27.5 fm, mud]. Southern California, in shelf and canyon depths, in silty mud (H '69). Off Purissima Point and Jalama, 109-112 m, to Point Loma, California, 40 m, in soft bottoms (L. Harris).

CLYMENURA (CEPHALATA) sp. F

= PRAXILLELLA TRIFILIA of Fauchald, 1972 (not Hartman, 1960)

27 and 31 m off Cabo Falso, Baja, 1400 and 1450 fm (F '72). The description given in Fauchald 1972 is of P. TRIFILIA, the specimens however have a very definite triangular ventral shield on the 8th setiger and the pygidium has an anal funnel bearing three filaments which surrounds the anal cone while P. TRIFILIA has no anal funnel and the filaments arise from the anal cone.

\*TL = Type Locality

Reference Abbreviations

B '81 - Banse, 1981; B & B '52 - Berkeley & Berkeley, 1952;  
B & B '62 - Berkeley & Berkeley, 1962; B & H '68 - Banse & Hobson,  
1968; B & K '74 - Blake & Kudenov, 1974; B et al. '68 - Banse, Hobson  
& Nichols, 1968; D '82 - Detinova, 1982; F '72 - Fauchald, 1972;  
F & H '81 - Fauchald & Hancock, 1981; H '60 - Hartman, 1960;  
H '69 - Hartman, 1969; I & S '82 - Imajima & Shiraki, 1982;  
KG '84 - K. Green, 1984; L '74 - Light, 1974; M '62 - Mangum, 1962

CLYMENURA (CLYMENURA) Verrill, 1900

CLYMENURA (CLYMENURA) sp. A  
San Diego Tough (S. Williams)

Subfamily Euclymeninae Arwidsson, 1907

AXIOTHELLA Verrill, 1900  
= AXIOTHEA Malmgren, 1865 preoccupied  
[spellings: ASIOTHEA, AXIOTHIA, AXYOTHEA]

AXIOTHELLA RUBROCINCTA (Johnson, 1901)  
= CLYMENELLA RUBROCINCTA Johnson, 1901  
[TL: Puget Sound]. Western Canada south to California, intertidal and shelf depths, in sand (H '69). New to Japan, 130-295 m (I & S '82). Collected from Point Conception to San Diego, 1975-78 BLM Project (K. Green).

AXIOTHELLA RUBROCINCTA COMPLEXA Berkeley & Berkeley, 1941  
[TL: Corona del Mar]. Newport Bay area, intertidal, in sandy silt (H '69).

CLYMENELLA Verrill, 1873  
= PARAXIOTHEA Webster, 1879

CLYMENELLA CALIFORNIENSIS Blake & Kudenov, 1974<sup>1</sup>  
[TL: Tomales Bay, 1 meter]. Only record from type locality (B & K '74).

CLYMENELLA COMPLANATA Hartman, 1969<sup>1</sup>  
= ?CLYMENELLA CINCTA of Hartman, 1961 (not Saint-Joseph, 1894)  
[TL: Marine View, San Mateo County, intertidal]. San Mateo County, intertidal, in shaly crevice; off Pt. Conception Light, in 12 fms, in shaly rocks (H '69). Cites H' 69 records, Japan, 5 m (I & S '82). Off Pt. Loma, 186 m (L. Harris).

CLYMENELLA TORQUATA (Leidy 1855)  
= CLYMENE TORQUATUS Leidy, 1855  
= AXIOTHEA TORQUATA of Lewis, 1897  
[TL: New Jersey]. Boundary Bay, British Columbia, 1 to 2 m, among eelgrass (16 to 1680 per m<sup>2</sup> !); New England to Florida; England (B '81)

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<sup>1</sup> not CLYMENELLA according to Banse, 1981

EUCLYMENE Verrill, 1900

- = CAESICIRRUS Arwidsson, 1911
- = ARWIDSSONIA McIntosh, 1915
- = LEIOCEPHALUS Quatrefages, 1865

EUCLYMENE CAMPANULA Hartman, 1969

[TL: Velero St. #4859-57], Southern California, shelf depths, in silty or rocky bottoms with mud (H '69). Off Point Conception, 128 m (L. Harris).

EUCLYMENE DELINEATA Moore, 1923

[TL: Santa Rosa Island, 243-265 fms]. Southern California in slope and basin depths, in mud (H '69).

EUCLYMENE GROSSA NEWPORTI Berkeley & Berkeley, 1941

= CLYMENE (EUCLYMENE) GROSSA NEWPORTI Berkeley & Berkeley, 1941  
[TL: Newport Bay, intertidal]. Southern California, intertidal, in silty mud (H '69).

EUCLYMENE RETICULATA Moore, 1923

[TL: off Santa Cruz Lighthouse, 43-44 fm]. Southern California, in shelf and slope depths, in hard-packed mud and silt (H '69). Near Cedros Island, Baja, in slope depths: 19 mi from Natividad Island Light, 660-600 fm, rock, foram sand; basin depths in Sal si Puedes Basin, Gulf of California: 7 mi from south end Isla Angel de la Guarda, 595 fm; 5 mi from north end Isla las Animas, 774 fms (F '72).

EUCLYMENE ZONALIS (Verrill, 1874)

= PRAXILLA ZONALIS Verrill, 1874  
= PRAXILLA ELONGATA Webster, 1879  
= PRAXILLELLA ELONGATA Webster 1879 in H '59  
= CLYMENE PRODUCTA Lewis, 1897  
= EUCLYMENE (EUCLYMENE) ZONALIS (Verrill), Verrill, 1900  
= EUCLYMENE (MACROCLYMENE) PRODUCTA (Lewis), Verrill, 1900  
? ?MACROCLYMENE ELONGATA (Webster), Hartman, 1951  
= CLYMENELLA ZONALIS (Verrill) Mangum, 1962  
[TL: New England]. Maine to North Carolina, intertidal to 50 m, in sand (M '62). Listed in Hobson & Banse, 1981 without specific locality. West coast Vancouver Island (B & B '52).

EUCLYMENE cf. ZONALIS (Verrill, 1874)

Puget Sound (B et al. '68). Cited in Hobson & Banse 1981 without specific locality.

HETEROCLYMENE Arwidsson, 1907

?HETEROCLYMENE GLABRA Moore, 1923

[TL: off Point La Jolla, 243-280 fms, mud]. Only record is type locality (H '69).

HETEROCLYMENE sp. A

Tanner Bank, 759-903 m, 1975-78 BLM Project (K. Green).

ISOCIRRUS Arwidsson, 1907

ISOCIRRUS LONGICEPS (Moore, 1923)

= PSEUDOCLYMENE LONGICEPS Moore, 1923

[TL: off Point Pinos Light, 56-59 fm, rocks]. California, in shelf and canyon depths, in rocky bottoms; western Canada, in 10-15 fms (H '69).

MACROCLYMENE Verrill, 1900

Synonymized with CLYMENELLA by Mangum 1962, not accepted by later authors.

MACROCLYMENE sp. Banse & Hobson, 1968

Puget Sound, 172-210 m (B & H '68). Listed in Hobson & Banse 1981 without specific locality.

MALDANELLA McIntosh 1885

MALDANELLA sp. A Williams

Mexican abyssal plain (S. Williams)

MALDANELLA CATALINIA (Hartman, 1969) Kudenov & Read, 1974

= AXIOTHELLA CATALINIA Hartman, 1969

[TL: off Ben Weston Point, Santa Catalina Island, in 49 fm, in sandy mud with rocks]. Only record from type locality (H '69). Collected off Santa Rosa Island, 103 m, olive green sand/pebbles, 1975-78 BLM Project (K. Green).

MALDANELLA HARAI (Izuka, 1902)

= CLYMENE HARAI Izuka, 1902

= AXIOTHEA CAMPANULATA Moore, 1903

= MALDANELLA ROBUSTA of Berkeley & Berkeley, 1952 (not Moore, 1906).

[TL: Sagami Bay, Japan]. Japan; Atlantic and Indian Oceans; Okhotsk Sea (I & S '82), Japan; British Columbia and Strait of Juan de Fuca, Washington, 27-140 m; Oregon (B '81);

MALDANELLA ROBUSTA Moore, 1906

[TL: Gulf of Georgia, Canada, 31-90 fm]. Southern California, shelf and canyon depths, in mud; western Canada (H '69). Listed in Hobson & Banse, 1981 without specific locality.

This species is listed as a synonym of M. HARAI by Imajima & Shiraki, 1982, without any discussion; this has not been accepted by other authors.

MICROCLYMENE Arwidsson, 1907

MICROCLYMENE nr. CAUDATA Imajima & Shiraki, 1982

= PRAXILLELLA sp. Hartman, 1960

San Nicolas Basin, 1670 m, and Santa Catalina Basin (H '60). The specimens in the holotype and paratype lots of PRAXILLELLA TRIFILIA Hartman had apparently been mixed up with some of Hartman's 1960 PRAXILLELLA sp., which is actually a MICROCLYMENE species very close to CAUDATA.

PRAXILLELLA Verrill, 1881

= PRAXILLA Malmgren, 1866

= IPHIANISSA Kinberg, 1867

PRAXILLELLA AFFINIS (Sars, 1872)

= CLYMENE AFFINIS Sars, 1872

= PRAXILLELLA AFFINIS AFFINIS in Hobson & Banse, 1981

[TL: Norway]. Western Europe; Atlantic and Pacific Oceans; ?Japan (I & S '82). Houston Passage, British Columbia, 18 fm (B & B '62). Listed in Hobson & Banse 1981 without specific locality.

PRAXILLELLA GRACILIS (Sars, 1861)

= CLYMENE GRACILIS Sars, 1861

= CLYMENE (PRAXILLELLA) GRACILIS of Fauvel, 1927

[TL: Norway]. Southern California north to western Canada, north Atlantic and western Europe; Mediterranean Sea; Japan, 4-2500 m (I & S '82). Southern California north to western Canada, in shelf, canyon and basin depths; in silty mud; north Atlantic and western Europe (H '69). Both shores of north Atlantic; east Pacific from Canada to southern California in shelf, canyon and basin depths; off Cedros Island: 15.5 mi from Natividad Island Light, 461-4333 fms, mud and glauconitic sand, and near mouth of Gulf of California: 12.4 mi off Punta Piedras Light, Isla San Juanito, 810 fms; 30 mi from Cabo Falso, 1235 fm (F '72). Santa Barbara to Oceanside, 48-99 m, silty sand/mud, 1975-78 BLM Project (K. Green).

PRAXILLELLA PACIFICA Berkeley, 1929; emended Imajima & Shiraki, 1982

= PRAXILLELLA AFFINIS PACIFICA Berkeley, 1929

[TL: Western Canada]. Southern California north to western Canada; Japan, 1.5-1650 m (I & S '82). Southern California north to western Canada, common in shelf and canyon depths, in mud (H '69). Point Conception to San Diego, 1975-78 BLM Project (K. Green).

PRAXILLELLA PRAETERMISSA (Malmgren, 1866)

= PRAXILLA PRAETERMISSA Malmgren, 1866

= CLYMENE (PRAXILLELLA) PRAETERMISSA of Fauvel, 1927

[TL: Norway]. Arctic; North Atlantic from Norway to Spain; Mediterranean Sea; Japan, 29-1500 m (I & S '82). Previously in Pacific from Bering Sea, Seas of Okhotsk and Japan; Orcas Island, West Sound, Washington (40 m, mud) (B '81).



PRAXILLELLA TRIFILA Hartman, 1960

[TL: San Nicolas Basin, 1670 m]. Outer basins and canyons of southern California, in deep slope depths (H '69). Off Santa Cruz, San Nicholas and San Miguel Islands, 222-1754 m, 1975-78 BLM Project (K. Green).

Subfamily Lumbriclymeninae Arwidsson, 1907

CLYMENOPSIS Verrill, 1900

CLYMENOPSIS CALIFORNIENSIS Hartman, 1969

= CLYMENOPSIS CINGULATA of Hartman, 1960 (not Ehlers, 1887)

[TL: Catalina Basin, 504 fm, greenish mud]. Outer canyons and basins of southern California, in slope depths, in blue mud (H '69). Off San Diego, 650 (F '72). This species is listed as a synonym of CLYMENOPSIS CINGULATA (Ehlers, 1887) by Imajima & Shiraki, 1982 without any discussion.

LUMBRICLYMENE Sars, 1872

LUMBRICLYMENE LINEUS Hartman, 1960

[TL: Santa Catalina Basin, 1225 m]. Santa Catalina and Tanner Basins, southern California in 1200-1500 m, in silty sand (H '69). Orange County, 434 m (L. Harris).

LUMBRICLYMENE sp. A

San Pedro Basin slope, 504 m and San Nicholas Basin, 940 m, 1975-78 BLM Project (K. Green).

NOTOPROCTUS Arwidsson, 1907

NOTOPROCTUS PACIFICUS (Moore, 1906)

= LUMBRICLYMENE PACIFICA Moore, 1906

? NOTOPROCTUS LINEATUS Moore, 1923 (as N. PACIFICUS)

[TL: off Alaska, 282-293 fms; LINEATUS: southern California, deep water]. Southern California; western Canada and Alaska; Japan, 60-520 fm; 2230-2350 m (I & S '82). Southern California, in shelf and abyssal depths, in green mud; western Canada and Alaska; in considerable depths (H '69). Off Point Conception and Channel Islands, 59-249 m, 1975-78 BLM Project (K. Green).

PRAXILLURA Verrill, 1880

PRAXILLURA MACULATA Moore, 1923

[TL: Off Santa Cruz Island, 447-510 fm]. Offshore islands of southern California, in shelf and slope depths, in silty mud or sand or mixed sediments (H '69). Off Santa Rosa Island and Tanner Bank, 57-100 m, 1975-78 BLM Project (K. Green).

Subfamily Maldaninae Arwidsson, 1907

ASYCHIS Kinberg, 1867

- = CHRYSOTHEMIS Kinberg, 1867
- = SABACO Kinberg, 1867
- = MALDANOPSIS Verrill, 1900
- = LEIOCHONE Grube, 1868, in part

ASYCHIS AMPHIGLYPTA (Ehlers, 1897)

- = MALDANE AMPHIGLYPTA Ehlers, 1897
- [TL: South Georgia, Antarctica]. ?deep water off Panama, 1132 fms (F '72: questionable).

ASYCHIS BICEPS (Sars, 1861)

- = CLYMENE BICEPS Sars, 1861
- = ASYCHIS JEFFREYSII McIntosh, 1915
- = ASYCHIS LACERA (Moore, 1923)
- = MALDANE CONSOBRINA Marion, 1876
- = ASYCHIS LOBATA Fauchald, 1972
- = MALDANE SIMILIS of Treadwell, 1923 (not Moore, 1906)
- [TL: Norway]. Iceland; Greenland; Scotland; Atlantic coast of Europe; California; western Mexico; new to Japan. Holotype of A. LACERA (USNM) was examined; not stated if holotype of A. LOBATA was seen. A. LOBATA is not mentioned except in initial synonymy. All specimens listed in "material examined" (other than A. LACERA holotype) came from Japan; type of A. BICEPS apparently not seen. (I & S '82). 16.45 mi from Natividad Island Light, 709-683 fm, green mud; 12.4 mi 321°T from Puntas Piedros Light, Isla San Juanito, 810 fms; off San Diego, 650 fms (type locality of A. LOBATA); 22°46'45"N, 109°50'15"W, 630 fm, coarse sand, green mud gravel [F'72: discusses difference of LOBATA from LACERA, SIMILIS and GOTOI]. Hobson & Banse (1981) list as valid species DISPARIDENTATA, LACERA, BICEPS and SIMILIS, but add the note "Based on the available literature and the variability of the teeth on the cephalic plate in British Columbia material, Berkeley & Berkeley (1962) surmised that A. SIMILIS and A. LACERA might be synonyms of A. BICEPS."

ASYCHIS DISPARIDENTATA (Moore, 1904)

- = MALDANE DISPARIDENTATA Moore, 1904
- [TL: San Diego Bay, 46-54 fm]. Southern California north to western Canada, in shelf and canyon depths, in coarse sand, shelly mixed bottoms and mud (H '69). Sal si Puedes Basin, Gulf of California: 7 mi off east end Isla Angel de la Guarda, 595 fm; 5 mi from north end Isla las Animas, 753 fms; and La Jolla Canyon, 127 fm (F '72). New to Japan (I & S '82). Collected from Point Conception to San Diego, 1975-78 BLM Project, 32-340 m, silty-mud, silt-clay and silty fine sand (K. Green).

ASYCHIS ELONGATA (Verrill, 1873)

= MALDANE ELONGATA Verrill, 1873

= MALDANOPSIS ELONGATA Verrill, 1900

= BRANCHIOASYCHIS COLMANI Monro, 1939

= BRANCHIOASYCHIS AMERICANA Hartman, 1945

= ASYCHIS AMPHIGLYPTA of Berkeley & Berkeley, 1960; Hartman, 1969  
(not Ehlers, 1897)

[TL: Connecticut]. Maine to Florida, Gulf of Mexico, British Honduras. San Francisco Bay, California. In clay, silt and sandy mud, intertidal to 37 m (L '74).

ASYCHIS GOTOI (Izuka, 1902)

= MALDANE GOTOI Izuka, 1902

= MALDANE CORONATA Moore, 1903

= ASYCHIS nr. GOTOI of Hartman, 1963, 1969

= ASYCHIS SHACCOTANUS Uchida, 1968

[TL: Sagami Bay, Japan, 80 fm]. Japan; Indo-Pacific areas; Adriatic Sea; California. "A. SHACCOTANUS Uchida, 1968 from Hokkaido, in 70-80 m is referred to the present species." No other mention or discussion of this synonymy is made, examination of type of A. SHACCOTANUS not noted (I & S '82).

ASYCHIS RAMOSUS Levinstein, 1961

[TL: Bering Sea]. Sea of Okhotsk in 2416-3940 m; southern part Gulf of California and Central American Trench off Mexico, Guatemala and Panama in similar depths: 15 mi off Punta Oesta, I. Maria Magdalena, 1920 fm; 11.5 mi off Punta Oesta, 1860 fm; 87.5 m off Creston Island Light, Mazatlan, 1340 fm; 31.5 mi off Punta San Telmo Light, 1250 fm; Panama, 1020 fm, green mud; Guatemala, 1965-1990 fm (F'72). 1000-2865 m, Yaquina Bay, Oregon (F & H '81).

ASYCHIS SIMILIS (Moore, 1906)

= MALDANE SIMILIS Moore, 1906

[TL: off Alaska, in 282-293 fms]. Alaska to California (H '48). British Columbia (B & B '62). Cited in Hobson and Banse 1981 without specific locality.

BATHYASYCHIS Detinova, 1982

BATHYASYCHIS CRISTATUS Detinova, 1982

[TL: Off Oregon]. Pacific coast of America, 2,826 to 4,230 meters (D '82).

CLYMALDANE Mesnil & Fauvel, 1939

CLYMALDANE is not considered part of the subfamily Maldaniae by K. Green (1984, unpublished thesis).

CLYMALDANE LAEVIS Fauchald, 1972

[TL: near Cedros Island, Baja, in abyssal depths - 1431-1490 fm].  
Type locality; 19 mi from Natividad Island, Baja, 660-600 fm, rock,  
foram sand (F '72). Yaquina Bay, Oregon, 2000 m (F & H '81).

MALDANE Grube, 1860

= HETEROMALDANE Ehlers, 1908  
= LEIOCHONE Grube, 1868, in part

MALDANE CRISTATA Treadwell, 1923

[TL: Point Sur, California, 475 fm]. Southern California and  
western Mexico; in slope, basin and canyon depths, in mud (H '69).  
Southern California to western Mexico; Japan (I & S '82). The type  
locality has been erroneously reported in western Mexico but is  
actually Point Sur according to Albatross station logs. The syntype of  
M. CRISTATA was compared to type material of M. SARSI, and is con-  
sidered synonymous by K. Green (1984, unpublished thesis).

MALDANE CUCULLIGERA subspecies A K. Green, mss.

Orange County, 615-625 m; Santa Monica Bay, 578 m (L. Harris).  
Point Dume to Oceanside, 85 to 625 m (K. Green '84).

MALDANE MONILATA Fauchald, 1972

[TL: 12 mi from Punta Oeste, Isla Maria Magdalena, 1743 fm].  
Several localities in the southern part of the Gulf of California, in  
the upper end of the Central American Trench, and in the same trench  
off Panama (F '72). Yaquina Bay, central Oregon, 2000 and 2400 m (F &  
H '81). Considered a subspecies of M. CUCULLIGERA by K. Green (1984,  
unpublished thesis).

MALDANE GLEBIFEX Grube, 1860

[TL: Adriatic Sea]. San Diego Trough, 1420 m, mud; western  
Canada; Mediterranean Sea (H '69). Adriatic Sea, Mediterranean Sea,  
Atlantic Ocean off west coast of France.

MALDANE SARSI Malmgren, 1865

[TL: Arctic Ocean]. Southern California north to western Canada;  
in shelf, slope and canyon depths, in mud; cosmopolitan (H '69).  
Eastern and western Pacific Ocean from Antarctica to Alaska and Japan,  
Seas of Arctic Ocean, Baffia Bay, Davis Strait, Skagerrak, 3-3034 m  
(KG '84).

SONATSA Chamberlin, 1919

SONATSA CARINATA (Moore, 1923) Green, in press

= ASYCHIS sp. C of 1975-78 BLM Project

= MALDANE CARINATA Moore, 1923

[TL: off San Clemente Island, 654-704 fm, green mud]. Type locality; doubtful specimen off Santa Rosa Island, 31-45 fm, mud and sand; anterior end, off Point Pinos Lighthouse, 1073 fm, mud (Moore, 1923). Off Santa Catalina Island, 851-1239 m; Santa Barbara Channel, 1206 m; San Nicolas Basin, 922-953 m; Santa Cruz Basin, 1874 m; Tanner Bank, 1054 m; from 1975-78 BLM Project (K. Green). San Diego Trough (S. Williams).

SONATSA MERIDIONALIS Chamberlin, 1919

[TL: between Galapagos Islands and Peru, 5°42'S, 83°W, 4063 m, sticky grey mud]. Off Guatemala and Peru in Peru-Chile Trench, 3594-4609 m; in Kurile-Kamchatka Trench, off Kamchatka, 3520 m (K. Green '84).

Subfamily Nicomachinae Arwidsson, 1907

MICROMALDANE Mesnil, 1897

MICROMALDANE ORNITHOCHAETA Mesnil, 1897

[TL: France]. Hardy Bay, British Columbia, 80 fm (B & B '62). Listed in Hobson & Banse 1981 without specific locality.

NICOMACHE Malmgren, 1865

NICOMACHE LUMBRICALIS (Fabricius, 1780)

= SABELLA LUMBRICALIS Fabricius, 1780

= NICOMACHE BENTHALIANA McIntosh, 1885

= NICOMACHE CAPENSIS McIntosh, 1885

= NICOMACHE CARINATA Moore, 1906

[TL: Greenland]. Greenland; North Sea; Kara Sea; Bering Sea; Pacific Coast of North America; Japan (I & S '82). California north to Alaska; in shelf and slope depths, to 1400 fms; circumboreal; western Europe (H '69).

NICOMACHE PERSONATA Johnson, 1901

[TL: Alki Point, Washington]. California, north to Alaska, in shelf and slope depths, in mixed and rocky bottoms (H '69); Pacific Coast of North American from southern Alaska to Vancouver; Japan (I & S '82). Santa Rosa and San Clemente Islands, intertidal, 1975-78 BLM Project (K. Green).

PETALOPROCTUS Quatrefages, 1865  
= NICOMACHELLA Levinsen, 1884

PETALOPROCTUS BOREALIS Arwidsson, 1907, emended Imajima & Shiraki,  
1982  
= PETALOPROCTUS TENUIS var. BOREALIS Arwidsson, 1907  
= PETALOPROCTUS TENUIS BOREALIS in Hobson & Banse, 1981  
[TL: Sweden]. Sweden; North Sea; Okhotsk Sea; Pacific Coast of  
North America; Japan, 210, 250 and 1680 m (I & S '82). Listed in  
Hobson & Banse 1981 without specific locality.

PETALOPROCTUS NEOBOREALIS Hartman, 1969  
[TL: off San Diego, 17.1 m, in sediments of rocky, pebbles,  
gravel]. Only record type locality (H '69). Santa Monica Bay, 60 m (L.  
Harris).

PETALOPROCTUS ORNATUS Hartman, 1969  
[TL: Palos Verdes Point, in 251 fm, mud and sand]. San Pedro sea  
valley, in 251-400 fms, in silty mud with sand (H '69). San Pedro sea  
valley; continental slope off Baja, 31 mi from Cabo Falso, 1450 fms  
(F '72). Off Santa Cruz and San Nicholas Islands, 463-913 m, silty  
mud/sand, 1975-78 BLM Project (K. Green).

PETALOPROCTUS TENUIS (Theel, 1879)  
= MALDANE TENUIS Theel, 1879  
[TL: Novaya Zemlya; Arctic Ocean]. Listed in Hobson & Banse,  
1981 without specific locality. Off Point Dume, 118 m, 1975-78 BLM  
Project (K. Green).

Subfamily Rhodininae Arwidsson, 1907

RHODINE Malmgren, 1865

RHODINE BITORQUATA Moore, 1923 (24, p. 223)  
[TL: Monterey Bay, in 75 fm, mud]. Southern California north to  
western Canada, in shelf, slope, basin and canyon depths, in soft  
sediments (H '69). Western Canada to southern California in all  
depths. Slope depths off Cedros Island: 27 mi from Cabo Falso,  
1400 fm, and Cabo Falso, Baja; 5 mi from north end Isla las Animas,  
770 fm; 4.5 mi from north end Isla las Animas, 682 fm, and from Sal si  
Puedes Basin, Gulf of California in basin depths: 81 mi from Creston  
Island Light, Mazatlan, 1360 fms (F '72). Santa Barbara to San Diego,  
45-1000 m, 1975-78 BLM Project (K. Green).

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SCAMIT Codes: LACO 48, AHF 31

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Synonymy:

Maldane disparidentata Moore, 1904

Literature:

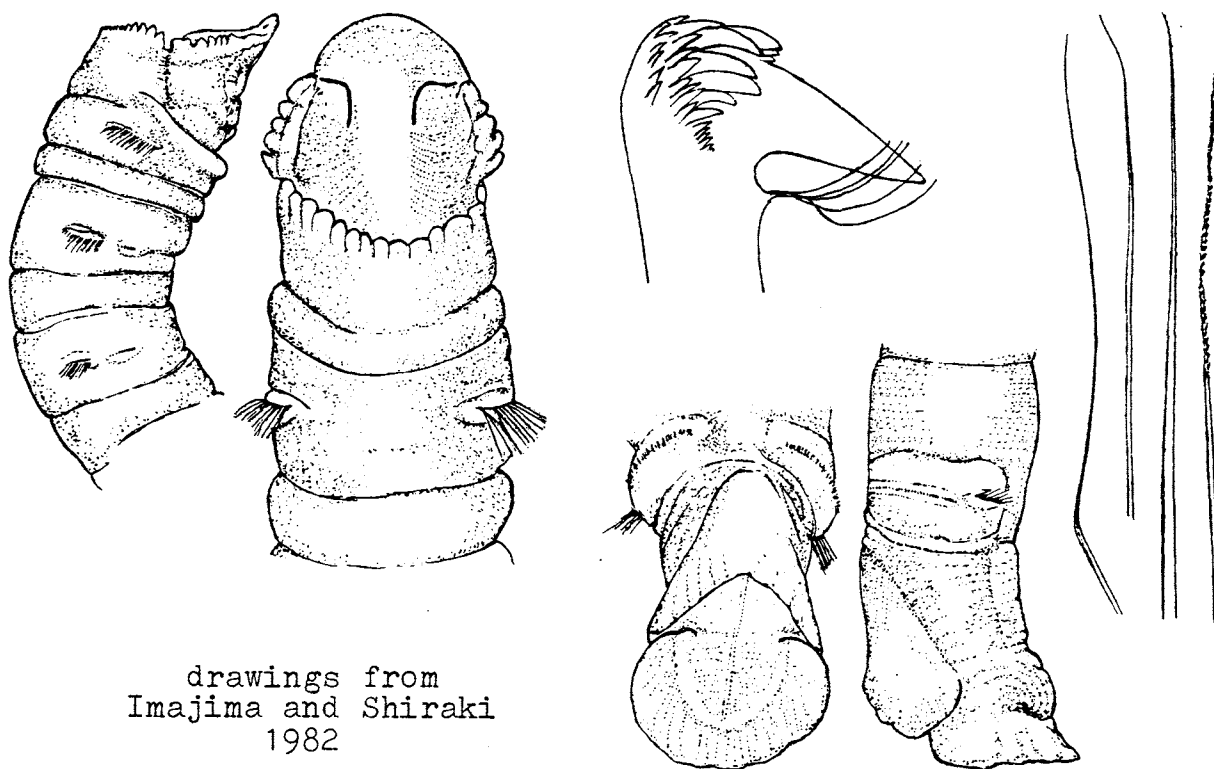
Hartman, 1969  
Fauchald, 1972  
Imajima and Shiraki, 1982

Diagnostic characters:

1. 19 setigerous segments, no asetous preanal glandular pads.
2. Cephalic plaque with serrate lateral and posterior margins. Prostomial palpode broadly rounded, keel of moderate length and low, and nuchal organs short-moderate length with curved tips.
3. Anal plaque divided into two smooth lobes; enlarged dorsal lobe petaloid in shape, ventral margin forms deep funnel-like pocket.
4. First setiger with ventral collar-like fold.

Distribution:

Western Canada south to Gulf of California; Japan. Shelf, basin, and canyon depths in coarse sand, shelly mixed sediments, silty sands, and mud.



drawings from  
Imajima and Shiraki  
1982

SCAMIT Code: CMM 6

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Literature:

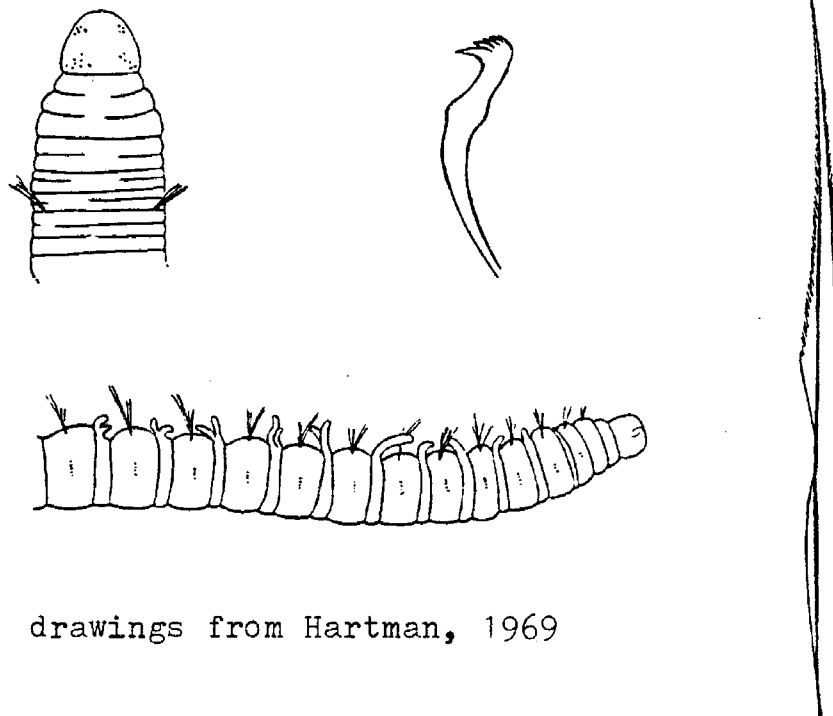
Berkeley and Berkeley, 1932  
Hartman, 1969

Diagnostic characters:

1. Body cylindrical, prostomium and pygidium rounded.
2. Branchiae on median and posterior segments.
3. Notosetae and neurosetae from first setiger. Capillaries with fimbriated margins in notopodia; long-handled rostrate uncini in neuropodia.

Additional notes:

1. The SCAMIT voucher agrees well with the description of Protocapitella simplex Berkeley and Berkeley, 1932, which was synonymized with Branchiomaldane vincenti. That is, branchiae start on setiger 27 and 2 pairs of eyes are present on the prostomium. The genus is currently being revised by J. Fournier.



drawings from Hartman, 1969



SCAMIT Codes: LACO 47, PL 58

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Literature:

Arwidsson, 1907  
Fauvel, 1914  
Green, 1984

Diagnostic characters:

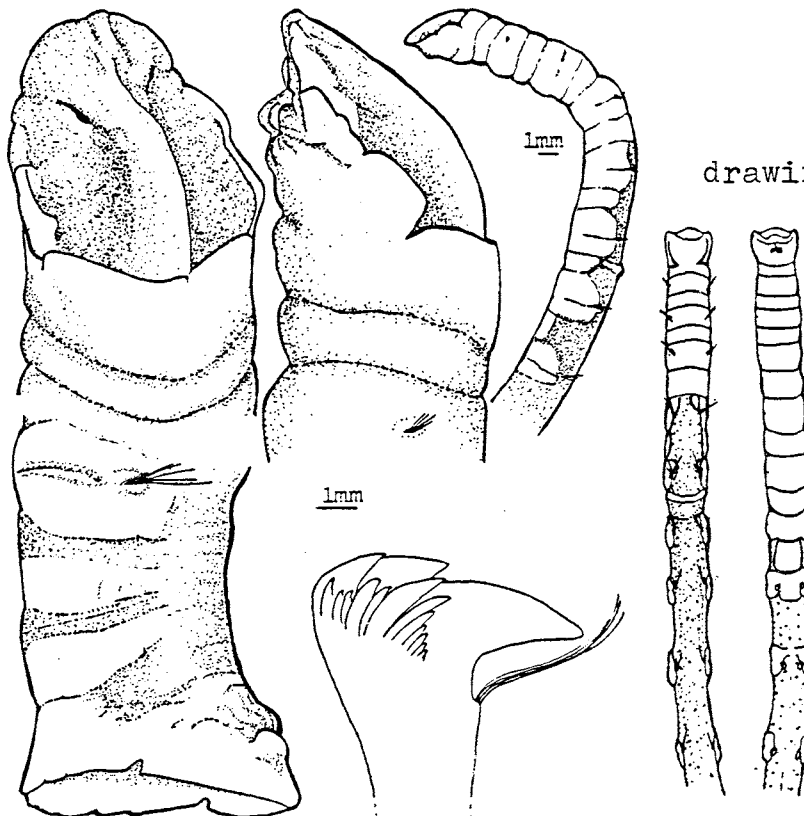
1. 19 setigerous segments, 2 asetous preanal glandular pads.
2. Cephalic plaque with smooth lateral and posterior margins. Posterior margin forms deep pocket. Prostomial palpode semi-triangular, keel long and high, and nuchal organs short and gently curved.
3. Anal plaque divided into two reduced lobes; dorsal margin smooth, ventral margin smooth to crenulate.
4. Dorsal glandular band behind glandular tori of setiger 5.

Additional notes:

The syntype of Maldane cristata and type material of M. sarsi were examined and are equivalent; records of M. glebifex from the eastern Pacific are questionable (Green, 1984; unpublished thesis).

Distribution:

Alaska south to Antarctica, Japan, Arctic Ocean, Baffin Bay, Davis Strait, and Skagerrak. Depths from 3 to 3034 m.



drawings from Green, 1984

SCAMIT Codes: MBC 29, SCCWRP 53

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Synonymy:

Lumbriclymene pacifica Moore, 1906

Literature:

Hartman, 1969  
Hobson and Banse, 1981  
Imajima and Shiraki, 1982

Diagnostic characters:

1. Prostomium and pygidium plaque-like but without distinct margins.
2. 19 setigerous segments, 2 preanal asetous glandular pads.
3. Nuchal organs transverse; anal pore dorsal.
4. Anterior 4 setigers with acicular neurospines.
5. Red pigment patch on cephalic plate; white glandular bands at anterior margins of anterior 5-6 setigers.

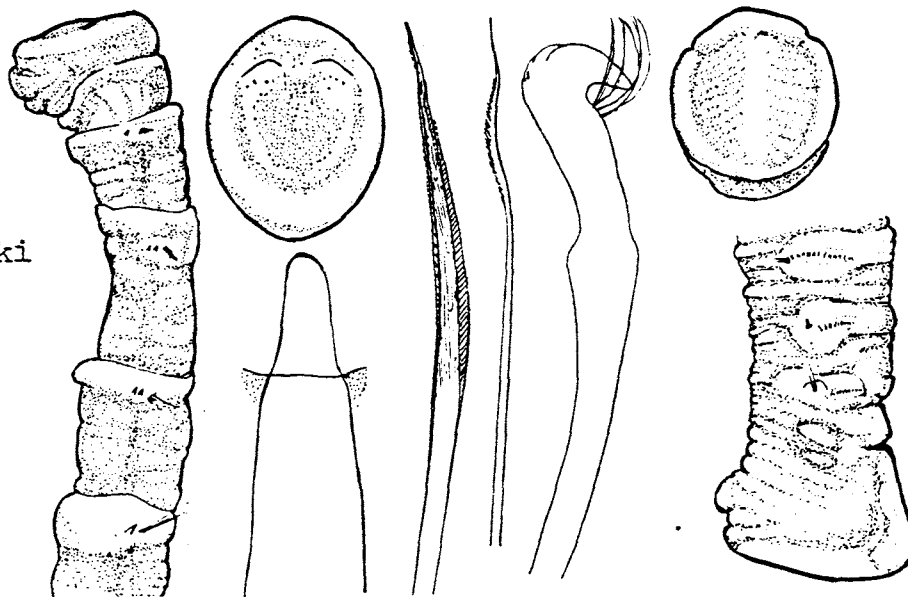
Additional notes:

1. Only one asetous preanal glandular pad may be obvious on small specimens.
2. Occasionally setiger 19 may be without setae so that there are 3 posterior achaetous segments (Hobson and Banse, 1981).

Distribution:

Alaska south to southern California; Japan. Shelf to abyssal depths.

drawings from  
Imajima and Shiraki  
1982



SCAMIT Code: PL 59

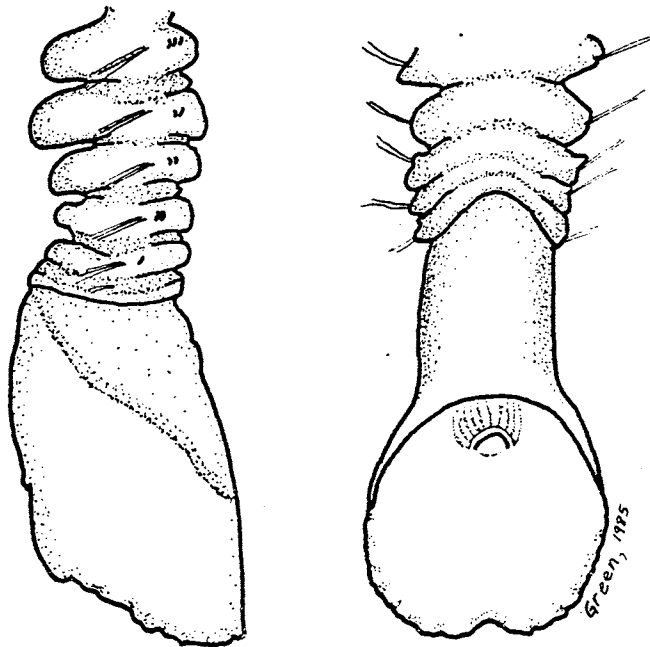
Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Diagnostic characters:

1. Anal plaque asymmetrical with dorsal side reduced.
2. Anal pore below center near ventral margin of plaque.

Additional notes:

1. The anal plaque is superficially similar to that of Asychis disparidentata. However, the anal pore is dorsal and both dorsal and ventral margins of the plaque are well developed in A. disparidentata.



SCAMIT Codes: AHF 33, MBC 28

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Literature:

Hartman, 1969; Hobson and Banse, 1981

Diagnostic characters:

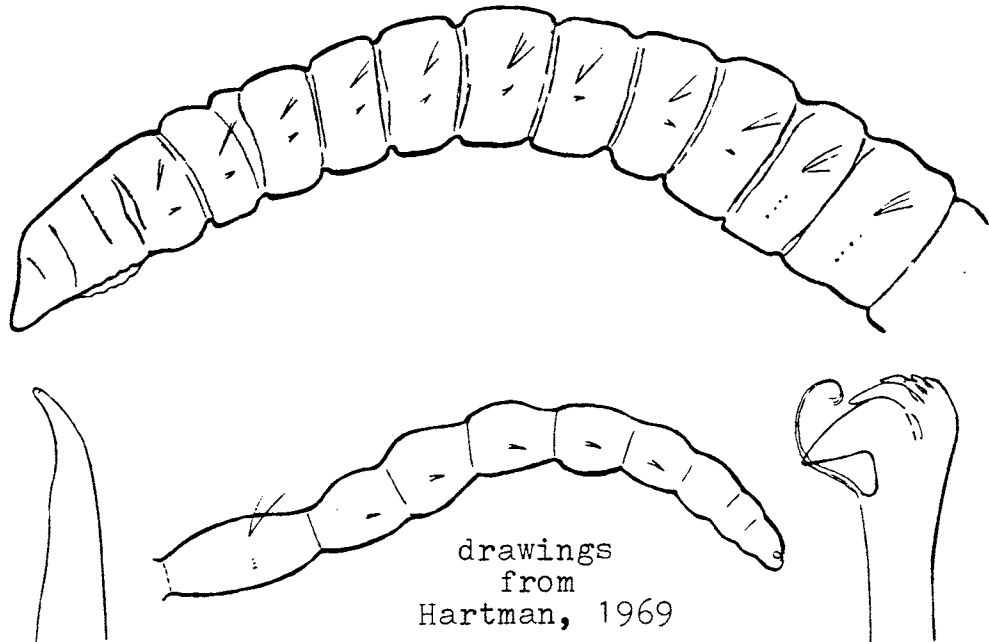
1. Variable number of setigerous segments, 2 asetous preanal segments.
2. No cephalic or anal plaques.
3. Mouth a longitudinal fissure; anal pore opens on dorsal side with ventral anal plug.
4. Anterior 7-9 setigers and posterior 5 setigers with acicular neurospines. Last 5 setigers without notosetae.
5. Anterior and posterior ends mottled with red-brown pigment.

Additional notes:

1. SCAMIT vouchers differ from the above description by having only 3 posterior setigers without notosetae and by lacking preanal asetous segments.
2. A small specimen (34mm by 0.5mm) from Point Loma only had 5 anterior setigers with neurospines.
3. Additional study is needed to determine whether the above-mentioned variability is size related or whether more than one species occurs off southern California.

Distribution:

Western Canada to southern California in shelf and slope depths.



drawings  
from  
Hartman, 1969

SCAMIT Code: AHF 32

Date examined: March 3, 1985  
Voucher by: Karen Green (MEC)

Literature:

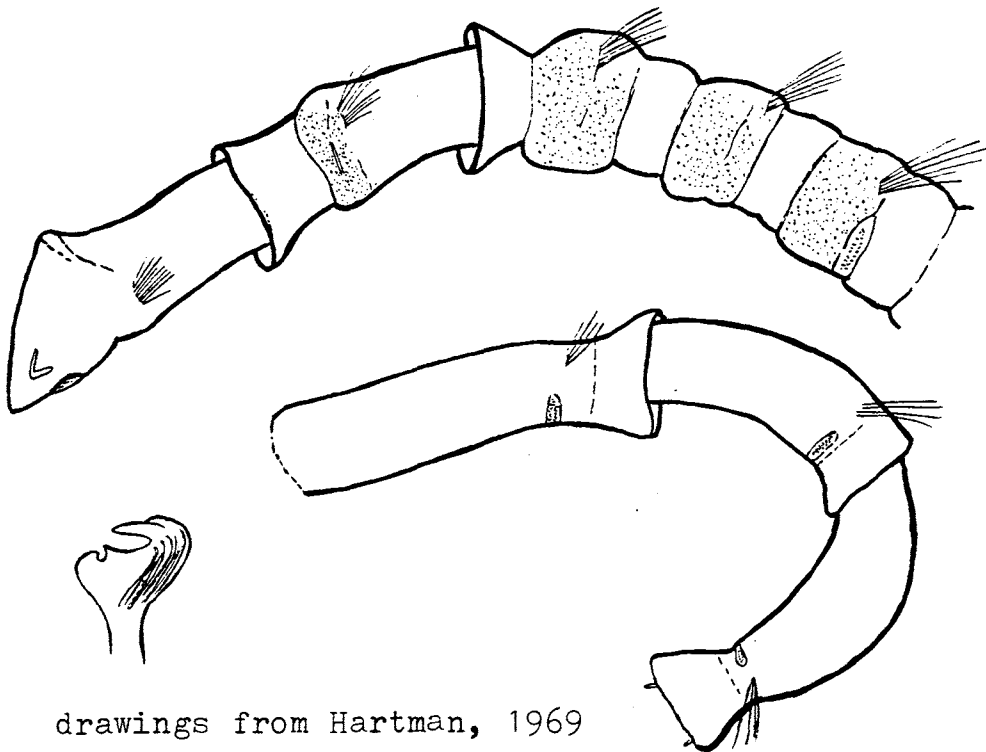
Hartman, 1969

Diagnostic characters:

1. No cephalic or anal plaques.
2. Prostomium with posterior dorsal ridge, "v"-shaped nuchal organs, and median keel.
3. Pygidium tapers to terminal anus with anal plug.
4. Anterior 4 setigers with notosetae only; neurosetae in double rows from setiger 5.
5. Collars directed forward on setigers 2 and 3; collars directed posteriorly from setiger 15-16 to end of worm.

Distribution:

Western Canada to southern California in shelf, basin, and canyon depths.



drawings from Hartman, 1969