Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

May, 1993 Vol. 12, No. 1

NEXT MEETING:	Cirratulidae and Dorvilleidae
GUEST SPEAKERS:	Drs. James Blake and Brigitte Hilbig of Battelle New England Marine Research Laboratory, Duxbury, Massachusetts
DATE:	June 21, 1993
TIME:	9:30am-3:00pm
LOCATION:	1036 Buena Vista Drive, (Larry's Home) Vista, California **(map is included)**

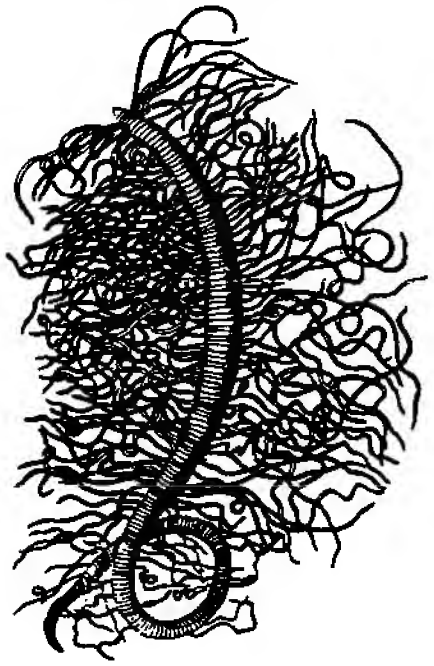


Figure from Polychaeta of the Far Eastern Seas of the U.S.S.R. by P. V. Ushakov, 1965

JUNE 21 MEETING

The Isopod meeting originally scheduled for June 14 has been postponed until September. The next meeting will occur on June 21 and will be held at Larry Lovell's house. Dr. James Blake plans to discuss Cirratulidae in the morning and Dr. Brigitte Hilbig will talk about Dorvilleidae (emphasis on the smaller species) in the afternoon. Please bring any cirratulid or dorvilleid specimens of interest or concern for feedback from Drs. Blake and Hilbig.

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

MINUTES FROM MEETING ON MAY 10

It was announced that the 1993 Western Society of Malacologists meeting will be held at La Jolla, California from June 27 to July 1, 1993. The site of the meetings will be Radisson Hotel La Jolla (formerly La Jolla Village Inn). Included in this year's agenda is a "Contemporary Research on Mollusca" symposium and a "Malacofauna of western Mexico" symposium.

The Southern California Academy of Sciences annual meeting is scheduled for June 4-5, 1993 at California State University, Long Beach. The index to program and general information is included in this newsletter.

Larry Lovell mentioned an article that may be of some interest to SCAMIT members. The article is entitled Megabenthic Assemblages of Coastal Shelves, Slopes, and Basins off Southern California written by Dr. Bruce Thompson, David Tsukada, and Jimmy Laughlin. It is in the Southern California Academy of Sciences Bulletin (April 1993, volume 92, number 1).

Enclosed in this newsletter is the 1992-93 Treasury's Report.

The rest of the meeting was devoted to resolving the master species list containing the four major dischargers and discussing the addition of the smaller dischargers.

FUTURE MEETINGS

The meeting on July 12, 1993 will cover Sabellidae Polychaeta. Dr. Kirk Fitzhugh will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). It will be held in the new polychaete lab at Los Angeles County Museum of Natural History. Please begin organizing specimens now and send them to Kirk prior (preferably) or bring them to the meeting.

The August 9, 1993 meeting will be the final SCAMIT meeting concerning the master species list of the southern California benthos and will include continued discussion on the addition of the smaller dischargers. It will be at the Cabrillo Marine Museum, San Pedro, Ca.

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

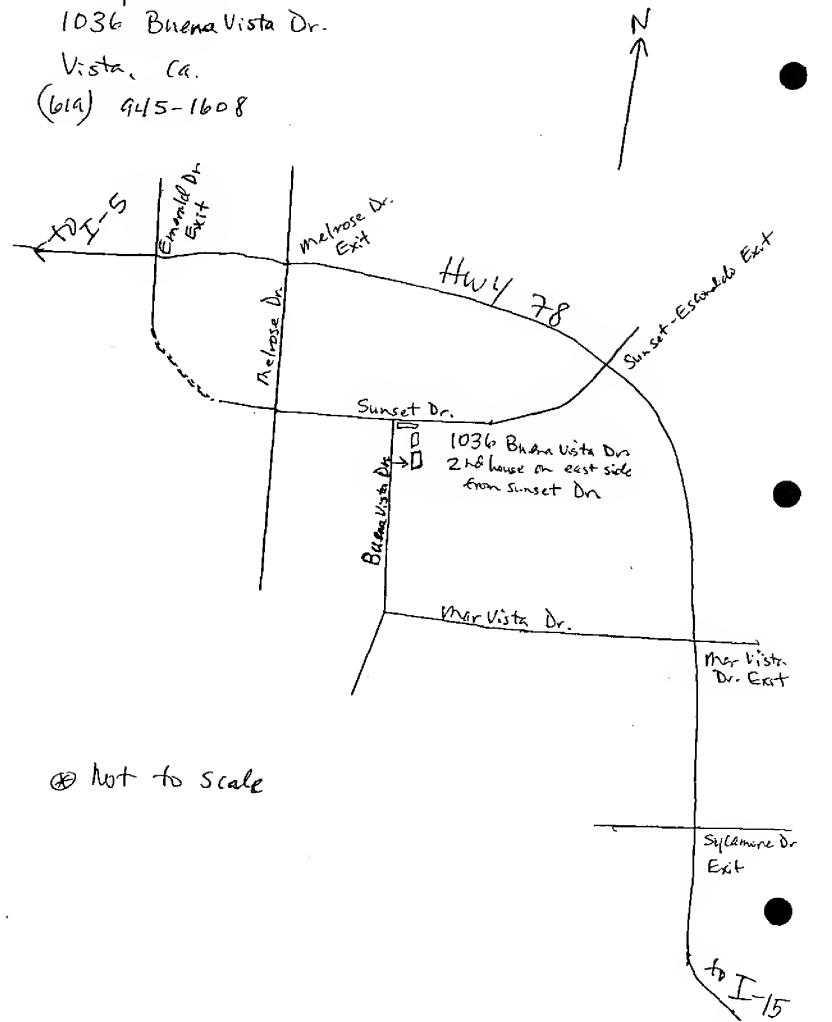
President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

SCAMIT TREASURY SUMMARY, 1992-93

During the past fiscal year, April 1992 through March 1993, the major expense was the newsletter for printing,postage, and supplies, $1856.90. Two publication grants were awarded to Gretchen Lambert for an ascidian paper ($400) and Larry Lovell for a polychaete paper ($487.50). Few grants were awarded pending results of an RFP to SCCWRP for creating a list of southern California soft bottom species. This contract was awarded in January and the first installment of $5000 was received in February. This money will be used for SCAMIT's puplication support program. SCAMIT's secondary source of income, $1684.00, came from membership dues. The following is a summary of the expenses and income:

Expenses	
Newsletter	$1856.90
Grants	887.50
Workshops	662.97
Miscellaneous	346.10
Total	**$4753.47**
Income	
SCCWRP Contract	$5000.00
Dues	1685.00
Interest	66.83
T-Shirts	0
Donations	0
Miscellaneous	20.00
Total	**$6771.83**
Account balance (March 31, 1993)	
Savings	$5540.11
Checking	1133.45
Total	**$6673.56**

Larry Lovell
1036 Buena Vista Dr.
Vista, Ca.
(619) 945-1608



⊛ Not to scale

INDEX TO PROGRAM

Room locations are listed by these abbreviations:
Lecture Hall LH1
Peterson Hall.....PH1
Science Lecture Hall...SCL

GENERAL INFORMATION

HOW TO GET HERE: From the north (Los Angeles or Long Beach Airports) proceed south on San Diego Freeway (405) to the Bellflower Blvd. exit in Long Beach; turn left at end of off-ramp and go one-half block to Bellflower Blvd; right on Bellflower for approximately one mile, go past the main entrance to the university to 7th Street; left on 7th Street to second stoplight at West Campus Dr.; left onto campus and follow signs to Information Booth. From the south (Orange County John Wayne Airport) you take the 405 Freeway north to Long Beach; exit on the 7th Street exit and continue to the second stoplight at East Campus Dr.; right onto campus and follow signs to Information Booth. Look for an 8 story building fronting on 7th Street; the information booth is adjacent to it.

PARKING: Visitor Parking is near 7th Street and will be available in Parking Lots 6,7 and 8. Please see the person in the Information Booth for access and directions. The centerfold in this program is your parking permit; pull it out of the booklet and place on your dashboard.

REGISTRATION: Opens 7:30 a.m. in the breeze-way outside of the Peterson Hall 1 Lecture Halls. Those pre-registered should check in at the Pre-registration desk. For those registering at the meeting, fees are: Member: $35; Non-member: $40; Student: $15. Barbeque Tickets: $20 (However, because of the need for advanced reservations, very few barbeque tickets may be available at the desk).

SLIDES: These should be given to the projectionist in the room where the paper will be delivered. Morning speakers should deliver their slides by 8:30 a.m.; afternoon speakers by 12:30 p.m. Please bring your slides, in correct order, in your own tray or carousel and have your name on it.

AWARDS:

- ARCO Best Environmental Science Paper Award
- Association of Fisheries Research Biologists Best Fish Biology Paper Award
- Durham Memorial Best Vertebrate Zoology Paper Award
- Southern California Botanists Best Botanical Paper Award
- 4 SCAS Best Paper Awards in Open Categories

*THROUGHOUT THIS PROGRAM, an asterisk indicates a student paper to be considered for award.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

June, 1993 Vol. 12, No. 2

NEXT MEETING:	Sabellidae
GUEST SPEAKER:	Dr. Kirk Fitzhugh of the Los Angeles County Museum of Natural History, Los Angeles, CA
DATE:	July 19, 1993
TIME:	9:30am-3:00pm
LOCATION:	New Polychaete Lab at Los Angeles County Museum of Natural History Los Angeles, CA (enter at staff entrance as usual)

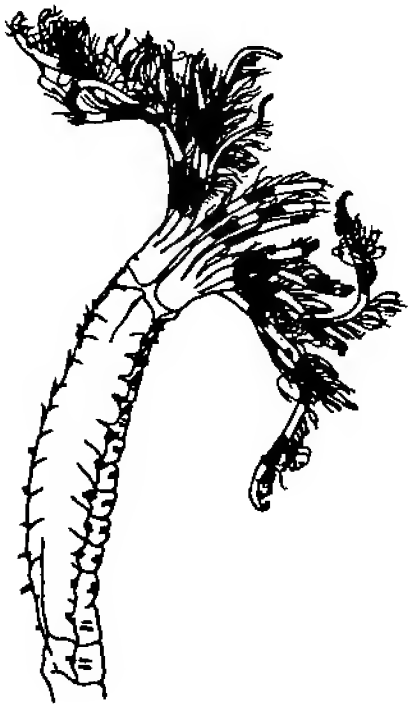


Figure from Polychaetes of the Northern Gulf of Mexico Vol.VII by Barry A. Vittor and Associates, Inc.

JULY 19 MEETING

The July 19 meeting will cover Sabellidae Polychaeta. Dr. Kirk Fitzhugh will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). It will be held at the Los Angeles County Museum of Natural History. Please begin organizing specimens now and send them to Kirk prior (preferably) or bring them to the meeting.

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MINUTES FROM MEETING ON JUNE 21

Ron Velarde announced that the 74th Annual Meeting of the Western Society of Naturalists in conjunction with the American Society of Zoologists (ASZ) will be held December 26-30, 1993 at the Hilton and Hyatt Regency in Los Angeles, California.

Larry Lovell stated that SCAMIT should think about organizing a volume for a future Southern California Academy of Sciences (SCAS) bulletin containing Southern California fauna. If anyone is interested or has any ideas please contact Larry at:

1036 Buena Vista Dr.
Vista, CA 92083
(619) 945-1608

Dr. Jim Blake started the morning by discussing the MMS Taxonomic Atlas of the Benthic Macrofauna of the Santa Maria Basin and Western Santa Barbara Channel. Included in the newsletter is the outline of the 14 volumes and the authors for each section. The first volume is scheduled to be released in three to four weeks. Paul Scott of the Santa Barbara Museum of Natural History will have an announcement in a future newsletter about subscribing to the atlas.

Dr. Blake announced to the group about the passing away of Ralph Smith (U. C. Berkeley). He also stated that the 4th edition of Light's and Smith's Manual by Jim Carlton is being planned and information in the manual will be expanded to cover the California/Oregon border to Point Conception.

Dr. Brigitte Hilbig then discussed Dorvilleidae. She presented illustrations of 5 species that will appear in the MMS Atlas. The five species are *Dorvillea* (*Schistomeringos*) *longicornis* (Ehlers, 1901), *Parougia batia* (Jumars,1974),*Dorvillea* (*Schistomeringos*) *annulata* (Moore, 1906), *Parophryotrocha* n. sp. and *Pettiboneia brevipalpa* Hilbig and Ruff, 1990. Included in this newsletter is a copy of her Dorvilleidae key. In her key, the Genera marked with an asterisk are not included in the Atlas. The species *Parougia caeca* (Webster and Benedict) marked with an asterisk means that it should show up in So. California, but she did not find it in the Santa Maria Basin. Brigitte also stated that the presence/absence of furcate setae is a variable character and shouldn't be relied upon. Instead she said the jaws should be used for identification. The larger specimens can be opened dorsally and the smaller specimens can be cleared in 10% KOH for an hour or two (check every 20 minutes).

In the afternoon Dr. Blake reviewed Cirratulidae. The first Genus discussed was *Chaetozone*. *Chaetozone armata* Hartman, 1963 and *C. corona* Berkeley and Berkeley, 1941 are valid species. *Chaetozone gracilis* (Moore, 1923) and *C. spinosa* Moore,1903 are both valid, but occur at depths of 2,000 m or greater. As noted, *C. multioculata* Hartman,1961 is actually *Cirratulus cirratus* (Muller, 1776). C.. cf *setosa* Malmgren, 1867 as reported in California appears to be a complex of species and still needs to be discerned. The common specimens in the Santa Maria Basin are a new species. The Genus *Caulleriella* was then discussed. The type material of *Caulleriella gracilis* was reviewed by Blake and further information will be forthcoming. *C. hamata* as reported by Hartman, 1969 is valid but probably does not occur in California. The California specimens represent a new species. The next Genus discussed was *Monticellina* (denticulate setae). The species Blake presented were

Monticellina tesselata (Hartman, 1960), *M.* n. sp. (Blake), *M. dorsobranchialis* (Kirkegaard, 1959), and a new species of Tony Phillip's *M.* sp B (Hyperion). Another Genus discussed was *Aphelochaeta* (smooth setae). The species described were *Aphelochaeta monilaris* (Hartman, 1960), *A. marioni* (Saint-Joseph, 1894), and two descriptions of *A. multifilis*. (Moore, 1909). He is also preparing two new species of *Tharyx*. One occurs in deep water near San Francisco and the other is an introduced species occuring in San Francisco Bay.

FUTURE MEETINGS

The August 9, 1993 meeting will be the final SCAMIT meeting concerning the master species list of the southern California benthos and will include continued discussion on the addition of the smaller dischargers. It will be at the Cabrillo Marine Museum, San Pedro, CA.

The meeting in September will be on Anthurid Isopods with Dr. Rick Brusca of the San Diego Natural History Museum and Don Cadien of the Los Angeles County Sanitation Districts. It will be held at the San Diego Natural History Museum, San Diego, CA.

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TAXONOMIC ATLAS OF THE BENTHIC MACROFAUNA OF THE SANTA MARIA BASIN AND WESTERN SANTA BARBARA CHANNEL

Volume 1: Introduction, Benthic Ecology, Oceanography, Platyhelminthes, and Nemertea

Introduction to the Taxonomic Atlas - Blake
Physical Description of the Santa Maria Basin and Western Santa Barbara Channel - Blake and Lissner
Benthic Soft-substrate Community Ecology of the Santa Maria Basin and Western Santa Barbara Channel - Blake
Benthic Hard-substrate Community Ecology of the Santa Maria Basin and Western Santa Barbara Channel - Lissner and Benech
Platyhelminthes - Hilbig and Blake
Nemertea - Blake

Volume 2: Porifera (Green and Bakus) (done)

Volume 3: Cnidaria
Anemones - Fautin (done)
Hydroids (Hochberg)
Corals (Hochberg)

Volume 4: Annelida Part 1 (volume completed)

Introduction to the Annelida (Blake and Erséus) (done)
Oligochaeta (Erséus) (done)
Introduction to the Polychaeta (Blake) (done)
Polychaeta:
Order Phyllodocida
Family Phyllodocidae (Blake) (done)
Family Lacydoniidae (Blake) (added family, done)
Family Glyceridae (Hilbig) (done)
Family Goniadidae (Hilbig) (done)
Family Sphaerodoridae (Kudenov) (done)
Family Hesionidae (Hilbig) (done)
Family Pilargidae (Blake) (done)
Family Nautiliniellidae (Blake) (added family, done)
Family Nephtyidae (Hilbig) (done)
Family Paralacydoniidae (Blake) (added family, done)
Family Nereididae (Hilbig) (done)

Volume 5: Annelida Part 2

- Order Phyllodocida (Continued)
  - Family Syllidae (Kudenov and Harris)
  - Family Aphroditidae (Blake) (done)
  - Family Polynoidae (Ruff)
  - Family Acoetidae (Blake) (done)
  - Family Pholoidae (Blake) (done)
  - Family Sigalionidae (Hilbig)
  - Family Chrysopetalidae (not represented)
- Order Amphinomida
  - Family Amphinomidae (Kudenov) (done)
  - Family Euphrosinidae (Kudenov) (done)
- Order Eunicida
  - Family Onuphidae (Hilbig)
  - Family Eunicidae (Hilbig) (done)
  - Family Lumbrineridae (Hilbig) (done)
  - Family Arabellidae (Hilbig) (done)
  - Family Dorvilleidae (Hilbig) (done)

Volume 6: Annelida Part 3

- Order Orbiniida
  - Family Orbiniidae (Blake) (done)
- Order Spionida
  - Family Apistobranchidae (Blake) (done)
  - Family Spionidae (Maciolek, Blake)
  - Family Trochochaetidae (not represented)
  - Family Poecilochaetidae (Blake)
- Order Chaetopterida
  - Family Chaetopteridae (Blake)
- Order Magelonida
  - Family Magelonidae (Blake)
- Order Cirratulida
  - Family Paraonidae (Blake)
  - Family Questidae (not represented)
  - Family Cirratulidae (Blake)
  - Family Ctenodrilidae (Blake)
- Order Cossurida
  - Family Cossuridae (Blake, Hilbig)
- Order Flabelligerida
  - Family Flabelligeridae (Light)
  - Family Acrocirridae (Light)
  - Family Fauveliopsidae (Hilbig)
- Order Opheliida
  - Family Opheliidae (Blake)
  - Family Scalibregmatidae (Blake)
- Order Sternaspida
  - Family Sternaspidae (Blake)

Volume 7: Annelida Part 4

- Order Capitellida
  - Family Capitellidae (Ruff)
  - Family Maldanidae (Light)
- Order Oweniida
  - Family Oweniidae (Blake)
- Order Terebellida
  - Family Pectinariidae (Blake)
  - Family Sabellariidae (Blake)
  - Family Ampharetidae (Hilbig)
  - Family Trichobranchidae (Hilbig)
  - Family Terebellidae (Hilbig)
- Order Sabellida
  - Family Sabellidae (Ruff)
  - Family Serpulidae (Ruff)

Volumes 8: Mollusca Part 1

- Gastropoda
  - Opisthobranchiata (Gosliner) (November)
  - Prosobranchiata (McLean) (August)

Volume 9: Mollusca Part 2

- Aplacophora (Scheltema) (September)
- Polyplacophora (Eernisse) (done, August)
- Bivalvia (Scott) (done)
- Scaphopoda (Shimek) (done)
- Cephalopoda (Hochberg) (done)

Volume 10: Arthropoda Part 1

- Introduction (Watling)
- Pycnogonida (Cadien, Dojiri)
- Crustacea
  - Cirripedia (Watling)
  - Decapoda (Martin)
    - Mysidacea (Williams)
    - Euphausiacea (Watling)

Volume 11: Arthropoda Part 2

- Peracarida
  - Cumacea (Watling)
  - Tanaidacea (Sieg, Dojiri)
  - Isopoda (Wilson, Brusca) (done)

Volume 12: Arthropoda Part 3
- Peracarida: Amphipoda (Conlan, Thomas, Watling)
  - Introduction (Watling)
    - Amphipod Morphology
    - Laboratory Methods
    - List of Abbreviations
    - Glossary
    - Key to the Suborders and Families
  - Suborder Gammaridea
    - Families Ampeliscidae to Urothoidae
  - Suborder Caprellidea

Volume 13: Bryozoa (Soule et al) (September)

Volume 14: Lesser Coelomata, Tunicata, Echinodermata
- Sipuncula (Winchell) (done)
- Echiura (Pilger) (done)
- Brachiopoda (Hochberg) (done)
- Phoronida (Hochberg)
- Echinodermata
  - Asteroidea (Lissner)
  - Ophiuroidea (Hendler)
  - Echinoidea (Lissner)
  - Holothuroidea (Bergen) (done)
- Hemichordata (Woodwick) (done)
- Urochordata (Lambert) (done)

12.5 Key to the Dorvilleidae

1A. Notopodia (= "dorsal cirri" with embedded acicula) present in at least some setigers 2

1B. Notopodia absent; dorsal cirri if present short, never with acicula 10

2A. Notopodia present throughout body (may be absent on setiger 1); antennae and palps well developed, antennae moniliform, palps biarticulate; maxillae in four rows, with or without maxillary carriers, with at least one pair of basal plates (Fig. xx) 3

2B. Notopodia with aciculae present on limited number of anterior setigers; antennae and palps well developed or reduced; maxillae in two, four, or numerous rows, consisting of free denticles only 8

3A. Maxillae with maxillary carriers and both superior and inferior basal plates; furcate setae if present with short tines (Fig. xx): genus *Dorvillea* 6

3B. Maxillae without inferior basal plates; furcate setae if present with long, slender tines (Fig. xx) 4

4A. Maxillary carriers present . . . . . genus *Ougia**

4B. Maxillary carriers absent: genus *Parougia* 5

5A. Body large (more than 10 mm long), rigid; furcate setae usually present; all setae with serrations at least distally; maxillae heavily sclerotized, visible through body wall as V-shaped structure; mandibles triangular, dark . . . . . *Parougia caeca**

5B. Body small (about 5 mm long), fragile; furcate setae absent; all setae smooth and very slender; maxillae reduced, transparent, not visible through body wall; mandibles L-shaped with transparent center . . . . . *Parougia batia*

6A. Furcate setae absent (check several parapodia) . . . . . subgenus *Dorvillea**

6B. Furcate setae present: subgenus *Schistomeringos* 7

7A. Dorsal cirri tapering, with cirrophores as long as cirrostyles; ventral cirri inserting subdistally; furcate setae with short tines half as long as long tines; anterior denticles with straight, finely serrated cutting edge . . . . . *Dorvillea (Schistomeringos) annulata*

7B. Dorsal cirri cylindrical, distally inflated, with cirrophores much longer than cirrostyles; ventral cirri inserting distally (may look like subdistal insertion when ventral setal lobe is extended); furcate setae with short tines one-thirs as long as long tines (setiger 10); most anterior denticles with crescentic, wing-like serrated cutting edge and some larger distal teeth . . . . . *Dorvillea (Schistomeringos) longicornis*

8A. Maxillae in 8 to 14 rows; most denticles covered with surficial spines; antennae simple, palps biarticulate, palpophores maximally as long as palpostyles: genus *Pettiboneia*.
Palps shorter than antennae, with very short palpophore; notopodia slightly longer than

neuropodia, present in setigers 2 to 12 . . . . . *Pettiboneia brevipalpa*

8B. Maxillae in 2 or 4 rows, none covered with surficial spines 9

9A. Maxillae in 4 rows, maxillary carriers absent; antennae moniliform, palps biarticulate, palpophores much longer than palpostyles; anterior notopodia with aciculae, posterior ones without aciculae . . . . . genus *Diapharosoma**

9B. Maxillae in 2 rows, maxillary carriers present; antennae indistinctly articulate, palps biarticulate; palpophores about as long as palpostyles; notopodia present in limited number of anterior setigers . . . . . genus *Westheideia**

10A. Antennae and palps well developed, antennae moniliform; maxillae in 2 rows (Fig. xx); ventral cirri much longer than dorsal cirri . . . . . genus *Anchidorvillea**

10B. Antennae and palps well developed or reduced, antennae never moniliform; ventral cirri always shorter than dorsal cirri 11

11A. Maxillae with superior and inferior free denticles and forceps or icetongs formed by fused carriers and basal plates (Fig. xx); prostomial appendages and parapodial cirri present or absent, well developed or reduced 13

11B. Maxillae in 2 or 4 rows, without forceps or icetongs 12

12A. Maxillae in 2 rows 20

12B. Maxillae in 4 rows, with superior and inferior free denticles, superior and inferior basal plates, and maxillary carriers (some elements may be reduced); antennae and palps well developed or reduced 15

13A. All setae simple: genus *Parophryotrocha*.
Prostomium wider than long, with well-developed clavate antennae and palps; median and posterior setigers with dorsolateral and ventrolateral segmental lobes; setae including smooth spines and fine capillaries . . . . . *Parophryotrocha brevicapitis* n.sp.

13B. Supraacicular setae simple, subacicular setae compound (ventralmost seta may be simple) 14

14A. Some or all setae in anterior setiger(s) greatly modified into recurved hooks genus *Exallopus**

14B. Anterior setae if modified only slightly different from regular setae, never recurved; prostomial appendages and parapodial cirri usually short and simple . . . . . genus *Ophryotrocha**

15A. Maxillae consisting of basal plates only; antennae and palps short, digitiformgenus *Eliberidens**

15B. Maxillae including free denticles 16

16A. Minute interstitial forms, about 1 mm long, with maximally 15 setigers 17

16B. Animals not interstitial, adults several millimeters long; antennae papilliform, palps

multiarticulate, much longer than antennae; maxillary apparatus well-developed . . . . . genus *Protodorvillea*

17A. Maxillae with superior and inferior basal plates and superior and inferior free denticles . . 18

17B. Maxillae with superior basal plates and superior and inferior free denticles; antennae simple, palps biarticulate, palpophores as long as palpostyles; all supraacicular setae simple spines . . . . . genus *Microdorvillea**

18A. Antennae moniliform, palps biarticulate, with long palpophore; supraacicular setae including furcate setae with long, slender tines . . . . . genus *Coralliotrocha**

18B. Antennae simple or absent; furcate setae absent 19

19A. Setae including serrated capillaries and compound falcigers with serrated shaft and blade; prostomium with simple palps, antennae absent; parapodia without cirri; mandibles ornate; maxillae with at least two pairs of free denticles . . . . . genus *Petrocha**

19B. Both simple setae and blades of compound falcigers unidentate; capillaries serrated, compounds smooth; prostomium with simple palps, antennae absent; maximally 18 setigers, parapodia without cirri . . . . . genus *Pusillotrocha**

20A. Maxillae consisting of 3 pairs of smooth, elongate plates; furcate or geniculate setae absent . . . . . genus *Pseudophryotrocha**

20B. Maxillae consisting of serrated, rounded free denticles 21

21A. Small, interstitial forms with reduced prostomial and parapodial appendages 23

21B. Adults several millimeters long, not interstitial 22

22A. Maxillary carriers absent; supraacicular setae including serrated capillaries, furcate setae with short tines (anterior setigers), and geniculate setae (median and posterior setigers); inferiormost subacicular seta cultriform; antennae and palps absent . . . . . genus *Gymnodorvillea**

22B. Maxillary carriers present; supraacicular setae including capillaries and furcate setae with short tines, occasionally replaced by geniculate seta in one or few anterior parapodia; antennae and palps present (palps may be absent) . . . . . genus *Melodorvillea**

23A. All setae compound; maximally 10 setigers, parapodia lacking cirri; prostomium with palps, antennae and eyes absent . . . . . genus *Ikostpodus**

23B. Supraacicular setae simple, serrated, bidentate; compound falcigers with smooth, distally bidentate blades; up to 10 setigers, parapodia without cirri; prostomium with digitiform antennae and thicker palps of equal length, eyes absent; nuchal organs with 4 ciliated pads . . . . . genus *Arenotrocha**

Southern California Association of Marine Invertebrate Taxonomists

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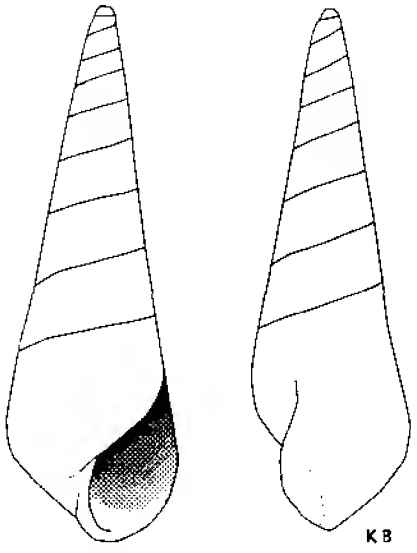
July, 1993 Vol. 12, No. 3

NEXT MEETING:	Master Species List
GUEST SPEAKER:	None
DATE:	August 9, 1993
TIME:	9:30am-3:00pm
LOCATION:	Cabrillo Marine Museum, San Pedro, CA



AUGUST 9 MEETING

The meeting in August will be the final SCAMIT meeting concerning the master species list of the Southern California benthos and will include continued discussion on the addition of the smaller dischargers. There will also be further discussion on minor additions and corrections. It will be at the Cabrillo Marine Museum, San Pedro, CA.

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MINUTES FROM MEETING ON JULY 19

Ron Velarde announced that SCAMIT wrote a letter of support for the Los Angeles Museum of Natural History (LAMNH). The letter was passed among the attending members.

Larry Lovell is still looking for other topics (non polychaetes) for this year. If anyone has any ideas or wants to volunteer to lead a meeting please contact Larry at:

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Vista, CA 92083
(619) 945-1608

Larry also mentioned the possibility of a SCAMIT booth at the 74th Annual Meeting of the Western Society of Naturalists in conjunction with the American Society of Zoologists (ASZ). It will be held in December 26-30, 1993 at the Hilton and Hyatt Regency in Los Angeles, CA.

Tom Parker (Los Angeles County Sanitation Districts) informed attending members about a new publication. It is "Hermit Crabs of the Northeastern Atlantic Ocean and Mediterranean Sea" a comprehensive review of all Northeastern Atlantic and Mediterranean hermit crab species with profusely illustrated taxonomic keys. December 1992, 504 pp, hardback Chapman & Hall Ltd, Cheriton House, North Way, Andover, Hants, SP10 5BE, ENGLAND, information line: 071 522-9966.

The Cabrillo Marine Museum needs help in identifying invertebrates (especially echinoderms) from their collection. If anyone is interested please contact either Suzie Delmonte or Steve Vogel at (310) 548-7563.

Dr. Kirk Fitzhugh and Leslie Harris (LAMNH) chaired the meeting on the Subfamily Sabellinae. The Genera emphasized were *Demonax, Bispira, Megalomma* and *Pseudopotamilla*. Kirk stated one reference that is helpful: Revision of *Demonax* Kinberg, *Hypsiconus* Grube, and *Notaulax* Tauber, with a review of *Megalomma* Johansson from Florida (Polychaeta : Sabellidae) by Thomas Perkins, 6 July 1984, Proc Biol Soc Wash, 97(2)84 p285-368. Kirk also mentioned another paper in progress by Thomas Perkins and Phyllis Knight-Jones that will be helpful when it is published.

Kirk then started the meeting by describing the differences among the Genera. *Bispira* and *Sabella* can be separated from *Demonax* by examining the abdominal neurosetae. *Demonax*'s neurosetae are in a transverse row; whereas *Bispira*'s and *Sabella*'s neurosetae are bunched together into a partial spiral or C- or U-shape. Another character that can be used is the presence (*Bispira, Sabella*) or absence (*Demonax*) of dark eyespots between the neurosetae and uncini. The eyespots are easiest to see on the abdomen though they are also on the thorax. *Demonax* can be distinguished from *Pseudopotamilla* by examining the companion setae. The companion setae of *Demonax* have dentate heads. Kirk also warned attending members that the character of spiral radioles may not be reliable and it appears to be age related.

The first Genus discussed was *Demonax*.. Material examined prior to the meeting included 3 taxa locally. *D. pallidus* (Moore, 1923) is the only *Demonax* that has unpaired eyespots on the radioles and the collar is high and membranaceous. *D.* sp. 1 has no eyespots on the radioles and the collar has only a midventral incision and margins are even except higher midventrally. *D.* sp. 2 differs from *D.* sp. 1 in that the collar margins are well developed and overlap, but there is a middorsal gap.

Bispira was the next Genus reviewed. *Bispira* is a diverse group in Southern California but not much work has been done. Kirk stated that there could be a systematic difference in the number of eyespots and the region of the crown where the eyespots begin. Leslie showed a unique staining pattern on the collar setiger (or setiger 1) of *Bispira*. The ventral shield arrangement stains in the shape of a big wide W. Five species were examined and discussed. Included in this newsletter is a brief description of each species.

Three species of *Megalomma* were examined. *M. splendida* (Moore, 1905) has V-shaped incisions dorsallaterally on the collar. *M.* cf. *splendida* dorsallaterally on the collar has a pair of deep, U-shaped (not V-shaped) incisions. Upon further examination Leslie determined that *M.* sp. 1 should be referred to *M. circumspectum* (Moore, 1923).

The last Genus discussed was *Pseudopotamilla*. *P. socialis* Hartman, 1944 fits Hartman's (1944) description well. *P.* sp. 1 has compound eyes that begin on dorsalmost radioles, 6-8 per radiole. The more lateral radioles have 2-4 eyes.

The next newsletter will have more detailed notes and illustrations from Kirk and Leslie concerning these Genera.

FUTURE MEETINGS

The Anthurid Isopods meeting originally scheduled for September has been postponed until October 19, 1993. There will be a Amphipod workshop on September 27-28, 1993 with Dr. Jim Thomas, Elizabeth Harrison-Nelson, and Linda McCann of the Smithsonion Institution Washington, D. C. Jim, Elizabeth and Linda will present and discuss their contribution to the Amphipod section of the forthcoming MMS Atlas. There will also be time to examine and discuss problem specimens. So please start thinking about questionable amphipods. It will be held at the Times Mirror Room at Los Angeles County Museum of Natural History, Los Angeles, CA. If anyone is interested in staying overnight there are rooms available at a special rate ($70 single, $75 double) at the University Hilton on Figuero St. Please contact Larry for further information at (619) 945-1608.

The October 19 meeting (note it is a Tuesday) will be on Anthurid Isopods with Don Cadien of the Los Angeles County Sanitation Districts. It will also be held at the Times Mirror Room at Los Angeles County Museum of Natural History, Los Angeles, CA.

TAXONOMIC UPDATE

Tony Phillips (Hyperion) informed members that *Monticellina* sp. A previously known as *Tharyx* sp. A (Dorsey) has been identified by Dr. James Blake as *Monticellina dorsobranchialis* (Kirkegaard, 1959).

JOB ANNOUNCEMENT

Growing South Bay Bio Marine Company needs a top notch Marine Biologist with outstanding Literature/Research skills. Person will be classifying marine organisms. Must like the academics of Marine Biology and be able to perform other functions as well. Please contact Shellie Stewart at (310) 542-6033.

SCAMIT OFFICERS:
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President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

SPECIES LIST[1]

Current Identification	Previous Identification(s)
**Demonax medius* (Bush, 1904)	
**Demonax pallidus* (Moore, 1923)	
Demonax pallidus (Moore, 1923)	*Demonax medius fide* Lovell
Demonax sp. 1	*Sabella* sp. A from Pt. Loma, *Demonax* sp. *fide* Harris
Demonax sp. 2	*Sabella crassicornis fide* Lovell
Bispira turneri Hartman, 1969	same
Bispira sp. 1	*Bispira turneri fide* Lovell
Bispira sp. 2	*Sabella crassicornis* from Pt. Loma
Bispira sp. 3	*Pseudopotamilla socilais fide* Lovell
Bispira sp. 4	*Sabella* sp. A, *Pseudopotamilla* sp. from Pt. Loma
Bispira sp. 5	*Pseudopotamilla* sp. from Pt. Loma
Megalomma pigmentata Reish, 1963	same
Megalomma splendida (Moore, 1905)	same
Megalomma cf. *splendida*	same
Megalomma circumspectum	(Moore, 1923) same
Pseudopotamilla socialis Hartman, 1944	*P.* sp. *fide* Lovell
**Pseudopotamilla ocellata* Moore, 1905	
**Pseudopotamilla intermedia* Moore, 1905	
Pseudopotamilla sp. 1	
cf. *Sabella* sp. 1	?*Sabella* sp.

[1] * = specimens not examined.

DIAGNOSES OF SPECIES EXAMINED:

Bispira sp. 1

Crown only partially spiralled. Paired eye-spots present on most radioles, 2-4 pairs per radiole. Eyes on dorsalmost radioles begin about ¼ up from base of crown; beginning higher up on more ventral radioles. Pigmentation of radioles begins where palmate membrane begins; radioles with 6-7 long pigmented bands, proximalmost band longest, following bands become shorter along length of radiole. Dorsally, collar is widely spaced, with 1 pair of ventro-lateral notches; midventral collar lobes higher than ventrolateral collar margins. *No pigment on thorax.*

Bispira sp. 2

Crown not spiralled. Paired eye-spots on radioles begin about Dorsal collar widely spaced, with one pair of ventrolateral notches. On dorsalmost radioles, eyespots on all radioles begin about ¼ up from base of crown; 4-5 pairs of eyes on each radiole. Radioles with 6 narrow pigment bands, proximalmost band without eyespots. Thorax dorsally pigmented. *Either side of dorsal midline of peristomium with dark brown pigment in a C- or U-shape. Inner margin of dorsal coller lobes with brown pigment. At bases of parallel lamellae are a pair of very dark brown pigment spots.* Collar lobes midventally are the same height as rest of collar.

Bispira sp. 3

Crown not spiralled. *On dorsal radioles, eyespots begin about ½ up from base*, but originate more proximally on more ventral radioles. Dorsally 3, ventrally 4 pairs of eyes on each radiole. Radiole pigment limited to around paired eyes. Middle ⅓ of crown with light brown pigment. Dorsal and ventrolateral collar margins at same height. Dorsally collar widely spaced. One pair of ventrolateral notches. No thoracic pigmentation. *Broad flanges on radioles more developed distally.*

Bispira sp. 4

Crown not spiralled. *Radiole eyespots begin just below level of palmate membrane*, slightly higher on more lateral and ventral radioles. *Up to 11-14 eyespots per radiole, most unpaired.* Narrow brown pigment bands associated w/ eyespots. Dorsally, coller widely spaced. One pair ventrolateral notches, v-shaped, deep (deeper than in *B.* sp. 2). Ventrally, collar is a little higher. No thoracic pigmentation.

Bispira sp. 5

Crown not spiralled. *Radiole eyespots begin well above palmate membrane, all eyes unpaired, located as a medial band on radioles.* Radioles with 3-4 ~~bands of~~ pigment, bands associated with each eye, 2-4 times longer than eye; another pigment band within area of palmate membrane present, without eyes. Collar with 1 pair of ventrolateral notches as narrow slits, not V- or U-shaped. Collar higher ventrally. No thoracic pigment.

cf. Sabella sp. 1

Branchial crown with no pigmentation or radiolar eyes. Short palmate membrane, low to base. Crown slightly inturned ventrally, but not spiralled. Collar widely spaced dorsally. Midventrally, collar is slightly higher and incised. Distal margin of collar appears to be

glandular (does not take up stain). Abdominal neurosetal fascicles not in tight spirals, C-shaped.

Demonax pallidus

See Perkins (1984). *Unpaired eyespots on radioles.* Pigment present on outer margins of radioles. Collar high, widely spaced dorsally, *membranaceous.*

***Demonax* sp. 1**

No eyespots on radioles; 13 narrow pigment bands located along inner margins of radioles. Collar orginates near middorsum, not widely separated. Collar with only midvental incision, margins even except higher midventrally. Five thoracic setigers. *Entire thorax & abdomen pigmented light to dark brown.*

***Demonax* sp. 2**

No eyespots on radioles. Similar to *D.* sp. 1 in coloration & body dimensions, crown has similar pigment pattern. Five thoracic setigers. Collar distinctly higher ventrally, *middorsally the margins are well developed and overlap, but there is a middorsal gap.*

Megalomma splendida

Collar as described and figured, v-shaped. Two-3 pairs of compound eyes on crown.

Megalomma cf. splendida

Light pigment bands begin about ¼ up crown, 6 bands on each radiole, all fairly narrow. Five pairs of eyes on dorsalmost radioles. Dorsallaterally the collar has a pair of deep, U-shaped (not V-shaped) incisions. Collar distinctly higher ventrally. No pigmentation on thorax.

Megalomma circumspectum

Two pairs of compound eyes on 1st and 2nd pair of dorsal radioles, slightly spiralled, equal in size, short radiolar tip beyond eye. Radiole pigmentation begins just below half-way mark on radiole, 5 bands; proximalmost band broadest, more distal bands successively narrower. *Collar originates at dorsal midline, no gap; dorsolaterally incised down to base of collar; middorsal region of collar folded inward at incision.* Collar even in height to ventrum, then w/ 2 broadly rounded, overlapping lobes. No thoracic pigmentation.

Pseudopotamilla socialis

Fits Harman's (1944) description well. *First (dorsalmost) pair of radioles* and ventral radioles *without compound eyes, remainder of radioles with 1-2 unpaired eyes.* Branchial base flanges as narrow, even shelves, not incised. *Thoracic uncini of last setiger larger and fewer in number, as described by Hartman.*

***Pseudopotamilla* sp. 1**

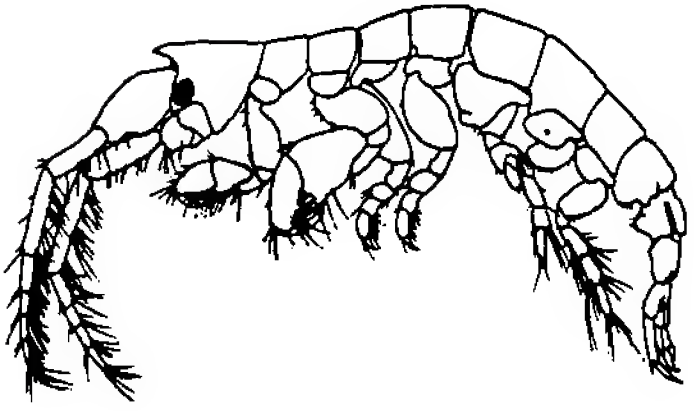
Compound eyes begin on dorsalmost radioles, 6-8 per radiole; more lateral radioles with 2-4 eyes; eyes absent on ventralmost radioles; eyes on radioles begin near base of crown. Branchial base flanges as narrow, even shelves, not incised. Brown or marone pigment bands on radioles, associated with eyes. Collar with V-shaped dorsolateral incisions. Collar slightly higher ventrally. Dorsal and ventral gaps of collar very narrow. No thoracic pigmentation.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

August, 1993 Vol. 12, No. 4

NEXT MEETING:	Amphipod Workshop
GUEST SPEAKER:	Dr. Jim Thomas, Elizabeth Harrison-Nelson, and Linda McCann of the Smithsonion Institution, Washington, D.C.
DATE:	September 27-28, 1993
TIME:	9:30am-5:00pm
LOCATION:	Times Mirror Room, Los Angeles County Museum of Natural History, Los Angeles, CA



Cerapus tubularis Say from Benthic Marine Amphipoda of Southern California: Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podoceridae by J. Laurens Barnard (1962)

SEPTEMBER 27-28 MEETING

The meeting in September will be an Amphipod workshop with Dr. Jim Thomas, Elizabeth Harrison-Nelson and Linda McCann of the Smithsonion Institution Washington, D.C. Jim, Elizabeth and Linda will present and discuss their contribution to the Amphipod section of the forthcoming MMS Atlas, including discussion on procedures, protocols and computer image scanning techniques. There will also be time to examine and discuss problem specimens. So please start thinking about any taxonomic problems you have with amphipods. Please bring voucher specimens, questionable ids, and other material for confirmation and discussion.

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

It will be held at the Times Mirror Room at the Los Angeles County Museum of Natural History, Los Angeles, CA. If anyone is interested in staying overnight there are rooms available at a special rate ($70 single, $75 double; $5.50/day parking) at the University Hilton near the museum on Figuero St. Please call (213) 748-4141 for reservations and don't forget to mention you want the museum rate.

MINUTES FROM MEETING ON AUGUST 9

Ron Velarde announced that SCAMIT has received one letter of response from the Los Angeles County Museum of Natural History (LAMNH) but we are still waiting for word from the Director regarding our concerns about staff reductions and possible closing of the museum.

Larry Lovell is still looking for other topics (non polychaetes) for this year. If anyone has any ideas or wants to volunteer to lead a meeting please contact Larry at:

1036 Buena Vista Dr.
Vista, CA 92083
(619) 945-1608

Tony Phillips (Hyperion) announced that the first volume of the MMS Atlas will be available in September. He also stated that Dr. James Blake will be describing Tony's *Monticellina* sp. B (Phillips).

Treasurer, Ann Dalkey, is working on a new SCAMIT brochure. If you received a draft version from Ann your comments and comments of other members should be directed to her by the end of December. Ann's phone number is listed at end of this newsletter.

The SCAMIT Christmas party has been scheduled for Saturday, December 11th at the Cabrillo Marine Aquarium*, San Pedro, CA. *Note: as of September 1, Cabrillo Marine Museum officially changed its name to Cabrillo Marine Aquarium (CMA). The change reflects the organization's focus on the living marine environment.

The rest of the meeting was devoted to reviewing several minor discharger's data for inclusion in the Master Species List.

FUTURE MEETINGS

The October 19 meeting (note: this is a Tuesday) will be on Anthurid Isopods lead by Don Cadien of the Los Angeles County Sanitation Districts. It will be held from 9:30am-3:00pm at the Times Mirror Room at Los Angeles County Museum of Natural History, Los Angeles, CA.

The meeting on November 15 (note: third Monday) will be on Sea Pens, Part 3 and Corymorphine Hydroids of southern California. The meeting will be lead by Dr. Gary C. Williams, California Academy of Sciences, San Francisco, CA. and John Ljubenkov, MEC Analytical Systems Inc. It will be held at MEC in their newly expanded and remodeled offices in Carlsbad, CA.

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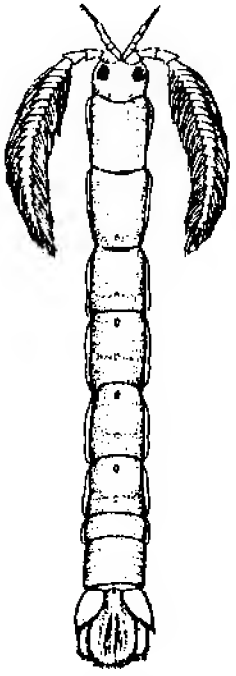
Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

September, 1993 Vol. 12, No. 5

NEXT MEETING:	Anthurid Isopods
GUEST SPEAKER:	Don Cadien of Los Angeles County Sanitation Districts
DATE:	October 19, 1993 (note this is a Tuesday)
TIME:	9:30am-3:00pm
LOCATION:	Times Mirror Room, Los Angeles County Museum of Natural History, Los Angeles, CA



Haliophasma geminata Mensies and Barnard, 1959. Male. California, San Diego Co., Oceanside. 20 February 1957. Coll. R/V "Velero IV", AHF 4868-57. Courtesy of R. Brusca

OCTOBER 19 MEETING

The meeting in October will be a workshop on Anthurid Isopods with Don Cadien of the Los Angeles County Sanitation Districts. Please bring any specimens you wish to have examined. It will be held at the Times Mirror Room at the Los Angeles County Museum of Natural History (LACMNH), Los Angeles, CA.

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

MINUTES FROM MEETING ON SEPTEMBER 27-28

Ron Velarde announced that the master species list of benthic infauna of the Southern California shelf has been completed.

Drs. Jodi Martin (LACMNH) and Debbie Zmarzly (SCRIPPS) have described a new crab, *Pinnixia scamit* (in prep), which will be published in the Proceedings of the Biological Society of Washington. Jodi also stated that the museum will be closed on Mondays and Tuesdays (except first Tues. of each month). None of the invertebrate curators were touched by the cutbacks.

Treasurer, Ann Dalkey, is working on a new SCAMIT brochure. If you received a draft version from Ann, your comments and comments of other members should be directed to her by the end of December. Ann's phone number is listed at the end of this newsletter.

The SCAMIT Christmas party has been scheduled for December 11th at the Cabrillo Marine Aquarium, San Pedro, CA.

Included in this newsletter is a flier from Dr. E. L. Bousefield that advertises a newly instituted journal of invertebrate systematics, "AMPHIPACIFICA".

Also included in this newsletter is a list of Research Seminars for Fall 1993 at the Natural History Museum of Los Angeles County, Los Angeles, CA.

Dr. Jim Thomas (Smithsonian Institution) chaired the workshop on amphipods. He started the meeting by informing attending members that the Smithsonian is still downsizing it's staff and is under a financial crunch. Jim said that he would keep the amphipod newsletter, the mailing list and inventory up to date. He also expressed an interest in having SCAMIT involved in workshops on various invertebrates from the West and East coast, and announced that the National Biological Survey (NBS) bill will be signed on October 1st. NBS is a new bureau whose main focus will be on generating an inventory of every animal and plant species in the United States, including their habitats.

The rest of the first day was spent examining specimens. The first amphipod discussed was *Corophium* n. sp. from Los Angeles (LA) Harbor. This species has a cleft telson and a long spine off of article 2 of gnathopod 2 (both sexes). Another specimen examined was *Corophium heteroceratum* from LA Harbor. This is a Chinese species that has invaded the West Coast and has been found in San Francisco Bay by John Chapman of Hatfield Marine Science Center in Newport, Oregon. The next amphipod discussed was another probable introduced species, *Synchelidium* n. sp., from LA Harbor. An additional specimen studied was a yet undescribed Pleustidae. This species has hollow suction-cups on its dactyls and is a commensal on *Paralithodes californiensis* and *P. rathbuni* (to date). A tricuspidate form of *Rhepoxynius bicuspidatus* was then examined along with *R.* sp. A which was determined to be a sibling species of *R. bicuspidatus*. The last amphipod discussed was a new species of *Paradexamine*.

FUTURE MEETINGS

The meeting on November 15 (note: third Monday) will be on Sea Pens, Part 3 and Corymorphine Hydroids of southern California. The meeting will be lead by Dr. Gary C. Williams, California Academy of Sciences, San Francisco, CA. and John Ljubenkov, MEC Analytical Systems Inc. It will be held at MEC in their newly expanded and remodeled offices in Carlsbad, CA.

The December 13 meeting will be a show and tell with specimens that are weird, strange, or rare from the recently generated species list. The site and group of animals to focus on will be determined at the October meeting.

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Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

RESEARCH SEMINARS

in History and Earth and Life Sciences

NATURAL HISTORY MUSEUM
of Los Angeles County

☞ PLEASE POST/CIRCULATE ☜

900 Exposition Boulevard
Los Angeles, California 90007

FALL 1993 SCHEDULE

TIMES MIRROR CONFERENCE ROOM
Seminar 3:00 - Coffee/Refreshments 2:45

7	October*	Mark R. Jennings - *National Biological Survey, San Simeon* **FROGS: DECLINING POPULATIONS AND EXTINCTIONS**
14	October	Karen Wise - *Anthropology Section, LACM* **TBA**
21	October	Kirk Fitzhugh - *Invertebrates Section, LACM* **EVOLUTIONARY PATTERNS OF REPRODUCTION AND DEVELOPMENT AMONG FAN WORM POLYCHAETES**
28	October	Mark Raab - *California State University, Northridge* **PREHISTORIC COASTAL HUMAN ECOLOGY OF THE CHANNEL ISLANDS**
4	November	Don Reynolds - *Molecular Systematics Laboratory, LACM* **ASEXUAL EVOLUTION AMONG THE FUNGI**
18	November	Howard Lipschitz - *California Institute of Technology, Pasadena* **HEADS OR TAILS: HOW GENES CONTROL EARLY DEVELOPMENT IN *DROSOPHILA***
2	December	Kevin Pope - *Geo Eco Arc Research, La Canada* **THE BIOSPHERIC EFFECTS OF THE CRETACEOUS-TERTIARY CHICXULUB ASTEROID IMPACT**
9	December	Bill McComas - *University of Southern California, Los Angeles* **THEMATIC APPROACHES TO BIOLOGICAL ISSUES IN THE GALAPAGOS ISLANDS**
16	December	Anne Cohen - *Research Associate, Invertebrates Section, LACM* **CLADISTIC ANALYSIS OF OSTRACODES: ANCIENT ORDERS TO RECENT BIOLUMINESCENT SIGNALING GENERA**

*Seminar at 3:30

-- ALL INTERESTED PERSONS ARE INVITED TO ATTEND --

Seminar suggestions/questions should be directed to Dr. Kirk Fitzhugh, Invertebrates Section (213-744-3233)

Thanks very much for sending the copy of V. V.'s Sweeney's pictorial history of Sea Monsters. Three of us were sitting here this Summer (enclosed) sorry we can't make your Symbiotic meeting but will be available next year. Good Luck! Hope you & SCAMIT are interested in our new Journal. Best. E.

September 8, 1993.

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Dear Larry:

I am enclosing a flier that advertises a newly instituted journal of invertebrate systematics, "AMPHIPACIFICA". Its purpose is to publish, efficiently and at reasonable cost, a growing backlog of large monographic papers, replete with new taxa, especially from the faunistically rich and relatively unexplored North Pacific coastal marine region. These studies have become difficult to publish elsewhere mainly because of recent overall decline in publication outlets for papers of this kind. To date, completed (or near ly completed) manuscripts and diskettes are on hand, especially those concerning crustaceans, are sufficient to fill much of the first volume (4 issues), and projections for other titles carry well into the second volume. Production and mailing costs can be met by means of very reasonable page charges to authors and through competitive rates to subscribers. To date, the Editorial and Advisory Boards have been successful in attracting significant institutional support to make the program initially feasible. However, its continuing success and viability depends on subscriptions from biological research libraries, and from individuals and colleagues world-wide.

We would therefore value your help in drawing this flier to the attention of your head librarian, and to colleagues in your agency, who might be interested in subscribing to this new journal, or contributing to its contents in the future.

Sincerely,

E. L. Bousfield, Managing Editor

AMPHIPACIFICA is a new international journal of invertebrate systematics, aimed primarily at the publication of monographic treatments that are too large or bulky (50 - 100 printed pages, including plates) for acceptance by established taxonomic journals such as the Journal of Crustacean Biology, or the Canadian Journal of Zoology. Initially, the contents will feature monographic studies on crustaceans of the faunistically rich and geologically ancient North American Pacific coastal marine region. The scope of this journal extends also to other arthropods, mollusks, annelids, and to other regional invertebrate taxa, both aquatic and terrestrial, including parasites, and to aspects of vertebrate animals that may involve invertebrates.

The journal will appear quarterly, or approximately so, with a run of 300-400 copies per issue, each of 200-225 pages, and a Volume (yearly) total of 1100 pages (approx.) Printed page size is 8.5 X 11 inches (22 X 27.5 cm). Paper quality will accommodate line cuts and half tones at 400-600 d.p.i., and a limited number of colour plates at author cost. Manuscripts are to be submitted in "camera-ready" computerized format (IBM- or MAC-compatible diskettes) that have previously been refereed and text-edited at the author's instigation. Suitability of manuscripts, based on content and adherence to submission regulations, will be decided by the Advisory Board of the new journal.

The cost of printing and mailing of each issue will be defrayed by institutional and individual subscriptions of $50.00 CAN. FUNDS ($40.00 US) per annum, and by page charges to the author of $15.00 per printed page (including plates). More detailed advisories, and a subscription form, are provided on the reverse side of this flier.

Sponsoring Agencies
The Royal British Columbia Museum, Victoria, B. C.
The Royal Ontario Museum, Toronto, Ontario.
The Canadian Museum of Nature, Ottawa, Ontario.
The Friday Harbor Laboratories, University of Washington, Friday Harbor, WA, USA.

Registration
The journal "AMPHIPACIFICA" is registered at the National Library of Canada, Legal Deposit Office, 395 Wellington St., Ottawa, Canada, as ISSN Number 9946895.

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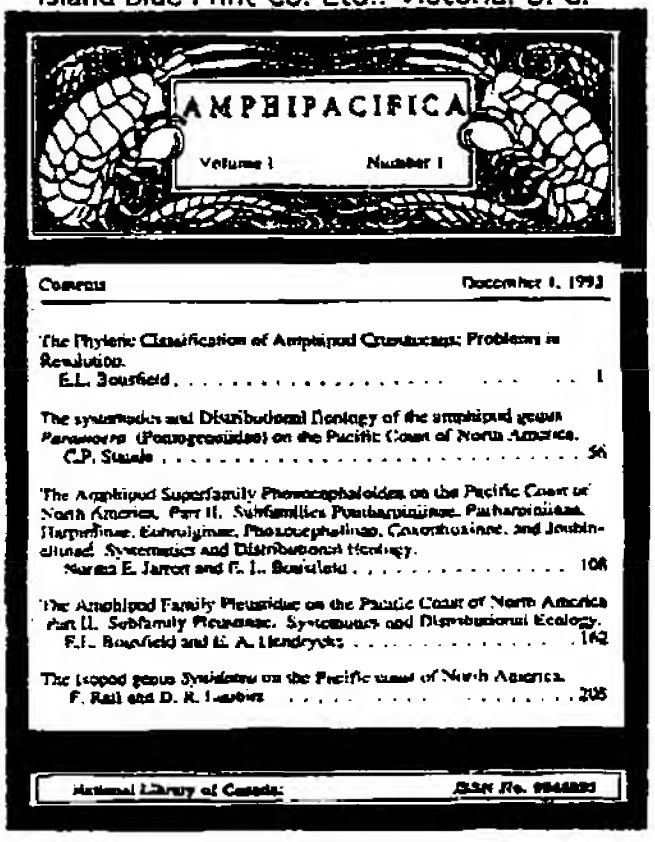
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Volume 1 Number 1
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To Ron Velarde
Co./Dept. Pt. Loma Bio Lab
Location S.D.
Fax # 692-4902 Telephone # 692-4901
Comments

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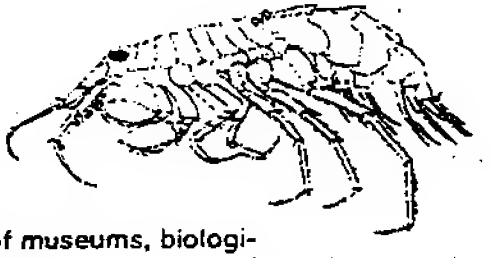
Location Dept. Charge
Fax # 631-4331 Telephone # 9451608
Original Disposition: ☐ Destroy ☐ Return ☐ Call for pickup

Copy of original being sent to Diane in mail.
Have a good meeting when/then. Regards to Jim etc.

AMPHIPACIFICA



INSTRUCTIONS TO AUTHORS

Manuscript submission. Manuscripts submitted for publication should represent original contributions that have not been published elsewhere. Under special circumstances, some reviews, advertisements, and pertinent short articles may be considered for publication. The text should be written in English or French, with Abstract in the other language. Abstracts should be suitable for separate publication in an abstract journal. Manuscripts must be submitted primarily on 3 1/2 inch high density diskettes, utilizing either IBM- or MAC-compatible computerized publishing systems (e.g., Aldus PageMaker, Quark Express), preferably in 2-column form. Diskettes must be accompanied by one 8.5 X11-inch (22 X 29 cm) hard copy (printed manuscript), with 1-in. text margins. Papers must have previously been refereed and text-edited. Authors must submit the name, address, and telephone number of the referee.

Acceptance of the paper is also contingent on prior payment of printing charges of $15 per page (CAN ADIAN FUNDS). Applications for page subsidies, from authors lacking supporting institutions or research grants, will be considered. Diskettes must be submitted in publishable form since virtually no editorial (mechanical) services will be performed on them here or by the Printing House, and no page proof will be sent. Authors (combined) will receive 100 free reprints per published paper. Mailings of this journal are expected to reach a minimum of 200 libraries of museums, biological laboratories, and other research institutions, in addition to individuals.

Text. The publication style of most standard international taxonomic journals will be acceptable, with the following provisos. Genus and species names must be in *Italics*, and ***Boldface italics*** when utilized as headings. Titles of sections and subsections must be in **Boldface Roman** The text, tables, and figures combined (with rare exceptions) must not total less than 50, and not more than about 100, printed pages. Prime recommended type font is "Geneva" 9-point, as in this flier, but other recommended fonts are ""New York", "Helvetica", and "Courier".

Figures and Tables. All figures and tables must be clearly numbered and referred to in the text. Line drawings and half-tone illustrations must meet acceptable standards of clarity and quality; the former should be accompanied by PMT's of publishable size (max. width of 16.5 cm or 6.5 inches), and the latter by glossy prints and/or negatives. Taxonomic papers lacking illustrations will not be accepted.

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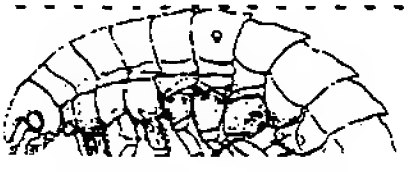

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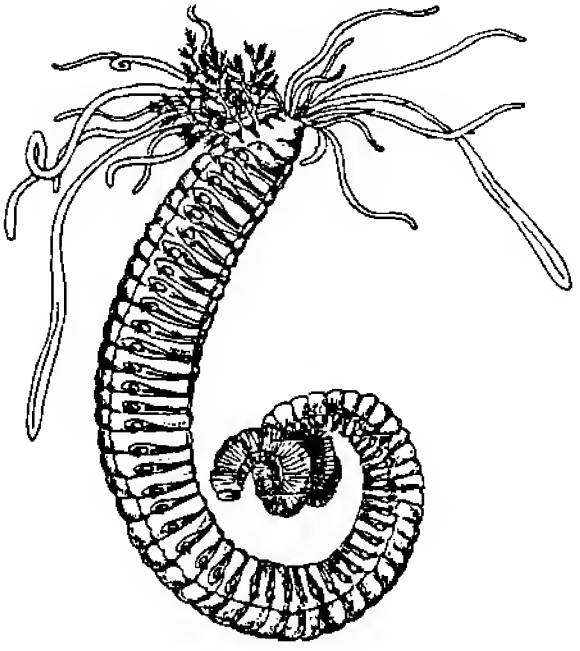
Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

October, 1993 Vol. 12, No. 6

NEXT MEETING:	Corymorphine Hydroids
GUEST SPEAKER:	John Ljubenkov, MEC Analytical Systems Inc., Carlsbad, CA
DATE:	November 15, 1993 (note third Monday)
TIME:	9:30am-3:00pm
LOCATION:	MEC Analytical Systems Inc., Carlsbad, CA (map is included)



Amphitrite ornata from Invert. Zoology (Sec. Ed.) by Paul A. Meglitsch

NOVEMBER 15 MEETING

The meeting in November will be on Corymorphine Hydroids of southern California. In addition, some of the unique cnidarians generated from the master species list will be reviewed. Please bring any cnidarians you need to have identified or confirmed. The workshop will be lead by John Ljubenkov of MEC Analytical Systems Inc. It will be held at MEC Analytical Systems Inc., Carlsbad, CA.

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

MINUTES FROM MEETING ON OCTOBER 19

The SCAMIT Christmas party has been scheduled for December 11th at the Cabrillo Marine Aquarium, San Pedro, CA. If anyone is interested in organizing the party and coming up with a theme please do not hesitate to do so.

The City of San Diego is pleased to announce four new employees. They are Laura Essex, Ami Groce, Megan Lilly, and Rick Rowe.

Don Cadien (Los Angeles County Sanitation Districts) informed attending members about new literature; the Amphipod Newsletter 19 and Amphipods, a noble obession: Essays in memory of J. Laurens Barnard (1928-1991), Journal of Natural History 27(4): 723-988.

Included in this newsletter is a list of publications available from De L'Institut Oceanographique in Paris, France.

Also included is a call for abstracts for the 1994 Water Environment Federation 67th Annual Conference and Exposition in Chicago, Ill.

Don Cadien chaired the workshop on Anthurid Isopods. Included in this newsletter is a handout prepared by Don and Richard C. Brusca. If anyone has any comments please send them to Don at LA County Sanitation Districts, Marine Biology Lab., 24501 S. Figueroa St., Carson, Ca 90745, (310) 775-2351 ext. 403. He will be modifying the key for future reference.

FUTURE MEETINGS

The December 13 meeting will be a show and tell with polychaete specimens that are weird, strange, or rare from the recently generated species list. There will also be some discussion on what SCAMIT's responsibility will be for the species list, how we can use it and whether we can distribute it. Tentatively the meeting will be held at Kirk Fitzhugh's polychaete lab at the Los Angeles Natural History Museum.

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
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MAP TO MARine ECOLOGICAL CONSULTANTS (MEC)

ANTHURIDEAN ISOPODS (CRUSTACEA) OF CALIFORNIA AND THE TEMPERATE NORTHEAST PACIFIC

Don Cadien and Richard C. Brusca
(presented at the October 19, 1993 meeting of SCAMIT)

I. Introduction

Literature on the anthuridean isopod fauna of California and the northeast Pacific has not recently been synthesized. Since the most recent comprehensive report (Schultz 1977) family and generic level reviews have altered the nomenclature of several species. Environmental survey and monitoring programs have generated many new geographic and bathymetric distributional records for eastern Pacific anthurideans, most as yet unpublished, and have collected several undescribed species. The current review was undertaken to update and standardize anthuridean taxonomy in California, and to disseminate information derived from a variety of unpublished sources.

II. Definition of the Group

Isopods of the suborder Anthuridea are most easily recognized by their slender elongate bodies (usually 7 or more times longer than wide), lateral uropods that curve up and over the pleotelson, and presence of (usually) one or two pleotelsonic statocysts (Fig. 1.1). Unlike most isopods, anthurideans are not much flattened dorso-ventrally and are circular or oval in cross-section. According to Brusca and Wilson (1991), the specific defining synapomorphies of the Anthuridea are: mandible without distinct lacinia mobilis or spine row, instead with a lamina dentata (which may be secondarily lost in some species); maxillae reduced, minute, fused to paragnath (or lost entirely); coxae of maxillipeds fused to head; maxillipedal endite without coupling spines; and uropodal exopod folded dorsally over pleotelson.

Brusca and Wilson (1991) placed this suborder within the "flabelliferan complex" (the Flabellifera *sensu lato*). The suborder contains four families, all now known to occur in the temperate northeast Pacific. Most species achieve a moderate size (8-15mm length), but a few are much smaller (4mm) or larger (45mm). Most anthurideans are marine, but some genera have marine, brackish, and freshwater members (e.g. *Cyathura*), some are exclusively freshwater (e.g. *Cruregens*), some are primarily stygofaunal (e.g. *Stygocyathura*), and some are primarily anchialine or interstitial (e.g. *Curassanthura*). About 200 species have been described, but this is almost certainly only a small percentage (probably less than half) of the world fauna.

III. Aspects of Anthuridean Biology

Reproduction - Mature male and female anthurideans are easily separated by secondary sexual characters, particularly the enlarged, multiarticulate, aesthetasc-fringed flagellum of the male first antenna (Fig. 2). In some cases males and females differ so greatly in gross morphology that they were initially described as separate species. The apparent separation of sexes can, however, be misleading, as protogynous sequential hermaphroditism occurs in many species. In others, as in some tanaids (Buckle-Ramirez 1965), there is also male polymorphy, with some animals always male and some males developing secondarily from post-brood females (Legrand & Juchalt 1963, Burbanck & Burbanck 1974, 1979).

Sex ratio in collections of anthurids is often skewed strongly towards females and juveniles, with few adult males (Kensley & Schotte 1989), although in *Apanthura* the reverse may be true. Examining a collection of several hundred *Apanthura* from tropical Australia, Poore and Lew Ton (1988b) noted no oostegite bearing females, and they suggested reproduction in this genus might deviate from the normal anthuridean pattern. Seasonal fluctuations of sex ratio in some species appear related to protogynous hermaphroditism (Burbanck & Burbanck 1979).

As in other isopods, the gonopores are located ventrally on the sternite of the fifth pereonite of the female and the seventh pereonite of the male. The inner ramus (endopod) of the male second pleopod also bears an appendix masculina as in other isopods. These structures assist in sperm transfer between the penile papillae of the male and the gonopore of the female. Their structure can be useful in anthuridean taxonomy, but details are unknown for most species, and may vary within a species due to male polymorphy.

Fertilization may occur in the ovary as in sphaeromatids (Shuster 1991) or may take place in the oviduct, before the eggs pass out through the gonopore and into the marsupium following molting (while the exoskeleton is still elastic). Eggs in the marsupium are already fertilized (at least in *Cyathura*) since they are encased in a vitelline coat lacking a micropyle for admission of sperm (Strömberg 1972). The marsupium is formed by paired oostegites on pereonites 2 or 3 through 5. Once in the marsupium the young undergo epimorphic development, eventually leaving as mancas. Mancas exit with only six pairs of pereopods and thus can be differentiated from post-manca juveniles with seven pairs. The genera *Cruregens* and *Colanthura* are neotenous, and have the formation of the seventh pereopod suppressed even in the adult.

Growth - No information is available on growth rates or molting frequencies for any eastern Pacific anthurideans. In the Atlantic species *Cyathura carinata* growth rate is dependent on temperature and food availability, and growth ceases during reproduction (Bamber 1985). Rate of growth declines with age in *Cyathura carinata* (Bamber 1985), but information is lacking on eastern Pacific species.

Feeding - There are two types of mouth parts in anthurids; those modified for piercing and sucking (Fig. 1.2), and those adapted for biting and chewing (Fig. 1.3). Chewing/biting mouth parts are used to feed either on detritus (Schultz 1977) or on living prey (Wägele 1981). Burbanck & Burbanck (1979) reported that while normally feeding on detritus, *Cyathura polita* may also consume both live and dead polychaetes, oligochaetes, amphipods, shrimp, and fish when the opportunity arises. Piercing mouth parts occur only in the family Paranthuridae, and are associated largely with species living among and feeding upon algae (Schultz 1977). Feeding ecology of eastern Pacific species has not been studied.

Habitats - Anthurideans are important and often abundant components of the offshore soft-sediment marine environment. Most live in sediment burrows or tubes, or within algal mats, habits in agreement with their narrow and elongate bodies. They may excavate burrows themselves (Fig. 3.1), or move into tubes or burrows abandoned by other organisms (e.g. *Cyathura polita* - Burbanck & Burbanck 1979). Anthurideans from hard substrates may live in crevices or fissures, in holes formed by other species, or in the attached tubes of other organisms (Wägele 1981). They are often found associated with littoral and sublittoral algae. *Eisothistos* sp. A lives among the incomplete septae at the eroded bases of the colonial coral *Coenocyathus bowersi*. A few other local species live outside of burrows or other shelter, finding adequate concealment among the tangled thalli of filamentous algae (e.g. *Paranthura elegans*), or among the rhizomes of seagrasses.

Family Hyssuridae

Hyssuridae gen. A, sp. A [MBC, 1984] Formerly reported as *Apanthura* sp. A; see comments below.

Family Anthuridae

Amakusanthura californiensis (Schultz, 1964)** Formerly placed in *Apanthura* and *Apanthuretta;* see comments below.

Calathura branchiata (Stimpson, 1855) Formerly placed in *Anthura;* see comments below.

Cyathura carinata (Kroyer, 1849). Originally placed in *Anthura;* see comments below.

Cyathura munda Menzies, 1951*

Eisothistos sp. A [MBC, 1984]. Formerly reported as *Heteranthura* sp. A; see comments below.

Eisothistos sp. B [Cadien, 1990]

Haliophasma geminatum Menzies & Barnard, 1959** Formerly placed in *Silophasma;* see comments below.

Mesanthura occidentalis Menzies & Barnard, 1959**

IV. Comments on Individual Species (listed alphabetically)

Amakusanthura californiensis (Fig. 4). The brief original description (Schultz 1964) was based on a lot of twelve females from "several to 11mm long," taken from black mud at a depth of 80m off Santa Monica, California. Schultz (1977) was aware of no additional records of the species, and we are aware of no other published records since the original description. However, this species has been collected in several environmental monitoring programs from southern California. It also occurred in samples from west Mexico taken during Allan Hancock Foundation cruises, ranging as far south as Isla Guadalupe (pers. obsv., LACMNH collections). The species was transferred from *Apanthura* Stebbing, to *Apanthuretta* Wägele by Poore & Lew Ton (1985), and subsequently to *Amakusanthura* Nunomura when *Apanthuretta* itself was synonymized (Poore & Lew Ton 1988b). The holotype of *A. californiensis* has been reexamined and inaccuracies and omissions in the original description are being corrected (Wetzer & Brusca, in press). Most importantly, pleonites 1-5 are dorsally fused along the midline, and the maxillipedal endite is broad and lobelike.

Ananthura luna (Fig. 5). *Bathura* Schultz was originally differentiated from *Ananthura* Barnard by a low tooth on the palm of the first pereopod, by the characteristic broadly-radiating setal clusters at the distal tips of the uropodal rami and pleotelson, and by the lack of serrations on the outer margins of the uropodal endopods (Schultz 1966). Kensley (1978) deemed these characters insufficient to support separate generic status and synonymized both *Bathura* and *Ananthura* with *Anthelura* Norman and Stebbing. These genera were later reexamined by Poore and Lew Ton (1988d), who separated *Ananthura* and *Anthelura* on the basis of their statocysts. *Bathura*, which was described with two statocysts, was reevaluated as having one central statocyst with a slitlike dorsal pore, as in *Ananthura*. Although this feature was not interpreted as a statocyst by Schultz, it was clearly indicated in his illustration of the holotype. *Ananthura luna* is a large species (to 21mm length; Schultz 1977) that is infrequently encountered in relatively deep water (783-1298m) off the southern California borderland between the Coronado and Santa Monica Submarine Canyons. It may also occur in shallower water around canyon heads, based on a sample from Santa Monica Bay (taken in 78m) in the LACMNH collection.

Calathura branchiata (Fig. 6) was originally described from New Brunswick (eastern Canada) by Stimpson (as *Anthura branchiata*), and has since become the senior synonym for two of G.O. Sars' northeast Atlantic species (*Paranthura norwegica* Sars and *Paranthura arctica* Sars). Gurjanova's (1936) record of *C. branchiata* from north Pacific, from the Sea of Okhotsk and the Bering Sea, and Coyle and

Predators - Many fishes are known to feed on the west Atlantic estuarine species *Cyathura polita*, as do blue crabs (Burbanck and Burbanck 1979). Predation by crabs, and other invertebrates is likely for eastern Pacific species, but has not been documented. In an evaluation of trophic relationships between fishes and benthic invertebrates at Catalina Island, Hobson & Chess (Ms.) found 11 fishes feeding on anthuridean isopods. Forty-one anthurids were found in the guts of 28 fish. Most of the isopods were consumed by three species; black surfperch *Embiotoca jacksoni* (6 guts, 10 isopods), blackeye goby *Coryphopterus nicholsi* (5 guts, 8 isopods), and California sheephead *Pimelometopon pulchrum* (5 guts, 10 isopods). Species taking anthurideans at lower frequencies were rock wrasse *Halichoeres semicinctus*, señorita *Oxyjulis californicus*, kelp surfperch *Brachyistius frenatus*, island kelpfish *Alloclinus holderi*, garibaldi *Hypsypops rubicundus*, halfmoon *Medialuna californica*, kelp bass *Paralabrax clathratus*, and blue-banded goby *Lythrypnus dalli*.

Anthurideans are slow compared to many other peracarids, and they swim only clumsily. Outside their refuges their movements are awkward, and they are probably easy prey to predatory nemerteans, annelids, and other arthropods. Despite the lack of special protective or offensive structures, some anthurideans respond aggressively to attack. If seized from behind, *Paranthura elegans* will twist around and strike at it's attacker (pers. obsv.). Perhaps this aggressive response is sufficient to deter some would-be predators.

The relatively indurated pleotelsonic region of many anthurideans apparently serves as an operculum to block access to certain tube or burrow-dwelling species. Observations on living *Eisothistos* (Wägele 1981) indicated that they adopt a head down position in serpulid worm tubes while feeding on the original occupant. This leaves the ornamented pleotelson and uropods in the position of the worm's operculum (Fig. 3.2). Foraminiferans and sponges observed attached to the tail-fan of *Eisothistos* sp B suggest they may move little once established in a tube, thus minimizing exposure to predators.

IV. Anthuridea of the West Coast of North America (North of Mexico)

Apart from *Edanthura linearis* Boone, 1923, the first anthurideans known from the northeastern temperate Pacific were those described by Menzies (1951). The temperate fauna of the northeast Pacific currently contains at least 15 recognizable species. Three are undescribed species and 12 are nominate species, of which one is a *nomen nudum* (*Paranthura linearis*), one may be a misidentification or incorrect locality record (*Paranthura algicola*), and one is clearly a questionable record (*Cyathura carinata*). Holotypes (**) or paratypes (*) of most of these species are in the collection of the Los Angeles County Museum of Natural History (LACMNH)(Wetzer et al. 1991), as noted below. North of California, anthuridean isopods are both less common and less diverse. No members of this suborder were reported by Richardson (1905) for the northeast Pacific, by Hatch (1947) from Washington, or by George & Strömberg (1968) from Puget Sound. In a detailed environmental analysis of benthic communities in Puget Sound, Lie (1968) reported *Haliophasma geminatum*, and three other species have since been reported from the northeast Pacific: *Cyathura carinata, Calathura branchiata*, and *Eisothistos sp B.*

Family Antheluridae

Ananthura luna (Schultz, 1966)** Formerly placed in *Bathura;* see comments below.

Family Paranthuridae

Califanthura squamosissima (Menzies, 1951)* Formerly placed in *Colanthura;* see comments below.

Colanthura bruscai Poore, 1984*

Paranthura algicola Nunomura, 1978 Questionable species; see comments below.

Paranthura elegans Menzies, 1951*

Paranthura linearis nomen nudum. Formerly placed in *Edanthura* ; see comments below.

Müller's (1981) record from the Gulf of Alaska, establish this species as circum-north Pacific in distribution. It has not been reported south of Alaska, and it's reported depth range is 20-1500m

Califanthura squamosissima (Fig. 7). Schultz (1977) sunk *Colanthura* Richardson, on the basis of a supposed synonymy of *Colanthura tenuis* Richardson (the type species) and *Paranthura infundibulata* Richardson, and he erected *Califanthura* as a replacement genus for *Colanthura squamosissima*. Poore (1980), however, resurrected *Colanthura*, declaring both it and *C. tenuis* to be valid taxa. Poore's conclusion was based, in part, on a reexamination of the types of *C. tenuis* and *P. infundibulata* by Kensley, who also did not substantiate their synonymy (in Poore 1980). Although Poore's (1980) move sunk Schultz' *Califanthura* into *Colanthura*, he later (Poore 1984) reestablished it as a valid genus, which now contains six species worldwide. *C. squamosissima* is a small species, reaching only about 5.2mm in length. It occurs in shallow water (18-90m) from Dillon Beach, California (Schultz 1977) to Magdalena Bay, west Baja California (Nunomura 1978), and has also been collected intertidally at Morro Bay and La Jolla.

Colanthura bruscai (Fig. 8) is similar to *C. squamosissima* in general appearance and size. However, it is predominantly Panamic in distribution, with it's northernmost occurrence at San Clemente, California (Poore 1984), and from there ranging south to at least Costa Rica. It occurs intertidally at most locations, although some northern records are subtidal to a maximum depth of 27m. The maximum reported length is 5.4mm (Poore 1984).

Cyathura carinata is a northern European species. Bernard's (1978:576) record from the Strait of Georgia (British Columbia, Canada), if accurate, may reflect a relict north Pacific population from a former circumboreal distribution. However, because there are no other reports of this well-known Atlantic species from the Pacific Ocean, this unpublished Pacific record needs confirmation. The record in Austin (1985) presumably is derived from Bernard's report. This species was originally placed in *Anthura*; and transferred to *Cyathura* by Norman and Stebbing (1886). It is not included in our key.

Cyathura munda (Fig. 9) is a moderate size (to 9 mm), narrow (length more than 9 times width) species, usually associated with brown algal holdfasts on hard substrates. The type material from northern California was all taken from the holdfasts of *Egregia* and *Laminaria*. All the subtidal records of Menzies & Barnard (1959) are from stations where the samples were noted to contain either kelp or rocks (Allan Hancock Foundation, 1965). LACMNH material of this species usually indicates collection from kelp or from surfgrass (*Phyllospadix*). This species has been taken from the intertidal zone (Menzies 1951) to 58m (Menzies and Barnard 1959), from Tomales Point to the Mexican border, and in the Gulf of California. More recent collections in the Santa Maria Basin extend the depth range down to 132m on rocks. Brusca and Iverson (1985) described a very similar species from intertidal habitats on the Pacific coast of Costa Rica (*C. guaroensis*).

***Eisothistos* sp. A.** A single juvenile specimen (1.4mm) of this species was taken off Tajiguas, Santa Barbara Co., California at 77m depth, in the washings of rocks retrieved during a submersible dive in 1984. It was initially called by the unpublished name *Heteranthura* sp. A. However, Wägele (1981) synonymized *Heteranthura* Kensley and *Eisothistos* Haswell, hence the generic reassignment. This specimen, while clearly not belonging to any other eastern Pacific anthuridean species, is not sufficiently adult to compare with other species of *Eisothistos*, of which there are over a dozen worldwide. Additional specimens were later taken by Hans Kuck (LACMNH) in 1989, in association with colonies of the coral *Coenocyathus bowersi* collected at 5-8m depth off the eastern shore of Catalina Island. These specimens were larger (2-2.5mm), but still not fully adult. In gross morphology this species is similar to *Eisothistos antarcticus* as described by Wägele (1984b), with serrate uropodal and pleotelsonic margins, and a single row of spines down the middle of the pleotelson. The range of this undescribed California species, as currently known, is 5-77m, Tajiguas to Catalina Island. The genus *Eisothistos* was recently transferred from Hyssuridae to Anthuridae by Poore & Lew Ton (1988c).

Eisothistos sp. B was encountered in environmental monitoring samples from Alaska related to the Exxon Valdez oil spill. Although the exact locations of the sampling sites were unavailable because of litigation, the animals were collected between the intertidal zone and 10m depth somewhere in Prince William Sound. Numerous specimens were taken from the tubes of serpulid polychaetes, a common habitat for members of this genus. This species resembles both *Eisothistos* sp. A and *Eisothistos minutus* (Sivertsen and Holthuis, 1980) of the tropical east Atlantic. Post-brood adult females, which undergo elongation of pereonites 2-6 (Fig. 10) as described for other species (Wägele 1981), may reach 5mm in length. This species has not been recorded from California waters.

Haliophasma geminatum (Fig. 11). Schultz (1977) erected a new genus (*Silophasma*) for this species, which the revision of Poore (1975) had placed beyond the bounds of a redefined *Haliophasma* Haswell. Subsequently, the definition of *Haliophasma* was expanded such that *Silophasma* was no longer needed, and it fell into synonymy with *Haliophasma* (see Negoescu and Wägele 1984 and Poore and Lew Ton 1988a). Poore (1975) changed the spelling of the trivial name from "geminata" to "geminatum" to match the gender of the generic name. Schultz (1977) gave 7mm as maximum size for *Haliophasma geminatum*, but we have seen specimens from California as large as 12mm in length. This species ranges from Monterey, California (Iverson 1974) to San Quintin Bay, Baja California, Mexico (Menzies 1962) over a broad depth range (9-512m). Lie (1968) also recorded it from Puget Sound.

Hyssuridae gen. A sp. A (Fig. 12). Collections made in the western Santa Barbara Channel and in the Santa Maria basin in central California encountered scattered specimens of this small species (5-6mm length). This may be the same as the "Anthurid n. sp. & n. gen." reported but not well described by Menzies (1962) from off San Quintin Bay, Baja California. In his discussion, Menzies indicated a close affinity to *Kupellonura* for his specimens, but felt they might constitute a new genus. The present material matches the characters Menzies noted: indurated pleotelson with a ventral keel, separation of all pleonal segments, antennal flagellum article counts, and details of the uropods. Menzies did not illustrate his material, and nothing in his brief discussion is unique enough to definitely establish identity between his material and our own. Redefinition of the genera of the Hyssuridae by Poore and Lew Ton (1988c) places the current material close to both *Kupellonura* Barnard and *Hyssura* Norman and Stebbing. One might be inclined to assign it to *Kupellonura* because of the presence of lobes on the lateral margins of the uropodal exopods, a unique synapomorphy for this genus (Poore and Lew Ton 1988c). It also possess a triangular carpus on pereopods IV-VII, whereas the carpus of *Hyssura* species is rectangular in shape. However, the mouth parts are more characteristic of *Hyssura* in that the mandibular molar process is acute (not blunt, as is characteristic of *Kupellonura*), and the maxillipedal endite is short, reaching only the second palp article (rather than the third article, as is typical of *Kupellonura*). One of the specimens of this species we examined had a 4-articulate flagellum on the left antenna and an 8-articulate flagellum on the right. Other than our own observations and Menzies' possible record, this species has not been reported from the northeast Pacific. Our material came from a sample taken off the southeast end of San Miguel Island, and from seven MMS sampling stations between Oso Flaco and the north side of Anacapa Island, from 47 to 166m.

Mesanthura occidentalis (Fig. 13). The original description of this species distinguishes it solely on the basis of the dorsal pigmentation pattern. Illustrations of the pleotelson apex, the maxilliped, the antennae, and the last three articles of the first pereopod were provided, but not discussed. This was amplified by description of a paratype, with a more complete illustration of it's antennae, mouth parts, and appendages by Wägele (1984a). Although taken subtidally by grab, the 7mm holotype female came from a sample containing kelp fragments and red algae. Menzies and Barnard (1959) recorded this species from two localities (Point Conception and Point Fermin, California), both containing either kelp or rock, and both from shallow water (12-20m). An additional lot was reported by Schultz (1964) from off Palos Verdes, also in shallow water (20m). Schultz (1977) later gave this species' range as "Point Conception to San Quintin Bay, Baja California" and "from shallow water to 55m deep," perhaps a transcription error of

earlier literature. The records of Menzies and Barnard (1959) suggest that this is a shallow-water species, probably associated with either macroalgal holdfasts, or with algal mats or turf. Brusca (1980) reported a similar appearing congener (*Mesanthura* sp.) from intertidal algal mats in the Gulf of California that may, in time, prove to be a variant of *M. occidentalis*. *Mesanthura nubifera* Wägele, 1984, also from intertidal habitats in the Gulf of California, does not match the pigmentation of Brusca's (1980) species.

Paranthura algicola (Fig. 14) was described by Nunomura (1978) on the basis of two female specimens (5.5mm and 10mm in length) sent to him by Waldo Schmitt in the 1970's. The locality was given as simply a "rocky beach in California, washed from algae, 24 November 1916." Judging by Nunomura's illustrations, his animals may have been *Paranthura elegans* showing the effects of long-time preservation. Nunomura stated that *P. algicola* differed from *P. elegans* in having: "eyes with scattered ocelli" [sic], pleonites medially fused, and by the "shape of the posterior border of the sixth pleonal somite." In fact, the eyes of *P. elegans* are large with many ommatidia and could easily appear as figured and described by Nunomura after many years of preservation; the pleonites are free in *P. elegans* but the articulations are very faint and can easily be mistaken as being fused; and, we see no significant differences between these two species in the posterior margin of the sixth pleonite (aside from what could be attributed to poor renditions by both Nunomura and Menzies). Nunomura's description and figures are difficult to interpret, but the type material was reported as being at the USNM and should be reexamined to establish the correct disposition of this species. We did not include this species in the key that follows. Nunomura (1978) also described another species of *Paranthura*, which he gave the unfortunate name of *P. californiae*, from Magdalena Bay (Baja California, Mexico) that closely resembles *P. elegans*.

Paranthura elegans (Fig. 15) ranges from Dillon Beach at least to San Quintin Bay (west coast of Baja California, Mexico), from the intertidal zone to a depth of 55m (Schultz 1977), and also throughout the Gulf of California (Brusca 1980). It frequents algal mats and clumps, mud bottoms, encrusted pier pilings, and rocky low intertidal habitats. Adults reach about 9.5mm in length in California waters, but are larger in the warmer waters of the Gulf of California (8-15mm). Differences is adult size along a latitudinal gradient are not uncommon, and have been reported for idoteid isopods in the eastern Pacific (Brusca and Wallerstein 1979, Wallerstein and Brusca 1982), and for *Cyathura polita* on the east coast of America (Burbanck and Burbanck 1979).

Paranthura linearis has remained enigmatic since its description (as *Edanthura linearis*). Boone (1923) reported this animal from Laguna Beach, California. She described it's mouth parts only as "well developed, unique"; perhaps accurate but certainly imprecise. Menzies (1951) considered *Edanthura* Boone a synonym of *Paranthura* Bate and Westwood, and also recommended *E. linearis* be reduced to *nomen nudum* status. Poore (1984) and Negoescu & Wägele (1984) apparently agreed with these assignments. The type has not been found at the USNM (where Boone indicated it had been deposited), and its whereabouts remains unknown. This species is not included in the key that follows.

V. Key to the Species of Anthuridea Known from the Northeast Pacific (North of Mexico)

1. Mouth parts adapted for piercing and sucking, together forming an anteriorly directed cone-like structure under the head; maxillipedal palps long, thin, and tapering; mandibular incisor smooth, styliform, not toothed; mandible without molar process or lamina dentata; 0 or 1 statocyst in pleotelson; first pleopods enlarged and operculate to others 2
   - Mouth parts adapted for biting and chewing, not forming a conelike structure; maxillipedal palps broad; mandibular incisor often toothed; mandible usually with molar process and lamina dentata; 0, 1, or 2 pleotelsonic statocysts; first pleopods may or may not be operculate to others 4

2. Pereonite 7 at least 50% as long as 6; seventh pereopods present ..... *Paranthura elegans*
- Pereonite 7 less than 20% as long as 6; seventh pereopods absent 3

3. Pereonite 1 twice as long as 2; pleonites free, not fused ..... *Colanthura bruscai*
- Pereonites 1 and 2 subequal; pleonites fused dorsally ..... *Califanthura squamosissima*

4. With no statocysts in pleotelson; first pleopods not enlarged and operculate to others; body extremely elongate, about 15 times longer than wide (Hyssuridae) ..... Hyssuridae gen. A, sp. A
- With 0, 1 or 2 statocysts in pleotelson; first pleopods always enlarged and operculate to pleopods 2-5; body length 6-10 times width 5

5. With 1 pleotelsonic statocyst; maxillipedal endite and palp very wide; pleonites 1-5 entirely free never fused dorsally (Antheluridae); the only known California anthelurid is blind and its uropodal tips bear radiating setal clusters ..... *Ananthura luna*
- With 0, 1 or 2 pleotelsonic statocysts; maxillipedal endite and palp normal, not especially broad; pleonites 1-5 free or dorsally fused (Anthuridae) 6

6. Pleotelson with a dorsal median spine row 7
- Pleotelson smooth or ridged, but without dorsal spines 8

7. Uropodal endopod with distolateral margin more or less evenly serrate ..... *Eisothistos* sp. A
- Uropodal endopod with distolateral margin divided into two cusps by three prominent denticles, evenly serrate between these points ..... *Eisothistos* sp. B

8. Pleonites 1-5 completely free and separate in both dorsal and lateral view ..... *Calathura branchiata*
- Pleonites 1-5 completely fused or fused mediodorsally, although segments may be visible in lateral view 9

9. Carpus of pereopods 4-7 rectangular; pleotelson with three raised dorsal longitudinal ridges ..... *Haliophasma geminatum*
- Carpus of pereopods 4-7 triangular; pleotelson without dorsal ridges 10

10. Pleonites 1-5 fused only along dorsal midline, segments free laterally; uropodal endopods narrow (<60% of pleotelson width), exopods much shorter than either pleotelson or endopods ..... *Amakusanthura californiensis*
- Pleonites 1-5 completely fused dorsally, segmentation indicated in lateral view only by faint lines and setal bundles; uropodal endopods subequal in width to pleotelson, exopods nearly as long as pleotelson and endopods 11

11. Maxillipedal palp 3-articulate; pereonites pigmented dorsally, with complete or nearly complete dark ovals on pereonites 2-6 ..... *Mesanthura occidentalis*
- Maxillipedal palp 2-articulate; pereonites pigmented dorsally with dark splotches, but without pigment rings ..... *Cyathura munda*

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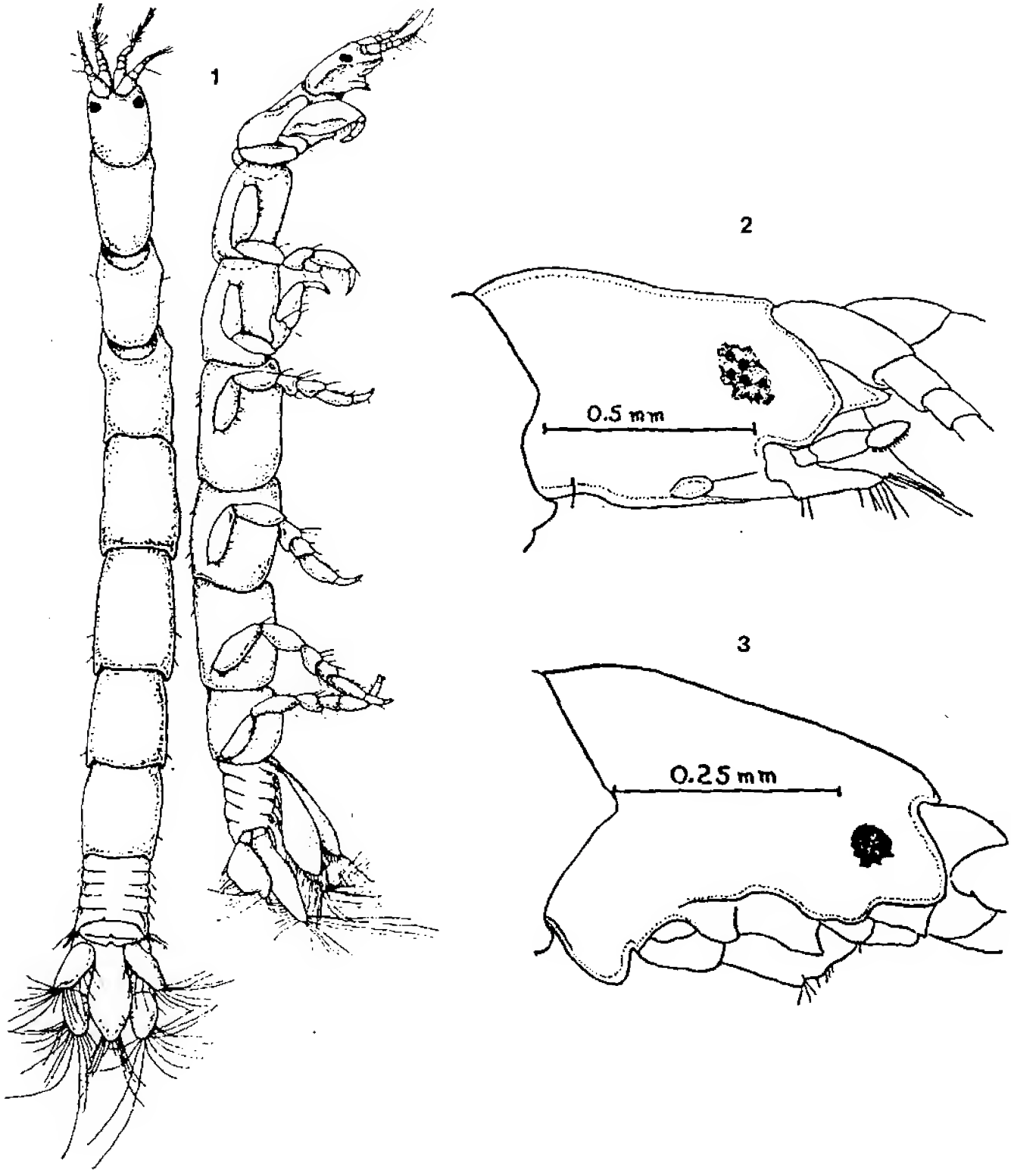

FIGURE 1. 1) Dorsal and lateral views of *Apanthura libyana* ♀ (from Negoescu 1980); 2) piercing mouthparts of *Paranthura elegans* (from Menzies 1951); 3) biting mouthparts of *Cyathura munda* (from Menzies 1951)

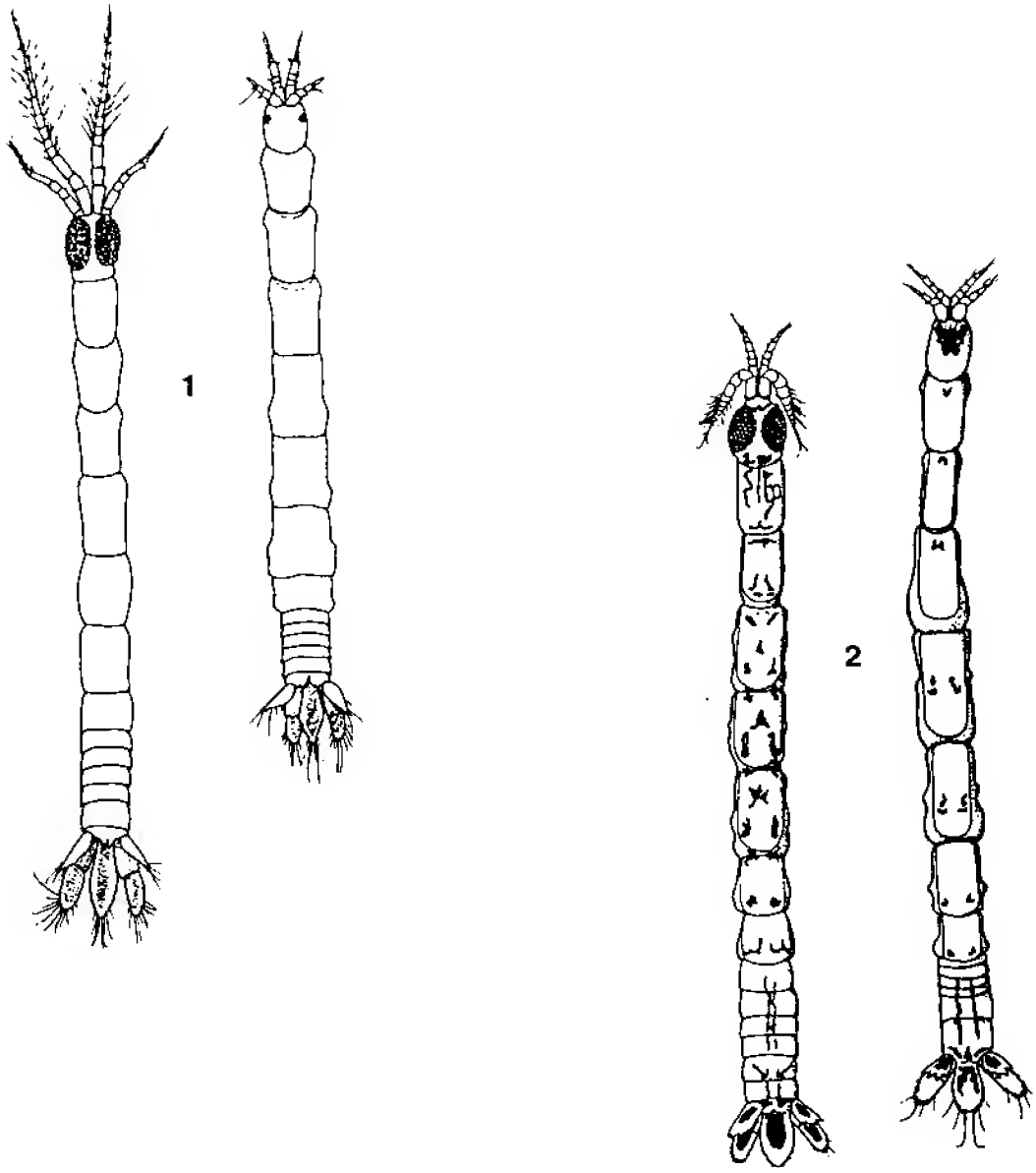

FIGURE 2. Anthurid sexual dimorphism. Male/female pairs of 1) *Chalixanthura lewisi* and 2) *Chalixanthura scopulosa* (male to the left of each pair)(from Kensley & Schotte 1989)

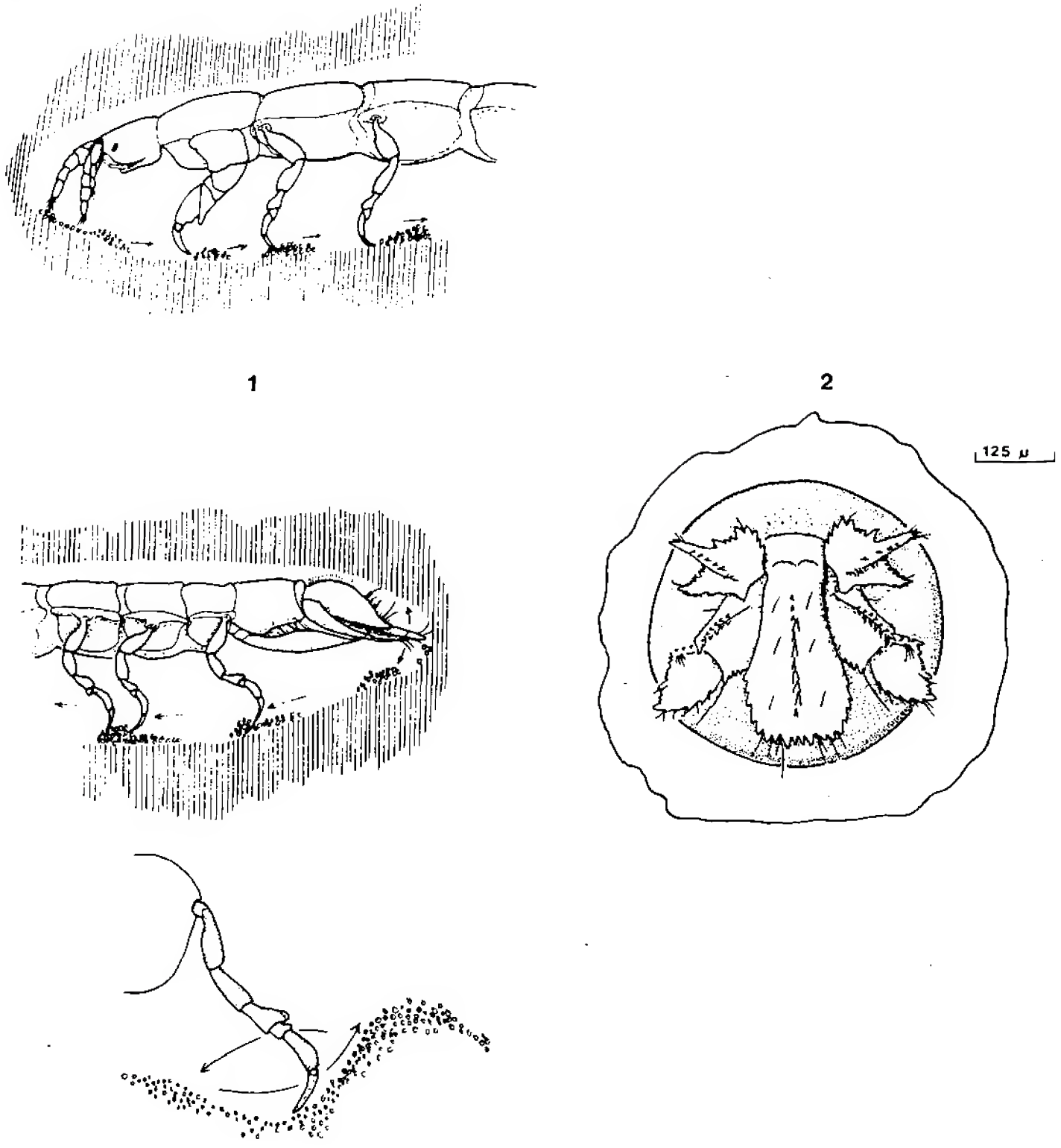

FIGURE 3. 1) *Cyathura carinata* excavating a burrow with anterior appendages, posterior appendages and pleotelson, and pereopods (from Wägele 1981); 2) tail fan of *Eisothistos macrurus* at the aperture of a serpulid tube (from Wägele 1981)

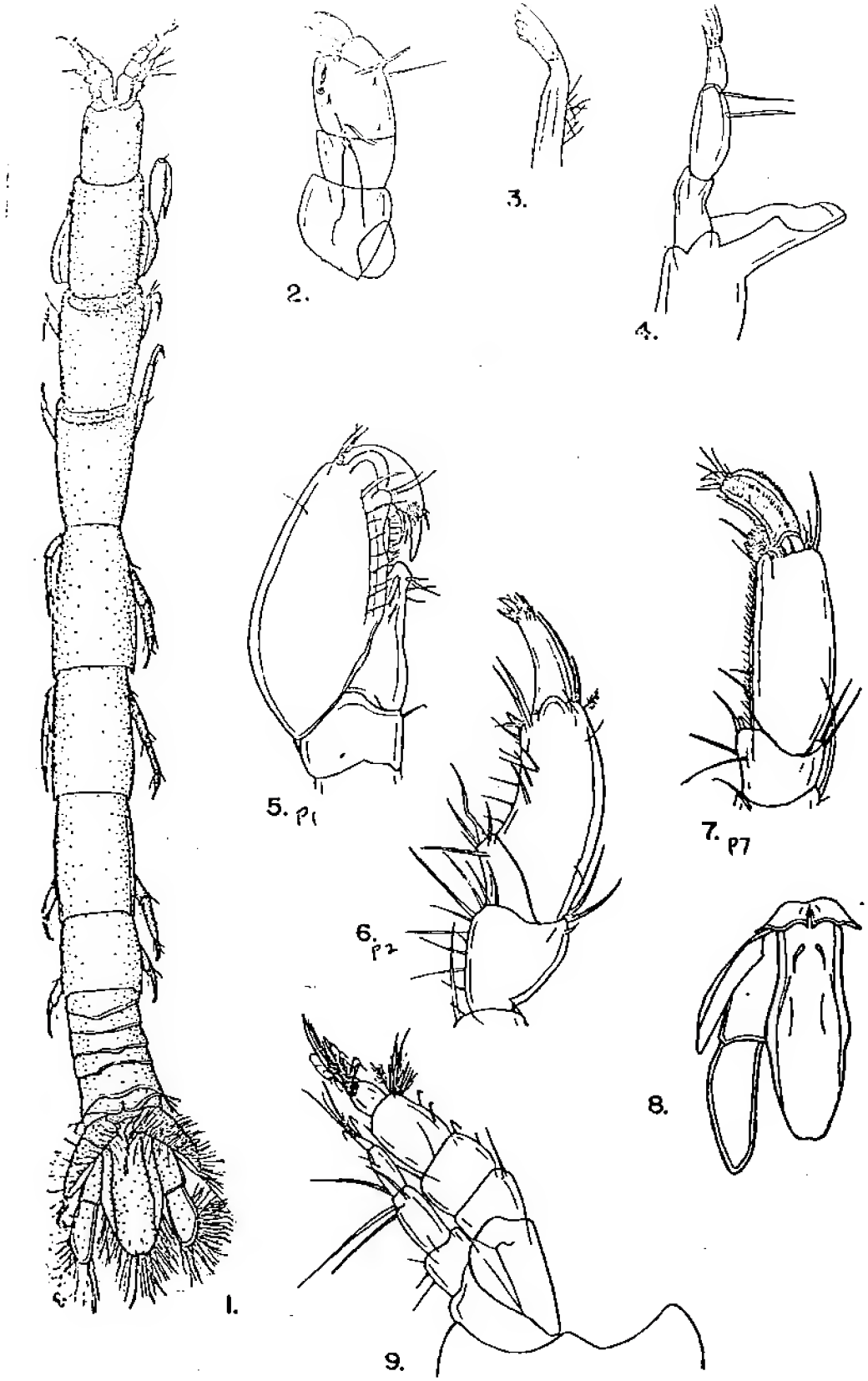

FIGURE 4. *Amakusanthura californiensis* - 1) ♀ whole animal, dorsal view; 2) maxilliped; 3) maxilla 1; 4) mandible; 5) pereopod 1; 6) pereopod 2; 7) pereopod 7; 8) tail fan; 9) antennae (from Schultz 1964)

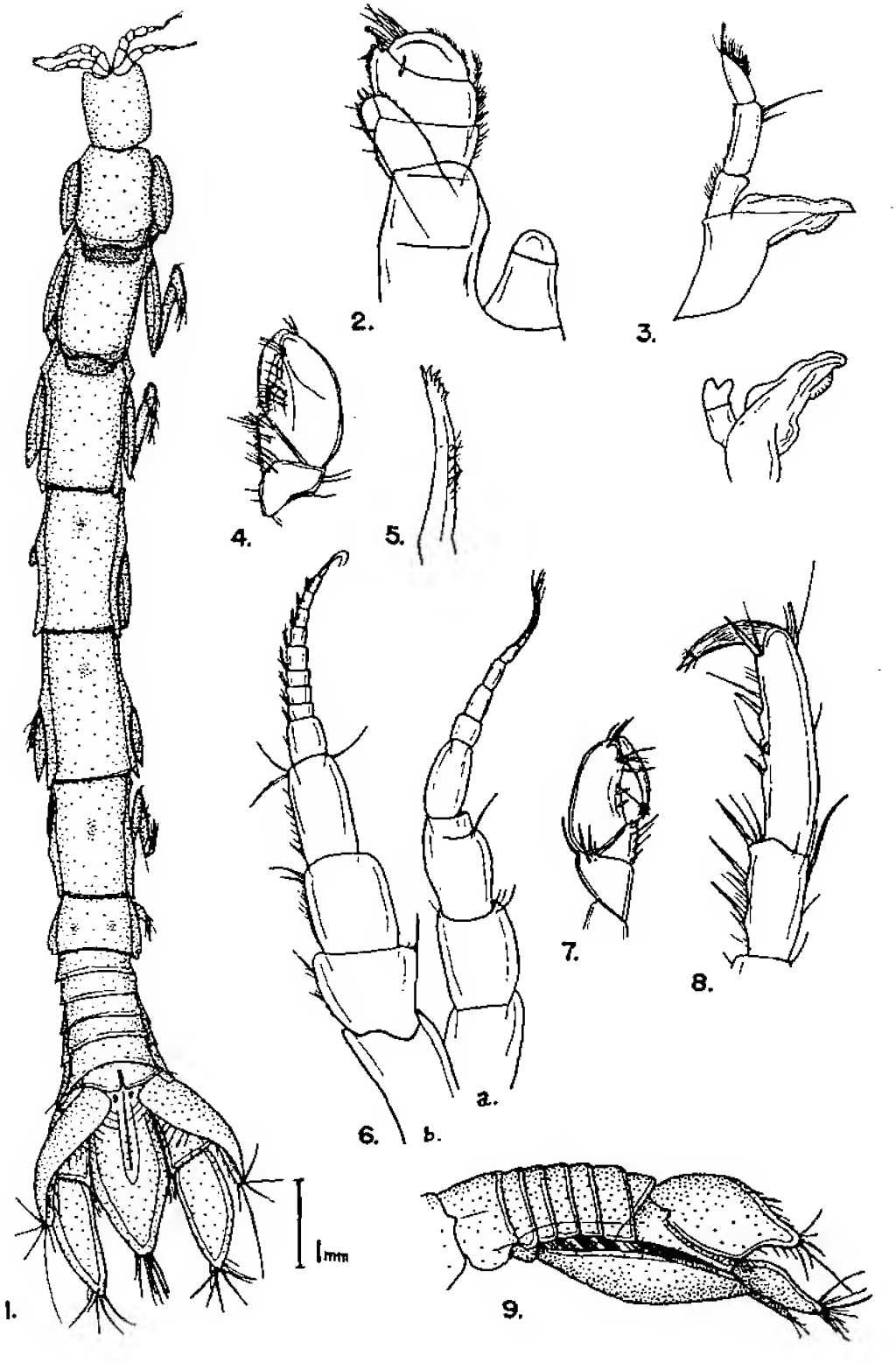

FIGURE 5. *Ananthura luna* - 1) ♀ whole animal, dorsal view; 2) maxilliped; 3) mandible; 4) pereopod 1; 5) maxilla 1; 6) antennae; 7) pereopod 2; 8) pereopod 7; 9) lateral view of pleon and tail fan (from Schultz 1966)

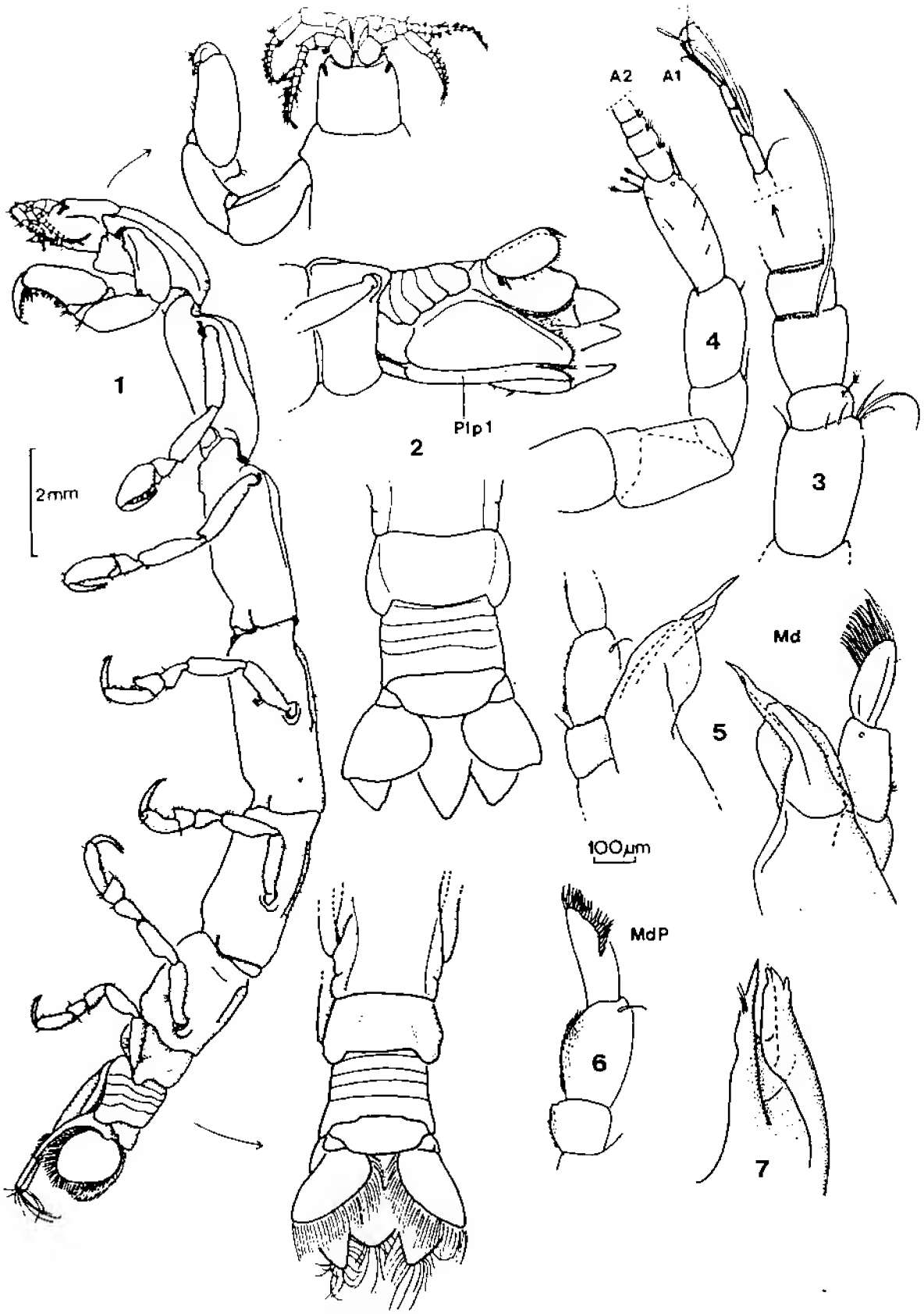

FIGURE 6. *Calathura branchiata* - 1) ♀ whole animal lateral view, with dorsal views of head and pleon/tail fan; 2) ventral oblique and dorsal views of the pleon/tail fan of another specimen; 3) antenna 1; 4) antenna 2; 5) mandible (2 views); 6) mandibular palp; 7) lower lip (labium)(from Wägele 1981)

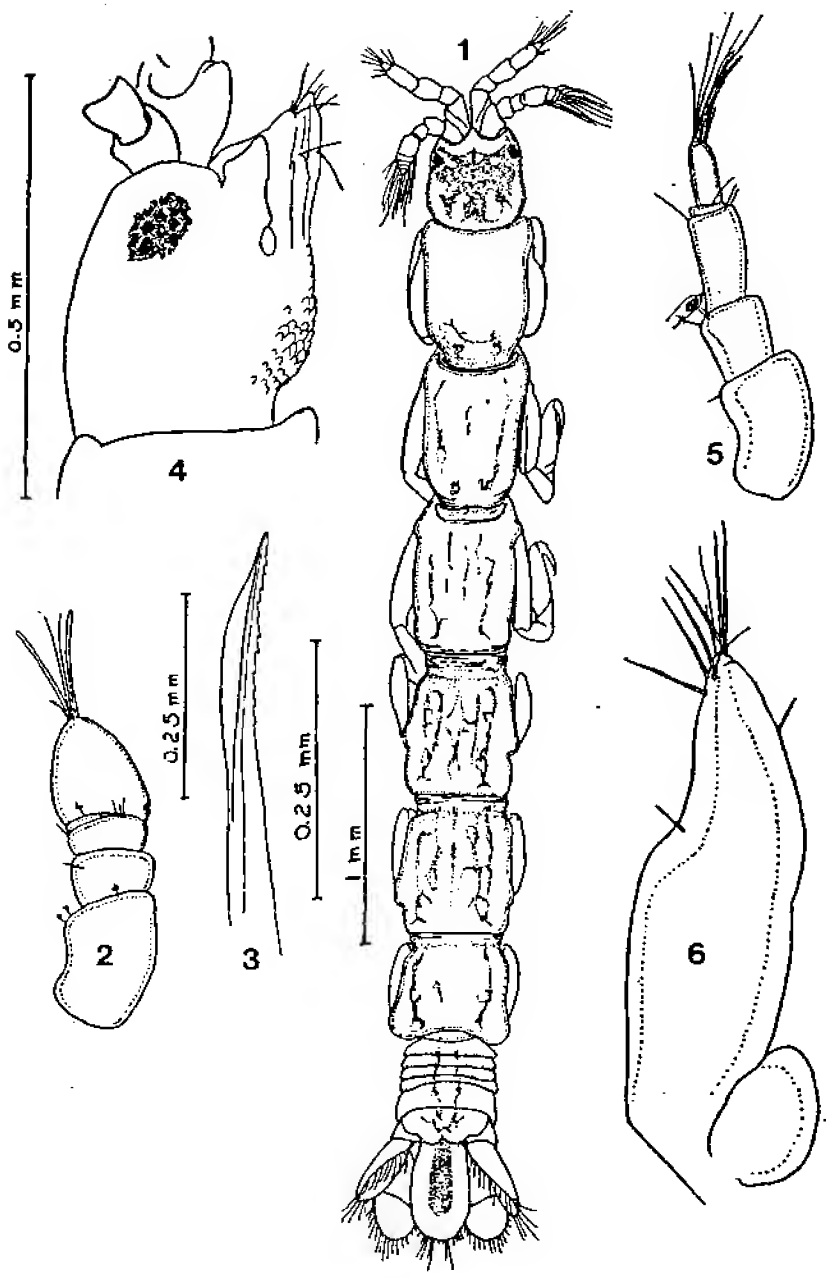

FIGURE 7. *Califanthura squamosissima* - 1) holotype ♂, dorsal view; 2) antenna 1 of juvenile ♂; 3) tip of maxilla 1; 4) later view of head, holotype ♂; 5) antenna 1 of ♀; 6) maxilliped of holotype ♂ (from Menzies 1951)

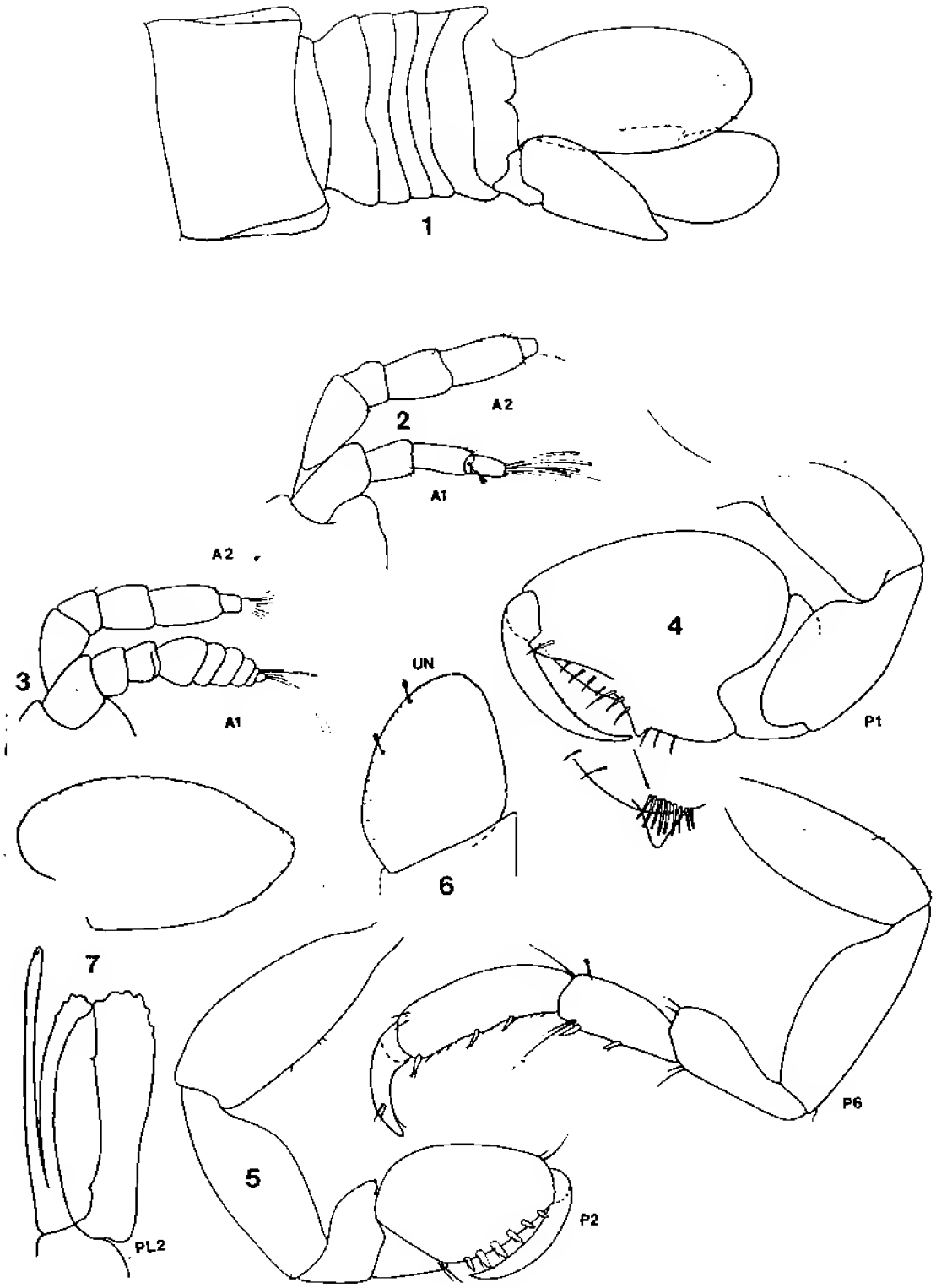

FIGURE 8. *Colanthura bruscai* - 1) dorsal view of ♀; 2) antennae of ♀; 3) antennae of ♂; 4) pereopod 1 of ♀; 5) pereopod 2 of ♀; 6) uropodal endopod of ♀; 7) uropodal exopod of ♀; pleopod 2 of ♂ (from Poore 1984)

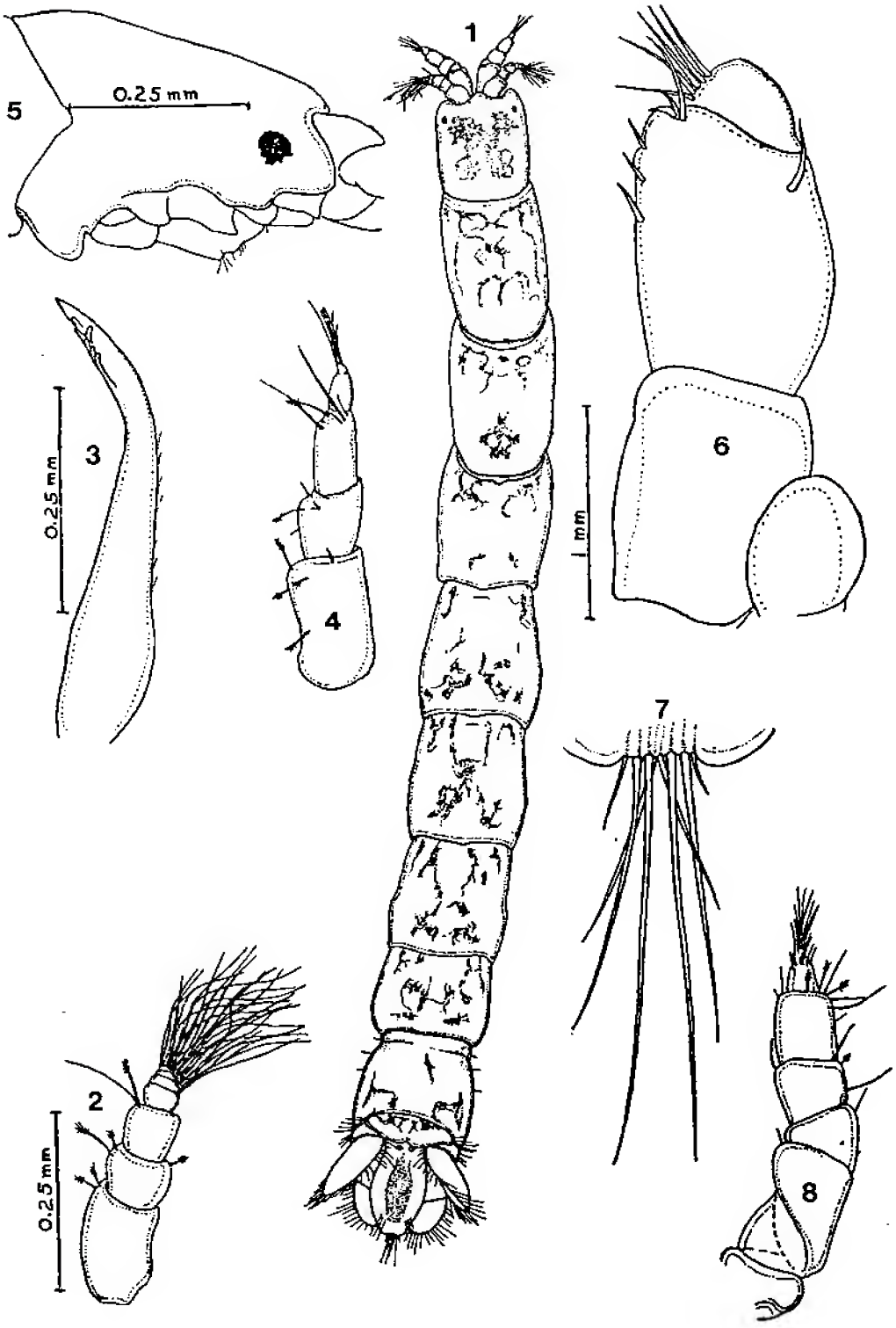

FIGURE 9. *Cyathura munda* - 1) dorsal view of ♂; 2) antenna 1 of ♂; 3) maxilla 1; 4) antenna 1 of ♀; 5) lateral view of ♂ head; 6) maxilliped of ♀; 7) tip of pleotelson of ♂; 8) antenna 2 of ♂ (from Menzies 1951)

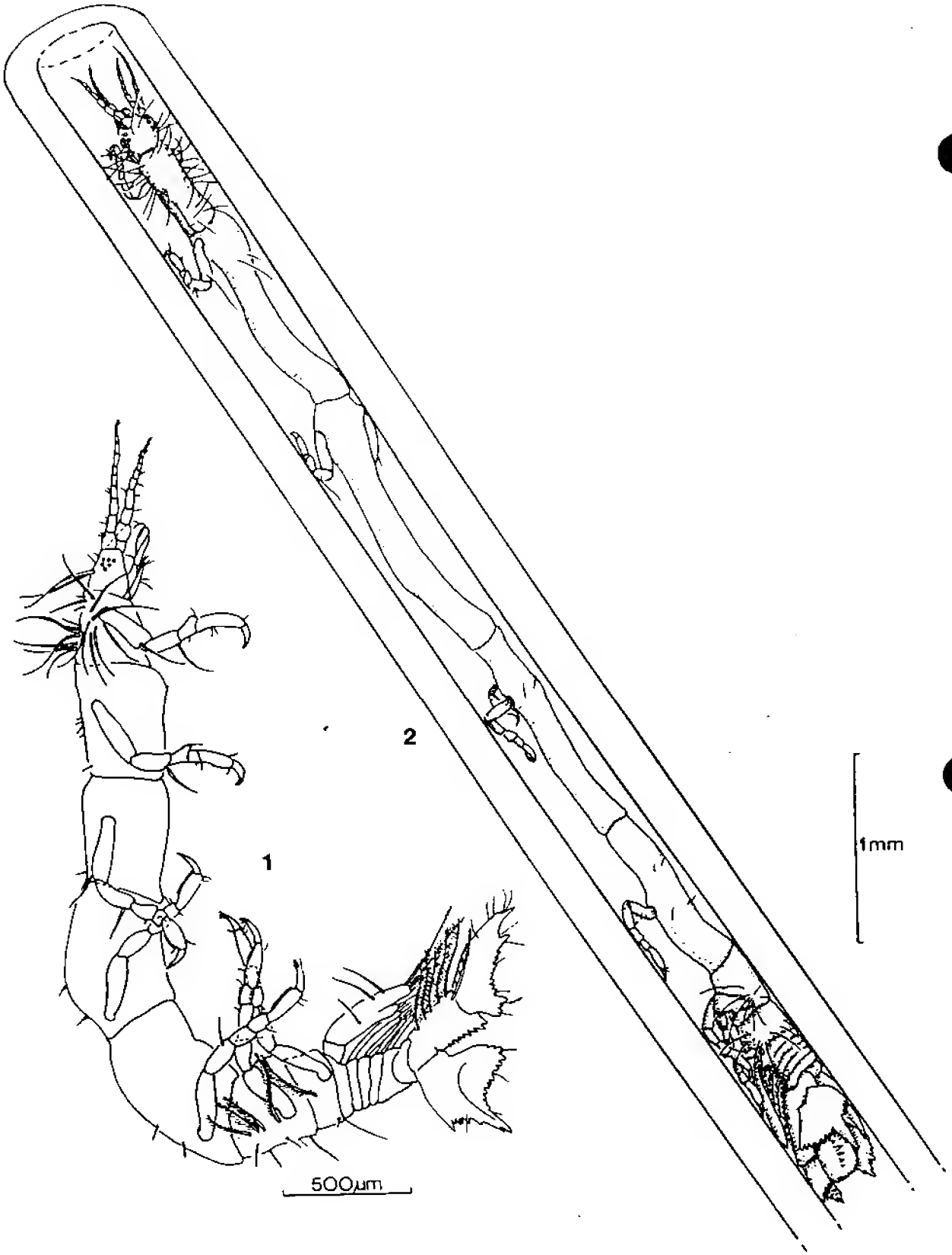

FIGURE 10. *Eisothistos macrurus* - 1) pre-brood ♀ in lateral view; 2) post-brood female in capillary tube showing elongation of pereonites (from Wägele 1981)

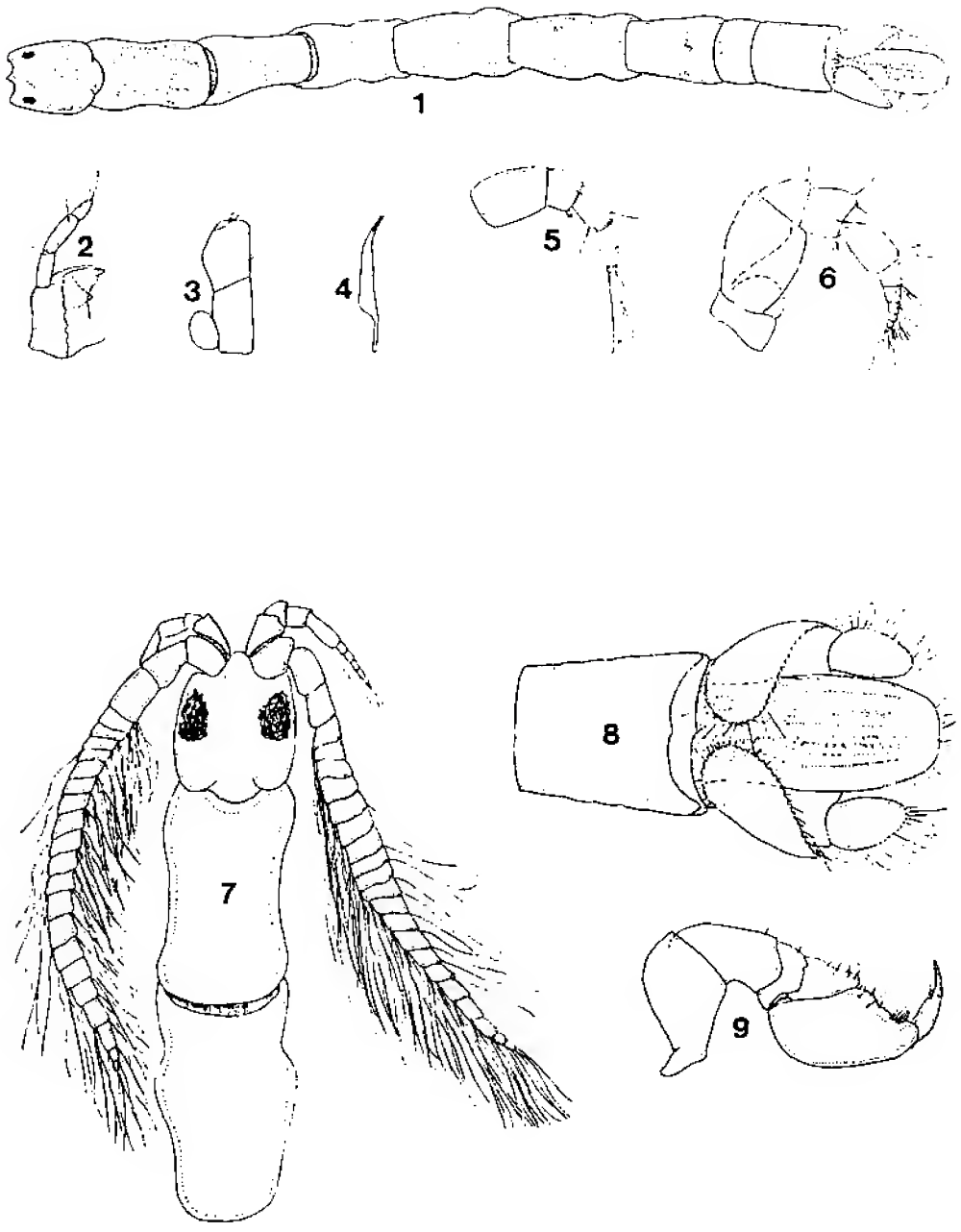

FIGURE 11. *Haliophasma geminatum* - 1) dorsal view of ♀; 2) mandible; 3) maxilliped; 4) maxilla 1; 5) antenna 1 of ♀; 6) antenna 2 of ♀; 7) anterior dorsal view of ♂; 8) pleon & pleotelson of ♂; 9) pereopod 1 of ♂ (from Menzies & Barnard 1959)

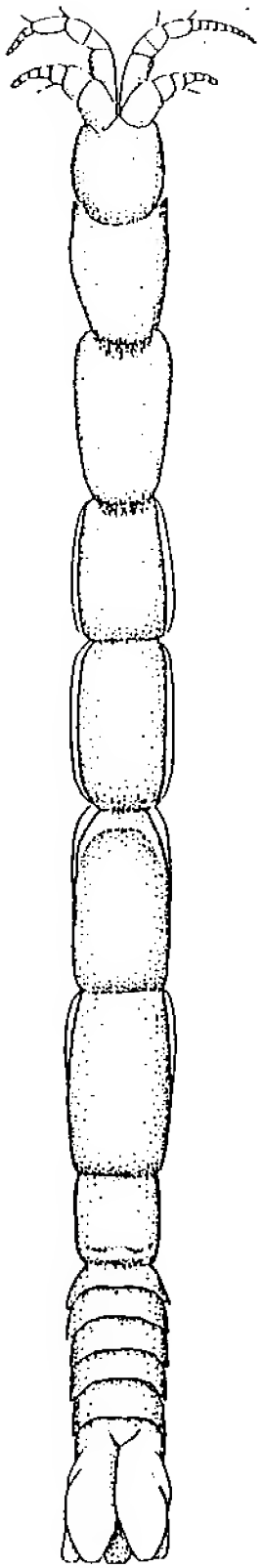

FIGURE 12. Hysurridae gen A sp A - dorsal view (from Wetzer & Brusca, in press)

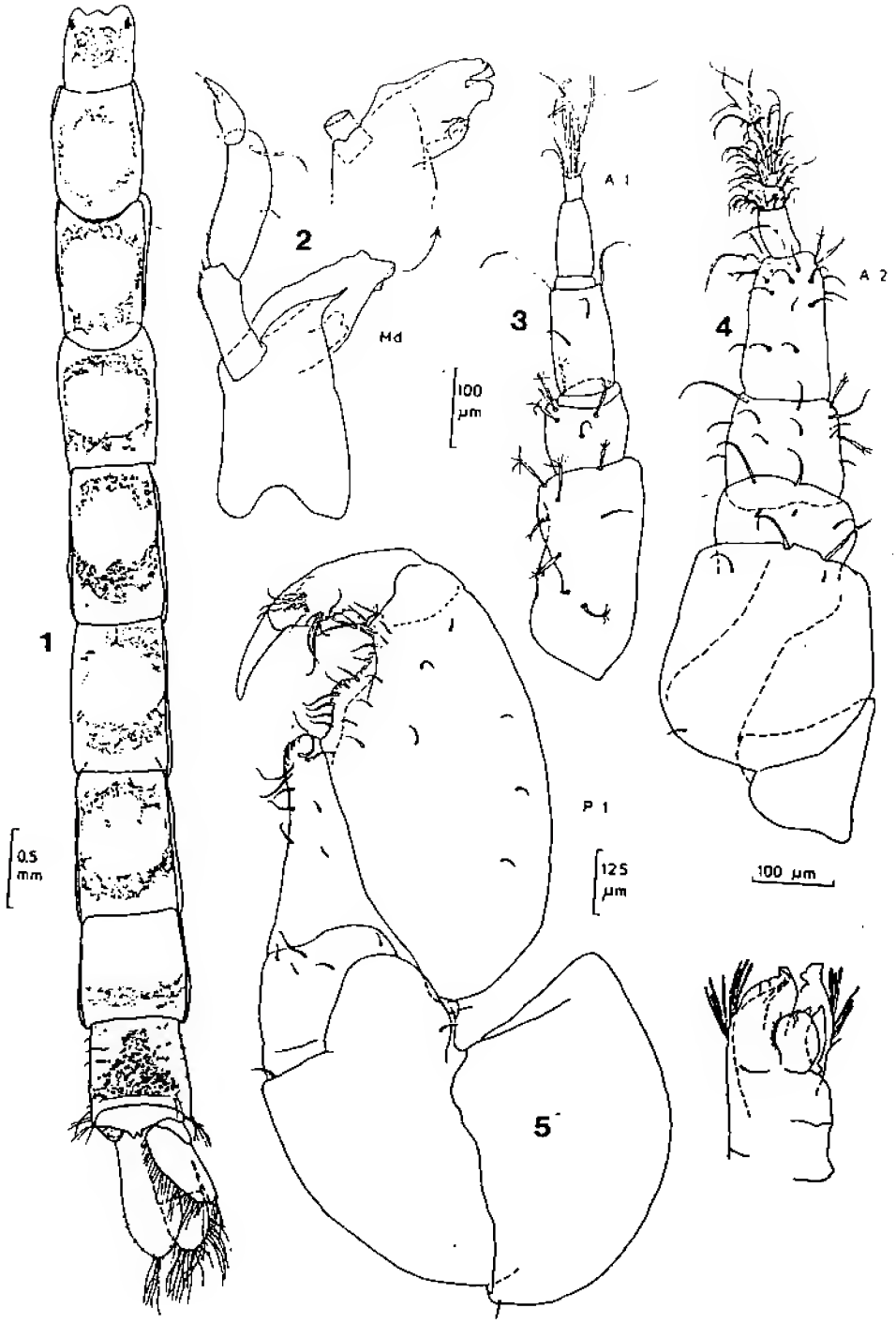

FIGURE 13. *Mesanthura occidentalis* - 1) dorsal view of juvenile; 2) mandible (2 views); 3) antenna 1; 4) antenna 2; 5) pereopod 1 (from Wägele 1984)

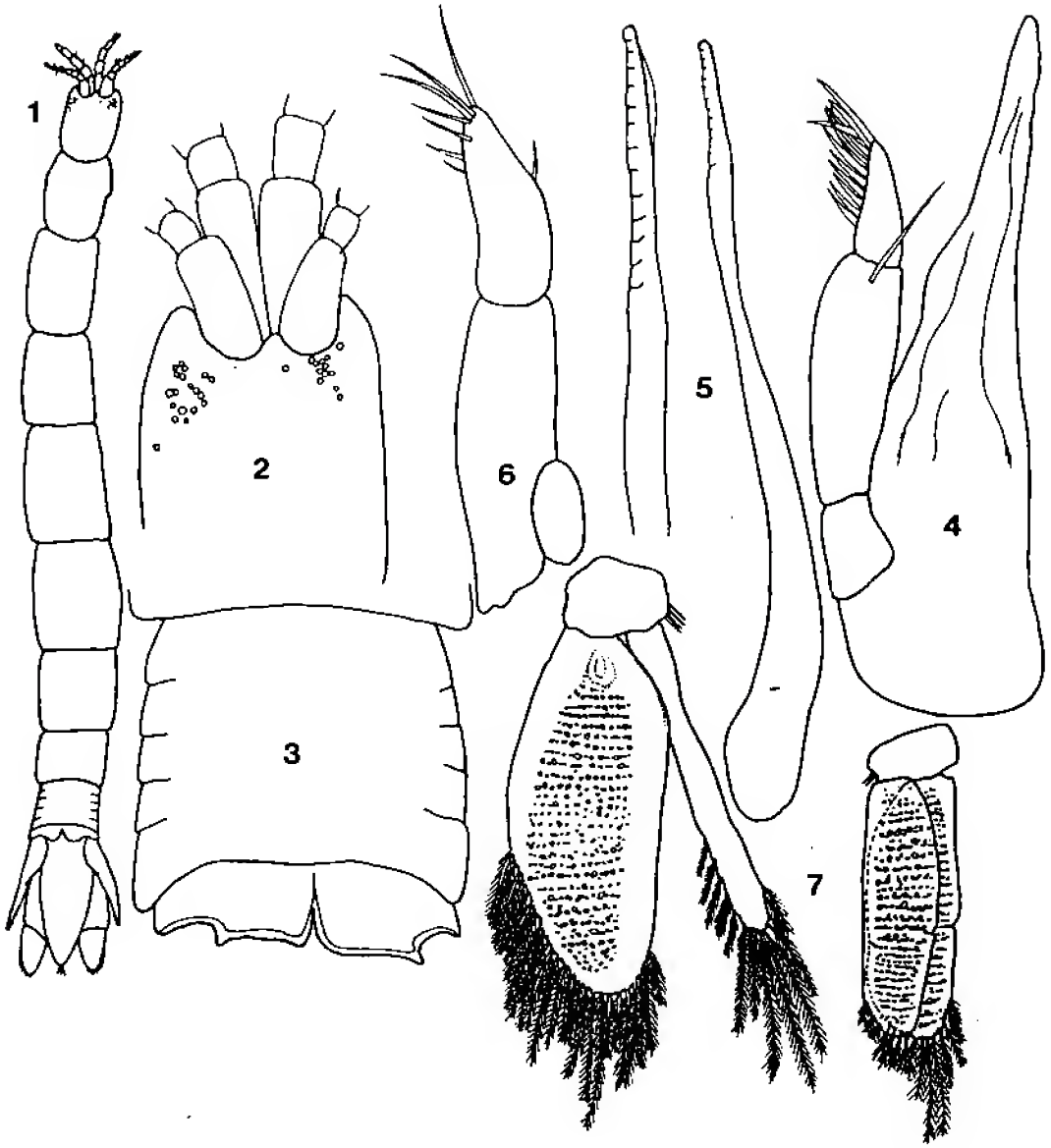

FIGURE 14. *Paranthura algicola* - 1) dorsal view of ♀; 2) head; 3) pleon; 4) mandible; 5) maxilla 1 (2 views); 6) maxilliped; 7) pleopods (2 views) (from Nunomura 1978)

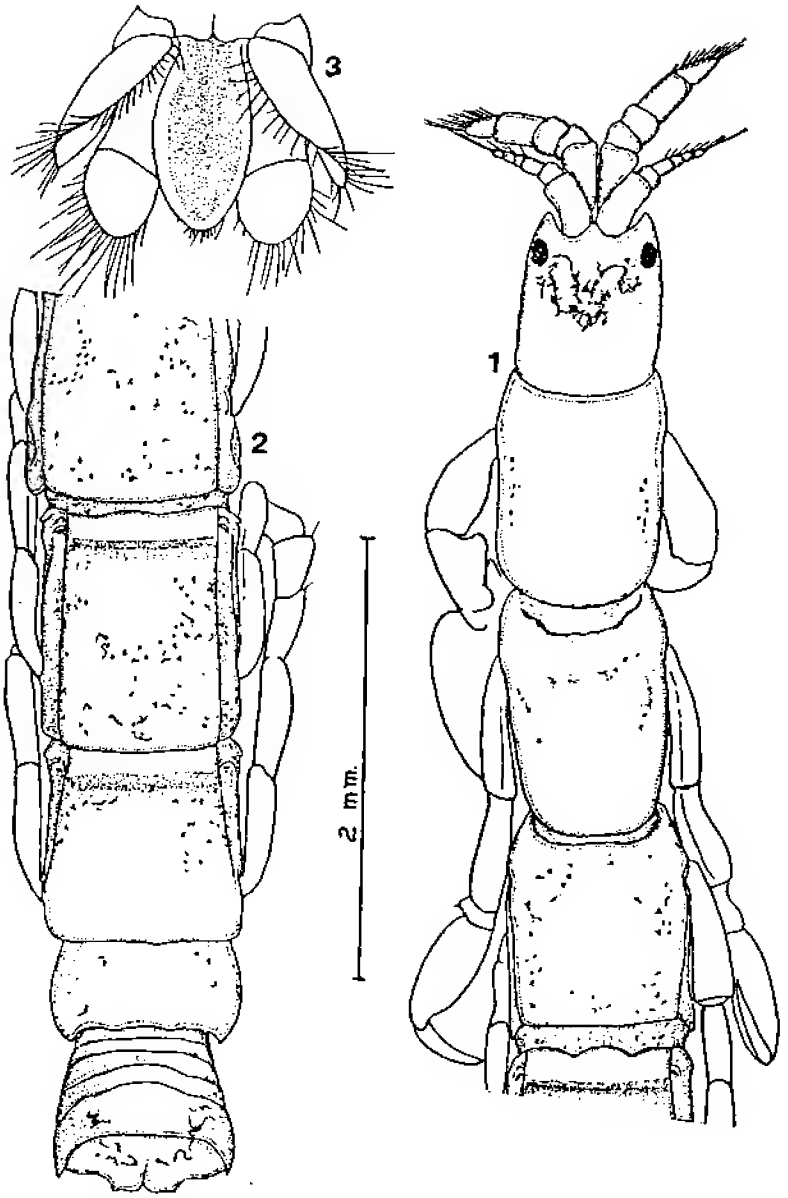

FIGURE 15. *Paranthura elegans* - 1) dorsal view of anterior body of ♀; 2) dorsal view of posterior body of ♀; 3) dorsal view of tail fan of ♀ (from Menzies 1951)

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O116 – Aquaculture de Méditerranée (N. Vicente, J. Vacelet) – Production biologique et pêche dans l'océan Indien (P. Geistdoerfer) – Impact à longue distance de rejets radioactifs en milieu marin (A. Garnier). 93 p., 1985. 70 F

W031 – Chlorophyll size distribution (Raimbault *et al.*), 10 p. ; *Cafeteria roenbergensis* n.g., n. sp. (T. Fenchel & D.J. Patterson) 11 p., Feeding of *Favella* (A. Taniguchi & Y. Takeda) 13 p. 120 F

WO32 – Choanoflagellate biology (P. Andersen), 15 p. Fatty acids of phyto and microzooplakton (H. Claustre, J.C. Marty, L. Cassiani & J. Dagaut), 15 p. Grazing on bacterioplankton (M.G. Frikha & E.A.S. Linley), 11 p. Photosynthetic *Strombidium* (D.K. Stoeker D.K., M.W. Silver, A.E. Michaels & L.H. Davis), 21 p. 150 F

W041 GAP, 4th International Workshop : Introduction (S-Y. Maestrini). Foreword (T. Berman). Microalgal respiration (J. Beardall & J.A. Raven). Phytoplankton and phytobenthos production (C. Charpy-Roubaud & A. Sournia). Measurement of respiration with isotopes (J.A. Raven). Estimates of primary production in oligotrophic waters (D.K. Krupatkina). Adaptive carbohydrate release by phytoplankton (A.M. Wood & L.M. Van Valen). Microphytobenthic pigments (R.G. Barlow *et al.*). Respiration in blooming *Microcystis* (Y. Watanabe & F. Kimura). 130 p. 160 F

W042 Nanoflagellates in culture (D.A. Caron), Phytoplankton flow cytometry (M. Legner). Algal release of DOM (P.J. le B. Williams). Microphytobenthos chloropigments (G. Blanchard *et al.*). Chlorophyll intercomparison (J. Neveux *et al.*). Primary production of epiphytic algae (N. Takamura *et al.*), 112 p. 80 F

W051 – NATO ASI 604/87, Plymouth, 24th July to 5th August 1988 : Protozoa and their role in marine processes. 177 p. 180 F

W052 – Toxic dinoflagellates and bacteria (C. Rausch de Traubenberg & P. Lassus). Distribution of bacterivory among nanoflagellates (B.F. & E.B. Sherr). Enteric bacteria removal (I. Barcina, J.M. Gonzàlez, J. Iriberri & L. Egea). Flagellate faeces production (M. Elbrächter). 60 p. 60 F

12. Documentation

O161 – Répertoire de dictionnaires et glossaires à l'usage des océanographes (M. Delahaye & D.H. Hugol). 74 p. 60 F

O16HS – Actes de la 2e réunion européenne des bibliothèques et centres de documentation en sciences aquatiques (EURASLIC). 131 p. 90 F

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CALL FOR ABSTRACTS

The Water Environment Federation (WEF) Program Committee is soliciting abstracts for the Surface Water Quality and Ecology Symposium and related sessions "Coastal Water Quality Issues", "Environmental Monitoring & Assessment", "Sediment Quality Criteria Issues", and "Watershed Management in the Great Lakes" for the 1994 Water Environment Federation Annual Conference in Chicago, Illinois, October 16-20, 1994.

Individuals are encouraged to submit abstracts to address this important and expanding focus of the Federation. Papers covering the following topics are especially encouraged:

- Urban & Agricultural Nonpoint Source Impacts and Controls
- Waste Disposal Effects on Estuaries and Coastal Areas
- Nutrient Problems and Eutrophication
- Multimedia, Transboundary Ecological Risk Assessments
- Natural Resources Damage Assessments
- Water Quality Impacts of Air Emissions
- Stormwater Impacts
- River, Lake & Watershed Management
- Water Quality Modeling & Monitoring
- Fate & Transport Modeling of Toxics
- Toxicity Reduction Evaluations
- Sediment Quality Criteria
- Assessment of Sediment Contamination (extent & type)
- Sediment Bioavailability Issues
- Evaluation of Cumulative Impacts
- Regional Planning
- Water Quality Criteria and Standards (including site specific)
- Freshwater & Marine Water Quality and Ecosystem Issues
- Bioassessment, Rapid Bioassessment Protocols and Biocriteria
- Great Lakes: (Development & Implementation of Regulations; Impact on Regulated Communities; Watershed Management; Site-specific Municipal and Industrial Permitting; and Regional Water Quality)

The deadline for submission of abstracts is January 10, 1994. Authors will be notified of tentative selection of abstracts by April 2; final acceptance of papers is contingent on submission of a full manuscript of the selected abstract by July 1, 1994.

Submit abstracts to:
Water Environment Federation
Attn: Maureen Novotne, Technical & Educational Services
601 Wythe Street, Alexandria, VA 22314-1994
(703) 684-2400, ext. 7450

Abstract Submittal FORM

WEF Control No. _____

Water Environment Federation

67th Annual Conference & Exposition

McCormick Place North
Chicago, Illinois October 16-20, 1994

A photocopy of this form must be used as the title page for each copy of the abstract. The session topic for which the abstract is submitted must be identified by letter in the appropriate space on the form. Another platform session or the poster session may be indicated for alternate consideration if the paper is not accepted for the primary session topic.

Send copies of the complete submittal to the Federation office. Sending abstracts to session managers or other members of the Program Committee may delay consideration of the paper. Abstracts must arrive at the Federation office by January 10, 1994. No FAX submissions can be accepted for consideration. Submissions received after this date will receive consideration only after prior submissions have been evaluated, and on a space available basis.

Title of paper: _____

Speaker: _____

Corresponding author: _____

Company: _____

Street address: _____

City: _____ State or Province: _____ ZIP: _____

Phone: _____ FAX: _____

Will this paper be presented elsewhere before September 1, 1994? ☐ Yes ☐ No

If so, where? _____

Paper submitted for session topic _____

Enter letter from attached list. If submitted for A-H (Symposia series), submit 15 copies of the abstract; for all other sessions, submit 5 copies. This form must be used as the cover page for each copy of the abstract.

Alternate consideration requested for session topic _____
(Enter another session topic **or** (I) Poster Session.)

Deadline for submissions is January 10, 1994.
Authors will be notified of tentative selection of abstracts by April 2, 1994.
Final acceptance for the program is contingent on receipt of a full manuscript by July 1, 1994.

Submit abstracts to:
Water Environment Federation
Attn: Conference Program
601 Wythe Street
Alexandria, Virginia 22314-1994 USA

FAX submissions cannot be accepted for consideration.

For Committee use only:	1	2	3	4	5	Total

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Dec. 13th SCAMIT Meeting
on Odd Polychaetes

Polychaetes brought by Larry Lovell

Scolelepis sp. B of Rossi - (S. bullibranchia) see in key → tridentate hooks
multidentate hooks, notosetae absent on 1st setiger
→ See Couplet insert in Lovell & Pasko key of Spionidae (new version in process)
(tri. vs multidentate hooks)
occipital cirrus absent here in S sp. B
hooks begin on setiger 15th.

Scolelepis sp. B. of Rossi
- notosetae absent on 1st setiger
- occipital cirrus absent
- multidentate hooks not tri- as in S. bullibranchia

Maciolek uses the shape of the main fang of the hooded hooks to separate Scolelepis into 2 main groups
one has a sharper main fang and the other is more blunt

Scolelepis sp. B brought by Larry could be Scolelepis sp. 1 of Pt. Loma Larry's from lagoon but Pt. Loma sees them offshore
{ has some palpal papillae as drawn in Maciolek 1987 and interramal ventral lamellae
See Maciolek '87 (Pettibone version)

Scoletoides tridentata has notosetae on setiger 1 unlike Ssp B.

Scalopolos acmeceps (brought by L. Lovell)

Family Orbiniidae

found deep in offshore basins

Larry has seen it much shallower

branchiae begin on setiger 12

* Check for uncinal setae in anterior setigers because there are fewer capillaries to interfere in view the capillaries form a U shape around these uncinal setae

no subpodial lobes found - easier to see if stained with Methyl green

Scalopolos tends to have its anterior end flattened dorso-ventrally whereas Leitoscalopolos is inflated and has some sort of ducts that make a dashed line running from setae to setae across ventrum. Scalopolos doesn't have these.

Mostly S. armiger is seen especially by Pt. Loma Hyperion hasn't reported this as of yet.

Nothria occidentalis

no pigment, large eyes, pigment spot on anterior prost.
first few parapodia point anteriorly
on 1st setiger large presetal rounded lobe
found 60 meters in coarse sediment with heavily encrusted rock tubes
See Hartmas atlas under Nothria conchylega
for figures that refer to N. occidentalis

Onuphis pallida - one from Larry and one from us

Larry's - Very different from ours
which keys out to O. geophiliformis according to
R. Velarde but should be checked against type.
He thinks it looks close to O. iridescens except that
branchiae begin on setiger 4 not 1

Larry's from Montara
- has what looks like eye spots on ceratophores
- Subacicular hooks present from setiger 10
- Compound spinigers
- branchiae begin at 1 (for Mooreonuphis - they begin at 6 or 7) and are bifid
- pseudocompound hooks - tridentate or bidentate?
- pseudocompound hooks in 1st 3 setigers on one side and

1st 4 setigers on other side

Keep out to *Onuphis eremita parva* if we consider pseudocompound hooks in 1st 4 setigers rather than 3

Need to check against Shisko's *O. annulata*

Syllidae

Sphaerosyllis branchaeseti (Larry's specimen from Orange Co. in 40 meters)

look at Banse & Hobson

* whether or not dorsal cirrus is present on 2nd setiger

S. branchaeseti has it.

3 pairs of eyes

dorsal cirrus on 1st 2 setigers

Simple setae present on setiger 1

no dentitions on edges of compound setae and the simple setae are smooth

* main character to distinguish species with

S. californiensis has no dorsal cirrus on 2nd setiger and only 2 pair of eyes

Maldanidae

see Hobson + Banse and voucher sheet by Karen Greene

Petaloproctus borealis - 21 setigers + smooth margin

what to look at { pygidial scoop w/ smooth or crenulated margin ?
20 or 21 setigers ?

Notoproctus, Nicomanche, Petaloproctus all have very long setae
all these are quite rare
most aren't found whole

Ariciidae

Aphelochaeta parva
spirally coiled with a mid dorsum stripe
large like A. multifilis
Tony Phillips will examine it

Mooreonuphis stigmatus

branchiae simple & strap like begin at setiger 21 and spinigers start on setigers 12-19

peristomium with dark brown pigment

pigment bands across setigers - double bars

small eyes at base of ceratophores

Tell Tom about

Sabellides sp. 1 - Pt. Loma - common at all depths

11 thoracic uncinigers

4 pairs of branchiae

another pair of appendages inserted between branchiae

See Fauchald, 1972 and Uebelacker - Gulf of Mexico

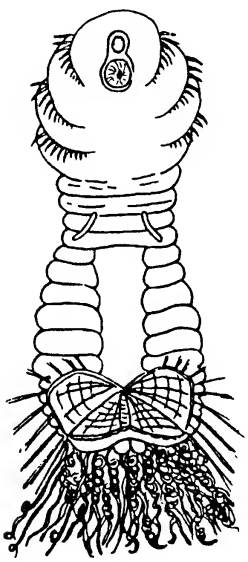
it differs from *A sabellides* in having 1 less uncinigers and having palae

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

November, 1993 Vol. 12, No. 7

NEXT MEETING:	Weird and Strange Polychaetes
GUEST SPEAKER:	None
DATE:	December 13, 1993
TIME:	9:30am-3:00pm
LOCATION:	Polychaete Lab, Los Angeles County Museum of Natural History, Los Angeles, CA



Sternaspis fossor Stimpson, 1854: Figure from Hartman 1969 Atlas of the Sedentariate Polychaetous Annelids

DECEMBER 13

The meeting in December will be a show and tell with polychaete specimens that are weird, strange or rare from the recently generated species list. So please bring your animals. It will be held at Dr. Kirk Fitzhugh's polychaete lab at the Los Angeles Natural History Museum, Los Angeles, CA.

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

MINUTES FROM MEETING ON NOVEMBER 15

Ron Velarde announced that the Master Species List has been given to Southern California Coastal Water Research Project (SCCWRP).

Nominations are now open for SCAMIT officers for the 1994-95 year. They will be entertained from now, up to and including the January meeting. We greatly need officers, (some of the current officers will not be running for re-election), so please consider offering your services for the upcoming year. Send your nominations to the Vice President, Larry Lovell at:

1036 Buena Vista
Vista, CA 92083

Ballots will be mailed out with the January newsletter and will be due by the March meeting.

Don't forget the SCAMIT Christmas party scheduled for Saturday evening, December 11th from 7:00 to 10:00 pm at the Cabrillo Marine Aquarium. Larry will be bringing a turkey for sandwiches and he will supply the bread and condiments. We need people to bring side dishes, salads and desserts. The Aquarium will be open for SCAMIT members and families. We will be setting up tables and chairs at 6 pm. Please come and help if you can.

Don Cadien (Los Angeles County Sanitation Districts) informed attending members that Dr. John Garth passed away. A copy of the service will be included in a later newsletter.

Mary Wicksten (Department of Biology, Texas A&M University, College Station, TX 77843) is checking records of various crabs from California. Does anyone have any recent (that is, since 1945) records of the pelagic grapsoid crabs *Planes cyaneus* and *Pachygrapsus marinus* from California? Both have been reported as cast ashore with floating debris and *Lepas*, the former often associates with sea turtles. Also: has anyone sighted *Uca crenulata* north of Playa del Rey or *Malacoplax californiensis* north of Mugu Lagoon? Reports of these or other "odd" decapods are appreciated.

Treasurer, Ann Dalkey, is working on a new SCAMIT brochure. If you received a draft version from Ann, your comments and also comments of other members should be directed to her by the end of December. Ann's phone number is listed at the end of this newsletter.

SCAMIT is proud to announce the arrival of a new SCAMITer. David and Audrey Vilas had a bouncing baby boy, Henry Kunio, (6 lbs, 11 oz) born on the evening of October 31st.

John Ljubenkov chaired the workshop on Corymorphine Hydroids of southern California. The main character used to identify hydroids is the distribution of 3 different kinds of tentacles: moniliform (beaded), capitate (variety of moniliform with bulb on end) and filiform (simple and straight). Included in this newsletter is a two-way table along with a handout created by John. The hydroids found in California are *Hypolytus, Euphysa, Corymorpha, Tubularia, Myriothela, Cladonema* and Corynidae. The Hypothetical column at the end of the two-way table is depicted in the middle of the drawings of the Evolutionary Trends in Capitate Hydroids and Medusae. John spent the remainder of the morning discussing other cnidarians from the master species list. The afternoon was spent examining specimens of those taxa discussed in the morning.

FUTURE MEETINGS

The meeting on January 10 will be on Sea Pens, Part3. Dr. Gary C. Williams, California Academy of Sciences, San Francisco, CA will be leading the workshop It will be held at MEC in their newly expanded and remodeled offices in Carlsbad, CA.

The February 21 meeting will be a workshop on the Polydora complex (*Boccardia, Pseudopolydora, Carazziella, Polydora* etc.). Larry Lovell will be leading the meeting. Please start collecting specimens and get them to Larry as soon as possible (at the December meeting would be nice). His address is at the beginning of the newsletter. The location of the meeting is still to be arranged.

The meeting on March 14 will be in Santa Barbara, CA. It will be lead by Paul Scott and Dr. Eric Hochberg of the Santa Barbara Natural History Museum. The topic(s) have yet to be determined.

The April 11 meeting will be on Polynoidae. The workshop will be lead by Gene Ruff. This will be held at the City of San Diego's Marine Biology Lab in Point Loma.

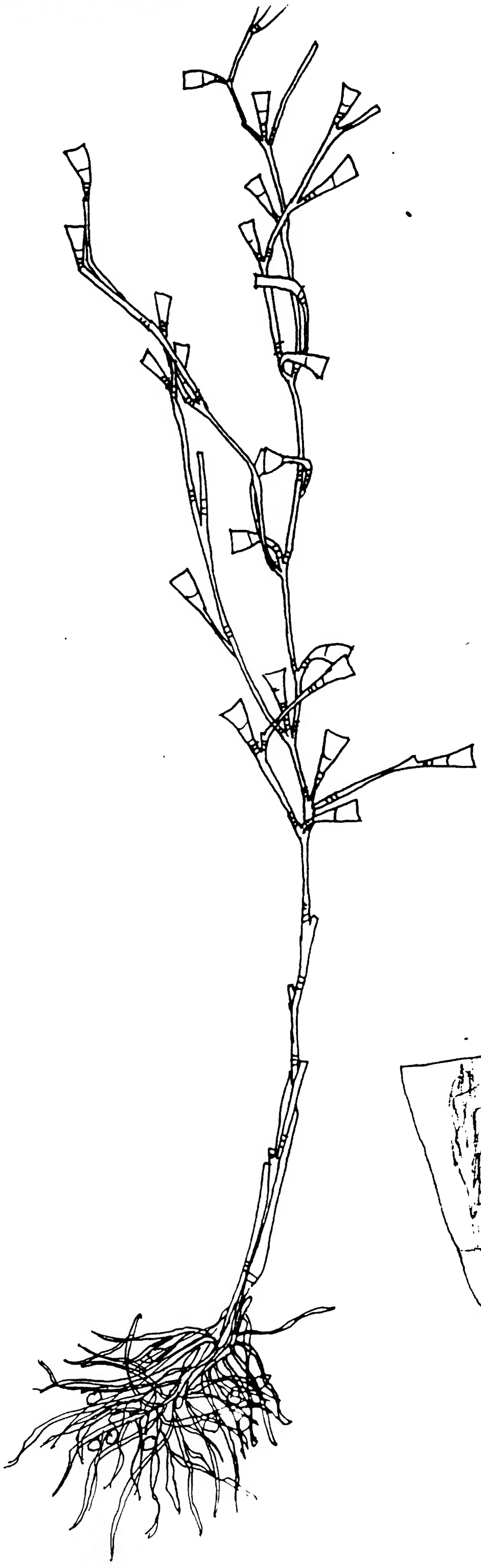
SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

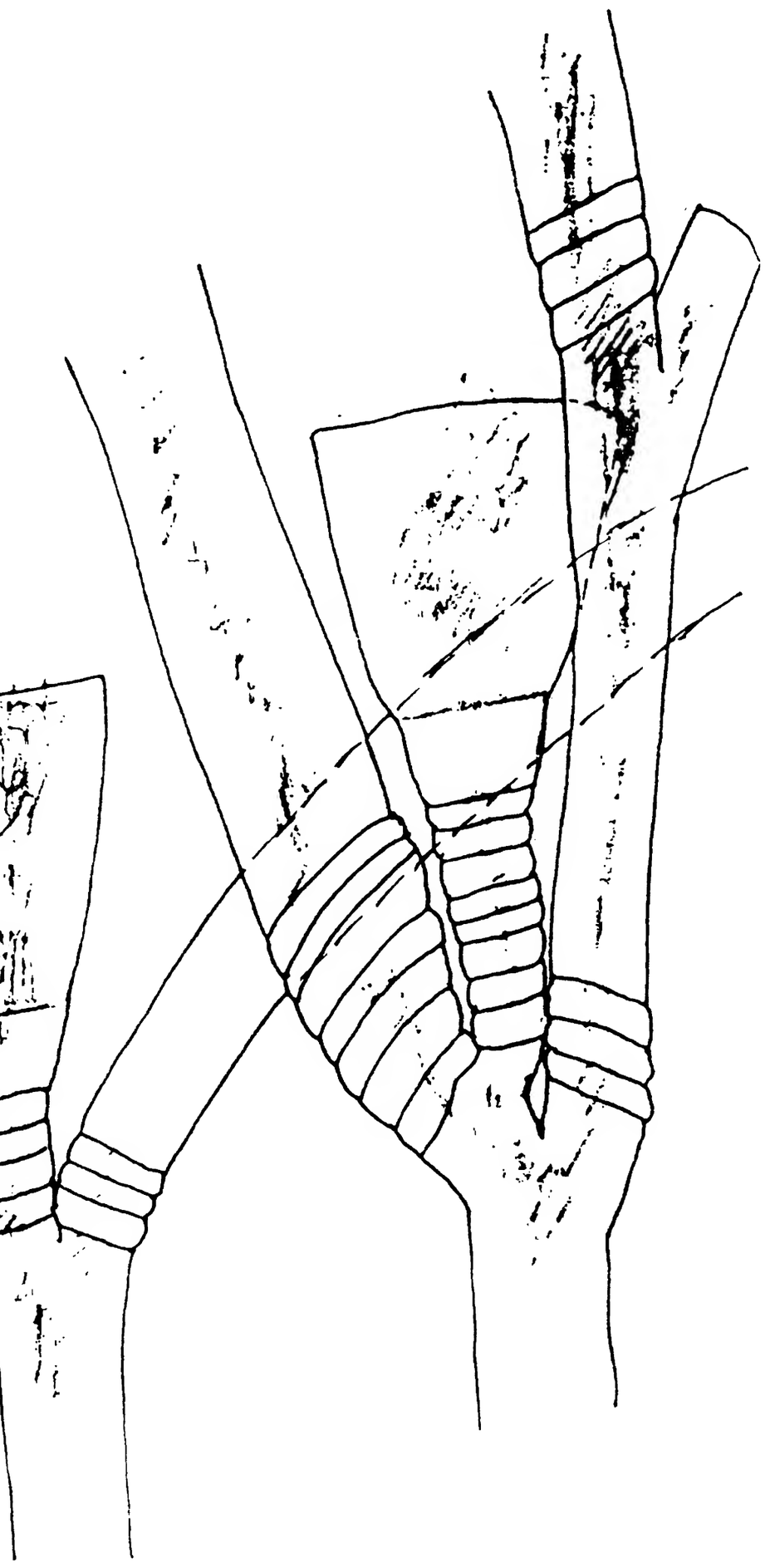
President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

	Hypolytus	*Euphysa*	*Boreohydra*	*Actinulida*	*Corymorpha*	*Tubularia*	*Asyncoryne*	*Tricyclusa*
oral capitate		X	X				X	X
oral moniliform	X							
oral filiform				X	X	X		
aboral moniliform	X	X					X	X
aboral filiform				X	X	X		
solitary	X	X	X	X	X			X
colonial						X	X	
thin perisarc	X	X	X		X			
thick perisarc						X	X	

	Acaulis	*Myriothela*	*Cladonema*	*Halocordyle*	*Corynidae*	*Hypothetical*
oral capitate	X	X	X (4)	X (MANY)	X	X
oral moniliform						
oral filiform						
aboral moniliform						
aboral filiform	X	X (MOD.)	X (4)	X (MANY)		X
solitary	X	X				X
colonial			X	X	X	
thin perisarc	X					X
thick perisarc		X	X	X	X	

Obelia sp. A





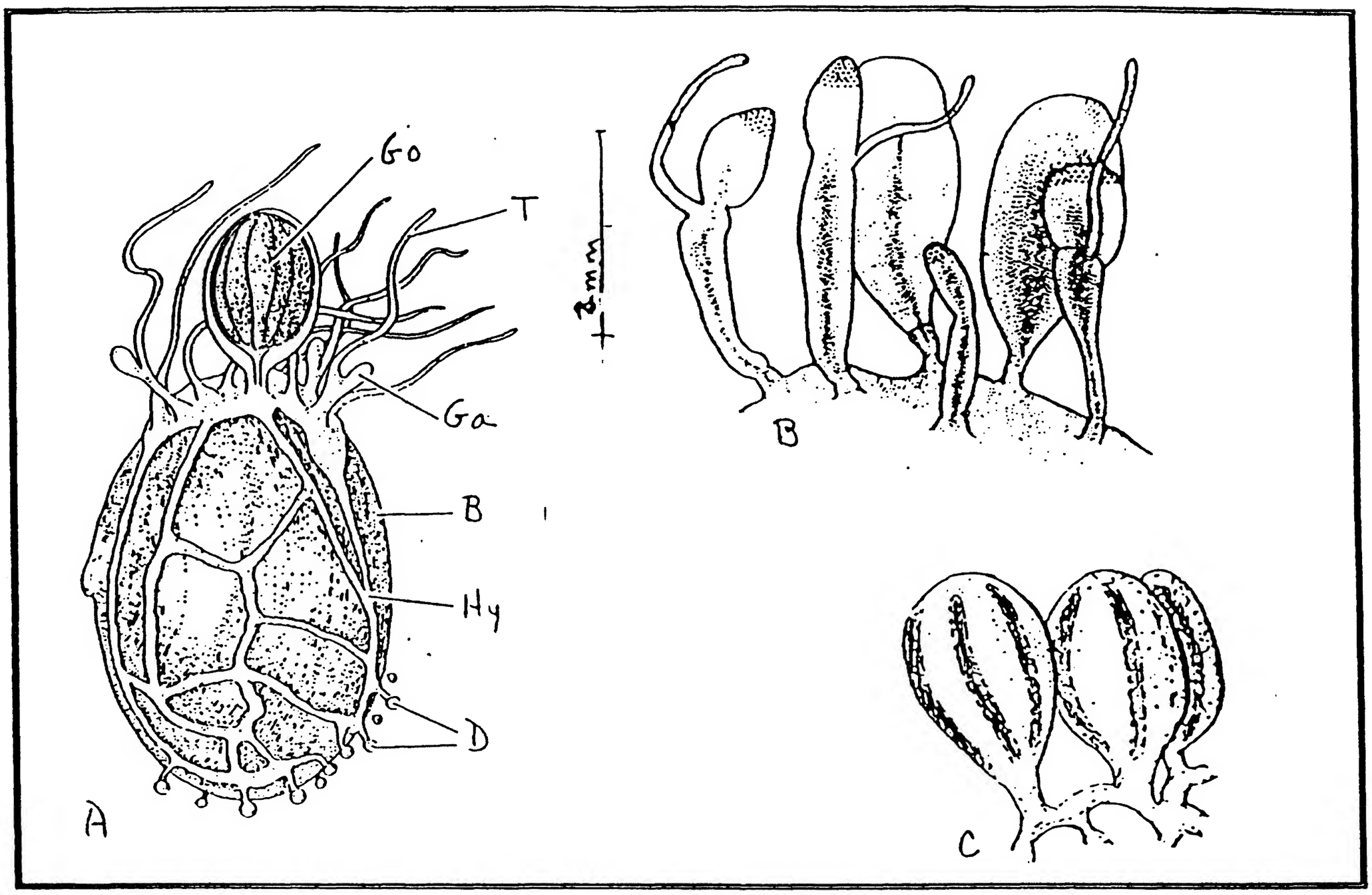


Figure 3.26. *Monobrachium parasitum*: A, colony on shell of bivalve mollusk, *Axinopsida serricata*, note presence of dactylozooids at the margin of the shell; B, enlarged section of colony showing cluster of feeding and reproductive zooids; C, gonozoid (Figure A from Hand, 1957; B, from Naumov, 1960; C, redrawn from Fraser, 1937). Scale in mm. **Abbreviations:** B, bivalve shell; D, dactylozooids; Ga, gastrozooid; Go, gonozooid; H, hydrorhiza; T, tentacle.

FIGURE 198. Calicella syringa (L.), section of colony with hydrothecae and gonothecae

Eudendrium sp.

Naumov '60

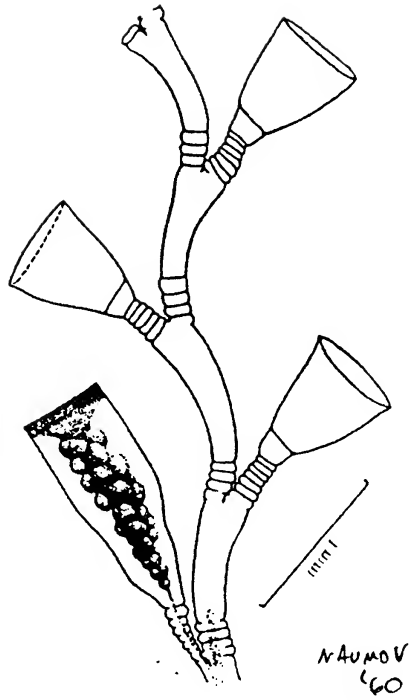


FIGURE 147. Obelia geniculata (L.), branchlet with hydrothecae and gonotheca

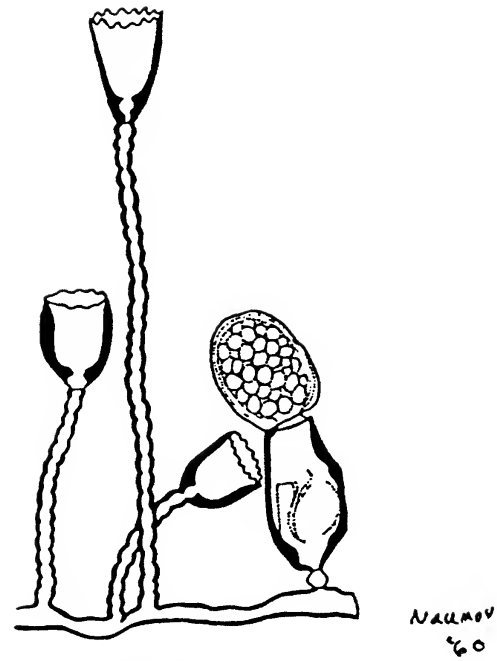
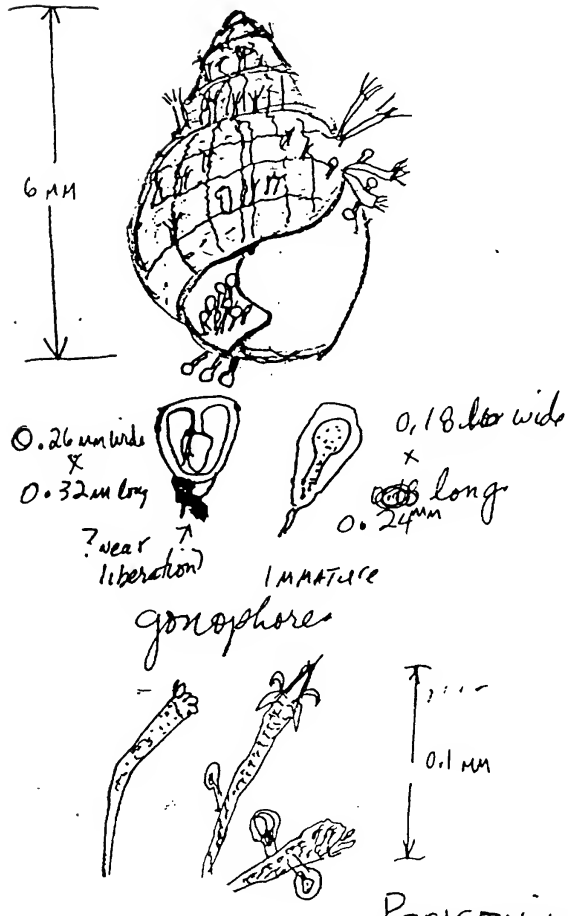


FIGURE 142. Campanularia everta Clark, section of colony with three hydrothecae and gonotheca (after Nutting, magnified?)



Perigonimus "Serpens"

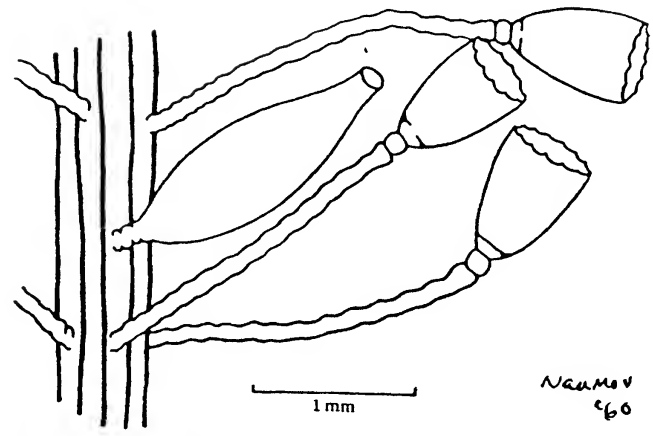
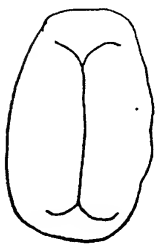


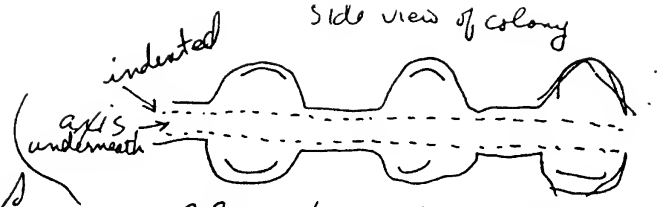
FIGURE 159. Verticillina verticillata (L.), section of colony with hydrothecae and gonotheca

Heteregorgia tortuosa



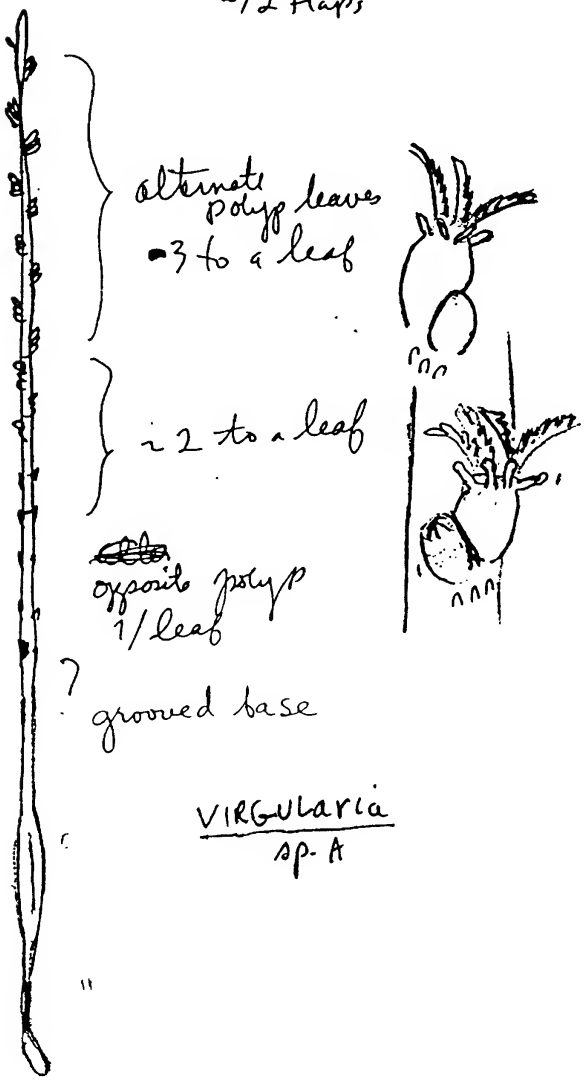
Top view

- Polyp with 2 flaps which fold over retractile polyp
- Polyp. a raised hemispherical mound w/2 flaps

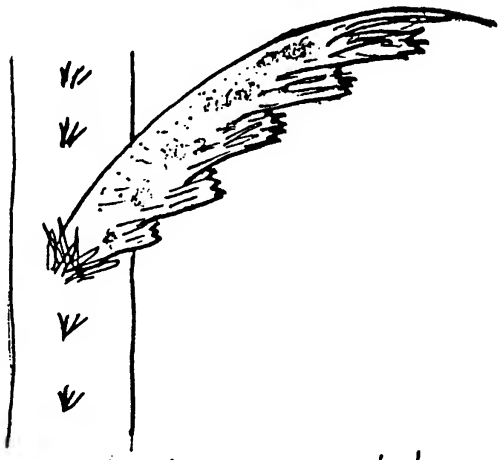


Side view of colony

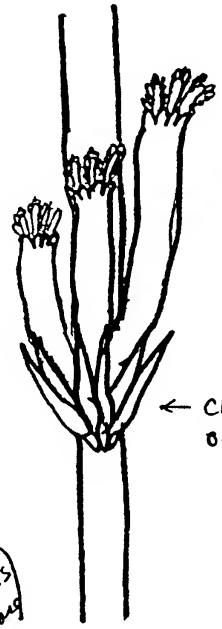
2 Rows of opposite polyps



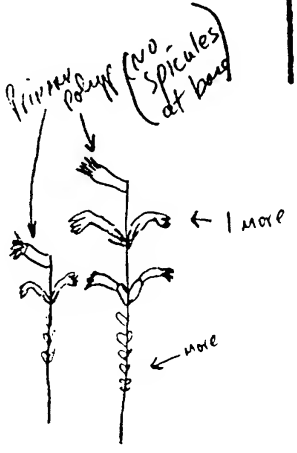
VIRGULARIA sp. A

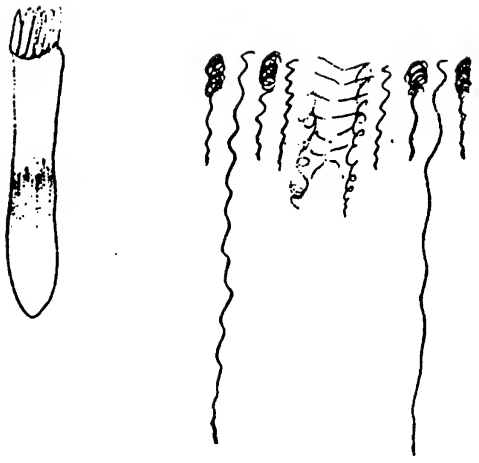


Acanthoptilum annulatum

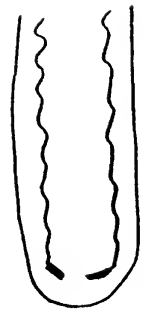


STYLATULA SP A



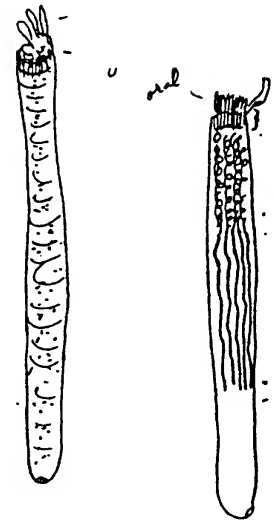


Pachycerianthus sp

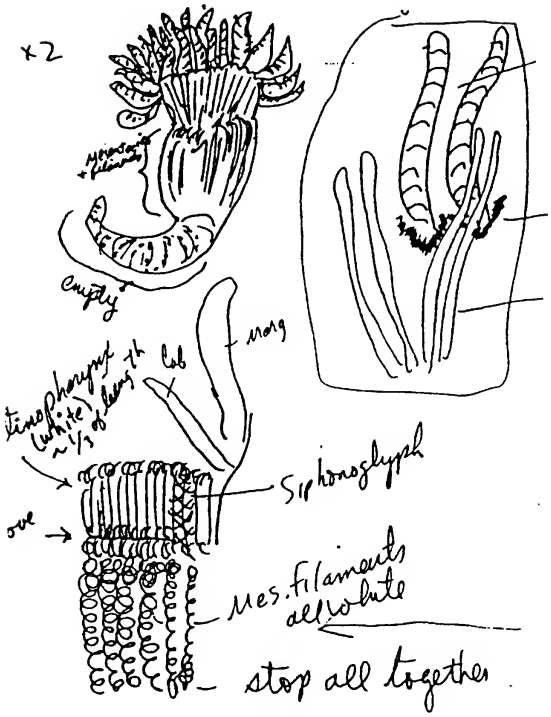


Arachnanthus sp. A

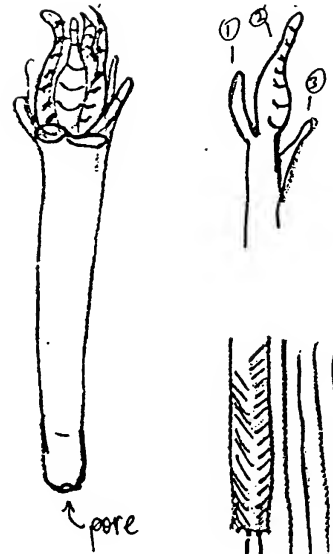
← acontioids



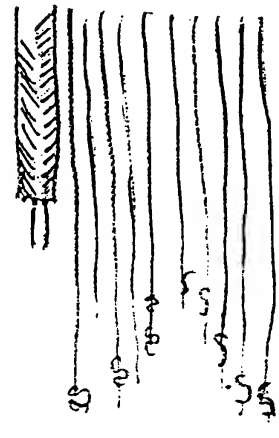
Ceriantharia sp. D

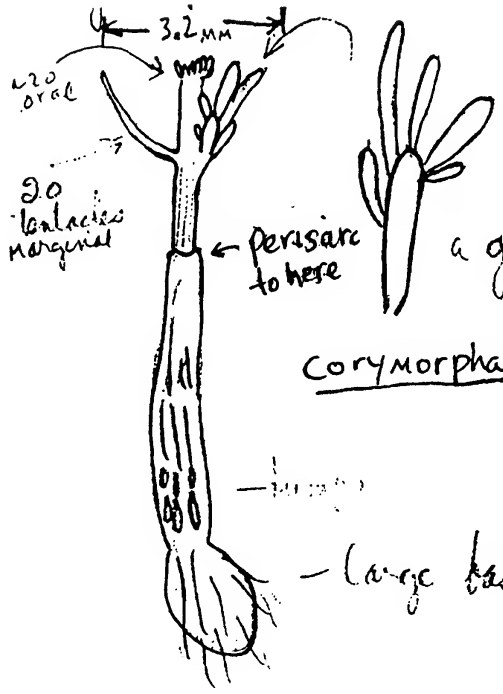


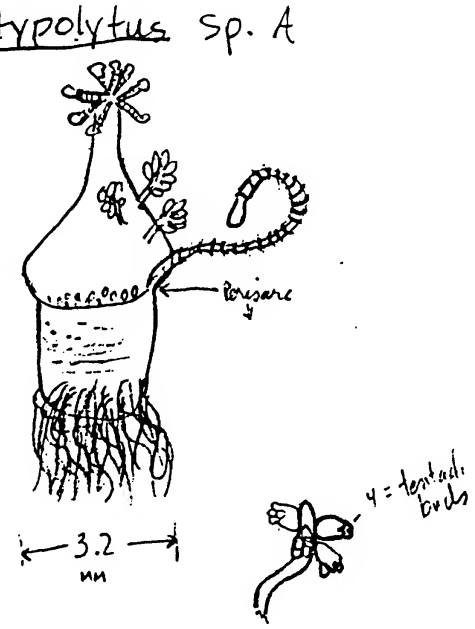
Ceriantharia sp. C

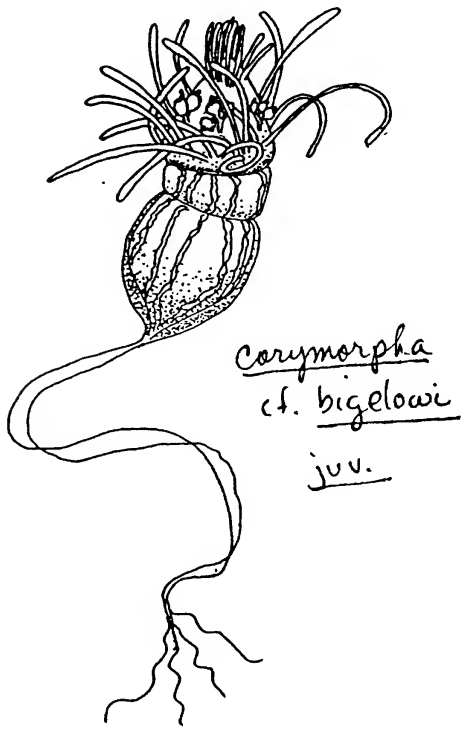


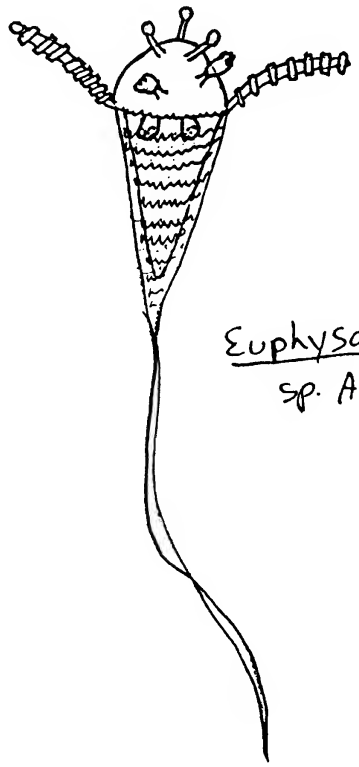
Ceriantharia sp. Q




3.2 mm
~20 oral
20 tentacles marginal
perisarc to here
gonodendrum
9.6 mm
Corymorpha palma
large base


Hypolytus sp. A
perisarc
3.2 mm
4 = tentacle buds


Corymorpha cf. bigelowi juv.


Euphysa sp. A

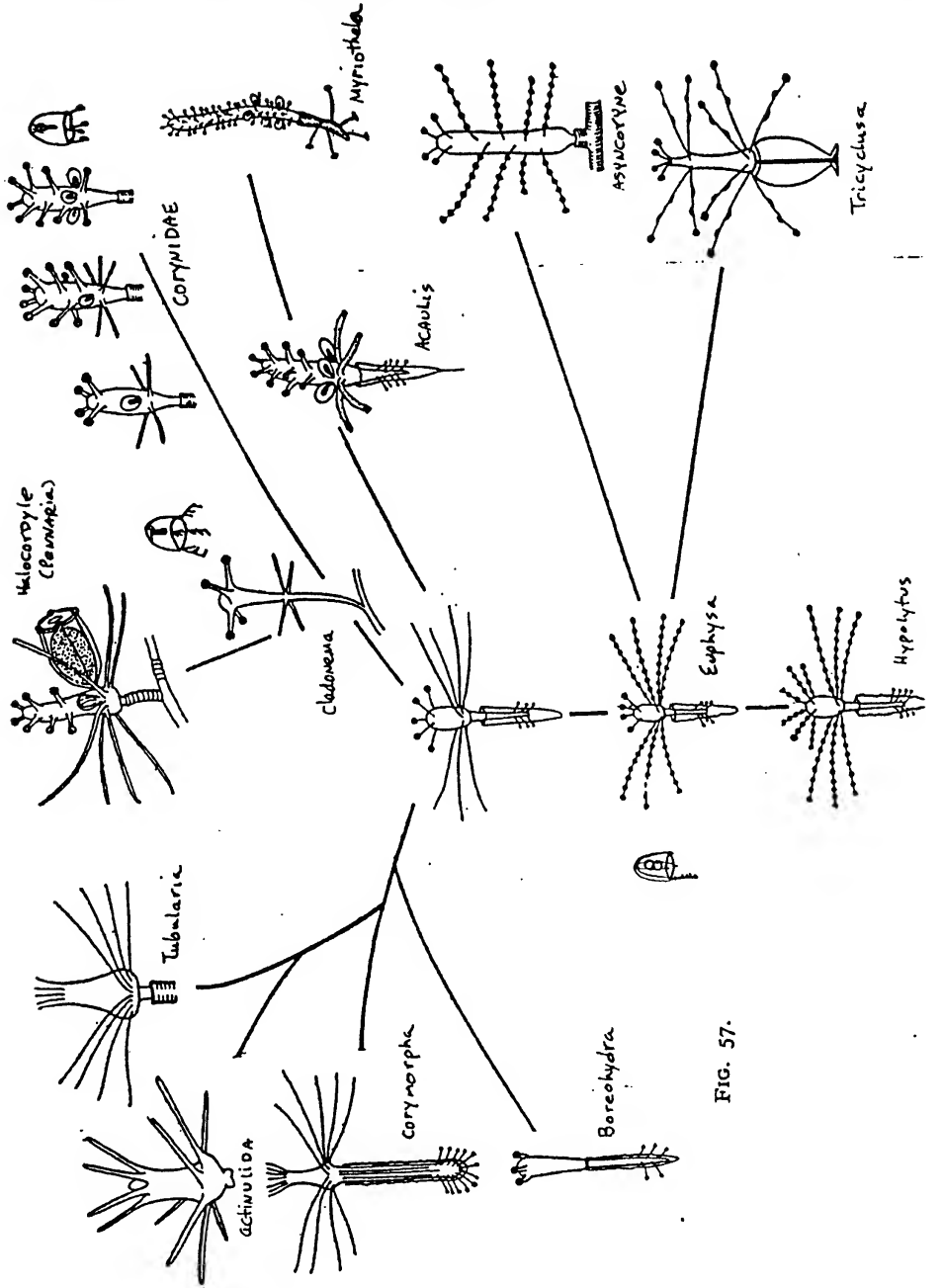

Myriothela
Asyncoryne
Tricyclusa
Corymidae
Acaulis
Halocoryle (Leuckartia)
Cladonema
Euphysa
Hypolytus
Tubularia
Actinulida
Corymorpha
Boreohydra

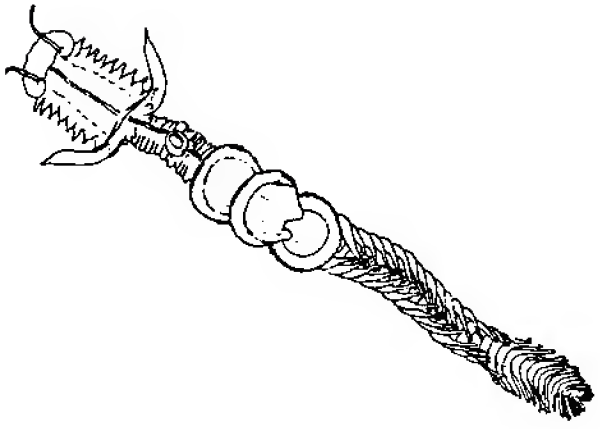
FIG. 57.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

December, 1993 Vol. 12, No. 8

NEXT MEETING:	Weird and Strange Polychaetes 2
GUEST SPEAKER:	None
DATE:	January 10, 1993
TIME:	9:30am-3:00pm
LOCATION:	Polychaete Lab, Los Angeles County Museum of Natural History, Los Angeles, CA



Chaetopterus variopedatus (Renier, 1804): Figure from Hartman 1969 Atlas of the Sedentariate Polychaetous Annelids

JANUARY 10

The meeting in January will be a show and tell, (part 2), with polychaete specimens that are weird, strange or rare from the recently generated species list. So please bring your animals. It will be held at Dr. Kirk Fitzhugh's polychaete lab at the Los Angeles Natural History Museum, Los Angeles, CA.

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

MINUTES FROM MEETING ON DECEMBER 13

The Echinoderm Newsletter #18 is available and anyone who is interested in receiving this newsletter or next years please contact:

Cynthia Ahearn
Dept. of Invertebrate Zoology, MRC 163
Smithsonian Institution
Washington, DC 20560

A bill has been introduced in the House of Representatives (HR 2918), which would establish the National Institute for the Environment as an independent entity "to improve the scientific basis for decision-making on environmental issues, and for other purposes. Additional duties relate to enhancing communications between scientists and policy makers, encouraging development of environmentally benign technologies and identifying emerging environmental issues.

Larry Lovell passed around a Smithsonian Series Program which contains reports on the research and collections of the various Smithsonian museums and offices or of professional colleagues associated with the Institution. If anyone is interested in receiving a copy of this please contact Ann Dalkey at (310) 648-5611.

Linde Looy of Fraser Environmental Services in British Columbia is starting a "SCAMIT" in the Pacific Northwest. It will include fresh water and/or marine phytoplankton, periphyton, zooplankton or invertebrate taxonomy. Included in this newsletter is a notice for an upcoming meeting.

The 5th Polychaete Conference will be held in China sometime in mid-July, 1995. Dr. Reish suggested SCAMIT might want to get a tour group formed so that the air fare would be cheaper.

Nominations are now open for SCAMIT officers for the 1994-95 year. They will be entertained from now up to and including the January meeting. We greatly need officers, (some of the current officers will not be running for re-election), so please consider offering your services for the upcoming year. Send your nominations to the Vice President, Larry Lovell at:

1036 Buena Vista
Vista, CA 92083

Ballots will be mailed out with the January newsletter and will be due by the March meeting.

The rest of the meeting was spent examining polychaete specimens that were weird, strange or rare from the recently generated species list. This included *Scolelepis* sp. 1 (Point Loma), *Nothria occidentalis*, *Sabellides* sp 1 (Point Loma), *Petaloproctus borealis*, *Scoloplos acmeceps profundus*, *Sphaerosyllis brandhorsti* and *Mooreonuphis stigmatis*.

FUTURE MEETINGS

The February 14 meeting will be a workshop on the Polydora complex (*Boccardia, Pseudopolydora, Carazziella, Polydora* etc.). Larry Lovell will be leading the meeting. Please start collecting specimens and get them to Larry as soon as possible. His address is at the beginning of the newsletter. The location of the meeting will be announced in the January newsletter.

The meeting on March 14 will be in Santa Barbara, CA. It will be lead by Paul Scott and Dr. Eric Hochberg of the Santa Barbara Natural History Museum. The topic(s) have yet to be determined.

The April 11 meeting will be on Polynoidae. The workshop will be lead by Gene Ruff. This will be held at the City of San Diego's Marine Biology Lab in Point Loma.

The meeting on May 9 will be on Decapods with Dr. Jodi Martin leading the workshop. It will be held in the Times Mirror Room at the Los Angeles Natural History Museum, Los Angeles, CA.

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

NOTICE TO INVERTEBRATE AND PLANKTONIC TAXONOMISTS

RE : TAXONOMIST'S WORKING GROUP

Identification of planktonic and invertebrate organisms has been used as a tool for understanding biodiversity as well as for a biological measure in impact assessments. Recently, there has been an effort made to better standardize the various methods and approaches used in monitoring these communities. In February 1992 EVS Consultants and Environment Canada held a Benthos Monitoring Workshop. The workshop was well attended and a considerable amount of information was exchanged on various aspects of benthos monitoring. To build on the work already started, there has been interest in forming a working group for taxonomists. This would be a forum for specialists and generalists alike to share ideas and hopefully develop standardized methods, QA/QC procedures, and lists of keys so that data analyzed is as comparable as possible over time independent of who performs the actual identifications.

To this end we would like to invite anyone active in freshwater or marine phytoplankton, periphyton, zooplankton or invertebrate taxonomy to a preliminary meeting of the working group for taxonomists. The purpose of this meeting will be to :

- discuss ideas on the structure and organization of the working group(s)
- discuss the development of standardized methods
- discuss possible topics for future workshops / meetings
- introduce the Royal British Columbia Museum voucher collection

Please forward a copy of this notice to anyone in the Pacific Northwest that may be interested in this meeting.

Date : January 21, 1994
Time : 1:00 pm
Place : The Royal British Columbia Museum
675 Belleville Street
Victoria, B.C.
Meeting Room 112
- check in at security desk

Please return the enclosed **RSVP** with suggestions on possible agenda topics to :

Linda Looy
Fraser Environmental Services
#16 - 9324 128th Street
Surrey, B.C.
V3V 6A4
(604) 588-9738 (telephone and fax number)

RSVP to be returned by December 15,1993 to :

Linde Looy
Fraser Environmental Services
#16 - 9324 128th Street
Surrey, B.C.
V3V 6A4
(604) 588-9738 (telephone and fax number)

___ **Yes**, I would like to attend the meeting of the working group for taxonomists.

___ **No**, I will not be able to attend the meeting but please send me any information generated.

Name : _____

Company / Institution : _____

Address : _____

_____

_____

Phone : _____

Area of Interest : _____

_____

_____

Suggestions for Agenda :

_____

_____

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19 Jan 94 - SCAMIT Meeting - Polychaetes

Meeting Changes

Feb 28th - Les Watling - Cumaceans - Pt. Loma Conference Lab

March 14 - S B Natural History Museum "Paul Scott + Eric Hochberg

April 11th - Jody Martin - Biological Illustration
LA Co. Natural History Museum

Vol. 1 of MMS - $29.00 plus shipping - flyer out soon
SCAMIT received complimentary copy

G. Hendler looking for brittlestar Ophioderma teres

Specimen from Hyperion - Ampharete goesi
See Hoelthe '86
Leslie says Hartman is incorrect in description
Very small specimen with 14 - Setigers
Should have 17. Is perhaps a juvenile. Call it Ampharete sp.
Gene Ruff - brought a larger Ampharete goesi specimen from which everyone agrees is A. goesi. North Alaska Beaufort Sea

Another specimen from Hyperion
Euclymene sp. - See handout on staining pattern
doesn't fit any description currently

Specimens from Pt. Loma - Ampharetids
not overtly papillose - appear to be smooth

Terebellids from Pt. Loma
branchiae with longer than average stalk
Leslie says that it is not uncommon for juveniles to have this sort of stretched stalk. Leslie would call it T. californica (Terebella)
Terebella sp. C -

Phyllodocid - Mystides sp. from Pt. Loma
LACOSAN also reports it.

Euclymene sp

(methyl green)
Stain pattern:
darker ring around anterior setiger 3
dark stain on ventrum setig
setigers 1 to 3 w/ small
around anterior se

Leslie stained this one again in a more concentrated stain and it had a darker pattern so appears to be
Praxillella pacifica

specimen from
LAH H01 6Jul93

LACOSAN

Harmothoe nigralba -

Leslie says the reticulation is very evident as a white pattern which ours don't have.

Using Pettibone's key it seems to fit Malmgreniella macginitei but the setae seem more like M. berkeleyorum

Ann Dalkey has a pictoral key she will give us Pt. Loma would have called this H. nigralba

M. macginitei seems to have a wide range of variation (seems to be taking the place of Harmothoe cf. lunulata)

Sthenelais berkeleyi - confirmed by group

Subadyte ~~sp.~~ mexicana

degree of serration
papillate vs smooth ventral cirri (Pettibone & Fauchald disagree)
length of 2nd tooth on bifid neurosetae

Gene finds no papillation on this particular specimen but Leslie did find some and showed us all.

SCAMIT's Subadyte sp. A should probably be called Subadyte mexicana because there really are no differences

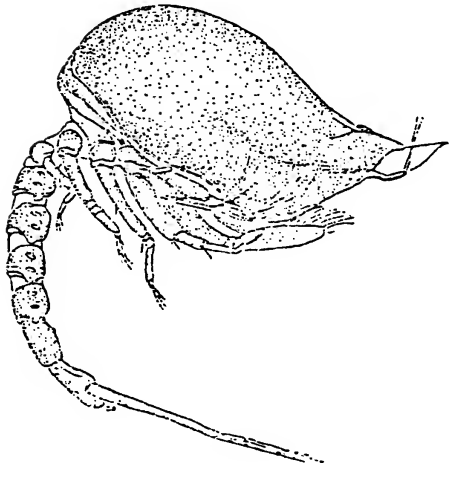
LACOSAN - Harmothoe cf. lunulata 0790-6C1 → H. sp.
Secondary tooth of neurosetae very small to non existant
not H. cf. lunulata but ?

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

January, 1994 Vol. 12, No. 9

NEXT MEETING:	Cumaceans
GUEST SPEAKER:	Dr. Les Watling, Darling Marine Sciences Center, Maine
DATE:	February 28, 1994
TIME:	9:30am-3:00pm
LOCATION:	City of San Diego Marine Biology Laboratory, San Diego, CA (map is included)



Campylaspis canaliculata: California Crustacea of the Order Cumacea, (Proc. U.S. Nat. Mus. Vol 83, #2992, 1936)

FEBRUARY 28

The meeting in February will be on Cumaceans from the MMS Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel. Please bring any Cumaceans you need to have identified or confirmed. The workshop will be lead by Dr. Les Watling of Darling Marine Center and will be held at the City of San Diego's Marine Biology Laboratory, San Diego, CA.

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

MINUTES FROM MEETING ON JANUARY 10

Ron Velarde announced that the Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel Volume 1- Introduction, Benthic Ecology, Oceanography, Platyhelminthes, and Nemertea has been finished and is available for $29 plus tax and shipping. Paul Scott of the Santa Barbara Museum of Natural History will prepare a flyer for the SCAMIT newsletter.

The Southern California Academy of Sciences will be having their 1994 Annual Meeting, May 6-7 at the University of California, Irvine. Included in this newsletter is the symposia and abstract instructions.

The Fourth California Islands Symposium will be on March 23-25, 1994 in Santa Barbara, CA. A photocopy of the registration form, along with the tentative program, has been included in this newsletter.

The X International Symposium on Marine Biology will be in Ensenada, Baja California, Mexico on June 13-17, 1994. The symposium will focus on topics related to: fisheries, marine ecology and resource management. For further information please contact:

Dr. Lon McClanaham
Southern Calif. Marine Institute
820 South Sea Ave.
Terminal Island, CA 90731 USA

An advanced course on Polychaete Autoecology: Evolutionary Trends and Adaptive Significance of Life History Traits is being offered at the Benthic Ecology Laboratory, Ischia (Naples), Italy from the 2-23 July, 1994. The course will be organized to include formal lectures, laboratory and field research training, individual and group research projects. An application form is in this newsletter.

Dr. Gordon Hendler of the Natural History Museum of Los Angeles County is wondering if anyone has any specimens of the shallow-water brittle star, *Ophioderma teres*, from California or elsewhere? The most northerly record is a specimen collected off Corona Del Mar in 1950. The more common *Ophioderma* species in southern California is *O. panamense*, which has banded arms. *O. teres* tends to be uniformly colored, spotted, or decorated with thin loops of dark pigmentation. Dr. Hendler would be grateful for the opportunity to study specimens that are, or might be, *O. teres*. His address is:

Natural History Museum of Los
Angeles County
Invertebrate Zoology Section
900 Exposition Boulevard
Los Angeles, California 90007
Tel. (213) 744-6391 FAX (213) 746-2999

Included in this newsletter is a notice of transfer of the Allan Hancock Foundation polychaete collection and the winter 1994 schedule of research seminars at the Natural History Museum of Los Angeles County.

Nominations for 1994-95 SCAMIT officers were taken at the last meeting. The following names were entered for nomination:

Ron Velarde - President
Don Cadien - Vice President
Cheryl Brantley - Secretary
Ann Dalkey - Treasurer

Short biographies of all the nominees along with a ballot have been included with the newsletter. Ballots are due by March 31. They can be either mailed to Larry Lovell or bring them to the February or March meeting. See ballot for the mailing address.

The rest of the meeting was spent examining polychaetes. The following species were examined and no problems with identification were noted. They were *Harmothoe fragilis* (Moore, 1910), *Lepidasthenia berkeleyae* Pettibone, 1948, and *Terebellides* sp. Type C Williams, 1984. Additional specimens were presented and the following problems were noted. *Ampharete* sp. was a juvenile specimen originally identified as *A. gossi* which probably does not occur in our area; Gene Ruff showed a specimen from Alaska. *Praxillella pacifica* was an anterior fragment originally identified as Euclymeninae as the staining pattern did not match any species; restained and the pattern showed it was *P. pacifica* and that the staining process needs to be done with concentrated stain and for a long enough period of time. There were several specimens of *Terebellides californica* with long stalked branchia; length of stalk is variable. Also several specimens of Ampharetidae did not match any known species; 15 thoracic setigers, 12 uncinigers, small paleae, 4 pairs of branchia and dark nuchal organs. *Malmgreniella* sp., which was originally identified as *Harmothoe nigralba* will be discussed in more detail at the April SCAMIT meeting on scale worms by Gene Ruff. Finally, the type of *Subadyte mexicana* Fauchald, 1972 was examined by Gene Ruff and Leslie Harris and compared to *Subadyte* sp. A. They concluded that they are synonymous.

FUTURE MEETINGS

The meeting on March 14 will be in Santa Barbara, CA. which will be lead by Paul Scott and Hank Chaney of the Santa Barbara Natural History Museum (map is included). Paul will be discussing *Parvilucina, Cyclopecten* and any problem bivalves. Hank will cover *Bittium* and *Eulimidae.* They would prefer if you could send them specimens of the target taxa ahead of time, if not, bring them to the meeting. Paul has arranged for motel accomodations. A special rate has been provided at:

Colonial Inn
206 Castillio St.
Santa Barbara, CA 93103
(805) 963-4317

The April 11 meeting will be on Polynoidae. The workshop will be lead by Gene Ruff and will be held at the City of San Diego's Marine Biology Lab in Point Loma.

The meeting on May 9 will be on Biological Illustrations with Dr. Jodi Martin leading the workshop. It will be held in the Times Mirror Room at the Los Angeles Natural History Museum, Los Angeles, CA.

FEBRUARY NEWSLETTER

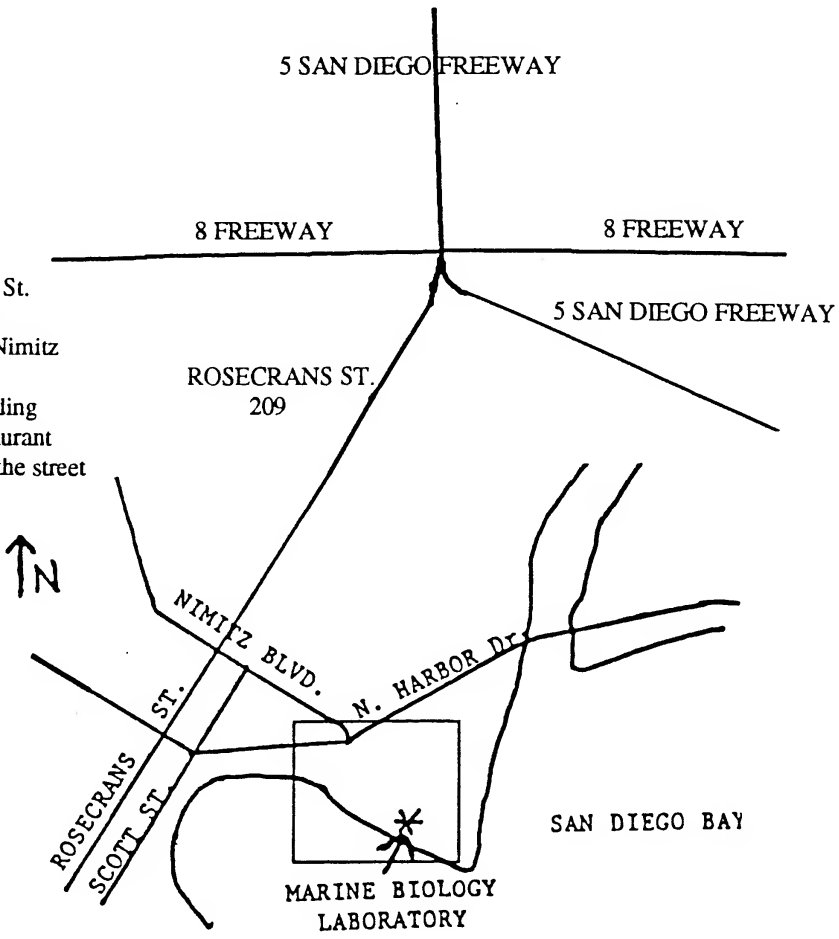
Please note that because of the short period of time (two weeks), the February newsletter will be included in the March edition. The next newsletter will be arriving in early April.

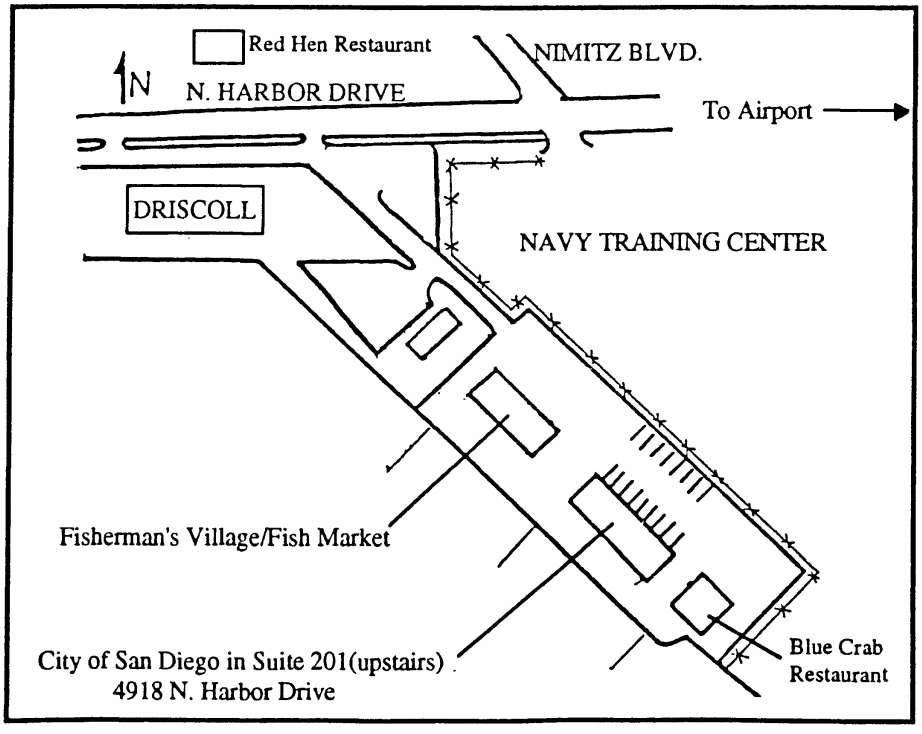
SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

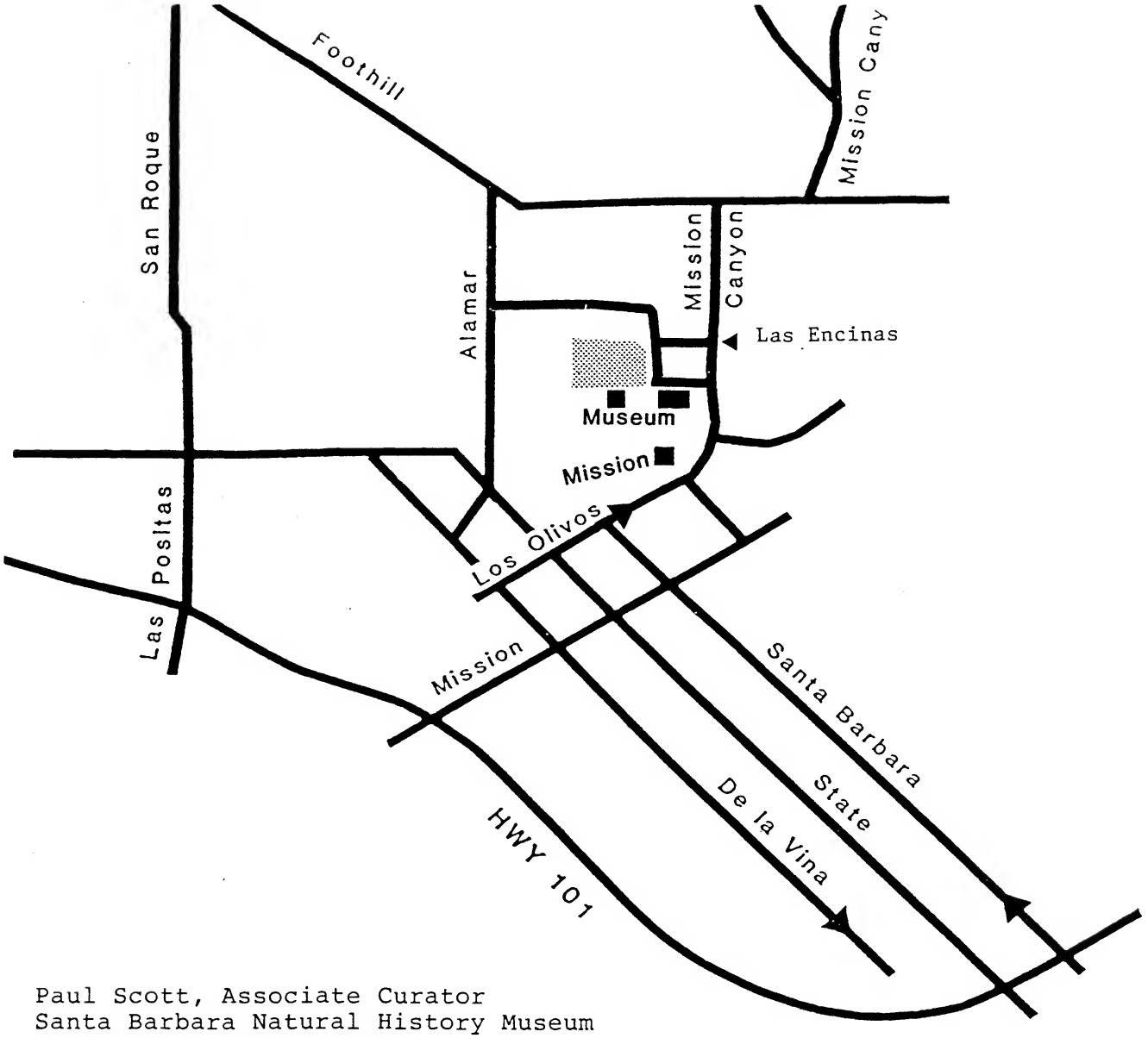
President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

CITY OF SAN DIEGO'S MARINE BIOLOGY LABORATORY

From North, take 5 South to Rosecrans St. (209)
Turn left on N. Harbor Dr. (light after Nimitz Blvd.)
The entrance will be after Driscoll building (America III), look for Blue Crab Restaurant sign; the Red Hen Restaurant is across the street







Paul Scott, Associate Curator
Santa Barbara Natural History Museum
2559 Puesta Del Sol Road
Santa Barbara, CA
(805) 682-4711

Directions from the south to the Santa Barbara Museum

1) Proceed north on US 101 to Santa Barbara, turn right at the first signal (Santa Barbara St.).

2) Proceed up Santa Barbara St. about 3 miles, turn right on Los Olivos.

3) Go past the Mission, bear left at the "Y", proceed about half a mile.

4) Turn left on Las Encinas, turn left on Puesta del Sol, turn right into Museum parking lot.

5) Invertebrate Zoology is on the west side of the new Collection and Research Center (past the whale, west side of parking lot).

BALLOT FOR SCAMIT OFFICERS 1994-95

Vote for one (1) nominee for each office. Please mail or return completed ballot to Larry Lovell by March 31, 1994. You may return it to the Secretary or other attending officer at the March 14 meeting. The address to mail it to is:

Larry Lovell
1036 Buena Vista Dr.
Vista, CA 92083

President - The president presides at all meetings and represents SCAMIT in external business affairs.

_____ Ron Velarde

_____ Write-in:_____

Vice-President - The Vice-President chairs ad hoc committees, supervises the specimen exchange, tabulates election ballots, edits the newsletter, and fills in for the President as necessary.

_____ Don Cadien

_____ Write-in:_____

Secretary - The Secretary keeps minutes of the meetings, is responsible for the newsletter, and preparation of the ballots.

_____ Cheryl Brantley

_____ Write-in:_____

Treasurer - The Treasurer collects dues, makes disbursements, keeps financial records, and makes an annual statement of the financial status of SCAMIT.

_____ Ann Dalkey

_____ Write-in:_____

1994-95 SCAMIT Meeting Topics - Please suggest any topics you deem worthy of a SCAMIT meeting.

_____

_____

CANDIDATE BIOGRAPHIES

PRESIDENT

Ron Velarde

Ron is the current President of SCAMIT and a past Vice-President; he has been a Marine Biologist with the City of San Diego since 1983 and currently is the supervisor of Benthic Taxonomy for the Ocean Monitoring Program. His taxonomic interests include most groups, especially polychaetes and nudibranch mollusks. He earned his B.S. degree in Marine Biology from California State University, Long Beach, in 1976, and did post-graduate research on the systematics and ecology of autolytid polychaetes.

VICE-PRESIDENT

Don Cadien

Charter member of SCAMIT, Member-at-large of the SCAMIT Executive Committee. Studied invertebrate taxonomy and biology at California State University, Long Beach, under Dr. D. J. Reish. Worked at Cabrillo Marine Museum, then at the L.A. County Museum of Natural History under Dr. J. H. McLean in Malacology. Spent 15 years at M.B.C. Applied Environmental Sciences as a taxonomist and later also Project Manager, leaving in 1989 as a Senior Marine Biologist to join the L.A. County Sanitation Districts' Marine Biology Lab. Specialties in taxonomy and biology of mollusks (particularly nudibranchs) and peracarid crustaceans. Currently a Research Associate in the Crustacea Section of the L.A. County Museum of Natural History.

SECRETARY

Cheryl Brantley

Cheryl Brantley (née Musselwhite) is a marine biologist for the County Sanitation Districts of Los Angeles County. She has worked for the Districts since graduation with her B.A. degree in Aquatic Biology from the University of California, Santa Barbara in 1985. As a taxonomist in the Districts' Marine Biology Laboratory, Cheryl has specialized in polychaetes with emphasis on the Spionida, Eunicida and the Aphroditiformia.

TREASURER

Ann Dalkey

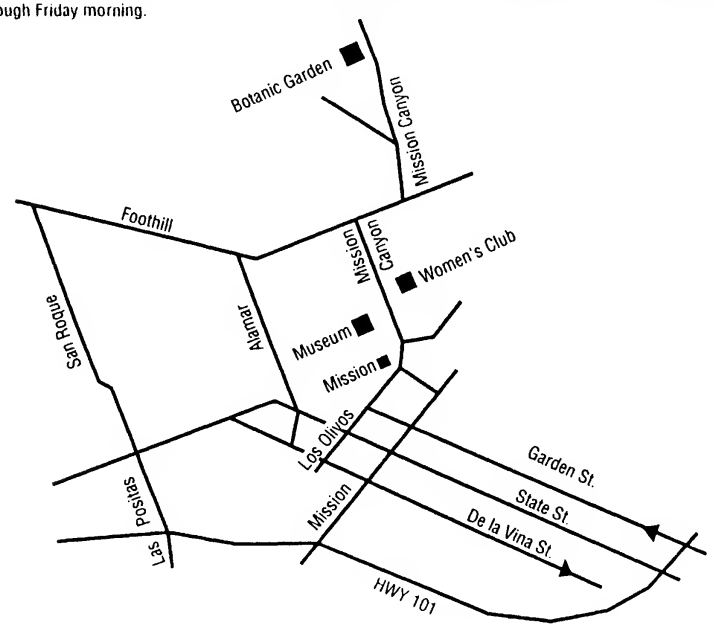
Ann is presently the Treasurer for SCAMIT and has held this position since SCAMIT was founded. Ann is a member of the water biology staff at the Hyperion Treatment Plant where she specializes in the identification of polychaetes and amphipod crustaceans. Prior to working at Hyperion, Ann was a member of the laboratory staff at the County Sanitation Districts of Orange County. She worked there for nearly 10 years, reaching a position of senior laboratory and research analyst. She received her B.S. from California State University Long Beach in Marine Biology in 1974 and her M.S. from the same university in 1982. Her thesis research pertained to polychaete bioassay.

TENTATIVE PROGRAM 23-25 MARCH 1994

NOTE: Please check daily the bulletin board near the registration desk in front of Fleischmann Auditorium for additional information.

		Fleischmann	Women's Club	Farrand Hall	Museum	Other
WEDNESDAY	8:00-8:30					Continental Breakfast
	8:30-9:30	Keynote Address				
	10:00-12:00	Restoration Ecology		Archaeology	Marine Biology	
	12:00-1:00					
	1:30-4:30	Restoration Ecology		Archaeology	Marine Biology	
	EVENING					Reception
THURSDAY	8:00-8:30					Coffee
	8:30-12:00	Terrestrial Biology	Marine Biology			
	12:00-1:00					Lunch
	1:00-4:30	Terrestrial Biology	GIS Technology		GIS	
	EVENING					Reception
FRIDAY	8:00-8:30					Coffee
	8:30-12:00	Terrestrial Biology	Geology	History	GIS	
	12:00-1:00					Lunch
	1:00-4:30	Terrestrial	Geology	History	GIS	

Poster presentations will be on display in the Paleontology/Geology Hall at the Museum from Wednesday afternoon through Friday morning.



REGISTRATION FORM

FOURTH CALIFORNIA ISLANDS SYMPOSIUM
23-25 MARCH 1994
SANTA BARBARA, CALIFORNIA

*Name: _____

*Institution: _____

Address: _____

_____

_____

Telephone ( ) _____ ( ) _____
business home

*Indicate exact wording desired on meeting badge.

Preregistration (before 23 February 1994) $50.00_____
Includes published proceedings

On-site Registration $65.00_____
Includes published proceedings

One-day: _____ Wed _____ Thu _____ Fri $20.00_____
Does not include the published proceedings.

Please complete a separate form for each person planning to attend the mee ing. Enclose check or money order made payable to the Santa Barba Museum of Natural History.

Tear out and mail to: Fourth California Islands Symposium
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105

CABRILLO MARINE AQUARIUM
los angeles

FRIENDS OF CABRILLO MARINE AQUARIUM
3720 Stephen White Drive • San Pedro, California 90731
Phone 310/548-7563 • Fax 310/548-2649

FOR IMMEDIATE RELEASE

CONTACT: BARBARA TRANSUE
(213)661-4032
STEVE VOGEL
(310)-548-7563

This winter, as Norway hosts the world's athletes at the Olympics, ocean animals also will practice athletic skills unequaled by humans; speed, power, agility and endurance are displayed by many species in their constant struggle for survival in the ocean realm. On January 11, 1994, Cabrillo Marine Aquarium brings back its popular "Aquatic Athletes" exhibit highlighting the olympian efforts sometimes demanded of ocean inhabitants.

CMA is open Tuesdays through Fridays from 12 noon to 5 pm and weekends from 10 am to 5 pm. There is no admission charge, but beach parking cost is $4.50 per car on weekdays and $5.50 on weekends from December 1 to February 28 (winter rate); some street parking is available nearby. For further information call 310/548-7562.

Cabrillo Marine Aquarium is located at 3720 Stephen White Drive, San Pedro, and is a facility of the City of Los Angeles Department of Recreation and Parks.

# # # #

STAZIONE ZOOLOGICA
'Anton Dohrn'

Polychaete autoecology: evolutionary trends and adaptive significance of life history traits

Reproductive biology, life history and feeding ecology of Polychaete worms

For further information and application forms, please contact:

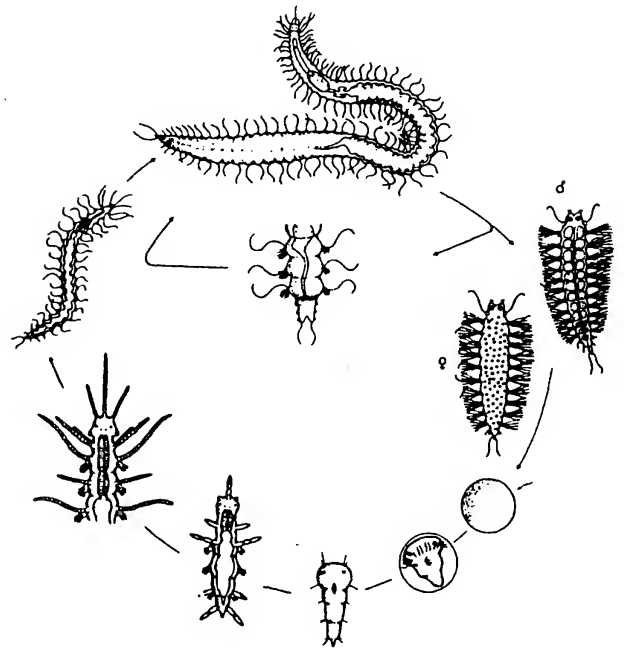
International Service Meeting, via Luigi Mazzella, 36
80077 Ischia (Napoli, Italy). Tel.: +39 81 983190 - 992813
Fax: +39 81 982281
or
Maria Cristina Gambi, Laboratorio di Ecologia del Benthos,
punta S. Pietro, 80077 Ischia (Napoli, Italy).
Tel.: +39 81 991410 - 5833305; Fax: +39 81 984201

Tipolito EPOMEO - Forio

STAZIONE ZOOLOGICA
'Anton Dohrn'

Polychaete autoecology: evolutionary trends and adaptive significance of life history traits

Reproductive biology, life history and feeding ecology of Polychaete worms



Life cycle of *Syllis prolifera* Krohn

2-23 July 1994

Benthic Ecology Laboratory
Ischia (Bay of Naples), Italy

Polychaete autoecology: evolutionary trends and adaptive significance of life history traits

2-23 July 1994. Benthic Ecology Laboratory, Ischia (Bay of Naples, Italy)

APPLICATION FORM

Name .....

Work address .....

Work tel..... Work fax .....

Home address ..... Tel. .....

Education current level .....

Degrees with years .....

Type of participation: Student ..... Auditor ..... please tick where appropriate

Diving certification: (yes) (no) please tick where appropriate

Date ..... Signature .....

Please send this form by **30 March 1994**, together with CV, list of publications and a brief statement of your reasons for attending the course, to: Maria Cristina Gambi - Laboratorio di Ecologia del Benthos, punta S. Pietro, 80077 Ischia (Napoli, Italy) – Tel. +39 81 991410 - 5833305; Fax + 39 81 984201

TAXONOMIC ATLAS
OF THE BENTHIC FAUNA OF THE SANTA MARIA BASIN AND WESTERN SANTA BARBARA CHANNEL

Volume 1 - Introduction, Benthic Ecology, Oceanography, Platyhelminthes, and Nemertea

SANTA BARBARA MUSEUM OF NATURAL HISTORY

SOUTHERN CALIFORNIA ACADEMY OF SCIENCES

1994 Annual Meeting
May 6-7
University of California, Irvine

Call for papers -- PROFESSIONAL and STUDENT -- in all disciplines of the natural and social sciences. Graduate or Undergraduate students are eligible for Best Paper Awards. Co-authored papers are eligible, as long as they are the work of the student(s) presenting.

Symposia being planned include: The Impact of Changes in Federal Science Policy on Southern California; Restoration of Wildlands After Fires; Wetlands Restoration; Earthquakes in Southern California; The Effects of Science Policy on Women.

Abstracts are due March 1, 1994

Send abstract to:

Program Chair
Southern California Academy of Sciences
900 Exposition Boulevard
Los Angeles, California 90007

Telephone: 213/744-3384

Please see other side for format and instructions -- and be sure to send with your abstract the requested 3 x 5 file card, giving the full name of the presenter, affiliation, title of your paper, and section preferred. Be sure to indicate whether this is a student or professional presentation. This information is vital to plan the sessions and assure a place for your presentation.

Abstract Instructions

Abstracts will appear exactly as submitted. Consequently, they must be cleanly typed and correct in format. Abstracts which fail to conform to the guidelines or are mailed after the deadline will **not** appear in the symposium program.

Abstracts must be typed and submitted on an 8½" x 11" sheet. It will be reproduced at 100% of original size, therefore use type that is no smaller than 10 point/12 pitch. If using a word processor, a laser printed copy is preferred. If using a typewriter, type must be clean, so use an electric typewriter with clean keys and a relatively new black or carbon ribbon. Do not erase.

Arrange abstract as follows in a space 6" wide x 4" high (see example below). Do not show the enclosing box.

1. TITLE must be all capital letters. Do **not** italicize, except species names.
2. Underline author(s) name(s), listing the presenter first.
3. List the institution and department for each author.
4. On the next line, begin text with 5 space paragraph indentation. Single space text.
5. List acknowledgements within parentheses following text.

With your abstract submit on a 3" x 5" index card the following:

1. Full name of presenter, affiliation, mailing address and telephone number (with area code).
2. Indicate student or professional.
3. Title of your paper.
4. The subject field in which you wish to present.

Abstract and card are due **MARCH 1, 1994** to: Program Chair
Southern California Academy of Sciences
900 Exposition Boulevard
Los Angeles, CA 90007

Sample Abstract

6"

4"

MICROBIAL ACTIVITY IN THE DIGESTIVE TRACT OF THE HALFMOON, *Medialuna californiensis*. J.S. Kandel[1], J.R. Paterek[2] and M.H. Horn[1]. [1]California State Univ. Fullerton, CA 92634 and [2]Agouron Institute, La Jolla, CA 92037.

We report the presence of a diverse microbial flora and of microbial fermentation products in the hindgut region of the halfmoon, *Medialuna californiensis*, a seaweed-eating fish from southern California coastal waters. Viable aerobic and anaerobic bacteria were found in all sections of the gut, but were of highest concentration (10^5-10^8/ml) in the hindgut. Microscopy revealed vibrios, spirilla, rod-shaped bacteria and flagellated protozoa in the midgut and hindgut, but primarily vibrios and rods in the stomach and foregut. Acetic, isobutyric and butyric acids, the volatile products of microbial breakdown of carbohydrates, were found only in the hindgut, as was ethanol, a nonvolatile product. These results provide the first evidence for microbial fermentation and its possible contribution to the energy supply in a north-temperate herbivorous fish.

NOTICE

TRANSFER OF ALLAN HANCOCK FOUNDATION POLYCHAETE COLLECTION

In 1988, the University of Southern California donated the Allan Hancock Foundation (AHF) polychaete collection to the Natural History Museum of Los Angeles County (LACM). Subsequently, the LACM hired Leslie H. Harris (collections manager) and Dr. Kirk Fitzhugh (curator) to care for the collection, now referred to as the **LACM-AHF POLYCHAETE COLLECTION**. The physical transfer of the collection to the LACM, however, only began in February 1994. The collection will be housed in the LACM in an environmentally-controlled room, specifically designed for this collection, allowing for ample growth into the future.

The LACM-AHF polychaete collection consists of an estimated 90,000 lots, including over 1,600 type lots. The collection is the second largest of its kind in the United States, and includes the most extensive assemblage of eastern Pacific polychaetes in the world, yet is world-wide in its holdings. An active program of computerizing collection data is underway, and we anticipate publication of a type catalog in the near future. Consistent with its rich history, the collection continues to receive very extensive use by specialists.

During transfer of the collection, specimens will continue to be available for loan. We strongly encourage colleagues to continue utilization of, and depositing specimens into the collection. Similarly, we invite visits to the museum - the polychaete lab offers excellent research space and facilities. For further information on any aspect of the collection, please contact either **Leslie H. Harris** or **Kirk Fitzhugh** at:

Invertebrates Section
Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, California 90007 USA

RESEARCH SEMINARS

in History and Earth and Life Sciences

POST

☛ PLEASE POST/CIRCULATE ☚

WINTER 1994 SCHEDULE: January - March

TIMES MIRROR CONFERENCE ROOM
Seminar 3:00 - Coffee / Refreshments 2:45

6 January	Don Prothero - *Occidental College, Los Angeles* BIOTIC RESPONSE TO THE EOCENE-OLIGOCENE CLIMATIC CRASH
13 January	--- No Seminar ---
20 January	Kathy Dickson - *California State University, Fullerton* THE MINIMUM SIZE FOR ENDOTHERMY IN TUNA FISH
27 January	Leonard Muscatine - *University of California, Los Angeles* CORAL BLEACHING: A CELL BIOLOGICAL PERSPECTIVE
3 February	Ron Kaufman - *Scripps Institution of Oceanography, La Jolla* THE INFLUENCE OF SEASONAL PACK ICE ON THE DISTRIBUTION AND ABUNDANCE OF EPIPELAGIC FAUNA IN THE NORTHWEST WEDDELL SEA, ANTARCTICA
10 February	Dan Larson - *University of California, Long Beach* RISK MINIMIZATION THEORY AND CULTURAL EVOLUTION AMONG THE ANASAZI
17 February	Eric Swann - *University of California, Berkeley* EVOLUTION OF BASIDIOMYCETES FUNGI: PHYLOGENETIC ANALYSIS OF THE 18S rRNA GENE
24 February	Kathleen A. Campbell - *University of Southern California, Los Angeles* PALEOECOLOGY OF FOSSIL COLD SEEPS, WESTERN NORTH AMERICA
3 March	Greg Stanford - *University of Southern California, Los Angeles* PREDATOR-PREY ECOLOGY OF CHIMPANZEES AND COLOBUS MONKEYS
10 March	Gary Pettit - *Invertebrates Section, LACMNH* SYSTEMATICS AND ECOLOGY OF CAPRELLID AMPHIPOD CRUSTACEANS FROM HYDROTHERMAL VENTS
17 March	Bob Wayne - University of California, Los Angeles POPULATION STRUCTURE AND HYBRIDIZATION OF WOLF-LIKE CANIDS REVEALED BY ANALYSIS OF HYPERVARIABLE NUCLEAR LOCI

– ALL INTERESTED PERSONS ARE INVITED TO ATTEND –

-- Free admittance through staff entrance --

Seminar suggestions/questions should be directed to Dr. Kirk Fitzhugh, Invertebrates Section (213-744-3233)

Segundo y último anuncio
Second and Final Announcement

X Simposium Internacional de
Biología Marina

13 -17 de Junio 1994

Ensenada, Baja California,

México.

X International Symposium on
Marine Biology

June 13-17, 1994

Ensenada, Baja California

Mexico.

Organizado por / Organized by

Southern California Marine Institute

Universidad Autónoma de Baja California
Southern California Marine Institute
Universidad Autónoma de Baja California Sur

X Simposium Internacional de
Biología Marina

X International Symposium on
Marine Biology

Junio / June 13-17, 1994

Lugar / Place: Facultad de Ciencias Marinas
Universidad Autónoma de Baja California
Km 103 Carretera Tijuana - Ensenada,
Baja California, México.

Resúmenes: Antes del 31 de Marzo, 1994
Dra. Elizabeth Orellana-Cepeda
Facultad de Ciencias Marinas
Universidad Autónoma de Baja California
Apartado postal 453
Ensenada, Baja California, México.

Abstracts: Due March 31, 1994
Dr. Lon M^{c} Clanaham
Director OSI and
Southern California Marine Institute
820 South Sea Side Ave.
Terminal Island, Ca. 90731, USA.

Cuota de inscripción / Registration fee
Antes del 31 de Marzo de 1994
Before March 31, 1994
Investigadores / Faculty: $ 75.00 US
Estudiantes / Students: $ 40.00 US

Después del 31 de Marzo de 1994
After March 31, 1994
Investigadores / Faculty: $115.00 US
Estudiantes / Students: $50.00 US

X International Symposium on **Marine Biology**

Facultad de Ciencias Marinas - Universidad Autónoma de Baja California
Ensenada, Baja California, Mexico. June 13 - 17, 1994.

Registration form

Name (surname, first, middle)_____

Institution_____

Address_____

Telephone _____ Fax _____ Zip code ____

Title_____ Presentation: Oral____Poster____

Registration fee: Faculty ____ Student____

Send registration fee to M.C. Roberto Millán-Nuñez, Apartado postal 453, Ensenada, Baja California, México. The registration fee includes the "icebreaker", Mexican party and transportation between Corona Hotel and the university campus.

X Simposium Internacional de **Biología Marina**
13-17 de Junio 1994
Ensenada, Baja California, México

X International Symposium on **Marine Biology**
June 13-17, 1994
Ensenada, Baja California, Mexico

Fecha límite para entrega de resúmenes: 31 de Marzo de 1994

Abstracts must be received by March 31, 1994

Forma para presentación de resumen / Abstract form

X Simposium Internacional de **Biología Marina**

1. Los resúmenes deben presentarse en español o inglés. El resumen completo, dentro del rectángulo azul, debe incluir título,nombres de los autores y direcciones. Este resumen se presentará tal como sea enviado. En los artículos o carteles de varios autores, subraye el nombre del autor que hará la presentación.
2. Use letra tamaño doce, con espacio sencillo entre líneas y tres espacios de sangría en los parrafos.
3. Por favor, haga el resumen lo más informativo y representativo de su artículo que sea posible.
4. Para los estudiantes:¿desean participar en el premio a la mejor ponencia estudiantil? Si___ No____.
5. Para presentaciones, sólo se dispondrá de proyector de transparencias de 35mm y proyector de acetatos.

1. All abstracts must be in English or Spanish. The entire abstract including title, authors' names, addresses and text must fit within the blue rectangle. Your abstract will be reported as you submit it. For papers or posters with multiple authors, underline name of presenting author.
2. Use 12-pitch type and single spacing between lines. Indent paragraphs three spaces.
3. Please make the abstract as informative and representative of your paper as possible.
4. For students: do you wish to participate in the award to the best student's presentation? Yes ___ No ___.
5. There is no special projection equipment available other than a 35mm slide projector and overhead projector.

Por favor, marque abajo la sesión que considere más adecuada para su tema. Su artículo o cartel se agrupará con otros del mismo campo, si es posible.

Please mark your choice of a session most suitable for your subject below. Your paper or poster will be grouped with related papers where scheduling permits.

- ☐ Pesquerías
  Fisheries
- ☐ Ecología marina
  Marine ecology
- ☐ Manejo de recursos
  Resource management

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

Career Opportunity for the position of: Director – Center for Regenerative Studies

California State Polytechnic University, Pomona, invites applications and nominations for the position of Director of the Center for Regenerative Studies. Cal Poly Pomona, a public university founded in 1938, is noted for its scenic and historic 1,400-acre campus, once the winter ranch of cereal magnate W. K. Kellogg. The campus is located 25 miles east of downtown Los Angeles in the Inland Valley, one of the fastest growing regions in the country. Cal Poly Pomona's 17,050 students (13,400 FTE'S and 58% ethnic minorities) are enrolled in 55 baccalaureate and 16 master's degree programs with approximately 900 full-time and part-time faculty. The university is committed to diversifying its faculty and staff, and has made educational equity one of its highest priorities.

The Center for Regenerative Studies

The Director will lead the university's new Center for Regenerative Studies, an interdisciplinary university-based setting for education, demonstration and research in regenerative practices and technologies, located on a 16-acre site on the Cal Poly campus. A $4 million facility has just been completed housing 20 students with a phased construction plan for the remaining 60 students. Its focal point is a community of 80 students who practice the collective means of using solar energy, reusing water, growing a variety of foods without pesticides or chemical fertilizers, reducing their waste stream and living within shelter compatible with existing environments, as an integral part of their daily lives. These students live in a village that includes housing as well as common rooms, seminar and meeting rooms, a kitchen and common dining room, classrooms, a laboratory, office space and accommodations for faculty and visiting scholars.

The common goal of educational and research efforts is life-support practices and systems that model the self-renewing ways of natural ecosystems. Faculty from the university's College of Agriculture, Engineering, Environmental Design, and Science have been involved in the development of the curriculum of the Center and its facility. Courses and research facilities will be open to students, and faculty members from all disciplines, and expertise will be drawn from many parts of the world through programs that sponsor visiting scholars and researchers.

The Position

The Center for Regenerative Studies is currently placed in the College of Environmental Design and in the future will become independent of disciplinary structure. The Director of the Center for Regenerative Studies currently reports to the Dean of the College of Environmental Design, and is charged with providing innovative leadership, vision and direction for the undergraduate and graduate academic programs, the physical facilities and their operation, and the continued support of the Center through advancement and proposal-writing activities. The Director is expected to work collegially and consultatively with an interdisciplinary faculty committee in advancing the goals of the Center. The Director will also work with students, university officials and corporate and community leaders in establishing the Center as an international leader in the study and application of regenerative technologies.

The position of Director is a twelve-month administrative position and will start no later than September 1, 1994. Depending upon qualifications and appropriate campus consultative procedures, the successful candidate may be awarded teaching return rights in an appropriate academic department.

Qualifications

The successful candidate must demonstrate a desire and proven ability to work in an interdisciplinary environment and be committed to a collegial and consultative form of decision-making involving the faculty team, students and staff. Because the Center is an academic program, candidates must have an established record of scholarship and teaching excellence in sustainable or regenerative technologies or related endeavors. Candidates should also possess administrative experience, preferably in an academic setting including the management of budgets, personnel and academic programs. Successful fund raising and proposal writing is particularly important. The candidate should possess a Ph.D. or an appropriate terminal degree.

Other desirable characteristics include experience working with a residential student/faculty program; experience working with academic program development activities; research for or participation in other environmental/sustainable programs sponsored by national or international government or non-governmental organizations; experience in private industry.

Compensation

Compensation is dependent upon the qualifications and experience of the successful candidate. The position includes a very attractive benefits package.

Application

The search committee will begin reviewing applications on February 14, 1994 and will continue until the position is filled. A complete application will include the University's Application for Academic Employment, a letter of interest which addresses the qualifications described in this announcement, a curriculum vita that includes at least those elements specified on the application form, and the names, titles, addresses and telephone numbers of at least five colleagues who can provide current assessments of the candidates professional experience. Finalists should request application materials from:

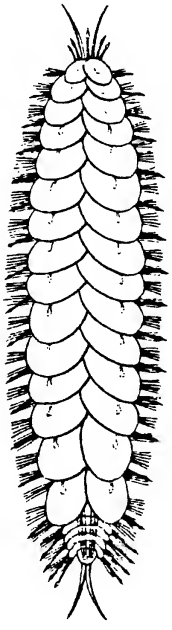
Dr. William Stine, Chair, CRS Director, Search Committee
California State Polytechnic University, Pomona
3801 W. Temple Avenue
Pomona, CA 91768-4062
(909) 869-2597 FAX: (909) 869-4370
e-Mail: WBSTINE@CSUPOMONA.EDU

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

March, 1994 Vol. 12, No. 10 & 11

NEXT MEETING:	Polynoidae
GUEST SPEAKER:	Eugene Ruff, Ruff Systematics, Solana Beach, CA
DATE:	April 11, 1994
TIME:	9:30am-3:00pm
LOCATION:	City of San Diego Marine Biology Laboratory, San Diego, CA (map is included)



Harmothoe imbricata: Light's Manual Third Edition; edited by Ralph I. Smith and James T. Carlton

APRIL 11

The meeting in April will be on Polynoidae from the MMS Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel. Please bring any specimens you need to have identified. The workshop will be lead by Gene Ruff and will be held at the City of San Diego's Marine Biology Laboratory, San Diego, CA.

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

MINUTES FROM MEETINGS ON FEBRUARY 28 & MARCH 14

The Southern California Academy of Sciences will be having their 1994 Annual Meeting, May 6-7 at the University of California, Irvine.

The X International Symposium on Marine Biology will be in Ensenada, Baja California, Mexico on June 13-17, 1994. The symposium will focus on topics related to: fisheries, marine ecology and resource management. Included in this newsletter is a letter from Dr. D. Reish and a copy of the registration form.

The Fifth International Polychaete Conference will be held at Qingdao, China in July 2-7, 1995. Information and a reply form have been included in this newsletter.

The Western Society of Malocologist meeting will be in June 26-30, 1994 at the Santa Barbara Museum of Natural History (SBMNH).

Larry Lovell suggested that Dr. Kirk Fitzhugh might need help moving the Allan Hancock Foundation polychaete collection to the Los Angeles County Museum of Natural History. Larry is thinking about organizing a Saturday SCAMIT moving party.

Preliminary results indicate that the slate of officers on the ballot will be elected to their positions for the upcoming year. They will assume their duties at the May meeting.

Don Cadien informed attending members that the Third California Island Symposium publication is available. If anyone is interested in a copy please contact the SBMNH. He also proposed for the upcoming EMAP project that there be information exchange and problem solving meetings for species encountered during this project. Don suggested meeting more than once a month to maximize the information interchange.

Two new publications were announced at the meeting:

Watling, L. 1991. Revision of the Cumacean Family Leuconidae. Journal of Crustacean Biology, 11(4): 569-582.

Kuck, H. G. and J. W. Martin. 1994. Redescription, Description for the Male, and New Distribution Records for the Homolid Crab *Paromola faxoni* (Schmitt) in the Eastern Pacific Ocean. Journal of Crustacean Biology, 14(1): 177-187.

Ron Velarde announced that the Master Species List is complete and everyone who is a SCAMIT member will receive a copy. The list will be updated on a yearly basis and non-members can receive a copy by contacting Ann Dalkey at:

Hyperion Treatment Plant
12000 Vista del Mar
Playa del Rey, CA 90293
tel. (310) 648-5611

CUMACEAN WORKSHOP FEBRUARY 28

Les Watling started the meeting by announcing that the final draft of the Cumaceans from the MMS Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel is due to Jim Blake by the end of March. The rough draft is available to SCAMIT members. If anyone would like a copy contact Diane O'Donohue at City of San Diego, Marine Biology Lab MS-45A, 4077 N. Harbor Drive, San Diego, CA 92101 tel. (619) 692-4901. Most of the specimens were from deeper water and Les has been using scanning Electron Microscopy to photograph sections of specimens along with whole mounts. He has been successful with the larger more robust, i.e. calcified, animals. The more fragile animals had a tendency to collapse or peel during the prep. Les is looking for more suitable prep agents. On the following page is a list of names currently used by SCAMIT and appropriate manuscript names (note: these names are still in prep.).

The only other foreseeable change is that *Hemilamprops californica* Zimmer, 1936 has been changed to *H. californicus*.

MOLLUSCA WORKSHOP MARCH 14

Paul Scott started the meeting by discussing the Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel. The standing order form for the atlas is included in this newsletter and depending on the production cost the price for each volume will vary from $20 to $50. The first volume is out and the second volume (sponges) will be available sometime in May.

The morning was spent examining *Parvilucina* and discussing Carole S. Hickman's article The Genus *Parvilucina* in the Eastern Pacific: Making Evolutionary Sense of a Chemosymbiotic Species Complex from The Veliger, Jan. 3, 1994, vol. 37(1), 43-61. Paul presented information about *P. tenuisculpta* Carpenter, 1864 vs *P. approximata* (Dall, 1901). He suggested looking at a suite of characters. *P. tenuisculpta* has shallow, narrow lunules in both valves, beaks low and hinge line slightly curved. Whereas, *P. approximata* has moderate depth and width lunules in both valves, beaks prominent and hinge line strongly curved. He will put something together for the next newsletter and suggested that everybody take a critical look at their *Parvilucina*'s and see if there are two different forms.

The afternoon was spent discussing the Family Eulimidae. Included in this newsletter is a handout entitled A Generic Revision of the Family Eulimidae (Gastropoda, Prosobranchia) by Anders Waren. In the handout, the Genus *Strombiformis* needs to be changed to *Eulima*. It was also determined that *Rhamphidonta* sp. A [Cadien, 1993] is *R. santarosae* (Dall, 1916).

FUTURE MEETINGS

The meeting on May 9 will be on Biological Illustrations with Dr. Jodi Martin leading the workshop. It will be held in the Times Mirror Room at the Los Angeles Natural History Museum, Los Angeles, CA.

The date and topic(s) for the June meeting have yet to be determined.

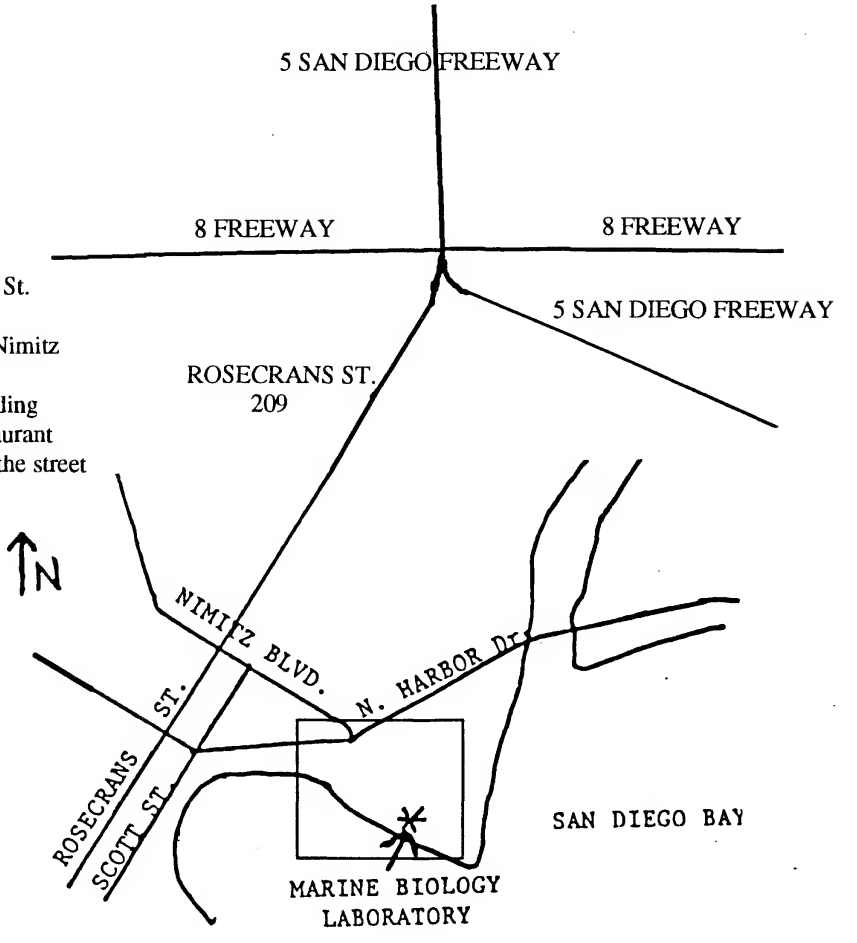
SCAMIT	Manuscript names
Diastylis sp. A and D. sp. D (male)	*D. serratocostata* Watling & McCann, n. sp.
Diastylis sp. B	*D. santamariensis* Watling & McCann, n. sp.
Leptostylis sp. A	*L. calva* Watling & McCann, n. sp.
Leptostylis villosa	*L. abditis* Watling & McCann, n. sp.
Leucon sp. H	*L.* (*Diaphonoleucon*) *declivis* Watling & McCann, n. sp.
Leucon sp. A	*L.* (*Leucon*) *falcicosta* Watling & McCann, n. sp.
Epileucon sp. A	*Leucon* (*Crymoleucon*) *bishopi* Bacescu, 1988
Campylaspis sp. P (male)	*C. maculinodulosa* Watling & McCann, n. sp.
Campylaspis sp. E	*C. blakei* Watling & McCann, n. sp.
Procampylaspis sp. A	*P. caenosa* Watling & McCann, n. sp.
Cumella sp. A	*C.* (*Cumella*) *californica* Watling & McCann, n. sp.

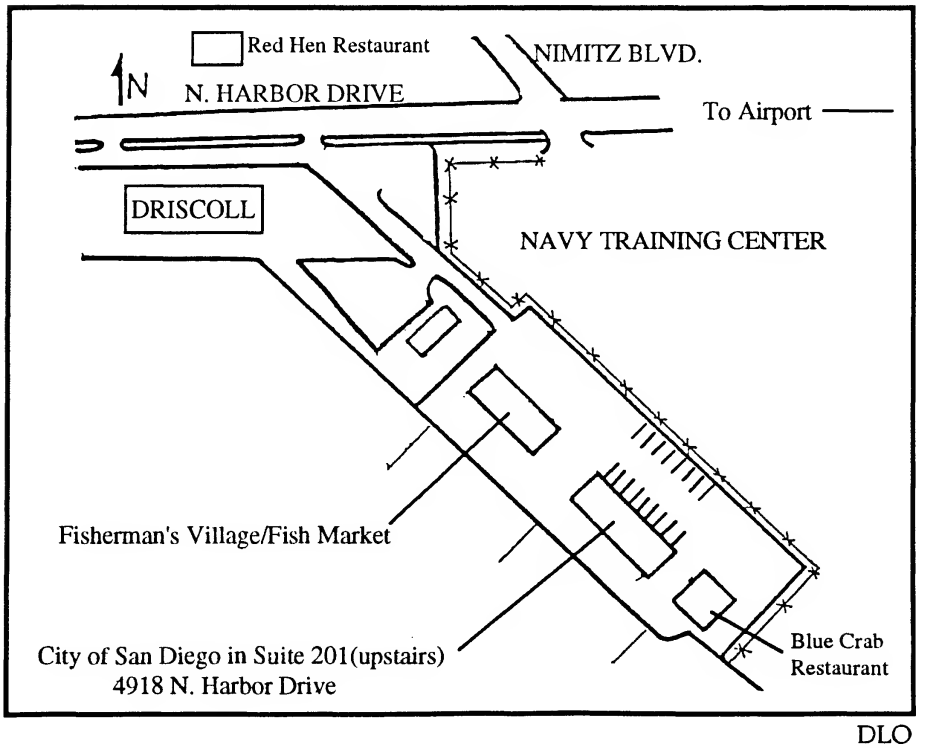
SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

CITY OF SAN DIEGO'S MARINE BIOLOGY LABORATORY

From North, take 5 South to Rosecrans St. (209)
Turn left on N. Harbor Dr. (light after Nimitz Blvd.)
The entrance will be after Driscoll building (America III), look for Blue Crab Restaurant sign; the Red Hen Restaurant is across the street





DLO

TAXONOMIC ATLAS
OF THE BENTHIC FAUNA OF THE SANTA MARIA BASIN AND WESTERN SANTA BARBARA CHANNEL

Standing Order Form

Name _____

Institution _____

Mailing Address _____

_____

_____

Phone number and fax number _____

Email address _____

I wish to have a standing order for the Taxonomic Atlas of the Santa Maria Basin and Santa Barbara Channel published by the Santa Barbara Museum of Natural History. I understand volumes will be sent to me as they are produced, and I will receive a 10% discount off the list price. All invoices will be paid within 30 days of receipt of the volume. If the publication is deemed unsatisfactory, it may be returned at no cost.

Signature _____ Date _____

Please return to:

Paul Scott
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105
fax 805-569-3170

for Announcement

CALIFORNIA STATE UNIVERSITY, LONG BEACH

DEPARTMENT OF BIOLOGY
(310) 985-4806

February 21, 1993

To: Marine Biologists

From: Donald J. Reish

Re: X International Marine Biology Symposium

The tenth International Marine Biology Symposium will be held in Ensenada, Baja California, June 13-17, 1994. This symposium is co-sponsored by the Universidad Autónoma de Baja California, Universidad Autónoma de Baja California de Baja California Sur Southern California Marine Institute [the new name for Oceans Study Institute]. This symposium has been a very successful association with the universities of Baja California. The symposium will be held in the convention center of Ensenada which was the former Hotel Riviera del Pacifico.

Abstracts are due March 31, 1994 to Lon McClanaham on Terminal Island or they can be given to me. Lon and I will be going to Ensenada to make the final arrangements after March 31. Abstracts must be typed on a specific form which will then be photocopied. Arrangements are being made to publish submitted papers in Ciencas Marinas subject to peer review. I have a few of the forms as well as hotel information. Additional forms are available from Lon.

Funds have been made available to support five graduate students to attend and present a paper or poster. Each student will receive $200.00; they must have the written support of a faculty member as well as presenting a paper or poster.

For further information consult Lon or me.

1250 Bellflower Boulevard, Long Beach, California 90840-3702

for announcement

CORONA

ENSENADA, B.C., DECEMBER 16, 1993.

X INTERNATIONAL MARINE BIOLOGY SIMPOSIUM

Dear Congress Member:

The present is with the aim to send you a greating and let you know about the services and rates that "HOTEL CORONA" offers you as a head office of the Congress, that going to be the 13 thru the 17 of June 1994.

The Corona Hotel has been built thinking in your safety and comfort taken the most advance sistems of security, prevent any catastrophy. The Hotel is located near to the see across from the Convention Center (Riviera del Pacífico Ex-Hotel).

The Hotel have 93 rooms with the following services:

- COMPLETED CARPETED
- PURIFIED DRINKING WATER
- POOL
- RESTAURANT
- PANORAMIC BALCONIES
- ELEVATORS
- GUARD
- SAFE BOX
- AIR CONDITIONER/HEATING
- PHONE
- PRIVATE PARKING LOT
- SATELLITE T.V.
- LOBBY BAR/LIVE MUSIC/GAMES ROOM

The four floors of the Hotel let see and enjoy the best view of the City and Harbor of Ensenada.

RATES:

SINGLE ROOM	1 KING bed/1 Person	$38 DLLS + TAX
DOUBLE ROOM	2 QUEEN beds/2 People	$38 DLLS + TAX
TRIPLE ROOM	2 QUEEN beds/3 People	$43 DLLS + TAX

We offer you a Welcome Party in a Pool Area from 8 to 10 P.M. with typical drinks of our land. (Margaritas, Clamatos, Beers & tequilas).

Also we provide you with our Restaurant Menu, wich contain prices for Breakfast, Lunch & Dinner.

RESERVATIONS POLICY: Must be made two weeks prior arrival and prepaid one week before; in case of cancellation it must be 72 Hrs. prior arrival, if not one night of no show, will be charge to your deposit or to the credit card that is holding the reservation.

Thank you for thinking in us, its our commitment that our guest have a pleasant stay.

VERY TRULY YOURS,

JOSE JORGE GALVAN LASSARD
GENERAL MANAGER

LILIA E. NAVA ROMERO
RESERVATIONS

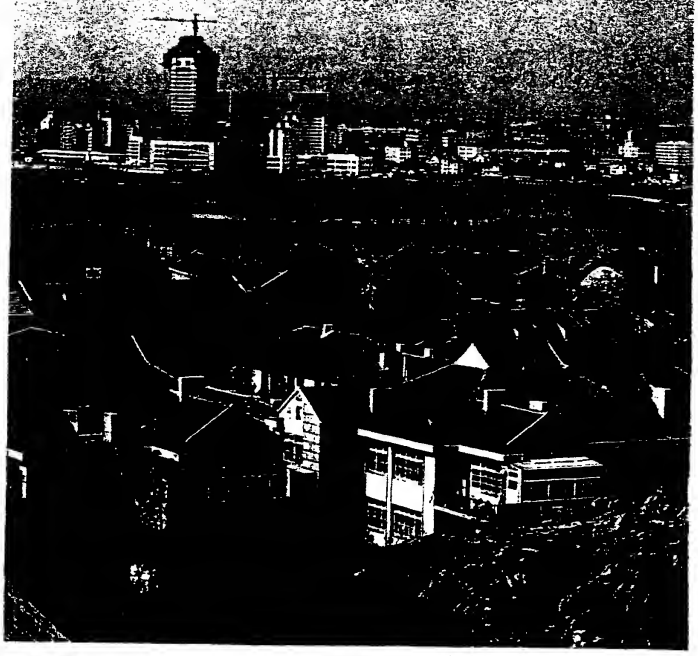
Fifth

INTERNATIONAL POLYCHAETE CONFERENCE

2 -7 JULY, 1995

Qingdao

PEOPLE'S REPUBLIC OF CHINA



Dear Colleague,

You are cordially invited to participate in the Fifth International Polychaete Conference to be held from 2-7 July 1995 in Qingdao, China. The Fifth International Polychaete Conference is sponsored by the International Polychaete Association (IPA) and the organizing committee of the Fourth International Polychaete Conference and is hosted by Chinese Society of Oceanography; Qingdao Association for Science and Technology; The Department of Biology, The Hong Kong University of Science and Technology; and The Marine Ecology and Polychaete Laboratory of the First Institute of Oceanography, State Oceanic Administration.

The conference will include plenary sessions, oral presentation of research papers, and display of the posters. In addition, field trips to various parts of the Yellow Sea will be organized during the session.

We welcome all polychaete experts who may like to present papers or posters, but we also welcome non-experts who are friends of polychaetes and who may only want to come to meet with world polychaete scholars and enjoy the surrounding of Qingdao. All participants are regarded as formal delegates and share the privilege of all activities of the conference.

Qingdao is a lovely port city; it is surrounded by miles of beautiful coast and fishing villages; the nearby Laoshan Mountain is a famous scenic resort. The first bathing beach at Huiquan Cove is one of the best bathing beaches in China and is characterized by a gentle slope and fine sand. The brand of Tsingdao Beer which is made with the Laoshan mineral water enjoys a worldwide fame. Qingdao is also the major base of oceanographic research with about half of all marine research institutions in China.

Attendees are urged to spend an extra week visiting the magnificent sights of China: The Great Wall, Forbidden City, the Summer Palace, Ming Tombs, Tiananmen Square etc. in Beijing; the Museum of terra cotta Army of the Emperor Qin ShiHuang in Xian; the lovely West Lake in Hangzhou; the beautiful mountains and waters in Guilin; and the beautiful port cities of Haikou and Sanya of Hainan Island in the South China Sea.

Organizing Committee of
The Fifth International Polychaete Conference

CHAIRPERSON OF THE INTERNATIONAL ASSOCIATION OF POLYCHAETES

Dr. Pat Hutchings

ORGANIZING COMMITTEE OF THE FIFTH INTERNATIONAL POLYCHAETE CONFERENCE

Co-Convener:

Prof. B. L. Wu
- First Institute of Oceanography, SOA, China

Prof. F. S. Chia
- The Hong Kong University of Science and Technology, Hong Kong

Secretary General:

Dr. P. Y. Qian
- The Hong Kong University of Science and Technology, Hong Kong

ADVISORY COMMITTEE OF THE FIFTH INTERNATIONAL POLYCHAETE CONFERENCE

Guan, H. S.
- President, Ocean University of Qingdao, PRC

Hutchings, Pat.
- Australian Museum, Sydney, Australia

Kung, Shain-dow
- Pro-vice-chancellor for Academic Affairs, The Hong Kong University of Science and Technology, Hong Kong

Reish, D. J.
- Department of Biology, California State University, Long Beach, California, USA

Shi, J. S.
- Vice Chairman of the Standing Committee of Qingdao Municipal People's Congress, PRC

Tseng, C. K.
- Honorary Director, Institute of Oceanography, Academia Sinica, Qingdao, PRC

Yan, H. M.
- Minister, State Oceanic Administration, PRC

DEADLINES

July 1994

Second Circular will be sent only to those who have requested it on the reply form included with the First Circular.

1 December 1994

Booking for post-conference excursions

1 February 1995

Submission of abstracts

1 May 1995

Notification of acceptance for oral or poster presentation

2 July 1995

Submission of manuscripts for review and publication

REGISTRATION FEES

US$200 before 30 November 1994
US$250 after 01 December 1994
50% discount of the registration fee for students & accompanying persons.

Registration fee includes all conference materials, proceeding programme, reception, tea & coffee breaks, and mid-conference tours.

SYMPOSIUM VENUE

All conference sessions will be held in the Yi-Fu Academic Hall at the Ocean University of Qingdao. The Academic Hall, completed only a year ago, was furnished with the latest conference facilities and funded with a generous donation of Hong Kong Film enterpriser Yi-Fu Shaw.

CONFERENCE PROGRAMME

English will be the official language for the entire conference and no translation facilities will be available. Details of scientific program, registration and abstract forms will be provided in the Second Circular.

ACCOMMODATION

Dormitories at modest rates at both the Ocean University of Qingdao and the First Institute of Oceanography are available for students and delegates. A variety of restaurants, major hotels and shops are within walking distance to the Yi-Fu Academic Hall.

Some close by Hotels:

Hui-Quan Hotel: US$110/night
Huanghai Hotel: US$80/night
Badaguan Hotel: US$85/night

All hotel rooms are provided with two beds, telephones, TV set and washrooms; and can be shared by two persons.

MID- AND POST-CONFERENCE EXCURSIONS

The following tours are being planned but subject to change. The number of participants is limited. More detailed information and post-conference tour cost will be given in the Second Circular.

a. Mid-conference tours (no charges to delegates)

Two mid-conference tours will be organized. All will take a whole day and lunch will be provided.

1. Laoshan Mountain (Beijiu Shui and Xiaqing Gong) and city tour.
2. Polychaete collection around the local coast area (intertidal zone, rocky shores and sand beaches).

b. Post-conference tours (Non-Scientific)

1. Qingdao - Shanghai - Hangzhou - Guilin. 8 days
2. Qingdao - Shanghai - Hangzhou - Shanghai. 5 days
3. Qingdao - Bejing. 3 days
4. Qingdao - Xian - Beijing. 5 days
5. Qingdao - Xiamen - Haikou - Sanya. 7 days

TRAVEL

There are several Domestic and International airlines connected Qingdao directly to Beijing, Shanghai, Guilin, Xian, Haikou, Sanya, Hong Kong, Seoul.

REPLY FORM AND SECOND CIRCULAR

To receive the second circular, you must complete the enclosed reply form and returned it to the address indicated on the Form as soon as possible. The Second Circular will include abstract form for oral or poster presentation.

CONTACT PERSON

Prof. B. L. Wu
Marine Ecology and Polychaete Laboratory
First Institute of Oceanography, State Oceanic Administration
3A Hongdaozhi Road, Qingdao, People's Republic of China
Tel. 86-0532-2866810
Fax. 86-0532-2879562

FIFTH INTERNATIONAL POLYCHAETE CONFERENCE

2 -7 JULY 1995

REPLY FORM

FAMILY NAME: _____ GIVEN NAMES: _____

TITLE(DR/PROF/ETC): _____

AFFILIATION: _____

ADDRESS: _____

_____

_____

TEL: _____ FAX: _____ E-MAIL: _____

(PLEASE CIRCLE AS APPROPRIATE)

1 I wish to attend the conference. Please send me more information when available

2 I wish to participate in the mid conference excursion

3 I wish to participate in the post-conference excursion

4 I intend to submit a paper entitled _____

_____

for **Oral presentation / poster display**

5 I wish to stay in: Hui-Quan, Huanghai, or Badaguan Hotel (Check one)

6 I wish to stay in the dormitories

PLEASE RETURN THE COMPLETED FORM TO:

Prof. B. L. Wu
Marine Ecology and Polychaete Laboratory
First Institute of Oceanography,
State Oceanic Administration
3A Hongdaozhi Road, Qingdao
P. R. China

A GENERIC REVISION OF THE FAMILY EULIMIDAE

(GASTROPODA, PROSOBRANCHIA)

ANDERS WARÉN
Department of Zoology, University of Göteborg
Box 25059, S-40031 Göteborg, Sweden

SUPPLEMENT 13
THE JOURNAL OF MOLLUSCAN STUDIES
1983

DEFINITION OF THE FAMILY EULIMIDAE

It is impossible to give a brief definition of a group that is so variable and incompletely known as the family Eulimidae. A family is a unit based on a number of genera which are more related to each other than to other genera and every new genus tends to strain the limits. I have therefore restricted myself to giving a number of details partly shared by the genera known to me. The alphabetical list of the genera shows the variation of the family more completely.

Shell. Usually present. Colourless or brownish yellowish with brownish or yellowish markings. Often there are one or several scars from earlier positions of the outer lip (similar scars may also be found in Aclididae and Rissoinidae). The shape of the shell is most variable. Siphonal canal absent.

Larval shell. Brownish or colourless. In species with planktotrophic development it consists of 2.5-4 whorls and is rather slender.

There is no sculpture except in a few species which have extremely faint axial lines. It does not show any sinusigera characteristics.

Operculum. An operculum is present in all species with a solid shell, but is often lacking in species which are constantly attached to the host and have an inflated or less solid shell. Sometimes it has pegs, folds or other reinforcements.

Tentacles. Usually present. They are round, flat, or are fused to form a fold. Sometimes they are lacking. Eyes are usually present and situated basally, under the skin in the centre of each tentacle.

Radula. Present in *Hemiliostraca, Niso, Eulimostraca, Eulima* and some other genera. Ptenoglossate.

Proboscis. Present in all except a few of the most highly reduced endoparasites. Acrembolic.

Alimentary canal. Salivary glands present in some species. Oesophagus usually passing through the nerve ring anteroventrally in the body cavity. Stomach present in *Eulima*, but usually the oesophagus is gradually transformed into the midgut gland. Rectum often present.

Pallial oviduct. Open.

Penis. Present except in the most highly modified endoparasites. Seminal groove open.

Foot. Usually present, often with flaps which may cover the base of the shell. Propodium (mentum) well developed.

Way of life. Always parasitic, more or less permanently attached to the host (with two exceptions echinoderms), by the snout or proboscis.

I have earlier used the name Eulimidae to denote these gastropods without discussing whether they should be regarded as a family or a higher taxon. Previous authors have distinguished between a number of taxa, a list of which is given below. These range from subfamily to suborder. As I will show later, these groups can all be derived from the basic eulimid organization shown by *Eulima, Niso,* and *Melanella.* Therefore I have preferred to keep them in one family, Eulimidae. I have not made any attempts to divide Eulimidae into subfamilies.

Suprageneric names used for species here included in Eulimidae.

Eulimidae H. & A. Adams, 1853
Styliferidae H. & A. Adams, 1853
Entoconchidae Gill, 1871
Parasita Fischer, 1883 (Suborder)
Cochlosolenia Voigt, 1888 (Suborder)
Cochlosyringia Voigt, 1888 (Suborder)
Melanellidae Bartsch, 1917

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Cochlosyringia Voigt, 1888 (Suborder)
Melanellidae Bartsch, 1917
Enteroxenini Schwanwitsch, 1917
Pelseneeridae Rosén, 1910
Asterophilidae Thiele, 1925b
Thycinae Thiele, 1931
Paedophoropodidae Ivanov, 1933
Enteroxenidae Heding & Mandahl-Barth, 1938
Melanellacea Cotton, 1959

The systematic position of Eulimidae also has to be decided upon. Thiele (1931) placed the family, together with Aclididae and Pyramidellidae in Aglossa. The family Pyramidellidae has since been transferred to the opisthobranchs (Fretter & Graham, 1949). Not very much is known about the aclidids (cf. Sars, 1878, and Thiele, 1931), but the few facts available (ptenoglossate radula, presence of mentum, long proboscis, a pair of jaws carrying teeth on their edges) agree as well with epitoniids as with eulimids, except a supposed absence of a penis in Aclididae (A.W. pers. obs), a difference from eulimids. The genus *Thaleia* Warén, 1979(e) is similar to Eulimidae in many aspects, but has a very different radula and the organization of the alimentary canal is poorly known.

The ptenoglossate radula is shared with the epitoniids and some architectonicids, but these families differ in the organization of the alimentary canal, and lack a penis and mentum. The epitoniids have a hypobranchial gland secreting a purple dye and the architectonicids have a heterostrophic larval shell.

Also the family Trochaclididae (with a single known species) has a ptenoglossate radula, but has neither proboscis nor jaws and a trochiform shell and multispiral operculum.

No other gastropods show any similarities to the eulimids, except in non-specific characters, such as shell shape (several smooth Rissoinidae).

Therefore I regard the eulimids as a superfamily, containing a single family Eulimidae. The name Melanellacea was introduced by Cotton (1959) to include Melelanellidae and Stiliferidae and has to be changed to Eulimoidea.

TAXONOMICAL CONCEPTS IN EULIMIDAE

Generic level. The present concept of genus and subgenus in taxonomy is based on personal weighting of differences and similarities between species. Species which resemble each other very much are placed in the same subgenus and similar subgenera are brought together in genera. Numerous attempts have been made to

use numerical methods to arrange the species of certain groups in a hierarchy or to express relationships between them. Such methods are valuable, under the presumption that the evolutionary rate of morphological changes has been approximately uniform in the group and through time (Colless, 1970). I find it unrealistic to assume that the evolution of the eulimids has proceeded with an approximately uniform rate, but believe that speciation and radiation have been faster when certain levels of organization have been achieved and that the present opulence of species at certain levels and the scarcity or absence at others reflect this.

The morphological variation within the eulimids is at least as great as among the remaining prosobranchs. All organ-systems of prosobranchs are present in the primitive species and most may be lacking in others. Thus it becomes more difficult to discern relationships between groups.

Another additional difficulty is the present, scanty knowledge about the family. As it will be emphasized (cf. p. 5), it can be assumed that only a small part of the total number of genera and species is known.

Therefore, I have preferred not to use subgenera, but instead I have used very restricted genera. Probably several of them can be united as subgenera in the future, when more species are known and intermediate forms make a continuum of what now is seen as scattered groups. This way of working reduces the probability of classifying unrelated species together and is more easy to correct, than an exaggeration in the other direction.

As I have based my generic concept on relative characteristics, viz. resemblance between a number of species, compared with the remaining species of the family, it has been impossible to affix a "generic value" to certain details. Some characteristics, however, are almost invariably constant in a genus. (1) Host group. The species of a genus are usually restricted to a single class of echinoderms. Exceptions are *Vitreolina* and perhaps *Niso*. (2) Sexual strategy.

Relationships within the Eulimidae. Earlier authors have constructed more or less elaborate evolutionary schemes, based on a few genera, to show the relationships of the families here included in the Eulimidae (e.g. Vaney, 1913; Ivanov, 1952; Grusov, 1965). Grusov reduced the number of families to one, while Lützen in various papers has mentioned Stiliferidae, Pelseneeridae, Paedophoropodidae, and Entoconchidae. I here point out the problems connected with such arrangements, and arrange some genera, which I consider related, into groups.

When previous workers have outlined the systematics of the family they have used exclusively morphological similarities and differences, and only infrequently have they considered the possibility of convergence. Neither have they been aware of the high plasticity of the morphology of the eulimids. I give some examples to show this.

Presence or absence of a pseudopallium has been used to group the species. The pseudopallium is a collar-shaped enlargement of the snout, first described in *Stilifer* where it forms a sac-like wrapping covering all the shell, except the apical part. In one species of the genus, *S. astericola,* it is absent in the male phase which lives as an ectoparasite. A pseudopallium is present also in several other genera, e.g. in the male of *Stilapex montrouzeri* which lives under the shell of the female, in *Megadenus* spp. and in *Vitreobalcis holdsworthi*, where it protects the snail from the pedicellariae of the host (Warén 1980b). The presence of a pseudopallium is always associated with a more intimate relation with the host and therefore I suppose that the pseudopallia of different groups of eulimids, have evolved independently, probably to reduce defensive activities of the host. (A parallel to this is presumably the pedal flaps of *Pelseneeria, Pulicicochlia* and *Robillardia.*) I have therefore not paid as much attention to the pseudopallium as earlier authors.

Some authors have paid much attention to sexual strategy, when grouping the species into families. I later discuss the variation of sexual strategies in the eulimids and try to show that these are very much subject to selective pressure by predation. The presumed primitive protandric hermaphroditism in the family and the small changes necessary for a change from one strategy to another have made me doubt this characteristic for separating larger groups.

The proboscis is also highly variable, even within a genus (e.g. *Apicalia* (Warén, 1979c) and *Peasistilifer* (Hoskin, pers. comm.)), which might be expected, as it is directly connected with food uptake. High variability also occurs in other parts of the digestive system and the foot. Some other details in the anatomy, such as excretory system and circulatory system are too poorly known to be evaluated at present. This is also the case with the spermatozoa, which are known to vary even between the few species in

which they are known (Heding & Mandahl-Barth, 1938, Ivanov, 1949b).

One characteristic that has not been used earlier is the host specificity. I have emphasized earlier (p. 1) and discuss later (p. 19) that most eulimid genera show a high degree of group specificity in their choice of host. The only exception is found in the little modified genus *Vitreolina*. Therefore, I assume that the early eulimid genera had a low host-specificity. Certain species became more and more specialized and more firmly associated with certain hosts. They gave rise to new genera, that evolved parallel to their hosts and in response to other selective forces such as predation and conditions for the larvae.

In Tables 1-5 I have arranged all eulimid genera by host group. Each table comprises the parasites of one echinoderm class. At a first glance the contents of a table seem very heterogeneous, with genera representing all degrees of specialization. At a closer examination, however, it will be found that no genus is more similar to genera of other groups, than to certain genera in its own group. It will also be found that in several occasions a genus seems to be a more specialized form of another genus of its own group, as for example the following: *Paramegadenus* → (development of pseudopallium) → *Stilifer* → (loss of shell and coiling of the visceral sac) → *Asterophila. Megadenus* → (enlargement of pseudopallium) → *Gasterosiphon* → (reduction of proboscis and visceral sac) → *Diacolax, Entocolax, Entoconcha* → (total reduction or extroversion of alimentary canal) → *Thyonicola, Enteroxenos. Sabinella* → (development of snout, reduction of foot) → *Echineulima. Trochostilifer* and *Robillardia* have in common the oddly-shaped male shell and the strongly-developed pedal fold and may share an ancestor.

I do not believe that evolution has gone straight or directly as in the sequences above, but I find it likely that the genera of a sequence represent offspring of the same evolutionary branch. Other genera of the same host group may or may not represent other evolutionary branches.

Because of poor knowledge, it is still more difficult and hazardous to give any scheme for the evolution of the more unmodified eulimids, and I prefer to leave it. The attempts above, however, will support my opinion that all eulimids can be included in a single family, even though there exist vast morphological differences.

NUMBER OF SPECIES OF EULIMIDAE

There have been described about 1250 species of the groups here included in Eulimidae. About 425 of these names are based on fossil species. There have been described about 150 species from the North Atlantic, from the Caribbean and Mediterranean areas and northwards. A revision that I am working on presently has proved that these names are based on about 110 species, but the fauna of the area includes at least 260 species. The fauna of other areas is much less well known. From South America for example, only a dozen species have been described. Therefore, it can be assumed, although many of the described species are probably synonyms, that the total number of species will by far exceed the number of described species. The large number of species is not surprising when one considers the number of potential hosts (echinoderms about 6000 species). Although many eulimids are not host-specific, there are many echinoderms that are parasitized by several species of Eulimidae.

PALEONTOLGICAL ASPECTS

Several species of *Eulima* have been described from the Triassic and Jurassic periods. I have examined the descriptions of these and find it hard to support their position in Eulimidae. Cossmann (1921) also arrived at the same conclusion. Sohl (1964), D'Orbigny (1842) and Holzapfel (1888) have in their treatments of the Cretaceous faunas listed typical eulimids. From this time, however, the eulimids are very poorly represented, both in number of species and specimens. In Paleocene faunas eulimids begin to become more common and in the Eocene Faunas they are represented by numerous genera (cf. Cossmann & Pissarro, 1904-06; Palmer, 1937). It is difficult to identify the old fossil genera with Recent ones, but there seems to be no doubts that most of the early tertiary species placed in *Niso* by von Koenen (1891), Cossman & Pissarro (1904), Palmer (1937) and other authors really do belong here. I have examined Eocene specimens and I am not able to separate them from modern species. Cossmann (1921) and Cossmann & Peyrot (1918) gave the earliest appearance of *Niso* as late Cretaceous. Cossmann (1921) also gave this early date for *Eulima* (by him called *Subularia*). The original descriptions of e.g. *Eulima clara* Wade, 1926 and *Niso melanoides* (Leymerie, 1842) fit these genera rather well. I have not been able to identify any other modern genera from deposits older than middle Eocene.

SHELL

The shell of most primitive eulimids is straight, conical, with flat whorls, a polished surface and a high spire. Many species have a more or less coloured shell, marked with brownish bands or spots on a colour-less or yellowish background. These colour patterns are usually specific for the species, but fade in empty shells. I have, however, seen them in Eocene specimens.

Presence or absence of colour has sometimes been used to distinguish genera (Laseron, 1955), but I have observed several cases where species with coloured and colour-less shells belong to the same genus, judging from anatomical characters.

The shell is usually rather solid, more so than in most mesogastropods of comparable size and shape. The suture is very shallow and marked by a less transparent spiral band which constitutes that part of the whorl which is in contact with the preceding whorl. In many species the suture is so indistinct, that the lower part of the spiral band is more conspicuous than the real suture.

Bartsch (1917) used the term "false suture" for this line and I have adopted his use.

In most eulimids the surface of the shell looks smooth at the first glance, but when examined with a stereomicroscope and good illumination there can often be seen extremely fine spiral and/or axial striae. These are especially distinct when the light is reflected by the shell. This is not a real sculpture. SEM examination of some species with such a striation, proved that the surface was completely smooth, even at high magnification. Therefore I suppose that this striation is a refractive phenomenon, caused by the crystalline structure of the calcium carbonate. It is, however, a good taxonomical characteristic, on the species level.

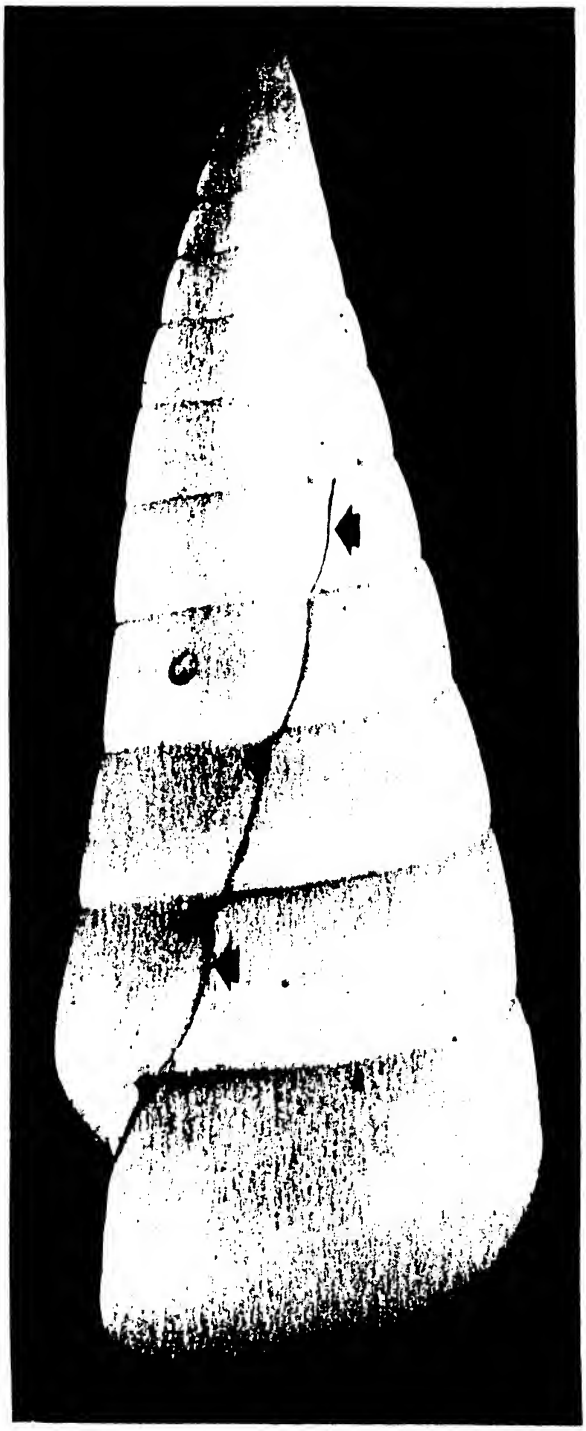


Fig. 22. *Melanella martini* (A. Adams in Sowerby, 1855), from Taiwan. Height 43 mm. Incremental scars placed in a line (marked by arrows).

In some eulimids, especially *Niso*, but also scattered among the slender species of other genera, there is a sculpture of regularly spaced, sharp, distinct, raised axial lines. These lines run almost straight, from suture to suture. They are never present in species with inflated shells, and they should not be confused with incremental lines, which usually run parallel to the outer lip. In some species there is also a normal sculpture.

Almost all eulimids have scars from earlier positions of the outer lip. These are formed by the growth pattern typical for eulimids: they grow rapidly 0.3-1 whorl and then they stay at that size for a considerable time. During this standstill in growth, the outer lip is thickened and when it starts growing again, there is left a scar marking the position and the shape of the old lip. These scars appear very regularly in some species, in others the intervals are variable.

In *Melanella martini* (A. Adams, 1855) some specimens have the scars in a perfect line, exactly one whorl from each other, while others have them scattered (cf. Fig. 22).

In some species with strongly-expanded apertures, e.g. *Oceanida* and *Auriculigerina*, these scars are very strong and may form varices or processes.

One detail of taxonomic importance in many genera is the profile of the outer lip (seen from the side). In some species it is projecting (in relation to the part immediately below) at the suture, in others it is retracted and in some more or less perpendicular.

Two genera have an umbilicus, *Niso* and *Microstilifer*. The umbilicus in *Niso* is broad and deep and penetrates the shell up to the larval shell in many species. These species also have a strong basal keel. In other species of this genus the umbilicus is more narrow and the base rounded, and some lack it completely.

In those species which anatomically may be regarded as more modified, the shell is usually less solid and more inflated. When scars are present, they usually represent a change in sex. Many of the odd genera such as *Bacula, Concavibalcis, Amamibalcis* etc. are still known from empty shells only, and it is not possible to say to what extent the oddness of the shells corresponds with deviations in the anatomy.

Family EULIMIDAE

Whorls flattened, suture not indented. The key is to genera.

1. Shell not conspicuously glossy; suture evident ..... *Cythnia*
   Shell polished; suture mostly indistinct 2
2. Apex mucronate, with minute pointed tip 3
   Apex evenly tapering 5
3. Outline globose ..... *Stilifer*
   Outline ovate to conic 4
4. Spire bluntly rounded, outline ovate ..... *Hypermastus*
   Spire cylindrical, outline conic ..... *Mucronalia*
5. Base umbilicate ..... *Niso*
   Base not umbilicate 6
6. Outline ovate ..... *Turveria*
   Outline conic to slenderly tapering 7
7. Periphery with a keel ..... *Scalenostoma*
   Periphery rounded, not keeled 8
8. Slender, many-whorled; aperture elongate ..... *Eulima*
   Blunt, relatively few-whorled; aperture short 9
9. Whorls inflated ..... *Sabinella*
   Whorls flat-sided 10
10. Inner lip smoothly appressed to body whorl ..... *Balcis*
    Inner lip slightly elevated from body whorl ..... *Eulimostraca*

now Melanella

Key to Californian and Panamic genera (ex Keen, 1971)

Genus *Melanella* Bowdich, 1822

Shell elongate, white, with an oily, glossy surface. Whorls numerous, slightly convex. Apex sometimes bent to one side. Not umbilicated. *Eulima* Risso, 1826, is a synonym. Type: *dufresnii* Bowdich, 1822 (is *arcuata* Sowerby?). There are many named forms in this group, and their speciation is in need of revision. Some are parasites of holothurians, starfish and sea urchins.

Melanella micans (Carpenter, 1864) **1338**
Carpenter's Melanella

Alaska to Baja California.

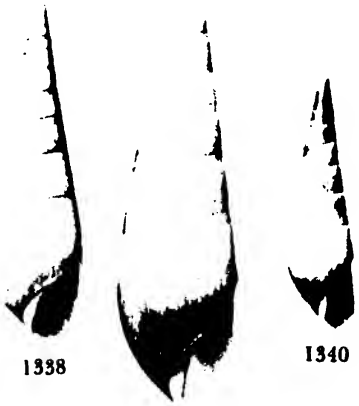
9 to 12 mm., rather straight, elongate, with about 15 flattened whorls. Parietal wall covered with a moderately thick glaze. Common; 1 to 30 fathoms.

(1339) The subspecies *borealis* Bartsch, 1917, occurring from Kodiak Island, Alaska, to Vancouver Island, British Columbia, is uniformly more slender. 12 whorls; length 11.3 mm.; width 3.3 mm.

Melanella rutila (Carpenter, 1864) **1340**
Rutila Melanella

Vancouver Island to Baja California.

6 to 7 mm., straight, slender, polished. Periphery of the last whorl rounded, the base sloping in such a way as to lend the left outline a somewhat flattened appearance. Parietal wall with weak callus. Common; on starfish from 1 to 360 fathoms.



1338 1340

1339

Other Pacific species:

1365 *Melanella* (*Balcis*) *montereyensis* (Trinidad to Monterey Bay), 5 mm.; *peninsularis* **(1366)** (San Diego to Magdalena Bay Baja California) 5 mm.; *lastra* **(1367)** (San Pedro to Magdalena Bay); *columbiana* **(1368)** (Baranoff Island, Alaska, to Departure Bay, British Columbia) 9.5 mm.; *comoxensis* **(1369)** (Comox Vancouver Island, British Columbia) 7 mm.; *macra* **(1370)** (Departure Bay to Seattle, Wash.) 7.5 mm.; *berryi* **(1371)** (Monterey Bay to Catalina Island, Calif.); *grippi* **(1372)** (San Pedro, Calif. to Point Abreojos, Baja Calif.) 8 mm.; *catalinensis* **(1373)** (San Rosa Island, Calif., to San Hipolito Point, Baja California) all Bartsch, 1917, *Proc. U.S. Nat. Mus.*, vol. 53.

1374 *Melanella* (*Balcis*) *thersites* Carpenter, 1864. Monterey California, to San Geronimo Island, Baja California. *M. bistorta* (Vanatta, 1899) and *M. lowei* (Vanatta, 1899) are synonyms.

1375 *Melanella* (*Melanella*) *randolphi* Vanatta, 1899. Aleutian Islands to Puget Sound. 7 mm.

1376 *Melanella compacta* Carpenter, 1864. San Pedro, California, to Point Abreojos, Baja California. 7 mm.

1377 *Melanella* (*Melanella*) *mexicana* Bartsch, 1917. Gulf of California to Acapulco, Mexico. 6.4 mm.

1378 *Melanella* (*Melanella*) *oldroydi* (San Pedro to Point Abreojos, Baja California) 9 mm.; *californica* **(1379)** (Catalina Island and San Martin, California); *hemphilli* **(1380)** (San Diego, California, to Point Abreojos, Baja California) 8.3 mm.; *tacomaensis* **(1381)** (Tacoma, Wash.) 5 mm., all Bartsch, 1917, *Proc. U.S. Nat. Mus.*, vol. 53.

1382 *Melanella* (*Sabinella* Monterosata, 1890) *bakeri* Bartsch 1917. San Diego, California. 2.7 mm.

1383 *Melanella ptilocrinicola* (Bartsch, 1907). Off British Columbia, 1,588 fms. 9.5 mm. Parasitic on the crinoid, *Ptilocrinus pinnatus*.

1384 *Melanella rosa* Willett, 1944. Off Redondo Beach, California, 125 fms. *Bull So. Calif. Acad. Sci.*, vol. 43, p. 72.

1385 *Melanella* (*Balcis*) *titubans* (S. S. Berry, 1956). Anacapa Island, California, 46 to 58 fms. *Jour. Wash. Acad. Sci.*, vol. 46 p. 155.

1386 *Melanella* (*Balcis*) *delmontensis* (A. G. Smith and M. Gordon, 1948). Off Del Monte, California, 10 fms. *Proc. Calif. Acad Sci.*, series 4, vol. 26, p. 219. 4.5 mm.

Abbott, 1974

Genus *Strombiformis* Da Costa, 1778

Shell small, transparent, elongate, glossy, with an umbilical depression. Type: *glabra* (Da Costa, 1778). *Leiostraca* H. and A. Adams, 1853, is a synonym. The genus name is masculine.

Strombiformis californicus **Bartsch, 1917** **1395**
Californian Melanella

Catalina Island to San Diego, California.

11 mm., with 13 flat-sided whorls. Elongate, narrow, polished. Early whorls yellowish white, succeeding ones light-brown, marked with a dark-brown band at the periphery. A second band occurs a little below the middle of the whorl. Outer lip edged with brown. Pale-brown growth streaks present on whorls. Parietal wall callused. Uncommon; 14 to 60 fathoms.

Strombiformis almo **Bartsch, 1917** **1396**
Almo's Melanella

Santa Rosa Island to San Diego, California.

7 mm., broadly elongate-conic, polished, whitish with a broad chestnut-brown band around the middle of the whorls. 10 whorls slightly convex. Uncommon; 53 to 113 fathoms on sandy mud bottom.

Abbott, 1974

Genus *Niso* Risso, 1826

Shell flat-sided, acutely conic, with a glossy surface. Umbilicus deep. Outer lip simple. Operculum corneous, thin, transparent-tan. Type: *eburnea* (Risso, 1826), Pliocene of Italy. For a review of the Eastern Pacific species, see W. K. Emerson, 1965, *Amer. Mus. Novitates*, no. 2218.

Niso hipolitensis **Bartsch, 1917** **1413**
Hipolito Niso

San Diego, California, to the Gulf of California.

3 mm., with 10 flat-sided whorls. Narrowly umbilicate. Apex yellowish white; base white with a broad median brown band. Anterior half of aperture white. Suture feebly impressed. Periphery of the last whorl angulated. Uncommon. See *Amer. Mus. Novitates*, no. 2218, figs. 9 and 10, by W. K. Emerson, 1965.

Other Pacific species:

1416 *Niso lomana* Bartsch, 1917. Santa Rosa Island to Point Loma, California.

Genus *Cythnia* Carpenter, 1864

Embedded in starfish. Similar to *Stilifer*, but the nuclear whorls are normal, not pupiform, and the operculum is multispiral. Type: *asteriaphila* Carpenter, 1857. *Cythna* is a misspelling. One United States species.

1427 *Cythnia albida* Carpenter, 1864. San Diego, southern California. Parasitic on starfishes.

1428 *Cythnia asteriaphila* Carpenter, 1864. Cape San Lucas, Baja California.

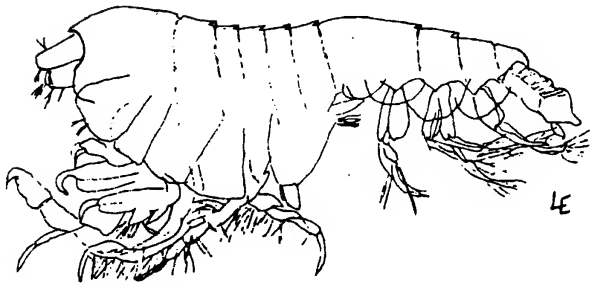
Abbott, 1974

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

April, 1994 Vol. 12, No. 12

NEXT MEETING:	Biological Illustrations
GUEST SPEAKER:	Dr. Jodi Martin, Los Angeles Natural History Museum, Los Angeles, CA
DATE:	May 9, 1994
TIME:	9:30am-3:00pm
LOCATION:	Times Mirror Room, Los Angeles County Museum of Natural History, Los Angeles, CA



Bathymedon pumilus, drawing by Laura Essex

MAY 9

The meeting in May will be on Biological Illustrations. Please bring, if possible, microscopes with drawing tubes or camera lucidas. The workshop will be lead by Dr. Jodi Martin and will be held at the LNHM in the Times Mirror Room, Los Angeles, CA.

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

MINUTES FROM MEETING ON APRIL 11

The X International Symposium on Marine Biology will be in Ensenada, Baja California, Mexico on June 13-17, 1994. The symposium will focus on topics related to: fisheries, marine ecology and resource management.

The Fifth International Polychaete Conference will be held at Qingdao, China in July 2-7, 1995.

The Western Society of Malocologist meeting will be in June 26-30, 1994 at the Santa Barbara Museum of Natural History (SBMNH).

The Western Society of Naturalist meeting will be held at Monterey, CA in December 27-30, 1994.

By now all SCAMIT members should have received a copy of the Master Species List, which was distributed with last month's newsletter. The last page of the index is missing and will be sent with this newsletter. Once again thanks for the hard work and a good job done by those who contributed to the compiling and editing of this list. Those who deserve the praise are: Diane O'Donohue, Don Cadien and all those who attended the meetings to assist with this project.

The Department of Ecology at Lacey Washington is currently looking for two taxonomists to help with the identification of their benthic grabs.

J. M. Orensanz has updated Banse and Hobson 1974, Benthic Polychaetes of British Columbia and Washington. If anyone would like a copy he can be contacted at:

School of Fisheries
University of Washington, WH-10
Seattle, Washington 98195
Phone: (206) 685-3609
Fax: (206) 685-3224

Included in this newsletter is the spring 1994 schedule of Research Seminars at the Natural History Museum of Los Angeles County.

Jim Blake has corresponded some updates on cirratulid taxonomy to Larry Lovell. John Dorsey's (Hyperion) *Tharyx* sp. C, *T.* cf C, *T.* sp. F and *T. serratisetus* Banse and Hobson, 1968 are thought to be *Tharyx marioni* (now *Aphelochaeta marioni*). Also, there is some confusion about *Tharyx secundus*. It was erroneously placed in *Aphelochaeta* by Blake (1992). It should be in the Genus *Monticellina* because of the serrated neurosetae in the posterior segments.

Congratulations to the new officers for 1994-95. They are:

President	Ron Velarde
Vice-President	Don Cadien
Secretary	Cheryl Brantley
Treasurer	Ann Dalkey

POLYNOIDAE WORKSHOP

Gene Ruff distributed a handout (included in newsletter) and gave a description of scale worms. There are currently about 17 subfamilies, most of which we don't need to worry about because they are from deep sea vents. Scale worms tend to be commensal and have coloration and scales

that help mimic their hosts. When examining elytra in scale worms do not look at the first pair, which are sometimes very different, try to examine those that are about a third of the way back, if you have them. The same applies for the neurosetae, in this case, those further back tend to be underdeveloped. Gene went over the table of scale worms species he included in his handout and made a few additions and comments. He did not include *Eunoe* sp. A (*Eunoe* cf *depressa* of SCAMIT) in his table because he was not aware of our common species and had no description. It has completely smooth elytra and might be Pettibone's *Malmgreniella baschi*. He will look at this in the future. He did not feel that there is a clear dividing line between subgenera *Harmothoe* and *Lagisca*; so he prefers to leave *Harmothoe extenuata* as it is rather than *Lagisca extenuata*. He also looked at a lot of *Lepidonotus squamatus* from So. California, Great Britain and other parts of Europe and found lots of variation. He could not find a clear defining line so he left them all as *L. squamatus*. Gene thinks "perhaps" *Lepidasthenia interrupta* does occur here and is a synonym of *L. berkeleyae*. It should be noted that in Hartmans Atlas figure no. 2 (showing the parapodia) of *L. interrupta* is really the parapodia from *Lepidonotus elongatus* Marenzellar, 1902.

The rest of the meeting was spent discussing the following animals:

1) *Hesperonoe*-like - specimen from Puget Sound has eyes and prostomium like *Gattyana*. Tony Philips and Larry Lovell thought it was not *Gattyana* because the notosetae were not distinctly slenderer than the neurosetae. Except in Pettibone's original description (1953) the length of the setae are not described this way. Gene determined the id. to be *Gattyana cirrosa*, because of the shape of the tubercles on the elytra.

2) *Malmgreniella liei* - looked at specimen of Tony's from Marina del Rey. It had definite wrench-shaped neurosetae, but unlike Pettibone's 1993 description this one had eyes and pigment on the elytra at the scar and in a C-shaped pattern.

3) *Malmgreniella baschi* - there may be a chance that what we have been formerly reporting as *Eunoe* cf *depressa* (*Eunoe* sp. A) might be this because of its neurosetae which look unidentate, but have a slight secondary tooth. Look for the transverse rows of spines on the notosetae, which almost encircle the setae instead of the longitudinal striations. This is a good indication of *Eunoe*. Cephalic peaks of the prostomium tend to curve back down toward the ventral side, which makes them look like they are not strongly pointed. SCAMIT's *Eunoe* cf *depressa* needs to be re-examined and compared to this.

4) *Malmgreniella nigralba* - cephalic peaks of prostomium are very squared off. The white reticulation pattern described in Hartman is not always distinct. The secondary tooth of the neurosetae is quite distinct in shape. Also, the supraacicular lobe of the neuropodium is very delineated. See illustration in Pettibone 1993 figure G page 61.

5) *Malmgreniella macginitiei* - very distinct prostomial peaks and the secondary tooth is short and blunt. The peaks actually stick out from the prostomium and do not lie down against the ceratophores.

6) *Malmgreniella scriptoria* - the cephalic peaks look like they are pointed but if you examine them from underneath you can see they actually lie right on top of the ceratophores. The secondary tooth is short and wide on the neurosetae and there does not seem to be any "neck" on the neurosetae. It is very thick all the way to the curved tip.

At the conclusion of the workshop Gene proposed that we look at the cephalic lobes and setal counts to determine if we can split these species of *Malmgreniella* more easily. Also, if the scale worm is very small and there are not 15 pairs of elytra they should either be left at the generic or sub-family level.

FUTURE MEETINGS

The meeting in June might be a literature review at Cabrillo Marine Aquarium, San Pedro, CA. The new Vice-President, Don Cadien, will decide on this next month.

The July 11 meeting will be a workshop on Sea Pens 3 and will be lead by Dr. Gary Williams of the California Academy of Sciences, San Francisco, CA. It will be held at MEC Analytical Systems Inc., Carlsbad, CA.

ACKNOWLEDGMENTS

I would like to take this time to acknowledge all of those people who have helped me in my two years as Secretary of SCAMIT. They are: Judes Brooks, Kelvin Barwick, Larry Lovell, Dean Pasko, Ron Velarde, Ann Dalkey, Cheryl Brantley and anyone else that I may have forgotten to mention. THANK YOU!!!

Diane O'Donohue

I would like to say "Thanks" to all those individuals who have contributed to making my five terms as Vice-President productive and enjoyable. The organization has made great strides in our mission of standardizing and promoting benthic invertebrate taxonomy in Southern California. I know that Don Cadien will receive the same support as I did as we continue in our quest of taxonomic understanding. THANK YOU!!!

Larry Lovell

SCAMIT OFFICERS:
If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Don Cadien	(310)830-2400 ext. 403
Secretary	Cheryl Brantley	(310)830-2400 ext. 403
Treasurer	Ann Dalkey	(310)648-5611

RESEARCH SEMINARS

in History and Earth and Life Sciences

NATURAL HISTORY MUSEUM
of Los Angeles County

☞ **PLEASE POST/CIRCULATE** ☜

SPRING 1994 SCHEDULE

900 Exposition Boulevard
Los Angeles, California 90007

TIMES MIRROR CONFERENCE ROOM
Seminar 3:00 - Coffee / Refreshments 2:45

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7 April — John & Jane Griffith - *Griffith Wildlife Biology, Calumet, Michigan*
BROWN-HEADED COWBIRD TRAPPING: EFFECTS ON THE RECOVERY OF THE LEAST BELL'S VIREO AND OTHER SONG BIRDS AT CAMP PENDELTON

14 April — Chris Steiner - *Anthropology Section, LACMNH*
BACCHUS IN BENIN AND OTHER SUBLIMINAL MYTHOLOGIES: PROBLEMS OF REPRESENTATION IN THE HISTORY OF SCIENCE

21 April — Henry Hespenheide - *University of California, Los Angeles*
THE COMPLEXITY OF BIODIVERSITY: THOUGHTS (AND DATA) ON A BUZZ WORD

28 April — Blaise Eitner - *Southwest Fisheries Science Center, La Jolla*
BIOCHEMICAL GENETICS OF ELASMOBRANCHS, WITH EMPHASIS ON THE ALOPIIDAE (THRESHER SHARKS)

5 May — Fritz Hertel - *University of California, Los Angeles*
VULTURE ECOMORPHOLOGY

12 May — Paula Schiffman - *California State University, Northridge*
EXOTIC AND ENDANGERED SPECIES: STRANGE ECOLOGICAL INTERACTIONS IN A CALIFORNIA GRASSLAND

19 May — Lucy Jones - *U.S. Geological Survey, Pasadena*
CURRENT RESEARCH IN EARTHQUAKE PREDICTION

26 May — Jèsus Maldonado - *University of California, Los Angeles*
INTERSPECIFIC VARIATION IN CALIFORNIA SEALIONS

*27 May — Brent Mishler - *University of California, Berkeley*
PHYLOGENETIC ANALYSIS OF MORPHOLOGICAL AND MOLECULAR DATA: AN EXAMPLE FROM THE GREEN PLANTS
*This seminar will begin at 12 noon; also note that it takes place on a Friday.

-- ALL INTERESTED PERSONS ARE INVITED TO ATTEND --

-- Free admittance through staff entrance --

Seminar suggestions/questions should be directed to Kirk Fitzhugh, Invertebrates Section
213-744-3233; e-mail: fitzhugh@bcf.usc.edu

Family **Polynoidae** Malmgren, 1867

The family Polynoidae is the largest and most commonly encountered group of scaleworms, with currently well over 600 described species. Fortunately, only about two dozen of these occur in shelf waters off California. The group is characterized by dorsoventrally flattened bodies, simple setae in both notopodial and neuropodial fascicles, and scales alternating with the dorsal cirri down much of the length of the body. Although a few become quite large (up to 250 mm), the majority of the scaleworms are only a centimeter or two in length.

In most polynoid species the prostomium is bilobed, with a median furrow between the anterior lobes. The anterolateral corners are sometimes more of less developed in to distinct cephalic peaks, or they extend anteriorly to form the ceratophores of the lateral antennae. There are typically two pairs of eyes arranged in a trapezoid pattern, although the eyes in deep-water species may be absent. Most species have a median and a pair of lateral antennae which are smooth or covered to a lesser or greater extent with papillae. A pair of tapering palps are attached ventrally to the prostomium, and are normally thicker and longer than the antennae; these structures usually have numerous longitudinal rows of minute sensory papillae. The eversible pharynx is large and muscular, with two pairs of curved, dark, keratinous jaws surrounded by a circlet of marginal papillae.

The tentacular segment (segment 1) has two pairs of tentacular cirri supported on large, forward-projecting basal lobes. These tentaculophores have an internal supporting aciculum, and sometimes on the anterior face there are additional projecting setae that are usually similar to the notosetae. The ventral portion of the peristomium forms the upper lip of the mouth. This is often produced into a ridge which sometimes bears a distinct conical facial tubercle.

The buccal segment (segment 2) bears the first pair of elytra and the first parapodia. Dorsally it may be developed into a nuchal fold that partly covers the prostomium, and ventrally it forms the lateral and lower portions of the mouth. The ventral buccal cirri on this segment are usually well-developed and inserted at the bases of the parapodia.

The paired elytra are flattened, scale-like structures that occur in place of the dorsal cirri, and are attached via the elytrophores to segments 2,4,5,7,9...21, 23; posterior to this point there are a number of different attachment arrangements, and the scales may be lacking in the posterior-most segments. The elytra may overlap and completely conceal the dorsum, or they may be reduced in size. The surface of the scales may be smooth, or they be covered with papillae, microtubercles, (sclerotized structures that are nodular, pointed, or multi pronged, and that are clearly visible only under high modification) or macrotubercles (larger, soft structures that occur irregularly on the surface or near the posterior edges). The borders of the elytra may be smooth, or they may have sparse or dense fringes of clavate or filiform papillae.

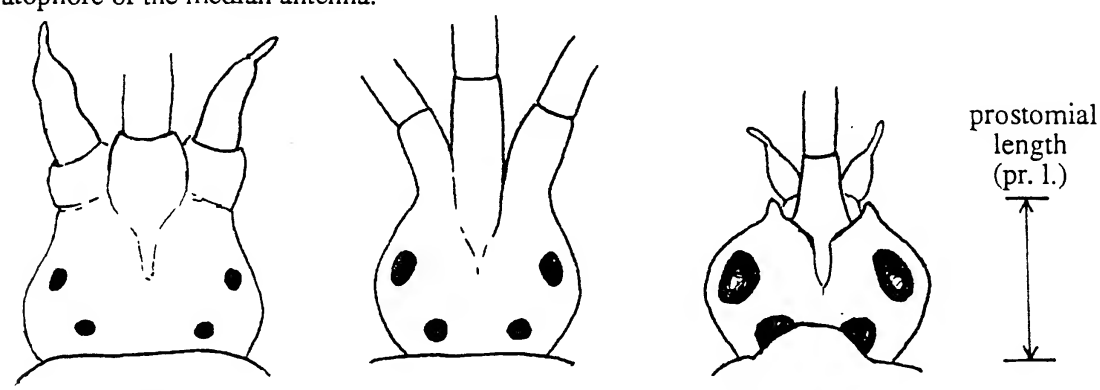
The elongated parapodia are biramous or, in some cases, subbiramous. The notopodia are usually located along the dorsal margin of the neuropodia; each has an interior supporting aciculum which may be distally emergent. The neuropodia are usually larger than the notopodia, and are distally cleft into a rounded post-setal lobe and a longer, narrower pre-setal lobe bearing the internal aciculum which may or may not emerge distally.

All polynoid setae are simple. Although lacking in a few species, the notosetae range from smooth and slender to stout with subdistal transverse spinous plates. The tips may be capillary, pointed, or blunt with or without a terminal cleft. The neurosetae have a long smooth shaft and a curved, subdistal inflated spinous region; the setal tips may be capillary, unidentate, or bidentate with a subequal or small secondary tooth. The shape of the superior neurosetae is often different from those lower in the fascicle, and both uni- and bidentate tips are sometimes found within the same setal bundle.

Dorsal cirri are inserted along the upper margin of the notopodia on segments not bearing elytra; in addition, these segments have a more or less developed dorsal tubercle corresponding in position to the elytrophore. Ventral cirri are normally inserted midway along the ventral edge of the neuropodia after segment 2. Small, cylindrical nephridial papillae occur ventrally at the base of

the neuropodia, usually from segment 6; these structures project posteriorly and upward between the parapodia. The pygidium surrounds a dorsally directed anus, and has a pair of terminal anal cirri that are similar in shape, but often are longer than the dorsal cirri.

The insertion of the lateral antennae is of primary importance in distinguishing some of the subfamilies of the polynoids. Three subfamilies are represented in the California material covered below. In the Arctonoinae the lateral antennae have large ceratophores that are inserted subterminally and are distinctly separated from the prostomium by a transverse groove. In the Lepidonotinae the lateral antennae are attached terminally to anterior prolongations of the prostomium, without distinct ceratophores. In the Harmothoinae the lateral antennae have small ceratophores that are attached ventrally beneath the anterior prostomial margins and/or to the large ceratophore of the median antenna.



Arctonoid Lepidonotoid Harmothoid

Polynoids are found from the intertidal regions to the abyssal depths on a wide variety of sediment types, although a few are entirely pelagic. Most species are carnivorous or omnivorous, feeding on a large spectrum of smaller invertebrates, plant fragments, and detritus. These species normally creep along the bottom, hiding in crevices, under rocks, and in algal holdfasts. The dorsum and the elytra are often pigmented with a variety of patterns and colors to match the general background. In addition, the elytral surface is sometimes covered with detritus and epiphytes, making the specimens difficult to detect.

A number of polynoids are commensal with other organisms, predominately the echinoderms, molluscs, or other polychaetes. In many of these species, the elytra and notopodia are reduced in size, and the notosetae are fewer in number or absent altogether. Many of these commensals are pigmented to match the host organisms.

All polynoids are dioecious, with fertilization taking place externally. Many species brood their eggs under the elytra, but generally the early larval stages appear in the plankton. The nectochaetes settle to the bottom after a month or so, and continue to grow to adult size. In most free-living polynoids, the number of segments is determinant within a small range, and the worms do not grow beyond 30-40 mm in length. In a number of the commensal species, however, segments continue to be added throughout the life of the specimens, and much greater body lengths are attained.

The number and arrangement of the elytra are very important in distinguishing the polynoid genera. Even though the scales are often autonomous, their position can be assessed by counting the distinctive elytrophores along the body. Unfortunately, many species fragment during preservation, and the posterior portion of the body is not available for examination. Therefore, the following information on the California genera and species is based only upon features that can be observed in anterior fragments.

	Arctonoe fragilis	*Arctonoe pulchra*	*Arctonoe vittata*
Prostomium	Arctonoid Both pairs of eyes small Cephalic peaks absent	Arctonoid Anterior eyes moderate; posterior pair small Cephalic peaks absent	Arctonoid Both pairs of eyes small Cephalic peaks absent
Antennae **Tentacular cirri**	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth Basal lobes achaetous	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth Basal lobes achaetous	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth Basal lobes achaetous
Dorsal cirri	Length variable: some greatly exceeding the neurosetae; without papillae	Extending slightly beyond the neurosetae in the anterior setigers; without papillae	Greatly exceeding the neurosetae; without papillae
Dorsal pigmentation	Colorless or tending to match the coloration of the host	Colorless or mottled with brown	Ranging from colorless through reddish-brown to purple depending upon the host. Often with a band of dark pigment across setiger 7-8
Setal diameter **Setal counts**	Nototsetae < Neurosetae Few : Few (16-24) (7-16)	[Nototsetae] < Neurosetae Few : Few (0-15) (3-13)	[Nototsetae] < Neurosetae Few : Few (0-15) (10-20)
Notosetae	Short, slender, straight, with close-set transverse serrations; tapering to pointed or notched tips	Short, slender, slightly curved, with close-set transverse serrations; tapering to blunt, notched tips	Short, slender, slightly curved, with close-set transverse serrations; tapering to blunt, notched tips
Neurosetae	Longer, stout, with faint transverse serrations; tapering to sharp, strongly hooked unidentate tips	Longer, stout, with faint transverse serrations; tapering to sharp, strongly hooked unidentate tips	Longer, stout, with prominent rows of transverse serrations; tapering to blunt notched tips Slightly thicker, with transverse serrations; tapering to sharp, hooked, unidentate tips Slender, with obscure transverse serrations; tapering to straight, blunt, unidentate tips
Elytra	Large, soft, smooth, with a conspicuously convoluted (frilled) margin Surface usually mottled with areas of white, reddish-brown, yellow, or green to match the host Marginal fringing papillae absent	Large, soft, smooth, flat or slightly undulate Surface colorless or with dark pigment tending to match the host coloration, often concentrated in a spot over the elytral scar Marginal fringing papillae absent	Large, soft, smooth, flat Surface usually mottled with black and white and varying considerably depending upon the host coloration Marginal fringing papillae absent
Other features	Ventral cirri rudimentary after setiger 2 Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft Commensal with asteroids	Ventral cirri short, subulate Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft Commensal mainly with echinoderms	Ventral cirri short, subulate Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft Notosetae decrease in number posteriorly and are only present in the first few segments in adults Commensal with asteroids and large molluscs

	Bylgides macrolepidus	*Eucranta anoculata*	*Gaudichaudius iphionelloides*
Prostomium	Harmothoid Anterior eyes very large and positioned near the anterior margin; posterior pair small Cephalic peaks small	Harmothoid Eyes absent Cephalic peaks prominent	Harmothoid Eyes large; anterior pair positioned on the anterolateral margin Cephalic peaks absent
Antennae **Tentacular cirri**	Median: 4 pr.l. Lateral: 1 pr.l. Styles with small scattered papillae Basal lobes with 2-4 stout setae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with numerous small papillae Basal lobes with 0-3 stout setae	Median: 3 pr.l. Lateral: 2 pr.l. Styles with scattered papillae Basal lobes with several long setae
Dorsal cirri	Extending beyond the neurosetae; with scattered clavate papillae	Extending well beyond the neurosetae; with scattered clavate papillae	Extending to the tips of the neurosetae; with scattered long papillae on the distal half
Dorsal pigmentation	Tan, with 2 transverse ciliated bands per segment	Pale to dusky, with iridescent cuticle	Colorless
Setal diameter **Setal counts**	Notosetae › Neurosetae Moderate : Numerous (15-25) (~50)	Notosetae › Neurosetae Few : Moderate (10-20) (20-30)	Notosetae ‹ Neurosetae Very numerous : Numerous (100+) (50-70)
Notosetae	Stout, curved, with transverse rows of spinules; tapering to short, blunt unidentate tips Longer, straight, with transverse rows of spinules; tapering to short, blunt tips	Stout, slightly curved, with inconspicouos transverse rows of spinules	Short, curved, with close-set rows of fine spinules; tapering to blunt tips Longer, straighter, more slender, tapering to fine tips
Neurosetae	Thin, with numerous transverse spinous rows; tips plumose, often with a terminal arista Thin, with numerous transverse spinous rows; tapering to slightly hooked, blunt unidentate tips Thin, with numerous transverse spinous rows; tips plumose, often with a terminal arista	Long, slender, with a long region of prominent spinules; tapering to thin, deeply incised tips. Long, thicker, with prominent spinules in transverse rows; tapering to elongated smooth, sharp, unidentate tips	Long, thick, with a long subdistal region of spinules in transverse rows; tapering to slightly hooked bare unidentate tips Shorter, with a short region of spinules in transverse rows; tapering to bare hooked unidentate tips
Elytra	Thin, appearing smooth but covered with tiny conical microtubercles Marbled with pale brown pigment Marginal fringing papillae sparse	Sort, membranous, with inconspicuous microtubercles anterior to the attachment scar Colorless or with streaks of greenish-yellow pigment Marginal fringing papillae very short	Thick, mostly covered with polygonal cells, each with a central flattened or occasionally conical tubercle Amber to dark brown Marginal fringing papillae short
Other features	Nuchal fold absent, but posterior eyes sometimes covered by the anterior margin of the buccal segment	Prostomium very white	Mostly a boreal species; only one known occurrence in California

	Eunoe depressa	*Eunoe oerstedi*	*Eunoe senta*
rostomium	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks weakly developed, blunt	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks weakly developed, rounded
Antennae **Tentacular cirri**	Median: 3 pr.l. Lateral: 0.5 pr.l. Styles with scattered short papillae Basal lobes with 1-3 stout curved setae	Median: 4 pr.l. Lateral: 2 pr.l. Styles with numerous long papillae and olive brown pigment Basal lobes with 1-3 stout, strongly curved setae	Median: 3 pr.l. Lateral: 1.5 pr.l. Styles with numerous long papillae and brown pigment Basal lobes with bundle of 4-5 stout setae
Dorsal cirri	Not exceeding the neurosetae; with scattered minute papillae	Extending slightly beyond the neurosetae, with numerous long papillae	Extending well beyond the neurosetae; with numerous long filiform and short clavate papillae
Dorsal pigmentation	Pale	Light brown along middorsal line	Colorless to pale yellow
Setal diameter **Setal counts**	Notosetae ≥ Neurosetae Moderate : Moderate (30-50) (30-50)	Notosetae ≈ Neurosetae Moderate : Moderate ( ) ( )	Notosetae ≈ Neurosetae Numerous : Moderate (50-60) (~20)
Notosetae	Short, stout, with close-set transverse rows of spinules; tapering to short, smooth, pointed tips Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to smooth, pointed tips	Short, stout, with close-set transverse rows of spinules; tapering to blunt, rough tips Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to blunt, rough tips	Short, stout, with close-set transverse rows of spinules; tapering to short, smooth, pointed tips Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to smooth, pointed tips
Neurosetae	Slightly thinner and much longer than lower notosetae, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips	Similar to lower notosetae in length and thickness, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips	Similar to lower notosetae in length and thickness, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips
Elytra	Thick, leathery, covered with numerous tiny conical microtubercles and a few larger, rounded tubercles Cream colored Marginal fringing papillae essentially lacking	Thick, leathery, studded with clavate macrotubercles, each with a stellate apex Mottled brown and gray Marginal fringing papillae essentially lacking	Thick, soft, covered with dendritic macrotubercles with acutely pointed branches Colorless or with irregular patches of pigment Marginal fringing papillae essentially lacking
Other features	Body dorsoventrally flattened; buccal segment with a small nuchal fold covering the posterior margin of the prostomium Apparently commensal with hermit crabs and other dacopod crustaceans	Body dorsally arched; buccal segment with a small nuchal fold covering the posterior margin of the prostomium	Body dorsally arched; buccal segment with a small nuchal fold covering the posterior margin of the prostomium Emergent parapodial acicula very long

	Halosydna brevisetosa	*Halosydna johnsoni*	*Halosydna latior*
Prostomium	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent
Antennae **Tentacular cirri**	Median: 2 pr.l. Lateral: 1 pr.l. Styles smooth; subterminally pigmented Basal lobes with 1-3 short, slender setae	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth; subterminally pigmented Basal lobes with 1-3 short, slender setae	Median: Lateral: Styles smooth; subterminally pigmented Basal lobes with 1-3 short, slender setae
Dorsal cirri	Extending well beyond the neurosetae and curving up between elytra; without papillae	Extending well beyond the neuosetae and curving up between the elytra; without papillae	Reaching only to tips of neurosetae; without papillae
Dorsal pigmentation	Highly variable, with dark transverse bands and light to dark base color	Variable, with dark transverse bands and light to dark base color	Transverse brown bands on colorless base
Setal diameter **Setal counts**	Notosetae << Neurosetae Few : Few (0-25) : (10-20)	Notosetae << Neurosetae Few : Few (0-25) : (10-20)	Notosetae << Neurosetae Few : Moderate (10-20) : (15-25)
Notosetae	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips Slender, slightly longer, with numerous transverse serrations; tapering to long, fine tips	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips Slender, slightly longer, with numerous transverse serrations; tapering to long, fine tips	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips Slender, much longer, with numerous transverse serrations; tapering to long, fine tips
Neurosetae	Stout, amber, with a few transverse rows of coarse spinules; tapering to pointed or blunt curved unidentate tips	Stout, amber, with a few transverse rows of coarse spinules; tapering to bidentate curved tips	Stout, dark amber, with a few transverse rows of coarse spinules; tapering to pointed curved unidentate tips
Elytra	Covered with small conical tubercles and occasional larger rounded tubercles Highly variable mottled pigmentation Marginal fringing papillae sparse, often absent.	Covered with small conical tubercles Highly variable mottled pigmentation or uniformly dark Marginal fringing papillae numerous, moderately long.	Covered with small conical tubercles and occasional larger rounded tubercles Highly variable solid or mottled pigmentation Marginal fringing papillae numerous, moderately long.
Other features	In commensal forms, 1-2 superior notosetae thickened and darker in color.		Body very broad and dorsoventrally flattened. Nephridial papillae three times longer than wide.

	Harmothoe extenuata	*Harmothoe fragilis*	*Harmothoe hirsuta*
Prostomium	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent
Antennae **Tentacular cirri**	Median: 2 pr.l. Lateral: 1 pr.l. Styles with scattered short clavate papillae Basal lobes with 1-2 stout setae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with scattered short clavate papillae Basal lobes with 1-3 stout setae	Median: 2 pr.l. Lateral: 1 pr.l. Styles with numerous long filiform papillae Basal lobes with 1-3 stout setae
Dorsal cirri	Extending slightly beyond the tips of the neurosetae; with numerous short papillae	Extending slightly beyond the tips of the neurosetae; with scattered short papillae	Extending well beyond the tips of the neurosetae; with numerous long filiform papillae
Dorsal pigmentation	Pale or with patches of brown pigment, especially around the cirrophores and elytrophores	Pale to dark brown with 2 thin transverse white stripes per setiger	Pale to dusky with patches of brown pigment around the cirrophores and elytrophores
Setal diameter **Setal counts**	Notosetae ≈ Neurosetae Moderate : Moderate (20-30) : (20-30)	Notosetae ≥ Neurosetae Moderate : Moderate (20-30) : (20-30)	Notosetae ≥ Neurosetae Moderate : Moderate (20-30) : (35-50)
Notosetae	Stout, curved, with numerous transverse rows of spinules; tapering to blunt points Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with numerous transverse rows of spinules; tapering to blunt, sculptured points Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with numerous transverse rows of spinules; tapering to blunt points Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips
Neurosetae	Slender, with long subdistal spinous region; tapering to smooth, bare unidentate tips Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth Shorter; tapering to smooth, bare, unidentate points	Slender, with long subdistal spinous region; tapering to finely bidentate tips Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a slender secondary tooth Shorter; tapering to smooth, bare, unidnetate points	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips Thicker, with short subdistally inflated spinous region; tapering to long, bare, slightly hooked tips with a remote incision forming a small secondary tooth Shorter; tapering to smooth, bare, unidentate points
Elytra	Surface with numerous conical or bifid microtubercles and a few globular to elongated macrotubercles that are constricted at the attachment point Colorless, tan, or mottled with brown pigment; macrotubercles usually dark brown Marginal fringing papillae short	Surface with numerous conical or multibranched microtubercles, scattered filiform papillar, and a few large blister-like macrotubercles near the posterior border Pale, with darker tan on the large macrotubercles Marginal fringing papillae thick, long	Surface in part divided into polygonal cells, each with a multipronged macrotubercle in the center Pale or with patches of brown pigment Marginal fringing papillae thick, long
Other features			

	Harmothoe imbricata	*Harmothoe multisetosa*	
Prostomium	Harmothoid Eyes large; anterior pair displaced forward beneath cephalic peaks Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	
Antennae **Tentacular cirri**	Median: 3 pr.l. Lateral: 1 pr.l. Styles with scattered short clavate papillae Basal lobes with 1-3 stout setae	Median: 3 pr.l. Lateral: 1 pr.l. Styles with numerous filiform papillae Basal lobes with 1-3 stout setae	
Dorsal cirri	Extending slightly beyond the tips of the neurosetae; with scattered short papillae	Extending well beyond the tips of the neurosetae; with scattered filiform papillae	
Dorsal pigmentation	Mottled, with darker areas around the cirrophores and elytrophores	Dark brown, with 2 thin transverse white stripes per setiger	
Setal diameter **Setal counts**	Notosetae ≥ Neurosetae Moderate : Moderate (20-30) : (30-40)	Notosetae ≈ Neurosetae Moderate : Moderate (20-40) : (20-40)	
Notosetae	Stout, curved, with transverse rows of spinules; tapering to blunt points Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with transverse rows of spinules; tapering to blunt points Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	
Neurosetae	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth Shorter, more slender; tapering to smooth, bare, unidentate points	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth Shorter, more slender; tapering to smooth, bare, unidentate points	
Elytra	Thick, with numerous blunt microtubercles, scattered papillae, and globular macrotubercles (larger specimens only) Great variability in both pigment pattern and color, with solid or mottled designs occurring in white, light tan, red, green, brown, gray, and black Marginal fringing papillae short, sparse	Thin, with blunt or bifid microtubercles, thornlike curved spines, and occasional large, blister-like macrotubercles Uniformly tan to gray, or mottled with brown pigment Marginal fringing papillae short	
Other features			

	Hesperonoe adventor	*Hesperonoe complanata*	*Hesperonoe laevis*
Prostomium	Harmothoid Eyes moderate; posterior pair slightly smaller Cephalic peaks small	Harmothoid Eyes fairly small Cephalic peaks prominent	Harmothoid Eyes moderate; posterior pair slightly smaller Cephalic peaks prominent
Antennae **Tentacular cirri**	Median: 2 pr.l. Lateral: 1 pr.l. Styles with minute scattered papillae Basal lobes without setae, but with a digitiform acicular lobe	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with minute scattered papillae Basal lobes without setae, but with a digitiform acicular lobe	Median: 2 pr.l. Lateral: 1 pr.l. Styles with minute scattered papillae Basal lobes without setae, but with a digitiform acicular lobe
Dorsal cirri	Extending far beyond neurosetae; with scattered minute clavate papillae	Extending far beyond neurosetae; with scattered minute clavate papillae	Extending far beyond neurosetae; with scattered minute clavate papillae
Dorsal pigmentation	Broad gray-green transverse bands	Pale, with small amounts of brown pigment at bases of the parapodia	Pale
Setal diameter **Setal counts**	Notosetae ≥ Neurosetae Numerous : Numerous (70- 80) : (70- 80)	Notosetae ≥ Neurosetae Moderate : Moderate (15-25) : (20-30)	Notosetae ≥ Neurosetae Moderate : Moderate (15-25) : (20-30)
Notosetae	Stout, with scarcely discernable transverse striations; tapering to blunt tips Thinner, ionger, tapering to fine capillary tips	Stout, with scarcely discernable transverse striations; tapering to blunt tips Thinner, longer, tapering to fine capillary tips	Stout, with scarcely discernable transverse striations; tapering to blunt tips Thinner, longer, tapering to fine capillary tips
Neurosetae	Slender, with long, coarsely serrated region tapering to very fine unidentate tips Thicker, with short subdistal swollen region having numerous transverse rows of coarse spinules; tapering to fine smooth unidentate tips	Slender, with long, coarsely serrated region tapering to very fine unidentate tips Thicker, with short subdistal swollen region having numerous transverse rows of coarse spinules; tapering to fine smooth unidentate tips	Slender, with long, coarsely serrated region tapering to very fine unidentate tips Thicker, with short subdistal swollen region having few or no transverse rows of coarse spinules; tapering to fine smooth unidentate tips
Elytra	Thin, with a few scattered microtubercles Crescent of gray pigment on posterior half Marginal fringing papillae sparse	Thin, translucent, with samll conical microtubercles scattered across the surface Pale and without pigment Marginal fringing papillae sparse	Thin, smooth excepth for a few inconspicuous microtubercles anterior to the attachment scar Crescent of gray pigment on posterior half Marginal fringing papillae sparse
Other features	Grayish-green in life Commensal with the echiuroid *Urechis caupo*	Bright yellowish-orange in life Commensal with the ghost shrimp	Notopodial lobe nearly as large as the neuropodial lobe in the first setiger; thereafter much smaller Commensal with the echiuroid *Listriolobus pelodes*

	Hololepida magna	*Lepidonopsis humilis*	*Thormora johnstoni*
Prostomium	Arctonoid Both pairs very large, with distinct lenses Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair small Cephalic peaks absent	Lepidonotoid Anterior eyes large; posterior pair moderate Cephalic peaks absent
Antennae **Tentacular cirri**	Median: 4.5 pr.l Lateral: 3.5 pr.l Styles without papillae Basal lobes without setae	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles without papillae Basal lobes with 1-2 delicate setae	Median: 3 pr.l. Lateral: 1 pr.l. Styles without papillae Basal lobes with 1-2 long setae
Dorsal cirri	Extending to the tips of the neurosetae; without papillae	Extending slightly beyond the neurosetae; without papillae	Not extending beyond the neurosetae; without papillae
Dorsal pigmentation	Reddish-brown	Colorless	Chestnut brown
Setal diameter **Setal counts**	Notosetae ‹ Neurosetae Few : Moderate (10-15) (40-50)	Notosetae ‹ Neurosetae Moderate : Moderate ( ) (~ 24)	Notosetae ‹ Neurosetae Numerous : Moderate ( ) (~ 20)
Notosetae	Long, straight, with barely discernable marginal serrations; tapering to capillary tips	Stout, slender, with numerous tranverse rows of fine spinules; tapering to blunt tips Longer, slender, with numerous transverse rows of fine spinules; tapering to capillary tips	Long, slender, smooth, hastate; tapering to pointed tips Shorter, thicker, curved, with close-set transverse rows of spinules; tapering to bare tips
Neurosetae	Slender, long, with marginal serrations; tapering to fine unidentate tips Shorter, coarser, with spinules in transverse rows; tapering to hooked, bifid tips	Stout, with coarse spinules in a few subdistal rows; tapering to slightly hooked tips with a small secondary tooth	Stout, with coarse spinules in a few subdistal rows; tapering to bare, slightly hooked unidentate tips
Elytra	Large, soft, gelatinous, with inconspicuous microtubercles scattered across the surface Tinged with reddish brown Marginal fringing papillae absent	Large, firmly attached, with scattered smooth to roughened rounded microtubercles of various sizes Tan, with mottled brown pigment patches Marginal fringing papillae long	Large, covered with numerous rounded microtubercles and scattered larger, acutely conical tubercles Mottled with brown and black pigment Marginal fringing papillae absent
Other features	Buccal segment with a broad nuchal fold extending over the posterior margin of the prostomium Notosetae absent in the first few setigers Elytra with a small notch on the anterior margin	Buccal segment with two sub-triangular nuchal folds extending over the posterior margin of the prostomium Distal margins of notopodia and neuropodia with fringes of filiform papillae	

	Lepidonotus leius	*Lepidonotus setosior*	*Lepidonotus squamatus*
Prostomium	Lepidonotoid Both pairs of eyes large Cephalic peaks absent	Lepidonotoid Anterior pair of eyes displaced onto lateral margins of the prostomium Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair smaller Cephalic peaks absent
Antennae **Tentacular cirri**	Median: Lateral: Basal lobes with 2 prominent setae	Median: 1 pr.l Lateral: 0.75 pr.l	Median: 2 pr.l. Lateral: 1.5 pr.l. Styles without papillae Basal lobes with 2-3 spinose setae
Dorsal cirri			Extending well beyond the neurosetae; without papillae
Dorsal pigmentation			Colorless
Setal diameter **Setal counts**	Notosetae ‹ Neurosetae Moderate : ( ) ( )	Notosetae ‹ Neurosetae Numerous : ( ) ( )	Notosetae ‹ Neurosetae Moderate : Moderate (20-30) (15-25)
Notosetae	Thin, with numerous spinous rows; tapering to very fine tips	Long, thin, with numerous spinous rows; tapering to sharp tips	Short, curved, with numerous transverse rows of spinules; tapering to bare, blunt tips tips Longer, slightly thinner, with numerous spinous rows; tapering to very fine tips
Neurosetae	Stout, with coarse subdistal spinules arranged in a few transverse rows; tapering to long, smooth, slightly hooked unidentate tips		Stout, with coarse subdistal spinules arranged in a few transverse rows; tapering to long, smooth, slightly hooked unidentate tips
Elytra	Thin, dehiscent, smooth or with a few scattered microtubercles Light brown Marginal fringing papillae absent	Surface with numerous low rounded tubercles, and scattered high, smooth, conical tubercles Mottled with gray and black Marginal fringing papillae absent	Large, firmly attached, surface studded with numerous crowded round to pointed tubercles of various sizes; larger tubecles with sculpted surface Color variable, from reddish yellow through brown to black Marginal fringing papillae thick. long
Other features	Tips of notosetae reaching to about the middle of the neurosetae; setae light amber in color.	Notosetae very long, with the tips reaching nearly to the ends of the neurosetae; setae dark amber in color.	Tips of notosetae barely surpassing the ends of the neuropodia; setae light amber in color.

	Lepidasthenia berkeleyae	*Lepidasthenia gigas*	*Lepidasthenia longicirrata*
Prostomium	Lepidonotoid Anterior eyes large; posterior pair moderate	Lepidonotoid Anterior eyes moderate; posterior pair small	Lepidonotoid Anterior eyes large; posterior pair moderate
Antennae **Tentacular cirri**	Median: 3 pr.l. Lateral: 1.5 pr.l. Styles without papillae Basal lobes achaetous, but with a digitiform acicular lobe	Median: Lateral: Styles without papillae Basal lobes achaetous, but with a digitiform acicular lobe	Median: 4.5 pr.l Lateral: 2.5 pr.l Styles without papillae Basal lobes achaetous, but with a digitiform acicular lobe
Dorsal cirri	Extending slightly beyond the neurosetae; without papillae	Not exceeding the neurosetae; without papillae	Extending slightly beyond the neurosetae; without papillae
Dorsal pigmentation	Colorless or with wide transverse bands of brown pigment	Light yellow to dark reddish	Wide bands of light brown pigment
Setal diameter **Setal counts**	Lacking : Moderate (0) (15-25)	Lacking : Few (0) (10-15)	Lacking : Moderate (0) (20-30)
Notosetae	Notosetae absent	Notosetae absent	Notosetae absent
Neurosetae	Long, slender, with long region of transverse rows of spinules; tapering to fine knobbed tips Shorter, slightly stouter, with short subdistal region of transverse spinous rows extending nearly to end; tapering to blunt bifid tips	Long, thick, dark, with short region of fine transverse spinous rows; tapering to bare, blunt unidentate or bifid tips More slender, lighter colored, with short region of coarse transverse spinous rows; tapering to bare bifid tips	Long, slender, with long region of transverse rows of spinules; tapering to fine knobbed tips Shorter, slightly stouter, with short subdistal region of transverse spinous rows; tapering to bare bifid tips Short, slender, with short spinous region; tapering to minutely bifid or unidentate tips
Elytra	Thin, translucent, smooth, leaving middorsum uncovered Dark pigment concentrated around the elytraphore and extending toward the middorsum Marginal fringing papillae essentially lacking	Thin, translucent, smooth, leaving middorsum uncovered Mottled with gray pigment Marginal fringing papillae essentially lacking	Thin, translucent, smooth, nearly covering the dorsum Dark pigment concentrated around the elytraphore and extending toward the middorsum Marginal fringing papillae essentially lacking
Other features	Notopodia short. Neuropodia. with rounded pre- and postsetal lobes separated by a deep dorsal cleft Secondary tooth on the median and inferior neurosetae is sometimes screened by the subterminal spinules Reported in association with large maldanid tubes	Notopodia short. Neuropodia with rounded pre- and postsetal lobes separated by a deep dorsal cleft Reported in association with large terebellid tubes	Notopodia elongate. Neuropodia with rounded pre- and postsetal lobes separated by a deep dorsal cleft Proximal ventral margins of the neuropodia with a fringe of short globular papillae Free-living

	Malmgreniella baschi	*Malmgreniella macginitiei*	*Malmgreniella nigralba*
Prostomium	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes produced into indistinct cephalic peaks	Harmothoid Anterior eyes moderate, located dorsolaterally; posterior pair smaller Anterior lobes produced into distinct, acute cephalic peaks	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes truncate; cephalic peaks absent
Antennae **Tentacular cirri**	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae Basal lobes with 0-2 stout, curved setae	Median: 1.5 pr.l. Lateral: 0.5 pr.l Styles with occasional minute clavate papillae Basal lobes with 1-2 stout, curved setae	Median: 1.5 pr.l. Lateral: 0.5 pr.l Styles with occasional minute clavate papillae Basal lobes with 0-2 stout, curved setae
Dorsal cirri	Extending to tips of neurosetae; with scattered clavate papillae	Extending to tips of neurosetae; with scattered clavate papillae	Extending to tips of neurosetae; with scattered clavate papillae
Dorsal pigmentation	Without pigment in anterior setigers	Colorless to dusky with dark transverse bands	Dusky with dark transverse bands in median and posterior setigers
Setal diameter **Setal counts**	Notosetae ≈ Neurosetae Moderate : Moderate (35-50) (25-35)	Notosetae ≥ Neurosetae Moderate : Moderate (30-40) (30-40)	Notosetae ≈ Neurosetae Moderate : Moderate (15-25) (30-45)
Notosetae	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips
Neurosetae	Long, with moderate distal region of prominent spinules; tapering to pointed, unidentate tips Long, with short inflated spinous region; tapring to bare hooked tips with only occasional indistinct indications of a secondary tooth	Long, slightly more slender, with moderate distal region of prominent spinules; tapering to pointed or minutely bifid tips Long, with short inflated spinous region; tapering to hooked bifid tips with a short secondary tooth Shorter; tapering to slightly hooked, unidentate tips	Long, with moderate distal region of prominent spinules; tapering to round, blunt unidentate or minutely bifid tips Long, with short inflated spinous region; tapering to hooked bifid tips with a distinct secondary tooth Shorter; tapering to slightly hooked, unidentate or bifid tips
Elytra	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Mottled dark pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Mottled dark pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Black pigment over attachment scar and in a complete or nearly complete ring Border with scattered micro-papillae
Other features	Reported from the shallow shelf, 8-30 meters, as a commensal with ophiuroids	Elytra often with both dark surface pigment and internal granules of reddish-brown pigment. Surface pigment often distributed in compartments Reported from the shallow shelf, 0-60 meters, as a commensal with ophiuroids and an inhabitant of polychaete and shrimp burrows	Elytral surface with distinct reticular areas Neuropodial supraacicular lobe distinctly demarcated from neuropodium Reported from the shallow shelf, 0-40 meters, as a commensal with holothouroids

	Malmgreniella sanpedroensis	*Malmgreniella scriptoria*	
Prostomium	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes truncate; cephalic peaks absent	Harmothoid Anterior eyes small, located dorsolaterally; posterior pair small Anterior lobes truncate; cephalic peaks absent	
Antennae **Tentacular cirri**	Median: 1 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae Basal lobes with 2-10 stout, curved setae	Median: 1.5 pr.l. Lateral: 0.5 pr.l Styles with occasional minute clavate papillae Basal lobes with 0-2 stout, curved setae	
Dorsal cirri	Extending to tips of neurosetae; with scattered clavate papillae	Extending well beyond tips of neurosetae; with scattered clavate papillae	
Dorsal pigmentation	Colorless	Colorless to dusky	
Setal diameter **Setal counts**	Notosetae > Neurosetae Moderate : Moderate (25-40) (25-40)	Notosetae ≥ Neurosetae Few : Moderate (10-25) (15-30)	
Notosetae	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	
Neurosetae	Long, with moderate distal region of prominent spinules; tapering to sharply pointed unidentate tips Long, with short inflated spinous region; tapering to hooked bifid tips with a distinct secondary tooth Shorter; tapering to slightly hooked, unidentate tips	Long, with moderate distal region of prominent spinules; tapering to unidentate or bifid tips Long, with short inflated spinous region; tapering to hooked bifid tips with a short, prominent secondary tooth Shorter; tapering to slightly hooked, unidentate or bifid tips	
Elytra	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Dark brown pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Dark brown pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	
Other features	Reported from upper slope depths, at 400 meters	Reported from the middle and outer shelf, 40+ meters, as a commensal with the heart urchin *Brisaster latifrons*	

	Subadyte mexicana	*Tenonia priops*	
Prostomium	Harmothoid Eyes large, reddish Cephalic peaks prominent	Harmothoid Both pairs very large; anterior pair on anteroventral margin Cephalic peaks weakly developed	
Antennae **Tentacular cirri**	Median: 3 pr.l. Lateral: 1 pr.l. Styles with scattered long papillae Basal lobes occasionally with 1-2 curved setae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles without papillae Basal lobes without setae	
Dorsal cirri	Extending beyond the tips of the neurosetae, with scattered papillae	Extending well beyond the tips of the neurosetae, without papillae	
Dorsal pigmentation	Dusky, tending to concentrate in 2 longitudinal bands above the cirrophores and elytrophores	Distinctive wide and narrow transverse bars of dark pigment; pigment bars often interrupted	
Setal diameter **Setal counts**	Notosetae > Neurosetae Few : Numerous (10-25) (40-60)	Notosetae ≤ Neurosetae Moderate : Numerous (30-40) (40-60)	
Notosetae	Thick, curved, distally with spinose transverse bracts becoming progressively smaller toward the blunt, notched tips	Slender, curved, with fine serrations; tapering to capillary tips Slander, longer, straight, with fine serrations; tapering to capillary tips	
Neurosetae	Long, coarsely serrated above a large basal cusp; tapering to notched tips Longer, with indistinct serrations above a large basal cusp; tapering to pointed unidentate tips Shorter, more slender, with small distinct serrations above a large basal cusp; tapering to pointed unidentate tips	Slender, long, straight, with fine serrations; tapering to capillary tips Slightly thicker, with coarse transverse serrations; tapering to bare bifid tips	
Elytra	Thin, translucent, with scattered papillae on the surface Pigment absent Marginal fringing papillae short, sparse	Thin, translucent, nearly smooth except for occasional inconspicuous microtubercles Brown pigment around the attachment scar Marginal fringing papillae absent	
Other features	Buccal segment with small nuchal fold covering the posterior margin of the prostomium Eye pigments are subject to fading, and are inconspicuous at times	Buccal segment with small nuchal fold covering the posterior margin of the prostomium Elytra do not cover the middorsum in the anterior setigers	