Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

December, 1991 Vol. 10, No. 8

NEXT MEETING:	Mysids
GUEST SPEAKER:	Ron Velarde City of San Diego
DATE:	January 6, 1991 **Note this is the first Monday of the month.**
LOCATION:	San Diego Natural History Museum San Diego, California

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JANUARY 6 MEETING: Remember to bring any problem Mysids with you to meeting. It will be held in the basement education room. Enter the building on the west side of the building.

MINUTES FROM MEETING ON DECEMBER 9:

Ron Velarde announced a couple of papers of interest to SCAMIT members.

Harrison, K. and J. P. Ellis. 1991. The Genera of the Sphaeromatidae (Crustacea:Isopoda): a Key and Distribution List. - Invertebrate Taxonomy. 5: 915-952.

Watling, L. 1991. Revision of the Cumacean Family Leuconidae. - Journal of Crustacean Biology. 11(4): 596-582.

Sponge Workshop: Karen Green, a private consultant, chaired the meeting on sea sponges. She presented a brief description of sponge morphology and the terminology used to identify them. She

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also included a key to the Demnospongia. These have been included in the newsletter. She said that a more complete workup will be published by her as part of the MMS/Santa Maria Taxomomic Atlas Project.

FUTURE MEETINGS:

The February 10, meeting will be on ophiuroids lead by Dr. Gordon Hendler of the Los Angeles Museum of Natural History. It will be at the museum in the Times Mirror Room. As always send or bring any problem ophiuroids to Dr. Hendler.

The meeting on March 9, 1992 will be chaired by Leslie Harris of the Allan Hancock Foundation. The subject will be abranchiate Terebellids. It will be held in room 20, the "worm lab," at the Allan Hancock Foundation building, University of Southern California, Los Angeles, California. Send any specimens to Leslie at the lab.

1992-93 Schedule: Larry Lovell is looking for input for possible speakers and subjects for the next year. He would **appreciate** any input you might have. You can write him at:

Larry Lovell
1036 Buena Vista
Vista, CA 92083

SCAMIT OFFICERS:

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

President	Ron Velarde	(619)226-0164
Vice-President	Larry Lovell	(619)945-1608
Secretary	Kelvin Barwick	(619)226-8175
Treasurer	Ann Martin	(213)648-5317

Marine Sponges

Karen D. Green, Consultant, Research Associate LACMNH

Sponges constitute the phylum Porifera, which includes nearly 5000 species classified among 4 classes (Bergquist, 1978). Two families occur in fresh water, but most sponges are marine. Sponges are distributed world-wide and occur from the intertidal to the deep sea. They exhibit a variety of shapes, textures, and morphologies. Sponges range in size from microscopic to 2 m; the largest occur in the Antarctic and the Caribbean (Bakus, 1985).

Sponges are unique animals. They lack organs, specialized cells perform body functions, and they derive nourishment by continually pumping water through their perforated bodies and canal system.

Many sponges, particularly tropical species, contain a variety of antibiotic substances, sterols, and toxins. Natural product research suggests that sponges have considerable medical, antifouling, and repellant potential.

Sponges are identified on the basis of several features of morphology including the composition and structure of their skeleton, measurements of skeletal elements (e.g., spicules, fibers), color, shape, and texture.

The taxonomic identity of sponges, however, is not always easily resolved. This is because many species are unidentified, taxonomic literature is limited for many geographic regions, and there is a long history of taxonomic problems associated with the group (refer to Bergquist, 1978).

Sponges presently are divided into four classes, as follows (from Hartman, 1975; Bergquist, 1978; Bakus, 1985):

Class **Calcarea** - skeleton of calcium carbonate spicules; spongin absent. Spicules monaxonid and/or 3- or 4-rayed. About 400 species. Common intertidal and subtidal marine habitats.

Class **Demospongia** - skeleton lacking or of silica spicules, spongin, or both. About 4000 species. Common all habitats.

Class **Hexactinellida** - skeleton consists of complex silica spicules, with basic pattern of 5-6 rays. About 600 species. Common in deep waters of continental shelf and slope.

Class **Sclerospongiae** - skeleton with calcareous base and entrapped silica spicules and organic fibers. About 15 species. Restricted to shallow, tropical reef habitats.

Three of the classes, Calcarea, Demospongiae, and Hexactinellida are represented in California. Demospongiae is the subject of the SCAMIT workshop. Features useful for their identification are summarized in the handout, and a general key that incorporates the features is presented.

Demospongiae

Notes for SCAMIT, by Karen Green, December, 1991

Body Regions:

choanosome- area where choanocyte chambers found;
endosome- inner portion of sponge;
ectosome- superficial region of sponge;
- cortex- relatively thick external cover;
- dermis- skin-like external covering.

Types of Skeletons (after Bergquist, 1978):

fiber- of spongin fiber:

anastomosing- fibers form network with cross-connections (characteristic of the order Dictyoceratida);

dentritic- fibers branch without anastomoses (characteristic of order Dendroceratida);

reduced- fiber skeleton reduced (characteristic of order Verongida).

mineral- of spicules and spongin:

axial- often rigid with a condensed axis of spicules and spongin fibers from which diverges a softer, plumose or plumoreticulate extra-axial skeleton (characteristic of the order Axinellida);

desma- hard skeleton of interlocked desma spicules;

halichondrid- refers to lack of skeletal organization except at the surface (characteristic of the order Halichondrida);

hymedesmoid- spiny with spicules oriented vertically from spongin fiber mat (of the order Poecilosclerida);

plumose- spicules arranged in tracts or columns (of the order Poecilosclerida);

plumoreticulate- similar to plumose, except some cross-connections between spiculo-fiber tracts (of the order Poecilosclerida);

radial- often rigid with spicule tracts arranged in a radial pattern (characterizes the orders Choristida, Hadromerida, Spirophorida);

reticulate- skeleton with network of spicules attached by spongin or a network of fibers cored with spicules (of the orders Haplosclerida and Poecilosclerida);

unorganized- flexible sponge without organized skeleton (found in order Homosclerophorida);

<u>none</u>: only fibrillar collagen as support (found in order Homosclerophorida and Dendroceratida).

Spicules:

<u>General Terms</u>

- act, actine or -actinal: Suffix to indicate the number of rays of a spicule.

- axon: Suffix to indicate the number of axes (growth directions); rays grow from different axes.

acantho-: prefix that denotes that a spicule is rough (from spines or hooks).

centrotylote: refers to a knob-like swelling near the middle of a monactine or diactine spicule.

polytylote: refers to two or more knob-like swellings along the shaft of a monactine or diactine spicule.

<u>Megascleres</u>

monactinal monaxons:
style- one end rounded (not knob-like), one end pointed;
subtylostyle- one end rounded with slight knob, one end pointed;
tylostyle- one end rounded with enlarged knob, one end pointed.

diactinal monaxons:
oxea- both ends gradually pointed;
strongyle- both ends rounded;
tornotes- both ends abruptly pointed;
tylote- both ends with enlarged knobs;
cladotylote- recurved clads (= rays) at one or both ends.

tetraxons:

- calthrops- rays of equal or near equal length;
- lopho- prefix associated with triactin or tetractin to indicate that one or more rays branched or with heavy spines;
- tetract- one ray shorter than other rays;
- triact- tetract modified with loss of one ray;
- triaenes- one ray long (rhabdome) and three rays short (clads);
  - anatriaene- clads are pointed in same direction as rhabdome;
  - dichotriaene- clads are forked;
  - diaene- triaene modified with one clad lost;
  - mesoprotriaene- like protriaene except with additional epirhabd;
  - monaene- triaene modified with loss of two clads;
  - orthotriaene- clads make an angle of about 90^0 with the rhabdome;
  - plagiotriaene- like protriaene except clads make an angle of about 45^0 with axis of rhabdome;
  - protriaene- clads point in opposite direction as rhabdome, make an angle of less than 45^0 with the axis of the rhabdome.

<u>Microscleres</u>

asters:

- euasters- multiple rays from small central point;
  - oxyasters- ends of rays pointed;
  - strongylasters- ends of rays rounded;
  - tylasters- ends of rays knobed.
- spheraster- multiple rays from a large central sphere;
  - oxy-, strongylo-, tylo- prefixes used as above for euasters;
- sterraster- sphere covered with minute multiple rays;
- streptaster- rays proceed from an axis rather than from the center;
  - amphiaster- short rods with aster-like branches or spines at both ends;
  - discaster- rod with heavy spines at both ends and near middle of spicule;
  - sanidaster- straight, spiny rod.
  - spiraster- curved, spiny rod.

chela:
- anisochelas- ends of shaft unequal in size;
- isochelas- ends of shaft equal in size;
  - anchorae- shaft slightly curved to straight, both ends with three or more teeth that are free from shaft for most of their length, teeth thin (not as wide as shaft);
  - arcuate- shaft curved, both ends with three teeth, central tooth not wider than shaft, lateral teeth attached to shaft for most of their length except at the tip;
  - bipocilli- curved shaft, ends with flattened cap of reduced teeth or ends clad-like;
  - birotulate (= unguiferate, brevidentate)- shaft curved, both ends with short multi-dentate cap;
  - palmate- shaft slighty curved or straight, ends with three palm-like teeth, central tooth broadly wider than shaft, lateral teeth attached to shaft for their entire length;
  - rosette- group of chela forming a ring-like pattern.

diactines:
- acanthoxea- spines along shaft;
- microstrongyles- both ends rounded, may be curved at both ends (= bicurvate);
- onychaete- spiny, raphide-like spicule;
- raphide- straight, hair-like oxea;
- trichodragma- bundle of raphides.

diancistras: shaft nearly straight, ends strongly recurved and hook-like.

forceps: u-shaped, ends may be straight, curve inward, or curve outward.

sigmas: c- or s-shaped.

toxas: bow-shaped.

Figure 1. Demospongiae macroscleres

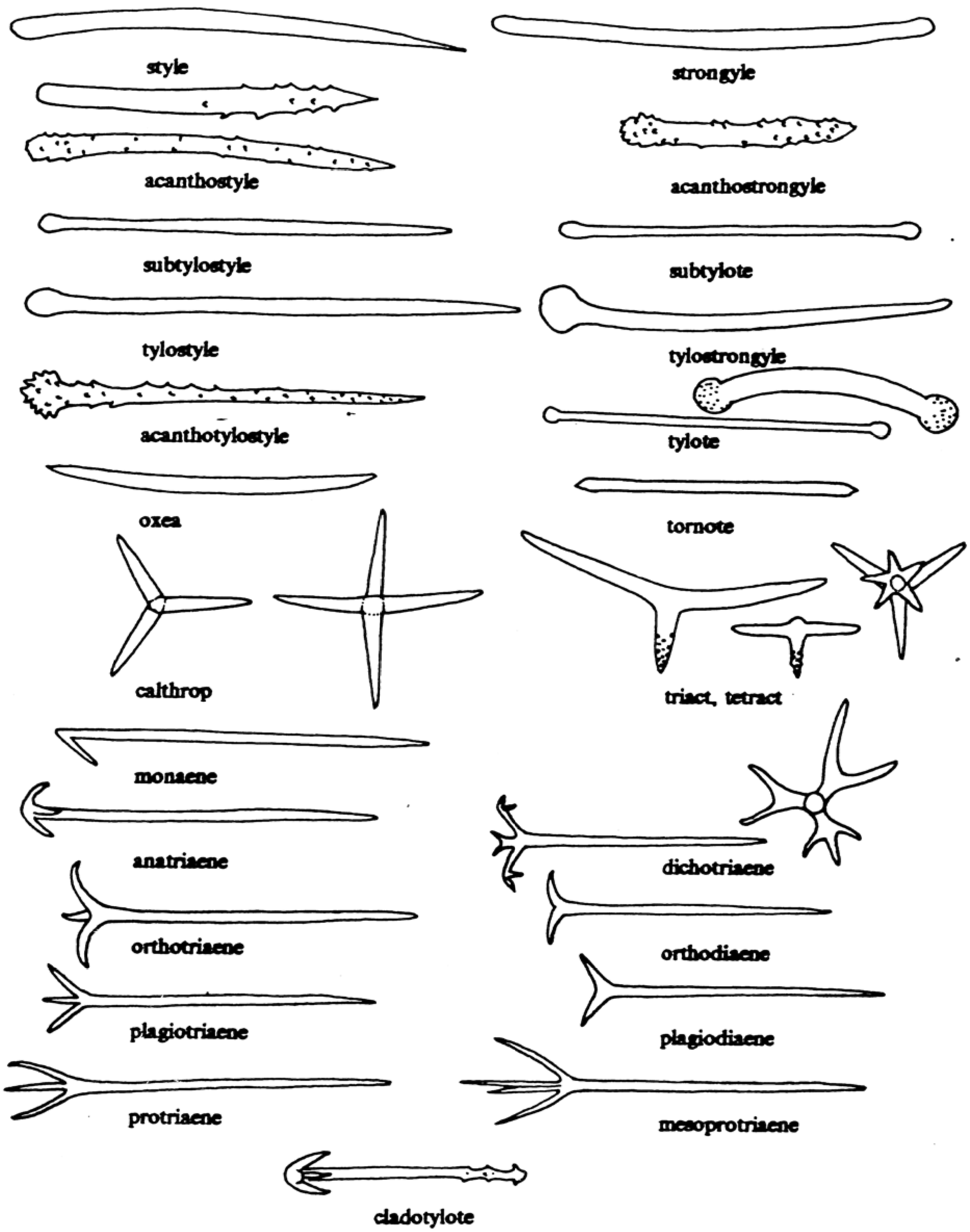
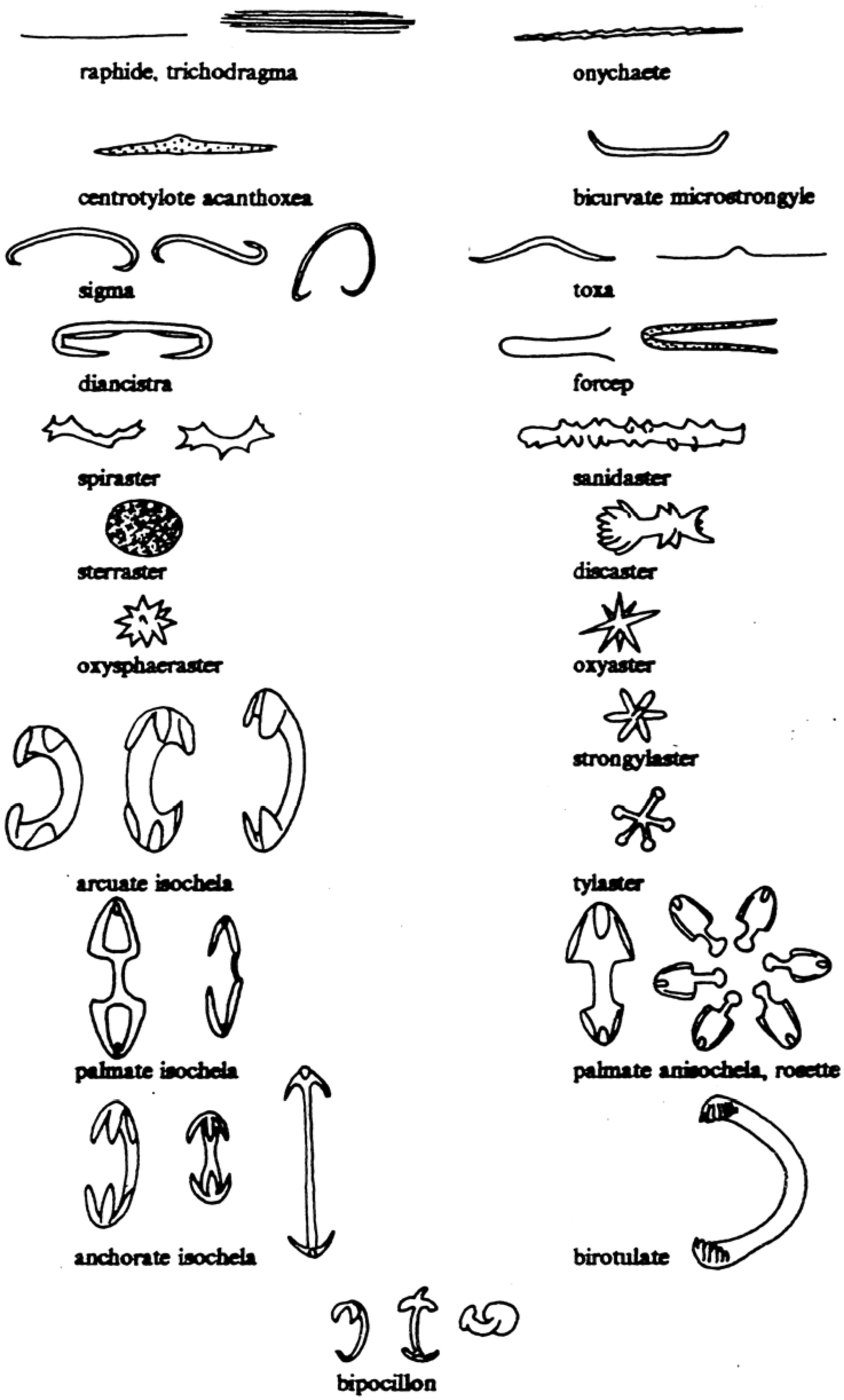


Figure 2. Demospongiae microscleres



General Key to California Demospongiae

Prepared for SCAMIT by Karen Green December, 1991

1a. No skeleton..................Dendroceratida (e.g., Halisarca)

1b. Skeleton present......................................2

2a. Spongin fiber skeleton................................3

2b. Spiculo-fiber skeleton................................4

3a. Primary and secondary fibers form branching network...........
...............................Dictyoceratida (e.g., Dysidea)

3b. Fibers arranged on a dendritic pattern, but without cross-connections (anastomoses).....Dendroceratida (e.g., Aplysilla)

3c. Fibers reduced, dense collagenous matrix......................
..................................Verongida (e.g., Verongia)

4a. Spicules include three or four rayed megascleres.............5

4b. No multi-rayed megascleres...................................8

5a. One ray (rhabdome) much longer than other rays (clads), radial skeleton..6

5b. Triacts or tetracts with near equal rays, various skeletons..7

6a. Microscleres asters.......................................
..................Choristida (e.g., Geodia, Penares, Stelletta)

6b. Microscleres sigmoid.............Spirophorida (e.g., Tetilla)

7a. With asterose microscleres, radial skeleton..................
..............................Choristida (e.g., Poecillastra)

7b. Without microscleres, with lophate multi-rayed spicules, unorganized skeleton.......Homosclerophorida (e.g., Plakina)

7c. Without microscleres, triacts with spines on one ray, axial skeleton.....................Axinellida (e.g., Cyamon)

8a. Skeleton without organization, or organized only at surface, megascleres monactinal (styles) or diactinal of various sizes, no microscleres.. ....Halichondrida (e.g., Halichondria, Hymeniacidon)

8b. Skeleton organized....................................9

9a. Radial skeleton of monactinal spicules (tylostyles, substylostyles), microscleres absent or asters............... .....Hadromerida (e.g., Cliona, Polymastia, Suberites, Tethya)

9b. Axial skeleton of monactinal (styles) and/or diactinal (oxeas, strongyles) spicules, microscleres absent, microxeas, raphides, or asters.....Axinellida (e.g., Axinella, Hemectyon)

9c. Skeleton reticulate, plumose, or plumoreticulate............10

10a. Microscleres absent, sigmas, toxas, and/or microxeas........11

10b. Microscleres include chela or diancistras and additionally may include other types.....................................12

11a. Skeleton reticulate, megascleres diactinal (oxeas or strongyles) and uniform in size, microscleres absent, sigmas, or toxas ....Haplosclerida (e.g., Haliclona, Sigmadocia)

11b. Skeleton plumoreticulate, megascleres monactinal (styles, subtylostyles), microscleres- sigmas, toxas, or microxeas..... ....Poecilosclerida (e.g. Biemna)

11c. Skeleton plumoreticulate, megascleres include diacts (tylotes), microscleres- onychaetes........................ ....Poecilosclerida (e.g., Tedania)

12a. With diancistras.............Poecilosclerida (e.g., Zygherpe)

12b. With anisochelas....................................... ....Poecilosclerida (e.g., Asbestopluma, Mycale, Iophon)

12c. With isochelas... ...Poecilosclerida (e.g., Acarnus, Hymedesmia, Lissodendoryx, ...Microciona, Myxilla, Ophlitaspongia, Plocamia)

Useful References

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POSITION ANNOUNCEMENT

POSITION:	CURATORIAL ASSISTANT Section of Invertebrates, Malacology
START DATE:	January 1992
SALARY:	Full time, 40 hours per week. Annual salary $23,675 plus benefits. Temporary position for 24 months funded by NSF grant.
DESCRIPTION:	Computer cataloging of mollusk reference collection and other curatorial tasks.
REQUIREMENTS:	Bachelors degree in biology plus museum or equivalent experience with scientific collections of mollusks or other marine invertebrates. Knowledge of molluscan classification desired. Applicant should be able to sort specimens and identify them to species with the help of reference sources. Computer and typing skills essential. Applicant should be able to work both independently with minimal supervision and in a team effort.
APPLICATION PROCEDURE:	Letter of application, curriculum vitae with names of three references to:

Dr. James H. McLean (213) 744-3377
Los Angeles County Museum of Natural History
900 Exposition Blvd.
Los Angeles, CA 90007

APPLICATION DEADLINE:	31 December 1991

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ANNOUNCEMENT

A JOURNAL FOR INVERTEBRATE TAXONOMY

The journal *Invertebrate Taxonomy* came into being in 1987, elevated from the *Australian Journal of Zoology* Supplement series. It is an international journal for publication of original contributions on taxonomy, biogeography, and phylogeny of invertebrates of the Indo-Pacific region.

There are 6 bimonthly issues totaling about 1300 pages annually. Page charges are not levied, and there is no page limit on papers published. Turn-around time for shorter papers is between 6 months and 1 year. The Journal is published by CSIRO Editorial Services and exhibits the same excellence in editing and production found in the other internationally recognized journals from this source. The advisory committee is composed of leading Australian scientists and is further supported by a committee of eminent international scientists.

In the past The Journal has been perceived as primarily entomological in content, as a venue for monographic papers and slow to publish. The Journal will continue to publish monographic papers, but is actively striving to broaden the diversity of copy. Currently half of the Advisory Committee members are marine biologists. The Journal would welcome papers on taxa other than terrestrial arthropods, as well as papers dealing with phylogeny, biogeography, and methodology.

Taxonomists seeking a venue for fast, high quality publication of their research should contact: Dr. Niel L. Bruce—Editor, PO Box 89, East Melbourne, Victoria 3002, Australia, or one of the Regional Advisers:

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TEXAS A&M UNIVERSITY
DEPARTMENT OF BIOLOGY
COLLEGE STATION, TEXAS 77843-3258
OFFICE: 409-845-7747 FAX: 409-845-2891

6 December 1991

SCAMIT
3720 Stephen White Drive
San Pedro, California
90731

Ladies and Gentlemen:

Would you please include the following news item in a forthcoming bulletin?

Deep-sea lysianassid amphipod specimens available. Dr. Gilbert Rowe, Department of Oceanography, Texas A&M University, College Station, TX 77843 has accumulated an extensive series of amphipods from baited traps, including at least ten species taken off Greenland. Extensive physical and geographic data accompany these specimens. It is likely that many belong to undescribed species. There are sufficient specimens to permit numerical analyses of within- and between-species variation, ecological distribution, or other other subjects. Interested biologists should contact Dr. Rowe for more information or requests to obtain specimens.

Yours truly,

Mary K. Wicksten

Mary K. Wicksten