



SOUTHERN CALIFORNIA ASSOCIATION OF
MARINE INVERTEBRATE TAXONOMISTS

Vol. 2, No. 9

Next Meeting: February 13, 1984

Place: Marine Biological Consultants
947 Newhall Street
Costa Mesa, CA 92627

Specimen Exchange Group: Magelonidae, Trochaetidae, Poecilo-
chaetidae, Heterospionidae

Topic Taxonomic Group: Spionidae

MINUTES FROM JANUARY 9, 1984

Change in Charter - It was proposed that SCAMIT split the office of Secretary-Treasurer into two separate offices, Secretary and Treasurer. Two offices would help distribute the duties required by the current office. The new Secretary would be responsible for writing the newsletter, making sure it gets out in time, and for all correspondence normally encountered by the office. The new Treasurer would collect money, pay SCAMIT bills, take care of SCAMIT accounting, and maintain the file of current members.

A change in the Constitution is necessary to implement the new offices. The proposed action was passed by 2/3 majority of the members at the meeting. To fulfill the next requirement, the proposed action must be sent to all voting members. Therefore you will find the proposed action below:

Article 5, Section 1 of the Constitution shall be changed from:
The elected officers of the Association shall be the President,
Vice-President, Secretary-Treasurer, and Committee Chairs to:
The elected officers of the Association shall be the President,
Vice-President, Secretary, Treasurer, and Committee Chairs.

Annual Elections - We are fast approaching the end of our second year and it's time for elections. Nominations for four offices were made. A ballot is enclosed with the nominees, a brief description of each, as well as ^{the} amendment. Send in your vote.

Membership Dues - A vote was carried out to increase yearly dues from \$5.00 to \$15.00 per year. This was passed to bolster SCAMIT's frequently impoverished treasury. The money will be used mainly for funding operating costs (stationary supplies, typing, and postage). Hopefully there will be money left over. The extra money will enable SCAMIT to be less reliant on t-shirt sales for these basic costs than in the past. And perhaps SCAMIT can become more community oriented, such as awarding small sums to high school students for taxonomic entries in high school science fairs (more on this next month).

Dues will cover 12 months' membership. Members will receive renewal notices on the last month of their membership. Renewal notices will begin to be mailed in March.

Institutional Membership - A vote was carried out to add a fourth type of membership. In addition to charter (now closed), participating, and correspondent memberships, an institutional membership is available for \$60.00 per year. This requires an addition to the Bylaws which read: Bylaw 1, d) Institutional - Institutions who wish to be apprised of Association activities through newsletters and announcements.

New Home for SCAMIT - SCAMIT is contemplating moving to Cabrillo Marine Museum. The move should be beneficial to both parties, SCAMIT would have a permanent meeting place and collection space, and Cabrillo Marine Museum would have access to SCAMIT's voucher collection. A regular meeting at the museum is planned for March 5, 1984. Many thanks to Dr. Suzanne Miller and the rest of the staff who are working to make this more possible.

SCAMIT Hats - Another fundraising endeavor has brought us SCAMIT hats. They are the classic baseball cap. They are \$6.00 each. You can order via the order form.

Grantsmanship - Emmanuel Rosalas, from Cabrillo Beach Marine Museum gave an excellent talk on how to obtain grant money. He gave us insight on how to approach companies for money and how to enhance SCAMIT's image and worthiness for receiving money. Now the Fund Raising Committee is much better equipped to pursue money. Thank you very much Emmanuel!

Helpful Hints - The amphipod, Acidostoma hancocki, Hurley 1963, was described as eyeless. Close examination of Hurley's specimens and those from Marine Biological Consultants and Orange County Sanitation Districts reveal there is an eye present. An illustration on the eye and some of the male features were prepared by Ann Martin. They are enclosed along with a short review of the diagnostic characters for the species.

List of January 9, 1984 Topic Specimens:

OC33, LAC021	<u>Amphiobia urtica</u>
OC34	<u>Amphichondrius granulosa</u>
HYP29	<u>Ophiomusium jolliensis</u>
PL35	<u>Ophiuroconis bispinosa</u>
PL 36	<u>Amphiura acrystata</u>
LAC022	Amphiuridae, juvenile
SCCWRP 31	<u>Ophiacantha diplasia</u>
SCCWRP 32	<u>Ophiopholis longispinus</u>

Travels with Olga:

Dear Folks: Had a delightful departure yesterday. Frieda and Chauncey were down to see me off. There were also many friends and gifts. So sorry you could not have been here.

It was a pleasant surprise to see this beautiful new boat, built in Goteberg in 1936, with very fine cabins and fixtures. She is a Knutsen. Norwegian, the officers and crew are all Norwegian, as are also the foods. Fore and aft she is laden with Douglas fir from Washington, to go to England, and in one of the large refrigerator holds are hundreds of crates of lemons, boarded yesterday at Los Angeles.

Yesterday while on board at the docks a telephone message came to the immigration office for me which really involves you. About a fortnight ago we had a visitor at the foundation from the Smithsonian Institution. He is Mr. Harold Bryant, chief of the accessions division, - a fine fellow, Dr. Schmitt's best friend, and a friend of mine. We had in our midst also a scientist from Adelaide, So. Australia, Dr. Herbert Hale, director of the So. Australia Museum. The latter had information of a meteorite and Bryant immediately jumped at the chance to acquire it. I ventured the casual remark that we had meteorites in our own country, - one seemingly on my home place. His ears pricked instantly. Other incidents intervened and nothing more was said of it at the time. During the past week, however, Bryant was trying to contact me to no avail. I was always elsewhere. Yesterday he called here and wants the meteorite very much. He said that the meteorite department is the only one at the Nat'l. Mus. that really has money, and that it will pay well for it. At any rate, if it turns out to be not a meteorite, they will stand all the expenses. They will take care of the shipping, the crating, and pay you for your trouble. It would also be a favor to me if you could send it on, for the Nat. Mus. has done a lot for me in the past. Bryant wanted to contact you directly, but I wanted to approach you first on the circumstances surrounding the lead.--- The division of accessions would want to know the approximate date of the fall, or the decade, - say, between 1920-25, or more accurately.---- You may make such disposition as you wish regarding this question.

Notes: In response to Olga's request we sent to Mr. Bryant a letter, describing the "meteorite", and enclosed small pieces of it (also photograph). We received a prompt reply, as follows:



July 11, 1939

Dear Mr. Hartman: In reply to your letter of June 30 to Mr. Bryant of this museum, with photograph enclosed.

The fragments are decomposed pieces of granite and in no way related to a meteorite. All meteorites are different from the rocks of this earth and can therefore be easily recognized.

It would have been impossible to definitely classify the sample from the photograph but with these fragments at hand there can be no question.

We appreciate very much your calling this to our attention and anytime you can find a rock of possible meteoric origin, please notify this Institution as we are seriously studying meteorites and also making a collection. Our present collection contains about 725 separate meteorite falls and is the most important one in this country. Sincerely yours, E.P. Henderson

The albatrosses are following us. Flying fishes were about yesterday, and will be with us as far as the canal. They are very fascinating to watch. By night we may be skirting Cape San Lucas, lower end of Lower California. Information now is that there will be no stop at Cristobal, or in the Canal zone, but that we go direct to Glasgow. There will however, be pick up of mail, hence I can send this off there.

The Elisabeth Bakke is a fast mail boat. She is doing approximately 16½ knots an hour, - a fine speed for a freight. Our passengers number 9 and are a congenial group. The sea is calm with only slight swells and we do only a little rolling. The heavy motors cause a certain vibration which is, however, not bad.

Saturday, 17 June- Day after tomorrow we are due in Panama, and we are really looking toward it. The trip thus far has been delightful. At night the sea has been luminescent, and by day we see occasional interesting phenomena. Flying fishes and schools of porpoises are fascinating to observe.

It is nearly lunch time again. I feel as though we go steadily from one banquet to another; even breakfast is an occasion.

19 June- Today we arrive at the canal. Everyone looks forward to it. The horizon on the port side is already green with trees and vegetation.

Shall have this mailed by the steward at Cristobal. Everything has been very fine and interesting thus far.

Aboard MS Elisabeth Bakke
12 June 1939



BALLOT FOR 1984-85 OFFICERS
Vote for one for each office

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

John Shisko - John has been president of SCAMIT the last two years. He works at Hyperion Treatment Plant on the marine monitoring program.

Write-in

Vice-President - The Vice-President chairs ad-hoc committees, supervises the specimen exchange, tabulates election ballots, and substitutes for the president when necessary.

John Dorsey - John is a charter member of SCAMIT and participates on the Fund Raising Committee. He also is the newest member of the Hyperion Treatment Plant marine monitoring staff.

Tony Phillips - Tony has been vice-president of SCAMIT the last two years. He also works at Hyperion Treatment Plant.

Sue Williams - As a charter member of SCAMIT, Sue holds the office of curator. She works at the Allan Hancock Foundation at USC.

Ron Velarde - Ron is another charter member of SCAMIT who is a very active participant. He is employed at the Pt. Loma Wastewater Laboratory.

Write-in

Secretary - The Secretary keeps minutes of the meetings, is responsible for the newsletter, mailing of ballots, and presents a yearly statement of activities.

Cathy Crouch - Cathy is another active charter member of SCAMIT. She is employed by Cabrillo Marine Museum.

Write-in

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

Ann Martin - Ann has been Secretary-Treasurer of SCAMIT the last two years. She is employed by the Orange County Sanitation Districts.

Jim Laughlin - Jim is a charter member of SCAMIT. He works at SCCWRP and heads up New Wave Taxonomic Consultants.

Write-in

* * *

Amendments

	Approve	Disapprove
The constitution should be amended as discussed above	<input type="checkbox"/>	<input type="checkbox"/>
The bylaws should be amended as discussed above	<input type="checkbox"/>	<input type="checkbox"/>

Comments _____

You may vote by returning your ballot at the February meeting, or by phoning your vote to Tony Phillips (213) 322-3131 x269, or by mailing it to Tony at 12000 Vista del Mar, Playa del Rey, CA 90291.



ORDER FORM

GENERAL CONTRIBUTION

Amount: _____

Would you like this to go for: Video System ()
General Treasury ()
Other () _____

T-SHIRTS

	COLOR			Mens	Womens	Childrens
	1st Choice	2nd Choice				
Blue	()	()	Small	()	()	()
Yellow	()	()	Medium	()	()	()
Tan	()	()	Large	()	()	()
			X-Large	()	----Not Available----	
			XX-Large	()	----Not Available----	

Price: \$8.00 plus \$.95 postage

SCAMIT MUGS

One mug	\$ 6.00	()	Shipping	\$ 1.50
Set of 4	22.00	()	Shipping	2.00
Set of 6	33.00	()	Shipping	2.50

SCAMIT HATS

\$6.00 each, \$.95 postage ()

SCCWRP KEYS TO INVERTEBRATES

Invertebrates of Southern California Coastal Waters Vol. I. Select Groups of Annelids, Arthropods, Echinoderms, and Mollusks. J. Q. Word and D. K. Charwat eds. 1975. ()

Vol. II. Natantia. J. Q. Word and D. K. Charwat. 1976. ()

Price: \$6.00 plus \$2.50 postage each

TOTAL ENCLOSED: \$ _____

Mail to: Ann Martin
10844 Ellis Avenue
Fountain Valley, CA 92708



Diagnostic Characters of Acidostoma hancocki

Ann Martin
Orange County Sanitation Districts
10844 Ellis Ave.
Mountain Valley, CA 92708
(714) 540-2910 X268

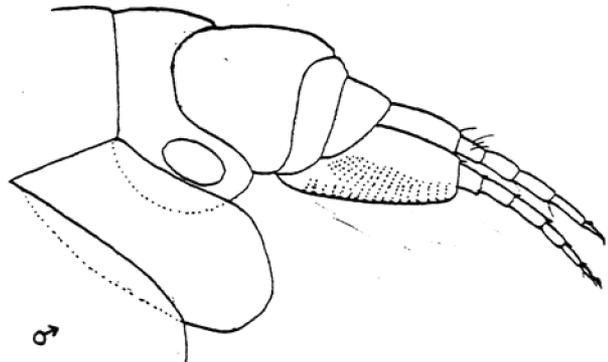
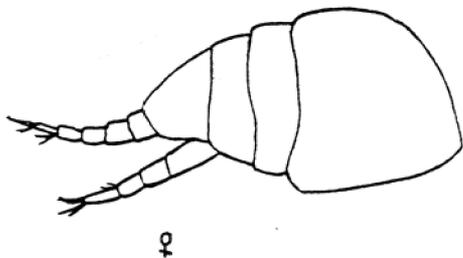
Hurley 1963

CSDOC, MBC Specimens

- | | |
|---|---|
| 1. Eyes absent, integument thick; antennae short, subequal | Eye present, prominent in live specimens, difficult to see in preserved specimens |
| 2. Ant. 1, seg. 1 of flagellum has stout bladelike spine on inner distal angle | Yes |
| 3. Mandible has peculiar short molar process, appears to be a stumpy second segment | Present, but difficult to see |
| 4. Maxilla 1, inner plate... with minute second segment at tip | Not visible |
| 5. Gnathopod 1 simple, hind margin of segment 6 minutely serrate | Yes in female, no in male |
| 6. Gnathopod 2, dactylos appears to be present in the form of a minute tooth masked by surrounding long spine-setae | Yes, seen only at high magnification |
| 7. Epimeral plate 3, posterodistal angle upturned in small but distinct tooth | Yes |

Additional comments

Males have extremely hirsute ant. 1, tend to have more setae on gnathopods and mouthparts than females. Males also appear to have thinner integument.



Voucher#: SCCWRP 32

Literature: Clark, H.L., 1911
McClendon, J.F., 1909
May, R.M., 1924
Boolootian, R.A. and D. Leighton, 1966
Word, J.Q., 1984 (Unpublished Manuscript)

Primary Diagnostic Characters: aboral surface of disk is spiny, not granulated;
(Figure 1) the radial shields are not covered with spines;
disk spines are not forked;
six to eight slender, long arm spines

Related Species and Character Differences:

Ophiopholis bakeri McClendon, 1909 (Figure 2)
the radial shields are covered with spines
the disk spines are forked
four to six moderately long, minutely thorny arm spines

Fig. 1. a. aboral disk
b. oral disk
(from Clark H.L. 1911)
p. 120

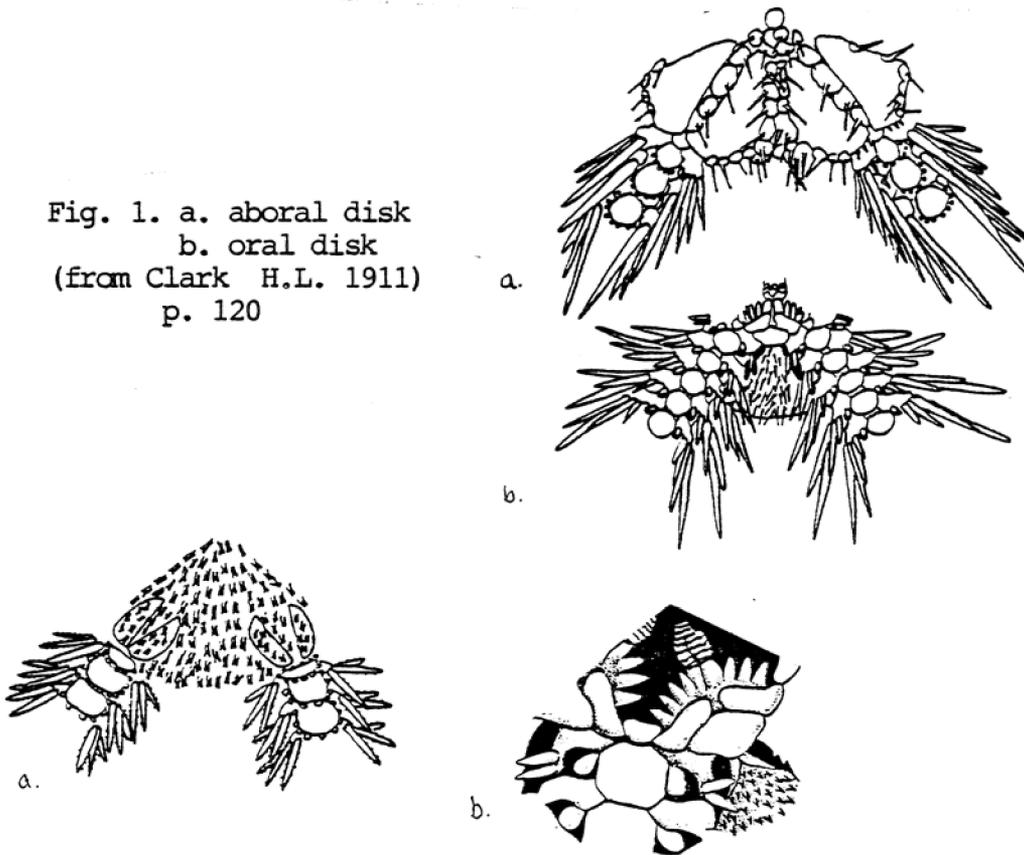
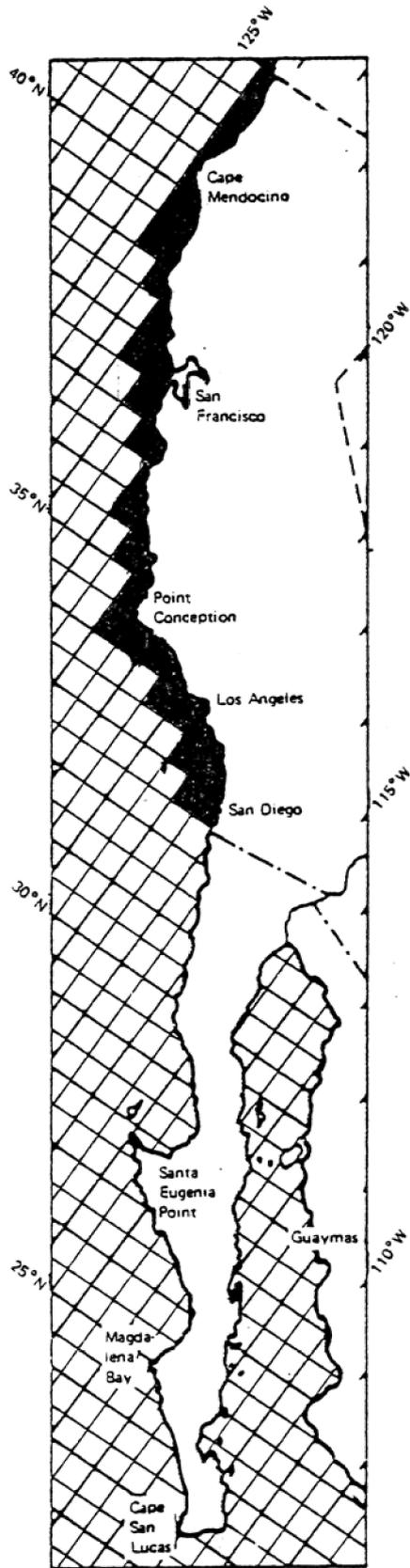


Fig. 2. a. aboral disk (from May R.M. 1924, p. 279)
b. oral disk (from Boolootian and Leighton 1966, p. 19)



Range: Washington to California

Habitat: 500-1400 meters; silty-sand, green mud, clay

Voucher #: OC 34

Literature: Nielsen, E., 1932
McClendon, J.F., 1909
Ziesenhenné, F.C., 1940
Boolootian, R.A. and D. Leighton, 1966
Word, J.Q., 1984 (Unpublished Manuscript)

Primary Diagnostic Characters: three pairs of oral papillae, distal pair broad, next narrower, inner pair small and partly infradental; (Figure 1)
two tentacle scales, distal larger;
disk covered by imbricated scales;
radial shields separated or just touching in distal end, in proximal end they diverge;
interbrachial area granular
genital ridge scaled

Related Species and Character Differences:

Amphichondrius laevis Ziesenhenni, 1940 (Figure 2)
radial shields are in contact distally
genital ridge granular

Amphipholis squamata (delle Chiaje, 1828) (Figure 3)
interbrachial areas scaled;
radial shields contiguous throughout their length

Synonyms: Amphipholis puntarene McClendon 1909
Cambell 1921

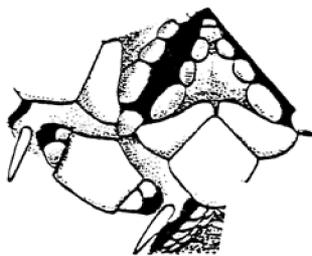


Fig. 1. a. oral disk (from Boolootian and Leighton 1966, p. 14)
b. aboral disk (from McClendon, J.F. 1909, plate 4)

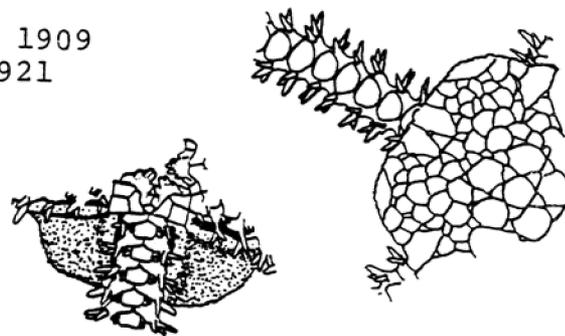


Fig. 2. a. aboral disk
b. oral disk
(from Ziesenhenné, F.C. 1940, plate 4)

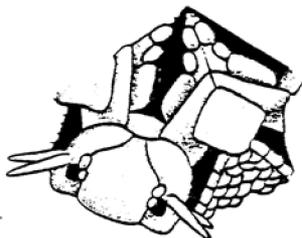
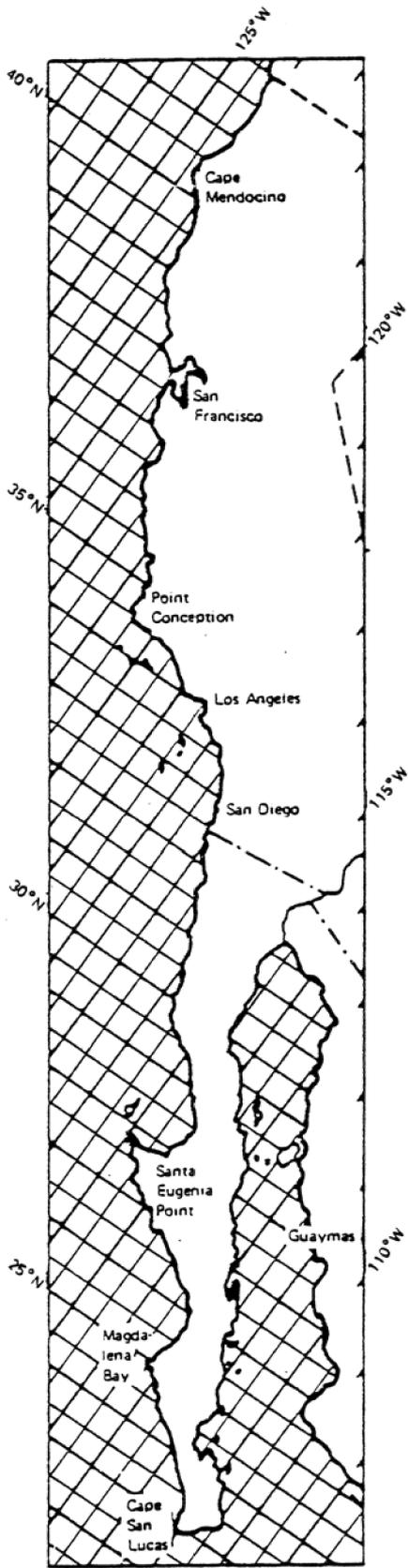


Fig. 3. a. oral disk (from Boolootian and Leighton, 1966, p. 14)
b. aboral disk (from Clark, H.L. 1911, p. 167, of A. pugetana)



Range:

Habitat: 10-200 meters; silty sand to silt

Voucher #: PL 35

Literature: Ziesenhene, F.C. 1937
Word, J.Q. (Unpublished Manuscript)

Primary Diagnostic Characters: aboral disk covered entirely by fine granulations; (Figure 1)
interbrachial areas heavily granulated distally, less proximally;
oral shields, mouth shields and proximal ventral arm-plates covered, but not concealed by scattered coarse granules;
oral papillae three to four pair;
one tentacle scale present on each arm plate, the shape of the tentacle scale is bicornate

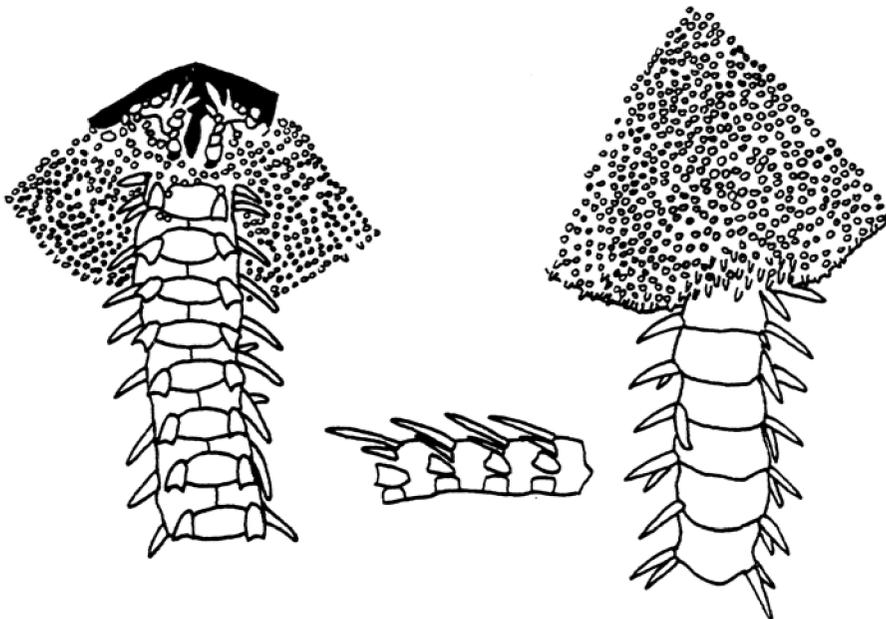
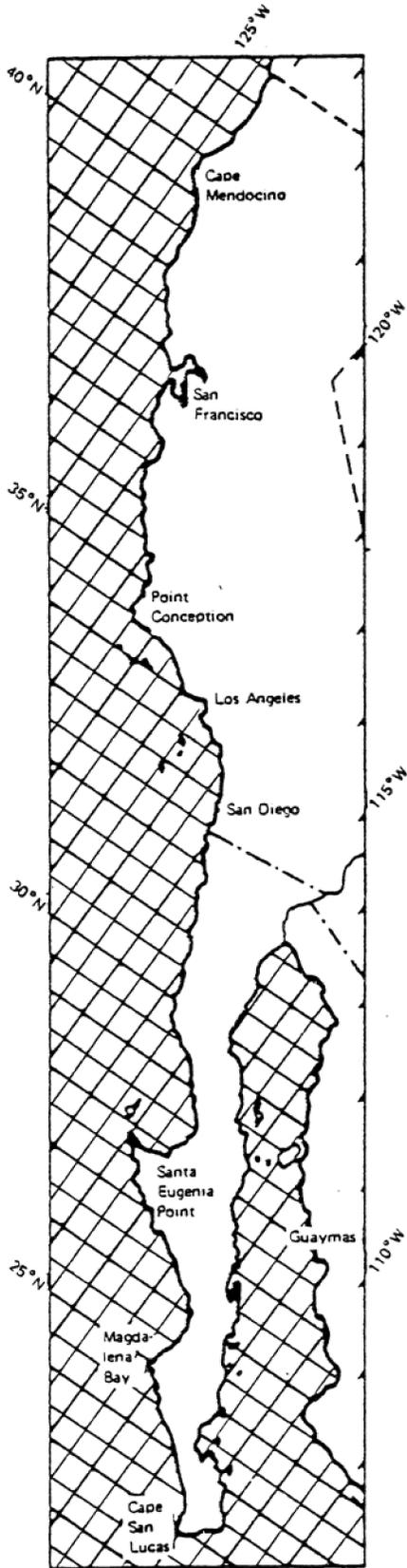


Fig. 1. a. oral disk
b. ventro-lateral view of arm spines and tentacle scale
c. aboral disk
(from Ziesenhene, F.C. 1937, p.229)



Range:

Habitat:

Voucher #: OC 33

Literature: Clark, H.L. 1911
Booolootian, R.A. and D. Leighton 1966

Primary Diagnostic Characters: four pairs of oral papillae;
(Figure 1) second pair from proximal end tapered to
to point, other three pair blunt,
spines not present on aboral disc;
tentacle scales in angle of mouth
adjacent to row of true oral
papillae;
oral shield distal end constricted

Related Species and Character Differences:

Amphioplus strongyloplax (H.L. Clark 1911) (Figure 2)
proximal oral papillae heavy and
globose, other three pair large
and tapered;
tentacle scales in angle of mouth
separate from row of true oral
papillae;
oral shield distal end indented

Dougaloplus amphacantha (McClendon 1909) (Figure 3)
oral papillae spinose;
spines present on aboral disc scales
and ventral interradiial areas

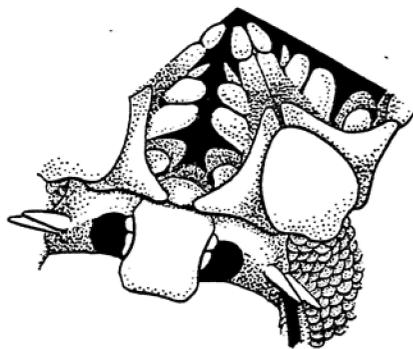


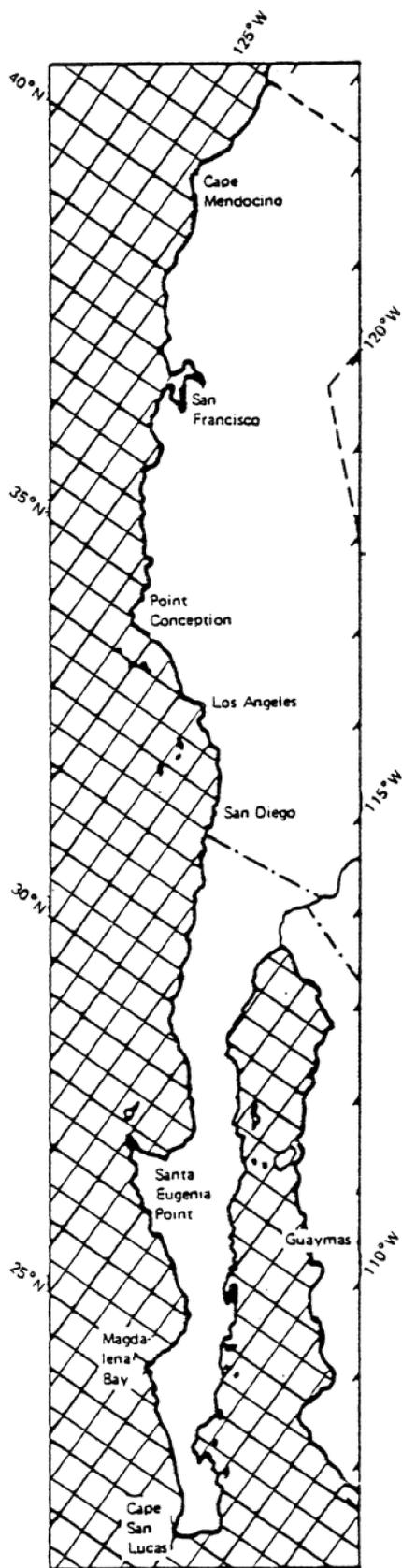
Fig. 1. oral disk (from Booolootian
and Leighton 1966, p. 16)



Fig. 2. oral disk (from Booolootian and Leighton 1966, p. 16)



Fig. 3. oral disk (from Booolootian and Leighton 1966, p. 16)



Range:

Habitat: 10-200 meters; silty-sand, silt , green mud

Voucher #: Hyp 29

Literature: McClendon, J.F. 1909
Lutken, C.F. and Th. Mortensen 1899
Clark, H.L. 1911
Boolootian, R.A. and D. Leighton 1966
Word, J.Q. (Unpublished Manuscript)

Primary Diagnostic Characters: two genital slits in each interbrachial space;
(Figure 1)
two or three short blunt arm spines present;
three pairs of tentacle pores, present only on basal arm segments;
each pore with one scale, rarely two;
five or six pairs mouth papillae per jaw, no infradental papillae;
when alive, bright red

Related Species and Character Differences:

Ophiomusium lymani Wyville Thomson 1873 (Figure 2)
six to eight rudimentary arm spines per lateral arm plate;
two pairs of tentacle pores, present only on basal arm segments;
when alive, ivory white

Ophiomusium glabrum Lutken & Mortensen 1899 (Figure 3)
twelve to sixteen arm spines per lateral arm plate;
four pairs of tentacle pores, present only on basal arm segments

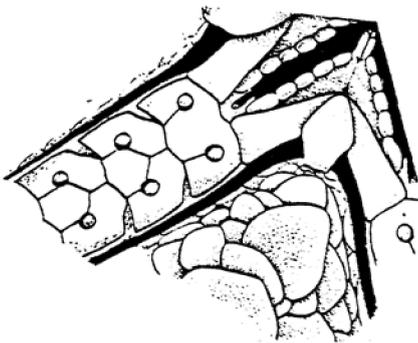


Fig. 1. oral disk (modified from Boolootian and Leighton 1966, p. 17)

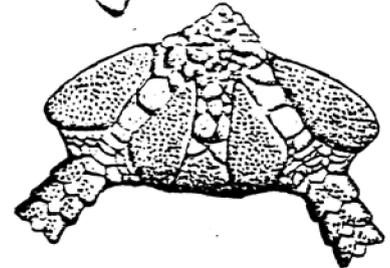
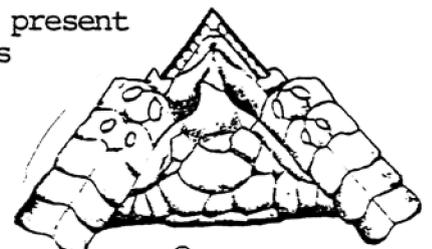


Fig. 2. a. oral disk
b. aboral disk
(from Lutkin and Mortensen 1899, plate III)

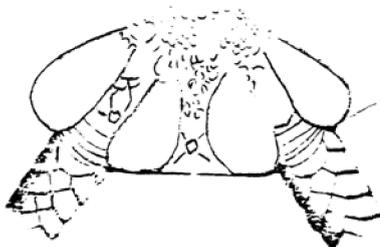
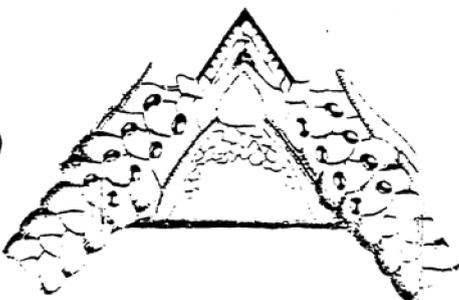
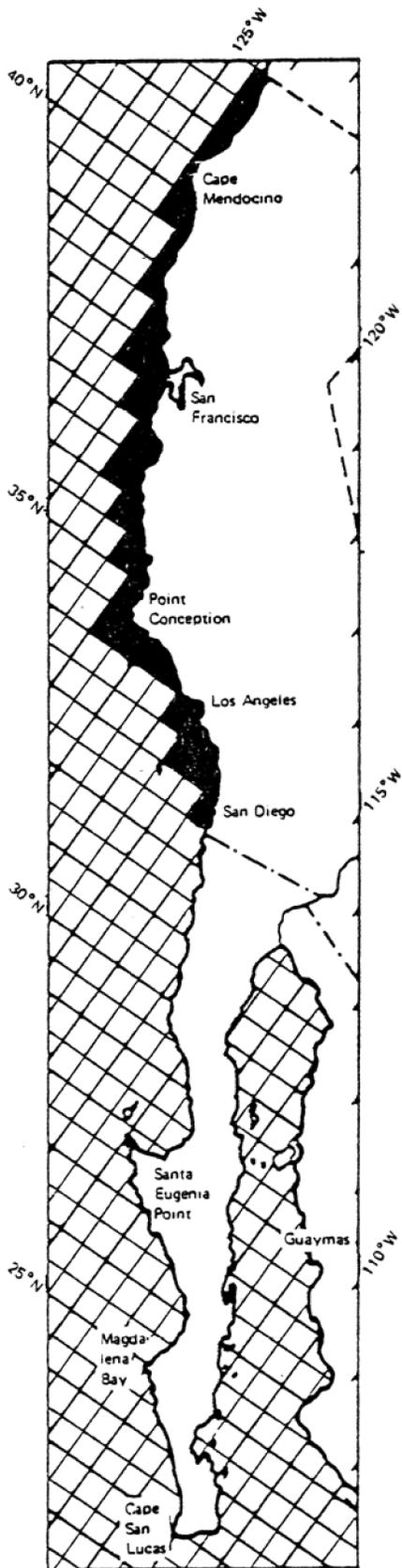


Fig. 3. a. oral disk
b. aboral disk
(from Lutkin and Mortensen 1899, plate IV)



Range: California to Japan

Habitat: 250-800 meters (slope depths); green mud

Voucher #: LACo 21

Literature: Clark, H.L., 1911
May, R.M., 1924
Nielsen, E., 1932
Boolootian, R.A. and D. Leighton, 1966
Work, J.Q., 1984 (Unpublished Manuscript)

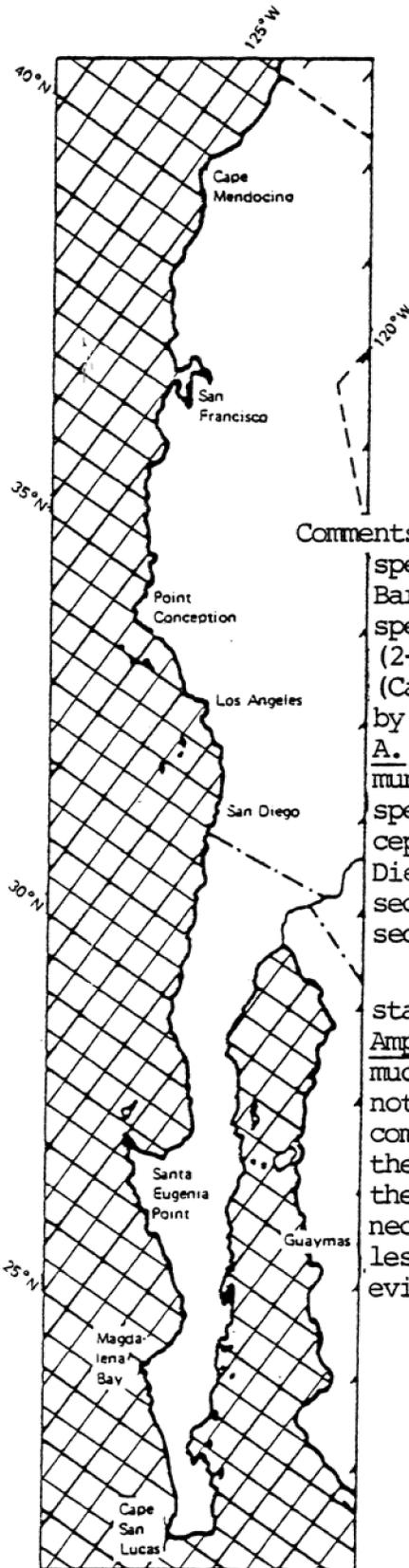
Primary Diagnostic Characters: aboral disk scaled;
three pairs of oral papillae;
ventral interradiial scales modified with
small hyaline forked tips;
outermost disk scales with modified
hyaline forked tips;
disk scales along genital slit area
with modified scales having
hyaline forked tips

Related Species and Character Differences:

Amphiodia digitata Nielsen, 1932
modified scales having hyaline forked
tips only found on outermost disk
scales

Amphiodia occidentalis (Lyman, 1860)
no modified scales having hyaline forked
tips found on disk

Synonyms: Amphiura urtica Lyman 1860
Ophiophragmus urtica Fell 1962



Range: Alaska to California

Habitat: subtidal to 200 meters, sandy silt to clay

Comments: The question concerning the status of Amphiodia digitata as a species was discussed. No one involved with sampling between Santa Barbara and San Diego had identified any A. digitata. Any specimens approaching the description of A. digitata were small (2-3 mm) and could have been juvenile A. urtica. Dr. Ann Muscat (Cataline Marine Lab.) and Mary Bergen (U.S.C.) (as communicated by Sue Williams) both feel that A. digitata is really just juvenile A. urtica. Jack Word (Univ. of Washington) (personnel communication) feels that A. digitata and A. urtica are both valid species; he has excellent specimens of A. digitata from Pt. Conception (6-7 mm disk), Santa Monica Bay, Palos Verdes and San Diego. He noted that this species seems to prefer coarser sediments while A. urtica seems to prefer the finer grained sediments.

Juvenile specimens of Amphiodia (2mm) are a problem. At what stage of development spines occur has not been determined. Since Amphiodia can occur in large number, particularly in clean areas, much time can be spent identifying these animals. Jack Word has noted the spines to present on specimens 0.5 mm with the aid of a compound microscope. The spines were observed in the area along the genital slits. When dealing with several hundred specimens, the use of a compound microscope would greatly increase the time necessary for identifying. For simplification, specimens 2 mm or less should be called Amphiodia sp. when spines are not clearly evident.

Voucher #: SCCWRP 31

Literature: Clark, H.L., 1911
McClendon, J.F., 1909
May, R.M., 1924
Ziesenhenne, F.C., 1940
D'yakonov, A..M., 1954
Boolootian, R.A. and D. Leighton, 1966
Word, J.Q., 1981 (Unpublished Manuscript)

Primary Diagnostic Characters: radial shields not readily visible,
(Figure 1) concealed by granules;
all arm segments with two tentacle
scales except for basal one to
two segments which will have
three (particularly in large
specimens);
oral papillae five to seven pairs per
jaw, outermost may be longer of
wider;
longest arm spines about five arm joints
in length;
seven to eight arm spines per lateral
arm plate

Related Species and Character Differences:

Ophiacantha euryxoma H.L. Clark, 1911 (Figure 2)

radial shields visible;
aboral disk covered by minute, thorny
stumps;
oral papillae three on each side and one
at apex of jaw;

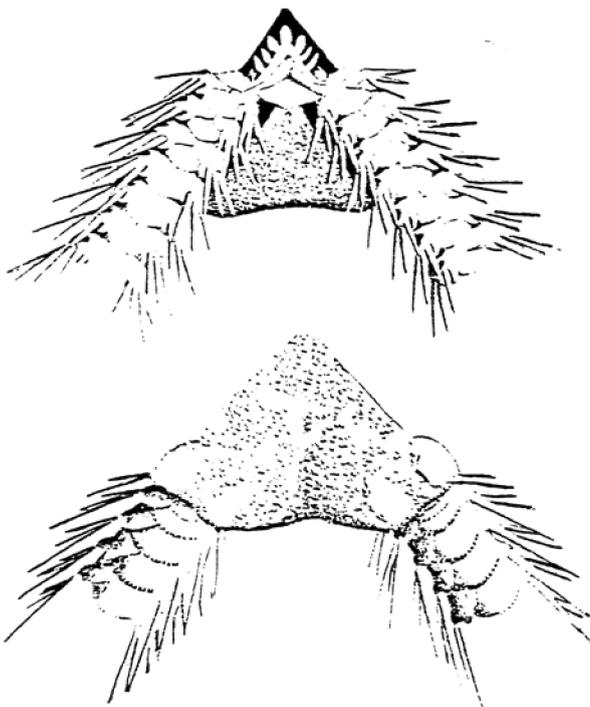
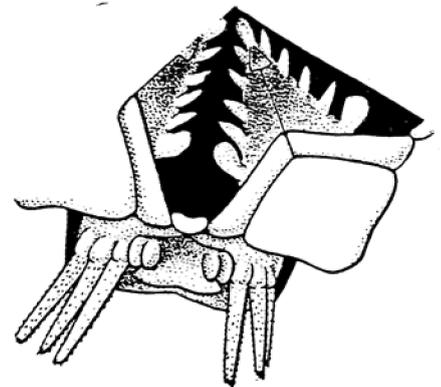
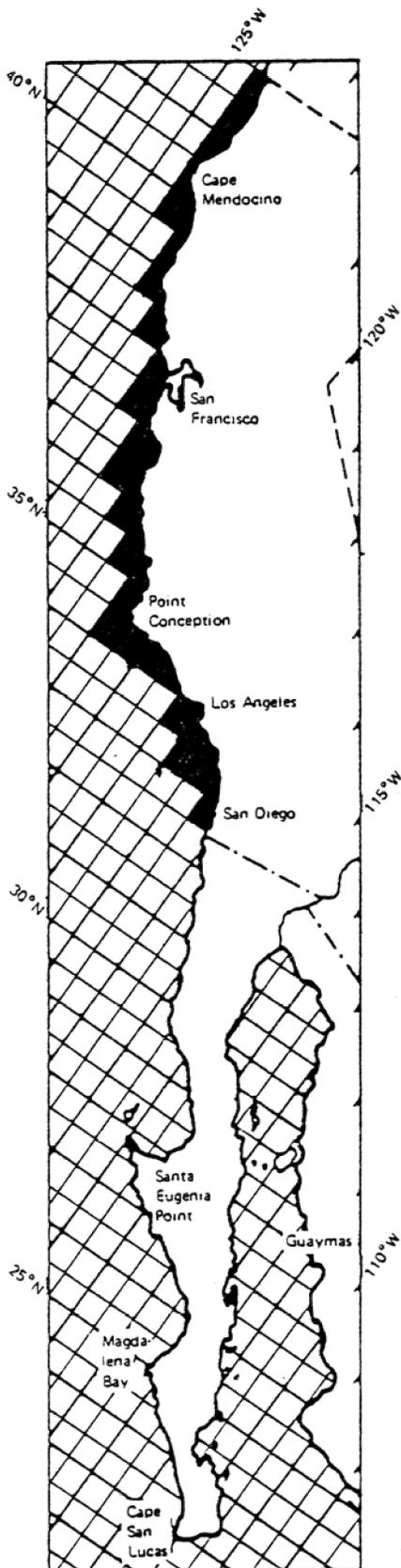


Fig. 1. a. aboral disk
b. oral disk
c. lateral arm spines
(from Clark, H.L. 1911, p. 210)
d. oral papillae
(from Boolootian and Leighton 1966, p. 19)





Ophiophthalmus normani (Lyman, 1879) (Figure 3)
radial shields partly visible;
aboral disk covered with scales bearing short spine;
four pairs of oral papillae per jaw;
four arm spines per lateral arm plate, longest arm spines approximately three arm joints in length

Ophiolimna bairdi (Lyman, 1883) (Figure 4)
aboral disk closely covered with short, thick spines;
ten to twelve pairs of oral papillae;
distal lateral arm plates with seven arm spines, the proximal lateral arm joints have five arm spines (all slender and sharp);
all tentacle pores with one tentacle scale, except the basal arm segment

Ophiacantha rhachophora H.L. Clark, 1911 (Figure 5)
aboral disk covered with short multi-point spines;
oral papillae serrate, five to six pairs per jaw;
all tentacle pores with one thorny tentacle scale;
arm spines rough and spiny

Ophiacantha phragma Ziesenhenne, 1940 (Figure 6)
aboral disk covered with granules and irregularly spaced long, stout, pointed spines;
five to seven pairs of oral papillae per jaw;
two to three tentacle scales on first six to nine basal arm segments, the remaining arm segments have only one tentacle scale

Range: San Diego to Washington

Habitat: 70-150 meters; silty-sand, gravel-sand, mud

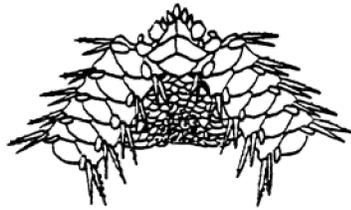
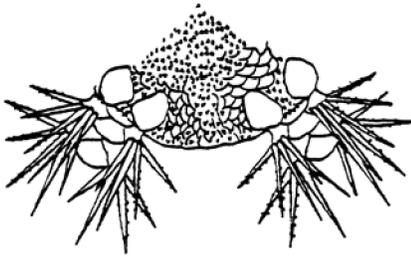


Fig. 2. a. aboral disk
b. oral disk
(from Clark H.L. 1911, p. 223)

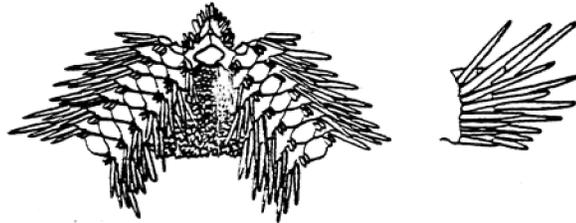
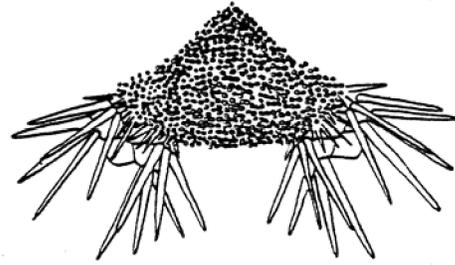


Fig. 3. a. oral disk
b. aboral disk
c. lateral arm spines
(from Lutkin and Mortensen 1899, plate XVI)

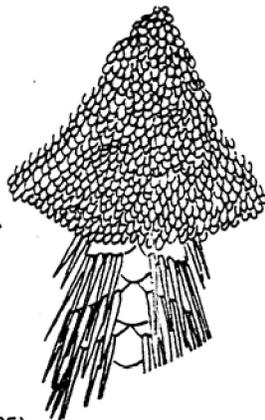
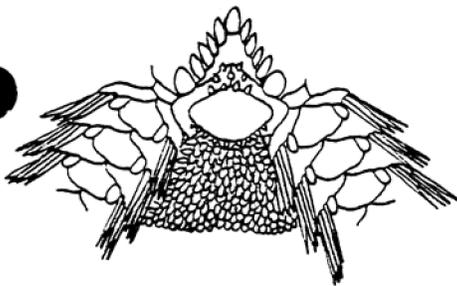


Fig. 4. a. oral disk
b. aboral disk
(from D'yakonov, A.M. 1954, p. 25)

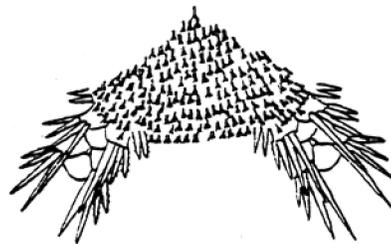


Fig. 5. a. aboral disk (from Clark, H.L. 1911, p. 201)
b. oral disk (from Boolootian and Leighton 1966, p. 20)



Fig. 6. a. oral disk
b. aboral disk
(from Ziesehenne, F.C. 1937, plate 2)
c. oral papillae
(from Boolootian and Leighton 1966, p.19)

Voucher #: PL 36

Literature: Clark, H.L., 1911
McClendon, J.F., 1909
May, R.M., 1924
Nielsen, E., 1932
D'Yakonov, A.M., 1954
Boolootian, R.A. and D. Leighton, 1966

Primary Diagnostic Characters: oral papillae two pair, one stout at apex of jaw, the other spine-like at outer corner of mouth;
radial shields long and narrow, the distal end in contact;
aboral disk usually naked in center and in the interradii;
around the radial shields there is a variable amount of fine scaling;
tentacle pores large, with two small tentacle scales

Synonym: Hemiliepis arcystata Fell 1962

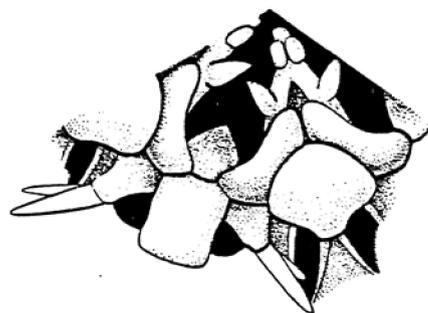
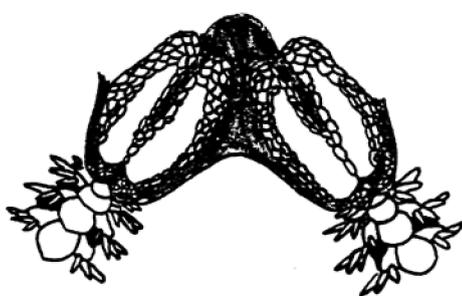
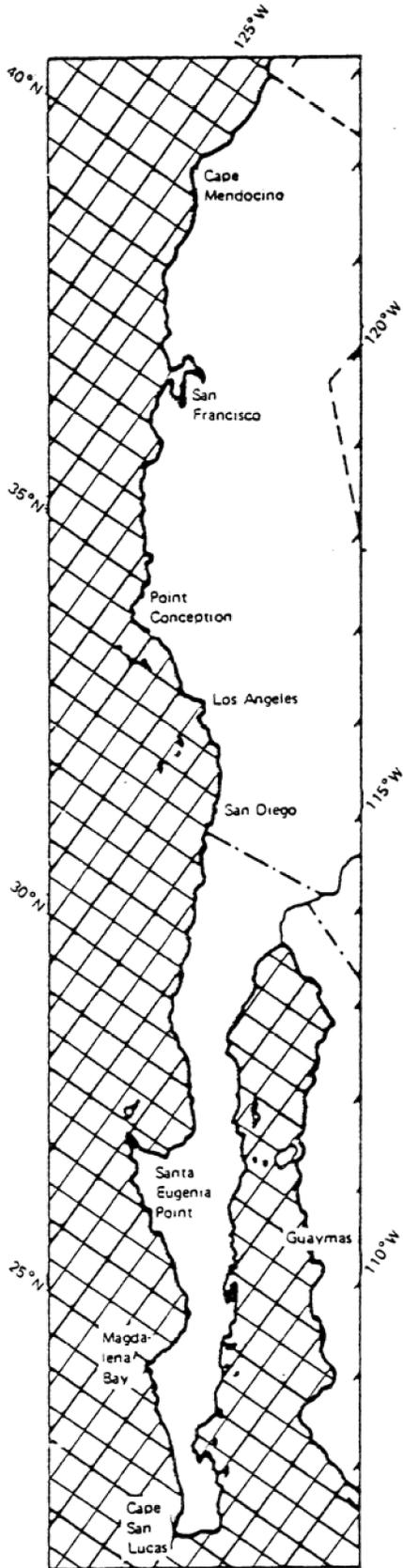


Fig.1a. aboral disk
b. oral disk
(from Clark, H.L. 1911, p.146)
c. oral papillae
(from Boolootian and Leighton 1966, p.14)



Range: California to Japan

Habitat: 50-950 meters, silty-sand, mud