Southern California Association of
Marine Invertebrate Taxonomists

September, 2004 **SCAMIT Newsletter** Vol. 23, No. 5

SUBJECT:	**Future of SCAMIT - Part II**
GUEST SPEAKER:	**Discussion Lead: Kelvin Barwick, SCAMIT President**
DATE:	**10 January 2005**
TIME:	**9:30 a.m. to 3:30 p. m.**
LOCATION:	**SCCWRP**

Pannychia moseleyi
Body wall ossicles

SEPTEMBER O4 MINUTES

The September SCAMIT meeting opened with President Kelvin Barwick discussing a few business items. First and foremost, Kelvin wanted to inform members that if they conduct a google search on SCAMIT one of the links leads to a website which is selling subscriptions to the SCAMIT newsletter for $40. Kelvin has sent the company running the site (they call themselves business facilitators) a letter asking them to cease and desist. We will keep you updated. Don Cadien suggested that we post a warning on our website to member hopefuls not to fall for this subscription scam and to simply become a member (much cheaper than $40) and enjoy the monthly newsletters.

Kelvin then announced the results of the SCAMIT elections, with all SCAMIT officers being unanimously re-elected.

Ron Velarde then had the floor and wanted to inform of us of upcoming non-SCAMIT meetings. The next SCUM meeting will be in January of 2005 and is being hosted by the City of San Diego. There is a flyer attached at the end of this newsletter.

Don Cadien then delighted us by revealing that he is back in the groove of writing up his reviews of new literature for the NL. I know we will all be looking forward to his insightful and often amusing prose. His first installment is below.

With that it was time for the Echinoderm portion of the meeting to begin.

Megan Lilly started off by reviewing the *Brisaster towsendi* versus *B. latifrons* issue raised originally by Rich Mooi of Cal Academy many moons ago.

B. townsendi and *B. latifrons* were originally described by Agassiz in 1898 (within the genus Schizaster). In 1917 Clark did a further review of the two species and described *B. townsendi* as having posterior petaloids that were at least 1/2 as long as the anterior petaloids, whereas *B. latifrons* had posterior petaloids that were 1/3 as long as the anterior petaloids.

Mortesen in his 1951 Monograph discussed the two species but expressed some doubt citing that it seemed odd that all the large specimens were one species (*B. towsendi*) and all the juvenile specimens were the other (*B. latifrons*).

McCauley reviewed these two species in 1967 and found the posterior/anterior petaloid ratio character (3:1 vs 2:1) to be unreliable with regards to separating the two species and synonomized the two. He worked with specimens from Oregon at depths of 100-840m and also looked at animals from the Albatross collections.

This brings us to Hood and Mooi (1998). A detailed examination was conducted on both species. Great variation was seen in the length of the posterior petaloids and they agreed with McCauley in that this character could not be used to separate the two taxa. However, their morphometric multivariate analyses gave a good separation of the two species based on posterior petaloid width. They feel that *B. townsendi* is distributed in the southern range of *B. latifrons*. It is theorized that the most recent species of *Brisaster* originated in the north Pacific with *B. townsendi* and *B. latifrons* only recently diverging.

The obvious problem here for those of us working at monitoring agencies is the applicability of the posterior petaloid width as a reliable field character. Don Cadien stated that we have to be able to see a difference in the field in order to distinguish the species. LACSD, for instance, can catch “hundreds” of *Brisaster* in a single trawl. It is not feasible for each animal to be examined with a pair of calipers to measure posterior petaloid width. In addition, the animals are live, with spines intact and usually covered with a wonderful mixture of mud, slime and fish puke, making it almost impossible to see the petaloids much less measure them. And, throw into this whole mess the fact that it is a distinct possibility the *B. townsendi* and *B. latifrons* could hybridize. So, the dilemma persists. Don Cadien has been gracious enough to offer that the people at his lab would be willing to bring some *Brisaster* specimens in from the field and take a closer look. They will work on the basis that if an animal “looks different” or “off” it will be subjected to a closer morphometric examination. In addition, Boris Savic has recently introduced himself to SCAMIT members and is willing and able to help do some work on the heart urchins. He may get more than he bargained for. We will keep you updated on the status of this project but there is a good possibility that we will end up having to back off to *Brisaster* spp as an ID for our field caught animals.

Speaking of strange heart urchins, Lisa Haney brought some images of a bizarre specimen. She had originally shown it to Don and Megan and we had both breezily blown it off with a "looks like a weird *Brissopsis pacifica*". Luckily Lisa persevered and we have to agree at this point that the animal is distinct. It does have a subanal fasciole, but it's very faint. In addition the spines and petaloids look different from those of either *Brissopsis* or *Brisaster*. For the moment Lisa is calling it *Brisaster* sp LA 1 and the animals have been sent to Rich Mooi for examination. There will be a voucher sheet coming out in a future newsletter.

Megan Lilly had prepared a power point presentation showing specimens she wanted reviewed as well as images and voucher sheets Lisa Haney had sent down to be included. Some of those voucher sheets will be included at the end of this newsletter, others are still in press.

We took at moment to look at some fossil echinoid photos that Boris had been kind enough to share. *Lovenia hemphilli* is a large and more robust looking version of our modern day *L. cordiformis*. Also, *Brisaster townsendi var waynari* was shown and again, it is very robust version of our modern day *Brisaster* species.

The first holothuroid to be discussed at some length was a trawl voucher specimen from LACSD. It was originally ID'ed by Lisa Haney as *Pentamera pediparva*. During the QA/QC for some of the trawl vouchers, Megan felt this was incorrect and called it *P. rigida*, based on the introvert ossicles and the overall gestalt of the animal. However, Lisa was unhappy with this ID and, as it turns out, justifiably so. Therefore, neither Lisa nor Megan felt they were correct in their ID of this animal. It is a *Pentamera*, of that much we feel fairly certain. The body wall ossicles are star-shaped, the supporting ossicles are somewhat similar to those found in *P. populifera* and the introvert ossicles are those seen in *P. populifera* and *P. rigida*. It was the opinion of some that the animal was simply a larger (2cm), strange looking, *P. populifera*. This could be, but both Lisa and Megan have some hesitancy with this ID as the overall gestalt of the animal does not suggest this species. For the moment the ID is pending.

Next up was Lisa's *Pentamera* sp C. It looks remarkably similar to *P. pseudocalcigera* externally, though much more "wrinkly" in appearance. Supporting tables in the tube feet resemble those of *P. beebei* depicted in Deichmann, 1941 Pl. 15 #5 and #6, although the body wall tables are very different. The body wall plates look more similar to *P. populifera* and *P. lissoplaca*. A voucher sheet is attached at the end of the newsletter.

Megan then showed a specimen of *Pentamera* on which she was waffling between *P. lissoplaca* and *P. psuedocalcigera*. It was collected at B'03 station 5002 at a depth of 319m. The final consensus (and with an email input from Philip Lambert) was that this was *P. pseudocalcigera*. The ID sheet is attached at the end of the newsletter.

A strange looking *Cucumaria* brought by Lisa was discussed next. This animal has body wall plates that are irregular in shape and perforated with large holes and scalloped edges, similar to those depicted for *C. frondosa japonica*, but without bumps on the surface. The ring canal, however, is most similar to the illustrations for *C. piperata*. Although Lisa had put together extensive slides and descriptions, there was no input from the audience on what this animal could be. It is being called *Cucumaria* sp A and the voucher sheet is attached at the end of the newsletter.

A mystery animal from the B'03 project was *Synallactes alexandri*. This holothuroidean was caught on a trawl survey and was immediately of interest. Lisa took copious pictures and sent these off with descriptions of the animal to various researchers world-wide. Francis Solis-Marin from Mexico City replied and provided

the ID. He had just recently completed a revision of the Synallactidae and a redescription of *S. alexandri*. The only other reported Synallactid from southern California is *S. challengeri* of which there is no way this specimen could be confused. *S. challengeri* has long pointed papillae dorsally and the ossicle tables are different in form, though the spires of both of these animals are similar. This fun but strange looking cucumber came from 500m off the Palos Verdes Shelf. A voucher sheet is included at the end of the newsletter.

Megan then showed a few slides of a *Pannychia moseleyi* specimen. Although this species had been seen by LACSD and described, the specimen that Megan examined was different looking in that it was white (versus, the normal purple that LACSD sees) and the podia looked slightly different. However, all present agreed, based on the ossicles, that it was a variable *P. moseleyi*.

Lisa Haney had brought an unusual ophiuroid specimen for us to examine. It was collected at B'03 trawl station 4110 from Orange County, at a depth of 150m. At first glance, with its flattened and spatualate arm spines, it appeared to be an *Ophiopteris papillosa*, though a closer look soon revealed that was not the case (the jaws told a different story). The jaw structure very clearly places this beast in the genus *Ophiacantha*, however, the arm spine morphology is yet to be like any known species in this group. This rather large specimen (roughly 1 inch disk diameter) was taken to the Los Angeles County Natural History Museum to be examined by Gordon Hendler. After much investigation and searching through various literature, an ID could not be established. Lisa will be designating this animal *Ophiacantha* sp. LA 1 and a voucher sheet will be distributed in the near future.

She also presented a cucumber, Phyllophoridae sp B that she could not place to genus. This specimen does not look externally similar to other known Phyllophorids from southern California. It is a large animal (measuring 6.5 cm), thin body wall, and has very short conical tube feet in double rows. The ossicles found in this animal are also unique. No tables were found in the body tissue or the introvert. Instead the animal is packed full of plates of all sizes that are located near the surface and can easily be seen without a prep mount. Supporting tables of various morphologies can be found in the tube feet and are distinct. A voucher sheet is attached.

Another animal that Lisa talked about was a familiar ophiuroid that had been surrounded by confusing nomenclature. Many people confused this animal with *Amphioplus hexacanthus*, because it had a scaled disk and forked arm spines. *Amphioplus hexacanthus* is a nomen dubium though. (Not a valid name due to lack of complete type material and inability to distinguish it as something different). Lisa explained that the type material for *A. hexacanthus* lacked disks but possessed forked arm spines. Without the disks and with the presence of forked arm spines, these specimens could not be distinguished as different from *Dougaloplus amphacanthus*. For this reason, *A. hexacanthus* was synonomized with *D. amphacanthus* (Hendler, 1996). With the information at hand at that time, the only known species to have forked arm spines, within this group of brittlestars, was *D. amphacanthus*, so the synonymy was appropriate. However, with recent information on this new species with a scaled disk and forked central arm spines, it is Lisa's recommendation that the synonymy be revoked and the name *Amphioplus hexacanthus* be designated as a nomen dubium. Either way, the name *A. hexacanthus* is unavailable and would not be appropriate to use. The forked arm spines are considered a species-specific character and are not part of the diagnosis for either of the two genera.

This new species, *Amphioplus* sp. LA1, is similar to both *A. strongyloplax* and *Dougaloplus amphacanthus* but may be distinguished easily from the two by the combined presence of a scaled disk **and** forked arm spines. To ensure that the presence or absence of forked arm spines were not related to growth stage, Lisa did an extensive review of the LACM collections to determine variability in arm spine morphology through all growth stages of *A. strongyloplax* and *D. amphacanthus*. In no observed specimens, of any size, were forked arm spines present in the collections of *A. strongyloplax*. In all individuals with a disk diameter of 3 mm or greater, forked arm spines were visible and spines present on the disk (even regenerated disks) for specimens of *D. amphacanthus*. With this information, Lisa feels strongly that *Amphioplus* sp. LA1 is a stand alone species and easily distinguished. A voucher sheet is just about complete and will be distributed shortly.

And finally, Megan had prepared a comparison sheet of *Dougaloplus amphacanthus* and *Dougaloplus* sp SD 1. Most attendees had already seen this sheet, but it is being attached at the end of the newsletter for those of you who have not.

In conclusion, Don Cadien talked about the Asteroid fauna of the B'03 trawls. In general, there was a low diversity as most of the trawls were shallow. One interesting find was *Odontaster crassus*. It looks similar to a "cookie cutter star", but has the distinctive feature of a large, spine like tooth at the apex of each jaw.

In the spirit of attaching voucher sheets, Megan has included her Phyllophoridae sp SD 1 sheet and is submitting, it at the end of this newsletter for SCAMITization as Phyllophoridae sp A. She also has a comparison sheet describing it side by side with *Havelockia benti*, which in Megan's opinion, it is not. If anybody is interested please contact her for that sheet.

NEW LITERATURE

At the September 2004 meeting a few articles were circulated for the attendees to examine. Most dealt with crustaceans, but Karr and Chu (1997) discussed a very basic issue: why are we monitoring the biota? Their explanation is well reasoned and a useful restatement of the value of biotic monitoring in ecological risk assessment. I find their approach a bit too rigid however. Repeatedly during the article the authors insist on focusing exclusively on changes resulting from anthropogenic impact. I think this is ill-advised. The effects of anthropogenic and natural stressors on a system are additive rather than unrelated, and it is very useful to consider them jointly. Karr is a very old hand at this, however, and has been instrumental in the conceptual development of monitoring methodology. His recommendations bear weight and should not be casually discarded. I suggest you read this paper and reach your own conclusions.

Last year's revision of the corophioid amphipod group, which came out at the beginning of the hyperactive sampling season for B'03 (and was set aside for later consideration), was brought up again. We will be devoting a meeting to this (Myers & Lowry 2003) in February 2005. It is important that all interested workers read, digest, consider, and decide how they feel about what the authors propose. We will conclude during next year's meeting what we will use of this revision in the SCAMIT list Ed. 5 and in other SCAMIT activities. Until then (i.e. in the B'03 Synoptic Data Review) we will not be adopting any of the proposed changes.

Two recent on-line publications were distributed for examination, both from the journal Organisms Diversity & Evolution (Berge 2003, and Malyutina 2003). The papers are available printed in the journal and in an expanded form in the Electronic Supplement to the journal. Berge reexamined the small amphipod genus *Stilipes* and proposed a new

species. Our local representative *S. distinctus* Holmes, 1908, is included in the key and briefly discussed. He refers readers to Shoemaker (1964) for a description of Holmes' species.

Malyutina performs major surgery on the large and heterogeneous munnopsid isopod genus *Storthyngura*, carving out three new genera and redistributing species among them. In this paper in particular one should plan on downloading the electronic supplement, as the printed version is only a brief summation and lacks the detail necessary to evaluate the revision fully. Unfortunately one of her proposed new genera (*Vanhoeffenella*) was a homonym of an earlier name in Foraminifera. She has replaced it with *Vanhoeffenura* (Malyutina 2004).

Boxshall (2004) provides the kind of detailed and comprehensive view of an issue one might expect of him. The subject is both large and contentious: evolution of arthropod limbs. Of course the available fossil evidence is marshaled along with observations of recent organisms. For anyone at all interested in the subject this is a very valuable (if somewhat pithy) read.

Two papers not circulated at the meeting are added here, Prenter et al (2004) and Pitombo (2004). There has been some confusion over the reaction of parasites to pollution, or perhaps no confusion, just a variety of responses in different taxa. The same breadth of possible responses and interpretations seems available when considering the specific case of parasites in invasive species (Prenter et al 2004). Given our increasing interest in the ecology of local invasives, we need to ponder the parasite/host relationships in the invaders we have seen so far. This paper will help rationalize our observations and broaden our conceptual approach to the issue.

Barnacle taxonomy has metamorphosed severely since the convenient treatment offered in Light's Manual (the old third ed., not the new one). Pitombo (2004) provides the results of his recent phylogenetic analysis of the Balanidae and addresses many of these changes. This is a morphology based phylogeny which does not consider molecular evidence. Pitombo introduces and codifies a number of new or underutilized characters having to do with plate coupling, tergal fine structure, and details of plate radial sutures. As a bonus he provides an appendix listing all currently valid names in the family. It was here, for instance, I learned that *Balanus pacificus* was now more correctly *Paraconcavus pacificus*.

A NEW CUCUMBER "FRIEND" *PARASTICHOPUS* SP A

- Lisa Haney, LACSD

Four known species of the genus *Parastichopus* (Clark, 1922) are regularly found in the waters of the northeast Pacific, (*P. californicus* (Stimpson, 1857), *P. johnsoni* Theel, 1886, *P. parvimensis* (H.L. Clark, 1913) and *P. leukothele* Lambert, 1985). *P. californicus* is the species of this genus most often collected by the LACSD off the Palos Verdes Peninsula. However, in 1998, the LACSD collected an unusual holothuroid from a trawl at 305 meters as part of our regular monitoring effort. At first inspection, the animal looked as if it may have been partly digested. The specimen was white in color, three inches in length, and its body was flaccid. It also lacked prominent dorsal papillae and had a "fluffy" appearance. The animal was vouchered and taken to the lab for further examination. Also during the Bight '98 surveys, three more individuals, whose appearance was very similar to the initial one collected, were taken off the east end of Catalina Island at 80 meters and vouchered with SCCWRP. These specimens possessed tube feet only on the ventral surface, an

elongate body and peltate tentacles. The specimens were all assigned to the genus *Parastichopus* and recorded as *Parastichopus* sp. A.

In 2002, an additional specimen of this strange holothuroid was taken from the same 305 meter station in the LACSD survey grid. This second individual provided an opportunity for further examination and comparison in the laboratory with the first specimen collected. Full dissections and ossicle mounts were undertaken and revealed that both animals possessed distinguishing characters of the genus *Parastichopus*, with a rudimentary and fragile ring canal and characteristic plates, buttons, and C-shaped rods. All local *Parastichopus* taxa have similar ossicle morphology, which has made it difficult to determine species on ossicle characters alone. Differences in body morphology have been well documented though variation has been recorded among life-stages, also making identifications at times difficult. Lambert (1985), with his description of *P. leukothele*, spent much time resolving this issue by measuring various ossicle morphometerics. His table of ossicle differences between the local taxa allowed comparison with ossicles of *Parastichopus*. sp. A. Slide mounts of the two LACSD specimens were made and over sixty ossicles per individual were evaluated. Their ossicle measurements were close in range with one another but did not match any species outlined in Lambert's 1985 review of the genus.

During sampling for Bight'03, nine additional specimens from 454 meters on the slope of the San Pedro Sea Shelf were vouchered and sent to SCCWRP. Though white and flaccid like the other individuals, several of the nine specimens possessed tiny pink dots while others had small black dots on the surface of the epidermis. This pigmentation was quickly lost once preserved. Ossicle measurements again fell within the same range as the previously sampled specimens. More individuals have recently been identified from Bight '03 samples off Anacapa Island at 80 meters and Orange County at 215 meters. Specimens have a recorded depth range of 80 – 454 meters and a geographical range as far north as Anacapa Island, west to Catalina, and south to Orange County.

Digital images of ossicle morphologies were captured and a detailed voucher sheet constructed and subsequently distributed over both the SCAMIT and Bight '03 list servers for comment and review. To date, no other monitoring agencies have reported such animals. Digital images and a discussion sheet were also sent to Dr. Phil Lambert for comment. He concluded, based on the information given to him and without observation of an actual specimen, that the unusual cucumbers seem to be an unrecognized species of *Parastichopus*.

Since 1998 this white cucumber has been documented in the LACSD database and the SCAMIT species list as *Parastichopus* sp. A, without a formal voucher sheet. To resolve this, per SCAMIT guidelines, the taxonomic information regarding this taxon has been distributed for discussion, a voucher sheet made, and now published recognition of this taxon in the SCAMIT newsletter makes the process complete. Detailed comparisons and digital images are provided within the composed voucher sheet and it is published as a hardcopy in this newsletter. The voucher sheet will also be made accessible as a PDF on the SCAMIT website. A CD with information sheets, a voucher sheet, and with additional digital images is also available to any agency that would like to request one. Contact Lisa Haney at LACSD for more information.

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Volumes 1 - 4 (compilation)	$ 30.00
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The SCAMIT newsletter is published monthly and is distributed freely through the web site at www.scamit.org**.** Membership is $15 for the electronic copy available via the web site and $30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is $60. All new members receive a printed copy of the most current edition of "A Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates … in the Southern California Bight." The current edition, the fourth, contains 2,067 species with partial synonyms. All correspondences can be sent to the Secretary at the email address above or to:

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C/O The Natural History Museum, Invertebrate Zoology
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Cucumaria sp. A SCAMIT Vol.23, No.5

Family: Cucumariidae

Synonymy: none

Date Examined: 25 August 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS **CUCUMARIA:**

1. Cucumber shaped.
2. Body wall soft and pliable.
3. Tentacles 10-20. 10 dendritic tentacles equal in size or 2 ventral tentacles smaller.
4. Tube feet in 5 distinct rows or scattered all over body.
5. Calcareous ring with anterior processes only.

IDENTIFYING CHARACTERS OF SPECIES ***A***:

1. Tube feet in five distinct rows only.
2. Color white/light yellow.
3. Supporting tables in tube feet variable but each with one large central hole in spire and irregular shaped projections emerging on top.
4. Irregular shaped supporting rods prevalent
5. Irregular and lattice shaped body wall plates present.

RELATED SPECIES AND CHARACTER DIFFERENCES

The body wall plates are irregular in shape and perforated with large holes and scalloped edges, similar to those depicted for *Cucumaria frondosa* japonica, but without bumps on the surface. The ring canal, however, is most similar to the illustrations for *Cucumaria piperata*.

DEPTH RANGE:

102.3 meters

HABITAT AND DISTRIBUTION:

Taken from the Channel Islands, sand substrate

LITERATURE:

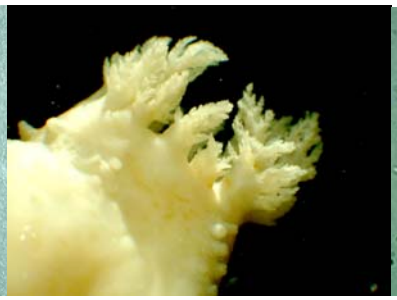
Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Cucumaria sp A

Haney 2004 §

This animal is white/yellow and 5.5 cm in length. There are ten dendritic tentacles of various sizes. The ring canal is characteristic of Cucumariidae and the specimen has retractable tube feet that look like dimples when retracted.

Whole Animal



Tentacle Mass

Body Wall Plate

Various styles of tube feet supporting tables

Various morphologies of plates found in the body wall

Parastichopus sp. A SCAMITVol. 23, No.5
Group: Stichopodidae

Synonymy: Same as *Parastichopus sp. A* in SCAMIT list from 1998 Date Examined: 25 September 2003
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS ***PARASTICHOPUS***:

1. Peltate tentacles.
2. Tube feet located only on the ventral side.
3. Body of animal elongate and tapering at both ends.
4. Gonads present in two tufts.
5. Dorsal side usually, but not always, with papillae.
6. Ossicles are predominately present as tables, C-shaped rods, and buttons

IDENTIFYING CHARACTERS OF SPECIES ***A***:

1. Body elongate, almost cylindrical, several times longer than broad.
2. Tentacles nearly equal in size, average twenty in number, large circular discoidal ends.
3. Ossicles are similar to all species within the genus *Parastichopus* and are represented by tables, C-shaped rods, and buttons. (Number of holes in tables varies, as is the case in all *Parastichopus* species).
4. Color in alcohol and in live material is bright white, with small dots of pink or black on the surface, terminal parts of the tentacles and pedicels yellowish.
5. Terminal part of the tentacles covered with minute papilla-like projections
6. Calcareous ring rudimentary and fragile.
7. Body wall flaccid with no large extending papillae or warts.

RELATED SPECIES AND CHARACTER DIFFERENCES

Parastichopus sp. A differs from *P. parvimensis*, *P. californicus*, *P. johnsoni*, and *P. leukothele* in overall body size, shape and color, ossicle morphometrics, absence of large or noticeable tubercles dorsally and lacking musculature of the body wall.

Species Name	Diameter of disk (μm)	No. of holes in disk	No. of spines on spire	Height of spire (μm)
P. californicus	82.5 ± 10.8	9.7 ± 3.8	15.1 ± 4.1	82.0 ± 9.7
P. johnsoni	138.3 ± 17	18.3 ± 3.3	16.3 ± 4.4	107.5 ± 11.9
P. leukothele	113.4 ± 14.5	16.6 ± 6.3	8.1 ± 2.3	96.6 ± 13.4
P. parvimensis	54.8 ± 4.5	5.9 ± 1.4	4.7 ± 1.7	47.7 ± 5.2

Taken from Lambert, 1986

P. sp. A	≈ 55	22 ± 6	≈ 12	≈ 65

DEPTH RANGE: 80 - 454 m

HABITAT AND DISTRIBUTION: Taken from the Palos Verdes Peninsula in Los Angeles, California within the slope environment and one specimen is know from the east end of Catalina Island. Muddy substrate.

LITERATURE:

Lambert, Philip. 1985. Northeast Pacific holothurians of the genus *Parastichopus* with a description of a new species, *Parastichopus leukothele* (Echinodermata). Canadian Journal of Zoology ; Vol 64: 2266-2272.

CLASS HOLOTHOROIDEA *Prepared by Lisa Haney, LACSD*

Subclass Aspidochirotacea

Diagnosis. 10-30 leaf like or shield like oral tentacles, lacks retractor muscles, tube feet present. (e.g., *Enypniastes, Holothuria, Isostichopus, Parastichopus, Pelagothuria, Scotoplanes, Stichopus*)

Order Aspidochirotida Grube, 1840

Diagnosis. Tentacles peltate, 15-30 in number. Respiratory trees present. Gonads in 1 or 2 tuffs. Ossicles usually include tables.

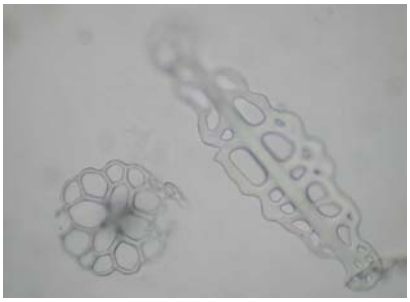
Family Stichopodidae Haeckel, 1896

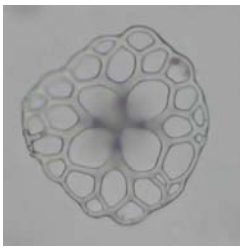
Diagnosis. Peltate tentacles, tube feet ventral, tapered ends, gonads in 2 tuffs, dorsal side usually with papillae or warts. Ossicles as tables and sometimes C-shaped rods and buttons.

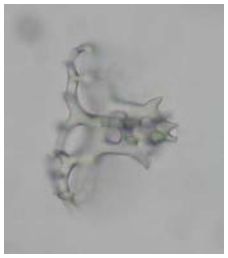
Parastichopus sp. A **(SCAMIT, 2004)**

General Body Design:

General Ossicle Morphology:







Parastichopus sp. A (SCAMIT, 2004)

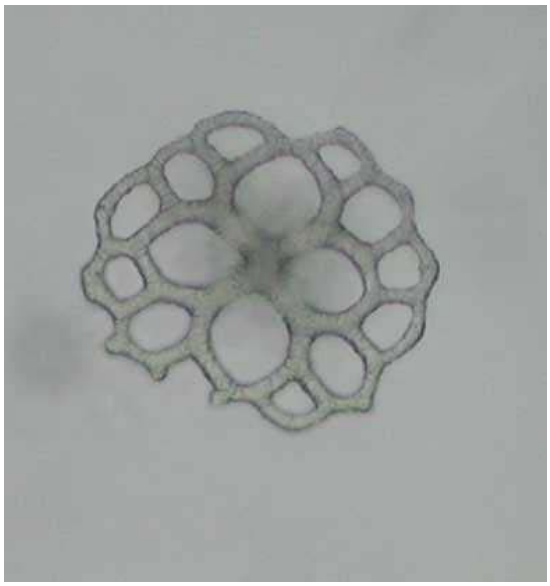


Fig. 1: Calcareous plate (Enlarged)

Fig. 2: Calcareous plate (Enlarged)

Fig. 3: Plates

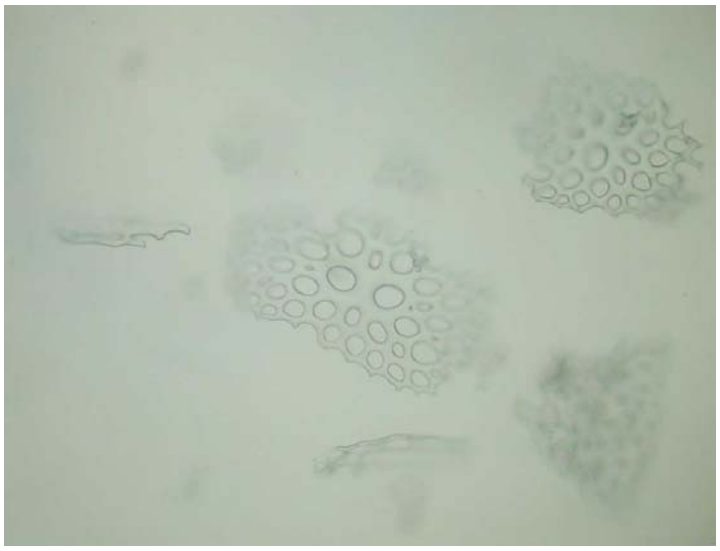


Fig. 4: Supporting tables

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Parastichopus sp. A (SCAMIT, 2004)

Fig. 1: Plates and Button

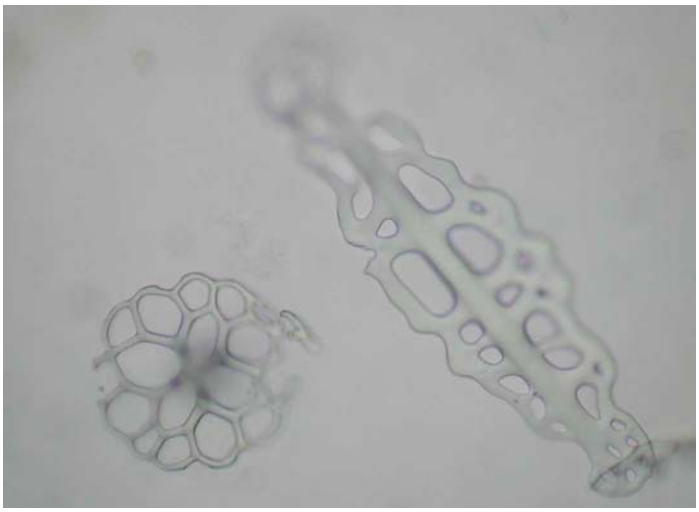


Fig. 2: Plates and Button (Enlarged)

Fig. 3: Side view of plate spires

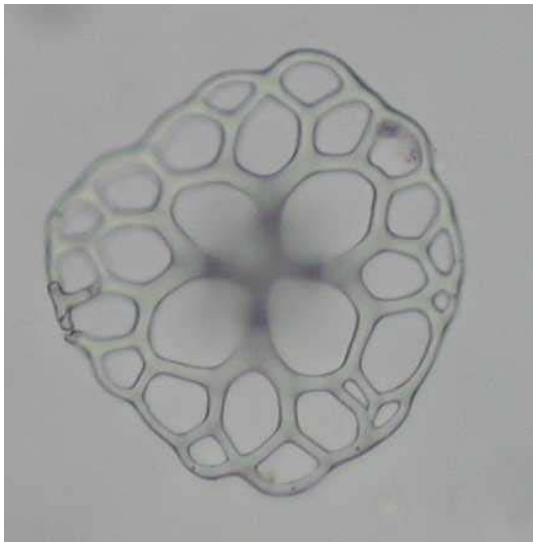


Fig. 4: Calcareous plate (Enlarged)

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Parastichopus sp A.

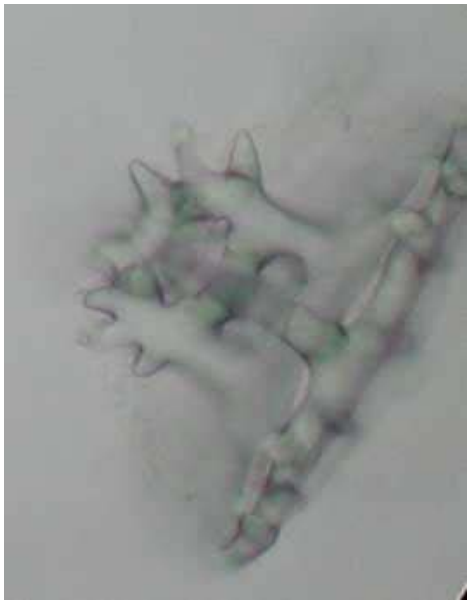


Fig. 5: Side view of spire

Fig. 6: Side view of spire

Fig. 7: Side view of spire

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Fresh Specimens

(in good condition)

Pentamera sp. C SCAMIT Vol.23, No.5
Family: Phyllophoridae

Synonymy: none Date Examined: 25 August 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE GENUS **PENTAMERA:**

1. U-shaped.
2. Body tapers at posterior end.
3. 10 dendritic tentacles (2 ventral tentacles smaller).
4. Tube feet non-retractable in 5 distinct double rows.
5. Calcareous ring with long processes divided into pieces.

IDENTIFYING CHARACTERS OF SPECIES ***C***:

1. Body white with yellow tube feet rows and a somewhat wrinkly appearance.
2. Five double rows (that are widely separated) of tube feet with no tube feet scattered in between.
3. Retractable tentacles.
4. Supporting tables in tube feet.
5. Only plates in the body wall and introvert, large and small.

RELATED SPECIES AND CHARACTER DIFFERENCES

Looks externally similar to *Pentamera pseudocalcigera* though much more "wrinkly" in appearance. Supporting tables in the tube feet resemble those of *Pentamera beebei* depicted in Deichmann, 1941 Pl. 15 #5 and #6, although the body wall tables are very different. The body wall plates look similar to *Pentamera populifera* and *Pentamera lissoplaca*

DEPTH RANGE:

305 meters

HABITAT AND DISTRIBUTION:

Palos Verdes Pennisula. Olive silt substrate.

LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Deichmann, 1941. The Holothurioidea Collected by the Velero III during the Years 1932 to 193. Allan Hancock Pacific Expeditions Vol.8 (3): 158-159.

Pentamera sp. C

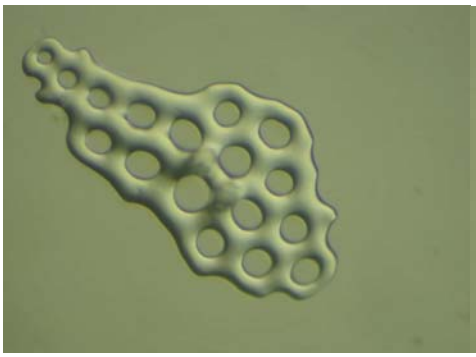
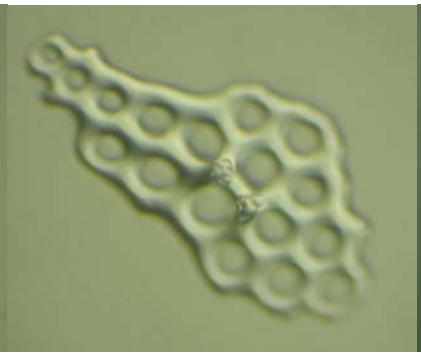
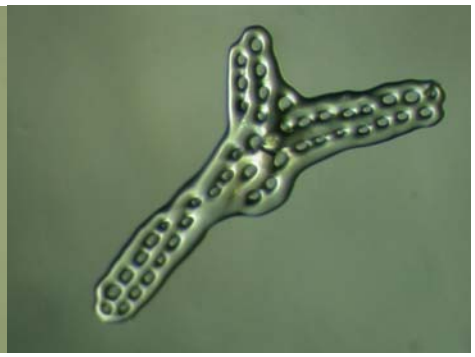


Table Plate in Body Wall



Spires on a Table Plate



Body Wall Plate

Variations of supporting tables in tube feet

Tentacle

Whole Animals

Digital images taken by Lisa Haney Los Angeles County Sanitation Dsitricts 2004

Phyllophoridae sp. B SCAMIT Vol. 23, No.5
Family: Phyllophoridae

Synonymy: none Date Examined: 25 July 2004
Vouchered By: Lisa Haney LACSD

DIAGNOSTIC CHARACTERS OF THE FAMILY **PHYLLOPHORIDAE:**

1. U-shaped.
2. Body tapers at posterior end.
3. 10 dendritic tentacles (2 ventral tentacles smaller).
4. Tube feet non-retractable in 5 distinct double rows.
5. Calcareous ring with long processes divided into pieces.

IDENTIFYING CHARACTERS OF SPECIES ***B***:

1. Body white/cream.
2. Five double rows of tube feet with tube feet also scattered in between rows.
3. Retractable tentacles.
4. Supporting tables in tube feet only (diverse morphologies).
5. Only plates in the body wall and introvert, plates are various sizes and shapes.

RELATED SPECIES AND CHARACTER DIFFERENCES

This specimen does not look externally like any of the other known Phyllophorids from southern California. It is a large animal (measuring 6.5 cm), thin body wall, and has very short conical tube feet in double rows. The ossicles found in this animal are also unique. No tables were found in the body tissue or the introvert. Instead the animal is packed full of plates of all sizes that are located near the surface and can easily be seen without a prep mount. Supporting tables of various morphologies can be found in the tube feet and are distinct.

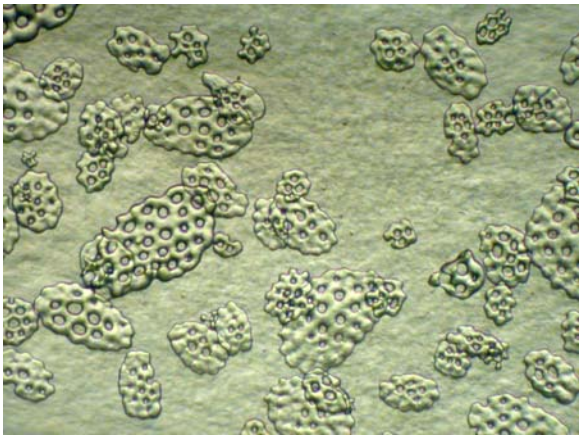
DEPTH RANGE: 56m

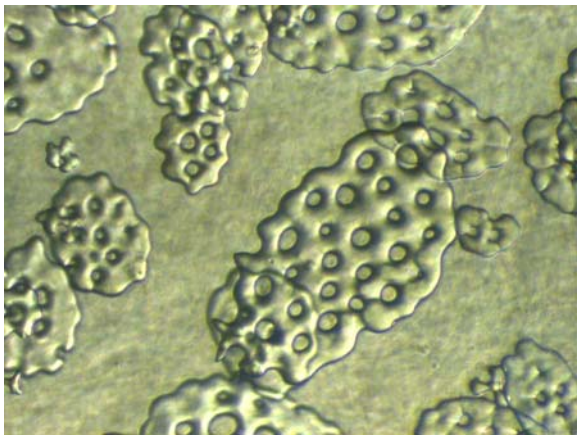
HABITAT AND DISTRIBUTION: Channel Islands

LITERATURE:

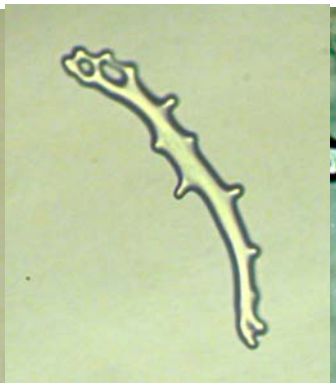
Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

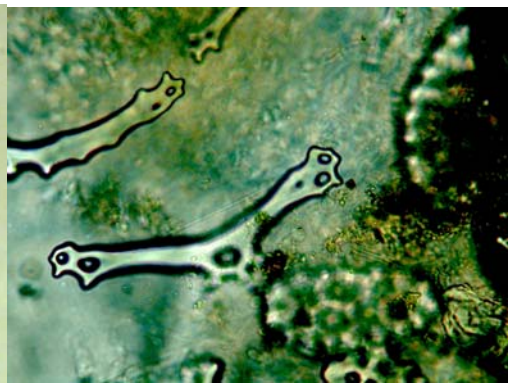
Phyllophoridae sp. B

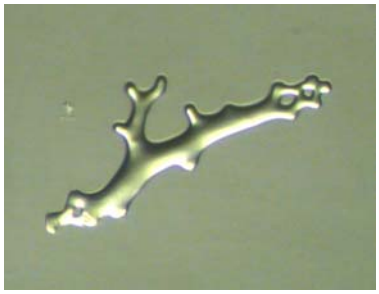




Body Wall Ossicles







Diversity of Tube Feet Supporting Tables

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Phyllophoridae sp. B

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Synallactes alexandri SCAMIT Vol. 23, No.5
Group: Synallactidae

Synonymy: none

Date Examined: 25 September 2003
Vouchered By: Lisa Haney LACSD

IDENTIFYING CHARACTERS:

1. Body elongate, almost cylindrical, and similar in form to Pannychia.
2. Peltate tentacles nearly equal in size, average twenty in number, large circular discoidal ends.
3. Ossicles are in the form of tables with long thin spires and a needle like opening towards the top. Also present are C-shaped supporting rods in the tentacles and small club-shaped ossicles in the tube feet.
4. Color in alcohol and in live material is brown/grey.
5. Terminal part of the tentacles covered with minute papilla-like projections
6. Smooth dorsal body wall with small projections/bumps.
7. Body wall rigid and well formed with large tube feet located ventrally only.
8. Calcareous ring very poorly calcified with neither long anterior or posterior extensions.

RELATED SPECIES AND CHARACTER DIFFERENCES:

The only reported Synallactid from southern California is *Synallactes challengeri* of which there is no way this specimen could be confused. *Synallactes challengeri* has long pointed papillae dorsally and the ossicle tables are different in form, though the spires of both of these animals are similar.

DEPTH RANGE: Taken from 500 m

HABITAT AND DISTRIBUTION: Taken from the Palos Verdes Peninsula in Los Angeles, California within the slope environment. Muddy substrate.

LITERATURE:

Lambert, Philip. 1997. Sea Cucumbers of British Columbia, southeast Alaska and Puget Sound. UBC Press.

Ludwig, 1893. Ludwig, H. 1893. Vorläufiger Bericht über die auf den Tiefsee-Fahrten des "Albatross" (Frühling, 1891) im ostlichen Stillen Ocean erbeuteten Holothurien. Zoologischer Anzeiger 16;177-186 (May, 1893). Abstract, J.R. Micr. Soc. 1893, pp.484-486.

Solis-Marin, 2004. Revision of the Synallactidae. In press.

CLASS HOLOTHOROIDEA

Prepared by Lisa Haney/LACSD

Subclass Aspidochirotacea

Diagnosis. 10-30 leaflike or shieldlike oral tentacles, lacks retractor muscles, tube feet present. (e.g., *Enypniastes, Holothuria, Isostichopus, Parastichopus, Pelagothuria, Scotoplanes, Stichopus*)

Order Aspidochirotida Grube, 1840

Diagnosis. Tentacles peltate, 15-30 in number. Respiratory trees present. Gonads in 1 or 2 tuffs. Ossicles usually include tables.

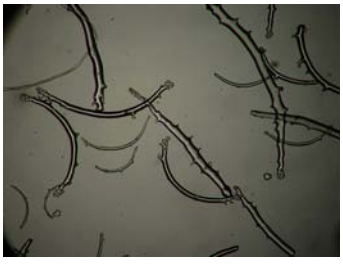
Family Synallactidae

Diagnosis. Body with tube feet in rows ventrally, papillae dorsally. Body wall soft and pliable. Twenty equal, peltate tentacles. Tentacle ampullae absent. Retractor muscles absent. Rete mirable absent. Posterior mesentery attached to right ventral body wall. Gonad single tuft, of double tuft. Cuvierian organs absent. Calcareous ring simple; not a mosaic of smaller pieces. Typical skin ossicles: Tables or C-shaped bodies.

Synallactes alexandri

General Body Design:	General Tentacle Morphology:

Larvae Morphology:	General Ossicle Morphology:



General Ring Canal Morphology:

Synallactes alexandri

Fig. 1: Tube feet ossicles

Fig. 2: Body wall ossicles

Fig. 3: Tentacle mass

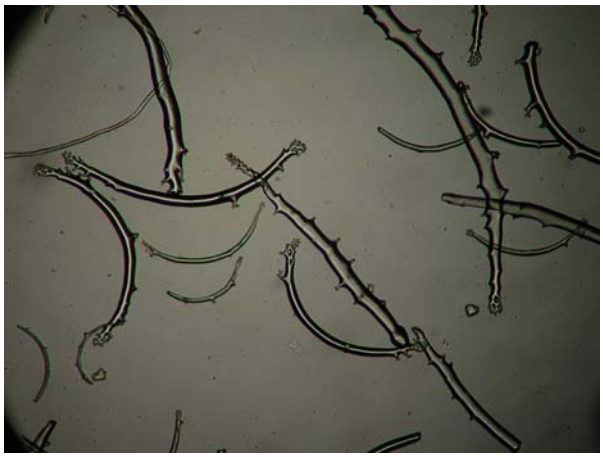


Fig. 4: Tentacle ossicles

Digital Images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA

Synallactes alexandri

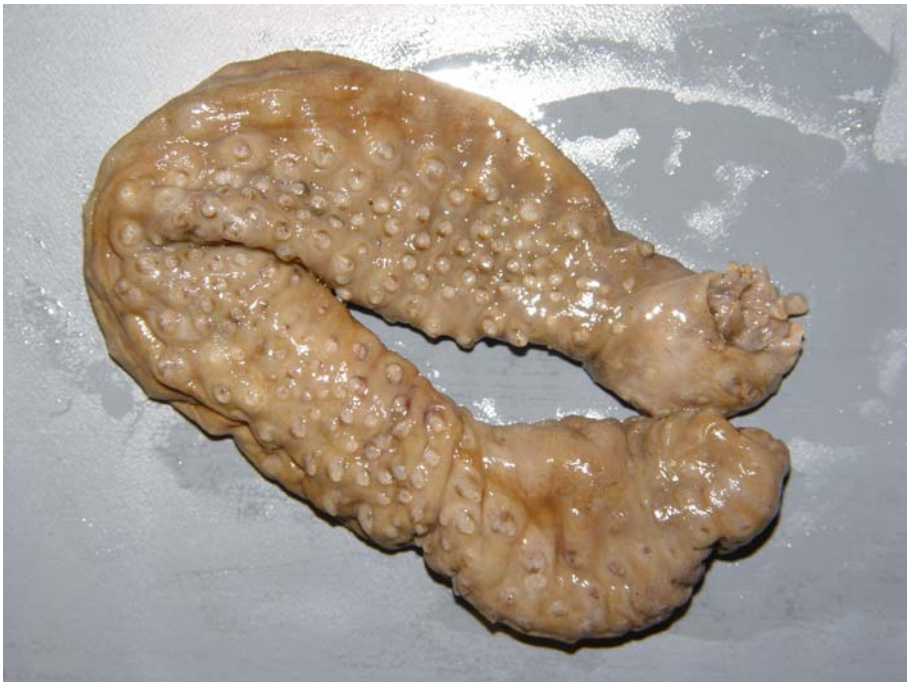
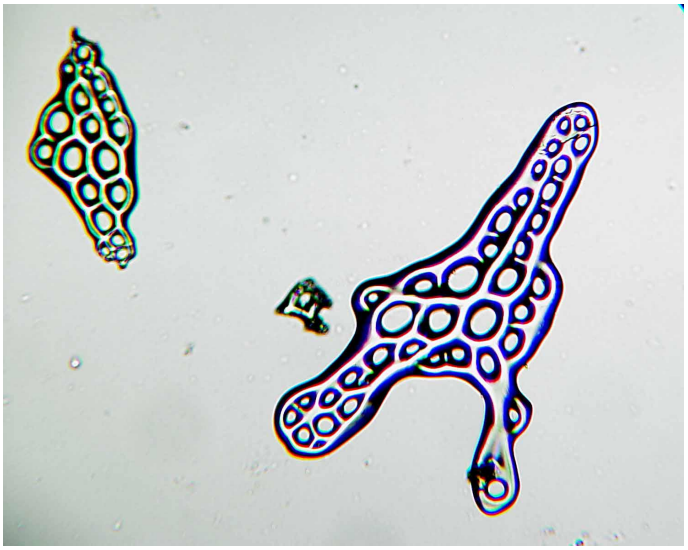
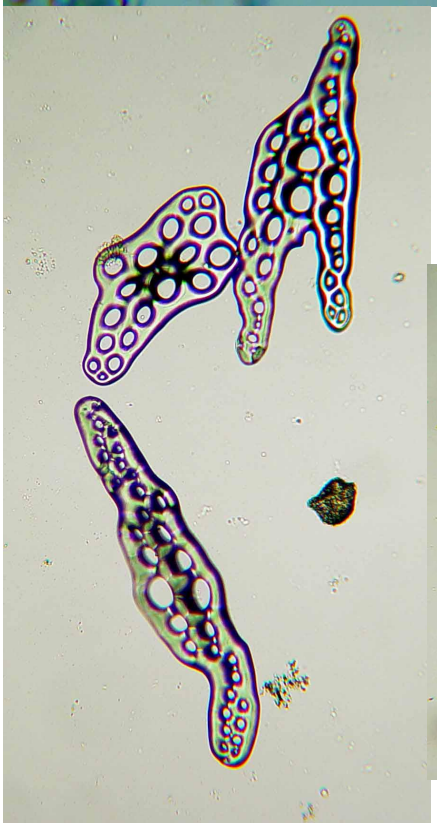


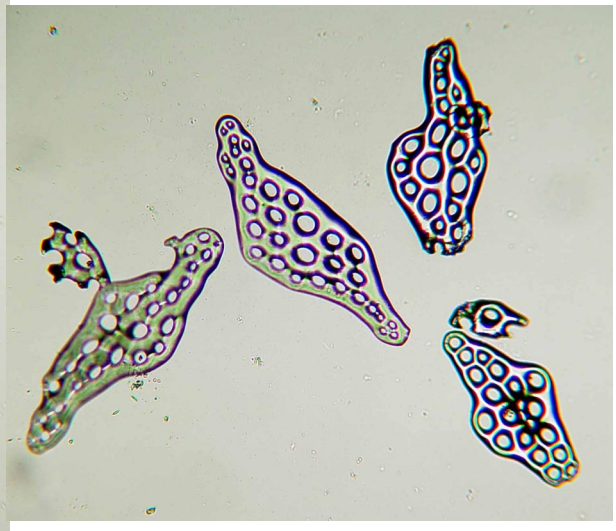
Fig. 1: Ventral view

Fig. 2: Dorsal view

Digital images taken by Lisa Haney, Los Angeles County Sanitation Districts, Carson, CA







B'03 station 5002
1 August 2003,
319m - M. Lilly 2004

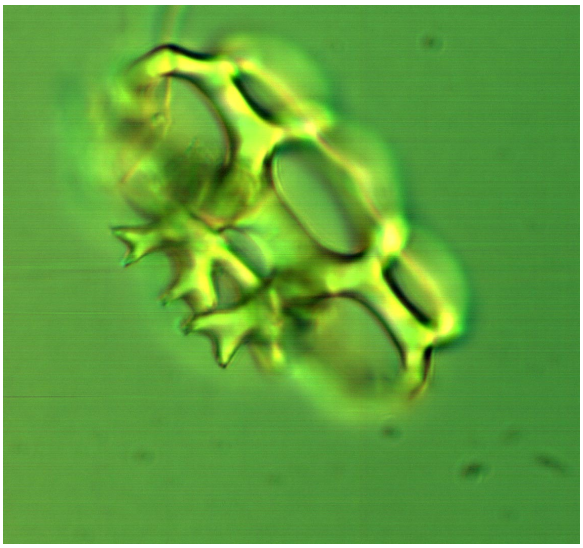
Phyllophoridae sp A (= Phyllophoridae sp SD 1) **SCAMIT Vol 23 No. 5**

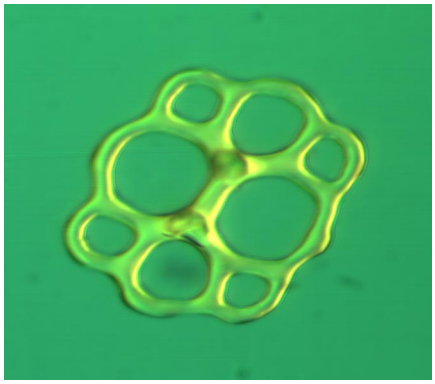
M. Lilly

Description:
Color is mostly white with slight tinge of color at anterior and posterior ends (could be sediment);I have since discovered one at station I-6 that had almost an orangish tinge to the tube feet (ferric oxide?).
Five bands of podia (two rows per band)
Long extensions on calcareous ring

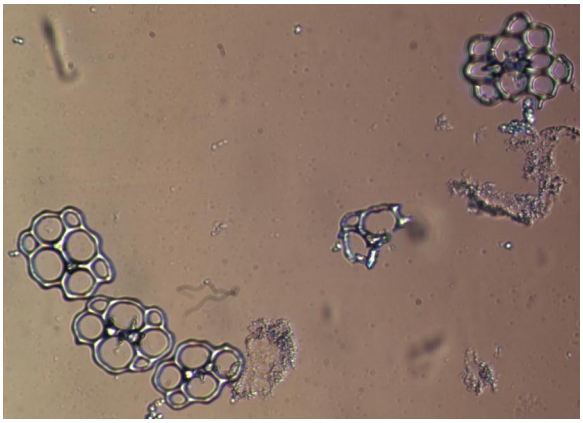
Collected from: ITP Stations, I-21(1), 7-5-01, 134 ft. and, I-6(2) 1-02, 83 ft. It is occuring at the coarse, relict red sand stations.

Comments: Looks similar to our common *Pentamera populifera* at first glance (although gestalt is subtly different). However, an ossicle mount will reveal tables of a different nature. The tables are much more delicate in appearance, often with four large holes at the center. To date I have been unable to find any supporting tables.
Ossicles shown below are all from body wall/podia mounts.





20x



20x

Dougaloplus amphacanthus
note the sharp-tipped, evenly tapering, disk spines

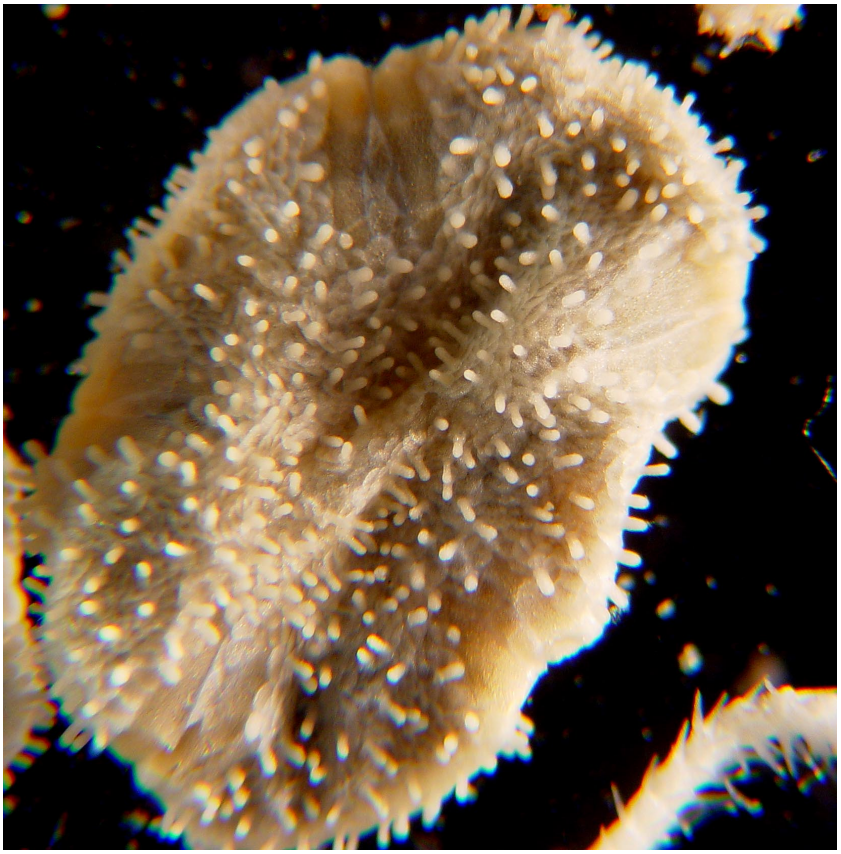
***Dougaloplus* sp SD 1**
note the blunt-tipped, "base-ball-bat" shaped disk spines, i.e., they can taper in the middle of the spine but tend to flare towards the apical tip.

Dougaloplus amphacanthus
B'03 station 4581, 169m

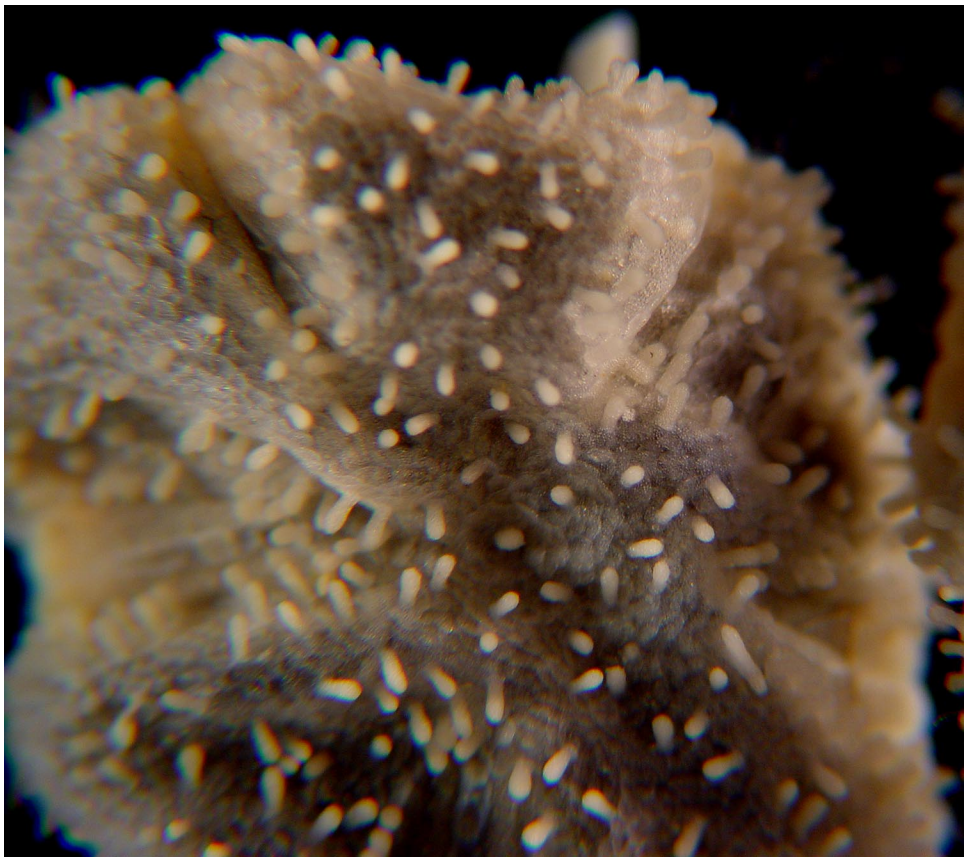
These species have been known to co-occur in our samples and actually both species were collected at B'03 station 4159, but a better example of *Dougaloplus amphacanthus*, from B'03 station 4581, was used for comparative purposes. For all intents and purposes the two species look alike with the exception of the shape of the superficial disk structures (caveat - the author has not done an exhaustive, pain-staking, detailed examination of arm spines etc., perhaps one day...). Be warned that occasionally we see animals with disk spines which fall between these two types; not evenly tapering and pointed but not completely blunt and flared either (hybridization?). Good luck.

M. Lilly 4/04

Dougaloplus sp SD 1



B’03 Station 4159, 71m



SCUM IX

January 22, 2005
8:00 AM – 3:30 PM
At the City of San Diego's Environmental Monitoring &
Technical Services Laboratory
2392 Kincaid Road
San Diego, California

The ninth annual meeting of the Southern California Unified Malacologists will be held this year at the City of San Diego's new Environmental Monitoring and Technical Services Laboratory building (see attached map). This state of the art building houses the City's Ocean Monitoring Program. The co-sponsor for this years event will be the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT).

SCUM is an informal association of southern California professional, amateur, and student malacologists and paleontologists who are active or interested in molluscan research. The purpose of the annual gatherings is to facilitate contact and keep one another informed of research current activities and opportunities. There are no dues, no officers, and no publications. SCUM is patterned after the Bay Area Malacologists (BAM), which is hosted at different institutions each year.

The doors will open at 8 AM for donuts and coffee. The meeting will begin about 9 AM. Lunch can be delivered to the meeting venue at a small cost to the participants. There is nothing within walking distance. There is very limited refrigerator space if you wish to bring your own.

The agenda:*

8:00 – 9:00 AM Meet and greet
9:00 – 11:30 AM Introductions and short informal presentations
11:30 – 12:00 AM City's Ocean Monitoring Program presentation and tour of the facility
12:00 – 1:30 PM Lunch and Prize drawings (Prizes provided by SCAMIT)
1:30 PM Group Picture
1:30 – 3:30 PM Continue presentations

For presentations there will be a video projector and PC laptop available for those of you with PowerPoint presentations. A 35mm slide projector, VHS video player and overhead projector will also be available. For more information contact:

Ron Velarde (619)758-2331 Rvelarde@sandiego.gov
Kelvin Barwick (619)758-2337 Kbarwick@sandiego.gov

*subject to change

City of San Diego's
Environmental Monitoring & Technical Services Division Laboratory
2392 Kincaid Road
619-758-2300

Turn right, just pass this sign, at McCain Road.

From I5 going south or I8 going west
take the Rosecrans St. exit

From I5 going north
take I8 west to Nimitz Blvd.

ROSECRANS ST.
VONS
NIMITZ BLVD
NORTH HARBOR DRIVE
Spurance St.
Kincaid Rd.
McCain Rd.
TERMINAL 2
San Diego Interational Airport
Lindberg Field
Spanish Landing Park
U-turn
Harbor Island
SAN DIEGO BAY
N