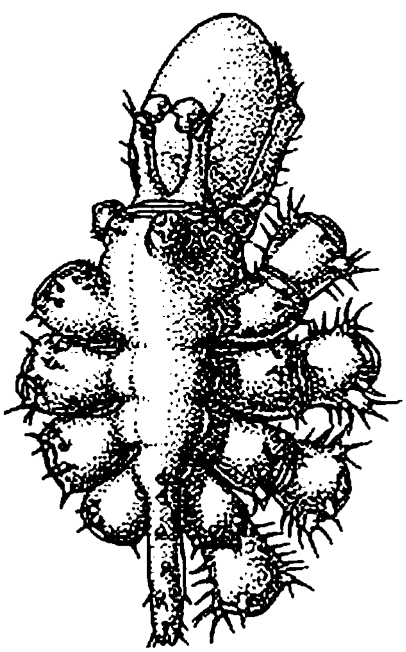
July, 1997 SCAMIT Newsletter Vol. 16, No.3

NEXT MEETING:	Review of MMS Atlas vols. 10-11/*Amphipacifica* 2(3)
GUEST SPEAKER:	Discussion Leader- Don Cadien
DATE:	25 Aug 1997
TIME:	9:30am - 3:30pm
LOCATION:	MEC Analytical Systems 2433 Impala Drive, Carlsbad



Achelia megova (Hilton 1942) from Child 1995

AUGUST 25 MEETING

We will critically review and examine the two newest entries in the MMS *Taxonomic Atlas of the Santa Maria Basin and Western Santa Barbara Channel* series, Volumes 10 and 11. Decapods, pycnogonids, mysids, cumaceans, isopods, and tanaids are covered in these two new publications. In several cases we have had advance copies of most of the contents, but there were some changes from the drafts in the final publications. Please test keys, examine descriptions, scrutinize bibliographic entries, etc. so we can catch and correct any errors which have made it to publication. We will also examine the two monographs which comprise *Amphipacifica* 2(3), the last issue!

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SIC TRANSIT...

A number of our older colleagues are no longer with us, and the rate of loss seems sadly to be accelerating. We have commented briefly in the past on the lost of a few major figures, here are two more.

Polychaetologists have lost a valued colleague with the recent death of Dr. David Kirtley. Dr. Kirtley was affiliated with the Florida Oceanographic Society and the Harbor Branch Oceanographic Museum in Fort Pierce, Florida. He began his research career as a geologist where he discovered an interest in sabellariids while working on his doctoral dissertation ("Geological Significance of the Sabellariidae" - Florida State Univ., 1974). He had a great enthusiasm for this group of polychaetes and studied sabellariids from all over the world. Although he made numerous contributions over the years he will be best remembered as author of his recent sabellariid monograph (Kirtley 1994). A number of his colleagues have dropped a line to the Annelida Discussion group to express their regrets and share memories of him. Those interested in further information about Dr. Kirtley or his life should review these contributions.

Dr. Jan Stock died very suddenly early this year. I was quite unaware of this until it was cited in a letter as one of the portents causing Dr. E. L. Bousfield to put away his microscope and end a hughly productive research career. John Holsinger provides a brief obituary for Dr. Stock in *Amphipacifica* 2(3).

I was privileged to meet and talk with him on an earlier sad occasion, the J. L. Barnard Memorial meetings at the Smithsonian Institution in 1992. Even in that brief meeting it was apparent that he was a man of rare accomplishment and encyclopedic knowledge of crustaceans. Although he is no longer able to grace such gatherings, he left behind a large number of erudite professional publications which will continue contributing to the work of other researchers. I had hoped to collaborate with him in examination of ingolfiellid amphipods from Alaska as we had discussed at our meeting, but waited too long and missed my chance. He contributed to many areas, but most of his work concerned pycnogonids, relict cave faunas and their biogeography, or copepods. - Don Cadien

AMU/WSM MEETING

The American Malacological Union/Western Society of Malacologists Combined Annual Meeting was held at the Radisson Hotel, Santa Barbara, 21-27 June. A symposium on Deep-Sea mollusks, and contributed paper sessions on Cephalopods of the North Pacific, and Phylogenetic Systematics were the major points of interest. President Ron Velarde was present for the entire meeting, member Megan Lilly caught the Cephalopod Symposium, and Vice-President Don Cadien slipped in just for the last day. Ron is preparing a report on the meeting for a future newsletter. Megan will also have an article for us a bit later, relating her experiences after-hours with visiting cephalopod workers from Russia and Japan.

One of the features of such meetings, in addition to the talks and the meetings with colleagues, is information on the availability of resources. This time an order list for back issues of the *American Malacological Bulletin* was encountered (see attachment). Apparently all of the issues to date are still available.

EDITOR'S NOTE

At the last meeting it was noted that the New Literature section of the Newsletter seems always to treat matters of interest to the editor. An accurate observation. I would be happy were it otherwise! As has been mentioned several times before, the breadth of coverage in the newsletter is totally dependant on what is made available. If none of the other members submit materials for inclusion, the result will of necessity be restricted to the interests and opinions of the editor. I would be delighted to receive any citation accompanied by brief review or comment on content from any member as long as it pertains to the joint interests of some portion of the membership. Received items will be included under New Literature and will be attributed to the submitting member. I would particularly enjoin members who find the current selections little to their liking to change the balance by submitting their own choices.

NEW LITERATURE

A new publications series has been inaugurated at the Santa Barbara Museum of Natural History paralleling the Contributions in Science series of the Natural History Museum of Los Angeles County: it's title - Contributions in Science. The first issue in this new series of what are essentially occasional papers is Checklist of the Marine Bivalves of the Northeastern Pacific Ocean (Coan and Scott 1997). This is a brief prequel to the monographic volume Bivalve Seashells of Western North America (Coan, Scott, and Bernard in press) due out this fall. The latter will contain illustrations and descriptions as well as tabular keys to all the bivalves known from the northeastern Pacific.

The checklist provides the taxonomic hierarchy used in the upcoming monograph, and a listing of all the taxa which are reported from the NEP which are currently considered valid. This is very helpful, and has a number of differences from the existing SCAMIT Ed. 2 list. Comments on some changes are provided by 130 footnotes. Ordering information is attached.

Two recent articles on gastropods are pertinent; one to a local species (Miller 1996), and one to the phylogeny of the group (Harasewych et al 1997). Miller describes a new species of the dorid nudibranch genus *Geitodoris* from New Zealand, and reviews the genus - commenting on its diagnosis and nomenclatural history. The local species *G. heathi* is briefly discussed, and its placement in *Geitodoris* reaffirmed.

Harasewych *et al* report on their analysis of the phylogeny of pleurotomariids based on 18S rDNA and cytochrome c oxidase I data. Since their analysis included two chitons and a cephalopod (*Nautilus*) as outgroups, 2 patelligastropod, 2 cocculiniform, and 2 neritopsine species, 5 caenogastropods, 7 heterobranchs, and 4 vetigastropods in addition to 7 pleurotomariids, the resulting trees present hypotheses of relationship for the entire class. A similar investigation focussed on Apogastropoda (Caenogastropoda and Heterobranchia) is ongoing, and should complement the present analysis. For the most part the present study supported the previous morphology based analyses of others, and was in agreement with a recent comprehensive gastropod phylogeny (Ponder & Lindberg 1996). These later authors have a morphology based cladistic analysis in press. When published, it should provide very interesting comparison to the current analysis based on molecular data.

A morphology based cladistic analysis of the polychaete family Spionidae (Sigvaldadóttir et al 1997) found difficulty in resolving the positions of several polymorphic genera based on traditionally used characters taken from the literature. Because of non-equivalent character usage in many of the original descriptions, potentially information rich multistate characters had to be used as present or absent in the analysis. Even restricting analysis to only the type species of each genus left residual problems of insufficient character availability for some of the genera, while it did resolve four clades within the family. The Poecilochaetidae, Trochochaetidae and Uncispionidae were used as outgroups in the analysis. Character discussion is thorough, and points out inadequacies in the original descriptions of many spionids. Results presented should probably be considered preliminary until an analysis involving reexamination of type material of at least each generotype can be undertaken. This paper has previously been available as Paper VI in Mackie 1996, and Paper I in Sigvaldadóttir 1996 with seemingly identical text, tables, and figures. If you have one or both of these, you already have this paper.

Another 18S rDNA study addressed the as yet unsettled position of the arthropods. Aguinaldo et al (1997) provide molecular evidence for close relationship of arthropods, nematodes, and priapulids within a clade of ecdysial groups. The authors found that by first testing a number of taxa within a group, and selecting only those with the slowest evolutionary rate (as evidenced by gene sequence substitutions) for inclusion, their cladistic analysis provided much different treatment of nematodes and platyhelminths. Groups which had been placed near tree bases in earlier analysis grouped with more advanced clades in the present analysis.

As a result the authors propose a new higher level taxon (Ecdysozoa) for the clade of groups which shed their cuticles - chelicerates, myriapods, insects, crustaceans, tardigrades, onychophorans, nematodes, nematomorphs, priapulids, and kinorhynchs. It is assumed that the loriciferans also belong in this clade, but no material has yet been available for analysis. The presented data do not support any hypothesis of a clade of "segmental" animals including both arthropods and annelids. They do, however, support the concept of Lophotrochozoa (including annelids, molluscs, rotifers, phoronids, brachiopods, bryozoans, platyhelminthes, and other non-ecdysial protostome groups) as sister group to the Ecdysozoa.

While this is a stimulating new analysis (whose immediate acceptance I find appealing), Moore and Willmer (1997) have provided a troubling assessment of convergence in invertebrates which calls most cladistic analyses into question. The most disturbing result of their examination of competing taxonomic methodologies is that a cladistic approach tends to down-play the frequency of convergence as a function of the method itself and consequently underevaluates the effect of convergence on every analysis. In the end the authors found themselves unable to answer the question "How common is convergence" because of inadequacies in the available data. The authors are clearly not neutral in the debate over methodology, but their examination of convergence is both broad and deep, providing much food for thought.

The relationship between genome and phenome in nemerteans was examined by Manchenko and Kulikova (1996); another contribution to the controversy between the Sundberg and Gibson camps on the nature and validity of characters in nemertean taxonomy. They dealt with color polymorphism of *Tetrastemma nigrifrons* in the Sea of Japan, a species which also occurs locally. They examined five discernable color morphs existing sympatrically in the same locality, and noted a few intermediates ["transitory color patterns"].

Using gel electrophoresis of nineteen isozyme loci, the authors rather conclusively demonstrate that the color "varieties" are all members of a single interbreeding population. Along the way they did note variation in a major morphological character; the ratio of stylet length to basis length within their composite population. Since this is often considered a reliable character for species separation, their finding of nearly 80% variation in this ratio within the population is noteworthy.

More limited variability was found when the sclerites of a gorgonian coral were tested for response to water motion, light level, and simulated predation damage (West 1997). It was found that there was indeed an inducible defensive response in the colonies where mid-branch and branch-tip predation had been simulated. Sclerites formed in the damaged areas were denser and shorter at branch-tips, and longer at mid-branch. The sclerome of such colonies would vary in response to such environmental effects. It was comforting that the author did not find differences in sclerites where light and water motion were experimentally manipulated. The response to predation, however, produced sclerites differing 20-33% in size from their control counterparts.

Hanamura (1997) reviews the mysid genus *Archaeomysis* in the north Pacific, erecting two new species, and providing an updated key to the genus. These are animals seldom captured in POTW monitoring programs because they frequent very shallow waters, with most species taken from intertidal beach sands. Taxonomic status of our local species, *Archaeomysis grebnitzkii*, is not modified in the present paper. Hanamura's biogeographic information indicates five of the six species he treats are restricted to Japan and the southern Kuriles, with *A. grebnitzkii* ranging from Sakhalin Island through the Sea of Okhotsk, the Bering Sea, the Aleutian Islands, and along the northeast Pacific shoreline as far south as California.

Extended parental brood care in peracarids is reported for a caprellid by Thiel (1997), and for two species of burrowing amphipods by Thiel et al (1997). A summary of previous reports of parental care in amphipods, isopods, and tanaids is provided in the later paper. For the burrowing species this care is not just passive. The females actively enlarge the burrow to provide living space for the recently released mancas, and provide a respiratory current to irrigate it and provide food to the now feeding young. The authors mention 11 species where extended care is offered in burrows or tubes, and 14 other species in which the adult female serves as a safe attachment for the young. They hypothesize an advantage in either protection from frequent environmental disturbance, or in growth of juveniles to a size affording at least partial escape from predation before leaving maternal care to form their own domicile.

A new model-based method of analysis is proposed by Fromentin et al (1997) to tease out meso-scale events from long term macrobenthic monitoring data. Their particular emphasis is on meterological events (cold vs mild periods), but their method seems applicable locally for analysis of ENSO based variability in benthic monitoring data. An impressively long series and broad range of monitoring information was available from northwest France for this ordination analysis. The interesting aspect of this paper is the direct comparison of actual data with model-based simulations from different hypotheses of community organization and function

PROCEEDINGS OF THE 5TH POLYCHAETE CONFERENCE

As announced in the previous newsletter these proceedings are now available in the *Bulletin of Marine Science* Vol.60:2. If you don't already have a copy or haven't ordered one yet you may be able to obtain one directly from Dr. Don Reish. He has a number of them available for $35.00 US without the $5.00 shipping and handling fee and he will accept Visa or Mastercard besides a check or money order drawn on a US bank made out to "Polychaete Conference". If you want to use plastic he will need the name on the account, the account number and the expiration date. You may contact him directly either by mail, fax (562-985-5846) or e-mail <DJR@aol.com> to request a copy.

SCAMIT WEBSITE

At the July meeting the SCAMIT website was addressed. The website is currently in a constant state of improvement on a monthly basis and will be for some time. The on-line newsletter at the website is not yet comparable to our printed version, but we hope it will be in the near future. This is mainly due to the lack of knowledge of the newsletter staff about how to properly format electronic files for transfer to the website. However, we are learning more every month and hopefully, this will be reflected in future on-line editions of the newsletter. Members should keep in mind that handouts such as tables and voucher sheets produced for the newsletter currently need to be in a specific format for the website. It would be best to check with either Don Cadien or Cheryl Brantley before submitting anything. If you do not want something published on the website and only in the printed newsletter, please tell them in advance, otherwise they will assume they have your permission.

Last month's *Malmgreniella* table that appeared as a handout with the newsletter was only partly successful in its on-line version. We still need to work out a better way of handling graphic images so they may be printed from any internet browser on any printer with good resolution. We might not be able to achieve this with our present hardware and software, but this is what our aim is. We will keep members updated with our successes and failures, but please don't hesitate to make suggestions about ways to improve the usefulness and professionalism of the site.

Recent suggestions have been:

1. Include the newsletter index that Faith Cole produces for us every year.

2. Include a Table of Contents or list of topics for each newsletter to minimize scrolling and allow members to directly access sections they are most interested in.

3. Add more links, especially those containing information on invertebrates. We have recently been in touch with the Annelid and Biosis website administrators and will not only be adding their links to our site, but also becoming a resource link at their sites.

4. Include a section where voucher sheets could be archived and accessed on-line until the provisional species was superseded.

Due to space limitations we will not be able to keep all back issues of the newsletter on-line, but we will archive them so an electronic version will always be available.

These suggestions will, hopefully, be incorporated into the website in the very near future and with more input from the membership the quality of the website will only improve.

EXTRACTING POLYDORIDS

For those SCAMIT members that have not been following the Annelida discussion group on the net recently here is some useful information regarding how to extract polydorids and other polychaetes from coral rock and oyster shells (other than chipping them out and damaging the worms).

1. A few drops of formalin added directly to the seawater will force the worms from their crevices with moderate success.

2. If it doesn't matter if the worms are dead a straight formalin fixation of the coralline material where the worms may then be pushed or chipped out because they are tougher and less likely to fall apart may be better. Also, the substrate may be dissolved with 4 percent nitric acid in the formalin solution (ie 4 of acid in 96 dilute formalin). Then the worms may be rinsed out of the dissolved material on a screen. See Brock, R. and J. Brock 1977 *Limnology and Oceanography* vol. 22(5) 948-951 for a method for quantitatively assessing the infaunal community in coral rock.

3. To keep the worms alive they can be relaxed with magnesium chloride (in a solution of MgCl2 that is isotonic to the water you are holding them in) and then sucked out of their burrows with a pipette. The more concentrated the MgCl the faster the worms will relax but the survival of extracted worms is better with slightly hypotonic MgCl. Worms that relax quickly (like most spionids) can be removed and placed back in normal seawater with full recovery.

4. Another vermifuge that has been used to extract spionids from oysters is 0.5% phenol and /or 0.25% di-chlorobenzene in seawater. The

worms are expelled from their host if left overnight in these solutions. Caution is advised when working with di-chlorobenzene. Consult MacKenzie, C.L.; Shearer, L.W. 1959. Chemical control of *Polydora websteri* and other annelids inhabiting oyster shells. Proceedings- National Shellfisheries Association 50: 105-111 for further information.

MINUTES FROM JULY 14 MEETING

After a brief business meeting where all the topics mentioned previously in this newsletter were addressed, President Ron Velarde began the meeting with a discussion of the family Onuphidae. Onuphids have always presented problems with taxonomic identification due to the wide range of variability amongst their main diagnostic characters. Many character states are growth dependant and it is difficult to distinguish between juveniles of large species and adults of smaller species.

Ron first reviewed the 3 common species of the genus *Onuphis* from so. California, *O. elegans*, *O. iridescens*, and *O.* sp. 1 of SCAMIT (="intermediates" of Hobson, 1971). *O. elegans* is a shallow water species seen at depths of approximately 20 m or less in coarse or sandy sediments. It is common in bays and estuaries. *O. iridescens* is a deeper water species common in silty mud and mixed sediments. It is generally found at depths greater than 100m and sometimes occurs as shallow as 60m. Hilbig (1995) reports it from intertidal areas to 2400m, but she is including the distribution from Mexico to British Columbia. It may be seen much shallower farther north. *O.* sp. 1 of SCAMIT is the most commonly occurring *Onuphis* species in our local monitoring programs.

O. eremita parva. is another *Onuphis* species reported from southern California which is easily recognized by its distinct pigment pattern and branchiae that are simple only in the first 20-30 setigers and then become pectinate. Leslie Harris (NHM-LAC) pointed out a character that is described for this species and its stem species, but is often overlooked. Interramal papillae are present between setigers 4-10. *Onuphis multiannulata* is similar to *O. eremita parva* with regards to its branchiae, which are also simple in the first 30 setigers and gradually gain more filaments farther along its body. However, *O. multiannulata* does not have a pigment pattern.

O. geophiliformis has also been reported from southern California, but its identity is in question. Our local animal has been thought to perhaps be a juvenile of *O. iridescens* by some SCAMIT members. Hilbig (1995) states that *O. geophiliformis* is easily recognized by its simple gills which start on setigers 3-6. However, juvenile *O. iridescens* may also not have branchiae beginning on the first setiger. *O. geophiliformis* was originally described from off of Japan. Hilbig makes the comment that this species is very similar to *O. similis*, which occurs off of Baja California. The major difference is in the number of setigers with pseudocompound hooks (3 for *O. geophiliformis* and 4 for *O. similis*).

Since several of the voucher specimens from the MMS project were readily available at the museum we took the time at the meeting to examine them and compare with our own vouchered specimens. The first specimens we examined were voucher specimens of *O. geophiliformis* from Phase II of the MMS project. The very first specimen had dark pigment banding across its setigers on the dorsum. It had branchia beginning on setiger 4 and subacicular hooks by setiger 11. Pseudocompound hooks were present on the first 3 setigers. This animal seems to fit the description of *O. geophiliformis*.

The second voucher animal examined was slightly larger than the first. It had branchiae beginning on setiger 3 and subacicular hooks beginning on setiger 13. There were pseudocompound hooks in the first 4 setigers on one side of the specimen and hooks in the first 5 setigers on the other side.

The last voucher specimen of *O. geophiliformis* we examined had branchiae beginning on setiger 4 and subacicular hooks from setiger 10. Pseudocompound hooks were present on the first 4 setigers.

We then examined 2 specimens from San Diego that were identified as *O. geophiliformis* from 380 ft. These were lighter in pigment and also had patches of pigment between the parapods. They both had branchiae beginning on setiger 3 and pseudocompound hooks in the first 4 setigers. However, one specimen had subacicular hooks starting on setiger 10 and the other on setiger 9, which is as described for *O. similis*.

From all of these comparisons we can see that there are many discrepancies in these diagnostic characters for *O. geophiliformis*, even amongst the vouchers themselves. For the time being, identifications of *O. geophiliformis* on southern California material should be made with caution.

We also examined the type specimen of *Onuphis multiannulata* and compared it with *O. eremita parva* from San Diego. The San Diego specimen was from 52 ft. depth and had been collected in 1985 and had still maintained its striking pigment pattern. The type specimen of *O. multiannulata* had no pigment pattern. Both specimens had branchiae which began on setiger 1 as single filaments and gradually increased the number of filaments to a maximum of five farther down the body. Interramal papillae was present on the *O. eremita parva* specimen from setiger 4 - 10. The papilla was located on the parapod ventral lateral to the dorsal cirrus. The papilla was very small on setiger 4 and increased in size thru setiger 10. There was some thought earlier in our meeting that *O. multiannulata* might be *O. eremita parva* with its pigment pattern just faded. However, this comparison should prove that the two species are still valid for now.

We finally addressed the main topic of the meeting *Mooreonuphis* late in the afternoon. SCAMIT members have known for several years that two forms of *Mooreonuphis nebulosa* exist here in southern California. These two forms are the same except for their pigment patterns. One has distinct paired black spots dorsally on each segment while the other form has dorsal banding across its segments. It is often difficult to view the compound spinigers of this species. At the meeting we needed to remove several parapods and use oil immersion to finally see the compound spinigers. *M. nebulosa* generally has branchiae beginning on setiger 6-7, but Leslie Harris has observed type specimens with branchiae beginning on setigers 8-9. *M. nebulosa* is described by Fauchald (1982) as having digitiform postsetal lobes. However, upon examination of local *M. nebulosa* specimens SCAMIT members agreed that the lobes were more broadly triangular in shape. Also, Hilbig (1995) describes *M. nebulosa* with a dark peristomium, which SCAMIT members do not see on local animals.

The City of San Diego's Biology Lab also reports several other species of *Mooreonuphis*. These include several types with a dark peristomium with branchiae and subacicular hooks beginning on all different setigers. San Diego's taxonomists have been referring some of these to *M. stigmatis* but many specimens have branchiae which begin anywhere from setiger 23-35+ and subacicular hooks beginning on setigers 11-13. Unlike *M. nebulosa* the compound spinigers of these animals are relatively easy to observe. A voucher sheet is in preparation and will be included in next month's newsletter. This provisional will be called *M.* sp SD1. A table of SCAMIT reported *Mooreonuphis* species is included with this newsletter as is a blank template for SCAMIT members to record their own observations. It was prepared by Rick Rowe (CSDMWWD). Two other species that San Diego reports occasionally are *M. exigua* and *M. segmentispadix*. They do not have problems distinguishing between either of these two species. Other agencies do not report seeing species of *Mooreonuphis* other than *M. nebulosa* and an occasional *M. stigmatis* in their benthic sampling programs.

Also included with this newsletter is another blank table for members to record their own observations on onuphids in general. All the major diagnostic characters used in the literature are included. SCAMIT members have found that tables are a very useful taxonomic tool for recording observations and making comparisons. This one was provided by Leslie Harris.

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Please visit the SCAMIT Website at: http://www.sccwrp.org/scamit/

SCAMIT OFFICERS:

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

			e-mail address
President	Ron Velarde	(619)692-4903	rgv@sddpc.sannet.gov
Vice-President	Don Cadien	(310)830-2400 ext. 403	mblcsdla@netcom.com
Secretary	Cheryl Brantley	(310)830-2400 ext. 403	mblcsdla@netcom.com
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

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PAULA M. MIKKELSEN, *Managing Editor*

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Department of Invertebrates
American Museum of Natural History
Central Park West at 79th Street
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Mooreonuphis spp - BLANK FOR RECORDING

SPECIES	BRANCHIAE BEGIN SETIGER #	BRANCHIAE SIMPLE/BIFID OR PECTINATE	SUBACICULAR HOOKS BEGIN SETIGER #	PSEUDO-COMPOUND HOOKS (BI/TRI/BOTH)	# SETIGERS WITH PSEUDO COMPOUND HOOKS	SETIGERS WITH COMPOUND SPINIGERS	PIGMENT PATTERN	LENGTH OF INNER OCCIPITAL TENTACLES	# SETIGERS CIRRIFORM VENTRAL CIRRI
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Mooreonuphis spp (SCAMIT LISTED SPECIES)

R. Rowe 15 July 97

SPECIES KEYS IN, LIT. CITE, REF.	BRANCHIAE BEGIN SETIGER #	BRANCHIAE SIMPLE/BIFID OR PECTINATE	SUBACICULAR HOOKS BEGIN SETIGER #	PSEUDO-COMPOUND HOOKS (BI/TRI/BOTH)	# SETIGERS WITH PSEUDO COMPOUND HOOKS	SETIGERS WITH COMPOUND SPINIGERS	PIGMENT PATTERN	LENGTH OF INNER OCCIPITAL TENTACLES	# SETIGERS CIRRIFORM VENTRAL CIRRI
M. stigmatis (TREADWELL, 1922) fide FAUCHALD 1982	19	SIMPLE STRAP-LIKE	SETIGER 16	TRIDENTATE	FIRST 3	4-16	PERISTOME, TRANSVERS BANDS ON DORSUM OF FIRST 20 SETIGERS	TO SETIGER 5	FIRST 4
M. nebulosa (MOORE, 1911) fide FAUCHALD 1982	6- 7	UP TO 4 FILAMENTS PECTINATE	18-20	TRIDENTATE	FIRST 7-8+ [LARGE, SIMPLE HOOKS ON 4-15(12)] 4-15(12)]	7-19 (7 TO 17-18)	NOT MENTIONED	TO SETIGER 6	FIRST 10(9) NOTE THE HIGH # OF MODIFIED ANT. SET.
SAME fide HILBIG 1995	6-8	UP TO 4 FILAMENTS ABSENT FROM POST.	14-18 (MAX 20)	TRIDENTATE	FIRST 8 [LARGE, SIMPLE HOOKS FROM 4-5]	7 TO 13-15 (7-19)	DARK PERISTOME, TRANSVERS BANDS FIRST 15-25 LIGHTEST ANT.	TO SETIGER 6-7	FIRST 7-10
M. segmentispadix (SHISKO, 1981) ORIGINAL AS *Onuphis*	9 (7-15)	UP TO 4 FILAMENTS	16 (12-18)	TRIDENTATE	FIRST 4	5-15 (4-5 TO 11-16)	DARK PERISTOME, TRANSVERSE BARS ON DORSUM THROUGH 31 SET.	TO SETIGER 6-17 (TYPICALLY 10-12)	FIRST 4
SAME fide HILBIG 1995	7-8 (7-15)	UP TO 4-5 FILAMENTS	16	TRIDENTATE	FIRST 4	5-15	WIDE TRANSVERSE BARS ON DORSUM OF FIRST 20-30 SET.	TO SETIGER 15	FIRST 4 OR 5
M. exigua (SHISKO, 1981) ORIGINAL AS *Nothria*	14-16 (11-20)	SIMPLE, STRAP-LIKE	16 (11-16)	TRIDENTATE	FIRST 4 (FEW FROM SETIGER 3 OR 5)	5-15 (4-5 TO 11-15)	PERISTOME BROWN, TRANSVERSE BAR ON DORSUM OF FIRST 25 SET.	TO SETIGER 6-11 (TYPICALLY 10)	FIRST 3 OR 4
SAME fide HILBIG 1995	11 (11-20)	SIMPLE	16 (12-17)	TRIDENTATE	FIRST 4	5-16 (4-5 TO 11-16)	PERISTOME BROWN, BANDS ON DORSUM OF FIRST 30 SET. (LIGHTEST ON ANT.)	TO SETIGER 10	FIRST 4
M. litoralis (MONRO, 1933) fide FAUCHALD 1982	17 (16-19)	UP TO 2 FILAMENTS BIFID	13 (12-16)	TRIDENTATE	FIRST 4 (LARGE SIMPLE HOOKS ON 3-5)	5-14 (5-6 TO 12-15)	LACKING OR TRANSVERSE BARS ON FIRST 25 SETIGERS	TO SETIGER 8	FIRST 4
M. sp SD 1 Rowe, 1996	28 (23-35+) much variation	SIMPLE	12 (11-13) rarely on 10	TRIDENTATE (few with single bidentate)	FIRST 3 (LARGE SIMPLE HOOKS ON 4-5, RARELY ON 6)	4-11 (4 TO 10-12)	PERISTOME BROWN, LIGHT TRANSVERSE BAND ON SETIGER 1, DARKER ON 2 AND 3, DARKEST ON 4-25, THEN FADE PROGRESSIVELY	TO SETIGER 7-10 (TYPICALLY 8)	FIRST 3 DIGITATE ON 4, PADLIKE ON 5 AND BEYOND