



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

April 1990

Vol. 8, No. 12

NEXT MEETING: Open Forum for Problematic Taxa

GUEST SPEAKERS: SCAMIT Members

DATE: Monday, 14 May 1990, 9:30 AM

LOCATION: Cabrillo Marine Museum  
3720 Stephen White Drive  
San Pedro, CA 90731

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MINUTES FROM MEETING ON APRIL 9, 1990

Polychaete Open Forum: Several polychaete families in need of discussion (and future workshops) are the Terebellidae, Ampharetidae, Spionidae, Syllidae, Hesionidae, Maldanidae, Cirratulidae, and the scaleworm families. Future discussions and workshops are not limited to the familial level, but may center around generic problems. Initial groups to be discussed, along with their tentative dates, are listed below:

Aug 1990	Scaleworms (non-Aphroditidae)	Ross Duggan
Nov 1990	Spionidae (non-Polydorid group)	Larry Lovell
Feb 1991	Hesionidae	Ron Velarde
Apr 1991	Cirratulidae (Tharyx)	Tony Phillips

The April meeting on problematic polychaete taxa also resulted in a list of taxa that commonly appear on species lists and, for various reasons, need a reevaluation of their taxonomic status. This list is presented below.

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The SCAMIT newsletter is not deemed to be a valid publication  
for formal taxonomic purposes.

Capitella capitata (Fabricius, 1780) - See the separate commentary written by Tom Parker and attached to this newsletter.

Chaetozone cf. setosa Malmgren, 1867 - This species was originally described from European waters, and the name was applied to west coast specimens in early studies. Leslie Harris examined specimens of C. setosa from Sweden and determined that the southern California species differs from the European species. The conditional designation, conferre (cf.), is added to the name to indicate a problem with this identity. Please see additional comments provided on a separate page.

Eteone spp. - Most of the species of this genus found off southern California are undescribed. Additional character states for this genus need to be established.

Marphysa sp. A (sensu Velarde) - It has been determined by Ron Velarde that this animal had previously been incorrectly identified in southern California as M. belli oculata Treadwell, 1921, which was originally described from Key West Harbor, Mangrove Key, Florida. Treadwell's holotype was 70 mm long, the branchiae began on the tenth setiger and yellow acicula were present. Hartman (1963) reported M. belli oculata from Catalina Canyon in 379 m that were 12 mm long, branchiae began on the tenth setiger and black acicula were present. Recent work on the developmental biology of the Eunicida by Kristian Fauchald indicates that the starting position of the branchiae changes with size. Thus, the branchiae starting on the same setiger for Treadwell's and Hartman's specimens does not seem logical. Ron is preparing a formal description of this new species.

Mediomastus spp. - Specimens of this genus fragment easily. Anterior fragments of the two most common species, M. ambiseta (Hartman, 1947) and M. californiensis Hartman, 1944 cannot be reliably differentiated, even with the use of methyl green staining. Mediomastus acutus Hartman, 1969 can, however, be identified from anterior fragments. Pat Hutchings and Linda Warren are working on a worldwide revision of the genus.

Ninoe sp. A (sensu Harris) - It has been determined by Leslie Harris that this animal has usually been incorrectly identified in southern California as N. gemmea Moore, 1911, a more northern species, described from Monterey Bay. Character differences for N. sp. A and a table of local species were presented in Vol. 1, No. 12 of the SCAMIT Newsletter. A formal description of this new species is in preparation by Leslie.

Polydora spp. - There are many species of this genus and related genera (Boccardia, Boccardiella, Carazziella, and Pseudopolydora) reported from southern California. Character states for local species are poorly known and caution should be used when assigning species names. Recent work by Rice (in press) indicates that the setae of the modified 5th segment in P. ligni Webster, 1878 are variable and the presence of brush-topped companion setae is the result of setal wear. Further work is needed to determine what other species may have similar problems.

Tharyx spp. - The species of this genus are poorly known due to the lack of described diagnostic characters. Attempts to characterize abundant local species have been moderately successful. A revision of the genus is in preparation by Dr. Jim Blake. Dr. Blake indicates that the genus will be redescribed based on the presence of a previously undescribed setal type in the stem species. None of the local species will remain in Tharyx. Local species of Tharyx will be split into two genera based on the presence or absence of serrated capillary setae.

Typosyllis spp. - This genus has several species reported from southern California. Poor descriptions and keys to these species can lead to misidentification. Caution should be used in reporting Typosyllis species from southern California.

Other problematic taxa will be discussed in the future. If you are aware of southern California taxa (both polychaete and non-polychaete) that need to be included in SCAMIT workshops, please mail your suggestions to the following address:

Larry Lovell  
1036 Buena Vista Drive  
Vista, CA  
92083

Telephone: (619) 945-1608

May SCAMIT Meeting: The upcoming meeting on May 14 at the Cabrillo Marine Museum will include a discussion of problematic taxa of crustaceans, mollusks, echinoderms, and minor phyla. Workshops on problematic groups within these major taxa will then be scheduled. We will also begin organizing the SCAMIT literature housed at Cabrillo, so that it is more accessible during meetings held there.

New Curator of Polychaetes: Dr. Kirk Fitzhugh has officially accepted a position at the Los Angeles County Museum of Natural History as the new curator of polychaetes. He will most likely start in early fall of this year.

A Former SCAMIT Provisional: The former SCAMIT provisional new species known as Prototrygaeus sp. A (Pycnogonida) has been published. Although the paper states that the species, named Prototrygaeus jordanae, has been found only in its type locality, the Biology Lab at the Hyperion Treatment Plant reports it from Santa Monica Bay. The full citation of this published work is provided below:

Child, C.A. 1990. Prototrygaeus jordanae, a new species of pycnogonid from Monterey Bay, California. Proceedings of the Biological Society of Washington, 103(1): 157-160.



New SCAMIT Officers: Results of the recent SCAMIT elections are final. The new officers, listed below, will take their posts starting in May. Congratulations to our new officers.

President	Ron Velarde
Vice-President	Larry Lovell
Secretary	Ross Duggan
Treasurer	Ann Martin

SCAMIT Grant: SCAMIT is pleased to announce that Karen Green's grant proposal for page charges to publish her manuscript entitled "Maldane californiensis, a new species (Polychaeta: Maldanidae) and a review of its relations" will be funded (SCAMIT Grant No. 90-1). The amount of the funding will not exceed \$250.00. The manuscript contains the description of a SCAMIT provisional new species, and has been accepted for publication in the Bulletin of Marine Science as a contribution in the Proceedings of the Third International Polychaete Conference.

SCAMIT Picnic: The annual SCAMIT Picnic will be held at Doheny State Beach in Area 7 (north end of the park) on Saturday, August 18, 1990. In addition to the usual food, drink, and conversation, there will be organized games for the young and old. Anyone willing to help with the picnic should contact Larry Lovell (619) 945-1608. Mark your calendar today!

Southern California Academy of Sciences Meetings: The SCAS Meetings will be held on May 11-12, 1990 at the campus of California State University, Dominguez Hills. A symposium on the status and effects of toxicants in California coastal waters is scheduled for Friday, May 11, and would be of particular interest to SCAMIT members.

Treasurer's Report: In 1989-90, total income was \$2275.53 and expenditures were \$1991.94. Year-end account balances were \$1008.29 and \$9128.96, respectively. The robust accounts enabled us to continue the Publication Support Program initiated during the previous fiscal year. SCAMIT officers decided to keep the awards in small amounts in order for the program to be available to as many members as possible. Tentative amounts awarded for the year included \$1500 for illustration costs (Debbie Zmarsly), \$100 for reprint fee (Jim Roney), and \$250 for page charges (Karen Green). Final amounts will be paid upon presentation of a bill from the recipient. These publications are in various stages of preparation and the publication dates will be announced in the SCAMIT newsletter.

A Precautionary Note on the Taxonomy of Capitella capitata  
by  
Thomas Parker, L.A. County Sanitation Districts

The major thrust of SCAMIT's efforts have been to improve taxonomic standardization of the local marine invertebrate species. Throughout this same period of time (1980-1990) there have been several published examinations of marine invertebrates using techniques of karyotyping and electrophoresis. These have demonstrated that morphological structures do not always differentiate one species from another. The polychaete, Capitella capitata, is common in benthic surveys and is considered ecologically important and useful as an indicator of disturbed or polluted conditions. It is also used in toxicity studies. Few, if any, data have been published in the last 10 years which supports the use of Capitella capitata as a single species. However, several papers have been published which have demonstrated that Capitella capitata is a complex of species differentiated by non-morphological characters.

Tsutsumi and Kikuchi (1984) concluded that morphological features should not be used to define adult worms as the species, Capitella capitata. Studies by Grassle, Gelfman, and Mills (1987) have clearly reinforced the separation of Capitella species by non-morphological characters. The diploid chromosome numbers of 8 different sibling species, identified morphologically as Capitella capitata, were found to be 18, 20, and 26. They also possessed karyotype differences. Among these species is a nearly complete lack of common allozymes, and marked differences in egg size, larval dispersal mode, and reproductive mode. These authors concluded that almost all aspects of these capitellid species examined were "sharply differentiated... except external adult morphology".

Traditionally, taxonomists have relied upon external morphology to define Capitella capitata species. The above research indicates that external morphology is inadequate to define Capitella species. Continued reports of this species in benthic data may be understood by many working taxonomists to represent a sibling species complex. However, such data may be used in environmental studies and regulatory decisions by non-taxonomists who may not be aware of these relatively recent advances in the knowledge of capitellid speciation. Rice and Simon (1980) provided this opinion: "It is no longer possible to accept a simplistic approach to the identification of species, especially in cases where national policies such as pollution control and abatement may be influenced by experimental results based upon organisms of uncertain identity".

Therefore, Capitella capitata, as previously known, represents a complex of sibling species that morphological features can not delineate. The use of the name Capitella capitata should be discouraged until further published data resolves the status of this complex.



Capitella capitata (Fabricius, 1780)

Literature:

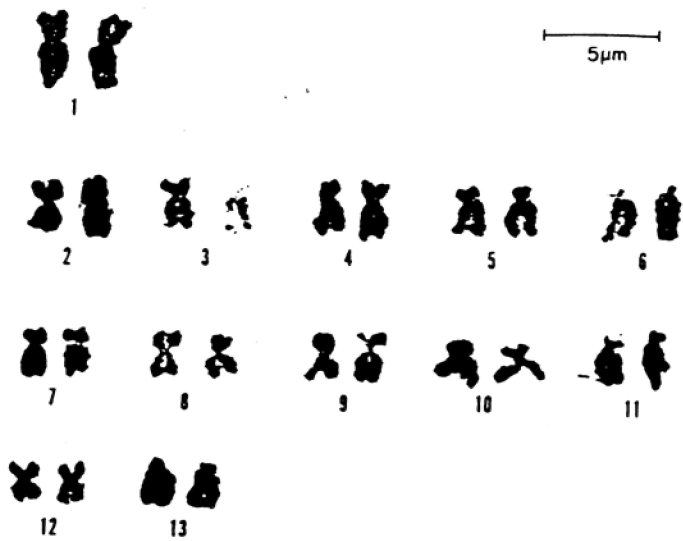
- Petraitis, P.S. 1988. Occurrence and reproductive success of feminized males in the polychaete, Capitella capitata (species Type I). Marine Biology (97) 403-412.
- Grassle, J.P., C.E. Gelfman, S.W. Mills. 1987. Karyotypes of Capitella sibling species, and of several species in the related genera Capitellides and Capitomastus (Polychaeta). Biol Soc. Wash. Bull. (7) 77-88.
- Rice, S.A., J.L. Simon. 1980. Intraspecific variation in the pollution indicator polychaete Polydora ligni (Spionidae). Ophelia 19 (1): 79-115.
- Swartz, R.C., F.A. Cole, D.W. Schultz, W.A. Deben. 1986. Ecological changes in the Southern California Bight near a large sewage outfall: benthic conditions in 1980 and 1983. Mar. Ecol. Prog. Ser. 31: 1-13.
- Tsutsumi, H., T. Kikuchi. 1984. Study of the life history of Capitella capitata (Polychaeta: Capitellidae) in Amakusa, South Japan including a comparison with other geographical regions. Marine Biology 80: 315-321.

Diagnostic Characters:

1. External adult morphology unreliable for discrimination of these species.
2. Diploid chromosome number of 18, 20, and 26 in different species.
3. Karyotype patterns markedly different in each species(see figures).
4. Species with diploid number  $2N = 26$ : one of these species has direct larval development, two of these species with lecithotrophic development, and one of these species with planktotrophic development.
5. Species with diploid number  $2N = 20$ : one of these species with planktotrophic larval development and three species with lecithotrophic development.
6. Species with diploid number  $2N = 18$ : one species with planktotrophic larval development.
7. All species with nearly complete lack of common allozymes (represents large genetic differences).
8. Egg size differences between species.
9. Males may transpose to hermaphrodites when females are rare.

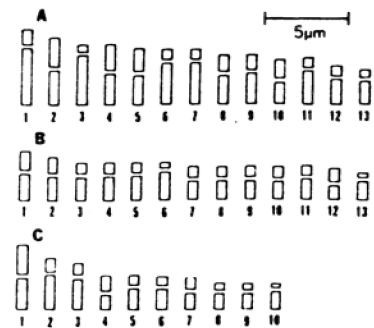
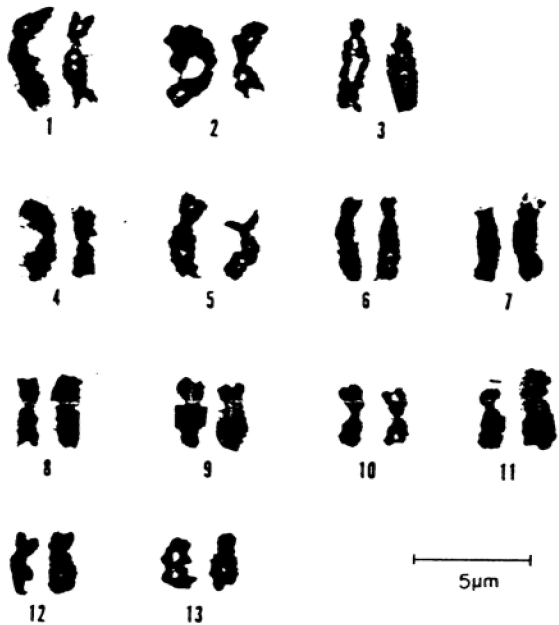
Comments:

Capitella capitata, as previously known, represents a complex of sibling species that morphological features cannot delineate. The name Capitella capitata should be used with caution and where appropriate accompanied by a note on its taxonomic status.



Karyotype for *Capitella* sp. I (Falmouth),  $2N = 20$ . The chromosomes of the set are arranged in three rows in descending order of length from 1 to 10. Pairs 1 and 4 are metacentric, pairs 2, 3, 5, 6, 7, 8, 9, 10 are submetacentric, and pair 10 is acrocentric.

Karyotype for *Capitella* sp. II (Marseille),  $2N = 26$ . The chromosomes of the set are arranged in four rows in descending order of length from 1 to 13. Pair 12 is metacentric, pairs 1-5 and 7-11 are submetacentric, and pairs 6 and 13 are acrocentric.



Idiograms of the karyotypes in Figs. 2-6. A, *Capitella* sp. II (New Bedford Harbor); B, *Capitella* sp. II (Marseille); C, *Capitella* sp. I (Falmouth).

Karyotype for *Capitella* sp. II (New Bedford Harbor),  $2N = 26$ . The chromosomes of the set are arranged in pairs in four rows in descending order of length from 1 to 13. Pairs 4 and 10 are metacentric, pairs 1, 2, 3, 5, 6, 7, 8, 9, 11 and 12 are submetacentric, and pairs 1, 3, 6, 7 and 13 are acrocentric.

CHAETOZONE SETOSA

Presented By: Leslie Harris, Los Angeles County Museum of Natural History

Reference: Christie, G. 1985. A comparative study of the reproductive cycles of three Northumberland populations of Chaetozone setosa (Polychaeta: Cirratulidae). Journal of the Marine Biological Association of the United Kingdom, 65: 239-254.

Very small specimens had small weakly bidentate acicular setae in the last five or fewer posterior setigers; these occurred as the most ventral setae in the neuropodia; setae are gradually replaced by unidentate acicular setae as the animal increases in size.

Chaetozone setosa sensu strictu has very long, fine capillary setae ("natatory setae") in anterior and mid-body notopodia. This is true only for gametogenic worms over 7 mm in subtidal populations; two intertidal populations lacked them.

Morphologically, the three populations can be distinguished by the relative positions of palpophores, first branchial filaments, and first setae. Several other characters are useful in distinguishing the populations: 1) presence or absence of deep constrictions between the posterior segments, 2) presence or absence of a complete ring (alternating with capillary setae) formed by the posterior acicular spines, 3) presence or absence of obvious spaces separating notopodial and neuropodial setae, and 4) number of acicular spines.

