

Rec 11/1/83



SOUTHERN CALIFORNIA ASSOCIATION
OF
MARINE INVERTEBRATE TAXONOMISTS

October 1983

Vol. 2, No. 7

Next Meeting: November 14, 1983

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

Specimen Exchange Group: Thyasiridae, Ungulinidae, Leptonidae,
Montacutidae, and Kellidae

Topic Taxonomic Group: Tellinidae

MINUTES FROM OCTOBER 10, 1983

Fund Raising Committee: The fund raising committee met a week before the general meeting to discuss goals and means of obtaining funds. The committee developed five goals that were approved at the meeting. They are:

- expand the video system to include color, taping, and editing abilities
- purchase computer and software to store the information generated by SCAMIT
- conduct workshops
- purchase permanent space for the voucher collection, equipment, and meetings
- money for publications

Members of the committee will be gathering more detailed information on the five goals to have a better idea how much money is needed.

The committee will also put together a slide show that tells about SCAMIT, its purpose, goals, and accomplishments. To do that we need two things:

- everyone is welcome to contribute their slides next month. Copies will be made so you can get them back
- photos will be taken at the next meeting, so, participate members and dress professionally at the November meeting!

CWPCA Conference: The slide show is already scheduled to be presented at the California Water Pollution Control Association annual meeting next year. Michael Carlin has agreed to add it to his ocean disposal section. More about this next spring.

Guest Speaker: Jack Engle who manages the Channel Island Research Program funded by the Tatman foundation, gave a delightful talk and slide presentation about the program. The program focuses on the shallow subtidal area of Southern California's eight channel islands. Diving surveys at the islands cover kelp bed, shifting sand, and stable sand habitats. Over 4,000 photos have been compiled on the various stations and species at the eight islands. Some of the highlights so far are the detection of warm water effects, monitoring urchin invasion of kelp beds and echinoderm disease, and the "rediscovery" of rarer species such as the orange-throat pikeblenny (Chaenopsis alepidota).

Jack mentioned the program is able to offer ship time for people to work on projects and can also accept grant work. Anyone interested can contact him at

Jack Engle
Channel Island Research Project
Catalina Marine Science Center
P.O. Box 398
Avalon, CA 90704

*tell him about
movies from 50's
taken by CFG.*

New Literature: SCAMIT has received surplus issues of the SCCWRP Keys to Invertebrates Vol. I and II thanks to SCCWRP. These are now available through SCAMIT at \$6.00 each plus postage.

List of October 10, 1983 Topic Specimens:

AHF 15	<u>Boccardia basilaria</u>
AHF 16	<u>Caraziella citrona</u>
HYP 28	<u>Polydora brachycephala</u>
PL 30	<u>Polydora sp.</u>
PL 29	<u>Caraziella citrona</u>

Travels with Olga: Los Angeles, 23 Feb. 1939 - Purchasing books abroad: ----- Perhaps you know that if you purchase books from Germany you are entitled to tourist marks instead of Reichs-marks. This means a difference of 25¢-27¢ as against 40¢ or more. The french franc is at present at its greatest buying power. We have been getting it at 2:54¢; the dutch guilder, on the other hand, around 55¢-60¢, and the danish crown runs around 25¢-27¢. One simply has to watch the monetary market to capitalize on these differences. The market fluctuates constantly. I am debating now whether I should buy a round trip ticket or wait to purchase return ticket at Naples. If the Italian lira should drop in value during coming years I might make some money.-----

Los Angeles, 4 March 1939

Dear Frieda: I have very much enjoyed your letters, and thrilled in the delights you must have had during all the festivities.----During the past few days, I have been examing tourist folders, comparing prices, visiting bureaus, and after first reserving on the East Asiatic lines, finally cancelled that and got one on the Knutsen Lines- the Margarethe Bakke. The cost of steamer tickets is terribly high, and that is only the beginning. Then, the fellowshp does not take effect until July 1st, and hence I will have to wait until London to receive the first installment. The tick from



Los Angeles to Manchester, and from Naples to New York is \$400, and as you see, that is only a small part of the expense.---- I should say that my boat sails June 6th, and arrives in Manchester about July 1st.----- Another matter I should like to ask you about. I have to get a passport and it calls for a witness who has known me personally for at least two years. There is no such person in or near L.A., and I am at a loss as how to proceed. The post office is open only from 9-4 ----

Los Angeles, 30 March 1939

My plans for the European trip are gradually, though slowly, crystallizing themselves. Monro of the British Museum is to be there through July (vacation in August), hence I shall plan to be there as near as July 1st, as is feasible. During August I expect to continue there, but will perhaps be able to manage by that time with Monro's assistant. Dr. McCulloch's sister is now in Europe, and we expect to arrange a meeting sometime during July, in the vicinity of London. By that time she will be through the continent, and looking toward India. She is on a trip around the world. Professor Bok, of the Swedish Rijksmuseum, Stockholm, has assured me of excellent facilities while at Stockholm. I should be there during September and October; that sounds pretty late in the year, for by that time the nights are long, the weather not very agreeable, and conditions perhaps not optimum. However, the short summer may be unusually prolonged. Everyone that I have heard speak of Stockholm, from first hand information, speaks of it with glowing terms, that it is one of the most beautiful cities in Europe, and that living conditions are ideal. After that, my plans are rather sketchy, but there is sufficient time to give them more thought later.

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Keys to Invertebrates

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

() Invertebrates of Southern California Coastal Waters
 II. Natantia. J.Q. Word and D.K. Charwat. Southern
 California Coastal Water Research Project, 1976.

Price: \$6.00 plus \$2.50 postage each.

Total remitted: _____ Make checks payable to SCAMIT.

Send to: Ann Martin 10844 Ellis Ave.
 Fountain Valley, CA 92708



Literature for West Coast Polydora - Boccardia complex

L. Harris
So. Calif. Coastal Water Research Project
646 W. Pacific Coast Hwy
Long Beach, CA 90806
(213) 435-7071

References include original descriptions of all valid species and most synonymies.

Andrews, E.A. 1891. Report upon the Annelida Polychaeta of Beaufort, North Carolina. Proc. U.S. Nat. Mus., 14:277-302.

Polydora commensalis

Annenkova, N. 1934. Kurze Übersicht der Polychaeten der litoralzone der Bering-Insel (Kommandor-Insel) nebst Beschreibung neuer Arten. Zool. Anzeig., 106:322-331.

Poly ciliata limicola

Banase, K., K.D. Hobson, and F.H. Nichols. 1968. Annotated list of polychaetes. In V. Lie. A quantitative study of benthic infauna in Puget Sound, Washington, USA, in 1963-64. Fisheridir. Skr. Ser. Havunders. 14:521-548.

Berkeley, E. 1927. Polychaetous annelids from the Nanaimo District. Part 3. Leodicidae to Spionidae. Contr. Can. Biol. Fish., 3(17):407-422, 1 plate.

Boccardia columbiana, B. uncata, Polydora caeca magna, P. cardalia

Berkeley, E. and C. Berkeley. 1936. Notes on Polychaeta from the coast of western Canada. I. Spionidae. Ann. Mag. Nat. Hist., Ser. 10, 18:468-477.

Polydora socialis plena

Berkeley, E., and C. Berkeley. 1950. Notes on polychaeta from the coast of western Canada. IV. Polychaeta Sedentaria. Ann. Mag. Nat. Hist., Ser. 12, 3:50-69.

Polydora ciliata spongicola

Berkeley, E. and C. Berkeley. 1952. Annelida. Polychaeta Sedentaria. Canadian Pacific Fauna, Fish. Res. Bd. Canada, 9b(2):139pp.

Blake, J.A. 1966. On Boccardia hamata (Webster). New combination (Polychaeta, Spionidae). Bull. So. Ca. Acad. Sci., 65(3):176-183.

Blake, James A. 1969. Reproduction and larval development of Polydora from northern New England (Polychaeta:Spionidae). Opnelia, 7:1-63.

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Blake, J.A. 1979. Four new species of Carazziella (Polychaeta:Spionidae) from North and South America, with a redescription of two previously described forms. Proc. Biol. Soc. Wash., 92(3):466-481.

Blake, J.A. 1979. Revision of some Polydorids (Polychaeta:Spionidae) described and recorded from British Columbia by Edith and Cyril Berkeley. Proc. Biol. Soc. Wash., 92(3):606-617.

Blake, J.A. 1981. A new coralline boring species of Polydora (Polychaeta: Spionidae) from Northern California. Bull. So. Calif. Acad. Sci., 80(1):32-35.

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- Blake, J.A. and J.D. Kudenov. 1978. The Spionidae (Polychaeta) from south-eastern Australia and adjacent areas with a revision of the genera. Mem. Nat. Mus. Vict., 39:171-280.
- Blake, J.A. and K.H. Woodwick. 1971. A review of the genus Boccardia Carazzi (Polychaeta:Spionidae) with descriptions of two new species. Bull. So. Calif. Acad. Sci., 70(1):31-42.
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- Blake, J.A. and K.H. Woodwick. 1981. The morphology of Tripolydora spinosa Woodwick (Polychaeta:Spionidae): an application of the scanning electron microscope to Polychaete systematics. Proc. Biol. Soc. Wash., 94(2):352-362.
- Bosc, A.G. 1802. Histoire Naturelle des Vers, contenant leur description et leurs moeurs; avec figures dessinées, d'après nature. I. Paris, Deterville. 324 pp.

Polydora

- Carazzi, D. 1895. Revisione del genere Polydora Bosc, e cenni su due specie che vivono sulle ostriche. Mitteilungen aus der Zoologischen Station zu Neapel, Bd. 11:4-45.

Polydora (Boccardia)

- Ehlers, E. 1905. Neuseeländische Anneliden. K. Ges. Wiss. Göttingen, Math-Phys. K., Abh., neue Folge, 3(1):1-80.

Polydora monilaris

- Fauchald, F. 1977. The polychaete worms - definitions and keys to orders, families and genera. LA Co. Mus. of Nat. Hist. Sci. Ser. 28, IX and 188 pp.

- Ferronnière, G. 1898. Contribution à l'étude de la faune of the Loire-inférieure (Polygordiens, Spionidrens, Nemertien). Bull. Sci. Nat. Ovest France, 8:101-115.

Boccardia ligERICA

- Foster, N.M. 1971. Spionidae (Polychaeta) of the Gulf of Mexico and the Caribbean Sea. Studies on the Fauna of Curacao and other Caribbean Islands, no. 129:183 pp.

Polydora plena

- Hartman, O. 1936. New species of Spionidae (Annelida Polychaeta) from the coast of California. Uni. Calif. Publ. Zool., 41(6):45-52, 22 fig.

Boccardia truncata, Polydora amarincola, P. brachycephala

- Hartman, O. 1939. The polychaetous annelids collected by the Presidential Cruise of 1938. Smithson. Misc. Coll., 98:1-22.

Polydora tricuspis

- Hartman, O. 1940. Boccardia proboscidea. A new species of spionid worm from California. J. Wash. Acad. Sci., 30:382-387.

Boccardia proboscidea

Hartman, O. 1941. Some contributions to the biology and life history of Spionidae from California, with keys to species and genera - descriptions of two new forms. AHPE, 7(4):289-324, pl. 45-48.

Polydora citrona

Hartman, O. 1943. Description of Polydora websteri Hartman. pp. 70-72. In: Loosanoff, V.L. and J.B. Engle. 1943. Polydora in oysters suspended in the water. Biol. Bull., 85:69-78.

Polydora websteri

Hartman, O. 1961. Polychaetous annelids from California. AHPE, 25:266 p., 34 pl.

Boccardia basilaria, Polydora neocardalia

Hartman, O. 1969. Atlas of the Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, USC, Los Angeles, CA. 812 p.

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Polydora euryhalina

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Polydora (Leucodora) polybranchia

Hobson, K.D. 1976. Notes on benthic sedentariate Polychaeta (Annelida) from British Columbia and Washington. Syesis, 9:135-142.

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Polydora redeki

Imajima M. and O. Hartman. 1964. The Polychaetous Annelids of Japan. AH Occ. Pap., #26, 2 vol, 38 pls.

Jacobi R. 1883. Anatomisch-histologische Untersuchung der Polydoren der Kieler Bucht. Inaugural Disseration, Keil:1-35.

Polydora quadrilobata

Kydenov, J.D. 1982. Redescription of the major spines of Polydora ligni Webster (Polychaeta:Spionidae). Proc. Biol. Soc. Wash., 95(3):571-574.

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Polydora armata

Light, W. J. 1969. Polydora narica, new species, and Pseudopolydora kempii californica, new subspecies, two new spionids (Annelids:Polychaeta) from central California. Proc. Ca. Acad. Sci., 36:531-550.

Polydora narica, Pseudopolydora kempii

Light, W. J. 1970. Polydora alloporis, new species, a commensal spionid (Annelida, Polychaeta) from a hydrocoral off central California. Proc. Calif. Acad. Sci., 37:459-477.

Polydora alloporis

Light, W.J. 1970. A new spionid (Annelida:Polychaeta) from the Gulf of California. Bull. S. Calif. Acad. Sci., 69:74-79.

Polydora wobberi

Light, W.J. 1977. Spionidae (Annelida:Polychaeta) from San Francisco Bay, California: a revised list with nomenclatural changes, new records, and comments on related species from the northeastern Pacific Ocean. Proc. Biol. Soc. Wash. 90(1):66-88.

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Mesnil, F. 1896. Études de morphologie externe chez les Annélides. I. Les Spionidiens des côtes de la Manche. Bull. Sci. France Belg., 29:110-287.

Polydora giardi

Monro, C.C.A. 1938. On a small collection of Polychaeta from Uruguay. Ann. Mag. Nat. Hist. London, ser. 11, 2:311-314.

Polydora uncatiformis

Rainer, S. 1973. Polydora and related genera (Polychaeta:Spionidae) from Otago waters. J. Roy. Soc. New Zealand, 3:545-564.

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Polydora heterochaeta

Rioja, E. 1943. Estudios anelidologicos. VIII. Datos acerca de la especies del genero Polydora Bosc, de las costas Mexicanas del Pacifico. An. Inst. Biol. Mexico, 14:229-241.

Polydora cirrosa

Rioja, E. 1962. Estudios Anelidologicos. XXVI. Algunos anelidos poliquetos de las costas del Pacifico de Mexico. Mexico, Univ. Inst. Biol., An., 33:131-229.

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Leucodore socialis

Treadwell, A.L. 1914. Polychaetous annelids of the Pacific Coast in the collection of the Zoological Museum of the University of California. Univ. Calif. Publ. Zool, 13:175-234

Polydora californica

Treadwell, A.L. 1922. Polychaetous annelids collected at Friday Harbor, State of Washington, in February and March, 1920. Publ. Carnegie Inst. Wash., no. 312:171-181.

Polydora californica

Uschakov, P.V. 1955. Polychaeta of the far eastern seas of the USSR. Keys to the Fauna of the USSR, no. 56:419pp. (English translation, Israel Program for Scientific Translations, Jerusalem. 1965).

Verrill, A.E. 1885. Notice of recent additions to the marine Invertebrata of the northeastern coast of America, with descriptions of new genera and species and critical remarks on others. Pt. V. Annelida, Echinodermata, Hydrozoa, Tunicata. Proc. U.S. Nat. Mus., 8:424-448.

Polydora tubifex

Webster, H.E. 1879. Annelida Chaetopoda of the Virginia coast. Trans. Albany Inst. N.Y., 9:202-269.

Polydora ligni

Webster, H.E. 1879. The Annelida Chaetopoda of New Jersey. Ann. Rept. N.Y. State Mus. Nat. Hist., 32:101-128.

Polydora caeca, Polydora hamata

Woodwick, K.H. 1953. Polydora nuchalis, a new species of polychaetous annelid from California. J. Wash. Acad. Sci., 43(11):381-383.

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Woodwick, K.H. 1960. Early larval development of Polydora nuchalis Woodwick, a spionid polychaete. Pac. Sci., 14:122-128.

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Polydora rickettsi

Woodwick, K.H. 1963. Comparison of Boccardia columbiana Berkeley and Boccardia proboscidea Hartman (Annelida, Polychaeta). Bull. So. Ca. Acad. Sci., 62(3):132-139.

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Zachs, I. 1933. (The annelidan fauna of the northern part of the Sea of Japan.) Gosudarstvennyi Gidrologicheskii Inst. Issledovaniya. Morei SSSR, no. 19:125-137. (In Russian with German summary).

Polydora ciliata brevivalpa

These tables were compiled from the information given in the references below and the original species description when available. When 2 or more authors disagreed on a character (such as the setiger the caruncle extended to), the majority view or that of the author who looked at type material was used.

- Blake, J.A. 1966. On Boccardia hamata (Webster) new combination (Polychaeta, Spionidae), Bull. So. Ca. Acad. Sci., 65:176-184.
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- _____ 1963b. Taxonomic revision of two polydorid species (Annelida, Polychaeta, Spionidae). Proc. Biol. Soc. Wash., 76:209-216.

CHECKLIST OF WEST COAST POLYDORA-BOCCARDIA COMPLEX

Leslie H. Harris

BOCCARDIA Carazzi, 1895
= PARABOCCARDIA Rainer, 1973

BOCCARDIA ANOPHTHALMA (Rioja, 1962) Blake, 1981
= POLYDORA ANOPHTHALMA Rioja, 1962
Near Puerto Penasco, Gulf of California; Asuncion Island; boring
into mollusk shells (Blake, 1981).

BOCCARDIA BASILARIA Hartman, 1961
Santa Barbara, Palos Verdes and San Pedro areas, in shelf depths,
in silt and fine sand (Hartman, 1969).

BOCCARDIA BERKELEYORUM Blake & Woodwick, 1971
Fort Bragg & Trinidad Head, northern California; Morro Bay, Cayucos
& San Simeon Beach State Park, southern California. Burrows into
TEGULA BRUNNEA shells with hermit crabs, shells of PODODESMUS
MACHROSCHIMA, and in LITHOTHAMNIUM (Blake & Woodwick, 1971).

BOCCARDIA CHILENSIS Blake & Woodwick, 1971
= BOCCARDIA SP. Hartman, 1948
= POLYDORA POLYBRANCHIA of Fauvel, 1916 (not Haswell, 1885)
= BOCCARDIA JUBATA Rainer, 1973
Australia; New Zealand; Chile; Falkland Islands; Macquarie Island
(Blake & Kudenov, 1978). ?Southern California.

BOCCARDIA COLUMBIANA E. Berkeley, 1927
Central California and western Canada, in intertidal sands, and
boring in hard shells and wood (Hartman, 1969). Sandy material
in or on wood pilings, sand between barnacles, sand in holdfasts,
sponge, rock, coralline algae, in TEGULA, PURPUREA, OLIVELLA,
ACANTHINA, JATON & DIODORA (Woodwick, 1963).

BOCCARDIA POLYBRANCHIA (Haswell, 1885) Carazzi, 1895
= POLYDORA POLYBRANCHIA Haswell, 1885
= POLYDORA (LEUCODORE) POLYBRANCHIA Haswell, 1885
= POLYDORA EURYHALINA Hartmann-Schroder, 1960
Morro Bay, estuarine; western Canada; in cosmopolitan areas,
especially in estuarine and tidal streams; in silt and mud
(Hartman, 1969). Also: Australia; Atlantic Ocean; Japan; Mediter-
ranean Sea.

BOCCARDIA PROBOSCIDEA Hartman, 1940
= POLYDORA CALIFORNICA Treadwell, 1914, 1922
British Columbia; Oregon; California; Humboldt Bay, Fort Bragg,
Cayucos, Goleta, Santa Barbara, Morro Bay, Ballona Creek; on rocks
among corallines, holdfasts, piling material, MYTILUS growth,
TEGULA, JATON, ACANTHINA, OLIVELLA, MYTILUS (Woodwick, 1963).
Also: Japan; Panama; Australia.

BOCCARDIA PUGETTENSIS Blake, 1979

= POLYDORA (BOCCARDIA) NATRIX of Berkeley & Berkeley, 1936,
1952; Banse, Hobson & Nichols, 1968.

British Columbia; Washington; in shallow subtidal and intertidal
sand substrata (Blake, 1979).

BOCCARDIA TRICUSPA (Hartman, 1939) Woodwick, 1963

= POLYDORA TRICUSPA Hartman, 1939

Morro Bay south to La Jolla; western Mexico; Galapagos Islands;
intertidal among encrusting organisms; boring in shells and
algae (Hartman, 1969). Morro Bay; Cayucos; Santa Barbara; La Jolla;
Galapagos Islands; in LITHOPHYLLUM, among serpulids, PHRAGMATOPOMA,
sponges, TEGULA, CERATOSTOMA, OLIVELLA, THAIS (Woodwick, 1963).

BOCCARDIELLA Blake & Kudenov, 1978

BOCCARDIELLA HAMATA (Webster, 1879) Blake & Kudenov, 1978

= POLYDORA HAMATA Webster, 1879

= BOCCARDIA HAMATA (Webster, 1879) Blake, 1966

= BOCCARDIA UNCATA E. Berkeley, 1927

= POLYDORA (BOCCARDIA) UNCATA of Berkeley & Berkeley, 1952

Mission Bay and Tomales Point, intertidal, in oyster clumps,
burrowing in outer shells, causing crescentic runways; western
Canada (Hartman, 1969). British Columbia to Bahia de San Quintin,
Baja; oyster beds, estuarine mud; DODECACERIA sp. masses; east and
Gulf coasts of North America, oyster and gastropod shells; Uruguay;
algal holdfasts; TEGULA (Blake, 1966).

BOCCARDIELLA LIGERICA (Ferroniere, 1879) Blake & Kudenov, 1978

= BOCCARDIA LIGERICA Ferroniere, 1879

= POLYDORA REDEKI Horst, 1920

= BOCCARDIA REDEKI (Horst, 1920)

= POLYDORA UNCATIFORMIS Monro, 1938, fide Blake & Kudenov, 1978

Mugu Lagoon and Mission Bay, in intertidal mud flats; Holland and
western France (Hartman, 1969). "Hartman (1941; 1961; 1969)
referred some posteriorly incomplete California specimens to B.
REDEKI. BOCCARDIA LIGERICA is closely related to B. HAMATA...
Because B. HAMATA is common in California waters, it is possible
that the incomplete specimens described by Hartman are B. HAMATA."
Brackish waters of mud flats of western Europe...Holland, France,
Germany; S. Africa (Blake & Woodwick, 1971). San Francisco Bay
vicinity, ?southern California, Alamitos Bay (Light, 1978).

BOCCARDIELLA TRUNCATA (Hartman, 1936) Blake & Kudenov, 1978

= POLYDORA TRUNCATA Hartman, 1936

= BOCCARDIA TRUNCATA Hartman, 1936

(The 1936 description is entitled "POLYDORA TRUNCATA sp. nov.",
but it is clearly of a BOCCARDIA and in the discussion the name
B. TRUNCATA is used.)

Moss Beach, San Mateo County, intertidal in sandstone reefs (Hart-
man, 1969).

CARAZZIELLA Blake & Kudenov, 1978

CARAZZIELLA CITRONA (Hartman, 1941) Blake & Kudenov, 1978

= POLYDORA CIRTONA Hartman, 1941

Mission Bay, intertidal in sandy mud areas with UPOGEBIA (Blake, 1979). Also: Point Loma, 60 m, and King Harbor, southern California.

CARAZZIELLA CALAFIA Blake, 1979

= PSEUDOPOLYDORA REISHI of Reish, 1968 (not Woodwick, 1964)

Monterey Bay (37m); Los Angeles Harbor (6-12 m); Catalina (12 m); Bahia de los Angeles (Blake, 1979). Also: Santa Monica Bay, 60 m.

POLYDORA Bosc, 1902 emended

= DIPLOTIS Montagu, 1813

= LEUCODORE Johnston, 1838

= LEIPOCERAS Mobius, 1874

= DIPOLYDORA Verrill, 1881

= PROTOPOLYDORA Czerniavsky, 1881

= PSEUDOLEUCODORE Czerniavsky, 1881

POLYDORA ALLOPORIS Light, 1970

British Columbia to central California; in ALLOPORA CALIFORNICA & A. VENUSTA in central California, and A. nr. A. PETROGRAPTA off Vancouver Island (Light, 1970).

POLYDORA ARMATA Langerhans, 1880

= POLYDORA MONILARIS Ehlers, 1905

Western Canada to western Mexico, in intertidal coralline or calcareous growths; cosmopolitan (Hartman, 1969).

POLYDORA BARBILLA Blake, 1981

Near Puerto Penasco, Gulf of California; boring into gastropod shells (Blake, 1981).

POLYDORA BIFURCATA Blake, 1981

Vicinity of Tomales Point, northern California; LITHOPHYLLUM crusts (Blake, 1981).

POLYDORA BIOCCIPITALIS Blake & Woodwick, 1971

Malibu Beach & Santa Barbara; OCENEBRA, OLIVELLA, MUREX, and POLINICES shells (Blake & Woodwick, 1971).

POLYDORA BRACHYCEPHALA Hartman, 1936

= POLYDORA CAULLERYI auctt., not Mesnil, 1897

Central and southern California, intertidal in shallow littoral silts and clayey mud (Hartman, 1969).

POLYDORA CARDALIA E. Berkeley, 1927

British Columbia; ?southern California (Blake, 1979).

POLYDORA CIRROSA Rioja, 1962

Bays and estuaries, Pacific coast of Mexico; Oceanside, San Diego County (Light, 1978).

POLYDORA COMMENSALIS Andrews, 1891

= POLYDORA CILIATA BREVIPALPA Zachs, 1933

= POLYDORA sp. E. Berkeley, 1927

Southern California, in intertidal mud flats; western Canada to western Mexico; eastern United States (Hartman, 1969). Also: Curacao; North Japan Sea.

POLYDORA CONVEXA Blake & Woodwick, 1971

Santa Barbara, Avila, Morro Bay, Cayucos, Bodega Harbor and Trinidad Head; in TEGULA, OLIVELLA, PODODESMUS and DIODORA shells; rock scrappings, holdfasts, sponges, DODECACERIA sp., bryozoa; intertidal to 18 m (Blake & Woodwick, 1971). Near Puerto Penasco, Gulf of California (Blake, 1981).

POLYDORA ELEGANTISSIMA Blake & Woodwick, 1971

Tomales Bay, Morro Bay, Malibu Beach; in TIVELA, OLIVELLA, hermit crab shells (Blake & Woodwick, 1971).

POLYDORA GIARDI Mesnil, 1896

Alaska south to western Mexico; intertidal to 20 fms, in coralline zones; boring into calcareous growths; cosmopolitan (Hartman, 1969). Also: Northeast Atlantic; Australia; New Zealand; Sonora, Mexico.

POLYDORA HETEROCHAETA Rioja, 1939

Mexico: Acapulco and Bahia de los Angeles, Gulf of California (Blake, 1981).

POLYDORA LIGNI Webster, 1879

= POLYDORA AMARINCOLA Hartman, 1936

= POLYDORA CILIATUM of Agassiz, 1867 (not Johnston, 1838)

= POLYDORA LITTOREA Verrill, 1881

British Columbia to western Mexico; Northern Europe; New England to Florida; Gulf of Mexico; euryhaline, shallow water of estuaries; thin tubes in tidal flats or attached to rocks, shells and wharf pilings (Light, 1978). Also: Caribbean Sea (Foster, 1971).

POLYDORA LIMICOLA Annenkova, 1934

= POLYDORA CILIATA LIMICOLA Annenkova, 1934

Los Angeles vicinity, intertidal, along breakwaters, in MYTILUS colonies, massed in crevices and forming muddy sheaths over rocks and other hard surfaces (Hartman, 1969).

POLYDORA NARICA Light, 1969

Carmel, California; 100-200' in association with an ampharetid (Light, 1969).

POLYDORA NEOCARDALIA Hartman, 1961

Santa Barbara south to San Pedro channel, in shelf depths, in mud, shale, and mixed sediments (Hartman, 1969).

POLYDORA NUCHALIS Woodwick, 1953

Estuaries and bays, southern and central California (Light, 1978). Near Puerto Penasco, Gulf of California (Blake, 1981).

POLYDORA PYGIDIALIS Blake & Woodwick, 1971

= POLYDORA CILIATA of Berkeley & Berkeley, 1936, 1952 (not Johnston, 1838).

Santa Barbara, Avila Beach, Morro Bay, Cayucos, California; British Columbia; in hermit crab shells, TEGULA, piling material, bryozoa; intertidal to 18 m (Blake & Woodwick, 1971).

POLYDORA QUADRILOBATA Jacobi, 1883

= POLYDORA TUBIFEX Verrill, 1885

= POLYDORA LITTOREA of Hartman, 1944 (not Verrill, 1881)

Southern California; eastern and western Canada; Europe; New England; Sea of Japan; Sea of Okhotsk; Bering Sea; ?San Francisco Bay; intertidal to shallow subtidal (to 210 m in Sea of Japan); in sandy and silty mud; forms dense interconnecting galleries of rust-colored tubes (Light, 1978).

POLYDORA RICKETTSI Woodwick, 1961

Cabo San Lucas, Baja California; in tube of SPIROBRANCHUS INCRASSATUS (Woodwick, 1961)

POLYDORA SOCIALIS (Schmarda, 1861)

= LEUCODORE SOCIALIS Schmarda, 1861

= POLYDORA CAECA VAR. MAGNA E. Berkeley, 1927

= POLYDORA MAGNA of Berkeley & Berkeley, 1936, 1952

= POLYDORA SOCIALIS PLENA Berkeley & Berkeley, 1936, 1952

= POLYDORA CAECA of Berkeley & Berkeley, 1936, 1952 (not Orsted, 1843)

= POLYDORA PLENA of Foster, 1971

?= POLYDORA GRACILIS Verrill, 1880

British Columbia; San Francisco Bay to Oceanside, California; Gulf of California; Gulf of Mexico; east coast of North America; Chile; Falkland Islands; Australia; in lagoons and depths to 68 m, in mud and silt; often forming large beds or boring in shells (Light, 1978).

POLYDORA SPONGICOLA Berkeley & Berkeley, 1950

= POLYDORA CILIATA SPONGICOLA Berkeley & Berkeley, 1950

Western Canada south to San Pedro, in intertidal depths northward and in slope depths at southern end; associated with sponges and in mixed sediments (Hartman, 1969)

POLYDORA WEBSTERI Hartman, 1943

= POLYDORA CAECA Webster, 1879 (not Orsted, 1843)

= POLYDORA CILIATA auctt. (not Johnston, 1838)

East coast of North America from Quebec and Newfoundland to Florida; Gulf of Mexico; California; Oregon and Hawaii; intertidal and shallow; boring into calcareous substrates, oysters, scallops, clams, gastropods (Blake, 1979).

POLYDORA WOBBERI Light, 1970

Baja California; burrowing in LOPHOGORGIA sp. (Light, 1970).

PSEUDOPOLYDORA Czerniavsky, 1881

= CARAZZIA Mesnil, 1896

= POLYDORELLA Augener, 1914

= NEOPYGOSPPIO Berkeley & Berkeley, 1954

PSEUDOPOLYDORA KEMPI (Southern, 1921)

= POLYDORA (CARAZZIA) KEMPI Southern, 1921

= NEOPYGOSPIO LAMINIFERA Berkeley & Berkeley, 1954

= POLYDORA (PSEUDOPOLYDORA) KEMPI JAPONICA of Banse, 1972

= PSEUDOPOLYDORA KEMPI JAPONICA Imajima & Hartman, 1964

= PSEUDOPOLYDORA KEMPI CALIFORNICA Light, 1969

British Columbia and Puget Sound; California: Morro Bay, San Francisco Bay, Bolinas Lagoon, Bodega Harbor, Tomales Bay; India; South Africa; Japan; Korean Archipelago; in mud, sand, or sand and mud; intertidal to shallow subtidal (Light, 1978). Also: Australia (Blake & Kudenov, 1978).

PSEUDOPOLYDORA PAUCIBRANCHIATA (Okuda, 1937)

= POLYDORA (CARAZZIA) PAUCIBRANCHIATA Okuda, 1937

= POLYDORA (CARASSIA) (sic) PAUCIBRANCHIATA of Reish, 1954

= POLYDORA PAUCHIBRANCHIATA of Reish, 1961

California: Los Angeles-Long Beach Harbor, Newport Bay, Alamitos Bay, Elkhorn Slough, San Francisco Bay, Tomales, Bay; Japan; New Zealand; in sand; lower littoral to shallow subtidal (Light, 1978). Also: Australia; King Harbor, southern California.

ADDENDUM

Blake, J.A. 1981. Polydora & Boccardia species (Polychaeta: Spionidae) from western Mexico, chiefly from calcareous habitats. Proc. Biol. Soc. Wash., 93(4): 947-962.

Okuda, S. 1937. Spioniform polychaetes from Japan. Fac. Sci. Hokkaido Imp. Univ., Jour., ser.6, 5(3): 217-254.

Banse, K., K.D. Hobson & F.H. Nichols. 1968. Annotated list of polychaetes, pp. 521-548. In: U.Lie.1968. A quantitative study of benthic infauna in Puget Sound. Fisheridir. Skr., Ser. Havunders. 14(5): 229-556.

Reish, D.J. 1959. An ecological study of pollution in Los Angeles-Long Beach Harbors, California. Allan Hancock Found. Publ. Occ. Pap. 22:1-119.

_____. 1964. A quantitative study of the benthic polychaetous annelids of Catalina Harbor, Santa Catalina Harbor, California. Bull. So. Calif. Acad. Sci., 63:86-96.

BOCCARDIA BASILARIA Hartman, 1961

Spionidae

Voucher #AHF 15

10 October 1983

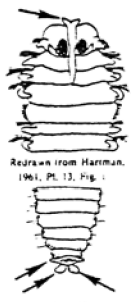
Literature citation: Hartman, O. 1961. Polychaetous annelids from California. Allan Hancock Pac. Exped., 25: 226 pp.

Synonymy: none

Primary diagnostic characters: Bifid prostomium; lacks notosetae on setiger 1; caruncle to end of setiger 3; branchiae on first half of body only; posterior notopodia with acicular spines; spines of modified 5th setiger include gently falcate ones and some bristle-topped with constricted neck; hooded hooks gradually change from bidentate to unidentate; pygidium a thin disk with two ventral lappets.

Related species and character differences: In southern California, *B. BASILARIA* is unique with its posterior unidentate hooks and notopodial acicular spines, however, it is closely related to *B. PUGETTENSIS* Blake, 1979, which also has these characters. *B. PUGETTENSIS* has thinner notopodial spines, its hooded hooks are nearly straight in the posterior and only sometimes unidentate, has notosetae on setiger 1, the pygidium has 4 lobes, and anterior branchiae reaching nearly to the midline of the dorsum. The branchiae of *BASILARIA* are short and reach no more than $\frac{1}{4}$ of the body width to the midline. *B. BERKELEY-ORUM* Blake and Woodwick, 1971, is similar to *BASILARIA* in lacking notosetae on setiger 1, possession of posterior acicular spines and very short anterior branchiae, but it has bidentate hooded hooks throughout its body, 4 small lobes on the pygidium, and a rounded prostomium.

Prostomium incised; posterior hooded hooks unidentate; pygidium a thin disk with two ventral lappets; notosetae absent on setiger one; short anterior branchiae



Redrawn from Hartman, 1961, Pl. 13, Fig. 1

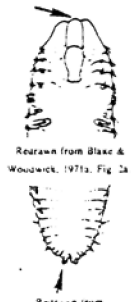
Redrawn from Hartman, 1961, Pl. 13, Fig. 2

Boccardia basilaria



Redrawn from Hartman, 1961, Pl. 13, Fig. 7

Prostomium rounded; posterior hooded hooks bidentate; pygidium with four very small papillae; notosetae absent on setiger one; short anterior branchiae



Redrawn from Blake & Woodwick, 1971, Fig. 24

Redrawn from Blake & Woodwick, 1971, Fig. 24

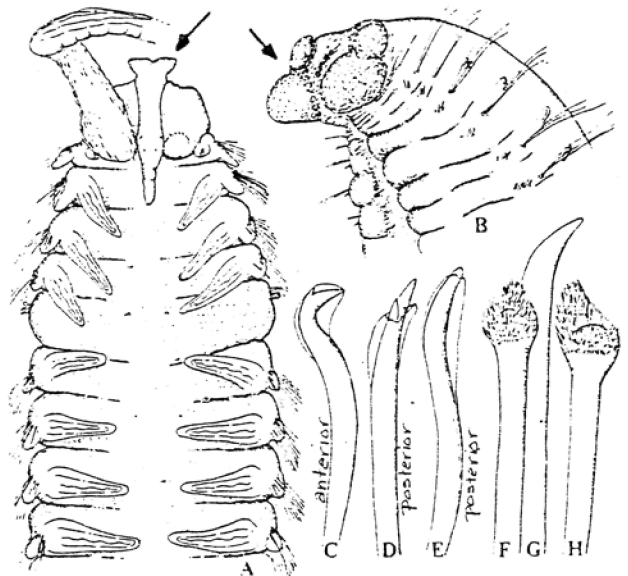
Boccardia berkeleyorum



Redrawn from Blake & Woodwick, 1971, Fig. 24

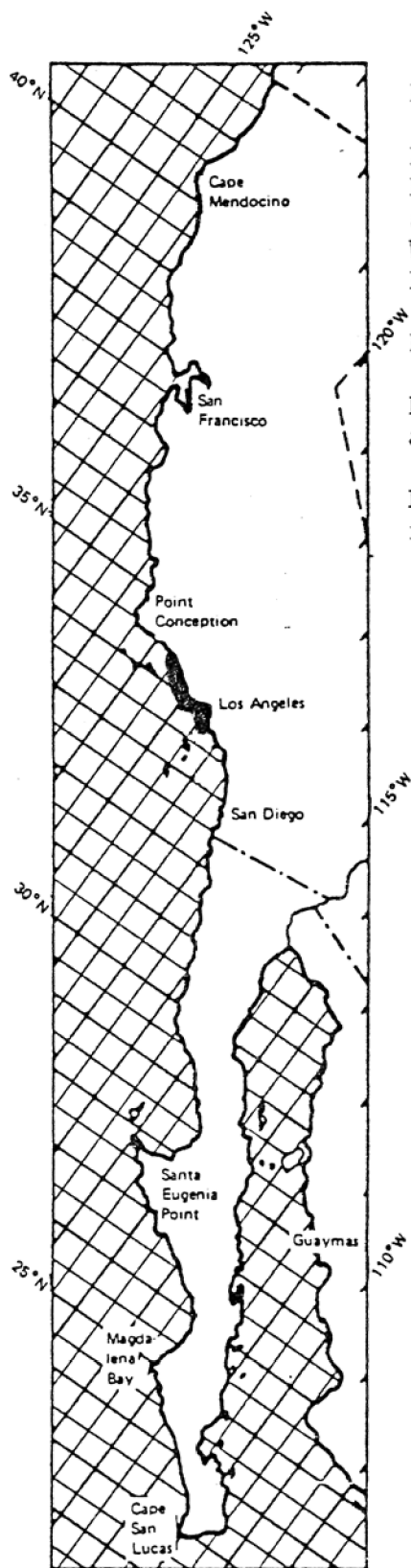
from Light 1978

Prostomium incised; posterior hooded hooks nearly straight, occasionally unidentate; pygidium with four lobes, dorsal pair smaller; notosetae present on setiger one; long anterior branchiae



Boccardia pugettensis

from Blake 1979



BOCCARDIA BASILARIA Hartman, 1961

Pertinent literature: Hartman, 1961, 1969; Blake & Kudenov, 1978 (first record of acicular spines, in discussion of *P. ACICULATA*); Blake & Woodwick, 1971; Blake, 1979 (see discussion of *B. PUGETTENSIS*); Light, 1978.

Depth range: Shallow shelf depths.

Distribution: Santa Barbara through San Pedro area, California.

Ecology: Soft bottom communities, in silt and fine sand.

CARAZZIELLA CITRONA (Hartman, 1941) Blake & Kudenov, 1978
 Spionidae

Voucher #PL 29, AHF 16

10 October 1983

Literature citation: Hartman, O. 1941. Some contributions to the biology and life history of Spionidae from California, with keys to species and genera and descriptions of two new forms. Allan Hancock Pac. Exped., 7(4): 289-324.

Synonymy: POLYDORA CITRONA Hartman, 1941

Primary diagnostic characters: Branchiae from setiger 7; 2 types of spines in setiger 5: ventral row with expanded bristled ends, dorsal row falcate with bristles and bare tip; bidentate hooded hooks in neurosetae from setiger 10; bidentate hooks gradually lose secondary tooth, become unidentate in posterior setigers.

Related species and character differences: Unique in genus in having unidentate posterior hooded hooks, with the hooks starting on setiger 10. CARAZZIELLA CALAFIA Blake, 1979 has bidentate hooded hooks throughout its body, the dorsal spines of setiger 5 have bristles covering their falcate tips, the ventral bristle-tipped spines have a terminal depression, and there is a "gizzard" in the digestive tract.

Variability: The prostomium may be entire anteriorly or slightly incised. The caruncle may stop at setiger 1 and then have an additional ridge on setiger 2, or the two may be fused into a single unit. The falcates spines of setiger appear to vary in shape, possibly due to the angle of observation and light refraction (see Blake, 1979): spines may look like those shown below, like those of POLYDORA BRACHYCEPHALA, or as in Hartman, 1969.

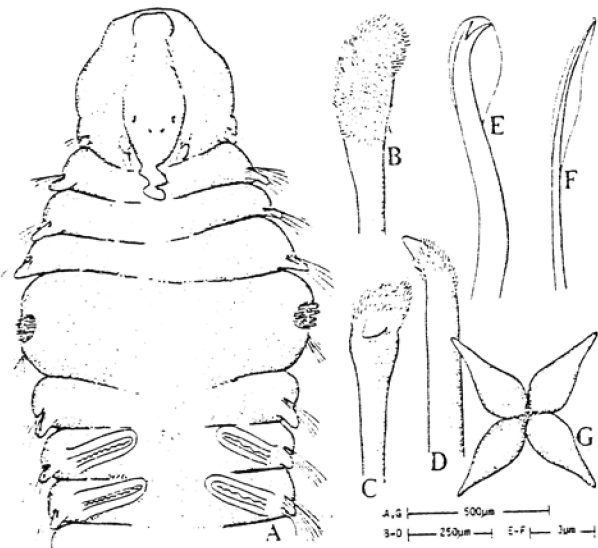
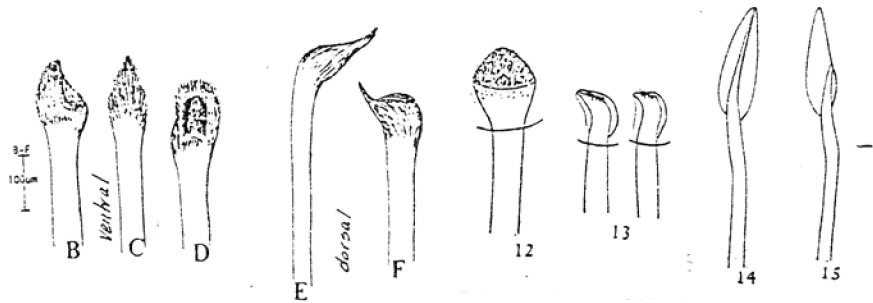


Fig. 1. *Carazziella citrona*: A. Anterior end of holotype in dorsal view; B. Ventral major spine from setiger 5; C-D. Dorsal falcate major spines from setiger 5; E. Hooded hook from anterior setiger; F. Hooded hook from posterior setiger; G. Pygidium, in posterior view.

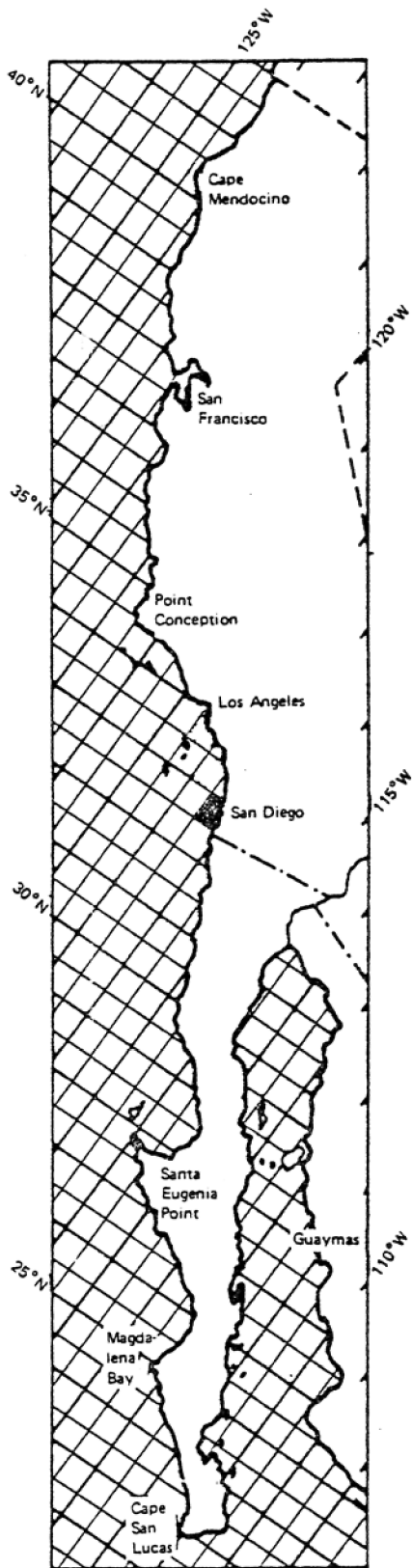
from Blake 1979



major spines of setiger five of
 CARAZZIELLA CALAFIA
 from Blake 1979

Fig. 12, one of 5 larger, anterior modified spines from fifth setiger, x 260; Fig. 13, 2 of the smaller, posterior modified spines from fifth setiger x 260; Fig. 14, an unbroken hooded seta from a posterior neuropodium, x 370; Fig. 15, a similar seta with broken tip, showing the hooded cap extending far beyond the broken tip, x 370;

from Hartman 1941



CARAZZIELLA CITRONA (Hartman, 1941)

Pertinent literature: Hartman, 1941, 1969; Blake & Kudenov, 1978; Blake, 1979.

Depth range: intertidal & 60 m.

Distribution: Sandy mud beds of UPOGEBIA in Mission Bay; silt/sand benthic communities off Point Loma, in 60 m.

POLYDORA BRACHYCEPHALA Hartman, 1936

Spionidae

Voucher #HYP 28

10 October 1983

Literature citation: Hartman, O. 1936. New species of Spionidae (Annelida Polychaeta) from the coast of California. Univ. Calif. Publ. Zool., 41(6): 45-52.

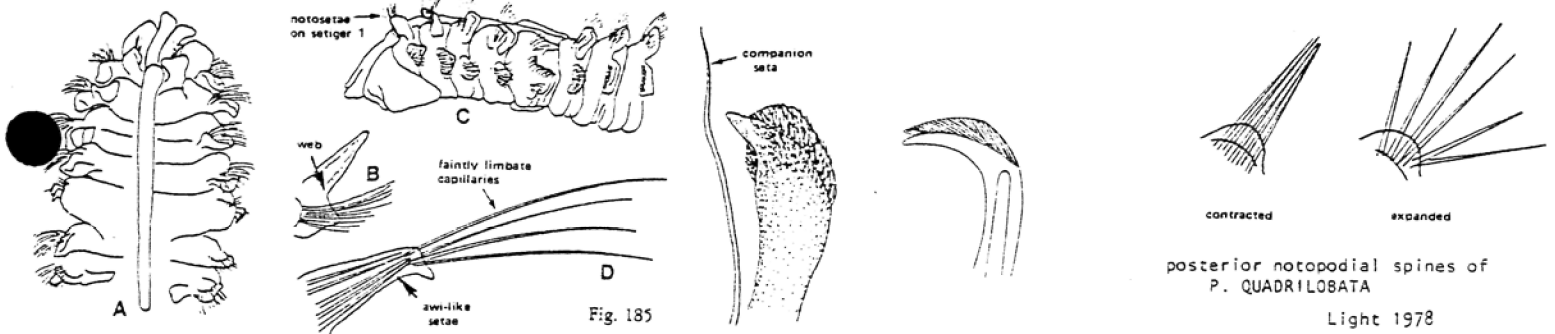
Synonymy: POLYDORA CAULLERYI of auctt., not Mesnil, 1897

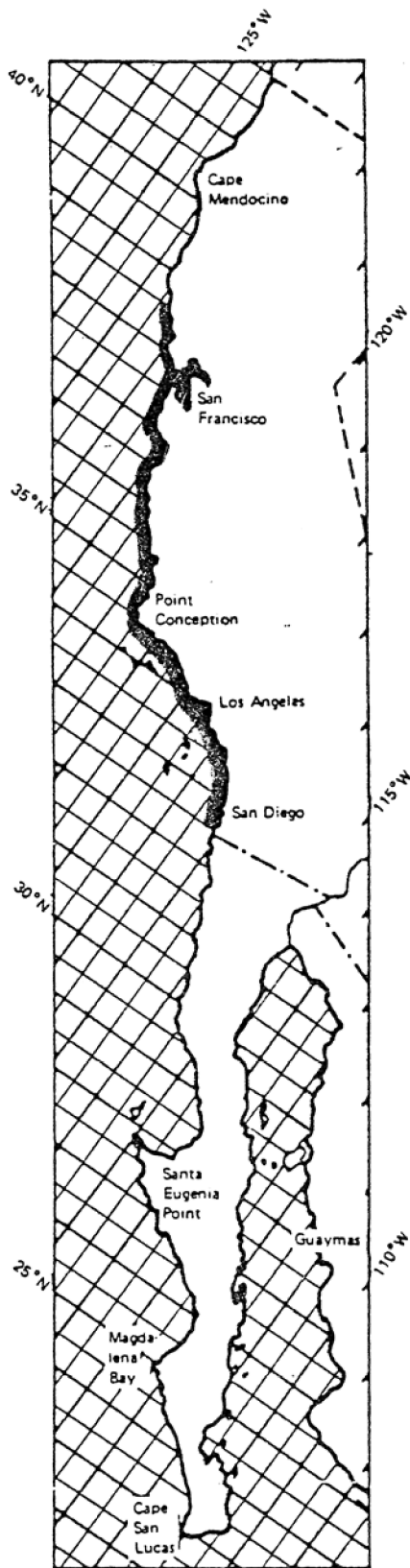
Primary diagnostic characters: Bifid prostomium; notosetae on first setiger; branchiae and hooded hooks begin on setiger 7; caruncle extends to setiger 7 (incorrectly noted as to setiger 2 in description: Light, 1978); spines of modified fifth setiger stout, sharply falcate, topped by dense fringe of bristles; notosetae in posteriormost segments form conical fascicles of spines, usually completely retracted within notopodia.

Related species & character differences: P. CAULLERYI Mesnil, 1897, P. ARMATA Langerhans, 1880, P. QUADRILOBATA Jacobi, 1883, and P. ACICULATA Blake & Kudenov, 1978, form a group of species with acicular spines in posterior segments, hooded hooks lacking a shaft constriction, and spines of the modified 5th with a flange on the convex side and/or a crest of bristles. P. CAULLERYI & P. BRACHYCEPHALA are often synonymized because the adult forms appear identical. The larval forms show considerable differences in pigmentation, however, enough that P. BRACHYCEPHALA is now thought to be a distinct species (see Light, 1978).

The major spines of P. ARMATA & P. QUADRILOBATA have a flange on the convex side, P. CAULLERYI & P. ACICULATA have spines similar to those of P. BRACHYCEPHALA, but those of ACICULATA also have a definite lateral flange. The posterior acicular spines of BRACHYCEPHALA (and CAULLERYI) barely protrude from the notopodial lobe, while those of QUADRILOBATA protrude prominently when contracted, ARMATA's spines are usually not emergent except in two posterior setigers where they form highly conspicuous stellate fascicles (in southern California specimens). The stout acicular spines of ACICULATA begin in midbody, and there are only 2-3 per fascicle throughout the rest of the body.

Variability: The pygidium has been described as 4 fleshy lobes and also as a disk with a middorsal notch. The notosetae of the first setiger may be abundant & obvious to sparse & nearly invisible. Hooded hooks may rarely start on setiger 6.





POLYDORA BRACHYCEPHALA Hartman, 1936

Pertinent literature: Hartman, 1936, 1969; Reish, 1959, 1964; Blake, 1971 (in part, as P. CAULLERYI), 1975; Banse, Hobson & Nichols, 1968 (in part, as P. CAULLERYI).

Depth range: Intertidal through shallow sub-tidal; one record at 150 m.

Distribution: Puget Sound, Washington; Yaquina Bay, Oregon (150 m); central and southern California, in bays & harbors (Los Angeles-Long Beach Harbor, King Harbor, Catalina Harbor).

Ecology: In soft bottom communities, on littoral silts, clayey mud, and silt/ooze mixtures.

POLYDORA nr. ARMATA Langerhans, 1880

Spionidae

Literature citation: Langerhans, P. 1880. Die Wurmfauna von Madeira. III. Zeitschr. Wissensch. Zool., 34: 87-143.

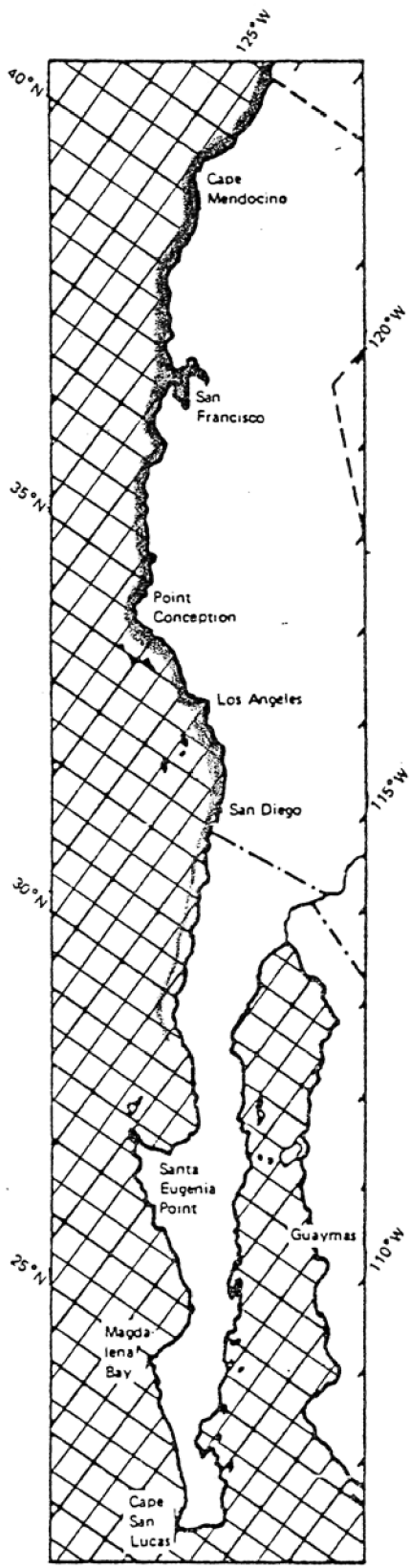
Synonymy: POLYDORA MONILARIS Ehlers, 1905

Primary diagnostic characters: Bifid prostomium; eyes absent; 2-3 capillary notosetae present on first setiger; dorsal fascicles of 2-3(4) geniculata spines on modified 5th setiger, each spine bidentate, distally curved, with teeth connected by transverse flange; no companion setae; neuropodial hooded hooks begin setiger 7, each bidentate, 3-4 per fascicle; branchiae begin setiger 7, continue to setiger 12 at most; caruncle extends to end setiger 2; pygidium disk-shape, with dorsal gap, occasionally ventral gap as well; last 8-12 notopodia with 8-12(13) thick, acicular spines in cone-shaped bundles.

Related species & character differences: P. BRACHYCEPHALA Hartman, 1936; P. CAULLERYI Mesnil, 1897; P. QUADRILOBATA Jacobi, 1883; P. ACICULATA Blake & Kudenov, 1978. See discussion under P. BRACHYCEPHALA.

Variability: The spines of the modified 5th setiger may vary considerably in appearance due to the angle of observation and degree of erosion (see Woodwick, 1964 and Blake & Kudenov, 1978, for discussion; illustrations below). There also appears to be several variations found in the arrangement of the posterior notopodia with spines as stated in the literature. The number of such notopodia ranges from 6 (Hartman, 1941), 8 (Okuda, 1937) to 8-12 (Fauvel, 1927). Acicular spines per fascicle are 8-12 (Fauvel, 1927) or 10-13 (Okuda, 1937). The fascicles are usually said to be cone-shaped (Fauvel, 1927; Hartman, 1969; Day, 1967; Blake & Kudenov, 1978), but in Japanese specimens are arranged in a half-moon (Okuda, 1937; Imajima and Hartman, 1964). The fascicles can be almost completely retracted within the notopodial lobes (Fauvel, 1927; Blake & Kudenov, 1978: small specimens) or emergent (Okuda, 1937; Hartman, 1969); if emergent, the spines may be capable of extension into stellate or funnel-shaped fascicles (Hartman, 1969; Day, 1967).

Comments: The specimens brought to the SCAMIT meeting came from the Allan Hancock Foundation collections, courtesy of Sue Williams, were originally identified by Olga Hartman. Concerning the posterior notopodia, her 1941 description states: "Fascicles of heavy spines are present in notopodia of the last 6 segments; those in the fifth and sixth last segments are unusually conspicuous bundles; those in the last four segments are much smaller". Despite the wide range of variation noted world-wide, the differences in the southern California material seem enough to place it in a new taxa. Confirmation of this would require examination of type material and other specimens.



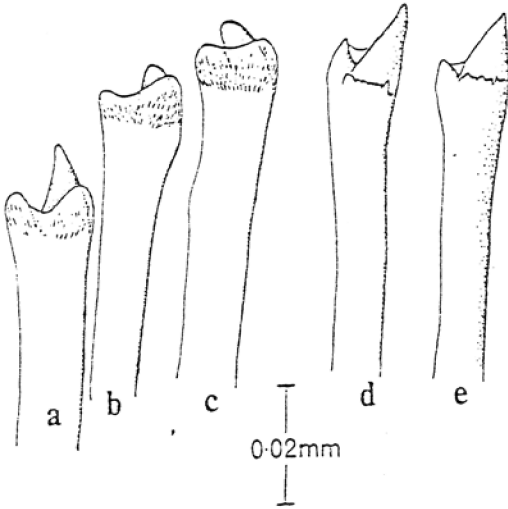
POLYDORA ARMATA Langerhans, 1880

Pertinent literature: Hartman, 1941, 1969; Imajima & Hartman, 1964; Blake & Kudenov, 1978; Woodwick, 1964; Light, 1978; Okuda, 1937.

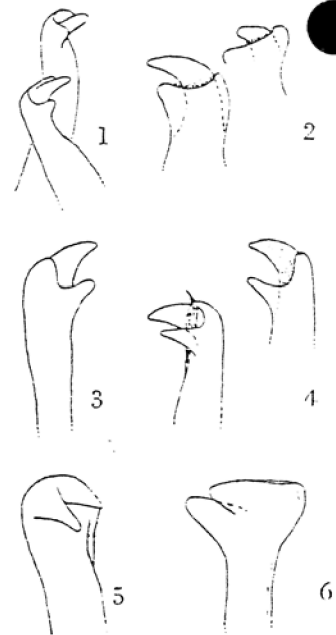
Depth range: Intertidal - shallow subtidal.

Distribution: Western Canada to western Mexico (southern end of range unstated). Considered cosmopolitan but may represent several confused species.

Ecology: Boring into coralline & calcareous growths, limestone substrates, shells, sponges and coral; forms galleries covered with tubes of fine mud (Fauvel, 1927).



major spines of setiger five from Woodwick 1964



major spines of setiger five from Blake and Kudenov 1978



half-moon arrangement of posterior notopodial spines from Okuda 1937