Contractor Report Series 77-6

ANNOTATED BIBLIOGRAPHY OF THE POLYCHAETA OF THE PACIFIC NORTHWEST

by

A.M. Gavin and V.I. Macdonald
Beak Consultants Ltd.

For

INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY
Sidney, B.C.

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November 1977

This report was prepared by A.M. Gavin and V.I. Macdonald of Beak Consultants Ltd. under contract to the Institute of Ocean Sciences, Patricia Bay. The contents of this report are the responsibility of the Contractor.

PREFACE

This bibliography was compiled as part of the requirement of contract DSS-0855-KF832-6-0261. The purpose was to review the literature on the distribution and ecology of infaunal polychaete species of the Pacific northwest from 1956-1976. This review is presented as section A. Section B consists of a review of pre-1956 literature, and section C consists of selected references of a general (non-regional) nature.

The format used on the review is that of the Government of Canada in which the following information is presented:

1. Author
2. Year of publication
3. Title
4. Publication type (other than a journal)
5. Journal
6. Number of references relating to the subject area
7. Geographical location
8. Indexing subjects
9. Source of annotation
10. Annotation

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File: J5140
Date: 27 September 1976

SAMPLING AND ANALYSIS OF MARINE BENTHIC FAUNA IN SAANICH INLET

SUMMARY FINAL REPORT

Prepared for:

DEPARTMENT OF THE ENVIRONMENT
INSTITUTE OF OCEAN SCIENCES
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Submitted by:

BEAK CONSULTANTS LIMITED
Vancouver, British Columbia

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INTRODUCTION

In June 1976, Beak Consultants Limited was awarded a contract for sampling and analyses of marine benthic fauna in Saanich Inlet. Saanich Inlet is a 15 mile long fjord having a sill (275 feet) at the entrance. The maximum depth is 128 fathoms. Usually waters below sill depth are oxygen deficient. This oxycline limits pelagic life at depth, and this study investigated the benthos, in particular the Annelida, in and into the anoxic zone.

In addition to the above investigation (and ancillary sediment analyses), BEAK conducted a literature survey of works on the distribution and ecology of infaunal polychaetes of the Pacific North West. These works are presented in Government of Canada standard format, in a three-part appendix. The first part contains 1956 to present references; the second, key earlier works (referenced only); and the third, works of peripheral interest. The third part includes ecological and life history works about species not in the Pacific North West, but of genera that are present.

MATERIALS AND METHODS

Field Activities

Sampling was conducted from the M/S Wanderer VII during 11-14 July 1976. Samples were collected with a 23 X 23 cm ponar grab sampler. Water samples were collected with a 2 l Van Dorn sampler. The temperature and dissolved oxygen content of water samples were measured immediately upon retrieval. The first two of three grabs was preserved in ETOH for benthic sorting and the third stored in plastic for chemical analyses.

A ComDev Marine CDM-160 was the primary sounder and a Lowrance CD-660 was used as an auxilliary. The CDM-160 is a 50 khz unit with a 60 ftm capacity (over soft substrata). The frequency difference allowed easier determination of substrate hardness as the CD-660 is capable of twice around (120 ftm) return over hard bottom. A Yellow Springs Instrument Company Model 54 oxygen meter was used for temperature and dissolved oxygen measurement in the field.

Sampling stations were along three transects. The first was from Sluggett Point (Brentwood Bay) to the central basin with stations at 25, 50, 75, 100, 120 and 125 fathoms. The second was from the central basin to Bamberton with stations at the same depths. The third was in Finlayson Arm from Sawluctus Island to Repulse Rock with stations at 25, 50, 75, 100 and 110 fathoms. Table 1 lists stations by line and number, giving sightings for any future reoccupations.

Table 1: Saanich Inlet Benthic Station Descriptions

STATION NO. (DEPTH)	BEARING	SUBSTRATE
BRENTWOOD LINE:		
1 (25 fathoms)	090° on Sluggett Pt. 220° on Willis Pt. 155° on Tod Inlet Tide gauge	Cobble
2 (50 fathoms)	270° on house above cement factory and on the 50 ftm line	Mud
3 (75 fathoms)	084° on Sluggett Pt. and on the 75 fathom line	Mud
4 (100 fathoms)	093° on Sluggett Pt. and on the 100 fathom line	Mud
5 (120 fathoms)	085° on Sluggett Pt. and on the 120 fathom line	Hardbottom - apparent hard pan
7 (125 fathoms)	080° on beacon on Senanus Is. and 125 fathoms	Mud to Rock
BAMBERTON LINE:		
11 (25 fathoms)	225° on tailings dump and on the 25 fathom line	Mud to Clay
10 (50 fathoms)	225° on tailings dump and on the 50 fathom line	Mud to Clay
9 (75 fathoms)	225° on tailings dump and on the 75 fathom line	Mud to Clay
8 (100 fathoms)	225° on tailings dump and on the 100 fathom line	Mud
6 (120 fathoms)	225° on tailings dump and on the 120 fathom line	Mud to Rock
7 (125 fathoms)	Brentwood line terminus	

Table 1: Saanich Inlet Benthic Station Descriptions (Cont'd)

STATION NO. (DEPTH)	BEARING	SUBSTRATE
FINLAYSON ARM LINE:		
16 (25 fathoms)	Straight up channel from Sawluctus Is. and on the 25 fathom line	Sand
15 (48 fathoms)	Straight up channel from Sawluctus Is. and at 48 fathoms (Rock at 50 fathoms)	Mud
14 (75 fathoms)	Inside Christmas Pt directly east of wreck at the end of the old road	Mud
13 (100 fathoms)	297° on unnamed point on the west shore of inlet and on 100 fathom line	Mud
12 (110 fathoms)	152° on Repulse Rock Beacon and at 110 fathoms	Mud

N.B. All bearings are magnetic

Laboratory Activities

The screening and sorting of benthic samples was done at Beak's Richmond facility. Screening was through an array of sieves using low pressure water. The final mesh used was 125μ, rather than the larger 250μ specified, to ensure retention of animals. All annelids collected were identified and the remaining benthos catagorized. Samples have been retained. Taxonomic references are included in Literature Cited.

Analyses of sediment included particle size distribution, volatile component (105°C - 550°C loss component) and Kjeldahl nitrogen. Analyses were conducted in accordance with standard methods (Beak, 1965; Hesse, 1971; EPA, 1974; and APHA et al, 1975).

A Yellow Springs Instrument Company Model 33 S-C-T meter was used for the salinity determinations.

RESULTS & DISCUSSION

No macrobenthic organisms were evident at any station upon grab retrieval. The average sample volume was about six litres at those stations having fine mud bottoms. As seen in Tables 2 and 3, all samples exhibited an extreme biological paucity.

The bottom types encountered ranged from hard pan rock to cobble to sand to tailings material (clayey - on the shallow end of the Bamberton transect) to hydrogen sulfide bearing fine mud at deeper stations. Table 4 presents the results of the sediment analyses.

Table 5 presents the results of temperature and salinity (conductivity) measurements of water collected at the sediment/water interface.

Prepared by: A. J. Jordan

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Marine Biologist

Approved by: J. D. Gaushorn

for K. R. D. Mundy
Manager, Environmental Services

Table 2: Detailed Annelid Identifications by Station

TAXA	NO. OF INDIVIDUALS
Station 1B	
F. Syllidae	
Syllis heterochaeta Moore	5
Syllidae sp. indet. (damaged)	1
F. Phyllodocidae	
Phyllodoce sp. Savigny	2
F. Naldanidae	
Euclymene sp. Verrill	2
F. Cirratulidae	
Tharyx tesselata Hartman	1
F. Dorvilleidae	
Dorvillea pseudorubrovittata Berkley	1
F. Polynoidae sp. indet. (damaged)	2
F. Terebellidae sp. indet. (damaged)	2
TOTAL NO. OF ANNELIDS	16
TOTAL NO. OF ANNELID TAXA	8
CALCULATED NO. OF ANNELIDS/m^2 *	306
Station 2A	
F. Nephtyidae	
Nephtys cornuta franciscana Clark & Jones	2
TOTAL NO. OF ANNELIDS	2
TOTAL NO. OF ANNELID TAXA	1
CALCULATED NO. OF ANNELIDS/m^2 *	38
Station 10A	
F. Nephtyidae	
Nephtys cornuta franciscana Clark & Jones	1
TOTAL NO. OF ANNELIDS	1
TOTAL NO. OF ANNELID TAXA	1
CALCULATED NO. OF ANNELIDS/m^2 *	19

* Calculation based on the "bite area" of the Ponar grab.

Table 2: Detailed Annelid Identification by Station (Cont'd)

TAXA	NO. OF INDIVIDUALS
Station 10B	
F. Nephtyidae	
Nephtys cornuta franciscana Clark & Jones	5
TOTAL NO. OF ANNELIDS	5
TOTAL NO. OF ANNELID TAXA	1
CALCULATED NO. OF ANNELIDS/m^2 *	96
Station 11A	
F. Spionidae	
Prionospio malmgreni Claparede	6
F. Capitellidae	
Capitella (damaged) Blainville	6
F. Polynoidae sp. indet. (damaged)	1
TOTAL NO. OF ANNELIDS	13
TOTAL NO. OF ANNELID TAXA	3
CALCULATED NO. OF ANNELIDS/m^2 *	248
Station 11B	
F. Cirratulidae	
Tharyx tesselata Hartman	1
F. Maldanidae sp. indet. (damaged)	1
TOTAL NO. OF ANNELIDS	2
TOTAL NO. OF ANNELID TAXA	2
CALCULATED NO. OF ANNELIDS/m^2 *	38
Station 15B	
F. Nephtyidae	
Nephtys cornuta franciscana Clark & Jones	7
TOTAL NO. OF ANNELIDS	7
TOTAL NO. OF ANNELID TAXA	1
CALCULATED NO. OF ANNELIDS/m^2 *	134

* Calculation based on the "bite area" of the Ponar grab.

Table 2: Detailed Annelid Identification by Station (Cont'd)

TAXA	NO. OF INDIVIDUALS
Station 16A	
F. Cirratulidae	
Tharyx tesselata Hartman	2
F. Nephtyidae	
Nephtys sp. Curvier	2
TOTAL NO. OF ANNELIDS	4
TOTAL NO. OF ANNELID TAXA	2
CALCULATED NO. OF ANNELIDS/m^2 *	76
Station 16B	
F. Spionidae	
Prionospio malmgreni Claparede	1
F. Lumbrineridae	
Lumbrineris pallida Hartman	1
F. Nephtyidae	
Nephtys cornuta franciscana Clark & Jones	1
F. Cirratulidae	
Tharyx tesselata Hartman	4
F. Nereidae	
Nereis sp. Linnaeus	1
TOTAL NO. OF ANNELIDS	8
TOTAL NO. OF ANNELID TAXA	5
CALCULATED NO. OF ANNELIDS/m^2 *	153

* Calculation based on the "bite area" of the Ponar grab.

Table 3: Other Benthos Collected (Stations 1A to 4B)

ORGANISM	STATION NUMBER*							
	1A	1B	2A	2B	3A	3B	4A	4B
Copepoda				1	3	32	29	58
Amphipoda								
Type 1 (*Parathemisto* sp.)			10	17	1	30	12	20
Type 2 (*Cyphocaris* sp.)			1		1			2
Type 3		2			1			5
Euphausiacea					1			5
Decapoda - larva						1	2	
adult		1						
Amphineura		1						
Bivalvia		2						
Gastropoda - limpet		1						
Holothuroidea		2						
Chaetognatha			1	1		3		7

* A and B refer to replicate grabs

Table 3: Other Benthos Collected (Stations 5A to 8B)

ORGANISMS	STATION NUMBER* 5A	5B	6A	6B	7A	7B	8A	8B
Copepoda	3	6	†	†	†	†		†
Amphipoda								
Type 1 (*Parathemisto* sp.)	5	4	†	†	†	†	†	†
Type 2 (*Cyphocaris* sp.)				†				
Type 3	1			†				
Euphausiacea		1	†	†		†	†	†
Decapoda - larva	1				†			
Bivalvia	3							
Chaetognatha		1	†	†	†	†	†	†
Pisces - larva				†				

* A and B refer to replicate grabs

† denotes presence

Table 3: Other Benthos Collected (Stations 9A to 12B)

ORGANISMS	STATION NUMBER* 9A	9B	10A	10B	11A	11B	12A	12B
Copepoda	†		†	†		†	†	†
Amphipoda								
Type 1 (*Parathemisto* sp.)	†	†					†	†
Type 2 (*Cyphocaris* sp.)	†							†
Type 3	†			†			†	†
Decapoda - adult				†	†			
Bryozoa						†		
Bivalvia						†		
Chaetognatha	†		†				†	

* A and B refer to replicate grabs

† denotes presence

Table 3: Other Benthos Collected (Stations 13A to 16B)

ORGANISMS	STATION NUMBER* 13A	13B	14A	14B	15A	15B	16A	16B
Hydrozoa								†
Copepoda	†	†	†	†			†	†
Amphipoda								
Type 1 (*Parathemisto* sp.)	†	†		†	†	†	†	
Type 2 (*Cyphocaris* sp.)			†		†	†		
Type 3			†					
Euphausiacea	†	†	†	†				
Decapoda - larva	†							
- adult (hermit crab)								†
Bivalvia							†	†
Gastropoda							†	†

* A and B refer to replicate grabs

† denotes presence

Table 4: Analyses of Sediment Results

STATION NO.	% TOTAL KJELDAHL[a] NITROGEN	% SAND[b]	% SILT[b]	% CLAY[b]	% VOLATILE[c] RESIDUES
1	d	e	e	e	8.81
2	0.57	2.0	27.7	70.3	14.4
3	0.39	0.4	22.3	77.3	11.5
4	0.41	0.4	19.6	80.0	12.1
5	0.35	0.3	21.3	78.4	12.1
6	0.33	2.5	25.9	71.6	10.4
7	0.35	0.4	26.2	73.4	10.9
8	0.24	17.2	16.7	66.1	9.64
9	0.16	0.4	22.7	76.9	9.66
10	0.058	16.2	64.8	19.0	6.65
11	0.078	20.2	60.1	19.7	5.11
12	0.42	0.5	15.8	83.7	12.5
13	0.50	2.8	22.1	75.1	12.8
14	1.1	1.3	27.7	71.0	16.1
15	0.52	4.8	46.6	48.6	13.7
16	0.042	92.6	4.5	2.9	1.66

a Results on an air-dried basis

b Sand $>63\mu$, silt $\leq 63\mu$ $\geq 4\mu$, Clay $< 4\mu$

c Results on an oven-dried basis

d Insufficient sample, see below

e Sample granule/pebble on the Wentworth classification

Table 5: Salinity & Temperature of Water at the Sediment/Water Interface

STATION NO.	DEPTH [1] (fathoms)	TEMPERATURE [2] (°C)	SALINITY [3] (°/∞)	DISSOLVED [4] OXYGEN (mg/l)
1	25	9.0	27.7	7.7
2	50	8.8	29.0	2.7
3	75	9.0	29.0	2.9
4	100	10.0	29.3	1.4
5	120	9.5	29.2	1.1
6	120	10.0	29.1	1.4
7	125	10.0	29.2	1.2
8	100	9.5	29.0	1.1
9	75	9.5	29.0	1.2
10	50	10.0	27.8	5.7
11	25	11.5	28.5	5.2
12	110	10.0	29.0	1.2
13	100	9.5	29.0	1.2
14	75	9.5	29.0	1.4
15	48	9.5	29.9	1.2
16	25	10.5	27.2	7.6

[1] Accuracy ± 1 fathom

[2] Accuracy ± 0.7°C

[3] Accuracy ± 1.3 ‰

[4] Corrected for salinity; Accuracy ± 6.3% of reading

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APPENDIX A

1956 - Present

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3. Effects of the insecticide carbaryl in clams and some other intertidal mud flat animals

5. J. Fish. Res. Bd. Canada 31(4): 466-470

6. 1 of 14

7. Yaquina Bay, Oregon

8. insecticide, mudflats, carbaryl, *Nephtys* sp., *Haploscoloplos elongatus*, *Goniada brunnea*, Spionidae.

9. from author's text and abstract

10. Insecticide carbaryl was applied in test plots on mud flat to determine effect on invertebrates and target organism, ghost shrimp. Results of study show significant reduction in juvenile clams. Clam species differed in susceptibility to carbaryl. Carbaryl did not reduce the number of polychaete or nemertean worms.

1. AUSTIN, W.C., L.D. DRUEHL & S.B. HAVEN
2. 1971
3. Marine benthic habitats and biota in the Bamfield Area.
5. Bamfield Marine Station Rep. No. 2, Bamfield Survey Part IV a: 1-30
6. 4 of 14
7. Barkley Sound, Cape Beale, Aguilar Point, Dixon Island, Bamfield Inlet, Folger Island, Grappler Inlet, Station Point
8. benthic habitats, biota, polychaeta, intertidal, subtidal
9. From text
10. Substrate types and topography, surface water conditions, tidal conditions covered in introduction. Descriptions of exposed rocky intertidal with biota ("many polychaetes"); sheltered rocky intertidal with biota (*Serpula vermicularis*, *Eudistylia vancouveri*, *Thelepus crispus*, *Amphitrite robusta*, *Nereis* spp., Glyceridae, Syllidae and many others); wharf pilings and biota (*Eudistylia*); mudflats and biota (*Abarenicola*, *Capitella capitata*, *Nainereis laevigata*, *Hemipodus borealis*, *Phyllochaetopterus prolifica* and abundant unidentified Dorvilleidae, Maldanidae, and Onuphidae); sandy beaches and biota (*Nephtys californiensis* and *Euzonus mucronata*); estuaries and biota (spirorbid polychaete) and subtidal benthos with biota (*Serpula vermicularis*, *Chitinopoma groenlandica*, *Spirorbis* spp., and *Dodecaceria fewkesi*).

1. AUSTIN, W.C.
2. 1970
3. Preliminary List of marine invertebrates of the Barkley Sound region
5. Bamfield Marine Station Report. No. 3, Bamfield Survey, Part V 125 p.
6. 13 of 114
7. Station list with latitude and longitude from 11 sources
8. species lists, abundance of species, polychaeta family listings
9. from text
10. Purpose of report is findings of the focus of invertebrate distribution along outer coast of Vancouver Island. A species list with record of abundance (if available) location found, and a literature citation (primary source if available). Polychaeta families covered are:

Acrocirridae	Eunicidae	Poeobiidae
Alciopidae	Euphrosinidae	Sabellaridae
Ampharetidae	Flabelligeridae	Sabellidae
Amphinomidae	Glyceridae	Scalibregmidae
Aphroditidae	Gioniadidae	Serpulidae
Arabellidae	Hesionidae	Sphaerodoridae
Arenicolidae	Lumbrineridae	Sigalionidae
Capitellidae	Magelonidae	Spionidae
Chaetopteridae	Phyllodocidae	Sternapsidae
Chrysopetalidae	Pilargiidae	Syllidae
Cirratulidae	Polynoidae	Terebellidae
Dorvilleidae	Polyodontidae	Typhloscolecidae
		Tomopteridae

1. BANSE, K.
2. 1972
3. On some species of Phyllodocidae, Syllidae, Nephtyidae, Goniadidae, Apistobranchidae, and Spionidae (Polychaeta) from the northeast Pacific Ocean
5. Pacific Science 26:191-222
6. 18 of 65
7. north east Pacific Ocean (cool, temperate)
8. species descriptions, polychaeta, Phyllodocidae, Syllidae, Nephtyidae, Goniadidae, Apistobranchidae, Spionidae, new species.
9. author's abstract
10. Eteone pacifica (synonym, E. bistriata) and E. tuberculata are redescribed from the types. Notophyllum (Hesperophyllum) tectum is redescribed from new material. Additions to the descriptions after study of type material are made for Eulalia (Eulalia) quadrioculata (synonym, E. aviculiseta), Autolytus (Proceraea) trilineatus (new combination), Exogone lourei, E. uniformis, Syllis (Syllis) elongata. S. (Typosyllis) pulchra, S. (Typosyllis) stewarti, Nephtys assignis, N. discors, N. rickettsi and Glycinde picta. Additions to the descriptions on the basis of new material are made for Eusyllis japonica Odontosyllis fulgurans japonica, O. parva, O. phosphorea (synonym, O. phosphorea nanaimoensis), Syllis (Typosyllis) adamantea adamantea, S. fasciata, Nephtys cornuta franciscana, and Apistobranchus ornatus. Six new records are given for Washington and British Columbia.

    New species are Brania brevipharyngea and Exogone molesta. Neopygospio is a synonym of Polydora (Pseudopolydora)

1. Banse, K.

2. 1971

3. A new species, and additions to the descriptions of six other species of Syllides Orsted (Syllidae:Polychaeta)

5. J. Fish. Res. Bd. Can. 28:1469-1481

6. 1 of 35

7. Waters off Washington State and Cape Cod Bay, Massachusetts

8. Syllidae: Polychaeta, Syllides Orsted, descriptions, new species

9. author's abstract

10. Additions are made to the description of Syllides articulosa, S. convoluta, S. japonica, and S. longocirrata. Syllides fulva and S. verilli are recognized as valid species, and Syllides benedicti is newly described. Several new records are given. The overlapping of characters of Syllides and Pionosyllis is pointed out. Possibly, the insertion of the blades of the compound setae may prove to be a reliable charcter in differentiating the two genera.

1. BANSE, K., F.H. NICHOLS & D.R. MAY

2. 1971

3. Oxygen consumption by the seabed. III. on the role of macrofauna at three stations

5. Vie et Milieu, 22: 31-52

1. BANSE, KARL
2. 1969
3. Acrocirridae n. Fam. (Polychaeta Sedentaria)
5. J. Fish. Res. Bd. Canada 26: 2595-2620
6. 3 of 52
7. Puget Sound, Washington and adjoining waters, western tropical North Atlantic Ocean, New England, North Sea, Antarctic, Mediterranean, northwestern Ireland, Northeastern Sea of Okhotsk, New Zealand, coast of Japan, S.E. Bering Sea, Pacific Coast of Alaskan Peninsula, Southern California, Adriatic Sea.
8. new family, Polychaeta Sedentaria, F. Acrocirridae, descriptions, distributions, key, genus, species.
9. author's abstract
10. Acrocirrus Grube and Macrochaeta Grube (Polychaeta Sedentaria), comprising at present 14 species, are removed from the Cirratulidae and placed in a new family. The descriptions of the type species of the genera and of five other species are materially improved. Acrocirrus trisectus and Macrochaeta pege are newly described; Acrocirrus heterochaetus okotensis Imajima is elevated to species rank. Diagnoses and records as well as keys for identification are given for all species of the family.

1. BANSE, K.

2. 1968

3. Streptosyllis latipalpa, new species (Polychaeta, Syllidae) from Puget Sound (Washington).

5. Proc. Biol. Soc. Wash. 81: 151-154

6. 1 of 6

7. Puget Sound (Washington)

8. new species, polychaeta, Streptosyllis latipalpa (F. Syllidae)

9. author's

10. Among the polychaetes collected from intertidal sand near Seattle, Washington in 1956 to 1957 by Wieser (1959), there is a previously overlooked, well-preserved specimen of an undescribed species of Streptosyllis Webster and Benedict, a genus not yet reported from the Pacific Ocean. The exact locality of collection can no longer be determined. The holotype is deposited in the U.S. National Museum (USNM 36509).

1. BANSE, K.
2. 1963
3. Polychaetous annelids from Puget Sound and the San Juan Archipelago, Washington
5. Proc. Biol. Soc. Wash. 76: 197-208
6. 4 of 34
7. Puget Sound and the San Juan Archipelago, Washington
8. polychaetous annelids, Eteonides coineaui difficilis (F. Phyllodocidae), Ophryotrocha vivipara [F. Eunicidae (Dorvilleinae)], Rhynchospio arenicola syn. Rhynchospio (cf. arenicola) [F. Spionidae], Cossura longocirrata [F. Cirratulidae], Laonome kroyeri [F. Sabellidae].
9. author's abstract
10. In view of pending investigations of the level bottom fauna of the inshore waters of Washington by the Dept. of Oceanography, polychaetes were studied at the Friday Harbour Laboratories of the University of Washington during the summers of 1961 and 1962. Some species new to the area or new to science are treated here.

1. BANSE, KARL & KATHARINE D. HOBSON
2. 1974
3. Benthic Errantiate Polychaetes of British Columbia and Washington
5. Fisheries & Marine Service, Dept. of the Environment, Ottawa Bulletin 185, 111 p.
6. 49 of 139
7. British Columbia and Washington
8. key, polychaete, errantiate, benthic, B.C., Washington
9. author's abstract
10. This Bulletin is concerned with the benthic errantiate polychaetes (Annelida) of British Columbia and Washington, the central and best-known section of the southern part of the Oregonian-Aleutian biogeographic region. The principal external diagnostic characters of all the families of benthid errantiate polychaetes are presented in a tabulated scheme. Keys to all the genera from the continental shelves of the cold-temperate North Pacific Ocean are provided under the relevant family. In contrast, the species keys treat only those species recorded, landward of the 200 m isobath, from British Columbia and Washington and an additional 22 species which may be expected to occur there. A checklist of the 195 species known from B.C. and Washington is provided; names in boldface indicate that the authors have seen specimens from B.C. or Washington.

    The diagnostic characters are presented in the specific keys, as well as in the generic keys, in a series of alternative choices. Supplemental characters for certain species, however, are added to preclude species, not previously recorded from B.C. and Washington but known form elsewhere in the cold-temperate North Pacific, from fitting the key accidentally. References are cited below the specific name if the species was not treated in Canadian Pacific Fauna (Berkeley & Berkeley 1948) or if the description was inadequate or the species was misidentified therein. About 330 detailed figures are given.

10. Continued

Brief instructions for collection, fixation, identification, and use of the key, as well as a glossary and an index to the scientific names, are provided. Onuphis longibranchiata Berkeley is referred to Diopatra ornata Moore. A diagnosis of Bergstroemia Banse, a new subgenus of Eulalia Savigny s.l. (Phyllodocidae), is added.

1. BANSE, KARL & K.D. HOBSON
2. 1968
3. Benthic polychaetes from Puget Sound, Washington with remarks on four other species.
5. Proc. U.S. National Museum. 125(3667): 1-53
7. Puget Sound, Washington
9. Bioabstract
10. During quantitative collections on snad and mud bottoms, 8 new species were found: Eunoe uniserata, Eulalia (Pterocirrus) parvoseta, Laonice pugettensis, Paraspio cirrifera, Chaetozone acuta, C. berkeleyorum, Tharyx secundus, and T. serratisetis. New combinations are Caulleriella annulosa (Hartman) and Neoamphitrite edwardsi (Quatrefages). Information on type material is provided for 8 species. Twenty-four new records for Washington and B.C. waters are given. It is suggested that they reflect incomplete knowledge of the region rather than represent recent immigration. Intestinal contents of local species of Glycera and Lumbrineris suggest deposit feeding but it is the exclusive mode of nutrition.

1. BANSE, K. & F.H. NICHOLS
2. 1968
3. Two new species and three new records of benthic polychaetes from Puget Sound (Washington)
5. Biol. Soc. Wash. 81: 223-230
6. 3 of 10
7. Puget Sound, Washington
8. new species, new records, benthic polychaetes, Eulalia (Pterocirrus) macroceros (Grube) [F. Phyllodocidae], Protodorvillea recuperata n. sp. and Stauronereis japonica [F. Dorvilleidae] Lanassa venusta and Lysilla pacifica [F. Terebellidae], Chone bimaculata n. sp. [F. Sabellidae].
9. Author's
10. We describe here two new polychaete species, give three new records for Puget Sound, Washington, and comment on one species known already from this region. The animals were found among the polychaetes of twenty-one 0.1 m^2 grab samples taken primarily in spring 1963 (see Lie, in press). Locations and full descriptions of the sampling stations, including full species lists, can be found in that paper.

1. BARNES, R.D.
2. 1965
3. Tube-building and feeding in chaetopterid polychaetes
5. Biol. Bull. 129: 217-233
6. 1 of 5
7. Atlantic, plus specimens from Washington coast
8. tube-building, feeding habits, Chaetopteridae
9. from author's abstract
10. tube-building and feeding habit investigated for some Chaetopterid genera. Tube descriptions and how built. Use of mucous bag for feeding. Cilia in worm groove transports food and wastes in or out of the tube.

1. BELL, LEONARD M. & RONALD J. KALLMAN
2. 1976
3. The Nanaimo River Estuary - Status of Environmental Knowledge to 1976
4. Estuary Working Grp., Reg. Brd. Pac. Reg., Env. Canada, Special Estuary Series No. 5
6. 25 of 101
7. Nanaimo River Estuary
8. summary, Geology, Climatology, Hydrology, Oceanography, Invertebrate Biology, Fish, Flora, Wildlife, Land & Water Use, Pollution, Effects of Development
9. AMG original
10. A summary of environmental information on the Nanaimo River Estuary. A section on marine invertebrates is included as well as lists of invertebrates is included as well as lists of marine invertebrates recorded from the area are found in the appendices.

1. BELL, LEONARD M. & RONALD J. KALLMAN
2. 1976
3. The Cowichan-Chemainus River Estuaries - Status of Knowledge to 1975
4. Estuary Working Grp., Reg. Brd. Pac. Reg., Env. Canada, Special Estuary Series No. 4.
6. 18 of 94
7. Cowichan-Chemainus River Estuaries
8. summary, Geology, Climatology, Hydrology, Water Quality, Oceanography, Invertebrate Biology, Fish, Flora, Wildlife, Land and Water Use, Pollution, Development.
9. AMG original
10. A summary of environmental information on the Cowichan-Chemainus River Estuaries. A section on marine invertebrates is included as well as a list of Marine Invertebrate organisms recorded from the area.

1. BERKELEY, C.
2. 1972
3. Further records of Polychaeta new to British Columbia with comments on some others
5. Can. J. Zool. 50: 451-456
6. 15 of 34
7. Coast of British Columbia
8. polychaeta, British Columbia, new records, Laetmonice japonica (F. Aphroditidae), Lepidasthenia longicirrata (F. Polynoidae), Ehlersileanira sp? (F. Sigalionidae), Notopygos labiatus (F. Amphinomidae), Nephthys californiensis Hartmaz var. simplex n. var. (F. Nepthydidae), Nereis limnicola (F. Nereidae), and Cheilonereis cyclurus (F. Nereidae), Eunice websteri syn. E. longicirrata and Onuphis longibranchiata (F. Eunicidae) and Hyalinoecia rigida (F. Eunicidae), Ampharete acutifrons (F. Ampharetidae), Pectinaria (Amphictene) auricoma (F. Pectinariidae) and Myxicola infundibulum (F. Sabellidae).

9. author's abstract
10. Thirteen species of Polychaeta distributed between 10 families are dealt with. Of these, one is new to science, one new to North America, and two new to British Columbia. The remaining discussions are of species already recorded from British Columbia, but the records of which call for further comment.

1. BERKELEY, C.
2. 1968
3. A checklist of Polychaeta recorded from British Columbia since 1923, with references to name changes, descriptions and synonymies II. Sedentaria
5. Canadian Journal of Zoology 46: 557-567
6. 17 of 67
7. British Columbia
8. polychaeta, sedentaria, British Columbia, name changes, descriptions, synonymies
9. author's abstract
10. This list completes that of the species of Polychaeta recorded from B.C. since 1923. It comprises 187 species, in 20 families of Sedentaria. Most of them were included in a contribution to the Canadian Pacific Fauna Series [No. 9b(2)] published by my wife and self in 1952, but many have been recorded, and, in several cases, reclassifications and modifications have been suggested since that date. An effort is made to include all these in the present contribution.

1. BERKELEY, C.
2. 1967
3. A checklist of Polychaeta recorded from British Columbia since 1923 with references to name changes, descriptions and synonymies I. Errantia
5. Canadian Journal of Zoology 45: 1049-1059
6. 26 of 62
7. British Columbia
8. polychaeta, errantia, British Columbia, name changes, descriptions, synonymies
9. author's abstract
10. A hundred and eighty species of Polychaeta Errantia comprise this list. A majority of them were included in a contribution to the Canadian Pacific Fauna series [No. 9b(1)] published by my wife and self in 1948, but, not only have a number of others been described from B,C, since then, but also there have been many modifications of classification and nomenclature suggested by other workers in the field. The purpose of the present list is to bring together all the species recorded by us from B.C. waters up to date and to provide for these reclassifications.

1. BERKELEY, C.
2. 1966
3. Records of some species of Polychaeta new to British Columbia and of extensions in distribution of some others.
5. Can. J. Zool. 44: 839-849
6. 6 of 46
7. west coast of Vancouver Island
8. polychaeta, new species, new depths, British Columbia, Aphrodita longipalpa and Laetmonice pellucida (F. Aphroditidae), Arctonoe caeca and Harmothoe tenebricosa (F. Polynoidae), Notopygos sp.? (F. Amphinomidae), Nephthys brachycephala (F. Nephthydidae), Glycinde lindbergi, Glycera robusta and Glycera americana (F. Glyceridae), Onuphis quadricuspis, Onuphis vexillaria, Nothria pallida, Nothria conchylega, Eunice aphroditois, Eunice longicirrata (F. Onuphidae), Lumbrinereis bifilaris and Lumbrinereis latreilli (F. Lumbrineridae), Drilonereis filum (F. Arabellidae), Flabelligera essenbergae tenebricosa (F. Flabelligeridae), Maldane sarsi, Asychis disparidentata and Asychis biceps (F. Maldanidae), Anobothrus gracilis (F. Ampharetidae), Travisia carnea, Ammotrypane pallida and Ammotrypane breviata (F. Opheliidae), Heteromastus filiformis (F. Capitellidae) and Potamethus elongatus (F. Sabellidae).
9. author's abstract
10. Twenty-five species of polychaeta recently collected off the coast of British Columbia are discussed. Most were taken in waters of considerable depth off the west coast of Vancouver Island. Sixteen are new to B.C. Most of these are known from farther south on the west coast of North America, but some from much shallower depths than those from which they are now recorded; two of them are new to the northeast Pacific; one is a new subspecies. The other nine have been previoulsy known from B.C. but they are now recorded from much greater depths than hitherto, or in new geographical locations.

1. BERKELEY, C.
2. 1956
3. Epidiopatra hupferiana Augener from the northeast Pacific
5. Nature (London) 178: 748
6. none related to subject area of 2
7. Hecate Strait, B.C.
8. polychaete, rare genus, pelagic Epidiopatra hupferiana Augener (F. Eunicidae)
9. author's
10. Capture of a specimen of E. hupferiana in a plankton tow, from 100 ft. to surface, in Hecate Strait, B.C., seems worthy of record. It was taken by Mr. R.J. LeBrasseur, of this Station, in June, 1955. The specimen is small (about 12 mm long); but the characters are unmistakable. The generic characters are essentially those of the better-known Eunicid genus Diopatra, except that tentacular cirri are entirely absent and there is a very limited number of branchiferous segments. In all technical details this specimen agrees completely with Augener's and Monro's descriptions of E. hupferiana.

1. BERKELEY, E.
2. 1961
3. Swarming of the polychaete _Odontosyllis_ _phosphorea_ Moore, var. _nanaimoensis_ Berkeley, near Nanaimo, B.C.
5. Nature 191 (4795): 1321
6. none
7. Departure Bay
8. swarming, bioluminescence, _Odontosyllis_
9. from author's text
10. Due to increased ferry service, using boats of considerable draught, sufficient disturbance has nullified effects of currents and has dispersed bottom dwellers. Since 1959, no swarming _Odontosyllis_ recovered.

1. BERKELEY, E. & C.
2. 1963
3. Neotony in larvae of two species of Spionidae
5. Can. Journ. Zool., 41: 149-151
6. 1 of 10
7. west coast of N. America, Peru, Chile (<u>Prionospio pinnata</u>)
8. neotonous larvae, <u>Prionospio</u>
9. from author's text
10. Collection of <u>Prionospio</u> from coast of Peru contained large larvae of family spionidae. Discussion of whether larvae develop benthically and rise to plankton or develop planktonically and are unable to settle. Influence of salinity or vertical migration discussed.

1. BERKELEY, E. & C. BERKELEY
2. 1962
3. Polychaeta from British Columbia; with a note on some western Canadian arctic forms.
5. Can. Journal of Zoology 40: 571-577
6. 10 of 36
7. B.C. coastline, and Alaska coastline to Point Barrow and Herschell Island
8. Sigalionidae, Nephthydidae, Syllidae, Maldanidae, Chaetopteridae, Opheliidae, Capitellidae
9. VIM original
10. Notations on first recorded recoveries of species not previously recorded from B.C. Western Arctic forms not necessary to this study.

1. BERKELEY, E. & C.
2. 1960
3. Some further records of pelagic Polychaeta from the northeast Pacific north of latitude 40°N and east of longitude 175°W., together with records of Siphonophora, Mollusca, and Tunicata from the same region
5. Can. J. Zool., 38: 787-99
6. 10 of 39
7. North of 40°N Latitude, East of 175°W Longitude: Pacific Ocean
8. Pelagic polychaeta, Phyllodocidae, Typhloscolecidae, Syllidae Alcropidae, Tomopteridae, Eunicidae, Spionidae, Magelonidae, Cirratulidae, Chloraemidae, Poeobiidae, miscellaneous larvae
9. from author's abstract
10. Seventeen species of pelagic polychaeta are recorded from N.E. Pacific. Five are species, not exclusively pelagic, and are known to swim as larvae. Several species new to Pacific or N.E. Pacific area.

    Descriptions of Siphonophera, Mollusca & Tunicata from the same region.

1. BERKELEY, E. & C.

2. 1958

3. Polychaeta of the Western Canadian Arctic

5. J. Fish. Res. Bd. Canada, 15(5), 801-804

6. 6 of 14

7. Western Canadian Arctic

8. polychaeta, Arctic

9. author's abstract

10. A summary of the species of polychaeta hitherto recorded from the western Canadian Arctic is given. Each of the species enumerated is considered in the light of its known, or unknown, occurrence in each of two regions to the west (northern Alaska and the Chukchee Sea) and two to the east (Hudson Bay and Greenland) respectively. The results show an almost complete balance in the number of occurrences of like species in the regions in both directions, suggesting circumpolar distribution within the area studied.

1. BERKELEY, E. & C.

2. 1957

3. On some pelagic Polychaeta from the northeast Pacific north of latitude 40°N and east of longitude 175°W

5. Can. J. Zool., 35: 573-578

6. 3 of 20

7. N.E. Pacific north of latitude 40°N and east of longitude 175°W

8. pelagic polychaeta, Phyllodocidae, Otopsidae, Alciopidae, Tomopteridae, Typhloscolecidae, Eunicidae

9. author's abstract

10. Two species (Otopsis longipes Ditlevsen and Epidiopatra hupferiana Augener) new to the Pacific Ocean and four new to it north of latitude 40°N (Phalocrophorus pictus Greef, Plotohelmis tenuis Apstein, Tomopteris cavallii Rosa, and Travisiopsis lobifera Levinsen) are recorded. Four others, one of which (Typhloscolex miilleri Busch) was taken at a more northerly latitude in the northeast Pacific than previously, are also listed.

1. BERKELEY, E. & C. BERKELEY
2. 1956
3. Notes on Polychaeta from the east coast of Vancouver Island and from adjacent waters, with a new description of a new species of Aricidea
5. J. Fish. Res. Bd. Canada, 13: 541-546
6. 8 of 18
7. east coast of Vancouver Island and adjacent waters
8. polychaeta, Aricidea, western Canada
9. author's abstract
10. Records are given of two species and a variety new to western Canada and notes on 3 other species already known from the region. A new species, Aricidea lopezi, and 4 species new to western North America, are described from the neighbourhood of Friday Harbour, Washington.

1. BERKELEY, E. & C.
2. 1956
3. On a collection of polychaetous annelids from Northern Banks Island, from the South Beaufort Sea, and from Northwest Alaska; together with some new records from the east coast of Canada
5. J. Fish. Res. Bd. Canada, 13(2); pp. 233-256
6. 18 of 54
7. Western Canadian Arctic, N.W. Alaska, and east coast of Canada
8. Canadian arctic, Alaska, polychaetous annelids, eastern Canada
9. author's abstract
10. Thirty-seven species of polychaeta from the western Canadian arctic and northwest Alaska, 27 of which are new to these regions, are enumerated and discussed. Comparison is made with their records in the American arctic to the east of these regions, in the European arctic, and on the east and west coasts of North America. Six species new to the east coast of Canada are also recorded.

1. BLAKE, J.A.
2. 1975
3. The larval development of polychaeta from the northern California coast. I. *Cirriformia spirabrancha* (Family Cirratulidae).
5. Trans. Amer. micros. Soc. 94: 179-188
6. 10 of 36
7. laboratory study, California
8. reproduction, larval development, *Cirriformia spirabrancha*
9. from author's abstract
10. Larval development of cirratulid polychaete *Cirriformia spirabrancha* described. Gametes released into sea where fertilization takes place. Planktonic larvae are lecithotrophic and metamorphose in 7 days at 17.5°C. Spawning techniques and culture methods are described. Cirratulidae development reviewed.

1. BLAKE, J.A.

2. 1975

3. The larval development of Polychaeta from the northern California coast III. Eighteen species of Errantia.

5. Ophelia, Vol. 14, Nos. 1-2, p. 23-84

6. 14 of 52

7. Tomales Bay, California

8. larval development, Polynoidae, Sigalionidae, Chrysopetalidae, Phyllodocidae, Pilargidae, Hesionidae, Nereidae, Goniadidae, Glyceridae, Dorvilleidae

9. author's abstract

10. The larvae of 18 species of northern California errant polychaetous annelids were obtained and described. Larvae cam from laboratory fertilizations, egg masses and plankton. Aspects of reproduction and larval development are presented and pertinent literature discussed. Some accounts such as those for Paleanotus bellis, Anaitides williamsi, Ophiodromus pugettensis, Platynereis bicanaliculata and Glycinde armigera are reasonably complete. Others, however, are only partial accounts of certain stages in the larval development.

    Most species treated have planktotrophic development, but Pholoe minuta, Ophiodromus pugettensis, Gyptis? brunnea, Platynereis bicanaliculata and Dorvillea rudolphi are lecithotrophic. Feeding does not begin until just before or shortly after metamorphosis.

    Taxonomic problems which might be resolved by further larval studies are discussed for Pholoe minuta and Dorvillea rudolphi.

    This study contains the initial larval descriptions for the genera Paleanotus, Ophiodromus, Gyptis, Glycinde and Hemipodus.

1. BLAKE, J.A.
2. 1975
3. The Larval Development of Polychaeta from the Northern California coast. II. Nothria elegans (Family Onuphidae)
5. Ophelia, Vol. 13, Nos. 1-2, p. 43-61
6. 3 of 15
7. northern Calif. (range to B.C.) laboratory study
8. larval development, Onuphidae, Nothria elegans, reproduction, development of setal, jaws
9. author's abstract
10. The larvae of Nothria elegans, an onuphid polychaete common in northern California were reared in the laboratory from artificial fertilizations. At a temperature of 17.5°C, larvae developed rapidly and settled 6 days after fertilization. Development in the plankton is lecithotrophic, with feeding delayed until just prior to settlement. Setal and branchial characteristics of juveniles are different from those of adult N. elegans and present difficulties in identification of small onuphids taken from benthic samples.

    It is concluded that developmental strategies in the Onuphidae are dominated by a dependency on yolk reserves. N. elegans and 2 other onuphid species recorded in the literature have lecithotrophic development, whereas 7 other species are reported to develop directly with no planktonic phase at all.

1. BLAKE, J.A.
2. 1975
3. Phylum Annelida: Class Polychaeta IN: Light's Manual: Intertidal Invertebrates of the Central California Coast
5. University of California Press, Berkeley & Los Angeles, 716 p.p. 151-243
6. 9 of 41
7. central and northern California
8. keys, polychaeta, family, genus, species, morphology, collection, preservation, mounting, dissection
9. AMG original
10. keys to the central and northern California Polychaeta with a discussion on general morphology, collection and preservation, dissection of jaws and mounting of parapodia.

1. BLAKE, J.A. & K.H. WOODWICK

2. 1975

3. Reproduction and larval development of Pseudopolydora paucibranchiata (Okuda) and Pseudopolydora kempi (Southern) [Polychaeta: Spionidae]

5. Biol. Bull. 149: (1) 109-127

6. 5 of 29

7. central California

8. reproduction, development in plankton, settling, natural history

9. from author's summary

10. larval development of Pseudopolydora paucibranchiata and P. Kempi described. Species occur in tidal flats and estuaries of California. Eggs laid in capsules, larvae develop in capsules and enter the plankton before taking up a benthic life.

1. BOUSFIELD, E.L.
2. 1968
3. Studies in littoral marine invertebrates of the Pacific Coast of Canada, 1964. I. Station List
5. Nat. Mus. Can. Bull. 223: 49-57 (contributions to Zoology N) (Biological Series No. 79)
6. 2 of 3
7. Station lists with latitudes and longitudes. Juan de Fuca, Queen Charlotte Sound, Hecate Strait.
8. station lists, intertidal invertebrates, northeast Pacific
9. VIM original
10. Station lists with location and intertidal physical description. Mentioned that invertebrate material has been sorted into major systematic groups and is available for study.

1. BOUSFIELD, E.L.
2. 1963
3. Investigations on sea-shore invertebrates of the Pacific Coast of Canada, 1957 and 1959. I. Station list.
5. Nat. Mus. Canada Bull. 185: 72-89 (contributions to Zoology 1962, Biological Series No. 69)
6. 1 of 5
7. station lists with latitudes and longitudes - Queen Charlotte Is., northern and southern Vancouver Island.
8. station lists, intertidal invertebrates
9. VIM original
10. Report of station location and physical description of intertidal zone. No mention of polychaetes directly, but made reference to fact that data on other phyla (presumeably polychaeta included) will be presently available.

1. BOUSFIELD, E.L.

2. 1958

3. Ecological investigations on shore invertebrates of the Pacific Coast of Canada 1955.

5. Nat. Mus. Canada Bull. 147: 104-115

1. BROWN, P.L. & D.V. ELLIS

2. 1971

3. Relation between Tube-Building and Feeding in Neoamphitrite robusta (Polychaeta: Terebellidae)

5. J. Fish. Res. Bd. Canada 28: 1433-1435

6. 0 of 2

7. Oak Bay marina, Victoria, B.C.

8. tube-building, feeding, Neoamphitrite robusta

9. author's abstract

10. Tube-building and feeding behaviour of Neoamphitrite robusta shared similar initial activities of tentacle extension, particle gathering and passage of particles to the oral region. Particles were sorted by the inner lips, but the extent of sorting depended upon whether the animal was tube-building or feeding. Particles to be incorporated into the tube were passed over the outer lips and moulded into the tube in a stereotyped manner. Tube-rebuilding in test specimens (tubes removed) proceeded significantly faster than tube-building in control specimens (within tubes), although feeding was significantly less in the test specimens. Nonfeeding specimens were able to construct tubes. The two behaviours were able to proceed independently, although feeding supplemented tube-building with the passage of rejected particles to the tube.

1. CLARK, M.E.
2. 1968
3. Free-amino acid levels in the coelomic fluid and body wall of polychaetes
5. Biol. Bull. 134: 35-47
6. 0 of 31
7. San Juan Island, (False Bay, Minnesota Reef, San Juan Point, Kilpatricks Beach, and Argyle Bay). Bristol Channel - Britain
8. amino acids, Nephtyidae, Nereidae, Eunicidae, Orbiniidae (Ariciidae), Arenicolidae, Terebellidae, Aphroditidae, Opheliidae, coelomic fluids of -
9. author's summary
10. Coelomic fluid amino-acid nitrogen (AAN) shows great variability among 14 polychaete species examined - ranging from 1-5 mg/100 ml in subtidal species to more than 150 mg/100 ml in an intertidal species.

    Individual variation in coelomic fluid (AAN) normally occurs intra-specifically.

    Amino-acid concentration increases posteriorly, pH usually decreases posteriorly.

    Body wall AAN is less variable within and between species.

1. DALES, R.P.
2. 1957
3. Pelagic Polychaetes of the Pacific Ocean
5. Bulletin of Scripps Inst. Oceanog. 7: 99-167
6. 2 of 139
7. varies from 135°W longitude to 115°W Longitude - 15°N Latitude to 50°N Latitude
8. Pelagic polychaeta
9. VIM original
10. Not much value. Includes species descriptions, locations and distributions of pelagic polychaeta. Valuable portion of paper gives Pacific Ocean distribution (including N.E. Pacific) of Phyllodocidae, Alciopidae, Tomopteridae and Typhloscolecidae.

1. DALES, R.P. & G. PETER

2. 1972

3. A synopsis of the pelagic polychaeta

5. Journal of Natural History 6: 55-92

6. 16 references of 309

8. Pelagic polychaeta

9. VIM original

10. Review of world-wide papers on pelagic polychaetes. Lists species of families Lopadorhynchidae, Iospilidae, Pontodoridae, Alciopidae, Tomopteridae and Typhloscolecidae giving distribution, synomomous names, and sources of original and secondary descriptions.

1. DAVENPORT, D. & J.F. HICKOK
2. 1957
3. Notes on the early stages of the facultative commensal Podarke pugettensis Johnson (Polychaeta:Hesionidae).
5. Ann. Mag. nat. Hist., Ser. 12, 10: 625-631
6. 8 references (0 of 8)
7. Friday Harbour, Garrison Bay, San Juan Island
8. larval development, Podarke pugettensis, commensal
9. VIM original
10. description of larval development from egg - prototrochophore - trachophore and settled larval form of Podarke pugettensis before the death of culture at 30 days.

1. ELLIS, DEREK V.

2. 1971

3. A review of marine infaunal community studies in the Strait of Georgia and adjacent inlets

5. Syesis, Volume 4, Parts 1 and 2, Dec. 1971

6. 13 of 33

7. Satellite Channel

8. quantitative samples, biomass, Chaetozone, Telepsavus, Travisia, Lumbrineris, Maldane glebifex, Nephtys, Sternaspis fossor, Prionospio.

9. VIM original

10. Chaetozone setosa - found in sandier sediments of eastern section of Satellite Channel

Telepsavus costarus - found in siltier sediments of western section of Satellite Channel

Maldane sp. - deep part of Satellite Channel

Level-bottom plains of Strait of Georgia (50m depth) typified by fine-grained sediments with faunal complexes falling within them (e.g., Thorson's 1957, Amphiura - Maldane-Ophiura complex). Shallow standing crops - 60/m^2 dry wt. Deep standing crops - low in species and biomass - 10g/m^2.

Sandy silts of Centre Satellite Channel - stable, rich community - large masses of Maldane glebifex, and Prionospio sp.

1. ELLIS, DEREK V.
2. 1969
3. Ecologically Significant Species in Coastal Marine Sediments of Southern British Columbia
5. SYESIS 2: 171-182 (1969)
6. 8 of 16
7. British Columbia, Strait of Georgia
8. marine sediments, ecology, surveys, taxon
9. author's abstract
10. By applying quantitative criteria for dispersion, density, biomass, and respiration rate (Pamatmat's Index), the following species and genera were indicated as significant components of sediment ecosystems in southern B.C. coastal waters: the Polychaeta Errantia Nephthys, Lumbrineris, Onuphis iridescens, Goniada brunnea, and Hemipodus borealis; the Polychaeta Sedentaria Prionospio, Maldane glebifex, Pista, Sternaspis fossor, Laonice cirrata, Phyllochaetopterus prolifica and Praxillella; Amphipoda of several species; the Pelecypoda Compsomyax subdiaphana, and several species of each of Macoma, Axinopsis, and Yoldia; the Gastropoda Acteocina; the Ophiuroidea Ophiura sarsi and Ophiura leptoctenia; the Echinoidea Brisaster latifrons; and the Holothuroidea Molpadia intermedia, Pentamera lissoplica, and Chiridota.

1. ELLIS, DEREK V.
2. 1968
3. Quantitative Benthic Investigations. V. Species Data from Selected Stations (Straits of Georgia and Adjacent Inlets; May 1965 - May 1966.
4. Fish. Res. Bd. Can. Tech. Report No. 73 (unplublished preliminary reports, manuscript status)
6. 5 of 5
7. Straits of Georgia and Adjacent Inlets
8. species, biomass, stations, density, percent, hauls, frequency
9. author's introduction
10. The fifth and concluding report of a series presenting quantitative data from sediment-biological investigations based at the University of Victoria. It presents data on species identified from a series of stations in the Straits of Georgia and adjacent inlets.

1. ELLIS, DEREK V.
2. 1968
3. Quantitative Benthic Investigations IV. Biomass Summaries and Major Taxon Rank Orders for Selected Stations (Mainly Straits of Georgia and Adjacent Inlets), May 1965 - December 1967.
4. Fish. Res. Bd. Can. Tech. Report No. 60. 81 tables, 2 figs.. Biol. Stn. Nanaimo, B.C. (unpublished preliminary reports, manuscript status).
6. 5 of 5
7. Straits of Georgia, the Straits of Juan de Fuca and Adjacent Inlets
8. biomass, taxa, hauls, station locality, replicates
9. from author's intro
10. This report is the fourth in a series of Technical Reports presenting quantitative data from benthic surveys undertaken at the University of Victoria. Haul data summarized in this report includes station locality, date occupied, number of replicates, and mesh dimensions of retaining screen.

    The report is concerned primarily with surveys in the Straits of Georgia, the Straits of Juan de Fuca, and inlets adjacent to these two large straits. Two areas in which preliminary biomass estimates were completed in the field have also been included, e.g., Fatty Basin (Alberni Inlet) and Tasu Sound (Queen Charlotte Islands).

1. ELLIS, DEREK V.
2. 1968
3. Quantitative Benthic Investigations III. Locality and Environmental Data for Selected Stations (Mainly from Satellite Channel, Straits of Georgia and Adjacent Inlets), February 1965 - December 1967.
4. Fish. Res. Bd. Can. Tech. Report No. 59, 61 tables, 6 figs. 2 appendices, (unpublished preliminary reports, manuscript status). Biol. Stn., Nanaimo, B.C.
6. 5 of 5
7. Satellite Channel, Straits of Georgia and Adjacent Inlets
8. locality, haul numbers, collections
9. from author's introduction
10. This report is the third in a series of quantitative benthic surveys undertaken at the University of Victoria. It summarizes the locality and environmental data for the collections described in other reports of the series.

1. ELLIS, DEREK V.
2. 1967
3. Quantitative Benthic Investigations. II. Satellite Channel species data, February, 1965 - May 1965
4. Fish. Res. Bd. Can. Tech. Report No. 35, 169 tables, 2 figs. Biol. Stan., Nanaimo, B.C. (unpublished preliminary reports, manuscript status)
6. no references
7. Satellite Channel
8. taxa, species, quantitative data
9. from author's introduction
10. This report is the second in a series presenting quantitative data from benthic surveys undertaken at the University of Victoria. It lists quantitative data on organisms collected in the surveys of Satellite Channel and identified to species (in some cases to genus or order).

1. ELLIS, DEREK
2. 1967
3. Quantitative Benthic Investigations. I. Satellite Channel biomass summaries and major taxon rank orders, February 1965 - May 1967.
4. Fish. Res. Bd. Can. Tech. Report No. 25, 49 pp. 2 figs., Biol. Stn. Nanaimo, B.C. (unpublished preliminary reports, manuscript status)
6. no references
7. Satellite Channel
8. biomass, taxa, sediment
9. author's introduction
10. In 1964 an investigation of marine sediment faunas was initiated at the University of Victoria. The preliminary objective was to describe faunal associations related to sediment type and to estimate biomasses using rapid data processing techniques.

    This report is the first of the series and gives total biomass estimates for Satellite Channel based on a preliminary sort of collections into major taxa (Phylum, Class or Order)

    A map is included that shows the locations of the collecting stations.

1. FAUCHALD, K.

2. 1974

3. Sphaerodoridae (Polychaeta: Errantia) from world-wide areas

5. J. Natur. Hist. 8, No. 3 257-389

6. 2 of 38

7. world-wide locations

8. Sphaerodoridae

9. VIM original

10. The small benthic sphaerodorid polychaetes are surveyed and the different genus of the family are diagnosed. Paper includes: where samples collected from, review of taxonomy discussion of taxonomic characters (body shape, tubercules, eyes cephalic appendages etc.) definitions of genera (9) and descriptions and diagnoses of species investigated. Genus recorded from B.C. waters - Sphaerodoropsis, Sphaerodorum.

1. FAUCHALD, K.

2. 1963

3. A Revision of six species of the flavus-bidentatus group of Eunice (Eunicidae: Polychaeta)

5. Smithsonian Contrib. Zool. No. 6, 15 p.

6. 4 of 19

7. San Juan archipelago

8. Eunice valens (from above locale)

9. author's abstract

10. The species here revised have yellow bidentate sub acicular hooks and branchiae limited to a short anterior region. They include E. biannulata Moore (1904), E. kobiensis McIntosh (1885 holotype examined), E. segregata (Chamberlin 1919a, restricted) E. semisegregata, new species, E. websteri, new name for E. longicirrata Webster (1884, holotype examined). The relationship between the 6 species is discussed.

1. FLORA, C. & E. FAIRBANKS
2. 1966
3. The Sound and the Sea
4. Pioneer Printing Press, Bellingham
7. Puget Sound
8. ecology, habitat, location, taxonomy, intertidal invertebrates, polychaeta
9. VIM original
10. General taxonomic reference for layman with scientific anmes, description of organisms, common names, with photographs and text on each organism covered.

1. FOSTER, N.
2. 1972
3. Freshwater polychaetes (Annelida) of North America
5. U.S. Environmental Protection Agency, Biota of Freshwater Ecosystems, Identification Manual #4. Water Pollution Control Research Series, 181050 ELD03/72
6. 2 of 10
8. key to species, freshwater polychaeta, identification manual
7. North America
9. Author's abstract
10. 8 species of freshwater polychaeta are reported in the form of a key. Three families represented - Nereidae, Sabellidae, Serpulidae. Key included only those actually collected from fresh water. Collection and preservation methods discussed.

1. HARTMAN, OLGA
2. 1969
3. Atlas of the sedentariate polychaetous annelids from California
4. Allan Hancock Foundation, Univ. of S. Calif., Los Angeles, 812 p.
7. California coast and N.E. Pacific
8. keys, locations, sedentariate polychaetes
9. AMG original
10. An atlas of sedentariate polychaetous annelids from California with keys to genera and species. Each species is diagnosed with illustrations, known geographical distribution and ecological data when available. Some genera and species in this atlas also apply not only to California but the northeastern Pacific as well.

1. HARTMAN, OLGA
2. 1968
3. Atlas of the Errantiate Polychaetous Annelids from California
4. Allan Hancock Foundation, Univ. of S. Calif., Los Angeles, 828 p.
7. California coast and N.E. Pacific
8. keys, locations, errantiate, polychaetes
9. AMG original
10. An atlas of errantiate polychaetous annelids from California with keys to genera and species. Each species is diagnosed with illustrations, known geographical distribution and ecological data when available. Some genera and species in this atlas also apply not only to California but the northeastern Pacific as well.

1. HARTMAN, OLGA
2. 1959
3. Catalogue of the polychaetous annelids of the world. Parts I and II.
5. Occasional papers of the Allan Hancock Foundation, 23. (Supplement and Index, 1960-1965)
6. 13 of 259
7. world-wide
8. systematic list, family names, generic names polychaete, world-wide
9. VIM original
10. 614 pages of listing polychaeta of the world. Listed by family, alphabetically, systematically. Information includes genotype, species, original description, and location found.

1. HEALY, E.A. & G.P. WELLS
2. 1959
3. Three new lugworms (Arenicolidae, Polychaeta) from the North Pacific Area.
5. Proc. Zool. Soc. London, 133: 315-335
6. 7 of 22
7. False Bay, San Juan Islands
8. Arenicolidae, distinguishing characteristics of:
9. VIM original
10. Definition of differences between Northesat Pacific Lugworms and European type specimen. Division of worms into 4 forms:

    <u>claparedii</u> - (European)
    <u>pacifica</u> - (Pacific)
    <u>vagabunda</u> - (Pacific)
    <u>oceanica</u> - (Pacific)

    Reference to genus as "<u>Abarenicola</u>"

    Geographical distribution, biology of A. <u>pacifica</u> and A. <u>vabunda</u> with False Bay distribution, forms of burrows, that the commensal pea crab cohabitation with <u>Arenicola</u> is determined more by substrate than host, breeding season and spawning behavious (surfacing).

    Conclusion - 3 different forms of <u>Abarenicola</u> <u>claparedii</u> i.e.:

    A. <u>pacifica</u> sp. nov.
    A. <u>vagabunda</u> sp. nov.
    A. <u>vagabunda</u> <u>vagabunda</u>
    A. <u>vagabunda</u> <u>oceanica</u> subsp. nov.

1. HERMANS, C.O.
2. 1966
3. The natural history and larval anatomy of Armandia brevis (Polychaeta: Opheliidae)
4. Ph.D. thesis. University of Washington, Seattle, 175 p.
10. A description of the general biology of Armandia brevis is presented including: a summary of the life history; a descussion of developmental rates and generation time; description of the methods of locomotion, feeding and predator defense.

The anatomy of the fully formed nectochaeta larva is described from Epon and paraffin sections and from whole mounts. The prototroch, metatroch, telotroch and segmental ciliary bands; the nuchal organ; intermediate zone of the prostomium; the glandular elements of the epidermis; the nervous system, including the ventral nerve cord and the brain; the gut, including the stomodaeum, stomach, intestine, and protodaeum; the muscular system, which is especially complicated in the head, the coelom and the blood space are described.

The major structural changes in metamorphosis are briefly outlined.

The development of the Opheliidae as it is known in Ophelia bicornis, Euzonus mucronata and Armandia brevis, is discussed. The general features of opheliid development are compared to those of the archiannelids. The most highly developed planktonic opheliid larvae thus far described are from Armandia brevis. The most highly developed plantonic archiannelid larvae are from Polygordius.

Armandia and Polygordius are compared with respect to reproductive biology, life history, early development, larval development and metamorphosis.

10. Continued

The question of the systematic position of the archiannelids is reviewed and it is concluded that they are best regarded as a monophyletic group of polychaeta which are neither degenerate nor primitive, but primarily adapted for interstitial life. It is, furthermore, concluded that the anatomical relationships between the opheliids and archiannelids may indicate a fair degree of phylogenetic relationship. Comparison of the development of Armandia brevis and Polygordius supports this conclusion.

Correlations between the life history characteristics of Polychaeta and their pattern of developmental morphology are shown to exist. These are related to recent ideas on the evolution of higher categories in terms of the life history consequences of environmental variability ($R_0=e^{rT}$). The hypothesis that a simple planktotrophic trochophore is a primitive polychaete larval form is supported.

The development of Armandia brevis offers the basis for a general interpretation of the segmental nature of the Polychaeta. The concepts acron, prostomium, peristomium, soma and pygidium are discussed and applied to this interpretation in terms of both trochophore and adult anatomy

The basis for considering heteronomy to be a fundamental morphological principle in annelids is discussed and related to the development of Armandia. Heteronomy is concluded to be a basic and common refection of the natural history pattern, characteristic of polychaetes, but not a fundamental morphological principle.

1. HERMAN, COLIN O.

2. 1964

3. The method of swimming and release of gametes in the opheliid polychaete _Armandia brevis_.

5. Amer. Zool. 4: Abstract 92, p. 292

9. Abstract

10. Epitokes of _Armandia brevis_ are attracted to the "night light" at the Friday Harbor Laboratories of the University of Washington during the summer months. The epitokes swim in a fish-like manner. They use the coelom as a compressional strut for the alternately contracting longitudinal muscles, the posterior segments and the anal funnel as a caudal fin and compress the body with the transverse muscles.

    The coelom of the mature epitoke is packed with gametes and their release would reduce the coelomic volume to the extent that continued swimming would be impossible were it not for water which is pumped into the posterior end of the gut by peristalsis of the anal funnel. The water passes from the gut into the coelom through tears in the degenerate gut wall and flushed the gametes from the genital openings.

    Four pairs of genital openings are located slightly anterior to the parapodia of the 10-13th segments. They are open only during the evacuation of the genital products; they lack an internal tubular structure but because of their position are regarded as homonomous with the distal portions of the nephridia of the posterior segments.

1. HERMANS, COLIN O.
2. 1964
3. The reproductive and developmental biology of the opheliid polychaete *Armandia brevis* (Moore)
4. Masters thesis, Univ. of Washington, Seattle 131 p.

1. HICKOK, J.F. & D. DAVENPORT

2. 1957

3. Further studies in the behavior of commensal polychaetes

5. Biol. Bull. 113: 297-406

6. 6 of 9

7. Garrison Bay, San Juan Island, Friday Harbour

8. behaviour of, commensal polychaeta, Podarke pugettensis

9. from author's text and summary

10. Podarke pugettensis - facultative commensal
- can occur in great numbers in free state (15-20/sq. yard)
- common on mud-star Luidia, cushion star Pteraster and with Nereis sp., with hermit crabs.

Arctonoe fragilis - has up to seven asteroid hosts

Arctonoe vittata - colonizes asteroids, amphineurans, gastropods, polychaetes

Two populations of Podarke: commensal and free-living: these react positively or negatively to "host" respectively. Commensals to Luidia respond with equal intensity to other "non-host" animals.

Three populations of Arctonoe fragilis show a response to its specific host alone.

Arctonoe vittata is an obligate commensal of diverse habit - has number of alternate hosts.

1. HOBSON, KATHARINE D.
2. 1976
3. Protoariciella oligobranchia new species (Orbiniidae) and six new records of Orbiniidae, Questidae, and Paraonidae (Annelida Polychaeta) from British Columbia.
5. Can. J. Zool. 54: 591-596
6. 4 of 15
7. British Columbia
8. polychaeta, Orbiniidae, Questidae, Paraonidae, new species, new records.
9. author's abstract
10. Protoariciella oligobranchia n. sp. is described from shell-gravel in the intertidal zone in Victoria, B.C. Orbiniella nuda, Scoloplos (Haploscoloplos) panamensis, Questa caudicirra, Aricidea assimilis, Aricidea minuta, and Paraonella platybranchia are briefly described and newly recorded from B.C.

1. HOBSON, K.D.
2. 1974
3. _Orbiniella nuda_ new species (Orbiniidae) and nine new records of other sedentariate polychaetous annelids from Washington and B.C.
5. Can. J. Zool. 52: 69-75
7. Washington and B.C. waters
9. Bioabstract
10. _Orbiniella nuda_ is newly described from Washington, U.S.A. _Nanereis quadricuspida_, _Pygospio elegans_, _Pherusa negligens_, _Asclerocheilus beringianus_, _Euzonus williamsi_, _Barantolla americana_, _Decamastus gracilis_, _Mediomastus capensis_, and _Stygocapitella subterranea_ are newly recorded from Washington or from Washington and B.C. (Canada). Most of these species have not been previously reported from the cold temperate northeastern Pacific Ocean. In addition, new descriptive information is provided for some species.

1. HOBSON, KATHERINE D.
2. 1972
3. Two New Species and Two New Records of the Family Paraonidae (Annelida; Polychaeta) from the Northeastern Pacific Ocean.
5. Proc. Biol. Soc. Wash. 85: 549-556
6. 2 of 12
7. northeastern Pacific Ocean
8. polychaeta, species, F. Paraonidae
9. author
10. During studies of some Paraonidae of the northeastern Pacific Ocean, two species new to science (Aricidea pseudoarticulata and Paraonis spinifera) and specimens that extend the known distributions of two other species (Aricidea neosuecica and Aricidea wassi) were encountered. This paper describes them.

1. HOBSON, KATHERINE D.

2. 1971

3. Some Polychaetes of the superfamily Eunicea from the North Pacific and North Atlantic Oceans.

5. Proc. Biol. Soc. Wash. 83: 527-544

6. 9 of 27

7. North Pacific and North Atlantic Oceans (Strait of Juan de Fuca, Orcas Is., Puget Wound, New England, Cape Cod Bay).

8. polychaetes, Onuphis, new species, Lumbrineridae, Arabellidae, Dorvilleidae, key

9. author's introduction

10. One new species of Onuphis is presented together with a discussion of and key to five other species of this genus and five new records of species of Lumbrineridae, Arabellidae, and Dorvilleidae.

1. HOBSON, K.D.
2. 1967
3. The feeding and ecology of two North Pacific Abarenicola species (Arenicolidae, Polychaeta)
5. Biol. Bull. 133: 343-354
6. 2 of 12
7. False Bay, San Juan Island, Washington
8. feeding behavious, sediment turnover, Abarenicola spp. and Arenicola sp.
9. author's text and summary
10. Comparison of ecology to 2 genera of lugworms and of 2 sympatric species by studying environment and feeding. Suspension or sediment feeding habit with irrigation cycle described. Sediment turnover rate experiments, transplantation experiments performed. Comparison of habitats shows Abarenicola pacifica lives in a muddier and more poorly sorted sediment than A. claparedi vagabunda. Both species, like Arenicola marina, are capable of suspension feeding predominately on surface rather than deep sediment. Both integrate feeding and difecation into irrigation cycle. A. claparedi vagabunda more active than A. pacifica. Physical factors rather than food availability limits distribution.

1. HOBSON, K.D.
2. 1966
3. Ecological observations on Abarenicola species (Polychaeta) of the North Pacific
4. M.S. thesis, Univ. of Washington, 75 pp.

1. HOOS, LINDSAY M.
2. 1975
3. The Skeena River Estuary - Status of Environmental Knowledge to 1975
4. Estuary Working Grp., Reg. Brd. Pac. Reg., Env. Canada, Special Estuary Series No. 3, 418 p.
6. 13 of 117
7. The Skeena R. Estuary, B.C.
8. summary, Geology and Soils, Climatology, Hydrology, water quality, Oceanography, Invertebrate Biology, Fish, Flora, Wildlife, Land Use, Pollution, Port Development.
9. AMG original
10. A summary of environmental information on the Skeena River Estuary. A section on invertebrates of the Skeena estuary is included as well as a list of freshwater and marine benthic invertebrate organisms of the Skeena River System and estuary compliled from the available literature listed in the bibliography.

1. HOOS, LINDSAY M. & GLEN A. PACKMAN
2. 1974
3. The Fraser River Estuary - Status of Environmental Knowledge to 1974
4. Estuary Working Grp., Reg. Brd. Pac. Reg., Environment Canada, Special Estuary Series No. 1. 518 pp.
6. 23 of 148
7. The Fraser River Estuary, B.C.
8. sources, summary, Geology, Climatology, Hydrology, Water Quality, Oceanography, Invertebrate Biology, Fish, Bacteria, Flora, Wildlife, Land Use, Waste Disposal, Pollution Problems, Food Chains.
9. author's introduction and summary
10. A summary of available information on the lower Fraser River and estuary from references and data gathered from a multitude of sources. Its purpose is to assemble information pertinent to the conflict between development and conservation of the Fraser estuary and delta, to assist in future planning, and to identify areas where more data are required. A section on invertebrates is included as well as a composite species list of known Benthic/Terrestrial Organisms of the Lower Fraser River Estuary in appendix 7.1

1. HOOS, LINDSAY M. & CECILY L. VOLD
2. 1975
3. The Squamish River Estuary - Status of Knowledge to 1974 Estuary Working Grp., Reg. Brd. Pac. Reg.
4. Environment Canada Special Estuary Series No. 2, 361 pp.
6. 27 of 136
7. The Squamish River Estuary, B.C.
8. sources, summary, Geology, Climatology, Hydrology, Water Quality, Oceanography, Invertebrate Biology, Fish, Flora, Wildlife, Food-chains, Land Use, Pollution sources, Developments.
9. AMG original
10. A summary of environmental information on the Squamish Estuary. A section of invertebrates of the Squamish Estuary is included as well as a species list of benthic invertebrates of the Squamish River estuary and upper Howe Sound compiled from the available literature listed in the bibliography.

1. JONES, MEREDITH L.

2. 1971

3. _Magelona berkeley_ n. sp. from Puget Sound (Annelida: Polychaeta), with a further redescription of _Magelona longicornis_ Johnson and a Consideration of Recently Described Species of _Magelona_

5. J. Fish. Res. Bd. Canada 28: 1445-1454

6. 8 of 25

7. Washington and B.C. Coast

8. magelonid polychaetes, new species, redescription

9. author's abstract

10. _Magelona berkeleyi_ n. sp. is described from Puget Sound, Washington. It is most similar to _M. filiformis_ from Great Britain and _M. lenticulata_ from South Vietnam. Detailed studies of _M. longicornis_ utilizing refined dissection techniques, reveal the presence of a number of diagnostic structures heretofore overlooked. Comments concerning the differentiation of nine valid recently described species (since 1963), relative to previously known species, are made.

1. KOZLOFF, EUGENE N.
2. 1974
3. Phylum Annelida, Class Polychaeta In: Keys to the Marine Invertebrates of Puget Sound, the San Juan Archipelago, and Adjacent Regions
4. University of Washington Press, Seattle, 226 p. (p. 97-121)
6. 17 of 25
7. Puget Sound, the San Juan Archipelago, and Adjacent Regions
8. polychaeta, keys, family, genus, species
9. author's
10. The treatment of polychaetes in this manual is divided into two sections: a key to families, and an alphabetical listing of the families, with further keys to the species

1. KOXLOFF, EUGENE N.
2. 1973
3. Seashore Life of Puget Sound, the Strait of Georgia and the San Juan Archipelago
4. J.J. Douglas Ltd., Vancouver, B.C. 282 pp. XXVIII plates
6. no references
7. Puget Sound, Strait of Georgia, San Juan Archipelago
8. seashore life, environments, habitats, flora, fauna, intertidal zonation
9. author's
10. As most animals and plants have specific environmental requirements each distinctly different habitat has a characteristic fauna and flora. In this book, discussions of seashore life within the area of Puget Sound and the San Juan Archipelago is organized into three habitat - orientated chapters, covering floating docks and pilings, rocky shores, and sand and muddy habitats. The book also includes an illustrated synopsis of invertebrates likely to be observed at the shore.

1. KOZLOFF, E.N.

2. 1966

3. *Phalacrocleptes verruciformis* gen. nov., sp. nov., an unciliated ciliate from the sabellid polychaete *Schizobranchia insignis* (Bush)

5. Biol. Bull. 130; 202-210

6. 2 of 4

7. San Juan Island

8. ciliates, sabellid polychaeta

9. author's summary

10. *P. verruci* lives on the frontal surfaces of the prostomial pinnules of *Schizobranchia insignis*

1. LEE, J. CHARLENE & N. BOURNE
2. November 1973
3. Marine Bibliographical and Review Study of Pacific Rim National Park.
5. Fish. Res. Bd. Canada, Manuscript Report Series No. 1276. (Unpublished preliminary reports, manuscript status)
6. 34 references of 289
7. West coast Vancouver Island - between 48°30'N latitude and 49° 05'N latitude; - Long Beach, Broken Group Is., West Coast Trail
8. species list, habitat, location of species listed below
9. VIM original
10. Bibliographic review and species list including habitat and location of invertebrates found within Pacific Rim Park. Abarenicola, Ampharete, Amphicteis, Aphrodita, Arabella, Arctonoe spp., Aricidae sp., Armandia, Boccardia, Callizona, Chitinipoma, Chone, spp., Demonas spp., Dodecaceria, Dorvillea, Eudistylia, Eulalia, Euzonus, Fabricia, Glycera spp., Glycinde, Goniada, Halosyndna, Hemipodus, Idanthyrus, Lumbrinereis, Magelona, Myxicola, Nephtys, spp., Nereis, Nerine, Odontosyllis, Onuphis, Pectinaria spp., Phyllochaetopterus, Pista spp., Protocapitella, Pseudopotamilla, Sabellaria, Serpula, Spirorbis spp., Sternaspis, Syllis, Thoracophelia, Tomopterus spp., Travisia.

Habitats Are:	Intertidal, Subtidal
Locations Are:	Broken Group Islands, Long Beach, West Coast Trail
Exposures Are:	Exposed, Semi-exposed, sheltered
Substrates Are:	Mud, sand, gravel, rock (boulders)

Qualitative Review

Zooplankton studies from Long Beach and Broken Islands indicate Autolytus spp. and Typhloscole sp. and trochophore larval stages present.

1. LEVINGS, C.D.

2. 1973

3. Intertidal Benthos of the Squamish Estuary

4. Fish. Res. Bd. Can. Manuscript Report Series No. 1218 Pacific Env. Inst., West Vanc., B.C. (unpublished preliminary report, manuscript status)

6. 3 of 28

7. Squamish Estuary

8. marine invertebrates, biomass, benthic algae, habitat, sampling methods

9. from author's introduction

10. The report presents results of investigations on benthic organisms that are an important component in the diet of young salmon at Squamish. The field studies were carried out over the period May 8 - August 23, 1972. Polychaeta were found.

1. Levings, C.D. & N.G. McDANIEL
2. 1974
3. A Unique Collection of Baseline Biological Data: Benthid Invertebrates from an Underwater Cable Across the Strait of Georgia
4. Fish. Res. Bd. Can. Tech. Report No. 441, Pacific Env. Inst., West Vanc., B.C. 19 p. (unpublished preliminary report, manuscript status)
6. 1 of 9
7. Strait of Georgia
8. cable, benthic invertebrates
9. author's introduction and AMG original
10. A brief report on the benthic organisms that were collected on a 52 year old telephone cable that reached from near Nanaimo to off Point Grey, Vancouver, B.C. Polychaeta found were: Polychaeta Errantia, F. Polynoidae (*Harmothoe aspera*, *Lepidonotus caelorus*, *Enipo cirrata*), F. Nereidae (*Nereis* sp.), F. Syllidae (*Syllis sclerolaema*); Polychaeta Sedentaria, F. Sabellidae (*Branchiomma burrardum*), F. Serpulidae (*Protula pacifica*, *Crucigera irregularis*), F. Terebellidae (*Neoamphitrite robusta*), F. Maldanidae (*Nicomache lumbricalis*, *Asychis* sp.).

1. LEVINGS, C.D. & N. McDANIELS
2. 1973
3. Biological Observations from the Submersible Pisces IV Near Britannia Beach, Howe Sound, B.C.
4. Fish. Res. Bd. Can. Tech. Report No. 409, Pac. Env. Inst., West Vanc., B.C. (unpublished preliminary report, manuscript status).
6. 1 of 9
7. Britannia Beach, Howe Sound, B.C.
8. Pisces IV, dives, biological observations
9. author's introduction
10. The report documents the first dives of the submersible Pisces IV made by Department of the Environment biologists for the purpose of examining effects of industrial wastes on the marine environment. Among the marine organisms seen were pelagic polychaetes and tube worms.

1. LIE, ULF. & DALE S. KISKER
2. 1970
3. Species Composition and Structure of Benthic Infauna Communities of the coast of Washington
5. J. Fish. Res. Bd. Canada 27: 2273-2285
6. 9 of 21
7. Coast of Washington
8. benthic, infauna, communities, structure, species composition, Washington
9. author's abstract
10. The deepwater mud-bottom community identified previously as one of three benthic infauna communities off the coast of Washington was found at mean depths of 154.5 m in sediments with a mean mud percentage of 50.09%. The most abundant species were the polychaetes Prionospio malmgreni, Sternaspis fossor, and Ninoe gemmea, the lamellibranchs Axinopsida serricata, Adontorhina cyclia, and Macoma carlottensis, and the amphipod Heterophoxus oculatus. The mean standing crop (ash-free dry weight) was 3.058 g/m^2, with, the echinoderms Brisaster latifrons, Ophiura lutkeni, and Amphioplus sp and the polychaete Sternaspis fossor as the major contributors to the standing crop.

    The intermediate depth sand-bottom community was found at stations with a mean depth of 95.8 m in sediments with a mean sand percentage of 67.81% The most abundant species were the polychaetes Magelona sp., Sternaspis fossor, Nephthys sp., and Haploscoloplos elongatus, the lamellibranchs Yoldia ensifera and Axinopsida serricata, and the the amphipod Paraphoxus variatus. The mean standing crop was 2.533 g/m^2, with the species listed above the lamellibranch Macoma elimata as the major contributors to the standing crop.

    The shallow water sand-bottom community was found at stations with a mean depth of 36.0 m in sediments with a mean sand percentage of 96.33%. The most abundant species were the cumacean Diastylopsis dawsoni, the amphipods *Ampelisca macrocephala* and *Paraphoxus obtusidens*, the lamellibranchs *Tellina salmonea* and *Macoma expansa*, and the polychaete *Owenia fusiformis*. The mean standing crop was 1.398 g/m^2, with the species listed above and the polychaetes *Nephthys* sp. and *Chaetozone setoza* and the lamellibranch *Siliqua patula* as the major contributors to the standing crop.

There was a distinctly lower species diversity in the shallow water sand bottom community than in the two communities in deeper waters.

1. LIE, U. & J.C. KELLEY
2. 1970
3. Benthic infauna communities off the coast of Washington and in Puget Sound: identification and distribution of the communities
5. J. Fish. Res. Bd. Can. 27 (4) 621-651
6. 5 of 40
7. Puget Sound, Juan de Fuca Strait, N.W. Wash. coast
8. benthic fauna communities, statistical analyses
9. from author's abstract
10. Benthic fauna collections in Puget Sound and Juan de Fuca Strait identified, counted, subjected to statistical analyses for grouping of benthic communities.

    Polychaeta, which contributed significantly to standing crop of the area (Lie, 1969) were not identified, however dominant polychaete species of the various communities will be included in a later published paper.

1. LIE, ULF
2. 1969
3. Standing crop of benthic infauna in Puget Sound and off the coast of Washington
5. J. Fish. Res. Bd. Can. 26: 55-62
6. 7 of 15
7. Puget Sound, Juan de Fuca, N.W. coast Washington
8. standing crop, offshore stations comparable to Gulf of Alaska shelf standing crop, but less than Puget Sound stations. Difference partly due to primary productivity differences. Standing crop at shallow offshore stations in fine sand substrates dominated by crustaceans and lamellibranchs, whereas at deeper stations, in high silt-clay sediments, polychaeta and echinodermata important contributors to standing crop.

1. LIE, ULF
2. 1968
3. A Quantitative Study of Benthic Infauna in Puget Sound, Washington, U.S.A., in 1963 - 1964
4. FiskDir. Skr. Ser. HavUnders. 14(5) 229-556
6. 21 of 228
7. Puget Sound
8. benthic infauna, ecology, abundance, benthic communities
9. AMG original
10. The study's objective has been to determine which species in Puget Sound are the most important and to compile ecological and biological information about those species. Appendix II (p. 521-556) in the book is an annotated list of polychaetes by Karl Banse, K.D. Hobson and F.H. Nichols.

1. LIGHT, W.J.

2. 1969

3. Extension of Range for Manayunkia aestuarina (Polychaeta: Sabellidae) to British Columbia

5. J. Fish. Res. Bd. Can. 26(12): 3088-3091

6. 3 of 10

7. Indian Arm Inlet (head of) 49° 28' N Latitude, 122° 53' W Longitude

8. range extension, Manayunkia aestuarina, Sabellidae, brackish-water polychaete, Haplobranchus aestuarina.

9. author's abstract and text

10. Many individuals of minute European sabellid taken from exposed mud flats at head of Indian Arm, B.C. The brackish water polychaetous annelid Manayunkia aestuarina is newly recorded for North America and constitutes the second species of this genus known to occur on this continent. Form is likely circumarctic, circumboreal in estuarine conditions. Future collections likely to turn up from other fjords in western and arctic North America.

1. McDANIEL, NEIL G.
2. 1973
3. A Survey of the Benthic Macroinvertebrates Fauna and Solid Pollutants in Howe Sound (unpublished preliminary report, manuscript status).
5. Fish. Res. Bd. Canada, Technical Report No. 385
6. 14 references of 77
7. Howe Sound
8. pollutants affecting benthic macroinvertebrates, tubeworms
9. author's abstract
10. Solid pollutants entering environment reduce ability of substrate to support colonization of benthic invertebrates. Species and locations listed are:

Protula pacifica	- Station 15	- 90'	Lookout Point
Serpula vermicularis	- Station 13	- 20'	Bowyer Island
Crucigera irregularis	- Station 15	- 70'	Lookout Point
Crucigera zygophora	- Station 15	- 70'	Lookout Point
Crucigera spp.	- Station 2&3	- -	Woodfibre
	- Station 4	- 30'	Britannia
Serpula vermicularis	- Station	- 26'	Squamish Estuary

1. MAY, D.R.

2. 1972

3. The Effects of Oxygen Concentration and Anexia on Respiration of *Abarenicola pacifica* and *Lumbrineris zonata* (Polychaeta).

5. Biol. Bull. 194: 71-83

6. 5 of 17

7. False Bay, San Juan Island, Washington

8. oxygen concentration in burrows, polychaete respiration, *Abarenicola*, *Lumbrineris*

9. from author's summary

10. oxygen concentrations measured burrows of polychaetes *Abarenicola* and *Lumbrineris*. Mean O_2 concentration values in *Abrenicola* burrows were 0.9 ml O_2/l at low tide and 2.3 ml O_2/l at high tide. O_2 concentrations in *Lumbrineris* burrows not measured, but burrow walls either grey or tan (reduced or oxidized). *Abarenicola* survives 3 days in anoxia, *Lumbrineris* survives 2 days in anoxia.

1. NICHOLS, F.H.

2. 1975

3. Dynamics and energetics of three deposit-feeding benthic invertebrate populations in Puget Sound, Washington.

5. Ecol. Monogr. 45: No. 1, 57-82

6. 15 of 67

7. Puget Sound - 5 stations

   1. 47° 44.2' N. Latitude and 122° 32.2' W. Longitude
   2. 47° 41.9' N. Latitude and 122° 27.2' W. Longitude
   3. 47° 33.7' N. Latitude and 122° 26.5' W. Longitude
   4. 47° 25.0' N. Latitude and 122° 22.8' W. Longitude
   5. 47° 11.7' N. Latitude and 122° 48.7' W. Longitude

8. benthos, energetics, Pectinaria californiensis

9. author's abstract

10. The dynamics and energetics of subpopulations of a numerically dominant deposit-feeding polychaete species, Pectinaria californiensis Hartman, were studied and compared with crude determination of the same for the larger but rarer coexisting species of the same feeding mode, the heart urchin Brisaster latifrons (Agassiz) and the sea cucumber Molpadia intermedia (Ludwig). Monthly samples, taken for 1 year at five stations in Puget Sound representing different habitats, were used in conjuction with laboratory measurements of respiration to assess the effects of seasonal and spatial variation in growth, mortality, and respiration on estimates of energy flow through these species populations.

    Pectinaria larval settlement (2,900 - 24,000 animals/m^2) occurred at all locations in June 1970. Two to three age classes or cohorts were present simultaneously. Pectinaria represented 4%-26% of macrofaunal (<1mm) biomass, and 9%-47% of numbers at the five locations, based on the mean of four seasonal estimates. At the two stations where Brisaster and Molpadia coexisted with Pectinaria they contributed, respectively 79% and 4% of macrofaunal biomass at one station and 13% and 63% at the other. Recruitment and growth of the two echinoderms appeared negligible, as neither numbers nor mean size changed during the study period.

10. Continued

Annual production of *Pectinaria*, not including excretion or mucus production, varied 1.4 - 4.8 g $C/m^2 \cdot yr.$ (14-49 $kcal/m^2 \cdot yr.$). The ratio of annual production to mean annual biomass, varying in the study area 3.3-5.5, provided a better estimate of turnover than the more commonly used ratio based on the life-time of a cohort because of the difficulty of determining lifespan, a problem with most long-lived organisms.

Pectinaria contributed 14%-42% of macrofaunal respiration in the area studied. But these numbers were shown to be affected by the failure to reproduce in the laboratory in situ oxygen-tension conditions. Such overestimates of population respiration from laboratory measurements were most marked for *Brisaster* and *Molpadia*. These latter estimates, while reflecting biomass data, unrealistically overshadowed the respiration of all other organisms.

The sum of *Pectinaria* production and respiration (corrected for in situ oxygen tension) varied 2.6-9.2 g $C/m^2 \cdot yr.$ (27-98 $kcal/m^2 \cdot yr.$), reflecting differences in rates of growth and mortality among stations. At two stations where primary production data were available, *Pectinaria* assimilated at least 1.3% and 3.3% of the carbon fixed by phytoplankton. Subsequently, 0.6% and 1.7%, respectively, were made available to predators and decomposers in the form of *Pectinaria* flesh. Because of its greater turnover of assimilated energy, *Pectinaria* contributed more to metabolic processes and to foodchain dynamics of the seabed than did the coexisting echinoderms. The echinoderms, on the other hand, may exert important influences on the structure of the community not accounted for in normal energetic assessments.

Spatial and temporal variations in energy flow through species subpopulations can be large, and thus may limit the usefulness of a stability assumption in the development of predictive models for organic matter budgets.

1. NICHOLS, F.H.

2. 1974

3. Sediment turnover by a deposit-feeding polychaete

5. Limnol and Oceanog. Vol. 19, No. 6, p. 945-950

6. 2 of 15

7. 2.2 km S.W. of Alki Point, Seattle, Puget Sound

8. *Pectinaria californiensis*, sediment turnover, deposit-feeder

9. author's abstract

10. Monthly determinations of the size frequency distribution of specimens in a population of *Pectinaria californiensis*, a deposit-feeding polychaete in Puget Sound, Washington, and laboratory measurements of sediment turnover by the same species reveal seasonal patterns in the rate at which the population processes the sediment during feeding. The relation between numbers of specimens and mean specimen size results in the most intense sediment turnover in late autumn or early winter (1 kg dry sediment m^{-2} $month^{-1}$) when recently settled animals dominate the biomass. Annual turnover was 8.6 kg dry sediment m^{-2}. This intense activity is potentially important in the transfer of dissolved materials from sediment to the water column.

1. NICHOLS, F.H.

2. 1972

3. Carbon and Energy Flow Through Populations of a Numerically Dominant Invertebrate Pectinaria californiensis Hartman, in Puget Sound, Washington, with reference to larger, rarer, co-existing species.

4. Ph.D. thesis, Univ. of Wash., Seattle, 164 p.

10. Carbon and energy flow through populations of a numerically dominant polychaete species, Pectinaria californiensis Hartman, have been measured and compared with crude estimates of the same for the larger, rarer co-existing species, the heart urchin Brisaster latifrons (Agassiz) and the sea cucumber Molpadia intermedia (Ludwig). Monthly samples, taken for one year at five stations representing different habitats, were used to determine size, spatial distribution, growth and mortality of these species populations. Rates of Pectinaria respiration, sediment turnover, and carbon uptake and concentrations of carbon, nitrogen, and calories in Pectinaria tissue were measured in the laboratory, as were rates of respiration of Brisaster and Molpadia.

Pectinaria larval settlement (up to 24,000 animals/m^2) occurred nearly simultaneously at all locations in mid-June (1970). Two or three age classes or cohorts were present simultaneously. At two stations, most animals did not survive through the first year; at one, many animals reached the third year. Pectinaria represented 5, 5, 26, 4 and 9% of the five locations based on the mean of four seasonal estimates.

At the two stations where Brisaster and Molpadia co-existed with Pectinaria they contributed, respectively, 79 and 4% of macrofaunal biomass at one station and 13 and 63% at the other. Recruitment of these two species appeared negligible, as neither numbers nor mean size changed during the study period.

10. Continued

Annual production (P) of Pectinaria, not including excretion of mucus production, varied from 1.4 to 4.8 g $C/m^2/yr.$ (14 to 49 $kcal/m^2/yr.$) in response to differences in mortality rates. The ratio of annual growth production to mean biomass (B) of the total Pectinaria populations varied from 3.3 to 5.5. Computational procedures for determining the P/B ratio are examined.

Pectinaria contributed 14, 20, 42, 14, 25% of macrofaunal respiration and 3, 8, 9, 2 and 7% of total oxygen uptake by the seabed at the five stations. Errors involved in estimating in situ respiration (R) from laboratory experiments are discussed. Total population net growth efficiency (P/P+R) was 50% at all stations.

The sum of Pectinaria production and respiration varied from 2.6 to 9.2 g $C/m^2/yr.$ (27 to 98 $kcal/m^2/yr$). At two stations where primary production data were available, Pectinaria assimilated at least 1.3 and 3.3% of the carbon fixed by phytoplankton. Subsequently, 0.6 and 1.7%, respectively, were made available to predators and decomposers in the form of Pectinaria flesh.

Laboratory measurements indicated that Brisaster and Molpadia contributed respectively, 54 and 5% of macrofaunal respiration at one location and 10 and 52% at the other, reflecting biomass data. However, it is tentatively suggested that these measurements overestimate respiration rates in nature, and that the metabolic importance of these species has been similarly overestimated.

It is concluded that the small but abundant polychaete species, Pectinaria californiensis, contributes more significantly to the metabolic processes and to the food-chain dynamics of the seabed of Puget Sound than do the larger but rarer echinoderms, Brisaster latifrons and Molpadia intermedia. Biomass estimates alone are not sufficient to define the role of an organism in the energetic processes of the seabed.

1. NICHOLS, F.H.

2. 1971

3. Two new records of benthic polychaetes from Washington

5. J. Fish. Res. Board Can. 28: 1491-1492

6. 3 of 6

7. Washington coast, Juan de Fuca Strait and Puget Sound

8. new records, benthic polychaetes, Chloeia entypa (F. Amphinomidae), Drilonereis falcata minor (F. Arabellidae)

9. author's abstract

10. Two benthic polychaete species, Chloeia entypa Chamberlin and Drilonereis falcata minor Hartman, heretofore not recorded from the northeast Pacific Ocean, have been found in samples from the Washington coast, Juan de Fuca Strait, and Puget Sound, These new records reflect incomplete knowledge of the polychaete fauna of these areas.

1. NICHOLS, F.H.

3. 1970

3. Benthic Polychaete Assemblages and Their Relationship to the Sediment in Port Madison, Washington.

5. Mar. Biol. 6: 48-57

6. 5 of 22

7. Port Madison, Washington (Puget Sound)

8. communities, benthic polychaetes, sediment

9. author's abstract

10. Two indices of community association and a 3 dimensional ordination of stations were used to elucidate the relationship between small-scale changes in species, composition of polychaete assemblages and changes in the physical character of the sediment, at 9 stations along a 1.5 km subtidal transect. There were no faunal or physical discontinuities that might have been used to delineate boundaries of polychaete communities, except at a very shallow station where the effects of extreme flucuations of temperature and salinity were evident. The degree of similarity between assemblages was related to the similarity of the sediments at the different stations. In particular, the changes in species composition appeared to correspond most cleary to differences in the clay contnet of the sediment.

1. NICHOLS, F.H.

2. 1969

3. Tenonia kitsapensis, a new genus and species of the Family Polynoidae (Polychaeta) from Puget Sound (Washington)

5. Proc. Biol. Soc. Wash. 82: 205-208

6. 4 of 7

7. Puget Sound

8. new genus, new species, Tenonia, Tenonia kitsapensis, description

10. Descriptions of a new genus Tenonia and new species Tenonia kitsapensis of the F. Polynoidae and where specimens were found.

1. NICHOLS, F.H.
2. 1968
3. A Quantitative Study of Benthic Polychaete Assemblages in Port Madison, Washington
4. M.S. Thesis, Univ. Washington, Seattle, Wash. 78 p.

1. OGLESBY, L.C.
2. 1973
3. Salt and Water Balance in Lugworms (Polychaete: Arenicolidae) with particular reference to Abarenicola pacifica in Coos Bay, Oregon
5. Biol. Bull. 145: 180-199
6. 7 of 75
7. Coos Bay, Oregon
8. salinity tolerance, Abarenicola pacifica
9. from author's summary
10. Abarenicola can tolerate salinities as low as 23% S.W. in lab, but not likely to survive more than brief exposures to lower than 50% S.W. salinities. Abarenicola pacifica is an osmotic conformer. Ion regulation limited. Abarenicola pacifica has very little ability to control water content and volume in different salinities. Estuarine distribution discussed in relation to osmotic physiology.

1. OGLESBY, L.C.

2. 1968

3. Responses of an Estuarine population of the Polychaete Nereis limnicola to osmotic stress.

5. Biol. Bull. 134: 118-

6. 4 of 41

7. Central Oregon coast, Siletz Bay/laboratory

8. osmotic stress, Nereis, estuarine habitat, chloride concentration

9. author's summary

10. Ecology of estuarine population of euryhaline Nereis limnicola described. Osmotic and ionic conformity at salinities above 30% S.W., hyperosmotic regulation in lower salinities down to a critical low salinity where hyperosmotic regulation breaks down (1-3% S.W.). Transfer from one salinity to another, both salinities within range of osmotic conformity, there is immediate change in total body chloride due to water and chloride movement. Adaptation to new salinity after transfer may take 2 days. Nereis limnicola less permeable to salts and possibly water than less euryhaline species.

1. OTTE, GERNOT & C.D. LEVINGS
2. 1975
3. Distribution of Macroinvertebrate Communities on a Mud Flat Influenced by Sewage, Fraser River Estuary, British Columbia.
4. Environment Canda, Fisheries and Marine Service, Technical Report No. 476 (unpublished preliminary report, manuscript status).
6. 4 of 34
7. Fraser River Estuary, B.C.
8. distribution, benthic macrofauna, sewage, dissolved oxygen, biomass, tidal flasts, outfall, salinity, temperature, particle size.
9. author's introduction
10. This report deals with the ecological effects of sewage disposal onto an intertidal mud flat at the estuary of the Fraser River, B.C.

1. PAMATMAT, M.M.
2. 1968
3. Ecology and Metabolism of a Benthic Community on an Intertidal Sandflat
5. Internationale Revue der Gesamter Hydrobiologie 53: (2) 211-298
6. 2 of 98
7. False Bay, San Juan Island, Washington
8. ecology, benthic community, primary productivity, metabolism, respiration, sediment
9. part of author's introduction
10. An investigation to determine the primary productivity of an intertidal sandflat, the metabolic activity of its entire benthic community and the relative metabolic activity of the producers the microorganisms plus meiofauna, and the macrofauna. The investigation entailed the description of geological, chemical and physical factors that could affect or limit life processes on a sandflat, the periodic assessment of plant and animal standing stock, in situ measurements of net primary production and community respiration, and laboratory experiments to determine the respiration of different macrofaunal species as a function of size and temperature.

1. PAMATMAT, M.M.
2. 1966
3. The Ecology and Metabolism of a Benthic Community on an Intertidal Sandflat (False Bay, San Juan Island, Washington)
4. Univ. of Wash., Ph.D. thesis
7. False Bay, San Juan Island, Washington
10. The plant and animal community of a temperate intertidal sandflat was studies by a broad program of sampling and experiments. Field sampling and experiments were done at three representative stations periodically from autumn 1963 to autumn 1965. Laboratory measurements were made of the community metabolism, and of the potential photosynthetic activity of subsurface sediment.

The ecology and metabolism of the benthic community to False Bay are determined largely by the interactions of incident radiation, temperature, and tide. Grain-size distribution of the sediment, and dissolved oxygen content, redox potential, pH, and salinity of the interstitial water appear to be of minor influence on the distribution of macrofauna at the three stations.

False Bay is comparable to other tideflats in primary productivity of benthic microflora (210, 297 and 333 litres O_2/m^2/yr. at three stations as estimated from bell jar measurements), in standing stock of macrofauna (7.1 to 18.3, averaging 10.9 g dry organic matter/m^2 for the period January to September at the deepest station), and to other shallow-water organically-rich, soft-bottom communities in oxygen uptake (68% of annual gross production as indicated by the mean ratio of community respiration to gross production).

An endogenous tidal thythm of metabolism was found. Both photosynthetic and respiratory rates are depressed during low and high water and elevated during flood and ebb tide. This lessened the reliability of

10. Continued

the present estimates of community metabolism. A scheme for more reliable measurements of metabolism on the tideflat, taking the tidal rhythm into consideration, is presented.

Community respiration was partitioned among benthic algae; combined bacteria, microfauna and meiofauna; and macrofauna. Respiration of benthic algae was estimated as 10% of gross production; macrofaunal respiration was based on laboratory measurements; and that of the combined bacteria, microfauna and meiofauna was estimated by difference. Results indicated increasing proportions of meiofauna from winter to summer. During the winter, benthic algae seemed to be the major energy transormers at two stations; the macrofauna was relatively more important at the lower than at the higher station.

Judging from their respiration and possible turnover rate as indicated by their size, the spionid polychaetes may be the dominant macrofauna at the lower station; the other important species are _Paraphoxus spinosus_ Holmes, _Leptosynapta clarki_ Heding, _Leptochelia dubia_ Krøyer, _Transennella tantilla_ Gould, _Anisogammarus confervicolus_ Stimpson, and _Lumbrinella zonata_ Johnston. The energy flow through the _Transennella tantilla_ population was 12.6 kcal/m^2 from January through August 1964; its net efficiency of production was 62%. The general relationship between production and respiration in natural animal populations is discussed.

There is an annual gain by False Bay of dissolved inorganic nutrients from the incoming tide and fresh-water run-off and a loss of particulate and dissolved organic matter. The difference between annual gross primary production and annual community respiration is 32% of gross production and respresents a maximum estimate of the annual export of organic matter.

1. PARKER, R.R. & B.A. KASK
2. 1972
3. Progress Reports on Studies of the Ecology of the Outer Squamish Estuary.
4. Fish. Res. Bd. Can. Manuscript Report Series No. 1192, 1193, 1194, 1195 (unpublished preliminary reports, manuscript status).

1. PETERSEN, J.A. & K. JOHANSEN

2. 1967

3. Aspects of Oxygen Uptake in Mesochaetopterus taylori, a Tube-dwelling Polychaete

5. Biol. Bull. 133: 600-605

6. 3 of 15

7. False Bay, San Juan Island

8. oxygen uptake, Mesochaetopterus, life habit, tube worm

9. author's summary

10. Oxygen uptake in Mesochaetopterus taylori has been studied as a function of external oxygen availability rate of O_2 decline inside normal tubes during tidal exposure indicates that oxygen supply is nearly exhausted during an average 3 hour tidal exposure. Tube is impermeable to water and oxygen.

1. PETTIBONE, MARIAN H.
2. 1971
3. Descriptions of *Sthenelais fusca* Johnson 1897 and *S. berkeleyi* n. sp. (Polychaeta: Sigalionidae) from the eastern Pacific
5. J. Fish. Res. Board Can. 28: 1392-1401
6. 8 of 16
7. eastern Pacific
8. descriptions, *Sthenelais fusca*, new species, *S. berkeleyi*, Sigalionidae
9. author's abstract
10. Descriptions of *Sthenelais fusca* Johnson 1897 and *S. berkeleyi* n. sp. (Polychaeta Sigalionidae) from the eastern Pacific

1. PETTIBONE, MARIAN H.
2. 1969
3. The Genera Polyeunoa McIntosh, Hololepidella Willey and Three New Genera (Polychaeta, Polynoidae)
5. Proc. Bio. Soc. Wash. 82: 43-62
6. 4 of 29
7. World distribution but one new genus and new combination from Alaska to Oregon
8. new genus, Grubeopolynoe, new combination, Grubeopolynoe tuta (Grube), Polynoidae
9. AMG original
10. A small section of this paper (p. 56-59) deals with a new genus, Grubeopolynoe and Grubeopolynoe tuta (Grube) a polychaete whose distribution is Alaska to Oregon and is associated with terebellid polychaetes

1. PETTIBONE, M.H.
2. 1967
3. Type - specimens of Polychaetes Described by Edith & Cyril Berkeley (1923-1964)
5. Proc. U.S. Nat. Mus. 119(3553) 1-23
6. 35 of 82
7. Nanaimo district
8. Berkeley collection, type collection, Berkeley bibliography
9. VIM original
10. Notes on polychaeta work completed by the Berkeley's upon its transfer to U.S. National Museum. Includes pertinent information on type material, where found, what substrate, life history phase. Considerable location data available, along with complete Berkeley bibliography.

1. PETTIBONE, MARIAN H.

2. 1966

3. Heteraphrodita altoni, a new genus and species of Polychaete worm (Polychaeta, Aphroditidae) from deep water off Oregon, and a revision of the Aphroditid Genera

5. Proc. Biol. Soc. Wash. 79: 95-108

6. 0 of 18

7. mouth of the Columbia River, Oregon

8. new genus, new species, Aphroditidae, Heteraphrodita altoni, revision

9. AMG original

10. A review of the genera in the family Aphroditidae as well as a description of the new species Heteraphrodita altoni belonging to a new genus Heteraphrodita. Included is a key to the genera.

1. PETTIBONE, M.
2. 1962
3. New Species of Polychaete Worms (Spionidae: Spiophanes) from the East and West Coast of North America
5. Proc. Biol. Soc. Wash. 75: 77-88
6. 5 of 17
7. east and west coast of North America
8. new species, Spionidae
9. AMG original
10. Two new species of the genus Spiophanes (Spiophanes berkeleyorum and Spiophanes wigleyi) are described

1. POTSWALD, H.E.
2. 1968
3. The biology of fertilization and brood protection in Spirorbis (Laeospira) morchi
5. Biol. Bull. 135: p. 208-222
6. 3 of 29
7. Argyle Creek, San Juan Island
8. fertilization, opercular brood protection, Spirorbis morchi, brooding behaviour, self-fertilization of Spirorbis morchi
9. from author's summary and text
10. In Argyle Creek, Spirorbis morchi breeds year round. S. morchi capable of self-fertilization, believed to be facultative, not obligatory. Histology of opercular brood pouch described. Spawning takes place when animal is completely withdrawn into tube.

1. POTSWALD, H.E.
2. 1967
3. Observations on the genital segments of Spirorbis (Polychaeta)
5. Biol. Bull. 132: 91-107
6. 6 of 37
7. San Juan Island
8. genital segments, primary oocyte and primary spermatocyte development, hermaphrodite
9. author's summary
10. In all Spirorbis examined the first 2 to 3 abdominal segments are female, remaining abdominal segments male. Both male and female gametes differentiate simultaneously in same individual. Cytological events of male-female gamete development described. Spawning assumed to take place by rupture of body wall.

1. POTSWALD, H.E.

2. 1965

3. Reproductive Biology and Development of _Spirorbis_ (Polychaeta, Serpulidae)

4. Doctoral thesis, University of Washington, Dissertation Abstracts No. 65-8528

10. The present investigation has been concerned with the adult morphology, gametogenesis, reproductive biology, and embryonic development of the serpulid genus _Spirorbis_. Original observations on living material and the fixation of developmental stages were completed primarily at the University of Washington's Friday Harbor Laboratories.

The main study has been concentrated on a sinistral species _Spirorbis_ (_Laeospira_) _morchi_ Levinsen; however, comparative material was drawn from another sinistral species _Spirorbis_ (_Protolaeospira_) _ambilateralis_ Pixell, and from two dextral species, _Spirorbis_ (_Paradexiospira_) _vitreus_ Fabricius, and _Spirorbis_ (_Dexiospira_) _spirillum_ Linne. All four species were collected intertidally on San Juan Island or by dredging in the San Juan Archipelago. Larvae of _Spirorbis_ (_Dexiospira_) _pagenstecheri_ Quatrefages sent from England were studied in section and compared with larvae of local species.

Since contradictory accounts concerning the gross asymmetry of the genus exist in the literature, the adult morphology of _Spirorbis_ has been investigated and described.

Descriptive details concerning the four species found in the vicinity of San Juan Island, Washington are recounted. Populations of both dextral and sinistral forms of _Sp. vitreus_ have been found. The significance of reversal of symmetry to the taxonomy of the genus is discussed.

In all species of _Spirorbis_ examined, the first two or three abdominal segments of mature adults are female and the remaining segments are male.

10. Continued

Both female and male gametes differentiate simultaneously in the same individual and arise from a discrete and persistent gonad composed of primordial germ cells arranged in two retroperitoneal rows, mesial to the ventral nerve cords, and running the length of the abdominal segments.

Evidence has been obtained by isolating larvae and non-brooding adults in sperm-free sea water, that Spirorbis morchi is capable of self-fertilization. This constitutes the first demonstration of self-fertilization within the genus.

Information is provided on breeding season and modes of brood protection. A study of brood protection in Spirorbis morchi has resulted, for the first time, in an explanation of how spawned oocytes are transferred to the opercular ampulia. The type of brood protection exhibited by any one species has been found to be constant.

In all four species of Spirorbis studied, the oocytes are relatively large and extremely yolky. Cleavage is non-synchronous, unequal, and of the spiral type. Gastrulation occurs primarily by epiboly. Mesoderm band formation is not stricity teloblastic in the sense that once the mesentoblasts begin to divide, there are no recognizable pole cells.

Described in detail are the events associated with the lecithotrophic development of the post-gastrula to the fully formed three segmented larva. Of particular interest is the segregation of the primordial germ cells, formation of the three larval or primary segments, development of the larval prostomium and stomodaeal-collar region, and the precocious development of the posterior gut cavity. Development from activation of the oocyte to hatching of the three segmented larva takes 30-31 days at 12-13°C.

10. Continued

The existence of three larval types within the genus Spirorbis is verified and detailed descriptions of each of the larval types is given. Conclusively demonstrated is the fact that the larval abdominal primary shell gland is a modified portion of the larval gut and is homologous to the posterior gut in larvae which lack the gland. The paired thoracic shell glands of Spirorbis pagenstecheri larvae are ectodermal and are interpreted to be precociously developed adult structures. An attempt is made to correlate larval characters with adult characters and mode of brood protection.

The events associated with settlement and metamorphosis are described. Particular attention is given to the development of asymmetry in the post-settled larva, changes which occur in the prostomium and peristomium, development of the thoracic nephridia, formation of abdominal or secondary segments, and developments of the gonada.

The development of Spirorbis is discussed in relation to what is known about development in other polychaetes.

1. POTSWALD, H.E.

2. 1964

3. The Nature of the Primordial Germ Cells and Evidence for Self-fertilization in Spirorbis (Polychaeta: Serpulidae)

5. Amer. Zool. 4: Abstract 93, p. 292

10. The known species of Spirorbis are hermaphroditic and brood their young: however, literature concerning sexuality and biology of propagation within the genus is incomplete and often contradictory. Observations herin presented were made in conjunction iwth an embryological study of Spirorbis (Laeospira) morchi Levinsen.

Gametes proliferate from a discrete and persistent gonad composed of primordial germ cells arranged in two retroperitoneal rows, mesial to the ventral nerve cords, and running the length of the abdominal or secondary segments. Interphase primordial germ cells are cytologically unique and can be traced back to sites within an early larval stage. In a mature adult, the first tow abdominal segments are female and the remaining abdominal segments male. Maturation of both sexes occurs simultaneously.

During the spring and summer of 1961, 70 larvae were artificially released from opercular brood pouches, individually isolated, and allowed to metamorphose in sperm-free sea water. Although mortality was high the first year, at the end of 17 months three separate broods of viable larvae were obtained. Settlement and normal metamorphosis followed natural larval release. Additional observations were made on adults taken from a natural population and individually isolated in pasteurized sea water. Of 63 adult isolates, 26 spawned after a period of from 2-58 days in isolation and 13 of these produced broods of viable larvae which settled and metamorphosed. Cytological observations together with the results obtained from the isolation experiments constitute the first demonstration of self-fertilization within the genus.

1. QUAYLE, D.B.
2. 1970
3. The Shore Fauna of Coffin Island, B.C.
5. Fish. Res. Bd. Canada, Manus. Report Series No. 1122 (unpublished preliminary report, manuscript status)
6. 10 of 12 on polychaeta
7. 48° 59'07" N. Latitude (small island near Ladysmith, B.C.) 124° 45' 0.8" W. Longitude
8. shore fauna collection, Polynoidae, Nereidae, Cirratulidae, Opheliidae, Chaetopteridae, Glyceridae, Leodocidae, Terebellidae, Syllidae, Hesionidae, Sabellidae, Serpulidae
9. VIM original
10. Species list of shore collection at Coffin Island (near Ladysmith, Vancouver Island) with the purpose of making available, baseline information for any comparative studies of faunal changes. All major phyla and classes represented by one or more species.

    For polychaeta, 31 species in above 13 families.

1. QUAYLE, D.B.

2. 1969

3. Pacific Oyster Culture in British Columbia

4. Fish. Res. Board Can. Bulletin 169

6. None

7. General B.C. area

8. polychaeta associated with Shellfish - Polydora, Euclymene zonalis, Serpula, Spirorbis

9. VIM original and author's text

10. 1. Polydora ciliata parasitic to Pacific oyster in B.C. Polydora burrows into shell and sometimes perforate inner shell so oyster has to lay down a protective new shell.

    2. Spirorbis sp. and Serpula sp. have calcareous tubes attached to oyster shell surfaces, but cause no harm to oyster.

    3. Euclymene zonalis live in 1/8" diameter membranous tubes buried in muddy sand. In some years it multiplies in great numbers and causes the ground to soften allowing oysters to sink into mud. Boundary Bay is only area where worm difficulty encountered. Solution is to plough the ground to destroy worms or to allow it to lie fallow until worms die off.

1. RICKETTS, EDWARD F. & J. CALVIN (revised by JOEL W. HEDGPETH)
2. 1968, 4th edition
3. Between Pacific Tides
4. Stanford University Press, Stanford, Calif. 614 pp.
7. Pacific Coast of North America
8. marine biology, marine invertebrates, life zones, marine plants, life history, physiology, community relations, intertidal zonation
9. Publishers
10. The book is a detailed account of the habits and habitats of the animals that live in one of the most prolific life zones of the world - the rocky shores and tide pools of the Pacific coast. The intricate and fascinating life processes that these creatures carry on within their own small spheres are described with affectionate care.

    The animals are grouped according to their most characteristic habitat, whether rocky shore, sandy beach, or wharf piling. The authors describe such factors as life history, physiology, community relations, and the influence of wave shock and tidal level.

1. ROBILLIARD, G.A.

2. 1971

3. Preliminary Survey of Intertidal and Subtidal Marine Fauna and Flora of Pacific Rim National Park with Emphasis on Long Beach Section.

5. Nat. Mus. Can. Rep. Ottawa: 156 p.

1. ROE, PAMELA
2. 1975
3. Aspects of Life History and of Territorial Behaviour in Young Individuals of _Platynereis bicanaliculata_ and _Nereis vexillosa_ (Annelida, Polychaeta)
5. Pacific Sci. Vol. 29, No. 4, 341-348
6. 5 of 8
7. Mitchell Bay 48° 34'9.5" N. Latitude and 123° 9'48" W. Longitude
   Garrison Bay 48° 34'57" N. Latitude and 123° 9'17" W. Longitude
8. life history, territorial behaviour, _Platynereis_, _Nereis_ settlement, tube-building, tube defense.
9. author's abstract
10. _Platynereis bicanaliculata_ (Baird), an annual nereid, spawned in early August at two areas in Washington state. Spawning was highly synchronous. Yound were planktonic for about 1 week. Within 3 weeks they had grown to 4 mm in length, had started building tubes of mucus and diatoms and showed a period of rapid growth in size. By the end of September or early October they averaged 10 mm in length, at which size they remained until March. In spring they reached adult length (20-23 mm) and during the summer gametes developed.

    Nereis vexillosa Grube egg masses were found from March through August. Nereis has a 2 year life span in both study areas, growing to one-half adult size the 1st year and to mature size the 2nd year. In the laboratory, young made tubes within 1 week after hatching from egg masses.

    Members of both species defend their tubes from intruders. Usually, larger individuals win fighting encounters, especially if they are the occupants of tubes. Small individuals successfully defent their tubes from larger individuals in about one-half of the encounters; and if fights occur between equal sized individuals, occupants are usually not displaced. Fights are real, with jaws used much for biting, and smaller individuals are sometimes actually eaten by larger ones, especially in

10. Continued

Nereis vexillosa. In the laboratory the number of individuals of *N. vexillosa* kept in fingerbowls decreased in number until only one or two large individuals remained.

1. ROSSI, S.S., J.W. ANDERSON & G.S. WARD
2. 1976
3. Toxicity of Water-soluble Fractions of Four Test Oils for the Polychaetous Annelids Neanthes arenaceodentata and Capitella capitata
5. Environ. Pollut. 10, No. 1, 9-18
6. 5 of 14
7. laboratory
8. toxicity, oil, bioassay, polychaeta
9. author's abstract
10. The toxicity of water-soluble fractions of two refined and two crude oils to two species of laboratory-reared polychaetes was determined. Two refined oils (No. 2 fuel oil and Bunker C residual) proved most toxic to both species. South Louisiana crude oil less toxic than either refined oils, yet more toxic than Kuwait crude. Higher concentrations of toxic diaromatic compounds (naphthalenes) found in refined oils accounted for major differences between the toxicity of refined versus crude oils.

    Capitella slightly more sensitive to 3 of 4 oils tested than was Neanthes. Both species similar to fish and crustacea in their sensitivity to these 4 oils.

1. STEPHENSON, T.A. & A. STEPHENSON

2. 1961a

3. Life Between Tide-marks in North America, Part IVb, Vancouver Island, II

5. J. Ecol., 49: 227-243

6. none of 10 (general intertidal)

7. Horswell Bluff 49° 12'50" N. Latitude/123° 56'12" W. Longitude
   False Narrows 39° 8' N. Latitude/123° 47' W. Longitude
   Victoria 48° 24.5' N. Latitude/123° 22' W. Longitude

8. intertidal zonation

9. VIM original

10. Comparison of intertidal zonation between Brandon Island, Horswell Bluff False Narrows and Clover Point, Victoria, B.C.

Serpula sp.	- Horswell Bluff - infralittoral zone
nil polychaeta	- False Narrows
Dodecaceria fewkesi	- commonly formed colonies in the lower midlittoral
Eudistylia vancouveri	- common in crevices, under ledges and in wave washed positions of lower midlittoral
	- Victora, B.C.

1. STEPHENSON, T.A. & A. STEPHENSON
2. 1961
3. Life Between Tide-marks in North America, Part IVa, Vancouver Island I
5. J. Ecol. 49: 1-27
6. 4 of 101
7. Brandon Island, Nanaimo Departure Bay 49° 12'26" N. Latitude/123° 57' 18" W. Longitude
8. intertidal zonation
9. from author's summary
10. Distribution of algae and animals on rocky substrata between tide marks at Brandon Island, Departure Bay, B.C. Differences in slope and exposure (sun vs. shade) accounted for differences in zonation. *Serpula vermicularis* found at infralittoral fringe bare zone and in metridium zone on north side of island (shady exposure). General intertidal zone reference, descriptive but not much on polychaeta.

1. REBBLE, N.
2. 1962
3. The Distribution of Pelagic Polychaetes Across the North Pacific Ocean
5. Bull. Br. Mus. Nat. Hist., 7(9): 373-492
6. 10 of 69
7. North Pacific Ocean
8. pelagic polychaeta - North Pacific
9. from author's introduction
10. Principle purpose of report was to examine the extent to which pelagic polychaeta are restricted in the North Pacific Ocean at the northern boundary of the sub-tropical zone and southern boundary of the sub-arctic zone. Systemic account of Tomopteridae, Alciopidae, Typhloscalecidae, Phyllodocidae. Distribution of families included.

1. TERWILLIGER, R.C. & T.L. KOPPENHEFFER
2. 1973
3. Coelomic Cell Hemoglobin of the Polychaete Annelid Pista pacifica
   Berkeley
5. Comparative Biochem. and Physiol. 45B, 557-66
6. ? of 34
7. Coos Bay Estuary, Oregon
8. hemoglobin; Pista pacifica; annelid hemoglobin; extracellular hemoglobin
9. author's abstract
10. The terebellid polychaete, Pista pacifica, has an extracellular hemoglobin in its vascular fluid and at least two hemoglobins contained in coelomic cells.

1. USCHAKOV, P.B.

2. 1971

3. Amphipacific Distribution of Polychaetes

5. J. Fish. Res. Bd. Canada 28: 1403-1406

6. 4 of 31

7. Asiatic and American coasts of the North Pacific

8. distribution, amphipacific, polychaetes, climate

9. author's abstract

10. Some 25 polychaete species common to Asiatic and American coasts are recorded in south-boreal and subtropical waters of the Pacific: they are absent in both northern cold regions (Bering and Okhotsk seas) and in tropical zones. Examples are also given of analogous, closely related twin species, and subspecies. Such disjunct amphipacific ranges of these species are probably caused by ancient changes in climatic conditions. The possibility of modern oceanic currents having some influence on this is also not excluded. The author suggests a study of life cycles of amphipacific species in the extremes of their habitats.

1. USCHAKOV, P.V.

2. 1957

3. On the Pelagic Fauna of the Northwest Region of the Pacific Area (Polychaeta)

5. Issledovaniia Dalnevostochnykh Morei, SSSR, No. 4 Invest. Far East Seas U.S.S.R. 4: 267-290 (in Russian)

1. WIESER, W.

2. 1959

3. The Effect of Grain Size on the Distribution of Small Invertebrates Inhabiting the Beaches of Puget Sound

5. Limnol. Oceanogr. 4: 181-194

6. 1 of 36

7. Seattle, Puget Sound - 1. Richmond Beach
   2. Golden Gardens
   3. Alki Point
   4. Vashon Island
   5. Bainbridge Island

8. particle (grain) size, distribution, polychaeta

9. from text and author's abstract

10. Polychaeta - Rhynochospio cf. arenicola most abundant and distribution similar to Protohydra leuckarti ie. no individuals above 200µ-line. Some for Boccardia and less characteristically for Eteone.

The position with respect to the general configuration of the shore-line and the direction and force of the currents of five localities in Puget Sound is such that they represent a series of decreasing exposure, Richmond Beach being the most exposed, Bainbridge Island the most sheltered locality. This is reflected in the composition of the substrate, the former locality having the coarsest, the latter the finest substrate. Perpendicular to this horizontal gradient there runs a vertical gradient due to the tide, the coarse grades being deposited in the upper, the fine grades in the lower intertidal.

The intertidal distribution of at least some of the more common species of invertebrates on the beaches is not so much determined by levels of tidal water as by the pattern of distribution of certain grades of substrate. For example, species of this sort will penetrate into the upper intertidal if the preferred substrate occurs there, but they will remain in the lower intertidal if the substrate is confined to this zone.

10. Continued

On the beaches there exist mixtures of sand which constitute barriers separating major faunal components from each other. It is assumed that substrates with a median diameter of approximately 200μ constitute such a barrier separating the bulk of interstitial sliders from a great number of burrowing animals. The former can move only in sand coarse enough to maintain an interstitial system; the latter, for mechanical reasons, will find fine sand more favorable than coarse. This distinction, however, does not apply to nematodes which are able to move even in the interstices of fine sand. There are various ways in which grain size and shape can influence the distribution of the fauna. These types of relationship are discussed.

1. WEISER, W.
2. 1959
3. Free-living Nematodes and Other Small Invertebrates of Puget Sound Beaches
4. Univ. of Washington Press, Seattle, 179 pp. Univ. Washington Publ. Biol. 19: 1-179
9. Bioabstract
10. The so-called meiofauna (invertebrates living in sand and mostly visible only through the microscope) was investigated by the author, who points out that such investigations of American coasts have rarely been undertaken but could be very useful. This paper deals particularly with 106 spp. of nematodes which were found, out of which over 70 spp. and 2 genera are new. Data are given on the 5 localities investigated: Descriptions, measurements, taxonomic discussions, many keys etc., are included in the treatment. The 2nd part deals with the distribution of the spp. and ecology. Tables showing horizontal distribution are given for spp. of archiannelids and gastrotrichs, polychaeta, copepods, ostracods, amphipods, chelifera and isopods. The bibliography lsits 96 references.

1. WELLS, G.P.
2. 1959
3. The Genera of Arenicolidae (Polychaeta)
5. Proc. Zool. Soc. London, 133, 301-314
6. 2 of 33
7. No specific location
8. Abarenicola gen. nov., taxonomic (genera) justification
9. author's summary
10. The species currently grouped as Arenicola Lamarck should be distributed between Arenicola, Arenicolides Mesnil and Abarenicola gen. nov.

    Formal diagnoses of the family are given along with constituent genera.

    Suggestions made as to the most convenient characters for referring arenicolid worms to their genera.

1. WENNEKENS, M.P.
2. 1959
3. Marine Environment and Macro-benthos of the Waters of Puget Sound, San Juan Archipelago, Southern Georgia Strait, and Strait of Juan de Fuca.
4. Univ. of Wash. Ph.D. thesis 298 p.

1. WOODIN, S.A.
2. 1974
3. Polychaete Abundance Patterns in a Marine Soft-sediment Environment: The Importance of Biological Interactions
5. Ecological Monographs 44: No. 2, 171-187
6. 16 of 46
7. Mitchell Bay, San Juan Island, Wash.
8. competition, interactions, Lumbrineris, Axiothella, Platynereis, Armandia, Exogone, Nereis, soft-sediment, space.
9. from author's abstract
10. Samples of infauna and measurements of temperature, oxygen, salinity, and algal cover were taken from January 1969 to December 1970 at -1.2 ft. tidal elevation in a mud flat dominated by polychaetes in Mitchell Bay, San Juan Island, Washington. Mortality of adults after spawning and variable larval settlement success probably explained much of the variation in population numbers of the four large and numerically important polychaete species, Lumbrineris inflata, Axiothella rubrocincta, Platynereis bicanaliculata, and Armadia brevis. No correlations were found between the abundances of numerically important species and physical factors.

    Exclosures constructed of 3 mm mesh plastic screening places on the flat became covered with diatoms. Settling juveniles of tube-buioding species, such a P. bicanaliculata, Axiothella rubrocincta, and L. inflata, built tubes in this layer of diatoms and thus did not reach the enclosed sediment, while settling juveniles of a burrowing species, Armandia brevis, burrowed through the diatom layer and reached the sediment. Thus cleaning the cage surfaces or removing the cage after settlement reduced abundances of tube-building species without disturbing the sediment since adults of all three numerically important tube-builders experience mortality after spawning. The manipulation of tube-builder abundances showed that the burrowing species responded to space vacated by tube-

10. Continued

builders by increased settlement success. Results form experimental variation of _A. brevis_ numbers per unit volume of sediment in the laboratory and abundance data from unmanipulated natural areas also demonstrated the presence of interspecific and intraspecific competition for space.

Changes in physical factors due to algal cover had some impact on population levels but the competitive interactions and behaviour patterns, revealed only by observations on the behavior of living organisms and manipulation of the infauna, demonstrated the importance of biological interactions to the determination of species abundance patterns in a soft-sediment environment.

1. WOODWICK, K.H.
2. 1963
3. Taxonomic Revision of Two Polydorid Species
5. Proc. Biol. Soc. Wash. 76: 209-216
6. 2 of 7
7. S. Calif. and near Nanaimo, B.C.
8. polychaeta, F. spionidae
9. author
10. Polydora tricuspa Hartman (1939) is referred to the closely related genus Boccardia. Polydora ciliata (Johnston) var. spongicola (Berkeley and Berkeley, 1950) is raised to species status.

APPENDIX B

PRE - 1956

REFERENCES

1. BERKELEY, C.

2. 1922a

3. On the occurrence of manganese in the tube and tissues of Mesochaetopterus taylori Potts, and in the tube of Chaetopterus variopedatus Renier.

5. Biochem Jour. 16 (1): 70-77.

1. BERKELEY, C.

2. 1922b

3. An organic constituent of the tube of <u>Mesochaetopterus</u> <u>taylori</u> Potts.

5. Jour. of Biol. Chem. 50(1): 113-120.

1. BERKELEY, C.

2. 1930

3. The green bodies of the intestinal wall of certain Chaetopteridae.

5. Quart. Jour. Microscopical. Sci. 73(3): 465-476.

1. BERKELEY, C.

2. 1942

3. Occurrence of _Ctenodrilus_ in the Pacific.

5. Nature, vol. 149, p. 248.

6. None

7. Ladysmith Harbour, B.C.

8. _Ctenodrilus serratus_

9. VIM original

10. Occurrence of _Ctenodrilus_ in quantity in an artificial lagoon used for raising oysters. Believed swept off eelgrass. Lagoon temperature abnormally high in summer. Placed in family Cirratulidae.

1. BERKELEY, E.

2. 1923

3. Polychaetous annelids from the Nanaimo District, Pt. 1. Syllidae to Sigalionidae.

5. Contr. Can. Biol. and Fish. New Series 1 (11): 205-218, 1 pl.

6. 5 of 13

7. Nanaimo District

8. polychaetous annelids, Syllidae, Hesionidae, Aphroditidae, Amphinomidae, Palmyridae, Polynoidae, Sigalionidae.

9. AMG original

10. The first installment of lists of polychaetous annelids from the Nanaimo District. This list comprises the above mentioned families and records 43 species.

1. BERKELEY, E.

2. 1923

3. Polychaetous annelids from the Nanaimo District Part 3. Leodicidae to Spionidae.

5. Contr. Canad. Biol. New Series 3: No. 17, 405 - 422.

6. 2 of 14

7. Nanaimo District

8. polychaetous annelids, Leodicidae, Glyceridae, Sphaerodoridae, Ariciidae, Spionidae.

9. AMG original

10. Descriptions of polychaetous annelids from the above mentioned families including areas where they were found.

1. BERKELEY, E.

2. 1924

3. On a new case of commensalism between echinoderm and annelid

5. Can. Field-Nat. 38 (10): 193

6. No references

7. Nanaimo District

8. commensalism, Polynoidae

9. Summary of author's note

10. Halosydna pulchra commensal with holothuroid Stichopus californica, asteroids Solaster stimpsoni and Pteraster tessalatus

    Halosydna fragilis commensal with asteroids Evasterias troschelii, Orthasterias leptolena, Orthasterias columbiana

    A species of Myzostoma common with local crinoids

    New occurrence is:

    Malmgrenia nigralba commensal with Leptosynapta inhaerens

1. BERKELEY, E.

2. 1924

3. Polychaetous annelids from the Nanaimo District 2 Phyllodocidae to Nereidae.

5. Contr. Can. J. Biol. Ottawa, New Series, Vol. 2: 285-294, No. 12

6. 2 of 7

7. Nanaimo District

8. Phyllodocidae, Tomopteridae, Nephthydidae, Nereidae

9. VIM original

10. Descriptions of history, organism, where found for species found in above families. Some habitat description for some species included.

1. BERKELEY, E.

2. 1927

3. A new genus of Chaetopteridae from the N.E. Pacific: with some remarks on allied genera.

5. Proc. Zool. Soc. London, Pt. 2: 441-445.

1. BERKELEY, E.

2. 1929

3. Polychaetous annelids from the Nanaimo District, Pt. 4. Chaetopteridae to Maldanidae.

5. Contr. Canad. Biol., New Series, Vol. 4, No. 22, pp. 305-317

6. 2 of 13

7. Nanaimo District

8. polychaetous annelids, Chaetopteridae, Cirratulidae, Terebellidae, Ampharetidae, Amphictenidae, Capitellidae, Opheliidae, Maldanidae.

9. AMG original

10. Descriptions of Polychaetous annelids from the above mentioned families including areas where they were found.

1. BERKELEY, E.

2. 1930

3. Polychaetous annelids from the Nanaimo District, Part 5. Ammocharidae to Myzostomidae,

5. Contri. Canad. Biol. New Series, 6, No. 5, 65-77

6. 2 of 16

7. Nanaimo District

8. polychaetous annelids, Ammocharidae, Arenicolidae, Scalibregmidae, Chlorhamidae, Sternaspidae, Sabellidae, Serpulidae, Sabellariidae, and Myzostomidae.

9. Author's abstract

10. This last installment of the list (of polychaetes collected in the Nanaimo region) comprises the above mentioned families. A single new species, Branchiomma burrardum is described. Some pelagic forms from the region and from the west coast of Vancouver Island are listed in the appendix.

1. BERKELEY, E.

2. 1935

3. Swarming of <u>Odontosyllis phosphorea</u> Moore and of other Polychaeta near Nanaimo, B.C.

5. Nature 136 (3452):1029.

1. BERKELEY, E.

2. 1936

3. Occurrence of Sacconereis in Western Canada.

5. Nature 137:1321.

1. BERKELEY, E.

2. 1949

3. Morphological characters of Myriochele heeri Malmgren.

5. Nature 164(4162):239.

1. BERKELEY, E. & C. BERKELEY

2. 1932

3. Some Capitellidae (Polychaeta) from the N.E. Pacific: with a description of new genus.

5. Proc. Zool. Soc. London, 669-675.

1. BERKELEY, E. & C. BERKELEY

2. 1932

3. On a collection of Littoral Polychaeta from the West Coast of Vancouver Island.

5. Contrib. Canadian Biol. and Fisheries, vii, No. 24, 309-318

6. 7 of 12

7. Long Beach, Wreck Bay

8. littoral polychaeta, West Coast Vancouver Island, habitat

9. VIM original

10. Littoral polychaeta collection at Long Beach and Wreck Bay with notes on where found.

<u>Syllis elongata</u> - amongst eelgrass roots, Wreck Bay
<u>Heteropale bellis</u> - fragment identified
<u>Halosydna insignis</u> - 2 samll specimens amongst algae on rocks, Long Beach
<u>Eulalia viridis</u> - 1 specimen from algae on rocks
<u>Phyllodoce castanea</u> - amongst algal holdfasts, Long Beach
<u>Nephthys caeca</u> - sand-dwelling, Long Beach
<u>Nereis notomacula</u> - amongst algal holdfasts, Long Beach
<u>Nereis vexillosa</u> - amongst mussels, barnacles, algal holdfasts, Long Beach & Wreck Bay
<u>Nereis virens</u> - dug out of sand, Long Beach
<u>Onuphis elegans</u> - lying fully exposed on sand surface. Tube is frail structure of snad grains, Long Beach. Johnson (1901) - Puget Sound; Treadwell (1922) - Neah Bay, Friday Harbour
<u>Lumbrinereis cervicalis</u> - amongst algae on rocks, Long Beach
<u>Arabella iricolor</u> - amongst algae on rocks, Long Beach
<u>Nainereis laevigata</u> - muddy sand, in rocks which run under sand in shallow sand bed, Long Beach and Wreck Bay
<u>Scoloplos elongate</u> - Puget Sound, Nanaimo region (1 specimen taken)
<u>Nerine cirratulus</u> - in sand pool, Long Beach
<u>Cirratulus robustus</u> - collected in sand, Long Beach

10. Continued

Dodecaceria pacifica - found on rocks exposed to full violence of breakers, considerable quantity. Colonies matted masses of fine calcareous tubes. Long Beach

Thelepus triserialis - found in empty Serpulid tube in which had constructed own tube, Long Beach

Ophelina mucronata - sand tunnelled by vast numbers, Long Beach

Arenicola pusilla - occurs over large stretches of sand exposed at low tide at Long Beach. Also head of Tofino Sound

Eudistylia gigantea - individuals attached to rocky reefs, not common, Long Beach

Parasabella media - on rocks at Long Beach

Pseudopotamilla reniformis - Wreck Bay

Chone gracilis - in sand around eelgrass roots, Wreck Bay

Fabricia minuta - amongst algae at Long Beach

Serpula vermicularis - on rocks, Long Beach

Spirorbis spirillum - on barnacle shells, Long Beach

Spirorbis granulatus - on barnacle shells, Long Beach

1. BERKELEY, E. & C. BERKELEY

2. 1936

3. Notes on Polychaeta from the west coast of Western Canada, Pt. 1. Spionidae

5. Ann. Mag. Nat. Hist. Ser. 10, 18: 468-476

6. 5 of 15

7. Departure Bay, Pipers Lagoon, Estevan Light, Nanoose Bay, Kye Bay, Mudge Island, Rocky Bay, Gabriola Island, False Narrows, Round Island, Friday Harbour

8. Spionidae, Polydora spp., Laonice sp., Spiophanes sp., Spio sp.

9. VIM original

10. Lists of new species and description of location and habits

Polydora socialis - colonies found in clean sand beds at low tide in Departure Bay, Pipers Bay. Subspecies plena described

Polydora caeca - found in large numbers in walls of hard sandy tubes of Nichomache carinata Moore. Not all Nichomache present in tubes recovered. Estevan Light.

Polydora commensalis - living in Thais lamellosa shells inhabited by Pagurus granosimanus. Describes how worm tube constructed in shell. Nanoose Bay, Departure Bay

Polydora ligni - tubes constructed of light sand. Kye Bay

Polydora ciliata - found in galleries in walls of old Thais shells inhabited by Pagurus in which Polydora commensalis was or had been present. Includes description. Departure Bay

Polydora (Boccardia) natrix - collected in gravelly sand at Mudge Island

Polydora magna - builds sandy tube and attains length of at least 100 mm. Found in galleries of shaly rock or tubes or shells of other animals. Rocky Bay, Gabriola Is., False Narrows, Round Is.

10. Continued

Laonice cirrata - found in muddy sand, moderate depth, considerable confusion in historical name

Spiophanes cirrata - shore form and 250 m depth Nanoose and Departure Bay, less depth at Friday Harbour

Spio filicornis (Müller) var. _pacifica_ - different colouration from _Spio filicornis_. Common beach form, Nanaimo

1. BERKELEY, E. & C. BERKELEY

2. 1938

3. Rhamphobrachium longisetosum sp.n. with some observations on the regeneration of the specialized anterior setae.

5. Anals. & Mag. of Nat. Hist., Ser. 11, 1: 428-435.

1. BERKELEY, E. & C. BERKELEY

2. 1938a

3. Notes on Polychaeta from the coast of Western Canada - II, Syllidae.

5. Ann. Mag. Natur. Hist., Ser. 11, 1: 33-49.

6. 5 of 15

7. West coast of Vancouver Island.

8. polychaeta, Syllidae, Canadian west coast, distribution

9. Author's introduction.

10. Prior to 1923 no Syllidae had been recorded from western Canadian waters. A list of 15 species taken in the district of Nanaimo, B.C., published by one of us in that year (Berkeley 1923, p. 205) included several forms previously described from points on the west coast of North America, both south and north of British Columbia, together with some new to the coast and others new to science.

    Study of material collected during the intervening years makes it necessary to comment on some of the species previously recorded, to extend some of their distributions and to add three species previously described from California (*Syllis heterochaeta*, *Odontosyllis phosphorea*, and *Autolytus varius*), six new to the west coast of North America (*Syllis sclerolaema*, *Sphaerosyllis pirifera*, *Sphaerosyllis hystrix*, *Exogone gemmifera*, *Exogone verrugera* and *Autolytus aurantiacus*) and four new to science (*Syllis spenceri*, *Syllis pulchra*, *Syllis harti* and *Exogone heterochaeta*).

    The types of the new species are in the authors' collection, and co-types, when available, will be deposited in the British Museum.

1. BERKELEY, E. & C. BERKELEY

2. 1942

3. North Pacific Polychaeta, chiefly from the west coast of Vancouver Island, Alaska and Bering Sea.

5. Can. J. Res. vol. 20, 183-208.

6. Total of 76 - no titles given.

7. Barclay Sound north to Amphitrite Point
   Amphitrite Point to Estevan Point
   Estevan Point to Bajo Point
   Bajo Point to Tatchu Point

8. polychaeta species list, north Pacific polychaeta, ecological notes

9. VIM original

10. Within species list information given is:
    occurrence - includes location, depth and Latitude and Longitude
    remarks - some of ecological nature: e.g. pigmentation concentration, body form, e.g., epitokus, sexual maturity, free-living, commensal habit.

1. BERKELEY, E. & C. BERKELEY

2. 1944

3. Polychaeta from the Western Canadian Arctic Region

5. Can. J. Research XXII, Section D. No. 1, p. 1-5

6. 12 references total, no titles

7. Western Canadian Arctic, Latitude and Longitude given in text

8. arctic polychaeta, Polynoidae, Phyllodocidae, Nephthyidae, Sphaerodoridae, Eunicidae, Amphictenidae, Ampharetidae, Terebellidae, Sabellidae

9. VIM original

10. List of species given includes information on location found, depth, with some remarks on appearance. Families are: Polynoidae
Phyllodocidae
Nephthyidae
Sphaerodoridae
Eunicidae
Amphictenidae
Ampharetidae
Terebellidae
Sabellidae

1. BERKELEY, E. & C. BERKELEY

2. 1945

3. Notes on Polychaeta from the coast of western Canada. III. Further notes on Syllidae and some observations on other Polychaeta Errantia

5. Ann. and Mag. Nat. Hist., Ser. 11, 12: 316-335

6. 13 of 36

7. Coast of Western Canada

8. Syllidae, western Canada polychaeta

9. AMG original

10. Addition of a new species from the F. Syllidae to the list presented in Part II of this series (Berkeley, E. & C., 1938, p. 33). Work during the last few years has brought to light some new species and new records in families other than Syllidae and amendments in previously reported species. The present paper consists of these records and amendments.

1. BERKELEY, E. & C. BERKELEY

2. 1948

3. Annelida Polychaeta Errantia

5. Can. Pac. Fauna No. 9b(1):100 p.

6. 19 of 54

7. N.E. Pacific Ocean

8. polychaeta errantia, keys

9. Author's introduction

10. The paper deals with the errantiate polychaeta which have all the segments approximately similar with the exception of the few around the mouth and the last segment, or pygidium. The Errantia are usually free-living.

    The application of the keys given is limited to the families, genera, and species dealt with herein.

1. BERKELEY, E. & C. BERKELEY

2. 1950

3. Notes on Polychaeta from the coast of Western Canada - IV Polychaeta Sedentaria

5. Ann. Mag. Nat. Hist. Ser. 12, 3:50-69.

6. 14 of 38

7. Vancouver Island west and east coasts.

8. Sedentaria, Ariciidae, Spionidae, Magelonidae, Paraonidae, Cirratulidae, Chaetopteridae, Chloraemidae, Capitellidae, Arenicolidae, Maldanidae, Terebellidae, Sabellidae

9. VIM original

10. Additions and modifications to nomenclature to be made in Polychaeta Sedentaria of Western Canada (1927). New species listed and described with taxonomic and locality mentioned.

1. BERKELEY, E. & C. BERKELEY

2. 1951

3. A second record of the polychaetous annelid Potamethus elongatus (Treadwell)

5. J. Wash. Acad. Sci. 41: 332-334

1. BERKELEY, E. & C. BERKELEY

2. 1952

3. Re-discovery of the Polychaete worm, Trypanosyllis ingens Johnson

5. J. Fish Res. Bd. Can. 8(7): 488-490

1. BERKELEY, E. & C. BERKELEY

2. 1952

3. Annelida Polychaeta Sedentaria

5. Can. Pac. Fauna No. 9b(2): 139 p.

6. 20 of 68

7. N.E. Pacific Ocean

8. Polychaeta Sedentaria, keys

9. Author's introduction

10. The polychaeta Sedentaria differ from the Errantia (described in Part 1) chiefly in the following particulars. The body is often divided into two or more distinct regions. The head is frequently obscure or profoundly modified. The peristomium is usually apodous and achaetous. The parapodia are never prominent and generally inconspicuous though their lobes may be prolonged into amellae or cirrus-like processes. The parapodia are nearly always biramous, but the rami are frequently marked by little more than setigerous areas. The ventral rami are often in the form of tori or pinnules armed with crotchets or with uncini. The proboscis is never armed. The Sedentaria are usually tubicolous.

    The warning given in Part 1 about using size, markings and coloration as characteristics for the determination of species applies equally, or even more strongly, in the case of the Sedentaria.

    The keys given are designed to apply only to the families, genera and species dealt with.

1. BERKELEY, E. & C. BERKELEY

2. 1953

3. <u>Micronereis nanaimoensis</u> sp. n.: with some Notes on its Life-History.

5. J. Fish. Res. Bd. Can. 10(2): p.85-95

6. 3 of 11

7. Nanaimo Region

8. Nereidae, Life-History, <u>Micronereis nanaimoensis</u>

9. VIM original

10. Description of <u>Micronereis nanaimoensis</u> and its life-history stages and behaviour.

1. BERKELEY, E. & C. BERKELEY

2. 1954

3. Notes on the life-history of the polychaete, Dodecaceria fewksi (nom-nov)

5. J. Fish. Res. Bd. Canad. 11: 326-334

1. BERKELEY, E. & C. BERKELEY

2. 1954

3. Additions to the polychaete fauna of Canada with comments on some older records.

5. J. Fish. Res. Board Can. 11: No. 4 454-471

6. 11 of 54

7. Northeast Pacific

8. Polynoidae, Sigalionidae, Nereidae, Syllidae, Phyllodocidae, Eunicidae, Glyceridae, Spionidae, Maldanidae, Capitellidae, Terebellidae, Opheliidae, Sabellidae

9. Author's Abstract

10. Descriptions are given of the new genera Neopygospio and Novobranchus, of the new species. Nereis (Eunereis) wailesi, Spio butleri, Neopygospia laminfera, Novobranchus pacificus and a new variety pacificus of Distylia volutacornis. All are from the Pacific Coast of Canada.

    Synonomy of Lepidonotus caelorus Moore with L. squamatus Linne and of Goniada eximia Ehlers with Ophioglycera gigantea Verrill. In addition to new species and variety, records of 3 species new to Western Canada are presented and notes on others. Thirteen species and a variety new to eastern Canada are recorded, one of them new to North America.

1. BUSH, K.

2. 1904

3. Tubicolous annelids of the tribes Sabellides and Serpulides from the Pacific Ocean.

5. Harriman Alaska Exped. Vol. 12, 169-355.

1. CHAMBERLIN, R.V.

2. 1919

3. Pacific Coast Polychaeta collected by Alexander Agassiz

5. Harvard University Mus. Comp. Zool. Bull. 63: 251-270, 3 pl.

1. CHAMBERLIN, R. V.

2. 1919

3. New polychaetous annelids from Laguna Beach, California.

5. Journ. Entom. Zool., Pomona College, 11: 1-23.

1. CHAMBERLIN, R. V.

2. 1920

3. Polychaeta of the Canadian Arctic Expedition 1913-1918.

4. Rép. Canadian Arctic Exped. No. 9 (pt. B) 1-41, 6 pl.

1. ESSENBERG, C.

2. 1917

3. New species of Amphinomidae from the Pacific Coast

5. Calif. Univ. Pubs., Zool. 18: No. 4, 61-74.

6. 3 of 9

7. San Franscisco Bay, Santa Barbara Channel, Kodiak Island

8. Euphrosyne sp. Eurythoe sp., Amphinomidae

9. VIM original

10. Not much value except for description of 4 new species of family Amphinomidae.

1. ESSENBERG, C.

2. 1918

3. The Factors Controlling the Distribution of the Polynoidae of the Pacific Coast of North America.

5. Univ. of Calif. Pubs. Zool. Vol. 18, No. 11, p. 171-238

6. 5 of 62 references

7. Between Vancouver and Kodiak Islands, Seattle, Admiralty Inlet, Salmon Bay (Wash.), Puget Sound, Gulf of Georgia, Queen Charlotte Sound, Port Townsend (Wash.), Alki Point (Seattle).

8. Polynoidae, Lepidonotus, Polynoe, Harmothoe, Halosydna, Eunoe, Antinoe, Gattyana, Lagisca, Holotepida, Melaenis, Lepidasthenia, Vertical, horizontal, temperatural distribution.

9. VIM original from Author summary

10. Polynoidae divided into cosmopolitan and non-cosmopolitan species. They are divided into littoral, sublittoral and abyssal species. Temperature, currents, winds, water chemistry composition, food habits, and animals' environmental response determines distribution. Greatest numbers found in littoral zone which is concluded to be the center of origin of the species, or center of dispersal of the species.

1. C. McL. FRASER

2. 1915

3. The swarming of Odontosyllis

5. Trans. of Roy. Soc. Canada, Series 3, 9, 43-49.

1. T. GISLÉN

2. 1943

3. Physiographical and ecological investigations concerning the littoral of the northern Pacific, Section II - IV, Regional Conditions of the Pacific Coast of America and their significance for the development of marine life.

5. K. Fysiogr. Sällsk. Handl. N.F., 55(8): 1-91.

1. GUBERLET, J. E.

2. 1934

3. Observations on the spawning and development of some Pacific annelids.

5. Proc. 5th Pacif. Sci. Congr. 5, 4213.

1. HARRINGTON, N. R. & B.B. GRIFFIN

2. 1897

3. Notes on the distribution and habits of some Puget Sound invertebrates.

5. Trans. N.Y. Acad. Sci. 16: 152-165.

1. HARTMAN, Olga

2. 1936

3. Nomenclatorial changes involving California polychaete worms.

5. Jour. Wash. Acad. Sci. 26(1): 31-32.

1. HARTMAN, Olga

2. 1936

3. A review of the Phyllodocidae (Annelida Polychaeta) of the coast of California, with descriptions of nine new species.

5. Univ. Calif. Pubs. Zool. 41: 117-132

6. 3 references of 7

7. California coastline

8. Phyllodocidae, key

9. VIM original

10. Key of 9 new species of Phyllodocidae with descriptions and diagrams of existing fauna and new fauna.

1. HARTMAN, Olga

2. 1938

3. Descriptions of New Species and New Generic Records of Polychaetous Annelids from California of the Families Glyceridae, Eunicidae, Stauronereidae, and Opheliidae.

5. Univ. Calif. Pubs. Zool. 43: 93-112

6. 8 of 33 references

7. California coast

8. Glyceridae, Eunicidae, Stauronereidae, Opheliidae, keys

9. VIM original

10. Species descriptions, key and diagrams to fauna of above families.

1. HARTMAN, O.

2. 1938

3. Review of the annelid worms of the family Nephtyidae from the Northeast Pacific, with descriptions of five new species.

5. Proc. U.S. natn. Mus., 85: 143-158.

1. HARTMAN, Olga

2. 1939

3. Polychaetous Annelids Part I: Aphroditidae to Pisionidae and New Species of Polychaetous Annelids from Southern California.

4. Allan Hancock Pac. Exp. Vol. 7, Nos. 1 & 2: 1-170, Univ. of S. Calif. Press.

1. HARTMAN, Olga

2. 1940

3. Polychaetous Annelids Part II. Chrysopetalidae to Goniadidae.

4. Allan Hancock Pac. Exp. Vol. 7, No. 3: 173-288.

1. HARTMAN, Olga

2. 1941

3. Polychaetous Annelids IV. Pectinariidae, with a review of all species from the Western Hemisphere.

5. Allan Hancock Pacific Exped., Vol. 7, pp. 325-344 pls. 49-52

6. none of seven

7. Western Hemisphere

8. Polychaetous annelids, Pectinariidae, keys, descriptions

9. AMG original

10. Keys and descriptions of the family Pectinariidae.

1. HARTMAN, Olga

2. 1941

3. Some contributions to the biology and life history of Spionidae from California

5. Allan Hancock Pacific Expedition 7: 289-324.

1. HARTMAN, Olga

2. 1944

3. Polychaetous Annelids from California

5. Allan Hancock Pacific Expedition 10(1): 239-310

6. 12 of 84

7. California and Northeastern Pacific Ocean

8. polychaetous annelids, keys, species, family, distribution, ecology.

9. AMG original

10. The polychaetous annelids of California are named with 650 species in 283 genera, 5 subgenera and 56 families. Keys to species, geographic distribution and diagnostic descriptions are given as well as some ecological data for certain species. Illustrations for some species are given.

1. HARTMAN, Olga

2. 1944

3. Polychaetous Annelids Part 6. Paraonidae, Magelonidae, Longosomidae Ctenodrilidae, Sabellariidae

5. Allan Hancock Pacific Expedition 10 (3): 311-389

6. 4 of 44

7. California

8. keys, descriptions, Paraonidae, Magelonidae, Longosomidae, Ctenodrilidae, Sabellaridae, ecology.

9. AMG original

10. Concerned with illustration and diagnostic descriptions for each species discussed from the above mentioned families. Keys are also supplied and where possible ecological data.

1. HARTMAN, Olga

2. 1947

3. Polychaetous Annelids, Part 7. Capitellidae Part 8. Pilargiidae

5. Allan Hancock Pacific Expedition 10 (4,5): 390-523

6. 1 of 24

7. California

8. polychaetous annelids, Capitellidae, Pilargiidae, distribution, keys

9. AMG original

10. Species and genus of Capitellidae and Pilargiidae are discussed. Most have diagnostic descriptions, geographic distributions as well as ecological data for some. Keys to species are included. Some genera and species not only apply to California but the northeastern Pacific as well.

1. HARTMAN, Olga

2. 1948

3. The Polychaetous Annelids of Alaska

5. Pacific Science 2: 3-58

6. 37 references of 125

7. Port Ashton, west along Alaska Peninsula to Kodiak Island and Unimak Island.

8. Aphroditidae, Polynoidae, Polyodontidae, Sigalionidae, Chrysopetalidae, Euphrosinidae, Spintheridae, Phyllodocidae, Alciopidae, Hesionidae, Syllidae, Nephtyidae, Nereidae, Sphaerodoridae, Glyceridae, Goniadidae, Onuphidae, Eunicidae, Lumbrineridae, Arabellidae, Dorvilleidae, Orbiniidae, Paraonidae, Spionidae, Chaetopteridae, Cirratulidae, Arenicolidae, Opheliidae, Scalibregmidae, Flabelligeridae, Capitellidae, Maldanidae, Oweniidae, Sabellariidae, Sternaspidae, Pectinariidae, Ampharetidae, Terebellidae, Sabellidae, Serpulidae.

9. VIM original

10. Historical review of Alaska polychaeta fauna from 1821 to 1949. New species are listed under family names listed above with descriptions of the organism, where found, and who wrote about it when.

1. HARTMAN, Olga

2. 1950

3. Goniadidae, Glyceridae & Nephtyidae

4. Allan Hancock Pac. Exp. Vol. 14, No. 1: 1-181

1. HARTMAN, Olga

2. 1951

3. The literature of the polychaetous annelids, Part I: Bibliography and subject analysis

4. Edward Brothers, Inc., Los Angeles, 290 p.

1. HARTMAN, O.

2. 1955

3. Endemism in the North Pacific Ocean, with emphasis on the distribution of marine annelids, and new or little known species.

5. Essays in the National Sciences in honour of Capt. Allan Hancock, Los Angeles, Univ. S.Calif. Press pp. 39 - 59.

1. HARTMAN, Olga & D.J. REISH

2. 1950

3. The Marine Annelids of Oregon

4. Oregon State Monographs, No. 6, August 1950. Oregon State College, Corvallis, Oregon

6. 27 of 36

7. Between 43^{o} + 45^{o} N. Latitude
   123^{o} + 125^{o} W. Longitude

8. checklist, Oregon Polychaeta, systemic account

9. VIM original

10. Description of species found, locations sampled and keys, for polychaeta families off the Oregon coast.

1. JOHNSON, E. M. & H.J. SNOOK

2. 1927

3. Seashore Animals of the Pacific Coast

4. Dover Publications, Inc., New York, 659 pp.

1. JOHNSON, H. P.

2. 1897

3. A preliminary account of the marine annelids of the Pacific coast, with descriptions of new species. Pt. 1: The Euphrosynidae, Amphinomidae, Palmyridae, Polynoidae, Sigalionidae.

4. Calif. Acad. Sci., Proc. Ser. 3, Zool. 1: 153-198 6 pl.

1. JOHNSON, H. P.

2. 1901

3. The Polychaeta of the Puget Sound Region.

5. Boston Soc. Nat. Hist., Proc. 29, 381-437.

1. JOHNSON, M. W.

2. 1943

3. Studies on the life history of the marine annelid *Nereis vexillosa*.

5. Biol. Bull. 84: 106-114

1. MacGINITIE G. E. & N. MacGINITIE

2. 1949

3. Natural History of Marine Animals

4. McGraw Hill Book Co., 473 pp.

1. MEDCOF, J. C.

2. 1946

3. The mud-blister worm, Polydora, in Canadian oysters.

5. J. Fish. Res. Bd., Can. 6(7): 498-505

1. MONRO, C. C. A.

2. 1933

3. On a new species of Polychaete of the genus _Pilargis_ from Friday Harbour, Washington.

5. Ann. Mag. Nat. Hist., Ser. 10, Vol. 11, 673-675

6. None

7. Friday Harbour

8. _Pilargis_ sp., Hesionidae

9. VIM original

10. Incomplete specimen but description included _Pilargis berkeleyi_ found in Friday Harbour.

1. MOORE, J. P.

2. 1905

3. New species of Ampharetidae and Terebellidae from the North Pacific

5. Proc. Acad. Nat. Sci. Philadelphia, Vol. 57, 846-860

6. No references given

7. Kodiak Bay; Boca de Quadra, S.E. Alaska; Behm Canal; Lynn Canal; Gulf of Georgia; Kasaan Bay, Prince of Wales Island; Stephens Passage

8. new species, Ampharetidae, Terebellidae

9. AMG original

10. Descriptions of the new species Amphicteis alaskensis, Amphicteis glabra, Melinna cristata, Artacama coniferi, Laena nuda, Thelepus hamatus, and Amphitrite palmata from the collections of the Alaskan Commission of 1903.

1. MOORE, J. P.

2. 1905

3. Five new species of Pseudopotamilla from the Pacific coast of North America

5. Acad. Nat. Sci. Philadelphia Proc. 57: 555-569

6. No references given

7. Kasaan Bay, Prince of Wales Island; Vancouver Island off Fort Rupert; Icy Strait; Afognak Is., Naka Bay.

8. New species, Pseudopotamilla brevibranchiata, Pseudopotamilla occelata, Pseudopotamilla intermedia, Pseudopotamilla splendida, Pseudopotamilla anoculata.

9. AMG original

10. Descriptions of five new species of Pseudopotamilla from the Pacific coast of North America.

1. MOORE, J. P.

2. 1905

3. New species of polychaeta from the North Pacific, Chiefly from Alaskan Waters.

5. Proc. Acad. Natur. Sci., Philadelphia 57: 525-554

6. No references given

7. Vicinity of Vancouver Island along the coast of B.C. and Alaska

8. new species, polychaeta, Aphrodita negligens, Aphrodita parva, Euphrosyne bicirrata, Euphrosyne hortensis, Eunoe depressa, Antinoe macrolepida, Hololepida, (new genus) Hololepida magna, Lepidonotus robustus, Lepidonotus caeloris, Ninoe simpla, Goniada annulata

9. AMG original

10. Descriptions of new species of polychaetes collected by the U.S. Fish Commission Steamer Albatross during the summer of 1903.

1. MOORE, J. P.

2. 1906

3. Additional new species of Polychaeta from the North Pacific

5. Proc. Acad. Natur. Sci. Philadelphia 58: 217 - 260

6. No references given

7. North Pacific

8. New species, *Notophyllum imbricatum*, *Eulalia quadrioculata*, *Eulalia longicornuta*, *Pionosyllis magnifica*, *Stauronereis annulatus*, *Notomastus giganteus*, *Travisia pupa*, *Brada pilosa*, *Maldane similis*, *Maldanella robusta*, *Clymenella tentaculata*, *Nicomache carinata*, *Lumbriclymene pacifica*, *Sabellaria cementarium*, *Samytha bioculata*, *Amphicteis scaphobranchiata*, *Chone gracilis*.

9. AMG original

10. Descriptions of the above mentioned new species of Polychaeta from the collections of the Alaskan Salmon Commission of 1903.

1. MOORE, J. P.

2. 1906

3. Descriptions of two new Polychaeta from Alaska

5. Proc. Acad. Nat. Sci. Philadelphia, Vol. 58, 352 - 355

6. No references given

7. Point Barrow and Icy Cape, Alaska

8. New species, *Syllis quaternaria* and *Ammotrypane brevis*

9. AMG original

10. Descriptions of the above mentioned new species.

1. MOORE, J. P.

2. 1908

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APPENDIX C

RECENT WORKS OF
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