

427
R3 C72
SI

McCawley, J. E., 1972

**THE COLUMBIA RIVER ESTUARY
AND ADJACENT OCEAN WATERS**

Bioenvironmental Studies

Edited by
**A. T. Pruter
D. L. Alverson**

Prepared under the auspices of the
Division of Technical Information, United States Atomic Energy Commission

**UNIVERSITY OF WASHINGTON PRESS
SEATTLE AND LONDON**



Chapter 19

A Preliminary Checklist of Selected Groups of Invertebrates from Otter-Trawl and Dredge Collections off Oregon

James E. McCauley*

ABSTRACT

A checklist is provided for epifaunal species of nine phyla taken in otter-trawl and biological-dredge hauls by personnel from Oregon State University, Department of Oceanography. Species within each phylum are listed from observed depth of shallowest to deepest occurrence.

Knowledge of the fauna off the coast of Oregon is incomplete. Although there are numerous isolated reports of benthic invertebrates collected from the coast and from offshore waters, few faunal lists have been compiled. Keen and Doty (1942) prepared a checklist of the intertidal gastropods of the Cape Arago region; Barnard (1954), a checklist of the amphipods; and Hartman and Reish (1950), a list of the marine annelids. Marriage (1958) summarized the knowledge of the estuarine and bay clams of Oregon. Some of the more useful publications for identifying intertidal animals were prepared for California waters (Light et al., 1954; Hedgpeth, 1962; Ricketts and Calvin, 1962; Tierney et al., 1966) and for Washington waters, especially Puget Sound (Flora and Fairbanks, 1966; Guberlet, 1962; Smith, 1962), but these have limited use for Oregon beaches. There have been no publications dealing with subtidal invertebrates off Oregon.

Since 1961 the Department of Oceanography at Oregon State University has made 246 otter-trawl collections and 50 biological-dredge collections. This chapter shows the observed depth ranges of the large epifaunal species taken in the otter-trawl net employed.

This checklist must be considered as preliminary because certain groups of animals are still being processed. Most of the identifications were made by the author or other persons in his laboratory and were subsequently verified by invertebrate specialists. Where the genus could not be identified, the animals were placed in a family, e.g., "Brisingidae" in the Asteroidea.

*Department of Oceanography, Oregon State University, Corvallis, Oregon.

Species within each phylum or class have been arranged by depth in order of the shallowest occurrence to the deepest. This arrangement is one of convenience and may not represent the order of optimum depth or the order of depth of maximum numbers. Where a specific diagnosis has not been made and where a broad but interrupted vertical distribution pattern was suggested, two species are presumed to be present (e. g., *Ophiura* sp. has an observed depth range of 100 to 2800 m, but none were collected from 20 stations at depths between 800 and 1400 m; therefore, two species were presumed to exist, and they are designated *Ophiura* sp. a, 100-800 m, and *Ophiura* sp. b, 1400-2800 m). Such a disposition of species is, of course, subject to revision.

Not all depths were sampled with equal intensity (Table 19.1). Stations on the continental shelf (0 to 200 m), one station on the midcontinental slope (800 m),

Table 19.1—NUMBER OF OTTER-TRAWL AND BIOLOGICAL-DREDGE SAMPLES FROM SELECTED DEPTH INTERVALS

Depth, m	Otter trawl	Dredge	Depth, m	Otter trawl	Dredge
0-50	19	10	1201-1400	8	
51-100	21	13	1401-1600	12	
101-150	23	10	1601-1800		
151-200	49	3	1801-2000	1	
201-300	2	1	2001-2200	4	
301-400	8	3	2201-2400	2	
401-500		3	2401-2600	4	
501-600	8	2	2601-2800	22	
601-800	30		2801-3000	17	
801-1000	8	2	3001+	6	
1001-1200	2	3			
			Total	246	50

and stations on the abyssal plain (2600 to 3000 m) have been most intensively sampled; those over most of the continental slope have been avoided because of the presence of rocky outcrops.

The generally low number of species of tunicates, anemones, sponges, bryozoans, and other attached species reflects a bias in the method of collection. The otter trawl is not a satisfactory tool for sampling rocky outcrops, and the biological dredge provided the few samples from rocky bottoms. In general, areas of collection that had smooth bottoms were purposefully selected in order to protect the nets.

A second bias is introduced by the limitations of the personnel working on the collections. If specialists were available for all groups, it is quite likely that many more species would be reported. The large number of asteroids (70) reflects not only the presence of a greater number of species but also the more-intensive study of these groups.

The checklist is necessarily incomplete because not all species have yet been identified. A number of new species have not been described, and a number of animal groups have not been worked up. The parasitic fauna has been excluded

thus far although some of the trematode parasites of deep-sea fishes have been described elsewhere. Groups of animals that were considered largely infaunal are not generally included.

Representatives of at least 16 phyla are in our collections, but a number of these phyla are not included in the checklist. Sponges have been collected from all depths off Oregon but have not yet been studied. Among the coelenterates the sea anemones are still being studied. Very few free-living flatworms have been found in our collections, and none have been identified. Trematode parasites occur commonly in fishes from all depths and have been studied by McCauley (1960, 1968), McCauley and Pequegnat (1968), and Pratt and McCauley (1961). Both digenetic and monogenetic species have been collected. A detailed list is not included here. Nematodes are primarily from infaunal collections and are not included. A list of intertidal polychaete annelids (Hartman and Reish, 1950) has been published, but the subtidal forms have not been reported. Most polychaetes in the collection are infaunal and thereby do not fall within the scope of this chapter. The small number of epifaunal polychaetes from our collections are being studied but the work is incomplete and they are not included in this checklist.

Among the arthropods the tanaids, amphipods, pycnogonids, and isopods have been omitted. Dr. J. Laurens Barnard (1954) published a monograph on the marine amphipods of Oregon but included primarily specimens from the intertidal region. The monograph however includes four species collected from depths to 74 fathoms (130 m).

Entoprocts in the collection have not yet been identified. Only a few specimens of crinoid have been collected. Very few tunicates have been collected, and these have not yet been studied.

Some of the checklists have been derived from papers previously published by workers in the Department of Oceanography, Oregon State University. The hydroids, worked up by McCormick (1965), are mostly from shallower waters (less than 600 m). Most from deeper waters have not yet been identified. The echinoids have already been described from the benthic habitat off Oregon (McCauley and Carey, 1967; McCauley, 1967).

I wish to express my appreciation to the many persons who assisted in the identification. The soft corals (Alcyonarians) were identified by Francis Belcik, now of East Carolina College, Greenville, N. C. Mrs. Mary Ann Alspach of Oregon State University identified the barnacles, and they have been verified by Dr. Dora Henry of the University of Washington. Dr. Carl Forss of Walla Walla College aided in identifying the shrimps. Dr. Allyn G. Smith of the California Academy of Science and the Rev. Elwood Hunter of Yachats, Ore., verified the identification of the chitons. Dr. William Percy of Oregon State University verified the identity of the benthic cephalopods. Dr. Ruth Turner of The Museum of Comparative Zoology, Harvard University, verified the identifications of the scaphopods.

Miles Alton (1966) published a checklist of the asteroids collected by the U. S. Bureau of Commercial Fisheries, Seattle, Wash. These were collected from a study area off northern Oregon to depths of 1050 fathoms (1920 m). Our collections are mostly from stations farther south and extend to somewhat deeper waters. Alton verified many of our identifications, and Dr. F. J. Madsen of the University of Copenhagen verified others. Astrahantseff and Alton (1965)

reported on the ophiuroids from collections made off northern Oregon by the U. S. Bureau of Commercial Fisheries, Seattle, Wash. Their collections came from depths up to 1050 fathoms (1920 m) and include many species that we found farther south. Our collections have been tentatively identified, and representatives have been sent to Dr. John Dearborn of the University of Maine for verification. A tentative list of those identified is included, but it is far from complete. The identifications of the holothurians were verified by Dr. Elizabeth Deichmann of the Museum of Comparative Zoology, Harvard University.

Specimens reported here have been collected in conjunction with various research projects in the Department of Oceanography at Oregon State University. These projects have received financial support from the Office of Naval Research, the National Science Foundation, the National Institutes of Health, and the Atomic Energy Commission.

	<u>Depth, m</u>
Phylum Coelenterata	
Class Hydrozoa	
<i>Abietinaria alexanderi</i> Nutting, 1904	10
<i>Campanularia</i> sp.	10
<i>Campanularia volubilis</i> (Linnaeus, 1767)	10
<i>Abietinaria</i> sp.	10–110
<i>Plumularia alicia</i> Torrey, 1902	22
<i>Abietinaria traski</i> (Torrey, 1902)	46–400
<i>Halecium corrugatum</i> Nutting, 1899	55
<i>Abietinaria abietina</i> (Linnaeus, 1758)	55–104
<i>Aglaophenia</i> sp. a	55–138
<i>Lafoea fruticosa</i> Sars, 1862	64
<i>Sertularella turgida</i> (Trask, 1857)	64–200
<i>Lafoea gracillima</i> (Alder, 1857)	64–400
<i>Lafoea adnata</i> Fraser, 1925	65–92
<i>Acryptolaria</i> sp.	77
<i>Aglaophenia inconspicua</i> Torrey, 1904	77
<i>Campanularia verticillata</i> (Linnaeus, 1767)	77
<i>Lafoea dumosa</i> (Fleming, 1828)	77
<i>Aglaophenia diegensis</i> Torrey, 1904	77–110
<i>Aglaophenia octocarpa</i> Nutting, 1900	92
<i>Thuiara robusta</i> Clark, 1876	146
<i>Hydralmania</i> sp.	320–400
<i>Aglaophenia</i> sp. b	400
<i>Eudendrium tenellum</i> Allman, 1877	400
<i>Hydractinia</i> sp.	512
<i>Lictorella cervicornis</i> Nutting, 1905	1829
<i>Lafoea</i> sp.	2012
Class Anthozoa	
<i>Lieoptilus quadrangularis</i> (Moroff, 1902)	50–86

	<u>Depth, m</u>
<i>Euplexaura marki</i> Kükenthal, 1912	64—200
<i>Allopora verrilli</i> Dall, 1884	92
<i>Oncosoecia</i> sp.	95
<i>Balanophyllia elegans</i> Verrill, 1864	100
<i>Metridium</i> sp.	100
<i>Scleroptilum</i> sp.	109
<i>Stylatula elongata</i> Verrill, 1864	165—190
<i>Anthoptilum grandiflorum</i> (Verrill, 1879)	400—1600
<i>Balticina pacifica</i> Nutting, 1909	400—1600
<i>Funicula</i> sp.	800
<i>Pennatula phosphorea californica</i> Jarowski, 1939	800—820
<i>Virgularia bromlei</i> Kölliker, 1880	800—980
<i>Antipathes</i> sp.	823—914
<i>Umbellula</i> sp.	823—1266
<i>Funicula armata</i> Verrill, 1879	861
<i>Pennatula aculeata</i> Koren & Danielssen, 1858	861
<i>Anthoptilum</i> sp.	861—1372
<i>Kophoblemnon</i> sp.	2012—3000
<i>Pennatula</i> sp.	2600
<i>Epizoanthus</i> sp.	2772—2800
<i>Clavularia</i> sp.	2800
<i>Protoptilum</i> sp.	2826
Phylum Nemertinea	
<i>Cerebratulus californiensis</i> Coe, 1905	175—800
<i>Carinomella lactea</i> Coe, 1905	200—800
Phylum Echiuroidea	
<i>Listriolobus hexamyotus</i> Fisher, 1949	600—800
<i>Thalassema steinbecki</i> Fisher, 1946	1400—1420
Phylum Arthropoda	
Class Cirripedia	
<i>Balanus crenatus</i> Bruguiere, 1789	40—42
<i>Scalpellum</i> sp. a	200
<i>Scalpellum sanctaebarbarae</i> Pilsbry, 1907	800—1260
<i>Scalpellum</i> sp. b	1250—3000
<i>Scalpellum perlongum</i> Pilsbry, 1907	1400—1600
<i>Lepas</i> sp.	1462—2810
<i>Scalpellum larvale</i> Pilsbry, 1907	1540—1600
<i>Scalpellum regium</i> Wyville Thomson, 1877	2600—4260
<i>Scalpellum albatrossianum</i> Pilsbry, 1907	2800
<i>Scalpellum antillarum</i> Pilsbry, 1907	2800—2853
<i>Scalpellum phantasma</i> Pilsbry, 1907	2826

	<u>Depth, m</u>
Class Malacostraca	
Order Mysidacea	
<i>Gnathophausia ingens</i> (Dohrn, 1870)	640–1170
<i>Ceratomysis spinosa</i> Faxon, 1893	2850
Order Decapoda	
<i>Chorilia</i> sp.	15
<i>Cancer magister</i> Dana, 1852	22–200
<i>Crangon alaskensis elongata</i> Rathbun, 1902	23–68
<i>Crangon alba</i> Holmes, 1900	25
<i>Pagurus ochotensis</i> Brandt, 1851	25–640
<i>Paguristes turgidus</i> (Stimpson, 1857)	40–174
<i>Pandalus danae</i> Stimpson, 1857	40–225
<i>Lopholithodes foraminatus</i> (Stimpson, 1859)	42–200
<i>Cancer oregonensis</i> (Dana, 1852)	46
<i>Pandalopsis</i> sp.	46–55
<i>Chorilia longipes</i> Dana, 1851	46–674
<i>Cancer</i> sp.	50–100
<i>Crangon</i> sp.	55
<i>Nectocrangon californiensis</i> Rathbun, 1902	73–119
<i>Crangon communis</i> Rathbun, 1899	73–366
<i>Mursia gaudichaudii</i> (Milne–Edwards, 1837)	100
<i>Pandalus jordani</i> Rathbun, 1904	100–200
✓ <i>Munida</i> sp.	100–885
<i>Paracrangon echinata</i> Dana, 1852	101–106
<i>Crangon resima</i> Rathbun, 1902	118–366
<i>Crangon munita</i> Dana, 1855	126
<i>Pandalus montague tridens</i> Rathbun, 1904	126
<i>Pandalopsis ampula</i> Bate, 1888	126–141
<i>Spirontocaris decora</i> Rathbun, 1902	126
<i>Crangon munitella</i> Walker, 1900	128
<i>Spirontocaris</i> sp.	146
✓ <i>Munida quadrispina</i> Benedict, 1902	146–674
<i>Lopholithodes</i> sp.	150
<i>Paguristes</i> sp.	200
<i>Chionoecetes tanneri</i> Rathbun, 1893	200–2800
<i>Pagurus</i> sp.	225–800
<i>Spirontocaris macrophthalma</i> Rathbun, 1902	225–1426
<i>Pagurus tanneri</i> (Benedict, 1892)	347–1097
<i>Pasiphaea pacifica</i> Rathbun, 1902	400–640
<i>Sergestes</i> sp.	600
<i>Calastacus investigatorius</i> Anderson, 1896	640–731
<i>Pasiphaea magna</i> Faxon, 1893	640–1189
<i>Gennadus borealis</i> Rathbun, 1902	800–1170
<i>Sergestes similis</i> Hansen, 1888	800–1170
✓ <i>Munidiopsis quadrata</i> Faxon, 1893	933–1097
<i>Pagurus capillatus</i> (Benedict, 1892)	1097–1189

	<u>Depth, m</u>
<i>Spirontocaris flexa</i> Rathbun, 1899	1097—1189
<i>Crangon abyssorum</i> Rathbun, 1902	1097—2012
<i>Paralomis multispina</i> (Benedict, 1894)	1335—2086
<i>Parapagurus mertensii</i> (Brandt, 1851)	1426—2012
<i>Crangon franciscorum</i> Stimpson, 1859	1426
<i>Paralomis verrilli</i> (Benedict, 1894)	1600
<i>Pandalus</i> sp.	1600
<i>Munidiopsis verrilli</i> Benedict, 1902	1829
<i>Lithodes couesi</i> Benedict, 1894	1829
<i>Munidiopsis</i> sp.	2600—4260

Phylum Mollusca

Class Amphineura

<i>Ischnochiton</i> sp.	100
<i>Lepidazona</i> sp.	101—106
<i>Lepidazona golischi</i> Berry, 1919	101—106
<i>Leptochiton</i> sp. <i>a</i>	109
<i>Lepidopleurus cancellatus</i> (Sowerby, 1839)	320
<i>Leptochiton</i> sp. <i>b</i>	1420—2000
<i>Leptochiton mesogonus</i> (Dall, 1902)	1829

Class Cephalopoda

<i>Rossia pacifica</i> Berry, 1911	126—174
<i>Polypus</i> sp. <i>a</i>	128—174
<i>Octopoteuthis</i> sp.	800
<i>Japetella</i> sp.	830
<i>Polypus</i> sp. <i>b</i>	2012

Class Scaphopoda

<i>Dentalium pretiosum</i> Sowerby, 1860	118—1829
<i>Dentalium</i> sp. <i>a</i>	150
<i>Dentalium rectius</i> Carpenter, 1864	175—200
<i>Cadulus californicus</i> Pilsbry & Sharp, 1898	200—2012
<i>Cadulus</i> sp.	400—800
<i>Dentalium</i> sp. <i>b</i>	1600—3800
<i>Dentalium agassizi</i> Pilsbry & Sharp, 1897	2012
<i>Dentalium megathyris</i> Dall, 1889	2400—2850
<i>Dentalium ceras</i> Watson, 1879	2600—2853

Class Pelecypoda

<i>Tellina buttoni</i> Dall, 1900	40—42
<i>Chlamys hastatus hericius</i> (Gould, 1850)	46
<i>Chlamys hindsii</i> (Carpenter, 1864)	46
<i>Clinocardium nutalli</i> (Conrad, 1837)	46
<i>Siliqua patula</i> Dixon, 1788	50
<i>Bankia setacea</i> (Tyron, 1863)	50—200
<i>Acilia castrensis</i> Hinds, 1843	64—100

	<u>Depth, m</u>
<i>Protothaca staminea</i> Conrad, 1837	70–80
<i>Nemocardium centrifilosum</i> (Carpenter, 1863)	101–106
<i>Saxicava arctica</i> Linnaeus, 1767	101–106
<i>Venericardia ventricosa</i> Gould, 1850	118–512
<i>Yoldia limatula gairdneri</i> (Oldroyd, 1935)	118–1829
<i>Pecten caurinus</i> (Gould, 1850)	119
<i>Cardiomya oldroydi</i> (Dall, 1924)	128–674
<i>Macoma calcarea</i> Gmelin, 1792	146–205
<i>Solemya agassizi</i> Dall, 1908	200–2833
<i>Xylophaga washingtona</i> Bartsch, 1921	200–1000
<i>Yoldia</i> sp.	512–674
<i>Pecten randolphi</i> Dall, 1897	674–1426
<i>Cuspidaria</i> sp.	1829–2012
 Class Gastropoda	
<i>Olivella biplicata</i> (Sowerby, 1825)	22–100
<i>Nassarius fossatus</i> (Gould, 1849)	25–68
<i>Amphissa versicolor</i> Dall, 1871	25–146
<i>Armina californica</i> (Bergh, 1862)	25–200
<i>Nassarius</i> sp.	30–86
<i>Acmaea limatula</i> Carpenter, 1866	46
<i>Acmaea mitra</i> Eschscholtz, 1833	46
<i>Boreotrophon stuarti</i> (Smith, 1880)	46–106
<i>Calliostoma annulatum</i> Martyn, 1784	46
<i>Lischkeia cidaris</i> (Carpenter, 1864)	46–126
<i>Antiplanes perversa</i> (Gabb, 1865)	50–245
<i>Buccinum strigillatum</i> Dall, 1891	50–347
<i>Lunatia lewisi</i> (Gould, 1847)	68
<i>Argobuccinum oregonense</i> Redfield, 1848	88–200
<i>Nassarius mendicus</i> (Gould, 1849)	73–146
<i>Archidoris montereyensis</i> (Cooper, 1862)	100
<i>Puncturella cucullata</i> Gould, 1846	100–106
<i>Polinices</i> sp.	126–205
<i>Neptunea lyrata</i> (Martyn, 1784)	126–1426
<i>Epitonium indianorum</i> (Carpenter, 1865)	128–146
<i>Antiplanes abarbarea</i> Dall, 1919	128–512
<i>Antiplanes vinosa</i> Dall, 1874	146–1250
<i>Natica clausi</i> (Broderip & Sowerby, 1829)	146–640
<i>Colus roseus</i> (Dall, 1877)	147–174
<i>Antiplanes</i> sp.	150–600
<i>Buccinum</i> sp.	170–2800
<i>Colus severinus</i> Dall, 1919	200–360
<i>Tritonia</i> sp.	200–2086
<i>Trophon triphorus</i> (Dall, 1902)	311–347
<i>Neptunea pribiloffensis</i> (Dall, 1919)	347–640
<i>Neptunea phoenicia</i> (Dall, 1891)	400
<i>Neptunea</i> sp.	400–1600

	<u>Depth, m</u>
<i>Mohnia frielei</i> Dall, 1891	549—861
<i>Bathybembix bairdi</i> Dall, 1889	549—137
<i>Mohnia</i> sp.	600—820
<i>Exiloidea rectirostris</i> (Carpenter, 1863)	640—731
<i>Pleurotomella herminea</i> Dall, 1919	674—2012
<i>Colus</i> sp.	800
<i>Colus halli</i> Dall, 1873	823—1097
<i>Buccinum tenue</i> Gray, 1839	861—1426
<i>Leucosyrinx amycus</i> Dall, 1919	933—2012
<i>Colus dimidiatus</i> (Dall, 1919)	1829
<i>Tritonia diomeda</i>	1260
<i>Colus sapidus</i> (Dall, 1919)	1829
<i>Plicifusus</i> sp.	1829
<i>Solariella permeabilis</i> Carpenter, 1864	2012
<i>Buccinum diplodetum</i> Verrill, 1884	2012
<i>Bathydoris</i> sp.	2709—3000
 Phylum Bryozoa	
<i>Myriozoum coarctatum</i> (Sars, 1850)	46—200
<i>Callapora corniculifera</i> (Hincks, 1884)	55
<i>Caberea ellisi</i> (Fleming, 1828)	55—106
<i>Cellaria diffusa</i> Robertson, 1905	55—146
<i>Lagenipora punctulata</i> (Gabb & Horn, 1862)	82—110
<i>Myriozoum tenue</i> O'Donoghue, 1923	92
<i>Bugula flabellata</i> (J. V. Thompson, 1847)	92—128
 Phylum Brachiopoda	
<i>Laqueus californicus</i> (Koch, 1847)	100—800
<i>Laqueus</i> sp. a	150—400
<i>Laqueus</i> sp. b	1829
<i>Pelagodiscus atlanticus</i> (King, 1868)	2600—2850
 Phylum Echinodermata	
Class Asteroidea	
<i>Dermasterias imbricata</i> (Grube, 1857)	10
<i>Evasterias troscheli</i> (Stimpson, 1862)	10
<i>Pisaster brevispinus</i> (Stimpson, 1857)	22—55
<i>Luidia foliolata</i> Grube, 1866	40—366
<i>Henricia leviuscula</i> (Stimpson, 1857)	46—200
<i>Mediaster aequalis</i> Stimpson, 1857	46—800
<i>Pisaster</i> sp.	50
<i>Pycnopodia helianthoides</i> (Brandt, 1835)	50—100
<i>Stylasterias forreri</i> (deLoriol, 1887)	50—150
<i>Solaster dawsoni</i> Verrill, 1880	77—106
<i>Solaster papposus</i> (Linnaeus, 1767)	82—126

	<u>Depth, m</u>
<i>Lophaster fucilliger</i> Fisher, 1904	92—2176
<i>Solaster stimsoni</i> Verrill, 1880	100
<i>Hippasteria spinosa</i> Verrill, 1909	100—800
<i>Poraniopsis inflata</i> (Fisher, 1906)	101—128
<i>Rathbunaster californicus</i> Fisher, 1906	126—400
<i>Solaster</i> sp.	126—1260
<i>Pteraster gracilis</i> (Clark, 1901)	128—146
<i>Leptychaster anomalous</i> Fisher, 1906	128—1829
“Brissingidae”	150—2810
“Pterasteridae”	150—1560
<i>Pseudarchaster parelli alascensis</i> Fisher 1904	165—830
<i>Orthasterias koehleri</i> (deLoriol, 1897)	200
<i>Orthasterias</i> sp.	200
<i>Pedicellaster</i> sp.	200—241
<i>Solaster endeca</i> (Linnaeus, 1783)	200—400
<i>Pseudarchaster pusillus</i> Fisher, 1904	200—512
<i>Zoraster</i> sp.	200—800
<i>Thrissacanthus penicillatus</i> (Fisher 1904)	200—1250
<i>Hippasterias</i> sp.	200—1530
<i>Heterozonius alternatus</i> (Fisher, 1906)	200—1600
<i>Nearchaster aciculosus</i> (Fisher, 1910)	200—1600
<i>Dipsacaster anoplus</i> Fisher, 1910	200—2800
<i>Myxoderma platyacanthum rhomaleum</i> Fisher, 1919	311—800
<i>Diplopteraster multipes</i> (Sars, 1865)	347—400
<i>Leptychaster arcticus</i> (Sars, 1851)	400
<i>Luidiaster dawsoni</i> (Verrill, 1880)	400
<i>Hippasteria californica</i> Fisher, 1904	400—1260
<i>Myxoderma sacculatum</i> Fisher, 1904	400—1530
<i>Rathbunaster</i> sp.	400—1600
<i>Solaster borealis</i> Fisher, 1906	400—1600
<i>Ctenodiscus crispatus</i> (Retzius, 1805)	400—1829
<i>Psilaster pectinatus</i> (Fisher, 1905)	600—2500
<i>Ampheraster</i> sp.	800
“Pedicellasterinae”	800
<i>Ampheraster marianus</i> (Ludwig, 1905)	800—1260
<i>Zoraster evermani mordax</i> Fisher, 1919	800—2012
“Zoroasteridae”	800—2176
<i>Zoraster ophiurus</i> Fisher, 1904	800—2176
<i>Anteliaster</i> sp.	820—980
<i>Pteraster jordani</i> Fisher, 1904	1000—1530
<i>Hymenaster quadrispinosus</i> Fisher, 1904	1335—3000
<i>Hymenaster</i> sp.	1530—3000
<i>Eremicaster</i> sp.	1540—2400
<i>Pseudarchaster dissonis</i> Fisher, 1910	1540—2850
<i>Myxoderma</i> sp.	1600
<i>Brissingia</i> sp.	1829

	<u>Depth, m</u>
<i>Benthopecten claviger</i> Fisher, 1910	2012
<i>Brissingella exilis</i> (Fisher, 1904)	2012-2176
<i>Benthopecten acanthonotus</i> Fisher, 1905	2176
<i>Pectinaster agassizi enoplus</i> (Fisher, 1910)	2176
<i>Eremicaster pacificus</i> (Ludwig, 1905)	2176-2860
<i>Dytaster gilberti</i> Fisher, 1905	2400-3000
<i>Benthopecten</i> sp.	2600-2920
<i>Mediaster elegans abyssi</i>	2600-3000
"Goniasteridae"	2736
<i>Astrolirus panamensis</i> (Ludwig, 1905)	2800
<i>Astrocles actinodetus</i> Fisher, 1917	2850
<i>Pseudarchaster</i> sp.	2865
<i>Dytaster</i> sp.	3860-4260
Class Ophiuroidea	
<i>Ophiura lütkeni</i> (Lyman, 1860)	100-175
<i>Ophiura</i> sp. <i>a</i>	100-800
<i>Gorgonocephalus caryi</i> (Lyman, 1860)	100-1372
"Euryalae"	100-2700
<i>Ophiura sarsi</i> Lütken, 1855	150-800
<i>Ophiopholus bakeri</i> McClendon, 1909	150-200
<i>Ophiopholus</i> sp.	400
<i>Ophiura hadra</i> Clark, 1911	400-1600
<i>Asteronyx loveni</i> Müller & Troschel, 1842	400-2826
<i>Ophiacantha</i> sp.	400-2860
<i>Ophiomusium jolliensis</i> McClendon, 1909	600-2800
<i>Ophiomusium</i> sp.	800-2000
<i>Ophiocten pacificum</i> Lütken & Mortensen, 1899	800-3000
<i>Ophiacantha normani</i> Lyman, 1879	1250-1600
<i>Ophiura ponderosa</i> Lyman, 1878	1260
<i>Ophiura</i> sp. <i>b</i>	1400-2800
<i>Ophiomusium lymani</i> Wyville Thomson, 1873	1530-2086
<i>Amphiura diomedea</i> Lütken & Mortensen, 1899	1530-3000
<i>Ophiura irrorata</i> (Lyman, 1878)	1600-2086
<i>Ophimitra</i> sp.	200C
<i>Ophiomusium multispinum</i> Clark, 1911	2012 -800
<i>Amphiura</i> sp.	2850
Class Echinoidea	
<i>Dendraster excentricus</i> (Eschscholtz, 1831)	22-50
<i>Strongylocentrotus franciscanus</i> (A. Agassiz, 1863)	46-64
<i>Alloccentrotus fragilis</i> (Jackson, 1912)	50-1260
<i>Strongylocentrotus purpuratus</i> (Stimpson, 1857)	64
<i>Strongylocentrotus echinoides</i> A. Agassiz & H. L. Clark, 1907	88-146
<i>Brisaster latifrons</i> (A. Agassiz, 1898)	100-980
<i>Sperosoma giganteum</i> A. Agassiz & H. L. Clark, 1907	2086-3000

	<u>Depth, m</u>
<i>Ceratophysa rosea</i> (A. Agassiz, 1879)	2600
<i>Aeropsis fulva</i> (A. Agassiz, 1898)	2600—2865
<i>Urechinus loveni</i> (A. Agassiz, 1898)	2600—4260
Class Holothuroidea	
<i>Stichopus californicus</i> (Stimpson, 1857)	50—245
<i>Pentamera populifera</i> (Stimpson, 1857)	150—200
<i>Molpadia intermedia</i> (Ludwig, 1894)	190—2800
<i>Leptosynapta</i> sp. a	200—400
<i>Psolus chitinoides</i> Clark, 1902	320—400
<i>Pseudostichopus</i> sp. a	400—800
<i>Pannychia moseleyi</i> Theel, 1882	500—800
<i>Leptosynapta inhaerens</i> (O. F. Müller, 1776)	600
<i>Laetmophasma fecundum</i> Ludwig, 1894	600—2810
<i>Scotoplanes globosa</i> (Theel, 1879)	933—1426
<i>Molpadia musculus</i> Risso, 1826	1000—4260
<i>Scotoplanes theeli</i> Onshima, 1915	1000—3700
<i>Molpadia oolitica</i> (Pourtales, 1851)	1097—1182
<i>Peniagone</i> sp.	1530—4260
<i>Molpadia granulata</i> Ludwig, 1893	1560—4260
<i>Leptosynapta</i> sp. b	1829—2000
Order "Dendrochirota"	2086—2850
<i>Palaeopatides</i> sp.	2176—4260
<i>Molpadia</i> sp.	2300—3700
<i>Laetmophasma</i> sp.	2400
<i>Psychroptes raripes</i> Ludwig, 1893	2540—4260
<i>Synellactes</i> sp.	2600
<i>Abyssicucumis albatrossi</i> Cherbonnier, 1947	2600—4260
<i>Molpadia spinosa</i> (Ludwig, 1893)	2600—4260
<i>Chiridota albatrossi</i> Edwards, 1908	2772—3000
<i>Synellactes gilberti</i> Onshima, 1915	2790—2826
<i>Scotoplanes</i> sp.	2800
<i>Pseudostichopus</i> sp. c	2800—2860
<i>Pseudostichopus nudus</i> Onshima, 1915	2826
<i>Pseudostichopus</i> sp. b	3700
Phylum Pogonophora	
<i>Heptabanchia ctenophora</i> Ivanov, 1962	800
<i>Galathealinum brachiosium</i> Ivanov, 1961	1530
<i>Lamellasabella zachsi</i> Ushakov, 1933	1829

REFERENCES

- Alton, M. S., 1966, Bathymetric Distribution of Sea Stars (Asteroidea) off the Northern Oregon Coast, *J. Fish. Res. Board Can.*, **23**: 1673-1714.
- Astrahantseff, S., and M. S. Alton, 1965, Bathymetric Distribution of Brittlestars (Ophiuroidea) Collected off the Northern Oregon Coast, *J. Fish. Res. Board Can.*, **22**: 407-1424.
- Barnard, J. L., 1954, Marine Amphipoda of Oregon, Studies in Zoology No. 8, Oregon State College, Corvallis.
- Flora, C. J., and E. Fairbanks, 1966, *The Sound and the Sea: A Guide to Northwestern Neritic Invertebrate Zoology*, Pioneer Printing Co., Bellingham, Wash.
- Guberlet, M., 1962, *Animals of the Seashore*, Binfords & Mort, Publishers, Portland, Ore.
- Hartman, O., and D. J. Reish, 1950, The Marine Annelids of Oregon, Studies in Zoology No. 6, Oregon State College, Corvallis.
- Hedgpeth, J. W., 1962, *Introduction to Seashore Life of the San Francisco Bay Region and the Coast of Northern California*, University of California Press, Berkeley, Calif.
- Keen, A. M., and C. L. Doty, 1942, An Annotated Checklist of the Gastropods of Cape Arago, Oregon, Studies in Zoology No. 3, Oregon State College, Corvallis.
- Light, S. F., R. I. Smith, F. A. Pitelka, D. P. Abbott, and F. M. Weesner, 1954, *Intertidal Invertebrates of the Central California Coast*, University of California Press, Berkeley, Calif.
- Marriage, L. D., 1958, Bay Clams of Oregon, Fish Commission of Oregon, Educational Bull. No. 2.
- McCauley, J. E., 1960, Hemiurid Parasites of Oregon Marine Fishes, *J. Parasitol.*, **46**: 84-89.
- , 1967, Status of the Heart Urchin *Brisaster latifrons*, *J. Fish. Res. Board Can.*, **24**: 1377-1384.
- , 1968, Six Species of *Lepidapedon* Stafford, 1904 (Trematode: Lepocreadiidae) from Deep-Sea Fishes, *J. Parasitol.*, **54**: 496-505.
- , and A. G. Carey, Jr., 1967, Echinoidea of Oregon, *J. Fish. Res. Board Can.*, **24**: 1385-1401.
- , and J. E. Pequegnat, 1968, Two New Species of *Dinosoma* Manter 1934 (Trematoda: Hemiuridae) from Deep-Water Macrourid Fishes off the Coast of Oregon, *J. Parasitol.*, **59**: 931-934.
- McCormick, J. M., 1965, Some Aspects of the Ecology of Hydroids off the Oregon Coast, *Northwest Sci.*, **39**: 139-147.
- Pratt, I., and J. E. McCauley, 1961, *Trematodes of the Pacific Northwest, An Annotated Bibliography*, Oregon State University Press, Corvallis, Ore.
- Ricketts, E. F., and J. Calvin, 1962, *Between Pacific Tides*, Stanford University Press, Stanford, Calif.
- Smith, L., 1962, *Common Seashore Life of the Pacific Northwest*, Naturograph Company, Healdsburg, Calif.
- Tierney, R. J., J. W. Ulmer, L. J. Waxdeck, N. Harris, and J. R. Eckenroad, 1966, *Exploring Tidal Life Along the Pacific Coast*, Tidepool Associates, Berkeley, Calif.