

Phylum **CHORDATA**

## Sub-Phylum HEMICHORDATA

Class **ENTEROPNEUSTA**Family **Ptychoderidae****GLOSSOBALANUS SARNIENSIS** Koehler [*Burdon-Jones*, 1953, p. 342]

One incomplete specimen in clean sand 50° 9', 4°15' W., at 64 metres, 21.7.50; and 2 incomplete specimens from clean sand at 50° 10' N., 4° 10' W. at 60 metres, 5.12.50 (Holme, 1953)

SALCOMBE. One incomplete mature male, in muddy sand near L.W., under Marine Hotel, 27.3.37; portions of 2 ripe females L.W., Mill Bay, 2.4.38 (E.W.K.J. and D.P.W.): 2 almost complete mature females and fragments of mature male at E.L.W., Mill Bay, 3.4.46 (D.P.W.): one at Mill Bay, 27.3.56 (P.G.C.)

Breeding: Müller and Metschnikoff stages of tornaria in the Sound and off Eddystone (Bourne, 1889); Krohn and Spengel stages, probably the larvae of *Glossobalanus sarniensis* Koehler (Stiasny-Wijnhoff and Stiasny, 1927); Krohn stages, July 1948 (C.B.-J.)

**BALANOGLOSSUS CLAVIGERUS** Delle Chiaje [*Horst*, 1927, p. 704]

The adult has never been recorded from the district, but is known to occur on the French coast (Horst, 1927; Burdon-Jones, 1953)

Breeding: Müller and Krohn stages in Plymouth Sound (Stiasny-Wijnhoff and Stiasny, 1927). Early and late Metschnikoff, and Krohn stages in Plymouth Sound, 12.6.51 (C.B.-J.)

*Tornaria sp. incert*

Five specimens from the Sound, 8.7.12 (J.H.O.): common in plankton (F.S.R.): often occur in abundance inside and outside the Sound in summer (M.V.L.)

## TUNICATA: ASCIDIACEA

## Sub-Phylum TUNICATA

Class **ASCIDIACEA**

## Order ENTEROGONA

## Sub-Order APLOUSOBRANCHIATA

Family **Polycitoridae**

## POLYCITOR SEARLI Kott, 1952, p. 66

Duke Rock, 15 colonies; New Grounds, 4 colonies (P.K.)

Breeding: June-Aug. (P.K.)

ARCHIDISTOMA AGGREGATUM Garstang [*Berrill*, 1950, p. 67]

Duke Rock, very abundant on stones; 2 m. S. of Mewstone, 1 specimen (W.G.): shallow water; Duke Rock (N.J.B.): Mewstone, common; Revelstoke, 10 m. (P.K.): Wembury Ledge, 1 specimen (D.B.C.)

SALCOMBE. Salstone (N.J.B.)

Breeding: June (W.G.): July-Sept. (N.J.C.)

Family **Clavelinidae**Sub-Family *Clavelininae*CLAVELINA LEPADIFORMIS (O. F. Müller) [*Berrill*, 1950, p. 70]

Drake's Island, occasionally at extreme low tide (W.G., R.A.T.): Queen's Ground (R.A.T., S.P.): Mount Edgumbe (W.G., T.V.H.): Duke Rock (W.G., R.A.T.): Rum Bay; Millbay Channel; Mewstone Ledge; Wembury Bay (T.V.H.): very rarely, in 10-15 fm. off the Mewstone and Penlee (W.G.): low water and shallow water, common, but local, Millbay Docks (N.J.B.): New Grounds, Duke Rock, common in Plymouth Sound (P.K.): common under pontoons in Millbay Docks (D.B.C.)

SALCOMBE. Salstone; Sunny Cove Point (N.J.B.)

Breeding: June (W.G.): July (R.A.T.): June-Sept. (N.J.B.)

PYCNOCLAVELLA AURILUCENS Garstang [*Berrill*, 1950, p. 74]

Mewstone Grounds, attached to various objects from rough ground, 10-20 fm.; once in Sound, forming a thin growth on the stems of red weeds (W.G.): Mewstone Ledge, on Eunicella (R.A.T., S.P., D.B.C.): numerous specimens on *Sidnyum elegans* and on shells, without further particulars (Hartmeyer, 1914, p. 432): deep water; Stoke Point (N.J.B.)

Breeding: Aug.-Sept., commencement may be delayed till Sept. (N.J.B.)

Sub-Family *Holozoinae*DISTAPLIA ROSEA Della Valle [*Berrill*, 1950, p. 78]

On stones, dead shells, etc., at Duke Rock, and elsewhere (W.G.): Queen's Ground, 2 colonies (Hartmeyer, 1914, p. 432): shallow to deep water; Duke Rock; New Grounds; Asia Shoal (N.J.B.): Mewstone (P.K.)

Breeding: July-Aug. (N.J.B.)

## DISTAPLIA CARSTANGI Berrill, 1950, p. 81

One mature colony, dredged, Mewstone, 24.8.30 (N.J.B.)



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Family **Polyclinidae (=Synoicidae)****POLYCLINUM AURANTIUM** Milne Edwards [*Berrill*, 1950, p. 87]

Queen's Ground, some colonies on *Zostera*; Rame, many colonies on *Zostera*; near New Grounds Buoy, some colonies; several colonies without further particulars (Hartmeyer, 1914, p. 433): shallow to deep water (N.J.B.): Wembury; Yealm River mouth; Looe; Mewstone (P.K.): Looe Island (D.B.C.)

SALCOMBE. Sunny Cove Point (N.J.B.): Castle Rocks (P.K.)

Breeding: July-Sept. (N.J.B.): Nov. (D.B.C.)

**MORCHELLIUM ARGUS** (Milne Edwards) [*Berrill*, 1950, p. 95]

Common everywhere on rocks between tide-marks (R.A.T., D.B.C.): Millbay Channel (T.V.H.): Millbay Docks, on wooden piles (W.G.): Duke Rock (E.J.A., R.A.T.): River Yealm (T.V.H., R.A.T.): Millbay Channel, 4 colonies with *Distomus variolosus*; Asia Shoal, several colonies; Duke Rock, many colonies, the largest 32 mm long; Yealm, Hotel Corner-Sand-bank, some colonies; near New Grounds Buoy, one colony; Bridge Ground, 6 colonies (Hartmeyer, 1914, p. 434): intertidal and shallow water (N.J.B.): Mewstone (P.K.): Wembury, Church Reef, abundant (A.I.C.)

SALCOMBE. Castle Rocks, Sunny Cove Point, and Salstone (N.J.B.): extremely common and well developed up to 150 MM (P.K.)

Breeding: Sept. (W.G.): June-Sept. (N.J.B.)

**APLIDIUM PALLIDUM** (Verrill) [*Berrill*, 1950, p. 97]

Plymouth, attached to the stalks of *Bowerbankia* or *Amathia* (W.G.): Queen's Ground, many colonies; Duke Rock, many colonies; Rame, 2 colonies; near New Grounds Buoy, many colonies (Hartmeyer, 1914, p. 434): shallow to deep water (N.J.B.): River Yealm; Wembury; Bigbury; Looe (P.K.)

SALCOMBE. Castle Rocks; Sunny Cove Point (P.K.)

Breeding: Aug. (P.K.)

**APLIDIUM PUNCTUM** (Giard) [*Berrill*, 1950, p. 100]

Single colony, 3 m. S.W. of Mewstone (W.G.): Queen's Ground, several long-stalked colonies; near New Grounds Buoy, several colonies; Stoke Point, some colonies, not all typically stalked; Bridge Ground, some colonies (Hartmeyer, 1914, p. 434): shallow to deep water, Mewstone Ledge; Millbay Docks (N.J.B.)

SALCOMBE. Castle Rocks (P.K.)

**APLIDIUM PROLIFERUM** (Milne Edwards) [*Berrill*, 1950, p. 102]

Yealm Estuary; Mewstone Ledge; Wembury; Downderry (P.K.)

SALCOMBE. Sunny Cove Point; Castle Rocks (P.K.)

Breeding: July-Sept. (P.K.)

**APLIDIUM NORDMANNI** (Milne Edwards) [*Berrill*, 1950, p. 105]

Church Reef, Wembury Bay, 1 specimen (W.G.): 3 colonies, without particulars, probably belonging to this species (Hartmeyer, 1914, p. 434): low water and shallow water, common but local; Queen's Ground; Rame-Eddystone (N.J.B.): Mewstone Ledge (P.K.)

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SALCOMBE. Salstone; Sunny Cove Point (N.J.B.): Castle Rocks (A.I.C.)  
Breeding: June (W.G.): June-Sept. (N.J.B.)

APLIDIUM DENSUM (Giard) [*Berrill*, 1950, p. 108]

Mewstone Ledge (N.J.B.)

SALCOMBE. Castle Rocks (D.B.C.): North Sands (A.I.C.)

SIDNYUM ELEGANS (Giard) [*Berrill*, 1950, p. 110]

Duke Rock, on stones (W.G.): Millbay Channel, many colonies; near New Grounds Buoy, many colonies, without further particulars (Hartmeyer, 1914, p. 434): River Yealm Estuary; Wembury; Mewstone Ledge; Looe Island, intertidal (P.K.)

SALCOMBE. Castle Rocks; Sunny Cove Point; Ferry Pier; common, intertidal (P.K.)

Breeding: Aug.-Nov. (P.K.): Dec. (D.B.C.)

SIDNYUM TURBINATUM Savigny [*Berrill*, 1950, p. 112]

Drake's Island, on reef leading to the Bridge, on holdfasts of Laminaria at extreme low water; Picklecombe, east of the Fort, on holdfasts of Laminaria; Devil's Point, Stonehouse, under a stone, low water, spring tide; Duke Rock, in crevices of stones; Wembury Bay, under overhanging rocks (W.G.): Millbay Channel, some colonies; Yealm, Hotel Corner-Sandbank, some colonies (Hartmeyer, 1914, p. 434): shallow water and intertidal; Wembury (N.J.B.): Mewstone, (P.K.)

SALCOMBE. Castle Rocks; Sunny Cove Point (N.J.B.): up to M.T.L. (D.B.C.)

Breeding: July-Sept. (N.J.B.)

Family **Didemnidae**

TRIDIDEMNUM TENERUM Verrill [*Berrill*, 1950, p. 116]

Millbay Pier Head, 1 colony; Mewstone Ledge, 2 colonies; Rame-Eddystone, 1 colony on *Asciidiella aspersa*; Stoke Point, several colonies; Duke Rock, 1 colony; near New Grounds Buoy, 5 colonies on Hydroids (Hartmeyer, 1914, p. 433): intertidal to deep water; River Yealm, Hotel Corner (N.J.B.): Mewstone Ledge, common; Asia Buoy; Yealm River mouth (P.K.): common on shell of Maia (D.B.C.)

SALCOMBE. Castle Rocks (N.J.B.): Salstone (D.B.C.)

Breeding: June-Sept. (N.J.B.): Aug.-Nov. (P.K.)

TRIDIDEMNUM ALLENI Berrill, 1950, p. 119

Attached to Nemertesia, Eunicella, etc., Mewstone and Eddystone (N.J.B.)

SALCOMBE. Salstone, 3 colonies (D.B.C.)

Breeding: Aug. (P.K.)

TRIDIDEMNUM NIVEUM (Giard) [*Carlisle*, 1953]

Looe Island, 20 colonies on Cystoseira; Wembury, Church Reef and Ledge; spreading rapidly in Laminaria zone, 1953-6, all along coast (D.B.C.)

SALCOMBE. Salstone; abundant on Castle Rocks (D.B.C.)

Breeding: April-June (D.B.C.)

**DIDEMNUM CANDIDUM** Savigny [*Carlisle, 1954a*, p. 313]

Common, intertidal and deeper water, especially on *Laminaria* holdfasts and shell of *Maia*, throughout the region (D.B.C.)

SALCOMBE. Salstone; Castle Rocks (D.B.C.)

Breeding: March-Sept. (D.B.C.)

**DIDEMNUM HELGOLANDICUM** Michaelsen, 1921, p. 118 [*Carlisle, 1954a*, p. 313]

Sound; Wembury; Looe (D.B.C.)

SALCOMBE. Castle Rocks, many colonies (D.B.C.)

**DIDEMNUM GELATINOSUM** Milne Edwards [*Berrill, 1950*, p. 122]

Occasionally on *Lepralia*, Mewstone Ledge and Eddystone (N.J.B.): New Grounds; Duke Rock; Wembury; Looe; intertidal and in deeper water (P.K.)

SALCOMBE. Sunny Cove Point (P.K.)

Breeding: July and Aug. 1930 (N.J.B.): March, July (P.K.)

**DIDEMNUM MACULOSUM** (Milne Edwards) [*Berrill, 1950*, p. 125]

New Grounds; Duke Rock; Tinside; Mewstone; Stoke Point; Yealm Estuary; Bigbury; Downderry; Looe; common, intertidal and deeper water (P.K.): Asia Shoal; Looe (D.B.C.)

SALCOMBE. Sunny Cove Point; Castle Rocks (P.K.): Salstone (D.B.C.)

Breeding: March-Sept. (P.K.)

**DIDEMNUM (LEPTOCLINIDES) FAEROËNSE** Bjerkan [*Carlisle and Carlisle, 1954*]

Looe Island, 2 colonies on *Laminaria* (A.I.C. and D.B.C.)

**DIPLOSOMA LISTERIANUM** (Milne Edwards) [*Berrill, 1950*, p. 125]

From 5 positions, 8-39 m. S.W. of Eddystone, 40-9 fm. (Hartmeyer, in Crawshay, 1912, p. 383): Asia Shoal, many colonies, on *Distomus variolosus*. Millbay Pier, 5 colonies; near New Grounds Buoy, many colonies on *Zostera*; Stoke Point, 2 colonies (Hartmeyer, 1914, p. 433): shallow to deep water; Aquarium tanks; Millbay Channel; occasionally on *Lepralia*, etc., Mewstone Ledge and Eddystone (N.J.B.): Duke Rock; Bigbury (P.K.): abundant in Millbay Docks, especially on Ciona (D.B.C.)

SALCOMBE. Ferry Pier; Sunny Cove Point; Castle Rocks (P.K.)

Breeding: May-Oct. (N.J.B.)

**LISSOCLINUM ARGYLLENSE** Müller, 1950, p. 389

Mewstone Ledge, 1 colony (P.K.): Tomb Rock, Wembury, 3 colonies (D.B.C.)

SALCOMBE. Sunny Cove Point (P.K.)

**LISSOCLINUM CUPULIFERUM** Kott, 1952, p. 79

Mewstone Ledge, 1 large colony (P.K.)

Breeding : April (P.K.)

## Sub-Order PELEBOBRANCHIATA

Family **Cionidae****CIONA INTESTINALIS** (L.) [*Berrill, 1950*, p. 131]

Until 1901 this ascidian was comparatively rare, having only been

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recorded occasionally from Millbay Channel, the Cattewater, River Yealm. Mewstone Ledge, and the Eddystone Grounds, and the specimens were never of greater length than 10-12 cm.; in that year the species became for a time very abundant in Millbay Docks, completely covering the piles and rafts, and many of the specimens from the Inner Dock were of extremely large size, measuring as much as a foot in length (E.J.A.): Stoke Point Grounds, small specimens, fairly common (S.P.): from 11 positions, 7-40 m. S.W. of Eddystone, 40-52 fm. (Hartmeyer, in Crawshay, 1912, p. 383): Millbay Channel, 1 specimen; Mewstone, 2 specimens (Hartmeyer, 1914, p. 432): low water to deep water, common but widely scattered (N.J.B.): shore on hard ground W. of Ince Castle, River Lynher (E.P.): abundant 1950-6 on buoys and boat bottoms (D.B.C.): since 1946 has grown regularly in some abundance in aquarium tanks and reservoirs (D.P.W.)

SALCOMBE. Ferry Pier; Sunny Cove Point; Castle Rocks (D.B.C.): often abundant on the Salstone (D.P.W.)

Breeding : Millbay Dock, tidal basin, from bottom of a ship which had been in the docks for the past eighteen months, 11.10.09, breeding but spermatozoa not very active, eggs appeared to be quite ripe (A.J.S.): Millbay Docks, 1.10.27 (A.J.S.): Millbay Docks, inner basin, 12.4.20, nearly all ripe, the eggs readily fertilized artificially (tadpoles obtained) (H.O.): April-Sept. (N.J.B.): July (J.T.C.): June-July (R.A.T.): Aug.-Sept. (W.G.): all the year round (D.B.C.)

Family **Diazonidae**

DIAZONA VIOLACEA Savigny [*Berrill*, 1950, p. 136]

Eddystone Grounds (W.G., R.A.T.) : Stoke Point Grounds (W.G.): between Stoke Point and Mewstone, dredge, 30.6.09, eggs given off when being preserved (A.J.S.): deep water, Mewstone Ledge (N.J.B.)

Breeding: July-Sept., but occasionally commencement of breeding delayed till Sept., oviparous (N.J.B.)

Family **Perophoridae**

PEROPHORA LISTERI Forbes [*Berrill*, 1950, p. 145]

Rocks under Hoe, abundant (W.H.): Queen's Grounds; Millbay Pit; Asia Shoal (A.J.S.): Duke Rock; Yealm Estuary (W.G.): tidal pools and shallow water; River Yealm (Hotel Corner) (N.J.B.)

SALCOMBE. Salstone (N.J.B.)

Breeding: July-Sept. (N.J.B.)

Family **Corellidae**

CORELLA PARALLELOGRAMMA (O. F. Müller) [*Berrill*, 1950, p. 149]

Off the Eddystone; Duke Rock, single specimen on small stone; 2 m. S. of Mewstone, single specimen on stone (W.G.): from 5 positions, 7-40 m. S.W. of Mewstone, 40-49 fm. (Hartmeyer, in Crawshay, 1912, p. 38 1): 1 m. Eddystone bearing N.W., 1 specimen; 1 specimen without particulars (Hartmeyer, 1914, p. 431): deep water, Bridge Ground,, Duke Rock;

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Eddystone Grounds; Millbay Channel; Mewstone Ledge; common on *Cellaria* from Eddystone Ground (*Chaetopterus* region) (N.J.B.)

Breeding: July-Aug. (N.J.B.)

Family **Asciidiidae**ASCIDIELLA ASPERSA O. F. Müller [*Berrill*, 1950, p. 154]

Common on the piles of the Promenade Pier, and in Millbay Dock (R.A.T.): Cattewater (T.V.H.): occasionally between tide-marks, Rum Bay (R.A.T.): inner basin, Millbay Docks, on floating stages and buoys; Mill bay Dock, tidal basin, from the bottom of a ship which has been in dock all the summer, 11.10.09 (A.J.S.): Plymouth, 3 specimens; Millbay Channel, 3 specimens; Queen's Ground, 1 specimen; Duke Rock, 1 specimen; Yealm, Hotel Corner-Sand-bank, 1 specimen; Stoke Point, several specimens; Rame-Eddystone, many specimens; 1 m. Eddystone bearing N.W., 4 specimens (Hartmeyer, 1914, p. 432): intertidal to deep water; Millbay Dock (N.J.B.): mussel bed above Saltash, ½ m. above Hole's Hole; various places in River Lynher as far as beach 100 yd. above Antony Creek, hand and dredge, June-Oct. 1928 (E.P.)

SALCOMBE. Salstone, specially abundant in upper regions of Salcombe Estuary, 2 fm. throughout year (N.J.B.): common, intertidal (D.B.C.)

Breeding: seems to depend on size exceeding 1½ in., not on season, Jan.-Dec. (N.J.B.): River Yealm, 23.3.20 (tadpoles obtained): Millbay Docks, March 1922 (a few tadpoles obtained) (J.H.O.): Millbay Docks, 7.4.20; inner basin, Millbay Docks, 12.4.20 (tadpoles obtained) (H.O.)

ASCIDIELLA SCABRA (O. F. Müller) [*Berrill*, 1950, p. 158]

Duke Rock; River Yealm (W.G.): Eddystone Grounds, generally present, but particularly abundant when *Sertularella gayi* is plentiful, growing at the base of the stem of the hydroid (E.J.A., S.P.): Mewstone Grounds (A.J.S., R.A.T., S.P.): Rame-Eddystone Grounds (R.A.T., S.P.): Stoke Point Grounds (S.P.): shallow to deep water, common but widely scattered; Millbay Channel; Queen's Ground; Stoke Point; River Yealm (Hotel Corner); common on *Cellaria* everywhere (N.J.B.): Asia Shoal (D.B.C.)

SALCOMBE. Upper part of estuary (N.J.B.)

Breeding: May-Sept. (N.J.B.)

ASCIDIA MENTULA O. F. Müller [*Berrill*, 1950, p. 160]

Reny Rocks, single specimen, var. *depressa* (W.G., R.A.T.): Millbay Channel, Mewstone Grounds (E.J.A.): from 7 positions (1-3 specimens), 7-39 m. S.W. of Eddystone, 40-49 fm. (Hartmeyer, in Crawshay, 1912, p. 38 I): Promenade Pier, 1 specimen; Millbay Pier, 1 specimen; 1 specimen without further particulars (Hartmeyer, 1914, p. 432): deep water, common but widely distributed; Mewstone Ledge; Millbay Channel; Stoke Point (N.J.B.): River Yealm mouth (P.K.): Asia Shoal; Looe Island (D.B.C.)

SALCOMBE. Salstone (N.J.B.)

Breeding: Feb.-Nov. (N.J.B.)

ASCIDIA CONCHILEGA O. F. Müller [*Berrill*, 1950, p. 162]

Not uncommon on the Bolt Head shell gravel attached to stones (E.J.A.):

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from 12 positions (1-4 specimens), 8-30 m. S.W. of Eddystone, 40-49 fm. or over (Hartmeyer, in Crawshay, 1912, p. 381): Plymouth, 9 specimens; Promenade Pier, 1 specimen; Millbay Pier, 1 specimen; Millbay Channel, 1 specimen; Queen's Ground, 1 specimen; Rame-Eddystone, many specimens; Eddystone, 1 specimen; some specimens, without further particulars (Hartmeyer, 1914, p. 432): low water to deep water (N.J.B.): River Yealm mouth; Duke Rock (P.K.): very rare 1951-6 (D.B.C.)

SALCOMBE. Salstone (N.J.B.)

Breeding: Jan.-Dec., probably all the year (N.J.B.)

ASCIDIA VIRGINEA O. F. Müller [*Berrill*, 1950, p. 165]

Eddystone Grounds, occasional specimens (E.J.A.): from 12 positions, 8-43 m. S.W. of Eddystone, 40-52 fm. or over (Hartmeyer, in Crawshay, 1912, p. 381): Plymouth, 2 specimens; Millbay Pier, 2 specimens; Rame-Eddystone, 2 specimens; Eddystone, 1 specimen (Hartmeyer, 1914, p.432): New Grounds (N.J.B.): Eddystone shell-gravel (D.B.C.)

Breeding: June-Oct. (N.J.B.): March (D.B.C.)

ASCIDIA PRUNUM Kupffer [*Berrill*, 1950, p. 168]

Asia Shoal, 1 mature specimen in Hiattella hole; Duke Rock. 1 mature specimen (D.B.C.)

Breeding: June (D.B.C.)

PHALLUSIA MAMMILLATA (Cuvier) [*Berrill*, 1950, p. 171]

Moderately common in dredgings from River Yealm; Mewstone Ledge. occasionally from the Duke Rock, Cattewater, and W. Channel; not uncommon washed up on the Yealm Sand-bank between tide-marks (R.A.T.): low water to deep water, common but widely scattered; Cawsand Bay; Stoke Point; River Yealm (Hotel Corner) (N.J.B.)

SALCOMBE. Salstone (N.J.B.)

Breeding: Jan.-Dec. (N.J.B.)

## Order PLEUROGONA

## Sub-Order STOLIDOBRANCHIATA

Family *Styelidae*Sub-Family *Styelinae*STYELA MAMMICULATA Carlisle, 1954*b*, p. 329

Lynher River, on oyster shells; Hamoaze, on bottom of hulks; Sound, on Drake's Island buoy (type locality) and on other buoys; not uncommon (D.B.C.)

POLYCARPA POMARIA (Savigny) [*Berrill*, 1950, p. 188]

Common at times in the Cattewater, but probably from trawl refuse; very plentiful on one occasion 4 m. W.N.W. of Eddystone (R.A.T.): Eddystone Grounds (E.J.A.): Mewstone Ledge (A.J.S.): from 12 positions, 8-46 m. S.W. of Eddystone, 40-49 fm. (Hartmeyer, in Crawshay, 1912, p. 379): Millbay Channel, numerous specimens covered with *Distomus variolosus* and *Botryllus schlosseri*; Queen's Ground; Mewstone Ledge, 1 specimen;

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- Yealm, Hotel Corner-Sand-bank, *ca.* 12 specimens; 1¾ m. Eddystone, bearing S.E. by E., 8 specimens; without further particulars, 1 specimen (Hartmeyer, 1914, p. 430): deep water (N.J.B.): Wembury Ledge, intertidal, common (D.B.C.)  
Breeding: July-Sept. (N.J.B.)
- POLYCARPA GRACILIS Heller [*Berrill*, 1950, p. 191]  
Queen's Ground, 2 specimens; Mewstone Ledge, 1 specimen; Yealm, Hotel Corner-Sand-bank, 9 specimens; near New Grounds Buoy, 4 specimens on *Zostera*; some specimens without further particulars (Hartmeyer, 1914, p. 430): shallow water (N.J.B.): Wembury Ledge (D.B.C.)
- POLYCARPA RUSTICA (L.) [*Berrill*, 1950, p. 193]  
Shallow water, common but widely scattered (N.J.B.)  
SALCOMBE. Salstone (N.J.B.)  
Breeding: May-Sept. (N.J.B.)
- POLYCARPA FIBROSA (Stimpson) [*Berrill*, 1950, p. 196]  
From 5 positions 8-32 m. S.W. of Eddystone (one or two), 40-49 fm. or over (Hartmeyer, in Crawshay, 1912, p. 380): Queen's Ground, 1 specimen; Yealm, Hotel Corner-Sand-bank, several specimens; Eddystone, 2 specimens; 1¾ m. Eddystone bearing S.E. by E., 3 specimens (Hartmeyer, 1914, p. 430): Asia Shoal (D.B.C.)  
SALCOMBE. Salstone (N.J.B.)  
Breeding: May-Sept. (N.J.B.)
- DENDRODOA GROSSULARIA (Van Beneden) [*Berrill*, 1950, p. 198]  
Abundant on rocks between tide-marks, Jennycliff Bay, Rum Bay, Mount Edgcumbe; occasionally in dredgings from Millbay Channel, Queen's Ground, etc. (R.A.T.): Eddystone Grounds, the small squat variety not uncommon on shells, particularly *Pecten* shells, on the gravels W. of the Eddystone (E.J.A.): Asia Shoal, some specimens of the solitary form; Queen's Ground, several specimens of the solitary form; Mewstone Ledge, several specimens; Yealm, Hotel Corner-Sand-bank, many specimens; Skerries, 1 specimen (Hartmeyer, 1914, p. 431): shallow water and intertidal; shore below Laboratory; common but local (N.J.B.): Duke Rock (P.K.): Wembury, Church Reef (A.I.C.)  
SALCOMBE. Quite common on shells and stones near Salstone (D.A.H.)  
Breeding: May-Oct. (W.G.): April-Oct. (N.J.B.)
- Sub-Family *Botryllinae*
- DISTOMUS VARIOLOSUS Gaertner [*Berrill*, 1950, p. 203]  
Millbay Channel, numerous colonies, on other ascidians (*Polycarpa pomaria*, *Botryllus schlosseri*, *Morchellium argue*) or sponges; Asia Shoal, 4 colonies; Queen's Ground, some colonies; Cawsand Bay, near Picklecombe Fort, 2 colonies round *Laminaria*; Mewstone Ledge, 2 colonies; 1¾ m. Eddystone bearing S.E. by E., 1 colony (Hartmeyer, 1914, p. 431): shallow water and intertidal; common but widely scattered (N.J.B.): Wembury, abundant (D.B.C.)

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SALCOMBE. Salstone; Bolt Head; Sunny Cove Point (N.J.B.): Castle Rocks (P.K.)  
Breeding: July-Sept. (N.J.B.)

STOLONICA SOCIALIS Hartmeyer [*Berrill*, 1950, p. 209]

Millbay Channel, 2 colonies, single zooids to 18 mm long; Queen's Ground, 2 colonies; Mewstone Ledge, several colonies; Bridge Ground, 1 colony (Hartmeyer, 1914, p. 431): Duke Rock and Queen's Ground, very plentiful, 1930 (N.J.B.)  
Breeding: Aug.-Sept. (N.J.B.)

BOTRYLLUS SCHLOSSERI (Pallas) [*Berrill*, 1950, p. 216]

Asia Shoal; Rame Head; Rame-Eddystone and other points (Hartmeyer, 1914, p. 431): Mewstone Ledge; shallow water and intertidal; Millbay Channel; Queen's Ground; shore below Laboratory; common but widely scattered (N.J.B.): Cargreen Hard, on Fucus; mussel bed above Saltash in main channel; Rat Island, hand and dredge (E.P.): Drake's Island Mewstone Ledge; deep water off Stoke Point (D.B.C.)

SALCOMBE. Castle Rocks, and dredgings from main channel (N.J.B.)  
Breeding: June-Sept. (N.J.B.)

BOTRYLLOMES LEACHI (Savigny) [*Berrill*, 1950, p. 224]

Under the Hoe, common under stones (W.G.): from 4 positions, single specimens, 7-12 m. S.W. of Eddystone, 40-43 fm. (Hartmeyer, in Crawshay, 1912, p. 380): near New Grounds Buoy, 2 colonies (Hartmeyer, 1914, p. 431): shallow water and intertidal, common but widely distributed; shore below Laboratory (N.J.B.): Rat Island, River Lynher (E.P.)

SALCOMBE. Salstone (N.J.B.)  
Breeding: Aug.-Oct. (W.G.): July-Oct. (N.J.B.)

Family **Pyuridae**MICROCOSMUS CLAUDICANS (Savigny) [*Berrill*, 1950, p. 235]

Mewstone Ledge, 6 specimens; between New Grounds Buoy and the Bridge, 1 specimen; 1¼ m. Eddystone, bearing S.E. by E., 1 specimen (Hartmeyer, 1914, p. 429)

PYURA MICROCOSMUS (Savigny) [*Berrill*, 1950, p. 237]

From 7 positions (1-4 specimens), 7-28 m. S.W. of Eddystone, 40-49 fm. or over (Hartmeyer, in Crawshay, 1912, p. 379): Queen's Ground, 1 specimen; Mewstone Ledge, 7 specimens; Rame-Eddystone Grounds, 3 specimens; Skerries, 4 specimens (Hartmeyer, 1914, p. 430): shallow to deep water (N.J.B.): Mewstone Ledge, common; Duke Rock (P.K.)

SALCOMBE. Salstone (N.J.B.)  
Breeding: Aug. (N.J.B.)

PYURA SQUAMULOSA (Alder) [*Berrill*, 1950, p. 240]

Mewstone Ledge, 10 specimens on shells and on *Microcosmus claudicans*; Eddystone bearing S.E. by E., 1¼ m., 1 specimen (Hartmeyer, 1914, p. 429): in small numbers everywhere in deep water on stones or shells (D.B.C.)

## PYURA TESSELLATA (Forbes) [Berrill, 1950, p. 242]

Rame-Eddystone Grounds (R.A.T.): Eddystone Grounds, single specimen on fine gravel (E.J.A.): Mewstone, 3 specimens (Hartmeyer, 1914, p. 429); shallow to deep water; Stoke Point (N.J.B.): Mewstone, common, especially on back of *Maia squinado*; Duke Rock (P.K.)  
SALCOMBE. Salstone (N.J.B.)  
Breeding: Aug. (N.J.B.)

Family **Molgulidae**

## MOLGULA MANHATTENSIS (De Kay) [Berrill, 1950, p. 248]

Queen's Ground, 1 specimen; Eddystone, 1 specimen (Hartmeyer, 1914, p. 429): from 12 positions, 8-30 m. S.W. of Eddystone, 40-47 fm. (Hartmeyer, in Crawshay, 1912, p. 379): Eddystone Grounds on Chaetopterus tubes, not uncommon (E.J.A., N.J.B.): River Yealm (Hotel Corner); Millbay Pier; deep water, fixed; New Grounds, occasionally on shells, crabs, etc.; Mewstone and Stoke Point; also occasional specimens free in muddy sand occurring with *M. oculata* (N.J.B.): small beach, 100 yd. above Antony Creek, L.W., spring tide, on stone; St. John's Lake, opposite Rifle Range, 16.9.28 (E.P.): abundant on buoys in Sound and on piles in Millbay Dock (D.B.C.)  
SALCOMBE. Salstone (N.J.B.)  
Breeding: throughout the year (N.J.B.)

## MOLGULA OCULATA Forbes [Berrill, 1950, p. 252]

Mewstone Ledge (T.V.H.): not uncommon in clean, fine gravel off Mewstone (R.A.T.): Eddystone Ground (E.J.A.): from 3 positions, 17-29 m. S.W. of Eddystone, 42-46 fm. (Hartmeyer, in Crawshay, 1912, p. 379): Queen's Ground, 6 specimens; Millbay Channel, 1 specimen; Yealm, Hotel Corner-Sand-bank, 2 specimens (Hartmeyer, 1914, p. 429): Cawsand Bay; Rame-Eddystone; deep water, free in sand or gravel, common but local (N.J.B.): more than 100 taken in one haul of dredge, 12.9.56, Eddystone shell gravel (D.B.C.)  
Breeding: July-Sept. (N.T.B.)

## MOLGULA OCCULTA Kupffer [Berrill, 1950, p. 254]

In association with the last species, common but local (N.J.B.): Borough Island, Bigbury (P.K.)  
Breeding: at the same time as the last species (N.J.B.)

## MOLGULA CITRINA Alder and Hancock [Berrill, 1950, p. 258]

Ten individuals, average size 10 mm., together with three of *M. complanata*, Millbay Docks pontoon, 20.8.30, all breeding, viviparous (N.J.B.)  
SALCOMBE. Two specimens from rocks at Sunny Cove Point, both breeding (N.J.B.)  
Breeding: August (N.J.B.)

## MOLGULA COMPLANATA Alder and Hancock [Berrill, 1950, p. 262]

Shallow water and intertidal, fixed, Asia Shoal; common throughout the Sound, attached to stones and clinkers, usually in small recesses so that the extended siphons do not reach beyond the general surface, covered with

## TUNICATA: THALIACEA-COPELATA

sand grains; average size when mature 3-4 mm, greatest dimension, but may attain 9 mm (N.J.B.):  
River Yealm Estuary; Borough Island, Bigbury (P.K.)

SALCOMBE. Salstone, Castle Rocks (D.B.C.)

Breeding: July-Sept., at least; is viviparous (N.J.B.): Nov. (D.B.C.)

EUGYRA ARENOSA (Alder and Hancock) [*Berrill*, 1950, p. 265]

From 4 positions (1-3 specimens) 8-17 m. S.W. of Eddystone, 42-43 fm. (Hartmeyer, in  
Crawshay, 1912, p. 379): Queen's Ground, 1 specimen (Hartmeyer, 1914, p. 429): deep water, free  
in sand or gravel, Rame-Eddystone; gravel, Station E.1 (N.J.B.)

Breeding: July-Aug. (N.J.B.)

Class **THALIACEA**

## Order DOLIOLIDA

DOLIOLUM NATIONALIS Borgert [*Berrill*, 1950, p. 282]

Tow-nettings, Aug., Sept. 1893, a considerable number (W.G.): very abundant during 1895  
(T.V.H.): S. of the Eddystone, several specimens, Nov. 1904 (L.H.G.): abundant off Eddystone,  
Oct. 1931, Sept., Oct. 1932 (Russell and Hastings, 1933): abundant off Eddystone, Oct. 1954  
(D.B.C.)

DOLIOLUM GEGENBAURI Uljanin, [*Berrill*, 1950, p. 285]

Abundant off Eddystone, Oct. 1931 (Russell and Hastings, 1933)

## Order SALPIDA

SALPA FUSIFORMIS Cuvier [*Berrill*, 1950, p. 293]

Aggregated form at surface, N. of Eddystone, Aug. 1901 (R.A.T.): Stations E. 1, L.4, common,  
9.7.25; L.4, 4.9.25 (M.V.L.): abundant, invading Sound and Hamoaze, 1917; abundant, aggregate  
and solitary forms, off Eddystone, Aug.-Oct. 1932 (Russell and Hastings, 1933)

SALPA DEMOCRATICA Forskal [*Berrill*, 1950, p. 291]

Large shoals visited the Sound in 1893, from the middle of June to the end of the first week in  
July (W.G.): aggregate and solitary forms present off Eddystone, Sept.-Oct. 1931 (Russell and  
Hastings, 1933)

SALPA ZONARIA (Pallas) [*Berrill*, 1950, p. 295]

Abundant off Falmouth Bay, Sept. 1914 (J.H.O. in Russell and Hastings, 1933)

Class **COPELATA (=LARVACEA)**Family **Oikopleuridae**

OIKOPLEURA DIOICA Fol [*Berrill*, 1950, p. 312]

Generally present in tow-nettings, occasionally common (R.A.T.): common in tow-nettings  
especially in autumn and early spring (M.V.L.): Hamoaze as far as No. 12 Buoy, opposite  
"Impregnable", surface, fine net, June-Oct. 1928 (E.P.)

Breeding: March-April (W.G.)

## CEPHALOCHORDA

OIKOPLEURA FUSIFORMIS Fol [*Berrill*, 1950, p. 314]

Recorded near Eddystone, Oct. 1932 (F.S.R.)

Family **Fritillaridae**

FRITILLARIA BOREALIS Lohmann [*Berrill*, 1950, p. 319]

Tow-nettings, Plymouth, March, Oct., Nov. 1899 (P.T.C.): Eddystone, Aug. 1903 (L.H.G.):  
occasionally with Oikopleura in autumn and spring (M.V.L.)

## Sub-Phylum CEPHALOCHORDA

AMPHIOXUS LANCEOLATUS (Pallas) [*Sedgwick*, 1905, p. 10] (=BRANCHIOSTOMA)

On clean, rough shell-gravel inside and outside the Sound; New Grounds, Mewstone Grounds,  
Eddystone Grounds (E.F., G.A.S., A.J.S.)

Breeding: young in tow-nettings occasionally, Aug., Sept. (M.V.L.)

## VERTEBRATA: MARSIPOBRANCHII-SELACHII

Sub-Phylum VERTEBRATA

Class **MARSIPOBRANCHII**

Order MYXINOIDEA

Family **Myxinidae**

MYXINE GLUTINOSA L. [*Day*, 1880-4, II, p. 364, Pl. 179, 4; Int. Coun. 3 \*] 'Hagfish'  
Day states that it is rare in Cornwall. No recent records (E.F., G.A.S.)

Order PETROMYZONIDA

Family **Petromyzonidae**

PETROMYZON MARINUS L. [*Day*, 1880-4, II, p. 356, Pl. 178; Int. Coun. 1] 'Sea  
Lamprey'

One at Weir Head in River Tamar, July 1928 (E.P.): one (23 cm.) from Mr. Howard Dunn, Mevagissey, 30.5.30; one (76 cm.) taken in ray-net in Bigbury Bay, 14.5.35; one male (85 cm.) and one female (56 cm.) full of eggs, caught in River Tamar at Weir Head, 5.5.46 (E.F.): juvenile (8 cm.) taken off Plymouth attached to a mackerel, 13.1.50; another (22.5 cm.) from Millbay Dock attached to a grey mullet, 6.1.53 (G.A.S.)

Class **SELACHII** †

Order PLEUROTREMATA

Family **Hexanchidae**

HEXANCHUS GRISEUS (Bonnaterre) [*Day*, 1880-4, 11, p. 308, Pl. 158, 2, as Notidanus; Int. Coun. 5]  
'Six-gilled Shark'

Immature female (112 cm.) caught on longline 25 m. S. of Dodman Point, 29.3.33 (E.F.)

\*This reference is to the appropriate identification sheet of the set issued by Le Conseil International pour l'Exploration de la Mer prior to 1938 when a numbered classification was published (see Reference under International Council, 1938).

† For convenience some references are given for the identification of eggs and young stage

## VERTEBRATA: SELACHII

Family **Isuridae**

LAMNA CORNUBICA (Gmelin) [Day, 1880-4, 11, p. 297, Pl. 156; Int. Coun. 6] 'Porbeagle'  
Occasionally caught in drift-nets and on special shark-fishing gear (E.F., G.A.S.)

ISURUS OXYRHYNCHUS Rafinesque [Bigelow and Schroeder, 1948, p. 124, figs. 18,19] 'Sharp-nosed Mackerel Shark'; 'Mako'  
Several specimens caught by shark anglers, 12-20 miles seaward of Looe. First authentic record a 352 lb. male caught in August 1955 (C.A.S.)

CETORHINUS MAXIMUS (Gunnerus) [Day, 1880-4, II, p. 303, Pl. 158, 1, as *Selache maxima*; Int. Coun. 7] Basking Shark'  
Not uncommon in the English Channel off Plymouth in sunshiny weather during summer months in most years; but in some years they fail to make an appearance (G.A.S.)

ALOPIAS VULPINUS (Bonnaterre) [Day, 1880-4, 11, p. 300, Pl. 157, as *A. vulpes*; Int. Coun. 8] 'Thresher'  
Very occasional in drift-nets (E.F., G.A.S.)

Family **Scyliorhinidae**

SCYLIORHINUS STELLARIS (L.) [Day, 1880-4, 11, p. 312, Pl. 159, 2, as *Scyllium catulus*; Int. Coun. 9] 'Nursehound'; 'Larger Spotted Dogfish'  
Regularly trawled, but never in large numbers (E.F., G.A.S.) Young stages, Ford, 1921, p. 492, f. 5-7 and 16-19. Eggs may be collected at low-water mark on some rocky shores during exceptionally good vernal and autumnal spring tides (E.F., G.A.S.)

SCYLIORHINUS CANICULA (L.) [Day, II, 1880-4, p. 309, Pl. 159, 1, as *Scyllium*; Int. Coun. 10] 'Rough Dog'; 'Lesser Spotted Dogfish'  
Generally plentiful on trawling grounds at all seasons (G.A.S.) Young stages, Ford, 1921, p. 486, f. 8-15. Eggs cannot be collected from the shore; the Laboratory procedure is to remove eggs from parent fish received alive and of these a fair percentage will develop and hatch out in Laboratory tanks (E.F., G.A.S.)

Family **Carcharhinidae**

CARCHARHINUS GLAUCUS (L.) [Day, 1880-4, 11, p. 289, Pl. 152, as *Carcharias* Int. Coun. 14] 'Blue Shark'  
Very occasional specimens from commercial fishing vessels (E.F.); generally caught by trawlers and longliners outside the Plymouth area in deeper water to the westward (G.A.S.): anglers from Looe catch well over 1,000 in a season, from the Eddystone area; this angling has become popular in recent years, since about 1950; first sharks are caught about the end of June or beginning of July and catches continue until about the end of September; angling starts before and continues after this period; males are stated to comprise under 3% of the catches (P.G.C.)

## VERTEBRATA: SELACHII

GALEORHINUS GALEUS (L.) [Day, 1880-4, II, p. 292, PI. 153, as *Galeus vulgaris*; Int. Coun. 15]  
'Tope'

Occasional specimens landed at Plymouth market where, with *Mustelus*, they are known locally as "Sweet Williams" (E.F.) Young stages, Ford, 1921, p. 502.

MUSTELUS MUSTELUS (L.) [Day, 1880-4, 11, p. 295, PI. 155, as *M. vulgaris*; Int. Coun. 16] 'Smooth Hound'

On occasions a few of these are landed on Plymouth market where they are known locally, together with *Galeorhinus*, as "Sweet Williams" (E.F.) Young stages, Ford, 1921, p. 502.

Family **Squalidae**

SQUALUS ACANTHIAS L. [Day, 1880-4, 11, p. 315, PI. 160,2, as *Acanthias vulgaris*; Int. Coun. 22]  
'Spur Dog'

Formerly common on Eddystone and other grounds, where a regular autumn line fishery was conducted, particularly by Mevagissey fishermen; they were also landed in varying numbers by drifters during the winter drift-net fishery at Plymouth; now rare in the Plymouth area (G.A.S.) Young stages, Ford, 1921, p. 470, f. 1 and 2.

OXYNOTUS CENTRINA (L.) [Day, 1880-4, 11, p. 319, PI. 161, as *Centrina salviani*; Int. Coun. 19]  
'Humantin'

Extremely rare (G.A.S.): one from S. by E. of Gribbon Head, received from Howard Dunn, 8.1.14 (R.S.C.)

ECHINORHINUS BRUCUS (Bonnaterre) [Day, 1880-4, 11, p. 323, PI. 162, 2 as *E. spinosus*; Int. Coun. 18] 'Spiny Shark'

Recorded by Day about 18 times off south coast of Devon and Cornwall between Brixham and Land's End; now rare, the only more recent record being one male (170 cm.) caught by long line off Looe, 21.7.36 (G.A.S.)

Family **Squatinae**

SQUATINA SQUATINA (L.) [Day, 1880-4, II, p. 326, PI. 163, as *Rhina*; Int. Coun. 30] 'Angel Fish'

A haul of the trawl in Cawsand Bay will generally yield several specimens; occasionally trawled on other grounds. Known locally as Buffoon; occasionally Monk Fish (E.F., G.A.S.)

## Order HYPOTREMATA

Family **Torpedinidae**

TORPEDO NOBILIANA Bonaparte [Day, 1880-4, 11, p. 331, PI. 164; Int. Coun. 33] 'Electric Ray';  
'Torpedo'

Single specimens in trawl at long intervals; from 1953 one or two a year during winter months (G.A.S.)

TORPEDO TORPEDO L. [Day, 1880-4, II, p. 322, PI. 165, as *T. marmorata*; Int. Coun. 31] 'Electric Ray';  
'Torpedo'

Single specimens in trawl at very long intervals (G.A.S.)

## VERTEBRATA: SELACHII

Family **Raiidae**

- RAIA CLAVATA L. [Clark, 1926, p. 24, PI. 8-10; Int. Coun. 43] 'Thornback Ray'; 'Roker'  
 The commonest ray at all depths up to about 30 fm.. marked inshore congregation of adult females on rough ground to eastward of Plymouth in spring (G.A.S.)  
 Young stages, Clark, 1922, p. 593, f. 1-4.
- RAIA MONTAGUI Fowler [Clark, 1926, p. 11, PI. 3a and b; Int. Coun. 37] 'Homelyn Ray'; 'Spotted Ray'  
 Generally distributed but less numerous than *R. clavata* within 30 fm. line; moderately common beyond 30 fm. (G.A.S.)  
 Young stages, Clark, 1922, p. 601, f. 5-7.
- RAIA BRACHYURA Lafont [Clark, 1926, p. 15, PI. 4a and b; Int. Coun. 38] 'Blonde Ray'  
 Commonest species in deep water, 15-20 m. outside Eddystone; only occasional specimens taken inside, but sometimes numerous in certain small sandy bays just outside the Plymouth area (G.A.S.)  
 Young stages, Clark, 1922, p. 608, f. 8-10.
- RAIA UNDULATA Lacépède [Clark, 1926, p. 20, PI. 6 and 7; Int. Coun. 41] 'Painted Ray'; 'Undulate Ray'  
 Not uncommon 20 m. or more S. of the Eddystone, but appears never to be taken inside (G.A.S.)  
 Young stages, Clark, 1922, p. 627, f. 18 (egg-capsule only)
- RAIA MICROCELLATA Montagu [Clark, 1926, p. 22, PI. 5b; Int. Coun. 42] 'Small-eyed Ray'  
 Taken inshore, particularly Bigbury Bay and Salcombe area (G.A.S.)  
 Young stages, Clark, 1922, p. 615, f. 11 and 12.
- RAIA NAEVUS Müller and Henle [Clark, 1925, p. 32, PI. 14 and 15; Int. Coun. 46] 'Cuckoo Ray'  
 Fairly common in deep water, outside the Eddystone (G.A.S.)  
 Young stages, Clark, 1922, p. 618, f. 13-15.
- RAIA CIRCULARIS Couch [Clark, 1926, p. 34, PI. 16-18; Int. Coun. 47] 'Sandy Ray'  
 Rare, and from deep water (G.A.S.)  
 Young stages, Clark, 1926, p. 34, PI. 13b (egg-capsule)
- RAIA FULLONICA L. [Clark, 1926, p. 37, PI. 19-21a; Int. Coun. 48] 'Shagreen Ray'  
 Fairly common in deep water outside Eddystone; occasional specimens inside (G.A.S.)  
 Egg-capsule, Desbrosses, 1931, p. 15, Pl. I.
- RAIA MARCINATA Lacépède [Clark, 1926, p. 47, PI. 28-31a; Int. Coun. 53] 'Bottle-nosed Skate' or 'Bastard Skate' (adult); 'Bordered Ray' or 'Bastard Ray' (juvenile)

## VERTEBRATA: PISCES

Occasionally taken outside Eddystone (G.A.S.)

Young stages, Clark, 1922, p. 632, f. 20 (egg-capsule only): Clark, 1926, PI. 28 and 29.

RAIA BATIS L. [Clark, 1926, p. 50, PI. 31b-33; Int. Coun. 55] 'Common Skate'

Rare in Plymouth area (G.A.S.)

Young stages, Clark, 1922, p. 629, f. 19 (egg-capsule only): Clark, 1926, PI. 31b and 32a.

RAIA OXYRNCHA L. [Clark, 1926, p. 55, PI. 34-6; Int. Coun. 57] 'Long-nosed Skate'

Very rare (G.A.S.)

Young stages, Clark, 1926, p. 55, PI. 36b (egg-capsule)

Family **Dasyatidae**

DASYATIS PASTINACA (L.) [Day, 1880-4, II, p. 350, PI. 175, as Trygon; Int. Coun. 58] 'Sting Ray'

Occasional specimens at very long intervals (G.A.S.)

Family **Myliobatidae**

MYLIOBATIS AQUILA (L.) [Day, 1880-4, 11, p. 352, PI. 176; Int. Coun. 59] 'Eagle Ray'

Single specimens at intervals of several or many years (G.A.S.)

Class **PISCES\***

Sub-Class *PALAEOPTERYGII*

Order CHONDROSTEI

Family **Acipenseridae**

ACIPENSER STURIO L. [Day, 1880-4, II, p. 280, PI. 150, 1 and 2; Int. Coun. 62] 'Sturgeon'

Occasional specimens landed by trawlers (E.F., G.A.S.)

Sub-Class *NEOPTERYGII*

Order ISOSPONDYLI

Family **Clupeidae**

CLUPEA HARENGUS L. [Day, 1880-4, II, p. 208, PI. 138, 2; Int. Coun. 63] 'Herring'

Once supported a flourishing drift fishery (Nov.-Feb.) which died out in the early nineteen-thirties; some herrings still present in the area but too few to support a fishery (G.A.S.)

Spawning, Sept.-March, principally Dec.-Jan. (E.F.): young stages, Lebour, 1921, p. 448, f. 10-12: early post-larvae, Dec.-Feb. or March; metamorphosing stages, April-May in estuaries; O-group, in estuaries (Ford, 1928, p. 305)

\* For convenience some references are given for the identification of eggs and young stages.

## VERTEBRATA: PISCES

CLUPEA SPRATTUS L. [Day, 1880-4, II, p. 231, Pl. 139, 2; Int. Coun. 64] 'Sprat'

Fairly common in winter, especially in estuaries (E.F., G.A.S.)

Eggs, Jan.-July (E.F.): young stages, Lebour, 1921, p. 439, f. 7-9; post larvae commonest in March (F.S.R.): metamorphosing stages and immature specimens common in estuaries during summer (E.F.)

SARDINA PILCHARDUS (Walbaum) [Day, 1880-4, 11, p. 224, Pl. 139, 1; as Clupea; Int. Coun. 67] 'Pilchard'; 'Sardine' (juvenile)

Common during winter drift-net fishery at Plymouth (E.F.): occasionally trawled at other seasons G.A.S.)

Eggs, Jan.-Dec., maximum June (P.G.C.): young stages, Lebour, 1921, p. 433, f. 4-6: post-larvae, May to end of year (F.S.R.): metamorphosing stages and young silvery forms in estuaries during summer (E.F.)

ALOSA ALOSA (L.) [Day, 1880-4, II, p. 234, Pl. 140, as Clupea; Int. Coun. 65] 'Allis Shad'

Occasional specimens in trawl (E.J.A., E.F., G.A.S.)

ALOSA FALLAX (Lac.) [Day, 1880-4, II, p. 236, Pl. 141, as *Clupea finta*; Int. Coun. 66] 'Twaite Shad'

Occasional specimens (E.F.): six in one haul of trawl, 14.7.55 (A.D.M.)

STOLEPHORUS ENCRASICOLUS (Lac.) [Day, 1880-4, II, p. 206, Pl. 138, 1, as *Engraulis encrasicolus*; Int. Coun. 69] 'Anchovy'

Not uncommon during summer and autumn, but seldom caught with ordinary gear (G.A.S.)

#### Family Salmonidae

SALMO SALAR L. [Day, 1880-4, II, p. 66, Pl. 110 and III, 1; Int. Coun. 93] 'Salmon'

Net fishery in Rivers Lynher, Tamar, and tributaries (E.F., G.A.S.)

SALMO TRUTTA L. [Day, 1880-4, II, p. 84, Pl. III, 1, and 112, 1 and 2; Int. Coun. 94] 'Sea Trout'; 'Brown Trout'

One (32 cm.) 1½ m. off Mewstone (in line with Eddystone) on hook 2 ft. from surface, 13.7.47 (O.D.H.): one caught on hook and line at West Hoe Pier 10.7.55 (A.D.M.): Tamar Estuary, occasionally caught in the tuck-net (Hartley, 1940, p. 45). The River Tavy is a well-known Sea Trout water.

#### Family Argentinidae

ARGENTINA SPHYRAENA L. [Day, 1880-4, II, p. 136, Pl. 125; Int. Coun. 97] 'Argentine'

One (8.0 cm.) in small-mesh cover of trawl, 3-4 m. S.W. of Eddystone, 2.3.51; two (9.0 cm.) similarly taken 3-6 m. S.S.W. of Eddystone, 28.3.51 (P.G.C.)

## VERTEBRATA: PISCES

## Order APODES

Family **Anguillidae**

ANGUILLA ANGUILLA (L.) [Day, 1880-4, II, p. 241, Pl. 142, 1, as *A. vulgaris*; Int. Coun. 129]

'Common Eel'

In estuaries; River Tamar, up to Weir Head (E.P.): elvers in River Yealm (E.F.)

Family **Congridae**

CONGER CONGER (L.) [Day, 1880-4, II, p. 250, Pl. 142, 2, as *C. vulgaris*; Int. Coun. 134] 'Conger Eel'

Common, inshore to deep water (E.F., G.A.S.) Young stages, Schmidt, 1909, p. 16, Pl. I, 1-3; the leptocephalus larva has been several times recorded from the Plymouth area (Ford, 1920b, p. 249-252)

Family **Muraenidae**

MURAENA HELENA L. [Day, 1880-4, II, p. 254, Pl. 143; Int. Coun. 130] 'Moray Eel'

One off the Eddystone, 3.3.97 (E.W.L.H.) (*J. mar. biol. Ass. U.K.*, Vol. V. p. 91)

## Order SYNENTOGNATHI

Family **Scomberesocidae**

SCOMBERESOX SAURUS (Walbaum) [Day, 1880-4, II, p. 151, Pl. 127, 2, as *Scomberesox*; Int. Coun. 141] 'Saury Pike'; Skipper'

One (27.2 cm.) jumped on board s.s. "Salpa", 20 m. S. of Eddystone (?1933) (E.F.)

Family **Belonidae**

BELONE BELONE (L.) [Day, 1880-4, II, p. 147, Pl. 127, 1, as *B. vulgaris*; Int. Coun. 142] 'Gar-fish'

Occasional specimens in summer (E.F., G.A.S.)

Young stages, Ehrenbaum, 1905, p. 134, f. 61, as *Rhamphistoma*: occasional specimens (M.V.L.) and also young adolescents taken at night by shining light from ship in Sound (E.F.)

Family **Exocoetidae**

EXOCOETUS VOLITANS L. [Day, 1880-4, II, p. 154, Pl. 128; Int. Coun. 145] 'Flying-fish'

One caught in drift-net in 1913 off Eddystone (R.S.C.): occasional specimens not infrequent off the Eddystone (E.J.A.): none for many years prior to 1957 (G.A.S.)

## VERTEBRATA: PISCES

## Order SOLENICHTHYES

Family **Syngnathidae**

ENULURUS AEQUOREUS (L.) [Day, 1880-4, II, p. 261, Pl. 144, 4, as Nerophis; Int. Coun. 149] 'Snake Pipe-fish'; 'Ocean Pipe-fish'

Cawsand Bay, Yealm Estuary among *Zostera* (E.F.): rather rare in recent years following the disappearance of much of the *Zostera* (D.P.W.)

Young stages, Ehrenbaum, 1909, p. 326, f. 121, as Nerophis.

NEROPMS LUMBRICIFORMIS Pennant [Day, 1880-4, II, p. 263, Pl. 144, 6; Int. Coun. 151] 'Worm Pipe-fish'

Common under stones between tide-marks (E.F., G.A.S.)

Eggs, spring and summer (E.F.): young stages, Ehrenbaum, 1909, p. 329, f. 123.

NEROPHIS OPHIDION (L.) [Day, 1880-4, II, p. 262, Pl. 144, 5; Int. Coun. 150] 'Straight-nosed Pipe-fish'

Cawsand Bay, formerly not uncommon (E.F.): rather rare in recent years following the disappearance of much of the *Zostera* (D.P.W.)

Young stages, Ehrenbaum, 1909, p. 328, f. 122.

SYNGNATHUS ACUS L. [Day, 1880-4, II, p. 259, Pl. 144, 1 and 2; Int. Coun. 152] 'Great Pipe-fish'

Common on *Zostera* beds, Yealm Estuary and Cawsand Bay (E.F., G.A.S.): River Tamar, up to Hole's Hole; River Lynher to Sheviok Wood (E.P.)

Young stages, Ehrenbaum, 1909, p. 323, f. 118.

SIPHOSTOMA TYPHLE (L.) [Day, 1880-4, II, p. 257, Pl. 144, 3, as Siphonostoma; Int. Coun. 153] 'Broad-nosed Pipe-fish'

Formerly common Cawsand Bay and Yealm Estuary on *Zostera* beds (E.F.): rather rare in recent years since the *Zostera* became scarcer (D.P.W.)

Young stages, Ehrenbaum, 1909, p. 325, f. 120.

HIPPOCAMPUS EUROPÆUS Ginsburg [Day, 1880-4, II, p. 265, Pl. 144, 7, as *H. antiquorum*; Int. Coun. 157, as *H. brevirostris*] 'Sea Horse'

One taken in the Sound, 29.11.13; another, 1.12.13 (R.S.C.): one on 28.9.33, and another on 29.9.33, both caught in ring trawl near Eddystone (E.F.): no recent records (G.A.S.)

## Order ANACANTHINI

Family **Merlucciidae**

MERLUCCIUS MERLUCCIUS (L.) [Day, 1880-4, I, p. 300, Pl. 85, 1, as *M. vulgaris*; Int. Coun. 166] 'Hake'

Occasional small specimens from local trawling grounds (E.F.): considerable increase in numbers and sizes after 1939-45 war (G.A.S.) Eggs not recorded (E.F.): young stages, Ehrenbaum, 1909, p. 260, f. 94; Schmidt, 1907a, p. 3, Pl. I, 1-13: post-larvae, June-Nov., especially Oct. (F.S.R.)

## VERTEBRATA: PISCES

Family **Gadidae**

- GADUS CALLARIAS** L. [*Day*, 1880-4, I, p. 275, Pl. 78, as *G. morrhua*; Int. Coun. 167] 'Cod'  
Occasional specimens (E.F., C.;A.S.)  
Eggs rarely, Feb.-March (E.F.): young stages, Ehrenbaum, 1909, p. 224, f. 84: Schmidt, 1905, p. 9, Pl. I, 1-9: Schmidt, 1906a, p. 4, f. 25-7: post larvae, Feb.-April, especially March (F.S.R.): adolescent stage (O-group), occasionally, Barn Pool and Cawsand Bay (E.F.)
- GADUS AEGLEFINUS** L. [*Day*, 1880-4, I, p. 283, Pl. 79; Int. Coun. 168] 'Haddock'  
Occasional specimens in trawl (E.F., C.A.S.)
- GADUS LUSCUS** L. [*Day*, 1880-41 I, p. 286, Pl. 80; Int. Coun. 171] 'Pout'; 'Bib'  
Moderately common on most trawling grounds (E.F., G.A.S.)  
Eggs, Nov.-April (E.F.): young stages, Ehrenbaum, 1909, p. 235] f. 87: Schmidt, 1905, p. 54, Pl. III, 20-24: Schmidt, 1906a, f. 13-16: post-larvae, Jan.-Dec., especially Dec. (F.S.R.): adolescent stages in estuaries during summer (E.F.)
- GADUS MINUTUS** L. [*Day*, 1880-4, I, p. 288, Pl. 81; Int. Coun. 172] 'Poor Cod'  
Plentiful; probably commonest gadoid on trawling grounds (E.F., G.A.S.)  
Eggs, Feb.-April (E.F.): young stages, Ehrenbaum, 1909, p. 240, f. 88: Schmidt, 1905, p. 46, Pl. III, 16-19: Schmidt, 1906a, p. 6, Pl. I, 19-23: post-larvae, Feb.-July, especially April (F.S.R.)
- GADUS MERLANGUS** L. [*Day*, 1880-4, I, p. 290, Pl. 82; Int. Coun. 174] 'Whiting'  
Generally common, except at spawning time (E.F., G.A.S.)  
Eggs, Feb.-May (E.F.): young stages, Ehrenbaum, 1909, p. 231, f. 86: Schmidt ' 1905, p. 37, Pl. II, 1-9: Schmidt, 1906a, p. 6, f. 24: post-larvae, March-Aug., especially May (F.S.R.)  
Late post-larvae and early adolescents under umbrella of *Cyanea*; O-group common in Sound and up estuaries in summer (E.F.)
- GADUS ESMARKI** Nilsson [*Smitt*, 1892, p. 508; Int. Coun. 176] 'Norway Pout'  
27.8.00, Hamoaze (W.G.) (*J. mar. biol. Ass. U.K.*, Vol. VI, p. 274)
- GADUS VIRENS** L. [*Day*, 1880-4, I, p. 293, Pl. 84; Int. Coun. 177] 'Coal-fish'; 'Saithe'  
Rare in Plymouth area (G.A.S.) Young stages, Ehrenbaum, 1909, p. 244, f. 89: Schmidt, 1905, p. 12, Pl. I, 10-18
- GADUS POLLACHIUS** L. [*Day*, 1880-4, I, p. 296, Pl. 83, 2; Int. Coun. 178] 'Pollack'  
Common at all sizes, especially over rocky ground (E.F., G.A.S.)  
Eggs, Jan.-April (E.F.): young stages, Ehrenbaum, 1909, p. 249, f. 90: Schmidt, 1905, p. 17, Pl. I, 25-30: post-larvae March-June, especially May (Russell, 1935b): adolescents O-I groups, very common inshore and in estuaries (E.F.)

UROPHYCIS BLENNOIDES (Briinn.) [Day, 1880-4, I, p. 303, Pl. 85, 2, as Phycis; Int. Coun. 182]  
'Greater Forkbeard'; 'Forked Hake'

Occasional specimens on most trawling grounds; not nearly so rare now as formerly (G.A.S.):  
adolescent (33 mm.) in 2-metre stramin ring trawl 15.12.48 (P.G.C.)

MOLVA MOLVA (L.) [Day, 1880-4, I, p. 305, Pl. 86, as *M. vulgaris*; Int. Coun. 184] 'Ling'

Not uncommon, taken by trawl but mostly by hook and line; less frequently seen on fish market  
with decline of line-fishing from Plymouth (G.A.S.)

Eggs, no records (E.F.): young stages, Ehrenbaum, 1909, p. 267, f. 96: Schmidt, 1906b, p. 3, Pl.  
I, 14-25: post-larvae, April-July, especially June (F.S.R.)

ONOS MUSTELUS (L.) [Day, 1880-4, I, p. 314, Pl. 89, 2, as Motella; Int. Coun. 189] 'Five-bearded  
Rockling'

Common inshore (E.F., G.A.S.): intertidal rock pools near low-water mark (P.G.C.)

Spawning time, Jan.-July (R.S.C.): eggs of *Onos* spp. (including *O. mustelus*) Jan.-Aug. (E.F.):  
young stages, Ehrenbaum, 1909, p. 284, f. 102: post-larvae of *Onos* spp. March-Nov., especially  
May (F.S.R.): early adolescents as "Mackerel Midges", seen in shoals during summer (E.F.)

ONOS CIMBRIUS (L.) [Day, 1880-4, I, p. 316, Pl. 88, 1, as Motella; Int. Coun. 190] 'Four-bearded  
Rockling'

Rather rare (E.F., G.A.S.)

Eggs, Whitsand Bay, 3.5.10 (A.E.H.): spawning time, Sept. (R.S.C.): young stages, Ehrenbaum,  
1909, p. 280, f. 101: post-larvae, not distinguished (E.F.)

GAIDROPSARUS MEDITERRANEUS (L.) [Svetovidov, 1948, 9, Pt. 4, p. 82, Pl. 1, 2] 'Three-bearded  
Rockling'

Not uncommon in rock pools at extreme low tide and in shallow inshore waters (G.A.S.)

N.B.-Until a thorough revision of the British three-bearded rocklings has been made it is not  
possible to name all those occurring in Plymouth waters. In addition to *G. mediterraneus* one or  
even two other species may be present inshore, and certainly a larger, spotted form, recorded in the  
1931 edition as *Onos tricirratu*s (Bloch), and very closely resembling that figured by Day (1880-4,  
I) in Pl. 89, I, as *Motella tricirrata*, is moderately common offshore.

RANICEPS RANINUS (L.) [Day, 1880-4, I, p. 320, Pl. 90, 1 ; Int. Coun. 195] 'Lesser Forkbeard'

Single specimens at irregular intervals (E.F., G.A.S.)

Eggs, June-Aug. (E.F.): young stages, Ehrenbaum, 1909, p. 289, f. 104: Schmidt, 1907b, p. 4, Pl.  
I, 9-13: post-larvae, June-Oct., especially July; not common (F.S.R.)

## VERTEBRATA: PISCES

## Order ALLOTRIOGNATHI

Family **Lampridae**

LAMPRIS GUTTATUS (Brünn.) [Day, 1880-4, I, p. 118, Pl. 42, as *L. luna*; Poll, 1947, p. 224; Orkin, 1950, p. 129] 'Opah'; 'Moon-fish'

One (99 cm., 80 lb.) washed up on beach in Bigbury Bay, 2.8.54 (M.V.L.)

## Order ZEOMORPHI

Family **Zeidae**

ZEUS FABER L. [Day, 1880-4 I, p. 138, Pl. 48; Int. Coun. 205] 'John Dory'

Fairly common on trawling grounds; Cawsand Bay and Barn Pool (E.F., G.A.S.)

Spawned in aquarium on several occasions, May 1952 (D.P.W.): young stages, Schmidt, 1908, p. 3, Pl. I, 1-4; Clark, 1914, p. 350, f. 1 and 2: post-larvae, Aug.-Oct., especially Aug. (F.S.R.)

Family **Caproidae**

CAPROS APER (L.) [Day, 1880-4, I, p. 134, Pl. 47, 2; Int. Coun. 206] 'Boar-fish'

Plentiful on outer trawling grounds until early nineteen-thirties, then quickly decreased and became extremely rare. None taken between 3.6.48 and 29.6.49; from 30.6.49 to Sept. 1951 occasional in the summer months: large numbers taken S.W. of the Eddystone on several occasions 30.10.51 to mid-March 1952, since then occasional specimens one to three per year (G.A.S.)

Eggs, May-Aug. (E.F.): young stages, Ehrenbaum, 1905, p. 26, f. 13; Clark, 1914, p. 353, f. 3 and 4; Schmidt, 1908, p. 5, Pl. I, 5; Holt, 1899, p. 26, Pl. 5, 43-4: post-larvae, June-Sept., especially Aug. (F.S.R.)

## Order PERCOMORPHI

Family **Serranidae**

MORONE LABRAX (L.) [Day, 1880-4, I, p. 8, Pl. 2, as *Labrax lupus*; Int. Coun. 208] 'Bass'

Fairly common, especially "school" sizes. Off rocks along coast, and in estuaries (E.F., G.A.S.)

Spawned in aquarium, May 1952 (D.P.W.): young stages, Ehrenbaum, 1905, p.16, f. 7, as Roccus: post-larvae, Bertolini, 1933, p. 310, Pl. XV, 14-16 and Pl. XIX, 1-15, as Roccus: Jackman' 1954, p. 53 I, Pl. I, 1-5: young stages extremely rare off Plymouth, March to June (Russell, 1935a)

POLYPRION AMERICANUM (Schneider) [Day, 1880-4, I, p. 17, Pl. 6, as *P. cernium*; Int. Coun. 210] 'Stone Bass'; 'Wreck-fish'

One, 20 ½ in., taken off Plymouth, 21.9.92; one, 19½ in., sent from Mevagissey same date (W.L.C.): one landed by S.T. "Stormcock", 8.10.26 (E.F.): one, about 50 cm., caught, inside a floating tea chest off Bolt Tail and brought alive to Laboratory, 7.9.51 ; still alive in aquarium tank, May 1957, having

## VERTEBRATA: PISCES

grown about 10 cm. since capture (G.A.S., D.P.W.): two caught by hook and line off Eddystone, 15.8.53 and 18.8.53 (A.D.M.)

**SERRANUS CABRILLA (L.)** [*Day*, 1880-4, I, p. 14, Pl. 4; Int. Coun. 215] 'Comber'

Small specimen Eddystone Grounds, 16.6.30 (E.F.): occasionally trawled inside Eddystone, commoner outside, but never numerous (G.A.S., P.G.C.)

Spawning time, July-Aug. (R.S.C.): young stages, Ehrenbaum, 1905, p. 18, f. 9: Clark, 1920, p. 205, f. 6 and 7: Fage, 1918, p. 26, f. 12-16: post-larvae, Aug.-Oct., especially Sept. (F.S.R.)

Family **Carangidae**

**TRACHURUS TRACHURUS (L.)** [*Day*, 1880-4, I, p. 124, Pl. 44, as Caranx; Int. Coun. 222] 'Horse Mackerel'; 'Scad'

Moderately common (G.A.S.)

Eggs, June-July (E.F.): young stages, Ehrenbaum, 1905, p. 27, f. 14: post-larvae, July-Oct., especially Aug. (F.S.R.): small specimens under umbrella of *Cyanea* (E.F.)

**NAUCRATES DUCTOR (L.)** [*Day*, 1880-4, I, p. 127, Pl. 45; Int. Coun. 224] 'Pilotfish'

A large number entered Cattewater with a vessel, 1833 (*Day, ibid., p. 129*): 18-20 m. S.S.W. of Eddystone, 24.6.14, by motor boat "Kathleen" of Fowey, 34.7 cm. (R.S.C. and E.F.): occasionally received at Laboratory from drift-netters W. of Lizard Head (G.A.S.): one, 30.5 cm., taken by hook and line off Eddystone, 25.6.55; another, by hook and line, 14 m. S.W. of Looe, 25.9.56 (A.D.M.)

**SERIOLA DUMERILI** Risso [*Cuvier and Valenciennes*, 1833, IX, p. 201, Pl. 258; Int. Coun. 226] 'Great Amberjack'

One, 45.2 cm., caught by hook and line on sand eel bait at mouth of Salcombe Estuary, 4.9.51; now in British Museum collection (G.A.S.)

Family **Bramidae**

**BRAMA RAI** (Bloch) [*Day*, 1880-4, I, p. 114, Pl. 41; Int. Coun. 229] 'Ray's Bream'

Very rare; one caught from pier in Sutton Harbour, 8.11.32 (E.F.): one, 39 cm., by hook and line, Millbay Docks, 20.8.54 (A.D.M.)

Family **Mullidae**

**MULLUS SURMULETUS L.** [*Day*, 1880-4, I, p. 22, Pl. 8, 2; Int. Coun. 234] 'Red Mullet'

Not uncommon on outside trawling grounds; Barn Pool, River Lynher (E.F., G.A.S.)

Young stages, Ehrenbaum, 1905, p. 21, f. 10: post-larvae July-Aug., especially Aug. (F.S.R.)

## VERTEBRATA: PISCES

Family **Sparidae**

PAGELLUS CENTRODONTUS (de la Roche) [*Day*, 1880-4, 1, p. 36, Pl. 13; Int. Coun. 238] 'Common Sea-bream'

Once common, this fish is now only taken very occasionally (E.F. in 1931 edition): since 1946 fairly regularly taken in the trawl but never numerous (G.A.S.)

PAGELLUS ERYTHRINUS (L.) [*Day*, 1880-4, I, p. 40, pl. 17; Int. Coun. 241] 'Pandora'

One in trawl from Looe-Eddystone Grounds, 28.6.51; one in trawl from Mewstone Corner Ground, 28.11.51 (P.G.C.): one in trawl, Mewstone Corner Ground, 9.12.54 (A.D.M.)

SPONDYLIOSOMA CANTHARUS (Gmelin) [*Day*, 1880-4, 1, p. 26, Pl. 9, as *Cantharus lineatus*; Int. Coun. 243] 'Black Sea-bream'; 'Old Wife'

One from Tamar, 2.7.97 (E.W.L.H.): about one dozen landed from local boats at Plymouth, 25.12.32 (E.F.): one outside Eddystone, 1.12.49, another just inside Eddystone, 23.1.51; three more, same place, 13.2.51; during second half of 1951 and first half of 1952 specimens caught on usual trawling grounds at rate of about one a month (G.A.S.): two dozen trawled outside Eddystone, 4.12.52 (P.G.C.): since 1951 occasional specimens throughout the year (A.D.M.) Nests (areas of tank floor cleared of gravel) made by the males, and eggs laid and guarded by the male parent, in aquarium, May 1953, May 1954, May and June 1955, June 1956, April 1957; the males make occasional nests from about the beginning of the year onwards, but no eggs have been seen before April following a mild winter (D.P.W.)

BOOPS BOOPS (L.) [*Day*, 1880-4, 1, p. 28, Pl. 10, as *Box vulgaris*; Int. Coun. 246] 'Bogue'

One taken near Plymouth, 26.6.72 (Day): one female (33 cm.) near mouth of Yealm, 15.12.31 (O.D.H.): one from Bigbury Bay, 19.12.32 (E.F.)

SPARUS AURATUS L. [*Day*, 1880-4, 1, p. 32, Pl. 12, as *Pagrus*; Int. Coun. 248] 'Gilt Head'

One, 45.7 cm., by hook and line, off Steer Point, 27.8.55 (A.D.M.)

PAGRUS PACYRUS (L.) [*Day*, 1880-4, 1, p. 30, Pl. 11, as *P. vulgaris*; Int. Coun. 250] 'Couch's Sea-bream'

One in otter trawl from Looe-Eddystone Grounds, 8.11.51 (P.G.C.)

Family **Cepolidae**

CEPOLA RUBESCENS L. [*Day*, 1880-4, 1, p. 213, Pl. 62] 'Red Band-fish'

Common on muddy trawling grounds westward of Rame Head (G.A.S.): 50-100 not uncommon in 1 hour's trawling with fine mesh cover on cod-end; young specimens (5-15 cm.) frequently taken by dredge in Rame mud; 203 specimens (1 5-50 cm.), 1. 12.54, after prolonged heavy gales, in 1 ½ hr. haul with covered cod-end, Mewstone Corner Ground, where normally only very occasional; 328 specimens (15-50 cm.) on 7.12.54, after further

## VERTEBRATA: PISCES

heavy gales, in 2 hr. haul with covered cod-end, west of Rame Head (P.G.C.) Spawning time, Aug. (R.S.C.): young stages, Clark, 1920, p. 213, f. 8: post-larvae, Aug., single specimens (R.S.C.): June-Sept., especially Aug. (F.S.R.)

Family **Labridae**

- CORIS JULIS** (L.) [Day, 1880-4, I, p. 269, PI. 77, 1 and 2; Int. Coun. 258] 'Rainbow Wrasse'  
Extremely rare (G.A.S.) Young stages, Ehrenbaum, 1905, p. 9, f. 3: Ford, 1922*b*, p. 693, f. 8, as Julis.
- LABRUS BERGYLTA** Ascanius [Day, 1880-4, I, p. 252, PI. 60 and 71, as *L. maculatus*; Int. Coun. 260] 'Ballan Wrasse'  
Common among *Zostera* and on rocky inshore grounds, Barn Pool and Yealm Estuary, etc. (E.F., G.A.S.) Eggs laid in nests of weeds and bryozoans in rock crevices between tide-marks, below 13 ft. tide-level, spring and summer (E.F.): young stages, Ehrenbaum, 1905, p. 6, fig. 1: Ford, 1922*b*, p. 693, f. 1 and 4: post-larvae, April-July, especially June (F.S.R.)
- LABRUS OSSIFAGUS** L. [Day, 1880-4, I, p. 256, PI. 72, 1 and 2, as *L. mixtus*; Int. Coun. 261] 'Cuckoo Wrasse'  
Occasional specimens from or near rocky ground off Mewstone and Revelstoke Point (E.F., G.A.S.): a male killed another male and then made a nest (a patch of slate cleared of gravel) in an aquarium tank in May 1955, and on many evenings repeatedly attacked and displayed to the three females sharing the same tank; although a female occasionally followed him to the nest no eggs were laid (D.P.W.) Young stages, Ford, 1922*b*, p. 693, f. 7: post-larvae, May-July, especially June (F.S.R.)
- CRENILABRUS MELOPS** (L.) [Day, 1880-4, I, p. 260, PI. 73; Int. Coun. 263] 'Cork-wing'; 'Conner'  
Very common among weed, Barn Pool and Yealm (E.F., G.A.S.) Young stages, Ford, 1922*b*, p. 693, f. 2 and 5: Holt, 1899, PI. 5, 49, as *Ctenolabrus rupestris*: post-larvae, June-Aug., especially July (F.S.R.)
- CTENOLABRUS RUPESTRIS** (L.) [Day, 1880-4, I, p. 264, PI. -1; Int. Coun. 265] 'Gold-sinny'  
Fairly common; adolescents mostly inshore with young of *Labrus bergylta* and *Crenilabrus melops* (E.F., G.A.S.) Young stages, Ehrenbaum, 1905, p. 7, f. 2: Ford, 1922*b*, p. 693, f. 9: Petersen. 1919, PI. II, 22 and 23: post-larvae, June-Sept., especially July (F.S.R.)
- CENTROLABRUS EXOLETUS** (L.) [Day, 1880-4, I, p. 267, PI. 76; Int. Coun. 266] 'Rock Cook',  
Fairly common amongst shore weed and on inner grounds; Barn Pool and Yealm Estuary (E.F., G.A.S.)

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Young stages, Ford, 1922*b*, p. 693, f. 3 and 6: post-larvae, June-Aug., especially July (F.S.R.)

Family **Ammodytidae**

**AMMODYTES LANCEOLATUS** Lesauvage [*Day*, 1880-4, 1, p. 329, Pl. 92, 1; Int. Coun. 268] 'Greater Sand Eel'

Common; may be dug from sand, or taken by trawl or seine at Whitsand Bay (E.F.): Yealm Estuary; Salcombe; very rarely taken outside in trawl or Agassiz trawl (P.G.C.) Spawning, April-Sept., from records of post-larvae (P.G.C.): young stages, Corbin and Vati, 1949, pp. 298-9, Pl. 11, 1, as *A. tobianus*; see Einarsson, 1951: post-larvae, April-Oct., uncommon (P.G.C., V.V.)

**AMMODYTES TOBIANUS** L. [*Day*, 1880-4, 1, p. 331, Pl. 92, 2; Int. Coun. 269] 'Lesser Sand Eel'

Common inshore; may be dug from sand, or taken by seine at Whitsand Bay (E.F.): Yealm Estuary; Salcombe (P.G.C.): commoner than *A. lanceolatus*; not taken outside (P.G.C.) Spawning: adults with ripe gonads, Aug.-Oct. (P.G.C.): young stages, see Einarsson, 1951; post-larvae not yet observed in Plymouth area (P.G.C.)

**AMMODYTES MARINUS** Raitt, 1934, pp. 365-72

Rare; adult in trawl, Start Bay, inside Skerries, 22.5.50; 4 juveniles, dredged, Eddystone shell gravel, 19.6.50 (P.G.C.) Spawning, Jan.-March, from records of post-larvae (P.G.C.): young stages, Corbin and Vati, 1949, pp. 297-8, Pl. I, 2; Einarsson, 1951: post-larvae, Jan.-April (P.G.C., V.V.)

**AMMODYTES IMMACULATUS** Corbin, 1950, p. 525

Occasional juveniles and adults taken when digging or by seine, Rum Bay, Yealm Estuary, Salcombe; adults, outside, not numerous, in dredge or Agassiz trawl on Eddystone shell gravel; in trawl with small mesh on rougher ground, particularly Looe-Eddystone area (P.G.C.) Spawning, Jan.-April., Nov., from records of post-larvae (P.G.C., V.V.): young stages, Corbin and Vati, 1949, pp. 299-300, Pl. II, 2, as *A. species IV*: post-larvae, Jan.-May, Nov., especially March (P.G.C., V.V.)

**GYMNAMMODYTES SEMISQUAMATUS** (Jourdain) [*Duncker and Mohr*, 1939, p. 22, fig. 4a; *Day*, 1880-4, I, p. 333, Pl. 92, 3, as *A. cicerellus*; Int. Coun. 270] 'Smooth Sand Eel'

Not found on the shore; taken outside in dredge, Agassiz trawl or otter trawl with small mesh, especially on gravelly grounds; numerous on Eddy-stone shell gravel in winter months (P.G.C.) Spawning, Jan.-Sept., from records of post-larvae (P.G.C., v.v.): young stages, Corbin and Vati, 1949, pp. 295-6, Pl. I, 1, as *A. lanceolatus*; see Einarsson, 1951: post-larvae, Feb.-Oct., especially July (P.G.C., V.V.)

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Family **Trachinidae**

TRACHINUS DRACO L. [*Day*, 1880-4, I, p. 79, PI. 30; Int. Coun. 271] 'Greater Weever'

Occasional specimens in trawl on Eddystone Grounds (E.F., G.A.S.) Spawning period, June-Aug. (R.S.C.): young stages, Ehrenbaum, 1905, p. 41, f. 18: Clark, 1920, p. 220, f. 9: post-larvae (few), June-Sept. (R.S.C.)

TRACHINUS VIPERA Cuvier and Valenciennes [*Day*, 1880-4, 1, p. 81, PI. 31; Int. Coun. 272] 'Lesser Weever'; 'Sting-fish'

Common inshore at Whitsand Bay (E.F.): Erme Estuary (G.A.S.): occasionally inside Eddystone in trawl with small mesh (P.G.C.) Eggs, April-Aug. (E.F.): young stages, Ehrenbaum, 1905, p. 37, f. 17: post-larvae, June-Sept., especially Aug. (F.S.R.)

Family **Trichiuridae**

TRICHIURUS LEPTURUS L. [*Day*, 1880-4, I, p. 154, PI. 51, 1; Int. Coun. 276] 'Hair-tail'

Looe and Plymouth, several specimens (*Day*, *ibid.*, p. 155): no recent records (E.F., G.A.S.)

LEPIDOPUS CAUDATUS (Euphrasen) [*Day*, 1880-4, 1, p. 156, PI. 51, 2; Int. Coun. 277] 'Scabbard-fish'

One, 43 cm. long, received at Laboratory, 26.7.1950 (G.A.S.): three taken by Plymouth trawler outside Eddystone during October 1950; one in drift-net in Teignmouth Bay, 1.1.52 (P.G.C.): one in drift-net inside Eddystone, 3.1.52 (G.A.S.)

Family **Scombridae**

SCOMBER SCOMBRUS L. [*Day*, 1880-4, 1, p. 83, PI. 32 and 33; Int. Coun. 279] 'Mackerel'

Common in summer and autumn, inside and outside Sound, fished by hook and line; some in trawl and drift-nets during winter and spring; an exceptionally large female caught at Looe, 10.5.35, length 26 in., weight 4 ½ lb. (G.A.S.) Eggs, May-Aug. (R.S.C.): spawning season, Corbin, 1947 p. 65: young stages, Ehrenbaum, 1905, p. 31, f. 15: Allen, 1917, p. 226, f. 4-7: post-larvae, May-Sept., especially July (F.S.R.): adolescent stages from *ca.* 12 cm. sometimes taken during late summer and early autumn from sprat-seines (E.F.)

PNEUMATOPHORUS COLIAS (Gmelin) [*Day*, 1880-4, 1, p. 91, PI. 34; Int. Coun. 280] 'Spanish Mackerel'

Rare; one, in trawl, 2-3 m. N.N.W. of Eddystone, 20.1.51; one in herring net off Plymouth, 6.3.51; another, in trawl, near Eddystone, 19.3.51 (G.A.S.)

THUNNUS THYNNUS (L.) [*Day*, 1880-4, 1, p. 93, PI. 35, as *Orcynus*, *Fraser-Brunner*, 1950, p. 143, fig. 4; Int. Coun. 281] 'Tunny'

One 9 ft. long, Plymouth, 22.7.1873 (*Day*, *ibid.*, p. 97): one 3 ft. long

## VERTEBRATA: PISCES

from mackerel nets off Plymouth, 19.9.1894 (J.T.C.): no recent records (G.A.S.)

KATSUWONUS PELAMIS (L.) [*Kishinouye*, 1923, p. 453, Pl. 30, 53; *Fraser-Brunner*, 1950, p. 152, fig. 19, as

Euthynnus; Int. Coun. 286] 'Bonito'

Single specimens at long intervals (G.A.S.)

SARDA SARDA (Bloch) [*Day*, 1880-4, I, p. 102, Pl. 38, as Pelamys; Int. Coun. 288] 'Pelamid'; 'Short-finned

Tunny'

One (20.5 cm.) Whitsand Bay, 30.9.1949; one (31.5 cm.) 23.11.49, and one (33.0 cm.) 6.12.49, 2 m. S. of Rame Head; one (32.5 cm.) 1 m. off Penlee, 13.12.49, all from drift-nets (G.A.S.)

AUXIS THAZARD (Lacépède) [*Day*, 1880-4, I, p. 104, Pl. 39, 1, as *A. rochei*; Int. Coun. 289] 'Plain Bonito'

Looe, 1843 (*Day, ibid.* p. 105): one female, 16 in. long, in a seine at Mount Batten, 13.8.1894 (J.T.C.)

Family **Xiphiidae**

XIPHIAS GLADIUS L. [*Day*, 1880-4, I, p. 146; Int. Coun. 290] 'Swordfish'

*Day, ibid.*, pp. 147 and 148, records a specimen 7 ft. 7 in. long, weighing 147 lb. Taken off Plymouth, Sept. 1863 and another 11 ft. long near Eddystone, June 1879; no recent records (G.A.S.)

Family **Istiophoridae**

ISTIOPHORUS AMERICANUS Cuvier and Valenciennes [*Norman*, 1929, p. 67, f. 1 and 2] 'American Sail-fish'

A specimen of this species (new to British fauna), 2.26 metres in length, was taken in a dying condition in the Yealm Estuary, about a mile above the Yealm Bar, on 17.8.1928 (see above reference)

Family **Gobiidae**

GOBIUS CAPITO Cuvier and Valenciennes [*Pickard-Cambridge*, 1903, p. 586, Pl. XXX; Int. Coun. 291] 'Giant

Goby'

One (20 cm.) caught at Looe by rod and line from the shore, 19.9.52; another (17 cm.) by rod and line from the shore at Looe, 7.9.53 (P.G.C.)

Recorded by *Pickard-Cambridge* as abundant in large rock pools in neighbourhood of Portscatho, Cornwall, where *G. paganellus* is absent.

GOBIUS NIGER L. [*Holt and Byrne*, 1901a, p. 43, f. 1; *Lebour*, 1919b, p. 74, Pl. IV, 24; *Petersen*, 1917, Pl. I, 6;

Int. Coun. 292] 'Black Goby'

Occasionally inside and outside the Sound (M.V.L., G.A.S.)

Young stages (*Lebour ibid.*; *Petersen*, 1919, Pl. I, 1, 20-2, II, 13 and 14)

GOBIUS PAGANELLUS L. [*Holt and Byrne*, 1901a, p. 45, Pl. I, 1 and 2; *Lebour*, 1919b, p. 71, Pl. IV, 23; Int.

Coun. 293] 'Rocky Goby'

Common between tide-marks, usually near low-water mark (M.V.L., G.A.S.)

Eggs on stones between tide-marks, March, through summer (M.V.L.): young stages (*Lebour ibid.*, p.

71, Pl. IV, figs. 1-23)

GOBIUS FLAVESCENS Fabricius [*Holt and Byrne, 1901a, p. 49, f. 2, as G. ruthensparri* Euphrasèn; *Lebour,*

1919*b*, p. 69, Pl. III, 14; *Petersen, 1917, Pl. I, 18; Int. Coun. 295*] ‘Spotted Goby’

Common inshore, often just below low-tide mark (M.V.L., G.A.S.)

Eggs on shells, spring and summer (M.V.L.): young stages, *Lebour* *ibid.*, p. 69, Pl. III, 3-14; *Petersen, 1917, Pl. I, 13-18; Petersen, 1919, Pl. I, 16-19, II, 10-12.*

GOBIUS PICTUS Malm [*Holt and Byrne, 1901a, p. 54, Pl. II, 2; Lebour, 1919b, p. 60, Pl. I, 4 and 5, and Pl. II, 1;*

*Petersen, 1919, Pl. III, 3; Int. Coun. 296*] ‘Painted Goby’

Common inshore (M.V.L., G.A.S.): and on most outside trawling grounds in trawl with small mesh (P.G.C.)

Eggs on shells, spring and summer (M.V.L.): young stages, *Lebour, ibid.*; *Petersen, ibid.*, Li. I, 11-15, II, 7-9.

GOBIUS MINUTIS Pallas [*Holt and Byrne, 1901a, p. 50; Lebour, 1919b, p. 55, Pl. I, 1; Petersen, 1919, Pl. 3, 2;*

*Int. Coun. 297*] ‘Common Goby’; ‘Sand Goby’

Common on inshore trawling ground, especially in sandy bays, and for some distance up estuaries (G.A.S.)

Eggs on shells, spring and summer; young stages (*Lebour, ibid.*; *Petersen, ibid.*, Pl. I, 6-10, II, 4-

6)

GOBIUS MICROPS Krøyer [*Holt and Byrne, 1901a, p. 52, f. 3, as estuarine race of G. minutus; Lebour, 1919b,*

p. 64, Pl. I, 6, and II, 2; *Petersen, 1919, Pl. III, 1; Int. Coun. 298*]

Common up the estuaries and in Chelson Meadow (M.V.L.)

Eggs laid in Laboratory, summer; young stages, *Lebour, ibid.*; *Petersen, ibid.*, Pl. I, 1-5, II, 1-3.

GOBIUS ELONGATUS Canestrini [*Lebour, 1919b, p. 58, Pl. I, 2, 3*]

Common in outside waters (M.V.L.): on most trawling grounds in trawl with small mesh (P.G.C.)

Young stages (*Lebour, ibid.*)

GOBIUS JEFFREYSI Günther [*Holt and Byrne, 1901a, p. 55, f. 4; Lebour, 1919b, p. 65, Pl. III, 1 and 2; Int.*

*Coun. 299*] ‘Jeffrey’s Goby’

Common in outside waters (M.V.L.)

Eggs on shells, summer; young stages (*Lebour, ibid.*)

GOBIUS sp.

A *Gobius* sp., not in European list; up to 12 cm. in length; top of head, back, sides of head and body with numerous bold dark orange or brick red spots on pale fawn ground colour; taken by hand-net when diving, Queeners Point, Rame Head; seen Inner Penlee Point and Stoke Point, Sept. 1956; one taken E.L.W.S.T. Hope Cove, 18.1.57; also seen when diving near mouth of Helford River, Falmouth and near St. Helier, Jersey, Channel Islands; not taken on outside trawling grounds or when diving in the Sound; living between 4 and 6 fm. in rock crevices towards the bottom of deep gullies (Queeners Point, St. Helier) or crevices under large boulders (Helford)

## VERTEBRATA: PISCES

River) on open coast-line; not in sheltered waters with estuarine influence as in Plymouth Sound (G.R.F., P.G.C.)

Breeding: in laboratory tanks, eggs laid on underside of flat stones and on tank sides at the beginning of May, June and July (1956); young hatched in about a week (G.R.F.)

## GOBIUS sp.

A *Gobius* sp., not in British List and probably not in European list, up to 12 cm. in length, resembling *G. paganellus*; variable, is sometimes fairly common on outside trawling grounds in Agassiz trawl and otter trawl with small mesh; not intertidally or in the Sound (P.G.C.)

LEBETUS SCORPIOIDES Collet [*Smitt*, 1892, I, p. 260, f. 67, as *Gobius*; Int Coun. 300] 'Diminutive Goby'

Rare in outside waters (M.V.L.): occasional, held within the load of gravel taken by Agassiz trawl or dredge from Eddystone shell gravel (P.G.C.)

Post-larvae occasional throughout summer (P.G.C.)

Young stages (Petersen, 1919, p. 59, Pl. I, 27-29 and III, 4)

APHIA MINUTA (Risso) [*Lebour*, 1919b, p. 75, Pl. III, 15, as *A. pellucida*; *Petersen*, 1919, Pl. III, 6; Int. Coun.

302] 'White Goby'; 'Nonnat'

Fairly common inside and outside the Sound (M.V.L., G.A.S.)

Young stages (*Lebour*, *ibid.*; *Petersen*, *ibid.*, Pl. I, 23, II, 20 and 21)

CRYSTALLOGOBIUS NILSSONI (Düb. And Kor.) [*Lebour*, 1919b, p. 78, Pl. III, 16; *Petersen*, 1919, Pl. III, 5;

Int. Coun. 303] 'Transparent Goby'

Common in outside waters (M.V.L., G.A.S.)

Eggs in Chaetopterus tubes, summer; young stages (*Lebour*, *ibid.*; *Petersen*, *ibid.*, Pl. I, 24-6, II, 15-19)

Family **Callionymidae**CALLIONYMUS LYRA L. [*Day*, 1880-4, I, p. 174, Pl. 54; Int. Coun. 304] 'Dragonet'

Abundant on most trawling grounds (E.F., G.A.S.): sexual displays and occasional spawnings in the aquarium most years, mainly Dec.-Feb. (D.P.W.)

Spawning time, Jan.-Aug. (R.S.C.): young stages, *Ehrenbaum*, 1905, p. 103, f. 46: post-larvae of *Callionymus* species, including *C. lyra*, Feb.-Dec., especially May (F.S.R.)

CALLIONYMUS MACULATUS Rafinesque [*Day*, 1880-4, I, p. 177, Pl. 53, 5; Int. Coun. 305] 'Spotted Dragonet'

Not infrequent on trawling grounds (E.F., G.A.S., H.W.C.)

Spawning time, June-Aug. (R.S.C.): young stages, *Ehrenbaum*, 1905, p. 106, f. 47: *Fage*, 1918, p. 132, f. 99-102: post-larvae, June-Sept. (R.S.C.)

CALLIONYMUS RETICULATUS Cuv. And Val. [*Chang*, 1951, p. 297, Pl. I, 1-4; II, 1, 4-8; III]

Occasional specimens on trawling grounds and in Cawsand Bay. Apparently ripe in April and May (H.W.C.): not infrequent from Eddystone shell gravel in Agassiz trawl (P.G.C.)

## VERTEBRATA: PISCES

Family **Blenniidae**

- BLENNIUS GATTORUGINE L. [*Day*, 1880-4, I, p. 198, Pl. 59, 1; Int. Coun. 306] 'Tompot Blenny'  
 Common on rocky shores; Wembury below 15ft. tide level; taken in trawl from 2-3 fm. in Barn Pool (W.S., G.A.S.)  
 Spawning period, spring (E.F.): young stages, Ford, 1922*a*, p. 691, f. 9-12: post-larvae, May-Sept., especially July (F.S.R.)
- BLENNIUS MONTAGUI Fleming [*Day*, 1880-4, I, p. 200, Pl. 60, I, as *B. galerita*; Int. Coun. 307] 'Montagu's Blenny'  
 One small one at Wembury, Sept. 1934 (E.F.): two specimens collected on Drake's Island, 21.1.47 (P.H.T.H.): small specimens (20-30 mm.) quite common between laminae of shaley rock at about half-tide mark at Wembury and Whitsand Bay, 1950 and 1951 (P.G.C.)  
 Young stages, Ehrenbaum, 1905, p. 84, f. 37; smallest 15.5 mm.
- BLENNIUS OCELLARIS L. [*Day*, 1880-4, I, p. 201, Pl. 59, 2; Int. Coun. 308] 'Butterfly Blenny'  
 Not uncommon offshore (E.F., G.A.S.)  
 Spawning period, late spring and summer, eggs and attendant parent in empty shells (Buccinum, large lamellibranchs) or bottles (E.F.)  
 Young stages, Ford, 1922*a*, p. 688, f. 1-4: post-larvae, June-Sept., especially Aug. (F.S.R.)
- BLENNIUS PHOLIS L. [*Day*, 1880-4, I, p. 203, Pl. 60, 2; Int. Coun. 309] 'Common Blenny'; 'Shanny'  
 Common between tide-marks on rocky shores, eg. Wembury (E.F., G.A.S.)  
 Spawning period, spring and summer; eggs on stones in rock crevices at about 13 ft. tide-level (W.S.):  
 young stages, Ford, 1922*a*, p. 689, f. 5-8: post-larvae May-Aug., especially June (F.S.R.)

Family **Stichaeidae**

- CHIROLOPHIS ASCANII (Walbaum) [*Day*, 1880-4, I, p. 206, Pl. 60, 3, as *Carelophus*; Int. Coun. 314] 'Yarrell's Blenny'  
 Very rare (E.F., G.A.S.): in contrast with post-larval abundance (P.G.C.)  
 Young stages, Ehrenbaum, 1905, p. 85, f. 38: post-larvae, Jan.-April, especially March (F.S.R.)

Family **Pholididae**

- PHOLIS GUNNELLUS (L.) [*Day*, 1880-4, I, p. 208, Pl. 61, 1, as *Centronotus*; Int. Coun. 317] 'Butterfish'; 'Gunnel'  
 Not uncommon on shores from about 15 ft. tide-level and below (W.S., G.A.S.)  
 Spawning period, Feb. and possibly later (E.F.); young stages (Ehrenbaum, 1905, p. 87, f. 39) occasionally (E.F.)

## VERTEBRATA: PISCES

## Family Stromateidae

LEIRUS PERCIFORMIS (Mitchell) [*Day*, 1880-4, 1, p. 130, Pl. 46, as Pammel] 'Barrel-fish'

A specimen, 35.5 cm. long, was taken off Rame Head on 29.8.28, inside a floating bottled-milk case, and brought ashore alive; it survived a few hours; the case belonged to an American firm, was strongly built, and contained many *Lepas anatifera*; the fish was underneath the bottle-grating, and could have got out only with great difficulty (E.F.): Holt and Byrne (1901*b*) record "a single specimen... captured off Penzance on Oct. 1874, drifting in a broken fish-box, from which it was apparently unable to escape; it had been feeding on the barnacles which were growing in the box".

## Family Mugilidae

MUGIL LABROSUS Risso [*Day*, 1880-4, I, p. 232, Pl. 67, as *M. chelo*; Int. Coun. 337] 'Thick-lipped Grey Mullet'

Occasional large shoals in the Sound and estuaries (E.J.A., G.A.S.)

MUGIL AURATUS Risso [*Gunther*, 1861, p. 442; Int. Coun. 339] 'Golden Grey Mullet'

Few specimens from Yealm Estuary, 13.8.36 (G.A.S.): Tamar Estuary, one out of ten examined (Hartley, 1940, p. 46)

## Family Atherinidae

ATHERINA PRESBYTER Cuvier [*Day*, 1880-4, I, p. 225, Pl. 65, 1; Int. Coun. 343] 'Sand Smelt'

Occasional specimens; few by seine in Millbay Docks, 1923 (E.F.) and Saltash late Oct. 1936 (Hartley, 1940, p. 46): Cawsand Bay, 19.12.49 (G.A.S.): few by seine, Salcombe Estuary, 13.11.47; in recent years by rod and line at Tinside in winter (P.G.C.)

Young stages, Ehrenbaum, 1905, p. 129, f. 59a, b and d, after Holt, 1899, Pl. 9.

## Order SCLEROPAREI

## Family Triglidae

TRIGLA GURNARDUS L. [*Day*, 1880-4, I, p. 62, Pl. 25; Int. Coun. 350] 'Grey Gurnard'

Common in bays and on trawling grounds, sometimes taken in large numbers (E.F., in 1931 edition): now less common than formerly (G.A.S.)

Spawning time, Jan.-Aug. (R.S.C.): young stages, Ehrenbaum, 1905, p. 66, f. 28; Fage, 1918, p. 114, f. 80-1: post-larvae, July-Sept. (R.S.C.)

TRIGLA LUCERNA L. [*Day*, 1880-4, I, p. 59, Pl. 24, as *T. hirundo*; Int. Coun. 351] 'Sapphirine Gurnard'; 'Tubifish'

Fairly common in the bays and outside (G.A.S.)

Spawning period, June (E.F.): young stages, Ehrenbaum, 1905, p. 70, f. 29; Fage, 1918, p. 115, f. 82-3, as *T. corax*.

## VERTEBRATA: PISCES

TRIGLA CUCULUS L. [*Day*, 1880-4, I, p. 58, Pl. 23; Int. Coun. 352] 'Red Gurnard'

Numerous on outer trawling grounds (E.F.): now the commonest species of *Trigla* on local trawling grounds (G.A.S.)

Spawning time, April- Aug. (R.S.C.): young stages, Ehrenbaum, 1905, p. 73, f. 30, eggs and newly hatched larvae only.

TRIGLA LINEATA Gmelin [*Day*, 1880-4, I, p. 56, Pl. 22; Int. Coun. 353] 'Streaked Gurnard'; 'Polperro Bull'

Taken in trawl, especially on Looe-Eddystone Grounds (E.F.): never numerous (G.A.S.)

Spawning time, June-July (R.S.C.).

TRIGLA LYRA L. [*Day*, 1880-4, I, p. 64, Pl. 26; Int. Coun. 355] 'Piper'

Occasional specimens from deep water (E.F.): mainly from the westward of Plymouth (G.A.S.)

Family **Cottidae**

COTTUS SCORPIUS L. [*Day*, 1880-4, I, p. 49, Pl. 20, 1; Int. Coun. 358] 'Sea Scorpion'

Occasionally taken in trawl outside Breakwater (E.F., G.A.S.)

Young stages (Ehrenbaum, 1905, p. 55, f. 22), not distinguished at Plymouth.

COTTUS BUBALIS Euphrasen [*Day*, 1880-4, I, p. 51, Pl. 20, 2; Int. Coun. 359] 'Father Lasher'

Common inside and outside Breakwater, and enters estuaries (E.F., G.A.S.)

Spawning time, Feb-April (E.F.): young stages, Ehrenbaum, 1905, p. 58, f. 23: post-larvae, Feb-June, especially March (F.S.R.)

Family **Agonidae**

AGONUS CATAPHRACTUS L. [*Day*, 1880-4, I, p. 67, Pl. 28, 1; Int. Coun. 367] 'Pogge'

Once common on inner trawling grounds; occasional specimens in estuaries (E.F.): Rivers Tamar and Lynher, on all the estuarine fishing grounds, 1936-7, a big haul on 24.2.36 (Hartley, 1940, p. 54)

Spawning period, March-April (R.S.C.): young stages, Ehrenbaum, 1905, p. 75, f. 31: post-larvae, March-May, especially March (F.S.R.)

Family **Cyclopteridae**

CYCLPTERUS LUMPUS L. [*Day*, 1880-4, I, p. 179, Pl. 55; Int. Coun. 369] 'Lump-sucker'

Occasional specimens (E.F., G.A.S.)

Young stages, Ehrenbaum, 1905, p. 116, f. 51.

## VERTEBRATA: PISCES

Family **Libaridae**

LIPARIS LIPARIS (L.) [Day, 1880-4, I, p. 184, Pl. 56, 1, as *L. vulgaris*; Int. Coun. 370] 'Sea Snail'

Not uncommon near low-water mark (E.F., G.A.S.)

Young stages, Ehrenbaum, 1905, p. 112, f. 49.

LIPARIS MONTAGUI Donovan [Day, 1880-4, I, p. 186, Pl. 56, 2; Int. Coun. 371] 'Montagu's Sea Snail'

Not uncommon near low-water mark (E.F., G.A.S.)

Young stages, Ehrenbaum, 1905, p. 109, f. 48; Fage, 1918, p. 119, f. 87: post-larvae March-Sept., especially May (F.S.R.)

Family **Gasterosteidae**

SPINACHIA SPINACHIA (L.) [Day, 1880-4, I, p. 246, Pl. 68, 5, as *Gasterosteus*; Int. Coun. 374] 'Fifteen-spined

Stickleback'

Common in sound, Barn Pool, mouth of Cattewater, mouth of Yealm (M.V.L., G.A.S.)

Nests of weed and Polyzoa found beyond low-water mark in spring; eggs hatched May; young reared to adolescent; young stages, spring and early summer, adolescent stages summer and autumn (M.V.L.)

## Order HETEROSOMATA

Family **Bothidae**

ARNOGLOSSUS THORI Kyle [Kyle, 1913, p. 55, fig. 8; Int. Coun. 376]

Occasional specimens in trawl (E.F., G.A.S.): particularly on roughish ground near Eddystone and on Looe-Eddystone Grounds (P.G.C.)

Eggs and post-larval stages of *Arnoglossus* species are very common at Plymouth, but have not been separately distinguished (Kyle, 1913; Ehrenbaum, 1905; Petersen, 1909): post-larvae June-Nov., especially Sept. (F.S.R.)

ARNOGOLOSSUS LATERNA (Walbaum) [Kyle, 1913, p. 64, fig. 9; Int. Coun. 377] 'Scald-fish'

Common on all trawling grounds (E.F., G.A.S.)

ARNOGLOSSUS IMPERIALIS (Rafinesque) [Kyle, 1913, p. 79, f. 10; Int. Coun. 378]

Occasional specimens on outside trawling grounds (G.A.S.)

SCOPHTHALMUS MAXIMUS (L.) [Day, 1880-4, II, P. 11, Pl. 96, as *Rhombus*; Int. Coun. 380] 'Turbot'

Often plentiful during winter months (G.A.S.)

Eggs, June-Aug. (E.F.): young stages, Ehrenbaum, 1905, p. 194, f. 77: post-larvae, June-Sept., especially July (F.S.R.): late stages and early bottom stages in Sound during summer, O-group in Whitsand Bay (E.F.)

SCOPHTHALMUS RHOMBUS (L.) [Day, 1880-4, II, p. 14, Pl. 97, as *Rhombus laevis*; Int. Coun. 381] 'Brill'

Moderately common on outer trawling grounds at all seasons (E.F., G.A.S.)

## VERTEBRATA: PISCES

Eggs, May; young stages, Ehrenbaum, 1905, p. 198, f. 78: post-larvae, April-Sept., especially May (F.S.R.): metamorphosing forms may usually be taken in Sound and Cattewater during Aug. (E.F.)

LEPIDORHOMBUS WHIFF-IAGONIS (Walbaum) [Day, 1880-4, II, p. 21, Pl. 98, as *Arnoglossus megastoma*;

Int. Coun. 382] 'Megrim'

Not common (E.F., in 1931 edition): now, in 1957, not uncommon (G.A.S.)

PHYNORHOMBUS NORVEGICUS (Günther) [Günther, 1862, IV, p. 412; Couch, 1864, III, p. 175, Pl. 167, as

Rhombus; Int. Coun. 383] 'Norwegian Topknot'

Not uncommon on trawling grounds (E.F., G.A.S.)

Spawning time, March-June (R.S.C.): young stages, Ehbrenbaum, 1905, p. 210, f. 81: Petersen, 1909, p.

3, Pl. I, 13-19, as Zeugopterus: post-larvae, March-Aug., especially May (F.S.R.)

PHRYNORHOMBUS REGIUS (Bonnaterre) [Day, 1880-4, II, p. 17, Pl. 99, 1, as *Zeugopterus unimaculatus*; Int.

Coun. 384] 'Eckstrom's Topknot'

Occasionally taken on trawling grounds (P.G.C., G.A.S.)

Spawning time, April-June (R.S.C.): young stages, Ehrenbaum, 1905, p. 214, f. 82: Petersen, 1909, p. 3,

Pl. II, 20 and 21: post-larvae, May-July (F.S.R.)

ZEUGOPTERUS PUNCTATUS (Bloch) [Day, 1880-4, II, p. 18, PL. 100; Int. Coun. 385] 'Common Topknot'

Occasionally taken in trawl outside Breakwater (E.F., G.A.S.): small specimens not uncommon at Wembury at extreme low-water mark (P.G.C.)

Spawning period, Feb-May (R.S.C.): young stages Ehbrenbaum, 1905, p. 206, f. 80: Petersen, 1909, p. 3, Pl. I, 1-6: post-larvae, March-June, especially May (F.S.R.)

#### Family **Pleuronectidae**

LIMANDA LIMANDA (L.) [Day, 1880-4, II, p. 31, Pl. 104, as *Pleuronectes*; Int. Coun. 389] 'Dab'

Common on trawling grounds outside and in the estuaries (E.F., G.A.S.)

Eggs, Feb-April (E.F.): young stages, Ehrenbaum, 1905, p. 151, f. 67: post-larvae, March-July, especially May (F.S.R.)

PLEURONECTES PLATESSA L. [Day, 1880-4, II, p. 25, Pl. 101; Int. Coun. 390] 'Plaice'

Common inside and outside Breakwater; adolescents in estuaries (E.F., G.A.S.)

Eggs, Dec.-May (E.F.): spawned in aquarium 20.2.53 (G.R.F.): young stages, Ehrenbaum, 1905, p. 156,

f. 68: early post-larvae first recorded in Plymouth area in 1939, in small numbers in 2-meter stramin ring trawl (F.S.R.): metamorphosing post-larvae in estuaries (E.F.)

MICROSTOMUS KITT (Walbaum) [Day, 1880-4, II, p. 28, Pl. 102, as *Pleuronectes microcephalus*; Int. Coun.

391] 'Lemon Sole': 'Smear Dab'; 'Merry Sole'

Common on trawling grounds (E.F., G.A.S.): spawned in aquarium 20.10.52 (D.P.W.)

## VERTEBRATA: PISCES

Eggs, Feb-April (E.F.): young stages, Ehrenbaum, 1905, p. 166, f. 70: Clark, 1920, p. 195, f. 2: post-larvae, March-July, especially May (F.S.R.)

GLYPTOCEPHALUS CYNOGLOSSUS (L.) [Day, 1880-4, II, p. 30, Pl. 103, as *Pleuronectes*; Int. Coun. 392]

‘Witch’

Rare (E.F., G.A.S.): one from Rame Mud, 30.6.52, another 28.6.56 (G.A.S.)

PLATICHTHYS FLESUS (L.) [Day, 1880-4, II, p. 33, Pl. 105, as *Pleuronectes*; Int. Coun. 393] ‘Flounder’; ‘Fluke’

Common in estuaries, and in the sea during spawning season, particularly in Rame Mud area (E.F., G.A.S.). For movements, etc. see Hartley 1940 and 1947.

Eggs, Feb.-April (E.F.): young stages, Ehrenbaum, 1905, p. 161, f. 69: post-larvae, March-June, especially April (F.S.R.)

Family **Soleidae**

QUENSELIA AZEVIA (Capello) [*Chabanaud*, 1933, p. 76; Int. Coun. 401]

One in otter trawl near Eddystone, 10.7.53. Retained in British Museum (Nat. Hist.) (G.A.S.)

SOLEA SOLEA (L.) [Day, 1880-4, II, p. 39, Pl. 106, as *S. vulgaris*; Int. Coun. 395] ‘Sole’; ‘Dover Sole’  
Frequently taken in trawl in small numbers (G.A.S.)

Eggs, Feb.-June (E.F.): young stages Ehrenbaum, 1905, p. 138, f. 63: post-larvae, March-June, especially April (F.S.R.): adolescent stages in estuaries (E.F.)

SOLEA LASCARIS (Risso) [Day, 1880-4, II, p. 42, Pl. 107; Int. Coun. 396] ‘Sand Sole’

Occasionally taken on trawling grounds (E.F., G.A.S.)

Spawning period, June-Aug. (R.S.C.): young stages, Ehrenbaum, 1905, p. 149, f. 66: Clark, 1914, p.

365, f. 5-11: post-larvae, July-Oct., not common (R.S.C., F.S.R.)

SOLEA VARIEGATA (Fleming) [Day, 1880-4, II, p.43, Pl. 108, 1; Int. Coun. 397] ‘Thickback Sole’; ‘Variegated

Sole’

Not uncommon on most trawling grounds (E.F., G.A.S.)

Eggs, Feb.-July (E.F.): young stages, Ehrenbaum, 1905, p. 143, f. 64: Petersen, 1909, p. 13, Pl. II, f. 35-

37: Clark, 1920, p. 197, f. 35: post-larvae, March-Aug., especially May (F.S.R.)

BUGLOSSIDIUM LUTEUM (Risso) [Day, 1880-4, II, p. 44, Pl. 108, 2, as *Solea lutea*; Int. Coun. 398]

‘Solenette’

Not uncommon on some trawling grounds (E.F., G.A.S.)

Eggs, March-July (E.F.): young stages, Ehrenbaum, 1905, p. 145, f. 65: post-larvae, July (F.S.R.)

## VERTEBRATA: PISCES

## Order DISCPCEPHALI

Family **Echeneididae**

REMORA REMORA (L.) [Day, 1880-4, I, p. 108, Pl. 39, 2, as Echeneis; Int. Coun. 403] 'Common Remora'

Day (*ibid.*, p. 109) records a specimen from a Blue Shark taken off Mevissey in 1867. Attached to Blue Sharks, *Carcharinus glaucus*, caught by anglers near the Eddystone: one, 4 in., towards tail of 110 lb. Shark, 4.7.55; one on 132½ lb. shark, 21.7.55; three on 180 lb. Shark, one on tail, two on left-hand side near mouth, 21.7.55 (P.G.C.)

## Order PLECTOGNATHI

Family **Baslistiae**

BALSITES CAPRISCUS Gmelin [Day, 1880-4, II, p. 268, Pl. 146; Int. Coun. 404] 'Trigger-fish'; 'File-fish'

One (39 cm.) taken from a lobster-pot at Hallsands, South Devon, 18.8.28; the fish presented a curious appearance on account of a "hood" of barnacles attached to the first dorsal spine; the barnacles were of three species, *Conchoderma virgatum*, *Lepas anatifera* and *Lepas hilli* (E.F.): one caught in crab-pot in Cawsand Bay, 3.10.50; brought to aquarium and kept alive for four months in large tank; also several other captures at other times (G.A.S.)

Family **Tetraodontidae**

LAGOCEPHALUS LAGOCEPHALUS (L.) [Day, 1880-4, II, p. 270, Pl. 147, as Tetrodon; Int. Coun. 406] 'Globe-fish'

There are no records from the immediate vicinity of Plymouth. Couch reports one specimen from near Polperro but gives no date. There are two recent records from the Mounts Bay area—one taken alive in shallow water at Marazion, 15.8.48, and one, also alive, in Mousehole Harbour, 21.10.49 (G.A.S.)

Family **Molidae**

MOLA MOLA (L.) [Day, 1880-4, II, p. 272, Pl. 148, as Orthogoriscus; Int. Coun. 408] 'Sun-fish'

One off Batten Pier, 12.6.20 (R.S.C.): one stranded at Millbrook, summer 1919 (R.S.C.): one small specimen caught off Yealm, 13.8.47; another off Ringmore, Bigbury Bay, 24.8.47 (E.F.): one, 73 cm., off Plymouth, 28.7.55 (A.D.M.)

RANZANIA TRUNCATA (Retzius) [Day, 1880-4, II, p. 276, Pl. 149, as *Orthogoriscus truncates*] 'Truncated Sun-fish'

Day quotes Clogg, who reports a specimen 25 in. long from Looe Harbour, 23.8.1883: specimen seen off Teignmouth, 24 and 25.6.36 (E.F.)

## VERTEBRATA: PISCES

## Order XENOPTERYGII

Family **Gobiesocidae**

LEPADOGASTER LEPADOGASTER (Bonnaterre) [*Day*, 1880-4, I, p. 189, Pl. 57, 1 as *L. gouanii*; Int. Coun.

409] 'Cornish Sucker'

Common between tide-marks (E.F., G.A.S.)

Spawning time, spring and early summer; eggs laid on under surface of stones between tide-marks

(E.F.): young stages, Ehrenbaum, 1905, p. 123, f. 56: post-larvae, July-Aug. (R.S.C.)

LEPADOGASTER CANDOLLI Risso [*Day*, 1880-4, I, p. 191, Pl. 57, 2, as *L. decandolii*; Int. Coun. 410]

'Connemara Sucker'

Rare (E.F., G.A.S.); one, Elbury Cove, Torbay, at extreme low-water mark, 27.2.52 (G.R.F.)

Young stages, Ehrenbaum, 1905, p. 122, f. 55: post-larvae, July-Aug. (R.S.C.)

LEPADOGASTER BIMACULATUS (Bonnaterre) [*Day*, 1880-4, I, p. 192, Pl. 57, 3; *Guitel*, 1904, II, p. 395, Pl.

15, 1-6; Int. Coun. 411] 'Two-spot Sucker'

Not uncommon offshore (E.F., G.A.S.)

Spawning time, May-Aug. (R.S.C.): young stages not described: post-larvae, March-Sept., especially

June (F.S.R.)

LEPADOASTER COUCHI Kent, 1883, p. 56 [*Guitel*, 1904, II, p. 403, Pl. 15, 7-14, as *L. microcephalus*; Int.

Coun. 412] 'Couch's Sucker'

Fairly common near low-water mark and just below, not off-shore (P.G.C.)

Spawning time, late spring and summer; late post-larvae and juveniles common at low-tide among

bushy weeds, especially *Cytoseira*, summer and autumn (P.G.C.): young stages, Ehrenbaum, 1905, p. 120, f. 53, as *L. bimaculatus*.

Family **Lophiidae**

LOPHIUS PISCATORIUS L. [*Day*, 1880-4, I, p. 73, Pl. 29; Int. Coun. 413] 'Angler-fish'; 'Fishing-frog'; occasionally 'Monk-fish'

Common on trawling grounds, outside Sound (E.F., G.A.S.)

Eggs in long ribbons, occasionally floating inside and outside Sound, June, July (Lebour, 1925a, p. 721.

f. 1): young stages, Ehrenbaum, 1905, p. 46, f. 19 and 1909, p. 303, f. 108b, as "Macrurus-Larve": Allen, 1917, p. 249, f. 8; Lebour, 1919a, p. 12, f. 1; 1925a, f. 2-4: post-larvae, March-Aug., especially June (F.S.R.)