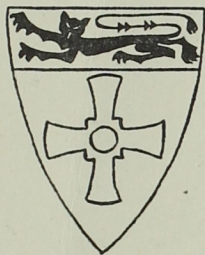


THE UNIVERSITY OF NEWCASTLE UPON TYNE
DEPARTMENT OF ZOOLOGY



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The Marine Fauna of the Cullercoats District

5

ARTHROPODA 3c: CRUSTACEA; COPEPODA

by

Jo Bossanyi and H. O. Bull

Report of the Dove Marine Laboratory

Third Series No. 17

March, 1971

PRICE 7/6

The Marine Fauna of the Cullercoats District

EDITOR'S FOREWORD

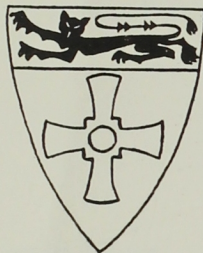
It is intended to devote this and the next succeeding numbers of this Report to the publication (at intervals) of the records of the marine fauna of the Cullercoats district. These compilations are the work of past or present members of the laboratory staff or of others closely associated with the work of the laboratory. Each number will deal with one or more phyla or parts of phyla and will be issued when ready regardless of classificatory sequence. Full uniformity of treatment is unlikely, but the general format will remain the same. The area treated is roughly from Berwick to Redcar—Latitude $55^{\circ}47'N$ to $54^{\circ}37'N$ —extending seawards to $0^{\circ}0'$ Longitude, but it is recognised that the coverage is at present incomplete.

R. B. CLARK.

The following have appeared:

1. Porifera. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **13**; 22p. Dec. 1963.
- 2a. Arthropoda 1: Diplopoda: Chilopoda. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **14**; pp. 5-8. Nov. 1964.
- 2b. Arthropoda 2a: Insecta; Apterygota. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **14**; pp. 9-16. Nov. 1964.
- 2c. Arthropoda 3e: Crustacea; Euphausiacea. J. Bossanyi. Rep.Dove Mar. Lab. 3rd ser. **14**; pp. 17-24. Nov. 1964.
- 2d. Chordata 3: Mammalia; Cetacea. W. Stephenson and H. O. Bull. Rep. Dove Mar.Lab. 3rd ser. **14**; pp. 25-32. Nov. 1964.
- 3a. Entoprocta. D. Eggleston and H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **15**; pp. 7-10. Jul. 1966.
- 3b. Priapulida, Echiurida, Sipunculida. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **15**; pp. 15-16. Jul. 1966.
- 3c. Chaetognatha. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **15**; pp. 19-20. Jul. 1966.
- 3d. Echinodermata. J. B. Buchanan. Rep.Dove Mar.Lab. 3rd ser. **15**; pp. 23-38. Jul. 1966.
- 4a. Arthropoda 2b: Insecta; Pterygota. H. O. Bull. Rep.Dove Mar.Lab. 3rd ser. **16**; pp. 7-29. Jul. 1967.
- 4b. Arthropoda 3a: Crustacea; Branchiopoda. J. Bossanyi. Rep.Dove Mar. Lab. 3rd ser. **16**; pp. 33-38. Jul. 1967.
- 4c. Arthropoda 3b: Crustacea; Ostracoda. J. Bossanyi. Rep.Dove Mar.Lab. 3rd ser. **16**; pp. 41-67. Jul. 1967.

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Univ. Newcastle upon Tyne
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3rd Ser. 17; pp. 00 to 00
1970

Sub-Class COPEPODA Milne-Edwards

Order CALANOIDA G. O. Sars

CALANIDAE G. O. Sars

Calanus finmarchicus (GUNNER)*

Sars 1901, pp. 9-11, pls. 1-3; Rees 1949, pp. 219-222, fig. 1; Harding 1963; Matthews 1966; Manwell *et al* 1967.

All stages, but females predominating, in numerous plankton-net hauls off Blyth and Cullercoats in most months of the years 1949-53; males few, but late copepodites and adult females abundant in bottom sledge-net hauls in daytime, 5-15 fms., spring-summer 1949-52 (J.B.): Adult males common Dec. 1964, and Jan. 1965, not seen in other months of 1965; adult females also common Feb. and Mar., otherwise same as males; stage 5 rare in Apr., Jul., and Oct., common in all other months; stage 4 rare in Dec.-Apr. and in Jul., common in other months; earlier stages (†) abundant Apr.-Oct., 1964-66 (F.E. and J.C.R.).

Calanus helgolandicus (CLAUS)*

Sars 1901, pp. 11-12, pl. 4; Rees 1949; Harding 1963; Matthews 1966; Manwell *et al* 1967.

Not seen in area during the years 1949-53 (J.B.): Adult males, females, and stage 5, common in plankton 20 fms., 5 miles E of Blyth, Nov.-Mar.; earlier stages (†) abundant Apr.-Oct.; 1964-66 (F.E. and J.C.R.).

EUCALANIDAE G. O. Sars

Rhincalanus nasutus GIESBRECHT

Sars 1901, p. 15, pls. 6, 7; Rose 1933, pp. 70, 71, fig. 23; Farran 1951, Sheet 34, p. 3, figs. 4a, c, d, f.

Present in catches by R.V. "Sir Lancelot" at approx. 55°48'N, 1°12'W, in Nov. 1947 (Fraser, 1952).

* Starting with Ferguson 1860 both species have undoubtedly been found and recorded under one or both names or earlier synonyms. But when this present list was first compiled (1953) there was still uncertainty about these older determinations. The present records are therefore limited to those made after 1949 in which year Rees 1949 made their separation possible.

(†) The two species are not differentiated in stages 1-3.

PARACALANIDAE G. O. Sars

Paracalanus parvus (CLAUS)

Sars 1901, pp. 17, 18, pls. 8, 9; Rose 1933, pp. 73, 74, fig. 25; Farran 1951, Sheet 35, p. 3, figs. 1a-g.

Numerous in plankton-net hauls, indicator samples, and herring stomachs, between lat. 54°32'N to 55°40'N and long. West of 0°, Mar.-Oct. 1924-34 (Hardy 1924, 1936, Savage 1926, 1931, 1937, Wimpenny 1933, Lucas 1936, Cheng 1941).

Sporadic in plankton samples in summer months, Blyth and Cullercoats, 1948-52; also present in bottom sledge-net samples 14 fms. off Blyth, summer 1950 (J.B.); Moderate numbers of juveniles in each month of the year, adults in Jun., Sep., and Oct., in plankton, 20 fms. 5 miles E of Blyth, 1964-5 (F.E.).

PSEUDOCALANIDAE G. O. Sars

Microcalanus pusillus G. O. Sars

Sars 1903a, pp. 156-7, suppl. pls. 2, 3, fig. 1; Rose 1933, p. 80, fig. 36; Farran 1951, Sheet 37, pp. 3, 4, figs. 4a-g.

Occasionally in moderate numbers in bottom sledge-net hauls in 5 and 14 fms. off Blyth, spring-summer 1950-2; also in townets in same locality, summer 1949 and Apr. 1952, mostly females (J.B.).

Pseudocalanus elongatus (BOECK)

Sars 1901, pp. 20, 21, pls. 10, 11; Rose 1933, p. 79, fig. 34; Farran 1951, Sheet 37, p. 3, figs. 1a-g.

First noted by Brady in 1862 (Brady 1865a, b, as *Calanus clausii*) and since found to be abundant in pools and the open sea in the area throughout the year (Brady 1872, 1902b, as *Clausia e.*, Brady 1878, 1900a, c, Norman & Brady 1909, Jorgensen 1923, 1924a, Meek 1899, 1904, Meek & Storrow 1912, Savage 1926, Savage & Wimpenny 1936, Storrow 1912a, 1913, Wimpenny 1933); in herring stomachs (Hardy 1924, Savage 1931, 1937); in indicator samples (Cheng 1941, Hardy 1924, 1925, 1936, Lucas 1936, Savage 1931, 1937); and in the estuaries of the R. Tees (Alexander *et al* 1935), the R. Tyne (Meek *et al* 1912), and the R. Coquet (Jorgensen 1924b); and in the saltwater pond, Amble (Meek 1926, 1934).

Common in plankton off St. Mary's and Cullercoats, 1947 (W.S.); Common in numerous plankton samples, summer, Blyth and Cullercoats, 1948-52 (J.B.); abundant, females predominating, in bottom sledge-net,

5 and 14 fms. off Blyth, spring and summer 1949-52 (J.B.): Males, females, and all stages, common throughout the year, abundant May, Jul., in plankton, 20 fms. E of Blyth, 1964-5 (F.E.).

AETIDIIDAE G. O. Sars

Bradyidius armatus GIESBRECHT

Sars 1902, pp. 32, 33, pls. 19, 20: Rose 1933, p. 92, fig. 55 (in both as *Undinopsis bradyi*): Vervoort 1952, Sheet 43, p. 3, fig. 1a.

One adult female in bottom sledge-net, 14 fms. NE of Sow Buoy, Blyth, summer 1950 (J.B.).

PHAENNIDAE G. O. Sars

Phaenna spinifera CLAUS

Giesbrecht 1892, pp. 293-8, pl. 5, fig. 3; pl. 12, figs. 1-8, 35, 37; pl. 37, figs. 17-21: Rose 1933, p. 126, fig. 113.

"Common 50 miles E off Tynemouth, summer 1862; scarce inside Fern Is." (Jul. 1863) (Brady 1864b).

CENTROPAGIDAE G. O. Sars

Centropages hamatus (LILLJEBORG)

Sars 1902, pp. 76-8, pl. 52: Gurney 1931, pp. 89-96, figs. 100-116: Rose 1933, p. 185, fig. 213: Farran 1948, Sheet 11, p. 3, fig. 3.

First noted by Norman, 1862 (Norman 1863, as *Ichthyophorba h.*) and since found to be very common in the plankton at all depths in the open sea, estuaries, and pools throughout the area (Brady 1864b, 1865a, b, as *Ichthyophorba h.* and 1864b as *I. angustata*, Brady 1872, 1878, 1900a, 1902b, Brady & Robertson 1876, Meek 1899, 1904, Meek & Storrow 1913, Norman & Brady 1909, Savage 1926, Storrow 1913): In indicator samples (Hardy 1925, 1926, Lucas 1936, Cheng 1941): In herring stomachs (Hardy 1924, Savage 1931, 1937): In estuaries of R. Tees (Alexander *et al* 1935), R. Tyne (Meek *et al* 1912), R. Coquet (Meek 1923); and in the saltwater pond, Amble (Meek 1934).

Fairly common in midwater plankton 8 fms. 1 mile E of Cullercoats May 1947 (W.S.): In plankton off Blyth and Cullercoats, summers 1948-52; abundant in bottom sledge-net 5 and 14 fms. off Blyth spring-summer 1949-52 (J.B.).

Centropages typicus KRØYER

Sars 1902, pp. 75, 6, pls. 49-51: Rose 1933, p. 185, fig. 212: Farran 1948, Sheet 11, p. 3, fig. 1.

First noted 50 miles E of Tynemouth 1862 (Brady 1864b as *Ichthyophorba denticornis*) and since found to have similar distribution to *C. hamatus* but in fewer numbers and not in the Amble pond or in estuaries.

Adults, both sexes, dominant in midnight surface plankton, 30 miles E of R. Tyne 30 Aug. 1946 (W.S.): Occasionally, mostly adults, in plankton off Blyth and Cullercoats, summer, 1948-52; sparse in two hauls of bottom sledge-net, females only, daylight, 5 fms. Blyth Bay, 12 Jun. 1950 (J.B.).

Isias clavipes BOECK

Sars 1902, pp. 79, 80, pls. 53, 54: Rose 1933, p. 189, fig. 220.

One, in saltwater pond Amble, 1905 (Brady 1907, Meek 1926, 1934): "Rather plentifully" in tow-net collections, Northumberland and Durham, summer 1905 (Norman & Brady 1909): Present in 1 out of 11 surface samples and the same in bottom samples in depths to 32 fms. Northumberland coast, Aug.-Sep. 1911 (Meek & Storrow 1912): Fairly numerous in net catches at several stations in area approx. 55°0' to 55°30' N. and from coast to 0° long., 8-14 Jul. 1922 (Savage 1926): Sporadic or sparse in herring stomachs from Shields fishery area, Jun.-Sep. 1926, 1930, 1934 (Savage 1931, 1937).

TEMORIDAE G. O. Sars

Eurytemora affinis (POPPE)

Gurney 1931, pp. 202-214, figs. 285-306: Rose 1933, p. 173, fig. 196: Harding & Smith 1960, p. 13, figs. 5c, d.

In pools at Hartlepool Slake (Brady 1892); in brackish pools at Seaton Sluice, summer 1894 (Brady 1896): Brackish water ditches, Hartlepool (Norman & Brady 1909): In surface nettings, estuary of R. Tyne, from Smith's Dock to Ouseburn, abundant at latter place, 20 Oct. 1911 (Meek *et al* 1912).

Eurytemora hirundoides (NORDQUIST)

Sars 1902, pp. 102-3, pl. 69: Rose 1933, pp. 173-4, fig. 197.

First recorded for the district in upper reaches of the R. Tyne estuary, 2 May 1922 (Meek 1923): Since found to be widespread and abundant

in all stages in middle reaches of the estuaries of the R. Tees and R. Tyne, in the areas of heaviest organic pollution and most severe oxygen depletion, and at all depths (Alexander *et al* 1935, Bull 1931, Jorgensen 1927-8; J. B. 27 Apr. 1951, and on many occasions subsequently): Female with egg-sacs in mud in laboratory aquarium channel, 3 Jun. 1947 (W.S.).

Eurytemora velox (LILLJEBORG)

Sars 1902, pp. 100-1, pls. 67, 68; Gurney 1931, pp. 194-202, figs. 248-284.

First noted by Brady (1864a) in brackish pools at Hylton Dene, and later commonly or abundantly at Hartlepool, Sunderland, Alnmouth, and elsewhere, in similar situations, and in upper reaches of estuary of R. Tyne (Brady 1865a, b, 1869, 1872, 1878 as *Temora* v.; 1892, 1900b as *E. clausi*; Norman & Brady 1909, Meek *et al* 1912, Meek 1923); common in saltmarsh pools, Seaton Sluice (Sutcliffe 1959, 1961).

Temora longicornis (O. F. MÜLLER)

Sars 1902, p. 97, pls. 65, 66.

Found abundantly 50 miles E of Tynemouth, summer 1862 (Brady 1864b), and since then generally regarded as the most abundant marine copepod of the area, being taken in all kinds of nets from surface to bottom and from close inshore to outer limits of area (Brady 1864b, 1865a, b, as *T. finmarchica*; 1872, 1878, Brady & Robertson 1876, Meek 1899, Brady 1900a, c, 1902a, b, Meek 1904, Meek & Storrow 1912, Storrow 1913, Jorgensen 1923, 1924a, Savage 1926, 1931, Wimpenny 1929, 1933: at roots of *Laminaria*, Holy Is. (Brady 1904): in estuaries of R. Tees (Alexander *et al* 1935), R. Tyne (Meek *et al* 1912), R. Coquet (Meek 1923, Jorgensen 1924b): saltwater pond Amble (Brady 1907, Meek 1926, 1934): in indicator samples (Hardy 1925, 1936, Lucas 1936, Cheng 1941); and in herring stomachs (Hardy 1924, Savage 1937).

Very abundant in numerous plankton hauls off Blyth and Cullercoats summer 1947-1952 (W.S.; J.B.): adults of both sexes and late copepodites abundant in bottom sledge-nets, 5 and 14 fms.; fewer at night, spring-summer 1949-52 (J.B.): Few in winter 1964-5, common spring-summer, 20 fms. 5 miles E of Blyth (F.E.).

Metridia lucens BOECK

METRIDIIDAE G. O. Sars

Sars 1902, pp. 113, 114, pl. 77: Rose 1933, p. 178, fig. 203: Farran 1948, Sheet 14, p. 3, fig. 6a, b, c.

Off Seahouses and 3 miles off Ryhope (Norman & Brady 1909); 10, in plankton, estuary of R. Coquet, 18 Sep. 1923 (Jorgensen 1924b, as *Metridia armata**); sparse in herring stomachs from Shields fishery area in years 1930-4, May to Sep. (Savage 1937).

Sparse in two Hensen net catches hauled vertically 40 miles NE R. Tyne early morning, 30 May 1949 (J.B.).

Pseudocyclops crassiremis BRADY

PSEUDOCYCLOPIDAE G. O. Sars

Sars 1919, pp. 14-5, pls. 8, 9: Rose 1933, p. 248, fig. 313.

One, dredged, 20-30 fms. off Seaham Harbour (Brady 1872). One male in large aquarium tank at laboratory 12 Nov. 1954 (J.B.).

Candacia armata BOECK

CANDACIIDAE Giesbrecht

Sars 1902, pp. 135-7, pl. 91: Rose 1933, p. 253, fig. 319: Farran 1948, Sheet 13, p. 3, fig. 1a-d.

One, in plankton, 1½ miles NE Boulmer Buoy 18 Sep. 1921 (Jorgensen 1923).

Several, in plankton haul at 10 fms. 4 miles E Blyth 12 Oct. 1948 both sexes (J.B.).

Anomalocera patersoni TEMPLETON

PONTELLIDAE G. O. Sars

Sars 1902, pp. 139-41, pls. 92-4: Rose 1933, p. 257, fig. 325

First recorded 50 miles E Tynemouth, Aug. 1862 and since found to be a common and regular member of the plankton throughout the area at all depths (Norman 1863, Brady 1864b, 1865b, all as *Irenaeus* p.; Brady 1872, 1900a, c, 1902b, Meek 1899, Meek & Storrow 1912, Norman & Brady 1909, Savage 1926, Storrow 1913): in herring stomachs (Hardy 1924, Savage 1937); in indicator samples (Cheng 1941); and in estuary of R. Tyne (Meek *et al* 1912).

Immense thick swarm, 50 yds. diam. $\frac{3}{4}$ males, $\frac{1}{4}$ females, no young stages, on surface, at noon, met by M.V. "Pandalus II" 1 mile E Sow and Pigs Buoy, Blyth, 23 May 1952; a few females in several townet hauls off Blyth, NE Sow and Pigs Buoy, Jul. 1952 (J.B.); great numbers, all males, making water green, rock pools, Amble, 14 May 1953 (J.B.).

*A probable, but doubtful, interpretation of this record (J.B.).

PARAPONTELLIDAE G. O. Sars

Parapontella brevicornis (LUBBOCK)

Sars 1903a, pp. 145-7, pls. 97, 98; Rose 1933, p. 266, fig. 336.

Dredged in 15-30 fms. off Seaham, 1869 (Brady 1870 as *Pontellina b.*): Amongst weeds in tide pools near Ryhope, Aug. 1871 (Brady 1872, 1878, as *Pontella b.*): In townet, seldom in great abundance (Brady 1900a); littoral, Alnmouth, Aug.-Sep. 1899 (Brady 1900b): At times very abundant in open sea generally not far from shore; also not infrequently but in smaller number between tidemarks; Northumberland and Durham (Norman & Brady 1909).

A few adult females and late copepodites in two bottom sledge-net hauls 5 fms. Blyth Bay, summer 1950 (J.B.).

ACARTIIDAE G. O. Sars

Acartia clausi GIESBRECHT

Sars 1903a, pp. 150-1, pl. 101; Gurney 1931, pp. 220-7, figs. 309-322; Farran 1948, Sheet 12, figs. 1a, b, c.

*For pre-1900 records see footnote: First noted under this name from brackish water at Alnmouth (all infested with a parasite—immature trematode) (Brady 1900b); thereafter as a common member of the plankton and bottom samples (Brady 1902b, Meek 1904, Meek & Storrow 1912, Norman & Brady 1909, Savage 1926, Storrow 1913, Wimpenny 1933; W.S. 1947: J.B. 1948-52): of herring stomachs in the Shields fishery area (Hardy 1924, Savage 1937); of plankton indicator samples (Hardy 1925, 1936, Lucas 1936, Cheng 1941): and in the estuaries of the R. Tees (Alexander *et al*), the R. Tyne (Meek *et al* 1912), and R. Coquet (Jorgensen 1924b). Present all the year, 5 miles offshore 1964-5 (F.E.).

Acartia discaudata (GIESBRECHT)

Sars 1903a, pp. 152-3, pl. 102; Gurney 1931, pp. 228-30, figs. 323-6; Farran 1948, Sheet 12, p. 3, figs. 3a, b, c.

One adult female, bottom sledge-net, 5 fms., Blyth Bay, 12 Jun. 1950 (J.B.).

*In the records before about 1900, confusion existed between the two species *A. clausi* and *A. longiremis*. Although always up till then recorded by Brady as *Dias = Acartia longiremis* Lilljeborg and hence included in this list under that name, it is almost certain that both species occurred on each occasion, probably with *A. clausi* the more abundant. This probably applies also to Meek 1899, and Brady 1900a, c, 1902a. (J.B.).

Acartia longiremis (LILLJEBORG)

Sars 1903a, pp.149-50, pls.99,100: Rose 1933, p.271, fig.339: Farran 1948, Sheet 12, p.3, figs.2a,b,c.

*For pre-1900 records see footnote: first noted as common 50 miles E and scarce at 100 miles E R. Tyne summer 1862, and since recorded frequently as an abundant member of the plankton of the open sea and shore, and of the dredge, throughout the area, but less abundant than *A. clausi* (Brady 1864b, 1865a, b, 1870, 1872, 1878, 1880a, b, Brady & Robertson 1876, all as *Dias l.*; Meek 1899, Brady 1900a, c, 1902a, Norman & Brady 1909, Meek & Storrow 1912, Storrow 1912a, 1913, Meek 1923, Savage 1926; and, spring and summer, Blyth and Cullercoats, 1948-1952 (J.B.)): in herring stomachs from Shields fishery area (Hardy 1924, Savage 1937): in plankton indicator samples (Hardy 1925, 1936, Lucas 1936, Cheng 1941): in estuaries of R. Tees (Alexander *et al* 1935) and R. Coquet (Jorgensen 1924b): In Amble saltwater pond (Brady 1907, Meek, 1926, 1934); and in brackish water (Brady 1872, 1878, 1880a, b). Not taken in winter, 5 miles offshore 1964-5 (F.E.).

Order MONSTRILLOIDA G. O. Sars

MONSTRILLIDAE Giesbrecht

Monstrilla grandis GIESBRECHT

Giesbrecht 1892, pp.588-9, pl.46, figs.2,8,11,17,19,24,25,35,39: Rose 1933, pp.344-5, fig.444.

One, male, in bottom net, Cullercoats, Jul. 1900 (Brady 1902):
One, Seaton Carew, May 1886 (Norman & Brady 1909).

Monstrilla longicornis THOMPSON

Sars 1921b, pp.11-13, pls.2,3.

2, males, in bottom sledge-net haul over mud in 14 fms., Cambois Bay NE Sow Buoy, Jul. 1952 (J.B.).

Cymbasoma longispinosum (BOURNE)

Sars 1921b, pp.24-25, pl.13, figs.1-4,10.

1, in plankton net, surface, Cullercoats, 27 Jul. 1936 (H.O.B.).

*In the records before about 1900, confusion existed between the two species *A. clausi* and *A. longiremis*. Although always up till then recorded by Brady as *Dias* = *Acartia longiremis* Lilljeborg and hence included in this list under that name, it is almost certain that both species occurred on each occasion, probably with *A. clausi* the more abundant. This probably applies also to Meek 1899, and Brady 1900a, c, 1902a. (J.B.).

Monstrilopsis dubia (SCOTT)

Sars 1921b, pp. 26-7, pl. 14.

One male and one female in offshore plankton $4\frac{1}{2}$ miles ENE $\frac{1}{2}$ E Newbiggin, 7 Aug. 1923 (Jorgensen 1924a); One, plankton net, 20 m. 8 miles SE by S of Coquet Is., 24 Apr. 1928 (Bull 1929).

One, male, in bottom sledge-net haul over mud in 14 fms., Cambois Bay NE Sow Buoy, Jul. 1952; one, female, in townetting about 2 miles E St. Mary's Lighthouse, 22 Mar. 1954 (J.B.).

Order CYCLOPOIDA G. O. Sars

Oithona nana GIESBRECHT

OITHONIDAE G. O. Sars

Giesbrecht 1892, p. 541, pl. 4, fig. 8; pl. 34, figs. 10, 11, 20, 24, 26, 34, 35, 42; pl. 44, figs. 2, 4, 6; Rose 1933, pp. 281-2, fig. 357.

Not very numerous in townettings, Cambois Bay NE Sow Buoy, Blyth, Apr. 1952 (J.B.).

Oithona similis CLAUS

Sars 1913, pp. 8-9, 207, pl. 3 (as *O. helgolandicus*): Pesta 1928, pp. 75-6, fig. 57; Rose 1933, pp. 280-1, fig. 355.

First recorded by Brady in surface tow-net Aug. 1871 (Brady 1872, as *O. helgolandicus*), and since recorded by numerous workers as common or abundant chiefly in offshore surface tow-nets, first as *O. spinifrons* (Brady 1878, 1900a, 1900c, 1902, Meek 1899, 1904) then as *O. similis* (Norman & Brady 1909, Storrow 1912a, 1913, Jorgensen 1923, 1924a, Savage 1926, Wimpenny 1933, Cheng 1941); in bottom nets or dredge (Brady 1900c, Meek & Storrow 1912); in estuaries of R. Tees (Alexander *et al* 1935 (as *O. helgolandicus*)), R. Tyne (Meek *et al* 1912), and R. Coquet (Meek 1923, Jorgensen 1924b); in herring stomachs off N. Shields (Savage 1923); and in plankton indicator samples (Hardy 1936, Lucas 1936 as "*Oithona*").*

All stages sometimes abundant in townettings off Blyth, spring and autumn 1949-1952; common in some bottom sledge-net hauls in 5 and 14 fms. off Blyth, summer 1950-52, (J.B.): Present all the year, 5 miles offshore, 1964-5 (F.E.).

*It is possible and in some cases probable that some of the above records refer to *Oithona nana* Giesbrecht or to both species, between which there was a certain amount of confusion. It is however likely that in most cases the form recorded was in fact *O. similis*. Records where there is room for some doubt on this score are: Brady 1872, 1878-80, Alexander *et al* 1935, Hardy 1936 and Lucas 1936. In Hardy 1936 it is probable that both species were found. In all other records, the species is *O. similis* as far as the evidence goes. (J.B.).

Cyclopina gracilis CLAUS

Sars 1913, pp. 11-12, pl. 4; Pesta 1928, pp. 77-9, figs. 59, 60.

One female among fuci in pools near L.W.M., Alnmouth, Aug.-Sep. 1899 (Brady 1900b as *Cyclops salinus*): On roots of *Laminaria*, Holy Is. (Brady 1904 as *Cyclops salinus*): In saltwater pond, Amble on 16 Nov. 1905, 22 Aug. 1922, 12 Jul. and 6 Sep. 1924, 21 Nov. 1930 and 18 Jul. 1929, and plenty on 28 May 1931 (Meek 1926, 1934).

Females with egg sacs in algae and in mud, Cullercoats aquarium, May, Jun. and Dec. 1947 (W.S.): One female with egg sacs in mud from under large tanks, Cullercoats aquarium, 5 Nov. 1948 (J.B.).

Cyclopina littoralis BRADY*

Sars 1921a, pp. 104-5, pl. 69, fig. 3.

Amongst weeds in tidal pools near Whitley and Ryhope, scarce (Brady 1872 as *Cyclops l.*; Brady 1878): Littoral, Alnmouth, Aug.-Sep. 1899 (Brady 1900b).

One, male, in bottom netting over sand in 9 fms. $\frac{3}{4}$ mile due E of Cullercoats, 21 Jun. 1947; also one female with egg sacs (W.S. as *C. longicornis* Boeck var. *littoralis* Brady).

Cyclopina longicornis BOECK*

Sars 1913, pp. 12-14, pl. 5.

Dredged, 45 fms. 20 miles E of Sunderland, 1874 (Brady & Robertson 1876): dredged, Northumberland and Durham, 4-45 fms. (Brady 1878): dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905) (all as *C. littoralis*).

Cyclopina norvegica BOECK

Sars 1915, pp. 102-3, pl. 69, fig. 1; Pesta 1928, p. 79, fig. 61.

One female in large aquarium tank swimming over mud on 12 Mar. 1954 (J.B.).

* The identity of these two species is confused: the records are separated here on the basis of habitat.

Cyclopina ovalis BRADY

Brady 1880a, pp.181-2, figs.1-2.

One, imperfect, in surface net off Sunderland (Brady 1872 as *Cyclops o. n.sp.*, 1880a).

Pterinopsyllus insignis BRADY

One, dredged, 27 fms., sandy bottom, 6 miles off Hawthorn, 1874 (Brady & Robertson 1876, Brady 1878 as *Lophophorus i.*).

CYCLOPIDAE G. O. Sars

Cyclops bicuspidatus CLAUS

Sars 1913, pp.47-8, pl.27 (as *C.pulchellus*): Pesta 1928, pp.98-9, fig.79.

In pools of brackish water near edge of slake, Hartlepool, Jun. 1866 (Brady 1869, 1872 as *C.lubbockii*).

Cyclops viridis (JURINE)

Sars 1913, pp.40-1, pl.22, as *C.vulgaris*: Pesta 1928, pp.96-8, fig.78.

"Sometimes even in brackish pools. N.D." (Norman & Brady 1909).

Euryte longicauda PHILIPPI

Sars 1913, pp.24-6, pl.12.

Single specimen among fuci in pools near L.W.M. between Ryhope and Sunderland, autumn 1871; on the fronds of *Laminaria saccharina* and other fuci in littoral situations and beyond L.W.M., Durham coast (Brady 1872, as *Thorellia brunnea*): On roots of *Laminaria*, Holy Is. (Brady 1904, as *Thorellia brunnea*): "By no means common in our district" (Norman & Brady 1909)).

Female with egg sacs among filamentous red algae in concrete tank in small tank room, Cullercoats aquarium, 30 May 1947 (W.S.): Several females without eggs and some juveniles and one or two males found in large aquarium tank on 12 Mar. 1954 (J.B.).

Euryte robusta GIESBRECHT

Sars 1913, pp. 26-7, pl. 13.

Several females and young specimens in large aquarium tank, 12 Mar. 1954 (J.B.).

Halicyclops magniceps (LILLJEBORG)

Sars 1913, pp. 29-30, pl. 15; Pesta 1928, p. 81, fig. 63.

In brackish pools at Seaton Sluice (Brady 1869, 1872, 1878, Norman & Brady 1909, all as *Cyclops aequoreus*).

Very common, females with egg sacs, in surface mud from Blyth estuary at L.W.S.T. near Fever Hospital, 21 Jul. 1947 (W.S.): Common in saltmarsh pools, Seaton Sluice (Sutcliffe 1959, 1961).

ASCOMYZONTIDAE G. O. Sars

Ascomyzon boeckii (BRADY)

Sars 1915, pp. 88-9, pl. 54.

One, amongst algae, in tidal pool, near L.W.M. at Alnmouth, Aug.-Sep. 1899 (Brady 1900b as *Artotrogus b.*); on roots of *Laminaria*, Holy Is. (Brady 1904 as *Asterocheres b.*).

Ascomyzon latum (BRADY)

Sars 1915, pp. 90-1, pl. 56.

One, amongst weeds in rock pool at Roker (Brady 1872, 1880a as *Cyclopicera l.*).

Four females found in tanks, Cullercoats aquarium, 1951 (J.B.).

Ascomyzon lilljeborgi THORELL

Sars 1915, pp. 87-8, pl. 53.

Four females and one male found in Cullercoats aquarium tanks, 1951 (J.B.).

Ascomyzon parvum (GIESBRECHT)

Sars 1915, p. 92, pl. 57.

Two females found in Cullercoats aquarium tanks, 1951 (J.B.).

Collocheres gracilicauda (BRADY)

Sars 1915, pp. 101-2, pl. 63.

In bottom net at 10 fms., NNE Newbiggin, 16 Sep. 1911 (Meek & Storrow 1912 as *Cyclopicera g.*): Occasionally in surface nettings May-Oct. 1912 (Storrow 1913, as *Cyclopicera g.*).

Dermatomyzon nigripes (BRADY & ROBERTSON)

Sars 1915, pp. 95-7, pls. 59-60.

"In many dredgings, 3-5 miles offshore, in depths of 20-35 fms." 1874 (Brady & Robertson 1876 as *Cyclopicera n.*): Dredged on rough sand off Marsden and Hawthorn in 25-27 fms.; "one or two specimens taken also off Sunderland in the surface-net" (Brady 1880b as *Cyclopicera n.*): In washings from dredge, 20 fms., off Cullercoats, 24 Jul. 1899 (Brady 1900c): Dredged or in bottom net in 50 and 59 fms., 25 and 29 miles E Alnmouth, 20 Aug. 1901 (Brady 1902; Norman & Brady 1909).

Echinocheres violaceus CLAUD

Sars 1915, pp. 93-4, pl. 58.

Two males amongst algae in tidal pool near L.W.M., Alnmouth, Aug.-Sep. 1899 (Brady 1900b, one as *Cyclopicera berniciensis*): On roots of *Laminaria*, Holy Is. (Brady 1904 as *Cyclopicera berniciensis*).

ACONTIOPHORIDAE G. O. Sars

Acontiophorus scutatus (BRADY & ROBERTSON)

Sars 1915, pp. 110-2, pl. 67.

Dredged, 27 fms. off Hawthorn (Brady & Robertson 1876 as *Solenostoma s.*, Brady 1880b, Norman & Brady 1909): In bottom net, 32 fms. 8 miles E by S Cullercoats, 22 Sep. 1911 (Meek & Storrow 1912).

DYSPONTIIDAE G. O. Sars

Bradypontius magniceps (BRADY)

Sars 1915, pp. 124-6, pl. 73.

"A few dredged off Castle Eden in 20 fms." (Norman & Brady 1909).

Cribropontius normani (BRADY & ROBERTSON)

Sars 1915, pp. 130-2, pl. 77.

3, dredged, on sand, 27 fms. 6 miles off Hawthorn (Brady & Robertson 1876 as *Dyspontius n.*).

Dyspontius striatus THORELL

Sars 1915, pp. 118-20, pl. 70.

Dredged, 27 fms. off Hawthorn (Brady 1880b).

CANCERILLIDAE G. O. Sars

Cancerilla tubulata DALYELL

Sars 1915, pp. 139-141, pl. 80.

Males and females with egg sacs common on *Amphipholis squamata* (4-15% infection), between tide-marks, Northumberland coast, Feb.-Apr. 1967 (T.J.W.).

Microcancerilla coeruleocruciata NORMAN & BRADY

Norman & Brady 1909, pp. 399-400, pl. 9(A).

3, "in a brackish pool by the side of the stream at Seaton Sluice in Jun., 1885 . . . (no) further specimens . . . doubtless a parasitic form" (Norman & Brady 1909).

ONCAEIDAE Giesbrecht

Oncaea anglica BRADY

Brady 1905, pp. 220-1, pl. 6, figs. 1-9.

One female, dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905).

LICHOMOLGIDAE G. O. Sars

Macrocheiron fucicum BRADY

Sars 1917, pp. 163-5, pl. 91; Pesta 1928, p. 124, fig. 105.

2-3, amongst fuci near L.W.M., Alnmouth, and between Ryhope and Sunderland; at St. Mary's Is. amongst fuci near L.W.M.; dredged among rough shelly sand, 25 fms. 4 miles off Hawthorn and Marsden; in washings from dredge, 20 fms. off Cullercoats, 24 Jul. 1899 (Brady 1872, 1880b, 1900c as *Lichomolgus f.*).

One female in bottom sledge-net haul, mud, 14 fms., NE of Sow Buoy, Cambois Bay, Apr. 1952 (J.B.).

Pseudanthessius liber (BRADY & ROBERTSON)

Sars 1917, pp. 169-70, pl. 94.

Dredged off Marsden and Hawthorn in 20-27 fms., 1874 (Brady & Robertson 1876, Brady 1880b, as *Lichomolgus l.*): In dredgings from North Sunderland (Norman & Brady 1909).

Pseudanthessius thorelli (BRADY & ROBERTSON)

Brady 1880b, pp. 47-9, pl. 88, figs. 1-9 as *Lichomolgus t.*

One, off Marsden in 25 fms. among coarse shelly sand and one off Hawthorn in 27 fms., 1874 (Brady & Robertson 1874, Brady 1880b as *Lichomolgus t.*).

Pseudomolgus arenicola (BRADY)

Sars 1921a, pp. 112-3, pl. 74.

One, dredged on sandy bottom in 4 fms. off Seaton Carew, Sep. 1871 (Brady 1872 as *Boeckia a.*; Brady 1880b as *Lichomolgus a.*).

BOMOLOCHIDAE Claus

Bomolochus so'elae CLAUS

Scott & Scott 1913, pp. 36-9, pl. 1, fig. 3; pl. 2, figs. 6-9; pl. 3, figs. 1-4.

"Seems to be very common in the nostrils of the cod" (landed at North Shields) (Bainbridge 1909).

CLAUSIIDAE G. O. Sars

Mytilicola intestinalis STEUER

Steuer 1902, pp. 635-7, figs. 1-5; Hockley 1952, pp. 223-226, figs. 2-3.

In the gut of mussels, *Mytilus edulis*, from estuary of R. Blyth, 90% infection (Ellenby 1947; Cole & Savage 1951): Estuary of R. Blyth; infection and average number of specimens per infected mussel lowest near mouth, highest in mid-estuary and lower again at top of estuary where salinity at L.W. is much reduced; females predominated at mouth, males at top of estuary—in mid-estuary proportion of sexes about equal (Bolster 1954): On many occasions from mussel guts from estuary of R. Blyth 1949-1967 (J.B. & H.O.B.).

Order HARPACTICOIDA G. O. Sars

MISOPHRIIDAE G. O. Sars

Misophria pallida BOECK

Sars 1903b, pp. 6-8, pls. 1-2.

One, dredged, sandy bottom, 27 fms. off Hawthorn, 1874 (Brady & Robertson 1876; Brady 1878).

In muddy scrapings from over-flow channel underneath large aquarium tanks, Cullercoats (W.S.).

Longipedia coronata CLAUS

Sars 1903b, pp.10-11, pls.3-4: Lang 1948, pp.155-6, fig.99.

Dredged, 20 fms. off Cullercoats 24 Jul. 1897 (Brady 1900c): Dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 190 (Brady 1905): 25 fms., "off Hartlepool" "many years ago" (Norman & Brady 1909): In bottom net, 32 fms., 8 miles E by S Cullercoats, 22 Sep. 1911; 10 fms., immediately S of Inner Farne, 16 Sep. 1911; 15 fms., SE of Craster, 16 Sep. 1911 (Meek & Storrow 1912); saltwater pond, Amble, 28 May 1931 (Meek 1934).

Sometimes in moderate numbers, mostly females, in bottom sledge-net hauls in 5 and 14 fms. off Blyth, summer 1950 and spring-summer 1952; in tow-nettings off Blyth, summer 1949, 1950 and 1952; nauplii often quite common in tow-nettings off Blyth, spring-summer (J.B.).

Longipedia scotti G. O. Sars

Sars 1903b, pp.11-12, pl.5, fig.1: Lang 1948, pp.158-9, fig.100(2).

Dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905): "Common in moderate depths of water, and on sandy bottoms especially is often very abundant" (Norman & Brady 1909): Nauplii in surface nettings, R. Tyne at Howdon Dock, 20 Oct. 1911 (Meek *et al* 1912): In surface and bottom nets, 10 fms., NNE Newbiggin, 16 Sep. 1911 (Meek & Storrow 1912): Occasionally in surface nets, May-Oct. 1912 (Storrow 1913).

Nauplii often present in fine tow-nettings off Blyth, spring-summer (J.B.).

Ectinosoma brunneum BRADY

Brady 1907, pp.333-4, pl.9, figs.4-11: Sars 1920, p.26, pl.16, fig.2 (as *E. clavatum*): Lang 1948, p.212, fig.116(7).

Abundant, saltwater pond, Amble, 16 Nov. 1905, coll. A. Meek (Brady 1907, Meek 1926).

Ectinosoma curticorne BOECK

Sars 1904, p.36, pl.20, fig.1: Lang 1948, pp.214-6, fig.117(1).

Abundant in dredgings, sandy ground, Durham coast, 1874 (Brady & Robertson 1876).

Females with egg sacs and males and females in copula common in surface mud scraping at L.W.S.T. near mussel beds, Blyth Estuary, 4 Jun. 1947; females with egg sacs and males and females in copula not so common in muddy *Rhodochorton* scrapings at L.W.S.T., Cullercoats N side rocks in 1st gully, 4 Jun. 1947; females in muddy weed fragments at L.W.S.T. between limestone 'canyons' just S of Hole Rocks, Ryhope, 19 Jun. 1947 (W.S.).

Ectinosoma herdmani T. & A. SCOTT

Sars 1904, pp. 33-34, pl. 18, fig. 2; Lang 1948, p. 209, figs. 112(5), 116(2).

Dredged off North Sunderland, Northumberland, Sep. 1902 (Brady & Norman 1909); In saltwater pond, Amble, 21 Nov. 1930 (Meek 1934).

Ectinosoma melaniceps BOECK

Sars 1904, pp. 34-35, pl. 19, fig. 1; Lang 1948, pp. 200-2, figs. 112(1), 113(1).

Berwick Bay, 1835 (Baird 1850 as *Canthocamptus minuticornis*: Several from among algae in tide pools, Alnmouth, Aug.-Sep. 1899; also collected abundantly in Cullercoats (Brady 1900b); pools at extreme L.W.M., Roker, 15 Aug. 1900 (Brady 1902a).

Female with egg sacs in mud in concrete tank in Cullercoats aquarium containing Blyth estuary mussels, 4 Jun. 1947; females with egg sacs fairly common on *Laminaria* roots in first gully on Cullercoats N side rocks, and also in *Rhodochorton* with *Fabricia* tubes at L.W.S.T., 4 Jun. 1947; female in rock scrapings at extreme L.W.S.T. on Cullercoats N side rocks, 18 Jun. 1947 (W.S.).

Ectinosoma normani T. & A. SCOTT

Sars 1904, pp. 35-36, pl. 19, fig. 2; Lang 1948, pp. 202-3, figs. 112(2), 113(2).

At roots of *Laminaria*, Holy Is. (Brady 1904).

Ectinosoma sarsi BOECK

Sars 1904, pp. 30-31, pl. 16; Lang 1948, pp. 206-7, fig. 112(3).

Common, on sandy bottom, in 4 fms. off Seaton Carew and in 20-30 fms. off Seaham Harbour (Brady 1872 as *E. melaniceps*): L.W. to 40 fms., in sandy or gravelly ground off Durham and Yorkshire coasts (Brady 1880a as *E. spinipes*): Dredged in 20 fms., off Cullercoats, 24 Jul. 1900 (Brady 1900c): Common in tidal pools and in moderate depths all round the coast (Norman & Brady 1909): In bottom net at 32 fms. 8 miles E by S Cullercoats, 22 Sep. 1911 (Meek & Storrow 1912).

Bradya scotti Sars

Sars 1920,p.42,pl.26: Lang 1948,pp.226-7,fig.2.

(4 specimens) "Off Hartlepool in 25 fms. on a sandy bottom" (Brady & Robertson 1876, Brady 1880a, T. & A. Scott 1896, all as *B.typica*).

Bradya typica BOECK

Sars 1904,p.46,pl.25: Lang 1948,pp.224-6,figs.119a,b.

Surface and bottom nets, 1 and 15 fms., SE Craster, 16 Sep. 1911 (Meek & Storrow 1912)*.

Microsetella norvegica (BOECK)

Sars 1904,pp.44-5 (*M.norvegica*), pl.24 (as *M.atlantica*): Lang 1948,p.230, fig.122(1).

2, saltwater pond, Amble, 1 Oct. 1929 (Meek 1934).

Some females in tow-nets, NE Sow Buoy, Cambois Bay, Apr. 1952 (J.B.).

Microsetella rosea (DANA)

Giesbrecht 1892,p.550,pl.44,figs.32,35,37,38,41,43,46,48,49: Lang 1948,p.232, fig.122(2).

One female from between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905).

Pseudobradia minor (T. & A. SCOTT)

Sars 1904,p.41,pl.22,fig.2: Lang 1948,pp.237-8,fig.125(1).

Considerable numbers in deeper part of saltwater pond, Amble, 16 Nov. 1905 (Brady 1907 as *Bradya m.*): Not seen again on later visits (Meek 1934).

Paranenosetella erythrops BRADY

T. & A. Scott 1896,p.431,pl.36,figs.24,31,36,pl.37,figs.14,18,37,42;pl.38,figs. 13,15,39,48: Lang 1948,pp.256-7,fig.133(1).

Scarce, dredge, 20-35 (5-30?) fms. off Hartlepool, 1874 (Brady & Robertson 1876; Brady 1880a as *Ectinosoma*).

* Not noticed by Lang 1948, and possibly referable to *B.scotti*.

TACHIDIIDAE G. O. Sars

Tachidius discipes GIESBRECHT

Sars 1909, pp. 328-30, pls. 218-219 as *T. brevicornis*: Lang 1948, pp. 292-4, fig. 143(1).

Saltmarsh, R. Wear, near Sunderland (Brady 1865); in brackish pools, Hartlepool, Hylton Dene, and Seaton Sluice (Brady 1869, 1872, 1880a "especially in autumn months. Probably few brackish marsh pools where it may not at times be found"); brackish pools, Seaton Sluice summer 1894 (Brady 1896 as *T. brevicornis*): "Plentifully during the summer months in the brackish pools of almost all estuaries and salt marshes" (Norman & Brady 1909): In plankton up to 11 miles from sea in estuary of R. Tees (Alexander *et al* 1935).

Females with egg sacs fairly common in surface mud in vicinity of mussel beds, estuary of R. Blyth, 4 Jun. 1947 and 21 Jul. 1947 (W.S.) (as *T. brevicornis*).

Microarthridion littorale (POPPE)

Scott, T., 1892, p. 250, pl. 8, figs. 14-27 as *Tachidius crassicornis*: Lang 1948, pp. 295-6, fig. 144(1).

Common in saltmarsh pools, Seaton Sluice, summer 1894 (Brady 1896); in brackish pools, R. Lyne at Newgiggin, mouth of the R. Wansbeck, Seaton Carew; Seaton Sluice (Norman & Brady 1909); as *Tachidius l.*

Danielssenia typica BOECK

Sars 1909, pp. 336-8, pl. 223: Lang 1948, pp. 299-300, figs. 145, 146(1).

Dredged sparingly, muddy sand, 20 fms., 5 miles off Hartlepool 1874 (Brady & Robertson 1876 as *Zosime spinulosa*; Brady 1880a as *Jonesiella spinulosa*): Dredged sparingly, muddy bottom, 37 fms. 16 miles off Hawthorn (Brady 1880a as *Jonesiella spinulosa*).

Thompsonula hyaenae (THOMPSON)

Scott 1893, pp. 202-3, pl. 3, figs. 1-6 (as *Jonesiella h.*): Lang 1948, pp. 302-3, fig. 147(1).

A few specimens dredged off North Sunderland, 1892 (Norman & Brady 1909).

HARPACTICIDAE G. O. Sars

Harpacticus chelifera (O. F. MÜLLER)

Sars 1904, pp. 49-51, pls. 27-28: Lang 1948, pp. 319-321, figs. 149(1), 150(1).

Common, in sea water rockpools on the shore at Berwick (Baird 1835, as *Cyclops johnstoni*; Baird 1837, as *Cyclops c.*; Baird 1845, 1850, as *Arpacticus c.*): A few taken near Sunderland "a year or two ago" (Brady 1865a): One, midwater, Skate Road, 23 Jul. 1899 (Meek 1899): Littoral,

Alnmouth, Aug.-Sep. 1899 (Brady 1900b); on roots of *Laminaria*, Holy Is. (Brady 1904); a few in saltwater pond, Amble, 16 Nov.-Dec. 1905 (Brady 1907; Meek 1926, 1934); "one of the commonest *Harpacticidae*: frequent between tidemarks, less frequent at greater depths" (Norman & Brady 1909): In plankton, fair numbers, estuary of R.Coquet 18 Sep. 1923 (Jorgensen 1924b).

Females present in bottom sledge-net haul in 5 fms., Blyth Bay, summer 1950 (J.B.).

***Harpacticus flexus* BRADY & ROBERTSON**

Sars 1904, pp.53-54, pl.30, fig.2: Lang 1948, p.326, fig.151(2).

On roots of *Laminaria*, Holy Is. (Brady 1904).

***Harpacticus gracilis* CLAUS**

Sars 1904, pp.52-53, pl.30, fig.1: Lang 1948, pp.323-4, figs.149(3), 150(3).

Present in saltwater pond, Amble, 21 Nov. 1930 and 28 May 1931 (Meek 1934).

***Harpacticus littoralis* G. O. SARS**

Sars 1910, pp.363-4, suppl.pl.8: Lang 1948, pp.329-330, figs.149(4), 152(1).

"In many places on the coasts of Durham and Northumberland" (Brady 1880a as *H.chelifera*).

One female with egg sacs in plankton collection about $\frac{1}{2}$ mile due E of Cullercoats Bay, 28 May 1947; females with egg sacs common in sweepings in *Fucus serratus* pool at L.W.N.T., Cullercoats S side rocks at edge of Bay, 3 Jun. 1947; in *Laminaria* holdfasts in first gully, Cullercoats N side rocks, 4 Jun. 1947; in *Enteromorpha* pool at H.W.N.T., middle of Cullercoats Bay, females with egg sacs, 5 Jun. 1947; females with egg sacs, L.W.S.T., Easington Colliery, 20 Jun. 1947; females with egg sacs, L.W.S.T. 400 yds. SW of Coastguard Station, Hartlepool, 21 Jun. 1947 (W.S.): Females and females together with *Tigriopus fulvus* in *Enteromorpha* pool at M.T.L. near Whitley Bay Bathing Pool, 25 Jul. 1947, also copepodite stage III? (M.M.).

***Harpacticus uniremis* KRØYER**

Sars 1904, pp.51-52, pl.29: Lang 1948, pp.321-3, figs.149(2), 150(2).

One male adult in bottom net at 10 fms. 1 mile E Cullercoats Bay over muddy sand, 11 Jun. 1947 (W.S.).

Tigriopus brevicornis (O. F. MÜLLER) = **Tigriopus fulvus** (FISCHER)

Sars 1904, pp. 54-56, pls. 31-32; Lang 1948, pp. 340-342, fig. 154(1).

"Sometimes in immense numbers in rock pools which are only reached by sea at high spring-tides near Marsden" (Norman 1869 as *T. lilljeborgi*): "In pools at or above H.W.M., Bamburgh, Cullercoats, Marsden . . . often extremely abundant" (Brady 1872 as *Harpacticus f.*): "Found all round the coast, mostly in shallow pools at or above H.W.M. and often in vast swarms when the water has become warm with prolonged exposure to the sun (N.D.)" (Norman & Brady 1909): 12, in salt-water pond, Amble, 10 Jul. 1926; 10, 18 Jul. 1929; 2, 1 Oct. 1929; present, 28 May 1931 (Meek 1934).

Swarming in vast numbers in warm rock pools with *Enteromorpha* above H.W.M. near Whitley Bay Bathing Pool on 2 and 9 May 1946, females with egg sacs; bred in Laboratory afterwards (W.S.): At various points on NE coast of England from Marsden to Amble (Mistakidis 1949 as *T. lilljeborgi* var. *northumbriensis*): In *Enteromorpha* pools above Whitley Bathing Pool, common, May-Jun. 1948 (J.B.) (all recorded as *T. fulvus* except where stated).

Zaus goodsiri BRADY

Sars 1904, pp. 59-60, pl. 35; Lang 1948, pp. 349-50, figs. 158(2), 159(2).

In washings from material dredged in 20 fms. off Cullercoats, 24 Jul. 1899 (Brady 1900c, Norman & Brady 1909): One or two specimens between tide-marks at Alnmouth, 1899 (Norman & Brady 1909).

A few female specimens in bottom sledge-net catches over sand in 5 fms. Blyth Bay, 12-13 Jun. 1950; also over mud in 14 fms. Cambois Bay, summer 1950 (J.B.).

Zaus spinatus GOODSIR

Sars 1904, pp. 57-8, pl. 33; Lang 1948, p. 347, figs. 158(1), 159(1).

A few in tidal pool near Roker (Brady 1865): "Common on fuci, and especially on the fronds of *Laminaria*, in tidal pools and beyond L.W.M., Roker, Ryhope, Sunderland, Cullercoats, etc." (Brady 1872 as *Z. spinosus*): "I have taken it in several places on the coasts of Durham and Northumberland, usually amongst *Laminaria saccharina* or other Fuci" (Brady 1880a): Littoral, Alnmouth, Aug.-Sep. 1899 (Brady 1900b): "In pools at extreme L.W.M., Roker, 15 Aug. 1900" (Brady 1902): On roots of *Laminaria*, Holy Is. and Roker (Brady 1904a): "Not uncommon among weeds, especially near L.W.M. all along the coast" (Norman & Brady 1909).

Males and females with egg sacs very common in sweepings in pool at high L.W.S. containing *Laminaria*, *Fucus serratus* and *Lithothamnion*, Cullercoats S side rocks at edge of Bay, 3 Jun. 1947; some males in copula with juv. females; in *Enteromorpha* pools, S side rocks Cullercoats near pier at about M.T.L., 3 Jun. 1947; on *Laminaria* holdfasts in first gully, Cullercoats N side rocks, 4 Jun. 1947; males and females in copula and females with egg sacs common in scraping from recent driftwood Cullercoats N side rocks, 17 Jun. 1947; females with egg sacs and males and females in copula common in hydroid collection at L.W.S.T., Hole Rock, Ryhope, 19 Jun. 1947; the same in general collection at L.W.S.T. at Easington Colliery, 20 Jun. 1947 and 400 yds. SW of Coastguard Station, Hartlepool, 21 Jun. 1947 (W.S.).

TISBIDAE (Stebbing) Lang

Tisbe ensifer FISCHER

Sars 1905, pp. 90-1, pl. 53, fig. 1; Lang 1948, pp. 372-3, figs. 163(2), 165(1).

Three females in plankton collection $\frac{1}{2}$ mile E Cullercoats, 28 May 1947 (W.S.).

Tisbe furcata (BAIRD)

Sars 1905, pp. 88-9, pls. 51-52, fig. 1; Lang 1948, pp. 369-72, figs. 163(1), 164.

Berwick Bay, 1835, not common (Baird 1837 as *Cyclops* f.; Baird 1845, 1850 as *Canthocarpus* f.): Between tidemarks, Northumberland, 1864 (Norman 1865): "Very common amongst weeds in tide pools" (Brady 1872): More or less commonly in all dredgings off Durham coast, 1874 (Brady & Robertson 1876): Littoral, Alnmouth, Aug.-Sep. 1899 (Brady 1900b): In pools at extreme L.W.M., Roker, 15 Aug. 1900 (Brady 1902a): On roots of *Laminaria*, Holy Is. (Brady 1904): Extremely plentiful with many ovigerous females in scanty coating of algae at shallow end of saltwater pond, Amble, Dec. 1905 (Brady 1907): Very common in tidal pools, much less so in open sea; very widely distributed and correspondingly variable in minor characteristics (Norman & Brady 1909): In bottom net at 10 fms. immediately S of Inner Farne 16 Sep. 1911 (Meek & Storrow 1912): In large numbers in all tanks, Cullercoats aquarium, Mar.-Apr. 1912 (Storrow 1912b): In saltwater pond, Amble, present on 16 Nov. 1905, 22 Aug. 1922, 21 Nov. 1930; plenty 28 May 1931; 6, 3 Apr. 1925; 2, 10 July., 17 Sep. 1925, 18 Jul. 1929 (Meek 1925, 1934).

Fairly plentiful in Cullercoats aquarium tanks, some with eggs, Feb.-Mar. 1912 (Storror in *ms*): Very common, Cullercoats small glass aquarium tanks, 1 and 12 May 1947; and in every littoral collection below H.W.N.T. in pools, *Laminaria* roots, sweepings, etc., Beadnell-Hartlepoons, May-Jun. 1947 (W.S.): All stages abundant on glass of large aquarium tanks, Cullercoats, Mar. 1950 and 1954; common in bottom sledge-net, sand, 5 fms. Blyth Bay, 12 Jun. 1950; some females in bottom sledge-net and tow-nets, 14 fms. NE Sow Buoy, Cambois Bay, spring and summer 1952 (J.B.).

Breeding: Females with egg sacs chiefly Feb.-Jun. (W.S. & J.B.); nauplii liberated in aquarium tanks May 1947 (W.S.); young stages Mar. 1950 (J.B.).

Tisbe longicornis SCOTT

Sars 1905, pp. 92-3, pl. 54, fig. 1: Lang 1948 pp. 374-5 figs. 163(4), 165(3).

Scarce, bottom sledge-net, sand, 5 fms., Blyth Bay, 12 Jun. 1950 (J.B.).

Tisbe minor (T. & A. SCOTT)

Sars 1905 p. 90, pl. 52, fig. 2: Lang 1948, p. 375, figs. 163(5), 165(4).

Females with egg sacs in company with *T. furcata* from inside mantle cavity of Blyth mussels kept in Cullercoats aquarium tank, 4 Jun. 1947 (W.S.).

Scutellidium longicauda (PHILIPPI)

Sars 1905, pp. 83-4, pl. 49: Lang 1948, pp. 389-90, fig. 170(1).

One, on frond of *Laminaria saccharina*, Roker (Brady 1872, 1880a, as *S. tisboides*; Norman & Brady 1909, as *Psamathe l.*).

Sacodiscus littoralis (G. O. SARS)

Sars 1904, pp. 79-81, pls. 46-47: Lang 1948, pp. 399-400, figs. 174(2), 175(2).

Abundant on fronds of *Laminaria saccharina*, Roker, Sunderland and Cullercoats (Brady 1872 as *Aspidiscus fasciatus*): Plentifully on Northumberland and Durham coasts wherever *Laminaria saccharina* grows (Brady 1880a as *Scutellidium fasciatum*): In pools at extreme L.W.M., Roker, 15 Aug. 1900 (Brady 1902a as *Scutellidium fasciatum*): On roots of *Laminaria*, Roker (Brady 1904 as *Scutellidium fasciatum*): Favourite habitat on fronds of *Laminaria*, often very abundant at almost all points (Norman & Brady 1909 as *Aspidiscus l.*).

Zosime valida Sars

Sars 1919, p. 22, pl. 14: Lang 1948, p. 406, fig. 178(4).

Dredged on sandy bottom 5 miles off Hartlepool; several, dredge, muddy sand, 45 fms. 20 miles off Sunderland (Brady 1880a as *Z. typica*)

PORCELLIDIIDAE G. O. Sars

Porcellidium viride (PHILIPPI)

Sars 1904, pp. 76-7, pls. 44-45: Lang 1948, pp. 420-2, fig. 182(1).

On fronds of *Laminaria* between tidemarks, Alnmouth (Brady 1880a).

PELTIDIIDAE G. O. Sars

Alteutha depressa (BAIRD)

Lang 1948, pp. 444-5, fig. 188.

Berwick Bay (Baird 1837 as *Cyclops depressus**; Baird 1845; Baird 1850 "1835. Not common").

Alteutha interrupta (GOODSIR)

Sars 1904, pp. 62-3, pls. 36-37: Lang 1948, pp. 445-7, fig. 189(1).

Several in tow-net 3-4 miles off Ryhope, 1863 (Brady 1865, 1867 and Norman 1865, as *A. bopyroides*): Dredged 15-30 fms., off Seaham, 1869 (Brady 1870, as *A. bopyroides*): "Often taken abundantly in the surface-net . . ." (Brady 1872, as *A. bopyroides*): Common in all dredgings along Durhamcoast, 1874 (Brady & Robertson 1876 as *Peltidium i.*): In tow-nets, seldom in very great abundance (Brady 1900a as *Peltidium i.*): In dredge washings, 20 fms. off Cullercoats, 24 Jul. (Brady 1900c as *Peltidium i.*): Dredged or bottom net in 39 fms., 34 miles E½S Alnmouth, in 39 fms., 16-17 miles off Souter Pt. and in 30 fms., 5-6 miles off Souter Pt., 21 Aug. 1901 (Brady 1902b as *Peltidium i.*): In 1 of 18 plankton hauls, summer 1904 (Meek 1904 as *Peltidium i.*): Roots of *Laminaria*, Holy Is. (Brady 1904 as *Peltidium i.*): A common species, taken mostly in tow-net, also by dredge and less commonly between tidemarks, Northumberland and Durham (Norman & Brady 1909): In bottom net, 10 fms. NNE Newbiggin 16 Sep. 1911 (Meek & Storrow 1912): Occasionally in surface nettings, May-Oct. 1912 (Storrow 1913).

Bottom net, 10 fms., over sandy mud, 1 mile E Cullercoats 11 Jun. 1947; 2 females, bottom net, 9 fms., over sand, ¾ mile E Cullercoats Bay 21 Jun. 1947, 2 females in general collection 600 yds. SW Coastguard

* All subsequent records are regarded as *A. oblonga*.

Station, Hartlepool, at L.W.S.T., 21 Jun. 1947; fairly common in plankton at 2 fms. over 20 fms., 2 miles E by N Cullercoats, midnight, 1-2 Jul. 1947 (W.S.): Very abundant in bottom sledge-net hauls in 5 fms. on sand Blyth Bay, summer 1950; less common in 14 fms. NE Sow Buoy in Cambois Bay summer 1950 and 1952; in both places much diminished at night compared with day, and mostly females, only few males (J.B.).

***Alteutha oblonga* (GOODSIR)**

Sars 1904,p.64,pl.38 (as *A.depressa* Baird): Lang 1948,pp.447-8,fig.189(2).

"On *Laminaria saccharina* at Roker and Cullercoats; frequent" (Brady 1872, as *A.purpurocincta*): On fronds of *Laminaria*, Sunderland and Cullercoats, and dredged, once, coarse sand, 4 fms. Sunderland (Brady 1880a, as *Peltidium depressum*); common in low-water pools, chiefly on the fronds of *Laminaria saccharina* (Norman & Brady 1909, as *Eupelte purpurocincta*, vide Lang 1948): In surface and bottom nettings, Aug.-Sep. 1911 in 10-15 fms. NNE Newbiggin, SE Craster and NW Longstone (Meek & Storrow 1912 as *Eupelte purpurocincta*): Occasionally in surface nettings, May-Oct. 1912 (Storrow 1913 as *Eupelte purpurocincta*): One in plankton in estuary of R.Tees about 5 miles from sea (Alexander *et al* 1935).

3 females in bottom net over muddy sand, 10 fms., 1 mile E Cullercoats, 11 Jun. 1947; female in general collection 400 yds. NE Coastguard Station, Hartlepool, 21 Jun. 1947; females with egg sacs and males common in plankton at 2 fms. over 20 fms. 2 miles E by N Cullercoats, midnight, 1-2 Jul. 1947 (W.S.): 3 females in bottom sledge-net, 5 fms., sand, Blyth Bay, 12 Jun. 1950; some females in bottom sledge-net hauls 14 fms., Cambois Bay, Apr. 1952 (J.B.).

TEGASTIDAE G. O. Sars

***Tegastes falcatus* (NORMAN)**

Sars 1904,pp.69-70,pl.41: Lang 1948,p.469,fig.196(4).

Dredged in rough sand, 25 fms., 4 miles off Marsden, 1874 (Brady & Robertson 1876 as *Amymone f.*; Brady 1880a as *Amymone sphaerica*): A few specimens on roots of *Laminaria*, Holy Is. (Brady 1904 as *Amymone rubra*): Dredged in 25 fms., between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905 as *Amymone f.*).

One female found in tow-netting Cambois Bay NE Sow Buoy, Apr. 1952 (J.B.).

Tegastes grandimanus (SARS)

Sars 1904, pp. 71-2, pl. 42, fig. 3; Lang 1948, p. 471, fig. 197(2).

One, dredged in 27 fms. off Hawthorn, 1874 (Brady & Robertson 1876; Brady 1880a, in both as *Amymone longimana*; Norman & Brady 1909 as *T. longimanus*).

THALESTRIDAE G. O. Sars

Thalestris brunnea G. O. Sars

Sars 1905, pp. 108-9, pl. 63; Lang 1948, p. 502, figs. 204(5), 207(1).

On roots of *Laminaria*, Roker (Brady 1904 as *T. rufoviolascentis*?; Norman & Brady 1909).

Common in grit from under boulders at L.W.S.T. E of Beadnell, 22 May 1947, females with well developed nauplii in egg sacs; fairly common in *Laminaria* holdfasts in first gully, Cullercoats N side rocks, 4 Jun. 1947; females with egg sacs (W.S.).

Thalestris longimana CLAUS

Sars 1905, pp. 104-5, pls. 59-60; Lang 1948, p. 498, figs. 204(2), 205(2).

In shallow tidal pool, Sunderland (Brady 1865a): One, in tow-net off Seaham Harbour, summer 1863 (Brady 1865b, Norman 1865): Frequent on the smaller weeds and *Laminaria* in tidal pools at Roker, Sunderland, Ryhope, etc., also in the open sea but more rarely (Brady 1872, 1880a): Occasional specimen in tow-net, probably a straggler from littoral zone (Brady 1900a): On roots of *Laminaria*, Holy Is. (Brady 1904): "Not uncommon between tidemarks all along the coast" (Norman & Brady 1909): Bottom net in 10 fms., NNE Newbiggin, 16 Sep. 1911 (Meek & Storrow 1912).

Two males in dredging containing grit in 8 fms., $\frac{1}{2}$ mile E St. George's Church, Cullercoats, 16 May 1947; male in dredged mud 1 mile E Cullercoats in 10 fms., 10 Jun. 1947 (W.S.); 2 females with egg sacs 400 yds. NE Coastguard Station, Hartlepool, 21 Jun. 1947; males and females with egg sacs from hydroid collection at L.W.S.T., and in muddy weed fragments at L.W.S.T., Hole Rock, Ryhope, 19 Jun. 1947; males and females with egg sacs L.W.S.T., Easington Colliery, 20 Jun. 1947; males and females common in rock scrapings on N side rocks, Cullercoats Bay at extreme L.S.W.T., 18 Aug. 1947 (W.S.): One female with eggs in bottom sledge-net haul in 5 fms., Blyth Bay, summer 1950 (J.B.).

Amenophia peltata BOECK

Sars 1906, pp. 136-8, pls. 83-84, fig. 1: Lang 1948, pp. 508-9, figs. 209(1), 210(1).

One, among algae, in tidal pool, Alnmouth, Aug.-Sep. 1899 (Brady 1900b as *Thalestris p.*).

Parathalestris clausi (NORMAN)

Sars 1905, p. 111, pls. 65-66: Lang 1948, pp. 513-4, figs. 209(5), 211(3).

Frequent on *Laminaria saccharina* and other weeds in tide pools, Ryhope, Sunderland, Roker, Whitley, etc. (Brady 1872, as *Thalestris c.*); plentiful in littoral zone amongst weeds and not infrequent in surface nets in open sea, Northumberland and Durham coasts (Brady 1880a as *Thalestris c.*): In pools at extreme L.W.M., Roker, 15 Aug. 1900 (Brady 1902a, 1904 as *Thalestris c.* and *Dactylopus platycheles* vide Lang 1948): "One of the commonest *Harpacticidae* . . . often found plentifully in pools of the littoral zone, as well as in the open sea" (Norman & Brady 1909).

Females (with egg sacs) and males fairly common in rock scrapings including sponges and Polyzoa, lowest L.W.S.T. of 1947, Cullercoats N side rocks, 18 Aug. 1947 (W.S.).

Parathalestris harpacticoides (CLAUS)

Sars 1905, p. 112, pl. 67: Lang 1948, p. 513, figs. 209(4), 211(2).

In surface net off Teesmouth (Brady 1872, 1880a as *Thalestris h.*): Rock pools, Seaton Sluice (Norman & Brady 1909).

Female, 400 yds. W of Coastguard Station, Hartlepool, 21 Jun. 1947 (W.S.): Female with egg sacs in *Enteromorpha* at H.W.N.T., 2 miles N of Alnmouth, 28 Aug. 1947; *Enteromorpha* kept in Cullercoats tanks until 12 Sep. 1947 when males and copulating pairs noted (M.M.).

Parathalestris hibernica (BRADY & ROBERTSON)

Sars 1905, pp. 113-4, pl. 68: Lang 1948, pp. 514-5, figs. 209(6), 211(4).

On roots of *Laminaria*, Holy Is. (Brady 1904 as *Thalestris h.*).

Phyllothalestris mysis (CLAUS)

Sars 1905, pp. 116-7, pls. 70-71: Lang 1948, pp. 519-21, fig. 213.

In tidal pools, among algae, Alnmouth, Aug.-Sep. 1899 (Brady 1900b, and Norman & Brady 1909 as *Thalestris m.*).

Rhynchothalestris helgolandica (CLAUS)

Sars 1905, pp. 121-2, pl. 75: Lang 1948, pp. 522-3, fig. 214(1).

On *Laminaria* in tide pools at Roker, not common (Brady 1872 as *Thalestris h.*): Dredged "very sparingly" in 27 fms. 6 miles off Hawthorn, 1874 (Brady & Robertson 1876; Brady 1880a as *Thalestris h.*).

Rhynchothalestris rufocincta (BRADY)

Sars 1905, pp. 120-1, pls. 73-74: Lang 1948, pp. 523-4, fig. 214(2).

Dredged "sparingly" in 27 fms. off Hawthorn and 10 fms. off Marsden 1874 (Brady & Robertson 1876; Brady 1880a) as *Thalestris r.*: On roots of *Laminaria*, Roker (Brady 1904 as *Thalestris r.*): In bottom net, 10 fms., NNE Newbiggin, 16 Sep. 1911 (Meek & Storrow 1912): Occasionally in surface nettings, May-Oct. 1912 (Storrow 1913).

Males and females sparse in dredging amongst red filamentous algae encrusted with Hydrozoa in 10 fms. on hard ground, 1 mile E Cullercoats, 11 Jun. 1947; female with egg sacs in dredged mud from 18-19 fms., 3 miles NE Cullercoats, 12 Jun. 1947 (W.S.).

Diarthrodes major (T. & A. SCOTT) = Westwoodia monensis (BRADY)

Sars 1911, pp. 377-8, suppl. pl. 15 (as *Westwoodia monensis*): Lang 1948, p. 534, fig. 218(3).

Fairly common in scraping from M.T.L. containing *Enteromorpha* and *Rhodochorton* on S side of N pier wall, Cullercoats, 2 Jun. 1947; females with egg sacs in *Laminaria* holdfasts in first gully, Cullercoats N side rocks, 4 Jun. 1947; in *Enteromorpha* pool at H.W.N.T., middle of Cullercoats Bay, 5 Jun. 1947 (W.S.).

Diarthrodes = Westwoodia nobilis (BAIRD)

Sars 1906, pp. 140-1, pls. 85-86: Lang 1948, pp. 529-30, fig. 216.

Berwick Bay, Sep. 1844 (Baird 1845, 1846, 1850 as *Arpacticus n.*): Rarely on *Laminaria* near Sunderland (Brady 1872, 1880c, 1904; Norman & Brady 1909).

Several females present in bottom sledge-net hauls in 5 fms., Blyth Bay, summer 1950 and in 14 fms., Cambois Bay, Jul. 1952 (J.B.).

Dactylopodia neglecta (G. O. SARS)

Sars 1905, pp. 127-8, pl. 78, fig. 2: Lang 1948, pp. 548-9, figs. 222(2), 223(2).

"Abundant in brackish pools at Seaton Sluice" (Brady 1872, 1880a; Norman & Brady 1909 as *Dactylopus tisboides*): One, in plankton $\frac{1}{2}$ mile E Cullercoats, 28 May 1947 (W.S.).

Dactylopodia tisboides (CLAUS)

Sars 1905, pp. 126-7, pls. 77-78, fig. 1 (as *Dactylopusia t.*): Lang 1948, pp. 545-8, figs. 222(1), 223(1).

"On *Laminaria saccharina* at Roker and Ryhope, scarce"; "Abundant in brackish pools at Seaton Sluice" (Brady 1872 as *Dactylopus t.*): Dredged, and from bottom net, at 30 and 39 fms., 5-6 and 17 miles off Souter Pt. 21 Aug. 1901 (Brady 1902b as *Dactylopus t.*): On roots of *Laminaria*, Holy Is. (Brady 1904 as *Dactylopus t.*): Abundantly between tidemarks and less profusely in greater depths down to at least 40 fms. (Norman & Brady 1909 as *Dactylopusia t.*): In bottom net at 14 fms., SE Holy Is. 17 Aug. 1911 (Meek & Storrow 1912): Occasionally in surface nettings, May-Oct. 1912 (Storrow 1913).

Dactylopodia vulgaris (G. O. SARS)

Sars 1905, pp. 128-9, pl. 79, fig. 1 (as *Dactylopusia v.*): Lang 1948, pp. 548-9, figs. 222(4), 223(4).

"In rock pools at Roker . . . also in pools of brackish water at Seaton Sluice . . ." (Brady 1869 as *Dactylopus tisboides* vide Lang 1948).

Abundant in small glass tanks in Cullercoats aquarium, mostly immature, a few females with egg sacs, 12 May and 1-3 Jun. 1947; females with egg sacs common in *Enteromorpha* pools at M.T.L. near bathing hut, Cullercoats S side rocks, 3 Jun. 1947; females with egg sacs common in *Laminaria* holdfasts, Cullercoats N side rocks, 4 Jun. 1947 (W.S.).

Paradactylopodia brevicornis (CLAUS)

Sars 1906, pp. 130-1, pl. 80 (as *Dactylopusia b.*): Lang 1948, pp. 557-8, figs. 222(7), 226(2).

"On *Laminaria saccharina*, at Roker; not common" (Brady 1872, 1880a, Norman & Brady 1909, as *Dactylopus b.*): On roots of *Laminaria*, Holy Is. (Brady 1904 as *Dactylopus b.*)*

Paradactylopodia latipes (BOECK)

Sars 1911, pp. 370-1, suppl. pl. 11, fig. 2 (as *Dactylopusia l.*): Lang 1948, pp. 556-7, figs. 222(6), 226(1).

Females without egg sacs in green filamentous algae, Cullercoats aquarium tanks, 3 Jun. 1947; females with egg sacs in scrapings from recent driftwood, Cullercoats N side rocks, 18 Jun. 1947; females in general collection 400 yds. SW of Coastguard Station, Hartlepool at L.W.S.T., 21 Jun. 1947 (W.S.).

* Lang 1948 also gives Seaton Sluice (Brady 1896)—but this is an error: This record refers to the Solway.

Dactylopodella flava (CLAUS)

Sars 1906, pp. 132-3, pl. 81; Lang 1948, pp. 576-7, fig. 236(1).

One female with egg sac among red algae in concrete aquarium tank
30 May 1947: in *Enteromorpha* pool at H.W.N.T. near bathing hut,
Cullercoats S side rocks, 3 Jun. 1947 (W.S.).

PARASTENHELIIDAE Lang

Parastenhelia spinosa (FISCHER) = **Microthalestris forficula** (CLAUS)

Sars 1905, pp. 123-4, pl. 76 (as *Microthalestris forficula*): Lang 1948, pp. 588-9,
fig. 240(1).

On roots of *Laminaria*, Holy Is. (Brady 1904 as *Thalestris forficuloides*).

DIOSACCIDAE G. O. Sars

Stenhelia aemula (T. SCOTT)

Sars 1906, p. 184, pl. 121; Lang 1948, pp. 601-2, figs. 241(2), 242(2).

In 25 fms., 5 miles off Hartlepool (Norman & Brady 1909).

Two females, one with egg sac, dredged, mud, 18-19 fms., 3 miles
NE Cullercoats, 12 Jun. 1947 (W.S.).

Stenhelia gibba BOECK

Sars 1906, pp. 181-2, pls. 119-120, fig. 1; Lang 1948, pp. 600-1, figs. 241(1), 242(1).

One female, dredged, 25 fms. between St. Mary's Is. and Souter Pt.
15 Jul. 1904 (Brady 1905 as *Ameira breviremis*, vide Lang 1948).

Females with egg sacs, dredged, mud, 18-19 fms., 3 miles NE Cullercoats 12 Jun. 1947 (W.S.).

Stenhelia longicaudata BOECK

Sars 1906, pp. 190-1, pl. 125, fig. 1; Lang 1948, pp. 605-6, figs. 241(5), 243(2).

Dredged, gravelly sand, 20 fms., 4-6 miles off Hawthorn and on
sand, 5 miles off Hartlepool, 1874 (Brady & Robertson 1876; Brady
1880a as *Spio brunnea*, *Delavalia robusta* and *Delavalia l.*, vide Lang
1948).

Stenhelia normani (T. SCOTT)

Sars 1906, pp. 189-90, pl. 124, fig. 2.

Females in mud dredged from 18-19 fms., 3 miles NE Cullercoats,
12 Jun. 1947 (W.S.).

***Stenhelia palustris* (BRADY)**

Sars 1906, pp. 185-6, pl. 122: Lang 1948, pp. 603-5, figs. 241(4), 243(1).

In brackish pools and at sides of burn, Seaton Sluice (Brady 1869, 1872, 1880a); littoral in brackish water, Alnmouth, Aug.-Sep. 1899 (Brady 1900b) (all as *Delavalia p.*).

***Stenhelia reflexa* BRADY & ROBERTSON**

Sars 1906, pp. 186-7, pl. 123: Lang 1948, p. 606, figs. 241(6), 243(3).

Dredged, sand, 5 miles off Hartlepool, 1874 (Brady & Robertson 1876; Brady 1880a; Norman & Brady 1909 as *Delavalia r.*, vide Lang 1948).

***Diosaccus tenuicornis* (CLAUS)**

Sars 1906, pp. 146-7, pls. 89-90: Lang 1948, pp. 617-8, fig. 249(1)

On *Laminaria* near L.W.M., Cullercoats, Jul. 1900 (Brady 1900c): Bottom net at 10 fms. S Inner Farne, 16 Sep. 1911 (Meek & Storrow 1912).

***Robertsonia tenuis* (BRADY & ROBERTSON)**

Sars 1909, pp. 334-5, pl. 222: Lang 1948, pp. 632-3, fig. 253.

Dredged, "in considerable numbers," sandy bottom, 27 fms., off Hawthorn and in mud, 37 fms., off Seaham (Brady & Robertson 1876 as *Ectinosoma t.*, Brady 1880a).

***Amphiascus minutus* (CLAUS)**

Sars 1906, pp. 154-6, pl. 96: Lang 1948, pp. 649-51, figs. 261(1), 262.

Females with egg sacs in mud scraping with green and blue-green algae from overflow of a small concrete tank in small tank room in Cullercoats aquarium, 31 May 1947 (W.S.): One female in sand sample at H.W.N.T. from between rocks just outside pier, Cullercoats N side rocks, 3 Nov. 1948; several females and 1 male from mud in outside storage tanks of Cullercoats aquarium, 8 Feb. 1949 (J.B.).

***Amphiascus tenuiremis* (BRADY & ROBERTSON)**

Sars 1906, p. 161, pl. 102: Lang 1948, pp. 651-2, figs. 261(2), 263(1).

Dredged, sparingly, in muddy sand, 45 fms., 20 miles off Sunderland, 1874 (Brady & Robertson 1876; Brady 1880a): Dredged and in bottom net in 30 and 39 fms., 5-6 and 17 miles off Souter Pt., 21 Aug. 1901 (Brady 1902 as *Dactylopus t.*): Bottom net in 32 fms., 8 miles E by S Cullercoats, 22 Sep. 1911 (Meek & Storrow 1912).

Two females, one with egg sacs, dredged, mud, 18-19 fms., 3 miles NE Cullercoats, 12 Jun, 1947; two males in muddy grit at L.W.S.T. Cullercoats N side rocks, 17 Jun. 1947 (W.S.).

Amphiascopus thalestroides (G. O. Sars)

Sars 1911, pp. 381-2, suppl. pl. 17 (as *Amphiascus t.*): Lang 1948, pp. 669-70, figs. 269(3), 271(2).

At "Roker, on *Laminaria saccharina*; rare" (Brady 1880a, as *Dactylopus strömii*; Norman & Brady 1909 as *Dactylopusia vulgaris* vide Lang 1948).

Amonardia normani (BRADY) = Amphiascus similis (CLAUS)

Sars 1906, pp. 151-3, pl. 94 (as *Amphiascus similis*): Lang 1948, p. 677, figs. 269(4), 273(2).

One, dredged in 4 fms. off Seaton Carew (Brady 1872 as *Dactylopus similis*): Roker, on *Laminaria saccharina*, rare (Brady 1872 as *Dactylopus normani*, vide Lang 1948).

Females with egg sacs common in red filamentous algae growing in concrete tanks nearest S window, Cullercoats aquarium, 30 May 1947; in green filamentous algae in jars under S window, Cullercoats aquarium, 3 Jun. 1947 (W.S.).

Pseudamphiascopus herdmani (A. Scott)

Scott, A., 1896, p. 33, pl. 1, figs. 1-11 (as *Stenhelina*): Lang 1948, pp. 680-1, fig. 274(1).

In washings from *Laminaria* roots, Holy Is. (Brady 1904 as *Stenhelina h.*).

Paramphiascopsis giesbrechti (G. O. Sars)

Sars 1906, pp. 157-8, pl. 98 as *Amphiascus g.*: Lang 1948, pp. 689-90, figs. 276(2), 277(2).

Present in saltwater pond, Amble, 21 Nov. 1930 (Meek 1934 as *Amphiascus g.*).

Paramphiascopsis longirostris (CLAUS)

Lang 1948, pp. 687-9, figs. 276(1), 277(1).

One imperfect male, in pool near L.W.M., Alnmouth, Aug.-Sep. 1899 (Brady 1900b as *Dactylopusia l.*).

Females and males in fair numbers, copulating, and females with egg

sacs, in liquid on opening *Mya arenaria* from Blyth estuary, 4 Jun. 1947; female and male, copulating, in mud dredged 18-19 fms., 3 miles NE Cullercoats, 12 Jun. 1947, also another female with egg sacs (W.S.): Male in mud from outside storage tanks, Dove Marine Laboratory, 8 Feb. 1949 (J.B.).

Bulbamphiascus denticulatus (THOMPSON)

Sars 1911, pp. 382-3, suppl. pl. 18 (as *Amphiascus d.*): Lang 1948, p. 696, figs. 276(5), 280(2).

Dredged in 20 fms., 3 miles off Whitley (Brady 1904); dredged in 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1904)—both as *Stenhelius d.*

Bulbamphiascus imus (BRADY)

Sars 1911, pp. 383-4, suppl. pl. 19, fig. 1 (as *Amphiascus normani*): Lang 1948, pp. 695-6, figs. 276(4), 280(1).

"A few," dredge, 30 fms. on mud about 10 miles off Seaham Harbour (Brady 1872 as *Canthocamptus i.*): Dredged off Marsden and Seaham in 20-30 fms., 1874 (Brady & Robertson 1876 as *Stenhelius i.* and *rostratus*): Dredged, 10-35 fms. off Marsden (Brady 1880a as *Stenhelius i.*): Dredged in 20 fms. off Cullercoats, Jul. 1900 (Brady 1900c as *Stenhelius i.*): Dredged off Hartlepool (Norman & Brady 1909 as *Amphiascus i.*).

Typhlamphiascus confusus (T. SCOTT)

Sars 1911, pp. 389-90, suppl. pl. 23 (as *Amphiascus c.*): Lang 1948, p. 708, figs. 284(2), 286(2).

One, female, dredged in 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1904 as *Stenhelius meeki* Brady).

Rhyncolagena lagenirostris (G. O. SARS)

Sars 1911, pp. 385-6, suppl. pl. 20 (as *Amphiascus l.*).

"Present" in saltwater pond, Amble, 21 Nov. 1930 (Meek 1934).

Amphiascella debilis (GIESBRECHT)

Sars 1906, pp. 162-4, pl. 104 (as *Amphiascus d.*): Lang 1948, pp. 719-20, fig. 291(1).

Present in saltwater pond, Amble, 22 Aug. 1922, 12 Jul. 1924, 6 Sep. 1924 and 21 Nov. 1930 (Meek 1926, 1934).

Female with egg sacs from 400 yds. NE Coastguard Station, Hartlepool, 21 Jun. 1947 (W.S.).

Amphiascella limicola (BRADY)

Brady 1900b, p. 433, pl. 12, figs. 1-7 (as *Stenhelia l.*): Lang 1948, p. 721, fig. 292(1).

2 or 3 specimens near old oyster hatchery, shore of R. Aln above Alnmouth, Aug.-Sep. 1899 (Brady 1900b): dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905 as *Stenhelia l.*).

Paramphiascella hispida (BRADY)

Sars 1906, pp. 166-8, pls. 107-8 (as *Amphiascus h.*): Lang 1948, pp. 725-7, fig. 295(1).

Dredged off Marsden in 30 fms. 1874 (Brady & Robertson 1876): Dredged off Hartlepool in 5 fms. (Brady 1880a); in roots of *Laminaria*, Holy Is. (Brady 1904)—all as *Stenhelia h.*

Paramphiascella intermedius (T. SCOTT)

Sars 1906, p. 169, pl. 110 (as *Amphiascus i.*).

1, dredged, 25 fms. off Hartlepool (Norman & Brady 1909 as *Amphiascus i.*).

METIDAE G. O. Sars

Metis ignea PHILIPPI = Ilyopsyllus coriaceus BRADY & ROBERTSON

Sars 1910, pp. 345-6, pl. 228: Lang 1948, pp. 776-7, fig. 315(1).

In mud of saltmarsh near mouth of R. Aln, probably largely restricted to belt just below H.W.M.; most specimens from backwater on S side of river in patch of reeds; by no means abundant; Aug.-Sep. 1899 (Brady 1900b as *Ilyopsyllus coriaceus*).

AMEIRIDAE (Monard) Lang

Ameira minuta BOECK

Sars 1907, pp. 216-7, pl. 141: Lang 1948, pp. 789-90, figs. 316(2), 317(2).

Females in rock scrapings on N edge of Cullercoats Bay at lowest L.W.S.T. of the season, 18 Aug. 1947 (W.S.).

Proameira simplex (NORMAN & T. SCOTT)

Sars 1907, pp. 219-20, pl. 144 (as *Ameira s.*): Lang 1948, p. 800, fig. 321(1).

Females with egg sacs from muddy scrapings with green and blue-green algae in overflow from small concrete tank in small tank room, Cullercoats aquarium, 31 May 1947; females with egg sacs in waste outfall from aquarium to beach, Cullercoats, 5 Jun. 1947 (W.S.).

Ameiropsis brevicornis G. O. Sars

Sars 1907, pp. 224-5, pl. 148; Lang 1948, p. 830, fig. 331(1).

Dredged in 45 fms., 20 miles off Sunderland, 1874 (Brady & Robertson 1876; Brady 1880a); in 25 fms. off Seaham (Brady 1880a) (in both as *Ameira longipes*).

Stenocopia longicaudata (T. Scott)

Sars 1907, pp. 228-9, pls. 151-2; Lang 1948, pp. 856-7, fig. 344(1).

"Dredged off Hartlepool in 25 fms." (Norman & Brady 1909).

TETRAGONICEPSIDAE Lang

Phyllopodopsyllus bradyi (T. Scott)

Sars 1907, pp. 231-3, pl. 155; Lang 1948, p. 885, fig. 356(1).

1 female, dredged, 25 fms. between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905 as *Tetragoniceps b.*).

CANTHOCAMPTIDAE G. O. Sars

Mesochra lilljeborgi Boeck

Sars 1907, pp. 208-9, pl. 135; Lang 1948, pp. 946-7, figs. 369(2), 371.

Salt marsh pools at Seaton Sluice and Alnmouth (Norman & Brady 1909).

Common to very common in scraping of surface mud E side of Willington Gut approx. M.T.L., 1 Mar. 1947; of 25 specimens examined all were female; common in surface mud, a few females with egg sacs and 1 male seen, Willington Gut, M.T.L., 15 Dec. 1947 (W.S.).

Mesochra pygmaea (Claus)

Sars 1907, pp. 209-10, pl. 136; Lang 1948, pp. 944-5, figs. 369(1), 370.

Females with egg sacs in mud scraping with green and blue-green algae from overflow of a small concrete tank in small-tank room, Cullercoats aquarium, 31 May 1947 (W.S.).

Orthopsyllus linearis (Claus)

Lang 1948, pp. 959-60, fig. 377.

Uncommon, on roots of *Laminaria*, Holy Is. (Brady 1904 as *Cletodes l.*).

CYLINDROPSYLLIDAE G. O. Sars

Cylindropsyllus laevis Brady

Sars 1909, pp. 321-3, pl. 215; Lang 1948, pp. 1195-6, fig. 476.

1, female, dredged, 5 fms. among muddy sand off Hartlepool, (Brady 1880b; Norman & Brady 1909).

Cletodes limicola BRADY

Sars 1909, p.283, pl.195: Lang 1948, pp.1256-7, figs.501(1), 502(1).

2, dredged, soft muddy bottom, 20-30 fms. off Seaham Harbour (Brady 1872): Dredged, 25 fms., between St. Mary's Is. and Souter Pt., 15 Jul. 1904 (Brady 1905): "Present" at bottom of deep region of salt-water pond, Amble, 12 Jun. and 6 Sep. 1924 (Meek 1925, 1934).

Cletodes longicaudatus (BOECK)

Sars 1909, p.286, pl.197: Lang 1948, p.1257, figs.501(2), 502(2).

Dredged, sand and gravel, 40-45 fms., 30 miles off Sunderland; muddy sand, 35 fms., 14 miles off Seaham; 20 fms., 5 miles off Hartlepool, Jul. 1874 (Brady & Robertson 1876 as *C. pectinata*, vide Lang 1948).

1 male, bottom sledge-net, 14 fms., Jul. 1952; 1 male, in tow-netting, Apr. 1952, Cambois Bay NE Sow Buoy (J.B.).

Enhydrosoma curticauda BOECK

Sars 1909, pp.298-300, pl.205: Lang 1948, p.1264, figs.501(7), 504(2).

Females with and without egg sacs in mud dredged, 18-19 fms., 3 miles NE Cullercoats 12 Jun. 1947 (W.S.).

Enhydrosoma propinquum (BRADY)

Sars 1909, pp.300-1, pl.206: Lang 1948, pp.1264-5, figs.501(8), 504(3).

A few, dredged, 33 fms. off Marsden, 1874 (Brady & Robertson 1876; Brady 1880a as *Cletodes* p.).

Nannopus palustris BRADY

Sars 1909, pp.307-9, pl.209: Lang 1948, p.1291, figs.514(4), 517.

A few, in pools of brackish water, Seaton Sluice (Brady 1880a, 1896).

Pontopolites typicus T. SCOTT

Sars 1909, pp.309-11, pl.210: Lang 1948, pp.1296-7, figs.514(7), 521.

On roots of *Laminaria*, Holy Is. (Brady 1904).

Eurycletodes latus (T. SCOTT)

Sars 1909, pp.294-5, pl.202: Lang 1948, p.1310, figs.523(8), 529(1).

"Dredged off Hartlepool in 25 fms." (Norman & Brady 1909 as *Cletodes* l.).

Eurycletodes similis (T. SCOTT)

Sars 1909, pp. 295-6, pl. 203: Lang 1948, p. 1311, figs. 523(9), 529(2).

In dredge and bottom net, 39 fms., 17 miles off Souter Pt., 21 Aug. 1901 (Brady 1902): On roots of *Laminaria*, Holy Is. (Brady 1904)—in both as *Cletodes s.*

LAOPHONTIDAE T. Scott

Laophonte cornuta PHILIPPI

Sars 1907, pp. 235-7, pls. 157-8: Lang 1948, pp. 1347-8, figs. 543(1), 544(1).

On roots of *Laminaria*, Holy Is. (Brady 1904 as *L. serrata*; Norman & Brady 1909): In bottom net, 10 fms. immediately S of Inner Farne, 16 Sep. 1911 (Meek & Storrow 1912).

Laophonte longicaudata BOECK

Sars 1908, pp. 243-4, pl. 164: Lang 1948, pp. 1352-4, figs. 543(7), 545(3).

Several, dredged, 20-30 fms. off Seaham (Brady 1872 as *L. hodgii*; Brady 1880a): Dredged, 27 fms. off Hawthorn and off Hartlepool, 1874 (Brady & Robertson 1876 as *L. hodgii*; Brady 1880a).

One, female, bottom sledge-net, 14 fms. NE Sow Buoy Cambois Bay, Jul. 1952 (J.B.).

Laophonte setosa BOECK

Sars 1908, pp. 244-5, pl. 165 (as *L. similis*): Lang 1948, pp. 1351-2, figs. 543(5), 545(1).

Amongst weeds in tide pools at Whitley, Cullercoats and Sunderland, and in brackish water at Seaton Sluice (Brady 1872, 1880a): Littoral, Alnmouth, Aug.-Sep. 1899 (Brady 1900b): Common littoral form, also down to several fms. Northumberland and Durham coast (Norman & Brady 1909) (all recorded as *L. similis*, vide Lang 1948).

Pseudonychocamptus proximus (G. O. SARS)

Sars 1908, p. 250, pl. 170 (as *Laophonte p.*): Lang 1948, p. 1362, figs. 547(8), 550(3).

"Present" in saltwater pond, Amble, 21 Nov. 1930 (Meek 1934).

Heterolaophonte strömi (BAIRD)

Sars 1908, pp. 251-2, pls. 171-2 (as *Laophonte s.*): Lang 1948, pp. 1368-70, figs. 551(1), 552.

(a) In pools on sea shore amongst corallines etc., Berwick Bay, 1835 (Baird 1837 as *Cyclops s.*; Baird 1845 as *Canthocarpus s.*; Baird 1850 as *Canthocamptus s.*): Rare, rock pools, Durham coast (Brady

1865a as *Dactylopus* (*Canthocamptus* s.): In scraping from small tank at Cullercoats aquarium containing mud and filamentous green and blue-green algae; antennal joints and 4th pleopod not as expected in adult, perhaps thus a juvenile (W.S.).

(b) Recorded as *Laophonte curticauda* Boeck.

On mud-covered rocks at Whitburn and amongst weeds at Sunderland (Brady 1880a): "In tidal pools at Whitburn and Sunderland, and at the roots of *Laminaria*, Holy Is. (G.S.B.)" (Norman & Brady 1909): In saltwater pond, Amble, on 22 Aug. 1922, 12 Jul. and 6 Sep. 1924, 21 Nov. 1930, 28 May 1931 (Meek 1925, 1934): Female with egg sacs in muddy scrapings with *Fabricia sabella* tubes, Cullercoats N side rocks, L.W.S.T. 4 Jun. 1947; female and male in copulation, 400 yds. NE Coastguard Station, Hartlepool, 21 Jun. 1947 (W.S.).

***Asellopsis hispida* BRADY & ROBERTSON**

Sars 1908, pp. 268-9, pl. 186: Lang 1948, pp. 1401-2, figs. 564(9), 569(1).

"Dredged sparingly in 4-10 fms. off Durham Coast" (Brady 1880a as *Laophonte h.*): Surface and bottom net at 1 and 15 fms. SE Craster, 16 Sep. 1911 (Meek & Storrow 1912).

***Platychelipus laophontoides* SARS**

Sars 1908, pp. 276-7, pl. 192: Lang 1948, pp. 1405-6, figs. 564(12), 570(2).

"Brackish pools at Seaton Sluice" (Brady 1896 as *P. littoralis*, vide Lang 1948).

***Platychelipus littoralis* BRADY**

Sars 1908, pp. 274-6, pls. 190-1: Lang 1948, pp. 1404-5, figs. 564(11), 570(1).

Brackish pools, Seaton Sluice (Brady 1800a): Brackish pools, Seaton Sluice, summer 1894 (Brady 1900a; Norman & Brady 1909): Tolerably abundant in mud of R. Aln and in tidal pools of adjacent marshes, usually in company with *Delavalia* (= *Stenhelia*) *palustris*, Aug.-Sep. 1899 (Brady 1900b; Norman & Brady 1909).*

***Onychocamptus horridus* (NORMAN)**

Sars 1908, pp. 246-7, pls. 166-7 (as *Laophonte h.*): Lang 1948, pp. 1421-2, figs. 571(10), 579(1).

On roots of *Laminaria*, Holy Is. (Brady 1904 as *Laophonte h.*).

* Lang 1948, regards only the Brady 1880a reference as certain; the others he says are uncertain (p. 1405). See also *P. laophontoides*.

Cleta lamellifera CLAUS

Sars 1908, pp. 266-7, pl. 185 (as *Laophontopsis l.*): Lang 1948, pp. 1436-7, fig. 589(1).

1, on *Laminaria saccharina*, Roker (Brady 1872): few, on *Laminaria* and muddy rocks near Sunderland (Brady 1880a); in pools at extreme L.W.M., Roker, 15 Aug. 1900 (Brady 1902); on roots *Laminaria*, Roker (Brady 1904); all as *Laophonte l.*: Rather scarce, on littoral algae and dredged from moderate depths. On roots of *Laminaria*, Sunderland and Holy Is. (Norman & Brady 1909 as *Laophontopsis l.*).

Normanella dubia BRADY & ROBERTSON

Brady 1880a, p. 87, pl. 78, figs. 12-22: Lang 1948, pp. 1443-4, fig. 592(8).

Dredged, 33 fms. off Marsden and 20 fms. Hartlepool, 1874 (Brady & Robertson 1876).

Normanella mucronata G. O. SARS

Sars 1909, pp. 280-1, pl. 194, fig. 2: Lang 1948, pp. 1440-1, figs. 591(3), 592(3).

Females in mud dredged from 18-19 fms., 3 miles NE Cullercoats, 12 Jun. 1947 (W.S.).

Order NOTODELPHYOIDA G. O. Sars

NOTODELPHYIDAE G. O. Sars

Notodelphys agilis THORELL

Sars 1921b, pp. 35-6, pl. 17, fig. 3.

In ascidians taken off the coast of Durham in 20-30 fms. (Brady 1878).

Notodelphys allmani THORELL

Sars 1921b, pp. 31-3, pls. 15-16.

Females found in *Asciidiella aspersa* (approx. 3 cms. long) growing in outside sea water storage reservoir, Cullercoats on 28 Nov. 1947; average number per host 1, range 0-2 (W.S.): 11 females, 11 males, 2 juv., from *Asciidiella aspersa* growing in same reservoir, 8 Feb. 1949 (J.B.).

Notodelphys coerulea THORELL

Sars 1921b, pp. 34-5, pl. 17, fig. 2.

In branchial sac of *Corella parallelogramma* taken off Hawthorn (Brady 1878).

DOROPYGIDAE Brady

Doropygus porcicauda BRADY

Sars 1921b,p.45,pl.22.

In *Corella parallelogramma* dredged in 27 fms. off Hawthorn (Brady 1878): From ascidians dredged in 21 fms. off Souter Pt. (Norman & Brady 1909).

Doropygus pulex THORELL

Sars 1921b,pp.42-4,pl.20.

Many immature specimens in ascidians dredged by Robertson, Norman and Brady off coasts of Durham (Brady 1878): In ascidians from the coasts of Northumberland and Durham (Norman & Brady 1909).

Common in *Molgula oculata*, trawled 600 yds. SE Farne Is. 9 Sep. 1950 (H.O.B.).

Gunentophorus globularis COSTA

Sars 1921b,pp.57-8,pl.28(2).

1, from *Polycarpa pomaria*, trawled 9 miles E by S Blyth 30 Mar. 1934 (H.O.B.)

ASCIDICOLIDAE Thorell

Ascidicola rosea THORELL

Sars 1921b,pp.64-66,pl.31.

From Ascidians dredged off the Durham coast (Brady 1878): In Ascidians taken off Northumberland and Durham (Norman & Brady 1909).

Order CALIGOIDA G. O. Sars

CALIGIDAE Milne-Edwards

Caligus curtus O. F. MÜLLER

T. & A. Scott 1913,p.45,pl.24,figs.1-2;pl.25,figs.7-9.

"Common" on "cod and coal-fish" off Tynemouth, Aug. 1862 (Norman 1863): "Common" on "cod" off Berwick, Jul. 1863 (Norman 1864): Dredged, Northumberland 1862-64 (Norman 1865): "Parasitic on cod and its allies; very common. N.D." (Norman & Brady 1909): 7 females and one male taken from 2 codling, 30 Oct. 1917. Were parasitised themselves by *Udonella pollachii* Nob. (Jorgensen 1918):

Very occasional in adult herring stomachs (about 0.02% of contents) obtained from stations within the area approx. 54°45' to 55°30'N and from coast to 0°30'W, May 1922 (Hardy 1924): In fair numbers in offshore plankton, Aug.-Sep. 1923 and in earlier years (Jorgensen 1924a): 3 in plankton from Coquet Estuary, 18 Sep. 1923 (Jorgensen 1924b).

Abundant on general body surface of practically every specimen of *Gadus morhua* and *Gadus virens* taken 40 miles NE by E of the Tyne, 31 Aug. 1946 (W.S.): One female, bottom sledge-net, mud, 14 fms., NE Sow Buoy Cambois Bay, in summer 1950 (J.B.).

Caligus diaphanus NORDMANN

T. & A. Scott 1913, p.60, pl.17, fig.1; pl.18, figs.6-7; pl.48, fig.7.

9 females from inner side of operculum of a 54 cm. *Trigla lucerna* trawled 60 miles ESE of the Tyne, landed 11 Mar. 1949 (W.S.).

Caligus pelamydis KRØYER

T. & A. Scott 1913, p.57, pl.7, figs.2-3; pl.9, figs.1-5; pl.71, fig.14.

2-3 per fish, on inner surface of operculum of a number of *Scomber scombrus* taken 40 miles NE by N of the Tyne, 21 Aug. 1946; about 1 in 5 of the fish were affected: 2, at back of mouth and inside operculum of a *Trachurus trachurus* caught in seine-net boat off Blyth, Nov. 1947 (W.S.).

Caligus rapax MILNE-EDWARDS

T. & A. Scott 1913, p.48, pl.4, figs.3-8; pl.6, figs.1-2.

"Common" on "cod", off Berwick, Jul. 1863 (Norman 1864): Northumberland 1862-64 (Norman 1865): In surface net, Blyth Bay 17 Aug. 1904 (Meek 1904): "A common parasite on various fishes. N.D." (Norman & Brady 1909): "Present" in saltwater pond, Amble, 21 Nov. 1930. Also nauplii of this and probably other spp. of the genus numerous in this pond in the years 1924, 1925, 1926, 1929, variously from Apr. to Oct. in numbers from 80 to 2520 (Meek 1925, 1934).

Immature female, netted, L.W.S.T., Cullercoats S side rocks, 14 Aug. 1946; very common in buccal cavity of *Gadus morhua* taken 40 miles NE by E of the Tyne, 31 Aug. 1946; about 20 specimens on body, mostly just anterior to caudal fin, of *Mola mola* 1½ miles E of Boulmer, 19 Sep. 1947; infesting about 1 in 10 *Gobius ruthensparri*, Cullercoats, summer 1948 (W.S.): Repeatedly found on *Gadus morhua* brought in from Blyth; some, both male and female, taken in bottom sledge-net, 5 and 14 fms. off Blyth in summer 1950 and 1952; also in tow-nettings at same localities and times (J.B.).

Cecrops latreillii LEACH

T. & A. Scott 1913, p. 98, pl. 21, figs. 3-4; pl. 27, figs. 9-10; pl. 28, figs. 1-7.

"On a sunfish off the Tyne (John Hancock); on sunfish, St. Mary's Is. (G.S.B.)" (Norman & Brady 1909).

Dinematura producta (O. F. MÜLLER)

T. & A. Scott, 1913, p. 86, pl. 22, fig. 3; pl. 26, figs. 1-3; pl. 27, figs. 1-8.

3, on "*Lamna monensis*" (= *L. cornubica*), Berwick Bay, Sept. 1834 (Johnston 1835 as *Pandarus lamnae*; Baird 1850 as *D. lamnae*; Norman & Brady 1909).

24 females collected from 11 ft. *Cetorhinus maximus* caught 2 miles off Souter, 13 Jun. 1934 (W.S.).

Echthrogaleus coleoptratus (GUÉRIN)

T. & A. Scott 1913, p. 89, pl. 22, fig. 4.

Male from branchial covers of *Lamna cornubica*, Berwick Bay, Sep. 1834 (Johnston 1835, as *Pandarus alatus*): "Appears parasitical on several species of fish . . . generally attached to sides of branchial covers" (Baird 1850, as *Dinemoura alata*).

Lepeophtheirus hippoglossi (KRØYER)

T. & A. Scott 1913, p. 67, pl. 6, figs. 4-5; pl. 17, fig. 2; pl. 18, figs. 8-10.

From *Hippoglossus hippoglossus* in Berwick Bay (Baird 1950): "Seaham Harbour (G.H.)" (Norman & Brady 1909).

Lepeophtheirus nordmanni (MILNE-EDWARDS)

T. & A. Scott 1913, p. 66, pl. 12, fig. 1; pl. 16, figs. 4-11.

48 females and 59 males on side of body near anus of a *Mola mola* 1½ miles E of Boulmer 19 Sep. 1947 (W.S.).

Lepeophtheirus pectoralis (O. F. MÜLLER)

T. & A. Scott 1913, p. 64, pl. 10, figs. 3-4; pl. 12, figs. 2-3; pls. 13, 14, 15 entire; pl. 16, figs. 1-3.

One female with egg strings on pelvic fin of *Pleuronectes platessa* in floor pool of Cullercoats aquarium, 3 Apr. 1951 (J.B.).

Lepeophtheirus pollachii BASSETT-SMITH

T. & A. Scott, p. 73, pl. 17, figs. 5-6; pl. 18, figs. 13-15; pl. 48, figs. 4-5.

6 females and 1 male, inside buccal cavity of *Gadus virens* cast up on Tynemouth beach 28 Oct. 1947 (W.S.).

Lepeophtheirus salmonis (KRØYER)

T. & A. Scott 1931, p. 71, pl. 17, fig. 4; pl. 18, figs. 11-12.

On salmon at Berwick (Baird 1845, 1848, 1850, as *L. strömii*).

Lepeophtheirus thompsoni BAIRD

T. & A. Scott 1913, p. 69, pl. 17, fig. 3; pl. 25, fig. 10; pl. 48, figs. 1-3.

Adults common and in large numbers on gills of *Scophthalmus maximus*; immature forms less common on body surface of same, taken 30 miles NE of R. Tyne, 2 Sep. 1946 (W.S.).

Pandarus bicolor LEACH

T. & A. Scott 1913, p. 95, pl. 21, fig. 2; pl. 22, figs. 5-6; pl. 26, figs. 4-19; pl. 58, figs. 1-8.

One, from pelvic fin of *Acanthias vulgaris* caught 30 miles NE of R. Tyne, 3 Sep. 1946; on pelvic fins of 14 *Acanthias*, Blyth, 29 Oct. 1946 (W.S.).

Trebius caudatus KRØYER

T. & A. Scott 1913, p. 81, pl. 22, figs. 1-2; pl. 54, figs. 1-11.

"Common on skate" (Norman & Brady 1909).

DICHELESTHIDAE Milne-Edwards

Dichelestium oblongum (ABILDGAARD)

T. & A. Scott 1913, p. 106, pl. 31, figs. 7-18; pl. 45, figs. 4-5.

11, from gills and branchial chamber of *Acipenser sturio*, 51 ins. long, caught 80 miles NE by E of R. Tyne by S.T. "Echo" and landed at North Shields, 21 Feb. 1948 (W.S.).

Order LERNEOIDA G. O. Sars

LERNAEIDAE de Blainville

Lernaeocera branchialis (L.)

T. & A. Scott 1913, p. 142, pls. 42-43.

On gills of *Gadus morhua* at Redcar (Ferguson 1860): Common on *Gadus morhua* (Norman & Brady 1909) (in both as *Lernaea b.*).

One female in bottom sledge-net haul in 5 fms., Blyth Bay, summer, 1950 (J.B.).

Pennella balaenopterae KOREN & DANIELSSEN

Leigh-Sharpe 1928, p.86, fig.6 (female).

One, in skin of 28 ft. male *Balaenoptera acutorostrata* taken 63 miles SE of R.Tyne by M.V. "Rodny" 8 Sep. 1948 (W.S.).

CHONDRACANTHIDAE Milne-Edwards

Chondracanthus annulatus OLSSON

T. & A. Scott 1913, p.169, pl.20, fig.9; pl.47, fig.3; pl.56, figs.8-10.

"A single specimen of a female with male attached was found on the gills of *Raia radiata*" (landed at North Shields) (Bainbridge 1909 as *C.inflatus* n.sp.; Norman & Brady 1909).

Chondracanthus lophii JOHNSTON

T. & A. Scott 1913, p.179, pl.52, fig.4; pl.56, figs.16-18.

Several, in pouches under fins of *Lophius piscatorius* (Johnston 1836): On *Lophius piscatorius*, Cambois (Norman & Brady 1909).

Abundant, on inner side of operculum of every *Lophius* examined 30 miles NE of R.Tyne, 31 Aug. 1946 (W.S.).

LERNAEPODIDAE Milne-Edwards

Brachiella merluccii BASSETT-SMITH

T. & A. Scott 1913, p.207, pl.62, figs.4-5; pl.63, figs.17-20.

Two, on gill rakers of *Merluccius merluccius*, seine-net boat, Blyth, 4 Nov. 1946 (W.S.).

Brachiella parkeri G. M. THOMPSON

T. & A. Scott 1913, p.212, pl.64, fig.7.

"One . . . (female) of . . . this species from gills of . . . *Raia oxyrhynchus*" (Bainbridge 1909; Norman & Brady 1909).

Brachiella pastinaca VAN BENEDEN

T. & A. Scott 1913, p.211, pl.64, fig.8.

One, in spiracle of *Acanthias vulgaris* landed at North Shields (Bainbridge 1909; Norman & Brady 1909); 7, from nostrils of several smallish *Acanthias vulgaris* caught by Blyth seine-net boat off Newbiggin, 29 Oct. 1946 (W.S.).

Charopinus dalmanni (RETZIUS)

T. & A. Scott 1913,p.189,pl.55,figs.1-4;pl.54,figs.12-17.

One, from claspers of *Trygon pastinaca* 25-28 miles NE of R.Tyne, 6 Nov. 1939 (W.S.).

Clavella iadda LEIGH-SHARPE

Leigh-Sharpe 1920,p.332,figs.1B,3.

From *Gadus morhua*, Cullercoats, Feb. 1946 (W.S.).

Clavella rugosa (KRØYER)

T. & A. Scott 1913,p.216,pl.65,figs.4-5;pl.66,figs.1-7.

... fairly common on gills of ... *Anarhicas lupus* landed at North Shields (Bainbridge 1909; Norman & Brady 1909, in both as *Anchorella r.*).

Clavella sciatherica LEIGH-SHARPE

Leigh Sharpe 1918,p.118, all figures; 1920,p.332,figs.1A,2,4-9.

On inside angle of the jaw of *Gadus morhua* (on half the specimens examined), from 38-50 fms., 40 miles NE by N of the R.Tyne, 31 Aug. 1946; one female with male attached and egg sacs dredged in 21 fms., 1½ miles E St. Mary's Is. 9 May 1947; one female from mouth of a *Gadus virens* cast up dead on Tynemouth sands 28 Oct. 1947 (W.S.).

Clavella uncinata (O. F. MÜLLER)

T. & A. Scott 1913,p.214,pl.65,figs.2,3,6;pl.66,figs.21-23.

On gill covers of *Gadus morhua* "the most common in any of our seas" (Johnston 1835 as *Lerneæ u.*): "Two females of what seems to be a variety of *Anchorella uncinata* Müller ... from the fin of ... *Gadus morhua*" (landed at North Shields) (Bainbridge 1909): Common on gills of *Gadus morhua* and *G.aeglefinus* (Norman & Brady 1909, as *Anchorella u.*).

Lernaeopoda cluthae SCOTT

T. & A. Scott 1913,p.198,pl.57,figs.1-7;pl.58,fig.16;pl.60,figs.1-3.

"About 12 females from the gills of *Raia radiata*" landed at North Shields (Bainbridge 1909).

Lernaeopoda salmonea (L.)

T. & A. Scott 1913,p.199,pl.48,figs.8-12;pl.59,figs.1-6.

From gills of salmon taken in the R.Coquet, 1908 (Norman & Brady 1909).

SPLANCHNOTROPHIDAE

Splanchnotrophus brevipes HANCOCK & NORMAN

Hancock & Norman 1863,p.55,pl.16,figs.1-6.

(3 females) from . . . *Doto coronata* from rock pools at Cullercoats," (early 1861) . . . "also a few . . . some years ago on the same coast . . ." (Hancock & Norman 1863).

On *Doto coronata* on *Sertularia* at L.W.S.T. as follows: on 1 out of 2 (of host) at Sharpness Point, 19 Apr. 1946, on 2 out of 6 at Hartley, 1 Jul. 1946, and on 2 out of 2 at Freestone Point, 16 Oct. 1946 (W.S.).

INITIALS

F.E.	F. Evans	M.M.	M. Mistakidis
H.O.B.	H. O. Bull	T.J.W.	T. J. Weston
J.B.	J. Bossanyi	W.S.	W. Stephenson
J.C.R.	J. C. Roff		

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