

Zooplankton.

Sheet 38.

COPEPODA

SUB-ORDER: CALANOIDA

Family: Pseudocalanidae

Genera: CLAUSOCALANUS

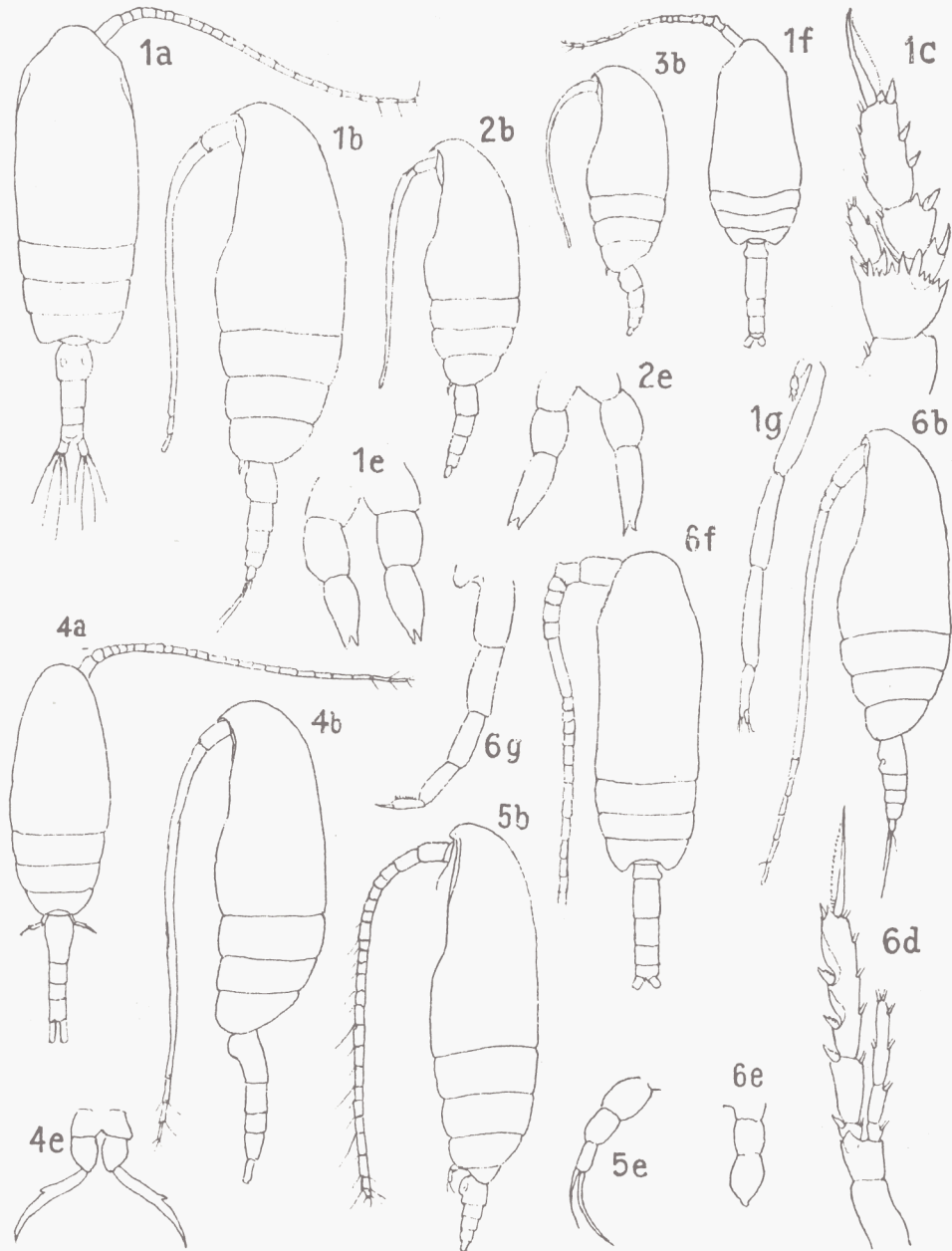
DREPANOPUS

DREPANOPSIS

CTENOCALANUS

(By G. P. Farran †,
revised by W. Vervoort)

1951.



1, *Clausocalanus arcuicornis*; 2, *Clausocalanus pergens*; 3, *Clausocalanus paululus*;
4, *Drepanopus bungei*; 5, *Drepanopsis oblongus*; 6, *Ctenocalanus vanus*.
a, ♀ dorsal; b, ♀ lateral; c, ♀ 2nd foot; d, ♀ 4th foot; e, ♀ 5th feet; f, ♂ dorsal; g, ♂ 5th feet.
(Figs. 4a, b e, 5b, e, after Sars; 1c, g, f, 6d, after Giesbrecht; 6g, after Wolfenden; remainder original).

Genus CLAUSOCALANUS Giesbrecht, 1888

Female with rather stiff rostral filaments, sometimes resembling 2 joints. 5th feet symmetrical, uniramous, 3-jointed, without setae, apical joints bifurcate at tip. 2nd basal joints of 2nd and 3rd feet very wide, distal margins bearing tooth-like processes. Male with slender, 17-jointed 1st antennae. Right 5th foot styliform, 5-jointed, much longer than left, which is 1-3-jointed and minute.

1. *C. arcuicornis* (Dana, 1849). ♀ 1.0-1.6 mm., ♂ 0.9-1.2 mm. Genital segment in female longer than either of the following segments. Furca about as long as wide. Rostrum composed of 2 rather stout, pointed filaments. Oceanic, surface to deep-water.
2. *C. pergens* Farran, 1926. ♀ 0.9-1.05 mm. Resembling *C. arcuicornis* closely in form and structure, but smaller, 5th feet more slender. Oceanic, mainly deep-water.
3. *C. paululus* Farran, 1926. ♀ 0.75-0.82 mm. Resembles *C. pergens* but smaller and stouter. Oceanic, mainly deep-water.

The specimens of *Clausocalanus*, originating from the N.E. Atlantic and resembling *C. arcuicornis*, fall into three size-groups, represented by the above-named species. It is doubtful, however, if the division is valid for the whole area of distribution of this world-wide section, and intermediate forms may ultimately link them up as races of a variable *C. arcuicornis*.

C. furcatus (Brady, 1883), with a more southern distribution in the Atlantic, has not yet been recorded from the west coast of Europe. It can easily be recognized by its much shorter genital segment in the female, shorter than either of the following abdominal segments.

Genus DREPANOPUS Brady, 1883

Female in general appearance as *Pseudocalanus*, but endopods of 2nd feet 1- or 2-jointed, of the 3rd feet 2- or 3-jointed. 5th feet symmetrical, 2-jointed, with a large, curved terminal spine.

4. *D. bungei* G. O. Sars, 1898. ♀ 1.3 mm. Endopods of the 2nd feet 1-jointed. 5th feet each with large, curved terminal spine, notched at outer edge. Adult male unknown. Polar distribution, in salt and brackish water, mainly surface.

Genus DREPANOPSIS Wolfenden, 1911

Female as *Pseudocalanus*, but body stouter; 4th and 5th thoracic somites separate. Abdomen short. Jointing of swimming feet as in *Pseudocalanus*. 1st antennae 24-jointed, short, exceedingly setose. Rostrum composed of one blunt projection. 5th feet symmetrical, 3-jointed, terminal joints with 2 strong, sickle-shaped terminal spines. Male unknown.

5. *D. oblongus* (G. O. Sars, 1920). ♀ 3.65 mm. Anal segment in female not longer than preceding. 5th thoracic segment slightly produced laterally and rounded. May be identical with *D. frigidus* Wolfenden, 1911, which appears to differ by its large size and rounded 5th thoracic somite. Oceanic, deep-water.

Genus CTENOCALANUS Giesbrecht, 1888

Shape of body and jointing of swimming feet as in *Pseudocalanus*. Outer edge spines of exopods of 2nd and 3rd feet with pectinate distal margins. Female with asymmetrical 5th feet: on the left side a short, 2-4-jointed finger-shaped process, right 5th foot absent. Male with 21-jointed 1st antennae; 5th foot on left side 5-jointed, elongated, on right side a small tubercle.

6. *C. vanus* Giesbrecht, 1888. ♀ 0.92-1.32 mm., ♂ 1.20-1.30 mm. Rostrum consists of 2 slender filaments. 1st antennae in female reach beyond furca. 1st antennae in male with thickened basal joints. Left 5th foot about half as long as abdomen. Oceanic, surface to deep-water.

References to Descriptions and Figures.

1. *C. arcuicornis*: Dana, 1853, Pl. 72, Fig. 7 (as *Calanus arcuicornis*). Claus, 1863, Pl. 27, Figs. 5-8 (as *Calanus mastigophorus*); 1866, Pl. 1, Fig. 1, Pl. 5, Figs. 20, 21 (as *Calanus mastigophorus*); 1881, Pl. 2, Figs. 10-16 (as *Eucalanus mastigophorus*). Giesbrecht, 1892, Pl. 1, Fig. 14, Pl. 2, Fig. 7, Pl. 10, Figs. 1-19, Pl. 36, Figs. 29-31. T. Scott, 1894, Pl. 8, Figs. 28-47 (as *C. latipes* and *C. arcuicornis*). Giesbrecht & Schmeil, 1898. Wheeler, 1900, Fig. 8. Esterly, 1905, Fig. 13. Van Breemen, 1908, Fig. 20. With, 1915, Pl. 1, Fig. 9. Pesta, 1920, Fig. B14. Früchtl, 1923, Fig. 2. Esterly, 1924, Fig. C. Früchtl, 1924, Fig. 5. Candeias, 1926, Pl. 2, Figs. 9, 10. Farran, 1926, Pl. 6, Figs. 1-3. Sewell, 1929, Figs. 36, 37. Wilson, 1932, Fig. 24. Rose, 1933, Fig. 37. Früchtl, 1934, Figs. 1, 2. Farran, 1936, Fig. 2. Tanaka, 1937, Fig. 2. Dakin & Colefax, 1940, Figs. 133a-f. Carvalho, 1945, Pl. 7, Fig. 5. Vervoort, 1946.
2. *C. pergens*: Farran, 1926, Pl. 6, Figs. 1-6; 1929. Rose, 1933, Fig. 39.
3. *C. paululus*: Farran, 1926, Pl. 6, Figs. 7-12; 1929. Rose, 1933, Fig. 40. Farran, 1936.
4. *D. bungei*: Sars, 1898, Pl. 9. Mrázek, 1902. Van Breemen, 1908, Fig. 26. Jaschnov, 1927, Figs. 2, 3.
5. *D. oblongus*: Sars, 1924-25, Pl. 13, Figs. 1-14 (as *Farrania oblonga*). Rose, 1933, Fig. 48. (*D. frigidus*: Wolfenden, 1911, Fig. 29. Farran, 1929. Sewell, 1929, Fig. 39. Rose, 1933.)
6. *C. vanus*: Giesbrecht, 1892, Pl. 10, Figs. 20, 21, 26, Pl. 36, Fig. 28. Giesbrecht & Schmeil, 1898. Wolfenden, 1904, Pl. 9, Fig. 9. Van Breemen, 1908, Fig. 21. Esterly, 1924, Fig. D. Rose, 1933, Fig. 41. Tanaka, 1937, Figs. 3a-c. Dakin & Colefax, 1940, Figs. 135a-f.

Distribution Species

Gulf of Bothnia	—
Gulf of Finland	—
Baltic proper	—
Belt Sea	—
Kattegat	—
Skagerak	—
Northern North Sea	—
Southern North Sea	—
English Channel (eastern)	—
English Channel (western)	1
Bristol Channel and Irish Sea	1
South and West Ireland	1, 2, 6
North-eastern Atlantic	1, 2, 3, 5, 6
Faroe Shetland Area	—
Faroe Iceland Area	—
Norwegian Sea	—
Barents Sea	4

References to Work on Biology.

- Bogorov (1939) 4. Van Breemen (1908) 1, 4, 6. Candeias (1926) 1. Catalogue, etc. (1906, 1909, 1916) 1, 6. Cleve (1900, 1902) 1. Dakin & Colefax (1940) 1, 6. Esterly (1924, 1928) 1, 6. Farran (1903) 1; (1905) 6; (1908) 1, 6; (1911) 1; (1920) 1, 6; (1926) 1, 2, 3, 6; (1936) 1, 3, 6. Früchtl (1923, 1924, 1934) 1. Giesbrecht (1892) 1, 6. Giesbrecht & Schmeil (1898) 1, 6. Hardy & Gunther (1935) 1, 6. Jaschnov (1927) 4. Mrázek (1902) 4. Pesta (1912) 1. Rose (1929) 1. Sars (1898, 1900) 4; (1924—25) 1, 5. A. Scott (1909) 1. Sewell (1929) 1. Steuer (1910) 1, 6. Tanaka (1937) 1, 6. Vervoort (1946) 1. Wilson (1932, 1942) 1. With (1915) 1. Wolfenden (1904) 6; (1911) 1, 6.

References.

- Bogorov, B. G., 1939. C.R. Acad. Sci. Moscou, Vol. 23.
Breemen, P. J. van, 1908. Nordisches Plankton, Vol. 4, Pt. 8.
Candeias, A., 1926. Bull. Soc. Port. Sci. Nat., Vol. 10, No. 3.
Catalogue des espèces, etc. Publ. Circ., Cons. Perm. Internat. Explor. Mer, No. 33 (1906), No. 48 (1909), No. 70 (1916).
Claus, C., 1863. Die Freilebenden Copepoden, etc.
— 1866. Die Copepoden Fauna von Nizza, etc.
— 1881. Arb. Zool. Inst. Univ. Wien, Vol. 3.
Cleve, P. T., 1900. The Seasonal Distribution of Atlantic Plankton Organisms.
— 1902. Additional Notes on the Seasonal Distribution of Atlantic Plankton Organisms.
Dana, J. D., 1853. U.S. Exploring Exped., etc., Vol. 13, Pt. 2 (+ Atlas, 1855).
Esterly, C. O., 1905. Univ. Calif. Publ. Zool., Vol. 2, No. 4.
— 1924. Univ. Calif. Publ. Zool., Vol. 26.
— 1928. Bull. Scripps Inst. Oceanogr., Techn. Ser., Vol. 1.
Farran, G. P., 1903. Fish., Ireland, Sci. Invest., 1901, Pt. 2, App. 7.
— 1905. Fish., Ireland., Sci. Invest., 1902—03, Pt. 2, App. 2.
— 1908. Fish., Ireland, Sci. Invest., 1906, Pt. 2.
— 1911. Bull. Trimestriel, 1902—08. Cons. Perm. Internat. Explor. Mer, Résumé, etc., Vol. 2.
— 1920. Publ. Circ., Cons. Perm. Internat. Explor. Mer., No. 73.
— 1926. J. Linn. Soc., Lond., Zool., Vol. 36.
— 1929. British Antarctic ("Terra Nova") Expedition, Nat. Hist. Rept., Zool., Vol. 8, No. 3.
— 1936. Sci. Repts. Gr. Barrier Reef Exped., Vol. 5, No. 3.
Früchtl, F., 1923. Verh. Zool. Bot. Ges. Wien, Vol. 73.
— 1924. S.B. Acad. Wiss. Wien, Math. Nat. Kl., Vol. 132, Sect. 1.
Früchtl, F., 1934. S.B. Akad. Wiss. Wien, Math. Nat. Kl., Vol. 143, Sect. 1.
Giesbrecht, W., 1892. Fauna u. Flora Golf. Neapel, Vol. 19.
Giesbrecht, W. & O. Schmeil, 1898. Das Tierreich, Vol. 6, Copepoda, 1, Gymnoplea.
Hardy, A. C. & E. R. Gunther, 1935. Discovery Repts., Vol. 11.
Jaschnov, W. A., 1927. Ber. Wiss. Meeresinst., Vol. 2, Pt. 2.
Mrázek, A., 1902. Fauna Arctica, Vol. 2.
Pesta, O., 1912. Denkschr. Akad. Wiss. Wien, Math. Nat. Kl., Vol. 87.
— 1920. Zool. Jahrb., Syst., Vol. 43.
Rose, M., 1929. Rés. Camp. Sci. Monaco, Vol. 78.
— 1933. Faune de France, Vol. 26.
Sars, G. O., 1898. Ann. Mus. Zool. St. Petersburg, 1898.
— 1900. Sci. Res. Norwegian North Polar Exped., Vol. 1, Pt. 5.
— 1924—25. Rés. Camp. Sci. Monaco, Vol. 69, Plates (1924) and Text (1925).
Scott, A., 1909. Siboga Exped., Mon. 29a.
Sewell, R. B. S., 1929. Mem. Indian Mus., Vol. 10, Pt. 1.
— 1947. Sci. Rep. John Murray Exped., 1933—34, Vol. 8, No. 1.
Steuer, A., 1910. S.B. Akad. Wiss. Wien, Math. Nat. Kl., Vol. 119, Sect. 1.
Tanaka, O., 1937. Jap. J. Zool., Vol. 7.
Vervoort, W., 1946. Temminckia, Vol. 8 (1949, issued separately 1946).
Wheeler, W. M., 1900. Bull. U.S. Fish. Comm., 1899.
Wilson, C. B., 1932. Bull. U.S. Nat. Mus., Vol. 158.
— 1942. Carnegie Inst. Washington Publ. No. 536.
With, C., 1915. Danish Ingolf Exped., Vol. 3, Pt. 4.
Wolfenden, R. N., 1904. J. Mar. Biol. Ass. U.K., N.S., Vol. 7.
— 1911. Deutsche Südpolar Exped., Vol. 12 (Zool., Vol. 4).