

ZOOLOGY.—*Pycnogonida of the Bartlett collections.*<sup>1</sup> JOEL W. HEDGEPEETH.  
(Communicated by WALDO L. SCHMITT.)

Most of the pycnogonids collected by Capt. Robert A. Bartlett in Greenland and Arctic America up to the year 1935 were sent to Dr. Louis Giltay, formerly of the Royal Museum of Natural History, Brussels, Belgium, who prepared a short manuscript on them. Unfortunately Dr. Giltay died before the manuscript was ready for the printer.<sup>2</sup> At the request of Dr. Waldo L. Schmitt, I have prepared this paper on the pycnogonids taken by Captain Bartlett in the Arctic and have included the identifications made by Dr. Giltay, which are designated by an asterisk.

Although the collections made by Captain Bartlett from the coasts of Greenland add no new species to the known fauna of that region, those from Fox Basin represent a hitherto unreported region for these animals. The specimens from Fox Basin comprise the most extensive collection of pycnogonids from the American Arctic that has yet been made. Heretofore, our knowledge of this fauna has been supplied principally by Cole's list (1921) of three species from Dolphin and Union Strait, a single record of *Nymphon serratum* from James Bay (Giltay, 1942), and the earlier records by Rodger (1893) from the coast of Labrador.

Of the 14 species represented in the Bartlett collections 9 are from Fox Basin. These are all well-known Arctic species whose previously established distribution is summarized in Stephensen's (1933) excellent paper on Greenland pycnogonids. American Arctic pycnogonids are still poorly represented in our collections, however, and it is certain that future collecting will add many species to our lists.

I have not seen the material identified by Dr. Giltay. As his manuscript consisted only of identifications, I am responsible for the synonymies, remarks, and arrangements of this paper. All the specimens, ex-

cept where otherwise noted, were procured by Captain Bartlett on personally sponsored expeditions. The localities from which pycnogonids were secured are listed in geographic sequence from north to south, beginning with Fox Basin (Fig. 1.) The collections, with the exception of two lots taken by the Hudson Bay Fisheries Expedition of 1930 on a steam trawler, the *S. S. Loubyrne*, are in the United States National Museum.

Family NYMPHONIDAE Wilson, 1878

Genus *Boreonymphon* G. O. Sars, 1891

*Boreonymphon robustum* (Bell)

*Boreonymphon robustum* Stephensen, 1933, pp. 4-5, fig. 1 (map); p. 38, fig. 11.

*Localities.*—Walrus grounds, Murchison Sound, NW. Greenland, app. 77°45'N., station 124, Aug. 7, 1938, 1 large ♀, encrusted with sponges, hydroids, and foraminifers.

King Francis Josef Fjord, NE. Greenland, No. 6A, Aug. 4, 1936, 1 specimen.

*Distribution.*—A widely distributed Arctic species, perhaps circumpolar but not yet known from between latitudes 120° W. and 160° E. It is often taken in considerable numbers. Stephensen (p. 38) suggests that this species may live on *Umbellula encrinus* and other corals.

Genus *Nymphon* J. C. Fabricius, 1794

*Nymphon hirtipes* Bell

*Nymphon hirtipes* Wilson, 1878, pp. 22-23, pl. 5, figs. 2-3; pl. 6, fig. 2a-k.

*Nymphon hirtum* Wilson, 1880, pp. 495-497, pl. 7, figs. 38-41.

*Chaetonymphon hirtipes* Sars, 1891, pp. 103-107, pl. 11, fig. 2a-k.

*Chaetonymphon hirtipes* Cole, 1921, p. 4.

*Chaetonymphon hirtipes* Stephensen, 1933, pp. 8-9, figs. 2, 10 (maps).

*Localities.*—\*Entrance to Fury and Hecla Straits, Sept. 3, 1933, 30 fathoms, 3 specimens (Norcross-Bartlett Expedition).

\*East end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 50' W., station 7, Aug. 3, 1935, 140-210 fathoms, bottom sample, gravel, 39 specimens (incl. ovig. ♂ ♂).

<sup>1</sup> Received December 28, 1942.

<sup>2</sup> Dr. Louis Giltay died on July 25, 1937. A biographical notice with bibliography was published by V. van Straelen in Bull. Mus. Roy. Hist. Nat. Belgique 14 (23). (1938).



Fig. 1.—A, Detail of NW. Greenland, showing localities represented in the Bartlett collections; B, The American Arctic (only those localities from which pycnogonids have been collected are indicated). \*Type locality of *Boreonymphon robustum* (approximate); probably also of *Nymphon hirtipes*. ●Type locality of *Colossendeis proboscidea* (approximate).

\*Thule, North Star Bay, NW. Greenland, 76° 32' N., 68° 45' W., Aug. 27, 1932, 12 fathoms, 1 specimen (Peary Memorial Expedition).

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 45' N., station 124, Aug. 7, 1938, otter trawl, 5 specimens.

Murchison Sound, NW. Greenland, app. 77° 43' N., station 134, Aug. 7, 1938, otter trawl, 1 specimen.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 38' N., station 146, Aug. 8, 1938, otter trawl, 5 specimens.

Along west side of Wolstenholme Island, station 43, July 23, 1940, 12 fathoms, 1 specimen.

Between north shore of Parker Snow Bay and Conical Rock, NW. Greenland, station 25, July 22, 1940, 25-45 fathoms, +7 specimens.

Off Conical Rock, NW. Greenland, 76° 3' N., 67° 30' W., station 76, July 29, 1938, dredged, 1 ♀.

One mile northwest of Conical Rock, NW. Greenland, station 37, July 22, 1940, 25-60 fathoms, 7 specimens.

\*Angmagsalik, SE. Greenland, Aug. 30, 1930, dredge, 1 specimen.

Off SE. Greenland, 61° N., 62° 30' W., station 166, Aug. 24, 1939, otter trawl, mud and pebbles, 5 specimens.

Prince Christian Sound, SE. Greenland, 61° 10' N., station 175, Aug. 25, 1939, 80-90 fathoms, otter trawl, 2 specimens.

Off Cape Farewell, S. Greenland, station 207, Aug. 25, 1939, 40-100 fathoms, otter trawl, 1 specimen.

\*NE. Greenland, 74° 21' N., 16° 30' W., July 29, 1931, 120 fathoms, 1 specimen (Norcross-Bartlett Expedition).

\*NE. Greenland, 74° 04' N., 17° 58' W., July 30, 1931, 120 fathoms, 4 specimens (Norcross-Bartlett Expedition).

*Distribution.*—An Arctic and boreal-Arctic species, widely distributed in the northern Atlantic and from Kara Sea to NW. Greenland in the Arctic. Cole's record from Dolphin and Union Strait is the westernmost record. It is known also from eastern United States, Halifax to Massachusetts Bay (Wilson). Apparently it is not circumpolar. Other hitherto unpublished records are Baldwin-Ziegler Polar Expedition, June, 1901, Aberdare Channel, east of Alger Island, Franz Josef Land, 7 specimens; and station 19, S. S. *Loubyrne*, Hudson Bay

Fisheries Expedition, 61° 11' N., 90° W., August 15, 1930, 75 fathoms, mud and stones, 1 specimen.

#### *Nymphon brevitarse* Krøyer

*Nymphon brevitarse* Stephensen, 1933, pp. 10-11.

*Localities.*—\*SE. corner of Fox Basin, 66° 46' N., 79° 15' W., Aug. 13, 1927, 34-37 fathoms, dredge, 1 specimen (Putnam Baffin Land Expedition).

South shore of Southampton Island, Hudson Bay, 63° 10' N., 85° 25' W., station 3, Aug. 3, 1933, from floating seaweed, 1 specimen (Norcross-Bartlett Expedition).

Between Cape Alexander and Cape Chalon, NW. Greenland, station 29, Aug. 2, 1937, 25-40 fathoms, rocky bottom, 3 specimens.

Walrus grounds, Murchison Sound, NW. Greenland, 77° 45' N., station 127, Aug. 7, 1938, 1 specimen.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 38' N., station 146, Aug. 8, 1938, 1 specimen.

*Distribution.*—An Arctic species, from Spitsbergen to NW. Greenland and Fox Basin. From shallow water, not more than 50 fathoms. Rodger (1893) reports the species from the Straits of Belle Isle. One specimen was collected by the Baldwin-Ziegler Expedition in Aberdare Channel, Franz Josef Land.

#### *Nymphon grossipes* (O. Fabricius?) Krøyer

*Nymphon grossipes* Stephensen, 1933, pp. 11-12.

*Localities.*—\*Fox Basin, 66° 30' N., 80° W., Aug. 10, 1927, 14 specimens (Putnam Baffin Land Expedition).

Fox Basin, 66° 30' N., 80° W., Aug. 10, 1927, 4 specimens. Identified by Giltay as *N. mixtum*, a synonym of *N. grossipes*. (Putnam Baffin Land Expedition.)

Southeast corner of Fox Basin, 66° 46' N., 79° 15' W., Aug. 13, 1927, 34-37 fathoms, dredge, 1 specimen. Identified by Giltay as *N. mixtum*. (Putnam Baffin Land Expedition.)

\*Southeast corner of Fox Basin, 66° 46' N., 79° 15' W., Aug. 13, 1927, 37 fathoms, dredge, 15 specimens (incl. ovig. ♂♂) (Putnam Baffin Land Expedition).

\*Center of Fox Basin, Aug. 24-25, 1927, 25 fathoms, 10 specimens (Putnam Baffin Land Expedition).

\*Fox Basin, Aug. 26, 1927, 25–31 fathoms, 1 specimen (Putnam Baffin Land Expedition).

East end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 40' W., Aug. 3, 1935, 140–210 fathoms, gravel, 1 specimen. Identified by Giltay as *N. mixtum*.

\*South end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 58' W., Aug. 4, 1935, 48–80 fathoms, rocky, 1 specimen.

\*South end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 59' W., Aug. 4, 1935, 68–120 fathoms, rocky, 1 specimen.

Between Cape Alexander and Cape Chalon, NW. Greenland, station 27, Aug. 2, 1937, 25–40 fathoms, rocky, 3 specimens.

\*Walrus feeding grounds, 5 miles north of Cape Chalon, Prudhoe Land, NW. Greenland, July 27, 1932, 1 specimen.

Murchison Sound, NW. Greenland, app. 77° 45' N., station 126, Aug. 7, 1938, otter trawl, 1 specimen.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 38' N., station 146, Aug. 8, 1938, 1 specimen.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 45' N., station 124, Aug. 7, 1938, otter trawl, 3 specimens.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 45' N., station 127, Aug. 7, 1938, otter trawl, 1 specimen.

Northumberland Island, NW. Greenland, station 49, Aug. 7, 1937, dredge, 1 specimen.

\*Northumberland Island, NW. Greenland, Aug. 1926, 1 specimen.

Off Dalrymple Rock, Wostenholme Sound, July 22, 1926, 2 specimens (1 ovig. ♂).

Off northwest shore of Wostenholme Island, NW. Greenland, station 57, July 23, 1940, 13–25 fathoms, 1 specimen.

Off Wostenholme Island, NW. Greenland, station 44, July 23, 1940, 13–17 fathoms, 1 specimen.

Off Wostenholme Island, NW. Greenland, station 46, July 23, 1940, 13–17 fathoms, 1 specimen.

One mile northwest of Conical Rock, NW. Greenland, station 38, July 23, 1940, 25–60 fathoms, dredge, 1 specimen.

Kerkoliak, Salve Island, Melville Bay, NW. Greenland, Aug. 28, 1932, dredge, 1 specimen. Identified by Giltay as *N. mixtum*.

Off Cape Farewell, S. Greenland, station 207,

Aug. 25, 1939, 40–100 fathoms, otter trawl, 2 specimens.

Off Cape Farewell, S. Greenland, station 196, Aug. 25, 1939, 60–70 fathoms, 1 specimen.

Off Cape Farewell, S. Greenland, station 218, Aug. 25, 1939, 60–70 fathoms, 3 specimens.

\*Clavering Fjord, NE. Greenland, Aug. 2, 1930, 1 specimen.

*Nymphon mixtum* Krøyer and *N. glaciale* Sars can not be separated from *N. grossipes*, as Stephensen (p. 12) has shown, and I concur with his synonymy.

*Distribution*.—A widely distributed and very variable species, found on the North American coast as far south as Long Island Sound on the east and Puget Sound on the west. It is circumpolar, Arctic, and boreal-Arctic; littoral to +500 fathoms.

#### *Nymphon longitarse* Krøyer

*Nymphon longitarse* Norman, 1908, pp. 212–213.

*Nymphon longitarse* Cole, 1921, p. 4.

*Nymphon longitarse* Stephensen, 1933, pp. 13–14, fig. 3 (map).

*Nymphon longitarse* Losina-Losinsky, 1933, pp. 67–68.

*Nymphon longitarsi* Hilton, 1942a, pp. 3–4.

*Locality*.—Frobisher Bay, Baffin Land, about 60 fathoms, 1 specimen.

*Distribution*.—A boreal-Arctic species, widely distributed from the coasts of Norway and Britain in Europe to Cape Cod on the American coast (rarely south to about lat. 40° N., but not to Cape Hatteras as suggested by Norman in his distribution table, p. 199). It is also circumpolar, having been recorded from Point Barrow (Cole) and from eastern Siberian waters (Losina-Losinsky). Hilton lists its from Kodiak and "Alaskan waters." It is a littoral to sublittoral species.

#### *Nymphon sluiteri* Hoek

*Nymphon sluiteri* Cole, 1921, pp. 3–4.

*Nymphon sluiteri* Stephensen, 1933, p. 14, fig. 4 (map).

*Localities*.—\*East end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 55' W., Aug. 3, 1935, 150–280 fathoms, muddy, 1 specimen.

Between Cape Alexander and Cape Chalon, NW. Greenland, station 29, Aug. 2, 1937, 25–40 fathoms, rocky, 1 specimen (juv.).

*Distribution*.—A circumpolar Arctic species, found in shallow water in the high Arctic and in deeper water in the southern part of its range (Faroës and Jan Mayen). Several specimens were collected by the Baldwin-Ziegler Polar Expedition in Aberdare Channel, Franz Josef Land, June, 1901.

*Nymphon sluiteri* has also been collected in the Gulf of St. Lawrence, where two specimens were dredged by Dr. Georges Préfontaine at Trois Pistoles, Quebec, in 200 meters, July, 1932 (U.S.N.M. 66540). This appears to be the southernmost record for this species. It does not appear to reach New England waters as do other Arctic species like *Nymphon hirtipes* and *Pseudopallene circularis*. Possibly its occurrence in the Gulf of St. Lawrence is rare or sporadic.

### *Nymphon elegans* Hansen

*Nymphon elegans* Stephensen, 1933, p. 17.

*Localities*.—Fox Basin, 45 miles east of Cape Dorchester, Aug. 8, 1927, 1 specimen (Putnam Baffin Land Expedition).

\*Southeast corner Fox Basin, 66° 45' N., 79° 15' W., Aug. 13, 1927, 34–37 fathoms, dredge, 5 specimens (Putnam Baffin Land Expedition).

\*Center of Fox Basin, Aug. 24–25, 1927, 25 fathoms, 3 specimens (Putnam Baffin Land Expedition).

\*Fox Basin, Aug. 26, 1927, 25–31 fathoms, dredge, 2 specimens (Putnam Baffin Land Expedition).

\*Fox Basin, 66° 30' N., 80° W., Aug. 10, 1927, 6 specimens (Putnam Baffin Land Expedition).

\*Fox Basin, 66° 43' N., 80° 07' W., Aug. 1927, dredge, 2 specimens (Putnam Baffin Land Expedition).

\*East end of Cobourg Island, Baffin Bay, 75° 40' N., 78° 40' W., Aug. 3, 1935, 140–210 fathoms, gravel, 10 specimens.

Walrus grounds, Murchison Sound, NW. Greenland, app. 77° 45' N., station 124, Aug. 7, 1938, otter trawl, 1 specimen.

*Distribution*.—An Arctic species, from the Kara Sea to W. Greenland, and Fox Basin. Usually taken in somewhat deeper water, i.e., about 100–300 fathoms.

### *Nymphon serratum* G. O. Sars

*Nymphon serratum* Stephensen, 1933, pp. 18–19.

*Nymphon serratum* Giltay, 1942, p. 459.

*Localities*.—\*Southeast corner Fox Basin, 66° 46' N., 79° 15' W., Aug. 13, 1927, 34–37 fathoms, dredge, 1 specimen (Putnam Baffin Land Expedition).

Between Cape Alexander and Cape Chalon, NW. Greenland, station 29, Aug. 2, 1937, 25–40 fathoms, rocky, 1 specimen.

Walrus grounds, Murchison Sound, app. 77° 45' N., station 124, Aug. 7, 1938, otter trawl, 1 specimen.

Whale Sound, NW. Greenland, Jar H, July 28, 1937, rocky bottom, 1 specimen.

One mile northwest of Conical Rock, station 37, July 22, 1940, 25–60 fathoms, 1 specimen.

West Greenland, 70° 20' N., 56° W., June 12, 1884, Ensign C. S. McLain, U.S.N., coll., 1 specimen.

*Distribution*.—An Arctic, sublittoral species from Kara Sea to W. Greenland and Hudson Bay (Giltay). Another specimen from Hudson Bay was taken by the S.S. *Loubyrne* (Hudson Bay Fisheries Expedition), station 31, Aug. 22, 1930, 41 fathoms, gravel. It is occasionally taken in the Atlantic just south of Wyville-Thomson Ridge (Stephensen).

### *Nymphon megalops* G. O. Sars Fig. 2

*Nymphon megalops* Stephensen, 1933, p. 19.

*Localities*.—\*Fox Basin, 66° 43' N., 80° 07' W., Aug., 1927, dredge, 2 specimens. Identified by Giltay as *N. sarsi*. (Putnam Baffin Land Expedition.)

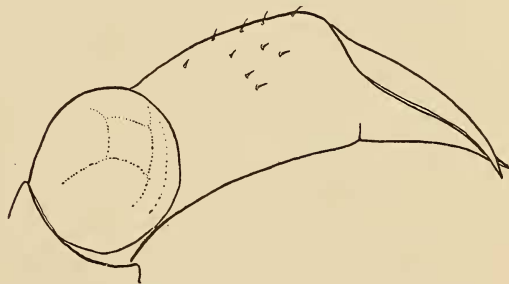


Fig. 2.—Right chela (reversed) of *Nymphon megalops*, showing rounded outgrowth.

Between Cape Alexander and Cape Chalon, NW. Greenland, Jar W, Aug. 2, 1937, 1 specimen.

Walrus feeding ground, Murchison Sound, NW. Greenland, app. 77° 42' N., station 135, Aug. 7, 1938, otter trawl, 2 specimens.

There seems to be no significant difference between this species and Meinert's (1899, pp.

48-49) *Nymphon sarsi*. The right chela of the specimen ( $\sigma$ ) from between Cape Alexander and Cape Chalon has a large rounded deformity (Fig. 2).

*Distribution*.—An Arctic species, from western Norway to Fox Basin; south to about  $61^{\circ} 30' N.$ , in the Faroe Channel. Usually from deep water.

Family PALLENIDAE Wilson, 1878

Genus *Pseudopallene* Wilson, 1878

For reasons to be discussed in detail in another paper, the use of *Phoxichilus* Latreille (hitherto used for *Endeis* Philippi by practically all authors) for *Pseudopallene* Wilson as recommended by Norman (1908, pp. 231-233) and Marcus (1940, p. 128) is rejected as an unnecessary confusion. It is much simpler to abandon *Phoxichilus* entirely.

*Pseudopallene spinipes* (O. Fabricius)

*Pseudopallene spinipes* Stephensen, 1933, p. 21.

*Localities*.—East end of Cobourg Island, Baffin Bay,  $75^{\circ} 40' N.$ ,  $78^{\circ} 40' W.$ , station 8b, Aug. 3, 1935, 140-200 fathoms, gravel, 1 specimen.

Off Cape Farewell, S. Greenland, station 197, Aug. 25, 1939, 60-70 fathoms, 1 specimen.

Off Cape Farewell, S. Greenland, station 208, Aug. 25, 1939, 60-70 fathoms, washed from seaweed, 1 specimen.

*Distribution*.—An Arctic species, from western Norway, Kara Sea, Franz Josef Land, and West Greenland; sublittoral.

*Pseudopallene circularis* (Goodsir)

*Pseudopallene circularis* Stephensen, 1933, pp. 20-21.

*Localities*.—Southern part of Fox Basin,  $66^{\circ} 30' N.$ ,  $80^{\circ} W.$ , Aug. 10, 1927, 2 specimens (Putnam Baffin Land Expedition).

Southern part of Fox Basin,  $66^{\circ} 43' N.$ ,  $80^{\circ} 07' W.$ , Aug. 12, 1927, 32-37 fathoms, dredge, 1 specimen (Putnam Baffin Land Expedition).

\*Center of Fox Basin, Aug. 24-25, 1927, 25 fathoms, dredge, 3 specimens (Putnam Baffin Land Expedition).

\*Fox Basin, Aug. 25, 1927, 25-31 fathoms, dredge, 1 specimen (Putnam Baffin Land Expedition).

\*Southern part of Fox Basin,  $66^{\circ} 43' N.$ ,  $80^{\circ} 07' W.$ , Aug., 1927, dredge, 1 specimen (Putnam Baffin Land Expedition).

Walrus feeding grounds, Murchison Sound, NW. Greenland, app.  $77^{\circ} 42' N.$ , station 135, Aug. 7, 1938, otter trawl, 1 specimen.

Walrus feeding grounds, Murchison Sound, NW. Greenland, app.  $77^{\circ} 45' N.$ , station 127, Aug. 7, 1938, 1 specimen.

Just back of Cape Farewell, S. Greenland station 210, Aug. 25, 1939, 70 fathoms, 1 specimen.

*Distribution*.—A boreal-Arctic species, from Okhotsk Sea to West Greenland, south to the Firth of Forth and southern Norway on the coast of Europe and to Cape Cod in American waters; littoral to shallow water. It is much smaller in the southern parts of its range.

Family AMMOTHEIDAE Dohrn, 1881

Genus *Eurycyde* Schiödte, 1857

*Eurycyde hispida* (Kröyer)

*Eurycyde hispida* Stephensen, 1933, p. 27.

*Localities*.—\*Southern part of Fox Basin,  $66^{\circ} 30' N.$ ,  $80^{\circ} W.$ , Aug. 10, 1927, 2 specimens (Putnam Baffin Land Expedition).

\*Southeast corner Fox Basin,  $66^{\circ} 46' N.$ ,  $79^{\circ} 15' W.$ , Aug. 12, 1927, 34-37 fathoms, 7 specimens (Putnam Baffin Land Expedition).

\*Center of Fox Basin, Aug. 24, 1927, 25 fathoms, 13 specimens (Putnam Baffin Land Expedition).

\*Fox Basin,  $67^{\circ} 45' N.$ ,  $79^{\circ} 09' W.$ , Aug. 24, 1927, 38 fathoms, 3 specimens (2 ovig.  $\sigma$   $\sigma$ ) (Putnam Baffin Land Expedition).

\*Fox Basin, Aug. 26, 1927, 25-31 fathoms, 2 specimens (Putnam Baffin Land Expedition).

\*Fox Basin,  $67^{\circ} 43' N.$ ,  $80^{\circ} 07' W.$ , Aug., 1927, dredge, 3 specimens (Putnam Baffin Land Expedition).

Walrus feeding grounds, Murchison Sound, NW. Greenland, app.  $77^{\circ} 42' N.$ , station 136, Aug. 7, 1938, 1 specimen.

*Distribution*.—An Arctic, littoral to sublittoral species, ranging from the Kara Sea to Baffin Land and Greenland (Stephensen) and as far south as Kristiansund on the Norwegian coast. It is unknown from Iceland.

Family COLOSSENDEIDAE Hoek, 1881

Genus *Colossendeis* Jarzynsky, 1870

*Colossendeis proboscidea* (Sabine)

*Colossendeis proboscidea* Stephensen, 1933, p. 28, fig. 6 (map).

*Locality*.—\*Southeast corner Fox Basin,  $66^{\circ}$

46' N., 79° 15' W., Aug. 13, 1927, 34-37 fathoms, dredge, 1 specimen (Putnam Baffin Land Expedition).

*Distribution.*—Possibly a circumpolar Arctic Basin species, from shallow water to about 500 fathoms. Unknown outside of Arctic waters (Stephensen).

ZOOGEOGRAPHICAL REMARKS

The status of our present knowledge of the distribution of pycnogonids in the American Arctic is summarized in Table 1. There are undoubtedly many more species in this sector; Stephensen (1933, pp. 32-33) lists at least 30 species from the waters west of Greenland alone, and the 14 species in the table are but half that number. While this is a considerable addition to the 6 species mentioned by Cole (1921, p. 5) for the region, our records from the north of Canada are far from extensive, and the localities represented are remarkably few. It is worthy of note that the American Arctic is the type locality for two of the character species of the Arctic Basin, *Boreonymphon robustum* and *Colossendeis proboscidea* (Fig. 1, B).

In recent preliminary papers, Hilton (1942a, b) has listed some pycnogonids from the Bering Sea and Alaskan waters that may establish the circumpolar distribution of certain well-known Arctic species when more adequately identified. Although it is

impossible, from the preliminary diagnoses, to recognize or identify any of the species mentioned in these papers, the occurrence of *Nymphon gracile* Leach in Alaskan waters (Hilton, 1942a, p. 7) is doubtful. This might be *Nymphon brevitarse*; *N. gracile* (sometimes confused with *N. rubrum* Hodge or *N. brevirostre* Hodge, e.g., *Nymphon gracile* Sars, 1891, non Leach—see also Stephensen, 1935, pp. 9-10) is a European species, from Denmark to the Mediterranean. "*Nymphon gracillipes*" (*stromi*?) is also listed (*ibid.*, p. 4), from the Bering Sea at Albatross station 3540 (Aug. 9, 1893, 56° 34' 00" N., 167° 19' 00" W., 57 fathoms). Two new species of *Pseudopallene*, *P. setosa* and *P. spinosa*, are alluded to (Hilton, 1942b, p. 39), one or both of which might be the variable *Pseudopallene circularis*.

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TABLE 1.—DISTRIBUTION OF PYCNOGONIDS IN THE AMERICAN ARCTIC (EXCLUSIVE OF WEST GREENLAND)

Species	Labrador	Baffin Land (and Cobourg Island)	Hudson Bay	Fox Basin	Dolphin and Union Strait	Point Barrow	Other records <sup>1</sup>
<i>Boreonymphon robustum</i> .....		×					76°52' N., 97° W.
<i>Nymphon hirtipes</i> .....	×	×	×	×	×		
<i>brevitarse</i> .....	×	×	×	×			
<i>grossipes</i> .....	×	×		×		×	
<i>longitarse</i> .....		×			×	×	
<i>sluiteri</i> .....	×	×			×		
<i>elegans</i> .....	×	×		×			
<i>serratum</i> .....			×	×			
<i>megalops</i> .....				×			
<i>macronyx</i> .....		×					
<i>Pseudopallene spinipes</i> .....		×					
<i>circularis</i> .....	×	×		×			
<i>Eurycyde hispida</i> .....		×		×			
<i>Colossendeis proboscidea</i> .....				×			75° N., 100° W.

<sup>1</sup> Both of these records are type localities. *Nymphon hirtipes* probably has the same type locality as *Boreonymphon robustum*, but I have not had access to the original paper to verify this. Both species were described by T. Bell in *The Last of the Arctic voyages*, by Edward Belcher, vol. 2, pp. 400-411, 1855.

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ICHTHYOLOGY.—*Notes on the affinity, anatomy, and development of Elops saurus Linnaeus.*<sup>1</sup> SAMUEL F. HILDEBRAND, Fish and Wildlife Service.

C. Tate Regan in "A Revision of the Fishes of the Genus *Elops*" (Ann. Mag. Nat. Hist. (ser. 8) 3: 37-40. 1909), among other revisions, recognized the inhabitants of this genus on the Pacific coast of America as distinct from *E. saurus* of the Atlantic coast, with which they had been considered identical. He named the Pacific coast species *E. affinis*. In the same paper, Regan recognized the form with small scales (the one with large scales being *E. lacerta* Cuvier and Valenciennes) of the west coast of Africa as also distinct from *E. saurus*, giving it the name *E. senegalensis*. Recently I have studied many specimens of *E. saurus*, including growth series, ranging from leptocephali with virtually undeveloped fins, except for the forked caudal, to large adults. The specimens were collected in many localities on the Atlantic coast of America from Cape Cod to Recife, Brazil, and the West Indian Islands. I have had for comparison several leptocephali and a moderately large series of adults from several localities on the Pacific coast of America from Guaymas, Mexico, to Payta, Peru; also three adults from Elmina, Ashantee, Africa. The validity of the species mentioned, recognized as new by Regan, originally apparently described from few specimens, has been confirmed by this study.

*Elops affinis* seems to differ from *E. saurus* only in the greater number of gill rakers, wherein *E. senegalensis* agrees with *E. saurus*, as shown by Table 1. However,

<sup>1</sup> Received November 9, 1942.

the scales in a lateral series are fewer in *E. senegalensis* than in *E. saurus*, as indicated in Table 2. *E. senegalensis* differs from *E. saurus* and *E. affinis* also in having fewer vertebrae. Ten specimens of *E. saurus* have, respectively, 73, 74, 75, 75, 75, 77, 78, 79, 80, and 80 vertebrae in the main axis. Nine leptocephali of the same species have, respectively, 77, 78, 78, 78, 79, 80, 82, 82, and 82 myomeres (enumerations somewhat uncertain because of indistinctness of myomeres posteriorly). The only adult *E. affinis* examined has 77 vertebrae, and six leptocephali have, respectively, 76, 77, 79, 80, and 81 myomeres. The single adult *E. senegalensis* examined has 67 vertebrae. These enumerations are in agreement with those given in Dr. Regan's revision.

So far as I know, the validity of *Elops affinis* has not been questioned. On the other hand, it was accepted by Meek and Hildebrand (Publ. Field Mus. Nat. Hist., zool. ser., 15 (1): 176. 1923), who compared specimens from the opposite coasts of Panama.

The situation with respect to *Elops senegalensis* is somewhat different, as it has been synonymized with *E. saurus*, at least, by Fowler (Bull. Amer. Mus. Nat. Hist. 70 (1): 155. 1936), though accepted by Boulenger (Cat. Fresh-water Fish. Africa 4: 152. 1916). Although only three specimens from Africa have been available to me for examination, it is evident from the many specimens from the Atlantic coast of America studied that the range in the number of scales in the lateral series in American speci-