

## THE OCCURRENCE OF UNUSUAL SPECIES OF CHAETOGNATHA IN SCOTTISH PLANKTON COLLECTIONS

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There are six species of Chaetognatha that are usually taken in Scottish plankton samples from the appropriate localities. These are

*Sagitta setosa* J. Müller, from lower salinity water such as that found in the southern and central North Sea and the Irish Sea.

*S. elegans elegans* Verrill, from mixed oceanic and coastal water.

*S. serratodentata* Krohn, from surface and subsurface warm oceanic water of fairly high salinity.

*S. maxima* (Conant), from cold deep water.

*Eukrohnia hamata* (Möbius), from cold deep water.

*Sagitta lyra* Krohn, from warm deep water.

All are valuable indicator species (Meek, 1928; Russell, 1935, 1939; Fraser, 1937, 1939). Of these, the first five have occurred in somewhat varying numbers and distribution according to hydrographic conditions every year since at least 1935, except possibly during the period 1940-45 when no investigations were made. *S. lyra* has been taken in most of these years, but was not found in 1935, 1936 or 1937. It was, perhaps, most abundant in 1948, and one specimen was taken in that year from the Moray Firth, though its presence there must be regarded as distinctly unusual.

*Spadella cephaloptera* (Busch) is widely distributed throughout the Scottish area as a bottom-living form and is therefore not included here as planktonic.

There are several other species which occur only occasionally in the Scottish plankton either as individual specimens or in small numbers in specialized localities: for convenience these may be termed unusual species. They are as follows.

*Sagitta elegans arctica* Aurivillius, which has occurred in several years in the Faroe-Shetland Channel associated with the community characterized by *Eukrohnia hamata* and *Calanus hyperboreus*.

*Sagitta hexaptera* d'Orbigny, a warm deep water species, which was found in the Faroe-Shetland Channel in 1935, 1939 and 1948 in conditions usually associated with *S. lyra*.

*S. planctonis* Steinhaus. This species was not recorded until 1948 when several specimens were taken in areas over deep water off the edge of the continental shelf west of the Hebrides. As this area has not yet been extensively sampled by the Scottish research vessels, it may be more common there than the number of records to date would indicate.

*S. bipunctata* Quoy & Gaimard, which was found off Cape Wrath in March 1949. There has been a good deal of controversy about this species, until the past decade or two *S. elegans* and also *S. setosa* were frequently recorded as '*bipunctata*'. *S. bipunctata* is normally a warm water species and the occurrence of three specimens off Cape Wrath—58° 50' N. 6° 26' W.—on 2 March 1949 is of considerable interest. Apart from misnomers, these are believed to be the first records of this species in Scottish plankton samples. Although generally recognized as of widespread distribution in the warmer seas, it has previously been recorded only as far north as the Azores (Burfield, 1930).

The Cape Wrath specimens, which are 9, 10 and 13 mm. in length, are all immature and the *vesiculae seminales* are only slightly developed so that their mature shape and position cannot be ascertained with certainty. They appear to be nearer the posterior fin than described by Ritter-Zahony (1911) and Burfield (1930), but agree with the description by Michael (1911), and they might well extend to the tail fin when fully mature.

Like Michael (1911) and Burfield (1930), I find no trace of a local epidermal thickening between the *vesiculae seminales* and the posterior fin such as that described by Tokioka (1939) from Japanese specimens and by Thomson (1947) from Australia. The present specimens, except for maturity, resemble some from Bermuda and South Africa that I had the opportunity of seeing, through the courtesy of Mr F. S. Russell, and Dr S. G. Gibbons.

*Krohnia (Eukrohnia) subtilis* (Grassi). A single specimen of *K. subtilis* was taken in a subsurface net (50 m. depth) from 56° 50' N. 90° 50' W. some 80 miles west of the Hebrides, where the depth exceeded 1800 m. This record is also believed to be the first from the Scottish area. Many bathypelagic copepoda, together with *Sagitta planctonis*, *S. lyra* and *S. maxima*, and other deep-water species, were also found at this station.

There are several other species that might be expected to occur occasionally off the west coast of Scotland and in the Faroe-Shetland Channel, but which have not so far been identified from plankton samples taken by Scottish research vessels. They are *S. macrocephala*, *S. decipiens* and *Eukrohnia fowleri* (see Russell, 1938, and the literature referred to therein).<sup>1</sup>

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<sup>1</sup> Since writing this, both *Sagitta macrocephala* and *Eukrohnia fowleri* have been taken in oblique hauls from 1000 m. and 1500 m. to the surface in positions west of the Hebrides in June 1949.

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