

These conclusions offer an explanation of the observation that the best results with root cuttings are generally obtained in the open air and not in greenhouses.

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Marques de Almeida, Carlos Rebelo, "Acerca do transporte polar das auxinas" (1950).

Northward Distribution of *Gammarus pulex* (L.)

SINCE the discovery that *Gammarus lacustris* Sars occurred in the fresh waters of the mainland of Scotland¹, and that the form previously identified as *G. pulex* was most probably this species, there seems to have arisen a tendency to assume that the former species replaces the more familiar *G. pulex* in that area.

However, mutual exclusion by no means occurs and the two species overlap to a marked extent. *G. lacustris* ranges from the north of Caithness and Sutherland southward to at least the Highland Line. *G. pulex*, on the other hand, ranges north through the *G. lacustris* area and has been found in Inverness-shire at Rothiemurchus in water of pH 6.2 at Drumintoul spring. The water of this spring has an alkalinity of 2.7, reckoned as parts calcium carbonate/10⁶ (estimates made by the late A. C. Gardiner). This is a somewhat unexpected environment for *G. pulex*.

Farther north and close to Inverness itself, *G. pulex* has been taken from the water-supply source of Leys Castle, where the pH is 6.6. This water flows into a small ornamental lake the sides of which have been concreted and the vegetation of which suggests that the water is alkaline. This lake also contains *G. pulex* abundantly.

The species has been taken from a small stream at Poolewe in the west of Ross-shire. In this stream no *Gammarus* could be found in 1943, when specimens identified as *G. lacustris* were introduced from a neighbouring loch; but the specimens taken from the stream (and now recorded as abundant) and sent to me for examination in 1945 were *G. pulex*.

Thus, so far as I know at the moment, the most northerly limit of the range of *G. pulex* in Scotland is a little south of the border of Sutherland. However, work is at present being carried out on the eastern side of that county, which has not apparently been investigated.

It will be seen from the foregoing that the factors which limit the northward range of *G. pulex* are not at all obvious, and it would not surprise me to find that this species occurs, albeit sparsely, in both the northern counties.

In assessing the distribution of these amphipods, one has to take cognizance of the fact that populations are apt to fluctuate enormously and suddenly, so that conclusions drawn as to the absence of a species after the most careful search may, in a year or two, be reversed by the appearance of abundant specimens. Lochs Poll a' Chnoic and Sgeirach near Stoer, W. Sutherland, both lost their population of *G. lacustris* in this sudden and inexplicable manner; in

the case of the former, a population of many years standing disappeared between April and August 1947.

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Reid, D. M., *Ann. Mag. Nat. Hist.*, 6, 11 (1940).

New Forms of *Spartina townsendii* (Groves)

WITHIN the past few years there has appeared in the Dovey Estuary a number of plants of *Spartina townsendii* differing markedly from the usual form, and among these, two very distinct forms are especially noticeable. One is very dwarf (3-4 in. above ground) and with brownish leaves and sheaths and flowering only sparsely. The other is variegated and has a leaf-blade with usually a yellow median portion and a band of green tissue along either side; the flowering of this form is also sparse. As might be expected, the dwarf-brown form does not occur in the fully-meadowed spartinetum. It is fairly widely distributed as small plants and as patches of up to 6-8 ft. in diameter in the more recently colonized and semi-open areas towards the upper end of the estuary, and among the *Spartina* which is invading the grazed glycerietum.

The variegated form is restricted to a comparatively small area of 3-5 acres, and less than a dozen plants have been found, none being more than a few inches in diameter. It would appear, therefore, that this form is either of more recent origin than the dwarf-brown form or that it is incapable of persistence for more than two or three years.

It is curious that so far the variegated form, which is no smaller than a poorly grown specimen of the normal form, has not been found to occur elsewhere than within the limits of a patch of dwarf-brown, although no connexion between them has been found below ground. Consequently, its behaviour when free from competition has yet to be studied. It is now intended to investigate this point and other aspects of the ecological relationship between these forms, while their cytology will be investigated by Prof. P. T. Thomas.

The dwarf form has also been found by one of us in the Severn Estuary near Chepstow, and there again only in the recently colonized zones. Although about twice the height of the dwarf form in the Dovey, its relation to the normal form remains the same, since on the mud of the Severn site even the normal form grows to about twice the height achieved on the sands of the Dovey.

While some degree of variation has been recorded by other observers, particularly in regard to anthocyan pigmentation, such marked variation as is recorded here does not appear to have been described elsewhere, and the observations so far made suggest the possibility that these new forms represent the disintegration of the formerly stable hybrid polyploid.

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