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DISAPPEARANCE OF *CHAETOGAMMARUS STOERENSIS* (REID) (CRUSTACEA: AMPHIPODA) FROM THE COAST OF THE NETHERLANDS

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ABSTRACT

Chaetogammarus stoerensis (Reid), formerly known from three localities in The Netherlands, has become extinct owing to habitat destruction.

INTRODUCTION

The amphipod *Chaetogammarus stoerensis* (Reid) is widely distributed along the coasts of northern and western Europe, ranging from Norway and Iceland, via the British Isles, southward to the French coast of the Channel. It is typical eulittoral species, confined to the belt between high and low water neaps. There it lives under stones or coarse gravel embedded in fine to coarse sand in just those places where fresh-water seepage runs across the shore (Sexton & Spooner, 1940; den Hartog, 1964; Lincoln, 1979). In this shock-habitat the marine flood water is replaced by fresh water within minutes when the tide is falling, but when the tide comes in the reverse happens. The species must thus be able to cope with heavy osmotic shocks: under the semidiurnal tidal cycle thus four times a day. In spite of its ability to stand these large

salinity fluctuations, it has never been recorded from estuarine or other brackish-water habitats.

LOCALITIES

Although the littoral shock habitat is extremely rare in The Netherlands, there are nevertheless three confirmed records of *Chaetogammarus stoerensis* (den Hartog, 1964, p. 419; under the name *Marinogammarus stoerensis* (Reid)). Unfortunately, the species was not mentioned in the recent survey of the gammarids of the Dutch surface water by Pinkster & Platvoet (1986).

The records are listed below:

1. Province of Zeeland: Island of Schouwen, Westbout near Haamstede, 24/25 August 1950, J.A.W. Lucas, one ovigerous female. (National Natural

- History Museum, Leiden).
2. Province of Noord-Holland; IJmuiden, inner side of the southern mole, under stones, 19 April 1950, J.H. Stock, 4 specimens (ZMA 100-610) and 3 specimens (ZMA 100-611).
 3. Province of Noord-Holland. Huisduinen near Den Helder, 11 November 1958, C. den Hartog. In the higher littoral, numerous specimens under stones embedded in sand, always wet by freshwater seepage, accompanied by some *Chaetogammarus marinus* (Leach), the sea-anemone *Sagartia troglodytes* (Price) and some tubificid oligochaetes; some growth of *Enteromorpha* (National Natural History Museum, Leiden.).

THE PRESENT STATE OF THE LOCALITIES

In his survey of the amphipods of the Deltaic area of the south-western Netherlands, carried out in the period 1958-1963, Den Hartog (1964) already pointed out that he had not succeeded in finding any *Chaetogammarus stoerensis*, although he was quite familiar with the habitat of the species. After the flood disaster in February 1953 the sea-dikes have been reinforced and thus not allowing for any sites with seepage. The building of the stormflood surge in the Oosterschelde has changed the Westbout site profoundly.

Since 1950 the southern mole of IJmuiden has undergone several overhauls, and no freshwater seep-

age is taking place nowadays. The site has become unsuitable for *Chaetogammarus stoerensis*.

The seawall near Huisduinen has also been "improved". All spaces between the basalt blocks and granite boulders used for the stoney dike mantle have been filled in with bitumen. Although the freshwater seepage has not ceased completely, the site can be considered to be irreversibly damaged as a habitat of *Chaetogammarus stoerensis*. In the first place the animals cannot hide anymore under the stones and secondly the quality of the seepage water has decreased. The remaining sand is now completely black. On 11 July 1993 I was unsuccessful in finding any amphipod.

It can be concluded that in The Netherlands *Chaetogammarus stoerensis* is now extinct owing to habitat destruction.

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