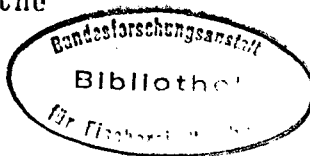


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On the Seasonal Distribution of Crangon Larvae on the
German Coast

by

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The distribution of larvae of Crangon crangon during the summer months 1968 and May 1969 as well as during the winter months 1968-1969 was studied by means of a Hensen-egg-net (diameter 70 cm, length 220 cm). The investigations were carried out during July, September 1968 and May 1969 aboard the fisheries inspection and research boat "Neptun", during December 1968 aboard RV "Friedrich Heincke", in January 1969 aboard FRV "Anton Dohrn" and in March 1969 aboard RV "Friedrich Heincke". The main aim of this work was to study the distribution of Crangon larvae also during the winter months in comparison to that during the summer months by using the same standard net. The station maps are shown in Figs. 1 and 2. While during the summer surveys a regular station net was covered, which was established in connection with the routine observations on the larvae distribution along the German coast since 1963 by the Institut für Küsten- und Binnenfischerei (Plett, 1965), during the winter surveys the following sections were covered:

- a) Fanö Bight - Borkum Riffgrund - lightvessel Elbe III
- b) lightvessel Elbe I - White Bank
- c) signal-fire Alte Weser - Borkum Riffgrund
- d) Büsum - White Bank.

At the selected stations vertical plankton catches were made. The larvae of Crangon crangon were separated according to their developmental stages following Ehrenbaum (1890). The single larval stages were counted and the number of larvae below 1 m² of surface was calculated.

The results of these investigations are compiled in tables 1 and 2. They show that largest larvae concentration at all was found off the coast of North Friesland in July 1968, followed by the area covered by the estuaries of Elbe and Weser. 263 resp. 214 larvae below 1 m² were counted. Less larvae abundance was found at the coast of East Friesland. Already Plett (1965) demonstrated that larvae distribution along the German coast can be unequally from month to month, and even from year to year.

Table 1

Mean number of Crangon larvae below 1 m² off the coast of North- and East-Friesland and the area of the outer Elbe and Weser.

Month	Number of plankton catches	Coast of East-Friesland	Area of the outer Elbe and Weser	Coast of North-Friesland
July 1968	37	97	214	263
Sept. 1968	30	81	165	66
May 1969	46	62	66	65

The lowest catches of the summerly surveys were on an average not below 60 larvae under 1 m² surface.

On the other hand the average number of larvae amounted to not more than 6 during the surveys made during December, January and March 1968/69 (table 2). It is noteworthy to mention that larvae caught in December and January were all younger stages between I and IV, 90-95 % belonging to the stages I/II. Only during March 1969 4 % of the larvae were of stages V/VI. It might be mentioned also that there were less marked differences in the horizontal distribution of Crangon larvae during the winter months than are obviously existing during the summer months.

Table 2

Mean number of Crangon larvae below 1 m² during the winter months 1968/69

Route: Fanö-Bight - Borkum Riffgrund - Lightvessel Elbe III					
Month	Number of plankton catches	Developmental stages			
		I/II	III/IV	V/VI	Total
December 1968	12	3,9	0,2	-	4,1
Route: Lightvessel Elbe I - White Bank					
Month	Number of plankton catches	Developmental stages			
		I/II	III/IV	V/VI	Total
January 1969	11	4,9	0,5	-	5,4
Route: Signal-fire Alte Weser - Borkum Riffgrund					
Month	Number of plankton catches	Developmental stages			
		I/II	III/IV	V/VI	Total
January 1969	10	2,5	0,2	-	2,7
Route: Büsum - White Bank					
Month	Number of plankton catches	Developmental stages			
		I/II	III/IV	V/VI	Total
March 1969	15	3,4	1,0	0,2	4,6

These results confirm the view expressed by several authors (14) that the main spawning time of Crangon crangon is during the summer months. They are contrary to the statement of Boddeke (1966) who says:

"The eggs, attached at the pleopods of the female shrimp, hatch after two months causing a sharp peak in the production of larvae in January. After the hatching of the eggs another fertilization takes place, followed two months later in March-April by a second peak in the production of shrimp larvae. Smaller numbers of larvae are found till September."

Boddeke (1966) refers among others to Rees (1952) who found a sharp peak in the production of larvae of Crangon crangon in January. When looking at the data of Rees, however, it has to be considered that he caught in a 3 years' survey a total of about 150 Crangon larvae only and that he fished practically outside the main spawning area of this shrimp. It seems to us that Rees' catches are not representative for describing the seasonal distribution of larvae of Crangon crangon. His total catch was made on the occasion of 65 tows with a plankton recorder over 20 miles each within 3 years and was thus smaller than the best average catches under one m² made by the Hensen egg net when sieving a water column of less than 20 m.

Our findings are in agreement with Jorgensen (1923), with Thorson (1946), with Lebour (1947), with Kühl and Mann (1963), with Plett (1965) and with Dornheim (1969).

SUMMARY

The distribution of larvae of Crangon crangon in the German Bight has been studied at different periods, i.e. summer 1968, winter 1968/69 and May 1969. It can be concluded that the peak of larvae abundance is during the summer, while during the winter months larvae were found to be very scarce.

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1°
Map of larvae catches
summer months: July 1968,
September 1968 and May 1969

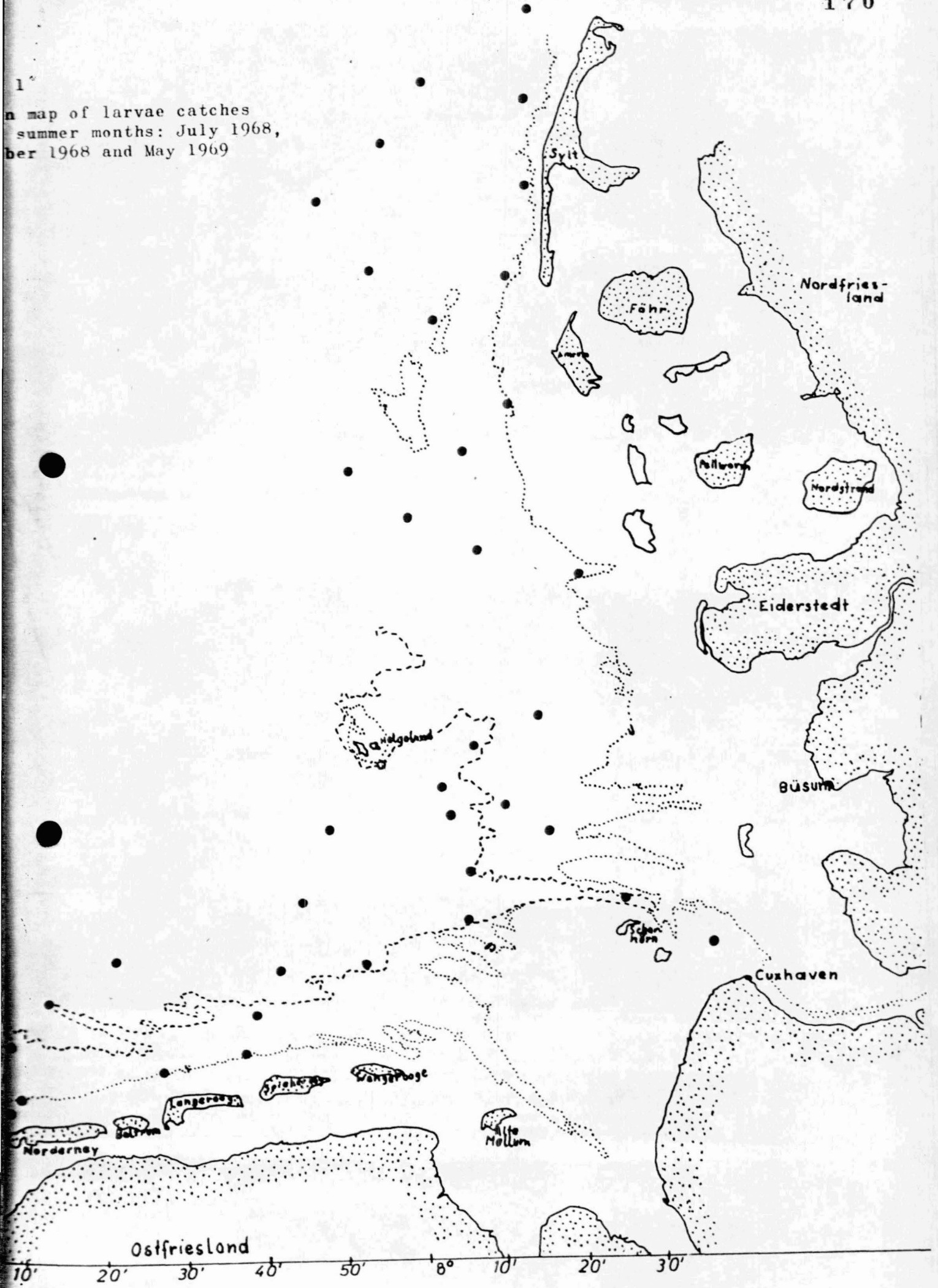


Figure 2
Location map and routes of larvae catches during December 1968 (route I), January 1969 (routes II and III), March 1969 (route IV) and May 1969 (route V)

