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Investigations on the spring spawning Rügen herring infested by
Anisakis in 1975 - 1977

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Summary

In the years 1975 - 1977 surveys of the Anisakis infestation of the Rügen spring spawning herring of the Greifswalder Bodden were done during the spawning period. The infestation rates were very dependent on length and age as pointed already out by other authors for other fishing grounds (Strzyzewska and Popiel 1974, Grabda 1974). The percentages of infested fish as well as the infestation rate of individuals increased with length and age from 25 cm and age group 3, respectively onward and reached the maximum level at 29-31 cm and age group 8, respectively. The infestation extensity and intensity of length groups diminished somewhat in 1976 and 1977 compared to 1975. The infestation extensity of the age groups tended to increase from 1975 to 1977.

Résumé

Pendant les années 1975 - 1977 des recherches sur l'infection du hareng de printemps de la Baie de Rügen avec Anisakis ont été conduites dans la période de la ponte. Le degré d'infection considérablement dépend de la taille et d'âge, comme des autres auteurs ont déjà constatés pour des autres régions de la pêche (Strzyzewska et Popiel 1974), Grabda 1974).

Le pourcentage ainsi que le degré d'infection des poissons augmente avec la taille et l'âge à partir de la classe d'âge de 3 ans respectivement 25 cm et atteint un maximum à l'âge 8 et 29-31 cm.

L'extensité et l'intensité d'infection des classes de taille diminuait un peu en 1976 et 1977 comparé avec 1975.

L'extensité d'infection des classes d'âge augmente de 1975 à 1977.

Introduction

The infestation rate of herring of the southwestern Baltic by Anisakis larvae (Anisakis simplex) probably increased since 1970. The investigations of Grabda (1974) of the years 1973 and 1974 show that the infestation is the highest from November to May. In this period the prespawning and spawning concentrations of Rügen spring spawning herring in the southwestern Baltic are of

great importance for the fishery of the GDR. Therefore in the last years the herring shoals in the spawning centre Greifswalder Bodden south of Rügen were investigated.

Material and method

The investigated material was taken from herring pound nets in the Greifswalder Bodden in 1975 in the period 6.2. - 11.3. and in 1976 and 1977 in the period 17.3. - 20.4. The sampling places guarantee the catch of immigrating and emigrating shoals. Above all spawning herrings in stages of gonads from 5 to 7 were sampled. The fish were examined 1 or 2 days after catch. The quantitative estimate of the infestation intensity was carried out using the following table:

Index of infestation	number of parasites
0	0
1	1 - 5
2	6 - 20
3	20

This scheme was applied together with routine investigations of other biological parameters such as length, weight, age, sex, and stage of gonads. The advantage of this method is that it is possible to investigate many individuals. But the estimations of the infestation are rough and can give some underestimations.

Results

Usually the Anisakis larvae were found between the two lobes of the gonads near their basis. There were single specimen as well as compact crowds.

The infestation extensity and intensity in dependence on length is drawn in figure 1 and 2. As already described by other authors the infestation increased from 25 cm onward and reached its maximal figures between 29 and 31 cm length. This relation refers to the extensity as well as to the intensity of infestation. The herrings of a length of 31 cm were in all years infested to 100% and had an index which approached 3.

In the range from 25 to 27 cm in the two last years the infestation extensity was lower than in 1975. In 1977 the extensity of the infestation was somewhat lower nearly over the whole length range.

The infestation intensity decreased to some degree in the range between 25 and 30 cm in 1976 and 1977 compared to 1975.

Table 1 Percentage numbers of herring infested in age groups

Year/Age groups	Infestation extensity							
	2	3	4	5	6	7	8	9
1975	0 (65)	20,0 (95)	29,2 (185)	54,0 (150)	77,2 (74)	86,4 (34)	100 (4)	100 (-)
1976	2,1 (47)	20,0 (115)	33,7 (92)	56,5 (69)	86,0 (36)	85,2 (14)	100 (3)	100 (3)
1977	0 (10)	20,6 (462)	39,9 (228)	70,0 (74)	80,3 (71)	90,0 (31)	100 (15)	100 (3)

(1880) = numbers of herrings investigated

Table 1 shows the development of infestation extensity in dependence on age. There is a rising infestation rate from the scarcely infested age group 2 to the completely infested age group 8.

From 1975 to 1977 we observe a tendency of increase of the infestation extensity from the age group 4 to 7. This tendency is produced by an acceleration of the herring growth observed in the last years.

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Table 2 Numbers of herrings investigated in cm-groups

Year	Length groups											
	21	22	23	24	25	26	27	28	29	30	31	32
1975	-	15	92	117	130	90	73	51	21	11	6	1
1976	8	28	30	58	73	50	44	24	23	21	14	9
1977	-	25	77	190	206	150	87	40	37	25	31	26

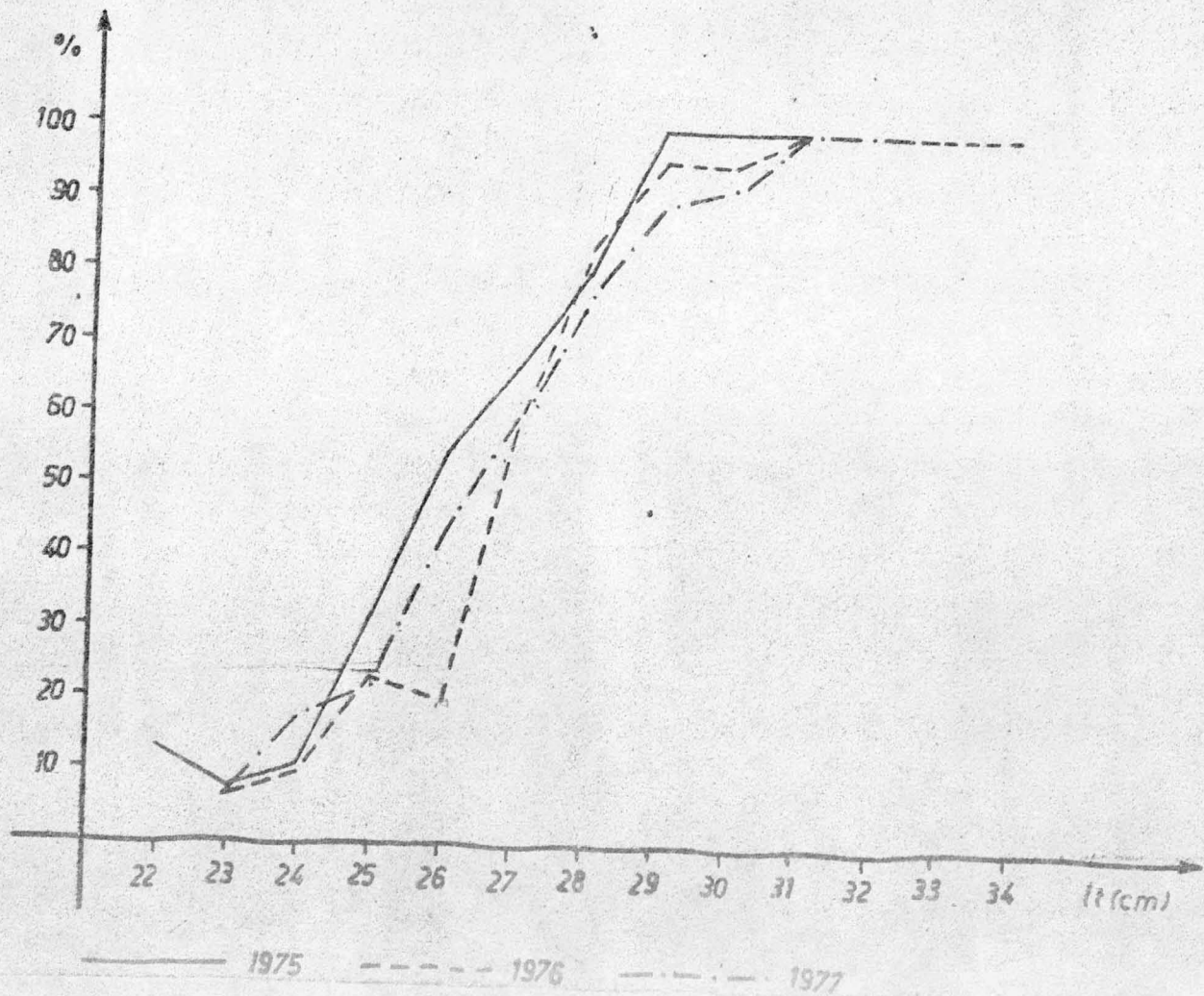


Fig. 1 Dependence of Anisakis infestation on fish length in % of infested herrings (extensity)

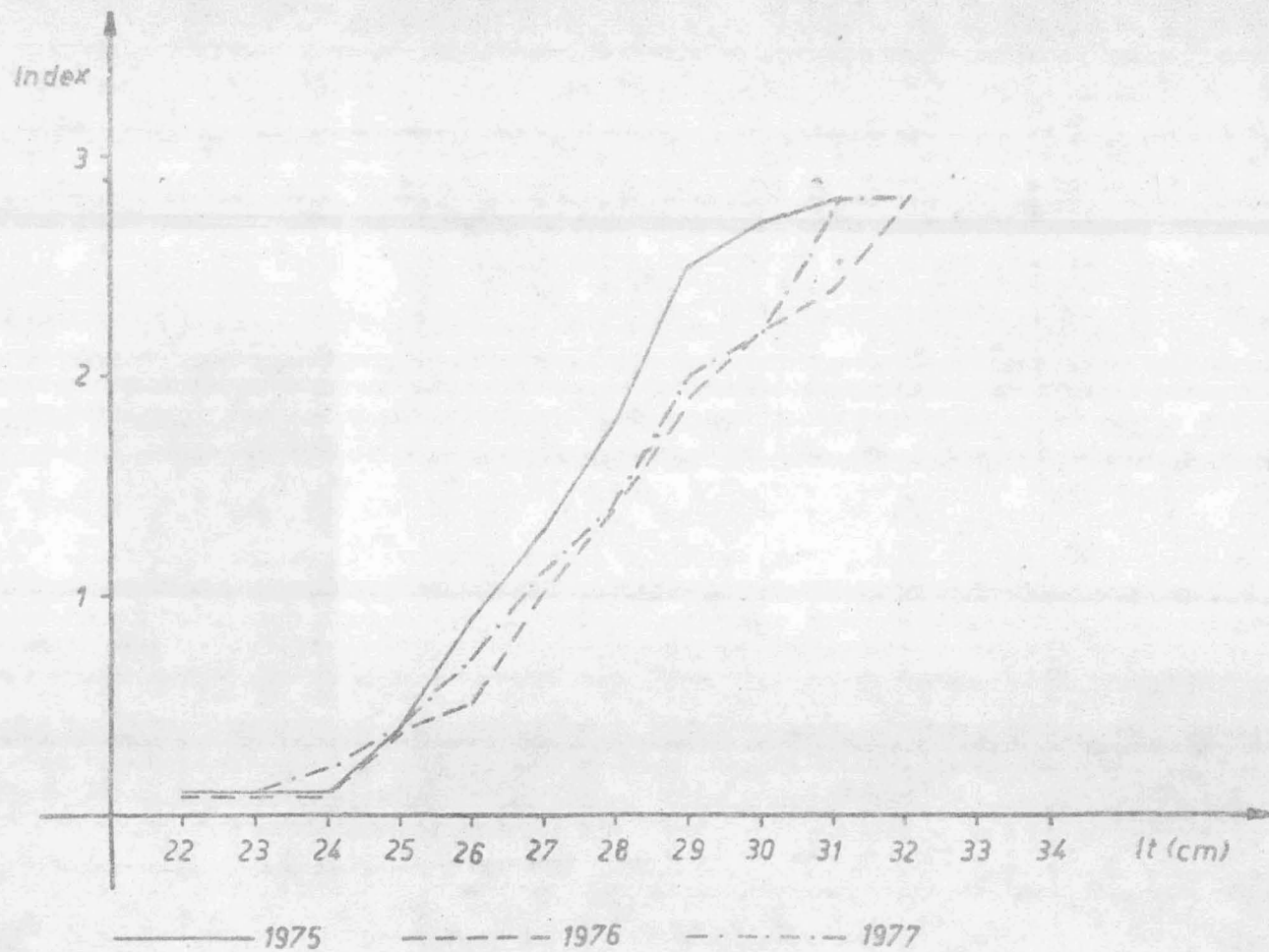


Fig. 2 Dependence of Anisakis infestation on fish length in infestation indices of individuals (intensity)