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Relations between the autumn spawning Herring Stock and the  
Winter - Fishery in the Bornholm Basin

by

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The Bornholm Basin is in summer an important area for the herring fishery. Since the development of midwater trawls the importance of this fishing area increased significantly. Feeding autumn spawners, spring spawners of the northern Baltic coasts and spring spawners of the southern coasts of the Baltic are caught in this area in summer. A polish winter herring fishery with bottom trawls is known for a longer time. The basis of this fishery are mainly juvenile herrings. ELWERTOWSKI and POPIEL (1) investigated, that in the time from 1952 to 1961 juvenile autumn spawners were dominating and juvenile spring spawners of the southern Baltic coasts were caught too.

Up to 1966 vessels of GDR were not fishing specially on herring in winter in the Bornholm Basin but had fished before on cod with bottom trawls.

In table 1 is shown a high catch per effort in the pelagic herring fishery by our cutters in the Bornholm Basin in winter 1966/67. In table 2 is shown, that this catches mainly based on the year class 1964 of autumn spawning herring. In January 1967 this year class has taken in 86 per cent of weight in the

catches from the Bornholm Basin. In winter 1967/68 the catch per effort of the herring fishery in the Bornholm Basin was significantly smaller than in 1966/67. Because of the difficult weather conditions in the Bornholm Basin and by the small fish concentrations a winter fishery was not longer attractive for smaller cutters. In this season the larger cutters fished mainly on cod plaice and flounder in the Bornholm Basin. Since 1966/67 the exploited stock of autumn spawning herring in the Baltic increased significantly by the year class of 1964. This year class is already described as an extraordinarily numerous one (2,3). The year class 1964 influenced the very high yields of the autumn spawning season of 1967 in the Arkona Sea and in the Bornholm Sea. In winter 1967/68 only a few autumn spawning herrings were caught. But in the second quarter of the year 1968 there was a productive fishery on feeding herrings in the Arkona Sea and in the Bornholm Sea, significantly influenced by the year class 1964 of the autumn spawning herring.

After spawning in autumn 1967 the dense shoals of autumn spawners have scattered and have not concentrated immediately after this for wintering in the Bornholm Basin. Large movements are not necessary between the spawning places and the area of wintering from 1966/67. Spawning places of autumn spawners in the Bornholm Sea are found on the Stupsk Bank and on the Middle Bank. Probably in the Hanö - Bay there is a spawning place of the autumn spawning herring too. Other spawning places in vicinity of the Bornholm Sea are found at the Rönne Bank at the Adlergrund and at the south and east coast of Öland. Nevertheless it took some months after the spawning time before the adult autumn spawning stock was newly concentrated. It seems by the investigations of ELWERTOWSKI and POPIEL and by this observations, that only juvenile autumn spawning herrings are dense concentrated at the beginning of winter. Therefore the one or two year old herrings are chiefly the basis for the winter fishery. The spawned adult stock of autumn spawning herring at the beginning of the winter is forming concentrations only gradually. But at the beginning of its feeding period the forming of its concentrations intensifies in March/April. It seems, that the adult autumn spawners of the Baltic don't concentrate shortly after the spawning time in a wintering area, as known from autumn spawning Bank - Herring of the North Sea.

By this results the forecasts concerning the possibilities of winter fishery in the Bornholm Basin mainly should base on the development of juvenile autumn spawning herring. By this means the forecasts are very difficult.

Table 1

Catch per cutter day in the Bornholm Basin in t

year	17-m-cutters				26-m-cutters			
	Nov.	Dez.	Jan.	Febr.	Nov.	Dez.	Jan.	Febr.
1966/67	0,9	1,5	1,0	2,0	-	2,8	3,9	2,1
1967/68	1,2	0,8	-	-	0,2	0,9	0,2	1,7

Table 2

Age composition of herring catches in the Bornholm Sea in ‰

year class	1	2	3	4	5	6	7	8	8 <sup>+</sup>	
spawner type										date
autumn	-	679	-	12	-	-	-	-	-	)
spring southern	60	87	-	-	-	-	9	-	-	) IX, 1966
spring northern	-	-	11	8	9	33	96	-	8	)
autumn	-	48	836	13	6	-	-	-	-	)
spring southern	-	86	6	-	-	3	-	-	-	) I, 1967
spring northern	-	-	-	-	-	-	-	-	-	)
autumn	-	34	415	49	-	54	31	6	21	)
spring southern	9	31	24	7	-	2	5	-	-	) VIII, 1967
spring northern	-	-	4	8	29	26	160	51	67	)

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