

Tagging experiments on cod in the Baltic
in 1972-1975

by Kondratovich E.Y.

ANNOTATION

Il est cité dans l'exposé les résultats du marquage de la morue Baltique du 1972 au 1977 dans les régions de Ventspils, Liépaya, Klaipéda, Gotland-sud et Bornholme.

Il est constaté que la morue Baltique ne tient pas aux régions déterminées, mais a la tendance aux migrations sur tous le plan d'eau du creux de Bornholme jusqu'au golfe de Finlande. Cela correspond surtout au stock de la morue de Gotland. Le stock de la morue de Bornholme mène la vie plus sédentaire

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Cod for tagging were caught with bottom trawl / trawling duration-30 minutes / in Ventspils, Liepaya, Klaipeda, Southern, Gotland, and Bornholm regions.

Two types of tags were used: plastic capsules with a letter inside / till March, 1974 / , and flat plastic tags with red flags / from December, 1974 / .

Tags were attached by stainless steel wire between the first and the second dorsal fins of a fish.

Of the total 3686 specimens tagged, 3260 were tagged in March-April, the rest-in December-January. /Table 1/.

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The depth in the regions of tagging was: in Southern Gotland—
100-120m; in Bornholm-70-90m, in the area from Klaipeda-Ventspils-
50-80m.

Mean tags return by regions makes up 8,5%. The largest tag
return is noted in Bornholm / up to 29% / and Southern Gotland
/ up to 11,3% / areas. This, apparently, is explained by the fact
that the Bornholm cod stock leads a more settled mode of life / 1 /,
since its feeding sites are not far from spawning grounds. Besides,
more intensive fishing over a relatively small area is carried out
in Bornholm and Southern Gotland regions that makes a great effect
upon tags return / 2 / .

Relatively small tag return in Southern Gotland in April 1975
besides other factors / younger individuals, lesser number of
tagged fish, ect. / perhaps is also connected with the use of a
new and less visible type of tags / Table 2 / .

Recapture of tagged cod by seasons depends upon the region
and the time of tagging / Table 1 / . Thus, if the cod was tagged
in March-April, then in the places of spawning—in Bornholm and
Southern Gotland regions—it is caught in the main / 60-70% / just
within the first 2-3 months, but on the feeding sites—in Ventspils,
Liepaya and Klaipeda regions—two-three months after tagging in the
second half year. It is connected with the distribution of fish
and, as the result with more intensive cod fishing on spawning si-
tes in spring and with lesser one—at the same time on feeding
areas.

Cod migrations from the regions of tagging in spawning and

feeding periods are given in Table 3.

Cod migrations from the regions of tagging differ. Of all fish tagged in Ventspils region, about 80% remained in the tagging region. From Liepaya region about 20% migrated northwards, 70% remained in the region of tagging. The largest migrations are observed from the Klaipeda region-about 44% northwards / in the feeding period basically / , 30% remained in the region of tagging and are mainly caught in the period of spawning, i. e. within the first 2 months after tagging, the rest-migrated to the places of spawning in Gotland and Gdansk Deeps.

Thus, a conclusion may be, that the cod from the south-eastern Baltic / Gotland Deep, Klaipeda and Liepaya regions / during feeding period migrates northwards to Ventspils region and to the north of the region where the richest feeding areas are situated.

Migrations from the places of spawning depend upon the time of tagging. Thus, 80% of the cod tagged in Bornholm region in March-April were caught in the same region, but of fish tagged in December only 35% have remained in tagging region.

An interchange between Bornholm and Gotland and Gotland cod / with the adjacent Klaipeda, Liepaya and Ventspils regions / in recent years was rather bad, more cod having migrated from Bornholm region eastwards / to Gotland Deep and Klaipeda region / than from the eastern regions to the west.

References.

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2. Danielssen Ditrik S. On the migrations of the cod in the Skagerrak shown by tagging experiments in the period 1954-1965. -Fiskeridirekt skr. Ser. havundersøk. 1969, No. 3, 331-338

Summary

The results of baltic cod tagging for the 1972-1975 period in Ventspils, Liepaya, Klaipeda, Southern Gotland and Bornholm regions are given.

It is determined that baltic cod do not keep to definite regions but have a tendency to migrate over the whole sea area from Bornholm Deep to the Gulf of Finland. Particularly it refers to the Gotland cod stock. The Bornholm cod stock leads more settled mode of life.

Table 3, Bibliogr. : 2 ref.

The number of tagged and recaptured cod in 1972-1975

Table 1
(continued)

Region	Year, month of tagging	The number of fish tagged	The time of stay in the sea	I quarter		II quarter		III quarter		IV quarter		Total	
				spec.	%	spec.	%	spec.	%	spec.	%	spec.	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ventspils	January, 1972	329	1 st year	8	28,6	8	28,6	1	3,6	5	17,8	22	78,6
			2 nd year	3	10,7	2	7,1	-	-	-	-	5	17,8
			3 rd year	-	-	1	3,6	-	-	-	-	1	3,6
			Total	11	39,3	11	39,3	1	3,6	5	17,8	28	100,0
	March, 1974	353	1 st year	-	-	-	-	3	33,3	3	33,3	6	66,7
			2 nd year	1	11,1	1	11,1	1	11,1	-	-	3	33,3
			Total	1	11,1	1	11,1	4	44,4	3	33,3	9	100,0
Liepaya	March, 1974	135	1 st year	-	-	1	8,3	8	66,7	1	8,3	10	83,3
			2 nd year	1	8,3	-	-	-	-	1	8,3	2	16,7
			Total	1	8,3	1	8,3	8	66,7	2	16,7	12	100,0
	April, 1975	188	1 st year	-	-	2	20,0	5	50,0	2	20,0	9	90,0
			2 nd year	-	-	1	10,0	-	-	-	-	1	10,0
			Total	-	-	3	30,0	5	50,0	2	20,0	10	100,0

Table 1
(continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Klaipėda	March, 1974	968	1 st year	4	8,7	7	15,2	19	41,3	7	15,2	37	80,4
	April, 1975		2 nd year	4	8,7	-	-	5	10,9	-	-	9	19,6
	Total			8	17,4	7	15,2	24	52,2	7	15,2	46	100,0
Southern Gotland	April, 1973	662	1 st year	-	-	42	60,0	7	10,0	3	4,3	52	74,3
			2 nd year	5	7,2	10	14,3	1	1,4	-	-	16	22,9
			3 rd year	1	1,4	1	1,4	-	-	-	-	2	2,8
	Total		6	8,6	53	75,7	8	11,4	3	4,3	70	100,0	
	March, 1974	585	1 st year	3	4,8	49	77,8	7	11,1	1	1,6	60	95,2
			2 nd year	3	4,8	-	-	-	-	-	-	3	4,8
			Total	6	9,6	49	77,8	7	11,1	1	1,6	63	100,0
April, 1975	163	1 st year	-	-	5	45,5	1	9,1	3	27,3	9	81,8	
		2 nd year	-	-	2	18,2	-	-	-	-	2	18,2	
		Total	-	-	7	63,7	1	9,1	3	27,3	11	100,0	

Table 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bornholm	March, 1974	108	1 st year	1	7,1	6	42,8	4	28,8	2	14,2	13	92,9	
			2 nd year	-	-	-	-	-	-	-	-	-	-	-
			3 rd year	-	-	1	7,1	-	-	-	-	-	1	7,1
			Total	1	7,1	7	49,9	4	28,8	2	14,2	14	100,0	
	April, 1975	120	1 st year	-	-	8	57,0	4	28,8	-	-	12	85,8	
			2 nd year	1	7,1	1	7,1	-	-	-	-	2	14,2	
			Total	1	7,1	9	64,1	4	28,8	-	-	14	100,0	
	December, 1975	75	2 nd year	16	72,7	6	27,3	-	-	-	-	22	100,0	
	Total (1972-1975)		3686		51	1,4	154	4,2	66	1,8	28	0,7	299	8,1

Table 2

The number of recaptured cod tagged by tags of different types

Type of a tag	Region of tagging														
	: Ventspils		: Liepaya		: Klaipeda		: Southern Gotl.		: Bornholm						
	:The	:recaptured	The:recaptured:	The:recaptur.	:the	:recaptur.	The:recaptured	:num-:num-:	:num-:num-:	:num-:num-:	:num-:num-:	:num-:num-:	:num-:num-:		
	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber	:ber		
	:of	:	:of	:	:of	:	:of	:	:of	:	:of	:	:of		
	:tag-	:	:tag-	:	:tag-	:	:tag-	:	:tag-	:	:tag-	:	:tag-		
	:ged	:	:ged	:	:ged	:	:ged	:	:ged	:	:ged	:	:ged		
	:fish:	:	:fish:	:	:fish:	:	:fish:	:	:fish:	:	:fish:	:	:fish:		
Polyethylene tube with a note inside(taggings till December, 1974)	682	41	6,0	113	11	9,7	884	47	5,3	1247	137	11,0	108, 14	13,0	
Lamellar tags(taggings from December, 1974)	-	-	-	210	12	5,7	84	2	2,4	163	11	6,7	195	37	19,0

Table 3

Cod migrations in the year of tagging from the regions of tagging in spawning and feeding periods / in % /^{x/}

Year and months of tagging	:Region of: tagging :	Spawning period / March-July /											
		: V :	L :	Kl :	MG :	SG :	Gd :	B :	KD :	S :	A :	Bl :	
January, 1972- March, 1974	Ventspils	14,3	-	14,3	-	-	-	-	-	-	-	-	-
1973-1975 March-April	Southern Gotland	-	7,1	3,5	17,6	54,2	7,1	-	-	1,2	-	-	
1974-1975 March-April	Liepaya	5,6	22,2	5,6	5,6	5,6	-	-	-	-	-	-	
1974-1975 March-April	Klaipeda	2,9	2,9	23,6	-	8,9	2,9	2,9	-	2,9	-	-	
1974-1975 March-April	Bornholm	-	-	-	-	13,6	-	68,3	-	-	-	-	
December, 1975	Bornholm	-	-	-	-	4,5	-	13,7	17,7	9,1	4,5	4,5	

x/

For tagging in December 1975, the returns are given for 1976. In the table only the returns are shown for which the time of fish catch is determined.

Feeding period / August-February /											Number of indi- viduals
V	L	Kl	MG	SG	Gd	B	KD	S	A	Bl	
64,3	7,1	-	-	-	-	-	-	-	-	-	14
3,5	2,3	2,3	-	1,2	-	-	-	-	-	-	85
100	44,4	-	-	-	-	-	-	-	-	-	18
29,4	8,9	8,9	2,9	-	-	-	-	-	-	2,9	34
-	-	4,5	-	-	-	13,6	-	-	-	-	22
-	-	-	-	-	-	18,2	27,3	4,5	-	-	22

Region designations: V - Ventpils, L - Liepaya, Kl - Klaipeda,
 MG - Middle Gotland, SG - Southern Gotland, G - Gdansk, B - Bernholm,
 KD - Kolobrzeg-Darlowo, S - Slupsk, A - Arkona, Bl - Blacking.

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