



Polish Cod Tagging Experiments in the Region of Slupsk
Furrow in the Years 1957 - 1963

by
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Slupsk Furrow is one of the more important regions for cod catches in the southern Baltic. Polish tagging experiments were conducted on the fishing grounds of this region in the years 1957-1963. The data on months and years of tagging are given in Table 1.

Table 1. Number of cod tagged in particular months
1957 - 1963.

Years	M o n t h s				
	I	II	III	IV	XI
1957	-	67	224	-	-
1958	-	-	103	-	-
1959	-	300	-	153	206
1961	334	-	-	291	-
1963	178	-	-	-	-

During this period in total 1,856 cod were tagged. Of this number 346 specimens were recaptured, i.e. 18.7%.

The data on the number of tagged and recaptured fish, showing the percentage of recaptures for the particular years are given in Table 2 below.

Table 2. Number of tagged and recaptured fish.

Years	Tagged	r e c a p t u r e d	
		Number of fish	%
1957	291	25	8.6
1958	103	20	19.4
1959	659	144	21.9
1960	-	-	-
1961	625	119	18.1
1962	-	-	-
1963	178	38	21.3
T o t a l	1,856	346	18.7

In 1957 only silver tags (modified Petersen's type) were used for tagging cod in the region of Slupsk Furrow, whereas in 1958 two types of tags were used, the above-mentioned silver tags and plastic flag tags. From taggings made with silver tags, the recapture in 1957 was 8.6%, and in 1958 2.3%, while the taggings performed in 1958 with plastic tags gave a recapture percentage of 31.7. These

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results seem to show that the silver tags are more frequently lost, and consequently there are fewer recaptures with silver than with plastic tags. Therefore, in later years only plastic flags have been used for the experiments. More or less the same differences in the percentage recapture occurred in the tagging experiments conducted in the region of Gdańsk.

From the figures given in Table 2 it is seen that there were only slight fluctuations in the percentage of recaptured fish, except for those tagged in 1957.

In the region of Slupsk Furrow the cod tagged was 18 to 80 cm long, with an average length of 33 to 65 cm. The length distribution and the curve representing the percentage of recaptures in the particular length-classes of tagged fish are given in Figure 1. In this Figure the relation between the length of the tagged fish and the percentage of recapture (calculations based upon the lengths of cod at the moment of tagging) must be noted.

The percentage of recaptures increases along with the length of the fish tagged. The percentage curve for recaptures rises until the length-class of 60-62 cm, then it abruptly goes down and again up and down. The final drop seems to be connected with the small number of individuals tagged and with a greater natural mortality. The lower percentage of recaptures of small fish may be connected with their lower resistance to the hardship of tagging, and it must also be remembered that the minimum size is 30 cm, and smaller specimens are not the object of commercial catches.

Detailed data concerning places of tagging and recaptures are shown in Figures 2-9. As seen from these Figures, the cod tagged in the region of Slupsk Furrow migrated mainly into the regions situated westwards, i.e. into the basins of Bornholm and Arkona. The migrations into these regions were undertaken mainly by cod tagged in the months January-April. A small number of fish tagged in that period migrated eastwards (Figures 2-5 and 7-9). A different tendency is noted in the cod tagged in November (Figure 6). A large number migrated towards east, i.e. into the regions of Gdańsk Deep and the southern part of the Gotland Deep. A smaller number of fish from this tagging migrated towards west, i.e. into the Bornholm Basin.

The tendencies in migrations in relation to the months of tagging are shown in Figure 10, where the percentage of recaptures is given in the form of curves illustrating the tendencies to undertake migrations in different directions.

Table 3. Number of recaptured cod from tagging experiments in particular months and regions.

Regions of recapture	Months of recapture											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
In the tagging region	18	15	23	12	10	4	2	6	4	1	4	-
Bornholm Basin	6	13	39	34	17	13	5	5	8	2	3	4
Arkona Basin	1	1	3	2	1	3	-	-	-	1	-	-
Region of Gdańsk	4	2	9	1	7	1	1	1	1	-	1	2
Region of Gotland Deep	1	2	1	1	5	-	-	-	-	2	-	-
T o t a l	30	33	75	50	40	21	8	12	13	6	8	6

In total 346 cod were recaptured. Of this number 99 specimens were recaptured in the tagging region, i.e. 28.7%. In the regions situated to the east of the tagging region 39 specimens were recaptured (11.3%). No places of recapture were reported for 44 specimens, they make out 12.7% of the total number of recaptures.

Data on the months of recapture in the various regions are given in Table 3, page 2. As is seen, most specimens were recaptured in the period January-June. In the second half of the year much less fish were recaptured than in the first half. The distribution of the amount of recaptured fish in particular months is partly connected with the periods of tagging and with pre-spawning and spawning concentrations.

The cod which migrated into the Bornholm Basin were recaptured mainly in March and April. This is also the period of the most intensive spawning of the cod, taking place in the Bornholm Deep, hence the conclusion that the object of the migration of cod from the Slupsk Furrow into the Bornholm Basin might be a spawning migration. This conclusion may be supported by the fact that in a few individuals (4), the gonads were in the running stage, and 1 specimen had spent gonads.

The fish migrating eastwards, i.e. into the region of Gdańsk, were mainly caught from January till May. From this region data were obtained on the maturity stage for only two recaptured specimens. They had gonads in stages III and V, and it is thus probable that some of these fish migrated eastwards for spawning.

A small number of tagged cod migrated into the region of the Gotland Deep. Most of the specimens in this region were recaptured in May. Data on the maturity stage were obtained for 3 specimens. In two specimens the gonads were in the running stage, and it shows that some fish might have undertaken this migration for spawning.

Tagged cod were recaptured in the region of tagging in the period from January till May. In this region data on maturity were obtained for 2 specimens. One of these had gonads in the running stage, and there was, therefore, a probability of spawning in this region as well.

From the results obtained through the tagging experiments, it is possible to draw the conclusion that various stocks of cod are mixed in the region of Slupsk Furrow, i.e. the stocks from Bornholm Deep, from Gdańsk and from Gotland Deeps.

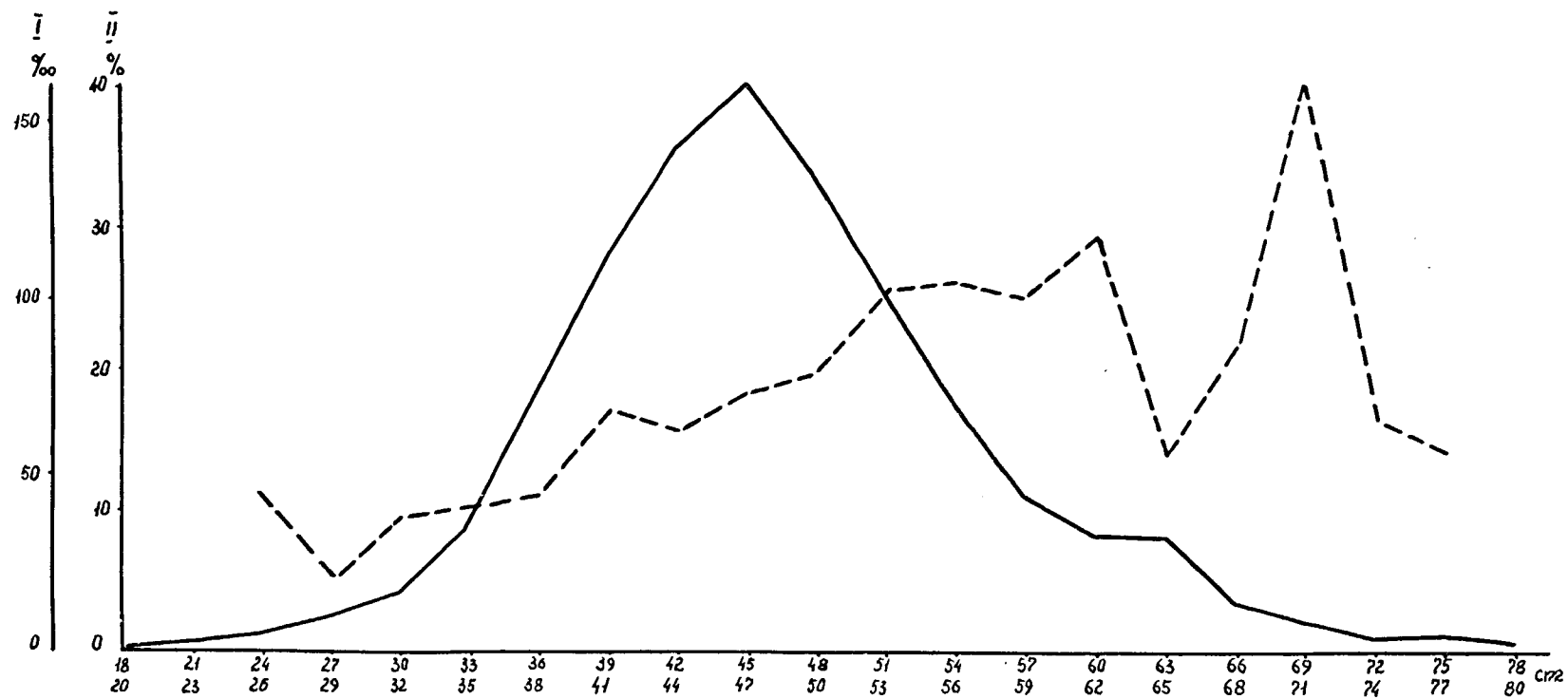
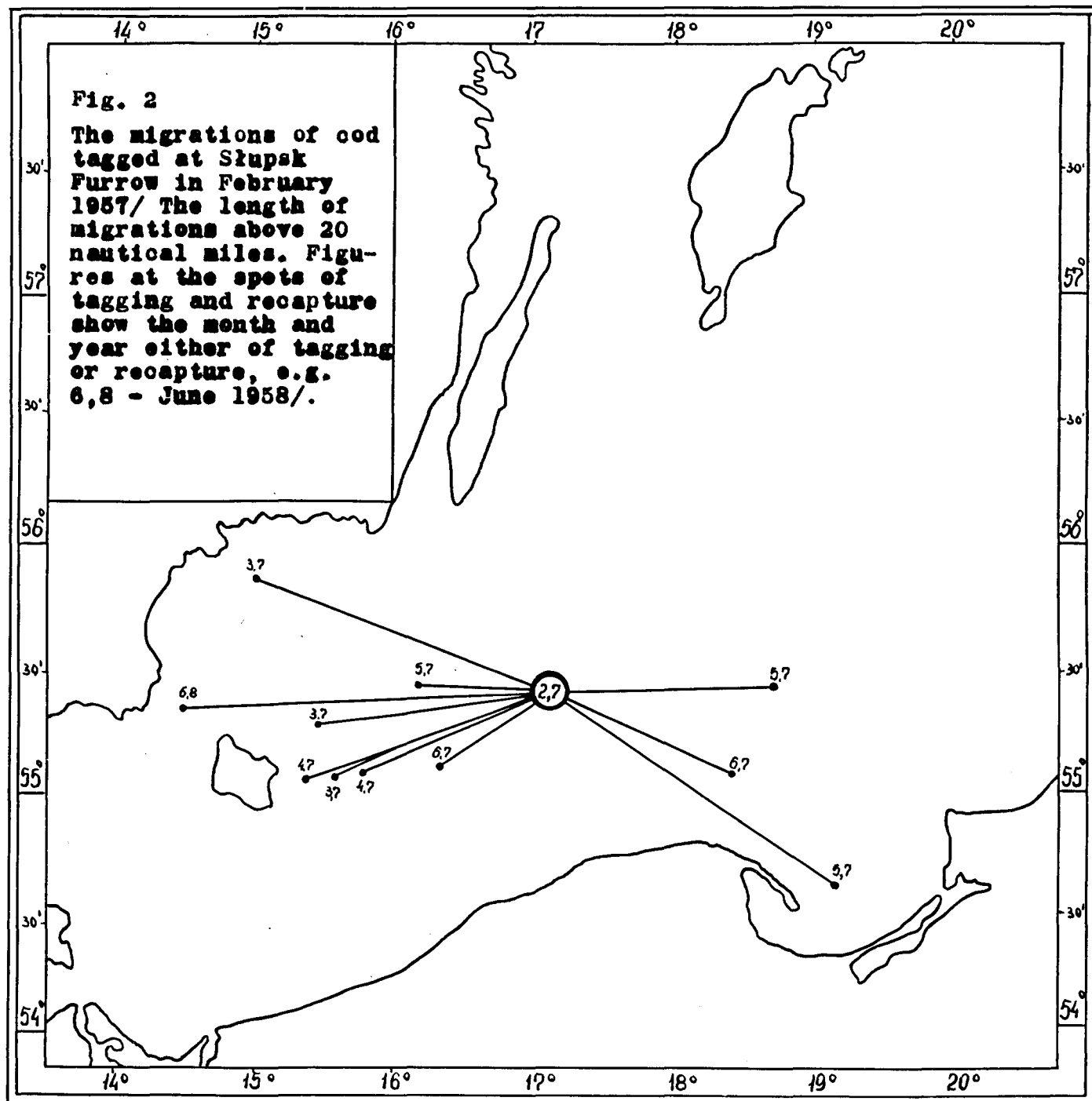
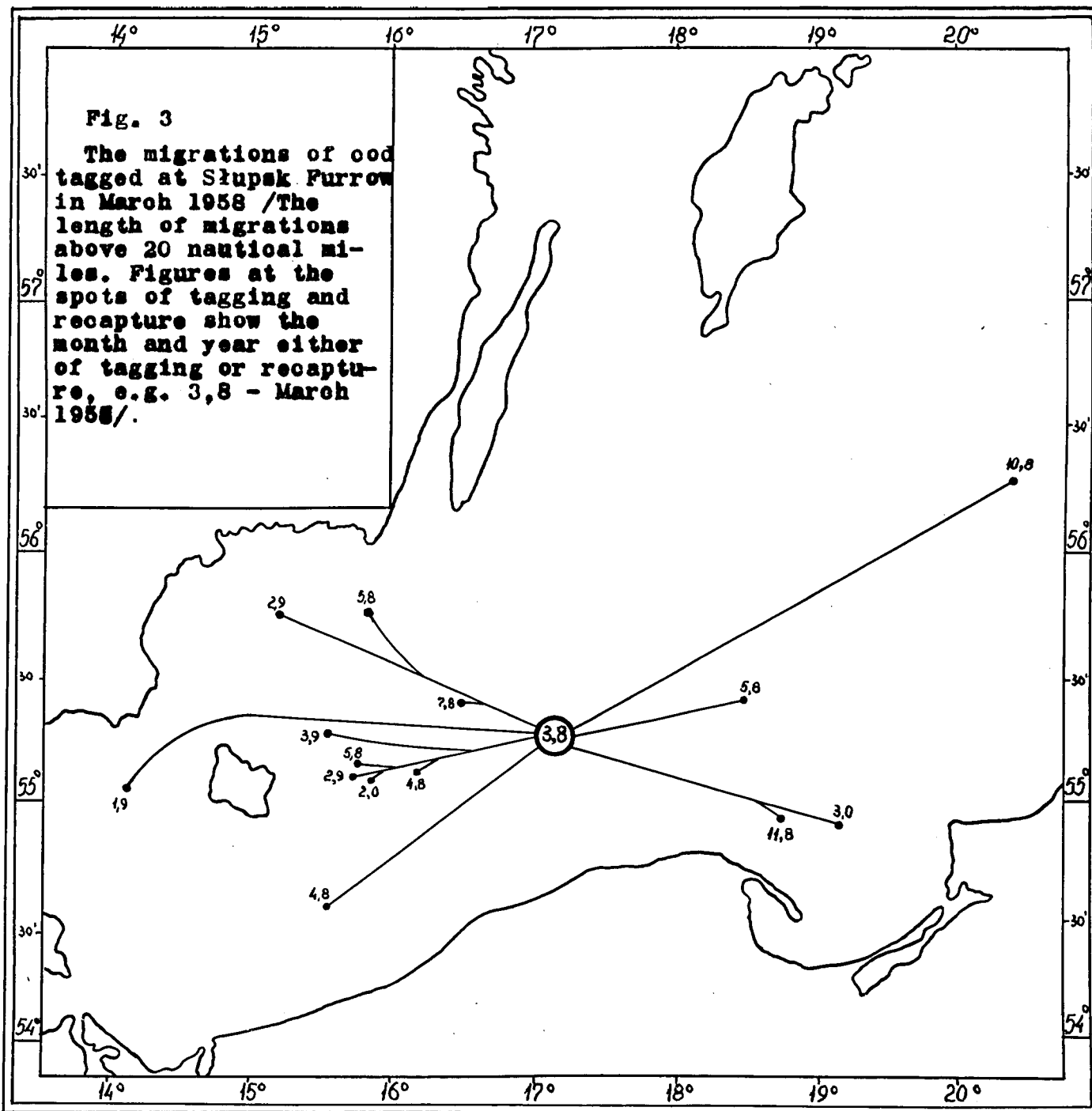
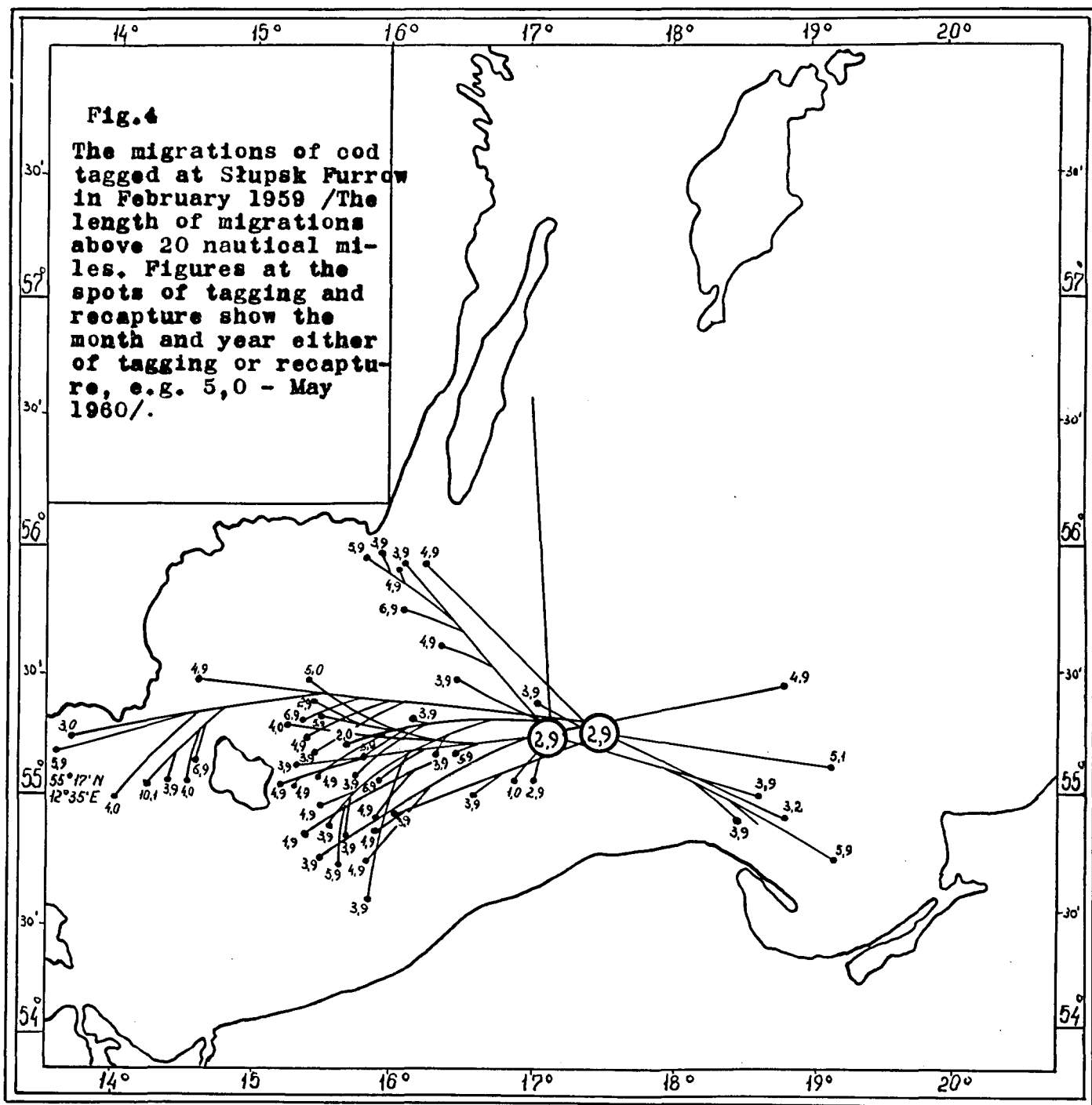
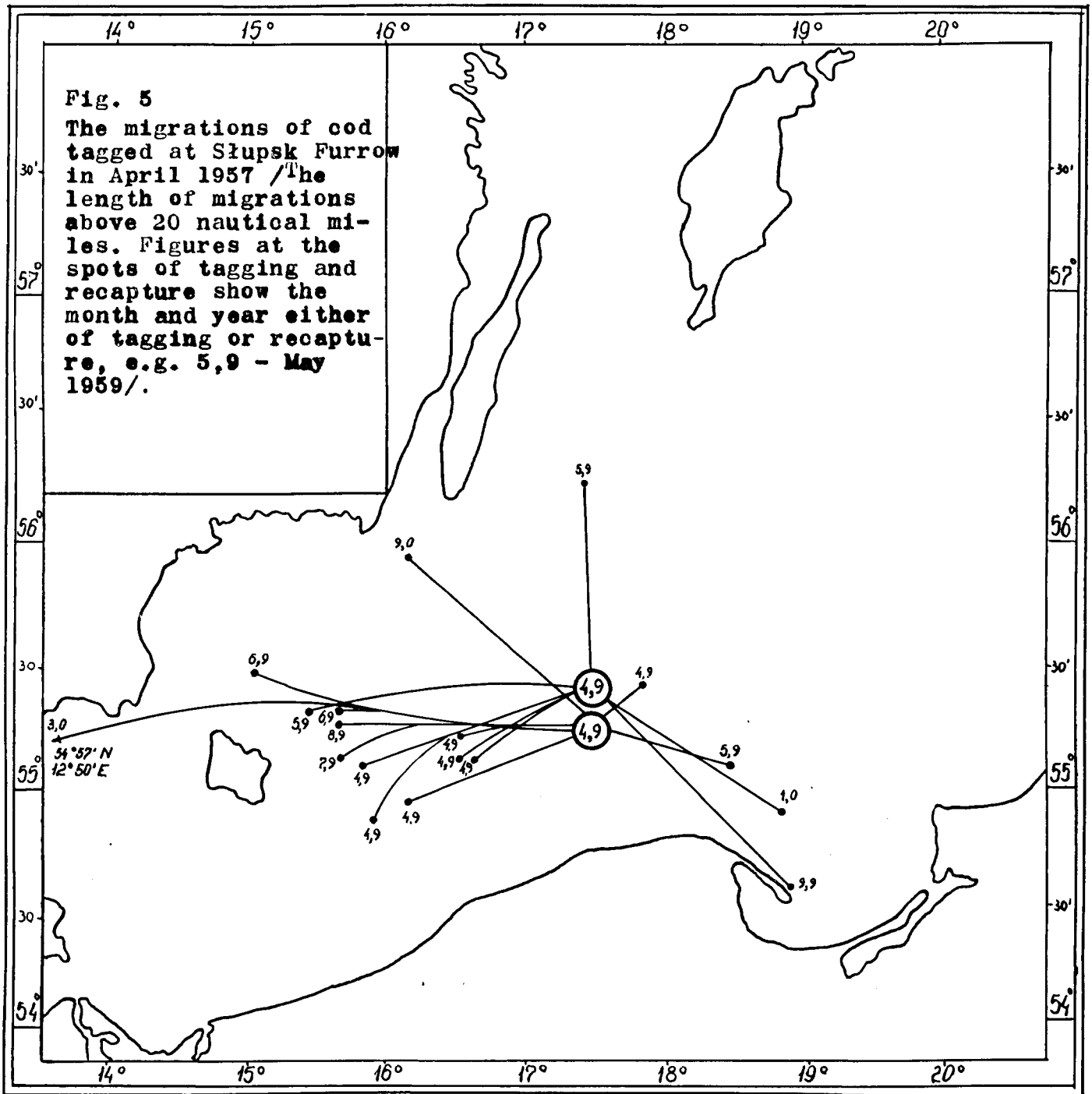


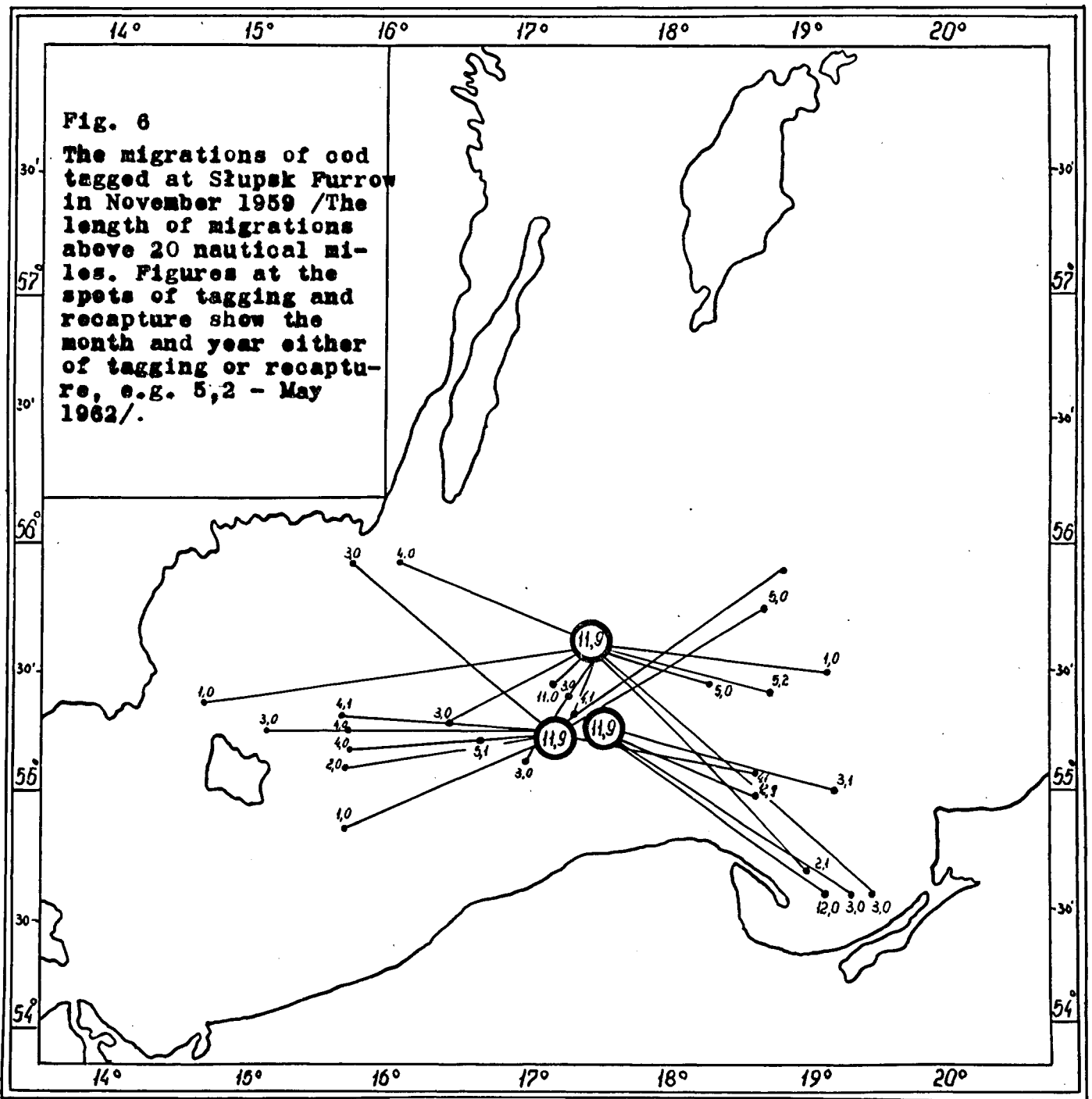
Fig. 1 The relation between the length at tagging and the number of recaptures
 I - length composition
 II - the percent of recaptured fish in particular length classes .

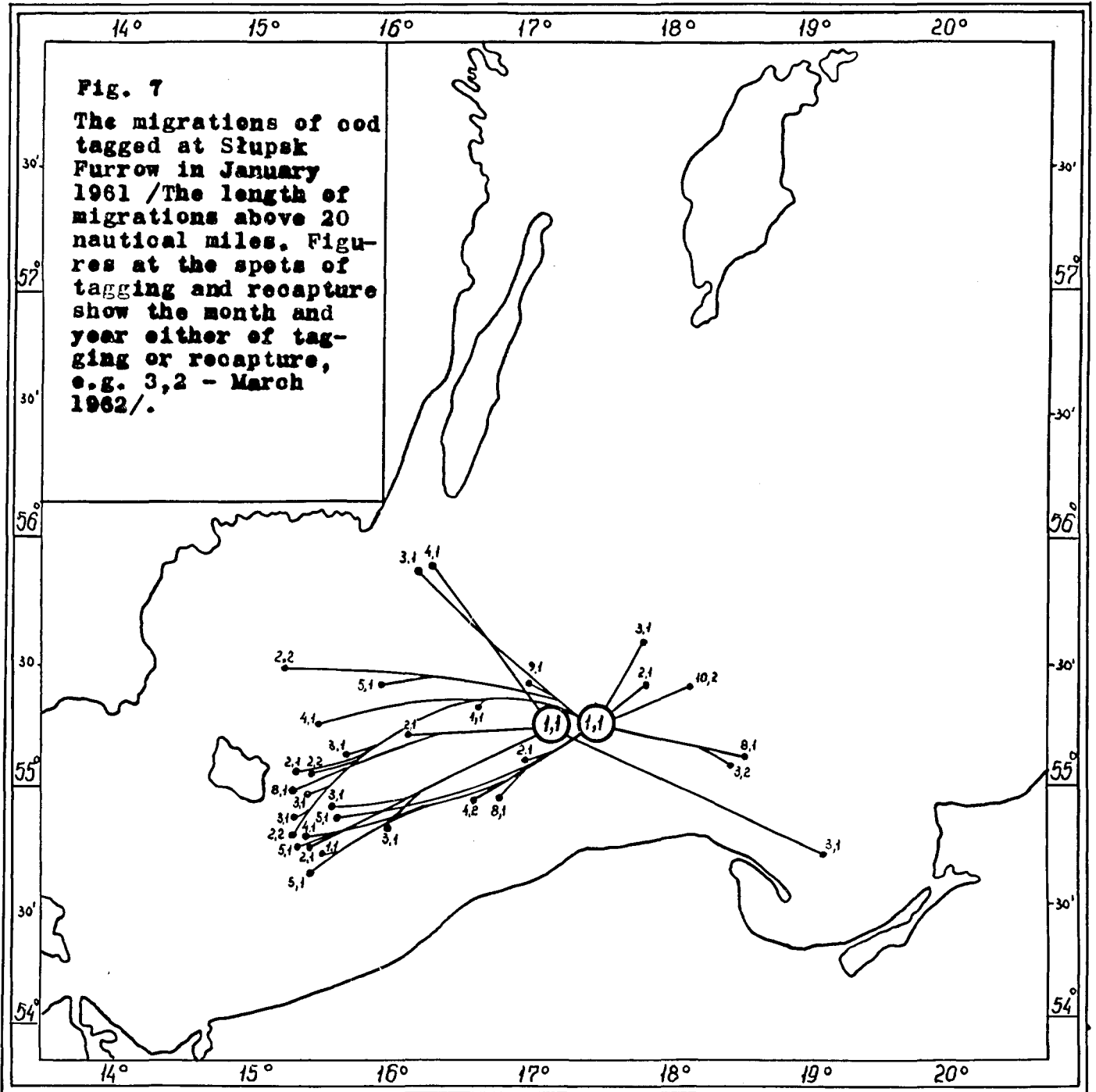


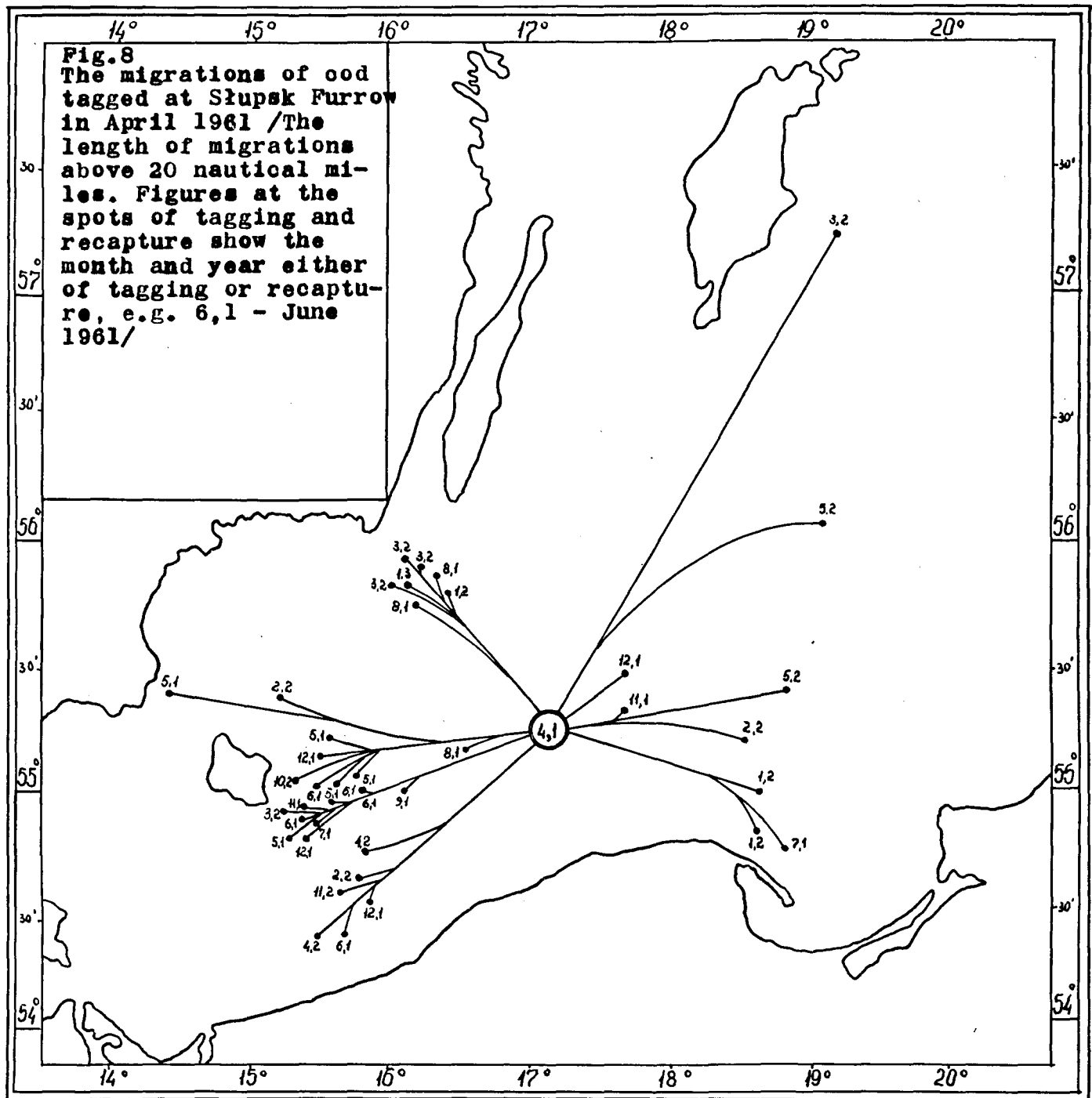


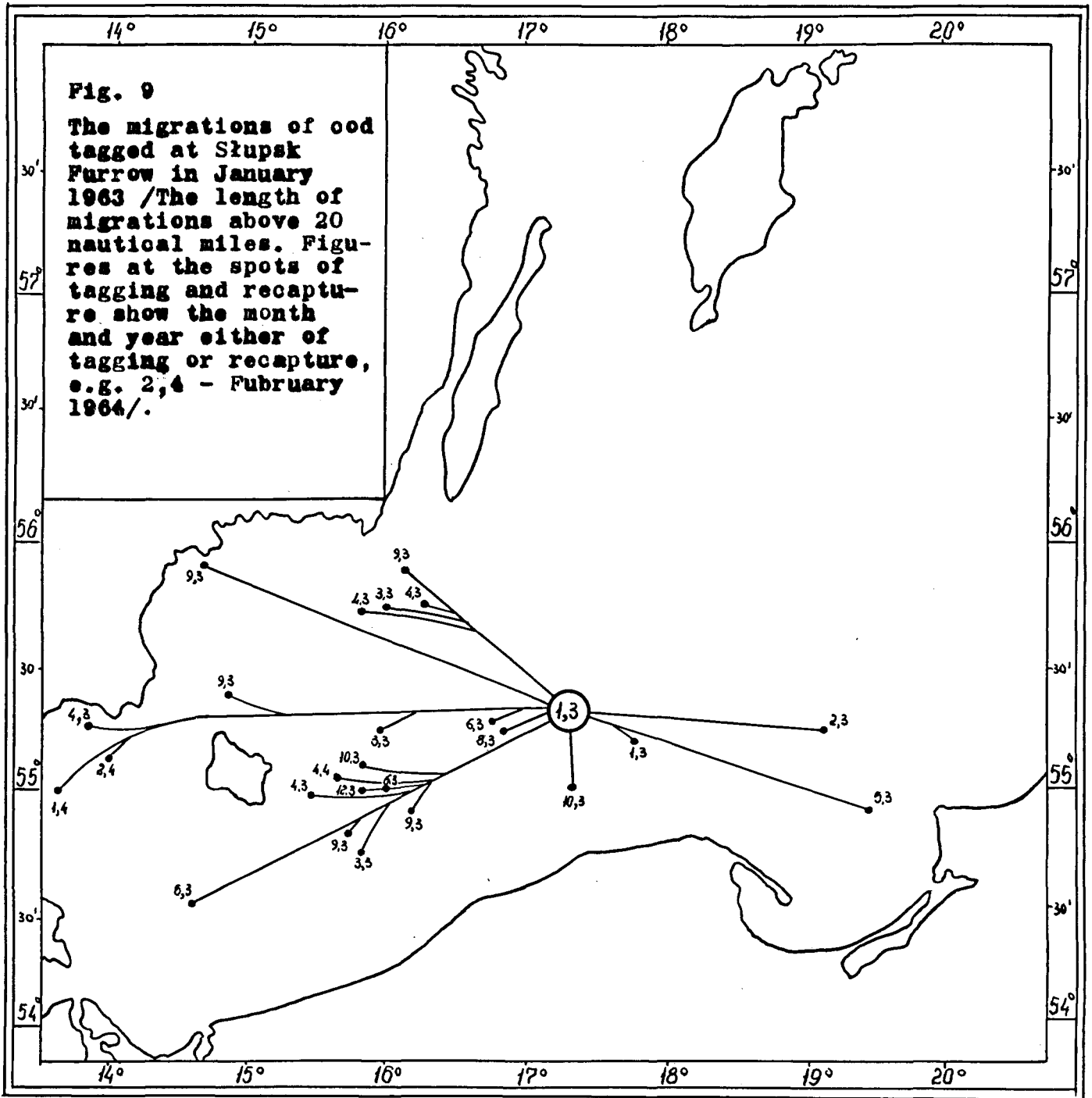












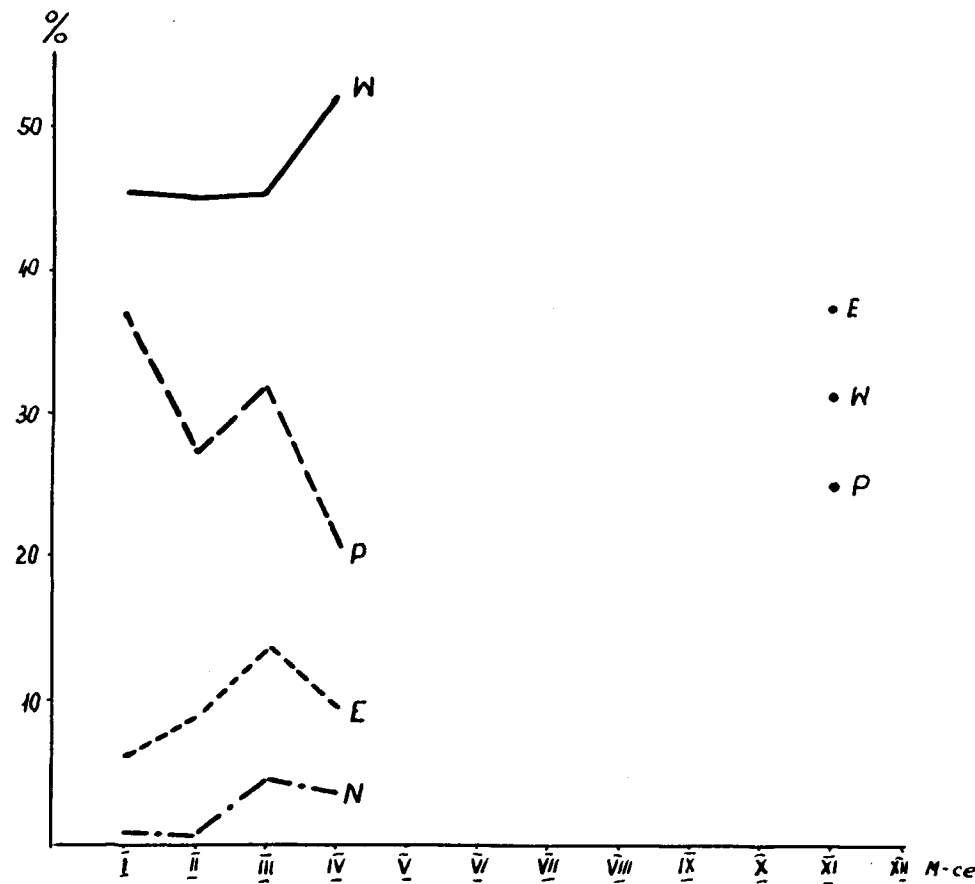


Fig. 10 Tendencies in migrations

- W - cod migrating westwards
- E - cod migrating eastwards
- N - cod migrating northwards
- P - cod recaptured in the region of tagging