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Preliminary Results of Sea- and Lake-Trout Tagging

by

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The Institute of Inland Water Fisheries in Poland has been conducting trout tagging since 1958. In order to illustrate the three problems currently investigated with the aid of that method, we will here deal with the results of tagging of sea-trout (Salmon trutta trutta) in 1961 and lake-trout (S.t.lacustris) in 1960. In May 1961, 7.870 tagged sea-trout smolts (age 2) were released in the area of the Vistula river mouth. In 1960 (May 31st and June 3rd), 1.636 lake-trout smolts were released directly into the Gulf of Gdańsk. The two batches of smolts were bred in the Institute's hatchery at Oliwa near Gdańsk.

1. Sea Migrations

As regards the sea-trout released in 1961, we have so far recovered (by June 30th 1963) 331 tags. From Figure 1 it is seen that the tagged individuals were being recaptured over nearly the entire area of the Baltic:- the Gulf of Bothnia, the Gulf of Finland, the Gulf of Riga, off the Swedish coast, and off Gotland and Bornholm. This distribution of the tagged sea-trout seems to contradict the opinion current hitherto (Schmidt, 1947; Nikolsky, 1954) that sea-trout as distinguished from salmon do not usually migrate far into the sea. The long sea-trout migrations in the Baltic is possibly related to the specific properties of that sea, which is relatively shallow and marked by low salinity. The ability of Salmo trutta of making distant migrations is being confirmed by the results of lake-trout tagging in 1960 (Figure 2). That variety just as the migratory one had been recaptured in almost all parts of the Baltic. The relative numbers of tags recovered in the various regions in question are roughly the same (Table 1). A certain difference can, however, be observed between the relative numbers of sea-trout and these numbers of lake-trout recaptured in the individual regions. In areas with higher salinity (Gotland, Bornholm), a relatively greater number of sea-trout were recaptured, whereas in areas with lower salinity (south-eastern coast) more or exclusively (region eight - Zalew Wislany) lake-trout were recovered. It appears that lake-trout being a freshwater species seeks water with lower salinity, but also ventures upon distant migrations. The farthest recovery in the Gulf of Bothnia was recorded 1.200 km away from the place of release.

The absence of recoveries in the western Baltic, to the west of the line Trelleborg-Rügen, where the salinity is higher, seems to be characteristic for the species in question.

The current opinion that the sea-trout do not make distant migrations can, therefore, be modified. As demonstrated above trout is a migratory species under the specific conditions of the Baltic but is a "more freshwater" fish than salmon.

2. Growth of the two Trout Varieties in the Baltic

The results of tagging also make it possible to compare the growth of the sea-trout with that of the lake-trout while in the sea (Figure 3). There is a striking difference between the two varieties:- the weight of sea-trout after 18-22 months in the sea is about 4 kg per fish, whereas the weight of the lake-trout after roughly the same time is about half of that, i.e. 2 kg per fish. Even after 30 months in the sea, the lake-trout never attains the size of the sea-trout. It is noteworthy that the lake variety grows at a higher rate in the Baltic than in lake Wdzydze (Wojno, 1961) where the variety originates from (Figure 3).

3. Remarks on Trout Exploitation in the Baltic

To conclude the present short note on some results of our trout tagging it might be of interest to present the data on the exploitation of sea-trout from the Vistula river system by other countries in addition to Poland. This is connected with the migrations of this species in the Baltic. The tags from sea- and lake-trout have been returned to us from 7 countries; apart from Poland they include: Denmark, Finland, East and West Germany, Sweden and the Soviet Union. The numbers of tags returned are specified in Table 2. It will be seen that 28% of the tags received were removed from fish caught by fishermen other than Polish.

The correct determination of the share of other countries in the exploitation of sea-trout from the Vistula river system is an important question to us, as this will make it possible to rectify the statistics of the catches of this species, which in other countries are usually being incorporated in the statistics of the salmon catches. It also makes it possible to estimate our share in the management of Baltic fisheries, considering that sea-trout stocking of the Vistula river system has been conducted in Poland for the past 60 years.

The conclusions presented here:

- 1) on distant migrations of sea- and lake-trout in the Baltic,
- 2) on growth difference between the two varieties of Salmo trutta,
- 3) on the considerable share of other countries in the exploitation of sea-trout stock originating from the Vistula river system

are still of a tentative nature. It seems, however, the continued research and collecting of material will make it possible to substantiate the above conclusions.

References

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Table 1. Recoveries of trouts by regions in the Baltic

Region	Lake-trout		Sea-trout	
	No. of returns	%	No. of returns	%
1. Gulf of Bothnia	1	0.58	1	0.36
2. Gulf of Finland	3	1.55	4	1.46
4. Gulf of Riga	-	-	2	0.73
5. Gotland	8	4.68	19	6.93
6. South-eastern	10	5.85	9	3.28
7. Gulf of Gdańsk	121	70.77	201	73.38
8. Wiślany Zalew	9	5.26	-	-
9. South (Central)	2	1.17	3	1.09
10. Bornholm	4	2.34	11	4.01
11. Vistula River	4	2.34	6	2.19
Place of recapture unknown	9	5.26	18	6.57
T o t a l	171	100.0	274	100.0
Recaptured as smolts	3	XX	57	XX

Table 2. Recoveries of trouts by various countries.

Country	Lake-trout released in 1960		Sea-trout released in 1961		Total	
	No.	%	No.	%	No.	%
Poland	130	76.0	192	70.0	322	72.4
Sweden	24	14.0	57	20.0	81	18.2
W.Germany	11	6.4	15	5.5	26	5.8
U.S.S.R.	2	1.2	5	1.8	7	1.6
Denmark	3	1.8	3	1.1	6	1.3
Finland	1	0.6	1	0.4	2	0.5
E.Germany	-	-	1	0.4	1	0.2
Total					445	100.0

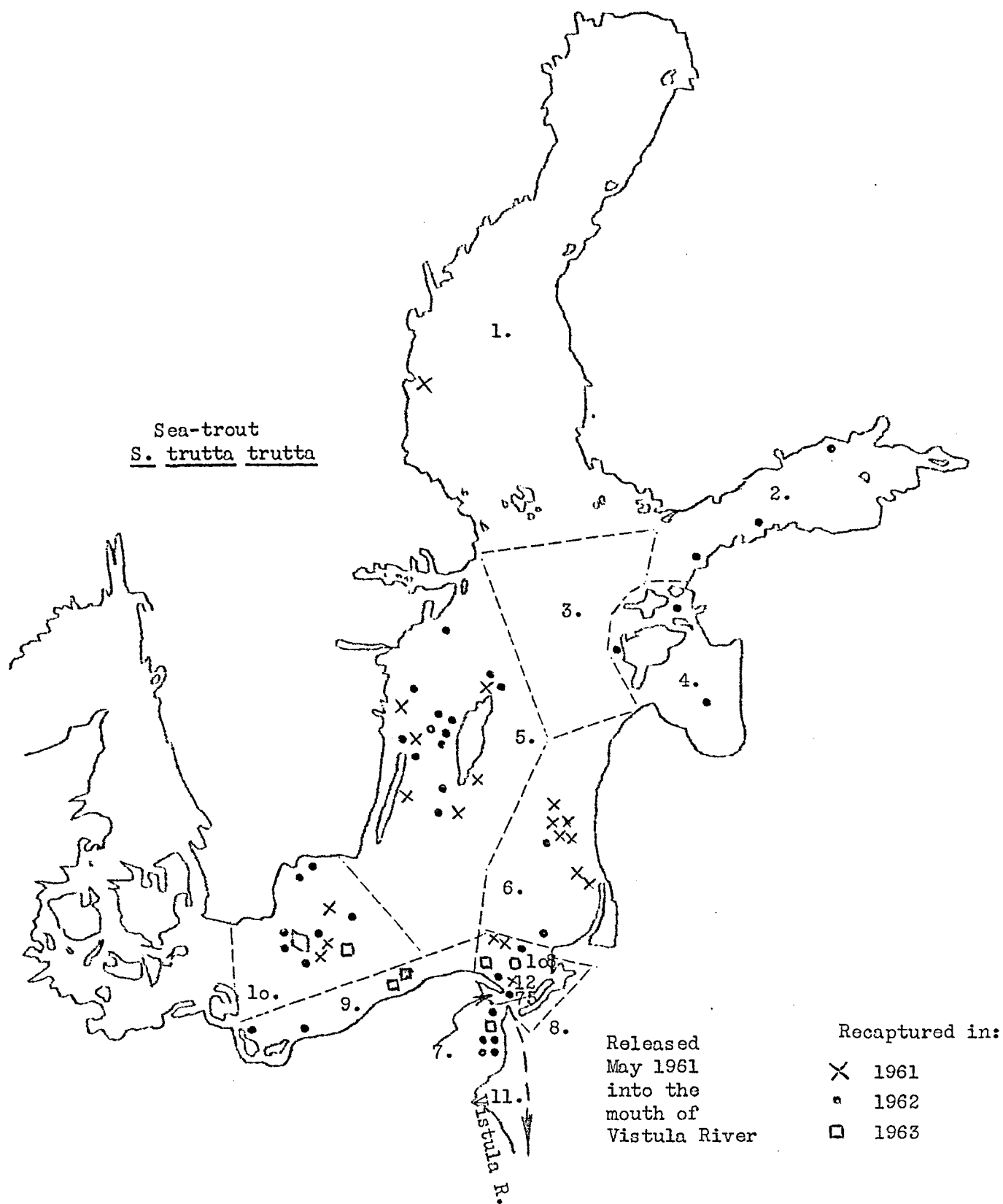


Figure 1. Distribution of recaptured sea-trout tagged in 1961; the Baltic is divided into arbitrary regions. Small figures next to the signs on the map give the numbers of tags returned from the given place.

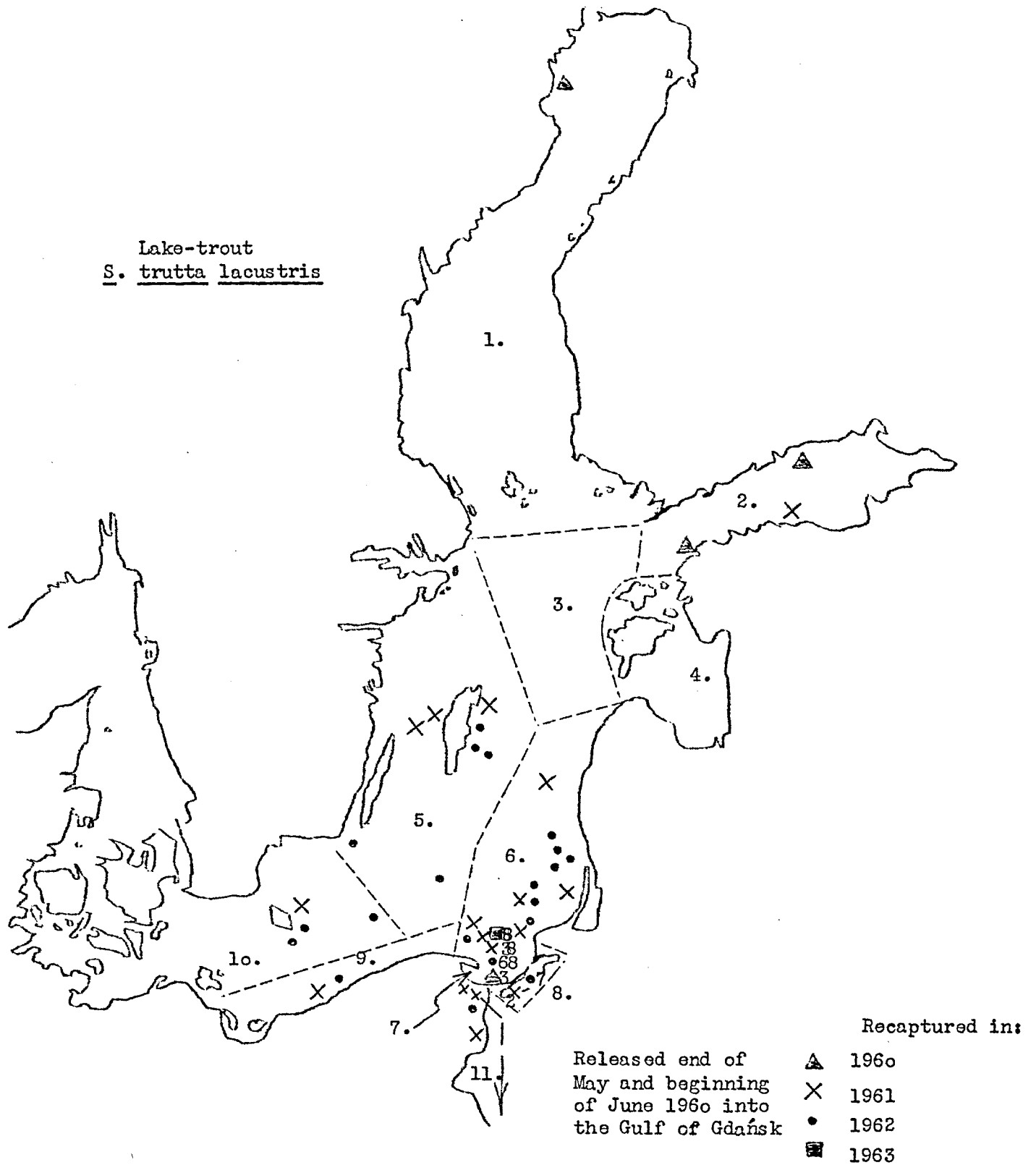


Figure 2. Distribution of recaptured lake-trout tagged in 1960.

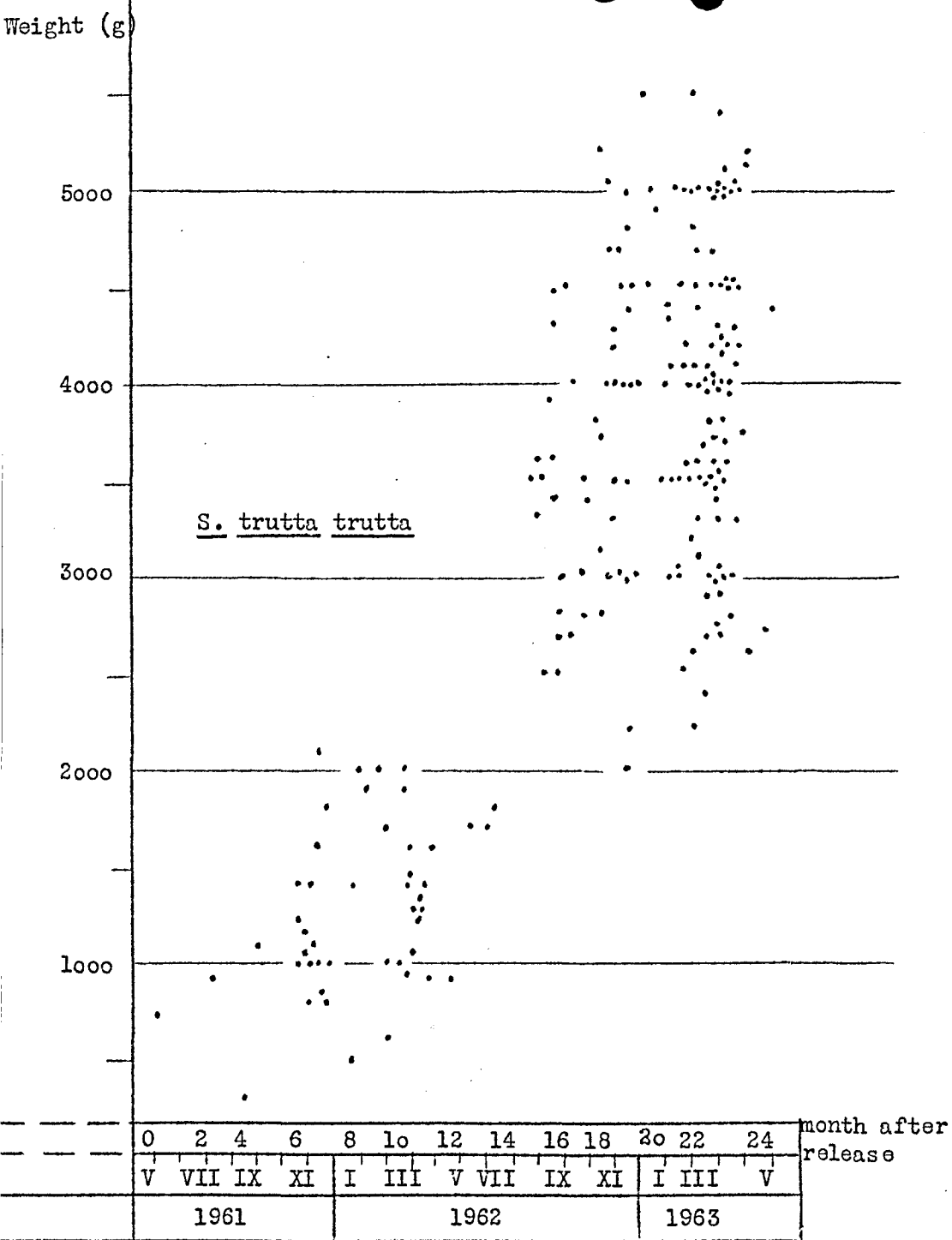


Figure 3. GROWTH OF TAGGED SEA- AND LAKE-TROUT.

The dots indicate the weight of single individuals. Average weights of lake-trout attained at the age of 4 and 5 years in lake Wdydze (after Wojno) are marked by rectangles; this corresponds to 24 and 36 months long stay of tagged fish in the sea.

