

# MEDDELELSER

FRA

## KOMMISSIONEN FOR HAVUNDERSØGELSER

SERIE: FISKERI · BIND II

---

Nr. 5. A. C. JOHANSEN: CONTRIBUTIONS TO THE BIOLOGY OF THE PLAICE WITH SPECIAL REGARD TO THE DANISH PLAICE-FISHERY. II. THE MARKING AND TRANSPLANTATION EXPERIMENTS WITH PLAICE IN THE DANISH WATERS IN THE YEARS 1903-06. (CONTAINING 6 PLATES AND 10 TEXT-FIGURES)

---

KØBENHAVN

I KOMMISSION HOS C. A. REITZEL

BIANCO LUNOS BOGTRYKKERI

1907

MEDDELELSER FRA KOMMISSIONEN FOR HAVUNDERSØGELSER

SERIE: FISKERI · BIND II · Nr. 5 · 1907

---

CONTRIBUTIONS

TO

THE BIOLOGY OF THE PLAICE

WITH SPECIAL REGARD TO THE DANISH PLAICE-FISHERY

(CONTAINING 6 PLATES AND 10 TEXT-FIGURES)

II

THE MARKING AND TRANSPLANTATION EXPERIMENTS WITH  
PLAICE IN THE DANISH WATERS IN THE YEARS 1903-06

BY

A. C. JOHANSEN

KØBENHAVN

HOS C. A. REITZEL

BIANCO LUNOS BOGTRYKKERI

1907



## I. Introduction.

### 1. The object of the marking experiments.

**I**N the Danish marking experiments with plaice the fish were as a rule liberated at the same spot where they were captured. In some cases, however, the fish have been transported shorter or longer distances before liberation. The aim of those experiments where the fish were liberated at the place of capture was in the main as follows:

- 1) To throw light upon the intensity of fishing.
- 2) To contribute to our knowledge with regard to the rate of growth of plaice on the various fishing grounds.
- 3) To yield information with regard to the natural migration of plaice.
- 4) To procure information as to the nationality of the vessels which catch the majority of the plaice on the various fishing grounds.
- 5) To elucidate what proportion of the marked fish are caught by trawling-vessels and what proportion by cutters and smaller vessels in the various areas.

The transplantation experiments have also to some degree enabled us to obtain information regarding the circumstances mentioned under 1—5. The main object of these experiments has been, however, to procure information as to the prospect of profitable transplantation on a large scale in the sea, the plaice being removed from grounds where they are crowded and increase in growth slowly to areas where they are scarce and increase rapidly.

### 2. The method of marking.

In the marking experiments Dr. PETERSEN'S method has been used. Two bone-buttons have been attached to the fish by means of a silver-wire passed through the interspinous bones near the dorsal-fin, somewhat nearer the head than the tail. The bone-button on the eye-side is provided with a small depression wherein is placed a brass-disc provided with a number. The same method of marking is used in England, Belgium, Holland and Sweden, with some slight modifications. This method has on the whole proved to be practical, though not perfectly satisfactory in all respects. If the results of a marking experiment are to be called satisfactory we may make the following claims:

- a) The labels must be sufficiently large and distinct to be easily discovered by the fishermen or the people who later on manage the fish.

In this direction the Danish labels are quite good.

- b) The labels must be constructed and fixed in a way that does not much injure the fish.

The Danish method of marking may also in this respect be called satisfactory. When the buttons have not been squeezed too tight to the fish we very rarely observe a serious wound caused



by the labels. Another evidence that the marked fish are in good health we possess in the fact that they grow on an average with a similar rapidity to those not marked.

- c) The labels must be made of such a material and fixed on the fish in such a manner that they will last as long as the specimen lives.

In this respect we are still far from the ideal. We may at present be quite content if the labels remain on the fish for one year, so that we may get information as to what degree the fishery has affected the stock throughout the year. Experience has shown that the labels generally last at least for one year. After 1—2 years, however, the bone button on the blind side is generally corroded by the sea water, and no label is known to have lasted for more than  $2\frac{3}{4}$  years. But even if the label is rather durable the fish may lose it because it has not been sufficiently well fixed. It is sometimes noticed, especially in smaller specimens, that the silver wire which fixes the label has caused a longitudinal wound between the interspinous bones so that the label has moved out against the edge of the body. Several labels are probably lost in this way before one year has passed.

### 3. The condition of the marked fish when set free.

It is naturally of the utmost importance that the marked fish should be liberated in a perfectly living condition. This has generally been the case in the Danish marking experiments; but in spite of the care we have taken on this point, it seems that we have not always been careful enough. Thus it has been ascertained that a few of the marked plaice have been taken dead from the sea-bottom shortly after liberation. I therefore suppose GARSTANG to be right when he says that "it is quite possible that a certain number of fishes receive injuries during the act of trawling which are incapable of detection at the time when the fish are marked and yet may be severe enough to cause a certain mortality among the fish used in the experiments".

While it is quite exceptional that marked plaice have been liberated in the ordinary marking experiments when not capable of living, we have reason to suppose that the condition of the plaice which were liberated in the Danish transplantation experiments in spring of 1904, has not always been as satisfactory as it ought to have been. The slight percentage which has been recovered of these transplanted fish points in this direction. The weather was very unfavourable during several of these experiments, and it became in several cases evident that the plaice were weakened during the transplantation.

It seems as if I have in some cases overestimated the vitality of the plaice. I have thought that, even if a plaice has become a little weak during the transport, it will soon recover when placed in the sea. Experience seems to show that such has not always been the case.

The plaice liberated in the marking experiments were as a rule caught by the "Thor" with a 50 feet ottertrawl in hauls lasting from ca.  $\frac{1}{2}$ —2 hours. In some cases they were captured in the snurrevaad by Danish cutters.

### 4. The areas where the marked fish have been set free.

The Danish marking experiments with plaice in 1903—1906 were made in the following areas:

- 1) In the North Sea N. of  $55^{\circ}0'$  N. lat. and E. of  $6^{\circ}0'$  E. long.
- 2) In the southern Skagerak on the Danish land-ground at depths between 0 and 50 meters.
- 3) In the Kattegat west of a line drawn from Elsinore over Little Middelgrund to  $58^{\circ}0'$  N. lat. and  $11^{\circ}0'$  E. long.

In that part of the North Sea where the marking experiments were made we may distinguish between two areas: The Horns Reef area and the Hanstholm-Søndervig area. The Horns Reef area comprises the grounds around the Horns Reef and the so called "Horns Reef Outer Grounds", lying



between 55°0' and 56°0' N. lat. and E. of 6°0' E. long. The Hanstholm-Søndervig area comprises the coastal grounds off the west coast of Jutland between 56°0' and 57°10' N. lat. and E. of 6°0' E. long.

As limits between the different waters are here considered:

Line: Hanstholm—Lindesnæs between the North Sea and the Skagerak.

» Skagen—Paternoster	»	the Skagerak and the Kattegat.
» Gniben—Hasenøre	»	the Kattegat and the Belt Sea.
» Elsinore—Helsingborg	»	the Kattegat and the Sound.

The submarine ridge: Dragør—Saltholm—Linhamn between the Sound and true Baltic.

» Gedser—Darsserort	»	the Belt Sea and true Baltic.
---------------------	---	-------------------------------

##### 5. The records of the fishermen and the registration of the data etc.

The Danish fishermen and fishmongers have on the whole shown a praiseworthy readiness in sending information regarding recovered marked fish, in spite of the fact that the reward offered has been rather low (1 Kr.). It has sometimes occurred that we have by chance obtained information that marked fish had been recovered, though no information was sent to our office. Such occurrences are however rare exceptions. More than 90% of the marked fish are in several of our marking experiments registered as recovered, a fact which shows the fishermen's and the fishmongers' readiness in sending accounts of the recaptures.

At the most important fishing ports we have had local assistance from people, who received the fish from the fishermen, measured them and paid the reward. In Frederikshavn we have thus been assisted by Mr. CLOOS LORENTZEN, in Skagen by Mr. L. HOLST, and in Esbjerg by the harbour master Lieutenant JENSEN.

For information regarding Danish marked fish recovered by foreign fishermen we are indebted to the authorities in the respective countries, who have had these matters in their charge.

##### 6. The shrinkage of fish after death before remeasurement.

The fish recovered during the same month in which they were liberated measure on an average ca. 0.5 cm. less at recovery than at liberation (Compare Contributions I, p. 23). This is naturally owing to shrinkage after death before the remeasurement takes place. Several specimens measure up to 2 cm. less on remeasurement after recovery than at liberation. In accordance with the experience gained and with the results of several experiments which we have undertaken in order to substantiate the amount of shrinkage when the fish were dried I have summed up the following as giving approximately the real size of the fish at recovery:

If stated: "fish fresh" or "fish living":	0	cm. is added.
If nothing stated about condition of fish:	0.5	»
If stated: "tail dry":	0.5	»
If stated: "fish rotten":	1.0	»
If stated: "fish dry" or "fish salted":	1.0	»

This implies that on an average 0.5 cm. has been added to the observed length of the recaptured fish by the calculation of the growth.

The fish has in each case been calculated to be at least as large on recovery as at liberation.

Among the experiments which we have carried out to test how much the plaice will shrink when dried up, the following may be recorded.

On October 2., 1906, 11. a. m., 30 living plaice of a length of 21—36 cm. were laid out on the deck of the "Thor".



They were left on the deck for 24 hours in fine weather; then they were remeasured and the shrinkage amounted to 4—9 mm., on an average to 5.6 mm. The majority of the marked plaice landed in Esbjerg are in a similar state.

The 30 specimens were now utterly dried up and on October 12. they were in such a state that they properly might be termed as "Fish dry" or "Fish somewhat dry". The shrinkage now amounted to between 7 and 13 mm., on an average to 9.6 mm.

The shrinkage of each of the individuals was as follows:

Original length 2. — 10. — 06.	Shrinkage until 3. — 10. — 06.	Shrinkage until 12. — 10. — 06.	Original length 2. — 10. — 06.	Shrinkage until 3. — 10. — 06.	Shrinkage until 12. — 10. — 06.
213 mm.	6 mm.	9 mm.	257 mm.	6 mm.	11 mm.
218 »	6 »	8 »	260 »	6 »	8 »
226 »	6 »	10 »	265 »	9 »	12 »
228 »	6 »	9 »	268 »	7 »	11 »
234 »	8 »	11 »	269 »	6 »	13 »
235 »	4 »	9 »	270 »	5 »	9 »
235 »	4 »	9 »	272 »	6 »	9 »
239 »	8 »	13 »	274 »	4 »	8 »
241 »	4 »	9 »	276 »	5 »	10 »
241 »	5 »	11 »	284 »	4 »	9 »
244 »	4 »	8 »	287 »	6 »	10 »
250 »	4 »	9 »	315 »	4 »	10 »
252 »	5 »	8 »	316 »	6 »	10 »
254 »	5 »	7 »	317 »	5 »	9 »
256 »	6 »	10 »	364 »	9 »	10 »

On salting and drying 9 plaice of a length of 22—28 cm. we found a shrinkage between 7 and 12 mm., on an average 9 mm. in the lapse of 4 weeks. The fish were at that time not quite dry.

#### 7. Particulars concerning the Tables, Figures and Plates.

In the Tables stating the particulars of liberation and recovery of the marked plaice S. S. and S. T. mean steam-ship or steam trawler, S. B. = Decked or sailing boats (cutters), "Fishingb." means small sailing boats or small motor boats (below 10 tons brutto). The tables include recoveries up to the end of September, 1906.

The charts illustrating the marking experiments have been drawn by Mr. SIMONSEN.

On all the charts the head of the arrow indicates the position of recapture. The letters beside the arrow heads represent the nationality of the vessels which recaptured the plaice, B. meaning Belgium, Da. = Denmark, E. = England, H. = Holland, G. = Germany, S. = Sweden. The Arabic numerals at the arrow-heads indicate the number of months between liberation and recapture, 0 meaning: recaptured in the same month as liberated, 1 meaning: recaptured 1 month after liberation and so on.

The Figures 1 to 9 represent the plaice which were recaptured until June 30., 1905. The Figure 10 and Pl. I to VI represent plaice recaptured until Septbr. 30., 1906.

The depth-lines are the same on the Figures as on the Plates.



## II. Detailed account of the Danish marking and transplantation experiments with plaice in the North Sea, the Skagerak and the Kattegat in the years 1903—1906.

### A. The ordinary marking experiments in 1903. Supplementary records.

In April of 1903, 1220 marked plaice were liberated from the investigation-steamer "Thor" off the west-coast of Jutland in the shore belt between 8 and 50 meters depth. At the end of 2 months and a half after the liberation 304 of the marked specimens or ca. 25% were already recovered. In the first year after liberation 361 specimens or 29.6% were recovered, in the second year 32 specimens or 2.6%, and in the third year 4 specimens or 0.3%. The last specimen recovered was caught on July 28th, 1905. Until September 30th, 1906, the total recatch amounted to 397 or 32.5%.

In "Contributions to the Biology of the Plaice I" I have dealt with the marking experiments of 1903 and given particulars with regard to the specimens recovered up to the end of June, 1904. The following supplementary records comprise one specimen recaptured in April of 1904 and 8 specimens recaptured between July 7th of 1904 and July 28th of 1905. These specimens are of special interest on account of the proportionally long time which has passed between the liberation and the recovery.

Table 1. Supplementary list of Recoveries from the Danish marking experiments with plaice in April, 1903.

Particulars of Liberation. Date. Locality.	Particulars of Recovery									
	Date	Nr. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
Marking experiment No. 2 1903 SE of Vyl. April 10, 1903	1904 April 12	41	10 miles S of Vyl Lightship	N 55°15' E 7°51'	English S. S.	XII	♂	23	26.5	
	1905 July 28	238	60 miles WSW of Graadyb. 15 fms.	65°08' 7°33'	Danish S. B.	XXVII	♂	17	27	
Marking experiment No. 3 1903 SE of Vyl. April 10, 1903	1905 May 1	626	55°40' N 7°25' E. 8 fms.	55°40' 7°25'	English S. T.	XXV	♂	24	31.5	dried and salted * <i>fide</i> fisherman.
	» June 16	662	55°20' N 7°50' E. 13 fms.	55°20' 7°50'	» »	XXVI	♀	17	34*	
Marking experiment No. 5 1903 N of Tuxen, Horns Reef. April 11, 1903	1904 Aug. 3	891	12 miles W of Husby. 12½ fms.	56°08' 7°49'	Danish S. B.	XVI	♂	30	...	
	1905 Febr. 6	836	70 miles NW by W of Helgoland	54°38' 6°04'	German S. S.	XXII	♂	24	37	
	» May 18	725	55°16' N 4°49' E. 25 fms.	55°16' 4°49'	English S. S.	XXV	♂	26	37	
Marking experiment No. 7 1903 Jammer Bay. April 17, 1903	1904 July 7	1003	NNE of Hanstholm. 24 miles f. shore. 22 fms.	57°30' 8°44'	Danish S. B.	XV	♂	20	35	
Marking experiment No. 16 1903 Off Torup. April 23, 1903	1904 July 17	1166	Monkey Bank	56°30' 6°30'	German S. T.	XV	♀	35	41	

It will be seen from Table 1 that 5 specimens liberated in the Horns Reef area have grown after ca. 2 years respectively 8, 10, 11, 13 and 17 cm. One specimen liberated in Jammer Bay in the Skagerak increased in size during 15 months from 20—35 cm.



Fig. 1 represents the position of recapture of the above mentioned plaice which were liberated in April, 1903, and recovered between 15 and 26 months after the liberation. It will be noticed that all the specimens save one were recovered in deeper water than that in which they were liberated. This corresponds with the general tendency of the plaice to leave the shallow water as it increases in size. At the end of 25 and 26 months 2 specimens were recovered on the Horns Reef grounds where

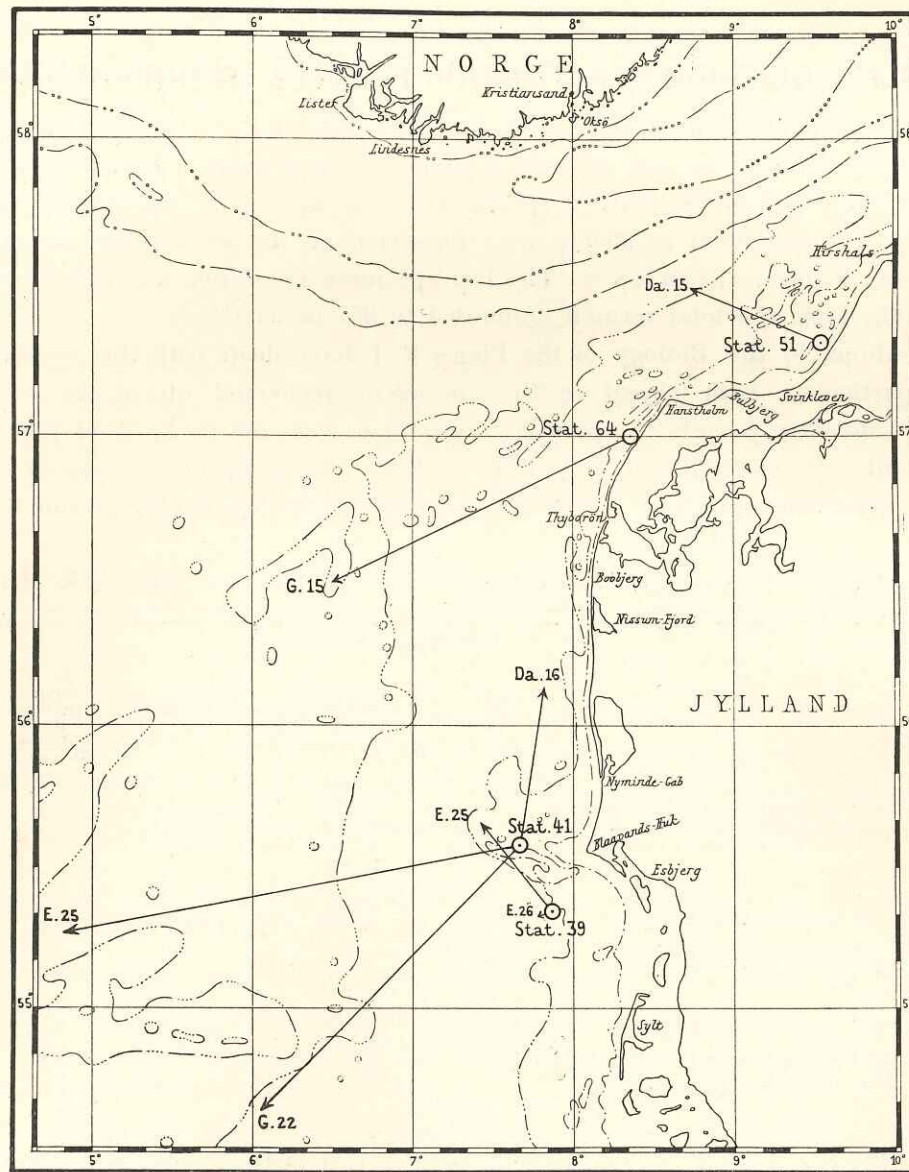


Fig. 1. Marking experiments with plaice. April 1903. Supplementary chart.

they were liberated originally. How far these plaice have been wandering to and fro from shallow to deeper water during the 2 years can naturally not be ascertained.

### B. The ordinary marking experiments in the spring of 1904.

In the ordinary Danish marking experiments in February and March, 1904, 210 specimens were liberated near the Horns Reef and 90 specimens in the north-western Kattegat.

A detailed account of the experiments is represented on the Tables 5 and 6. The list of recap-



tures of the marked fish is here entered up to the end of September, 1906 and thus comprises a space of ca.  $2\frac{1}{2}$  years.

Of the 210 specimens liberated at Horns Reef in February, 76 specimens or ca. 36.2% were recovered by the end of one year. During the second year 10 specimens or ca. 5% were recovered. The total recaptures until September 30th of 1906 amounted to 86 specimens or 41.0%. 159 of the specimens measured at liberation 19–24 cm. and 51 specimens measured 25–31 cm. In one year 39 specimens or 24.5% were recovered of the first group and 37 specimens or 72.5% of the latter group.

The growth of the specimens liberated at Horns Reef is represented on Table 2. It will be seen that the increase here during the summer amounted to ca. 6 cm. for specimens of a total length of 20–30 cm. and that apparently no increase has taken place during the winter months of 1904–1905.

Marked plaice were also liberated by Germany in the Horns Reef area in the spring of 1904. 264 specimens were thus liberated W. and S.W. of Horns Reef at 23–30 meters depth. During the first year after liberation 86 of these specimens or 32.6% were recaptured. As shown on Table 3 the average increase was 3.5 cm. for 4 specimens of 28–31 cm. which were recaptured in July and August 1905, while the average increase was 5 cm. for 10 specimens of 20–27 cm., which were recaptured during the same months in the Danish marking experiments.

Of the 90 specimens liberated in the marking experiments in the northern Kattegat 76 specimens or 84.4% were recovered during one year. In the following year only one specimen was recaptured. Until September 30th of 1906 the total recaptures amounted to 77 specimens or 85.6%.

Of the marked specimens 35 measured at liberation 21–24 cm. and 55 25–32 cm. In the course of one year 30 specimens or 85.7% were recaptured of the first group and 46 specimens or 83.6% of the last group.

A survey over the growth of the specimens liberated in the northern Kattegat is represented on Table 4. The increase during the summer seems to be ca. 5–7 cm. for specimens of an average length of 22–25 cm.

A further account of the results of the marking experiments in spring, 1904 will be found in Chap. III: "Discussion of the Results of the Danish marking experiments with Plaice in the years 1903–1906".

Table 2. Rate of Growth of plaice liberated in the Horns Reef Area. February, 1904.  
Ordinary Danish marking experiments No. 1 & 2.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Febr. 22.–24.	1904 March	1 month	0.1	0	0.5	11	24.2	21	27
	» April	2 months	0.4	0	1.0	23	25.6	21	31
	» May	3 »	0.8	0	2.0	15	24.7	20	29
	» June	4 »	1.4	1	1.5	5	22.4	20	25
	» July	5 »	5.0	4	6.0	5	24.0	20	27
	» August	6 »	5.1	3	6	5	23	21	27
	» Septbr.	7 »	6.2	3.5	8.5	3	26.7	22	30
	» October	8 »	3.0	...	...	1	19	..	..
	» November	9 »	5.8	5	6.5	2	23	20	26
	1905 March	13 »	5	...	...	1	21	..	..
	» April	14 »	5	...	...	1	20	..	..
	» May	15 »	8.2	7.5	8.5	3	22.7	22	23
	» June	16 »	9.5	9	10	2	20.5	20	21
	» July	17 »	9.5	...	...	1	21	..	..
» August	18 »	13	...	...	1	21	..	..	
» November	21 »	11	...	...	1	28	..	..	



Table 3. Rate of Growth of plaice liberated in the Horns Reef Area on March 18., 1904. German marking experiments No. 38—41. Compiled from Bolau.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. March 18.	1904 April	1 month	0.9	0	2.5	23	27.1	21	33
	» May	2 months	1.0	0	2.5	29	27.3	19	33
	» June	3 »	1.2	0	3.5	11	25.1	21	31
	» July	4 »	4.5	2.5	6.5	2	28	28	28
	» August	5 »	2.5	2.5	2.5	2	30.5	30	31

Table 4. Rate of Growth of plaice liberated in the northern Kattegat on March 5.—14., 1904. Ordinary marking experiments No. 3, 4, 5.

Date liberated	Month recovered	Period of Growth	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. March 5.—14.	1904 April	1 month	0.6	0	1.5	21	25.8	22	31
	» May	2 months	1.7	1.5	2	3	24.3	24	25
	» June	3 »	2.4	0.5	4	14	24.5	21	27
	» July	4 »	4.1	2.5	6.5	10	24.1	22	26
	» August	5 »	3.5	...	...	1	28	...	...
	» September	6 »	7	...	...	1	24	...	...
	» October	7 »	6.5	...	...	1	22	...	...
	1905 July	16 »	3.0	...	...	1	22	...	...

Table 5. Table showing the size of plaice at liberation and the specimens of the various size-groups recaptured up to September 30., 1906. The marking experiments in the spring of 1904.

	Horns Reef area								North-West Kattegat											
	Marking exper. No. 1				Marking exper. No. 2				Marking exper. No. 3				Marking exper. No. 4				Marking exper. No. 5			
	♂		♀		♂		♀		♂		♀		♂		♀		♂		♀	
	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.
19 cm. ....	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20 » .....	19	6	17	6	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
21 » .....	29	4	20	4	4	1	1	..	1	1	..	..	1	1	..	..	..	..	..	..
22 » .....	16	5	13	3	3	2	2	1	1	1	3	3	1	1	..	..	1	1	1	1
23 » .....	5	3	11	5	..	..	1	1	1	1	3	3	..	..	1	1	1	1	..	..
24 » .....	4	2	5	2	1	..	2	2	4	4	5	4	2	1	2	1	3	2	4	4
25 » .....	4	2	3	2	3	2	1	2	1	1	3	2	1	..	1	1	1	1	9	9
26 » .....	7	5	2	1	1	1	2	2	3	1	1	1	..	..	2	1	3	3	5	3
27 » .....	4	3	2	2	2	2	5	3	..	..	2	2	1	1	1	..	3	3	5	5
28 » .....	1	1	..	..	2	1	7	5	..	..	..	..	3	3	1	1	..	..	1	1
29 » .....	..	..	..	..	2	1	..	..	..	..	2	1	1	1	..	..	1	1	..	..
30 » .....	..	..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	1	1	..	..
31 » .....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1
32 » .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..
Total ...	91	32	74	25	21	11	24	18	11	9	19	16	10	8	10	7	14	13	26	24



Table 6. Table showing particulars of Liberation and Recapture of plaice in the ordinary marking experiments. February and March, 1904.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. February 22-23. 7 miles SbyW <sup>1</sup> / <sub>2</sub> W from Blaavands Point. 55°27' N 8°4' E 14 meters. "Thor" St. 192, a & b. 165 plaice liberated (No. 1-65 and No. 101-200). "Thor's" marking experiment No. 1 1904	1904 March 4	32	5 miles SSW from Cancer. 9 fms.	N 55°26' E 7°59'	Danish S. B.	I	♂	22.5	22	
	" " 4	102	5 miles SW from Cancer. 9 fms	55°25' 7°55'	" "	I	♂	27	26.5	
	" " 6	4	10 miles W by N from Graadeep. 8 fms	55°27' 8°0'	" "	I	♂	24.5	23.5	
	" " 8	22	8 miles W from the bell buoy Graadeep. 9 fms	55°25' 7°59'	" "	I	♂	26	26	
	" " 8	108	8 miles W from the bell buoy Graadeep. 9 fms	55°25' 7°59'	" "	I	♂	26.5	25.5	
	" " 10	188	8 miles W by S from Graadeep. 8 fms	55°25' 8°3'	" "	I	♀	24	23.5	
	" " 11	48	3 miles E from Vyl Light-ship. 9 <sup>1</sup> / <sub>2</sub> fms	55°25' 7°54'	" "	I	♀	21	21	
	" " 17	107	2 miles ESE from Vyl Light-ship. 10 fms	55°24' 7°52'	" "	I	♀	25	24.5	
	" " 20	190	2 miles W from Vyl Light-ship. 11 fms	55°25' 7°43'	" "	I	♀	21	21	
	" " 23	5	Lat. 55°27' N Long. 7°45' E	55°27' 7°45'	English S. S.	I	♂	26	25.5	fish sound
	" April 15	7	10 miles WSW from Vyl Light-ship. 12 <sup>1</sup> / <sub>2</sub> fms	55°19' 7°33'	Danish S. B.	II	♀	23.5		
	" " 19	115	1/2 mile W from Graadeep. 7 fms	55°26' 8°14'	" "	II	♀	24.0	23.5	
	" " 19	123	1 mile NW from the bell buoy Graadeep. 6 fms	55°26' 8°12'	" "	II	♂	23	22	
	" " 20	3	1/2 mile NE from the bell buoy Graadeep	55°27' 8°14'	" "	II	♂	22.5		
	" " 20	198	1 mile W from the bell buoy Graadeep. 6 fms	55°26' 8°12'	" "	II	♀	23	22.5	
	" " 21	23	1 mile W from the bell buoy Graadeep. 6 fms	55°26' 8°12'	" "	II	♂	26.5	26.5	
	" " 21	26	4 miles WSW from Cancer. 7 fms.	55°25' 7°58'	" "	II	♂	27.5	27.5	
	" " 21	50	1 mile S from Cancer. 7 fms	58°28' 8°2'	" "	II	♂	28	28	
	" " 21	113	6 miles S from Blaavands Point. 4 fms	55°29' 8°7'	" "	II	♂	24	23.5	
	" " 21	179	2 miles SE by E from Cancer. 5 <sup>1</sup> / <sub>2</sub> fms	55°28' 8°3'	" "	II	♂	22	21.5	
	" " 22	103	3 miles S from Blaavands Point. 4 fms	55°30' 8°6'	" "	II	♂	26	25.5	
	" " 22	125	2 miles NW from Graadeep. 8 fms	55°26' 8°11'	" "	II	♂	21	21	
	" " 23	119	3 miles Sby W from Blaavands Point. 4 fms	55°30' 8°5'	" "	II	♂	27	27	
	" " 24	109	1 mile W from Slugen N. 8 fms	55°35' 7°49'	" "	II	♀	23	22.5	
	" May 3	16	7 miles off Fanø		German S. S.	III	♀	20		
	" " 4	166	At Esbjerg. 1 fathom	55°28' 8°26'	Dan. Fishingb.	III	♀	20	19.5	
	" " 6	42	6 miles W from Graadeep. 7 <sup>1</sup> / <sub>2</sub> fms	55°26' 8°6'	Danish S. B.	III	♀	20.5	21	
	" " 6	49	1 mile W from Slugen N. 13 fms	55°35' 7°48'	" "	III	♀	27.5	28	
	" " 9	186	1 mile N from Cancer. 7 fms	55°30' 7°59'	" "	III	♀	25	24.5	
	" " 9	29	5 miles WNW from Cancer. 7 fms	55°32' 7°55'	" "	III	♂	20.5	20.5	
	" " 27	10	5 miles SW from Sønderho, Fanø	55°19' 8°20'	" "	III	♂	23	23.5	
	" " 27	114	Off Nymindegab. 4 miles from shore. 6 fms	55°48' 8°5'	" "	III	♀	26.5	26	
	" " 28	120	3 miles SW from Cancer. 8 fms	55°26' 7°58'	" "	III	♀	20.5		
	" June 2	21	3 miles WNW from Kærgaarde Bn. 5 <sup>1</sup> / <sub>2</sub> fms	55°43' 8°7'	" "	IV	♀	22	23	
	" " 2	105	9 miles SW from Graadeep. 9 fms	55°22' 8°8'	" "	IV	♀	25	26	
	" " 2	127	4 miles SW by S from Fanø sea-water bath	55°22' 8°20'	" "	IV	♀	20	21	
	" " 7	45	4 miles SW from Blaavands Point. 7 fms	55°31' 8°2'	" "	IV	♂	25.5	26	
	" " 20	171	Vyl Lightship bearing NE dist. 8 miles. 10 fms	55°18' 7°39'	English S. T.	IV	♂	22.5	[28]	
	" " 30	43	Lat. 56°10' N Long. 7°25' E. 18 fms	56°10' 7°25'	" "	IV	♂	20.5	21	fish dry
	" July 13	51	25 miles N from Slugen. 14 fms	55°59' 7°48'	Danish S. B.	V	♀	27	32	
	" " 16	17	16 miles SSW from Klegod Bn. 12 fms	55°50' 7°58'	" "	V	♀	20.5	24	
	" August 3	178	12 miles W from Husby. 12 fms	56°10' 7°55'	" "	VI	♂	20.5		
" " 4	2	12 miles W from Klegod Bn.	56° 5' 7°45'	" "	VI	♂	23	27.5		
" " 4	104	12 miles W from Klegod Bn.	56° 5' 7°45'	" "	VI	♂	22.5	25		
" " 25	58	8 miles NW from Klegod Bn. 12 fms	56° 7' 7°52'	" "	VI	♂	21	26.5		
" Sept. 20	9	3 miles NW from Nymindegab. 8 fms	55°50' 8°6'	" "	VII	♀	22	28		
" October 3	36	10 miles N from Horns Reef L. V.	55°44' 7°17'	German S. S.	VIII	♂	19.5	22		
" Nov. 1	162	20 miles NE from Horns Reef L. V. 11 fms	55°51' 7°40'	Danish S. B.	IX	♂	20	24.5		
1905 March 4	140	10 miles WSW from Vyl Light-ship. 12 <sup>1</sup> / <sub>2</sub> fms	55°19' 7°32'	" "	XIII	♂	21	25.5		
" April 27	14	6 miles SW from Blaavands Point. 6 fms	55°30' 7°57'	" "	XIV	♀	20	24.5		
" May 5	47	3 miles W from Slugen N. 7 fms	55°35' 7°44'	" "	XV	♀	22	30		
" " 8	111	1 mile NW from Slugen N. 7 fms	55°35' 7°46'	" "	XV	♀	23	31		
" " 29	56			English S. S.	XV	♀	23.5	30.5	fish sound	
" June 1	121	Lat. 55°25' N Long. 7°50' E. 10 fms	55°25' 7°50'	" "	XVI	♂	21.5	30	fish sound	
" " 5	62	10 miles SW from Graadeep. 12 fms	55°17' 8°0'	Danish S. B.	XVI	♂	20.5	30		
" July 7	59	18 miles SW from Graadeep. 12 fms	55°16' 7°57'	" "	XVII	♀	20			
" August 18	54	Lat. 54°38' N Long. 4°55' E. 18-20 fms	54°38' 4°55'	English S. T.	XVIII	♂	21.5	34		



Table 6. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery								Remarks		
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No of months between Liberation and Recovery	Sex		Initial Size	Ultimate Size
1904. Febr. 24. 3 1/2 miles W 3/4 S from Kærgaarde Bn. 55°42' N 8°4'E. 15 meters. "Thor" St. 195. 45 plaice libe- rated (No. 441— 485). "Thor"'s marking experi- ment No. 2 1904.	1904 March 20	475	1 mile NW from Slugen N. 13 fms	55°35'	7°49'	Danish S. B.	I	♀	24.5	24	
	» April 12	443	3 miles NW from Slugen N. 10 fms	55°36'	7°45'	» »	II	♀	22.5	21.5	
	» » 18	469	3 miles N from Blaavands Point. 7 fms	55°38'	8°0'	» »	II	♀	27	26.5	
	» » 21	468	4 miles WSW from Cancer. 7 fms	55°26'	7°56'	» »	II	♀	31	31	
	» » 22	456	6 miles NW from Graadeep bell buoy. 6 fms	55°29'	8°7'	» »	II	♂	25.5	25.5	
	» » 23	445	2 miles SW from Cancer. 6 1/2 fms	55°27'	7°59'	» »	II	♀	30.5	32	
	» » 23	472	3 miles SW from Blaavands Point. 4 fms	55°30'	8°5'	» »	II	♀	25	25.5	
	» » 24	453	16 miles WSW from Graadeep bell buoy. 12 fms	55°20'	7°48'	» »	II	♂	26	26	
	» » 27	455	2 miles SE from Cancer. 7 fms	55°28'	8°4'	» »	II	♀	26	26	
	» » 29	479	3 miles S by W from Blaavands Point. 4 fms	55°30'	8°5'	» »	II	♀	27	27.5	
	» » 30	450	1 mile NW from Slugen N. 7 fms	55°35'	7°48'	» »	II	♀	28.5	28	
	» » 30	473	1 mile W from Cancer. 14 fms	55°30'	8°0'	» »	II	♂	28	28.5	
	» May 6	447	1 mile NW from Munk buoy. 10 fms	55°32'	7°51'	» »	III	♀	28	29	
	» » 9	446	4 miles WNW from Cancer. 7 fms	55°31'	7°54'	» »	III	♀	28	28.5	
	» » 13	460	2 miles NW from Graadeep bell buoy. 8 fms	55°27'	8°9'	» »	III	♂	21	21.5	
	» » 21	452	3 miles S from Cancer. 7 fms	55°26'	8°1'	» »	III	♀	23.5	23.5	
	» » 23	477	1 mile WSW from Nymindégab. 7 fms	55°49'	8°8'	» »	III	♂	25.5	26	
	» » 24	441	2 miles W from Kærgaarde Bn. 5 1/2 fms	55°42'	8°6'	» »	III	♂	29	30.5	
	» » 25	465	1 mile W from Slugen N. 8 fms	55°35'	7°49'	» »	III	♀	27	27	
	» » 25	480	5 miles NW from Blaavands Point. 6 fms	55°35'	7°56'	» »	III	♀	28.5	29	
	» July 17	484	8 miles W by N from Vedersø Bn.	56°15'	7°43'	» »	V	♀	24	28.5	
	» » 28	474	The North Sea			German S. T.	V	♀	27	31	
	» » 29	457	11 miles W by N from Klegod Bn.	56°5'	7°47'	Danish S. B.	V	♂	22.5	28	
	» August 13	458	Lat. 56°6' N Long. 7°57' E. 13 fms	56°6'	7°57'	English S. S.	VI	♂	22	27.5	fish sound
	» » 23	451	Lat. 56°45' N Long. 6°25' E. 26 fms	56°45'	6°25'	» »	VI	♂	27	32	fish sound
	» Sept. 2	463	2 miles W from Klegod. 11 fms	56°4'	8°0'	Danish S. B.	VII	♀	28	36	
	» » 13	448	Locality unknown			English S. S.	VII	♂	30	33	fish sound
» Nov. 11	449	Lat. 55°37' 1/2 N Long. 4°41' 1/2 E. 19 fms	55°37'	4°41'	» »	IX	♀	26.5	32.5	fish sound	
1905 » 2	467	Lat. 54°22' N Long. 3°40' E. 23 fms	54°22'	3°40'	» »	XXI	♂	28	38.5	mature	
1904. March 5. Læsø Rende. 57°15' N 10°43' E. 16 meters. "Thor" St. 206, a & b. 30 plaice liberated (No. 1851 — 1880). "Thor"'s mark- ing experiment No. 3 1904.	1904 March 12	1863	Læsø Rende. 11 fms			Danish S. B.	0	♀	29.5	30	
	» » 14	1875	Læsø Rende, off Sæby. 11 fms	57°20'	10°43'	» »	0	♂	24	23.5	
	» » 23	1880	At Kobbergrunden. 8 fms	57°11'	11°18'	Swedish S. B.	0	♀	23.5	24.5	
	» » 25	1858	Between Læsø and Sæby. 12 fms	57°20'	10°43'	Danish S. B.	0	♂	26	26	
	» » 25	1862	Between Læsø and Sæby. 12 fms	57°20'	10°43'	» »	0	♀	27	27	
	» April 26	1856	NE of Skagen's Light. 8 fms	57°45'	10°40'	» »	I	♂	22.5	23	
	» June 4	1851	3 miles S from NW Reef Light. Læsø	57°14'	10°46'	» »	III	♀	27.5	29.5	
	» » 6	1861	Flyndergrund, E of Læsø. 10 fms	57°16'	11°16'	» »	III	♂	24	25.5	
	» » 10	1879	ESE of Sæby. 10 fms	57°15'	10°41'	» »	III	♂	21	23.5	
	» » 12	1864	SE of Frederikshavn's harbour. 11 fms	57°23'	10°41'	» »	III	♀	23	26.5	
	» » 14	1868	(The outermost channel between Sæby and Læsø. 10 fms)	57°18'	10°44'	» »	III	♂	24	25	
	» » 27	1869	E of Sæby. 9 fms	57°20'	10°40'	» »	III	♂	25	26	
	» » 27	1870	SE of Sæby. 9 fms	57°17'	10°40'	» »	III	♀	22	25	
	» » 27	1871	SSE of Frederikshavn's harbour. 11 fms	57°23'	10°41'	» »	III	♀	23.5	26.5	
	» » 27	1873	At Skagen. 3 fms	57°44'	10°39'	» »	III	♀	26.5	28.5	
	» » 27	1876	SE of Sæby. 9 fms	57°17'	10°39'	» »	III	♀	25.5	26.5	
	» July 10	1865	SE of Læsø. 10 fms	57°6'	11°25'	» »	IV	♂	23	26	
	» » 20	1859	2 miles SW from Skagen	57°42'	10°37'	Swedish S. B.	IV	♀	25.5	29	
	» » 22	1857	At Nordre Rønner. W of Trindelen	57°24'	10°57'	» »	IV	♀	22.5	27.5	
	» » 22	1878	At Nordre Rønner. W of Trindelen	57°24'	10°57'	» »	IV	♀	24.5	28	
	» » 23	1877	12 miles E by N from Hirsholmene. 17 fms	57°34'	10°58'	Danish S. B.	IV	♀	24	28.5	
	» » 24	1860	SE of Frederikshavn's harbour. 12 fms	57°23'	10°43'	» »	IV	♂	24.5	26.5	
	» » 27	1852	NW Reef, Læsø. 11 fms	57°18'	10°46'	» »	IV	♀	24	27	
	» Sept. 3	1872	8 miles NW from Anholt	56°49'	11°27'	» »	VI	♀	24	30	fish dry
	1905 July 24	1866	E of Sæby. 11 fms	57°21'	10°43'	» »	XVI	♀	22	25	fish fresh



Tabel 6. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1904. March 7. 8 1/2 miles NE of Hirsholmene, Herthas Flak. 57°35' N 10°48' E. 29 meters. "Thor" St. 207. 20 plaice liberated (No. 1881-1900). "Thor"s marking experiment No. 4 1904.	1904 March 10	1897	3 miles NE from Hirsholmene. 12 fms	N 57°32' 10°40' E	Danish S. B.	0	♀	25.5	25.5		
	» » 10	1899	3 miles NE from Hirsholmene. 12 fms	57°32' 10°40'	» »	0	♀	23.5	23.5		
	» » 14	1889	2 miles ENE from Hirsholmene. 15 fms	57°30' 10°40'	» »	0	♂	26	26		
	» » 14	1891	6 miles SSE from Skagen's Light. 13 fms	57°39' 10°44'	» »	0	♂	27.5	27		
	» » 15	1886	NE of Skagen's Light. 20 fms.	57°46' 10°41'	» »	0	♂	29	27.5	fish dry	
	» » 18	1881	N of Skagen's Light. 15 fms	57°46' 10°37'	» »	0	♀	32.5	31	fish dry	
	» » 21	1892	8 miles E from Hirsholmene. 15 fms	57°34' 10°50'	» »	0	♀	32	32		
	» » 23	1884	SE brush-buoy, Skagen. 6 fms	57°44' 10°41'	» »	0	♀	28.5	28		
	» » 23	1895	S of the old church, Skagen. 8 fms	57°40' 10°35'	» »	0	♂	28	27.5		
	» » 31	1894	7 miles S from Læsø		Swedish S. B.	0	♂	21	[25]		
	» April 12	1887	2 miles N from Hirsholmene. 13 fms	57°31' 10°38'	Danish S. B.	I	♂	28	28.5		
	» » 12	1898	6 miles N from Hirsholmene. 13 fms	57°35' 10°40'	» »	I	♀	22.5	23		
	» » 16	1896	Off Aalbæk. 5 fms	57°36' 10°30'	» »	I	♀	24.5	23.5		
	» July 29	1885	8 miles E from Hirsholmene. 18 fms	57°31' 10°52'	» »	IV	♂	24.5	30.5		
	» August 5	1888	Nordre Rønner, Læsø, bearing SSE. 14 fms	57°28' 11°3'	» »	V	♂	28	31		
	1904. March 14. Kattegat. Aalbæk Bay off Aalbæk. 57°35 1/2' N 10°33' E. 12 meters. "Thor" St. 216. 40 plaice liberated (No. 1901-1940). "Thor"s marking experiment No. 5 1904	1904 March 19	1938	E of Aalbæk. 5 fms	57°36' 10°31'	Danish S. B.	0	♂	27	27	
		» » 22	1915	E of Aalbæk. 5 1/2 fms	57°36' 10°32'	» »	0	♀	27.5	28	
» » 23		1920	1 mile E from Aalbæk. 5 fms	57°36' 10°31'	» »	0	♀	26.5	26.5		
» » 23		1936	1/2 mile E from Bunken. Aalbæk Bay		» »	0	♂	24	24		
» » 25		1909	SE brush-buoy at Skagen. 6 fms	57°44' 10°41'	» »	0	♂	26	25.5		
» » 30		1905	Off the old church of Skagen. 12 fms	57°43' 10°44'	» »	0	♀	26	25.5		
» April 4		1929	NE of Aalbæk. 6 fms	57°38' 10°34'	» »	I	♀	27.5	[24]		
» » 4		1930	NE of Aalbæk. 6 fms	57°38' 10°34'	» »	I	♀	25.5	25.5		
» » 4		1937	NE of Aalbæk. 6 fms	57°38' 10°34'	» »	I	♀	25.5	25.5		
» » 8		1923	Off Hulsig. 2 miles dist. 4 fms	57°38' 10°32'	» »	I	♂	26.5	27		
» » 8		1924	Off Hulsig. 2 miles dist. 4 fms	57°38' 10°32'	» »	I	♀	28	27.5		
» » 11		1912	At Trindelen. 12 fms	57°29' 11°15'	Swedish S. B.	I	♀	26.5	26.5		
» » 11		1922	Off Aalbæk. 5 fms	57°36' 10°30'	Danish S. B.	I	♀	24.5	24		
» » 12		1904	E of the old church, Skagen. 7 fms	57°42' 10°37'	» »	I	♀	25	26		
» » 12		1908	E of the old church, Skagen. 7 fms	57°42' 10°37'	» »	I	♂	29	29		
» » 12		1910	Off Aalbæk. 5 fms	57°36' 10°30'	» »	I	♀	22			
» » 12		1913	Off the old church of Skagen. 6 fms	57°42' 10°35'	» »	I	♀	27	27.5		
» » 12		1931	Off Aalbæk. 5 fms	57°36' 10°30'	» »	I	♂	23.5	24		
» » 12		1935	Off Aalbæk. 5 fms	57°36' 10°30'	» »	I	♀	25	25		
» » 12		1939	At Røsen, E of Læsø	57°20' 11°15'	Swedish S. B.	I	♀	27.5	27.5		
» » 16		1916	Off Aalbæk. 5 1/2 fms	57°35' 10°32'	Danish S. B.	I	♀	24.5	23.5		
» » 23		1902	Off Hulsig, 3 miles from shore	57°38' 10°34'	» »	I	♀	25	25		
» » 24		1925	SE of Aalbæk. 5 fms	57°34' 10°28'	» »	I	♀	25.5	25.5		
» » 26		1901	E of Skagen. 7 fms	57°42' 10°37'	» »	I	♂	30.5	31		
» » 26		1907	S of Skagen's church		» »	I	♀	31	31		
» May 10		1928			» »	II	♀	24	25		
» » 11		1914	Between Aalbæk and Skagen. 3 fms	57°40' 10°31'	» »	II	♀	24	25.5		
» » 11		1921	Off Aalbæk. 6 fms	57°36' 10°32'	» »	II	♀	25	26		
» June 1		1911	S of Skagen. 7 fms	57°41' 10°35'	» »	III	♂	25.5	26.5		
» » 1		1934	3 miles SE of Skagen. 13 fms	57°42' 10°43'	» »	III	♂	27.5	29.5		
» » 4		1932	S of the old church of Skagen. 7 fms	57°41' 10°35'	» »	III	♀	25.5	27		
» » 4		1933	E of Skagen's Light. 12 fms	57°45' 10°43'	» »	III	♂	24.5	26.5		
» » 23		1917	Skagen's Light bearing NNE. 8 fms	57°43' 10°38'	» »	III	♀	27	[26]		
» » 29	1906	SSW of Skagen		Swedish S. B.	III	♂	27	27			
» July 22	1919	Hertha's Flak	57°39' 10°52'	» »	IV	♂	26	29			
» » 28	1927	S of the old church of Skagen. 5 fms	57°41' 10°33'	Danish S. B.	IV	♀	25	27.5			
» October 14	1903	SW of Skagen's L. V. 5 fms	57°45' 10°42'	» »	VII	♂	22	28			



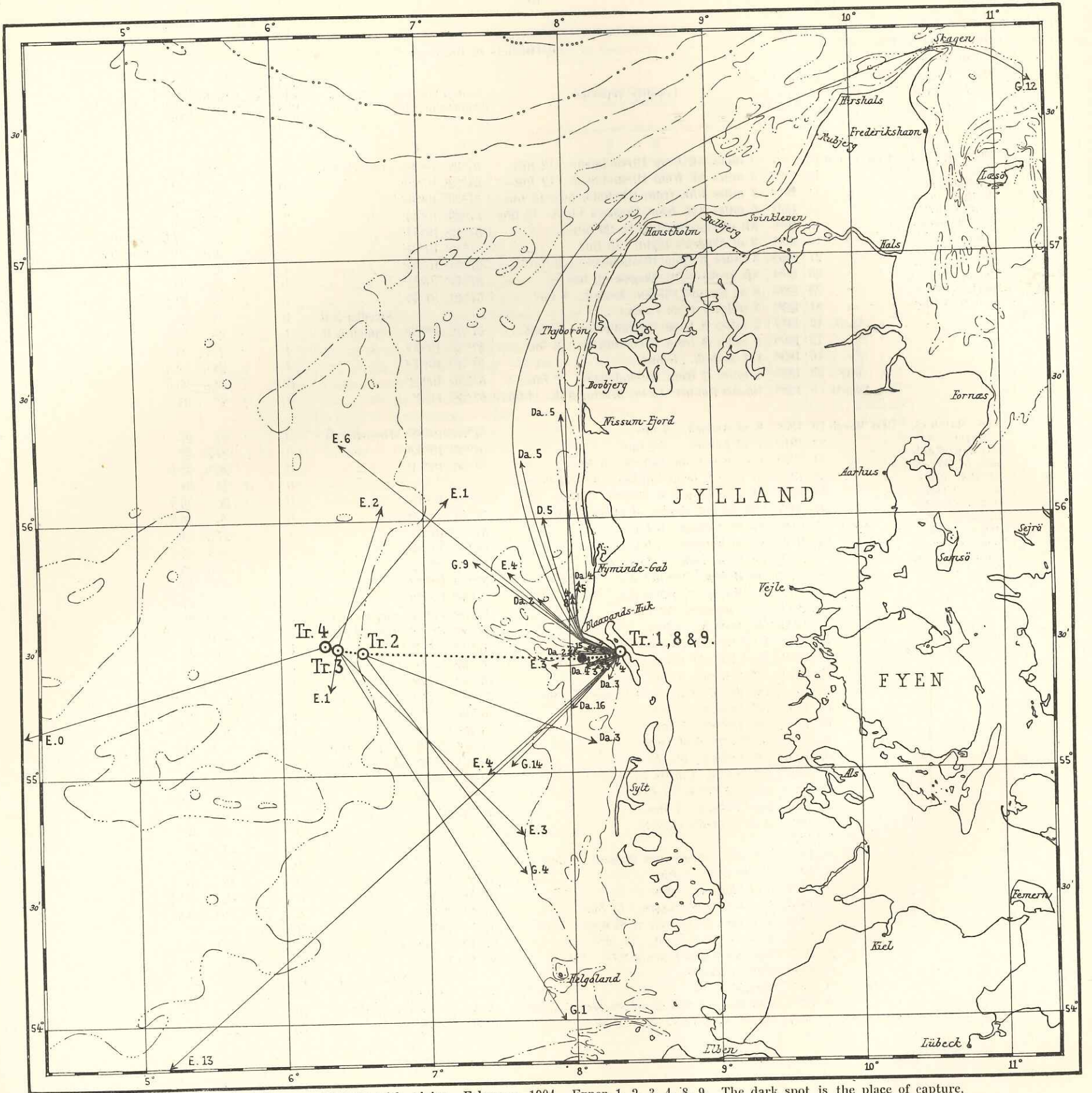


Fig. 2. Transplantation experiments with plaice. February, 1904. Exper. 1, 2, 3, 4, 8, 9. The dark spot is the place of capture, the circles are the places of liberation.



### C. The transplantation experiments with plaice in 1904.

In spring, 1904, transplantation experiments with 1700 plaice of a length from 18 to 32 cm. were made by the "Thor" in the waters surrounding Denmark. The specimens were marked in the usual way with two bone buttons and a brass disc.

Most of the plaice were captured on the rich rearing grounds at Horns Reef and were transplanted partly into the Graadeep inshore waters, partly into deeper water in the Horns Reef area, and partly into the Skagerak. A smaller number, 60 specimens, were transplanted in the Kattegat from the Aalbæk Bay to Trindelen.

The plaice transported over shorter distances (less than 12 miles) were kept separately on the "Thor's" deck without any supply of sea-water. Those transported over greater distances were placed in wooden tanks in which sea-water was kept in circulation by means of the ship's pump and hose.

A detailed account of the experiments will be found in the Tables 10 and 11.

#### 1. The transplantation from the Horns Reef Grounds to the Graadeep inshore waters (the experiments No. 1, 8 and 9, Fig. 2).

In the experiments No. 1, 8 and 9 in February of 1904, 140 plaice were transplanted from the waters west of Graadeep to the Graadeep inshore waters, a distance of 7—12 miles. The black spot on Fig. 2 indicates the place where the specimens were caught.

The intention with these experiments was to elucidate if the fish would remain in the inshore waters during the summer till the autumn fishing took place, or if they would migrate to offshore grounds before that time.

The experiments have proved that the fish quickly began to migrate towards the offshore grounds. The tendency to migrate outward was so strong that not a single one of the transplanted fish was recovered in the inshore waters during the intense autumn fishing; thus it must be supposed that practically all disappeared from the inshore waters in the course of the spring and summer.

Table 7. Rate of Growth of Plaice transplanted from W. of Graadeep to the Graadeep inshore waters. February, 1904. (Exp. No. 1, 8 & 9).

Date liberated	Month recovered	Period of Growth	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. February 22.—26.	1904 April	2 months	0.5	0	2.5	12	23.3	21	26
	» May	3 »	0.6	0.5	1	5	22.4	21	24
	» June	4 »	1.4	0.5	2.5	4	22.8	22	25
	» July	5 »	3.9	2.5	5.5	4	22.5	22	23
	» August	6 »	5.0	...	...	1	24	..	..
	» Septbr.	7 »	...	...	...	..	...	..	..
	» October	8 »	9.0	...	...	1	23	..	..
	» Novbr.	9 »	4.5	...	...	1	21	..	..
	» Decbr.	10 »	...	...	...	..	...	..	..
	1905 Jan.	11 »	...	...	...	..	...	..	..
	» Febr.	12 »	5.5	...	...	1	21	..	..
	» March	13 »	6.5	...	...	1	23	..	..
	» April	14 »	6.0	...	...	1	20	..	..
	» May	15 »	6.3	3	9.5	2	22	21	23
	» June	16 »	8.3	5.5	11	2	23	22	24
	» July	17 »	7.0	...	...	1	23	..	..
	» August	18 »	9.5	...	...	1	20	..	..



Of the transplanted 140 specimens 31 or 22.1% were recaptured within one year. Until Septbr. 30th of 1906 the total recaptures amounted to 36 specimens or 25.7%. As more than 40% of the liberated specimens were on an average recaptured in the ordinary marking experiments in the Horns Reef area in the course of one year, these transplantations thus show a considerably lower percentage of recaptures. Still it may hardly be supposed that the fish were injured during the transportation.

On Fig. 2 the places of recapture of the liberated specimens have been put down. Several specimens have migrated far from the place of liberation. One which was recovered in the Kattegat 12 months after liberation had moved more than 200 miles from the place of liberation.

The Table 7 p. 15 shows the increase in growth of the transplanted specimens. It may be noticed that the increase in size in the course of one year is ca. 6 cm. or about the same as has been noticed by the not-transplanted specimens in the Horns Reef area (compare Table 2 p. 9).

**2. The transplantation from the Horns Reef coastal-grounds to the Horns Reef off-shore grounds. (Experiments 2, 3, 4, 5, 6 and 7. Fig. 2 and 3.)**

In the experiments No. 2, 3, 4, 5, 6 and 7, 900 plaice were transplanted from the waters W. of Graadeep at 55°27' N. 8°4½' E. to deeper water in the Horns Reef area. Fig. 2 and 3 represent the places of liberation.

The intention with these experiments was to investigate

1) if the increase in growth of the transplanted specimens was considerably greater than that of the specimens which were marked and liberated in more shallow water,

2) if a considerable percentage of the transplanted specimens would be recaptured.

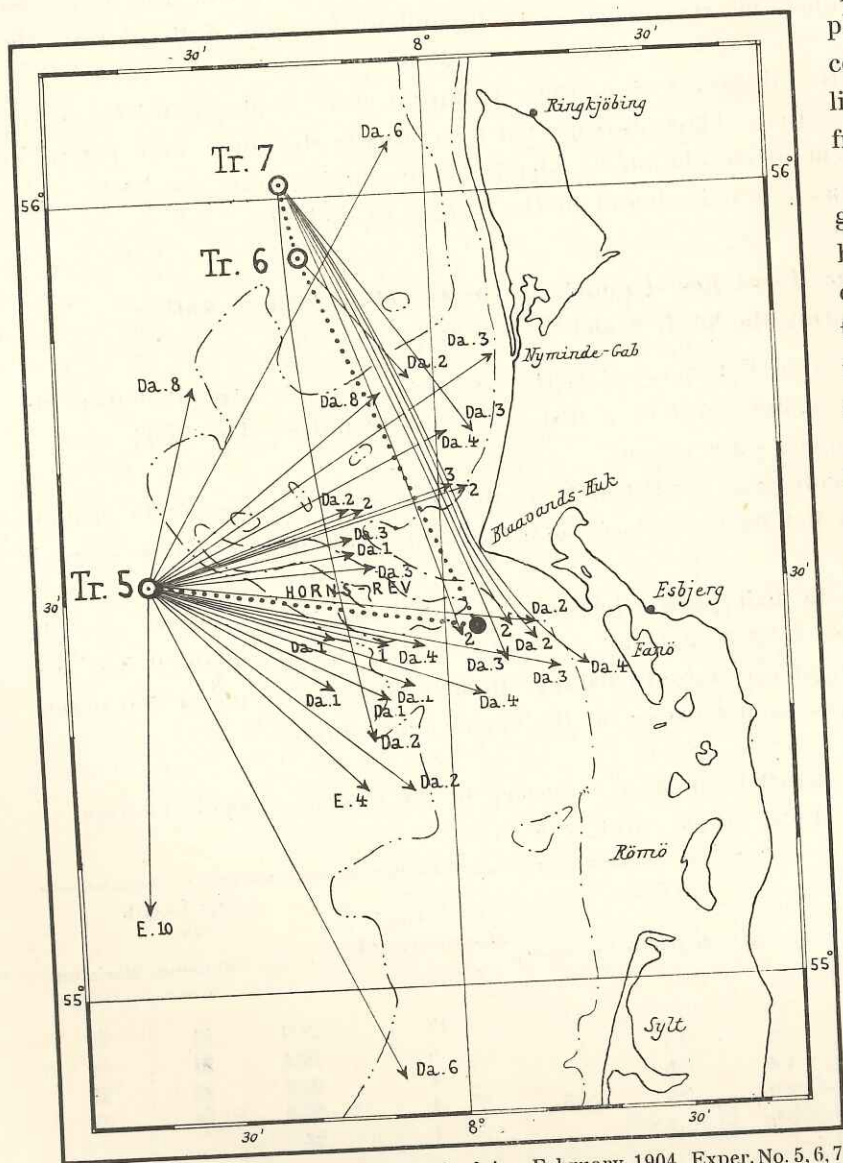
The experiments showed that only a

Fig. 3. Transplantation experiments with plaice. February, 1904. Exper. No. 5, 6, 7. The dark spot is the place of capture, the circles are the places of liberation.

very slight percentage of the transplanted fish, scarcely 5%, was recovered in the course of one year, also that these specimens did not increase perceptibly quicker in size than those which were marked and liberated in the coastal waters.

The main reason why only such a slight percentage was recaptured may probably be looked for in the fact that many specimens had been weakened during the transportation.

The specimens liberated in the 5th experiment 3 miles S. of the Horns Reef lightship at a depth of 31 m. had naturally suffered least, being transported over the shortest distance. In this experiment 13.5% of the liberated specimens were recaptured during one year.





When Fig. 3 seems to indicate that the transplanted specimens have shown a marked tendency to return to the Horns Reef Grounds, this is essentially due to the circumstance that a much more intense plaice-fishery is carried on here than on the off-shore grounds. The specimens migrating in a western direction have had a far greater chance of avoiding recapture than those moving in an eastern or south-eastern direction towards the Horns Reef Grounds. It is, however, a remarkable fact that not a single specimen is known to have migrated in a western direction towards greater depths.

The growth of the transplanted specimens is represented on Table 8. It will be noticed that the increase during one year is ca. 6 cm. which is about the same as in the not-transplanted specimens, which were liberated in more shallow water (compare Table 2 p. 9).

Table 8. Rate of Growth of plaice transplanted from the Graadeep into deeper water in the Horns Reef Area. February, 1904. (Exper. No. 2, 3, 4, 5, 6, 7.)

Date liberated	Month recovered	Period of Growth	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Febr. 23.—25.	1904 March	1 month	0.2	0	1	11	24.5	21	28
	» April	2 months	0.6	0	1.0	10	26.1	22	31
	» May	3 »	0.9	0	2.0	10	23.9	21	28
	» June	4 »	0.9	0	2.0	5	23.4	22	26
	» August	6 »	3.3	3	3.5	2	27	26	28
	» October	8 »	5.5	5.5	5.5	2	22.5	21	24
	» Novbr.	9 »	6.5	...	...	1	24	..	..
	» Decbr.	10 »	6.0	...	...	1	20	..	..
	1905 August	18 »	10.8	9	12.5	2	26.5	26	27
	» Novbr.	21 »	8.5	...	...	1	24	..	..

### 3. The Transplantation from the Horns Reef Grounds to the Skagerak. March 1st, 1904. (Transplantation experiment No. 10, 1904. Fig. 4.)

In the transplantation experiment No. 10, which took place on March 1st of 1904, 600 plaice were transplanted from Graadeep to the Jammer Bay in the Skagerak. The intention with this experiment was to obtain information as to whether the specimens transplanted from the Horns Reef area into the Skagerak would increase in size with a considerably greater rapidity than those remaining at the Horns Reef, also if a similar percentage would be recaptured of these transplanted specimens as of those caught, marked and liberated in the Skagerak.

The marking experiments in 1903 showed that the plaice in the Skagerak increased twice as much in size as did the plaice at the Horns Reef, a fact which naturally gave rise to the supposition that it would be of great importance from an economical point of view to undertake on a large scale the transplantation of young plaice from the Horns Reef to the Skagerak. (See Contributions to the Biology of the Plaice I p. 22—23).

The experiments carried on in 1904 have given the results, that only an exceedingly small percentage of the liberated specimens were recovered, and that these recovered specimens certainly increased with nearly twice the rapidity of the marked plaice at the Horns Reef in 1903, but not with a much greater rapidity than the marked plaice at Horns Reef in 1904.

Of the 600 transplanted plaice only 42 specimens or 7.0% were recovered within one year after liberation, and up to Septbr. 30th of 1906 the total recaptures did not comprise more than 45 specimens or 7.5%. If we compare how many specimens were recaptured in the ordinary marking experiments undertaken on the same areas where the transplanted specimens were liberated, it will be seen that the



small percentage of specimens recovered in the transplantation experiments cannot be due to a small intensity of fishing. It must evidently be ascribed to other causes.

Of the specimens liberated in the ordinary marking experiments in the Skagerak in April of 1903 and March of 1905 in the same area and at the same depth where the transplanted specimens from the Horns Reef were liberated in 1904, the following percentage was recaptured in the course of one year:

in the experiments in 1903: 53.1% (32 liberated 17 recovered)  
 » » » » 1905: 47.8% (575 » 275 » )

Two reasons might be suggested *a priori* to account for the fact that only a very small percentage was recovered in the transplantation experiment. In the first instance we might suppose that the plaice were injured during the transportation and when liberated less able to live than in the ordinary marking experiments. Secondly it might be supposed that the changed conditions of life into which the plaice were transferred might be unfavourable and cause a migration from the place of liberation and eventually to grounds where the fishery was less intense. Probably both these factors have been of consequence, but in my opinion we shall have to look for the main reason for the small percentage of specimens recovered in the circumstance that the plaice became weakened during the transportation.

During the voyage from Graadeep to Skagerak the weather became gradually rougher and on reaching the Skagerak we met with a north easterly gale.

It was quite evident that the plaice had become weakened during the transportation. The strong movement caused by the high sea affected them seriously. They were repeatedly thrown about in the tank and many specimens showed signs of exhaustion. Several specimens died before we reached the place of liberation. My co-workers and helpers (among whom I may mention the sailing master Captain JØRGENSEN, an experienced master of trawlers, and Mr. TARBENSEN, an experienced fisherman from Esbjerg) as well as I myself thought at the time that the specimens which we marked and liberated were capable of living, but considering now how small the percentage is that has been recovered, I feel quite convinced that we must have overrated their vitality. When the plaice are beforehand somewhat weakened they are probably much affected by the irritation caused by the marking and later on by the attached label itself. At present definite specimens are also to hand of marked plaice which have been fished dead from the sea-bottom shortly after liberation. Though these examples do not originate from the transplantation experiments they are still of great interest, proving that plaice marked by experienced people, who believed them to be perfectly well and strong on liberation, have still suffered so much injury by the capture or the process of marking that they have died shortly after.

These examples are as follows:

1) Plaice marked Da. 220 liberated S. of Horns Reef on April 10th, 1903. Male of length 20 cm. Recaptured by an English steam-trawler on April 14th, 1903. GARSTANG records: "Fish not received, but the fisherman says the fish was dead and rotten when caught".

2 and 3) Plaice marked Da. 05, 1386, and Da. 05, 1420 liberated in Aalbæk Bay in North-West Kattegat on March 29th, 1905. Female of length 27 cm., and Male of length 22 cm. Retaken by a Danish cutter on April 5th, 1905. The fisherman said that they were dead and rotten when caught ("døde og bedærvede ved Fangsten"). Mr. LORENTZEN in Frederikshavn, who measured the fish shortly after they were caught, confirmed this statement.

It should be noted that two of the above mentioned plaice were relatively small specimens of 20 and 22 cm. length.

Even if the main reason, why such a proportionately small number of the specimens transplanted into the Skagerak from Horns Reef was recovered, is to be looked for in the fact that the plaice had become injured during the transportation and were partly moribund when set free, there is as said before a possibility that another concurrent cause of the slight number of recaptures may be sought for in the



fact that numbers of liberated specimens have quickly migrated away from the place of liberation and that some arrived at grounds subjected to less intense fishing. It appears, namely, as will be seen from the survey below, that a relatively large percentage of the recovered specimens had left the Skagerak before recapture (see Fig. 4).

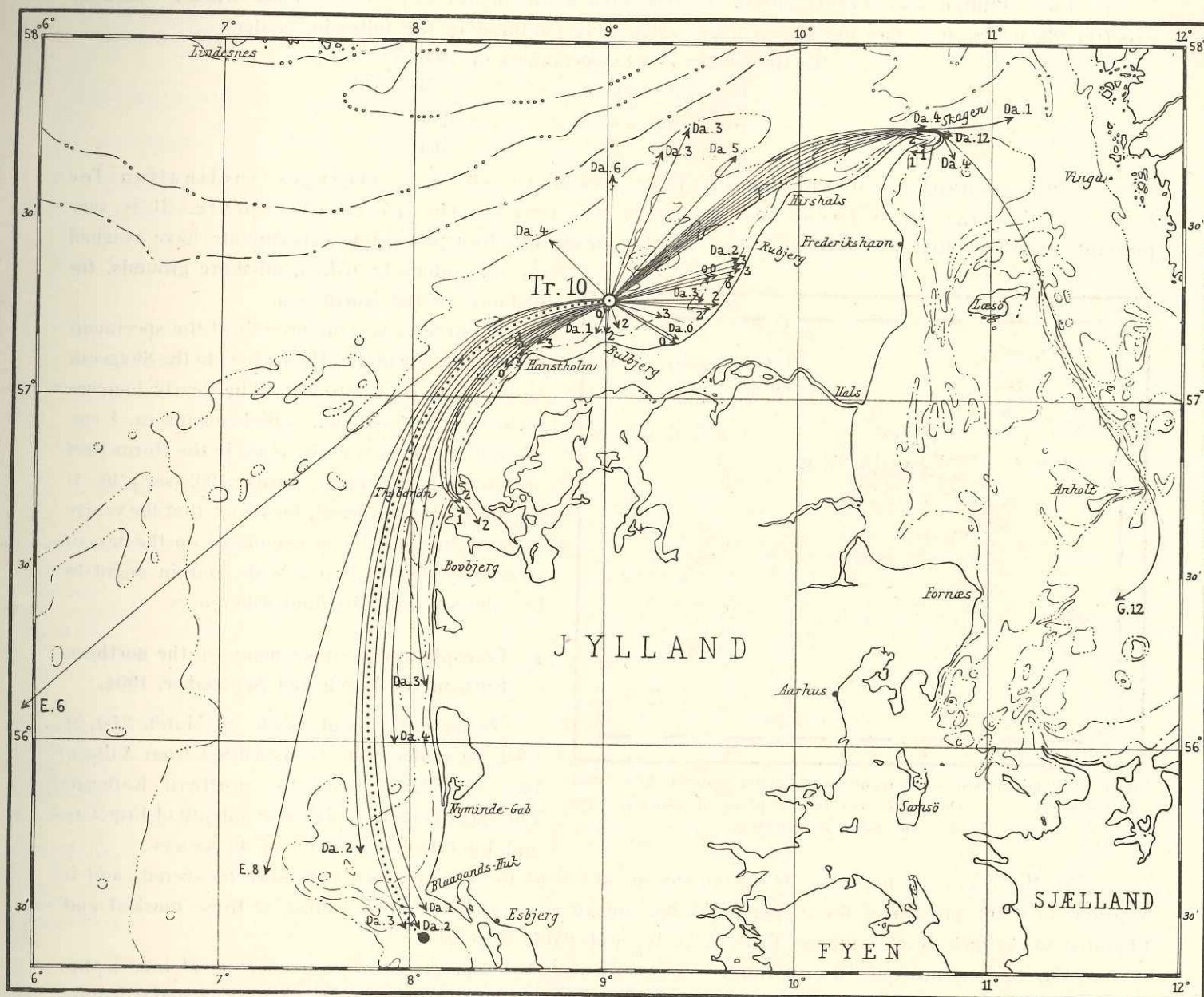


Fig. 4. Transplantation experiments with plaice. March 1st, 1904. Exper. No. 10. The dark spot indicates place of capture, the circle is the place of liberation.

The 45 specimens which were recovered before Septbr. 30th of 1906 from the transplantation experiment in Jammer Bay in the Skagerak on March 1st of 1904, were captured in the following waters:

- |    |                 |              |    |           |
|----|-----------------|--------------|----|-----------|
| a) | In the Skagerak | 26 specimens | or | 57.8%     |
| b) | » »             | Kattegat     | 5  | » » 11.1% |
| c) | » »             | North Sea    | 11 | » » 24.4% |
| d) | » »             | Limfjorden   | 3  | » » 6.7%  |



The 18 specimens, which were recovered before Septbr. 30th of 1905 in the ordinary marking experiments in Jammer Bay N.E. of Bulbjerg in April, 1903, were caught at the following places:

In the Skagerak	12 specimens or 66.7%
» » North Sea	6 » 33.3%

Two hundred and seventy specimens recovered before Septbr. 30th, 1906, in the ordinary marking experiments in Jammer Bay on March 22nd, 1905, were captured in the following waters:

In the Skagerak	215 specimens or 79.6%
» » Kattegat	21 » 7.8%
» » North Sea	33 » 12.2%
» » Limfjord	1 » 0.4%

The transplanted specimens thus seem to show a stronger inclination for long wanderings than those marked and set free at the place of capture. It is very probable therefore that a relatively large number from the transplantation experiments have reached the less intensely fished, off-shore grounds, for instance in the North Sea.

A survey over the growth of the specimens transplanted from the Horns Reef to the Skagerak is supplied in Chap. III. The yearly increase seems to be 7—8 cm., which means ca. 1 cm. more than the average increase in the Horns Reef area from spring, 1904—spring, 1905 (see p. 9). It should be remembered, however, that the yearly increase here has been calculated on the base of so few specimens that a wide margin ought to be allowed for individual differences.

#### 4. Transplantation experiments in the northern Kattegat in March and September, 1904.

In an experiment, made on March 21st of 1904, 60 plaice were transplanted from Aalbæk Bay to Trindelen in the northern Kattegat. The specimens were fished at a depth of 15 meters and liberated at a depth of 40 meters.

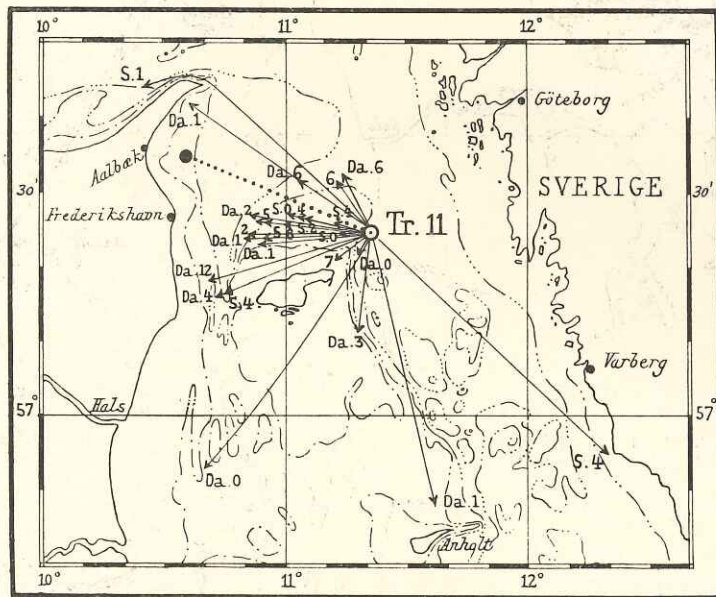


Fig. 5. Transplantation experiments with plaice. March 21st, 1904. Experiment No. 11. The dark spot is the place of capture. The circle is the place of liberation.

In the course of one year 34 specimens or 56.7% of the transplanted fish were recovered, and it appears as if the growth of these specimens has on an average been quicker than of those marked and liberated in Aalbæk Bay (compare Table 4, p. 10, and Table 9, p. 21).

Fig. 5 illustrates the transplantation experiment. Most specimens were recovered at less depths than at the place of liberation: a natural consequence of the fact that the most intense plaice-fishing is carried on in shallow water. Only a single specimen was recaptured near the Swedish coast.

In autumn, 1904, on September 13th, a single transplantation experiment was undertaken with 40 plaice, which were transplanted from Aalbæk Bay to the deeper part of the northern Kattegat (12 miles E.  $\frac{3}{4}$  S. of Skagens L. V.).

The plaice were fished at 17 meters depth and liberated at 50 m. As none of the transplanted fish have been recovered later, it may be supposed, that they have all died probably on account of the changed conditions of life. That they should have been weakened during transportation over the relatively short distance from the place of capture to the place of liberation is hardly probable.



The transplanted specimens measured 22—28 cm. The place of capture and the place of liberation did not show any particular difference, neither in the water's temperature nor in the salinity. At the place of capture the temperature was 12·40 C. at the bottom and the salinity was 33·8<sup>0</sup>/<sub>00</sub>; at the place of liberation the temperature was 12·90 C., the salinity 34·2<sup>0</sup>/<sub>00</sub>.

Table 9. Rate of Growth of plaice transplanted from Aalbæk Bay to Trindelen in the northern Kattegat. March, 1904. (Transpl. exper. No. 11.)

Date liberated	Month recovered	Period of Growth	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. March 21.	1904 April	1 month	0·5	0	1	4	22·8	22	24
	» May	2 months	1·7	1	2·5	5	23	21	24
	» June	3 »	1·8	1·5	2	2	24	24	24
	» July	4 »	3·5	2	5·5	6	24·3	23	26
	» August	5 »	5·8	5	6·5	3	22·3	22	23
	» Septbr.	6 »	6·0	5·5	6·5	3	22·7	22	24
	» October	7 »	7·0	...	...	1	23	..	..
	» Novbr.	8 »	8·5	...	...	1	22	..	..
	1905 March	12 »	4·5	...	...	1	24	..	..
	1906 February	23 »	8·0	...	...	1	26	..	..

Table 10. Table showing particulars of Liberation and Recapture of plaice in the transplantation experiments, February and March, 1904.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. Febr. 22. Fish liberated between Sæden strand light and Skallingen. 55°29'N 8°21'E. 10 meters. 35 plaice transported 12 miles (No. 66—100). "Thor"s transplantation experiment No. 1 1904	1904 April 20	69	1/2 mile NE of the bell buoy; Graadeep. 5 fms.	N 55°27'	E 8°14'	Danish S. B.	II	♂	24	24	
	» » 23	71	3 miles N by W from Graadeep. 4 fms.	55°29'	8°13'	» »	II	♂	21·5	21	
	» May 27	83	6 miles SSW from Graadeep. 5 fms.	55°22'	8°16'	» »	III	♂	21	21·5	
	» July 5	66	6 miles W from Blaabjerg. 12 fms.	55°45'	8° 4'	» »	V	♀	23	25	
	» Octbr. 10	100	8 miles W by S from Blaabjerg. 9 1/2 fms.	55°42'	8° 1'	» »	VIII	♀	23	31·5	
	1905 Febr. 17	74	Vinga bearing E by N, Trindelen bear. S by W. 25 fms.	57°38'	11°16'	German S. S.	XII	♀	21	26	
	1904. Febr. 23. Fish liberated 26 miles W from Horns Reef Light-ship. 55°29'N 6°33'1"E. 38 meters. 100 plaice transported 52 miles. (No. 201—300). "Thor"s transplantation experiment No. 2 1904	1904 May 16	205	20 miles SSW from Graadeep. 7 1/2 fms.	55°07'	8°10'	Danish S. B.	III	♀	26	26·5
» June 11		276	ESE of Amrum	54°36'	7°40'	German S. S.	IV	♀	26·5	26	
1905 Aug. 29		241	Lat. 58°06' N. Long. 10°07' E. 60 fms.	58°06'	10°07'	» S.T.	XVIII	♂	27	39	



Table 10. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. Febr. 23.— 24. Fish liber. 32 m. W 1/2 N from Horns Reef L. S. 55°30' N 6°23 1/2' E 40 meters. 100 plaice trans- ported 57 miles. (No. 301—400). "Thor"s trans- plantation ex- periment No. 3 1904	1904 March 16	302	Between Helgoland and Weser L. S.	N E 54° 0' 7°55'	German S. S.	I	♂	25	25	
	" " 25	364	Lat. 55°20' N. Long. 6°20' E. 21 fms.	55°20' 6°20'	English "	I	♀	24	23.5	Fish salted
	" April 2	387	35 miles NNW from Horns Reef L. S. 13 fms.	56° 3' 6°43'	" "	II	♂	23	23	Fish sound
	" May 15	362	Lat. 54°45' N. Long. 7°40' E. 10 1/2 fms.	54°45' 7°40'	" "	III	♀	21	21	" "
	1905 Nov. 30	329	c. Lat. 56°0' N. Long 4°18' E. 20 fms.	56° 0' 4°18'	" S.T.	XXI	♀	24.5	32.5*	*) fide fisher- man
1904. Febr. 23.— 24. Fish liber. 35 miles W 5/8 N from Horns Reef L. S. 55°31' N 6° 18' E 40 m. 40 plaice trans- ported 60 miles. (No. 401—440). "Thor"s trans- plantation ex- periment No. 4 1904	1904 Febr. 28	415	S side of Dogger Bank. 55°10' N 4°10' E.	55°10' 4°10'	English S. S.	0	♀	27	26	Fish sound
	" March 17	412	Lat. 56°5' N. Long. 7°10' E. 15 fms.	56° 5' 7°10'	" "	I	♀	27	27	" "
	" " 20	433	Locality unknown		" "	I	♀	28	27.5	" "
1904. Febr. 24. Fish caught 7 miles S by W from Blaavands Point. 55°27' N 8°4 1/2' E 14 m. Liberated 3 miles S of Horns Reef L. S. 55°31' N 7°21' E 31 meters. 200 plaice trans- ported 25 miles (No. 486—685). "Thor"s trans- plantation ex- periment No. 5 1904	1904 March 13	553	1 1/2 miles SE from Vyl buoy. 9 1/2 fms.	55°26' 7°52'	Danish S. B.	I	♂	25.5	25	
	" " 20	597	5 miles SE from Vyl L. S. 10 fms.	55°23' 7°56'	" "	I	♀	23	22	
	" " 23	500	8 miles N by E from Vyl L. S. 10 fms.	55°33' 7°48'	" "	I	♂	21.5	21	
	" " 23	552	Lat. 55°27' N Long. 7°45' E.	55°27' 7°45'	English S. S.	I	♀	22	22.5	Fish sound
	" " 28	561	2 miles WSW from Vyl L. S. 11 fms.	55°23' 7°45'	Danish S. B.	I	♂	26.5	26	
	" " 28	575	4 miles ESE from Vyl L. S. 9 fms.	55°22' 7°52'	" "	I	♀	26.5	25.5	
	" " 30	613	(Taken from the stomach of a cod)		English S. S.	I	♂	23	22.5	Half albino
	" April 16	639	16 miles SW from Graadeep. 11 fms.	55°15' 7°55'	Danish S. B.	II	♀	22.5	21.5	
	" " 19	498	4 miles N from Blaavands Point. 4 1/2 fms.	55°38' 8° 3'	" "	II	♀	22	[18.5]	
	" " 19	584	1 m. NW from the bell buoy, Graadeep 6 1/2 fms.	55°27' 8°12'	" "	II	♂	24.5	24.5	
	" " 24	630	1 mile NW from Slugen N. 8 fms.	55°36' 7°49'	" "	II	♀	25.5	25.5	
	" " 30	568	1 mile E by N from Slugen N. 8 1/2 fms.	55°36' 7°50'	" "	II	♂	25	25	
	" May 6	586	1 mile NW from Munk buoy. 10 fms.	55°32' 7°51'	" "	III	♂	21.5	21.5	
	" " 7	499	2 miles SW from Slugen N. 11 fms.	55°34' 7°48'	" "	III	♂	21	20.5	
	" " 7	629	Off Fanø		German S. S.	III	♂	27	27	
	" " 14	627	2 miles S from Graadeep. 6 fms.	55°24' 8°15'	Danish S. B.	III	♂	25	25.5	
	" " 24	664	2 miles SW from Nymindegab. 7 fms.	55°48' 8° 8'	" "	III	♂	23	23.5	
	" " 25	635	3 miles NW from Ringebjerger Bn. 6 fms.	55°38' 8° 2'	" "	III	♀	21.5	22	
	" June 6	523	4 miles SW from Cancer. 8 fms.	55°26' 7°57'	" "	IV	♂	25	[23.5]	
	" " 6	634	10 miles WSW from Graadeep. 8 fms.	55°22' 8° 5'	" "	IV	♂	23	23	
	" " 9	638	5 miles W from Kærgaarde Bn. 7 1/2 fms.	55°42' 8° 1'	" "	IV	♀	23	23	
	" " 14	601	10 miles S from Vyl L. S. 13 fms.	55°15' 7°49'	English S. S.	IV	♀	22	23.5	Fish sound
	" August 3	620	16 miles W from Red Cliff.	54°53' 7°52'	Danish S. B.	VI	♀	26	29	
	" " 19	558	6 miles W from Klegod Bn. 12 fms.	56° 4' 7°56'	" "	VI	♀	28.5	31	
	" October 14	571	10 miles NNE from Slugen N. 8 fms.	55°45' 7°53'	" "	VIII	♀	24	29	
	" " 31	489	16 miles NNW from Slugen N. 14 fms.	55°46' 7°28'	" "	VIII	♂	21	26	
	" Dcbr. 26	626	Lat. 55°6 1/2' N Long. 7°19' E. 13 fms.	55°6 1/2' 7°19'	English S. S.	X	♂	20.5	26	Tail dry
1905 August 3	679	20 miles NNW of Slugen N. 13 fms.	55°52' 7°25'	Danish S. B.	XVIII	♂	26	34.5		



Table 10. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. Febr. 25. Fish liber. 15 miles W 1/4 S from Aargab Bn. 55°55' 2' N 7°43' E 27 meters. 250 plaice transported 31 miles (No. 685-935). "Thor's" transplantation experiment No. 6 1904	1904 April 22	905	1 mile NW from Kærgaarde. [10 fms.]	N E	Danish S. B. English S. S.	II IX	♀	31.5	32	Tail dry and curled
	» Nov.	692		♂			24.5	30.5		
1904. Febr. 25. Fish liber. 15 miles W by S from Søndervig. 56°1' N 7°41' E 30 meters. 210 plaice transported 36 miles (No. 936-1145). "Thor's" transplantation experiment No. 7 1904	1904 April 21	973	3 miles NW from the bell buoy, Graadeep 7 fms.	55°27' 8° 9'	Danish S. B.	II	♂	29.5	29	
	» » 28	1044	12 miles SW from Cancer. 9 fms.	55°19' 7°50'	» »	II	♂	24.5	25	
	» » 28	1131	2 miles S from Cancer. 7 fms.	55°27' 8° 2'	» »	II	♀	29	29	
	» » 30	1048	1 mile NW from the bell buoy, Graadeep 7 fms.	55°26' 8°12'	» »	II	♀	29.5	30	
	» May 24	1055	2 miles SW from Kærgaarde. 6 1/2 fms.	55°42' 8° 5'	» »	III	♂	26.5	27.5	
	» » 30	1059	7 miles WSW from Graadeep. 8 fms.	55°25' 8° 8'	» »	III	♀	28	29.5	
	» June 2	1042	4 miles SW by S from Fanø sea bath 3 1/2 fms.	55°24' 8°19'	» »	IV	♀	23	24	
1904. Febr. 26. Fish caught 9 miles W by S 1/2 S from Skallingen's Light. 55°25 1/2' N 8°4 1/2' E 15 meters. Liberated on the Graadeep Barre. 55°26' N 8°16' E 7 meters. 40 plaice transported 7 miles (No. 1146-1185). "Thor's" transplantation experiment No. 8 1904	1904 April 20	1158	1 mile W from the Graadeep bell buoy. 6 fms.	55°26' 8°12'	Danish S. B.	II	♀	23.5	23	Fish sound
	» » 20	1180	1/2 m. NE from the Graadeep bell buoy. 5 fms.	55°27' 8°14'	» »	II	♂	26.5	27	
	» » 23	1165	1/2 mile SW from Cancer. 6 1/2 fms.	55°28' 8° 2'	» »	II	♀	25.5	25	
	» » 26	1148	6 miles N from Slugen N. 6 fms.	55°41' 7°47'	» »	II	♂	22	21.5	
	» June 9	1155	5 miles W from Kærgaarde. 7 1/2 fms.	55°42' 8° 2'	» »	IV	♂	22	23	
	» » 12	1154	Horns Reef L. S. bearing SW distant 15 m. 9 fms.	55°47' 7°35'	English S. S.	IV	♀	22	22.5	
	» » 13	1160	5 miles W by N from Blaabjerg. 9 1/2 fms.	55°45' 8° 5'	Danish S. B.	IV	♀	25	25	
	» July 14	1184	SW of Bovbjerg. 12 fms.	56°24' 7°58'	» »	V	♀	23	26	
	» Novbr. 17	1149	Lat. 55°50' N Long 7°20' E	55°50' 7°20'	German S. S.	IX	♂	21	25	
	1905 April 4	1183	Lat. 55°2' N Long 7°35' E	55° 2' 7°35'	» »	XIV	♀	20.5	26	
	» May 29	1163	3 miles NW from Kærgaarde Bn. [9 fms.]		Danish S. B.	XV	♀	23	32	
	» June 18	1169	12 miles WSW from Graadeep. 10 fms.	55°16' 8° 0'	» »	XVI	♀	24	29	
	» July 26	1156	NNE of Horns Reef L. V. 14 fms.	55°44' 7°24'	» »	XVII	♂	23	30	
» Aug. 2	1178	Lat. 55°18' N. Long 4°20' E. 20 fms.	55°18' 4°20'	English S. T.	XVIII	♀	20.5	28		
1904. Febr. 26. Fish caught 9 miles W by S 1/2 S from Skallingen's Light. 55°25 1/2' N 8°4 1/2' E 15 meters. Liberated between Sædenstrand Light and Skallingen. 55°28 1/2' N 8°20 1/2' E 14 m. 65 plaice transported 10 miles (No. 1186-1250). "Thor's" transplantation experiment No. 9 1904	1904 April 21	1226	6 miles S from Blaavands Point. 4 fms.	55°29' 8° 8'	Danish S. B.	II	♀	24	24	Fish sound
	» » 23	1195	1/2 mile SW from Cancer. 6 1/2 fms.	55°28' 8° 2'	» »	II	♀	23	22.5	
	» » 28	1215	2 miles S from Cancer. 7 fms.	55°27' 8° 3'	» »	II	♂	25.5	26	
	» » 30	1202	3/4 mile S from Cancer. 8 fms.	55°28' 8° 3'	» »	II	♀	21.5	21.5	
	» » 30	1206	1 m. WNW from the Graadeep bell buoy. 7 1/2 fms.	55°26' 8°12'	» »	II	♀	22.5	24.5	
	» » 30	1240	2 m. N from the Graadeep bell buoy. 5 fms.	55°28' 8°13'	» »	II	♂	24.5	24	
	» May 6	1187	3 miles WNW from Graadeep. 8 fms.	55°26' 8° 9'	» »	III	♂	23	23	
	» » 6	1236	6 miles SW from Graadeep. 8 fms.	55°25' 8°11'	» »	III	♀	23	23	
	» » 9	1224	1 mile W from the Graadeep bell buoy. 7 fms.	55°26' 8°12'	» »	III	♀	24	24	
	» » 31	1218	1 mile SE from Vyl buoy. 9 fms.	55°26' 7°52'	English S. S.	III	♂	21	21	
	» June 2	1204	2 miles W from Fanø sea bath. 2 fms.	55°25' 8°19'	Danish S. B.	IV	♂	22.5	24.5	
	» » 12	1214	7 miles W by S from Graadeep. 8 fms.	55°25' 8° 7'	» »	IV	♂	23	[22]	
	» » 23	1203	35 miles below Horns Reef. 15 fms.	55° 0' 7°25'	English S. S.	IV	♂	22		
	» July 26	1245	16 miles NW from Ringkøbing Bn. 15 fms.	56°13' 7°42'	Danish S. B.	V	♂	22.5	26	
	» » 29	1233	Lat. c. 56° N Long. c. 7°50' E	56° 0' 7°50'	Dutch S. S.	V	♂	22.5	27.5	
	» August 4	1220	270 miles ENE of Spurn. 27 fms.	56°18' 6°25'	English »	VI	♀	24.5	29	
	1905 March 3	1235	Lat. 53°50' N Long. 5°10' E. 17 fms.	53°50' 5°10'	» »	XIII	♂	23.5	29.5	
	» May 27	1209	6 1/2 miles NNW from Graadeep. 6 fms.	55°29' 8° 7'	German »	XV	♀	21.5	23.5	
	» June 6	1234	Lat. 55°43' N. Long. 7°40' E. 12 fms.	55°43' 7°40'	English S. T.	XVI	♂	22	32.5	



Table 10. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. March 1. Fish caught 9 miles W by S 1/2 S from Skallingen's Light. 55°25' N 8°41' E 15 meters. Liberated in Jammer Bay, Skagerak. 57°12'—57°21' N 8°45'—9°17' E c. 14 meters. 600 plaice transported ca. 125 miles. (No. 1251—1850). "Thor's" transplantation experiment (No. 10 1904	1904 March 20	1823	1 1/2 mile N of Bulbjerg. 10 fms.	N 57°15' 9° 0'	Danish S. B.	0	♀	26	26	
	» » 21	1787	Slettestrand. Jammer Bay	E 57°10' 9°22'	» »	0	♀	20.5		
	» » 22	1788	1 mile S from Løkken. 4 fms.	57°21' 9°39'	» »	0	♀	25.5		
	» » 29	1781	N of Klitmøller Bn. 2 m. from shore. 10 fms.	57° 5' 8°29'	» »	0	♀	21	19.5	Fish dry
	» » 29	1582	1/2 mile W from Slettestrand	57° 9' 9°22'	» »	0	♀	21.5	22	
	» » 30	1819	1 mile S from Løkken. 4 fms.	57°21' 9°39'	» »	0	♀	22	22	
	» » 30	1678	1 mile S from Løkken. 4 fms.	57°21' 9°39'	» »	0	♀	28	28	
	» April 14	1609	S of Skagen's church. 3 fms.	57°21' 9°39'	» »	0	♀	25	25	
	» » 18	1266	S of Skagen's Light. 5 fms.	57°43' 10°35'	» »	I	♀	24	24	
	» » 19	1253	Off Hanstholm Light. 9 fms.	57°43 1/2 10°38 1/2'	» »	I	♂	26.5	26	
	» » 19	1262	Off Marstrand, 16 miles from shore. 25 fms.	57° 8' 8°33'	» »	I	♂	24.5	24.5	
	» » 19	1262	Off Marstrand, 16 miles from shore. 25 fms.	57°48'11° 6'	» »	I	♂	26	26	
	» » 23	1328	1 mile NE from Bragerne, Jammer Bay. 10 fms.	57°11' 8°57'	» »	I	♀	25	25	
	» » 29	1720	3 miles S by W from Blaaavands Point. 4 fms.	55°30' 8° 5'	» »	I	♀	25.5	25.5	
	» » 30	1821	Nissum Bredning S from the Fjordground	56°40' 8°16'	» »	I	♀	23	23	
	» May 5	1400	Tyborøn Canal	56°42' 8°15'	» »	II	♀	23.5	23	
	» » 7	1762	N from Skagen's Light. 8 fms.	57°45 1/2 10°38'	» »	II	♀	28	28	
	» » 8	1346	Off Bulbjerg. 3 miles from shore. 6 fms.	57°12' 9° 4'	» »	II	♀	26.5	25	
	» » 10	1573	2 miles NE from Bulbjerg. 8 fms.	57°11' 9° 0'	» »	II	♀	25.5		
	» » 13	1621	Nissum Bredning	56°38' 8°21'	» »	II	♂	26	26.5	
	» » 21	1442	1 mile NW from Løkken. 10 fms.	57°24' 9°41'	» »	II	♀	26.5	27	
	» » 26	1483	6 miles NE from Slugen N	55°40' 7°45'	» »	II	♀	25.5	27	
	» » 26	1276	2 miles S from Cancer. 7 fms.	55°27' 8° 3'	» »	II	♀	27.5	27.5	
	» » 28	1325	Off Blokhuis. 1 mile from shore. 4 fms.	57°16' 9°33'	» »	II	♀	24.5	25.5	
	» » 28	1771	Off Blokhuis. 1 mile from shore. 4 fms.	57°16' 9°34'	» »	II	♂	26.5	26	
	» June 1	1414	N of Svinkleven. 6 fms.	57°14' 9°17'	» »	III	♂	25	26	
	» » 1	1318	S of Løkken. 1 mile from shore. 3 fms.	57°22' 9°41'	» »	III	♂	26	28.5	
	» » 1	1439	Off Husby Klit. 4 fms.	56°10' 8° 5'	» »	III	♀	24	26	
	» » 7	1522	1 mile NW from Løkken. 6 fms.	57°23' 9°41'	» »	III	♀	26	27	
	» » 9	1735	3 miles SW from Cancer. 8 fms.	55°27' 7°59'	» »	III	♀	27	28	
	» » 10	1836	W of Hanstholm. 1 mile from shore. 8 fms.	57° 7' 8°33'	» »	III	♀	27	28	
	» » 11	1715	Off Blokhuis. 3 miles distant	57°17' 9°30'	» »	III	♀	24.5	26.5	
	» » 12	1730	1 mile NE from Hanstholm. 7 1/2 fms.	57° 9' 8°38'	» »	III	♀	25	27	
	» » 30	1619	NW of Hirshals. 32 miles from shore. 25 fms.	57°46' 9°25'	» »	III	♂	23.5	26.5	
	» » 30	1798	NW of Hirshals. 18—24 fms.	57°42' 9°17'	» »	III	♂	27	32	
	» July 15	1722	NE of Hanstholm. 20 fms.	57°27' 8°42'	» »	IV	♂	24	28.5	
	» » 22	1727	N of Skagen's Light. 25 fms.	57°46' 10°38'	» »	IV	♀	25	31	
	» » 27	1454	12 miles SW from Husby Klit. 12 fms.	56° 0' 7°55'	» »	IV	♀	21	24.5	
	» » 29	1814	SE of Skagen. 14 fms.	57°41' 10°48'	» »	IV	♀	26	30.5	
	» August 1	1708	NE of Hirshals. 12 miles dist. 20 fms.	57°41' 9°40'	» »	V	♀	22.5	27	
» Septbr. 4	1805	NW of Løkken. 30 fms.	57°38' 9° 2'	» »	VI	♀	26.5	29.5	Tail dry	
» » 11	1699	250 miles ENE from Spurn. 25 fms.	56°5' 5°55'	English S. S.	VIII	♂	25	30.5	Sound	
» » 11	1699	250 miles ENE from Spurn. 25 fms.	55°46' 7°15'	» »	VIII	♂	25	30.5	Sound	
» Novbr. 17	1329	Lat. 55°46' N Long. 7°15' E. 14 fms.	56°26' 11°40'	German »	XII	♂	27.5	33		
1905 March 12	1578	18 miles S by W from Anholt	57°45' 10°46'	Danish S. B.	XII	♀	22.5	31.5		
» » 23	1413	East of Skagen. 15 fms.	57°05' 7°15'	Danish S. B.	XXX	♀	21			
1906 Sept. 25	1589	Lat. 57°05' N. Long. 7°15' E. 19 fms.	57°05' 7°15'	English S. T.	XXX	♀	21			
1904. March 21. Fish caught in Aalbæk Bay 57°35' N 10°35 1/2' E. Depth 15 meters. "Thor" St. 227. Liberated at Trindelen 57°25' N 11°21' E. Depth 40 meters. 60 plaice transported 27 miles.	1904 March 23	1965	Nordre Rønner Light bearing SSW. 10 fms.	57°27' 11° 2'	Swedish S. B.	0	♂	24		
	» » 23	1977	1/2 mile S from Trindelen. 18 fms.	57°25' 11°15'	» »	0	♂	22	22	
	» » 30	1980	SE of Hals. 6 fms.	56°53' 10°39'	Danish »	0	♂	24	23.5	
	» » 30	1956	4 miles S from Trindelen. 15 fms.	57°22' 11°18'	» »	0	♂	24	23.5	
	» April 5	1954	NW of Nordre Rønner, Læsø. 15 fms.	57°24' 10°50'	» »	I	♀	24.5	24	
	» » 12	1976	S of Skagen. 6 fms.	57°42' 10°36'	» »	I	♀	22	22	
	» » 12	1999	7 miles W. of Skagen. 15 fms. [?]	57°44' 10°25'	Swedish »	I	♀	23.5	24	
	» » 14	1990	4 miles N from Anholt Light	56°48' 11°37'	Danish »	I	♂	22.5		
	» » 18	1958	2 miles NW from Nordre Rønner. 6 fms.	57°23' 10°53'	» »	I	♂	22.5	22.5	
	» May 2	1975	N of Læsø	57°23' 10°53'	» »	II	♀	21.5	22	



Table 10. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
(No. 1941-2000). "Thor's trans- plantation ex- periment No. 11 1904	1904 May 5	1989	NE of Nordre Rønner, Læsø	N E 57°27' 11° 3'	Swedish S. B.	II	♂	21.5	[25]	
	» » 10	1964	6 miles N from Nordre Rønner. Læsø	57°27' 10°52'	Danish »	II	♀	24.5	25	
	» » 25	1994	At Trindelen. 20 fms.		Swedish »	II	♂	22.5	24	
	» » 27	1983	N of Læsø. 10 fms.	57°27' 11° 2'	» »	II	♀	24	26	
	» » 28	1946	NW of Nordre Rønner, Læsø. 10 fms.	57°24' 10°51'	Danish »	II	♀	24.5	26	
	» June 4	1985	At Kobberground	57°11' 11°18'	» »	III	♂	24	25.5	Tail dry
	» » 25	1942	3 miles N from Læsø. 8 fms.		» »	III	♀	24	25	
	» July 3	1957	Læsø Rende	57°16' 10°43'	» »	IV	♀	23.5	27	
	» » 5	1992	NE of Nordre Rønner, Læsø	57°27' 11° 3'	Swedish »	IV	♂	24.5	[22]	
	» » 7	1971	S of Trindelen		» »	IV	♀	22.5		
	» » 11	1986	12 miles N from Læsø		» »	IV	♀	24	27	
	» » 12	1951	1 mile W from Morup Light	56°55' 12°20'	» »	IV	♂	24	27	
	» » 13	1984	At Trindelen	57°26' 11°14'	» »	IV	♂	26.5	28.5	
	» » 22	1979	Læsø Rende	57°16' 10°43'	» »	IV	♂	23	24.5	
	» » 29	1941	Læsø Rende?		» »	IV	♀	26	31	
	» August 19	1993	N of Nordre Rønner, Læsø. 5 fms.	57°24' 10°55'	Danish S. B.	V	♀	22	28	
	» » 23	1943	N of Nordre Rønner, Læsø. 16 fms.	57°26' 10°53'	» »	V	♀	23	28.5	
	» » 25	1988	N of Nordre Rønner, Læsø. 11 fms.	57°26' 10°54'	» »	V	♀	22	26.5	
	» Septbr. 7	1953	N of Trindelen. 22 fms.	57°32' 11°14'	» »	VI	♀	22.5	28	
	» » 8	1987	5 miles NW from Trindelen	57°31' 11°13'	» »	VI	♀	22.5	27.5	
	» » 28	1996	NW of Trindelen. 22 fms.	57°31' 11° 3'	» »	VI	♂	24.5	30.5	
	» October 21	1973	Rusmands Bank, Læsø	57°21' 11°12'	» »	VII	♀	23	29.5	
	» Novbr. 24	1950	NE of Nordre Rønner, Læsø. 5 fms.	57°26' 11° 0'	» »	VIII	♀	22	30	
	1905 March 3	1960	ESE of Sæby. 10 fms.	57°18' 10°41'	» »	XII	♂	24	28	
	1906 Febr. 5	1955	N of Skagen. 12 fms.	57°46' 10°34'	» Fishingb.	XXIII	♂	26	33.5	

Table 11. Table showing the size of plaice at liberation and the specimens of the various sizes that have been recovered until September 30th, 1906. The transplantation experiments in the spring of 1904.

	Graadeep inshore-waters				S. of Horns Reef L. V.				Btw. Horns Reef a. Dogger Bank				Off Ringkøbing Fjord, W. of Jutl.				Skagerak				Northern Kattegat							
	Transpl. exper. No. 1 & 9		Transpl. exper. No. 8		Transpl. exper. No. 5		Transpl. exper. No. 2, 3 & 4		Transpl. exper. Nr. 6 & 7		Transpl. exper. No. 10		Transpl. exper. No. 11															
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀												
	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.	Lib.	Rec.												
18 cm. ....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..												
19 » .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..												
20 » .....	5	..	10	..	..	5	2	12	1	14	..	..	9	..	8	..	2	..	4	..	30	..	32	1	..	..	..	..
21 » .....	10	3	16	3	4	1	2	23	4	25	1	17	1	20	..	30	..	26	..	78	..	73	4	2	1	3	1	
22 » .....	18	5	6	1	3	2	4	16	..	25	4	22	..	14	..	37	..	20	..	56	2	55	1	5	4	8	7	
23 » .....	7	3	10	4	1	1	9	3	13	3	13	2	14	1	24	..	33	..	27	1	41	1	38	2	6	1	7	4
24 » .....	3	2	7	3	..	..	4	1	11	1	13	1	14	..	20	2	27	2	30	..	29	4	27	2	9	8	10	6
25 » .....	2	1	2	..	2	1	1	1	10	4	8	1	13	1	12	..	26	..	22	..	13	4	34	6	2	..	2	..
26 » .....	..	..	..	..	2	1	3	..	7	2	4	2	8	..	15	2	23	1	27	..	17	4	29	7	2	2	4	1
27 » .....	..	..	..	..	..	..	..	..	2	1	1	..	9	1	9	2	23	..	21	..	12	2	14	3	..	..	..	..
28 » .....	..	..	2	..	..	..	..	..	..	..	1	1	3	..	8	1	15	..	22	1	1	..	8	2	..	..	..	..
29 » .....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	14	1	14	2	1	..	3	..	..	..	..	..
30 » .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	9	..	..	..	..	..	..	..	..	..
31 » .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	4	1	..	..	..	..	..	..	..	..
32 » .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Total ...	46	14	54	11	12	6	28	8	95	16	105	12	109	4	131	7	233	4	227	5	283	17	317	28	26	16	34	19

Fiskeri II. 5.



### D. The ordinary marking experiments with plaice in the Kattegat in the autumn of 1904.

In the ordinary Danish marking experiments in October, 1904, 360 marked plaice were set free at 9 different places in the Kattegat. The length of the specimens varied between 18—46 cm.; only one specimen was under 20 cm. and only 5 specimens 40 cm. or above.

Particulars regarding the experiments are represented on the Tables 12 and 13. The entries include all recaptures recorded up to the end of September, 1906, and thus comprise a period of ca. 2 years.

In the course of the first year after liberation 184 specimens or 51.1% were recaptured, and until September 30th, 1906, the total recaptures amounted to 201 specimens or 55.8%. Of the specimens between 18—24 cm. the same percentage was recovered as of the specimens between 25—46 cm.

As might be expected the experiments have given the result that the specimens liberated in the northern Kattegat increased considerably more rapidly than those liberated in the southern Kattegat. The former have increased ca. 6 cm. during one year, the latter only ca. 4 cm. (see Chap. III). It should here be remembered that the specimens liberated in the southern Kattegat were for the greater part mature and of a rather considerable size, while the majority of those liberated in the northern Kattegat were immature and of a somewhat smaller size.

Besides the marking experiments mentioned in Table 12, 5 marked plaice were liberated 32 miles SSW.  $\frac{1}{4}$  W., of Horns Reef light-ship at 45 meters depth on September 28th, 1904. The size of the specimens was as follows: one male: 39 cm., and 4 females: 35, 50, 56 and 57 cm. None of these large specimens are so far known to have been recaptured.

A further account of the results of the marking experiments in the Kattegat in October, 1904, may be looked for in Chap. III of the present paper.

Table 12. Table showing particulars of Liberation and Recapture of plaice in the ordinary marking experiments in the Kattegat, October, 1904.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1904. October 5. 11 miles WNW. from Vinga Light. 57°39' N. 11°16' E. 44 meters. "Thor" St. 266. 72 Plaice liberated (Da. 4 No. 1—72). Marking experiment No. 6 1904.	1904 Octbr. 16	19	S of Trindelen. 18 fms.	N E 57°25' 11°15'	Danish S. B.	0	♂	30	30	mature	
	» » 22	52	12 miles E of Hirsholmene. 15 fms.	57°35' 10°55'	» »	0	♀	30	30		
	» Novbr. 1	28	NW of Trindelen. 18 fms.	57°29' 11°07'	» »	I	♀	26.5	26		
	» » 1	35	NW of Trindelen. 18 fms.	57°29' 11°07'	» »	I	♀	34	34.5		
	» » 7	58	8 miles E of Hirsholmene. 14 fms.	57°35' 10°49'	» »	I	♀	34	33.5		
	» » 16	38	6 miles E of Hirsholmene. 14 fms.	57°30' 10°45'	» »	I	♂	28.5	29		
	» » 16	69	6 miles E of Hirsholmene. 14 fms.	57°30' 10°45'	» »	I	♂	24.5	24		
	» » 25	56	Læsøgrunden NE of Nordre Rønner. 5 fms.	57°23' 10°58'	» »	I	♀	29.5	30		
	» Decbr. 3	4	NE of Hirsholmene. 14½ fms.	57°33' 10°42'	» »	II	♂	32	32		
	» » 4	30	NE of Læsø. 7 fms.	» »	» »	II	♂	28	29		
	» » 4	62	NE of Hirsholmene. 12 fms.	57°31' 10°40'	» »	II	♂	26.5	27		
	» » 13	15	1 mile W of Gl. Skagen. 5 fms.	57°44' 10°30'	» Fishingb.	II	♂	33.5	34		fresh
	» » 13	57	The Kattegat.	» »	S. B.	II	♀	33	34		
	» » 14	47	NE of Hirsholmene. 12 fms.	57°31' 10°40'	» »	II	♀	26.5	27.5		
	» » 14	63	NE of Hirsholmene. 12 fms.	57°31' 10°40'	» »	II	♀	32	33		
	» » 19	53	12 miles E of Hirsholmene. 14 fms.	57°36' 10°52'	» »	II	♀	31.5	31.5		
	» » 20	48	2 miles E of Hirsholmene.	57°30' 10°41'	» »	II	♀	27.5	27.5		
» » 22	67	S of Skagen's Light. 9 fms.	57°43' 10°39'	» Fishingb.	II	♂	29.5	29			
1905 Jan. 8	43	(Landed in Frederikshavn.)	» »	S. B.	III	♀	27	28			
» » 21	51	E of Hirsholmene. 14 fms.	57°30' 10°43'	» »	III	♀	30.5	33			



Table 12. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1904. October 5. 11 miles WNW from Vinga Light. 57°39' N. 11°16' E. 44 meters. "Thor" St. 266. 72 Plaice liberated (Da. 4 No. 1-72). Marking experiment No. 6 1904.	1905 Jan. 24	18	Off Læsø. 10-12 fms.	N E	Danish S. B.	III	♀	30.5	30.5	dry
	» » 27	65	N of Skagen.	57°45' 10°36'	» Fishingb.	III	♂	27.5	27	
	» » 28	39	N of Hirsholmene. 14 fms.	57°33' 10°40'	» S. B.	III	♀	27	28.5	
	» » 30	26	4 miles S by E of Skagen	57°41' 10°42'	German S. T.	III	♀	31.5	32	
	» Febr. 27	3	4 miles WNW from Vinga. 28 fms.	57°39' 11°30'	Swedish »	IV	♀	24	23.5	
	» March 3	61	SE of Skagen Light-ship. 13 fms.	57°46' 10°44'	Danish S. B.	V	♀	26	26.5	
	» » 5	45	N of Læsø. 14 fms.	57°28' 11°02'	» »	V	♀	35.5	36	
	» » 9	33	Hertha's Flak. 18 fms.	57°40' 10°59'	» S. T.	V	♀	27.5	29	
	» » 24	22	NE of Nordre Rønner Light Læsø. 9 fms.	57°27' 11°02'	» S. B.	V	♀	22.5	23.5	
	» » 24	64	NE of Nordre Rønner Light Læsø. 14 fms.	57°28' 11°04'	» »	V	♀	26	26	
	» April 5	20			German S. T.	VI	♀	30.5	30	
	» » 10	50	Skagen's Light bearing N by E. 5 fms.	57°43' 10°38'	Dan. Fishingb.	VI	♀	32	32	
	» May 3	31	E of Skagen. 17 fms.	57°45' 10°45'	» S. B.	VII	♀	25.5	28	
	» » 10	13	SE of Skagen. 14 fms.	57°41' 10°46'	» »	VII	♂	28	30.5	
	» » 25	41	Rusmandsbanken by Læsø. 5 fms.	57°22' 11°11'	» »	VII	♂	28	31.5	
	» » 29	21	Flyndergrunden E of Læsø. 20 fms.	57°16' 11°18'	» »	VII	♂	32	34	
	» June 7	7	Lille Middelgrund.	56°57' 11°56'	Swedish S. B.	VIII	♂	25	26.5	
	» » 10	49	SE of Kobbergrunden Light-ship. 22 fms.	57°08' 11°25'	Danish »	VIII	♀	30	33.5	
	» » 21	11	S of Skagen. 5 fms.	57°43' 10°39'	» Fishingb.	VIII	♂	26	29.5	
	» » 25	9	E of Læsø. 14 fms.	57°20' 11°16'	» S. B.	VIII	♂	25	28	
» July 15	25	S of Skagen's Light-ship. 15 fms.	57°46' 10°44'	» »	IX	♀	29	32		
» » 21	2	Lille Middelgrund.	56°57' 11°56'	Swedish »	IX	♀	31	35		
» » 24	16	Off Kobbergrundens brush-buoy. 20 fms.	57°12' 11°21'	Danish »	IX	♀	25	28.5		
» October 12	17	SE of Hirsholmene. 13 fms.	57°28' 10°41'	» »	XII	♀	22	28.5		
1904. October 11. 2 1/2 miles SSW from Trindelen. 57°24' N. 11°15' E. 34 meters. "Thor" St. 278. 19 Plaice liberated (Da. 4 No. 73-91). Marking experiment No. 7 1904.	1904 Octbr. 16	88	NE of Læsø. 5 fms.		Danish S. B.	0	♂	28	26	
	» » 28	87	Rusmandsbanken Læsø. 4 fms.	57°21' 11°11'	» »	0	♂	31	32	
	» Decbr. 10	77	NNE of Nordre Rønner Læsø. 10 fms.	57°26' 10°57'	» »	II	♀	29	29	
	» » 17	84	NE of Læsø. 12 fms.		» »	II	♀	35	36.5	
	1905 Jan. 15	83	NE of Nordre Rønner Læsø. 9 fms.	57°27' 11°02'	» »	III	♂	28	28.5	
	» May 16	76	N of Nordre Rønner Læsø. 10 fms.	57°25' 10°54'	» »	VII	♀	28	30	
	» Sept. 6	90	NE of Læsø at Tællemund brush-buoy. 19 fms.	57°21' 11°17'	» »	XI	♂	26	32.5	
» October 7	91	Måsesker bearing ESE. 15 miles distant.	58°09' 10°52'	German S. T.	XII	♀	31	35		
1904. October 12. 8 miles NW by N from Trindelen. 57°32' N. 11°6' E. 42 meters. "Thor" St. 280. 43 Plaice liberated. (Da. 4 No. 92-134). Marking experiment No. 8 1904.	1904 Octbr. 23	108	N of Nordre Rønner Læsø. 5 fms.	57°24' 10°55'	Danish S. B.	0	♀	28	28	mature
	» » 28	112	NE of Nordre Rønner Læsø. 5 1/2 fms.	57°26' 11°01'	» »	0	♀	32	32	
	» Novbr. 14	95	8 miles NE of Nordre Rønner. 10 fms.	57°27' 11°06'	» »	I	♂	29	30.5	
	» » 16	128	8 miles NE of Hirsholmene. 13 fms.	57°36' 10°46'	» »	I	♀	31	31	
	» » 18	134	NE of Nordre Rønner. 8 fms.	57°26' 11°02'	» »	I	♂	23	23	
	» » 25	125	N of Nordre Rønner. 6 fms.	57°24' 10°55'	» »	I	♀	29.5	29.5	
	» » 25	100	SW of Læsø Rende's Light-ship. 5 fms.	57°11' 10°38'	» »	I	♀	33	34	
	» Decbr. 3	127	NE of Nordre Rønner Læsø. 9 fms.	57°27' 11°02'	» »	II	♀	34	36	
	» » 10	132	12 miles NE of Hirsholmene. 14 fms.	57°37' 10°52'	» »	II	♀	27.5	29	
	» » 14	124	NE of Nordre Rønner Læsø. 14 fms.	57°28' 11°03'	» »	II	♀	36	37	
	» » 19	113	N of Læsø. 9 fms.	57°27' 11°05'	» »	II	♀	31.5	32.5	
	1905 Jan. 15	130	NE of Nordre Rønner Læsø. 9 fms.	57°27' 11°02'	» »	III	♂	29	30.5	
	» » 16	99	N of Skageu. 10 fms.	57°46' 10°37'	» »	III	♂	32	34	
	» » 28	133	The slope W. of Trindelen's Light-ship. 10 fms.	57°25' 11°13'	» »	III	♂	28.5	28.5	
	» Febr. 23	129	NW by N of Nordre Rønner. 12 fms.	57°24' 10°51'	» »	IV	♂	29	29.5	
	» March 18	121	N of Skagen. 7 fms.	57°45' 10°36'	» Fishingb.	V	♀	32	33	
	» April 7	116	S of Hirsholmene. 13 fms.	57°28' 10°40'	» »	VI	♀	27.5	[26]	
	» » 22	104	Brush-buoy Jessen's Grund. Kattegat.	56°15' 10°51'	» S. B.	VI	♀	23	24	
	» May 5	101	4 miles E of Skagen. 22 fms.	57°45' 10°48'	» »	VII	♀	33	34	
» » 29	106	South-west point of Anholt. 14 fms.	56°35' 11°28'	» »	VII	♂	26.5	29		



Table 12. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
	1905 June 7	96	E of Sæby. 10 fms.	N E 57°21' 10°42'	Danish S. B.	VIII	♂	28.5	31	
	» » 17	122	NW of Hirshals. E of the reef. 24 fms.	57°41' 9°40'	» »	VIII	♂	32.5	37	
	» » 24	111	57°52' N. 10°38' E.	57°52' 10°38'	German S. T.	VIII	♂	29	29	
	» July 11	92	N of Læsø. 8 fms.		Swedish S. B.	IX	♀	21.5	25.5	
1904. October 17. 2 miles E of Aalbæk. 57°36' N. 10°28' E. 7 meters. "Thor" St. 288. 26 Plaice liberated (Da. 4 No. 175-200) Marking experiment No. 9 1904.	1904 Octbr. 28	176	Off Aalbæk. 4½ fms.	57°36' 10°29'	Danish S. B.	0	♀	22.5	22	
	» » 28	186	Off Aalbæk. 3 fms.	57°36' 10°27'	» »	0	♀	24.5	24.5	
	» » 28	190	Off Aalbæk. 3 fms.	57°36' 10°27'	» »	0	♀	23.5	23	
	» Novbr. 2	175	Off Aalbæk. 5 fms.	57°36' 10°30'	» Fishingb.	I	♀	22	23	
	» » 5	187	S of Aalbæk. 5 fms.	57°34' 10°28'	» S. B.	I	♂	25	25	
	» » 12	180	E of Hulsig. 8 fms.	57°40' 10°35'	» »	I	♀	25	25	
	» » 12	184	E of Hulsig. 9 fms.	57°40' 10°37'	» »	I	♀	27	27.5	
	» » 16	193	E of Aalbæk. 6 fms.	57°36' 10°32'	» »	I	♀	24	24.5	
	» Decbr. 20	177	Off Aalbæk. 7 fms.	57°36' 10°33'	» »	II	♀	22.5	23	
	1905 Jan. 14	191	SSW of Skagen's old church. 8 fms.	57°40' 10°35'	» Fishingb.	III	♂	24	25	
	» » 20	182	Aalbæk Bay. 6 fms.		» »	III	♀	23.5	26.5	
	» Febr. 16	195	E of Aalbæk. 7 fms.	57°36' 10°33'	» »	IV	♂	23.5	24	
	» » 20	194	SE of Skagen's old church. 8 fms.	57°41' 10°37'	» »	IV	♀	24.5	27.5	
	» » 20	199	E of Aalbæk. 7 fms.	57°36' 10°33'	» »	IV	♀	22.5	23.5	
	» March 22	183	E of Jerup (Aalbæk Bay). 7 fms.	57°33' 10°34'	» »	V	♀	24	26	
	» May 1	198	6 miles NE of Hirshals.	57°40' 10°03'	» S. B.	VII	♀	23	25.5	
	» » 2	179	The Aalbæk Bay.		» Fishingb.	VII	♀	20	23	
	» » 2	188	The Aalbæk Bay. 8 fms.		» »	VII	♂	24.5	27.5	
	» » 24	185	2 miles S of Frederikshavn. 5 fms.	57°24' 10°34'	» S. B.	VII	♂	25	25.5	
	» » 27	192	S of Skagen's old church. 5 fms.		» Fishingb.	VII	♂	23.5	25.5	fresh
	» June 8	189	S of Skagen. 8 fms.	57°44' 10°38'	» »	VIII	♂	23.5	27	
	» » 21	181	S of Skagen. 8 fms.	57°42' 10°37'	» »	VIII	♀	24	29	
	» » 28	197	S of Skagen, near shore.	57°44' 10°38'	» »	VIII	♀	24.5	28	{somewhat dry
	» July 24	200	NW of Skagen's Light. 5 fms.	57°45' 10°34'	» »	IX	♂	22	28	
1904. October 25. Pakhus Bay, Anholt. 56°40' N. 11°38' E. 24-30 meters. "Thor" St. 303. 10 Plaice liberated (Da. 4 No. 201-210). Marking experiment No. 10 1904.	1904 Dec. 23	210	Store Middelgrund. 14 fms.	56°38' 12°03'	Danish S. B.	II	♀	32.5		
	1905 Jan. 10	208	N of Skagen. 10 fms.	57°46' 10°36'	» Fishingb.	III	♂	37	36	dry
	» March 3	205	4 miles NE of Hirshals.	57°38' 10°01'	» »	V	♂	34	34	
	» May 10	206	1½ mile NNE of Ostebakken's Light. 2½ fms.	56°44' 11°35'	» S. B.	VII	♀	30	31	
1904. October 27. 8 miles S. from Anholt Knob. 56°38' N. 11°54' E. 32 meters. "Thor" St. 305. 25 Plaice liberated (Da. 4 No. 211-235). Marking experiment No. 11 1904.	1904 Nov. 15	213	N of Store Middelgrund. 13 fms.	56°28' 12°06'	Danish S. B.	I	♀	39.5	39	
	» Decbr. 16	233	N of Kullen. Store Middelgrund. 13 fms.	56°34' 12°10'	» »	II	♀	27	28	
	1905 Febr. 20	216	Near Anholt, the Kattegat.		German S. S.	IV	♂	31.5	31	
	» March 15	215	SSW of Anholt, 3 miles distant.	56°41' 11°38'	Danish S. B.	V	♀	35	34.5	
	» May 15	217	Store Middelgrund. 15 fms.	56°39' 12°04'	Swedish »	VII	♀	31.5	34	
	» Aug. 22	222	Halmstad Bay. 10 fms.	56°34' 12°43'	» »	X	♂	29.5	30	
	» Octbr. 27	231	N of Store Middelgrund. 13 fms.	56°39' 12°06'	Danish »	XII	♀	36.5	41	
1904. October 28. 9 miles SE by S from Kobbergrundens Light 57°01' N. 11°34' E. 24-40 meters "Thor" St. 307. 6 Plaice libe-	1904 Nov. 26	241	SSW of Anholt		Danish S. B.	I	♀	37.5	37	
	1905 July 24	236	N of Anholt. 21 meters.	56°48' 11°35'	Swedish »	IX	♂	32	36	



Table 12. Continued.

Particulars of Liberation. Date. Locality No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
rated (Da. 4 No. 236-241). Marking experiment No. 12 1904.				N E						
1904 October 28. 6 miles NW from Anholt Knob, L. V. 56°49'N 11°44'E. 30 meters. "Thor" St. 308. 20 Plaice liberated (Da. 4 No. 242-261). Marking experiment No 13 1904.	1904 Nov. 16	242	S of Koberground. 10 fms.	57°08' 11°23'	Danish S.B.	I	♂	31	31.5	
	1905 March 19	250	12 miles N by W of Anholt. 8 fms.	56°52' 11°22'	" "	V	♂	39	42*	{ * fide fisherman
	" " 20	259	(not reported)		" Fishingb.	V	♀	35	36.5	
	" May 9	252	N of Anholt. 18 meters.	56°47' 11°34'	Swedish S.B.	VII	♂	34.5	35	
	" July 26	251	N of Anholt. 21 fms.	56°48' 11°35'	" "	IX	♂	32.5	36	
	" Sept. 20	243	NE of Anholt. 17 fms.	56°48' 11°43'	Danish "	XI	♂	36.5	36.5	
	" Nov. 24	244	N of Skagen. 10 fms.	57°46' 10°36'	" Fishingb.	XIII	♂	32.5	39	fresh
1904. October 29. 10 miles NW by W. of Kullen. 56°21'N. 12°10'E. 32 meters. "Thor" St. 309. 107 Plaice liberated. Marking experiment No. 14 1904.	1904 Nov. 18	319	NNW of Nakkehoved. 13 fms.	56°12' 12°19'	Danish S.B.	I	♂	32.5	32	tail dry
	" Dec. 7	352	(not reported)		" "	II	♀	35	34	mature
	" " 22	327	55°30' N. 6°0' E. 28 fms.	55°30' 6°0'	German S.S.	II	♀	33.5	32	
	1905 Jan. 26	372	Pakhus Bay. 1 mile from shore. 14 fms.	56°42' 11°43'	Danish S.B.	III	♀	31.5	31.5	dry
	" Febr. 1	296	South coast of Anholt.		German S.S.	IV	♂	30.5	30	
	" " 6	293	N of Isefjord. 8 miles from shore. 10 fms.	56°07' 11°49'	Dan. Fishingb.	IV	♀	29	30	
	" " 7	299	8 miles NW of Gilleleje. 13 fms.	56°13' 12°10'	" "	IV	♀	32	32	dry
	" " 10	280	4 miles NW of Nakkehoved. 13 fms.	56°12' 12°18'	" "	IV	♂	33.5	34.5	
	" " 19	382	Skagen's Light bearing SE. 7 fms.	57°45' 10°35'	" "	IV	♀	33	32	
	" " 23	292	6 miles S of Sønderbjerg, Anholt. 14 fms.	56°35' 11°33'	" "	IV	♀	33.5	34	
	" " 24	353	Pakhus Bay by Anholt.	56°42' 11°38'	" S.B.	IV	♂	27.5	28	
	" " 25	314	N by E of Liseleje. 11 fms.	56°08' 11°57'	" Fishingb.	IV	♂	28	28*	{ * fide fisherman
	" March 4	295	S of Skagen's Light. 6 fms.	57°43' 10°38'	" "	V	♀	31	31	
	" " 5	281	N of Skagen's Light. 15 fms.	57°46' 10°37'	" "	V	♂	34	33	
	" " 7	398	Off Hornbæk. 6 fms.	56°06' 12°28'	" "	V	♀	28	28	
	" " 8	264	N of Liseleje. 8½ fms.	56°06' 11°56'	" "	V	♂	32.5	32.5	
	" " 14	263	6 miles SSW of Anholt. 14 fms.	56°35' 11°33'	" "	V	♂	30	30.5	
	" " 16	391	6 miles S of Anholt. 16 fms.	56°37' 11°40'	" S.B.	V	♀	33	34	
	" " 19	298	6 miles N of Tidsvildeleje. 12 fms.	56°10' 12°00'	" "	V	♂	32	32	
	" " 19	365	55°8' N 5°37½' E 25 fms.	55°08' 5°37½'	English S.T.	V	♂	32	33	sound
	" " 20	362	56°10' N 12°18' E.	56°10' 12°18'	Dan. Fishingb.	V	♀	32.5	33	
	" " 21	373	Off Højen Light. 26 fms.	57°46' 10°33'	" "	V	♀	32	32.5	
	" " 20	380	SE by S of Sønderbjerg, Anholt. 15 fms.	56°39' 11°37'	" "	V	♀	32	32.5	
	" " 24	271	{ Anholt Light bearing S ¼ E { Western Highland bearing SSW ¼ W. }	56°52' 11°36'	" S.B.	V	♀	29.5	31*	{ * fide fisherman
	" " 30	266	4 miles SW of Morup's Light	56°52' 12°17'	Sw. Fishingb.	V	♀	33.5	34	
	" " 31	302	Off Svinbådan	56°11' 12°29'	" "	V	♀	31.5	30	mature
	" April 4	351	NNE off Gilleleje. 8 fms.	56°10' 12°20'	Danish S.B.	VI	♂	29.5	29	
	" " 5	323	SE of Skagen. 10 fms.	57°43' 10°41'	" "	VI	♂	32.5	33.5	
	" " 17	350	Gillelejevoved. 2 fms.	56°08' 12°18'	" Fishingb.	VI	♂	31	31	
	" " 21	363	Off Raageleje (North Sealand). 2½ fms.	56°06' 12°10'	" "	VI	♀	30.5	31.5	
	" " 22	336	4 miles N of Tidsvildeleje.	56°07' 12°02'	" "	VI	♂	30	30*	{ * fide fisherman
	" May 1	294	Lille Middelgrund. 21 meters.	56°56' 11°53'	Swedish S.B.	VII	♀	31.5	34	
	" " 3	324	Lille Middelgrund. 12 miles from shore. 12 fm.	56°55' 11°54'	" "	VII	♀	34.5	37	
	" " 4	320	4 miles NNW of Hanstholm.	57°10' 8°32'	Danish "	VII	♀	32.5	32	
	" " 6	277	1 mile W of Gilleleje. ¼ fms.	56°08' 12°17'	" "	VII	♂	30.5	30	
	" " 9	267	3 miles W of Kullen's Light.	56°17' 12°22'	Swedish "	VII	♂	29	29	
	" " 13	312	6 miles N of Gilbjerg. 13 fms.	56°13' 12°15'	Danish "	VII	♂	28	28.5	
	" " 13	341	6 miles N of Gilbjerg. 13 fms.	56°13' 12°15'	" "	VII	♂	30.5	30	
	" " 17	388	4 miles E of Isefjord. 1 mile from shore.	56°02' 11°57'	" Fishingb.	VII	♀	28.5	30	
	" " 18	347	5 miles W of Kullen's Light. 14-15 fms.	56°17' 12°19'	Swedish S.B.	VII	♂	31.5	31.5	



Table 12. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery								Remarks	
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size		Ultimate Size
1904. October 29. 10 miles NW by W of Kullen. 56°21'N. 12°10'E. 32 meters. "Thor" St. 309. 107 Plaice liberated. Marking experiment No. 14 1904.	1905 May 25	354	4 miles SE of Grenaa harbour.	N 56°23' E 11°03'	Danish S. B.	VII	♂	31	33	tail a little dry
	» » 31	338			» Fishingb.	VII	♂	29.5	31	
	» June 1	361	6 miles SW from Eftras. 15 fms.	56°45' 12°25'	Swedish »	VIII	♀	31	33	
	» » 14	278	Pakhus Bay by Anholt. 16 fms.	56°41' 11°42'	Danish S. B.	VIII	♀	31.5	33	
	» » 29	381	NW of Hirshals. 21 fms.	57°40' 9°44'	» »	VIII	♀	30	34	
	» July 5	275	S of Anholt. 8 fms.		» »	IX	♀	29	33	{ immat., tail a little dry
	» » 10	397	2 miles SE of SW Point, Anholt.	56°40' 11°35'	» »	IX	♂	28	31	immat.sound
	» Sept. 10	273	Tylø Light bearing E by S. 14 fms.	56°39' 12°25'	» »	XI	♀	30.5	34	fresh
	» » 12	304	(not reported)		» »	XI	♂	31.5	[30]	fresh
	» » 13	318	6 miles N of Anholt.	56°50' 11°32'	» »	XI	♂	30	34	tail dry
	» » 29	393	3 miles WNW of Kullen's Light. 13 fms.	56°19' 12°22'	Swedish »	XI	♀	30.5	35.5	
	» Octbr. 12	290	4 miles SW of Varberg. 16 fms.	57°04' 12°09'	» »	XII	♀	30	31	
	» » 16	384	S of Anholt. 14 fms.	56°41' 11°39'	Danish »	XII	♂	30.5	34.5	{ * fide fisherman
	» Decbr. 6	400	Middelgrunden, SE of Anholt. 14 fms.	56°37' 12°03'	Dan. Fishingb.	XIV	♀	28.5	33.5*	
	1906 Jan. 18	389	Skagen's Reef. 20 fms.	57°46' 10°42'	» »	XV	♂	30.5	37	
	» Febr. 24	392	SE of Flyndergrund, Læsø. 17 fms.	57°15' 11°18'	Danish S. B.	XVI	♀	30	35.5	fresh
	» March 2	303	Near Anholt.		German S. T.	XVII	♂	26.5	27	
	» » 5	356	N. of Skagen.		Dan. Fishingb.	XVII	♀	32	39.5	sound
	» » 19	385			Danish S. B.	XVII	♀	33		mature
	» April 9	348	Pakhus Bay, 1 mile SSE of Skejnæshage. 12 fm.		» Fishingb.	XVIII	♀	30	37	fat and solid
» May 19	378	SE of Anholt. 15 fms.	56°42' 11°45'	» S. B.	XIX	♂	33	36.5	sound	
» » 23	370	Hirshalsrende, N by W of Hirshals. 27 fms.	57°41' 9°52'	» »	XIX	♀	35.5	38.5		
» June 30	340	3½ miles S of Anholt Light. 14 fms.	56°41' 11°40'	» »	XX	♂	32	38	fresh	
» Sept. 12	396	56°44' N. 7°25' E. 22 fms.	56°44' 7°25'	English S. T.	XXIII	♂	27	36	sound	
1904. October 29. 10 miles NW by W of Kullen. 56°21'N. 12°10'E. 82 meters. "Thor" St. 309. 32 plaice liberated, all mature females. Marking experiment No. 14 A 1904.	1905 Febr. 20	379	4 miles N of Gilleleje.	56°12' 12°17'	Sw. Fishingb.	IV	♀	36.5	37	{ * fide fisherman
	» March 8	367	N of Liseleje. 8½ fms.	56°06' 11°56'	Danish »	V	♀	35.5	35*	
	» » 9	332	Off Råå, 2 miles distant.	55°59' 12°42'	Swedish »	V	♀	35.5	36	
	» » 18	334	3 miles N of Gilleleje. 10 fms.	56°10' 12°17'	Danish S. B.	V	♀	33.5	33	
	» April 6	375	NNE of Spodsbjerg, 6 miles from shore	56°05' 11°45'	» »	VI	♀	31	30	
	» » 22	301	Off Gilleleje.		Swedish »	VI	♀	31	30	
	» May 9	310	3 miles W of Kullen's Light.	56°17' 12°22'	» »	VII	♀	32	30	
	» » 9	342	3 miles W of Kullen's Light.	56°17' 12°22'	» »	VII	♀	33	31	
	» » 13	289	6 miles N of Gilbjerg. 13 fms.	56°13' 12°15'	Danish »	VII	♀	35.5	35.5	
	» » 13	315	N of Nakkehoved. 12 fms.	56°09' 12°21'	» »	VII	♀	31	30	
	» » 24	270	2 miles NW of Kullen's Light.	56°19' 12°24'	Swedish »	VII	♀	30	30	
	» June 7	300	2 miles W from Svinbådan.	56°10' 12°27'	» »	VIII	♀	26	28	
	» July 5	357	Off Anholt.		Danish »	IX	♀	32	33	tail a little dry
	» » 12	265	Off Kronborg castle. 14 fms.	56°02' 12°38'	» Fishingb.	IX	♀	33	32.5	much shrunk
	» Novbr. 22	345	7 miles SW of Kullen's Light. 14½ fms.	56°13' 12°22'	Swedish S. B.	XIII	♀	33.5	35	
	1906 Jan. 339	339	NNW of Nakkehoved Light. 13 fms.	56°12' 12°19'	Dan. Fishingb.	XV	♀	35.5	37	{ more than 5 years
» Febr. 15	284	12 miles SW of Anholt. 14 fms.	56°31' 11°30'	Danish S. B.	XVI	♀	29.5	31.5		

### E. The ordinary marking experiments with plaice in the spring of 1905.

In February and March of 1905, 2000 marked plaice were liberated in the waters surrounding Denmark. In the Horns Reef area 345 were liberated, in the Graadeep inshore waters 40, in the Hanstholm-Søndervig area 40, in the Skagerak 775, and in the Kattegat 800 specimens. Particulars regarding the experiments are represented on the Tables 20 and 21.

The list over the captures of the marked fish is here entered up to the end of September, 1906.







of 23–25 cm. were liberated on April 15., 1905. The recaptures in one year amounted to 28 specimens or 70.0%.

The average increase of the specimens liberated at Horns Reef and Graadeep seems to be ca. 7.5–8 cm. in the course of one year (see Chap. III).

Of the 40 specimens liberated off Torup (near Hanstholm) 35% were recovered within one year. The specimens measured at liberation 23–32 cm. One specimen, recovered 10 months after liberation, had increased 7 cm. (see Chap. III).

In the Skagerak marking of plaice was undertaken at two different localities.

In the area off Bulbjerg-Svinkleven at 10–16 meters depth, 575 plaice of a length of 22–33 cm. were liberated on March 22nd. They were caught by a Danish snurrevaad's cutter and were all liberated near the place of capture. (Experiment No. 4, 1905).

In the course of the first year after liberation 275 marked specimens or 47.8% were recovered. Sixteen of the specimens measured at liberation 22–24 cm. and 559 were 25–33 cm. Of the former, 5 specimens or 31.3%, of the latter, 270 specimens or 48.3% were recovered in the course of one year.

As shown on Table 14 the average yearly increase of the marked specimens has been ca. 7 à 8 cm.; 8 specimens recovered 8–13 months after liberation had on an average increased 7.6 cm. The individual rapidity in growth was here very different; but the monthly averages were rather consistent for the months April–October. The average size of the marked and recaptured fish was at liberation 26–29 cm.

Table 14. Rate of Growth of plaice liberated in Jammer Bay (Skagerak). March, 1905.  
Marking experiment No. 4, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 22.	1905 April	1 month	0.3	0	1	36	27.8	23	33
	» May	2 months	0.8	0	2.5	97	28.1	24	31
	» June	3 »	1.6	0	3.5	37	28	25	31
	» July	4 »	3.5	1	7	51	27.6	25	30
	» August	5 »	3.6	1	7	10	27.1	24	30
	» Septbr.	6 »	5.8	4	9	7	27.1	24	29
	» October	7 »	6.3	6	6.5	2	29.5	29	30
	» November	8 »	8.5	...	...	1	28	...	...
	» December	9 »	12.0	...	...	1	27	...	...
	1906 January	10 »	4.5	...	...	1	26	...	...
	» February	11 »	6	6	6	2	28.5	27	30
	» April	13 »	7.5	6.5	8	3	26.7	25	28

In the Tannis Bay off Spirbakken at 17 meters depth 200 marked plaice measuring from 19–32 cm. were liberated on March 20th, 1905. (Experiment No. 3, 1905). They were all caught by the "Thor" and liberated at the place of capture.

50 specimens were on liberation below 25 cm. and 150 measured 25 cm. or more. Of the former, 7 specimens or 14.0%, of the latter, 49 specimens or 32.7% were recovered within 12 months. Of all the liberated plaice 56 specimens or 28% were recovered in the said time.

As represented on Table 15 the average increase of the specimens during the summer and autumn of 1905 may be estimated at ca. 6 à 7 cm. Two specimens recovered in January, 1906, only showed an increase of 3 and 3.5 cm. in length. The recovered specimens measured on liberation 23–31 cm. and belonged evidently essentially to the III-Group.



Table 15. Rate of Growth of plaice liberated in Tannis Bay (Skagerak). March, 1905. Marking Exper. No. 3, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 20.	1905 April	1 month	0.5	0	2	12	28.5	25	31
	» May	2 months	0.9	0	2.5	28	27.6	23	31
	» June	3 »	2.1	0	4	4	26.5	23	29
	» July	4 »	4.3	3	5.5	2	26	24	28
	» August	5 »	5.0	...	...	1	27	..	..
	» September	6 »	5.0	...	...	1	23	..	..
	» November	8 »	6.5	...	...	1	30	..	..
	1906 January	10 »	3.3	3	3.5	2	28.5	27	30

On March 29<sup>th</sup> 300 marked plaice of a length of 22—33 cm. were liberated in Aalbæk Bay NW. of Hirsholmene at 16 meters depth. All the specimens were caught by the "Thor" and liberated at the place of capture. They were all, or almost all, immature fish (Exper. No. 6, 1905).

121 of the specimens measured on liberation less than 25 cm. and 179 more than 25 cm. Of the former were recaptured in the course of one year 61 specimens or 50.4%; of the latter 109 specimens or 60.9%. Of all the liberated plaice 170 specimens or 56.7% were recovered in one year.

This percentage is much less than in the marking experiments in 1904 in Aalbæk Bay, where 2 experiments with 40 and 26 specimens gave respectively 92.5% and 92.3% of recaptures within one year.

To form a judgment about the normal percentage of recaptures in Aalbæk Bay it is of importance to notice that the experiment of March 29., 1905, was apparently not quite successful. Seven days after liberation 2 marked plaice were hauled up from the sea-bottom by a fisherman, who found them to be "dead and rotten" (see p. 18). Thus it is evident that some of the specimens had sustained injuries either during the process of marking or during the process of capture (by pricks of sea-urchins? A considerable number of *Strongylocentrotus droebachiensis* were taken together with the plaice).

The growth of the liberated specimens appears here to have been rather inconsiderable during the summer. 4 specimens recaptured 7—14 months after liberation had on an average only increased 4.4 cm. On the basis of these few specimens however, we dare not draw the conclusion that the plaice in Aalbæk Bay on the whole increased so slowly in 1905. The investigation of the otoliths does not point in that direction<sup>1</sup>.

Table 16. Rate of Growth of plaice liberated in Aalbæk Bay. March, 1905. Marking experiment No. 6, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 29.	1905 April	1 month	0.2	0	1.5	82	26.4	22	33
	» May	2 months	0.8	0	2	48	25.6	22	33
	» June	3 »	1.0	0	3	18	24.8	22	29
	» July	4 »	2.0	0	4.5	9	25	22	29
	» August	5 »	0.7	0	1.5	3	24.3	22	27
	» October	7 »	6.0	..	..	1	23	..	..
	1906 January	10 »	4.0	3.5	4.5	2	29.5	29	30
	» May	14 »	3.5	..	..	1	23	..	..

<sup>1</sup> A. C. JOHANSEN: Ueber die Schollenfischerei im Kattegat und die Mittel, sie zu heben. Rapports et Procès-Verbaux Vol. V. 1906. Conseil perm. internat. pour l'exploration de la Mer. p. 92.  
Fiskeri II. 5.



On March 15., 1905, 95 plaice were liberated 5 miles N. of Anholt light at 19 meters depth. One specimen measured 48 cm. and the remaining 26—38 cm. The majority of the specimens were immature fish of the "northern form" (Exper. No. 1, 1905).

Within the first year after liberation 70 specimens or 73.7% were recaptured.

The growth of the recovered marked fish is represented in Table 17. The monthly averages show a rather regular increase from March, 1905 to January, 1906. The increase amounts in the course of the summer to ca. 5 cm.

Table 17. Rate of Growth of plaice liberated N. of Anholt. March, 1905. Marking experiment No. 1, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 15.	1905 April	1 month	0.3	0	1	10	33.1	26	36
	» May	2 months	1.2	0.5	2.5	17	33.1	28	37
	» June	3 »	2.3	1.5	3.5	4	32.5	28	36
	» July	4 »	2.8	0.5	5	18	32	28	36
	» August	5 »	3.0	...	...	1	36	..	..
	» Septbr.	6 »	4.0	...	...	1	28	..	..
	» Novbr.	8 »	4.8	3	6.5	3	30.3	28	32
	1906 January	10 »	5.3	2.5	8	2	33.5	31	36
	» February	11 »	8.0	...	...	1	33	..	..
	» March	12 »	2.3	2.0	2.5	2	32.5	31	34

In Aalborg Bay at 56°48' N. lat. 10°35' E. long. and 9 meters depth, 100 plaice measuring 21—33 cm. were liberated on April 1<sup>st</sup>, 1905. Most of the specimens were on liberation immature fish of the "northern form" (Exper. No. 7, 1905).

47 of the specimens were below 25 cm., while 53 specimens measured 25 cm. or above. Within one year 19 specimens or 40.4% were recovered of the former and 28 specimens or 52.8% of the latter. Of all the 100 specimens 47% were recovered in the course of one year.

The growth of the recovered specimens is represented in Table 18. It appears from the Table that 10 specimens, which were recovered within 9—14 months after liberation, had on an average increased 6.6 cm.

Table 18. Rate of Growth of plaice liberated in Aalborg Bay. April, 1905. Marking experiment No. 7, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. April 1.	1905 April	15 days	0	..	..	1	33	..	..
	» May	1 month	2.3	1.5	3	2	22.5	22	23
	» June	2 months	2.1	0.5	4	10	24.9	23	27
	» July	3 »	3.6	2	5	9	25.8	23	29
	» August	4 »	3.3	0.5	6	9	25	23	28
	» Septbr.	5 »	5.7	3.5	7.5	3	25	24	26
	» October	6 »	4.8	3	6	3	26	22	30
	» Novbr.	7 »	2.5	..	..	1	33	..	..
	1906 January	9 »	5.9	4.5	7.5	4	24.3	23	26
	» February	10 »	6.5	6	7	2	24	23	25
	» March	11 »	4.0	..	..	1	23	..	..
	» April	12 »	9.0	8.5	9.5	2	25.5	25	26
	» June	14 »	7.0	..	..	1	22	..	..



Near Anholt, SW. of the isle at 15 meters depth, 305 marked plaice were liberated on March 16<sup>th</sup> and 17<sup>th</sup> of 1905. Five specimens were between 21—24 cm., 293 between 25—34 cm. and 7 between 35—43 cm. Most of the specimens were caught by some Danish snurrevaad cutters and liberated near the place of capture. The majority were immature fish of the "northern form" (Exper. No. 2, 1905).

During the first year after liberation 210 specimens or 68·9% were recovered. The growth of the specimens is represented in Table 19. It will be noticed that 14 specimens of a length of 26—35 cm., recovered 9—15 months after liberation, showed an average increase of 5·5 cm., which must be regarded as a considerable growth for plaice of that size.

Table 19. Rate of Growth of plaice liberated SW. of Anholt. March, 1905. Marking experiment No. 2, 1905.

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 16.-17.	1905 April	1 month	0·5	0	2·5	20	29·8	27	32
	» May	2 months	0·8	0	2·0	38	28·2	24	34
	» June	3 »	1·8	0	5·5	13	30·6	26	36
	» July	4 »	2·3	1	4·5	10	28·8	25	33
	» August	5 »	2·2	0	5·5	10	29·3	25	34
	» Septbr.	6 »	2·6	1	4	9	28·9	24	31
	» October	7 »	3·3	0·5	6	6	27·3	25	30
	» Novbr.	8 »	3·2	2·5	3·5	3	29·3	27	32
	» Decbr.	9 »	5·3	1·5	9	4	31·3	28	35
	1906 Febr.	11 »	6·3	4	8·5	2	30	27	33
	» March	12 »	1·8	0·5	3	2	33·5	32	35
	» April	13 »	5·2	2·0	8	3	30	30	30
	» May	14 »	10·0	...	...	1	26	..	..
	» June	15 »	7·0	6	8	2	28·5	28	29
	» July	16 »	7·0	...	...	1	24·5	..	..
	» August	17 »	5·0	...	...	1	28	..	..

Table 20. Table showing particulars of Liberation and Recapture of plaice in the ordinary marking experiments in the Kattegat, Skagerak and North Sea. March and April, 1905.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 15. 5 miles N of Anholt Light, Kattegat. 56°49' N 11°38' E. 19 meters. "Thor" St. 341. 95 Plaice liberated (No. 1—95). "Thor"s marking experiment No. 1 1905	1904 March 20	14		N E	Danish S. B.	0	♂	26·5	26·5	
	» » 20	24			» »	0	♀	33·5	33·5	
	» » 20	33			» »	0	♀	35	35	
	» » 22	28	S by W of Anholt Light.		» »	0	♂	26	[37]	
	» » 24	16	NE of Anholt. 4 miles from shore. 25 fms.	56°48' 11°47'	» »	0	♀	33·5	33·5	
	» » 24	19	N of Anholt.		» »	0	♂	33	31	
	» » 27	15	2 miles N from Anholt. 9 fms.	56°45' 11°37'	» »	0	♀	35·5	35	
	» » 27	76			» Fishingb.	0	♂	32·5	33	mature
	» April 4	51			» »	I	♀	33	32·5	
	» » 4	63	N of Skagen's Light. 5 fms.	57°45' 10°38'	» S. B.	I	♀	34	33	
	» » 4	87			» Fishingb.	I	♀	26·5	27	
	» » 11	21	1 mile N of Anholt Light. 9 fms.	56°45' 11°39'	» »	I	♂	33	33	
	» » 11	64	{ Anholt Light bearing S by E ½ E. { Western Highland bearing SSW ½ W }	56°49' 11°35'	» S. B.	I	♀	35	34*	{ * fide fisherman



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	Nr. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 15. 5 miles N of Anholt Light, Kattegat. 56°49' N, 11°38' E. 19 meters. "Thor" St. 341. 95 Plaice liberated (No. 1-95). "Thor's" marking experiment No. 1 1905.	1905 April 11	81	{Anholt Light bearing S by E 1/2 E {Western Highland bearing SSW 1/2 W	N E 56°49' 11°35'	Dan. Fishingb.	I	♂	36	36	
	» » 11	84	{Anholt Light bearing S by E 1/2 E {Western Highland bearing SSW 1/2 W	56°49' 11°35'	» »	I	♂	35	34	
	» » 11	86	{Anholt Light bearing S by E 1/2 E {Western Highland bearing SSW 1/2 W	56°49' 11°35'	» »	I	♀	34	34	
	» » 11	91	{Anholt Light bearing S by E 1/2 E {Western Highland bearing SSW 1/2 W	56°49' 11°35'	» »	I	♀	32	32	
	» » 15	45	4 miles SSE of Kobbergrundens's L. V. 12 fms.	57°06' 11°27'	» S. B.	I	♂	33	32.5	
	» May 1	88	10 miles N by W from Anholt Light. 8 1/2 fms.	56°53' 11°32'	» »	II	♀	31	32	tail dry
	» » 3	4	8 miles NE of Tangens light-buoy.	56°46' 11°07'	» »	II	♀	33	33	tail dry
	» » 5	37	Anholt Light bearing S by E. 4 m. dist. 10 fm.	56°48' 11°36'	» »	II	♀	36	35.5	
	» » 5	46	10 miles NNW of Anholt. 5 fms.	56°52' 11°18'	Swedish »	II	♂	34.5	36	sound
	» » 5	67	7 1/2 miles NW from Anholt. 7 1/2 fms.	56°47' 11°19'	Danish »	II	♂	32	32	
	» » 5	74	10 miles NNW of Anholt.	56°51' 11°20'	Swedish »	II	♀	29	30	sound
	» » 13	2	4 miles N of Anholt Light. 18 meters.	56°48' 11°37'	» »	II	♀	37	38	
	» » 13	8	12 miles S of Kobbergrundens. 8 fms.	56°58' 11°32'	Danish »	II	♀	32	32.5	
	» » 14	35	6 miles NW from Anholt. 6 fms.	56°47' 11°30'	Swedish »	II	♀	36	38	
	» » 15	58	N of Anholt. 10 fms.	56°48' 11°35'	Danish »	II	♂	30	30	
	» » 18	20	3 miles SE of Kobbergrundens's L. V. 8 fms.	57°06' 11°25'	» »	II	♀	33	34.5	
	» » 19	7	12 miles N of Anholt. 14 meters.	56°56' 11°33'	» »	II	♀	34.5	34.5	
	» » 20	17	6 miles NNW from Anholt.	56°49' 11°33'	Swedish »	II	♀	34	35	
	» » 20	83	10 miles N of Anholt.	56°54' 11°33'	Dan. Fishingb.	II	♂	36	36	
	» » 20	92	N of Anholt. 10 fms.	56°48' 11°35'	» S. B.	II	♀	36.5	37.5	
	» » 21	90	10 miles N of Anholt.	56°54' 11°33'	» »	II	♀	32.5	34	fresh
	» » 28	1	9 miles NNW of Anholt Light. 6 fms.	56°52' 11°30'	» »	II	♂	28	28.5	
	» June 1	10	8 miles N from Anholt Light.	56°52' 11°37'	» »	III	♂	37		
	» » 8	39	N of Anholt. 5 miles from shore. 10 fms.	56°50' 11°38'	» »	III	♀	34	35	
	» » 25	61	1 mile N from Anholt Light. 6 fms.	56°45' 11°39'	» »	III	♀	36	37*	* fide fisherman
	» » 26	52			» Fishingb.	III	♂	28	29.5	dry
	» » 29	48	N of Anholt.		» S. B.	III	♀	32	35	tail dry
	» July 1	49	W of Anholt. 7 1/2 fms.	56°41' 11°20'	» »	IV	♂	32	33	tail dry
	» » 2	70	NW of Anholt. 16 fms.		» »	IV	♀	30.5	35	fresh
	» » 5	42	N of Læsø. 10 fms.	57°27' 11°08'	» »	IV	♂	36	38	tail dry
	» » 8	9	8 miles NNW from Anholt. 9 fms.	56°51' 11°31'	Swedish »	IV	♂	29	29	
	» » 10	25	4 miles S of Kobbergrundens's L. V. 12 fms.	57°05' 11°26'	Danish »	IV	♀	34.5	36.5	dry
	» » 10	47	6 miles N from Anholt Light. 8 fms.	56°50' 11°37'	» »	IV	♂	31.5	34	tail dry
	» » 10	73	9 miles N of Anholt. 9 fms.	56°53' 11°36'	» »	IV	♂	36.5	38	mature, fresh
	» » 10	95	6 miles N from Anholt Light. 8 fms.	56°50' 11°37'	» »	IV	♂	28	30.5	fresh
	» » 11	23	SW of Morup's Light. 20 meters.	56°52' 12°17'	Sw. Fishingb.	IV	♀	35	36	
	» » 12	94	N of Anholt. 24 fms.	56°58' 11°35'	Danish S. B.	IV	♀	33	36	fresh
	» » 17	5	8 miles NNE of Anholt Light. 12 1/2 fms.	56°52' 11°42'	Swedish »	IV	♂	36.5	37	
	» » 17	13	10 miles NE of Anholt. 13 fms.	56°53' 11°50'	» »	IV	♂	33.5	[33]	
	» » 17	71	10 miles NE of Anholt. 13 fms.	56°53' 11°50'	» »	IV	♂	33.5	38	
	» » 22	65	12 miles N of Anholt. 11 fms.	56°56' 11°36'	Danish »	IV	♂	34	36	
	» » 22	85	12 miles N of Anholt. 11 fms.	56°57' 11°35'	» »	IV	♂	29	32	
» » 26	93	NW of Hirshals.		» »	IV	♀	32	37	fresh	
» » 27	78	N of Anholt. 16 fms.	56°56' 11°37'	» Fishingb.	IV	♀	30	33	fresh	
» » 28	40			» S. B.	IV	♂	30	32	rotten	
» » 28	41	12 miles N of Anholt. 12 fms.	56°56' 11°36'	Swedish »	IV	♀	28	32		
» August 10	36	NE of Anholt. 22 fms.	56°50' 11°46'	Danish »	V	♂	36	39	living	
» Sept. 5	56	Anholt Light bearing NE. 8 miles from shore.	56°34' 11°26'	» »	VI	♀	28	31	rotten	
» » 10	31	Pakhus Bay. 8 fms.	56°43' 11°37'	» »	VI	♂	33			
» Nov. 7	59	18 miles E from Skagen. 25 fms.	57°47' 11°12'	Swedish »	VIII	♀	28.5	33		
» » 10	75	10 miles SW from Varberg. 10 fms.	57°00' 11°59'	» »	VIII	♂	32	38		
» » 24	27	E of Kobbergrundens's brush-buoy. 8 fms.	57°11' 11°18'	Danish »	VIII	♂	31	34	living	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
	1906 Januar 2	30	211 miles E 1/2 N from Spurn L. V. 24 fms.	N 54°49' E 5°50'	English S. T.	X	♀	36	38	sound
	» » 23	82	N of Skagen. 20 fms.	57°46' 10°39'	Dan. Fishingb.	X	♀	31	38.5	
	» Febr. 14	80	At Skagen's L. V. 26 fms.	57°46' 10°45'	» »	XI	♀	33	41	fresh
	» March 7	18	Middelgrundten. 13 fms.		» S. B.	XII	♀	31	33	(mature tail dry)
	» » 7	26	Middelgrundten. 13 fms.		» »	XII	♀	34.5	36	tail dry
1905. March 16.-17. SW of Anholt, Kattgat. 56°32'-56°39' N 11°17'-11°36' E. 15-27 meters. "Thor" St. 344-347. 305 plaice liberated (No. 96-400). "Thor"s marking experiment No. 2 1905.	1904 March 17	187	2 miles S of Anholt. 15 fms.	56°39' 11°37'	Danish S. B.	0	♂	29	29	
	» » 18	210	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	29.5	29.5	
	» » 18	232	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	28	27	
	» » 18	240	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	27.5	27	
	» » 18	244	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	26	26	
	» » 18	249	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♀	30	30.5	
	» » 18	250	6 miles S by W of Anholt Bakken. 14 fms.	56°36, 11°33'	» »	0	♀	28	28	
	» » 18	251	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♀	30	30	
	» » 18	255	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♀	27	26.5	
	» » 18	266	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	28	28	
	» » 18	276	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	31	30.5	
	» » 18	300	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♀	32	31.5	
	» » 18	324	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♂	32.5	32	
	» » 18	329	6 miles S by W of Anholt Bakken. 14 fms.	56°36' 11°33'	» »	0	♀	33.5	33	mature
	» » 19	212	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	27.5	27	
	» » 19	222	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	30.5	30	
	» » 19	224	2 miles S of Anholt. 15 fms.	56°39' 11°36'	» »	0	♀	29.5	30	
	» » 19	230	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	27	26.5	
	» » 19	235	2 miles S of Anholt. 15 fms.	56°39' 11°36'	» »	0	♀	30	30	
	» » 19	238	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26.5	26	
	» » 19	253	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	30	30	
	» » 19	290	6 miles S or S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	29	29	
	» » 19	328	6 miles S or S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29	29	
	» » 19	355	4 miles S of Anholt. 15 fms.	56°37' 11°35'	» »	0	♂	30	30	
	» » 19	367	2 miles S of Anholt. 15 fms.	56°39' 11°36'	» »	0	♂	29	[30]	
	» » 20	177	16 miles S by W of Anholt Light.	56°28' 11°39'	German S. T.	0	♀	29	27	
	» » 21	163	S of Anholt.		Danish S. B.	0	♂	28		
	» » 21	168	Pakhus Bay, 1/2 mile from shore.	56°42' 11°37'	» Fishingb.	0	♂	29	28	
	» » 21	171	6 miles SSW of Anholt.	56°36' 11°32'	» S. B.	0	♂	29	29	
	» » 21	172	S of Sønderbjerg, Anholt.		» »	0	♂	31		
	» » 21	179	S of Sønderbjerg, Anholt.		» »	0	♂	27.5		
	» » 21	182	S of Sønderbjerg, Anholt.		» »	0	♀	31.5		
	» » 21	201	S of Sønderbjerg, Anholt.		» »	0	♂	29		
	» » 21	203	S of Sønderbjerg, Anholt.		» »	0	♂	33.5		
	» » 21	270	S of Sønderbjerg, Anholt.		» »	0	♂	28		
	» » 21	272	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	28	27	
	» » 21	278	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	26	26	
	» » 21	301	S of Anholt. 4 miles from shore. 16 fms.	56°38' 11°37'	» »	0	♂	28	28.5	
	» » 21	315	S of Sønderbjerg, Anholt.		» »	0	♂	28		
	» » 21	319	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	28.5	28	
	» » 21	325	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	30.5	30	
	» » 21	341	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	29	29	
	» » 21	345	S of Sønderbjerg, Anholt.		» »	0	♀	30.5	30	mature
	» » 21	377	S of Sønderbjerg, Anholt.		» »	0	♀	25		mature
	» » 21	381	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26.5	26.5	
	» » 22	237	6 miles SSW of Anholt.	56°36' 11°32'	» »	0	♂	30	29	
	» » 22	271	6 miles SSW of Anholt.	56°36' 11°32'	» »	0	♂	29	28	
	» » 22	281	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29	29	
	» » 22	285	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	28.5	28	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 16-17. SW of Anholt, Kattegat. 56°32'-56°39' N 11°17'-11°36' E. 15-27 meters. "Thor" St. 344-347. 305 plaice liberated (No. 96-400). "Thor's" marking experiment No. 2 1905	1905 March 22	308	6 miles S or SW of Anholt. 14 fms.	N E 56°36' 11°33'	Danish S. B.	0	♂	31	30	
	» » 22	321	Off Anholt.		Dan. Fishingb.	0	♀	32	31	
	» » 22	322	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» S. B.	0	♂	27.5	27	
	» » 22	323	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26.5	26	mature
	» » 22	346	Off Anholt.		» Fishingb.	0	♀	29	29	
	» » 22	391	6 miles S or SW of Anholt. 14 fms.	56°36' 11°33'	» S. B.	0	♂	30	30	
	» » 24	97	2 miles NNW of Anholt. 8 fms.	56°46' 11°36'	» »	0	♀	31	30	
	» » 24	120	2 miles NNW of Anholt. 8 fms.	56°46' 11°36'	» »	0	♂	27	27	
	» » 24	205	SSW of Anholt.		» »	0	♀	30.5	30	
	» » 24	220	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29.5	29	
	» » 24	221	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	28.5	28	
	» » 24	269	SSW of Anholt.		» »	0	♂	30	30	
	» » 24	286	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	25.5	25.5	
	» » 24	293	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26.5	26.5	
	» » 24	306	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29.5	30	
	» » 24	316	SSW of Anholt.		» »	0	♂	30	30	
	» » 24	320	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26	26	
	» » 24	354	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	27	27.5	
	» » 24	370	SSW of Anholt.		» »	0	♂	30.5	30	
	» » 25	282	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	30.5	30	
	» » 25	318	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	28.5	28.5	mature
	» » 25	365	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	28	28	
	» » 25	387	2 miles S of Anholt.	56°39' 11°35'	» Fishingb.	0	♀	28.5	29	
	» » 27	223	6 miles SSW of Anholt.	56°36' 11°32'	» S. B.	0	♂	30.5	30.5	
	» » 27	258	6 miles SSW of Anholt.	56°36' 11°32'	» »	0	♂	31	30	
	» » 28	156	8 miles SE of Anholt. 15 fms.	56°39' 11°53'	» »	0	♀	32	32.5	
	» » 28	159	8 miles SE of Anholt. 15 fms.	56°39' 11°53'	» »	0	♀	32	32	
	» » 28	165	8 miles SE of Anholt. 15 fms.	56°39' 11°53'	» »	0	♀	30	31	
	» » 29	216	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	31.5	31	
	» » 29	234	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	30	29	
	» » 29	263	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29.5	29	
	» » 29	287	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	30	30	
	» » 29	309	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	29	29	
	» » 29	353	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	30.5	30.5	
	» » 29	375	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♀	26	26	mature
	» » 29	392	6 miles S by W of Anholt. 14 fms.	56°36' 11°33'	» »	0	♂	26	26	mature
	» » 31	279	E of Skejnæshage. 10 fms.	56°41' 11°36'	» »	0	♂	30	29	
	» April 1	275	6 miles SSW of Sønderbjerg, Anholt. 12 fms.	56°36' 11°29'	» »	I	♀	30	30	
	» » 1	288	1 mile S of Anholt.	56°40' 11°35'	» Fishingb.	I	♂	29	28	
	» » 1	291	6 miles SSW of Anholt.	56°36' 11°32'	» S. B.	I	♂	29.5	29.5	
	» » 1	298	6 miles SSW of Sønderbjerg, Anholt. 12 fms.	56°36' 11°29'	» »	I	♀	28.5	28.5	
	» » 1	334	6 miles SSW of Sønderbjerg, Anholt. 12 fms.	56°36' 11°29'	» »	I	♂	32	31.5	
» » 1	363	1/2 mile SSW of Anholt.	56°40' 11°34'	» »	I	♀	27.5	28		
» » 1	368	1/2 mile SSW of Anholt.	56°40' 11°34'	» »	I	♀	31	30.5		
» » 2	195	NNE of Anholt.		German S. T.	I	♂	30.5	29		
» » 4	98	2 miles W of Anholt. 8 fms.		Danish S. B.	I	♀	34.5		mature	
» » 4	207	5 miles S by W of Anholt. 14 fms.	56°37' 11°32'	» »	I	♂	29	28.5		
» » 4	213	8 miles W of Anholt. 8 fms.	56°41' 11°18'	» »	I	♀	30.5	30.5		
» » 10	333	6 miles W of Anholt. 14 fms.		» »	I	♂	30	29.5		
» » 10	337	Pakhus Bay. 15 fms.	56°41' 11°42'	» Fishingb.	I	♀	32.5	32.5		
» » 11	190	8 miles SSW of Anholt. 14 fms.	56°35' 11°29'	» S. B.	I	♂	30.5	30		
» » 15	157	Aalborg Bay. E Flak. 12 miles from shore. 7 fm.	57°04' 10°47'	Swedish »	I	♂	30	31		
» » 17	311	8 miles SW of Anholt. 9 fms.	56°36' 11°26'	» Fishingb.	I	♀	29	30.5	somewh. dry	
» » 19	362	Northern Part of Store Middelgrund. 13 fms.	56°38' 12°04'	Danish »	I	♂	31.5	32		
» » 19	267	S of Skagen's Light. 5 fms.	57°43' 10°39'	» »	I	♂	29.5	27	somewh. dry	
» » 19	283	At Helgenæs.	56°05' 10°31'	» S. B.	I	♂	29.5	28.5	somewh. dry	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 16.-17. SW of Anholt, Kattegat. 56°32'-56°39' N 11°17'-11°36' E. 15-27 meters. "Thor" St. 344-347. 305 plaice liberated (No. 96-400). "Thor"'s marking experiment No. 2 1905	1905 April 26	166	6 miles SSW of Anholt.	N E 56°35' 11°32'	Danish S. B.	I	♀	31	31	somewh. dry
	» » 28	374	Off Gerrild Bay.	56°31' 10°57'	» Fishingb.	I	♂	29.5	29.5	mature
	» May 3	132	13 miles NE from Tangen's Light-buoy. 8 fms.	56°50' 11°11'	» S. B.	II	♂	28.5	29	
	» » 3	206	Aalborg Bay. NW of the Light-buoy. 7 fms.	56°46' 10°42'	Swedish »	II	♂	27	27	somewh. dry
	» » 3	274	13 miles NE of Tangen's Light-buoy. 8 fms.	56°50' 11°11'	Danish »	II	♂	28.5	28	
	» » 3	338	13 miles NE of Tangen's Light-buoy. 8 fms.	56°50' 11°11'	» »	II	♀	31	31	
	» » 4	123	Aalborg Bay. 20 miles from shore. 7 fms.		Swedish »	II	♂	24.5	25	
	» » 4	140	Krogøgrund. 15 fms.		Danish »	II	♂	26	26	tail dry
	» » 4	335	N of Skagen's Light. 7 fms.	57°45' 10°38'	» Fishingb.	II	♂	31.5	31	tail dry
	» » 5	101	SE of Hals. 7 fms.	56°54' 10°31'	Swedish S. B.	II	♀	25.5	26	fresh
	» » 5	137	2 miles S from Tangen's Light-buoy.	56°38' 11°00'	Danish »	II	♂	30	30	
	» » 5	148	Aalborg Bay. 16 miles from shore. 7 fms.	56°47' 10°45'	Swedish »	II	♂	25	25.5	
	» » 5	277	Svitringen, SE of Hals. 7 fms.	56°54' 10°31'	» »	II	♂	29	28.5	
	» » 5	310	1/2 mile S of Grenaa Harbour.	56°24' 10°57'	Danish »	II	♂	26	26	
	» » 6	146	4 miles E from Fornæs Light.	56°27' 11°05'	» Fishingb.	II	♂	27.5	28	
	» » 6	397	Off Vinga. 18 fms.	57°37' 11°36'	Swedish S. B.	II	♂	25	24.5	mature
	» » 9	105	3 miles E from Fornæs Light.	56°27' 11°03'	Dan. Fishingb.	II	♂	29	28.5	
	» » 10	399	Aalborg Bay. 20 miles from shore. 7 fms.	56°51' 10°54'	Swedish S. B.	II	♂	27	28	mature
	» » 11	197	20 miles E from Hals. 6 fms.	57°03' 10°55'	» »	II	♀	32	32	
	» » 11	304	16 miles E from Hals. 7 fms.	57°02' 10°49'	» »	II	♀	26.5	27.5	
	» » 14	99	1 mile NE from "Slusen". 4 fms.	56°46' 11°30'	Dan. Fishingb.	II	♀	27.5	26	dry
	» » 17	382	12 miles NE of Staunshoved. 6 fms.	56°43' 10°59'	Swedish S. B.	II	♀	25.5	25.5	mature
	» » 18	117	NW of Anholt. 10 fms.	56°49' 11°11'	Danish »	II	♀	27.5	28	
	» » 18	268	Aalborg Bay, SE of Læsø Rende.		» »	II	♂	29	28	
	» » 19	170	Aalborg Bay. 8 miles NW from the L.-buoy. 5 f.	56°44' 10°50'	Swedish »	II	♂	31	32	
	» » 19	302	Aalborg Bay. NE of the Light-buoy. 8 fms.	56°44' 11°04'	Danish »	II	♂	28.5	28.5	
	» » 20	193	W of Anholt. 10 fms.	56°40' 11°20'	» »	II	♂	25	24.5	
	» » 20	379	W of Anholt. 4 1/2 fms.	56°41' 11°23'	» Fishingb.	II	♂	29.5	31	mature, fresh
	» » 23	106	NW of Anholt. 8 fms.	56°49' 11°17'	» S. B.	II	♀	28	26.5	mature
	» » 24	357	Aalborg Bay. SW of Læsø Rende. 6 fms.	57°11' 10°40'	» Fishingb.	II	♀	29	29.5	
	» » 27	122	4 miles NNE of NW brush-buoy Anholt.	56°53' 11°22'	» S. B.	II	♀	34	34	(mature, tail a little dry
	» » 27	181	Pakhus Bay. 4 miles from shore.	56°40' 11°41'	» »	II	♀	28	28.5	fresh
	» » 27	372	3 miles SE of Grenaa Harbour.	56°23' 11°01'	» Fishingb.	II	♂	27	28	(mature (somewh. dry
	» » 28	160	2 1/2 miles NNE from Ostbakke Light. 4 fms.	56°45' 11°35'	» »	II	♀	31	31.5	a little dry
	» » 28	162	Aalborg Bay. 10 miles NW of the L.-buoy. 8 fms.	56°45' 10°44'	Swedish S. B.	II	♂	33	34.5	
	» » 28	169	9 miles NNW of Anholt Light. 6 1/4 fms.	56°51' 11°29'	Danish »	II	♀	30	31	
	» » 28	194	Aalborg Bay. 8 miles NW from the L.-buoy.	56°44' 10°47'	Swedish »	II	♀	29.5	31	
	» » 29	348	Anholt Light bearing E by S. 4 miles fr. shore.	56°46' 11°32'	Danish »	II	♂	28	29	somewh. dry
	» » 30	185	Anholt Light bear. E by S. 4 m. fr. shore. 5 fms.	56°46' 11°32'	» Fishingb.	II	♂	30.5	30.5	a little dry
	» » 31	142	8 miles NNW from Tangen's Light-buoy.	56°46' 10°51'	» S. B.	II	♀	28	29	
» June 4	389	2 miles E of Skejnæshage. 12-13 fms.	56°41' 11°38'	» Fishingb.	III	♀	31	32	(mature (somewh. dry	
» » 5	330	Off Ebbeløkke, 1 mile from shore.	55°59' 11°30'	» S. B.	III	♂	30			
» » 6	305	8 miles W from Tangen's buoy.	56°44' 10°47'	» Fishingb.	III	♂	29	29.5		
» » 7	118			» »	III	♀	31.5	33		
» » 9	110	NW of Anholt. 7 fms.	56°49' 11°20'	» S. B.	III	♀	36	36.5	(mature	
» » 19	155	2 miles W of Anholt.	56°42' 11°27'	» »	III	♀	34	34	tail dry	
» » 21	228	Store Middelgrund. 15 meters.	56°34' 12°05'	Sw. Fishingb.	III	♀	30.5	29		
» » 27	219	4 miles NW from Tangen's Light-buoy.	56°42' 10°53'	Danish S. B.	III	♀	26.5	30		
» » 29	126	8 miles N from Grenaa. 7 fms.	56°32' 10°58'	Swedish »	III	♀	34.5	36		
» » 29	161	5 miles SE of Anholt. 15 fms.	56°37' 11°39'	Danish »	III	♂	29	29	dry	
» » 29	167	N of Anholt.		» »	III	♂	28	28.5	tail dry	
» » 29	200	4 miles WNW of Anholt, 6 fms.	56°44' 11°21'	» »	III	♀	30	31	fresh	
» » 29	314			» »	III	♂	30.5	33	fresh	
» » 29	383	W of Anholt. 5 fms.	56°42' 11°22'	» »	III	♂	30	35		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1905. March 16.-17. SW of Anholt, Kattegat. 56°32'-56°39' N 11°17'-11°36' E. 15-27 meters. "Thor" St. 344-347. 305 plaice liberated (No. 96-400). "Thor's" marking experiment No. 2 1905	1905 July	1	204	SW of Anholt. 16 fms.	56°35' 11°31'	Danish S. B.	IV	♂	29.5	30.5	tail dry
	» »	2	225	W of NW-Reef, Anholt. 7 fms.	56°45' 11°20'	» »	IV	♀	31	31	dry
	» »	5	214	Nordbjerg, Anholt, bearing ESE. 8 fms.	56°44' 11°19'	» »	IV	♂	26.5	27	tail dry
	» »	10	356	2 miles SE of SW Point of Anholt. 15 fms.	56°40' 11°37'	» »	IV	♀	30.5	33	
	» »	10	164	2 miles S by E of Anholt SW Point. 15 fms.	56°39' 11°33'	» »	IV	♂	29	30.5	mature, fresh
	» »	17	211	8 miles NNE from Anholt Light. 12½ fms.	56°52' 11°43'	Swedish »	IV	♂	27.5	[37]	
	» »	20	196	NW of Anholt. 8 fms.	56°50' 11°18'	Danish »	IV	♀	29	30.5	
	» »	24	109	N of Anholt. 21 meters.	56°48' 11°35'	Sw Fishingb.	IV	♀	33	36	
	» »	24	265	E of Sæby. 11 fms.	57°21' 10°43'	Danish S. B.	IV	♀	27.5	[25.5]	fresh
	» »	26	218	"Pladen", SSW of Anholt.		» »	IV	♀	29	31.5	tail dry
	» »	27	151	4 miles SE from Grenaa Harbour.	56°23' 11°03'	» »	IV	♀	27	28.5	tail dry
	» »	29	192	WNW of Anholt 9 fms.	56°45' 11°18'	» Fishingb.	IV	♂	25	29	tail dry
	» August	1	396	NNE of Nordre Rønner, Læsø. 14 fms.	57°27' 10°57'	» S. B.	V	♂	26.5	26.5	living
	» »	3	369	10 miles WNW of Anholt.	56°45' 11°13'	» »	V	♂	25	25.5	dry
	» »	5	183	NW of Anholt. 9 fms.	56°50' 11°19'	» »	V	♀	34	37.5	immat., fresh
	» »	15	128	10 miles SW of Anholt. 15½ fms.	56°35' 11°30'	Swedish »	V	♀	26	31	mature
	» »	16	108	NNW of Anholt. 10 fms.	56°47' 11°14'	Danish »	V	♂	26		
	» »	19	133	8 miles WNW of Anholt.	56°45' 11°17'	» »	V	♂	32	33.5	
	» »	20	178	N of Anholt. 14 fms.	56°56' 11°38'	» »	V	♀	29	31	fresh
	» »	20	364	NW of Anholt. 6 fms.	56°46' 11°21'	» »	V	♂	30	31	fresh
	» »	28	150	2 miles SW of Anholt. 14 fms.	56°39' 11°35'	» »	V	♀	28	30.5	fresh
	» »	30	127	SE of Anholt. 15 fms.	56°42' 11°44'	» »	V	♀	31.5	31.5	mature
	» »	30	173	W of Anholt.		» »	V	♀	32.5	35.5	living
	» Septbr.	3	297	Tangen. 10 fms.		» »	VI	♂	29	30	dry
	» »	5	388	Anholt Light bearing NE, 8 miles from shore.	56°34' 11°27'	» Fishingb.	VI	♂	29	30.5	rotten
	» »	10	312	Pakhus Bay. 8 fms.	56°42' 11°36'	» S. B.	VI	♂	24	27.5	
	» »	10	385	Pakhus Bay. 8 fms.	56°42' 11°36'	» »	VI	♂	28.5		
	» »	12	102	12 miles N of Anholt.	56°55' 11°30'	» »	VI	♂	31.5	34	tail dry
	» »	16	349	SW of Anholt, 8 miles from shore. 8 fms.	56°36' 11°26'	» »	VI	♂	31	33.5	living
	» »	17	340	6 miles N of Anholt Light. 8 fms.	56°50' 11°37'	» »	VI	♀	26	29	mature
	» »	20	176	S of SW Point, Anholt. 15 fms.	56°38' 11°35'	» »	VI	♀	29.5	30.5	fresh
	» »	25	294	Pakhus Bay. 10 fms.	56°41' 11°36'	» »	VI	♂	30	31	tail dry
	» »	26	96	SW of Anholt. 6 fms.	56°39' 11°28'	» »	VI	♀	31	34	mature, fresh
	» October	9	393	7 miles N of Anholt Light.	56°51' 11°37'	» »	VII	♂	26	30.5	
	» »	14	115	N of Anholt. 20 fms.	56°57' 11°35'	» »	VII	♂	29	35	fresh
	» »	18	124	10 miles W of Anholt. 8 fms.	56°38' 11°15'	» »	VII	♂	28.5	30	tail a little dry
	» »	22	226	12 miles N of Anholt. 8 fms.	56°55' 11°32'	» »	VII	♂	26	26.5	fresh
	» »	26	241	8 miles NW of Anholt. 7 fms.	56°47' 11°18'	» Fishingb.	VII	♀	30.5	34.5	living
	» »		386	S by E of Anholt. 10 fms.	56°41' 11°36'	» S. B.	VII	♂	25	27	
	» Novbr.	1	136	At Middelgrundten. The Sound.	55°44' 12°40'	» »	VIII	♀	38.5		mature
	» »	1	154	SSW of Læsø. 7 fms.	57°02' 10°55'	» »	VIII	♂	32	35.5	living
	» »	12	158	16 miles N of Anholt, 15 fms.	57°00' 11°37'	» »	VIII	♀	33	[31]	
» »	20	112			» »	VIII	♂	27	30		
» »	29	376	4-5 miles E of Græsholm.	57°31' 10°44'	German S. T.	VIII	♂	29	31	mature	
» Dcbr.	5	229	NW of Anholt. 8 fms.	56°49' 11°17'	Danish S. B.	IX	♂	28	37	living	
» »	14	138	Off SW Point, Anholt, 3 miles fr. shore. 12½ fm.	56°38' 11°32'	» »	IX	♀	30	33.5	mature, fresh	
» »	22	339	20 miles SE of Anholt. 16 fms.	56°31' 12°06'	» Fishingb.	IX	♀	35	36.5	mat., living	
» »	29	104	Off Høyen. 10 fms.	57°45' 10°31'	» »	IX	♀	32	38.5		
1906 Febr.	15	116	3 miles S of Anholt. 10 fms.	56°41' 11°41'	» S. B.	XI	♀	27.5	36	fresh	
» »	25	145	53°43' N 3°22' E. 21 fms.	53°43' 3°22'	English S. S.	XI	♂	33	37	mature, fresh	
» March	1	186	15 miles S by W of Anholt.	56°29' 11°38'	German S. T.	XII	♂	35	35		
» »	30	198	5 miles ENE from Fornæs Light.	56°29' 11°05'	Danish S. B.	XII	♂	32.5	35		
» April	1	130	NE of Fornæs. 8½ fms.	56°36' 11°10'	» »	XIII	♂	30	31.5	tail dry	
» »	1	378	NE of Fornæs. 8½ fms.	56°36' 11°10'	» »	XIII	♀	30	37.5	tail dry	
» »	10	326	9 miles NE by E from Fornæs. 9 fms.	56°33' 11°10'	» »	XIII	♀	30	35		
» May	26	380	NE of Hanstholm. 32 fms.		» »	XIV	♂	26.5	36.5	fresh	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
	1905 June 1	264	Aalborg Bay, 20 miles from shore. 6 fms.	N E	Swedish S.B.	XV	♂	28.5	34	
	» » 30	327	3½ miles S of Anholt Light.	56°41' 11°40'	Danish »	XV	♀	29	37	fresh
	» July 27	149	8 miles W of Anholt. 11 fms.	57°42' 11°17'	» »	XVI	♂	24.5	30.5	mature (somewh. dry)
	» August 2	217	10 miles NW of Anholt. 11 fms.	56°47' 11°13'	» »	XVII	♂	28	32	mature (somewh. dry)
1905. March 20. 2 miles W of Spirbakken Bn. Skagerak. 57°42' N 10°23' E. 17 meters. "Thor" St. 349. 200 plaice liberated (No. 401—600). "Thor"'s marking experiment No. 3 1905	1905 March 27	401	Off Skagen's old Light. 8 fms.	57°45' 10°32'	Dan. Fishingb.	0	♂	27	25.5	
	» » 27	436	N of Højen's Light. 15 fms.	57°45' 10°34'	» »	0	♀	28	27	
	» » 27	468	NE of Højen's Light. 7 fms.	57°45' 10°35'	» »	0	♂	26.5	25	
	» » 27	496	N by E of Højen's Light. 27 fms.	57°46' 10°34'	» »	0	♀	26.5	26	
	» » 29	566	Off Tversted. 6 fms.	57°38' 10°10'	» S. B.	0	♂	27	27.5	
	» April 1	493	Off Kandestederne. 4 fms.	57°40' 10°20'	» »	1	♀	28.5	28	
	» » 4	528	N of Skagen's Light. 5 fms.	57°45' 10°37'	» Fishingb.	I	♀	29	28	
	» » 5	534	SE of Skagen, 4 miles from shore.	57°41' 10°43'	» S. B.	I	♂	25.5	25.5	
	» » 6	439	N of Højen's Light. 15 fms.	57°45' 10°34'	» Fishingb.	I	♀	29	29	
	» » 6	502	NW of Skagen's Light. 7 fms.	57°45' 10°37'	» »	I	♀	29	28	
	» » 10	438	½ mile W of Skagen. 5 fms.	57°43' 10°36'	» »	I	♀	29.5	29	
	» » 10	595	NW of Skagen's Light. 7 fms.	57°45' 10°37'	» »	I	♂	31.5	30.5	
	» » 11	565	NW of Skagen's Light. 15 fms.	57°46' 10°35'	» »	I	♀	29.5	28.5	
	» » 15	574	Off Tversted. 9 fms.	57°38' 10°11'	» S. B.	I	♀	28	28	
	» » 20	539	NE of Hirshals. 10 fms.	57°40' 10°04'	» »	I	♀	30.5	31.5	
	» » 24	588	Off Skagen. 5 fms.	57°42' 10°35'	» Fishingb.	I	♀	30	30	
	» » 30	570	NNE of Skagen's Light. 8 fms.	57°45' 10°39'	» »	I	♀	25.5	26.5	a little dry
	» May 1	453	Højen's Whistling-buoy.	57°44' 10°28'	» S. B.	II	♀	28.5	28	
	» » 2	432	4 miles SE of Skagen's Light-ship. 14 fms.	57°43' 10°49'	» »	II	♀	27	27	
	» » 3	526	NE of Højen's Light. 13 fms.	57°46' 10°35'	» Fishingb.	II	♀	30	30.5	
	» » 3	553	24 miles NW of Hirshals. 20 fms.	57°42' 9°09'	» S. B.	II	♂	29	30	
	» » 3	581	SE of Skagen's Light. 5 fms.	57°43' 10°39'	» Fishingb.	II	♂	27	26.5	
	» » 4	513	N of Bulbjerg. 7 fms.	57°12' 9°01'	» S. B.	II	♀	27.5	28	
	» » 4	524	N of Bulbjerg. 8 fms.	57°14' 9°00'	» »	II	♀	28	28.5	
	» » 4	555	N of Højen's Light. 4 fms.	57°45' 10°34'	» Fishingb.	II	♂	24.5	24	tail dry
	» » 4	585	SE of Skagen's Light. 6 fms.	57°43' 10°40'	» »	II	♂	30.5	30	tail dry
	» » 6	495	2 miles W of Hirshals. 1 mile from shore.	57°34' 9°53'	» »	II	♀	29	29	
	» » 6	552	Aalbæk Bay. 8 fms.	» »	» »	II	♂	25.5	25.5	
	» » 9	571	2 miles NW of Hirshals.	57°36' 9°54'	» »	II	♂	27	26.5	
	» » 10	594	Off Hirshals. 10 fms.	57°37' 9°55'	» S. B.	II	♀	31	32	
	» » 11	537	NW of Tversted. 10 fms.	57°40' 10°02'	» »	II	♂	29.5	29.5	
	» » 13	573	NW of Hirshals. 18 fms.	57°40' 9°47'	» »	II	♀	30.5	31.5	
	» » 16	567	Off Tversted Bn. 2 miles from shore. 7 fms.	57°38' 10°10'	» Fishingb.	II	♀	30	31	dry
	» » 16	569	Off Tversted. 10 fms.	57°39' 10°11'	» S. B.	II	♀	29	29	
	» » 17	507	Off Tversted. 4 fms.	57°37' 10°11'	» »	II	♀	23	23.5	
	» » 17	590	Off Tversted, 9 fms.	57°39' 10°09'	» »	II	♀	30	30.5	
	» » 18	532	Off Hirshals.	» »	» Fishingb.	II	♀	29	30	
	» » 23	506	N of Kandestederne. 3 fms.	57°40' 10°21'	» »	II	♀	25.5	26	
	» » 23	558	SE of Hulsig church. 4 fms.	57°38' 10°32'	» »	II	♂	26.5	27	
	» » 25	538	Off Tversted Bn. 6 fms.	57°38' 10°10'	» »	II	♀	24	24	somewh. dry
	» » 29	582	Off Hirshals. 19 fms.	57°41' 9°55'	» S. B.	II	♀	30	32	
	» » 30	561	Off Tversted Bn. 2 miles from shore. 10 fms.	57°38' 10°10'	» »	II	♀	28.5	31	
	» » 30	576	Off Rubjerg Knude. 19 fms.	57°36' 9°29'	» »	II	♀	28	27	
	» » 31	577	12 miles N of Hirshals. 27 fms.	57°46' 9°56'	» »	II	♀	28	27	
	» » 31	578	Off Kandestederne. 3 fms.	57°39' 10°20'	» Fishingb.	II	♀	23.5	21	
	» June 8	430	Off Vesterby, Skagen. 4 fms.	57°43' 10°36'	» »	III	♀	29	28.5	
	» » 10	483	Off Tversted. 7 fms.	57°38' 10°10'	» S. B.	III	♀	27	28.5	
	» » 26	529	Off Tversted. 13 fms.	57°45' 10°14'	» »	III	♀	27	30.5	
	» » 29	512	W of Spirbakken. 3 miles from shore. 17 fms.	57°44' 10°25'	» »	III	♂	23.5	25.5	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery								Remarks	
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size		Ultimate Size
	1905 July 12	560	8 miles N of Læsø. 12 fms.	N 57°27' 10°59' E	Sw. Fishingb.	IV	♂	24	29	
	» » 16	587	NW of Hirshals. 20 fms.	57°39' 9°44'	Danish S. B.	IV	♂	28·5	31	
	» August 1	579	NW of Hirshals. 22 fms.	57°40' 9°43'	» »	V	♀	27	32	living
	» Sept. 23	509	NW of Hirshals. 40 fms.	57°42' 9°51'	» »	VI	♂	23·5	28	
	» Nov. 23	564	E of Rusmandsbanken, NE of Læsø. 13 fms.	57°22' 11°16'	» »	VIII	♀	30·5	37	living
	1906 Jan. 24	504	N of Skagen. 20 fms.	57°46' 10°35'	» Fishingb.	X	♀	30	33·5	fresh
	» » 25	547	NE of Trindelen's Light. 25 fms.	57°30' 11°21'	Swedish S.T.	X	♀	27·5	30	
1905. March 22. Off Bulbjerg—Svinkleven, Skagerak. 57°12'—57°18'N 9°09'—9°17' E. 10—16 meters. 575 Plaice liberated (No. 601—1175). "Thor"s marking experiment No. 4 1905.	1905 March 23	888	Bulbjerg bearing SSW by S. 8 fms.	57°12' 9°03'	Danish S. B.	0	♂	26	26	
	» » 23	981	Bulbjerg bearing SSW by S. 8 fms.	57°12' 9°03'	» »	0	♀	28·5	27	
	» » 23	943	Bulbjerg bearing SSW by S. 8 fms.	57°12' 9°03'	» »	0	♀	27	27	
	» » 23	968	Bulbjerg bearing SSW by S. 8 fms.	57°12' 9°03'	» »	0	♂	26·5	26·5	
	» » 24	642	12 miles NE of Bulbjerg. 11 fms.	57°20' 9°12'	» »	0	♂	27	26·5	
	» » 24	655	NE of Hanstholm. 9 fms.	57°09' 8°38'	» »	0	♀	29·5	29	
	» » 24	691	NE of Hanstholm. 9 fms.	57°09' 8°38'	» »	0	♀	29·5	29	
	» » 24	707	NE of Bulbjerg, 12 miles from shore. 11 fms.	57°21' 9°09'	» »	0	♂	29	29	
	» » 24	756	12 miles NE of Bulbjerg 11 fms.	57°20' 9°12'	» »	0	♀	27·5	27·5	
	» » 24	810	6 miles N of Bulbjerg. 10 fms.	57°15' 8°59'	» »	0	♀	28·5	28	
	» » 24	893	6 miles N of Bulbjerg. 10 fms.	57°15' 8°59'	» »	0	♀	25	24·5	
	» » 24	905	6 miles N of Bulbjerg. 10 fms.	57°15' 8°59'	» »	0	♀	28	28	
	» » 24	952	6 miles N of Bulbjerg. 10 fms.	57°15' 8°59'	» »	0	♀	30	30	
	» » 24	964	6 miles N of Bulbjerg, 10 fms.	57°15' 8°59'	» »	0	♂	26·5	26	
	» » 26	779	8 miles NNE of Bulbjerg. 8 fms.	57°17' 9°07'	» »	0	♂	27	27	
	» » 29	749	Off Bulbjerg. 7 fms.	57°12' 9°02'	» »	0	♂	27	27	
	» » 29	1067	Off Bulbjerg. 7 fms.	57°12' 9°02'	» »	0	♂	27	26·5	
	» » 29	1169	Off Bulbjerg. 7 fms.	57°12' 9°02'	» »	0	♀	28·5	28·5	
	» April 4	763	6 miles NE of Bulbjerg. 9½ fms.	57°15' 9°08'	» »	I	♀	26	26	
	» » 4	1166	6 miles NE of Bulbjerg. 9 fms.	57°14' 9°07'	» »	I	♀	30	29·5	
	» » 10	667	NE of Skagen's Light. 15 fms.	57°46' 10°40'	» Fishingb.	I	♀	26	25·5	
	» » 10	712	N of Skagen's Light. 4 fms.	57°45' 10°38'	» »	I	♂	26	26	
	» » 10	867	N of Skagen's Light. 4 fms.	57°45' 10°38'	» »	I	♂	29·5	29	
	» » 11	1007	S of Skagen. 8 fms.	57°41' 10°37'	» »	I	♂	23·5	23	
	» » 11	1071	NW of Skagen's Light. 7 fms.	57°45' 10°37'	» »	I	♀	26·5	26·5	
	» » 15	780	N of Bulbjerg.	57°13' 9°00'	» S. B.	I	♂	29	28	
	» » 15	816	N of Bulbjerg. 7½ fms.	57°13' 9°00'	» »	I	♀	27·5	26·5	
	» » 15	971	N of Bulbjerg. 7½ fms.	57°13' 9°00'	» »	I	♀	26	26	
	» » 15	994	N of Bulbjerg. 8 fms.	57°14' 9°00'	» »	I	♂	33·5	33	
	» » 15	1141	N of Bulbjerg. 8 fms.	57°14' 9°00'	» »	I	♀	31	31	
	» » 15	1149	Hanstholm Light bearing ENE. 7 fms.	57°05' 8°31'	» »	I	♂	27·5	27	
	» » 18	628	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	28	27·5	
	» » 18	662	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	25·5	25	
	» » 18	840	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	25	24·5	
	» » 18	844	Between Svinkleven and Bulbjerg. 7 fms.	57°16' 9°09'	» »	I	♀	25·5	25·5	
	» » 18	863	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	29·5	28·5	
	» » 18	956	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♀	27	26·5	
	» » 18	1004	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	31	30·5	
	» » 18	1081	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♂	30	29·5	
	» » 18	1024	4 miles N of Bulbjerg. 6½ fms.	57°13' 9°00'	» »	I	♀	27	27	
	» » 19	948	Off Rubjerg. 8 fms.	57°27' 9°43'	» »	I	♂	30·5	29·5	somewh. dry
	» » 20	673	Between Svinkleven and Bulbjerg. 8 fms.	57°17' 9°13'	» »	I	♀	26	25	
	» » 20	788	NNE of Bulbjerg, 6 miles from shore. 8 fms.	57°15' 9°03'	» »	I	♂	29	29·5	
	» » 20	1070	Betw. Svinkleven and Bulbjerg. 8 m. fr. sh. 8 fm.	57°17' 9°13'	» »	I	♂	27	26·5	
	» » 20	1074	Betw. Svinkleven and Bulbjerg. 8 m. fr. sh. 8 fm.	57°17' 9°13'	» »	I	♀	30·5	29·5	
	» » 21	752	NE of Bulbjerg. 9 fms.	57°14' 9°07'	» »	I	♂	30	30·5	
	» » 21	950	NE of Bulbjerg. 9 fms.	57°14' 9°07'	» »	I	♀	27·5	25·5	
	» » 21	636	NE of Bulbjerg, 12 miles from shore. 11 fms.	57°20' 9°12'	» »	I	♂	27	27	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905 March 22. Off Bulbjerg— Svinkleven, Ska- gerak. 57°12'—57°18'N 9°09'—9°17' E. 10—16 meters. 575 Plaice libe- rated (No. 601— 1175). "Thor"s marking experi- ment No 4 1905.	1905 April 26	989	Aalbæk Bay. 8 fms.	N E 57°36' 10°35'	Dan. Fishingb.	I	♀	30	29.5	
	» » 26	1161	Aalbæk Bay. 8 fms.	57°36' 10°35'	» »	I	♀	28	28	
	» » 27	676	Between Svinkleven and Bulbjerg. 8 fms.	57°17' 9°13'	» S.B.	I	♀	27.5	27.5	
	» » 29	783	NE of Højen's Light. 5 fms.	57°45' 10°34'	» Fishingb.	I	♂	30.5	30.5	somewh. dry
	» » 29	1000	NE of Højen's Light. 4 fms.	57°45' 10°34'	» »	I	♂	26	26	a little dry
	» » 29	1050	SW of Skagen's Light. 4 fms.	57°43' 10°37'	» »	I	♂	28.5	28.5	somewh. dry
	» May 1	980	3 miles NE of Hanstholm. 10 fms.	57°10' 8°40'	» S.B.	II	♀	28		
	» » 2	605	NE of Hirshals. 10 fms.	57°39' 10°01'	» »	II	♀	27	25.5	
	» » 2	622	NE of Bulbjerg. 8 fms.	57°14' 9°07'	» »	II	♀	29.5	29	
	» » 2	858	NE of Bulbjerg. 10 fms.	57°21' 9°16'	» »	II	♂	29.5	29	
	» » 2	892	NE of Bulbjerg. 10 fms.	57°21' 9°16'	» »	II	♂	31.5	31	
	» » 2	918	N of Bulbjerg. 11 fms.	57°15' 9°00'	» »	II	♂	28	28.5	
	» » 2	929	NE of Hanstholm. 9 fms.	57°09' 8°38'	» »	II	♀	30	31	
	» » 2	978	NNE of Bulbjerg. 14 miles fr. shore. 12 fms.	57°23' 9°07'	» »	II	♂	28	29.5	
	» » 2	1027	N of Svinkleven. 7 fms.	57°17' 9°18'	» »	II	♀	26	26	
	» » 2	1079	NE of Bulbjerg. 10 fms.	57°21' 9°16'	» »	II	♂	28	27.5	
	» » 2	1096	Vorsaa pr. Asaa.	57°11' 10°33'	» Fishingb.	II	♂	28	27.5	somewh. dry
	» » 2	1103	NNE of Bulbjerg. 8 miles from shore. 12 fms.	57°18' 9°02'	» S.B.	II	♀	28	28	
	» » 2	1140	NE of Bulbjerg. 10 fms.	57°21' 9°16'	» »	II	♂	27.5	27	
	» » 2	1142	NE of Hirshals. 10 fms.	57°38' 10°01'	» »	II	♀	26.5	25.5	
	» » 3	619	NW of Højen's Light. 10 fms.	57°45' 10°32'	» »	II	♂	28	28	
	» » 3	669	Off Bulbjerg. 2 miles from shore. 7 fms.	57°12' 9°02'	» »	II	♀	28	28	
	» » 3	687	NE of Hanstholm. 8 fms.	57°10' 8°40'	» »	II	♀	29.5	29	
	» » 3	727	NE of Hanstholm. 8 fms.	57°10' 8°40'	» »	II	♀	29.5	29	
	» » 3	894	NE of Bulbjerg. 7 fms.	57°13' 9°06'	» »	II	♂	28	28	
	» » 3	935	Off Bulbjerg. 2 miles from shore. 7 fms.	57°12' 9°02'	» »	II	♂	28.5	29	
	» » 3	1056	NE of Hanstholm. 8 fms.	57°10' 8°40'	» »	II	♀	27.5	26.5	
	» » 4	616	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♂	28	28	
	» » 4	809	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♀	28.5	29	
	» » 4	817	NE of Bulbjerg. 7 fms.	57°13' 9°06'	» »	II	♀	30.5	31	
	» » 4	818	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♂	27	26	
	» » 4	849	Off Tversted. 20 fms.	57°43' 10°06'	» »	II	♀	30.5	31	
	» » 4	869	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♀	30	28.5	
	» » 4	902	NE of Bulbjerg. 7 fms.	57°13' 9°06'	» »	II	♀	30.5	31.5	
	» » 4	914	N of Svinkleven. 6 fms.	57°14' 9°15'	» »	II	♀	27.5	28	
	» » 4	953	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♀	29	29	
	» » 4	992	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♀	29	28.5	
	» » 4	1023	NE of Bulbjerg. 7 fms.	57°13' 9°06'	» »	II	♂	29	29	
	» » 4	1037	NE of Bulbjerg. 7 fms.	57°13' 9°06'	» »	II	♀	26	26	
	» » 4	1038	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♂	27	27.5	
	» » 4	1073	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♀	26	25.5	
	» » 4	1135	N of Bulbjerg. 10 fms.	57°15' 9°00'	» »	II	♀	29	28	
	» » 5	769	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♂	29	29.5	
	» » 5	806	6 miles N of Svinkleven. 7 fms.	57°15' 9°17'	» »	II	♀	30	30.5	
	» » 5	820	1¼ mile SW of Løkken. 3 fms.	57°22' 9°40'	» »	II	♂	29.5	29.5	
	» » 5	1121	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♀	29.5	30	
	» » 5	1129	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♀	27.5	28	
	» » 6	675	N of Bulbjerg. 6 fms.	57°11' 9°02'	» »	II	♂	26	27	
	» » 6	682	Off Skiveren, Tversted. 6 fms.	57°38' 10°14'	» »	II	♀	26.5	26	
	» » 6	735	N of Bulbjerg. 8 fms.	57°14' 9°02'	» »	II	♂	28	29	
	» » 6	860	N of Bulbjerg. 6 fms.	57°11' 9°00'	» »	II	♂	27	27.5	
	» » 6	924	N of Bulbjerg. 7 fms.	57°12' 9°01'	» »	II	♀	29	29.5	
	» » 6	944	3 miles SE of Cancer. 7 fms.	55°28' 8°07'	» »	II	♂	27.5	27.5	
	» » 6	946	NE of Bulbjerg. 5 fms.	57°11' 9°03'	» »	II	♂	28	28.5	
	» » 6	1046	ENE of Hanstholm. 12 fms.	» »	» »	II	♀	28.5	28.5	
	» » 7	630	7 miles NE of Hanstholm. 9 fms.	57°12' 8°46'	» »	II	♂	28.5	28	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 22. Off Bulbjerg— Svinkleven, Ska- gerak. 57°12'—57°18'N 9°09'—9°17' E. 10—16 meters. 575 Plaice libe- rated (No. 601— 1175). "Thor"'s marking experi- ment No. 4 1905	1905 May 7	635	12 miles N of Horns Reef Light-ship. 11 fms.	N 55°46'	E 7°19'	Danish S. B.	II	♀	29	28.5	
	» » 7	649	2 miles NE of Hanstholm. 10 fms.	57°09'	8°38'	» »	II	♀	28	29	
	» » 7	793	ENE of Hanstholm. 12 fms.			» »	II	♂	27	27	
	» » 7	883	7 miles NE of Hanstholm. 9 fms.	57°12'	8°46'	» »	II	♂	27	27	
	» » 7	1063	7 miles NE of Hanstholm. 9 fms.	57°12'	8°46'	» »	II	♀	27.5	27	
	» » 10	659	NE of Hanstholm. 10 fms.	57°09'	8°39'	» »	II	♀	28	28.5	
	» » 10	725	N of Svinkleven. 6 fms.	57°15'	9°16'	» »	II	♂	31.5	31.5	
	» » 10	1022	Off Skallerup. 4 fms.	57°30'	9°49'	» »	II	♂	29.5	29	
	» » 10	1042	N of Hanstholm. 12 fms.			» »	II	♀	30	30	
	» » 10	1117	4 miles W by N of Hanstholm.	57°07'	8°29'	» »	II	♀	27	27	
	» » 10	1132	N of Bulbjerg. 8 fms.	57°14'	9°00'	» »	II	♂	29	30	
	» » 10	1153	N of Hirshals.			» »	II	♂	30	30	
	» » 12	617	N of Bulbjerg. 7 fms.	57°12'	9°02'	» »	II	♀	30.5	31.5	
	» » 12	829	NE of Hirshals. 10 fms.	57°40'	10°02'	» »	II	♂	27.5	27.5	
	» » 12	983	N of Hanstholm. 10 fms.	57°08'	8°36'	» »	II	♀	25.5	26	
	» » 12	1162	Off Blokhus. 5 fms.	57°16'	9°33'	» Fishingb.	II	♀	29	28	dry
	» » 12	1170	1 mile NW of Løkken.	57°23'	9°41'	» S. B.	II	♂	29	[26.5]	
	» » 13	873	NW of Skagen's Light. 5 fms.	57°45'	10°36'	» Fishingb.	II	♀	30	30	
	» » 13	887	SE of Skagen's Light. 7 fms.	57°43'	10°39'	» »	II	♀	25	24	
	» » 13	917	NW of Skagen's Light.			» »	II	♀	27.5	[24]	
	» » 13	1108	N of Bulbjerg, 2 miles from shore. 5 fms.	57°11'	9°01'	» S. B.	II	♂	27	28	
	» » 13	1125	4 miles SW of Cancer. 10 fms.	55°24'	7°54'	» »	II	♀	29	29	
	» » 13	1163	NW of Skagen's Light. 4 fms.	57°45'	10°37'	» Fishingb.	II	♂	27.5	28	tail dry
	» » 15	1040	North Sea, off Thyborøn Canal. 3 fms.	56°43'	8°13'	» S. B.	II	♂	25.5		
	» » 16	1006	Hulsig church bearing NW. 6 fms.	57°37'	10°33'	» Fishingb.	II	♀	27	28	
	» » 17	720	S of Skagen's Light. 3 fms.	57°44'	10°38'	» »	II	♀	24.5	22.5	
	» » 18	812	¾ mile NNW of Klitmøller. 4 fms.	57°03'	8°29'	» S. B.	II	♀	28	27	
	» » 20	634	Off Tuskjer, 1 mile from shore.	56°28'	8°05'	» »	II	♀	28.5	30	
	» » 20	702	Off Blokhus. 5 fms.	57°16'	9°33'	» »	II	♀	27	28.5	
	» » 21	632	1 miles NW of Løkken.	57°23'	9°41'	» Fishingb.	II	♀	25.5	26	somewh. dry
	» » 24	877	54°50'N 8°10'E.	54°50'	8°10'	English S. S.	II	♀	30	30.5	sound
	» » 24	1102	2 miles WNW of Ringebjerg. 8 fms.	55°38'	8°02'	Danish S. B.	II	♀	29.5	30.5	
	» » 26	755				Scottish S. S.	II	♂	28	27	sound
» » 26	879	At Hanstholm.			Danish S. B.	II	♀	27	27	a little dry	
» » 26	930	8 miles NW of Blaavand's Light. 8 fms.	55°38'	7°52'	» »	II	♀	30.5	31		
» » 26	1013	2 miles NW of Thorsminde. 6½—7 fms.	56°23'	8°05'	» »	II	♀	31	30.5		
» » 26	1065	At Hanstholm.			» »	II	♀	29	30.5	somewh. dry	
» » 26	1076	At Hanstholm.			» »	II	♀	27	26.5	somewh. dry	
» » 26	1115	At Hanstholm.			» »	II	♂	30.5	30.5	somewh. dry	
» » 27	601	S of Skagen's old church. 8 fms.	57°40'	10°35'	» Fishingb.	II	♀	28	28.5		
» » 27	1112	¾ mile NW of Ringebjerg. 6 fms.	55°39'	8°03'	» S. B.	II	♂	28.5	29		
» » 29	1049	Off Tversted. 3 fms.	57°36'	10°11'	» Fishingb.	II	♀	27.5	27.5		
» » 29	1174	Off the mole of Hirshals.	57°36'	9°58'	» »	II	♀	26	27	somewh. dry	
» » 30	1098	Off Tversted Bn. 2 miles distant.	57°38'	10°10'	» S. B.	II	♂	28	29		
» » 31	640	SSE of Sæby. 5 fms.	57°16'	10°38'	» Fishingb.	II	♂	25.5	25.5		
» » 31	641	Off Blokhus. 6 fms.	57°17'	9°31'	» »	II	♀	28	28.5	dry	
» » 31	772	Off Blokhus. 5 fms.	57°16'	9°33'	» S. B.	II	♂	30.5	32.5		
» » 31	773	Off Blokhus. 5 fms.	57°16'	9°33'	» »	II	♀	29.5	30.5		
» » 31	833	Skagerak, off Tranum. 3 fms.	57°11'	9°24'	» »	II	♂	26.5	28		
» » 31	913	NNE of Hirshals. 30 fms.	57°43'	10°00'	» »	II	♀	29.5	31		
» » 31	961	Off Blokhus. 5 fms.	57°16'	9°33'	» »	II	♂	29	31		
» June 1	901	55°40'N 7°55'E. 7 fms.	55°40'	7°55'	English S. T.	III	♂	25.5	24.5	dried and salted	
» » 2	696	4 miles NW of Slugen N. 8½ fms.			Danish S. B.	III	♂	26.5			
» » 2	716	24 miles NNW of Rubjerg Knude. 19 fms.	57°45'	9°24'	» »	III	♀	29.5	30.5		
» » 2	1145	Off Blokhus. 5 fms.	57°16'	9°33'	» »	III	♂	27	27		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1905. March 22. Off Bulbjerg—Svinkleven, Skagerak.	1905 June	3	633	Off Blokhus. 5 fms.	N 57°16' E 9°33'	Danish S. B.	III	♂	27	27.5	
» » »	» »	3	748	Off Blokhus. 5 fms.	57°16' 9°33'	» »	III	♂	28	29	
» » »	» »	3	949	Off Blokhus, Skagerak. 5 fms.	57°16' 9°33'	» »	III	♂	27.5	27.5	fresh
» » » 57°12'—57°18' N 9°09'—9°17' E.	» »	3	959	12 miles WSW of Graadyb. 10 fms.	55°21' 7°58'	» »	III	♀	26	26	
» » » 10—16 meters.	» »	3	988	N of Svinkleven. 5 fms.	57°12' 9°17'	» »	III	♂	26	26.5	
» » » 575 Plaice liberated (No. 601—1175). "Thor"s marking experiment No. 4 1905.	» »	4	623	55°05' N 7°52' E. 10 fms.	55°05' 7°52'	English S. S.	III	♂	29.5	30	sound
» » »	» »	5	975	55°40' N 7°30' E. 13 fms.	55°40' 7°30'	» S. T.	III	♀	30	30	sound
» » »	» »	7	742	2 miles E of Hirsholmene.	57°30' 10°41'	Dan. Fishingb.	III	♂	25.5	26	
» » »	» »	7	1152	55°43' N 7°30' E. 10 fms.	55°43' 7°30'	English S. T.	III	♀	31	30	(dried and salted)
» » »	» »	8	907	E of Skagen's Light-ship. 22 fms.	57°46' 10°45'	Danish S. B.	III	♂	27	28.5	
» » »	» »	10	1093	NW of Hirshals. 19 fms.	57°40' 9°45'	» »	III	♂	25	26	
» » »	» »	11	1106	2 miles W of Nymindegab. 8 fms.	55°48' 8°07'	» »	III	♀	29.5	30.5	
» » »	» »	15	886	Off Kærgaarde Bn. 8 fms.	55°42' 8°04'	» »	III	♂	29	31.5	
» » »	» »	17	1119	Bulbjerg bearing S by W. 15 fms.	57°30' 9°01'	» Fishingb.	III	♀	27	28.5	
» » »	» »	19	709	6—7 miles NW of Hirshals.	57°39' 9°47'	» S. B.	III	♂	28.5	30.5	
» » »	» »	19	1097	1 mile NW of the NW Reef Light of Læsø. 10 fms.	57°18' 10°44'	» »	III	♂	28	27	
» » »	» »	20	955	» » »	» »	» »	III	♀	28	30	
» » »	» »	20	602	55°45' N 7°31' E. 10 fms.	55°45' 7°31'	English S. T.	III	♂	29.5	30	
» » »	» »	23	1008	S of Skagen, 7 fms.	57°42' 10°37'	Dan. Fishingb.	III	♀	28.5	29	
» » »	» »	24	880	Off Tversted. 8 fms.	57°38' 10°09'	» »	III	♀	29	30.5	
» » »	» »	26	972	Rubjerg Knude bearing SE. 17 fms.	57°38' 9°17'	» »	III	♂	29.5	29	
» » »	» »	27	1118	Off Tversted. 25 fms.	57°43' 10°08'	» S. B.	III	♂	28.5	30	
» » »	» »	28	671	8 miles NW of Hirshals. 25 fms.	57°40' 9°44'	» »	III	♂	28	28	
» » »	» »	28	1017	8 miles NW of Hirshals. 25 fms.	57°40' 9°44'	» Fishingb.	III	♀	31	34	
» » »	» »	28	1048	N of Skagen. 5 fms.	57°45' 10°35'	» »	III	♀	30	31	
» » »	» »	28	1111	56°30' N 7°50' E. 13 fms.	56°30' 7°50'	English S. S.	III	♂	29	32	sound
» » »	» »	29	694	NW of Hirshals. 25 fms.	57°40' 9°44'	Danish S. B.	III	♀	26.5	29	
» » »	» »	29	698	NW of Hirshals. 25 fms.	57°40' 9°44'	» »	III	♀	29	31	
» » »	» »	29	799	16 miles N of Hirshals. 18 fms.	57°49' 9°41'	» »	III	♂	28.5	31.5	
» » »	» »	29	957	S of Skagen's old church. 7 fms.	57°42' 10°36'	» Fishingb.	III	♀	29	28.5	
» » »	» »	29	991	NE of Hanstholm. 30 fms.	» »	» S. B.	III	♀	29.5	31.5	
» » »	» »	30	681	S of Skagen. 6 fms.	57°43' 10°38'	» Fishingb.	III	♂	28	29	
» » »	» »	30	684	SW of Anholt, 4 miles from shore.	56°38' 11°30'	» S. B.	III	♀	29	31.5	fresh
» » »	» »	30	874	NW of Hirshals. 16 fms.	57°38' 9°47'	» »	III	♀	25.5	28.5	
» » »	July	2	762	NW of Hirshals. 18 fms.	57°39' 9°45'	» Fishingb.	IV	♂	29	31.5	
» » »	» »	2	804	N of Bulbjerg. 8 fms.	57°14' 9°00'	» S. B.	IV	♂	30	[27]	
» » »	» »	2	847	N of Bulbjerg. 8 fms.	57°14' 9°00'	» »	IV	♂	26	26.5	
» » »	» »	2	899	NW of Hirshals. 20 fms.	57°39' 9°42'	» »	IV	♀	29.5	31.5	
» » »	» »	2	1113	NW of Hirshals. 18 fms.	57°39' 9°45'	» Fishingb.	IV	♀	29	31.5	
» » »	» »	3	683	4 miles NW of Hirshals. 15 fms.	57°38' 9°50'	» »	IV	♀	26.5	28.5	
» » »	» »	4	717	NW of Rubjerg Knude. 14 fms.	57°38' 9°17'	» S. B.	IV	♂	26	28.5	
» » »	» »	4	757	NE by N of Hanstholm. 20 fms.	57°30' 8°53'	» »	IV	♂	25.5	27	
» » »	» »	4	808	NW of Rubjerg Knude. 14 fms.	57°38' 9°17'	» »	IV	♀	28	31	
» » »	» »	4	1165	NW of Hirshals. 16 fms.	57°37' 9°47'	» »	IV	♀	29	31.5	
» » »	» »	4	1171	NW of Rubjerg Knude. 14 fms.	57°38' 9°17'	» »	IV	♂	25	28	
» » »	» »	6	890	8 miles NNE of Horns Reef Light-ship. 10 1/2 fm.	55°42' 7°22'	» »	IV	♂	29	31	
» » »	» »	11	603	WNW of Hirshals. 18 fms.	57°37' 9°36'	» »	IV	♀	27.5	31	
» » »	» »	11	977	57°28' N 8°30' E. 32 fms.	57°28' 8°30'	English S. T.	IV	♂	27	30.5	sound
» » »	» »	12	1114	At Hanstholm. 24 fms.	» »	Danish S. B.	IV	♀	27.5	31	somewh. dry
» » »	» »	14	648	30 miles NW of Rubjerg Knude. 18 fms.	» »	» »	IV	♀	29.5	33.5	
» » »	» »	15	639	NW of Hirshals. 17 fms.	57°39' 9°48'	» »	IV	♂	26.5	28.5	
» » »	» »	15	674	24 miles W of Hirshals. 18 fms.	57°37' 9°12'	» »	IV	♂	27	30.5	
» » »	» »	15	700	NW of Hirshals. 20 fms.	57°40' 9°45'	» »	IV	♂	28.5	30.5	
» » »	» »	15	713	NW of Hirshals. 17 fms.	57°38' 9°46'	» »	IV	♀	33	33	
» » »	» »	15	719	NW of Hirshals. 17 fms.	57°38' 9°46'	» »	IV	♀	29.5	29.5	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery													
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks			
				N	E									
1905. March 22. Off Bulbjerg— Svinkleven, Skagerak. 57°12'—57°18'N 9°09'—9°17' E. 10—16 meters. 575 Plaice liberated (No. 601—1175). "Thor's" marking experiment No. 4 1905	1905 July	15	787	NW of Hirshals. 19 fms.	57°40'	9°45'	Danish »	IV	♂	28	32			
	»	»	15	800	NW of Hirshals. 14 fms.	57°38'	9°47'	»	»	IV	♀	25.5	30	
	»	»	15	822	NW of Hanstholm. 19 fms.	57°14'	8°16'	»	»	IV	♂	28	32	
	»	»	15	824	NW of Hirshals. 16 fms.	57°39'	9°47'	»	»	IV	♀	26.5	31	
	»	»	15	832	NW of Hirshals. 24 fms.	57°40'	9°43'	»	»	IV	♂	28.5	33	
	»	»	15	836	NW of Hirshals. 21 fms.	57°40'	9°45'	»	»	IV	♂	28	30	
	»	»	15	837	NW of Hirshals. 15 fms.	57°39'	9°49'	»	»	IV	♀	30	33.5	
	»	»	15	911	16 miles NW of Hirshals. 16 fms.	57°44'	9°32'	»	»	IV	♀	28.5	32.5	
	»	»	15	925	NE of Hanstholm. 20 fms.	»	»	»	»	IV	♀	26	28	
	»	»	15	1083	NW of Hirshals. 17 fms.	57°38'	9°47'	»	»	IV	♂	26	28.5	
	»	»	15	1136	NW of Hanstholm. 19 fms.	57°14'	8°16'	»	»	IV	♂	30	32.5	
	»	»	15	1139	NE of Hanstholm. 20 fms.	»	»	»	»	VI	♀	29	30	
	»	»	15	1159	NW of Rubjerg Knude. 14 fms.	57°38'	9°17'	»	»	IV	♀	27	28	
	»	»	16	743	NNE of Hanstholm. 21 fms.	57°27'	8°43'	»	»	IV	♂	29	32.5	
	»	»	16	838	Off Bulbjerg. 19 fms.	57°32'	8°59'	»	»	IV	♂	27.5	31	fresh
	»	»	16	862	NNE of Hanstholm. 28 fms.	57°30'	8°44'	»	»	IV	♂	28	31	
	»	»	16	979	NW of Hirshals. 21 fms.	57°40'	9°44'	»	»	IV	♂	29	32	
	»	»	16	1041	W of Hirshals, 20 miles from shore.	57°31'	9°20'	»	»	IV	♂	26	28	fresh
	»	»	17	777	NW of Hirshals. 20 fms.	57°39'	9°45'	»	»	IV	♂	31	[23.5]	fresh
	»	»	17	997	Off Bulbjerg. 19 fms.	57°32'	8°57'	»	»	IV	♀	25	30	
	»	»	17	891	NW of Rubjerg Knude. 14 fms.	57°38'	9°17'	»	»	IV	♂	29	32	fresh
	»	»	24	706	NW of Hirshals. 16 fms.	57°38'	9°46'	»	»	IV	♀	29.5	33	living
	»	»	24	744	S of Skagen's Light-ship. 14 fms.	57°45'	10°45'	»	»	IV	♂	24	[23.5]	living (tail stunted)
	»	»	24	781	W of Rubjerg Knude. 35 fms.	57°34'	8°51'	»	»	IV	♂	29	36	living
	»	»	24	995	N of Hirshals. 27 fms.	57°41'	9°54'	»	»	IV	♂	28.5	30	salted
	»	»	24	1019	8 miles NW of Hirshals. 20 fms.	57°39'	9°55'	»	»	IV	♀	25	30	fresh
	»	»	25	666	NNE of Hanstholm. 25 fms.	57°29'	8°43'	»	»	IV	♀	29.5	31.5	living
	»	»	25	795	NW of Hirshals. 19 fms.	57°40'	9°45'	»	»	IV	♀	27	30	living
	»	»	25	796	N of Bulbjerg. 18 fms.	57°31'	8°56'	»	»	IV	♂	26.5	31	living
	»	»	26	973	NE of Hanstholm. 16 fms.	57°15'	8°45'	»	»	IV	♀	28	33	fresh
	»	»	28	912	N of Bulbjerg. 18 fms.	57°30'	8°53'	»	»	IV	♂	28	33	living
	»	»	28	1034	NW of Hirshals. 23 fms.	57°40'	9°43'	»	»	IV	♂	28.5	33.5	living
	»	»	31	1003	Off Tversted. 16 fms.	57°43'	10°09'	»	»	IV	♂	30	33.5	fresh
	»	»	»	1068	The Limfjord.	»	»	» Fishingb.	IV	♀	30.5	»	»	
	»	August	2	708	N by E of Hanstholm. 32 fms.	57°28'	8°36'	» S. B.	V	♀	30	34	living	
	»	»	2	790	WNW of Hirshals. 23 fms.	57°38'	9°34'	»	»	V	♂	25.5	28	living
	»	»	2	792	NNW of Hirsholmene. 15 fms.	57°40'	9°50'	»	»	V	♂	27	31	living
	»	»	10	830	E of Hirsholmene. 15 fms.	57°30'	10°42'	»	»	V	♀	25.5	27	living
	»	»	11	936	E of Skagen. 31 fms.	57°48'	10°47'	»	»	V	♂	30	33.5	living
	»	»	12	1087	24 miles NW of Hirshals. 30 fms.	57°46'	9°25'	Dan. Fishingb.	V	♀	27.5	31	»	
»	»	17	920	N of Trindelen. 19 fms.	57°30'	11°15'	» S. B.	V	♂	29	30	living		
»	»	19	722	57°30' N 8°35' E. 36 fms.	57°30'	8°35'	English S. T.	V	♂	26	32.5	»		
»	»	25	942	Off Hirshals. 25 fms.	57°40'	9°47'	Danish S. B.	V	♂	24	27	rotten		
»	»	25	1133	NNE of Hanstholm. 26 fms.	57°29'	8°44'	»	»	V	♂	28	32.5	fresh	
»	»	31	1015	NW of Hirshals. 20 fms.	57°39'	9°45'	»	»	V	♂	27	[25]	rotten	
»	Septbr.	2	985	S of Skagen. 8 fms.	57°42'	10°38'	» Fishingb.	VI	♂	27.5	32	fresh		
»	»	7	612	Off Tversted. 20 fms.	57°43'	10°07'	» S. B.	VI	♀	24.5	33.5	fresh		
»	»	10	746	56°50' N 6°20' E. 28 fms.	56°50'	6°20'	English S. S.	VI	♀	29	33	fresh		
»	»	10	947	Pakhus Bay. 8 fms.	56°42'	11°36'	Danish S. B.	VI	♀	28	»	»		
»	»	13	926	56°40' N 7°00' E. 21 fms.	56°40'	7°00'	English S. T.	VI	♀	28	34	fresh		
»	»	15	850	At Hanstholm.	57°10'	8°30'	»	»	VI	♂	25	29.5	fresh	
»	»	23	625	N of Hanstholm Light, 24 miles fr. shore. 40 fms.	57°29'	8°26'	Danish S. B.	VI	♂	29	34.5	tail dry		
»	»	29	1032	Hanstholm bearing SSW. 30 fms.	57°30'	8°44'	»	»	VI	♀	28.5	34	a little dry	
»	October	15	895	Skagerak, off Skiveren. 4 fms.	57°38'	10°16'	»	»	VII	♀	30	36	fresh	
»	»	30	664	NNW of Skagen. 80 fms.	58°04'	10°13'	German S. S.	VII	♀	29	35	»		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 22. Off Bulbjerg—Svinkleven, Skagerak. 57°12'—57°18' N 9°09'—9°17' E. 10—16 meters. 575 Plaice liberated (No. 601—1175). "Thor's" marking experiment No. 4 1905	1905 Novbr. 9	966	16 miles NNW of Slugen N 12 fms.	N 55°46' E 7°30'	Danish S. B.	VIII	♀	28.5	36.5	
	» Decbr. 9	1105	N of Skagen. 10 fms.	57°45' 10°35'	» Fishingb.	IX	♀	27	39	fresh
	1906 Jan. 9	782	Off Kandestederne. 4 fms.	57°40' 10°21'	» S. B.	X	♀	26.5	31	fresh
	» » 31	922	Skagen's Light-ship.	57°46' 10°44'	» Fishingb.	X	♂	29		
	» Febr. 18	900	56°58' N 6°45' E. 23 fms.	56°58' 6°45'	English S. T.	XI	♀	30	35	(dried and salted)
	» » 27	1130	8 miles E of Skagen. 28 fms	57°47' 10°53'	Swedish S.T.	XI	♂	27.5	33	
	» April 9	606	NW of Hirshals. 17 fms.	57°38' 9°46'	Danish S. B.	XIII	♀	27.5	35.5	living
	» » 30	699	NW of Hirshals. 20 fms.	57°40' 9°45'	» »	XIII	♀	28	36	living
	» » 30	903	16 miles SW of Graadyb. 10 fms.	55°13' 7°58'	» »	XIII	♂	25.5	31.5	
	1905. March 24. 3 miles W of Torupbn., North Sea. 56°58' N 8°18' E. 18 meters. "Thor" St. 354. 40 Plaice liber. (No. 1201—1240). "Thor's" marking experiment No. 5 1905.	1905 March 26	1205	Off Thyborøn Canal. 1 mile from shore.	56°43' 8°11'	Dan. Fishingb.	0	♂	26.5	25
» April 10		1222	2 miles E of Thyborøn Canal.	56°43' 8°14'	» »	I	♀	28.5	27.5	
» » 24		1221	Off Husby. 1/3 mile from shore.	56°11' 8°06'	» »	I	♀	25	25	
» » 27		1224	1 mile S of Cancer. 8 fms.	55°28' 8°03'	» S. B.	I	♂	25.5	25.5	
» May 15		1231	Off Helligsødal, Nissum Bredning.	56°42' 8°18'	» Fishingb.	II	♀	23	24	
» June 7		1203	8 miles WSW of Vyl Light-ship. 10 fms.		» S. B.	III	♀	30.5	31.5	
» » 9		1230	1 mile S of Thyborøn Canal, close to shore. 6 fm.	56°41' 8°10'	» »	III	♂	25.5	27	
» » 11		1238	2 miles W of Nymindegab. 8 fms.	55°47' 8°06'	» »	III	♂	29	30.5	
» » 12		1214	N of Esbjerg Light (?). 7 fms.		» »	III	♂	23	24.5	
» July 13		1224	SW of Bovbjerg. 14 fms.	56°19' 7°54'	» »	IV	♂	29	33.5	
» » 14		1217	20 miles NW of Rubjerg Knude. 18 fms.	57°39' 9°17'	» »	IV	♀	27	29.5	
» » 16		1235	57°20' N 7°30' E.	57°20' 7°30'	English S. T.	IV	♀	31.5	34*	* fide agent
» Aug. 24		1215	57°28' N 8°27' E.	57°28' 8°27'	German S. T.	V	♀	32	35	
1906 Jan. 6		1228	56°10' N 5°30' E. 29 fms.	56°10' 5°30'	English S. T.	X	♂	24	30.5	
1905. March 29. 5 miles N 1/2 W of Hirsholmene, Kattegat. 57°34' N 10°35' E. 16 meters. "Thor" St. 359. 300 Plaice liber. (No. 1241—1540). "Thor's" marking experiment No. 6 1905.	1905 April 1	1241	E of Aalbæk. 8 fms.	57°37' 10°34'	Dan. Fishingb.	I	♂	27.5	27.5	
	» » 1	1253	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	29.5	29	
	» » 1	1256	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	22.5	20	
	» » 1	1260	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	23.5	23	
	» » 1	1264	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	26	25	
	» » 1	1288	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♂	28	27.5	
	» » 1	1300	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♂	22.5	20	
	» » 1	1310	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	24.5	24	
	» » 1	1315	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	25	24	mature
	» » 1	1363	E of Aalbæk. 8 fms.	57°37' 10°34'	» S. B.	I	♂	29.5	29	
	» » 1	1374	E of Hulsig. 6 fms.	57°40' 10°33'	» »	I	♂	32	31	
	» » 4	1246	Off Jerup. 3 fms.	57°33' 10°29'	» Fishingb.	I	♀	26	25.5	
	» » 4	1255	S of Skagen's old church. 7 fms.	57°41' 10°35'	» »	I	♂	22	21.5	
	» » 4	1263	E of Aalbæk. 8 fms.	57°37' 10°34'	» »	I	♀	29.9	29	
	» » 4	1275	S of Skagens old church. 7 fms.	57°41' 10°35'	» »	I	♂	29	27.5	
	» » 4	1289	S of Skagen, off Fyrbakken. 5 fms.	57°43' 10°37'	» »	I	♂	23.5	23	mature
	» » 4	1353	S of Skagen's old church. 5 fms.	57°42' 10°34'	» »	I	♂	22.5	22	
	» » 4	1365	Skagen's old church bearing NE. 4 fms.	57°42' 10°35'	» »	I	♂	25	24.5	
	» » 4	1442	SE of Skagen's old church. 5 fms.	57°42' 10°34'	» »	I	♂	26	25	
	» » 4	1449	Off Jerup. 3 fms.	57°33' 10°29'	» »	I	♀	26.5	26.5	
	» » 4	1454	S of Skagen's old church. 5 fms.	57°42' 10°34'	» »	I	♀	28.5	28	
	» » 4	1491	Skagen's Light bearing NE. 6 fms.	57°42' 10°34'	» »	I	♀	24.5	24	
	» » 5	1282	SW of Skagen's Light. 8 fms.	57°42' 10°36'	» S. B.	I	♀	24	24	
	» » 5	1287	Aalbæk Bay. 6 fms.		» »	I	♂	24.5	24.5	
	» » 5	1291	E of Aalbæk. 8 fms.	57°37' 10°34'	» Fishingb.	I	♀	26.5	26.5	
	» » 5	1331	2 miles S of Skagen. 8 fms.	57°42' 10°37'	» »	I	♂	26	25.5	
	» » 5	1356	Aalbæk Bay. 6 fms.		» S. B.	I	♀	24.5	24	
	» » 5	1386	2 miles S of Skagen. 8 fms.	57°42' 10°37'	» Fishingb.	I	♀	27		(dead and rotten when caught)
» » 5	1404	SW of Skagen's Light. 8 fms.	57°42' 10°36'	» S. B.	I	♂	22.5	22		
» » 5	1420	SW of Skagen's Light. 8 fms.	57°42' 10°36'	» »	I	♂	22		(dead and rotten when caught)	
» » 5	1428	Aalbæk Bay at the Corals. 10 fms.	57°33' 10°36'	» »	I	♀	28.5	28.5		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery											
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks		
1905. March 29. 5 miles N 1/2 W of Hirsholmene, Kattegat. 57°34' N 10°35' E. 16 meters. "Thor" St. 359. 300 Plaice liber. (No. 1241-1540). "Thor's" mark- ing experiment No. 6 1905.	1905 April	5	1531	SW of Skagen's Light. 8 fms.	N E 57°42' 10°36'	Danish S. B.	I	♂	23	22.5		
	"	"	6	1248	S of Skagen's old church. 5 fms.	57°42' 10°34'	" Fishingb.	I	♂	26	25	
	"	"	6	1250	1 mile W of Skagen. 4 fms.	57°42' 10°35'	" "	I	♂	27.5	27	
	"	"	6	1258	Skagen's Light bearing NE. 6 fms.	57°42' 10°35'	" "	I	♀	27	25.5	
	"	"	6	1332	1 mile W of Skagen. 4 fms.	57°42' 10°35'	" "	I	♂	22	21	
	"	"	6	1355	Skagen's Light bearing N by E. 5 fms.	57°43' 10°38'	" "	I	♀	32	31	
	"	"	6	1383	S of Skagen. 6 fms.	57°43' 10°38'	" S. B.	I	♂	25.5	25	
	"	"	6	1430	Aalbæk Bay. 3 fms.	" "	" "	I	♂	32.5	32	
	"	"	6	1445	Skagen's Light bearing SE. 7 fms.	57°45' 10°35'	" Fishingb.	I	♀	30	29	
	"	"	6	1483	Skagen's Light bearing N by E. 6 fms.	57°43' 10°39'	" "	I	♂	29.5	29	
	"	"	7	1330	S of Skagen's old church. 6 fms.	57°42' 10°34'	" "	I	♂	24	23.5	
	"	"	8	1266	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♀	27	27	
	"	"	8	1270	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♀	29	29	
	"	"	8	1301	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♀	30	30	
	"	"	8	1302	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♀	26.5	26.5	
	"	"	8	1347	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♀	26	25.5	
	"	"	8	1354	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♂	29.5	29.5	
	"	"	8	1421	S of Skagen's old church. 8-9 fms.	57°38' 10°36'	" "	I	♂	26	26	
	"	"	8	1468	Hertha's Flak. 13 fms.	" "	" "	I	♀	29.5	29.5	
	"	"	10	1311	S of Skagen's old church. 13 fms.	57°37' 10°40'	" S. B.	I	♀	26.5	26.5	
	"	"	10	1321	" "	" "	" Fishingb.	I	♂	26	25.5	
	"	"	10	1341	S of Skagen. 8 fms.	57°41' 10°36'	" "	I	♂	26	25.5	
	"	"	10	1368	S of Fyrbakken, Skagen. 8 fms.	57°41' 10°39'	" "	I	♂	24.5	23.5	
	"	"	10	1427	Skagen's Light bearing S by E. 6 fms.	57°45' 10°37'	" "	I	♀	28.5	27	
	"	"	10	1447	S of Østerby, Skagen. 7 fms.	57°43' 10°37'	" "	I	♀	27.5	26.5	
	"	"	10	1492	SE of Skagen. 13 fms.	57°42' 10°45'	" S. B.	I	♀	27.5	27	
	"	"	11	1242	Aalbæk Bay. 8 fms.	" "	" Fishingb.	I	♂	30.5	31	
	"	"	11	1318	4 miles N of Hirsholmene. 7 fms.	57°34' 10°34'	" S. B.	I	♀	23.5	23	
	"	"	11	1328	Aalbæk Bay. 8 fms.	" "	" Fishingb.	I	♀	31	31.5	
	"	"	11	1345	1 1/2 mile W of Skagen. 7 fms.	57°41' 10°35'	" "	I	♀	23	22.5	
	"	"	11	1372	S of Skagen's old church. 6 fms.	57°41' 10°34'	" "	I	♀	30	29.5	
	"	"	11	1375	S of Skagen's old church. 6 fms.	57°41' 10°34'	" "	I	♀	25	23.5	
	"	"	11	1407	S of Skagen's old church. 7 fms.	57°41' 10°35'	" "	I	♀	33	32	
	"	"	11	1538	1 1/2 mile W of Skagen. 7 fms.	57°41' 10°35'	" "	I	♀	24	23.5	
	"	"	12	1245	Off Aalbæk. 3 fms.	57°36' 10°27'	" "	I	♂	23	22	
	"	"	12	1459	Off Klitlund. 3 fms.	57°36' 10°27'	" "	I	♀	25.5	24.5	
	"	"	13	1312	NE of Aalbæk. 7 1/2 fms.	57°39' 10°35'	" "	I	♂	25.5	25	
	"	"	18	1450	E of Skagen's Light. 15 fms	57°45' 10°45'	" "	I	♀	30	29	
	"	"	18	1457	Aalbæk Bay. 8 fms.	" "	" "	I	♀	31	31	
	"	"	23	1276	Off Skagen. 5 fms.	57°42' 10°35'	" "	I	♀	26.5	27	
	"	"	24	1479	Off Skagen. 5 fms.	57°42' 10°35'	" "	I	♀	25	24.5	
	"	"	25	1370	S of Skagen's old church. 5 fms.	57°42' 10°34'	" "	I	♀	25	24.5	
"	"	25	1410	S of Skagen's old church. 6 fms.	57°41' 10°34'	" "	I	♀	25	24.5		
"	"	25	1433	SW of Skagen's Light. 6 fms.	57°40' 10°34'	" "	I	♀	25	24.5	somewh. dry	
"	"	26	1443	Aalbæk Bay. 8 fms.	" "	" S. B.	I	♀	24	24		
"	"	27	1249	Aalbæk Bay. 8 fms.	" "	" "	I	♂	26	26		
"	"	27	1279	Aalbæk Bay. 4 fms.	" "	" Fishingb.	I	♀	27.5	27		
"	"	27	1309	Aalbæk Bay. 7 fms.	" "	" "	I	♂	25.5	26		
"	"	27	1346	Aalbæk Bay. 8 fms.	" "	" "	I	♀	29	29.5		
"	"	27	1358	Aalbæk Bay. 7 fms.	" "	" S. B.	I	♂	25.5	26		
"	"	27	1460	Aalbæk Bay. 8 fms.	" "	" Fishingb.	I	♂	28.5	29		
"	"	30	1285	S of Skagen's old church. 5 fms.	57°42' 10°35'	" "	I	♀	29	29	a little dry	
"	"	30	1485	Aalbæk Bay. 7 fms.	" "	" "	I	♂	25	26		
"	May	1	1344	NE of the Flak, Skagen's Light bear. NW. 16 fm.	57°43' 10°51'	" S. B.	II	♂	33	33		
"	"	2	1251	SW of Skagen's Light. 8 fms.	57°41' 10°36'	" "	II	♀	25.5			
"	"	2	1273	Aalbæk Bay. 8 fms.	" "	" Fishingb.	II	♂	26	27		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. March 29. 5 miles N 1/2 W of Hirsholmene, Kattegat. 57°34' N 10°35' E. 16 meters. "Thor" St. 359. 300 Plaice liber. (No. 1241 - 1540). "Thor's" marking experiment No. 6 1905.	1905 May	2	1290 Aalbæk Bay.	N E	Dan. Fishingb.	II	♀	22	22	
	»	2	1342 Aalbæk Bay.		»	II	♂	25	25.5	
	»	2	1466 N of Nordre Rønner, Læsø. 6 fms.	57°24' 10°54'	» S. B.	II	♂	25.5	25.5	
	»	2	1504 Aalbæk Bay. 8 fms.		» Fishingb.	II	♂	26.5	26	
	»	2	1510 Aalbæk Bay. 8 fms.		»	II	♀	30	29.5	
	»	3	1325 Skagen's old church bearing NE. 5 fms.	57°42' 10°35'	»	II	♀	22	22	
	»	3	1362 Aalbæk Bay. 8 fms.		»	II	♀	23	23	
	»	4	1274 SE of Skagen's Light. 6 fms.	57°43' 10°39'	»	II	♂	28.5	29	tail dry
	»	4	1429 Aalbæk Bay, 1 mile from shore. 4 fms.		Swedish S. B.	II	♂	23.5	23.5	
	»	5	1268 S of Skagen. 10 fms.	57°41' 10°39'	Dan. Fishingb.	II	♀	26	26	
	»	5	1340 Hirshalsrende. 10 fms.		» S. B.	II	♂	23	24	
	»	5	1403 Skagen's Light bearing NW. 6 fms.	57°43' 10°39'	» Fishingb.	II	♀	22.5	22	
	»	5	1444 S of Skagen's Light. 6 fms.	57°43' 10°39'	»	II	♀	24	24	
	»	6	1267 Aalbæk Bay. 8 fms.		»	II	♀	27.5	27.5	
	»	6	1283 Aalbæk Bay. 8 fms.		»	II	♀	24.5	25	
	»	6	1295 Aalbæk Bay. 8 fms.		»	II	♀	25	24.5	
	»	6	1303 Aalbæk Bay. 8 fms.		»	II	♀	23	23	
	»	6	1338 Aalbæk Bay. 7 fms.		»	II	♂	30	31	
	»	6	1359 Aalbæk Bay. 11 fms.		»	II	♀	22	21.5	
	»	6	1377 Aalbæk Bay.		»	II	♀	28	29	
	»	6	1381 Aalbæk Bay. 8 fms.		»	II	♂	23.5	24	
	»	10	1257 Aalbæk Bay. 8 fms.		»	II	♂	22	22	
	»	11	1401 S of Skagen. 5 fms.	57°42' 10°35'	»	II	♂	29	29	
	»	13	1308 1 mile N of Græsholmene. 4 fms.	57°31' 10°34'	»	II	♂	24		
	»	13	1306 Aalbæk Bay. 7 fms.		»	II	♀	22.5	23	
	»	13	1348 Skagen's Light bearing SW. 6 fms.	57°45' 10°39'	»	II	♀	29.5	30.5	tail dry
	»	13	1448 Off Bulbjerg. 30 fms.	57°37' 8°59'	»	II	♂	29	28.5	
	»	15	1252 Aalbæk Bay. 8 fms.		»	II	♀	28	28.5	
	»	15	1437 1 mile NW of Løkken.	57°23' 9°41'	»	II	♀	28.5	29.5	tail dry
	»	16	1292 S of Skagen's old church. 10 fms.	57°37' 10°37'	»	II	♀	24.5	25.5	tail dry
	»	16	1297 S of Skagen. 6 fms.	57°42' 10°35'	»	II	♀	27	26.5	tail dry
	»	16	1350 S of Skagen's old church. 10 fms.	57°37' 10°37'	»	II	♀	25.5	26.5	tail dry
	»	16	1418 6 miles NE of Frederikshavn. 6 fms.	57°31' 10°35'	Swedish S. B.	II	♀	28.5	29.5	
	»	17	1243 S of Skagen. 7 fms.	57°41' 10°37'	Dan. Fishingb.	II	♀	26	27	
	»	17	1413 Store Grund, N of Læsø.		»	II	♂	23	24	
	»	17	1532 Store Grund, N of Læsø.		»	II	♂	25.5	23.5	
	»	18	1314 Off Aalbæk. 6 fms.	57°35' 10°32'	»	II	♀	23	23.5	
	»	18	1337 Off Aalbæk. 6 fms.	57°35' 10°32'	»	II	♀	27.5	27.5	
	»	20	1334 Aalbæk Bay. 8 fms.		»	II	♂	26.5	26	
	»	20	1349 Aalbæk Bay. 8 fms.		»	II	♀	25	25	
	»	24	1520 SE of Sæby, 4 fms.	57°18' 10°37'	» S. B.	II	♀	25	24.5	
	»	25	1360 Aalbæk Bay. 8 fms.		» Fishingb.	II	♀	22.5	22	
»	27	1271 Aalbæk Bay. 3 fms.		»	II	♀	28	[25.5]		
»	27	1364 SE brush-buoy, Skagen. 6 fms.	57°44' 10°41'	»	II	♀	26	27.5		
»	27	1494 E of Sæby harbour, 5 miles from shore. 9 fms.	57°21' 10°41'	»	II	♂	29.5	29.5		
»	30	1261 8 miles NE of Frederikshavn. 6 fms.		Swedish S. B.	II	♀	27	27		
»	30	1336 S of Skagen's old church. 8 fms.	57°38' 10°36'	Dan. Fishingb.	II	♂	27	28.5		
»	30	1525 Skagen's Light bearing NE. 8 fms.	57°43' 10°40'	»	II	♂	28	28		
»	June	2	1366 E of Aalbæk. 9 fms.	57°37' 10°36'	»	III	♂	23	23	
»	»	2	1452 E of Aalbæk. 9 fms.	57°37' 10°36'	»	III	♂	24.5	24.5	
»	»	5	1272 NE of Aalbæk. 7 fms.	57°40' 10°35'	»	III	♂	27.5	29.5	
»	»	5	1335 Skagen, off Sandmilen. 6 fms.	57°42' 10°33'	»	III	♂	22.5	24.5	fresh
»	»	5	1387 Skagen, off Sandmilen. 4 fms.	57°42' 10°33'	»	III	♂	25.5	28.5	fresh
»	»	5	1486 At the harbour of Skagen. 5 fms.	57°43' 10°36'	»	III	♀	24	24.5	fresh
»	»	6	1265 Skagen, off Sandmilen. 5 fms.	57°42' 10°33'	»	III	♂	26	26	
»	»	7	1333 Off Hulsig. 8 fms.	57°38' 10°35'	»	III	♂	22	22.5	fresh







Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery										
	Date	Nr. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1905. March 29. 5 miles N 1/2 W of Hirsholmene, Kattegat. 57°34' N 10°35' E. 16 meters. "Thor" St. 359. 300 Plaice liber. (No. 1241—1540). "Thor"s mark- ing experiment No. 6 1905.	1905 June	8	1280	Off Hulsig. 8 fms.	N 57°38' 10°35'	Dan. Fishingb.	III	♀	29	29.5	fresh
	» »	8	1512	S of Skagen. 10 fms.	E 57°41' 10°39'	» »	III	♀	28	29.5	fresh
	» »	9	1296	Skagen, off Sandmilen.	57°42' 10°33'	» »	III	♀	22	[21]	fresh
	» »	9	1497	N of Nordre Rønner, Læsø. 7 fms.	57°24' 10°53'	» »	III	♂	24	23.5	
	» »	13	1343	Off Aalbæk. 9 fms.	57°36' 10°36'	» »	III	♂	24	25	
	» »	17	1269	Off Aalbæk. 9 fms.	57°36' 10°36'	» »	III	♀	26	24.5	
	» »	17	1352	NE of Holmene. 13 fms.	57°36' 10°44'	» »	III	♂	24	25.5	
	» »	20	1391	S of Skagen. 7 fms.	57°41' 10°37'	» »	III	♂	23.5	26	
	» »	26	1293	Off Skagen. 9—10 fms.	57°41' 10°39'	» »	III	♂	24.5	23	
	» »	28	1259	S of Skagen. 5 fms.	57°42' 10°35'	» »	III	♂	22.5	21.5	
	» »	28	1262	Skagen, off Sandmilen. 6 fms.	57°42' 10°33'	» »	III	♀	29.5	29	
	» July	2	1313	E of Aalbæk. 8 fms.	57°37' 10°34'	» S. B.	IV	♀	25	24.5	
	» »	2	1326	S of Skagens Reef, off Stokmilen.	57°43' 10°40'	» Fishingb.	IV	♀	22.5	24	half dry
	» »	3	1284	S of Skagen. 5 fms.	57°42' 10°35'	» »	IV	♂	22.5	24.5	
	» »	3	1320	Aalbæk Bay. 8 fms.	57°42' 10°35'	» »	IV	♀	24	28	
	» »	3	1322	S of Skagen, off Sandmilen. 5 fms.	57°42' 10°33'	» »	IV	♀	23.5	25.5	
	» »	3	1521	57°50' N 10°57' E. 20 fms.	57°50' 10°57'	English S. T.	IV	♀	28.5	28.5	(dried and salted)
	» »	13	1501	Betw. Skagen and Hirsholmene. 6 m. fr. sh. 12 f.	57°36' 10°40'	Swedish S. B.	IV	♂	28	30	
	» »	18	1446	S of Skagen. 6 fms.	57°42' 10°35'	Dan. Fishingb.	IV	♂	24.5	27	fresh
	» »	31	1477	2 miles E of Trindelen's Light-ship. 22 fms.	57°26' 11°20'	» S. B.	IV	♂	29.5	29.5	fresh
	» August	1	1247	N of Kandestederne. 6 fms.	57°41' 10°23'	» Fishingb.	V	♀	22.5	23	half dry
	» »	2	1351	NE of Aalbæk.	57°41' 10°23'	» »	V	♀	27	27.5	fresh
	» »	7	1319	NW of Skagen's Light. 13 fms.	57°45' 10°34'	» S. B.	V	♂	24	[23]	living
	» »	17	1500	6 miles SE of Skagen. 13 fms.	57°40' 10°47'	Swedish »	V	♂	24.5	23.5	
	» Octbr.	4	1307	Off Kandestederne. 4 fms.	57°41' 10°23'	Danish »	VII	♀	23	29	fresh
	1906 Jan.	1	1498	S of Knallen's brush-buoy, Læsø.	57°18' 11°16'	» Fishingb.	X	♂	30	34.5	living
	» »	15	1299	N of Skagen. 25 fms.	57°46' 10°35'	» »	X	♀	29.5	33	fresh
	» May	20	1294	NW of Blokhus. 6 fms.	57°17' 9°31'	» S. B.	XIV	♂	23	26.5	
1905. April 1. 12 miles SSE of Hals Light-ship, Kattegat. 56°48' N 10°35' E. 9 meters. "Thor" St. 361. 100 Plaice liber. (No. 1541—1640). "Thor"s mark- ing experiment No. 7 1905.	1905 April	15	1544	"Havdyb" S of Limfjord.	56°58' 10°21'	Dan. Fishingb.	0	♀	33	31	dry
	» May	5	1589	Aalbæk Bay. 7 fms.	56°58' 10°36'	» »	I	♀	23.5	26	
	» »	26	1621	8 miles E of Hals. 7 fms.	56°58' 10°36'	Swedish S. B.	I	♂	22	23	
	» June	3	1596	Aalborg Bay. 7 fms.	56°49' 10°58'	» »	II	♀	23.5	23.5	
	» »	6	1605	Aalborg Bay, 24 m. SW of Kobbergrund. 7 1/2 f.	56°49' 10°58'	» »	II	♀	27.5	30	
	» »	7	1620	Aalborg Bay. 7 1/2 fms.	56°49' 10°58'	» »	II	♀	24	25	
	» »	7	1638	Aalborg Bay. 7 1/2 fms.	56°49' 10°58'	» »	II	♀	27.5	28	
	» »	8	1573	12 miles NW from Tangen's Light-buoy. 7 1/2 f.	56°46' 10°41'	» »	II	♀	25.5	27	
	» »	15	1568	Aalborg Bay, 16 miles from shore. 7 1/2 fms.	56°50' 10°48'	» »	II	♂	26.5	28.5	
	» »	15	1634	Aalborg Bay, 16 miles from shore. 7 fms.	56°49' 10°48'	» »	II	♂	27	28	
	» »	16	1630	8 miles N of Læsø. 14 fms.	57°27' 11°03'	» »	II	♂	23.5	25.5	
	» »	29	1565	4 miles N of Grenaa. 7 fms.	56°29' 10°58'	» »	II	♂	23.5	25	
	» »	29	1625	4 miles N of Grenaa. 7 fms.	56°29' 10°58'	» »	II	♂	24	27.5	
	» July	5	1588	Aalborg Bay, 12 miles from shore 7 fms.	56°47' 10°40'	» »	III	♀	25	29.5	
	» »	9	1623	12 miles N of Staunshoved.	56°44' 10°43'	Danish »	III	♂	26.5	29	somehw. dry
	» »	11	1598	Aalborg Bay. 7 fms.	56°44' 10°43'	Swedish »	III	♂	23.5	26	
	» »	11	1613	Aalborg Bay. 7 fms.	56°44' 10°43'	» »	III	♀	26	28.5	
	» »	13	1583	Aalborg Bay. 7 1/2 fms.	56°44' 10°43'	» »	III	♀	23.5	26.5	
	» »	28	1567	8 miles NW of Anholt. 9 fms.	56°47' 11°18'	» »	III	♀	27	30	
	» »	28	1571	E of Sæby. 10 fms.	57°21' 10°43'	Danish »	III	♀	27	31.5	fresh
	» »	28	1584	6 miles NE of Tangen's Light-buoy.	56°45' 11°05'	» »	III	♀	26	30	
	» »	28	1614	S of the NW Reef, Læsø. 15 fms.	57°16' 10°46'	» »	III	♀	29	31	fresh
	» August	2	1563	Store Kobbergrund. 9 fms.	57°11' 11°19'	Swedish »	IV	♀	27	32.5	
	» »	8	1627	E of Læsø. 8 fms.	57°18' 11°15'	Danish »	IV	♂	26.5	30	living
	» »	10	1622	Skagen's Light bearing SW. 15 fms.	57°46' 10°41'	» »	IV	♂	28	31.5	fresh
	» »	11	1570	Anholt Light bearing ESE. 10 fms.	56°47' 11°14'	» »	IV	♀	23.5	25.5	dry



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. April 1. 12 miles SSE of Hals Light-ship, Kattegat. 56°48' N 10°35' E. 9 meters. "Thor" St. 361. 100 Plaice liber. (No. 1541-1640). "Thor's" marking experiment No. 7 1905.	1905 Aug. 13	1600	Aalborg Bay. 6 fms.	N	E	Danish S. B.	IV	♀	25	25	
	» » 14	1629	W of Nordbjerg, Anholt, 6 miles fr. shore. 9 fm.	56°42'	11°18'	» »	IV	♀	22.5	27	tail dry
	» » 17	1618	12 miles NW of Anholt. 9 fms.	56°49'	11°13'	» »	IV	♂	24.5	25	dry
	» » 20	1580	Outermost buoy, NW Reef, Anholt. 10 fms.	56°48'	11°21'	» »	IV	♀	24.5	26	somewh. dry
	» » 25	1590	2 m. NE of the outerm. buoy, NW Reef, Anh. 9 fm.	56°50'	11°21'	» »	IV	♀	26.5	29.5	dry
	» Sept. 1	1592	8 miles SW of Anholt. 14 fms.	56°34'	11°28'	» »	V	♀	32		
	» » 14	1615	Skagen's Light bearing SE. 10 fms.	57°45'	10°35'	» Fishingb.	V	♀	25	31	fresh
	» » 14	1603	8 miles W of Anholt.	56°41'	11°18'	» S. B.	V	♀	26.5	29	dry
	» » 21	1636	NNW of Anholt. 7 fms.	56°54'	11°23'	» »	V	♀	27.5	[21.5]	fresh
	» » 22	1611	16 miles S of Læsø Rende Light-ship. 6½ fms.	56°58'	10°49'	» »	V	♀	24.5	32	fresh
	» Octbr. 12	1635	8 miles E of Hirsholmene. 14 fms.	57°35'	10°49'	» »	VI	♀	30	33	fresh
	» » 12	1561	SE of Hals. 7 fms.	56°54'	10°31'	» »	VI	♀	22.5	28.5	fresh
	» »	1637	S by W of Kobbergrund. 10 fms.	57°04'	11°28'	» »	VI	♂	26	31	
	» Novbr. 9	1566	Off Højen. 6 fms.	57°44'	10°30'	» Fishingb.	VII	♀	33	35.5	fresh
	1906 Jan. 6	1579	N of Skagen. 8 fms.	57°45'	10°37'	» »	IX	♀	26	33.5	fresh
	» » 25	1604	6 miles SSW of Anholt Light.	56°39'	11°37'	German S. T.	IX	♀	23.5	30	fresh
	» » 27	1569	N of Skagen. 15 fms.	57°46'	10°37'	Dan. Fishingb.	IX	♂	25.5	30.5	fresh
	» » 28	1631	8 miles SW of Anholt. 13 fms.	56°35'	11°25'	Danish S. B.	IX	♀	23.5	28	(mature fresh)
	» Febr. 15	1608	8 miles NW of Lysegrund.	56°23'	11°36'	» »	X	♀	23.5	30	
	» » 18	1624	Off Højen. 3 fms.	57°44'	10°30'	» Fishingb.	X	♂	25.5	31.5	fresh
» March 17	1617	Anholt bearing N by W. 10 miles distant.	56°34'	11°47'	German S. S.	XI	♀	23.5	27		
» April 2	1616	6 miles SW of Anholt. 14 fms.	56°35'	11°30'	Dan. Fishingb.	XII	♀	25	33.5	fresh	
» » 25	1602	W of Læsø harbour. 5 fms.	57°19'	10°48'	Danish S. B.	XII	♀	26.5	35.5		
» June 16	1595	Aalborg Bay, 16 miles from shore. 7 fms.	56°49'	10°48'	Swedish »	XIV	♀	22	28.5		
1905. April 15. 8 miles SSW of Blaavands Point, North Sea. 55°26' N 8°02' E. 14 meters. "Thor" St. 381. 200 Plaice liber. (No. 1641-1840). "Thor's" marking experiment No. 8 1905.	1905 April 17	1641	2 miles SSW of Cancer. 9 fms.	55°26'	8°02'	Danish S. B.	0	♂	27.5	27.5	
	» » 17	1652	2 miles SSW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	23	22.5	
	» » 17	1666	½ mile SSW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	26	26	
	» » 17	1677	2 miles SW of Cancer. 8 fms.	55°26'	8°02'	» »	0	♂	23.5	23.5	
	» » 17	1690	2 miles SSW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	26	25.5	
	» » 17	1692	2 miles SW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♀	27	27	
	» » 17	1700	2 miles SW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	27.5	27.5	
	» » 17	1708	2 miles SW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	24	24	
	» » 17	1733	3 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	26	25.5	
	» » 17	1755	2 miles SW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♀	25.5	25.5	
	» » 17	1835	3 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	24	23	
	» » 18	1647	1 mile SW of Cancer. 6 fms.	55°28'	8°01'	» »	0	♂	25	25	
	» » 18	1653	2 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	27	27	
	» » 18	1793	1 mile SW of Cancer. 6 fms.	55°28'	8°01'	» »	0	♀	23	23	
	» » 18	1815	1 mile SW of Cancer. 6 fms.	55°28'	8°01'	» »	0	♂	29	28.5	
	» » 19	1665	2 miles WNW of Graadeep. 7½ fms.	55°26'	8°11'	» »	0	♂	25	24	
	» » 19	1669	2 miles WNW of Graadeep. 7½ fms.	55°26'	8°11'	» »	0	♂	27	27	
	» » 19	1717	2 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	28	27.5	
	» » 19	1720	2 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	25	25	
	» » 19	1735	4 miles ESE of Cancer. 7 fms.	55°28'	8°08'	» »	0	♀	24	23.5	
	» » 19	1751	2 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	26.5	26	
	» » 19	1803	2 miles WNW of Graadeep. 7½ fms.	55°26'	8°10'	» »	0	♀	26.5	26.5	
	» » 20	1645	1 mile S of Cancer. 8 fms.	55°26'	8°02'	» »	0	♀	27.5	27	
	» » 20	1646	2 miles SSW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♀	26	25.5	
	» » 20	1650	1 mile S of Cancer. 8 fms.	55°26'	8°02'	» »	0	♀	25	24.5	
	» » 20	1660	¼ mile SSW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	25.5	25	
	» » 20	1709	3 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	27	26.5	
	» » 20	1712	2 miles SSW of Cancer. 9 fms.	55°26'	8°02'	» »	0	♂	25	24.5	
	» » 20	1716	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	» »	0	♀	27.5	27	
	» » 20	1718	1 mile NE of Vyl Light-ship. 12 fms.	55°25'	7°46'	» »	0	♂	26	25.5	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery											
	Date	No on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1905. April 15. 8 miles SSW of Blaavands Point, North Sea. 55°26'N 8°02'E. 14 meters. "Thor" St. 381. 200 Plaice liber. (No. 1641-1840). "Thor"'s marking experiment No. 8 1905.	1905 April	20	1744	2 miles E of Vyl Light-ship. 8 fms.	N 55°24'	E 7°54'	Danish S. B.	0	♂	24.5	23.5	
	»	»	20	1760	4 miles WSW of Graadeep. 8 fms.	55°24'	8°09'	»	♀	24	24	
	»	»	20	1806	1 mile SSW of Cancer. 7 fms.	55°26'	8°02'	»	♀	27	27	
	»	»	20	1819	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	26.5	26.5	
	»	»	21	1648	1 mile SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	25.5	25	
	»	»	21	1817	1 mile SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	25.5	24.5	
	»	»	22	1672	3/4 mile N by E of Graadeep. 6 fms.	55°27'	8°13'	»	♀	28	28	
	»	»	27	1729	4 miles SW of Blaavand. 8 fms.	55°30'	8°03'	»	♀	26	26	
	»	»	27	1730	2 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	29.5	30	
	»	»	27	1732	4 1/2 miles W by N of Vyl Light-ship. 11 fms.	55°24'	7°37'	»	♀	25	25	
	»	»	27	1736	1 mile S of Cancer. 7 fms.	55°26'	8°02'	»	♀	27.5	27.5	
	»	»	27	1742	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	27	27.5	
	»	»	27	1745	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	25.5	25	
	»	»	27	1752	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	23	22.5	
	»	»	27	1771	1 mile S of Cancer. 8 fms.	55°26'	8°02'	»	♀	25	25	
	»	»	27	1772	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	27.5	27	
	»	»	27	1790	4 1/2 miles W by N of Vyl Light-ship. 11 fms.	55°24'	7°37'	»	♀	24	24	
	»	»	27	1792	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	27	26.5	
	»	»	27	1822	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	23.5	23	
	»	»	28	1667	2 miles S of Cancer. 7 fms.	55°26'	8°02'	»	♀	26		
	»	»	28	1680	1 mile SW of Cancer. 7 1/2 fms.	55°26'	8°02'	»	♀	29	28.5	
	»	»	28	1688	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	26	25.5	
	»	»	28	1713	1 mile SE of Vyl buoy. 9 fms.	55°26'	7°52'	»	♀	27.5	27	
	»	»	28	1721	1 mile SW of Cancer. 7 1/2 fms.	55°26'	8°02'	»	♀	24.5	24	
	»	»	28	1738	1 mile SW of Cancer. 7 1/2 fms.	55°26'	8°02'	»	♀	26	25.5	
	»	»	28	1740	3 miles S of Cancer. 7 1/2 fms.	55°26'	8°02'	»	♀	25	25	
	»	»	28	1768	4 miles SW of Cancer. 9 fms.	55°26'	8°02'	»	♀	23.5	22.5	
	»	»	28	1787	3 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	25	24.5	
	»	»	28	1791	6 miles SW of Blaavand. 8 fms.	55°30'	7°57'	»	♀	25.5	25.5	
	»	»	28	1811	3 miles WNW of Slugen N. 6 1/2 fms.	55°35'	7°43'	»	♀	24	23.5	
	»	»	28	1823	2 miles S of Cancer. 7 fms.	55°26'	8°02'	»	♀	30	29.5	
	»	»	28	1824	1 mile SE of Vyl buoy. 9 fms.	55°26'	7°52'	»	♀	27.5	27	
	»	»	30	1748	2 miles NW of Slugen N. 8 fms.	55°36'	7°46'	»	♀	25	24.5	
	»	May	1	1773	1 mile SW of Cancer. 7 fms.	55°26'	8°02'	»	♀	27	25.5	
	»	»	3	1663	1 mile NW of Slugen N. 9 fms.	55°35'	7°46'	»	♀	25	25	
	»	»	3	1821	1 mile NW of Slugen N. 9 fms.	55°35'	7°46'	»	♀	25	25	
	»	»	5	1643	4 miles NW of Slugen N. 7 fms.	55°36'	7°44'	»	♀	28	28	
	»	»	5	1664	10 miles NW of Blaavands Point. 8 fms.	55°39'	7°50'	»	♀	23	23	
	»	»	6	1676	4 miles S of Vyl Light-ship 10 1/2 fms.	55°20'	7°47'	»	♀	29.5	29.5	
	»	»	6	1784	1 mile SE of Cancer. 6 fms.	55°29'	8°03'	»	♀	25	23.5	
	»	»	8	1788	1 mile W of Slugen N. 8 fms.	55°34'	7°46'	»	♀	25	24.5	
	»	»	8	1830	1 mile S of Cancer. 8 fms.	55°26'	8°02'	»	♀	26.5	26.5	
»	»	9	1825	1 mile NE of Cancer. 5 fms.	55°30'	8°03'	»	♀	24	24		
»	»	11	1642	4 miles N of Blaavands Point. 4 fms.	55°36'	8°03'	»	♀	23	22.5		
»	»	11	1685	2 miles NE of Cancer. 6 fms.	55°30'	8°04'	»	♀	25.5	28		
»	»	11	1794	2 miles SW of Cancer. 8 fms.	55°26'	8°02'	»	♀	24	23.5		
»	»	12	1774	1 mile S of Cancer. 8 fms.	55°26'	8°02'	»	♀	24	23		
»	»	12	1834	12 miles NW of Cancer. 8 fms.	55°36'	7°44'	»	♀	26	26.5		
»	»	12	1839	4 miles SW of Cancer. 7 fms.	55°26'	8°02'	»	♀	23.5	23		
»	»	13	1826	2 miles NW of Graadeep. 7 1/2 fms.	55°26'	8°11'	»	♀	25.5	25		
»	»	14	1813	1 mile SW of Horns Reef. 18 fms.	55°33'	7°18'	»	♀	25	25		
»	»	15	1777	5 miles SE of Cancer. 7 1/2 fms.	55°26'	8°09'	»	♀	26.5	27		
»	»	16	1724	14 miles NE of Horns Reef. 10 fms.	55°47'	7°30'	»	♀	26.5	26.5		
»	»	16	1726	1/2 mile E of Vyl buoy. 5 fms.	55°27'	7°51'	»	♀	27	29.5		
»	»	16	1809	3 miles WSW of the Graadeep bell-buoy. 8 1/2 fm.	55°23'	8°14'	»	♀	28	28		
»	»	17	1722	5 miles SE of Cancer. 7 1/2 fms.	55°26'	8°09'	»	♀	26	26		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery									
	Date	No. on Label	Locality reported	Central Position (Approximately)	Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
1905. April 15. 8 miles SSW of Blaavands Point, North Sea. 55°26' N 8°02' E. 14 meters. "Thor" St. 381. 200 Plaice liber. (No. 1641—1840). "Thor's" marking experiment No. 8 1905.	1905 May 17	1810	10 miles NW of Slugen. 11 fms.	N 55°40' E 7°32'	Danish S. B.	I	♂	29.5	29.5	
	» » 17	1831	6 miles NW of Cancer. 7 fms.	55°32' 7°53'	» »	I	♂	24.5	24	
	» » 18	1702	2 miles SE of Cancer. 7½ fms.	55°28' 8°04'	» »	I	♀	27.5	27	
	» » 19	1741	55°26½' N 7°27½' E. 9 fms.	55°26½' 7°27½'	English S. S.	I	♀	24.5	25	sound
	» » 24	1675	2 miles WSW of Graadeep bell-buoy. 8 fms.	55°24' 8°14'	Danish S. B.	I	♀	28.5	29.5	
	» » 24	1715	8 miles NW of Slugen N. 8 fms.	55°38' 7°36'	» »	I	♂	24	24	
	» » 24	1746	55°40' N 6°33' E. 10 fms.	55°40' 6°33'	English S. T.	I	♂	24	24.5	sound
	» » 27	1840	3 miles NW of Ringebjerg. 6 fms.	55°38' 8°03'	Danish S. B.	I	♂	25.5	25.5	
	» » 29	1725	NW of Ringebjerg. 6 fms.	55°38' 8°03'	» »	I	♀	25.5	27	
	» » 29	1828	8 miles NW of Slugen N. 10 fms.	55°39' 7°32'	» »	I	♂	25	25	
	» » 30	1698	1 mile W of Kærgaarde. 4 fms.	55°42' 8°08'	» »	I	♂	23	24.5	
	» » 30	1707	1 mile W of Kærgaarde. 4½ fms.	55°41' 8°07'	» »	I	♀	29	29.5	
	» » 30	1789	54°56' N 7°39' E. 11 fms.	54°56' 7°39'	English S. T.	I	♂	24	25	sound
	» » 31	1655	55°15' N 8°00' E. 10 fms.	55°15' 8°00'	» »	I	♀	29	29	dried and salted
	» » 31	1770	4 miles ENE of Vyl Light-ship. 10 fms.	55°26' 7°51'	Danish S. B.	I	♂	23.5	23.5	
	» June 1	1836	4 miles E of Vyl Light-ship. 9 fms.	55°25' 7°51'	» »	II	♂	29.5	31.5	
	» » 3	1749	Vyl Light-ship.	55°24' 7°45'	English S. S.	II	♂	24	25	sound
	» » 4	1719	3 miles SE of Vyl Light-ship. 10½ fms.	55°22' 7°49'	Danish S. B.	II	♀	23.5	23.5	
	» » 4	1779	3 miles SE of Vyl Light-ship. 10 fms.	55°21' 7°50'	» »	II	♂	24	25	
	» » 4	1827	55°22' N 7°47½' E. 10 fms.	55°22' 7°47½'	English S. T.	II	♀	28	26	dried and salted
	» » 5	1689	2 miles WSW of Vyl Light-ship. 10 fms.	55°22' 7°44'	Danish S. B.	II	♂	29	30	
	» » 5	1747	55°25' N 7°50' E. 9 fms.	55°25' 7°50'	English S. T.	II	♀	25.5	24.5	dried and salted
	» » 5	1778	2 miles WSW of Vyl Light-ship. 10 fms.		Danish S. B.	II	♀	27	28	
	» » 9	1723	4 miles N of Vyl Light-ship. 5 fms.	55°28' 7°46'	» »	II	♀	27.5	27.5	
	» » 10	1662	¼ mile SE of Slugen N. 11 fms.	55°34' 7°48'	» »	II	♀	27	27	
	» » 11	1756	10 miles NW of Slugen N. 10 fms.	55°43' 7°40'	» »	II	♂	24	25.5	
	» » 15	1780	1 mile N by E of Slugen N. 7 fms.	55°34' 7°47'	» »	II	♀	25	26	
	» » 16	1797	7 miles W of Blaabjerg. 8 fms.	55°43' 8°03'	» »	II	♂	24	25	
	» » 16	1818	5 miles WNW of Aargab. 10 fms.	56°00' 8°03'	» »	II	♂	25	25	
	» » 18	1727	2 miles W of Kærgaarde. 6½ fms.	55°41' 8°06'	» »	II	♀	26	27.5	
	» » 26	1679	4 miles S of Vyl Light-ship. 8 fms.		» »	II	♀	25.5	27.5	
	» » 27	1795	55°32' N 7°27½' E. 12 fms.	55°32' 7°27½'	English S. S.	II	♂	26.5	28.5	sound
	» July 1	1767	8 miles NNE of Horns Reef Light-ship. 10½ fms.	55°41' 7°25'	Danish S. B.	III	♀	23.5		
	» » 6	1644	20 miles SW of Vyl Light-ship. 15 fms.	55°06' 7°26'	» »	III	♀	26	30	
	» » 6	1694	8 miles SW of Horns Reef Light-ship. 14 fms.	55°27' 7°12'	» »	III	♀	24	26.5	
	» » 6	1728	8 miles WSW of Horns Reef Light-ship. 15 fms.	55°29' 7°08'	» »	III	♀	25	28	
	» » 6	1731	55°00' N 7°50' E. 11 fms.	55°00' 7°50'	» »	III	♂	27		
	» » 10	1781	21 miles WNW of Blaavands Point. 15 fms.	55°48' 7°22'	» »	III	♂	26	30.5	
	» » 10	1798	8 miles NW of Blaabjerg. 11 fms.	55°50' 8°00'	» »	III	♂	23	27	
	» » 11	1711	10 miles W of Nymindegab. 12 fms.	55°47' 7°52'	» »	III	♀	23	28	
	» » 11	1753	14 miles N by W of Blaavand. 10 fms.	55°46' 7°56'	» »	III	♀	24.5	28.5	
	» » 12	1695	NNW of Helgoland. 85 miles distant.	55°25' 6°38'	German S. S.	III	♂	29	32	
» » 17	1649	24 miles N of Slugen. 13 fms.	55°56' 7°38'	Danish S. B.	III	♀	25	30		
» » 18	1673	SE of Vyl Light-ship.		» »	III	♂	27	27	dried and salted	
» » 27	1686	Helgoland. 13 fms.	54°15' 7°45'	Belgian S. S.	III	♀	28	32		
» » 30	1800	20 miles NW of Slugen N. 12 fms.	55°46' 7°19'	Danish S. B.	III	♂	23	29.5		
» August 4	1697	16 miles W by N of Haurvig Bn. 13 fms.	55°55' 7°41'	» »	IV	♂	25	30.5		
» » 4	1775	16 miles W by N of Haurvig Bn. 13 fms.	55°55' 7°41'	» »	IV	♀	23	27		
» Septbr. 13	1714	25 miles NNW of Slugen N. 12½ fms.	55°55' 7°23'	» »	V	♀	25.5	34		
» » 13	1776	25 miles NNW of Slugen N. 12½ fms.	55°55' 7°23'	» »	V	♀	25.5	35.5		
» » 14	1757	55°26' N 5°45' E. 48 meters.	55°26' 5°45'	German S. S.	V	♂	24	27.5		
» » 18	1750	(North Sea.)		English S. S.	V	♂	24	27.5	fresh	
» » 20	1659	25 miles NNW of Slugen N. 13 fms.	55°56' 7°26'	Danish S. B.	V	♂	26	33.5		



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
	1905 Octbr.	8 1763	55°44' N 7°23' E. 12 fms.	N 55°44'	E 7°23'	English S. S.	VI	♂	23	32	sound
	» »	14 1820	55°48' N 7°25' E. 12 fms.	55°48'	7°25'	» »	VI	♀	28	36.5	sound
	» »	20 1696	57°03' N 6°25' E. 26 fms.	57°03'	6°25'	» »	VI	♀	28	36	sound
	1906 April	8 1812	N of Bulbjerg. 12 fms.	57°17'	8°59'	Danish S. B.	XII	♀	28	37.5	living
	» »	30 1764	54°44' N 7°47' E. 11 fms.	54°44'	7°47'	English S. S.	XII	♂	23	30	sound
	» May	9 1704	9 miles WSW of Graadeep. 9 fms.			Danish S. B.	XIII	♀	24.5	29.5	tail dry
	» Septbr.	4 1681	70 miles NW of Slugen. 23 fms.	56°11'	6°02'	» »	XVII	♀	26.5	39.5	sound
1905. April 15. Northern part of Slugen, North Sea. 55°36' N 7°50' E. 15 meters. "Thor" St. 382. 145 Plaice liber. (No. 1841—1985). "Thor's" marking experiment No. 9 1905.	1906 April	19 1845	2 miles SW of Cancer. 7 fms.	55°26'	8°02'	Danish S. B.	0	♂	26	25.5	
	» »	19 1866	3 miles NW of Graadeep. 7½ fms.	55°27'	8°09'	» »	0	♀	28	28	
	» »	20 1854	1 mile S of Cancer. 8 fms.	55°26'	8°02'	» »	0	♂	25	24	
	» »	20 1858	6 miles W by N of Graadeep. 7 fms.	55°26'	8°05'	» »	0	♀	26.5	26.5	
	» »	20 1900	2 miles E of Vyl. 8 fms.	55°27'	7°54'	» »	0	♀	26.5	26	
	» »	20 1930	4 miles NW of Graadeep. 7 fms.	55°28'	8°08'	» »	0	♀	28	27.5	
	» »	20 1937	3 miles NW of Graadeep bell-buoy. 7½ fms.	55°27'	8°09'	» »	0	♀	28.5	28	
	» »	20 1940	3 miles NW of Graadeep bell-buoy. 7½ fms.	55°27'	8°09'	» »	0	♂	26	25.5	
	» »	21 1849	2 miles SSE of Cancer. 9 fms.	55°28'	8°04'	» »	0	♀	23	24	
	» »	22 1842	3 miles NW of Graadeep. 7 fms.	55°27'	8°08'	» »	0	♂	24.5	24	
	» »	22 1889	4 miles S of Vyl Light-ship. 11½ fms.	55°20'	7°47'	» »	0	♀	26.5	26.5	
	» »	22 1893	1 mile S of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	26	25	
	» »	22 1958	1 mile S of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	26	25.5	
	» »	26 1872	4 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	26.5	26.5	
	» »	26 1887	4 miles SW of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	25	24.5	
	» »	27 1861	1 mile NNE of Graadeep bell-buoy. 5½ fms.	55°27'	8°13'	» »	0	♀	25.5	25.5	
	» »	27 1947	1 mile SE of Cancer. 8 fms.	55°29'	8°04'	» »	0	♀	24.5	24	
	» »	27 1949	1 mile SW of Cancer. 7½ fms.	55°26'	8°02'	» »	0	♂	26	[21.5]	
	» »	28 1846	1 mile S of Cancer. 7 fms.	55°26'	8°02'	» »	0	♀	23	22.5	
	» May	1 1844	1 mile SW of Cancer. 7 fms.	55°26'	8°02'	» »	1	♀	24.5	24	
	» »	1 1890	1 mile SW of Cancer. 7 fms.	55°26'	8°02'	» »	1	♂	26	25.5	
	» »	3 1879	2 miles NNW of Slugen N. 9 fms.	55°36'	7°46'	» »	1	♀	24.5	24	
	» »	4 1851	1 mile NW of Slugen N. 9 fms.	55°35'	7°47'	» »	1	♀	27	27	
	» »	7 1901	1 mile SSW of Cancer. 8 fms.	55°26'	8°02'	» »	1	♂	25	24.5	
	» »	7 1953	1 mile SSW of Cancer. 8 fms.	55°26'	8°02'	» »	1	♀	24.5	23.5	
	» »	7 1933	6 miles NW of Graadeep. 7 fms.	55°29'	8°06'	» »	1	♀	27.5	27	
	» »	8 1857	3 miles SW of Blaavands Point. 6 fms.	55°31'	8°02'	» »	1	♂	24	23.5	
	» »	9 1915	1 mile NE of Cancer. 5 fms.	55°30'	8°03'	» »	1	♂	24	24	
	» »	14 1905	6 miles W of Romø. 8½ fms.	55°07'	8°10'	» »	1	♀	26.5	26.5	
	» »	14 1964	2 miles NW of Graadeep. 8 fms.	55°26'	8°09'	» »	1	♀	26.5	26.5	
	» »	15 1910	55°40' N 8°00' E. 9 fms.	55°40'	8°00'	English S. T.	I	♂	27.5		
	» »	17 1862	10 miles SW of Cancer. 15 fms.			Danish S. B.	I	♀	25.5	26	
	» »	17 1934	2 miles WNW of Slugen N. 8 fms.	55°35'	7°45'	» »	I	♀	27		
	» »	17 1946	1 mile SW of Horns Reef Light-ship. 18 fms.	55°33'	7°18'	» »	I	♀	26	26	
	» »	17 1973	1 mile SW of Horns Reef Light-ship. 18 fms.	55°33'	7°18'	» »	I	♂	28	28	
	» »	18 1843	1 mile N of Slugen N. 10 fms.	55°35'	7°47'	» »	I	♀	24	23.5	
	» »	18 1969	8 miles NW of Slugen N. 8 fms.	55°38'	7°35'	» »	I	♀	24	23.5	
	» »	20 1972	2 miles N of Slugen N. 8 fms.	55°36'	7°46'	» »	I	♀	28	29	
	» »	26 1977	2 miles WNW of Slugen N. 8 fms.	55°35'	7°44'	» »	I	♀	28	29.5	
	» »	29 1886	8 miles NW of Slugen N. 10 fms.	55°39'	7°33'	» »	I	♀	24.5	24	
	» June	4 1882	(North Sea.)			English S. S.	II	♀	24	25	(sound, head removed)
	» »	4 1959	3 miles SE of Vyl Light-ship. 10 fms.	55°22'	7°50'	Danish S. B.	II	♂	25.5	25	
	» »	5 1859	55°40' N 7°30' E. 8 fms.	55°40'	7°30'	» »	II	♀	23.5	23	(dried and salted)
	» »	5 1863	12 miles N of Horns Reef. 11 fms.			» »	II	♂	26	26	
	» »	5 1898	1 mile SE of Vyl Light-ship. 11 fms.	55°23'	7°47'	» »	II	♂	24.5	25	
	» »	5 1926	4 miles S of Vyl Light-ship. 10 fms.	55°20'	7°48'	» »	II	♀	25	26.5	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish. etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
				N	E						
1905. April 15. Northern part of Slugen, North Sea. 55°36' N 7°50' E. 15 meters. "Thor" St. 382. 145 Plaice liber. (No.1841-1985). "Thor"s marking experiment No. 9 1905.	1905 June 6	1871	(North Sea.)			English S. S.	II	♀	26.5	26	sound
	» » 7	1868	10 miles NW of Slugen. 10 fms.	55°35'	7°47'	Danish S. B.	II	♂	27.5	29	
	» » 11	1913	Off Kærgaarde. 7 fms.	55°42'	8°02'	» »	II	♂	25	26.5	
	» » 14	1841	Off Kærgaarde Bn. 7 fms.	55°42'	8°02'	» »	II	♂	27.5	28	
	» » 14	1850	55°42' N 8°04' E. 7 fms.	55°42'	8°04'	English S. T.	II	♂	23	23	sound
	» » 14	1916	Horns Reef.			» S. S.	II	♀	24	[31.5]	sound
	» » 15	1894	16 miles W of Blaabjerg. 8 fms.	55°41'	7°47'	Danish S. B.	II	♂	24.5		
	» » 16	1865	8 miles SE of Vyl Light-ship. 8 fms.	55°20'	7°56'	» »	II	♂	29.5	30.5	
	» » 16	1924	7 miles W of Kærgaarde. 7 fms.	55°41'	7°57'	» »	II	♀	25.5		
	» » 17	1878	55°20' N 7°50' E. 12 fms.	55°20'	7°50'	English S. T.	II	♂	30	31.5	sound
	» » 17	1897	3 miles NW of Kærgaarde. 8 fms.	55°42'	8°05'	Danish S. B.	II	♂	24.5	26.5	
	» » 18	1942	4 miles N of Vyl Light-ship. 8 fms.	55°28'	7°45'	» »	II	♀	24.5	27	
	» » 21	1883	55°09' N 7°53' E. 10 fms.	55°09'	7°53'	English S. S.	II	♂	27	25.5	(dried and salted)
	» » 27	1919	10 miles NNW of Vyl Light-ship. 10 fms.	55°31'	7°35'	Danish S. B.	II	♀	23.5	24	
	» » 27	1929	10 miles NNW of Vyl Light-ship. 10 fms.	55°31'	7°35'	» »	II	♀	26	27.5	
	» » 27	1943	10 miles W of Nymindegab. 10 fms.	55°45'	7°53'	» »	II	♂	27.5	29	a little dry
	» » 27	1974	12 miles off Blaabjerg. 9 fms.	55°44'	7°53'	» »	II	♂	29	31	
	» » 30	1936	4 miles NW of Slugen N. 10 fms.	55°37'	7°47'	» »	II	♀	25.5	29.5	
	» July 1	1891	6 miles WSW of Vyl Light-ship. 11 fms.	55°18'	7°43'	» »	III	♂	28	[26]	
	» » 1	1896	8 miles NW of Slugen N. 10 fms.	55°39'	7°33'	» »	III	♀	28		
	» » 2	1920	14 miles NE of Horns Reef Light-ship. 11 fms.	55°45'	7°30'	» »	III	♂	23	27	
	» » 2	1968	14 miles NE of Horns Reef Light-ship. 11 fms.	55°45'	7°30'	» »	III	♀	25.5	28	
	» » 10	1950	55°47' N 7°15' E. 10-11 fms.	55°47'	7°15'	English S. S.	III	♂	27	29	sound
	» » 10	1971	15 miles NW by W of Blaabjerg. 9 fms.			Danish S. B.	III	♀	23.5	26	
	» » 11	1860	10 miles W by S of Haurvig Bn. 12 fms.	55°51'	7°53'	» »	III	♂	24.5	27	
	» » 14	1856	55°35' N 7°22' E. 17 fms.	55°35'	7°22'	English S. S.	III	♂	25.5	30.5	
	» » 26	1957	8 miles NNE of Horns Reef. 10½ fms.	55°42'	7°22'	Danish S. B.	III	♂	24	30	
	» » 30	1867	1½ mile SW of Horns Reef Light-ship.	55°33'	7°18'	» »	III	♂	23	24.5	
	» August 4	1962	20 miles NNW of Slugen N. 14 fms.	55°49'	7°25'	» »	IV	♂	25.5		
	» » 10	1903	15 miles SW by S of Horns Reef Light-ship. 16 fm.	55°21'	7°08'	» »	IV	♀	27	31	
	» » 18	1895	22 miles NNW of Slugen N. 15 fms.	55°54'	7°20'	» »	IV	♀	28	35	
	» Septbr. 9	1922	57°05' N 6°45' E. 33 fms.	57°05'	6°45'	English S. S.	V	♂	28.5	34	sound
	» » 19	1848	24 miles NNW of Slugen N. 12 fms.	55°54'	7°23'	Danish S. B.	V	♂	23.5	29.5	
	» » 26	1855	(North Sea.)			English S. S.	V	♀	29.5	39	sound
	» October 8	1875	(North Sea.)			» »	VI	♀	27	34.5	sound
	» » 16	1911	(North Sea.)			Danish S. B.	VI	♂	29		sound
	» » 18	1976	55°50' N 7°42½' E. 15 fms.	55°50'	7°42½'	English S. S.	VI	♀	27	36.5	sound
	» » 19	1921	55°58' N 7°05' E.	55°58'	7°05'	German »	VI	♂	28	30	
	» » 21	1899	55°47' N 7°25' E. 12 fms.	55°47'	7°25'	English »	VI	♀	23.5	31.5	(dried and salted)
	» » 30	1892	55°52' N 5°22' E. 27 fms.	55°52'	5°22'	» »	VI	♀	25	31	sound
	» Novbr. 21	1931	NNW of Horns Reef Light-ship. 7 miles dist.	55°40'	7°13'	German S. T.	VII	♀	27.5	33	(sound immature)
	1906 Jan. 8	1870	(North Sea.)			English S. S.	IX	♂	28	34	(sound immature)
	» » 16	1917	56°20' N 6°00' E. 26 fms.	56°20'	6°00'	German S. T.	IX	♀	24	32	
	» June 1	1881	55°02' N 8°10' E. 7 fms.	55°02'	8°10'	English »	XIV	♂	24	29.5	(dried and salted)
1905. April 15. Graadyb, inside the bar. 55°26½' N 8°16' E. 6 meters. 40 Plaice liber. (No.1986-2025).	1905 April 22	2025	¾ mile N by E of Graadeep. 6 fms.	55°27'	8°13'	Danish S. B.	0	♀	25	24.5	
	» » 28	2022	1 mile S of Cancer. 7 fms.	55°26'	8°02'	» »	0	♂	24	23.5	
	» May 4	2007	1 mile S of Cancer. 9 fms.	55°26'	8°02'	» »	I	♀	24.5	23.5	
	» » 5	2004	¼ miles NW of Slugen N. 7 fms.	55°36'	7°42'	» »	I	♀	23.5	23.5	
	» » 5	2019	1 mile W of Slugen N. 8 fms.	55°34'	7°46'	» »	I	♂	25	24.5	
	» » 7	2000	½ mile S of Cancer. 8 fms.	55°26'	8°02'	» »	I	♀	23	24.5	
	» » 15	2001	5 miles SE of Cancer. 7½ fms.	55°26'	8°09'	» »	I	♀	25	25	



Table 20. Continued.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery										
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks
"Thor's" marking experiment No. 10 1905.	1905 May 24	1986	NW by N of Elben's L. S. 6 miles distant.	N 54°04'	E 8°05'	German S. T.	I	♂	25.5	23.5	
	» » 24	1988	7 miles W of Kærgaarde. 8½ fms.	55°40'	7°57'	Danish S. B.	I	♂	25	25.5	
	» » 24	2003	2 miles W of Graadeep bell-buoy. 8 fms.	55°26'	8°10'	» »	I	♂	25	25.5	
	» » 24	2008	1 mile SW of Graadeep bell buoy. 6½ fms.	55°25'	8°13'	» »	I	♀	25	24	
	» June 1	2015	55°10' N 7°40' E. 10 fms.	55°10'	7°40'	English S. T.	II	♂	24	23	(dried and salted)
	» » 3	1992	12 miles W of Graadeep. 8 fms.	55°23'	7°55'	Danish S. B.	II	♂	24	24	
	» » 5	1994	8 miles NW of Slugen N. 7 fms.	55°39'	7°37'	» »	II	♂	25	27	
	» » 7	1997	6 miles E of Vyl Light-ship. 9 fms.	55°25'	7°55'	» »	II	♂	24	24.5	
	» » 11	2016	¼ mile NW of Slugen N. 11 fms.	55°34'	7°47'	» »	II	♂	25	25.5	
	» » 14	1998	55°41' N 7°22' E. 10 fms.	55°41'	7°22'	English S. T.	II	♀	25	27.5	sound
	» » 17	1987	3 miles W of Kærgaarde. 7 fms.	55°41'	8°05'	Danish S. B.	II	♂	25	26.5	
	» » 17	2009	3 miles NW of Kærgaarde. 8 fms.	55°43'	8°05'	» »	II	♂	23.5	24.5	
	» » 21	2002	About 54° N 8° E. 10 fms.	54°00'	8°00'	Belgian S. T.	II	♀	23	24	
	» » 26	1989	4 miles N of Vyl Light-ship. 8 fms.	55°28'	7°45'	Danish S. B.	II	♀	24	25.5	
	» » 26	1990	(North Sea.)			English S. S.	II	♀	25	27	
	» » 29	2020	N of Horns Reef. 7 fms.			Danish S. B.	II	♀	25	25.5	
	» July 7	2023	56°47' N 7°34' E. 15 fms.	56°47'	7°34'	English S. S.	III	♂	23	24.5	sound
	» » 29	1991	55°42½ N 7°10' E.	55°42½'	7°10'	» »	III	♂	23	27	
	» Septbr. 20	2011	25 miles NNW of Slugen N. 13 fms.	55°54'	7°23'	Danish S. B.	V	♀	25	34	
	» » 21	2021	55°19' N 7°46' E. 14 fms.	55°19'	7°46'	English S. S.	V	♂	23	31	sound
» » 25	1996	3 miles W of Blaabjerg. 8½ fms.	55°43'	8°06'	Danish S. B.	V	♂	23	29.5		
1906 May 24	2017	53°45' N 5°10' E. 10 fms.	53°45'	5°10'	Dutch S. S.	XIII	♂	23	31.5	sound	

### F. The ordinary marking experiments with plaice in the Graadeep inshore-waters in the autumn of 1905.

In the Graadeep inshore-waters between Esbjerg and Skallingen 21 marked plaice of 20—26 cm. length were liberated on September 29th and 30th of 1905. Within one year 7 specimens or 33.3% were recaptured.

A detailed record over particulars of liberation and recaptures is represented on Table 22. It will be seen that only three of the liberated specimens were recaptured during the inshore fishing in the autumn. Next spring and summer 4 specimens were recaptured in the North Sea and one of those by a foreign trawler.

The length of the liberated specimens was as follows:

	males	females		males	females
20 cm. ....	5	2	24 cm. ....	..	3
21 » .....	..	3	25 » .....	1	..
22 » .....	1	2	26 » .....	1	1
23 » .....	..	2			







Table 22. Table showing particulars of Liberation and Recapture of plaice in the ordinary marking-experiment in September, 1905.

Particulars of Liberation. Date. Locality. No. of Fish etc.	Particulars of Recovery											
	Date	No. on Label	Locality reported	Central Position (Approximately)		Fishing Vessel	No. of months between Liberation and Recovery	Sex	Initial Size	Ultimate Size	Remarks	
1905. Sept. 29. Graadeep, W. of Esbjerg Harbour 55°28'N 8°25'E. 9 meters. 21 plaice liberated (No. 2026-2046). "Thor's" marking experiment No. 11 1905	1905 Novbr. 1	2028	At Sandodden.	N 55°28'	E 8°25'	Danish S. B.	II	♀	21	20.5		
	» » 14	2040	Off Jerg. Northend of Fanø.	55°29'	8°23'	» »	II	♀	23	22.5		
	» » 14	2046	Off Jerg. Northend of Fanø.	55°29'	8°23'	» »	II	♂	20	20		
	1906 March 16	2034	53°45' N 6°30' E. 15 fms.	53°45'	6°30'	Dutch S. T.	VI	♂	25	25.5		
	» April 6	2030	8 miles NW of Red Cliff. 7 fms.	55°02'	8°07'	Danish S. B.	VII	♀	24	24		
	» » 27	2037	29 miles SW of Graadeep. 9 fms.	55°02'	7°53'	» »	VII	♂	20	21		
	» July 5	2035	20 miles SW of Graadeep. 10 fms.	55°09'	7°56'	» »	X	♂	20		rotten	

### G. The ordinary marking experiments in the Horns Reef area in April of 1906. Preliminary record.

On April 7th and 10th of 1906, 200 marked plaice of a length of 24—31 cm. were liberated in the Horns Reef area near Slugen. Until the end of September, 1906, 126 specimens or 63% were recovered.

As is usually the case in the Horns Reef area a far greater percentage was recaptured of the larger than of the smaller specimens. At liberation 180 specimens measured 25 cm. or above, while the length of 20 specimens only was 24 cm. Until September 30th, 1906, 121 specimens or 67.2% were recovered of the former, and 5 specimens or 25% of the latter.

## III. Discussion of the Results of the Danish marking experiments with plaice in the years 1903—1906.

### A. Rate of growth of plaice.

The growth of plaice varies according to the stage of development as well as to the density of "population" and to the locality where they live. In the larger specimens a considerable difference in the rate of growth may be noticed in the two sexes, the females increasing with far greater rapidity than the males. It is hardly the most common case that the plaice increase in growth with the greatest rapidity during their first year. Very frequently a more rapid growth may be traced in the second or third year of their life. On approaching maturity there is a considerable decrease in growth, and the mature specimens grow on the whole with far less rapidity than the immature ones.



## 1. Rate of growth of plaice of different sex.

As will be seen in the Tables 23 and 24 the specimens of the two sexes of the plaice of the "northern form"<sup>1</sup> increase in growth with about equal rapidity as long as they are below 30 cm. At a size of 30—34 cm. the growth is already considerably quicker in the females than in the males. Through investigations of the otoliths it may be proved that the growth in smaller specimens also is a little more rapid in the females than in the males.

Table 23. Rate of Growth of plaice of different sex. Marking and Transplantation experiments in the Horns Reef area. February, 1904. (Mark. exper. No. 1, 2 and Trpl. exper. No. 1—9).

Month recovered	Period between Liberation and Recovery	Males between 20—24 cm.		Females betw. 20—24 cm.	
		Average increase	No.	Average increase	No.
1904 June .....	4 months	1.5	4	1.3	6
» July .....	5 »	5.2	3	3.8	4
» August .....	6 »	5.0	4	5.0	1
» September ..	7 »	...	..	6.5	1
» October .....	8 »	5.5	1	7.3	2
» November ..	9 »	5.3	3	...	..
» December ...	10 »	6.0	1	...	..
1905 February ...	12 »	...	..	5.5	1
» March .....	13 »	5.8	2	...	..
» April .....	14 »	5.0	1	6.0	1
» May .....	15 »	...	..	7.4	5
» June .....	16 »	10.0	3	5.5	1
» July .....	17 »	7.5	1	9.0	1
» August .....	18 »	13.0	1	8.5	1
» November ..	21 »	...	..	8.5	1

Table 24. Rate of Growth of plaice of different sex. Marking experiments in the middle Kattegat. March, 1905. (Exper. No. 1, 2 and 7.)

Month recovered	Period between Liberation and Recovery	Males				Females			
		Average increase of specimens between 22—29 cm.	No. of specimens of initial length 22—29 cm.	Average increase of specimens between 30—34 cm.	No. of specimens of initial length 30—34 cm.	Average increase of specimens between 22—29 cm.	No. of specimens of initial length 22—29 cm.	Average increase of specimens between 30—34 cm.	No. of specimens of initial length 30—34 cm.
1905 April ..	1 month	0.2	6	0.4	8	1.0	4	0.4	10
» May ...	2 months	0.8	20	1.0	8	1.1	12	1.1	12
» June ..	3 »	2.0	9	4.0	2	2.0	6	1.6	8
» July ..	4 »	2.4	9	3.0	6	3.4	11	3.3	7
» August.	5 »	2.0	5	1.5	2	3.4	9	2.3	3
» Sept. ..	6 »	3.6	4	2.3	3	3.9	5	3.0	1
» Octbr. .	7 »	3.6	6	...	..	6.0	1	3.5	2
» Novbr. .	8 »	3.0	2	4.3	3	5.0	1	2.5	1
» Decbr. .	9 »	9.0	1	...	..	...	..	5.3	2
1906 Jan. ...	10 »	5.0	1	...	..	6.2	3	8.0	1
» Febr. ...	11 »	6.0	1	4.0	1	7.8	2	8.0	1
» March .	12 »	...	..	3.0	1	4.0	1	2.3	2
» April ..	13 »	...	..	2.0	1	9.0	2	6.8	2
» May ...	14 »	10.0	1	...	..	...	..	...	..
» June ..	15 »	6.0	1	...	..	7.5	2	...	..
» July ..	16 »	7.0	1	...	..	...	..	...	..
» August.	17 »	5.0	1	...	..	...	..	...	..

<sup>1</sup> I use the term "northern form" for the plaice which have their home in the northern part of the North Sea, the Skagerak, and a part of the northern Kattegat, in opposition to the "southern form" or the "dwarf-form" whose home is the southern Kattegat, the Belt Sea and the Baltic. This dwarf-form has been mentioned in various papers by HOLT, DUNCKER, MORTENSEN, PETERSEN, KYLE a. o.



## 2. Rate of growth of plaice in the Horns Reef area.

The Danish marking experiments have revealed a fact of great importance, namely that plaice of the same size may in different years grow with very unequal rapidity on the same fishing grounds.

As will be seen in the Tables 26, 27, 28 the marking experiments show that the rate of growth of plaice in the Horns Reef area has been greater in 1904 than in 1903, and still greater in 1905 than in 1904. The difference is so conspicuous that it may not be mistaken. The monthly averages are sufficiently consistent with one another to make us believe that we have for all the three years determined the rate of growth on a fairly solid basis.

The experiments in spring of 1903 showed a rate of growth of 4–4.5 cm. in one year. In the experiments in spring of 1904 the increase in growth was in one year ca. 6 cm., and finally in the experiments in 1905 the growth was in one year 7.5–8 cm.

As it has become evident that the young plaice grow relatively slowly in places where they are exceedingly numerous, and relatively quickly where they are more scarce, it might seem an obvious conclusion that the unequal rate of growth might be due to an unequal density of population, the density decreasing in the years from 1903 to 1905. If this be the reason of the unequal rapidity in growth, it must be supposed that the diminishing density is a phenomenon which has only been of consequence for the young, not yet marketable, plaice. It appears namely that in 1903, when the plaice in the Horns Reef area increased slowly, the Esbjerg cutters' yield of the plaice-fishery — which essentially is carried on in this area — was comparatively slight, while the yield was considerably greater in 1904 and 1905 when the rapid growth took place (see Table 25).

At the same time as we trace a relatively rapid growth of plaice, namely in the month of July, 1904, the Esbjerg cutters begin to get a relatively rich yield.

Thus we must suppose that a proportionately larger number of marketable plaice (above 25 cm.) has been present in the Horns Reef area in 1904 and 1905 than in 1903. That the yield of the fishery becomes considerable in the years where a rapid growth takes place may naturally be understood from the consideration that proportionately many undersized fish grow up to a marketable size.

It is also worthy of note that in 1902, when the yield of the plaice-fishery at Horns Reef was uncommonly rich (see Table 25), the rapidity of growth for the plaice has probably also been very considerable. We have, namely, ascertained by investigating otoliths of plaice recovered in the Horns Reef area in April, 1903, that a great part of the specimens at a size of 25–28 cm. (see Contributions I p. 8, Stat. 38–39–41) were only 3 years old. It is probable that such specimens in the course of their third year, i. e. in 1902, have increased about 10 cm. in growth. It may however be admitted that we do not know if these specimens have lived in 1902 on the Horns Reef grounds or if they have come from other areas.

These investigations have thus afforded some reason to suppose that there is a connection between the rapidity of growth of the plaice in the Horns Reef area and the yield of the plaice-fishery in this area. Future investigations may elucidate this matter further. The possibility is not yet excluded that the small yield of the plaice-fishery in the Horns Reef area in 1903 and the proportionately great yield in 1902, 1904 and 1905 may be due to other causes than those here mentioned (see the section B).

In the Table below, which has been compiled from the Danish "Fiskeri-Beretning", a summary is given over the monthly yield of the Esbjerg cutters plaice-fishery in the years 1897–1905<sup>1</sup>. As fishing unit we have chosen a "cutter day", a term which should be understood in the following way. The number of cutters fishing in a month has been multiplied by the number of "fishing days", which

<sup>1</sup> The statistics for the Esbjerg fishery are very important as the original data have been collected with great care (by Mr. LORCK MADSEN).



means the days when the weather has allowed fishing by snurrevaad. The product is the number of cutter days. If for instance it is stated, that 75 cutters have been fishing in a month and that there have been 10 "fishing days" the number of "cutter-days" will for that month amount to 750: a somewhat higher figure than we would get if we knew the exact number of fishing days for each cutter separately.

It may be seen in Table 25 that the yield has been far less in 1903 than in 1902, 1904 and 1905, both when we regard the total yield and when we consider the yield per cutter-day. It is moreover interesting to notice, that while the total yield has on the whole increased in the course of the years 1897—1905, the yield per "cutter-day" has on the whole decreased, and this in spite of the fact that the cutters' fishing power has been greatly improved.

Table 25. The catch of plaice by the Esbjerg cutters in the years 1897—1905.

Period	Total quantity in kilograms	Number of "cutter-days"	Average catch per "cutter-day" in kilograms	Period	Total quantity in kilograms	Number of "cutter-days"	Average catch per "cutter-day" in kilograms
1897 January . . . . .	0	0	...	1900 January . . . . .	0	0	...
» February . . . . .	0	0	...	» February . . . . .	0	0	...
» March . . . . .	5,500	62	89	» March . . . . .	55,000	164	335
» April . . . . .	332,000	558	595	» April . . . . .	246,000	400	615
» May . . . . .	261,000	450	580	» May . . . . .	354,000	686	516
» June . . . . .	137,000	360	381	» June . . . . .	235,000	470	500
» July . . . . .	98,000	270	363	» July . . . . .	139,000	516	269
» August . . . . .	66,000	210	314	» August . . . . .	86,000	240	358
» September . . . . .	28,000	56	500	» September . . . . .	80,000	312	256
» October . . . . .	302,000	224	1,348	» October . . . . .	0	0	...
» November . . . . .	75,000	125	600	» November . . . . .	58,000	132	439
» December . . . . .	0	0	...	» December . . . . .	32,000	129	248
1897 Total . . . . .	<b>1,305,000</b>	<b>2,315</b>	<b>564</b>	1900 Total . . . . .	<b>1,285,000</b>	<b>3,049</b>	<b>421</b>
1898 January . . . . .	0	0	...	1901 January . . . . .	0	0	...
» February . . . . .	0	0	...	» February . . . . .	0	0	...
» March . . . . .	15,000	62	242	» March . . . . .	14,000	164	85
» April . . . . .	144,000	369	390	» April . . . . .	199,000	520	383
» May . . . . .	259,000	615	421	» May . . . . .	406,000	954	426
» June . . . . .	87,000	228	382	» June . . . . .	341,000	936	364
» July . . . . .	3,000	66	45	» July . . . . .	255,000	750	340
» August . . . . .	57,000	204	279	» August . . . . .	77,000	351	219
» September . . . . .	99,000	204	485	» September . . . . .	88,000	129	681
» October . . . . .	156,000	216	722	» October . . . . .	182,000	540	337
» November . . . . .	148,000	210	705	» November . . . . .	202,000	492	411
» December . . . . .	0	0	...	» December . . . . .	1,000	3	333
1898 Total . . . . .	<b>968,000</b>	<b>2,174</b>	<b>445</b>	1901 Total . . . . .	<b>1,765,000</b>	<b>4,839</b>	<b>365</b>
1899 January . . . . .	0	0	...	1902 January . . . . .	0	0	...
» February . . . . .	0	0	...	» February . . . . .	500	6	83
» March . . . . .	119,000	164	726	» March . . . . .	87,000	387	225
» April . . . . .	352,000	430	819	» April . . . . .	434,000	918	473
» May . . . . .	322,000	516	624	» May . . . . .	741,000	1,272	583
» June . . . . .	334,000	390	856	» June . . . . .	461,000	990	466
» July . . . . .	190,000	480	396	» July . . . . .	157,000	612	257
» August . . . . .	91,000	204	446	» August . . . . .	373,000	750	497
» September . . . . .	0	0	...	» September . . . . .	179,000	588	305
» October . . . . .	71,000	264	269	» October . . . . .	165,000	450	367
» November . . . . .	0	0	...	» November . . . . .	38,000	432	88
» December . . . . .	0	0	...	» December . . . . .	300	c. 2	c. 150
1899 Total . . . . .	<b>1,479,000</b>	<b>2,448</b>	<b>604</b>	1902 Total . . . . .	<b>2,636,000</b>	<b>6,407</b>	<b>411</b>



Table 25. Continued.

Period	Total quantity in kilograms	Number of "cutter-days"	Average catch per "cutter-day" in kilograms	Period	Total quantity in kilograms	Number of "cutter-days"	Average catch per "cutter-day" in kilograms
1903 January . . . .	0	0	...	1905 January . . . .	0	0	...
» February . . . .	250	4	63	» February . . . .	0	0	...
» March . . . . .	193,000	720	268	» March . . . . .	180,000	603	299
» April . . . . .	331,000	1,116	297	» April . . . . .	232,000	1,005	231
» May . . . . .	362,000	1,170	309	» May . . . . .	554,000	1,260	440
» June . . . . .	189,000	1,134	167	» June . . . . .	436,000	1,260	346
» July . . . . .	202,000	960	210	» July . . . . .	394,000	1,050	375
» August . . . . .	55,000	348	158	» August . . . . .	256,000	1,035	247
» September . . . .	49,000	441	111	» September . . . .	400,000	1,224	327
» October . . . . .	7,500	126	60	» October . . . . .	177,000	1,005	176
» November . . . . .	26,000	c. 240	108	» November . . . . .	10,000	938	11
» December . . . . .	0	0	...	» December . . . . .	0	0	...
1903 Total . . . .	<b>1,415,000</b>	<b>6,259</b>	<b>226</b>	1905 Total . . . .	<b>2,639,000</b>	<b>9,380</b>	<b>281</b>
1904 January . . . .	0	0	...				
» February . . . . .	9,000	27	333				
» March . . . . .	130,000	780	167				
» April . . . . .	280,000	594	471				
» May . . . . .	306,000	1,152	266				
» June . . . . .	277,000	768	361				
» July . . . . .	314,000	1,152	273				
» August . . . . .	353,000	930	380				
» September . . . .	390,000	1,116	349				
» October . . . . .	284,000	945	301				
» November . . . . .	112,000	195	574				
» December . . . . .	0	0	...				
1904 Total . . . .	<b>2,455,000</b>	<b>7,659</b>	<b>321</b>				

The fact that the plaice on the same fishing grounds may increase in length with very unequal rapidity in different years makes the question about profitable transplantation of plaice in the sea rather complicated.

As will be seen in the Table 29, the plaice of 25—29 cm. seem to increase in size with a similar rapidity to those of 20—24 cm. in the Horns Reef area.

Table 26. Rate of Growth of plaice liberated in the Horns Reef Area in April of 1903.  
(Mark. exper. No. 1—5.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of speci- mens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1903. April 10.—11.	1903 May	1 month	0.3	0	3	101	26.8	18	39
	» June	2 months	0.8	0	2	23	25.7	22	32
	» July	3 »	1.4	0	3.5	7	27.1	22	32
	» August	4 »	2.2	1	4	9	26.1	21	40
	» Septbr.	5 »	2.0	2	2	2	27	23	31
	» October	6 »	2.3	2	2.5	2	28	28	28
	» Novbr.	7 »	3.3	1	5	4	21.5	16	25
	» Decbr.	8 »	2.8	2	3.5	2	23.5	21	26
	1904 January	9 »	5.5	...	...	1	23	..	..
	» March	11 »	3.9	2	4.5	4	22.3	18	25
	» April	12 »	4.3	2	6	8	22.3	16	28
	» May	13 »	3.9	1.5	6.5	7	22	17	26
	» June	14 »	4.6	2.5	6.0	4	21.3	20	23
	1905 Febr.	22 »	13.5	...	...	1	24	..	..
	» May	25 »	10	8.5	11.5	2	25	24	26
	» June	26 »	17.5	...	...	1	17	..	..
	» July	27 »	10.5	...	...	1	17	..	..



Table 27. Rate of Growth of plaice liberated in the Horns Reef Area in February of 1904. (Mark. exper. No. 1—2 and Trpl. exper. No. 1—9.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Febr. 22.—26.	1904 March	1 month	0.2	0	1	22	24.4	21	28
	» April	2 months	0.5	0	2.5	45	25.1	21	31
	» May	3 »	0.8	0	2.0	30	24	20	29
	» June	4 »	1.2	0	2.5	14	22.9	20	26
	» July	5 »	4.5	2.5	6	9	23.3	20	27
	» August	6 »	4.6	3	6	8	24.1	21	28
	» Septbr.	7 »	6.2	3.5	8.5	3	26.7	22	30
	» October	8 »	5.8	3	9	4	21.8	19	24
	» Novbr.	9 »	5.6	4.5	6.5	4	22.8	20	26
	» Decbr.	10 »	6.0	..	..	1	20	..	..
	1905 Febr.	12 »	5.5	..	..	1	21	..	..
	» March	13 »	5.8	5	6.5	2	22	21	23
	» April	14 »	5.5	5	6	2	20	20	20
	» May	15 »	7.4	3	9.5	5	22.4	21	23
	» June	16 »	8.9	5.5	11	4	21.8	20	24
	» July	17 »	8.3	7	9.5	2	22	21	23
	» August	18 »	10.8	8.5	13	4	23.5	20	27
	» Novbr.	21 »	9.8	8.5	11	2	26	24	28

Table 28. Rate of Growth of plaice liberated in the Horns Reef Area in April, 1905. (Mark. exper. No. 8, 9, 10.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. April 22.	1905 May	1 month	0.6	0	3	66	25.3	23	29
	» June	2 months	1.5	0	4.5	50	25.4	23	30
	» July	3 »	4.0	1	7	22	24.7	23	29
	» August	4 »	5.6	4.5	7.5	4	25.8	23	28
	» September	5 »	7.5	3.5	10.5	11	25	23	29
	» October	6 »	7.9	2.5	10	8	26.1	23	29
	» November	7 »	6.0	..	..	1	27	..	..
	1906 January	9 »	7.5	6.5	8.5	2	26	24	28
	» April	12 »	8.5	7.5	9.5	2	25.5	23	28
	» May	13 »	7.3	5.5	9	2	23.5	23	24
	» June	14 »	6.5	..	..	1	24	..	..
	» September	17 »	13.5	..	..	1	26.5	..	..

Table 29. Rate of Growth of plaice of different sizes, liberated in the Horns Reef Area. February, 1904. (Mark. exper. No. 1—2 and Trpl. exper. No. 1—9.)

Month recovered	Period between Liberation and Recovery	Average increase of specimens betw. 20—24 cm.	No. of specimens of initial length 20—24 cm.	Average increase of specimens betw. 25—29 cm.	No. of specimens of initial length 25—29 cm.
1904 June ....	4 months	1.4	10	0.8	4
» July ....	5 »	4.4	7	4.8	2
» August ..	6 »	5.0	5	4.0	3
» Septbr. . .	7 »	6.5	1	8.5	1
» October .	8 »	6.7	3	..	..
» Novbr. . .	9 »	5.3	3	7.0	1
» Decbr. . . .	10 »	6.0	1	..	..
1905 February	12 »	5.5	1	..	..
» March . . .	13 »	5.8	2	..	..
» April . . . .	14 »	5.5	2	..	..
» May . . . . .	15 »	7.4	5	..	..
» June . . . . .	16 »	8.9	4	..	..
» July . . . . .	17 »	8.3	2	..	..
» August . . .	18 »	10.8	2	10.8	2
» Novbr. . . .	21 »	8.5	1	11.0	1



### 3. The Rate of Growth of plaice in the Hanstholm—Søndervig area.

To judge from the relatively few specimens which are represented in Table 30 the increase in growth of the plaice of 22—35 cm. liberated in the Hanstholm—Søndervig area may be put down to ca. 8 cm. for the year 1903, or about twice as much as the increase of plaice in the Horns Reef area in that year.

From the marking experiments in 1905 there are so few recaptures that we cannot settle with any certainty how great the normal increase has been in the course of one year, but it is reasonable to suppose a somewhat similar increase to that in 1903 (see Table 31).

Table 30. Rate of Growth of plaice liberated in the Hanstholm—Søndervig Area. April, 1903.  
(Exper. No. 15—17.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length of specimens cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1903. April 23.	1903 May	1 month	0.6	0	2	7	29.0	22	34
	» June	2 months	1.5	0.5	3	5	29.6	27	31
	» July	3 »	2.4	1.5	3	4	29.5	24	33
	» August	4 »	3.5	...	...	1	33	..	..
	» September	5 »	1.5	...	...	1	26	..	..
	1904 April	12 »	8.0	6.5	9.5	2	27.5	25	28
	» May	13 »	8.8	7.5	10	2	26.5	26	27
	» June	14 »	9.0	...	...	1	31	..	..
	» July	15 »	6.5	...	...	1	35	..	..

Table 31. Rate of Growth of plaice liberated in the Hanstholm—Søndervig Area. March, 1905.  
(Marking experiment No. 5.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 24.	1905 April	1 month	0.3	0	0.5	3	26	25	28
	» May	2 months	1.5	...	...	1	23	..	..
	» June	3 »	1.9	1.5	2	4	26.8	23	30
	» July	4 »	3.5	3	4.5	3	29	27	31
	» August	5 »	3.5	...	...	1	32	..	..
	1906 January	10 »	7.0	...	...	1	24	..	..

### 4. Rate of growth of plaice in the Skagerak.

The rate of growth of the plaice which were marked in the Skagerak in April, 1903, March, 1904, and March, 1905, is represented in the Tables 32, 33, 34.

From the experiments in 1903 we know only the yearly increase in growth of the small specimens of 16—24 cm. The growth appears in the course of one year to have been at least 10 cm. for these. A considerably less rapidity of growth may be noticed in the transplantation experiments in 1904 for specimens of 22—27 cm., and in the ordinary marking experiments in 1905 for specimens of 23—30 cm., namely ca. 7—8 cm. The difference in the initial size in the specimens from the experiments in 1903 and the two series of experiments in 1904 and 1905 is, however, so considerable that it may play an essential rôle in comparing the rate of growth.

It will be seen in the Tables 35 and 36 that though the specimens exceeding 30 cm. have had a less rapidity of growth than the smaller specimens their increase in length is still quite considerable.



In the experiments of 1903 the growth of specimens of 30—36 cm. appears to be at least 4 cm. for the period from April to September. In the experiments of 1905 four specimens of a length of 30—33 cm. increased during 7—11 months on an average 5.5 cm.

Table 32. Rate of Growth of plaice liberated in the Skagerak. April 1903. (Exper. No. 6—14.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1903. April 17—22.	1903 May	1 month	0.4	0	1.5	13	25.7	17	33
	» June	2 months	1.4	0	2.5	4	29	25	33
	» July	3 »	4.0	3.5	5.5	5	28	22	32
	» August	4 »	5.5	5.5	5.5	2	27.5	27	28
	» September	5 »	6.7	4	8.5	3	24.3	16	36
	» November	7 »	10.5	...	...	1	18	..	..
	1904 June	14 »	13.5	11.5	15.5	2	21	21	21
	» July	15 »	13.5	...	...	1	20	..	..

Table 33. Rate of Growth of plaice transplanted from Graadeep to Jammer Bay in the Skagerak on March 1st, 1904. (Transpl. exper. No. 10.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. March 1.	1904 April	1 month	0.4	0	0.5	7	25.0	24	26
	» May	2 months	0.7	0	2.0	9	25.3	23	28
	» June	3 »	2.0	0	3.5	10	25.3	23	27
	» July	4 »	5.3	4	6.5	4	24.3	21	27
	» August	5 »	5.0	..	..	1	26	..	..
	» September	6 »	4.5	4	5	2	24	22	26
	» November	8 »	6.0	..	..	1	23	..	..
	1905 March	12 »	7.8	6	9.5	2	24.5	22	27

Table 34. Rate of Growth of plaice liberated in the Skagerak. March, 1905. (Marking experiment No. 3 and 4.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 22.-24.	1905 April	1 month	0.3	0	2	48	28	23	33
	» May	2 months	0.8	0	3	125	28	23	31
	» June	3 »	1.6	0	4	41	27.8	23	31
	» July	4 »	3.6	1	7	53	27.5	24	30
	» August	5 »	3.7	1	7	11	27.1	24	30
	» September	6 »	5.7	4	9	8	26.6	23	29
	» October	7 »	6.3	6	6.5	2	29.5	29	30
	» November	8 »	7.5	6.5	8.5	2	29	28	30
	» December	9 »	12.0	...	...	1	27	..	..
	1906 January	10 »	3.7	3	4.5	3	27.7	26	30
	» February	11 »	6	6	6	2	28.5	27	30
	» April	13 »	7.5	6.5	8	3	26.7	25	28



Table 35. Rate of Growth of plaice of different sizes liberated in the Skagerak. April, 1903.  
(Exper. No. 6—14.)

Month recovered	Period between Liberation and Recovery	Average increase of specimens of initial length 15—24 cm.	No. of specimens between 15—24 cm.	Average increase of specimens of initial length 25—29 cm.	No. of specimens between 25—29 cm.	Average increase of specimens of initial length 30—36 cm.	No. of specimens between 30—36 cm.
1903 May.....	1 month	0.5	6	1.0	3	0.0	4
» June.....	2 months	...	..	1.3	2	1.5	2
» July.....	3 »	4.8	2	...	..	3.5	3
» August.....	4 »	...	..	5.5	2	...	..
» September...	5 »	8.0	2	...	..	4.0	1
» November...	7 »	10.5	1	...	..	...	..
1904 June.....	14 »	13.5	2	...	..	...	..
» July.....	17 »	15.5	1	...	..	...	..

Table 36. Rate of Growth of plaice of different sizes liberated in the Skagerak.  
March, 1905. (Exper. No. 3 and 4.)

Month recovered	Period between Liberation and Recovery	Average increase of specimens of initial length 23—29 cm.	No. of specimens betw. 23—29 cm.	Average increase of specimens of initial length 30—33 cm.	No. of specimens betw. 30—33 cm.
1905 April....	1 month	0.3	35	0.3	13
» May.....	2 months	0.7	101	1.0	24
» June.....	3 »	1.6	37	1.4	4
» July.....	4 »	3.6	49	3.5	4
» August..	5 »	3.7	9	3.8	2
» September	6 »	5.7	8	...	..
» October..	7 »	6.5	1	6.0	1
» November	8 »	8.5	1	6.5	1
» December	9 »	12.0	1	...	..
1906 January .	10 »	3.8	2	3.5	1
» February	11 »	6.0	1	6.0	1
» April....	13 »	7.5	3	...	..

##### 5. Rate of growth of plaice liberated in the Kattegat.

A view is given over the rate of growth of the marked plaice in the Tables 37—43. The yearly increase in growth has been as follows for plaice from the northern and middle Kattegat:

for specimens of length from 21—31 cm. liberated in March, 1904, ca. 7 cm. (Table 37).

for specimens of length from 20—39 cm. liberated in October, 1904, ca. 5 cm. (Table 38 A & B).

for specimens of length from 22—37 cm. liberated in March, 1905, ca. 6 cm. (Table 39).

As the specimens have been of very unequal size and as they were liberated in rather different localities, the Tables 37—39 do not show how far the growth of the plaice in the northern and middle Kattegat has been different in the two years 1904 and 1905.

If we regard Table 40, which comprises solely specimens of 22—29 cm., liberated in the Aalbæk Bay or in the vicinity in March, 1904 and March, 1905 we get the impression that the plaice have here grown with a somewhat greater rapidity in 1904 than in 1905.



Table 37. Rate of Growth of plaice liberated in the northern Kattegat in March of 1904.  
(Mark. exper. No. 3, 4, 5. Transpl. exper. No. 11.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. March 5.-21.	1904 April	1 month	0.6	0	1.5	25	25.3	22	31
	» May	2 months	1.7	1	2.5	8	23.5	21	25
	» June	3 »	2.3	0.5	4	16	24.4	21	27
	» July	4 »	3.9	2	6.5	16	24.2	22	26
	» August	5 »	5.3	3.5	6.5	4	23.8	22	28
	» September	6 »	6.3	5.5	7	4	23	22	24
	» October	7 »	6.8	6.5	7	2	22.5	22	23
	» November	8 »	8.5	...	...	1	22	..	..
	1905 March	12 »	4.5	...	...	1	24	..	..
	» July	16 »	3.0	...	...	1	22	..	..
	1906 February	23 »	8.0	...	...	1	26	..	..

Table 38 A. Rate of Growth of plaice liberated in the northern Kattegat. October, 1904.  
(Exper. No. 6, 7, 8, 9.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Octbr. 25.-28.	1904 November	1 month	0.8	0	2.0	16	27.7	22	34
	» December	2 months	1.2	0	2.5	17	30.1	22	36
	1905 January	3 »	1.7	0.5	3.5	12	28.0	23	32
	» February	4 »	1.4	0	3.5	5	24.4	22	29
	» March	5 »	1.4	0.5	2.5	7	27.4	22	35
	» April	6 »	0.7	0	1.5	3	28.3	23	32
	» May	7 »	2.7	1	4	12	26.3	20	33
	» June	8 »	3.5	0.5	5.5	10	26.6	23	32
	» July	9 »	4.6	3	7	5	27.4	21	31
	» September	11 »	7.0	...	...	1	26.0	..	..
	» October	12 »	5.8	4.5	7	2	26.5	22	31

Table 38 B. Rate of Growth of plaice liberated in the middle Kattegat. October, 1904.  
(Exper. No. 10, 11, 12 & 13.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Octbr. 25.-28.	1904 November	1 month	0.3	0	1.0	3	35.7	31	39
	» December	2 months	1.5	..	...	1	27	..	..
	1905 January	3 »	0.0	..	...	1	37	..	..
	» February	4 »	0.0	..	...	1	31	..	..
	» March	5 »	1.5	0	3.5	4	35.8	34	39
	» May	7 »	1.8	1	3.0	3	31.7	30	34
	» July	9 »	4.3	4	4.5	2	32	32	32
	» August	10 »	1.0	..	...	1	29	..	..
	» October	12 »	5.0	..	...	1	36	..	..
	» November	13 »	2.3	..	...	1	32	..	..



Table 39. Rate of Growth of plaice liberated in the northern and middle Kattegat in March of 1905.  
(Mark. exper. No. 1, 2, 6 and 7.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1905. March 15.—April 1.	1905 April	1 month	0.3	0	2.5	113	27.6	22	36
	» May	2 months	0.9	0	3	105	27.7	22	37
	» June	3 »	1.7	0	5.5	45	27.2	22	36
	» July	4 »	2.7	0.5	5	46	28.7	22	36
	» August	5 »	2.4	0	6	23	27.3	22	36
	» September	6 »	3.4	1	7.5	13	27.9	24	31
	» October	7 »	4.1	0.5	6	10	26.5	22	30
	» November	8 »	3.8	2.5	6.5	7	30.3	27	33
	» December	9 »	5.3	1.5	9	4	31.3	28	35
	1906 January	10 »	5.3	2.5	8	8	27.9	23	36
	» February	11 »	6.7	4	8.5	5	28.2	23	33
	» March	12 »	2.4	0.5	4	5	31	23	35
	» April	13 »	6.7	2	9.5	5	28.2	25	30
	» May	14 »	7.0	4.0	10	2	24.5	23	26
	» June	15 »	7.0	6	8	3	26.3	22	29

Table 40. Rate of Growth of plaice of initial length 22—29 cm., liberated in Aalbæk Bay or Hertha's Flak in March, 1904, and March, 1905.

Month recovered	Period between Liberation and Recovery	Experiment March 1904		Experiment March 1905	
		Average increase	No. of specimens	Average increase	No. of specimens
June .....	3 months	1.8	5	1.0	18
July .....	4 »	4.0	3	2.0	9
August .....	5 »	3.5	1	0.7	3
October .....	7 »	6.5	1	6.0	1
January .....	10 »	...	..	3.5	1
May .....	14 »	...	..	3.5	1

In the experiments in the northern and middle Kattegat it has become evident that the specimens increase in growth with rather considerable rapidity till they reach a size of ca. 35 cm. The specimens which surpass this size are either mature or approach maturity for the first time, and the growth becomes now considerably slower than in the younger and smaller specimens. In the experiments in the middle Kattegat in March, 1905, the following growth might be noticed in the specimens which were recovered 9—14 months after liberation (see Table 41).

7 specimens of 22—25 cm.	increased on an average 5.9 cm.
5 » » 26—29 »	» » » 8.9 »
11 » » 30—34 »	» » » 4.9 »
3 » » 35—37 »	» » » 1.5 »

The figures stated here might seem to show that the yearly increase is greater for the specimens between 26 and 29 cm. than for the specimens between 22 and 25 cm. We are, however, not entitled to fix the yearly increase solely according to the few specimens that are recovered about a year after liberation. If we regard the total monthly averages the impression is conveyed that the specimens of the latter group have increased as quickly as the specimens of the former group. (Table 41.)



The experiments in 1904 and 1905 suggest in reality that the yearly average increase for plaice of 20–29 cm. amounts to at least 7 cm. in the northern and middle Kattegat.

Table 41. Rate of Growth of plaice of different sizes liberated in the middle Kattegat. March, 1905.  
(Exper. No. 1, 2 and 7.)

Month recovered	Period betw. Liberation and Recovery	Average increase of specimens of initial length 22–25 cm.	No. of specimens between 22-25 cm.	Average increase of specimens of initial length 26–29 cm.	No. of specimens between 26-29 cm.	Average increase of specimens of initial length 30–34 cm.	No. of specimens between 30-34 cm.	Average increase of specimens of initial length 35–37 cm.	No. of specimens between 35-37 cm.
1905 April ...	1 month	...	...	0.6	10	0.3	18	0.2	3
» May ...	2 months	0.9	8	0.9	24	1.1	20	1.2	5
» June ...	3 »	2.1	6	1.9	9	2.1	10	1.3	2
» July ...	4 »	3.9	4	2.7	16	3.2	13	1.6	4
» August ...	5 »	2.3	6	3.4	8	2.0	5	3.0	1
» Septbr ...	6 »	5.8	3	2.8	6	2.5	4	...	...
» October ...	7 »	4.3	2	3.8	5	3.5	2	...	...
» Novbr ...	8 »	...	...	3.7	3	3.9	4	...	...
» Decbr ...	9 »	...	...	9.0	1	5.3	2	1.5	1
1906 January ...	10 »	5.3	3	7.5	1	8.0	1	2.5	1
» February ...	11 »	6.5	2	8.5	1	6.0	2	...	...
» March ...	12 »	4.0	1	...	...	2.5	3	0.5	1
» April ...	13 »	8.5	1	9.5	1	5.2	3	...	...
» May ...	14 »	...	...	10.0	1	...	...	...	...
» June ...	15 »	7.0	1	7.0	2	...	...	...	...
» July ...	16 »	7.0	1	...	...	...	...	...	...
» August ...	17 »	...	...	5.0	1	...	...	...	...

Table 42. Rate of Growth of plaice liberated in the southern Kattegat. October, 1904.  
(Exper. No. 14 and 14 A.)

Date liberated	Month recovered	Period between Liberation and Recovery	Increase			No. of specimens measured	Initial Length cm.		
			Average	Minimum	Maximum		Average	Minimum	Maximum
1904. Octbr. 25.-29.	1904 November	1 month	0	...	...	1	32	..	..
	» December	2 months	0	0	0	2	34	33	35
	1905 January	3 »	1	...	...	1	31	..	..
	» February	4 »	0.8	0	1.5	9	31.2	27	36
	» March	5 »	0.8	0	2	16	32.0	28	35
	» April	6 »	0.6	0	1.5	7	30.6	29	32
	» May	7 »	1.0	0	3	16	30.9	28	35
	» June	8 »	2.7	2	4.5	4	29.5	26	31
	» July	9 »	2.5	0.5	4.5	4	30.5	28	33
	» September	11 »	4.5	3.5	5.5	3	30	30	30
	» October	12 »	3.0	1.5	4.5	2	30	30	30
	» November	13 »	2.0	...	...	1	33	..	..
	» December	14 »	5.5	...	...	1	28	..	..
	1906 January	15 »	4.5	2	7	2	32.5	30	35
	» February	16 »	4.0	2.5	5.5	2	29.5	29	30
	» March	17 »	4.5	1	8	2	29	26	32
	» April	18 »	7.5	...	...	1	30	..	..
	» May	19 »	3.8	3.5	4	2	34	33	35
	» June	20 »	6.0	...	...	1	32	..	..
	» September	23 »	9.5	...	...	1	27	..	..



For plaice of a length from 26—39 cm. from the southern Kattegat liberated in October, 1904, the increase in growth has in the course of one year only been ca. 4 cm. (Table 42) but it should be remembered here that the majority of these specimens were already mature at liberation, while the great majority of the specimens from the northern and middle Kattegat had not reached maturity at liberation.

In one of the experiments in the southern Kattegat (No. 14 A) only mature females were liberated of a length from 26—36 cm. It appears from Table 43 that the yearly increase for such specimens has not been more than ca. 2 cm.

As the female plaice in the southern Kattegat reach maturity for the first time generally at a size of ca. 20—30 cm. and at an age of 3—5 years, we must suppose that mature specimens of a length of 40 cm. or above are of a very considerable age as far as they have grown up in this water.

Table 43. Rate of Growth of mature female plaice in the southern Kattegat.  
Exper. No. 14 A. October 1904.

Date liberated	Month recovered	Period between Liberation and Recovery	Average increase	No. of specimens measured	Average initial length
1904. October 29.	1905 February	4 months	1.0	1	36
	» March	5 »	0.3	3	34.5
	» April	6 »	0.0	2	31
	» May	7 »	0.1	5	32.2
	» June	8 »	2.0	1	26
	» July	9 »	1.0	2	32.5
	» November	13 »	2.0	1	33
	1906 January	15 »	2.0	1	35
	» February	16 »	2.5	1	29

## B. Migrations of Plaice.

Long ago the fishermen have experienced that the plaice undertake migrations, and they have formed different hypotheses about the characters, extent and causes of these migrations. Some of these hypotheses are mentioned by the older authors who treated the question about the migration of the plaice. KRØYER<sup>1</sup> writes for instance on the basis of the fishermen's experiences that the plaice twice a year migrate out into deeper water, namely in warmest summer and coldest winter, and that they likewise twice a year approach the coasts, namely in spring and autumn. As will be mentioned later on, the Danish marking experiments in 1903—1905 have essentially confirmed this view and have in no way been at variance with it.

By the systematical investigation of the frequency and distribution of the various age-groups of plaice, which have been carried on in the North-European waters in the last decennaries some light has been thrown over the migration of the plaice. One of the most principal facts which has been revealed is that the youngest bottom-stages of the plaice are only met with on quite shallow water close to the shore. While the grown up plaice occur almost everywhere in our waters from the coasts to 50 fms. or exceptionally to 100 fms. depth, the youngest bottom stages are in the main restricted to depths below one fathom and are rarely met with in a few fathoms depth<sup>2</sup>. When

<sup>1</sup> HENRIK KRØYER: "Danmarks Fiske" Bd. II. Kjøbenhavn 1843—45, p. 272.

<sup>2</sup> Particular conditions exist in the true Baltic Sea where specimens of the 0-Group are very rare in shallow water, below 4 meters, but fairly numerous at depths from ca. 10—40 meters (according to the recent investigations of the "Thor").



this has been ascertained, we must conclude that the plaice which occur far from the coast must have undertaken long migrations previously. By investigating the distribution of the 0-Group, the I-Group, the II-Group, etc., it has also been found that gradually as the plaice increase in size they move out into greater depths and thereby enlarge their area of distribution.

Among other information concerning the migration of the plaice, which has been obtained by the systematical investigation of the distribution of the different age-groups, it should be mentioned that the plaice in the Lim Fjord come from the North Sea. Dr. PETERSEN has namely found that the youngest bottom-stages immigrate through the Tyborøn Canal, and gradually as the plaice increase in size they migrate further eastward. The youngest bottom stages are wanting, or at any rate very rare, in those parts of the Lim Fjord where the great plaice-fisheries are carried on: Kaas Bredning, Livø Bredning etc.

In the marking experiments, which were commenced in the North-European waters in 1887 by Dr. PETERSEN<sup>1</sup>, as a link in the rational investigations of the stock of food-fishes in the sea, and which in later years, after the beginning of the international cooperation for the study of the sea, have been carried on to a great extent, much light has been thrown upon the migratory tendency of the plaice, and as a general result of these investigations it may be said, I think, that the plaice is much more a fish of migratory habits than was believed formerly by most of the older naturalists.

With respect to the special information about the migrations, which the Danish experiments in 1903—1905 have afforded, the summary below must be referred to.

While it on one hand should be remembered that the number of plaice captured in a certain area depend highly on the intensity with which the fishing is carried on, it must on the other hand not be forgotten that the intensity with which the fishery is carried on in the different areas depend essentially upon the migration of the plaice.

#### 1. Migration of Plaice liberated in the Horns Reef Area.

In order to obtain a view over the migrations of the plaice through the marking experiments it is not sufficient to know at which places and at what time the marked plaice are recovered. It is also necessary to know at which places and with what intensity the fishery is carried on in the different seasons. Information in the latter direction is not difficult to obtain as far as the Danish plaice fishing in the Horns Reef area is concerned, owing to the fact that the "Dansk Fiskeritidende" states in weekly accounts where the cutters are fishing.

A view over the places where the cutters, which take their catch to Esbjerg, have been fishing during the years 1903—1905 is represented in Table 44. As the great majority of the recovered marked specimens in the Danish experiments have been captured by the Danish cutters, it is of less importance to us that it has not been investigated on which grounds the English and German trawlers have been fishing during the different seasons.

Table 44. Table showing the Localities, where the Esbjerg Cutters have been fishing in 1903—1905.

Date	Locality	No. of Cutters	Remarks
1903 February 14—20	SSW of Vyl. 12—14 fms.	2	
» March 1—7	SW of Vyl L. V.	5	
» » 8—14	6—10 miles SSW of Vyl L. V. 12—14 fms.	About the whole fleet	
» » »	60 miles W of Vyl L. V. 23 fms.	1	No yield
» » 15—21	10—11 miles SW of Vyl L. V.	The whole fleet	

<sup>1</sup> C. G. JOH. PETERSEN: Om de praktisk videnskabelige Undersøgelser i de danske Have i Aarene 1887—1888. Fiskeri-Beretning for 1888—1889. København 1890.



Table 44. Continued.

Date		Locality	No. of Cutters	Remarks
1903	March 22-28	4-6 miles SW of Vyl L. V.	c. 80 (The whole fleet)	Stormy weather
	» 29-	4-6 miles SW of Vyl L. V.	c. 80 (The whole fleet)	
	April 4			
	» 12-18	2-3 miles NW of Slugen. 8-9 fms.	40-50	
	» 19-25	Northern part of Slugen or SE of Vyl Slugen.	50-60	
	» 26-	3-4 miles SW of Slugen	40-50	
	May 2			
	» »	3-4 miles WNW of Graadeep.	8-9	
	» »	WNW of Graadeep or N of Horns Reef	20-30	
	» 3-9	Slugen - Kærgaarde - N of Horns Reef	The whole fleet	
	» 10-16	Slugen - Kærgaarde	Most of the Cutters	
	» »	Off Nymindegab	Several	
	» »	At Vyl	Several	
	» »	Off List	10-11	
	» »	Off Fjaltring (S of Bovbjerg)	Some	
	» 17-30	Slugen - Kærgaarde	15-16	Bad weather
	» 31-	20 miles SW of Graadeep	5-6	Bad weather
	June 6			
	» 7-13	At Vyl and N of Horns Reef	Most of the Cutters	
	» »	30 miles SSW of Vyl L. V.	Some	
	» »	NW of Horns Reef L. V.	a few	
	» 14-20	50 miles WSW of Graadeep	30	
	» »	Near Vyl	Many	
	» »	WNW of Vyl	Some	
	» »	Off Nymindegab	Several	
	» 21-27	20-30 miles WSW of Graadeep	10-12	
	» »	50 miles WSW of Graadeep	40-50	
	» »	30 miles WSW of Graadeep	40-50	
	» »	Near Vyl	Several	
	» 29-	30-60 miles WSW of Graadeep	Most of the Cutters	
	July 4			
	» »	NNW of Slugen	Some	
	» 12-18	WSW of Graadeep, until 50 miles distant	The whole fleet	
	» 19-25	50-80 miles WSW of Graadeep	90	
	» 26-	50-60 miles WSW of Graadeep	70	
	August 1			
	» »	NNW of Horns Reef	Several	
	» 2-8		No Cutters fishing	Stormy weather
	» 9-15	20-25 miles NW of Horns Reef L. V. 17-20 fms.	The whole fleet	
	» 16-29	15-20 miles NW of Horns Reef L. V.	15-20	Stormy weather
	» 30-	40-50 miles WSW of Graadeep	c. 30	
	September 5			
	» 6-12	WSW of Graadeep or 15-20 miles NW of Horns Reef L. V.	60-70	
	» »	Off Husby	2	No yield
	» 13-26	NW of Horns Reef L. V.	20-30	(Several cutters go to the Kattegat
	» »	Off Husby	Most of the Cutters	
	» 27-	Nymindegab - Husby	Most of the Cutters	
	October 3			
	» »	Husby - Bovbjerg	10-15	Bad weather almost the whole month
	» »	NW of Horns Reef L. V.	a few	
	» »	Slugen	a few	
	» 4-31	Graadeep or in that neighbourhood	Several	The fishery from small boats in the Graadeep inshore-waters begins
	November 1-7	N of Graadeep	Most of the Cutters	
	» »	Near Vyl L. V.	a few	Bad weather
	» 8-14		No Cutters fishing	
	» 15-21	Esperance Bay (S of Blaavand)	10-12	



Table 44. Continued.

Date			Locality	No. of Cutters	Remarks
1904	February	25—	} 6 miles S of Vyl	3	
	March	5			
	»	»	Near Vyl	12—14	
	»	»	Slugen	1	
	»	12—19	6—10 miles SW of Slugen	8—10	
	»	»	SW of Slugen. — Near Vyl	7—8	
	»	20—26	S or SW of Vyl L. V.	Most of the Cutters	
	»	»	Slugen — Kærgaarde	Several	
	»	»	SW of Slugen	Several	
	»	»	Off List	a few	No yield
	»	27—	}	No Cutters fishing	Stormy weather
	April	9			
	»	10—16	4 miles N of Slugen	c. 10	
	»	»	Near Vyl	Several	
	»	17—23	Esperance Bay (S of Blaavand)	Most of the Cutters	
	»	»	20 miles SW of Graadeep	15—20	
	»	»	N of Horns Reef	some	
	»	24—30	20 m. SW of Graadeep. — Esperance Bay (S of Blaavand)	60	
	»	»	Southern part of Slugen	25—30	
	May	1—7	Slugen — Graadeep bell-buoy	60—70	
	»	»	N and NW of Horns Reef	25—30	
	»	»	S of Vyl	a few	
	»	8—14	Off List	60—70	
	»	»	Graadeep bell-buoy	c. 20	
	»	»	20 miles SW of Graadeep	a few	
	»	»	N of Horns Reef	Several	
	»	15—21	Red Cliff Bank	20—25	
	»	»	Off Sylt	c. 10	} Stormy weather
	»	»	SW of Slugen	8—10	
	»	»	29 miles SW of Graadeep	c. 2	
	»	22—28	Red Cliff Bank	20—30	
	»	»	Off Sønderho (Fanø)	c. 10	
	»	»	Off List	a few	
	»	»	Horns Reef — Kærgaarde — along the shore	Most of the Cutters	
	»	30—	} Slugen — Nymindegab	50—60	
	June	4			
	»	»	20—25 miles SW of Graadeep	20—30	
	»	»	Near Vyl	c. 20	
	»	»	Off Sønderho (Fanø)	c. 10	
	»	5—11	Off Sønderho (Fanø)	8—10	
	»	»	Slugen — Nymindegab	20—30	
	»	»	Red Cliff Bank	c. 20	
	»	12—18	SE of Vyl. 10 fms.	20—30	
	»	»	Slugen — Nymindegab	30—40	
	»	»	W by N of Blaabjerg.	6—7	
	»	»	Off Amrum	1	
	»	19—30	36 miles SW of Graadeep	2 (most Cutters in harbour)	Stormy weather
	July	1—9	30—36 miles SW of Graadeep	50—60	
	»	»	SW of Graadeep	20—30	
	»	»	Off Blaabjerg — Kærgaarde	a few	
	»	10—16	Off Haurvig — Søndervig	Most of the Cutters	
	»	»	W of Horns Reef L. V.	c. 10	
	»	»	SW of Graadeep	3—4	
	»	»	Off Amrum	a few	
	»	»	21 miles SW of Horns Reef L. V.	1	
	»	17—23	Off Husby	c. 10	
	»	»	20 miles W of Amrum	5—6	
	»	»	45 miles W by S of Vyl L. V.	2	
	»	»	Klegod — Husby	20	
	»	24—30	NW of Helgoland. 16—19 fms.	c. 10	



Table 44. Continued.

Date			Locality	No. of Cutters	Remarks
1904	July	24-30	Off Husby. 15 miles from shore	Most of the Cutters	
»	»	»	Near Horns Reef L. V.	c. 8	
»	August	1-6	Off Ringkøbing — Husby	Most of the Cutters	Small yield
»	»	»	Near Horns Reef L. V.	c. 10	
»	»	»	15 miles NW of Horns Reef L. V.	5-7	
»	»	7-13	Near Horns Reef L. V.	Several	} Stormy weather
»	»	»	Off Søndervig	5-6	
»	»	14-20	Off Haurvig — Søndervig	The whole fleet	} Stormy weather
»	»	21-27	7-8 miles off Klegod and Husby. 12-13 fms.	Most of the Cutters	
»	»	»	Northend of Slugen	12-15	
»	»	28-	} Northend of Slugen	14-15	
September	»	3		Off Klegod and Sønder-Lyngvig or near Horns Reef L. V.	30
»	»	4-10	Off Klegod — Husby	30-40	
»	»	»	Slugen	10-15	
»	»	»	Off Kærgaarde — Nymindegab	40-50	
»	»	»	Off Klegod	15-20	
»	»	»	NW of Horns Reef L. V.	a few	
»	»	11-17	Nymindegab — Aargab, near shore	30-40	
»	»	»	3 miles off Klegod — Husby	30-40	
»	»	»	Slugen	3-4	
»	»	18-24	Off Haurvig — Husby	c. 20	
»	»	»	Blaabjerg — Bjerregaard	20-30	
»	»	»	Slugen	c. 20	
»	»	25-	} Slugen — Blaabjerg	25-30	
October	»	1		Along the coast, N of Kærgaarde	30-35
»	»	»	Off Klegod	a few	
»	»	»	Off Blaavands Point	1	
»	»	2-8	Along the coast, N of Kærgaarde.	20	} Bad weather
»	»	»	Slugen	c. 10	
»	»	»	Off Klegod	4	
»	»	9-15	Slugen — Blaabjerg	3	
»	»	»	8-10 miles W of Blaabjerg	c. 30	
»	»	16-22	Kærgaarde — Blaabjerg	30-40	
»	»	»	10-15 miles NW of Slugen	15	
»	»	23-29	Off Nymindegab, 8-10 miles from shore	35-40	
»	»	»	13 miles NNE of Horns Reef L. V.	a few	
»	»	30-	} 25 miles NNW of Slugen	60-70	
November	»	5		10 miles NNE of Horns Reef L. V.	20
»	»	6-12		No Cutters fishing	} Stormy weather
»	»	13-19	Esperance Bay (S of Blaavand)	14-15	
»	»	»	25 miles NNW of Slugen	25-30	
»	»	»	10 miles N by E of Horns Reef L. V.	6-7	
»	»	20-26	20 miles NNW of Slugen	7-8	Almost no yield
1905	February	12-18	S and N of Vyl	a few	Small yield
»	»	19-25	Vyl, Esperance Bay — Slugen, off Nymindegab	14-15	Almost no yield
»	»	26-	} No Cutters fishing		} Stormy weather
March	»	18		10-15 miles SW of Vyl	
»	»	19-25	16 miles W of Vyl L. V.	1	
»	»	26-	} 20-25 miles SW of Vyl L. V.	60-70	
April	»	1		S of Slugen	1
»	»	»	26 miles NW by N of Slugen	1	
»	»	»	10-12 miles SW of Vyl	30	
»	»	2-8	10-14 miles SSW of Vyl	70	
»	»	9-15	NW of Red Cliff Light	40	
»	»	»	SW of Vyl L. V.	30	



Table 44. Continued.

Date			Locality	No. of Cutters	Remarks
1905	April	9-15	SW of Horns Reef L. V.	20-30	
»	»	16-22	NW of Red Cliff. — SW of Vyl	10-15	
»	»	»	Graadeep from the bell-buoy to Slugen	Most of the Cutters	
»	»	»	30 miles SW of Graadeep	4-5	
»	»	»	SE of Vyl L. V.	a few	
»	»	23-29	Graadeep — southern part of Slugen — Cancer	60-70	
»	»	»	SW of Vyl	4-5	
»	»	»	Horns Reef L. V.	1	
»	»	»	Northend of Slugen	some	
»	»	30	} Near Vyl	40-50	
	May	6			
»	»	»	Slugen and S and N of Blaavands Point	30-40	
»	»	»	At Cancer	a few	
»	»	»	Off List	a few	
»	»	7-13	S or W of Vyl	30-40	
»	»	»	Off Sønderho	10	
»	»	»	N of Horns Reef L. V.	1	
»	»	»	The bell-buoy of the Cancer grounds	Most of the Cutters	
»	»	»	10-15 miles W of List	15-20	
»	»	»	Off Kærgaarde	c. 10	
»	»	»	15 miles NW of Slugen	8-10	
»	»	14-20	SW of the Cancer grounds	Most of the Cutters	
»	»	»	Blaabjerg — Kærgaarde	15-16	
»	»	»	Off List	c. 10	
»	»	»	Northend of Slugen	20-25	
»	»	»	13-14 miles NW of Slugen	15-20	
»	»	21-27	Near Vyl	c. 20	
»	»	»	Graadeep, 5 miles from the bell-buoy	30-40	
»	»	»	Northern part of Slugen	some	
»	»	»	Graadeep. — Off Sønderho. — Off List	30	
»	»	»	NNW of Slugen	some	
»	»	28-	} 3 miles N of Slugen	20-25	
	June	3			
»	»	»	Graadeep SW of the bell-buoy	25	
»	»	»	Off Kærgaarde	25-30	
»	»	»	14-15 miles NNW of Slugen	c. 10	
»	»	»	SE of Vyl L. V.	20-25	
»	»	4-10	S of Vyl L. V.	50-60	
»	»	»	SW of Graadeep, near Vyl	c. 50	
»	»	»	SW of Vyl	c. 10	
»	»	»	Northend of Slugen	a few	
»	»	11-17	Off Kærgaarde	25	
»	»	»	Off Red Cliff and Amrum	20-30	
»	»	»	S of Vyl	Several	
»	»	»	Northend of Slugen	c. 10	
»	»	»	N of Horns Reef L. V.	a few	
»	»	»	Off Aargab	a few	
»	»	18-24	Off Kærgaarde	20-25	
»	»	»	Off Red Cliff	c. 20	
»	»	»	S of Vyl L. V.	10-12	} strong gale
»	»	»	NW of Vyl	a few	
»	»	25-	} W of Red Cliff. — S of Vyl L. V.	40-50	
	July	1			
»	»	»	Amrum — Red Cliff	10-20	
»	»	»	12 miles W of Vyl L. V.	15-20	
»	»	»	Off Haurvig	c. 20	
»	»	»	NW of Horns Reef L. V.	1	
»	»	2-8	S of Vyl, towards Helgoland	Most of the Cutters	
»	»	»	10 miles NW of Slugen	20-30	
»	»	»	At Horns Reef L. V. and W of that	c. 20	



Table 44. Continued.

Date			Locality	No. of Cutters	Remarks
1905	July	2-8	NW of Slugen. — S of Horns Reef L. V.	30-40	
»	»	9-15	6-8 miles SW of Vyl L. V.	25	
»	»	»	Off Blaabjerg	14-15	
»	»	»	Off Husby	12-14	
»	»	»	Off Klegod	Several	
»	»	»	N of Horns Reef L. V.	4	
»	»	16-22	Haurvig — Aargab	30-40	
»	»	»	30 miles SW of Graadeep	10	
»	»	»	20-25 miles N of Slugen	some	
»	»	»	Off Aargab	25-20	
»	»	23-29	Aargab — Haurvig	Most of the Cutters	
»	»	»	NNW of Slugen	20-30	
»	»	»	25 miles SW of Graadeep	Several	
»	»	»	NW of Horns Reef L. V.	1	
»	»	30-	Northend of Slugen. — Aargab — Haurvig	90-100	
»	August	5			
»	»	»	Off Husby	a few	
»	»	»	30-50 miles SW of Graadeep	14-15	
»	»	6-12		No Cutters fishing	Heavy gales
»	»	13-19	SW of Horns Reef L. V.	2	
»	»	»	20-30 miles NW by N of Slugen	Most of the Cutters	
»	»	»	20 miles W of Horns Reef L. V.	30-40	
»	»	20-26	NW of Slugen	Most of the Cutters	
»	»	»	Off Husby	Several	
»	»	27-	20 miles NNW of Slugen	Most of the Cutters	
»	September	2			
»	»	3-9	16-20 miles N by W of Slugen	Most of the Cutters	
»	»	»	Off Nørre-Lyngvig	a few	
»	»	10-16	20-25 miles N by W of Slugen	50-60	
»	»	17-23	N by W of Slugen	Most of the Cutters	
»	»	»	Off Kærgaarde	3-4	
»	»	»	Kærgaarde — Nymindegab, close to the shore	c. 20	
»	»	»	Off Sønder-Lyngvig	1	
»	»	24-30	Kærgaarde — Nymindegab, close to the shore	c. 10	
»	»	»	Klegod — Søndervig	20-25	
»	»	»	20 miles N by W of Slugen	40-50	
»	October	1-7		Practically no fishing	Stormy weather
»	»	8-14	20 miles NW of Slugen	Most of the Cutters	
»	»	»	SW of Nymindegab, near the shore	c. 20	
»	»	15-21	20 miles N by W of Slugen	50	
»	»	»	Northend of Slugen. — Kærgaarde — Sønder-Lyngvig	some	No yield
»	»	22-28	20-30 miles N by W of Slugen	60-70	
»	»	29-	Off Red Cliff	a few	No yield
»	November	4			
»	»	5-11	N by W of Slugen	10-20	No yield
»	»	12-18	S of Horns Reef. — N of Horns Reef	30-40	No yield
»	»	»	NE of Horns Reef L. V.	2	

It may be seen from Table 44, that the cutters keep about the same grounds during the same season in the different years.

The fishery around or SW of Vyl light-ship commences at the end of February or at the beginning of March. Later on, in March or April, a great many of the cutters move into more shallow water and approach the Graadeep and Cancer. Yet in April only a few cutters sail north of Horns Reef. In May and June many cutters go north of the Reef, where they remain in the beginning on rather shallow water below 25 meters, while they later on generally fish at depths from 25-40 meters. The cutters



remaining south of the Reef now fish the grounds further south off Amrum and Sylt, or stand further to sea.

During the summer months July, August and partly in September, when the water is warmest, very little fishing takes place on the grounds near the Horns Reef below 20 meters depth. The majority of the cutters are fishing somewhat further out partly off the stretch Haurvig—Aargab—Sønder Lyngvig—Søndervig—Husby—Bovbjerg, partly at Horns Reef light-ship or NW. of that, and partly in a south-western direction from Graadeep, ca. 30—80 miles at sea. At the end of September or in the beginning of October the cutters recommence to gather at the Horns Reef grounds, where they are now fishing, partly north of, partly south of the Reef, until the cutter fishery ends in the month of November.

In November and December a rather considerable plaice fishery takes place in the inshore waters at Esbjerg from small boats. This fishery ceases when the winter cold sets in.

The question is now: what conditions cause the rather uniform movements of the fleet of fishing vessels in the different years. It should be noticed that when the cutters in spring, in February or in the beginning of March, start the fishery, they do not begin on the quite shallow water at Graadeep and Cancer, but they sail further out and begin S. or SW. of Vyl light-ship. Though the unsettled weather of this season might tempt the cutters to look for the fish as near the harbour as possible, they go several miles out. Thus the fishermen must evidently have experienced, that they may reckon with a richer catch here than on the shallow grounds at Cancer and Graadeep. Not until they have been fishing around Vyl for a time do they sail into the more shallow water at Graadeep, Cancer and Slugen. That the cutter's movement towards the more shallow grounds is owing to a corresponding movement of the plaice, we have every reason to believe, as it has been ascertained, that a very great portion of the plaice which in spring were marked at Vyl or somewhat further at sea have later on been recovered in the shallow water at Cancer, Graadeep and Slugen (see Contributions I, Pl. XI and XII and this paper Fig. 3 p. 16 and Pl. V and VI).

When the fishermen in the beginning of the summer generally leave the grounds at Horns Reef to stand further at sea we might imagine the following reasons to account for this:

- 1) That the stock of marketable fish at the Horns Reef had been fished up.
- 2) That the stock of marketable fish was migrating outward into deeper water.

That the stock of marketable plaice at Horns Reef is not quite destroyed by the spring fishery is proved by the Danish marking experiments. A not inconsiderable number of the specimens marked at the Horns Reef grounds escape recapture at these grounds in the spring, while they are partly recovered in deeper water in summer. Thus the cutter fishery in summer is at least partly based on a stock coming from the Horns Reef. In this way we must suppose the migrations of this stock to influence the cutter's movements.

It would also appear from the trawling experiments carried on by the Danish, English and German research steamers, as if the quantity of plaice on the off-shore grounds in the Horns Reef area at depths above 30 meters mainly depend on the stock of young plaice that in the summer months comes from the shallow water. In March, April and May there are very few plaice on the off-shore grounds, and the Danish cutters do not fish there. In July, August and September there are relatively many plaice on the off-shore grounds, which are now visited by the Danish cutters (conf. GARSTANG: Provisional Report on the Natural History of the Plaice etc. Rapports et Procès-Verbaux, vol. III, 1905).

In July of 1903 the majority of the Esbjerg cutters fished 30—80 miles WSW. of Graadeep, but they did not catch more than one of the Danish marked fish here (see Contributions I, Pl. XI and XII). A few cutters fished on the other hand N. or NNE. of Horns Reef light-ship, and caught two marked fish. The trawlers captured 7 of the marked fish in the same month, and most of these were recovered



NW. of Horns Reef light-ship. Thus it appears as if the plaice have moved mainly in a north-western direction when they have migrated out towards greater depths.

The Figures 2 (p. 14), 3 (p. 16), 6 (p. 78) and 7 (p. 79) offer a view over the migrations of plaice which were liberated in the Horns Reef area in February, 1904. It is of great interest to notice where the marked fish were caught during the month of July (see the arrow heads marked 5 on Fig. 2, 3, 6 and 7). The cutters fished partly SW. of Horns Reef, 30—40 miles or more from shore, partly northward, off the area Nymindégab—Bovbjerg. In the former places no marked plaice were recovered, in the latter 8 specimens. Thus it is quite evident that the plaice migrating away from the Horns Reef grounds have moved in the main in north-western and northern direction as in the summer of 1903.

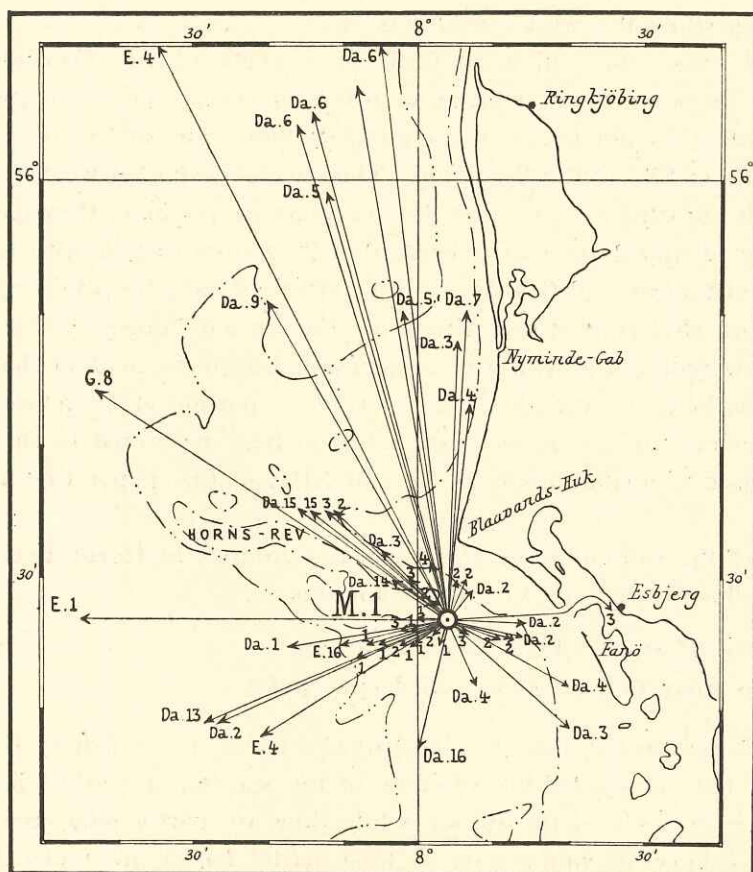


Fig. 6. Marking experiment with plaice. No. 1. 1904. February.

more shallow water than that in which they were liberated, while they are in summer constantly caught further in the offing. During the inshore fishing in Graadeep in the month of November, 1903, 3 specimens were thus recovered of those liberated in spring at Vyl or at Horns Reef. This points undoubtedly in the direction that at any rate some of the plaice gathering in the Graadeep inshore waters in autumn come from deeper water in the very North Sea.

It is worthy of note that three specimens recovered close to the shore in October—November had only an average length of 24 cm., while 6 specimens caught on the off-shore grounds in September—December had an average length of 29 cm. We see here an illustration of the fact that it is especially the larger specimens which remain on the off-shore grounds in autumn and winter.

2) That some of the plaice which in the course of the summer have reached a marketable size at the Horns Reef grounds have remained there.

Turning to the marking experiments No. 8, 9 and 10 in April, 1905 (Pl. III, V and VI) it will be seen also that far more marked fish were recovered during the summer period, July, August, September, north-west than south-west of Horns Reef (arrow heads marked 3, 4 and 5), and yet the cutters seem to have been fishing as much south-west as north-west of Horns Reef. It is also here plain that the fish from Horns Reef have moved in north-western direction in summer. The cutters, which in summer have fished south or south-west of the Reef, have probably not caught plaice coming from the Horns Reef, but more likely fish migrating from south.

In the beginning of autumn the cutters leave the deeper water and start again for the Horns Reef grounds. This movement is probably due to the following three causes.

1) That some of the plaice have returned from the off-shore grounds.

This hypothesis is in accordance with the fact that the marked fish may sometimes in autumn be recovered near the coast in