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Belgian tagging results of plaice in the Irish Sea

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INTRODUCTION

During two Dutch-Belgian research trips in the Irish Sea for the biological sampling of the sole stock a simultaneous sampling and tagging programme was set up on the plaice by-catch.

The aim of this study is to determine the migration pattern of the Morecambe plaice stock of the Irish Sea.

MATERIAL AND METHODS

Two plaice tagging experiments were carried out in the Morecambe Bay on board the Dutch R.V. "Tridens", viz. in the autumn of 1971 (1,005 plaice released) and in the summer of 1972 (1,450 plaice released).

In experiment 1 the plaice was tagged with the red Floytag while yellow Petersen discs were used in the second experiment.

The length frequency distribution of the released plaice is shown on figure 1. Most of the tagged plaice were adult and mature.

The migration parameters (Jones, 1965) concerning the first experiment are given in table 1.

The position as well as the mean direction and distance of the recaptures of experiment 1 are shown on figure 2.

Due to the fact that during experiment 2 no important migration was observed no migration parameters have been calculated. The positions of recapture of experiment 2 are shown on figure 3.

RESULTS

The plaice spawning season in the Irish Sea starts at the end of January and lasts till the end of March (Simpson, 1959). The most important spawning areas are situated between the Isle of Man and the coast of Cumberland, viz. off Port Erin and off St. Bees Head (Johnstone et al, 1922 ; Simpson, 1959).

In the southern part of this area one of the sub-stocks is the Morecambe Bay stock and on this population two tagging experiments have been carried out.

The results can be described as follows :

Experiment 1 (figure 2).

From the 1,005 plaice released 70 recaptures have been received (7 %).

According to the area of recovery the returns have been split up into area A (release area), area B (Dundalk Bay), area C (East Wexford) and area D (Caermarthen Bay).

During the first winter (spawning season) most of the recaptures were in the area between the Isle of Man and the coast of Cumberland.

The dispersion coefficient was high but the mean velocity was only about 0,11 miles per day. At the same time two other migrations of less importance were noticed, the first one in a W-NW direction of the Dundalk Bay and the second one in a SW direction to East Wexford.

The recoveries during the first summer and autumn were all concentrated in the neighbourhood of the release point with the exception of one recovery Southeast of Ireland.

The recaptures in the following periods i.e. the second winter and the second autumn indicated again the stay in the release area. One exception was noted from a recovery in the Bristol Channel (Caermarthen Bay).

Experiment 2 (figure 3).

From the 1,450 plaice released 152 recaptures have been received (10 %).

Only one recapture indicated a migration out of the release area, viz a migration during the third winter to the East coast of Ireland. All the other recoveries (151) remained during the whole period of investigation in the release area. From this experiment it became clear that the summer population of plaice in the Morecambe Bay is a resident one. The same phenomenon has been found in earlier tagging experiments in the area between the Isle of Man and the coast of Cumberland (Griffith, 1966 ; Hill, 1971 ; Macer, 1972).

SUMMARY

In general the Morecambe plaice stock remains in this area throughout its life. Only a very small number migrates to the East coast of Ireland, to Wexford (SW) and to the Bristol Channel (Caermarthen Bay).

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Table 1 - Migration parameters for experiment 1.

Season of recapture		V miles/day	a ²	Ψ	tn.V miles	n
First winter	A	0.11	4.10	331	12	14
	B	0.72	0.75	286	71	2
	C	1.40	0.50	222	174	2
First summer	A	0.02	0.80	17	4	23
First autumn	A	0.04	1.61	345	14	4
	C	0.60	0.00	225	177	1
Second winter	A	0.04	0.00	122	20	2
	D	0.26	0.00	195	145	1
Second autumn	A	0.01	0.21	322	9	2

A : recaptures around the release point

B : migration into W.NW. direction

C : migration into S.W. direction

D : migration into S.SW. direction

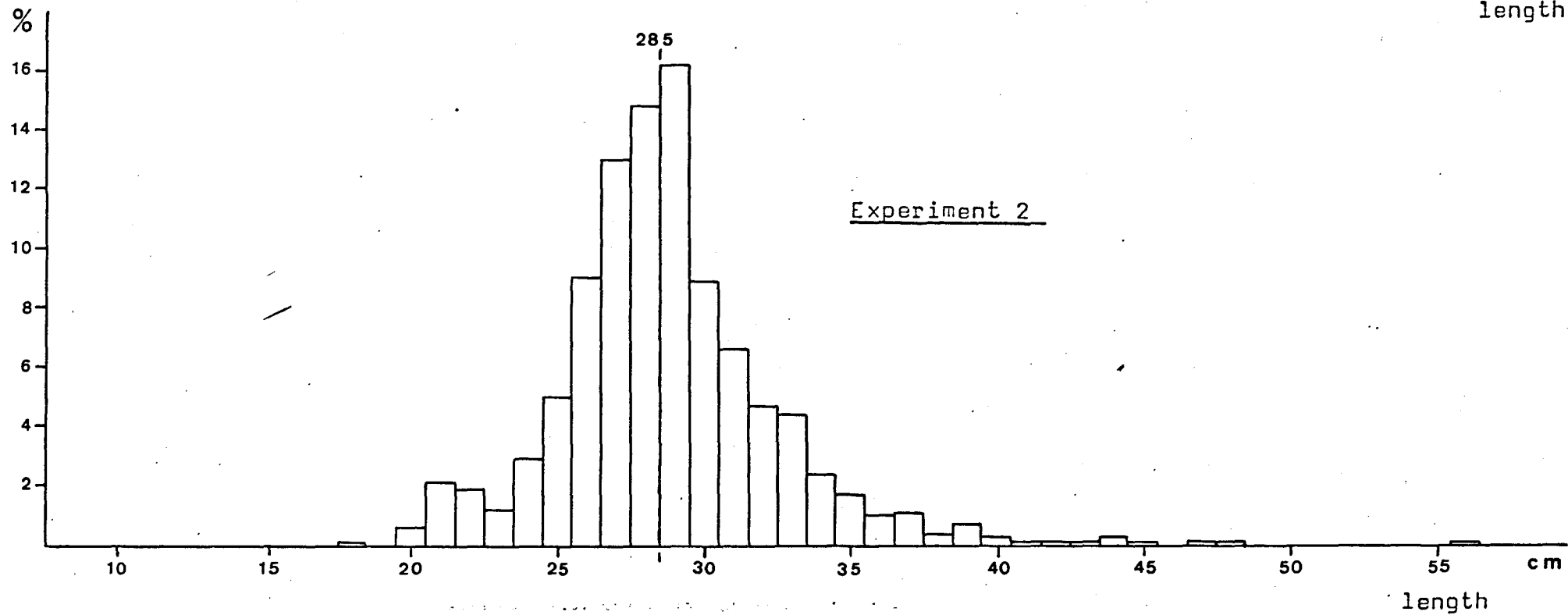
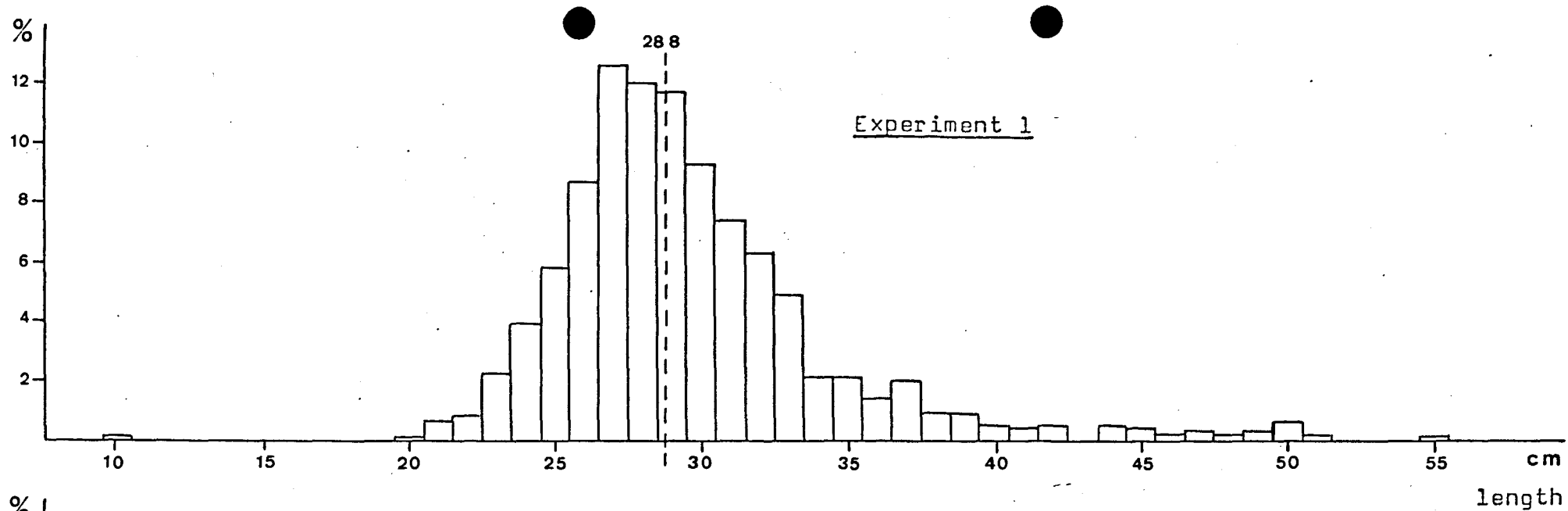
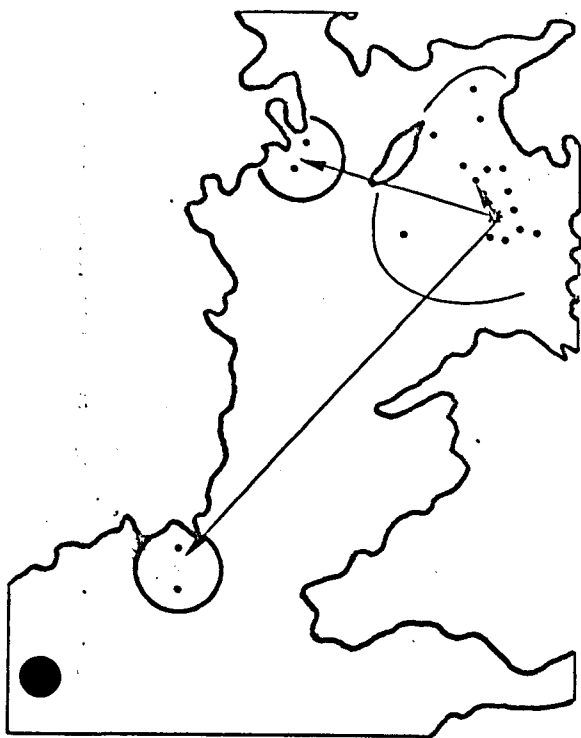


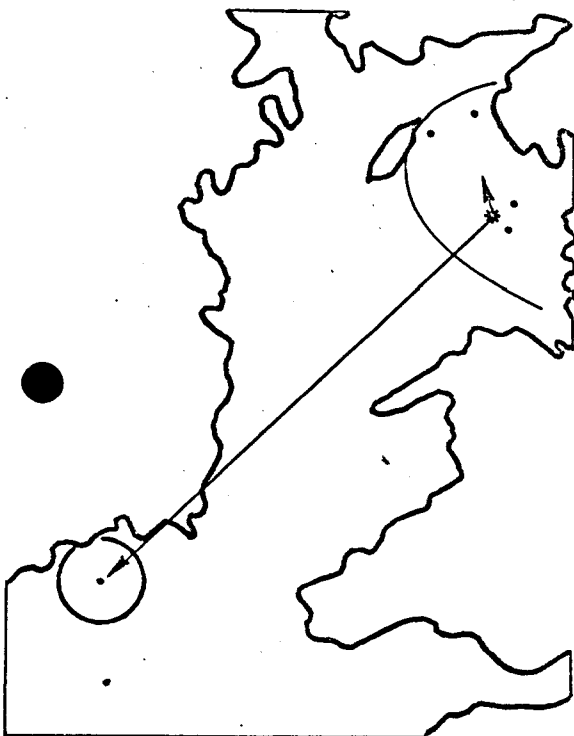
Figure 1.- Length frequency distribution of the tagged plaice of experiment 1 and 2.



first winter



first summer



first autumn



second winter



second autumn

Figure 2.- Position of recaptures, mean direction and mean distance of experiment 1.

* : release position



first summer



first autumn



first winter



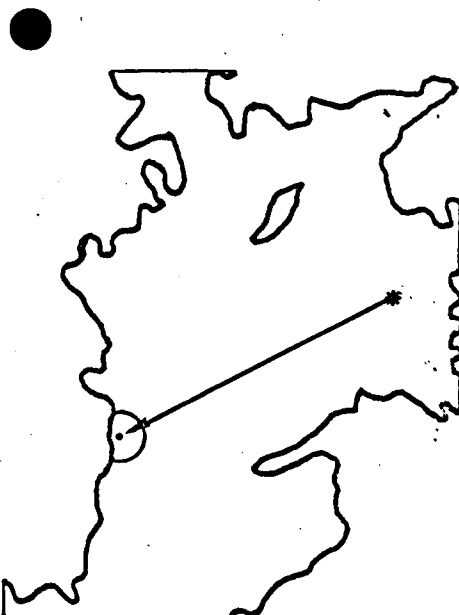
second summer



second autumn



1974 all periods



third winter(1975)



1976 all periods

* :Release position

Figure 3.- Position of recaptures, mean direction and mean distance of experiment 2