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A Preliminary Report of the Comparison of Herring Tagged with Six Types of Tags

by

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Introduction

A suitable tag is required to obtain information on the exploitation, identification and delimitation of herring (*Clupea harengus harengus* L.) stocks in Newfoundland waters. Few studies have been carried out to determine the suitability by comparing short and long term tag returns of a variety of tags in the Northwest Atlantic. The tag should be easily and rapidly applied, have a low shedding rate, and have an insignificant effect on mortality during the observation period. In an attempt to decide on the best tag to use, a study was initiated in the spring of 1974. This paper is limited to a discussion of suitability of the six tag types from returns over a period of 2 1/2 years.

Methods

Fish were mainly caught in a herring trap but a few were taken in a bar seine at North Harbour (Fig. 1) during May and June 1974. The fish were held in a 5.49 meter per side cube impoundment and 50 fish were removed at a time into a plastic tub to be individually tagged by a two man tagging team. Two technicians inserted the tags during the experiment but those who caught and held the fish to be tagged were rotated.

Groups of fish were tagged with the different tag types in a series of 20 separate taggings. In each series 25 Carlin, 125 disc and dangler, 100 disc and disc, 50 anchor (Floy FD68), 100 dart (Floy FT1) and 100 internal tags. Additionally the anchor was inserted in the interneural bones for one series of 20 and through the fish for another.

Results & Discussion

The percent returned of each of the seven tag types was relatively low (Table 1). Those tag types fixed to the fish by passing a stainless steel wire through the dorsal musculature were returned in a slightly higher proportion than the anchor, dart and internal tags.

The time spent tagging the fish was far greater with the former. Two men can put on between 700-800 per day of the Carlin, disc and dangler or disc and disc. Additionally the attachment wires have to be made before tagging. On the other hand the anchor, dart and internal tags can be put on at a rate of 2000-3000 per day by a team. The internal tags were a disadvantage because they were collected from a magnet (generally each day) and where mixed landings occurred one cannot determine where the fish was caught. All the other types of tags are visible thus returns come from both the fishermen and plants while the internal tag is only returned from the magnet. The internal tag, however, has proven to be a good mark in a fishery which is concentrated in one area.

Little difference was found between the percentage returns of the two taggers for the different tag types (Table 1). Tagger "B" had slightly less fish return than tagger "A" in the anchor dart and internal tags while the reverse occurred with the disc and dangler.

Most of the tags of all types were returned in the first year of the fishery in the St. Mary's Bay area near the site of the tagging (Figure 1, Table 1). A few were caught in Placentia Bay and the Southern Shore during 1974 but a larger number were returned in other than St. Mary's during the second fishing season. Few have been returned so far this year however, thus the drop in returns from most types of tags used by the second year is high.

The percentage of Carlin and internal tags returned was higher in the second year than the first but the anchor and dart were the most common tag returned this year. Additionally the anchor tag was returned in almost equal numbers for the first two years. Thus for ease of tagging large numbers of herring and when longer than one year observations of tagged fish are needed the anchor or dart seems the most suitable.

Table 1. The return rate of 6 tag types, the effects of different taggers, the proportion returned at month intervals and the proportion returned by area by date.

Tag Type	Number Liberated	Number Returned	Percent Returned to Date	Percent Returned by Tagger		Percent Returned by Date				Percent returned by Area by year																
				A	B	May/Sept 1974	Oct/March 1974/75	April/Sept 1975		Oct/March 1975/76	St. Marys Bay		Placentia Bay		Conception Bay		Southern Shore									
								1974	1975		1974	1975	1974	1975	1974	1975	1974	1975	1974	1975						
Carlin	500	18	4	4	0	37	63	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Disc & Dangler	2500	85	4	3	46	36	4	4	52	35	0	1	6	1	0	1	0	0	1	0	0	0	1	0	1	3
Disc & Disc	2000	91	5	5	87	9	4	0	87	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anchor normal	1000	26	3	3	38	42	4	4	48	43	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anchor through	1000	22	2	3	27	41	14	14	35	47	0	0	12	0	0	6	0	0	0	0	0	0	0	0	0	0
Dart	2000	38	2	3	26	39	11	11	33	43	0	0	23	0	0	3	0	0	0	0	0	0	0	0	0	0
Internal	2000	29	1	1	0	83	2	2	83																	

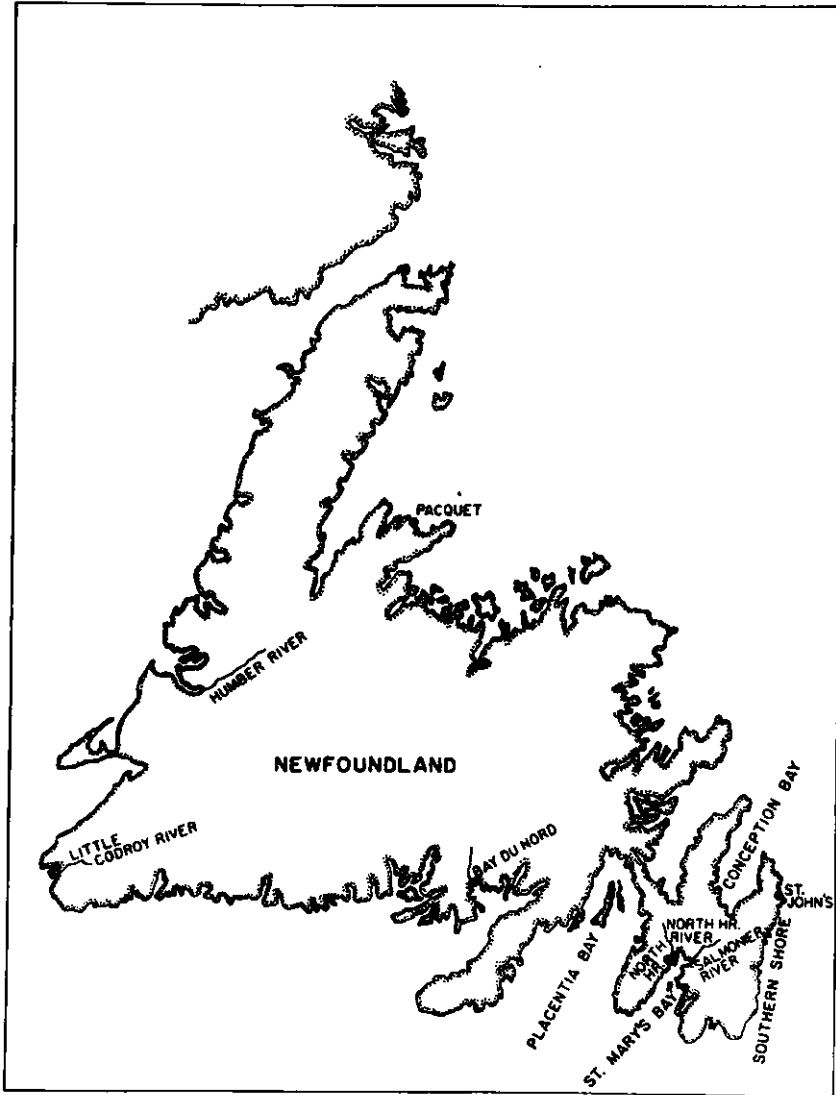


Fig. 1. The position of North Harbour in the Province of Newfoundland, Canada.