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Some results of field experiments of tagging the edible crab (Cancer pagurus L.) with the suture and toggle methods

by

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INTRODUCTION

A method of tagging crabs with tags which are retained during moulting, was first devised by van Engel (Butler 1957). The tag, later named "suture tag", consists of a numbered plastic disc attached by means of a stainless steel wire along the line which separates of the carapace during ecdysis. Two holes are made through the shell on this line, and with a curved suture needle, the wire is threaded through the shell and the underlying tissue and back again to the outside where it is tied to the tag. The stainless steel wire has later been replaced by a braided nylon thread (Edwards 1964).

Another method, also involving that the tag persists through the moult, was devised by Gundersen (1961). The tag used later got the name "toggle tag" and consists of two oblong plastic tags with rounded ends joined by a double nylon thread. One of the plastic pieces is a little smaller than the other, the dimensions being 14 x 3 x 0,5mm and 20 x 4 x 0,5mm. The smaller tag is inserted through a hole in the epimeral line on the shell and flesh and will, inserted perfectly, take place in the gill chamber with only the nylon gut going through the shell and flesh. The larger tag is remaining outside the carapace.

At the special meeting on crustacea held by I.C.E.S. in Copenhagen in

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1962, it was recommended: "That extended trials of the Norwegian method of suture tagging of crabs will be arranged as soon as possible to include comparative test with the British method". (Procés - verbal de la Réunion 1962).

A comparison of the two methods were made by Mason and Edwards (1964). Their conclusions were that the toggle tag had the advantages of ease and speed of application, but resulted in greater initial mortalities than the suture tag. Also a lower rate of recapture of toggle-tagged crabs suggest that the subsequent mortality also is greater, or that loss of toggle tags is greater, or both.

FIELD EXPERIMENTS

An experiment was started in the end of 1969 in order to compare the two methods in Norwegian waters. Crabs for the experiment were bought from fishermen at Geitanger in the skerries west of Bergen. Only crabs in perfect condition were used, and the tagging took place under equal conditions. Two persons, the author and a technical assistant, applied the suture method while two other technical assistants used the toggle tag.

The tagged crabs were released at three different localities near Geitanger, Rotøy and Tofteholmene. At Geitanger the crabs were dropped into the sea immediately after tagging. The crabs dropped at Rotøy and Tofteholmene were packed in newspaper after tagging, stored on-board and transported to Rotøy and Tofteholmene. The crabs released at Rotøy stayed on board 4-5 hours, and the crabs released at Tofteholmene 5-6 hours.

Table 1 shows the results of the experiment.

Table 1. Recaptures of tagged crabs released at Geitanger, Rotøy and Tofteholmene in December 1969.

Locality	Tagged			Recaptured					
	Date	Tag	No.	1969	1970	1971	1972	Tot.	%
Geitanger	8.12	Sut.	171	1	38	4	2	45	26,3
	8.12	Tog.	276	2	90	6	2	100	36,2
Rotøy	17.12	Sut.	63	0	31	7		38	60,3
	17.12	Tog.	116	0	58	11		69	59,5
Tofteholm.	12.12	Sut.	79	2	22	2	2	28	35,4
	12.12	Tog.	97	2	16	3	4	25	25,8
Total:		Sut.	313					111	35,5
		Tog.	489					194	39,7

At Geitanger the suture tag gave 26,3% recapture, the toggle tag 36,2%. At Rotøy the results were 60,3% and 59,5% respectively, and at Tofteholmene 35,4% recapture of suture tags and 25,8% of toggle tag.

111 of a total of 313 suture tagged crabs, or 35,5%, were recaptured from 1969 to 1972, while 194 of 489 toggle tagged crabs, or 39,7%, were recaptured during the same interval.

These experiments seem to indicate a little higher percent of recaptures of the toggle tag than the suture tag, while Mason and Edwards (1964) showed recaptures in favour of the suture tag.

Table 2. Recaptures of toggle tagged crabs released in 1962 -68, and suture and toggle tagged crabs released in 1969 at Geitanger, Rotøy and Tofteholmene.

		Geitanger	Rotøy	Tofteholm.	
1962	No.	391	349	132	
	%	55	41	33	
1963	No.	152	43	53	
	%	61	37	30	
1964	No.	749	383	0	
	%	47	53	0	
1965	No.	319	201	365	
	%	54	40	53	
1966	No.	451	198	170	
	%	32	27	23	
1967	No.	347	206	281	
	%	44	42	26	
1968	No.	396	238	130	
	%	81	54	24	
Total		2805	1618	1131	
Mean %		49	44	35	
1969	No.	171	63	79	
	%	26	60	35	Sut.
	No.	276	116	97	
	%	36	60	25	Tog.

Table 2 gives the number of toggle tagged crabs and the percent of recaptures at Geitanger, Rotøy and Tofteholmene in the years 1962 - 68. The last columns give the total number of tagged crabs, the mean percent of recaptures together with the numbers and percent of recaptures of suture and toggle tagged crabs at the same localities in 1969.

At Tofteholmene and Rotøy the percent of recaptures in 1962 -68 seems to be nearly the same as in 1969, while at Geitanger the mean percent of recaptures in 1962 -68 is rather higher than in 1969. The higher mean percent of recaptures in 1962 -68 at Geitanger and Rotøy compared to Tofteholmene is probably a result of higher fishing intensity. At these two localities the fishing starts in the middle of June and continues to December. The fishermen here use to sell the catch during summer at the fish-market in Bergen. At Tofteholmene the fishery starts in the middle of August and continues to the end of October.

SUMMARY

Comparisons of the suture and toggle methods of tagging crabs in this field experiment seem to indicate a little higher percent of recaptures of the toggle tag.

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