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Shellfish and Benthos CommitteeENGLISH LOBSTER (*HOMARUS GAMMARUS*(L)) TAGGING, 1976

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ABSTRACT

To enable advice to be given on the future management of lobster stocks by the minimum legal size regulation, data on growth, mortality rates and migrations were collected from 1 777 tagged lobsters released off the east and north-east coast of England in 1976. Up to the end of 1976 317 (18%) were captured; the highest recapture rates were off Sheringham and Cromer in Norfolk (24%) and Whitby, Yorkshire (22%). A total of 68 lobsters was returned having moulted. Average moult increments in carapace length were 12 and 14% off Yorkshire and Norfolk respectively. Allowing for the lower average size off Norfolk the moult increments were similar for the two areas. The majority of recaptures were made within 5 nautical miles of the release positions, but 10% moved 5-9 miles and 4% more than 10 miles.

INTRODUCTION

Conservation of the lobster stocks in Great Britain is dependent upon a single regulation, namely the minimum legal size. The Immature Crabs and Lobsters Order 1976, which came into operation on 15 March 1976, prescribes a minimum legal size of 80 mm carapace length (measured from the rear of either eye socket to the rear end of the body shell along a line parallel to the centre line of the body shell). Carapace length as the method of measurement was introduced in order to ensure the effective enforcement of the regulation: the length of 80 mm was chosen as being the nearest equivalent to the old 9 inch (229 mm) total length regulation. To be sure that any increase in the minimum legal size to above 80 mm will benefit a fishery it is necessary to know something about the growth rate, migrations, the natural mortality rate and proportion of the stock caught by fishing.

The lobster fishery on the east and north-east coast of England is one of the most important in Great Britain. In 1975 nearly 40% of the catch from England and Wales came from Norfolk, Yorkshire and Northumberland. However, in recent years recorded catches and catch rates have been declining in these areas. The average annual catch on the north-east coast during the early sixties was around 135 tonnes, but in the early seventies it had fallen by 52% to around 65 tonnes. At the same time catch rates have fallen. As part of an investigation of this decline a large scale lobster tagging programme was commenced off Norfolk, Yorkshire and Northumberland in 1976. The Burnham tag (Bennett and Lovewell, 1975) was used (Figure 1). This paper presents the preliminary results from recaptures up to the end of 1976.

1976 TAGGED LOBSTER RELEASES

In June 1976 a total of 955 lobsters was tagged and released off Whitby and Bridlington in Yorkshire (Table 1, Figure 2). The following month a further 527 tagged lobsters were released off Sheringham and Cromer in Norfolk. A further planned release of tagged lobsters off Seahouses, Northumberland was hampered by the autumn gales, and only 295 lobsters were released in September.

The samples of lobsters tagged and released included undersized (< 80 mm carapace length) animals so as to represent approximately the size composition of the local unselected catch. Thus, off Sheringham and Cromer, 76% of the lobsters released were undersized (Table 1), whereas at Whitby, Seahouses and Bridlington the proportions were 37, 5 and 1% respectively.

RECAPTURES IN 1976

Fishermen were asked to help by returning tagged lobsters, together with details of the date and position of capture, to their local Fisheries Office or tag collector. A reward of 50p plus the market value of the lobster was paid.

Of the 1 777 tagged lobsters released between June and September 1976, 317 (18%) were recaptured up to the end of the year. The highest recapture rates were off Sheringham and Cromer and at Whitby where 24 and 22% respectively were recaptured in 1976. In both areas a slightly higher proportion of males was caught than of females (Table 2). Off Seahouses, where the releases were made at the end of the main fishing season, only a small proportion (5%) of those released was recaptured (Table 2). Only two of the 152 lobsters released near Bridlington in June were recaptured.

Off Sheringham and Cromer, which only have a short lobster season of about six weeks, over half of those recaptured in 1976 were caught in the first two weeks after release, and 86% were caught in the first five weeks, ie from mid-July to mid-August (Figure 3). At Whitby, the picture was somewhat different. Only eight (5%) were returned in the first two weeks, but the majority (86%) were recaptured in the first 12 weeks (Figure 3), ie from mid-June to early September. A few continued to be caught up until December.

GROWTH INFORMATION

The releases at Seahouses were made late in the season and none of the recaptures had moulted. Neither of the two lobsters recaptured off Bridlington had moulted. However, from the recaptures at Whitby and Sheringham and Cromer 60 and 8, respectively, had moulted and have given growth information (Table 3). At Whitby 46% of the recaptured males and 25% of the females had moulted. This could be taken to suggest that males moult more frequently than females but the releases were made in mid-June when the moulting period could have already started. The low proportion (6%) of those recaptured off Sheringham and Cromer which moulted suggests that the releases in mid-July took place after the main moulting period. Alternative explanations are that the lobsters moult in the autumn, or that they may even moult both before and after the main fishing season. Recaptures in 1977 will help to clarify the position.

On average the carapace increased in length by 12 and 14% after moulting off Whitby, Yorkshire and Sheringham and Cromer, Norfolk, respectively (Table 3). However, the average premoult size of the moulted Norfolk lobsters at 63 mm carapace length was much lower than that of the Yorkshire ones at 76 mm. As smaller lobsters usually have a proportionately greater increase in length than larger ones, the increase in length at moulting for the two areas would seem to be basically similar.

MIGRATIONS

The majority of recaptures off Sheringham and Cromer were made within 5 nautical miles of the release position. A male of 92 mm carapace length, moved 11 miles north-west, before recapture by a trawler four weeks after release. None of the tagged lobsters recaptured off Seahouses moved more than 5 nautical miles.

Off Whitby 22 recaptured lobsters moved more than 5 nautical miles, six of them more than 10 nautical miles (Table 4). However, the majority (86%) were caught within 5 miles of their release position, having been free for eight weeks on average. Those moving 5-9 and 10 or more miles were free on average for 11 and 14 weeks respectively (Table 4). This suggests that, given time, some more long distance movements might be recorded.

BERRIED FEMALES

Where available berried females were tagged and observations on their breeding condition were made on recapture. A total of 125 berried lobsters was released, 111 off Whitby and Bridlington, 13 off Seahouses and one off Sheringham and Cromer. Of those released off Whitby eight were recaptured, two of them still berried and six having hatched their eggs. 313 of the female lobsters released off Whitby were judged to be mature although not berried and 20 of these were recaptured berried.

REFERENCE

BENNETT, D. B. and LOVEWELL, S. R. J., 1975. Lobster (*Homarus gammarus* (L)) Tagging trials in England. ICES CM 1975/K:26, 5 pp (mimeo).

TABLE 1 Details of tagged lobster releases in 1976

Month released	Release area (see Figure 2)	Numbers released			% under 80 mm carapace length
		Males	Females	Total	
June	Whitby	320	483	803	37
June	Bridlington	58	94	152	1
July	Sheringham/Cromer	279	248	527	76
September	Seahouses	143	152	295	5
	Totals	800	977	1 777	

TABLE 2 Numbers and percentage of lobsters recaptured to the end of 1976

Month released	Release area (see Figure 2)	Numbers and % recaptured					
		Males	%	Females	%	Total	%
June	Whitby	78	24	95	20	173	22
June	Bridlington	1	2	1	1	2	1
July	Sheringham/Cromer	72	26	56	23	128	24
September	Seahouses	9	6	5	2	14	5
	Totals	160	20	157	16	317	18

TABLE 3 Growth information from tagged lobsters recaptured in 1976

Month released	Release area (see Figure 2)	Number recaptured	% moulted	Mean premoult size (mm)	Mean % increment
MALES					
June	Whitby	78	46	76	12
July	Sheringham/Cromer	72	6	63	13
FEMALES					
June	Whitby	95	25	76	11
July	Sheringham/Cromer	56	7	63	15
TOTAL					
June	Whitby	173	35	76	12
July	Sheringham/Cromer	128	6	63	14

TABLE 4 Movements of tagged lobsters released off Yorkshire. Those moving less than 5 nautical miles were not considered because of possible inaccuracies in reporting the recapture position

Direction	Number of lobsters		
	Distance (nautical miles)		
	Under 5	5-9	10 or more
North-west		11	5
South-east		4	1
East		1	0
Total number recaptured	137	16	6
Mean number of weeks free	8	11	14

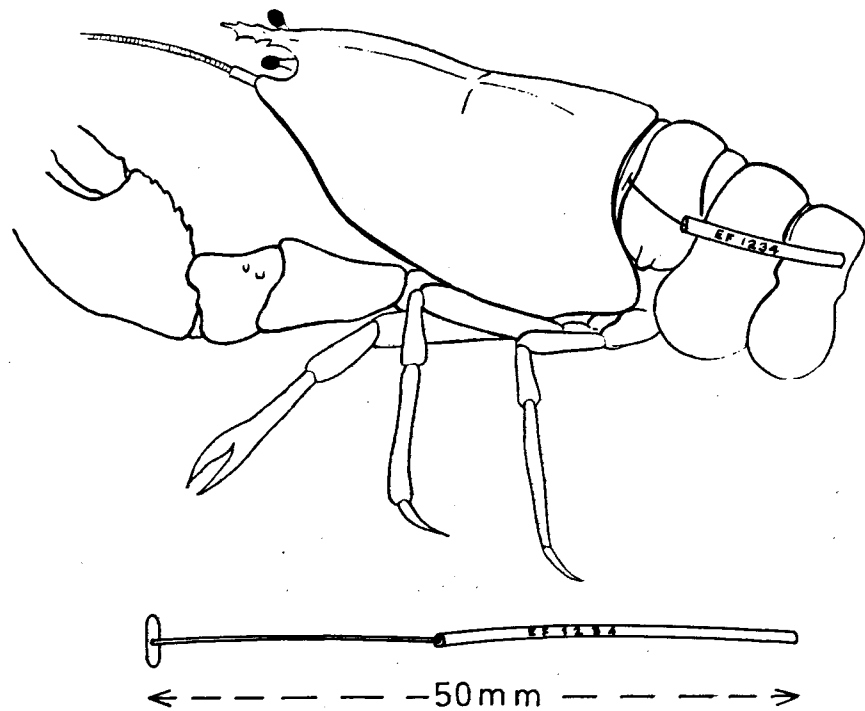


Figure 1 The 'Burnham Lobster Tag', which is inserted into the musculature between the rear of the carapace and the tail. It is retained in this position after moulting.

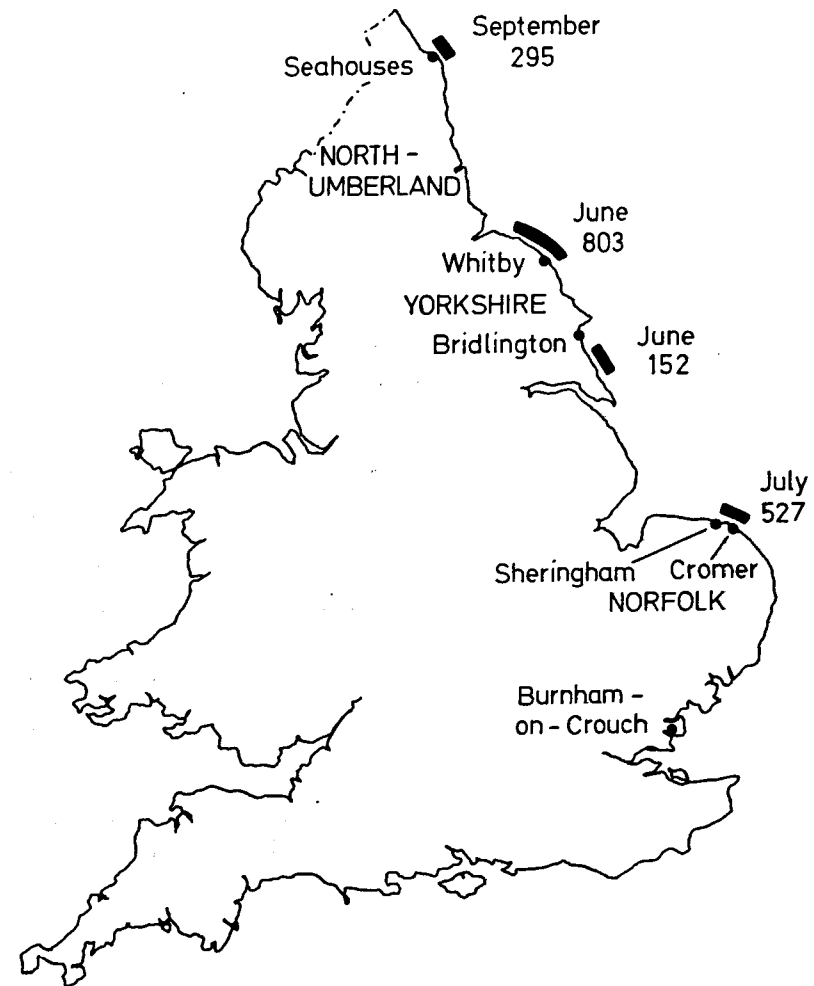


Figure 2 The position, month and number of tagged lobsters released in 1976.

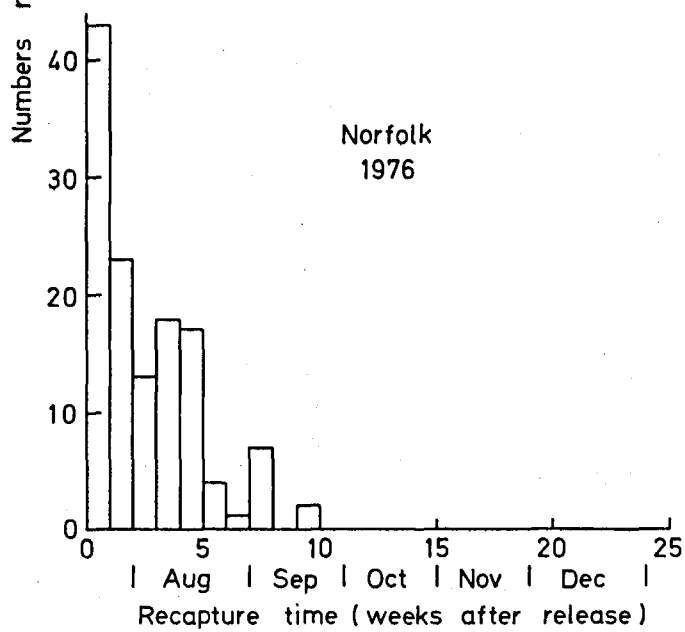
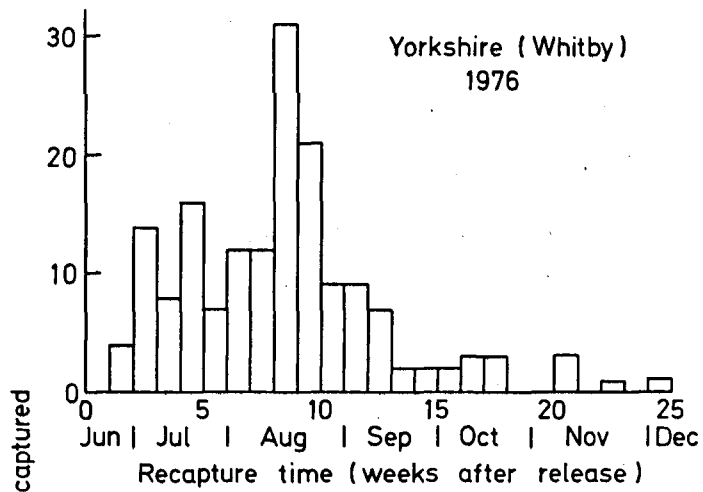


Figure 3 Number of tagged lobsters recaptured in 1976 for each week after release.