SHELLFISH INVESTIGATION

INFORMATION REPORT 70-7

CRAB MOVEMENT OFF PORT ORFORD, OREGON

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INTRODUCTION

Dungeness crab migration along the coast and movement in and out of bays and estuaries has been studied by Cleaver (1949) in Washington, Waldron (1958), and Snow and Wagner (1965) in Oregon. Tagged crabs were recovered up to 133 miles from the point of release and a free interchange between the bay and ocean populations was indicated. Waldron (1958) suggested that jetties or natural land projections along the coast might be a barrier to nearshore crab migration. Port Orford was chosen to examine specifically the movement of crabs around a natural headland.

Port Orford is located on the southern Oregon coast at latitude 124° 30' N., longitude 42° 44' W. (Figure 1). The port is exposed from the south and completely protected from the west and north by a headland known as The Heads. The crabs tagged and released at the dock would have to travel nearly 2 miles south and west to go north along the coast.

METHODS

Sublegal crabs, (less than 159 mm carapace width), were tagged with 12-inch spaghetti tags placed in the epimeral line using the method described by Snow and Wagner (1965). The tagging was done during March and April 1965. The crabs retain the suture tags through molting and would have several months of freedom before entering the 1965-66 fishery. A local crabber was paid 25¢ each for crabs from two areas. One area was 6 miles north of Port Orford off Elk River and the other was 11 miles south of Port Orford off Frankport. Tagged crabs were tossed off the dock after the width, sex, condition, and noticeable injuries or other marks were noted. In all, 3,004 males and 1,001 females were tagged.

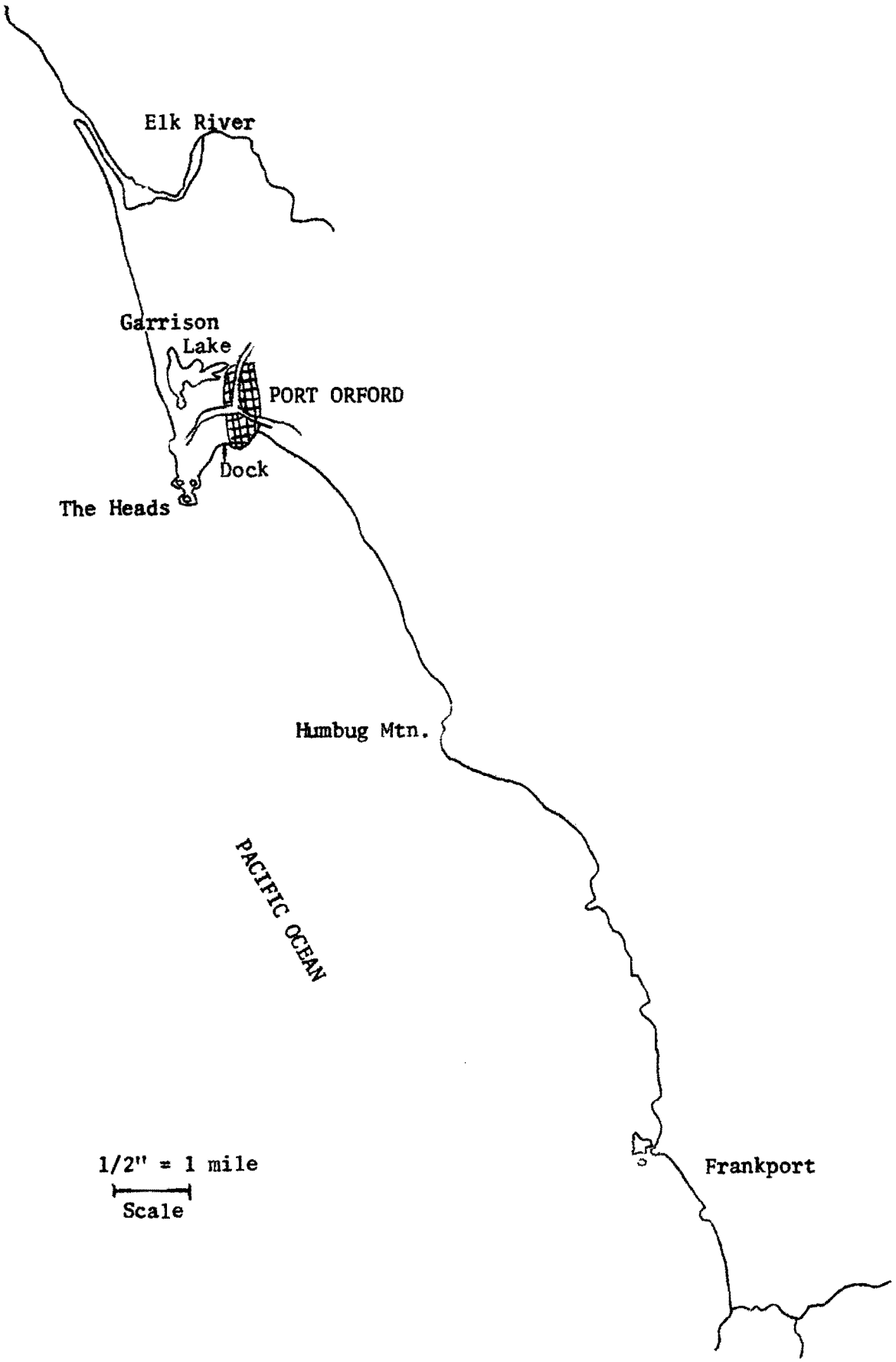

Figure 1. Location of Port Orford, Oregon

Crab fishermen and processors were informed of the study and their cooperation solicited in tag recovery. Forms were provided to record pertinent data. Recoveries were made by local fishermen and plant personnel from Port Orford to San Francisco.

RESULTS

Only 113 crabs were reported from the 4,005 animals tagged, but just 71 had complete recovery data (Table 1). Table 2 reveals that most of the tags were recovered during the 1965-66 season. Tagged crabs recovered were at liberty an average of 332 days.

Table 1. Number of Crabs Tagged and Recovery Data, Port Orford, 1965

Sex	No. Tagged	No. Recovered	% Recovered
Males	3,004	108	2.9
Females	1,001	5	0.5
Total	4,005	113	2.3

Table 2. Recovery by Month of Crabs Tagged in March and April, Port Orford, 1965

	Month	No. Recovered
1965	April-September	13
	December	29
1966	January	9
	February	13
	March	19
	April	14
	May	7
	June	2
	July	1
1967	January	2
	February	2

The tag return by area of origin is shown in Table 3. Of the 2,674 crabs tagged from the Elk River area, 85 were captured while 28 of the 1,331 Frankport crabs were reported.

Table 3. Origin of Tagged Crabs and Recovery Data, Port Orford, 1965

Origin	No. Tagged	No. Recovered	% Recovered
Elk River	2,674	85	3.2
Frankport	1,331	28	2.1
Total	4,005	113	2.8

Tag returns from both Elk River and Frankport crabs indicate a slight preference for northward movement (Table 3). The Elk River crabs traveled an average of 14.9 miles north and 14.4 miles south with a range of 2-90 miles not counting those caught less than 2 miles from the dock. The average travel of Frankport crabs was 10.6 miles north and 20.2 miles south with a range of 11-35 miles (Table 4). Of the crabs that went north, 61% were caught within 16 miles of the point of release and 73% of the southern migrants within 11 miles. One tag was recovered from northern California.

Table 4. Tagged Crab Movement in Miles off Port Orford, 1965

Area of Origin	Number	Per Cent	Miles Traveled		
			Maximum	Minimum	Mean
Elk River					
Local	9	17.3	--	--	--
North	22	42.3	90	2	14.9
South	21	40.4	56	5	14.4
Frankport					
Local	3	15.8	--	--	--
North	11	57.9	27	2	10.6
South	5	26.3	35	11	20.2

Growth data are available for 56 of the tagged crabs. The average increase in carapace width was 27.1 mm. This compares to 28.6 mm for Snow and Wagner (1965) and 23.9 mm for Cleaver (1949).

DISCUSSION

The results of this study may not be too reliable because of certain deficiencies. Initially, the tagged crabs were tossed off a dock 25-30 feet high. There is no doubt that loss occurred through this procedure. Tests by shellfish personnel in 1969 showed that crabs dropped from 100 feet suffered 100% mortality. Further, 25% of the tagged crabs were females, but females are illegal in the fishery and automatically discarded when caught by the fishermen. Few female crabs are caught, however, because most pots have 4 1/4-inch escape ports which allows most females to escape. It is not surprising that only five tagged females were reported, and in effect, 25% of the tagging effort was lost.

Poor tag returns were a serious handicap to this study and several factors have a bearing. Nearly all tag information was questionable at the time it was received. Crab fishermen and processors had little, if any, incentive to look for tagged crabs in the catch because no reward was offered for tags returned. Daily contact in the area was lacking by our staff because of the time and distance involved. Some tags were lost on the boats or at the canneries or simply shelved long enough for the recovery data to be forgotten. The tag itself was not reliable. California biologists noted in one of their studies that the tag knot would work loose. Recent observations indicate that tags may be lost during mating.

In spite of these shortcomings, the study does indicate that the headland at Port Orford is not a barrier to crab migration. In fact, a slight tendency for northward migration is indicated, but this may be due to the concentration of the fishery. No homing instinct was suggested by the tag returns.

ACKNOWLEDGMENTS

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