

Columbia River Crab Studies, 1957-58

This report summarizes the results of crab studies undertaken during the fall of 1957 and 1958 in the Columbia River estuary. The purpose of this project was to determine the shell condition of the crabs available in this area during the period when crab fishing is prohibited in the ocean, and to study the movement of these crabs by tagging. The total catch of crabs taken by commercial fishermen in this area was also tabulated.

Magnitude of the Fishery

Figure 1 illustrates the seasonal crab landings in the Astoria area, and landings made during the period when ocean fishing is prohibited, for the period 1955-58. Crabs landed during the ocean closed period were taken primarily in the Columbia River estuary and will henceforth be referred to as Columbia River landings. The total annual landings vary from 2.2 to 3.2 million pounds and the Columbia River landings vary from 70,000 to 217,744 pounds during the period shown. The Columbia River crab landings average less than five per cent of the total annual landings. It is believed that 1956 and 1957 respectively, represent the poorest and most successful seasons of the river fishery in recent years.

Shell Condition

Shell condition samples were collected periodically through the period of study, and are summarized in Figure 2. Only crabs available to the commercial fishery -- males of legal size -- were included in these data. Experimental fishing was carried on in the river during July and August of 1958 and shell condition samples shown for this period were obtained in this manner. All other samples were collected by accompanying commercial fishermen and sampling all of the crabs taken in a portion of the pots lifted. The peak of softness apparently occurred prior to commencement of fishing in 1957, and during October in 1958. The time of moulting and ensuing period of poor shell condition,

although varying slightly from year to year, seems to occur at about the same time in the Columbia River as in the adjacent ocean area.

Tagging

In 1958, 480 tagged crabs were released in the estuary between July 6 and October 15. Table 1 summarizes this tagging study. Of these, 74 (14.6 per cent) were recovered in the river. Only 3 river recoveries were made after the start of the ocean season. A total of 53 (10.5 per cent) was recovered in the ocean. No ocean recoveries were made of 23 crabs released in the ocean, however 3 (13.6 per cent), were recovered in the river. The crabs released in the river and recovered in the ocean exhibited no marked directional movement. Recoveries were almost equally divided north and south of the mouth of the river. The total number of recoveries compares well with previous crab tagging studies and they are thought to be representative of crab movements in the study area during this period.

Summary and Conclusions

The amount of crabs taken commercially in the Columbia River during the ocean closed period is small when compared to the total annual landings for the Astoria area. The percentage of soft-shelled crabs caught in the Columbia during the period of study varied from 8 to 64 per cent. It is thought that the time of moulting and period of poor shell condition is essentially the same for the estuary and adjacent ocean. The recovery distribution of the tagged crabs reveal a rather free movement of crabs in and out of the estuary. The results of this study indicate that Columbia River estuary crab stocks are not separate from those found in the nearby ocean, and should be subject to the same management regulations.

Robert J. Ayers
Aquatic Biologist
December 12, 1960

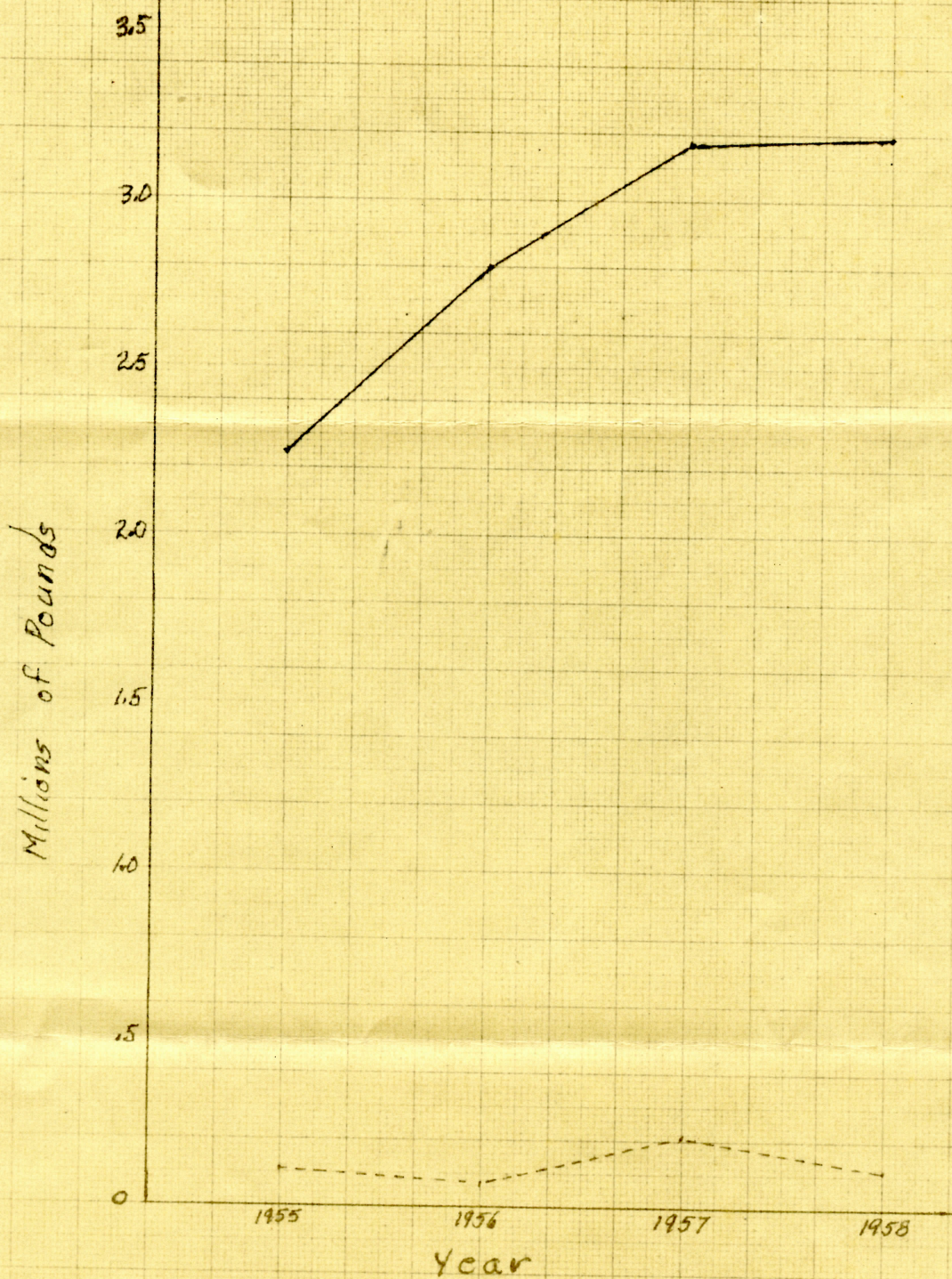


Figure 1. Annual Crab Landings at Astoria, By Season, and Landings During the Ocean Closed Period, (Sept. 15-Dec. 15) 1955-58.

Table Astoria Crab Landings, all Months
Included, 1955-58

1955-----2,249,750

1956-----2,802,425

1957-----3,173,950

1958-----3,185,775

Table Astoria Crab Landings During Ocean
Closed Period, (Sept. 15-Dec. 15),
1955-58

1955-----111,090

1956----- 70,170

1957-----217,744

1958-----118,700

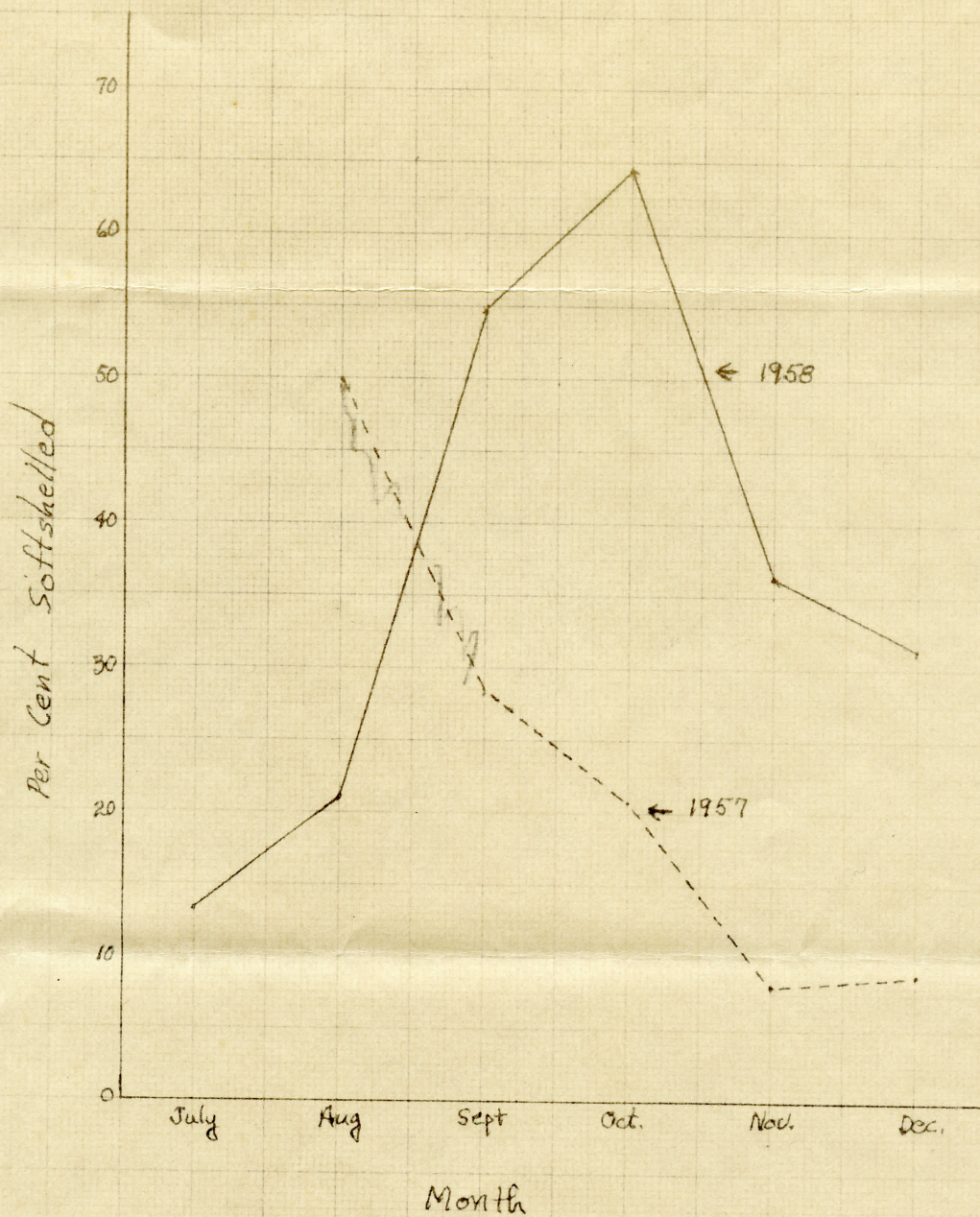


Figure 2. Per cent of Legal-sized Crabs Which were Softshelled When Taken in the Columbia River, July-December, 1957-58.

Per Cent of Legal-sized Crabs Which Were Soft-shelled
When Taken in the Columbia River, July-December, 1957-58.

	No. of Legal- sized Crabs	No. of Soft- shelled Crabs	Per Cent Soft-shelled
<u>1957</u>			
September	14	4	28.6
October	1,230	255	20.7
November	589	47	8.0
December	1,208	106	8.8
<u>1958</u>			
July	866	115	13.3
August	275	58	21.1
September	386	211	54.7
October	611	394	64.5
November	326	118	36.2
December	227	71	31.3

Per Cent of Legal-sized Crabs Which Were Soft-shelled
When Taken in the Columbia River, July-December, 1957-58.

	No. of Legal- sized Crabs	No. of Soft- shelled Crabs	Per Cent Soft-shelled
<u>1957</u>			
September	14	4	28.6
October	1,230	255	20.7
November	589	47	8.0
December	1,208	106	8.8
<u>1958</u>			
July	866	115	13.3
August	275	58	21.1
September	386	211	54.7
October	611	394	64.5
November	326	118	36.2
December	227	71	31.3

Table I. Area of Release, Area of Recovery, and Direction of Movement
of Crabs Tagged in the Columbia River and Vicinity, 1958.

Release Area	Number Released	Recovery Area		Movement			
		Ocean	River	Non-directional	North	South	Unknown
		No. Per Cent	No. Per Cent	No. Per Cent	No. Per Cent	No. Per Cent	No. Per Cent
Col. R.	480	53	10.5	74	14.6	127	25.2
Ocean	23	0	0	3	13.6	3	13.0
Col. R.	127	74	58.3	24	18.9	27	21.3
Ocean	3	--	--	3	100.0	--	--