

CRAB CONDITION STUDIES DURING THE 1960-61 SEASON IN OREGON

INTRODUCTION

The condition of Dungeness crabs at the inception of each season fluctuates considerably between years. In some years only a small portion of the marketable crabs have softshells (and little meat) and in other years substantial portions. The poor quality of crabs during the early portion of the 1959-60 season caused considerable concern within the industry and this resulted in a recommendation to the FMFC in November 1960 to delay the opening date along the coast. A concurrent recommendation called for uniform opening dates for all areas. The northern California, northern Oregon (Area I, north of Cascade Head), and Washington areas opened December 15 and southern Oregon (Area II, south of Cascade Head) opened November 15. The variable opening dates in Oregon were based upon condition studies undertaken in 1948 and 1949.

The OFC acted in December 1960 to change the opening date for Area I from December 15 to January 1, and for Area II, from November 15 to December 1. These new dates would become effective in the 1961-62 season if the Washington season was altered to coincide with that in Oregon's Area I. Subsequently NDF did alter their season accordingly.

The OFC action created some controversy among some segments of the Oregon industry who alleged that the crab condition did not vary sufficiently between areas to warrant different opening dates for Areas I and II. In accordance with a FMFC staff request a 2-year investigation was undertaken to determine the condition of crabs landed in the principal Oregon ports.

This report deals with the information collected during the 1960-61 season.

## METHODS

Through the cooperation of the processing plants and fishermen, 17,000 crabs were sampled at sea and dockside for shell condition. Condition of the crabs was determined by pinching the shell at the base of the tenth antero-lateral spine. If the shell was immovable at this point, the crab was considered to be condition 1, or hardshell. If the shell was flexible under pressure it was considered as condition 2, or softshell. If it was very soft or compressed readily it was classified as condition 3. Samples were taken weekly when weather and landings permitted. Also each staff member sampled at least once in every port in order to minimize bias. Width frequencies were taken of all legal soft-shell crabs and a portion (45 per cent) of the hard-shell crabs.

In this type of sampling the following assumptions must be made: (1) a crab with a soft or flexible shell is a crab that has not completely filled out since molting; (2) uniform interpretation of shell condition by all samplers; and (3) the samples taken are representative of the crabs being caught in the fishing area.

## RESULTS

Table I summarizes the information collected concerning the condition of crabs landed as measured by the per cent of soft-shell crabs in the samples. In general, the per cent soft-shell crabs declined steadily after the season opened in all fishing areas. However there was a decided difference in the condition of crabs between fishing areas, in the same week, during the early portion of the season. For the week ending January 1, percentage for southern Washington was 37 (the previous week it was 41 compared with 29 for Area I). For Area II, exclusive of the southernmost portion (Regue River Reef to the

Table 1. Numbers of Crabs Sampled and Per Cent Softshells, by Area Caught and Date Sampled, for the 1960-61 Season.

Date	Longbeach, Wn.		Columbia R.		C. Falcon		C. Lookout		Umpqua R.		Cape Blanco		Rogue River	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
11-28-60	0		0		161	38	0		0		0		0	
12-13-60	587	57	0		426	20	468	14	279	8	632	6	632	36
12-26-60	195	41	300	39	555	7	0		0		280		280	36
1-2-61	150	37	0		73	3	190	5	95	13	250		250	20
1-9-61	0		159	13	539	5	0		0		0		0	
1-16-61	0		0		490	8	0		349	10	503		503	20
1-23-61	279	13	148	9	734	7	369	6	0		0		0	
1-30-61	524	9	0		832	9	0		500	9	306		306	10
2-13-61	0		0		629	6	0		0		0		0	
2-20-61	257	7	141	22	0		0		0		0		0	
2-27-61	0		0		657	2	0		0		0		0	
3-5-61	0		0		471	6	488	29	0		334		334	12
3-20-61	399	5	535	6	0		0		0		0		0	
3-27-61	0		0		302	3	0		0		419		419	5
4-2-61	149	63	319	10	0		0		0		0		0	
4-17-61	0		0		391	5	453	2	0		0		0	
5-1-61	316	23	0		0		0		0		0		0	
5-8-61	197	13	0		0		0		0		0		0	

Cape Falcon is 4.3 miles north of Cascade Road, the northern boundary of Area II.

California border), the percentages were 3, 5, and 13, respectively, moving southward. Curiously, the Rogue River Reef-California border sub-area had a percentage of 20 which is comparable to that in Area I. This area has only recently been extensively exploited by Oregon fishermen. Further study is indicated to determine whether this condition is consistent. The data indicated that a later opening in 1960 for all areas would have reduced the proportion of soft-shell crabs landed; and that the crab condition does vary markedly between areas.

Table 2 summarizes the information collected concerning the mean width (mm.) of hard- and soft-shell crabs sampled, by fishing area and date. The soft-shell crabs in almost all samples were smaller than the hard-shell crabs. Furthermore, the soft-shell crabs declined in size throughout the season in all areas except Cape Lookout-Umpqua River. One or more of the following reasons may account for this: (1) crabs which were sub-legal during the early portion of the season molted and reached marketable size but had not hardened up; (2) freshets may have caused bay crabs to emigrate to the sea-- these are smaller crabs and a substantial portion of them are soft at any time of the year; or (3) smaller crabs have thinner shells and may have been categorized as soft merely because the thinner shells offered less resistance to squeezing.

CONCLUSIONS

The 1960-61 crab sampling substantiated the difference in condition of crabs sampled from different areas at the same time, and that the crabs in Area II, except the southernmost portion, reached prime condition earlier than those in Area I. However, in the southernmost sub-area of Area II, the crabs were as soft as those in Area I. This area merits additional study since Oregon crabbers have only recently begun exploiting the area.

Table 2. Mean Width (mm.) of Legal-Size Hard- (H) and Soft-shell (S) Crabs, by Area Caught and Date Sampled, for the 1960-61 Season.

Date	Longbeach, Wa.		Columbia R.		C. Falcon		C. Lockport		A. S. G. Lockport		Cape Blanco		Cape Mendocino		Cape Blanco		Cape Mendocino	
	H	S	H	S	H	S	H	S	H	S	H	S	H	S	H	S	H	S
12-12-60	180	173	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
12-26-60	174	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
1-1-61	176	168	174	174	174	174	174	174	174	174	174	174	174	174	174	174	174	174
1-9-61	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177
1-16-61	176	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177
1-23-61	178	174	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
1-30-61	179	170	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
2-20-61	179	170	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
2-27-61	179	170	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
3-5-61	179	165	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
3-20-61	179	165	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
3-27-61	179	165	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
4-3-61	179	162	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
4-17-61	179	162	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
5-1-61	179	162	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
5-8-61	179	162	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178

by Cape Falcon is 43 miles north of Cascade Head, the northern boundary of Area II.

The study further substantiated that a later opening would indeed improve the quality of the crabs landed early in the season.

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