

REPORT TO THE BOARD OF FISHERIES,
YAKUTAT DUNGENESS CRAB FISHERY



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INTRODUCTION

Dungeness crabs *Cancer magister* are members of the highly evolved brachyuran (true crab) subgroup of the order Crustacea. They are commercially significant and widely distributed in coastal waters of the eastern Pacific Ocean from Baja California to the Aleutian Islands.

Fishing grounds in Yakutat (Registration Area D) are close to the northern limit of Dungeness crab distribution. They are widely distributed in Yakutat waters, but tend to concentrate off ocean beaches in two to 10 fathoms. Some of the most productive summer fishing occurs in the shore break of exposed beaches. Although the fishery extends along the entire coast, much of the total harvest each year is taken from four or five distinct, localized fishing grounds. Through the past forty seasons, Yakutat produced a long-term average harvest of about 1,370,000 pounds per season (Table 6.1) but with a downward trend occurring since 1992/93. Historically, the product was marketed as canned or frozen meat, sections, whole-cooked, or live crab. More recently, whole cooked or live crab has entered the summer tourist markets in Washington, Oregon, and California. Early indications during the last three seasons reflected low stock abundance and the seasons were closed by emergency order by the 4th week of the fishery. The department intends to keep this fishery closed beginning May, 2000, pending rebuilding of the stock and development of a management plan and research program designed to provide sustained yields.

Yakutat is a superexclusive registration area for Dungeness crab; a vessel registered to fish in this area cannot register or fish in any other area in Alaska during the same calendar year. The fishery is currently under open entry. Anyone with a permit and license can register a vessel to crab in this area. During the past decade, up to 67 permits have fished in the Yakutat area. During the past three seasons, an average of 23 permits were fished. Most vessels are 50 feet or larger, with some vessels up to 90 feet in length. As a rule, the fleet is composed of sturdy vessels designed to be operated in near-shore rollers and capable of open ocean transit. The 400 pot limit, open ocean conditions, and the remote nature of the fishing grounds favor vessels typical of Dungeness fisheries in the Pacific Northwest. In fact, most of the vessels fishing the more remote western and eastern grounds have homeports in the Pacific Northwest. Almost all participants use standard, hatbox-shaped pots constructed with steel frames and webbed with stainless steel wire.

Management of this fishery is problematic because collection of biological data is limited to port sampling of the landed harvest for size frequency information, and to harvest data reported through the fish ticket system. The wide range of landing ports, as far away as Cordova, and very sporadic deliveries make it difficult to schedule dockside sampling of deliveries. The remoteness of many of the grounds complicates understanding the effects of the fishery on crab stocks. Determining stock composition and abundance would require a much more extensive research and management program.

The summer fisheries overlap important parts of the male molting period, which extends into mid-summer, and the female molting period that extends through the summer. The major mating period is also during mid to late summer. The relative success of the summer fishery depends on sporadic major recruitment events that support the fishery for up to three years thereafter. Once a large recruit year-class passes through the fishery, the fishery is dependent on annual recruitment and is vulnerable to local depletion until another large year class enters the fishery. It has been at least six years since any significant recruitment occurred in the Yakutat area. Stocks are currently considered depressed.

Alaska is the only management jurisdiction on the West Coast of North America that allows major summer fisheries for Dungeness crabs, justifying the risks because of overriding economic considerations. The Yakutat summer fishery is considered a necessary concession to the extreme winter weather conditions on the open ocean fishing grounds.

FISHERY DEVELOPMENT AND HISTORY

Through much of its history, from the mid-1920s to the mid-1960s, Southeast Alaska and Yakutat were managed as a single unit. Prior to the 1960s, harvests from much of the Gulf of Alaska were combined into a single total; Yakutat contributions were significant, but the exact percentages are unavailable.

Since the early 1960s, the fishery in the Yakutat area has evolved through two major periods. Between the early 1960s and the 1981/82 season, the landings and participants fluctuated widely (Table 6.1). Until the early 1980s, demand for Dungeness crab from Yakutat was generally inversely related to the availability of crab from Washington, Oregon, and California and highly dependent on the willingness of one or two major processors to purchase crab during the summer. The fishery was market driven.

Between the 1981/82 and 1995/96 seasons, effort and participation generally increased. As the preferred product form changed from frozen or canned meat to air-freighted live crab, there was increasing interest from processors to handle Dungeness crab. For many crabbers from the Pacific Northwest, the Yakutat summer fishery was attractive because their home waters are closed during the summer. The rising demand in the early 1980s coincided with the entry of a huge recruit class into the fishery and a decline in harvests from Washington, Oregon, and California. The recruit year class supported increasing fishing effort through the next two seasons and set the pattern for development of the current fishery, which is driven by stock abundance.

REGULATION DEVELOPMENT

The documented regulatory history of this fishery started in 1924. Most management jurisdictions within the range of this species employ passive management measures such as size limits, restricting harvest to males, and specifying a season that avoids known sensitive molting and mating periods. In Yakutat, this management triad, called 3-S management (size, sex, and season), is actually 2-S management since the summer fishery occurs while males and females are molting and mating. The current May 15 to July 15 opening is a compromise developed over many years to avoid the major molts to the extent possible, while recognizing economic returns. There are few alternatives to a summer season in Yakutat because the most productive grounds are exposed to extreme weather conditions in the winter. Both classical 3-S and modified 2-S management usually does not effectively manage intensive, highly competitive fisheries. If the effort in Yakutat continues to climb, other management options will need to be considered.

There are more active management alternatives to 2-S methods currently used by the state. Some of these, such as harvest rates or guideline harvest levels based on stock assessment surveys, could structure harvest to protect weak stock segments or soft-shell crabs while optimizing exploitation rates and product quality.

Fishing Seasons and Periods

For most years and seasons before 1975/76, the fishery was open all year. The accounting period started on January 1 and ended on December 31. In 1975, following eight consecutive years of harvests between one and two million pounds and a rapid rise in the number of fishing vessels, the season was shortened to May 16 through February 28, 1976. It was then closed in the summer by emergency order because large numbers of soft-shelled crab were observed in the landed harvest. It was a season notable only because it marked the advent of short seasons and in-season management of the fishery based on stock conditions.

The 1976/77 season started on June 1, with a scheduled closure on February 28, 1977. The season opening and closing dates remained the same through the 1981/82 season, although several intervening seasons were closed by emergency order when large numbers of soft-shells were sampled at the dock. The season changed again in 1982, to May 1 through February 28, 1983. Each season from 1982/83 through 1984/85 was closed by emergency order at some point in the summer due to increasing numbers of soft shells in the landed harvest. In 1985, a split season was implemented from May 1 through July 14, and November 1 through February 28, 1986. Management of the summer fishery focused on avoiding major male molts, which frequently start on the western grounds around Icy Bay and move eastward through the summer. The summer season was generally tailored to start after the major molt on the western grounds, and end before the major molt in the Yakutat Bay stocks. By 1986, it was evident that the May 1 opening was too early and the season was shortened to start on May 15. For each season since, the summer segment of the season has started on May 15 and ended on July 14, and the winter segment has started on November 1 and ended on February 28. The timing of the winter segment was intended to provide a fishery for local residents fishing in Yakutat Bay.

Although there were no proposals before the BOF at their January 1997 meeting to deal specifically with Yakutat stock status, they directed the department to take action. In the first three weeks of the 1997/98 season, a large portion of the harvest was recruit size crab coupled with low abundance, both indicators of poor stock condition. An emergency order closure was issued for June 13, 1997 to foster recovery of the stock. By also closing the winter portion of the fishery, it was thought that there would be an accrual of benefits from the summer closure. However, the 1998/99 fishery indicated further recruitment failure and overall low stock abundance. On June 9, 1998 the fishery was closed for the second consecutive season. And on June 15, 1999, the fishery was closed by emergency order for a third season.

Size Restrictions

From 1924 to 1935, the legal size of male crabs was 6 ½" in greatest width of carapace. This changed in 1936 to 7" and remained unchanged until 1963, when the measurement was redefined as 6 ½" in width, measured immediately anterior to the tenth anterolateral spines. This was essentially the equivalent of a

seven inch total shell width measurement but more consistent since damage to the tips of the tenth anterolateral spines is common, particularly in older shell crabs. This measurement standard, often coined "shoulder width," has been in effect since then.

Gear Restrictions

In 1934, trawls were prohibited. Only pots or ring nets were allowed from 1954 to 1965. A gear limit of 300 pots or ring nets was implemented in 1963. In 1966, diving gear was legalized. The legal limit for pots and ring nets was raised to 600 pots in 1968. In 1995 the legal limit for pots was reduced to 400. This limit continues to the present. Two escape rings with a minimum inside diameter of 4 3/8" were first required in 1976. The intent of escape rings is to permit the escape of sublegal males and females, which are usually smaller than legal males. In 1977, a Dungeness pot was defined as a pot with tunnel eye openings, which individually do not exceed 30" in perimeter. A biodegradable natural fiber breaking strap for the pot tiedown has been required since 1978. Originally specified for a maximum of 120 thread, it was reduced in 1990 to 30 thread, then increased in 1991 to 60 thread.

Other Regulations

Registration and hold inspections were required starting in 1974. In midsummer 1983, Yakutat was designated a superexclusive registration district and vessels registering to fish in Yakutat were prohibited from fishing in any other area in Alaska for the calendar year. The hold inspection requirement was rescinded in 1984, although registration was still required. In the same year, the area between Sitkagi Bluffs and Cape Yakataga, the western half of the Yakutat fishing district, was designated a non-exclusive area. The partial non-exclusive area was difficult to enforce and other problems led to redesignation of the entire Yakutat fishing district as a superexclusive registration area in 1985. In 1986, Yakutat was designated as Registration Area D, distinct and separate from Southeast Alaska (Registration Area A).

1999/00 SEASON SYNOPSIS

Only ten vessels participated in the most recent season 1999/00 that ended by emergency order on June 15, 1999. Only 65,386 pounds was landed (Table 6.1) as the stocks continue their downward trend. Almost 75 percent of the low harvest were taken during the first two weeks of the season (Table 6.2). This was a clear indication that stock abundance continues to be dismal and recruitment into the fishery is poor. Fishing was so poor that three of the vessels left after the first few weeks to return to the Pacific Northwest.

2000/01 SEASON OUTLOOK

The department intends to close the Yakutat Dungeness fishery for the entire 2000/01 season. Information available indicated that a significant number of pre-recruit crab were not available during the 1999/00 fishery. Thus, no substantial recruit contribution to the Yakutat stock is expected for the coming season. The department will monitor events in the local sport, subsistence, and personal use fisheries for indications of stock recovery. The fishery will remain closed pending rebuilding of the stock and development of a management plan and research program designed to provide sustained yields.

Table 6.1. Registration Area D (Yakutat) Dungeness harvest, number of participating vessels, number of landings, and average harvest per landing, 1960 to present.

Year/ Season	Harvest in Pounds	Number of Permits	Pounds Per Permit	Number of Landings	Pounds Per Landing
1960	543,762	-			
1961	1,023,545	-			
1962	937,051	-			
1963	1,383,298	-			
1964	637,140	-			
1965	910,278	-			
1966	528,060	-			
1967	2,031,460	-			
1968	2,096,119	-			
1969/70	1,223,240	11	111,204	107	11,432
1970/71	1,508,561	10	150,856	83	18,175
1971/72	1,212,198	7	173,171	88	13,774
1972/73	1,992,574	9	221,397	85	23,442
1973/74	2,347,752	27	86,954	236	9,948
1974/75	1,031,573	22	46,890	154	6,698
1975/76	579,908	17	34,112	113	5,131
1976/77	537,543	7	76,792	28	19,197
1977/78	131,052	3	43,684	11	11,913
1978/79	1,799,403	12	149,950	122	14,749
1979/80	1,436,923	21	68,425	87	16,516
1980/81	895,220	10	89,522	63	14,209
1981/82	3,228,301	28	115,296	169	19,102
1982/83	5,160,135	35	147,432	305	16,918
1983/84	2,666,383	67	39,797	458	5,821
1984/85	774,828	39	19,830	228	3,398
1985/86	371,237	32	11,601	168	2,209
1986/87	755,912	22	34,360	111	6,810
1987/88	2,725,040	28	97,323	191	14,267
1988/89	3,494,368	32	109,199	220	15,883
1989/90	1,701,859	29	58,685	207	8,221
1990/91	2,101,676	36	58,380	320	6,567
1991/92	2,852,074	67	42,568	482	5,917
1992/93	1,392,700	49	28,416	257	5,419
1993/94	815,969	44	18,545	250	3,263
1994/95	915,523	47	19,479	240	3,814
1995/96	557,528	46	12,120	269	2,072
1996/97	244,425	26	9,401	152	1,608
1997/98	156,072	30	5,202	84	1,858
1998/99	121,478	29	4,189	84	1,446
1999/00 ^a	65,386	10	6,539	51	1,282

^a Most recent year's data should be considered preliminary.

Table 6.2. Registration Area D (Yakutat) 1998/99 and 1999/00 seasons: Dungeness crab harvest by month and district.

Dist.	1998								1999		Total
	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	
181	88,380	25,666	----- Season Closed by Emergency Order at 11:59 p.m. June 9, 1998 -----						Closed		114,046
183	5,252	2,180	----- Season Closed by Emergency Order at 11:59 p.m. June 9, 1998 -----						Closed		7,432
191			----- Season Closed by Emergency Order at 11:59 p.m. June 9, 1998 -----						Closed		
Total	93,632	27,846	----- Season Closed by Emergency Order at 11:59 p.m. June 9, 1998 -----						Closed		121,478

Dist.	1999								2000 ^a		Total
	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	
181	43,795	13,067	----- Season Closed By Emergency Order at 11:59 p.m. June 15, 1999 -----						Closed		56,862
183	3,932	4,592	----- Season Closed By Emergency Order at 11:59 p.m. June 15, 1999 -----						Closed		8,524
191			----- Season Closed By Emergency Order at 11:59 p.m. June 15, 1999 -----						Closed		0
Total	47,727	17,659	----- Season Closed By Emergency Order at 11:59 p.m. June 15, 1999 -----						Closed		65,386

^a Most recent year's data should be considered preliminary.