Alaska Shellfish Fisheries

Unit 20

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INTRODUCTION

Alaska's major shellfish fisheries developed in the 1960's in the Gulf of Alaska, subsequently expanding to the Bering Sea and Aleutian Islands region. Shellfish landings in 1997 generated an ex-vessel value of $151,000,000 (preliminary). The most important of these are the king and snow crab fisheries at $144,000,000. There was no fishery for Tanner crab in the Bering Sea in 1997 due to low stock abundance. Shrimp resources remain depressed, and sea snails are only lightly harvested. These and other miscellaneous invertebrate landings contributed about $7,000,000 to ex-vessel revenue in 1997.

King and Tanner crab fisheries are managed primarily by the State of Alaska, with advice from a Federal fishery management plan for the Bering Sea and Aleutian Islands stocks. The sea snail resource falls under management of a Federal preliminary fishery management plan. Shrimp and other nearshore fisheries are managed by the State of Alaska.

SPECIES AND STATUS

Crab

Three king crab species (red, blue, and golden or brown) and two Tanner crab species (Tanner crab and snow crab) have traditionally been harvested commercially off Alaska. Since the last report (National Marine Fisheries Service, 1996) exploratory fisheries on new deep-water stocks of scarlet king crab, grooved Tanner crab, and triangle Tanner crab have begun, producing only minor landings to date. Yield values from these fisheries are presented in Table 20-1. Information on current and long-term potential yield is lacking for king and Tanner crabs; thus default values were derived from historical average landings. Long-term potential yield is represented by catch averages; current potential yield is set equal to recent average yield, calculated as the most recent three-year average. Stock status is determined by comparison of the short-term average catches against long-term production. The recent average yields for king (7,170 metric tons (t)) and Tanner (2,857 t) crabs are below their respective long-term potential of 36,481 and 21,751 t. By contrast, the recent average yield for snow crab of 39,053 t is above its long-term potential yield of 37,202 t. Alaska crab resources are fully utilized.

The ex-vessel value for king crabs in 1997 was $56,000,000, $3,800,000 for Tanner crabs (Southeast Alaska only), and $88,000,000 for snow crabs. Landings in 1997 were: king crab (9,200 t), Tanner crab (862 t), and snow crab (53,220 t). Almost all this production came from the Bering Sea, where value and landings for king crab were ($43,000,000 from 6,720 t). All snow crab landings came from the Bering Sea, and these dominated the total crab landings, comprising 58% of value and 82% of catch (Alaska Department of Fish and Game, 1998).

The fleet fishing for Alaska crab is comprised of 200–250 vessels, many of which are based in the Pacific Northwest. Crabs are captured with baited pots, and most of the catch is landed in Dutch Harbor, Alaska. Catches are restricted by quotas, seasons, and size and sex limits, with landings limited to large male crabs. Fishing seasons are set at times of the year which avoid molting, mating, and soft-shell periods, both to protect crab resources and to maintain product quality.

Catch and abundance trends (Stevens et al., 1998) for king crabs are shown in Figure 20-1. After a 1964–66 peak, declines were evident. Un-

Table 20-1
Productivity in metric tons and status of Alaska shellfish fisheries resources.

Species and Area	Recent average yield (RAY)	Current potential yield (CPY)	Long-term potential yield (LTPY)	Fishery utilization level	Stock level relative to LTPY
Tanner crabs	2,857	2,857	21,751	Full	Below
Snow crabs	39,053	39,053	37,202	Full	Above
King crabs	7,170	7,170	36,481	Full	Below
Shrimp	1,637	1,637	14,722	Full	Below
Snails	1,414	1,414	3,062	Under	Unknown
Total	52,131	52,131	113,218		

til 1967, Japanese and Russian fisheries dominated Bering Sea landings, but those fisheries were phased out by 1974. In the Bering Sea, domestic catches peaked at 74,000 t in 1980 and then dropped precipitously in 1981. Since then, the catches have remained low. Gulf of Alaska catches peaked in 1965, then varied at a relatively low level for a decade before dropping lower still in 1983. Almost all Gulf of Alaska king crab fisheries have been closed since 1983.

Tanner and snow crab trends (Stevens et al., 1998) are shown in Figure 20-2. The 1965–75 period was a developmental phase. During 1975–85, the catch peaked at about 75,000 t in 1979 and then declined. Since 1984 the catch increased, reaching an all-time high of 168,000 t in 1991, and then decreased into 1997. Abundance trends for Bering Sea stocks indicate that the Tanner crab stock declined from a relatively high level in the late 1970's to a low in 1985. The stock recovered and then declined again subsequent to 1989, and is currently at a low level. From a low in 1985, snow crab rebounded sharply, producing the high catches of 1991.

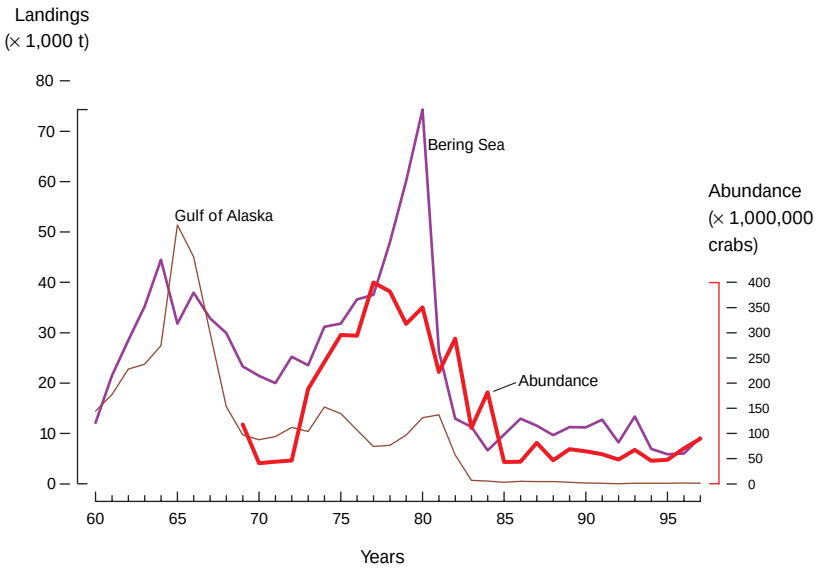


Figure 20-1
Landings in metric tons (t) and abundance trends of king crabs in the Gulf of Alaska and Bering Sea.

Shrimp and Sea Snail

The northern pink shrimp is the most important of the five species making up Alaska shrimp landings. The domestic shrimp fishery in western Alaskan waters is currently at a low level. Shrimp abundance is also too low in the Bering Sea to support a commercial fishery. The western Gulf of Alaska has been the main area of operation. During the 1970's, when the fishery was more productive, 50–100 vessels trawled for shrimp at Kodiak Island and along the Alaska Peninsula.

Shrimp landings in the western Gulf during 1960–90 (Figure 20-3) show that catches rose steadily to about 58,000 t in 1976 and then declined precipitously. Since 1988, negligible amounts have been landed, almost all of it coming from Southeast Alaska. Ex-vessel revenue from the western shrimp fisheries averaged $4,000,000 annually, and yielded a peak revenue of $14,000,000 in 1977. Bering Sea shrimp catches by Russia and Japan peaked at 32,000 t in 1963, declining gradually thereafter, until the fishery ended in 1973. As with crabs, the potential yields of shrimp stocks in Alaska are not well understood, and they have been equated to average catches. Shrimp are managed by regulating catch levels according to stock abundance. In addition, spring "egg hatch" closures are used to protect breeding stocks.

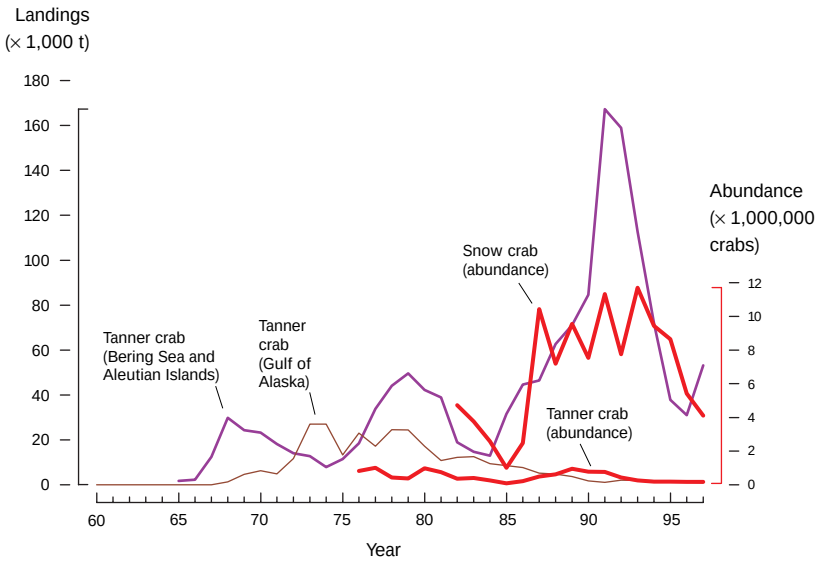
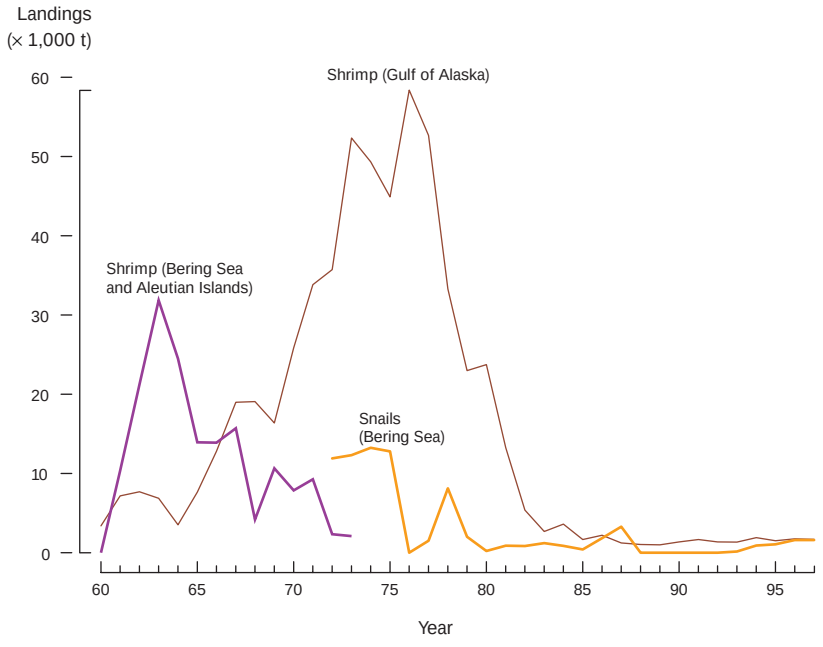


Figure 20-2
Landings in metric tons (t) and abundance trends of Tanner and snow crabs in the Gulf of Alaska and Bering Sea.

Figure 20-3
Landings in metric tons (t) of shrimp and snails in the Gulf of Alaska and Bering Sea.



The Japanese pot fishery for snails, conducted from about 1972 until ending in 1987, peaked at about 13,000 t in 1974. Annual catches averaged about 4,800 t during the period of the fishery. The snail stocks of the Bering Sea are underutilized because they are only lightly harvested, with five vessels participating in the Bering Sea during 1996. Recent average yield and current potential yield equal the 1994–97 average catch, and the long-term potential yield equals the 1972–97 average.

ISSUES AND PROGRESS

Bycatch and Multispecies Interactions

In general, crab and shrimp resources are depressed throughout Alaska. The red king and Tanner crab stocks in Bristol Bay are particularly low. The red king crab fishery was closed in 1994 and 1995, following assessment of the spawning stock, which has declined to a low level. During the 1996 Tanner crab fishery only 800 t was landed, and the fishery was closed in 1997.

The bycatch of crabs in trawl and pot fisheries continues to be a major issue. Not only is bycatch an allocation problem, but unknown mortalities from discards of females and subadult crabs from pot and trawl catches could have an impact on the crab stocks. When crab abundance is low, the unknown bycatch mortality, if high enough, could impose unacceptable risks to stock recovery.

LITERATURE CITED

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