The Alaskan King Crab Industry

The Alaskan king crab industry is the fastest growing segment of the United States fishing industry. Over 86 million pounds of king crab were caught in Alaska’s king crab fishery in 1964. Just two decades previously, in 1944, the total annual harvest equaled only slightly more than 15,000 pounds. (See Table I.)

The overall growth of the king crab industry’s harvest during the last seven years has been a spectacular 674 percent, with increases in the annual catch ranging from 10 to 68 percent. Current statistics indicate that the Alaska king crab catch for 1965 will reach a record 100 million pounds.

King crab is becoming an increasingly important part of Alaska’s fisheries industry. In 1960, less than 6 percent of the total wholesale value of fisheries production in Alaska resulted from the king crab segment of the industry. In 1964, however, king crab production accounted for over 15 percent of the $140 million wholesale value of Alaska’s fisheries production. (See Table II.)

During the six-year period from 1959 to 1964, the wholesale value of the state’s king crab production has more than quadrupled, moving from $3,850,000 to $21,262,340.

The Alaskan king crab fishery is divided into eight general geographic areas. These areas are: Southeastern (ranging from Dixon Entrance on the south to Cape St. Elias); Prince William Sound; Cook Inlet; Kodiak Island; Chignik; Alaska Peninsula (south side); Aleutian Islands; and Alaska Peninsula (north side, including the Bering Sea). Alaskan king crab are harvested commercially along more than 21,000 miles of Alaska’s coast.

Production statistics for the eight areas listed above indicate that the Aleutian Island area in 1964 led all production areas with an estimated catch of 33.6 million pounds. This harvest was more than double any king crab harvest previously taken from that area. The large increase in the Aleutian Island area’s production of crab was due to the utilization of additional floating processors which were supplied with crab by vessels that had shifted from the Kodiak area. Kodiak suffered the loss of several crab-processing facilities when the city was damaged by the seismic waves generated by the great Alaskan earthquake of March 27, 1964.

Despite the seismic wave destruction, and the departure of some vessels for the Aleutians, the second largest king crab production in 1964 took place in the Kodiak area, which registered a catch of 29.6 million pounds. The area on the south side of the Alaska Peninsula provided a total harvest of 14.3 million pounds of king crab in 1964, while the Cook Inlet production equaled 6.9 million pounds. The other four areas of Alaska’s king crab fishery in 1964 collectively produced approximately 2.2 million pounds of king crab.

During 1965 an estimated 50 million pounds of king crab were taken in the Kodiak area. This was an increase of 67 percent above the 1964 Kodiak landings and about 19 percent above the 1963 harvest. Much of the increased production in this area in 1965 apparently resulted from the introduction of more efficient gear and vessels, and the elimination of the limit on the number of crab pots each vessel could fish. In all other areas of Alaska, with the exception of the Bering Sea area, the 1965 king crab harvest ran behind the harvest in 1964.

HISTORY OF THE ALASKAN KING CRAB INDUSTRY

The Alaskan king crab has been fished commercially by three nations — the United States, Japan, and Russia. Japan was the first of the three countries to develop an industry based on the king crab.

The Japanese originally established their king crab fishery in the Sea of Japan in 1892. During this early
developmental period, the entire catch was canned at shore-based plants. Growth of the industry was slow until 1923, when the successful development of the floating cannery permitted expansion of the fishing operations away from Japan proper and into the Alaskan waters of the eastern Bering Sea. Shortly thereafter, Japan extended its king crab exploration into other water immediately adjacent to United States territory. Utilizing floating canneries, the Japanese began to harvest king crab in the vicinity of the Pribilof Islands, along the north side of the Alaska Peninsula, and in the Bristol Bay area.

The annual Japanese king crab pack exceeded 400,000 cases by 1930. Beginning as early as 1906, much of Japan’s king crab output was exported in canned form to the United States, and king crab imports from Japan in 1933 exceeded 7 million pounds.

The Japanese discontinued king crab fishing during World War II, but resumed harvesting the crab in the eastern Bering Sea in 1953. From 1953 to 1959, Japan’s annual pack ranged between 60,000 and 70,000 cases. By 1963, Japan’s output had expanded to 235,000 standard cases. The entire Japanese catch is processed on factoryships which accompany the fleets of crab-catching vessels.

The Japanese king crab fleet operating off the coast of Alaska in 1964 was composed of two factoryships, twelve vessels to set the tangle nets, and about 16 small boats to haul and pick the tangle nets. The Japanese king crab fleet arrived north of the Alaska Peninsula in March and remained in that general area until September. They harvested enough king crab during this period to process 235,000 cases of canned crab meat.

The Russians first began to fish for king crab in the eastern Bering Sea in 1928. They employed two factoryships and an unknown number of catcher boats during that year and processed 35,000 cases of king crab. By 1930, the Russian fleet had increased to ten vessels. During that year they processed 73,000 cases of king crab. Russia’s annual catch from 1930 to 1939 averaged two and a quarter million pounds.

During World War II, the Russians ceased king crab fishing in Alaskan waters, but resumed activities in the eastern Bering Sea in 1959. Since then, the Russians have been engaged in spirited competition with the Japanese for king crab, and their production has increased each year. In 1963, the Russians employed three factoryships to process an estimated catch of 2.3 million king crab.

The Russian king crab fishery operating near Alaska in 1964 consisted of three ultramodern factoryships and nine tangle net setting trawlers. Each factoryship carried 12 small boats from which the tangle nets were picked. In addition, two scouting trawlers were used by the Russians to determine the most productive places to set the tangle nets. The Soviet king crab fishery in 1964 operated in the outer Bristol Bay flats area from near Port Moller to Unimak Pass from April through July, at which time the fishery left Alaskan waters.

Russia harvested king crab from the waters of the Sea of Okhotsk and in the Bering Sea off Kamchatka in 1965. Estimated production equalled 420,000 cases, which was 42,000 cases above the estimated 1964 production level.

UNITED STATES KING CRAB OPERATIONS

United States fishermen began commercial king crab fishing on a small scale in 1920, in Seldovia, Alaska. Only a few cases of crab were packed that year, and production in the American king crab industry remained sporadic and weak during the next 30 years. A relatively small amount of king crab was canned during the earlier years in the three Alaskan communities of Seldovia, Kodiak and Hoonah. From 1926 to 1934 no commercial canning of king crab took place anywhere in the Alaskan Territory.

Although both Japan and Russia were using factoryships to process king crab during this period, such facilities were not utilized by American king crab processors until 1946.

The harvesting of king crab by Americans was pioneered by the operators of small salmon purse seiners. These fishermen supplemented their summer income by fishing for king crab during the winter months when the salmon were not running. In this early period the crabs were taken only from the areas adjacent to the fishermen’s own villages, because the fishermen lacked the proper facilities for keeping crabs alive on board their vessels for any substantial length of time. King crab must be alive up to the time of processing, and ordinarily these crustaceans cannot live out of water for more than 12 consecutive hours.

Larger and more efficient vessels were developed later, fitted with tanks in which crab could be kept alive. These vessels enabled the fishermen to harvest crabs from distances much farther from the processing areas.
without danger of the crabs dying and spoiling before they could be processed.

Several factors were responsible for the late development of the American king crab industry. One primary retarding factor was the healthy salmon fishery that provided adequate employment opportunities for Alaska's fishermen during the 1920's and 1930's. The lack of knowledge of proper crab canning techniques; problems of quality control; ignorance of the king crab's migratory habits; and the lack of equipment for effectively harvesting the king crab were other causes of the fishery's slow growth. Another important factor deterring the development of a U.S. king crab industry was Japanese competition. The Japanese were producing a generally excellent king crab product and were selling it at a low price. Under the circumstances American producers were reluctant to risk the capital required to obtain the basic information necessary for profitable operation of the fishery.

The foreign exploitation of domestic United States fishing grounds did not make sense to many Americans and in 1940, President Roosevelt requested the Secretary of the Interior to investigate the practicability of establishing an American king crab canning industry in Alaskan waters. In 1940 and 1941, Congress authorized the Fish and Wildlife Service to conduct research on the problems of king crab biology and technology, and on the abundance and distribution of the resource. The objectives of this research were to locate the areas where king crab was most abundant and to develop satisfactory methods for taking and processing king crabs. Several American vessels were involved in exploratory research during this period and their findings pointed the way toward profitable king crab operations in the Cook Inlet, and in the areas around Kodiak Island, along the Alaskan Peninsula, and in the Bering Sea. In a further effort to assist domestic crab producers during this period, the ad valorem tariff on imported crab meat was increased from 15 percent to 22 1/2 percent in 1941.

The hostilities of World War II brought an unscheduled end to king crab research and effectively extinguished hopes for a large-scale king crab fishery until 1946.

Immediately after the war, exploratory king crab fishing was begun in the Bering Sea by Wakefield's combination trawler processor, the Bering Sea. Shortly thereafter the Cherikof, under charter to Libby, McNeill and Libby, began operating in the same area. Both processors put up experimental packs of frozen king crab, since they felt that frozen crab had the greatest growth potential at that time.

In 1947 Wakefield's new boat, the Deep Sea, made

| TABLE I |

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight of Crab Landed (in pounds)</th>
<th>Value to Fishermen (in dollars)</th>
<th>Average Price Per Pound Paid to Fishermen (in cents)</th>
<th>Weight after Processing (in pounds)</th>
<th>Percent Discarded in Processing</th>
<th>Value of Processed Crab (in dollars)</th>
<th>Raw Crab Cost Per Pound Processed (in cents)</th>
<th>Average Value Per Pound After Processing (in cents)</th>
<th>Percent Increase in Value Added by Processing</th>
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<td>1944</td>
<td>15,208</td>
<td>1,238</td>
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<td>75</td>
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<td>N.A.</td>
<td>N.A.</td>
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<td>960</td>
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<td>5,421</td>
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<td>8,172</td>
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<td>150.7</td>
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<td>168,507</td>
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<td>630,876</td>
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<td>1,993,912</td>
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<td>682,882</td>
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<td>388,197</td>
<td>11.9</td>
<td>1,272,524</td>
<td>75</td>
<td>1,771,554</td>
<td>43.0</td>
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<td>1953</td>
<td>4,613,209</td>
<td>547,431</td>
<td>13.9</td>
<td>1,913,209</td>
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<td>2,342,554</td>
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<td>3,504,601</td>
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<td>3,279,856</td>
<td>71</td>
<td>2,709,813</td>
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<td>1959</td>
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<td>1,477,980</td>
<td>7.8</td>
<td>4,317,665</td>
<td>77</td>
<td>3,850,022</td>
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<td>89.2</td>
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<td>2,286,136</td>
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<td>5,034,435</td>
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<td>5,294,866</td>
<td>45.4</td>
<td>105.2</td>
<td>132</td>
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<tr>
<td>1961</td>
<td>43,41,600</td>
<td>3,913,700</td>
<td>9.0</td>
<td>8,549,000</td>
<td>80</td>
<td>9,625,500</td>
<td>45.8</td>
<td>112.6</td>
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<tr>
<td>1962</td>
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<td>5,278,210</td>
<td>10.0</td>
<td>10,377,180</td>
<td>80</td>
<td>11,861,800</td>
<td>49.9</td>
<td>112.1</td>
<td>125</td>
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<td>1963</td>
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<td>7,607,360</td>
<td>9.7</td>
<td>16,399,790</td>
<td>79</td>
<td>16,770,640</td>
<td>46.4</td>
<td>102.3</td>
<td>121</td>
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<tr>
<td>1964</td>
<td>86,270,670</td>
<td>8,186,190</td>
<td>9.4</td>
<td>22,994,390</td>
<td>78</td>
<td>21,242,340</td>
<td>35.6</td>
<td>92.5</td>
<td>160</td>
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</tbody>
</table>

Source: Computed from data obtained from the Alaska State Department of Fish and Game.
two trips into the Bering Sea for king crab. The Deep Sea was the first U.S. vessel constructed exclusively for king crab fishing and processing.

A new type of operation entered the industry in 1948 when the Pacific Explorer, a 5,000 ton factoryship, with a fleet of 12 chartered catcher trawlers, came into Alaskan waters. The Pacific Explorer canned over 17,000 cases of king crab but the operation was not financially successful and the vessels did not continue operating in the fishery after 1948.

Shore-based canning of king crab began in earnest in 1955 when several large U.S. salmon processors started canning the crab. The annual pack, which was only 17,000 cases in 1955, reached 100,000 cases by 1960. In 1964, over 235,000 cases of king crab were canned, with a wholesale value of nearly $6 million.

There were 39 shore-based plants or floating factoryships processing king crab in Alaska in 1964, according to the Alaska Department of Fish and Game. Twenty-nine of these processors were preparing frozen or fresh king crab for market, and ten were producing canned crab. Approximately 79 percent of the king crab prepared for market in 1964 was frozen, 20 percent was canned, and the remainder was sold fresh. (See Table III)

There were approximately 300 boats registered as king crab vessels in Alaska in 1964. The size of these boats varied widely. They ranged in length from 20 to 170 feet, but the majority of them were between 30 and 40 feet long.

An estimated 1,200 American fishermen were employed harvesting Alaska king crab during 1964. These fishermen received a total of $8,186,190 for their catch. (See Table I). Approximately 780 persons were employed processing this harvest.

The growing king crab industry is contributing increasingly to private employment, personal income and public revenue in Alaska. Its growth has generated the need for the construction and staffing of many additional processing facilities. Employment in the industry extends throughout the year and thus helps counteract the drastic seasonal fluctuations experienced by some other industries in the state.

**KING CRABS**

The king crab (*Paralithodes camtschatica*) is a giant crustacean found only in the north Pacific Ocean. It has a sweet lobster-like meat and has become immensely popular as a gourmet food. Perhaps the most spectacular and commercially important feature about the king crab is its large size. Mature male king crabs can have an over-all leg spread of six feet and can weigh as much as 25 pounds. King crabs weighing 15 pounds, with a carapace 9 1/2 inches wide, are not uncommon in Alaskan waters.

Male king crabs mature sexually at about five years of age but generally are not large enough to be legally harvested until their seventh or eighth year. The female king crabs are considerably smaller than the male of the same age and are identified by their broader, less elongated tail. The female will hatch 150,000 to 400,000 eggs, after an incubation period of 11 months, but it is estimated that only about 2 percent of these baby crabs survive, since other species of the sea find them a delicacy. Mature crabs also become the prey of these predators. Three large king crabs have been found ingested in a single 80 pound halibut. Despite the struggle for survival, the propagation of king crab in an area can be maintained, even under intensive fishing pressure, if the regulations are obeyed.

![TABLE II](image-url)

**WHOLESALE VALUE OF FISHERIES PRODUCTION IN ALASKA 1960 - 1964 (thousands of dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Salmon</th>
<th>Halibut</th>
<th>King Crab</th>
<th>Percent of Total</th>
<th>Dungeness Crab</th>
<th>Shrimp and other Shellfish</th>
<th>Other</th>
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<tbody>
<tr>
<td>1960</td>
<td>96,689</td>
<td>83,108</td>
<td>3,736</td>
<td>5,295</td>
<td>5.5</td>
<td>1,108</td>
<td>1,588</td>
<td>1,853</td>
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<td>1961</td>
<td>128,726</td>
<td>107,050</td>
<td>7,035</td>
<td>9,626</td>
<td>7.5</td>
<td>1,474</td>
<td>2,273</td>
<td>1,268</td>
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<tr>
<td>1962</td>
<td>131,938</td>
<td>102,419</td>
<td>10,288</td>
<td>11,862</td>
<td>9.0</td>
<td>2,642</td>
<td>3,634</td>
<td>1,093</td>
</tr>
<tr>
<td>1963</td>
<td>109,038</td>
<td>75,988</td>
<td>7,929</td>
<td>16,771</td>
<td>15.4</td>
<td>3,032</td>
<td>4,300</td>
<td>1,018</td>
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<tr>
<td>1964</td>
<td>140,921</td>
<td>104,764</td>
<td>8,006</td>
<td>21,262</td>
<td>15.1</td>
<td>3,579</td>
<td>1,520</td>
<td>1,790</td>
</tr>
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</table>

Source: Department of Fish and Game, State of Alaska.
King crabs generally live to be about 15 years old. Consequently, when fishermen begin to harvest a virgin king crab fishing area, they are drawing from about nine different age-groups of king crab; that is, the crab the fishermen keep range from seven to eight years of age to harvestable increment only until the older age classes fluctuate such as those experienced by the Dungeness king crab fishing area, they are drawing from about nine harvestable age. This is the situation currently developing in the Kodiak area, and as a result the Kodiak king crab industry may go through a period of wide catch fluctuations such as those experienced by the Dungeness crab industry.

There are thirteen king crab processing plants operating in the Kodiak area at the present time. Nine of these are within the city of Kodiak itself. An estimated 80,000 crabs are needed daily to keep these plants operating. To operate at capacity these plants would require more than 100 million pounds of crab annually, which is about equivalent to the entire estimated 1965 king crab harvest. Since much of the current king crab harvest is processed in areas other than Kodiak, it is evident that Kodiak has some idle plant capacity. Such conditions in the past have stimulated the expansion of the fishing fleets with a resultant decrease in the share of the catch accruing to each vessel. The end result may well be the setting of a quota in the king crab industry such as now exists in the halibut industry.

Annual commercial production in a heavily harvested area may show drastic declines over a period of years. One way to avoid such overharvesting is through the use of factoryships which can be moved from place to place as harvesting conditions dictate.

Total Alaskan king crab production will not decline markedly as long as new unexploited king crab fishing areas are brought into production. Research indicates that heavy harvesting of male crabs, with carapace widths of seven inches or more, will not adversely affect the ability of an area's crab population to reproduce itself. However, a more thorough knowledge of the king crab's life history must be obtained before this resource can be managed on a maximum sustained yield basis.

### KING CRAB REGULATIONS

Alaskan commercial king crab harvesting regulations have traditionally specified the sex and size of the king crab that can legally be taken in Alaskan waters. Currently these regulations do not permit the harvesting of female king crab, and the minimum harvestable size for male king crabs in most areas in 1965 was seven inches as measured across the greatest width of the carapace.

Alaskan king crab regulations also stipulate the type and amount of gear that can legally be used for the commercial harvesting of king crab. The regulations also indicate the areas which may be fished.

### METHODS OF CATCHING KING CRAB

Alaskan king crab have been caught commercially by three types of gear: tangle nets, otter trawls and crab pots. Under the current regulations of the Alaska Department of Fish and Game, king crab may not be taken by tangle nets or otter trawls; thus the only legal method of conducting commercial king crab fishing operations in Alaska at the present time is by the use of crab pots. This regulation does not impose any real hardship on the industry however, since, in terms of productivity per man hour worked, crab pots are the most efficient type of gear for harvesting Alaskan king crab.

### TANGLE NETS

When set in place to harvest king crab, tangle nets resemble a large mesh fence on the bottom of the sea. King crab are continually migrating on the ocean floor and their legs and carapace tend to become enmeshed in any tangle net blocking their migratory path. Once caught, the crab's struggle to get free only serves to hold it more securely.

Obviously, when a tangle net is used, it catches male and female crabs indiscriminately and without regard to size. It is very difficult to remove crabs from these nets.

### TABLE III

<table>
<thead>
<tr>
<th>Method of Processing</th>
<th>Number of Pounds Processed</th>
<th>Percent of Total</th>
<th>Wholesale Value After Processing (in dollars)</th>
<th>Percent of Total</th>
<th>Wholesale Value per Pound (in cents)</th>
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<tr>
<td>Frozen Whole</td>
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<td>Fresh Whole</td>
<td>312,290</td>
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<td>Canned *</td>
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<td>20.0</td>
<td>5,941,250</td>
<td>28.0</td>
<td>129.1</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>22,994,590</strong></td>
<td><strong>100.0</strong></td>
<td><strong>21,262,340</strong></td>
<td><strong>100.0</strong></td>
<td><strong>92.5</strong></td>
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</tbody>
</table>

* Consists of 235,970 standard cases of 48-50 oz. cans. Source: Department of Fish and Game, State of Alaska.
without seriously damaging or killing them. Since it has proven to be impossible to carry on an efficient tangle net operation without destroying large numbers of female and undersized male king crabs, the use of the tangle net for harvesting king crab in Alaskan water was outlawed in 1955. Irrespective of the fact that this method of taking king crab in Alaskan waters is illegal, the Japanese and Russian fleets use tangle nets almost exclusively to harvest Alaskan king crab.

**OTTER TRAWLS**

An otter trawl is a large flattened conical bag of netting which is dragged behind a vessel to capture marine life feeding on the ocean bottoms. The mouth of the net is buoyed at the top, weighted at the bottom and spread horizontally through the action of a pair of otter boards which are forced apart when towed through the water. The overall construction of the trawl and the speed at which it is towed (two to four miles per hour), enables the fisherman to obtain extensive coverage of an ocean area in a short period of time.

Otter trawls were first used by American fishermen in the Kodiak area in 1943. Initially their success was very limited as far as catching king crab was concerned due to the fact that the crabs were spread too thinly over the sea floor at the depth fished.

Otter trawling for king crab gained popularity in 1952 however, as the fishermen began to learn the crabs' migratory habits and thus could concentrate their trawling activities in areas where the king crab were abundant. By 1953, the otter trawl was the main type of gear used in the taking of king crab, and although it had a number of serious disadvantages as a method of harvesting king crab, it remained the dominant method used by U.S. fishermen until 1956.

Because of its destructive non-selectivity, trawling for king crab has been prohibited in the Kodiak area since 1960 and in other Alaskan water areas since 1961.

**CRAB POTS**

Crab pots were first used to take Alaskan king crab in 1938 when modified Dungeness crab pots were used to capture sample king crabs. Small processing plants in Olga and Moser Bays were entirely dependent on crab from pots as early as 1941.

The first king crab pots were constructed of wood and were covered with salmon trap wire and seine netting. Manila rope and pot warp were employed for buoy lines, and strings of seine corks were used as buoy markers. Pots of this type usually were good for only one season and then had to be replaced.

Most modern king crab pots have a frame constructed of welded steel and are covered with four inch mesh soft stainless steel wire. These modern pots last about five years under ordinary usage. Crab pots used on the larger vessels usually are about 7 feet square and 3 feet high. A seven-foot square king crab pot weighs approximately 250 pounds, has an internal volume of 104 cubic feet and costs about $250.00 new, including necessary line and buoy. One of these pots has captured and contained, at one time, over 290 king crabs weighing more than 2,600 pounds. Smaller vessels carry smaller crab pots, typically square pots 6 x 6 x 2 1/2 feet, or round pots with a 6 foot diameter. The square king crab pot is the most popular because it is easier to store on deck and has a greater capacity than the non-square variety.

Before 1965 the Alaska Department of Fish and Game restricted the number of crab pots that could be fished by one vessel. Consequently, when mechanical means for handling larger and heavier king crab loads became available, the size of the pots increased accordingly. Some crab pots today are as large as 9 feet square. Under current regulations, the number of crab pots that can be fished by a single boat is limited only by the capacity of the vessel and its crew.

The pot catches king crab by means of a wire or nylon mesh tunnel which slopes upward at an angle of about 40 degrees to a horizontal opening in the side of the crab pot. Attracted by the bait inside the pot, the crabs crawl up the slope and drop off into the pot. Although no mechanism is used to prevent their escape, king crab are unable to extricate themselves from the trap. This method of harvesting king crab enables the fisherman to catch crab without damaging them in any way. Thus, any female or undersized male king crab which are taken can be released unharmed to help preserve the fishery.

**QUALITY CONTROL BOARD**

The 1965 Alaska Legislature created a King Crab Marketing and Quality Control Board. This Board has been given the responsibility for maintaining the quality of Alaska's king crab production as well as the responsibility for overall king crab market promotion and development.

Under provisions of the Act which created the Board, Alaskan king crab producers are assessed one percent of the gross value of their production. These funds are used to finance the activities of the Board. Each Alaskan king crab processor has the opportunity to review the Board's annual program and approve or disapprove the costs. At its initial meeting, the Board concluded that the quality control practices currently implemented by the
industry's individual processors are adequate, and as a consequence, no funds were allocated for quality control by the Board. However, a $50,000 advertising and public relations budget was approved at the Board's first meeting.

**CONVENTION OF THE CONTINENTAL SHELF**

One recent development important to the orderly growth of Alaska's king crab industry is the **Convention of the Continental Shelf**. This Convention was recommended by the United Nations International Convention on the Law of the Sea and was ratified by the United States on April 12, 1964. Twenty-two nations had to ratify this Convention before it could become legally effective. On May 10th, 1964, Great Britain became the 22nd signatory nation and the Convention went into effect on June 10th, 1964.

The **Convention of the Continental Shelf** provides that a coastal state, such as Alaska, has sovereign rights over its continental shelf and may exercise these rights for the purpose of exploring and exploiting the shelf's natural resources when such resources at their harvestable stage are either immobile on or under the sea bed or are unable to move except in constant physical contact with the sea bed or subsoil. Thus Alaska, under terms of the Convention, can assert jurisdiction over certain clams, crabs, oysters, abalone and other species which live on the floor of the continental shelf adjacent to Alaska's coast.

The United States Senate Bill S.1988, signed into law in 1964 as Public Law 88-308, contains a section designed to implement the Convention agreement. When the President signed this bill (known as the Bartlett Act) into law, he acknowledged that king crab were to be included as a continental shelf resource. Although the territorial shelf Convention defines the king crab as a crustacean which walks on the continental shelf, the Japanese contend that king crab actually swim as well as walk and should not be so defined. Japan has not ratified the Convention and does not intend to do so.

Public Law 88-308 could eventually have the effect of stopping Japan and Russia from pursuing their king crab operations on areas of the United States' continental shelf adjacent to the Alaskan coast. The situation in relation to Japan, however, is complicated by the fact that a "historical fishery" is involved, since Japan has been harvesting king crab in this area for some 35 years. Faced with the opposing legal positions of the two governments regarding rights under international law to fish the king crab, the President of the United States assured Japan that full consideration would be given to its long-established king crab fishery before the implementation of the provisions of P. L. 88-308.

Practical arrangements were successfully concluded in November, 1964, regarding Japanese king crab fishing in the eastern Bering Sea. These arrangements did not prejudice the legal position of either the United States or Japan. The agreement expires in two years at which time the two governments plan to hold further consultations.

Under terms of the agreement, Japan's king crab catch in the eastern Bering Sea is limited to 185,000 cases per year for 1965 and 1966. This is a harvest reduction of about 21 percent. Other provisions in the agreement called for: the application of interim conservation measures; continued and intensified scientific study of the king crab resource; and procedures for enforcement of the terms of the agreement.

In order to minimize the possibility of conflict resulting from the use of different types of fishing gear by the two countries, the agreement also specifies an area in which only crab pots will be used for commercial crab fishing. This part of the agreement is particularly important to Alaskan king crab fishermen since large numbers of valuable crab pots have been lost due to the activities of Japanese and Russian fishing vessels.

The Soviet Union is a signatory to the Convention and agrees with the United States that the king crab is a resource of the continental shelf over which the coastal nation has sovereign rights. Accordingly, after several weeks of consultations, an agreement on fishing for king crab was signed by the United States and the Soviet Union on February 5, 1965, at Washington, D. C. The United States agreed that Soviet fishermen may continue to harvest king crab in the eastern Bering Sea for two years at a reduced level of catch. The Russian government agreed that its fishermen would not fish for king crab in other areas of the United States continental shelf. This portion of the agreement was violated by Russian fishermen on June 21, 1965, when the Soviet factoryship Konstantin Sukhanov was discovered taking king crab with 7 fishing boats from 40 fathoms approximately 25 miles south of Unimak Island.

The agreement also provides for conservation measures to be applied by both countries in the eastern Bering Sea, for continued and intensified scientific study of the king crab resource there, and for enforcement of the terms of the agreement. The agreement specifies that only crab pots will be used for commercial crab fishing in a substantial sub-area of the Bering Sea. Russia and the United States plan to hold further consultations regarding the king crab resource prior to the end of the two-year period.
THE FUTURE OF THE INDUSTRY

Although king crab sales have expanded very rapidly for the past several years, there is ample evidence to indicate that only a small portion of the potential market is being exploited. In fact it is very likely that tens of millions of Americans who could well afford king crab and would undoubtedly enjoy it, have never even tasted it.

Thus far, king crab sales have been concentrated in the eastern portion of the United States. Approximately 50 percent of the king crab sold in recent years has been sold in the area ranging along the Atlantic coast from Boston to New York, while the coastal area from Baltimore to Florida has accounted for only about 10 percent. The Great Lakes area between Cleveland and Minneapolis has accounted for about 20 percent of recent king crab sales, and the vast area from Chicago westward, including Alaska, consumed only 20 percent of Alaska’s king crab production. Both the retail and the institutional segments of the king crab market are untouched or underdeveloped in many parts of the United States and most potential foreign markets have yet to be approached.

King crab is not an inexpensive product, but experience proves that it does not need to be inexpensive in order to sell. King crab is a high quality product and can easily command a premium price in an unsaturated market. It would be a mistake to lower quality in an attempt to reduce prices and increase sales. A gourmet food such as king crab should be processed only under the highest quality standards in order to develop and maintain a permanent consumer market. In future years increasing emphasis might well be placed on advertising and marketing in order to develop numerous new markets. With the rapid expansion of king crab production currently taking place, lack of promotional effort may well result in unprofitable levels of king crab prices in the years ahead.

KING CRAB BY-PRODUCTS

When king crab are canned or processed as frozen meat, 80 percent or more of the crabs’ landed weight becomes waste. (See Table I.) The meat of the king crab is in the claws, legs and shoulder, and ordinarily none of the rest of the crab is used. The disposal of growing quantities of crab shells and gurry have created serious problems for shore-based processing plants. In some places, the disposed material floating in the water and awash on the beaches has contaminated an area and created a paramount health hazard. An estimated 40,000 tons of crab shells and gurry will be thrown away by the industry’s processors during 1965. Obviously, the development of some profitable method of converting this waste material into salable products could substantially improve the economic well-being of Alaska’s king crab industry. Such a development would enable the king crab industry to derive part of its income from by-products and thus become more competitive in the world food market.

Ground and dried king crab shells and gurry have been sold for chicken feed and swine feed in the past. However, these sales have not been profitable due to high processing and freight costs. Crab shells also have been utilized recently as a source of glucosemide, a filler and stabilizer for antibiotics in capsule form. However, this market is very limited and does not require any significant quantity of shells.

New research developments indicate that a solution to the problem of profitable utilization of king crab shells may soon be forthcoming. One prime potential market appears to be Alaska’s oil industry. Tests show that crab shells can be substituted for the walnut shells now being used by oil companies to conserve drilling mud when crevasses and caverns are encountered in drilling. This market might become large enough to utilize a significant portion of the king crab shells currently being discarded.

Other possible uses of crab shells being explored at this time include their utilization by the rubber industry in making winter tires and their possible use as a surface for wood paneling.

FUTURE REVIEW TOPICS

A wide variety of topics are being considered for presentation in future issues of the Review. Articles currently in preparation for early inclusion will cover: a study of the Anchorage economy; a summary of Alaska’s economic activity in 1965, along with a forecast of economic trends for 1966; a study of the reapportionment of Alaska’s legislature, and its possible implications.

The following back issues of the Review are still available for those interested: The Economic Impact of the Alaskan Earthquake; Alaska’s Financial Position; Agriculture in Alaska; The Petroleum Industry in Alaska; Alaska’s Fisheries Industry; The Gold Mining Industry in Alaska; The Wood Products Industry in Alaska; Alaska’s Economy in 1964; The Coal Industry in Alaska. Single copies of any of the above can be obtained without charge by writing to the Editor of the Review, Institute of Business, Economic and Government Research, University of Alaska, College, Alaska, 99701.

The staff of the Review would welcome any suggestions from readers concerning possible subjects for future issues.