

NOAA Fisheries Service

Alaska Fisheries Science Center

Red King Crab

Paralithodes camtschaticus

Width 165 mm (6.5 in) legal

Weight 2 kg (22 oz) legal

Age 21 years (maximum)



Protecting
Conserving
Managing
Marine Resources
in
Alaska

The Alaska Fisheries Science Center is a scientific research organization responsible for the development and implementation of NOAA's scientific research on marine resources in Alaska waters. Our research focuses on more than 250 fish and 42 marine mammal stocks off the coasts of the Bering Sea, Gulf of Alaska and Aleutian Islands.



National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Range/Habitat

Red king crab (RKC) are widely distributed throughout the Bering Sea and Aleutian Islands, Gulf of Alaska, Sea of Okhotsk, and along the Kamchatka shelf up to depths of 250 m. RKC are found from eastern Korea around the Pacific Rim to northern British Columbia and as far north as Point Barrow. A population of RKC has also been found in the Barents Sea.

Diet/Role in Ecosystem

RKC diet varies with crab size and depth inhabited. Larval crab consume phytoplankton and zooplankton; juveniles feed on diatoms, protozoa, hydroids, crab, and other benthic organisms; adults eat an assortment of worms, clams, mussels, snails, brittle stars, sea stars, sea urchins, sand dollars, barnacles, fish, and algae. King crabs fall prey to a wide variety of species, including Pacific cod, rock sole, yellowfin sole, pollock, octopus, and other king crab.

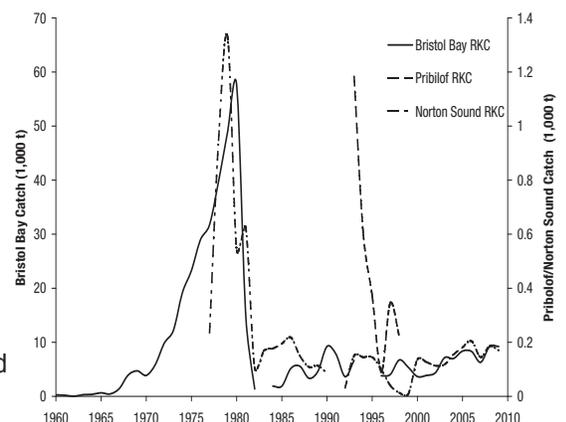
Reproduction

RKC have an annual reproductive cycle. In Bristol Bay, RKC mate in shallower waters (<50 m), generally beginning in January and continuing through June. Males grasp females just prior to female molting, after which the eggs (43,000 to 500,000 eggs) are fertilized and extruded onto the female's abdomen. The female RKC carries the eggs for 11-12 months before they hatch.

Population

Fishery and Catch History

The Japanese tanglenet fishery harvested Bristol Bay RKC in the 1930s and from 1953-1974 while the Russian tanglenet fishery operated from 1959-1971. The American pot fishery began in the 1960s and peaked in 1980. Following the stock collapse in the early 1980s the catch has been relatively low but steady. Since 2005 the fishery has been managed according to the Crab Rationalization program under which qualified participants are issued individual fishing quotas. The Pribilof Island stock was harvested concurrently with blue king crab in the 1990s but was closed when the blue king crab stock was declared overfished. The Norton Sound stock has been harvested by a pot fishery since 1977. In 1994 the stock was designated super-exclusive meaning that vessels participating in it could not participate in other king crab fisheries and vice-versa.



RESEARCH

In addition to basic biology conducted during the NMFS annual EBS Assessment survey, a variety of biological questions are being researched by the Alaska Fisheries Science Center (AFSC) Resource Assessment and Conservation Engineering (RACE) Division Shellfish Assessment Program. Research topics include the effects of ocean acidification on embryogenesis, larval crabs, and juvenile crabs, and fine scale habitat usage by podding juveniles. A collaborative enhancement study, Alaska King Crab Rehabilitation and Biology Program (AKCRRAB), between the NOAA Aquaculture Program, AFSC Kodiak Laboratory, Alaska Sea Grant, University of Alaska, Fairbanks, and fishermen, continues to explore optimal culture techniques for king crab larvae, and conducts dive studies to identify juvenile rearing habitat in the wild.

The North Pacific Research Board funds a collaboration between AFSC/RACE Kodiak and the University of Alaska, Fairbanks that is assessing (1) reductions in fecundity during brooding, and occurrence of unfertilized or non-viable eggs, (2) egg quality by female size and reproductive history, and (3) larval fitness by female size, reproductive history, and egg quality. The Marine Conservation Alliance Foundation and AFSC are quantifying the unobserved injury and mortality of crabs due to encounters with trawls on the seafloor.

For more information

Most recent stock assessment:

<http://www.fakr.noaa.gov/npfmc/SAFE/SAFE.htm>

Research:

http://www.afsc.noaa.gov/RACE/shellfish/default_sf.php

Management:

<http://www.fakr.noaa.gov/sustainablefisheries/crab/default.htm>

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Questions or Comments?

email: afsc.outreach@noaa.gov

Resource Status

The abundance of the Bristol Bay stock of large males and females is not considered to be overfished, but remains well below the peak population levels of abundance of the 1970s. The Pribilof Island stock is also not overfished but the fishery has not opened since 1998 due to concerns over bycatch of blue king crab.

Stock Assessment

Abundance estimates for the eastern Bering Sea (EBS) are obtained through the National Marine Fisheries Service (NMFS) annual bottom trawl surveys every summer using an area-swept method. NMFS and the Alaska Department of Fish and Game (ADFG) use this information to determine the status of stocks and set the harvest levels.

Management

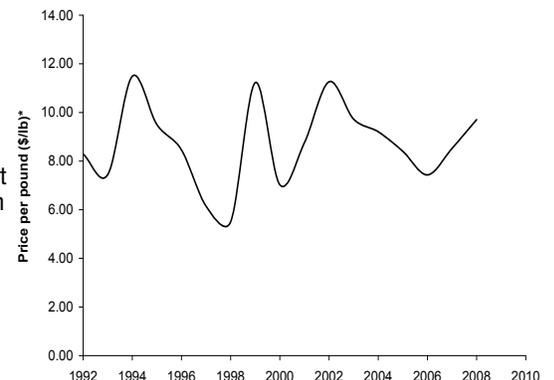
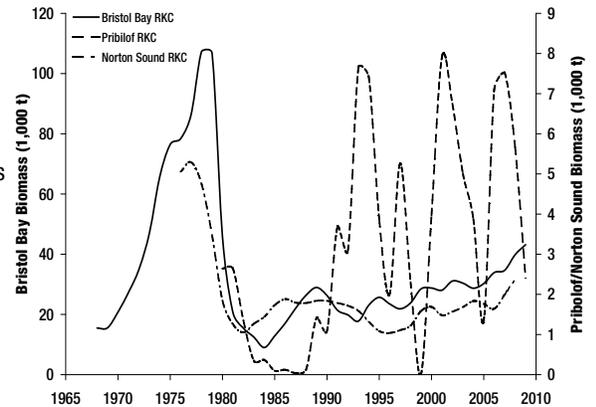
Stocks in the Bering Sea and Aleutian Islands are cooperatively managed by NMFS and the State of Alaska through the North Pacific Fishery Management Council's (NPFMC) fisheries management plan (FMP) for Bering Sea/Aleutian Islands (BSAI) King and Tanner crabs. State regulations comply with the FMP and the national standards of the Magnuson-Stevens Act. RKC in the BSAI are managed as four separate fisheries: Bristol Bay, Pribilof Islands, Aleutian Islands, and Norton Sound. Three BSAI stocks are managed separately to accommodate different life histories and fishery characteristics: the Bristol Bay, Norton Sound, and Aleutian Islands stocks (consists of Adak and Dutch Harbor populations). Other populations of RKC are found around the Pribilofs islands, St. Matthew, and St. Lawrence, but are managed in conjunction with blue king crab fisheries and have not opened since 1999 due to incidental harvest of blue king crabs. The State of Alaska institutes minimum size and sex restrictions, vessel registration, licenses and permits, observer coverage, and gear requirements.

The Crab Rationalization program applies to the BSAI RKC fisheries, and was implemented in 2005 by the NPFMC to limit access by decreasing fishing capacity (number of vessels and processors in Alaska) to improve conservation and management. In addition, the community development quota (CDQ) program allocates 10 percent of the total allowable catch to CDQ groups (community interests), and is managed by the State of Alaska with federal oversight.

State of Alaska regulations for BSAI crab fisheries include vessel registration with the State of Alaska and a requirement of licenses and permits; registration for each fishery and each area; observer coverage; and gear restrictions such as pot limits, degradable escape mechanisms, and web specifications. Season opening dates are set to maximize meat yield and minimize handling of soft shell crabs. Current minimum legal size for Bristol Bay, Aleutian Islands, and Pribilof Islands RKC is 6.5 inches (165 mm) and for Norton Sound, St. Matthew, and St. Lawrence Island is 4.75" (≥ 120 mm) carapace width. Only male crabs are harvested.

Economics

Price and production volume of red king crab has fluctuated since the early 1990s. Price varied from a high of \$11.49/lb in 1994 to a low of \$5.50 in 1998. The average product price from 1992-2005 was \$10.71/lb. The 2005 price was \$8.40/lb which is lower than the historical average. The primary product is shellfish sections; other products include whole fish and other, unspecified products.



* The inflation-adjusted prices shown in the graph are 1st wholesale (2008 U.S. currency). Numbers are from NMFS and ADF&G price data.

