

FEDERAL REQUIREMENTS FOR STATE OF ALASKA
MANAGEMENT MEASURES UNDER THE AUSPICES OF THE
FISHERY MANAGEMENT PLAN FOR BERING SEA/ALEUTIAN
ISLANDS KING AND TANNER CRABS:
A REPORT TO THE ALASKA BOARD OF FISHERIES



By

Margaret C. Murphy and Gordon H. Kruse

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P.O. Box 25526
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Introduction

Crab fisheries of the Bering Sea/Aleutian Islands (BS/AI) area are managed under a federal fishery management plan (FMP) for BS/AI king and Tanner crabs. The original FMP (NPFMC 1989) was recently revised (NPFMC 1998). The FMP specifies a cooperative state-federal management approach that defers much of the management to the State, while the most controversial measures are fixed in the FMP and require a plan amendment to change.

When adopting State regulations for BS/AI crab fisheries, the Alaska Board of Fisheries (Board) must consider and discuss on the record the FMP goal and all of the objectives, the National Standards of the Magnuson-Stevens Fishery Conservation and Management Act (NMFS 1996), and other applicable federal law. In addition, the Secretary of Commerce published the National Standards Guidelines to assist in the development of FMPs. The crab FMP specifies that the State will provide written explanations of the reasons for its decisions concerning management of crab fisheries. It also specifies that representatives from the North Pacific Fishery Management Council (Council), National Marine Fisheries Service, and NOAA General Counsel will participate in the State's development of regulations for management of king and Tanner crabs in the BS/AI area, including direct participation in the Board meeting for the purpose of assisting the State in determining the extent to which proposed management measures are consistent with the FMP, Magnuson-Stevens Act and its National Standards, and other applicable federal law.

This report is intended to aid the Board in their deliberations at their March 1999 meeting by providing a concise summary of these considerations. It is a revised version of a previous report (Murphy 1997) that has been substantially modified and updated by the junior author in part to reflect recent revisions to the FMP. Although much of the text has been excerpted from the FMP, the FMP should be directly consulted for complete descriptions and explanations.

FMP Management Goal

The management goal in the FMP is to maximize the overall long-term benefit to the nation of BS/AI king and Tanner crab stocks by coordinated Federal and State management, consistent with responsible stewardship for conservation of the crab resources and their habitats.

FMP Management Objectives

The FMP provides seven management objectives as summarized below:

1. Biological Conservation Objective: *Ensure the long-term reproductive viability of king and Tanner crab populations.*

To ensure continued reproductive viability through protection of reproductive potential, management must prevent overfishing. The maintenance of adequate reproductive potential in each crab stock will take precedence over economic and social considerations.

2. Economic and Social Objective: *Maximize economic and social benefits to the nation over time.*

Economic benefits are broadly defined to include, but are not limited to, profits, income, employment, benefits to consumers, and less tangible or less quantifiable social benefits such as the economic stability of coastal communities. To ensure that economic and social benefits derived for fisheries covered by this FMP are maximized over time, the following will be examined in the selection of management measures:

- a. The value of crab harvested (adjusted for the amount of crab dying prior to processing and discarded, known as deadloss) during the season for which management measures are considered;
- b. The future value of crab, based on the value of a crab as a member of both the parent and harvestable stock;
- c. Subsistence harvests within the registration area; and
- d. Economic impacts on coastal communities.

This examination will be accomplished by considering, to the extent that data allow: the impact of management alternatives on the size of the catch during the current and future seasons and their associated prices, harvesting costs, processing costs, and employment; the distribution of benefits among members of the harvesting, processing, and consumer communities; and management costs and other factors affecting the ability to maximize the economic and social benefits as defined in this section.

Social benefits are tied to economic stability and impacts of commercial fishing associated with coastal communities. While social benefits can be difficult to quantify, economic indices may serve as proxy measures of the social benefits that accrue from commercial fishing. Social and economic impacts of BS/AI crab fisheries on coastal communities can be quite significant and must be considered in attempts to attain the economic and social objective. Subsistence harvests must also be considered to ensure that subsistence requirements are met as required by law.

3. Gear Conflict Objective: *Minimize gear conflict among fisheries.*

Management measures developed for the king and Tanner crab fisheries will take into account the interaction of those fisheries, and the people engaged in them, with other fisheries.

4. Habitat Objective: *Preserve the quality and extent of suitable habitat.*

The quality and availability of habitat supporting the BS/AI area king and Tanner crab populations are important. Fishery managers should strive to ensure that optimal habitat is available for juvenile and breeding, as well as exploitable, segments of the population. It also will be important to consider the potential impacts of crab fisheries on other fish and shellfish populations.

5. Vessel Safety Objective: *Provide public access to the regulatory process for vessel safety considerations.*

Upon request, and when appropriate, the Council and the State shall consider, and may provide for, temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented because of weather and other ocean conditions affecting the safety of vessels.

6. Due Process Objective: *Ensure that access to the regulatory process and opportunity for redress are available to interested parties.*

In order to attain the maximum benefit to the nation, the interrelated biological, economic and social, habitat, and vessel safety objectives outlined above must be balanced among one another. A continuing dialogue between fishery managers, fishery scientists, fishermen, processors, consumers, and other interested parties is necessary to keep this balance.

7. Research and Management Objective: *Provide fisheries research, data collection, and analysis to ensure a sound information base for management decisions.*

Necessary data must be collected and analyzed in order to measure progress relative to other objectives and to ensure that management actions are adjusted to reflect new knowledge. Achieving the objective will require new and ongoing research and analysis relative to stock conditions, dynamic feedback to market conditions, and adaptive management strategies.

FMP Management Measures

The FMP defers much of the management of the BS/AI crab fisheries to the State of Alaska using the following three categories of management measures:

Category 1: Federal management measures fixed by the FMP.

Category 2: Framework management measures (the State can change them following criteria set out in the FMP).

Category 3: Management measures deferred to the State.

FMP management measures are summarized by category in Table 1.

Table 1. Management measures for king and Tanner crab fisheries in the BS/AI management unit by category.

Category 1 (Fixed in FMP)	Category 2 (Frameworked in FMP)	Category 3 (Discretion of State)
Legal Gear	Minimum Size Limits	Reporting Requirements
Permit Requirements	Guideline Harvest Levels	Gear Placement and Removal
Federal Observer Requirements	Inseason Adjustments	Gear Storage
Limited Access	Districts, Subdistricts, and Sections	Vessel Tank Inspection
Norton Sound Super-Exclusive Registration	Fishing Seasons	Gear Modifications
	Sex Restrictions	Bycatch Limits (in crab fisheries)
	Pot Limits	State Observer Requirements
	Registration Areas	Other
	Closed Waters	

Management measures in category 1 may be addressed through a plan amendment to the North Pacific Fishery Management Council (NPFMC). As such, they are not under the discretion of the State of Alaska and are not discussed further in this report. A description of these measures is provided in the FMP. Management measures in categories 2 and 3 may be adopted under State laws subject to the appeals process specified in the FMP and are discussed further in this report.

Category 2 – Framework Management Measures

Minimum Size Limits

Under the FMP, the State can adjust size limits within the constraints of available information on:

1. Size at maturity (physiological, morphometric, or functional);
2. Protection of reproductive capability;
3. Market and other economic considerations;
4. Natural and discard mortality rates;
5. Growth rates; and
6. Yield per recruit.

Biological considerations, such as 1, 2, and 4-6, are used to establish minimum legal size limits to ensure that conservation needs are served. Preference for larger crabs based upon market and other economic considerations is accommodated by industry rather than through regulation. A change in minimum size limits requires an analysis with appropriate documentation.

Minimum size limits may be set at various intervals above the average size of maturity depending on a species' life history pattern. In developing fisheries with insufficient information, there may be no size limit set.

Guideline Harvest Levels

The FMP authorizes the State to set preseason guideline harvest levels (GHLs) under State regulations. Seasons or areas may be closed when the GHL is reached, or current inseason information may be used to close them prior to or after reaching the GHL. The following factors are approved and will be considered to the extent information is available when establishing GHLs:

1. Estimates of exploitable biomass;
2. Estimates of recruitment;
3. Estimates of threshold;
4. Estimates of maximum sustainable yield (MSY) or optimum yield (OY); and

5. Market and other economic considerations.

The GHL is the result of a process that includes the examination of the effects of different harvesting strategies on the seven objectives of management listed previously. While harvest strategies will be evaluated relative to all seven objectives, GHL will most frequently be used as a management measure to achieve only the first two objectives. For this reason, the GHL is primarily composed of two interrelated components: a biological component and a socioeconomic component.

The biological component, acceptable biological catch (ABC), is set to achieve the biological conservation objective of preventing overfishing. The ABC serves as the upper-bound constraint on harvest because maintenance of adequate reproductive potential takes precedence over economic and social considerations. Having specified an ABC, a GHL must be chosen to be less than or equal to the ABC. The target harvest level is to maximize the anticipated discounted benefits to the fishery over the long term. These benefits include profits, personal income, employment, benefits to consumers, and less tangible or less quantifiable social benefits such as the economic stability of coastal communities.

Exact procedures for determining appropriate ABCs and GHLs vary between crab resources in the BS/AI area due to differences in the quality and quantity of resource databases. Information necessary to evaluate the federally approved factors (1-5 above) for establishing GHLs includes data from trawl surveys, pot surveys, fishery performance statistics (catch per unit effort), price, personal income, employment, and other market and economic data.

Inseason Adjustments

The FMP authorizes the State to make inseason adjustments to GHLs, to fishing period lengths, and to close areas under State regulations. When making inseason adjustments, the State shall consider the following inseason data to the extent it is available:

1. Overall fishing effort;
2. Catch per unit effort and rate of harvest;
3. Relative abundance of king or Tanner crab;
4. Achievement of GHLs;
5. Proportion of soft-shelled crabs and rate of deadloss;
6. General information on stock condition;
7. Timeliness and accuracy of catch reporting;
8. Adequacy of subsistence harvest; and
9. Other factors that affect ability to meet the FMP objectives.

When an unanticipated event occurs that affects preseason predictions, or a preseason prediction proves to be incorrect, compensatory inseason adjustments must be made to keep the management system on track toward meeting the biological and economic objectives of the FMP. All inseason adjustments must be recorded, justified in writing, and attached to the emergency order for review by the public, the State, NMFS, and other regulatory agencies.

District, Subdistrict, and Section Boundaries

The FMP authorizes the State to adjust district, subdistrict, and section boundaries on the basis of any of the following criteria:

1. If the area contains a reasonably distinct stock of crab that requires a separate GHJ estimate to avoid possible overharvest;
2. If the stock requires a different size limit from other stocks in the registration area;
3. If different timing of molting and breeding requires a different fishing season;
4. If estimates of fishing effort are needed preseason so that overharvest can be prevented; or
5. If part of an area is relatively unutilized and unexplored, and if creation of a new district, subdistrict, or section will encourage exploration and utilization.

Fishing Seasons

Fisheries are closed during sensitive biological periods to protect crab from mortality caused by handling and stress when shells are soft, and to maximize meat recovery by delaying harvest until the shells have filled out. Fisheries conducted during sensitive biological periods should prevent any irreparable damage to the stocks.

Within biological constraints, the open fishing season is set:

1. To minimize deadloss;
2. To produce the best quality product;
3. To minimize fishing during severe weather conditions;
4. To minimize the cost of industry operations;
5. To coordinate the king and Tanner crab fisheries with other fishery demands on the same harvesting, processing, and transportation systems; and
6. To reduce the cost of enforcement and management before, during and after the season, both of which are affected by the timing and area of fisheries for king and Tanner crabs and other resources.

Sex Restrictions

West coast crab fisheries harvest only male crab, a restriction that is assumed to contribute to maximum reproductive potential. Under the FMP, unless a surplus is determined to be available, female crabs cannot be taken. There have been some recent studies indicating that there are probably surplus female crab which can be taken when stock levels are high. However, the accumulative effects of a female harvest and the subsequent environmental impacts have not been evaluated. When a surplus of crabs is shown to exist, the FMP authorizes an experimental harvest under a State permit if fishermen provide accurate documentation of harvest rates and location, and processing and marketing results are made available to the management agency.

Pot Limits

The FMP authorizes the State to use pot limits to attain the biological conservation objective and the economic and social objective of the FMP. When establishing pot limits, the State can consider, within constraints of available information:

1. Total vessel effort relative to GHL;
2. Probable concentrations of pots by area;
3. Potential for conflict with other fisheries;
4. Potential for handling mortality of target or nontarget species;
5. Adverse effects on vessel safety, including hazards to navigation;
6. Enforceability of pot limits; and
7. Analysis of the effects on industry.

The FMP sets standards for the adoption of pot limits. Pot limits must be designed in a nondiscriminatory manner. For example, pot limits that are a function of vessel size can be developed which affect large and small vessels equally. Historic data on pot registration and length overall could be used for developing pot limit regulations.

The Secretary of Commerce, after a review of the pot limits adopted by the Board in 1992, concluded that the nondiscriminatory language in the FMP requires the economic burden imposed by pot limits to be shared equally by large and small vessels alike.

Only special types of situations warrant the use of pot limits. There are at least two such cases:

1. Restrict deployment of excessive amounts of gear to attain the biological conservation objective in the event of pot loss from advancing ice cover.

2. Restrict excessive amounts of gear to allow a small guideline harvest level from a depressed stock to attain the economic and social objective within biological conservation constraints.

Registration Areas

The FMP adopts existing State registration areas within the BS/AI fishery management unit. The management unit is divided by the State into three king crab registration areas - Bering Sea, Bristol Bay, and Aleutian Islands and one Tanner crab registration area - Westward.

Registration areas may be further divided into fishing districts, subdistricts, and sections for purposes of management and reporting. State regulations require vessels to register for fishing in these areas, and may require vessels to register for specific districts within a registration area.

King crab registration areas within the management unit are designated as either exclusive or nonexclusive. Vessels can register for any one exclusive area but cannot fish in any other exclusive area during the registration year. Vessels can fish any or all nonexclusive areas.

Designation of an area or district as exclusive must be supported by a written finding by the State that considers the extent to which the designation will:

1. Facilitate proper management of the fishery;
2. Help provide vessels with a reasonable opportunity to participate in the fishery;
3. Avoid sudden economic dislocation;
4. Encourage efficient use of vessels and gear;
5. Result in economic benefits offset by economic costs and inefficiencies; and
6. Yield results that could be attained by other management measures.

The FMP describes examples of situations in which the designation and maintenance of the exclusive registration area might be appropriate which are summarized as follows:

1. Sequential season openings that give an advantage to highly mobile vessels;
2. Timing of price settlements;
3. Historic utilization by a fleet with limited mobility;
4. Vessel effort shifts due to seasonal crab availability;
5. Rapid growth and advancement in fishing efficiency that increases the potential for overharvest;
6. Small vessel fleet with restricted carrying capacity requires a longer fishing period to ensure safety during bad weather;

7. Small vessel fleet with a limited ability to transport quantities of pot gear safely; and
8. Multiple discrete harvestable stocks within the area.

Closed Waters

The FMP recognizes the current State regulations that prohibit commercial fishing for king crab in waters within 10 miles of mean lower low water around St. Lawrence, King, and Little Diomed Islands. The FMP also recognizes the State closure to protect the Norton Sound subsistence king crab fishery.

The State may designate new closed water areas or expand or reduce existing State closed water areas. When making such changes, the State shall consider the following appropriate factors:

1. The need to protect subsistence fisheries;
2. The need to protect critical habitat for target or nontarget species;
3. The prevention of conflict between harvesting of species; and
4. The creation of navigational hazard.

Category 3 - Management Measures Deferred to State

Reporting Requirements

Current State reporting requirements include:

1. Reporting the company or individual that purchased the catch;
2. The full name and signature of the permit holder;
3. The vessel that landed it with its license plate number;
4. The type of gear used;
5. The amount of gear (number of pots, pot lifts);
6. The weight and number of crab landed including deadloss;
7. The dates of landing and capture; and
8. The location of capture.

Processing companies are required to report this information for each landing purchased, and vessel operators are required to provide information to the processor at the time of sale. All reports (fish tickets) are confidential.

Gear Placement and Removal

Placement of unbaited gear, with doors secured open, on the fishing grounds before and after a season has been allowed within certain limits. Such early placement or late removal has been justified in light of the following considerations:

1. Its lack of biological impacts;
2. Enforcement problems and costs borne by the public and the industry;
3. Lack of potential gear conflict;
4. The unavailability of loading or unloading facilities and gear storage areas;
5. Vessel safety;
6. Increasing the competitiveness of smaller vessels; and
7. Decreasing the fishing costs.

Gear Storage

Crab pots are generally stored on land or in designated storage areas at sea. Storage in a nonfishing condition in ice-free water areas of low crab abundance has been justified based on the following considerations:

1. Expected biological impacts;
2. Potential enforcement costs to the public;
3. Costs to vessel owners of storage on land;
4. Availability of other land and sea storage areas; and
5. The possibility that it would lead to gear conflict.

Vessel Tank Inspections

Vessel tank (or live-hold) and freezer inspections are required before the opening of a king or Tanner crab fishing season to meet the legal requirements of the State's landing laws, provide effort information, and provide for a fair start to the fishery. The State normally considers the following factors when determining whether inspections should be required:

1. Enforcement requirements;
2. Ability of vessels to move easily between the fishing grounds and the location of inspection centers;
3. Time necessary for the vessels to transport their gear from storage areas to fishing grounds;
4. Fuel consumption that the inspection requirement will cause; and
5. Equity of allowing all participants to start the fishery at substantially the same time.

Gear Modifications

Pots are the specified legal commercial gear for capturing crab in the BS/AI area. State regulations require escape rings or mesh panels in pots used in the BS/AI Tanner, snow, and golden (brown) king crab fisheries, in the Bristol Bay red king crab fishery, and in the Pribilof District king crab fishery. State regulations also require incorporation of biodegradable twine as an escape

mechanism on all pots which will terminate a pot's catching and holding ability in case the pot is lost.

Bycatch Limits

The State may implement limits on crab bycatch in crab fisheries managed under the FMP. Often, regulation of bycatch in the directed fishery involves no, or limited, allocation because the same fishermen participate in both fisheries.

State Observer Requirements

The State may place observers aboard crab fishing and/or processing vessels when the State finds that observers provide the only practical mechanism to obtain essential biological and management data or when observers provide the only effective means to enforce regulations. The State currently requires onboard observer on all catcher/processor or floating-processor vessels participating in the king, Tanner, and snow crab fisheries. Observers are also required on all vessels participating in the Aleutian Islands king crab fisheries and some other fisheries as a condition of obtaining a permit to fish.

Other

State government is not limited to only the management measures described in the FMP. Implementation of other management measures not described in the FMP must be consistent with the FMP, the Magnuson-Stevens Act, and other applicable federal laws, and may occur only after consultation with the Council. Other management measures the State may implement are subject to the review and appeals procedures described in the FMP.

Procedure to Appeal Actions by the State

The FMP describes in detail the process whereby individuals may appeal actions taken by the State concerning crab management in the BS/AI area. FMP crab regulations adopted by the Board are subject to an administrative appeal process for review by the Secretary of Commerce. The applicant must first petition the Board to reconsider its regulation. If the applicant receives an adverse ruling, it will be reviewed by the Crab Interim Action Committee for comment to the Secretary. Secretarial review is limited to whether the challenged regulation is consistent with the FMP, Magnuson-Stevens Act, and other applicable federal law. If the Secretary determines that the regulation is inconsistent with the FMP, the Secretary may supersede the regulation by publishing a federal rule for the thirty-day comment period or immediately publishing an interim final rule.

Magnuson-Stevens Act National Standards

Regulatory measures for crab in federal waters must be consistent with the following national standards of the Magnuson-Stevens Fishery Conservation and Management Act (NMFS 1996):

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be:
 - a. Fair and equitable to all such fishermen;
 - b. Reasonably calculated to promote conservation; and
 - c. Carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; no such measure shall have economic allocation as its sole purpose.
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid necessary duplication.
8. Conservation and management measures shall, consistent with the conservation requirements of this act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to:

- a. Provide for the sustained participation of such communities; and
 - b. To the extent practicable, minimize adverse economic impacts on such communities.
9. Conservation and management measures shall, to the extent practicable:
- a. Minimize bycatch; and
 - b. To the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Other Applicable Federal Law

Regulatory Flexibility Act (5 U.S.C. 601 et seq.):

Under this Act agencies must endeavor to fit regulatory and informational requirements to the scale of the business. To achieve this, the agency should solicit and seriously consider flexible regulatory proposals. This requires the agency to recognize differences in scale and size of the regulated entities, and to consider regulations that do not impose undue burden on small businesses.

Executive Order 12866, dated September 30, 1993 (superseding EO 12291):

To achieve the purpose of the Regulatory Flexibility Act, EO 12866 directs agencies to promulgate only necessary regulations and to assess all costs and benefits of available regulatory alternatives, including not regulating, and providing economic incentives to encourage the desired behavior. The agency should choose the regulatory approach that maximizes net benefits, including economic, environmental, public health and safety, distributive impacts, equity, and where the agency has determined that the benefits of the intended regulation justify its costs.

The agency shall base its decision on the best reasonably obtainable scientific, technical, economic and other information concerning the need for, and consequences of, the intended regulation.

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