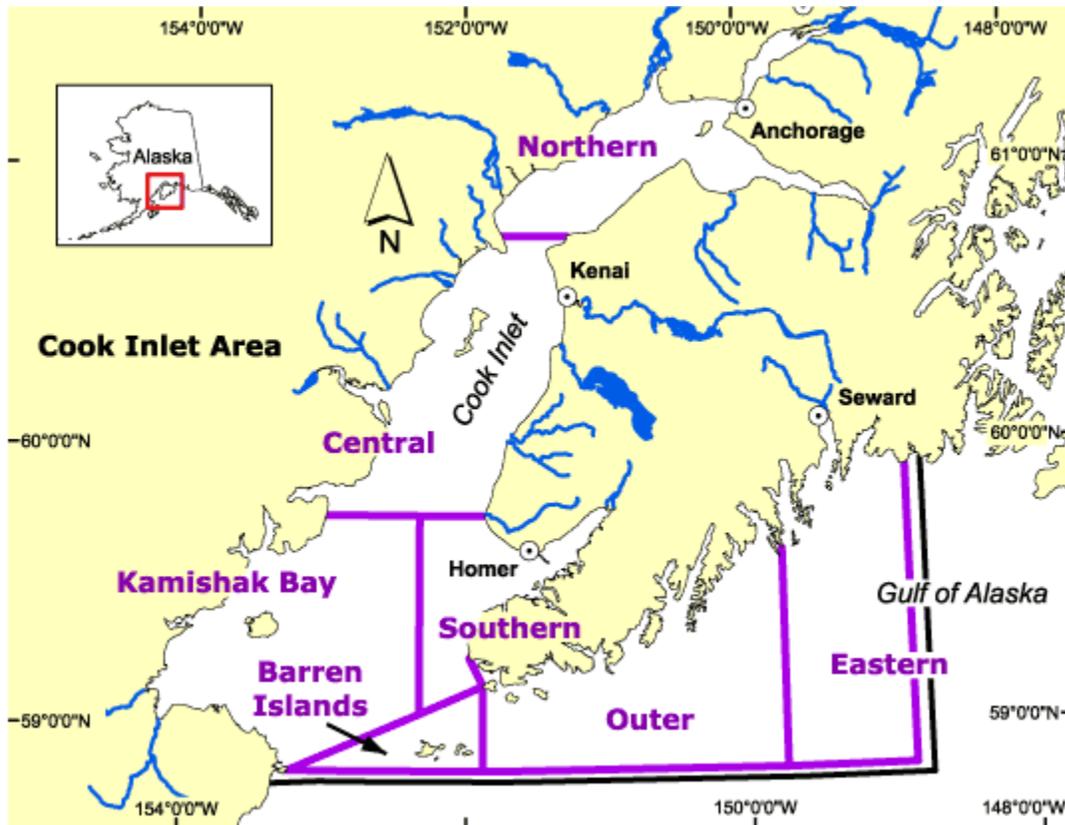


# Cook Inlet Management Area



The Cook Inlet Management Area is located in the Central Gulf of Alaska and comprised of all marine waters west of the longitude of Cape Fairfield and north of the latitude of Cape Douglas, and includes all benthic, estuarine and freshwater habitats necessary to salmon for spawning, breeding, feeding, or growth to maturity.

The Cook Inlet Management Area is divided into two sections. The Upper Cook Inlet Management Area is that area north of the latitude of the Anchor Point Light, and the Lower Cook Inlet Management Area that is south of the latitude of the Anchor Point Light, north of the latitude of Cape Douglas and west of Cape Fairfield.

## **Upper Cook Inlet Management Area**

The Upper Cook Inlet (UCI) Management Area consists of that portion of Cook Inlet north of the latitude of the Anchor Point Light and is divided into the Central and Northern districts. The Central District is approximately 75 miles long, averaging 32 miles in width. There are at least 373 anadromous streams within the Central District of UCI that have been identified. In that total are 84 Chinook, 133 sockeye, 281 coho, 39 pink and 31 chum, salmon streams. The Northern District is 50 miles long, averaging 20 miles in width. There are at least 1,001 anadromous streams within the Northern District of UCI that have been identified. In that total are 361 Chinook, 261 sockeye, 809 coho, 183 pink and 136 chum, salmon streams. All 5 species of Pacific salmon are commercially harvested in UCI. Since the inception of a commercial salmon fishery in 1882, many salmon gear types, including fish traps, gillnets, and seines have been employed with varying degrees of success. The Cook Inlet salmon fisheries were part of an original group of 19 Alaska salmon fisheries that were limited to entry in after the Alaska legislature passed the limited entry act. Salmon limited entry permits for all three Cook Inlet gear types were first issued in 1975. More than 1,300 drift and set gillnet limited entry fishing permits have been issued for the UCI area, contributing about 10% of salmon permits issued statewide. Sockeye salmon are most important in terms of their economic value in the Upper Cook Inlet fishery.

Participation in commercial salmon fishing in the Upper and Lower Cook Inlet management areas differ by gear group. In the Upper Cook Inlet management area, the majority of the commercial salmon fishing is prosecuted by both the set and drift gillnet fisheries. The use of purse seine gear is only employed sporadically in the Chinitna Bay subdistrict of the Upper Cook Inlet Management Area. In the Lower Cook Inlet management area, most of the commercial salmon fishing is prosecuted by the purse seine fleet along with a few of the set gillnet permit holders.

## **Status Determination Criteria**

*Congress finds and declares the following:*

*The fish off the coasts of the United States, the highly migratory species of the high seas, the species which dwell on or in the Continental Shelf appertaining to the United States, and the anadromous species which spawn in United States rivers or estuaries, constitute valuable and renewable natural resources. These fishery resources contribute to the food supply, economy, and health of the Nation and provide recreational opportunities.*

*A national program for the development of fisheries which are underutilized or not utilized by the United States fishing industry, ..... is necessary to assure that our citizens benefit from the employment, food supply, and revenue which could be generated thereby.*

To achieve National Standard 1 – prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery – the Magnuson-Stevens Act requires each FMP to (1) Specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished and contain conservation management measures to prevent overfishing or end overfishing and rebuild the fishery and (2) establish mechanisms for specifying annual catch limits (ACLs) to prevent overfishing and include accountability measures (AMs) to prevent ACLs from being exceeded and to correct overages of the ACL if they do occur.

The Council and committees must also, in order to achieve the “optimum yield” and “provide the greatest overall benefit to the nation,” consider the unique life history of salmon and the complexity of mixed stock fishery management on semelparous species where underfishing/over-escaping and exceeding the carrying capacity of available spawning and rearing habitat may jeopardize the capacity of a stock or stock complex to produce MSY on a continuing basis. Achieving OY on a continuing basis on salmon stocks requires a level of harvest to stay within the range of spawners (Smsy) that will produce MSY.

In the Upper Cook Inlet Management Area, instead of using the tier system used in the East Area, all salmon stocks returning to Upper Cook Inlet (UCI) would be separated into 3 stock complexes based on run timing with an early, mid-season and late component. Due to the mixed stock nature of the commercial fishery in Cook Inlet and the extremely short time period when stocks are available for harvest, the tier system cannot function as it does in the East Area, as there is no ability to separate and evaluate stock specific data until after the salmon have entered their natal streams. Also, in UCI there is no need to account for Chinook stocks covered by the Pacific Salmon Treaty, as there is in the East Area.

The three stock complexes would be managed using indicator stocks (indices), MSY Fishing Mortality Rate (Fmsy) and abundance-based management utilizing CPUE’s (Catch per Unit of Effort) to achieve the level of harvest and escapement required to meet NS1. The over fishing definitions are based on the SSC’s escapement goal guidance to determine MSY. The status determination criteria developed by the salmon committee would prevent overfishing and provide for rebuilding of overfished stocks in the manner and timeframe required by the MSA. Reviewing known harvest rates in ADFG literature and using Discussion Paper Tables 2.2, 2.3 and 2.4 as examples, there are currently no overfished stocks in the UCI management area.

All five salmon species enter Cook Inlet on their way to their natal streams to complete their life cycle. Most salmon returning to Cook Inlet do so between June and September, with the majority of the stocks typically returning in an eight-week time period between late-June and late-August. During this annual migration period, there may be only a several-day time period between the time a salmon available for harvest enters Cook Inlet, and the time it enters its natal stream. This short, several-day period is the one and only opportunity to commercially harvest those available stocks and achieve the harvest rate required to meet the NS1 requirement of OY.

Due to the volume of all species of salmon present in Cook Inlet at the same time, and the non-selective nature of gillnets, the Upper Cook Inlet commercial fishery is mixed stock in nature. Lack of an in-season general stock identification technique prevents assessment of run strength of individual stocks that contribute to the mixed stock fishery until well after the fishery is complete. Models have been developed over time to estimate final escapements based on test fishing and commercial harvest rates/CPUE. In

general, management of these stock complexes is based on aggregate abundance with specific stocks used as indicators. An indicator stock is a stock with measurable and objective status determination criteria that can be used to help manage and evaluate more poorly known stocks that are in a stock complex. Further, an indicator stock is believed to represent the typical vulnerabilities of stocks within the stock complex.

The ADFG has conducted several studies in the last decade, utilizing genetic data, attempting to determine if stock separation occurred anywhere in the Central District of Cook Inlet. Results have determined there were no distinct or consistent temporal or spatial patterns in stock composition in the harvest. In addition to these reports there is test boat data for the last 30+ years that also demonstrates the daily variations of salmon passage into the Central District of UCI. In general, in the Central District salmon fishery of Cook Inlet, stocks cannot be targeted independent of one-another. Consistent or reliable level of harvest required to achieve OY for any individual stock cannot always be achieved annually. Due to natural variations in stock abundance, (pink salmon 2-year cycle) and seasonal variations in run timing and other factors the SDC should provide for the flexibility to deviate from specific requirements annually as long as the average over a several year period does meet the criteria.

The mechanisms for achieving NS1 on salmon stocks in Cook Inlet are the scientifically-based management measures, as developed by the Council, the SSC and the salmon committee, that are used to determine stock status and control harvest to achieve, but not exceed, the spawning biomass level necessary to produce MSY. The State's salmon management program is based on those scientifically defensible management measures and adaptive inseason management to prevent overfishing and underfishing. Accountability measures (AM) include an annual review of the State's inseason management measures to ensure that MSY/OY goals are being achieved over the long term. The review should address both the magnitude and frequency of identified problems and recommend changes in management to achieve compliance. Inseason management measures are typically adjustments in time and area of opportunity to harvest. Long term AM's may require escapement goal reviews and EFH and carrying capacity assessments.

Escapement is defined as the annual estimated size of the spawning salmon stock. Quality of the escapement may be determined not only by numbers of spawners, but also by factors such as sex ratio, age composition, temporal entry into the system, and spatial distribution within salmon spawning habitat.

Alaska's salmon fisheries shall be managed to maintain escapement within levels that provide for MSY, escapements are assessed on an annual basis, all appropriate reference points are couched in term of escapement level, and status determinations are made based on an indicator stock's level of escapement or achieving the harvest rate/MSY Fishing Mortality Rate (Fmsy) for those stocks without goals. When data are insufficient to estimate MSY directly, Fmsy can serve as reasonable proxy for MSY (NS1 Guidelines). Escapement goal ranges together with real-time escapement enumeration (i.e. visual counts from towers, weir counts, multiple aerial survey counts, sonar counts) and intensive fishery monitoring programs have been established for most of Alaska's major salmon stocks. In cases where salmon runs have been below forecast levels, the State may implement time and area restrictions for the fishery in order to achieve escapement goals, thus preventing overfishing. In cases where salmon runs are projected to exceed MSY escapement levels, the State will increase fishing opportunity in order to harvest stocks that are surplus to escapement needs or to achieve the minimum harvest rate/Fmsy.

For salmon, MSY is achieved by controlling fishing to maintain the spawning escapement of the larger more productive stocks at levels that provide potential to maximize production. Escapement goals are based on direct assessments of MSY escapement levels from stock recruit analysis or a reasonable proxy. To comply with NS1, escapement goal ranges are specified to produce 90% to 100% of MSY. Escapement goal ranges give managers the flexibility to moderate fishing to protect stocks of weak runs that are commonly exploited in mixed stock fisheries. Scientifically-based biological reference points for salmon populations are estimated based on long-term stock specific assessment of recruits from parent escapement or long-term assessment of escapement. The salmon stock assessment programs employed by ADF&G are designed to monitor stock and age-specific catch and escapements. Comprehensive implementation of the ADF&G salmon stock assessment programs, over time, provides stock-recruitment data necessary for developing MSY-based escapement goals. Since the catch and escapement monitoring programs are conducted in real-time, they provide inseason assessments of run strength necessary for managers to implement the FMP's escapement based harvest policies.

For Cook Inlet salmon stocks, the Council believes that an escapement based management system is a more effective management system for preventing overfishing and underfishing than a system that places rigid numeric limits on the number of fish that may be caught. The fundamental goal of fishery managers who employ catch limits to prevent overfishing is to ensure that the number of fish that survive to breed is sufficient to produce maximum yields over the long term. Given salmon's particular life history attributes, the preferred method to annually ensure that surviving spawners will maximize present and future yields is a system that establishes escapement goals intended to maximize surplus productivity of future runs, estimates run strength in advance and also monitors actual run strength and escapement during the fishery, and utilizes inseason management measures, including fishery closures, to ensure that minimum escapement goals are achieved and upper goal limits are not exceeded. For those stocks without established EG's, the use of harvest rates/Fmsy and the regular evaluation of CPUE's compared to the historical data set will provide the means to achieve a reasonable proxy of OY. The Council believes that such an approach provides a more effective mechanism to prevent overfishing and underfishing than a system that prescribes rigid catch limits and has already been employed in Alaska for over 100 years with relative success. Such a catch-based system would rely on pre-season predictions of run strength and of the resulting catch that would allow the stock to meet prescribed escapement goals. However, because it would employ rigid catch limits, such a system would lack the added features of inseason monitoring to confirm actual run strength and the ability to adjust fishing pressure to ensure that escapement goals are met if pre-season predictions of run strength prove inaccurate.

Moreover, an additional advantage of an escapement based system or a harvest rate/Fmsy for indicator stocks is that it does not rely on fishers' or managers' ability to accurately identify the particular stock to which each harvested fish belongs. There are numerous stocks of each species of Pacific salmon managed under this FMP, and fish of the same species from different stocks cannot be distinguished visually.

The National Standard 1 Guidelines (NS1) provides a structure for classifying stocks in and around the fishery, and for organizing stock complexes. This classification scheme helps conceptualize how the

fishery operates, which stocks are affected by various fishery sectors, and how escapement goal management is applied and how harvest rates/ $F_{msy}$  may be applied.

The stocks identified in an FMP are classified as in or out of the fishery, and as target or non-target stocks. Target stocks (T) and non-target stocks (NT) are in the fishery; minor stock component (MSC) are non-target stocks that have a very low percentage (*de minimis*) of incidental catch, ecosystem component (ECs) stocks are non-target stocks that are not in the fishery, certain stocks (i.e., groundfish) may be identified for non-retention (NR). Conservation and management of targeted stocks will occur prior to implementing management action on those sectors that are not targeting those stocks.

Individual stocks can also be formed into stock complexes for management and assessment purposes. Stock complexes are groups of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impacts of management actions on the stocks are similar. Stock complexes may be formed to facilitate management requirements such as setting escapement goals and harvest rates/ $F_{msy}$  in a mixed stock fishery. Each stock complex has one or more indicator stocks to establish harvest potential or constraints based on status of those indicator stocks.

## Upper Cook Inlet Salmon Stock Matrix

All Salmon Species	Upper Cook Inlet Salmon Fishery Sectors						
	Subsistence	Commercial			Recreational		
Stocks and Stock Complexes		DRIFT	SET CD	SET ND	SPORT	ED	PU
<b>May 15 - June 20 salmon stock complex 1</b>							
East Side Early Run Chinook - Anchor PT to Kenai	MSC	MSC	NT	MSC	T	T	MSC
Northern District early run Chinook	T	MSC	T	T	T	NT	MSC
East Side Early Run Sockeye - Kenai and Kasilof	MSC	MSC	T	MSC	T	T	T
West Side Early Run Sockeye	MSC	MSC	T	NT	T	NT	MSC
<b>June 21 - August 31 Salmon Stock Complex 2</b>							
Kasilof River Chinook	NT	MSC	NT	MSC	T	T	MSC
Kenai River Late Run Chinook	NT	MSC	NT	NT	T	T	NR
Northern District Chinook	MSC	MSC	MSC	T	T	MSC	MSC
Kasilof River Sockeye - Indicator Stock	T	T	T	NT	T	T	T
Kenai River Late Run Sockeye - Indicator Stock	T	T	T	T	T	T	T
Crescent River Sockeye	MSC	T	T	NT	T	MSC	MSC
Northern District Sockeye	MSC	T	T	T	T	T	T
Kenai River Coho	MSC	NT	NT	NT	T	T	NT
Northern district Coho - Deshka - Indicator Stock	T	NT	NT	T	T	T	T
West Side Coho	MSC	T	T	MSC	T	MSC	MSC
Kenai River Pinks	MSC	T	T	NT	T	T	T
Northern District Pinks	MSC	T	T	T	T	NT	MSC
Northern District Chums	MSC	T	T	T	T	NT	MSC
West Side Chums	MSC	T	T	MSC	T	MSC	MSC
<b>Sept 1 - Season End - Salmon Stock Complex 3</b>							
Kasilof River Coho	MSC	NT	NT	MSC	T	T	MSC
Kenai River Coho	MSC	NT	NT	MSC	T	T	MSC
West Side Coho	MSC	T	T	MSC	T	MSC	MSC
Northern District Coho	MSC	MSC	MSC	T	T	MSC	MSC
<b>Hatchery Salmon Stocks</b>							
	MSC	MSC	MSC	MSC	T	MSC	MSC
<b>Groundfish</b> as defined by NMFS; Rockfish, Sharks, Flatfish, Pacific Cod, Pollock, etc							
	NR	NR	NR	NR	T	NR	NR

### Legend

**Subsistence** - Federal Subsistence net fisheries  
**DRIFT** - Drift Gillnet Central District  
**SET CD** - Set gillnet Central District  
**SET ND** - Set gillnet Northern District  
**SPORT** - Sport fisheries  
**ED** - Educational net fisheries  
**PU** - Personal use fisheries

### Definitions

**T - Target stocks**, intentional harvest for sale or personal use. Stocks that require conservation and management.

**NT - Non target stocks**, incidental harvest, may be retained for sale or personal use. May require conservation and management.

**MSC - Minor stock component, de minimus** harvest, may be retained for sale or personal use.

**NR - No retention**, may have reporting requirements.

## Optimum Yield – Upper Cook Inlet

*” Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery”*

For the Upper Cook Inlet fishery in the West Area, several economic, social, and ecological factors are involved in the definition of OY. Of particular importance are the annual variations in abundance, distribution, migration patterns, and timing of the salmon stocks, traditional and historical uses, methods, and areas of salmon fishing and inseason indices of stock strength. Further, because the subsistence, commercial and the sport fisheries take place in the Federal and State waters without formal recognition of the boundary between these areas, the OY should not and cannot be subdivided into separate parts for the Federal and State waters.

For some stocks identified in Stock Complex 1, 2 and 3, MSY is defined in terms of escapement. MSY escapement goals account for biological productivity and ecological factors, including the consumption of salmon by a variety of marine predators. For those stocks without escapement goals, a harvest rate/Fmsy described as a minimum harvest rate of 40% will be the proxy to achieve OY until an MSY escapement goal can be established. The OY for all the user groups by fishery and stock or stock complex is that fishery’s annual catch, which, when combined with the catch from all other salmon fisheries, results in a post-harvest run size that is within the MSY escapement goal range for each stock or stock complex with an established goal.

Stock-recruitment analysis is the typical method used to estimate stock productivity and carrying capacity, and to establish biological escapement goals (BEGs) that provide the greatest potential for maximum sustained yield of Pacific salmon stocks in Alaska. Stock-specific information on harvest, escapement, and age composition over a series of years is necessary to conduct these analyses. A minimum harvest rate of 40% is required to produce the necessary data so that run reconstruction and production modeling can be achieved and an appropriate MSY goal can be determined.

The Magnuson-Stevens Act requires the Council to “review on a continuing basis, and revise as appropriate, the assessments and specifications made...with respect to the optimum yield.” In particular, OY may need to be adjusted in the future if changes occur in the estimate of MSY. Likewise, OY may need to be adjusted if changes occur in the ecological, social, or economic factors governing the relationship between OY and MSY.

Most of the recreational harvest occurs as the salmon separate into distinct stocks and enter their natal streams. These targeted stock specific harvests are entirely unlike harvests in a mixed stock commercial fishery. As a result, these recreational fisheries provide a unique opportunity to apply specific management and conservation measures. Some of these targeted recreational fisheries are well-documented to have significant and long-lasting negative effects on Essential Fish Habitat and may jeopardize the capacity of a stock or stocks to produce MSY/OY on a continuing basis.

### Harvest Rates for Upper Cook Inlet Stocks

<b>All Salmon species</b>		
<b>Stocks and Stock Complexes</b>	<b>Harvest Rates to</b>	<b>Assessment</b>
<b>May 15 - June 20 - Salmon Stock Complex 1</b>	<b>Meet MSY/OY*</b>	<b>Method</b>
East Side Early Run Chinook - Anchor PT to Kenai River	40-60%	Fmsy <sup>1</sup> /EG <sup>2</sup>
Northern District Early Run Chinook	40-60%	Fmsy
East Side Early Run Sockeye Kasilof & Kenai	65-75%	Fmsy/EG
West Side Early Run Sockeye	65-75%	Fmsy
<b>June 21 - August 31 - Salmon Stock Complex 2</b>		
Kasilof River Chinook	40-60%	Fmsy
Kenai River Late Run Chinook	40-60%	EG
Northern District Chinook	40-60%	Fmsy
Kasilof River Sockeye - Indicator Stock	65-75%	EG
Kenai River Late Run Sockeye - Indicator Stock	65-75%	EG
Crescent River Sockeye	65-75%	Fmsy
Northern District Sockeye	50-75%	Fmsy
Kenai River Coho	60-70%	Fmsy
Northern District Coho	60-70%	Fmsy
West Side Coho	60-70%	Fmsy
Kenai River Pinks	70-85%	Fmsy
Northern District Pink	70-85%	Fmsy
Northern District Chum	60-70%	Fmsy
West Side Chum	60-70%	Fmsy
<b>Sept 1- End of season - Salmon Stock Complex 3</b>		
Kasilof River Coho	60-70%	Fmsy
Kenai River Coho	60-70%	Fmsy
West Side Coho	60-70%	Fmsy
Northern District Coho	60-70%	Fmsy
<b>Hatchery Salmon Stocks - All Three Stock Complexes</b>		
Hatchery Stocks - After Egg Take & Cost Recovery	90-100%	

**\*National Standard 1:** Conservation and management measures shall prevent overfishing while achieving the optimum yield from each fishery.

<sup>1</sup>Fmsy – MSY fishing mortality rate; the fishing mortality rate that, if applied over the long term, would result in MSY.

<sup>2</sup>EG – Escapement Goal

## **Domestic Annual Harvesting and Processing Capacity**

Domestic annual harvesting capacity (DAH) is the expected amount of the allowable harvest of salmon that the domestic fisheries (subsistence, commercial and sport) are capable of harvesting in one year. The Council has determined that domestic harvesters are able to, and expect to, harvest the entire OY of salmon each year.

Domestic annual processing capacity (DAP) is the estimated portion of the DAH that U.S. processors expect to process. For salmon, DAP means the amount of salmon harvested (and processed) by subsistence and sport fishermen, as well as that harvested by domestic commercial fishermen, less any of the commercial harvest delivered to any permitted foreign processors. In the past decade, domestic processors have been able to process the entire commercial harvest of salmon; the Council has no reason to expect that situation to change.

## **Foreign Fishing and Processing**

Title II of the Magnuson-Stevens Act establishes the criteria for the regulation of foreign fishing and processing within the U.S. EEZ. Regulations implementing Title II of the Magnuson-Stevens Act are published in 50 CFR part 600. The regulations provide for the setting of a total allowable level of foreign fishing (TALFF) for species based on a portion of the OY that will not be caught by U.S. vessels. Pursuant to Title II of the Magnuson-Stevens Act, this FMP does not allow foreign harvesting of salmon in the EEZ. At the highest conceivable level of abundance, the allowable amount of salmon can be harvested completely by U.S. fisheries.

Foreign processing refers to fish harvested by U.S. fishermen and processed by foreign processors. In the past, some foreign processing of salmon has taken place in State waters, particularly in Norton Sound and Bristol Bay, and some domestic harvesters have delivered unprocessed or whole fresh salmon caught within State waters to British Columbian ports. Pursuant to Title II of the Magnuson-Stevens Act, for processing in the EEZ, the foreign partner must be authorized under an international fisheries agreement and possess a valid and applicable permit.