AGENDA D-2/3(b)
MAY 1985

M E M O R A N D U M

TO: Council, SSC and AP Members

FROM: Jim H. Branson
Executive Director

DATE: May 15, 1985

SUBJECT: Net Entanglement Regulation

ACTION REQUIRED

(a) Approve entanglement/net discard section of habitat document
(b) Approve draft implementing regulation

BACKGROUND

In February the Council discussed the problem of birds, fish and marine mammals becoming entangled in man-made debris discarded or lost from fishing vessels. Though this problem has received nationwide attention there has been little support from other Councils for a nationwide federal regulation to prohibit marine discard from U.S. vessels (discard from foreign vessels is already prohibited). However, the North Pacific Council considered the issue important for Alaska waters and directed Council staff to include a domestic discard/entanglement provision in this year's amendments to both groundfish FMPs.

A review by staff and NOAA General Counsel has shown that neither FMP currently provides authority to implement regulations prohibiting discarding litter at sea. However, the draft Habitat Document under consideration does address this issue and would authorize such a regulation. Regardless of the extent to which the habitat document is incorporated into the FMPs, the Council should consider at least adding the attached sections entitled "Derelict Fragments of Fishing Gear and General Litter" and "Management Measures to Address Identified Habitat Problems." Without this or similar language a regulation cannot be implemented by the Secretary.

In February the SSC drafted a proposed regulation to implement the net entanglement sections if adopted:

DISPOSAL OF FISHING GEAR AND OTHER ARTICLES

(A) No fishing vessel shall intentionally discard or abandon fishing gear, net fragments, or other articles which may interfere with fishing activities or cause damage to fishery resources and other marine animals. Exception to this rule will be permitted in case of an emergency involving the safety of the ship and/or crew or when officially authorized to do so.

(B) If abandoned or discarded fishing gear, net fragments, or other articles are encountered, or in the event of accidental or emergency placing of such article into the fishery conservation zone, the operator of the vessel shall make a reasonable attempt to recover the article or immediately report the incident to the appropriate official giving:

1. the name of the reporting person and his vessel;
2. the nature of the article;
3. the location of the article; and
4. the time and date of the incident.

3.5.7.1 Derelict fragments of fishing gear and general litter. The introduction of debris into the marine environment occurs when commercial fisheries take place. The debris includes netting, pots, longline gear, packing bands, and other material. Because of the lack of a monitoring program, estimates of debris have been based on 1) observations of debris at sea and on beaches, and 2) occasional reports of accidental or deliberate discards of fishing gear. Therefore, annual or accumulated estimates may not reflect either the level or trends of actual debris. Studies by Merrell (1984) and others have shown that much of the observed debris consists of fragments of trawl and gillnet netting, and much of this netting may be discarded deliberately at the time nets are repaired.

The quantity of marine debris that is produced by commercial fisheries depends on a variety of factors including the types and amount of gear used and the efforts fishermen make to reduce both accidental and deliberate discards of debris. It is not known how the type and amount of gear used will change or how such change will affect the level of debris.

Debris may result in the mortality of marine fish, marine mammals, and birds that become entangled in or ingest it. Discarded trawl netting that floats at the surface is not a threat to most fish, but it has been identified as a source of mortality for marine mammals and birds. Similarly, discarded packing bands have been identified as a source of mortality for marine mammals. Other discarded gear including pots continue to function unattended for varying lengths of time. Neither the extent of debris related mortality nor the effects of such mortality on the abundance of various species is known.

8.10 Management Measures to Address Identified Habitat Problems. An FMP may contain only those conservation and management measures which pertain to fishing or to fishing vessels. The Secretary, upon the recommendation of the Council, may adopt regulations of the kinds and for the purposes set forth below.

- Propose regulations restricting disposal of fishing gear by domestic vessels.

(NOTE: For the BS/AI Groundfish FMP the above text would be inserted into sections 10.3.5. and 14.7., respectively.)

FINAL

North Pacific Fishery Management Council
Fishery Management Plan for the
Bering Sea/Aleutian Islands Groundfish Fishery

Outline for Habitat Sections of Amendment 9

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[9.0 Biological and Environmental Characteristics of the Fishery.]

9.1 Life History Features and Habitat requirements.
- 9.1.1 Walleye pollock.
- 9.1.2 Pacific cod.
- 9.1.3 Yellowfin sole.
- 9.1.4 Greenland turbot.
- 9.1.5 Other flatfishes.
- 9.1.6 Pacific ocean perch.
- 9.1.7 Other rockfishes.
- 9.1.8 Sablefish.
- 9.1.9 Atka mackerel.
- 9.1.10 Squid.
- 9.1.11 Pacific halibut.

[9.2 Stock Units. 9.3 Data Sources. 9.4 Quality of Data. 9.5 Ecological Relationships. 9.6 Current Status of Stocks. 9.7 Estimate of Future Stock Conditions.]

9.8 Description of Habitat Types.

9.9 Habitat Areas of Particular Concern.

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[10.0 Other Considerations Which May Affect the Fishery.
10.1 International Pacific Halibut Commission. 10.2 Marine Mammal Protection Act of 1972.]

10.3 Potential for Habitat Alteration.
- 10.3.1 Offshore petroleum production.
- 10.3.2 Coastal development and filling.
- 10.3.3 Marine mining.
- 10.3.4 Ocean Discharge and Dumping.
- 10.3.5 Derelict fragments of fishing gear and general litter.
- 10.3.6 Benthic habitat damage by bottom gear.

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[14.0 Management Regime.]

14.1 Management Objectives.
E. [Add habitat objective.]

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[14.2 Area, Fisheries, and Stocks Involved. 14.3 Fishing Year. 14.4 Management Measures--Domestic Fishery. 14.5 Management Measures--Foreign Fisheries. 14.6 Operational Needs and Costs.]

14.7 Management Measures to Address Identified Habitat Problems.

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16.0 Research Needs.
[Add text to first and before last paragraph.]

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[18.0 References. 18.1 General.]

18.2 Sources Used in Preparing Habitat Amendments.

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19.0 Appendices.

Appendix IV--Programs Addressing Habitat of Bering Sea/Aleutian Islands Groundfish Stocks.

A. Habitat protection: existing programs.

1. Federal legislative programs and responsibilities related to habitat.
2. Specific actions taken by the Council and NMFS related to habitat for the BS/A groundfish fishery.

B. Non-regulatory techniques to address identified habitat problems.

9.0 Biological and Environmental Characteristics of the Fishery.

9.1 Life History Features and Habitat Requirements. This section summarizes habitats and life histories of the different groundfish species of commercial value in the Bering Sea. The information was drawn from the following sources: Bakkala and Smith (1978), Bakkala (1981), Best (1981), Carlson and Haight (1976), Carlson and Straty (1981), Garrison and Miller (1982), Gusey (1979), Hart (1972), Hood and Calder (1981), Lewbel (1983), Morris (1981), National Marine Fisheries Service (1979, 1980), Pereyra et al. (1976), Quast (1972), Smith (1981, Wilson and Gorham (1982), and Wolotira (1977).

9.1.1 Walleye pollock. This species is the most abundant species on the continental shelf representing 20-50 percent of the total standing stock of groundfish. Pollock are found throughout the water column from shallow to deep water. Massive schools occur on the outer shelf and upper slope from the surface to 500 m. In the Eastern Bering Sea, walleye pollock undergo extensive seasonal migrations associated with feeding and reproduction. Overwintering takes place along the outer shelf and upper slope, and over deep water where bottom temperatures are relatively warmer. As temperatures on the shelf become warmer in spring, part of the walleye pollock population moves to shallower waters (90-140 m) where spawning takes place. They first reproduce at the age of 3 or 4 years. Spawning occurs from March through July along the outer shelf, with major spawning concentrations occurring between the Pribilof Islands and Unimak Island. Each female produces approximately 60,000-400,000 pelagic eggs. Walleye pollock eggs hatch in two to three weeks, depending on temperature; larvae remain in surface waters. Larval pollock begin feeding on copepod eggs and nauplii; as they grow, they feed successively on larger prey such as small copepods. Diets of adult pollock consist mainly of copepods, euphausiids, and fish (a majority of fish eaten are juvenile pollock). Walleye pollock constitute a major part of the diets of northern fur seals and other marine mammals in the Bering Sea, and are important as prey to seabirds and other fish species.

9.1.2 Pacific cod. This species is generally common at depths of 80-260 m. In the Bering Sea, Pacific cod schools are most abundant on the shelf and upper slope. They undergo seasonal migrations between the continental slope and shelf, and along the continental slope. Spawning begins in January, but exact timing and areas of spawning are not known. Females produce from 200,000 to 5,700,000 eggs which are benthic and initially slightly adhesive. The eggs hatch within 10-20 days and larvae are distributed at depths from 25-150 m, with the largest numbers at 75-100 m. Adults are mostly semi-demersal and feed on benthic epifauna, planktonic crustaceans, and fish. Pacific cod are utilized as food by northern fur seals, halibut, belugas, and sperm whales.

9.1.3 Yellowfin sole. The eastern Bering Sea contains the largest single population of this flatfish, which occurs on the shelf at depths from 5-360 m. Yellowfin sole undergo complex seasonal movements (both vertical and horizontal) that are not fully understood. During winter, adults congregate in large dense schools on the outer shelf and upper slope from 100-270 m. In spring, fish begin moving into shallower waters, and by summer the main body of the stock is found on the inner shelf at depths of less than 100 m where feeding and spawning takes place. In late autumn, the fish migrate back to deeper waters. Distribution and movements of yellowfin sole

are associated with environmental factors including temperature, salinity, and bottom sediment type. Adult yellowfin sole are not confined to the bottom, but make periodic vertical movements through the water column. Spawning takes place predominantly in June and July on the inner shelf with females releasing from 1,000,000 to 3,000,000 pelagic eggs, which accumulate in central areas of well-developed gyres. The larvae are pelagic for 4 to 5 months before undergoing metamorphosis; at lengths of about 17 mm the juvenile sole settle to the bottom along the inner shelf. As the juveniles grow they apparently move gradually into deeper water. Their principal prey include benthic infauna and epifauna, although they also eat euphausiids, copepods and fish. Important predators on yellowfin sole include Pacific halibut and northern fur seals.

9.1.4 Greenland turbot. Large concentrations of greenland turbot are found in the eastern Bering Sea and Navarin Basin in a depth range of about 70-670 m. Seasonal movements by greenland turbot are complex and not fully understood. They are generally found at shallower depths in the summer than in winter. Spawning occurs from October to December in waters greater than 100 m in depth; the eggs are apparently bathypelagic, developing in deep water. After hatching, the larvae are pelagic and found in the 30-130 m depth range until they reach a length of about 80 mm when they transform and become demersal. Little else is known about the life history. Greenland turbot feed on a variety of foods including pelagic, mid-water, and demersal fishes, crustaceans, and squids.

9.1.5 Other flatfishes. These include rock sole, flathead sole, arrowtooth flounder, rex sole, butter sole, longhead dab, Dover sole, starry flounder, Alaska plaice, and longnose plaice.

Rock sole are most abundant in the southeastern region of the Bering Sea where they occupy areas of the shelf down to 300 m. Seasonal movements are not well-known. Spawning takes place from March to June at depths near 100 m. Eggs are adhesive and demersal, sinking to the bottom; larvae are pelagic. Adults prey on benthic invertebrates, and occasionally on fish. Predators include fish and marine mammals.

Flathead sole are most abundant in the eastern portion of the Bering Sea. They range in depth from the surface to 550 m. Seasonal distributions consist of concentrations overwintering in depths of 70-400 m on the outer shelf which then migrate to shallower waters (20-180 m) in the spring. Reproduction takes place during February to May within the shelf boundaries; eggs and larvae are pelagic and become widely distributed. The adults prey primarily upon benthic crustaceans,fish, and squid. Predators on flathead sole are not well known, but are thought to be Pacific halibut and marine mammals.

Arrowtooth flounder are most abundant on the continental slope of the southeastern, central, and northwestern Bering Sea at depths of 200-500 m. Arrowtooth flounder move seasonally from the 300-500 m depth range in the winter to the 200-400 m depth range in the summer, apparently associated with water temperatures. Adults are thought to spawn from December to February, releasing up to 500,000 bathypelagic eggs. Hatched larvae remain in shallow nearshore waters over the shelf for several months; then they settle to the bottom. Juveniles gradually move into deeper waters as they grow. Major

foods include crustaceans and fish. Predators on arrowtooth flounder are thought to be Pacific halibut and marine mammals.

9.1.6 Pacific ocean perch. The species is common in and along canyons and depressions on the upper continental slope. The most dense concentrations occur from January to May, during spawning, west of the Pribilofs at depths of 340-420 m. During this period, the species undergoes daily vertical migrations, probably for feeding. Rockfishes give birth to live young. Because Pacific ocean perch inhabit such deep waters, tag and recapture studies are virtually impossible. Any statements about their migration patterns are therefore speculation.

Pacific ocean perch probably mate during winter (October - February) and young are born in spring (March - June). Larvae are 5 to 8 mm at birth and live a planktonic existence for an undetermined period of time. The juveniles (ages one to five) feed mainly on copepods and euphausiids; adults on euphasiids, copepods, fish, and squid.

9.1.7 Other rockfishes. These include rougheye rockfish, dusky rockfish, northern rockfish, shortspine thornyhead, shortraker rockfish, dark blotched rockfish, yelloweye rockfish, and blue rockfish. Rockfishes are mostly demersal and distributed from the surface to very deep waters. Little is known about the biology of Bering Sea rockfishes other than Pacific ocean perch.

9.1.8 Sablefish. This species occupies the water column from the surface to a depth of 1200 m and is most abundant between 100-1000 m on the outer continental shelf and continental slope, where 15 to 20 percent of the total species biomass is located. Some sablefish undertake migrations between different areas in the North Pacific; more localized cross-shelf migrations have also been observed. Sablefish make daily vertical movements associated with feeding; fish are found higher in the water column during the day and nearer the bottom at night. Sablefish spawn during winter (February) at depths of around 550 m, where females release up to 1,000,000 pelagic eggs which rise toward the surface as they develop and hatch. Later-stage larvae are found near the surface. Little is known of egg or larval development, although one-year-old juveniles appear annually in shallow coastal waters. As pelagic juveniles mature, they move into deeper waters and become demersal. Sablefish feed on a wide variety of prey, both pelagic and benthic, depending on location, season, and age of fish. The prey include squid, capelin, pollock, and euphausiids, shrimp, pleuronectid species, cottids, and benthic invertebrates. Predators on sablefish include Pacific halibut, ling cod, and sea lions.

9.1.9 Atka mackerel. This species occurs in the Bering Sea from the Aleutian Islands to Cape Navarin. It spawns near the bottom, but is generally encountered in the upper water layers. Atka mackerel spawn from June to September in coastal areas with stony or rocky bottoms. The eggs are demersal and are deposited in large masses on stones or in cracks among rocks. Hatched larvae are found at depths of 2-30 m and move to the surface at night. The larvae are widely dispersed for distances of up to 200-500 miles from shore. Adults feed largely on euphausiids. Predators on Atka mackerel are marine mammals and the larger pelagic fishes.

9.1.10 Squid. Several species of squid inhabit the Bering Sea seasonally, wide ranging in distribution. The exact nature and size of the resource are poorly defined, but they are generally thought to be large and mobile. Squid live at both mid-water and near surface depths. Spawning, for some species, may extend from spring to fall; sexual maturity may be reached in two years or less. Fertilization is internal; the fertilized eggs are released enmeshed in a gelatinous material. The number of eggs spawned per individual is low compared to groundfish. Predators on squid are marine mammals and pelagic fishes.

9.1.11 Pacific halibut. The distribution is widespread on the shelf and slope to depths of up to 700 m. They undertake seasonal migrations to shallow spring feeding areas, and to deeper waters (250-550 m) in the fall, where they spawn and remain in the winter. Seasonal movements can extend as far as 800 km. Spawning takes place from November through February, and females release up to 2,000,000 pelagic eggs. Larvae are also pelagic until reaching a length of about 10 cm after about 6 months; at that time they settle to the bottom to begin a benthic existence. During the pelagic life stage, eggs and larvae may be transported several hundred km by currents. Pacific halibut are long-lived and may reach ages in excess of 40 years. They are opportunistic feeders, consuming a variety of prey, which varies with age and area. Juvenile fish feed mainly on crustaceans, whereas older fish eat mostly other fish, particularly flounders. Predators of Pacific halibut are poorly known.

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[9.2 Stock Units. 9.3 Data Sources. 9.4 Quality of Data. 9.5 Ecological Relationships. 9.6 Current Status of Stocks. 9.7 Estimate of Future Stock Condition.]

9.8 Description of Habitat Types.

The Bering Sea covers a flat, relatively featureless shelf whose southern boundary extends from near Unimak Pass to Cape Navarin, and from a deepwater basin bounded by the shelf and the Aleutian Island Arc. The Bering Sea has certain characteristic features which make it different from other corresponding regions in higher latitudes (see Table 19.1 from Favorite and Laevastu, referenced as Hood and Calder, editors). The Aleutian Island Arc contains a narrow shelf that drops off rapidly to the Bering Sea on the north and the North Pacific Ocean to the south. Seasonal changes are more moderate than over the Bering Sea shelf. Ocean currents flow through the passes between the Islands, and south of the chain the narrow shelf is washed by a westward current which is stronger in the eastern part; on the Bering Sea side this current is missing.

The waters of the Bering Sea can be partitioned (Kinder and Schumacher, 1981 a and b) during the summer by transition zones which separate four hydrographic domains (Figure 19.2). The hydrographic domains are distinguished by bottom depth and seasonal changes in their vertical density structure. During the winter the structure is absent or much less apparent under the ice. Beginning in the nearshore area, the coastal domain includes waters less than 50 m in depth that due to tidal mixing do not stratify seasonally. A zone of transition separates the coastal domain from the

middle shelf domain. In the middle shelf domain, over bottom depths of 50 to 100 m, seasonal stratification sets up during the ice-free season, and warmer, less saline waters overlie colder and more saline bottom waters. This stratification persists until broken down by winter cooling and storms. A broad transition zone separates the middle shelf zone from the outer shelf domain. This latter domain, in water depths from 100 to 170 m, is characterized by well-mixed upper and lower layers separated by a complex intermediate layer containing fine density structure. In general, the outer shelf waters intrude shoreward near the bottom, while middle shelf waters spread seaward above them. Beyond the outer shelf domain, the shelf break front separates the shelf waters from the oceanic domain, with its more saline, less aerobic waters overlying the Bering Sea slope and deep basin.

Net circulation in the Bering Sea is generally sluggish. However, moderate to strong tidal and wind-driven currents can be established over the shelf. Nearshore coastal currents from the Gulf of Alaska shelf flow into the Bering Sea through Unimak Pass and then apparently continue northeastward along the Alaska Peninsula. Within Bristol Bay, the flow becomes counterclockwise and follows the 50 m depth contour toward Nunivak Island. In the middle shelf domain (water depths from 50 - 100 m), currents are weak and variable, responding temporarily as wind-driven pulses. In the outer shelf domain, a mean northwestward flow exists along the shelf edge and upper slope following depth contours.

With respect to the physiographic regimes and hydrographic domains of the Bering Sea, many species perform seasonal and spawning migrations from one domain to another. Shelf dwellers, such as yellowfin sole and Pacific halibut spawn in deep water 275-410 m (Garrison and Miller, 1982), while walleye pollock form mid-water spawning shoals. Other species also make similar off-on shelf migrations for spawning and feeding. Adult sablefish and Pacific ocean perch live principally on the continental slope at water depths greater than 200 m but are known to make large daily vertical movements within the water column for feeding.

9.9. Habitat Areas of Particular Concern. With the possible exception of the ice-covered surface layer of the shelf during winter, there is not an area of the Bering Sea, water depth, or time of year when one or several species of commercial importance are not present at some life stage. It is difficult without better information to designate particular habitats that can be spatially and temporally defined as holding substantially more important resource values than other areas.

Adults of most of the commercially important groundfish species are known to form dense aggregations on feeding or spawning grounds at certain seasons. Most often these concentrations are found on or inside of the shelf edge in spring and early summer when and where suitable environmental conditions have formed. However, these areas shift in size and location from year to year, presumably due to a combination of environmental and population variables that are not yet well understood. For example, feeding pollock concentrations have been found to be primarily located in outer shelf waters in years when the bottom water of the middle shelf domain remained cold, but extended onto the middle shelf in warm years (Lynde, 1984).

Table 19.1. CHARACTERISTIC FEATURES OF THE EASTERN BERING SEA SHELF ECOSYSTEM

Characteristic Features	Consequences
Physical Features	
Large continental shelf	High standing stocks of biota
	High fish production
	Large food resources for mammals
High latitude area	Nutrient replenishment with seasonal turnover
	Environmental distribution limits for many species
	Large seasonal changes
	Seasonal presence of ice
	Accumulation of generations
Large seasonal changes	Seasonally changing growth
	Seasonal migrations
	Possibility of large anomalies
Ice	Presence of ice-related mammals
	Migration of biota (in & out) caused by ice
	Limited production in winter
Cold bottom water	Outmigration of biota
	Higher mortalities & lower growth of benthic & demersal biota
	Accumulation of generations
High runoff	Low salinities (near coasts)
	High turbidities
	Presence of eurohaline fauna
Sluggish circulation	Local biological production
	Local pelagic spawning
Biological Features	
High production & slow turnover	High standing stocks
Fewer species (than in lower latitudes)	Few species quantitatively very dominant
High amounts of marine mammals & birds)	High predation by apex predators
Pronounced seasonal migrations	Great local space & time changes of abundance
Fisheries Resource Features	
Pollock dominate semidemersal species	Flexible feeding & breeding habits, especially environmental adaption
Yellowfin sole dominant demersal species	Abundant bethos food supply
Herring & capelin dominant pelagic species	Important forage species in the ecosystem
Abundant crab resources	Large, relatively shallow shelf
	Few predators on adults, especially environmental adaption
Abundant marine mammals	Abundant food supply, no enemies, insignificant hunting
	Competes with man on fishery resources
Man-related Features	
Fisheries development rather recent	Ecosystem in near-natural state, not yet fully adjusted to effects of extensive fishery
Little inhabited coasts	Ample space for breeding colonies for mammals & birds
	Very limited local fisheries, no pollution

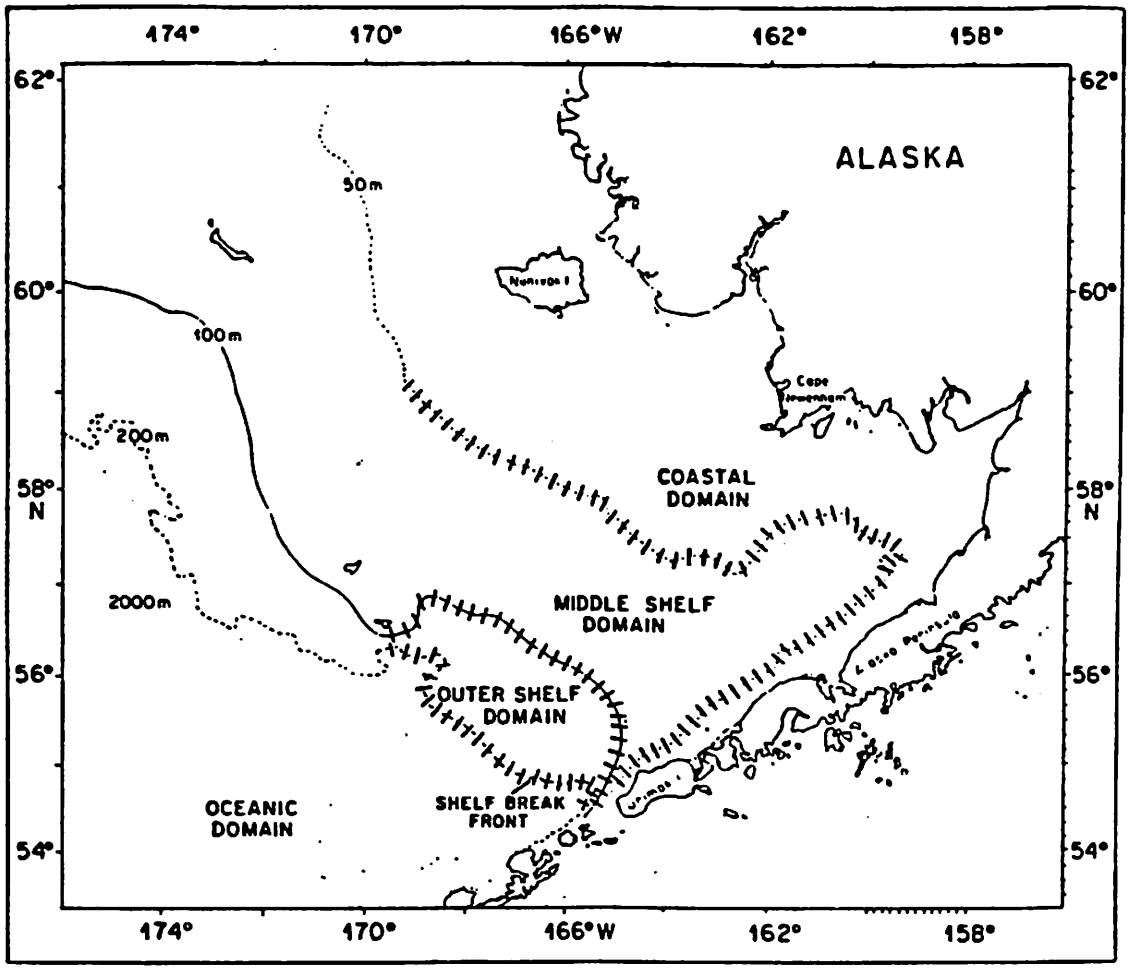

Figure 19.2. Hydrographic Domains And Transition Zones (Bars) During Summer In Bering Sea

Eggs and larvae of the groundfish species are usually more widely distributed spatially than the adults, but may be confined to a specific range of water depths. Some species such as walleye pollock lay buoyant eggs that float to the sea surface; sablefish larvae move to the surface layer during development; other species such as Atka mackerel and rock sole lay demersal eggs that sink or adhere to the bottom.

In a general way, the following areas, among others, of the Bering Sea and Aleutians can be described as particularly rich in groundfish:

- The shelf edge from Unimak Pass northwest toward the Pribilof Islands contains abundant schools of walleye pollock and Pacific cod.

- The seabed of the middle shelf of outer Bristol Bay contains dense spawning and feeding aggregations of yellowfin sole.

- Submarine canyons along the continental slope of the Bering Sea and Aleutian Islands harbor dense concentrations of Pacific ocean perch and other rockfish species.

- Atka mackerel spawning occurs on certain restricted shelf areas with suitable (rocky) bottom characteristics, and may be particularly concentrated in the western Aleutians, such as the strait between Atka and Amlia Islands.

Significant increases in knowledge of the habitat requirements of the groundfish species are yet to be made. With this additional understanding, it may be possible to develop a finer definition of habitat areas of particular concern and a better ability to manage single and multispecies fishery resources.

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[10.0 Other Considerations Which May Affect the Fishery.
10.1 International Pacific Halibut Commission. 10.2 Marine Mammal Protection Act of 1972.]

10.3 Potential for Habitat Alteration. This section discusses types of human activities that have a potential to cause pollution and habitat degradation that could affect groundfish populations in the Bering Sea and Aleutian Islands area. It is not intended as a statement of present conditions; rather, it is designed to identify those areas of uncertainty that may reasonably deserve Council attention in the future. Whether the likelihood and level of these activities or events may cause harm to groundfish resources and their habitats can be better judged when the details of a proposed activity's location, magnitude, timing, and duration are more fully known.

Habitat alteration may lower both the quantity and quality of groundfish products through physical changes or chemical contamination of habitat. Species and individuals within species differ in their tolerance to effects of habitat alteration. It is possible for the timing of a major alteration event and the occurrence of a large concentration of living marine resources to coincide in a manner that may affect fishery stocks and their supporting habitats. The effects of such events may be masked by natural phenomena or

may be delayed in becoming evident. However, the process of habitat degradation more characteristically begins with small-scale projects that result in only minor losses or temporary disruptions to organisms and habitat. As the number and rate of occurrence of these and other major projects increases, their cumulative and synergistic effects become apparent over larger areas. It is often difficult to separate the effects of habitat alteration from other factors such as fishing mortality, predation, and natural environmental fluctuations.

Species dependent on coastal areas during various stages of their life, particularly for reproduction, are more vulnerable to habitat alterations than are species that remain offshore. Also, the effects of habitat alteration on fish species offshore are not as apparent as they are in coastal areas. Concern is warranted, however, to the degree that (1) the offshore environment is subject to habitat degradation from either inshore activities or offshore uses, and (2) to the extent that some species living offshore depend directly or indirectly on coastal habitats for reproduction and food supply.

At present, there are no indications that human activities in the Bering Sea/Aleutian Island area have had any measurable effect on the existing habitats of groundfish, though there have been localized effects. The present primary human use of the offshore area is commercial fishing. While the establishment of other activities could potentially generate user conflicts, pollution, and habitat deterioration, it is the collective opinion of the Council and NMFS that the status of the habitat in this management area is generally unaffected by other human activities at this time.

10.3.1 Offshore Petroleum Production. This material is drawn from Berg (1977); Deis et al. (1983); OCSEAP Synthesis Reports on the St. George Basin (1982), the Navarin Basin (1984), and the North Aleutian Shelf (1984); Thorsteinson and Thorsteinson (1982); and the University of Aberdeen (1978).

The Alaska offshore area comprises 74 percent of the total area of the U.S. continental shelf. Because of its size, the Alaska outer continental shelf (OCS) is divided into three subregions--Arctic, Bering Sea, and Gulf of Alaska. The Bering Sea/Aleutian Subregion contains five planning areas where lease sales have been held or are currently scheduled - Norton Basin, St. George Basin, Navarin Basin, North Aleutian Basin, and Shumagin.

If a commercial quantity of petroleum is found in the Bering Sea, its production would require construction of facilities and all the necessary infrastructure for pipelines to onshore storage and shipment terminals or for building offshore loading facilities. It is believed that Bering Sea oil would be pipelined to shore and then loaded on tankers for transportation from Alaska. In the Navarin Basin, however, offshore-loading terminals may be more feasible. Unlike exploration, production would continue year-round and would have to surmount the problems imposed by winter sea-ice in many areas. Norton Basin and perhaps Navarin Basin would require ice-breaking tanker capabilities. There are also occasional proposals for tankering oil from Arctic fields via the Bering Sea, which would also require ice-breaking capabilities.

Oil and gas related activities in the Bering Sea and Aleutian Island area have the potential to cause pollution of habitats, loss of resources,

and use conflicts. Physical alterations in the quality and quantity of existing local habitats may occur because of the siting and construction of offshore drilling rigs and platforms, loading platforms, or pipelines.

Pollution Risks. Large oil spills are the most serious potential source of oil and gas development-related pollution in the eastern Bering Sea and Navarin Basin. Offshore oil and gas development will inevitably result in some oil entering the environment. Most spills are expected to be of small size, although there is a potential for spills greater than 1,000 barrels to occur. In large quantities, this oil can affect habitats and living marine resources. Many factors determine the degree of damage from a spill; the most important variables are the type of oil, size and duration of the spill, geographic location of the spill, and the season. Although oil is toxic to all marine organisms at high concentrations, certain species are more sensitive than others. In general, the early life stages (eggs and larvae) are most sensitive; juveniles are less sensitive, and adults least so (Rice et al., 1984).

Habitats most sensitive to oil pollution are typically located in those coastal areas with the lowest physical energy because once oiled, these areas are the slowest to repurify. Examples of low energy environments include tidal marshes, lagoons, and seafloor sediments. Exposed rocky shores and ocean surface waters are higher energy environments where physical processes will more rapidly remove or actively weather spilled oil.

Thorsteinson and Thorsteinson (1984) report that a major oil spill (i.e., 50,000 bbls) in the St. George Basin lease area could produce a surface slick covering up to several hundred square kilometers. Oil would generally be at toxic levels to some organisms within this slick. Beneath and surrounding the surface slick, there would be some oil-contaminated waters. Mixing and current dispersal would act to reduce the oil concentrations with depth and distance. If the oil spill trajectory moves toward land, habitats and species could be affected by the loading of oil into contained areas of the nearshore environment. In the shallower waters, an oil spill could be mixed throughout the water column and contaminate the seabed sediments. Suspended sediment can also act to carry oil to the seabed.

Toxic fractions of oil mixed to depth and under the surface slick could cause mortalities and sublethal effects to individuals and populations. However, the area contaminated would appear negligible in relation to the overall size of the area inhabited by commercial groundfish in the Bering Sea. For example, Thorsteinson and Thorsteinson (1982) calculated that a 50,000 barrel spill in the St. George Basin would impact less than 0.002 percent of the total size of this area. As a result, oil spills at sea are believed to be local and transitory, and would have only minor effects on fish populations overall. Measurable damage to fishery stocks from an oilspill would appear to be the exception rather than the rule. Even if concentrations of oil are sufficiently diluted not to be physically damaging to marine organisms or their consumers, it still could be detected by them, and alter certain of their behavior patterns. Other exceptions are where the spill reaches nearshore areas with productive nursery grounds or areas containing high densities of fish eggs and larvae. A year class of a commercially important species of fish or shellfish could possibly be reduced, and

any fishery dependent on it may be affected in later years. An oil spill at an especially important habitat (e.g., a gyre where larvae are concentrated) could result in disproportionately high losses of the resource compared to other areas.

Other sources of potential habitat degradation and pollution from oil and gas activities include the disposal of drilling muds and cuttings to the water and seabed, disposal of drilling fluids and produced waters in the water column, and dredged materials from pipeline laying or facilities construction. These materials may contain heavy metals or other chemical compounds that will be released to the environment, but the quantities are generally low and only local impacts would be expected to occur. Again, these activities may be of concern if they occurred in habitats of special biological importance to a resource.

Interference by Seismic Vessel Operations. Seismic vessels operate in the Bering Sea/Aleutian area for oil and gas exploration purposes. The potential exists for interference between commercial fishing vessels and seismic vessels if both are operating their gear in an area at the same time.

The effect of seismic noises on groundfish is being studied off the coast of California, since concern has been expressed by fishermen that the seismic pulse has the effect of dispersing schools of fish and making them difficult to catch. Results of these studies are not yet available.

10.3.2 Coastal development and filling. Minimal developmental pressure has occurred in the coastal habitat of the Bering Sea and Aleutian area. An extension of the airport runway at the village of Unalaska into water approximately 50-feet in depth has received the necessary permits but has not yet been constructed. Construction of a large-scale port facility is planned for the city of Nome and a smaller-scale harbor is currently under construction on St. Paul Island. Beyond these specific projects, development activity in the coastal areas of the Bering Sea and the Aleutian Islands has been largely limited to construction of erosion control measures and breakwaters (e.g., the city of Bethel). Because of the desirability of finding protection from Bering Sea storms, suitable port development sites often are valuable to fishery resources for similar related reasons. Without special considerations these facilities could affect local flushing, water temperatures, water quality, and access by fishes. In other areas, shallow water depth requires construction of long structures projected seaward in order to provide direct access from the uplands to deeper-draft ocean going vessels. These causeways could alter both along-shore physical processes and the migration and movement of fish in the area.

10.3.3 Marine mining. At present, mining activity has been limited to extraction of gravel and gold in the Bering Sea and the Aleutian peninsula. Gravel is needed for almost all construction projects throughout the area and is relatively unavailable from upland sources. Consequently, gravel is obtained by mining gravel beaches along the Bristol Bay coast (e.g., Goodnews Bay, Kangirlvar Bay) and in the lower reaches of the Yukon and Kuskokwim Rivers. Dredging for gold has been attempted at various sites along the Aleutians and there are several current proposals for the offshore mining of gold near the city of Nome. One such proposal, which has received all of the

necessary permits to proceed, will entail dredging 21,000 acres of sea bottom in Norton Sound for the purpose of recovering gold.

Such activity has the potential to cause physical damage directly and indirectly to benthic habitat and to fish during certain juvenile life stages. Mining of large quantities of beach gravel can significantly affect the removal, transport, and deposition of sand and gravel along shore, both at the mining site and at other more distant areas. During mining, water turbidity increases and the resuspension of organic materials could affect less motile organisms (i.e., eggs and recently hatched fishes), and displace the more motile species from the area. Spawning and rearing habitats could be damaged or destroyed by these actions. Neither the future extent of this activity nor the effects of such mortality on the abundance of marine species is known.

10.3.4 Ocean discharge and dumping. At present, there are only two areas in the Bering Sea/Aleutian Islands area where the ocean discharge of materials is known to occur on a large scale. Both of the areas are dredged material disposal sites near the city of Nome and have been in use for approximately 50 years. Recently, the two areas were given final designation as ocean dredged material disposal sites by the Environmental Protection Agency. Use of these sites presents no new habitat concerns.

The return of materials dredged from the ocean to the water column is considered a discharge activity. Depending upon the chemical constituency of the local bottom sediments and any alterations of dredged materials prior to discharge, living marine resources in the area may be exposed to elevated levels of heavy metals. For example, natural deposits of mercury occur in eastern Norton Sound and elemental mercury, measured as reaching levels ranging from 250-1300 ug/l, has been identified in marine sediments in that area (Nelson et al., 1975). The levels of this heavy metal exceed the 3.7 ug/l set by EPA as the maximum allowable concentrations; although no measurements of the more toxic methyl and dimethyl forms of mercury have been made in this area, Wood (1974) demonstrated that mercury available to the aquatic environment in any form can result in steady state concentrations of methyl, dimethyl, and metallic mercury through microbial catalysis and chemical equilibrium. Large-scale gold dredging projects proposed in eastern Norton Sound would result in the discharge and resuspension of sediments that could introduce mercury to the water column.

Accumulation of heavy metals in fish is usually natural, but also may be an indication of habitat deterioration. The Federal Drug Administration's (FDA) safety limit for mercury is presently 1.0 ppm of methyl mercury or about 1.1 ppm of mercury. In Hall, et al (1976) a sample of sablefish caught in the Bering Sea and in the vicinity of Kodiak Island contained levels of mercury (0.02 - 0.11, $\bar{x}$ 0.04 ppm)--well below the FDA limit. Levels found in the natural environment or the fish pose no problem at present.

10.3.5 Derelict fragments of fishing gear and general litter. The introduction of debris into the marine environment occurs when commercial fisheries take place. The debris includes netting, pots, longline gear, packing bands, and other material. Because of the lack of a monitoring program, estimates of debris have been based on 1) observations of debris at sea and on beaches, and 2) occasional reports of accidental or deliberate

discards of fishing gear. Studies by Merrell (1984) and others have shown that much of the observed debris consists of fragments of trawl netting. Much of this netting may be discarded carelessly at the time nets are repaired.

The quantity of marine debris that is produced by commercial fisheries depends on a variety of factors including the types and amount of gear used and the efforts fishermen make to reduce both accidental and deliberate discards. It is not known how the type and amount of gear used will change or how such change will affect the level of debris.

Debris may result in the mortality of marine fish, marine mammals, and birds that become entangled in or ingest it. Discarded trawl netting that floats at the surface is not a threat to most fish, but it has been identified as a source of mortality for marine mammals and birds. Similarly, discarded packing bands have been identified as a source of mortality for marine mammals. Other discarded gear including pots continue to function unattended for varying lengths of time. Neither the extent of debris related mortality nor the effects of such mortality on the abundance of various species is known.

10.3.6 Benthic habitat damage by bottom gear. Bottom trawls are presently the predominant gear used for groundfish in the Bering Sea/Aleutian Island management area, and are likely to continue as the major gear for the flatfish and Pacific cod fisheries of the Bering Sea shelf. The generally flat and uniform bottom composed of sand and mud presents a good substrate for bottom trawling.

Any effect of gear dragged along the bottom depends on the type of gear, its rigging, and the type of bottom and its biota. In addition to the target species, movement of a bottom trawl through an area primarily affects the slow moving macrobenthic fauna such as seastars and sea urchins. Some bivalves can also be damaged. It is possible for demersal eggs such as rock sole and Pacific cod to be disturbed by the passage of trawls. Although little is known of the effects these disturbances and damages have on the affected species or their local communities, only minor impacts are suspected.

Numerous studies to determine these impacts have been conducted (notably in European waters) since World War II. Most of the studies and their results have been summarized in a report by Natural Resource Consultants (1984) titled "Trawl Evaluation Study". The consensus of these investigators is that the overall effect of trawling on sea bottom may not be harmful, and may in fact be beneficial. They found, for example: that trawl doors on sand and soft bottom stir up sand and silt which settle quickly. On muddy bottoms, the stirred up mud settles in a few hours, depending on the current speed and resulting turbulence near the bottom. Trawls have not been observed to kill flatfishes. The damaged organisms, as well as the infauna which might have been dug up by the trawl are quickly preyed upon by fish and crabs. Similar findings originate from a study of hydraulic clam dredges in the southeastern Bering Sea, where yellowfin sole quickly concentrated in the dredge wake feeding on exposed organisms. Several researchers observe that fishing by trawls with tickler chains has not resulted in any apparent effects on the sea bed or its biota (Hempel, 1979).

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14.0 Management Regime.

14.1 Management Objectives.

[Add:] E. Seek to maintain the productive capacity of the habitat required to support the Bering Sea/Aleutian Island groundfish fishery.

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[14.2 Area, Fisheries, and Stocks Involved. 14.3 Fishing Year. 14.4 Management Measures--Domestic Fishery. 14.5 Management Measures--Foreign Fisheries. 14.6 Operational Needs and Costs.]

14.7 Management Measures to Address Identified Habitat Problems. An FMP may contain only those conservation and management measures which pertain to fishing or to fishing vessels. The Secretary, upon the recommendation of the Council, may adopt regulations of the kinds and for the purposes set forth below.

- Propose regulations establishing gear, timing, or area restrictions for purposes of protecting particular habitats or life stages of species in the Bering Sea/Aleutian Island groundfish fishery.

- Propose regulations establishing area or timing restrictions to prevent the harvest of fish in contaminated areas.

- Propose regulations restricting disposal of fishing gear by domestic vessels.

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16.0 Research Needs. [Add, as follows:]

[to end of first paragraph:] and (6) examine the direct affects of man's activities on fish habitats and ecosystems.

[before penultimate paragraph:] Research needs related to maintaining the productive capacity of fish habitat can be broadly classified as those which (a) examine the direct affects of man's activities (such as fishing, oil exploration, or coastal development), and (b) apply fisheries oceanography in an ecosystem context (such as migration and transport patterns, predator/prey relationships, life histories). Both categories of research serve to increase the understanding of natural systems and the ability to detect and measure change caused by natural or man-made forces. The following represents areas that are potential cause for concern, and where precaution is warranted.

Under category (a), further research should be conducted on the short and long-term effects of habitat alteration caused by fishing and oil exploration in the Bering Sea/Aleutian Island groundfish management area. These include the effects of derelict fishing gear, pollution products, the recovery rate of oil-polluted environments, and long-term cumulative effects of discharged and spilled oil.

Under category (b), expanded research is needed on factors affecting the ecosystem such as currents, temperatures, ocean productivity and food chains, and the influence of climatic variation on biological and physical events. More information about life histories, habitat requirements, and predator/prey relationships is needed for a clearer understanding of an organism's response to perturbations in the habitat.

In deciding which of these research needs are to be addressed, it is important that they be reviewed regularly and ranked in order of importance and likelihood of success.

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18.0 References.

18.1 General.

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19.0 Appendices.

Appendix IV--Programs Addressing Habitat of Bering Sea/Aleutian Island Groundfish Stocks.

A. Habitat protection: existing programs.

This section describes (a) general legislative programs, portions of which are particularly directed or related to the protection, maintenance, or restoration of the habitat of living marine resources; and (b) specific actions taken by the Council and NMFS within the Bering Sea/Aleutian Island area for the same purpose.

1. Federal legislative programs and responsibilities related to habitat. The Department of Commerce, through NOAA, is responsible for, or involved in, protecting living marine resources and their habitats under a number of Congressional authorities that call for varying degrees of interagency participation, consultation, or review. Those having direct effect on Council responsibilities are identified with an asterisk. A potential for further Council participation exists wherever Federal review is required or encouraged. In some cases, State agencies may share the Federal responsibility.

* (a) Magnuson Fishery Conservation and Management Act (Magnuson Act). This Act provides for the conservation and management of U.S. fishery resources within the 200-mile fishery conservation zone, and is the primary authority for Council action. Conservation and management is defined as referring to "all of the rules, regulations, conditions, methods, and other measures which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment, and which are designed to assure that...irreversible or long-term adverse effects on fishery resources and the marine environment are avoided." Fishery resource is defined to include habitat of fish. The North Pacific Council is charged with developing FMPs, FMP amendments, and regulations for the fisheries needing conservation and management within its geographical area of authority. FMPs are developed in consideration of habitat-related problems and other factors relating to resource productivity. After approval of FMPs or FMP amendments, NMFS is charged with their implementation.

(b) Fish and Wildlife Coordination Act of 1958 (FWCA). The FWCA provides the primary expression of Federal policy for fish and wildlife habitat. It requires interagency consultation to assure that fish and wildlife are given equal consideration when a Federal or Federally-authorized project is proposed which controls, modifies, or develops the Nation's waters. For example, NMFS is a consulting resource agency in processing Department of the Army permits for dredge and fill and construction projects in navigable waters, Environmental Protection Agency (EPA) ocean dumping permits, Federal Energy Regulatory Commission hydroelectric power project proposals, and Department of the Interior (DOI) Outer Continental Shelf (OCS) mineral leasing activities, among others.

* (c) National Environmental Policy Act of 1969 (NEPA). NEPA requires that the effects of Federal activities on the environment be assessed. Its

purpose is to insure that Federal officials weigh and give appropriate consideration to environmental values in policy formulation, decisionmaking and administrative actions, and that the public is provided adequate opportunity to review and comment on the major Federal actions. NEPA requires preparation of an Environmental Impact Statement (EIS) for major Federal actions that significantly affect the quality of the human environment, and consultation with the agencies having legal jurisdiction or expertise for the affected resources. NMFS reviews EISs and provides recommendations to mitigate any expected impacts to living marine resources and habitats. An EIS or environmental assessment for a finding of no significant impact is prepared for FMPs and their amendments.

(d) Clean Water Act (CWA). The purpose of the CWA, which amends the Federal Water Pollution Control Act, is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters; to eliminate the discharge of pollutants into navigable waters; and to prohibit the discharge of toxic pollutants in toxic amounts. Discharge of oil or hazardous substances into or upon navigable waters, contiguous zone and ocean is prohibited. NMFS reviews and comments on Section 404 permits for deposition of fill or dredged materials into U.S. waters, and on EPA National Pollutant Discharge Elimination System permits for point source discharges.

(e) River and Harbor Act of 1899. Section 10 of this Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States, the excavation from or deposition of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such water. Authority was later extended to artificial islands and fixed structures located on the Outer Continental Shelf. The Act authorizes the Department of the Army to regulate all construction and dredge and fill activities in navigable waters to mean high water shoreline. NMFS reviews and comments on Public Notices the Corps of Engineers circulates for proposed projects.

* (f) Endangered Species Act of 1973 (ESA). The ESA provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by DOI (terrestrial, freshwater, and some marine species such as walrus) and DOC (marine fish, and some marine mammals including the great whales). Federal actions that may affect an endangered or threatened species are resolved by a consultation process between the project agency and DOC or DOI, as appropriate. For actions related to FMPs, NMFS provides biological assessments and Section 7 consultations if the Federal action may affect endangered or threatened species or cause destruction or adverse modification of any designated critical habitat.

* (g) Coastal Zone Management Act of 1972 (CZMA). The principal objective of the CZMA is to encourage and assist States in developing coastal zone management programs, to coordinate State activities, and to safeguard the regional and national interests in the coastal zone. Section 307(c) requires that any Federal activity directly affecting the coastal zone of a State be consistent with that State's approved coastal zone management program to the maximum extent practicable. Under present policy, FMPs undergo consistency review. Alaska's coastal zone program contains a section on Resources and Habitats. Following a January 1984 U.S. Supreme Court ruling, the sale of

OCS oil and gas leases no longer requires a consistency review; such a review is triggered at the exploratory drilling stage.

* (h) Marine Protection, Research and Sanctuaries Act (MPRSA). Title I of the MPRSA establishes a system to regulate dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect "human health, welfare or amenities or the marine environment, ecological systems, or economic potentialities." NMFS may provide comments to EPA on proposed sites of ocean dumping if the marine environment or ecological systems may be adversely affected. Title III of the MPRSA authorizes the Secretary of Commerce (NOAA) to designate as marine sanctuaries areas of the marine environment that have been identified as having special national significance due to their resource or human-use values. The Marine Sanctuaries Amendments of 1984 amend this Title to include, as consultative agencies in determining whether the proposal meets the sanctuary designation standards, the Councils affected by the proposed designation. The Amendments also provide the Council affected with the opportunity to prepare draft regulations, consistent with the Magnuson Act national standards, for fishing within the FCZ as it may deem necessary to implement a proposed designation.

(i) Outer Continental Shelf Lands Act of 1953, as amended (OCSLA). The OCSLA authorizes the Department of Interior's Minerals Management Service (MMS) to lease lands seaward of state marine boundaries, design and oversee environmental studies, prepare environmental impact statements, enforce special lease stipulations, and issue pipeline rights-of-way. It specifies that no exploratory drilling permit can be issued unless MMS determines that "such exploration will not be unduly harmful to aquatic life in the area, result in pollution, create hazardous or unsafe conditions, unreasonably interfere with other uses of the area, or disturb any site, structure or object of historical or archaeological significance." Drilling and production discharges related to OCS exploration and development are subject to EPA NPDES permit regulations under the CWA. Sharing responsibility for the protection of fish and wildlife resources and their habitats, NOAA/NMFS, FWS, EPA and the States act in an advisory capacity in the formulation of OCS leasing stipulations that MMS develops for conditions or resources that are believed to warrant special regulation or protection. Some of these stipulations address protection of biological resources and their habitats. Interagency Regional Biological Task Forces and Technical Working Groups have been established by MMS to offer advice on various aspects of leasing, transport, and environmental studies. NMFS is represented on both groups in Alaska.

The Secretary of the Interior is required to maintain an oil and gas leasing program that "consists of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity" that will best meet national energy needs for a 5-year period following its approval or reapproval. In developing the schedule of proposed lease sales, the Secretary is required to take into account the potential impacts of oil and gas exploration on other offshore resources, including the marine, coastal, and human environments.

Once a lease is awarded, before exploratory drilling can begin in any location, the lessee must submit an exploration plan to the Minerals

Management Service for approval. An oilspill contingency plan must be contained within the exploration plan. If approved by MMS and having obtained other necessary permits, the lessee may conduct exploratory drilling and testing in keeping with lease sale stipulations and MMS Operating Orders. If discoveries are made, before development and production can begin in a frontier lease area, a development plan must be submitted and a second EIS process begun. At this time, a better understanding of the location, magnitude, and nature of activity can be expected, and resource concerns may once again be addressed before development can be permitted to proceed.

* (j) National Fishing Enhancement Act of 1984. Title II of this Act authorizes the Secretary of Commerce (NOAA) to develop and publish a National Artificial Reef Plan in consultation with specified public agencies, including the Councils, for the purpose of enhancing fishery resources. Permits for the siting, construction, and monitoring of such reefs are to be issued by the Department of the Army under Section 10 of the River and Harbor Act, Section 404 of the Clean Water Act, or Section 4(e) of the Outer Continental Shelf Lands Act, in consultation with appropriate Federal agencies, States, local governments and other interested parties. NMFS will be included in this consultation process.

(k) Northwest Power Act of 1980 (NPA). The NPA includes extensive and unprecedented fish and wildlife provisions designed to assure equitable treatment of fish and wildlife, particularly anadromous fish, in making decisions about hydroelectric projects. Under the NPA, a detailed Fish and Wildlife Program has been established to protect, mitigate, and enhance fish and wildlife in the Columbia River Basin. In addition, general fish and wildlife criteria for hydroelectric development throughout the region have been established in the Regional Energy Plan developed under the Act. NMFS has a statutory role in the development of the Program and the Plan and encourages their implementation by Federal agencies such as the Federal Energy Regulatory Commmission, the Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration.

(l) Alaska National Interest Lands Conservation Act of 1980 (ANILCA). The purpose of this Act is to provide for the designation and conservation of certain public lands in Alaska. The Department of Agriculture Forest Service has authority to manage surface resources on National Forest Lands in Alaska. Under Title V of this Act, any regulations for this purpose must take into consideration existing laws and regulations to maintain the habitats, to the maximum extent feasible, of anadromous fish and other foodfish, and to maintain the present and continued productivity of such habitat when they are affected by mining activities. For example, mining operations in the vicinity of the Quartz Hill area in the Tongass National Forest must be conducted in accordance with an approved operations plan developed in consultation with NMFS; consultation continues through the monitoring and altering of operations through an annual review of the operations plan. Title XII of the Act establishes an Alaska Land Use Council to advise Federal agencies, the State, local governments and Native Corporations with respect to land and resource uses in Alaska. NOAA is named as a member of this Council.

* (m) Marine Mammal Protection Act (MMPA). The Marine Mammal Protection Act establishes a moratorium on the taking of marine mammals and a ban on the importation of marine mammal products with certain exceptions.

Responsibility is divided between DOC (whales, porpoises, seals, and sea lions) and DOI (other marine mammals) to issue permits and to waive the moratorium for specified purposes, including incidental takings during commercial fishing operations. The Magnuson Act amended the MMPA to extend its jurisdiction to the FCZ. If the FMP has effect on marine mammal populations, certain information must be included in the EIS, and the FMP should indicate whether permits are available for any incidental takings.

2. Specific actions taken by the Council and NMFS related to habitat for the for the Bering Sea/Aleutian Islands Groundfish fishery.

(a) Gear limitations that act to protect habitat or critical life stages. Section 611.16 of the foreign fishing regulations prohibit discard of fishing gear and other debris by foreign fishing vessels.

(b) Seasonal restrictions that act to protect habitat or critical life stages. Section 14.5.3 of the FMP prohibits foreign trawling year-round in the Bristol Bay Pot Sanctuary to prevent incidental catch of juvenile halibut that are known to concentrate in this area. It also restricts foreign trawling from December 1 through May 31 in the Winter Halibut Savings Area to protect winter concentrations of juvenile halibut and spawning concentrations of pollock and flounders.

(c) Other management measures that act to allow for contingencies in the condition of the stock. Sections 675.20(a)(3) and 611.93 of the Bering Sea/Aleutian Islands Groundfish regulations establish a Reserve at 15 percent of the TAC; on specified dates, that portion of this reserve which the NMFS Regional Director finds will be harvested by U.S. vessels during the remainder of the year will be allocated to DAH, with the rest allocated to TALFF. However, the Regional Director is also permitted to withhold reserves for conservation purposes.

(d) Recommendations to permitting agencies regarding lease sales. Recommendations have been made to permitting agencies on all past proposed lease sales on the Alaska OCS, in the interests of protecting or maintaining the marine environment. These recommendations have ranged from calling for delay or postponement of certain scheduled sales such as in Bristol Bay and Kodiak, requesting deletions of certain areas from sales, identifying need for additional environmental studies and for protective measures such as burial of pipelines, seasonal drilling limitations, and oilspill countermeasure planning. For example, in 1979, the Council unanimously requested an indefinite postponement of the St. George Basin lease sale, citing incomplete research results and a concern for the possibility of oil spills in an area of great economic and biologic importance. The comment was transmitted to the NMFS Central Office for transmittal to the Department of Interior.

C. Non-regulatory Techniques to Address Identified Habitat Problems.

The following is a list of "real time" possible non-regulatory actions or strategies the Council may wish to take in the future, based on concerns expressed and data presented or referenced in this FMP. Actions taken must also be consistent with the goals and objectives of the FMP. Authorities for Council participation are described in Appendix IV-C, above. Possible regulatory actions may be found in section 14.7.

- Hold hearings to gather information or opinions about specific proposed projects having a potentially adverse affect on the Bering Sea/ Aleutian Island groundfish fishery.

- Write comments to regulatory agencies during project review periods to express concerns or make recommendations about issuance or denial of particular permits.

- Respond to "Calls for Information" from MMS regarding upcoming oil and gas lease areas affecting the Bering Sea/Aleutian Islands.

- Identify research needs and recommend funding for studies related to habitat issues of new or continuing concern and for which the data base is limited. Examples would include research to identify critical habitats or to determine the long-term effect of various levels and types of toxicity on marine fish and their food webs in the Bering Sea/Aleutian Islands region.

- Establish review panels or an ad hoc task force to coordinate or screen habitat issues.

- Propose to other regulatory agencies additional restrictions on industries operating in the fisheries management area, for purposes of protecting the fisheries or habitat against loss or degradation. Examples are waste discharge restrictions for floating processors, or drilling restrictions for oil and gas exploration.

- Join as amicus in litigation brought in furtherance of critical habitat conservation, consistent with FMP goals and objectives.

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BERING SEA ALEUTIAN ISLANDS GROUNDFISH FMP AMENDMENT 9

Item 1: Closure of the area immediately off the Aleutians to foreign trawling.

50 CFR §611.93 is amended as follows:

In §611.93(c), paragraph (2)(i) is deleted; paragraphs (ii)(A), (ii)(B), (ii)(C), (ii)(D), and (ii)(E) are redesignated as paragraphs (i), (ii), (iii), and (v); and a new paragraph (iv) is added, to read as follows:

(iv) At all times in the area bounded by straight lines connecting the following coordinates in the order listed:

53°30'N - 170°00'W
53°30'N - 172°00'W
53°00'N - 172°00'W
53°00'N - 176°00'W
52°30'N - 176°00'W
52°30'N - 177°00'E
53°00'N - 177°00'E
53°00'N - 175°00'E
53°30'N - 175°00'E
53°30'N - the boundary of the FCZ
52°00'N - the boundary of the FCZ
52°00'N - 175°00'E
51°00'N - 175°00'E
51°00'N - 180°
50°30'N - 180°
50°30'N - 178°30'W
the boundary of the FCZ - 178°30'W
the boundary of the FCZ - 172°00'W
52°00'N - 172°00'W
53°30'N - 170°00'W

Item 2: Reporting Requirements for Catcher/Processors.

50 CFR Part 675 is amended as follows:

1. In §675.5, a new paragraph (a)(3) is added, as follows:

(3) Catcher/Processor Vessels.

(A) The operator of any fishing vessel regulated under this Part that retains any part of its catch of groundfish on board that vessel for a period of more than 14 days from the time it is caught shall, in addition to the requirements of paragraphs (a)(1) and (a)(2) of this section, meet the following requirements:

(i) Within 48 hours after entering any regulatory area or district of the Gulf of Alaska, and within 48 hours of leaving any such area or district, the operator of that vessel shall notify the Regional Director of such entry or departure through such means as the Regional Director may prescribe upon issuing that vessel's permit under §672.5 of this Part. No such operator may retain any part of that vessel's catch on board that vessel for a period of more than 14 days from the time it is caught unless the Regional Director received all notifications required under this paragraph during that period.

(ii) Within 7 days after the first catch of groundfish by that vessel during that period, and every 7 days thereafter until that vessel's entire catch has been offloaded, the operator of that vessel shall report the following information to the Regional Director through such means as the Regional Director may prescribe upon issuing that vessel's permit under §675.4 of this Part:

(a) the estimated round weight, by species group, of all fish caught by that vessel during the preceding 7 days, whether retained, discarded, or offloaded;

(b) the estimated share by species groups of such fish that was caught in each regulatory area and district in which that vessel fished during the preceding 7 days.

(B) The operator of any vessel regulated under this Part that receives groundfish at sea from a fishing vessel regulated under this Part shall meet the following requirements:

(i) Within 48 hours after entering any regulatory area or district of the Gulf of Alaska, and within 48 hours of leaving any such area or district, the operator of that vessel shall notify the Regional Director of such entry or departure through such means as the Regional Director may prescribe upon issuing that vessel's permit under §672.5 of this Part.

(ii) Within 7 days after the first receipt of groundfish by that vessel at sea from a fishing vessel regulated under this Part, and every 7 days thereafter until that vessel's entire cargo of fish has been delivered to a port, the operator of that vessel shall report the following information to the Regional Director through such means as the Regional Director may prescribe upon issuing that vessel's permit under §675.4 of this Part:

(a) the estimated weight, by species groups, of all fish received by that vessel during the preceding 7 days, whether retained, discarded, or offloaded;

(b) the form in which such fish was received, by species groups.

2. In §675.4, paragraph (b)(6) and subsection (d) are revised as follows:

§675.4 Permits.

* * * * *

(b) * * *

(6) whether the vessel is to be used in fish harvesting, in which case the type of fishing gear to be used must be specified; or for support operations, including the receipt of fish from United States vessels, at sea; and

* * * * *

(d) Notification of change.

(1) Except as provided in paragraph (d)(2) of this section, any person who has applied for and received a permit under this section shall give written notification of any change in the information provided under paragraph (b) of this section to the Regional Director within 30 days of the date of that change.

(2) A permit issued under this section shall authorize either harvesting or support operations, but not both. The notification of the Regional Director under paragraph (d)(1) of this section of a change in the type of operations in which that vessel is to engage must be completed before that vessel begins the new type of operation.