



Scallop Fish - 12/19/97
UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

DEC 31 1997

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Final Rule to Change the Scallop Fishing Season Dates in the Yakutat and Prince William Sound Registration Areas

LOCATION: Federal Waters off Alaska

SUMMARY: This final rule establishes a July 1 through February 15 fishing season for the scallop fishery in the Yakutat and Prince William Sound Registration Areas. The previous fishing season in those areas ran from January 10 through June 30. This change was made at the request of industry to improve vessel safety and to maintain consistency between Federal and state regulations for the scallop fishery off Alaska.

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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information. Also, please send one copy of your comment to me in Room 5805, PSP, U.S. Department of Commerce, Washington, D.C. 20230.

Sincerely,

Susan Traylor

Acting NEPA Coordinator

Enclosure



ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW

FOR:

**A REGULATORY AMENDMENT TO CHANGE THE SCALLOP FISHING SEASON DATES
IN
REGISTRATION AREA D (YAKUTAT), AND
REGISTRATION AREA E (PRINCE WILLIAM SOUND)**

Prepared by

**National Marine Fisheries Service
Alaska Regional Office**

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1.0 INTRODUCTION

The scallop fishery in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska is jointly managed by NMFS and the Alaska Department of Fish and Game (ADF&G) under the Fishery Management Plan for the Scallop Fishery off Alaska. The FMP was prepared by the North Pacific Fishery Management Council (Council) under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and approved by NMFS on July 26, 1995.

Actions taken to amend FMPs or implement other regulations governing the groundfish fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Section 1 of this document. Section 2 contains information on the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. Section 4 contains the Initial Regulatory Flexibility Analysis (IRFA) required by the RFA which specifically addresses the impacts of the proposed action on small businesses.

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) addresses a regulatory amendment to change the scallop season in scallop Registration Areas D (Yakutat) and E (Prince William Sound)

1.1 Purpose of and Need for the Action

In March 1997, the Alaska State Board of Fisheries (Board) approved an industry proposal to change the scallop season opening date from January 10 to July 1 in the Prince William Sound and Yakutat Registration Areas. The Board recommended that a parallel season change be made in Federal regulations to prevent conflicting regulations at the State and Federal levels. The following two reasons were cited in the Board's decision to move the scallop season opening date for these areas from January 10 to July 1.

Changing circumstances in the fishery. The historic reason for a January opening in Prince William Sound and Yakutat no longer makes sense under the current management regime. Prior to 1993, ADF&G did not set Guideline Harvest Levels (GHLs) for each area. Winter and summer openings were used in different areas to spread effort and to mirror the historic pattern of scallop fishing throughout the State. However, under Amendment 1 to the FMP approved in July 1996, ADF&G and NMFS now establish GHLs or total allowable catch (TAC) amounts for each scallop registration area. As a consequence, maintaining a January opening for Prince William Sound and Yakutat no longer serves a purpose because the separate TACs established for each registration area accomplish the same objective.

Safety issues. At its March 1997 meeting, the Board received substantial testimony from scallop fishermen who reported that January is an unsafe time to fish for scallops in the smaller vessels that compose most of the fleet. Historically, the summer fishery in the western registration areas would extend into the fall and winter months. Vessel operators would typically begin scallop fishing in the Bering Sea and Alaskan Peninsula during the summer months and move to the more sheltered waters of Prince William Sound and Yakutat in the winter. However, in recent years, TACs and/or crab bycatch limits (CBLs) are reached relatively quickly in the western registration areas. No reason exists to delay the Prince William Sound and Yakutat scallop fisheries until January when the worst winter weather occurs.

Federal response to Board action. The Board has already amended State regulations to establish a scallop fishing season of July 1 through February 15 for the areas in question. Therefore, NMFS is faced with an additional reason to implement a parallel change in Federal regulations, the need to maintain consistency between State and Federal scallop regulations. A parallel change in Federal regulations is necessary to prevent conflicting fishing seasons at the State and Federal level and the resulting disruption to industry. If no action were taken, joint State-Federal management of the fishery would be impossible. State waters in Prince William Sound and Yakutat would open on July 1 while Federal waters would open on January 10, the ADF&G and NMFS would be forced to split the TACs between State and Federal waters and manage separately each portion of the TAC.

1.2 Alternatives Considered

1.2.1 Alternative 1: No Action. Current Federal regulations establish a January 10 through June 30 scallop fishing season in the Federal waters of the Prince William Sound and Yakutat Registration Areas. The scallop fishery in Federal waters would continue to open on January 10 of each year and would run through June 30, or until the scallop TAC or crab bycatch limit (CBL) established for each area is reached, whichever comes first. State-registered vessels would only be able to fish in the Federal waters of these registration areas during the narrow window of time when both State and Federal fishing seasons are open e.g., January 10 to February 15 of each year.

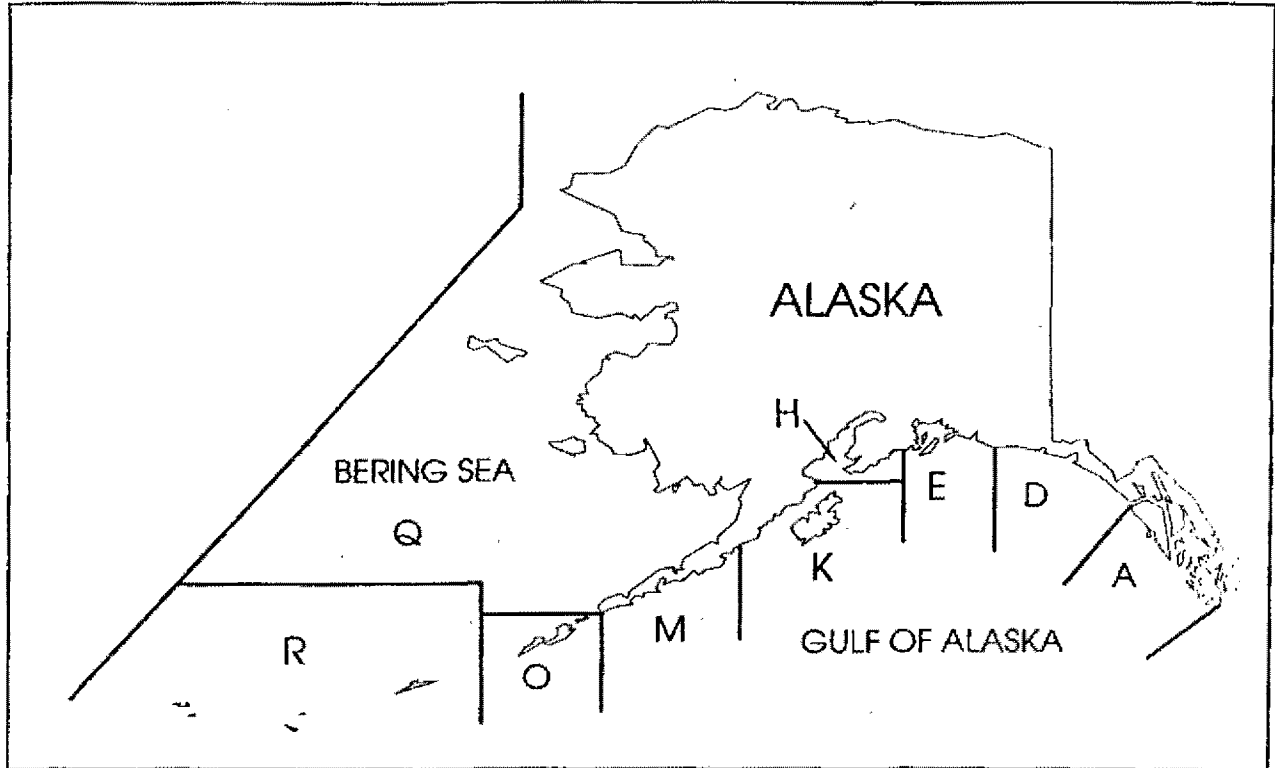
1.2.2 Alternative 2 (preferred): The scallop fishing season in the Prince William Sound and Yakutat Registration Areas would begin on July 1 and end on February 15 of the following year, matching the existing scallop fishing season in all other registration areas except for Cook Inlet. This option is recommended by the Board and is consistent with recently amended State regulations governing the scallop fishery in these areas.

1.3 Scallop Registration Areas

Under the FMP, scallop registration areas are defined in regulation to be identical to ADF&G scallop registration areas. This action would affect the scallop fishing seasons in Registration Area D (Prince William Sound) and Registration Area E (Yakutat) as defined below and displayed in Figure 1.

Figure 1. Scallop Registration Areas

Registration Area D (Yakutat) has as its western boundary the longitude of Cape Suckling (143° 53' W. long.), and as its southern boundary Loran-C line 7960-Y-29590, which intersects the western tip of Cape Fairweather at 58° 47' 58" N. lat., 137° 56' 30" W. long., and ADF&G District 16 defined as



all waters all waters north of a line projecting west from the southernmost tip of Cape Spencer and south of a line projecting southwest from the westernmost tip of Cape Fairweather.

Registration Area E (Prince William Sound) has as its western boundary the longitude of Cape Fairfield (148° 50' W. long.), and its eastern boundary the longitude of Cape Suckling (143° 53' W. long.).

1.4 Background on the Scallop Fishery off Alaska

All commercial fisheries for Alaskan scallops take place in relatively shallow waters (< 200 m) of the continental shelf. Weathervane scallops are found at depths ranging from intertidal waters to depths of 300 m (Foster 1991), but abundance tends to be greatest between depths of 45-130 m on substrates consisting of mud, clay, sand, or gravel (Hennick 1973). Although weathervane scallops are widely distributed along the shelf, the highest densities in Alaska have been found to occur in discrete areas. Areas fished in recent years include beds in the Bering Sea, off the Alaska Peninsula, in Shelikof Strait, on the east side of Kodiak Island, and along the Gulf coast from Yakutat to Kayak Island.

Fishing for scallops is conducted with metal dredges. The body of a scallop dredge must be constructed of metal rings of a minimum inside diameter of 4 inches (10.16 cm) to provide for escapement of small scallops. In the Cook Inlet Registration Area, vessels are limited to a single dredge with a maximum width of 6 ft (1.83 m). In all other registration areas, vessels are limited to two dredges with a maximum width of 15 ft (4.57 m). To limit effort, vessels are restricted to a maximum crew size of 12 persons and scallops must be shucked by hand only.

1.4.1 Description of the Fishery and History of Federal Involvement

The scallop resource off Alaska has been commercially exploited for 30 years. Weathervane scallop stocks off Alaska were first commercially explored by a few vessels in 1967. The fishery grew rapidly over the next 2 years with about 19 vessels harvesting almost 2 million pounds of shucked meat. Since then vessel participation and harvests have fluctuated greatly, but have remained below the peak participation and harvests experienced in the late 1960's. Between 1969 and 1991, about 40 percent of the annual scallop harvest came from State waters. Since 1991, Alaska scallop harvests have increasingly occurred in Federal waters. In 1994, only 14 percent of the 1.2 million lbs landed were harvested in State waters, with the remainder harvested in Federal waters.

Between 1968 and 1995 the ADF&G managed the scallop fishery in both State and Federal waters off Alaska, consistent with the Magnuson-Stevens Act, under which a State may regulate any fishing vessel outside State waters if the vessel is registered under the laws of that State. Prior to 1995, all vessels participating in the Alaska scallop fishery were registered under the laws of the State and the fishery was monitored and controlled under State jurisdiction. The Council had concluded that the State's scallop management program provided sufficient conservation and management of the Alaska scallop resource and did not need to be duplicated by direct Federal regulation.

Initial Council involvement. By 1992, fishery participants and management agencies developed growing concerns about overcapitalization and overexploitation in the scallop fishery. In 1993, due to mounting resource concerns, the Commissioner of ADF&G declared scallops a High Impact Emerging Fishery. At the same time, the Council was presented with information indicating that the stocks of weathervane scallops were fully exploited and any increase in effort could be detrimental to the stocks. Information indicated that dramatic changes in age composition had occurred after the fishing-up period (1980-90), with commensurate declines in harvest. In the early 1990's, many fishermen had abandoned historical fishing areas and searched for new areas to maintain catch levels. Increased numbers of small scallops were reported. These events, raised concerns because scallops are highly susceptible to overfishing and boom/bust cycles worldwide.

At its January 1993 meeting, the Council determined that the scallop fishery may require Federal management to protect the fishery from overexploitation and further overcapitalization. The need to limit access was the primary motivation for the Council to begin consideration of Federal management of the scallop fishery. The Council believed that Federal action was necessary because existing State statutes precluded a State vessel moratorium and at that time, the State did not have authority under the Magnuson-Stevens Act to limit access in Federal waters. At its January 1993 meeting, the Council also set a control date of January 20, 1993, to notify the industry that a moratorium for this fishery may be implemented.

In 1993, the Council began analysis of a variety of options for Federal management of the scallop fishery in Federal waters off Alaska and a vessel moratorium was proposed as an essential element of a Federal management regime to stabilize the size and capitalization of the scallop fleet while the Council considered permanent limited entry alternatives for the fishery. At the September 1993 Council meeting, the Council received public testimony on scallop management, particularly on the qualifying criteria for a moratorium. At that meeting, the Council tentatively identified its preferred alternative of a separate FMP for the scallop fishery that would establish a Federal vessel moratorium and shared management authority with the State. A draft FMP and analysis were released to the Public in November 1993.

In April 1994, the Council and its advisory bodies reviewed the draft FMP, received public testimony, and approved the draft FMP for the scallop fishery which would establish a vessel moratorium and defer most other routine management measures to the State. Under the moratorium qualification criteria adopted by the Council, 18 scallop vessels would qualify for moratorium permits. Under the draft FMP, most other management measures were deferred to the State based on the premise that all vessels fishing for scallops in the Federal waters off Alaska would also be registered with the State. The Council recognized the potential problem of unregistered vessels fishing in Federal waters, but noted that all vessels fishing for scallops in Federal waters were registered in Alaska and that no information was available to indicate that vessels would not continue to register with the State.

Unregulated Fishing and the Emergency Closure of Federal Waters. During the period of time that NMFS was developing regulations to implement the Council's proposed FMP, a vessel that had nullified its State registration began fishing for scallops in Federal waters of the Prince William Sound management area, waters that had already been previously closed by ADF&G to fishing by State-registered vessels. Because the vessel was outside State jurisdiction, ADF&G was unable to stop this uncontrolled fishing activity. On February 17, 1995, the Council held a tele-conference to address concerns about uncontrolled fishing for scallops in Federal waters by one or more vessels fishing outside the jurisdiction of State regulations and requested that NMFS implement an emergency rule to close Federal waters to fishing for scallops to prevent overfishing of the scallop stocks. Subsequent to the Council's recommendation, the U.S. Coast Guard boarded the vessel in question and was informed that 54,000 lbs of shucked scallop meat were on board. This amount exceeded the State's guideline harvest level for the Prince William Sound area (50,000 lbs) by over 100 percent.

On February 13, 1995, NMFS implemented a 90-day emergency rule to close Federal waters off Alaska to fishing for scallops to respond to concerns that continued uncontrolled harvest of scallops in Federal waters would result in localized overfishing of the scallop resource. On the recommendation of the Council, NMFS subsequently extended the emergency rule for a second 90-day period, through August 28, 1995.

After the unregulated fishing event that warranted the emergency interim rule, the Council and NMFS determined that the Council's draft FMP was no longer an appropriate option for the management of the scallop fishery in Federal waters. As a result, the draft FMP was not submitted for review and approval by the Secretary of Commerce. The decision by one vessel owner to fish outside the jurisdiction of the State, the contemplation of other vessel owners to follow the same course of action, and the likelihood that uncontrolled fishing for scallops could occur anywhere off Alaska by the highly mobile scallop processor fleet now made direct Federal regulations necessary to control vessels that choose not to register with the State.

Approval of a Federal FMP. To respond to the need for Federal management of the scallop fishery once the emergency rule expired, the Council prepared a second FMP for the scallop fishery which was subsequently approved by NMFS on July 26, 1995. The only management measure authorized under this FMP was an interim closure of Federal waters off Alaska to fishing for scallops for 1 year, or until an amendment was prepared that would provide for a managed fishery in Federal waters. The purpose of the interim closure was to prevent uncontrolled fishing for scallops in Federal waters while a Federal scallop management program was under development. The Council recommended this approach because it determined that the suite of alternative management measures necessary to support a controlled fishery for scallops in Federal waters could not be prepared, reviewed, and implemented before the emergency rule expires.

Amendment 1: State-Federal Management Regime. During the period of the interim closure, the Council developed Amendment 1 to the FMP to replace the interim closure with a Federal management regime. The Council's initial recommendation for Amendment 1 was to Federalize the State's management regime and implement a vessel moratorium, based on the criteria originally adopted in April 1994. However, in April 1996, the Council recommended that the scallop vessel moratorium be separated from the other management measures contained in Amendment 1 and that the moratorium be approved as Amendment 2 in order to prevent moratorium issues from delaying the reopening of the fishery. Amendment 1 was subsequently approved by NMFS on July 10, 1996 and Federal waters were re-opened to fishing for scallops on August 1, 1996.

Amendment 1 established a joint State-Federal management regime under which NMFS has implemented Federal management measures to parallel most State management measures. This Federal management program was developed in close coordination with ADF&G and is designed to be consistent with existing State management of the scallop fishery. Amendment 1 does not preclude the State from imposing additional regulations on State-registered vessels fishing in Federal waters, providing such regulations are consistent with the Magnuson-Stevens Act.

Under Amendment 1, Federal regulations were established to duplicate existing State regulations in the following areas: gear and efficiency restrictions, registration areas, fishing seasons, observer coverage requirements, and most closed areas. Amendment 1 also established procedures under which NMFS will establish an annual total allowable catch (TAC) for each registration area. Under Amendment 1, initial GHs are proposed by the State at the annual March Board of Fisheries meeting and are reviewed by the Council in April and by NMFS prior to publication in the *Federal Register*. In registration areas where crab bycatch is a concern, NMFS also specifies annual CBLs for red king crab and Tanner crab species using similar procedures.

While this management regime has enabled NMFS to reopen the EEZ to fishing for scallops, it has proven to be cumbersome in practice. Every management action including openings and closures must be coordinated so that State and Federal actions are simultaneously effective. NMFS must draft and publish *Federal Register* notices that duplicate every State inseason scallop action and State scallop managers are now constrained in their ability to make rapid management decisions because they must coordinate each action with NMFS and provide sufficient lead-time for publication of the action in the *Federal Register*.

Amendment 2: Federal Vessel Moratorium. On March 5, 1997, NMFS approved Amendment 2 to the FMP which established a moratorium on the entry of new vessels into the scallop fishery off Alaska. A final rule implementing the vessel moratorium was published on April 11, 1997 (62 FR 17749). The moratorium period runs from July 1, 1997 through June 30, 2000, or until repealed or replaced by a permanent limited access program. Under Amendment 2, the Council may recommend that the moratorium be extended for not more than 2 years if a limited access program is imminent. Key elements of the Federal vessel moratorium are outlined in Table 2.

1.4.2 Recent State Actions: The State Scallop Vessel Moratorium

In May 1997, the State legislature approved a statute establishing a scallop vessel moratorium program. This State scallop vessel moratorium differs substantially from the existing Federal scallop vessel moratorium. At present, the State vessel moratorium is only applicable to State waters and is superseded by the Federal moratorium program in Federal waters.

2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 1.1 and 1.2, and the list of preparers is in Section 6. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

2.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear.

The effects of scallop fishing on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are analyzed in the final EA/RIR/FRFA for Amendments 1 and 2 to the FMP (NMFS 1997a). The alternatives to the status quo are not expected to allow substantial damage to the ocean and coastal habitats, or to jeopardize the long-term productive capability of crab, herring, or groundfish stocks in any manner not previously analyzed in the EA for Amendment 1. Scallop dredges may have potential, in some situations, to affect other organisms comprising benthic communities; however, these effects are not likely to be substantial for the relatively small scale scallop fisheries in Alaska. In addition, the alternatives under consideration are not expected to change the manner in which the scallop fishery is currently conducted in the Federal waters off Alaska.

2.2 Potential Impacts on Benthic Communities and the Physical Environment

Determination of significance requires evaluation whether any fishery management plan or amendment may reasonably be expected to allow substantial damage to the ocean and coastal habitats (NOAA Administrative Order 216-6). Like trawl gear, scallop dredges may have some potential to affect adversely other organisms comprising benthic communities. Potential effects of scallop gear have been described in the EA/RIR/FRFA for Amendments 1 and 2 to the FMP (NMFS 1997a). Studies on the potential effects of trawling and dredging are summarized below.

An article from the January 1992 New Zealand Journal of Marine and Freshwater Research, titled "Environmental Impact of Trawling on the Seabed: A Review" (Jones 1992) attempts to review available knowledge on the subject of trawl impacts on the benthic environment. Evidence of trawling, such as furrows from the trawl doors, varies in its depth into the sea-floor and its duration

depending upon the "softness" of the bottom being trawled. Potential effects of this bottom alteration are not directly addressed in this report. In terms of sediment re-suspension, the report notes that there are two facets to this issue: (1) Increased, and usually temporary turbidity and (2) vertical redistribution of sediment layers. Both of these results of bottom disturbance by trawl gear were noted to vary in their duration, primarily dependent upon the depths at which they occurred. The report also concludes that "From the work performed under the aegis of ICES, it would appear that beam trawls, otter trawls, and dredges are all basically similar in their effects. Generally, the heavier the gear in contact with the seabed, the greater the damage. The effects vary greatly, depending on the amount of gear contact with the bottom, together with the depth, nature of the seabed, and the strengths of the currents or tides....The removal of the macrobenthos has variable effects. In shallow water areas where the damage is intermittent, recolonization soon occurs. However, where the macrobenthos is substantially removed and recovery is not permitted, the change is permanent....The evidence is that bottom trawling has an impact on the environment, but that the extent and duration of that impact varies depending on local conditions."

Other sources of information on the effects of trawling or dredging are limited. The GOA Groundfish FMP contains a section titled "Benthic habitat damage by fishing gear." The section concludes that "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, the movement of a bottom trawl through an area primarily affects the slow-moving macrobenthic fauna such as sea stars and sea urchins. Some bivalves can also be damaged. Although little is known of the effects of these disturbances and damages have on the affected species or their local communities, only minor impacts are suspected."

A report prepared by the Washington Department of Fisheries (1985), titled "Final EIS for the Continued Harvest of Bottomfish in Puget Sound by Commercial Otter Trawl Gears", evaluates the potential adverse effects of otter trawl gear on the marine species, associated biota, marine substrate, water quality, and human activities. The EIS notes negative impacts of trawling including: disturbance of substrate such as otter board tracks, silt suspension, shearing of eel grass and other large algae, some wastage of bottomfish and crab, and net negative impact on recreational bottomfish fisheries. In the conclusions section of the EIS, which addresses effects on long-term productivity, the document states that "Trawling does not cause permanent habitat damage. Biota potentially impacted by trawling show the capability to naturally repopulate a harvested area."

Based on the above trawl studies, any adverse effects of scallop dredges on benthic communities in Alaska are likely lower in intensity than trawl gear. Scallop dredges generally weigh less than most trawl doors, and the relative width they occupy is significantly smaller. A 15 ft (4.57 m) wide New Bedford style scallop dredge weighs about 1,900 lb (0.86 mt) (Kodiak Fish Co. data). Because scallop vessels generally fish two dredges, the total weight of the gear is 3,800 lb (1.72 mt). Trawl gear can be significantly heavier. An 850 HP vessel pulling a trawl with a 150 ft (45.7 m) sweep may require a pair of doors weigh that about 4,500 lb (2.04 mt). Total weight of all trawl gear, including net, footrope, and mud gear would weigh about 16,400 lb (45.7 m) (T. Kandianis, personal communication 5/26/95). ICES research has indicated that the heavier the gear in contact with the seabed, the greater the damage, suggesting that scallop fishing may have less impact than bottom trawling.

Although small amounts of coral are caught or damaged by groundfish trawls (NPFMC 1992), distribution data and limited observer information suggest that little or none is taken by scallop dredges in Alaska. Generally, corals do not have the same habitat requirements as weathervane scallops. Most corals, such as fan corals, bamboo corals, cup corals, soft corals, and hydrocorals

occur at greater depths than scallops. The two more abundant species of coral that live at similar depths as scallops occur in habitat consisting of boulders and bedrock, habitats that are not inhabited by most scallop species.

Similar to trawling, dredging may place fine sediments into suspension, bury gravel below the surface and overturn large rocks that are embedded in the substrate (NEFMC 1982). Dredging can also result in dislodgement of buried shell material, burying of gravel under re-suspended sand, and overturning of larger rocks with an appreciable roughening of the sediment surface (Caddy 1968). A study of scallop dredging in Scotland showed that dredging caused significant physical disturbance to the sediments, as indicated by furrows and dislodgement of shell fragments and small stones (Eleftheriou and Robertson 1992). However, the authors note that these changes in bottom topography did not change sediment disposition, sediment size, organic carbon content, or chlorophyll content. Observations of the Icelandic scallop fishery off Norway indicated that dredging changed the bottom substrate from shell-sand to clay with large stones within a 3-year period (Aschan 1991). For some scallop species, it has been demonstrated that dredges may adversely affect substrate required for settlement of young to the bottom (Fonseca et al. 1984; Orensanz 1986). Mayer et al. (1991), investigating the effects of a New Bedford scallop dredge on sedimentology at a site in coastal Maine, found that vertical redistribution of bottom sediments had greater implications than the horizontal translocation associated with scraping and ploughing the bottom. The scallop dredge tended to bury surficial metabolizable organic matter below the surface, causing a shift in sediment metabolism away from aerobic respiration that occurred at the sediment-water interface and instead toward subsurface anaerobic respiration by bacteria (Mayer et al. 1991). Dredge marks on the sea floor tend to be short-lived in areas of strong bottom currents, but may persist in low energy environments (Messieh et al. 1991).

Two studies have indicated that intensive scallop dredging may have some direct impacts on the benthic community. Eleftheriou and Robertson (1992), conducted an experimental scallop dredging in a small sandy bay in Scotland to assess the effects of scallop dredging on the benthic fauna. They concluded that while dredging on sandy bottom has a limited effect on the physical environment and the smaller infauna, large numbers of the larger infauna (mollusks) and some epifaunal organisms (echinoderms and crustaceans) were killed or damaged after only a few hauls of the dredge. However, long term and cumulative effects were not examined. Aschan (1991) examined the effects of dredging for islandic scallops on macrobenthos off Norway. Aschan found that the faunal biomass declined over a 4-year period of heavy dredging. Several species, including *Stonylocentrotus droebachiensis*, *Pagurus pubescens*, *Ophiura robusta*, and polychaetes showed an increase in abundance over the time period. In summary, scallop gear, like other gear used to harvest living aquatic resources, may impact the benthic community and physical environment relative to the intensity of the fishery.

Current State and Federal regulation of the scallop fishery is designed to reduce potential impacts. Fishing seasons are established, in part, to protect scallop during the spawning portions of their life cycle, and protect young during critical periods which occur during the spring months. In addition, many areas have been closed to dredging to protect important benthic communities. Weathervane scallops occur at depths ranging from intertidal waters to 300 m, with highest abundance at depths between 45 and 130 m on substrates consisting of mud, clay, sand, or gravel (Hennick 1970a, 1973). In addition to weathervane scallops, such substrates are likely to support populations of starfish, skates, crabs, snails, flatfish, and other groundfish species. Other scallop species are found in different habitats.

Based on the available information detailed above, the alternatives to the status quo are not reasonably expected to allow substantial damage to the ocean and coastal habitats (NOAA Administrative Order 216-6). Scallop dredges may have some potential, in some situations, to affect other organisms comprising benthic communities; however, these effects are not likely to be substantial for the relatively small scale scallop fisheries in Alaska.

2.3 Potential Impacts on Bycatch of Non-target Species

As with trawl and other gear, scallop dredges have some potential to catch non-target species, particularly those that are slow moving or stationary. Limited data have been collected in past years on incidental catches of crab by dredges targeting weathervane and other scallop species, but the information remains confidential. In some areas, the catches of king and Tanner crabs may be high, and many captured crabs may be lethally damaged (Haynes and Powell 1968; Hennick 1973; Kaiser 1986). Some catches from scallop dredges contain small amounts of other species of crabs, shrimps, octopi, and fishes such as flatfishes, cod, and others (Hennick 1973, Kruse et al. 1993). Starfish, a scallop predator (Bourne 1991), was found to be the primary bycatch in weathervane scallop fisheries off Yakutat (Kruse et al. 1993). Seasonal and area-specific differences in bycatch rates exist. For example, in some areas incidental catches of king crabs may increase in spring as adult crabs migrate inshore for molting and mating, whereas other areas of dense scallop concentrations may possess few king crabs (Hennick 1973) and bycatch may be of little concern in these locations.

More recent bycatch data were collected during the 1993 ADF&G observer program (Urban et al. 1994). Nearly 900 days of scallop dredging were observed, comprising 12,881 hauls. By weight, the catch consisted of weathervane scallops (72.2 percent), starfish (11.4 percent), shells (4.9 percent), skates (1.9 percent), *C. bairdi* Tanner crab (1.5 percent), and arrowtooth flounder (1.1 percent). Flatfish and other invertebrate species comprised the remaining bycatch. No salmon bycatch was reported. Total bycatch of halibut ranged from less than 30 in Prince William Sound (Area E) to 1,750 in Kodiak (Area K). Total bycatch of Tanner crab in the 1993 scallop fishery was estimated to exceed 580,000 animals. Another 15,000 *C. opilio* snow crabs were captured. Estimated bycatch of red king crab was 200 or less in all registration areas.

Bycatch of Tanner crabs during the 1993 scallop fishery was analyzed in detail (Urban et al. 1994). Total Tanner crab bycatch varied widely between areas, ranging from 200 in Prince William Sound to 227,000 in the Bering Sea (Area Q). Crab bycatch consists primarily of small (<40 mm cw) immature Tanner crabs. Bycatch rates varied among vessels and areas fished, and ranged from zero to 2,600 crabs per tow-hour. Highest bycatch rates were associated with high scallop catch rates. New injuries were observed in 28 percent of the crabs sampled during the Shelikof scallop fishery. Approximately 13 percent of the Tanner crabs were recorded as dead or moribund before being discarded, with the highest mortality rates occurring on small (<40 mm cw) and large (>120 mm cw) crabs.

Other studies have also enumerated mortality and injury of crab taken as bycatch in the Alaska scallop fisheries. During a scallop survey of Cook Inlet in August 1984, a total of 5 red king crabs and more than 399 Tanner crabs were taken as bycatch in 47 tows (Hammarstrom and Merritt 1985). Of the crab taken as bycatch, 19 percent of the Tanner crabs were injured and mortality was estimated at 8 percent, with most injuries and mortality occurring when the catch was dumped on deck (Hammarstrom and Merritt 1985). Another scallop survey conducted around Kodiak Island in January 1968 had an unspecified bycatch (up to 33 per tow) of red king crabs, with an estimated mortality rate of 79 percent (Haynes and Powell 1968). Observations of the 1968-1972 scallop fishery around Kodiak

Island indicated an average bycatch of 4.1 red king crab and 42.5 Tanner crab per tow (Kaiser 1986), with mortality estimated at 19 percent for Tanner crab and 48 percent for red king crab. An average of 0.6 Dungeness crabs per tow were also captured with mortality estimated to be 8 percent.

Bycatch of crab may vary by area, season, and depth. Off Yakutat, Hennick (1973) noted no king crab bycatch. Around Kodiak, king crab catches tended to increase in spring as adults migrated inshore for molting and mating (Hennick 1973). Consistent with other handling studies, newly molted crabs experience higher rates of injury and mortality than hard shelled crab, as a result of scallop dredges (Starr and McCrae 1983). Bycatch rates, injury rates, and mortality estimates do not take into account that scallop vessels dredge over the same bottom, tow after tow. Therefore, impacts of scallop fishing on crab bycatch may be overestimated in some situations.

Current regulations limit bycatch and interaction of crabs and the scallop fishery. King and Tanner crab bycatch limits for Alaskan scallop fisheries were instituted by the State in July 1993 and by NMFS under Amendment 1 in 1996. With the exception of Yakutat and Southeast areas, crab bycatch limits were specified for scallop fisheries in all registration areas. In addition, large areas in State and Federal waters have been closed to scallop fishing, as these areas have showed high concentrations of crabs.

Bycatch data collected by State observers in the 1993 scallop fishery (Urban et al. 1994) can be used to analyze bycatch rates of crabs and other species. During the 1993 Bering Sea area scallop fishery (occurring over a 4 month period), a total of 10 vessels made 7,208 tows, to harvest 598,093 lb (271.3 mt) of scallop meat, with a bycatch of 276,500 Tanner crab and 212 king crab (Morrison 1994). On a rate basis, this equates to 83 lb (0.038 mt) of scallops and 38 Tanner crab per tow, or put another way, about 0.46 Tanner crabs per pound (1 Tanner crab per kilogram) of scallop meat harvested. At an average exvessel price of \$6.02 per pound for scallops, gross exvessel value was \$500 per tow. Bycatch rates varied greatly among vessels fishing in the 1993 Bering Sea scallop fishery (Urban et al. 1994). Catch of Tanner crabs per tow-hour ranged from 17 crabs to 203 crabs per tow-hour (median=53, mean=90). Length frequency of Tanner crabs taken as bycatch was not reported, but likely consisted primarily of small juvenile crab.

Given the best available information, as summarized above, none of the alternatives are expected to jeopardize the long-term productive capability of crab, herring or groundfish stocks.

2.4 Impacts on Endangered, Threatened or Candidate Species

Species listed as endangered and threatened under the ESA that may be present in the Federal waters off Alaska include:

Endangered

Northern right whale	<i>Balaena glacialis</i>
Sei whale	<i>Balaenoptera borealis</i>
Blue whale	<i>Balaenoptera musculus</i>
Fin whale	<i>Balaenoptera physalus</i>
Humpback whale	<i>Megaptera novaeangliae</i>
Sperm whale	<i>Physeter macrocephalus</i>
Snake River sockeye salmon	<i>Oncorhynchus nerka</i>

Short-tailed albatross	<i>Diomedea albatrus</i>
Steller sea lion (western stock)	<i>Eumetopias jubatus</i>

Threatened

Steller sea lion (eastern stock)	<i>Eumetopias jubatus</i>
Snake R. spring and summer chinook salmon	<i>Oncorhynchus tshawytscha</i>
Snake R. fall chinook salmon	<i>Oncorhynchus tshawytscha</i>
Spectacled eider	<i>Somateria fischeri</i>
Steller's eider	<i>Polysticta stelleri</i>

The impact of the groundfish fisheries off Alaska on endangered and threatened species has been addressed extensively in a series of formal and informal consultations. The scallop fishery off Alaska (which consists of a much smaller fleet of vessels, and uses gear less likely to generate bycatch of finfish, seabirds or marine mammals) is not expected to affect ESA-listed species, seabirds or marine mammals in any manner or extent not already addressed under these previous consultations. In a formal consultation pursuant to section 7 of the ESA that culminated in a biological opinion dated April 19, 1991, NMFS concluded that the GOA and BSAI groundfish fisheries were not likely to adversely affect listed cetaceans or to jeopardize the continued existence or recovery of Steller sea lions. NMFS determined that section 7 consultation should be reinitiated for Steller sea lions if any proposed change in the GOA or BSAI groundfish fisheries was likely to adversely affect them, if new information regarding the effects of the fishery on Steller sea lions was obtained, or if there was a change in the status of sea lions. Since April 1991, NMFS has reinitiated section 7 consultation for several GOA and BSAI regulatory amendments (e.g., inshore/offshore) and for the annual TAC specifications.

Endangered, threatened, and candidate species of seabirds that may be found within the regions of the GOA and BSAI where the groundfish fisheries operate, and potential impacts of the groundfish fisheries on these species are discussed in the EA prepared for the 1997 TAC specifications. The U.S. Fish and Wildlife Service (USFWS), in consultation on the 1997 specifications, concluded that groundfish operations using gear other than hook-and-line gear are not likely to adversely affect short-tailed albatrosses (letter, Rappoport to Pennoyer, February 10, 1997).

2.5 Potential Impacts on ESA-listed Pacific salmon

Capture of salmon by the scallop dredges is reported to be extremely rare (Hennick 1973), as scallop dredges are small in size, and remain within one meter of the ocean bottom. Bycatch of all fish species by scallop dredges is composed primarily of flounders and skates (Kruse et al. 1993; Urban et al. 1994). No salmon bycatch was reported during the 1993 ADF&G observer program, with nearly 900 days fishing observed (Urban et al. 1994), and there have been no other reports of salmon bycatch in the scallop fishery off Alaska. None of the alternatives will affect the continued existence of listed species of Pacific salmon, or result in disturbance or adverse modification of critical salmon habitat.

2.6 Potential Impacts on Seabirds

Many seabirds occur in Alaskan waters where scallop fisheries are conducted. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murrelets, and puffins. These groups, and others, represent 38 species of seabirds that breed in Alaska. Eight species of Alaska seabirds breed only in Alaska and in Siberia. Populations of five other species are concentrated in Alaska but range throughout the North Pacific region. Marine waters off Alaska provide critical feeding grounds for these species as well as others that do not breed in Alaska but migrate to Alaska during summer, and for other species that breed in Canada or Eurasia and overwinter in Alaska. Additional discussion about seabird life history, predator-prey relationships, and interactions with commercial fisheries can be found in an EA prepared for the 1997 Groundfish Total Allowable Catch Specifications (NMFS 1997b).

Fishing interactions occur directly through entanglements or collisions with fishing gear, or indirectly through competition for fish prey; and indirect mortality from encounters with marine debris or pollution, and disruption of the ecosystem from habitat degradation. An assessment of impacts of groundfish fisheries on colonial and pelagic seabirds and migratory birds was prepared as part of the Final Environmental Assessment for 1997 Groundfish TAC Specifications for the Bering Sea/Aleutian Islands and the Gulf of Alaska. The EA is incorporated by reference, as is the informal consultation with the USFWS on the 1997 TAC specifications, and a 1997 biological opinion prepared by the USFWS on the effects of the 1997 GOA/BSAI groundfish TAC specifications and all subsequent actions and amendments consistent with the terms and conditions of the consultation. These documents list the endangered, threatened, proposed and candidate species that may be found off Alaska where the groundfish fisheries operate the potential impacts of the groundfish fisheries on these species. The 1997 informal consultation with the USFWS determined that trawl and pot fishing activities off Alaska are not likely to adversely affect short-tailed albatross and limited the scope of the consultation to hook-and-line fisheries. Because scallop dredges are small in size, and remain within one meter of the ocean bottom, interactions with seabirds are much less likely in the scallop fishery than in the groundfish fishery, which consists of a much larger fleet of vessels using large nets or baited hooks or pots. In addition, there are no reported takes of seabirds by the scallop fishery off Alaska. Therefore, none of the alternatives will affect endangered or threatened seabirds or their critical habitat.

2.7 Potential Impacts on Marine Mammals

Cetacean and pinniped species are unlikely to have potential for interaction with scallop fisheries in the GOA and BSAI. Marine mammals not listed under ESA that may be present in the GOA and BSAI include cetaceans, (minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*) as well as pinnipeds (northern fur seals (*Callorhinus ursinus*), and Pacific harbor seals (*Phoca vitulina*)) and the sea otter (*Enhydra lutris*).

A list of marine mammal species and detailed discussion regarding life history and potential impacts of the 1997 groundfish fisheries of the BSAI and GOA on these species can be found in the EA prepared for the 1997 Total Allowable Catch Specifications for Groundfish (NMFS 1997b). Interactions of the scallop fishery with Steller sea lions and other pinnipeds, and sea otters are thought to be rare and less common than in the groundfish fisheries. In addition, there are no reported takes of marine mammals by the scallop fishery off Alaska. Therefore, none of the alternatives will have an adverse effect on marine mammals.

2.8 Coastal Zone Management Act

Each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Zone Management Program within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.9 Finding of No Significant Impact

For the reasons discussed above, implementation of any one of the alternatives to the status quo would not significantly affect the quality of the human environment, and the preparation of an environmental impact statement on the final action is not required under Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

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Assistant Administrator for Fisheries, NOAA

12/18/97
Date

3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

E. O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant". A "significant regulatory action" is one that is likely to:

1. Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant." None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

3.1 Alternative 1: No Action

Current Federal regulations establish a January 10 through June 30 scallop fishing season in the Federal waters of the Prince William Sound and Yakutat Registration Areas. The scallop fishery in Federal waters would continue to open on January 10 of each year and would run through June 30, or until the scallop TAC or CBL established for each area is reached, whichever comes first. State-registered vessels would only be able to fish in the Federal waters of these registration areas during the narrow window of time when both State and Federal fishing seasons are open e.g., January 10 to February 15 of each year.

Since the Board has already approved an amendment to State regulations establishing a July 1 opening date for the registration areas in question, the absence of a follow-up Federal action would result in conflicting fishing State and Federal fishing seasons. Under such circumstances, joint State-Federal management of the fishery would be impossible. Because State waters in Prince William Sound and Yakutat would open on July 1 while Federal waters would open on January 10, the ADF&G and NMFS would be forced to split the TACs between State and Federal waters and manage each portion of the TAC separately.

3.2 Alternative 2 (Preferred): July 1 Opening Date for Registration Areas D and E

The scallop fishing season in the Prince William Sound and Yakutat Registration Areas would begin on July 1 and end on February 15 of the following year, matching the existing scallop fishing season in all other registration areas (except for Cook Inlet). This option is recommended by the Board and is consistent with recently amended State regulations governing the scallop fishery in these areas.

Alternative 2 will provide some economic benefits to industry compared to the no action alternative as it would prevent the problem of inconsistent seasons at the State and Federal levels. The historic reason for a January opening in Prince William Sound and Yakutat no longer makes sense under the current management regime. Prior to 1993, ADF&G did not set Guideline Harvest Levels (GHLs) for each area. Winter and summer openings were used in different areas to spread effort and to mirror the historic pattern of scallop fishing throughout the State. However, under Amendment 1 to the FMP approved in July 1996, ADF&G and NMFS now establish GHLs or total allowable catch (TAC) amounts for each scallop registration area. As a consequence, maintaining a January opening for Prince William Sound and Yakutat no longer serves a purpose because the separate TACs established for each registration area accomplish the same objective.

In addition, changing the scallop fishing seasons in Prince William Sound and Yakutat to be consistent with the scallop fishing seasons in other areas of Alaska will reduce overhead costs for vessel operators and crew. With a consolidated fishing season throughout Alaska, vessel operators will be able to conduct all of their scallop fishing within the same time block and devote the remainder of the year to other fisheries or activities. Under the status quo, vessel operators and crew must gear up and transit to the fishing grounds twice a year due to the different season dates. At the March 1997 Board meeting, crew members of scallop vessels testified that they would benefit from a single scallop fishing season throughout Alaska because it would free them up to seek other employment or opportunities during the off season. However, the extent of these benefits is impossible to quantify.

Finally, a July 1 opening date for Prince William Sound and Yakutat would allow vessel operators to fish in safer conditions. At its March 1997 meeting, the Board received substantial testimony from

scallop fishermen who reported that January is an unsafe time to fish for scallops in the smaller vessels that compose most of the fleet. Historically, the summer fishery in the western registration areas would extend into the fall and winter months. Vessel operators would typically begin scallop fishing in the Bering Sea and Alaskan Peninsula during the summer months and move to the more sheltered waters of Prince William Sound and Yakutat in the winter. However, in recent years, TACs and/or CBLs are reached relatively quickly in the western registration areas and there is no longer any reason to delay the Prince William Sound and Yakutat scallop fisheries until January when the worst winter weather occurs.

3.3 Administrative, Enforcement and Information Costs

Administrative, enforcement and information costs are not expected to vary substantially under any of the alternatives in question.

3.4 Impacts to Small Entities

The objective of the Regulatory Flexibility Act is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. If an action will have a significant impact on a substantial number of small entities an Initial Regulatory Flexibility Analysis (IRFA) must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

The Small Business Administration has defined all fish-harvesting or hatchery businesses that are independently owned and operated, not dominant in their field of operation, with annual receipts not in excess of \$3,000,000 as small businesses. In addition, seafood processors with 500 employees or fewer, wholesale industry members with 100 employees or fewer, not-for-profit enterprises, and government jurisdictions with a population of 50,000 or less are considered small entities. NMFS has determined that a "substantial number" of small entities would generally be 20 percent of the total universe of small entities affected by the regulation. A regulation would have a "significant impact" on these small entities if it reduced annual gross revenues by more than 5 percent, increased total costs of production by more than 5 percent, or resulted in compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities.

If an action is determined to affect a substantial number of small entities, the analysis must include:

1. a description and estimate of the number of small entities and total number of entities in a particular affected sector, and total number of small entities affected; and
2. analysis of economic impact on small entities, including direct and indirect compliance costs, burden of completing paperwork or recordkeeping requirements, effect on the competitive position of small entities, effect on the small entity's cashflow and liquidity, and ability of small entities to remain in the market.

NMFS has determined that none of the alternatives would have a significant impact on a substantial number of small entities. The rationale for this determination is as follows: In the past two years, eight of the eleven scallop vessels active in Alaska have participated in the scallop fishery in Registration Areas D and E. This is a "substantial number" of small entities, as NMFS has interpreted this term to mean 20 percent of the total universe of small entities affected by the regulation. However the proposed action would not impose any compliance costs on small entities. Furthermore,

the likely effects of the proposed action are positive and include: Safer fishing conditions for vessels and crews, and a consolidated fishing season that will reduce the overhead costs that are associated with conducting scallop fishing during two separate times of the year. Therefore, this action would not have a "significant impact," as NMFS has interpreted that term to mean a reduction in annual gross revenues by more than 5 percent, an increase in total costs of production by more than 5 percent, or compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities. As a result, an initial regulatory flexibility analysis was not prepared.

4.0 REFERENCES

- Aschan, M.M. 1991. Effects of Iceland scallop dredging on benthic communities in the Northeast Atlantic. Special international workshop on the effects of physical disturbance on the sea floor on benthic and epibenthic ecosystems. Conseil International pour L'Exploration de la Mer, Benthos Working Group, Unpublished Manuscript.
- Bourne, N. 1991. Fisheries and Aquaculture: West Coast of North America. in S.E. Shumway, (ed.), *Scallops: biology, ecology, and aquaculture*. Elsevier, N.Y. 1991.
- Caddy, J.F. 1968. Underwater observations on scallop (*Placopecten magellanicus*) behavior and drag efficiency. *Journal of the Fisheries Research Board of Canada* 25: 2123-2141.
- Caddy, J.F. 1989. A perspective on the population dynamics and assessment of scallop fisheries, with special reference to the sea scallop, *Placopecten magellanicus* Gmelin. Pages 559-589 in J.F. Caddy, editor. *Marine invertebrate fisheries: their assessment and management*. John Wiley and Sons, New York.
- Eleftheriou, A., and M.R. Robertson. 1992. The effects of experimental scallop dredging on the fauna and physical environment of a shallow sandy community. *Netherlands Journal of Sea Research* 30:289-299.
- Fonseca, M.S., G.W. Thayer, A.J. Chester, and C. Foltz. 1984. Impact of scallop harvesting on eelgrass (*Zostera marina*) meadows: implications for management. *North American Journal of Fisheries Management* 4:
- Foster, N.R. 1991. *Intertidal bivalves: a guide to the common marine bivalves of Alaska*. University of Alaska Press, Fairbanks.
- Hammarstrom, L.F., and M.F. Merritt. 1985. A survey of Pacific weathervane scallops (*Pecten caurinus*) in Kamishak Bay, Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 252, Juneau.
- Haynes, E.B., and G.C. Powell. 1968. A preliminary report on the Alaska sea scallop - fishery exploration, biology, and commercial processing. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 125, Juneau.
- Hennick, D.P. 1970a. The weathervane scallop fishery of Alaska with notes on occurrence in Washington and Oregon. Pacific Marine Fisheries Commission, Annual Report for the Year 1969: 33-34.
- Hennick, D.P. 1973. Sea scallop, *Patinopecten caurinus*, investigations in Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Completion Report 5-23-R, Juneau.
- Jones, J.B. 1992. Environmental impact of trawling on the seabed: a review. *New Zealand Journal of Marine and Freshwater Research* 26:59-67.

- Kaiser, R.J. 1986. Characteristics of the Pacific weathervane scallop (*Pecten [Patinopecten] caurinus*, Gould 1850) fishery in Alaska, 1967-1981. Alaska Department of Fish and Game, Division of Commercial Fisheries (Unpublished Report, Catalog RUR-5J86-01), Juneau.
- Kruse, G.H., E. Krygier, R.D. Mecum, and M.C. Murphy. 1993. Synopsis of ADF&G scallop meeting, Anchorage, Alaska, July 15, 1993. ADF&G Regional Information Report No. 5J93-07.
- Mayer, L.M., D.F. Schick, R.H. Findlay, and D.L. Rice. 1991. Effects of commercial dragging on sedimentary organic matter. *Marine Environmental Research* 31:249-261.
- Morrison, R. 1994. Bering Sea Aleutian Islands Scallops. In: Westward Region Reports to the Board of Fisheries. March 1994.
- New England Fishery Management Council (NEFMC). 1982. Fishery management plan, final environmental impact statement, regulatory impact review for Atlantic sea scallops (*Placopecten magellanicus*). New England Fishery Management Council, Saugus, Massachusetts.
- National Marine Fisheries Service (NMFS). 1997a. Final Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for Amendments 1 and 2 to the Fishery Management Plan for the Scallop Fishery off Alaska. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.
- NMFS. 1997b. Final Environmental Assessment for the 1997 Groundfish Total Allowable Catch Specifications. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.
- North Pacific Fishery Management Council (NPFMC). 1992. Final Supplemental Environmental Impact Statement and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Proposed Inshore/Offshore Allocation Alternatives (Amendment 18/23) to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska. March 5, 1992.
- Orensanz, J.M. 1986. Size, environment, and density: the regulation of a scallop stock and its management implications. Pages 195-227 in G.S. Jamieson and N. Bourne, editors. North Pacific workshop on stock assessment and management of invertebrates. Canadian Special Publication of Fisheries and Aquatic Sciences 92.
- Starr, R.M., and J.E. McCrae. 1983. Weathervane scallop (*Patinopecten caurinus*) investigations in Oregon, 1981-1983. Oregon Department of Fish and Wildlife, Information Reports 83-10, Newport.
- Urban, D., D. Pengilly, and I. Vining. 1994. The scallop observer program and statewide data analysis summary to the Board of Fisheries. Alaska Department of Fish and Game, Kodiak, Alaska. 54p.
- United States Fish and Wildlife Service (USFWS). 1997. Formal consultation with the U.S. Fish and Wildlife Service Pursuant to Section 7 of the Endangered Species Act. Amendment to Biological Opinion. February 10, 1997. National Marine Fisheries Service, Juneau, Alaska.

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