UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East West Highway
Silver Spring MD 20910

THE DIRECTOR

Scallop 4

JUN 15 2000

JUN 8 2000

MEMORANDUM FOR Susan Fruchter
NEPA Coordinator

FROM Penelope D Dalton

SUBJECT Transmittal of the Environmental Assessment for Amendment 4 to the Fishery Management Plan for Scallop Fishery Off Alaska--DECISION MEMORANDUM

Based on the subject environmental assessment I have determined that no significant environmental impacts will result from the proposed action I request your concurrence in this determination by signing below Please return this memorandum for our files

1 I concur Susan Fruchter 6/15/00
Date

2 I do not concur _____
Date

Attachments

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington D C 20230

6/15/00

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 — Amendment 4 to the Fishery Management Plan for the Scallop Fishery Off Alaska

LOCATION — Federal Waters of the Bering Sea and Aleutian Islands and the Gulf of Alaska

SUMMARY — Amendment 4 would provide a license limitation program (LLP) for the scallop fishery to replace the Federal vessel moratorium scheduled to expire June 30, 2000 The scallop fishery has been characterized as an overcapitalized fishery Under this LLP a total of nine licenses would be issued Licenses would be issued to holders of either Federal or State moratorium permits who used their permits to make legal landings of scallops in each of any two calendar years beginning January 1 1996 through October 9 1998 However licenses based on legal landings of scallops harvested only from Cook Inlet during the qualifying period would have a gear endorsement that would limit allowable gear to a single six-foot dredge when fishing for scallops in any area No increase in vessel length would be allowed No person, corporation or entity could own more than two scallop licenses which would limit excessive shares The LLP is intended to prevent further deterioration of economic benefits in the scallop fishery because the potential fleet size is less than under the moratorium

RESPONSIBLE OFFICIAL — James W Balsiger
Administrator
Alaska Region
National Marine Fisheries Service
P O Box 21668
Juneau AK 99802
Phone 907-586-7221

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 SP U S Department of Commerce Washington D C 20230

Sincerely

Susan B Fruchter
NEPA Coordinator

Enclosure

ENVIRONMENTAL ASSESSMENT / REGULATORY IMPACT REVIEW

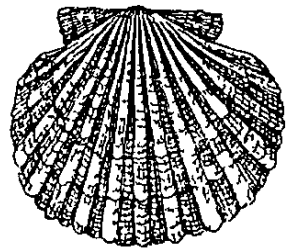
INITIAL REGULATORY FLEXIBILITY ANALYSIS

for

Amendment 4

TO THE FISHERY MANAGEMENT PLAN
FOR THE SCALLOP FISHERY OFF ALASKA
to establish a

License Limitation Program



Lead Agency	North Pacific Fishery Management Council
Responsible Official	Clarence Pautzke Executive Director 605 West 4th Avenue Anchorage AK 99510
Further Information Contact	David Witherell North Pacific Fishery Management Council
Cooperating Agencies	National Marine Fisheries Service Alaska Department of Fish and Game

Abstract This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendment 4 to the Fishery Management Plan for the Scallop Fishery off Alaska proposes alternatives for a scallop license limitation program to address the problem of overcapitalization in the scallop fishery

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The scallop fishery off Alaska has been characterized as an overcapitalized fishery In 1997 Amendment 2 to the Alaska Scallop fishery management plan (FMP) established a Federal vessel moratorium, which is scheduled to expire in the year 2000 In the same year the Alaska State Legislature enacted a scallop vessel moratorium for State waters which will expire in the year 2001

In February 1998 the Council reviewed participation and other data from the scallop fishery and developed a problem statement and alternatives for analysis of a license limitation program (LLP) to replace the existing vessel moratorium. The alternatives analyzed were as follows

Alternative 1 No Action. Under this alternative the scallop vessel moratorium would expire in 2000 and the fishery would revert back to open access

Alternative 2 Vessel owners who qualify for Federal moratorium permits would receive a license Under this alternative, a total of 18 licenses would be issued, one for each vessel

Alternative 3 Vessel owners who qualify for State moratorium permits would receive a license Under this alternative a total of 10 licenses would be issued, one for each vessel

Alternative 4 Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in 1996 or 1997 would receive a license The federal or state moratorium qualification period would serve as the historic qualifying period and the years 1996 and 1997 would serve as the recent qualifying period. Under this alternative a total of 10 licenses would be issued, one for each vessel

Alternative 5 Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in 1996 1997 or 1998 (through 10/9/98) would receive a license The federal or state moratorium qualification period would serve as the historic qualifying period and the years 1996 1997 and 1998 would serve as the recent qualifying period. Under this alternative a total of 11 licenses would be issued, one for each vessel

Alternative 6 (**Preferred**) Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in two of the three years (1996 1997 1998 through 10/9) would receive a license The federal or state moratorium qualification period would serve as the historic qualifying period and the years 1996 1997 and 1998 would serve as the recent qualifying period. Under this alternative a total of 9 licenses would be issued, one for each vessel

In addition two options applicable to Alternatives 2 6 were analyzed.

Option 1 Area Endorsements

- A (1) Separate endorsements for Cook Inlet and statewide areas based on recent activity
  (2) Separate endorsements for Cook Inlet and statewide areas based on recent or historic activity
- B No area endorsement All licenses are statewide
- C (1) (**Preferred**) No area endorsements All licenses are statewide but Cook Inlet vessels would be restricted to a single 6 ft dredge in all areas based on recent activity

(2) No area endorsements All licenses are statewide but Cook Inlet vessels would be restricted to a single 6 ft dredge in all areas based on recent or historic activity

Option 2 Vessel Reconstruction and Replacement

- **A.** No restrictions on reconstruction or replacement
- **B** Maximum LOA restricted to 120% of the length of the vessel on January 23 1993
- **C** Maximum LOA restricted to 120% of the LOA of the vessel on which the permit was used in 1996 or 1997
- **D** **(Preferred)** No increases in vessel length allowed. Maximum vessel length will be restricted to 100% of the LOA of the qualifying vessel on February 8 1999 unless the moratorium permit was used on a longer vessel in the recent qualifying period in which case the license will be limited to 100% of the LOA of the longest vessel used in the recent qualifying period.

Analysis indicated that a total of about 6 or 7 vessels could participate full time in the Alaska statewide scallop fishery at the breakeven level (not including Cook Inlet vessels) More vessels could participate at a breakeven level if ex vessel prices for scallop or current annual harvest levels increased. The reverse is also true The Cook Inlet fishery appears to be fully capitalized, and perhaps overcapitalized at the current level of effort (3-4 vessels) even if done on a part time basis *Alternative 6 together with the options adopted by the Council will allow seven vessels to participate in the statewide fishery with full size dredges and would allow two vessels to participate with a single 6-foot dredge All vessels will be allowed to participate in the Cook Inlet fishery but it is highly likely that only three of the licensed vessels would consider prosecuting that fishery due to limited quota season timing and gear restrictions*

Alternatives and options that perpetuate overcapitalization in the scallop fishery would have negative impacts on vessel owners crew and fishing communities The race for quota and bycatch would be exacerbated under Alternatives 1 and 2 Issued licenses would have monetary value and latent licenses (issued to vessels not currently fishing) would likely be transferred to other vessels wishing to participate in the scallop fishery

Alternatives 3-6 provide more long term stability to this fishery and to the communities that support the fishery The number of licenses issued would be more in line with the number of full time scallop vessels that recent harvests can support at a breakeven level Although the number of licenses that would be issued (9 11) would still be more than the number of vessels that could efficiently harvest the resource (4 see NPFMC 1995) most participants would have an opportunity to catch enough scallops to make normal returns on investments without accruing excessive profits Nevertheless each additional vessel participating in the fishery or other additional increases in harvesting capacity impose additional costs to existing participants including vessel owners and crew

Scallop licenses would be issued to those who held the moratorium permit for a qualifying vessel on the date of Council action (February 8 1999) as opposed to a) the person who owned the qualifying vessel at the time that qualifying landings of scallops were made b) some other person who may have purchased a qualifying vessel s fishing rights with respect to scallop or c) a person who may have sold a qualifying vessel, but contracted to retain the fishing rights that may result from the vessel s activities) At the time of initial issuance a owner will receive a formal permanent designation (i e a number or a letter or a combination of the two) The license will be manifest by a Certificate which will be sent to the permit holder Once it has been initially issued, a scallop license in its entirety (i e including all endorsements and limitations license attributes would not be severable) will not be vessel specific and can be transferred Applications for transfers will be submitted on a form prepared by NMFS (RAM) If a transfer application

is approved, a new permit certificate will be issued in the name of the transferee If a transfer application is denied, the applicant(s) could appeal that determination to the Office of Administrative Appeals

The Council considered the Magnuson Stevens Act requirements that no person shall be granted excessive shares of a limited access privileges The Council recommended that no person (as defined under the Magnuson Stevens Act) can hold more than 2 scallop licenses

None of the alternatives are expected to have a significant impact on endangered, threatened, or candidate species and none of the alternatives would affect takes of marine mammals Actions taken to limit the number of scallop vessel permits will not alter the harvest of scallops

None of the alternatives is expected to result in a significant regulatory action" as defined in E O 12866

The alternatives to the status quo would be expected to have significant economic impact on a substantial number of small entities Alternative 2 would not have impacts because all vessels currently participating in the scallop fishery would qualify for licenses under this alternative Alternatives 3 6 would have a significant economic impact on a substantial number of small entities because some vessels would not qualify for licenses

None of the alternatives are likely to significantly affect the quality of the human environment and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations

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 (FMP) The FMP was developed 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)

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) addresses Amendment 4 to the FMP The proposed action would establish an LLP for the Alaska scallop fishery 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

1 1 Purpose of and Need for the Action

The scallop fishery off Alaska has been characterized as an overcapitalized fishery (NMFS 1997a) Amendment 4 has been proposed to establish a license limitation system for the scallop fishery to replace the Federal vessel moratorium, which is scheduled to expire in the year 2000 At its February meeting the Council reviewed participation and other data from the scallop fishery and developed a problem statement and alternatives for analysis

Problem Statement adopted by the Council at its February 1998 meeting and revised in October

The Council is dealing with a sensitive resource and overcapitalized fishery In 1993 the Council determined, through the moratorium, that 'unrestricted access to the fishery can be harmful to the resource and cause net loss to the nation With the moratorium set to expire the number of latent permits in existence which if activated, would exacerbate the problem. Additional participation or increased harvesting capacity may impose significant economic hardship to current participants

A system for limiting access which is an optional measure under section 303(b) of the Magnuson Stevens Act is a type of allocation of fishing privileges that may be used to promote economic efficiency or conservation For example *limited access may be used to combat overfishing overcrowding or overcapitalization in a fishery to achieve OY*' (50 CFR 600 330(c)) The Magnuson Stevens Act (Section 3(28)) further defines The optimum with respect to the yield from a fishery means the amount of fish (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems (B) is prescribed on the basis of the maximum sustainable yield from the fishery as reduced by any relevant social, economic or ecological factor and (C) in the case of an overfished fishery provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery

Section 303(b)(6) of the Magnuson Stevens Act provides authority to limit access to a fishery ' to achieve optimum yield if, in developing such a system, the Council and Secretary take into account

A present participation in the fishery
B historical fishing practices in, and dependence on, the fishery
C the economics of the fishery
D the capability of fishing vessels used in the fishery to engage in other fisheries
E the cultural and social framework relevant to the fishery and,
F any other relevant considerations

1 2 Alternatives Considered

1 2 1 Alternative 1 No Action. Under this alternative the scallop vessel moratorium would expire in 2000 and the fishery would revert back to open access

1 2 2 Alternative 2 Vessel owners who qualify for Federal moratorium permits would receive a license Under this alternative a total of 18 licenses would be issued, one for each vessel

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Option 1 Area Endorsements (applicable to Alternatives 2 6)

A (1) Separate endorsements for Cook Inlet and statewide areas Must have a legal landing of scallops in each area during the recent qualifying period to receive an endorsement in that area

(2) Separate endorsements for Cook Inlet and statewide areas Must have a legal landing of scallops in each area during either the recent or historic qualifying period to receive an endorsement in that area.

B No area endorsement All licenses are statewide.

C (1) **(Preferred)** No area endorsements All licenses are statewide However license holders who never made a legal landing of scallops from outside Cook Inlet during the recent qualifying period would be restricted to a single 6 ft dredge in all areas (e g restricted and unrestricted licenses)

(2) No area endorsements All licenses are statewide However license holders who never made a legal landing of scallops from outside Cook Inlet during either the recent or historic qualifying period would be restricted to a single 6 ft dredge in all areas (e g restricted and unrestricted licenses)

Option 2 Vessel Reconstruction and Replacement (applicable to alternatives 2-6)

A. No restrictions on reconstruction or replacement

B Maximum length overall (LOA) would be equal to 120% of the length of the vessel on January 23 1993 (maximum LOA under Federal moratorium)

C Maximum vessel length would be restricted to 120% of the LOA of the vessel on which the permit was used in 1996 or 1997 on or before December 31 1997 If a permit was used on more than one vessel in 1996 or 1997 maximum LOA would be calculated using the longest vessel.

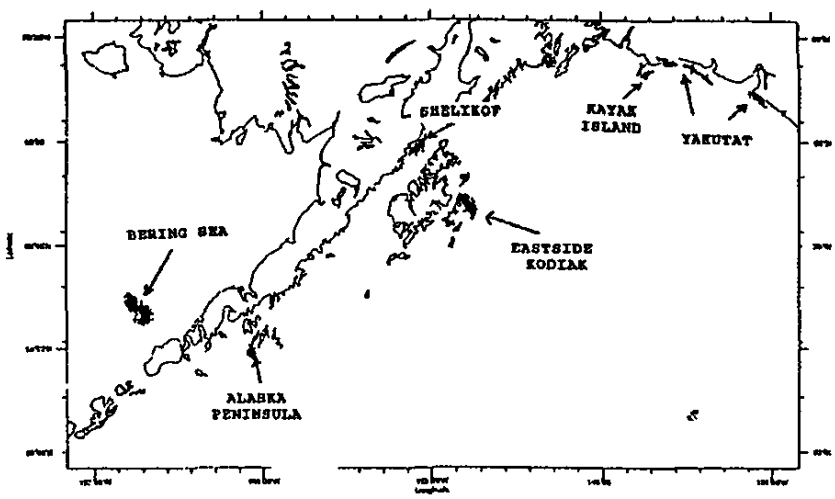
D **(Preferred)** No increases in vessel length allowed. Maximum vessel length will be restricted to 100% of the LOA of the qualifying vessel on February 8 1999 unless the moratorium permit was used on a longer vessel in the recent qualifying period in which case the license will be limited to 100% of the LOA of the longest vessel used in the recent qualifying period.

1 3 Background on the Scallop Fishery off Alaska

1 3 1 Biology, Abundance, and Distribution

Weathervane scallops (*Patinopectin caurinus*) are distributed from Point Reyes California, to the Pribilof Islands Alaska The highest known densities in Alaska have been found to occur in the Bering Sea, off Kodiak Island, and along the eastern gulf coast from Cape Spencer to Cape St Elias Weathervane scallops are found from intertidal waters to depths of 300 m, but abundance tends to be greatest between depths of 40-130 m on beds of mud, clay sand, and gravel Sexes are separate and mature male and female scallops are distinguishable based on gonad color Although spawning time varies with latitude and depth, weathervane scallops in Alaska spawn in May to July depending on location Eggs and spermatozoa are released into the water where the eggs become fertilized. After a few days eggs hatch, and larvae rise into the water column and drift with ocean currents Larvae are pelagic and drift for about one month until metamorphosis to the juvenile stage when they settle to the bottom. Weathervane scallops begin to mature by age 3 at about 7 6 cm (3 inches) in shell height, and virtually all scallops are mature by age 4 Growth, maximum size, and size at maturity vary significantly within and between beds and geographic areas Weathervane scallops are long lived, individuals may live 28 years old or more Scallops are likely prey to various fish and invertebrates during the early part of their life cycle Flounders are known to prey on juvenile weathervane scallops and sea stars may also be important predators

The overall magnitude of the weathervane scallop resource off Alaska is thought to be very limited based on survey and fishery information Fisheries occur in discrete areas of concentration (beds) as shown in the figure below These same beds have been exploited since the beginnings of the fishery over thirty years ago No other concentrations have been found in the Gulf of Alaska despite lots of prospecting However some fishermen have testified that they believe other beds may exist in state waters closed to scallop dredging Survey data confirms that although weathervanes are distributed all along the coast commercial quantities are found only in the areas currently exploited. In areas where scallop surveys have been conducted (Cook Inlet and Prince William Sound) scallops were very concentrated in these beds and nearly absent in adjacent areas Although the bed of scallops in the Bering Sea was known about many years ago the fishery only began to target on this concentration in the 1990s No other concentrations of weathervane scallops are known to exist off Alaska despite many years of bottom trawl surveys and prospecting by scallop fishermen



Areas fished for weathervane scallops during 1993

Several other species of scallop found in the EEZ off Alaska have commercial potential These scallops grow to smaller sizes than weathervanes and thus have not been extensively exploited in Alaska Pink scallops *Chlamys rubida* range from California to the Pribilof Islands Pink scallops are found in deep

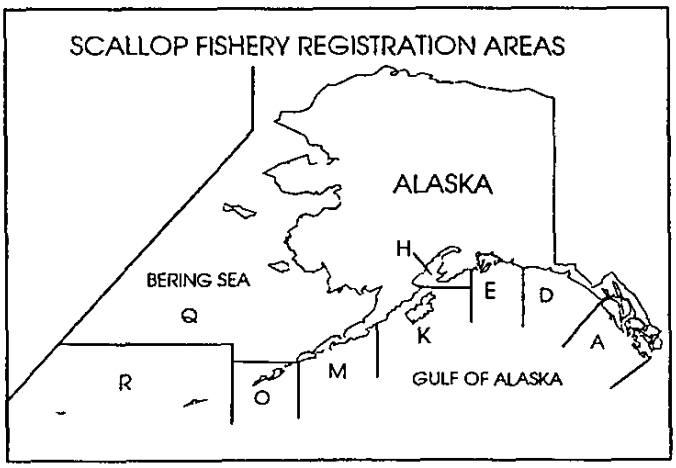
waters (to 200 m) in areas with soft bottom, whereas spiny scallops occur in shallower (to 150 m) areas characterized by hard bottom and strong currents Pink scallops mature at age 2 and spawn in the winter (January-March) Maximum age for this species is 6 years Spiny scallops *Chlamys hastata*, are found in coastal regions from California to the Gulf of Alaska Spiny scallops grow to slightly larger sizes (75 mm) than pink scallops (60 mm) Spiny scallops also mature at age 2 (35 mm) and spawn in the autumn (August-October) Rock scallops *Crassadoma gigantea* range from Mexico to Unalaska Island. Rock scallops are found in relatively shallower water (0 80 m) with strong currents Apparently distribution of these animals is discontinuous and the abundance in most areas is low These scallops attach themselves to rocks attain a large size (to 250 mm) and exhibit fast growth rates Rock scallops are thought to spawn during two distinct periods one in the autumn (October January) and one in the spring-summer (March August)

1 3 2 Management of the Fishery

Scallop stocks in Alaska have been managed under a federal fishery management plan (FMP) since July 26 1995 which established a 1 year interim closure of federal waters to scallop fishing to prevent uncontrolled fishing Amendment 1 which allowed scallop fishing under a federal management regime was approved July 10 1996 and fishing resumed on August 1 Amendment 1 provided for fishery management through permits registration areas and districts seasons closed waters gear restrictions efficiency limits crab bycatch limits scallop catch limits inseason adjustments and observer monitoring Most of these regulations were developed by the State prior to 1995 Dredge size is limited to a maximum width of 15 feet, and only 2 dredges may be used at any one time In the Kamishak District of Cook Inlet only 1 dredge with a 6 foot maximum width is allowed. Dredges are required to have rings with a 4 minimum inside diameter To reduce incentives to harvest small scallops crew size on scallop vessels is limited to 12 persons and all scallops must be manually shucked. Dredging is prohibited in areas designated as crab habitat protection areas similar to the groundfish FMPs In June 1995 the Council adopted a 3 year vessel moratorium to restrict new entry into the scallop fishery while a more comprehensive plan was being developed. The moratorium was approved as Amendment 2 and became effective August 1 1997 To qualify under the moratorium, a vessel must have made at least one landing in 1991 1992 or 1993 or must have participated for at least 4 years between 1980 and 1993 The moratorium also limits reconstruction and replacement of vessels to a 20% maximum increase in original qualifying length overall

A summary of management measures established under amendments to the federal scallop FMP

Amendment	Date	Action
1	July 1996	Allowed fishing after a 1 year closure of Federal waters
2	July 1997	Established a federal scallop vessel moratorium.
3	June 1998	Deferred all management (except limited access) to State
4	1999?	Would establish a permanent limited access system.
5	1998	Essential Fish Habitat
6	1998	MSY OY Overfishing



In 1996 a total of 9 vessels participated in the scallop fishery statewide Scallop vessels average 90-110 ft long Scallops are harvested using dredges of standard New Bedford design Weathervane scallops are processed at sea by manual shucking, with only the meats (adductor muscles) retained. Scallops harvested in Cook Inlet are bagged and iced, whereas scallops harvested from other areas are generally block frozen at sea The fishery has occurred almost exclusively in the EEZ in recent years but some fishing in State waters occurs off Yakatat Dutch Harbor and Adak. To date only 1 vessel has made commercial landings of scallops other than weathervanes In 1991 and 1992 this vessel fished for pink scallops in the Dutch Harbor and Adak registration areas These landings remain confidential

Many of the vessels fishing for Alaska scallops originally hailed from east coast scallop fisheries Some vessels have a long history (one vessel has fished every year for the past 18 years several others have 5-9 years) of scallop fishing in Alaska Many crew members come from local communities in Alaska (particularly in Homer and Kodiak) with some crew flying in from the east coast to participate during the season. The 1995 scallop fishery closure caused hardship to those crew that were unable to find other work in Alaska

Since 1967 when the first landings were made fishing effort and total scallop harvest (weight of shucked meats) have varied annually Total commercial harvest of weathervane scallops has fluctuated from a high of 157 landings totaling 1 850 187 pounds of shucked meats by 19 vessels in 1969 to no landings in 1978 Prices and demand for scallop have remained high since fishery inception Prior to 1990 about two-thirds of the scallop harvest has been taken off Kodiak Island and about one third has come from the Yakutat area other areas had made minor contributions to overall landings Harvests in 1990 and 1991 were the highest on record since the early 1970s The 1992 scallop harvest was even higher at 1 810 788 pounds The increased harvests in the 1990s occurred with new exploitation in the Bering Sea The reduced 1995 catch was due to implementation of an interim closure in the EEZ from 2/23/95 to 8/1/96

Landings and effort in the Alaska weathervane scallop fishery 1980 1998 (through 11/20) Average price from fish ticket data

Year	# of Vessels	Landings (pounds)	Price ($/lb)
1980	8	633 000	4 32
1981	18	924 000	4 05
1982	13	914 000	3 77
1983	6	194 000	4 88
1984	10	390 000	4 47
1985	8	648 000	3 12
1986	9	683 000	3 66
1987	4	583 000	3 38
1988	4	341 000	3 49
1989	7	526 000	3 68
1990	9	1 489 000	3 37
1991	7	1 191 000	3 76
1992	7	1 811 000	3 88
1993	15	1 429 000	5 00
1994	16	1 235 000	5 36
1995	10	283 000	5 04
1996	8	732 424	6 38
1997	9	786 043	6 58
1998	8	810,242	6 40

Weathervane scallop registration areas, seasons, GHL s (pounds, shucked), and crab bycatch limits established for the 1998 scallop fishery by area

Area	GHL (pounds)	Fishing Season		Crab Bycatch Limits king crab	Tanner crab	Snow crab
D District 16	0 35 000	July 1	Feb 15	n/a	n/a	n/a
D Yakutat	0 250 000	July 1	Feb 15	n/a	n/a	n/a
E Eastern PWS	0 20 000	July 1	Feb 15	n/a	500	n/a
Western PWS	exploratory	July 1	Feb 15	n/a	130	n/a
H Cook Inlet (Kamishak)	0 20 000	Aug 15	Oct 31	60	24 992	n/a
Cook Inlet (Outer area)	combined	Jan 1	Dec 31	98	2 170	n/a
K Kodiak (Shelikof)	0 300 000	July 1	Feb 15	196	33 500	n/a
Kodiak (Northeast)	combined	July 1	Feb 15	21	46 500	n/a
M AK Peninsula	0 200 000	July 1	Feb 15	900	48,500	n/a
O Dutch Harbor	0 110 000	July 1	Feb 15	10	10 700	n/a
Q Bering Sea	0 400 000	July 1	Feb 15	500	215 000	130 000
R Adak	0 75 000	July 1	Feb 15	50	10 000	n/a

Summary of the 1998 scallop fishery GHL s (pounds, shucked), landings, and seasons by area

Area	GHL (pounds)	Approx landings	Fishing Season
D District 16	0 35 000	35 000	July 1 Oct 6
D Yakutat	0 250 000	250 000	July 1 July 29
E Eastern PWS	0 20 000	6 000	July 1 July 2
Western PWS	exploratory	14 000	July 1 July 4
H Cook Inlet (Kamishak)	0 20 000	conf	Aug 15 Dec 31
Cook Inlet (Outer area)	combined		Jan 1 Dec 31
K Kodiak (Shelikof)	0 300 000	180 000	July 1 Aug 21
Kodiak (NE and Semidi)	combined	122 000	July 1 Oct 2
M AK Peninsula	0 200 000	60 000	July 1 Sept 19
O Dutch Harbor	0 110 000	44 000	July 1 open
Q Bering Sea	0 400 000	93 000	July 1 Sept 1
R Adak	0 75 000	0	July 1 open
TOTAL	0 1 390 000	810 000	

1 3 3 Federal Involvement in the Scallop Fishery

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 the weathervane scallop fishery 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 In 1993 ADF&G instituted management measures to control harvest and prevent overfishing However the state s limited access program was permit based (individual permits) and the likely number of qualifiers was much too high to assure net profits for active participants So limited access measures were not implemented by the State at that time

At its January 1993 meeting the Council determined that the scallop fishery may require Federal management to protect the fishery from 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 The Council requested NMFS to publish a control date of April 24 1994 after which scallop harvests made in the Alaska EEZ may not apply as catch history for purposes of any future IFQ or licenses in anticipation of a future limited access program for this fishery The control date notice was published in the Federal Register on June 15 1994 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 continued to fish for scallops in Federal waters of the Prince William Sound management area waters that had already been 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 teleconference to address concerns about uncontrolled fishing for scallops in Federal waters by one vessel 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 Amendment 1 established a joint State Federal management regime under which NMFS has implemented Federal management measures to parallel most State management measures Under Amendment 1 Federal regulations were established to duplicate existing State regulations

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

Amendment 3 Delegate Management to State. On June 19 1998 NMFS approved Amendment 3 to the FMP which delegates to the State authority to manage all aspects of the scallop fishery in Federal waters off Alaska except limited access Under this amendment, limited access management remained a Federal responsibility under the FMP The authority to manage all other aspects of the scallop fishery was delegated to the State under the FMP including the authority to regulate any vessels not registered under the laws of the State Two categories of management measures were thus established. Limited access measures were designated as Category 1 measures Such measures would be fixed in the FMP reserved for Federal implementation and would require an FMP amendment to change All other management measures were designated as Category 2 measures and were delegated to the State for implementation.

Amendment 4 (Proposed License Limitation Program) The Council first began discussing the possibility of a license program for the scallop fishery in 1993 when they reviewed the first analysis of an FMP and a federal vessel moratorium for this fishery It was noted that the moratorium was an interim step to be followed by a future rationalization of the scallop fishery via ITQs or an LLP In December 1996 the Council adopted for analysis a proposal from the Kodiak Fish Company which contained options for analysis of an LLP for the scallop fishery The Council notified the public in their newsletter that a scallop license limitation system was being analyzed. The proposal was further discussed at the September 1997 and December 1997 meetings In December 1997 the Council added for analysis options for eligibility to include state moratorium qualifiers and participants that made landings in 1996 and 1997 In February 1998 the Council developed a problem statement and refined the set of alternatives and options for analysis (these were Alternatives 1-4) In October 1998 the Council made an initial review of the scallop license limitation analysis and added Alternatives 5 6

At its February 1999 meeting the Council adopted a preferred alternative and options for an LLP for the Alaska scallop fishery If approved, this program will supersede the existing federal scallop vessel moratorium that is scheduled to expire in 2000 The Council adopted Alternative 6 of the analysis which will limit the fishery to a total of 9 licenses Only those holders of moratorium permits that made legal landings of scallops from a vessel in two of the three years 1996 1997 or 1998 (through October 9) will receive a license The Council further adopted several options from the analysis including option 1C(1) and a modified option 2d, which specify license restrictions and limits on vessel replacement size All licenses will be statewide but license holders who never made a legal landing of scallops from outside Cook Inlet during the recent qualifying period would be restricted to a single 6 ft dredge in all areas Maximum vessel length will be restricted to 100% of the LOA on February 8 1999 of the longest vessel used to make legal landings during the recent qualifying period. Licenses would be issued to those who held the moratorium permit for the qualifying vessel on February 8 1999 The Council considered the issue of excessive shares and recommended that no person (as defined under the Magnuson Act) can control or own more than 2 scallop licenses Similar to the rules adopted for the halibut and sablefish ITQ program, persons who hold more than 2 licenses (based on qualified vessels as of February 8 1999) would have grandfather rights but these rights would be extinguished if corporation structure is changed.

Amendments 5 and 6 (Essential Fish Habitat and Overfishing Definitions) In June 1998 the Council adopted preferred alternatives for amending the scallop FMP to meet Magnuson-Stevens Act requirements Amendment 5 defined and described essential fish habitat for scallops and was approved by NMFS (64 FR 20216 April 26 1999) Amendment 6 revised definitions of overfishing and optimum yield (OY) and provided new definitions for maximum sustainable yield (MSY) and minimum stock size threshold (MSST) for Alaska weathervane scallops Amendment 6 was approved by NMFS on March 3, 1999 (64 FR 11390) Amendment 6 reduces OY to a maximum of 1 24 million pounds establishes MSY at 1 24 million pounds and establishes overfishing rates ($F_{OFL}=F_{msy}=M=0$ 13) for weathervane scallops OY MSY and overfishing were not established for pink, spiny or rock scallops as these are undeveloped fisheries that are managed through ADF&G via special permit

1 3 4 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 The full text of the State s scallop vessel moratorium is included as Appendix A Table 1 3 1 provides a comparison of the State and Federal scallop vessel moratorium programs Table 1 3 2 lists the vessels qualified under the State and Federal moratorium.

1 3 5 Recent U S Law The American Fisheries Act (AFA)

There is one issue for the Scallop fishery related to the American Fisheries Act (Division C Title II of P L 105 277) which went into effect in 1998 The American Fisheries Act establishes limitations on the pollock fisheries and delegates the Council to establish sideboards for pollock boats in other fisheries Specific language from the Act states By not later than July 1 1999 the North Pacific Council shall recommend for approval by the Secretary conservation and management measures to (A) prevent the catcher vessels eligible under subsections (a) (b) and (c) of section 208 from exceeding in the aggregate the traditional harvest levels of such vessels in other fisheries under the authority of the North Pacific Council as a result of fishery cooperatives in the directed pollock fishery (AFA 211(c)(1)(A))

The F/V FORUM STAR is one of the offshore pollock catcher boats that fall under this provision The Council/NMFS/ADF&G will need to restrict this vessel s harvest of scallops to its traditional harvest levels That restriction could be written into a LLP permit issued for this vessel Management of this vessel s catch and bycatch limits would be reasonably within the delegated authority of the State however implementation of these limits has not as yet been determined.

In February 1999 the Council adopted final alternatives for defining traditional harvest level for fisheries under the American Fisheries Act Measures which would restrict pollock co op vessels to their aggregate traditional harvest in the scallop fishery in the years 1996 and 1997 or 1997 only Suboptions being considered would limit the F/V Forum Star s catch based on a percentage of the statewide catch or based on a percentage of the crab bycatch limits

1 3 6 Fisheries Impact Statement

Section 303(a)(9) of the Magnuson Stevens Act provides that an FMP or FMP amendment submitted to the Secretary for approval shall include a fishery impact statement (FIS) which will assess specify and describe the likely effects of the proposed conservation and management measures on participants in the affected

fisheries and participants in fisheries in adjacent areas Economic impacts of the LLP on the scallop fishery are further discussed in sections 3 0 and 4 0

The LLP will place limitations on current participants in the affected fisheries First, current participants in the Cook Inlet fishery will be limited to deploying a single 6 ft dredge in all waters Second, vessel replacements and upgrades will be limited by the maximum length overall (MLOA) specified on the license Third, and most importantly current participants will have to meet the specific eligibility criteria of the LLP to receive a license authorizing participation in the scallop fishery

Although the LLP will exclude some current participants who did not fish during the qualifying period, these excluded persons can gain access to the affected fisheries by obtaining a license through transfer Also the GHLs for the affected fisheries are not expected to change based on implementation of the LLP Nor will the implementation of the LLP affect fishery product flow total revenues derived from the affected fisheries or regional distribution of vessel ownership The LLP will ameliorate, but not totally eliminate, overcapacity overcapitalization, and vessel safety concerns perpetuated under status quo management

Due to the geographical location of the affected fisheries no adjacent areas under the authority of other Regional Fishery Management Councils However participants in fisheries in other areas could face increased pressures from new entrants excluded from the affected fisheries This increased pressure is expected to be nominal in any case, because of the increasingly small number of open access scallop fisheries available in the EEZ off the coast of the U S In fact, the LLP is intended to prevent just the opposite effect i e a surge of new entrants to the scallop fisheries in the EEZ off Alaska from among those persons that have been excluded from fisheries in the EEZ off the coast of the contiguous U S

Table 1 3 1 Comparison of Federal and State scallop vessel moratorium programs

	Federal Moratorium	*State Moratorium*
Moratorium period	July 1 1997 June 30 2000	July 1 1997 June 30 2001
Qualifying Criteria	A vessel must have made a legal landing of scallops from any waters off Alaska during 1991 1992 or 1993 or during at least 4 separate years from 1980 through 1990	Statewide A vessel must have landed at least 1 000 lbs of scallops from statewide waters during 1995 or 1996 and during each of at least 4 years between 1984 and 1996 inclusive Cook Inlet A vessel must have landed at least 1 000 lbs of scallops from Cook Inlet during 1994 or 1996 and during each of at least 3 years between 1984 and 1996 inclusive
Area endorsements	Separate endorsements are needed for Area H (Cook Inlet) and statewide waters outside Area H. Once a vessel meets the qualifying criteria for a moratorium permit, a single legal landing of scallops from an area during the qualifying period is required to receive an endorsement for that area	Separate permits are required for Area H (Cook Inlet) and statewide waters outside Area H. A vessel must meet the qualifying criteria in each area to receive a permit for that area
Vessel reconstruction	Vessels may be reconstructed or lengthened however length may not exceed a maximum length overall (LOA) of 1 2 times the length of the vessel on January 23 1993 This maximum LOA will be listed on all moratorium permits	No limits on vessel lengthening or reconstruction
Vessel replacement	A permit holder may use a moratorium permit on any vessel that does not exceed maximum LOA listed on the permit	A vessel owner may transfer a moratorium permit to another vessel that does not exceed the LOA or horsepower rating of the originally permitted vessel
Permit transfers	Moratorium permits may be transferred to any person and used on any vessel not exceeding the maximum LOA listed on the permit	Except as provided for under vessel replacement permits may not be transferred to a new owner except through sale of the permitted vessel
Qualifying recipient	In the case of multiple owners of a single vessel the moratorium permit will be issued to the most recent owner of the vessel who made a qualifying landing during the moratorium period such that each vessel generates only one permit	Permits are issued to the current owner of a qualifying vessel However a vessel owner who does not own a vessel that qualifies for a moratorium permit may receive a moratorium permit if he owned two or more vessels whose combined participation in the scallop fishery would satisfy qualifying criteria In such a case the moratorium permit would be issued to the last vessel that made qualifying landings
Fees	none	Annual fee of $1000 per permit

Table 1 3 2 Scallop vessels qualifying for moratorium permits under the Federal and State Vessel Moratorium Programs (preliminary)[1]

Vessel Name	Federal Moratorium		State Moratorium	
	Statewide	Cook Inlet	Statewide	Cook Inlet
ALASKA BEAUTY		Y	Y	Y
ARCTIC QUEEN (Formerly the JACQUELINE & JOSEPH)	Y		Y	
SEAWIND (formerly the ARCTIC ROSE)	Y			
CAROLINA BOY	Y		Y	
CAROLINA GIRL II	Y		Y	
FORTUNE HUNTER	Y			
FORUM STAR	Y			
KILKENNY		Y		
LA BRISA[2]			Y	Y
LORRAINE CAROL	Y			
MISTER BIG	Y			
NORTHERN EXPLORER		Y	Y	Y
OCEAN HUNTER	Y			
PHOENIX	Y			
PROVIDER	Y		Y	
PURSUIT	Y		Y	
RUSH	Y		Y	
TRADE WIND	Y		Y	
MIRANDA ROSE (Formerly named WAYWARD WIND)[2]	Y	Y		

[1]This list should be considered preliminary Eligibility was determined using the State s fish ticket files according to the eligibility criteria established for each moratorium program Additional vessels could be eligible if it is determined through adjudicatory hearings that the fish ticket records do not accurately represent a vessel s participation history in the scallop fishery

[2]The owner of the LA BRISA also owned the MIRANDA ROSE Both vessels participated in the scallop fishery Under the State moratorium program the combined participation of both vessels qualifies the last vessel fished, the LA BRISA, for a State moratorium permit Under the Federal moratorium program the MIRANDA ROSE qualifies for a moratorium permit but not the LA BRISA which entered the scallop fishery after the end of the qualifying period for the Federal moratorium As a result the vessel owner is eligible for one moratorium permit under either moratorium program

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

For general information about the environmental effects of fishing refer to the SEIS (NMFS 1998a) which analyzed the effects of groundfish fisheries in the EEZ and displayed fishery induced impacts on all aspects of the ecosystem NMFS notes that in a July 8 1999 order amended on July 13 1999 the court in Greenpeace, et al , v NMFS et al , Civ No 98 0492 (W D Wash) held that the SEIS did not adequately address aspects of the GOA and BSAI groundfish fishery management plans other than TAC setting and therefore was insufficient in scope under NEPA In response to the Courts order NMFS currently is preparing a programmatic SEIS for the GOA and BSAI groundfish fishery management plans

The scallop fisheries occur in the Bering Sea and in the Gulf of Alaska in the regions around Kodiak and Yakatat Descriptions of the affected environment are given in the SEIS for the groundfish fisheries (NMFS 1998) Substrate is described at section 3 1 1 water column at 3 1 3 temperature and nutrient regimes at 3 1 4 currents at 3 1 5 marine mammals at 3 4 seabirds at 3 5 benthic infauna and epifauna at 3 6 prohibited species at 3 7 and the socioeconomic environment at 3 10 A summary and analysis of onboard observer collected data for the statewide commercial weathervane scallop fishery is published annually as Regional Information Reports by ADF&G These reports detail the catch and effort of the scallop fishery and the scallop fishery bycatch estimates by species

2 1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish and invertebrate stocks which may result in changes in food availability to predators and scavengers changes in the population structure of target fish and invertebrate 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 These effects are not likely to be substantial however because the scallop fisheries in Alaska are small in area relative to the total benthic ecosystem, compressed in time and contribute insignificantly

to the total bycatch of crabs off Alaska In addition, the alternatives under consideration are not expected to change the manner in which the scallop fishery currently is conducted in the Federal waters off Alaska This is because the number of potential participants in the fishery will not affect the amount of scallops harvested which is controlled by an overall catch limit or the timing of the harvest or location of the harvests which are controlled by management measures implemented by the State

2 2 Habitat Impacts

Inclusively all the marine waters and benthic substrates in the management areas comprise the habitat of all marine species Additionally the adjacent marine waters outside the EEZ adjacent State waters inside the EEZ, shoreline freshwater inflows and atmosphere above the waters constitutes habitat for prey species other life stages and species that move in and out of, or interact with, the fisheries target species marine mammals seabirds and the ESA listed species

This section contains analyses of potential fishing gear impacts on benthic substrate attributable to the scallop fishery The habitat impacts of the scallop fishery will not change due to this proposed action because the proposed action does not increase the amount of scallops harvested or change the location or timing of the fishery The proposed action would limit the number of vessels in the fishing fleet to about the same number of vessels that have fished for scallops in the last three years Summaries and assessments of habitat information for scallops are provided in the 1997 Essential Fish Habitat Assessment Report (available from the NPFMC)

2 2 1 Direct impacts of fishing gear

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) It has been estimated that up to 133 square nautical miles of ocean bottom area were dredged for Alaskan scallops in 1996 (Barnhart and Sagalkin 1998) Like trawl gear scallop dredges may have some potential to affect adversely other organisms comprising benthic communities 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 that these disturbances and damages have on the affected species or their local communities only minor impacts are suspected. '

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 *Stronylocentrotus 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 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 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 This Amendment, however, only limits the number of participants in the scallop fishery

2 2 2 Impacts on Critical Habitat

No evidence suggests that the licence limitation program impacts critical habitat

2 2 3 Impacts on Essential Fish Habitat

Section 303(a)(7) of the Magnuson-Stevens Act requires all FMPs to describe and identify EFH which it defines as those waters and substrate necessary to fish for spawning breeding, feeding or growth to maturity In addition, FMPs must minimize effects on EFH caused by fishing and identify other actions to conserve and enhance EFH These EFH requirements are detailed in Amendment 5 to the FMP for the Scallop Fishery off Alaska and the accompanying Environmental Assessment (available from NMFS)

The scallop fishery occurs from the Bering Sea to Yakatat in the Gulf of Alaska concentrating in the regions around Kodiak and Yakatat All managed species and their identified EFH under each of the Council s five FMPs are located within the area affected by this action. No evidence suggests that the scallop fishery impacts the EFH of salmon. The scallop fishery does not occur on any areas designated as Habitat Areas of Particular Concern (HAPC)

This proposed action will not change the location of the scallop fishery or increase the amount of scallops harvested. The location of the fishery is determined by the location of the scallop resource which is not randomly distributed. The State of Alaska determines the guideline harvest level (GHL) which is the amount of scallops harvested, by scallop abundance estimates The State apportions the GHL by scallop management area The LLP which limits the number of participants in the fishery will not change the GHL setting process or how it is apportioned by area Nor with the LLP change the existing scallop management areas or the location of the scallop beds Less vessels in the fishery will mean each vessel will harvest more of the overall catch limit on average than with more vessels in the fishery License limitation systems define the group of persons or vessels that are permitted to capture as much of the catch limit as possible before it is reached and the fishery is closed.

The action proposed by this regulatory amendment will not increase the amount of harvest the intensity of harvest or the location of harvest therefore this action is presumed not to increase the impacts of the fishery to EFH In fact by reducing the number and limiting the size of vessels that participate in the fishery the LLP is presumed to decrease the intensity of the fishery and thus decrease the impacts of the scallop fishery on EFH Based on the above this action in the context of the fishery as a whole will not adverse affect EFH for species managed under the five North Pacific FMPs As a result of this determination, an EFH consultation is not required.

2 3 Potential Impacts on Bycatch of Non target Species

Because the effects of the alternatives primarily are focused on the variable potential profitability of the fishery as a whole the environmental impacts of the alternatives are not expected to differ from the status quo 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 The scallop LLP will not change the State of Alaska s existing bycatch control measures that limit the amount of bycatch in the scallop fishery nor will the LLP change the existing scallop observer program which monitors the amount of bycatch of non target species in the scallop fishery

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 1996 ADF&G observer program (Barnhart and Sagalkin 1998) Over 300 days of scallop dredging were observed from five different vessels By weight, the catch consisted primarily of weathervane scallops in all management districts Catch of starfish and shells were also common in the Gulf of Alaska, and C opilio were taken in the Bering Sea Flatfish and other invertebrate species comprised the remaining bycatch. No salmon bycatch was reported. Total bycatch of prohibited species statewide included 106 935 opilio, 91 137 bairdi, 5 619 dungeness crab 9 king crab and 1 088 halibut Most of the halibut were observed to be in excellent or good condition, but about 27 percent were classified as in poor or dead condition. Tanner crab (C bairdi and C opilio) had a mortality rate of 22 4 percent

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 (Hammarstom 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 (Hammarstom 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 Dingiess 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) Although these absolute numbers of crabs taken as bycatch in the scallop fishery may appear large, compared to the total Tanner crab population (estimated from the 1993 survey at about 255 million) the 1993 bycatch amounted to about 0 1 percent of the population. 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 Hence, the effect of the scallop fishery on crab populations is likely to be insignificant Because none of the alternatives are likely to affect fishing behavior in the scallop fishery the environmental impacts on principal bycatch species is likely to be insignificant

2 4 Endangered Species Act

The Endangered Species Act of 1973 as amended [16 U S C 1531 *et seq* ESA] provides for the conservation of endangered and threatened species of fish, wildlife and plants The program is administered jointly by the NMFS for most marine mammal species marine and anadromous fish species and marine plants species and by the USFWS for bird species and terrestrial and freshwater wildlife and plant species

The designation of an ESA listed species is based on the biological health of that species' The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U S C § 1532(20)] Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U S C § 1532(20)] Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS is authorized to list marine fish, plants and mammals (except for walrus and sea otter) and anadromous fish species The Secretary of the Interior acting through the USFWS is authorized to list walrus and sea otter seabirds terrestrial plants and wildlife and freshwater fish and plant species

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the maximum extent prudent and determinable [16 U S C § 1533(b)(1)(A)] The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration Federal agencies are prohibited from undertaking actions that destroy or adversely modify designated critical habitat Some species primarily the cetaceans which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA have not received critical habitat designations

2 5 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

Common Name	Scientific Name	ESA Status
Northern Right Whale	*Balaena glacialis*	Endangered
Bowhead Whale [1]	*Balaena mysticetus*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Onchorynchus nerka*	Endangered
Short tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [2]
Snake River Fall Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Onchorynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Onchorynchus mykiss*	Endangered
Snake River Basin Steelhead	*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Steller Eider	*Polysticta stelleri*	Threatened

[1] The bowhead whale is present in the Bering Sea area only

[2] Steller sea lion are listed as endangered west of Cape Suckling and threatened east of Cape Suckling

The scallop fishery off Alaska (which consists of a small 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 previous consultations for the groundfish fisheries There has never been an assumption that there is an effect therefore there has never been a consultation for the FMP for the Scallop Fishery off Alaska 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

Section 7 consultations with respect to actions of the federal groundfish fisheries have been done for all the species listed in above either individually or in groups See section 3 8 of the SEIS (NMFS 1998a) for summaries of section 7 consultations done prior to December 1998 Consultations completed since publication of the SEIS are summarized in the EA for the interim and final groundfish harvest specifications for 2000 Also each species has been considered for re initiated consultation with respect to the year 2000 specifications and reinitiated consultations are underway for Steller sea lion and the 12 evolutionarily significant units of Pacific salmon and steelhead

2 6 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 likely will affect the continued existence of listed species of Pacific salmon, or result in disturbance or adverse modification of critical salmon habitat

2 7 Potential Impacts on Seabirds

Many seabirds occur in Alaskan waters indicating a potential for interaction with scallop fisheries The most numerous seabirds in Alaska are northern fulmars storm petrels kittiwakes murres auklets 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 the 1998 FSEIS for the Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits Under the Authority of the Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska (NMFS 1998)

Since 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 likely will affect endangered or threatened seabirds or their critical habitat

2 8 Potential Impacts on Marine Mammals

The scallop fishery in the EEZ of Alaska is classified as Category III fishery under the Marine Mammal Protection Act A fishery that interacts only with non strategic stocks and whose level of take has insignificant impact on the stocks is placed in Category III An observer program is in place for the scallop fisheries No takes of marine mammals by the scallop fishery off Alaska have been reported.

2 9 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 10 Social and Economic Impacts

The social and economic impacts of each of the alternatives are analyzed in Section 3 0 (pp 26 40) and Section 4 0 (pp 42 49) of this document and are considered part of the determination under NEPA

Although social and economic impacts of the alternatives must be considered under NEPA, a decision of whether the preferred alternative will have a significant affect on the quality of the human environment is not solely based on those factors Therefore a determination that an action is expected to have a significant

economic impact on a substantial number of small entities under the standards found in the Regulatory Flexibility Act (RFA) does not necessarily mean that the action would have a significant affect on the quality of the human environment The universe of affect entities under RFA is often much smaller than the human environment that must be considered under NEPA. Also the significant factors that must be considered under the RFA are different Although a determination that an action is expected to have a significant economic impact on a substantial number of small entities may contribute to a determination that an action would have a significant affect on the quality of the human environment, the second determination does not automatically follow the first Consideration is given to all factors analyzed throughout the entire document including sections that address environmental social and economic impacts before a decision is reached on whether an action would have a significant affect on the quality of the human environment

4 11 Finding of No Significant Impact

For the reasons discussed above implementation of any one of the alternatives to the status quo for Amendment 4 to the Scallop FMP 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

Assistant Administrator for Fisheries NOAA

6/8/00
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

The Council adopted the following problem statement at its February 1998 meeting with subsequent revisions The Council is dealing with a sensitive resource and overcapitalized fishery In 1993 the Council determined, through the moratorium, that unrestricted access to the fishery can be harmful to the resource and cause net loss to the nation. With the moratorium set to expire the number of latent permits in existence

which if activated, would exacerbate the problem. Additional participation or increased harvesting capacity may impose significant economic hardship to current participants

The management objective of the scallop LLP is to reduce overcapitalization by limiting the number of vessels in the scallop fishery. The LLP would replace the existing Federal vessel moratorium program, which is scheduled to expire on June 30, 2000. Each of the proposed alternatives except status quo would limit the number of vessels participating in the fishery based on past fishing history during the historical qualifying period and the recent qualifying period.

A system for limiting access, which is an optional measure under section 303(b) of the Magnuson Stevens Act, is a type of allocation of fishing privileges that may be used to promote economic efficiency or conservation. For example, *limited access may be used to combat overfishing, overcrowding or overcapitalization in a fishery to achieve OY* (50 CFR 600.330(c)). The Magnuson Stevens Act (Section 3(28)) further defines. The optimum with respect to the yield from a fishery means the amount of fish -- (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (B) is prescribed on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant social, economic or ecological factor; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

Section 303(b)(6) of the Magnuson Stevens Act provides authority to limit access to a fishery ' to achieve optimum yield if, in developing such a system, the Council and Secretary take into account

A. present participation in the fishery;
B. historical fishing practices in, and dependence on, the fishery;
C. the economics of the fishery;
D. the capability of fishing vessels used in the fishery to engage in other fisheries;
E. the cultural and social framework relevant to the fishery, and,
F. any other relevant considerations.

3.1 Break Even Analysis

A break even analysis for an individual fishing vessel provides an estimate of the scallop harvest necessary to cover annual operating (variable) and fixed costs. Information about the operating and fixed costs for vessels in the scallop fleet has not been readily available, but owners of seven vessels volunteered cost data for their operations as part of their public testimony to the Council in 1994 (see table below). These vessels represent the approximate average size of all vessels participating in the 1993 statewide fishery.

Annual operating costs (crew shares, fuel, food, etc.) for all vessels were estimated to be about 59 percent of the gross revenues and fish taxes about 3 to 4 percent of gross revenues. Fixed costs however are likely to vary considerably from one vessel to the next depending primarily on the amount of repair and supplies

Available cost data for the scallop fleet, 1993, submitted by industry participants during public testimony. Note: all of these vessels participated in statewide areas.

Vessel length	Operating Costs	Fish Taxes	Fixed Costs	Exvessel price / lb	Breakeven income	Breakeven landings
114	61%	3.85%	$ 507,310	$ 4.76	$ 1,443,272	303,208
97	56%	3.85%	$ 276,191	$ 4.76	$ 696,573	146,339
88	57%	3.30%	$ 285,300	$ 6.60	$ 718,640	108,885
88	57%	3.30%	$ 285,300	$ 6.60	$ 718,640	108,885
98	60%	1.25%	$ 278,424	$ 6.14	$ 704,761	114,782
96	60%	n/a	$ 214,850	$ 6.65	$ 742,125	111,597
96	60%	n/a	$ 207,250	$ 6.65	$ 745,625	112,124
Ave	59%		$ 293,518	$ 6.02	$ 824,234	143,689

required, and mortgage and insurance costs It is interesting to note that the average price reported by industry ($ 6 02/lb) is considerably more than the average reported on fish tickets ($ 5 00/lb) in 1993

More recent data submitted by the scallop fleet, 1998

Vessel name	Operating Costs	Fish Taxes	Fixed Costs	Exvessel price / lb	Breakeven income	Breakeven landings
N Explorer	55%	5 0%	$94 000	$7 00	$ 235 000	33,570
Arctic Queen	na	na	na	$ 6 75	$ 667 937	98 953
Carolina Boy	na	na	na	$ 6 75	$ 667 937	98 953
Carolina Girl	na	na	na	$ 6 75	$ 667 937	98 953
Provider	63%	1 30%	$466 094	$ 6 25	$ 1 305,585	208 894
Pursuit	60%	1 30%	$390 432	$ 6 25	$ 1 008 868	161 419

More recent data voluntarily submitted as public testimony by the fleet indicates slightly higher ex vessel prices for scallops in 1998 Also for the first time data from a slightly smaller vessel (about 70') the F/V Northern Explorer was submitted.

The number of vessels that will break even in the fishery depends on two primary factors which are the exvessel price paid for scallops and the total landings Industry sources have indicated that price may vary from vessel to vessel depending on processing methods area of harvest, and market arrangements Exvessel prices received in 1993 ranged from $4 76 to $6 65 per pound (average = $6 02)of shucked meat These prices were higher than the historically paid for Alaskan scallops but generally lower than observed in 1996 and 1997 fisheries

Based on the above information, it was estimated that about nine vessels would be able to operate full time at the break even level, assuming total landings of 1 3 million pounds at $6 02 per pound. The break even calculation was as follows # vessels = landings*price/$824 234 Fewer vessels would break even if quotas (landings) or price was reduced. Alternatively more vessels would break even if quotas or price increased. For example if future exvessel prices were in the order of $8 00 per pound or more several more vessels could operate at a breakeven level assuming total landings and costs remained constant

Number of vessels that could breakeven under various combinations of average price and total landings of scallops in the Alaska statewide scallop fishery

	Landings (lbs)			
Price ($)	600 000	800 000	1 000 000	1 200 000
5 00	3 6	4 9	6 1	7 3
5 50	4 0	5 3	6 7	8 0
6 00	4 4	5 8	7 3	8 7
6 50	4 7	6 3	7 9	9 5
7 00	5 1	6 8	8 5	10 2
7 50	5 5	7 3	9 1	10 9
8 00	5 8	7 8	9 7	11 6

As it turns out, recent landings have been lower than previously projected. Statewide landings (not including Cook Inlet) averaged **735,000 pounds** during 1996 97 Average price during the same period was approximately **$ 6 50 /lb** Based on this more recent information approximately 6 vessels could participate full time in the Alaska statewide scallop fishery (not including the 3 Cook Inlet vessels) at a break even level As shown in the adjacent table 800 000 pounds landed at $6 50/lb would result in 6 3 vessels breaking even. As previously stated, more vessels could break even if price or landings increased Preliminary information indicates that about 810 000 pounds will be landed in the 1998 statewide fishery (J Barnhart pers comm. 11/20/98)

ADF&G is proposing changes to crab bycatch limits for Bering Sea scallop fisheries that could allow for higher landings in future years (Al Spalinger pers comm. 12/1/98) The approach being considered would establish an overall bycatch limit of 260 000 *C bairdi* 300 000 other Tanner (i e opilio and hybrid) crabs and 5 000 red king crabs for the Bering Sea scallop fishery If any of the crab stocks are below its minimum stock size threshold, the PSC limits would be reduced by 50% If the stock was at such a low level that no directed crab fishery was allowed, PSC limits would be reduced by 75% Based on this formula 1999 crab bycatch limits would be 65 000 *C bairdi* 300 000 other Tanner (i e opilio and hybrid) crabs and 5 000

red king crabs Under the increase in opilio PSC total scallop landings from the Bering Sea would be expected to increase from 93 000 pounds (1998) to about 140,000 pounds in 1999 (Jeff Barnhart, pers comm. 2/98) **This measure would increase the breakeven point to nearly 7 vessels for the statewide fishery (not including the 3 Cook Inlet vessels)**

Although the information used in this analysis was available for some vessels in the fleet, other analyses suggest that assuming operating costs of about 59 percent of gross revenues is not unreasonable Operating (variable) costs for various types of groundfish trawl and longline catcher/processor vessels were estimated for analysis of cod allocation in the BSAI (Amendment 24 to the BSAI Groundfish FMP NPFMC 1993) Appendix D of that analysis provided the following estimates of operating costs as a percent of gross revenues (1) 41 percent for trawl vessels heading and gutting product, (2) 46 percent for trawl vessels filleting product (3) 51 percent for a large longline catcher/processor and (4) 66 percent for a small longline catcher processor Note that the size distribution of small longline vessels are similar to the sizes of scallop vessels hence supporting operating costs used in this analysis for the scallop fishery

Caution should be exercised in interpreting the reported break even analyses The conclusions drawn from these analyses are contingent on the assumption that the operating cost structure and the annual round of activity are identical for all current or potential participants Break even analyses should not be confused with an assessment of changes in net benefits to the nation.

Changes in net benefits to the nation cannot be determined with a gross revenue analysis However given that the total economic value of the scallop fishery in 1996 1997 was approximately $4 777 500 and this action will not eliminate the fishery or even reduce the annual TAC we can conclude that the net benefits to the US economy would not decrease by $100 million annually once costs were included in the calculation. Therefore base on this one criteria, the Council s preferred alternative does not constitute a significant action under E O 12866 recognizing that there may be distributional economic impacts among the various sectors of the industry s affected by this proposed action.

3 2 Overcapitalization

From the perspective of the individual fisherman net returns decline as the vessel s share of the quota decreases due to increased fishing pressure and shorter seasons Capitalization of the fishery continues beyond an efficient level because fishermen do not bear the entire social cost of the fishery resource The resource is owned by the public and although it has some value fishermen are allowed to take the fish for free This encourages capitalization beyond the level of operation that would exist if fishermen had to incur the cost or value society places on the fish Effort continues to increase in the fishery beyond an efficient or profitable fleet size until average net returns reach or fall below zero The cumulative effect is a fleet that dissipates net economic value and perpetuates low incomes in the fishery The overcapitalized fleet also represents an unnecessarily large and unproductive share of the economy s capital investment base This condition of overcapitalization prevents achievement of optimum yield from the fishery to the extent that economic rents are lower than those achievable and overall capital costs in the fishery are higher than required. The status quo will perpetuate these inefficiencies

Options available to vessels that do not qualify under the LLP are limited. Some of the vessels previously harvested scallops in the Atlantic Ocean, and may still qualify to scallop on the east coast Although many scallop vessels could be rigged to fish for groundfish, the opportunities for new vessels to participate in North Pacific fisheries are limited. In 1992 the Council adopted a moratorium on new vessels entering the groundfish and crab fisheries in the North Pacific and the analysis for that moratorium (NPFMC 1992c) details many of the same overcapitalization problems addressed in the analysis for a moratorium for the

scallop fishery (NMFS 1997) An LLP has since been adopted for groundfish and crab fisheries (NPFMC 1994) Beyond existing fisheries under Council management, the opportunities and capabilities of this fleet to engage in other fisheries imply a shift to one of several alternatives (1) State managed fisheries within Alaska (2) state or federally managed fisheries in the U S outside Alaska or (3) high seas or foreign fisheries elsewhere in the world.

Opportunities for new entrants in Alaska state managed fisheries are restricted by the state's limited entry program that covers most of the important commercial fisheries including salmon, sablefish herring, and crab In order to access most of these fisheries new entrants from EEZ fisheries would have to purchase a permit, as well as adopt necessary vessel and gear modifications In the case of salmon, asking prices for permits vary from around $50 000 up to over $250 000 for the most desirable areas Salmon vessels in some areas have been developed to operate in specific regulatory and oceanographic conditions such that halibut or groundfish boats may prove inadequate without modifications The Alaska state fisheries are managed under a limited entry permit system because of existing concerns over excess capacity such that the entry of vessels from Council managed fisheries would require the exit of an existing vessel. In general, there appear to be few if any unexploited opportunities in existing state managed fisheries that are capable of absorbing an influx of new entrants from the EEZ fisheries

Overcapitalization is common in many EEZ fisheries of the United States and many of these fisheries have been subject to limited entry systems A moratorium and effort reduction package was adopted for the East Coast scallop fishery under Amendment #4 of the Atlantic Sea Scallop FMP (NEFMC 1993) That moratorium affects the North Pacific scallop fisheries in two ways First vessels that would not participate under the proposed LLP for the Alaska scallop fishery would not be able to participate in the Atlantic sea scallop fishery unless they had previously fished for sea scallops and met the moratorium qualifying criteria outlined in Amendment 4 Second, vessels that do not qualify to continue scalloping in the Atlantic may look to enter the scallop fishery in Alaska if access remained unrestricted. Under Amendment 4 34 vessels that derived at least 85 percent of their income from sea scallops in 1991 will not qualify under that LLP (Lou Goodreau, NEFMC staff personal communication) It is likely that some of these vessels would participate in the Alaska scallop fishery if access were unrestricted.

Many fisheries in the Pacific Council waters off Washington Oregon and California are already governed by trip limits and fishery managers have recommended that NMFS approve their adoption of a license limitation scheme to restrict further unneeded fishing effort (Pacific Fishery Management Council, 1992) In the Western Pacific waters off Hawaii a moratorium on entry into certain longline fisheries has already been adopted. Although the fleet operating in the Alaska EEZ may have the technical capability to operate in these and other domestic fisheries the real constraint is obtaining access to these already overcapitalized fisheries

Outside domestic waters fishing opportunities are less certain, although it is recognized that excess harvesting capacity exists for many of the world s developed fisheries Following the extension of fisheries jurisdiction in the mid 1970s most coastal nations led by the United States endeavored to claim the economic benefits associated with the marine resources in their exclusive economic zones greatly reducing the opportunities for distant water fleets of some countries As a result access to the coastal waters of foreign nations must be arranged through joint venture arrangements in competition with the distant water fleets of many other nations such as Japan and Korea However the shift to foreign fisheries requires both logistical and diplomatic arrangements that may be beyond the scope of many small boat operators Also opportunities for the Alaska fleet in foreign fisheries likely favor technologically advanced, higher valued vessels not readily available in the host country

In summary the problems associated with excess capacity and overcapitalization cannot be easily overcome by shifting unneeded vessels to other fisheries This is not so much because of an incompatibility of technology as the dilemma of widespread overcapitalization. Efficient, adaptable vessels are capable of shifting to other fisheries and may well enter different fisheries in response to economic efficiency criteria Entrepreneurs may also be capable of finding and competing in a variety of world wide fisheries However overall there is no simple means of shifting excess Alaska EEZ vessels into other fisheries in the current environment, primarily because already there appears to be more than adequate capacity throughout the Alaskan, United States and world fishing industry

3 3 Implementation of a License Limitation Program

Scallop licenses would be issued to moratorium permit holders and would not be vessel specific Any capacity limitations that may apply to a vessel with the license (MLOA) and gear restrictions (number and size of dredges) will be set out on the face of the license The license holder could then use the license on any vessel that does not exceed the capacity and gear and area restrictions The license holder would not be required to be on board the vessel only the license, when it is harvesting scallops

To prepare for implementation of the scallop LLP NMFS (RAM) will assemble an Official Scallop License Limitation Program Record (Official Record) The Official Record will contain as much relevant information as possible on the following

1 Harvest and Landings of scallops including dates locations and amounts
2 Vessels used to harvest and land scallops including (as known) vessel characteristics (LOA, etc) and,
3 Vessel ownership

An LLP application period will be announced in the Federal Register Applications that are submitted during the application period will be processed, those that are not submitted in a timely manner will be denied. In addition to the Federal Register notice current owners of vessel which, according to the Official Record, appear to have been used in a way that entitles those owners to an SLLP permit will receive direct notice of the need to apply all others will be notified through the Federal Register notice and by other forms of public notice including public service announcements press releases etc

Applicants seeking LLP license will have the burden of demonstrating the legitimacy of any claims they make that are contrary to any information compiled in the Official Record. Ample opportunity to perfect those claims (i e to supply evidence in support of them) will be provided Those whose claims can not be verified will receive an Initial Administrative Determination (IAD) prepared by RAM, and an applicant disadvantaged by an IAD will have the opportunity to appeal it to the NMFS Office of Administrative Appeals Issuance of an interim license during the pendency of the appeals process will be at the discretion of the RAM Administrator (though a decision to deny an interim permit can also give rise to an appeal)

Licenses under the LLP will be initially issued only to persons who held, on February 8 1999(the date of Council action) either a State or Federal moratorium permit and who used the permit to make legal landings of scallops in the qualification period Licenses will not be issued to those who may have contracted to purchase the fishing rights or fishing history associated with a qualifying vessel nor to a person who sold such a vessel but contracted to retain the rights or history

Identification of the license as well as the terms and conditions of its use will be set out on the face of the License Certificate and will include

- the unique license designation (number or letter or combination)
- the name(s) of the license holder
- limitations on vessel and gear authorized to be deployed by the license (e g vessel LOA, number and size of dredges that may be deployed from the vessel etc)

At the time of initial issuance an LLP license will receive a formal permanent designation (i e a number or a letter or a combination of the two) The license will be manifest by a Certificate which will be sent to the license holder Once it has been initially issued, an LLP license, in its entirety (i e including all endorsements and limitations - license attributes would not be severable) may be transferrable Applications for transfers will be submitted on a form prepared by NMFS (RAM) If a transfer application is approved, a new license certificate will be issued in the name of the transferee If a transfer application is denied, the applicant(s) could appeal that determination to the Office of Administrative Appeals

3 4 Economic Impact of the Alternatives

The economic impacts to individual vessels depends on the alternative and option chosen. Alternatives 3-6 to the status quo would have a significant economic impact on a substantial number of small entities because some vessels would not qualify for permits therefore, they would be excluded from the scallop fishery Alternatives 4-6 would have a significant impact on a substantial number of small entities compared to the status quo because at least two of the eighteen vessels currently permitted in the scallop fishery in Federal waters would be eliminated from the fishery because they would not qualify The number of vessels that will be allowed to participate in the scallop fishery will have the largest economic impact More vessels mean less gross revenues for each participant less vessels translates into higher revenues for participating vessels Vessels owners that do not receive a

Table 3.4 1 Vessels making legal landings of scallops in Alaska 1994 1997 based on preliminary CFEC fish ticket data

Area and Vessel	Moratorium qualified	1994	1995	1996	1997	1998
Cook Inlet						
Alaska Beauty	F,S	X		X		
Northern Explorer	F,S	X		X	X	X
Kilkenny	F	X		X	X	
Wayward/LaBrisa	F,S	X				
Willin (state waters)	no	X				
Billy D	no			X[1]		
Trina	no				X[1]	
Outside Cook Inlet						
Pursuit	F S	X	X	X	X	X
Jacqueline & Joseph[2]	F S	X	X			X
Rush	F,S	X	X			
Provider	F S	X	X	X	X	X
Trade Wind	F S	X	X			
Carolina Boy	F S	X	X	X	X	X
Carolina Girl 2	F,S	X	X	X	X	X
Northern Explorer	S		X			X
Ocean Hunter	F	X			X	X
Forum Star	F	X			X	X
Captain Joe	no	X				
Mister Big	F	X				
Lorraine Carol	F	X	X			
Fortune Hunter	F	X	X			
Arctic Rose[2]	F	Did not fish for scallops in these years				
Phoenix	F	Did not fish for scallops in these years				
Wayward Wind	F	(Permit used on other vessels in Cook Inlet)				

[1]The Billy D and Trina fished the Wayward Wind federal moratorium permit
[2]Jacquaeine and Joseph renamed Arctic Queen Arctic Rose renamed Seawind

license would be negatively impacted because they would be required to purchase a license of a qualifying vessel

Because the scallop fishery has been prosecuted by less than 20 vessels in recent years it is easy to display the information on vessel participation, and what vessels would be impacted under the various alternatives The adjacent table shows vessel participation in recent scallop fisheries before and after the federal moratorium (effective July 1997) Since 1997 vessels must have qualified to fish under the Federal or State moratorium (F or S) to legally fish scallops

Table 3.4 2 Vessels that would qualify for licenses under the alternatives, based on preliminary CFEC fish ticket data

vessel Vessel	LOA[1]	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Areas Fished in 1996-98	# of years fished 1980 98
Alaska Beauty	98	yes	yes	yes	yes	NO	Cook Inlet	3
Northern Explorer	70	yes	yes	yes	yes*	yes*	Cook Inlet Statewide in 1998	6
Kilkenny	75	yes	NO	yes	yes	yes	Cook Inlet	4
Wayward Wind	52	yes	yes	yes	yes*	yes*	Cook Inlet w/leased vessel	4+ (see note 3)
Pursuit	101	yes	yes	yes	yes	yes	Statewide	19
Jacqueline&Joseph[2]	96	yes	yes	NO	yes	NO	Statewide in 1998	9
Rush	72	yes	yes	NO	NO	NO	Did not fish for scallops	7
Provider	124	yes	yes	yes	yes	yes	Statewide	10
Trade Wind	88	yes	yes	NO	NO	NO	Did not fish for scallops	4
Carolina Boy	96	yes	yes	yes	yes	yes	Statewide	6
Carolina Girl 2	96	yes	yes	yes	yes	yes	Statewide	6
Ocean Hunter	100	yes	NO	yes	yes	yes	Statewide	10
Forum Star	97	yes	NO	yes	yes	yes	Statewide	5
Mr Big	146	yes	NO	NO	NO	NO	Did not fish for scallops	4
Lorraine Carol	88	yes	NO	NO	NO	NO	Did not fish for scallops	3
Fortune Hunter	82	yes	NO	NO	NO	NO	Permit transferred in 1998	3
Arctic Rose[2]	224	yes	NO	NO	NO	NO	Did not fish for scallops	2
Pheonix	104	yes	NO	NO	NO	NO	Did not fish for scallops	6
TOTAL NUMBER		**18**	**10**	**10**	**11**	**9**		
Option 1A (1) Statewide endorsements		15	10	6	8	7		
Option 1A (1) Cook Inlet endorsements			4	3	4	4	3	
Option 1A (2) Statewide endorsements		15	10	7	9	8		
Option 1A (2) Cook Inlet endorsements			4	3	4	4	3	

Potentially could be endorsed for both statewide and Cook Inlet areas under Option 1A.

[1] LOA (length overall in feet) from moratorium permit or other sources

[2] Jacqueline and Joseph renamed Arctic Queen Arctic Rose renamed Seawind.

[3] Wayward Wind qualified for moratorium with 4 years landings (1983 84 85 87) the permit holder fished the F/V LaBrisa in 1994 and fished the permit on leased vessels (Billy D and Trina) in 1996 and 1997

3 4 1 Alternative 1

Under this alternative the scallop vessel moratorium would expire in 2000 and the fishery would revert back to open access Additional effort and capitol would likely be invested in this fishery This can occur with the addition of more vessels that may be larger or more powerful and other capitol investments Marginal revenues for participating vessels would be reduced with additional effort Shorter seasons and increased

bycatch rates would be expected. Communities would be impacted by shorter seasons, as full time crew jobs would become part time jobs with lower annual pay Returning to an open access fishery may be hard to rationalize from a resource conservation perspective and from the perspective of maintaining an economically viable fishery The limited size of the scallop resource limits the potential economic return in the fishery If the fishery reverts to open access the relatively high value of scallops would likely attract additional vessels into the fishery This would further diminish the ability of vessels and fishers to break-even. The affects of an overcapitalized fishery are discussed in section 3 2

3 4 2 Alternative 2

Under this alternative, vessel owners who qualify for Federal moratorium permits would receive a license A total of 14 licenses would be issued, one for each vessel This alternative would result in the largest number of vessel licenses of the six proposed alternative The breakeven analysis (Section 3 1) clearly demonstrated that the fishery cannot support this many vessels participating on a full time basis The effects of this overcapitalization are the same as would be expected under open access Note that the maximum number of vessels to fish scallops was 18 vessels in 1981 Alternative 2 would not have impacts on individual vessels because all vessels currently participating in the scallop fishery would qualify for licenses under this alternative However Alternative 2 would impact the fleet as a whole because the fishery would continue to be overcapitalized.

3 4 3 Alternative 3

Vessel owners who qualify for State moratorium permits would receive a license Under this alternative, a total of 10 licenses would be issued, one for each vessel The breakeven analysis (Section 3 1) demonstrated that the fishery cannot profitably support this many vessels participating on a full time basis Nevertheless the effects of this overcapitalization would be considerably lessened under this alternative Since a total of 10 licenses would be issued, this alternative would have a significant impact on a substantial number of small entities compared to the status quo There are vessels with long histories of participation in the scallop fishery which are not eligible for the state moratorium. Three of the eighteen vessels that have recently participated in the scallop fishery in Federal waters would be eliminated from the fishery because they would not qualify for the State moratorium (i e these vessels didn t make landings during the State moratorium qualifying years) An additional five vessels are believed to qualify for Federal moratorium permits but have not applied for permits or re entered the fishery since the establishment of the Federal moratorium program in July 1997

3 4 4 Alternative 4

Under this alternative holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in 1996 or 1997 would receive a license The federal or state moratorium qualification period would serve as the historic qualifying period and the years 1996 and 1997 would serve as the recent qualifying period. This alternative would allow a maximum of 10 licenses into the scallop fishery A total of 10 licenses would be issued, therefore 8 vessels would be excluded from the fishery Both state and federal moratorium-qualified vessels could be considered for licenses Some vessels with substantial fishing histories would be excluded.

3 4 5 Alternative 5

Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in 1996 1997 or 1998 (through 10/9/98) would receive a license The federal or state

moratorium qualification period would serve as the historic qualifying period and the years 1996 1997 and 1998 would serve as the recent qualifying period. Under this alternative a total of 11 licenses would be issued, one for each vessel. Alternative 5 excludes fewer vessels with substantial fishing histories in the scallop fishery than Alternatives 4 or 6 The qualifying criteria in Alternative 5 are more encompassing than any of the other alternatives in terms of which vessels may be considered for LLP licenses and the years included in the recent qualifying period. The number of licenses that would be issued under Alternative 5 is only slightly higher that the estimated break even number of vessels and similar to the number of vessels in Alternatives 3 and 4 and the number of vessels currently eligible for the statewide waters moratorium. Alternative 5 provides an opportunity for more scallop vessels to qualify for LLP licenses The trade-off for the more encompassing qualifying criteria is an increase of one additional vessel over the number of vessels eligible under Alternatives 3 and 4 and two additional vessels over the number of vessels eligible under Alternative 6 The additional qualifying vessel under Alternative 5 has a long history of participation, and has demonstrated present participation by making scallop landings in 1998

3 4 6 Alternative 6

Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in two of the three years (1996 1997 1998 through 10/9) would receive a license The federal or state moratorium qualification period would serve as the historic qualifying period and the years 1996 1997 and 1998 would serve as the recent qualifying period. Under this alternative a total of 9 licenses would be issued, one for each vessel The number of licenses estimated for Alternative 6 is exactly the number of vessels estimated in the break even cost analysis (including the Cook Inlet vessels) Alternative 6 would result in the lowest number of licenses of any of the six proposed alternative Requiring two years of participation during the recent qualifying period will exclude some vessels with substantial fishing histories in the scallop fishery Those vessels would not receive LLP licenses because they made scallop landings in only one year during the recent qualifying period. Because there are no minimum standards (pounds or fishing time during a year) for participation during the recent qualifying periods a vessel could meet the recent participation standards by landing very small quantities of scallops Thus vessels with less participation overall could receive licenses because they fished more years during the recent period, while vessels with more substantial fishing histories but only one year of participation during the recent period would not receive permits

3 5 Economic Impact of the Options

The options chosen for Alternatives 2 6 will also have economic impacts on a fleet wide individual vessel, and individual owner level

3 5 1 Option 1 Area Endorsements

There are three options available for area endorsements and they are as follows

A (1) Separate endorsements for Cook Inlet and statewide areas Must have a legal landing of scallops in each area during the recent qualifying period to receive an endorsement in that area

(2) Separate endorsements for Cook Inlet and statewide areas Must have a legal landing of scallops in each area during either the recent or historic qualifying periods to receive an endorsement in that area

B No area endorsement All licenses are statewide

C (1) **(Preferred)** No area endorsements All licenses are statewide However license holders who never made a legal landing of scallops from outside Cook Inlet during

the recent qualifying period would be restricted to a single 6 ft dredge in all areas (e g restricted and unrestricted licenses)

(2) No area endorsements All licenses are statewide However license holders who never made a legal landing of scallops from outside Cook Inlet during either the recent or historic qualifying periods would be restricted to a single 6 ft dredge in all areas (e g restricted and unrestricted licenses)

Option 1 was developed to address concerns about having to separate the scallop fleets inside and outside of Cook Inlet Originally the designation of separate licenses was intended to protect the Homer small boat fleet from competition by larger outside vessels As indicated in public testimony from February 1998 this protection may no longer be necessary Three factors were cited. First, the season opening dates for Yakatat and PWS have been changed from January to July 1 This provides additional fishing opportunities for larger vessels in the summer months The second reason is that Cook Inlet requires the use of a single 6 foot dredge which would not be economical to fish with a larger vessel and an 11 person crew The third reason cited is that the Cook Inlet (Kamishak) quota has remained very small relative to outside areas ranging from 20 000 to 28 000 pounds

Option 1A has economic costs to the handful of vessels that were moratorium qualified for Cook Inlet because it limits their opportunities to catch scallops elsewhere On the other hand, Option 1A has benefits to the vessels that were moratorium qualified to fish outside of Cook Inlet because it reduces their competition for scallop quota The difference between Option 1A(1) and Option 1A(2) is one vessel the F/V Wayward Wind, that fished outside Cook Inlet during the historic qualifying period, but not in the recent qualifying period.

Option 1B has exactly the reverse effect of Option 1A Under Option 1B Cook Inlet vessels would stand to benefit, whereas vessels fishing outside Cook Inlet would be subject to additional competition. Note that three vessels from Cook Inlet would be allowed to fish in outside waters under Option 1B Although these vessels currently fish one 6-foot dredge and carry a small crew (2 5 persons) it is likely that they could fish larger dredges and carry larger crews if they were allowed to fish in other areas of the state

Option 1C is a compromise between having a separate fleet (Option 1A) and a single fleet (Option 1B) Option 1C would allow the Cook Inlet qualified vessels to fish in other areas but would limit these vessels to fishing only one 6 foot dredge Testimony at the February 1998 meeting indicated that this may not be a economically viable option if the restricted vessels were required to carry observer in the statewide areas In other words Option 1C would allow vessels to fish in the outside waters with a gear restriction, but the observer costs would be prohibitive and none of the Cook Inlet vessels would be expected to participate in areas outside Cook Inlet The difference between Option 1C(1) and Option 1C(2) is one vessel the F/V Wayward Wind, that fished outside Cook Inlet during the historic qualifying period, but not in the recent qualifying period. Option 1C(1) would limit this vessel to fishing one 6 foot dredge outside of Cook Inlet

Note that the alternative chosen will also affect the number of vessels allowed to fish in each area (Table 3 4 2) For example the F/V Northern Explorer was an originally qualified vessel for a federal scallop moratorium permit endorsed for fishing inside Cook Inlet (Area H) Mr Bill Kopplin (president of Oceanic Research Services which owns the Northern Explorer) was issued the moratorium permit for this vessel in June of 1997 In June of 1998 RAM approved a transfer of a SMP #SC0024600 (from qualifying vessel Fortune Hunter) which is endorsed for fishing outside cook inlet to Oceanic Research Services Inc (Bill Kopplin) SMP SC0024600 can be used on any vessel with an LOA less than 98 ft (there is no vessel named on an SMP) The permit was used on the Northern Explorer to catch scallops in federal waters in the statewide fishery in 1998 So Alternatives that include 1998 as a qualifying year for the proposed scallop

LLP could potentially increase effort in statewide areas without changing the overall number of licenses issued or the number of vessels involved.

3.5.2 Option 2 Vessel Reconstruction and Replacement

Three options were developed to address the potential for additional capitalization of the fishery through reconstruction and replacement of vessels

- A. No restrictions on reconstruction or replacement
- B Maximum length overall (LOA) would be equal to 120% of the length of the vessel on January 23 1993 (maximum LOA under Federal moratorium)
- C Maximum vessel length would be restricted to 120% of the LOA of the vessel on which the permit was used in 1996 or 1997 on or before December 31 1997 If a permit was used on more than one vessel in 1996 or 1997 maximum LOA would be calculated using the longest vessel
- D **(Preferred)** No increases in vessel length allowed. Maximum vessel length will be restricted to 100% of the LOA of the qualifying vessel on February 8 1999 unless the moratorium permit was used on a longer vessel in the recent qualifying period in which case the license will be limited to 100% of the LOA of the longest vessel used in the recent qualifying period.

Option 2A would allow vessels to be as large as economically viable for this fishery it may also be a safety consideration in some cases as increasing vessel length may increase stability Given the current restrictions on crew size (12 person maximum) dredge size (two 15 foot dredges) and a requirement for manual shucking it is unlikely that many vessels would increase in size Larger vessels have higher operating costs If Cook Inlet vessels were allowed to participate unrestricted in the statewide areas these vessels would be expected to increase in size (to the extent allowed) to handle bigger seas larger gear and bigger crew size Licensed vessels could be lengthened or sponsoned, or an individual license could be transferred to a larger vessel

Both Option 2B and Option 2C address economic concerns by limiting the length of vessels during replacement or reconstruction Only one vessel would be expected to be impacted by the choice of Option 2B or 2C based on public testimony The F/V LaBrisa is currently 72 LOA (Max Hulse, pers comm, 7/7/98) which is more than 120% larger than the vessel (F/V Wayward Wind, 52 LOA) that generated the moratorium permit for this vessel owner (Max Hulse personal communication) Option 2C would allow the owners of the F/V LaBrisa to fish for scallops without having to cut off the bow or replace the vessel with a smaller vessel less than or equal to 62 feet LOA Under Option 2C the owner of the F/V LaBrisa would be issued a permit that would allow up to a 91 vessel to be used (based on leasing the 76 F/V Billy D in 1996) Only one other vessels has been lengthened during the moratorium period (F/V Seawind current and permitted maximum length is 224 LOA)

Option 2D would also address economic concerns by limiting the length of vessels during replacement or reconstruction however it would allow the MLOA specified on the license to be the LOA of the longest vessel used to fish the moratorium permit during the recent qualifying years This would allow vessel owners who fished during the recent qualifying period with a vessel with a greater LOA than specified on their moratorium permit to continue to use the longer vessel However it would not allow any further increase in vessel length

3 6 Magnuson Act Provisions

Section 303(b)(6) of the Magnuson Stevens Act provides authority to limit access to a fishery " to achieve optimum yield if, in developing such a system, the Council and Secretary take into account an number of factors A summary of how the analysis addresses these factors is shown in the following table

A summary checklist of how the analysis meets Section 303(b)(6) of the Magnuson Stevens Act.

Issue that must be considered	Analysis chapter	Summary of Information
A present participation in the fishery	3 4	individual vessel participation shown by year
B historical fishing practices in, and dependence on the fishery	1 3 and 3 4	historical participation from moratorium qualifications. some vessels have a very long history of participation
C the economics of the fishery	1 3 and 3 1	breakeven analysis, price of scallops, landings
D the capability of fishing vessels used in the fishery to engage in other fisheries,	3 2 and Apdx B	most federally managed fisheries have limited access some vessels have groundfish permits
E the cultural and social framework relevant to the fishery and,	1 3	crews dependent on scallop income some crews are flown in from outside but many from local communities.
F any other relevant considerations	all chapters	some vessels sunk, sold, upgraded, leased, or left Alaska. latent permits could enter fishery through transfer to others

3 6 1 Excessive Shares

At the October 1998 Council meeting questions were raised about what would constitute an excessive share for this fishery Note that National Standard 4 says Conservation and management measures shall not discriminate between residents of different states If it becomes necessary to allocate or assign fishing privileges among various US fishermen such allocation shall be

(A) fair and equitable to all such fishermen

(B) reasonably calculated to promote conservation and

(C) carried out in such a manner that no particular individual corporation, or other entity acquires an excessive share of such privileges

The Council final action recommended that no person (as defined under the Magnuson-Stevens Act) can control or own more than 2 scallop licences The 2 license ownership cap is intended to prevent any person from obtaining an excessive share of harvest privileges in the scallop fishery as required by national standard 4 of the Magnuson Stevens Act The Council determined that holding more than 2 scallop LLP licenses would constitute an excessive share in the context of this relatively small fishery

The Council considered the following provision if a person were initially issued more than 2 licenses that person would have grandfather rights to retain licenses in excess of 2 but these rights would be extinguished if the person (a) through transfer drops to 2 or fewer licenses and (b) is a corporation or partnership and the corporate structure is changed. The Council determined that this provision is not necessary because the scallop LLP alternative adopted by the Council precludes any person from receiving more than 2 licenses

When the NPFMC adopted its LLP for groundfish (Amendments 38/40) and crab (Amendment 5) the issue of excessive shares was addressed in the following manner License ownership caps for groundfish were established such that no more than 10 general groundfish licenses may be purchased or controlled by a 'person with grandfather rights to those persons who exceed this limit in the initial allocation. For crab no more than 5 general licenses per person will be allowed, with grandfather provisions to those persons who exceed this limit in the initial allocation The intent of the Council was that this limit is applied to the person as defined under license recipients and is not interpreted to apply to individual owners within corporations or partnerships

3 7 Confidentiality

In October 1998 the Council s Scientific and Statistical Committee noted that confidentiality laws may constrain public access to data relevant to a host of management concerns given the small number of participants in the scallop fishery and potential further consolidation The Committee wondered if it would be possible for scallop fishery participants to waive confidentiality rights as a requirement under the LLP so that data could be more widely accessible for management purposes

Confidentiality was also an issue in the IFQ programs for halibut and sablefish. In those fisheries the State of Alaska s Commercial Fisheries Entry Commission (CFEC) supplied summary data to vessel owners For example if several permit holders fished from a vessel, CFEC aggregated the data for all permit holders on the same vessel, by year species area and week. The vessel owner then had the vessel s history, but could not identify specific landings for individual permit holders

That works until there is a dispute among permit holders and vessel owners Some permit holders claimed there was some implied partnership arrangement between themselves and the vessel owner and believed they were entitled to part of the vessel s history The question then was how to divide landings among the vessel owner and the permit holder In such cases CFEC provided the vessel owner with the names and addresses of the permit holders who fished from the vessel but not individual landings and left it up to the vessel owner to get a confidentiality waiver from the permit holder Sometimes the permit holder waived confidentiality and sometimes they didn t Often, CFEC got stuck in the middle of these disputes between permit holders and vessel owners Permit holders would not waive confidentiality and CFEC couldn t release information to vessel owners without the waiver Confidentiality release forms were supplied by NMFS in application packages for the IFQ programs

More recently the Alaska legislature created a vessel moratorium for scallops in state waters Part of the statute specifically states the commission may release to the owner of a vessel information on the vessel s history of harvests in a fishery that is necessary to apply for a vessel permit CFEC still requires the vessel owner to complete a request form, and verifies the requester is actually the vessel owner CFEC actually had to do this only for one vessel so far In that case the permit holder was the son of the vessel owner and there was no dispute over who should get credit for the landings The son filed a confidentiality waiver even though it was not required under this law The provision for releasing vessel information to the vessel owner sunsets July 1 2001

On the other hand, confidential data does not seem to be an issue for scallop fishery managers Under Amendment 3 the Council deferred management of the scallop fishery to the State Currently State managers don t have any problem looking at the data it is not confidential from them. If confidentiality of data becomes a problem for management of the scallop fishery one approach to obtaining confidential data for management would be to draft up a release form and send it around to the owners and see who sends it back voluntarily Perhaps they will all do it voluntarily All scallop fishery participants testifying to the

Council in October stated that they would waive these confidentiality rights if it meant better management of the fishery The Alaska State regulations regarding confidentiality of fisheries data are excerpted below

SEC 16 05 815 CONFIDENTIAL NATURE OF CERTAIN REPORTS AND RECORDS (a) Except as provided in (b) and (c) of this section records required by regulations of the department concerning the landings of fish shellfish or fishery products and annual statistical reports of buyers and processors required by regulation of the department are confidential and may not be released by the department except as set out in this subsection The department may release the records and reports set out in this subsection to the recipients identified in this subsection if the recipient, other than a recipient under (4) (6) of this subsection agrees to maintain the confidentiality of the records and reports. The department may release

(1) any of its records and reports in the National Marine Fisheries Service and the professional staff of the North Pacific Fishery Management Council as required for preparation land implementation of the fishery management plans of the North Pacific Fishery Management Council within the exclusive economic zone

(2) any of its records and reports to the Department of Revenue and to the Alaska Commercial Fisheries Entry Commission to assist them in carrying out their statutory responsibilities

(3) records or reports of the total value purchased by each buyer to a municipality that levies and collects a tax on fish shellfish or fishery products if the municipality requires records of the landings of fish shellfish or fishery products to be submitted to it for purposes of verification of taxes payable

(4) such records and reports as necessary to be in conformity with a court order

(5) on request, the report of a person to the person whose fishery activity is the subject of the report

(6) fish tickets and fish ticket information to the Division of Fish and Wildlife Protection Department of Public Safety and

(7) fish tickets and fish ticket information regarding halibut to the International Pacific Halibut Commission

(8) any of its records and reports to the child support enforcement agency created in AS 25 27 010 or the child support agency of another state for child support purposes authorized under law

(b) Except as provided in (c) of this section records or reports received by the department which do not identify individual fishermen buyers, or processors or the specific locations where fish have been taken are public information

(c) Crab stock abundance survey information that reveals crab catch by sampling location ins confidential and is not subject to inspection or copying under AS 09 25 010 09 25 120 until the close of the fishing season for which the survey was conducted.

(d) Except as otherwise provided in this section the department shall keep confidential (1) personal information contained in fish and wildlife harvest and usage data and (2) the records of the department that concern (A) telemetry radio frequencies of monitored species (B) denning sites (C) nest locations of raptors that require special attention (D) the specific location of animal capture sites used for wildlife research or management and (E) the specific location of fish and wildlife species The department may release records and information that are kept confidential under this subsection if the release is necessary to comply with a court order if the requestor is a state or federal agency if the requestor is under contract with the state or federal agency to conduct research on a fish or wildlife population or if the requestor has been authorized by the department to perform specific activities and agrees to use the records and information only for purposes as provided under a contract or agreement with the department. After 25 years the records and information that are kept confidential under this subsection become public records subject to inspection and copying under AS 09 25 110 09 25 140 unless the department determines that the release of the records or information may be detrimental to the fish or wildlife population In this subsection personal information has the meaning given in AS 44 99 350

3 8 Compatibility of Federal and State Programs

The Council and Alaska Board of Fisheries have discussed the goal of achieving uniform management and licensing of the scallop fishery in State waters and the adjacent EEZ Limited entry in State waters and the EEZ may be able to be accomplished through a single limited entry program spanning both areas but if that is not possible the State may have to develop a separate but similar limited entry program for the State waters fishery The State will continue to limit effort with the existing vessel moratorium program until an alternative program is established. The State moratorium program is set to expire in 2001

The Commercial Fisheries Entry Commission (CFEC) and the Alaska Department of Law at the direction of the Alaska Legislature are currently drafting a vessel limited entry permit (VPLE) program. This draft legislation was introduced in Legislature in the 1999 session We do not know if or in what form, the Legislature will adopt the VPLE program.

One of the fisheries the VPLE could be useful for is the scallop fishery in state waters CFEC is attempting to build enough flexibility into the VPLE program to allow the State to develop management regimes and limited entry programs in state waters that could be compatible with federal management of fisheries in adjacent waters of the EEZ

4 0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The Regulatory Flexibility Act (RFA) first enacted in 1980 was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes they do not unduly inhibit the ability of small entities to compete The RFA recognizes that the size of a business unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a federal regulation. Major goals of the RFA are (1) to increase agency awareness and understanding of the impact of their regulations on small business (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29 1996 President Clinton signed the Small Business Regulatory Enforcement Fairness Act Among other things the new law amended the RFA to allow judicial review of an agency s compliance with the RFA The 1996 amendments also updated the requirements for a final regulatory flexibility analysis including a description of the steps an agency must take to minimize the significant economic impact on small entities Finally the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency s violation of the RFA

In determining the scope or universe of the entities to be considered in making a significance determination, NMFS generally includes only those entities both large and small that can reasonably be expected to be directly or indirectly affected by the proposed action. If the effects of the rule fall primarily on a distinct segment or portion thereof of the industry (e g user group gear type geographic area) that segment would be considered the universe for the purpose of this criterion.

Currently insufficient quantitative economic information exist on the fishery under review to determine the economic significance of this action In the absence of such quantitative social and economic data a qualitative based Initial Regulatory Flexibility Analysis is conducted below to comply with the RFA

The management objective of the scallop LLP is to reduce overcapitalization by limiting the number of vessels in the scallop fishery The LLP would replace the existing Federal vessel moratorium program, which is scheduled to expire on June 30 2000 Each of the proposed alternatives except status quo would limit the number of vessels participating in the fishery based on past fishing history during the historical qualifying period and the recent qualifying period.

4 1 Requirement to Prepare an IRFA

For each proposed rule NMFS must prepare an initial regulatory flexibility analysis unless we certify that the action is not expected to have a significant economic impact on a substantial number of small entities The central focus of the IRFA should be on the economic impacts of a regulation on small entities and on the alternatives that might minimize the impacts and still accomplish the statutory objectives Under 5 U S C Section 603(b) of the RFA, each IRFA is required to address

A description of the reasons why action by the agency is being considered,

A succinct statement of the objectives of and the legal basis for the proposed rule

- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate)

- A description of the projected reporting recordkeeping and other compliance requirements of the proposed rule including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record,

- An identification, to the extent practicable of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule

- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson Stevens Act and any other applicable statutes and that would minimize any significant economic impact of the proposed rule on small entities Consistent with the stated objectives of applicable statutes the analysis shall discuss significant alternatives such as

  1 The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities

  2 The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities

  3 The use of performance rather than design standards

  4 An exemption from coverage of the rule or any part thereof for such small entities

4 2 What is a Small Entity?

The RFA recognizes and defines three kinds of small entities (1) small businesses (2) small non profit organizations and (3) and small government jurisdictions

Small businesses Section 601(3) of the RFA defines a small business as having the same meaning as small business concern which is defined under Section 3 of the Small Business Act Small business or small business concern includes any firm that is independently owned and operated and not dominate in its field of operation The SBA has further defined a small business concern as one organized for profit with a place of business located in the United States and which operates primarily within the United States or which makes a significant contribution to the U S economy through payment of taxes or use of American products materials or labor A small business concern may be in the legal form of an individual proprietorship partnership limited liability company corporation joint venture, association, trust or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture

The SBA has established size criteria for all major industry sectors in the US including fish harvesting and fish processing businesses A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $ 3 million for all its affiliated operations worldwide A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full time part time temporary or other basis at all its affiliated operations worldwide A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3 million criterion for fish harvesting operations Finally a wholesale business

servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full time part time temporary or other basis at all its affiliated operations worldwide

The SBA has established 'principles of affiliation to determine whether a business concern is independently owned and operated In general business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both The SBA considers factors such as ownership management previous relationships with or ties to another concern, and contractual relationships in determining whether affiliation exists Individuals or firms that have identical or substantially identical business or economic interests such as family members persons with common investments or firms that are economically dependent through contractual or other relationships are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates regardless of whether the affiliates are organized for profit, in determining the concern s size However business concerns owned and controlled by Indian Tribes Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U S C 1601) Native Hawaiian Organizations or Community Development Corporations authorized by 42 U S C 9805 are not considered affiliates of such entities or with other concerns owned by these entities solely because of their common ownership

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls or has the power to control 50% or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns controls or has the power to control less than 50% of the voting stock of a concern, with minority holdings that are equal or approximately equal in size but the aggregate of these minority holdings is large as compared with any other stock holding each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements Affiliation arises where one or more officers directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor All requirements of the contract are considered in reviewing such relationship including contract management technical responsibilities and the percentage of subcontracted work.

Small organizations The RFA defines small organizations as any nonprofit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions The RFA defines small governmental jurisdictions as governments of cities counties towns townships villages school districts or special districts with populations of less than 50 000

4 3 Reason for Considering the proposed action

The scallop fishery off Alaska has been characterized as an overcapitalized fishery because the number of permits under the moratorium program (18) allow too many vessels the opportunity to fish for scallops (NMFS 1997a) Furthermore a substantial body of evidence and testimony exists indicating the limited size of the scallop resource off Alaska the vulnerability of scallops due to their sedentary nature and the efficiency of scallop harvesting gear Too many vessels targeting the limited scallop resource has negative

socioeconomic impacts on vessel owners crew, and fishing communities because each vessel s portion of the harvest too small to earn a profit in the fishery Thus there is a need to limit capacity in the fishery

The Council considered a scallop LLP as a method to reduce overcapitalization in the fishery In 1997, Amendment 2 to the Alaska Scallop fishery management plan (FMP) established a Federal vessel moratorium, which is scheduled to expire in the year 2000 In the same year the Alaska State Legislature enacted a scallop vessel moratorium for State waters which will expire in the year 2001 Appendix B General Description of License Limitation Programs contains a chapter excerpted from the EA/RIR analysis of an LLP for Alaska groundfish and crab fisheries (NPFMC 1994) It provides an overview of license limitation programs in general, and ability of license limitation programs to address problems of overcapacity

4 4 Objectives of, and legal basis for, the proposed action

Amendment 4 has been proposed to establish a license limitation system for the scallop fishery to replace the Federal vessel moratorium, which is scheduled to expire in the year 2000 The LLP would limit the number of vessels in the scallop fleet thus reducing overcapitalization At its February meeting the Council reviewed participation and other data from the scallop fishery and developed a problem statement and alternatives for analysis

Problem Statement adopted by the Council Council is dealing with a sensitive resource and overcapitalized fishery In 1993 the Council determined, through the moratorium, that unrestricted access to the fishery can be harmful to the resource and cause net loss to the nation. With the moratorium set to expire, the number of latent permits in existence which if activated, would exacerbate the problem. Additional participation or increased harvesting capacity may impose significant economic hardship to current participants

A system for limiting access which is an optional measure under section 303(b) of the Magnuson-Stevens Act is a type of allocation of fishing privileges that may be used to promote economic efficiency or conservation. For example *limited access may be used to combat overfishing overcrowding or overcapitalization in a fishery to achieve OY* (50 CFR 600 330(c)) The Magnuson Stevens Act (section 3(28)) further defines The optimum with respect to the yield from a fishery means the amount of fish (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems (B) is prescribed on the basis of the maximum sustainable yield from the fishery as reduced by any relevant social economic, or ecological factor and (C) in the case of an overfished fishery provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery

Section 303(b)(6) of the Magnuson Stevens Act provides authority to limit access to a fishery to achieve optimum yield if in developing such a system, the Council and Secretary take into account

A present participation in the fishery
B historical fishing practices in and dependence on the fishery
C the economics of the fishery
D the capability of fishing vessels used in the fishery to engage in other fisheries
E the cultural and social framework relevant to the fishery and,
F any other relevant considerations

4 5 Number and description of affected small entities

Companies

This proposed rule would apply to any entity desiring to enter the scallop fishery after its effective date Under the current moratorium, 18 vessels fished for scallops during the 1994-1998 period and qualify for a Federal moratorium permit Fourteen vessels applied for and received scallop moratorium permits Based on public testimony each scallop vessel is individually owned except one company owns three vessels Information on each vessel, such as the fishing history and LOA are identified in Tables 3 4 1 and 3 4 2 Based on available information, the owners of the scallop vessels are classified as small entities The moratorium is scheduled to expire June 30 2000 If this rule or some other limited entry program is not implemented by that date, the scallop fishery will revert to an open access fishery NMFS estimates that 18 entities might enter the scallop fishery if it reverts to open access

The principal impact on small fishing enterprises due to this proposal will be a limitation on the entry of new vessels This may restrict the ability of new small entities to enter the fishery although access is not denied because the licenses are transferable New entrants can purchase licenses thus increasing costs to prospective vessel owners Alternatively small fishing firms owning non qualifying vessels may experience a decrease in value of their investment to the extent that the vessel s opportunities have been limited. The impact of license limitation is to restrict the opportunities of some small vessel owners yet offer a stabilized economic environment for those remaining in the fishery The benefits accrue from preventing a further erosion of per vessel net returns and operating efficiency In summary the proposed LLP will significantly impact the vessels excluded from the scallop fishery The flexibility of open access will be reduced, limiting economic opportunities for some non qualifying fishermen.

NMFS considered the following alternatives that could reduce economic impacts on small entities

Alternative 1 No action, fishery would revert to open access after the moratorium expires in 2000 Returning to an open access fishery may be hard to rationalize from a resource conservation perspective and from the perspective of maintaining an economically viable fishery The limited size of the scallop resource limits the potential economic return in the fishery If the fishery reverts to open access the relatively high value of scallops would likely attract additional vessels into the fishery This would further diminish the ability of vessels and fishers to break even. The effects of an overcapitalized fishery are discussed in section 3 2

Alternative 2 All vessel owners who qualify for federal moratorium permits would receive a license A total of 14 licenses would be issued. This alternative would result in the largest number of vessel licenses of the six proposed alternatives Alternative 2 would not have impacts on individual vessels currently participating in the scallop fishery but any other potential participants would be excluded. However Alternative 2 would impact the fleet as a whole because the fishery would continue to be overcapitalized.

Alternatives 3 6 to the status quo would have a significant economic impact on a substantial number of small entities because some vessels would not qualify for licenses therefore they would be excluded from the scallop fishery The numbers of vessels excluded from the fishery under each alternative is in Table 3 4 2 We note that although the total numbers of vessels that would be allowed under each of those alternatives range only from 9 to 11 the combinations of different individual vessels that could fish under the different alternatives also varies Thus the impacts on individual vessels would vary according to whether or not they qualified.

Alternative 3 Vessel owners who qualify for state moratorium permits would receive a license A total of 10 licenses would be issued. There are vessels with long histories of participation in the scallop fishery which are not eligible for the state moratorium. Three of the 18 vessels that have recently participated in the scallop fishery in Federal waters would be eliminated from the fishery because they would not qualify for the State moratorium (i e these vessels didn t make landings during the State moratorium qualifying years) An additional 5 vessels are believed to qualify for Federal moratorium permits but have not applied for permits or re entered the fishery since the establishment of the Federal moratorium program in July 1997

Alternatives 4 6 would have a significant impact on a substantial number of small entities compared to the status quo because at least 2 of the 14 vessels currently permitted in the scallop fishery in Federal waters would be eliminated from the fishery because they would not qualify

Alternative 4 Vessel owners who qualify for either federal or state moratorium permits and made legal landing of scallops in 1996 or 1997 would receive a license A total of 10 licenses would be issued, therefore, 8 vessels would be excluded from the fishery Both state and federal moratorium-qualified vessels could be considered for licenses Some vessels with substantial fishing histories would be excluded.

Alternative 5 Vessel owners who qualify for either federal of state moratorium permits and made legal landings of scallops in 1996 1997 or 1998 (through 10/9/98) would receive a license A total of 11 licenses would be issued. Alternative 5 excludes fewer vessels with substantial fishing histories in the scallop fishery than Alternatives 4 or 6 The qualifying criteria in Alternative 5 are more encompassing that any of the other alternatives in terms of which vessels may be considered for LLP licenses and the years included in the recent qualifying period. The number of licenses that would be issued under Alternative 5 is slightly higher that the estimated break even number of vessels and similar to the number of vessels in Alternatives 3 and 4 and the number of vessels currently eligible for the statewide waters moratorium. Alternative 5 provides an opportunity for more scallop vessels to qualify for LLP licenses The trade off for the more encompassing qualifying criteria is an increase of one additional vessel over the number of vessels eligible under Alternatives 3 and 4 and two additional vessels over the number of vessels eligible under Alternative 6 The additional qualifying vessel under Alternative 5 has a history of participation, and has demonstrated present participation by making scallop landings in 1998

Alternative 6 (preferred) Vessel owners who qualify for either federal or state moratorium permits and made legal landings of scallops in two of the three years (1996 1997 or 1998 through 10/9/98) would receive a license A total of 9 vessels would be issued licenses The number of licenses estimated for Alternative 6 is exactly the number of vessels estimated in the break even cost analysis (including the Cook Inlet vessels) Alternative 6 would result in the lowest number of licenses of any of the six proposed alternative Requiring two years of participation during the recent qualifying period will exclude some vessels with substantial fishing histories in the scallop fishery Those vessels would not receive LLP licenses because they made scallop landings in only one year during the recent qualifying period. Because there are no minimum standards (pounds or fishing time during a year) for participation during the recent qualifying periods a vessel could meet the recent participation standards by landing very small quantities of scallops Thus vessels with less participation overall could receive licenses because they fished more years during the recent period, while vessels with more substantial fishing histories but only one year of participation during the recent period would not receive permits

Communities and Groups

According to NMFS (RAM) 14 vessels qualified for and applied for federal moratorium permits Of these 14 vessels 7 vessel owners live in Alaska, 3 live in Washington, 3 live in Virginia and one lives in Massachusetts Table 4 5 1 shows the home port cities of the 18 moratorium qualifying vessels With the

current economic data, it is difficult to quantify the effects of removing specific vessels from the fishery on the coastal communities Many crew members come from communities in Alaska (particularly Homer Seward, and Kodiak) with some crew flying in from the east coast to participate during the season. Crew members may obtain employment in other fisheries or other sectors of the economy Vessels that will be excluded from the fishery under the LLP may fish for scallops on the east coast if they have the required permits or they may buy a scallop license from a qualifying vessel

Table 4.5 1 Home Port Cities of Vessels that would qualify for licenses under the alternatives, based on CFEC vessel license files

Vessel	LOA[1]	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Home Port City	# of years vessel fished 1980-98
Alaska Beauty	98	yes	yes	yes	yes	NO	Cordova, AK	3
Northern Explorer	70	yes	yes	yes	yes*	yes*	Homer Ak	6
Kilkenny	75	yes	NO	yes	yes	yes	Juneau, Ak	4
Wayward Wind	52	yes	yes	yes	yes*	yes*	Eagle River Ak	4+ (see note 3)
Pursuit	101	yes	yes	yes	yes	yes	Atlantic City NJ	19
Jacquelme&Joseph[2]	96	yes	yes	NO	yes	NO	Philadelphia, Pa	9
Rush	72	yes	yes	NO	NO	NO	Boston Ma	7
Provider	124	yes	yes	yes	yes	yes	Kodiak, Ak	10
Trade Wind	88	yes	yes	NO	NO	NO	Boston Ma	4
Carolina Boy	96	yes	yes	yes	yes	yes	Norfolk, Va	6
Carolina Girl 2	96	yes	yes	yes	yes	yes	Norfolk, Va	6
Ocean Hunter	100	yes	NO	yes	yes	yes	Seattle Wa	10
Forum Star	97	yes	NO	yes	yes	yes	Juneau Ak	5
Mr Big	146	yes	NO	NO	NO	NO	Norfolk, Va	4
Lorraine Carol	88	yes	NO	NO	NO	NO	Seattle Wa	3
Fortune Hunter	82	yes	NO	NO	NO	NO	Seattle Wa	3
Arctic Rose[2]	224	yes	NO	NO	NO	NO	Seattle Wa	2
Pheonix	104	yes	NO	NO	NO	NO	Boston Ma	6
TOTAL NUMBER		**18**	**10**	**10**	**11**	**9**		
Option 1A (1) Statewide endorsements		15	10	6	8	7		
Option 1A (1) Cook Inlet endorsements	4		3	4	4	3		
Option 1A (2) Statewide endorsements		15	10	7	9	8		
Option 1A (2) Cook Inlet endorsements	4		3	4	4	3		

Potentially could be endorsed for both statewide and Cook Inlet areas under Option 1A.
[1] LOA (length overall in feet) from moratorium permit or other sources
[2] Jacqueline and Joseph renamed Arctic Queen Arctic Rose renamed Seawind.
[3] Wayward Wind qualified for moratorium with 4 years landings (1983 84 85 87) the permit holder fished the F/V LaBrisa in 1994 and fished the permit on leased vessels (Billy D and Trina) in 1996 and 1997

Insufficient information exists regarding non governmental organizations (NGOs) that may be directly or indirectly adversely impacted by this proposed action. No information indicates community development quota (CDQ) group involvement in the scallop fishery

4 5 1 Number and description of small entities indirectly affected by the proposed action

No small entities have been identified that are indirectly affected by this proposed action Even during open access a maximum of 18 vessels and an average of 9 vessels per year participated in the fishery since 1980

4 6 Recordkeeping and Reporting Requirements

Section 3 3 explains the implementation of an LLP Proposed Amendment 4 would impose a minor collection of information requirement on affected vessels This collection of information is necessary to provide information to NMFS for the implementation and management of the LLP Scallop vessels wishing to participate in the scallop fishery under the LLP would submit to NMFS a completed application for a license NMFS would verify the information included on each application and issue licenses to each qualifying vessel owner To properly issue licenses NMFS must collect information such as The name and address of the vessel owner to whom the license would be issued, the name registration number and length of the qualifying vessel proof of ownership of the qualifying vessel and the vessel s basis for qualifying for a license NMFS and Alaska State files contain much of the information requested in the license application, however this information must be verified or corrected by the person applying for the license.

A license could be transferred from a person to another person. This provision for transferability of licenses is necessary to allow fishermen flexibility for their business operations All persons taking part in the transfer of a license would be required to submit an application for transfer of the license to NMFS NMFS would verify the information contained in the transfer application and issue a new license in the name of the new permit holder

4 7 Relevant Federal Rules

No known Federal rules duplicate overlap or conflict with the proposed rule The LLP would supersede the existing Federal moratorium program for the scallop fisheries

4 8 Measures taken to reduce impacts on small entities

The economic effects of a LLP if promulgated, would reduce the adverse impacts on a substantial number of small entities resulting from open access Alternatives and options that perpetuate overcapitalization in the scallop fishery would have negative impacts on vessel owners crew and fishing communities An LLP will help reduce overcapitalization of the fishery and the loss of income to current participants that would result from further overcapitalization As shown in the break even analysis open access has negative impacts on all members of the fleet Each alternative that reduces capacity in the fishery benefits the fleet as a whole however by reducing capacity some vessels are excluded from the fishery Issued licenses would have monetary value and latent licenses (issued to vessels not currently fishing) if allowed, would likely be transferred to other vessels wishing to participate in the scallop fishery The preferred Alternative 6 excludes nine vessels from the fishery creating a fleet of nine vessels which is the most restrictive alternative and closest to the break even point Section 3 1 of this document describes the affected scallop fleet in detail

Generally small entities included in the fishery under the LLP will be benefitted, while those excluded will be adversely affected. Alternative policies that would minimize adverse impacts on excluded small entities also would dilute or eliminate the benefits to the fleet as a whole of reduced fishing capacity under the LLP Allowing one or two additional vessels to participate (relative to the preferred alternative) would reduce impacts on those one or two small entities However it also would reduce the beneficial effect of the LLP by reducing the average harvests of all vessels (all other small entities) in the fishery and their potential profitability by preventing attainment of the breakeven fleet size Hence no alternative measure would reduce the impacts on small entities that are negatively affected by the preferred alternative

5 0 SUMMARY AND CONCLUSIONS

The scallop fishery off Alaska has been characterized as an overcapitalized fishery In 1997 Amendment 2 to the Alaska Scallop fishery management plan (FMP) established a Federal vessel moratorium, which is scheduled to expire in the year 2000 In the same year the Alaska State Legislature enacted a scallop vessel moratorium for State waters and will expire in the year 2001 In February 1998 the Council reviewed participation and other data from the scallop fishery and developed a problem statement and alternatives for analysis of an LLP to replace the existing vessel moratorium The alternatives analyzed in this document range from a total of 9 vessels (Alternative 6) to open access (No Action)

Analysis indicated that a total of about 6 or 7 vessels could participate full time in the Alaska statewide scallop fishery at the breakeven level (not including Cook Inlet vessels) More vessels could participate if ex-vessel prices for scallop or current annual harvest levels increased. The Cook Inlet fishery appears to be fully capitalized, and perhaps overcapitalized at the current level of effort (3-4 vessels) Alternatives and options that perpetuate overcapitalization in the scallop fishery would have negative impacts on vessel owners crew and fishing communities Issued licenses would have monetary value, and latent licenses (issued to vessels not currently fishing) would likely be transferred to other vessels wishing to participate in the scallop fishery

Alternatives 3 4 5 and 6 provide more long term stability to this fishery and to the communities that support the fishery The number of licenses issued would be more in line with the number of full time scallop vessels that recent harvests can support at a breakeven level Although the number of licenses that would be issued under Alternatives 3 4 and 5 (10 11) would still be more than the number of vessels that could efficiently harvest the resource (4 see NPFMC 1995) most participants would have an opportunity to catch enough scallops to make normal returns on investments without accruing excessive profits Nevertheless each additional vessel participating in the fishery or other additional increases in harvesting capacity impose additional costs to existing participants including vessel owners and crew

NMFS believes that most persons operating in the fishery impacted by the proposed action are small entities given their expected annual gross revenues less than $3 million However the ownership characteristics of vessels operating in the fishery has not been analyzed to determine if they are independently owned and operated or affiliated with a larger parent company

Because NMFS is addressing the allocation of a limited resource alternatives to minimize economic impacts on some small entities would necessarily result in increased impacts on others None of the alternatives are expected to have a significant impact on endangered, threatened, or candidate species and none of the alternatives would affect takes of marine mammals Actions taken to limit the number of scallop vessel permits will not alter the harvest of scallops None of the alternatives are likely to significantly affect the quality of the human environment and the preparation of an environmental impact statement for the proposed action is not required by section 102(2)(C) of the National Environmental Policy Act or its implementing regulations

None of the alternatives is expected to result in a significant regulatory action as defined in E O 12866

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8 0 APPENDIX A State of Alaska Scallop Vessel Moratorium

HB0141
SCS CSHB 141(RES)
SENATE CS FOR CS FOR HOUSE BILL NO 141(RES)
IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTIETH LEGISLATURE - FIRST SESSION
BY THE SENATE RESOURCES COMMITTEE
Offered 5/8/97
Referred Rules
Sponsor(s) REPRESENTATIVE AUSTERMAN

A BILL
FOR AN ACT ENTITLED

"An Act relating to a vessel permit moratorium for the Alaska weathervane scallop fishery, relating to management of the scallop fisheries, and providing for an effective date "

BE IT ENACTED BY THE STATE OF ALASKA

* Section 1 LEGISLATIVE FINDINGS AND INTENT (a) The legislature finds that

(1) the scallop fishing fleet in Alaska is overcapitalized

(2) fishing effort in the Alaska weathervane scallop fishery has reached levels that may threaten the sustained yield management of the fishery

(3) weathervane scallops are long lived animals with few natural predators these attributes are common to species that are the most susceptible to overfishing

(4) the status of many Alaska weathervane scallop stocks is largely unknown and the stocks are susceptible to localized depletion and general overfishing

(5) scallop fisheries around the world have collapsed after relatively short periods of intense fishing

(6) scallop dredges may adversely affect important bottom-dwelling species such as king crab and Tanner crab and without careful management may threaten the conservation of these other fishery resources

(7) the conventional limited entry and moratorium system under AS 16 43 cannot adequately protect the economic health and stability of the Alaska weathervane scallop fishery or adequately promote the sustained yield management of the Alaska weathervane scallop fishery

(8) the United States Department of Commerce has taken action to restrict access to the Alaska weathervane scallop fishery in the waters of the United States exclusive economic zone adjacent to Alaska,

(9) state management of the entire Alaska weathervane scallop fishery will provide a uniform and comprehensive management regime for the fishery protect the economic health and stability of the fishery and promote sustained yield management of the fishery

(10) establishment of a moratorium on the issuance of vessel permits to new vessels seeking to enter the Alaska weathervane scallop fishery promotes the purposes of art VIII, sec 15 Constitution of the State of Alaska, and AS 16 43 while providing an opportunity to study and evaluate the feasibility of a permanent vessel permit limited entry system for the Alaska weathervane scallop fishery

(b) It is the intent of the legislature that the Board of Fisheries maintain 100 percent observer coverage for all vessels engaged in the Alaska weathervane scallop fishery

* Sec 2 AS 16 05 is amended by adding a new section to article 5 to read

Sec 16 05 735 Management of offshore fisheries The state may assume management of the scallop fisheries in offshore water adjacent to the state in the absence of a federal fishery management plan for scallops or in the event that a federal fishery management plan for scallops delegates authority to the state to manage scallop fisheries in the United States exclusive economic zone

* Sec 3 AS 16 43 is amended by adding a new section to read.

Sec 16 43 906 Vessel permits for weathervane scallop fishery (a) The commission shall issue annual vessel permits for commercial fishing vessels used in the weathervane scallop fishery The commission shall issue vessel permits to the vessel upon application by the vessel owner The commission shall issue separate vessel permits for each registration area. The weathervane scallop fishery registration areas are the statewide Alaska weathervane scallop fishery registration area and the area H weathervane scallop fishery registration area.

(b) A vessel permit is a use privilege authorizing the vessel to take weathervane scallops in the registration area for which the vessel permit is issued. The use privilege conveyed by a vessel permit may be modified or revoked by the legislature without compensation

(c) On or after July 1 1997 a commercial fishing vessel may not be used to take weathervane scallops in a registration area unless a vessel permit for that registration area has been issued under this section for the vessel.

(d) The commission may not issue a vessel permit under this section to a commercial fishing vessel for the statewide Alaska weathervane scallop fishery registration area for the period from June 30 1997 through June 30 2001 inclusive unless

(1) the vessel has landed at least 1 000 pounds of weathervane scallops that were legally taken in the statewide Alaska weathervane scallop fishery registration area

(A) during calendar year 1995 or 1996 and

(B) during each of at least four calendar years between 1984 and 1996 inclusive or

(2) the vessel qualifies for a vessel permit for the area H weathervane scallop fishery registration area under (e) of this section

(e) The commission may not issue a vessel permit under this section to a commercial fishing vessel for the area H weathervane scallop fishery registration area for the period from July 1 1997 through June 30 2001 inclusive unless the vessel has landed at least 1 000 pounds of weathervane scallops that were legally taken in the area H weathervane scallop fishery registration area

(1) during calendar year 1994 or 1996 and

(2) during each of at least three calendar years between 1984 and 1996 inclusive

(f) Notwithstanding (d) and (e) of this section a vessel owner who does not own a commercial fishing vessel that qualifies for a vessel permit for a scallop fishery registration area may receive a vessel permit for that registration area if the vessel owner owned two or more commercial fishing vessels whose combined participation in the scallop fishery for that registration area would satisfy the requirements for a vessel permit for that registration area under this section The commission shall issue a vessel permit under this subsection to the last commercial fishing vessel that the vessel owner owned to satisfy the requirements for the vessel permit for the registration area if the vessel owner still owned that commercial fishing vessel on July 1 1997 (g) Notwithstanding (d) (f) of this section the commission shall reissue a vessel permit upon request of a person who is the owner of a vessel for which a vessel permit has been issued under this section to another vessel owned by the person if the vessel to which the vessel permit is to be reissued does not have an overall length or horsepower rating exceeding the length or horsepower rating of the vessel for which the vessel permit was initially issued. The vessel from which the vessel permit was transferred may no longer be used in the fishery for which the vessel permit was issued unless another vessel permit is reissued to the vessel. This subsection does not authorize the issuance of more vessel permits than are authorized under (d) (f) of this section

(h) Use of a vessel in a weathervane scallop fishery on or after July 1 1997 may not be used to establish eligibility for a vessel permit for a weathervane scallop fishery that may be issued after June 30 2001

(i) Subsections (d) (h) of this section may be superseded by regulations adopted by the commission under subsequent legislation enacted by the legislature authorizing

(1) a permanent vessel permit limited entry system for the weathervane scallop fishery or

(2) termination of the temporary moratorium on issuance of new vessel permits established by this subsection

(j) An application for a vessel permit under this section must contain the name of each permit holder authorized to operate the vessel in the weathervane scallop fishery and other information the commission may require to implement this section. The owner of a vessel for which a vessel permit is issued shall notify the commission in writing of a change in the permit holders who are authorized to operate the vessel in the weathervane scallop fishery In this subsection permit holder' means a person who holds an entry permit or interim-use permit issued under this chapter for the weathervane scallop fishery

(k) If a commercial fishing vessel that qualifies for a vessel permit under this section or that is issued a vessel permit under this section is sunk, destroyed, or damaged to the extent that the vessel is inoperable for a weathervane scallop fishing season the commission may upon the request of the owner of the vessel, reissue the vessel permit for that fishing season to another commercial fishing vessel with an overall length and horsepower rating that does not exceed the overall length and horsepower rating of the vessel that was sunk, destroyed, or damaged.

(l) The fee for the annual vessel permit is $1 000 A vessel permit is valid for the calendar year that is inscribed on the license

(m) The commission shall, in cooperation with the Department of Fish and Game conduct investigations to determine whether an alternative form of nontransferable vessel or limited entry permit system or other management program is appropriate for weathervane scallop fisheries in the state

(n) The commission may adopt regulations that the commission considers necessary to implement this section.

(o) In this section,

(1) area H weathervane scallop fishery registration area means the marine waters of Cook Inlet north of the latitude of Cape Douglas (58 degrees 52 minutes North latitude) and west of the longitude of Cape Fairfield (148 degrees 50 minutes West longitude)

(2) landed includes catching or catching and processing of weathervane scallops taken in state waters or the adjacent United States exclusive economic zone for sale as evidenced by a Department of Fish and Game fish ticket

(3) statewide Alaska weathervane scallop fishery registration area means the marine waters of the state and the adjacent United States exclusive economic zone outside of the area H weathervane scallop fishery registration area.

* Sec 4 AS 16 43 911 (c) is amended to read.

(c) Notwithstanding AS 16 05 815 and AS 16 43 975 the commission may release to the owner of a vessel information on the vessel s history of harvests in a [THE KOREAN HAIR CRAB] fishery that is necessary to apply for a vessel permit under AS 16 43 901 16 43 906

* Sec 5 Section 5 ch 126 SLA 1996 is amended to read

Sec 5 AS 16 43 901 [AND 16 43 911] added by sec 3 of this Act is [ARE] repealed July 1 2000

* Sec 6 AS 16 43 906 added by sec 3 of this Act and AS 16 43 911 are repealed July 1 2001

* Sec 7 This Act takes effect immediately under AS 01 10 070 (c)

9 0 APPENDIX B General Discussion of License Limitation Programs

The following chapter is excerpted from the EA/RIR analysis of an LLP for Alaska groundfish and crab fisheries (NPFMC 1994) It provides an overview of LLPs in general, and their ability to address problems of overcapacity

Limited Entry and Effort Control Issues and Examples

Controlling Effort along Unlimited Margins

Limited entry programs have been used to limit different features of fisheries including the number of persons, vessels, or units of gear indices of fishing capacity and in some cases, a combination of these In general, however these measures are not capable of completely preventing increases in fishing effort because a fleet may bypass the intent of the restrictions and expand effort in other ways. This is called capital stuffing.[1]

The State of Alaska's limited entry program on salmon herring, and certain other species, limits the number of persons who may operate gear The salmon program run by the Canadian federal government in the waters off British Columbia initially limited the number of separate vessels[2] The State of Florida has started a program in which individual lobster traps are subjected to limited licensing. The Australian federal government limits an index of fishing capacity in a prawn trawl fishery off of its northern coast. This index is based on measures of under deck volume and horsepower

Some programs have limited more than one feature For example in the Australian northern prawn fishery the limit on the fishing capacity index is accompanied by a limit on the number of vessels allowed in the fishery As a practical matter any system which combines a limited number of permit holders with a regulation fixing the amount of gear each permit holder may use limits both persons and gear

Each of these approaches to limited entry however leaves ways for fishermen to expand their fishing effort. Restrictions on persons, for example can be undermined if persons are free to increase the number of gear units they use Limits on the number of vessels may be bypassed by changing the size and shape of the vessels, the technology in use the amount of gear used, or the number of crew Restrictions on persons or vessels may also be bypassed by the introduction of supplementary units such as tenders, spotter planes, or additional skiffs.[3] Gear restrictions can be bypassed by upgrading the capacity of vessels or gear or by cheating and fishing excess gear Practical measurement problems mean that any index of fishing capacity will necessarily be a crude approximation to capacity and will miss ways in which the limited inputs can be supplemented. The index in use in the Northern Australia prawn fishery has been circumvented by the introduction of satellite navigators, Kort nozzles, coloured echo sounders, sonar and new trawling gear (Haynes and Pascoe 1988 7)

Although limited entry cannot control effort perfectly there are important reasons to believe that it can be a helpful element in fisheries management Even if fishermen completely compete away the resource rents in the fishery as they would be expected to do under open access limited entry may slow down this process The present value of the rents[4] preserved in the short run may be valuable and worth the cost of the program. Beyond this, however theoretical analyses suggests that under plausible conditions, limited entry can increase or preserve fishery rents even in the long run Anderson (1985 413-417)[5] showed that, when all fishermen were alike a limited fishery could generate more rents than an unregulated, open access fishery Limited entry would reduce costs

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Capital stuffing refers to the increased capital investment associated with each unit of the limited inputs Capital stuffing is only one of the ways by which effort and fishing costs may be increased under limited entry

[2]This program very quickly substituted a limit on the net tons allowed in the fleet for the limit on vessels (Wilen 1988 251)

[3]One of the most spectacular examples of the use of supplementary inputs was the use of helicopters to move drift gillnet vessels between open areas in the British Columbia herring sac roe drift gillnet fishery (Wilen 1988 254)

[4]Rents are the payments to the fishing operations greater than are necessary to keep the fishing operations in the fishery They are an excess over the profits that are customary to an operation engaged in an activity of similar risk Rents accruing to the superior skill of some fishermen may continue to exist under open access

[5]Anderson discusses a program that actually reduces the number of operations active in the fishery The same analysis would apply to a program that prevents an influx of operations that might otherwise occur

as some vessels were taken from the fishery these costs would be offset somewhat as the remaining vessels expanded their effort to compete for the rents that had been generated. However as long as there were limits to the fleet's ability to substitute other costly inputs for the restricted input, limited entry could generate net benefits that could be sustained in the long run In a fishery in which fishermen differed, perhaps due to differences in skill, Anderson found a somewhat more complex situation Nevertheless, Anderson found that in this case as well, a limited fishery entry could often generate more rents than an unregulated, open access fishery even in the long run

The assumption that inputs are not perfectly substitutable for one another is usually a reasonable one At one extreme inputs may be used in fixed proportions. To some extent this may be the case under the Alaska limited entry program. In Alaska, gear operators are limited and the gear that they may operate is highly regulated. In some fleets there may be little or no scope for the fleet to substitute increased gear inputs and offset the limit on the number of gear operators Although there may be more potential for substitution between other inputs few inputs are perfect substitutes for one another

Campbell and Lindner (1990 66) have extended Anderson's analysis and pointed out additional conditions that may be associated with the rent-generating capacity of limited entry They reiterate Anderson's argument about the importance of input substitutability The more easily the fleet may substitute unlimited for limited inputs, all other things being equal, the less capacity a program has to generate rents They also note the importance of the input intensity" for the limited input.[6] The more intensively the fishery uses the restricted input compared to other inputs the greater the capacity of limited entry to generate rents. They note that high input intensity implies that the restricted inputs would be a significant proportion of total factor cost. Finally they suggest that the rent generating capacity of the program will be greater if the economic pressure to exploit the fish stock is not too great.

These theoretical arguments that limited entry can help preserve rents are given some support in many limited fisheries by the existence of positive prices for limited entry licenses[7] Permit prices should reflect the net present value of the future rents expected from permit ownership by the marginal fisherman the fisherman who just finds it worthwhile to enter the fishery The present value of this resource rent [8] would be zero in an unregulated, common property fishery The present value would also be zero in a limited fishery if effort in the fishery were not effectively constrained.

Permit prices have been positive and even large in many limited fisheries Wilen (1988 253) found that almost 20 years after the start of the British Columbia limited entry program in salmon licenses were trading at about C$7 000 for each net ton He noted that roe herring seine licenses leased for C$500 000 while herring sac roe gillnet licenses leased for C$80 000 Almost 20 years after the start of the Alaska limited entry program, many licenses in the original limited fisheries still trade for high prices Some dramatic examples from early 1994 include the Cook Inlet salmon seine permit at $134 500 the Alaska Peninsula salmon drift gillnet permit at $391 900 the Bristol Bay drift gillnet permit at $171 100 and the Kodiak set net permit at $107 600 (Tingley 1994 2 3) Alaska salmon permit prices have tended to drop from highs reached in the late eighties and early nineties Townsend cites numerous examples of limited fisheries with positive permit prices

Both Anderson and Campbell and Lindner note that under reasonable conditions limited entry is likely to be a second best solution That is the same amount of effort could be produced in a fishery at lower cost using alternative fleet structures (Anderson 1985 415 Campbell and Lindner 1990 65) However there may be many situations in which the available choices include limited entry but do not include some of the solutions that could generate the higher rents Many attractive management solutions may be ruled out by the biology of the fishery the technical problems associated with enforcement, budgetary considerations, or the necessities of political compromise

The implication of the discussion so far then is that limited entry may not be able to constrain effort very well because fishermen can substitute unlimited inputs for the limited inputs, thereby driving up their fishing effectiveness and their costs Nevertheless, theoretical and empirical evidence suggests that it is possible to generate positive rents in a fishery using limited entry In most cases however there are fleet configurations that would generate even higher rents than a fleet under limited entry

The history of the British Columbia salmon limited entry system shows how effort can expand under limited entry The commercial salmon fishery in British Columbia began during the nineteenth century Since the fish were valuable and could be exploited at

[6] The term input intensity' is taken from Ferguson (1969 100)

[7] Positive permit prices are not proof of rents generated by limited entry There may for example be no rents in the present but the fishermen may expect rents in the future However persistent positive limited license or permit prices are generally considered strongly suggestive of the presence of rents from limitation

[8] As opposed to the ability' rent earned by fishermen who are better than the marginal fisherman

relatively low cost, excess effort soon posed problems These problems led to a short lived limited entry program on the Fraser River as early as 1889 Excess effort continued to be a problem after this program ended in 1892 (Fraser 1977 1 2)

At about the time the fishery was limited in 1969 it was estimated that as much as half of the gear in the fishery could be taken out without appreciable reduction in effective fishing capacity [9] Returns in the fishery were small just before the fishery was limited. With the costs of social subsidies, the net social benefit from the fishery was probably negative [10]

At the start of the program, the British Columbia salmon fishing fleet was composed of seiners, gillnetters, and trollers. The criteria used to determine who would receive a limited license gave all operators, meeting certain catch thresholds, a permanent vessel license 5 870 vessels received these A" licenses. 1 062 vessels that had been fished at levels below the thresholds were given B vessel licenses Initially vessels with "B licenses could not be replaced. In 1970 the B licenses were given a 10 year expiration date The licenses were homogenous and did not distinguish between gear types The capacity initially licensed into the fleet was greater than was needed to harvest the available resource In fact, it was greater than the capacity that had been used in either of the preceding two years (Fraser 1979 757)

The number of vessels operating in this fishery has decreased under the program. 361 vessel licenses were removed in a buy-back program in the early seventies, and a further 26 were bought back in 1981 (Fraser 1980 7 Burlington and Associations, 1981 15) [11] The temporary permits have expired. In addition the number of separate vessels has been reduced by the practice of pyramiding of licenses prior to 1980 This is the practice of combining licenses from smaller boats to introduce a larger vessel to the fishery [12]

However while the number of vessels has been reduced, the actual effort and capital used in the fishery appear to have increased. Vessels increased in size and physical capacity during this period. By 1977 the average horsepower had increased by 47/ in the gillnet fleet, 43% in the seine fleet and 36% in the troll fleet Average vessel lengths had increased by 6/ in the gillnet fleet, 10% in the seine fleet and 11% in the troll fleet Average net tonnages had increased 24% in the gillnet fleet, 11% in the seine fleet, and 17/ in the troll fleet. Fraser suggests that real capital invested in the fishery had increased by 49% by 1977 and had continued to increase through 1979 (Fraser 1979 757) Pearse and Wilen provide estimates showing that the value of the capital invested in vessels and gear (not in licenses) rose from about $81 million 1971 dollars in 1969 to about $200 million in 1977 (Pearse and Wilen 1979 767)

While there was an overall decline in the overall number of vessels the number of vessels licensed to use seine gear actually rose 370 vessels were licensed for seine gear in 1969 and 514 were licensed by 1977 (Fraser 1979 761) The seiners tend to be the larger vessels in the fleet. The numbers of boats fishing more than one of the available gear types rose as well. The number of vessels licensed to use more than one gear rose from 1 171 in 1969 to 1 923 in 1977 Fraser notes that the vessels fishing with more than one gear type tend to be more highly capitalized than other vessels (Fraser 1979 757 761)

Managers have had to make many adjustments to the program rules in order to constrain effort increases Wilen described this process with the vivid metaphor of managers chasing fishing effort. The initial limitation measure in British Columbia in 1969 was a limit on the number of separate salmon vessels allowed in the fishery Fishermen were allowed to replace vessels with larger ones Almost immediately 76 vessels with a combined 186 net tons were replaced by vessels with a combined 596 net tons (Wilen, 1988 251)

In response in 1970 managers added a net ton for net ton replacement rule This effectively replaced the limit on the number of vessels with a limit on fleet net tonnage Vessels over 15 net tons are surveyed in Canada by law so there were good figures on vessel net tonnage for these vessels Most of the fleet, however was composed of vessels under 15 net tons For these vessels, the Canadians adopted a schedule relating net tonnage to vessel length These rules however were not enough to constrain effort increases through upgrading so in 1972 the Canadians added a rule limiting the length of a replacement vessel to the length of the vessel it replaced (Fraser 1977 31 Wilen 1988 251)

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[9] A conclusion reached by Crutchfield and Pontecorvo as summarized by Pearse and Wilen (1979 765) Presumably this means the capacity could be removed without affecting the ability of the fleet to harvest the available fish

[10] From a cost-benefit perspective and ignoring other social issues (Pearse and Wilen 1979 765)

[11] The buy-back programs are discussed in section 3 2 1 5

[12] There were also reductions in the amount of labor used in the fishery but neither Fraser or Pearse and Wilen believe these were sufficient to offset the increased effort and costs associated with greater capitalization discussed in the next paragraphs (Fraser 1979 757 Pearse and Wilen 1979 767)

In subsequent years, managers continued to add restrictions to the program in an effort to constrain effort increases In 1977 the practice of replacing two or more vessels by a single vessel over 50 feet was prohibited. In the same year the conversion of gillnet or troll vessels into seine vessels was also prohibited In 1980 the practice of pyramiding two or more vessels into a single vessel was finally prohibited in all cases (Wilen 1988 251)

Despite the history of effort increases, there are reasons to believe the program may have generated rents for the fishermen Some vessels are also used in the roe herring seine fishery and, to some extent increasing capitalization in the herring fishery might lead to larger-vessels in the salmon fishery without implying salmon overcapitalization (Fraser 1979 758) As noted earlier license prices have been fairly high In 1979 Fraser cited these as a strong indication of some relative success (Fraser 1979 758) Pearse and Wilen estimated that up to 1979 the effort increases had been slower than they would have been in the absence of limited entry Prior to the program, capital in the fleet had been growing at an average rate of 5 7/ a year while after the program from 1969 to 1977 it grew at an average rate of 3 7/ a year This change did not appear to be related to changes in gross revenues, which grew at about the same average rate before and after limitation There was evidence that limited entry had constrained the growth of capital in the fleet somewhat. In 1989 Wilen cited the positive market prices for the limited entry tonnage licenses in the salmon fishery as evidence that rents were being generated (Wilen 1988 253)

Fleet Heterogeneity

Prior to the limitation of effort fishermen may pursue different fishing strategies If so their levels of effort and output may differ considerably For example some fishermen may be life style fishermen using the fishery to obtain a small amount of cash to supplement a subsistence lifestyle These fishermen may compete in the fishery with other capital intensive higher volume fishing operations These two different types of fishermen may have very different levels of production in the fishery

Differences in strategies may also be caused by differences in diversification Some operations in a fishery may have historically specialized in the harvest of a particular species Other operations may have been more diversified, fishing the target species as well as others Specialization may also be associated with gear use Pot fishermen may have targeted a particular groundfish species while trawl fishermen may have targeted a complex of groundfish species Different market strategies may also drive differences in fishing activity Some fishermen may be moving small volumes of high quality fish to fresh markets while others may be moving larger volumes of lower quality fish to processed markets.

Faced with these differences in fishing strategies, and consequent differences in effective effort and production managers must decide how to define the limited entry permits Considerable care must be taken in defining the relevant fishery and the limited entry permits

A classic example of the problems raised by heterogeneity of fishing strategies is provided by Alaska s limitation of entry into the Alaska Peninsula salmon seine drift gillnet and set gillnet fisheries in the mid-seventies These fisheries were among the first limited under Alaska s limited entry law In the early seventies fishermen in the Alaska Peninsula area fished for salmon using a variety of different gear strategies Some fished seine gear some drift gillnet gear and some set gillnet gear Most fishermen fished a combination of the gear types
At this time the state tended to define a separate permit for each gear type It thus defined three permit types purse seine drift gillnet and set gillnet The number of permits for each gear type was based on the highest number of units of that gear to have recorded even one landing in any of the four years prior to 1973

Because most participants fished a combination of these gears prior to limitation opting to fish different gears at different times this meant that some fishing operations were included in the determination of the number of permits for more than one of the fisheries defined for limitation purposes It also meant that many participants were able to qualify and receive permits for two or more gear types.

After limitation when conditions in the fisheries had improved and permit prices had risen the opportunity costs of holding one or more permits idle for portions of a salmon season rose considerably As a result persons with more than one permit tended to concentrate their efforts on one gear type and sell off their excess permits to new participants who could use them on a full-time basis At initial issuance 235 individuals received 392 permits in the Alaska Peninsula salmon fisheries By year-end 1988 361 different individuals owned the remaining 390 permits

Under Alaska s program, the number of permits issued in a fishery depends upon the definition of the fishery For example if Alaska had limited a Peninsula Aleutian salmon fishery (any legal gear type) the number of permits to be issued for that combined gear type fishery would have been less than the sum of the number issued in the three gear specific sub fisheries which were actually limited Fewer total permits would have been issued

However a single combined gear type fishery also might have resulted in post limitation increases in effort The number of permits in a combined fishery would likely have been greater (given the rule used to set the number of permits to issue) than the number actually issued in any of the three individual fisheries Thus for example the number of vessels which could use seine gear would

have been greater under a combined fishery permit than the number which can use same gear today Defining a single combined gear type fishery may have created as many ways for effort to expand after limitation as creating three separate fisheries [13]

More recently in the Southeastern Alaska king and Tanner crab fisheries the state opted to take a new approach to dealing with the fishery definition problem At the time the main fisheries segregated for management purposes were the Tanner crab fishery red king crab fishery and the brown king crab fishery Blue king crab was mostly caught incidentally in the red king crab fishery An examination of the data revealed that, while some participants concentrated on only one of these species, most had fished and landed two or more of the species.

The system adopted and defined three fisheries red/blue king crab pot fishery brown king crab pot fishery and Tanner crab pot fishery In each case the number of permits to issue was based upon the highest number of units of gear fished in the last season completed prior to the qualification date

However to avoid post-limitation increases in participation similar to those occurring in the Peninsula Aleutian salmon fisheries, the state adopted regulations to issue a single non-severable integrated resource permit to those who qualify for a use privilege in more than one of these three fisheries An integrated resource permit conveys whatever combination of use privileges (in these three fisheries) for which the applicant qualifies. The holder cannot sell the use privileges separately from the combined permit, the integrated permit must be sold with all the use privileges embodied in it.

The permit options adopted in the Southeastern Alaska king and Tanner crab fisheries will reduce the number of permits issued relative to what would have been issued under a three fishery option without non severable integrated permits. It should also help prevent post limitation increases in participation levels.[14]

Even more recently the Pacific Fisheries Management Council used a similar approach in its limitation in the west coast groundfish fishery West coast groundfish are harvested with a variety of gears and strategies Bottom trawls are used to harvest Dover sole arrowtooth flounder thornyheads and sablefish midwater trawls are used for Pacific whiting and widow rockfish pots are used for sablefish longlines are used for sablefish rockfish and ling cod, set nets are used to harvest rockfish, white croaker and halibut off of California. Factory trawlers have not been active in this fishery to date (PFMC 1992 5-41 to 5-61)

Limited entry was imposed on this fishery effective January 1994 Fishermen were given a standard limited entry license which was endorsed for the different gears they were entitled to use There were separate endorsements for pot longline and trawl gear No distinction was made for the different types of trawl gear in use A fishermen was issued one or more of the endorsements depending on his participation with the different gear types during a qualifying or window period Endorsements cannot be separated from the permit to which they are attached A fisherman who wants to diversify into new gear types must buy a new permit with the gear endorsement desired, or can sell the permit he holds and buy a new permit containing the desired gear endorsements [15]

Even if fishery definition issues are not important, or once they have been decided, issues are still raised by the differences among the fishermen within a defined fishery If all fishermen are given permits that provide the same fishing rights then there may be ways for effort to be increased using permits given to persons who had been less active or who are less skillful fishermen Either the permit holder will have the opportunity to increase the amount of effort associated with the permit, or the permit holder will be able to sell it to someone else who can fish more intensively with it This could be a problem, especially if not everyone with a permit is using that permit to the extent allowed by other fishery restrictions prior to limitation

This problem has been dealt with in some fisheries through the use of restrictive thresholds to determine who shall qualify for a permit or to define different categories of permits with different use rights attached. The British Columbia limited entry program initially issued 1 062 B permits to persons who fell below certain activity levels Initially those issued these permits were not allowed to replace the vessels to which they were attached. Within two years, these permits were given a 10 year expiration date Although some of these permit holders were granted extensions on the expiration dates, by 1990 the government was only renewing one of

[13]This discussion of the Peninsula Aleutians salmon limitation follows Schelle and Muse (1989 18 21)

[14]This discussion of the Southeast Alaska crab limitation follows Schelle and Muse (1989 21 22)

[15]Four classes of endorsements were issued for each gear type A endorsements went to vessels meeting minimum landings requirements for the gear during the landings window Provisional A endorsements went to vessels under construction during the window B endorsements went to vessels that operated, but didn't meet landings minimums during the window (these expire after a short period) Designated species B endorsements are meant for vessels to be used to harvest currently under utilized species (PFMC 1992 2 5) The licenses also carried a vessel length endorsement This is discussed later in this section

these permits. A similar procedure was used by the State of Alaska in its hand troll fishery for salmon Many of the permits issued in this fishery were non-transferable although they did not carry an expiration date

Operations also differ considerably with respect to the size of the vessels that are fished. A vessel permit system that ignores the different sizes and fishing capacities of the vessels in the fleet can provide relatively easy upgrade paths for the fishing operations in the fleet As already mentioned, the British Columbia salmon license limitation program shifted from a limit on the number of vessels allowed in the fishery to a limit on the number of net tons allowed to fishing vessels in the fishery shortly after the program began. Likewise the northern prawn license limitation program in Australia was forced to supplement a limitation on the number of vessels in the fishery with an additional set of limits on the number of units of fishing capacity allowed in the fishery (capacity units included measures on under-deck volume and horsepower) (Lilburn, 1986 159 160)

The west coast groundfish program has been faced with vessels of different sizes and fishing capacities The approach taken there is to attach a length endorsement to each license That is, each license indicates the length of the vessel that can be used with it In this respect each license is unique and heterogeneous licenses have been issued to reflect the heterogeneity of the fleet Licenses may be combined so that two or more licenses, with the same gear endorsements may be combined into a new license with a length endorsement greater than the endorsements on either of the individual licenses

Limited Entry May Divert Effort into Other Fisheries

Limited entry in one fishery may lead to increases in fishing effort in one or more additional fisheries Fishery inputs that do not receive licenses for the limited fishery may be placed in an unlimited fishery by their owners High cost producers in one fishery may sell their licenses and use the capital to enter additional fisheries Holders of limited licenses may use the license as collateral to raise money for entry into other fisheries Fishermen observing the limitation of entry in one fishery may anticipate that entry will be limited in others These fishermen may then enter the unlimited fisheries to establish records of participation

Commercial harvest of Australia s northern prawn stocks by trawlers began in the mid-sixties Entry into the fishery was limited in 1977 The criteria for receipt of a limited license were not severe and 292 vessels were licensed, although no more than 160 had been used in any year prior to limitation The original program included a rule prohibiting replacement of a vessel with a larger vessel. This was apparently unenforceable and was replaced by a rule allowing the replacement of small vessels by vessels of up to 21 meters[16] Lilburn notes that many small operators sold their licenses to larger operators and entered their vessels in Australia's unlimited Southeast Trawl fishery a fishery for a variety of species. The movement contributed significantly to overcapacity in the Southeast fishery The Southeast fishery was subsequently limited in 1985 (Lilburn 1986 158 159 173)

Rent Seeking

Resource rents from fishing motivate the effort increases described above Fishermen competing for these rents have incentives to bypass the restrictions imposed by the license limitations by using more unlimited inputs Thus if the number of vessels is limited, fishermen may use larger vessels more gear more electronics and more crew members or may compete in a wide variety of additional ways

This competition for rents however is not limited to the actual use of inputs in the fishing process Fishermen can also compete for the rents by seeking to change the rules of the game in their favor This form of competition is common whenever government and industry interface and where the allocation of valuable rights depends on the decisions government makes This type of behavior is called rent seeking behavior in the economics literature[17]

Rent seeking under limited entry can take many forms It occurs during the design of the limited entry program as interested persons and groups lobby for provisions that will benefit themselves It can take place during the initial allocation as fishermen appeal and litigate after being denied permits Some fishermen may challenge the basis of the allocation decisions or the legitimacy of the program itself High rents following implementation of the program may lead to pressures to increase the numbers of permits issued.[18]

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[16]This 21-meter rule was apparently introduced to allow vessel owners to take advantage of a ship building bounty designed to promote the development of an Australian ship building industry

[17]Mueller has a good discussion (1989 229 246)

[18]The focus in this section is on increases in actual effort in the fishery However the literature on rent seeking suggests that even if effort in the fishery is not increased, the rent seeking activities will tend to reduce the benefits associated with the limited entry program by increasing the costs of the fishermen and the managers These costs include the cost of the time the fisherman must take to follow his appeal and litigation the fisherman s legal costs the time spent by managers dealing with appeals and the costs

Things can be done to reduce the pressure for increases in the numbers of permits issued. Initial issuance criteria that are simple and easily measured may reduce opportunities for appeals Allocation decisions should not be modified on the basis of hardship factors that are not carefully defined and delimited. The incentive to appeal and to prolong appeals and litigation will be reduced if fishermen are not allowed to fish while their case is being decided. The key incentive for this rent seeking behavior is the rents Taxes directed at part or all of the rents can reduce the incentives for this behavior

In a review of the literature on limited entry Townsend identified a number of fisheries in which he claimed that "political realities tend to favor those who want more licenses issued. (Townsend, 1990 373) In the clearest example that he cites, a temporary limited entry program for the Isle of Man herring fishery was abandoned earlier than expected because of favorable stock conditions in the first year of the fishery and government acquiescence to resulting political pressure to lift the entry moratorium. (Townsend, 1990 368) The first limited entry program in the British Columbia salmon fisheries, begun in 1889 appears to have ended in 1892 in response to pressures from persons who wanted to get permits in the fishery and who either could not get them, or manipulated the rules to get them. (Fraser 1977 2)

In 1978 within three years of the start of the Alaska limited entry program, Adasiak noted concerns over the creation of a rich man's club He pointed to the existence of provisions in the limited entry law that would allow the state to increase the numbers of permits in a fishery in response to long term improvements in fishery conditions He also noted, however that other conditions in the state s limited entry law might preclude increases in the number of permits if fishery management would be seriously degraded. (Adasiak, 1978 279 281)

Since Adasiak wrote the Alaska Supreme Court appears to have implied that average earnings that are too high may be a legitimate reason to implement the law's provisions to increase permit numbers (Schelle et al. 1992 127) In general, fishery gross revenues and permit prices have declined since the late eighties This will probably reduce pressures for increases in the numbers of permits

Fishermen can manipulate the system without seeking rule changes. Reports that a fishery may be limited may encourage an increase in effort in that fishery as fishermen seek to establish fishing records for themselves Some limited entry programs are explicitly transitional. Moratoria, for example are temporary limitations designed to buy time for decisions to be made about the shape of more permanent arrangements Limited entry may be viewed the same way if fishermen come to view individual quotas as a likely successor regime Where a moratorium or a limited entry program are believed to be temporary and transitional, fishermen may also increase their fishing effort in an attempt to enhance their records

One step that can be taken to head off rent seeking effort increases of this type is to make a credible commitment to ignore effort during the short run program in allocating fishing rights under any subsequent program. The State of Alaska implemented a four year moratorium in the dungeness crab fishery in Southeast Alaska in 1992 By statute however the state cannot count participation during the period of the moratorium for credit towards any possible subsequent limited entry permits (AS 16 43 260(f))

Effort Control Through Private Contracting

Wilen has speculated that as the number of operations in a fishery is reduced to low levels fishermen may be able to reach agreements among themselves to limit their effort (Wilen 1988 261) The argument is that if the resource is valuable and if the number of license holders can be reduced to a level that will allow them to reach an agreement with one another it may be possible for them to negotiate among themselves and agree to a set of fishing rules that reduces or eliminates excess effort

An oligopoly is an industry with only a few sellers The economic theory of oligopoly suggests several circumstances that may favor a cooperative agreement among the oligopolists [19] These circumstances include a legal environment that is favorable to or not hostile to agreement a small number of parties among whom agreement is to be reached similarity of operations to reduce information costs an obvious way to divide the proceeds of the agreement a stable environment so that adjustments to the agreement, and changes in the parties to the agreement are infrequent a situation where it is easy to detect violators of the agreement and an ability to exclude new entrants

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imposed on the courts

[19] The situations of oligopoly agreement among sellers in an industry and agreement among fish harvesters to organize the fishing of the resource are not the same An oligopoly agreement by approximating a monopoly outcome may restrict production below socially optimal levels and might lead to a reduction in social benefits The agreement among the fishermen to organize the harvest so as to eliminate waste if it did not provide them with market power could lead to an increase in social benefits from the fishery

A classic example of this type of agreement was operated in Oregon's Yaquina Bay herring sac roe fishery after 1989 In this fishery nine limited entry license holders using seine and lampara nets reached their own private individual quota agreement This agreement was embodied in a contract the fishermen have renewed periodically Under this agreement, the catch is divided equally among the license holders. This agreement was reached in response to competitive pressures in the fishery which were causing quality cost, and safety concerns Fishermen initially sought a state response and acted when it became apparent that the state would be unable to respond in a timely manner (Muse 1991 5) Note in this example the small number of fishermen the restricted area of operations, and the simplicity of the fishery with respect to species and season

The Sitka seine herring sac roe fishery in Alaska has also been cited as an example of a fishery where fishermen have reached agreements under limited entry (Wilen 1988 261) During the 18 seasons this fishery has functioned under limited entry the fishermen have agreed to cooperative arrangements for the harvest in 5 years The sporadic nature of the agreements in this fishery however suggest the problems of agreement as much as the possibilities The number of permits fished in this fishery has never been more than 52 (Schelle et al, 1992 34 38 107) The fishermen are fishing for the same species with the same gear during a short period of time In the days prior to the season all the limited license holders are literally in the same room for management briefings Despite these factors the fishermen have only sporadically reached effort reducing agreements and then only for a carefully limited period of time and under considerable pressure from resource problems. If the conditions in this fishery have provided such limited scope for agreement, we should not be optimistic about the potential for agreement in larger more dispersed, more complicated fisheries

Beyond Limited Entry

This section draws on theory and a body of fisheries experience to suggest plausible lines of evolution for a limited entry program.

Entry may be limited in a fishery after other regulatory options many designed to reduce the efficiency of fishing operations have been deemed unsuccessful. These pre-existing regulations may be continued following the start of the limited entry At the time of limitation there is likely to be more effort in the fishery than is necessary to harvest the resource Limited entry will probably leave more effort than is necessary to harvest the resource in the fishery A buy-back program may be implemented to take out excess effort The program may be funded by the fishermen themselves or by the government

If there are positive rents in the fishery at limitation, if there is a technological change which reduces the cost of applying effort in the fishery or if there is an improvement in price or resource conditions effort may continue to increase after limited entry The effort increases may be slower than they would have been in the absence of limited entry These increases may move the fishery towards a long run equilibrium in which the fishery operates with a positive level of rents This process may be accompanied by occasional modifications to the limited entry program and other fishing regulations designed to slow down the effort increases

It may be however that the increases in effort are rapid, tend to eliminate all rents and to produce other unacceptable resource and social problems Alternatively market or resource crises may drive rents and profitability below zero Another possibility is that the increasing layers of regulations designed to limit fishing effort become unacceptably burdensome and costly to the fleet

The Chatham Straits sablefish fishery which has operated under a license limitation program since 1985 provides one example of the evolution of a license limitation program. Envisioned as a first step in a more comprehensive management program, the nine year license program has been unsuccessful in restricting total effort or promoting a more orderly fishery Seasons have shortened from 5 days in 1984 to 24 hours beginning in 1987 Average hook numbers and landings per vessel day have increased dramatically with annual harvest objectives being consistently exceeded. In 1992 the number of participants (120) is well above the target level of 73 initial allocation of licenses in excess of the target level is one reason for the program s lack of success (Bracken 1994) In 1994 the Alaska Board of Fish approved implementation of additional management measures to supplement the license program. These regulations will consist primarily of the assignment of individual harvest limits during a specified season

At this point, other options may be investigated. These may include buy-back, fractional licensing or zonal licensing With the fishery in disarray the fishermen may not be in a position to afford the investment in the fishery that these represent and government financing might be sought Section 3 2 1 5 discusses some of the possible effort reduction options

Fishery management might go in another direction A casual review of surveys of individual quota programs suggests that most are introduced into fisheries which have already been managed with limited entry programs (Muse and Schelle 1989 Muse 1991) In many cases they are introduced after effort increases under limited entry have produced unacceptable conditions In some cases the programs have taken the form of simply assigning equal individual quotas to each of the license holders in the fishery irrespective of historical catches

Fleet Reduction Programs Issues and Examples

Introduction

The ability of a license limitation program to generate and sustain increases in economic efficiency may depend upon the nature of the fishery the number of licenses issued, and the actual impacts of the constraints imposed by the licensing program on the fishing technology The previous section provided some examples of fishery attributes and the types of design considerations which might affect the net economic benefits of a license limited entry program.

Anderson (1985a) demonstrated theoretical conditions where a license limitation program can result in efficiency gains. Campbell and Linder (1990) found that efficiency gains from a license limitation program were possible as long as non-restricted inputs could not be substituted easily for restricted inputs, and as long as restricted inputs are a significant proportion of the total cost of fishing effort.

Wilen (1988b) noted that the creation of rents in a limited fishery may depend upon fishing technology and the interaction between fishermen and regulators He also argued that in many limited fisheries constraints on the unit of gear are probably the most binding restriction which discourages an individual from upgrading their vessel to increase fishing capacity

Wilen suggested that the appearance of economic rents, as evidenced by limited entry license values are probably more dependent upon fixing the number of units of gear rather than fixing the number of units of vessel capital. If the terminal gear was sufficiently constrained, he felt that it would be relatively fruitless to expand vessel fishing capacity beyond a certain point although additional rent dissipation could occur through excessive in-season movement, searching, and etc

Hannesson (1988) concluded that limited entry programs may be better than their reputation and should not be dismissed outright. He also suggested that if the substitutability of components of fishing power is not great, then a limited entry program might be successful.

The political economy of many limitations tends to support the initial issuance of a greater than optimal number of units of gear in the fishery (Townsend 1992) Political considerations may sometimes lead to the initial issuance of more licenses rather than less, to reduce the number of persons opposing the program. Increasing the number of licenses initially allocated may also increase the number of persons who cannot be excluded without compensation

If a limited entry program can control the number of units of gear in a fishery and adequately contain the growth of fishing capacity of each individual operation then it might be possible to generate increases in economic benefits from further fleet reductions Nevertheless, many programs have never attempted fleet reductions and the fleet reduction programs which have been tried have had mixed results at best.

Buy-back programs are often voluntary meaning that a license holder does not have to surrender a license (and sometimes vessel and gear) unless the holder considers the compensation offered as adequate However license holders are sometimes taxed to provide the underlying funding for the buy-back program.

In such circumstances license holders who want to remain in the fishery would want the present value of the increase in their net benefits to exceed the present value of their buy-back taxes If a buy back program could achieve this both those exiting the fishery and those remaining in the fishery would be made better off or at least no worse off

Whether or not a buy-back program can achieve such a result may depend upon the nature of the fishery and the rules of the program. In some cases a significant portion of the licensed fishing capacity may already be idled and large quantities of use-privileges may need to be purchased before the remaining active fleet obtains benefits from additional catch

The decision rules of the buy-back program may impact the cost of removing fishing capacity Some programs remove vessel and gear as well as the underlying license In some cases the vessel is resold with restrictions that it can no longer be used in certain fisheries In other cases the vessel may be destroyed. While these actions may help to protect the vessel values of the remaining license holders the rules may result in a drain in buy back funds and hence the purchase of less fishing capacity than would a buy back program which purchases the underlying license only [20]

Programs which purchase and resell vessels and/or gear can also drain buy-back funds for other reasons A substantial portion of real administrative costs can become tied up in the tasks involved in purchasing and disposing of the vessels Vessel and equipment

[20]Sometimes the destruction of a vessel purchased or the resale of the vessel with restrictions on its use have been justified as a means to prevent spill-over effects into other overcapitalized fisheries which aren't covered by the buy-back program See Section 3 2 1 4 for a discussion of how limited entry on a piecemeal basis may result in spill-over effects into unlimited fisheries

appraisals, negotiation of purchases storage of the purchased equipment, maintenance of the purchased equipment, and sale commissions for resales are some of the types of administrative tasks which need to be done but which consume available funding.

Resale values are reduced by placing restrictions on the future use of the vessel and can be lower if an inordinate number of vessels are placed upon the market at the same time Spreading the sales out over time may require longer storage periods and increase the probability that the vessel will deteriorate in storage if not maintained properly This may also increase storage and maintenance costs and/or reduce resale value

The removal of fishing capacity through buy-back programs may also be hampered by the expectations which such programs may generate If a buy-back program is expected to increase the future net benefits and license values of the remaining fleet, some license holders who might otherwise opt to sell to someone in the absence of the program may opt to hold onto their license in the hope of obtaining a higher price in the near future This problem may not be large if there is a significant risk of missing out altogether" by waiting.

Persons interested in designing buy-back programs to achieve the largest reduction in fishing capacity given the available funding may have to consider many factors in deciding upon the best procedures and decision rules to follow Such decisions may be more difficult, the more complex the licensing scheme and the more diverse the vessels in the fleet

This section provides a few illustrative examples of attempts to reduce fleet sizes through buy-back programs The examples help to illustrate the types of issues and problems which may arise and provide some information on what was accomplished under the program. This section also describes two other approaches to reducing fleet sizes. The two other approaches are area licensing and fractional licensing

The information in this section has been drawn from existing literature No attempt has been made to provide updates on programs beyond the information provided in the literature cited.

Buy back Programs Issues and Examples

The Norwegian Purse Seine Fishery Buy-back Program

Hannesson (1986) provided an example of a fleet reduction program in the Norwegian purse seine fishery The fleet consisted of vessels which varied widely in size from 90 feet or less to 200 feet or more The fleet targeted pelagic species such as capelin herring, mackerel, and blue whiting.

Hannesson indicated that the power block was introduced in the early 1960s and that this had greatly increased the fishing capacity of the vessels Harvests of the pelagic species increased rapidly over the 1963 1967 period and the Atlanto-Scandia herring stock was brought to near collapse

A ban on the introduction of new purse seine vessels was introduced in 1970 This stopped the growth in the number of the larger vessels However total fishing capacity continued to grow Owners of smaller vessels had been permitted to replace them with larger vessels up to 6 000 hectoliters (hl) of cargo capacity Other vessels were also modified to increase their fishing capacity

In 1973 a formal license limitation program was introduced. The license allowed a particular person to operate a particular vessel of a given cargo capacity The goal was to limit fishing capacity through restricting cargo capacity However vessels could be replaced or altered and eventually licenses could be transferred between persons or vessels with the approval of the Ministry of Fisheries

Hannesson noted that the fishing capacity of a vessel could still be increased through alterations and better equipment. Similarly increases in fishing capacity could occur upon vessel replacement Moreover small vessels were exempt from the licensing system. As a result of this there was a growth in fishing capacity under the licensing restrictions

In 1979 the government began a buy-back grant program to reduce fishing capacity The program was operated by a fisherman's bank created by the government Hannesson reports that the program halted the growth in cargo capacity and led to an 18 / decline over the 1979 1984 time period He indicates that this was less than the capacity reduction needed to maximize economic rent in the fishery

Grants were given in return for destruction of the vessel, subsidizing the sale of a vessel to foreign buyers and for subsidizing the sale of the vessel to a domestic buyer who was converting it to another purpose The limited license was eliminated with the grant transaction

The amount of the grant was determined by set rules, and owners could voluntarily decide if they wanted to participate As the program evolved, the maximum potential amounts of the grants were increased to draw out more volunteers. Increases occurred in August 1979 November 1979 July 1980 and July 1982 The July 1982 guidelines apparently brought in new factors to be considered in the awarding of grants.

Hannesson indicates that the program appeared to be pulling out the cheapest licenses first, but it was unclear if the tendering process was best He notes that the successive increases might cause fishermen to adapt their expectations and wait for the grant amounts to be increased further. He also notes that the procedure draws out the process over time.

Did the grant buy-back scheme produce net economic benefits? Hannesson asked the question in the following two ways

(1) Did the retirement of licenses so improve incomes for the remaining vessels that they could have paid for the cost of the licenses and still be left with a net gain?

(2) Did the cost savings achieved by the retirement of vessels outweigh the amount paid for retirement?

Based upon available data and some seemingly reasonable assumptions Hannesson concluded that the answer to both questions was yes, and the present value of the benefits from the buy-back program appeared to outweigh the costs.

The British Columbia Salmon Buy-back Programs

The British Columbia salmon limited entry program was discussed in the previous section on limited entry programs This section briefly describes two buy-back programs that were used in the British Columbia salmon fisheries The information for the description comes from Campbell (1973) Pearse (1982) Fraser (1980) and Schelle and Muse (1984)

The first buy-back program began in 1971 funded by an increase in fees on Class A licenses, and by the resale of vessels purchased. A buy-back committee of industry members was charged with program development and program implementation

The program ran on a first-come first-served basis No fleet reduction target was established and no attempt was made to balance expenditures across gear groups License holders could submit non-binding applications to the program. They were offered an appraised value for the vessel and license plus a 5% bonus. The costs of the bonus and the resale of the vessel were absorbed by the program.

The vessels that were purchased were stripped of their license and resold with the stipulation that the vessel could not be used in any fishery on the west coast of Canada. The reasons given for the stipulation were to avoid spill-over effects into other Canadian overcapitalized fisheries and to prevent the remainder of the fleet from upgrading more easily by purchasing an auctioned vessel

The use-restriction probably also helped maintain the market value of vessels remaining in the salmon fleets However the stipulation helped to drain buy-back funds as the average resale value of the vessels (excluding commissions) represented approximately 43 / of the vessel and license purchase price Other factors which may have contributed to lower resale values were deterioration in storage and the auctioning of large quantities of vessels at one time (Schelle and Muse 1984)

This buy-back program was terminated in 1974 The buy-back fixed annual license fee had remained unchanged while the number of Class A licenses fell. Thus buy-back revenues from licensing fell. More importantly improved salmon runs and higher ex vessel prices in 1973 led to a considerable increase in license values Thus vessel and license asking prices were rising and few operations could be purchased with the available funds As a result the program was terminated.

When the program was terminated, 361 vessels had been retired representing approximately 6 / of the licensed Class A Fleet Vessel and license purchases had cost about six million Canadian dollars A large portion of the program's administrative costs were resale commissions Resale commissions averaged 8 5 / of the resale value

For the most part a first-come first served decision rule was used to decide which vessels to purchase The question arises as to whether or not a different decision rule would have resulted in a greater reduction in fishing capacity (or current production) than the rule chosen given the same level of buy-back revenues

Since the salmon licenses were restricted in terms of net tons one might suggest ranking the offers by their cost per net ton However the use-restriction placed upon the vessel upon resale complicates matters as vessels may have varying percentage declines in their resale values because of the new use restriction Under the buy-back program, appraisals were based upon the current uses of the vessel Vessels were purchased based upon the appraisals and later resold with restrictions on the use of the vessel.

Declines in resale value due to the use restrictions will depend upon the other alternative potential uses for the vessel. Thus, if the goal was to remove the maximum amount of fishing capacity it is not entirely clear what decision rules would have maximized the bang for the buck given the constraints of the first buy-back program.

A second and smaller buy-back program was implemented in the British Columbia salmon fisheries in 1981. An industry committee and some government representatives implemented the program. The funding of approximately 2.9 million Canadian dollars came from federal sources and needed to be spent before the fiscal year ended in March 1981. In the short time available approximately 2.5 million Canadian dollars were spent.

Applications were taken from mid-February to March 1. Despite a $100 application fee, 351 applications were received. There was time to complete appraisals on 111 vessels and offers to buy were made to 32 fishermen. The offers were accepted by 26 fishermen. The vessels which were purchased for about 2.5 million Canadian dollars were resold at auction for $(C)660,000. Pearse (1982) indicated that the vessels had deteriorated after a long period of storage and had been auctioned into a weak market. The money from vessel resales went into the Canadian government's general fund.

The buy-back committee apparently had a great deal of discretion in making their decisions on which vessels to purchase. Purchasing the maximum fishing capacity with the funds available, purchasing a balanced fleet mix (in value terms) at a low cost per ton, and equity considerations such as the health and age of the vessel owner" were some of the criteria used in the decision-making process.

The committee also had some discretion with respect to offer prices. While vessel appraisals were used, the committee could modify their offer prices based upon the size and age of the vessel and personal knowledge of the vessels by individual committee members.

The Australian Northern Prawn Fishery Buy-back Program

Wesney (1988) reported on the evolution of a license limitation program in the Australian Northern Prawn Fishery (NPF). According to Wesney the catch in the fishery varied widely on an annual basis, but averaged about 9500 tons and was usually worth from $100 to $150 million in export value which made it Australia's largest export earner. Several species of prawns were involved.

The fleet consists of trawlers from 19m to 23m in length, many of which are state of the art freezer boats. The fleet was limited in 1977 to 292 licenses and had a restrictive vessel replacement policy. Despite limited entry and the vessel replacement policy fishing capacity continued to increase.

Smaller vessels which were less than 21m or less than 150 gross construction tons could be replaced with vessels up to those limits. Larger vessels could be replaced as long as they did not exceed their original length and gross construction ton measurements.

Wesney indicated that other increases in vessel size (non-constrained dimensions) could not be enforced. This factor coupled with technological innovations in boat design, construction, and engine power led to increases in fishing capacity upon replacement. Improvements in navigational aids, fish finding aids, fishing gear, and equipment also played a role.

In the early 1980's, the profitability of the fleet was in decline for these and other reasons. An IFQ quota management program was not considered to be feasible. The availability of banana prawns, a key portion of the prawn resources, was highly variable and unpredictable from year to year. As a result, it was not practical to set an annual quota and stick to it.

The fishery harvested several species of prawns worth different market prices which also made an IFQ program less feasible. Additionally, there were several aspects of the fishery which might make IFQ enforcement a difficult endeavor.

Instead, fishery managers decided to go to a more elaborate program of input controls coupled with a fleet reduction program. A boat unit measurement was defined as a proxy for a unit of fishing capacity. A vessel's total boat units were derived by adding together the vessel's under-deck volume and the manufacturer's specified maximum continuous kilowatts brake power of the vessel's engine.

In 1984, when the program began, there were 131,769 boat units called Class A units assigned to the fleet of 292 vessels. The number of these units could decline but could not increase. The original right to a limited entry endorsement was assigned as a Class B unit. There were 292 of these. The number of Class B units could also decline but could not increase.

To decrease the number of both Class A and Class B units in the fishery, industry proposed a buy-back program called the Voluntary Adjustment Scheme (VAS). The VAS that was established was managed under an agreement with the Australian government and the NPF Trading Corporation LTD. A buy back trust fund was established and funded by an annual levy on all NPF fishermen.

Wesney indicated that the annual levy on an average-sized trawler of 400 Class A units was about $18 000 and that the levy on all boats was bringing in about 3 8 million Australian dollars A government-created National Fishery Adjustment Scheme organization also loaned 3 million dollars to the NPF trust fund to assist the VAS This loan has to be repaid by the levies on fishermen

The goal of the VAS was to reduce the Class A units from 131 769 to 70 000 by 1993 Fishermen wishing to exit the fishery could sell their units to the buy-back authority While the vessel owner is responsible for disposing of the boat, apparently the NPF Trading Corporation is responsible for helping to negotiate the sale of the boat to foreign buyers where there is a market for the trawlers used in the fishery

In addition anyone who wanted to replace a vessel must surrender one Class B license and the number of Class A units by which the replacement vessel exceeds 375 The replacement rules and VAS began in 1985 Other management measures included in the management mix were permanent closures of prawn nursery grounds seasonal closures to optimize prawn size and closures to prevent exploitation during critical recruitment periods

In 1986 gear restrictions and other measures were introduced in response to evidence that the tiger prawns were being overfished. Further conservation measures were taken in 1988 In addition greater emphasis was placed upon the VAS system.

Wesney provided information as of March 1988 on progress under the VAS and vessel replacement programs The number of Class B units had been reduced from 292 to 254 and the number of Class A units had declined from 131 769 to 114 091

Wesney was optimistic about the success of the program. He noted that the program had the support of industry even though the average trawler was paying an annual levy of $(A)18 000 toward the VAS fleet reduction 1987 was a profitable year for fishermen and Wesney felt that they would soon be receiving dividends from their buy-back investment Most of the idle capacity and some operational units had been removed from the fleet

Wesney noted, however that the market price of Class A units had risen to $(A)450 to $(A)650 from approximately $(A)120 at the start of the program. This suggests that removing additional units might become increasingly expensive

Joseph Haynes and Sean Pascoe (1988) were less optimistic about the long-term outcome of the VAS Using a mathematical programming model, they analyzed several different management policies and scenarios for the fishery They concluded that under sole ownership the optimum size of the fleet would be much smaller than that which VAS had targeted as a goal. They also saw few benefits to the vessel replacement policy and thought that it was actually retarding consolidation

The model simulation of the VAS did achieve positive rents under middle and high price scenarios (but not the low price scenario) if the cost of financing the VAS were ignored. They felt that the VAS would have a better chance of success if the levy were placed on effort rather than Class A units The authors noted that the VAS might be beneficial from society's viewpoint This might occur if an ongoing positive rent can be generated, resources which leave the fishery can earn positive returns elsewhere and resources which remain in the fishery can accrue greater returns than they did previously

Haynes and Pascoe noted that their analysis assumed that fishing power per Class A unit would remain constant However there were likely many ways that fishing capacity could increase per Class A unit over time as substitution of inputs occur Thus the authors felt that the positive rent result from the simulations of the VAS policy should be viewed with caution

Washington's Salmon Fishery Buy-back Programs

Buy-back programs in the Washington state salmon fisheries occurred in the late seventies and early eighties (Jelvik 1986 Schelle and Muse 1984) Reduced allocations to non Indian commercial fisheries due to the Boldt court decision and subsequent court decisions played a large role in limited entry and buy-back funding decisions

In 1974 the State of Washington enacted a three year moratorium on new salmon fishery licenses and permits in commercial salmon fisheries The moratorium had been under consideration for several years but the court case helped motivate the action Licenses were issued to owners of vessels which had landed salmon from January 1970 through May 1974 and also to some vessels which had been under construction The licenses were transferable and not tied to the vessel

In 1977 the moratorium was extended until 1980 and charter boats were placed under the system. After 1979 the commercial license moratorium was made permanent and vessels had to land fish in the previous year to continue to be licensed In 1975 Washington implemented legislation to implement a gear reduction program and received a grant from the Economic Development Administration (EDA) of which $2 700 000 was eventually used for gear reduction programs

Washington s first buy-back program began in January 1976 The vessel gear and license were all purchased under the program. Applicants were handled on a first come first served basis The state offered to purchase the license for a fixed nominal fee the vessel

and equipment for appraised value and nets according to a fixed schedule The vessels purchased were to be resold with the provision that the vessel could not be used in Washington State

No attempt was made to allocate buy-back funds among different fleets to achieve a balanced reduction across fleets The first buy back program purchased 253 vessels of which 244 were Puget Sound gillnetters There were substantial administrative costs associated with the purchase maintenance storage and resale of vessels and equipment On average only about 42% of the vessel's purchase price was recovered upon resale Many of the vessels deteriorated in storage prior to resale and a few sunk at the docks

The separation of electronic equipment from the vessels appeared to lower the resale value of both vessel and equipment In some cases, both the vessel and electronic gear were damaged during the separation Resale values were also lower because of the stipulation that the vessel could not be used in a Washington fishery and may have been lowered by the practice of auctioning the vessels 30 to 50 at a time

A federal audit of the program over the June 1976 through June 1979 time period indicated that marginally productive operations rather than serious fishermen were being removed. The program manager indicated that this part of the program had not been very successful at reducing fishing effort. He felt that the program had been successful in removing non-producing licenses but had resulted in little impact on the amount of gear fished.

In the Spring of 1979 with about $800 000 left to spend, the program was changed. Applications for the new (second) program were taken for a two week period. The applicant could apply for one of two options

Under the first option the applicant could sell the license to the program at its estimated 1978 market value Under the second option the applicant could opt to sell vessel, license and gear Persons selecting the first option would be taken before those selecting the second option Under the second option the program offered to pay for the license and gear in accordance with a schedule where the payment for the license was less than under the first option Again the vessel price was based upon appraisals

This part of the buy-back program saw the first extension of the program to the fisheries outside of Puget Sound. This included gillnet fisheries in Willapa and Grays Harbor as well as the ocean troll fishery Again there was no attempt to target a portion of the funds to a particular gear group This portion of the program was dominated by purchases from trollers

A third buy-back program began in late 1980 based upon a Congressional appropriation to purchase licenses only Under the program, the state offered to pay a fixed fee equal to the estimated market value of the license calculated from recent transfers A $500 bonus was offered if the application was received before a given date

Under this phase of the program, not enough money was available to purchase licenses from all of the applicants To decide which offers to accept, applicants were ranked by the length of time they held their license Enough money was available to purchase licenses that had been held for five or more years Licenses were purchased from 198 of 325 applicants

A fourth program began in October 1981 again using federal funding Under this part of the program, only fishermen who held their licenses prior to December 1980 were able to apply The fourth program offered two options both of which avoided the actual purchase and resale of vessels

Under the first option the state would purchase the license only at the state s estimated market value from the previous year Under the second option the state would purchase both the license and a promise not to use the vessel in Washington s commercial salmon fisheries for 10 years The restrictions placed upon the future use of a vessel were purchased at 30% of the vessel s appraised value

The fourth program was the first one which tried to achieve a balance across the different fisheries by allocating a portion of the buy back funds to each fishery Through December 1983 141 licenses had been purchased under the first option and an additional 170 licenses and vessel restrictions had been purchased under the second option at a total cost of $6 180 333 The purchases were distributed over all fisheries

Oregon s Columbia River Drift Gillnet Buy-back Program

Oregon implemented a moratorium on new licenses in the Columbia river drift gillnet fishery in 1980 Approximately 572 permits were issued under liberal grandfathering rules (Schelle and Muse 1984) In 1981 the moratorium was made permanent and the permits were made transferable

In 1981 the U S Congress made provisions for the purchase of vessels and permits from Columbia River drift gillnet fishermen impacted by the Belloni court decision in 1977 Based upon experiences elsewhere a permit-only' buy-back program was implemented in 1983 Thus, the real costs associated with purchase and resale of vessels and equipment were avoided.

The mechanics of the buy-back program were fairly simple Permit holders could submit offers to sell during an application period. The administrator would then rank the offers to sell in ascending order and pick a cut-off' point. Offers at or below the cut-off point would then be accepted.

The first application period occurred in approximately a one month period in mid 1983 Thirty five offers to sell were received and a cut-off point of $5500 was picked. Twenty five permits were purchased at an average cost of $3600 which was above the previous year's estimated market value

A second application period was held in early 1984 Sixty five applications were received and a cut-off point of $5450 was picked. Thirty-one permits were purchased at an average cost of $4900 There appeared to be some evidence of strategic behavior during the second application as many offers to sell were near or at the cut-off point from the first application period.

Other Fleet Reduction Methods

Area Licensing

MacGillivray (1986) reported on an another method of achieving fleet reductions that has been used in the British Columbia roe herring fisheries The method was called Area Licensing and represents a possible alternative to buy-back programs for reducing fleet sizes in overcrowded limited fisheries

The hectic roe herring fishery was first limited in 1974 However the numbers of licenses granted made the fishery very difficult to manage Moreover additional investments by license holders after limitation led to further increases in the fishing power of individual operations

In 1979 herring populations declined and the likelihood that the vast majority of the fleet would be concentrated at each opening increased. This caused concerns about the manager's ability to control the harvest Prior to the 1981 fishery a number of new management options were discussed with industry groups These included not opening the fishery individual vessel quotas, vessel pooling and area licensing The majority of the industry groups favored area licensing

Prior to the 1981 season a seine or gillnet roe herring license allowed a vessel to participate in all open areas in the waters off British Columbia Beginning with the 1981 season each license holder was required to choose one of the three herring areas to fish in for the year Safeguards had been put into the system in case too many fishermen applied for a particular area. These were not needed however as an adequate distribution across areas occurred by giving all fishermen a license for their preferred area.

In 1982 the program was changed to allow for fleet consolidation through multiple licensing Again each fisherman was allocated a license for a single area only However by leasing a license for a different area from another fisherman a license holder could use his vessel in more than one area. In this multiple licensing process, some fleet consolidation could occur and total harvesting costs could be reduced.

The original goal of area licensing had been to make the fishery more manageable by reducing the concentration of gear at any particular opening With the multiple licensing regulation introduced in 1982 the area licensing program also became a means to reduce fishing costs through consolidation of licenses onto a single vessel.

As the result of this area licensing scheme MacGillivray reported that the number of vessels participating in the British Columbia roe herring fishery declined by approximately 30 / over the 1982 through 1985 time period The number of vessels fishing in multiple areas increased in each of these years as consolidation occurred through private contracting.

Presumably both license holders who opted not to fish and leased out their licenses, and persons who leased a license to fish in an additional area were made better off by this consolidation MacGillivray provided survey and hearsay evidence suggesting that real cost savings had occurred through the consolidation process

Wilen (1988a) was particularly interested in the potential for area licensing and suggested that if the fleet became small enough through such a process the likelihood would increase that the remaining fishermen would act in a cooperative manner to achieve additional gains in economic efficiency Wilen suggested that similar area licensing schemes might be very good management alternatives in some fisheries perhaps even preferable to ITQs in some cases

Thus in some instances an area licensing scheme might be a viable alternative to a government run buy-back program. Under area licensing, all license holders would have the use privileges associated with their limited license diminished at the start of the program. A license to fish all areas would become a license to fish a single area.

Those who wished to continue to fish multiple areas would then have to obtain the requisite additional license(s) through the methods allowed under the program. These might include barter trade purchase and fishing with other license holders, etc. Fleet consolidations decisions and efficiency gains would occur through contracting among many individual private entities rather than through a centrally controlled government buy-back program.

Fractional Licensing

Townsend (1992) suggested an approach for reducing fleet size to an optimum level at initial allocation by awarding applicants fractional licenses and forcing them to acquire enough fractional licenses to equal a whole license in order to continue participating in the fishery. This method would obviate the need for a government run buy-back program to achieve fleet reductions, but would force all fishermen to make adjustments in their holdings if they wanted to continue to fish.

Townsend suggests that fractional licensing could occur at initial allocation. A fractional license plan would address the problem that limited entry programs are often expensive to implement but generate few benefits because too many licenses need to be issued for the program to be politically acceptable. Many persons could be allocated rights to fractional licenses without undermining the potential benefits of limited entry.

In a simple fishery where all vessels and licenses look alike, Townsend suggests that an optimum number or target number of units of gear could be chosen at the beginning of the program. Entities with claims to those licenses could then be totaled. Each eligible applicant would then be given a fractional license equal to the optimum number divided by the total number of eligible entities.

For example, if the target number of vessels was 100 and the total number of eligible applicants was 300, then 1/3 of a license would be assigned to each eligible applicant. Under Townsend's fractional licensing scheme, the continued operation of vessel would require a whole license.

Under such conditions, license holders would be required to negotiate among themselves to develop a smaller number of consolidated operations each with a whole license to operate a fishing unit. Depending upon the rules of the program, this consolidation might occur through trade, sale, lease, and/or fractional license holders consolidating their holdings onto one boat.

Townsend's approach would appear to work best in a simple fishery where each license contains exactly the same right. Fractional licensing might become more difficult in situations where the license is tied to a surrogate measure of fishing capacity such as net tons or some index number calculated from a vessel's attributes. However, Townsend suggests that the system could be flexible enough to handle such situations.

For example, each eligible applicant could have a qualifying number of units of fishing capacity. Managers could also pick an optimum number of units of fishing capacity or at least a smaller target number of units of fishing capacity (as in the Australian Northern Prawn fishery).

At initial allocation, the target number of units would be divided by the total number of qualifying units to determine the appropriate fraction. Then the fraction would be multiplied times each applicant's original qualifying units to determine each applicant's initial allocation of licensed fishing capacity units.

As the measured fishing capacity of all vessels would be greater than the licensed fishing capacity, consolidation of fishing capacity licenses would again have to occur through negotiated trades, sales, leases, etc. However, the amount of licensed capacity by fishing operation could vary.[21]

The idea of fractional licensing appears to be similar to the area licensing approach described by MacGillivray (1986) and further discussed by Wilen (1988). Indeed, a fractional licensing approach could be applied after a limited entry program has been in operation as was the area licensing plan invoked in the British Columbia roe herring fishery.

[21] An actual application of this concept might require some other adjustments to make the fractional license more divisible.

However applying the program after the fact would require a reduction in the use-rights previously assigned to each license Such an action might invite litigation particularly from those who paid fair market value for their licenses expecting that the government would not change the use-rights associated with the license

Both fractional licensing and area licensing might provide a means to achieve fleet reductions without resorting to government-run buy back programs and the issues associated with such programs However most buy-back programs have relied on voluntary" decisions to exit a fishery by persons who feel that they have been adequately compensated. Fractional and area licensing may involve an initial reduction in use-rights for all license-holders.

Under fractional licensing or area licensing all persons would have their use-rights diminished (unless occurring at the beginning of the program) and then consolidation would occur through private contracting to construct operations with the requisite amount of licenses [22] The burden of fleet reduction decisions would be shifted from a centrally controlled government entity to private contracting among license-holding entities

The Economics of License Limitation Programs

Resource and fishery economic literature is replete with treatises describing limited access programs and their near uniform failure to achieve efficiency gains in the long run The literature cites the inability of license programs to solve the fundamental market failure inherent in common property resources While license limitation creates a market for the rights to harvest fish it does not eliminate the race for fish among those that have that right The license does not grant the right to harvest a specific amount of fish and, therefore it will be prudent for each licensee to try to harvest as much of the resource as possible In order to increase their share of the harvest, each licensee will have incentives to increase their catching power Increases in catching power can come only with the introduction of additional capital or labor into the fishery The result is that overall it takes more capital and labor to harvest the same amount of fish This phenomenon will be referred to as capital stuffing [23] The conclusion of most of the literature is that license limitation is not as effective as allocation of individual quotas in bringing about efficiency and maximizing the net economic benefits to society It is less clear whether license limitation will bring about more net economic benefits than the status quo or open access fisheries.

Another often cited reason for implementing a license limitation program is that it will be a mechanism for a vessel owner to be compensated when leaving the fishery To address this question let's examine qualitatively the profit (in financial terms) to a vessel owner under the status quo and under a license limitation program. Theoretically the value of a vessel license will be a function of the amount of additional profit the license generates for the license holder Conversely profit is a function of the inputs and the costs of those inputs, used to product the output in this case fish and fishery products In this case we assume a net revenue function which takes into account fish prices fixed and variable costs and stock sizes CPUE, etc In addition to the net revenues the vessel owner expects to make a return on the capital he or she has invested in the fishery [24] We assume here the purchase price of the vessel determines the level of the expected return Profit under the status quo is therefore defined here as a function of the net revenue and the value of the vessel. In mathematical terms we can summarize the profit function under the status quo as follows

Let R^0 = the net revenue function under status quo and
V^0 = value of the vessel under status quo
then profit under status quo $\prod^0$ is a function (f) of R^0 and V^0 i.e
$\prod^0 = f(R^0\ V^0)$

Under a vessel license limitation program, the value of the investment may change and, therefore the expected returns the vessel owner must now factor in the purchase (sale) price of the license as well as the value of the vessel. Profit under a license limitation program can be summarized as below

Let R^1 = the net revenue function under license limitation
V^1 = value of the vessel under license limitation and

[22]Note that under area licensing all license holders could continue to fish in at least one area, even after the use privileges associated with their licenses have been reduced In contrast fractional licensing might require all license holders who have had their licensed capacity reduced to obtain the requisite additional license(s) if they wanted to continue to fish

[23]Technically capital stuffing does not include the cost of additional labor since labor is a variable cost and capital is assumed to be a fixed cost

[24]For purposes of this discussion the difference between *net revenues* and *profit* is that net revenue is the sum of actual revenues and costs and profit is the net return on an investment

L^1 = value of license under license limitation,
then profit under license limitation $\prod^1$ is a function (f) of R^1 V^1 and L^1 i.e
$\prod^1 = f(R^1\ V^1\ L^1)$

If the license program does not constrain the number of vessels participating in the fleet to a size smaller than would actually participate under the status quo then profits under the license limitation program will be unchanged from profits under the status quo Under this scenario it is unlikely that the net revenue function will change[25] and, therefore the value of the vessel under status quo will equal the value of the vessel under the license program plus the value of the license Mathematically this is shown as follows.

If $\prod^0 = \prod^1$ then
$f(R^0\ V^0) = f(R^1\ V^1\ L^1)$ Assuming that
$R^0 = R^1$ then
$V^0 = V^1 + L^1$

Now assume that the license program does constrain expansion of the fleet, or actually reduces the fleet. In this case it is likely that, at least in the short run profits will increase because fewer vessels will be chasing the same amount of fish Fewer vessels means more catch for the remaining and higher net revenues resulting from the net revenue function Under this scenario net revenues to the fleet increase and the licenses take on a value as a function of that increase In the short run the value of the vessel is unchanged. Mathematically this is expressed as follows.

If $\prod^0 < \prod^1$ then
$f(R^0\ V^0) < f(R^1\ V^1\ L^1)$ Assuming that
$V^0 = V^1$ then
$R^0 < R^1 + L^1$

The appearance of abnormally high profits under a license program that constrains the fleet in sheer numbers of vessels, will cause the owners of the vessels and licenses to try to expand their share of the fishery Since the number of vessels is fixed, the only available avenue for expansion is to increase the catching power of the existing vessel. This can be done in several ways including investments in new machinery by refitting or reconfiguring the vessel, or by adding more crew This phenomenon is known as capital stuffing These changes increase the actual investment in the vessel and, thus, the opportunity cost of capital, and increase the costs in the net revenue function The effect is that, in the long run any increase in profits achieved as a result of constraining the number of vessels erode eventually forcing the fleet profits back toward the profits under the status quo

In summary then unless the license program reduces the current fleet or eliminates expansion which would have occurred under the status quo it is unlikely that the existence of a license program will bring about an incentive for vessel owners to leave the fishery nor will it provide any additional compensation In the status quo investments may be recouped by fishing or by selling the means of production i.e the vessel and gear The vessel and gear will sell for a price equal to the expected earnings from using those means Under a license program which does not constrain the fleet there will be no expected changes in the ability of the vessel and gear to generate returns and, therefore there should be no change in the price of the means of production except that now the means of production include the vessel license If the license constrains the fleet then in the long-run with the assumption of capital stuffing the expected returns to the means of production will approach the expected returns under the status quo and therefore provides no real gains to society Section 3 2 1 2 describes some conditions under which additional rents could be generated, and possibly sustained. These conditions include an effective buy-back program or other capacity controls

A Hypothetical Example To Illustrate the Impacts of a License Program

The previous sections indicate that license limitation can bring about benefits to society only if the amount of capital and labor in a fishery are less under licenses than might be expected to occur under open access Thus, if 50 vessels would fish under license limitation and 51 vessels would have fished under open access then it can be argued that producer surplus under license limitation would be greater than under the status quo at least in the short run It can be argued that under the status quo every existing U S flagged fishing vessel may enter the fishery and, therefore any limited entry program will bring about benefits A key fact is that all existing U S flagged fishing vessels are not currently participating in the North Pacific fisheries and there is not much evidence that current prices and operating costs are enticing many new entrants

[25] If the license program is non-binding then vessel owners will not have incentives to change the way they operate and, therefore it would not be expected that production/cost functions would change

Under "open access existing vessels enter and exit a given fishery if vessel owner believes that more rents can be generated in that fishery than in any other fishery available to it, or in any other use of the vessel. If rents are very high then prospective fishing vessel owners may be enticed to purchase a vessel or build a new vessel.

As an example examine the hypothetical redfin fishery in which there are currently 50 vessels operating. For simplicity assume that each has identical fixed and variable costs (including opportunity costs) identical catching ability and, therefore identical revenues and profits. Further assume that the TAC for the redfin fishery is set at 100 000 tons Scenario 1 in Table 3 12 shows the costs, revenues and total profit of the 50 vessels in the hypothetical redfin fishery A total of $30 000 of profit is being generated per year per vessel, and $1 5 million for the fleet as a whole

Now assume that one additional vessel enters the redfin fishery[26] as shown in Scenario 2 Under the same TACs product prices, and costs, the profit or producer surplus accruing to each vessel and to the entire fleet is cut This is because the new vessel's fixed costs added to the total fleet cost of prosecuting the fishery while the fleet revenue stayed the same Each of the original 50 vessels are *still profitable however the extra profits they were earning have been have been cut in half*[27] Because there are profits in the redfin fishery even with 51 vessels additional entrants are a possibility If another vessel enters the redfin fishery the fleet profits fall to zero as seen in Scenario 3 Each vessel is still economically viable as they have covered their fixed, variable and opportunity costs, but no extra profits are to be had. If the 53rd vessel started fishing (Scenario 4) none of the vessels can cover all of their fixed and opportunity costs, and depending on their ability to withstand losses, one or more vessels will eventually leave the fishery In the process, profits to the fleet will be negative Scenarios 5-8 show that in order for the redfin fleet to break-even with 53 vessels, variable costs would have to decrease or revenues increase by $7 50/mt the TAC would have to increase by 1 923 mt (the break-even catch level with 52 vessels) or opportunity and fixed costs fall by over $14 000

Obviously the redfin fishery is an example built to show the impacts of vessel entry in an open access fishery In reality we know that costs, catch and revenues vary widely across fishing fleets. Under any given scenario it is likely that one or more vessels will earn positive profits It is also very likely that with each additional vessel average fleet variable costs will increase due to crowding on the grounds and the more intense race for the remaining fish It also seems obvious that limiting the number of vessels allowed to fish would be an effective way to ensure that the remaining fleet remains profitable

Suppose that a license limitation program had been in place in the hypothetical redfin fishery prior to the entrance of the 51st vessel. Further assume that there were only 50 licenses and that each of the existing vessels had a license The 51st vessel would not be allowed to enter the fishery unless the owner was willing to purchase a license from an existing vessel Scenario 9 shows the 50 *license situation with no changes to costs or revenues Scenarios 10 13 show the impacts* of the license program under the same changes to costs an revenues Under each of these scenarios the existence of the license limitation program preserved the profits in the fishery and society was most likely better off at least in the short run

Now suppose the license program made 52 licenses available then the license limitation program would have had no impact on the eventual entrance of the 51st and 52nd vessels (Scenario 14 & 15) and net benefits to society due to the policy change to a license limitation regime would be negligible In the absence of the changes in costs or revenues discussed in Scenarios 5-8 the 53rd vessel would not have entered the fishery under the status quo and could not have *entered under the license program. The license program* with 52 licenses did not constrain the status quo entrance into the fishery and therefore it has little if any net benefit to the nation

If however there existed the possibility of price or TAC increases or of cost decreases then a license limitation program would have barred the 53rd vessel from entering the fishery even though profits were to be had Therefore it can be argued that in the absolute sense license limitation can provide some benefits to the nation even if the impacts are not immediately felt It should be noted, however that these benefits are lessened by the fact that there is uncertainty whether there would be changes in costs or revenues and when they actually occurred. If for example a TAC increase occurred ten years into the future the actual benefits in today's dollars would be nil.

Clearly the prospect of profits today and into the future in a given fishery is the determinant of entry and exit of vessels into that fishery On the surface it appears that the extent to which a license program constrains entry into a fishery determines the programs impact It was exactly this logic which prompted many experiments with license limitation experiments which as history has shown have largely failed.

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[26]For *simplicity we assume that the new vessel already exists and incurs no cost in changing over to the redfin fishery* Any change-over cost would of course lessen the profit earned by that vessel and the fleet as a whole

[27]The fact that per vessel profits were reduced by over 50 percent is a result of the numbers used for this example In actuality the per vessel decrease in profits will vary depending the relative variable and fixed costs and revenue

The specter of increased profits in the future and the likely increase of vessels into the fleet as a result, has prompted the Council to approach license limitation The likelihood of increased profits under open access is a function of the likelihood of increased prices and/or lower costs It appears however that the Council is heading down the path toward Individual Fishing Quotas (IFQs) a market driven alternative to the current race for fish Because IFQs are likely to bring about increased profits to the recipients, the incentive to enter the fleet now is high It was the fear of speculative entry which brought the Council to the Moratorium, and it appears that the same threat is leading the Council toward a limited entry program. Following their action on the Moratorium, the Council approved the following notice to the public which was published in the Federal Register on June 21 1993 [Federal Register 1993]

> The North Pacific Fishery Management Council (Council) intends to develop a comprehensive rationalization plan (CRP) for the management of fisheries in the Councils area of authority The Council has adopted and publicized a control date of June 24 1992 after which any person or fishing vessel that enters the groundfish halibut, or crab fisheries under the Councils management authority will not be assured of future access to those fishery resources if a CRP plan is implemented that limits the number of participants or vessels in those fisheries The Council has also published possible eligibility criteria for access to the groundfish halibut, and/or crab resources The Council is not prevented from selecting any other date for eligibility in these fisheries or another method of controlling fishing effort from being proposed and implemented. The Councils intention in announcing this control date is to notify the public that speculative entry into those fisheries after the control date will not assure continued access to those fishery resources if a limited access system is implemented.

Most license programs have failed however even those that constrained entry because they did not eliminate the principle cause of over-capitalization common property which leads to a race for the resource This last statement is the centerpiece of the Councils problem statement and bears further examination

Gordon [1954] in his seminal work describes the The Economic Theory of the Common Property Resource In fisheries because no individual has control over a given amount of the resource and because the capture of more of the resource leads in theory to greater returns to each individual, each fisher will have incentives to fish as hard and as fast as possible In unregulated fisheries, this leads to overfishing and depletion of the stocks In fisheries where the total harvest is limited, these incentives lead to shorter seasons and greater costs to harvest the allowable catch One of the most cost efficient ways to increase one's harvest share in a regulated fishery is to use an additional vessel Other ways to increase one's share include increasing the catching power of existing vessels, increasing the actual fishing time per day and improving one's ability to find the fish

In Scenario 1 of the hypothetical redfin fishery there were 50 vessels each catching 2 000 mt and each earning profits of $30 000 Eventually each independent fishing company will come to the realization that more profits could be earned if its vessels catch could improve relative to the other vessels Scenario 16 assumes that one company discovers a technological improvement which allows its vessel to catch 10% more fish per day than in the past To utilize this improvement the vessel must increase its annual fixed cost by $30 000 By catching 10% more fish per day the improved vessel increases it total profit to over $76 000 but because the TAC is reached sooner and the average catch for the other vessel decreases the profit accruing to each of the other vessels falls to $28 000 Overall the fleet spends $30 000 more to catch the same amount of fish and to generate $30 000 less in producer surplus This is a loss in the net benefits to society accruing from the redfin fishery

There will be incentives to make the kind of improvements as shown above under either open access or license limitation[28] Assuming vessels were available at prices equal to their earning potential in the fishery[29] it is likely that before long each vessel will have incorporated the technological change This will result in each vessel's catch returning to 2 000 mt but since each vessel will have to increase its fixed cost by $30 000 per year each vessel and the fleet as a whole will be earning zero profits This will also result in a shorter fishing season raising safety and other concerns This is shown in Scenario 17 In the end, the result is the same under either open access or under license limitation Overall catch and revenues will not improve but fleet expenditures will increase to the point were all profits are dissipated

[28]It is also possible that the license limitation program will make feasible capital improvements which under open access were not feasible Assume the fishing company has the know-how to double its vessels catch per year by investing in improvements in the engines fish finding electronics nets and crew quarters Further assume the improvements are an all or nothing investment The improvements beside doubling the catch and revenue increase the vessels average variable costs by $145/mt to $505/mt and increase annual fixed costs by $250 000 per year to $1 000 000 Under open access with 50 vessels in the fishery the investment is not feasible the company would do better by bringing in an additional vessel

[29]Assume however that a license limitation program with 50 licenses was in place At this point the investment appears feasible

Conclusions Regarding License Limitation Programs in General

From the examples it is clear that there may be some gains in profits earned by the industry in the short-run with the implementation of a license limitation program.[30] Those gains will only come about if the number of licenses is set such that it constrains entry into the fishery It is also likely that capital stuffing will occur even under a license program which constrains entry Capital stuffing is the Catch 22 of license limitation programs In order to be effective a license limitation program must constrain the number of vessels in the fleet to a number less than that which would be participating under open access Capital stuffing will very likely occur in any 'effective license limitation program. If the license program does not constrain the fleet, the likelihood of capital stuffing approaches zero but then there is no benefit to the industry or the Nation even in the short term.

Although such a program may place overall limits on the number of vessels operating in the fisheries, it is not likely to effectively control effort or capacity increases in the long run An effective buy back program would have to potential to mitigate the Catch 22 phenomenon and actually reduce effort and capacity however such a program would be very unlikely under a license limitation alternative which is perceived as an interim step towards eventual allocations of IFQs, particularly if the allocations of IFQs will be going to the players identified under the license limitation program.

[30]It should be noted that the benefits described above do not include the costs of administering implementing monitoring and enforcing the license program. These costs will further diminish the net benefits to the nation of a license program.