

MEMORANDUM

TO: Council, SSC and AP Members
FROM: Clarence G. Pautzke
Executive Director
DATE: June 2, 1998
SUBJECT: Experimental Fishing Permit

ESTIMATED TIME
6 HOURS
(all D-1 items)

ACTION REQUIRED

Provide NMFS with recommendations on experimental fishing permit request.

BACKGROUND

Groundfish Forum, Inc., has applied for a Experimental Fishing Permit (EFP) as detailed in item D-1(e)(1). The objective of the EFP is to select and test the most promising device that can be placed in a trawl that lowers retention of halibut and reduces halibut bycatch rates without significantly lowering the catch rates of target flatfish species. The test is scheduled to take place over about a 10-day period in August or September of 1998 on the grounds of the deep water flatfish fishery in the Central and Western Gulf of Alaska.



FM AK REGION
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

AGENDA D-1(e)(1)
JUNE 1998

May 28, 1998

RECEIVED
JUN - 1 1998
N.P.F.M.C

Clarence G. Pautzke
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501

Dear Clarence,

We have received an application from John Gauvin, Groundfish Forum, Inc., for an Experimental Fishing Permit (EFP). Issuance of experimental fishing permits is authorized by the Fishery Management Plan for Groundfish of the Gulf of Alaska and its implementing regulations at 50 CFR part 679.6, Experimental Fisheries. If awarded, this permit would be used to develop a device for flatfish trawls that may lower halibut bycatch rates without significantly lowering catch rates of target flatfish species.

Under regulations at § 679.6, we have consulted with the Alaska Fisheries Science Center, and have determined that the application contains all the information necessary to judge whether the proposal constitutes a valid fishing experiment appropriate for further consideration. We are initiating consultation with the North Pacific Fishery Management Council (Council) by forwarding the application to you as required by regulations. We understand that you tentatively scheduled Council review of the attached application on the Council's June 1998 agenda in anticipation of our review and determination that the application warrants further consideration and consultation with the Council.

Please notify Mr. Gauvin of your receipt of the application and invite the applicant to appear before the Council in June in support of the application if the applicant desires. We will publish a notice of the application in the Federal Register with a brief description of the proposal. Attached is a copy of Mr. Gauvin's proposal.

Sincerely,

Steven Pennoyer
Administrator, Alaska Region

Attachment

Salveson





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Alaska Fisheries Science Center
7600 Sand Point Way Northeast
BIN C15700, Building 4
Seattle, Washington 98115-0070

MAY 22 1998

MEMORANDUM FOR: F/AKR - Steven Pennoyer
Regional Administrator, Alaska Region

FROM: F/AKC - James W. Balsiger
Science and Research Director, Alaska Region

SUBJECT: Application for an Exempted Fishing Permit to
Test a Halibut Excluder Device for Flatfish
Trawl Fisheries

We have reviewed the May 15, 1998 application from Mr. John Gauvin, Groundfish Forum, Inc. for an Exempted Fishing Permit (EFP) to test a halibut excluder device for flatfish trawls. We conclude that the application with respect to regulations of 50 CFR part 620.10 and 679.6 contains all the information required for an EFP and that the proposal constitutes a valid fishing experiment appropriate for further consideration. The objective of the EFP is to select and test the most promising device that can be placed in a trawl that lowers retention of halibut and reduces halibut bycatch rates without significantly lowering the catch rates of target flatfish species. The test is scheduled to take place over about a 10-day period in August or September of 1998 on the grounds of the deep water flatfish fishery in the Central and Western Gulf of Alaska. Alaska Fisheries Science Center (AFSC) scientists from the Resource Assessment and Conservation Engineering (RACE) Division have been working with the Groundfish Forum to develop the experimental design. They are also willing to participate in the competitive process for selecting the best design of a halibut excluder device and vessels for conducting the test. We plan to have one scientist aboard the participating fishing vessels to oversee the field tests and to observe the operation of the test nets using our remote underwater video camera systems. This same scientist will also participate in the data analysis and writing of the final report.



Mr. Steve Pennoyer
Regional Director
NMFS- F/AKR
P.O. Box 21668
Juneau, AK 99802

May 15, 1998

RE: EFP application to test a halibut excluder device

Dear Steve:

Groundfish Forum hereby submits for your consideration an application for an exempted fishing permit (EFP) to test a halibut excluder device during August or September this year. Through a "request for proposals" process, Groundfish Forum will invite interested parties to submit applications to participate in the EFP which include descriptions and drawings of their halibut excluder devices and any available supporting evidence on the expected performance of these devices. A NMFS review panel will review the descriptions of excluders and other application materials for the test fishery. The review team will select two vessels to test the most promising halibut excluder.

The EFP test described in the attached document employs an experimental design which has a high probability of determining the actual effectiveness of the device. Through this process, industry is expected to gain a great deal of knowledge and experience which could eventually result in significant reductions in halibut bycatch in flatfish trawls.

In accordance with regulations governing EFP applications, we have provided the baseline information about our EFP in the categories listed in the regulations. A more detailed description of the EFP and the experimental design can be found in the attached supporting materials. Thanks in advance for considering our application.

Sincerely,

John R. Gauvin

Groundfish Forum's test of a halibut excluder device for flatfish trawls. May 1998

Date of Application: May 15, 1998

Name, mailing address, and phone number of applicant:

Groundfish Forum, Inc.; John R. Gauvin, Director
4215 21st Avenue West, Suite 201
Seattle, WA 98126
(206) 301-9504

Purpose and Goals of the EFP: Groundfish Forum's goal is to develop a device for flatfish trawls that lowers halibut bycatch rates without significantly lowering catch rates of target flatfish species. The EFP sets up a "request for proposals" process whereby industry can submit materials describing proposed devices. NMFS gear specialists and other NMFS managers will review the materials and select the most promising device based on criteria set out in the EFP. Two vessels chosen by the NMFS panel will test the selected device under a rigorous, controlled, experimental design with a high probability of determining if the device excludes halibut and retains target flatfish successfully. The EFP will produce a report for public dissemination describing the device tested and the results of the test. Because flatfish fisheries are constrained by halibut bycatch, widespread adoption of the device can be expected if the device is successful.

Justification for the EFP: Mandates to reduce bycatch and bycatch mortality are set out in the Magnuson-Stevens Act. The flatfish fishery would benefit from an opportunity to develop and test a halibut excluder outside of the regular open access fishery where *ad hoc* development of bycatch reduction devices suffers from extreme limitations (see attached description of the EFP).

Names of participating vessels, copies of vessel Coast Guard documents, names of vessel masters:
This information will be supplied after the review process is completed.

Target and incidental species harvested: The estimated total harvest of allocated groundfish species is 650 MT of groundfish, principally species belonging to the deep water flatfish complex of the Gulf of Alaska. The experiment will be conducted in accordance with the directed fishing standards for deepwater flatfish. The expected total incidental mortality of halibut from the experiment is 25 MT and if the device reduces halibut bycatch by one-half, then the expected total mortality of halibut is 18.5 MT (see attached document for a more detailed list of expected catch and bycatch). Halibut catch will be measured through a census conducted through deck sorting of halibut under the direction of observers.

Disposition of allocated groundfish species caught in the EFP: Participants selected for participation in the experiment can legally retain all groundfish catches in accordance to the directed fishing standards for deep water flatfish that would be applicable to the open access fishery during that period of time.

Expected impacts on marine mammals and endangered species: None.

Type and size of vessels and gear: Expected participants are the H&G or shoreside catcher vessels that commonly participate in flatfish fisheries in the GOA and BS/AI. Gear will be normal flatfish trawls with modifications in the net to exclude halibut (modifications to experimental tows only).

Approximate time and place for exempted fishing under EFP: The field test portion of the EFP is expected to last approximately 10 consecutive days sometime in August or September of 1998 (see attached document for an explanation of the anticipated timing). The location for the test will be the common areas for deep water flatfish fishing in the Central and Western GOA.

Signature of Applicant:

Exempted Fishing Permit Application May 1998: Groundfish Forum's test of a halibut excluder device for flatfish trawls

Part One: Introduction

Purpose and need for an EFP for a halibut excluder device

Groundfish Forum believes the halibut mortality attributable to trawl fisheries can be significantly reduced. A multi-faceted approach will achieve the best success: 1) rapid identification and avoidance of areas with high bycatch rates; 2) excluders to minimize bycatch in the areas selected for fishing; 3) a system to return captured halibut to the sea rapidly; and finally, 4) an system that holds fishermen accountable for their individual bycatch. Groundfish Forum believes that individual accountability would ensure that all fishermen diligently employ the first three elements above.

Industry programs have already started to reduce halibut bycatch and mortality effectively. These programs, when used in conjunction with effective halibut excluders, will enable managers to reduce the quantity of halibut needed to conduct trawl fisheries without compromising utilization and optimum yield objectives.

Summary of current and proposed projects to reduce halibut bycatch and mortality

Sea State:

In 1994, H&G companies fishing flatfish pioneered the use of Sea State to rapidly identify crab and halibut bycatch hotspots. Daily, NMFS observer data is electronically transmitted to Sea State where it is analyzed and sent back to fishermen in the form of charts indicating where high bycatch rates occur. Since 1997, Sea State has also included a list of vessels' specific daily bycatch rates for each PSC species to help vessel owners recognize and reduce bycatch problems. Sea State is now used for all Bering Sea flatfish fisheries, Pacific cod fisheries in Alaska, and whiting fisheries off the coast of Washington.

Since Sea State's inception, participants in the rock sole fishery have lowered their red king crab and halibut bycatch even when the species are found in unexpected areas or at odd times. Furthermore, for the first time ever, yellowfin sole fishermen took 93% of the TAC and stopped fishing due to market conditions and rough weather in December instead of halibut bycatch.

Halibut Mortality Avoidance Program (HMAP)

Last year, Groundfish Forum proposed a system to allow for deck sorting of halibut. Currently, halibut are placed in fish tanks until observers can sample the catch. If HMAP is approved participating trawlers will be able to return halibut to the sea more rapidly which will decrease mortality. HMAP will place limits on the duration and tonnage of hauls. Crew members will be required to spill codends gradually into fish tanks while removing halibut. Observers will monitor deck sorting and enumerate the halibut before they are released. Estimates of halibut bycatch will be more accurate than with basket sampling under the VIP program.

In February, the North Pacific Council selected the HMAP program for analysis and formed a committee to iron out the details. This spring, the Council and NMFS will review the program and (hopefully) approve regulations to implement the program in 1999 or 2000.

VBA's:

A system of individual accountability would increase incentives for fishermen to utilize other programs such as Sea State and HMAP. Under a fleet-wide PSC cap, a few fishermen have been able to thwart industry efforts to reduce bycatch. Under a VBA system, those unwilling to lower PSC bycatch will be only impacting their own success. The Council has formed a committee to work out a proposal for analysis. If consensus is reached on the program, it could be implemented as early as 1999.

Development of an effective halibut excluder device:

Avoidance programs fall short when halibut are not concentrated into identifiable areas or there is insufficient data to project bycatch rates. In such cases, an excluder is a more effective method of reducing halibut bycatch.

Trawl skippers have informally developed and tested halibut excluders for years, but there have been no systematic tests of these devices. Informal experimentation often does not include control observations to account for variability of catch and bycatch rates. In addition, informal testing during an open access fishery frequently leads to early abandonment of the device because the vessel is at a competitive disadvantage. The benefits of formal testing with a rigorous experimental design can not be understated. For instance, in Groundfish Forum's experimental fishery last summer, we noted that a careful statistical analysis of the data revealed quite different results than those informally observed by skippers and deck crew in the field.

Halibut excluders have been tested by NMFS and other institutions (Rose 1995, Stone and Bublitz 1995). Although this research is beneficial, both studies had small sample sizes and thus limited statistical power. In addition, many of these studies were performed on nets that are different from those currently used by the industry. In addition, secondary codends were used to catch fish escaping through the excluder device. The extra codend itself may effect the effectiveness of the gear. Further, neither system tested was effective on deepwater flatfish species specifically, which is the fishery selected for the EFP test (see below).

This experiment will utilize both strong statistical methods as well as the experience and innovation of the industry. A Request for Proposal (RFP) process will challenge the industry to come forward with their most promising excluder designs. The experiment will use a review panel will select a prototype device that appears to have the greatest promise based on available evidence.

Desirable aspects of a halibut excluder in flatfish trawls

The following are aspects of an effective excluder device that is practical to the industry. The NMFS review committee in this EFP will focus on the preferred aspects listed below while reviewing applications.

- 1) Release a large percentage of the halibut that come into the trawl unharmed
- 2) Avoid significant reductions in target flatfish or round fish catches, while potentially releasing less desirable species (such as arrowtooth flounder).
- 3) Function with few failures or break downs and be resistant to clogging and debris jams.
- 4) Easy removal or disabling of the excluder to facilitate changes between experimental and control gear without handling difficulties or safety concerns for deck crew (this feature is especially critical for small vessels with limited deck length).
- 5) Durability and ease of storage on deck.
- 6) Constructed from affordable materials that are readily available.

The device selected by the review panel will be subjected to a systematic field test to establish its effectiveness as well as some exploration to isolate the elements that make the device successful (placement, towing speed, sea conditions, ambient light conditions, etc.)

Expected benefits from this project:

A detailed report will be provided describing the device, how it was tested, and the degree of halibut and target catch reduction experienced from the test. The report will also hopefully provide some qualitative information that would indicate which factors and design elements were most critical to the effectiveness of the device. Other expected benefits are that the RFP process will document the devices and approaches applicants have developed and informally tested. If the device is successful, then one could expect large-scale industry adoption of the device and lower halibut bycatch overall while maintaining the utilization objectives. Even if the device is not successful, the experiment has been designed to provide helpful information that can be used in the future to reduce halibut bycatch. In addition, the application and experimental process should help foster industry cooperation and the impress on the industry the importance of collective efforts to reduce bycatch. Many believe that this latter benefit was one of the most important results from Groundfish Forum's EFP in 1997.

Part Two: method and approach for the experiment

Overview:

Groundfish Forum will administer the RFP process and develop all application materials with oversight from Dr. Craig Rose, Alaska Fisheries Science Center, RACE Division. NMFS will be consulted to determine the level of observer coverage needed; review the adequacy of sampling procedures and proposed observer sampling stations; and provide information on applicants' expected cooperation level based on their past records.

NMFS Race Division will be responsible for appointments to the selection panel. Upon approval of the EFP, Groundfish Forum will distribute materials describing the RFP process; requirements for the applicants; and the extent of the fishing opportunity in the experiment. The panel will convene approximately three weeks after these materials are made available to the public.

Choice of a fishery to conduct a test of a halibut excluder

The Gulf of Alaska deepwater flatfish fishery is proposed for this experiment for several reasons. The rex sole and flathead sole inhabit the same depths and areas as halibut and thus the fishery has been constrained by the halibut cap. At-sea processors have averaged halibut rates of four to six percent over the last three years. Shoreside rates are believed to be similar, but lower levels of observer coverage make it more difficult to characterize rates. Halibut bycatch and average size is higher in Gulf flatfish fisheries than in similar Bering Sea fisheries. This makes the Gulf a better ground for proving halibut excluders.

RFP Process and timing for tasks associated with the experiment

Trawl companies will be invited to propose halibut excluder designs. The experiment is designed to be feasible for at-sea processors or vessels delivering to shoreside plants. A review panel of NMFS gear experts and other management personnel will review the suitability of applications and determine which design has the greatest potential for excluding halibut and retaining target catch. NMFS will be responsible for selecting participants for the review panel.

The field test portion of the EFP is expected to take approximately ten consecutive days. Both vessels participating in the experiment will have to fish during the same period to standardize factors determining halibut and target catch abundance to the greatest degree possible. Successful applicants will have to coordinate a starting time that allows the two vessels to fish at the same time. Groundfish Forum prefers that the field test occurs sometime between August and September, 1998. The August-September period is a time when few regular trawl opportunities are available and this will help to maximize the attractiveness of the EFP fishing time. This time is also the best window of opportunity to catch deepwater flatfish in the remainder of this year. Groundfish Forum hopes that this time schedule will be sufficient for the NMFS approval process. If this proves impossible, we will attempt to reschedule the EFP to the next period when fishing conditions would be appropriate for the test (spring or summer of next year).

Groundfish Forum is aware of the brevity of the application period given the proposed timing for the experiment. While the EFP application is being reviewed, Groundfish Forum will inform all North Pacific trawl associations of the potential opportunity and ask the Council to also notify the industry through its website and other means. Notice of the proposed experiment will describe the EFP and ask parties interested in participating to begin preparing materials for their applications. Notice of the upcoming EFP will also explain that the experiment is still subject to Council and NMFS approval.

Groundfish Forum will formally disseminate application materials to all North Pacific trawl associations as well as making these materials available through the Council's website upon receiving Council approval of the EFP. Materials describing the experiment will detail the purpose of the EFP, the "request for proposals" process, application materials required, catch and PSC limits for the experiment, a description of all responsibilities of applicants, and a description of the review process. Application materials will note that the EFP will still be subject to final approval by NMFS following Council approval. Potential applicants will also be provided a rough schedule for the fishing activities (subject to change). Applicants will have approximately four weeks to complete and submit applications from the time application materials are formally made available. The review panel is tentatively scheduled to take place in late July, subject to the availability of panel participants and other considerations.

Requirements for applicants and participants

Applicants must agree to follow the procedures and protocols for fishing described in the EFP. This includes switching control and experimental nets at the direction of the observer and standardizing tows within blocks to the greatest degree possible (duration of tow, towing speed, area, etc.). Further, at the observer's request, participants must agree to assist with sampling, enumeration of halibut and halibut deck sorting.

The requirements to switch from control to experimental nets and to deck sort halibut are expected to create a significant amount of additional work for deck crews. Applicants will have to recognize that if deck crews normally perform other duties between tows (such as sorting or helping process fish in the factory), this practice will likely be impossible under the increased workload for the experiment.

Applications must include: a) scale drawings or models of the device, b) an explanation of how the device works and why it is believed to be effective, c) any supporting data (observer data, underwater videos, etc.) that explains how the device has been used in the past and sheds light on the expected effectiveness of the device. Applicants must also describe their vessels' facilities (including observer sampling station), and demonstrate that the deck space is adequate for testing the device and deck sorting halibut.

In addition to the potential of the excluder device proposed for testing, the NMFS review panel will consider the deck space and sampling and other facilities available on the vessel in making their determination of which vessels are selected for participation. The review panel will also take into consideration the expected level of cooperation with the experimental protocol by the applicant, based on any information available from NMFS in-season managers who will be consulted in the process of reviewing applications.

Applicants must agree to allow data derived from the experiment to be used by Groundfish Forum and NMFS for the analysis and for public dissemination. Applicants must agree that information on their halibut excluder devices submitted for this experiment is public property following the experiment.

Applicants may sell all fish which would be legally retainable under the directed fishing standards applicable to the 1998 third quarter GOA deepwater flatfish fishery (note: in the event that the experiment is conducted at another time, the directed fishing standards in force during that quarter would be applicable to the experiment). The directed fishing standards place maximum retainable bycatch limits (MRBs) on the amount of non-target species that can be retained in conjunction with deepwater flatfish such as rex sole, Dover sole, and flathead sole. Adherence to the directed fishing standards includes discard of any species on PSC status at the time of the field experiment.

How applicants will be selected:

All applicants must submit materials describing a proposed halibut excluder device to be tested. The applicant that proposes the device chosen for testing will automatically be selected for the test fishery (assuming their application meets all other criteria set out in the EFP). The second vessel for the test will be chosen randomly from the pool of eligible applicants by a random drawing conducted by the review committee. If the second participant does not want to fish with

the device it did not propose, then the selection committee will make the opportunity available to the other applicants, in the order selected by random drawing.

Observer coverage requirements for the test and description of sampling stations

Vessels participating in the test must take adequate observer coverage to allow all hauls to be sampled as described below. Applicants proposing to use vessels that normally are required to take an observer for 30% of their fishing time must, at a minimum, have one observer on their vessel for the duration of the experiment. All applicants must submit a statement of their fishing plan for the EFP as well as a description of the observer sampling facilities on the applicant's vessel. The fishing plan submitted must describe the number of tows per day the crew expects to make during the experiment and a description of the proposed coordination of observer sampling and deck crew duties during the experiment. These materials will be used by the selection committee to gauge the ability to obtain valid data on the applicant vessel and to examine the suitability of the proposed observer coverage for the collection of data in the experiment.

Once applications are reviewed, Groundfish Forum will contact Observer contractors for the participating companies. Observers will have to be in Kodiak two days before the experiment for a briefing to explain the modifications to observer priorities. Enumeration of the halibut catch from every tow will be given the highest priority for observer efforts. Also, observer duties will be prioritized to increase species composition sampling to at least 300 kg per tow, with samples taken randomly throughout the catch from each haul. A lower priority for this sampling will be the size frequency of target catch, to determine, to the degree possible, whether the excluder has an effect on the size composition of target catches.

In addition, as in Groundfish Forum's 1997 experiment, observers will be asked to help design and to carry out a regime for deck sorting halibut, allowing both accurate enumeration of halibut catches and expeditious return of halibut to the sea. Vessel personnel responsible for following the experimental protocol must agree to abide by this protocol throughout the EFP fishing.

Data used to design the EFP

To determine the sample sizes required to detect changes in target catch and halibut bycatch rates, observer data obtained from Sea State were examined from 4 H&G vessels which fished in the Gulf of Alaska, deepwater flatfish fishery in the second quarter of 1997. Most of these tows were located in three areas between Kodiak Island and the Shumagins. The principal flatfish species captured were rex sole and arrowtooth flounder. Halibut bycatch rates averaged 60 kg/mt. Data used for development of the EFP came from vessels that were not using halibut excluders during the period corresponding to the data used for this section.

Because a paired design is planned for the halibut excluder tests, sequential tows from these vessels were paired, excluding any pairs where the tows were far apart in time or distance and randomizing their order. This process produced 58 pairs of tows. Log transformed catch rates (kg/hr) were calculated for rex sole and halibut for each tow. The differences in catch rates between paired tows were calculated, providing a sample with which to estimate the expected variability between paired tows for the catch rates during the experiment.

The standard deviations calculated for the differences in log transformed catch rates were 0.6 for the rex sole catches and 1.26 for the halibut bycatches. These values were used to estimate the

power to reject the null hypothesis of no catch difference for a range of sample sizes and proportional differences in catch rates. The calculations were done with the Sample Power program (SPSS, 1997) using a paired t-test model (one tailed test, $\alpha = 0.10$)

These data indicate that 60 pairs of tows would have a 90% probability of detecting a 35% difference in halibut bycatch rates (see attached figures). The same number tows has close to a 100% chance of detecting a 25% decrease in rex sole catch, the principle target species in the Gulf deepwater fishery (see attached figures). If a reduction in target catch (rex sole) of 10% occurs, a far lower probability of detection would result (< 50%). However, such a small reduction in target catch would not be critical compared to the benefits of a 35% reduction in halibut bycatch. The industry expects that if this level of reduction occurred in open access fisheries the reduction in halibut bycatch would extend the fishing season. This value of this benefit would greatly exceed the small losses in target catch from each tow.

Experimental Design

The principal variables of interest for this experiment are the catch rates (kg/hr) of rex sole and halibut from tows with and without the experimental device. Catch rates of other groundfish will also be examined. The size composition of target and bycatch species will also be sampled to test for any size selectivity of the device. Auxiliary towing and environmental data, including depth, temperature, light level, speed, and time of day will be collected and analyzed for any important factors which may effect the selectivity of the device. The sample unit for all variables will be the trawl tow.

All tows will be conducted in pairs (statistical blocks), consisting of sequential tows of a trawl with and without the device by a single vessel, with the order of control and experimental tows determined randomly for each pair. When a site has been selected for the first tow of a pair, the observer will inform the crew whether or not the device is to be installed. Paired tows will be conducted as close together as practical in space and time, using the same procedures and towing methods, except for the addition or removal of the device.

The experiment will be conducted on two vessels, dividing the number of tows equally between vessels (60 tows (30 blocks) per vessel). This is needed to gauge the effects of vessel-specific variation on the performance of the device selected for the test and to complete the experiment in a reasonable amount of time (a long time duration could mean the experiment is conducted under conditions of varying groundfish and halibut abundance, which could affect results). With two vessels, the experiment is expected to take 10-12 days of fishing, based on an average of 5 to 6 tows per day under the experimental protocol (deck sorting halibut) and the additional time needed for switching to and from the device. Unfortunately, skippers and other vessel personnel cannot know in advance whether halibut excluder will be used on the first tow of an experimental block. This will result in more time between tows than normally occurs.

Towing will be conducted with procedures and sites used during the commercial fishery for deepwater flatfish, particularly rex sole, in the Gulf of Alaska. A small number of test tows of short duration (20-30 minutes) may be carried out to determine if the species mix is suitable before commencing experimental tows at a new site. Results of these tows will not be used in the analysis. Tows will also not be used if the trawl suffers such significant damage that it is considered unlikely to have fished in a normal manner. If this occurs on the first tow of a pair, the

block will be discarded and another pair will be started. If damage occurs during the second tow, a repeat tow will be attempted to save the block if that is feasible. In a limited number of cases, a block may also be discarded if the species composition of the first tow indicates that a full block would not be useful for the experiment. An example of such a tow would be an initial tow with no halibut or deepwater flatfish present.

The captain or other bridge crew will record the start and end times of each tow as well as the average speed, depth, captain's estimate of catch weight and whether the device was installed. A self-contained data-logger will be attached to the trawl net during every tow to measure the depth, temperature, and light level during fishing.

Catches will be sampled by procedures the Observer Program uses for North Pacific groundfish fisheries. The observers hired to carry out this sampling will be certified in these methods by the NMFS. Catch volume will be estimated through standard codend measurement procedures conducted by the observer. Catches from separate tows shall not be mixed until all sampling is completed. A sample of the catch will be taken to determine species composition and density. Portions of this sample shall be collected to be representative of all portions of the catch (i.e. filling baskets from a conveyor belt at the beginning, middle and end of the period that it takes to empty a holding bin). The weights and number of each species in this sample will be recorded. Sub-samples of selected species will be taken to determine their size composition.

As described above, a procedure will be developed to remove, measure, and return to the sea as much of the halibut catch as possible on deck. This will minimize halibut mortality and improve the estimate of halibut catch. Any remaining halibut encountered during the sorting and processing of the catch shall be presented to the observer for enumeration and then placed overboard. Participants will work out an agreement in advance with observers regarding where any halibut that are not detected during deck sorting are placed so they can be enumerated before they are discarded. Given the large average size of halibut in the Gulf of Alaska compared to the target catch and the expected effectiveness of deck sorting procedures (based on Groundfish Forum's 1997 EFP), we expect a very large fraction of the halibut to be removed on deck and enumerated.

Each vessel will carry a project manager supplied by Groundfish Forum. In addition, Dr. Rose will be invited to assist on one or both vessels if sea conditions allow for safe conveyance between participating vessels. Dr. Rose will provide underwater camera work to help understand the working of the excluder as well as troubleshooting for deployment difficulties.

Target and PSC mortality needed to support the EFP

The following is based on 120 tows (60 pairs) for the experiment and the expected significance levels described above. The expected catch of groundfish from 120 tows would be 600 MT, based on an average of 5 MT of groundfish per tow.. This assume reasonably low levels of escapement of target catch through the excluder device. Based on expected frequency that clogging and debris jams will occur, and estimated the number of test tows needed for two vessels fishing in the experiment, **the overall groundfish catch is not expected to exceed 650 MT.**

Based on data obtained from Sea State for at-sea vessels in the deepwater flatfish fishery, the expected species composition (principle components) of that catch is:

Pacific cod 5%; Arrowtooth flounder 43%; Rex sole 31%; Pacific Ocean Perch 14%; Halibut 6%*; Other 1%.

**Note: If the excluder device proves effective at reducing halibut bycatch, the expectation for halibut catch is lower than reported above because one-half of the tows will employ the device.*

The data used to develop these catch expectations were for at-sea deepwater flatfish tows and did not include tows aimed at maximizing maximum retainable bycatch (MRB) limits for that fishery. Tows with that objective would be expected to have higher percentages of sablefish. Groundfish Forum is specifically interested in the performance of the halibut excluder in deep water flatfish tows and has no particular interest in testing the excluder in tows attempting to maximize the sablefish MRB. We therefore have no objection if limits on sablefish retention for this experiment are lower than the current MRB of seven percent. Based on available data, sablefish catches would not be expected to exceed two percent of the round weight equivalent of retained groundfish catches.

Estimating halibut mortality from the experiment:

If the device proves completely ineffectual (an outcome we obviously feel is unlikely), then an upper limit of 36 MT of halibut bycatch would be expected to occur. If the device reduces halibut bycatch by 50%, then 27 MT of halibut catch would be expected (half of tows are with the excluder).

Using the Council's recommended 1998 NMFS halibut mortality rate for the deepwater fishery (64%), and assuming the excluder used for the experimental tows has no effect on halibut bycatch, then the experiment would result in an estimated halibut mortality of 23 MT. If the device results in a 50% reduction in halibut bycatch, then 17.2 MT of halibut mortality would occur assuming the open access halibut rate of 64% is applicable to the experiment.

Taking into account halibut mortality needed to carry out the experiment and the additional halibut mortality from the test tows and tows that cannot be counted for the number of pairs needed for the experiment because of debris jams etc., the overall halibut mortality from the experiment is expected to be between 25 MT and 18.5 MT.

Enumeration of the halibut catch will be done through a deck sorting protocol which can be expected to improve the accuracy of halibut catch estimates over basket sampling. Additionally, deck sorting procedures employed during Groundfish Forum's 1997 EFP appeared to very successful at returning halibut to the sea rapidly and with a high degree of viability. Thus, Groundfish Forum believes that the actual mortality from the experiment will be much lower than the estimated rate for the regular fishery (64%).

Analysis

Catch rates (kg/hr) will be calculated for each groundfish species in each haul from the volume, density, tow duration and species composition measurements. A log transformation will be applied to these rates to allow additivity of the multiplicative effects. The resulting parameters will be tested for normality. The differences between the log catch rates with and without the device will be calculated and tested against the null hypothesis that the difference equals zero with

an analysis of variance. This analysis will include a test of whether this effect varied between vessels. Of particular interest will be if and how much the halibut and rex sole catches were affected. Estimates and confidence intervals for the effects will also be generated.

The size composition data will be used to partition the catch rates of rex sole and halibut into 2 to 5 size categories. Analyses of variance will be used to test the null hypothesis that the effect of the device did not vary between size groups. Plots of size composition and selectivity curves will be generated for halibut and rex sole.

A report to the industry and public will be prepared by Groundfish Forum describing the following: the device(s) tested in the experiment, how the test was conducted, placement and other factors (such as towing speeds, water conditions, amount of debris in the water, etc.), and performance of the device in terms of halibut bycatch reduction, target catch reduction, handling and maintenance. The findings will be presented at a NPFMC meeting (subject to the Council's scheduling requirements). The written report, prepared by Groundfish Forum in conjunction with NMFS, will be made available by the NPFMC to interested public (in the same manner as occurred with Groundfish Forum's 1997 EFP).

References

Rose, C.S. 1995. Behavior of North Pacific groundfish encountering trawls: Applications to reduce bycatch. In *Solving Bycatch: Considerations for Today and Tomorrow*. Alaska Sea Grant College Report No.96-03, University of Alaska Fairbanks.

Stone, M. and C.G. Bublitz. 1995. Cod trawl separator panel: potential for reducing halibut bycatch. In *Solving Bycatch: Considerations for Today and Tomorrow*. Alaska Sea Grant College Report No.9 6-03, University of Alaska Fairbanks.

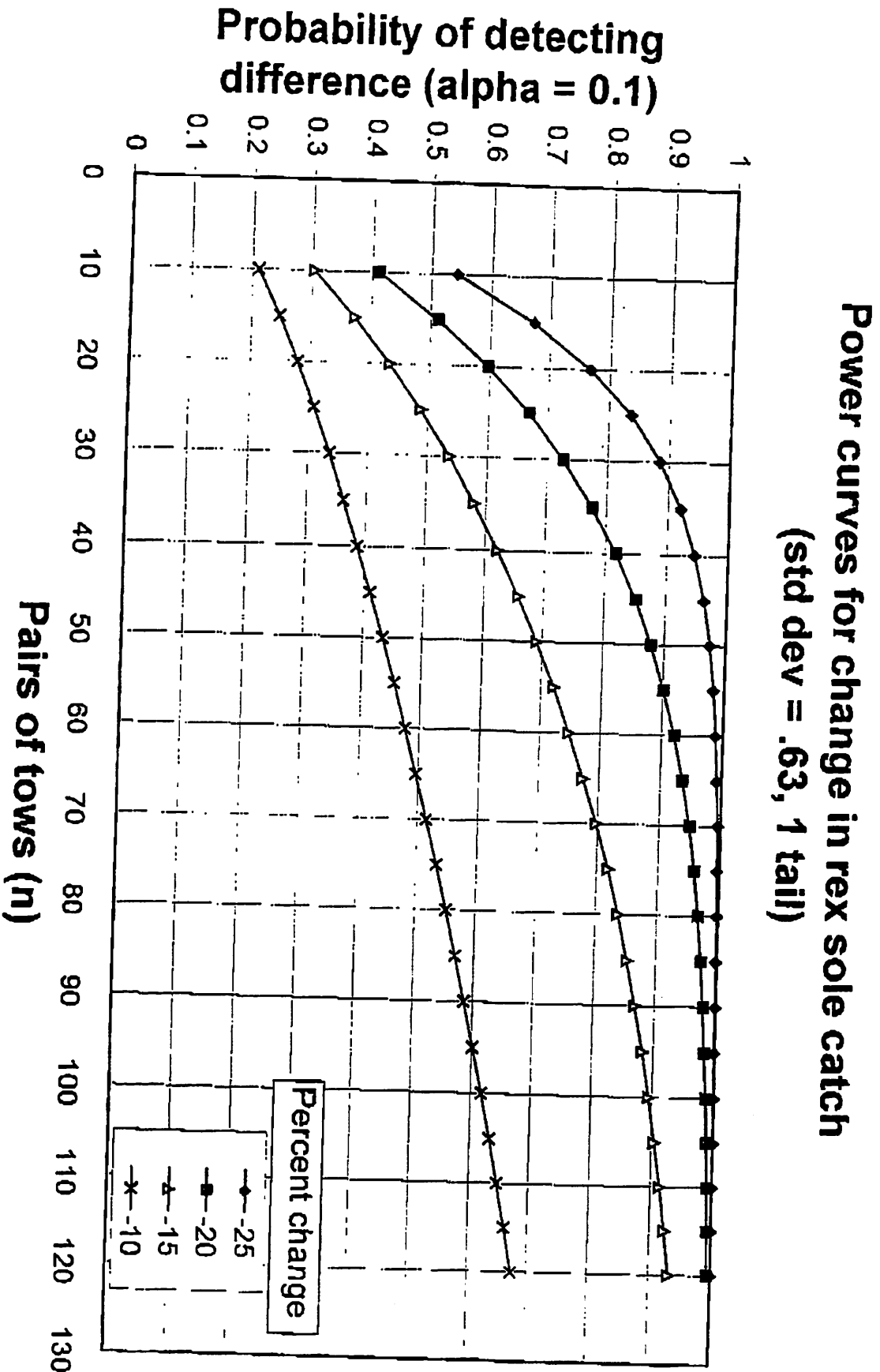
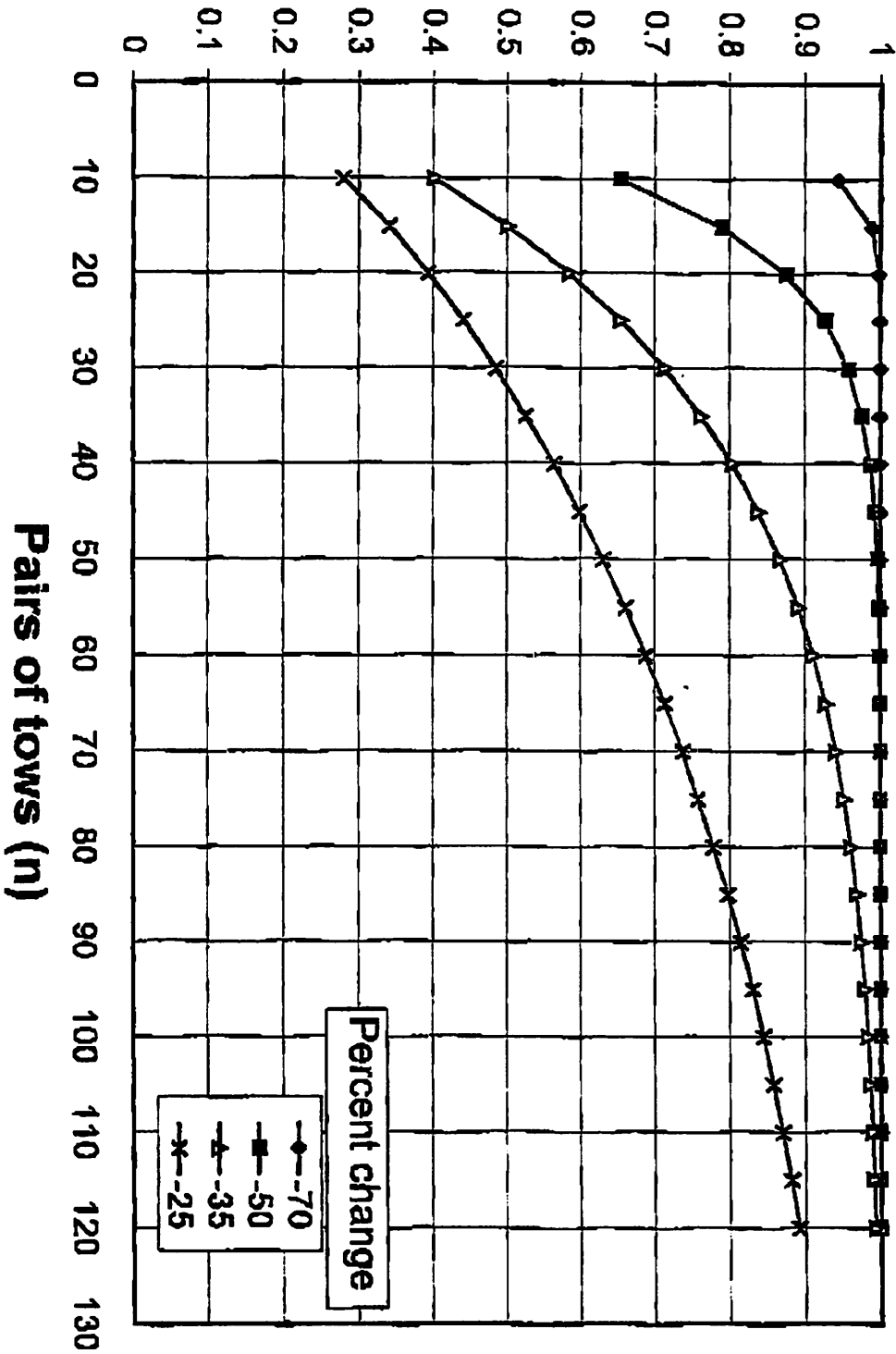


Figure 1

Probability of detecting difference (alpha = 0.1)

Power curves for change in halibut bycatch
(std dev = 1.26, 1 tail)



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INTERNATIONAL PACIFIC HALIBUT COMMISSION

ESTABLISHED BY A CONVENTION BETWEEN CANADA
AND THE UNITED STATES OF AMERICA

AGENDA D-1(e)
JUNE 1998
Supplemental
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June 1, 1998

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N.P.F.M.C

Dr. Clarence Pautzke, Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

RE: June 1998 Meeting - Agenda Item D-1(e) Experimental Fishing Permit Application

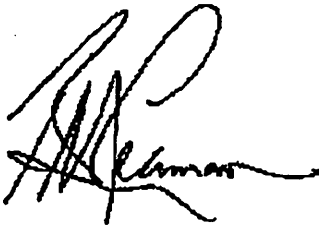
Dear Clarence:

The staff of the International Pacific Halibut Commission (IPHC) has reviewed the materials available for the application by Groundfish Forum for an Experimental Fishing Permit (EFP) to test halibut excluder devices for trawls.

We recommend that the Council approve this request. The experiment provides the opportunity to demonstrate the potential to reduce halibut bycatch in trawls, as well as reduce mortality through a concerted effort at sorting halibut on deck. We find the experiment to be a good design and anticipate results useful not only to the industry but to managers as well.

A member of my staff will be at the June meeting and will be able to address questions the Council may have on this recommendation.

Sincerely yours,



Bruce M. Leaman
Director

cc: Commissioners

Alaska Groundfish Data Bank

P.O. Box 2298 • Kodiak, Alaska 99615

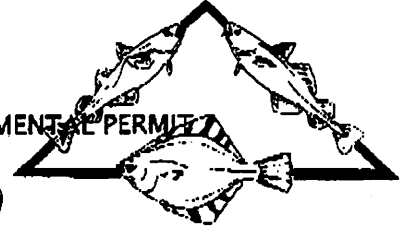
TO: RICK LAUBER, CHAIRMAN
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

RE: COMMENTS ON GROUND FISH FORUM'S REQUEST FOR AN EXPERIMENTAL PERMIT
AGENDA ITEM D-1e

DATE: JUNE 2, 1998

SENT BY FAX: 1 PP

RECEIVED
JUN - 2 1998



N.P.F.M.C.
COMMENTS ON GROUND FISH FORUM'S REQUEST FOR AN EXPERIMENTAL PERMIT
(AGENDA ITEM D-1e)

The members of AGDB support the issuance of an Experimental Fishing Permit to Groundfish Forum for the purpose of testing halibut excluders in the Gulf of Alaska rex sole and flathead sole fisheries. Gulf fishermen have successfully over the last 7 years reduced their halibut bycatch rates in the Pacific cod fishery (4% - 1.5% halibut), in the pollock fishery, and in the rockfish fishery.

However, halibut bycatch rate reductions have not occurred in the flatfish fisheries. The annual bycatch rates mirror the abundance of halibut on the grounds -- high rates when halibut are abundant and low rates when halibut are scarce.

No time or area combination has yet been found to reliably reduce halibut bycatch rates in the flatfish fisheries. As described in Groundfish Forum's request for an EFP, it appears that an appropriate excluder device may solve what so far has been an unsolvable problem.

Groundfish Forum's application would allow catcher boats as well as catcher processors to participate in the testing of excluder devices. Only a portion of the available flatfish is taken each year due to halibut bycatch. If the halibut bycatch problem can be reduced substantially, then shorebased communities, as well as small factory trawlers, will be able to increase the number of fishing days and opportunities for employment in the processing plants.

We urge the Council to approve this permit.


Chris Blackburn, Director
Alaska Groundfish Data Bank