MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: April 9, 1999

SUBJECT: Seabird Protection

ESTIMATED TIME
3 HOURS

ACTION REQUIRED

1. Final action to revise regulations for seabird avoidance measures in the hook-and-line fisheries off Alaska.
2. Council discussion of net debris.
3. Review two applications for experimental fishing permits to test seabird avoidance devices.

BACKGROUND

Seabird avoidance measures

Measures implemented in 1997 to protect seabirds in the groundfish and halibut fixed gear fisheries have not prevented additional takes of the endangered short-tailed albatross in these fisheries. Two short-tailed albatross were taken in late September 1998 in the BSAI Pacific cod fishery. Both vessels that hooked these birds were using the required seabird avoidance devices.

At its December 1998 meeting, the Council approved the development of an analysis of additional seabird avoidance measures at the request of industry. The Council approved the analysis for public review at the February 1999 meeting. It was released to the public on March 17, 1999. The alternatives in the analysis are listed in the executive summary, which is attached as Item C-6(a).

Net debris

In December 1998, Western Pacific Council Chairman Jim Cook requested information on marine debris, specifically nets and plastics. His request referred to mortality caused by net fragments thought to originate from trawl nets in the demersal trawl fisheries in the Bering Sea and adjacent waters. The Western Pacific Council requested comments from the North Pacific and Pacific Councils on ways to deal with these MARPOL issues. His letter and my reply are attached as Item C-6(b) for additional Council comment.

Experimental fishing permits

NMFS has forwarded two experimental fishing permit (EFP) applications from Ed Melvin, University of Washington Sea Grant on two grants he has received to study the effectiveness of seabird avoidance devices in the IFQ longline fisheries in the GOA and Pacific cod longline fisheries in the BSAI (Item C-6(c)(1)). The proposal will test two seabird avoidance measures for comparison to a control in the GOA sablefish and halibut longline fisheries and BSAI P. cod fisheries. The research will be an industry-university collaboration and use

three GOA and two BSAI longliners. The research is scheduled to begin May 1, 1999 and extend to mid-November 2000 and will be conducted during the open commercial fishing season. Observers will be onboard the vessels.

Mr. Melvin is available to present his applications. The first application requests an exemption from current seabird avoidance requirements to test the controls in his experiments. The second application requests an allocation of 877 mt of Bering Sea Pacific cod for each of two freezer longliners vessels for the Bering Sea experiments (Item C-6(c)(2)). The Council may wish to provide a recommendation to NMFS on these applications.

Executive Summary

At the December 1998 Council meeting, industry representatives requested that the Council revise and strengthen the seabird avoidance measures that are currently required by Federal regulation. This request was made because of the incidental takes of two short-tailed albatrosses (*Phoebastria albatrus*) in September 1998 and because of the industry group's perception that some portions of the hook-and-line fleet may not always be using seabird avoidance measures as carefully as is required to effectively reduce seabird bycatch. At its February 1999 meeting, the Council approved releasing a revised analysis for a proposed regulatory amendment that is intended to revise the seabird avoidance measures and thereby reduce seabird bycatch and incidental mortality in the hook-and-line groundfish and Pacific halibut fisheries off Alaska.

Recent takes of the endangered short-tailed albatross (two in September 1998) in the BSAI groundfish fishery highlight a seabird bycatch problem and that seabird avoidance measures must be used consistently and conscientiously if they are to be effective at reducing seabird bycatch. Under the ESA section 7 consultation on the 1997 GOA and BSAI groundfish fisheries, the U.S. Fish & Wildlife Service (USFWS) anticipated that four short-tailed albatrosses could be taken in 1997 and 1998. The USFWS recently extended the effective period of this 1997-1998 Biological Opinion until it is superseded by a subsequent amendment to that Opinion. Two short-tailed albatrosses have been taken thus far during this period. Based on the ESA section 7 consultation on the 1998 Pacific halibut fishery, the USFWS anticipates that two short-tailed albatross could be taken in 1998 and 1999. If the 2-year incidental take limit is exceeded in either the groundfish or the halibut fisheries, NMFS must immediately reinitiate section 7 consultation and review with USFWS the need for possible modification of the reasonable and prudent measures established to minimize take of the short-tailed albatross.

The NMFS Groundfish Observer Program (GFOP) office has documented bycatch of seabird species in the GOA and BSAI groundfish fisheries since 1989. Preliminary estimates of the annual seabird bycatch for the Alaska groundfish fisheries, based on 1993 to 1997 data, indicate that approximately 14,000 seabirds are taken annually in the combined BSAI and GOA groundfish fisheries (11,600 in the BSAI; 2,400 in the GOA) at the average rates of 0.090 and 0.0568 birds per 1000 hooks in the BSAI and in the GOA, respectively (USFWS 1998a).

Even though experimental testing of required measures in Alaska is still forthcoming, recent experimental work in other demersal hook-and-line fisheries on the effectiveness of line weighting, buoy bags, and lining tubes may lend valuable insight as to the use of those measures in Alaska hook-and-line fisheries. This information, in conjunction with that from the IPHC pilot tests, observer seabird data, and input from fishermen in the Alaska groundfish and halibut hook-and-line fisheries, is the basis for revising the current seabird avoidance measures. In addition to any regulatory requirements and their enforcement, bycatch reduction requires education of the fleet and the conscientious and consistent application of effective measures.

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) addresses revising regulations for seabird avoidance measures in the hook-and-line fisheries off Alaska to reduce bycatch of the short-tailed albatross and other seabird species.

Alternative 1: No Action: No change in the current Federal requirements for seabird avoidance measures.

Alternative 2: Revisions to existing regulations, intended to improve and strengthen the effectiveness of the required seabird avoidance measures and reduce the bycatch of the short-tailed albatross and other seabird species.

Option 1: All applicable hook-and-line fishing operations would be conducted in the following manner:

1. Use groundlines which are sufficiently weighted to cause the baited hooks to sink out of reach of seabirds immediately after they are set. (This weight would be determined at a future date by experimental trials);

2. If offal is discharged while gear is being set or hauled, it must be discharged in a manner that distracts seabirds from baited hooks, to the extent practicable. The discharge site on board a vessel must either be aft of the hauling station or on the opposite side of the vessel from the hauling station. Hooks must be removed from any offal (i.e. fish heads) that is discharged; and

3. Make every reasonable effort to ensure that birds brought aboard alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

4. Employ one of the following seabird avoidance measures:

    a. Tow a bird scaring line during deployment of the gear to prevent birds from taking baited hooks. The bird scaring line would be towed directly over the baited hooks and would be of a sufficient length (at minimum, twice the vessel LOA) and attached to the vessel at a sufficient height (at minimum, 10ft from vessel deck) to protect the entire area behind the stern of the vessel where baited hooks are accessible to seabirds. If multiple bird scaring lines are used, they would be immediately adjacent, on each side, of the groundline bearing the baited hooks.

    b. Towed buoy bags or float devices and bird streamer lines would qualify as bird scaring lines if they are properly constructed to effectively deter and prevent seabirds from accessing baited hooks. Towing a board or stick during deployment of gear no longer would qualify as an acceptable seabird avoidance measure.

    c. In addition to 4a above, deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear.

    d. In addition to 4a above, deploy gear only during the hours specified in regulation ["hours of darkness" §679.24(e)(3)(iv)], using only the minimum vessel's lights necessary for safety.

Sub-option: These requirements under Option 1 would apply to:

a. All vessels, 26 ft LOA or longer, using hook-and-line gear,
b. All vessels, 60 ft LOA or longer, using hook-and-line gear,
c. All vessels, 100 ft LOA or longer, using hook-and-line gear,
d. All vessels, 125 ft LOA or longer, using hook-and-line gear,
e. All catcher-processors, 60 ft LOA or longer, using hook-and-line gear,
f. All catcher-processors, 100 ft LOA or longer, using hook-and-line gear, or
g. All catcher-processors, 125 ft LOA or longer, using hook-and-line gear.

Option 2: The same revisions to existing regulations as proposed in Option 1 except that the use of lining tubes would be required on specified vessels in the following manner:

A. Catcher-processors using hook-and-line gear would be required to deploy baited hooks through a lining tube, at a depth not less than 1.5 meters when the vessel is fully laden;

B. Sufficient weights would be added to the groundline to prevent it from resurfacing after being set; and

C. This lining tube requirement would apply to:
   a. All catcher-processors, 60 ft LOA or longer, using hook-and-line gear,
   b. catcher-processors, 100 ft LOA or longer, using hook-and-line gear, or
   c. catcher-processors, 125 ft LOA or longer, using hook-and-line gear.
   d. All vessels, 60 ft LOA or longer, using hook-and-line gear,
   e. All vessels, 100 ft LOA or longer, using hook-and-line gear, or
   f. All vessels, 125 ft LOA or longer, using hook-and-line gear.

D. This requirement would be effective:
   a. January 1, 2000,
   b. September 15, 2000; or
   c. January 1, 2001.

Option 3: Revisions to existing regulations that would be more restrictive and would not allow options in choosing the appropriate seabird avoidance measures to be used. All applicable hook-and-line fishing operations would be conducted in the following manner:

1. Use groundlines which are sufficiently weighted to cause the baited hooks to sink out of reach of seabirds immediately after they are set. (This weight would be determined at a future date by experimental trials);

2. If offal is discharged while gear is being set or hauled, it must be discharged in a manner that distracts seabirds from baited hooks, to the extent practicable. The discharge site on board a vessel must either be aft of the hauling station or on the opposite side of the vessel from the hauling station. Hooks must be removed from any offal (fish heads) that is discharged;

3. Make every reasonable effort to ensure that birds brought aboard alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird; and

4. Employ the following seabird avoidance measures:

   a. Tow a bird scaring line during deployment of the gear to prevent birds from taking baited hooks. The bird scaring line would be towed directly over the baited hooks and would be of a sufficient length (at minimum, twice the vessel LOA) and attached to the vessel at a sufficient height (at minimum, 10ft from vessel deck) to protect the entire area behind the stern of the vessel where baited hooks are accessible to seabirds. If multiple bird scaring lines are used, they would be immediately adjacent, on each side, of the groundline bearing the baited hooks.

b. Towed buoy bags or float devices would not qualify as bird scaring lines; bird scaring lines would have streamers attached and would be properly constructed to effectively deter and prevent seabirds from accessing baited hooks. Towing a board or stick during deployment of gear also would not qualify as an acceptable seabird avoidance measure.

c. Deploy gear only during the hours specified in regulation ["hours of darkness" §679.24(e)(3)(iv)], using only the minimum vessel's lights necessary for safety.

Sub-option: These requirements under Option 3 would apply to:

a. All vessels, 26 ft LOA or longer, using hook-and-line gear,
b. All vessels, 60 ft LOA or longer, using hook-and-line gear,
c. All vessels, 100 ft LOA or longer, using hook-and-line gear,
d. All vessels, 125 ft LOA or longer, using hook-and-line gear,
e. All catcher-processors, 60 ft LOA or longer, using hook-and-line gear,
f. All catcher-processors, 100 ft LOA or longer, using hook-and-line gear, or
g. All catcher-processors, 125 ft LOA or longer, using hook-and-line gear.

To summarize the Alternative 2 options, Option 1 would: Explicitly specify that weights must be added to the groundline. Currently, the requirement is that baited hooks must sink as soon as they enter the water. It is assumed that fishermen are weighting the groundlines to achieve this performance standard. The offal discharge regulation would be amended by requiring that prior to any offal discharge, embedded hooks must be removed. Streamer lines and towed buoy bags and float devices may both qualify as bird scaring lines. Specific instructions are provided for proper placement and deployment of bird scaring lines. Towed boards and sticks would no longer qualify as seabird avoidance measures. The use of bird scaring lines would be required in conjunction to using a lining tube or night-setting. Use of a lining tube or night-setting would continue to be options.

Option 2 differs from Option 1 in that it would require the use of a lining tube for specified vessels. Weights added to the groundline would be required to prevent the groundline from resurfacing after it was set.

Option 3 differs from Option 1 in the two ways: Towed buoy bags and float devices would not qualify as bird scaring lines and night-setting would be required of all specified vessels.

The alternatives for revisions to seabird bycatch avoidance measures are described in Sections 1 and 2 of this document.

In 1997, 101 catcher vessels and 44 catcher/processors fished with hook-and-line gear in the BSAI, and 920 catcher vessels and 25 catcher/processors fished with hook-and-line gear in the GOA. The total number of hook-and-line catcher vessels that caught groundfish off Alaska in 1997 was 932 and the total number of hook-and-line catcher-processor vessels that caught and processed groundfish off Alaska in 1997 was 46. These numbers for vessels off Alaska account for the vessels that operated in both the BSAI and GOA. In 1998, 1768 vessels landed halibut from U.S. Convention waters off Alaska, 91 percent of which were vessels less than 60 ft (18.3 m) LOA. Under both alternatives, all hook-and-line vessels would be directly affected. Under Alternative 2, vessels less than 26 ft (7.9 m) LOA would continue to be exempt from some of the seabird avoidance measures. In 1996, approximately 2.5 percent of groundfish vessels were less than 26 ft (7.9 m) LOA and 15 percent of vessels making halibut landings were less than 26 ft (7.9 m) LOA.

Under Alternative 2, the economic impact on small entities would depend upon the option exercised and the particular measures chosen. All options require the use of a bird scaring line, estimated at $50 to $250 and the use of line weights. Under Option 1, the measures required of all applicable vessels would be expected to be of minimal cost. Procedural or operational changes may be required in fishing operations. Under Option 2, the economic impact on small entities would be the cost for vessel operators required to use a lining tube ($40,000). Note, this cost could be present under Option 1 where the use of a lining tube is optional. The number of groundfish vessels longer than 60 ft and less than 100 ft is 119, vessels longer than 100 ft and less than 124 ft is 8, and vessels longer than 124 ft is 3. In the halibut fishery, 158 vessels are longer than 60 ft and less than 124 ft and 3 vessels are longer than 125 ft. Under Option 3, the economic impact on small entities would be the potential variable costs of night-setting.

North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

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February 12, 1999

Jim Cook, Chair
Western Pacific Fishery Management Council
1164 Bishop Street, Suite 1405
Honolulu, Hawaii 96813

Dear Jim:

I am responding to your December 8, 1998 letter on the impact of marine debris on protected species in the Northwestern Hawaiian Islands. The North Pacific Council has not had the opportunity to review it yet, but here are some initial thoughts on actions we could take.

A prominent agenda item at our next Council meeting on April 21-26 is final action on protective measures for seabirds, particularly endangered shorttailed albatross. We took initial action in late 1996 to require fishermen to deploy their baited hook-and-line longlines in a manner so as to minimize, preferably avoid altogether, hooking mortality of seabirds. These rules were first implemented by NMFS in 1997. We are now considering additional avoidance measures that may include the use of lining tubes to deploy baited lines underwater. I enclose the draft analysis that we reviewed last week.

Our longline fleet off Alaska is just one of several contributors to hooking mortality of seabirds. I know that you have been dealing with the issue off Hawaii and throughout the Pacific because of the many ocean fisheries your Council is involved with. Obviously we have a strong mutual interest in cooperating to mitigate the impacts of this type of fishing on shorttailed albatross and all seabirds.

Mortality caused by net fragments also is of mutual interest. I had assumed that it was no longer a significant issue since we worked so hard on the marine debris issue up here several years ago, and especially because MARPOL was enacted. It is distressing to know that our trawl fleet may be affecting albatrosses and monk seals in the Hawaiian Islands. Therefore, I plan on making your letter available to the Council and its advisory bodies in April and discussing it under our seabird protection item on the agenda. Our industry is very sensitized to Endangered Species Act problems because of the plight of the Steller sea lion and shorttailed albatross populations. We should make every effort to urge the industry to pass the word to the trawl fleet that discards of net fragments and other materials are strictly forbidden. We also may want to query the observer data for evidence of discarding. Getting at the issue of lost and torn nets will, of course, be much more difficult. Through complementary efforts by Western Pacific, Pacific, and North Pacific councils, we should be able to cover most of the trawl fleet working on this side of the Pacific Ocean.

Additionally, we must work on international fronts, using a variety of forums to increase international awareness of these problems. Your suggested international workshop would be a good starting place, but we also could bring these issues up in our U.S.-Russia Intergovernmental Coordinating Committee on Fisheries and meetings held under the auspices of the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, which includes all major trawl nations in the North Pacific. Pru Fox Lewis, Special Assistant to the Deputy Assistant Secretary for International Affairs within Commerce, should be notified also since she is handling many FAO issues for the U.S., including seabird protection. I think that it would be very important to have the results available of any studies that have been performed to determine the country of origin of the discarded netting. We would also need to know which fishing countries use that particular gear.

I believe our Council stands ready to help you in any way we can on the above issues. Certainly we need to encourage responsible trawl and longline fishing practices in our EEZ and across the Pacific. I look forward to hearing of any further initiatives from the Western Pacific or Pacific councils, and I will be communicating with you again after our April meeting.

Sincerely,

Richard B. Lauber
Chairman

Copy to: Vice Chairman Pereyra
Larry Six
Steve Pennoyer

Enclosure: Draft Seabird Analysis

WESTERN
PACIFIC
REGIONAL
FISHERY
MANAGEMENT
COUNCIL

MEMORANDUM

To: Richard Lauber — Chairman, North Pacific Council
Clarence Pautzke — Exec. Director, North Pacific Council

Jerry Mallet — Chairman, Pacific Fishery Council
Larry Six — Exec. Director, Pacific Fishery Council

From: Jim Cook, Chair of the Western Pacific Council — 8 December 1998

Subject: Marine debris and protected species in the Hawaiian Islands — c\doc\birds\plasmemo.wpd

The 98th Council meeting concluded last week bringing this years meeting cycle to an end. One of the more important topics discussed at this meeting was the impact of marine debris on populations of protected species in the Northwestern Hawaiian Islands (NWHI), namely albatrosses and monk seals. During the preparation for the Council's Blackfooted Albatross Population Dynamics Workshop, which was convened in October, it was revealed that there is a significant mortality of chicks through plastic ingestion. Plastic objects, such as lighters, light-sticks and even toys discarded at sea, are consumed by adult birds during feeding migrations in the North Pacific along with fish and fish eggs. The parents in turn pass these objects on to the chicks at the NWHI nesting sites. Chicks may succumb to the effects of toxins with in the plastics, or die when the plastic objects pierce their stomach or block the intestines.

The other major source of marine debris that is a serious hazzard to wildlife are discarded bundles of fishing nets, mainly trawl nets which are thought to originate in the demersal trawl fisheries in the Bering Sea and adjacent waters. You may remember the video that was shown by NMFS on the problems associated with these discarded pieces of netting in the NWHI at our July meeting. These net bundles may become snagged on coral and some may even continue to catch fish. Apart from the damage they do to the reef substrate, the nets are a serious hazzard for monk seals. These animals are extremely curious and will investigate exotic objects in their domain, including these discarded net bundles. Occasionally, these critters get too curious, get entangled and drown. Given that there are only about 1000 or so monk seals left in the Hawaiian Archipelago, we cannot afford to loose individuals needlessly.

Just to remind you of the scale of this problem, the National Marine Fisheries Service estimates there are over 70,000 discarded net segments in waters surrounding Pearl and Hermes Atoll and French Frigate Shoals in the Northwestern Hawaiian Islands. Researchers recently returned with 6 tons of debris collected over six days from French Frigate Shoals alone. There are no clear indications as to the origins of these net bundles, or of the smaller plastic items such as lighters and light sticks. Many of the lighters have Korean, Japanese or Chinese script, suggesting that they were discarded by Asian fishing vessels. It is likely, however, that the

marine debris in the North Pacific contains elements from both Asian, Russian and US fishing fleets.

The issue of dumping plastics at sea was supposed to have been tackled under the International MARPOL (Marine Pollution) convention (see attached Council briefing book document). The US is a signatory to the Convention and MARPOL regulations are supposed to be enforced by the US Coast Guard. However, without hard evidence, such as identifying marks to the origin of plastics, it is difficult for the USCG to issue MARPOL Annex V violations. This Council is determined to ensure that light-sticks used in the Hawaii longline fishery are no longer discarded at sea, and we will be asking the USCG to vigorously pursue this policy by inspecting returning longline vessels and demanding to see the spent light sticks. We are requesting our sister Councils in the Pacific to take complementary action to minimize the discards of small plastic objects and bundles of old netting. We hope that you will ensure that fishermen on the West Coast and in Alaska are aware of the consequences of dumping either light-sticks or old netting for protected and endangered wildlife in the Hawaiian Islands.

We would be most interested to hear comments from the North Pacific and Pacific Councils on ways to deal with MARPOL issues. Clearly, clearing up our own act is only part of the solution to dealing with this marine pollution issue. We are asking the State Department to contact their counterparts along the Pacific Rim to bring to their attention the marine debris problem and the consequences for Hawaii's protected species. It is likely that we will be organizing an international workshop here in Hawaii to address marine debris issues such as ecological impacts, and the problems of locating the source of this material. I hope that both the Pacific and North Pacific Councils will support and attend this workshop, and we will keep you informed of our progress in convening this meeting. Mahalo!

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Marine Pollution: a Serious Problem for Breeding Albatross

Author: K. Cousins
Western Pacific Regional Fishery Management Council

Dumping plastic at-sea has been prohibited by an international Convention, MARPOL Annex V (e.g., MARPOL is an acronym for Marine Pollution), for at least10 years, yet seabirds are still ingesting plastic debris. Recently, concern has been expressed to the Council regarding the numerous light sticks and cigarette lighters found in the remains of albatross chicks on the Northwestern Hawaiian Islands. Adult seabirds ingest plastic items while foraging for food at-sea and then inadvertently feed the plastic to their young. Albatrosses tend to follow ships, and as opportunistic foragers, they quickly learn that the ships can be a source of food. Plastic garbage lost intentionally or unintentionally from ships could easily be the source of their plastic in the marine environment. But as the sources for plastic pollution are varied and complex, understanding and identifying the origins of plastics is a first step to stopping the pollution.

MARPOL Annex V

In 1987, Congress enacted the Marine Plastic Pollution Research and Control Act (MPPRCA) to implement MARPOL 73/78 Annex V (Title II of Public Law 100-220). On December 31, 1988, MPPRCA made it illegal for any vessel of any size to discard plastic in any navigable waters or in the 200 mile Exclusive Economic Zone (EEZ) of the U.S. (33 U.S.C. 1901, CFR 151.67). The law also applies to U.S. vessels outside of the EEZ on the high seas. The MPPRCA designated the U.S. Coast Guard (USCG) as the agency responsible for the implementation of the MARPOL 73/78 Annex V requirements.

According to the Code of Federal Regulations (CFR), the master or person in charge of a vessel is required to keep a detailed log regarding the discharge and disposal of plastics. These records are to be maintained on a vessel for at least two years following the operation and are to be made available for inspection by the USCG (33 CFR, 151.55). The master or person in charge of the vessel is also responsible for the development of a waste management

plan (33 CFR, 151.57) and for the displaying of one or more pollution prevention placards (33 CFR, 151.59). All ports, terminals and marinas, whether public or private, are required to provide trash reception facilities and are responsible for the disposal after receiving the trash. Penalties for any person, vessel, port or marina not complying with MPPRCA include:

- civil penalties of up to $25,000 per day per violation;
- criminal penalties of up to $50,000 and a five year prison term; and,
- denied access to port, terminal or marina.

Although the USCG has enforced the law for 10 years, plastic ingestion by seabirds has increased and plastic debris continues to wash ashore on the Hawaiian Islands. Either there must be a large derelict floating mass of plastic that accumulated prior to the enforcement of MARPOL Annex V, or people are still dumping garbage over the side of their vessels. If people are dumping fishing gear or light sticks at-sea, then according to the USCG, this event is rarely witnessed. Without hard evidence, such as identifying marks to the origin of the plastic, it is difficult for USCG to issue MARPOL Annex V violations.

The Impacts of Plastic Ingestion on Albatross

Parent seabirds feed their chicks by regurgitating the contents of their stomach in a crossed-bill feeding method. With sudden and strong muscular contractions, the parent forces food from their proventiculus to the open mouth of their chick. (The proventriculus is the anterior part of the bird stomach, with the gizzard being the posterior part.) Some of the plastic items found in the remains of albatross chicks in the Northwestern Hawaiian Islands are cigarette lighters, light sticks, pellets, styrofoam and smaller unidentifiable plastic pieces.

While the adults can regurgitate the plastic from their stomach, the young chicks are unable to regurgitate the plastic until much later in their development. The direct and indirect effects of plastic ingestion on seabirds are summarized as follows:

- Dehydration and Starvation
- Intestinal Blockage
- Internal Injury
- Exposure to Dangerous Toxins

On a broader scale, plastic ingestion by seabirds could indirectly affect their population dynamics. Toxins like PCBs (polychlorinated biphenyls) and DDE (dichlorodiphenyl-dichloroethylene) leach from ingested plastic and these chemicals could cause a decrease in

the birds' reproductive performance. A decrease in reproductive performance for a species that has a long maturation period and a low annual production could seriously reduce population growth. With adults failing to lay viable eggs and with chicks dying before they fledge, recruitment into the breeding population will decline resulting in a reduction in the population growth.

The Plastic Source

The density of marine debris tends to be greater in the northern latitudes than in the southern latitudes and in the North Pacific, floating plastic is the most abundant marine debris. Much of the plastic debris found on Hawaiian shores originates from ships and the debris is carried toward the islands by an Eastern Pacific current (i.e., the Kuroshio Extension) and then the plastic accumulates in two large-scale eddies located in the mid-Pacific Ocean called the "Great Garbage Patch". This suggests that plastic debris dumped in waters in the Eastern Pacific could drift toward the Hawaiian Islands. This could also explain why seabirds find so many cigarette lighters with foreign symbols; however, whether this plastic has been floating on the ocean surface for a decade or is a new introduction remains unresolved.

It is well known that longline fishermen use plastic light (i.e., chemilume) to attract swordfish (*Xiphias gladius*). Clearly, some light sticks must be unintentionally lost or intentionally dumped during each set, but it is unknown how much of this debris is a result of accidental loss or deliberate dumping. Certainly, commercial fishermen are not the only sources of marine pollution. Other possible sources for marine pollution are the merchant shipping industries, the U.S. Navy, passenger ships, and recreational vessels. Furthermore, the Center for Marine Conservation states that 60-80% of the total marine debris is generated from land-based. Sometimes this plastic waste is simply a product of people's ignorance, such as leaving plastic items in parks and on beaches after picnics or parties and dumping plastic items into storm drains. Prior to the enforcement of international treaties to prevent plastic pollution, many manufacturers were dumping their plastic waste directly into river systems that emptied into the ocean.

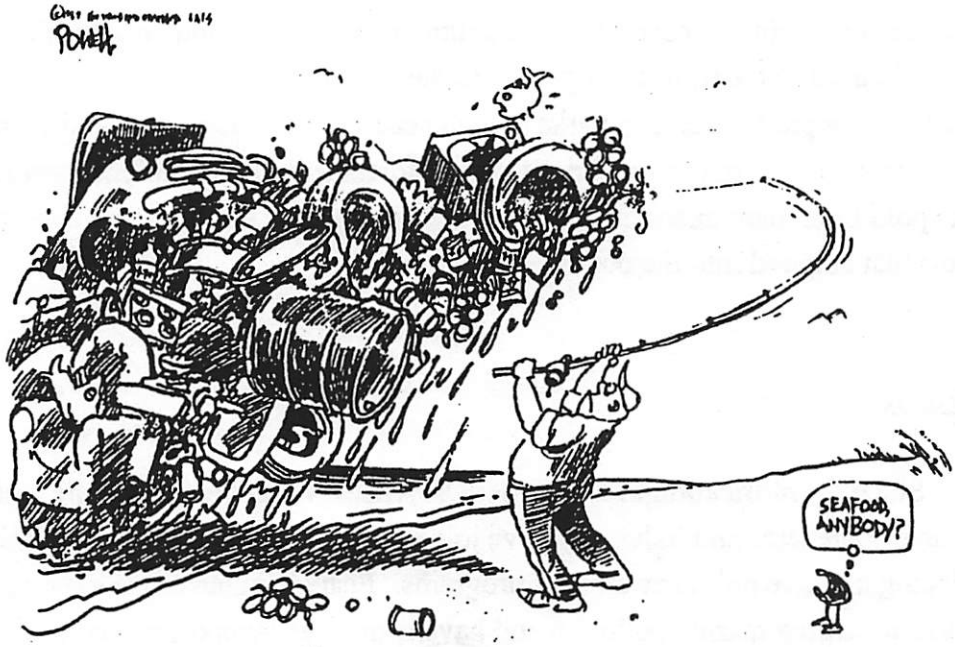
The Future

Since the ratification of the MARPOL Annex V Convention by the United States in 1987, many agencies and industries have joined together to stop marine pollution by developing massive public awareness programs. Fishermen have also expressed their concerns regarding marine pollution and have sponsored symposiums on marine debris. At

the moment, however, it appears seabirds are still ingesting plastic and that the source of the plastic is undetermined. It is even difficult to ascertain the age at liberty and the original manufacturer of each plastic type.

For instance, some the manufacturers of light sticks could be from countries other than the U.S. and countries not party to MARPOL Annex V. To date, only 76 states have ratified the optional Annex V of the treaty. Taiwan is a state that manufactures and distributes light sticks. Taiwan is also party to MARPOL Annexes I and II, but has not ratified the optional Annex V. Japan, China and the Democratic People's Republic of Korea are nations that are known to fish for swordfish and are party to MARPOL Annex V. Clearly, it would be advantageous for states that are trying to reduce plastic pollution to know the states that are perpetuating the pollution and to know whether these states are either violators or not yet party to the MARPOL Annex V Convention.

To reduce even one source of marine plastic pollution, such as discarded cigarette lighters or light sticks appears to be an overwhelming task - but someone has to try. To control one source of plastic will encourage other states to control additional sources of plastic pollution. Many agencies, industries and communities are already working hard to reduce marine debris. Methods to track plastic and to identify other possible new sources of plastic can be developed. Increasing public awareness, sponsoring recycling stations, and organizing workshops can help to reduce plastic waste in the marine environment. Perhaps all that is needed is to bring all the interested parties together to work toward solving the problem. The Council asking for industry and community support to help stop plastic marine pollution.



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

March 17, 1999

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 for an experimental fishing permit from Mr. Edward Melvin, University of Washington, Washington Sea Grant Program. Issuance of experimental fishing permits is authorized by the Fishery Management Plan for Groundfish of the Gulf of Alaska and the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and the implementing regulations at 50 CFR parts 679.6 and 600.745(b), Experimental Fisheries and Exempted Fishing, respectively. If awarded, this permit would be used to test the effectiveness of seabird avoidance measures in the hook-and-line groundfish fisheries of the Bering Sea and Aleutian Islands Area and the Gulf of Alaska and in the Individual Fishing Quota (IFQ) Pacific halibut fishery off Alaska.

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 have tentatively scheduled Council review of the attached application on the Council's April 1999 agenda in anticipation of our review and determination that the application warrants further consideration and consultation with the Council.

Please notify Mr. Melvin of your receipt of the application and invite the applicant to appear before the Council in April 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. Melvin's proposal.

Sincerely,

Arnold J. Berg

For Steven Pennoyer
Administrator, Alaska Region

Attachment

cc: YBC

Amendment), as submitted by the Caribbean Fishery Management Council (Council).

ADDRESSES: Requests for copies of the Generic EFH Amendment (two volumes), which includes an environmental assessment, should be sent to the Caribbean Fishery Management Council, 268 Munoz Rivera Avenue, Suite 1108, San Juan, Puerto Rico 00918-2577. Phone: 787-766-5926; FAX: 787-766-6239.

FOR FURTHER INFORMATION CONTACT: Georgia Cranmore, 727-570-5305.

SUPPLEMENTARY INFORMATION: The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires each regional fishery management council to submit any FMP or amendment to NMFS for review and approval, disapproval, or partial approval.

NMFS published guidelines to assist the regional fishery management councils in the description and identification of EFH in FMPs, including identification of adverse impacts from both fishing and non-fishing activities on EFH and identification of actions required to conserve and enhance EFH (62 FR 66531, December 19, 1997).

On November 20, 1998, NMFS published a notice of public availability of the Generic EFH amendment, and requested comments (63 FR 64463). A 60-day public comment period on the amendment ended on January 19, 1999. No regulations were published for this amendment. A summary of the comments received and NMFS' responses are provided below.

Agency Decision

After considering the Council's Generic EFH Amendment and the public comments received, NMFS advised the Council on February 18, 1999, that it had partially approved the amendment. Specifically, NMFS advised that the amendment was approved for its 17 selected species and corals but that EFH designations were lacking for the remaining managed species and approval of these designations was deferred to a subsequent amendment. NMFS advised the Council that as soon as possible it should identify and describe EFH for the remaining species or, alternatively, identify ecological relationships between the selected species and the remaining species in the FMPs' fishery management units in order to justify using the selected species as representatives. NMFS indicated that it would work with the Council to obtain necessary additional scientific information (and noted efforts underway) that will assist the Council in its completion of these EFH designations in the near future.

Comments and Responses

During the comment period on the Generic EFH Amendment, NMFS received two written comments.

Comment: Because a number of the species affected by the Generic EFH Amendment, including queen conch, are distributed both inside and outside U.S. waters in the Caribbean, cooperation with other governments in that region will be necessary to achieve effective conservation and management.

Response: NMFS agrees with this statement and plans to continue to assist in efforts to develop Caribbean-wide management plans for these species.

Comment: A commenter recommended disapproval of the fishing gear impact sections of the amendment. Although the commenter recognized that additional research is needed to fully evaluate effects of fishing gear on EFH, the commenter believes action must be taken now to mitigate adverse impacts on coral and other habitats. The commenter provided specific recommendations for action on limiting the use of traps and nets for the reef fish, spiny lobster and coral FMPs.

Response: NMFS believes that the Council could not have completed the biological and socioeconomic analyses needed to support management measures to limit fishing gear and still meet the mandated time frame of the EFH amendment. NMFS notes that the Council plans to address gear effects during 1999 and is preparing background documents for options regarding a trap reduction program for the reef fish and spiny lobster fisheries.

NMFS believes that the Council's EFH amendment adequately addresses fishing impacts on EFH and provides the basis for future actions when more information is available.

Comment: A commenter requested that the non-fishing related impact portion of the EFH amendment be disapproved because it does not include procedures for evaluating potential impacts of state and Federal permit applicants on a case-by-case basis. The commenter provided recommendations on procedures for consultations with other agencies on EFH, including the need for thorough public review of the process and its conclusions.

Response: The Magnuson-Stevens Act does not require the Councils to develop consultation procedures. NMFS has published procedures for Federal and state agencies and the Councils to use to coordinate, consult, or provide recommendations on Federal or state activities that may adversely impact EFH (50 CFR Part 600, Subpart K). Councils are encouraged to develop their own internal procedures for the development of Council recommendations but this is not a required element of their EFH amendments.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: March 23, 1999.

Andrew A. Rosenberg,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

[FR Doc. 99-7652 Filed 3-26-99; 8:45 am]

BILLING CODE 3510-22-F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 031899A]

IFQ Halibut Fisheries Off Alaska; Fisheries of the Exclusive Economic Zone Off Alaska; Application for an Experimental Fishing Permit

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of receipt of an experimental fishing permit.

SUMMARY: This notice announces receipt of an application from the Washington Sea Grant Program for an Experimental Fishing Permit (EFP). If awarded, this permit would be used to test the effectiveness of seabird avoidance measures in the hook-and-line groundfish fisheries of the Bering Sea and Aleutian Islands Area (BSAI) and the Gulf of Alaska (GOA) and in the Individual Fishing Quota (IFQ) Pacific halibut fishery off Alaska. It is intended to promote the objectives of the North Pacific Fishery Management Council (Council).

ADDRESSES: Copies of the EFP application are available by writing to Steven Pennoyer, Administrator, Alaska Region, NMFS, P.O. Box 21668, Juneau, AK 99802, Attn: Lori Gravel.

FOR FURTHER INFORMATION CONTACT: Kim S. Rivera, 907-586-7424.

SUPPLEMENTARY INFORMATION: The Fishery Management Plan for Groundfish of the GOA and the Fishery Management Plan for the Groundfish Fishery of the BSAI and the implementing regulations at 50 CFR 679.6 and 600.745(b) authorize issuance of EFPs to allow fishing that would otherwise be prohibited. Procedures for

issuing EFPs are contained in the implementing regulations.

NMFS received an application for an EFP from Edward F. Melvin, University of Washington, Washington Sea Grant Program, on February 23, 1999. The purpose of the EFP is to conduct an experiment to assess alternative seabird bycatch avoidance measures for hook-and-line gear fisheries off Alaska. Results from the experiment could be used by NMFS to establish more effective regulatory measures to reduce seabird bycatch in these fisheries.

In accordance with § 679.6(c)(2), NMFS has determined that the proposal warrants further consideration and has initiated consultation with the Council. The Council will consider the EFP application during its April 19–23, 1999, meeting, which will be held at the Hilton Hotel, Anchorage, AK. The applicant has been invited to appear in support of the application.

A copy of the application is available for review from the NMFS Regional Administrator (see **ADDRESSES**).

16 U.S.C. 1801 *et seq.*

Dated: March 23, 1999.

Bruce C. Morehead,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 99–7653 Filed 3–26–99; 8:45 am]

BILLING CODE 3510–22–F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

DEPARTMENT OF THE INTERIOR

U.S. Fish and Wildlife Service

[I.D. 031199B]

Marine Mammals; File No. 930–1486

AGENCIES: National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NMFS), Commerce; Fish and Wildlife Service (FWS), Interior.

ACTION: Receipt of application.

SUMMARY: Notice is hereby given that U.S. Geological Survey (USGS), Western Ecological Research Center, Dixon Field Station 6924 Tremont Road, Dixon, CA 95620 has applied in due form for a permit to take various cetacean and pinniped species, and southern sea otter and sea birds for purposes of scientific research.

DATES: Written or telefaxed comments must be received on or before April 28, 1999.

ADDRESSES: The application and related documents are available for review upon written request or by appointment in the following office(s):

Permits and Documentation Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910 (301/713–2289);

Regional Administrator, Southwest Region, National Marine Fisheries Service, NOAA, 501 West Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213 (562/980–4001); and

Chief, Branch of Permits, Office of Management Authority, FWS, 4401 N. Fairfax Drive, Room 432, Arlington, VA 22203 (1–800–358–2104).

Written comments or request for a public hearing on this application should be mailed to the Chief, Permits and Documentation Division, F/PR1, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910 or Chief, Branch of Permits, Office of Management Authority, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Room 700, Arlington, VA 22203. Those individuals requesting a hearing should set forth the specific reasons why a hearing on this particular request would be appropriate.

Comments may also be submitted by facsimile at NMFS (301) 713–0376 or FWS 703/358–2281, provided the facsimile is confirmed by hard copy submitted by mail and postmarked no later than the closing date of the comment period. Please note that comments will not be accepted by e-mail or by other electronic media.

FOR FURTHER INFORMATION CONTACT: Ruth Johnson or Sara Shapiro, 301/713–2289.

SUPPLEMENTARY INFORMATION: The subject permit is requested under the authority of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*), and the Regulations Governing the Taking and Importing of Marine Mammals (50 CFR parts 216 and 18).

USGS requests authorization to conduct low altitude aerial surveys of marine mammals, including southern sea otters and sea birds in the Southern California Bight and adjacent waters.

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), an initial determination has been made that the activities proposed are categorically excluded from the requirement to prepare an environmental assessment or environmental impact statement.

Concurrent with the publication of this notice in the **Federal Register**, NMFS is forwarding copies of these applications to the Marine Mammal Commission and its Committee of Scientific Advisors.

Dated: March 11, 1999.

Ann D. Terbush,

Chief, Permits and Documentation Division, Office of Protected Resources, National Marine Fisheries Service.

Dated:: March 19, 1999.

Margaret Tieger,

Chief, Branch of Permits, Office of Management Authority, Fish and Wildlife Service.

[FR Doc. 99–7651 Filed 3–26–99; 8:45 am]

BILLING CODE 3510–22–F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 032299C]

Marine Mammals; File No. P368D

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Receipt of application for amendment.

SUMMARY: Notice is hereby given that Dr. James T. Harvey, Moss Landing Marine Laboratories, P.O. Box 450 Moss Landing, CA 95039–0450, has requested an amendment to scientific research Permit No. 938 (File No. P368D).

DATES: Written or telefaxed comments must be received on or before April 28, 1999.

ADDRESSES: The amendment request and related documents are available for review upon written request or by appointment in the following office(s):

Permits and Documentation Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910 (301/713–2289); and

Regional Administrator, Southwest Region, National Marine Fisheries Service, NOAA, 501 West Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213 (562/980–4001).

Written comments or requests for a public hearing on this request should be submitted to the Chief, Permits and Documentation Division, F/PR1, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13130, Silver Spring, MD 20910. Those individuals requesting a hearing should set forth the specific reasons why a hearing on this particular amendment request would be appropriate.

Comments may also be submitted by facsimile at (301) 713–0376, provided

Pennoyer office received fax on 3-12-99

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115

MAR 12 1999

MEMORANDUM FOR: F/AK - 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 Effectiveness of Seabird Avoidance Measures by University of Washington Sea Grant Program

I have reviewed the February 23, 1999 application from Edward F. Melvin, University of Washington Sea Grant Program, for an Exempted Fishing Permit (EFP) to test the Effectiveness of Seabird Avoidance Measures in the Gulf of Alaska Sablefish and Halibut Longline Fisheries, and the Bering Sea Pacific cod Freezer-Longline Fishery. Based on this review with respect to regulations of CFR part 600.745(b) and 679.6, I have concluded that the application contains all the information requirements for an EFP and that the proposed research constitutes a valid fishing experiment appropriate for your further consideration for issuance of an EFP.

The proposal will test two seabird avoidance measures for comparison to a control (with no special avoidance measures) in each of the fisheries. The principal investigators are Ed Melvin (University of Washington Sea Grant Program) and Julia Parrish (University of Washington Zoology Department). The research will be an industry-university collaboration and will use three fishing vessels from the Gulf of Alaska sablefish-halibut fisheries and two fishing vessels from the Bering Sea/Aleutians Pacific cod fisheries. The research is scheduled to begin 1 May 1999 and extend to mid-November 2000 and will be conducted during the open commercial fishing season. Observers will be onboard the vessels to monitor the research. The data collected and reports of the research will be provided to the NMFS, USFWS, and relevant state agencies.

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

April 9, 1999

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

Dear Clarence,

We have received a second application for an experimental fishing permit from Mr. Edward Melvin, University of Washington, Washington Sea Grant Program. Issuance of experimental fishing permits is authorized by the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and the implementing regulations at 50 CFR parts 679.6, Experimental Fisheries. If awarded, this permit would augment the first permit application and would be used to test the effectiveness of seabird avoidance measures in the hook-and-line groundfish fisheries of the Bering Sea and Aleutian Islands Area.

Under regulations at § 679.6, we have consulted with the Alaska Fisheries Science Center (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. The Center has requested clarification of some details that are outlined in the attached memo. 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 have tentatively scheduled Council review of the EFP applications on the Council's April 1999 agenda in anticipation of our review and determination that the applications warrant further consideration and consultation with the Council.

Please notify Mr. Melvin of your receipt of this application and invite the applicant to appear before the Council in April in support of this application if the applicant desires. A notice announcing receipt of the first EFP application was published in the Federal Register on March 29, 1999 (64 FR 14885) and will

suffice to notice the public of this related EFP application as well. Attached is a copy of Mr. Melvin's proposal and the Center's memo.

Sincerely,

Steven Pennoyer
Administrator, Alaska Region

Attachment

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

APR - 8 1999

MEMORANDUM FOR: Steven Pennoyer
Administrator, Alaska Region

FROM: James W. Balsiger
Science and Research Director
Alaska Region

SUBJECT: Application for Exempted Fishing Permit for Seabird Experiments by F/V *Norton Sound* and F/V *Mariner*

Center staff reviewed the application and evaluated the scientific expectations of the experiment. The Center has no objections to the application. This application by the Washington Sea Grant Program is related to, but different, than the first application for an EFP to conduct a longline gear modification study.

The application identifies the two vessels that will participate in the fishery. It requests 877 mt of groundfish (with species breakdown) per vessel per year for two years to be taken outside of the regular fishing season. The amounts of catch (by species) requested are consistent with historical fishing records maintained by the observer program.

Clarification of the following issues would strengthen the application:

1. Experimental Devices - Describe the seabird deterrent devices to be used.
2. Observer Duties - What other observer duties are required for this research and what standard duties will be changed or given up in order to carry out all the seabird observations? Will it be possible to sample 100% of the sets if only one observer is trained in seabird sampling?
3. Data Forms and Observations - Data elements to be collected should be specified in detail. What are the seabird behavioral observations that will be made? How will this be quantified? What ancillary data will be collected?

It is suggested that the applicant be requested to respond to these questions.

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

March 22, 1999

MEMORANDUM FOR: James W. Balsiger
Science and Research Director
Alaska Region

FROM: Steven Pennoyer
Administrator, Alaska Region

SUBJECT: Application for an Exempted Fishing Permit (EFP) to Test the Effectiveness of Seabird Avoidance Measures Onboard Freezer-Longliner Vessels Fishing for Pacific Cod.

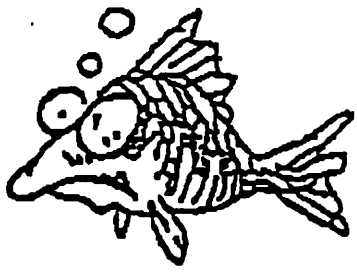
We have received a second EFP application to test the effectiveness of seabird avoidance measures onboard two freezer longliner vessels fishing for Pacific cod. This EFP is intended to assure that these vessels will be available as research platforms to extend the research previously submitted by Mr. Ed Melvin of the Washington Sea Grant Program.

This EFP requests about 1,800 mt of groundfish and 17 mt of Pacific halibut mortality to support two freezer longliner Pacific cod fishing operations from which the effectiveness of sea bird avoidance measures would be assessed this summer. Similar amounts of groundfish and halibut also are requested for next summer as well. The North Pacific Fishery Management Council is scheduled to review this application at its April 1999 meeting pending your approval of the enclosed experimental design.

Please provide us your assessment of the enclosed application by April 9, 1999, so that we may inform the Council whether or not NMFS can support this application for Council review. We especially wish to focus your review on the applicant's assertion that the EFP and associated groundfish and halibut allocations must be provided for a two year period to allow an adequate assessment of seabird avoidance measures. If this is the case, we would recommend that the second year's activity be conducted under a separate EFP pending acceptable completion of the first year's work.

cc: Rich Marasco
Gary Stauffer

North
Pacific
Longline
Association



- FAX TRANSMISSION -

DATE: March 19, 1999

TO: NMFS - Suzerain Salveson
Constable For All That Matters

FROM: NPLA - Thorn Smith

SUBJECT: EFP Application

PAGES: ~~10~~ 11

Dear Suz -

Attached please find our FINAL EFP application, and DRAFT cover letter(s). Final cover letter(s) and freezer-longliner experiment proposal (I believe you have it already) should be along later today along with an apprporiate cartoon.

Stauffer has reviewed this, and his comments have been incorporated. We're talking Skookum City here.

I will forward the entire package to the AFSC as well. Kim advised that you do the same before you leave for vacation. Hint, hint.

You are a great American...

FIN

UW
UNIVERSITY OF WASHINGTON
Office of Marine Environmental & Resource Programs
Washington Sea Grant Program
Marine Advisory Services

March 22, 1999

Mr. Steve Pennoyer
Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Re: Experimental Fishing Permit application to test effectiveness of seabird avoidance measures

Dear Mr. Pennoyer:

The Washington Sea Grant Program hereby submits for your consideration a second application for an Experimental Fishing Permit (EFP), in compliance with requirements set forth at 50 CFR Part 679.6. The first application was for an EFP to allow the use of a control (no seabird deterrent) during our experimental fishery (please see my letter of February 23, 1999, attached, which is hereby incorporated by reference). The second application is to allow for an experimental BSAI cod fishery outside of the open access and CDQ fisheries – rationale set forth in attached application. Both of the EFP's are requested in support of a seabird bycatch research program that is planned under two federal grant awards.

Please note that we have requested EFPs for two years – 1999 and 2000. If necessary, we will resubmit our application for the year 2000 EFPs.

In accordance with the EFP regulations, we have provided the baseline information about our EFP request. A more detailed description of the research and the experimental design can be found in the attached supporting materials. Thank you for considering our application. Both EFP requests well be on the agenda for the April meeting of the North Pacific Management Council, and I will be present too answer questions.

Sincerely,

Edward F. Melvin, Marine Fisheries Specialist
Washington Sea Grant Program
University of Washington

Marine Fisheries Office (206) 543-9261 FAX: (206) 685-7471
460 Fisheries Center Box 357980 Seattle, Washington 98195-7980
http://www.wsg.washington.edu

Washington Sea Grant Program's Test of Seabird Avoidance Measures. February 1999.

Date of Application: March 22, 1999

Name, Mailing Address, and Phone Number of Applicant:
Edward F. Melvin
Washington Sea Grant Program
University of Washington
3716 Brooklyn Ave., NE
Seattle, WA 98105
(206)543-9968

Purpose and Goals of the EFP: The purpose of the Washington Sea Grant Program's (WSGP) EFP is to assure that freezer-longliners will be available as research platforms to conduct research on the effectiveness of seabird avoidance measures. The purpose of the research program is to test the effectiveness of selected seabird avoidance measures relative to a control (no seabird deterrent device). The goal of the program is to reduce seabird bycatch in the North Pacific longline fisheries.

Justification for the EFP: NMFS is required to evaluate the effectiveness of seabird avoidance methods under a USFWS Biological Opinion issued in March 1998. In order to assure the participation of freezer-longliners in this experimentation it is necessary to provide a fishing opportunity outside the directed open access and CDQ fisheries. Owner/operators fear that experimental operations will interfere with the highly competitive open access fishery, to their significant economic detriment. The CDQ fisheries are normally conducted after the fall open access BSAI cod fishery, at a time when some seabirds have left the grounds. There is limited space for observers on the vessels, and both CDQ observers are necessary to collect round-the-clock catch and bycatch data. A separate observer is required for the seabird research - the vessels cannot accommodate a third observer.

Amounts of Each Species to Be Harvested Per Year:

	Each Vessel (Round Weight Catch)	Both Vessels
Cod	653mt	1,306mt
Halibut	78mt*	156mt
Arrowtooth Flunder	36mt	72mt
Flathead Sole	6mt	12mt
Yellowfin Sole	5mt	10mt
Sculpin	5mt	10mt
Skates	91mt	182mt
Pollock	3mt	5mt
Total Groundfish	877mt	1,754mt

Tanner Crabs	1,800count	3,600count
*Halibut Mortality: 78 X 0.11 ≈ 8.6mt		17.2mt

Impacts on Marine Mammals and Endangered Species: No impacts on marine mammals are anticipated from this experimental fishing activity. If short-tailed albatrosses are encountered, the control (fishing without seabird avoidance devices) will be abandoned and every measure employed to avoid catching them. Short-tailed albatross catch in the experimental fishery will be covered by an ESA Section 10 permit (allowing the take of one bird). No other endangered species are expected to be encountered.

Disposition of Species Taken: Participants will retain groundfish catches in accordance with the directed fishing standards.

Area and Timing: Bering Sea/Aleutian Islands Area, July 15 - August 31, 1999, 2000.

Vessels and Gear to Be Used: F/V Frontier Mariner, freezer-longliner, standard longline gear; F/V Norton Sound, freezer-longliner, standard longline gear. The vessels were selected by the principal investigator based on fishing configuration criteria.

Experimental Design: We will compare two mitigation devices to a control of no device, for a total of three independent treatments (device 1, device 2, and control). Priority will be given to testing deterrent devices now required or proposed as a future regulation in the fishery, but we will also consider new techniques being tested elsewhere in the world that show great promise to reduce seabird bycatch in the North Pacific fishery. Selection of test devices, as well as specifications for their construction, deployment and use in each fishery, will be determined by an informal fishery advisory committee composed of participating vessel operators and designees of longline industry associations, and in consultation with NMFS and USFWS. Each vessel in the test fishery will be supplied with test devices, such that all vessels will encompass an independent test of deterrent efficacy. Vessels will fish in the manner and location consistent with the commercial fishery, except for the following: Test treatments will be rotated throughout all observed set deployments (i,e,, device 1, device 2, control). Treatment rotation will be predetermined to minimize the effects of time of day and insure even coverage of all treatments across all times of day fished.

Because seabird hookings in North Pacific longline fisheries are rare events, we have estimated that a minimum of three million deployed hooks and 150 observer days over two years will be needed to adequately address deterrent device efficacy relative

to a control of no device. Within fishery this translates into two vessels per year in the BSAI Pacific cod fishery with two obeservers aboard. Observers will be highly experienced NMFS certified observers - at least one of these will have specialized seabird observation training. They will make observations for a total of 40 to 50 days per year (approximately 2 trips). Two observers would allow us to achieve an effective observation rate of 100% of deployments and approaching 100% of the hauls.

Special seabird observers will take data on a range of species-specific seabird abundance and behavioral issues during gear deployment and seabird hooking rates as observed during gear retrieval, as well as tally the catch of all species (target and non-target species, all taxa). (See pages 6 to 9 in the attached proposal, "Reducing seabird bycatch in the pacific cod freezer-longline fishery.")

Following each trip observer data will be entered into a database for multivariate analysis. Preliminary analysis of Year 1 data will be used to adjust experimental design as needed (e.g., verify adequacy of projected sample sizes). The focus of the preliminary and final analyses will be two-fold:

First we will determine the extent to which each tested deterrent device significantly reduces seabird bycatch, in total as well a by species (weight and number). Interactions with physical parameters will also be examined. Because hooking is a rare event, we expect these data to be non-normally distributed. Past experience analyzing rare-event seabird bycatch data has indicatd to us that use of a tailored, iterative model based on a Poisson distribution can adequately address these statistical concerns (e.g., GLIM; Melvin et. al. 1997).

Second we will probe the relationship between seabird abundance and behavior in the vicinity of the vessel (i.e., the interaction zone) and the gear (i.e., the vulnerable zone), and hooking probabilities as a conditional function of deterrent device. This latter analysis will allow us to determine both the specific behaviors leading to hooking, as well as how deterrent devices may alter these behaviors, leading to significant reductions in hooking rate. We expect that the behavioral analysis will be used in qualifying the results of the primary analysis as well as paving the way for additional deterrent work, should such be merited.

Release of Information, Reporting: Following the Year 1 field season and subsequent analysis, we expect to have a draft first year report for relevant fishery and seabird resource menagers within NMFS, USFWS, and state agencies by 1 February, 2000. We expect to deliver a final report which details the results of the aforementioned analysis by 1 April 2001. To insure that our results are acted upon in a timely fashion, we will organize and/or participate in agency and relevant stakeholder forums dsigned to improve regulatory effectiveness as a consequence of

this research. During these forums we will outline our research, highlight our results, and present our conclusions relative to both current regulatory change and future research direction(s).

In addition to these reports and agency forums, we expect to produce one or more papers for submission to peer-reviewed scientific journals, as well as for presentation at relevant national and international scientific meetings convened by professional societies (e.g., Pacific Seabird Group, American Fisheries Society, Society for Conservation Biology).

Perhaps the most important product wil be the ability to help direct potential regulatory change in the North Pacific longline fisheries to reduce and/or eliminate seabird bycatch. These changes will be based on best-available science, accomplished in collaboration with the active fishery and relevant Federal agencies. Such partnerships are a necessity for proactive solutions to natural resource conservation issues.

Observers: In addition to the usual NMFS fisheries observer, the vessels will carry a specially-trained NMFS observer to monitor seabird research.

Information on Vessels: Please see attachments.

Signature of Applicant: Edward F. Rue

GLACIER FISH COMPANY

1200 Westlake Avenue North
AGC Building, Suite 900
Seattle, WA 98109

Phone (206) 298-1200
Fax (206) 298-4750

Vessel Name	F/V Norton Sound
Federal Permit #	AK995294C
USCG Official #	936017
Owner Name	Glacier Fish Co. LLC
Phone	(206) 298-1200
Fax	(206) 298-4750
Managing Co.	Glacier Fish Co. LLC
Responsible Person(s)	Marie Windrow, John Bundy
Observer Contractor	Salt Water
Length (LOA)	135.8
Gross Wt	653
Type of Vessel	Catcher/Processor
Homeport	Nome AK
Trip Length	21 days est. @ 56,000 lbs round Pacific Cod/day
Expected Bycatch	91 kg Pacific Halibut per mt Pacific Cod/day
Other Bycatch	Pollock, Turbot, Yellowfin Sole, Arrowtooth, Sculpins, Skates, Rockfish, Opilio Crab, and Bairdi Crab
Dates	Mid July, August

Marie Windrow
Operations Manager

EXPERIMENTAL FISHING PERMIT: 99-07

PERMITTED VESSEL

Vessel Name:	Frontier Mariner
Federal Permit Number:	AK993672A
USCG Official Number:	951440
Owner Name:	Mariner Ltd. Partnership
Owner Address:	133 4th Ave. S. Edmonds, WA 98020
Phone:	(425) 775-3424 (EX 205)
FAX:	(FAX) 778-2322
Length (LOA):	135'
Gross Wt.:	446 GT
Type of Vessel:	Catcher/Processor
Homeport:	Seattle

Signature(s) of Authorized Representative(s):

Mike Bayle

William C. Atkinson

Date Signed:

The signature(s) above confirm this information, but do not constitute a final commitment to participate in the test operation.

TABLE 1.--1999 ACCEPTABLE BIOLOGICAL CATCH (ABC), TOTAL ALLOWABLE CATCH (TAC), INITIAL TAC (ITAC), CDQ RESERVE ALLOCATION, AND OVERFISHING LEVELS OF GROUNDFISH IN THE BERING SEA AND ALEUTIAN ISLANDS AREA (BSAI)[1]

Species	Area	Overfishing level	ABC	TAC	ITAC[2]	CDQ reserve[3]
Pollock[4]	Bering Sea (BS)	1,720,000	992,000	992,000	892,800	99,200
	Aleutian Islands (AI)	31,700	23,800	2,000	1,800	200
	Bogoslof District	21,000	16,300	1,000	900	100
Pacific cod	BSAI	284,000	177,000	177,000	150,450	13,275
Sablefish[5]	BS	2,090	1,340	1,340	585	184
	AI	2,890	1,860	1,360	263	232
Atka mackerel	Total	145,000	73,300	68,400	58,440	4,950
	Western AI	.....	30,700	27,000	22,950	2,025
	Central AI	.....	25,800	22,400	19,040	1,680
	Eastern AI/BS	.....	17,000	17,000	14,450	1,275
Yellowfin sole	BSAI	308,000	212,000	207,985	176,787	15,598
Rock sole	BSAI	444,000	309,000	120,000	102,000	9,000
Greenland turbot	Total	29,700	14,200	9,000	7,651	674
.....	BS	.....	9,514	6,030	5,126	452
	AI	.....	4,686	2,970	2,525	222
Arrowtooth flounder	BSAI	219,000	140,000	134,364	114,201	10,076
Flathead sole	BSAI	118,000	77,300	77,300	65,705	5,797
Other flatfish[6]	BSAI	248,000	154,000	154,000	130,900	11,550
Pacific ocean perch	BS	3,800	1,900	1,400	1,190	105
	AI Total	19,100	13,500	13,500	11,475	1,011
	Western AI	.....	9,220	5,220	5,287	466
	Central AI	.....	3,850	3,850	3,273	288
	Eastern AI	.....	3,430	3,430	2,916	257
Other red rockfish[7]	BS	356	267	267	227	20
Sharpchin/Northern	AI	5,640	4,230	4,230	3,596	317
Shortraker/rougheye	AI	1,290	965	965	821	72
Other rockfish[8]	BS	492	369	369	314	27
	AI	613	685	685	583	51
Squid	BSAI	2,820	1,970	1,970	1,675	0
Other species[9]	BSAI	129,000	32,860	32,860	27,931	2,464
TOTAL		3,719,391	2,247,846	2,000,000	1,694,575	174,933

[1] Amounts are in metric tons. These amounts apply to the entire Bering Sea (BS) and Aleutian Islands (AI) Subares unless otherwise specified. With the exception of pollock, and for the purpose of these specifications, the Bering Sea subares includes the Bogoslof District.

[2] Except for pollock and the portion of the sablefish TAC allocated to hook-and-line and pot gear, 15 percent of each TAC is put into a reserve. The ITAC for each species is the remainder of the TAC after

UNIVERSITY OF WASHINGTON

Office of Marine Environmental & Resource Programs
Washington Sea Grant Program
Marine Advisory Services

April 12, 1999

Mr. Steve Pennoyer
Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Dear Mr. Pennoyer:

RE: Experimental fishing permit to test seabird bycatch deterrent devices in the freezer longline fishery for Pacific cod.

The purpose of this letter is to clarify aspects of our pending Experimental Fishing Permit application dated 22 March 1999.

1) Our proposal calls for an industry ad-hoc advisory committee to determine what deterrents to test in the fishery in 1999 and 2000. This committee met for the first time 1 March 1999 (summary attached). In the meeting, freezer longline representatives proposed testing three bycatch deterrents in their fishery: line shooters, lining tubes, and weighting lines. As the experimental design of our proposed research includes enough fishing time to test two deterrents to a control in any single year, the selection of which deterrents to test in 1999 will require further discussion. NPLA is scheduling a second industry meeting to narrow three possible deterrents to two.

2) All observers will be NMFS certified. At least one will be specially trained to collect seabird abundance and behavior data during gear deployment. This research is a special project of the NMFS observer program (OP). During the haul, observers will collect only official total catch data – core observer data – which includes a tally of all species and average weights as per OP protocol. We plan to sample between 65 to 80% of all hauls with two observers. (One observer typically achieves an effective sampling rate of 30% on freezer longline vessels in the Pacific cod fishery). Other typically collected OP data, such as sexed lengths and otoliths, crab measurement and halibut viability, will not be collected. Instead we will collect seabird abundance and behavior data by species in a minimum of 80% of the gear deployments. Because these vessels work 24 hours per day our ability to effectively observe sets made at night may be limited depending on lunar phase and weather.

3) Data forms for the hauls will be NMFS standard forms for tallies and average weights. Seabird abundance and behavior data forms will be developed by the principal investigators based on observations made during a fishing vessels charter prior to deploying observers in the fishery. We plan to adapt data forms developed to quantify seabird abundance and behavior data in Hawaii and CCAMLR longline fisheries to the seabird species and interaction levels in the North Pacific (attached).

Marine Fisheries Office (206) 543-9968 FAX: (206) 685-7471
460 Fisheries Center Box 357980 Seattle, Washington 98195-7980
http://www.wsg.washington.edu

4) We will collect species specific abundance data as a function of time and gear unit deployed in two zones behind the vessel. One we will call the interaction zone, which preliminarily we define approximately as a 50 meter hemisphere centered on the vessel stern. The other is a more specific area within the interaction zone we will call the vulnerable zone or a roughly 6 by 12 meter rectangle centered on the sinking longline.

5) Seabird attacks on baited hooks and actual hookings are the key seabird behaviors of interest. We will collect species specific data on seabird attacks and hookings within the vulnerable zone per unit of gear and time. However, we will also do focal animal sampling per unit time, where we quantify a broader range of seabird behaviors such as flying, alighting or sitting on the water, chasing bait. Focal sampling will focus on albatross species, but other species will be included if possible. Focal animal sampling will be used to assess the degree to which individual birds behave differently, adding to the variance at the group/population level.

6) Other data is likely to include the following for each set: date; observer name; vessel name; weather condition (cloud cover, precipitation, barometric pressure); sea state (Beaufort scale); swell height, wind speed and relative direction; target species; bait; hook type; gangion length; distance between hooks; hooks per set; vessel location at start of gear deployment (DGPS); vessel speed and direction; gear deployment start and finish time (military time); deterrent type (device 1, device 2, control); offal discarded? y/n; distance to line submersion (meters, mapped); distance to following edge of deterrent device (meters, mapped); width of deterrent zone (meters, mapped); deck lights on or off, and comments as needed.

7) Analysis will focus on the following three questions:

- What is the relationship between diversity and abundance of seabirds and key behaviors such as attacks? This will be a correlation analysis to determine the degree of relatedness among measures of abundance and key behaviors to determine variables most useful for by-treatment analyses.

- What is the effect of gear treatment (seabird deterrents and control) on the abundance and behavior of seabirds? This will be a series of ANOVA's comparing behavior or abundance on treatment using general linear modeling (GLM) analysis techniques. The GLM model will also include the biotic and abiotic factors.

- Can gear treatment significantly reduce seabird bycatch without significantly altering the catch of target or other bycatch species? This will be a series of ANOVA's using GLIM techniques that will take into account possible relationships among seabird behavior or abundance, gear treatment, catch and other biotic and abiotic factors.

Sincerely,

Edward F. Melvin
Marine Fisheries Specialist

Cc: Clarence Pautzke
Julia Parrish
Thom Smith

TITLE OF PROJECT:

Reducing Seabird Bycatch in Sablefish and Halibut Longline Fisheries

INSTITUTION:

Office of Marine Environmental and Resource Programs
Washington Sea Grant Program
University of Washington
3716 Brooklyn Ave. NE
Seattle, WA 98105
206-543-6600

GRANTING AGENCY:

Regional Director
National Marine Fisheries Service
BIN C15700
7600 Sand Point Way NE
Seattle, WA 98115

PROJECT DURATION:

April 1, 1999 to September 30, 2000

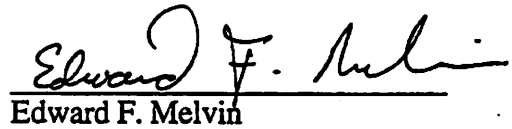
AMOUNT REQUESTED:

$180,000

DATE OF SUBMISSION:

February 19, 1999

PRINCIPAL INVESTIGATOR:



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OFFICIAL AUTHORIZED TO GIVE UNIVERSITY APPROVAL:

Donald W. Allen, Director
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REDUCING SEABIRD BYCATCH IN SABLEFISH AND HALIBUT ITQ LONGLINE FISHERIES

a. Project Goals and Objectives

This proposal addresses funding priority A: *minimize interactions between fisheries and protected or non-targeted species*. Specifically, our goal is to reduce seabird bycatch in North Pacific longline fisheries and eliminate the threat of fishery closures stemming from the incidental capture of endangered seabirds and/or all seabirds protected under the Migratory Bird Treaty Act (MBTA). The objectives of our proposed work are to:

- work cooperatively with the fishing industry to select and then test the effectiveness of seabird deterrent devices in the groundfish and halibut longline fisheries in the Gulf of Alaska.
- characterize the species-specific behavioral interactions of seabirds with longline fishing gear on active fishing vessels, with and without deterrent devices.
- work cooperatively with the fishing industry and federal regulatory agencies to develop recommendations for specific seabird bycatch avoidance regulations and performance standards based on the results of this industry-university collaborative research.
- recommend future research and research protocols.

Collectively, the Alaska groundfish (sablefish, Pacific cod and rockfish) and halibut longline fisheries were valued at over $200 million ex-vessel in 1996 and involved over 4,000 Alaska and Washington vessels (Kinoshita et. al., 1998). Fishing communities throughout Alaska would be most affected by fishery interruptions or closures due to excessive incidental take of endangered seabirds, but individuals and companies in Washington and possibly Oregon could feel the economic and social effects of such a closure.

The incidental capture of seabirds in world longline fisheries has emerged as a major international conservation concern beginning in the late 1980s (Murray et. al., 1993). In particular, persistent declines of several South Pacific albatross populations linked to incidental mortality in longline fisheries (Croxall and Prince 1990) sparked international debate over whether and how offending fisheries should be regulated (IUCN 1996, Alexander et. al., 1997). Based on fishery observer data, Brothers (1991) estimated albatross mortality in the southern bluefin tuna fisheries operating offshore of Australia at 44,000 albatrosses per year. Longline fisheries off New Zealand (Murray et. al., 1993) and Brazil (Vaske 1991) have also been implicated in albatross population declines.

Seabirds are long-lived species with limited reproduction capability and as such, vulnerable to population decline at low rates of annual mortality (less than 5% of the breeding population) from any source. For example, albatross can live 60-70 years, do not reproduce until they are age 5 or older, only raise one chick per reproductive attempt, and commonly reproduce every other year. Pacific seabirds have been threatened by a variety of human-mediated factors, including hunting for the feather trade, egging, and habitat destruction, in addition to bycatch in a range of coastal and pelagic fisheries. Although the former factors have declined markedly as conservation awareness has increased, population levels of many species, particularly albatross, are substantially smaller than pre-exploitation levels (Hasegawa 1984, Flint 1997). Consequently, the rate at which remnant populations, particularly of the short-tailed albatross, can recover is highly sensitive to adult mortality agents such as incidental take in longline fisheries.

In view of high mortality rates of albatrosses and other seabirds in these fisheries and related albatross population declines throughout the southern oceans, Brothers (1991)

strongly advocated the use of specific seabird mitigation devices based on his observations in the Southern bluefin tuna fishery. Responding to these recommendations, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) adopted measures to reduce albatross bycatch in convention waters beginning in 1992 (Conservation measure 29/XI; later revised in 1994 - Conservation Measure 29/XIII). These measures include the use of tori lines, night setting, specifications on the discard of fish offal, use of thawed baits, sinking gear as quickly as possible, and the rescue of hooked birds where possible. Within New Zealand waters, regulations requiring night fishing or the use of tori lines began in 1992, followed by the use of tori lines at all times (Duckworth 1995). In Australian fisheries, seabird bycatch reduction measures are encouraged but voluntary (Brothers 1994).

As international attention focused on albatross bycatch, longline fisheries in other areas of the world's oceans, particularly in the North Pacific, have come under fire in scientific publications (e.g., Kalmer et. al., 1996) and in the press (e.g., Stevens 1996, Wurster 1996). Within Alaska longline fisheries, three species of albatross have been taken: black-footed albatross (BFA; *D. nigripes*), Laysan albatross (LA; *D. immutabilis*), and short-tailed albatross (STA; *D. albatrus*). All three species are stable or increasing; however, several large colonies particularly those in the Hawaiian Islands, have recently experienced significant declines (E. Flint pers. comm. to EFM 1998). These same albatross species are also taken in the Hawaiian pelagic longline fisheries for swordfish and tuna, with estimated mortality at 3,000 to 4,000 albatrosses per year (Skillman and Flint 1997). Although populations of the former two species are fairly robust (LA: 616,000 breeding pairs, BFA: 67,000 breeding pairs; Flint 1997) short-tailed albatross are an internationally endangered species, with an estimated worldwide population of only 1,000 individuals (NMFS Anon, 1998). Since 1995, there are documented reports of three short-tailed albatross hookings in Alaska longline fisheries (five documented reports since 1983). The USFWS (1998) estimates the annual take of STA to be four birds every two years in the Bering Sea-Aleutian Island (BSAI) and Gulf of Alaska (GOA) groundfish fishery, with an additional two birds every two years in the GOA halibut fishery. The consequences of increasing STA bycatch are grave: takes in excess of the aforementioned estimates could trigger a Section 7 consultation under the Endangered Species Act (USFWS 1998) potentially leading to the premature closure of these multi-million dollar fisheries.

Although recent controversy has centered on albatross bycatch, a range of seabird species taken in these fisheries, including Northern fulmars (*Fulmarus glacialis*; 65%), gulls (*Larus* spp.; 19%), albatrosses (11%), and shearwaters (*Puffinus* spp.; 5%). Total seabird mortality in Alaska groundfish longline fisheries (excluding halibut and sablefish) derived from National Marine Fisheries Service (NMFS) 1994 to 1996 observer data is estimated at 13,000 birds per year, or *one bird killed per 10,000 hooks* (USFWS; R. Stehn, pers. comm. to EFM 1998). Because the number of hooks deployed annually is large (halibut: 13.6 million; groundfish: 213 million), the collective bycatch becomes significant. Eighty-three percent of the seabirds are taken in the BSAI region where effort is much higher. However, overall hooking rates are similar for the BSAI (.09 birds/1000 hooks) and GOA fisheries (.06 birds/1000 hooks). Species-specific hooking rates vary markedly between the two regions, a pattern exemplified by albatrosses. GOA albatross hooking rates (24.4 birds /million hooks) are over five times that of the BSAI (4.6 birds /million hooks), due primarily to the higher interaction rates with the more aggressive black-footed albatross in the GOA. All three species of albatross found in the North Pacific leave their breeding colonies in May-July, and appear on the longline fishing grounds during the late spring-summer, at the peak of the halibut and sablefish fishing season (Figure 1).

Recognizing the danger to their industry, the Alaska groundfish longline industry, under the leadership of the North Pacific Longline Association (NPLA), proposed regulations for

the industry based on the CCAMLR conservation measures developed in the South Pacific and Southern oceans. The regulations, adopted 15 December 1997 (62 FR 65635) and extended to the halibut fishery 6 March 1998 (63 FR 11161), are similar to CCAMLR measures but provide more flexibility by allowing the choice of using one or more bycatch reduction measures from an approved list. The list includes setting the gear subsurface through a lining tube; night fishing; towing streamer lines (tori lines); and a towed buoy, board, stick, or other device.

Because the effectiveness of these deterrent techniques in Alaska fisheries is unknown, the regulations were made intentionally flexible to allow for innovation and experimentation. Ideally, more specific regulations will be developed based on innovation within the fishery followed by scientific testing of developed deterrents. The USFWS (1998) requires NMFS to develop a research plan to test these required seabird bycatch avoidance measures and to implement the plan no later than 1999. The NMFS research plan is finalized (Fadely et. al., 1998); however, funding has not been identified to carry out the plan (S. Pennoyer, NMFS Alaska Region Administrator, in 28 February 1998 letter to Thorn Smith, NPLA).

To date, seabird bycatch avoidance measures in longline fisheries such as those adopted by CCAMLR, New Zealand, and Alaska have been developed primarily from anecdotal evidence. There have been no rigorous, statistically robust tests of deterrent efficacy in any fishery, scientific or active. Most published studies on longline fishery seabird bycatch are experimental questions imposed on observer data after the fact (e.g., Brothers 1991, Murray et .al., 1993, Klaer and Placheck 1995, Duckworrth 1995). As such these studies do not test the degree to which deterrents reduce bycatch relative to controls (i.e., no deterrent). These studies also fail to provide rigorous documentation of seabird interaction with deployed gear and/or seabird behavioral response to deterrent presence. Nevertheless, the observer studies do provide evidence that certain seabird bycatch reduction measures tend to reduce overall seabird bycatch, at least within the geographic scope of the fishery.

In contrast to the observer studies, there are three pilot experiments addressing the efficacy of specific deterrent measures (Lokkeborg and Bjordal 1992, Cherel et. al., 1995, Lokkeborg 1996) one of which included data on seabird-bait interactions (Cherel et. al., 1995). Working in waters off Finmark, Lokkeborg and Bjordal (1992) compared bait loss from bird depredation with and without a bird scaring device and between two baits. In this one day trial in which they deployed and immediately retrieved 800 hooks, bait loss was significantly less using a bird scaring device regardless of bait type. Lokkeborg (1996) carried out seabird bycatch and bait loss experiments on a single vessel in 12 days of fishing (number of hooks unknown) in the torsk and ling fishery in waters off mid-Norway as a function of three treatments: a setting funnel that deployed hooks subsurface, a tori line and traditional gear deployment (the control). Tori lines were most successful at repelling birds and diminishing bait loss. Fish catch did not vary among treatments.

In the most comprehensive study to date, Cherel et. al. (1995), working in the Patagonian toothfish, (*Dissostichus eleginoides*) fishery in the South Indian Ocean compared the effects of discarding offal during gear deployment and day versus night fishing on seabird hooking rates and attacks on bait. The research was carried out on a single vessel and spanned 13 days (174,000 hooks). Discarding offal during gear setting resulted in dramatically reduced (20 times) bird hooking rates compared to traditional deployment and significantly reduced bird attacks on the baits for all but one species. In sets without offal discharge (the control), bird hooking rates were 2.6 times lower during night sets and night hooking was further reduced (4x) in the absence of deck lighting. Based on these results Cherel et. al. (1995) recommended specifications for offal dumping during line setting as a valid seabird bycatch mitigation measure.

The observer and experimental studies provide insight and guidance in the design and testing of seabird deterrent for longline fisheries; however, they are far from comprehensive studies which rigorously test a range of deterrents in a statistically valid study design. Furthermore, all studies (with the possible exception of Cherel et. al. 1995) fail to link patterns of seabird abundance and behavior to observed hooking rates. We believe these are crucial steps for several reasons. First, although many seabirds may be hooked in aggregate, seabird bycatch in longline fisheries is a rare event (that is, birds per hook). Therefore, even experiments with a few hundred thousand hooks may not catch enough birds to adequately test deterrent efficacy. In essence, the results become suggestive rather than definitive. Second, tests on a single vessel run the risk of bias introduced due to individual fisher behavior and/or anomalies associated with restricted geographic locations. More comprehensive studies, encompassing several vessels, over more than one season, are needed to reduce the chance that "significant" results are outcome of fisher effort rather than gear tested. Third, deterrents work because they can successfully alter seabird behavior, reducing the likelihood that the bird will encounter the bait. A comprehensive study must address this linkage, allowing researchers to not only explain why certain deterrents are effective but to also suggest avenues for future deterrent development. Finally, changes in fishery regulation can be costly to the effected industry. Therefore, it is reasonable to require that all proposed changes be rigorously tested to increase the certainty that they will work.

We propose to build on the experimental approach used by Cherel et. al (1995) and test at least two required seabird mitigation devices (62 FR 65635, 63 FR 11161) on active fishing vessels in the groundfish BSAI and the halibut GOA fisheries, collecting data on seabird abundance, behavior, and hooking rates. Our proposed work conforms to and extends the NMFS research plan (Fadely et. al., 1998) by: calling for direct collaboration with industry throughout the research activity, occurring on active fishing vessels, and exceeding minimum suggested sampling levels.

b. Project Impacts

This work is important for several reasons:

- it satisfies USFWS requirements and conforms to the NMFS Research Plan.
- it empowers the industry to maintain its leadership role in developing techniques to reduce seabird bycatch,
- it would be the first comprehensive study on the effectiveness of seabird bycatch deterrents in any fishery.
- it paves the way toward reduced seabird bycatch and enhanced conservation of many seabird species.
- it minimizes the likelihood of STA hookings triggering premature closure of these multi-million dollar fisheries.

Results from this study will be used to help develop recommendations for specific seabird bycatch avoidance regulations and performance standards in the North Pacific longline fisheries. Without regulations which work, the industry could be faced with potential costly and ineffective bycatch measures, and in the worst case, premature closure if STA's are caught. Because our study will not only test deterrent efficacy but also provide insight on future deterrent design based on quantification of seabird-bait-deterrent behavioral interactions, we expect to make significant strides towards the goal of elimination of seabird bycatch in these fisheries.

c. Evaluation of Project

Regardless of the outcome of our proposed experiments, relative objective attainment will be determined by the degree to which relevant stakeholders (e.g., the fishing industry) and management agencies (e.g., NMFS, USFWS, Halibut Commission, North Pacific Fisheries Management Council) use our results to proactively reform bycatch regulation in the North Pacific longline fisheries. The success of our project will hinge on our ability to adequately test approved deterrent devices within the constraints of the active longline fisheries in the North Pacific. We have secured provisional endorsements of support from industry (see letter). Benchmarks of objective attainment will include:

Schedule	Benchmark	Status
Before Year 1	Secure industry cooperation, including determination of specific vessels and vessel operators.	Initiated
	Secure necessary permits from NMFS, USFWS.	Initiated
	Identify deterrent devices to be tested in conjunction with industry and agency cooperators.	
	Complete shakedown cruise prior to Year 1 field season.	
Year 1	Finalize assessment protocols.	
Year 1 & 2	Train observers. Collect and analyze data. Debrief observers.	
After Year 2	Publicize results (written reports, stakeholder and agency forums, scientific meeting presentations).	
	Consequent regulatory reform.	

d. Need for Government Financial Assistance.

Government financial assistance is required for this proposed research because this work is critical to the health of the North Pacific Longline fisheries valued at over $200 million ex-vessel annually and funding for it is not available elsewhere. This work is important for several reasons:

- it minimizes the likelihood of STA hookings (4 every two years in the groundfish fishery and 2 STA's in the halibut fishery every two year) triggering interruption and/or premature closure of these multi-million dollar fisheries.
- it satisfies USFWS requirements to initiate testing required seabird avoidance measures in 1999 and conforms to the NMFS Research Plan.
- it empowers the industry to maintain its leadership role in developing techniques to reduce seabird bycatch,
- it would be the first comprehensive study on the effectiveness of seabird bycatch deterrents in any fishery.
- it paves the way toward reduced seabird bycatch and enhanced conservation of many seabird species.

Funding for this research was sought from several sources: The most likely sources of funding for this required research are the resource management agencies with management authority in this issue: the Alaska Region of NMFS, and the US Fish and Wildlife Service. They have indicated that funding is not available for this research.

Research of this scope is beyond the resources of the Washington and Alaska Sea Grant Programs and the International Pacific Halibut Commission. The Washington Sea Grant Program is providing in-kind support (federal) by contributing six to eight months of salary for the PI. This research is also beyond the scope of full industry financial support,

however, the industry is willing to provide in-kind support (see budget justification and letter from FVOA).

e. Participation by Persons or Groups Other Than the Applicant.
Participants include the industry, through the Fishing Vessel Owners Association, representatives of the National Marine Fisheries Service and the US Fish and Wildlife Service, and Alaskan Observers, Inc.

Industry: We propose to establish an industry-university collaboration and will conduct this research on active fishing vessels in the Gulf of Alaska (GOA) sablefish-halibut fishery on vessels in the less than 124 foot class. Participating vessels will be selected in collaboration the Fishing Vessel Owners Association (FVOA; for sablefish/halibut ITQ) based on fishing experience, demonstrated leadership in the seabird bycatch issue, and willingness to cooperate in the study (see letters of support, Section 5). Selection of test devices, as well as specifications for their construction, deployment and use in each fishery, will be determined by an informal industry advisory committee composed of participating vessel operators and designees from industry associations, and in consultation with NMFS and US Fish and Wildlife Service (USFWS) representatives.

National Marine Fisheries Service: Our research conforms with the NMFS Research Plan (Fadely et. al, 1998) and utilizes data from the NMFS observer program on seabird mortality rates and groundfish observer program protocols. We will collaborate with NMFS on recommendations for regulations and performance protocols for seabird avoidance measures based on our results. We will also coordinate with the NMFS Observer program in several ways. This project will be a special project of the NMFS observer program where core NMFS observer program tasks will be carried out, but other less essential tasks will be replaced with tasks specific to this project. All observers will be NMFS certified and we will share catch weight and tally data with the Observer Program.

US Fish and Wildlife Service: ESA and MBTA permits will be obtained for this research and we will collaborate with USFWS on developing protocols for STA interactions, should they occur during this work, and collaborate with USFWS representatives on recommendations for regulations and performance protocols based on our results.

Alaskan Observers, Inc. We will subcontract with AOI to provide experienced NMFS trained observers for data collection on fishing vessels.

f. Federal, State and Local Government Activities and Permits.
We will obtain USFWS permits for possible incidental take of short-tailed albatross under ESA (Greg Balogh, USFWS, Ecological Services anchorage, 605 West 4th Avenue, Room 62, Anchorage, AK 99501; 907/271-2778) and for the incidental take of seabirds under the Migratory Bird Treaty Act (MBTA: Karen Laing or Steve Kendall, USFWS, Ecological Services anchorage, 605 West 4th Avenue, Room 62, Anchorage, AK 99501; 907/ 786-3443) regulations. USFWS (Anon., 1998) requires that NMFS evaluate the effectiveness of seabird bycatch avoidance devices in the Alaska groundfish and halibut longline fisheries. In response, NMFS prepared a Research Plan (Fadely et. al, 1998) and is required to implement it in 1999 (Brian Fadely/Kim Rivera, NMFS, Fisheries Management Division, P.O. Box 21668, Juneau, AK 99802).

g. Project Statement of Work.
Project Design: We propose to establish an industry-university collaboration to test seabird bycatch mitigation devices on active commercial longline vessels using specially trained

fishery observers during the 1999 and 2000 fishing seasons. This work will be conducted in the less than 124 foot class ITQ sablefish and halibut longline fisheries operating in the Gulf of Alaska. Participating vessels will be selected in collaboration with the Fishing Vessel Owners Association (FVOA; for sablefish/halibut ITQ) based on fishing experience, demonstrated leadership in the seabird bycatch issue, and willingness to cooperate in the study. Within the constraints of an active fishery, we will conduct our test fishing in seasons and locations that maximize fishery interactions with albatross species and, secondarily other seabirds, as determined by available NMFS fishery observer data as well as anecdotal reports of vessel operators and fishery observers.

We will compare two mitigation devices to a control of no device, for a total of three independent treatments (device 1, device 2, and control). Priority will be given to testing deterrent devices now required or proposed as a future regulation in the fishery, but we will also consider new techniques being tested elsewhere in the world that show great promise to reduce seabird bycatch in the North Pacific fishery. Selection of test devices, as well as specifications for their construction, deployment and use in each fishery, will be determined by an informal fishery advisory committee composed of participating vessel operators and designees of longline industry associations, and in consultation with NMFS and USFWS. Each vessel in the test fishery will be supplied with test devices, such that all vessels will encompass an independent test of deterrent efficacy. Vessels will fish in the manner and location normal to the fishery, except for the following: Test treatments will be rotated throughout all observed set deployments (i.e., device 1, device 2, control). Treatment rotation will be predetermined to minimize the effects of time of day and insure even coverage of all treatments across all times of day fished.

Because seabird hookings in North Pacific longline fisheries are rare events, we have estimated that a minimum of .64 to one million deployed hooks and 150 observer days over two years will be needed to adequately address deterrent device efficacy relative to a control of no device. Within fishery this translates into:

- three vessels per year in the GOA ITQ fishery, with seabird observer coverage for a total of 45 days per year (approximately 3 trips), assuming a total hook retrieval observation rate of 40% We will make every effort to deploy a second observer to maximize data collection and to achieve an effective observation rate approaching 100% of the hauls, overall.

Special seabird observers will take data on a range of species-specific seabird abundance and behavioral data during gear deployment and seabird hooking rates as observed during gear retrieval, as well as tally the catch of all species (target and non-target species, all taxa).

Although hooking rates are extremely low, vessels deploying baited lines frequently attract tens to hundreds of seabirds, including albatross (Cherel et. al., 1996). Thus, *crucial questions are how these birds behave in the vicinity of deploying gear and whether deterrent devices sufficiently alter bird behavior such that the likelihood of hooking is reduced to virtually zero.* Our experimental approach focuses on linking seabird abundance and behavioral data collected during gear deployment with observed hooking rates. Within each test fishery, we will estimate the abundance of seabirds within the general test fishery area, as well as species-specific abundance and behavioral data in the immediate vicinity of test vessels (*the interaction zone*) during gear deployment. To maximize the probability of linking seabird behavior in the vicinity of the gear to the likelihood of hooking, we will pay particular attention to interactions occurring within the area within which hooking is physically possible (*the vulnerable zone* - Fadely 1998). Although we will collect data on

all seabird species, our emphasis will be on characterizing the interaction of albatross species, particularly short-tailed albatross, with deployed gear with and without deterrent devices. Following from the NMFS 1998 research plan (Fadely 1998), seabird abundance and behavioral data will include but not be limited to:

Scan sampling for species-specific distribution, abundance, and bait attacks

- For total abundances of 50 or less - species-specific estimates of abundance per unit time, from immediately before gear deployment to immediately after gear has been fully deployed, within the *interaction zone* defined as a 50 meter radial hemisphere centered on the vessel stern (at least 9 samples per set).
- Species-specific estimates of abundance per unit time, from immediately before gear deployment to immediately after gear has been fully deployed, within the *vulnerable zone* defined as a 6-12 m wide rectangle centered on the deployed gear running from the vessel stern to the point of gear submersion (at least 9 samples per set). Should seabird numbers rise above 300, the will be recorded in aggregate as 300+, except for albatross, which will be counted individually.
- Time, location relative to vessel stern, location relative to following edge of deterrent device, and species for all attacks on deployed bait.
- Time, location relative to vessel stern, location relative to following edge of deterrent device, and species for all observed hookings.

Focal animal sampling of individual albatross

- Constant observation of select albatross during gear deployment, including: dominant behavior (flying, seated on water, diving for bait), location relative to vessel stern, and location relative to following edge of deterrent device, where all measures are collected per unit time.

SLR 35mm and video cameras may be used to help quantify bird abundance and behavior, respectively, especially during protocol refinement and observer training. Each observed set will be predetermined as a scan sample or a focal animal sample, and the distribution of scan and focal sampling will be even across observer effort, treatment type, and time of day. All hookings will be recorded regardless of sample type. Location of hooking will be noted on cartoon plans of the vessel, gear, and test deterrent device (see sample datasheet). Any snagging of the deterrent device during gear deployment will also be recorded such than subsequent increases in attacks on bait and/or seabird hookings can be explained in the analysis. We will finalize seabird behavior and abundance protocols prior to the Year 1 test fishery during a pilot cruise using a chartered commercial longline vessel.

In addition to catch data and the seabird abundance and behavioral data collection described above, a range of physical and vessel-specific data will be recorded for each observed set, including but not limited to:

> date; observer name; vessel name; weather condition (cloud cover, precipitation, barometric pressure); sea state (Beaufort scale); wind speed and direction; target species; primary bait; hook type; gangion length; distance between hooks; hooks per set; vessel location at start of gear deployment (DGPS); vessel speed and direction; gear deployment start and finish time (military time); deterrent type (device 1, device 2, control); offal discarded? y/n; distance to line submersion (meters, mapped); distance to following edge of deterrent device (meters, mapped); width of deterrent zone (meters, mapped); and comments as needed.

Following each trip, observer data will be entered into a database for multivariate analysis. Preliminary analysis of Year 1 data will be used to adjust experimental design as needed (e.g., verify adequacy of projected sample sizes). The focus of the preliminary and final analyses will be two-fold:

First, we will determine the extent to which each tested deterrent device significantly reduces seabird bycatch, in total as well as by species, and the effect of deterrents on target catch and bycatch of all species (weight and number). Interactions with physical parameters (see list above) will also be examined. Because hooking is a rare event, we expect these data to be non-normally distributed. Past experience analyzing rare-event seabird bycatch data has indicated to us that use of a tailored, iterative model based on a Poisson distribution can adequately address these statistical concerns (e.g., GLIM; Melvin et. al. 1997). In these analyses, each fishery will be analyzed independently.

Second, we will probe the relationship between seabird abundance and behavior in the vicinity of the vessel (i.e., the interaction zone) and the gear (i.e., the vulnerable zone), and hooking probabilities as a conditional function of deterrent device. This latter analysis will allow us to determine both the specific behaviors leading to hooking, as well as how deterrent devices may alter these behaviors, leading to significant reductions in hooking rate. We expect that the behavioral analysis will be useful in qualifying the results of the primary analysis as well as paving the way for additional deterrent work, should such be merited.

Responsibilities: Edward Melvin, Washington Sea Grant Fisheries Specialist, will serve as lead Principal Investigator (PI) on this project, assisted by Dr. Julia Parrish, Research Professor of Zoology, University of Washington. See Section H, Project Management for a complete description of qualifications and responsibilities.

Major Products and Milestones: Following the Year 1 field season and subsequent analysis, we expect to have a draft first year report for Saltonstall-Kennedy as well as relevant fishery and seabird resource managers within NMFS, USFWS, and state agencies by 1 February 2000 (Figure 2). At the conclusion of the grant tenure, we expect to deliver a final report which details the results of the aforementioned analyses within 90 days of the end of the grant period (31 December 2000). To insure that our results are acted upon in a timely fashion, we will organize and/or participate in agency and relevant stakeholder forums designed to improve regulatory effectiveness as a consequence of this research. During these forums we will outline our research, highlight our results, and present our conclusions relative to both current regulatory change and future research direction(s).

In addition to these reports and agency forums, we expect to produce one or more papers for submission to peer-reviewed scientific journals, as well as for presentation at relevant national and international meetings convened by scholarly societies (e.g., Pacific Seabird Group, American Fisheries Society, Society for Conservation Biology).

Perhaps the most important product will be the ability to help direct potential regulatory change in the North Pacific longline fisheries to reduce and/or eliminate seabird bycatch. These changes will be based on best-available science, accomplished in collaboration with the active fishery and relevant Federal agencies. Such partnerships are a necessity for proactive solutions to natural resource conservation issues.

h. Project Management

Management:

Primary responsibility for project completion will fall to the Principal Investigators Melvin and Parrish. All other grant personnel will be contract workers (e.g., special observers) or

University employees under the direction of Melvin and Parrish. In addition to the PIs, there are several Principal Participants, including individual fishing vessels represented by the FVOA (see letter by Robert Alverson; 5. Supporting Documentation). Responsibility for the various grant activities are as follows:

Responsible Party	Grant Activity
Ed Melvin	Point contact for industry. Secure vessels for test fishery. Final selection of deterrent devices. Point contact for agencies. Secure necessary permits. Contract with AOI for observers. Assist in protocol development. Oversee field coordinator. Train observers. Data analysis and report writing. Present results.
Julia Parrish	Develop and refine seabird abundance and behavior protocols. Train observers. Data analysis and report writing. Present results.
Field Coordinator	Train and oversee observers. Field season logistics. Preliminary data entry.
Statistical Consultant	Perform preliminary analysis (Year 1 data). Perform final analysis (Years 1 & 2 data).
Observers	Data collection.

All observers will be contracted through Alaska Observers Incorporated (AOI) or equivalent independent contracting organization. Contractor requirements include full NMFS certification. Observer requirements include a minimum of five (5) years of experience.

Qualifications:
Melvin and Parrish are highly qualified to do the proposed research and have demonstrated their effectiveness to work as a team on seabird bycatch research. Ed Melvin is the Marine Fisheries Specialist for the Washington Sea Grant Program, School of Fisheries, University of Washington. He was the principal investigator on two S/K projects (seabird bycatch in gillnet fisheries and hagfish fishery development) and co-PI on another (albacore handling). He has 18 years of experience working with the fishing industry doing applied research on active fishing vessels to address industry problems/issues. Most recently, he led the first and only research program ever conducted on developing gear modifications and practices to reduce seabird bycatch in coastal gillnet fisheries. This university-industry collaboration led to the identification of several tools that reduce seabird bycatch. These tools were later adopted as regulations by the Washington Fish and Wildlife Commission with the full support of the Puget Sound Gillnetters' Association. This was the first time anywhere in the world seabird bycatch was managed in a coastal gillnet fishery without closing the fishery.

In the course of this work he has developed expertise on seabird biology and behavior and seabird interactions with fisheries and has developed working relationships with related management agencies on this issue. He was among the group of experts that helped develop the NMFS Research Plan to test seabird mitigation devices in North Pacific longline fisheries. He also reviewed proposals for the Western Pacific Fisheries Management Council on testing seabird mitigation devices in Hawaiian longline fisheries.

Dr. Julia Parrish is a Research Professor in the Zoology Department at the University of Washington. She is a widely respected expert in seabird biology, behavior, and

conservation, conducting research on seabirds throughout the North Pacific, including Alaska. Her work with common murres in Washington led to her to become involved in seabird-gillnet interactions in Puget Sound gillnet fisheries. She has presented results of her research on many occasions in industry-agency forums dealing with management of seabird bycatch in gillnet fisheries, contributed greatly to, and is an author of the final report on, the seabird bycatch study in the Puget Sound gillnet fishery (Melvin et. al, 1997). She has a demonstrated ability to do excellent research and interact productively with the fishing industry and resource managers. Dr. Parrish was recently named an Environmental Hero (one of 25 nationally) by NOAA for her work developing volunteer-based beached bird surveys in Washington.

Alaskan Observers, Inc. is the largest company providing the largest pool of NMFS trained observers to Alaska longline fisheries. (AOI, 130 Nickerson Ave, suite 20, Seattle, WA 98109; 208/283-7310).

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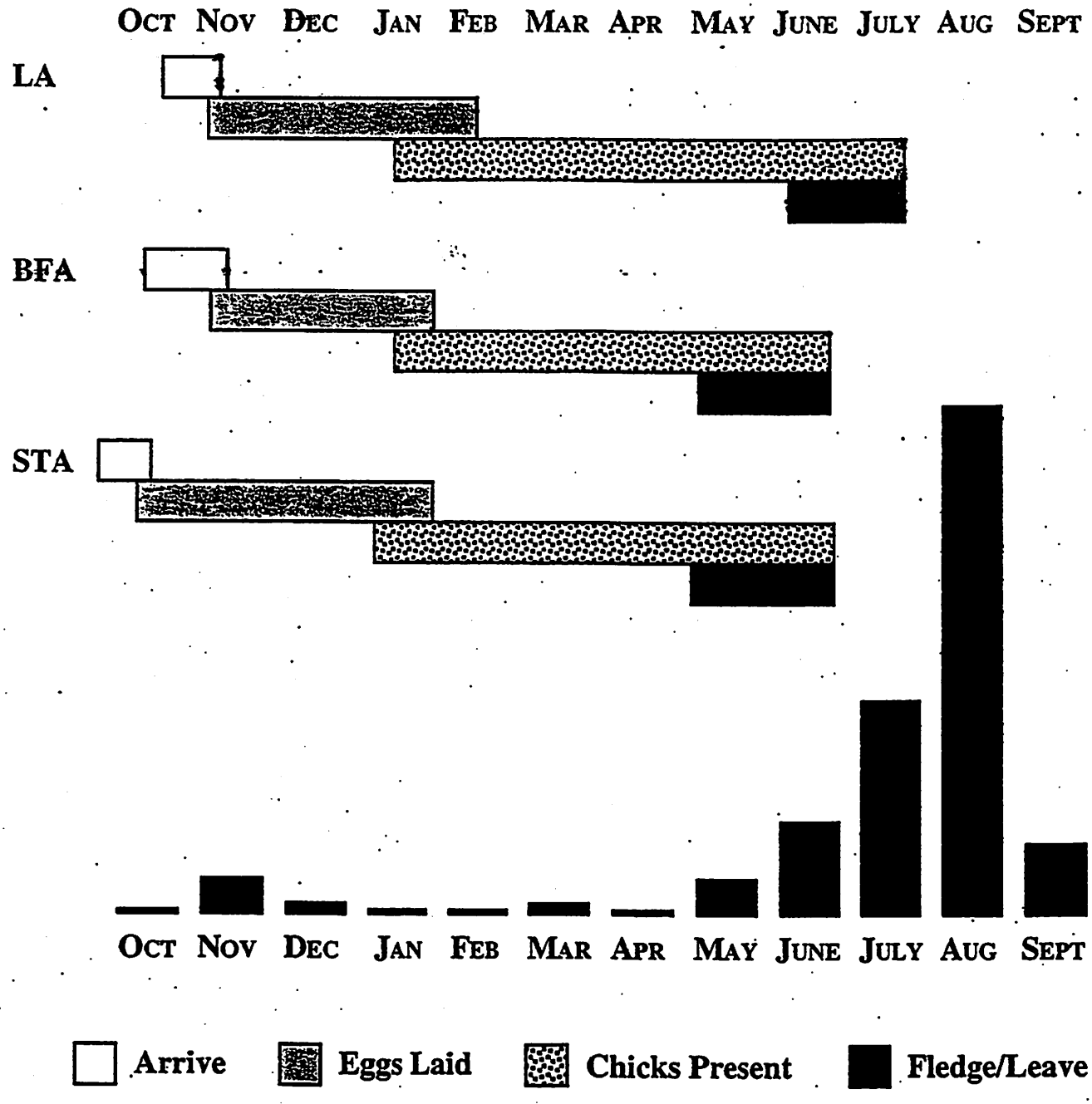

Figure 1. The breeding cycles of the three albatross species incidentally caught in North Pacific longline fisheries (LA: Laysan; BFA: black-footed; STA: short-tailed) and an index of relative abundance in STA sightings based on groundfish observer data adjusted for effort (first panels based on Gould and Hubbs 1994 (LA, BFA), USFWS 1998 (STA); last panel after Figure 8, p. 19, USFWS 1998).

	1	2	3	4	5	6	7	8	9	10	11	12
1999												
Observer selection				X								
Protocol Refinement/					X							
Observer training Cruise					X							
Data Collection					X	X						
Data Entry							X	X				
Analysis and Writing									X	X	X	X
2000												
Analysis and Writing	X											
Interim Report to Managers		X										
Observer selection			X	X								
Protocol Refinement/				X	X							
Observer training Cruise					X							
Data Collection					X	X						
Data Entry							X					
Analysis and Writing							X	X	X	X		
Provisional Report											X	
Final Report												X

Figure 2. Milestones

ROOM 232, WEST WALL BUILDING • 4005 20TH AVE. W.
SEATTLE, WASHINGTON 98199-1290

SINCE 1911

April 29, 1998

Mr. Rollie Schmitten
Assistant Administrator for Fisheries
National Marine Fisheries Service
1335 East-West Highway
Silver Spring, MD 209910

Dear Rollie:

This letter is in support of a project which will answer the effectiveness of the mechanisms currently deployed by the North Pacific longline fleet in deterring birds from the baited hooks. The proposed project will be conducted by the Marine Advisory Services from the Washington Sea Grant program.

The bird bycatch issue poses a threat to the industry. As you may know, the halibut fleet has been allotted two takings of short-tailed Albatross over a two-year time frame. The fishery is a 75 million dollar fishery that employs over 3000 small boat operators. The rest of the longline industry has been allotted two additional short-tailed albatross over a two-year period. The freezer longline fleet for pacific cod is valued annually at 75 million dollars and last year, the sablefish fishery was similarly valued at 75 million dollars. There are approximately 25 pacific cod freezer vessels employing 350 crew and the sablefish operations have approximately 700 small family operations participating annually. The threat of a shut down could be disastrous for local communities and family fishing opportunities.

The Association is willing to help recruit fishing vessels for the work suggested. We believe a project that assesses active fishing vessels is a good thing. I hope you give this project the highest consideration.

Sincerely,

Robert D. Alverson
Manager

RDA:cb

FAX
(206) 283-3341
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DIAL "A VESSEL"
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LONGITUDE: 120° 22' 68" WEST

EDWARD F. MELVIN

Marine Fisheries Specialist
Washington Sea Grant Program
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Education

M.S. Humboldt State University, 1980
B.A. University of Pennsylvania, 1974

Positions Held

Marine Fisheries Specialist. Washington Sea Grant Program, University of Washington, 1993-present
Marine Field Agent. Washington Sea Grant Program, University of Washington, 1990-1993
Area Marine Advisor. Sea Grant Extension Program, Cooperative Extension, Monterey & Santa Cruz Counties, University of California, 1980-1990

Professional Memberships

American Fishery Society
Pacific Seabird Group
Society for Conservation Biology
Western Society of Naturalists

Selected Publications

1997 Seabird Bycatch Reduction: New Tools for Puget Sound Drift Gillnet Salmon Fisheries. With L. L. Conquest and J. K. Parrish. Project A/FP-7 Washington Sea Grant Program. WSG-AS 97-01.

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JULIA K PARRISH

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Zoology Department
University of Washington
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Education

Ph.D. Zoology Department, Duke University, 1988
B.S. Biochemistry/Biophysics from the Biology Department, Carnegie-Mellon University, 1982

Positions Held

1995-ongoing	Research Assistant Professor. Zoology Department, University of Washington
1991-1994	Research Associate. Institute for Environmental Studies, University of Washington
1990-1991	Postdoctoral Fellow. Fisheries Research Institute, College of Ocean & Fisheries Science, University of Washington
1989	Postdoctoral Scholar. Biology Department, UCLA, in the laboratory of William Hamner

Professional Societies

Animal Behavior Society
American Society of Ichthyologists & Herpetologists
American Society of Zoologists
International Society for Behavioral Ecology
Pacific Seabird Group
Society for Conservation Biology
Western Society of Naturalists

Publications

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TITLE OF PROJECT: Reducing Seabird Bycatch in the Pacific Cod Freezer Longline Fishery

INSTITUTION:

Office of Marine Environmental and
Resource Programs
Washington Sea Grant Program
University of Washington
3716 Brooklyn Ave. NE
Seattle, WA 98105
206-543-6600

GRANTING AGENCY:

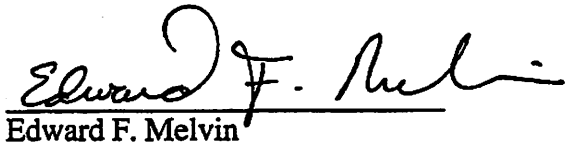
Regional Director
National Marine Fisheries Service
BIN C15700
7600 Sand Point Way NE
Seattle, WA 98115

PROJECT DURATION: June 1, 1999 to May 31, 2001

AMOUNT REQUESTED: $ 104,000

DATE OF SUBMISSION: February 19, 1999

PRINCIPAL INVESTIGATOR:



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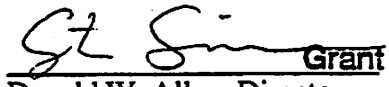

Sinh Simmons
Grant and Contract Manage
Acting for
Donald W. Allen

Donald W. Allen, Director
Grant & Contract Services
AD-24
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206-543-4043

Reducing Seabird Bycatch in the Pacific Cod Freezer-Longliner Fishery

a. Project Goals and Objectives

This proposal addresses funding priority A: *minimize interactions between fisheries and protected or non-targeted species*. Specifically, our goal is to reduce seabird bycatch in North Pacific longline fisheries and eliminate the threat of fishery closures stemming from the incidental capture of endangered seabirds and/or all seabirds protected under the Migratory Bird Treaty Act (MBTA). The objectives of our proposed work are to:

- work cooperatively with the fishing industry to select and then test the effectiveness of seabird deterrent devices in the freezer-longliner groundfish fishery in the Bering Sea/ Aleutian Islands (BSAI) region.
- characterize the species-specific behavioral interactions of seabirds with longline fishing gear on active fishing vessels, with and without deterrent devices.
- work cooperatively with the fishing industry and federal regulatory agencies to develop recommendations for specific seabird bycatch avoidance regulations and performance standards based on the results of this industry-university collaborative research.
- recommend future research and research protocols.

Collectively, the Alaska groundfish (sablefish, Pacific cod and rockfish) and halibut longline fisheries were valued at over $200 million ex-vessel in 1996 and involved over 4,000 Alaska and Washington vessels (Kinoshita et. al., 1998). Fishing communities throughout Alaska would be most affected by fishery interruptions or closures due to excessive incidental take of endangered seabirds, but individuals and companies in Washington and possibly Oregon could feel the economic and social effects of such a closure.

The incidental capture of seabirds in world longline fisheries has emerged as a major international conservation concern beginning in the late 1980s (Murray et. al., 1993). In particular, persistent declines of several South Pacific albatross populations linked to incidental mortality in longline fisheries (Croxall and Prince 1990) sparked international debate over whether and how offending fisheries should be regulated (IUCN 1996, Alexander et. al., 1997). Based on fishery observer data, Brothers (1991) estimated albatross mortality in the southern bluefin tuna fisheries operating offshore of Australia at 44,000 albatrosses per year. Longline fisheries off New Zealand (Murray et. al., 1993) and Brazil (Vaske 1991) have also been implicated in albatross population declines.

Seabirds are long-lived species with limited reproduction capability and as such, vulnerable to population decline at low rates of annual mortality (less than 5% of the breeding population) from any source. For example, albatross can live 60-70 years, do not reproduce until they are age 5 or older, only raise one chick per reproductive attempt, and commonly reproduce every other year. Pacific seabirds have been threatened by a variety of human-mediated factors, including hunting for the feather trade, egging, and habitat destruction, in addition to bycatch in a range of coastal and pelagic fisheries. Although the former factors have declined markedly as conservation awareness has increased, population levels of many species, particularly albatross, are substantially smaller than pre-exploitation levels (Hasegawa 1984, Flint 1997). Consequently, the rate at which remnant populations, particularly of the short-tailed albatross, can recover is highly sensitive to adult mortality agents such as incidental take in longline fisheries.

In view of high mortality rates of albatrosses and other seabirds in these fisheries and related albatross population declines throughout the southern oceans, Brothers (1991) strongly advocated the use of specific seabird mitigation devices based on his observations

in the Southern bluefin tuna fishery. Responding to these recommendations, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) adopted measures to reduce albatross bycatch in convention waters beginning in 1992 (Conservation measure 29/XI; later revised in 1994 - Conservation Measure 29/XIII). These measures include the use of tori lines, night setting, specifications on the discard of fish offal, use of thawed baits, sinking gear as quickly as possible, and the rescue of hooked birds where possible. Within New Zealand waters, regulations requiring night fishing or the use of tori lines began in 1992, followed by the use of tori lines at all times (Duckworth 1995). In Australian fisheries, seabird bycatch reduction measures are encouraged but voluntary (Brothers 1994).

As international attention focused on albatross bycatch, longline fisheries in other areas of the world's oceans, particularly in the North Pacific, have come under fire in scientific publications (e.g., Kalmer et. al., 1996) and in the press (e.g., Stevens 1996, Wurster 1996). Within Alaska longline fisheries, three species of albatross have been taken: black-footed albatross (BFA; *D. nigripes*), Laysan albatross (LA; *D. immutabilis*), and short-tailed albatross (STA; *D. albatrus*). All three species are stable or increasing; however, several large colonies particularly those in the Hawaiian Islands, have recently experienced significant declines (E. Flint pers. comm. to EFM 1998). These same albatross species are also taken in the Hawaiian pelagic longline fisheries for swordfish and tuna, with estimated mortality at 3,000 to 4,000 albatrosses per year (Skillman and Flint 1997). Although populations of the former two species are fairly robust (LA: 616,000 breeding pairs, BFA: 67,000 breeding pairs; Flint 1997) short-tailed albatross are an internationally endangered species, with an estimated worldwide population of only 1,000 individuals (NMFS Anon, 1998). Since 1995, there are documented reports of three short-tailed albatross hookings in Alaska longline fisheries (five documented reports since 1983). The USFWS (1998) estimates the annual take of STA to be four birds every two years in the Bering Sea-Aleutian Island (BSAI) and Gulf of Alaska (GOA) groundfish fishery, with an additional two birds every two years in the GOA halibut fishery. The consequences of increasing STA bycatch are grave: takes in excess of the aforementioned estimates could trigger a Section 7 consultation under the Endangered Species Act (USFWS 1998) potentially leading to the premature closure of these multi-million dollar fisheries.

Although recent controversy has centered on albatross bycatch, a range of seabird species taken in these fisheries, including Northern fulmars (*Fulmarus glacialis*; 65%), gulls (*Larus* spp.; 19%), albatrosses (11%), and shearwaters (*Puffinus* spp.; 5%). Total seabird mortality in Alaska groundfish longline fisheries (excluding halibut and sablefish) derived from National Marine Fisheries Service (NMFS) 1994 to 1996 observer data is estimated at 13,000 birds per year, or *one bird killed per 10,000 hooks* (USFWS; R. Stehn, pers. comm. to EFM 1998). Because the number of hooks deployed annually is large (halibut: 13.6 million; groundfish: 213 million), the collective bycatch becomes significant. Eighty-three percent of the seabirds are taken in the BSAI region where effort is much higher. However, overall hooking rates are similar for the BSAI (.09 birds/1000 hooks) and GOA fisheries (.06 birds/1000 hooks). Species-specific hooking rates vary markedly between the two regions, a pattern exemplified by albatrosses. GOA albatross hooking rates (24.4 birds /million hooks) are over five times that of the BSAI (4.6 birds /million hooks), due primarily to the higher interaction rates with the more aggressive black-footed albatross in the GOA. All three species of albatross found in the North Pacific leave their breeding colonies in May-July, and appear on the longline fishing grounds during the late spring-summer, at the peak of the halibut and sablefish fishing season (Figure 1).

Recognizing the danger to their industry, the Alaska groundfish longline industry, under the leadership of the North Pacific Longline Association (NPLA), proposed regulations for the industry based on the CCAMLR conservation measures developed in the South Pacific

and Southern oceans. The regulations, adopted 15 December 1997 (62 FR 65635) and extended to the halibut fishery 6 March 1998 (63 FR 11161), are similar to CCAMLR measures but provide more flexibility by allowing the choice of using one or more bycatch reduction measures from an approved list. The list includes setting the gear subsurface through a lining tube; night fishing; towing streamer lines (tori lines); and a towed buoy, board, stick, or other device.

Because the effectiveness of these deterrent techniques in Alaska fisheries is unknown, the regulations were made intentionally flexible to allow for innovation and experimentation. Ideally, more specific regulations will be developed based on innovation within the fishery followed by scientific testing of developed deterrents. The USFWS (1998) requires NMFS to develop a research plan to test these required seabird bycatch avoidance measures and to implement the plan no later than 1999. The NMFS research plan is finalized (Fadely et. al., 1998); however, funding has not been identified to carry out the plan (S. Pennoyer, NMFS Alaska Region Administrator, in 28 February 1998 letter to Thorn Smith, NPLA).

To date, seabird bycatch avoidance measures in longline fisheries such as those adopted by CCAMLR, New Zealand, and Alaska have been developed primarily from anecdotal evidence. There have been no rigorous, statistically robust tests of deterrent efficacy in any fishery, scientific or active. Most published studies on longline fishery seabird bycatch are experimental questions imposed on observer data after the fact (e.g., Brothers 1991, Murray et .al., 1993, Klaer and Placheck 1995, Duckworrth 1995). As such these studies do not test the degree to which deterrents reduce bycatch relative to controls (i.e., no deterrent). These studies also fail to provide rigorous documentation of seabird interaction with deployed gear and/or seabird behavioral response to deterrent presence. Nevertheless, the observer studies do provide evidence that certain seabird bycatch reduction measures tend to reduce overall seabird bycatch, at least within the geographic scope of the fishery.

In contrast to the observer studies, there are three pilot experiments addressing the efficacy of specific deterrent measures (Lokkeborg and Bjordal 1992, Cherel et. al., 1995, Lokkeborg 1996) one of which included data on seabird-bait interactions (Cherel et. al., 1995). Working in waters off Finmark, Lokkeborg and Bjordal (1992) compared bait loss from bird depredation with and without a bird scaring device and between two baits. In this one day trial in which they deployed and immediately retrieved 800 hooks, bait loss was significantly less using a bird scaring device regardless of bait type. Lokkeborg (1996) carried out seabird bycatch and bait loss experiments on a single vessel in 12 days of fishing (number of hooks unknown) in the torsk and ling fishery in waters off mid-Norway as a function of three treatments: a setting funnel that deployed hooks subsurface, a tori line and traditional gear deployment (the control). Tori lines were most successful at repelling birds and diminishing bait loss. Fish catch did not vary among treatments.

In the most comprehensive study to date, Cherel et. al. (1995), working in the Patagonian toothfish, (*Dissostichus eleginoides*) fishery in the South Indian Ocean compared the effects of discarding offal during gear deployment and day versus night fishing on seabird hooking rates and attacks on bait. The research was carried out on a single vessel and spanned 13 days (174,000 hooks). Discarding offal during gear setting resulted in dramatically reduced (20 times) bird hooking rates compared to traditional deployment and significantly reduced bird attacks on the baits for all but one species. In sets without offal discharge (the control), bird hooking rates were 2.6 times lower during night sets and night hooking was further reduced (4x) in the absence of deck lighting. Based on these results Cherel et. al. (1995) recommended specifications for offal dumping during line setting as a valid seabird bycatch mitigation measure.

The observer and experimental studies provide insight and guidance in the design and testing of seabird deterrent for longline fisheries; however, they are far from comprehensive studies which rigorously test a range of deterrents in a statistically valid study design. Furthermore, all studies (with the possible exception of Cherel et. al. 1995) fail to link patterns of seabird abundance and behavior to observed hooking rates. We believe these are crucial steps for several reasons. First, although many seabirds may be hooked in aggregate, seabird bycatch in longline fisheries is a rare event (that is, birds per hook). Therefore, even experiments with a few hundred thousand hooks may not catch enough birds to adequately test deterrent efficacy. In essence, the results become suggestive rather than definitive. Second, tests on a single vessel run the risk of bias introduced due to individual fisher behavior and/or anomalies associated with restricted geographic locations. More comprehensive studies, encompassing several vessels, over more than one season, are needed to reduce the chance that "significant" results are outcome of fisher effort rather than gear tested. Third, deterrents work because they can successfully alter seabird behavior, reducing the likelihood that the bird will encounter the bait. A comprehensive study must address this linkage, allowing researchers to not only explain why certain deterrents are effective but to also suggest avenues for future deterrent development. Finally, changes in fishery regulation can be costly to the effected industry. Therefore, it is reasonable to require that all proposed changes be rigorously tested to increase the certainty that they will work.

We propose to build on the experimental approach used by Cherel et. al (1995) and test at least two required seabird mitigation devices (62 FR 65635, 63 FR 11161) on active fishing vessels in the groundfish BSAI and the halibut GOA fisheries, collecting data on seabird abundance, behavior, and hooking rates. Our proposed work conforms to and extends the NMFS research plan (Fadely et. al., 1998) by: calling for direct collaboration with industry throughout the research activity, occurring on active fishing vessels, and exceeding minimum suggested sampling levels.

b. Project Impacts

This work is important for several reasons:

- it satisfies USFWS requirements and conforms to the NMFS Research Plan.
- it empowers the industry to maintain its leadership role in developing techniques to reduce seabird bycatch,
- it would be the first comprehensive study on the effectiveness of seabird bycatch deterrents in any fishery.
- it paves the way toward reduced seabird bycatch and enhanced conservation of many seabird species.
- it minimizes the likelihood of STA hookings triggering premature closure of these multi-million dollar fisheries.

Results from this study will be used to help develop recommendations for specific seabird bycatch avoidance regulations and performance standards in the North Pacific longline fisheries. Without regulations which work, the industry could be faced with potential costly and ineffective bycatch measures, and in the worst case, premature closure if STA's are caught. Because our study will not only test deterrent efficacy but also provide insight on future deterrent design based on quantification of seabird-bait-deterrent behavioral interactions, we expect to make significant strides towards the goal of elimination of seabird bycatch in these fisheries.

c. Evaluation of Project

Regardless of the outcome of our proposed experiments, relative objective attainment will be determined by the degree to which relevant stakeholders (e.g., the fishing industry) and management agencies (e.g., NMFS, USFWS, Halibut Commission, North Pacific Fisheries Management Council) use our results to proactively reform bycatch regulation in the North Pacific longline fisheries. The success of our project will hinge on our ability to adequately test approved deterrent devices within the constraints of the active longline fisheries in the North Pacific. We have secured provisional endorsements of support from industry (see letters. Benchmarks of objective attainment will include:

Schedule	Benchmark	Status
Before Year 1	Secure industry cooperation, including determination of specific vessels and vessel operators.	Initiated
	Secure necessary permits from NMFS, USFWS.	Initiated
	Identify deterrent devices to be tested in conjunction with industry and agency cooperators.	
	Complete shakedown cruise prior to Year 1 field season.	
Year 1	Finalize assessment protocols.	
Year 1 & 2	Train observers. Collect and analyze data. Debrief observers.	
After Year 2	Publicize results (written reports, stakeholder and agency forums, scientific meeting presentations).	
	Consequent regulatory reform.	

d. Need for Government Financial Assistance.

Government financial assistance is required for this proposed research because this work is critical to the health of the North Pacific Longline fisheries valued at over $200 million ex-vessel annually and funding for it is not available elsewhere. This work is important for several reasons:

- it minimizes the likelihood of STA hookings (4 every two years in the groundfish fishery and 2 STA's in the halibut fishery every two year) triggering interruption and/or premature closure of these multi-million dollar fisheries.
- it satisfies USFWS requirements to initiate testing required seabird avoidance measures in 1999 and conforms to the NMFS Research Plan.
- it empowers the industry to maintain its leadership role in developing techniques to reduce seabird bycatch,
- it would be the first comprehensive study on the effectiveness of seabird bycatch deterrents in any fishery.
- it paves the way toward reduced seabird bycatch and enhanced conservation of many seabird species.

Funding for this research was sought from several sources: The most likely sources of funding for this required research are the resource management agencies with management authority in this issue: the Alaska Region of NMFS, and the US Fish and Wildlife Service. They have indicated that funding is not available for this research.

Research of this scope is beyond the resources of the Washington and Alaska Sea Grant Programs and the International Pacific Halibut Commission. The Washington Sea Grant Program is providing in-kind support (federal) by contributing six to eight months of salary for the PI. This research is also beyond the scope of full industry financial support, however, the industry is willing to provide in-kind support (see budget justification and letter from NPLA).

e. Participation by Persons or Groups Other Than the Applicant.
Participants include the industry through the North Pacific Longline Association, and representatives of the National Marine Fisheries Service and the US Fish and Wildlife Service, and Alaskan Observers, Inc.

Industry: We propose to establish an industry-university collaboration and will conduct this research on active fishing vessels in the Bering Sea/Aleutian Islands (BSAI) Pacific cod freezer-longliner fishery on vessels in the greater than 124 foot class. Participating vessels will be selected in collaboration the North Pacific Longline Association (NPLA) based on fishing experience, demonstrated leadership in the seabird bycatch issue, and willingness to cooperate in the study (see letters of support, Section 5). Selection of test devices, as well as specifications for their construction, deployment and use in each fishery, will be determined by an informal industry advisory committee composed of participating vessel operators and designees from industry associations, and in consultation with NMFS and US Fish and Wildlife Service (USFWS) representatives.

National Marine Fisheries Service: Our research conforms with the NMFS Research Plan (Fadely et. al, 1998) and utilizes data from the NMFS observer program on seabird mortality rates and groundfish observer program protocols. We will collaborate with NMFS on recommendations for regulations and performance protocols for seabird avoidance measures based on our results. We will also coordinate with the NMFS Observer program in several ways. This project will be a special project of the NMFS observer program where core NMFS observer program tasks will be carried out, but other less essential tasks will be replaced with tasks specific to this project. All observers will be NMFS certified and we will share catch weight and tally data with the Observer Program.

US Fish and Wildlife Service: ESA and MBTA permits will be obtained for this research and we will collaborate with USFWS on developing protocols for STA interactions, should they occur during this work, and collaborate with USFWS representatives on recommendations for regulations and performance protocols based on our results.

Alaskan Observers, Inc. We will subcontract with AOI to provide experienced NMFS trained observers for data collection on fishing vessels.

f. Federal, State and Local Government Activities and Permits.
We will obtain USFWS permits for possible incidental take of short-tailed albatross under ESA (Greg Balogh, USFWS, Ecological Services anchorage, 605 West 4th Avenue, Room 62, Anchorage, AK 99501; 907/271-2778) and for the incidental take of seabirds under the Migratory Bird Treaty Act (MBTA: Karen Laing or Steve Kendall, USFWS, Ecological Services anchorage, 605 West 4th Avenue, Room 62, Anchorage, AK 99501; 907/ 786-3443) regulations. USFWS (Anon., 1998) requires that NMFS evaluate the effectiveness of seabird bycatch avoidance devices in the Alaska groundfish and halibut longline fisheries. In response, NMFS prepared a Research Plan (Fadely et. al, 1998) and is required to implement it in 1999 (Brian Fadely/Kim Rivera, NMFS, Fisheries Management Division, P.O. Box 21668, Juneau, AK 99802).

g. Project Statement of Work.
Project Design: We propose to establish an industry-university collaboration to test seabird bycatch mitigation devices on active commercial longline vessels using specially trained fishery observers during the 1999 and 2000 fishing seasons. This work will be conducted in the greater than 124 foot class Pacific Cod longline fishery operating in the BSAI.

Participating vessels will be selected in collaboration with the North Pacific Longline Association (NPLA) based on fishing experience, demonstrated leadership in the seabird bycatch issue, and willingness to cooperate in the study. Within the constraints of an active fishery, we will conduct our test fishing in seasons and locations that maximize fishery interactions with albatross species and, secondarily other seabirds, as determined by available NMFS fishery observer data as well as anecdotal reports of vessel operators and fishery observers.

We will compare two mitigation devices to a control of no device, for a total of three independent treatments (device 1, device 2, and control). Priority will be given to testing deterrent devices now required or proposed as a future regulation in the fishery, but we will also consider new techniques being tested elsewhere in the world that show great promise to reduce seabird bycatch in the North Pacific fishery. Selection of test devices, as well as specifications for their construction, deployment and use in each fishery, will be determined by an informal fishery advisory committee composed of participating vessel operators and designees of longline industry associations, and in consultation with NMFS and USFWS. Each vessel in the test fishery will be supplied with test devices, such that all vessels will encompass an independent test of deterrent efficacy. Vessels will fish in the manner and location normal to the fishery, except for the following: Test treatments will be rotated throughout all observed set deployments (i.e., device 1, device 2, control). Treatment rotation will be predetermined to minimize the effects of time of day and insure even coverage of all treatments across all times of day fished.

Because seabird hookings in North Pacific longline fisheries are rare events, we have estimated that a minimum of three million deployed hooks and 150 observer days over two years will be needed to adequately address deterrent device efficacy relative to a control of no device. Within fishery this translates into:

- two vessels per year in the BSAI Pacific cod fishery, with seabird observer coverage for a total of 40 days per year (approximately 2 trips), assuming a total hook retrieval observation rate of 40%. We will make every effort to deploy a second observer to maximize data collection and to achieve an effective observation rate approaching 100% of the hauls, overall.

Special seabird observers will take data on a range of species-specific seabird abundance and behavioral data during gear deployment and seabird hooking rates as observed during gear retrieval, as well as tally the catch of all species (target and non-target species, all taxa).

Although hooking rates are extremely low, vessels deploying baited lines frequently attract tens to hundreds of seabirds, including albatross (Cherel et. al., 1996). Thus, *crucial questions are how these birds behave in the vicinity of deploying gear and whether deterrent devices sufficiently alter bird behavior such that the likelihood of hooking is reduced to virtually zero.* Our experimental approach focuses on linking seabird abundance and behavioral data collected during gear deployment with observed hooking rates. Within each test fishery, we will estimate the abundance of seabirds within the general test fishery area, as well as species-specific abundance and behavioral data in the immediate vicinity of test vessels (*the interaction zone*) during gear deployment. To maximize the probability of linking seabird behavior in the vicinity of the gear to the likelihood of hooking, we will pay particular attention to interactions occurring within the area within which hooking is physically possible (*the vulnerable zone* - Fadely 1998). Although we will collect data on all seabird species, our emphasis will be on characterizing the interaction of albatross species, particularly short-tailed albatross, with deployed gear with and without deterrent

devices. Following from the NMFS 1998 research plan (Fadely 1998), seabird abundance and behavioral data will include but not be limited to:

Scan sampling for species-specific distribution, abundance, and bait attacks

- For total abundances of 50 or less - species-specific estimates of abundance per unit time, from immediately before gear deployment to immediately after gear has been fully deployed, within the *interaction zone* defined as a 50 meter radial hemisphere centered on the vessel stern (at least 9 samples per set).
- Species-specific estimates of abundance per unit time, from immediately before gear deployment to immediately after gear has been fully deployed, within the *vulnerable zone* defined as a 6-12 m wide rectangle centered on the deployed gear running from the vessel stern to the point of gear submersion (at least 9 samples per set). Should seabird numbers rise above 300, the will be recorded in aggregate as 300+, except for albatross, which will be counted individually.
- Time, location relative to vessel stern, location relative to following edge of deterrent device, and species for all attacks on deployed bait.
- Time, location relative to vessel stern, location relative to following edge of deterrent device, and species for all observed hookings.

Focal animal sampling of individual albatross

- Constant observation of select albatross during gear deployment, including: dominant behavior (flying, seated on water, diving for bait), location relative to vessel stern, and location relative to following edge of deterrent device, where all measures are collected per unit time.

SLR 35mm and video cameras may be used to help quantify bird abundance and behavior, respectively, especially during protocol refinement and observer training. Each observed set will be predetermined as a scan sample or a focal animal sample, and the distribution of scan and focal sampling will be even across observer effort, treatment type, and time of day. All hookings will be recorded regardless of sample type. Location of hooking will be noted on cartoon plans of the vessel, gear, and test deterrent device (see sample datasheet). Any snagging of the deterrent device during gear deployment will also be recorded such than subsequent increases in attacks on bait and/or seabird hookings can be explained in the analysis. We will finalize seabird behavior and abundance protocols prior to the Year 1 test fishery during a pilot cruise using a chartered commercial longline vessel.

In addition to catch data and the seabird abundance and behavioral data collection described above, a range of physical and vessel-specific data will be recorded for each observed set, including but not limited to:

> date; observer name; vessel name; weather condition (cloud cover, precipitation, barometric pressure); sea state (Beaufort scale); wind speed and direction; target species; primary bait; hook type; gangion length; distance between hooks; hooks per set; vessel location at start of gear deployment (DGPS); vessel speed and direction; gear deployment start and finish time (military time); deterrent type (device 1, device 2, control); offal discarded? y/n; distance to line submersion (meters, mapped); distance to following edge of deterrent device (meters, mapped); width of deterrent zone (meters, mapped); and comments as needed.

Following each trip, observer data will be entered into a database for multivariate analysis. Preliminary analysis of Year 1 data will be used to adjust experimental design as needed

(e.g., verify adequacy of projected sample sizes). The focus of the preliminary and final analyses will be two-fold:

First, we will determine the extent to which each tested deterrent device significantly reduces seabird bycatch, in total as well as by species, and the effect of deterrents on target catch and bycatch of all species (weight and number). Interactions with physical parameters (see list above) will also be examined. Because hooking is a rare event, we expect these data to be non-normally distributed. Past experience analyzing rare-event seabird bycatch data has indicated to us that use of a tailored, iterative model based on a Poisson distribution can adequately address these statistical concerns (e.g., GLIM; Melvin et. al. 1997). In these analyses, each fishery will be analyzed independently.

Second, we will probe the relationship between seabird abundance and behavior in the vicinity of the vessel (i.e., the interaction zone) and the gear (i.e., the vulnerable zone), and hooking probabilities as a conditional function of deterrent device. This latter analysis will allow us to determine both the specific behaviors leading to hooking, as well as how deterrent devices may alter these behaviors, leading to significant reductions in hooking rate. We expect that the behavioral analysis will be useful in qualifying the results of the primary analysis as well as paving the way for additional deterrent work, should such be merited.

Responsibilities: Edward Melvin, Washington Sea Grant Fisheries Specialist, will serve as lead Principal Investigator (PI) on this project, assisted by Dr. Julia Parrish, Research Professor of Zoology, University of Washington. See Section H, Project Management for a complete description of qualifications and responsibilities.

Major Products and Milestones: Following the Year 1 field season and subsequent analysis, we expect to have a draft first year report for relevant fishery and seabird resource managers within NMFS, USFWS, and state agencies by 1 February 2000 (Figure 2). At the conclusion of the grant tenure, we expect to deliver a final report which details the results of the aforementioned analyses by 1 April 2001. To insure that our results are acted upon in a timely fashion, we will organize and/or participate in agency and relevant stakeholder forums designed to improve regulatory effectiveness as a consequence of this research. During these forums we will outline our research, highlight our results, and present our conclusions relative to both current regulatory change and future research direction(s).

In addition to these reports and agency forums, we expect to produce one or more papers for submission to peer-reviewed scientific journals, as well as for presentation at relevant national and international meetings convened by scholarly societies (e.g., Pacific Seabird Group, American Fisheries Society, Society for Conservation Biology).

Perhaps the most important product will be the ability to help direct potential regulatory change in the North Pacific longline fisheries to reduce and/or eliminate seabird bycatch. These changes will be based on best-available science, accomplished in collaboration with the active fishery and relevant Federal agencies. Such partnerships are a necessity for proactive solutions to natural resource conservation issues.

h. Project Management

Management:

Primary responsibility for project completion will fall to the Principal Investigators Melvin and Parrish. All other grant personnel will be contract workers (e.g., special observers) or University employees under the direction of Melvin and Parrish. In addition to the PIs, there are several Principal Participants, including individual fishing vessels represented by

the NPLA (see letter by Thom Smith; 5. Supporting Documentation). Responsibility for the various grant activities are as follows:

Responsible Party	Grant Activity
Ed Melvin	Point contact for industry. Secure vessels for test fishery. Final selection of deterrent devices.
	Point contact for agencies. Secure necessary permits. Contract with AOI for observers.
	Assist in protocol development.
	Oversee field coordinator. Train observers.
	Data analysis and report writing.
	Present results.
Julia Parrish	Develop and refine seabird abundance and behavior protocols.
	Train observers.
	Data analysis and report writing.
	Present results.
Field Coordinator	Train and oversee observers. Field season logistics.
	Preliminary data entry.
Statistical Consultant	Perform preliminary analysis (Year 1 data). Perform final analysis (Years 1 & 2 data).
Observers	Data collection.

All observers will be contracted through Alaska Observers Incorporated (AOI) or equivalent independent contracting organization. Contractor requirements include full NMFS certification. Observer requirements include a minimum of five (5) years of experience.

Qualifications:
Melvin and Parrish are highly qualified to do the proposed research and have demonstrated their effectiveness to work as a team on seabird bycatch research. Ed Melvin is the Marine Fisheries Specialist for the Washington Sea Grant Program, School of Fisheries, University of Washington. He was the principal investigator on two S/K projects (seabird bycatch in gillnet fisheries and hagfish fishery development) and co-PI on another (albacore handling). He has 18 years of experience working with the fishing industry doing applied research on active fishing vessels to address industry problems/issues. Most recently, he led the first and only research program ever conducted on developing gear modifications and practices to reduce seabird bycatch in coastal gillnet fisheries. This university-industry collaboration led to the identification of several tools that reduce seabird bycatch. These tools were later adopted as regulations by the Washington Fish and Wildlife Commission with the full support of the Puget Sound Gillnetters' Association. This was the first time anywhere in the world seabird bycatch was managed in a coastal gillnet fishery without closing the fishery.

In the course of this work he has developed expertise on seabird biology and behavior and seabird interactions with fisheries and has developed working relationships with related management agencies on this issue. He was among the group of experts that helped develop the NMFS Research Plan to test seabird mitigation devices in North Pacific longline fisheries. He also reviewed proposals for the Western Pacific Fisheries Management Council on testing seabird mitigation devices in Hawaiian longline fisheries.

Dr. Julia Parrish is a Research Professor in the Zoology Department at the University of Washington. She is a widely respected expert in seabird biology, behavior, and conservation, conducting research on seabirds throughout the North Pacific, including Alaska. Her work with common murres in Washington led to her to become involved in

seabird-gillnet interactions in Puget Sound gillnet fisheries. She has presented results of her research on many occasions in industry-agency forums dealing with management of seabird bycatch in gillnet fisheries, contributed greatly to, and is an author of the final report on, the seabird bycatch study in the Puget Sound gillnet fishery (Melvin et. al, 1997). She has a demonstrated ability to do excellent research and interact productively with the fishing industry and resource managers. Dr. Parrish was recently named an Environmental Hero (one of 25 nationally) by NOAA for her work developing volunteer-based beached bird surveys in Washington.

Alaskan Observers, Inc. is the largest company providing the largest pool of NMFS trained observers to Alaska longline fisheries. (AOI, 130 Nickerson Ave, suite 20, Seattle, WA 98109; 208/283-7310).

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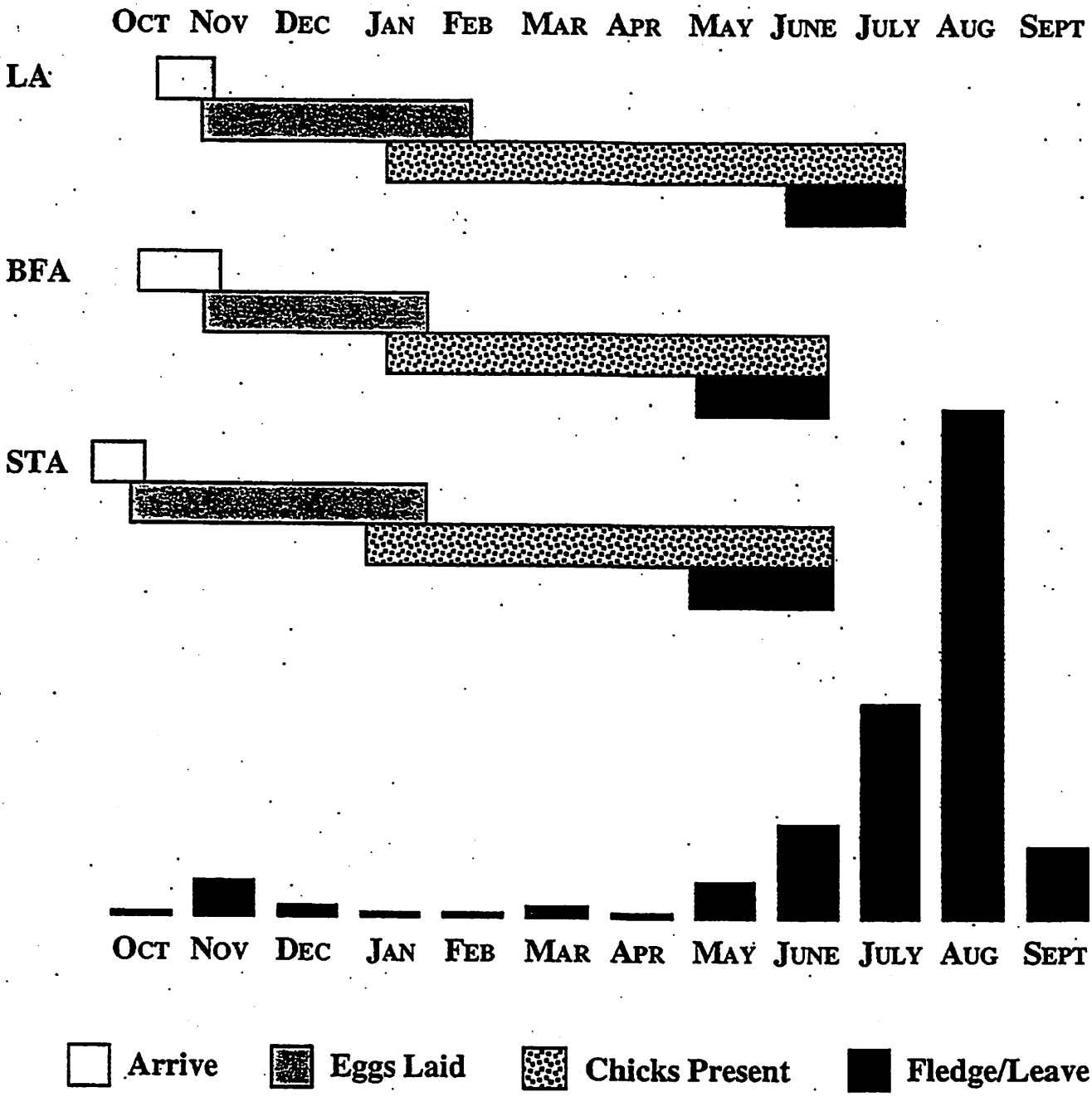
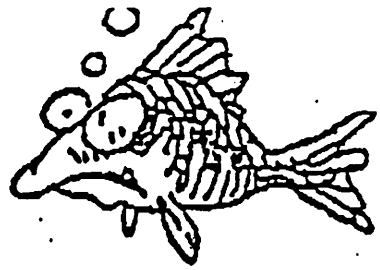


Figure 1. The breeding cycles of the three albatross species incidentally caught in North Pacific longline fisheries (LA: Laysan; BFA: black-footed; STA: short-tailed) and an index of relative abundance in STA sightings based on groundfish observer data adjusted for effort (first panels based on Gould and Hubbs 1994 (LA, BFA), USFWS 1998 (STA); last panel after Figure 8, p. 19, USFWS 1998).

	1	2	3	4	5	6	7	8	9	10	11	12
1999												
Observer selection						X	X	X				
Data Collection									X	X		
Data Entry										X	X	
Analysis and Writing											X	X
2000												
Observer selection							X	X				
Data Collection									X	X		
Data Entry											X	X
Analysis and Writing	X											
Interim Report to Managers		X										
2001												
Analysis and Writing	X	X										
Provsional Fianl Report		X										
Final Report			X	X								

Figure 1. Milestones

North
Pacific
Longline
Association



April 30, 1998

Mr. Rolland Schmitten
Assistant Administrator for Fisheries
National Marine Fisheries Service
Silver Spring, MD

RE: Reducing Seabird Bycatch in North Pacific Longline Fisheries
Washington Sea Grant Saltonstall-Kennedy Project

Dear Rollie:

I have reviewed Ed Melvin's seabird research proposal with considerable interest. As you are aware the NPLA has been very active in promoting seabird avoidance in longline fisheries. Given the endangered status of the short-tailed albatross and the wide interest in seabirds generally, we have no choice but to reduce seabird bycatch. We would be most interested in seeing our current avoidance alternatives evaluated scientifically. It has not been done in the North Pacific, and now is the time.

I would particularly like the research to be done on fishing vessels during the season. I would like the fishermen to be involved in the research just as they were involved directly in developing our seabird regulations. We will do everything we can to find freezer-longliners to participate in the project, should it come to pass.

I can vouch for the fact that catching a seabird is a rare thing. While I do not masquerade as a scientist, I understand the concept of testing the devices while a very large number of hooks are set, for statistical robustness. I do think that there should be some evaluation of adding weight to the groundline - this may be the most efficient avoidance mechanism. Ed hasd assured me this can be done.

If the proposal is approved for Saltonstall/Kennedy funding you may rely on my best efforts in carrying out the research.

Sincerely,

Thorn Smith
Executive Director

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

UNIVERSITY OF WASHINGTON

Office of Research
Grant and Contract Services

February 22, 1999

Regional Director
ATTN: B. Fosburg
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

Ladies and Gentlemen:

Enclosed is a proposal prepared by Marine Fisheries Specialist Edward F. Melvin, Office of Marine Environmental and Resource Programs , requesting support for a project entitled *"Reducing Seabird Bycatch in Sablefish and Halibut Longline Fisheries."*

Funding in the amount of $180,000 is requested from April 1, 1999 through September 30, 2000.

It is a pleasure to transmit this proposal for your consideration.

Sincerely,

Donald W. Allen, Director
Grant and Contract Services

DWA: rs
Enclosure
Please reference our **#117792** on all correspondence concerning this proposal.

3935 University Way NE. Seattle, WA 98105-6613/Telephone (206) 543-4043/FAX: (206) 685-1732

AGENDA C-6
APRIL 1999
Supplemental

Alaskan Leader Fisheries
P.O. Box 569
Kodiak, AK 99615
Phone (907) 486-5780
Fax (907) 486-5789
E-mail akldr@ptialaska.net

ALASKAN LEADER FISHERIES, INC.

March 10, 1999

Rick Lauber, Chairman
North Pacific Fisheries Management Council
P.O. Box 103136
Anchorage, AK 99510

Dear Rick:

I am writing you to express the position of Alaskan Leader Fisheries on seabird avoidance devices and techniques. The C/P Longline fleet has been very pro-active in the attempt to minimize seabird interactions in the North Pacific and continues to develop techniques that will assure the protection of seabirds. The captains of both the Alaskan Leader and Bristol Leader are very concerned that the council may mandate the use of Lining Tubes as the bird avoidance device. These devices may or may not be useful but will surely bring an entire new set of problems, one being safety. We know of no data that suggests that a lining tube will lessen the take of seabirds. In fact, there is information that suggests that the depth, type, and style of the lining tube has much to do with its effectiveness. Alaskan Leader Fisheries is concerned for the protection of seabirds and more importantly the lives of our crews. We are very confident that with a combination of proper weighting of the gear, Tory lines, and setting at night, can virtually eliminate the take of seabirds. It is our hope that the council will adopt these more practical techniques and devices in managing seabird avoidance. In the future, if the lining tube proves to be both useful and safe, ALF will support including this device as one of the tools for seabird avoidance.

Thank you for taking the time to think about this letter. It comes to you from the first hand experience of licensed fishing captains in the North Pacific longline fleet. If we can be of any assistance in providing data and/or discussing this very important issue please call, fax, or e-mail us at the Alaskan Leader Fisheries office.

Sincerely,

Robert J Wurm
Managing Partner

C.C. Steven Pennoyer

AMERICAN BIRD CONSERVANCY
CONSERVING WILD BIRDS AND THEIR HABITATS THROUGHOUT THE AMERICAS

April 12, 1999

Mr. Richard Lauber, Chairman
North Pacific Fishery Management Council
321 Highland Dr.
Juneau, AK 99801

RE: Council Action to Avoid Killing Seabirds in Longline Fisheries

Dear Mr. Lauber:

Please accept these comments for the upcoming April meeting of the North Pacific Fishery Management Council concerning measures to avoid the killing of seabirds. We understand that strengthened and improved measures to prevent the killing of seabirds such as the Short-tailed Albatross again will be discussed by the Council. I submit these comments on behalf of the American Bird Conservancy (ABC), and request that they be distributed to all Council members, the Advisory Panel, Scientific Sub-committee, Council Staff, and to your public distribution list.

The present regulations were suggested by the NPLA and adopted verbatim by the Council in December 1996. NMFS then promulgated these regulations that were effective two years ago. ABC, National Audubon Society and other conservation organizations commented on the proposed regs, suggesting that they were too weak, and offered suggestions for better regulations. All such suggestions were rejected by NMFS. ABC and several of these member groups were advised at the time of the adoption of the existing regulations in early 1997 that the full CCAMLR regulations were not being adopted because flexibility was being given to the fishermen and there would be an evaluation of the effectiveness of the measures being employed with necessary changes in the regulations after that review. Two years have passed and it is time for change. Substantial mortality of seabirds in Alaskan longline fisheries continues to be documented in the Alaskan longline fisheries. These unnecessary deaths have included the killing of two globally endangered Short-tailed Albatrosses (*Diomedea albatrus*) in the Bering Sea/Aleutian Islands groundfish fishery on September 21 and September 28, 1998. Laysan and Black-footed Albatrosses, thousands of Northern Fulmars, and many other seabirds such as Black-legged Kittiwakes and shearwaters continue to be killed unnecessarily in the Alaskan longline fisheries. From NMFS and FWS data, we note that the average number of seabirds killed from 1993-1997 was 13,983 birds; in 1997, when the avoidance measures were mandated, the kill was 17,899 birds.

We are growing increasingly concerned that NMFS and the Council may postpone any meaningful changes to the regs and engage in a "paralysis by analysis". Under this time-worn bureaucratic shuffle, hard decisions that need to be made are postponed indefinitely while researchers and Federal agencies study the problem. Enough! It is time for the Council to act to stop the killing and to adopt tried and proven measures that should, at minimum, include mandatory weighting of lines and the use of bird scaring lines/streamers of adequate design. Night setting where possible should also be required. When properly weighted lines are used with effectively deployed bird scaring lines, seabird killing should be eliminated or reduced to minimal numbers. Mark Lundsten has documented this on his vessel during the 1998 fishing season with zero birds killed using these methods. Why not have Mark deliver his "study" free of charge and act on it?

The FAO Technical Guidelines attached to an international agreement on seabird bycatch negotiated in Rome, Italy, are contained in FAO Circular 937. This document and the international agreement were

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developed with the leadership and support of NMFS and the Fish and Wildlife Service, including the Alaska representatives of these agencies. The well-researched data in FAO Circular 937 clearly indicate that just the proper deployment of a pole towing a bird scaring line (with no other avoidance measure employed) can reduce seabird killing by 90-98% in demersal fisheries, citing Lokkeborg (1996). (see page 68 of FAO Circular 937). In table 11 of the Circular at page 83, the author notes that, overall, these bird scaring lines reduce seabird kills by 80% but when employed with properly weighted lines the reduction is 90%. Line weights alone reduce seabird killing by 80% (see page 68 of FAO Circular 937). Add night setting, and seabird kills are reduced to zero in demersal fisheries.

We also would suggest that the Council prohibit the discharge of offal (fish heads in particular) containing hooks. And, we ask the Council to consider prohibiting the discharge of offal during line setting and hauling. Please note that Australia is acting to prohibit offal discharge during line setting and hauling.

As to night setting, we know that in summer months there may be little or no true night in the Bering Sea and Aleutian Islands. However, when there are sufficient hours of darkness, night setting should be required along with line weighting and bird scaring lines. Night setting reduces seabird kills when used alone by 90% according to FAO Circular 937 at pages 46 and 83. We believe that specific weights and their placement should be required. Such specificity is readily enforceable and clear to all fishermen. Again, properly weighting lines will reduce seabird killing by 80% when done without any other avoidance measures. (see page 83, Table 11 of FAO Circular 937).

The Council acting to simply eliminate the part of current regulations allowing the option of towing a board, stick, or other such device will not be effective in addressing the problem. While we support such elimination (and did when we commented on the original regs), requirements for weighted lines, streamer lines, and night setting need to adopted.

ABC is a national organization dedicated to the conservation of wild birds in the Americas. Our Policy Council consists of 76 member organizations many of whom are quite concerned over the unnecessary deaths of seabirds. These groups include the Pacific Seabird Group, Center for Marine Conservation, Environmental Defense Fund, Defenders of Wildlife, National Audubon Society, and the World Wildlife Fund. ABC urges the North Pacific Fisheries Management Council and NMFS to adopt the proven and cost-effective measures of weighted lines, bird-scaring lines, and night setting for all ground fishing longline vessels in Alaskan waters.

If the U.S. can exercise leadership in this fishery in successfully requiring the implementation of effective avoidance measures, we can serve as a role model for the rest of the fishing nations on Earth. U.S. leadership can lead to full implementation of the FAO Seabird Avoidance Protocol by the world's longlining nations and keep Albatrosses flying over the world's oceans.

Sincerely,

Gerald W. Winegrad
Vice President for Policy

April 9, 1999

RECEIVED
APR 12 1999
N.P.F.M.C

Mr. Richard Lauber
Chairman
North Pacific Fisheries Management Council
321 Highland Dr.
Juneau, AK 99801

Mr. Clarence Pautzke
Executive Director
North Pacific Fisheries Management Council
605 W. 4th Ave., Suite 306
Anchorage, AK 99501

Dear Mr. Lauber and Mr. Pautzke:

I wish to offer the following comments on behalf of Defenders of Wildlife regarding the Environmental Assessment/Regulatory Impact Review for a Regulatory Amendment (EA) for Seabird Avoidance which will be considered at the upcoming meeting of the Council on April 19, 1999. Defenders of Wildlife has a keen interest in seeing seabird populations increase, especially that of the endangered short-tailed albatross. We commend the Council for taking up this issue in an effort to protect both the birds and the livelihood of the fishermen who are an integral part of our economy, especially in the Pacific Northwest and Alaska.

Of the three options proposed under Alternative 2 for strengthening the regulations already in place in the Alaskan longline fishery, we strongly encourage the Council to adopt the third which would require weights on lines, bird scaring lines, and night setting. This is the strongest and most proven option for preventing seabird interactions according to FAO documents and anecdotal evidence from BSAI/GOA fishermen. In the scientific report to FAO by three well-known seabird-fishery interaction specialists, the combination outlined in Option 3 was estimated to have 100% effectiveness at reducing seabird bycatch (FAO Circular 937). The provisions outlined for discharging offal away from where lines are being set or hauled and the mandate to release birds alive when practicable make Option #3 the strongest and potentially most effective of those offered. Furthermore, we feel the option should be applied to all vessels 26ft LOA or longer using hook-and-line gear. If the measures applied only to vessels 60 ft. LOA or more, nearly 800 vessels would not be required to do their utmost to prevent killing seabirds.

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http://www.defenders.org

We feel strongly that the other two options do not go far enough to protect seabirds based on current knowledge. Alternative 2, Option 1 still allows the use of a buoy bag as a bird scaring device. This method has not been tested and the perception that it is effective is based on anecdotal evidence from fishermen. Should this method prove to be at least as effective as properly constructed bird-scaring lines after the NMFS test plan is completed, it should then be reevaluated for use in the Alaskan fishery. However, anecdotal evidence should not be sufficient for allowing its use at the present time when more proven techniques are available.

Option 2 is likewise not suitable for implementation at this time, principally because test use of a lining tube by an Alaskan catcher-processor in 1998 did not prove to be effective. Preliminary studies show that vessels may catch even more birds by using a lining-tube than if they used no avoidance measure at all. Lining tubes are also prohibitively expensive while other, far less costly measures such as line weighting and bird-scaring lines are more effective. This requirement would also only cover vessels over 60 at best and not require the use of a bird-scaring line. However, lining tubes do hold promise for the future and should be reexamined in a few years to determine their effectiveness and costs.

Alternative 1, which demands no changes in the regulations is unacceptable given the recent take of two, and possibly three short-tailed albatross in the Alaskan fishery. Action must be taken to ensure that fishermen are using the most effective methods of seabird avoidance available in this fishery to avoid the catch of more short-tailed albatross.

Please take these comments into consideration and share them with other Council members at your next meeting. It is important to enact strong protections for seabirds, especially the recovering, but still vulnerable population of short-tailed albatross which frequent Alaskan waters. The proposed Option 3 would go a long way towards ensuring the continued recovery of the species and keep dozens of other seabirds from harms way, protecting the biodiversity of our marine ecosystems.

Sincerely,

Heather M. Pellet

Heather M. Pellet
Program Coordinator
Species Conservation Division

Elizabeth Ann Mitchell
P.O. Box 933
Eugene, Oregon 97440

Tel: 541-338-7939
E-mail: emitch@efn.org

13 April 1999

Mr. Richard B. Lauber
Chairman
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Dear Mr. Lauber:

I have been a fisheries observer in various observer programs since 1983 and have completed 13 contracts with the NMFS Foreign and Domestic Observer Programs. I've had three pelagic longline deployments in the Hawaiian Longline Observer Program in 1994 and twelve demersal longline deployments in the NMFS Domestic Observer Program. All but one of the demersal vessels operated in the Gulf of Alaska and varied in length from 60 to 76 feet. I made observations of the seabird deterrents used on several of the demersal longline vessels. These observations were part of an unofficial US Fish and Wildlife Service project, called the North Pacific Longline Seabird Bycatch Deterrent Evaluation Pilot Project (USFWS, 1997, 1998).

Reviewing the EA/RIR/IRFA for revising the current seabird regulations, I would like to offer support of Alternative 1, Option 1 but have a few comments based on my observations.

Alternative 1, Option 1

1. WEIGHTED GROUNDLINE

Improper weighting of lines was reported by NMFS observers as the main cause of at least two of the seven Short-tailed Albatross takes since 1989 (NMFS, 1998b). Myself and others have found that 5 kilogram weights every 100 fathoms only sink the line in the immediate vicinity of the weight but, before and after this, the line remains at the surface available to seabirds (N. Smith, pers. comm.; USFWS, 1997, 1998).

Weights varied from 2-5 kg and placement of weights varied from one weight per skate, to no weights used. Consistently, throughout all my observations, I noted many successful attempts at birds stealing bait aft of the terminal end of the bird-scaring line. All bird-scaring lines observed were less than 65 meters. This indicated to me that a 5 kg /100 fathom skate is not a sufficient groundline weighting scheme to effectively reduce

seabird mortality. Weights are more effective at sinking the line quickly (and thus preventing access to baited hooks by seabirds) when placed at more frequent intervals (M. Lundsten, pers. comm.).

Problems with autobaiters

Adding weights to the groundline of vessels using autobaiter systems is problematic, according to industry representatives (T. Smith; L. Powers—all pers. comm.). Because of the rapid rate at which the hooks leave the autobaiter machine, the crew would have to remove hooks on either side of where weights would be added to prevent entanglement of the crew. They would have to add on a magazine or two to make up for lost hooks and there is the problem of having to carry weights back and forth. This would slow them down in their setting and hauling process. There is upcoming experimentation to address the need to sink hooks quickly for autobaiters and this is encouraging.

However, if the current methods used by freezer longline vessels are not changed immediately, they could find themselves with another albatross problem this year. Tests of line-weighting regimes on demersal freezer longline vessels have been conducted and have shown to prevent seabird bycatch with minimal effects on fishing using about 4 kg/40 meter (Robertson, 1998). I think it would be prudent to use the results of completed tests from other demersal fisheries as guidelines until the recommendations from our own tests are forthcoming. Comparing the amount of lost fishing time if the fishery closed, I would hope that both the Council and Industry could see the value in implementing a temporary weighting regime for these vessels until a more practical method could be developed by Industry.

2. DISCHARGE OF OFFAL DURING SETTING AND HAULING OPERATIONS

I have noted that discarding offal (while dressing fish) during setting operations resulted in the offal drifting occasionally over the gear (USFWS, 1998). During setting operations, the discarding of offal was, not done in an attempt to distract seabirds from baited gear, but simply as a routine in dressing fish. While "chumming" may, in the immediate sense, distract birds away from baited gear, it also attracts birds to the area. In the frenzy of feeding while the offal drifts over baited hooks, birds may become entangled. In this frenzy, seabirds have been found to totally ignore the bird-scaring line, endangering themselves to entanglement (Robertson, 1998). Still, I have observed a short-tailed albatross become distracted away from the baited hooks when the crew began discarding offal by intentionally throwing it far off to the side of the vessel. While it is probably not a good practice to habitually discard offal during setting operations, it may be an effective emergency measure to employ, if the crew throws the offal far enough off to the side. This should be done with an immediate addition of weights to the groundline.

3. RELEASING LIVE BIRDS WITHOUT INJURY

There are techniques to remove barbed hooks without injuring a bird. If this is to be included as a regulation, veterinarians should be consulted and an instructional pamphlet should be distributed to the fleet and to NMFS fisheries observers. While I have never seen or heard of an albatross getting caught during hauling operations in Alaskan longline fisheries, I have observed fulmars caught on several occasions.

4a. TOWING A BIRD-SCARING LINE

During the last takes of the short-tailed albatross, both vessels were using a bird-scaring line in compliance with NMFS regulations. They were not effective, so it is crucial that we narrow down the construction and deployment specifications.

Placement and Length of Bird-Scaring Line: I have observed that having the bird-scaring line directly over the gear reduces the number of seabirds attempting to steal bait. Even with it directly over the gear, I noted that when it briefly departed from over the gear, fulmars immediately began diving on the baited hooks, which illustrated to me 1) that having the line off to the side of the vessel is ineffective for the vessel type I was on and 2) the need for increased weights added to the mainline. Some fishermen are placing a bird-scaring line on either side of the gear with some success, with the bird-scaring lines approximately 10 feet apart (M. Lundsten, pers. comm.). It appears that the effectiveness of this method will depend upon how far (horizontally) the lines are away from the gear.

On every vessel observed for seabird deterrent effectiveness , the bird-scaring lines varied from 15-62 meters (50-203 feet). It has been shown that if the bird-scaring line isn't long enough, the terminal end will not have enough drag to keep an adequate length of the line above water and over the baited hooks on the surface (Brothers, 1996a, 1996b; M. Lundsten, pers. comm.). On several occasions I noted that a large portion of the line only floated at the surface and seabirds appeared to ignore this section, while seabirds reacted to the portion of the line that was above the water. I have found that 60 meters (197 feet) is not an adequate length for the small iceboats. On one occasion I saw black-footed albatrosses with bait in their bills approximately 30 meters past the end of a 60-meter bird-scaring line, where the weighting regime was 1 weight (2-5 kg) per skate. This indicated to me that there wasn't enough weight to sink the gear quickly and that the bird-scaring lines weren't covering an area far enough behind the vessel.

Height of the bird-scaring line over the water: Ten feet above deck may not be high enough. On several occasions I noted that half or more of the length of the bird-scaring line was just floating. One line was 62 m long and tied to the upper deck rail off the stern (about 12 feet above the lower deck). Three quarters of the length was just floating and produced little effect on the seabirds behavior, in spite of the splashing effect of the objects tied to the line. Other reports from observations elsewhere indicate that in order for the line to remain above the water, effectively scaring seabirds, the line must have adequate length and height above the water (Brothers, 1996).

In summary, I recommend the following for bird-scaring lines:

1. A minimum length for bird scaring lines of at least 350 feet for smaller vessels should be required. A minimum of 500 feet should be required for freezer longline vessels (using the example of CCAMLR regulations in the southern oceans until our tests are forthcoming) . Experimental trials should be developed to customize the proper length for different vessel types, including those vessels 26-60 feet in length. If deployment is required directly over the gear but the line is of inadequate length and height, they will surely result in entanglement and thus be entirely ineffective.

2. A minimum height should be specified above the point of hook departure, rather than above the deck. Increased height will reduce entanglement in the groundline and specifying the point of reference at hook departure will address those vessels that set gear high off the water.

3. Include in the regulations specified streamer construction to eventually be determined at a *specified* future date by experimental trials, if their addition should prove effective in reducing seabird bycatch.

Vessels need to be reminded to have several bird-scaring lines on board, ready for deployment. If crew is forced to cut a line because of entanglement and doesn't replace it, they are not in compliance with the regulations.

4c. DEPLOYMENT OF HOOKS UNDERWATER IN ADDITION TO WEIGHTED GROUNDLINES AND A PROPERLY CONSTRUCTED AND DEPLOYED BIRD-SCARING LINE

If the setting tube sets the gear 1-2 meters below the surface, this may not be deep enough to prevent seabird bycatch. I have seen Laysan and black-footed albatrosses plunge entirely below the surface of the water and albatrosses are known to plunge past 2 meters. Tests with the setting tube have shown that the line may float back to the surface, becoming available to seabirds again (Lokkeborg, 1996, 1998). To proceed with this method without determining a proper groundline-weighting regime could present some serious problems if vessels still find themselves with a bird bycatch problem after spending $40,000.

4d. NIGHT SETTING IN ADDITION TO SUFFICIENTLY WEIGHTED GROUNDLINES AND PROPERLY CONSTRUCTED AND DEPLOYED BIRD-SCARING LINES

I have observed fulmars caught on four different occasions during night sets. Two of the sets were done with a bird-scaring line in use. One of these sets was done during clear skies and a full moon. This illustrated to me that night-setting alone is not adequate at preventing seabird mortality. It also illustrated that when the bird-scaring lines were deployed, they were not adequate on their own. Also, at least one short-tailed albatross was caught at night and their feeding habits are unknown (Sherbourne, 1993). It is imperative that the same measures required during the day are also required at night.

HOW THE OBSERVER PROGRAM CAN HELP

The FAO Plan of Action determined Observer Programs to be an effective avenue to determine the effectiveness of seabird deterrents in use (Brothers, *et. al.*, 1998). We have allowed for two years of experimentation by fishermen to arrive at an effective method of reducing seabird bycatch and yet there has been no systematic monitoring of the process. We still have a bird bycatch problem and still only have a vague idea of which vessel type/gear is causing it and where the problem is.

In 1997, NMFS said that we could not implement CCAMLR seabird regulations because there were so many different vessel types in the Alaskan longline fleet. A simple survey recording the parameters that we know effect seabird bycatch would have given us an idea of what is out there. The reason given for not initiating a seabird special project was that observers are already loaded down with data collection responsibilities of commercially valuable species. However, it would take an observer approximately one hour per trip to measure these parameters. If we had done this in the beginning, we would now know what vessel types/areas and seasons are causing the problem, which would have aided in developing research plans to test deterrents.

In 1997, observers were asked to report in their vessel survey what type of mitigation measures were used. The problem with using the vessel survey to acquire data is that it is usually filled out at the end of a 3 month contract, sometimes by memory, sometimes from data and logbook notes. Since "bird-scaring line" encompasses a variety of constructions and deployments, the USFWS, not surprisingly, found this "data" to be of limited use in determining the effectiveness of mitigation measures. We also found ourselves without any further knowledge of this "wide variety" of vessel types.

This year's change is asking observers to describe the deterrent used. However, without a specific project with an assigned protocol given to observers before they leave for sea, the USFWS will again get a wide variety of quantity and quality instead of a systematic survey of what is actually out there.

I urge the Council to request that a seabird special project be implemented in the Observer Program to give selected observers specific instructions on gathering the following information:

1. Bird-scaring line: Length of line; length, number and spacing of streamers (if used); material of the bird-scaring line and streamers (including the line diameters), horizontal distance from gear, height above water of the forward end of the bird-scaring line.

2. Line-weighting regime: Weights could be collected and weighed during the Observer's sample period and extrapolated to the rest of the set.

3. Time of day: Many of the short-tailed albatrosses were caught during months when there was more than 8 hours of darkness. Observers are not currently asked to report on

time of set but they could take note in the seabird section of the logbook of the cloud cover and time of sets. This is the only way we can determine if night-setting is effective. While seabird bycatch may be reduced during nighttime hours, if there is a full moon, this may have an effect on bycatch levels.

4. Type of vessel: This is probably the most important piece of information missing from observer data questionnaires. Length and width of vessel; height above water of setting chute; autobaiter or hand-baiter; freezer boat or ice boat; diameter and material of mainline (i.e. leaded nylon or poly), size of gangions, size of hooks, bait used, setting speed.

5. Offal discharge practices.

LACK OF A SEABIRD BYCATCH DATA ANALYST

Currently the burden for the analysis of Observer Program seabird bycatch data falls on the USFWS. However, they lack a full-time statistician to deal with analyzing this data and this was the last reason given for not implementing a seabird special project. There has not been a proper analysis yet of the Observer Program seabird bycatch data to identify seabird bycatch problems per vessel type/area/season, except in the most general terms (NMFS, 1998b). This information could aid industry representatives enormously in determining which vessel types are problems for the fleet. It is imperative that either the Council, NMFS or the USFWS hire a full-time statistician to specifically deal with longline-source mortality of seabirds.

I very much appreciate your time and consideration of my testimony.

Sincerely,

Elizabeth A. Mitchell

Elizabeth A. Mitchell

Sources

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Smith, T. 1999. North Pacific Longline Association, Seattle, Washington

C-6

UNIVERSITY OF WASHINGTON

Office of Marine Environmental & Resource Programs
Washington Sea Grant Program
Marine Advisory Services

February 23, 1999

Mr. Steve Pennoyer
Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Re: Experimental Fishing Permit application to test effectiveness of seabird avoidance measures

Dear Mr. Pennoyer:

The Washington Sea Grant Program hereby submits for your consideration an application for an Experimental Fishing Permit (EFP), in compliance with requirements set forth at 50 CFR Part 679.6. The EFP is for a component of a seabird bycatch reduction research program that is planned under two federal grant awards: a NMFS Saltonstall-Kennedy (SK) Project award (" *Reduction of Seabird Bycatch in Sablefish and Halibut Longline Fisheries)*" and a separate award of federal funds from multiple sources (" *Reduction of Seabird Bycatch in the Pacific Cod Freezer – Longline Fishery*"). The research program will test the effectiveness of seabird avoidance measures in two fisheries, the IFQ sablefish and halibut fishery operating in the Gulf of Alaska and the Pacific cod fishery operating in the Bering Sea/Aleutian Islands. Two seabird avoidance measures will be compared to a control (no measures) in each fishery. Testing is scheduled to begin 1 May 1999 and extend to mid –November 2000. Prior to that date, in consultation with NMFS and the US Fish & Wildlife Service (USFWS), we will form an Industry Advisory Committee to assist in the selection of the specific measures to be tested, as well as the particular vessels on which the experimental work will be conducted during the commercial fishing season.

An EFP is being sought because the research program will test seabird reduction measures relative to a control of no deterrent, and possibly, we will test new seabird bycatch reduction technologies not included in current NMFS regulations. According to regulations at 50 CFR Part 679.6, an EFP is necessary if for limited experimental purposes, fishing for groundfish is going to occur in a manner that would otherwise be prohibited. Regulations at 50 CFR 679.24 and 679.42 currently require the use of specific seabird avoidance measures on longline vessels.

Marine Fisheries Office (206) 543-9968 FAX: (206) 685-7471
460 Fisheries Center Box 357980 Seattle, Washington 98195-7980
http://www.wsg.washington.edu

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

Sincerely,

Edward F. Melvin, Marine Fisheries Specialist
University of Washington Sea Grant Program

Washington Sea Grant Program's test of seabird avoidance measures. February 1999

Date of Application: February 23, 1999

Name, mailing address, and phone number of applicant:
Edward F. Melvin
Washington Sea Grant Program
University of Washington
3716 Brooklyn Ave., NE
Seattle, WA 98105
(206)543-9968

Purpose and Goals of the EFP: The purpose of the Washington Sea Grant Program's (WSGP) EFP is to assure that the work conducted under the seabird bycatch reduction research program is in compliance with Federal fishery regulations for the commercial fisheries off Alaska. Specifically, the program will require that fishing be conducted without the use of normally required seabird avoidance measures; i.e., the control of no seabird deterrents, and possibly, employing new technologies not currently included in NMFS regulations. The purpose of the research program is to test the effectiveness of selected seabird avoidance measures relative to a control (no seabird deterrent device). The goal of the program is to reduce seabird bycatch in North Pacific longline fisheries.

Justification for the EFP: NMFS is required to implement its *Test Plan to Evaluate Effectiveness of Seabird Avoidance Measures Required in Alaska's Hook-and-Line Groundfish and Halibut Fisheries*, according to a USFWS Biological Opinion issued in March 1998. In addition to meeting other objectives, the seabird bycatch research program should result in improved management opportunities to revise current seabird avoidance regulations based on scientific information about the effectiveness of measures in the Alaska longline fisheries.

Names of participating vessels, copies of vessel Coast Guard documents, names of vessel masters:
This information will be supplied after meetings with NMFS, USFWS, and the Industry Advisory Committee.

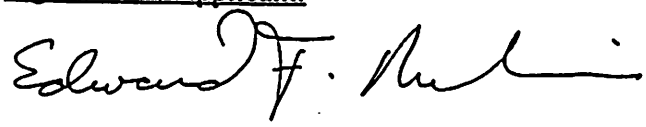
Target and incidental species harvested: Experiments will be conducted during the commercial fishing season and no additional harvest amounts of target or incidental catch is being requested.

Expected impacts on marine mammals and endangered species: No impacts are expected on marine mammals. It is possible but highly unlikely that an endangered short-tailed albatross could be taken during the control treatments. Any such take of a short-tailed albatross would be authorized under an Endangered Species Act section 10 research permit obtained by WSGP.

Vessel and gear to be used: Expected participants are three vessels in the GOA IFQ fishery and two freezer-longliner vessels in the BSAI Pacific cod fishery. During the control treatments and testing technologies not currently required under current regulations, vessels would be exempt from seabird avoidance regulations at 50 CFR Part 679.24 and 50 CFR Part 679.42.

Approximate time and place for use of EFP: The field test portion of the EFP is planned for the 1999 and 2000 fishing seasons in the GOA and the BSAI. In the GOA experimental fishing is expected to span 1 May to 15 July 1999 and 2000. This will include a vessel charter for approximately six days and research under production fishing for approximately 45 days (3 trips). Fishing in BSAI will span September through October 1999 and September through October 2000 in the open access Pacific cod fishery.

Signature of Applicant:



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BSAI PACIFIC COD

1998 TAC	210,000
1998 OPEN ACCESS CATCH*	193,220
1998 CDQ CATCH	2,148
1998 UNTAKEN	14,632
1999 OVERFISHING LEVEL	264,000
1999 TAC (=ABC)	177,000
difference	87,000

1998 BSAI FIXED GEAR HALIBUT

Cod Target bycatch	719
Cod Target cap	750
Other Target bycatch	59
Other Target cap	83
Halibut remainder	**55**

T. Smith
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Reducing Seabird Bycatch in Alaska Longline Fisheries

Fleet	ITQ	P-Cod
Location	GOA/BSAI	BSAI
When	May-June 1999 and 2000	July-August 1999 and 2000
Vessels (Trips) per year	3(3)	2(1)
Days per Trip (Year)	5(45)	20(40)
Hooks/day	11,000	43,000
Hooks/Year	495,000	1,720,000
Hooks/Treatment	165,000	573,000
Bird Bycatch Devices Tested	2 vs. Control	2 vs. Control
Deterrents	Increased Weighting Paired Streamer Lines	Increased Weighting Line Shooters (Throwers) Lining Tube
Birds (Albatross) in Control [Estimated]	30 (4)	150 (3)
Vessel Incentive	NMFS Observer No Cost	NMFS Observer No Cost Fishery Access
Vessel Charter 6 days 1999 2 days 2000	Yes	No