

WAES

[Date]

Mr. Steven Pennoyer  
Administrator, Alaska Region  
National Marine Fisheries Service  
P.O. Box 21668  
Juneau, Alaska 99802-1668

Re: Endangered Species Act Formal Section 7 Consultation for 1999-2000 Hook-and-Line Groundfish Fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands Area.

Dear Mr. Pennoyer:

This document transmits the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion on the effects of the hook-and-line groundfish fisheries in the Gulf of Alaska and Bering Sea and Aleutian Islands Area. This amendment is based on our review of the proposed 1999-2000 fisheries, and their effects on the short-tailed albatross (*Phoebastria albatrus*) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Your November 4, 1998 request for formal consultation was received on November 9, 1998.

This amended biological opinion is based on information in documents you provided to us, and other documents and biological information including: 1) the Final Supplement Environmental Impact Statement on the Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska (December 1998), 2) the Report on Seabird Bycatch Issues Relating to the Commercial Longline Fisheries Off Alaska (December 1998), 3) the Proposed Rule to List the Short-tailed Albatross as Endangered in the United States (FR 63(211) 58692-58701), and other sources of information. A complete administrative record of this consultation is on file at U.S. Fish and Wildlife Service's Anchorage Field Office.

If you have any questions regarding this consultation, I can be reached at (907) 271-2787, or you may contact Greg Balogh at (907) 271-2778, or Janey Fadely at (907) 586-7242. Thank you for your cooperation in meeting our joint responsibilities under the ESA.

Sincerely,

Ann G. Rappoport  
Field Supervisor

Enclosure

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## CONSULTATION HISTORY

July 1983: A short-tailed albatross (*Phoebastria albatrus*) recovered dead by the crew of a commercial fishing vessel after it had drowned in a net (gear type unknown) while the vessel was fishing in the northern Bering Sea near St. Matthew Island.

October 1987: A short-tailed albatross was taken by the Providence, a 70-ft. commercial fishing vessel licensed to Gustafson Fisheries in Seattle, while it was fishing for halibut near Middleton Island in the Gulf of Alaska. The bird had been banded as a nestling on Torishima Island, Japan on 5 April 1987 (Red plastic band #173, metal band #130-01836).

February 27, 1989: Letter from NMFS to USFWS requesting formal consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act), regarding the interim incidental take exemption program on several listed species which occur in U.S. waters and/or occur in the Fishery Conservation Zone (54 FR:16072). Through this program, commercial fishermen may have been exempted from prohibitions against the incidental take of marine mammals, except the southern sea otter, in the course of commercial fishing operations. (This letter is presumed to be on file in the USFWS Atlanta Regional Office where the consultation was completed).

July 3, 1989: Biological Opinion issued by USFWS on the effects of the Interim Incidental Take Exemption Program for marine mammals, and related fishing activities, on all listed species under USFWS jurisdiction which may be affected by the proposed action. Included in the list of species that may be adversely affected were short-tailed albatrosses. The USFWS concluded that commercial fishing, and especially commercial longline and gillnet fishing, would adversely affect the short-tailed albatross through: 1) direct injury or mortality from entanglement with hooks, nets, and other gear; 2) problems associated with entanglement or ingestion of plastics and other debris; 3) competition with the fishery for certain species utilized as food by albatrosses; 4) injury resulting from contact with petroleum products spilled or leaked from vessels.

The authorized incidental take of short-tailed albatrosses was set at two birds per year.

Reasonable and prudent measures and terms and conditions required that:

1. Fishery observers become trained in identification of short-tailed albatrosses and report all sightings;
2. Every effort be made, when a short-tailed albatross is observed following a fishing vessel, to minimize the possibility of the bird becoming entangled with the gear (i.e., changing ship's heading or speed, aborting or delaying the set on a long line, gillnet or trammel, or taking steps to flush or remove birds from dangerous situations).
3. All commercial vessels shall strictly comply with the Marine Plastic Pollution Research and Control Act and the International Convention of the Prevention of Pollution by

- Ships, 1973, and the subsequent Protocol of 1978, known as MARPOL 73/78.
4. All observations or recoveries of short-tailed albatrosses should be reported. Dead birds should be frozen pending a decision by the USFWS regarding their disposition. Injured birds should be provided veterinary care as quickly as possible.

December 22, 1992: Informal consultation concluded on the delay of the second quarter GOA pollock fishing season.

March 12, 1993: Informal consultations concluded on the careful release of halibut in hook-and-line fisheries, and on the delay of the second pollock fishing seasons in the BSAI and GOA.

April 14, 1993: Informal consultation concluded on the BSAI FMP amendment 28.

July 21, 1993: Informal consultation concluded on the GOA FMP amendment 31.

June 22, 1994: Informal consultation concluded on the experimental trawl fishery, Kuskokwim Bay to Hooper Bay.

January 30, 1995: NMFS requests section 7 consultation on the Gulf of Alaska (GOA) and Bering Sea Aleutian Islands (BSAI) groundfish fisheries 1995 Total Allowable Catch specifications.

February 7, 1995: USFWS issues an amendment to the original 1989 consultation. Reasonable and prudent measures and terms and conditions required that NMFS:

1. Collect fishery observer data on short-tailed albatross sightings and fishery interactions;
2. Conduct a program informing fishermen about short-tailed albatross conservation and marine debris pollution issues;
3. Collect fishery observer data on marine pollution and report violations of disposal regulations to appropriate authorities.

In the reinitiation clause, the USFWS stated that “An increase in the total allowable catch of 10% or more from the proposed 1995 level would constitute effects of the agency action not considered in this opinion”, and therefore requiring reinitiation of consultation on the action.

August 28, 1995: Juvenile short-tailed albatross taken in the western Gulf of Alaska IFQ sablefish longline fishery south of the Krenitzin Islands.

September 8, 1995: Letter from NMFS to USFWS requesting re-initiation of formal consultation on the groundfish fisheries in the exclusive economic zone of the Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) areas which are managed by the National Marine Fisheries

Service according to the Fishery Management Plans for Groundfish of the GOA and Groundfish of the BSAI (GOA/BSAI groundfish fishery).

October 8, 1995: A short-tailed albatross mortality occurs in the IFQ sablefish fishery, in the Bering Sea.

June 12, 1996: Letter from USFWS to NMFS:

1. Acknowledged receipt of NMFS's letter regarding re-initiation of formal consultation regarding the GOA/BSAI groundfish fisheries.
2. Concurred that since the 1996 total allowable catch specification for the fisheries were equal to or below the 1995 levels, re-initiation was not necessary for the 1996 fisheries.
3. Amended the current consultation by correcting a procedural error which was contained in the 1995 amendment. The 1995 amendment reduced the authorized level of incidental take from two birds per year to one bird per year. However, in the 1995 amendment, the authorized level was stated as that which would be expected to occur after implementation of reasonable and prudent measures. According to regulations for the implementation of section 7 of the Endangered Species Act of 1973, as amended, the authorized level of incidental take for a proposed action must be set at the level expected before implementation of reasonable and prudent measures which are required to minimize such take (50 CFR, §402.14). The incidental take in place for the consultation was therefore amended to anticipate that as many as two short-tailed albatrosses could be taken as a result of the proposed action.
4. Acknowledged NMFS's request for an increase in the authorized incidental take level for short-tailed albatrosses to four birds per year, and requested extension of the consultation period to consider this request until April 1, 1997.

July 2, 1996: Letter from NMFS to USFWS requesting conclusion of an amendment to the February 7, 1989 formal consultation.

October 1, 1996: Letter from USFWS to NMFS:

1. Acknowledging receipt of July 2, 1996 letter.
2. Amending consultation as follows:
  - A. Consultation is amended such that it applies only to the 1996 BOA/BSAI groundfish fisheries season.
  - B. Authorized incidental take level remains at two short-tailed albatrosses (as reported by observers, volunteers or fishermen).

September 27, 1996: Mortality of a 5-year-old short-tailed albatross occurred in the BSAI hook-and-line fishery.

November 14, 1996: Letter from NMFS received by USFWS requesting re-initiation of consultation

on the effects of the 1997 Total Allowable Catch Specifications and Environmental Assessment for GOA/BSAI groundfish fisheries on short-tailed albatrosses.

December 20, 1996: Letter from USFWS to NMFS acknowledging receipt of the request for re-initiation of formal consultation regarding GOA/BSAI groundfish fisheries, and stating that all information required for initiation has been provided or is available to USFWS. The USFWS extends the period of the existing Biological Opinion until superseded by a subsequent amendment. The USFWS notes that the extension of the current Biological Opinion until the anticipated completion date of a new amendment at the end of February 1997, is not likely to adversely affect short-tailed albatrosses because the birds do not occur in Alaskan waters during that period.

December 26, 1996: USFWS receives Final Recommended 1997 Total Allowable Catch Specifications from NMFS.

January 16, 1997: USFWS receives a letter from the NMFS requesting that the proposed action to require seabird bycatch avoidance devices on hook-and-line vessels in the Gulf of Alaska and Bering Sea-Aleutian Islands areas groundfish fisheries be incorporated into the consultation for the 1997 fisheries.

February 19, 1997: USFWS sends a letter to the NMFS:

1. Specifying that USFWS is unable to incorporate the proposed action to require seabird bycatch avoidance devices on hook-and-line vessels in the Gulf of Alaska and Bering Sea-Aleutian Islands areas groundfish fisheries because the final outcome of the proposal is unknown.
2. Issuing an amendment to the consultation on the effects of the GOA/BSAI groundfish fisheries on short-tailed albatrosses. Substantive changes are:
  - A. Scope of the consultation is limited to hook-and-line groundfish fisheries. Although previous consultation and amendments were requested on the groundfish fisheries as a whole, the NMFS determined, and USFWS concurs, that trawl and pot fishing activities in the GOA/BSAI areas are not likely to adversely affect short-tailed albatrosses. The formal consultation is therefore limited to hook-and-line groundfish fisheries which are likely to adversely affect short-tailed albatrosses.
  - B. The current consultation is limited to the 1997 and 1998 fishery seasons between January 1, 1997 and December 21, 1998.
  - C. The USFWS determines that the anticipated incidental take level of four short-tailed albatrosses (as reported by observers, volunteers, and/or fishermen) over the 2-year period of the 1997 and 1998 fishery seasons, was not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat. The USFWS encourages the NMFS to re-initiate consultation if two

birds were taken during the 1997 fishery so that any new information relative to the consultation could be examined.

- D. The following reasonable and prudent measures are added to the existing reasonable and prudent measures:
  - a. seabird avoidance devices and methods shall be used in the hook-and-line fisheries of the GOA/BSAI groundfish fisheries.
  - b. The effectiveness of seabird bycatch avoidance devices and methods in the GOA/BSAI fisheries shall be tested.
- E. Conservation Recommendations were added to the existing consultation.

March 1997: NMFS publishes a proposed rule in Federal Register that would require groundfish hook-and-line vessels to use seabird avoidance measures (62 FR 10016).

April 29, 1997: NMFS publishes a final rule in the Federal Register (Vol. 62, No. 82) regarding management measures required for vessels greater than 26 ft. length overall (LOA) to reduce seabird bycatch in the hook-and-line groundfish fisheries. Regulations effective May 29, 1997.

January 12, 1998: Letter from USFWS to NMFS limiting the scope of the consultation to vessels greater than 26 ft. LOA in the hook-and-line fisheries in the GOA and BSAI, and concurring with NMFS that vessels less than or equal to 26 LOA are not likely to adversely affect short-tailed albatrosses.

February 12, 1998: Informal consultation on regulatory amendments/measures to reduce seabird bycatch is completed. The USFWS concurs with the NMFS's assessment that the amendments are not likely to adversely affect threatened or endangered species.

February 17, 1998: Letter from USFWS to NMFS clarifying that incidental take of short-tailed albatrosses specified in the February 12, 1998 consultation apply only to groundfish vessels 26 ft. LOA or greater. No incidental take of short-tailed albatrosses by groundfish vessels under 26 ft. in length is anticipated.

April 1998: NMFS submits to FWS the "Test Plan to Evaluate Effectiveness of Seabird Avoidance Measures Required in Alaska's Hook-and-Line Groundfish and Halibut Fisheries", as required by the 1997 Biological Opinion.

September 21, 1998: Mortality of an 8-year-old short-tailed albatross occurs in the BSAI hook-and-line fishery. Mortality is in the observed sample.

September 28, 1998: Mortality of a short-tailed albatross occurs in the BSAI hook-and-line fishery, but the specimen is not retained on the vessel. Identification of the bird is confirmed by USFWS seabird experts. The confirmation is based on the fishery observer's description of

key characteristics that matched that of a subadult short-tailed albatross to the exclusion of all other species. A second albatross, which may be a short-tailed albatross, is also taken on the same date but the specimen is not retained on board the vessel, and the observer is unable to confirm the species identification.

November 4, 1998: Letter from NMFS to USFWS, in which NMFS:

1. Requests reinitiation of consultation for GOA/BSAI groundfish fisheries beginning January 1, 1999.
2. Determines, based on new information, that groundfish trawl vessels that deploy a sonar transducer cable, may affect short-tailed albatrosses.
3. Requests initiation of consultation on the effects of the groundfish trawl fishery on short-tailed albatrosses.

December 2, 1998: Letter from USFWS to NMFS in which USFWS:

1. Acknowledges receipt of the November 4, 1998 letter;
2. Establishes the statutory deadline for receipt of a final Biological Opinion and Incidental Take Statement for the GOA/BSAI hook-and-line groundfish fisheries as March 19, 1999.
3. Notifies NMFS that the next step in the consultation process for the trawl fishery is completion of a biological assessment by the action agency (NMFS) on the effects of the action on listed species.
4. Extends the period of the 1997-1998 Biological Opinion until it is superseded by a subsequent amendment to that Opinion. Based on current information, USFWS does not anticipate that the final Opinion would determine that this action places the short-tailed albatross in jeopardy of extinction.

**BIOLOGICAL OPINION**  
**ON THE EFFECTS OF HOOK-AND-LINE GROUND FISH FISHERIES**  
**IN THE GULF OF ALASKA AND BERING SEA/ALEUTIAN ISLANDS AREAS**  
**ON SHORT-TAILED ALBATROSSES (*Phoebastria albatrus*)**

Prepared by  
U.S. Fish and Wildlife Service

March 19, 1999

## I. DESCRIPTION OF THE PROPOSED ACTION

This consultation addresses groundfish fishing activities authorized and/or managed by the National Marine Fisheries Service (NMFS) in the Exclusive Economic Zone of the United States (EEZ) in the Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) during the 1999 and 2000 calendar years.

The vessel groups in the BSAI and GOA groundfish fisheries are typically defined by the gear and areas fished, by length classes, and by whether they only catch fish or catch and process fish. Trawl, hook-and-line, and pots are the principal types of gear used in the domestic groundfish fishery. In separate consultations, the U.S. Fish and Wildlife Service (USFWS) determined that groundfish fishing activities by vessels 26 ft. length overall (LOA), and groundfish fishing activities by vessels using pot gear, are not likely to adversely affect short-tailed albatrosses. A separate informal consultation addressing the effects of fishing activities by vessels using trawl gear has been initiated, and the NMFS is in the process of preparing a Biological Assessment on trawl fishing activities. This Biological Opinion addresses the effects of vessels 26 ft. LOA or greater using hook-and-line gear, and includes both catcher and catcher-processor vessels.

The proposed action is the hook-and-line fishery described above. This action will occur within the EEZ which extends from 3 to 200 miles from shore. The short-tailed albatross is listed as endangered rangewide, except in the U.S.; the species is considered listed everywhere it occurs except on U.S. lands and within 3 miles from U.S. shore. Therefore, this consultation addresses fishing activities that occur between 3 and 200 miles from shore off Alaska.

The action addressed in this consultation includes the regulations promulgated by NMFS in 1997 which require the use of seabird avoidance measures in the fishery (62FR 23176, April 29, 1997), but does not include the NMFS's proposed research program to test the effectiveness of seabird deterrent devices. A separate USFWS intra-Service section 7 consultation will be conducted on the proposed research program in the event that the USFWS issues a section 10 research permit for this action.

NMFS is an agency within the United States Department of Commerce National Oceanic and Atmospheric Administration NMFS manages the groundfish fisheries in the EEZ off Alaska under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. Alaska's groundfish fisheries occur in the North Pacific Ocean and Bering Sea in the U.S. EEZ from 50EN to 65EN. The subject waters are divided into two management areas: the BSAI and the GOA. Groundfish hook-and-line target species include: Pacific cod, sablefish, Greenland turbot, and rockfish in the BSAI and sablefish, Pacific cod, and rockfish in the GOA. Descriptions of the groundfish fisheries of the GOA/BSAI, and of the management of those fisheries by the NMFS are contained in the following documents:

1. Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits

Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska: Final Supplemental Environmental Impact Statement prepared by National Marine Fisheries Service, December 1998.

2. Groundfish Fishery of the Gulf of Alaska; Fisheries of the Exclusive Economic Zone; Gulf of Alaska; Proposed 1999 Harvest Specifications for Groundfish (63FR 71876 December 30, 1998).
3. Groundfish Fishery of the Gulf of Alaska; Fisheries of the Exclusive Economic Zone; Gulf of Alaska; Final 1999 Harvest Specifications for Groundfish (64FR 12094 March 11, 1999).
4. Fisheries of the Exclusive Economic Zone Off Alaska; Bering Sea and Aleutian Islands; Proposed 1999 Harvest Specifications for Groundfish (63FR 71867, December 30, 1998).
5. Fisheries of the Exclusive Economic Zone Off Alaska; Bering Sea; Final 1999 Harvest Specifications for Groundfish (64FR 12103 March 11, 1999).

Vessel and gear characteristics are described in Table 1. Hook-and-line gear in Alaska is fished demersally; the gear is designed to sink to the seafloor. In 1996, the average set length was 9 km for the sablefish fishery, 16 km for the Pacific cod fishery, and 7 km for Greenland turbot. Twelve-inch gangions with hooks are attached to the groundline at regular intervals. The average hook spacing in these three fisheries is 1.2 m, 1.4 m, and 1.3 m, respectively. Therefore, the average number of hooks per set for the three fisheries is 7500, 11,428, and 5385, respectively. The gear is baited by hand or by machine. Baiting on smaller vessels generally occurs by hand and baiting on larger vessels generally occurs mechanically. Circle hooks are usually used, except that modified J-hooks are used on some vessels with machine baiters. In the Pacific cod fishery, typically two lines are set and hauled in a day. The vessel travels at a speed of approximately five to seven knots and the gear is usually deployed from the vessel stern during a two-hour set. Radar-reflecting buoys are connected to both ends of the groundline. Most of the longline vessels in the BSAI targeting Pacific cod are freezer/longliners, many of which use autobaiting systems (Sigler, NMFS pers. comm.). Hook-and-line vessels targeting sablefish or Greenland turbot set gear in deeper water on the continental slope. Many smaller vessels participate in both the BSAI and GOA fisheries, and fewer are equipped with autobaiting machines. The average number of vessels fishing in each month, by area and vessel type, provides some indication of the seasonality of fishing effort (Table 6).

#### Description and History of BSAI Fisheries

Pacific cod has dominated the landings of the hook-and-line fishery. Pacific cod was taken by Japanese longline and trawl operation beginning in the early 1960s and joined by Russian vessels in 1971. The average harvest from 1971-1976 was 50,000 mt. Foreign fisheries were phased out by the domestic fleet by 1988. Catches have fluctuated around 165,000 mt since 1985. The Pacific cod total allowable catch (TAC) is apportioned by gear type and by season. Commercial fishing for Pacific cod

occurs near the edge of the continental shelf at depths averaging 170 m in 1996. The Pacific cod fishery generally is open from January to May and September to December and harvests are typically constrained by halibut bycatch limits.

Sablefish was targeted by Japanese freezer longliners since 1959. Catches peaked in 1962 at 28,500 mt and averaged about 13,000 mt from 1963-1972. Russians entered the fishery in 1967. Catches dropped to less than 5,000 mt in 1974, peaked in 1987 at 8,000 mt, and have dropped since then. The sablefish TAC is apportioned among gear types, fixed gear and trawl. Commercial fishing for sablefish occurs on the upper continental slope at depths averaging 500 m in 1996. Since 1995, sablefish has been managed under the Individual Fishing Quota (IFQ) system and the season is from March 15 to November 15.

Greenland turbot has been targeted by trawl and longline gear. Significant amounts are also retained as bycatch in other fisheries (particularly sablefish). Most fishing occurs in May along the shelf edge and slope at depths averaging 600 m in 1996, as well as along the Aleutian Islands. Catches averaged about 30,000 mt during the 1960s. Catches increased to 60,000 mt in 1974, and remained in the 50,000 mt range through 1983. Catch has remained at or below 10,000 mt since 1986.

Rockfish are harvested by both trawl and longline gear. Small quantities of Pacific ocean perch were also harvested by longline gear in 1995. Most of the rockfish catch in hook-and-line fisheries is caught incidentally in the sablefish, Pacific cod and Greenland turbot fisheries.

Statistics for the BSAI hook-and-line fishery are presented in Table 2. In 1998, the total hook-and-line groundfish catch in the BSAI was 130,489 mt, representing 8.5 percent of the total groundfish catch in the BSAI. In 1997, 101 catcher vessels and 44 catcher/processors operated in the BSAI (Table 3) and targeted sablefish, Pacific cod, Greenland turbot, and rockfish. The BSAI hook-and-line groundfish fleet is characterized predominantly by the larger catcher/processor vessels (freezer-longliners). Catcher-processor vessels accounted for 98.3 percent of the average 3-year harvest from 1996 to 1998 (Table 3). Of the 44 catcher/processor vessels operating in 1997, 77 percent (34) were greater than or equal to 100 ft LOA (Table 4). Based on observer data collected from 1993 to 1997, the average annual estimate of total number of hooks deployed in the BSAI is approximately 128 million.

#### Description and History of GOA Fisheries

Sablefish are an important demersal species of the slope region. Annual catches averaged about 1,500 mt in 1930-50, and exploitation rates remained low until the Japanese longline fleet expanded into the Gulf of Alaska. Catches rapidly escalated during the mid 1960s and peaked in 1972. Evidence of declining stock abundance led to significant fishery restrictions from 1977 to 1985 and total catches were reduced substantially. Since 1995, sablefish has been managed under the IFQ system and the fishery occurs from March 15 to November 15.

Pacific cod are a widespread demersal species found along the continental shelf from inshore waters to the upper slope. Catches of Pacific cod increased throughout most of the 1980s and then dropped from a high of 36,000 mt in 1981 to about 14,000 mt in 1985 as foreign effort began to be phased out. Catch increased again as the capacity of the domestic fleet increased, reaching record levels of approximately 77,000 mt and 80,000 mt, in 1991 and 1992, respectively. Presently, the Pacific cod stock is exploited by a multiple-gear fishery, including trawl, hook-and-line, and pot components; the hook-and-line fishery occurs generally from January through March. Trawlers account for the majority of landings with pot gear catches increasing in recent years.

Rockfish have been landed incidental to other groundfish and halibut fisheries in Southeast Alaska since the turn of the century. The directed fishery for demersal shelf rockfish in East Yakutat increased substantially in 1991. The decline in directed harvest since 1992 is a consequence of in-season management to ensure that enough TAC remains for bycatch in the halibut fishery.

Statistics for the GOA hook-and-line fishery are presented in Table 5. In 1998, the total hook-and-line groundfish catch in the GOA was 27,800 mt, representing 11.3 percent of the total groundfish catch in the GOA. A total of 920 catcher vessels and 25 catcher/processors operated in the GOA (Table 3) and targeted sablefish, Pacific cod, deep-water flatfish, and rockfish. The GOA hook-and-line groundfish fleet is characterized predominantly by the smaller catcher vessels. Catcher vessels accounted for 77.7 percent of the average 3-year harvest from 1996 to 1998 (Table 3). Of the 920 catcher vessels operating in 1997, 99 percent (909) were less than 100 ft LOA and 86 percent (791) were less than 60 ft LOA (Table 4). Based on observer data collected from 1993 to 1997, the average annual estimate of total number of hooks deployed is approximately 39 million.

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 account for the vessels that operated in both the BSAI and GOA.

Current observer coverage requirements for vessels in the groundfish fishery are based on vessel length and whether participation occurs in the Community Development Quota (CDQ) program. A catcher/processor or catch vessel 125 ft. (38.1 m) LOA or longer must always carry an observer while fishing (100 percent coverage). A catcher/processor or catcher vessel equal to or greater than 60 ft. (18.3 m) LOA, but less than 125 ft. (38.1 m) LOA, that participates for more than 3 fishing days in a directed fishery for groundfish in a calendar quarter must carry an observer during at least 30 percent of its fishing days in that calendar quarter and at all times during at least one fishing trip in that calendar quarter for each of the groundfish fishery categories (30 percent coverage). Vessels less than 60 ft. (18.3 m) LOA are not required to carry observers. Since 1990, between 20,000 and 35,000 observer coverage days occur each year in the groundfish fisheries. Regulations implementing the NMFS Groundfish Observer Program in Alaska can be found at 50 CFR Part 679.50.

The monitoring of seabird/fishery interactions by NMFS in the groundfish fisheries began in 1990 and was expanded during the 1993, 1997 and 1999 seasons. The collection of seabird bycatch data was integrated into an existing comprehensive data-gathering observer program designed to collect data for a wide variety of management and research purposes. Data includes: total catch and effort, catch composition, prohibited species bycatch, and other biological information. The major change in 1993 was to have observers provide genus or species identifications of incidentally caught seabirds. During species composition sampling, the observer makes a reliable (to species or species group) identification and records the numbers and weights of birds in the sample. These data are used to calculate bycatch rates of the observed hauls, and to extrapolate numbers of seabirds incidentally caught from the observed portions of the fleet to the unobserved portion, resulting in an estimate of total seabird bycatch. Observers began providing information about what seabird avoidance measures were being used on longline vessels in 1997. This information was expanded in early 1999 to incorporate more detailed information about the frequency of use of the measures during a fishing trip and specific characteristics of the different avoidance measures. Observers now record data including what line weighting regimes are used (number and size of weights and weight spacing on the groundline), construction and deployment characteristics of towed streamer lines and buoy bags, and whether offal is discharged for the purpose of distracting seabirds away from baited hooks.

### **Conservation Measures**

In 1997, NMFS promulgated regulations requiring operators of both hook-and-line vessels fishing for groundfish in the BSAI and GOA, and federally-permitted hook-and-line vessels fishing for groundfish in Alaska waters adjacent to the BSAI and GOA, to employ specified seabird avoidance measures to reduce seabird bycatch and incidental seabird mortality (62 FR 23176, April 29, 1997). Measures were intended to mitigate longline fishery interactions with the short-tailed albatross and other seabird species. Prior to 1997, measures were not required but anecdotal information indicates that some vessel operators used mitigation measures voluntarily.

The U.S. Coast Guard (USCG) assumed an aggressive and proactive policy of educating commercial longline fishers in the months prior to regulations becoming effective. Vessels are checked for compliance with regulations during at-sea boardings by the USCG and reports of these compliance checks are made in the USCG's report to the North Pacific Fishery Management Council at each of its meetings. NMFS Enforcement is currently investigating several cases involving alleged violations of seabird avoidance regulations.

The regulations require all vessels conducting groundfish longline fishing operations to: 1) use baited hooks that sink as soon as they are put in the water, 2) discharge offal in a manner that distracts seabirds from baited hooks (if discharged at all during the setting or hauling of gear), and 3) make every reasonable effort to ensure that birds brought on board alive are released alive. In addition, all applicable longline vessels greater than 26 ft. LOA, must employ one or more of the following measures: 4) set gear at night (during hours specified in regulation), 5) tow a streamer line or lines

during deployment of gear to prevent birds from taking hooks, 6) tow a buoy, board, stick or other device during deployment of gear at a distance appropriate to prevent birds from taking hooks, or 7) deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during the deployment of gear.

## II. STATUS OF THE SPECIES

### A. Species Description

George Steller made the first record of the short-tailed albatross in the 1740s. The type specimen for the species was collected offshore of Kamchatka, Russia, and was described in 1769 by P.S. Pallas in *Spicilegia Zoologica* (AOU 1998). In the order of tube nosed marine birds, Procellariiformes, the short-tailed albatross is classified within the family Diomedidae. Until recently, it had been assigned to the genus Diomedea. Following the results of genetic studies by Nunn et al. (1996), the family Diomedidae was arranged in four genera. The genus Phoebastria, North Pacific albatrosses, now includes the short-tailed albatross, the Laysan albatross (P. immutabilis), the black-footed albatross (P. nigripes), and the waved albatross (P. irrorata) (AOU 1998).

The short)tailed albatross is a large pelagic bird with long narrow wings adapted for soaring just above the water surface. The bill is disproportionately large compared to other northern hemisphere albatrosses; it is pink and hooked with a bluish tip, has external tubular nostrils, and there is a thin but conspicuous black line extending around the base. Adult short)tailed albatrosses are the only North Pacific albatross with an entirely white back. The white head develops a yellow)gold crown and nape over several years. Fledged juveniles are dark brown)black, but soon obtain pale bills and legs that distinguish them from black)footed and Laysan albatrosses (Tuck 1978, Roberson 1980). Subadult birds have mixed white and brown-black areas of plumage.

### B. Life History

Available evidence from historical accounts, and from current breeding sites, indicates that short)tailed albatross nesting habitat is characterized by flat or sloped sites, with sparse or full vegetation, on isolated windswept offshore islands, with restricted human access (Aronoff 1960, Sherburne 1993, DeGange 1981). Current nesting habitat on Torishima Island is steep sites on soils containing loose volcanic ash; the island is dominated by a grass, Miscanthus sinensis var. condensatus, but a composite, Chrysanthemum pacificum, and a nettle, Boehmeria biloba, are also present (Hasegawa 1977). The grass probably stabilizes the soil, provides protection from weather, and minimizes mutual interference between nesting pairs while allowing for safe, open take)offs and landings (Hasegawa 1978). The nest is a grass or moss)lined concave scoop about 0.75 m (2 ft.) in diameter (Tickell 1975).

The common synonym of ``coastal albatross`` reflects the short)tailed albatross's predilection for

nearshore waters. The USFWS's short-tailed albatross at-sea sightings database contains many observations of short-tailed albatrosses within 6 miles of shore, and several observations of birds within 3 miles of shore (Julie Michaelson, Alaska Natural Heritage Program, Anchorage, pers. comm.). Their presence may coincide with areas of high biological productivity, such as along the west coast of North America, the Bering Sea, and offshore from the Aleutians (Hasegawa and DeGange 1982).

Short-tailed albatrosses are long-lived and slow to mature; the average age at first breeding is 6 years old (H. Hasegawa pers. comm.). As many as 25 percent of breeding age adults may not return to the colony in a given year (H. Hasegawa pers. comm.; Cochrane and Starfield in prep.) Females lay a single egg each year, which is not replaced if destroyed (Austin 1949). Adult and juvenile survival rates are high (96 percent), and an average of 0.24 chicks per adult bird on the colony survives to six months of age (Cochrane and Starfield in prep.). However, chick survival can be severely reduced in years when catastrophic volcanic or weather events occur during the breeding season.

At Torishima, birds arrive at the breeding colony in October and begin nest-building. Egg-laying begins in late October and continues through late November. The female lays a single egg; incubation involves both parents and lasts for 64-65 days. Eggs hatch in late December and January, and by late May or early June, the chicks are almost full grown and the adults begin abandoning their nests (H. Hasegawa pers. comm.; Hasegawa and DeGange 1982). The chicks fledge soon after the adults leave the colony, and by mid-July, the colony is totally deserted (Austin 1949). Non-breeders and failed breeders disperse from the breeding colony in late winter through spring (Hasegawa and DeGange 1982). There is no detailed information on phenology on Minami-kojima, but it is likely to be similar to that on Torishima.

Short-tailed albatrosses are monogamous and highly philopatric to breeding sites. Chicks hatched at Torishima return there to breed. However, young birds may occasionally disperse from their natal colonies to breed, as evidenced by the appearance of adult birds attempting to breed on Midway Atoll that were banded as chicks on Torishima (H. Hasegawa pers. comm., Richardson 1994).

The diet of short-tailed albatrosses includes squid, fish, flying fish eggs, shrimp and other crustaceans (Hattori in Austin 1949, H. Hasegawa pers. comm.). There is currently no information on variation of diet by season, habitat, or environmental condition.

Observed population growth rates, as indicated by annual increases in adults observed, eggs laid, and chicks fledged on Torishima Island are presented in Table 6. The population at Torishima is growing at a rate between 6.5% and 8.0%.

### **C. Population Dynamics**

Breeding-age population estimates come primarily from egg counts and breeding bird observations. There were 426 breeding adults present at the beginning of the 1998-99 breeding season on Torishima,

assuming 2 adults are present for each of the 213 eggs counted (H. Hasegawa, pers.comm.). The most recent population estimate on Minami) kojima is 25 breeding pairs, or 50 breeding adults. An total worldwide estimate for breeding birds is therefore 475. It has been noted that an average of approximately 25 percent of breeding adults may not return to breed each year. It is reasonable, therefore, to estimate that approximately 120 additional breeding) aged birds may not be observed on the breeding grounds. The worldwide estimate of breeding aged birds is therefore 600.

Estimates of immature birds are more difficult to calculate because these individuals do not congregate between fledging and returning to breed at approximately 6 years of age. An estimate can be calculated by totaling the number of known fledged chicks in the last 6 years, and the average juvenile survival rate of 96 percent (H. Hasegawa, pers. comm., Cochran and Starfield in prep.). H. Hasegawa reported that 509 chicks were fledged from the Tsubamesaki colony on Torishima between 1992 and 1997. Based on an average juvenile survival rate of 96 percent, there are an estimated 489 birds in the immature population from Torishima Island. In 1998, H. Hasegawa estimated the total population at Minami-kojima to be 150 birds. Subtracting the estimated number of breeding adults on Minami-kojima from this total number results in an estimated immature population of 100 individuals. Combining the estimated number of immature birds from Torishima Island and the estimated number of immature birds from Minami-kojima yields a worldwide immature population estimate of 590 individuals (based on data through the 1997-98 breeding season).

Preliminary data from the 1998-99 breeding season have been obtained but are not complete because the breeding season is not over (number of chicks fledged is not yet available). The data indicate that an increase in the immature population will occur when young of the year fledge, but the magnitude of this increase can only be estimated roughly until fledging data are available. H. Hasegawa reported that 212 eggs were counted this breeding season. Although chicks have not fledged at Torishima, based on the average rate of the number of chicks fledged per egg laid over the 6 years between 1992 and 1997 (average of 0.521 fledged/egg laid), a conservative estimate of the number of chicks expected to fledge in the 1998-99 breeding season is 110 birds. This would raise the total number of chicks fledged in the past six years (in this case 1993-1998) on Torishima to 553 immature birds. If this is combined with the estimated 100 immature birds from Minami-kojima island, the total number of immature birds at the end of the 1998-99 breeding season is expected to be above 650 birds.

The estimated total world population of short-tailed albatrosses, calculated from the total estimated breeding age birds (600) and the total estimated immature birds (between 590 and 650), is therefore between 1190 and 1250 birds. No estimates of uncertainty are available for this estimate.

#### **D. Distribution and Status**

##### Distribution

The species once ranged throughout most of the North Pacific Ocean and Bering Sea, with known

nesting colonies on numerous western North Pacific islands in Japan and Taiwan (Hasegawa 1979, King 1981). Other undocumented nesting colonies may have existed. For example, recent observations together with records from the 1930s, suggest that the short-tailed albatross may have once nested on Midway Atoll, USA. No confirmed historical breeding accounts are available for this area, however.

Early naturalists, such as Turner and Chamisso, believed that short-tailed albatrosses bred in the Aleutian Islands because high numbers of birds were seen nearshore during the summer and fall months (Yesner 1976). Alaska Aleut lore referred to local breeding birds and explorer O. Von Kotzebue reported that Natives harvested short-tailed albatross eggs. However, while adult bones were found in Aleut middens, fledgling remains were not recorded in over 400 samples (Yesner 1976). Yesner (1976) believed that short-tailed albatrosses did not breed in the Aleutians but were harvested offshore during the summer, non-breeding season. Given the constraints on avian breeding at high latitudes during midwinter and the known southerly location of winter breeding, it is highly unlikely that these birds ever bred in Alaska (Sherburne 1993).

Additional historical information on the species' range away from known breeding areas is scant. Evidence from archeological studies in middens suggests that hunters in kayaks had access to an abundant nearshore supply of short-tailed albatrosses from California north to St. Lawrence Island as early as 4000 years ago (Howard and Dodson 1933, Yesner and Aigner 1976, Murie 1959). In the 1880s and 1890s, short-tailed albatross abundance and distribution during the non-breeding season was generalized by statements such as "more or less numerous" in the vicinity of the Aleutian Islands (Yesner 1976). They were reported as highly abundant around Cape Newenham, in western Alaska, and Ventaiminov regarded them as abundant near the Pribilof Islands (DeGange 1981). In 1904, they were considered "tolerably common on both coasts of Vancouver Island, but more abundant on the west coast" (Kermode in Campbell et al., 1990).

At the beginning of the 20th century, the species declined in population numbers to near extinction, primarily as a result of hunting at the breeding colonies in Japan. Albatross were killed for their feathers and various other body parts. The feathers were used for writing quills; their bodies were processed into fertilizer, their fat was rendered, and their eggs were collected for food (Austin 1949). Hattori (in Austin 1949) commented that short-tailed albatrosses were "...killed by striking them on the head with a club, and it is not difficult for a man to kill between 100 and 200 birds daily." He also noted that the birds were, "very rich in fat, each bird yielding over a pint."

Pre-exploitation worldwide population estimates of short-tailed albatrosses are not known; the total number of birds harvested may provide the best estimate, since the harvest drove the species nearly to extinction. Between approximately 1885 and 1903, an estimated 5 million short-tailed albatrosses were harvested from the breeding colony on Torishima (Yamashina in Austin 1949), and harvest continued until the early 1930s, except for a few years following the 1903 volcanic eruption. One of the residents on the island (a schoolteacher), reported 3,000 albatrosses killed in December 1932 and

January 1933. Yamashina (in Austin) stated that “This last great slaughter was undoubtedly perpetrated by the inhabitants in anticipation of the island’s soon becoming a bird sanctuary.” By 1949, there were no short-tailed albatrosses breeding at any of the historically known breeding sites, including Torishima, and the species was thought to be extinct (Austin 1949).

The species persisted, however, and in 1950, the chief of the weather station at Torishima, Mr. M. Yamamoto, reported nesting of the short-tailed albatross (Tickell 1973, 1975), and by 1954 there were 25 birds and at least 6 breeding pairs present on Torishima (Ono 1955). These were presumably juvenile birds that had been wandering the North Pacific during the final several years of slaughter. Since then, as a result of habitat management projects, stringent protection, and the absence of any significant volcanic eruption events, the population has gradually increased. The average growth of the colony on Torishima Island (called “Tsubamesaki”), between 1950 and 1977 was 2.5 adults per year; between 1978 and 1991 the average population increase was 11 adults per year. An average annual population growth as high as 6 percent per year (Hasegawa 1982, Cochrane and Starfield in prep.) has resulted in a continuing increase in the breeding population to an estimated 424 breeding birds on Torishima in 1998 (H. Hasegawa, Toho University, Chiba, Japan, pers. comm.). Torishima is under Japanese government ownership and management, and is managed for the conservation of wildlife. There is no evidence that the breeding population on Torishima is nest site limited at this point; therefore, ongoing management efforts focus on maintaining high rates of breeding success.

Two management projects have been undertaken to enhance breeding success on Torishima. First, erosion control efforts at the Tsubamesaki colony have improved nesting success. Second, there are continuing attempts to establish a second breeding colony on Torishima by luring breeding birds to the opposite side of the island from the Tsubamesaki colony through the use of decoys and recorded colony sounds. Preliminary results of this experiment are promising; the first chick was fledged from this site in 1997. The expectation is that absent a volcanic eruption or some other catastrophic event, the population on Torishima will continue to grow, and that it will be many years before the breeding sites are limited.

In 1971, 12 adult short)tailed albatrosses were discovered on Minami)kojima in the Senkaku Islands, one of the former breeding colony sites (Hasegawa 1984). Aerial surveys in 1979 and 1980 resulted in observations of between 16 and 35 adults. In April 1988, the first confirmed chicks on Minami-kojima were observed, and in March 1991, 10 chicks were observed. In 1991, the estimate for the population on Minami)kojima was 75 birds, including 15 breeding pairs (Hasegawa 1991). There is no information available on historical numbers at this breeding site.

Short)tailed albatrosses have been observed on Midway Atoll since the early 1930s (Berger 1972, Hadden 1941, Fisher in Tickell 1973, Robbins in Hasegawa and DeGange 1982). There is one unconfirmed report of a short)tailed albatross breeding on Midway Atoll in the 1960s (H. Hasegawa pers. comm., in a letter from Dr. Harvey Fischer), but no subsequent reports of successful breeding exist. In the years following the reported observation, tens of thousands of albatrosses were

exterminated from Midway Atoll to construct an aircraft runway, and to provide safe conditions for aircraft landings and departures. It is possible that short-tailed albatrosses nesting on the island could have been killed during this process (E. Flint, U.S. Fish and Wildlife Service, Honolulu pers. comm.). Since the mid 1970s, short-tailed albatrosses have been observed during the breeding season on Midway Atoll. In March 1994, a courtship dance was observed between two short-tailed albatrosses (Richardson 1994), and at least one has occupied a nest site and laid an egg which did not hatch (K. Niethammer, U.S. Fish and Wildlife Service, Midway Atoll pers. comm.). Midway Atoll is managed by the U.S. Government as a National Wildlife Refuge.

Observations have also been made during the breeding season on Laysan Island, Green Island at Kure Atoll, and French Frigate Shoals, but there is no indication that these occurrences represent breeding attempts (Sekora 1977, Fefer 1989).

### Status

The dramatic decline during the turn of the century and recent increases in numbers of short-tailed albatrosses were reflected in at-sea observations away from the breeding colonies (Figure 1). Between the 1950s and 1970, there were few records of the species away from the breeding grounds according to the AOU Handbook of North American Birds (Vol. 1, 1962) and the Red Data Book (Vol.2, Aves, International Union for the Conservation of Nature, Morges, Switzerland, 1966) (Tramontano 1970). There were 12 reported marine sightings in the 1970s, 55 sightings in the 1980s, and over 250 sightings reported in the 1990s to date (Sanger 1972, Hasegawa and DeGange 1982, USFWS unpublished database). This observed increase in opportunistic sightings should be interpreted cautiously, however, because of the potential temporal, spatial, and numerical biases introduced by opportunistic shipboard observations. Observation effort, total number of vessels present, and location of vessels may have affected the number of observations independent of an increase in total numbers of birds present. Moreover, it is likely the reporting rate of observations has increased with implementation of outreach efforts by Federal agencies and fishing interest groups in the last few years.

At-sea sightings since the 1940s indicate that the short-tailed albatross, while very few in number today, is distributed widely throughout its historical foraging range of the temperate and subarctic North Pacific Ocean (Sanger 1972; USFWS unpublished data), and is found close to the U.S. west coast. From December through April, distribution is concentrated near the breeding colonies in the Izu and Bonin Islands (McDermond and Morgan 1993). Recent satellite tracking of black-footed and Laysan albatrosses revealed that individuals of those species travel hundreds of miles from the breeding colonies during the breeding season (David Anderson, Wake Forest University, pers. comm.). If short-tailed albatrosses are similar in behavior to black-footed and Laysan albatrosses, short-tailed albatross foraging trips may extend hundreds of miles or more from the colony sites.

In summer (i.e., non-breeding season), individuals appear to disperse widely throughout the historical range of the temperate and subarctic North Pacific Ocean (Sanger 1972), with observations

concentrated in the northern Gulf of Alaska, Aleutian Islands, and Bering Sea (McDermond and Morgan 1993, Sherburne 1993, USFWS unpublished data). Individuals have been recorded along the west coast of North America as far south as the Baja Peninsula, Mexico (Palmer 1962).

The short)tailed albatross is considered endangered by the State of Alaska (State of Alaska, Alaska Statutes, Article 4. Sec. 16.20.19). This classification was supported by a letter to Commissioner Noerenberg from J.C. Bartonek (1972, in litt.) in which he recommended endangered status because the short)tailed albatross occurs or ``was likely`` to occur in state waters within the 3) mile limit of state jurisdiction (Sherburne 1993). The short-tailed albatross is not on the State of Hawaii's list of threatened and endangered species.

The Japanese government designated the short)tailed albatross as a protected species in 1958, as a Special National Monument in 1962 (Hasegawa and DeGange 1982), and as a Special Bird for Protection in 1972 (King 1981). Torishima was declared a National Monument in 1965 (King 1981). These designations have resulted in tight restrictions on human activities and disturbance on Torishima (H. Hasegawa pers. comm.). In 1992, the species was classified as ``endangered`` under the newly implemented ``Species Preservation Act`` in Japan which makes federal funds available for conservation programs and requires that a 10) year plan be in place which sets forth conservation goals for the species. The current Japanese ``Short)tailed Albatross Conservation and Management Master Plan`` outlines general goals for continuing management and monitoring of the species, and future conservation needs (Environment Agency 1996). The principal management practices used on Torishima are legal protection, habitat enhancement, and population monitoring. Since 1976, Dr. Hiroshi Hasegawa has systematically monitored the breeding success and population numbers of short)tailed albatrosses breeding on Torishima.

Currently, the short)tailed albatross is listed as endangered under the U.S. Endangered Species Act (ESA), throughout its range, except in the U.S. (50 CFR 17.11). The USFWS considers the short-tailed albatross to be covered under the Endangered Species Act in all portions of its range that are farther than 3 miles from U.S. shores, including those waters of the EEZ (3-200 miles from shore).

The exclusion of the U.S. from the range in which the species is listed resulted from administrative procedures rather than from any biological evaluation of the species status within the U.S. The species was originally listed as endangered in accordance with the Endangered Species Conservation Act of 1969 (ESCA). Pursuant to the ESCA, two separate lists of endangered wildlife were maintained, one for foreign species and one for species native to the United States. The short)tailed albatross appeared only on the List of Endangered Foreign Wildlife (35 FR 8495; June 2, 1970). When the ESA became effective on December 28, 1973, it superseded the ESCA. The native and foreign lists were combined to create one list of endangered and threatened species (39 FR 1171; January 4, 1974). When the lists were combined, prior notice of the action was not given to the governors of the affected states (Alaska, California, Hawaii, Oregon and Washington), as required by the ESA because available data were interpreted as not supporting resident status for the species. Thus native individuals of this species were

not formally proposed for listing pursuant to the criteria and procedures of the ESA.

On July 25, 1979, the USFWS published a notice (44 FR 43705) stating that, through an oversight in the listing of the short) tailed albatross and six other endangered species, individuals occurring in the United States were not protected by the ESA. The notice stated that it was always the intent of the USFWS that all populations and individuals of the seven species should be listed as endangered wherever they occurred. Therefore, the notice stated that the USFWS intended to take action as quickly as possible to propose endangered status for individuals occurring in the U.S.

On July 25, 1980, the USFWS published a proposed rule (45 FR 49844; July 25, 1980), to list, in the United States, the short) tailed albatross and four of the other species referred to above. No final action was taken on the July 25, 1980, proposal. In 1996, the USFWS designated the species as a Candidate for listing in the U.S. (U.S. Fish and Wildlife Service, in litt.).

The USFWS published a proposal to list the short-tailed albatross as endangered in the U.S. (FR 63(211): 58692-58701) on November 2, 1998, and a final rule on this proposal is expected before November 2, 1999.

#### **E. Analysis of the Species Likely to Be Affected**

The proposed action is likely to adversely affect the endangered short-tailed albatross. Although the fishing activities covered under this consultation will occur between 3 and 200 miles from the shoreline of Alaska, the effects of the action on this species will potentially occur throughout the species range because individual short-tailed albatrosses range throughout the North Pacific Ocean and Bering Sea.

### **III. ENVIRONMENTAL BASELINE**

#### **A. Status of the Species Within the Action Area**

The action area for this consultation is the entire range of the species because the best available information indicates that each individual albatross in the world population, both immature and adult, has the potential to occur throughout the species range, including within the U.S. EEZ off Alaska, where encounters with groundfish fishing vessels may occur. Therefore, the effects of the action can occur throughout the range of the species, and the environmental baseline for this consultation includes the status of the species as a whole, as described above, including the current known natural and anthropogenic threats to the species.

#### **B. Factors Affecting Species Environment Within the Action Area**

##### Breeding Habitat

Short) tailed albatrosses face a significant threat at the primary breeding colony on Torishima due to the potential for habitat destruction from volcanic eruptions on the island. The threat is not predictable in time or in magnitude. Eruptions could be catastrophic or minor, and could occur at any time of year. A catastrophic eruption during the breeding season could result in chick and adult mortalities as well as destruction of nesting habitat. Significant loss of currently occupied breeding habitat or breeding adults at Torishima would delay the recovery of the species or jeopardize its continued existence.

Torishima is an active volcano approximately 394 meters (m) high and 2.6 kilometers (km) wide (H. Hasegawa pers. comm.) located at 30.48E N and 140.32E E (Simkin and Siebert 1994). The earliest record of a volcanic eruption at Torishima is a report of a submarine eruption in 1871 (Simkin and Siebert 1994), but there is no information on the magnitude or effects of this eruption. Since the first recorded human occupation on the island in 1887, there have been four formally recorded eruption events: 1) August 7, 1902, an explosive eruption in the central and flank vents resulted in lava flow and a submarine eruption, and caused 125 human mortalities; 2) August 17, 1939, an explosive eruption in the central vent resulted in lava flow, and caused two human mortalities; 3) November 13, 1965, a submarine eruption and; 4) October 2, 1975, a submarine eruption 9 km south of Torishima (Simkin and Siebert 1994). There is also reference in the literature to an additional eruption in 1940 which resulted in lava flow that filled the island's only anchorage (Austin 1949).

Austin (1949) visited the waters around Torishima in 1949 and made the following observations: "The only part of Torishima not affected by the recent volcanic activity is the steep northwest slopes where the low buildings occupied by the weather station staff are huddled. Elsewhere, except on the forbidding vertical cliffs, the entire surface of the island is now covered with stark, lifeless, black) gray lava. Where the flow thins out on the northwest slopes, a few dead, white sticks are mute remnants of the brush growth that formerly covered the island. Also on these slopes some sparse grassy vegetation is visible, but there is no sign of those thick reeds, or 'makusa' which formerly sheltered the albatross colonies. The main crater is still smoking and fumes issues from cracks and fissures all over the summit of the island."

In 1965, meteorological staff stationed on the island were evacuated on an emergency basis due to a high level of seismic activity; although no eruption followed, the island has since been considered too dangerous for permanent human occupation (Tickell 1973). In late 1997, Hiroshi Hasegawa observed more steam from the volcano crater, a more pronounced bulge in the center of the crater, and more sulphur crusts around the crater than were previously present (R. Steiner, Alaska Sea Grant Program pers. comm.).

The eruptions in 1902 and 1939 destroyed much of the original breeding colony sites. The remaining site used by albatrosses is on a sparsely vegetated steep slope of loose volcanic soil. The monsoon rains that occur on the island result in frequent mud slides and erosion of these soils, which can result in habitat loss and chick mortality. A typhoon in 1995 occurred just before the breeding season and destroyed most of the vegetation at the Tsubamezaki colony. Without the protection provided by

vegetation, eggs and chicks are at greater risk of mortality from monsoon rains, sand storms and wind (H. Hasegawa pers. comm.). Breeding success at Tsubamezaki is lower in years when there are significant typhoons resulting in mud slides (H. Hasegawa pers. comm.).

In 1981, a project was supported by the Environment Agency of Japan and the Tokyo Metropolitan Government to improve nesting habitat by transplanting grass and stabilizing the loose volcanic soils (Hasegawa 1991). Breeding success at the Tsubamezaki colony has increased following habitat enhancement (H. Hasegawa pers. comm.). Current population enhancement efforts in Japan are concentrated on attracting breeding birds to an alternate, well vegetated colony site on Torishima which is less likely to be impacted by lava flow, mud slides, or erosion than the Tsubamezaki colony site (H. Hasegawa pers. comm.). Japan's "Short)tailed Albatross Conservation and Management Master Plan" (Environment Agency 1996) sets forth a long)term goal of examining the possibility of establishing additional breeding grounds away from Torishima once there are at least 1,000 birds on Torishima. Until other safe breeding sites are established, however, short)tailed albatross survival will continue to be at risk due to the possibility of significant habitat loss and mortality from unpredictable natural catastrophic volcanic eruptions and land or mud slides caused by monsoon rains.

It should be noted that the risk of extinction caused by a catastrophic event at the breeding colony is buffered by adult and immature non)breeding birds. An average of 25 percent of breeding age adults do not return to breed each year (H. Hasegawa pers. comm.), and immature birds do not return to the colony to breed until at least 6 years after fledging (H. Hasegawa pers. comm.). As much as 50 percent of the current total worldwide population may be immature birds. If suitable habitat were still available on Torishima, these birds could recolonize in years following a catastrophic event.

#### Diseases and Parasites

There are no known diseases affecting short)tailed albatrosses on Torishima or Minami)kojima today. However, the world population is vulnerable to the effects of disease because of the small population size and extremely limited number of breeding sites. H. Hasegawa (pers. comm.) reports that he has observed a wing)disabled bird every few years on Torishima, but the cause of the disability is not known. An avian pox has been observed in chicks of albatross species on Midway Island, but it is unknown whether this pox infects short)tailed albatrosses or the effect it may have on survivorship of any albatross species (T. Work, D.V.M., USGS, Hawaii).

Several parasites were documented historically on short)tailed albatrosses on Torishima: a blood)sucking tick that attacks its host's feet, a feather louse, and a carnivorous beetle (Austin 1949). However, current evidence suggests that there are no parasites affecting short)tailed albatrosses on Torishima, and there is no evidence that parasites caused mortality or had population level effects in the past (H. Hasegawa pers. comm.).

#### Predation

Sharks may take fledgling short)tailed albatrosses as they desert the colony and take to the surrounding waters (Harrison 1979). Shark predation is well documented among other albatross species, but has not been documented for the short)tailed albatross. The crow, Corvus sp., is the only historically known avian predator of chicks on Torishima. Hattori (in Austin 1949) reported that one)third of the chicks on Torishima were killed by crows, but crows are not present on the island today (H. Hasegawa pers. comm.). Black or ship rats were introduced to Torishima at some point during human occupation; their effect on short)tailed albatrosses is unknown. Cats were also present, and most likely introduced during the feather hunting period. They have caused damage to other seabirds on the island (Ono 1955), but there is no evidence to indicate an adverse effect to short)tailed albatrosses. Cats were present on Torishima in 1973 (Tickell 1975), but Hasegawa (1982) did not find any evidence of cats on the island.

### Contaminants

Another potential threat is damage or injury related to oil contamination, which could cause physiological problems from petroleum toxicity and by interfering with the bird's ability to thermoregulate. Oil spills can occur in many parts of the short)tailed albatrosses' marine range. Oil development has been considered in the past in the vicinity of the Senkaku Islands (Hasegawa 1981, in litt.). This industrial development would introduce the risk of local marine contamination, or pollution due to blow)outs, spills, and leaks related to oil extraction, transfer and transportation. Historically short)tailed albatrosses rafted together in the waters around Torishima (Austin 1949) and small groups of individuals have occasionally been observed at sea (USFWS unpublished data). An oil spill in an areas where individuals were rafting could affect the population significantly. The species' habit of feeding at the surface of the sea makes them vulnerable to oil contamination. Dr. Hiroshi Hasegawa (pers. comm.) has observed some birds on Torishima with oil spots on their plumage.

Consumption of plastics may also be a factor affecting the species' survival. Albatrosses often consume plastics at sea, presumably mistaking the plastics for food items, or in consuming marine life such as flying fish eggs which are attached to floating objects. Dr. Hiroshi Hasegawa (pers. comm.) reports that short)tailed albatrosses on Torishima commonly regurgitate large amounts of plastics debris. Plastics ingestion can result in injury or mortality to albatrosses if sharp plastic pieces cause internal injuries, or through reduction in ingested food volumes and dehydration (Sievert and Sileo in McDermond and Morgan 1993). Young birds may be particularly vulnerable to potential effects of plastic ingestion prior to developing the ability to regurgitate (Fefer 1989, in litt.). Auman (1994) found that Laysan albatross chicks found dead in the colony had significantly greater plastic loads than chicks injured by vehicles, a sampling method presumably unrelated to plastic ingestion, and therefore representative of the population. Dr. Hiroshi Hasegawa has observed a large increase in the occurrence of plastics in birds on Torishima over the last 10 years (R. Steiner pers. comm.), but the effect on survival and population growth is not known.

### Fisheries

Longline fisheries in the North Pacific Ocean and Bering Sea pose a risk to short-tailed albatrosses. Seabirds, including albatrosses, attempt to steal bait from hooks as the hooks are deployed off the stern of the vessel into the water. If birds are hooked, they can be pulled underwater with the groundline and drown.

Despite significant international initiatives in recent years to address this problem globally, there is still little information available on the magnitude of this potential threat in many foreign fisheries. In many fisheries, fishermen may not be required to report seabird bycatch, may not be able to identify seabirds, or may have significant disincentives to do so for fear of consequences to the future of the fishery.

Information currently available on foreign fisheries in the North Pacific Ocean and Bering Sea that may adversely affect short-tailed albatrosses is very limited. The following excerpt is from the Food and Agriculture Organization of the United Nations' recent Circular No. 937 (1998):

In the northwestern Pacific Ocean, longline fishing is conducted by vessels from China, Japan, the Republic of Korea, Russia and Taiwan Province of China. Catch statistics, however, have only been obtained from Japan. Japanese longliners operate on coastal and high-sea fishing grounds around Japan. Both demersal and pelagic long lines are used in this fishery which is classified into three categories: coastal, offshore, and high-seas. This fishery is dominated by small boats operating on coastal fishing grounds. A total number of 11,952 vessels was registered in 1995. Of these, 9887 boats were smaller than 5 GRT, 1972 boats were between 5-20 GRT, and 93 were larger than 20 GRT. No observers are required on longliners fishing within the Japanese EEZ. The total annual landings in 1995 were 64,673 tons, with 38,813 tons taken in the coastal fishery, 19,448 tons in the offshore fishery, and 6,412 tons in the high seas fishery. The most important species are Walleye pollock (16,095 tons), Pacific cod (12,279 tons), and Pacific halibut (FAO 1998).

Russian longliners fish for Pacific cod and Pacific halibut in the northwest Pacific Ocean, particularly off the Kamchatka Peninsula (Dunn 1995, Anon. 1997a). Some vessels have automatic baiting machines (Anon. 1997a).

Pelagic longline fishing is conducted in the central North Pacific Ocean in the vicinity of the Hawaiian Islands by the United States, which is within the range of the short-tailed albatross. Consultation under section 7 of the ESA has not been conducted to evaluate the effects of this fishery on short-tailed albatrosses. The amount and likelihood of take in this fishery is difficult to determine because of the low rate of observer coverage (5 percent of fishing time is observed). There have been no takes of (short) tailed albatrosses reported by observers in this fishery, but unreported take may occur (E. Flint, pers. comm.). Blackfooted albatrosses and Laysan albatrosses are taken in this fishery; in 1996, estimated total takes were 625 Laysan albatrosses (0.276 birds/1000 hooks) and 1189 blackfooted albatrosses (0.083 birds/1000 hooks; FAO 1998).

U. S. groundfish fisheries in Alaska are monitored by fishery observers who collect data on seabird bycatch, as described in the Description of the Action section. Reports of seabird bycatch are also occasionally received directly from fishermen. There were two reported fishery-related takes of short-tailed albatrosses in the 1980s. The first bird was found dead in a fish net north of St. Matthew island in July 1983. The second bird was taken by a vessel fishing for halibut in the Gulf of Alaska. In 1989, NMFS began consulting with USFWS on the effects of Alaska's groundfish fisheries on short-tailed albatrosses. Since 1990, there have been five reported takes of short-tailed albatrosses in Alaska's fisheries: 1) a juvenile taken in IFQ sablefish fishery in the western Gulf of Alaska south of the Krenitzin Islands on August 28, 1995, 2) a bird taken in the hook-and-line fishery on September 27, 1996, 3) a 5-year-old bird taken in the hook-and-line fishery on September 27, 1996, 4) an 8-year-old bird taken in the cod hook-and-line fishery in the Bering Sea on September 22, 1998, and 5) a sub-adult bird taken in the cod hook-and-line fishery in the Bering Sea on September 21, 1998.

A paper describing the seabird bycatch estimation methods and procedures developed by the USFWS, in consultation with NMFS, is currently in preparation (Stehn, USFWS pers. comm.). Standard statistical procedures for estimating a population total from a sample are used. Bycatch estimates are based on the number of seabirds by species in samples from observed hauls and the total commercial fish catch as estimated by the NMFS Blend program (the Blend program estimates total catch from a variety of data sources). The unobserved weight of fish was calculated by subtracting the weight of fish on observed hauls from the known total weight of fish. The estimated total number of birds caught was the sum of observed birds in the catch and the estimated unobserved birds. The number of unobserved birds was estimated by multiplying the ratio of number of birds caught per weight of fish caught from observed hauls by the total estimated weight of fish caught on unobserved hauls. Unobserved birds were assigned to species in proportion to the species composition of observed hauls averaged over all 5 years of data for each region and month. Both the catch rate of birds (number of birds per weight of fish, or birds per 1000 hooks) and the catch rate of fish (total weight of all fish species per hook) are assumed to be equal for observed and unobserved hauls. These assumptions may not hold, not necessarily because the presence of the observer may change the fishing practices of the skipper or crew, but rather because, for some other operational reason, the smaller (unobserved) vessels may have different catch rates than the large or mid-sized vessels. The constant catch rates for birds and/or fish among vessel size categories are untested and critical assumptions. If different catch rates do exist for different vessel size categories, then the average area catch rates and the estimates of the total seabird bycatch may be overestimated.

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 0.057 birds per 1000 hooks in the BSAI and in the GOA, respectively (Robert Stehn, USFWS, pers.comm., 1999). In general, the calculated expansion factor between observed bird mortalities and total estimated bird mortalities is 4 in the Bering Sea and 8 in the Gulf of Alaska (Robert Stehn, USFWS, pers.comm.). These numbers are preliminary and may change with further analysis and

additional data, but represent the best available information at this time.

There have been three short-tailed albatross mortalities reported since 1993 (when fishery observers began reporting bird mortalities by species) during observed portions of the haul. All three mortalities in the 6-year period since 1993 occurred in the Bering Sea. Applying an expansion factor of 4 to the 3 mortalities results in a total estimated mortality of 12 birds over 6 years, or 2 birds per year. In other words, 3 observed mortalities over a six year period probably represented 12 actual mortalities. The estimate for total short-tailed albatross mortalities in the GOA is 0 because no takes have occurred there in the observed sample. Therefore, the best available information indicates that the total take of short-tailed albatrosses in the GOA and BSAI hook-and-line fisheries since 1993 has been 2 birds per year.

The halibut fishery in Alaskan waters is managed separately from the groundfish fishery. A separate formal section 7 consultation was conducted on the halibut fishery in 1998. The USFWS determined that commercial halibut longline fishing in U.S. waters off Alaska within the International Pacific Halibut Commission regulatory zones 2B, 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E is likely to adversely affect, but not likely to jeopardize short-tailed albatrosses. The incidental take statement accompanying the Biological Opinion for the effects of this fishery on short-tailed albatrosses set the expected level of incidental take of short-tailed albatrosses at 2 birds every 2 years (USFWS 1998).

Hasegawa (pers. comm.) reports that 3-4 birds come ashore on Torishima Island per year entangled in fishing gear, and that some may die as a result. He also stated that some take by Japanese handliners may occur near the nesting colonies, although no such take has been reported. There is no additional information on the potential effects of fisheries near Torishima on the species.

## **IV. EFFECTS OF THE ACTION**

### **A. Factors to Be Considered**

The probability of short-tailed albatrosses being taken on hook-and-line gear is a function of many factors including: 1) the temporal and spacial overlap of the distribution of birds at sea and the distribution of vessels at sea, and 2) the total number of baited hooks set per unit time, and 3) the use and effectiveness of seabird deterrent devices.

Although short-tailed albatrosses may occur in the EEZ during any time of the year, they are more common during the non-breeding season. Data on observations of short-tailed albatrosses by fishery observers indicates that short-tailed albatrosses occur in Alaskan waters primarily from May until September (the non-breeding season) with fewer sightings in other months (Figure 2 ). Relative abundance (number of sightings adjusted for observer effort) is still low in May and increases to the highest level in August, and drops back down in September (Figure 3). Groundfish catch data from

1993-1997 indicate that groundfish fishing activity is highest from January until May (Figure 4). Clearly, there is temporal overlap in the distributions of short-tailed albatrosses and fishing vessels, but periods of peak activity do not overlap.

The geographic distribution of short-tailed albatrosses appears to be concentrated in the EEZ, suggesting that there is complete overlap between fishing areas and the marine distribution of short-tailed albatrosses (Figure 1). However, these data should be viewed with caution. Many of the short-tailed albatross observations are reported by fishery observers who are restricted to fishing areas. This may introduce a significant bias in the overall distribution of short-tailed albatrosses. Nevertheless, short-tailed albatrosses do occur throughout the areas fished.

The total number of hooks set per year in the BSAI (Table 2) increased each year since 1993 from 104 million hooks in 1993 to 159 million hooks in 1997. The TAC does not show the same pattern over these years; TAC remained relatively constant between 1993 and 1998, but the final specifications for 1999 represent an increase of 10% over the 1998 TAC. The total number of hooks set per year in the GOA (Table 5) decreased from 53 million hooks in 1993 to 27 million hooks in 1997. The GOA TAC decreased from 306,651 mt in 1993 to 282,575 mt in 1997, but increased to 327,046 mt in 1997. The final GOA TAC for 1999 (306,535 mt) is lower than the 1998 TAC. However, there is no available method for predicting the total number of hooks that will be set; number of hooks set is calculated after the fishing year is over. In addition, there is not a direct relationship between the total number of hooks set and the rate of seabird deaths (birds killed per 1000 hooks set) or the annual total number of seabird deaths.

There are numerous other factors that contribute to the probability that individual birds will be hooked, including: 1) type of fishing operation and gear used, 2) length of time fishing gear is at or near the surface of the water, 3) behavior of the bird, 4) water and weather conditions (e.g., sea state), 5) availability of food (including bait and offal), and 6) physical condition of the bird.

The number of birds affected by hook-and-line fishing is also a function of population size; as the short-tailed albatross population increases, an increase in the number of birds killed on long lines is likely to occur. However, the beneficial effects of seabird deterrent devices may counter-balance this effect, both through improvement of deterrent methods and regulations, and increasing skills and understanding of deterrent gear and methods.

## **B. Analyses for Effects of the Action**

The expected direct and adverse effect of the proposed action is mortality of individual albatrosses. Birds attempting to steal bait may be hooked, pulled underwater with the longline, and drowned. Some birds may sustain injuries from interactions with baited hooks during setting or hauling of the line which could result in later mortality, but there is no information on the likelihood that this occurs.

There are no identified relationships between total groundfish TAC and bird deaths, which could be used to predict the expected number of bird mortalities in current or future years. The best available predictor of bird mortalities is therefore the historical take rate. Therefore, based on the calculated, expanded take rate of 2 birds per year between 1993 and 1998, 4 short-tailed albatrosses are expected to be taken as a result of hook-and-line fishing activities managed by NMFS in the BSAI and GOA.

The indirect effect expected to occur as a result of the proposed action is reduction in population growth rate as a result of lost future reproductive success of the birds taken, and the temporary loss of reproductive success of the mates of any adult birds taken by this action.

### **C. Species Response to the Action**

The USFWS is developing a dynamic, individual-based, age-structured, stochastic model to simulate short-tailed albatross population dynamics and explore the effects of different hypothetical levels of incidental take (Cochrane and Starfield 1997). Life history information for the model (numbers of observed birds, eggs, and fledglings observed and estimates for age at first breeding, breeding frequency and annual survival on Torishima Island) was provided by Dr. Hiroshi Hasegawa, Toho University, Japan. The current level of incidental take is built into the life history information in the model, because at the time the model was created, no estimates of the total number of short-tailed albatrosses taken was available. Simulations were run to examine the effects of increments of 1% additional mortality on the short-tailed albatross population.

In the baseline model, without additional incidental take, the average population growth for the entire population was 6.4% (subsequent information indicates the population growth rate is actually higher, especially in recent years). After 10 years the average population totaled 1,675 birds with 689 breeding in the last year. This represents an increase of about 300 breeding birds from the initial population. Simulations were run with 1, 2, 3, 4, 5 and 6 percent additional mortality (incidental take) from all ages, and 2,4,6,8,10,12,14, and 16 percent additional mortality (incidental take) from just the immature population. The population did not begin to decline until at least 5% additional mortality occurred in all age groups, or at least 12% additional mortality occurred in immature birds.

The average population growth rate for simulations with an additional 1% mortality was approximately 1% lower than the baseline growth rate. Incidental take levels between 9 and 14 birds per year over and above the take currently occurring in the population would result in a 1% additional mortality. Even with this level of additional mortality, the population would continue to grow at an average annual rate of 5.3%.

The expected result of hook-and-line fishing activity in 1999 and 2000 is the continuation of a lower population growth rate than that which would occur in the absence of fishery related mortality. Two individual albatrosses per year at a population level of approximately 1100 birds represents a 0.2%

decrease in population growth rate. The short-tailed albatross population has continued to grow since 1950, and is currently growing at a rate of at least 6.5% per year. In the absence of additional disturbances beyond those that have occurred in the last several decades (i.e., without catastrophic volcanic events), and assuming that habitat enhancement and management projects by the Japanese government will continue on Torishima Island, the population can be expected to continue to recover, even with the current estimated level of fishery related mortality.

The jeopardy determination therefore depends on the following three questions: 1) is a volcanic eruption reasonably expected to occur prior to recovery? 2) If it does occur, is it likely to be of a magnitude and result in effects that place the species beyond the jeopardy threshold (the point at which they can reasonably be expected to recover and survive)? and 3) Would the fishery related take make a difference in whether the volcanic event results in the species being beyond the jeopardy threshold?

The adverse effects of a potential volcanic eruption would be buffered by many factors: 1) eruption occurring during the non-breeding season, 2) prevailing winds during an eruption, 3) location of the eruption on the island, 4) direction and extent of any lava flow, 5) the proportion of birds that are immature and do not return to the breeding colony until they are 6 years old, and 6) the existence of the second short-tailed albatross colony at a safe location on Torishima Island. If breeding birds were displaced from the current colony due to habitat destruction, they may re-nest sooner in subsequent years in the second colony than they would elsewhere (i.e. on other islands).

Based on historical patterns, we can predict with reasonable certainty that volcanic eruptions will occur on Torishima Island in the future, but there are many possible scenarios for a volcanic eruption event. Many eruptions around Torishima have been submarine eruptions which are likely to have little or no effect on short-tailed albatrosses. An eruption may result in lava flow that does not impact short-tailed albatrosses or their breeding habitat. But if the eruption were to occur during the breeding season (resulting in the loss of chicks), result in destruction of breeding habitat, or result in adult mortalities, the effects could be significant and long-lasting. Given the range of possible types and magnitudes of volcanic eruptions, and the historical pattern of eruptions on Torishima Island, a volcanic eruption of sufficient magnitude and impacts to cause the species to drop below the jeopardy threshold, is not reasonable certain to occur. If it were to occur, it is not likely that the fishery-related take that occurred before the event would have made a difference between the species reaching, or not reaching, the jeopardy threshold.

## **V. CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Direct harvest of short) tailed albatrosses in Japan today is apparently rare. H. Hasegawa (pers. comm.) reports that some local Japanese fishermen in Izu and Ryukyu Islands hunt seabirds and may take some short) tailed albatrosses, but the likelihood that short) tailed albatrosses are taken, or the magnitude of such take is not known.

There is some potential for oil spills to occur in the action area which could affect short-tailed albatrosses, but the likelihood of such an occurrence is not known. Oil transport occurs from the terminus of the Trans-Alaska pipeline in Valdez, Alaska, to refineries along the shores of the U.S. West Coast and Texas year round. Fuel oils are transported through waters offshore of the Aleutian Islands and the Bering Sea to coastal Alaska communities, primarily during the open water season.

Longline fisheries managed by the State of Alaska occur between 0 and 3 miles from shore. There are no records of short-tailed albatross mortalities occurring in these fisheries, and no information on the likelihood that any impacts to short-tailed albatrosses may occur in the future.

The likelihood that foreign hook-and-line fisheries in the North Pacific Ocean and Bering Sea will continue in the future, the number of hooks likely to be set in these fisheries in the future, and the number of seabirds likely to be caught are unknown. There is no information available with which to assess these factors.

It is not possible, with the currently available information, to assess whether any of the observed mortality in the short-tailed albatross population on Torishima Island is resulting from State, local and private actions. In the absence of a current level of impact or rate of take on which to base a prediction of future impacts from these sources, we assume that there is no reason to anticipate that any future State, private or local actions in the future will result in greater impacts to short-tailed albatrosses than that which are already occurring. In other words, we assume that the level of impacts from these sources will remain unchanged over the period 1999-2000.

## **VI. CONCLUSION**

After reviewing the current status of the short-tailed albatross, the environmental baseline for the action area, the effects of the proposed groundfish fishing activities in the GOA/BSAI areas and the cumulative effects, it is the Service's Biological Opinion that the GOA and BSAI hook-and-line fisheries, as proposed, are not likely to jeopardize the continued existence of the short-tailed albatross. No critical habitat has been designated for this species, therefore, none will be affected.

At the current population level and the current population growth rate, the level of mortality expected to result from this fishery, as described in the Final Supplement Environmental Impact Statement for this action, is not thought to represent a threat to the species' continued survival. However, in the event of a major population decline as a result of a natural environmental catastrophe or an oil spill, the effects of

longline fisheries on short) tailed albatrosses could be serious. Such an event would represent new information and stimulate reinitiation of this consultation.

## **INCIDENTAL TAKE STATEMENT**

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the NMFS so that they become binding conditions of any authorization of the fishery as appropriate, for the exemption in section 7(o)(2) to apply. The NMFS has a continuing duty to regulate the activity covered by this incidental take statement. If the NMFS, (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NMFS must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

### **Amount or Extent of Take Anticipated**

The USFWS anticipates up to four short-tailed albatrosses could be taken during the 2-year period of 1999 and 2000 as a result of the hook-and-line groundfish fishing activities in the GOA/BSAI areas regulated by the NMFS. The incidental take is expected to be in the form of lethal take due to birds being drowned as a result of encounters with hook-and-line groundfish fishing gear.

The USFWS will not refer the incidental take of any migratory bird (in this case, short-tailed albatross) or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

## **Effect of the Take**

In the accompanying Biological Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

## **Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of short-tailed albatrosses:

### **A. Minimize take of short-tailed albatrosses**

1. NMFS shall advise fishermen to make every effort to avoid bycatch of short-tailed albatrosses.
2. NMFS shall review current seabird deterrent device regulations to determine if changes in the regulations could minimize the likelihood of short-tailed albatross mortalities. NMFS shall revise regulations if revisions are likely to reduce the risk of short-tailed albatross bycatch.
3. NMFS shall test the effectiveness of the seabird avoidance measures required by regulation in a scientifically rigorous manner as specified in the "Test Plan to Evaluate the Effectiveness of Seabird Avoidance Measures Required in Alaska's Hook-and-Line Groundfish and Halibut Fisheries" (NMFS 1998), and if appropriate, modify regulations to maximize effectiveness and minimize seabird bycatch.
4. NMFS shall continue a proactive outreach and education policy to inform fishermen about short-tailed albatrosses and the risk of mortalities in the hook-and-line fisheries.

### **B. Monitoring and Reporting**

1. NMFS shall monitor bycatch and occurrences of short-tailed albatrosses on and/or near hook-and-line vessels.

### **C. Disposition of Injured or Dead Birds**

1. NMFS shall advise fishery observers and fishermen that injured short-tailed albatrosses must be evaluated and handled as specified in the terms and conditions below, and that dead short-tailed albatrosses must be frozen and surrendered to NMFS or USFWS at the first opportunity.

## **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the ESA, the NMFS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

#### A. Minimize Take

1. NMFS shall inform fishermen and fishery observers that every effort should be made, when a short-tailed albatross is observed following a fishing vessel, to minimize the possibility of the bird becoming entangled with the gear.
2. NMFS shall prepare an analysis on options for improving the effectiveness of regulations which require the use of seabird deterrent devices on hook-and-line groundfish vessels, using the best information currently available. If the results of the analysis support immediate changes in the regulations (before the results of the NMFS's test plan are available), NMFS shall propose such changes in the Federal Register by January 31, 1999 to minimize the likelihood of short-tailed albatross mortalities.
3. NMFS shall investigate the effectiveness of seabird deterrent measures currently used in Alaska's groundfish fishery. Research shall be designed and conducted by a qualified scientist or scientists. A draft progress report shall be submitted to USFWS by March 31, 2000. A final report shall be submitted to USFWS by June 31, 2001.
4. Based on the results of the above research, NMFS shall modify existing seabird avoidance regulations, if necessary, to improve the effectiveness of measures or devices which are required, and minimize the likelihood of short-tailed albatross mortalities. Modifications, if they are warranted, shall be proposed by December 31, 2001. Alternatively, NMFS shall provide a report to USFWS describing why modifications are not warranted, by December 31, 2001.
5. NMFS shall continue issuing bulletins, and conducting outreach regarding potential interactions between short-tailed albatrosses and hook-and-line gear.

#### B. Monitoring and Reporting

1. NMFS shall provide detailed training to fishery observers in identification of short-tailed albatrosses and other seabirds.
2. NMFS shall require fishery observers to report all mortalities or potential mortalities of short-tailed albatrosses, and all observations of short-tailed albatrosses.
3. NMFS shall advise fishermen that all mortalities and observations of short-tailed albatrosses should be reported.

4. NMFS shall provide an annual report to USFWS summarizing all reported observations and mortalities of short-tailed albatrosses including date, time, location, vessel, vessel type, vessel size, gear description, observer name, observer phone number, skipper name, skipper phone number, and all observer or reported comments. Reports shall be submitted by May 1 of the year following the reporting year (i.e. the report for calendar year 1999 shall be submitted by May 2000, etc.).

C. Disposition of Injured or Dead Birds

1. NMFS shall advise fishermen and fishery observers that every reasonable effort must be made to save injured short-tailed albatrosses. If a short-tailed albatross is recovered alive, it must be retained unless it exhibits all of the following traits:
  - a. head is held erect and bird responds to noise and motion stimuli;
  - b. bird breathes without noise;
  - c. both wings can flap and retract to normal folded position on back;
  - d. bird can stand on both feet with toes pointed in proper direction (forward).

If a recovered albatross exhibits all of these traits, it should be held until dry and then released overboard. If the recovered bird fails to exhibit even one of the above traits, it must, by law, be retained aboard and the U.S. Coast Guard contacted immediately. The Coast Guard must be instructed to contact the appropriate U.S. Fish and Wildlife Service personnel at any one the following phone numbers (in the order listed):

907/271-2778  
907/345-9899  
907/271-2787  
907/585-7242  
907/789-5265

2. NMFS shall advise fishery observers and fishermen that every effort must be made to recover any dead short-tailed albatrosses. Specimens should be frozen immediately, with identification tags attached directly to the carcass, and a duplicate identification tag attached to the bag or container holding the carcass. Identification tags should include species, date of mortality, name of vessel, location (latitude and longitude) of mortality, observer or skipper name, and any band numbers if the specimen has a leg bands.
3. NMFS shall inform fishery observers and fishermen that specimens must be surrendered, as soon as possible to a NMFS or USFWS office. The observer or fishermen should inform the NMFS or USFWS representative that the specimen must remain frozen and must be shipped as soon as possible to Greg Balogh, Ecological Services Anchorage Field Office, USFWS, 605 West 4th Avenue, Room G-62,

Anchorage, AK 99501. Contact phone numbers for the Anchorage Field Office are 1) 800-272-4174, 2) 907-271-2778 (Greg Balogh), 3) 907-271-2787 (Ann Rappoport), or 907-271-2888 (front desk).

The Service believes that no more than four short-tailed albatrosses will be incidentally taken as a result of the proposed action in 1999 and 2000. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency (i.e., NMFS) must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

## **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

1. Following completion of the research to evaluate the effectiveness of seabird avoidance measures, develop an instructional video which outlines the most effective seabird avoidance devices and methods with hook-and-line gear. Distribute the video to individual permit holders, longline fishing organizations, and at the annual Fish Expo in Seattle.

## **REINITIATION NOTICE**

This concludes formal consultation on the hook-and-line groundfish fishing activities in the GOA/BSAI areas regulated by the NMFS. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances

where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The USFWS is currently in the process of finalizing modeling analyses on short-tailed albatrosses, and calculating estimated take rates and numbers of hooks set for the 1998 GOA and BSAI fisheries. Final reports on these analyses are expected by the end of 1999, and are likely to reveal effects of the proposed action that may affect listed species in a manner or to an extent not considered in this biological opinion.

## LITERATURE CITED

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**TABLE 1.** Predominant hook-and-line vessel and gear characteristics by area and vessel type and vessel size.

| <b>AREA AND VESSEL TYPE</b>                  | <b>BSAI Catcher-Processor</b>    | <b>GOA Catcher Vessel</b> | <b>GOA Small Catcher Vessel</b> |
|--|----------------------------------|---------------------------|---------------------------------|
| Mean Vessel Length (LOA)                     | 143ft (125-164) & 181 (165-234)  | 76 ft (60-124)            | 44 ft (< 60)                    |
| Target Fishery                               | Pacific cod, sablefish           | Halibut , sablefish       | Halibut, sablefish              |
| Gear Type                                    | Auto-bait, hand-bait (3 vessels) | Conventional, hand-bait   | Snap-on                         |
| Bait Used                                    | Squid                            | Herring, salmon, squid    | Herring, salmon, squid          |
| Average Hooks Set per Day                    | 35,000 to 50,000                 | approximately 20,000      | 1,000 to 5,000                  |
| Setting Speed                                | 4 to 6 knots                     | 4 to 6 knots              | 2 to 3 knots                    |
| Fishing Day Cycle                            | Continuously                     | 16 hours on, 8 hours off  | 2 sets per day                  |
| Distance Behind Stern that Gear Enters Water | 5 to 10 ft                       | 6 to 8 ft                 | 1 to 3 ft                       |
| Height Above Water that Gear is Set          | 3 to 6 ft                        | 3 to 6 ft                 | 1 to 3 ft                       |

**TABLE 2.** Statistics for the Bering Sea/Aleutian Islands Hook-and-Line Groundfish Fishery

| Year | Total Groundfish TAC   | Total Groundfish Catch        | % of TAC harvested      | H&L portion of catch (mt)   | H&L proportion of TAC    | H&L proportion of total catch | Total hooks set (hook and line fishery) | Birds killed per 1000 hooks set | STAL mortalities reported |
|------|------------------------|-------------------------------|-------------------------|-----------------------------|--------------------------|-------------------------------|---|---------------------------------|---------------------------|
| 1993 | 1,847,407              | 1,754,384                     | 95%                     | 89,367                      | 4.8%                     | 5.1%                          | 104,176,470                             | 0.0638                          | 0                         |
| 1994 | 1,891,218              | 1,809,609                     | 96%                     | 109,201                     | 5.8%                     | 6.0%                          | 124,579,570                             | 0.0798                          | 0                         |
| 1995 | 1,867,756              | 1,830,295                     | 98%                     | 126,683                     | 6.8%                     | 6.8%                          | 128,576,230                             | 0.1399                          | 1                         |
| 1996 | 1,854,529              | 1,755,872                     | 95%                     | 116,442                     | 6.3%                     | 6.6%                          | 128,434,710                             | 0.0595                          | 1                         |
| 1997 | 1,846,660              | 1,740,663                     | 94%                     | 154,016                     | 8.3%                     | 8.8%                          | 159,184,790                             | 0.1030                          | 0                         |
| 1998 | 1,806,437              | 1,531,838                     | 85%                     | 130,489                     | 7.2%                     | 8.5%                          | NA                                      | NA                              | 2                         |
| 1999 | 2,000,000              | <i>1,880,000</i> <sup>2</sup> | 94% (avg.) <sup>1</sup> | <i>130,000</i> <sup>2</sup> | 6.5% (avg.) <sup>1</sup> | --                            | --                                      | --                              | --                        |
| 2000 | 1,568,506 <sup>3</sup> | <i>1,474,396</i> <sup>2</sup> | 94% (avg.) <sup>1</sup> | <i>101,952</i> <sup>2</sup> | 6.5% (avg.) <sup>1</sup> | --                            | --                                      | --                              | --                        |

<sup>1</sup> Average values for percent of TAC harvested and H&L portion of total catch represent average annual values between 1993 and 1997.

<sup>2</sup> 1999 and 2000 Total Groundfish Catch and H&L portion of TAC (in italics) were calculated from the 1999 Total Groundfish TAC and projected 2000 Total Groundfish TAC, and the 1993-1997 average percent of TAC harvested and 1993-1997 average H&L proportion of TAC.

<sup>3</sup> 2000 TAC is projected - see FSEIS, Table 2-1, Alternative A, pg. 16 (NMFS 1998).

NA Not available.

**TABLE 3.** Average Hook-and-Line Groundfish Harvest Levels By Vessel Type and Area

**BSAI**

|                    | # of Vessels <sup>1</sup> | 1996-98 Average Harvest (mt) | Percent of Average Harvest |
|--------------------|---------------------------|------------------------------|----------------------------|
| Total Harvest      | ----                      | 133,435                      | 100.0                      |
| Catcher-processors | 44                        | 131,102                      | 98.3                       |
| Catcher vessels    | 101                       | 2,333                        | 1.7                        |

**GOA**

|                    | # of Vessels <sup>1</sup> | 1996-98 Average Harvest (mt) | Percent of Average Harvest |
|--------------------|---------------------------|------------------------------|----------------------------|
| Total Harvest      | ----                      | 28,594                       | 100.0                      |
| Catcher-processors | 25                        | 6,389                        | 22.3                       |
| Catcher vessels    | 920                       | 22,205                       | 77.7                       |

<sup>1</sup>Number of vessels in 1997.



**TABLE 4.** Numbers of vessels that caught groundfish off Alaska by area, vessel length class (feet), 1992-97 (excluding catcher-processors)

|                   | Gulf of Alaska      |     |      |      | Bering Sea and Aleutian |     |      |      | All Alaska          |     |      |      |
|-------------------|---------------------|-----|------|------|-------------------------|-----|------|------|---------------------|-----|------|------|
|                   | Vessel length class |     |      |      | Vessel length class     |     |      |      | Vessel length class |     |      |      |
|                   | <60                 | 60- | 100- | >124 | <60                     | 60- | 100- | >124 | <60                 | 60- | 100- | >124 |
|                   |                     | 99  | 124  |      |                         | 99  | 124  |      |                     | 99  | 124  |      |
| Number of Vessels |                     |     |      |      |                         |     |      |      |                     |     |      |      |
| Hook & Line       |                     |     |      |      |                         |     |      |      |                     |     |      |      |
| 1993              | 998                 | 143 | 9    | 1    | 29                      | 27  | 2    | 0    | 1006                | 151 | 11   | 1    |
| 1994              | 1149                | 181 | 14   | 0    | 60                      | 26  | 1    | 0    | 1165                | 185 | 15   | 0    |
| 1995              | 901                 | 148 | 14   | 2    | 73                      | 60  | 3    | 0    | 935                 | 151 | 17   | 2    |
| 1996              | 821                 | 140 | 8    | 5    | 59                      | 54  | 4    | 2    | 848                 | 141 | 9    | 6    |
| 1997              | 791                 | 118 | 8    | 3    | 49                      | 49  | 3    | 0    | 802                 | 119 | 8    | 3    |

Numbers of vessels that caught and processed groundfish off Alaska by area and vessel length class (feet), 1992-97.

|                   |   |    |    |    |   |    |    |    |   |    |    |    |
|-------------------|---|----|----|----|---|----|----|----|---|----|----|----|
| Number of Vessels |   |    |    |    |   |    |    |    |   |    |    |    |
| Hook & Line       |   |    |    |    |   |    |    |    |   |    |    |    |
| 1993              | 2 | 13 | 14 | 25 | 0 | 12 | 14 | 34 | 2 | 14 | 14 | 34 |
| 1994              | 3 | 13 | 12 | 24 | 1 | 15 | 13 | 28 | 3 | 16 | 13 | 28 |
| 1995              | 4 | 9  | 8  | 15 | 1 | 7  | 11 | 28 | 4 | 9  | 11 | 28 |
| 1996              | 4 | 6  | 8  | 9  | 1 | 7  | 10 | 26 | 4 | 7  | 10 | 26 |
| 1997              | 2 | 6  | 8  | 9  | 3 | 7  | 8  | 26 | 4 | 8  | 8  | 26 |

Note: Includes only vessels that fished part of Federal TACs.

Source: 1997 Economic SAFE Document, Tables 28 and 29. Blend estimates, NMFS permits.

National Marine Fisheries Service, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.



**TABLE 5.** Statistics for the Gulf of Alaska Hook-and-Line Groundfish Fishery

| Year | Total Groundfish TAC (mt) | Total Groundfish Catch (mt) | % of TAC harvested         | H&L portion of catch (mt) | H&L proportion of TAC        | H&L proportion of total catch | Total hooks set (hook and line fishery) | Birds per 1000 hooks set | STAL mortalities reported |
|------|---------------------------|-----------------------------|----------------------------|---------------------------|------------------------------|-------------------------------|---|--------------------------|---------------------------|
| 1993 | 306,651                   | 255,434                     | 83%                        | 35,171                    | 11.5%                        | 13.8%                         | 53,781,560                              | 0.0546                   | 0                         |
| 1994 | 304,595                   | 239,502                     | 79%                        | 29,676                    | 9.7%                         | 12.4%                         | 38,889,089                              | 0.0522                   | 0                         |
| 1995 | 279,463                   | 216,585                     | 78%                        | 32,546                    | 11.6%                        | 15.0%                         | 39,762,962                              | 0.0683                   | 1                         |
| 1996 | 260,207                   | 202,054                     | 78%                        | 27,862                    | 10.7%                        | 13.8%                         | 35,573,047                              | 0.0690                   | 0                         |
| 1997 | 282,575                   | 230,448                     | 82%                        | 26,266                    | 9.3%                         | 11.4%                         | 27,437,083                              | 0.0272                   | 0                         |
| 1998 | 327,046                   | 245,155                     | 75%                        | 25,543                    | 7.8%                         | 10.4%                         | NA                                      | NA                       | 0                         |
| 1999 | 306,535                   | <i>242,163<sup>2</sup></i>  | 79%<br>(avg.) <sup>1</sup> | <i>30,960<sup>2</sup></i> | 10.1%<br>(avg.)              | --                            | --                                      | --                       | --                        |
| 2000 | 367,530 <sup>3</sup>      | <i>290,349<sup>2</sup></i>  | 79%<br>(avg.) <sup>1</sup> | <i>37,120<sup>2</sup></i> | 10.1%<br>(avg.) <sup>1</sup> | --                            | --                                      | --                       | --                        |

<sup>1</sup> Average values for percent of TAC harvested and H&L portion of total catch represent average annual values between 1993 and 1997.

<sup>2</sup> 1999 and 2000 Total Groundfish Catch and H&L portion of TAC (in italics) were calculated from the 1999 Total Groundfish TAC and projected 2000 Total Groundfish TAC, and the 1993-1997 average percent of TAC harvested and 1993-1997 average H&L proportion of TAC.

<sup>3</sup> 2000 TAC is projected - see FSEIS, Table 2-1, Alternative A, pg. 16 (NMFS 1998).

NA Not available

**TABLE 6.** Observed population growth rates at the Torishima Island short-tailed albatross colony.  
Data are from H. Hasegawa, Toho University, Japan.

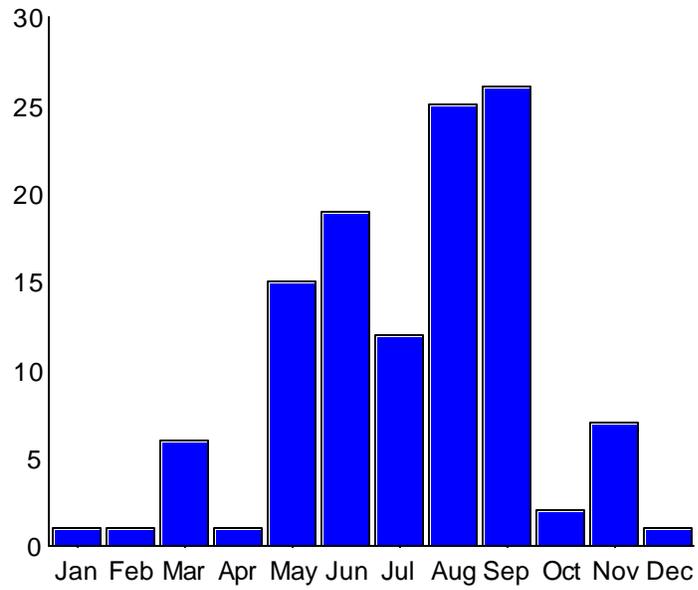
|                       | <b>AVERAGE ANNUAL<br/>INCREASE<br/>1955-1998</b> | <b>AVERAGE ANNUAL<br/>INCREASE<br/>1980-1998</b> |
|-----------------------|--|--|
| <b>OBSERVED BIRDS</b> | 6.86%  | 6.47%  |
| <b>EGGS LAID</b>      | 6.76%  | 7.59%  |
| <b>CHICKS FLEDGED</b> | 7.86%  | 8.04%  |

**TABLE 7.** Average (1992-1996) number of vessels fishing in each area and vessel category in each month

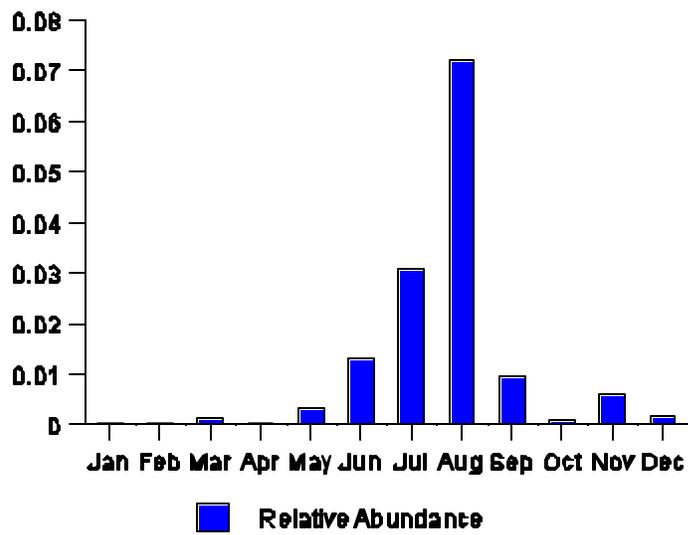
| Vessel area and category  | JAN | FEB | MAR | APR | MA<br>Y | JUN | JUL | AUG | SEP<br>T | OCT | NOV | DEC |
|---------------------------|-----|-----|-----|-----|---------|-----|-----|-----|----------|-----|-----|-----|
| BSAI - Catcher vessels    | 4   | 4   | 8   | 16  | 29      | 31  | 36  | 40  | 17       | 11  | 9   | 7   |
| BSAI - Catcher-processors | 32  | 32  | 42  | 44  | 44      | 21  | 18  | 17  | 30       | 23  | 12  | 6   |
| GOA - Catcher vessels     | 94  | 120 | 187 | 156 | 645     | 619 | 135 | 114 | 355      | 134 | 63  | 14  |
| GOA - Catcher-processors  | 10  | 12  | 13  | 3   | 28      | 19  | 5   | 4   | 7        | 5   | 2   | 0   |

**TABLE 8.** Estimated total incidental catch of seabirds in the Alaskan longline groundfish fisheries in the Bering Sea/Aleutian Islands and Gulf of Alaska 1993 to 1997 (from Stehn et al. 1999).

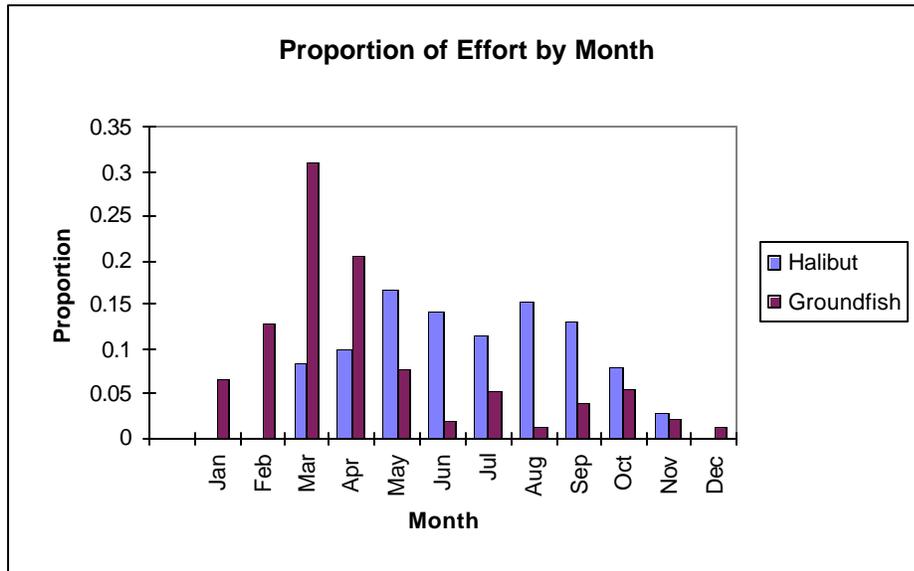
|                      | BERING SEA/ALEUTIAN ISLANDS | GULF OF ALASKA |
|----------------------|-----------------------------|----------------|
| 1993                 | 6,255                       | 3,065          |
| 1994                 | 9,883                       | 2,904          |
| 1995                 | 17,376                      | 2,778          |
| 1996                 | 7,604                       | 2,153          |
| 1997                 | 16,960                      | 939            |
| Annual Average 93-97 | 11,616                      | 2,368          |



**Figure 2.** Distribution through time of Short-tailed albatross sightings made by groundfish fishery observers from 1993-1997.



**Figure 3.** Abundance index for short-tailed albatross in waters off Alaska. Generated from groundfish observer data and adjusted for observer effort.



**Figure 4.** Allocation of effort through time for the Pacific halibut fishery and BSAI/GOA groundfish fishery. Halibut effort data from 1996 catch data. Groundfish effort data from 1993-97 catch data.