



Interactions Between Albatrosses and Pelagic Longline Fisheries in the North Central Pacific

by Pacific Seabird Group

At least two of the three albatross species that breed and forage in the North Pacific are experiencing considerable mortality due to interactions with various longline fisheries operating in their pelagic range. The species for which we have most evidence of this conflict are the Laysan albatross (*Diomedea immutabilis*) and black-footed albatross (*D. nigripes*). Short-tailed albatrosses (*D. albatrus*) also forage in the areas fished by longliners. The mortality occurs when the birds attempt to take baits from the hooks as they are deployed, soaking, or hauled in or are entangled in gear as they attempt to feed on discarded bait coming from the vessels. The fisheries in most immediate proximity to the breeding colonies and large concentrations of albatrosses, and for which we have most information, are the Hawaii-based fisheries for bigeye tuna (*Thunnus obesus*) and broad-billed swordfish (*Xiphius gladius*). The vast pelagic range of albatrosses, however, means that they are exposed to all other foreign longline fisheries and the Bering Sea and Gulf of Alaska groundfish longline fisheries as well.

Management Responsibilities

Today 98% of the world black-footed albatross population and over 99% of the world's Laysan albatross population nest in the Northwestern Hawaiian Islands. This area is almost entirely contained in two National Wildlife Refuges (NWRs); Midway Atoll NWR and Hawaiian Islands NWR both of which were originally established to protect these two albatrosses and other migratory seabirds. These lands are managed by the Department of Interior U.S. Fish and Wildlife Service (FWS). The staffs of these refuges have responsibility for

monitoring populations and identifying and correcting situations that pose a danger to refuge wildlife. Laysan, black-footed, and short-tailed albatross are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-711)(MBTA). The short-tailed albatross is afforded further protection by the U.S. Endangered Species Act of 1973 (under which it is listed as Endangered) for individuals that may have been illegally taken outside of U.S. jurisdiction. This species also ranges throughout the North Pacific and the Bering Sea but breeds in Japan.

Evidence of Interactions with Longline Fisheries

National Wildlife Refuge staff became aware of a potential problem with longline fisheries in the late 1980s when both species of albatrosses started returning to the colonies with hooks and lightsticks attached or ingested. Anecdotal reports from people on the fishing boats confirmed that in some areas large numbers of birds were interfering with fishing operations and suffering injury and mortality. At this time the refuge staff also started getting a few bands recovered at sea in the area of the fisheries. In November of 1991, the Western Pacific Regional Fisheries Management Council staff asked the Fish and Wildlife Service to examine the degree of fishing-related albatross mortality and report back to them. At the time the refuge biologists had no data and were unable to provide any information.

Since then a mandatory observer program has been established in the Hawaii fishery as required by a biological opinion concerning endangered marine turtles so seabird data are now being collected. These data are being analyzed by National Marine Fisheries Service and Fish and Wildlife

Service scientists for presentation to the Council meeting. The confidence intervals are wide due to the small sample size of only 4% of all trips observed but we estimate that approximately 2000 each of Laysan black-footed albatrosses were killed each year in 1994 and 1995. In 1996 the totals fell to approximately 1000 of each species.

From preliminary looks at the data and discussion with fishermen we know that the vast majority of birds are killed in sets initiated in the evening and located to the north of the Hawaiian chain. We assume these are on trips targeting swordfish. Birds are caught on hooks during both setting and gear retrieval.

Band recoveries of ten known-age banded Laysan albatrosses showed an age range of hatch year to twenty-five years hooked. We had eighteen known-age black-footed albatross hooked ranging in age from hatch year to greater than twenty-six years of age.

Rates of albatross mortality on foreign vessels longlining on the high seas are completely unknown. It seems likely that any estimates for the take for Hawaii-based boats could at least be doubled to estimate total world impact on these birds.

Population Status of the Species Involved

Laysan and black-footed albatrosses have an almost identical breeding range centered in the Northwestern Hawaiian Islands. Over 95 % of the world's Laysan albatrosses and 95 % of all black-footed albatrosses have been censused within the last five years. The current world population estimate for Laysan albatrosses is 636,000 breeding pairs and for black-footed albatrosses is 63,000 breeding pairs (USFWS data). The reason for this order of magnitude difference in population size is unknown but recent results of a study of diets and stable isotope levels in the two species indicate that Laysan albatrosses feed at one trophic level below black-footed albatrosses in the North Pacific. (Gould et al. 1995). Albatrosses are characterized by

(continued page 121)

Book Review

by Darlene Fiske¹

MO'OMOMI, WEST MOLOKA'I: A COASTAL TREASURE

By Hannah Will Johnstone

Published by University of Hawaii Manoa, Sea Grant College Program

Hawaii Audubon Society

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Many members of Hawaii Audubon have visited Mo'omomi beach with Nature Conservancy tours. Many others will want to visit after reading *MO'OMOMI, WEST MOLOKA'I, A COASTAL TREASURE*, the first guide written about this unique preserve. "Mo'omomi is the last stronghold of a major Hawaiian ecosystem - a holdover from an ancient era," says author Hannah Johnstone, a longtime Moloka'i resident. The 921 acre preserve was established by the Nature Conservancy in 1988. Conservancy staff and volunteers help protect the vast community of native grasses, shrubs and forbs. Many Hawaiian coastal plant species are found nowhere else on earth. Mo'omomi is also very important archaeologically, for it was here that the first fossil remains of the earliest Hawaiian birds were discovered by Joan Aidem, renowned naturalist and Hannah's fellow beach wanderer. Management by TNCH (The Nature Conservancy of Hawaii) has encouraged the return of the green sea turtle to Mo'omomi beach.

The first half of this book gives excellent directions on how to get to Mo'omomi, which is not easy without a good guide. Johnstone also lists precautions which are useful and practical (e.g. access is controlled by TNCH), and it also gives a fine overview of Moloka'i's relevant cultural history. The second half of the book is made up of excellent photographs of plants that are notoriously hard to photograph. A great deal of patience as well as expertise was needed by the author. This is the first time photographs of Mo'omomi's plant life have been gathered in one place, and each is accompanied by a complete and most readable description of the plant as well as its distribution through the islands, its historical uses and in some cases short tales of its importance in native history. Johnstone writes clearly and concisely, yet leaves out none of the important things that will make a Mo'omomi trip especially rewarding. The visitor to Mo'omomi will find this an indispensable guide. We are fortunate to have Hannah Johnstone's dedication and persistence as well as her outstanding ability as writer and photographer.

The book is available from the Moloka'i Historical Society, Box 1418, Kaunakakai, Hi. 96748. Make check for \$15 payable to "MHS Mo'omomi Book".

¹9313 Bull Valley Road
Woodstock, IL 60098-8186

high adult survivorship, great longevity (probably well over fifty years), deferred maturity (nine years), and low reproductive output (adults unable to raise more than one chick per year and no chance to re-lay in the same year if the first egg is lost). The stability of populations such as these is more sensitive to changes in adult survivorship than to annual changes in reproductive success. Furthermore, the birds form permanent pair bonds so if one bird is widowed not only its chick but the next breeding season is also lost to that bird because of the time it takes to form a new pair.

Age-specific survivorship and recruitment rates have not been documented for black-footed albatrosses. Those rates were studied in Laysan albatrosses by Fisher (1975). As part of our monitoring plan the refuge is stepping up its efforts to construct life tables and measure adult survivorship for both albatross species. Johnson et al. (1993) reported that $17,548 \pm 640$ Laysan albatrosses and 4426 ± 240 black-footed albatrosses were killed in 1990 in the north Pacific high seas driftnet fishery for squid. This mortality was considered significant to black-footed albatross populations by Gould and Hobbs (1993). The increase in longline hooks set in the early 1990s coincided with these high takes from the drift nets so it is important that we monitor each recruiting cohort for effects that they may have suffered those years. Populations of black-footed albatrosses have declined at each of the three permanently manned field stations that have albatrosses. This is most dramatic at French Frigate Shoals where numbers of breeding birds have fallen from 6210 pairs in 1987 to 3341 pairs in 1996. At Midway Atoll the black-footed albatross population diminished by 2.5% between 1991 and 1995. Even this lower rate of decline at Midway (0.6% per annum) in a colony that makes up 30% of the world population is sufficient to propose that this species be placed in the IUCN (World Conservation Union) Red List category of a Vulnerable species. Consistent with a much larger population size, we have not detected large declines in Laysan albatrosses to date.

Both Laysan and black-footed albatrosses are also being taken in the Gulf of Alaska and Bering Sea groundfish longline fisheries for black cod.

There are no records of interactions between short-tailed albatrosses and longline gear in the Hawaii record. This is not sur-

prising even if it is occurring because of the size of the total world population (~700 birds) and the extremely low level of observer coverage. Since it has happened in the Alaska fisheries we do know that the species is attracted to longline fishing vessels. This species has been seen from Hawaii longliners and the risk of loss of one of these birds should be considered real and of great significance to the population.

Comparisons with the Southern Ocean

Hooking rates of Laysan and black-footed albatrosses are comparable to or exceed those that have directly caused some devastating population declines in several albatross species in the southern hemisphere. The severity of the problem in waters managed by the Australians, New Zealanders, the French, and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has generated much thought and many suggestions for technical

solutions from these parties. It is hoped that we can initiate conservation measures in the northern hemisphere before populations of black-footed and Laysan albatrosses experience the same level of damage due to longline fisheries.

Literature Cited

- Fisher, H.A. 1975. Mortality and survival in the Laysan Albatross, *Diomedea immutabilis*. Pacific Science 29:279-300.
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- Gould, P.J. and R. Hobbs. 1993. Population dynamics of the Laysan and other albatrosses in the North Pacific. International North Pacific Fisheries Commission Bulletin 53:485-487.
- Johnson, D.H. et al. 1993. incidental catch of marine birds in the North Pacific High Seas Driftnet Fisheries in 1990. International North Pacific Fisheries Commission Bulletin 53:473-483

Source: Contact Elizabeth Flint, U.S. Fish and Wildlife Service, Honolulu

Hawaiian Moth Proposed for Addition to Endangered Species List

by Barbara Maxfield

A native Hawaiian moth, Blackburn's sphinx moth, is the first Hawaiian insect to be proposed for listing under the Endangered Species Act.

Blackburn's sphinx moth is Hawaii's largest native insect, with a wing span of up to five inches. It has blackish gray mottled wings and a gray abdomen with orange highlights. The caterpillars are large green or grayish hornworm caterpillars that feed on native 'aiea trees, native popo shrubs, and other plants in the nightshade family.

Few individuals of this species have been seen since 1940. Staff of the B.P. Bishop Museum in Honolulu failed to find any Blackburn's sphinx moths during a systematic search in the late 1970s, and the species was considered extinct, but a single population was discovered on public land on Maui in 1984.

The moth is threatened by the loss of its native host plant, the 'aiea, which is a dry-land forest tree, and is susceptible to over-collection by individuals and for trade.

Source: U.S. Fish and Wildlife Service

Your Bequest Can Help

A bequest to the Hawaii Audubon Society is an excellent way to help in our conservation efforts. For example, George C. Munro, enthusiastic and tireless field ornithologist and naturalist, provided for a fund to be used exclusively for the protection of native dry forests. Today, the George C. Munro Fund provides money for research projects on such forests.

Although an attorney should be consulted in the drafting of your will, a model clause for bequests is set forth below.

"I hereby give, devise, and bequeath to the Hawaii Audubon Society, Honolulu, Hawai'i, the sum of _____ dollars (or set forth a description of property), to be used for the general purpose of said organization."

For more information and assistance, contact the Hawaii Audubon Society, 850 Richards Street, Suite 505, Honolulu, HI 96813-4709, (808) 528-1432.

Albatross By-catch Conservation Measures

by Linda Paul

Albatrosses inhabit the windy latitudes of the northern and southern hemispheres, gliding across vast tracks of ocean in search of food and breeding on remote islands. However, since the 1950s large commercial fishing fleets have expanded into most of the world's oceans to the point where it is now unlikely that albatrosses can avoid coming into contact with them. It was estimated that one million birds drowned in driftnets each year before the UN driftnet moratorium went into effect at the end of 1992. Now that the number of driftnet vessels have declined (driftnetters are still illegally fishing on the high seas and with coastal states' permission in exclusive economic zones) the world has seen a huge expansion in the longline fishery. Estimates range from 3,000 to 10,000 longline vessels worldwide, each of which set thousands of hooks on lines that stretch 20 to 40 or more miles (an estimated 50 to 100 million hooks annually in the world's southern oceans alone). Australian scientists calculate that more than 40,000 albatross are killed in the South Pacific each year.

Preliminary data from the Hawaii-based longline fishery indicate more black-footed albatrosses are taken annually in longline interactions than were taken in the entire North Pacific high seas driftnet fishery each year. The National Marine Fisheries Service (NMFS) longline observer program in the North Pacific records instances of bird interaction. Bob Skillman (NMFS) and Elizabeth Flint (U.S. Fish and Wildlife Service [FWS]) report that Laysan and black-footed albatrosses are being killed during interactions with longline gear of boats fishing for tuna and swordfish in the central North Pacific north of Hawaii at rates comparable to or exceeding hooking rates for seabirds on longlines in the southern ocean.

NMFS observers recorded interactions of marine mammals, turtles, and birds on 4% of the longline fishing trips taken by boats registered in Hawaii in 1994 and 1995. Laysan albatross were hooked at a

rate of 0.113 birds per 1000 hooks and black-footed albatross at a rate of 0.152 birds per 1000 hooks. The world population of black-footed albatross is approximately 60,000 breeding pairs, and longline mortality estimates are causing managing agencies serious concern. Skillman and Flint estimate that 2135 ± 970 black-foots were hooked in the North Pacific in 1994 and 1796 ± 1498 in 1995.

The Western Pacific Regional Fisheries Management Council (WESTPAC), the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and members of the fishing community are now working together to reduce the incidental mortality of albatrosses in the Hawaii longline fishery through (1) education of fishermen, (2) by-catch data collection and analysis, and (3) albatross population monitoring.

Several methods are being employed by fishermen to reduce the by-catch of sea birds on longlines including:

- Using streamers on a pole at the vessel's stern. The flapping and noise discourage the birds from snatching bait from lines.
- Setting lines after dusk and before dawn, prime feeding times, and decreasing lights astern.
- Setting longline gear outside or below the prop wash.
- Adding weights as close to the hook as possible to reduce the time the bait is at the surface.
- Using only thawed bait and baits with deflated swim bladders.
- Hauling back gear as fast as possible at a steep angle to the waterline.
- Avoid throwing bait and offal over the side of the vessel.
- Season and area closures.

Australian scientists have found that the appropriate use of a bird scaring line and streamers can reduce by-catch between 30-75%. They reported an average catch rate of 0.064/1000 hooks with a bird scaring line and streamers line and a rate of 0.247/1000 hooks without them, a reduction of 74%. Kevin Foster (FWS) reports that preliminary tests with streamer poles in Hawaii indicate that they are also effective in repelling seabirds. He is now visiting fishermen at the dock in Honolulu to show them how they can avoid snaring birds and in the process improve their catch.

Sierra Club Legal Defense Fund Changes Name

by Marjorie Ziegler

On June 14, 1997, the Sierra Club Legal Defense Fund announced that it is changing its name to Earthjustice Legal Defense Fund, effective immediately. Earthjustice Legal Defense Fund is a nonprofit, public interest, environmental law firm that employs approximately fifty attorneys in nine offices across the country. While its name is changing, the Legal Defense Fund's mission of protecting people and resources by enforcing and strengthening our environmental laws continues as strong as ever.

The Mid-Pacific office, located in Honolulu, opened in 1988 with a grant from the MacArthur Foundation. The Fund has successfully litigated matters under state and federal laws, including the Endangered Species Act, Clean Water Act, National Environmental Policy Act, State Water Code, and Hawai'i's "Sunshine" Law. In addition to legal services to the public, which are provided free of charge, the Legal Defense Fund assists its clients in community organizing, lobbying, and media relations. Since 1995 the Mid-Pacific office has also sponsored the Ahupua'a Action Alliance, a statewide coalition of over 65 environmental and Hawaiian organizations, which was created as part of the Legal Defense Fund's Marine Biodiversity Project.

The Legal Defense Fund represented Hawaii Audubon Society in legal actions to protect the endangered palila and its critical habitat on Mauna Kea, and the endangered 'alalā and its essential habitat in South Kona—which also provides habitat for the endangered 'akiapōlā'au, Hawai'i creeper, Hawai'i 'ākepa, 'io, 'ōpe'apea, and at least a dozen endangered plants. The Legal Defense Fund also represented Hawaii Audubon Society in an action to prevent high-voltage power lines across Kalihiwai Valley on Kaua'i, a major flyway for the threatened 'a'o (Newell's shearwater).

Source: *Earthjustice Legal Defense Fund*

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by September 15, 1997

Nominating Committee Seeks Candidates for Board

Your Society Wants You or a Friend!

by Susan Elliott Miller

If it's midsummer, it is time to find Society members who are willing to serve on the Board. The bylaws call for six officer positions and from three to ten directors to serve two-year terms with half elected each year; therefore normally half the officer positions and director positions would be open for election.

However, as a result of resignations and Board members being elected or appointed to fill unexpired terms, the following positions are now open for nomination: First Vice President, Treasurer, and Corresponding Secretary (two-year terms); five Directors (two-year terms); three Directors (complete second year of term).

Incumbents continuing to serve until December 1998 are President Linda Paul, Second Vice President Wendy Johnson, and Recording Secretary Deetsie Chave, along with Directors Mary Gaber and Eric VanderWerf. Incumbents whose terms are pau this December are First Vice President John Harrison and Directors Liz Kumabe, Dan Sailer, and Andrew Tomlinson.

Birdathoners Few But Mighty!

by Susan Elliott Miller

On Saturday, June 14, 1997, four intrepid Birdathoners joined Dr. Alan Ziegler's fossil-bird hunting field trip to the Ewa sink holes. Marcia Wright, Ivan Kaisan, Mark Jenkins, and his mother, Florence Jenkins, saw eleven species. Dr. Ziegler identified three of them as extinct: dark rumped petrel, *Pterodroma phaeopygia*; Hawaiian gallinule, *Gallinula chloropus*; and O'ahu crow, *Corvus impluviatus* or *Corvus viriosus*.

The four participants raised \$70.00 between them. At eight years old (and a very sharp birder already, I'm told by other field trip members), Mark Jenkins definitely won the prize as the youngest participant, while Marcia Wright raised the most money.

Our thanks to each and to their sponsors!

The HAS Board is a dynamic group of committed individuals whose energy and expertise involve many aspects of environmental protection in Hawaii from fund raising to education, and from birding to habitat cleanup.

All members of the Board are expected to attend two-hour monthly meetings and a Leaders' retreat in January. Directors are also expected to be active on one of the Society's two standing committees: Conservation and Education. Persons interested in serving on the Board are encouraged to attend a Board meeting; the next one will be August 11th at 6:30 p.m. at the HAS office.

If you want to be a candidate, please submit a letter of interest and brief resume of your background and activities (in and outside of HAS) to the attention of the Nominating Committee at the return address on this journal by September 2, 1997. For an information sheet giving more specific information regarding responsibilities of officers and directors, please call the office at (808) 528-1432.

Ten Plants from Maui Nui Proposed for Endangered Status

by Barbara Maxfield

The U.S. Fish and Wildlife Service is seeking public comments on a proposal to list ten Hawaiian plant species known only from the Maui Nui group of islands as endangered under the Federal Endangered Species Act.

The proposed list includes: *Kanaloa kahoolawensis*, a small shrub in the legume family, discovered in 1992; two subspecies of the shrub *Clermontia samuelii* ('oha wai), a member of the bellflower family; the vine-like shrub *Cyanea copelandi* ssp. *haleakalaensis* (haha) also a member of the

Audubon Field Trips for 1997, August - December

by Mary Gaber

August 16 - Saturday: A trek through some of the lesser-known areas of Ho'omaluhia Botanical Garden, including a walk on the dam and a look at the emergency spillway. Docent Mary Gaber will lead the hike.

September 13 - Saturday: Ki'i Unit of James Campbell Natural Wildlife Refuge with Refuge Manager Johnny Beall; we should see four of our endangered water birds plus others.

October 12 - Sunday: Arlene Buchholz, Sierra Club hike leader, will lead a hike on Hawai'i Loa Ridge to look for forest birds.

November 15 - Saturday: Kahuku Point sand dunes and beyond with Phil Bruner to see migratory birds.

December 6 - Saturday: Aiea Loop/Ridge trail with Pete Donaldson to try to spot the apapane.

NEXT YEAR: Unfortunately Hawai'i Audubon Society is unable to sponsor a trip to Midway Island next March as previously announced. Individuals who want to visit the atoll, however, can arrange to join tours given by Oceanic Society Expeditions. HAS office has information, or you may contact Mary Gaber at 247-0104.

bellflower family; another haha, *Cyanea glabra*; a third haha, *Cyanea hamatiflora* ssp. *hamatiflora*, a palm-like tree; a member of the aster family, *Dubautia plantaginea* ssp. *humilis* (na'ena'e); kopa, *Hedyotis schlechtendahlia* ssp. *remyi*, a member of the coffee family; kamakahala, or *Labordia tinifolia* var. *lanaiensis*, an erect shrub or small tree that is part of the logan family; another kamakahala, *Labordia triflora*, found only on the island of Moloka'i; and *Melicope munroi* or alani now only existing on Lana'i.

A complete description of the proposal to list these ten Maui Nui plants as endangered was published in the Federal Register on May 15, 1997.

Source: U.S. Fish and Wildlife Service

Calendar of Events

Monday, August 4 and September 1

Regular first Monday of the month meeting of the **Conservation Committee**, 6 p.m., at the U.H. Environmental Center (Crawford Hall, Room 317, 2550 Campus Road). All are welcome. For more information call chairperson Dan Sailer, 455-2311.

Thursday, August 7 and September 4

Monthly meeting of the **Education Committee**, 7 p.m. at BaLe Sandwich Shop in Manoa Marketplace (near Safeway). All are welcome. For more information, call chairperson Wendy Johnson, 261-5957.

Monday, August 11 and September 8

HAS Board meeting, (always open to all members) 6:30 p.m. at the HAS office.

Saturday, August 16

A **trek** through some of the lesser-known areas of Ho'omaluhia Botanical Garden in Kaneohe, including a walk on the dam and a look at the emergency spillway. Docent Mary Gaber will lead the hike. On the thirty two-acre lake, Wai Maluhia, many ducks and one goose are in residence. For several months one alae ke'oke'o (Hawaiian coot) made his home here, and several return from time to time. Carpool from the corner

of Punchbowl and King Streets by the Main Library at 8:30 a.m., or meet at the Visitors' Center at the Garden at 9:10 a.m. (Gate to the Garden opens at 9 a.m.) Suggested donation, \$2.00.

Monday, August 18

Albatross — their behavior, biology, and interactions with longline fishers, as well as the impact on the birds of ecotourism on Midway Island — will be the topic at the **HAS Program and Members' Meeting**. Elizabeth Flint, a biologist with FWS Refuges in Honolulu, will illustrate her talk with slides. Bring your friends and join fellow HAS members at Paki Hall Conference Room, Bishop Museum at 7:30 p.m. Refreshments are provided; HAS books, tapes, and T-shirts will be available for purchase.

Saturday, September 13

A **field trip** to Ki'i Unit of James Campbell Natural Wildlife Refuge with Refuge Manager Johnny Beall; we should see four of our endangered Hawaiian water birds plus others. Carpool from the corner of Punchbowl and King Streets by the Main Library at 8:00 a.m., or meet at the parking lot of the Kahuku Sugar Mill at about 8:45 a.m. Suggested donation, \$2.00.

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