

KILAUEA POINT
NATIONAL WILDLIFE REFUGE

ANNUAL NARRATIVE REPORT

Calendar Year 1986

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM



1-2-3

Personnel

1. Richard Bottomley, WG-5, TFT, Maintenance Worker
2. Noreen Bautista, GS-4, PPT, Clerk Typist
3. Dan Moriarty, GS-11, PFT, Park Ranger

Review and Approvals

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INTRODUCTION

Kilauea Point National Wildlife Refuge is located on a peninsula at the northern tip of the Island of Kauai, the northernmost inhabited island of the Hawaiian Archipelago.



Kilauea Point National Wildlife Refuge.

The 32-acre site is enjoyed by over 450,000 visitors annually who are attracted to the area's exceptional scenery, historic lighthouse, and the opportunity to view Central Pacific Wildlife.

Wildlife, visible among the Refuge's sea cliffs and off shore waters, include the following bird species: Laysan albatross, wedge-tailed shearwater, red-footed booby, white-tailed tropicbird, red-tailed tropicbird, brown booby, and great frigatebird. Pacific green sea turtles, humpback whales, and spinner dolphins also inhabit the off-shore waters near the Point.

Kilauea Point, from 1913 to 1976, was operated as a U.S. Coast Guard Lightstation. Commencing in 1976, the U.S. Fish and Wildlife Service managed the area under an annual license from the Coast Guard. In 1985, the property was conveyed to the U.S. Fish and Wildlife Service and the site was officially designated Kilauea Point National Wildlife Refuge.

In 1984, a radio building next to the lighthouse was converted to a visitor center. A volunteer group was then organized. Today, the group numbers over 135 active members.

To generate funds and make available to the public quality natural history publications, a cooperating association called the Kilauea Point Natural History Association was also incorporated in 1984. The Refuge now serves as the primary public contact point for the 14-unit Hawaiian and Pacific Islands National Wildlife Refuge Complex, all of which are either extremely isolated or too sensitive to allow public entry.

The grounds of the Refuge have been cleared of introduced weedy species. Utilizing a small nursery and a dedicated volunteer commitment, the area has been attractively landscaped with native coastal plants.

As of March 1986, the Refuge is open to the public from Monday to Friday from 10:00 a.m. to 4:00 p.m.

KILAUEA POINT NATIONAL WILDLIFE REFUGE

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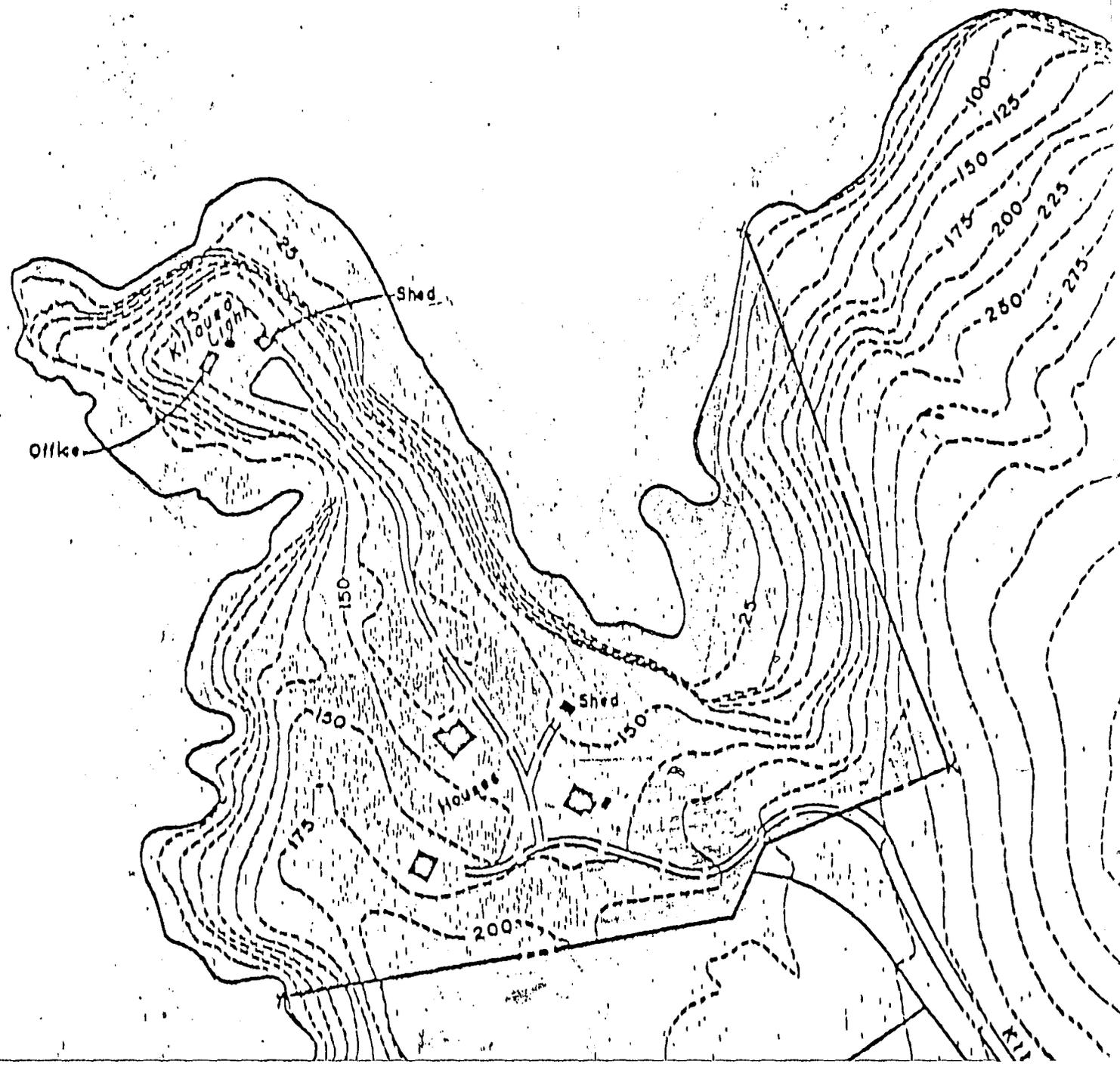
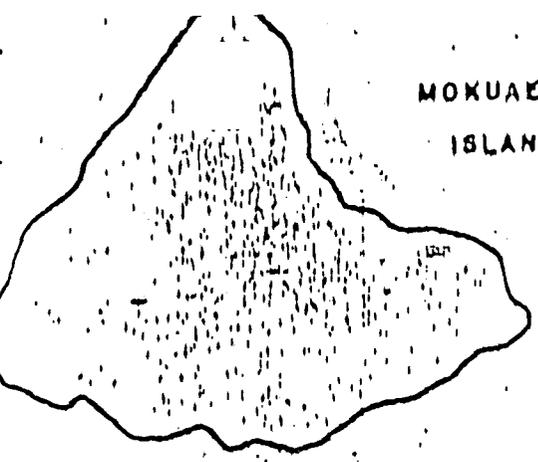
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MOKUAEEAE
ISLAND



KILAUEA POINT
NATIONAL WILDLIFE REFUGE

A. HIGHLIGHTS

Four Laysan albatross nests produced three successful fledglings in July 1986. This marks the first successful nesting attempt on the Refuge. In December 1986, four new nests were reported.

In March, the Kilauea Point visitor hours were changed to safely accommodate the recent increase in visitation. The new visitor hours would be Monday to Friday, from 10:00 a.m. to 4:00 p.m. The previous hours were Sunday to Friday from 12:00 p.m. to 4:00 p.m. The change of hours increased visitation by almost 20%, however, a few residents complained of the Sunday closing. Considerable staff time was spent in implementing the change in hours.



Visitors at Kilauea Point
observing Laysan albatross.

Volunteer, Lorena Wada, compiled a draft Teachers Manual to the Kilauea Point National Wildlife Refuge. The draft, which includes a 35 mm slide packet, will circulate for a year to allow for teachers' comments prior to its completed form. The draft was first proposed at a teachers workshop held on August 20.

Three issues of the Hawaii Nature Focus, the Kilauea Point Natural History Association children publications were distributed to all fifth graders in the State of Hawaii, a total of 15,000 copies per issue.

In February, the Kilauea Point Natural History Association fully repaid its \$2000 initial start-up loan to the Arizona Memorial History Association.



Weddings have become a popular event on the Refuge with several couples being married at Kilauea during the year.



Kilauea Point NWR staff designed and built the shelter cabin on the newly created Hakalau Forest NWR on the slopes of Mauna Kea on the Big Island of Hawaii.

During the year, Hawaii Senator Daniel Inouye introduced an appropriation bill for \$900,000 for a Visitor Center at Kilauea Point.

B. CLIMATIC CONDITIONS

1986 was a benign year as far as the weather was concerned. Seasonally normal weather occurred during the period with no unusual patterns.

Weather data for 1986 is as follows:

	<u>Rain (in.)</u>	<u>High</u>	<u>Low</u>	<u>Wind (MPH)</u>
January	2.37	79.9	64.3	12.2
February	2.44	80.7	61.8	11.6
March	6.71	79.3	67.3	15.7
April	5.22	79.6	71.2	19.4
May	7.99	81.2	71.4	14.5
June	5.24	82.3	73.3	17.2
July	4.94	84.0	75.0	16.0
August	5.84	84.1	76.2	15.3
September	4.70	86.0	74.1	10.9
October	4.55	84.1	73.2	15.1
November	14.44	80.9	71.5	16.3
December	4.44	79.9	66.9	13.6



High surf occurs during the winter months at Kilauea Point.

C. LAND ACQUISITION

3. Other

A very active community group has been seeking congressional support for the acquisition of the adjacent 101 acres of Crater Hill property and the 38-acre Mokolea property. These areas are proposed as inclusions to the Kilauea Point National Wildlife Refuge.

The group was successful in attracting the interest of Senator Spark Matsunaga, who visited the site in June.

The community has involved the Nature Conservancy (Crater Hill) and the Trust for Public Lands (Mokolea Point) to assist with their acquisition efforts.

The two parcels, combined with the existing 32-acre Kilauea Point National Wildlife Refuge, contains the largest concentration of seabirds in the inhabited Hawaiian Islands.

D. PLANNING

4. Compliance with Environmental and Cultural Resource Mandates

A large body of government documents, including 150 photographs, a wide range of correspondence, several oral history recordings relating to the Kilauea Lighthouse, and a National Register of Historic Property has been collected by staff and volunteers.

5. Research and Investigation

During 1986, the following research investigations were conducted:

- Incidence of Plastics ingested by Wedge-tailed Shearwater at Kilauea Point was investigated by staff and assisted by volunteers. Paul Sievert of the National Wildlife Health Laboratory in Madison, Wisconsin is conducting the master study at Midway Atoll.
- D. Moriarty and R. Bottomley: Laysan Albatross Nesting Attempts, Kauai, Hawaii.
- D. Moriarty and R. Bottomley: Wedge-Tailed Shearwater Nesting Success, Kilauea Point, Kauai, Hawaii.

E. ADMINISTRATION

1. Personnel

Dan Moriarty, GS-11, PFT, Park Ranger

Noreen Bautista, GS-04, PPT, Clerk Typist

Richard Bottomley, WG-05, TFT, Maintenance Worker

To reflect the increase in responsibility and public use demands, Park Ranger Moriarty's position was upgraded from a GS-9 to a GS-11 on June 8, 1986.

2. Youth Programs

An 8-week YCC program was held between June 16 and August 8.

Kapaa High School science teacher, Robert Bordner, was selected as work leader. Enrollees included: Kyle Pacheco (Youth Leader), Stacy Pacheco, Daniel Genegabuas, Blaise Aki, Rollan Yadao, Eric Arthur, Salvin Hilario, Dustin Alfiler, Jordan Kahananui, and Darnel Woodward.

As in previous years, the work leader and staff spent considerable time developing appropriate environmental education materials, as the North American oriented "Project Wild" materials are not suitable for use in Hawaii.

The new contractor, Salish Kooteni College, proved to be an excellent contractor for work leader services and followed up several times on the functioning of the camp. Despite a late start in appointing the contractor, their efforts exceeded the previous contractor in all aspects, such as prompt payment of wages and follow up on problems.

Several important refuge maintenance projects were completed including: fencing the Laysan albatross nesting areas, re-establishment of native vegetation in several areas of the Refuge, painting the maintenance building, maintaining grounds and buildings at Kilauea Point and assisting with predator fencing at Hanalei NWR.

One unpleasant incident marred an otherwise outstanding year when it was discovered an enrollee had put paint thinner in the lawn mower oil fill. Damages were averted when operator Kip Bottomley immediately sensed a problem and shut the mower off, saving the engine.

4. Volunteer Program

With the small staff at Kilauea Point (2.7 persons) and the large visitation (450,000 annual visitors), the staff relies very heavily on volunteer support from the community to maintain its programs.

Starting in 1984, the Refuge conducted its first formal volunteer training program. Over 60 persons responded to an appeal in the local media seeking "community-minded persons to assist the public at Kilauea Point".

To date, over 160 persons have participated in the training program, which runs for 10 weeks, 2-3 hours every Wednesday. The 25-hour course covers subjects ranging from history and mission of the U.S. Fish and Wildlife Service, area history, life histories of the area wildlife, geology, the historic lighthouse, and coastal plants to a session on how to deal with the public and answer sensitive questions.

Thirty seven persons completed the 1986 training program.

The main involvement of the volunteers is staffing the visitor center, which requires 2-3 persons in two shifts daily. The Center is staffed entirely by volunteers, coordinated by five "day chairmen" and a monthly volunteer council. The monthly council is composed of the 15 most active volunteers.

In addition to answering questions, volunteers in the visitor center conduct mini tours and check out free binoculars and spotting scopes. They also conduct sales and related activities for the refuge cooperating association, the Kilauea Point Natural History Association, and maintain the visitor center.

In addition to the visitor center, volunteers run the native plant nursery and produced two publications. The Kilauea Pointers is the Kilauea Point Natural History Association's (KPNHA) quarterly membership publication; and Hawaii Nature Focus is a 5th grade natural history publication funded by the KPNHA, which is intended for free distribution to all fifth graders in the State of Hawaii.

In 1986, over 186 persons contributed volunteer service for the Refuge. The following volunteers were awarded certificates of appreciation by District Supervisor, Jerry F. Leinecke, at the annual volunteer party:

100 hours

Margaret (Mickey) Akin	Linda Goodman
Belinda Bain	Mary Ishida
Richard Blaisdell	Pat Koerner
Helen Brooks	Jim Land
Charlene Dyer	Bert Lyon

200 hours: Bill Davis
Janis Lyon
Jim and Julie Towar

300 hours: Phillis Davis
Mary Jane Moore
Ferne and Bob Orlik
Fran Powell

700 hours: Ross Akin

1000 hours: Barbara Steenhoff

5. Funding

The Kilauea Point National Wildlife Refuge is part of the Hawaiian/Pacific Islands National Wildlife Refuge Complex. During 1986, 932.2K was received for complex management. Kilauea Point received 135K to conduct its operations and maintenance programs.

6. Safety

Richard Bottomley is the Refuge Safety committee. He conducts regular safety briefings. A safety portion of the bulletin board contains a safety poster which is rotated monthly.

Twice a year, safety inspections scrutinize all areas of the Refuge. Fire extinguishers, unsafe equipment, and unsafe conditions are noted during the inspection. All problems are then rectified as quickly as possible.

Chainsaw safety, use of roadside barriers, injured persons, safe operation of sanders and grinders, disposal of herbicide containers, and dust reduction were some of the topics covered in sessions throughout the year.

All volunteers are provided copies of written emergency procedures. No injuries were reported in 1986. This good record may be attributed in part to Bottomley's safety program.

7. Technical Assistance

Air strikes; U.S. Navy, Pacific Missile Range Facility

The Service provided technical assistance to the Navy installation at Pacific Missile Range, Mana, Kauai regarding Navy concerns over a small Laysan Albatross colony which they perceived as a potential air strike hazard.

The Service, later augmented by the recent Animal Damage Control employee, Tim Ohashi, continued to monitor population trends and remove surviving chicks to Sea Life Park after the removal of the chicks. A lack of sustained effort to haze courting birds may allow some birds to return in 1987.

Newell's Shearwater - Princeville Sheraton

The lighting of the newly constructed Sheraton Princeville Hotel at the Hanalei River estuary has continued to attract a large number of fledging Townsend's (Newell's) shearwaters, a threatened species. Refuge staff worked with hotel employees to reduce all unnecessary exterior lighting during the October-November fledging period. Early results show this effort reduced "fallout" by almost 50% over the previous years numbers.

The Sheraton staff was extremely helpful and in many cases re wired entire electrical circuits to reduce lighting.

F. HABITAT MANAGEMENT

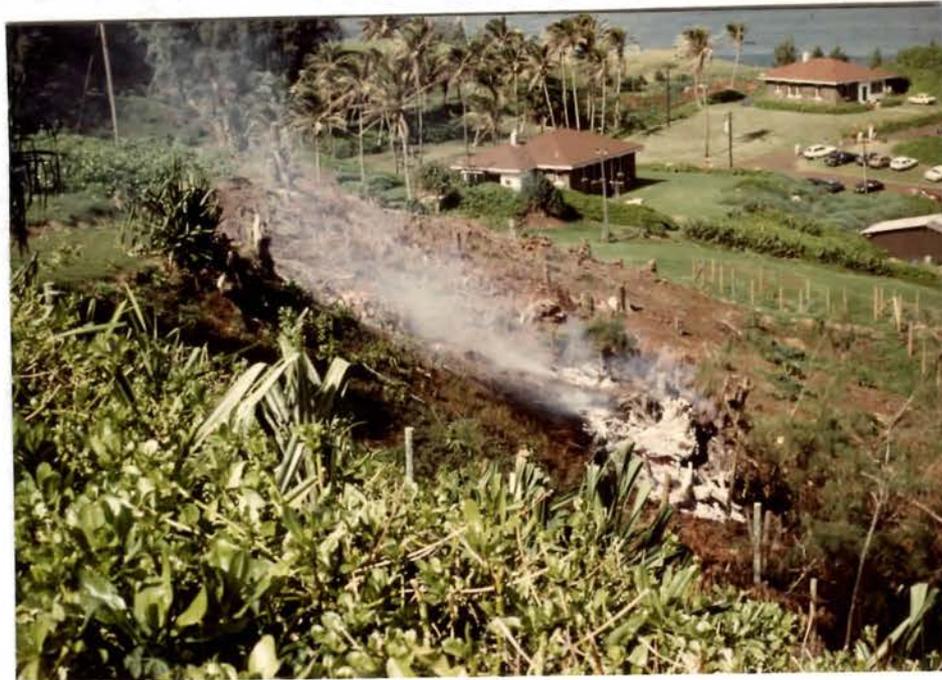
1. General

Commencing with early management of Kilauea Point in 1979, a concentrated effort was undertaken to restore the native coastal plant species. Historical land use patterns in Hawaii indicate that Hawaiians and early European settlers burned off and destroyed much of the native vegetation to be replaced with various economically profitable plants, to be utilized for activities from grazing to crop production.

Early photographs (1924) of Kilauea Point indicate a denuded landscape devoid of any vegetation. Later photographs indicate a new Hawaiian flora consisting of a wide range of introduced cosmopolitan weedy species dominated by such species as the Christmas Berry (Schinus terebinthifolius) and lantana (Lantana camara).

Fortunately, many of the native plant species persisted on the rocky cliff face out of the reach of man and animals. Using seeds from these remnant plants, a modest green house and nursery operation was able to propagate thousands of seedlings to be returned to the landscape.

Existing weedy species were cut down and burned. Native plants were immediately re-established in their place. Watering, fertilizing, and especially weed control were very important in the successful re-establishment of the original native landscape. After eight years of management, the area has been successfully returned to its original flora.



Most of the ironwood trees at the entrance of the Refuge were cleared in late 1986.

In addition to conserving these plant species, the efforts benefit the wildlife by producing preferred nest material and nest support for the areas seabirds. Instructional use of the plants, in the Environmental Education Program, and aesthetics are other considerations for the effort undertaken.

10. Pest Control

Mammalian Predators

Dogs, cats, and rats pose a threat to Hawaii's ground nesting seabirds. A large part of the Refuge is on a peninsula. Its landward portion has been fenced with a 5' high 2" x 4" mesh fence since 1979, excluding dogs.

Maintenance of the 1500 feet of fencing is an ongoing Refuge maintenance effort.

The fence is ineffective against cats and rats. Thus, an ongoing trapping effort must be sustained to control populations of these two critters.

In 1986, 4 cats were taken. With the reduction in cats, the rat population made a dramatic increase. The following is a listing by month of the number of rats taken from the Refuge by rodent traps:

January	21
February	33
March	24
April	18
May	10
June	10
July	27
August	15
September	12
October	14
November	10
December	54

Note: The numbers caught are not a reflection of population, but rather a function of available staff time.

Mongoose

The mongoose, introduced to the major islands of Hawaii at the turn of the century was not introduced to Kauai. The mongoose introduction has proven to be exceptionally destructive to wildlife on other islands, especially to ground nesting species.

In the late 1970's, a dead lactating female was turned into the Division of Forestry and Wildlife. To date, no additional mongoose have been recovered. Numerous citizen sightings of varying degrees of credibility have been reported, however, large rats may easily be confused with the mongoose on a hasty sighting.

Although not officially established, wildlife professionals consider it just a matter of time before the high volume of inter-island commerce will unknowingly introduce the mongoose.

Myna Birds

Under a State of Hawaii permit, myna birds are controlled by shooting during the wedge-tailed shearwater incubation period (June-July). The myna, a Deccan Peninsula introduction, has been known to predate up to 80% of the Wedge-tailed shearwater eggs.

The above control measure has suppressed predation to 5-10 eggs from a total of 500-600 active wedge-tailed shearwater nests.

G. WILDLIFE

2. Endangered and/or Threatened Species

TOWNSEND'S (Newell's) SHEARWATER:

A threatened species, once found on all the major islands, presently survives only on the island of Kauai in colonies at elevations of 800' to 1500'. Refuge staff assists the recovery of the species through two programs.

A. Cross Fostering Project

Between 1978 and 1980, ninety eggs were taken from three mountain colonies and placed under Wedge-tailed Shearwater adults. Ninety four percent of these cross fostered chicks were reported to have fledged.

During the spring and summer months, several individuals and a few small groups of approximately six birds, may be heard as the birds circle the Refuge and call throughout the night from dusk to dawn. At times this phenomena has been known to wake the staff. Three individual cross fostered Townsend's Newell's Shearwaters have been recovered and released. These birds apparently were attracted to lights and were victims of "fallout." Two of these birds were found at Kilauea Point and the third at Anini Beach, 1 mile to the west.

In 1986, no nesting attempts were observed. However, the intensity of vocalizations appeared to increase over previous years. It is difficult to obtain an exact count of the circling birds as they are fast moving and dark in color. Night vision is further diminished by the effect of the flashing lighthouse beam.

B. Townsend's Newell's Shearwater "Fallout" Recovery Program

Each fall the fledging Townsend's Newell's leave their mountain burrows and attempt to fly to the ocean. The intensity of lights in the densely populated coastal areas appear to attract and disorient the fledglings causing many to fall to the ground in a confused state and become unable to take off. Many of the downed birds are struck by cars or killed by dogs and cats.



Newell's Shearwater road kill.

Commencing in 1976, a joint State of Hawaii, Division of Forestry and Wildlife and U.S. Fish and Wildlife Service effort ended in development of a Shearwater Aid Station recovery program. Through the media and other educational channels, citizens are instructed to take "fallen" birds to aid stations located at fire stations throughout the island and a few convenient locations in nearby towns.

The program has been very successful, saving from 1000 to 1500 Townsend's Newell's Shearwaters annually. Salvaged birds are banded prior to release.

In 1986, 205 birds were recovered by refuge personnel alone on Kauai's north shore.

The program salvaged a total of 1,281 birds on Kauai.

DARK RUMPED PETREL:

The Dark-rumped petrel is an endangered species, presently found only on upper slopes of Haleakala National Park. It is considered to possibly exist in remote areas of Kauai. Several fledglings were recovered at Newell's Shearwater Aid Stations in early December. In 1986, two birds were recovered by refuge staff at north shore aid stations. One bird with broken primaries and unable to fly was sent to Sea Life Park on Oahu where it died several days later. The specimen was then conveyed to the Bishop Museum.

A total of 8 Dark rumped petrels were salvaged on Kauai through the aid station program.

5. Shorebirds, Gulls, Terns, and Allied Species

Pacific Golden Plover

From 10 to 20 plovers winter in the large open grassy area of the Refuge. The last week of April, the Pacific Golden Plover departs Hawaii for its summer breeding ground in the arctic.

Ruddy Turnstone

From 5 to 20 birds have been seen to frequent the open grassy areas of the Refuge and adjacent residences. There seems to be a pronounced increase of this species, possibly due to the creation of large open areas to attract Laysan Albatross.

7. Other Migratory Birds

LAYSAN ALBATROSS

Prior to 1977, Laysan albatross were not known to nest on Kauai. In that year, a nesting attempt was recorded on the east flank of Crater Hill and at Mana, Kauai. Additional attempts were reported on Kauai in following years, most unsuccessful. A summary of the sites monitored on Kauai are as follows:

A. Kilauea Point National Wildlife Refuge

Prior to 1983, a few birds reportedly had landed on the lawn fronting the lighthouse. However, they moved on quickly.

In 1983, a large wooded hillside to the west of Kilauea Point was cleared of vegetation and grassed. In 1984, courtship activity, involving up to six birds, was observed in the area. Two birds attempted to nest in December 1984. However, both nests failed.

In the late fall of 1985, there were four nesting attempts, three of those nests were successful, fledging three young in July of 1986. 1986 represents the first successful nesting of Laysan albatross on the Refuge. The developing Laysan albatross colony at Kilauea Point also provides a rare occasion to study the dynamics of the formation of a new seabird colony.

In addition to the three successful nests, courting groups of up to 18 birds were reported.



Dan Moriarty and Kip Bottomley
banding Laysan albatross.

B. Northeast Kauai

There were no nesting attempts during the 1985-1986 season. However, the 1986-87 nesting season produced a number of nesting attempts:

East Crater Hill - 5

Mokolea Point - 2

Kepuhi Point - 4

Many of the eggs were abandoned immediately after laying. However, several adults continued incubation into the new year.

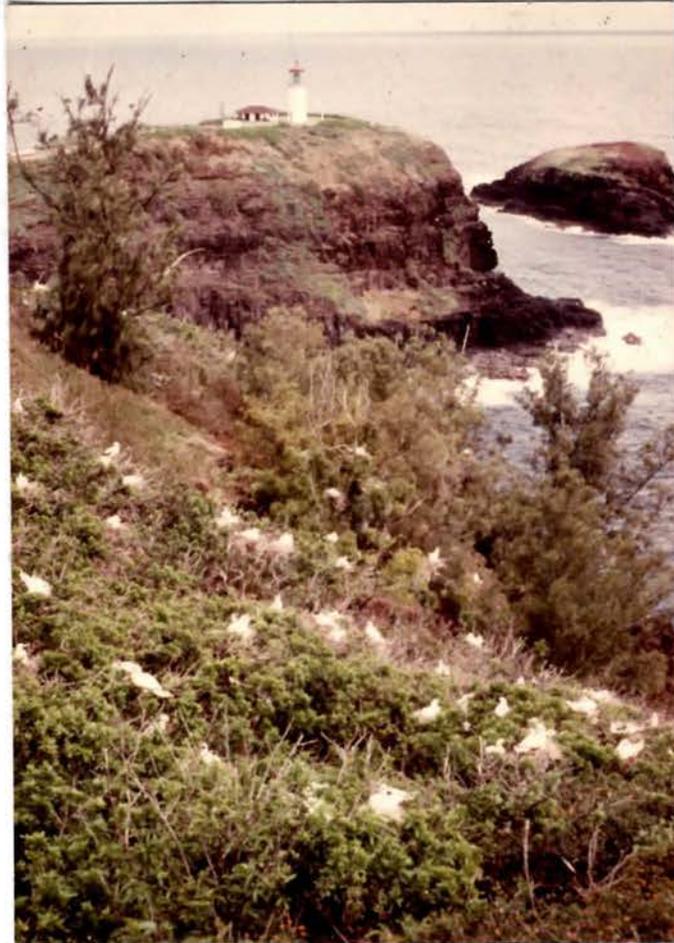
C. Pacific Missile Range

A total of 27 nesting attempts were recorded at several locations on the base. Abandonment by inexperienced breeders and two reported dog kills had reduced the successful nests to 3 by year's end. Arrangements were made to send the 3 survivors to Sea Life Park on Oahu after they had reached 1000 grams in weight.

Safety concerns by the base command diminished as the albatross population fell to small numbers.

RED FOOTED BOOBY

A colony of 500-700 breeding pairs is found on the hillside adjacent to the Refuge. A few pairs nest on the Refuge itself. The colony was first noted in the late 1950's when Biologists Richardson and Bowles reported 30-40 nesting pairs at Kilauea Point. In 1982, Hurricane Iwa caused the birds to move several hundred feet to the east. In 1986, 311 Red-footed Boobies were reared to fledging.



Red footed booby colony with
Kilauea Point NWR in the background.

Dogs, which had presented problems in the past by taking a number of birds in low growing vegetation, were less of a problem in 1986. The removal of several aggressive offenders and an awareness campaign to educate the nearby community about the destructiveness to wildlife of free roaming dogs accounted for the decrease in predation.



Booby chick numbers are increasing due to a reduction in predators.

BROWN BOOBY

Seen in the nearby waters, the Brown Booby does not nest on Kauai. However, in recent years, 4 roosting sites have been observed; two sites on the Napali Coast, Mokuaeae Island (small island North of Kilauea Point, presently a State of Hawaii bird refuge) and a ledge at Crater Hill.

WEDGE-TAILED SHEARWATER

The Kilauea Point National Wildlife Refuge contains 300 to 500 breeding pairs of wedge-tailed shearwaters. The actual colony extends to the two adjacent parcels where the species is showing significant declines as the result of dogs, cat, and rat predation, human intrusion and the collapse of the burrows by grazing cattle and horses.

Management efforts on the Refuge over the last few years have concentrated on fencing and predator control within the Refuge.

9. Marine Mammals

HAWAIIAN MONK SEAL

There were several sightings of this endangered species in the off-shore waters near the Point. Reports of Hawaiian Monk Seal sightings on Kauai were reported to the National Marine Fisheries Service.

HUMPBACK WHALES

Humpback whales were seen regularly in the waters off the Kilauea Point National Wildlife Refuge during the months of December to May.

Volunteers interpret their activities to Refuge visitors and several cases of boat harassment were forwarded to National Marine Fisheries Service, Enforcement Division.



Visitors at Kilauea Point
observing humpback whales

The presence of staff at Kilauea Point provides considerable protection of this species from harassment as a vast expanse of coastline is visible from the Point.

During the Spring, the Humpback whales migrate to feeding grounds in Alaska.

SPINNER DOLPHINS

A pod of 50 to 100 Spinner dolphins are seen with great regularity in the summer months and occasionally during the winter.

Proximity to the Refuge provides this marine mammal with some measure of protection.

H. PUBLIC USE

1. General

In addition to the regular volunteer program, the Refuge has been very successful in utilizing community groups under volunteer agreements to assist with refuge projects.

In 1986, the following groups performed volunteer service:

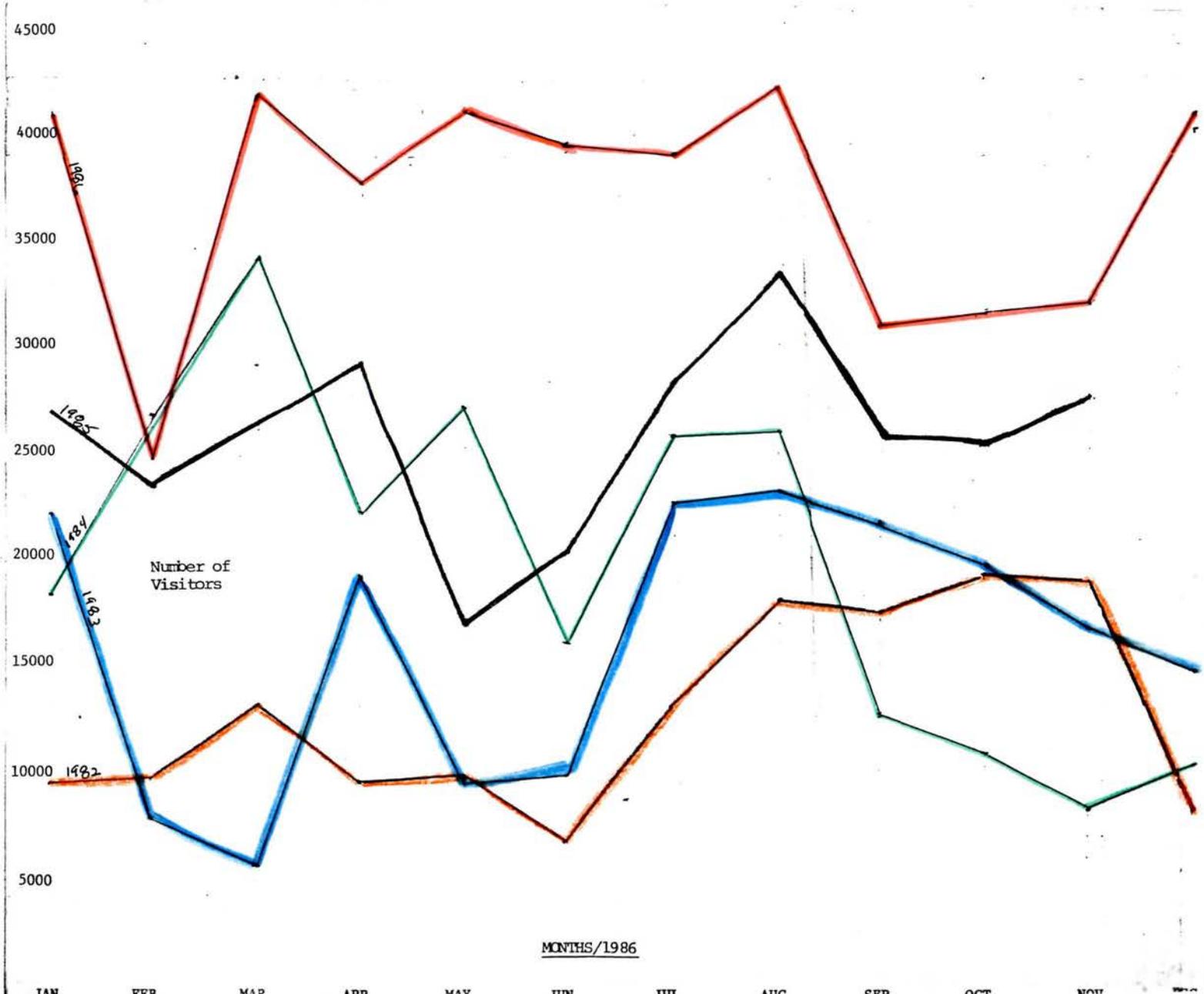
Northshore Lions Club
Cub Scout Troop - Kilauea
Brownie Troop
Kauai Chapter - Sierra Club

Managing such a large group of persons and being sensitive to the preferences of specific individuals, provides a challenge to the staff.

The formation of the volunteer program has contributed immeasurably to the popularity of the Refuge. An additional problem is the lack of a building on the Refuge large enough to contain the entire group. The annual awards dinner, held in April, was held under a rented tent.

11. Wildlife Observation

The Refuge attracted an average of 37,000 visitors per month for the year, or approximately 450,000 for the year. This is the only area in the inhabited islands where wildlife can be readily observed. However, the visitors also are provided the opportunity to view the historic lighthouse and the beautiful north shore coastline. The following graph (Graphic 1) depicts the rapid rise in public use since 1982 when an average of less than 15,000 visitors per month, or approximately 180,000 people enjoyed the Refuge.



18. Cooperating Association

The Board members of the Kilauea Point Natural History Association for 1986 consisted of Nick Beck, Ryan Jimenez, David Kawate, Julia Neal, Herman Texeira, Barbara Steenhof, Jim Towar and Dan Moriarty (ex officio). Jim Towar was appointed to fill the remainder of Board member Nick Bahouth's term, as Mr. Bahouth moved off island. Jim is a long time Kilauea Point volunteer and is active in the visitor center and biological programs.

The initial start up loan from the Arizona Memorial History Association was paid in full on February 28 when the final repayment check of \$1000.00 was presented to Gary Beito, Business Manager for Arizona Memorial History Association.

The introduction of a new cash register with the capability to track stock items entered through the register simplified much of the end of the day check out procedures and monthly record keeping.

In order to reduce the pressure of constant reordering, the shop inventory was increased from a value of \$6,028.84 in 1985 to its present value of \$17,695.93. Increasing the stock inventory has also provided some volume discounts for the stock acquired increasing KPHNA profit margin.

In addition to substantially increasing the value of the inventory, shop sales increased from \$27,359.45 in 1985, to \$38,843.12 in 1986. The shop selection was increased from 175 items in 1985 to 206 items in 1986. These items include: 105 books and publications, 4 postcards, 33 maps, posters, cards, and 24 t-shirts.

The Steenhof fund, monies donated in the memory of the late Norm Steenhof, received an additional \$50.00 in 1986 bringing the balance of the fund to \$3,000.00.

\$1,000.00 was received from the Tatman Foundation to be used for the publication of the Hawaii Nature Focus.

Bert Lyon contributed a \$2500 Radio Shack TR80 computer with printer and software.

Bushnell Corporation donated 3 pairs of binoculars to the Association to be used at the visitor center.

During the year, the Association sponsored 5 lectures and partially hosted the annual volunteers birthday party.

Publications produced during the year included the 15,000 copies of Hawaii Nature Focus, which were distributed to all 5th graders in the State of Hawaii. This was the first State wide educational effort, another milestone for the Association.

Three issues of an upgraded Association newsletter, Kilauea Pointers were produced throughout the year.

A Student's Checklist to Kilauea Point was produced during the year. Students were sent a checklist prior to their visit to Kilauea Point.

A new membership brochure and active membership drive increased membership from 372 to 473 during the period.

1984-1985 members were solicited for renewal during the year. A very high percentage renewed their membership, many upgrading their level of membership contribution.

Membership revenues amounted to \$3,532.00 during the year.

The 1986 annual Christmas sale was open to the public. Members of the Association received a 20% discount on items purchased at the shop.

The Board discussed the possibility of hiring a person to assist with shop activities. The Board determined that hiring a person at this time would exhaust a considerable amount of their profits. At this time, it is not possible to hire additional help.

J: OTHER ITEMS

1. Cooperative Programs

Refuge staff and volunteers assisted the State of Hawaii with two semi-annual waterbird census'.

2. Other Economic Uses

The Refuge sustains a sizable tourist industry. The Refuge is mentioned in all tourist guides and in State of Hawaii and Hawaii Visitor Bureau literature. Kilauea Lighthouse and Kilauea Point National Wildlife Refuge have emerged as a major tourist stop. Tour companies utilizing 14 to 16 passenger vans visit the Refuge daily.

The visitors also use the Refuge restrooms since they are the only convenient restrooms on the north shore.

Realty brochures often mention proximity to Kilauea Point National Wildlife Refuge.

Sales in the cooperating association provide some income for small businessmen such as book wholesalers, t-shirt manufacturers, and handicraft makers.

3. Items of Interest

The fourth volunteer training session began on January 22. Approximately 55-60 persons attended the first session.

Marge Kam of Historic Hawaii visited Kilauea Point.

Staff members from SUNSET magazine visited Kilauea Point in March for a possible upcoming article on Volunteers.

On May 7, a tidal wave warning was issued for all Hawaiian waters, due to a earthquake off Alaska. Visitors were asked to leave the Refuge and the Refuge was closed early.

Bill Meck, Realty, met with Dan Moriarty in July to discuss Quarters Rental Rates.

Tom McMillan, Nevada Fish and Game, visited Kilauea Point in July.

On August 20, staff and volunteers held a teacher's workshop at Kilauea Point. Teachers were given a Draft Teacher's Packet for Kilauea Point for review and comment.

Moriarty met with Kalani Flores of the Department of Education to discuss educational projects.

On October 30, Congressman Daniel Akaka and Fred Mohrman visited Kilauea Point.

Plans are being formulated for a May 1988 function to celebrate the 75th anniversary of the Kilauea Lighthouse. Volunteers and Moriarty are working on a publication highlighting the history of the lighthouse.

4. Credits

This report was written by Dan Moriarty, edited by Noreen Bautista, and typed by Wendy Tashiro.