

sea in less than 3 hours, with an average speed of 5.8 miles an hour. A small village and a number of buildings were destroyed by this eruption, which lasted 23 days. New lava produced totaled approximately one billion tons.

RAIN FOREST

The road along the northeast rim of Kilauea Crater and the Chain of Craters Road are within the upper edge of the tropical rain forest. Rains from the northeast trade winds, averaging about 100 inches annually, sustain a vigorous growth of many varieties of ferns, shaded by the heavy stand of ohia trees. A magnificent forest thrives in the area of Twin Craters and Thurston Lava Tube that has been undisturbed by lava activity for many centuries. In contrast, a young rain forest is recapturing areas inundated by recent lava flows along the Chain of Craters.

KAU DESERT

South and west of Kilauea Crater, the rim road enters the upper edge of the Kau Desert—the leeward slope of the Kilauea ridge—which receives no rain from the trade winds but is soaked occasionally by a heavy general storm. Weird and

fantastic lava formations are most easily seen in this area as they are not overgrown by forest. Ohelo berry bushes, which the Hawaiians held sacred to Pele, the goddess of the volcano, are found near the crater. Scrubby ohia and other dwarf plants are also beginning to invade the desert. Barren lava, crusted volcanic ash, and moving dunes of wind-blown ash and pumice extend to the seacoast from the rim of the crater. The Hilina Pali Road and several long foot trails make the desert accessible, but hikers should obtain detailed information from park headquarters concerning distances and location of water before setting out on the desert trails.

KIPUKAS—ISLANDS OF VEGETATION

Kipukas are islands of old surface, or soil areas, surrounded by younger lava flows. On the slopes of Mauna Loa to the northwest of park headquarters, they support grassy meadows dotted with clumps of huge koa and ohia trees, soap-berry, kolea, mamani, and many other varieties of trees and shrubs peculiar to the island of Hawaii. In Kipuka Puau (Bird Park), reached by paved road, there are 40 varieties of trees, some of which are the only living representatives of their species. The ohia, a tree of cosmopolitan growth habit, and the colorful aalii and pukeawe shrubs pioneer the forest on the fresh rock surface of the younger lava flows in this zone of open mountain forest.

MAUNA LOA TRAIL

The trail to the summit of Mauna Loa passes through the mountain parkland, through the fringe of straggling mamani and railliardias, and enters the vast expanse of barren lava fields above an altitude of 10,000 feet. The trail follows the northeast rift zone, winding between pumice cones and splattered cracks from which many lava flows have erupted, up to the summit crater where ice in cracks, protected from the sun, remains frozen the year around. Severe sunburn and worn-out shoe soles will ruin this trip for the hiker who is unprepared. Permits to use the cabins are available at park headquarters to persons planning to climb Mauna Loa.

HALEAKALA

The summit of Haleakala, a 10,000-foot high volcano of eastern Maui, is included in the Haleakala section of Hawaii National Park. The mountain derives its name, which means "House of the Sun," from a legend about the Polynesian demigod Maui, who climbed to the top of Haleakala, ensnared the rays of the sun, and forced it to travel more slowly in its course so that his mother, Hina, might have sufficient hours of sunlight each day to complete her work.

Haleakala is an old volcano in the last stage of activity, with infrequent eruptions separated by perhaps hundreds of years of inactivity. It was last active in the middle of the 18th century. The great summit depression, one of the largest craters

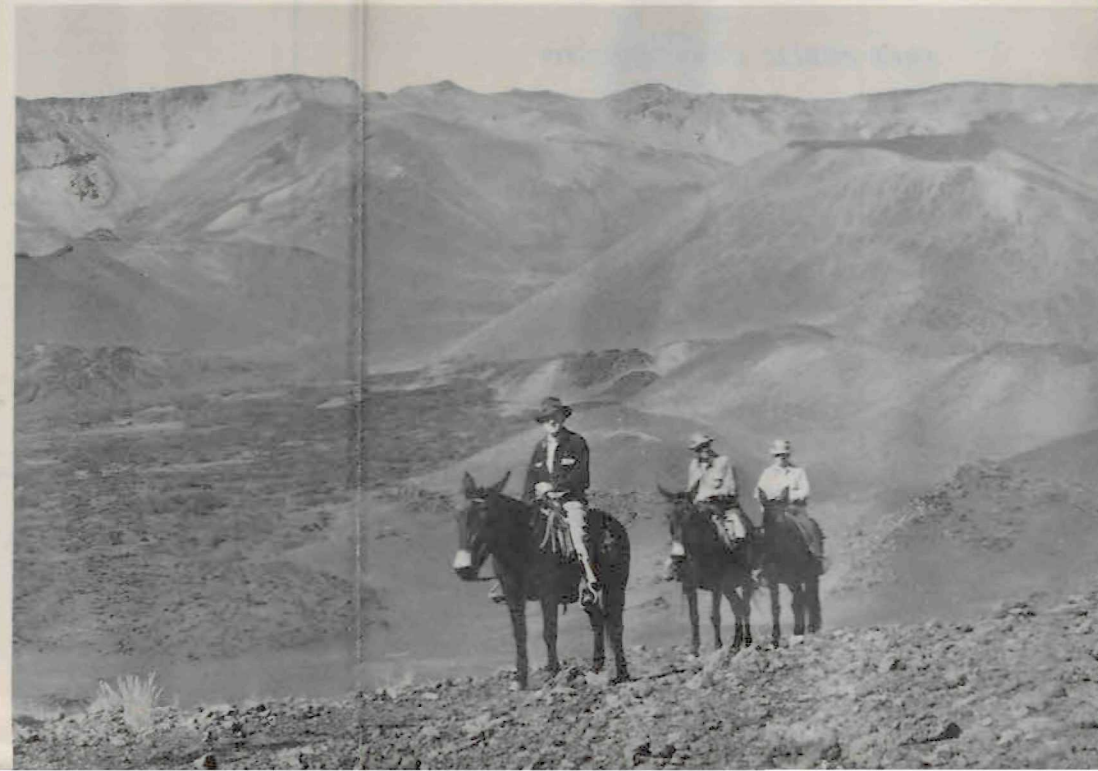
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Tree Fern-Ohia Jungle Covers the North Rim of Kilauea



On the Trail in Haleakala



HAWAII NATIONAL PARK



H A W A I I

O P E N A L L Y E A R

Hawaii NATIONAL PARK



HAWAII NATIONAL PARK, one of the most spectacular volcanic areas in the world, was established by an act of Congress in 1916. Although the park's major interest centers around its volcanoes, the luxuriant tropical forests, native birds, spectacular cliffs, and rugged coastline make it an area of outstanding significance. The park includes two separate areas: the Kilauea-Mauna Loa section, on the Island of Hawaii, and the Haleakala section, on the Island of Maui. The park contains 176,950.90 acres of Federal land, the greater part of which is in the Kilauea-Mauna Loa section.

KILAUEA

Kilauea Volcano is an elongated low dome built up by countless layers of lava erupted from the central crater and from lines of craters extending both to the southwest and to the east from the summit. The gentle slopes abut against and merge with the slopes of Mauna Loa on the west and the north, but extend to the ocean bottom to the east and south. The summit is collapsed in a broad shallow depression, floored with recent lava flows. Within the great crater depression is a vast pit, Halemaumau, which is the most active vent of Kilauea. During most of the many years that man has watched this volcano, Halemaumau has contained a boiling lake of active lava which at times rises and overflows onto the adjacent crater floor and at other times sinks from sight. The sinking is accompanied by collapse of the pit walls in tremendous avalanches and occasionally is followed by catastrophic steam explosions, if the sinking is so violent that water rushes through the cracked walls of the hot volcanic throat.

One of these violent steam explosions, which occurred in 1790, is well remembered by the Hawaiians because the hot blast of rock and rockdust overwhelmed and killed part of an army on the march past the volcano. Prints of bare feet, made in the layer of wet volcanic ash from this explosion, are preserved and may be seen today in the desert 6 miles southwest of the crater of Kilauea. A less-violent explosive eruption in 1924 scattered the boulders and gravel which cover the floor of the crater south and west of Halemaumau.

Between 1790 and 1924 there was a period of great and prolonged lava-lake activity which culminated in the great flows onto the crater floor in 1919 and 1921 and the 1920 flow southwest of Kilauea in the Kau Desert. This lava flowed through an underground channel leading from the side of Halemaumau, 6 miles down the mountain, where it emerged from a crack to build the lava dome of Mauna Iki.

The collapse in 1924 left Halemaumau a yawning pit over 3,000 feet in diameter and 1,350 feet deep. Since then, lava has appeared several times in Halemaumau, each eruption contributing more to the new lava in the bottom of the pit. In the eruption beginning on June 27, 1952, the gas-charged liquid lava burst through a crack which extended across the floor of the pit and produced a solid curtain of fire 300 feet high. One fountain played to a height of 750 feet. At the beginning of this activity the pit was 770 feet deep. The eruption lasted 136 days, during which 64,000,000 cubic yards of lava were poured out, raising the floor 310 feet.

At 4:10 a. m., on May 31, 1954, a brilliant eruption started suddenly, the firepit becoming a molten lake with many fountains. A row of fountains, 600 yards long, extended outside Halemaumau toward Kilauea Iki.

In Kipuka Puauulu (Bird Park)

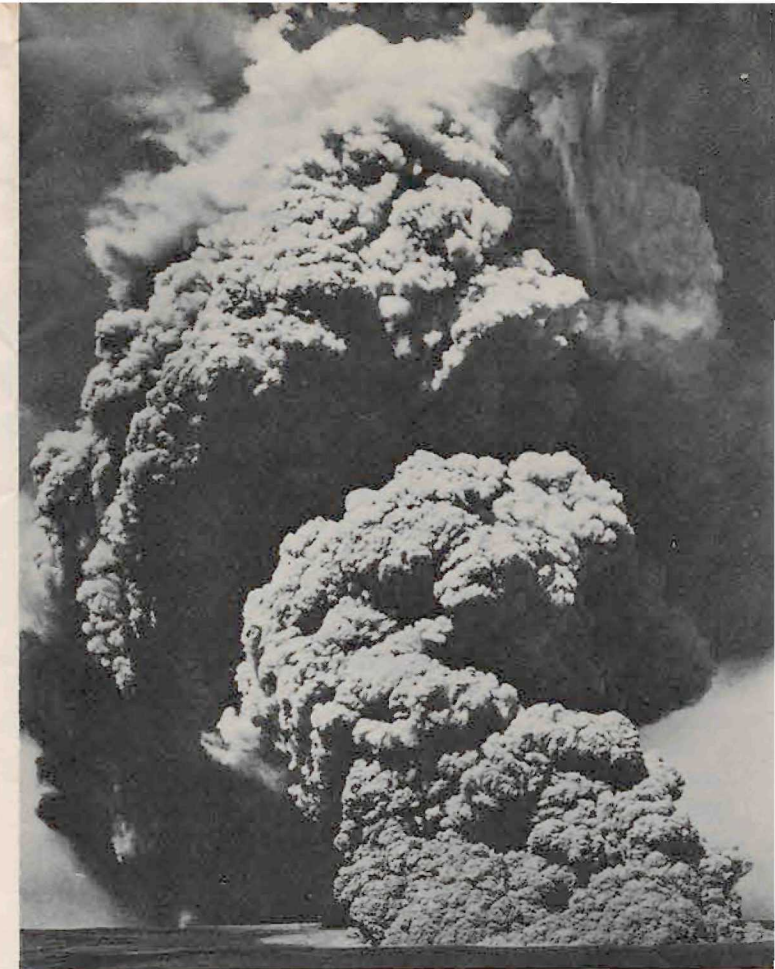


The National Park System, of which Hawaii National Park is a unit, is dedicated to the conservation of America's scenic, scientific, and historic heritage for the benefit and enjoyment of the people.

MAUNA LOA

To the west of Kilauea rises the vast dome of Mauna Loa, whose summit crater, Mokuaweoweo, and part of the northeast ridge are included in the national park. Lava flows from Mauna Loa occupy more than 2,000 square miles of the surface of the island, and its bulk extends from ocean bottom, 18,000 feet below, to its highest point, 13,680 feet above sea level. Since man has watched it, Mauna Loa has been intermittently active, with periods of quiet between eruptions ranging from a few months to 9 years, but never has it maintained a lake of permanently active lava in its summit crater. Many of its eruptions, as in the summer of 1940, are confined within the crater of Mokuaweoweo; but others start in the crater, then split open the side of the mountain and gush forth from an open crack in the flank, far below the summit. A flank flow from the southwest ridge in 1926 destroyed the village of Hoopuloa, and a tremendous flow in 1881 from the northeast ridge entered the outskirts of Hilo.

Coming eruptions often give advance warning in the form of a swelling of the mountain and a series of earthquakes starting at great depth and rising nearer to the surface as the lava

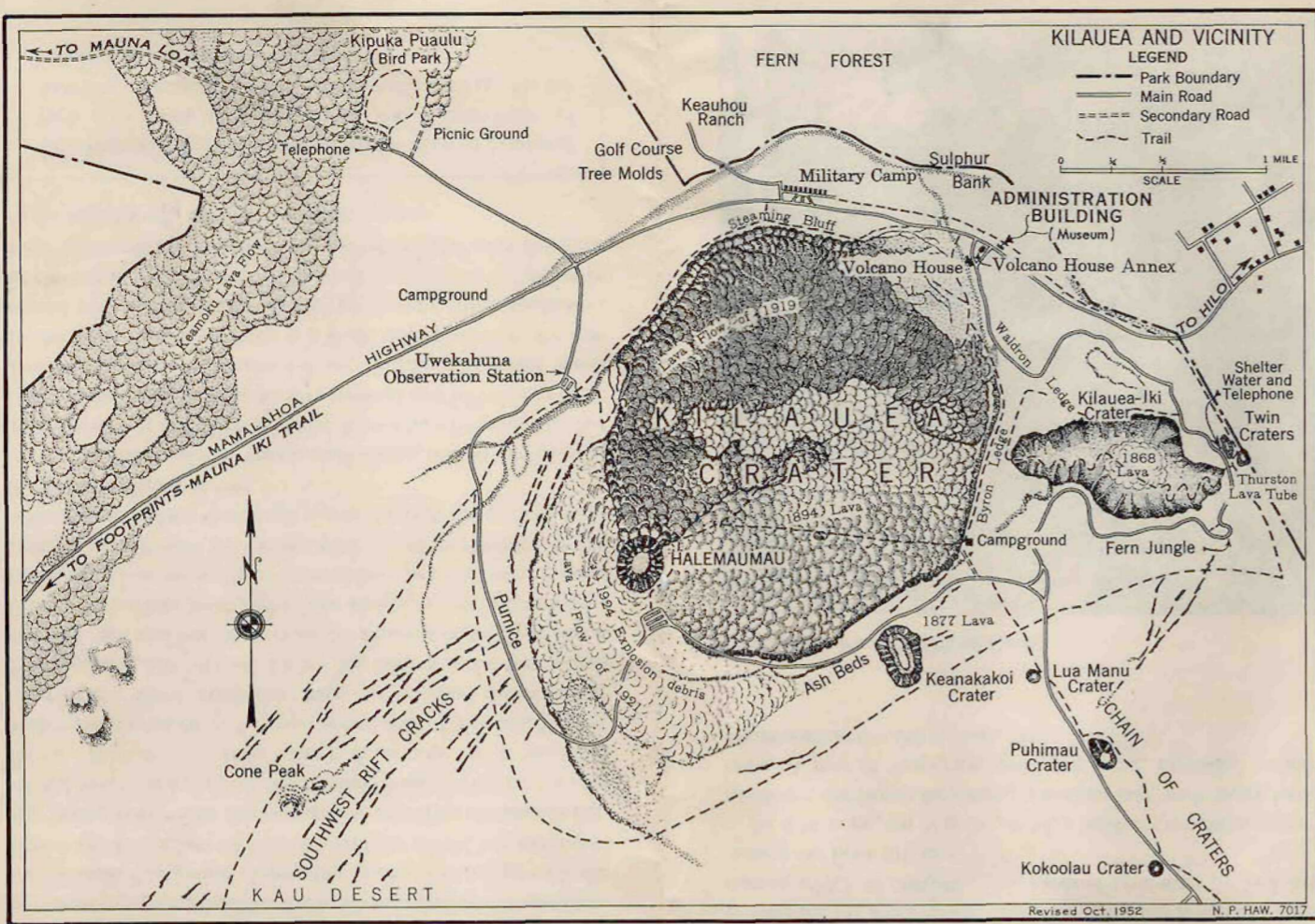


1924 Kilauea Steam Explosion. Photo by Tai Sing Loo

Eruption Fume Cloud—Mauna Loa 1942



wells up through deep cracks in the volcano. Such a warning enabled scientists to predict the 1942 outbreak which began in the summit crater on April 26. Summit fountaining ceased on April 27 and a crack opened on the northeast ridge from which lava gushed in spectacular fountains. A lava stream moved to within 12 miles of Hilo. Activity ceased on May 10. The 1949 summit eruption began on January 6 and for almost 5 months poured out lava. One of the most voluminous flows in historic times began the night of June 1, 1950, on the southwest rift. The highly fluid lava, liberated through a fissure 13 miles long, reached the



Rates for accommodations may be obtained by writing to the Volcano House, Hawaii National Park, Territory of Hawaii, and to the Haleakala Mountain Lodge, P. O. Box 62, Wailuku, Maui, T. H.

KILAUEA MILITARY CAMP

Kilauea Military Camp, 1 mile west of the Volcano House, is a rest and recreation camp operated by and for the use of members of the Armed Forces stationed in the Territory of Hawaii.

MISCELLANEOUS SERVICES

Communication Service.—The post office for Hawaii National Park is open all year in the Volcano House, Kilauea section. Telegraph, telephone, and radio connection with all parts of the world is available at the Volcano House and Haleakala Mountain Lodge.

Automobile Service.—Gasoline and oil are available 2 miles from the Volcano House only. No repair facilities are located within 15 miles of either section of the park.

Medical Service.—Hospitals at Olaa (20 miles) and Pahala (25 miles) provide emergency aid in the Kilauea section, and Kula Sanitarium (20 miles) in the Haleakala section.

Supplies.—Campers may buy food and miscellaneous merchandise at a small general store near the Hilo entrance to the Kilauea section. Tobacco, film, etc., are sold by the Volcano House and the Haleakala Mountain Lodge.

Information, maps, and publications may be obtained at park headquarters in both sections.

ADMINISTRATION

Hawaii National Park is administered by the National Park Service of the United States Department of the Interior, with the superintendent in immediate charge. The administrative center is in the Kilauea section. An assistant superintendent is stationed in the Haleakala section. His office is 1 mile above the park entrance on the Haleakala Road, and his address is P. O. Box 320, Wailuku, Maui, T. H.

All complaints, suggestions, and requests for information should be addressed to the Superintendent, Hawaii National Park, Hawaii, T. H.

HELP US TO PROTECT THIS PARK

The park regulations are intended as a guide for visitors. Park rangers are here to help and advise you as well as to enforce the regulations. If you need information, or are in any difficulty, see a park ranger. Help them to serve you better by observing these regulations.

Preservation of Natural Features.—The first law of a national park is preservation. Disturbance, injury, or destruction in any way of natural features, plant life, or wildlife is strictly prohibited. Permits are required to collect specimens of any kind.

Camps.—Camp or lunch only in designated areas. All rubbish that will burn should be disposed of in campfires. Garbage cans are provided for nonflammable refuse. Wood and water are provided in all campgrounds.

Fires.—Fires are not permitted, except in designated spots. Please do not go out of sight of your camp, even for a few moments, without making sure that your fire is either out entirely or being watched. *Extinguish completely before leaving camp.*

Dogs, Cats, or Other Domestic Animals are not permitted on Government lands in the park unless on leash, crated, or otherwise under restraint at all times.

Automobiles.—The safe speed limit on the park roads is 35 miles per hour. In the headquarters area and at intersections the speed limit is 25 miles per hour.

Trail Travel.—Hikers and riders are urged to confine themselves to the trails at all times.

Hunting.—Hunting and trapping are not allowed in the park. Unless adequately sealed, cased, broken down, or otherwise packed to prevent their use while in the park, firearms are prohibited, except upon written permission from the superintendent.

Copies of the complete rules and regulations for the government of the park may be obtained at the office of the superintendent.

known, is probably the product of tremendous stream erosion. Subsequent eruptions have dotted the floor with huge cinder cones and flooded the area with lava flows, which have poured through the two great gaps in the rim and flowed down Kaupo and Keanae Valleys to the sea. The summit depression includes an area of over 19 square miles; most of its floor lies more than 2,500 feet below the high western rim. Trade-wind rain clouds drift in through the great Koolau Gap and override the low eastern rim. They often meet in the center of the crater, leaving the high north rim, Hanakaui, "Maker of Mist," an island mountain in a sea of cloud. In late afternoon, an observer standing on the western rim will sometimes see his shadow cast on the sea of cloud in the crater surrounded by a circular rainbow, the so-called "Spectre of the Brocken" made famous in the Alps.

On the walls and within the crater grows the rare silversword, a large spherical plant having a "pin cushion" of long, narrow, swordlike leaves that gleam like frosted silver. Each plant produces one flower stalk, as much as 6 feet high, bearing hundreds of small purple-petaled flowers. When the seeds have matured, the plant dies. Fifty years ago the silversword carpeted acres of the crater floor; 20 years ago the plant had been almost exterminated by heedless human visitors; today, under National Park Service protection and with public cooperation, the silversword is starting a slow comeback.

The slopes at lower elevation, where rainfall is ample, support a rich plant life, many species of which are found only on Haleakala.

WILDLIFE

Birds.—Whenever the ohia blooms, one will find the apapane, the little honey-sucking bird, of the same red color as the ohia blossom (lehua) but with black wings and gray belly. Equally abundant in the forests is the amakihi, a small yellow-green insect gatherer, and the elepaio, a flycatcher with red-brown, black and white markings and a perky tail. Less common is the iiwi, a little larger than the apapane, red with black wings, but no gray underside, which also lives on honey from the lehua. The koae, white-tailed tropic sea bird, nests in the cliffs of Kilauea and Halemaumau. In the desert and on the parkland slopes of Mauna Loa and Haleakala, the Pacific golden plover, kolea, is common from August to May; it nests in Alaska in summer. Occasionally, one may see the io, a Hawaiian hawk, or the puco, a small Hawaiian owl, soaring over grassland in search of mice or rats. The imported Japanese green pheasant and the California Valley quail have become established in the open forest on the Mauna Loa slopes. On Haleakala, the ringnecked pheasant and the quail are abundant. Other nonnative birds to be seen are the mynah, a native of India, the English sparrow, the red-billed liothrix or Pekin nightingale, and the skylark.

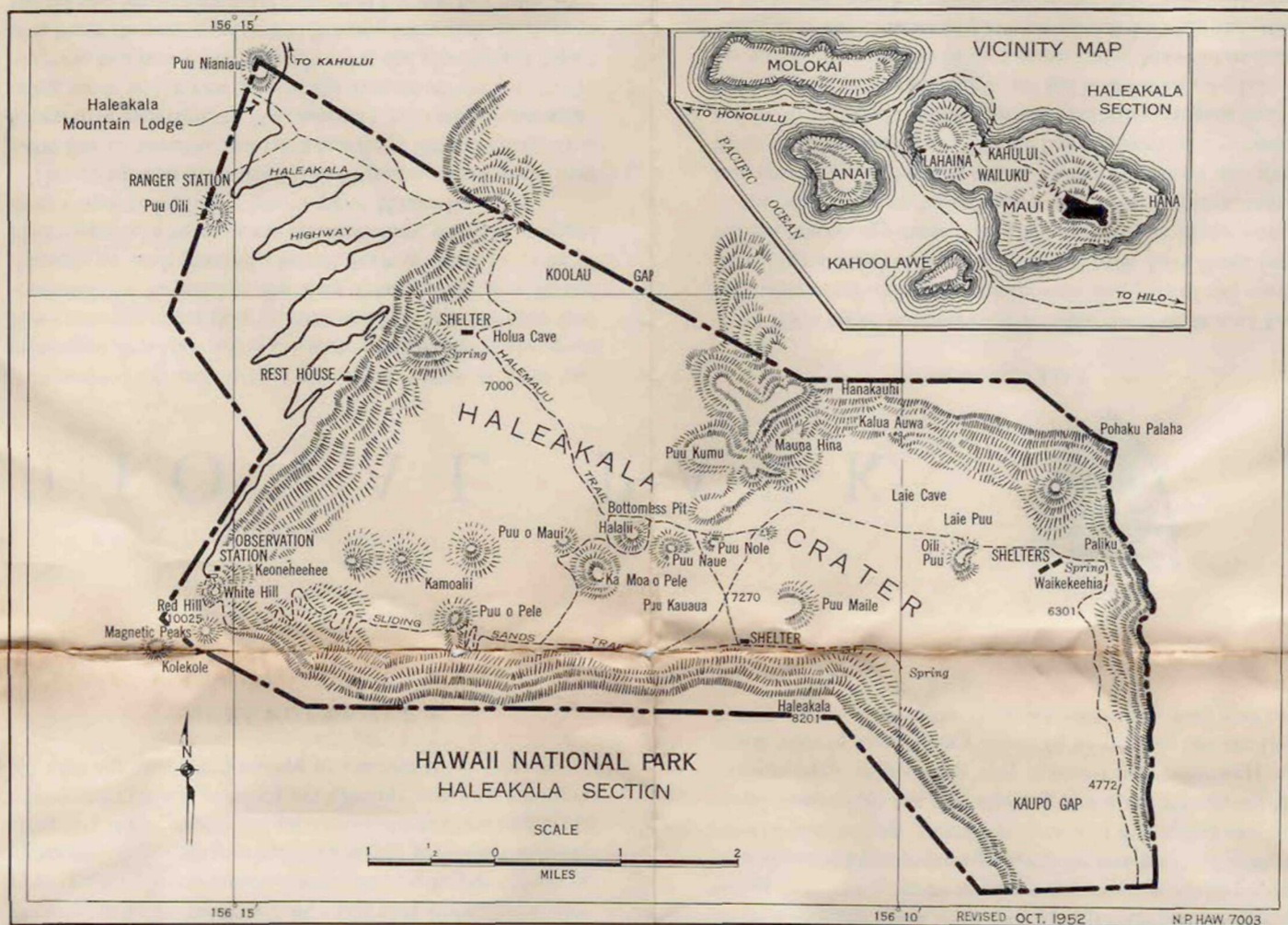
Mammals.—The majority of mammals now living in a wild state in the park have been introduced by man: pigs by early Hawaiians, goats by the British explorers, and mongooses brought from India to prey on rats. Native bats may be seen occasionally in the park.

INTERPRETIVE SERVICES

The research and information facilities maintained by the Government are directed jointly by the volcanologist and the park naturalists.

The Hawaiian Volcano Observatory, established in 1912, is under the direction of the volcanologist and is operated by the Geological Survey, United States Department of the Interior in cooperation with the Hawaiian Volcano Research Association and the University of Hawaii. A vast amount of research has been and is being conducted, including continuous observations of Kilauea and Mauna Loa.

Other research work and the information service are carried on by the park naturalists. This work is interpreted to the public by scheduled field trips to points of interest, at the headquarters museum in the Kilauea section, and roadside exhibits at strategic locations. Illustrated talks by the various staff



members are given at the central museum in conjunction with demonstration maps, charts, and other exhibits.

HUI O PELE

The Hui O Pele is an organization composed of persons who have visited the fire pit, Halemaumau, in the crater of Kilauea, the legendary home of the fire goddess Pele. Life membership and an attractive certificate cost \$1. Net revenues therefrom are expended for improvements in the park.

HOW TO REACH THE PARK

Passenger planes from Honolulu to Maui and Hawaii make scheduled flights several times daily. Unscheduled steamship transportation from Honolulu to each island is available. Taxis meet planes and ships on each island. "U-drive" cars may be rented in Hilo, Hawaii, and Wailuku, Maui.

The Hawaii Visitors Bureau, a nonprofit organization with offices in Honolulu and at 215 Market Street, San Francisco, will supply information about trips to and through the Hawaiian Islands.

FREE PUBLIC CAMPGROUNDS

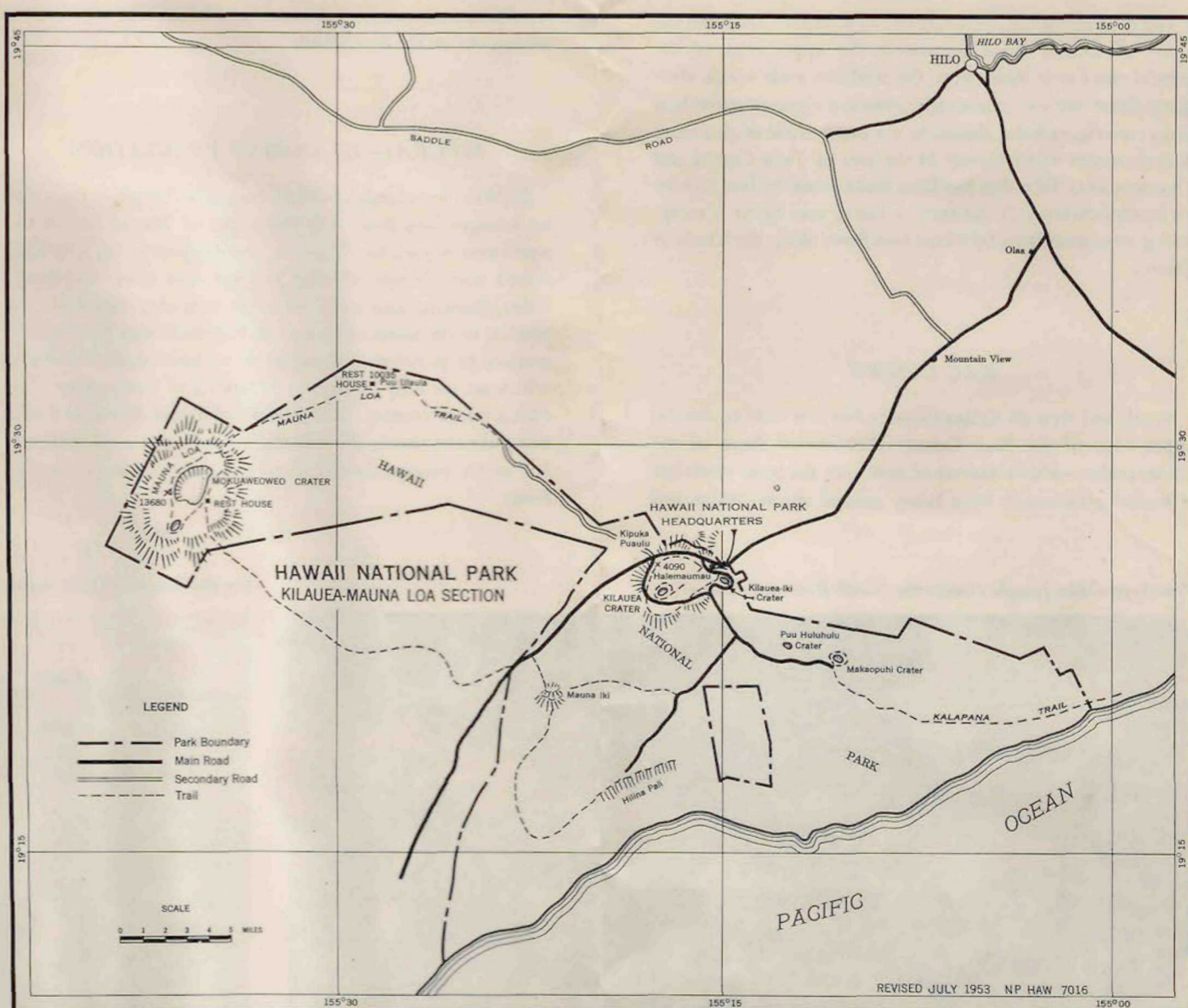
In the Kilauea section, three public campgrounds, with water and open-air fireplaces, but no sleeping shelters, are provided. Two fully equipped overnight cabins, one at 10,000 feet and one at the summit, are available for use on Mauna Loa.

In the Haleakala section, three fully equipped cabins, strategically located along the trail through the crater, and a rest house on the crater rim are provided for campers. Keys may be obtained from the assistant superintendent.

ACCOMMODATIONS

The Volcano House, on the rim of Kilauea Crater, is operated by Mr. George Lycurgus under franchise from the Department of the Interior, and is open all year.

The Haleakala Mountain Lodge, at 7,000 feet altitude on Haleakala, is open the year round. It is operated by Lodges of Hawaii, Ltd., the franchised concessioner.



COVER: Silversword in Haleakala Crater. Photo by Bert Tarleton

UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, Secretary

NATIONAL PARK SERVICE, Conrad L. Wirth, Director

