

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 sea in less than 3 hours, having advanced 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 roads 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 invading 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 Kilauea Volcano. The desert receives no rain from the trade winds but is soaked occasionally by a heavy general storm. Weird lava formations are most easily seen in this area as they are not overgrown by forest. Ohelo berry bushes, which the

Tree Fern-Ohia Jungle Covers the North Rim of Kilauea



Hawaiians held sacred to Pele, the goddess of volcanoes, are found near the crater. Scrubby ohia and other dwarfed plants are also attempting 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.

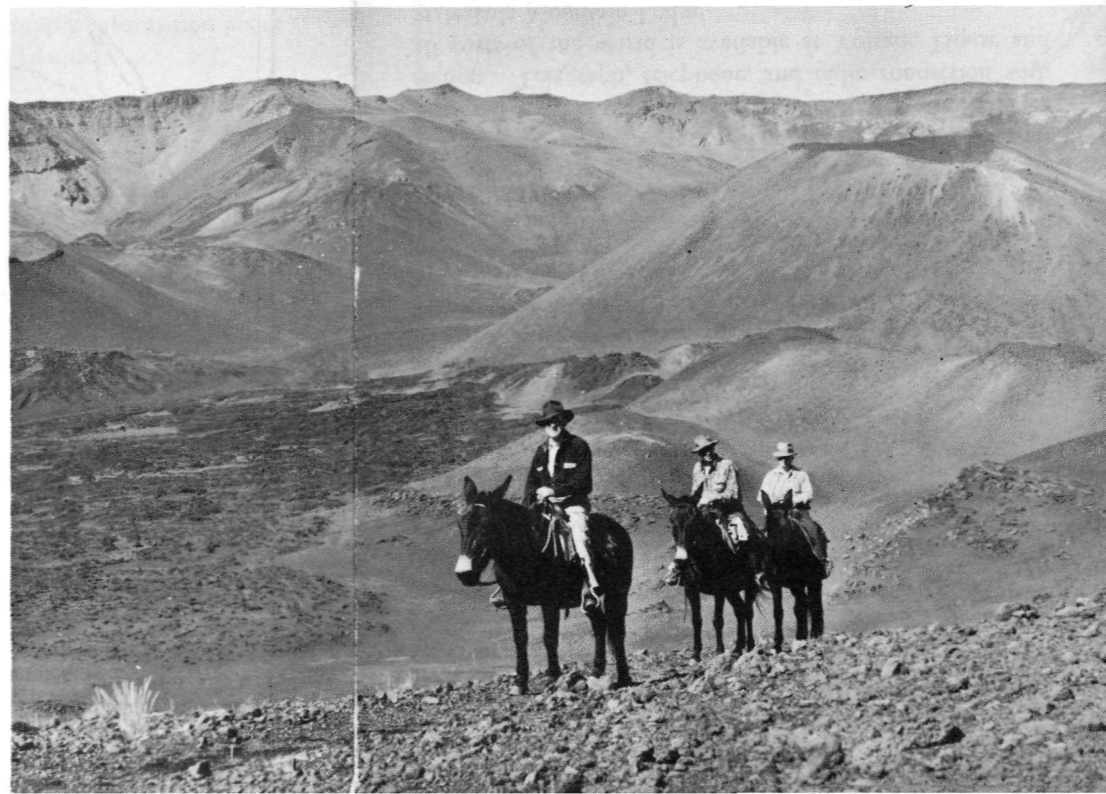
Kipukas—Islands of Vegetation

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, the Kipukas support grassy meadows dotted with clumps of koa, ohia, soapberry, kolea, and mamani trees. Many other varieties of trees and shrubs, some of which are peculiar to the island of Hawaii, are also found here. In Kipuka Puau (Bird Park), reached by paved road, are 40 varieties of trees. Some of these are the only living representatives of their species. The ohia, as well as the colorful aalii and pukeawe shrubs, pioneer the forest on the fresh rock surfaces 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 mama-

On the Trail in Haleakala



nis and railliardias, and, above 10,000 feet, enters the vast expanse of barren lava fields. The trail follows the northeast rift zone, winding between pumice cones and along eruption cracks splattered with lava. It continues to the summit of the crater where ice, protected from the sun in cracks, lingers the year round. Severe sunburn and wornout shoe soles will ruin this trip for the hiker who is unprepared. Permits to use the cabins are available at park headquarters to those who plan to climb Mauna Loa.

Haleakala

The summit of the 10,000-foot volcano, Haleakala, of eastern Maui is included in the Haleakala section of Hawaii National Park. Haleakala means "House of the Sun." The name comes from a legend about the Polynesian demigod Maui. To give his mother, Hina, enough hours of sunlight to complete her work, Maui climbed to the top of the volcano, ensnared the sun, and forced it to travel more slowly in its course.

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 known, is probably the product of 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

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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 is one of the most spectacular volcanic areas in the world. 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, established by act of Congress in 1916, contains 176,951 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. The summit of Kilauea has collapsed to form a broad shallow depression, technically a caldera, that is paved with recent lava flows. Within the great crater depression is the vast Halemaumau pit, the most active vent of Kilauea. During most of the years that scientists have 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 Hawaiians because the hot blast of rock and rockdust overwhelmed and killed part of a native army on the march near the crater. 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.

Lava-lake activity persisted between 1790 and 1924. In 1919 and 1921 this activity caused great lava flows on the floor of the crater. In 1920 lava drained out through a crack in the southwest wall of Halemaumau. This molten

lava moved for 6 miles in an underground channel, emerged through fissures to build a broad low dome called Mauna Iki, and spread for 6 miles on the surface of the Kau Desert. In 1924 a steam blast eruption extended Halemaumau pit, making it over 3,000 feet in diameter and 1,300 feet deep. Since then it has been active 9 times. These successive eruptions of lava raised the floor of Halemaumau so that by 1932 it was only 770 feet below the rim.

On June 27, 1952, a crack opened across the floor, pouring out 4,000,000 cubic yards of lava in half an hour. Within 24 hours a lava lake 50 feet deep was formed. This eruption lasted 136 days and produced about 64,000,000 cubic yards of lava—enough to raise the floor of Halemaumau another 310 feet to a new level only 460 feet below the floor of the Kilauea Crater.

At 4:10 a. m. on May 31, 1954, a brilliant though short-lived eruption broke out suddenly. A 300-foot lavafall went down the side of Halemaumau pit and a fountain 650 feet high erupted on its floor. Within 3½ hours a lava lake of 146 acres was formed 63 feet deep. A half-mile row of fountains 100 feet high played on the floor of the Kilauea Crater outside Halemaumau. Complete quiet was restored after 4 days.

Early in 1955 a series of violent and frequent quakes originated along the Puna Rift of Kilauea in eastern Hawaii. On February 28, activity started from a long fissure in the canefields and forests southeast of the village of Pahoa, outside of the park. For varying periods during the ensuing 88 days, spectacular fountains and overflowing vents developed along numerous fissures. The lava streams destroyed and buried valuable canelands, orchards, and gardens, crossed roads and highways in many areas, and entered the ocean in three places.

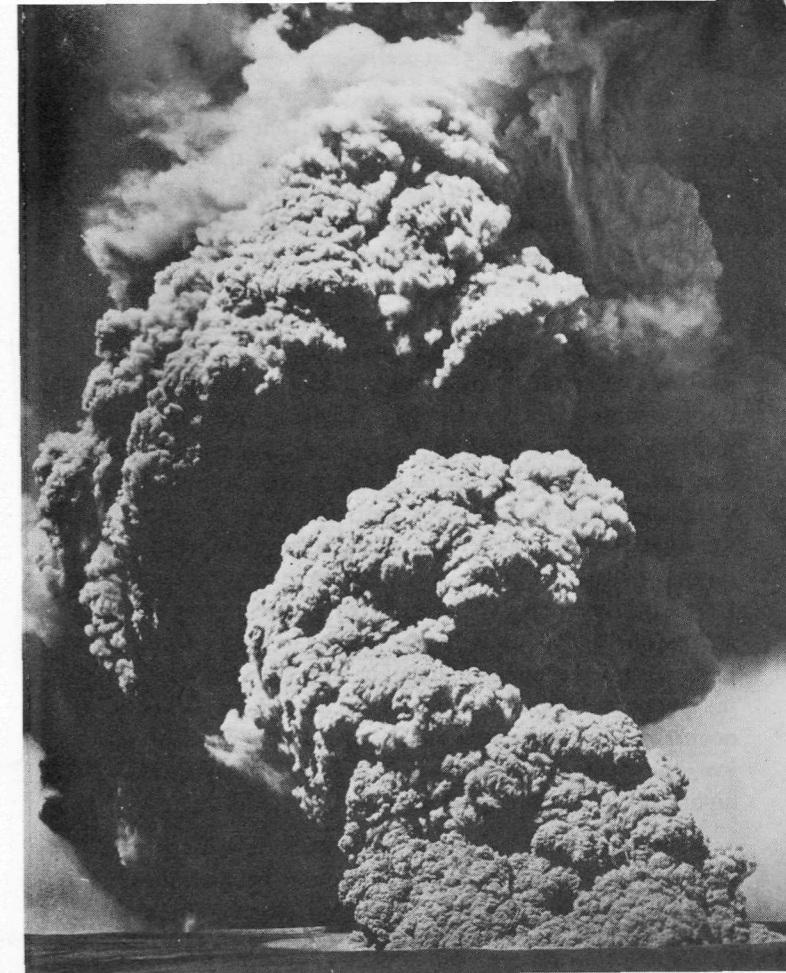


← In Kipuka Puaulu
(Bird Park)

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 it has never maintained a lake of molten lava in its summit crater. Many of its eruptions are confined within the crater of Mokuaweoweo. Others start in the crater, then split open the side of the mountain and gush forth from cracks in the flank, far below the summit. A tremendous flank lava flow occurred in 1881 from the northeast ridge, entering the outskirts of the city of Hilo. Another, from the southwest ridge in 1926 destroyed the village of Hoopuloa.

There may be warning of impending eruptions. An important indication is a measurable upward tilt of the surface of the mountain in the area affected. This may be followed by a series of earthquakes whose points of origin start at great depth migrating to the surface as the molten rock material, or magma, is squeezed upward through cracks opening along the zones of weakness. Such warnings enabled scientists to predict the 1942 outbreak which began in the summit crater on April 26. Summit fountaining ceased on April 27. Then a crack opened on the northeast ridge from which lava gushed in spectacular fountains, flowing to within 12 miles of Hilo. Activity ceased on May 10. The 1949 summit eruption began on January 6, and continued for almost 5 months.

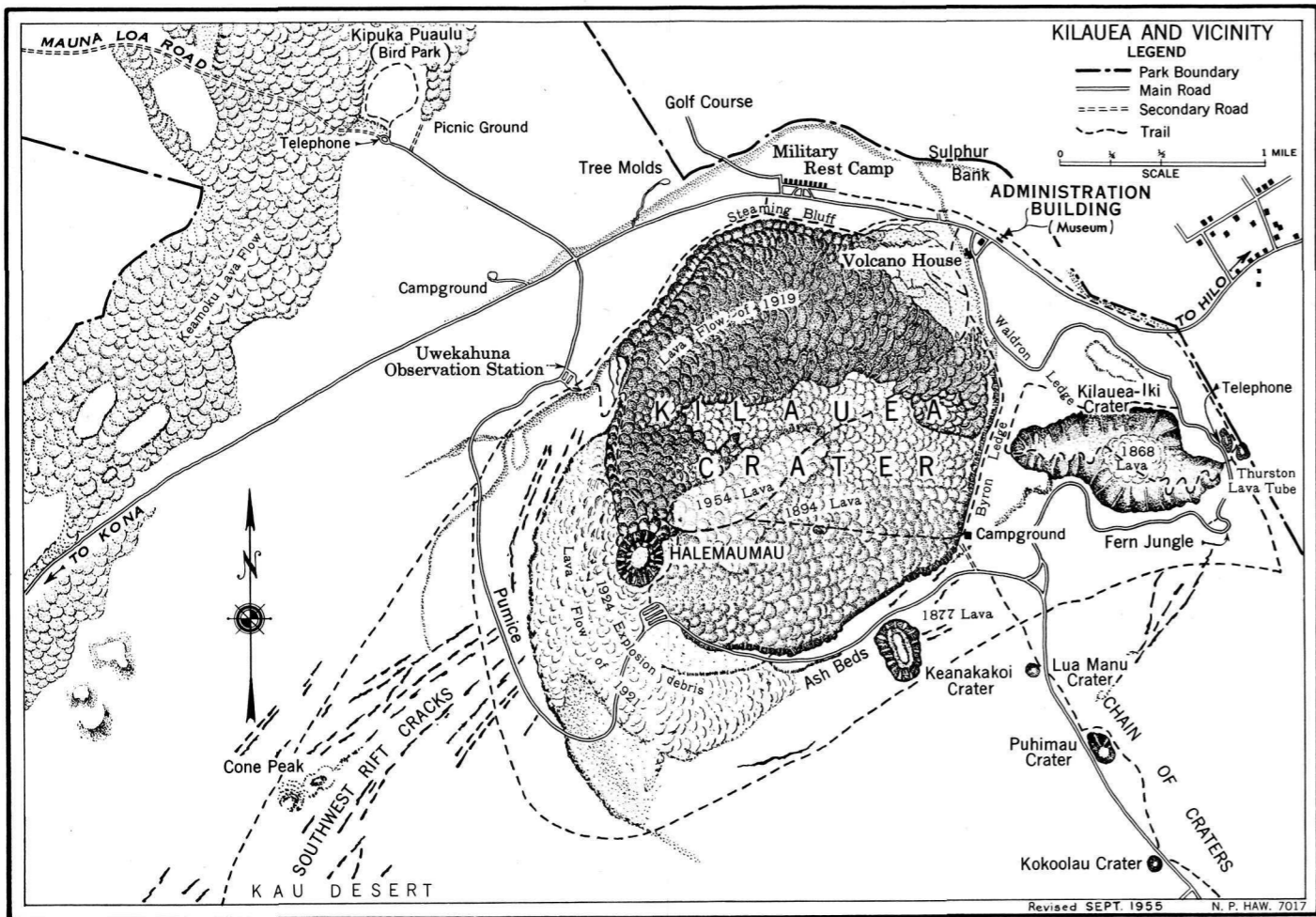


1924 Kilauea Steam Explosion. Photo by Tai Sing Loo



Eruption Fume Cloud—
Mauna Loa 1942→

The National Park System, of which this park is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.



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. This is like the famous Brocken Specter of the Alps.

On the walls and within the crater grows a species of the rare silversword. This is a large plant of spherical outline having a "pincushion" 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 small nectar-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 reddish-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 nectar from the lehua. The koae, white-tailed tropic sea bird, nests in the cliffs of Kilauea and Halemau-mau. 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 pueo, 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, the English sparrow, the Kentucky cardinal, the red-billed liotrix or Pekin nightingale, and the English skylark.

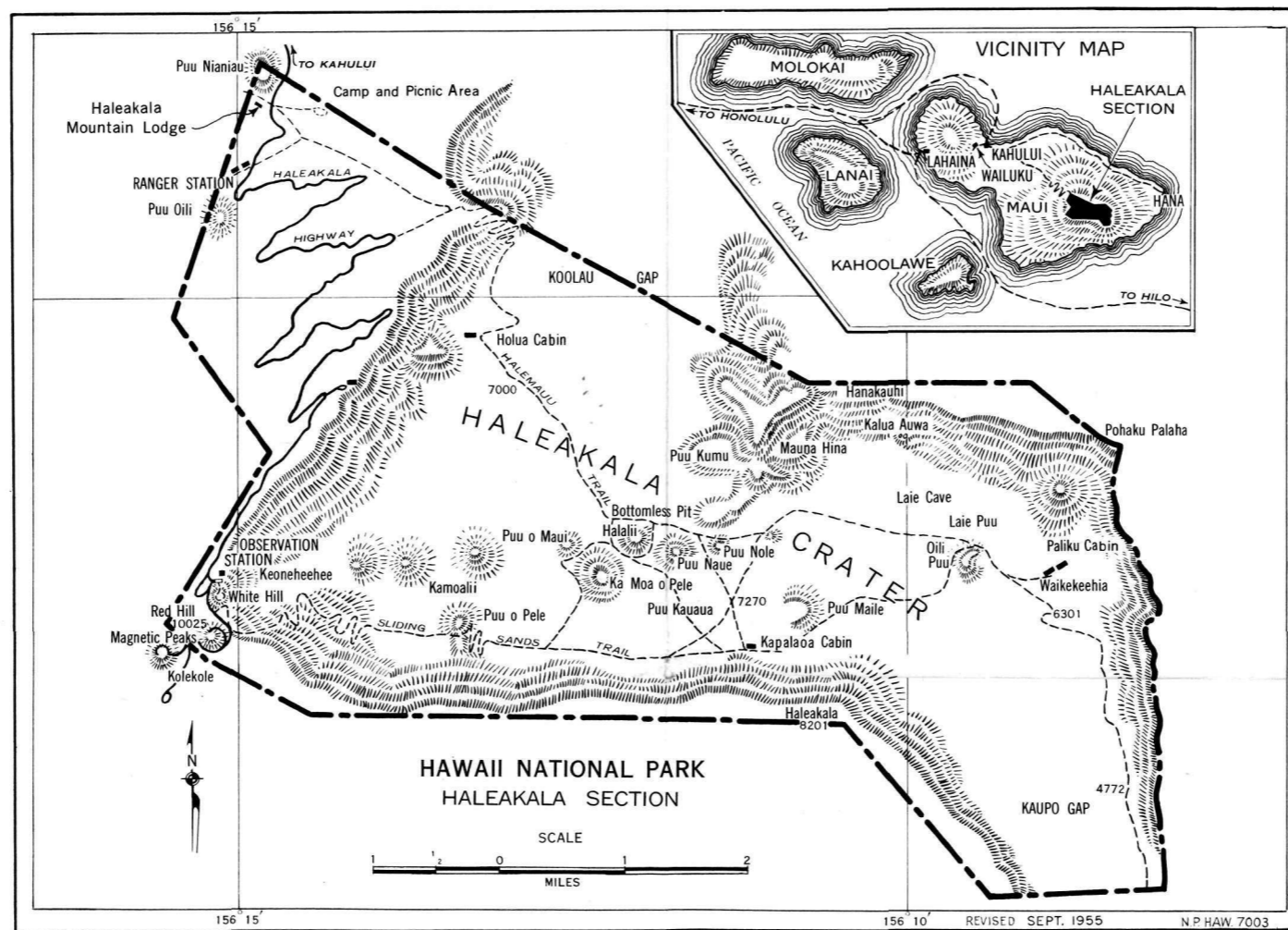
Mammals.—The majority of mammals now living in a wild state in the park have been introduced by man: pigs by early Hawaiians, goats by the British explorers, and mongooses brought from India to prey on rats. Native bats may be seen occasionally in the park.

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. 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 at the headquarters museum in the Kilauea section by talks and field trips, and by trailside exhibits at strategic locations. Motion pictures of recent eruptions are shown daily at park headquarters. Here is located the central museum with demonstration maps, charts, and other exhibits. An observatory with interpretive exhibits is located on the summit of Haleakala.



Hui O Pele and Hui Abinabina

The Hui O Pele is an organization composed of persons who have visited the fire pit, Halemau-mau, in the crater of Kilauea, the legendary home of the fire goddess Pele. The organization, Hui Abinabina provides similar recognition for those who have stood on the edge of the crater of Haleakala, where the demigod Maui once ensnared the sun. Life membership in either organization is affirmed by an attractive certificate that costs \$1. The money is used 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, Hilo, Wailuku, Lihue, and at 323 Geary Street, San Francisco, will supply information about trips to and through the Hawaiian Islands.

Free Campgrounds

In the Kilauea section, three 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 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 the Lycurgus family 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.

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

Kilauea Military Camp

Kilauea Military Camp, 1 mile west of 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 Volcano House, Kilauea section. Telegraph, telephone, and radio connection with all parts of the world is available at Volcano House and Haleakala Mountain Lodge.

Automobile Service.—Gasoline and oil are only available 2 miles from park headquarters. 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 at Volcano House.

Administration

Hawaii National Park is administered by the National Park Service of the United States Department of the Interior. A superintendent is in immediate charge, with offices in the administrative center 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 456, Kahului, 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

Park regulations are designed to protect the natural beauty of the park, and are for your comfort and convenience. 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. Complete rules and regulations may be seen in the superintendent's office.

Preservation of natural features.—The first law of every 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 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 physical restrictive control at all times.

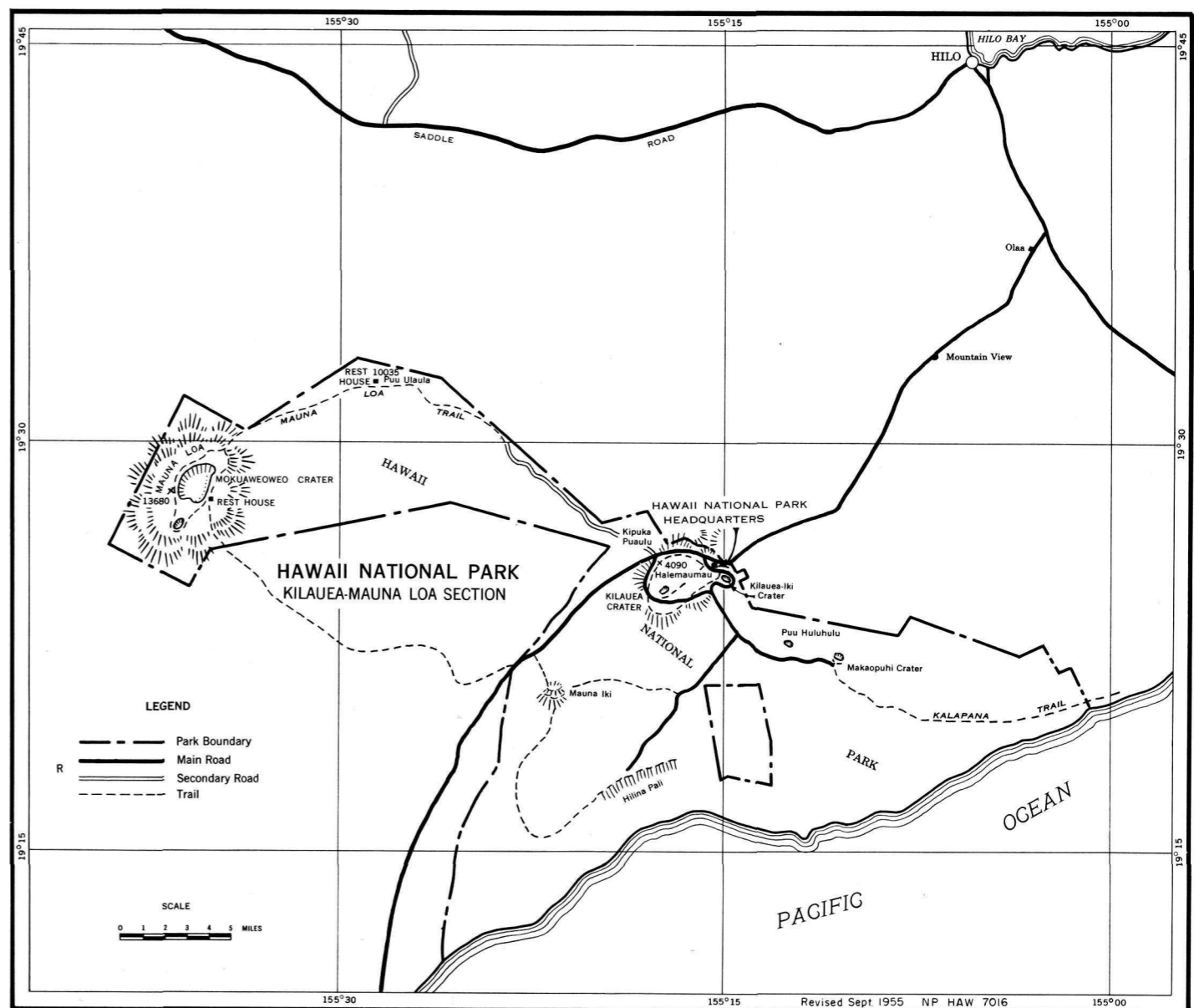
Automobiles. The maximum speed limit on some park roads is 45 miles per hour. On others, and at intersections, the speed limit is lower.

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

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.

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

Cover: *Silversword in Haleakala Crater.*
 Photo by Bert Tarleton



UNITED STATES DEPARTMENT OF THE INTERIOR
 Fred A. Seaton, Secretary
 NATIONAL PARK SERVICE
 Conrad L. Wirth, Director

