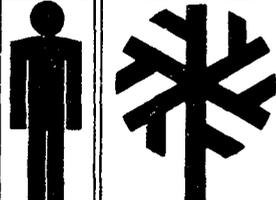


master plan

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HAWAII VOLCANOES NATIONAL MONUMENT
HONOLULU, HAWAII

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<h1>HAWAII VOLCANOES</h1>	

NATIONAL PARK • HAWAII

RECOMMENDED:

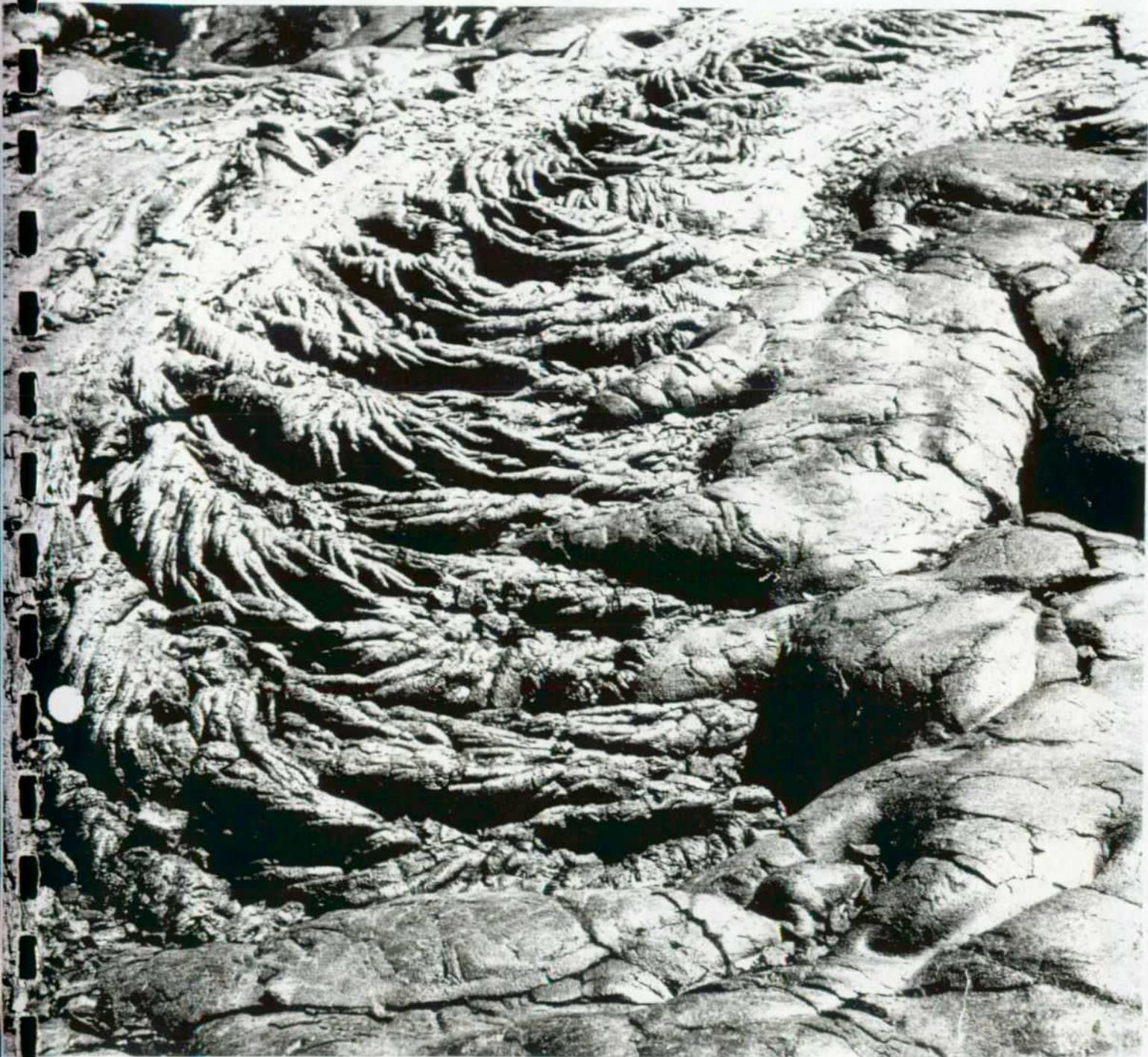
Bryan Harvey
Superintendent, Hawaii Volcanoes National Park

Oct 21, 1975
date

APPROVED:

Howard H. Chapman
Regional Director, Western Region

Nov. 7, 1975
date



HAWAII VOLCANOES NATIONAL PARK

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INTRODUCTION

Hawaii Volcanoes National Park contains within its boundaries two of the most active volcanoes in the world, Mauna Loa and Kilauea. These along with the numerous historic, archeological and biological resources, some in serious danger of deterioration, require particular care in management and planning to guarantee that they will continue to be available as part of the Nation's cultural heritage for the benefit and enjoyment of its citizens.

- Unique to this particular park is volcanic research, for it is equal in importance to the conservation-public use aspect common to other units in the National Park System.

This report seeks to determine what the future of Hawaii Volcanoes National Park shall be: its appropriate public uses; what additional lands might be needed to further the purposes of the park; how research, both by the National Park Service and U.S. Geological Survey, shall augment the information already available; how the park's fragile biologic resources can best be protected; and what type of development is necessary to support these programs.

REGIONAL ENVIRONMENT

The Island of Hawaii—sometimes called the Big Island—lies at the southeast end of a chain of islands extending nearly 2,000 miles across the north-central Pacific. These islands, 124 including islets and atolls, are the emerged peaks of a tremendous volcanic mountain range rising from the ocean floor. There are only 8 main islands, and these, located at the southeast end of the chain, form the group commonly known as the Hawaiian Islands.

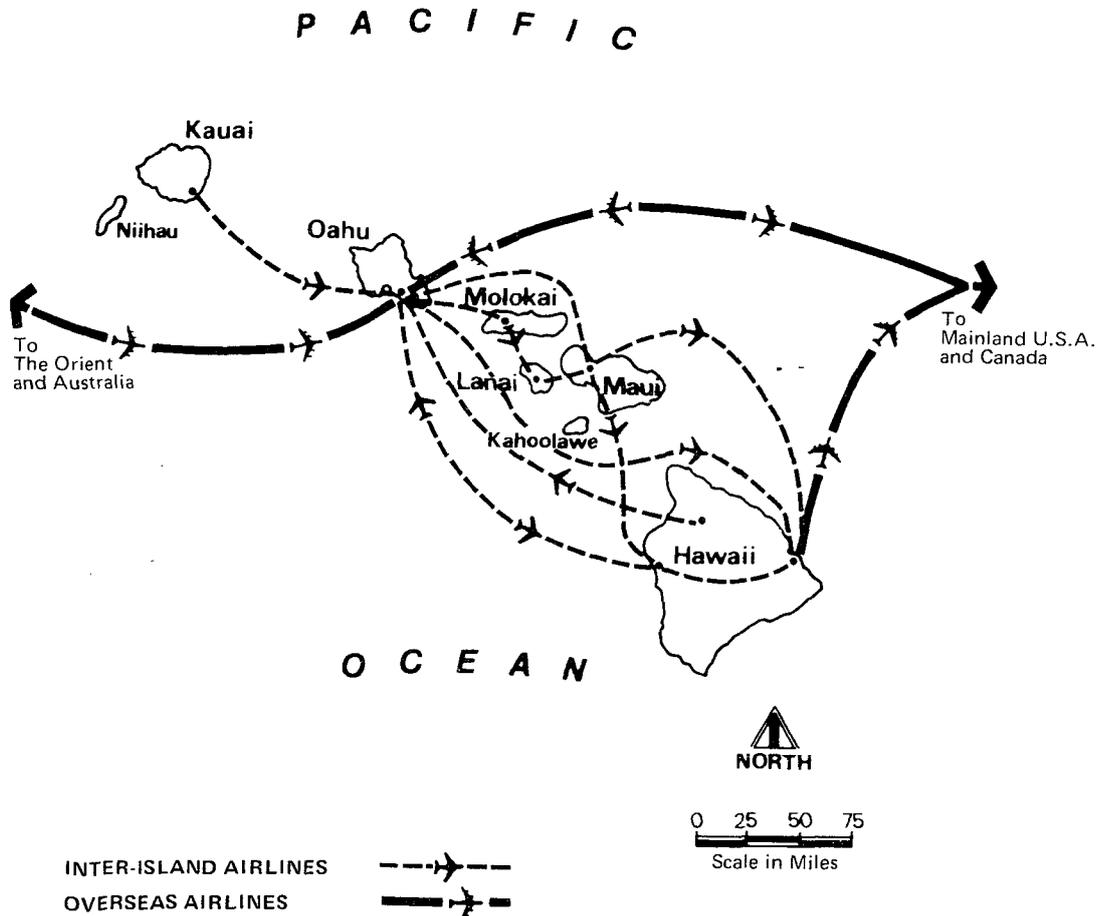
Long extolled in tourist promotional programs for their pleasant climate, romantic history, exotic peoples, unusual scenery, and recreation opportunities, the Hawaiian Islands have become a vacation dream for many "mainlanders." As air fares decrease and personal incomes rise, visitation to the islands has increased dramatically. From less than half a million in 1960 the 1974 visitation is over 2.5 million. The Big Island has also shared in this increase, less than quarter of a million in 1960 to 730,000 in 1974. The primary tourist destination is the Island of Oahu with the State's major urban complex centered around Honolulu, Waikiki Beach, the bulk of hotel accommodations, and the only international air terminal. From Oahu, Hawaii and the other neighbor islands are only a short flight.

ACCESS

Access to the State is almost entirely by air. Jetliners arriving from North America, Australia, New Zealand, and the Orient make Honolulu one of the world's busiest airports. Use of the Big Island's airport at Hilo by scheduled airlines operating from West Coast cities commenced in 1967. Boat travel, previously an important means of access, has dropped to near zero as compared to the faster air travel, particularly as newer jet aircraft carrying up to 370 first- and economy-class passengers began operation a few years ago.

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Inter-island airlines make about 30 scheduled flights daily to the Big Island terminals of Hilo, Waimea, and Kona. Visitors with limited time may arrive and leave the same day—from a different airport if they desire. The Big Island is included on one-day air tours originating in Honolulu which permit short stops and provide excellent aerial coverage with in-flight informational talks. An inter-island auto ferry system is planned but is not yet in operation.



ACCESS TO HAWAII

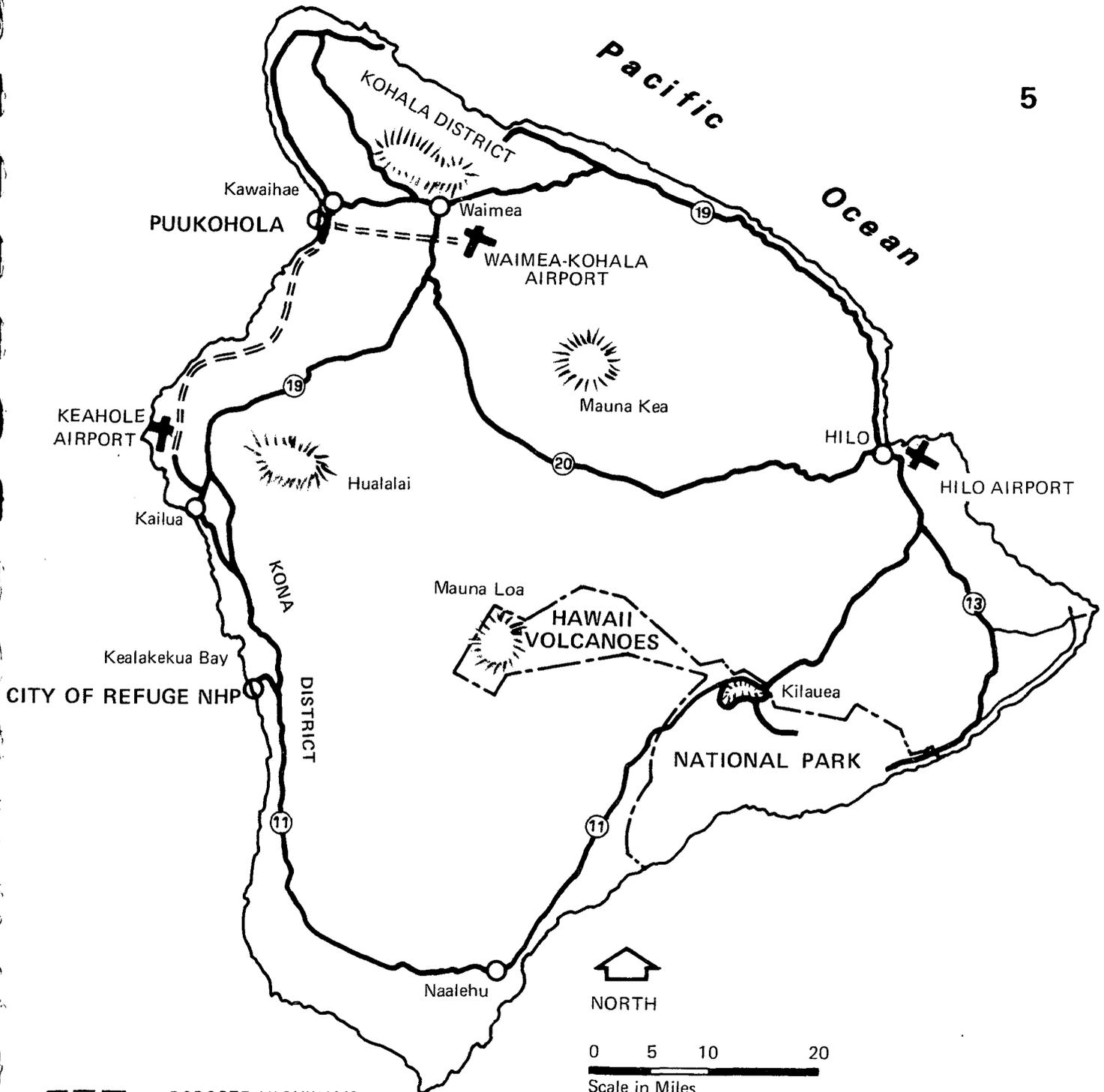
Intra-island circulation is by ground and air transportation centered around Hilo, Waimea, and Kona. Cars and pickup campers may be rented. Commercial tours are available by bus and tour car. Air taxis fly visitors to other airstrips.

Current access to Hawaii Volcanoes National Park is generally satisfactory, except for the fact that much of the Chain of Craters Road has been covered with new lava in the past few years. Previous to this, the Golden Triangle was a popular loop trip from Hilo to Kalapana and Kilauea Volcano. The "Belt Road," consisting of State Highways 11 and 19, makes a general loop around the island and provides the main surface route between towns and communities for commercial and visitor use. It passes through Hawaii Volcanoes National Park near park headquarters and is connected to City of Refuge National Historical Park by an excellent secondary highway. The State plans to upgrade the entire belt road system to a high-speed standard.

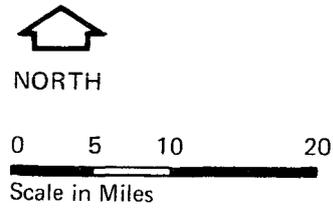
POPULATION

Although the State of Hawaii ranks 15th among the 50 states in population density (approximately 100 persons per square mile), the Island of Hawaii is still sparsely populated with only 15 persons per square mile. The State population has continually increased, while the Big Island population decreased for a number of years because of the mechanization of agriculture and the loss of some industry. This decline is over, however, and a growth period has apparently started. Most of this growth will take place in the resort regions on Hawaii's dry west coastline, where a new road along the coast between Keahole airport and Kawaihae will open up additional land for homes and resorts. Most of the island's residents already live near the coast, about half being concentrated in and around Hilo.

County	1950 Census	1960 Census	1968 Census	1980 Prediction
Hawaii	68,350	61,332	63,468	69,486
Honolulu	353,020	500,409	630,528	930,000
Kauai	29,905	28,176	29,761	32,242
Maui	48,519	42,855	46,156	54,798
State Total	499,794	632,172	769,913	1,086,526



== PROPOSED HIGHWAYS
(Portions under Contract)



Island of Hawaii

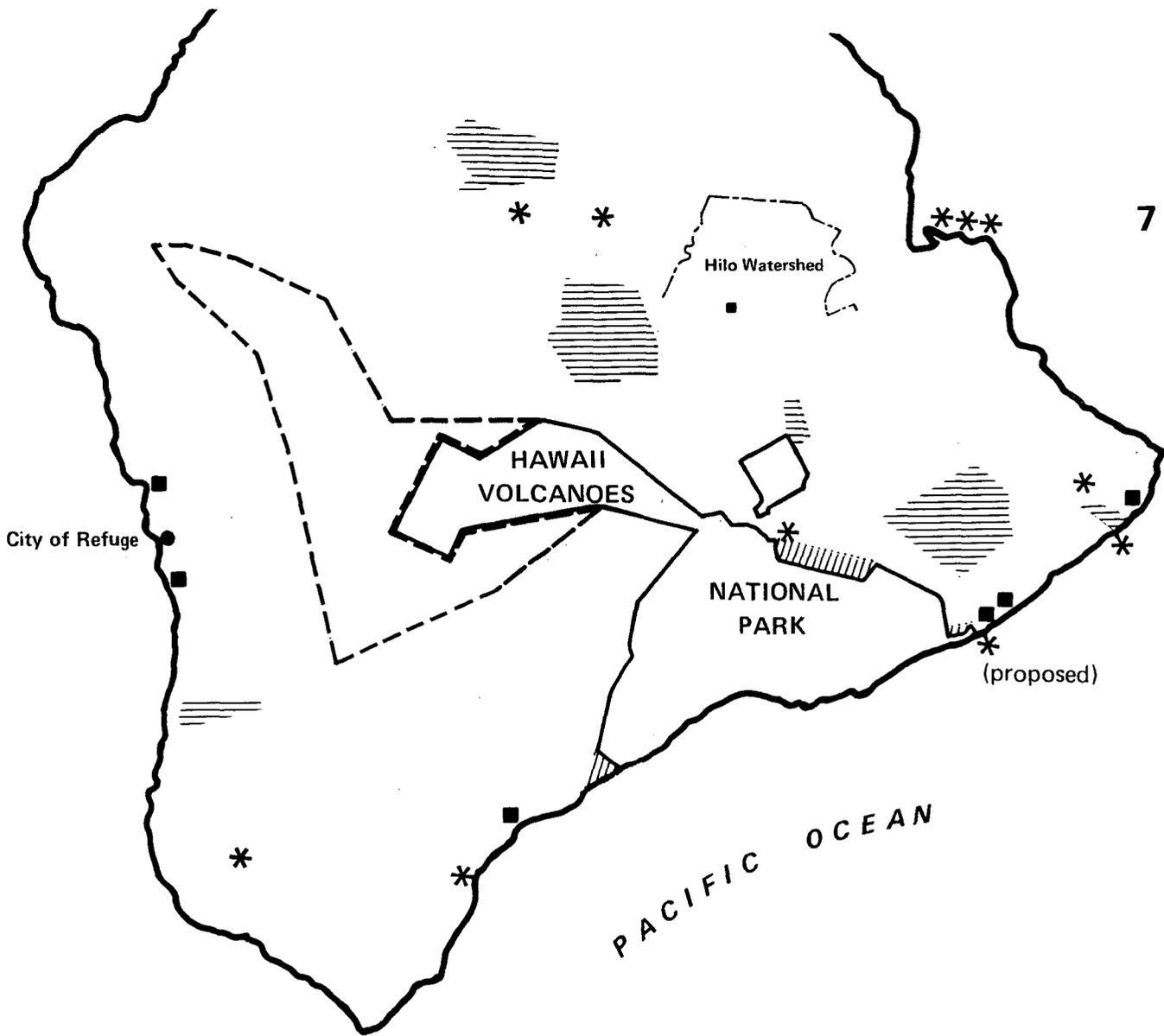
LAND CHARACTER AND USE

Land use, both existing and potential, is closely related to the island environment, which varies widely in desirability. The generally smooth and gently sloping topography is related to the lava flows originating from the five volcanoes which created the island. Because Hawaii is a young island with many fresh lava flows, much of the land is still barren.

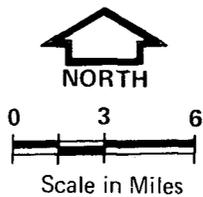
Climate is largely the product of the prevailing trade winds, high mountain masses, and elevation. The annual temperature averages a balmy 75-degree F. at sea level, but freezing winter weather is to be expected on the snowy summits of Mauna Loa and Mauna Kea where elevations exceed 13,000 feet above sea level. The eastern side of Hawaii intercepts the moisture-laden trade winds that encourage lush humid rain forests and commercial sugarcane production, the chief industry of the island. Hawaii also has the only coffee industry in the United States, the world's largest commercial orchid-growing center, and produces papayas, macadamia nuts, and tropical flowers for local use and export. In addition, there are extensive grass and scrub areas used for grazing livestock. Even so, large areas of the island are still in undeveloped forests and barren lava fields.

Under the State's "Greenbelt" Law, all land in Hawaii is classified into four major land-use districts; urban, rural, agriculture, and conservation, as determined by the State Land-Use Commission. This law provides some assurance that land will be used for its best purpose and that development will be compatible with the uses permitted within the four categories. The counties regulate internal zoning in the urban, agricultural, and rural districts; the State Department of Land and Natural Resources regulates use in the conservation districts. Outdoor recreation and the preservation of natural resources and cultural values are considered in administering the State Land-Use Law. The law states that, "Conservation districts shall include areas necessary for protecting watershed and water resources; preserving scenic areas; providing park lands, wilderness and beach reserves; conserving endemic plants, fish, and wildlife; preventing floods and soil erosion; forestry and other related activities; and other permitted uses not detrimental to a multiple-use conservation concept."

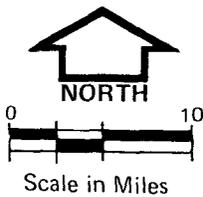
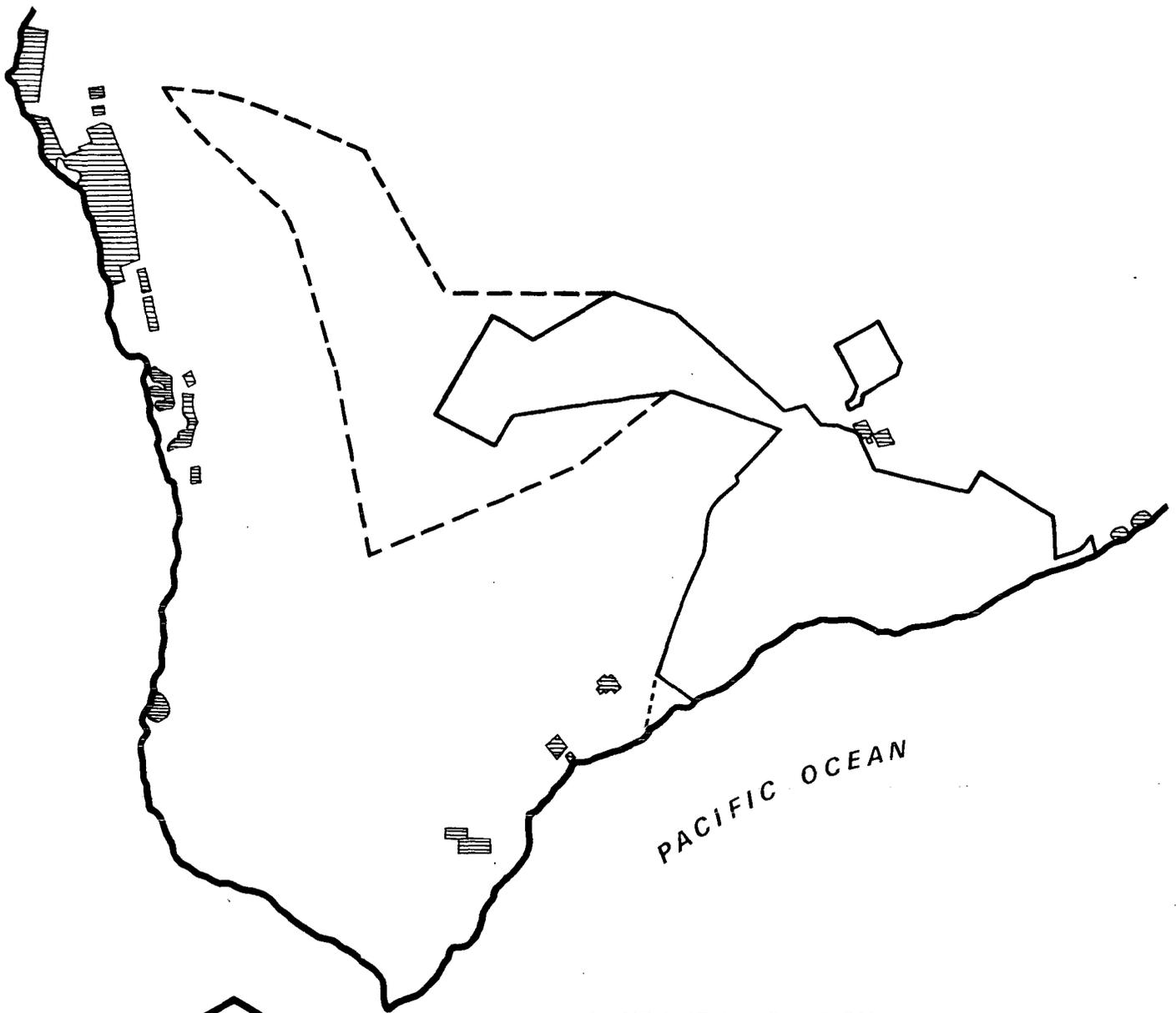
Hawaii's abundant recreational opportunities are largely undeveloped. The island's 266 miles of coastline, its varied topography and vast areas of wild lands comprise a raw resource adaptable for swimming, surfing, fishing, boating, hiking, horseback riding, hunting, camping, and picnicking. Coastal-oriented recreation holds the greatest appeal for visitors, but island residents are interested also in other activities. Some even seek Mauna Kea's snowy summit for skiing.



**NATURAL AREAS, PARKS, and FOREST RESERVES
adjacent to HAWAII VOLCANOES NATIONAL PARK**



-  State owned Forest Reserves
-  Proposed State Natural Areas
-  County Parks
-  State Parks
-  Proposed Hualalai extension to
Hawaii Volcanoes National Park
-  Privately-owned land authorized and
proposed for addition to Hawaii
Volcanoes National Park



LAND USE ALLOCATION
of lands adjacent to Hawaii Volcanoes National Park



AGRICULTURAL
Includes intensive, extensive agricultural and orchards



URBAN
Includes industrial, medium and low density urban and resort

CONSERVATION

Paradoxically, Hawaii has relatively few swimming beaches. Most are on the west coast between Kailua and Kawaihae where there are about six small sandy coves. Sand, however, is not essential for swimming. Rocky coves and bays offer excellent possibilities for snorkeling or scuba diving to view tropical fish and coral.

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Hawaii is also rich in the sites and events which led to the founding of the historic Kingdom of Hawaii, the political ancestor of the modern State.

State and county parks have been established for a variety of historic, scenic, scientific, and recreational sites, but private enterprise is also making indispensable contributions toward the recreational use of Hawaii. Without accommodations, there could be little nonresident use of the recreational resources. Spectacular resort hotels have been built where they provide access to beaches or scenic views of the coast. Some more isolated resorts have complete recreation complexes including golf courses, swimming pools, tennis courts, and equestrian trails. The number of such accommodations continues to increase. The Big Island had 2,188 hotel rooms in 1968. This increased to 5,390 in 1974 and more are planned. The major concentration is at Kailua, Kona (about 3,080 rooms), but future expansion will likely spread along the coast from a little south of Kailua to the Kawaihae-Waimea area.

There is little resort development adjacent to Hawaii Volcanoes National Park, except along the coast, and even this is not likely to reach the proportions of the Kona development. On the adjacent mauka or upland areas, land type and use varies. Near the park's Mauna Loa strip there are barren lava flows at high elevations and scrub forest below. Grazing is the only current use. Grass and scrub grazing lands also lie west of the park's Kilauea section. The more humid forests are contiguous with most of the eastern boundary. Adjacent lands are primarily owned by trust estate or the State of Hawaii. Between the Kilauea section and the O'aa Forest Tract are estate lands leased for small homesites, agriculture, and a golf course. The balance of the tract is surrounded by forest and grazing lands. There is considerable subdivision activity close to the boundary in the Kalapana section. At Punaluu, a few miles southwest of the park, C. Brewer is developing a major resort area with golf course, restaurant, hotel, condominiums, and house lots. This development, called Seamountain Ninole, compliments their concession facilities within the park and provides an alternative to substantial expansion of the Volcano House within the park.



THE PARK and ITS RESOURCES

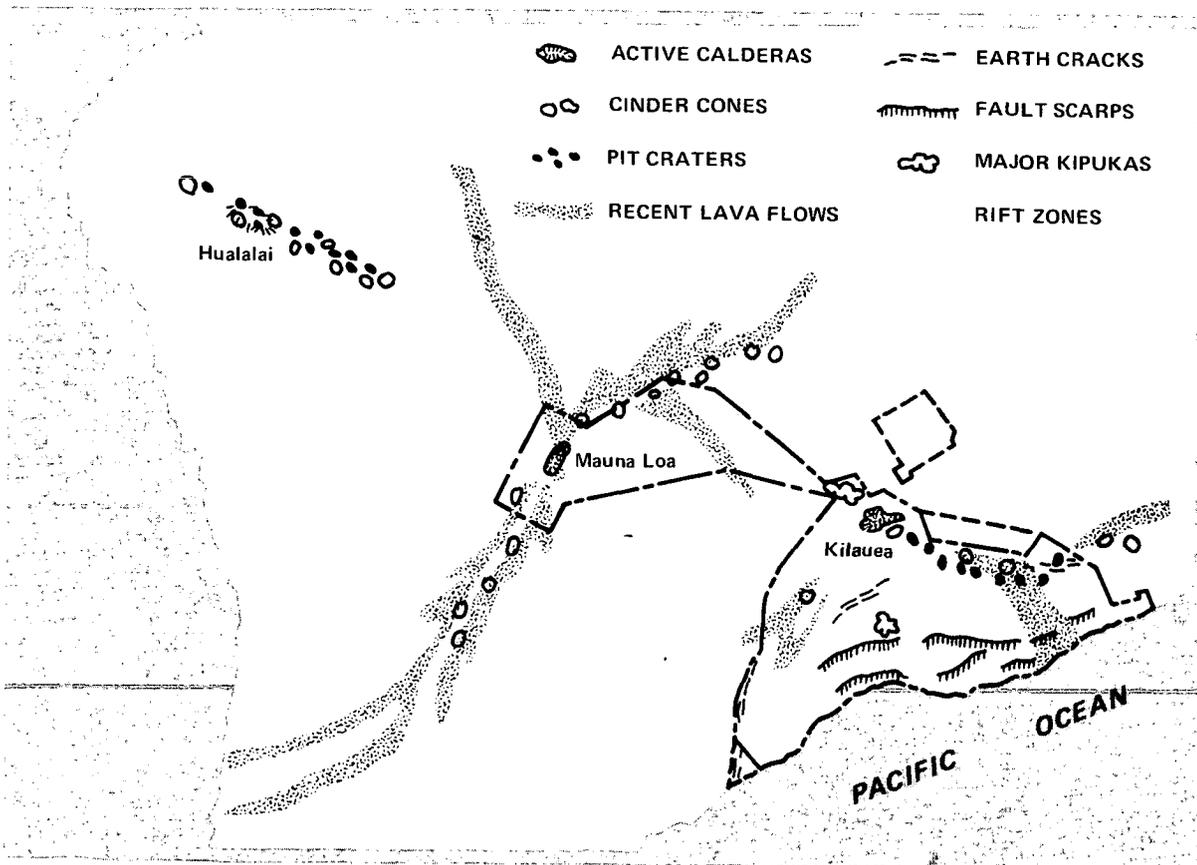
- Kilauea and Mauna Loa volcanoes are the dominant features of the park. Surrounded by recent lava flow materials and unique endemic plant communities, these are dynamic landforms where new lava flows can drastically change the landscape. Indeed, recent eruptions in the Mauna Ulu vicinity have covered many acres with lava up to 300 feet deep, created new land where flows enter the ocean, and built up a new mountain where none existed before.
- Mauna Loa and Kilauea are the most studied and best understood volcanoes in the world. The favorable opportunities afforded by Hawaiian volcanoes for fundamental and detailed research are not duplicated or even approached in any other park of the world. The program of study is under the direction of U.S. Geological Survey scientists. And Kilauea is perhaps the most safe and accessible active volcano for people to see. This dual role makes the park extremely valuable for both research and sightseeing. Mauna Loa, above the temperature inversion level, has unusually clean air offering an exceptional opportunity for studies related to contamination trends of the earth's upper air envelope.

With the arrival of European civilization to the Island of Hawaii two hundred years ago, the fragile native biota of the islands was disturbed. Some of these changes have been almost catastrophic with regard to certain plant and animal species; but to the uninitiated visitor these changes are not readily apparent, so that to them the park appears to be much the same today as it did when man first saw the magnificent displays of volcanism, the great fern forests and the superb views along the seacoast and up the palis (cliffs).

GEOLOGY

Park lands encompass the summit and part of the southeast flank of Mauna Loa Volcano and almost a third of Kilauea Volcano. These broad, flat volcanic domes rarely explode, but do send up fountains of molten rock hundreds of feet into the air. Eruptions generally occur in calderas (huge collapsed depressions in the summit) or along the rift zones on the flanks of the volcanoes. Kilauea is the most active volcano in the world; it achieved fame because of an almost continuously active lake of liquid lava in Halemaumau during the 19th century and the early part of the 20th century. From 1952 to 1974 Kilauea has had 25 different eruptions originating from Halemaumau, the caldera floor, the east rift, and the southwest rift. All but two of these eruptions have been within Hawaii Volcanoes National Park. In recent years most of the activity has been on the upper east rift; and since 1969 Mauna Ulu, a newly formed shield, has been almost continuously active.

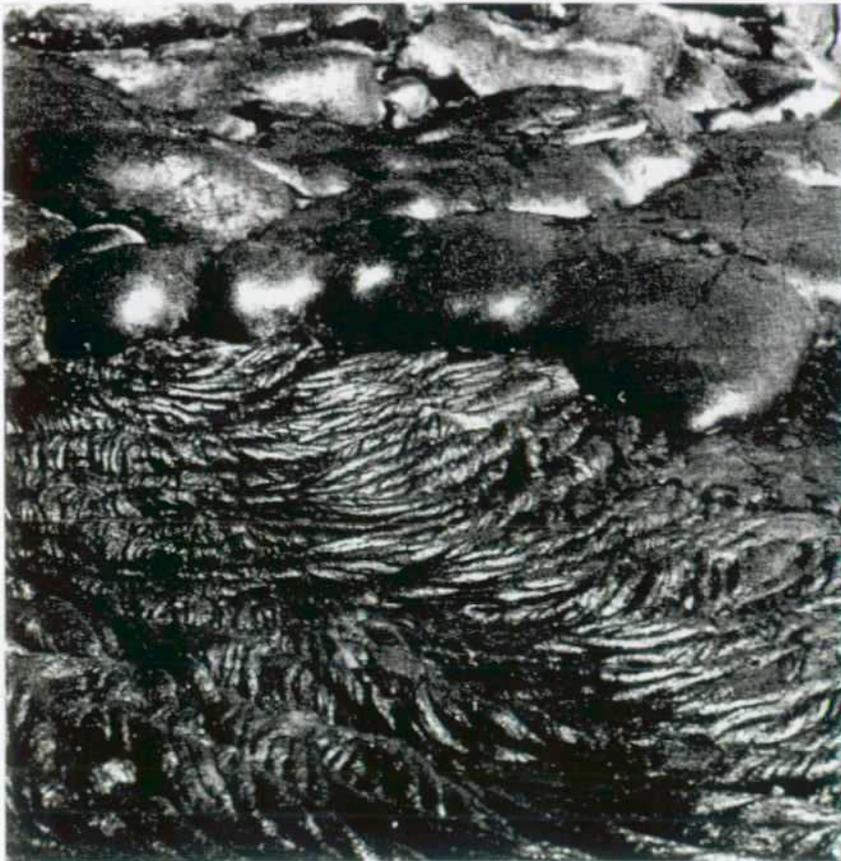
Throughout history, however, Halemaumau has been the principal place of volcanic activity. Kilauea's two main rift zones are defined by large pit craters, cracks, and cinder cones, and its seaward side is bounded by great fault scarps contrasting with its other gentle slopes.

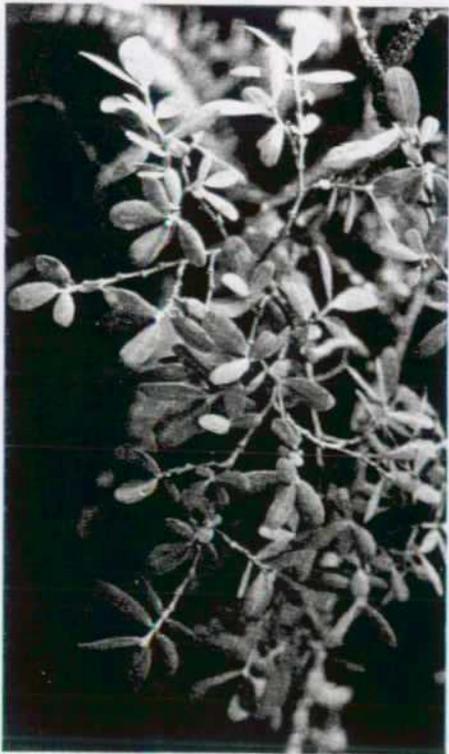


Lava flows, devastated areas, and steam cracks show old and new activity. Steam issues from the ground at many places in and around Kilauea caldera and along the Chain of Craters.

Mauna Loa is a massive, flat-domed shield volcano built by layer upon layer of lava and is recognized as the best example of its type in the world. Extending from about 20,000 feet below sea level to 13,677 feet above, it is one of the world's greatest mountains. Its upper slopes, along its two principal rift zones, contain extensive, recent flows that are stark, picturesque, bare, and forbidding. Since man has watched it, Mauna Loa has been intermittently active, with periods of quiet ranging from a few months to more than 20 years. Many of its eruptions are confined to the caldera of Mokuaweoweo; others burst forth from fissures along one of the rift zones on the flanks of the mountain and feed lava flows that may reach the sea.

Both Kilauea and Mauna Loa are young volcanoes, for their growth keeps well ahead of erosion. Geologists calculate from its present growth that Mauna Loa could have been formed within the last million years.





VEGETATION

Hawaiian flora is quite young in comparison to continental systems. And it is believed that endemics evolved with little competition, particularly since most plant communities possess numerous niches that were never filled by native species. The result is that Hawaiian vegetation was especially vulnerable to structural and composition change when highly competitive species were introduced.

With an elevation range from sea level to 13,677 feet and a precipitation spread from 15 to 100 inches of rain annually, there is within the park a wide range of 23 distinct vegetative types—from lush rain forest jungle to the sparse vegetation of the Kau Desert, a few miles to the southwest. Some native species are endemic only to a single valley or mountain slope.

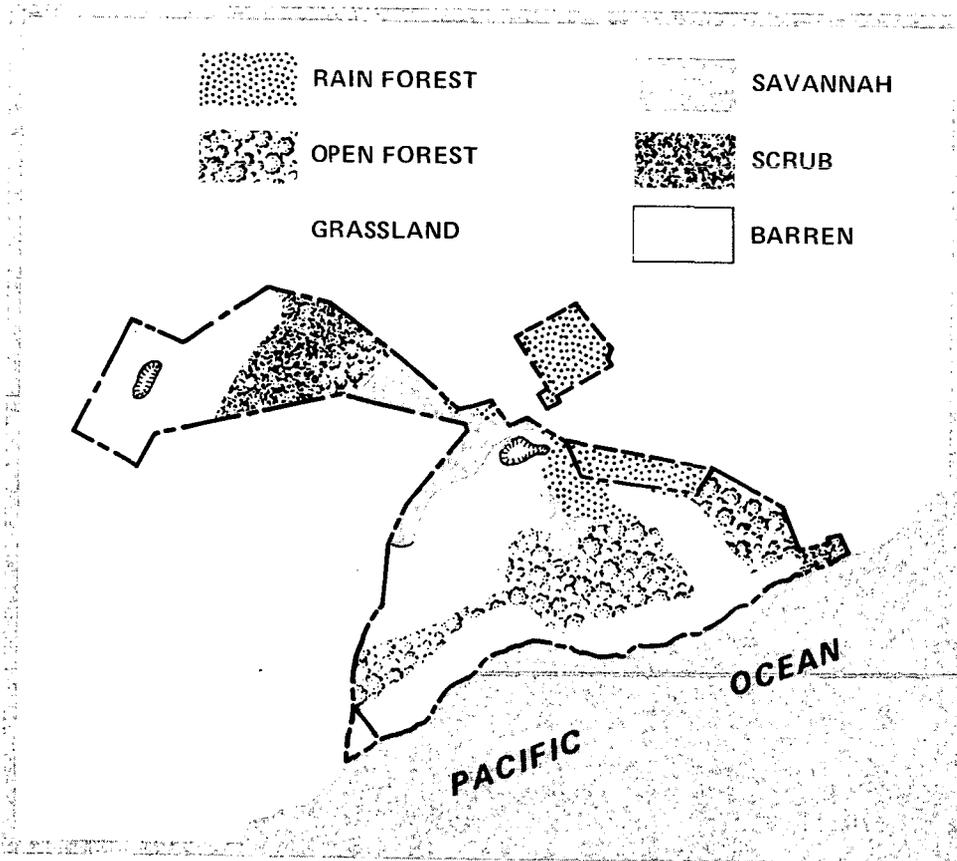
Dense ohia and fern "rain forests" exist in areas of heavy rainfall. In drier areas, the forest opens into savannah containing mixtures of ohia and koa trees, and in the other areas there is only low scrub and open grasslands. The Kau Desert is nearly barren, as is much of the coast.

Some rarer plants, such as varieties of hibiscus (*Hibiscadelphus*), are found in kipukas (older areas that have been surrounded by more recent lava flows). They can be readily recognized as islands of denser vegetation in sparsely vegetated areas. Kipukas represent somewhat simplified ecosystems suitable for studying integral ecological relationships. Here isolation of small populations provides opportunities for evolutionary study. The park's two best known kipukas, Kipuka Puaulu, popularly known as "Bird Park," and nearby Kipuka Ki, contain unique and complex compositions of plant species and are judged to be "of great age."

During the Polynesian colonization period, several non-native plants were released into the native vegetation. In a relatively short period, some of these became securely established. The appearance of Western man, near the close of the 18th century, marks the beginning of mass introduction of highly competitive

and aggressive species (guava, tibouchina, lantana, haole koa and kiawe). Further, there was direct removal or alteration of the native forest for sugarcane, pineapple, and ranching activities, plus the introduction of feral goats, mongoose and pigs. Exotic plants, particularly grasses, have invaded all disturbed areas and ecological niches within the park. Sections of the Mauna Loa Strip were most obviously affected by domestic stock. This activity has stopped and the vegetation is now recovering. Even the completely natural phenomenon of volcanic activity has destroyed some native vegetation. Recent flows have almost completely wiped out Naulu Forest, a small enclave of rare native species along the Chain of Craters Road. Fortunately, significant large areas of original vegetation still remain intact and many individual rare native plants still exist within the park. The most important forest type is in the Olaa Forest tract, an area of almost 10,000 acres, which is probably the largest remaining tract of virgin ohia and fern forest in the Hawaiian Islands. This tract has been recognized by the Society of American Foresters as a "natural area," the best example of its type.

At Bird Park, many rare native plants have been replanted in an effort to keep them from extinction, including one of the world's rarest trees, the "hula Kuahiwi," or Hibiscadelphus Giffardianus. At the Naulu Forest there were other species of rare native plants clustered in a small area.



VEGETATIVE TYPES



ANIMAL LIFE

Birds are the most important aspect of the park's wildlife. Unfortunately, several endemic species have become extinct within the park and elsewhere on the island because of many practices which disturb native habitats. Further, introduced birds are especially detrimental to the highly specialized Hawaiian honeycreeper family (Drepaniidae), which are of special interest to ornithologists and evolutionists. Included in this group are the apapane and iwi (common); amakihi (scarce); and creeper, akepa, ou, and akiapolaau (all recognized as endangered species). Besides the honeycreepers, other endemic birds which range throughout the park are pueo (owl), amao (thrush), and elepaio (flycatcher). Io (hawk) and nene (goose) are found within the park, and are also listed by U.S.D.I. as "endangered."

The nene was once close to extinction but now appears to be out of immediate danger as the result of the efforts of many interested agencies and individuals. They once inhabited the lower coastal section of the park during their nesting period, but man's hunting and ranching activities, the deadly predations of mongooses, cats, and dogs, and the disturbances of goats and pigs have eliminated nene populations below 5,000 feet.

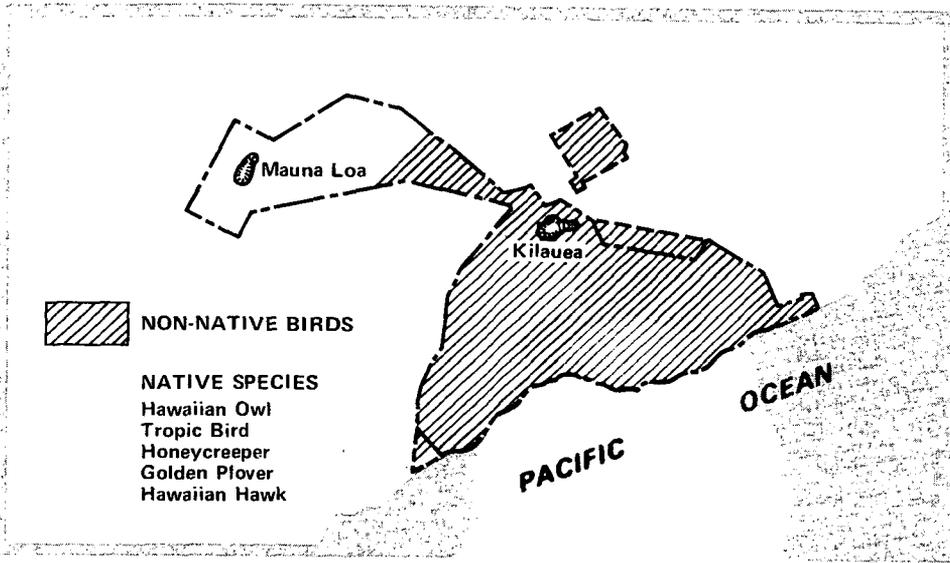
There are six species of migrant sea birds including the endangered dark-rumped petrel, white-tailed tropic bird, American golden plover, ruddy turnstone, wandering tattler, and white-capped noddy. Exotic bird species are the California quail, chukar, ring-necked pheasant, Japanese blue pheasant, spotted dove, barred dove, skylark, Chinese thrush, red-billed leiothrix, mynah, white-eye, ricebird, house sparrow, cardinal, and house finch. The Hawaiian bat is the only native land mammal.

Feral goats have, in the past, built up high populations in the open, drier coastal and high mountain sections of the park despite long-term reduction efforts. Recent feral goat populations in the 10,000 to 20,000 range have been greatly reduced through vigorous annual reduction programs which have removed some 4,000 animals each year.

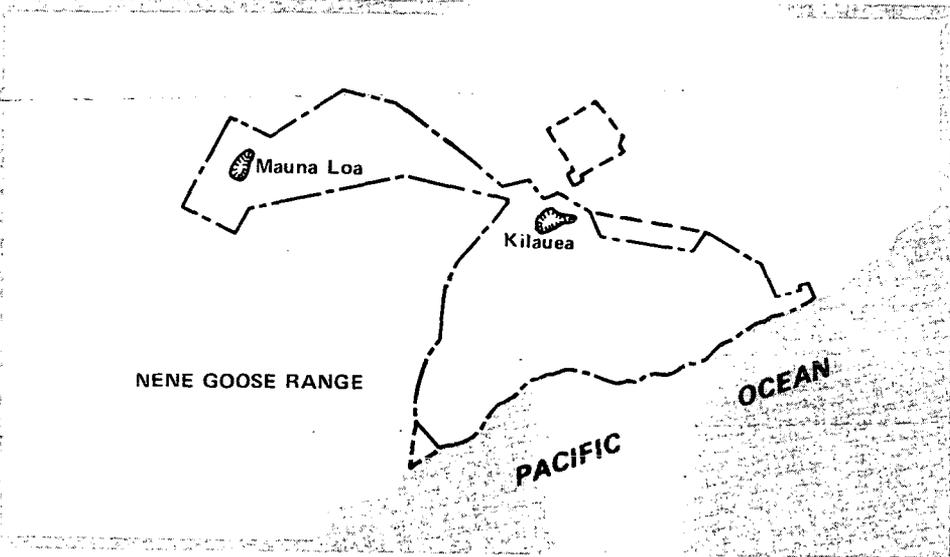
The pig was brought to the Hawaiian Islands by the Polynesians during their early migrations. These, mixed with later European varieties, produced the strain of pigs that now inhabit the wetter forests and savannahs.

Feral goats, mongoose, and pigs have done great damage to the park vegetation and birdlife to an extent that cannot be accurately assessed without a continuing and extensive research program. Pigs have engendered the spread of exotic plants by carrying seed and scarifying the ground. Heavy goat browsing denudes the landscape of shrubs and prevents the regeneration of many native plant species.

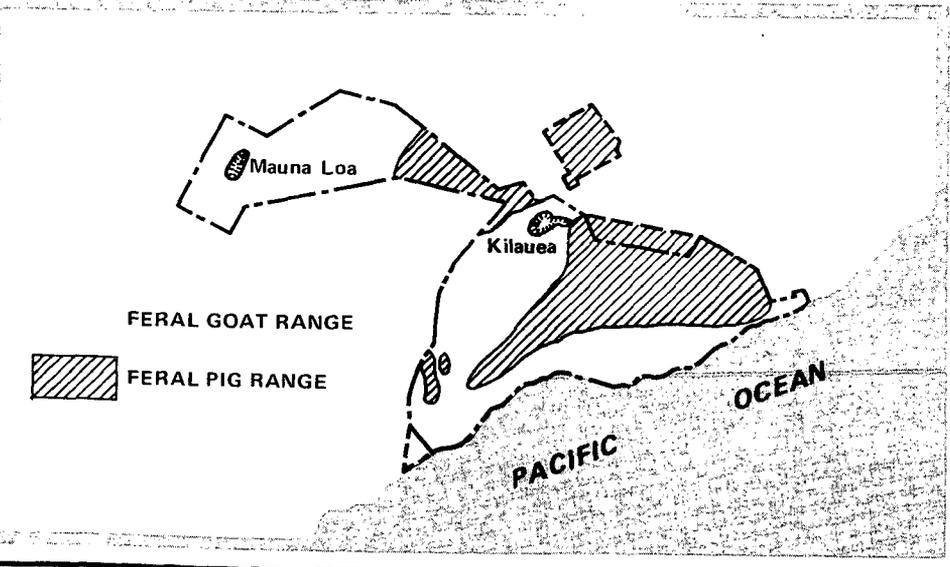
No fish are found within the park, but there are excellent opportunities to view and study the colorful fish populations along the park's 30-mile coastline. Coral reefs are limited to a small area near Halape where common reef fishes include the squirrel fish, butterfly fish, Moorish idol, surgeonfish, trigger fish, and several kinds of eel. Opihi, a species of limpet, found on the surf-washed lava cliffs, is an important local delicacy.



NATIVE and NON-NATIVE BIRDS



NENE GOOSE



FERAL GOATS and FERAL PIGS



HISTORY AND ARCHEOLOGY

Land within the national park, especially the coastal region, is rich in remains left by the ancient Hawaiians--heiau ruins, house platforms, stone walls of canoe sheds, pens and corrals, graves, shelter caves, petroglyphs, paved trails, and agricultural areas. Many are within easy reach of the former Kalapana/Chain of Craters Road. Others are scattered along that section of coast accessible only by trail and to a lesser extent, inland. The people who lived here were mainly fishermen and farmers, and in the uplands some were bird hunters. Habitation required special adaptation to severe environmental conditions and reveals the versatility and ingenuity of the Hawaiians.

Archeological surveys were undertaken in 1959 when the Bishop Museum, under the direction of Dr. Kenneth P. Emory, made the first extensive field survey. A second survey was made between 1963 and 1965, which continued the assessment of the park's archeological resources and suggested avenues along which more detailed investigations might proceed. These surveys recorded 380 sites. Between 1962 and 1968, several small sites were salvaged as part of the Chain of Craters Road project.

There are within the park a variety of archeological resources, unique in several ways. Furthermore, there is evidence that many aspects of Hawaiian history can best be investigated in this particular complex of sites. Several deserving of special mention are discussed below.

Wahaula Heiau--Red Mouth Tempie--is reported to have been established and constructed in 1275. Kailili village, nearby, probably supported the temple. These are the most important archeological sites in the park. The heiau is one of the most significant in the Hawaiian Islands, as it is important in the story of Paoa and the introduction of the heiau luakini and the ritual worship of the major gods that characterized Hawaiian ceremonial worship. It is in remarkably fine condition and has an impressive appearance.

Site 911 is a small cave shelter west of Kailili village near the coast which was used by the ancient Hawaiians as a shelter and an occasional overnight campsite.

Kamoamo Village site represents an area where two periods of occupation appear to be superimposed. The ancient village appears to be farther back from the shore and the later (historic) development toward the ocean.

The Puu Loa petroglyph field, about 1/2 acre in extent, is the largest concentration of "rock carvings" in the park, and one of the three largest in the Hawaiian Islands. Many of the petroglyphs are ancient, as they have been almost completely obliterated by successive drawings and erosion. The forms are mainly dots with rings, human figures, sails, and circles with attached lines.

Kealakomo was perhaps the largest village on the Puna Coast in ancient times. It was also the hub of a number of trails: coastal and inland, ancient and post-European. Unfortunately this site was covered by fresh lava in 1972.

The aforementioned and numerous additional sites are a rich source of research material dealing with ancient Polynesian culture and the transition to modern times. Many scattered sites are located along the coast.

Captain James Cook, R.N., discovered Hawaii for the Western World in 1778 and died at Kealakekua Bay in 1779. His ship navigated offshore from what is now Hawaii Volcanoes National Park, trading with the Hawaiians of Puna, and Kau, exchanging nails, beads, and cloth for pigs, fruit, and salt.

The historic events that occurred within the park area after Captain Cook first viewed the Puna/Kau coast are of value chiefly in their association with events that occurred elsewhere, and in the descriptions of the volcano and the coastal Hawaiian habitation recorded in accounts of early travelers. An explosive eruption of Kilauea was a historic factor in the eventual rise of Kamehameha as ruler of all Hawaii. In 1790, while enroute through the Kau Desert to battle the forces of Kamehameha, a portion of Keoua's army was destroyed by the volcano. Fossil footprints of some of the Hawaiian warriors remain today in the Kau Desert.

Vancouver's naturalist, Archibald Menzies, was the first Westerner to penetrate inland to what is now the park. He ascended Mauna Loa in the winter of 1794, a climb not duplicated until Lt. Charles Wilkes, U.S.N. and aides made the climb again in 1841.

In 1823, a band of Christian missionaries visited Kilauea and wrote such vivid and widely read descriptions that thereafter Kilauea was of prime scientific interest as well as a desired visitor destination. By the 1840's, before Yosemite Valley had even been discovered, Kilauea Volcano had become a regular stop for tourists to Hawaii. They stayed in native-style huts until 1866, when the Volcano House was established on the caldera rim.

The records of Menzies and the Rev. William Ellis in 1823, and the officers of HMS *Blonde* in 1824 started a long list of amateur and professional observations of Hawaii's volcanoes, which formed the basis of volcanic study which was formalized in 1912 with the founding of the Hawaiian Volcano Observatory.

Hawaiians held the Kilauea summit sacred, and made offerings to the Goddess of Volcanoes--Pele; and it was at Halemaumau, the principal vent of Kilauea, that the image of Pele was weakened in 1824 by High Chieftess Kapiolani, a convert to Christianity, who ate ohelo berries without the traditional offering. Her action did much to weaken belief in the old gods and paved the way for a wider acceptance of Christianity.

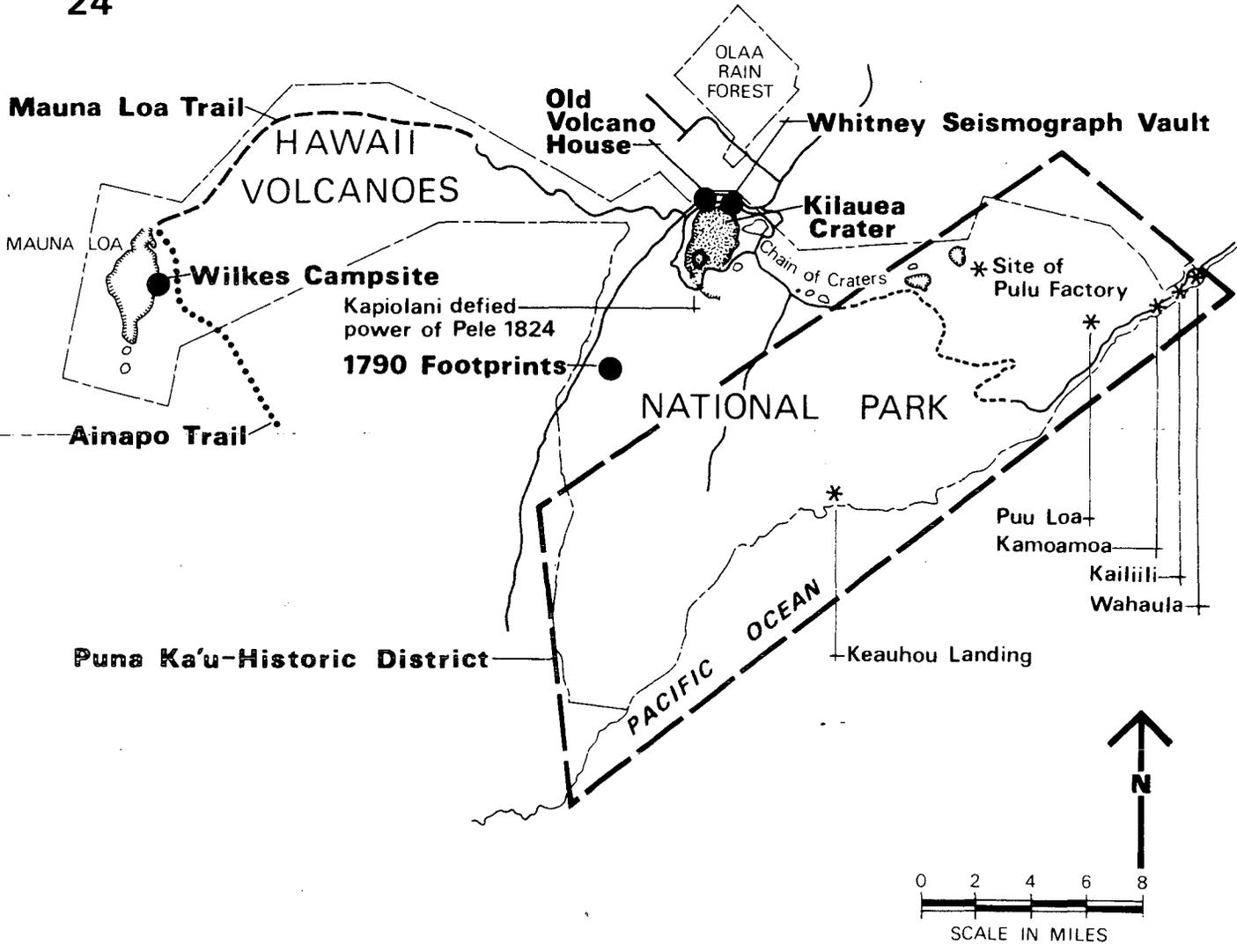
Christian missionaries based in Hilo built churches and schools in the mid-1800's along what is now the park's seacoast. Cattle, goat, pulu (a fern product), and tourist enterprises changed the Hawaiian way of life as well as the structures of the villages. The now abandoned villages represent Western influences grafted onto the traditional Hawaiian culture. Only tourist activity and scientific investigation on Kilauea's rim have survived.

Two relatively recent historic sites have been identified. One is the "Old Volcano House" of 1877, which still stands. The second is the Keauhou Landing Site which for a time in the middle 1800's was a landing for tourists coming to the Kilauea volcano. The landing and village were virtually destroyed by the 1868 tsunami (tidal wave that destroyed whole villages along the Puna/Kau Coast). A few coconut trees and remains of the old wharf are all that is left of what was once a fairly large village and steamship port.

A third historic site of some significance, a pulu factory ruin, is located on the trail between Makaopuhi and Napau Craters.



Several properties within Hawaii Volcanoes National Park are now on the National Register of Historic Places: the Wilkes Campsite and the old Ainapo Trail, the Puna/Kau Historic District, the footprints area, Kilauea Crater, Whitney Seismograph Vault, and the Old Volcano House. The Mauna Loa Trail is nominated and declared eligible for the National Register. These sites are noted on the map on page 24. The Puna/Kau Historic District includes previously described Wahaula Heiau, Kailiili Village, Site 911, Kamoamo Village, Puu Loa petroglyph field, Kealakomo, pulu factory ruins, and Keauhou Landing Site.



History and Archeology

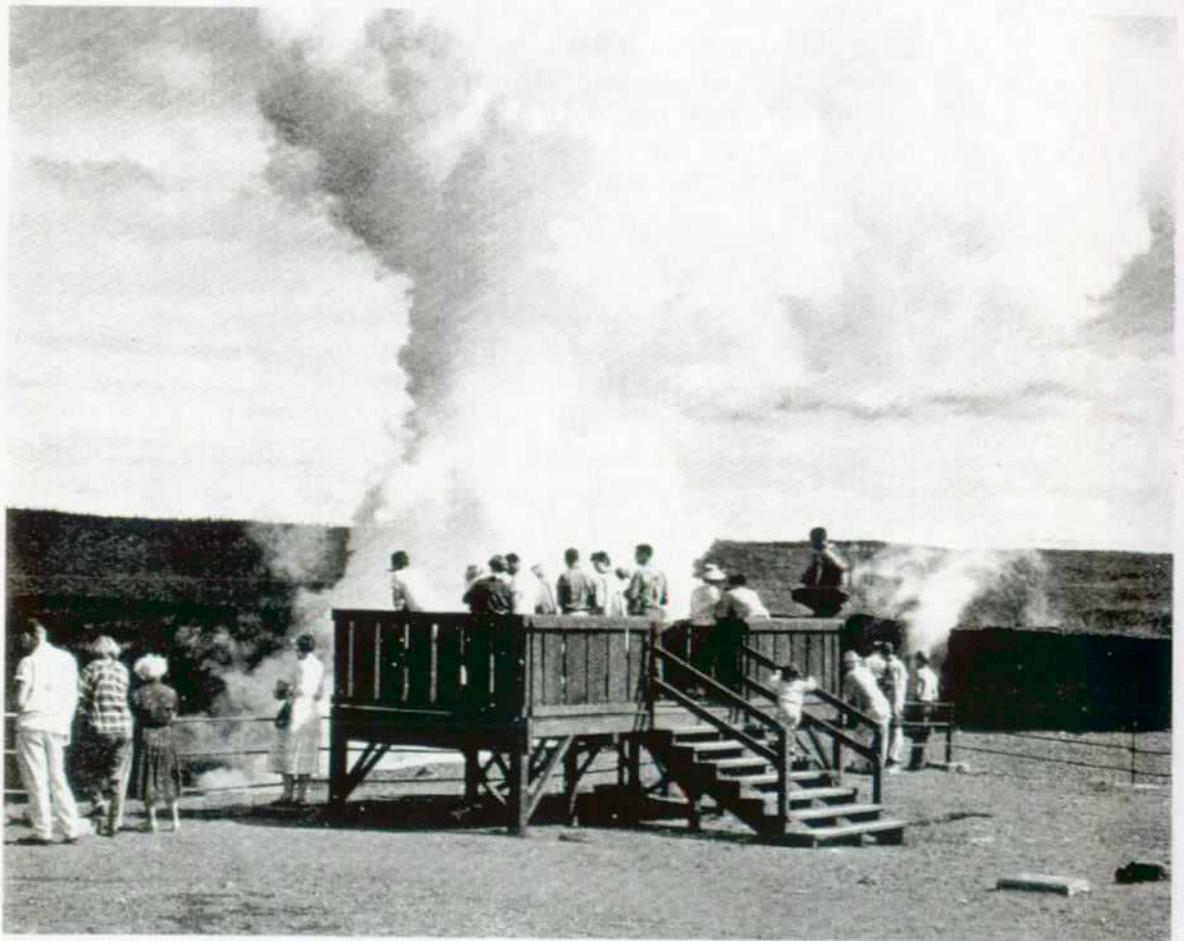
SITES ON THE NATIONAL REGISTER OF HISTORIC PLACES
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VISITOR-USE POTENTIAL

The park encompasses a variety of terrain between sea level and 13,680 feet, with a wide range of climatic conditions. But few areas are suitable for activities such as hiking, riding, and nature study. Lava flows and other volcanic features cover a major part of the park, and there is no natural water source. The 30 miles of seacoast within the park are extremely rough with shore cliffs up to 100 feet, sparse vegetation, and a dry, windy climate. There are a half-dozen trail access points to the ocean along the entire park coast. The areas of heaviest rainfall are covered with dense rain forest, are difficult of access, and contain important ecological values. These areas are sensitive to the disturbances caused by development and use.

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PLANNING CONSIDERATIONS

LEGAL

A Congressional Act of August 1, 1916 (39 Stat. 432) authorized Hawaii National Park on the Islands of Hawaii and Maui in what was then the Territory of Hawaii. The act gave the Secretary of the Interior authorization to permit the erection and maintenance of buildings in the park for scientific purposes. Subsequent acts extended the boundaries of the park: Act of May 1, 1922 (42 Stat. 503); Act of February 12, 1927 (44 Stat. 1087); Act of April 11, 1928 (45 Stat. 424); and the Act of June 20, 1938 (52 Stat. 781).

The park was created from federally owned lands and by donation from the Territory of Hawaii (later the State). The Act of February 27, 1920 (41 Stat. 452) authorized the Governor of the Territory to acquire privately owned lands and rights-of-way within the boundaries of the park.

The 1938 Act also had special restrictions regarding land acquisition. It stated:

That the United States shall not purchase, by appropriation of public moneys, any land within the aforesaid area but such lands shall be secured by the United States only by public and private donations.

The Territory, and later, the State of Hawaii, acquired most of these lands for the United States through donation, exchange, and condemnation with purchase.

Further, section 3 of the 1938 Act gave the Secretary of the Interior the discretionary authority to allow homesite leases within the Kalapana Extension to Hawaiians. It also restricted fishing along the coast to native Hawaiians of the Kalapana area and persons guided by them. The term "native Hawaiian" is defined as any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778.

Exclusive jurisdiction for park lands was assumed by the Federal Government by an Act of Congress on April 19, 1930 (46 Stat. 227). There were also later amendments to this act.

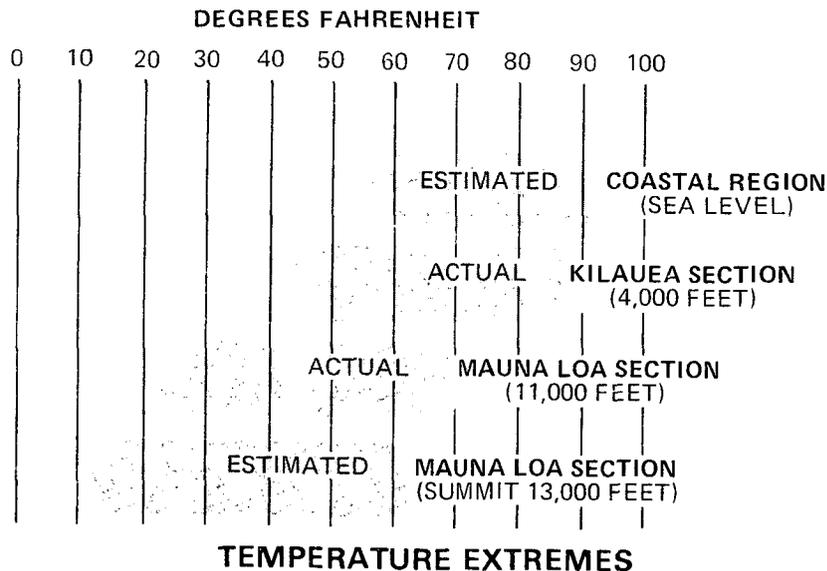
The Oloo Forest Tract of 9,654.67 acres was obtained by donation of ceded Territorial lands in 1951 and 1953 (Executive Order No. 1640 by Territorial Governor Long, November 28, 1952). The National Park Service owns and has protective custody of the Oloo Forest Tract even though the land is not contiguous to the park. Under terms of the 1938 extension act, all lands must be adjacent or contiguous to the existing park before actually becoming part of Hawaii Volcanoes National Park. Governor Long's executive order, donating the Oloo Forest to the National Park Service, specified that the Oloo lands were "... for a national wilderness area to be under the control and management of the National Park Service ..."

In 1961, Congress changed the designation of the park on the Island of Hawaii to "Hawaii Volcanoes National Park," (75 Stat. 577), approved September 22, 1961, and created a separate national park, "Haleakala National Park," on the Island of Maui.

Current gross park acreage is 219,522.36 acres not including new lands added by the recent Mauna Ulu eruptions or the Oloo Forest Tract of 9,654.67 acres. Of this, 207,374.94 is federally owned, and 12,143.42 is privately owned, and 4 State owned. The most recent land acquisitions, in 1972, were Ainahou Ranch of about 6,324 acres and a small 39.05-acre parcel near Thurston Lava Tube.

CLIMATE

Weather is an important influence in determining the visitor-use pattern. The climate around Kilauea is too cool and damp to be conducive to pleasurable overnight use, particularly when compared to the warm coastal areas where resorts are located. In 1951, there were only 15 days when no rain fell on the Kilauea area, and mean temperatures range from 50 degrees to 70 degrees Fahrenheit. The accompanying graph indicates the great range in temperatures in different sections of the park.



Rainfall varies greatly throughout the park and from year to year. A particular year may have 2 to 3 times as much precipitation as another year. The wettest parts of the park are on the northeast or trade wind side of Kilauea. At park headquarters, the average annual precipitation is 99.9 inches while 2 miles from headquarters on the Kau side of Kilauea Crater, at a similar elevation, the average is 48 inches.

Along the ocean, the rainfall varies from 15 to 60 inches annually. At the summit of Mauna Loa, the average annual rainfall is 15 inches. Snowfall occurs at times above 9,000 feet where depths up to a foot have been noted. There generally is a mantle of snow on Mauna Loa for several months during the winter. Frostline is at about 5,000 feet.

Several special conditions are also worthy of mention. Heavy rainstorms over periods of several days occur with rainfall amounts up to 15 to 20 inches. Electrical storms are infrequent and mild, but may occur any month. Strong tropical winds (Kona winds) blow once or twice a year, inflicting damage on buildings and vegetation and causing minor flooding to the pali sections of the park. The entire park lies within the storm track of Pacific hurricanes. The northeasterly trades prevail from March to November. Their velocity is generally 10 to 20 miles per hour, with higher gusts in exposed areas. There is also a tsunami (tidal wave) danger along the low sections of the park coastline. Points above the 50-foot contour are considered safe. The Civil Defense Agency warns backcountry users of potential tsunami danger as part of the Statewide warning network.

SPECIAL CONDITIONS

The most obvious condition unique to Hawaii Volcanoes is, of course, the volcanic eruption. Since 1969, activity has been almost constant and has covered about 30 square miles of the park with new lava including about 10 miles of road, created some new land where previously there was ocean, covered many acres of vegetation, and completely changed the face of the land in many locations. Each new eruption or change in eruption pattern stimulates new and heavier visitation and creates the obvious problem of safety, often in areas inaccessible by road or previously not frequented by visitors. Moreover, since 1969, eruptions have caused 50 to 100 fires per year.

Since much of the park is covered by unweathered lava, there is little soil depth and permeability is excellent. There is soil consisting of weathered ash deposits up to several feet in depth at Kipuka Puaulu, Kipuka Ki, and elsewhere on the lower slopes of Mauna Loa.

Water availability is especially significant. Even with heavy rainfall the water table is low. Due to the extremely porous fresh lavas,

there are no running streams in the park and few on the island. Water for domestic use in the Kilauea area is collected from extensive rain sheds. Current annual production is about 8 1/2 million gallons and is inadequate.

Other dangers are also present in the park. High surf dashes against the base of the cliffs, presenting a danger to shore fishermen and shellfish gatherers. Volcanic cracks throughout the Kilauea area make building-site selection difficult and are a hazard, especially in heavily vegetated areas. Water mains must be placed above ground to prevent ruptures from quake activity. This same activity also causes road damage along park roads.

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VISITOR USE

Visitor use at Hawaii Volcanoes National Park is year-round, 90 percent day use, and increases greatly during periods of volcanic activity. It is usually more than 100,000 a month year-round. Total yearly visitation has gone from a little over 300,000 in 1950 to 1,400,000 in 1972. Particularly heavy visitation occurs during eruptions, at which time the concessioner's overnight facilities are nearly always full.

Park visitation is essentially from three basic sources. Over 50 percent are off-island visitors, both on commercial tours and those driving rental cars. Other visitors come from Kilauea Military Camp or are local island residents.

The majority of off-island visitors see the park in organized tours. Kilauea is a major stop on the Hilo-Kona (and reverse) tours. Seven companies serve the park, using 11-passenger limousines and larger conventional buses. They carried almost 400,000 visitors through the park in 1972. In the summer, 1,200 to 1,500 persons tour the park each day; the "off-season" average is about 800 to 1,000. The tours are usually in the park between midmorning and midafternoon and almost all make a lunch stop at the Volcano House, where from 800 to 1,500 are served each day.

The balance of off-island visitors see the park in rental automobiles. There are presently about 500 rental cars available on the island and on the average, 75 percent of the cars rented each day are driven to the park.

Residents use the park somewhat less than off-island tourists, but make up a greater portion of eruption-viewers. They also come to picnic, sightsee, hike, and, to a limited extent, to camp and fish. The farthest islander resides within a 2 1/2-hour drive of the park and more than half the 62,000 residents live within an hour's drive. Their use is almost entirely during the day.

Park visitation increases greatly during periods of volcanic activity. Thousands of people flock to the park, mostly between dusk and midnight, to see the vivid eruption displays wherever they occur. Crowds to 20,000 a night have witnessed the more dramatic eruptions.

The continuing rise in park visitation noted earlier is the result of the tremendous increase in tourist travel to the Hawaiian Islands and the increased popularity of the "Outer Islands." The completion of the Chain of Craters Road in 1965 further stimulated use by opening a one-day loop trip through the park from Hilo. And even when the road was subsequently closed by an eruption in 1969 and still remains closed, visitation continues to increase. The predominant effect of the road closure is the limited use of the Kalapana Coastal area.

Limited recreational resources such as beaches or small bodies of water, plus the damp cool climate of the Kilauea area greatly limit the usual overnight camping use associated with most large mainland parks. Local residents tend to prefer this activity to be associated with the island's warm beaches and shoreline where they will be near opportunities for fishing and swimming.

There are, however, three small campgrounds with a total of 22 sites at Kamoamo, Kipuka Nene and near Namakani Paio. In 1972, these accommodated about 2,500 overnight visits, more than double what was recorded in 1967.

Three types of visitor overnight accommodations are located on or near the Kilauea caldera rim. The original Volcano House and its successors have been used by visitors from all over the world since 1866. The present structure is an 83-guest-capacity lodge located directly on the Kilauea caldera rim and is operated by the park's concessioner, C. Brewer Corporation. The return of almost constant eruption activity and a recent upgrading of the facility have been at least partially responsible for the greatly increased use. The occupancy rate during the peak month of August 1972 was 100 percent.

Namakani Paio Campground includes a 10-unit camper cabin facility operated by the park concessioner. It was constructed by the National Park Service in 1965 to provide low-cost overnight accommodations. Each unit sleeps four and has an outside picnic table, grill, and lights.

Use of this facility was initially very light, but has been growing. Heaviest use is in the summer and during eruption periods when the average occupancy approaches 100 per cent.

Kilauea Military Camp provides a complete, year-round, recreational vacation program within its 50 acres for active and retired members of the Armed Forces and their families. The camp is on the Kilauea rim and provides overnight accommodations for 300 people. Its program includes guided tours of the park and surrounding points of interest. The camp operates under a National Park Service special-use permit and has been in existence since 1916. It is administered by an Army officer who has a 57-man complement of Army, Navy, Air Force, and Marine Corps personnel, and 24 civilian employees. It operates at capacity during the summer and at 55 percent capacity during off-season, but off-season use is increasing.

Day-use activities are varied both in scope and in popularity. Automobile and bus sightseeing is the most popular activity and enjoyed by virtually all visitors, as many points of interest are made available by over 40 miles of good park roads and can be readily seen in one day.

Two air-tour companies run daily flights which include the park and use of these is steadily increasing. During periods of exceptional eruption activity, the island airlines and charter services make numerous flights over the eruption site sometimes resulting in air congestion.

Audiovisual programs throughout the year as well as exhibits at the Kilauea Visitor Center are a major part of the interpretive program. Daily programs include a talk and a color film presentation of recent eruptions. This program is geared to the tour pattern, but is suspended during periods of unusual eruption activity when interpretive contact is shifted to the eruption site.

Hundreds of persons daily hike the three short interpretive trails in the park: Devastation, Bird Park, and Thurston Lava Tube. Halemaumau Trail across the floor of Kilauea Caldera is a longer, 3-mile nature trail that receives much less use and the Footprints Trail in the Kau Desert has only light use. Rough trails to eruption overlooks are built as needed; and as many as 100,000 persons are estimated to have used the trail to the Mauna Ulu crater rim in 1972 while the eruption was continuous there.

Fishing from the park shoreline is done by hook and line, throw net, and spear. The coast from the Puna/Kau District line west to Kapao Point (15 miles) is open to public fishing. Access to this area is by trail. The remaining 15 miles of coastline, known as the Kalapana Extension, is limited by law to sport and commercial fishing by native Hawaiian Kalapana residents and persons under their guidance. The rough ocean waters greatly limit activities such as boating, swimming, scuba diving, and skin diving.

There are three small picnic locations around the Kilauea area, two along the pali section, and one at Kamoamoia on the coast. Use is light due to frequent wind and rain, particularly at higher elevations.

Backcountry use, especially overnight camping, is also increasing. In the 1960's, only about 1,000 to 1,200 persons per year stayed overnight in the backcountry. In 1972, the number was about 2,500. This is despite the rough terrain and lack of fresh water. Most use is along the coast below Hilina Pali where there is access to good fishing at Halape, Kakiwai and Apua Point. There is also some use of the trail to Mauna Loa's summit. Here two cabins open to visitor use provide minimum shelter in this cold climate. One is at Red Hill at the 10,000-foot level and the other is at the eastern edge of the summit caldera.

ADJACENT RESOURCES

Large expanses of primitive land surround much of the park, particularly at the higher elevations. Access has, in the past, been very limited by the rough character of the land, great distances involved, defense activities, high elevation, lack of water, and the fact that nearly all major development has historically been concentrated along the seashore or at least at lower elevations. Use of this land for grazing or for production of timber has proved to be a marginal economic venture at best. As land in the islands becomes more valuable, however, all such areas are being scrutinized in more detail to determine what their appropriate uses should be.

Part of the purpose of this planning document is to examine these lands and determine which, if any, possess features of great enough significance to be included in Hawaii Volcanoes National Park, and what kind of public use and management programs should be applied. The land in question encompasses generally that area around the major Hualalai Volcano, the intervening lands between that mountain and Mauna Loa, and the upper slopes of Mauna Loa.

Geology

Hawaii Volcanoes National Park contains only a small portion of Mauna Loa Volcano. The Mauna Loa strip is 1-mile wide near Kilauea, flaring out to 6 miles at the summit. Major geologic features lying within the park are the Mokuaweoweo Caldera and the upper portions of Mauna Loa's two rift zones. But about two-thirds of the major geologic features are outside the park. This includes the greater part of the dramatic southwest rift and the lower portions of major historic lava flows.

Hualalai rises 8,271 feet above sea level over the resort town of Kailua. It rests in the rain shadow of its lofty neighbor, Mauna Kea, and has thus suffered very little erosion. The last eruptions on Hualalai occurred in 1800 and 1801, when two voluminous



Southwest rift zone of Mauna Loa.



Hualalai from the interior basin.



Cinder cones near the summit of Hualalai.

flows poured from the northwest rift at the 5,500- to 6,000-foot level. Several lava rivers flowed seaward to form the Kaupulehu flow and overwhelmed Hawaiian villages on the shore.

About 120 cinder, spatter, and lava cones, more abundant than on Mauna Loa, dot the upper slopes of Hualalai. Some reach a height of 300 feet, but most are 100 to 200 feet high. Hualalai's summit is pockmarked by numerous pit craters and some of the larger summit cones contain crater depressions 500 feet deep. Eruptions from these cones have covered much of the summit area and the adjacent slopes with loose cinders and pumice.

An additional geologic feature of Hualalai is the abundance of xenolithic nodules, coarse crystal aggregates composed of olivine, pyroxene, and feldspar, that were brought to the surface during the 1860 eruption. Because of their significance in deducing the genesis of basaltic magmas, they have received worldwide attention by earth scientists. Hualalai has progressed further in its "life cycle" than have Mauna Loa and Kilauea, making it attractive for comparative study and interpretation.

Vegetation

The upper slopes of Mauna Loa from its summit to 11,000 feet are classified as unvegetated stone desert. Precipitation is light and there is year-round ground frost. Mosses appear at 11,000 feet on north-facing cracks of lava and in sheltered blister-holes. Low, gnarled pukeawe, ohelo berry, bunchgrass, and small ferns are found scattered from 10,000 feet down to 8,000 feet. At 8,500 feet on Mauna Loa and also on Hualalai, shrubs begin suddenly to grow taller and to be more densely distributed. Other shrubs and berries such as pilo and kukainene appear. The ground frost disappears, precipitation increases, and clouds frequent the ground. Timberline is from 7,500 to 8,000 feet. Here, the ohia is a full-grown tree. An open ohia and mamani forest is established on the aa flows at 7,500 feet down to 6,600 feet, and below the ohia-mamani forest there is koa and an occasional sandalwood.

At lower elevations to 4,000 feet, where rainfall greatly increases, the forest changes to a dense mix of koa and soapberry with tree ferns. Tall and well-formed ohia and koa are present in the "rain forest" belt between 3,000 and 5,000 feet. Unaltered Hawaiian rain forest is becoming rare, and only 23,000 acres are afforded full protection in Hawaii Volcanoes National Park. Most of the remainder, (outside the park), is subject to range and commercial forest development.

Moreover, at one time most of the interior plateau country was covered by fine stands of koa and sandalwood. Sandalwood stands were destroyed during the China trade period of the early 19th century. Other interior forests were further depleted by extensive cattle grazing and some were cleared for pasture. On Hawaii's Kona slope, only Honaunau Forest and another smaller section, Kahuluu Forest to the north, remain. Near Kilauea, the Kilauea State Forest Reserve also contains considerable botanical integrity. In recent years, ranchers have been fencing the lower lands up to 6,000 feet, so some recovery of sandalwood, mamani, and koa has occurred in the interior plateau. But the long-term effects of heavy cattle grazing are still noticeable in the Hualalai-Mauna Loa interior lands.

Rare and endangered plant species found within this area include various species of *Bidens*, *Santalum pilgeri* and/or *paniculatum*, *Cyanea carlsonii*, *Delissea undulata*.

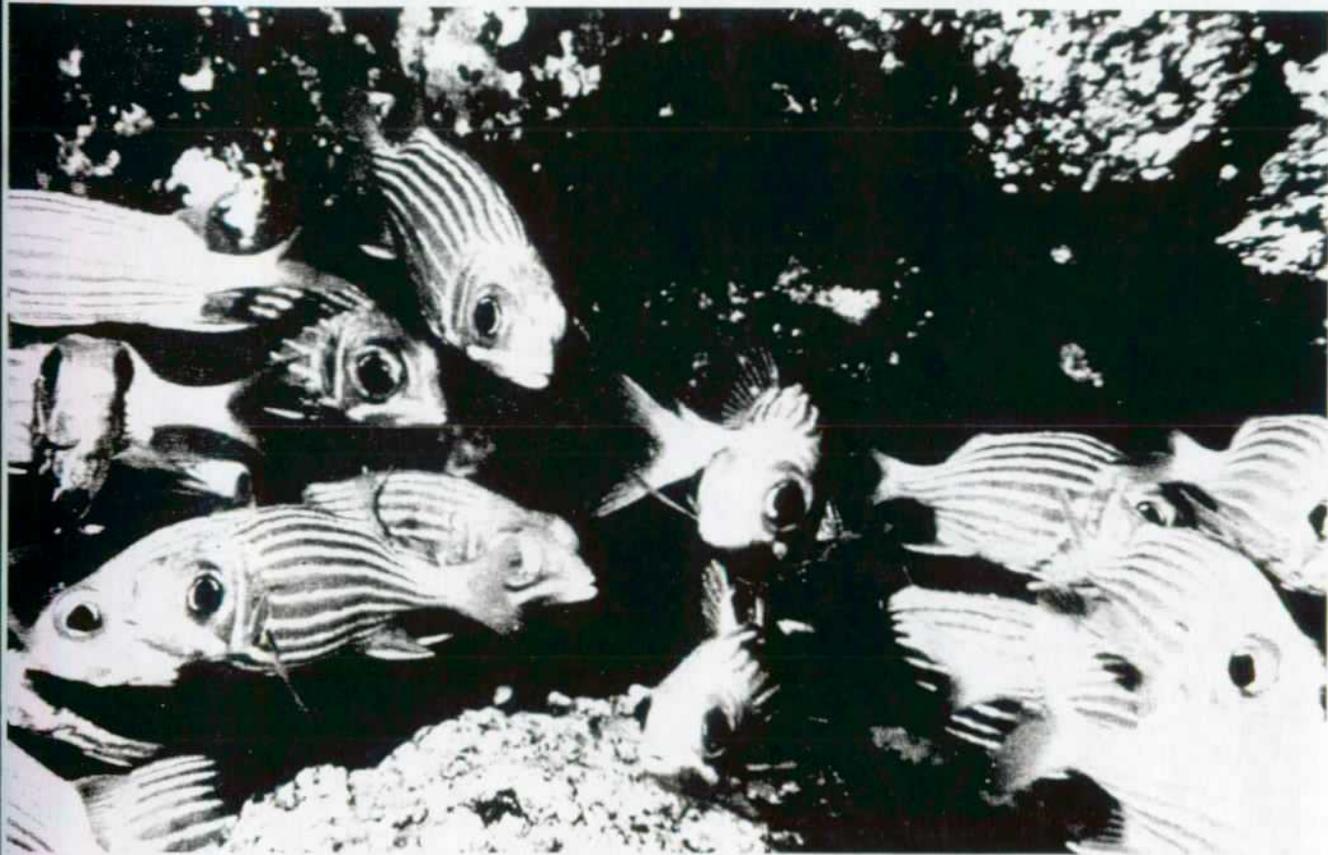
Animal Life

The native Hawaiian goose, the nene, may be seen occasionally on Hualalai's eastern slopes. The State Division of Fish and Game, in cooperation with the Bishop Estate, has established sanctuaries on the slopes of Hualalai and Mauna Loa (Keauhou Ranch) where nene are released and given protection. A third sanctuary and release site was established in 1967 on the Kahuku Ranch on the southwest slope of Mauna Loa between 6,500 and 8,500 feet, through a cooperative agreement with the Damon Estate. Birds reared at the State Nene Project have been released at these sites.

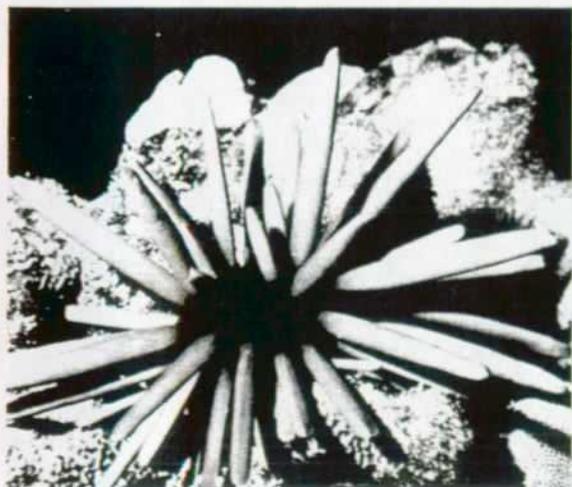
There are a number of other endemic Hawaiian birds on Hualalai and the interior plateau. Among these are four honeycreepers: apapane, iiwi, amakihi, and creeper. Small numbers of the Hawaiian crow have also been reported in the Honaunau Forest and on Hualalai in recent years. They are among the very last in existence and are on the United States Department of Interior list of endangered species. The endangered palila formerly was resident on the Hualalai saddle before feral sheep and goats devastated the mamani stands that constitute a major part of the palila's environment.

In 1967, small breeding populations of another endangered species, the Hawaiian dark-rumped petrel, were discovered in the vicinity of Puu Keokeo, a 6,800-foot cinder cone on Mauna Loa's southwest rift. No other populations of this extremely rare and threatened seabird are presently known on the Island of Hawaii.

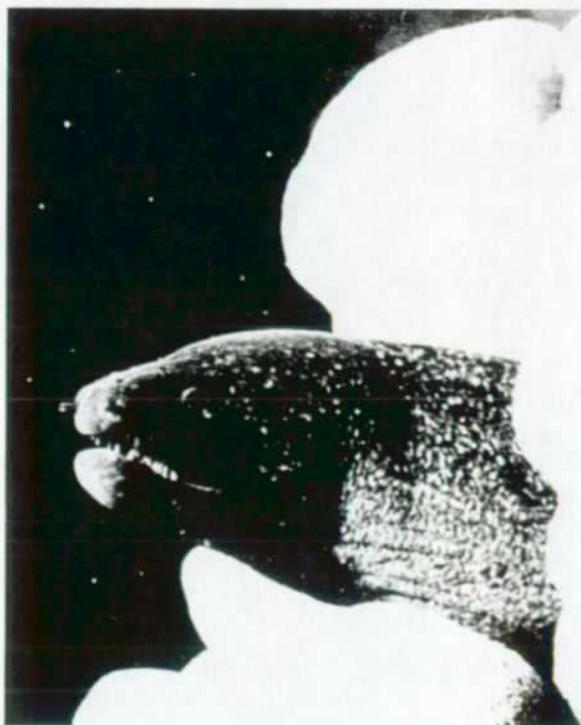
Exotic birds, including chukar, ring-necked pheasant, and dove reside on the interior plateau and slopes of Hualalai, and feral goats, pigs and sheep are also present. They receive relatively light hunting pressure, as access to this region is limited.



Squirrel Fish



Slate Pencil Sea Urchin



Moray Eel

Archeology and History

There are two sites worthy of mention in the Hualalai vicinity, Ahuaumi Heiau and the Judd Trail.

Ahuaumi Heiau, on the National Register of Historic Places, is an ancient Hawaiian rock feature on the barren interior plateau between Hualalai and Mauna Loa. The first known drawing of the heiau was made by Lieutenant Charles Wilkes in 1841, and represents, in this surprising site, the dry masonry remnants of the type of major Hawaiian temples usually found close to coastlines. Wilkes wrote of the heiau:

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"After a day's travel they (his men) reached the site of the ancient temple of Kaili. These ruins lie equally distant from three mountains, Mauna Kea, Mauna Loa, and Hualalai. This temple is said to have been built by Umi, who with his wife, Papa, is supposed to have inhabited it when he was king of the island. The northern pyramids forming the front were originally erected by Umi, to represent the districts of the land he then governed; and as he conquered other districts, he obliged each of them to build a pyramid on the side of the temple. All these are built of compact blocks of lava, laid without cement. The building is said to have formerly been covered with idols, and offerings were required to be brought from a great distance, consisting generally of provisions. There are now no traces of these idols. The situation of the temple is at an elevation of 5,000 feet above the sea."

Other stories present the feature as ancient Hawaii's first census, with each district contributing a stone for each man, woman, and child, with the largest pile indicating the most populous district. In addition, the Kaili title may refer to the family war god, Kukailimoku, held by Umi and passed down to Kamehameha the Great in historic times. This title, with a plan of the structure drawn by Wilkes, lends credence to the structure being a major ancient temple. Research now underway on ancient Hawaiian temples may shed greater light on its significance.

The Judd Trail, a typical two-horse Hawaiian trail of the mid-1800's, was an attempt to connect Kona with Hilo in a more-or-less direct line. Built by taxpayers and prisoners who worked side by side under the direction of Gerritt P. Judd, M.D. (missionary turned into His Majesty's Minister of the Interior), trail construction was aborted through two major causes: the 1859 lava flow from Mauna Loa which crossed in front of it and left new land surface too hot to handle, let alone walk over; and the logistics of supply for a work gang getting farther and farther from food and water. Remnants of the trail are well preserved and its story is an interesting sidelight on the transportation history of Hawaii.



Ahuaumi Heiau



Judd Trail

Special Considerations

The Hualalai summit area, the upper slopes of Mauna Loa, and the interior plateau lands are in large blocks of private, State, and Federal ownership, lying above productive farm and ranchlands. The only significant development is the Mauna Loa Observatory, a research installation occupying a 4.05-acre tract of State land at the 11,150-foot elevation. The location is important because the unique, uncontaminated, clean air qualities offer unparalleled opportunities to monitor world wide changes in the earth's upper air atmosphere.

There are three principal landowners—the B. P. Bishop Trust Estate, the Samuel M. Damon Trust Estate, and the State of Hawaii. Almost all the lands are within State Conservation Districts.

The B. P. Bishop Estate manages the lands of the late Princess Bernice Pauahi Bishop for the support of the Kamehameha schools. They include most of the Hualalai summit, forest lands between Hualalai and the Kona Coast, the saddle area between Hualalai and Mauna Loa, and lands above the City of Refuge.

The Samuel M. Damon Trust Estate owns Kahuku Ranch, which extends from the park boundary at 12,500 feet on the southwest rift of Mauna Loa to the ocean. Their holdings contain the greater portion of the upper southwest rift slopes. State of Hawaii lands, essentially barren, are above the 8,500-foot level on Mauna Loa and include a small tract on Hualalai.

Current recreational use of these lands has been limited to a minor amount of pig and goat hunting up to the 8,000-foot level and some game bird shooting on the lower slopes of Hualalai and Mauna Loa. The best hunting is at 6,000 to 7,500 feet. Nearly all hunters are local residents who obtain permission from ranchers or landowners. There is occasional snowplay at the Mauna Loa Observatory during the winter. Mainly, however, such use is limited to the summit of Mauna Kea.

Weather conditions are vastly different from those on the nearby sunny Kona Coast. At the higher elevations on Mauna Loa and Hualalai, there is almost daily occurrence of dense fog, the band of greatest concentration being from 6,000 to 10,000 feet. This condition usually starts developing in midmorning and persists until early evening. In the winter months, there is often snow on Mauna Loa down to 9,000 feet. Depths range from a few inches to a foot during any one storm.

FUTURE MANAGEMENT AND USE

PARK PURPOSE

The purpose of Hawaii Volcanoes National Park is to conserve the volcanic features, endemic Hawaiian ecosystems, Hawaiian cultural and archeological remains, and inherent scenic values for visitor enjoyment and appreciation and for their scientific and historic values with minimum impairment to the resources.

The park preserves for public interest and scientific research significant features of Hawaii's natural history and cultural background, enabling people to understand the powerful volcanic forces, fragile biota and way of life which characterizes the Hawaiian Islands.

MANAGEMENT CATEGORY: Natural

MANAGEMENT OBJECTIVES

General Management

Develop and manage the park in accordance with the long-range objectives of the National Park Service and the administrative policies established for "natural" areas of the National Park System.

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Develop and manage the park as a 7-day per week, year-round operation, mainly for day use.

Do not charge entrance fees.

Seek legislation to include the Oloa Tract as a detached portion of Hawaii Volcanoes National Park.

Recognize Kilauea Military Camp as an established nonconforming use, but cooperate with the Armed Forces in managing the camp for minimum interference with the public use of the park.

Resource Management

Preserve the evolving natural scene by protecting outstanding geologic features, such as the calderas and rift zones, steam and sulphur banks, the profile of Mauna Loa, and the associated native ecosystems.

Cooperate with public and private landowners in striving to maintain the evolving natural landscape adjacent to the park.

Acquire those lands which will improve the geologic, ecologic, and scenic integrity of the park. Recognize the priority of park land acquisition on this island, if authorized, at (1) City of Refuge and the Honokohau study area, (2) Hawaii Volcanoes.

Protect the park's remnant Hawaiian ecosystems—including endangered species—from further depredation and competition by those exotic animals and plants introduced by modern man.

Reestablish the park's endemic species into their former ranges, concentrating efforts on those species which are in danger of extinction, and those that are key components of major native ecosystems.

Preserve the sites and structural remains of the early Hawaiian period and historical period through a program of limited stabilization and restoration in cooperation with local Hawaiian interests.

Support the U.S. Geological Survey's research program on volcanism which contributes invaluable knowledge needed for park management and interpretation.

Conduct and encourage natural history research focused upon: (1) further definition and insight into the park's native island ecosystems; (2) developing life history and ecologic understanding of species facing extinction; and (3) developing management strategies for preserving endemic island ecosystems.

Encourage research in other fields of natural history and anthropology by other organizations and individuals.

Limit park collections of natural history specimens and artifacts to those intended for display and to those essential to study for the purposes of resource management and authentic presentation of the interpretive themes.

Assist other institutions in developing representative collections required for research, only if such collections do not jeopardize park integrity.

Visitor Use

Develop an interpretive program around the three themes of significance in Hawaii Volcanoes: (1) the primary story of active volcanism from which the island is evolving; (2) the secondary story of native ecosystems and threats to their survival from introduced plant and animal species; and (3) the prehistoric and historic events and culture which illustrate man's adaptation to this local environment.

Provide visitor access between the Kalapana Coast and the Kilauea Caldera, so that these major features can be seen and enjoyed by the majority of visitors. When conditions permit, reconstruct the lava-buried Chain of Craters Road, relocated where necessary.

Encourage visitor enjoyment of remote areas—including the summit and slopes of Mauna Loa, Kau Desert, and the Kau coast.

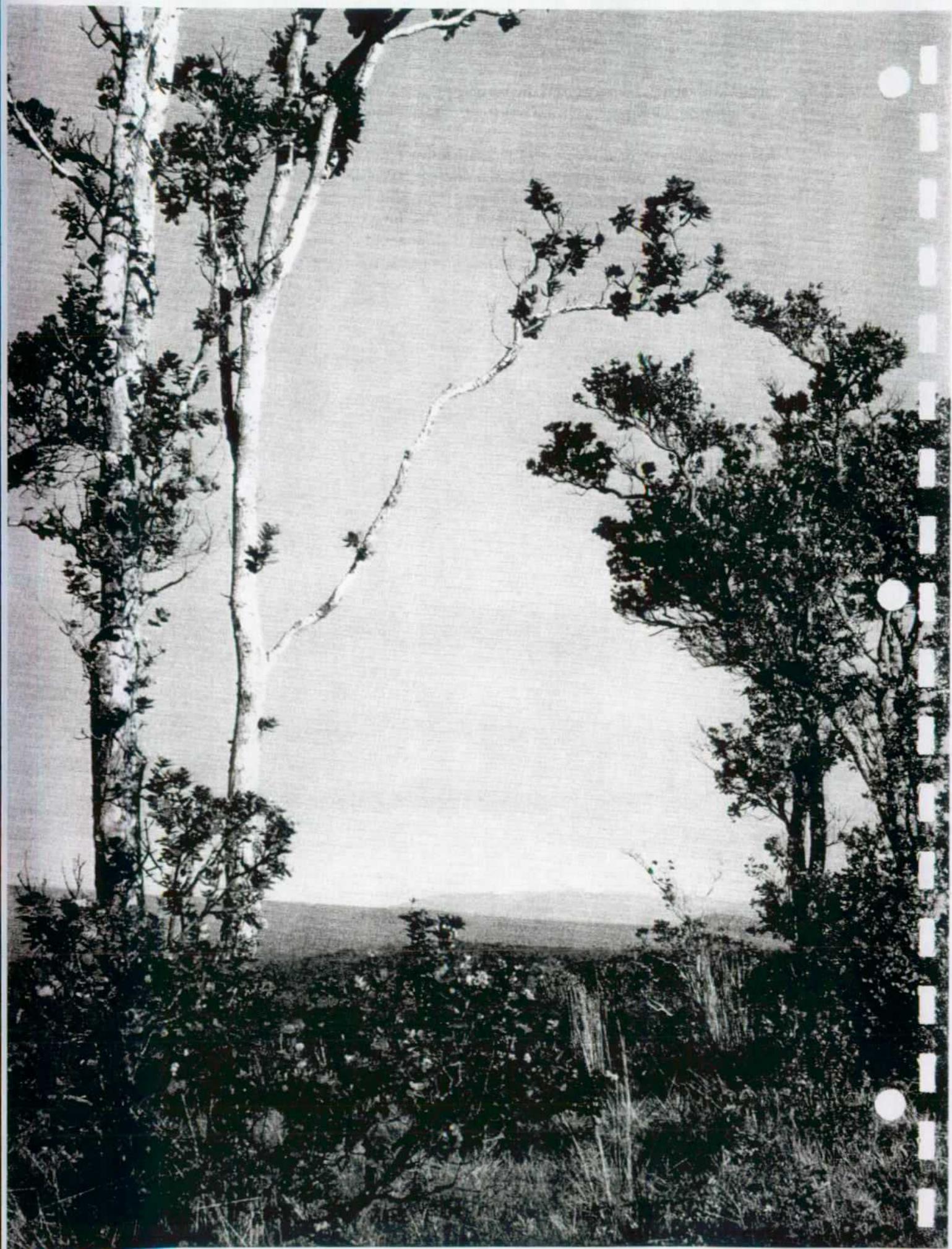
When reasonable, provide safe routes of access for visitors to significant interpretive features and visitor facilities even though special hazards may exist.

Provide meal service, other day-use visitor needs, and limited overnight accommodations in the park through an authorized concessioner.

Provide only enough overnight facilities (lodging and campgrounds) for some visitors to experience an in-depth enjoyment of park resources, but within the estimated overnight carrying capacity for the park. The extent of campground development may be influenced by the availability of campsites outside the park.

Depend on the gateway communities and private enterprise to develop any additional lodging facilities needed for park visitors.

Recognize Hawaii State Route 11 as the lifeline from the southern area of Hawaii Island over which all commercial agricultural, industrial, and visitor traffic must pass on its way to and from Hilo; cooperate with the State Division of Highways to plan and identify improvements in road design which meet the Islander's transportation requirements and park visitor needs for a scenic parkway which does minimum visual damage to the park landscape.



THE PLAN

45

A great variety of experience awaits the visitor to Hawaii Volcanoes National Park. The foremost attraction will continue to be Kilauea Caldera where the visitor will be able to view, at close range, the wealth of volcanic features and the eruptions that occur there. When new eruptions occur elsewhere, such as the current one at Mauna Ulu, they too will be interpreted and, if possible, access afforded.

For the visitor who travels by private car and wishes to stay longer, additional attractions will invite his attention: the Oiaa fern forest; vast primitive areas around Mauna Loa's summit; remote coastal stretches; and many historical, archeological, and cultural exhibits of Hawaii's provocative past.

Activities will include fishing, nature walks, camping, hiking, picnicking, and pleasure driving, and campgrounds and hotel accommodations will continue to be provided for those few visitors who remain in the park for more than one day.

Research and management of resources is more important here than perhaps at any other unit in the National Park System. This is not only because of the legislative mandate concerning volcanic research, but also because of the great problems encountered in maintaining a stable ecosystem when competing exotic plant and animal species wreak destruction on the many endemic populations that exist nowhere else in the world.

INTERPRETATION

The interpretive program must be comprehensive and flexible—comprehensive enough to include a wide variety of natural features as well as archeological remains and flexible enough to meet the needs of visitors who have vastly different travel patterns, education, and interests. The special need for additional personal interpretive services during eruptions must also be met. Large visitor groups from commercial tours make regular stops at key points, imposing relatively high demands on facilities and staff for brief periods each day. These visitors must be served, as must those traveling independently and arriving continuously during the day. Furthermore, during eruptions, heavy visitation occurs at night when the molten lava can be seen as spectacular, glowing red fountains, streams, or lakes. The interpretive program must reach these nighttime visitors whenever and wherever they congregate, be it at Halemaumau or at some new eruption site not known at this time.

The three interpretive themes dealing with volcanism, ecology, and archeology are related because volcanism has strongly influenced the evolution of ecosystems and human developments. The full story of one theme cannot be related without some reference to the others. Volcanology will be the dominant theme along the Chain of Craters Road in the Kilauea Caldera area. Ecology will be interpreted onsite, in the lowlands, Oiaa Forest, Hualalai, the Mauna Loa Strip, Bird Park, and at other appropriate locations such as the nature trails in the Kilauea area. Marine environment will be interpreted along the Kalapana Coast and related to the Hawaiian culture. Prehistoric cultural remains along the Kalapana Coast will be used further to interpret the archeological story. Historic interpretation will be incorporated where appropriate. An ecological approach to interpretation should blend themes in relation to the significance of the features involved. Detail on specific interpretive facilities will be provided in the interpretive prospectus yet to be prepared.

Existing facilities (with the exception of the Kilauea Visitor Center) are adequately located and in harmony with this plan's interpretive concept. The structure originally built for geological research is outdated. It will be replaced by an interpretive facility near the rim of Kilauea's caldera where it can better relate to primary features, including the interior of Halemaumau firepit, the whole summit area of Kilauea, and Mauna Loa without presenting an intrusive element. The new exhibit and audiovisual presentations can be readily associated with features in view from the interpretive facility.

The recently constructed interpretive structure near Wahaula Heiau on the Kalapana Coast is now on a dead-end road and little used. Reconstruction of the Chain of Craters-Kalapana Road, as discussed later in the report, will increase the importance of the Wahaula development as a major park entrance.

Innovative interpretive structures will also be necessary, particularly in those areas where the environment is sensitive to human use. An example of this would be a nature trail elevated above fragile resources, such as Oiaa Forest. In addition to protecting the resource, this would allow visitors to obtain close-up views of various levels of forest ecology. The upper levels can provide exceptional opportunities for observing the brightly colored Hawaiian birds that inhabit the forest canopy.

PARK BOUNDARIES

Kilauea Caldera is and will continue to be the primary attraction and its northern rim will continue to be the center of park facilities and activities. From this location, moreover, the shield volcano profile of Mauna Loa, the most dominant feature of the landscape, is in full view. Other features within the park and on adjacent

lands complete the story of volcanic processes, exhibit ecological progression from volcanic materials to dense rain forest, and illustrate early Hawaiian occupation of the island and association with volcanic forces. To protect these features, to provide for expanded visitor use and enjoyment, and to build necessary park facilities, the following boundary changes are proposed:

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Tracts Within the Authorized Boundary:

Several land parcels within the present park boundary were authorized for inclusion by Secretarial Order. However, no funds were to be authorized for purchase, and they could be acquired only by donation. Legislative action will be required to authorize purchase of these lands as follows:

Tract 22 (5,649.88 acres): This is recommended for acquisition to preserve a portion of an extensive virgin ohia and fern forest which is the natural habitat of native honeycreepers and the endangered ou.

Parcels 12 (159.44 acres), 13 (109.00 acres), and 15 (144.20 acres) of Tract 19: These parcels are proposed for acquisition to protect the historic complex at Wahaula and to provide a buffer zone for the Kalapana Road. The balance of Tract 19 (2,666.12 acres) is hereinafter proposed for deletion.

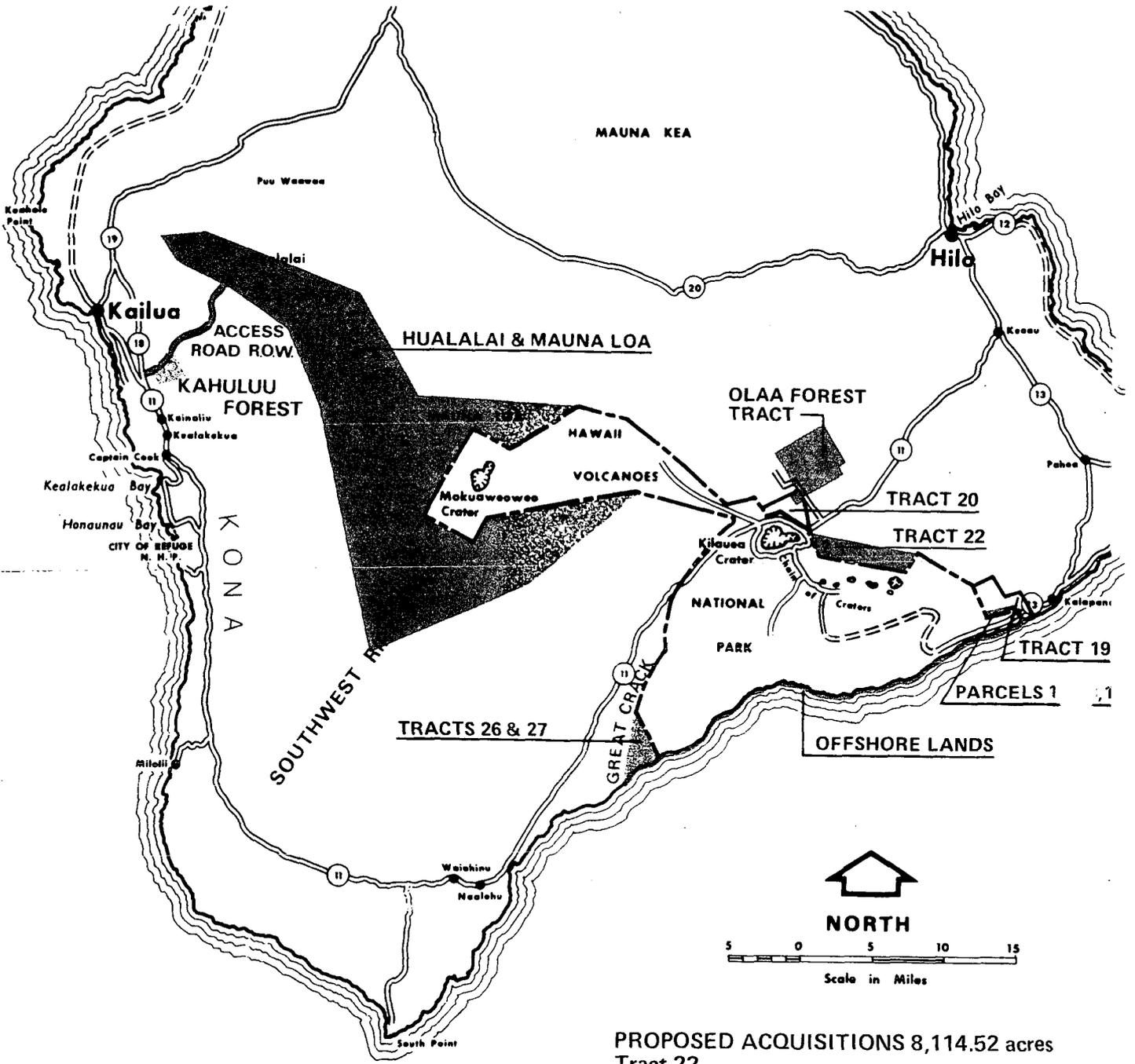
Tracts 26 and 27 (2,052.00 acres): These tracts are at the southwest corner of the park and makai (seaward) of the Great Crack, a major geologic feature lying along the park's western boundary. Acquisition of these tracts is proposed, but will be deferred until it is determined that potential geothermal energy extraction is not feasible.

Proposed Additions:

Changes in the existing boundary are proposed, adding certain lands to the park. Appropriate legislative authority will be sought to include and to acquire the following lands:

Olaa Forest Tract (9,654.67 acres): Although now owned by and under the administration of the National Park Service, this unique fern and ohia forest has never been an official part of the park. It is proposed that legislation authorize its inclusion as a non-contiguous part of the park.

Offshore Lands (2,700.00 acres): Tide and submerged lands extending 1/8-mile offshore, now owned by the State of Hawaii, are recommended for addition and acquisition to protect the intertidal zone, the small island of Keaoi, and the intervening coral reef between there and Halape, and to provide opportunities for interpretation of the marine life.



PROPOSED ACQUISITIONS 8,114.52 acres
 Tract 22
 Parcels 12, 13, 15 of Tract 19
 Tracts 26 and 27

PROPOSED ADDITIONS 112,414.67
 Olaa Forest
 Offshore Lands
 Volcano Summit Area
 Access Road

PROPOSED DELETIONS 4,032.90
 Tract 19 (portion)
 Tract 20

BOUNDARIES
HAWAII VOLCANOES NATIONAL PARK

Volcano Summit Area (100,000.00 acres): The summit of Hualalai Volcano and the upper slopes of Mauna Loa are proposed additions that will include the southwest rift of Mauna Loa down to approximately the 8,000-foot elevation and to the same elevation of Mauna Loa's north side. Proposed addition on Hualalai goes to about the 6,000-foot elevation. Also included is a corridor between that volcano and Mauna Loa that will provide for public enjoyment of the interesting geologic and historic features on Hualalai and allow ample space for construction of visitor-use facilities.

Access Road (60.00 acres maximum): This road right-of-way is proposed to be acquired in fee to provide access to Hualalai Extension. Location is only approximate and authorizing legislation should provide for a detailed alignment study within the following guidelines:

The lower road terminus will be at State Route 11, the Kona Belt Road.

The upper terminus will be inside the proposed Hualalai addition at about 6,500-foot elevation.

The right-of-way will be approximately 15 miles long, a maximum of 300 feet wide.

The road alignment will avoid significant archeologic, historic, and critical wildlife habitat areas, but will necessarily be routed in the vicinity of Kahuluu Forest.

Appropriate access points for private development will be provided based on discussions with landowners.

The road proposal will require full environmental analysis and public review before implementation.

If the State of Hawaii constructs a direct Hilo-Kona road across the Hualalai-Mauna Loa Saddle, it would provide access to the park's Hualalai extension, and this proposed access corridor would then be unnecessary.

Proposed Deletions:

Tract 20 (1,366.78 acres): This tract is recommended for deletion because it consists of State highway land, extensive subdivision, agriculture, and golf course development lying between the Olaa Forest Tract and Kilauea. (This includes the 4.00-acre parcel owned by State of Hawaii on which Highway 11 is located.)

Tract 19 (remaining 2,666.12 acres): This area is situated at the eastern end of the park near the village of Kalapana and is recommended for deletion as it contains a subdivided area.

RESEARCH

Many of the difficulties in preserving native Hawaiian flora and birds stem from inadequate information on native plants and the effect of exotic plants and feral animals on native ecology. A continuing research program is the most important element in the future planning and management programs for the national parks on Hawaii. At Hawaii Volcanoes it should include:

Vegetation mapping of ecosystem boundaries or zones.

Degree of environmental stability and guidelines for manipulating environmental factors for restoration of historic communities.

Evaluate the historic, scientific, and scenic resources in the Kalapana Extension to determine their relative value with regard to the Secretarial authorization to grant homesites to native Hawaiians.

Evaluation of the use of herbicides and other techniques in controlling exotic plants.

Evaluation of effects of fire upon Hawaiian vegetation communities.

Present impact of the goat and pig populations on plant and animal communities, and the comparative impact when control programs drastically reduce population of these animals.

Ecological investigation of the Mauna Loa silversword, its past and present distribution, and method of restoration.

Oceanographic investigation, including vanishing species, and possibilities for restoration and interpretation.

A complete study of bird populations, including the effect of the numerous exotic birds on the native bird populations, and the effect of exotic rat and mongoose on nesting birds.

Investigation of the nene and its habitat in cooperation with the State of Hawaii Fish and Game program.

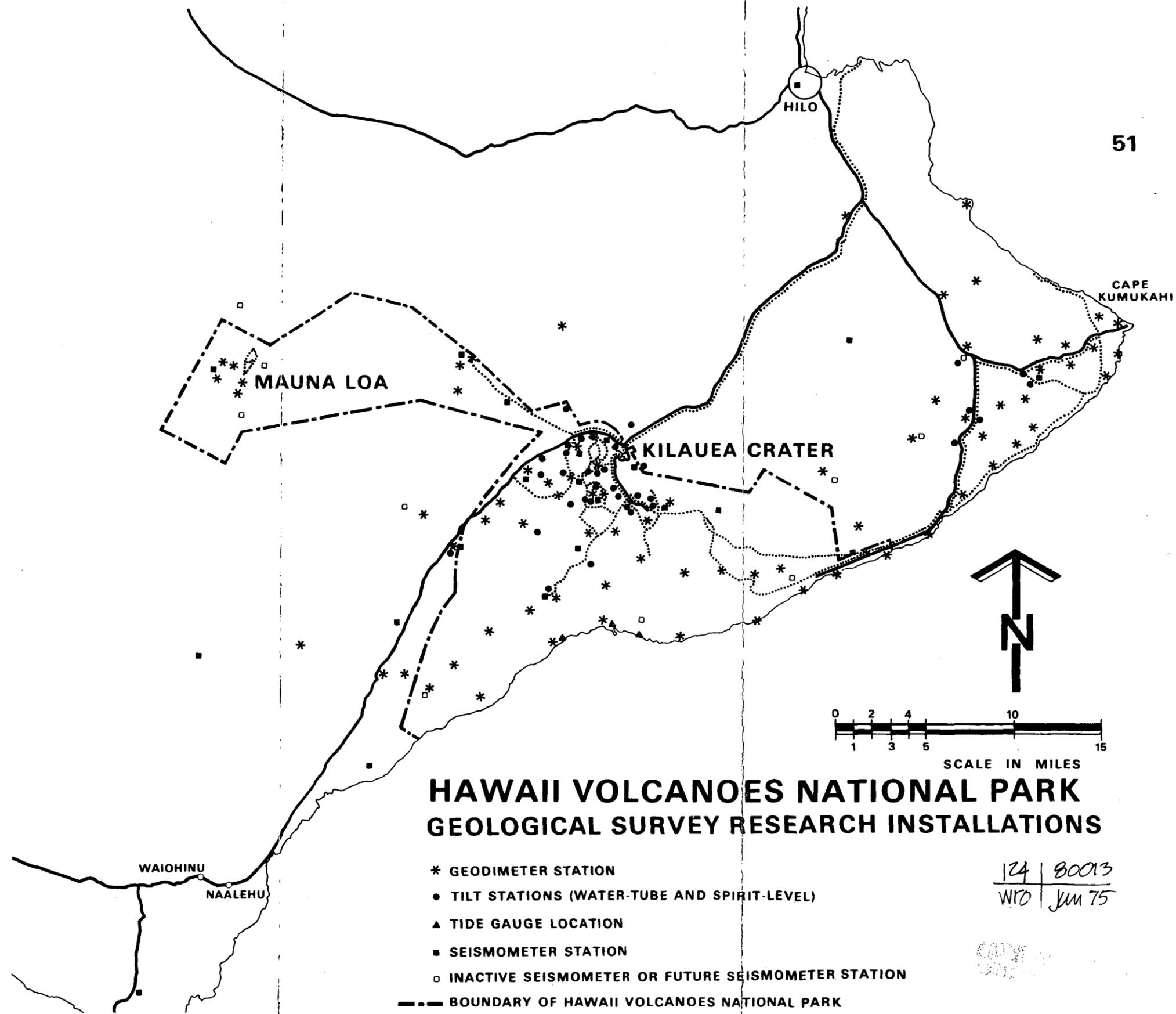
Further historical and archeological investigation of coastal villages.

Study of the legend of Pele and religious ceremonies connected with Kilauea.

Examine the capacity of the park's resources to accommodate visitor use with no appreciable damage.

The significant program of U.S. Geological Survey Research predates establishment of Hawaii Volcanoes National Park. Their facilities for research are in strategic locations throughout much of the Island of Hawaii, as is shown on the accompanying map. No major change in the program is contemplated although new electronic developments may allow removal of many of the wires which intrude on the natural scene.

Atmospheric research into background levels of trace contaminants is also required. This activity at the Mauna Loa Observatory utilizes the special environment of upper Mauna Loa. This research, dating back to 1956, is the world's only long-term clean air monitoring program.



**HAWAII VOLCANOES NATIONAL PARK
GEOLOGICAL SURVEY RESEARCH INSTALLATIONS**

- * GEODIMETER STATION
- TILT STATIONS (WATER-TUBE AND SPIRIT-LEVEL)
- ▲ TIDE GAUGE LOCATION
- SEISMOMETER STATION
- INACTIVE SEISMOMETER OR FUTURE SEISMOMETER STATION
- BOUNDARY OF HAWAII VOLCANOES NATIONAL PARK

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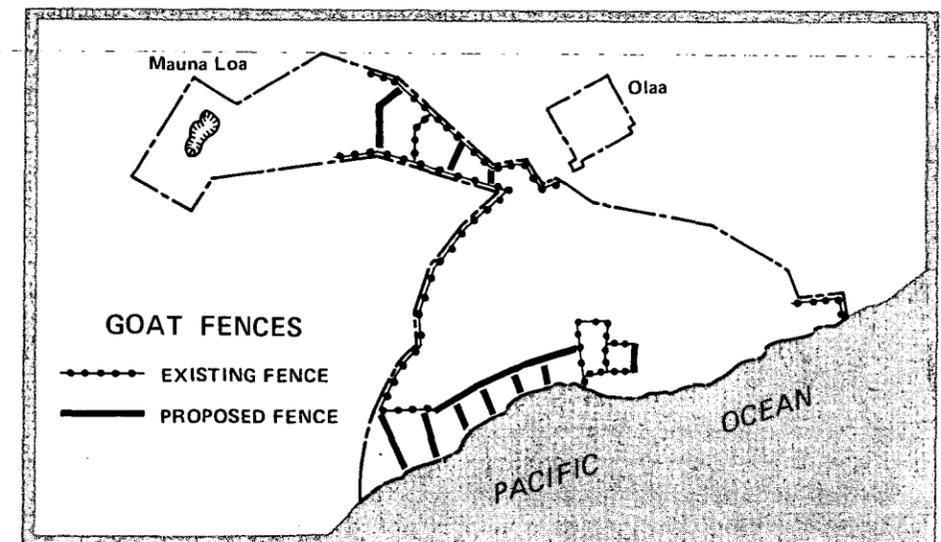
RESOURCES MANAGEMENT

This will continue to be the logical follow-up program to research since part of the goal of the research program will be to examine current practices aimed at preservation of native populations. Resource management must also, however, be a dynamic program, one that can change or adjust as new information and techniques become available. Such information may confirm the effectiveness of present methods or may suggest some change. The general goals, however, remain the same for management of these resources as indicated in the following discussion. Greater detail on this program is covered in the resources management plan.

Feral and Exotic Animal Control

Future research may discover new methods which would provide greater options to control feral animal populations. The proposed program is based on known control methods. This program is the key to restoration of the park's Hawaiian ecosystems. It is useless to transplant endemic species into their former range, if they will be eaten immediately. And efforts to restore endangered bird populations are futile without restoration of the plant habitat that supports them.

Goat control programs since the early 1960's have resulted in substantial reductions, using a combination of drives, local citizen participation, and drift fences to further protect those portions where reduction programs have been successful. It is proposed to continue these intensive control measures eventually to the point where some 40,000 acres of the park are fenced below 9,000 feet. Complete elimination of the goat from the park using known methods appears impractical and costly, if not impossible. Even if accomplished, goats from adjacent lands would, on frequent occasions, reinfest park lands. Thus, this must be recognized as a continuing control program for as long as goat populations exist on the Big Island. It is a program that is indispensable if endemic populations are to be restored and continued.



Control levels and methods to reduce the impact of pigs on native vegetation and soils should be set by an action plan based on research. Current known control methods include direct shooting and trapping.

It is unlikely that mongoose, present throughout the island, can be completely regulated until research provides effective measures to actually reduce populations. Until then, reduction programs will be limited to developed areas, backcountry cabins and campsites, and nene goose nesting areas.

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Exotic Plant Control and Endemic Biota

It is particularly important to recognize the magnitude and cost of any exotic plant control program in Hawaii. Previous programs have concentrated on selected species, such as blackberry, and then only in specific areas. For the foreseeable future, control will concentrate on lowland forests, Kipuka Puauolu, the setting for Wahaula Heiaiu, areas of heavy visitor use around Kilauea Caldera, and other areas which may be identified through research. Improvements in control methods may allow expansion of the program to larger sections of the park. The resource management plan and environmental impact statement have a more detailed discussion of exotic plant control methods and target species.

Equally important is the protection of outstanding examples of Hawaiian biota. Much can be accomplished through careful location of visitor facilities and control of visitor use. One specific area, however, merits special attention. The bulk of the Oloa Fern Forest is proposed as a research natural area. There will be no permanent trails, and the predominant purpose of the area will be for scientific research, to be allowed by permission of the park superintendent. Public use will be provided for in the small parcel on the Kilauea side of the road paralleling the forest. The resources in the large parcel are so significant and rare that it is considered that their greatest value is to remain in their present undeveloped state for research and watershed protection purposes.

Special Management Conditions

Use of Kilauea Military Camp is exclusively for active and retired members of the Armed Forces and their families. As such, it is a nonconforming use within the park boundaries, but is proposed for continuation at its current level of operation.

An escape road is reserved for emergency use only in the event an eruption cuts the existing Crater Rim Road. It is proposed that this road remain unimproved for emergency use only. The existing administrative jeep road to the summit of Mauna Loa, hardly more than a track, will be restricted to use by U.S. Geological Survey personnel. Vehicular use of the road by visitors is not proposed as it would impair research activities at the Mauna Loa Observatory, since pure air is essential to its operation.

The present water collection system for the Kilauea vicinity is inadequate. The addition of more rainsheds and increased storage capacity is proposed, although this would entail use of additional lands.

VISITOR USE

Public use of Hawaii Volcanoes National Park has developed a somewhat structured pattern as most visitors arrive and visit the park as part of a tour. This pattern is expected to continue with some flexibility required in tour itinerary as new eruptions occur and new areas become the focus of visitor interest. There is nonetheless an increasing number of visitors who use rental cars, plus the continuing visitation by Big Island residents in their own cars. The latter are more adventurous persons who generally spend more time in the park and engage in a much greater variety of activities. And they require more development and services as they probe into more remote resources little used or never visited by the tour group.

The resource classification map gives an indication of those lands that are most suitable for concentrated visitor use and development. It also shows what lands should not be developed due to significant unique resources or other special physical or climatic conditions. Moreover, it gives an indication as to what lands should not be utilized for concentrated visitor use. Those lands shown as barren and high elevation are frequently cold. This together with the accompanying rare atmosphere makes them unsuitable for other than backcountry use since most visitors travel in Hawaii clad in very light clothing. Further, any development on these lands would be apparent from many points in the park and outside due to the lack of plant cover.

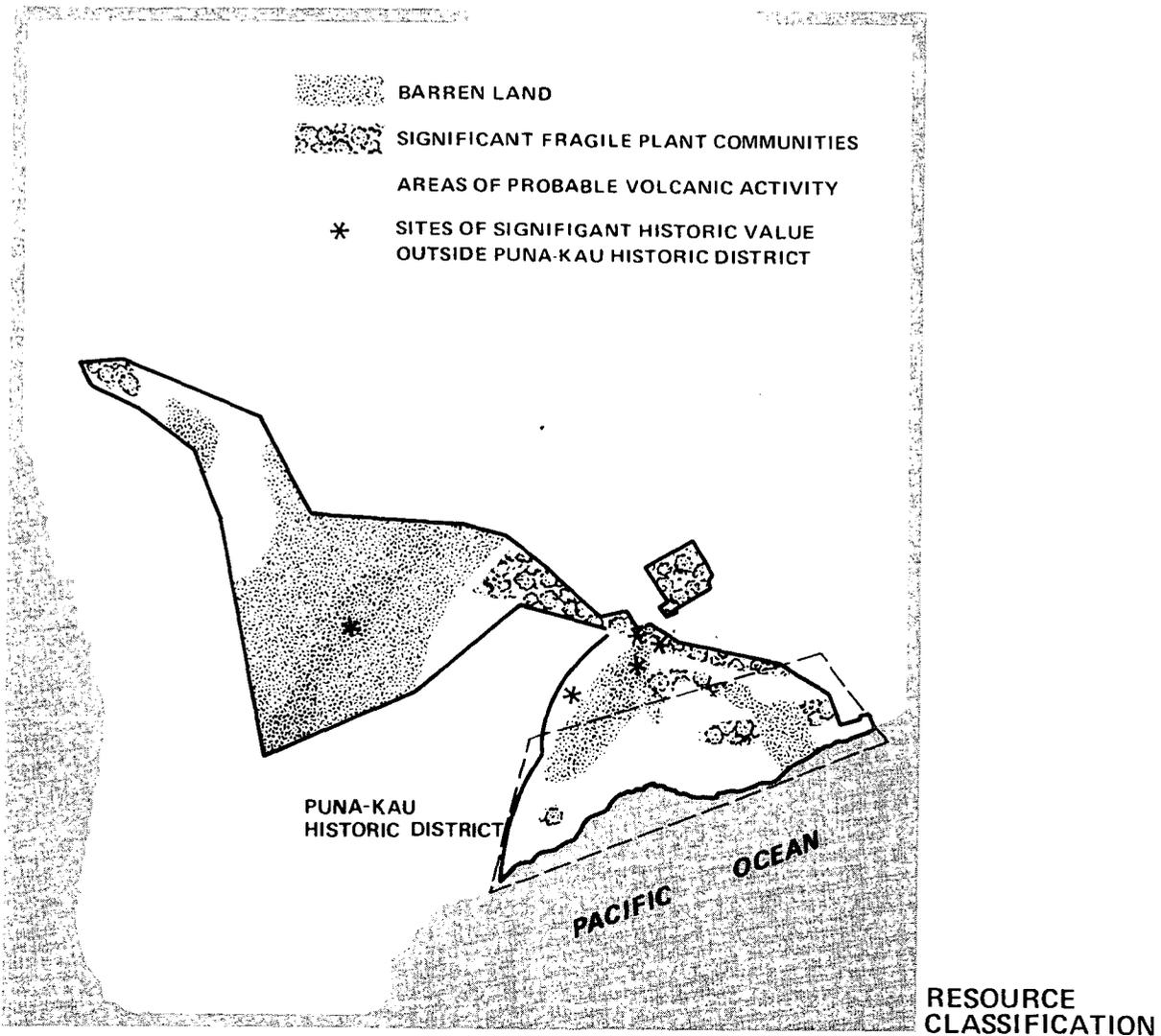
The significant plant communities vary in their response to public use and development. The rain forest types such as Olaa Forest have retained much of their integrity and particular care should be taken to maintain it. The already developed areas around Kilauea, koa forests on the Mauna Loa Strip, and the more isolated communities nearer the coast can sustain a varying amount of development and use so long as there is a continuing recognition of the importance of individual species, and the integrity of their immediate environment.

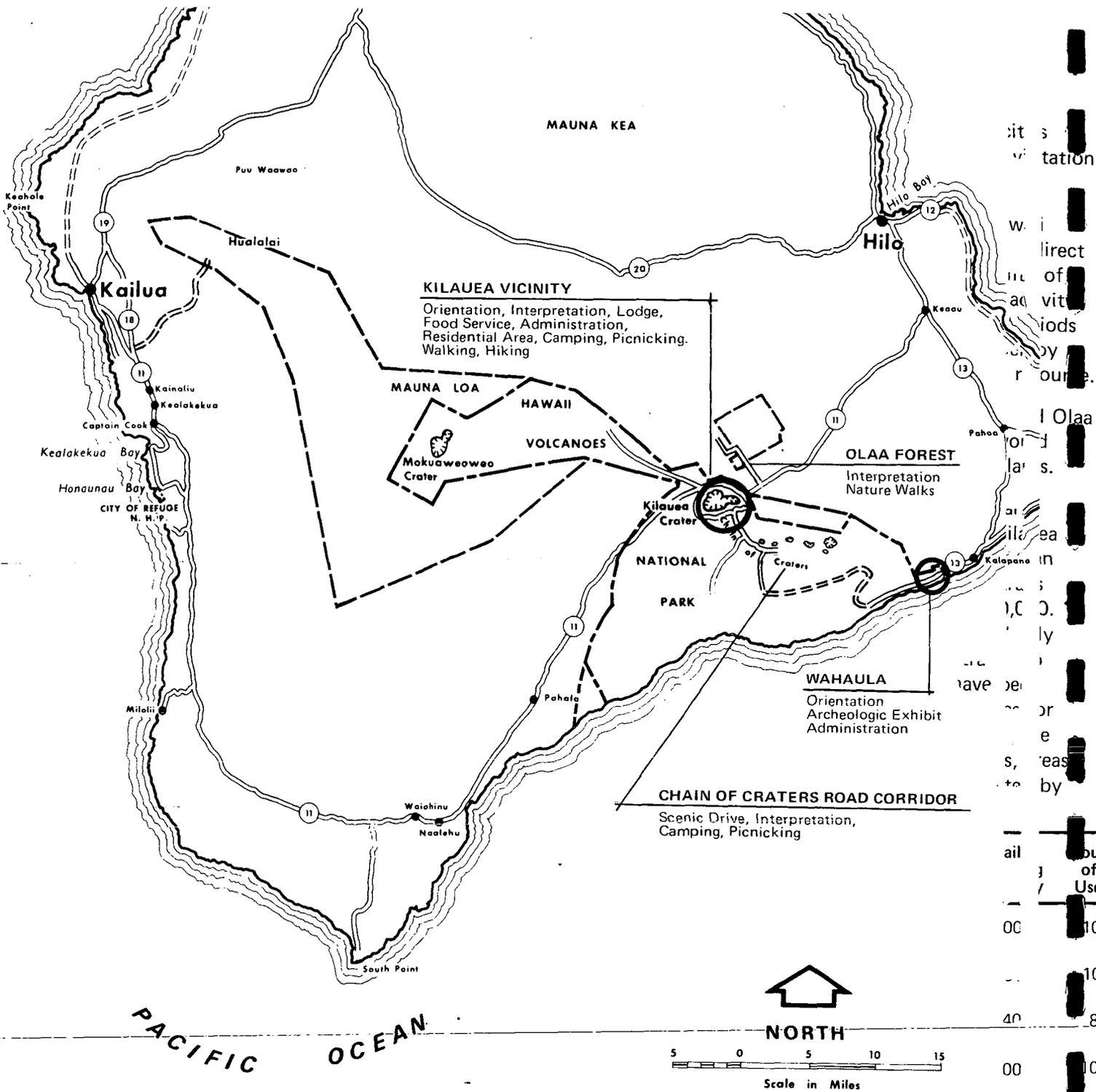
Those areas where volcanic activity is most likely to take place are the calderas and rift zones. Development of interpretive devices will continue to be important in the vicinity of these features since they are the focus of visitor interest. Investment in major facilities

such as overnight lodges, campgrounds, or administrative offices will, however, be avoided. It must be recognized that almost the entire park is under a potential threat of being covered by lava flows. Major facilities must simply be located in areas where judgment and historic precedent indicate that there is the least chance of inundation by lava.

Historical and archeological resources are scattered throughout the park at lower elevations. As in the case of significant plant communities, development and use programs must consider specific sites and their relative importance in determining location of facilities, and in adhering to the requirements of the Historic Preservation Act and Executive Order No. 11593.

It is reasonably clear that past development patterns have generally been appropriate to restrictions so noted. Only sections of the Chain of Craters-Kalapana Road should be relocated because of recent volcanic activity. Thus, except for proposed development and use of new park lands in the Hualalai area, little change in the overall use of park resources is anticipated as a result of the proposals outlined here.



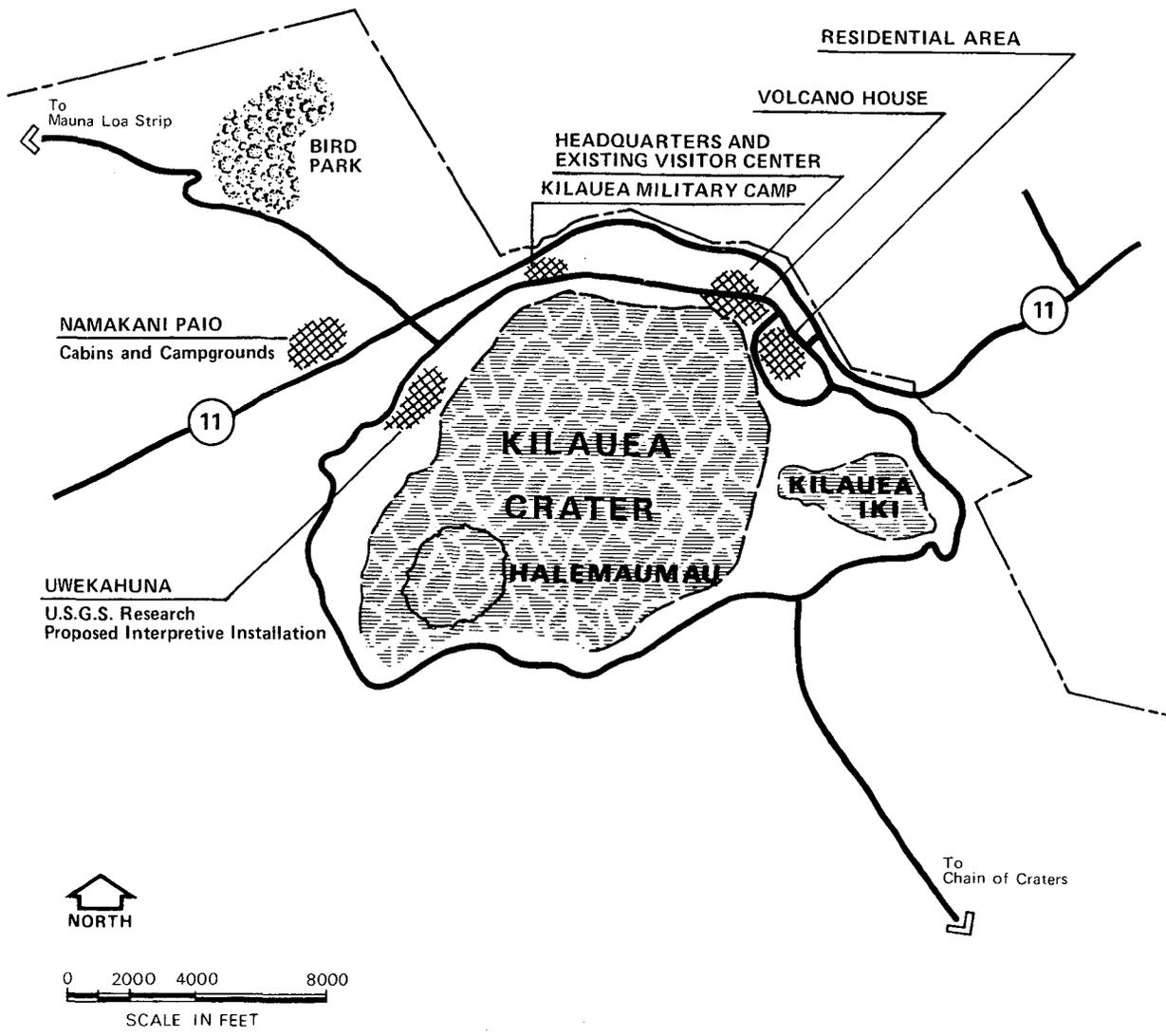


PRIMARY USE ZONE
HAWAII VOLCANOES NATIONAL PARK

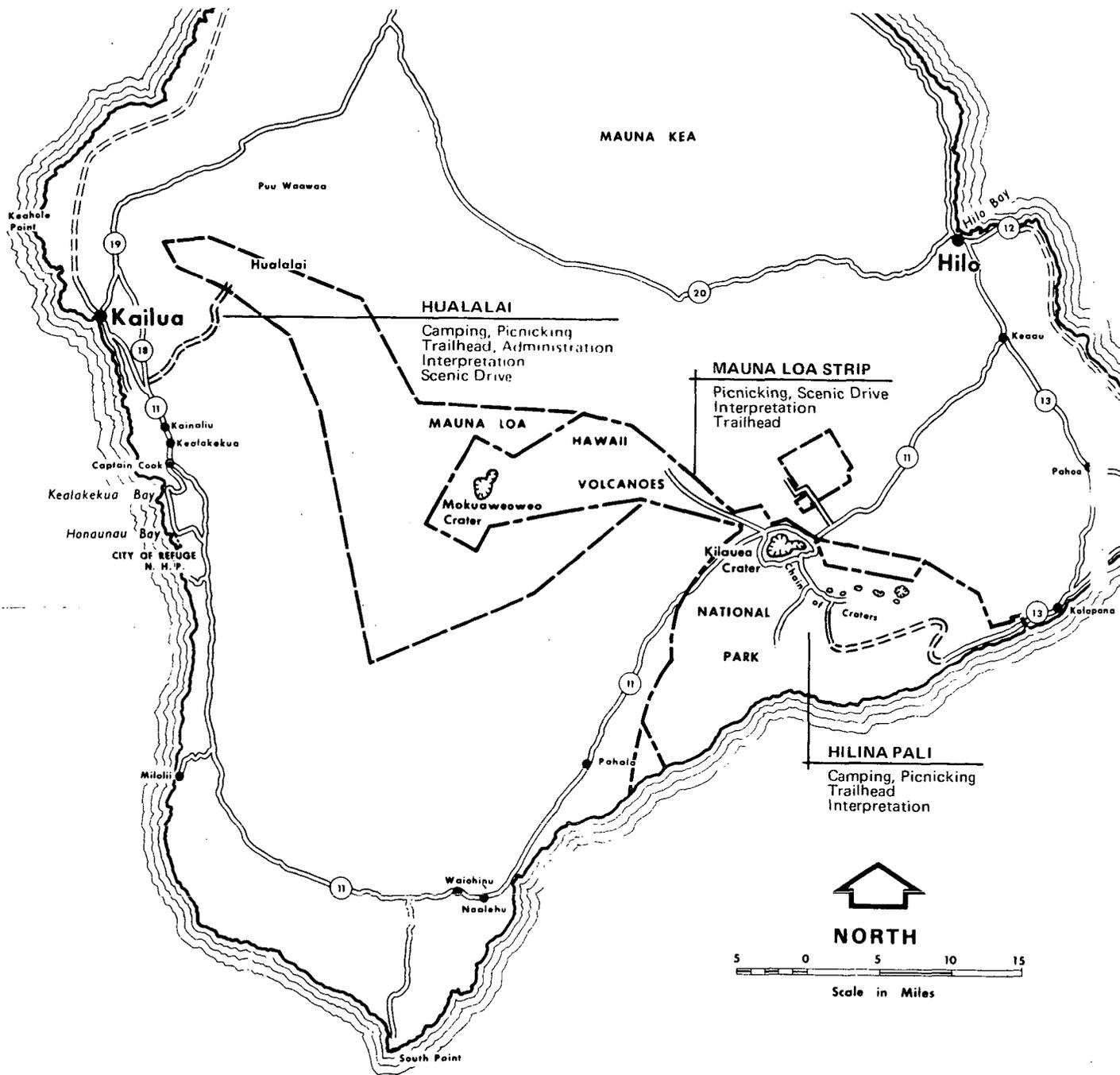
LEGEND

- — — — —** EXISTING PARK LAND
- - - - -** LANDS TO BE ADDED
- — — — —** BACKCOUNTRY ACCESS

Kilauea Caldera and its vicinity will continue to be the center of visitor and management activities, the park's most concentrated use area. Facilities will provide a brief glimpse of the park's attractions, make detailed information available for those who wish to spend longer periods of time, and provide a variety of overnight accommodations. The latter will include the existing Volcano House (to remain at its present capacity), inexpensive cabins, and campgrounds.



KILAUEA VICINITY



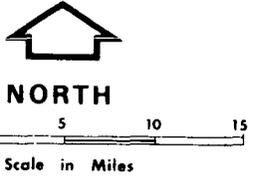
PACIFIC OCEAN

WILDERNESS THRESHOLD ZONE

HAWAII VOLCANOES NATIONAL PARK

LEGEND

- — — — —** EXISTING PARK LAND
- - - - -** LANDS TO BE ADDED
- — — — —** BACKCOUNTRY ACCESS



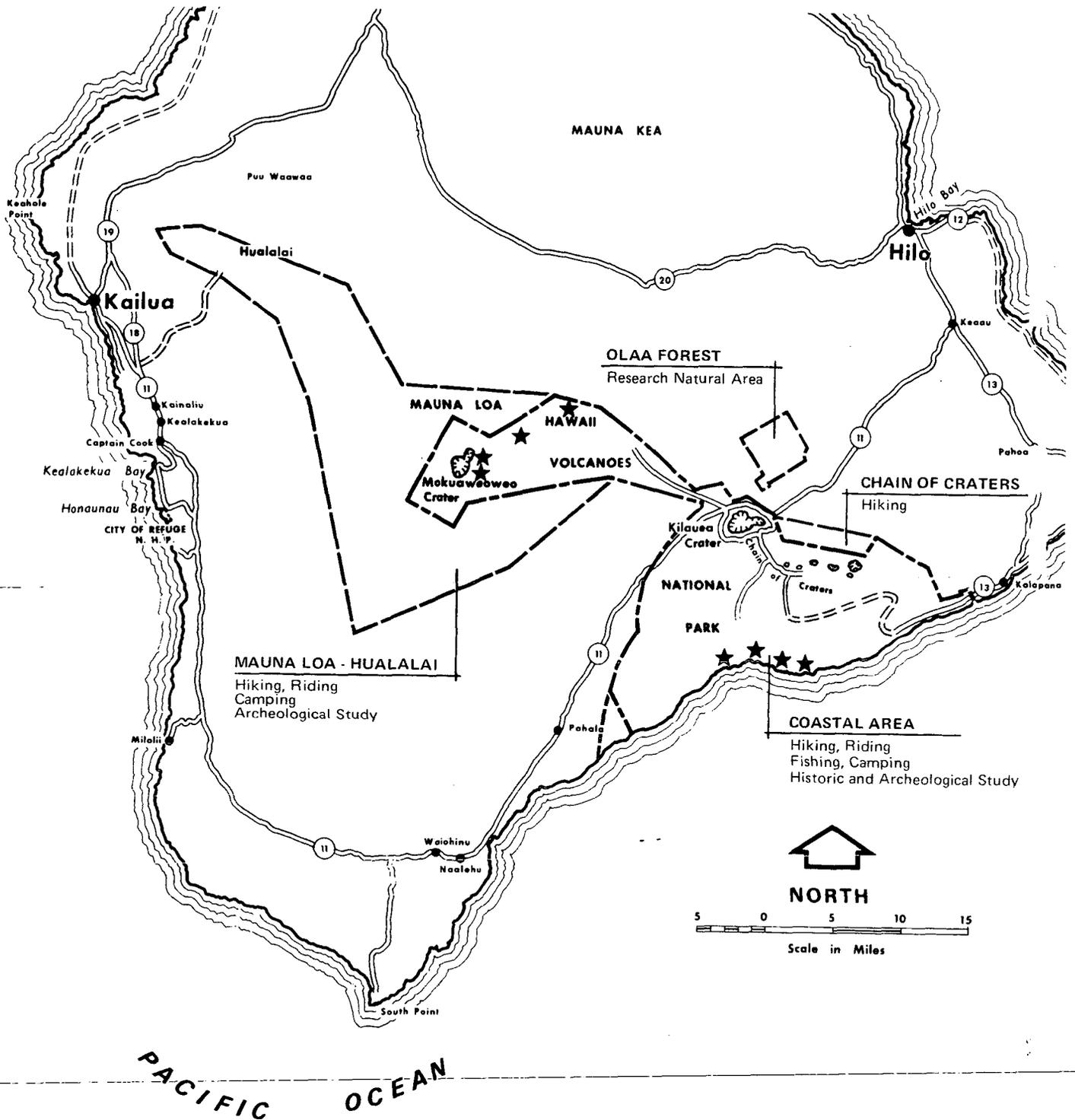
Circulation patterns are expected to remain somewhat as they are. As new eruption activity occurs, however, shuttle buses may be utilized as a method of transporting visitors from existing parking areas to the eruption site, particularly when it is remote from any parking area or on a dead-end road. This will increase the flexibility of the park to handle large crowds and in a manner resulting in greater visitor safety. The Chain of Craters Road, now partially covered with lava, will be reconstructed on a new alignment when the current Mauna Ulu eruptive phase subsides. The development concept plan, to be prepared later, will examine these problems in greater detail. It will also examine the proposal to move the existing interpretive center to the Kilauea Caldera rim in the vicinity of Uwekahuna. Predominant use will still be during the day and include pleasure driving or touring, attending interpretive programs, picnicking, hiking, and nature study.

The administrative-maintenance complex for the entire park will include offices, research facilities for U. S. Geological Survey and a residential area for the National Park Service and U.S. Geological Survey. These are all located on the north side of Kilauea Caldera where there is the least chance of volcanic activity and where prevailing winds direct the fumes from Halemaumau in the opposite direction. The exception to this is the U.S. Geological Survey's Volcano Observatory, located to afford the best possible view of Halemaumau and the entire summit of Kilauea Volcano. It is not anticipated that any of these facilities will be moved or appreciably expanded.

The Chain of Craters and Kalapana developments will be essentially an extension of the Kilauea area both in facilities and use. The reconstructed Chain of Craters Road will be an excellent vehicle for interpretation of volcanism with appropriate interpretive points and overlooks to give the visitor greater knowledge of these processes. The Kalapana Coast development will provide a glimpse into ancient Hawaii, although even here volcanism is important, with recent flows having reached the sea nearby. Uses will include attendance at interpretive programs, nature study (both coastal and inland), appreciation of historic features, camping and picnicking.

The Wahaula-Kailiili-Kamoamoā vicinity will continue to be the focus of archeological and cultural interpretation. Moreover, the visitor center adjacent to Wahaula will be the introductory facility for visitors entering the park from the Kalapana Coast. Undue concentration of development there, however, would tend to ignore many of the excellent natural and historic features nearby. Especially important is the coast itself and its associated marine resources.

The Wilderness Threshold Zone will stimulate the visitor's interest in the more intimate details of the park environment. Interpretation will be low-key in this zone and predominantly of a self-guiding nature. Visitors to this zone will be comprised almost entirely of local island residents and off-island visitors who rent automobiles.



BACKCOUNTRY ZONE

HAWAII VOLCANOES NATIONAL PARK

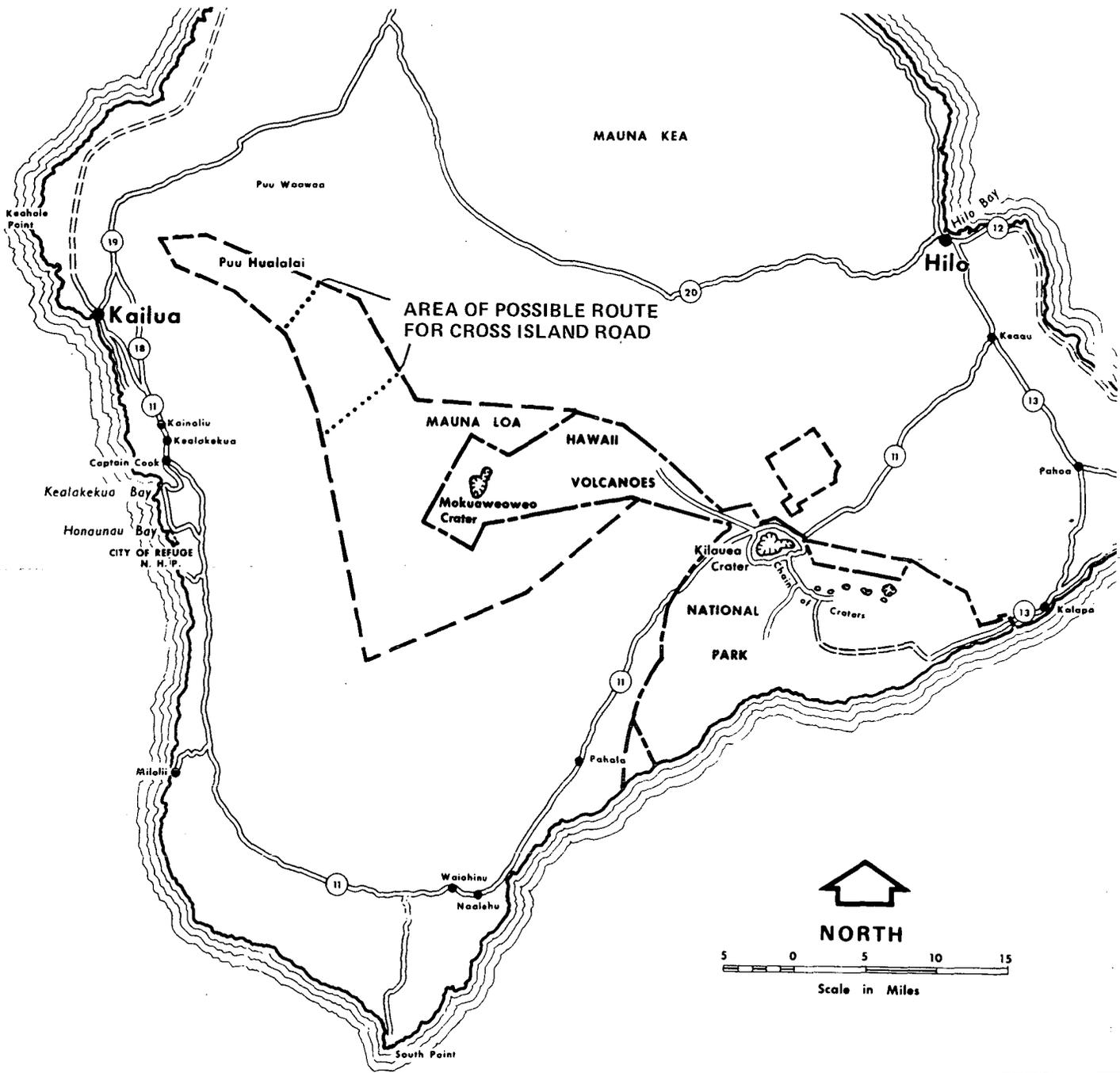
LEGEND

- EXISTING PARK LAND
- LANDS TO BE ADDED
- ★ BACKCOUNTRY SHELTERS

This is a more adventurous group willing to spend more time in the park and expend more energy to enjoy the attractions. This zone, and the people using it, exemplifies the "get-away-from-it-all syndrome," and provides the opportunity to enjoy wild country and unique attractions at a relaxed pace without a long hike but with a minimum of development or formal interpretation. Persons visiting this zone will very likely spend some time in the interpretation zone, if for no other reason than to gain access to the wilderness threshold. They will almost certainly visit the site of any major eruption activity. Access into this zone and its developments will be on low standard roads designed to retain an intimate association with the environment, not merely to provide access. Uses include pleasure driving, viewing the adjacent wilderness lands, camping, picnicking, and nature study. All facilities, like the road, will be low-key and for small groups of visitors. For example, campgrounds will not exceed 25 sites. Ainahou Ranch, only recently acquired, contains perhaps the best potential for a new campground. The soil depth is good, much of the area has already been disturbed and rainshed water is available.

The Backcountry Zone is the largest zone and as with other major parks will continue to receive the lightest use. Again, visitors to this zone have considerable time and energy to enjoy long hikes either to simply see and appreciate the park's unique resources or to fish along the coast.

In the past, the backcountry has received very limited use, partially because there is no fresh groundwater available, even along the coast. As a device to encourage and facilitate backcountry use, it is proposed that shelters be constructed at sites along the coast that will serve both for water collection and as camp shelters. These sites include Apua Point and Kakiwai. There is already a shelter at Halape and Keauhou. The existing cabins on Mauna Loa (at Red Hill and on the summit) will be retained for management and visitor use. Major new trails are proposed in the Hualalai-Mauna Loa area to afford access to Hualalai's summit, Ahuaumi Heiau and the Judd Trail. Trail connections will also be made between this area and the summit of Mauna Loa. As in the case with the coastal part of the park, the dominant problem will be the lack of water. More detailed planning will be needed to investigate this problem and offer an appropriate solution.



PROPOSED WILDERNESS AREAS

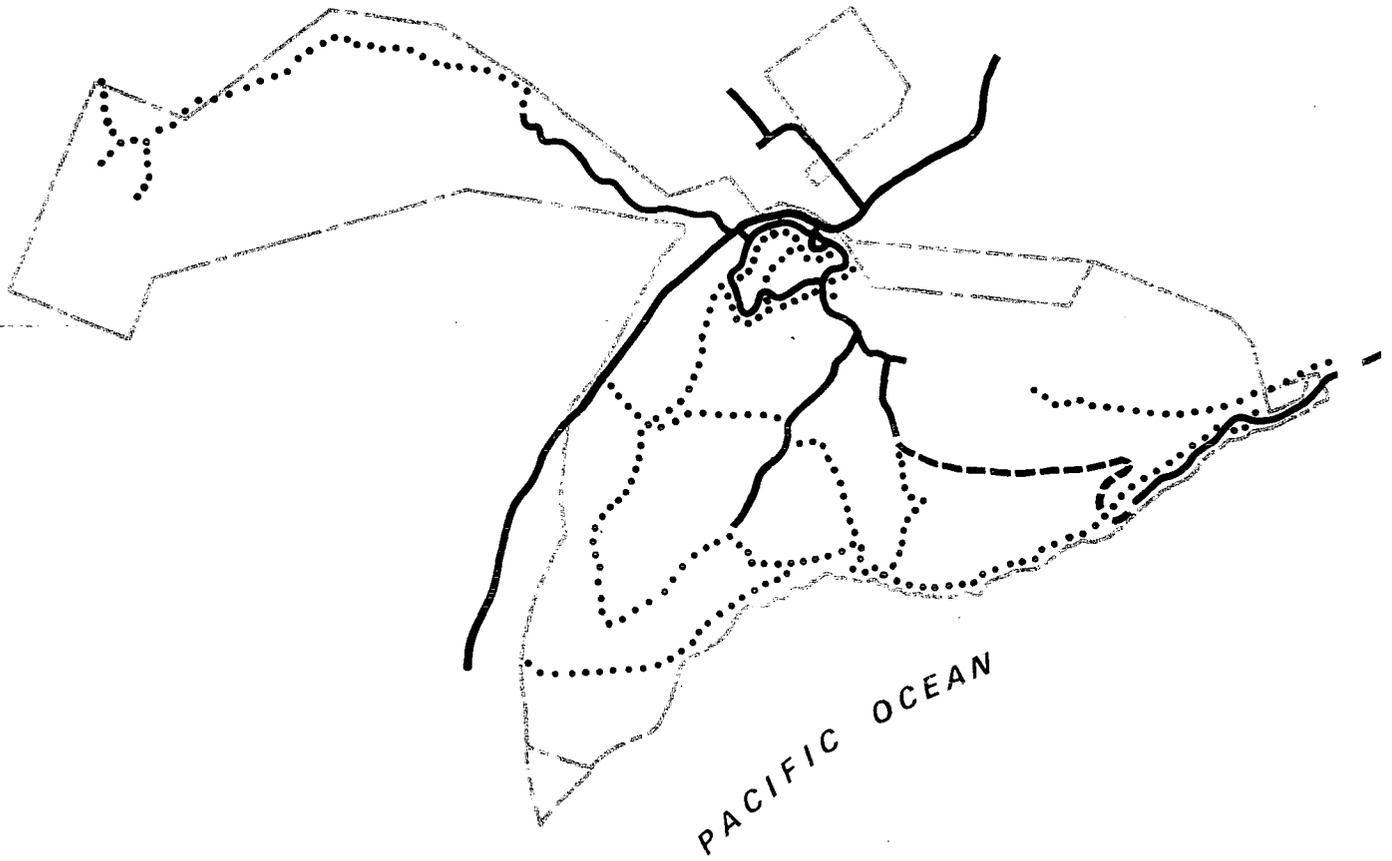
HAWAII VOLCANOES NATIONAL PARK

- Recommended wilderness
- Potential wilderness additions on privately owned land within the authorized boundary
- Area suitable for future wilderness considerations on land proposed for addition to the authorized boundary

A major element concerning use and management of the backcountry is the proposal to designate about 123,000 acres of the existing park in wilderness. This proposal and its impact on the environment are discussed in two separate documents entitled *Wilderness Recommendations, Hawaii Volcanoes National Park*, and *Final Environmental Impact Statement, Proposed Wilderness Areas, Hawaii Volcanoes National Park*.

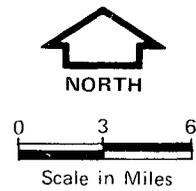
65

The master plan and wilderness recommendations were prepared in concert and special provisions are proposed to allow construction of facilities such as goat fences, backcountry shelters, and research facilities on lands proposed for wilderness status. The map on page 64 indicates wilderness recommendations and potential wilderness additions within the authorized park boundary. The map also indicates those lands, proposed for addition to the park, that might be suitable for wilderness in the future. A special study, however, would be required to arrive at a specific proposal. Moreover, special consideration would need to be given to the possibility of accommodating a new cross-island road that might be routed over the saddle between Mauna Loa and Hualalai. Other changes in surrounding land use and in potential uses of park lands may also have an effect on any wilderness line.



EXISTING CIRCULATION SYSTEM

- ROADS
- TRAILS
- - - - CHAIN OF CRATERS ROAD TO BE BUILT



APPENDIX

57



PERTINENT LEGISLATION

An Act To establish a national park in the Territory of Hawaii, approved August 1, 1916 (39 Stat. 432)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tracts of land on the island of Hawaii and on the island of Maui, in the Territory of Hawaii, hereinafter described, shall be perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States, to be known as Hawaii National Park. Said tracts of land are described as follows:

Hawaii National
Park.
Established on
islands of Hawaii
and Maui

First. All that tract of land comprising portions of the lands of Kapapala and Keauhou, in the district of Kau, and Kahaualea, Panaunui, and Apua, in the district of Puna, on the island of Hawaii, containing approximately thirty-five thousand eight hundred and sixty-five acres, bounded as follows: Beginning at a point on the west edge of the Keamoku Aa Flow (lava flow of eighteen hundred and twenty-three), from which point the true azimuth and distance to Government survey trigonometrical station Ohaika is one hundred and sixty-six degrees twenty minutes, six thousand three hundred and fifty feet, and running by true azimuths: (First) Along the west edge of the Keamoku lava flow in a northeasterly and northwesterly direction, the direct azimuth and distance being one hundred and ninety-eight degrees ten minutes, fourteen thousand seven hundred feet; (second) two hundred and fifty-six degrees, eleven thousand four hundred feet, more or less, across the land of Kapapala and Keauhou to a marked point on the Humuula trail; (third) three hundred and twenty-eight degrees fifteen minutes, eight thousand seven hundred and twenty-five feet, across the land of Keauhou to the top of the fault north of the Kau road; (fourth) along the fault in a northeasterly direction, the direction azimuth and distance being two hundred and fifty-one degrees and thirty minutes, four thousand three hundred and thirty feet; (fifth) two hundred and forty-five degrees, six thousand feet, to a point near the southwest boundary of the land of Olaa; (sixth) three hundred and thirty-seven degrees ten minutes, eight thousand six hundred and fifty feet, more or less, to the junction of the Hilo and Keauhou roads; (seventh) three hundred and thirty-three degrees and twenty minutes, three thousand three hundred feet, more or less, to the southwest corner of the land of Keaau; (eighth) three hundred and thirty-two degrees and ten minutes, seven thousand feet, along the land of Kahaualea; (ninth) two hundred and eighty-one degrees, thirty thousand three hundred and seventy-five feet, more or less, across the land of Kahaualea, passing through the north corner of the land of Panaunui, to the north corner of the land of Laeapuki; (tenth) thirty-one degrees

Description.
Of Hawaii.

thirty minutes, thirteen thousand two hundred feet, more or less, along the land of Laeapuki and across the land of Panaunui; (eleventh) eighty-nine degrees and ten minutes, thirty-two thousand nine hundred feet, more or less, across the land of Panaunui, Apua, and Keauhou to "Palilele-o-Kalihipaa", the boundary point of the Keauhou-Kapapala boundary; (twelfth) fifty-one degrees and thirty minutes, five thousand and five hundred feet, across the land of Kapapala; (thirteenth) one hundred and two degrees and fifty minutes, nineteen thousand one hundred and fifty feet, across the land of Kapapala to a small cone about one thousand five hundred feet southwest of Puu Koae trigonometrical station; (fourteenth) one hundred and sixty-six degrees twenty minutes, twenty-one thousand feet, across the land of Kapapala to the point of beginning.

Second. All that tract of land comprising portions of the lands of Kapapala and Kahuku, in the district of Kau, island of Hawaii; Keauhou second, in the district of North Kona; and Kaohe, in the district of Hamakua, containing seventeen thousand nine hundred and twenty acres, bounded as follows: Beginning at Pohaku Hanalei of Humuula, a small cone on the brow of Mauna Loa, and at the common boundary points of the lands of Humuula, Kapapala, and Kaohe, from which the true azimuth and distance to Government survey trigonometrical station Omaokoili is one hundred and ninety-five degrees twelve minutes eighteen seconds, seventy-eight thousand two hundred and eighty-six feet, and running by true azimuths: First, two hundred and ninety-eight degrees, five thousand two hundred and forty feet; second, twenty-eight degrees, thirty-six thousand nine hundred and sixty feet; third, one hundred and eighteen degrees, twenty-one thousand one hundred and twenty feet; fourth, two hundred and eight degrees, thirty-six thousand nine hundred and sixty feet; fifth, two hundred and ninety-eight degrees, fifteen thousand eight hundred and eighty feet, to the point of beginning.

Third. A strip of land of sufficient width for a road to connect the two tracts of land on the island of Hawaii above described, the width and location of which strip shall be determined by the Secretary of the Interior.

Fourth. All that tract of land comprising portions of On Maui. the lands of Honuaula and Kula, in the district of Makawao, and Kipahulu, Kaupo, and Kahikinui, in the district of Hana, on the island of Maui, containing approximately twenty-one thousand one hundred and fifty acres, bounded as follows: Beginning at a point called Kolekole, on the summit near the most western point of the rim of the crater of Haleakala, and running by approximate azimuths and distances: First, hundred and ninety-three degrees forty-five minutes nineteen thousand three hundred and fifty feet along the west slope of the crater of Haleakala to a point called Puu-o-Ili; second, two hundred and sixty-eight degrees twenty-three thousand feet up the western slope and across Koolau Gap to the point where the southwest boundary of Koolau Forest Reserve crosses the east rim of Koolau Gap; third, three hundred and six degrees thirty minutes seventeen thousand one hundred and fifty feet along the southwest boundary of Koolau Forest Reserve to a point called Palalia, on the east rim of the crater of Haleakala; fourth, along the

east rim of the crater of Haleakala, the direct azimuth and distance being three hundred and fifty-four degrees fifteen minutes eighteen thousand three hundred feet to a point on the east rim of Kaupo Gap, shown on Hawaiian Government survey maps at an elevation of four thousand two-hundred and eight feet; fifth, eighty-eight degrees forty-five minutes three thousand three hundred feet across Kaupo Gap to a point called Kaumikaohu, on the boundary line between the lands of Kipahulu and Kahikinui; sixth, one hundred and two degrees and thirty minutes forty thousand seven hundred and fifty feet along the south slope of the crater of Haleakala to the point of beginning. (U.S.C., title 16, sec. 391.)

SEC. 2. That nothing herein contained shall affect any valid existing claim, location, or entry under the land laws of the United States, whether for homestead, mineral, right of way, or any other purpose whatsoever, or shall affect the rights of any such claimant, locator, or entryman to the full use and enjoyment of his land. Whenever consistent with the primary purposes of the park the Act of February fifteenth, nineteen hundred and one, applicable to the location of rights of way in certain national parks and the national forests for irrigation and other purposes, shall be and remain applicable to the lands included within the park. The Secretary of the Interior may, in his discretion and upon such conditions as he may deem wise, grant easements or rights of way for steam, electric, or similar transportation upon or across the park. (U.S.C., title 16, sec. 393.)

Existing land claims not affected.

Rights of way.
Vol. 31, p. 790.

Private ownership not affected.

SEC. 3. That no lands located within the park boundaries now held in private or municipal ownership shall be affected by or subject to the provisions of this Act. (U.S.C., title 16, sec. 393.)

Administration, etc.

SEC. 4. That the said park shall be under the executive control of the Secretary of the Interior whose duty it shall be, as soon as practicable, to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the same. Such regulations shall provide for the preservation from injury of all timber, birds, mineral deposits, and natural curiosities or wonders within said park, and their retention in their natural condition as nearly as possible. The Secretary may in his discretion grant leases for terms not exceeding twenty years, at such annual rental as he may determine, of parcels of land in said park of not more than twenty acres in all to any one person, corporation, or company for the erection and maintenance of buildings for the accommodation of visitors; but no such lease shall include any of the objects of curiosity or interest in said park or exclude the public from free and convenient approach thereto or convey, either expressly or by implication, any exclusive privilege within the park except upon the premises held thereunder and for the time granted therein; and every such lease shall require the lessee to observe and obey each and every provision in any Act of Congress and every rule, order, or regulation of the Secretary of the Interior concerning the use, care, management, or government of the park, or any object or property therein, under penalty of forfeiture of such lease. The Secretary may in his discretion grant to persons or corporations now holding leases of land in the park, upon the surrender thereof, new leases hereunder, upon the terms and stipulations contained in their

Leases for accommodating visitors.
(Superseded by 39 Stat. 635, as amended. See See pp. 9-12.)

Proceeds for
park uses.

present leases, with such modifications, restrictions, and reservations as he may prescribe. All of the proceeds of said leases and other revenues that may be derived from any source connected with the park shall be expended under the direction of the Secretary, in the management and protection of the same and the construction of roads and paths therein. The Secretary may also, in his discretion, permit the erection and maintenance of buildings in said park for scientific purposes: *Provided*, That no appropriation for the maintenance, supervision, and improvement of said park in excess of \$10,000 annually shall be made unless the same shall have first been expressly authorized by law: *And provided further*, That no appropriation shall be made for the improvement or maintenance of said park until proper conveyances shall be made to the United States of such perpetual easements and rights of way over private lands within the exterior boundaries of said park as the Secretary of the Interior shall find necessary to make said park reasonably accessible in all its parts, and said Secretary shall when such easements and rights of way have been conveyed to the United States report the same to Congress. (U.S.C., title 16, sec. 394.)

Proviso.
Limit on
expenses.
(Repealed by 43
Stat. 390. See
p. 173 below.)

Conveyances of
easements from
private owners.

An Act To authorize the governor of the Territory of Hawaii to acquire privately owned lands and rights of way within the boundaries of the Hawaii National Park, approved February 27, 1920 (41 Stat. 452)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the governor of the Territory of Hawaii is hereby authorized to acquire, at the expense of the Territory of Hawaii, by exchange or otherwise, all privately owned lands lying within the boundaries of the Hawaii National Park as defined by "An Act to establish a national park in the Territory of Hawaii," approved August 1, 1916, and all necessary perpetual easements and rights of way, or roadways, in fee simple, over or to said land or any part thereof.

Hawaii National
Park.
Acquiring additional lands for authorized.
Vol. 39, p. 432.
See p. 169.

SEC. 2. That the provisions of section 73 of an Act entitled "An Act to provide a government for the Territory of Hawaii," approved April 30, 1900, as amended by an Act approved May 27, 1910, relating to exchanges of public lands, shall not apply in the acquisition, by exchange, of the privately owned lands herein referred to. (U.S.C., title 16, sec. 392.)

General
restrictions
not applicable.

Vol. 31, p. 155;
vol. 36, p. 444.

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An Act To add a certain tract of land on the island of Hawaii to the Hawaii National Park, approved May 1, 1922 (42 Stat. 503)

Hawaii.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the tract of land on the island of Hawaii, in the Territory of Hawaii, set aside for park purposes on the 29th day of October, 1920, by executive order numbered eighty-one of the governor of the Territory of Hawaii, and hereinafter described, is hereby added to and made a part of the Hawaii National Park. Said tract of land is described as follows, to wit:

Tract added to
Hawaii National
Park.

Vol. 39, p. 432.
See p. 169.

Description.

All that tract of land comprising a portion of the Kau Desert, Kapapala, in the district of Kau, on the island of Hawaii, containing forty-three thousand four hundred acres, more or less, bounded as follows:

Beginning at a galvanized iron nail driven into the

pahoehoe at the northeast corner of this tract of land, at a place called Palilele-o-Kalihipaa, and on the boundary between the lands of Kapapala and Keauhou, the coordinates of said point of beginning referred to Government survey trigonometrical station Uwekahuna, being twenty-six thousand and ten and four tenths feet south and nine thousand nine hundred and thirty-two and four tenths feet east, as shown on Government survey registered map numbered twenty-three hundred and eighty-eight and running by true azimuths: First, three hundred and fifty degrees forty-three minutes, thirty thousand and twenty-three feet along the land of Kapapala to a point at seacoast; second, thence in a west and south-westerly direction along the seacoast to a station on a large flat stone, at a place called Na-Puu-o-na-Elamakule, at the seacoast boundary point of the lands of Kapapala and Kaalaala, the direct azimuth and distance being sixty-nine degrees thirty-four minutes thirty seconds, thirty-two thousand and forty-three feet; third, eighty-nine degrees twenty-seven minutes thirty seconds, thirty thousand six hundred and ninety feet along the land of Kaalaala to the main eighteen hundred and sixty-eight lava crack, said point being by true azimuth and distance two hundred and ninety-six degrees twenty-seven minutes thirty seconds, twenty-one hundred feet from Government survey trigonometrical station Puu Nahala; fourth, thence up along the main eighteen hundred and sixty-eight lava crack, along the Kapapala pastoral lands to a small outbreak of lava from the eighteen hundred and sixty-eight lava crack, opposite the Halfway House, the direct azimuth and distance being one hundred and ninety-eight degrees, thirty-two thousand five hundred and fifty feet; fifth, two hundred and thirty degrees twenty-five minutes, twenty-seven thousand six hundred and fifteen feet along the Kapapala pastoral lands to the west boundary of the Kilauea section, Hawaii National Park; sixth, three hundred and forty-six degrees twenty minutes, six thousand seven hundred and forty-two feet along said west boundary to a small cone; seventh, two hundred and eighty-two degrees fifty minutes, nineteen thousand one hundred and fifty feet along the south boundary of said Kilauea section, Hawaii National Park; eighth, two hundred and thirty-one degrees fifty minutes thirty seconds, five thousand four hundred and thirty feet along said south boundary to the point of beginning.

SEC. 2. That the provisions of the Act of August 1, 1916, entitled "An Act to establish a national park in the Territory of Hawaii": the Act of August 25, 1916, entitled "An Act to establish a national park service, and for other purposes," and all Acts supplementary to and amendatory of said Acts are made applicable to and extended over the lands hereby added to the park: *Provided*, That the provisions of the Act of June 10, 1920, entitled "An Act to create a Federal power commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal section 18 of the River and Harbor Appropriation Act, approved August 8, 1917, and for other purposes," shall not apply to or extend over such lands. (U.S.C., title 16, sec. 391.)

National park laws, etc., applicable. Vol. 39, pp. 432, 535. See pp. 169 and 9.

Proviso.

Federal Water Power Act provisions not applicable.

Vol. 41, p. 1063.

An Act To revise the boundary of a portion of the Hawaii National Park on the island of Hawaii in the Territory of Hawaii, approved April 11, 1928 (45 Stat. 424)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the boundary of that portion of the Hawaii National Park on the island of Hawaii firstly described in the Act of Congress approved August 1, 1916 (Thirty-ninth Statutes, page 432, section 391, title 16, United States Code), entitled "An Act to establish a national park in the Territory of Hawaii," be, and the same is hereby, amended to read as follows:

Hawaii National Park.

Boundary revised. Vol. 39, p. 432, amended. See p. 169.

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"All that tract of land comprising portion of the lands of Kapapala and Keauhou, in the District of Kau, and portions of the lands of Keaau, Kahaualea, Panaunui, and Apua in the District of Puna, containing approximately thirty-four thousand five hundred and thirty-one acres, bounded as follows:

Description.

"Beginning at a point on the west edge of the Keamoku Aa Flow (lava flow of 1823), the coordinates of said point of beginning referred to Government Survey Trigonometry Station 'Uwekahuna,' being four thousand seven hundred and six and six-tenths feet south and seventeen thousand nine hundred and seventy and three-tenths feet west, and the true azimuth and distance from said point of beginning to Government Survey Trigonometry Station 'Ohaikea,' being one hundred and sixty-six degrees and twenty minutes, six thousand three hundred and fifty feet, and running by true azimuths—

"1. Along the west edge of the Keamoku Aa Flow in a northeasterly and northwesterly direction, the direct azimuth and distance being one hundred and ninety-eight degrees and ten minutes fourteen thousand seven hundred feet;

"2. Two hundred and fifty-six degrees, eleven thousand four hundred feet across the land of Kapapala and Keauhou to a marked point on the Humuula Trail;

"3. Three hundred and twenty-eight degrees and fifteen minutes eight thousand seven hundred and twenty-five feet across the land of Keauhou to the top of the fault north and the Kau Road;

"4. Thence along the fault in a northeasterly direction along the remainder of Keauhou to a pipe, the direct azimuth and distance being two hundred and fifty-one degrees and thirty minutes four thousand three hundred and thirty feet;

"5. Two hundred and eighty-six degrees five hundred and thirty feet along the remainder of Keauhou;

"6. Two hundred and ninety-eight degrees nine hundred and sixty feet along same;

"7. Two hundred and eighty-three degrees and forty-eight minutes one thousand one hundred and forty-six and five-tenths feet along same to a pipe;

"8. Two hundred and sixty-seven degrees and twenty minutes one thousand and twenty-seven and five-tenths feet along same;

"9. Two hundred and ninety-three degrees and ten minutes one thousand and fifty feet along same to a pipe;

"10. Three hundred and twenty-one degrees and forty-six minutes one thousand one hundred and eleven and three-tenths feet along same;

"11. Three hundred and thirty-three degrees and fifty minutes one thousand one hundred feet along same;

"12. Three hundred and twenty-seven degrees and twenty minutes one thousand nine hundred and forty feet along same;

"13. Two hundred and eighty-three degrees and thirty-nine minutes two thousand and fifty-seven and four-tenths feet along same to a pipe;

"14. Three hundred and thirty-three degrees and twenty minutes two hundred and fifty feet along same to a pipe on the north side of Government Main Road at junction with the Keauhou Road, said pipe being by true azimuth and distance two hundred and ninety-five degrees and twelve minutes six thousand one hundred and sixty-seven and one-tenth feet from Government Survey Trigonometry Station 'Volcano House Flag';

"15. Three hundred and thirty-three degrees and twenty minutes three thousand two hundred and eighty-three and two-tenths feet along the remainder of Keauhou to a pipe;

"16. Three hundred and fifty-four degrees and fifty-four minutes sixty feet along the remainder of Keauhou;

"17. Two hundred and thirty-one degrees and thirty-one minutes one thousand six hundred and seventy-eight and eight-tenths feet along same;

"18. Three hundred and eighteen degrees eight hundred and sixteen and four-tenths feet along same to the boundary between the lands of Keauhou and Kahaualea;

"19. Seventy-two degrees and forty-five minutes one thousand two hundred and thirty-three and three-tenths feet along the land of Kahaualea to a pipe;

"20. Forty-eight degrees six hundred and thirty-four feet along the remainder of Kahaualea to a pipe on the Kahaualea-Keauhou boundary;

"21. Three hundred and thirty-two degrees and ten minutes six thousand five hundred and fifty-one and four-tenths feet along the Kahaualea-Keauhou boundary to a pipe;

"22. Two hundred and eighty-one degrees thirty thousand three hundred and one and seven-tenths feet along the remainder of Kahaualea to a pipe;

"23. Thirty-one degrees and thirty minutes thirteen thousand and seventy-four and seven-tenths feet along the remainder of Kahaualea and Panaunui to a pipe, passing over a pipe at five thousand nine hundred and twenty-two and two-tenths feet on the Kahaualea-Panaunui boundary;

"24. Eighty-nine degrees and ten minutes thirty-two thousand nine hundred feet along the remainder of Panaunui, across the lands of Apua and Keauhou to 'Palilele-o-Kalihipaa,' at an angle in the Keauhou-Kapapala boundary marked by a pile of stones, passing over pipes at three thousand five hundred and seventy-two and eight-tenths feet on the Panaunui-Apua boundary and eight thousand four hundred and thirty-five and three-tenths feet;

"25. Fifty-one degrees fifty minutes and thirty seconds five thousand four hundred and thirty feet across the land of Kapapala;

"26. One hundred and two degrees and fifty minutes nineteen thousand one hundred and fifty feet across same to a small cone about one thousand five hundred feet southwest of 'Puu Koae';

"27. One hundred and sixty-six degrees and twenty minutes twenty-one thousand feet across the land of

Kapapala to the point of beginning;" and all of those lands lying within the boundary above described are hereby included in and made a part of the Hawaii National Park subject to all laws and regulations pertaining to said park. (U.S.C., 6th supp., title 16, sec. 391.)

Acquiring of
privately owned
lands authorized.
Vol. 41, p. 452.
See p. 178.

SEC. 2. That the provisions of the Act of February 27, 1920, entitled "An Act to authorize the Governor of the Territory of Hawaii to acquire privately owned lands and rights of way within the boundaries of the Hawaii National Park," are hereby extended over and made applicable to the lands added to the park and included within the boundary established by the preceding section of this Act. (U.S.C., 6th supp., title 16, sec. 392a.)

An Act To provide for the exercise of sole and exclusive jurisdiction by the United States over the Hawaii National Park in the Territory of Hawaii, and for other purposes. approved April 19, 1930 (46 Stat. 227)

Hawaii National
Park.
Sole jurisdiction
over, to be
exercised by
United States.
Rights reserved
to the Territory

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That hereafter sole and exclusive jurisdiction shall be exercised by the United States over the territory which is now or may hereafter be included in the Hawaii National Park in the Territory of Hawaii, saving, however, to the Territory of Hawaii the right to serve civil or criminal process within the limits of the aforesaid park in suits or prosecutions for or on account of rights acquired, obligations incurred, or crimes committed outside of said park, and saving further to the Territory of Hawaii the right to tax persons and corporations, their franchises and property on the lands included in said park. All the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said park. All fugitives from justice taking refuge in said park shall be subject to the same laws as refugees from justice found in the Territory of Hawaii. (U.S.C., 6th supp., title 16, sec. 395.)

Application of
Federal laws.

Extradition of
criminals.

Jurisdiction of
District Court.

SEC. 2. That the District Court of the United States in and for the Territory of Hawaii shall have jurisdiction of all offenses committed within the boundaries of said park. (U.S.C., 6th supp., title 16, sec. 395a.)

Punishment of
offenses against
Territorial laws.

SEC. 3. That if any offense shall be committed in the Hawaii National Park, which offense is not prohibited or the punishment for which is not specifically provided for by any law of the United States, the offender shall be subject to the same punishment as the laws of the Territory of Hawaii in force at the time of the commission of the offense may provide for a like offense in said Territory and no subsequent repeal of any such law of the Territory of Hawaii shall affect any prosecution for said offense committed within said park. (U.S.C., 6th supp., title 16, sec. 395b.)

Hunting, fishing,
etc., prohibitions.

SEC. 4. That all hunting or the killing, wounding, or capturing at any time of any wild bird or animal, except dangerous animals when it is necessary to prevent them from destroying human lives or inflicting personal injury, is prohibited within the limits of said park; nor shall any fish be taken out of the waters of the park in any other way than by hook and line, and then only at such seasons and in such times and manner as may be directed by the Secretary of the Interior. That the Secretary of the Interior shall make and publish such general rules and regulations as he may deem necessary and proper for the

Regulations, etc.,
to be prescribed.

management and care of the park and for the protection of the property therein, especially for the preservation from injury or spoliation of all timber, natural curiosities, or wonderful objects within said park, and for the protection of the animals and birds in the park from capture or destruction, and to prevent their being frightened or driven from the park; and he shall make rules and regulations governing the taking of fish from the streams or lakes in the park. Possession within said park of the dead bodies, or any part thereof, of any wild bird or animal shall be prima facie evidence that the person or persons having the same are guilty of violating this Act. Any person or persons, or stage or express company, or railway company, who knows or has reason to believe that they were taken or killed contrary to the provisions of this Act and who receives for transportation any of said animals, birds, or fish so killed, caught, or taken, or who shall violate any of the provisions of this Act or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park or for the protection of the property therein, for the preservation from injury or spoliation of timber, natural curiosities, or wonderful objects within said park, or for the protection of the animals, birds, or fish in the park, or who shall within said park willfully commit any damage, injury, or spoliation to or upon any building, fence, hedge, gate, guidepost, tree, wood, underwood, timber, garden, crops, vegetables, plants, land, springs, natural curiosities, or other matter or thing growing or being thereon or situated therein, shall be deemed guilty of a misdemeanor and shall be subject to a fine of not more than \$500 or imprisonment not exceeding six months, or both, and be adjudged to pay all costs of the proceedings. (U.S.C., 6th supp., title 16, sec. 395c.)

Evidence of violations.

Punishment for violating provisions hereof, etc.

Sec. 5. That all guns, traps, teams, horses, or means of transportation of every nature or description used by any person or persons within said park limits when engaged in killing, trapping, ensnaring, or capturing such wild beasts, birds, or animals shall be forfeited to the United States and may be seized by the officers in said park and held pending the prosecution of any person or persons arrested under charge of violating the provisions of this Act, and upon conviction under this Act of such person or persons using said guns, traps, teams, horses, or other means of transportation, such forfeiture shall be adjudicated as a penalty in addition to the other punishment provided in this Act. Such forfeited property shall be disposed of and accounted for by and under the authority of the Secretary of the Interior. (U.S.C., 6th supp., title 16, sec. 395d.)

Forfeiture of guns, traps, etc., illegally used.

Disposal of.

Commissioner for Appointment, authority, etc.

Sec. 6. That upon the recommendation and approval of the Secretary of the Interior of a qualified candidate the United States District Court for the Territory of Hawaii shall appoint a commissioner who shall reside in the park and who shall have jurisdiction to hear and act upon all complaints made of any violations of law or of the rules and regulations made by the Secretary of the Interior for the government of the park and for the protection of the animals, birds, and fish, and objects of interest therein, and for other purposes, authorized by this Act. (U.S.C., 6th supp., title 16, sec. 395e.)

Judicial power of, in violations of rules, etc.

Such commissioner shall have power, upon sworn information, to issue process in the name of the United

States for the arrest of any person charged with the commission of any misdemeanor, or charged with a violation of the rules and regulations, or with a violation of any of the provisions of this Act prescribed for the government of said park and for the protection of the animals, birds, and fish in said park, and to try the person so charged, and, if found guilty, to impose punishment and to adjudge the forfeiture prescribed. (U.S.C., 6th supp., title 16, sec. 395e.)

Appeals from, to district court.

In all cases of conviction an appeal shall lie from the judgment of said commissioner to the United States District Court for the Territory of Hawaii, and the United States district court in said district shall prescribe the rules of procedure and practice for said commissioner in the trial of cases and for appeal to said United States district court. (U.S.C., 6th supp., title 16, sec. 395e.)

Procedure in criminal cases.

SEC. 7. That such commissioner shall also have power to issue process as hereinbefore provided for the arrest of any person charged with the commission within said boundaries of any criminal offense not covered by the provisions of section 4 of this Act, to hear the evidence introduced, and if he is of opinion that probable cause is shown for holding the person so charged for trial shall cause such person to be safely conveyed to a secure place of confinement within the jurisdiction of the United States District Court for the Territory of Hawaii, and certify a transcript of the record of his proceedings and the testimony in the case to said court, which court shall have jurisdiction of the case: *Provided*, That the said commissioner shall grant bail in all cases bailable under the laws of the United States or of said Territory. (U.S.C., 6th supp., title 16, sec. 395f.)

Proviso. Bail.

Service of process.

SEC. 8. That all process issued by the commissioner shall be directed to the marshal of the United States for the district of Hawaii, but nothing herein contained shall be so construed as to prevent the arrest by any officer or employee of the Government or any person employed by the United States in the policing of said reservation within said boundaries without process of any person taken in the act of violating the law or this Act or the regulations prescribed by the said Secretary as aforesaid. (U.S.C., 6th supp., title 16, sec. 395g.)

Summary arrests.

SEC. 9. That the commissioner provided for in this Act shall be paid an annual salary as appropriated for by Congress, payable quarterly; *Provided*, That the said commissioner shall reside within exterior boundaries of said Hawaii National Park at a place to be designated by the Secretary of the Interior: *And provided further*, That all fees, costs, and expenses collected by the commissioner shall be disposed of as provided in section 11 of this Act. (U.S.C., 6th supp., title 16, sec. 395h.)

Pay of commissioner.

Proviso.

Residence required.

Disposal of fees, etc.

SEC. 10. That all fees, costs, and expenses arising in cases under this Act and properly chargeable to the United States shall be certified, approved, and paid as are like fees, costs, and expenses in the courts of the United States. (U.S.C., 6th supp., title 16, sec. 395i.)

Fees, United States cases.

SEC. 11. That all fines and costs imposed and collected shall be deposited by said commissioner or the United States, or the marshal of the United States collecting the same, with the clerk of the United States District Court for the Territory of Hawaii. (U.S.C., 6th supp., title 16, sec. 395j.)

Deposit of fines and costs.

Sec. 12. That the Secretary of the Interior shall notify, in writing, the Governor of the Territory of Hawaii of the passage and approval of this Act and of the fact that the United States assumes police jurisdiction over said park.

Notice to Territory of Federal police jurisdiction assumed.

[CHAPTER 530]

AN ACT

To add certain lands on the island of Hawaii to the Hawaii National Park, and for other purposes.

June 20, 1938
[H. R. 1995]
[Public, No. 680]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when title to all or any of the following-described lands on the island of Hawaii, in the Territory of Hawaii, shall be vested in the United States, such lands shall be, and the same are hereby, added to and made a part of the Hawaii National Park:

Hawaii National Park.
Lands added.

Kalapana extension (being portions of the lands of Kahaualea, Panaunui, and Apua and all of the lands of Poupou, Pulama, Kamoamo, Laeapuki, Panauiki, Kealakomo, and Kahue, in the district of Puna, and portion of the land of Keauhou, in the district of Kau): Beginning at the United States Coast and Geodetic Survey triangulation station Kupapau (marked by a survey tablet set in large rock), the true azimuth and distance from said point of beginning to the United States Coast and Geodetic Survey triangulation station Hakuma (marked by a United States Coast and Geodetic Survey tablet set in smooth lava outcrop and surrounded by a circular patch of cement near edge of sea pali) being two hundred and forty-four degrees forty minutes and fifty seconds exactly fourteen thousand four hundred and thirteen feet and running as follows, all azimuths being measured clockwise from true south (note azimuths of courses 1 to 4, inclusive, are referred to Hakuma meridian):

Description.
Kalapana extension.

Along the seacoast at high-water mark, in a general southwesterly direction for the first five courses, the true azimuths and distances between points on said seacoast being—

1. Exactly sixty-six degrees and fifteen minutes twenty-six thousand three hundred and thirty-six and six-tenths feet to United States Coast and Geodetic Survey station Laeapuki, marked by a survey tablet set in mound and covered by a small cairn;
2. Exactly sixty degrees and ten minutes eighteen thousand seven hundred feet to Kaena Point;
3. Exactly seventy-one degrees and fifty-six minutes, twenty-one thousand three hundred and fifty feet to Apua Point;
4. Exactly ninety-eight degrees and forty-five minutes seven thousand four hundred feet to a pipe in concrete at a place called Okio-kiahu (note: azimuths of courses 5 to 11, inclusive, are referred to Uwekahuna meridian);
5. One hundred and nine degrees fifty-seven minutes and twenty-two seconds ten thousand seven hundred and seventeen and nine-tenths feet to a pipe in concrete at a place called Makaloa; thence
6. One hundred and seventy degrees four minutes and thirty-nine seconds exactly six thousand eight hundred feet along Hawaii National Park, Kilauea section, to the foot of the Puueo pali;
7. Two hundred and forty-three degrees five minutes and thirty seconds exactly one thousand nine hundred and seventy-three feet along the foot of Puueo pali along portion of the land of Keauhou;
8. Exactly two hundred and eighty-six degrees fifty minutes exactly nine thousand seven hundred feet along portion of the land of Keauhou;
9. One hundred and seventy-eight degrees thirty-eight minutes and twenty-five seconds exactly twelve thousand five hundred feet along portion of the land of Keauhou to a pipe in concrete at top of the Poliokeawe pali;

10. One hundred and sixty-six degrees twenty-two minutes and twenty-four seconds twelve thousand four hundred and sixty-seven and nine-tenths feet along portion of the land of Keauhou to a pipe in concrete on the south boundary of Hawaii National Park, Kilauea section;

11. Exactly two hundred and sixty-nine degrees and ten minutes twenty-one thousand one hundred forty-six and five-tenths feet along Hawaii National Park, Kilauea section, to a pipe (note: azimuths of courses 12 and 13 are referred to Puu Huluhulu meridian);

12. Exactly two hundred and eleven degrees and thirty minutes thirteen thousand seventy-four and seven-tenths feet along Hawaii National Park, Kilauea section, to a pipe;

13. Exactly two hundred and eighty-one degrees exactly two thousand nine hundred and thirty-one feet along portion of the land of Kahaualea (note: azimuths of courses 14 to 24, inclusive, are referred to Hakuma meridian);

14. Exactly two hundred and twelve degrees and thirty minutes exactly eight thousand and fifteen feet along the land of Kahaualea;

15. Exactly two hundred and ninety-seven degrees and fifteen minutes exactly twenty-four thousand five hundred and fifty-two feet along the land of Kahaualea;

16. Exactly two hundred and forty-five degrees and fifty-eight minutes exactly six thousand one hundred and sixty-eight feet along the land of Kahaualea;

17. Exactly three hundred and twenty-six degrees and thirty-one minutes exactly five thousand two hundred and forty-eight feet along the land of Kahaualea;

18. Exactly three hundred and fifty-nine degrees and fifteen minutes exactly four hundred and forty-five feet along the land of Kahaualea;

19. Exactly three hundred and twenty-nine degrees exactly two thousand two hundred and eleven feet along the land of Kahaualea;

20. Two hundred and thirty-four degrees thirty-nine minutes and forty seconds exactly three thousand two hundred and eighty-three feet across portion of the land of Kahaualea;

21. Exactly three hundred and thirty-eight degrees and twelve minutes three thousand nine hundred and twenty-seven and five-tenths feet along the land of Kapaahu;

22. Exactly three hundred and thirty-four degrees and thirty minutes exactly one thousand seven hundred and eighty feet along the land of Kapaahu to the south corner of grant 3208 to West Kaloi;

23. Exactly three hundred and thirty-one degrees and thirty minutes five thousand and ninety-seven and eight-tenths feet along the land of Kapaahu to a point near seacoast; thence

24. To and along the seacoast at high-water mark to the point of beginning, the true azimuth and distance being: Exactly fifty-three degrees and eighteen minutes three thousand three hundred and sixty-four feet.

Area, forty-nine thousand three hundred and forty acres.

Footprint extension: Beginning at the northeast corner of this tract of land, at a point on the west edge of the Keamoku Aa Flow (lava flow of 1823), and on the westerly boundary of Hawaii National Park, Kilauea section, as described in Governor's Executive Order 86, the coordinates of said point of beginning referred to Government survey triangulation station Uwekahuna, being four thousand seven hundred and six and six-tenths feet south and seventeen thousand nine hundred and seventy and three-tenths feet west, and the true azimuth and distance from said point of beginning to Government survey triangulation station Ohaikea being one hundred and sixty-six degrees and twenty minutes exactly six thousand three hundred and fifty feet, as shown on Government survey registered map 2388, and running by azimuths measured clockwise from true south—

Footprint extension.

1. Three hundred and forty-six degrees and twenty minutes exactly fourteen thousand two hundred and fifty-eight feet along Hawaii National Park, Kilauea section, as described in Governor's Executive Order 86;

2. Fifty degrees and twenty-five minutes exactly twenty-seven thousand six hundred and fifteen feet along Hawaii National Park, Kilauea section, as described in Governor's Executive Order 81, thence along the remainder of the Government land of Kapapala to the point of beginning as follows:

3. One hundred and ninety-one degrees no minutes and twenty seconds thirteen thousand five hundred and forty-four and five-tenths feet to a pipe at fence corner a little southwest of the old halfway house and about twenty feet southeast of the edge of the Government main road;

4. Two hundred and thirty-four degrees and twenty-five minutes one thousand three hundred and seventy-seven and five-tenths feet to a pipe on a mound of pahoehoe about ninety feet southeast of the Government main road;

5. Two hundred and twenty degrees and forty minutes exactly one thousand seven hundred and eighty-seven feet crossing the Government main road to a spike in large boulder in stone wall about one hundred and twenty-five feet north of the Government main road; thence

6. Along stone wall over the lava flows, the boundary following the wall in its turns and windings, the direct azimuth and distance being: two hundred and nineteen degrees twenty-two minutes and forty-five seconds exactly eighteen thousand one hundred and twenty-one feet to a point in said stone wall;

7. Two hundred and thirty-eight degrees and seven minutes exactly two hundred and fifty feet partly along stone wall to a pipe in the middle of a corral;

8. Two hundred and thirty-four degrees and two minutes exactly two hundred feet across corral and along stone wall to a point in said wall;

9. Two hundred and thirty-nine degrees and thirty minutes exactly three hundred and fifteen feet along stone wall to a pipe at end of wall and on the south side of the old Peter Lee Road;

10. One hundred and eighty-five degrees and thirty minutes exactly three hundred and eighty feet crossing old Peter Lee Road and along fence to a pipe at fence corner on the west bank of a ravine; thence

11. Following along the west bank of ravine, the direct azimuth and distance being: two hundred and three degrees and twenty-three minutes four hundred seventy-five and seven-tenths feet to a pipe on the west bank of the ravine;

12. Two hundred and twenty degrees and fifty-four minutes exactly two hundred and forty-five feet across ravine and along fence to a spike in stone pile;

13. Two hundred and twelve degrees and forty-four minutes exactly two hundred feet along fence to a spike in stone pile;

~~14. Two hundred and twenty-two degrees and fifty-three minutes exactly two hundred and forty feet along fence to a spike in stone pile;~~

15. Two hundred and twenty-five degrees and forty-six minutes three hundred and forty and six-tenths feet to the point of beginning and containing an area of five thousand seven hundred and thirty acres, more or less;

and, in addition, any lands adjacent or contiguous to the Hawaii National Park as hereby extended which, in the discretion of the Secretary of the Interior, are necessary for the proper rounding out of the boundaries of the park: *Provided*, That the United States shall not purchase, by appropriation of public moneys, any land within the aforesaid area, but such lands shall be secured by the United States only by public and private donations.

Additional adjacent
or contiguous lands.

Proviso.
Lands to be secured
by donations only.

Acceptance of title authorized.

SEC. 2. The Secretary of the Interior is hereby authorized, in his discretion and upon submission of evidence of satisfactory title to him, to accept, on behalf of the United States, title to the lands referred to in the previous section hereof as may be deemed by him necessary or desirable for national-park purposes.

Leases for home site purposes in the Kalapana extension to natives.

SEC. 3. (a) That the Secretary of the Interior is authorized to lease, under such rules and regulations as he may deem proper, land ascertained by him to be suitable for home site purposes in the Kalapana extension as described herein, to native Hawaiians when such occupancy does not encroach on or prevent free access to any points of historic, scientific, or scenic interest or in any manner obstruct or interfere with protection and preservation of said area as a part of the Hawaii National Park: *Provided, however,* That occupants of homesites shall reside on the land not less than six months in any one year: *And provided further,* That fishing shall be permitted in said area only by native Hawaiian residents of said area or of adjacent villages and by visitors under their guidance.

Provisos. Residence requirements. Fishing restrictions.

(b) The term "native Hawaiian", as used in this section, means any descendant of not less than one-half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778.

"Native Hawaiian" defined.

SEC. 4. That the provisions of the Act of August 1, 1916 (39 Stat. 432), entitled "An Act to establish a national park in the Territory of Hawaii"; the Act of August 25, 1916 (39 Stat. 535), entitled "An Act to establish a National Park Service, and for other purposes"; the Act of February 27, 1920 (41 Stat. 452), entitled "An Act to authorize the Governor of the Territory of Hawaii to acquire privately owned lands and rights-of-way within the boundaries of the Hawaii National Park"; and all Acts supplementary to and amendatory of said Acts are made applicable to and extended over the lands hereby added to the park: *Provided,* That the provisions of the Act of June 10, 1920, as amended, entitled "An Act to create a Federal Power Commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal section 18 of the River and Harbor Appropriations Act, approved August 8, 1917, and for other purposes", shall not apply to or extend over such lands (U. S. C., title 16, sec. 391): *And provided further,* That the Governor of the Territory of Hawaii is authorized to convey to the United States any and all lands and interests in lands acquired by the Territorial Government under the provisions of this Act.

Provisions of designated Acts extended to additions. 39 Stat. 432. 16 U. S. C. § 391. 39 Stat. 535. 16 U. S. C. § 1. 41 Stat. 452. 16 U. S. C. § 392.

Provisos. Designated provisions inapplicable. 41 Stat. 1063. 16 U. S. C., ch. 12.

16 U. S. C. § 391. Conveyance authorized.

Approved, June 20, 1938.

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PUBLIC LAWS—CHS. 684, 685—JUNE 25, 1938 [52 STAT.]

[CHAPTER 684]

AN ACT

June 25, 1938 [H. R. 5805] [Public, No. 726]

To amend an Act entitled "An Act to provide for the exercise of sole and exclusive jurisdiction by the United States over the Hawaii National Park in the Territory of Hawaii, and for other purposes", approved April 19, 1930.

Hawaii National Park.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of the Act entitled "An Act providing for the exercise of sole and exclusive jurisdiction by the United States over Hawaii National Park in the Territory of Hawaii, and for other purposes", approved April 19, 1930 (46 Stat. 228; U. S. C., title 16, sec. 395e), be amended by adding at the end thereof the following:

46 Stat. 228. 16 U. S. C. § 395e.

Acting Commissioner; power, jurisdiction, etc.

"That during such time or times as the office of the Commissioner for the Hawaii National Park shall be or remain unfilled, or when the presence of such Commissioner cannot be conveniently procured, any United States commissioner duly appointed by the United States District Court for the Territory of Hawaii and residing in such district shall have full power, authority, and jurisdiction to hear and act upon all complaints made with respect to offenses or violations of law

or regulations occurring within the limits of the Hawaii National Park, as the United States Commissioner for the Hawaii National Park may now act with respect to offenses or violations of law or regulations occurring within the limits of said park."

46 Stat. 229.
16 U. S. C. § 395h.

SEC. 2. That section 9 of the said Act of April 19, 1930 (46 Stat. 229; U. S. C., title 16, sec. 395h), be amended by adding at the end thereof the following:

Fees allowed.

"That any United States commissioner in and for the Territory of Hawaii, while acting in such capacity as United States Commissioner for the Hawaii National Park as authorized by section 6 hereof, shall be allowed the fees prescribed by section 21 of the Act of May 28, 1896 (29 Stat. 184), upon the rendition of an itemized account."

29 Stat. 184.
28 U. S. C. § 597.

Repeal of conflicting laws.

SEC. 3. All laws or parts of laws, either Federal or Territorial, in conflict herewith are hereby repealed.

Approved, June 25, 1938.

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STUDY PARTICIPANTS

In June 1970 a study entitled, "The Island of Hawaii, A Resource Study and Master Plan," was completed. It included a master plan for Hawaii Volcanoes and adjacent lands proposed for addition.

Participants in that study included the following:

Daniel J. Tobin, Jr., former Superintendent
Hawaii Volcanoes National Park

Richard W. Barnett and Ronald N. Mortimore,
Team Captains, Environmental Planning
and Design, WSC

John W. Henneberger, Park Planner,
Environmental Planning and Design, WSC

Bruce W. Black, Park Planner,
Environmental Planning and Design, WSC

Frank Collins, Landscape Architect
formerly with Office of Design & Construction, WSC

Kenneth Kasper, Staff Appraiser,
Office of Land and Water Rights, WSC

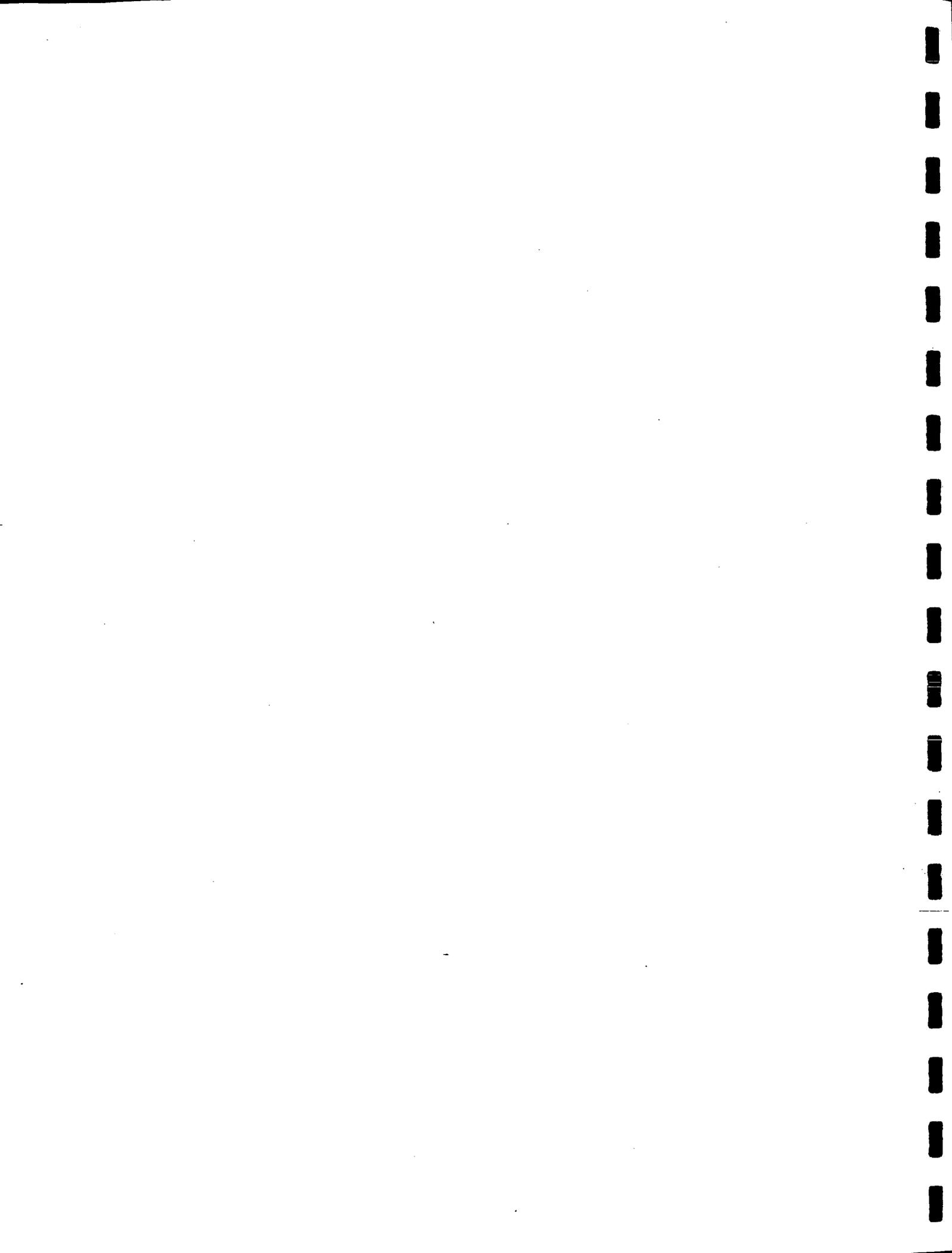
In late 1972 and early 1973, the original study was reexamined and the proposals included in this report were formulated.

The following National Park Service personnel participated in this revised study and report:

Robert Barrel
State Director, Hawaii

Bryan Harry
Superintendent, Hawaii Volcanoes National Park

Ronald Mortimore
Park Planner, Western Regional Office



As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The Department also has major responsibilities for American Indian reservation communities and for people who live in island territories under U.S. administration.

U.S. DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

