



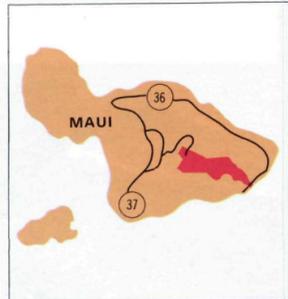
## Of Volcanoes and the Sea—Of Valleys and Cascades

Haleakala National Park was established on the island of Maui to preserve the outstanding features of Haleakala Crater. Later additions to the park gave protection to the unique and fragile ecosystems and rare biotic species of Kīpahulu Valley, the scenic pools along 'Ohe'o Gulch, and the coast.

And so, stretching from the summit of Mt. Haleakala eastward to the southeast coast, the park joins these two special areas—Haleakala Crater near the summit and the Kīpahulu coastal area. No roads connect the two, though each can be reached by road from Kahului. In fact, to help keep the park as undisturbed as possible, so that the visitor may find here a natural environment, roads lead only to the threshold of this inspiring wilderness.

Cross this threshold and step into the contrasting beauty of Haleakala National Park. Learn here of the earth and of those mysteries beneath and above its surface—of cool and silent volcanic rocks, of cascading streams and quiet pools, and of dazzling silver plants and flashing scarlet birds.

Haleakala Crater is now a cool, cone-studded reminder of a once-active volcano. Streaks of red, yellow, gray, and black trace the courses of recent and ancient lava, ash, and cinder flows. The volcanic rocks slowly break down as natural forces



reduce them to minute particles which are swept away by wind, heavy rain, and intermittent streams.

*A fiery birth beneath the sea*  
Modern geology indicates that the Hawaiian Islands are situated near the middle of the "Pacific Plate," one of a dozen thin, rigid structures covering our planet like the cracked shell of an egg. Though adjoining each other, these plates are in constant slow motion, the Pacific Plate moving northwestward several centimeters per year. Scattered around the world are many weak areas in the earth's crust where magma slowly wells upward to the surface as a "plume." Here volcanoes and volcanic islands, such as Maui, are born.

This constant northwestward movement of the Pacific Plate over a local volcanic "hot spot," or plume, has produced a series of islands one after another in assembly line fashion. The result is a chain of volcanic islands stretching from the island of Hawai'i along a southeast-northwest line for 4,050 kilometers (2,500 miles) toward Japan.

*Mountains above the sea*  
Maui, one of the younger islands in this chain, began as two separate volcanoes on the ocean floor; time and again, eon after eon, they erupted, and thin new sheets of lava spread upon the old, building and



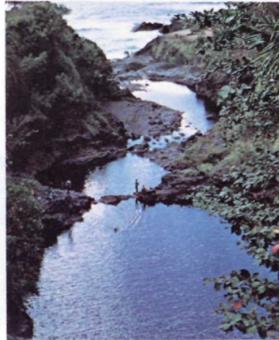
building, until the volcano heads emerged from the sea. Lava, wind-blown ash, and alluvium eventually joined the two by an isthmus or valley, forming Maui, "The Valley Isle." Finally, Haleakala, the larger eastern volcano, reached its greatest height, 3,600 meters (12,000 feet) above the ocean—some 9,100 meters (30,000 feet) from its base on the ocean floor.

*Waters upon the mountain*  
For a time, volcanic activity ceased, and erosion dominated. The great mountain was high enough to trap the moisture-laden northeast tradewinds. Rain fell and streams began to cut channels down its slopes. Two such streams eroding their way headward created large amphitheater-like depressions near the summit.

## HALEAKALA CRATER—The Geologic Story

Ultimately these two valleys met, creating a long erosional "crater." At the same time a series of ice age submergences and emergences of the shoreline occurred; the final submergence formed the four islands of Lanai, Molokai, Kahoolawe, and Maui.

Enrich your visit to the park by becoming aware of the many unusual and contrasting colors here. Note the pink and gray cinder cones dotting the crater floor (far left) and the vivid green ferns growing near the summit



along Halemau Trail (left). Not so easy to spot among the leaves is the red 'i'iwi (above, top), whose long curving bill reaches deep for nectar. At the far southeast corner of the park, near Kīpahulu, the bright blue waters of the 'Ohe'o Pools (above) sparkle in the sunshine, and spray from Waimoku Falls constantly bathes these fern-like plants (right).

*Lava down the valleys*  
When volcanic activity resumed near the summit, lava poured down the stream valleys, nearly filling them. More recently, cinders, ash, volcanic bombs, and spatter were blown from the numerous young vents in the "crater" forming multi-colored symmetrical cones as high as 180 meters (600 feet).

Thus this water-carved basin became partially filled with lava and cinder cones, and it came to resemble a true volcanic crater.

*Stillness within the volcano*  
Several hundred years have passed since the last volcanic

activity occurred within the crater. This stillness in Maui is attributed by modern geology to the constant northwestward movement of the Pacific Plate. As the oldest islands on the northwest end of the chain have moved farther away from the plume—the source of new lava—they have ceased to grow; the ravages of wind and rain and time have thus been able to reduce them to sandbars and atolls.

Maui has shifted a few kilometers from the plume's influence, and Haleakala, too, is destined to become extinct. Though dormant now, about 1790, which is quite recent in geologic time, two minor flows at lower elevations along the southwest rift zone of Haleakala reached the sea and altered the southwest coastline of Maui. Today, earthquake records indicate that internal adjustments are still taking place in the earth's crust, but at present, no volcanic activity of any form is visible in the crater nor at any other place on the island of Maui. Perhaps Haleakala could erupt again; we just don't know.

Though Maui is no longer growing, the youngest island in the chain, Hawai'i, is enlarging. And as plate drift continues, it is even probable that in the distant future, a new volcanic island will appear to the southeast of Hawai'i, the Big Island.



On the other hand, all mammals—except for a small brown bat and monk seal—arrived on these islands through man's intentional or accidental aid. Being unnatural, their presence

The Hawaiian Islands, thousands of kilometers from a continental land mass, support a complex system of plants and animals. More than 90 percent of the native species are found only on these islands. What events took place to create this assemblage of life so severely restricted in range?

A tiny seed caught among a bird's feathers, fern spores borne aloft by strong winds, and insects cast ashore with floating vegetation are means by which life can cross an ocean. For every one that successfully survived the trip, thousands, perhaps millions, failed. But time was not a critical factor, and thus over millions of years several hundred of the hardier life forms established populations on the new islands.

Time and extreme isolation were essential for the development of Hawai'i's unique native life. Isolated from the remainder of its kind and living in a strange environment, a small breeding population is especially subject to evolutionary development. In some instances, changes have been so pronounced that it is difficult, if not impossible, to trace ancestries to continental forms.

## LIFE STORY

has greatly upset the natural balance here. Wild pigs, initially brought by early Hawaiians, root today through the wet areas of the park. Goats, introduced by Europeans, browse throughout the crater. These two exotics are the most serious threat to the native plant and animal populations. But other introduced species inhabit the park such as the predatory mongoose, released in sugar cane fields to control rats and mice (also introduced). All of these exotics continue to threaten the natural relationship which would have evolved between organisms and their environment in the absence of interference by modern man. Thus, the Park Service has embarked on an exotic plant and animal control program aimed at perpetuating the values for which Haleakala National Park was established.

Hawai'i is noted for its unique birdlife, and many species are found nowhere else. The golden plover commonly seen from September to May is famous for its migratory flights to and from Alaska. You may also see the 'apapane, 'i'iwi, 'amakihi, and nene which are among those birds native only to the Hawaiian Islands. The 'i'iwi is one of the most beautiful of all Hawaiian birds, with a bright scarlet body, black wings and tail, and inch-long curved bill. The 'apapane is also scarlet, but has a white belly and black legs and bill. The bright green and yellow 'amakihi is known for the speed at which it searches for nectar and insects. However, most of the birds you will see along park roads—pheasants, chukars, skylarks, mockingbirds—are introduced forms. These, too, have taken their toll of native birdlife—as the carriers of bird diseases and competitors for territory and food.



Strangely enough, the silversword dies after blooming only once. After growing for some 5 to 20 years, this spectacular plant with its many dagger-like silvery leaves (bottom left), develops a cluster of 100 to 500 yellow and reddish-purple flower heads (top left and cover). The flower stalk, which begins to develop in May or June, reaches a height of about 1 to 2.5 meters (3 to 8 feet) in July or August. Each flower produces hundreds of seeds, and as the seeds develop, the remainder of the plant slowly dies. By late autumn, only a dry, decaying skeleton remains.

The silversword, called ahinahina or "gray-gray" by the Hawaiians, is a member of the sunflower family. It probably descended from ancestors whose seed was carried by air currents across the Pacific from the Americas.

You can see silverswords most easily along the park road at the Kīpahulu Overlook's Silversword Enclosure. The more venturesome visitors will find fine groups in various stages of growth on the Silversword Loop Trail within the crater.

## KIPAHULU

In contrast to the red and yellow, gray and black lava ash and cinder cones of Haleakala Crater are the lush greenness and abundant waters of the Kīpahulu section of the park. Here the visitor is greeted by a chain of usually placid sparkling pools, some large, some small, and each connected by a waterfall or short cascade. But 'Ohe'o, the stream joining the pools, has many moods, and at times becomes a thundering torrent of white water burying these quiet pools as it churns and plunges headlong toward the ocean. The upper rain forest above the pools receives up to 635 centimeters (250 inches) of rainfall a year and flash floods can and do occur here.

A pastoral scene of rolling grasslands and forested valleys

surrounds the pools. Ginger and ti form an understory in forests of kukui, mango, guava, and bamboo, while beach naupaka, false kamani, and pandanus abound along the rugged coastal cliffs. Pictographs, painted by long-forgotten artists, and farm plots once flourishing with cultivated taro and sweet potatoes, remind us of an age when the ali'i—Hawaiian chiefs—ruled this land.

In the higher elevations, a vast native koa and 'ohi'a rain forest thrives, just as it has for thousands of years, still relatively undisturbed by the influences of man. It is here that the endangered Maui nūkupu'u, Maui parrotbill, and other native birds still survive in a delicately balanced environment. Protection of this ecosystem will help preserve some of this rare birdlife.

## WHEN TO VISIT

Weather near the summit varies considerably; summers are generally dry and moderately warm, but you should come prepared for occasional cold, windy, damp weather. Winters tend to be cold, wet, foggy, and windy. Generally in the spring and fall there is a mixture of all kinds of weather. Call the park at 572-7749 for current weather conditions before beginning your trip to the park.

Conditions for viewing scenery change during the day. At sunrise the light is poor, but the crater is usually free of clouds to midmorning and again in late afternoon and evening. Photographic lighting is usually best in the afternoon. Cloudy conditions often prevail during midday, but frequently improve for short periods, permitting at least partial views of the crater. Evening visits to the crater rim can be spectacular.

Weather along the Kīpahulu coast is subtropical. Light showers can occur any day.

## HOW TO REACH THE PARK

Haleakala National Park extends from the 3,055-meter (10,023-foot) summit of Mt. Haleakala down the southeast flank to the Kīpahulu coast near Hana. These two sections of the park are not directly connected by road, but each can be reached by automobile from Kahului, as follows:

Haleakala Crater is a 3-hour round trip drive from Kahului

## SERVICES AND FACILITIES

There are no overnight motel accommodations, food services, stores, or service stations within

Distance from park entrance: (Haleakala Crater)

Restaurant & Lodge 19 km (12 mi) on Hawaii 37—Kula

Service Station 29 km (18 mi) on Hawaii 37—Pukalani

the park, but these facilities can be reached by car in about 30 to 45 minutes:

Distance from Kīpahulu: ('Ohe'o Gulch)

Distance from Kīpahulu: on Hawaii 31—Hana 16 km (10 mi)

Same as above

Facilities at Ohe'o, erroneously known as Seven Pools or Seven Sacred Pools, are primitive. Neither drinking water nor modern restrooms are available. Park Service personnel are usually available near Ohe'o Bridge between 7:30 a.m. and 4 p.m.

There are two state parks and numerous scenic points along the highway to Hana. Some of these can be reached within one or two hours' driving time, making a good rest stop or final destination for those not wanting to make the whole drive. Consider driving only part of the distance since some people are disappointed upon completing the long, exhausting, and arduous drive only to discover that the natural qualities at Ohe'o are similar to other scenic vistas along the way.

