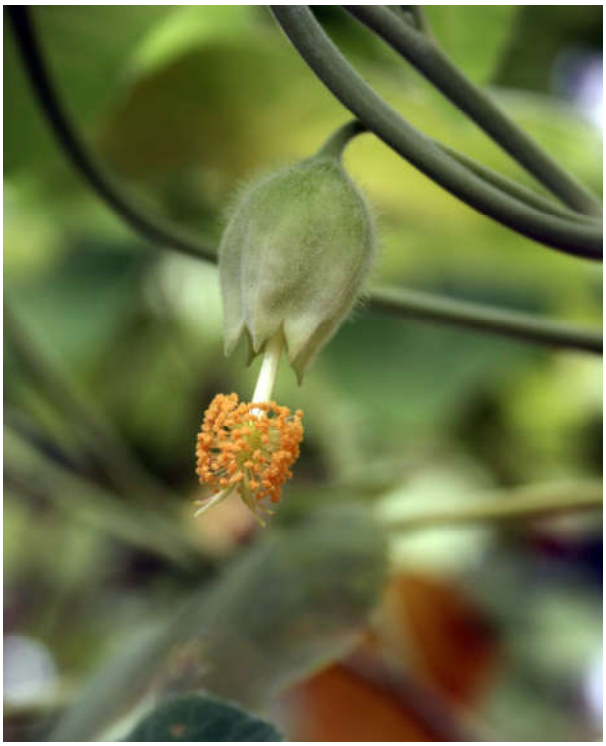
MAI UKA A KAI (FROM MOUNTAINS TO SEA)
ENVIRONMENTAL AND CULTURAL DEPREDATION

Introduction

By way of this small collection of nineteenth- and early twentieth-century accounts, I wish to provide readers with a general overview of documentation pertaining what Hawaiians called ‘āina (the land and living environment that sustains us) from mountains to sea. The narratives cited below, include historical accounts—some written by native Hawaiian writers of the last century—describing the condition of the Hawaiian forests, open land and other natural resources, and ways by which people sought to protect the biocultural landscape from the impacts of introduced hoofed animals. Because of the present interests and concerns for conservation, hunting, and protection of native habitats, this paper also includes several examples of management efforts that were undertaken in the first few decades of this century.



Lāna‘i Abutilon eremitpetalum – known by only a few plants in the wild, on the verge of extinction due to grazing by introduced ungulates (Photo KPAC-8348)

In reviewing the following documentation, several points on our island history and losses due to depredation will be noted. Among these are:

(1) The cultural attachment and relationship shared between Hawaiians and their environment is ancient. Traditional Hawaiian values assigned to the forests and upland regions are very different from many of those represented in modern forestry and recreational interests.

(2) The demise of Hawaiian forests and water sheds (resulting primarily from the impacts of grazing animals and large scale land use) has been a concern of kingdom and later governmental agencies and communities for more than 180 years.

(3) The primary focus of “Hawaiian forestry” since the nineteenth century has been driven by western economic values and interests.

(4) Conservation efforts today are rooted in a foundation that crosses both traditional and contemporary boundaries, and the process is one in which people have participated for the last two centuries.

This paper only scratches the surface of this dynamic history, and I and ask you to remember a saying taught to me by my kūpuna hānai (adoptive grandparents) on Lāna‘i —

“O ka mea maikaʻi mālama, o ka mea maikaʻi ʻole, kāpae ʻia”
(Keep that which is good, and set that which is not good, aside).

Bio-Cultural Landscapes

Today, as a result of the cultural diversity of our island community, island residents look at the natural and cultural resources around them in different ways and apply different values to them. In the Hawaiian context, these values—the “sense of place”—have developed over countless generations of evolving “cultural attachment” to the natural, physical, and spiritual environments. Hawaiian culture evolved in close partnership with its natural environment, and does not have a clear dividing line of where culture ends and nature begins. Thus, cultural resources are not only things of a physical, geographic, practitioner’s, or archival nature, but they are also natural resources—the earth and its elements. Tradition and practice demonstrate that the spiritual beliefs, cultural practices, and cultural landscape of the Hawaiian people, were intricately bound to the natural landscape of the islands.

Hawaiian moʻolelo, or traditions express the attachment felt between the Hawaiian people and the earth around them. Moʻolelo tell us that all forms of the natural environment, from the skies and mountain peaks, to the forests, watered valleys, and plains, the shore line and ocean depths—were the embodiments of Hawaiian deities. One Hawaiian genealogical account, records that Wākea (the expanse of the sky) and Papa-hānau-moku (Earth-mother who gave birth to the islands) and various creative forces of nature, gave birth to the islands. As the native genealogical account continues, we find that these same creative forces of nature were also the parents of the first human (Hāloa), and from this ancestor, all Hawaiian people are descended (cf. David Malo 1951).

In a traditional context, natural resources—such as rock outcrops, a pool of water, a forest grove, an ocean current, lava flows, and the creatures of the earth—are valued as cultural properties by the Hawaiian people. It is this “cultural attachment” to the natural world that defines a significant body of traditional cultural properties and cultural practices in Hawaiʻi.

The mele (traditional chant) to the right, is one example of the way by which the poʻe kahiko Hawaiʻi (ancient people of Hawaiʻi) expressed their feelings and spiritual attachment to the honua ola (living environment).

Eō ka wahine i loko o ka ʻohu,
Ka ʻohu noho no i ke kuahiwi, kualono,
I loko o ʻIhikalani, hale kumu ʻohu…

…Respond o woman who is there in the mists.
The mists that sit upon the mountain ridges
and peaks,
At ʻIhi-ka-lani, mountain that is the source of
the mists.
The heavens are clear, no clouds are seen
in the sky,
At the dwelling place of the woman of
many body forms.
The woman for whom the lei was woven speaks.
Her lei was made by Hina-of-the-ʻōhiʻa-groves,
Made of the hala and lehua which grows in
the forest.
The wind carries the sweet fragrance of
the forest,
And it mingles with the scent of the ocean
at Pākaʻalana,
It mixes with the sweet scent of the
līpoa seaweed.
The water leaps from Ka-wai-kapu,
It descends from the cliff.
Descend Lau-kaʻieʻie and Lau-ka-palai
Companion of the kī plants which grows
in the uplands.
Descend. Inspire us!

(from the collection of Kupuna M.K. Pukuʻi, 1978)

A part of the premise in offering mele of this nature was that respectful travel across the land, entry into the forested regions, and care in collection of resources, would ensure success in each endeavor and the continuation of life.

In pre-western contact Hawai‘i, all land and natural resources were held in trust by the high chiefs (ali‘i ‘ai ahupua‘a or ali‘i ‘ai moku). The rights of use of the lands and resources were given to the hoa‘āina (native tenants), at the prerogative of the ali‘i and their representatives. Boundaries of lands were defined, and individuals living within given ahupua‘a (native land divisions, usually extending from the sea to the mountains) were responsible for the wise use of the resources within their home land.

The thought shared among many kūpuna (elders) and Hawaiian people today — is captured in the saying: “E mālama i ka ‘āina, a e mālama ho‘i ka ‘āina iā ‘oe” (Care for the land, and the land, in turn, shall care for you), is one that is centuries old and is rooted the spirituality of the Hawaiian people.

Hawaiian Resources–Western Values

Two important environmental observations are realized through a simple study of Hawaiian history. One is that prior to human residency there were no mammals (except for an endemic bat and seal), in the Hawaiian Islands. There were no hooved animals, and the natural environment was radically different than those of continental land masses. Another is that after western contact, historic land use and forestry in the Hawaiian Islands valued the forests in the terms of the western economic system—what could be taken from it. In the centuries prior to the arrival of westerners in 1778, the system of land tenure and management mirrored the natural landscape of the islands, while later management systems focused on what, and how much could be gotten from the land.

Upon western contact, foreigners looked at the land first as a source of provisions for ships; and second as a means for earning money, through the trade of natural resources such as ‘iliahi (sandalwood). In 1778, Captain Cook introduced European boar, goats, rams, and ewes. While offered as a “gift,” one of the motivating factors was that leaving the animals would produce a breeding stock to supply other foreign ships (Beaglehole 1967:276, 578-579). Later, in 1793, Captain Vancouver brought cattle to Hawai‘i. Given as gifts to Kamehameha I, the cattle were first let off at Kawaihae (then at Kealakekua), and were placed under a ten-year kapu to protect them and allow them to reproduce (Kamakau 1961:164). Between 1793 and c. 1811, new stock was added, and the numbers of cattle had increased dramatically. The cattle and other introduced stock were rapidly becoming a problem to the native population and forests.

While the introduced animals were making their way into the higher elevations, other economic pursuits also led to the clearing of large tracts of land. In the early 1800s (c. 1810-1829), tens-of-thousands of pounds of ‘iliahi (sandalwood) trees were cut from the forests and shipped to market in China (cf. Ellis 1969:397, Clark and Kirch 1983:48). By the 1830s, the forest had been stripped of sandalwood and many other plants of the forest were impacted by the clearings made for collection and transportation of the ‘iliahi. Another reason that large sections of forest were cleared, was to develop lands on which western-introduced food crops could be cultivated and harvested for sale to visiting ships.

In this part of the discussion, it is important to note that the European boar was significantly larger, and thus stronger, than the Polynesian introduced pua‘a, or pig (Beaglehole

1967:579). Prior to ca. 1815, when native Hawaiians went hunting in the uplands, rather than hunting pigs or other large grazers, they hunted birds (either as food or for collection of feathers, releasing the living birds). They also collected woods, plants, and stone resources, all of which were integral to either subsistence or traditional practices. Detailed native accounts describe the sophisticated system of protocols and kānāwai (laws) by which these practices were undertaken. Failure to adhere to the system often resulted in severe punishment of the offending party, and at times, even led to one's death (you break the kapu, you die).

By the 1840s, roaming cattle, sheep, and goats made such a severe impact through eating native dwellings (thatched houses) and consuming the produce of the agricultural fields, that most of the families who remained upon the land built stone walls around their residence and gardens (cf. Land Commission Award Testimonies, 1848-1850). The "pāhale" (house lots enclosed with walls or fences) are recorded in many of the Land Commission Awards.

In 1847, Reverend Lorenzo Lyons of the Waimea Station wrote:

> People are compelled to leave their cultivated spots and seek distant corners of the woods beyond the reach of the roaming cattle sheep and goats. But the cattle follow, and soon destroy the fruit of their labor. There is a despairing spirit among my people, and great suffering among them... (Doyle 1953:48)

Lyons also noted that the forests and weather had changed over the years of his residence (since 1832 till his death in 1886). He observed:

> Waimea of an evening is a perfect cloud of dust. The soil is remarkably dry, and so extremely fine that water does not even seem to wet it…Cattle destroying the forest has changed the mumuku. It was formerly so strong that natives always lashed canoes to the rocks, stakes, or trees at Kawaihae (Doyle 1953:49).

That the free roaming cattle were having an impact not only on the cultivated lands of the native tenants, but also on the remaining forests was documented in 1856 by Kingdom land surveyor, Curtis Lyons, son of Reverend Lyons as well:

> It is in the memory of many foreigners now living here, when the whole of these plains were covered with thick wood... Where hardly a tree is to be seen for miles, we were informed by an old resident that twenty-five years ago he lost himself with his team in the woods. (Lyons in Forbes 1991:54)

The younger Lyons also remarked that there was far more rain at Waimea in earlier days than there is now (Lyons in Forbes 1991:54).

Overview of Kingdom and Territorial Legislation and Actions on Protection and Preservation of Hawaiian Forests

So significant was the threat of wild animals to the Hawaiian landscape, that on September 19, 1876, King David Kalākaua signed into law, an Act for the Protection and Preservation of Woods and Forests. By that Act, the Minister of the Interior was authorized to set apart and protect from "damage by trespass of animals or otherwise, such woods and forest lands, the

property of government…best suited for the protection of water resources…" (Hawaii Laws Chapter XXX:39). The Minister of the Interior was authorized to appoint a superintendent of woods and forests:

> …who shall, under the direction of said Minister, enforce such rules and regulations as may be established to protect and preserve such reserved woods and forest lands from trespass. Said superintendent shall have charge of the construction of fences and barriers required to protect the said woods and forest lands, and shall be responsible for their being kept in good condition… (ibid.).

The above act was further defined by an Act of the Legislature of the Hawaiian Kingdom, approved by Queen Lili'uokalani on January 4, 1893, which established the Bureau of Agriculture and Forestry. Among the Bureau's goals was the "preservation of forests." On June 14, 1900, the members and functions of the Bureau were absorbed by the Board of Commissioners of Agriculture and Forestry (Hawaii State Archives – Com 2, Box 11). As a result forest reserves were established across the island, though their primary function was the protection of water resources to supply sugar plantations and economic growth. Unfortunately, hundreds of foreign plant species were introduced to cover the land. These fast growing plants not only covered lands that had been stripped of vegetation, but also steadily crept into remaining areas that were predominately native. This fostered a continual decline of native ecosystems and reduced the bio-diversity of Hawaiian forests. In fact, several of the introduced species led to the evolution of monoculture environments.

> Kiawe (Prosopis pallida), a species of mesquite, is an example of an early monoculture introduction to the Hawaiian lowland environment. First planted by a Catholic priest in Honolulu in 1828, from bean stock that was used as feed for his mule, it was found that the tree grew well in open Hawaiian lands that had been cleared of native vegetation by introduced grazing animals. It grew quickly, provided valuable feed for growing ranch interests, and the wood was ideal for fires in both home and industrial applications. Having evolved on continental drylands, its root system extends further into the ground that Hawaiian plant species that once grew in the same environmental zones, taking water from the ground before other plants can reach it. As a result, the kiawe invaded vast areas of Hawaiian land. On Lāna'i, the first record of kiawe is found in 1873, with a few trees on the kula (plains). Today, nearly 40,000 acres (of 90,000) of Lāna'i are covered with kiawe. Its growth habits, and heavy leaf debris make it nearly impossible for other plants (particularly endemic species) to grow.

On October 10, 1924, C.S. Judd, Superintendent of Forestry, wrote the following account of forests and forestry in the Hawaiian Islands to Governor Farrington. Nearly 96-years later, his words still present readers with an important frame work for the on-going efforts in protection of Hawai'i's native forests:

> Forestry is practiced in the Territory of Hawaii primarily, not for timber production, but for the conservation of water. Probably in no other section of the world is the relation between a satisfactory forest cover on the mountains and the supply of water for domestic and agricultural uses better or more ably demonstrated… The chief product, and, the most valuable, coming from the main forested and mountainous regions of the Territory, comprising about one-fourth of the total land area of the eight islands (4,099,860 acres) is

water. Because of the comparatively limited terrain, short and steep water sheds, heavy rainfall in certain regions and the great need for irrigating the dry but fertile, sun-warmed lowlands, the value of this liquid product of the forest, on which domestic needs and prosperity of the community depend, is most highly appreciated and every effort is being made to conserve and maintain its sources in the forests.

Character of the Native Forest
The forest of comparatively small trees found growing naturally on the mountain slopes is admirably suited to prevent erosion and to convert surface runoff into underground drainage, the desirederatum in water conservation. The happy combination of small trees, brushes, ferns, vines and other forms of ground cover keep the soil porous and allow the water to percolate more easily into the underground channels. The foliage of the trees breaks the force of the rain and prevents the impacting of the soil by rain drops. A considerable portion of the precipitation is let down to the ground slowly by this three-storied cover of trees, bushes, and floor plants and in this manner the rain, falling on a well-forested area, is held back and instead of rushing down to the sea rapidly in the form of destructive floods, is fed gradually to the springs and streams and to the underground artesian basins where it is held for use over a much longer interval.

Protection of the Forest
Forest practice in the Territory of Hawaii, therefore, resolves itself into what is known as “forest protection” and the main efforts of the foresters are exerted in maintaining and build up the native forests on the mountains so that they will function to the highest degree in conserving the rainfall.

The native forest, however, is peculiarly constituted in that it is readily susceptible to damage. The shallow-rooted trees depend for proper moisture and soil conditions on the undergrowth of bushes and ferns and when the latter, the first to be attacked by stock, are injured or removed, the tree roots dry out, the trees are weakened and begin to decline, and an opening is made in the forest for the invasion of destructive insects and fungi and of the more vigorously-growing foreign grasses and other plants which choke out native growth and prevent tree reproduction. It is always dangerous for this reason to make any opening in the native forest and the only safe way to preserve it and keep it healthy and vigorous is to maintain it inviolable from all attacks and keep the ground well shaded and dark.

Damage to the Forest
The chief damage to the native forest is done by cattle and other grazing stock which first attack the toothsome ferns and other plants which give the shallow-rooted trees the protection which is necessary to their existence. The fencing of exposed forest boundaries to keep out stock and the extermination of wild stock where it exists in the forest constitutes an important item in forest work in the Territory…

Forest Reserves
Forest lands devoted to the purpose of water conservation have been officially recognized under the law and set apart as forest reserves by

proclamation of the Governor. In this manner during the past two decades 50 of such forest reserves have been set aside on the five largest islands of the group. These embrace a total area of 840,984 acres of which 579,905 acres or 68 per cent is land belonging to the Territory… (Hawaii State Archives – Com 2, Box 15)

Game Hunting Introduced in the Hawaiian Islands

Beyond the introduction of livestock as an economic engine to supply meat, tallow and hides, western residents introduced game animals to promote private sports-hunting activities. In December 1867, seven Axis (or Indian) Deer arrived at the port of Honolulu, and on January 20, 1868, King Kamehameha V brought them to his lands on Molokaʻi (Jan. 25, 1868:3, Pacific Commercial Advertiser). Even though private hunting was allowed after the herd established itself on Molokaʻi, by 1898, the herd grew to 7,000 (Dorman, 1996). In 1918, George C. Munro, Lānaʻi Ranch manager, took the first of 12 Axis deer to Lānaʻi from Molokaʻi (Geo. C. Munro, Annual Report, Feb. 1919). The idea was to further develop game hunting opportunities for ranch guests. At the time, all hunting in the islands was controlled by private or government land owners, and except for poaching, hunting access was granted by invitation only. By December 1933, however, Munro urged the complete eradication of the deer from Lānaʻi, as the herd was growing quickly, competing with the ranch and pineapple operations, and destroying large areas of the landscape (Munro, Annual Report, Dec. 1933).

Mouflon on the sloped of Lānaʻi (Photo KPAC-8863)

After World War II, many soldiers armed with guns returned home, with a desire to use them. In 1948, the Territory of Hawaiʻi engaged in a public hunting program, which a short time later developed into a means of promoting tourism in the form of hunting. By 1956, the Board of Agriculture and Fish and Game reported that it managed 14 areas on six islands (covering 169,000 acres of land) open to hunting by anyone with a license. On Lānaʻi alone, the Hawaiian Pineapple Company leased 60,000 to the Territory for the hunting program. As part of the program, the Territory also imported breeding stock of the mouflon, the Mediterranean bighorn sheep to Lānaʻi in 1956 (Dec. 16, 1956:13, The Honolulu Star Bulletin).

Today, even though several thousand deer and mouflon are hunted each year, the populations of deer and sheep have exploded across the landscape. While their numbers remain estimates, it is suggested that more than 20,000 animals currently roam across Lānaʻi. Today, more red earth—areas cleared a nearly all vegetation—are exposed to wind, sun, rain and erosion than anyone has seen in the last 100 years. The environment is degrading, and rare and endangered species hover near extinction. Unless haste is made and better, sustainable management practices are adopted, our island home will continue to deteriorate and become inhospitable.

Mana‘o Pani (Closing thoughts)

Today, throughout Hawai‘i, communities and land managers are seeking solutions to the environmental repercussions of the depredation brought about by poor decisions made in the last 200-plus years. Concerns for the well-being of unique island ecosystems and the traditional culture that evolved in Hawai‘i are well-founded. For more than 200 years, native residents and those who have come to call Hawai‘i home, have been seeking ways to ensure the well-being of the native forests, wildlife, and landscape of Hawai‘i. We stand upon a common meeting ground—ka pae ‘āina Hawai‘i (the Hawaiian Islands)—yet the issues remain, and each year that passes takes us further from that which has been. There is an ancient Hawaiian saying which may hold the key to our development of caring partnerships —

A‘ohe hana nui ke alu ‘ia

(It is no great task when done together by many)

While biologists frequently describe the Hawaiian Islands as the “extinction capital[1]” of the world—largely a result of habitat destruction—resulting in the loss of bio-diversity, the impact on native Hawaiians is often overlooked. Hawaiian history reveals that the kānaka ‘ōiwi (native) population, was the most susceptible to introduced threats. For example, in the late 1700s, the human population on Lāna‘i is estimated to have been 6,000 (a number supported by archaeological evidence). An epidemic in 1804-1805 is estimated to have killed more the 150,000 Hawaiians across the islands—at least 2,000 on Lāna‘i. By 1850, the native population was 604. In 1893, approximately 160 native Hawaiians lived on Lāna‘i, along with a handful of foreigners. It may be suggested that a discussion about depredation must also look at the human cost.

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[1] For example, see -- https://www.worldatlas.com/articles/why-are-species-in-hawaii-going-extinct-at-such-a-rapid-rate.html

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