3 | ~~Environment – Natural, and~~ Heritage, and Scenic Resources

~~Moloka`i's environment contains diverse natural ecosystems, natural resources, developed areas of towns and buildings, agricultural and industrial lands, and heritage resources. Heritage resources include cultural, historic, and archeological resources that are both built and within the natural landscape, such as historic cultural trails and gathering sites. The environment is the whole of these resources: Tthe history, built places, open spaces, ranchlands, dunes, dryland forests, wetlands, cliffs, forest lands, and beaches; these provide the scenic resources of Moloka`i.~~

This chapter will discuss ecosystems and natural resources in section 3.1; heritage resources, including the interface of the natural environment with human built structures and activities in section 3.2. Section 3.3 addresses scenic resources that shape our experience of place every day. The elements discussed in this chapter are fundamental to sustaining the quality of life enjoyed by Moloka`i residents and are essential for supporting the living cultural traditions of native Hawaiians. Subsequent chapters discuss effects from multiple natural and human-created hazards, including climate change, land use, and community design that need to be considered in combination with the elements of this chapter.

3.1 Natural Resources

Moloka`i's pre-human diverse ecosystems ~~(interdependent animal and plant species and their habitats)~~ were extensively altered by human settlement beginning with the arrival of the Polynesians, continuing through the ~~western~~ plantation era ~~,~~and ~~as well as~~ into ~~by~~ present day ~~land use activities~~. The ~~primary~~ most significant changes were the result of clearing of forest lands for agriculture and building sites, and the introduction of non-native flora and fauna~~,~~ ~~particularly ungulates~~ . Many hoofed animals that were~~,~~ initially introduced as free-range, ~~and later~~ eventually became ~~feral (~~wild~~)~~. ~~F~~These feral ungulates destroyed the forest understory and tree roots, ~~which~~ setting off a chain of environmental damage that extended from mauka to makai ~~(mountains to sea)~~. Erosion created bare land where invasive plants become established, which resulted in native species loss, ~~and~~ reduced water recharge of the aquifer. ~~Invasive plants, animals, and insects decimated native species, such as forest birds, and~~ decreased bio-diversity, ~~creating~~ and a less resilient forest ecosystem. Excessive erosion also results in sedimentation of surface waters and coral reefs, and leads to progressive propagation of invasive plants, such as mangroves and gorilla ogo, which threatens coral reefs and coastal ecosystems along Moloka`i's south shore.

–The forest ecosystem greatly influences many elements of Moloka`i's community—: natural and heritage resources, recreation, agriculture, tourism, infrastructure, and economic viability. Recent studies have calculated financial values for services provided by forest ecosystems[1] (See Appendix 3.1).

> *A University of Hawai`i study examined the various services provided by O'ahu's Ko`olau forests - including water recharge, water quality, climate control, biodiversity, and cultural, aesthetic, recreational, and commercial values. These services were calculated to have a net present value of between $7.4 and $14 billion. Approximately half of that amount is attributed to the forest's contribution to ground and surface water quality and quantity. Other watersheds across the state were estimated to be comparable in value.*[2]

(Note: below moved from page 3-1 and 3-5)

Protection and restoration of Moloka`i's forest ecosystems will help to ensure a sustainable water supply; it will reduce erosion, surface water runoff, flooding, sedimentation that forms new coastal land, and siltation of reefs and ocean waters. Development generally disrupts the natural processes of ecosystems, increasing non-point pollutants in surface water runoff. Most development occurs in coastal areas; nonpoint source pollutants from homes, businesses, farming and industry in coastal areas decrease water quality and reef health. Modern building techniques that integrate development into the landscape can reduce the impact on water quality, animal and plant habitats, and ecosystem connectivity. *Green infrastructure* uses natural systems, constructed soil, rock, or plant-based systems for surface water management. In 2013, Maui County strengthened water quality regulations by requiring on-site retention of site runoff for new development.

Existing Conditions

Moloka`i's~~The~~ largest native forest ecosystem is located in the East Moloka`i ~~M~~mountains that contain deep, mostly inaccessible~~,~~ valleys with high -quality habitat for stream fauna, forest birds, ~~and~~ native snails, and insects. Moloka`i's other significant habitats are lava tube caves, montane bogs, wet forests and shrublands, cliff and coastal systems, and nine offshore islets. These natural ecosystems provide recovery, or critical, habitat identified by the U.S. Fish and Wildlife Service (USFWS) ~~for. Critical habitat for the in part overlaps 24,333 acres designated as critical habitat~~for 79 endangered and ~~three~~3 threatened terrestrial species and 11 endangered and ~~two~~2 threatened marine species, including the Maui parrotbill, and ʻākohekohe (crested honeycreeper) and Blackburn's sphinx moth.~~for 41 endangered plants and many additional threatened species~~[3].

[1] State of Hawai`i (2011). *The Rain Follows the Forest*. Department of Land and Natural Resources.
[2] Ibid. Pg. 4.
[3] U.S. Fish and Wildlife Service Endangered Species Database, May 2015; http://www.fws.gov/endangered/

Approximately ~~thirty percent~~ 30% of Moloka`i is in the State Land Use Conservation District, which is under the jurisdiction of the ~~State~~ Department of Land and Natural Resources (DLNR). Most areas dominated by native species are in East Moloka`i Mountains or along the coasts (see Map 3.1). Numerous federal, state, and county plans and regulations support actions to protect, conserve, or restore the natural resources of these areas. Partnerships between agencies, non-profits, community groups and stakeholders have been formed, but there is a need to expand both partnerships and collaboration in order to more effectively address the increased complexity and ~~increasing~~ scope of environmental issues.

Hawaii's Comprehensive Wildlife Conservation Strategy identified key management areas and the ~~agency or group that~~parties responsible for managing~~es~~ them ~~land or resources~~[4]. ~~Many of these groups and agencies work in partnerships to accomplish their goals.~~ Although there has been extensive conservation work accomplished to date, the State has identified additional threatened areas that need to be protected~~,~~ such as cave ecosystems, coastal wetlands and shorelines, and stream corridors. Key threats to these areas include feral ungulates, predators, invasive species and human intrusion. Often in addressing one threat another threat can be reduced. For example, forest restoration is being addressed by abatement of feral ungulates. Once feral ungulates cease to disturb the soil the native forest can regenerate in small areas, which reduces the area for invasive plant species to establish and reduces subsequent soil erosion, ~~and subsequent siltation of~~ deposition in nearshore waters, and siltation of coral reefs.

~~Recent~~Hawaii state plans, such as the *Coastal Non-point Pollution Control Program*[5], ~~with updated management measures in 2010;~~ the *Implementation Plan for Polluted Runoff Control*[6]; and *the Ocean Resource Management Plan*[7] *(ORMP),* are addressing comprehensive ecosystem management by connecting upland land-based activities to ocean resource conditions. Excessive sediment, and other non-point pollutants such as nutrients, herbicides and heavy metals, are being addressed by multiple efforts (see Map 3.2). Hawaii's Local Action Strategy has ~~eight~~ partner agencies addressing land-based pollution threats to reefs in the Kawela watershed. Best Management Practices (BMPs) for control of feral ungulates and wildfire are being extended into ~~new~~ other areas and sediment retention basins will be constructed and maintained along the south shore. ~~Another example is~~ T~~t~~he USDA Natural Resources Conservation Service~~s~~ (NRCS) ~~implementation~~ implements~~of~~ many soil conservation projects on Moloka`i using the Farm Bill's Environmental Quality Incentives Program ~~(EQIP)~~ and other landowner assistance programs.

~~Mitchell, C, C Ogura, DW Meadows, A Kane, L Strommer, S Fretz, D Leonard, and A McClung. (October~~

[4] *Hawaii's Comprehensive Wildlife Conservation Strategy*. (2005) Department of Land and Natural Resources. Honolulu, Hawai'i

[5] State of Hawaii (1996). *Coastal Nonpoint Pollution Control Program*, 2010 Update~~.~~

[6] State of Hawaii (2000). *Implementation Plan for Polluted Runoff Control*.

[7] State of Hawaii (201~~1~~3). *Ocean Resources Management Plan*.

Restoration work of wetlands and riparian (stream edge) areas can play a critical role in reducing polluted runoff by intercepting surface runoff, subsurface flow, and certain groundwater flows. Moloka`i community groups, non-profits, and schools are actively restoring lo`i kalo (taro patches) and `auwai (irrigation ditches) that reduce and filter sediment loads. At Kawaikapu Preserve, the Moloka`i Land Trust plans to use the ahupua'a-based management system to restore lands, including community restoration of ancient taro fields. In Halawa Valley, restoration of taro fields, which once measured in the hundreds of acres, is ongoing.

The *ORMP* emphasizes links between human activities and the environment and the need for increased stewardship[8], which . Stewardship usually begins with awareness of a connection between one's activities and an environmental issue. A survey of Hawaii residents aboutон coral reef management priorities found a high level of public awareness of the decline of reef health but little knowledge of how their personal land-based behaviors contributed to that decline or how to doing damaging activities differently can to help the reefs[9]. Currently, pPublic environmental education and involvement activities are available on the island of Moloka`i and contribute to building a volunteer base for on-going stewardship. Some non-profits useare using volunteer monitoring, based on best management practicesBMPs, to build stewardship. Involvement in volunteer monitoring, or and citizen science, not only raises awareness and creates stakeholders, but also increases science literacy within the community.

The Hawaiian Islands Humpback Whale National Marine Sanctuary includes ocean waters adjacent to Moloka`i's southern, western, and eastern shorelines,. except the north shore, and ItThe Sanctuary also encompasses the ocean channels between Moloka`i, and Lāna`i, and Maui, and as well as an extensive ocean area from off Moloka`i's west shore (see Map 3.1). Created by Congress in 1992, the Sanctuary protects humpback whales and their habitat; anditit constitutes one of the world's most important humpback whale habitats. The National Oceanic and Atmospheric Administration (NOAA) and the State of Hawai'i's DLNR jointly manage the Sanctuary.

Water runoff with excessive sediment and pollutants, recreational over-use, and commercial over-fishing are primary threats to the health of reefs and fisheries. The State DLNR's Division of Aquatic Resources (DAR) manages four areas to protect ocean fishery resources near Moloka`i. . On Moloka`i's south shore tThe Kaunakakai Harbor Fishery Management Area sets limits on restricts the fishing season, harvest methods, amounts and defines the fishing season and fishing areas. Bottomfish Restricted Fishing Areas (BRFA) are located in two open ocean areas: 1) between the southeast end of Moloka`i and Maui, and 2) far offshore from the southwest point. A third BRFA Bottomfish Restricted Fishing Area is located along the shoreline off the northeast side of Kalaupapa National Historic Park, and extendings eastward in the nearshore waters along

[8] Ibid

[9] NOAA (2010). *Hawaii Coastal Zone Management Program, Final Evaluation of Findings*. Office of Ocean and Coastal Resource Management.

Moloka`i's north shore. The ~~Bottomfish Restricted Fishing Areas~~ BRFAs are co-managed ~~with~~ by ~~the State~~ DLNR ~~by NOAA~~ and National Marine Fishery Service (NMFS), a division of NOAA.

~~In northwest Molokai is~~The Mokio Preserve, is a 1,718 acre parcel located in northwest Moloka`i that is owned and managed by the Molokai Land Trust (MLT), with five miles of coastline, dune, and wetland ecosystems. East of Mokio is the Mo'omomi Preserve, 921 acres of the most intact coastal beach strand and sand dune area in the main Hawaiian Islands. It is owned by the Nature Conservancy with MLT assisting with stewardship activities.

Moved to page 3-2 ~~Development generally disrupts the natural processes of ecosystems as well as increasing non-point pollutants in surface water run-off. However, newer design guidelines and techniques can integrate development into the landscape with less impacts to water quality or animal and plant habitats and maintain ecosystem connectivity. One technique is green infrastructure for surface water management, that uses natural systems or constructed soil, rock, and plant-based systems (see section 8.3 in Chapter 8 – Infrastructure). The County of Maui increased water quality regulations for development in 2013 that require on-site retention of site run-off.~~

Climate Change and Natural Resources

The observed effects of climate change on natural resources ~~has already been observed and~~ will continue to challenge the health of ecosystems ~~health due to an~~with increased ~~in~~ frequency and severity of climate-related disturbances such as ~~(e.g., storms~~, flooding, drought, wildfire, invasive species, and ocean acidification~~,)~~ combined with an increase effects from human land and natural resource use.

Marine ecosystems, coral reefs and nearshore habitats~~,~~ are experiencing increasing sea surface temperatures leading to thermal stress and coral bleaching. ~~The rise in sea levels~~ SLR and coastal inundation will change the nearshore environment, including habitat loss and shifts. This will be ~~is further~~ amplified by accelerated SLR~~rise~~ and changes in storm and cyclone patterns, which will increase wave energy and erosion patterns.

Terrestrial ecosystems are experiencing warming air temperatures~~,~~ which may cause ecosystems to shift upslope or decline in size. Higher elevations ~~will~~ may ~~have~~ experience an even greater degree of change. ~~Changes~~ Variations in precipitation patterns could affect terrestrial ecosystems through increases in flooding, erosion, drought, and fire. As the extent of native habitats diminishes, the range for pests, diseases, and invasive species may expand.

B. ISSUES

Issue 1: Ecosystems are declining due to an increase in invasive animal and plant species, ~~and~~ soil erosion, and coastal deposition and human effects.

Issue 2: Excessive sediment from erosion and coastal deposition severely impact~~s~~ coastal water quality and the health of all marine life. ~~the southern reef.~~

Issue 3: Cumulative impacts to surface and coastal waters from pollutants including ~~–~~ sediment~~,~~ home and business chemicals, herbicides, and fertilizers~~ –~~ are not well understood by the community.

Issue 4: Climate change will stress and change ecosystems~~,~~ with some ecosystems declining and some adapting successfully.

Issue 5: The coral reefs and other ecosystems along Moloka`i's south shore are being threatened by the progressive propagation of invasive plant species such as mangroves and gorilla ogo that retain sediment ~~entering coastal waters or~~ cause~~e~~ing poor water quality.

C.~~:~~ GOAL, POLICIES, ACTIONS

Goal **Moloka`i's environment and natural resources will be protected, restored, and preserved for current and future ~~–~~generations to use and enjoy.**

Policies

1. ~~Support –~~Ensure collaboration and partnerships for natural resource management, watershed planning, funding, and action implementation.

~~2. Encourage watershed, or ahupua'a, based resource management partnerships, initiatives, and approach for natural and cultural resource protection, restoration, education, and enforcement.~~

~~3.~~2. Encourage the implementation of State plans~~: Hawai'i Comprehensive Wildlife Conservation Strategy; Coastal Non-point Pollution Control Program Management Plan; Implementation Plan for Polluted Runoff Control; Ocean Resource Management Plan;~~ and other plans and programs for comprehensive ecosystem management.

~~4.~~3. Encourage protection and restoration of the biodiversity~~, and~~ of native plant and animal species, and habitats through land conservation, resource management, education, invasive species prevention and control, wild fire prevention, and stewardship.

~~5.~~4. Ensure that the design and construction of new development protects surface and coastal water quality from point source and non-point pollution.

~~6.~~5. Encourage ~~environmental~~ *low impact development* education programs, including green infrastructure, for designers, developers, and builders.

~~7.~~6. Support a significant increase in public outreach, education, and involvement events to build community-based stewardship and implementation capacity.

~~8.~~7. Recognize and support sustainable agricultural, forestry, and game BMPs ~~best management practices~~ as key elements to maintain, preserve, and protect Moloka`i's land, water and marine resources.

~~9. Support the protection and, where appropriate, restore Moloka`i's coastal resources and water quality through green infrastructure best management practices. for surface water and sediment management.~~

~~10. Encourage a system of floating preserves (adaptable areas of protection) as a means of managing nearshore coastal resources.~~

~~11.~~8. Encourage and support the establishment and expansion of native plant species~~,~~ by utilizing appropriate practices and techniques for propagation and planting.

9. Encourage the implementation~~establishment~~ and adequate ~~State~~ funding for the Hawaii Department of Agriculture's Plant Quarantine Program~~State quarantine and inspection process~~ on Moloka'i.

10. Encourage food security through programs and activities in organic agriculture, permaculture, agroforestry, and aquaponics.

Actions

Table 3.1 Natural Resources

No.	Action	Lead-County/ Other	Partners
3.1.01	Assist with a conference or workshops of key federal, state, and local agencies, and community and non-profit leaders to discuss, plan, and prioritize actions to address environmental and natural resource issues.	Mayor's Office (Environmental Coordinator)	Planning Department Department of Water Supply

3.1.02	Compile GIS data to ~~create~~ maps ~~(location and baseline survey) of~~ the highest value ecological areas and natural resources.	Planning Department	DLNR The Nature Conservancy (TNC) Molokai Ranch East Moloka`i Watershed Partnership~~(EMWP)~~
3.1.03	Compile GIS data ~~a~~ to ~~create~~ map ~~s of the~~ primary ~~–~~ and secondary groundwater recharge areas to help prioritize protection and restoration efforts.	Water Department	State (CWRM) Planning Department USGS
3.1.04	Assist ~~with~~ in conducting workshops with stakeholder~~State and community~~ groups to develop~~implement~~ an integrated natural and heritage resources management system.	Mayor's Office (Environmental Coordinator)	~~State~~ DLNR - Na Ala Hea~~a~~le Trail ~~–~~and Access ~~p~~Program NGOs
3.1.05	Assist ~~with~~ in conducting, or coordinating~~,~~ public education and involvement events~~-~~ to build community-based stewardship and implementation capacity.~~to increase implementation through community stewardship, trainings, and interpretive signage.~~	Mayor's Office (Environmental Coordinator)	DLNR Molokai Ranch Watershed Partnerships TNC
3.1.06	Assist ~~with~~ in the development of a West Moloka`i dry native forest and lowland shrub restoration program.	Mayor's Office (Environmental Coordinator)	DLNR Molokai Ranch TNC
3.1.07	Consult with UHMC-Moloka`i to develop and manage a native plant nursery for ~~students and~~ community restoration projects.	Mayor's Office (Environmental Coordinator)	UHMC-Moloka`i DLNR
3.1.08	Conduct outreach to agricultural, ranching, and development interests to implement BMPs to reduce excess sediment loss, and herbicide and pesticide use.	Office of Economic Development	DOH Clean Water Branch CTAHR NRCS

3.1.09	Review regulations for small-scale water retention projects. ~~:~~ ~~Assist~~ landowner(s), upon request, to design or construct small-scale water retention projects to increase infiltration to the aquifer and control surface water run-off. Include bioretention methods to reduce sediment and nutrient loads from entering coastal waters.	~~Department of Public Works (~~DPW~~)~~	DLNR NGOs Natural Resource Conservation Service (NRCS) USGS
3.1.10	Work with federal, state, and county agencies to initiate a program to provide education and support for community stewardship of the coastal areas, including conducting baseline studies on coastal water quality.	Mayor's Office – (Environmental Coordinator)	DLNR DOH, Clean Water Branch NGOs NRCS USGS NOAA
3.1.11	Develop a toolbox of green infrastructure ~~best management practices~~BMPs and conduct workshops for consultants, designers, developers, and builders.	DPW	State Office of Planning - Greenway Program
3.1.12	Develop a toolbox of ~~best management practices (~~BMPs~~)~~ for use by residents and businesses to improve ecosystem health and water quality in urban and coastal areas. ~~:~~Provide assistance or workshops on BMPs and education to change business and household practices. Maintain a website for public education on water quality pollution prevention and BMPs.	~~Department of Water Supply (~~DWS~~)~~	~~-~~DOH-Clean Water Branch DPW Planning Department DLNR
3.1.13	Assist with development of a community-based game management plan.	OED	DLNR NRCS TNC EMWP Molokai Ranch

(Note: duplicates of actions 3.1.09 and 3.1.10 were removed)

3.2 HERITAGE RESOURCES

Throughout Moloka`i's landscape there is an abundance of archaeological and historic sites and traditional cultural properties that document habitation by ancient Hawaiians, as well as, the more recent immigrants and their settlements. Archaeological, historic, and cultural resources combine to express the heritage of the people and place. Some residents practice a subsistence lifestyle, relying upon the island's resources for fishing, hunting, and gathering. The people of Moloka`i are proud of their history, cultural identify, and unique Molokaian lifestyle, and are determined to uphold and strengthen these qualities for future generations.

Moloka`i is historically significant as a center of Hawaiian culture and learning. It is purported in ~~the~~ oral tradition ~~as~~ to be the birthplace of the hula and a training ground for powerful priests. ~~Traditional~~ Hawaiians have traditionally believed the *'aina* (land) ~~wa~~is their ancestor and that it ~~wa~~is their *kuleana* (responsibility) to search for balance and harmony with nature: ~~and~~ the people will take care of the land, and in turn the land ~~would~~ will take care of ~~them~~the people. ~~–~~The island's natural resources ~~were~~ are intimately connected to the cultural resources~~,~~ and together they provide~~d~~ the foundation for the traditional Hawaiian lifestyle.

By the mid 1800s, Europeans and Americans were established on Moloka`i. As these populations increased, the plantation and ranching industries took hold on the island, producing commercial ventures operating in throughout the 1800s and 1900s. Several small-scale attempts at sugarcane cultivation were made between 1870 and 1900, however sugar plantations on Moloka`i did not reach the same level of success as those on neighboring islands.

Beginning in the 1920s, growth in cattle ranching and pineapple plantations influenced growth development on Moloka`i. Kaunakakai became the shipping and political center of the island as well as the home of Molokai Ranch's headquarters. In 1923, Libby, McNeill & Libby established a pineapple plantation in Maunaloa. Kualapu`u, originally the location of a small out-station for Molokai Ranch, became home to the California Packing Corporation pineapple plantation in 1927.

A. EXISTING CONDITIONS

Moloka`i has hundreds of documented archaeological and historic sites as well as numerous undocumented sites ~~that are undocumented~~. West and ~~C~~central Moloka`i lands have been extensively surveyed ~~and documented~~,~~;~~ while the ~~E~~east ~~E~~end has not yet been adequately surveyed~~, considering the region's cultural significance~~. Approximately 120 Moloka`i sites are listed in the State Historic Preservation Division's (SHPD) s~~S~~tatewide Inventory of Historic Properties, and roughly 75 of those sites have been entered in the Hawai`i and/or National Registers of Historic Places (see Map 3.3~~2~~).

~~–~~Archaeological sites and traditional cultural properties are distributed across the landscape and ~~encompass~~ include both Hawaiian cultural sites as well as areas ~~representing~~ of more recent use.

A *t~~T~~raditional cultural* ~~properties~~ *property* ~~are~~is ~~-~~ defined as an area or place "that is eligible for inclusion in the National Register because of its association with cultural practice or beliefs of a living community".[10] Some of Moloka`i's most noted traditional cultural resources include the ancient Hawaiian complexes of Halawa Valley, the *'Ili'ili'ōpai heiau* of Mapulehu, the east end fishponds, the *Makahiki* Grounds of Nā'iwa, the *Hula Piko* of Kā'ana, St. Joseph Church, and the R.W. Meyer Sugar Mill of Kala`e.

Some Moloka`i residents feel that there is a lack of awareness and respect for the importance of Moloka`i's cultural and archeological sites by locals and visitors alike, which often leads to intentional or unintentional damage.[11] ~~Some residents are~~There is also concern~~ed~~ that some sites that have not been formally identified are being damaged or destroyed by unregulated ~~grading~~ground altering activities ~~and~~, land development, ~~of land~~ and ~~ATV~~all-~~-~~terrain vehicle use~~s~~. In addition, neglected archeological sites~~,~~ such as *heiau*, rock walls, and house platforms, are often damaged by animals or tree roots.

Many of the historic buildings in Kaunakakai remain along the town's main commercial corridor, Ala Malama Street. However, a number of the wood, plantation vernacular style storefronts have been altered and character defining features removed. Maunaloa has suffered from wholesale demolition of laborer housing. Some twenty years after pineapple operations ceased in the 1970s, approximately 57 of the 200 plantation homes were demolished, and few wood plantation vernacular commercial buildings remain intact. Conversely, the original camp homes at Kualapu`u remain largely intact. A number have been altered, but the majority of the homes retain the character defining features of early twentieth century Hawaiian plantation laborer housing.

Moloka`i's cultural sites are actively used by many in the community for cultural, spiritual, and subsistence purposes and are important to the perpetuation of Hawaiian traditions and cultural practices. According to the *Governor's Moloka`i Subsistence Task Force Final Report*[12], among the random sample group surveyed 28% of their food is acquired through subsistence activities and 76% of respondents ranked subsistence as important to their own families. Erosion and reef siltation, over-fishing and improper harvesting, and non-native invasive marine species threaten traditional subsistence practices. Moloka`i has a wealth of traditional cultural practitioners with extensive experiential knowledge of local customs, resources, and ecosystems. Many of these practitioners believe it is their responsibility to teach younger generations traditional conservation practices and adherence to a code of conduct. This community place-based traditional resource management can function collaboratively with the more contemporary, resource management approach. One example is the 'Aha Moku initiative, a joint venture established between the

[10] U.S. Department of the Interior, National Park Service. (1998). *National Register Bulletin 38.*
[11] Chris Hart & Partners, Inc. January 2011. *Cultural Resources Issue Paper.* Prepared for the County of Maui Long-Range Planning Division, Wailuku, HI.
[12] Matsuoka, Jon K., Davianna P. McGregor, and Luciano Minerbi. June 1994. *Governor's Subsistence Task Force Final Report.* Prepared for the State of Hawaii, Department of Business, Economic Development and Tourism, Honolulu, HI.

native Hawaiian community and the State to integrate the traditional cultural natural resource management system into existing government regulatory policy.

B. ISSUES

Issue 1: Cultural, historic, and archaeological sites are vulnerable to destruction, theft, neglect, and environmental degradation.

Issue 2: Cultural and environmental degradation affects the ability of contemporary Hawaiian cultural practitioners to practice their traditional lifestyles, including subsistence practices.

C: GOAL, POLICIES, ACTIONS

GOAL **Moloka`i's cultural, historic, and archaeological sites and cultural practices will be protected and perpetuated for their cultural and historical value and for enjoyment of and sustainable use by future generations.**

Policies

~~1. Require the identification and protection of sites prior to and during construction. Encourage on-site preservation of significant archaeological remains, rather than data recovery. Recognize significant native vegetation zones as cultural resources.~~

~~2.~~1. Encourage proper management~~,~~ of and appropriate interpretation~~, and adequate access to~~ of significant cultural resources and sites.

~~3.~~2. Promote the rehabilitation, reuse, and historic registration of significant cultural resources, historic structures, and cultural landscapes.

~~4.~~3. ~~Reduce the occurrence of costal dune grading and un-permitted grading and filling of wetlands, springs, fishponds and *loi*.~~Require all grading and grubbing permits on Moloka`i to be reviewed by County personnel located on Moloka`i.

~~5.~~4. Where appropriate, require identification and mitigation of potential impacts to subsistence activities and resources when reviewing development permits and discretionary land use proposals.

~~6. Support access for subsistence hunting, fishing, and gathering.~~

~~7.~~5. Support protection of native Hawaiian rights customarily and traditionally exercised for subsistence, cultural, and religious purposes in accordance with the Hawai`i State Constitution (Article XII, Section 7) and Hawai`i law.

~~8. Support watershed or ahupua'a-based resource management partnerships.~~

~~9.~~6. Support the establishment of the island as a community-based subsistence fishing area pursuant to HRS 188-22.6.

~~10.~~7. Increase community awareness and stewardship of Moloka`i's historic~~al~~ and cultural resources.

~~11.~~8. Protect traditional cultural landscapes such as Hālawa Valley, 'Ualapu`e, Ka`amola, and Kamalo.

~~12.~~9. Encourage the ~~and rehabilitation~~restoration, management, and use~~,~~ of Moloka`i's fishponds.

10. Support the inclusion of educational programs that emphasize culturally significant arts and practices, the Hawaiian language, and Moloka`i ~~natural~~ history into the curriculum of Moloka`i schools.

11. Support community-based cultural tourism.

~~13.~~12. Encourage increased funding for SHPD.

Actions

Table 3.2 Heritage Resources Actions

No.	Action	Lead County Agency	Partners
3.2.01	~~Maintain~~ Create and maintain a GIS~~n~~ inventory of cultural, archaeological and historic resources assembled from existing inventories and databases to be used for project review. ~~Establish archaeological and historic districts where high concentrations of sites exist.~~ Note: Moved to Action 3.2.03	Planning Department	SHPD
3.2.02	Identify other significant cultural property types, including rural historic landscapes and traditional cultural properties.	Planning Department	SHPD
3.2.03	Establish archaeological and historic districts where high concentrations of sites exist.	Planning Department	SHPD
3.2.04~~3.2.02~~	Provide education and incentives ~~for~~ to encourage property owners to nominate structures and sites to the State and National Register of Historic Places.	Planning Department	Real Property Tax
~~3.2.03~~	~~Develop a Public Access Management Plan.~~	~~Planning Department~~	~~Large landowners~~
3.2.05~~3.2.04~~	Coordinate with cultural practitioners and state agencies to develop public education programs ~~to educate the public~~ on the proper gathering and use ~~and gathering~~ of subsistence resources.	Environmental Coordinator	Cultural practitioners DLNR OHA
3.2.06~~3.2.05~~	Develop educational materials ~~about~~ addressing impacts from ~~coastal dune grading and~~ un-permitted ~~grading and filling of wetlands, springs, fishponds and *loi*,~~ ground altering activities ~~and~~; provide instructions for reporting un-permitted activities. ~~Cross-t~~Train Moloka`i ~~existing~~ Development Services Administration (DSA) personnel ~~on Moloka`i to be able~~ to immediately respond to complaints ~~regarding grading regulations~~.	~~Public Works~~DSA	Planning Department
3.2.07~~3.2.06~~	Establish a~~n~~ historical interpretive center at Mālama Cultural Park.	Parks Department	Planning Department SHPD DHHL
3.2.8~~3.2.07~~	Explore establishment of Kawakiu Nui and Pu'u o Kaiaka as cultural preserves and development of ~~a~~ preservation/interpretive plans for these areas.	Planning Department	SHPD Molokai Ranch

3.2.93.2.08	~~Implement~~ Conduct~~a~~ community curatorship ~~program~~, site reconstruction, and interpretation projects at Kaulukukui o Lanikaula.	Planning Department	SHPD Pu`u o~~O~~ Hoku Ranch
3.2.103.2.9	~~Implement~~ Establish a comprehensive historical interpretive program ~~which~~ including~~es~~ historical markers, maps and brochures ~~to~~ identifying ahupua`a and significant historical ~~and legendary~~ sites that are appropriate for public interpretation.	OED~~Planning Department~~	Moloka`i Visitors Association Planning Department SHPD
3.2.11	Reestablish the Smith and Bronte memorial site at Kaamola.	Planning Department	SHPD Landowner?
3.2.12	Coordinate with kupuna knowledgeable in north shore protocol to hold community meetings to educate people about the history and cultural significance of Wailau and Pelekunu and to encourage pono cultural practices while on the north shore.	Environmental Coordinator	Cultural practitioners DLNR OHA
3.2013	Encourage the Governor to appoint members to the Moloka`i Burial Council so that regular hearings by this body may resume.	Planning Department	SHPD

3.3 SCENIC RESOURCES

Scenic views and ~~scenic view~~ corridors are abundant and diverse on Moloka`i. ~~Scenic views combine~~ They include land, sky, sea, and historic structures at a variety of scales and locations: urban, rural, agricultural, ~~or~~ and open ~~natural~~ spaces. Views of nature, including ~~–~~ ocean, hill slopes, valleys, ridgelines or coastlines ~~– are~~ can be seen nearly continuously from roadways that cross the island or follow the coast.

(Note: Moved text from first to third paragraph)

Existing Conditions

~~Currently the, s~~Scenic resources on Moloka'i benefit from the limited amount of ~~compact~~ development which preserves ~~within~~ vast areas of open space, agricultural lands, forested mountains, historic landscapes and ocean coastline. ~~The~~Many ridgelines and higher elevation hillsides ~~slopes are~~ remain ~~not~~ undeveloped, while ~~.~~ ~~M~~mangroves along the coastline obstruct views in some locations.

~~For Moloka`i, a~~A photo inventory of Moloka'i's scenic resources was conducted and mapped but has not been ~~not~~ rated for resource value. The *Maui County General Plan 2030 Scenic & Historic Resources, Inventory & Mapping Methodology Reports* provide guidance on visual quality ratings based on eleven factors that are used to evaluate and prioritize scenic resources.[13] In addition, the inventory and mapping work has not yet occurred to ~~implement~~ develop the Scenic Roadway Corridors Management Plan and Design Guidelines.

B. ISSUES

Issue 1: Scenic resources are vulnerable to loss or degradation when not identified.

Issue 2: Most scenic resources can ~~not~~ be difficult to restore~~d~~ once changed.

Issue 3: Moloka`i's ~~S~~scenic views are underutilized due to a lack of signage and turnouts.

C. GOAL, POLICIES, AND ACTIONS

Goal: **Preserve and protect Moloka`i's diverse scenic resources for future generations.**

[13] Chris Hart & Partners, Inc. (June 2006). *Maui County General Plan 2030 Scenic & Historic Resources, Inventory & Mapping Methodology Reports* (County of Maui Long-Range Planning Division).

Policies:

1. Restrict or mitigate ~~development's~~ the impact of development on ~~to~~ scenic resources.

~~2. Ensure development is designed to protect scenic roadway views, and significant view corridors and view sheds.~~

~~3.~~2. Ensure development is designed to protect scenic roadway views, significant views of ridgelines and hill-slopes to maintain open space scenic character.

~~4.~~3. Increase community awareness and appreciation of Moloka`i's scenic resources.

Actions:

Table 3.3 Scenic Resources

No.	Action	Lead County Agency	Partners
3.3.01	Develop BMPs~~best management practices~~ for development to protect identified priority view corridors or viewsheds. ~~Integrated scenic resource planning into natural and heritage resources strategies and plans.~~	Planning Department	NGOs
3..3.02	Complete the visual inventory, analysis, and mapping of key scenic view corridors, ridgelines, and view~~-~~sheds~~,~~ ~~including a variety of built and natural features~~.	Planning Department	NGOs
3..3.03	Develop ~~Implement the~~ Scenic Roadway Corridors Management Plan and Design Guidelines.	Planning Department	NGOs
3~~.~~.3.04	Provide educational workshops for design consultants and developers on ~~Moloka`i~~ scenic resource BMPs~~best management practices~~.	Planning Department	NGOs
3.3.05	Purchase land or provide tax incentives, design and construct scenic overlooks, roadside pull-outs, and signage. Maintain scenic view corridors to the ocean.	Department of Transportation	Planning Department
3.3.06	Integrate scenic resource planning into natural and heritage resources strategies and plans.	Planning Department	NGOs