



## Managing Hawaii's Watersheds

### Why Watersheds Are Important and How Hawaiians Kept These Resources Healthy

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Rainfall flows from high ground to the ocean through natural land divisions called watersheds. Plants and all other living things in the watershed depend on soil and water. For the watershed to be healthy, the soil must be protected from erosion and the water must be kept clean. Otherwise, the entire watershed will be affected, along with the lives of those depending on it.

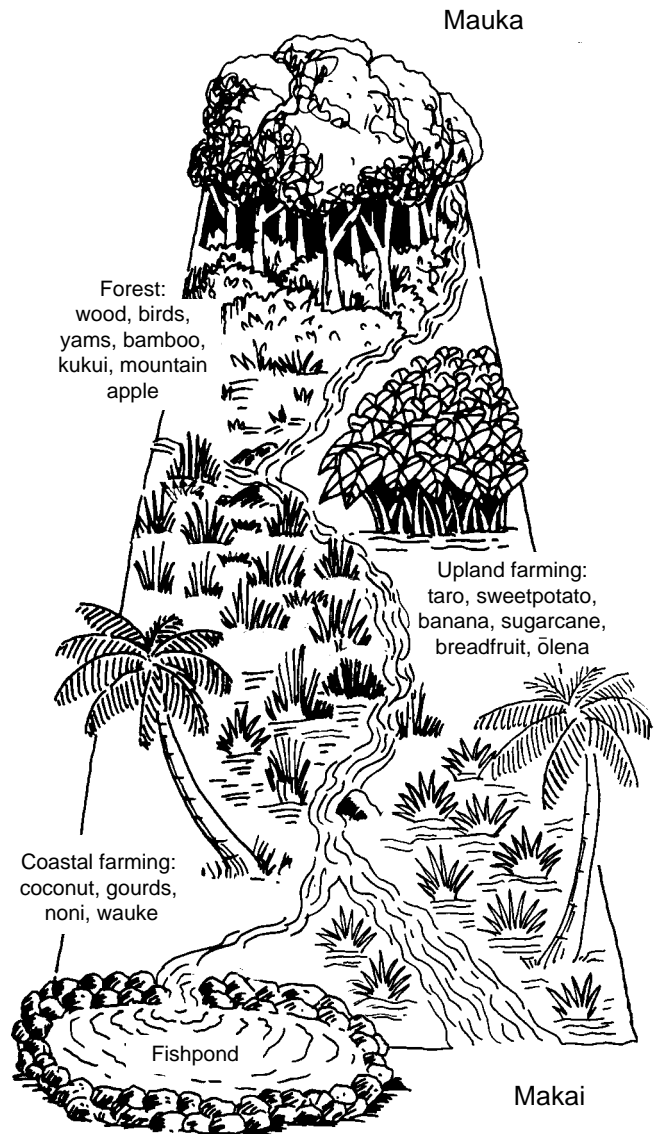
Watersheds can be damaged either by people or by the forces of nature. For example, loose, unprotected soil may be washed toward the ocean. This erosion may make soil in the upper parts of the watershed thin and unproductive and cause muddy water in the lower parts. Strong winds may blow dry soil away, or fires may kill the plants whose roots help hold the soil. If people pollute the soil, this pollution will contaminate the streams, groundwater, and ocean.

To keep Hawaii's natural resources healthy, each watershed should be managed as a living community. This is often difficult to do because of the way most land is owned. The Western system of private land ownership does not divide land by natural watershed boundaries, and this can cause problems for the environment. For example, activities of farmers and other users or owners of private land may damage Hawaii's resources. If a farmer uses too much pesticide or fertilizer, this might get into the ocean and groundwater and show up later in reef fish or our drinking water. The farmer may move or sell his property before the contamination is found. People may cause serious pollution problems if they don't understand how their actions hurt the watershed and the community.

Learning about how you might harm the watershed you live in—and what you can do to protect it—is the first step toward good resource management.

#### Hawaiian management of ahupua'a

The Hawaiians had a sensible way of dividing and managing land and coastal waters—the ahupua'a system. Ahupua'a are lands that go from the ocean to the moun-



#### An ahupua'a

tains, often following the natural watershed divisions. The ahupua'a was the key unit of land management. The ali'i, or chief, picked a manager called a konohiki to run the day-to-day operations of the ahupua'a. The konohiki also collected taxes during the annual harvest

festival, the Makahiki. Luna, experts about different things, helped the konohiki. For example, luna wai were experts on fresh water who knew how to take care of the irrigated terraces, or lo'i, in which taro was grown.

Each ahupua'a had the natural resources Hawaiians needed to live:

- fresh water for drinking, washing, and growing crops
- areas to grow and harvest plants for food, clothing, shelter, canoes, weapons, and household goods
- access to land and sea resources that could be used for food, tools, and crafts

The maka'ainana were the planters, fishermen, and craftsmen who lived on the land. They shared what they produced with the ali'i when taxes were collected. At the same time, they always got some of the other subsistence goods they couldn't produce for themselves. The maka'ainana also traded within their 'ohana, or extended family. The ali'i understood that the ahupua'a system was a good way to get the most from their natural resources while also preserving them.

Understanding the ahupua'a system will help everyone recognize ways to protect Hawaii's natural resources. At the same time, working together as the ancient Hawaiians did will help build better communities.

### **Working together**

Working together as a community is the key to successful resource management. Everyone in the community, and others who have an environmental and economic stake in the area, must be involved.

Involving everyone is hard, because the bigger the group, the longer it takes to make decisions. Communicating and follow-up take time. But the entire community must be involved for the process to be successful.

Some issues must be dealt with in order to manage Hawaii's watersheds at the community level.

**Commitment.** Everyone must make a long-term commitment to work together. Understanding our watersheds and changing our actions to keep our watersheds healthy may take many years.

**Education.** We all must teach what we know about our watersheds to our young people, neighbors, and community leaders.

**Policy, regulations, and laws.** Local, state, and federal governments must support an all-inclusive program for watershed management. Trying to solve single issues one at a time will not work.

**Measurement and reporting.** Biological, ecological, social, and economic measures of the watersheds' health are needed. These data must be interpreted and explained so they can help everyone make better decisions about using and protecting the land.

The issues may look tough, but there are places that communities can turn to for help. Many government agencies can give technical advice, and sometimes financial help.

### **Government help**

In 1947, the Territory of Hawaii started the Soil and Water Conservation Districts. Now there are 16 of these districts in the state. Their staff are responsible for promoting the management of agricultural resources. Each SWC district is run by a board of five volunteers from the community. The board approves conservation plans for those in the district. Right now, conservation plans are voluntary, but this may change in the future.

The USDA Natural Resources Conservation Service (NRCS) helps land owners or users make conservation plans to guide their use of natural resources. The plan is put together with the help of NRCS staff, taking the users' and the communities' needs and wants into account. NRCS also gives technical help on conservation needs and solutions.

The University of Hawaii's College of Tropical Agriculture and Human Resources maintains the state-wide, county-based Cooperative Extension Service (CES), which can advise communities on managing natural resources. CES offers educational programs and technical help on many aspects of resource conservation. CES can also provide training in techniques to help people in communities work together.

In addition to NRCS and CES, other government agencies either have educational programs, provide technical support, or offer financial help; they include:

- USDA Consolidated Farm Services Agency
- USDA Rural Development Administration
- USDA Forest Service
- U.S. Environmental Protection Agency
- Hawaii Department of Agriculture
- Hawaii Department of Health

Please join with the members of your community and these government agencies to help keep Hawaii's watersheds healthy.