

A NEW BARREN LAND EMERGES....

Millions of years ago, in the middle of the Pacific ocean, the Hawaiian Islands emerged from the depths of the sea.

SHIELD VOLCANO

Our volcanoes are known as shield volcanoes. Layers and layers of lava flow over vast areas and pile one atop the next to form the 14,000 foot mountains we see today.

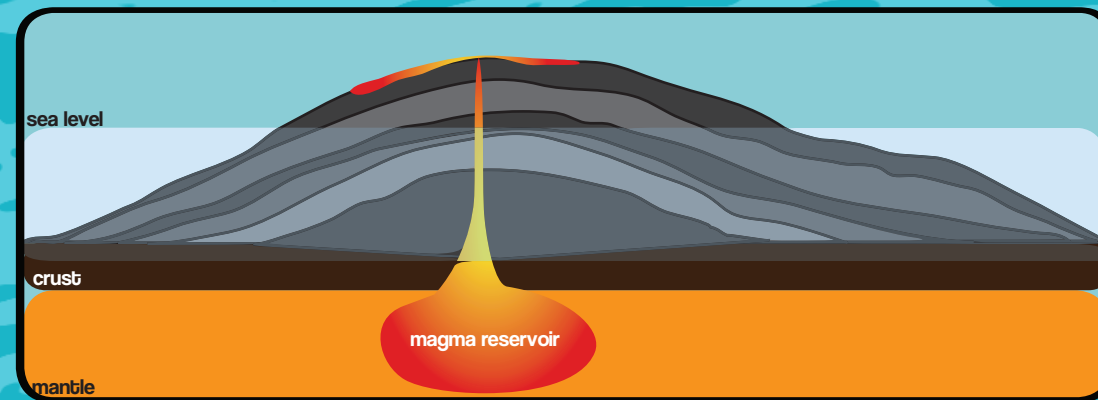
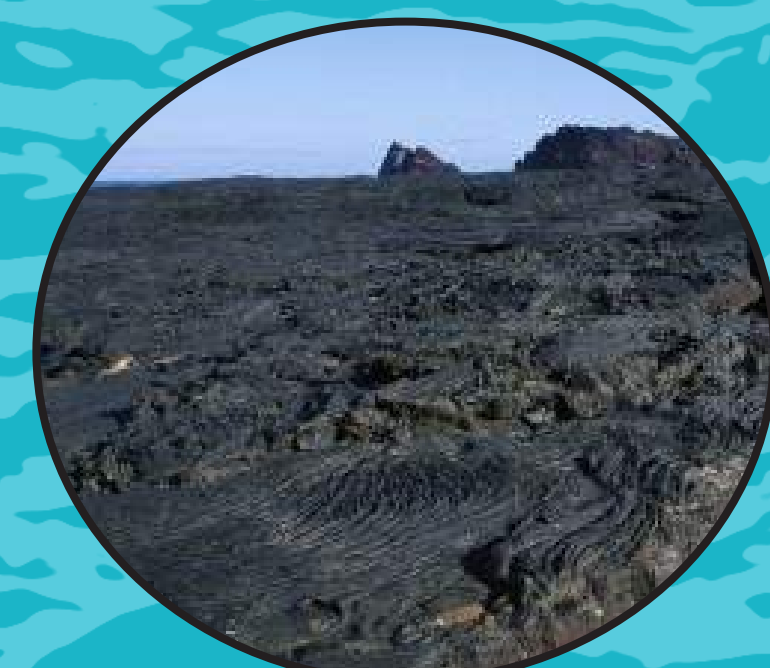
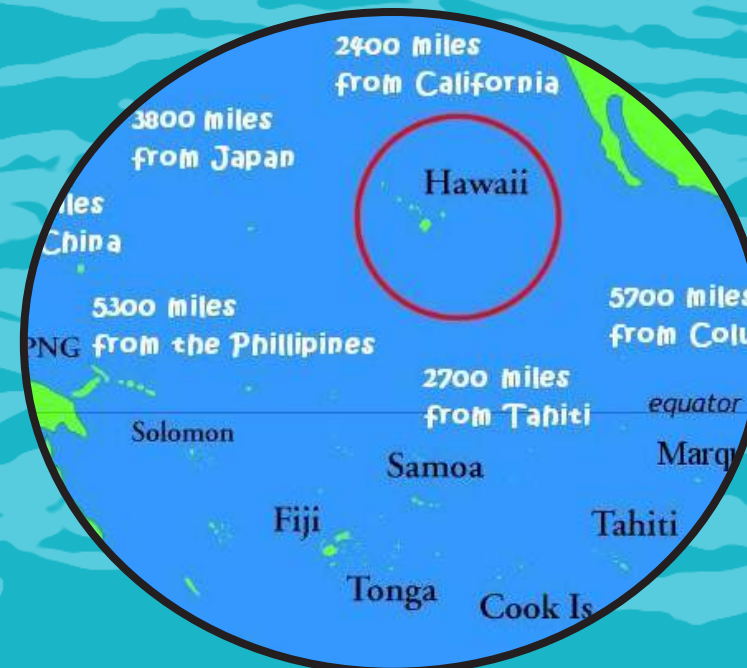
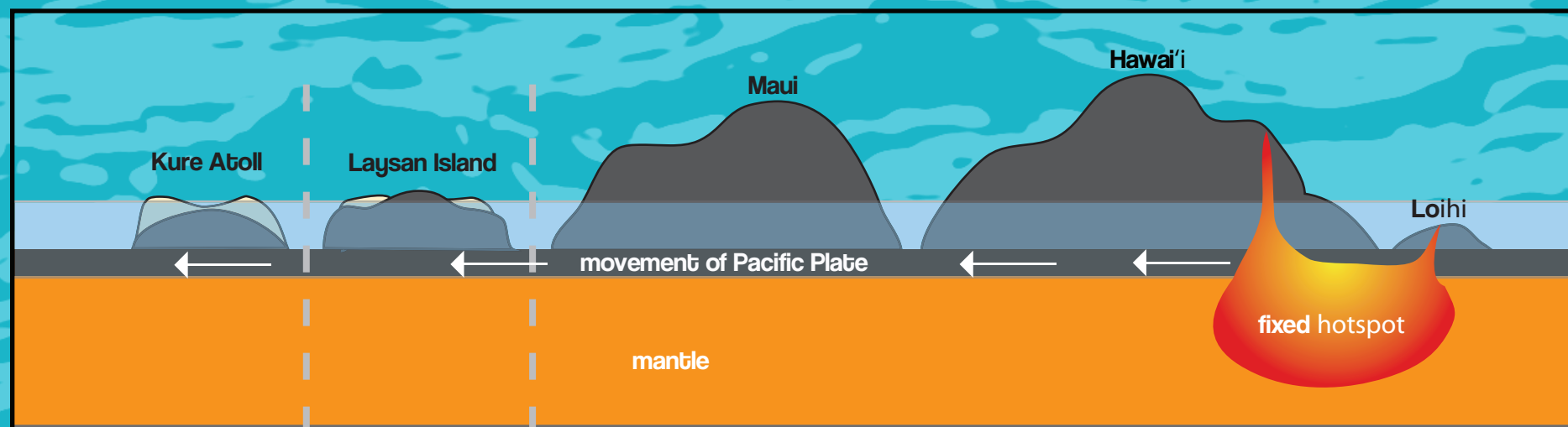


PLATE MOVEMENT

As the Pacific plate moves northwest, the hotspot beneath the ocean floor continues to spew hot magma. Slowly islands rise above the sea, age, erode and eventually sink beneath the waves to become atolls we see at the end of our island chain.



REEFS TO RIDGES

The atolls and seamounts like Kure, have continued to move away from the hotspot. While they may have been towering mountains millions of years ago, time and erosion have created the reefs and atolls we see today.

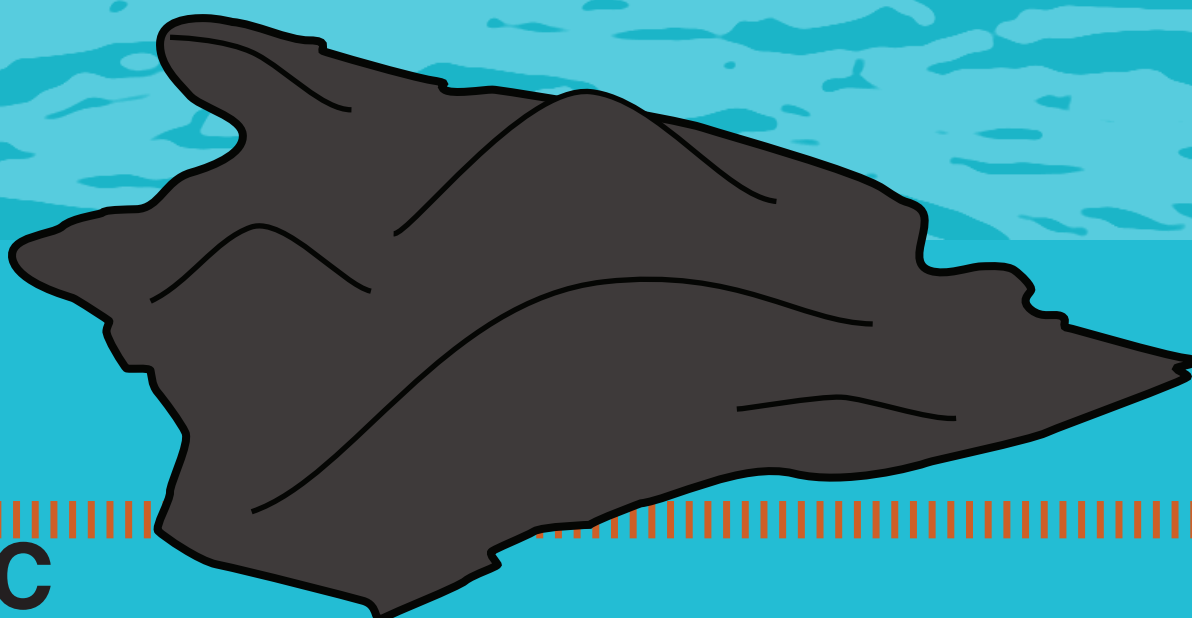
A DESTINATION OF INCONVIENCE

Located over 2,000 miles from any large landmass, these islands are some of the most isolated in the world. It was this distance that made colonization for plants and animals extremely difficult.

BEFORE PARADISE

Once seeds and animals reached Hawai'i's shores, they needed to survive on a vast expanse of rock. Dry, windy, and desolate, it was a harsh environment to foster new life.

1,000,000 BC



NATURAL HISTORY ^{OF} HAWAII

LIFE ARRIVES ADAPTS AND FLOURISHES....

Native plants and animals are those who were able to come to Hawai'i without any help from humans.

THE 3 W's:



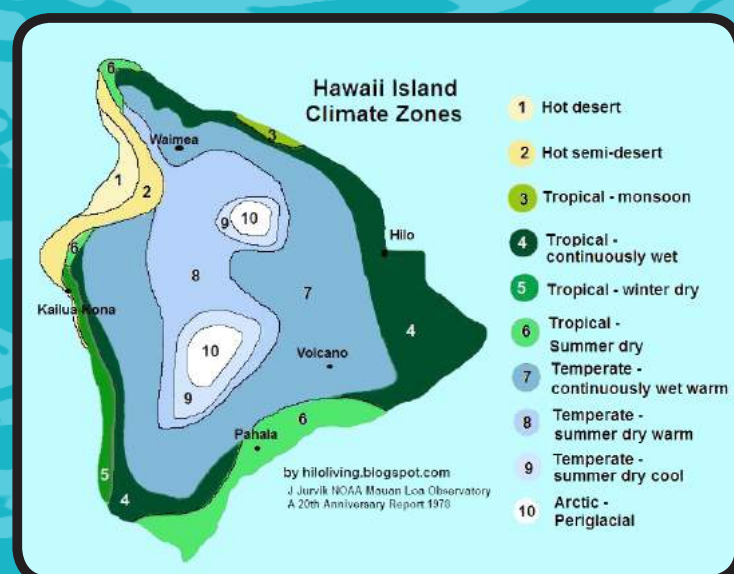
WINGS: birds that fly, or seeds stuck in or outside our winged friends.



WIND: seeds that are very small, and very light, some even shaped like kites



WAVES: seeds that can float and don't mind some sea salt



VARIETY OF CLIMATES

The seeds and animals that found their way to these isolated islands, landed in a variety of environments. Mountains stretching nearly 14,000 feet along with the near constant North East tradewinds, created a numerous climates, with stark contrasts in rainfall and temperatures. Plants and animals began to evolve to fit the niches, morphing into species very different from their ancestors. As a result of these diverse ecosystems, 90% of our species are endemice, meaning they are found here and no where else on earth.

LOSS OF DEFENCES

Since most grazing animals couldn't make it to the islands many native plants quit producing thorns, funky tastes, or poisons since they no longer needed to protect themselves from these types of threats. Our mint-less mints (above) for example no longer needed that minty taste to fend off cattle or sheep.

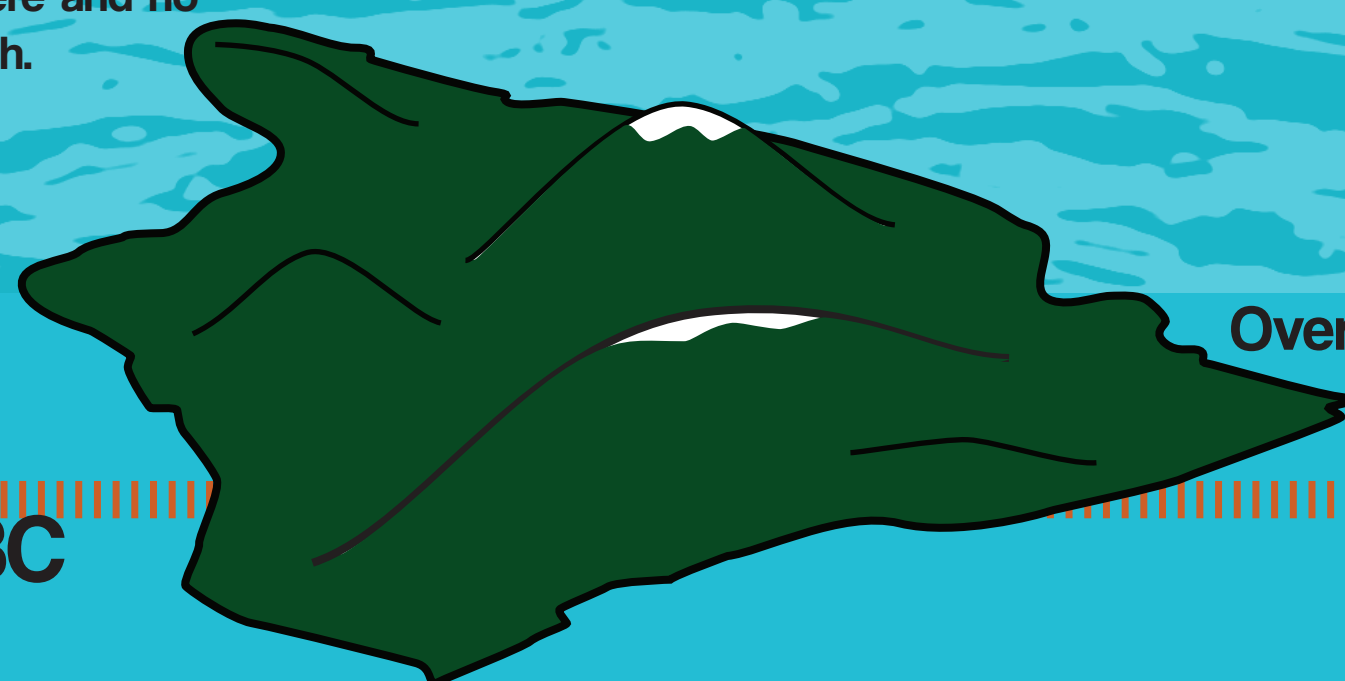
WORKING TOGETHER

Imagine you are a seed landing on empty lava field...do you work together with other plants or compete for resources? This was the harsh environment the first seeds and animals had to colonize. In order to survive they needed to work harmoniously and thus they adapted to fill different niches. Forests layers formed and these native forests became excellent at collecting and filtering fresh water.

CO-EVOLUTION

The isolation and need to work together resulted in many examples of co-evolution. 'Ōhāwai or lobeliads, a rare native plant, evolved with honeycreepers so that the shape of the ōhāwai flowers perfectly matches the bill of specific native birds. Thus the birds have food to eat and the plant can reproduce: a win-win for everybody.

500,000 BC



Over thousands of years, the landscape of barren rock became a verdant paradise.

WITH HUMANS, COMES RAPID CHANGE...

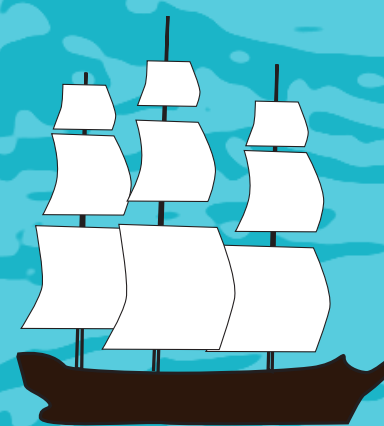
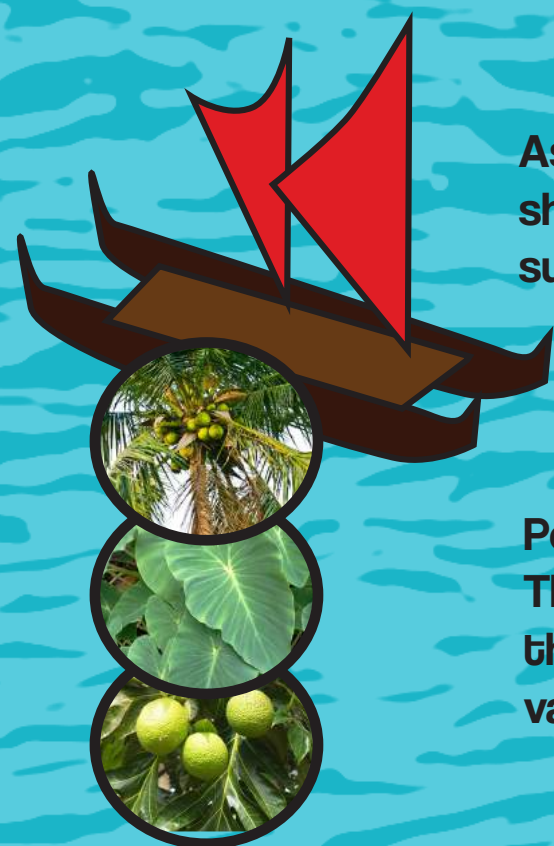
POLYNESIAN CONTACT:

Voyagers from afar arrived to these islands and made their home. They would become the Hawaiian people.

As the native ecosystem shaped these voyagers, they too began to shape the land as their own. With the introduction of canoe plants, such as niu, kalo, and ulu, animals, and with the clearing of forests for agriculture, the native landscape began to change.

CANOE PLANTS

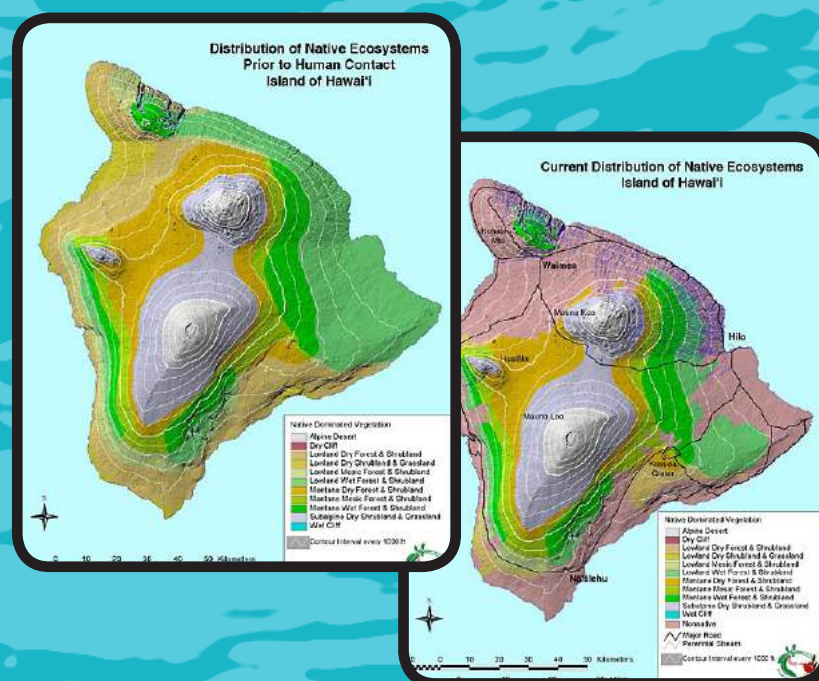
Polyneans introduced a variety of plants to ensure their survival. These plants are often called native, but it is important to remember they were brought by human hands. These useful plants are equally valued in a cultural perspective as those species that reached our shores of their own accord.



WESTERN CONTACT:

Centuries later Europeans would arrive in Hawai'i. With each wave of arrivals, non-native plants and animals were brought to Hawai'i, the land was altered for human use and foreign diseases were accidentally introduced.

Our native plants and animals, used to thriving in pristine environments, were not able to defend themselves against this rapid change. One by one, species began disappearing...



INTRODUCED SPECIES

Non-native plants such as Strawberry Guava and Albizia, grow and reproduce quickly, often much faster than native species like koa and ōhi'a. These aggressive plants fight for space, light and nutrients and rob native species of the things they need to live.

Ungulates, or four legged hoofed animals, were not present until the time of human contact. These grazing animals wreak havoc by grazing and trampling our native forests.

DEFORESTATION

Presently we have lost over half of our native forests. Not just one thing causes deforestation. Development, agriculture, grazing ungulates and introduced species all play a part in the decline of our native ecosystems.

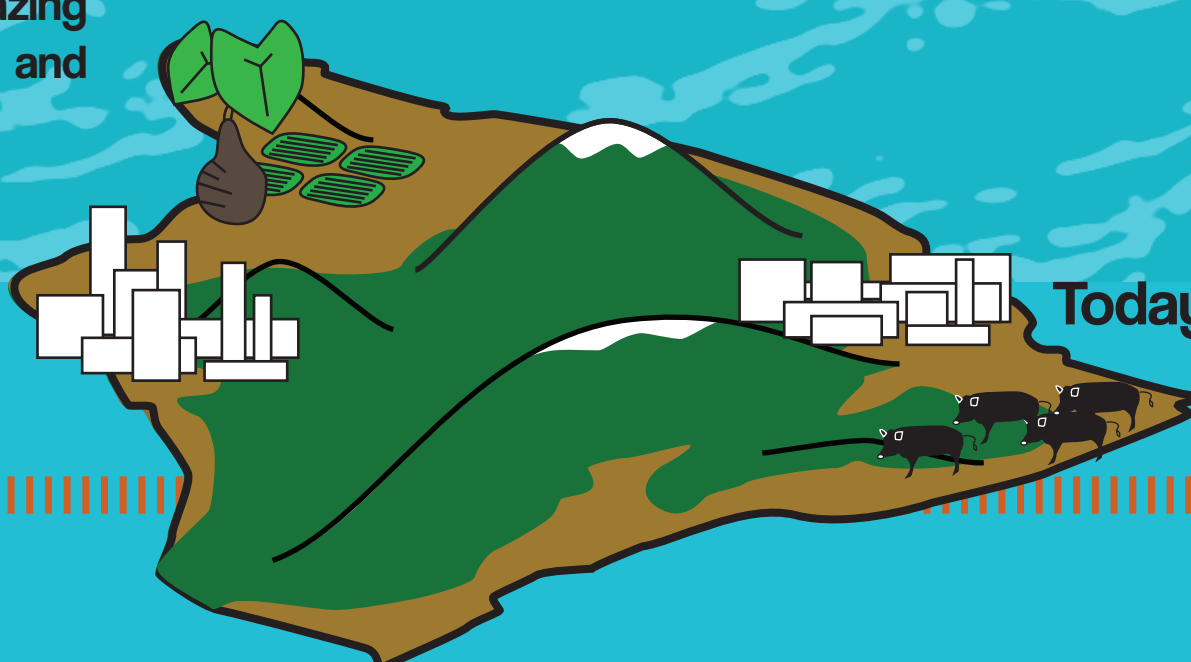
These forests are what collect our fresh water, allowing us an abundance of clean water for drinking bathing, and agriculture.

PROTECTION OF CULTURAL RESOURCES

The first human voyagers to make Hawai'i their home were not Hawaiian. It was living and learning the species that made their culture truly unique, and truly Hawaiian. The loss of individual species leaves a hole in the fabric that is our Hawaiian culture. These species are the mele, the maui of these islands.

A PLACE FOR ALL

While we cannot go back to a pre-contact Hawaii, we must live harmoniously with all species. For example, both ungulate food resources, such as pigs and cattle, as well as the protection of native species are important to the people of Hawaii. Fences are a tool that separate fragile native ecosystems from areas that contain ungulates and thus help balance these two needs so that both are possible.



Today we must find a balance of human and environmental health to sustain the life of our island.