

West of the West – Restoration Tale

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Part I. Teacher Background Information

Summary of the Story

Santa Cruz Island

Twenty-five miles off the coast of southern California, Santa Cruz Island is a world away from Los Angeles' urban landscape. Never connected to the mainland, the island has evolved into an oasis of extraordinary life forms. More than 1,000 species of plants and animals inhabit the island's high peaks, vast meadows and 77 miles of dramatic coastline. Introduced non-native species and historical human disturbances have threatened the survival of many of these species — 12 of which are found nowhere else on Earth — nearly driving them to extinction.

When The Nature Conservancy purchased most of Santa Cruz Island in 1978, the island was on the brink of biological collapse. The once densely vegetated hillsides and valleys were overgrazed by feral sheep and excavated by feral pigs that were descendants of livestock brought to the island by Euro-American settlers more than a century ago. While devouring native plants and spreading weeds throughout the island, pigs also attracted a new predator to the island — golden eagles — which feasted on piglets and the diminutive island fox, wiping out 95 percent of the fox population in less than a decade. The island's native bald eagles, which are highly territorial and prey on fish rather than foxes, had been wiped out by DDT contamination nearly five decades ago, leaving the golden eagles free to devastate the fox population.

An Island Comes Alive

The Nature Conservancy, the National Park Service and U.S. Fish & Wildlife Service pooled their resources, engaging in an intensive, science-based restoration program to save the island fox and revitalize the natural communities of Santa Cruz Island.

Essential to reviving the island's sensitive ecosystems was the elimination of feral sheep by the late 1980s and pigs, which were removed in 2006.

More than 40 golden eagles that had taken up residence on the island were captured and relocated to the mainland, while bald eagle chicks were reintroduced and carefully raised and released into the wild. For the first time in over half a century, bald eagles successfully nest again on the island.

To restore the island fox population, island wide monitoring efforts were stepped up, and a captive breeding program was launched in 2002. The island fox recovery program is heralded as

one of the fastest and most successful endangered species recovery programs in the country.

For the first time in over 150 years, the island is free of non-native animals, and native species are flourishing.

Managing the Present, Protecting the Future

Efforts are now focused on preserving the island's delicate balance and exporting what has been learned to other Channel Islands and island conservation projects around the world.

With thousands of boaters and hikers visiting the island each year, managing human interaction with native plants and animals is vital to maintaining the island's health. Educational outreach efforts instill in visitors the importance of protecting the island's delicate ecology and preventing the introduction of non-native species. Research and restoration work continues, including regular check-ups on the island's radio-collared foxes to monitor their health and administer vaccinations for canine distemper — a disease easily contracted from domesticated dogs illegally brought ashore by boaters.

Overall Themes

Humans and Nature

We are very much a part of nature, and we need to continue to be mindful of what kind of ecological footprint we have and how our behaviors impact the environment and our living landscape.

We need to coexist with nature more sustainably over the longer term. What that coexistence looks like over thousands of years is anyone's guess. But the greater our impact now, the less sustainable the environment will be over the longer term.

What we have learned from the Channel Islands is that natural systems are both fragile but also incredibly resilient, and that if given a chance, can recover and flourish.

Less than 30 years ago, Santa Cruz Island was on the brink of ecological collapse – much of the Island looked like a barren landscape due to overgrazing by feral ungulates – wild pigs and sheep. Today, island foxes are no longer on the brink of extinction, geographically extirpated bald eagles are a common sight, and island native plants and habitats are rebounding.

Man has a very significant and deleterious impact on our environment and nature, but we can do something about that. The story of the Channel Islands is one of hope and how we can reverse our legacy of negative impacts on our landscapes.

In an era where we hear so much about environmental gloom and doom, California's Channel Islands is one of the stories of hope and opportunity, where we can make a positive difference and take what we have learned here and leverage that into environmental action elsewhere in the world.

Importance of Islands

Islands are important for the conservation of the richness of life on earth. They are hotspots for biological diversity. Isolation and lack of connection to the mainland typically leads to higher rates of endemism – unique species found nowhere else.

The Channel Islands are a special place – often referred to as the Galapagos of North America. These islands are oases of biodiversity, especially in the context that they lie within a 200 mile radius of over 18 million people, and they are home to thousands of species of plants and animals found only on these Islands and nowhere else on Earth.

The stakes are much higher on islands. The potential to lose species forever from an island is very high. One of the biggest challenges we face today is the global extinction crisis. The tragedy of needless extinction is perhaps greatest on islands. One of the things that drive much of that extinction is introduced invasive/non-native species. The story of California's Channel Islands is a great example of tackling this challenge, removing invasive species and reversing a legacy of habitat degradation and loss of biodiversity.

Teaching Points

Island Fox Recovery

Saving the Santa Cruz Island Fox

At just four pounds and the size of a small house cat, the Santa Cruz Island fox has historically been the island's top predator for thousands of years. However, history changed as introduced species and human disturbances took their toll on the island, driving the native fox population to near extinction.

The Nature Conservancy—together with the National Park Service, U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife—engaged in an intensive, science-based recovery project to save the island fox. In less than a decade, the fox population has made an unprecedented recovery—heralding it as one of the fastest and most successful endangered species recovery programs in U.S. history.

A Vanishing Species

For thousands of years the Santa Cruz Island fox roamed the island free from predators— until golden eagles from the mainland began nesting on the island in the 1990s. Attracted by the abundance of feral pigs on the island, the golden eagles also preyed on the island fox. Naïve to aerial predators, the foxes made easy targets, resulting in a rapid decline in population.

- The island fox population fell from 1,500 to fewer than 100 animals in less than a decade—a 95 percent reduction of the fox population.
- In March 2004, the U.S. Fish and Wildlife Service listed the Santa Cruz Island fox as an endangered species.

Island Fox Recovery

In 2002, the Conservancy and partners initiated an Island Fox Recovery Program— including captive breeding, monitoring foxes closely in the wild and vaccinating against canid diseases—to safeguard the limited remaining population against extinction.

- Biologists identified mating pairs, then carefully captured and housed them in a captive breeding facility, designed to mimic their natural environment.
- In six seasons, 85 pups were produced by the program and released to the wild.
- Due to the successful recovery of fox populations in the wild, the captive breeding program was phased out in 2007.
- The wild island fox population now stands at more than 1,500.

Restoration and Research Continues

Today, the island fox survival rate has increased to an astonishing 96 percent, and biologists continue to track and monitor foxes in the wild.

- Roughly 10 percent of the fox population is radio-collared, enabling researchers to study their movements and keep close tabs on the population.
- Fox health is monitored and vaccines administered annually for rabies and canine distemper—diseases easily contracted from domestic dogs illegally brought ashore by boaters.

Bald Eagle Re-establishment

Bringing the Bald Eagle Back to the Channel Islands

Bald eagles were once a common sight on the Channel Islands, off the coast of Los Angeles. However, they disappeared in the mid-1900s due to widespread DDT contamination of their food supply. Chemical companies flushed the pesticide into the ocean through the Los Angeles sewer system until it was banned in the early 1970s.

For more than 20 years, scientists tried to re-establish the birds on Santa Catalina Island. But the lingering effects of DDT made the birds' eggshells too thin to hatch without human intervention.

An Inspiring Comeback

A program was initiated through the National Park Service in 2002, with funding in part from the Montrose Settlements Restoration Program and research efforts by the Institute for Wildlife Studies, to re-establish bald eagles on the northern Channel Islands.

Sixty-one chicks — around 12 per year — were reintroduced to Santa Cruz Island during the five-year program. The first group of eagles reached breeding age in 2006, and in that year one female produced a chick with a male from the Catalina Island reintroduction efforts.

Two chicks were born on Santa Cruz Island in 2006 — the first wild-born chicks to hatch anywhere on the Channel Islands in more than 50 years — and more chicks have hatched in successive years. The 2006 and 2007 births gave biologists hope that DDT levels in the birds'

eggs had sufficiently declined and that bald eagles would once again thrive on the Channel Islands. As a result of rebounding populations on the mainland, the bald eagle was de-listed from its endangered species status in June 2007.

Thanks to the re-establishment efforts of our partners, several bald eagle pairs have been nesting successfully on Santa Cruz Island for the first time in over half a century. In fact, the 2010 breeding season was the most successful season yet — a record-setting 15 eaglets joined the ranks of Channel Island bald eagle alums.

Eagles Go Live

Due to increasing public interest in the bald eagles' historic comeback, a webcam was installed on Santa Cruz Island. The webcam was launched in 2006 by the Ventura County Office of Education, the National Park Service and the Institute for Wildlife Studies. The nest is located on the portion of Santa Cruz Island owned by The Nature Conservancy.

Each spring, as part of the Channel Islands Bald Eagle Restoration Project conducted by the Institute for Wildlife Studies, the webcam broadcasts live streaming video of the eagles' nesting activities. This unique technology offers educational opportunities for students, teachers and the general public — giving viewers the rare chance to observe the nest daily and learn firsthand about the fascinating life stages of these magnificent birds.