UPPER ELEMENTARY:
FOREST ENCOUNTERS PROGRAM
OVERVIEW

Key Concept: Nature is constantly changing. People contribute to that change.

Goals: To foster an awareness and appreciation of nature, with emphasis on geological, biological and human-induced change; to expose students to some of the plants and animals found in lowland Hawaiian forest environments; to introduce factors, which influence soil erosion and water runoff in the forest.

Objectives: Students will be able to explain how natural forces shape our islands, interpret one type of change that has occurred at Pu'u 'Ualaka'a, and predict how human activity may affect the forest floor and watershed. They will also be able to distinguish between changes that have short-term or local effects and those that have far-reaching ramifications, and suggest changes they could make to create a better future for Hawaii.

PROGRAM SCHEDULE

9:00 - 9:30	Introduction to Change in Nature
9:30 - 10:45	First Rotation
10:45 - 12:00	Second Rotation
12:00 - 12:30	Lunch
12:30 - 1:00	Summary, clean up, return to school

INTRODUCTION

Key Concept: Change is a part of the natural world; people are forces of change.

Objectives: Students will be able to describe the basic geologic processes that shaped the Hawaiian Islands, and identify three ways native species initially reached our shores.

1. *<Benchmark SC.4.8.1 Forces that Shape the Earth. Describe how slow processes (e.g. waves, wind, water, ice) sometimes shape and reshape the surface of the Earth.>*
2. *<Benchmark SC.4.8.2 Forces that Shape the Earth. Describe how fast processes (e.g. volcanoes, earthquakes) sometimes shape and reshape the Earth.>*
3. *<Benchmark SC.4.2.1 Science, Technology, and Society. Describe how the use of technology (e.g farming, manufacturing, or communication) has influenced the economy, demography, and environment of Hawaii.>*

Activity: Students will gather around a map of the world for a hands-on, participatory review of the geologic formation of the Hawaiian Islands, the dispersal of plants and animals to Hawaii, and human arrival. We will introduce the concept of change (geologic, biologic, and human-caused) and set the tone for the day`s adventure.

ROTATION A: **Ranger Hike on a Trail of Changes**

Key Concepts: Pu'u 'Ualaka'a has undergone extensive biologic, geologic and human-caused changes. Some of the human-caused changes continue to affect the area, either positively or negatively. The decisions we make today may have positive or negative effects on the area in the future.

Objective: Students will be able to share one example each of geologic, biologic, and human--caused change in the Makiki-Tantalus area with others.

1. *<Benchmark SC.4.5.1 Unity and Diversity. Describe the roles of various organisms in the same environment.>*
2. *<Benchmark SC.4.5.2 Unity and Diversity. Describe how different organisms need specific environmental conditions to survive.>*

Activity: The program will begin in a grove of pine trees near the Ualakaa trailhead. Two by two, the students will proceed up the trail, stopping at Ranger stations along the way to learn short stories about the changes that have taken place in the area. Each pair of students will serve as Rangers, and be responsible for imparting information to their classmates. Two by two, the students will gather at the end of the trail for a review and comparison of the different kinds of changes discovered along the way.

ROTATION B: View Plane

Key Concepts: Natural geological processes including volcanism, erosion, and changing sea level have shaped the landscape of Oahu. People have made changes to the landscape as well.

Objective: Students will be able to interpret the view from the Puʻu ʻUalakaʻa lookout.
<Same benchmarks as INTRODUCTION: SC.4.8.1, SC.4.8.2, and SC.4.2.1>

Activity: Students will gather at the lookout to interpret primary features of the landscape from Diamond Head to the Waianae Mountains with the help of an instructor.

ROTATION B: Forest Studies

Key Concepts: Small animal life on the forest floor is one indicator of the ecosystem`s health. Factors that affect the forest floor include ground cover, slope, presence of hoofed animals, and land use. These factors also influence runoff, which affects not only the forest but the streams, watershed and ocean below.

Objectives: Students will be able to create and test a hypothesis and be able to suggest why forest floor conditions vary in two different areas of the forest. They will be able to describe how these differences may impact the streams, watershed and ocean below.
<Benchmark SC.4.1.1 Scientific Inquiry. Describe a testable hypothesis and an experimental procedure.>

Activities: Students will work in subgroups to create and test a hypothesis about a healthy forest floor. They will test the ability of soil to absorb water and assess small animal diversity in two different areas of the forest. Afterwards, the groups will share their data, and consider how issues like ground cover and land use influence forest and watershed health.

SUMMARY

Key Concepts: Changes are ongoing in nature. People have accelerated the rate of change in Hawaii. Changes we make today can affect the future we inherit tomorrow.

Objectives: Students will be able to identify several ways in which human actions have resulted in undesirable changes to the environment, and several actions they can take that may result in long term, positive changes.
<Benchmark SC.4.2.1 Science, Technology, and Society. ADVANCED RUBRIC: Explain how the use of technology has influenced the economy, demography, and environment of Hawaii and suggest ways to conserve the environment. >

Activity: The group will gather to discuss the day`s activities and review the concepts addressed. Afterwards, students will be asked to choose between several different possible futures and suggest changes they can make in their own lifestyles to help create the kind of world they want for themselves and their children.