SANTA CRUZ MUSEUM of natural history

## Why do we provide the Educational Kit?

This activity kit is designed to familiarize your students with topics presented in the "Nature Rangers" field trip, and to provide a depth of experience and opportunity to apply knowledge after the trip. The activities within this kit will give your students a better understanding of such topics as **adaptations, community connectivity, human influences,** and **change over time** using unique artifacts and hands-on exploration. They are designed to build a strong background for the field trip itself, thereby enhancing your students' outdoor experience.

## How does it work?

We provide different activities that will help students build a more comprehensive understanding of relevant concepts. We recommend that these activities are done in the order that they are presented, for a more comprehensive understanding of relevant concepts. These activities can be adjusted to different age or learning groups; you can omit the included worksheets and focus purely on observational activities, and extensional writing prompts help to further understanding and scientific observational skills.

## Nature Rangers Kit Contents

1. Supplemental Activity Curriculum Descriptions
2. Materials to support curriculum
3. Visual Aids to support curriculum, including photos, diagrams, and worksheets
4. Artifacts to foster hands-on learning such as tree ring cookies, pelts, animal track molds

## List of Activities and Key Concepts Covered

1. **Pogonip Timeline** - *Community connectivity and human influence*
   Students learn the history of Pogonip from first inhabitants to modern time, exploring how people and the environment have been connected and how it has changed.
2. **Bill Nye Rock and Soil DVD** - *Rock cycle and environmental change over time*
   Students learn about the rock cycle and soil types, then follow up with discussion questions.
3. **Pogonip Pandemonium** - *Adaptations and connectivity*
   Students explore animal adaptations and how animals, plants and the environment are connected.
4. **Peek Inside The Bean Seed** - *Adaptations and biology*
   Students observe a bean seed as it starts to grow into a bean plant. **Teachers must provide their own seeds.**
5. **Stuck in the Web of Life** - *Connectivity and web of life*
   Students play an interactive role in the food web using string to explore connectivity and the effects of population on the food web.
6. **Follow The Signs -** *Tracking and evidence*
   Students learn to identify local animals by studying their tracks.

7. **Tree Cookie Detectives -** *Dendrochronology and data collection*
   Students learn how to use tree rings to study past growth patterns based on rainfall data.
8. **I Will Survive** - *Adaptations and change*
   This activity models how generalist species survive changes to their environment better than specialist species.

The Educational Kit includes the visual aids and materials for all activities, unless otherwise noted, and suggestions for extension activities and writing prompts which encourage deeper understanding.

**See chart below for NGSS connections for each activity.**

# Nature Rangers Classroom Kit Standards

| Activity | 5 E | Focus | Next Generation Science Standards (NGSS) | | | Suggested Compliment Activities | Best Before or After Field Trip? |
|---|---|---|---|---|---|---|---|
| | | | ***Disciplinary Core Idea*** | ***Science & Engineering Practices*** | ***Cross-Cutting Concepts*** | | |
| ***Engage! Activate prior knowledge and experience, get focused for future learning*** | | | | | | | |
| **Bill Nye Rock Cycle** | Engage | Geology and earth processes | ESS2.E Biogeology, ESS2.B Plate Tectonics and Large-Scale System Interactions | | Stability and Change | Tree Cookie Detectives | Before |
| **Pogonip Pandemonium** | Engage | Plants and animals and their adaptations | LS1.A Structure and Function | Engaging in argument from evidence. | | I Will Survive, Stuck in the Web of Life | Before or after |
| | | | | | | | |
| ***Explore! Use senses to make observations, discoveries, and connections that stimulate thinking*** | | | | | | | |
| **Pogonip Timeline** | Explore | History of Pogonip | ESS3.A Natural Resources | Use evidence to construct or support an explanation | Stability and Change | | Before |
| **Stuck in the Web of Life** | Explore | Food web | | | Cause and Effect | I Will Survive | Before or after |
| **Follow the Signs** | Explore | Identification of animals by their tracks. | ESS2.E - Living things affect the physical characteristics of their region. | Analyzing and interpreting data, using evidence to support or construct an explanation | Patterns, stability and change | | Before |
| | | | | | | | |
| ***Explain! Construct explanations and hypotheses based on observations*** | | | | | | | |
| **Tree Cookie Detectives** | Explain | Tree growth, weather | ESS2.A Earth Materials and Systems | Analyzing and interpreting data, constructing explanations | Patterns can be used to support an explanation. | Bill Nye Rock Cycle | Before or after |
| **I Will Survive** | Explain | Landscape change, survival, adaptations | LS2.C Ecosystem Dynamics, ESS3.B Natural Hazards | Analyzing and interpreting data, constructing explanations | Stability and Change | Pogonip Pandemonium, Stuck in the Web of Life | Before or after |
| | | | | | | | |
| ***Elaborate! Take explanations a step further, constructing arguments and coming up with new questions*** | | | | | | | |
| **Nature Rangers at Your School (**emailed as followup activity after the field trip) | Elaborate | Plant communities, data collection | ESS2.E Biogeology | Analyzing and interpreting data, constructing explanations | Patterns, Cause and Effect | | |