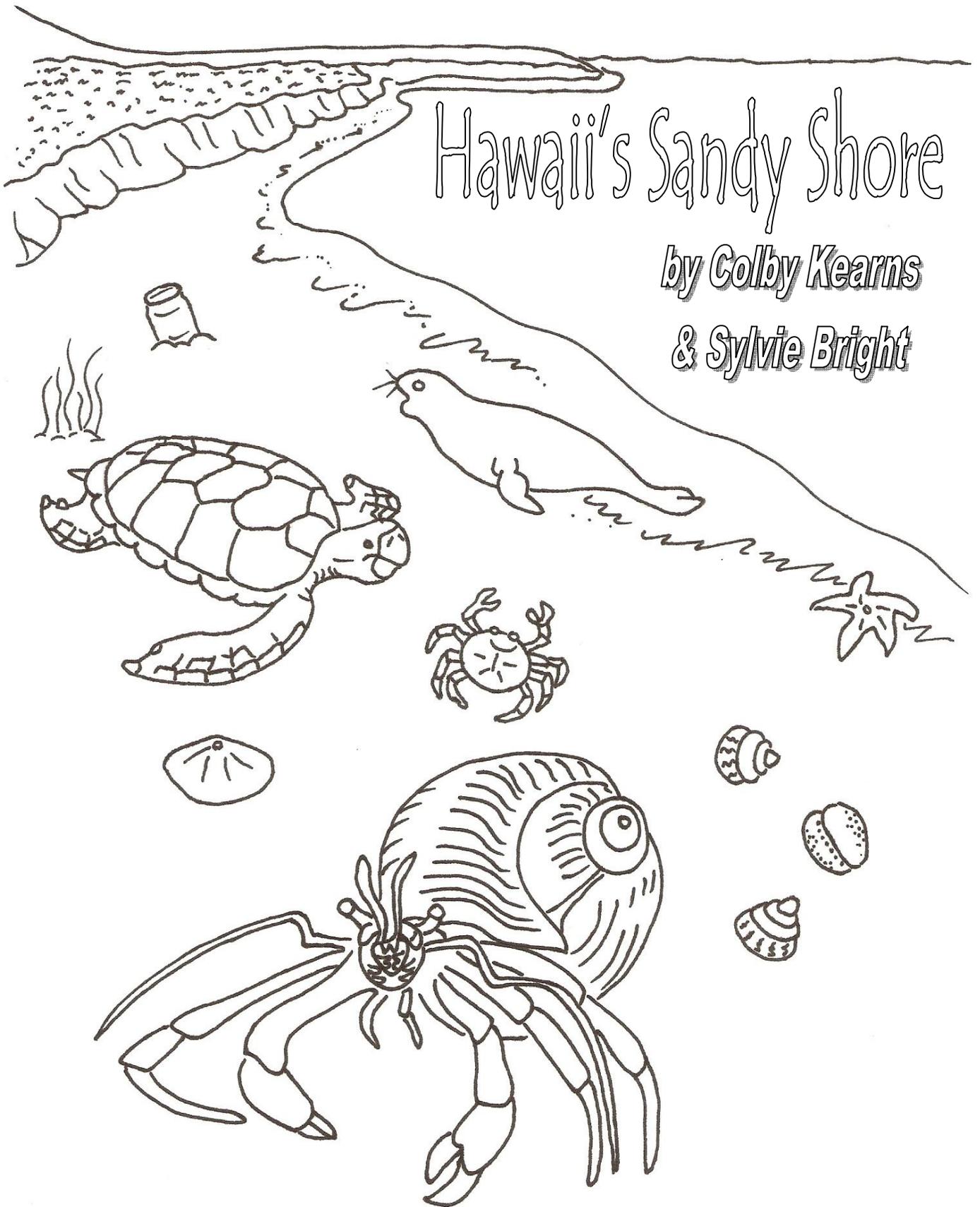


Hawaii's Sandy Shore

by Colby Kearns

& Sylvie Bright





A Hands-on Guide to Hawaii's Sandy Shore Habitat

**Developed by:
Colby Kearns & Sylvie Bright**

Grade Level: Second Grade

Purpose: This curriculum is designed to communicate:

- I. How the sandy shores of Hawaii are physically and biologically structured.
- II. What the major natural and human induced impacts to the sandy shore habitat are.
- III. How science and conservation are working together to study the sandy shore habitat and manage the people and resource within the habitat.

Hawaii Content and Performance Standards (HCPSIII):

Science

Standard 1: The Scientific Process: Scientific Investigation: Discover, invent, and investigate using the skills necessary to engage in the scientific process.

Benchmarks

- SC.2.1.1. Develop predictions based on observations
- SC.2.1.2. Conduct a simple investigation using a systematic process safely to test a prediction

Standard 3: Life and Environmental Sciences: Organisms And The Environment: Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment.

Benchmark

- SC.2.3.1. Describe how animals depend on plants and animals

Standard 4: Life and Environmental Sciences: Structure And Function In Organisms: Understand the structures and functions of living organisms and how organisms can be compared scientifically.

Benchmark

- SC.2.4.1 Explain how plants and animals go through life cycles



Standard 5: Life and Environmental Sciences: Diversity, Genetics, And Evolution: Understand genetics and biological evolution and their impact on the unity and diversity of organisms.

Benchmark

SC.2.5.1 Identify distinct environments and the different kinds of organisms each environment supports

Health

Standard 5: Interpersonal Communication: Use interpersonal communication skills to enhance health

Benchmark

HE.K-2.5.1 Use effective verbal and nonverbal communication

Language Arts

Standard 1: Reading: Conventions and Skills: Use knowledge of the conventions of language and texts to construct meaning for a range of literary and informational texts for a variety of purposes

Benchmark

LA.2.1.4 Identify grade-appropriate high-frequency words

Standard 5: Writing: Rhetoric: Use rhetorical devices to craft writing appropriate to audience and purpose

Benchmark

LA.2.5.1 Choose and maintain a focus in a single piece of writing

Standard 6: Oral Communication: Conventions and Skills: Apply knowledge of verbal and nonverbal language to communicate effectively in various situations: interpersonal, group, and public: for a variety of purposes

Benchmarks

LA.2.6.1 Use oral language to obtain information, complete a task, and share ideas with others

LA.2.6.2 Give an oral presentation to share information with peers

LA.2.6.4 Use appropriate social conventions in various large and small group situations

LA.2.6.6 Adjust pacing, volume, and intonation appropriate to content and



purpose
LA.2.6.7 Use simple gestures and eye contact to complement and enhance verbal messages

Math

Standard 11: Data Analysis, Statistics, and Probability: Fluency with Data: Pose questions and collect, organize, and represent data to answer those questions

Benchmark

MA.2.11.1 Pose questions, collect data, and display the data using a graph (e.g. bar graphs, pictographs)

Standard 12: Data Analysis, Statistics, and Probability: Statistics: Interpret data using methods of exploratory data analysis

Benchmark

MA.2.12.1 Interpret data displayed in a bar graph and describe how the important features of the data set are represented in a bar graph

Physical Education

Standard 1: Movement Forms: Use motor skills and movement patterns to perform a variety of physical activities

Benchmark

PE.K-2.1.1 Use basic locomotor skills in initial (immature) form alone, with a partner, and in small groups

Standard 2: Cognitive Concepts: Understand movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities

Benchmarks

PE.K-2.2.1 Use basic movement concepts related to space, time, effort, and relationships (e.g., personal space, fast/slow, strong/light, under/over)

PE.K-2.2.2 Identify basic rules for safe participation in physical activities

Standard 3: Active Lifestyle: Participate regularly in physical activity

Benchmark

PE.K-2.3.1 Participate regularly in physical activities



Social Studies

Standard 5: Political Science/Civics: Participation and Citizenship: Understand roles, rights (personal, economic, and political), and responsibilities of American citizens and exercise them in civic action

Benchmark

SS.2.5.1 Demonstrate own roles and responsibilities in caring for others and the environment

Standard 7: Geography: World in Spatial Terms: Use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographics regions and societies around the world

Benchmark

SS.2.7.4 Analyze and demonstrate ways to protect and preserve the local environment

Topic and Driving Question:

What is unique about the sandy shore habitat, what lives there, and how is it culturally important for Hawaii?

Rationale:

The sandy shore makes up a large portion of Hawaii's coastal habitats and ranges in color from white, black, green, and red. It provides a habitat for many of the plants and animals that support the lifestyle and culture of island residents, as well as, a place where recreational activities can be enjoyed by all. This curriculum promotes an enhanced understanding within Hawaii's youth on how the sandy shore habitat functions, how we use and study it, and how that use impacts the habitat. It uses hands-on, inquiry-based activities to promote an enhanced learning about Hawaii's sandy shore habitat.

Concept Map for Unit: See below

Formative Assessment:

Students will demonstrate continued learning throughout the unit through successful completion of activity specific worksheets, accurate data collection, and daily written explanations of what they did, saw, and learned for each activity.



Summative Assessment:

Students will present their complete knowledge about the sandy shore through the design and construction of a diorama. Students will choose one plant or animal that lives on the sandy shore and design a habitat appropriate for its survival including all the abiotic and biotic components necessary for survival. A written report will be done to explain the components of their diorama and demonstrate their understanding of who lives on the sandy shore, why they live there, how they survive in the harsh environment, and what they need to survive. Students will improve their communication skills during an oral presentation on their project.

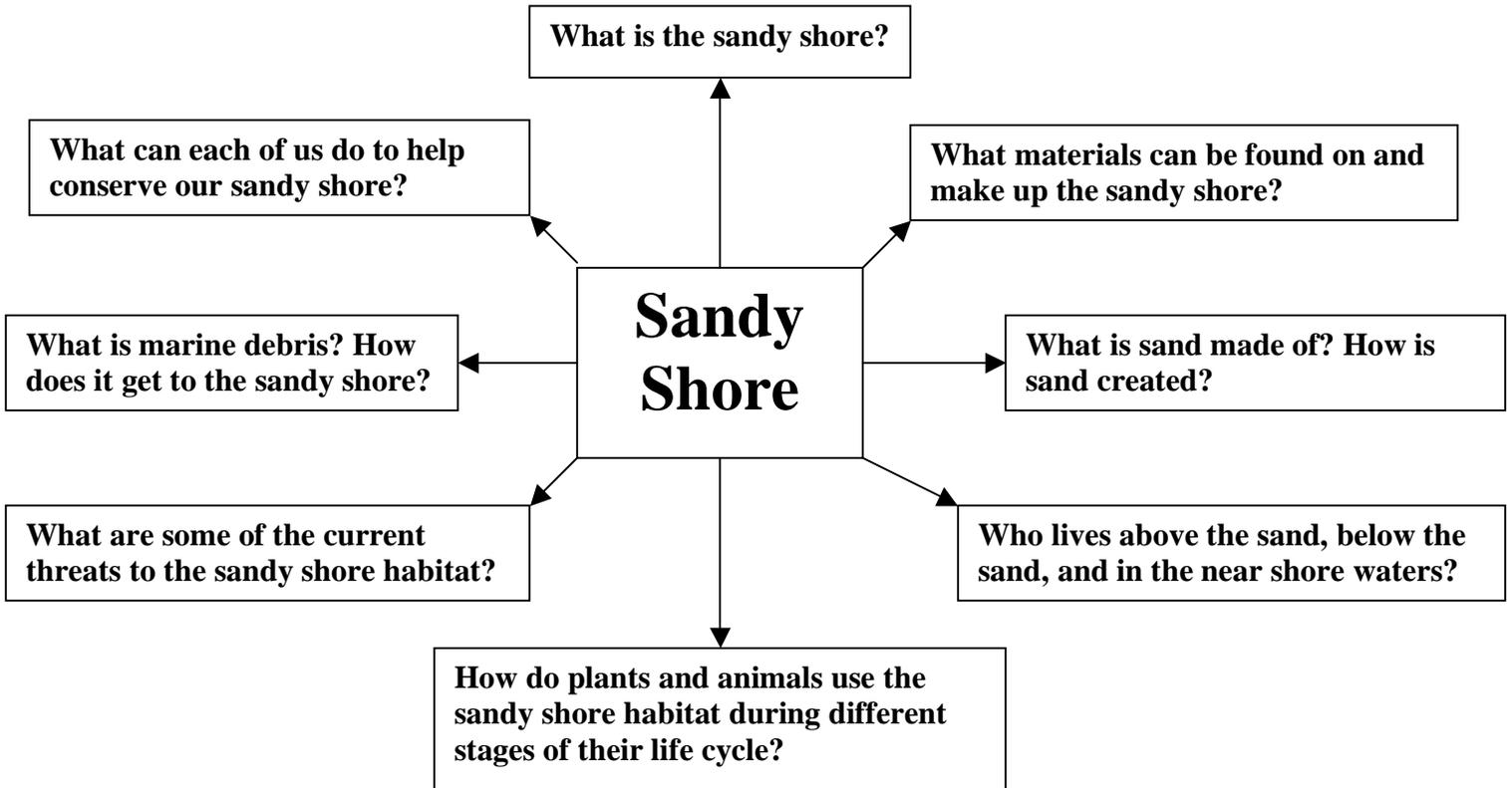
Overview of Lessons Chart: See below

Sources:

- MARE Sandy Shorelines www.lawrencehallofscience.org/mare/curriculum/
- Maui Ocean Center www.mauiocceancenter.com
- Project Aquatic Wild (Hawaii Supplement)
- Videos www.arkive.org



Unit Concept Map

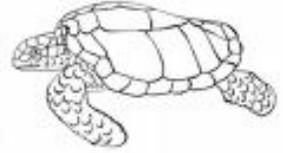




Timeline	Lesson and Topic	Concepts	Student Objectives	Activity description	Assessment
<i>Week 1</i> <i>2 (1 hour) sessions without field trip</i>	Unit Introduction to Hawaii's Sandy Shore Habitat (Field Trip) & Exploring Hawaii's Beaches	The sandy shore is made up of abiotic and biotic components. It is where the sea meets the land providing a habitat for a multitude of life.	Students will identify what they know and what they want to know about the sandy shore. They will learn how to be a good observer and make predictions based on observations.	Students are introduced to basic vocabulary they will encounter in the unit. They will go on a field trip to the sandy shore where they make their own observations of the habitat.	"I Think Of " worksheets & prediction drawings
<i>Week 2</i> <i>2 (1 hour) sessions</i>	Scavenging the Sandy Shore & What Is Sand	Objects found on the sandy shore can be: evidence of plant life, animal life, humans, and non-living material. Sand is made up of different kinds of materials.	Students will explore and identify different materials that are typically found on the sandy shore and make up sand. They will classify each item and record the information on their activity sheet.	Students discover the types of things that can be found in or on the sand. They observe sand samples using a digital microscope. They identify the different components of sand.	Predictions made & "I Spy" worksheets completed, Questions Formed & "Sand on Stage" worksheet
<i>Week 3</i> <i>2 (1 hour) sessions</i>	Hermit Crabs in the Classroom & Crustacean Critters	Hermit crabs live in and on the sand and require the same needs as all animals to survive.	They will learn the physical/behavioral characteristics of hermit crabs through hands-on experience. They will identify the basic things animals need to survive.	Students observe live hermit crabs and learn about/discuss their essential needs for survival.	Problem Solving skills developed & Drawings
<i>Week 4</i> <i>2 (1 hour) sessions</i>	Hawaiian Monk Seal Jeopardy & Monk Seal Research Expedition	Endangered Hawaiian Monk Seals use the sandy shore habitat for reasons such as sun bathing and breeding.	Students will discuss the general and physical characteristics of monk seals and observe them via video tour in their natural habitat.	Students play an interactive game of jeopardy. They explore their use of the sandy shore habitat on a virtual research expedition.	Game questions answered, Datasheets & "What We Know" strips
<i>Week 5</i> <i>2 (1 hour) sessions</i>	Hawaii's Sea Turtle Observer & Hawaii's Sea Turtle Exploration	There are 3 different types of sea turtles found in Hawaii. The Hawaii Green sea turtle is most common and can be seen frequently on the sandy shore.	Student will make observations of different types of sea turtles. They will learn the anatomy and life cycle of the Hawaiian green sea turtle.	Students learn the 7 types of sea turtles in the world. They make their classmate into a human turtle model and learn the steps of their life cycle through computer-based observation.	Questions formed & "Sea Turtle Observer, Anatomy, and Life Cycle" worksheets
<i>Week 6</i> <i>1 (1 hour)</i>	Life Cycle of Hawaii's Honu & Field Trip	The sandy shore habitat is used by sea turtles in Hawaii for basking and laying eggs.	Students will be able to describe the life cycle of a sea turtle and learn about their predators. They will	Students demonstrate their knowledge of a sea turtle's life cycle during a game of tag.	Survey datasheet & Game



<p><i>Week 6</i></p> <p><i>1 (1 hour) session without field trip</i></p>	<p>Life Cycle of Hawaii's Honu & Field Trip</p>	<p>The sandy shore habitat is used by sea turtles in Hawaii for basking and laying eggs.</p>	<p>Students will be able to describe the life cycle of a sea turtle and learn about their predators. They will also observe and survey them in their natural habitat.</p>	<p>Students demonstrate their knowledge of a sea turtle's life cycle during a game of tag. They will collect their own data on a scientific survey.</p>	<p>Survey datasheet & Game</p>
<p><i>Week 7</i></p> <p><i>2 (1 hour) sessions</i></p>	<p>Oil on the Beach & Sink or Float</p>	<p>Humans impact the marine environment and sandy shore in many ways such as oil spills and creation of marine debris.</p>	<p>Students will identify different materials that could be used to clean up an oil spill and how to decrease the risk of oil pollution. They will classify different types of marine debris and understand how they are harmful to marine life.</p>	<p>Student will learn how oil is spilled and why it is impossible to clean up. They will also explore the concept of marine debris through hands-on experimentation.</p>	<p>Predictions made & Data or answered collected through experimentation</p>
<p><i>Week 8</i></p> <p><i>1 (2-3 hour) session</i></p>	<p>Human Impacts to the Sandy Shore (Field Trip)</p>	<p>Humans can have both negative and positive impacts to the sandy shore habitat.</p>	<p>Students will experience and see for themselves the results of human impacts. They will develop a better understanding for how their own actions, as well as, the actions of others around them can impact the environment.</p>	<p>Students will collect, sort, and chart debris found during a beach cleanup. They will discuss how humans can have a positive and negative impact on the habitat.</p>	<p>Active participation in cleanup effort</p>
<p><i>Week 9</i></p> <p><i>Duration Varies</i></p>	<p>Project Presentations (Summative Assessment)</p>	<p>Review of all concepts covered in the unit.</p>	<p>Students will demonstrate their cumulative knowledge of the sandy shore.</p>	<p>Students create and present a diorama and written report on their favorite sandy shores critter including all the abiotic</p>	<p>Clearly demonstrates knowledge of abiotic and biotic</p>



SANDY SHORES pre-assessment

Name: _____

Date: _____

Circle the correct answer. **Some questions may have more than one answer.**

1. **Abiotic** means:

Non-living

Non-moving

Living

Moving

2. Sand is made of:

Rocks

Concrete

Shells

Glass

3. Circle the **biotic** things below:

The sun

Crab

Coconut tree

Sand

Dolphin

Plastic bottle



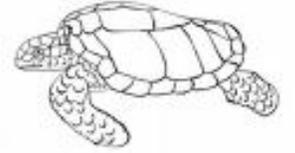
Answer the questions below in two sentences or less.

4. How would you find out why sand is different colors?

5. What kind of pollution or marine debris (rubbish) is on the sandy shore?

6. **Draw** a picture of what you want to do when you are older.

A large, empty rectangular box with a thin black border, intended for a student to draw a picture of what they want to do when they are older.



SANDY SHORES post-assessment

Name: _____

Date: _____

Circle the correct answer. **Some questions may have more than one answer.**

1. **Abiotic** means:

Non-living

Non-moving

Living

Moving

2. Sand is made of:

Rocks

Concrete

Shells

Glass

3. Circle the **biotic** things below:

The sun

Crab

Coconut tree

Sand

Dolphin

Plastic bottle



Answer the questions below in two sentences or less.

4. How would you find out why sand is different colors?

5. What kind of pollution or marine debris (rubbish) is on the sandy shore?

6. **Draw** a picture of what you want to do when you are older.

A large, empty rectangular box with a thin black border, intended for a student to draw a picture of their future career or activity.



Quarter 3 - Science Project

Aloha!

This quarter we will be exploring the sandy shore habitat. The quarter end project will be in the form of a diorama. The diorama cannot be larger than a boot box. Each student will pick an animal from the list on the back, and include the model (no live animals please!) of the animal in its natural habitat based on what they have learned and their research. In addition to the animal/habitat model, each student will have to give a short oral presentation (5 to 10 minutes) describing the various biotic and abiotic (living and non-living) things that are part of that animal's habitat and turn in the written part of their oral presentation. A bibliography is required. The project will represent 100% of the science grade as well as part of the writing and oral communication grade on the report card.

Students will gather their information from the library, internet and the classroom. It is up to the student to decide what materials they will use, and how they plan on displaying their habitat. Students are 100% responsible for their work. **Parents can help BUT the student MUST have done MOST of the work.**

All projects are due on _____. Late projects will not be accepted and will be graded with a "U". This gives the students 6 1/2 weeks to complete their projects. If you have any questions and/or comments, please feel free to contact me by phone at _____ or by e-mail at _____.

Mahalo,



Materials you might want to use:

- 1 box with one side cut out (mandatory, that's the diorama frame)
- Paper and tagboard in different colors
- Glue
- Paint
- Modeling clay
- Plastic animals
- Rocks, twigs, sand, etc...
- Let your imagination run wild!!!

Steps to follow to get you started:

1. Students use paint or paper to cover back, sides and bottom of box. Cover the box with a thin layer of glue and sprinkle whatever you want for the floor of your habitat.
2. Make plants. If you use tagboard, you can make the plants stand by making tabs at the bottom and glue them to the box.
3. Add animals made from paper, modeling clay or store bought. Walmart has a lot of really cheap stuff.

HAWAIIAN SANDY SHORES ANIMALS YOU CAN CHOOSE FROM, PICK ONLY 1!

Above the sand (nearshore water)

- jellyfish - portugese man-o-war
- plankton
- Striped mullet

Under the sand

- sand (mole) crabs
- Ghost crab (this can also be seen above the sand).

Above the Sand

- Wandering Tattler
- Hawaiian Stilt
- Pacific Golden Plover
- Hawaiian Mussel
- Limu (seaweed)
- Cowry (reticulated)
- Hawaiian Monk Seal
- Hawaiian Green Sea Turtle (Honu)
- Hermit Crabs (Left Handed & Seurats)

Sanderlings

**Near the Shore
(Plants)**

- Beach Naukapa
- Coconut trees

(Others may be accepted with teacher's consent)



	Advanced	Proficient	Partially Proficient	Novice
Science Benchmark S2.1.1 S2.3.1 S2.5.1	<p>Student shows evidence of the key elements to survival in the depiction of the organism through a rendition of its habitat by means of a diorama. The diorama has the biotic and abiotic elements of that habitat. The project is very detailed and imaginative.</p>	<p>Student produces an accurate rendition of a habitat by means of a diorama. The diorama has some biotic and abiotic elements of that habitat.</p>	<p>Student produces a somewhat accurate rendition of a habitat by means other than a diorama. The project is incomplete and without details.</p>	<p>Student produces an inaccurate rendition of a habitat or the student has no project to show the class.</p>
Language Arts Writing Benchmark LA 2.5.1	<p>Chooses an organism of the Sandy Shores unit and consistently stays on topic providing insightful details on the subject.</p>	<p>Chooses an organism of the Sandy Shores unit and maintains focus on topic most of the time. Many details on the subject are noted.</p>	<p>Chooses an organism of the Sandy Shores unit and maintains focus on the subject some of the time. Not too many details are noted.</p>	<p>Chooses an organism of the Sandy Shores unit but no focus on the subject. Barely any details to the piece of writing or no report is given.</p>
Language Arts Oral Communication Benchmark LA 2.6.2 LA 2.6.4 LA 2.6.6 LA 2.6.7	<p>Gives a highly effective presentation speaking loudly and clearly with great intonation, looking at the audience, able to read report comfortably, able to answer questions from audience, uses project to make presentation more interesting.</p>	<p>Gives an effective presentation speaking loudly and clearly, looking at the audience, able to read report, paper is not in front of face, able to answer questions from audience.</p>	<p>Gives a somewhat effective presentation by not doing 3 of the following: Speaking loudly and clearly enough, looking at the audience, able to read report, paper not in front of face, able to answer questions from audience.</p>	<p>Gives an ineffective presentation by not doing 4 or more of the following: Speaking loudly and clearly enough, looking at the audience, able read report, paper not in front of face, able to answer questions from audience.</p>

Name: _____

Science Rubric for quarter 3 science project: Hawaii's Sandy Shore