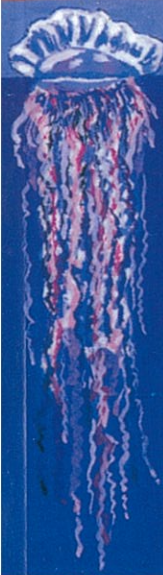


TEACHER'S GUIDE



# ON SANDY SHORES

MARINE SCIENCE ACTIVITIES FOR GRADES 2-4





# Activity 1

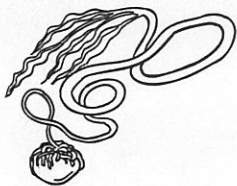
## What You Need

### For the class:

- 1 classroom globe
- 4–6 sheets of chart paper (approximately 27" x 34")
- markers (4–5 colors, wide tip)
- masking tape
- (optional) miscellaneous posters or calendar pictures of beach scenes and/or beach animals

### For each group of 4–6 students:

- 1 plastic tub or dishpan, 12" x 9" x 4"
- enough beach sand to fill each tub 2" deep
- fine-point markers or crayons
- 4–6 sheets of 11" x 17" or 8 1/2" x 11" construction paper (and copy of template on page 25 for simple version of mini-book)
- 4–6 photos, pictures, or drawings of beach organisms or sandy shores with and without marine debris
- pieces of beach drift and marine debris—at least two from each of the following groups:



\_\_\_ evidence of plants:  
driftwood, twigs, leaves,  
seaweed, seaweed holdfasts  
attached to rocks



\_\_\_ evidence of animals:  
shells; feathers; bones; dried  
fish parts; shark, skate, or ray  
egg cases (often called  
"mermaids' purses"); crab  
parts; tracks in the sand



\_\_\_ evidence of humans:  
cans, bottles, candy wrap-  
pers, six pack rings, plastic  
straws, bottle caps, juice  
boxes, fishing line, balloons,  
plastic toys, coins, chicken  
bones



\_\_\_ non-living material:  
rocks, "beach glass" (broken  
glass worn smooth), plastic,  
metal

## Activity 2

### What You Need

#### For the class:

- pictures of sandy beaches and beach organisms from various parts of the world
- 4–6 sheets of chart paper (approximately 27" x 34")
- markers (4–5 colors, wide tip)
- 1 small flat tray, box lid, or shoe box (for teacher demonstration of Sand in the Wind)\*
- (optional) 1 large piece of construction paper or 1 paper plate for Sand Display
- (optional) white glue
- (optional) masking tape
- (optional—but highly recommended) 1–6 student-friendly microscopes (See the "Resources" section for information about where to obtain.)

#### For each group of 6 students:

- $\frac{1}{2}$  cup of sand, any kind (for Sand in the Wind)
- 1 small flat tray, box lid, or shoe box\*
- $\frac{1}{4}$  cup each of 6 different sand samples, each from a different location (See the "Getting Ready" and "Resources" sections for information about where to obtain.)
- 1 large ziplock freezer bag
- 6 small but sturdy ziplock freezer bags
- 3–6 hand lenses (if microscopes not used)
- 2 magnets, each in a separate thin plastic sandwich bag
- 10 3" x 5" index cards (5 white, 5 a dark color)
- white glue
- 3 sheets of paper for Anticipatory Chart
- 1 or more small rock or mineral kits (See the "Getting Ready" and "Resources" sections.)
- 2–3 sets of crayons or colored markers and pencils
- 6 each of both student sheets: Sand on Stage and Expert Group (masters on pages 40 and 42)

\*At the end of Session 3, some teachers do a whole group demonstration of wind's effect on sand, rather than providing one tray for each group of six students. If you decide to do it as a demonstration, you will need only one tray for the entire class.

## Activity 3

### What You Need

#### For the class:

- 9 sheets of chart paper (approximately 27" x 34")
- markers (4–5 colors, wide tips)
- a few real postcards with messages on them
- at least 10 extra 4" x 6" blank index cards

#### For each group of 6 students:

- 7 4" x 6" blank index cards to make into postcards
- 2–3 sets of crayons, fine-point markers, or colored pencils
- 6 regular ball-point pens or pencils
- clear tape to connect the finished index/postcards

## Activity 4

### What You Need

#### For the class:

- 2 sheets of chart paper (approximately 27" x 34")
- crayons, colored pencils, or fine-point markers
- masking tape
- pictures, slides, or video images of sandy beaches (you can use the pictures collected for earlier activities in this guide, adding others as available, including slides and/or videos) The MARE Sandy Beach Slide Show is available for purchase. See "Resources" on page 117.
- large piece of butcher or chart paper (for simulated classroom field trip)
- a 1-gallon bucket half full of rocks the size of walnuts
- a 1-gallon bucket half full of sand
- 2 five-foot long pieces of butcher paper (to be covered with sand for displays)
- white glue
- a 2"- or 3"-wide paint brush to spread glue on butcher paper
- 5 feet of blue mural paper or blue cellophane
- one roll monofilament fishing line
- 50 feet of brown or green butcher or construction paper to make stuffed organisms (or brown or green paint and white paper)
- miscellaneous "junk" for students to design their own beach organisms including, for example: string, styrofoam, crepe paper, marbles, toothpicks, pipe cleaners, black beads, feathers, different colors of tempera paint, chopsticks, brush bristles, straws, variously colored tissue paper, plastic bags, curling ribbon, balloons



- lots of newspaper for stuffing organisms
- 1 box of facial tissues for stuffing organisms
- (*optional*) refrigerator box (instead of one piece of sand-covered butcher paper)

**For each student:**

- 1 piece of construction paper (used to back organism illustrations and make habitat drawings)
- 1 organism illustration (masters begin on page 165)

**For each group of 10–12 students (3 groups total):**

- 1–3 staplers
- 5 or more scissors
- 2–3 small bottles of glue
- masking and clear tape
- 1 lb. of modeling clay in various colors, including purple, white, and red
- 10 paper plates
- construction paper to make organisms (1 pad or 30 large sheets; various colors, including: dark green, light green, brown, black, white, and purple)
- resource books for students to use to research their organism

**For the group that does "Beach Wrack" (materials in addition to above):**

- 50 feet of brown butcher paper or equivalent amount of large sheets of green and brown construction paper
- 4 large (36-gallon) black, green, or brown garbage bags
- 2 cardboard boxes about 1 foot square each to make rocks
- 5–10 green balloons
- 2 rolls brown crepe paper

## Activity 5

### What You Need

**For the class:**

- a picture for each student from magazines or newspapers showing oil-based products (e.g., plastics) or showing oil being used in cars, trucks, motorcycles, tractors, factories, refineries, power plants, farm fields, etc.
- 6–10 sheets of chart paper (approximately 27" x 34")
- markers (several colors, wide tips)
- paper for sketches and Anticipatory Charts
- 1 cup of olive oil or other heavy vegetable oil (for the oil spill)
- 1 teaspoon of dry black tempera paint powder (to color the oil)
- 1 dropper bottle or squeeze bottle (for containing oil)
- 1 plastic dishpan
- a pencil or small cork to plug the hole made in the dishpan

- a pitcher or other container filled with enough water to fill the dishpan three quarters full
- a bucket or similar container to catch water
- a fist-sized rock
- 10–12 items to represent typical beach organisms, such as small rubber or plastic beach animals (crabs, etc.); drift algae, driftwood, plastic aquarium plants; crab molts, shells, etc.
- water-resistant glue (for gluing some of the “organisms” onto the rock)
- half a bucket of sand to form a sloping beach in the dishpan
- (optional) an empty quart and gallon container (see bottom sidebar on page 100)
- (optional) marine sanctuary posters (see “Resources”)
- (optional) oil spill videos such as “When the Spill Hit Homer” (see “Resources”)

## For Fouled Feathers in Session 2

### For each group of 4 students:

- 1 cup of water
- the dropper bottle of prepared oil (see “Getting Ready” #3)
- 1 small bowl
- 4 bird feathers
- 2 hand lenses
- 2–3 sheets of newspaper to cover desks
- (optional) 1 tablespoon dishwashing detergent

## For Cleaning the Oil Spill in Session 4

### For each group of 6 students:

- a ziplock bag with one of each of the following clean-up items:
  - \_\_\_ nylon stocking square (about 2" x 2")
  - \_\_\_ cotton ball
  - \_\_\_ sand (or kitty litter)
  - \_\_\_ hay or straw (a small handful)
  - \_\_\_ feather
  - \_\_\_ fake fur (about 2" x 2")
- a plastic, aluminum, or paper bowl (plastic or aluminum bowls can be reused throughout this activity; paper bowls will also work, but you will need to use a new one each time).
- 10 drops of prepared oil (see “Getting Ready” #3)
- enough water to fill bowl two thirds full 1–2 times
- several paper towels
- 3–5 sheets of newspaper to cover desks
- 6 Oil on the Beach student sheets (masters on pages 106–108)
- 6 pencils