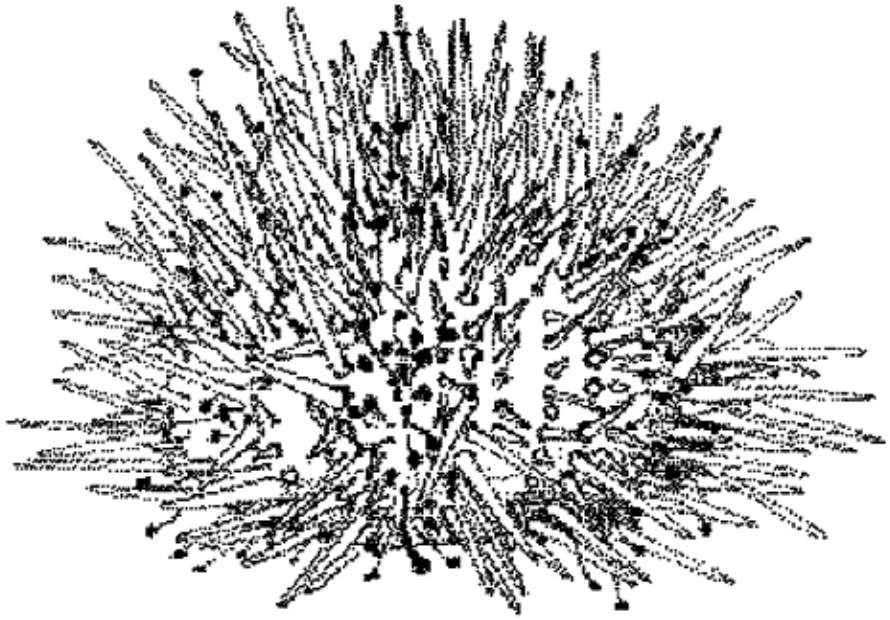
TROUBLE IN THE TIDEPOOLS



For the Teacher

Discipline
People and the Sea

Theme
Systems and Interactions

Key Concept
People visiting the rocky seashore need to follow special rules for their own safety, and for the safety of the plants and animals living there.

Synopsis
Students make a field trip guide to the rocky seashore that can be used for a real field trip or to help another class visit your classroom's rocky shore. Students add evidence of people to their 3-dimensional classroom rocky seashore. The final portion of this activity can only be completed after the Build A Rocky Seashore activity.

Science Process Skills
communicating, comparing, predicting

Social Skills
working in a group, attentive listening, sharing information

Vocabulary
tidepool, high tide, low tide, pollution, tidepool zones, adaptation

Materials

For INTO the activities
• drawing paper and crayons or marking pens

For THROUGH the activities
• six sets of several sheets of drawing paper and crayons or marking pens
• litter (cans, plastic six-pack rings, fishing line, paper, Styrofoam)
• miscellaneous art supplies to build models of people, buckets, rubber boots, hand nets, binoculars, toys (assorted items to represent human activities in the tidepools)
Optional: book binding tape or book rings

For BEYOND the activities
• completed Field Trip Guide (from THROUGH activity)
Optional: additional paper to add to Field Trip Guide

Introduction

At the rocky seashore life is everywhere, covering every surface, in every crack, and in every tidepool. Each inhabitant has its own special niche or role in the seashore neighborhood. The sand tubeworms live in colonies of homemade tubes, mussels live in mid-zone beds attached to rocks on wave-exposed reefs, hermit crabs and fish hunt and scavenge in protected tidepools, anemones hold onto rocks, crabs scamper between crevices, and sea stars amble through the mussel beds looking for food, then back to their home in low zone. Many of the organisms are very long-lived; many are killed only by storms or predators—never by old age. Giant green anemones may live more

than 100 years and sea stars may live to be over 40. The diversity of life here is often astounding to first time visitors.

Rocky seashore organisms live in specific bands, called zones, along the shore according to just how much time they can tolerate being out of water. They also live in a specific orientation to the sun and the waves—under a rock or facing away from the breaking surf. While the rocky seashore organisms are adapted to survive the rigors of crashing waves and changing tides, they cannot survive the careless trampling and collecting by overzealous human visitors. Moving an animal from one place to another, to a different nearby tidepool or even from one side of a rock to the other, can harm or even kill it. The rocky shore can be a dangerous place for people. Simple precautions, however, can insure the safety of your students. For these reasons, specific guidelines should be followed whenever a visit to the rocky seashore is planned.

Students should always be in buddy pairs or trios watching out for each other and giving reminders to "Never Turn Your Back On The Ocean!" Students should walk or crawl, never run or jump, as the rocks are all slippery. Rubber boots help, but even without them, it is better to get your feet wet walking through a pool, then trying to jump from one rock to the next. If rocks are turned over to discover what is living underneath, they must be returned gently and exactly as they were. In this way the animal is not crushed, its home is disturbed as little as possible, and the plants growing on the top of the rock can continue to grow in the sunlight. We recommend no collecting under any circumstances.

Many human activities harm seashore creatures. Walking carelessly can trample delicate animals; a picnic lunch might leave trash behind; pulling an animal off a rock can tear it, and even if you are very careful, many animals cannot re-attach quickly. After animals are examined, they might be left somewhere different from where they were found; fishing line left on the seashore might entangle animals; and turning over rocks and not turning them back, taking animals home (bucket brigades); and oil and other pollution washing off the land onto the rocky seashore can all be fatal.

INTO the Activities

When People Visit the Seashore: Brainstorm and Drawing

Tell the students they are going to plan a field trip to the rocky seashore. If you can actually go there—Great! If not, you can create a field trip guide that other

students can use to plan a field trip to your 3-dimensional classroom rocky seashore.

Brainstorm what the students would like to do when they go to the seashore. Record (with pictures) on large poster paper, or the board, the students' responses, or have each student choose an activity to illustrate and put them together to make a class book of seashore activities.
Brainstorm what activities might harm the seashore creatures (even unintentionally) and add these potentially damaging activities to the class drawing.

My Buddy Says

See the Teaching Strategies section for how to present this activity.

Questions

•What does the rocky seashore look like at high tide?
•What does the rocky seashore look like at low tide?
•What would you like to bring with you on the field trip?
•What could you do on a visit to the seashore at high tide?
•What could you do on a visit to the seashore at low tide?
•What plants and animals could you see on a visit to the rocky seashore?
•What rules should we have to protect the rocky seashore from human visitors?
•What rules should we have to protect ourselves from the dangers of crashing waves and slippery rocks?

THROUGH the Activities

The Field Trip Guide

Arrange the students in six groups with each group given one of the first six of the above questions to talk about. Do not assign the last two questions to a group. Each group will decide on an illustration to accompany the brainstormed ideas from the class generated in My Buddy Says (and any new ideas they have). Have each group share their question and illustration with the class. The teacher can write down text dictated by each group to accompany the illustration in the guide.

Lead a class discussion about what field trip rules the students think are needed for their own safety and for the protection of the plants and animals living on the rocky seashore. Have the class agree on the rules they want in the field trip guide and then assign each small group of students one or two of the rules to illustrate for the guide. (See the INTRODUCTION for ideas on some possible rules).

You may want to make extra copies of the guide to be used by other classes. The guides can be used on the field trip if the pages are laminated and the guide is bound with book binding tape or rings.

People in the 3-Dimensional Tidepools

Have the class decide what should be added to their 3-D rocky seashore (See the Build A Rocky Seashore activity) to represent the activities of people. Some ideas include people with tennis shoes, boots, clip boards, binoculars, hand lenses, and field guides to represent enjoyment and learning; others with buckets, knives, and hand nets for bucket brigades; trash, plastic bags, six-pack rings, Styrofoam, cans, old fishing line, and nets as harmful litter. Assign groups of students the job of creating models of people and/or each of the above items to add to the class rocky seashore. For example, one group makes a girl collecting shells, another group a girl looking through a hand lens, etc.

Compare how the rocky seashore looked before and after adding the human activities. Ask the students which version they like the best. What could they do to help keep the tidepools safe for the organisms living there?

If students are disturbed that your classroom tidepool has been overwhelmed and no longer looks like an inviting place, you can now clean it up. Collect all the litter and make a separate display with it. Perhaps restrict the number of visitors that can be at the seashore at one time, and/or the types of activities that can take place in your tidepool (e.g., remove the collectors and messy picnickers, but leave those exploring, observing and playing).

BEYOND the Activities

Field Trip

Visit the rocky seashore at low tide and be sure to take your field trip guide with you. Look over the entries you made and decide as a class what they would like to add for the 2nd edition. Possible ideas for revisions include:

•What things do you wish you had brought for fun or to investigate the tidepools?
•What other activities could you do on a field trip?
•What plants and animals did you see that weren't listed in your guide? Can you make a page for each organism?
•What new questions do you have?
•Any new rules you would add?

While on your field trip, do a beach cleanup. Sort the materials you find into categories such as recyclables (plastic, cans, and bottles); garbage; potentially

harmful unrecyclable plastics (fishing line and six-pack rings). Put the garbage in a suitable container and recycle what you can.

Classroom Rocky Seashore Field Trip

Distribute the field trip guide to classes that will be visiting your 3-D classroom rocky seashore. Have the students serve as rangers, naturalists, or guides for the classes visiting your rocky seashore. They can point out the changing tides, and the special adaptations the plants and animals have for living in this habitat. They can also explain the rules for the field trip.

Library Research

Use the school or public library, or borrow books from the MARE library, to use in your classroom for the students to look up answers to their questions. Find published field trip guides to compare with your own.