SUGGESTED REFERENCES

- *Marine Education Society of Australia*
  http://www.mesa.edu.au
- *Rocky Shores*
  http://www.env.qld.gov.au/environment/coast/habitats/rs.html
- *The Rocky Shore*
  http://www.sbg.ac.at/ipk/avstudio/pierofun/rovigno/rovigno3.html
- *The Tide Pool Page: Interactive Tour*
  http://web.mit.edu/corrina/tpool/intro.html
- *Tidepool Animals*
  http://library.thinkquest.org/J001418/animals.html
- *What is a Rocky Shore?*
  http://mbgnet.mobot.org/salt/rocky/what.htm
- *Zonation on a Rocky Shore*
  http://ourworld.compuserve.com/homepages/BMLSS/Zones.htm

NATIONAL SCIENCE EDUCATION STANDARDS

Science Content Standards:

K - 4 Characteristics of Organisms
5 - 8 Diversity and Adaptations of Organisms

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SCIENCE SCREEN REPORT® FOR KIDS

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WHERE THE SEA MEETS THE SHORE

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SYNOPSIS

In an environment where the sea pounds the rocky shore, survival is a continuing struggle for the strange and beautiful species that live under very difficult conditions. But, every time the waves roll in, the ocean delivers water and nourishment, and sea creatures here have adapted in a variety of ways to withstand the pressures they encounter daily.

This edition of SCIENCE SCREEN REPORT FOR KIDS explores the intertidal zones of the rocky shore. As dramatic undersea photography illustrates the diversity of life forms, the program discusses the scientific classifications of the sea animals and the varying conditions that support life at different intertidal zones.

CURRICULUM UNITS	RUNNING TIME
■ BIOLOGY	26:15
■ MARINE BIOLOGY	
■ OCEANOGRAPHY	
■ TAXONOMY	
■ ZOOLOGY	

BACKGROUND

Everything living on a rocky shore is nurtured and buffeted by the sea. To analyze how living things adapt to the daily ebb and flow of the tide, scientists divide the shore into levels above the water line. They then study the conditions and the animals that make a particular level or intertidal zone their home.

Most inhabitants of rocky shores live at the low tide, or at the low fringe level. They can also live on rocks that are under water all the time (the low tide level), or in small worlds created by rock pools. However, other diverse groups of plants and animals make their home on the splash level, high tide level, and mid tide level as well.

To explain the diversity of life here, the program looks at sea animals according to phylum. We see a wide variety of arthropods, animals with jointed limbs and an exoskeleton. These include crabs, lobsters, and shrimp, and even barnacles. Students get a close look at rock crabs, swimmer crabs and hermit crabs, and watch the fierce Mantis Shrimp crack open a shell.

Close-up photography also uncovers the world of mollusks, including snails, sea slugs and octopi. Snails are seen eating other snails and leaving trails of scent. The beautiful sea slugs are shown in their many varieties and rich colors. The most complex mollusk, the octopus, is filmed making its way from rock pool to rock pool, eating and changing colors to blend with its environment.

Sea stars and sea urchins are featured, as we watch these beautiful echinoderms move, eat, and defend themselves. The lives of cnidarians, sea creatures with stinging cells, are explored, as the program focuses on the Portuguese man-of-war, sea anemones, and coral.

The competitive nature of life in this environment is also illustrated. The program explains the defenses used by different sea animals to help ensure their survival. This includes camouflage, poison, and tough hides. Some animals, like the Harlequin Shrimp, even learn to cooperate, working in pairs to improve their odds. Interspecies cooperation between arthropods and anemones is also studied.

There is much to appreciate about the vast variety of beautiful creatures that live on rocky shores. Scientists study these animals and plants because there is still much to learn about their diversity and their survival mechanisms that might help us to improve the technologies that make life better for people.

CAREER POSSIBILITIES

- BIOLOGIST
- MARINE BIOLOGIST
- OCEANOGRAPHER
- ZOOLOGIST

VOCABULARY

Annelida: . . . . . a phylum of ringed worms
Arthropod: . . . . . animals having pairs of jointed appendages and an exoskeleton
Camouflage: . . . . . blend into the background
Chordata: . . . . . animals having a dorsal nervous cord
Cnidarian: . . . . . animals having symmetrical, saclike bodies and tentacles that sting
Echinoderm: . . . . . animals with a spiny skin that are radially symmetrical
Exoskeleton: . . . . . a hard outer structure such as a shell that provides protection or support
Gastropod: . . . . . mollusks with one coiled shell or no shell that have a muscular foot for locomotion, and eyes and feelers on the head
High tide level: . . . part of intertidal zone covered by the tide for a few hours each day
Holdfast: . . . . . a suckerlike organ that attaches algae to the rocks
Intertidal zone: . . . the part of the shore that lies between the low and high water lines
Invertebrate: . . . . . any animal without a backbone or spinal column
Limpets: . . . . . many marine shellfish that are gastropods
Low fringe level: . . portion of intertidal zone in which the rocks are under water every time a wave breaks
Low tide level: . . . portion of intertidal zone that is covered with water most of the time
Mantle: . . . . . the soft outer wall lining the shell of mollusks and barnacles
Mid tide level: . . . . part of the rocky shore that is covered by the high tide and uncovered by the low tide for equal amounts of time each day
Mollusk: . . . . . soft-bodied animals, most with a shell, a mantle and a muscular foot
Nutrient: . . . . . a substance that nourishes and promotes growth
Predator: . . . . . an organism that lives by preying on other organisms
Putrid: . . . . . decomposed and foul smelling
Phylum: . . . . . plural, phyla; a large division of an animal kingdom
Rock pool: . . . . . a pool of water deposited by an ebbing tide along a rocky shoreline
Salinity: . . . . . the proportion of salt in a solution
Scavenger: . . . . . any organism that feeds on dead or decaying matter
Splash level: . . . . . part of intertidal zone that becomes wet only by spray and mist
Tides: . . . . . the daily rise and fall of the water in the oceans and other bodies of water
Valve: . . . . . a structure that controls the flow of a fluid

CRITICAL THINKING EXERCISES

1. After showing the video, ask your students the following:
   a| What is a rocky shore?
   b| Into how many levels is the rocky shore divided, and what are the characteristics of each level?
   c| Name some of the animals that live at each of the levels of the rocky shore.
   d| What is the difference between vertebrates and invertebrates?
   e| What are the main groupings of animals represented in the video?
2. Discuss classification of animals and plants and why it is useful.
3. Discuss competition and cooperation between animals. Do humans compete or cooperate? How are we different? How are we the same?
4. Discuss the defenses used by animals such as sea-camouflage, poison, tough skin.
5. Talk about plankton. How is it possible for sea creatures to feed on the young of other sea creatures without wiping them out?
6. Have students make a chart showing the characteristics of different phyla and the animals that belong in each phylum.
7. Have students find out what creatures belong to these groups: arthropods, annelids, and mollusks.