Activities based on the book *In One Tidepool: Crabs, Snails, and Salty Tails* by Anthony D. Fredericks

Birth Announcement

Introduction

In the book *In One Tidepool* by Anthony Fredericks, children are introduced to a variety of creatures that inhabit a single tidepool. In this activity, students will discover the differences and similarities between baby tidepool creatures and their parents.

Materials Needed

- Paper
- Pens & Art Supplies
- *In One Tidepool: Crabs Snails and Salty Tails*
  - by Anthony Fredericks

Key Concepts

- Plants and animals have life cycles.
- A life cycle includes: birth development, adulthood, reproduction, and death.
- Offspring resemble parents.

For standards correlation please see our website.

Procedure

1. Invite each student to choose an animal from *In One Tidepool* to study.
2. Have students research how the offspring of their chosen animals are born and raised.
3. Invite students to draw a picture of their baby animal. Does the baby look like the parents? What features are the same? What features are different? What is the reason for this difference?
4. Encourage students to write a birth announcement modeled off one from a local newspaper for thier baby animal.
5. Post the birth announcements and the baby animal picture on a classroom wall.

Nature Connections

- Before reading this book to students invite them to look at the cover of the book and guess what it is about. Ask students to predict the animals that might be found in a tidepool. What do they know about tidepool animals?

- Invite students to create a sequel to this book, such as one titled “Along the Shore: Critters, Creatures and Other Features.” What other types of animals could the young girl discover - either in another tidepool or along the beach? Invite students to defend their selections.

Additional Resources

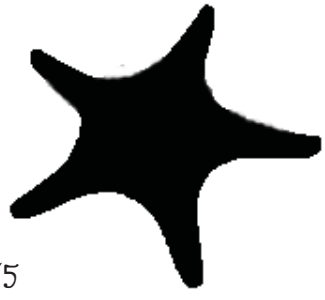
Fun Phytoplankton Facts!

- If you put five million phytoplankton together, they would form a greenish glob the size of a pea.

- Phytoplankton create their own food from sunlight.

- Long before trees or plants grew on Earth, the Earth’s atmosphere was being formed from the oxygen created by phytoplankton.

- All the creatures of the sea depend on phytoplankton for their food.



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Tidepool Critters

Introduction

In the book *In One Tidepool* by Anthony Fredericks, a young girl discovers the amazing creatures in a tidepool. Students who have read the book may wish to observe their own "tidepool critters" in action. Here's an activity that will help them do just that!

Materials Needed

- Brine Shrimp Eggs
- Non-iodized kosher salt
- Two-quart pot
- Water
- Teaspoon
- Medicine Dropper
- Hand lens or Microscope

Key Concepts

- Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life.
- Changes in environments can be natural or influenced by humans.
- Some environmental changes occur slowly, and others occur rapidly.

For standards correlation please see our website.

Procedure

1. Fill the pot with two quarts of water and allow it to sit for two days, stirring it occasionally. (Most city water has chlorine in it which would kill the shrimp. "Aging" for several days allows the chlorine gas to escape from the water.)
2. Mix 5 teaspoons of non-iodized salt with the water until dissolved.
3. Add 1/2 teaspoon of brine shrimp eggs to the salt water and place the pot in a warm spot.
4. Invite students to use the medicine dropper to remove some eggs to observe them with a hand lens or microscope. They may wish to check a drop of water every day. They also may wish to create a series of drawings or illustrations which record the growth of the brine shrimp.
5. The brine shrimp eggs will begin to hatch in about two days. They will continue to grow in the water until they reach their adult stage. Students will be able to watch this growth process over a period of many days.

Nature Connections

- Invite students to discuss the similarities between human dwellings and animal homes. What are some of the things that determine where an animal lives? Are those conditions or features similar to the considerations of humans in selecting a living site? Do animals have more options for living spaces than humans?

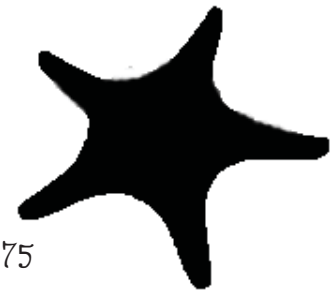
- Encourage students to write a fictitious letter to the girl in the story. What would they like to say to her? What would they like to know about her adventures with the tidepool in the book? What would they tell her about the brine shrimp?

Additional Resources

Brine shrimp are found in salty waters across the globe. One suprising locale is the Great Salt Lake in Utah, where brine shrimp represent a multi-million dollar industry. To find out more about these amazing creatures visit the following websites:

- http://wildlife.utah.gov/gsl/brineshrimp/index.php

- http://ut.water.usgs.gov/greatsaltlake/shrimp/



Activities based on the book *In One Tidepool: Crabs, Snails, and Salty Tails* by Anthony D. Fredericks

Paper Plate Porthole

Introduction

In the book *In One Tidepool: Crabs, Snails, and Salty Tails* author Anthony Fredericks introduces us to a young girl exploring the different creatures that inhabit a single tidepool. In this activitiy, students will be able to create their own tidepool model to peek into!

Materials Needed

- Two paper plates per student
- Scizzors
- Blue cellophane
- Birdseed
- Fish crackers

Key Concepts

- Models can be used in explanations.
- Tools help scientists make better observations, measurements, and equipment for investigations.

For standards correlation please see our website.

Procedure

1. Provide each student with two paper plates.
2. Invite each student to cut out a circular section from one plate and glue blue cellophane over the inside of the hole to create a water effect.
3. Encourage students to draw illustrations of seaweed, various tidepool creatures from *In One Tidepool*, and other underwater items on the face of the uncut paper plate.
4. Students may wish to glue birdseed on the "tidepool floor" to simulate sand or to use fish crackers to provide a 3-dimensional effect.
5. Invite students to glue or staple the two plates together (face to face) to create an imaginaty "porthole" into a tidepool.

Nature Connections

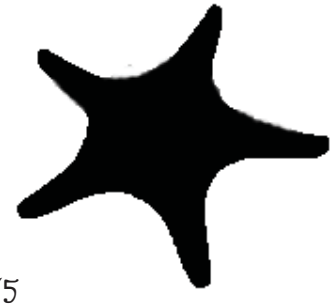
- Invite students to put together an identification guide for various tidepool animals around the world. What types of tidepool creatures can be found in Europe, Africa or South America? How are tidepool animals on the West Coast of the US similar to, or different from, those on the East Coast?

- Invite youngsters to each take on the role of one of the animals in this book. Encourage them to do the necessary library research on the habits and behaviors of their selected animals. Then invite each youngster to write a diary entry - as his or her selected animal might record it - on a day in the life of that species.

Additional Resources

While the Paper Plate Porthole doesn't allow students to actually look into the depths of the ocean, this is a great starting point to talk about scientific inventions which have helped ocean explorers discover the deep. Here are some suggestions from *Earth Heroes: Champions of the Ocean* by Carol Malnor to discuss with students:

- Aqualung
- Bathyscaphe
- Bathysphere
- Diving Saucer
- Jim Suit
- Submersible



Activities based on the book *In One Tidepool: Crabs, Snails, and Salty Tails* by Anthony D. Fredericks

Sea Star Facts

Introduction

In the introduction to *In One Tidepool: Crabs, Snails, and Salty Tails* by Anthony Fredericks, children read a letter from their five-armed buddy, Sea Star. In this activity, students will discover fantastic facts about the sea star - from number of legs, to how tube feet work, and that a sea star eats by inserting its stomach inside the victim and digests it inside its own shell. Yuck!

Materials Needed

- Cardboard
- Pens or Paint
- Construction Paper

Key Concepts

- Each organism has different structures for different functions.
- Plants and animals have life cycles.

For standards correlation please see our website.

Procedure

1. Draw and cut out an oversized outline of a sea star body from stiff cardboard.
2. Invite students to illustrate the sea star in accordance with the illustrations from *In One Tidepool*, other informational books in the library or on the Internet.
3. Encourage students to record information on sea stars that can be written inside the sea star outline.
4. Hang the cardboard sea stars from the ceiling with paperclips or tape to create an underwater theme.

Nature Connections

- Replicate the activity above using cardboard outlines of the other creatures profiled in the tidepool. What are some amazing facts students can locate for each animal - facts that can be listed on each illustrative outline?

- Provide students with some modeling clay (available at any hobby store). Work with them to make small models of each of the animals mentioned in the book.

Additional Resources

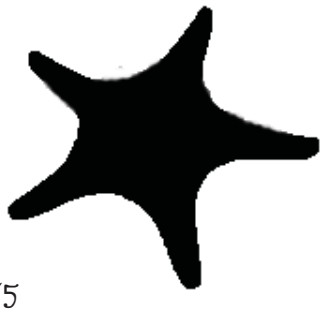
Visit these aquarium websites to find more ocean activities to share with children!

- **Monterey Bay Aquarium**
www.montereybayaquarium.org

- **The Florida Aquarium**
www.flaquarium.org

- **Aquarium of the Pacific**
www.aquariumofpacific.org

- **John G. Shedd Aquarium**
www.sheddaquarium.org



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Wave Action Activity

Introduction

In the book *In One Tidepool* by Anthony Fredericks, children are introduced to a "coastline with pounding waves, Sea-splashed rocks and hidden caves." In this activity, students will explore how tides and waves affect the surface of the earth.

Materials Needed

- White glue
- Playground sand
- Water
- Small coffee can (with lid)
- Cookie sheet

Key Concepts

- The surface of the earth changes.
- Objects in the sky have patterns of movement.

For standards correlation please see our website.

Procedure

1. Mix together six tablespoons of white glue with six tablespoons of sand in a bowl.
2. Using the tablespoon, place small lumps of mixture on a cookie sheet.
3. Place the cookie sheet in a slow over (250 degrees F) and "bake" them for three to four hours.
4. Remove the "rocks" and allow them to cool.
5. Put three or four "rocks" into a coffee can with some water and place the lid securely on top.
6. Shake for four to five minutes and remove the lid.

The rocks will begin to wear down. Some of the "rocks" will be worn down into sand. The action of the "waves" inside the coffee can causes the "rocks" to wear against each other. As a result, they break down into smaller and smaller pieces. On a beach or shoreline this process takes many years, but the result is the same. Rocks become smaller by being tossed against each other by the action of the waves. Over time rocks wear down into sand-like particles which eventually become part of the beach or shoreline.

Nature Connections

- Invite students to log onto the National Wildlife Federation's web site "Keep the Wild Alive." Ask students to write a paper on endangered species in the ocean or along the seashores of the world utilizing this website as a resource.

- Invite students to imagine that they are a tidepool creature and are writing to another animal in another tidepool to convince him or her to visit. What features or attractions should be pointed out in the letter? What is it about that specific tidepool environment that would make it appealing for another creature?

Additional Resources

- Tides are caused by the gravitational pull of the moon.
- A neap tide is a weak tide and occurs during quarter moons.
- The biggest tide swells occur in Spring when the moon, sun and the Earth are all aligned.
- Waves only occur on the surface.
- Waves are caused by friction between the wind and the surface of the water.