Sandy Shores

Concepts
Hawaiian monk seals are an endangered, endemic species that inhabit the waters around the Hawaiian Islands. They spend most of their life in the water but use the sandy shore for having their pups and warming up in the sun.

Standards Addressed
2.3.1
2.5.1

Duration
1 hour

Source Material
MARE Sandy Shores

Vocabulary
Characteristics
Physical
Endangered
Marine Debris
Flippers
Threat
Endemic

Hawaiian Monk Seal Jeopardy

Summary

In this activity students work cooperatively to teach one another about the endangered, endemic Hawaiian monk seal. They will learn about the general and physical characteristics including their adaptations, basic facts about reproduction and pupping, the threats the seals must deal with, and about conservation efforts to protect them. Their learning will be facilitating through the use of a jeopardy game in which teams will work together to demonstrate their understanding and knowledge.

Objectives

- Students will learn about how to cooperate and work as a team.
- Students will be able to discuss the general and physical characteristics of Hawaiian monk seals.
- Students will learn about the special adaptations that monk seals have developed for life in the sea and on land.
- Students will begin to understand how, why, and when monk seals use the sandy shore habitat.
- Students will develop an understanding of the term endangered and how it applies to the Hawaiian monk seal.

Materials (based on having 4 teams)

1 piece of poster board or a white/chalk board
4 sheets of colored paper (a different color for each group/team)
4 popsicle sticks
Game buzzer or bell
Information sheets (these are attached, there are four categories)
Beach bucket

Making Connections

Students may recall personal experiences when they have seen or heard about Hawaiian monk seals. Learning about monk seal characteristics and why they are endangered will provide them with a better appreciation for their existence and need for the sandy shore habitat.

Teacher Prep for Activity

Make the jeopardy game board either on a piece of poster board or the white/chalk board (see the attached example of a game board within the following pages). Make four paddles, one for each team, by cutting out circles of each colored paper and gluing them to the popsicle sticks. Find a bell or game buzzer. Make one copy of each information sheet per group.

Background

Hawaiian monk seals are considered one of the most endangered species (in the U.S.) with only 1200 seals left in their population. They are a type of marine mammal called a pinniped. Hawaiian monk seals are found mostly in the northwestern portion of the Hawaiian island chain. However, there have been more and more sightings of monk seals around the main Hawaiian Islands in recent years. Monk seals spend a large portion of their time swimming in the sea and are able to dive up to 600 feet deep. They can hold their breath for up to 20 minutes. Often they will stay at sea for up to one month swimming and feeding on fish, octopus, eels, and lobsters. Monk seals can grow to be very large in size. Adults can reach a length of 7 feet and a weigh between 400-600 pounds. They are usually dark in color ranging from gray to brown. Hawaiian monk seals have evolved and developed a number of special adaptations to deal with living in the aquatic environment. Some of these adaptations include: streamlined bodies, flipper-like appendages for gliding, thick blubber layer for heat and buoyancy, internalized structures such as reproductive and sensory organs.

Hawaiian monk seals are hunted by sharks, which are their main predators. Disturbance from humans during their time on the sandy shore has also been identified as a key factor in their population decline. This is usually related to changes in behavior during reproduction or pupping, which you will learn more about in the next lesson. However, there are other ways in which humans contribute to their decline such as marine debris, overfishing, and global warming. Hawaiian monk seals can be easily tangled in discarded fishing gear like nets. Their primary food source in the Northwestern Hawaiian Islands is lobster. The lobster fishery in that area has been severely overfished decreasing the amount of food available for the monk seals (the fishing is now being managed). Changes in weather and sea conditions can alter fish spawning and migration patterns, which can also affect their food source. The Hawaiian monk seal is now considered an endangered species and has been granted protection through the National Marine Fisheries Service under the Marine Mammal Protection Act and the Endangered Species Act.

There are set guidelines for what to do or not to do if you come in contact with a Hawaiian monk seal: 1) do not approach seal while on land or in the water, 2) remain 100 feet away at all times, 3) avoid females with pups, 4) report the sighting especially if it appears sick or injured to the National Marine Fisheries Service.

Procedure

1. Tell the students that they will be learning about the basic characteristics of Hawaiian Monk Seals and the physical adaptations they have that allow them to live in the ocean and on the sandy shore.
2. Separate the students in groups (groups of 4 or 5 is best). Each group should get one set of pink, blue, yellow, and green cards. Each color represents a different category of information the students should learn throughout this activity.
   Pink – Basic Information
   Blue – Physical Characteristics and Adaptations
   Yellow – Reproduction or Pupping
   Green – Threats and Conservation
   Each set of cards should consist of four or more informational cards on the topic or category.
3. Explain that each group is responsible for learning all the information on the cards. Suggest that they work together as a team to figure out the best way to learn the information. They may want to split them up and then help the other members of their

team learn them after they have become experts in their category. Another strategy may be to rotate the cards around the group by color. You know your students and can best provide suggestions or assistance with this process.

4. Tell the students they will have 20 minutes to work with their team and learn the information on the cards to the best of their ability. At the end the 20 minutes ask each team to choose a team name that uses one of the new vocabulary words they learned. During this time pass out four different colored paper paddles, one to each group.
5. When team names have been decided write the names in the column on the game board. Also, have the students write their names on their paddles.
6. Explain that they will be playing a game similar to Jeopardy but with a few changes. Tell the students that you have one set of the same cards folded and in your beach bucket. Tell the students you will be coming around the classroom and that each one of them will have a chance to choose a question from the bucket. You will read the question out loud, they can discuss the answer with their team, and the first team to raise their paddle in the air can give their answer. If they do not give the correct answer then another team can have a chance to guess.
7. For each question they answer correctly, their team will be awarded one point. Record the points on the board for each team after each question. (HINT: It may be fun to draw stars on the game board for each point)
8. Any questions that were not answered correctly by any team should be put aside and addressed at the end of the game.
9. After each student has been given the opportunity to choose one card, if there is more left over offer them as bonus cards and make them worth extra points. This may help teams that have been struggling. If they need help, allow them to peek at their cards to help them find the right answer.
10. When there are no cards left, the game is over. Total the points for each teams and announce the winners. Prices and rewards are a good incentive for the students to be encouraged for future games that may be played in the classroom. Maybe even a small prize (sticker??) for those who did not win but played the game well.

Assessments

Game questions answered

Resources

http://www.pbs.org/kqed/oceanadventures/episodes/kure/oceanscience.html
http://www.thewildones.org/Animals/monkseal.html
www.earthtrust.org

Literature Connections

The Hawaiian Monk Seal by Patrick Ching

This book compliments this lesson by providing a review of some of the concepts and information the students learned during their jeopardy game. The story and illustrations will help the students retain what they have learned and provide a means for them to get excited about the next lesson.

Jeopardy Game Score Board

This template can be used to make your own scoreboard or to draw a similar example up on the board. Each team is awarded one point for each correct answer given. Points can be placed in the team row under the category of the question. A point can be a slash, circle, star, etc.

Team Number	General Characteristics	Physical Characteristics	Reproduction & Pups	Threats & Conservation
1	☆			
2				
3			◯	
4				

GENERAL CHARACTERISTICS

HAWAIIAN MONK SEALS ARE PINNIPEDS. THEY ARE AN ENDANGERED SPECIES AND CAN BE FOUND IN THE NORTH WEST HAWAII ISLANDS AND THE MAIN HAWAIIAN ISLANDS.

HAWAIIAN MONK SEALS EAT REEF FISH, EELS, OCTOPUS, AND LOBSTERS.

HAWAIIAN MONK SEALS HAVE SKINNY BODIES, SHORT FLIPPERS, AND SMALL, FLAT HEADS.

HAWAIIAN MONK SEALS ARE ONE OF THE MOST ENDANGERED MARINE MAMMALS. THERE ARE ONLY 1200 LEFT IN THE WORLD.

HAWAIIAN MONK SEALS CAN DIVE UP TO 600 FEET DEEP AND HOLD THEIR BREATH FOR UP TO 20 MINUTES. THEY CAN STAY OUT AT SEA FOR A MONTH STRAIGHT WITHOUT TAKING A BREAK ON LAND.

HAWAIIAN MONK SEALS GROW UP TO 7 FEET LONG AND WEIGH BETWEEN 400 AND 600 POUNDS.

PHYSICAL CHARACTERISTICS & ADAPTATIONS

HAWAIIAN MONK SEALS HAVE SHORT FLIPPERS. ON THE BEACH THEY CANNOT WALK ON THEIR FLIPPERS AT ALL. THEY SCOOT ALONG LIKE AN INCHWORM OR WIGGLE FROM SIDE TO SIDE.

HAWAIIAN MONK SEALS ARE SLOW AND HAVE TO CRAWL ON THEIR BELLIES ON LAND SO THEY LIKE SANDY SHORES OR FLAT ROCK BEACHES TO LIE ON.

HAWAIIAN MONK SEALS USE THEIR HIND FLIPPERS TO SWIM VEY FAST. THEY ONLY USE THEIR FRONT FLIPPERS TO TURN RIGHT OR LEFT.

HAWAIIAN MONK SEALS FLIPPERS ARE LIKE LONG FEET WITH WEBBED TOES. THEY USE THEIR FLIPPERS LIKE PADDLES IN THE WATER TO SWIM VERY FAST.

HAWAIIAN MONK SEALS HAVE EARS THAT ARE SMALL HOLES ON THE SIDE OF THEIR HEADS. THEY HAVE VERY GOOD HEARING THAT THEY USE TO NAVIGATE UNDERWATER WHERE IT IS TOO DARK TO SEE. HAWAIIAN MONK SEALS CAN HEAR BETTER THAN HUMANS.

REPRODUCTION AND PUPS

BABY MONK SEALS ARE CALLED PUPS. PUPS ARE BLACK AND FURRY WHEN THEY ARE BORN. THEY MOLT OR SHED THEIR FUR AND GROW UP TO BE GRAY OR SILVER IN COLOR.

MONK SEAL PUPS ARE BORN ON THE LAND. THE MOTHER MONK SEAL FINDS A SANDY SHORE TO GIVE BIRTH TO HER PUP.

BABY MONK SEALS FEED ON THEIR MOTHER'S MILK FOR SIX WEEKS AFTER THEY ARE BORN. THE MOTHER DOES NOT EAT ANYTHING FOR THE ENTIRE SIX WEEKS.

MONK SEAL PUPS ARE 3 FEET LONG AND WEIGH 30 POUNDS AT BIRTH. BY THE END OF THE SIX WEEKS WITH THEIR MOM, THEY WEIGH CAN WEIGH 150 TO 200 POUNDS.

HUMANS MUST NOT DISTURB A MOTHER MONK SEAL WITH A PUP BECAUSE SHE MAY LEAVE THE PUP AND NEVER RETURN FOR IT. IF THIS HAPPENS THE PUP MAY DIE.

THREATS & CONSERVATION

TIGER SHARKS ARE THE MAIN PREDATORS OF HAWAIIAN MONK SEALS.

OVERFISHING, GETTING CAUGHT IN NETS, AND MARINE DEBRIS ARE THE MOST COMMON THREATS TO MONK SEAL SURVIVAL.

HAWAIIAN MONK SEALS ARE ENDANGERED AND ARE PROVIDED PROTECTION. THEY ARE PROTECTED BY TWO LAWS CALLED THE MARINE MAMMAL PROTECTION ACT AND THE ENDANGERED SPECIES ACT.

WHEN OBSERVING MONK SEALS IN THEIR NATURAL HABITAT YOU SHOULD FOLLOW THE RULES. THE RULES ARE:

1. **ALWAYS STAY 100 FEET AWAY FROM MONK SEALS**
2. **STAY FAR AWAY FROM A MOM AND HER PUP**
3. **DO NOT APPROACH MONK SEALS ON LAND OR IN THE OCEAN**

General Characteristics - PINK

Question:
What two places in the world can we find Hawaiian Monk Seals?

Answer:
The Northwest Hawaiian Islands and Main Hawaiian Islands

Question:
Name two things that Hawaiian Monk Seals eat?

Answer:
Reef fish, Eels, Octopus, and Lobsters

Question:
How many Hawaiian Monk Seals are left in the world?

Answer:
1200

Question:
How deep can Hawaiian Monk Seals dive?

Answer:
600 feet

Question:
How long can they hold their breath?

Answer:
20 minutes

Question:
How much do Hawaiian Monk Seals weigh?

Answer:
400 to 600 pounds

Physical Characteristics – Blue

Question:
How do Hawaiian Monk Seals move on the beach?

Answer:
Scoot along like an inchworm and wiggle from side to side

Question:
Why do Hawaiian Monk Seals like sandy or flat rock beaches?

Answer: Because they have to crawl along on their bellies

Question:
What part of their body do they use like paddles in the water to help them swim fast?

Answer:
Flippers

Question:
Which set of flippers do Hawaiian Monk Seals use to turn right and left? Front or Back?

Answer:
Front

Question:
What do Hawaiian Monk Seal ears look like?

Answer:
Small holes on the side of their head

Question:
Why do Hawaiian Monk Seals need to have good hearing?

Answer:
So, they can navigate underwater where it is dark

Reproduction & Pups – Yellow

Question:
What are baby monk seals called?

Answer:
Pups

Question:
Where do mommy monk seals give birth to their babies?

Answer:
Sandy shore

Question:
How long do mommy monk seals feed the babies milk?

Answer:
6 weeks

Question:
When monk seal pups are born, how long are they and how much do they weigh?

Answer:
3 feet long and 30 pounds

Question:
How much do monk seal pups weigh at the end of the six weeks with their mom?

Answer:
120 to 200 pounds

Question:
What happens when humans disturb a mom and her baby?

Answer:
The mom leaves the pup and the pup dies

Threats & Conservation – Green

Question:
What are the main predators of Hawaiian Monk Seals?

Answer:
Tiger Sharks

Question:
What is one big threat to Hawaiian Monk Seal survival? Name one thing that may hurt them.

Answer:
Overfishing, getting stuck in nets, or tangled in marine debris

Question:
What is one law that protects Hawaiian Monk Seals from harm?

Answer:
Marine Mammal Protection Act or The Endangered Species Act

Question:
When we observe Hawaiian Monk Seals on the sandy shore, how far away should we stay?

Answer:
100 feet

Question:
True or False. We should always approach or go near Hawaiian Monk Seals in the water or on the land.

Answer:
False. We should never approach them

Sandy Shores

Concepts
Hawaiian monk seals can be found throughout the Hawaiian Island chain. However, the majority of the population inhabits the Northwestern Hawaiian Islands. It is here that mating and breeding occurs most frequently due to the presence of uninhabited (human free) sandy shore habitat.

Standards Addressed
2.3.1.
2.5.1

Duration
1 hour

Source Material
PRISM

Vocabulary
Scientific Expedition
Datasheet
Virtual
Research

Monk Seal Research Expedition

Summary

In this activity students will embark on a virtual research expedition to observe Hawaiian monk seals in their natural habitat on the sandy shores of the Northwestern Hawaiian Islands (NWHI). They will become marine scientists and collect data on what they observe during their expedition. The field expedition experience consists of actual video footage of monk seals taken in the NWHI.

Objectives

- Students will learn what it means to be a scientific researcher.
- Students will learn how to collect data and make scientific observations.
- Students will learn about the essential materials needed for field research.
- Students will learn proper behavior when viewing wild animals.

Materials

This activity can be done using one TV or projector connected to a computer or multiple computers set up in viewing stations (you will need 4 computers or viewing stations).
Clipboards
Pencils

Making Connections

Students may recall field trips or other schoolwork that required them to find and collect data. This activity provides them with the necessary information and practice about how to become better data collectors and may spark their interest in becoming future field scientists.

Teacher Prep for Activity

Download the Hawaiian monk seal video footage that accompanies this lesson to the computer(s) you intend on using during the activity. Put the video icons in the middle of the computer screen for easy access. Be sure that sound/audio capabilities are available. Make one copy of the datasheet for each student.

Background

Hawaiian monk seals are born on land every year around spring to summer (usually). The females will find suitable sandy shore habitats to give birth to their single pup. Typically, they avoid

beaches where the water becomes deep quickly to decrease the chance of their pup being attacked by their natural predators, sharks. After birth the mother will spend up to 6 weeks with her pup and never leave the sandy shore. They do not even leave to feed and live on the previous year's stored fat reserve. The mothers are feeding their new pup very rich, fatty mile during this six-week period. At birth, pups are about 3 feet long and weigh around 35 pounds.

Despite their preference for remote beaches for birthing, recent years have seen more frequent use of beaches within the Main Hawaiian Islands being used for this purpose. The main problem with these more accessible beaches is the increased chance of human disturbance. Human disturbance has been shown to decrease reproductive success and pup survival. Often, if humans approach the mother or get too close to the pup, she will abandon the pup and head out to sea. In cases such as this, the pup rarely survives. However, if circumstances are ideal and the mother and pup are healthy, the female will leave her pup on the beach. The pup is then faced with heading out to sea and finding food for itself.

Procedure

Activity 1: Preparing for the Expedition

Explain to the students that today they will be working together in research teams to observe and collect data on the endangered Hawaiian monk seal. Tell the students that they will be working alongside a scientific expert on monk seals. In order to prep for their expedition they need to be sure they have everything they will need to be successful scientists.

1. Ask the students what they think they will need on the expedition to observe Hawaiian monk seals. Ask to the students to raise their hands and give one item that they will need on their trip and explain what they will need or use it for. List all their ideas on the board. Some ideas would be: hats, sunscreen, cameras, science journal or datasheets, pencils and pens, water, etc.
2. Once the list is complete pass out one datasheet, clipboard, and pencil or pen to each student. Explain that they will be working alongside a scientific expert who has been out on many expeditions before today.

Activity 2: The Video Expedition

(This procedure may be slightly different if you are using one viewing screen for the entire class as opposed to rotating viewing stations – you will need to make adjustments accordingly)

1. Tell the students that the research expedition will begin as soon as everyone's eyes are closed and the room is completely silent. Tell them that when they open their eyes, they will have found the Hawaiian monk seals for their study. Explain that there will be more than one monk seal to observe so each group will be visiting four observation stations that are set up around the room.
2. Have each group open their eyes and instruction them to open the video at their observation station by clicking on the icon in the middle of the screen. Tell the students to watch each of the videos at their station very carefully and record all their observations on their datasheet. Encourage them to watch the entire video first and then discuss as a group the types of activities they observed before recording it on the sheet. (HINT: they may need to watch the video(s) more than one time.)

3. Remind them that the most important thing that scientists have to do during their research is record their observations. They can record their observations in words or in pictures but must be able to explain their observations with the other scientists in the classroom at the end.
4. Rotate the groups through the four stations as they finish each one until they have visited all of them.
5. After the students have been to all four stations give them a few minutes to complete their recording process.
6. Once they have finalized their observations have one member of each group come up to the front of the classroom and describe what they learned and observed during their research expedition.

Activity 3: Sentence Strips

1. Pass out two large strips of paper and colored marker to each group.
2. Tell each group to write a sentence on each strip of paper. Each sentence strip should be about "What we know about Hawaiian monk seals." Explain that they should get the information from their observations today or from what they learned while playing jeopardy in the previous lesson. They should think about what the most interesting or important new thing they learned about monk seals was.
3. Tape the sentence strips on the board and have student volunteers read each one out loud to the group.
4. To end the session, congratulate the students on a successful research expedition. Tell them they collected excellent scientific data and made careful observations. This is an important step in becoming a good scientific researcher!

Assessments

Datasheets complete with good scientific observations
"What we know" sentence strips completed with correct information

Resources

www.earthtrust.org
www.pbs.org/kqed/oceanadventures/eopisodes/kure/oceanscience.html
www.kidsplanet.org

STUDENT NAME: _____

MONK SEAL RESEARCH EXPEDITION DATASHEET



Directions: Make and record observations at each of the three video stations. Write down as much information as possible about what you observed in each video. Answer the two questions, color, and name your monk seal at station four.

STATION 1: Hawaiian Monk Seal Overview
At this station I observed _____

_____

_____

_____

_____ .

STATION 2: Hawaiian Monk Seals in their Habitat
At this station I observed _____

_____

_____

_____

_____.

STATION 3: Hawaiian Monk Seal Reproduction and Pups
At this station I observed _____

_____

_____

_____

_____.