

9. SHARING OUR HOME & PROTECTING EVERYONE'S NEEDS

This Lesson's Goals

- » *To develop awareness that the Earth has natural limits and introduce the concept of carrying capacity*
- » *To become informed about ways in which the capacity to support life is reduced by human activities*
- » *To explore what may happen when plant or animal populations have limited access to their habitat*
- » *To promote the desire to nurture and protect life on Earth*
- » *To recognize our responsibility for the changes we make in our environment*

Agenda

Posting a simple agenda can help both the teachers and the children stay on track.

- 1. Opening:** Silent Worship, Song, Scripture
- 2. Activity:** Global Size Comparison
- 3. Small Group Activities**
- 4. Closing**
- 5. Sharing of Take-Home Materials**

Opening [10 min.]

Use your familiar pattern to begin your class. Gather for silent worship.

Song

Three New Verses to "It's a Small World"

Original song © by Sherman and Sherman, with additional words by Mary Hallesy and the 1976 LeConte Lodge Summer Staff, in *Manure, Meadows, and Milkshakes*.

There is just so much water and so much air
And just so much land and food everywhere
There's so much we must share,
oh it's time we're aware
It's a small world after all. [Chorus]

On this spaceship earth we are all a crew
And we've got to learn what we must do
It is time we're aware we use more than
our share
It's a small world after all. [Chorus]

Scripture

Genesis 9: 1-3, 8-14

God blessed Noah and his sons and said to them, "Be fruitful and increase, and fill the earth. The fear and dread of you shall fall upon all wild animals on earth, on all birds of heaven, on everything that moves upon the ground and all the fish in the sea; they are given into your hands. Every creature that lives and moves shall be food for you; I give you them all, as I once I gave you all green plants.

* * *

God spoke with Noah and to his children with him: "I now make my covenant with you and with your descendants after you, and with every living creature that is with you, all the birds and cattle, all the wild animals with you on earth, all that have come out of the ark.

I will make my covenant with you: never again shall all living creatures be destroyed by the waters of the flood, never again shall there be a flood to lay waste the earth."

God said, "This is the sign of the covenant which I establish between myself and you and every living creature with you, to endless generations:

My bow I set in the cloud
sign of the covenant
between myself and earth.
When I cloud the sky over the earth,
the bow shall be seen in the cloud.

Scripture Discussion

- » What do you understand from the Scripture?
- » Do the animals fear and dread us? Why or why not?
- » What kind of agreement is a covenant? Some say this covenant with Noah gives humans the right to control everything in the world. What do you think?
- » If God gave us plants and animals what is our responsibility?
- » God didn't save just Noah alone or just farm animals. Why?
- » What is needed after a major flood, fire, hurricane, or other disaster?
- » What does "fill the Earth" mean? Is the Earth full now?
- » How do we know the right amount of everything to fill the Earth the best way?
- » How much life can Earth support?

Global Size Comparison [5-10]

Materials: Bring a twelve-inch-diameter globe, two sizes of marbles, and some pinto beans.

Ask several children to show, with their hands, how far up from the surface of the globe they think the air goes. Hold your finger not quite touching the globe. That is how high the breathable atmosphere goes.

Bring out a big "boulder" marble. In proportion to the globe, it represents all of the

Earth's atmosphere up to a height where it is no longer breathable. Pass it around.

Then show a regular-size blue marble to represent all the water all the oceans, lakes, and ice caps – all the blue stuff on the globe! The average ocean depth isn't much more than the paint on the surface of the globe.

A pinto bean represents all the soil down to bedrock. Most of that land cannot be cultivated to grow crops. The spots on the pinto bean may show the amount of arable land. Pass it around. What does this show about the nature of our planet? How much extra do we have of the stuff needed for life here?

The point to make is that what looks like abundant life to us is a very fragile shell about the surface of the Earth. Though similar in set-up to the opening of *Water, Water Everywhere* (Chapter 6), the focus here is on the relative size of the biosphere.

Small Group Activities:

Select from the activities, giving consideration to the age and size of your group. Some of these activities are best done out of doors or in a large room.

1. Animal Collage [10-15]

Materials: Scissors, Wildlife magazines, 3 x 5 card, glue or paste

Have the children cut five animal pictures from wildlife magazines, looking for many different kinds. Give each child a card and some glue or paste. Have each fit as many animals as possible onto the small paper.

Ask what happens when there are too many animals or people in a small space.

2. Carrying Capacity: Three Activities [15-20]

The expression "carrying capacity" was first used to understand how much cows or sheep a specific amount of land could "carry" before the soil was degraded and unusable. We use carrying capacity also to refer to the number of animals a habitat can support over a given period of time.

The greater the access to the four elements of habitat (water, food, shelter, nesting area), the larger the carrying capacity of an area. To protect other creatures, we must protect their access to all four elements of a healthy habitat. In addition, the amount of life the soil can support is its carrying capacity. A big tree can't grow in a small flower

Snack Ideas

Serve snacks that have "carrying capacity" – sticks carrying peanut butter [\[allergy alert\]](#), olives stuffed with pimento, crackers with cheese, chips carrying dip or salsa. Carry your snack to another room or outside. We can expand our personal carrying capacity with trays, boxes, backpacks, etc. What expands the carrying capacity of the Earth?

pot. Sometimes the soil gets tired and the land needs rest. Crops won't grow as well as before. The Earth needs time for worms and microbes to enrich the soil.

1. Wagon Capacity

Materials: A child's wagon

Load the wagon with children. How many can be pulled at once? Does it matter who pulls? Does the surface of the ground make a difference? What happens when there are too many riders? How many cats could ride in the wagon at the same time? Remember that the nature of cats is different from that of children. How many dogs, depending on the breed, could ride? Dogs and cats? How many animals can live on the same piece of land? What are the determining factors?

2. The Bathtub Metaphor

Ideally an outdoor activity. **Materials:** Wide bowl, access to water

Ask the students to consider that the bowl represents the amount of greenhouse gases that the atmosphere can absorb before destabilizing the climate. Ask how much water it can hold before overflowing. Fill the bowl $\frac{3}{4}$ full. How much more can we add? Fill it to the edge of the bowl. What happens when more than it can hold is added? How is the bowl like the atmosphere around planet Earth? What will happen to this bowl if we keep adding more pollution or greenhouse gases?



3. People Power

Materials: Objects of different weight

Ask the children to carry some heavy things, such as chairs or boxes of books, and then some big light things like a feather comforter. How long or how far can they carry things? What helps? [Rest, organization, load sharing, hand trucks or dollies]

How much can each child carry alone? Can two people carry more separately or together?

3. Sharing the Earth for All Creatures [10-15]

All ecosystems function very well when undisturbed. They maintain a balance. People often make changes, both large and small that disturb that balance. Usually it is because we are expanding –building roads, taking down forests for pasturing animals, building new towns and neighborhoods on farm and open land. When we make these changes, there are direct impacts on the animals and plants that live there.

Our roads and buildings break ecosystems into smaller chunks. This is called habitat fragmentation.

When habitats are fragmented, in order to survive, the animals and plants in that habitat must learn to adapt. Often their food source is limited, or their nesting areas are gone. The big risk is that some plants and animals cannot adapt.

Play “Musical Remnants”

Materials: Hula hoops or large sheets of paper, markers or crayons

Lay some hoops out in different spots around the room e.g. Tell the students that each hoop represents a different habitat type and explain what these are. Alternatively you could use large sheets of paper and ask the students to draw a different habitat type on each sheet. Examples include: pond/pond edge, forest/forest edge, desert, prairie, etc.

Assign each student a role as a different type of animal ensuring that there is at least one student representing each major category (mammals, birds, fish, reptiles, amphibians and invertebrates).

Discuss the different habitat needs of the animals and ask the students to head to the hoop that will make the most suitable home for them. Let them know that it is okay for them to live in the same hoop.

Explain that the game you are about to play is similar to musical chairs. Each time the music stops you will remove one hoop and the animals that live there will have to find a new hoop home to move to. Encourage them to discuss what is happening as you go.

- » *Is there enough habitat for all of you?*
- » *Is there another type of habitat that you can move to?*
- » *Why not?*
- » *What do you think will happen to the animals with no habitat left?*
- » *When you are finished, play a second round. This time assign a small number of students as predators.*
- » *What happens as the habitat shrinks and predators and prey are confined to the same small area?"*
- » *What would people need to do differently to make sure there was habitat for all living things?*

Adapted from Wildlife Corridors for Kids.

4. New Neighbors [5-10]

Materials: Have pictures, information, and art materials so the children can draw pictures of birds making homes among human settlements

Around the world, many species of birds have adapted to the buildings in human settlements. Ask what wild birds the children know of that nest or roost on things built by people. [storks, swallows, wrens, pigeons, owls, hawks]

Why do you think they use human settlements now? Are there any living around the building where you meet? What benefits do the birds get from living here?

With older children, extend the discussion to other animals [such as spiders, raccoons, or mice] that have found a niche in which to live amid human cities. Consider how people and animals fit into a variety of niches in order to thrive. Evolution may be seen more as a collaboration among those who fit in and less as the survival of the fittest.

Closing [10-15]

Consider making a bird feeder as a closing activity.

Hand out copies of the [Take-Home Page, How Many Fit?](#)

Encourage the children to get their families to talk about the possible ways they can increase the carrying capacity of their home through a garden, bird feeder, etc.

Close with each child sharing: "Today I learned..." and enter into silent worship.

Bird Feeder [10-15]

Materials: Quart milk or juice cartons, peanut butter, birdseed, scissors, little sticks or dowels, tape or staples, coat hangers



Open up a one-quart milk or juice carton and fill it with birdseed mixed with peanut butter [allergy alert]. The children will enjoy stirring it together. This may be a little messy. Cut holes in the side and provide perches with little sticks. Reclose the top with tape or staples. Suspend it with a coat hanger in a place where birds will feel safe to come and eat. Step back and wait quietly to see if birds come. It may take a while. Consider it a time of worship.

How might the birdfeeder increase the carrying capacity of the neighborhood?

How Many Fit?

Look at these places; think about the usual number of people (or animals) there. What would be the ideal or best number? How many would make it crowded?

PLACE	usual number	ideal number	too crowded
Our family's car			
Our kitchen or dining room table			
Our dining table, expanded for a holiday			
The bathroom at home			
My school classroom			
Worship at our church or meeting			
Cats or dogs at our house			
My bicycle or skateboard			
In front of where I live			
In back of where I live			

- » *Were these questions easy or hard for you to answer?*
- » *When is it good to be a bit crowded?*
- » *Where would you rather be alone?*
- » *What places feel too crowded most of the time?*