



## Lesson Plan 100106

### How Big is Your Footprint? (Target: Grades 3-6)

#### Time Requirements:

1. 50-minutes during science or art time

#### Objectives:

1. Create awareness for ways in which the “Western” lifestyle negatively impacts the Earth
2. Create awareness for alternatives to our current ways of living, eating and traveling
3. Challenge students to talk with their parents or other grown-ups about how we can make simple changes that can add up to big differences for the future

#### Materials:

1. “How Big is Your Footprint?” lesson and activity handouts (included with this lesson)
2. Pencil or pen

#### Methods:

1. (10 minutes) Distribute “How Big is Your Footprint?” Lesson Handout, Activity Page, and Footprint Quiz to students. Read aloud the information in the lesson handout.
2. (15 minutes) Ask the students to complete the maze and answer the questions on the Activity Page.
3. (20 minutes) Discussion: review students’ answers to questions on the Activity Page, review Footprint Quiz.
4. Challenge students to complete Footprint Quiz with their parents, then bring completed quiz to class on the following day.

#### Lesson Information: How Big is Your Footprint?

##### What is an “Ecological Footprint?”

Every person has an impact on the Earth’s natural resources. The measure of that impact has been expressed as an “Eco-Footprint” or “Ecological Footprint.” Key categories for measuring one’s footprint include the type of food we eat, the homes in which we live, the modes of transportation we use, how we conserve energy, and the general habits we’ve established for purchasing and discarding consumables. Here are the most significant:

##### The Food We Eat: Consider the Hamburger

A hamburger is an example of how a single food item can have a dramatic effect on our overall Ecological Footprint. Although nothing is wrong with an occasional hamburger, the amount of factory-raised beef consumed, and the production methods used by factory farms is not sustainable. There are many reasons why the organic salad or even other types of protein alternatives are more environmentally friendly than an average hamburger:

- Farmers do not use pesticides to grow organic produce. Therefore, they are less harmful to the soil.
- Organic ingredients are usually (but not always) locally grown and therefore do not rely on the nonenvironmentally friendly

transportation system.

- Factory-fed beef cows are not environmentally friendly. They require massive amounts of natural resources such as water, grain, wheat, and grass, and produce a lot of solid waste which, in such large quantities, is a major pollutant.

- Factory farmed cows are often treated inhumanely.

#### Housing

Although big apartment housing complexes are larger than single family homes, the fact that many more people and families live in the same building rather than each having their own home make them more environmentally friendly.

- More people living in a smaller space require less energy for electricity, climate control, and cooking.

- More people living in a smaller space allows for less dependency on traveling long distances for school, shopping, and visiting friends and family.

- Smaller homes require fewer natural resources and materials to construct.

#### Transportation

- Transportation sources that are efficient and carry the most people using the least amount of natural resources are the most environmentally friendly.

- Bicycles are the most efficient and the most environmentally friendly mode of transportation. They use no natural resources and carry people great distances with little effort.

- Cars –especially large cars–are not efficient, and therefore not environmentally friendly. They use a lot of natural resources and fuel to provide for the needs of a small number of people.

- Busses and other forms of public transportation are environmentally friendly–especially if they use natural gas or hybrid technology.

Although busses are larger than cars, they carry many more people at one time and decrease congestion and the need for new roads.

#### Consumption

Reduce, reuse, recycle!

- Recycling both limits the amount of garbage in landfills and reduces the amount of natural resources required to make new materials such as glass, paper, plastic, and metal.

- Buying products that use little packaging or natural resources is environmentally friendly.

- Wasting energy, water, and other natural resources is not sustainable behavior.

- Sustainable behavior includes purchasing efficient light bulbs, low flow toilets and showerheads, energy efficient cars, and organic foods..

Some of this lesson information is adapted from various web sites, including:

- <http://www.kidsfootprint.org>, <http://www.myfootprint.org>,  
<http://www.RedefiningProgress.org>, <http://www.earthday.net>  
<http://www.mec.ca/apps/ecocalc/ecocalc.jsp>  
<http://www.sbs.utexas.edu/resource/ecofpmt/calculate.htm>  
<http://www.bestfootforward.com/footprintlife.htm>

#### What's your Ecological Footprint?

Our footprint is not just the outline of our shoe – it's also the mark that we leave behind when we're walking through the forest, running on the beach, or buying our groceries. Every action has a reaction, and sometimes these can be far reaching, impacting other areas around the globe.

#### What IS an Ecological Footprint?

It's a measurement of human impact on nature. People consume what nature produces for survival. Because of this, we all have an impact on our planet. As long as we don't take more from the Earth than it can produce, we're not doing too badly. We depend on the Earth for food, shelter and energy. For this we need resources: productive land to grow our food, build our homes, produce our energy, and to store our wastes. We expect that the Earth will be able to meet our "need" for these resources, but are we expecting

too much? The average American requires 12.4 hectares of productive Earth in order to support their lifestyle, and the average Canadian requires 7.8 hectares; nature provides only 2 hectares of bio-productive space for every person in the world.

#### How much can nature provide?

We use 30 percent more than the Earth can sustain. North Americans have the largest footprint - if everyone in the world had a footprint our size, we would require two more planets the size of Earth to meet our "needs".

#### So, How BIG is your footprint?

There are a number of ways we can figure this out. People have created surveys and interactive calculators to help us estimate of the size of our ecological footprint. Today, you will be taking home an Ecological Footprint Survey to complete with your parents or other grown-ups at home.

### What can grown-ups do to reduce your Ecological Footprint?

#### The Food You Eat

- Buy and eat fewer processed foods. Processed foods have been frozen, canned, or packaged before coming to your table
- Buy organic if you can, or locally-grown produce.
- Plant a garden (by doing this you cut down on pollution from shipping, fertilizers, packaging, etc.)
- Bring your own bags to the store (canvas, or reuse plastic/paper).
- Instead of drinking a juice box, eat a piece of fruit
- Make a salad
- Pop your own popcorn instead of microwave popcorn
- Eat a baked potato instead of potatoes in a box (au gratin, potato flakes, etc.)
- Eat less meat. You can get protein from other sources
- Eat at home instead of ordering out



#### Transportation

- Walk or ride your bike to school.
- Carpool when where you are going is too far to walk.
- Take public transportation.



#### Creating Less Waste

- Buy products with the least amount of packaging possible (buy in bulk or in big boxes).
- Ask for no bag when you buy something you can carry without one.
- Recycle as much as possible (and purchase recycled products when you can).
- Mend things that are broken (don't throw them away).
- Donate old items to someone who can use them.
- Buy items that can be reused (not disposable).
- Reuse lunch sacks and baggies (or use a lunch box and Tupperware).
- Reuse water bottles (and recycle them too!).

#### Energy / Electricity

- Make sure all lights are off when not in use.
- Turn the air conditioner and heater off at night.
- Get outside! Outside activities are fun and take less energy.
- Keep doors and windows shut when heating or cooling the house/car.



#### Saving Water

- Turn off the faucet while brushing your teeth.
- Don't pour toxics down storm drains.
- Put a brick in your toilet tank. It saves thousands of gallons of water a year.
- Run only full loads in your dishwasher or washing machine.



## Activity Page 1

### How Big is Your Footprint?

**MATCHING:** Using the word list below, write the letter (A-N) in the blank next to its clue (1-14).

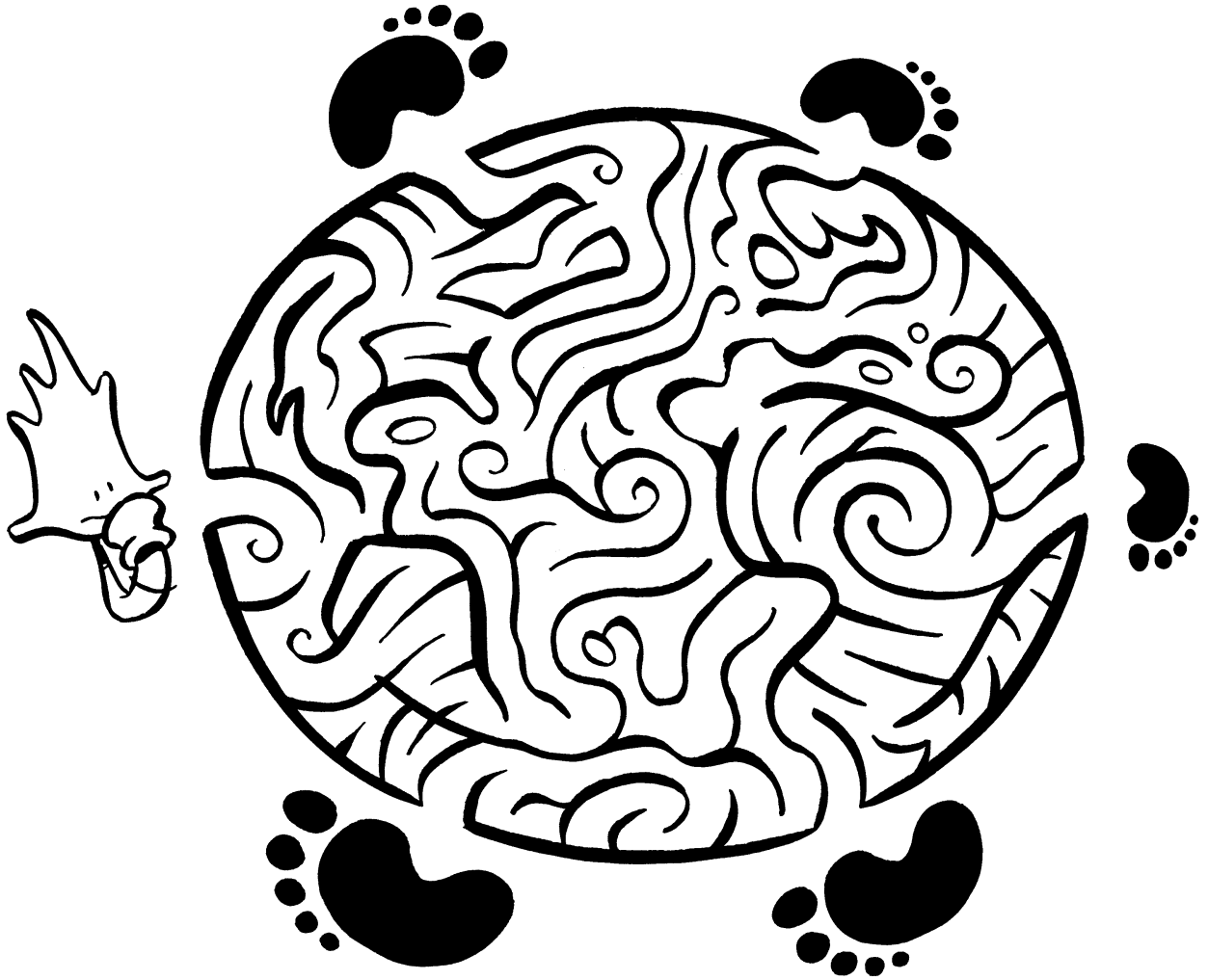
- |                |               |            |           |
|----------------|---------------|------------|-----------|
| A. Sun         | E. Reuse      | I. Bicycle | M. Reduce |
| B. Fresh Water | F. Wind Power | J. Humans  | N. Air    |
| C. Paper       | G. Trees      | K. Coal    |           |
| D. Earth Day   | H. Recycle    | L. Oil     |           |

- \_\_\_\_\_ 1. Another name for using fewer resources. One of the "three Rs".
- \_\_\_\_\_ 2. To use something more than once. One of the "three Rs".
- \_\_\_\_\_ 3. When one thing is made from another. One of the "three Rs".
- \_\_\_\_\_ 4. The day designated for celebrating the environment, April 22.
- \_\_\_\_\_ 5. The Earth's closest star gives off more clean energy than people currently use.
- \_\_\_\_\_ 6. A clean form of energy from nature that is captured in giant fans.
- \_\_\_\_\_ 7. This fossil fuel looks like a dirty rock, is widely used, and gives off the most pollution.
- \_\_\_\_\_ 8. This fossil fuel is a liquid used for cars. It comes from dinosaurs and other organisms that lived millions of years ago.
- \_\_\_\_\_ 9. The cleanest form of transportation.
- \_\_\_\_\_ 10. People and animals need this to live. We swim in it, but it is not found in the ocean.
- \_\_\_\_\_ 11. These take in the carbon dioxide you breathe out and put oxygen back into the air.
- \_\_\_\_\_ 12. It is made from trees and can be recycled.
- \_\_\_\_\_ 13. The animal that has the biggest impact on the Earth's resources.
- \_\_\_\_\_ 14. We breathe it and we need to keep it clean!

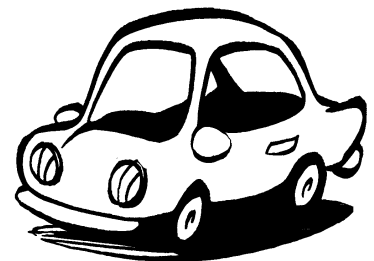
**WORD SEARCH:** Find each word in the Word Search Puzzle below.  
Remember, the words can be backwards, forewords, or even up and down!

- |                       |             |
|-----------------------|-------------|
| C F R E S H W A T E R | Sun         |
| O E E E A R T H D A Y | Fresh Water |
| A L R E W O P D N I W | Paper       |
| L C A E C U D E R R S | Earth Day   |
| S Y B I C Y C L E N R | Reuse       |
| E C R E P A P T A E H | Wind Power  |
| E E N D A Y I M U S E | Trees       |
| R R V U E R U S L I O | Recycle     |
| T Y D A S H E Y A I R | Bicycle     |
|                       | Humans      |
|                       | Coal        |
|                       | Oil         |
|                       | Reduce      |
|                       | Air         |

MAZE: Guide Rustle through the maze to find the smallest footprint



THINK WHILE YOU COLOR: Which of these do you think has the most effect on your footprint? After you have finished coloring, circle the one you think effects your footprint most, then visit: <http://www.thirddirection.com/conference-teaches-living-with-less> (The answer is in the fourth paragraph!)





## Eco-Footprint Quiz

### How Big is Your Footprint?

Circle the best answer for each question, then total your score and compare it to the rating below

- |   |   |   |   |
|---|---|---|---|
| 1. How much meat do you eat?  |   | 9. How big is your house?   |   |
| a. Vegan (no meat)  | 0 | a. Small (1-3 rooms)  | 1 |
| b. Vegetarian (no meat, but eggs or dairy)  | 1 | b. Medium (4-7 rooms)   | 2 |
| c. Meat 1 to 4 times a week   | 2 | c. Large (over 7 rooms)   | 3 |
| d. Meat almost every day  | 3 | 10. What power source does your house have?   |   |
| 2. How much food is wasted in your home?  |   | a. Some or all solar/wind power   | 1 |
| a. Most is eaten  | 1 | b. Only electricity or gas  | 2 |
| b. Sometimes waste of rotten/uneaten food   | 2 | c. Wood/coal/paraffin   | 3 |
| c. Uneaten food thrown away most days   | 3 | 11. How much electricity does your household use?   |   |
| 3. Where do you get most of your food?  |   | a. Up to \$25 per month   | 1 |
| a. Grown at home or from local markets with no packaging                            | 1 | b. \$25 - \$50 per month  | 2 |
| b. Grown in your county, bought at local markets, in plastic packaging              | 2 | c. over 50 per month  | 3 |
| c. Mostly shipped-in food from supermarket, packaged in various plastics and papers | 3 | 12. How many of these waterwise activities do you do?   |   |
| 4. How many miles do you travel in a week?  |   | Use low-flow valve in shower head; recycle used water on garden, garden with indigenous plants, have a low-capacity toilet; have no swimming pool |   |
| a. 0 miles  | 0 | a. All 5 of these   | 1 |
| b. less than 50 miles per week  | 1 | b. 3-4 of these   | 2 |
| c. 50 to 150 miles per week   | 2 | c. 0-2 of these   | 3 |
| d. over 150 miles per week  | 3 | 13. Do you recycle paper, aluminum cans, plastic, glass and make compost?   |   |
| 5. Do you bicycle, walk or use animal power to get around?                          |   | a. All 5 of these   | 1 |
| a. All the time   | 0 | b. 3-4 of these   | 2 |
| b. Most of the time   | 1 | c. 0-2 of these   | 3 |
| c. Sometimes  | 2 | 14. How many children do you have?  |   |
| d. Seldom or never  | 3 | a. None   | 1 |
| 6. Do you own a car?  |   | b. One  | 2 |
| a. No   | 1 | c. Two or more  | 3 |
| b. One small car (4-cylinder)   | 2 |   |   |
| c. Large car, SUV, truck or more than 1 car   | 3 |   |   |
| 7. How often do you drive in a car with someone else, rather than alone?            |   |   |   |
| a. Always   | 0 |   |   |
| b. Very often   | 1 |   |   |
| c. Occasionally   | 2 |   |   |
| d. Almost never   | 3 |   |   |
| 8. Approximately how many hours do you spend flying each year?                      |   |   |   |
| a. Never fly  | 0 |   |   |
| b. Less than 25 hours   | 1 |   |   |
| c. 25-100 hours   | 2 |   |   |
| d. More than 100 hours  | 3 |   |   |

#### Scoring:

Less than 16 points: Lightfoot! You tread softly on our Earth and have a small footprint compared to others in North America. Wish there were more like you around!

17 to 30 points: Bigfoot! You have a medium footprint and your presence on Earth is damaging. The natural environment cannot support very many people like you.

Over 30 points: Godzilla!! Lighten up! If everyone had footprints like this, we would need several more Earths to have enough resources to meet all these demands!

#### A Comparison:

Worldwide, there are 4.5 biologically productive acres per person; however, the average ecological footprint in the U.S. is 24 acres per person!