CHICAGO BOTANIC GARDEN

Activity 4.1: Are You Bigfoot?

Grades 5 – 6

Description: Students will calculate their ecological footprint and determine how many earths would be needed if everyone on Earth lived the same lifestyle as they do. By doing this, students will begin to understand the individual impacts they personally have on the environment. Students will then discuss ways that they can lower their ecological footprint.

Materials:
- Student handout
- Computers with internet access
- Pens or pencils

Total Time: One 45-minute class period

National Science Education Standards:
F3.b Human activities can also introduce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal.
F4.d Important personal and social decisions are made based on perceptions of benefits and risks.

AAAS Benchmarks:
5D/H3 Human beings are part of Earth's ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems.
3C/M7 Societies influence what aspects of technology are developed and how these are used. People control technology (as well as science) and are responsible for its effects.
4B/H9 Although Earth has a great capacity to absorb and recycle materials naturally, ecosystems have only a finite capacity to withstand change without experiencing major ecological alterations that may also have adverse effects on human activities.
4B/H6 …The burning of fossil fuels in the last century has increased the amount of greenhouse gases in the atmosphere, which has contributed to Earth's warming.

Guiding Questions
- What is an ecological footprint?
- How do you calculate an ecological footprint?
- What is my ecological footprint?
- How can I make changes to reduce the ecological resources I use every day?

Assessment(s)
- Are You Bigfoot worksheet

Pre-Activity
Choose the footprint calculator you will use and become familiar with how it works. There are several online footprint calculators you may consider for use with this unit.
- **Zerofootprint:** http://www.zerofootprintkids.com/kids_home.aspx This calculator was made specifically for children, so questions are geared toward students' knowledge of their

household. In addition to the ecological footprint questions, students are also asked to check boxes for goals to reduce their footprint as they are answering questions. You will need to set up an account for your school to use this site. We suggest creating one student account, with a name and password, for your school, and then have all your students use the same login, rather than creating separate log-ins for each student. You may choose to set up the computers ahead of time, with the website open and already logged in to save time.

- **Earth Day Network:** http://www.earthday.net/footprint/flash.html This site is comprehensive and illustrates student choices visually. Students customize an avatar, and a virtual neighborhood is build based on student choices. There are two options for calculating their footprint. For each question there are options for a general answer, or a more detailed specific answer. Depending on students' level of knowledge about their household, they may answer generally or provide additional detail. At the end they receive a display of how many earths they would need, as well as a breakdown of the amounts that different parts of their lives require (food, mobility, services, etc.).

Procedure:

1. Ask students: "What is your footprint? What do you think your **ecological footprint** is?" Help students come up with a definition for ecological footprint. If you have already covered habitats, have students think about what a habitat is for animals. Ask students: "What is your habitat? What do you need to live? Where does all that "stuff" come from?" The ecological footprint calculation includes how much land is needed to sustain one's lifestyle. Ask students what type of land is needed for their life (e.g.: the land they live on, where their food comes from, where their energy comes from, etc.).

2. Choose one of the above websites (or another footprint calculator) and have students calculate their ecological footprint. Walk students through the questions so they have an understanding of what each question is asking.

3. Have students answer the questions on the handout "Are You Bigfoot? Calculating your Ecological Footprint."

4. When students have completed the questions individually, have them discuss their answers in groups. Have each group report back to class on Questions 3 and 5 (What decisions do you make that contribute most to your ecological footprint? What are some ways to reduce your own ecological footprint?).

5. Handouts should be saved in student portfolios.

Extensions: A math extension could be added for students to calculate the number of miles they ride to and from school in a year. They would have to determine the distance between their home and school, and multiply that by the number of days/weeks/months in the school year. Students could them determine how much CO_2 they are responsible for when commuting to school, or how much gasoline is used in traveling (they will have to find or look up the gas mileage of a school bus or the model of car they use to travel to school).

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Name:_____ **Date:**_____ **Room:** _____

Are you Bigfoot? Calculating Your Ecological Footprint

1. What is an ecological footprint?

2. Draw the number of worlds that would be needed if everyone lived like you.

3. Explain what your drawing of worlds in Question 2 means in words.

4. What decisions do you make that contribute most to your ecological footprint?

5. How do you think your footprint compares to kids in other countries?

6. What are some ways to reduce your own ecological footprint?

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TEACHER ANSWER KEY:

Are You Bigfoot?

1. What is an ecological footprint?

2. Draw the number of worlds that would be needed if everyone lived like you.

3. Explain what your drawing of worlds in Question 2 means in words.

4. What decisions do you make that contribute most to your ecological footprint?

5. How do you think your footprint compares to kids in other countries?

6. What are some ways to reduce your own ecological footprint?

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