



United Nations
Educational, Scientific and
Cultural Organization



**MOUNT
ARROWSMITH**
BIOSPHERE REGION

BIOSPHERE BOOKLETS

Lesson Plans & Activities

ECOLOGICAL FOOTPRINTS

SUMMARY/OVERVIEW

Grades:
1-2

Prep Time:
10 Minutes

**Learning
Environment:**
Indoor

**Total Lesson
Length:**
2 hours

DESCRIPTION:

This activity booklet has students begin considering what an ecological footprint is and how they can either increase it or decrease it through their day-to-day activities. The three activities in this booklet provide opportunities for students and educators to engage with the topic in a variety of ways.

CURRICULUM EXPECTATIONS:

Questioning and predicting:

- Demonstrate curiosity about the natural world
- Make simple predictions about familiar objects and events
- Ask questions about familiar objects and events

Processing and analyzing data and information:

- Experience and interpret the local environment
- Compare observations with predictions through discussion
- Identify simple patterns and connections

BACKGROUND:

An ecological footprint is a measure that estimates the land and sea area needed to provide renewable resources that a population consumes and to absorb the waste they generate. Essentially, it is the supply and demand of nature. It is important to understand one's ecological footprint as it allows for a personal reflection of how our behaviors impact surroundings and natural resources.

LESSON PLAN

TIME	ACTIVITY	LOCATION	MATERIALS
30 Mins	1. Introduction	Indoor	Printed worksheet
30 Mins	2. Changing your footprint	Indoor	Printed worksheet
45 Mins	3. Drawing your footprint	Indoor	Printed worksheet
15 Mins	4. Conclusion	Indoor	N/A

TIME	ACTIVITY	LOCATION	MATERIALS
30 Mins	1. Introduction	Indoor	Printed worksheet

Introduction:

What is an ecological footprint?

GOAL: Introduce the concept of ecological footprints and allow students to make predictions about their consumption habits.

PREPARATION: Print activity worksheet (page 3).

LESSON PLAN:

INTRODUCTION: Initial Discussion

1. Ask students if they know what an ecological footprint is. Explain that it is the total area of land required to **support** an activity or population. It includes environmental impacts such as water use, crop and grazing land for food production, resource production, and waste.
2. Show students the video below, titled “The Ecological Footprint Explained” by Moovly (1:20 mins) <https://www.youtube.com/watch?v=fACkb2u1ULY>
3. Introduce and explain the following concepts to students (from the global footprint network).
 - a. **Earth Overshoot Day**
 - i. Canada’s Earth Overshoot Day in 2022 was March 13. This means that if everyone continues to consume and utilize earth’s resources the same way, by March 13 they will have used as much from nature as earth can renew for the entire year.
 - b. **Global Hectares (Gha)**
 - i. Are biologically productive hectares (about 10,000 square meters, or about 2.5 times the size of a football field). Currently the planet has about 1.7 global hectares available per person (all of earth’s productive area divided into the earth’s human population).
 - c. **Planets Needed**
 - i. A calculator activity that shows how many planets would be needed to support a lifestyle if everyone lived like “you”. The number will reflect how many global hectares and planets are needed to support consumption habits.
 - d. **Carbon Footprint**
 - i. Is the amount of CO₂ emissions in tons that a person creates per year

HANDS ON: What goes into your ecological footprint?

4. Hand out the worksheet below (page 3).
5. Have students complete the worksheet individually, in a group, or as a class.
6. Once completed, ask students to share their answers with the class or in groups.

What makes your ecological footprint?

Which of the phrases below do you think have an impact on your footprint? Draw a line from the phrases (that apply to you) to the footprint in the center.

Having a
shower/bath

Driving your car
instead of riding
your bike

Leaving lights on
when not in the room

Leaving electronics
running when not
in use



Throwing stuff
out in the
garbage

Eating meat
everyday

Travelling
using a plane,
train, or car

Heating your
house using
fossil fuels

Not composting
your food scraps

Leaving water
running when
not using it

Buying from large
box stores rather
than local stores

Forgetting to
recycle things
that can be

TIME
30 Mins

ACTIVITY
2. Changing your footprint

LOCATION
Indoor

MATERIALS
Printed worksheet

How to grow or shrink your footprint

GOAL: For students to consider which activities and habits can help reduce their ecological footprint.

PREPARATION: Print worksheet (page 5).

LESSON PLAN:

1. Have students complete the worksheet below. They can do this individually, in groups, or as a class.
2. The goal is for students to start thinking about daily activities and how they impact their ecological footprint.

CONTENT:

An ecological footprint is a measure that estimates the land and sea area needed to provide renewable resources that a population consumes and to absorb the waste they generate. Therefore, the larger one's footprint is, the larger your demand on nature and natural resources. Conversely, a smaller footprint means a smaller demand on resources. Our day-to-day activities have an effect on our footprint, and by choosing more sustainable actions (walking instead of driving), we can reduce our ecological footprint.



Changing your ecological footprint

The larger footprint (left) represents a larger ecological footprint, and the smaller footprint (right) represents a smaller ecological footprint. The phrases in the middle of the page are activities that can either increase or decrease your footprint. Use arrows to connect the phrases to the correct foot. Think about how they affect your ecological footprint, do they increase or decrease your footprint?



Driving in a car, when you could ride your bike instead

Eating meat in every meal

Having shorter baths/showers

Including more vegetables and meat alternatives in your meal

Using solar panels to create electricity

Leaving the heat on in your house when you're not home

Driving an electric car

Taking trips by an airplane frequently

Shopping at local stores and buying local products



TIME	ACTIVITY	LOCATION	MATERIALS
45 Mins	3. Draw your own footprint	Indoor	Printed worksheet

Draw your own ecological footprint

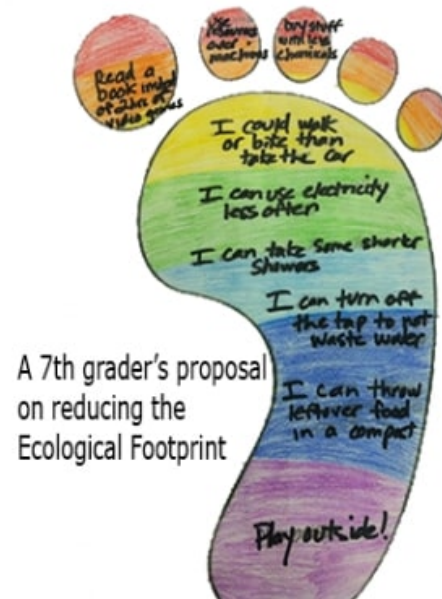
GOAL: Have students continue thinking about what impacts their ecological footprint

PREPARATION: Gather blank paper, pencils and markers for students. Alternatively, print page 7.

LESSON PLAN:

1. Have students trace their own foot onto a blank piece of paper.
2. Students can use their traced footprint to represent their ecological footprint, and use it as a template to help visualize what goes into their ecological footprint.
3. Ask students to fill in their footprint with words and images about things that contribute to their ecological footprint or things that can reduce their ecological footprint.
 - a. Some categories to focus on: food, shelter, mobility, goods, and services.
4. If preferred, teachers can print out the pre-made foot diagram on page 7.

Here are a couple examples of student drawn ecological footprints:



A 7th grader's proposal on reducing the Ecological Footprint

FOOD

SHELTER

MOBILITY

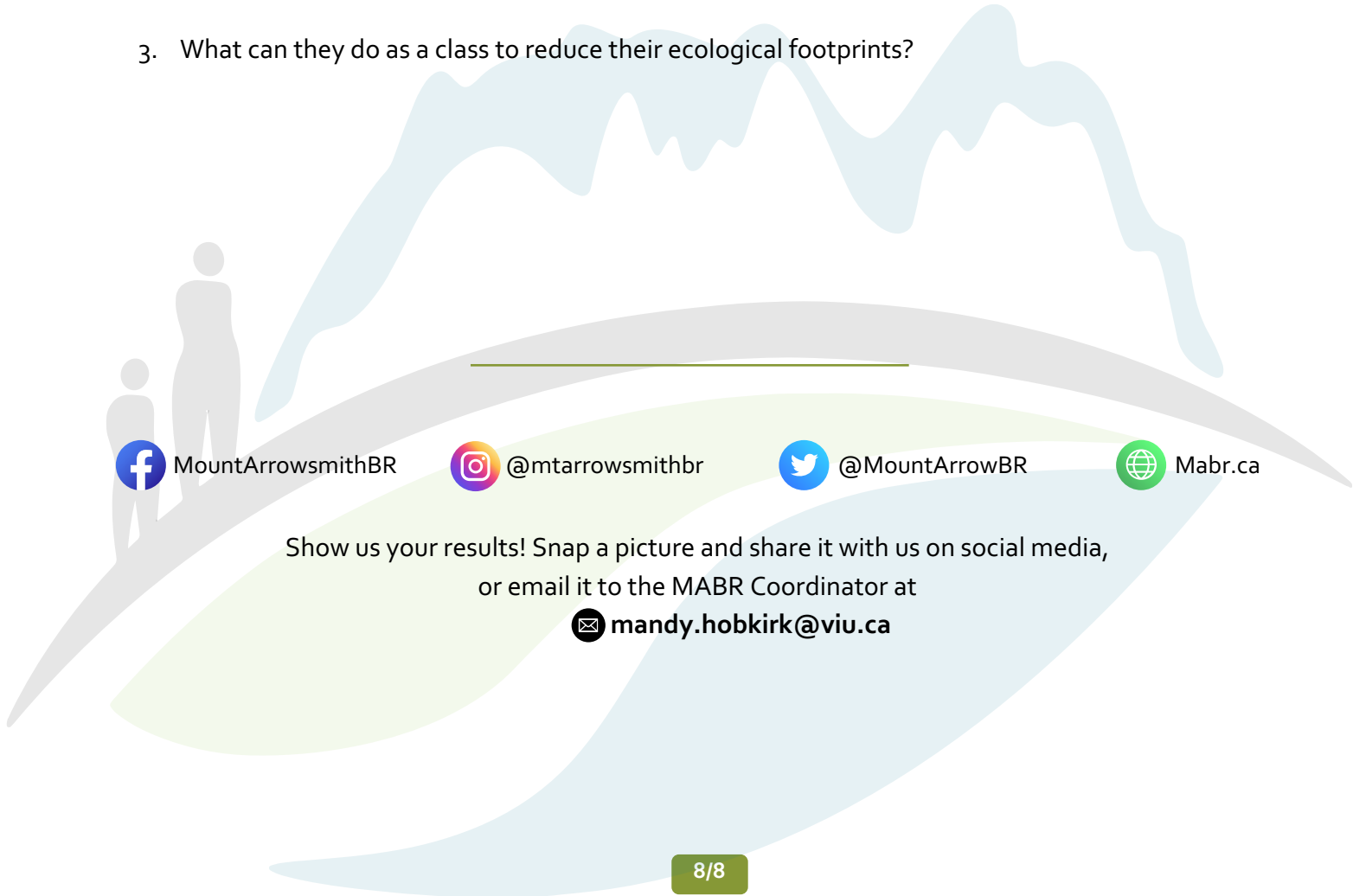
GOODS

SERVICES

TIME	ACTIVITY	LOCATION	MATERIALS
15 Mins	4. Conclusion	Indoor	N/A

Conclusion

1. Have students discuss some of the ideas they came up with to reduce their ecological footprints. Some examples could include:
 - Walk to school
 - Eat more vegetables and less meat
 - Turn off lights when not in use
 - Shower instead of bath
 - Recycle more
 - Plant a garden
 - Play outside instead of using electronics
2. Ask students if this activity has made them think differently about how they will consume earth's resources.
3. What can they do as a class to reduce their ecological footprints?



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Show us your results! Snap a picture and share it with us on social media,
or email it to the MABR Coordinator at



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