

Anglophone School District - North



Grade 4 Science - Unit Lesson Guide

Habitats

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The Aim of Science Education - Scientific Literacy

The aim of science education in the Atlantic Provinces is to develop scientific literacy.

Scientific Literacy is an evolving combination of the science-related attitudes, skills, and knowledge students need to develop inquiry, problem-solving, and decision-making abilities; to become lifelong learners; and to maintain a sense of wonder about the world around them. To develop scientific literacy, students require diverse learning experiences that provide opportunities to explore, analyze, evaluate, synthesize, appreciate, and understand the interrelationships among science, technology, society, and the environment.

The Three Processes of Scientific Literacy

An individual can be considered Scientifically Literate when he/she is familiar with, and able to engage in, three processes: Inquiry, problem solving, and decision making.

Inquiry

Scientific inquiry involves posing questions and developing explanation for phenomena. While there is a general agreement that there is no such thing as the scientific method, students require certain skills to participate in the activities of science. Skills such as questioning, observing, inferring, predicting, measuring, hypothesizing, classifying, designing experiments, collecting data, analysing data, and interpreting data are fundamental to engaging science. These activities provide students with opportunities to understand and practise the process of theory development in science and the nature of science.

Problem Solving

The process of problem solving involves seeking solutions to human problems. It consists of proposing, creating, and testing prototypes, products, and techniques to determine the best solution to a given problem.

Decision Making

The process of decision making involves determining what we, as citizens, should do in a particular context or in response to a given situation. Decision-making situations are important to their own right, and they also provide a relevant context for engaging in scientific inquiry and/or problem solving.

Science Assessment Overview

Science is a hybrid term that houses different disciplines such as: Physics, Chemistry, Biology, Environmental Studies, Engineering, Math, etc. Given this broad spectrum, it is not realistic that we can paint science assessment with a single brush in terms of probes that work for every science activity. However, regardless of school subject, let alone science, the frequency of assessment should be unbalanced with formative assessment occupying 80% of practise and summative with the remaining 20%.

80% Formative - 20% Summative

Formative Assessment

Formative assessment is a range of formal and informal assessment procedures employed by teachers during their learning process in order to modify teaching and learning activities to improve student attainment. It typically involves qualitative feedback (rather than scores) for both students and teacher that focuses on the detail of content and performance. Feedback is the central function of formative assessment. It typically involves a focus on the detailed content of what is being learnt.

Science Formative Assessment falls into 2 distinct categories, and they are divided about how feedback is given. Please be aware that an activity could be informal or formal, it is the purpose of the task that determines purpose.

Informal Formative

Informal Formative Science Assessment acts as a monitoring probe and is distinct because it is not graded.

Formal Formative

Formal Formative Science Assessment provides specific feedback to students, the teachers corresponds via anecdotal feedback, rubrics, and written responses to offer progress to student attainment.

Summative Assessment

Summative assessment seeks to monitor educational outcomes, often for the purposes of external accountability. Usually occurring at the end of a learning unit and determines if the content being taught was retained.

Habitats

Focus and Context

The focuses in this unit are inquiry and decision-making. While exploring and investigating plants and animals that live in local habitats, students should realize the impact they can have on the environment. How do they treat the organisms they encounter? Do they ensure they do not leave behind any garbage? What small steps can they take in their local area to ensure habitats are preserved and protected? Their investigation of a habitat and the impact they can have on it create a meaningful context for the unit.



Unit Instructional Overview

Habitats and Population*	Collecting Scientific Information using Models of Natural Habitats	Behavioural and Structural Features of Animals that Enable them to Survive in their Habitat	Structural Features of Plants that Enable them to Survive in their Habitat	Food Chains	The Impact of Technology on Natural Habitats
Access Prior Knowledge	Activity - Model of Habitat	How do Animals Survive in their Habitats	How do Plants Survive in their Habitats	Building Food Chains	Local Habitat Issues
1st Cycle Activity - Honing Observation Skills				Understanding Links on the Food Chain	
2nd Cycle Activity - Observing Living Things					
3rd Cycle Activity - Making a Habitat for Mealworms					
4th Cycle Activity - Suitable Habitat					

* - EECD Grade 4 Inquiry package - available at <https://portal.nbed.nb.ca/tr/lr/k-8Science/Pages/default.aspx>

Habitats - Curriculum Outcomes

Habitats and Populations *	104-6 Use the terms habitats, population, and community in appropriate contexts	204-1 Identify questions to investigate about the types of plants and/or animals at a local habitat, and the conditions under which they live	204-6 Identify various methods for finding answers to questions related to the local habitat, and select one that is appropriate	205-5, 302-1 Make observations and collect information related to local habitats and their associated populations of plants and animals
	108-6, 108-3 Identify their own and their families' impact on habitats, and describe how personal actions help conserve habitats	206-2 Compile and display the data collected during the habitat study using tallies, tables, and/or bar graphs	104-4, 206-3 Present the procedures used during the habitat study and the results obtained, compare these results with those of other class members, recognizing that results may vary, and suggest explanations for these discrepancies	
Collecting Scientific Information using Models of Natural Habitats	205-10, 205-5 Construct and/or maintain a model of a natural habitat, and use it to make observations and collect information about organisms in the habitat		206-6 Suggest improvements to the model of the natural habitat to make it more realistic and habitable for organisms	
Behavioural and Structural Features of Animals that Enable them to Survive in their Habitat	302-2, 300-1 Compare the external features and behavioural patterns of various animals that relate these features to their ability to meet their basic needs in their natural habitats	205-1 Carry out procedures to ensure a fair test that explores how appearance affects visibility	204-3 Predict the structural and/or behavioural adaptations needed for an animal to live in a particular habitat, either real or imagined	
Structural Features of Plants that Enable them to Survive in their Habitat	300-2, 104-6 Using appropriate terminology to compare the structural features of plants that enable them to thrive in different kinds of places	106-4 Describe how scientists' knowledge of plant growth has led to agricultural innovations and techniques	105-1 Describe current investigations of local or regional habitat issues	
Food Chains	302-3, 104-6, 206-1 Classify organisms according to their role in a food chain and draw a diagram to illustrate the food chain	301-1 Predict how to removal of a plant or animal population affect the rest of the community	301-2 Relate habitat loss to the endangerment or extinction of plants and animals	
The Impact of Technology on Natural Habitats	108-1 Identify examples of positive and negative effects of technological developments on natural habitats			

Habitats

Strand - Habitats and Populations

General Curriculum Outcomes	Specific Curriculum Outcomes
104-6 Demonstrate that specific terminology is used in science and technology contexts	104-6 Use the terms habitat, population, and community in appropriate contexts
204-1 Propose questions to investigate and practical problems to solve	204-1 Identify questions to investigate about the types of plants and/or animals at a local habitat, and the conditions under which they live
204-6 Identify various methods for finding answers to given questions as well as solutions to given problems, and ultimately select one that is appropriate	204-6 Identify various methods for finding answers to questions related to the local habitat, and select one approach that is appropriate
205-5 Make observations and collect information relevant to a given question or problem	205-5, 302-1 Make observations and collect information related to local habitats and their associated populations of plants and animals
302-1 Identify a variety of local and regional habitats and their associated populations of plants and animals	
108-6 Identify their own and their family's impact on natural resources	108-6, 108-3 Identify their own and their families' impact on habitats, and describe how personal actions help conserve habitats
108-3 Describe how personal actions help conserve natural resources and care for living things and their habitats	
206-2 Compile and display data, by hand or by computer, in a variety of formats including frequency tallies, tables, and bar graphs	206-2 Compile and display data collected during the habitat study using tallies, tables, and/or bar graphs
104-4 Compare the results of their investigations to those of others and recognize results may vary	104-4, 206-3 Present the procedures used during their habitat study and the results obtained, compare these results with those of other class members, recognizing that results may vary, and suggest explanations for these discrepancies
206-3 Identify and suggest explanations for patterns and discrepancies in data	

Science Resource Package: Grade 4

Habitats:
Habitats and Populations

New Brunswick Department of Education

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i Background Information

Prior Knowledge:

Students are not expected to have specific prior knowledge related to this unit. Students may know:

- Local animals and the type of location in which they can be found
- Other animals and where they can be found (arctic, jungle, desert)
- Plants are food for some animals; some animals eat other animals

Common Misconceptions:

- Plants don't eat
- Plants are not as important as animals
- You can find most plants and animals anywhere in the world
- Plant and animal behaviour can be explained in "human" terms such as different species "getting along"

Did You Know?

There is a tendency for plants and animals to be given human qualities. This is called anthropomorphism. When dealing with habitats, care should be taken to avoid using human "relationships" as a parallel for ecological relationships, which are not emotional or negotiated.

A **habitat** is the area in which an organism has access to everything it needs to live. Some needs to consider include food, water, shelter, space, and temperature.

A forest may be a habitat for a moose, whereas a beaver pond may be the habitat for a trout, and a dead tree trunk may be the habitat for a fungus, or a beetle. Habitat size can vary hugely.

A **population** is a group of individual organisms of the same kind (or species) living in the same area. They are potentially able to interact with each other. Another group of organisms of that same species that live in a separate area are considered to be a different population.

A **community** is a group of organisms of different kinds (or species) that live in the same area and are potentially able to interact with each other. For example, a pond community would include all the types of fish, insects, frogs, plants, and so on that live in the same pond.

Background information on life in the Polar Regions can be found at:

<http://beyondpenguins.nsd.org/>

Background information on conditions in a variety of ecosystems can be found at:

<http://www.mbgnet.net/>

The following websites have many ideas that could be used as extension activities:

<http://www.greenhour.org/section/about/info/announcement>

<http://www.ecoliteracy.org/publications/getting-started.html>

<http://www.fs.fed.us/wildflowers/teacher/>

Instructional Plan

Access Prior Knowledge

Ask students to draw and label a picture of where they live and everything they need to meet their needs. Have students share their drawings with a partner and ask them to add anything they may have missed.

At this point, the “needs” may include things unnecessary to live such as TV and games. Accept all answers as the list will be revisited after each cycle and can be refined at that point.

On chart paper, create a master list of human needs. If there is disagreement among students, have them explain their reasoning. Items can be marked with a question mark if consensus cannot be reached. The [discussion tips](#) on page 21-22 may be helpful.


Next, ask students to choose a living thing they know about and to draw and label where that living thing lives and how it meets its needs. Do a think-pair-share to have students discuss and add to their drawings after talking to their partners.

Students could also describe/write about their pictures.

Each pair shares their list of “needs” with the class. A master list of living organism needs can be generated. *What is the same or different between the human needs and the living organism needs?*

✓ **Assessment:**

Note the concepts and misconceptions students are expressing. You will need to know these to plan effective questions for subsequent activities and discussions so that students will examine and adjust their alternate conceptions.

 **Post [student versions of curricular outcomes](#) on chart paper (see page 24). Inform students that these outcomes will be addressed over the next portion of the unit. Point out to students which outcomes are being addressed in each activity.**

1st Cycle

Curriculum Outcomes

- 104-4 Compare the results of their investigations to those of others and recognize results may vary
- 108-3 Describe how personal actions help conserve natural resources and care for living things and their habitats
- 204-6 Identify various methods for finding answers to given questions as well as solutions to given problems, and ultimately select one that is appropriate
- 205-5 Make observations and collect information relevant to a given question or problem
- 206-2 Compile and display data, by hand or by computer, in a variety of formats including frequency tallies, tables, and bar graphs
- 206-3 Identify and suggest explanations for patterns and discrepancies in data
- 207-2 Communicate procedures and results, using lists, notes in point form, sentences, charts, graphs, drawings, and oral language

Activity: Honing Observations Skills

Materials:

- Bags of random items (10-20 items/group of students)
- Towel or box to cover items
- Paper
- Pencils
- Clipboards

Part 1 – In the classroom

The purpose of this activity is to have students refine their observation skills so they will be more aware and more patient when they go outside to make observations in nature. This activity focuses on sight since it is the sense most heavily relied upon for gathering information.

Have students work in groups of 3-4. Provide each group with a paper bag of items. Bags can contain any 10-20 items that can be easily identified by students. When you say, “Go” have the students dump the contents of the bag onto a desk/floor and try to remember as many of the items as they can. After 15 seconds, tell them to cover the objects. Make your way around the room and remove one item from each group. The object can be placed back in the bag so the students can check to see if they are right. Now have them uncover their objects and see if they can figure out which one is missing. Similar objects with multiple colours or

Cross-curricular links:

ELA

2. Students will be expected to:
 - a) Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - c) Give and follow instructions and respond to questions and directions
- 3a. Students will be expected to:
Show basic courtesies of conversation in group interactions

sizes can be included in the bags to see if students can identify the colour or size of the objects once they have been covered.

For the groups who were able to identify the missing object, ask if they did something special to help remember what was on the table. Ask the students to try to come up with a system to remember what they observed. This could include writing, dividing the desk into sections and assigning a section to each person where they try to remember all of the items in “their” section, remembering the first letter of each object, etc. This activity can be repeated by having the groups switch bags or made more difficult by having more objects that are very close in appearance such as 15 paperclips of different colours or buttons of similar shapes and sizes.

Part 2 - Outside the classroom

The purpose of this activity is two-fold:

- To have them find a way to record a huge amount of information in a way that they will be able to recall and share with the class later.
- To have them pay close attention to what is happening around them.

Tell students they are going on a little walk to practice their observation skills. *Every time we go somewhere, we have an impact on our environment – birds stop singing, cars stop to let us cross the road, friends wave and call out to us, etc. So we need to be very careful about the impact we have on our surroundings.*

A review of the senses and how to make careful observations should be done prior to taking the students on a walk. The discussion should include having to be very quiet if their observations of living things are going to be accurate, and reminders to use all of their senses. Students may need to be reminded that living things include both animals and plants.

Take the students on a walk through the school or outside in the schoolyard. The students’ job is to observe and record as many living things as they can and the activity that living thing is doing. They can use their senses of sight, smell and hearing to gather information. Make a few observations yourself that students would not likely make to add variety to the discussion.

Cross-curricular links:

ELA

2. Students will be expected to:

- b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
- c) Give and follow instructions and respond to questions and directions

3a. Students will be expected to:

Show basic courtesies of conversation in group interactions

8b. Experiment with different ways of making their own notes

Social Studies

4.3.3 Examine the relationship between humans and the physical environment.

✓ **Assessment:**

During the student activity, make notes on outcomes (or parts of outcomes) you observe being addressed. Process skill outcomes are part of the curriculum and should be assessed. Using the observation chart or the checklist (see pages 29 to 31) on a clipboard may be helpful to you. Develop your own code for quick notes.

A suggested code:

✓ for observed and appropriate,
WD with difficulty,
A absent.

This chart may be used on multiple days, using a different coloured pen or pencil each day and putting the date in the corner. You may not have a symbol or note for every child every day. Some teachers like to focus on a group or two each time. However you choose to make note of your observations, you will always have a sense of who you need to take more notice of and who might need extra support. The information will also help you when it is reporting time.

Reflection: Class Discussion

How did the students record what they observed on their walk? (Most will likely have made a list, but see if anyone had other ideas).

If, while reviewing what the students found, you keep getting the same answers, ask the students whether they can think of an easier way to keep track of the same answers so it doesn't take as long to record. (The most likely way will be to start a tally sheet but students may have other useful ideas). Display different strategies.

What other materials may be helpful in observing and/or recording? (camera, voice recorder).

Did anyone record living things that they heard but did not see? (for example a bird chirping or students playing in the gym)

Did anyone record living things that they smelled but did not see? (for example a certain type of flower, someone baking in the cafeteria/staff room)

Why doesn't everyone have the same list? This could be due to them looking in another direction, being busy recording something else, maybe being at the back of the line and missing something or not thinking it was worth recording.

What effect do you think you had on what you observed and the environment? (Did their friends wave to them? Did they track dirt into the hallway? Did they disturb a class?)

Cross-curricular links:

ELA

1. Students will be expected to:
 - a) Explore and discuss their thoughts, ideas, and experiences and consider those of their peers
 - b) Ask and respond to questions to clarify information and explore solutions to problems
 - c) Explain personal opinions and respond to questions and opinions of others
2. Students will be expected to:
 - a) Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - c) Give and follow instructions and respond to questions and directions
- 3a. Students will be expected to:
Show basic courtesies of conversation in group interactions

How could you have lessened your impact on the environment?

Revisit the Accessing Prior Knowledge activity (page 5). Ask: *Are there any items that should be added to or revised? Is there other information we could add?* Remind your class about respectful discussion. The [discussion tips](#) on pages 21-22 may be helpful.

✓ **Assessment:**

Were the students collecting information and recording it in a manner that could be easily recalled and shared with others?

 **Reflection: Journaling**

To make careful observations, and to make a very small impact on the environment I am observing, I need to do these things:

Cross-curricular links:

ELA

8. Students will be expected to:

- a) Use strategies in writing and other ways of representing to
 - formulate questions and organize ideas
 - record experiences

✓ **Assessment:**

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective.

Note whether students can identify ways to lessen their impact on the area where they are making observations.

2nd Cycle

Curriculum Outcomes

- 104-4 Compare the results of their investigations to those of others and recognize results may vary
- 104-6 Demonstrate that specific terminology is used in science and technology contexts
- 108-3 Describe how personal actions help conserve natural resources and care for living things and their habitats
- 204-6 Identify various methods for finding answers to given questions as well as solutions to given problems, and ultimately select one that is appropriate
- 205-5 Make observations and collect information relevant to a given question or problem
- 206-2 Compile and display data, by hand or by computer, in a variety of formats including frequency tallies, tables, and bar graphs
- 206-3 Identify and suggest explanations for patterns and discrepancies in data
- 207-2 Communicate procedures and results, using lists, notes in point form, sentences, charts, graphs, drawings, and oral language
- 302-1 Identify a variety of local and regional habitats and their associated populations of plants and animals
- 302-2 Describe how various animals are able to meet their basic needs in their habitat

Activity: Observing Living Things

Materials:

Clipboards
Paper
Pencils
Magnifying glasses
Tape recorders (if available)
Hula hoops or string to define observation boundaries
Cameras (if available)

- Take students outside to make observations of living things.

This could be in the school yard, a nearby park, woods or a field, a duck pond, a slab of cement, whatever you have available. It would be ideal if there were at least 2 different types of areas where the students make observations; for example, some students could make observations on the asphalt of the playground or cement sidewalk and another group could make observations on a little grassy space. If several different types of locations are available, students could draw their location from a hat.

Cross-curricular links:

ELA

2. Students will be expected to:

- b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
- c) Give and follow instructions and respond to questions and directions

3a. Students will be expected to:

Show basic courtesies of conversation in group interactions

8b. Experiment with different ways of making their own notes

Social Studies

4.3.3 Examine the relationship between humans and the physical environment.

Students can be given meter sticks, string of certain lengths or hula hoops that they can use to stake out their observation space. A space of about 1 m² is a good size. If the space is too small, the students won't see very much. If it is too large, the students won't spend time focussing on the smaller things found in their space (such as ants or small plants).

Before going out, students should:

- ✓ Know how to mark out their space
- ✓ Know how to use the different equipment to make observations
- ✓ Have a plan for recording their information
- ✓ Be able to limit their impact on the environment (not to pick, squish or tamper with the area in any way)
- ✓ Be able to observe other factors that may affect living things, such as the amount of sunlight and the type of terrain
- ✓ Predict and record a list of things they expect to observe while they are in their observation spaces

Take the students to the observation spaces and remind them to make careful observations of what and how much of each living thing they observe. The time spent making observations can last anywhere from 10 to 30 minutes. The longer students spend in one place, the more they will look at the smaller things like differences in the blades of grass or insects flying into their space, and so on.

✓ **Assessment:**

Were the students collecting information and recording it in a manner that could be easily recalled and shared with others?

Once students are done with their observations, have them organize their findings in a manner that can be shown and shared with the class.

① **Teacher note:** Students (and teachers) may have difficulty identifying everything they see. Students can be provided with books or photos that will help them identify commonly found animals and plants. They could also photograph unknown plants and animals and either use the pictures to represent what they found or use the pictures to look up and identify the samples later.

Reflection: Class Discussion

- Ask each group to spend a few minutes sharing their findings with the class. This includes where their observation space was and what they observed. How did they record their results?
- As the first group presents their findings, introduce the term “population”. Use the term often as you discuss what each group found.
- Once all of the groups have presented their information, discuss the similarities and differences among the findings.
- Ask: *How were the actual observations different from what you expected to observe?*
Why did different groups find different things?
- This leads into the idea of habitats – that every living thing has a space where it can meet its needs. Looking at their data, do they think any of their populations could meet all of its needs in the one space they looked at? Introduce the word habitat and use examples from different groups to emphasize that different living things have different habitats.
- Revisit the Accessing Prior Knowledge activity (page 5). Ask: *Are there any items that should be added to or revised? Is there other information we could add?* Remind your class about respectful discussion. The [discussion tips](#) on pages 21-22 may be helpful.

Cross-curricular links:

ELA

1. Students will be expected to:
 - a) Explore and discuss their thoughts, ideas, and experiences and consider those of their peers
 - b) Ask and respond to questions to clarify information and explore solutions to problems
 - c) Explain personal opinions and respond to questions and opinions of others
2. Students will be expected to:
 - a) Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - c) Give and follow instructions and respond to questions and directions
- 3a. Students will be expected to:
Show basic courtesies of conversation in group interactions

Reflection: Journaling

Based on your observations in your assigned space outside, how can you lessen your impact when you encounter that type of environment?

How about other types of environments?

Cross-curricular links:

ELA

8. Students will be expected to:
 - a) Use strategies in writing and other ways of representing to
 - formulate questions and organize ideas
 - record experiences

✓ Assessment:

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective.

Note whether students can identify ways to lessen their impact on the area where they made observations and/or in other types of environments.

Possible extension:

Have students explore microclimates. They should write down the location and temperature of each microclimate. Other characteristics should be noted such as in sun or shade, dry or damp, in light or dark. Compare open areas, sheltered areas, holes in trees, a hollow under a rock, in a gulley, and so on.

3rd Cycle

Curriculum Outcomes

- 104-4 Compare the results of their investigations to those of others and recognize results may vary
- 104-6 Demonstrate that specific terminology is used in science and technology contexts
- 204-1 Propose questions to investigate and practical problems to solve
- 204-3 State a prediction and a hypothesis based on an observed pattern of events
- 204-6 Identify various methods for finding answers to given questions as well as solutions to given problems, and ultimately select one that is appropriate
- 205-1 Carry out procedures to explore a given problem and to ensure a fair test of a proposed idea by controlling major variables
- 205-5 Make observations and collect information relevant to a given question or problem
- 205-10 Construct and use devices for a specific purpose
- 206-2 Compile and display data, by hand or by computer, in a variety of formats including frequency tallies, tables, and bar graphs
- 206-3 Identify and suggest explanations for patterns and discrepancies in data
- 206-6 Suggest improvements to a design or constructed object
- 207-2 Communicate procedures and results, using lists, notes in point form, sentences, charts, graphs, drawings, and oral language
- 302-2 Describe how various animals are able to meet their basic needs in their habitat

Activity: Making a Habitat for Mealworms

Materials:

Computers

Books

Small plastic containers with lids or clear plastic cups

Saran wrap or nylons and rubber bands

Wheat bran

Potatoes

Apples

Mealworms (can be purchased from pet/animal suppliers that sell animals like snakes and spiders – they run about \$0.10 each)

① Teacher note: Mealworms were chosen since they are relatively low maintenance and low cost. Other habitats could be substituted if you would like. See making an earthworm habitat at <http://www.scholastic.com/magicschoolbus/games/teacher/frogs/index.htm>

Or making a pond habitat at

<http://www.kidsgardening.com/growingideas/projects/june04/pg1.html>

Or making a spider habitat – directions are in the *Spiders in Space Teacher Guide* at

http://bioedonline.org/space/STS_Mission_134S.cfm

Other possible examples could be using red wigglers from the composter at your school, or making a water habitat with a pond snail and elodea plant (available at pet stores).

Part 1 - Research

The purpose of this activity is:

- 1) To help students further define populations, habitat and community
- 2) To give students practice in investigating a particular living thing and determining what it needs for its habitat (in preparation for the 4th cycle)

Have students work in small groups to visit one or two websites to determine what mealworms need to live and how they would create a habitat for them (several sites are suggested below, but a search of “Mealworm Habitat” should yield a few useful websites). The student hand out “[Mealworms Habitat](#)” on page 25 can be used to help focus their research.

http://www.uen.org/utahlink/activities/view_activity.cgi?activity_id=3022

<http://www.thewildones.org/Curric/mealworm.html>

http://www.insectlore.com/xinsectucational_stuff/mealworm_activity.html (section on Darkling Beetle/Mealworm Rearing)

<http://www.howtodothings.com/pets-animals/how-to-keep-mealworms>

http://aged.ces.uga.edu/browseable_folders/TeacherResources/Mealworm%20Habitat.pdf (section on Building a mealworm habitat).

Reflection: Class Discussion – Research on Mealworm Habitats

Review the information found by the students about constructing a mealworm habitat. *Did everyone find the same requirements? Some sites list crumpled paper or a film canister. Why would mealworms need these materials?*

Cross-curricular links:

ELA

2. Students will be expected to:
- a) Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - c) Give and follow instructions and respond to questions and directions
- 3a. Students will be expected to:
- Show basic courtesies of conversation in group interactions

Why might there be differences?

Tell students that they will be able to test some of these differences by setting up their own habitats.

Part 2 – Setting up the Habitat

- Place students into groups to set up one mealworm habitat per group.

There will be “control” habitats where everyone in the class agrees on what is inside and then each group will set up their own habitat to test one variable.

- Start by asking students to decide what the class “control” habitat should look like.
- Then ask each group what one thing they would like to change about their own habitat.

The variables tested should be similar to conditions they would find in nature. Try to encourage questions that can be tested and answered quickly (30 minutes). For example: “Do mealworms prefer apples or potatoes? Do they like dark or light? Do mealworms spend more time on top of the “bedding” or under?”

- Students should predict what they expect to see by changing that one variable.
- Provide students with materials to find the answers to their questions.

The student sheet “[Setting up a Mealworm Habitat](#)” on page 26 can be used to help guide students in their recording.

Cross-curricular links:

ELA

- Students will be expected to:
 - Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - Give and follow instructions and respond to questions and directions
- Students will be expected to:
 - Show basic courtesies of conversation in group interactions
- Experiment with different ways of making their own notes

✓ Assessment:

On observation chart (or other record), note how students are performing on the skill outcomes.

Reflection: Class Discussion

Review what each of the groups were testing and what each found.

How did you record your observations?

In nature, where do you think you would find mealworms living?

Revisit the Accessing Prior Knowledge activity (page 5). Ask: *Are there any items that should be added to or revised? Is there other information we could add?* Remind your class about respectful discussion. The [discussion tips](#) on pages 21-22 may be helpful.

Cross-curricular links:

ELA

- Students will be expected to:
 - Explore and discuss their thoughts, ideas, and experiences and consider those of their peers
 - Ask and respond to questions to clarify information and explore solutions to problems
- Students will be expected to:
 - Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - Give and follow instructions and respond to questions and directions
- Students will be expected to:
 - Show basic courtesies of conversation in group interactions

Reflection: Journaling

My ideal mealworm habitat would have _____ for food, ____ for water, _____ for space plus _____ because our group found _____.

Cross-curricular links:

ELA

8. Students will be expected to:
- Use strategies in writing and other ways of representing to
 - formulate questions and organize ideas
 - record experiences

✓ Assessment:

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective.

Note whether students can explain what components are necessary for an acceptable mealworm habitat. Notice if they were able to back up their thoughts with evidence from the investigation.



Think like a scientist

Asking good questions is an important skill in science. Initially students will need support. Model the skill with the whole class and students will begin to have the confidence to contribute. After some practice, students will be able to generate questions successfully individually.

Present students with a situation and ask them to generate questions that could be investigated scientifically. (These situations and questions do not have to be limited to those that can be done in a classroom.)

Situation:

The monarch butterfly attaches its eggs to the underside of milkweed plant leaves. The larva (caterpillar) that hatches from the egg, eats the milkweed plant leaves until it finally pupates, making a cocoon. Adult monarch butterflies may be of the population that migrate (fly south) for the winter and lay eggs along the way or they may be of the population that stays in the same place all year.

What is one question concerning the monarch butterfly that could be investigated scientifically?

For example:

Do the butterflies prefer to lay their eggs on leaves higher or lower on the plants?

Do monarch butterflies that do not migrate eat different food than those that migrate?

Cross-curricular links:

ELA

8. Students will be expected to:
- Use strategies in writing and other ways of representing to
 - formulate questions and organize ideas

Mealworm Habitat Research

Food:

Water:

Shelter/Space:

Other interesting things we found:

[Return to Making a Habitat for Mealworms](#)

Setting up a Mealworm Habitat

Draw a picture of your habitat including the materials and label it so others could create the same habitat.

What is the one thing you are changing compared to the control?

What is the question you are testing?

How will you record your observations?

Predict what you think you will see.

Your observations:

Your conclusions:

[Return to Making a Habitat for Mealworms](#)

Web Resources for Habitat Research

Information on a wide variety of species – available in English and French (click on button at top right)

http://nature.ca/notebooks/english/a_z.htm

Videos of animals in their element

<http://video.nationalgeographic.com/video/index.html>

Information on living things in polar habitats

<http://beyondpenguins.nsd.org/information.php?topic=stories>

Choose an environment and then get a fact sheet on the creature of your choice

<http://ngfl.northumberland.gov.uk/ict/AAA/habitats.htm>

Choose a habitat and then get fact sheets on the creature of your choice

<http://dnr.wi.gov/org/caer/ce/eeek/nature/habitat/index.htm>

[Return to Wanted: Suitable Habitat](#)

4th Cycle

Curriculum Outcomes

- 104-6 Demonstrate that specific terminology is used in science and technology contexts
- 207-2 Communicate procedures and results, using lists, notes in point form, sentences, charts, graphs, drawings, and oral language
- 302-1 Identify a variety of local and regional habitats and their associated populations of plants and animals
- 302-2 Describe how various animals are able to meet their basic needs in their habitat

Wanted: Suitable Habitat

Materials:

Computers (see “[Web Resources for Habitat Research](#)” on page 28) or books to provide students with a variety of animal information

Student sheet “[Wanted: Suitable Habitat](#)” found on page 29

- Ask students to choose any animal that would be found in New Brunswick that interests them.
- Ask them to find what that animal needs to live as well as useful notes (such as, area must not contain...)
- Then students are to write a “Wanted: Suitable Habitat” ad.

Cross-curricular links:

ELA

4. Students will be expected to:
 - c) Use pictures and illustrations, word structures, and text features to locate topics and obtain or verify understandings of information.
8. Students will be expected to:
 - b) experiment with different ways of making their own notes.
 - c) experiment with language, appropriate to purpose, audience, and form, that enhances meaning and demonstrates imagination in writing and other ways of representing
9. Students will be expected to:
 - b) demonstrate an awareness of audience and purpose

Students should consider their experiments with the mealworms and how different conditions affect an organism, such as light, heat, other organisms, and so on.

The “Wanted: Suitable Habitat” ad should include:

- types of food preferred
- water source
- materials for shelter
- anything that may be risky to the survival of the animal that should not be there (like predators or pests)
- special requests for light, temperature, other organisms

✓ **Assessment:**

On observation chart (or other record), note how students are performing on the skill outcomes.

 **Teacher note:** These ads can also be used when talking about adaptations and food chains later on in the unit.

If students are interested in adding pictures to their ads, there are free images for use available at MorgueFile (<http://www.morguefile.com/archive>) and District 16 Media Server Image Bank (<http://dt16community.nbed.nb.ca/media/image>)

✓ **Assessment:**

Note whether students are able to identify special needs of their animal (such as shade, possible predators, nocturnal habits, etc.)

Reflection: Class Discussion

The following discussion should provide wonderful opportunities to clarify (and distinguish between) the terms population and community.

Do different animals have the same or different habitats?

Choose a habitat described by one of the students, and ask students why it is suitable for the intended animal.

Looking at that same habitat, choose another animal and discuss what changes or upgrades would be necessary for that animal to survive there. (Students could be given a habitat and asked to write a paragraph about what would need to change to make the habitat ideal for their chosen animal).

The website <http://switchzoo.com/> Switch Zoo allows students to build an online habitat and see the compatibility of a variety of animals with the elements selected. This helps illustrate that the ideal habitat for animals is dependent on a number of factors.

If your students are still not solid on what a community is, the following sites have you identify a variety of organisms in each community. http://www.bbc.co.uk/schools/scienceclips/ages/8_9/habitats.shtml

http://www.nationalgeographic.com/features/00/earthpulse/reef/reef1_flash-feature.html

Revisit the Accessing Prior Knowledge activity (page 5). Draw another diagram similar to the first one used in the Accessing Prior Knowledge activity, but draw the elements of the

Cross-curricular links:

ELA

1. Students will be expected to:
 - a) Explore and discuss their thoughts, ideas, and experiences and consider those of their peers
 - b) Ask and respond to questions to clarify information and explore solutions to problems
2. Students will be expected to:
 - a) Contribute to conversations, small-group and whole-group discussion, showing an awareness of when to speak and when to listen
 - b) Use word choice, tone of voice, facial expressions, and gestures appropriate to the speaking occasion
 - c) Give and follow instructions and respond to questions and directions
- 3a. Students will be expected to:
 - Show basic courtesies of conversation in group interactions

habitat, labelling populations that can live there. Ask: *Are there any items that should be added to or revised? Is there other information we could add?* Remind your class about respectful discussion. The [discussion tips](#) on pages 21-22 may be helpful.

Other resources that might be useful at this time:

A variety of habitat videos are available from <http://learning.aliant.net/> . To access Aliant videos, type the title, “Habitats” into the search box. This search should yield a variety of results. One video named “Habitats – Homes for Living Things” focuses on how animals meet their needs.

Videos are available free of charge at this site. You will need to register, however registration is free. If you try to watch the video without logging in, you will be prompted to do so. Note that a table of contents opens beside the video so that you may select only certain sections for viewing if you wish. There is also an option to watch the video full screen.

 **Reflection: Journaling**

I could share a habitat with a _____ because _____, but I would need to have _____.

Cross-curricular links:

ELA

- 8. Students will be expected to:
 - a) Use strategies in writing and other ways of representing to
 - formulate questions and organize ideas

✓ Assessment:

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective.

Note whether students can identify the requirements of their animal and how those specific needs may be different for different organisms that live in similar habitats.

Ideas for next steps:

The next area of study could be food chains. Information from the wanted ads or the mealworm habitats could help students identify the role different organisms play in the food chain. For example, when researching habitats for their chosen plant or animal in the 4th Cycle, students will likely have identified predators and/or prey (302-3). Also, having discussed communities, students may be able to identify the impact of removing a plant or animal population (301-1).

Alternatively, the next area to study could be structural features that allow animals and plants to thrive in different kinds of places (300-1, 300-2). The mealworm habitats could act as a starting point for identifying behavioural and structural patterns and the ability to meet their basic needs.

Wanted: Suitable Habitat

- 1) Choose one animal population found in New Brunswick.
- 2) Research the information necessary to write an ad describing the ideal habitat for your chosen population.

Your ad should include the following:

- a) types of food preferred
 - b) water source
 - c) materials for shelter
 - d) anything that may be risky to the survival of the animal that should not be there (like predators or pests)
 - e) special requests for light, temperature, other organisms
- 3) Your ad should begin with: "Wanted: Suitable habitat for (put in the name of your animal)"

You may wish to include pictures of your animal.

Habitats

Strand - Collecting Scientific Information using Models of Natural Habitats

General Curriculum Outcomes	Specific Curriculum Outcomes
205-10 Construct and use devices for a specific purpose	205-10, 205-5 Construct and/or maintain a model of a natural habitat, and use it to make observations and collect information about organisms in the habitat
205-5 Make observations and collect information relevant to a given question or problem	
206-6 Suggest improvements to a design or constructed object	206-6 Suggest improvements to the model of the natural habitat to make it more realistic and habitable for organisms

Models of Habitats

Outcomes:

- 205-10, 205-5 Construct and/or maintain a model of a natural habitat, and use it to make observations and collect information about organisms in the habitat
- 206-6 Suggest improvements to the model of the natural habitat to make it more realistic and habitable for organisms

Lesson Activity Overview:

The geographic location of the school and the local habitats present allow for variance in what teachers can realistically do with students. The ultimate goal should always be to do as much hands-on real (at the actual habitat) investigation as possible. Here are a couple of different options that teachers could choose to accomplish these outcomes. The class will only need to do either Examining a Local Habitat or Bring a Part of a Habitat to Class to accomplish these outcomes. Either option follows a similar lesson and assessment plan.

Option 1 - Examine a Local Habitat

Marshlands, streams, and woodlands are sometimes located near or within a quick walk of a school. If possible, students should visit an actual habitat to fully appreciate the dynamics of the area. Also, this exposure will be of value later in the Food Chains strand where students must understand how organisms are dependent on each other for survival.

Students should dig through the local habitat to find organisms (plant and animal) or signs that organisms have been there and examine how the organisms survive in that habitat. It is important that students respect the habitat and leave it as they found it.

Students can continue their observations and data collection by maintaining a habitat in their classroom or constructing one that models some features of the one under investigation. Samples such as plants, soil, insects could be used. Students should be continuously adding to their model based on all the observations and discussion that have been made.

Encourage students to observe their aquarium/terrarium (area of Model) for visible organisms, those visible with magnifying glass and changes in algae growth. In their journal students could note observations of the classroom habitat, specifically observing increases or decreases in the growth of plants/algae and number of insects, changes in the appearances of organisms, and evidence of how the organisms meet their needs. Students should be considerate of the organisms they captured, and try to make the

habitat as much like the natural one as possible. This also encourages attitudes related to being sensitive to the welfare of living things and the environment.

Assessment:Informal Formative

Students should make observation and collect information about organisms in the habitat. (205-5)

Students should be suggesting improvements to the model of the habitat to make it more realistic based on their observations and discussions. (206-6)

Assessment:Formal Formative

Students will construct a model of a habitat. (205-10)

Option 2 - Bring a Part of a Habitat to Class

A rotting log makes a good habitat study. Part of it can be brought to the classroom for a period of time. Students can dig through it to find organisms or signs of organisms and examine how the organisms survive in the habitat. Students should show respect for the organisms they find. At the end of the study, the log and its inhabitants should be returned to a natural setting.

Students can continue their observations and data collection by maintaining a habitat in their classroom or constructing one that models (aquarium or terrarium) some features of the one under investigation. Samples such as plants, soil, insects could be used. Students should be continuously adding to their model based on all the observations and discussion that have been made.

Encourage students to observe their aquarium/terrarium (area of Model) for visible organisms, those visible with magnifying glass and changes in algae growth. In their journal students could note observations of the classroom habitat, specifically observing increases or decreases in the growth of plants/algae and number of insects, changes in the appearances of organisms, and evidence of how the organisms meet their needs. Students should be considerate of the organisms they captured, and try to make the habitat as much like the natural on as possible. this also encourages attitudes related to being sensitive to the welfare of living things and the environment.

Assessment:Informal Formative

Students should make observation and collect information about organisms in the habitat. (205-5)

Students should be suggesting improvements to the model of the habitat to make it more realistic based on their observations and discussions. (206-6)

Assessment:Formal Formative

Students will construct a model of a habitat. (205-10)

Habitats

Strand - Behavioural and Structural Features of Animals that Enable them to Survive in their Habitat

General Curriculum Outcomes	Specific Curriculum Outcomes
302-2 Describe how various animals are able to meet their basic needs in their habitat	302-2, 300-1 Compare the external features and behavioural patterns of various animals and relate these features to their ability to meet their basic needs in their natural habitats
300-1 Compare the external features and behavioural patterns of animals that help them thrive in different kinds of places	
205-1 Carry out procedures to explore a given problem and to ensure a fair test of a proposed idea by controlling major variables	205-1 Carry out procedures to ensure a fair test that explores how appearance affect visibility
204-3 State a prediction and a hypothesis based on an observed pattern of events	204-3 Predict the structural and/or behavioural adaptations needed for an animal to live in a particular habitat, either real or imagined

How do Animals Survive in their Habitats

Outcomes:

- 302-2 describe how various animals are able to meet their basic needs in their basic needs in their habitat
- 300-1 compare the external features and behavioural patterns of animals that help them thrive in different kinds of places
- 205-1 Carry out procedures to ensure a fair test that explores how appearance affect visibility
- 204-3 Predict the structural and/or behavioural adaptations needed for an animal to live in a particular habitat, either real or imagined

Lesson Activity Overview:

As students investigate habitats at the natural site or in the classroom, they should start to focus on how animals meet their needs. Needs include food, protection, and the ability to reproduce.

Research an Animal - Each student will investigate one animal type in the following:

Part 1 - Investigate an Animal

Students could use a variety of sources to investigate animal features and the behavioural adaptations that enable them to survive in their habitat (e.g. defensive structures, body movements, and behaviours).

Part 2 - Understanding Protection

Students can investigate external features that serve to camouflage organisms. They should design a model of an organisms (same as one they researched) from common materials such as newspaper, scraps of fabric, or virtually any odds and ends, and place it in the habitat so it is well camouflaged.

Part 3 - Adaptations

Students could use their knowledge of structural and/or behavioural adaptations to invent features to help an animal adapt to a habitat. Students should be encouraged to be creative.

Students should predict the structural and/or behavioural adaptations needed for an animal to live in their habitat.

Students should then research to find actual adaptations their organisms has made to live in their habitat.

Assessment:Formal Formative

- Research the adaptations of a selected animal. Try to link the adaptation with how the animal meets its basic needs in its habitat (302-2, 300-1)
- Observe students' abilities to design an animal that is camouflaged in its habitat. (205-1)
- Observe students' abilities to suggest a suitable adaptation for an animal in order for it to survive in a certain habitat. (204-3)

Habitats

Strand - Structural Features of Plants that Enable them to Survive in their Habitat

General Curriculum Outcomes	Specific Curriculum Outcomes
300-2 Compare the structural features of plants that enable them to thrive in different kinds of places	300-2, 104-6 Using appropriate terminology to compare the structural features of plants that enable them to thrive in different kinds of places
104-6 Demonstrate that specific terminology is used in science and technology contexts	
106-4 Describe instances in which scientific ideas and discoveries have led to new inventions and applications	106-4 Describe how scientists' knowledge of plant growth has led to agricultural innovations and techniques
105-1 Identify examples of scientific questions and technological problems that are currently being studied	105-1 Describe current investigations of local and regional habitat issues

How Do Plants Survive in their Habitats

Outcomes:

300-2 compare the structural features of plants that enable them to thrive in different kinds of places

104-6 demonstrate the specific terminology is used in science and technology contexts

106-4 describe how scientists' knowledge of plant growth has led to agricultural innovations and techniques

105-1 describe current investigations of local or regional habitat issues

Lesson Activity Overview

The focus of this lesson is that students should investigate the variety of structural features for different plants and how these adaptations enable them to thrive in their habitat. They will have to draw on their understanding from Grade 3 Life cycle of Plants to understand the different parts of the plants. Plants in different habitats (bog, forest, ocean, school yard, etc.) should be explored

The purpose is for students to explore how plants survive in their various habitats. !

Activity

Draw and describe features of plants that help them thrive in their habitat. (Examples of plants you might include are cactus, pitcher plant, dandelion). (300-2, 104-6)

As a class, discuss how you can fairly compare some of the different ways that humans help plants grow. Discuss variables to control, like the amount of light, heat, and water a plant receives. In smaller groups, grow a plant using the condition treatment that has been assigned to you (e.g., solid fertilizer). Measure and record growth in the chart.

(106-4)

Treatment	Growth in cm			
	Day 7	Day 14	Day 21	Day 28
With Compost				
Liquid Fertilizer				
Solid Fertilizer				
Control				

During the growth of the plants, students should be encouraged to explore current investigations in our local area related to habitat issues. These issue can be as small town local as students choose or as large as they feel that pertains to their life.

Activity

Complete a presentation on a relevant local or regional habitat issue using either artwork, a collage, a skit, a video or multimedia. (105-1)

Assessment:Informal Formative

Ensure that students have participated in planting and care for plants grown in the classroom

Assessment:Formal Formative

Ensure that students have created an illustrations about the structures of a plants that allow them to survive 300-2

Ensure that students have completed a data table that analyzes the growth differences of a plant given different soil conditions 106-4

Ensure that students have appropriately completed a presentation of of local habitat issues. 105-1

Habitats

Strand - Food Chains

General Curriculum Outcomes	Specific Curriculum Outcomes
302-3 Classify organisms according to their role in a food chain	302-3, 104-6, 206-1 Classify organisms according to their role in a food chain and draw a diagram to illustrate the food chain
104-6 Demonstrate that specific terminology is used in science and technology contexts	
206-1 Classify according to several attributes and create a chart or diagram that shows the method of classification	
301-1 Predict how the removal of a plant or animal population affects the rest of the community	301-1 Predict how the removal of a plant or animal population affects the rest of the community
301-2 Relate habitat loss to the endangerment or extinction of plant and animals	301-2 Relate habitat loss to the endangerment or extinction of plant and animals

Building Food Chains

Outcomes:

302-3 classify organisms according to their role in a food chain

104-6 demonstrate that specific terminology is used in science and technology contexts

206-1 classify according to several attributes and create a chart or diagram that shows the method of classification

Lesson Activity Overview

The major focus of this lesson is for students to create food chains. Although there is no limitation, there should be some emphasis put on local habitats rather than exploring food chains that students will never interact with. 302-3

Ensure that when introducing the food chain that “prey” and “predator” relationships in a natural habitat is discussed. As well, students should become familiar with “Producers”, “Consumers”, and “Decomposers” in order to correctly create a food chain. 104-6

Teachers have two options to accomplish this task.

Option 1

If pellets are available at the local pet store, have students sort and classify the contents of a pellet investigation. Use this classification to construct a food chain. (104-6, 206-1, 302-3)

Option 2

Gather images of organisms that would live in a local habitat. Have students draw or collect pictures of living organisms and organize them in a food chain. (104-6, 206-1, 302-3)

Assessment: Informal Formative

Ensure that students have demonstrated that they can use the terms “Producers”, “Consumers”, and “Decomposers” and “prey” and “predator”. 104-6

Ensure that students are able to classify according to the attributes determined by the class 206-1

Assessment: Formal Formative

Based on the task chosen, ensure that students are able to construct and classify organisms correctly based on their role in a food chain 302-3

Understanding Links on The Food Chain

Outcomes:

301-1 predict how the removal of a plant or animal population affects the rest of the community

301-2 relate habitat loss to the endangerment or extinction of plants and animals

Lesson Activity Overview

This lesson is designed to extend the concept of food chains and allow the students to better understand how a true habitat functions when circumstances occur. First, students should explore what happens to the food chain if a food source is removed. The crux is for students to understand how each link in the food chain is dependent on the others.

Students have a tendency to think that if there was no predator that this would be positive. However, students need to be steered to the understanding that overpopulation is not good, due to lack of food source.

Activity

Predict the consequences of what happens when one type of organism in the food chain is removed

Using a computer simulation, make one type of organism completely disappear. Record what happens to the other organisms. If computers are not accessible, students can play simulation games such as "Oh Deer!" (Project Wild, Canadian Wildlife Federation). (301-1)

The second focus of the lesson is for students to understand how the habitat itself is important to the food chain. The food chain is only as strong as the habitat in which it exists, so an discussion about local habitat loss (eg forest fire, forest cutting, housing construction, insect infestation, and pollution) to understand its effect on plants and animals. The more local the issues the more it drives home for the students.

Journal

- It is important to try to preserve natural habitats because ... (301-2)

- What would happen to the remainder of the living things in a given area if there were a forest fire or major oil spill on the seashore? (301-1, 301-2)

Presentation

- Research an animal/plant deemed as endangered. Why is the living thing endangered? What must be done to help save the organism? Present your findings. (301-2)

Assessment: Informal Formative

Ensure that students have participated in an activity in which a link on the food chain is removed 301-1

Assessment:Formal Formative

Ensure that students have made a prediction about how the removal of a species will affect a food chain 301-1

Ensure that students have created a journal entry related to preserving natural habitats 301-2

Habitats

Strand - The Impact of Technology in Natural Habitats

General Curriculum Outcomes	Specific Curriculum Outcomes
108-1 identify positive and negative effects of familiar technologies	108-1 Identify examples of positive and negative effects of technological developments in natural habitats

Local Habitat Issues

Outcomes:

108-1 identify examples of positive and negative effects of technological developments on natural habitats

Lesson Activity Overview

The intent of this lesson is for students to dive deeper into issues related to preserving habitats. STSE outcomes aim to start a larger conversation, this one focuses on the science connection to the environment along with society's impact on the environment.

The most authentic conversations are the ones that start because of local issues, so this will vary from place to place. However, if help is needed the curriculum guides offers the following suggestions

“Students can engage in discussions about ways in which their use of technological products may impact a habitat and result in the endangerment or extinction of plants and animals. Examples might include: the extremely detrimental effect the use of an all-terrain vehicle on a marsh can have on the habitat; the use of jet skis on lakes, and how their loud noise can drive away animals; constructing a road or building on a previously unspoiled habitat. Care should be taken not to blame the technology for negative effects on habitats. Humans choose these products, and have a choice in how they are used. For example, the impact of all-terrain vehicles would be minimized if they were used on appropriate trails.”

Journal

Talk with an adult in your community to determine how the local area has changed during her/his lifetime. Can he/she notice differences in the amount of wildlife and vegetation? What does he/she think has caused these changes? In your journal, write about the conversation, and what you hope will or will not happen to the local area during your lifetime. 108-1

What are some of the good things that will happen with building a new (highways, subdivision, parking lot, etc)? What are some of the bad things that will happen 108-1

UDL Activity - Have students select one of the following tasks to complete

Write a verse, lyric, poem or skit on the positive and/or negative effects of technological developments on natural habitats

Find a song that relates to the effects of technology on the natural habitat and dramatize the song

Interview people in your community who have tried to restore natural habitats and help endangered species. Report your findings to the class.

Assessment:Informal Formative

Ensure that students have been engaged in conversations related to local habitat issues

Assessment:Formal Formative

Ensure that students have created a journal entry in which they have ask questions to someone in their life about how a local habitat has changed 108-1

Ensure that students have create a journal entry that weighs the positive and negatives of altering a habitat 108-1

Ensure that students have completed on of the activities related to preserving local habitats.