Science Unit Plan

Grade 4 – Unit 1 Life Sciences: Habitats

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Unit Overview:

In this unit students will begin to investigate organisms and how they may differ from one habitat to another. They can then consider how some of these differences between organisms are helpful for survival. Furthermore, students will explore the concept of interrelatedness and how populations co-exist and depend on one another. This will lead into the discussion on the impact that a loss of one population with have on the community/ habitat.

To make this unit meaningful to the students there will be a focus on the impact they can have on the environment. Questions students will be asked to reflect on throughout the following less will be: “How do they treat the organisms they encounter?” “Do they try to be environmentally conscious citizens?” and “What can they do in their community to help preserve and protect local habitats?”. By asking these questions, students will become more engaged because they will now see a role that they can fill.

This unit consists of 11 lessons. The lessons are focused around hands-on activities that will initiate higher thinking on the part of the student. Each lesson uses the “5 E’s” (Engaging Question, Exploration, Explanation, Expansion, Evaluation) and contains all the resources/handouts/evaluation material needed to deliver the lesson. Integrated lessons can be found on pages 13, 46, and 57.

NSES Standards K-4:

Life Science

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

Science in Personal and Social Perspectives

Content Standard F

As a result of activities in grades K-4, all students should develop understanding of

- Changes in environments

Atlantic Canada Science Curriculum Grade 4:

Unit 1
Life Science: Habitats

STSE	Skills	Knowledge
Students will be expected to	**Students will be expected to**	**Students will be expected to**
Nature of Science and Technology 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 105-1 identify examples of scientific questions and technological problems that are currently being studied	**Initiating and Planning** 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	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 300-1 compare the external features and behavioural patterns of animals that help them thrive in different kinds of places 300-2 compare the structural features of plants that enable

Relationships Between Science and Technology 106-4 describe instances in which scientific ideas and discoveries have led to new inventions and Applications	**Performing and Recording** 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	them to thrive in different kinds of places 302-3 classify organisms according to their role in a food chain 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
Social and Environmental Contexts of Science and Technology 108-1 identify positive and negative effects of familiar technologies 108-3 describe how personal actions help conserve natural resources and care for living things and their habitats 108-6 identify their own and their family's impact on natural resources	**Analysing and Interpreting** 206-1 classify according to several attributes and create a chart or diagram that shows the method of classification 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	

Title of Lesson: Animals, Plants, and Habitats	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**

Overview: In this lesson students will be introduced to local habitats and will be setting up study areas in a wooded area near the school for observations. These observations are going to be recorded in their nature journal.
**Please note for the next week, students will be going out and doing observations with the groups of their habitat study area, writing/drawing in their journal, and having discussions with classmates about their findings.

NCTM Standards:
Life Science
Content Standard C
As a result of activities in grades K-4, all students should develop understanding of

- Organisms and environments

Curriculum Outcomes:

- 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
- 205-5 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
- 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

Class Objective:
Students will begin to identify plants and animals in their local habitat.

Instructional Strategies: Whole-class instruction Small groups	**Time Required:** 60 minutes

Materials:
Chart paper meter stick Journal folders first journal handout
Markers cameras
Wooden stakes
5 different colours of string

Text/Audio/Video-based Resources	**Vocabulary:** Habitat, local, plants, animals, organisms

Methods/Procedure for the Class:
An interactive bulletin board has been posted a week prior to this lesson. This bulletin board displays a variety of habitats that are found in the Fundy Biosphere. These are also habitats that can be found in the local area. See appendix after this lesson for a picture of the interactive bulletin board.

Engaging Question: (10 minutes)
What kind of animals and plants live around us?

- Start your students off with this question to get them thinking about what kinds of plants and animals they think are live around us. Allow the students to have think time and they can discuss with a partner if they would like.
- Divide a piece of chart paper into two columns (animals and plants), and have students volunteer their ideas of what they think would go in each category. Once the list is complete, post it in the classroom so it is visible.
    - *It is important to note that this will be ongoing throughout the unit and as students explore different habitats. During the unit we will have class discussions on animals and plants that may need to be added to the list or eliminated and why.*

Exploration: (30 minutes)
- Tell the students that they are going to be doing a study of a local habitat. They will be going out to a wooded area near the school to explore a habitat and record their observations/ findings. They will be doing this study in groups.
    - *Group students using the popsicle stick method, into groups of 4, which will make 5 groups in total*

-Discuss with the students that each group is going to get their own plot to study. They will be marking their own plots. Draw on the white board what the plot will look like (1x1 meter square, 1 wooden stake at each corner, and tie string around the stakes/area to mark their square).
-Get each group to nominate a group leader to come and get the supplies that they will need to mark their plot. Give each group 1 meter stick, string, 1 pair of scissors and 4 wooden stakes. Model to the students how you would mark
-Have the students get dressed to go out to the wooded area to mark the plots they will be studying (which will be 1x1 meter plots). Students should take all their material with them.
-Once you have arrived at the wooded area, have the students stand around you and model how to mark their plot, explaining the process as you go.
- When students are finished marking their plot, have them take note of which colour string signifies their plot, and go back to the classroom.

Explanation: (10 minutes)
- Students will fill out the first page of their journal. Please see the appendix attached after this lesson.

Expansion : (10 minutes)
- Ask the children to write down questions in their journal that they hope to have answered by doing the habitat study/ hypotheses of what they think they might find during this study. They can collaborate with their Habitat group for this, but each student needs to record what they discussed in their journal.

Evaluation:

- The nature journals are going to be collected regularly as part of formative assessment. Therefore, no grade will be given. This will be a type of communication between the teacher and the student. Comments will be given to students after each lesson.

Resources:

https://portal.nbed.nb.ca/tr/cd/Documents/,DanaInfo=portal.nbed.nb.ca,SSL+Science%20Grade%204%20Curriculum.pdf

Abruscato, J. and DeRosa, D. (2010). *Teaching children science, A discovery approach*. Pearson Education Inc., Boston: USA.

Name:_____ Date:_____

Science Observation Journal

You are a scientist who has been chosen to research the plant and animal life in the wooded area near the school! You will be working with other scientists in your class to make observations about the different organisms you see in the woods. You are encouraged to draw or take photographs of the things you see and describe them. Good luck on your research journey!

Please answer the following questions:

1. Describe the habitat that you are doing research in.

2. What kind of plants and animals do you think you will see in your research area?

3. What is one question that you would like to answer during this research journey?

Title of Lesson: Fundy Biosphere Introduction	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: We are moving from local habitat to regional habitats. The Fundy Biosphere Reserve will be introduced in this lesson because this will be the focus for regional habitats. *Please note that students will be going on a field trip for the next class so it is important to hand out permission slips to students.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of Organisms and environments	
Curriculum Outcomes: ▪ 302-1 identify a variety of local and regional habitats and their associated populations of plants and animals	
Class Objective: Students will be able to name different animals that they might find in Fundy National Park.	
Instructional Strategies: Whole class Small groups Investigation	**Time Required:** 60 minutes
Materials: Smart board	
Text/Audio/Video-based Resources: Engaging video: http://www.youtube.com/channel/UCljw51EbbwhMjZYnE5Q_rqA Map of Fundy Biosphere Reserve: http://fundy-biosphere.ca/en/about-us/the-reserve/where-to-find-us Link to learn about Amazing Places: http://fundy-biosphere.ca/en/experience/amazing-places	**Vocabulary:** Regional Habitat, Fundy Biosphere Reserve, Fundy National Park
Methods/Procedure for the Class: **Engaging Question (10 minutes):** Where is the Fundy Biosphere and what type of animals and plants would we find there? ▪ Show the Amazing Places video ▪ Show the students a map of New Brunswick, with the Fundy Biosphere Reserve boundary outlined. This map should also show where Fundy National Park is. - Discuss with the students that you are going to be going on a field trip to Fundy National Park next class.	

Exploration (30 minutes):
- Students will have the link to the Amazing Places that are all located in the Fundy Biosphere Reserve. Students will choose 2 Amazing Places to explore and then they will fill out the worksheet that is attached to this lesson plan.

Explanation (approx. 15 minutes):
-Using their knowledge of the plants and animals that they have found in their habitat study, students will discuss with partners what amazing places they explored and what types of plants and animals they would find in these places.

Expansion (5-10 minutes):
- Students will be expected to finish the following sentences in their journal in preparation for the field trip:
1. The things I think I will see on my field trip are ...
2. The questions that I would like answered are ...
3. I think Fundy National Park will be different/ the same as my habitat study in the following ways...

Evaluation:
- Student journals will be collected at the end of class and looked over to see what their responses were.

Resources:
http://www.defenders.org/forest/basic-facts

Amazing Places Worksheet

Name: _____ Date: _____

Please fill out the table below. If you have any questions remember to ask a partner first, and then if you are still unsure come to me for any questions you have.

	List two facts that you learned about this Amazing Place	List 3 animals and 3 plants that you think you would find in this Amazing Place
Name of Amazing Place #1		
Name of Amazing Place #2		

Title of Lesson: Fundy National Park	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: Students will be travelling to Fundy National Park today for a field trip. This is for learning as much as it is for fun so students are encouraged to ask questions, take notes, and take pictures if possible. When they return from the field trip students will be required to write a story regarding their field trip. These stories will be sent to the Fundy National Park team. The story will be about what they learned and saw on the field trip. This will integrate nicely into the English Language Arts curriculum. This lesson will be taught over the span of two days.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of Organisms and environments	
Curriculum Outcomes: ***Science*** ▪ 302-1 identify a variety of local and regional habitats and their associated populations of plants and animals ***English Language Arts*** GCO 8: Students will be expected to use writing, and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations	
Class Objective: Students will observe and record information throughout the trip.	
Instructional Strategies: Whole Class Exploration	**Time Required:** All Day
Materials: Pencils Paper Camera	
Text/Audio/Video-based Resources	**Vocabulary:** Fundy National Park
Methods/Procedure for the Class: Day 1 **Engaging Question:** What will we see today? ▪ Field trips are very exciting for students and it is important to go over the rules and expectations you have of students before you leave for the trip. Talk about being respectful to nature and not to pick any flowers or anything while you are there. This is not the time to take souvenirs.	

- Go over the chart that students have been working on throughout the unit and discuss what they think they might see/will be at Fundy National Park
- Tell them not to be afraid to ask the tour guide any questions and to think about what kind of habitats they see while they are on the trip.

Exploration/ Explanation:
- Students will get ample opportunity to explore parts Fundy National Park as they get a tour. Every once and awhile allow students to take a break and write down what they have observed. Encourage students to discuss what they are thinking/ seeing as they are on their field trip (when appropriate, of course).
- Let students use the camera occasionally to take their own pictures and take lots of pictures of the class as they explore Fundy National Park

Day 2

Expansion (45 minutes:
- When students arrive back from the field trip they should place the notes they took into their journal. Students will then write a letter to the Explorer program of Fundy National Park about what kinds of things they saw on their trip and they can include pictures and drawings. Please see the criteria for this assignment attached to this lesson plan.

Evaluation:
- Journals and stories will be collected at the end of the day. The stories will be evaluated using a rubric that is attached to this lesson plan.

Resources:
https://sites.google.com/a/fundy-biosphere.ca/explorer/home/scavenger-hunt

Tell Fundy National Park your story!

Instructions: Write a story about the field trip that you took to Fundy National Park. The story should be:

- ✓ One page in length
- ✓ It should include 3 things you learned
- ✓ Describe some of the things you saw (it could be plants, animals, landscapes, etc...)
- ✓ Tell your reader what the most interesting part of the field trip was to you and why
- ✓ Include a drawing! ☺

Start with a rough draft and then check the criteria. Once you have edited your first draft, complete a final draft.

Your story is going to be sent to Fundy National Park so they can know all about your experience, so be sure to do your best work!

Rubric:

	3 Great Job	2 Almost there	1 Needs Improvement
Length	One page in length	¾ of a page or less	½ a page or less
Things you learned	2-3 facts	1-2 facts	No facts
Description	Very detailed	Little detail	No detail
Your Most interesting Part	Included your favourite part of the field trip and why	Included your favourite part of the field trip	Did not include your favourite part of the field trip
Drawing	Drew a picture, added lots of detail, had colour	Drew a picture, some detail, little colour	Drew a picture, no colour, no detail

Title of Lesson: Animals and their Needs	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: In this lesson students will learn about what animals need to survive. They will also explore a science center that is related to the Fundy Biosphere. They will also begin a research project on an animal of their choice that lives in either a local or regional habitat.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of • The characteristics of organisms • Life cycles of organisms • Organisms and environments	
Curriculum Outcomes: *Science* 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 *English Language Arts* 10.3 use technology with increasing proficiency in writing and other forms of representing 10.5 select, organize, and combine relevant information from two or more sources to construct and communicate meaning	
Class Objective: Students will research an animal that lives in either a local or regional habitat.	
Instructional Strategies: Half-Half class instruction Independent Research	**Time Required:** 60 minutes
Materials: Computer lab Science center (see attached photos)	
Text/Audio/Video-based Resources: http://www.animalfactguide.com/links/	**Vocabulary:** Camouflage, habitats
Methods/Procedure for the Class: There will be an interactive bulletin board for this lesson that will have pictures of water, different types of food/vegetation, hiding places, a shield, and an item that has a camouflage pattern **Engaging Question (10 minutes):** What do animals need to survive? ▪ Brainstorm a list with your students of things animals need to survive. What you hope they will include in the list are: food, water, protection. Discuss with the students the objects on the bulletin board and see why the objects on the board fit into this lesson **Exploration (30 minutes)** - For this section I am using the half-half class method. One group of students will go and	

explore the science center (there are already instructions at the center so students will not need an explanation from the teacher of what to do), and the other group of students will be introduced to research report they are going to do about a particular animal
- Let the students at the science center explore and complete the activities for approximately 15-20 minutes, then switch the two groups.

Explanation (20 minutes):
- Students will choose their animal and then using their computers, they will research the animal of their choosing using the links provided. (Please see instructional handout for more information attached to the end of this lesson). They can use the remainder of class time to work on their projects. The next two classes will be used to do research on their animal and write their report. If the presentation is not finished by that time, students will have to finish their research for homework.

Expansion:
- Students will do a presentation on the animal of their choosing. Please see the criteria for this report attached to the end of this lesson

Evaluation:
The animal presentation will be used for evaluation

Resources:
http://www.animalfactguide.com/links/

Animal Research Presentation

Please choose an animal from a local or regional habitat to do a research report on. Think back to your habitat study plot, nature journal, worksheet on the amazing places, and the field trip to Fundy National park for ideas on what animal to choose. Once you have chosen, consider the following questions when doing your research:

1. What does your animal look like? (Colour, big, small, etc...)

2. What type of habitat does this animal live in? (Please describe with detail)

3. Why can this animal live in this habitat? (Think about the physical traits)

4. What does this animal eat?

5. Where does this animal sleep?

6. Does it have or do anything special to protect itself?

7. What is the most interesting thing you learned about your animal?

You can create your own questions too!

Record the information you find and then organize it in a way to present to the class. Be creative with your presentations, it is up to you how you present it to the class!

Enjoy ☺

Animal Research Presentation Checklist

Name: _____

	Yes, they included this in their presentation	**No**, this was not included in their presentation
Name of animal		
Description of animal		
Habitat animal lives in		
Physical traits that help this animal survive it its habitat		
Diet of animal		
Interesting facts about their animal		

Comments: _____

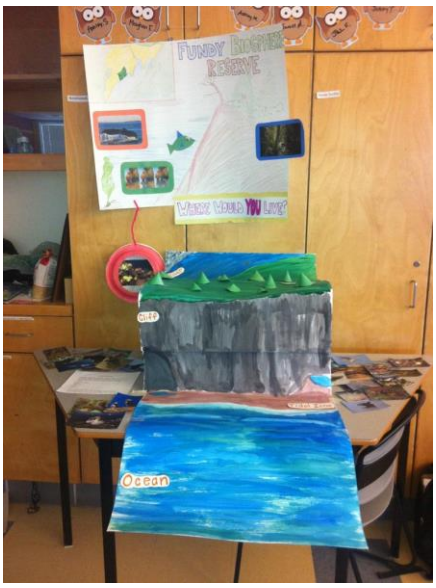
_____

_____

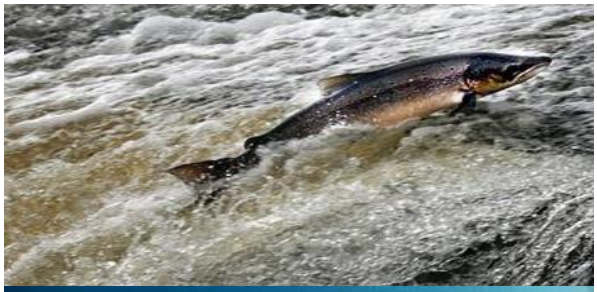
_____

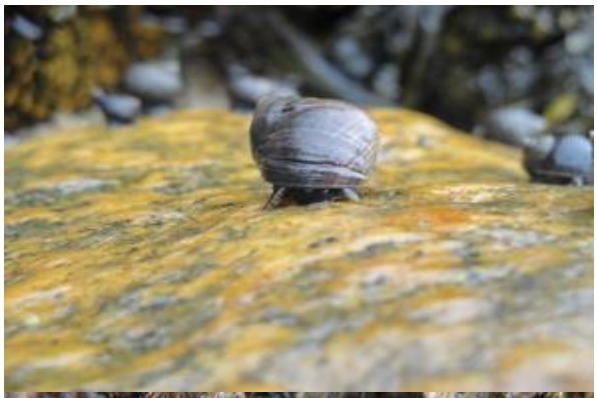
_____

Science Center Pictures



Pictures Used for the Science Center





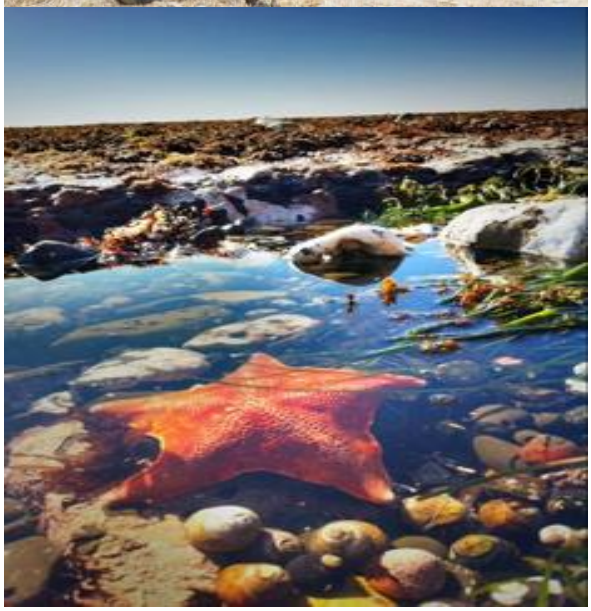












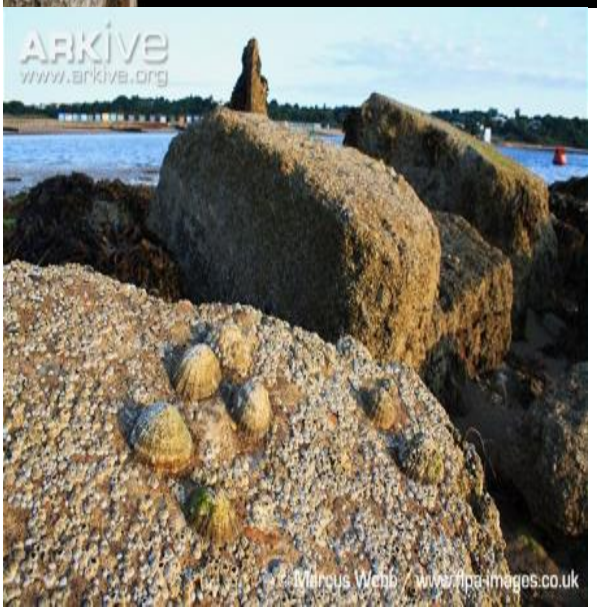
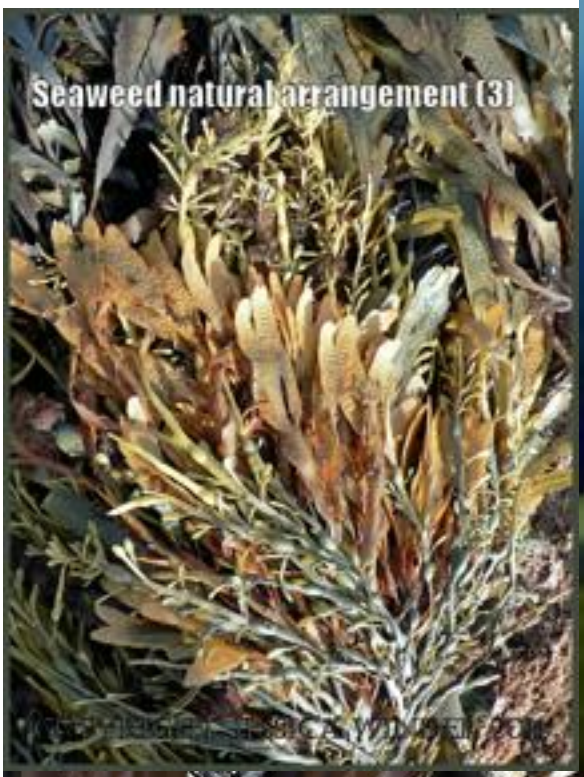

ARKive
www.arkive.org
Marcus Webb / www.fpa-images.co.uk


Photo: Åke Nilsson


Seaweed natural arrangement (3)


Copyright Aljos Farjon

Title of Lesson: Why Those Traits?	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: Throughout the lesson students will examine different traits animals in the Fundy Biosphere have and the purpose of those traits. Students will end class by creating their own creature that could potentially live in the Fundy Biosphere.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of • The characteristics of an organism	
Curriculum Outcomes: ▪ 302-2 describe how various animals are able to meet 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	
Class Objective: The objective is for students to be able to successfully compare the external features and behavioural patterns of animals that help them thrive in different kinds of places.	
Instructional Strategies: Whole-class instruction Small groups	**Time Required:** 60 minutes
Materials: Laptop Projector/Smart Board Paper for students Activity sheet for Expansion activity	
Text/Audio/Video-based Resources http://www.youtube.com/watch?v=MMo5z8WXyCU (Adaptation Video)	**Vocabulary:** Adaptation, trait, habitat
Methods/Procedure for the Class: **Engaging Question: (2 minutes)** -Why would you find a black bear in the forest of Fundy National Park instead of in the Bay of Fundy? -Explain to students what a trait is and ask them to name some of the traits a black bear has are. Compare a black bear to a polar bear. **Exploration: (15 minutes)** -Watch “Adaptations” video. Break students up into pairs and have them choose a creature on the bulletin board. Have students list important traits for that creature that allow it to survive in	

its habitat and describe why those traits are important. Lead the discussion for some of the less popular creatures that may not have been chosen. CENTER Using the report they did in lesson 4 expand upon the traits

Explanation: (10 minutes)

-Have some pairs of students share the adaptations/traits their creature has to survive in its habitat and why that trait is important to their survival.

Expansion: (23 minutes)

-Students will create a creature that would live in one of the habitats found in the Fundy Biosphere. Describe its habitat and how the creature's features help it take advantage of the features of the habitat.

Evaluation:

-Collect and give feedback on the creature that students created. Creature must show that students understand what features are necessary to live within their given habitat.

Differentiation

- Give students the choice to select from a list of animals when in pairs.
- Give students the choice of the habitat their creature must live in. Options may include: ocean, river, cave, forest, and cliff.

Resources:

http://www.youtube.com/watch?v=MMo5z8WXyCU

Create a Creature!

You get to create a brand new creature to live in the Fundy Biosphere! Choose a habitat for your creature to live in, but make sure it has the traits to survive. After drawing your habitat and the creature, give a description of what traits your creature has that will allow it to survive in the Fundy Biosphere!

Title of Lesson: Who Eats Whom?	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: Students will be introduced to the idea of food chains through a visual. They will explore different food chains through a Smart Board activity and then a game on their own laptops.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of • Life cycles of organisms	
Curriculum Outcomes: ▪ 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 ▪ 302-3 classify organisms according to their role in a food chain	
Class Objective: The objective is for students to be able to successfully classify organisms according to their role in a food chain.	
Instructional Strategies: Whole-class instruction Small groups	**Time Required:** 60 minutes
Materials: Smart Board Laptop/ Student Exit Slips	
Text/Audio/Video-based Resources http://exchange.smarttech.com/details.html?id=1e26b169-20ca-42e9-b02d-a659aa984917 (Smart Board Presentation) http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm (Food Chain Game)	**Vocabulary:** Producers, primary consumers, secondary consumers, decomposers, food chain
Methods/Procedure for the Class: **Engaging Question: (5 minutes)** Who is at the top of the food chain? Have 4 students come up to the front of the classroom. Have the student link arms like they are a chain. Explain that the first person in the line is a plant. Ask students something in the Fundy Biosphere that would eat the plant. Ask students what would the creature that would eat the	

plant, etc. Explain that this is an example of a food chain.

Exploration: (5 minutes)
Can you correctly place the pieces in the food chain? Ask a student to come up to the front of the class and guess where the food chain should start. Continue until the class has completed the food chain correctly.

Explanation: (10 minutes)
Ask students they think a food chain is after having completed a food chain. Remove square to show students the answer. Introduce students to the terms producers, consumers, and decomposers. Ask students to come up and try to match the term to the definition. After students have successfully matched the definitions, ask for examples of each that would be found in the Fundy Biosphere.

Expansion: (20 minutes)
On their laptops, have students go to the Food Chain game. Circulate around the classroom to make sure students are on task and look for students who are struggling. The game will not allow a picture to be placed in the incorrect position, but will keep track of how many mistakes are made. Have students raise their hand when they complete the game, so you can look to see how well they did.

Evaluation: (20 minutes)
Ask students how well they did in the game. On an exit slip, have students draw a very simple food chain that would be found in the Fundy Biosphere.

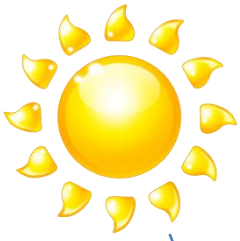
Differentiation

- Students can use any habitat within the Fundy Biosphere on their exit slip.

Resources:
http://exchange.smarttech.com/details.html?id=1e26b169-20ca-42e9-b02d-a659aa984917

Exit Slip Name:_____

Draw an example of a food chain in the Fundy Biosphere. Use any habitat in the Fundy Biosphere.



Producer

Consumer

Decomposer

Title of Lesson: Why You So Beautiful?	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**

Overview: This lesson will be taught after the class has explored animal traits. They will be growing more familiar with the process of considering how organisms adapt to living in various habitats. They will be expected to draw from their learning with animals to consider how plants have adapted to their environments. This lesson may require more than 60 minutes to perform, in which case it will be continued in the following Science lesson, where they will look more closely at the adaptation song that is introduced in this lesson (and write their own verse for Fundy plants). Learning about plants and their traits will lead them to be better able to consider a plant's role in the food-chain in future lessons.

NCTM Standards:

Life Science

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of an organism
- Life cycles of organisms
- Organisms and environments

Science in Personal and Social Perspectives

Content Standard F

As a result of activities in grades K-4, all students should develop understanding of:

- Changes in environments.

Curriculum Outcomes:

- 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.
- 104-6, 300-2 using appropriate terminology to compare the structural features of plants that enable them to thrive in different kinds of places.

Class Objective:

The objective of this class is to get students involved in plant inquiry. They will identify characteristics of plants, and the differences and similarities between plants in different habitats. Through independent research (in pairs), students will explore general characteristics of plants, and then they will elaborate on their learning to investigate a specific plant and its traits.

Instructional Strategies:	**Time Required:** 60 minutes
Sing along WebQuest Poster creation Pair work Group work	

Materials:

Handout - list of WebQuest questions

3 pieces of Chart Paper - 3 markers

Plant pictures from Science Center - in baskets (labeled forest/ocean)

Big paper for drawing of plant (10) pencil crayons	
Text/Audio/Video-based Resources SmartBoard: Images of plant people, Access to plant website: http://www.mbgnet.net/bioplants/main.html 1 computer for every 2 students	**Vocabulary:** Traits, adaptations, flower, pollinate, seeds, chlorophyl, stems, leaves, needles, air sacs, fronds, holdfast

Methods/Procedure for the Class:

Engagement: (10 minutes)

-To engage the students attention, have some interesting photos of people dressed up as plants (or in fancy dress) on a SmartBoard for students to look at. After looking at some, ask them what they think we will be learning about today. - Plants.

-Continue looking at some more photos, then ask students why they think these photos were chosen.

-While maintaining a question-based discussion, explain that plants can have very pretty flowers that attract animals. These animals pollinate other flowers by carrying pollen from one flower to another. Students will likely have many questions about flowers at this point, so encourage them by stating that we will explore many traits of plants throughout the lesson.

Exploration: (30 minutes)
-Using their computers, students will explore the following website:
Plant website: http://www.mbgnet.net/bioplants/main.html
-Students will be performing a WebQuest with this website in pairs, but before doing this, listen to the following song (found on the same website) together, having the lyrics on the SmartBoard. The lyrics of the song are found at the end of this lesson. This song could be elaborated on in a future lesson by asking groups of students to work together to write new verses that identify traits of seaweeds or other plants.
Song with lyrics: http://www.mbgnet.net/bioplants/adaptsong.html

Their task, which should be passed out to students, written in clear steps, is to:

Name 5 characteristics of all plants,
List 4 things a plant needs to grow,
What makes a plant green?
What is pollination?
List 2 ways plants spread their seeds.
Describe 2 features of plants in:
Temperate Deciduous Forests,
In water,
One other Habitat of their choice.
Describe ONE thing that plants can do to participate in the environment:
From the Plants and Life on Earth link.

Explanation: (5-10 minutes)
-After 30 minutes of WebQuesting, even if they aren't done, have the students put their computers aside briefly while you perform the following:

-It is important to discuss as a whole class the key traits of trees, land plants, and seaweeds.

Take a few minutes to brainstorm as a class using three different pieces of chart paper: Some examples are seen in the table below. Include any other ideas students contribute.

Trees	Land plants	Seaweeds
Bark	**Flowers - attract pollinators: smell, look, other**	**Airsacs - float, breathe**
Needles vs. leaves	**stems, leaves**	**fronds - store energy, reproductive features.**
Roots	**Roots**	**Holdfast instead of roots**

Elaboration: (15-20 minutes)
Divide the class into groups of 3. Have the groups sit together, and send one member to come choose an image of a plant found in the Fundy biosphere (photos from Science Center). In groups, students will critique their image and identify the traits is has that enable it to survive in its habitat.
Ask students to try to identify 5 traits.
Have the group draw and label their plant on a large piece of paper.
Groups may present their poster together as a team to the rest of the class. Try to have one tree group, one plant group, and one seaweed group present.
Once they have done this, they can return to working on their WebQuest until the end of the class.

Evaluation: (0 minutes)
The evaluation of this lesson will be done by looking at the posters the groups have made.

Resources:
http://www.mbgnet.net/bioplants/main.html

The Desert and Rainforest Habitat (lyrics to song)
Plants survive in their surroundings
Because they adapt
To conditions that are found in
The desert habitat.
There it's always hot and sunny,
The air is very dry,
Soil is sandy and it's rocky,
And the winds go blowing by.

How have desert plants adapted
To their habitat?
Roots are long for finding water
That they store in stems so fat.

Leaves lose water so they're smaller;
Some plants have none, you know.
Cacti have spines that will protect them
As they slowly grow.

Other kinds of plants are living
Where they must adapt
To the tropical rain forest—
a wet, shady habitat.
There it's always warm and rainy.
Soil is shallow and poor.
There's so many plants it's shady
On the forest floor.

In the tropical rain forest
How do plants adapt?
Buttresses support the tall trees;
Drip-tip leaves shed water.
Prop and stilt roots can be found here—
Supporting while they feed.
Some plants climb or live on others
For the light they need.

WebQuest: Questions to Discover!

Go to the following website to find the answers to the following questions:

Plant website: http://www.mbgnet.net/bioplants/main.html

1. Name 5 characteristics of all plants,
    1.
    2.
    3.
    4.
    5.
2. List 4 things a plant needs to grow,
    1.
    2.
    3.
    4.
3. What makes a plant green?
    1.
4. What is pollination?
5. List 2 ways plants spread their seeds.
    1.
    2.

6. Describe 2 features of plants in:
    1. Temperate Deciduous Forests:
        1.
        2.
    2. In Water:
        1.
        2.
    3. One other Habitat of their choice:
        1.
        2.

7. Describe ONE thing that plants can do to participate in the environment: (From the Plants and Life on Earth link)
    1.

Title of Lesson: We're All Connected	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**
Overview: Students will participate in an activity in a hands on activity that will represent a complex food chain. This activity will introduce the idea that all parts of a food chain have an effect on each other. This will be followed by students creating their own food chain.	
NCTM Standards: Life Science Content Standard C As a result of activities in grades K-4, all students should develop understanding of • Life cycles of organisms • Organisms and environments	
Curriculum Outcomes: ▪ 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 ▪ 302-3 classify organisms according to their role in a food chain ▪ 301-1 predict how the removal of a plant or animal population affects the rest of the community	
Class Objective: The objective is for students to be able to successfully classify organisms according to their role in a food chain and to begin to look at what happens when pieces of the food chain are removed.	
Instructional Strategies: Whole-class instruction Project-based learning	**Time Required:** 60 minutes
Materials: Laptop/ group Poster/ group Ball of string/ yarn Markers Magazines Check list	
Text/Audio/Video-based Resources http://www.youtube.com/watch?v=SWvtRf4TAO4 (Food Chains, Food Webs, Etc.) (0:00-3:00)	**Vocabulary:** Producers, primary consumers, secondary consumers, decomposers, food chain, food web

Methods/Procedure for the Class:

Engaging Question: (5 minutes)

There are multiple consumers. What happens when multiple creatures consume the same food in a chain?

Watch video: http://www.youtube.com/watch?v=SWvtRf4TAO4 (0:00-3:00)

Exploration: (5 minutes)

Have the entire class stand up in a circle. Have the class toss a ball of string from student to student until every student has a piece of string that they are holding onto. Have students sit down while still holding the string in their hands.

Explanation: (5 minutes)

Explain to students that this represents a food chain. Give example of how this relates to the Fundy Biosphere. Use terms like producer, primary consumer, and secondary consumer. Question students on an example that fits multiple habitats within the Fundy Biosphere.

Expansion: (5 minutes)

To introduce students to the idea of each piece of the food chain having an effect on the rest, cut one piece of string and have students pull. Have them imagine that there was only a producer on one side of the string. Ask what would happen to the other side of the food chain.

Evaluation: (40 minutes)

Break students into groups of 4. Give each group a poster to create a food chain that includes 6 organisms (1 producer, 4 consumers, and 1 Decomposer) from the science centre. Students must draw their habitat, but can choose to draw, print pictures, or cut pictures out of magazines of their organisms.

Differentiation

- Students choose their habitat and the way they choose to depict their organisms in the food chain.

Resources:

http://www.youtube.com/watch?v=SWvtRf4TAO4

Create a Food Chain

Group Members: _____

Checklist:

____ 1 producer present

____ 4 consumers present

____ 1 decomposer present

____ Proper habitat for food chain used

____ Food chain is correct (/3)

____ Poster is colourful

Total: /8

Comments:

Title of Lesson: Don't Lose Your Population!	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**

Overview: In the previous lesson, students learned about the food-chain. They performed an activity involving creating a network between all producers, primary consumers, and secondary consumers. Today's lesson will build on this concept of interconnectedness, by encouraging students to consider what will happen if a habitat loses one of its populations.

NCTM Standards:

Life Science

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of an organism
- Life cycles of organisms
- Organisms and environments

Science in Personal and Social Perspectives

Content Standard F

As a result of activities in grades K-4, all students should develop understanding of:

- Changes in environments.

Curriculum Outcomes:

Science

- 301-1 predict how the removal of a plant or animal population affects the rest of the community.
- 108-6,108-3: identify their own and their families' impact on habitats, and describe how personal actions help conserve habitats.

Music

Creating, Making and Presenting:

GCO: 1. Students will explore, challenge, develop, and express ideas, using the skills, language, techniques and processes of the arts.

- SCO: 3.1.2. Explore a range of materials and techniques to create, make and present music

Class Objective:

Students will observe the effects of population loss on an ecosystem. Students will discover, and be expected to think critically about, how plant and animal populations fluctuate naturally. This understanding will lead them toward being able to consider what effects unnatural disturbance of environments have on the ecosystem (in the ensuing lesson).

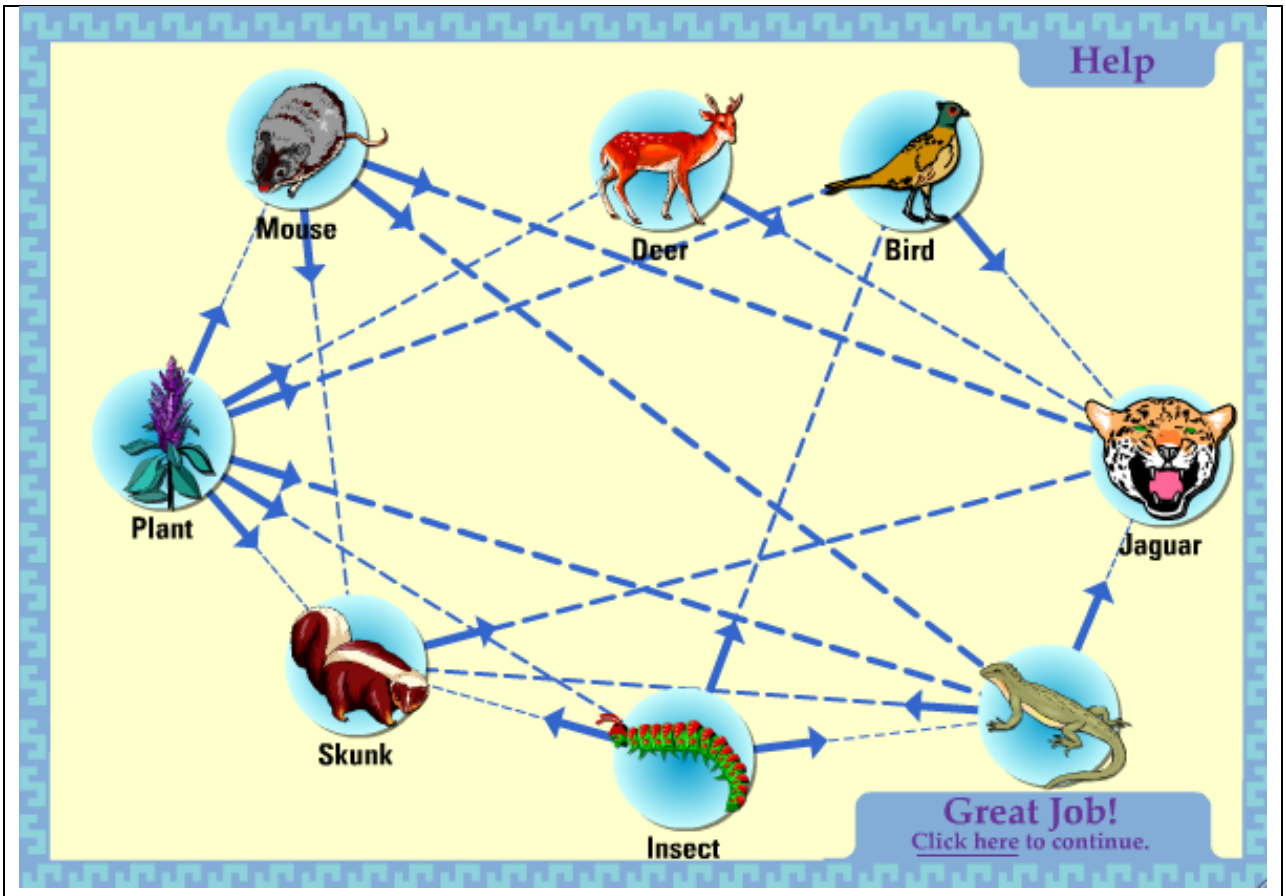
Instructional Strategies:	**Time Required:** 60 minutes
SmartBoard Activity Small Groups Class discussion Music Activity	

Materials:
Whiteboard
Signs - 2 FOREST, 2 OCEAN
Yarn - cut into pieces (15 at each corner group)
Baskets with labels: producer, primary consumer, secondary consumer
Pictures from Science Center
Instruments - bins from music room (many types)
Pencil crayons/crayons
Teacher checklist for assessment

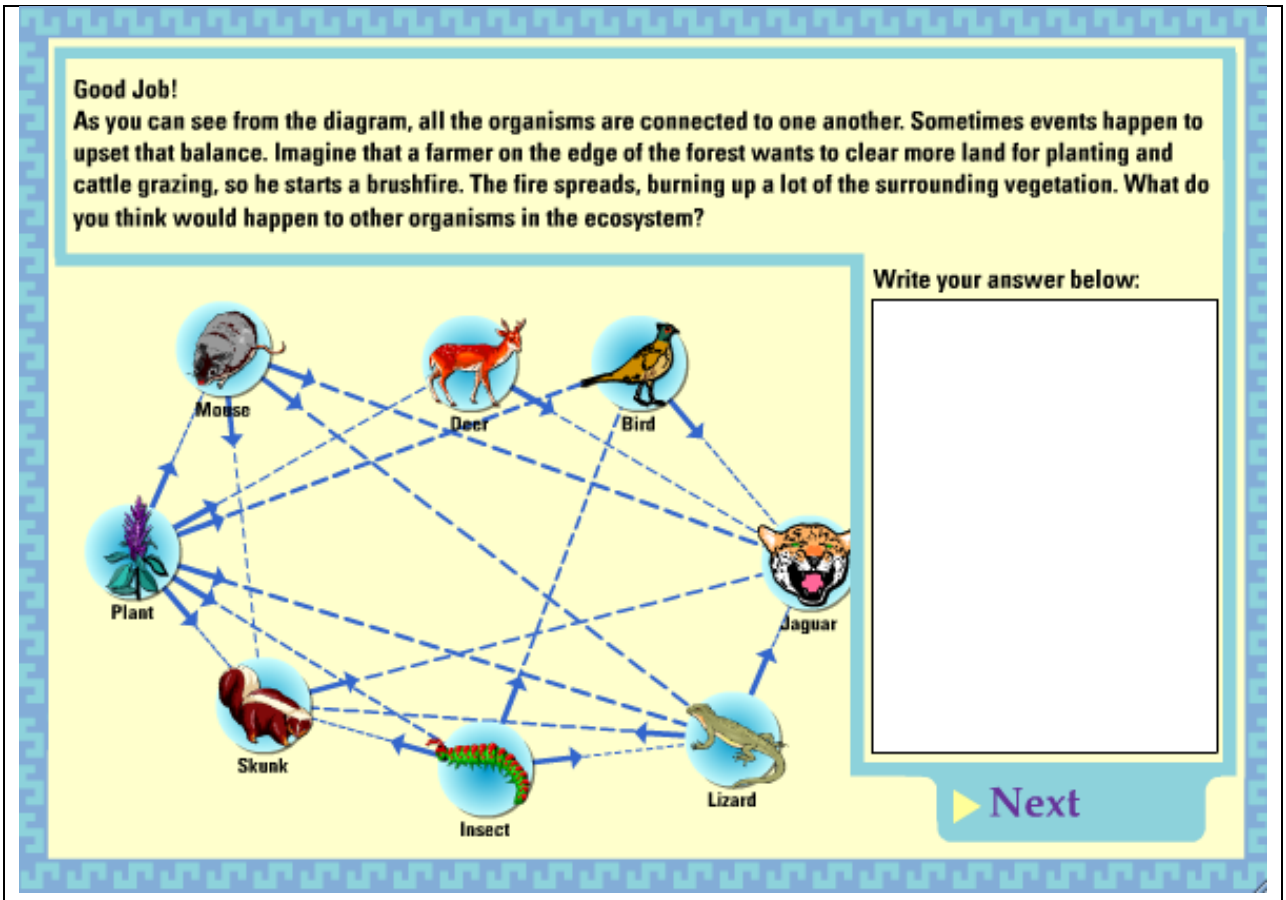
Text/Audio/Video-based Resources	**Vocabulary:**
SmartBoard Link to food-web website (below)	Population, ecosystem, habitat, diversity

Methods/Procedure for the Class:

Engagement: (10-15 minutes)
-To engage the students, use the SmartBoard to go to the following website: http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/form_wildcats.htm#
-Engage students in deciding what animals eat what other animals/plants. Explain that this is an example of an ecosystem in Mexico, so we will have to create our own food web for our local Fundy ecosystem. An image of the food web you will create as a class is below:



After creating the food web, the game will proceed to give the following scenario:



-Ask students to contribute their thoughts as to what would happen if the farmer starts a bushfire to clear some land for his crops/livestock.
-Responses should include:
there would be less for the mice, deer, lizards, skunks, and birds to eat/use.
this would mean there are fewer of these animals.
Now the animals who eat the above animals will have less to eat, so they will be hungry.
Some of these animals might die because they don't have enough to eat.
As students provide responses, organize them onto a big piece of sheet-paper to show the cascading effects of losing a population within an ecosystem.
- *On the whiteboard, maintain a list of key vocabulary terms as you come across them. They will be in italics throughout this lesson plan.

Exploration: (25 minutes)
-The exploration of this lesson involves students choosing an animal/plant from the Science Center Activity and discovering what other animals/plants are involved in the same ecosystem as theirs. Once they have chosen, student will group together with all other students who belong in the same ecosystem as them (if there is choice, they can choose which group they want to be in (ie: an eagle eats from land and ocean)). In their groups they will place (not glue) the picture of their animal onto a poster and make connections to what plants/animals they eat. One at a time, students will discuss the impacts of losing one of the plants/animals in this

population.
-There will be 4 groups made within the class: 2 ocean ecosystems and 2 forest ecosystems (5 students in each).
-The teacher should write the important information that follows on the board for student reference:
Pictures of animals/plants will be organized in containers.
8 producers (4 forest and 4 ocean) - 1/2 per group
8 primary consumers (4 forest, 4 ocean) - 1/2 per group
8 secondary consumers (4 forest, 4 ocean) - 1/2 per group
Students will go to their respective group corners. The teacher will have made signs that designate where to go (2 FOREST signs, 2 OCEAN signs).
-There will be a poster at each corner with cut pieces of yarn that students will use to make connections between the organisms.
-Once all of the connections have been made, one at a time, remove:
one of the producers,
one of the primary consumers,
one of the secondary consumers,
one of the decomposers (if applicable).
-Talk with your group about what impacts the removal of these organisms will have on the rest of the organisms.
-If a group is done before the rest, have them draw other animals that would belong in the same food web and make connections within the food web until the other groups are done.

Explanation: (10-15 minutes)
-The explanation portion of the lesson will be in the form of a classroom discussion, with the students leading most of the discussion and the teacher acting as a facilitator - scaffolding language and concepts and probing students for more information when they speak out.
The purpose of this discussion will be to help students develop a more concrete understanding of the effects of population loss within an ecosystem.
-When the discussion wains, the teacher can pull out a student's name (on a popsicle stick) and ask them a specific question to keep the conversation going.
-Keep a vocabulary term list going on the whiteboard and pause to define certain terms with the class. (see vocabulary list for key terms for the lesson, try to touch on all of these during the discussion).
-Refer to the class objective to keep the conversation on track.
*The teacher will have a checklist with student's names and will check-off when a student displays an ability to independently understand the effects of population loss on the ecosystem.

Elaboration: (15 minutes)
-The elaboration of this concept will involve incorporating music into the lesson. The music outcome is listed above on the lesson. If possible, consult with the music teacher and inquire about a song the class is learning to play along with in music class. If there is nothing, use a simple song that the students will all know.
-The activity involves separating the class into groups (4 or 5), where each group plays an

instrument type.

The procedure is as follows:

Distribute a different instrument to each group.

Have groups to represent producers, primary consumers, and secondary consumers.

With each instrument in the song representing a different animal or vegetation, the students perform the song they have begun or mastered already in music class.

Slowly, the teacher signals to one group at a time to stop playing (in a orderly fashion).

Eventually it becomes quiet and the students can see the effect populations disappearing have on other populations and the habitat.

Repeat the activity, and this time have the students choose when to stop playing based on the cascade effects of population loss. If a top level of the food chain goes away, what should other groups below that level do? (get louder, because they don't get eaten).

Lead a discussion about what the students felt or thought as the instruments stopped one by one. What effect did it have?

Evaluation:

-The evaluation of student understanding will occur earlier in the lesson, during the class discussion.

Resources:

http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/form_wildcats.htm#

Title of Lesson: Back and Forth and Repeat	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**

Overview: Students have been learning about population loss and its effect on the ecosystem. To introduce the next outcome of habitat loss and its effect on the populations within an ecosystem, students will perform the following kinesthetic activity. Students will live-out the experiences of elk as they migrate from year to year, and the possible natural and unnatural impacts (limiting factors) that will influence their population numbers.

- Each students will represent more than one elk. Be sure to explain this to students. Avoid having limiting factors that would only affect one or two elk (wolf attack), rather use examples of limiting factors that affect large numbers (avalanche that traps a group, loss of habitat to human development).
- The simulation will show the effects over many years. Be sure to demonstrate that some years, the population may improve due to Natural Reserves.

NCTM Standards:

Life Science

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of an organism
- Life cycles of organisms
- Organisms and environments

Science in Personal and Social Perspectives

Content Standard F

As a result of activities in grades K-4, all students should develop understanding of:

- Changes in environments.

Curriculum Outcomes:

- 301-2 relate habitat loss to the endangerment or extinction of plants and animals
- 301-1 predict how the removal of a plant or animal population affects the rest of the community.
- 108-1 identify positive and negative effects of familiar technologies.
- 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.

Class Objective:

Students will be able to list limiting factors affecting populations of migrating elk and predict the effects of such limiting factors. Students will begin to apply their understanding to other populations within the Fundy biosphere.

Instructional Strategies: Students will role-play the annual migration of elk. There will be simulations of dangers to their	**Time Required:** 60 minutes

survival at each end of the migration**.**	
Materials: Paper Plates: 2 for every 3 students. Chart paper and markers Paper for warning sign Markers, pencil crayons, crayons	
Text/Audio/Video-based Resources http://www.youtube.com/watch?v=4SxxOTkfKPk	**Vocabulary:** Limiting factors, migration, habitat loss, annual change

Methods/Procedure for the Class:

This activity will take the whole class. Introduce the idea in the class, then take the class to the gym or another large room that is available in the school (when I did this as a student, we did it in a foyer at the bottom of the stairs where there was ample room)(assume the gym is available for the rest of the lesson plan). Bring plates, chart paper, and markers along and tape it to the wall in the gym.

Engagement: **(5 minutes)**

Begin class by asking students what animal this is:

-After discovering that it is an elk, watch the following video to introduce the concept of elk migration: http://www.youtube.com/watch?v=4SxxOTkfKPk

This video shows elk migrating and crossing a road. At this stage, introduce the students to the outcome of the day and read them the objective of the day (see above).

- Ask students to discuss in pairs the effects of the road being on the migration path may have. Ask them to think of 2 effects.
- Tell students they will be going to the gym to do an activity, and discuss expectations of their behavior when there (respect the environment, stop and listen when requested, they can run when appropriate, etc.).
- Take students to the gym.

Exploration: (35 minutes)

Reference: http://idahoptv.org/dialogue4kids/season4/elk/activities.cfm

1. Have students help place half of the paper plates in a patch at one end of the playing

field and the other half of the plates in a patch at the other end.

2. Explain to the students that they are elk and will migrate between these two areas at your signal. Explain that as they migrate, students must *walk* because elk do not run when they migrate. Tell them that the paper plates represent suitable habitat for elk. As students what must be in an elk habitat.

- Possible answers: grassy area, trees to hide under, big/open area without people, etc.

3. Explain that at the end of each journey the students will have to have one foot on a paper plate in order to continue. Tell them that for the purposes of the activity only three elk can occupy a habitat (paper plate) at any one time. If they cannot get their foot on a plate, that means they have not found any suitable habitat and they "die". Elk that have died move to the sidelines - at least temporarily - and watch (these students will be given a task soon).

4. Begin the activity with all students at the wintering habitat.

- Describe briefly the wintering habitat - warmer weather, water, large area, etc.

There should be three students for each paper plate. Announce the start of the first migration. Have students migrate to the calving habitat. Because there is enough habitat (paper plates), all the elk will migrate successfully to the calving habitat.

5. Explain that many factors can limit the survival of populations of migrating elk. Some of these factors involve:

- changes in the wintering and calving habitats. Ask students to think of how these changes might occur,
- there may be times when there is abundant food, water, shelter and space suitable for the elk,
- other times any or all of these elements may be reduced, limiting the elk's potential for survival.

6. Before the elk migrate back to the wintering habitat, remove one plate from the wintering range. Explain that a road has been built through the wintering range resulting in a loss of habitat and an increase in accidents with cars.

7. Repeat the instruction to migrate, and send the elk to the wintering habitat. Three students will be displaced; have them stand on the sidelines. Tell the students that these three elk died as a result of habitat loss and accidents. Remind any "dead elk" that they can come back as surviving calves when habitat is available in the calving area.

8. You may graph/tally the migration cycles using the chart paper.

9. Have the “dead elk” remove three plates in the calving habitat. Explain that this catastrophic loss is due to a new subdivision that reduced the amount of habitat. Instruct the students to migrate. This will result in many students waiting on the sidelines, so provide them with an opportunity for reentry in one of the next cycles.

10. Repeat the process for eight or ten migration cycles to illustrate changes in habitat conditions that affect elk. Be sure to create one or more "disaster" years to illustrate catastrophic loss of large areas of habitat.

11. Also, have cue cards with “avalanche,” “car accidents,” “starvation,” written on them. In one or two of the migrations, have the “”dead elk” run out during the migration and ‘nab’ an elk to show that these events occur during the migration. When the elk arrive at the calving habitat after this, there will be extra plates, so ask students what implications this

will have on the population. Will there be more potential for calves to grow strong because there are more resources for them? This will be a means to add new elk back to the population.

- Overall, suitable habitat for elk is diminishing and so the activity should end with less habitat than the elk need.

Explanation: (5 minutes)

Return to the class and graph the results of the migrations together as a whole class on the whiteboard.

Elaboration: (15 minutes)

Have the students pair up with a partner. To do this, have them do a "stand up, hand up, pair up" method of pairing.

Hand out a strip of paper with two limiting factors and two favoring factors for each group. They may choose one of each to elaborate on.

- Have them make a caution/warning sign for their limiting factor OR create a role-play for how this factor affects elk populations. Explain that the sign/role-play should show the possible negative effects on elk populations.
- Once done their sign, they can write in their journals (until the end of class) about how the favoring factor they choose can help the elk populations grow.

Factors limiting survival of migrating elk populations

- Urban expansion
- Drought (no rain)
- Pollution and contamination of water
- Poaching
- Highways
- Heavy snowfall (greater than 24") causing lack of winter food
- Wet, cold weather during calving season
- Human activity on roads during times of migration
- Loss of migration corridors
- Loss of thermal cover and hiding cover
- Human activity on calving and wintering grounds

- Factors favoring survival of migrating elk populations
  - Preservation of range lands
  - Preservation of migration corridors
  - Early spring plant growth due to mild temperatures and abundant rain
  - Restoration of habitat
  - Regulation of hunting
  - Dynamic balance with predators
  - Freedom from disturbance during wintering and calving times
  - Road closures on public lands
  - Restrictions of public lands during periods of elk use

Evaluation:
Collect the signs and journals to inform yourself of the level of understanding the activity imparted to the students. The teacher will make notes during role-plays of how well students demonstrate understanding.

Resources
http://idahoptv.org/dialogue4kids/season4/elk/activities.cfm

Title of Lesson: Are You Extinct?	Megan Hodd, Luke McFarland, Justin Upshall **Grade: 4**

Overview: Now that students have explored the effects of population loss on an ecosystem, they will explore habitat loss. We will discuss the importance of Natural Preserves and the impacts humans can have on ecosystems and habitat destruction. Their knowledge of plant and animal traits will be reinforced through considering these ecosystem issues.

NCTM Standards:

Life Science

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of an organism
- Life cycles of organisms
- Organisms and environments

Science in Personal and Social Perspectives

Content Standard F

As a result of activities in grades K-4, all students should develop understanding of:

- Changes in environments.

Curriculum Outcomes:

Science

- 301-2 relate habitat loss to the endangerment or extinction of plants and animals.
- 105-1 describe current investigations of local or regional habitat issues
- 108-3 describe how personal actions help conserve natural resources and care for living things and their habitats

Art

Development of Imagery:

GCO: Create an artwork, independently, based on memory, observation, imagination, fantasy, mood and in response to expressive art forms, e.g., dance, drama, music and literature.

- SCO: Use a variety of sources to stimulate ideas on art work e.g. poems, songs, the environment.

Class Objective:

The objective is to have students be able to identify possible sources/causes of habitat loss, and infer the affects this has on the plant/animal populations therein.

Instructional Strategies:	**Time Required:** 60 minutes
DEMO Collage Independent research Whole-class discussion Journal entries	

Materials:

Tin container (10 cm deep) with a quick habitat built inside
Soil for habitat
Mini umbrella
Container for water - water died a color for visual effect
Paper animals and trees to go in the habitat (quick sketches)
Dead as a Dodo resource pages (see bottom)
Pictures, magazines, newspapers, National Geographics - for collage
Glue
Scissors
Large paper – collage

Text/Audio/Video-based Resources	**Vocabulary:**
The Learning Zone: http://www.oum.ox.ac.uk/thezone/animals/extinct/index.htm - free access to Oxford University Museum Website.	Extinct, endangered, habitat loss, human influence, natural reserve

Methods/Procedure for the Class:

Engagement: (5-10 minutes)

-The class will begin with a demonstration of how Natural Reserves serve to protect animals, plants, and habitats. The demonstration involves placing an umbrella over a mini-habitat built in a tin pan. By pouring water onto the umbrella, students will observe how the umbrella protects the habitat from being destroyed. After the students have observed this, demonstrate the effects on the habitat when the umbrella is removed. This demonstration will lead into a discussion of how Nature Reserves protect plans, animals, and habitats.

-Inform the students of the outcome of the day. Write this at the very top of the whiteboard and leave it there for the duration of the lesson:

Relate habitat loss to the endangerment or extinction of plants and animals.

Ask what the water could represent in the DEMO. What could the umbrella represent?

Discuss the importance of national reserves such as Fundy in how they protect natural habitats: What would happen if the reserve wasn't protected like it is. (Build highways, deforestation, build homes on animal habitats, etc.)

-How would you and your family act at Fundy? What if it wasn't a 'special' reserve? Why do you feel inclined to act differently when you are there vs. when you are at the park, or downtown Fredericton. (The discussion should focus on how we are more inclined to be considerate of the environment when we are at National Reserves.)

Exploration: (23 minutes)

Choice between TWO activities!

Dead as a Dodo: Reference: http://www.oum.ox.ac.uk/thezone/animals/extinct/index.htm

To explore some extinct animals from around the world, students will be grouped into groups of 2 or 3 to learn about a specific extinct animal. The teacher will pass around the handouts and groups will read up on their extinct animal. The purpose of this activity is not for students to learn specific information about the animal so much as for them to discover the cause of the animal's extinction. The students will briefly share their findings with the class.

Write these steps on the board for students to refer to:
Groups of 2 or 3
Read the sheet about your extinct animal.
Discuss what caused the animal to become extinct. Identify 2 or three possible factors.
Think about where the animal might live now if it hadn't become extinct.
What could/should we have done to protect this extinct animal.
Choose a member to share what you discussed with the class.

Collage of human impacts on environments -
Using pictures the teacher has printed off, and looking through newspapers and magazines, students will find images that depict the effects of humans on natural environments. If they choose, students may also include images that show Nature Reserves, or undisturbed places in nature, to compare.
Write the following on the board for students to refer to:
Work alone
Look through pictures and books to find pictures that show human impacts on natural environments.
Find pictures that show natural environments that haven't been influenced by humans.
Cut out and glue your pictures into a collage showing human impacts on natural environments.

Explanation: (10-15 minutes)
-The explanation portion of this lesson will involve students presenting their findings during the exploration phase.
-Students will be encouraged to discuss their classmate's work as a class, and sometimes in a pair/share.
-The teacher will take opportunities to suggest important terminology (populations, human impacts/influences, extinction, endangered, protection, prevention, habitat, habitat loss), relate the discussion to Fundy National Reserve, give specific examples from Fundy. During this discussion the teacher will encourage students to develop thoughts of their own by asking them questions to support what they are presenting/saying.

Expansion: (15 minutes)
-Students will choose an animal or plant from the Science Center, and describe how it is being protected by the Fundy National Reserve in their science journals. Write the following question on the board to prompt ideas for the students.
Separate the ideas as MUST and COULD write about:
MUST:
Identify what habitat the animal/plant lives in.
Describe why it lives there (what elements of the habitat are important to the animal/plant).
Explain how the Fundy National Reserve protects this animal/plant.

COULD:
What interests you about this plant/animal?
Where else could this animal live/where else does this habitat exist?

Is the plant/animal in danger of extinction? Is it endangered? (If you don't know, how can you find out?)

Evaluation: (5 minutes)
-To evaluate how well students understood the outcome for the day, ask them to pass in a quick exit slip that lists three different ways that habitats can be lost or destroyed. Also, have them state something they didn't understand well from the lesson.

Differentiation

- Flexible groupings
- Choice of activities: research / collage
- If there are any struggling writers in the class, the teacher will go chat with this student to find the answers to the exit slip questions to avoid stressing the child with having to write (when this is not the objective of the activity)

Resources
http://www.oum.ox.ac.uk/thezone/animals/extinct/index.htm

Summary:

Habitats and the animals and plants within them can be a very complex topic. This unit has introduced students to the main concepts such as local and regional habitats, animal traits, survival needs, food chains, and conservation. Students will go more in-depth as their schooling continues.

References:

Abruscato, J. and DeRosa, D. (2010). *Teaching children science, A discovery approach*. Pearson Education Inc., Boston: USA.

Department of Education and Early Childhood Development. (2002). *Science Grade 4 Curriculum*. Retrieved from http://www.gnb.ca/0000/publications/curric/grade4science.pdf