

Grade 4 Program: Habitats and Communities

"Our Lessons Really Rock!"

Scenic Caves Nature Adventures

2002

Scenic Caves Nature Adventures Education Program

Scenic Caves Nature Adventures

Welcome to our Education Program!

Teachers of students from grade 4 - 8 are provided with a lot of very useful, classroom- ready materials including:

Program Introduction and Overview
Background Information about each topic,
Worksheets (and answer sheets),
an **Internet Scavenger Hunt** for the Caves' website,
40 Quick- Questions
and some very practical and current **Student Demonstration** activities.

The guide also contains some administrative forms to help you get you class organized for the trip:

Your Rock Groups
Guidelines for Conduct

Also, we would like to hear your responses to the program. So, we included an:

Evaluation Form

The guide was written and compiled by Stacey LePage, an intermediate teacher from Collingwood, Ontario who has also written curriculum for The Simcoe County District School Board, the United Nations, the Toronto Star (classroom connection and Aboriginal Pride), CBC Radio - Quirks and Quarks, and The Canadian Electricity Association. Contributing writers include Taresa Matchett (Habitats and Communities and Diversity of Living Things), Marg Moran (Cells, Tissues, Organs, and Systems), Bill Ironside (Rocks, Minerals, and Erosion), Joanne Fleming (Water Systems) Donna Langman (promotional packages and Scavenger Hunt), and Gwen Kistemaker (a ton of student worksheets throughout the program).

"Our lessons really rock!"

...and some are more petrified than others.

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Teaching Strategies and Learning Activities

Lesson #1

- ✓ Have students discuss what would happen to them if all of a sudden they had to leave Canada to live in a new country. All of their possessions were left behind - everything that they would encounter in the future would be foreign.
- ✓ Discuss the term "culture" and relate this term to habitat.
- ✓ Relate the "refugee" experience to the populations in Africa, Serbia and Vietnam - when these populations needed to flee their own "habitat" for a new culture.
- ✓ Discuss what happens when an animal's habitat is changed.

Lesson #2

- ✓ Discuss what elements make up a habitat. (Use background information)
- ✓ Have students describe their own personal habitat. (Refer to Habitat Haven Worksheet)

Lesson #3

- ✓ Assign the vocabulary worksheet and have students write the assignment in pencil - making logical deductions.
- ✓ Correct the sheet together. Perhaps post the vocabulary on chart paper at the front of the class.
- ✓ Discuss "chains" and ask students to describe the "chain of events" on The Shoe Chain worksheet to show how everything in our world is linked (chained) together.
- ✓ Discuss what is meant by a food chain.
- ✓ Have students record what they have eaten for one week. (Food Chain Worksheet)

Habitats - Gr. 4.....2

Scenic Caves Nature Adventures

Lesson #4

- ✓ Teach the terms producer, consumer, decomposer, herbivore, omnivore.
- ✓ Have students begin to complete the **Who Is Eating Whom?** worksheet.

Lesson #5

- ✓ Students begin the Internet Spelunker's Scavenger Hunt worksheet.
- ✓ Review the Niagara Escarpment and Scenic Caves information sheet with students.
- ✓ Brainstorm a list of carnivores, herbivores and decomposers that they may encounter at Scenic Caves.

Lesson #6

- ✓ Assign students - Day One - 20 Questions or so....
- ✓ Give time to work on Scavenger Hunt.

Lesson #7

- ✓ Correct Day One and assign Day Two.
- ✓ Have students work through "An Ecosystem Food Web" worksheet

Lesson #8

- ✓ Correct Day Two and assign Day Three.
- ✓ Correct Food Web worksheet.

Habitats- Gr. 4.....3

Scenic Caves Nature Adventures

Lesson #9

- ✓ Correct Day 3 and assign Day 4.
- ✓ Familiarize students with Scenic Caves Nature Preserve guidelines sheet.
- ✓ Discuss what would happen if the food chain were to be interrupted.
- ✓ What natural disasters would interrupt the normal functioning of an ecosystem?
- ✓ Offer students a list of endangered species of plants and animals or have them brainstorm a list.
- ✓ Have students examine what caused a change in their selected animal or plant habitat, leading to this species' threatened or extinct state.

Lesson #10

- ✓ Correct Day 4.
- ✓ Discuss why the Niagara Escarpment has been classified as a World Biosphere Reserve.
- ✓ Read *The Lorax* by Dr. Seuss.
- ✓ Have students determine what lead to the extinction of the animals in the book.
- ✓ Explain the term "allegory" and that this story is really an allegory.
- ✓ Discuss how realistic the story is and why it may have been banned in the United States.

Lesson #11

- ✓ Trip to Scenic Caves Nature Adventures (remind students to bring their field work study sheets)

Life Systems: Grade 4

Habitats and Communities

Introduction

Earth is a unique place in the solar system. It is the only one of nine planets (as far as we know) that supports life; nothing lives alone. Everything in the world is dependent on some other living or non-living thing. "That depends.." is an expression that takes on a whole new meaning when we refer to habitats and ecosystems. Ecosystems are examples of this interdependency. A habitat is where an animal lives, where it gets its food, water and shelter. A community is formed by a group of plants and animals that live together in one habitat. Whatever happens to one habitat, affects entire systems of "life". Students will become familiar with the basic needs of plants and animals in a habitat. Through investigation, they will study some of the factors that affect habitats, including changes that occur naturally and changes brought about by people.

Student Demonstration

Language: Students will identify ways in which humans are dependent on forests (products we use and for jobs the industry creates) and how our needs counterbalance the needs of the forest itself. They will examine the children's story, *The Lorax*, by Dr. Seuss and interpret suggested parallels to the real world.

Habitat: Students will reconstruct a habitat that may have supported a creature that is now only a fossil at Collingwood Scenic Caves.

Adaptation: Explain the importance of being able to adapt to a new environment, making reference to species that have not adapted to a new environment ie. dinosaurs.

Life Systems - Gr. 4.....2

Scenic Caves Nature Adventures

Program Areas

Geography, Science and Technology, Language

Keywords and Vocabulary

ecology, biosphere, biome, ecosystem, populations, community, habitat, niche, environment, food chain, extinction, adaptation, dependency, herbivore, carnivore, omnivore, producer, consumer, decomposer, fungi, nutrient, energy, bacteria

Background Information

Food Webs

The sun is the primary source of energy for our food chains. Its energy is "eaten" by plants who then use the energy to grow. The plants, in turn, become food for many different animals. When the animals die, tiny organisms feed on the plants and animals and are able to break down the decaying matter. The nutrients (energy) from the plants' and animals' body are released back to the soil where they are available for new plants whose life is just beginning. As organisms are often in more than one food chain, the food chains within each ecosystem become connected. Connected food chains are called food webs. Within a food web, the main players are consumers, decomposer and producers.

Consumers

Consumers cannot make their own food from the sun. They must eat other things to get energy. They come in three different varieties: herbivores (animals that eat only plants), carnivores (animals that eat only animals) and omnivores (eat both plants and animals). Humans are consumers.

Life Systems - Gr. 4.....3

Scenic Caves Nature Adventures

Decomposers

Decomposers are insects, fungi, and micro-organisms that eat dead materials. They return the nutrients to the soil for plants to use again.

Producers

Plants are producers because they use the sun's energy to make their own food. Animals cannot do this - when was the last time you knew a person who went to lunch and ordered a ray of sunshine? The production of food occurs through a process called photosynthesis. Plants use a green substance which is found in the leaves - called chlorophyll - to trap the sun's light and use it to make a sugar called glucose. The light must be combined with carbon dioxide (from the air) and water (from the ground). Oxygen is a by-product of this process and is released into the atmosphere from the plants' leaves. Since producers can "make" food from the sun - they are usually at the beginning of most food chains in ecosystems.

Ecology is the study of the relationship of plants and animals to their physical and biological environment. Light, heat, moisture, wind, oxygen, carbon dioxide, and nutrients are elements that make up the "physical environment". The biological environment refers to plants and animals - living things.

A **biome** is a term that refers to a large area that has a particular climate and a particular vegetation and animal life. The plants and animals that live in one biome have adapted well to their environment and tend to stay in this location where they may thrive. Pine trees, for example, thrive in a cool, moist environment. They exist in a completely different biome than cacti for example. There are seven major biomes in the world:

- 1) **Temperate** - broad leafed deciduous trees, shrubs as undergrowth, lichens and mosses
- 2) **Grassland** - many species of grasses, some bushes and occasional trees
- 3) **Desert** - some cacti and flowers, thorny bushes and shrubs
- 4) **Coniferous Forest** - coniferous trees, black spruce pine and fir

Life Systems - Gr. 4.....4

Scenic Caves Nature Adventures

- 5) **Tundra** - lichens and mosses with grasses and small shrubs
- 6) **Savanna** - grasses with some scattered deciduous trees
- 7) **Tropical Rain Forest** - many trees and plants, as well as vines

Do people have biomes?

An **ecosystem** is a balanced system. Living (biotic) and non-living (abiotic) systems work together in an harmonic relationship. How can something that isn't living, actually keep something living in balance? Disney would refer to it as "The Circle of Life"- and the sun "fuels it all." The producers (green plants), consumers (herbivores and carnivores), and decomposers (fungi and bacteria) become difficult to discern from the soil - as they decompose and return to the soil. The energy from the living is transferred into the soil and then back again to the living through the sun, water, oxygen and carbon dioxide and nitrogen cycles.

Organisms that use or give energy are called **populations**. A population is a group of organisms of the same kind living in the same space at the same time. Groups of humans are often referred to as populations. Just as humans play certain roles that are needed to make the group function - so do other organisms. To the best of our knowledge, there are very few, if any computer technicians of the organism world - and in this capacity, humans are different from a simple community of organisms. There are, however, many similarities including bakers and garbage collectors. The organism's job is its "**niche**". In human circles, a niche defines our occupation - how we earn our living. The area surrounding the organisms and their jobs is referred to as their **community**.

Life Systems - Gr. 4.....5

Scenic Caves Nature Adventures

Name: _____

Habitat Haven

Answer the following questions, using complete sentences.

1. Why did your family move to your current location?

2. What resources are available at this location that are necessary for your immediate survival?

3. Would you be able to live outside your house in the middle of winter - in your summer shorts?
How would you *adapt* to your environment?

4. In what ways have you adapted to your life in your current habitat?

Life Systems - Gr. 4.....6

Scenic Caves Nature Adventures

5. What characteristics do you share with your neighbours?

6. In what way are humans dependent on plants and animals to help them *adapt*?

7. How has the human habitat affected the habitats of the natural world?

Life Systems - Gr. 4.....7

Scenic Caves Nature Adventures

Vocabulary

Throughout this unit you will see the terms listed below. In order to gain a better understanding for the material it is important for you to be familiar with the terms and be able to use them appropriately in presentations and discussions.

Habitat _____

A. The functional role of a species in a community

Niche_____

B. Relying on things for your own survival

Ecology _____

C. The surroundings in which we live

Biome_____

D. The changes that a species must make in order to survive

Environment _____

E. The study of the relationship of plants and animals to their physical and biological environment

Food Chain_____

F. A group of organisms of the same kind living in the same place, at the same time

Extinction_____

G. The environment in which a plant or animal naturally grows or lives

Adaption_____

H. When an organism is no longer found with the ecosystem

Community _____

I. Differing populations within the habitat

Dependent_____

J. The cycle of food production in which organisms are found

Life Systems - Gr. 4.....8

Scenic Caves Nature Adventures

Your Shoe is a Habitat???

Show a leather shoe to the class. Brainstorm with the class by asking the following questions:

Where do you think this shoe came from?

Where did it come from before it was there?

Write all responses on the board. Try to lead the questioning until students recognize that the original source of the leather was the soil (plants that feed the cow that provided the leather).

Where the shoe has been:

1. Classroom teacher was wearing it
2. Shoe store - shoe was purchased
3. Factory - shoe was manufactured
4. Tannery - leather was made from animal skin
5. Packing plant - animal was skinned and butchered
6. Stockyard - where farmer sold animal
7. Farm or ranch - where animal was raised
8. Feed yard - where cattle ate grain
9. Fields - where grain was raised
10. Soil - in field where grain plants were nourished

Complete the same exercise for the following items:

1. The pencil that they are using to complete this activity.
2. The chair that they are sitting in.
3. The liquid that they drank at lunch or breakfast.

Life Systems - Gr. 4.....9

To which food chain do you belong?

Keep a record for one week of the food your family eats. Graph or chart your results. Make a diagram of the food chain that your family is part of.

Day of the week	Breakfast	Lunch	Dinner	Snacks
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

Who is Eating Whom?

Name: _____

Place the food that you have eaten during the past week in the appropriate section of the following chart.

SUN

(Primary source of energy for all food groups)

Plants

(Producers)

Herbivores

(Consumers)

Carnivores

(Consumers)

Decomposers

(Consumers)

For example, if you ate fish and chips for dinner - followed by yoghurt for dessert:

Herbivores - fish (cod fish eat plants and plankton)

Plants - chips (plants eat the sun)

Decomposers - yoghurt (contains bacteria which are decomposers)

Low - Impact Fieldwork

Preparation: In preparing students for the field study, teachers will advise students to conduct their investigations of the outdoor environment in a responsible way and with respect for the environment.

1. Select a particular habitat (indicate the location by referring to the site number).
 2. Give a brief description of the habitat.
-
-

3. Complete the following chart:

Identify Organism	Classify Organism	Role of organism within the ecosystem
1. Ladybug	Herbivore	- eats aphids on plants - eaten by birds
2. Fossil		
3. Worm		
4. Fern		
5. Squirrel		
6. Blue Jay		
7. Fish		
8. Wild turkey		
9. Hawk		
10. Snake		

An Ecosystem Food Web

Name: _____

_____ cannot use the sun's energy to produce their own _____.

They have to _____ other things to get the _____ they need in order to _____.

Plants are called _____ because they use the _____ energy to _____ their own food. Producers are the _____ of most food chains in _____.

_____ are _____, _____, and micro-organisms that feed on _____ material. They return the _____ to the soil for plants to use again.

A biome refers to a large area that has a particular _____ and a particular _____. Plants and animals that live in one biome have _____ well to their environment. There are _____ types of biomes around the world.

1. Deciduous trees live in a _____ biome.
2. Cacti and flowers grow in the _____.

3. Lichens and mosses grow in the _____.

4. Vines thrive in the _____.

Living systems, _____, and non-living systems, _____,

live together in balance. Organisms that live together are referred to as a

_____, which have come to be threatened by changing

environments to which they cannot adapt. Some examples of these species

include:

An Ecosystem Food Web

Name: Answers

Consumers cannot use the sun's energy to produce their own food.

They have to eat other things to get the energy they need in order to survive.

Plants are called producers because they use the sun's energy to make their own food. Producers are at the beginning of most food chains in ecosystems.

Decomposers are fungi, insects, and micro-organisms that feed on dead material. They return the nutrients to the soil for plants to use again.

A biome refers to a large area that has a particular climate and a particular vegetation. Plants and animals that live in one biome have adapted well to their environment. There are seven types of biomes around the world.

1. Deciduous trees live in a Temperate biome.

Scenic Caves Nature Adventures

2. Cacti and flowers grow in the Desert.
3. Lichens and mosses grow in the Tundra.
4. Vines thrive in the Tropical Rain Forest.

Living systems, Biotic, and non-living systems, Abiotic, live together in balance. Organisms that live together are referred to as a population, which have come to be threatened by changing environments to which they cannot adapt. Some examples of these species include: The Panda, The Tiger, The Canadian Polar Bear

To help make your job easy, we'd like to share our

"Guidelines for conduct while visiting Scenic Caves Nature Adventures"

In light of the fact that Scenic Caves contains many species and sites that are either endangered or at risk, we ask that you make your students aware of the consequences of destroying any part of the property while touring through the caves.

1. Ensure that all litter is put in it's place. Litter not only creates an eye-sore, but also interferes with the animals' habitat.
2. LEAVE everything in its place. You will encounter rare mosses and ferns along your way and may have no idea how valued they really are. Remember this region is a protected biosphere and recognized by the United Nations. It takes generations for some mosses to grow, and only seconds for them to be ripped from their natural habitat. We have lost many of our bull rushes to people picking them for souvenirs - any disturbance to the flora is regarded as complete disrespect for our site.
3. Rocks are not glued in place. Any rock that is kicked off of a ledge may pose a threat to someone walking below. Articles of any nature must be left in place on the property.
4. Leave the wildflowers where they are. The temptation to pick is great, but you may be contributing to the declining population of species of exotic plants.
5. The walls of the cave are to be left untouched by any sort of utensil with which you may be tempted to carve your insignia. If you wish to leave your name for posterity sake, please do so on our "visitor's wall" inside the gift shop.
6. All students are expected to conduct themselves in a mature and responsible manner. Please WALK at all times as the area is filled with dangerous crevices. Have fun, but be aware that this trip is for educational purposes.
7. Students are responsible to all supervisors. Supervisors are expected to directly intervene to ensure that the common expectations listed are adhered to by all. Exceptions may NOT be made by individual supervisors.
8. Stay on the property at all times. You are trespassing if you cross over our fences into the next property.
9. Students must remain in groups while on tour.
10. Smoking, possession of cigarettes, drugs or alcoholic drinks means suspension from access to Scenic Caves Nature Adventures.
11. The fish pond is for viewing. Keep garbage, rocks or other items out of the pond.

.....

I have read the rules outlined above and will abide by them on the trip to Collingwood Scenic Caves Nature Preserve and will respectfully comply to consequences if a reminder is needed. I am fully aware that this trip is for educational purposes and I will conduct myself in a mature and responsible manner.

Signature of Student

Signature of Parent

Your "Rock" Groups - or should we say your group rocks?

School Name : _____

Grade(s) _____

Head Spelunk: _____

"Ice Cavers" - Supervisor _____

(List students below)

1. _____

2. _____

3. _____

4. _____

5. _____

"Ekarenniondi" Supervisor _____

(List students below)

1. _____

2. _____

3. _____

4. _____

5. _____

"Fat Man's Squeezers" - Supervisor _____

"Maidenhair Ferners" - Supervisor _____

(List students below)

(List students below)

1. _____

1. _____

2. _____

2. _____

3. _____

3. _____

4. _____

4. _____

5. _____

5. _____

"The Petun" - Supervisor _____

(List students below)

1. _____

2. _____

3. _____

4. _____

5. _____

"Native Councilors" - Supervisor _____

(List students below)

1. _____

2. _____

3. _____

4. _____

5. _____

Name: _____

The Internet Spelunker's Scavenger Hunt

Use information from the Collingwood Scenic Caves web site to answer the following questions.

1. Find the name of the escarpment on which the Collingwood Scenic Caves are located.

2. How were these mysterious caves and caverns formed?

-
3. Find the name of the Native Nation that once inhabited the area around the Scenic Caves.

-
4. Find the meaning for EKARENNIONDI.

-
5. Suppose you live in Toronto. Name the two highways that you would take to get to the Scenic Caves. How many kilometers would you drive? How long would it take you?

-
6. Find the cave called the Natural Refrigerator. What was this cave used for many years ago? Why?

Internet Spelunker's Scavenger Hunt - Questions.....2

7. Find out why Fat Man's Misery is a good name for this particular cave.

8. The first thing that most photographers encounter in caves is that the camera lens attract moisture. Find out how you can help alleviate this problem.

9. Find out why you shouldn't remove any material from the caves or leave any foreign material inside them when you visit.

10. How could you find out more information about this attraction?

The Internet Spelunker's Scavenger Hunt

Use information from the Collingwood Scenic Caves web site to answer the following questions.

1. Find the name of the escarpment on which the Collingwood Scenic Caves are located.

The Collingwood Scenic Caves are located on the Niagara Escarpment.

2. How were these mysterious caves and caverns formed?

These mysterious caves and caverns were formed by ice movement in the Glacial Age.

3. Find the name of the Native Nation that once inhabited the area around the Scenic Caves.

The Hurons - Petun Tribe or Tobacco Nation once inhabited the area around the caves.

4. Find the meaning for EKARENIONDI.

EKARENIONDI means "the rock that stands out".

5. Suppose you live in Toronto. Name the two highways that you would take to get to the Scenic Caves. How many kilometers would you drive? How long would it take you?

You would take both Highways 400 and 26 to get to the caves. You would drive 168 km. The trip would take you about 2 hours.

Internet Spelunker's Scavenger Hunt - Answers.....2

6. Find the cave called the Natural Refrigerator. What was this cave used for many years ago? Why?

Many years ago this cave was used for food storage because it stays cold even in the summer, 4 degrees Celsius.

7. Find out why Fat Man's Misery is a good name for this particular cave.

It is a good name because its narrowest spot is only 36 cm wide!

8. The first thing that most photographers encounter in caves is that the camera lens attract moisture. Find out how you can help alleviate this problem.

You can alleviate this problem by warming the lens. Try wrapping a hand around the lens barrel or using a lens cloth.

9. Find out why you shouldn't remove any material from the caves or leave any foreign material inside them when you visit.

These items can easily mar the Caves' beauty as well as upset its delicate ecological balance.

10. How could you find out more information about this attraction?

You could find out more information about this attraction by filling in the form at the end of the web site, phone, or fax the number listed.

Teachers' Guide for: A Quick Spelunk

"Twenty Questions", or so

We thought you might be "lichen" some information to give yourself a preparatory taste of some of the unique "stuff" there is to learn about our site! You may wish to present a few of these questions to your students each day before you visit the site. See if you have any cave experts or Niagara Escarpment "bluffs".

Questions:

- 1) How long is the Niagara Escarpment?
- 2) What initially caused the formation of the Escarpment?
- 3) How is it that salt-water came to this area?
- 4) How long ago did Collingwood Scenic Caves begin to form?.
- 5) What type of rock is found at the Collingwood Scenic Caves?
- 6) What caused the "step" in the land?
- 7) When was the region first populated?
- 8) Which group of people lived here at the Collingwood property?
- 9) Where did the Petun store their perishable food?
- 10) Which group of people drafted the first written word in the area?

Answers:

- 1) The Niagara Escarpment is 2300 km long and up to 250 m high.
- 2) It was the shore of a huge, salt-water sea - the Michigan Basin
- 3) About two million years ago, this whole area was covered with ice which compressed the surface of the ground enough to allow for the salt water from the Atlantic Ocean to run "inward".
- 4) The Collingwood Scenic Caves began to form around 300 million years ago.
- 5) Rivers flowing into this sea carried sand, silt and clay to be deposited as thick layers of sediment. Over millions of years, lime-rich organic material became compressed into massive layers of sedimentary rocks and ancient reef structures now visible along the Escarpment.

Quick Spelunk Questions/Answers.....2

A Quick Spelunk

- 6) The Escarpment represents older rock pushed to the surface, where it was subject to erosion and other weathering processes. This rock (limestone, dolostone shale and sandstone), eroded at different speeds.
- 7) When the glacier began to melt, people followed the receding glacier ice front to this area.
- 8) The Petun Nation
- 9) They stored their food in the *Natural Refrigerator*.
- 10) The earliest written records of this area were by the Jesuit missionaries.

Day 2

Questions:

- 11) What caused the demise of the Aboriginals living in the area?
- 12) How many archeological sites are along the Escarpment?
- 13) What product was traded by the Petuns?
- 14) In what way did these rocks help the Hurons?
- 15) From which present-day city could a smoke signal be seen?
- 16) Which famous French explorer came to this area?
- 17) Which famous Jesuit Father studied the Huron - Petun culture?
- 18) To where, was it believed, did the spirit pass once leaving this world?
- 19) For what reason did Oscotarach draw the brains out of the heads of the dead?
- 20) What famous "nest" is located behind Ekarennondi?

Answers:

- 11) In the 1630's, foreign diseases devastated the Aboriginal populations, and 20 years later, the Iroquois wars drove all the Aboriginal Peoples out of the Escarpment area.
- 12) There are about 250 known archeological sites on the Escarpment, including some First Nation burial sites.

A Quick Spelunk

- 13) The main product for trade was the tobacco they grew.
- 14) The Huron Natives used these rock formations for protection from their enemies.
- 15) Native signal fires could be seen all the way from Barrie.
- 16) This area was once visited by the French explorer Samuel de Champlain.
- 17) One of the early Jesuit priests to study the Huron- Petun culture was Father Jean de Brebeuf.
- 18) It was believed that the journey that one took upon leaving this world, lead you by a rock called *Ecaregniondi*.
- 19) Oscotarach, or "Pierce-head" draws the brains out of the heads of the dead, and keeps them to remove any longing for the life now finished - they can no longer remember anything.
- 20) Behind Ekarennondi is a bowl-shaped cavity which may be perceived as resembling a huge nest with eggs. This is probably the Thunderbird's Nest. The principal attribute of the Thunderbird is its ability to affect the weather.

Day 3

- 21) Why did so many people move to this area from Upper Canada and Britain in the 1800's?
- 22) Where did people clear land around the area of the Escarpment?
- 23) Why was the top of the Escarpment not cleared?
- 24) What natural feature encouraged the construction of mills and communities?
- 25) For what purpose was the timber of the Escarpment used?
- 26) Of what material is the Ontario Legislature made?
- 27) Of what use was the Escarpment shale and limestone?
- 28) What sort of farming now exists along the Escarpment now?
- 29) What is causing the Escarpment to change now?
- 30) What caused the formation of Ekarennondi - the famous Huron rock?

A Quick Spelunk

Answers:

- 21) The early and mid 1800's saw massive waves of immigration into Upper Canada from Britain and Ireland due to the industrial revolution's cause of job loss and due to famine.
- 22) The forests of the Escarpment above and below the cliffs were cleared to make way for agriculture.
- 23) The cliff face presented a physical obstacle and was therefore left intact as a narrow strip of "nature".
- 24) The rivers and streams of the Escarpment encouraged the construction of mills and communities.
- 25) Escarpment timber provided shipbuilding needs to the British Navy.
- 26) The Ontario Legislature at Queen's Park in Toronto is made from Escarpment limestone and sandstone.
- 27) Escarpment shale was made into bricks, and limestone was burned in kilns to make lime for mortar and plaster.
- 28) Looking from your *First View*, you may see the land as it has been prepared to support the Collingwood farming community. There is mixed farming (dairy, grains, market gardening) through the central portions of the Escarpment and an important beef cattle industry in Bruce County.
- 29) The Niagara Escarpment continues to slowly change by the same process that led to its creation.
- 30) The Escarpment is surrounded by a variety of landforms created by the glaciers, including *Ekarenniondi* - a massive, isolated rock that sits on the property which was of great importance to the Huron Natives.

Day 4

Questions:

- 31) Which rivers flow through the Escarpment?
- 32) What filters the water as it moves through the ground?

A Quick Spelunk

- 33) Name one purpose this groundwater serves for thousands of local people.
- 34) How far away are the markets for this water?
- 35) Why is it difficult to track some of the streams?
- 36) What can be found living inside the limestone?
- 37) Which fern grows along the Escarpment, but no where else in the province?
38) What "exotic" fern is found on site?
- 39) How old are the oldest cedars?
- 40) Name 5 tree species found on site.

Answers:

- 31) Watersheds of a number of rivers are shaped by the Escarpment including the Nottawasaga, Beaver, Credit, Grand & Thames.
- 32) Glacial deposits of sand and gravel hold and filter water as it moves through the ground.
- 33) The groundwater resources of this area provide drinking water for thousands of local people.
- 34) Some water is bottled and sold from the Caribbean to the Far East.
- 35) Streams mysteriously disappear beneath the bedrock, to reappear hundreds of metres away.
- 36) We can find algae, living inside the limestone.
- 37) Hart's Tongue Fern
- 38) The Maidenhair Fern.
- 39) Many of the slow-growing eastern white cedar trees are over 1000 years old.
- 40) Typical tree species include beech, white birch, trembling aspen, eastern white cedar, balsam fir and jack pine as well as maple and oak.

.. And one for good measure...

Name 5 animal species found on site.

- The northern dusky salamander (endangered), the eastern Massasauga rattlesnake (threatened) and the southern flying squirrel (vulnerable), deer, wild turkeys, many types of wild birds including the chickadee, blue jay, cardinal and other common species including ground hogs and rabbits.

The Collingwood Scenic Caves and Nature Preserve

Evaluation Form

.. Now that we've made an impression on you - what would you like to impress upon us?

How did we do???

We would appreciate your input on our service by complete this evaluation and dropping it in the mail. For your convenience, we have enclosed a self-addressed, self-stamped envelope.

1. How did you hear about the educational program(s) offered at The Collingwood Scenic Caves and Nature Preserve?

2. Why did you bring your students to The Collingwood Scenic Caves and Nature Preserve?

(Fit with my program in _____)

3. What did you like about your visit?

4. On a scale of 1 - 10, how likely is it that you will bring a school group to our site another time? _____

5. What has affected the likelihood of a return visit?

6. On a scale of 1 - 10, how useful did you find the Teachers' Guide?

7. What changes, if any, would you like to see in the Teachers' Guide?

8. On a scale of 1 -10, how did you find our botanical gardens?

9. On a scale of 1 -10, how friendly and helpful did you find our staff?

10. How would you rate your visit to the Collingwood Scenic Caves, again, on a scale of 1 - 10?

I give this visit a _____

11. What new programs would you suggest?

12. What changes would you like to see to the site itself?

★ Congratulations on your pursuit of naturalistic excellence!

"We've Been Millions of Years In the Making"

- and indeed what a journey its been!

(Optional) Name: _____

School: _____

Contact Person: _____