

Grade 6 Program: Diversity of Living Things

"Our Lessons Really Rock!"

Scenic Caves Nature Adventures

Scenic Caves Nature Adventures Education Program 2002

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 your 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.

Life Systems

Diversity of Living Things

Introduction

Students in grade six will focus on the use of classification systems as a way of learning about the great diversity of species and as a way of organizing the study of species. Particular attention is given to the classification of organisms in the animal kingdom. Classifying animals will not only enable students to learn about many different types of animals, but also will help them to observe and describe many similarities and differences among species .

Student Demonstration

Students will acquire first-hand experience studying the diversity of living things at Scenic Caves Nature Adventures. Students will be given a package of charts and graphs that will aid them in examining and classifying living things found within the area.

Program Areas

Social Studies, Science and Technology, Language, Math, Drama

Keywords and Vocabulary

ecosystem, environment, extinction, herbivore, carnivore, omnivore, producer, consumer, decomposer, bacteria, organism, classification, inter-relationship, diversity, characteristics, cold-blooded, warm-blooded, vertebrates, invertebrates, mammals, birds, amphibians, reptiles, fish, phyla, sponges, mollusks, arthropods, micro-organism, kingdom, structure.

Teaching Strategies and Learning Activities

Art Lesson #1

- ✓ Introduce students to new topic - Diversity and Living Things.
- ✓ Discuss the meanings of the words.
- ✓ Have students create a folder to be used in organizing their materials.

Science/Language - Lesson #2

- ✓ Introduce **Diversity** again to students by writing it on the blackboard.
- ✓ Brainstorm what students already know about the term.
- ✓ Discuss what students want to know so that at the end of the unit they can add what they have learned.
- ✓ Blackline master for above - to be used as an overhead (see Appendix).
- ✓ Students will record all information on their sheets and place in folder.

Science/Language - Lesson #3

- ✓ **Vocabulary** - Teacher will introduce vocabulary by writing the selected words on the board.
- ✓ Students will discuss meanings given prompts from the teacher.
- ✓ Teacher will read the "formal" definition.
- ✓ Students will construct in their own words meaningful definitions.
- ✓ As definitions are completed, students will then copy them into their notes and place them in their folder.

- ✓ **Reinforcement** - Complete Vocabulary worksheet to assimilate information learned.
- ✓ Teacher can include vocabulary words in student's formal spelling word lists.
- ✓ Students can also include new vocabulary in their personal dictionaries.

Science/Language - Lesson #4

- ✓ Teacher will introduce classification of animals - vertebrate and invertebrate.
- ✓ Teacher will discuss the reasoning behind the basis for classification based on structural differences, rather than physical appearance or behaviours.
- ✓ Have students brainstorm the meaning of the terms.
- ✓ Ask students to list, in their notes, any animals they can think of that fall into these classifications (have students leave a lot of room as we will be adding a great deal to their lists!).
- ✓ Instruct the class that vertebrates fall into **5** main groups:
 - FISH**
 - AMPHIBIANS**
 - REPTILES**
 - BIRDS**
 - MAMMALS**
- ✓ Have students return to their notes and classify the animals according to their group.
- ✓ Have students list any others as invertebrates - these will be examined in the next lesson.
- ✓ **Reinforcement** - Worksheet Vertebrates

Science/Language - Lesson #5

- ✓ Students will return to their folder and retrieve the earlier note (Lesson 4).
- ✓ Teacher will instruct class that invertebrates also have many categories.
- ✓ Have students predict how invertebrates could be classified (body structure).

- ✓ Classifications include the following:
 - SPONGES**
 - HOLLOWED BODIED ANIMALS**
 - WORMS**
 - MOLLUSKS**
 - ARTHIROPODS**
 - SPINY-SKINNED**
- ✓ Blackline master or overhead available for note taking on the classifications of invertebrates (See Appendix - Background Information - Invertebrates).
- ✓ Have students go back to their list and classify invertebrates based on the new classifications learned.
- ✓ **Reinforcement** - Worksheet Invertebrates

Science/Language - Lesson #6

- ✓ Teacher will introduce the terms cold-blooded and warm-blooded.
- ✓ Class will brainstorm the meanings of the term.
- ✓ When the class comes to a decision on the terms the students will place the definition in their notes and place it in their folder.
- ✓ Students will return to their original list of animals and classify them again as **cold or warm -blooded**.

Drama - Lesson #7

- ✓ Teacher has a jar with names of animals written on pieces of paper. Each child takes one piece of paper out of the jar.
- ✓ Each student must adopt the role of that animal and enact it for the other students.
- ✓ Students will guess which animal they are.
- ✓ The student who guesses correctly, must then classify the enacted animal as to vertebrate or invertebrate, as well as which group they belong in.
- ✓ **Reinforcement** - Worksheet True/False

Language - Lesson #8

- ✓ Students must write a narrative about the animal they played in the drama activity. This narrative should include proper sentence structure, appropriate vocabulary and evidence that a rough draft was prepared and edited. Responses should include their classifications.

Science/Language/Math - Lesson #9

- ✓ Review on the board the classification of animals.
- ✓ Engage class in defining each in their own words and from their own experiences thus far in the unit.
- ✓ Teacher will engage class in an activity comparing the characteristics of vertebrates and invertebrates, as well as different kinds of arthropods.
- ✓ **Reinforcement** - Activity Worksheet - Short Answer

Technology Beyond the School - Lesson #10

- ✓ Students will identify as homework or in class, various kinds of classification systems that are based on specific criteria and used to organize information (Examples - telephone system, numbers are classified according to country code, area code, number, extension, etc.).
- ✓ Students will present one of their ideas to the class.

Student Demonstration - Lesson #11

- ✓ **Independent Study** - Students will acquire first-hand experience in studying the diversity of living things on site at Collingwood Scenic Caves. Students will be given a package of charts and graphs that will aid them in examining and classifying living things found within the area.

Background Information

Scientists use a characteristic to classify animals into two groups. The characteristic is a backbone. Animals with backbones are called vertebrates. People are vertebrates because we have a backbone.

Scientists classify vertebrates into five main groups: fish, reptiles, amphibians, birds, and mammals. Each group has characteristics different from the other groups, and each group is more complex than the previous group.

VERTEBRATES

FISH: The first group of vertebrates is fish, which is also the simplest and largest group. Fish have scales on their body for protection. They live in water, and have gills on the side of their head. Near the gills are fins. Fins are used to propel the fish through the water. Fish are also cold-blooded, which means their body temperature is the same as their environment.

AMPHIBIANS: Amphibians live part of their lives in water and part on land. Frogs and salamanders are a good example. Amphibians are also cold-blooded.

REPTILES: Reptiles have dry scaly skin and spend all of their lives on land. Like fish and amphibians, reptiles are cold-blooded animals. Unlike fish and amphibians, reptiles lay their eggs on land. Reptiles have well developed lungs.

BIRDS: Birds are more advanced than fish, amphibians, and reptiles. The body covering on birds is called feathers. Birds are different from all other vertebrates we have looked at thus far. They are the first warm-blooded vertebrates so far. In other words, a bird's body temperature stays the same, no matter how cold or how hot the air may be. A bird's feathers help to keep the body warm. Unlike most vertebrates, most birds can fly.

MAMMALS: The most complex animals are mammals. Mammals are vertebrates with fur or hair. Female mammals can produce milk for their young and give live birth. Mammals are also warm-blooded. Mammals are adapted to live in every environment on earth-ice, desert, prairie, jungle, mountain, ocean, fresh water. There are many kinds of mammals. They range from mice to elephants and whales. Bats are mammals that fly. Monkeys and squirrels live in trees. Whales and dolphins live their lives in the water. Moles and gophers spend their time underground.

DISCUSSION - Who can define vertebrate?
Who can name the five groups of vertebrates and give at least two characteristics of each group?

Background Information

An invertebrate is an animal without a backbone or a skeleton inside its body. Some invertebrates have a soft body, while others have a hard outside covering. Scientists classify invertebrates from simple to complex, according to the characteristics of their body parts. There are eight different phyla in the Animal Kingdom for the invertebrate. We will look at six.

INVERTEBRATES

SPONGE: The simplest of the groups is the sponge. Sponges live in the ocean.

HALLOW-BODIED ANIMALS: The next group is the *hollow-bodied animals*. This group includes jellyfish, hydra and coral. These animals live in water, they have a hollow center, and only one opening.

WORM: The third group is the *worm*. They are soft-bodied animals that live on land or in water.

MOLLUSKS: The fourth group is called *mollusks*. Mollusks have soft bodies, but some have a hard outer shell. Some live on land and some live in water. Examples of this group are snails, clams and octopus.

ARTHROPODS: The next group is the *arthropods*. These animals have an outside skeleton, jointed legs and segmented bodies. Three-fourths of all the animals on the earth are arthropods. Some live on land, some live in water, and some can fly. Some arthropods are bees, crabs, shrimp, and beetles.

SPINY-SKINNED ANIMALS: The last group is called the *spiny-skinned animals*. This group has sharp spines on the outside of their bodies, which form a skeleton for protection. Spiny-skinned animals have tube feet and live in the ocean. Some examples are starfish, and sea urchins.

DISCUSSION - Who can name the six groups of invertebrates and give at least two characteristics of each group?

DIVERSITY OF LIVING THINGS

What I know	What I would like to know	What I have learned

VOCABULARY

Name: _____

Complete the following vocabulary by placing the letter of the correct definition beside the proper term.

- | | | |
|-------------------|-------|--|
| 1. Organism | _____ | A. an animal with a backbone |
| 2. Species | _____ | B. a system of organizing animals |
| 3. Structure | _____ | C. an animal without a backbone |
| 4. Kingdom | _____ | D. segmented animals like bees |
| 5. Vertebrate | _____ | E. a group of animals closely related in structure |
| 6. Invertebrate | _____ | F. any living creature |
| 7. Characteristic | _____ | G. parts of an animal that join together |

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8. Classification _____

H. any organism of microscopic size
(bacteria)

9. Arthropod _____

I. groups used to classify nature

10. Micro-organism _____

J. a quality of an organism (ie. having a
backbone)

VERTEBRATES

Name:

Fill in the blanks from the word bank provided.

Animals with _____ are called _____. They are classified into _____ main groups: _____, reptiles, birds, amphibians, and _____.

Fish are the _____ group of vertebrates. They live in and have _____ that help them move, and _____ that help them breathe. _____ live part of their lives in water and part on _____. Salamanders and _____ are good examples.

Reptiles have dry _____ skin and spend all of their lives on _____. They lay their _____ on land.

Birds have a body covering called _____. They are _____. Unlike most vertebrates, most birds can _____.

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Mammals are vertebrates with _____ or _____. Female mammals can produce _____ and give _____ birth. Mammals are _____ to live in every _____ on _____.

backbones	water	earth	Amphibians	hairfish
	mammals	warm-blooded	vertebrates	
adapted	frogs	five	fins	largest
gills	scaly	land	eggs	feathers
milk	environment	fur	fly	
live				

INVERTEBRATES

Name:

Fill in the blanks from the word bank provided below.

An *Invertebrate* is an _____ without a _____. Some invertebrates have a _____, while others have a hard outside covering. The simplest _____ is the _____.

The next group is the _____ - _____ animals. This group includes _____ and coral.

The third group is the *worm*. They are _____ - _____ animals that live in _____ or on land.

The fourth group is called _____. Some have a outer shell. Examples include _____ and octopus.

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The next group is the _____. These animals have an outside _____, _____, and segmented bodies. _____ percent of all animals are arthropods.

The last group is called *spiny-skinned* animals. This group has sharp spines on the _____ of their bodies. These _____ are used for _____.

Some examples of this group include _____.

animal	mollusks	hard	protection
jellyfish	snails		soft body
backbone	sponge		starfish
arthropods	jointed-legs	hollow-bodied	skeleton
soft-bodied	water	75	outside
		invertebrate	spine

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 Covers" - Supervisor _____

(List students below)

1. _____
2. _____
3. _____

4. _____

5. _____

"Ekarenniondi" - Supervisor

(List students below)

- 1.
- 2.
- 3.

- 4.

- 5.

"Fat Man's Squeezers" - Supervisor _____

(List students below)

1. _____
2. _____
3. _____
4. _____
5. _____

"Maidenhair Ferners" - Supervisor

(List students below)

- 1.
- 2.
- 3.
- 4.
- 5.

"The Petun" - Supervisor _____

(List students below)

1. _____
2. _____

3. _____

4. _____

5. _____

"Native Councilors" - Supervisor

(List students below)

- 1.
- 2.

- 3.

- 4.

- 5.

Name:

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 EKARENIONDI.
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?

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 Indian 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.

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.

The Niagara Escarpment

(The following information was taken from the Niagara Escarpment Commission's Fact Sheet)

- ☺ The Niagara Escarpment is recognized as one of Canada's foremost landforms.
- ☺ is a massive ridge of fossil rich sedimentary rock which began its formation 450 million years ago as the outer rim of a shallow sea known geologically as the Michigan Basin
- ☺ It soars 1675 ft. high in some locations and stretches 725 km. From Niagara to Tobermory.
- ☺ is a rich mosaic of forests, farms, recreation area, scenic views, cliffs, streams, wetlands, rolling hills, waterfalls, mineral resources, wildlife habitats, historic sites, villages, towns and cities
- ☺ contains more than 300 bird species, 53 mammals, 36 reptiles and amphibians, 90 fish and 100 varieties of special interest flora including 37 types of wild orchids
- ☺ The Escarpment is home to the oldest living trees in Canada. 900 + year old white cedar trees located in the Milton area and Bruce Peninsula are part of the Niagara Escarpment.
- ☺ includes some of Ontario's best skiing, boating, hiking and viewing
- ☺ contains Canada's famous Bruce Trail established in 1967

The Scenic Caves Nature Adventures (www.sceniccaves.com)

Carved by millions of years of glacial ice, the Scenic Caves Nature Preserve is a wonder of nature that attracts and fascinates visitors of all ages from around the world.

The site commands the peak of a precipice on the famous Niagara Escarpment from which you can view the town of Collingwood, the spectacular shoreline of Georgian Bay and several thousand square miles of unsurpassed scenery.

Set against the backdrop of sheer limestone cliff, the Caves plunge hundreds of feet into the depths, opening passageways and revealing rock formations from another era. One point is so deep that snow and ice remain year round - defying summer's hottest days!

On this historic site once stood the Native Village of Ekarenniondi, home of the Hurons. You can reach out and touch their famous worshipping rock!

Throughout the Caves, rare and exotic plants, including the Maidenhead Fern, grow and flourish. Every new corner promises a unique surprise. Meanwhile, throughout the surrounding woodland, nature's best-dressed trails beckon you to adventure further.

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.

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.
- 13) The main product for trade was the tobacco they grew.

A Quick Spelunk

- 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

Questions:

- 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?

Quick Spelunk Questions/Answers.....3

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 Hurons 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.

Quick Spelunk Questions/Answers.....5

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 Scenic Caves Nature Adventures?
2. Why did you bring your students to Scenic Caves Nature Adventures?

(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 *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:

Evaluation Form3

