



**Close to nature.
Close to home.**

**THE BRUCE TRAIL
CONSERVANCY**

**ENVIRONMENTAL HIKE
GUIDE FOR ENVIRONMENTAL
HIKE LEADERS**



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Introduction

The Bruce Trail is the oldest and longest continuous footpath in Canada. It runs along the Niagara Escarpment from Niagara to Tobermory, spanning almost 900 km of main trail and 400 km of side trails. A Board of Directors governs the Bruce Trail Conservancy (BTC) and volunteers from 9 Bruce Trail Clubs are responsible for maintaining, stewarding and promoting the Trail.

It is said that there has been more change to the Niagara Escarpment during the past 100 years than in the previous 9,000 years. As a result of the tremendous urban and recreational development of natural lands, people became motivated to ensure access to green space where they could walk and reflect. People came together and built the Bruce Trail.

Every year, 400,000 visits are made to the Trail as people walk, cross country ski, snowshoe, watch wildlife, take photographs and admire the glorious scenery of the Escarpment. By providing an opportunity to explore the Escarpment, the Bruce Trail Conservancy has helped increase awareness of the uniqueness and rich diversity of this landform. The Bruce Trail was instrumental in the Escarpment being named a UNESCO World Biosphere Reserve by the United Nations in 1990 - one of only fifteen such reserves in all of Canada.

Today 47% of the Bruce Trail is secure and safe from development. However, 53% of the Bruce Trail corridor is vulnerable. The Bruce Trail Conservancy is committed to securing the corridor in its entirety. Reserves like the Niagara Escarpment provide excellent examples of sustainable development, and are valuable reference sites for environmental research, monitoring and educational activities.

The spectacular Niagara Escarpment encompasses farms, recreation areas, sweeping scenic views, 1675 foot high cliffs, clear streams, wetlands, pebbled beaches, rolling hills, pristine waterfalls, wildlife habitats, historic sites, villages, towns and cities. The Niagara Escarpment is known as one of the world's most unique natural wonders - a masterpiece of living art that has been recognized as a UNESCO World Biosphere Reserve because the residents of this significant ecosystem have successfully balanced conservation and preservation with surrounding development.

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1. An Environmental Hike



Environmental hikes are one way to raise public awareness of the Niagara Escarpment's uniqueness and encourage an appreciation of nature and environmental stewardship. Bruce Trail environmental hikes further one of the Bruce Trail Conservancy's Values: Our role in providing educational resources and opportunities about the Niagara Escarpment.

Participants in environmental hikes can gain a better understanding of the effects of humans, both past and present (The Human Environment) on the natural environment of an area. Environmental Hikes combine a traditional hike with a hike where the purpose is to provide a better understanding and appreciation of both the Natural and Human Environments and the relationships between them.

2. The Purpose of this Guide

The purpose of this guide is to provide an Environmental Hike Leader with the following.

1. Definitions, relationships and influences of
 - a. The Environment,
 - b. Natural, and
 - c. Human Environments (Figure One).
2. An example list of components and influences for both the Natural and Human Environments (Tables One and Two).
3. An example list of impacts on the Natural Environment from Human Environment influences (Table Three).
4. Characteristics of an Environmental Hike Leader.
5. How to conduct an Environmental Hike.
6. A list of items that may be considered when planning an environmental hike (Appendix One).

7. Forms that can be used to assess and document the Natural and Human Environment component, influences and impacts in the preparation for an environmental hike (Appendices Two, Three and Four).
8. Definitions (Appendix Five).
9. Sources of information (Appendix Six).

3. "The Environment"

The environment is what surrounds a thing or an item. The environment as it pertains to humans can be viewed as the relationship (Figure One) between the,

- Natural Environment, and the
- Human Environment.

4. The Natural Environment

The natural environment, encompasses all living and non-living things occurring naturally on Earth and their interaction. It includes the following components; all flora and fauna, land, climate, water, natural phenomena, and air.



5. The Human Environment

The human environment includes human historic, present and future activities and the following components; demographics, civilization, culture, politics, legislation, technology and economics.



Figure One:

“The Environment” – A Relationship between the Natural and Human Environments

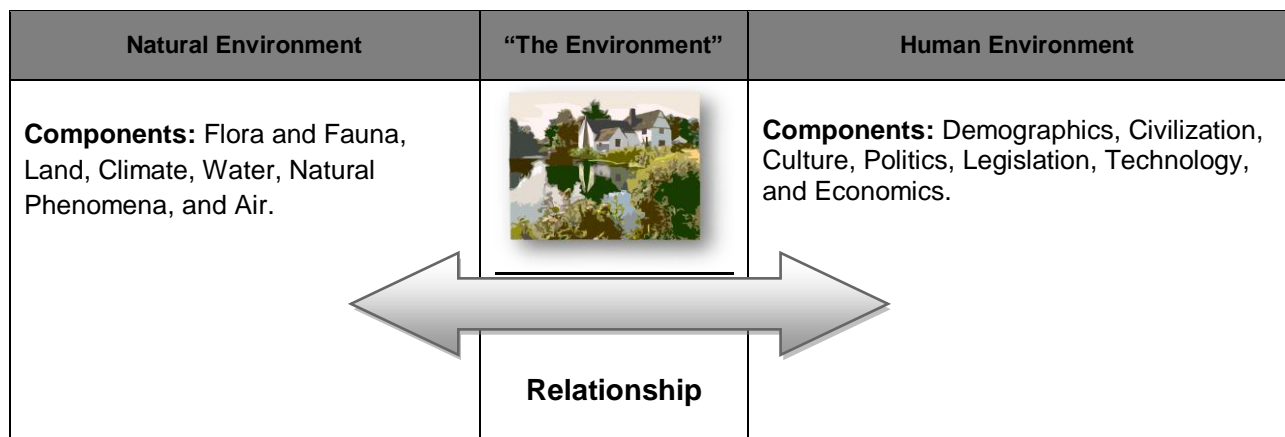


Table One:

Components and Influences of the Natural Environment - Examples

| The Natural Environment | |
|--------------------------------|--|
| Components | Influences (examples) |
| Flora and Fauna | <ul style="list-style-type: none"> ✓ Biodiversity ✓ Natural succession ✓ Invasive species ✓ Native species ✓ Food chain |
| Land | <ul style="list-style-type: none"> ✓ Natural history ✓ Glaciations ✓ Geology and geomorphology ✓ Soil |
| Climate | <ul style="list-style-type: none"> ✓ Weathering/erosion ✓ Climate change |
| Water | <ul style="list-style-type: none"> ✓ Water cycle (evaporation and rain) ✓ Lakes, rivers, streams ✓ Water Quality |

| The Natural Environment | |
|-------------------------|--|
| Components | Influences (examples) |
| Natural Phenomena | ✓ Geological ✓ Glaciations ✓ Natural fires ✓ Floods |
| Air | ✓ Air quality |

Table Two:

Components and Influences of the Human Environment - Examples

| The Human Environment | |
|------------------------------|---|
| Components | Influences (examples) |
| Demographics | <ul style="list-style-type: none">✓ First Nations✓ Immigration✓ Population growth✓ Rural development verses urbanization |
| Civilization | <ul style="list-style-type: none">✓ Land development✓ Industrialization✓ Water and land use✓ Hunting and fishing✓ Farming✓ Recreation✓ Fires✓ Transportation development✓ Power generation✓ Waste management |
| Culture | <ul style="list-style-type: none">✓ Rural verse urban development✓ Disposable income✓ Leisure time✓ Priorities |
| Politics | <ul style="list-style-type: none">✓ Land Use Planning✓ Elections✓ Funding✓ Parks, reserves, conservation areas, etc.✓ Legislation |
| Legislation | <ul style="list-style-type: none">✓ Land use regulations✓ Environmental protection e.g.: Endangered species regulations, pesticides✓ Waste management |
| Technology | <ul style="list-style-type: none">✓ Sustainable development✓ Water and air pollution✓ Technological development✓ Pesticides/Herbicides |
| Economics | <ul style="list-style-type: none">✓ Recreation✓ Forestry✓ Quarrying and mining✓ Orchards, vineyards✓ Trapping |

Table Three:

Example: Impacts of the Human Environment - Examples

| Relationship Between The Natural and Human Environments | | |
|---|-------------------------------------|--|
| Components of the Natural Environment | Influences of the Human Environment | Impacts on the Natural Environment (examples) |
| Flora and Fauna | Demographics | <ul style="list-style-type: none"> ✓ Higher human use and impact ✓ Loss of natural lands through development ✓ Natural land protection |
| | Civilization | <ul style="list-style-type: none"> ✓ Introduction of invasive species ✓ Loss of natural lands ✓ Loss of flora and fauna ✓ Loss of biodiversity ✓ Development such as transportation and communities |
| | Culture | <ul style="list-style-type: none"> ✓ Introduction of invasive species |
| | Politics | <ul style="list-style-type: none"> ✓ Environmental protection and legislation |
| | Legislation | <ul style="list-style-type: none"> ✓ Endangered Species ✓ Land use planning ✓ Pesticides use |
| | Technology | <ul style="list-style-type: none"> ✓ Agriculture and mono cultures |
| | Economics | <ul style="list-style-type: none"> ✓ Forest management ✓ Quarrying and mining ✓ Hydroelectric generation and power transmission |
| Land | Demographics | <ul style="list-style-type: none"> ✓ Rural land development |
| | Civilization | <ul style="list-style-type: none"> ✓ Rural land development |
| | Culture | <ul style="list-style-type: none"> ✓ Land use control and protection |
| | Politics | <ul style="list-style-type: none"> ✓ Development control e.g., Green Belts and watershed protection |
| | Legislation | <ul style="list-style-type: none"> ✓ Land use planning and legislation |
| | Technology | <ul style="list-style-type: none"> ✓ Larger farms |
| | Economics | <ul style="list-style-type: none"> ✓ Higher incomes ✓ Rural homes |
| Climate | Demographics | <ul style="list-style-type: none"> ✓ Increase automobile use and associated pollution |
| | Civilization | <ul style="list-style-type: none"> ✓ Climate change such as global warming and ozone depletion |
| | Culture | <ul style="list-style-type: none"> ✓ Awareness of climate change |
| | Politics | <ul style="list-style-type: none"> ✓ Awareness of climate change |
| | Legislation | <ul style="list-style-type: none"> ✓ Environmental protection and legislation |
| | Technology | <ul style="list-style-type: none"> ✓ Increase in automobiles and pollution ✓ Air pollution prevention |
| | Economics | <ul style="list-style-type: none"> ✓ Increased industrialization |
| Water | Demographics | <ul style="list-style-type: none"> ✓ Increased water use ✓ Recreational use of water, e.g., canoeing, kayaking and boating ✓ Sewage and water runoff issues |
| | Civilization | <ul style="list-style-type: none"> ✓ Water protection awareness ✓ Loss of groundwater ✓ Water pollution ✓ Land use changes, e.g. deforestation |
| | Culture | <ul style="list-style-type: none"> ✓ Importance of water protection |
| | Politics | <ul style="list-style-type: none"> ✓ Politics of water use control and water protection |
| | Legislation | <ul style="list-style-type: none"> ✓ Water protection and use control |
| | Technology | <ul style="list-style-type: none"> ✓ Pollution control including sewage and waste water treatment |

| Relationship Between The Natural and Human Environments | | |
|---|-------------------------------------|---|
| Components of the Natural Environment | Influences of the Human Environment | Impacts on the Natural Environment (examples) |
| | Economics | <ul style="list-style-type: none"> ✓ Water use for industry ✓ Hydroelectric generation |
| Natural Phenomena | Demographics | <ul style="list-style-type: none"> ✓ Climate changes affecting water and food ✓ Flooding and fires |
| | Civilization | <ul style="list-style-type: none"> ✓ Effects on climate, e.g., global warming, ozone depletion |
| | Culture | <ul style="list-style-type: none"> ✓ Storm damage ✓ Illness and disease, e.g., skin cancers ✓ Food and water shortages |
| | Politics | <ul style="list-style-type: none"> ✓ Political issue |
| | Legislation | <ul style="list-style-type: none"> ✓ Environmental protection |
| | Technology | <ul style="list-style-type: none"> ✓ Pollution controls to prevent further changes ✓ Scientific research on impacts and changes |
| | Economics | <ul style="list-style-type: none"> ✓ Increase and severity of weather e.g., tornadoes, rainfall or lack, etc. ✓ Insurance claims, lost income, property damages |
| Air | Demographics | <ul style="list-style-type: none"> ✓ Health impacts of air pollution |
| | Civilization | <ul style="list-style-type: none"> ✓ Increased air pollution ✓ Asthma |
| | Culture | <ul style="list-style-type: none"> ✓ Air pollution and prevention awareness |
| | Politics | <ul style="list-style-type: none"> ✓ Political issue |
| | Legislation | <ul style="list-style-type: none"> ✓ Air protection and pollution prevention legislation |
| | Technology | <ul style="list-style-type: none"> ✓ Air pollution prevention technology, e.g., automobile and industrial emissions |
| | Economics | <ul style="list-style-type: none"> ✓ Increased medical costs ✓ Air pollution costs |

6. Characteristics of an Environmental Hike Leader

An environmental hike leader needs to have or develop a variety of characteristics to effectively organize and run a successful hike. These characteristics include the ability to:

- Communicate, with enthusiasm, the excitement and wonder of the natural and cultural environment.
- Stimulate conversation by raising questions regarding components of the hike, and encourage participation of the whole group.
- Enjoy the trail and be aware of the significance and fragility of the Niagara Escarpment.
- Foster in the group an appreciation of nature and at the same time convey the importance of environmental stewardship.

7. Conducting an Environmental Hike

Environmental hikes can be led by people with a genuine interest in different aspects of the environment along the Bruce Trail. An environmental hike can benefit from the hike leader's general knowledge of topics such as botany or geology, or specific knowledge of topics such as an old mill or hydro site, or the characteristics of an environmentally sensitive area. Of course, each hike can address many topics.

When leading a hike, each topic should be presented in an informative and entertaining way. Information should be presented in an interpretive style, provoking questions and discussion between members of the group. The interpretive style of conducting a hike gives an opportunity to think about and discuss the topic with the hike leaders and fellow hikers.

Environmental hike leaders are encouraged to:

- Adequately plan the hike, see Appendix One,
- Access, documents and discuss with the group the
 - ✓ Natural environmental components and influences on the hike, Appendix Two,
 - ✓ Human environmental components and influences on the hike, Appendix Three, and
 - ✓ Determine the Human Environmental Impacts on the Natural Environment, Appendix Four,
- include hands-on activities for all hikers,
- integrate topics within a wider context,
- encourage thought-provoking discussion about both local and global environmental issues, and
- stimulate interest through exchange and dialogue among the hikers.

Try using simple games to encourage participation. Naturalist's Pockets has the group picking up things they see along the trail, such as leaves, stones, twigs or even cans and candy wrappers (but never anything living or attached to something, like a leaf to a tree!). At various intervals, call out Naturalist's Pockets and discuss the items that have been picked up.

It may be a good idea to take along some props to facilitate discussion. Consider taking along fossil samples of bedrock on a geology hike, bird feathers, bird photographs and bird calls on a birding hike, tree identification keys on a forestry walk, and historical maps, photographs, and artifacts on a cultural history hike. And, of course, items such as a compass, pocket knife, magnifying glass, binoculars and topical field guides are always useful.

Appendix One

Hike Planning

1. Determine the appropriate trail selection considering the following
 - a. Type of group, e.g., children, adults, mixed ability, experienced hikers
 - b. Terrain, season and weather
 - c. Parking and transportation
 - d. Length of hike
 - e. Fees such as parking
 - f. Lunch

2. Complete the tables in appendices
 - a. Two - Natural Environmental Features on the Hike
 - b. Three – Human Environmental Features on the Hike
 - c. Four – The Impact of the Human Environment

3. Communications
 - a. Permission (verbal/written)
 - b. Participants contact information
 - c. Emergency communication e.g., cell phone(s)

4. Emergency planning
 - a. Cell phone(s) that are charged
 - b. Maps, GPS and/or compass
 - c. First aid kit

5. Contingency Planning
 - a. Inclement weather contingency
 - b. Emergency contingency

Appendix Two

Natural Environmental Influences on the Hike

| Natural Environment Features | |
|------------------------------|-----------------------|
| Components | Influences (examples) |
| Flora and Fauna | • |
| Land | • |
| Climate | • |
| Water | • |
| Natural Phenomena | • |
| Air | • |

Appendix Three

Human Environmental Influences on the Hike

| Human Environment | |
|-------------------|-----------------------|
| Components | Influences (Examples) |
| Demographics | • |
| Civilization | • |
| Culture | • |
| Politics | • |
| Legislation | • |
| Technology | • |

Appendix Four

The Impact of the Human Environment

| Relationship Between The Natural and Human Environments | | |
|---|-------------------------------------|---|
| Components of the Natural Environment | Influences of the Human Environment | Impacts on the Natural Environment (examples) |
| Flora and Fauna | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |
| Land | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |
| Climate | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |
| Water | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |
| Natural Phenomena | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |
| Air | Demographics | ✓ |
| | Civilization | ✓ |
| | Culture | ✓ |
| | Politics | ✓ |
| | Legislation | ✓ |
| | Technology | ✓ |
| | Economics | ✓ |

Appendix Five

Definitions

Air: a mixture of nitrogen, oxygen and minute amounts of other gases that surrounds the earth and forms its atmosphere.

Biodiversity: Biodiversity is the degree of variation of life forms within a given ecosystem, biome, or an entire planet. Biodiversity is one measure of the health of ecosystem. Life on Earth today consists of many millions of distinct biological species. The United Nations declared the year 2010 as the International Year of Biodiversity.

Civilization: An advanced state of intellectual, cultural, and material development in human society, marked by progress in the arts and sciences, the extensive use of record-keeping, including writing, and the appearance of complex political and social institutions.

Climate: The meteorological conditions, including temperature, precipitation, and wind, that characteristically prevail in a particular region.

Culture: A particular society at a particular time and place.

Demographics: a variety of socio-demographic characteristics that can be identified and used to categorize groups with shared behaviors or traits including: age; gender; ethnicity; income; and education.

Ecosystem: An ecosystem is a biological environment consisting of all the organisms living in a particular area, as well as all the nonliving, physical components of the environment with which the organisms interact, such as air, soil, water, and sunlight.

Flora: Plants considered as a group, especially the plants of a particular country, region, or time.

Fauna: Animals, especially the animals of a particular region or period, considered as a group.

Geological: The period of time covering the physical formation and development of Earth, especially the period prior to human history.

Human Environment: The human environment can be interpreted comprehensively to include the natural environment and the relationship of humans with the natural environment.

Legislation: The body of laws established by a state or nation for its own regulation.

Natural Phenomena: A natural phenomenon is a non-artificial event in the physical sense, and therefore not produced by humans, although it may affect humans (e.g. bacteria, aging, natural disasters, death). Common examples of natural phenomena include volcanic eruptions, weather, and decay. ...

Land: Any portion, large or small, of the surface of the earth, considered by itself, or as belonging to an individual or a people, as a country, estate, farm, or tract.

Natural Environment: The natural environment, encompasses all living and non-living things occurring naturally on Earth. It is an environment that encompasses the interaction of all living species. It includes all vegetation, microorganisms, soil, rocks, atmosphere and natural phenomena that occur within their boundaries.

Politics: The activities or affairs engaged in by a government, politician, or political party.

Stewardship: The careful and responsible management of something entrusted to one's care.

Sustainable Development: Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Technology: Is the usage and knowledge of tools, techniques, and crafts, or is systems or methods of organization, or is a material product (such as clothing) of these things.

Water: A clear, colorless, odorless, and tasteless liquid, H₂O, essential for most plant and animal life and the most widely used of all solvents. A body of water such as a sea, lake, river, or stream.

Appendix Six

Sources of Information

The Natural Environment

| Sources of Information | |
|------------------------|--|
| Flora and Fauna | |
| Land | |
| Climate | |
| Water | Conservation Areas: http://www.conservation-ontario.on.ca/ Drinking Water: http://www.ene.gov.on.ca/envision/org/dwmd.htm Water Erosion: http://www.omafra.gov.on.ca/english/engineer/facts/87-040.htm Water Wells: http://www.omafra.gov.on.ca/english/environment/water/publications.htm |
| Natural Phenomena | |
| Air | |