

# Trails and the Environment

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## Environmental Concerns of Canadians

Canadians view environmental pollution and fitness as the most important factors affecting their personal health today (Environics 1998). Canadians are increasingly looking to governments for leadership on environmental issues, and are less likely to feel personally empowered (Environics 1998). A worldwide poll found that there is strong agreement that countries should focus more on social and environmental goals and less on economic ones (Adams 2000).

Trails and greenways can provide a solution to some of these concerns by providing opportunities for healthy physical activity that is respectful of the environment.

## Environmental Benefits of Trails and Greenways

In general, trails and greenways are important factors in maintaining the health of our environment because they:

- protect habitat for native animals and plants
- raise environmental consciousness
- help mitigate pollution caused by fossil fuels
- reduce noise levels and provide visual diversity
- protect the biodiversity of our living world
- can be used as living laboratories to monitor changes in the environment over time (Petersen 1996)

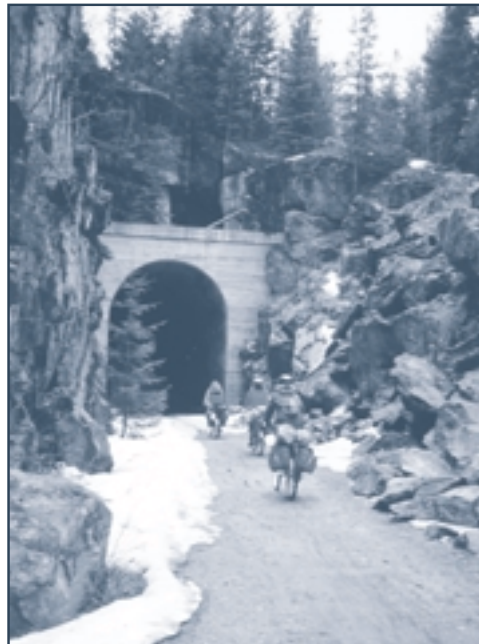
## Conservation of natural resources and habitat

Trails and greenways improve air quality by protecting the plants that naturally create oxygen and filter out air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metals (Trails and Greenways Clearinghouse 2000).

Trails and greenways help maintain and enhance carbon sequestration, a process by which “carbon sinks” (that is, soil and trees) capture and slow the release of CO<sub>2</sub> into the atmosphere (Greenhouse Gas Emission Reduction Trading Pilot 2000). About 500 full-sized trees are needed to absorb the carbon dioxide produced by a typical car driven 20,000 km/year (Tree Canada 1999).

Trails provide passageways for migrating birds and butterflies (Royal Commission on the Future of the Toronto Waterfront 1992). For example:

- Monarch butterflies in Canada thrive primarily where there are milkweed (*Asclepius*) and wildflowers (such as goldenrod, asters, and purple loosestrife). These plants can often be found on abandoned farmland, roadsides, and other open spaces (Environment Canada 2000).
- The North American Bluebird Society is helping increase the bluebird population by building nest boxes for the birds along designated trails. Recreational greenways are perfect for the boxes



because they provide an ideal habitat for the birds and allow birdwatchers to easily monitor the boxes (North American Bluebird Society 1999).

Railway rights-of-way are linear corridors that act as environmental buffer zones to protect waterways, watersheds, wetlands, and ecosystems (Recreation Association of Nova Scotia 1992; Sentier NB Trail 1995).

Railway rights-of-way conserve natural resources by acting as land-use buffers, seed source reserves, wildlife habitat, and migration routes (Jacques Whitford Environment Ltd. 1993).

Greenways, particularly those along stream valleys and wetlands, help filter and remove pollutants, therefore protecting downstream water quality (Royal Commission on the Future of the Toronto Waterfront 1992).

Abandoned rail rights-of-way can be a unique seed source for valuable woody and herbaceous plant species (Ecologistics 1990). These sources can be especially useful for the scientific community and the landscaping industry.

- Henry Kock, head propagator at the University of Guelph Arboretum, is establishing a seedbank for native plants. He considers abandoned railways an irreplaceable genetic resource (Ecologistics Ltd. 1990).
- Because of its diversity of ecosystem types and the presence of rare and endangered plant species such as sassafras, chestnut, golden alexander, wild geraniums, green violets and Canadian wild rye, the Cambridge-to-Lynden Junction right-of-way, in Ontario, is an example of a seed source reserve that has been used successfully by naturalists, academics and landscape trade groups (Ecologistics Ltd. 1990).

## **Education and understanding trails as an outdoor environmental classroom**

Trails and greenways foster environmental consciousness and stewardship, and act as ‘therapeutic landscapes’. That is, they are places that “promote wellness by facilitating relaxation and restoration and enhancing some combination of physical, mental and spiritual healing” (Milligan 2003). The physical interaction of humans with trails, parks and greenways can improve human health by promoting mental and physical wellness.

By drawing tourist attention to cherished local natural resources in an environmentally sustainable manner, rail and greenway trails highlight local beauty as well as help preserve it (Bureau of Transportation Statistics 2000).

In Vancouver, the Musqueam Watershed Restoration Project has restored trails and installed interpretive signs along Musqueam Creek (the last remaining salmon stream in Vancouver) and the adjoining woodland, to illustrate the history and significance of the

natural area to visitors (Suzuki 1999).

Trails can become a precious “wild places” for exploration, especially given the increased urban density. Canadian researcher, Raymond Chipeniuk found that when children do not explore nature when they are young, they do not understand it when they grow up. “There is a strong association between the breadth of foraging a person does as a child and the ability to read landscapes and read biodiversity when that person grows up” (International Journal of Environmental Conservation 1998).

Trails offer excellent opportunities for wildlife viewing, which helps raise environmental consciousness (Petersen 1996; Northland Associated Ltd. 1992).



Many concerned Canadians desire to foster a healthy and responsible attitude toward nature. Greenways can help achieve that goal by providing opportunities for recreation and public education (Labaree 1992; MacIntosh 1993).

On trails, hikers, birdwatchers and other nature enthusiasts are confined to a narrow movement corridor, thereby reducing the amount of random trampling through the landscape (Daigle and Havinga 1996).

Outdoor recreation is one of the best approaches to environmental education - a key to long-term sustainability (Canadian Parks and Recreation Association 1997).

### **The benefits of trails in urban design**

In his book *Urban Parks in Ontario*, J.R. Wright notes: "The linear open space systems that have been incorporated into many urban developments have provided a tremendous stimulus to walking, jogging, [cross country] skiing, in-line-skating and bicycling...One of the by-products of any linked pathway or trail system is the increased use of the unitary parks that are connected by these linked open spaces" (Wright 2000).

Pedestrian paths are much more efficient than roads, handling 20 times the volume per hour. The use of active modes of transportation results in a decreased need for road infrastructure improvements and maintenance (Go for Green 2000).

Greenways, which help conserve plants and trees, are a valuable contribution toward pollution control because they mitigate water, air and noise pollution.

- Greenways help control air pollution because plants are natural air cleaners. Plants cleanse the air through the process of photosynthesis, which removes carbon dioxide from the air and returns oxygen. Plants are green filters for a city's air



(National Park Service 1990; Canadian Parks and Recreation Association 1997).

- Vegetation can be used to help control noise. Placed in the path of sound, vegetation absorbs and diverts energy (Marsh 1991).

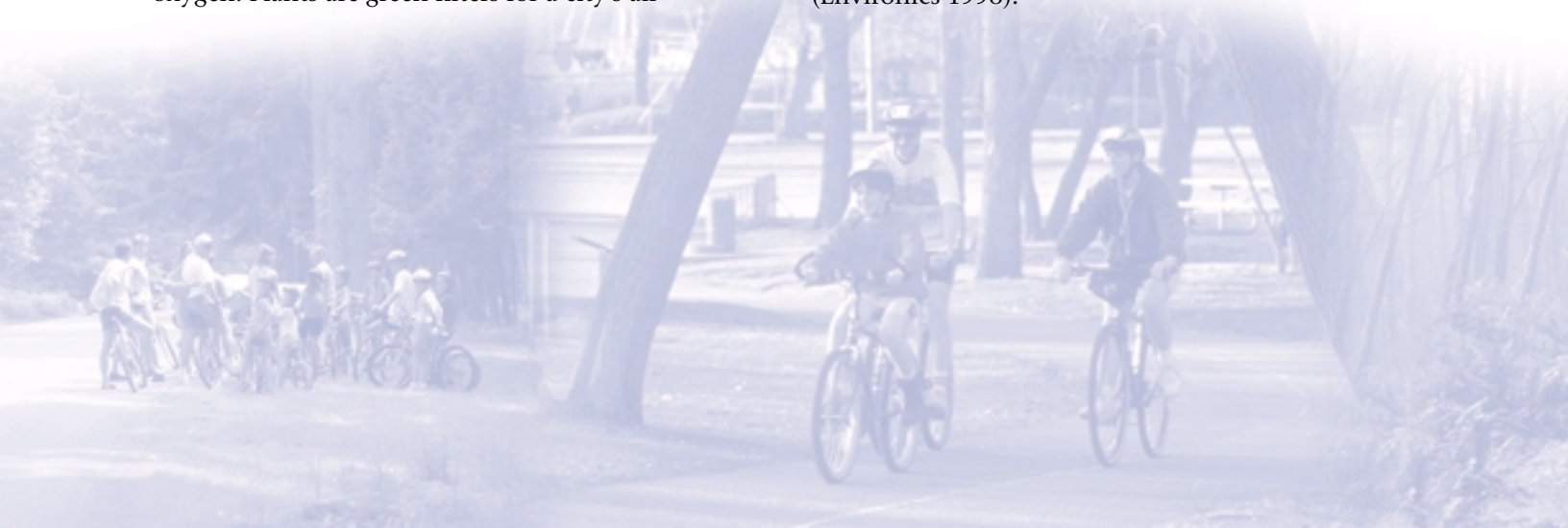
The generous width of railway rights-of-way (66 feet minimum) allows wider treadways, parallel paths, plant and tree growth separations and screenings (McCullum 1990).

Trails and the environment are addressed in the technical handbook, *Guide Technique d'Aménagement des Voies Cyclables*, Vélo Québec, 2003. This is one of the best resources available in French on this subject. (English version also available).

### **Trails, lifestyle change and our environment**

Transportation accounts for half of individual greenhouse gas emissions (Environment Canada 2004). The number of cars per 1,000 persons in Canada has doubled since 1960, while passenger transportation now accounts for 16% of Canada's total energy consumption. When just one person switches from driving to bicycling, walking or other active modes of transportation, 12 kg of greenhouse gases per day are prevented from entering our air (Gardner and Gordon 1998; Transport Canada, 1997; Climate Change Solutions 2000).

Active transportation helps individuals become healthier through exercise, and also contributes to a cleaner environment. Cycling 55 kms burns at least 1200 calories (Enviroics 1998; Climate Change Solutions 2000). A majority of Canadians would like to walk (82%) or cycle (66%) more than currently do. Many Canadians recognize that cycling is an opportunity to improve the air quality in their communities and incorporate exercise into their day-to-day life (Enviroics 1998).



Bicycling and walking may never meet all the transportation needs currently met by motor vehicles. However, they can provide a viable alternative for many trips now taken by single-occupant autos, especially when combined with transit facilities, inter-city buses and trains and well-routed trails in a safe setting (Bureau of Transportation Statistics 2000).

## What has been left on corridors and whose responsibility is it?

Trail managers need to be aware of the possibility that contaminants – some toxic – may have impregnated the soil on trails, especially those with former industrial uses. The presence of substances like diesel fuel, gasoline, leaching creosote, chemicals, lubricants, detergents and solvents, transformer fluids, PCBs and herbicides often resulted from rail operations.

Contaminates are often defined in statutes as a risk to humans and the environment. Trail managers need to know what contaminants might still exist because of issues related to liability, due diligence, regulatory requirements, and impact on future construction and maintenance.

Trail managers should

- have environmental professionals evaluate the presence and degree of contamination
- consult with utilities, planning departments, fire departments, maps and records, aerial photos over a certain time period, land title records, tax information
- walk the whole trail, document where there might be potential spills
- interview former railway personnel, planning department staff, or people who live near the trail

If contaminants are found

- be sure to have the documentation to support the conclusions
- have a laboratory analysis done
- ensure assumptions are verified by tests
- determine if further work is needed and what it should be
- create a health and safety plan and appropriate



- policies to govern criteria for cleaning up the site
- before accepting or purchasing a corridor, determine whose responsibility it is to resolve the problem

Phytoremediation is a process where plants are used to help clean toxic chemicals, heavy metals and even radiation from contaminated soil and water. This process can be much less expensive than traditional filtration techniques and makes it easier to dispose of the contaminants (Lazaroff 2000).

The advantages of phytoremediation include:

- Low cost – allows treating large soil areas with minimal dollar input
- Recyclable – allows some metals to be captured from plant residues and reused
- Large application – can remove or remediate a wide range of soil-borne contaminants
- Low impact – disturbs contaminated soil material very little initially. The high stability of soil material following establishment of plantings strictly retards secondary air or water-borne wastes
- Public acceptance (Environmental Turf Solutions 2000)

Although phytoremediation is an important contamination management practice, it must be noted that this process can take a long time, and it is usually not the only action required for remediation depending on the contamination type and severity. Professional consultation is necessary to assess each situation.





## About Go for Green . . .

Go for Green, the Active Living and Environment Program, has been working since 1992 in close partnership with health, environment, transportation and community organizations, corporations, and all levels of government in Canada. Go for Green focuses on:

- Creating healthy, safe and accessible environments.
- Providing opportunities for Canadians to experience, value and learn to protect the environment while being active outdoors.
- Finding active transportation alternatives to counter the growing reliance on the automobile.

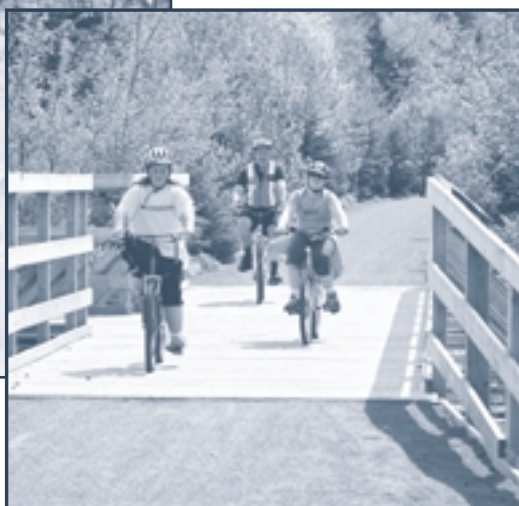
Go for Green encourages trail development and maintenance. The organization administers TrailCanada ([www.trailcanada.ca](http://www.trailcanada.ca)), a sustainable web based resource centre for trail developers and users. TrailCanada was launched in June 2000 to assist Canada's trail communities by:

- Supporting community-based trail initiatives.
- Sharing valuable trail resources among trail developers.
- Informing Canadians about accessing trail opportunities in their community.
- Promoting Canada's outdoor trail adventures to an international audience.



"Trails and the Environment" is the fourth in a series of fact sheets about trail development in Canada, designed to assist trail builders. The trail monitors are available online at [www.trailcanada.ca](http://www.trailcanada.ca). Other trail monitors include:

- The Economic Benefits of Trails
- The Social, Health and Heritage Benefits of Trails.
- Risk Management and Liability for Trails



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