

impossible: when a species is eliminated from its island from whatever cause, it is likely gone for good.

In order to counteract forces that reduce biodiversity, it is vital to maintain and expand natural links among habitat islands. Within the bioregion, greenway corridors along valleys are among the most significant connectors and also provide passageways for migrating birds and butterflies. Improved waterfront connectors could also do a great deal to stem the impoverishment of such isolated habitats as Mississauga's Rattray Marsh.

Re-creating the natural links to these remnant habitats, which were severed as the result of inadequate planning in the past, can help restore their natural balance. These habitat links must be carefully designed because the same stresses that affect habitat islands are at play in narrow greenway corridors. Greenway planners must ensure that habitat links do not become wildlife deathtraps, and must realize that the design of a greenway has a major effect on the species mix that can use it. While there is still more to be learned in this field, the design principles for an area-wide natural heritage system, produced by the Ministry of Natural Resources in April 1991, provide a useful starting point.

In the bioregion's more rural parts, the degree of habitat fragmentation is generally less pronounced, and the effect on wildlife populations is less noticeable. However, in the longer term, the near-urban forces of aggregate extraction, estate housing, roadways, and utility corridors will lead to the same kinds of stresses. Rural communities have the opportunity, in advance, to lay out greenway systems that will protect the integrity of their ecosystem, rather than piecing together remnants of the urbanizing process later.



Forks of the Credit Provincial Park near Cataract in Caledon: part of the Bruce Trail

While greenway connectors are essential in the landscape, they are not a substitute for other forms of sound planning. Environmentally Sensitive Areas, wetlands, and other greenlands have been identified across the bioregion, some of which do not fit logically in a greenway system. Nonetheless, these should be protected, particularly where they are known to shelter rare species or to provide other vital ecological functions.

Greenways are one tool in the package of sound planning processes, but certainly not the only one. Other issues such as agricultural land preservation and countryside management demand ongoing attention outside the context of greenways.

GREENWAYS ENHANCE WATER QUALITY

The degradation of water quality in the bioregion is not simply the result of

point sources, such as sewage treatment plants and factories. Equally important are the multitude of small sources of pollution: eroding streambanks and construction projects, stormwater run-off from streets and parking lots, pesticide and fertilizer residues from lawns, golf courses, and farmland. Greenways, particularly those along stream valleys and wetlands, can help filter and remove these diffuse pollutants, protecting downstream water quality.

Greenways carry out this cleansing function in a variety of ways: vegetated buffers along waterways slow the flow of incoming water, trapping sediments and attached pollutants. Excess nutrients are soaked up by floodplains and wetlands vegetation and eventually are incorporated into the soil. Vegetated banks reduce erosion, by shielding the soil from the impact of falling rain and by binding the soil in the root system.

In an urban context, greenways can also provide a suitable location for facilities that enhance water quality, such as stormwater detention ponds and wetlands. Properly designed, these features could also be used to improve wildlife habitats and recreational access.

Most greenways include wooded areas, especially along valleylands. Even the shade provided by these woods can be a benefit to water quality: it reduces the photosynthetic process (which requires sunlight) in the stream, thereby reducing the growth of undesirable algae. Shaded waters remain cooler in summer, improving the habitat for fish and other aquatic creatures, and

increasing the water's capacity to hold dissolved oxygen.

In the Greater Toronto bioregion, the Oak Ridges Moraine has been identified as a major recharge area for groundwater, and as a source for more than 30 major watercourses. The water quality in the upper sections of these streams is excellent, because of the high baseflow contribution from the moraine. To maintain water quality in these streams, and to protect the associated cold-water fishery, it is vital to safeguard the moraine.

The Province has recognized this need by expressing a Provincial Interest in the Oak Ridges Moraine, issuing interim guidelines for planning decisions, and initiating a

two-year study to produce a long-term strategy for the moraine.

Maintaining vegetation in key recharge and source areas along the moraine, as part of a greenway system, should be an integral part of that protection. Unless the moraine itself is healthy enough to provide a strong flow of cool water to the bioregion's streams, it will be impossible to restore water quality in their lower reaches.

Even the best greenway system can be overwhelmed by uncontrolled stormwater flows, excessive nutrients, and other pollutants: while greenways can play an important role in improving water quality, they can do so only in concert with other pollution control measures. Therefore, they should be a central part of water quality restoration plans, but cannot be used as a substitute for other measures.

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GREENWAYS PROVIDE RECREATION OPPORTUNITIES CLOSE TO HOME

As part of the background report, *A Green Strategy for the Greater Toronto Waterfront* (Reid, Lockhart, and Woodburn 1990), the Commission examined trends affecting participation in recreation. Among the more significant:

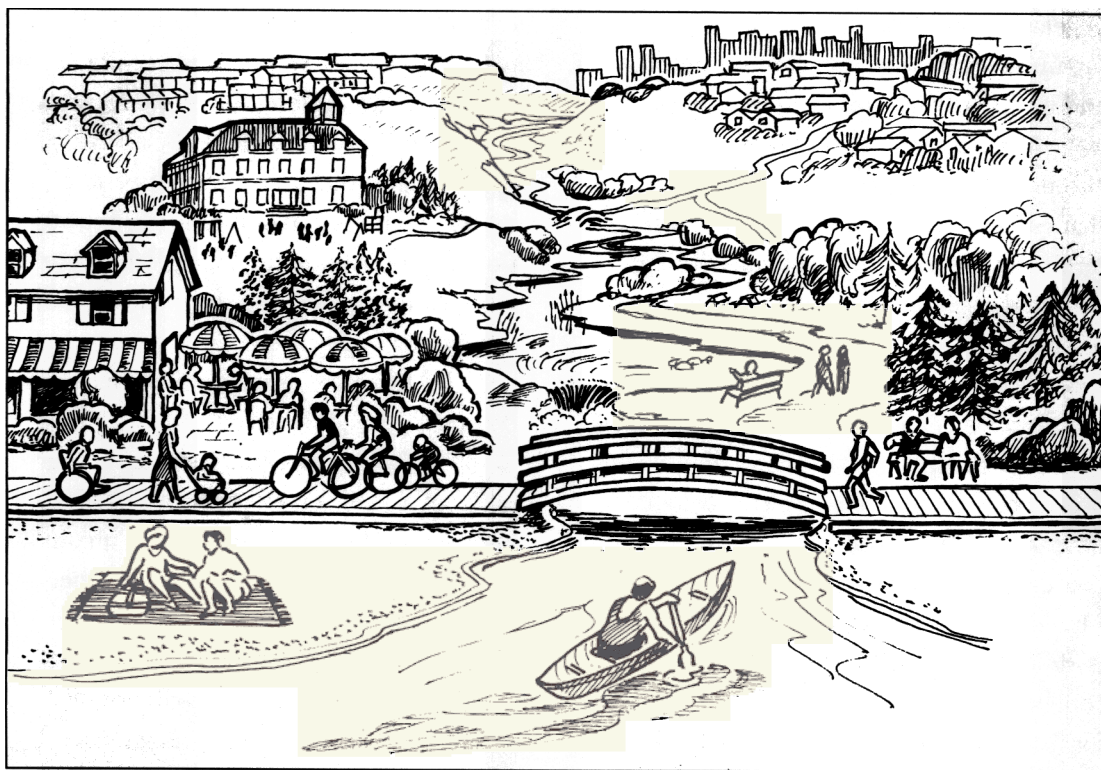
- a dramatic increase in population to be served, especially on the fringes of the metropolitan area;
- free time being spent closer to home, bringing increasing demands on near-urban facilities;
- increasing interest in the environment and out-of-doors, physical and emotional well-being, and spontaneous

rather than structured recreation activities;

- a rapidly aging population, which will probably lead to increases in the demand for golf, bicycling, walking, and similar outdoor pursuits; and
- strong public support for linked parks and trail systems, and for preservation of natural areas.

Recognizing these trends, as well as evidence of high use of existing cycling and walking trails, the Metropolitan Toronto and Region Conservation Authority has called for a system of river valley and moraine trails as part of its Greenspace Strategy. In his report, *Space for All: Options for a Greater Toronto Area Greenlands Strategy*, former MPP Ron Kanter (1990) also recommended “a series of regional trail systems”. The Royal Commission’s

Figure 5.1 Greenways bring people to the water’s edge



interim report, *Watershed*, echoed those recommendations.

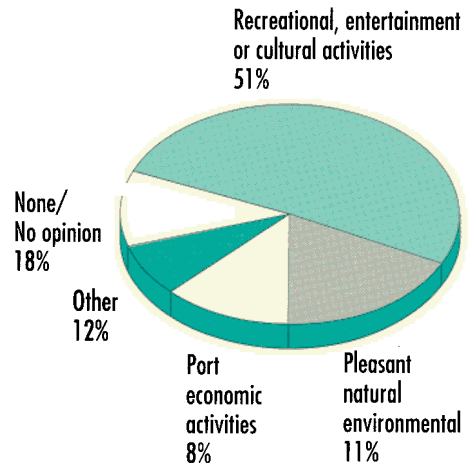
Several conclusions can be drawn from the Commission's background studies and from depositions made at its hearings. First, the value of trail systems is enhanced by increasing their length and interconnectedness. Second, trails are more attractive and more likely to be well-used when they are set in a corridor of greenspace. Third, the increasing time pressures being felt by working people mean that most trails must be immediately accessible, so that recreational use can be integrated into modern lifestyles. Trails that can be used easily as a route to the corner store, or to commute to work or school, will rapidly become part of community life.

Therefore, in a network of greenways, several distinct trail types should be recognized:

- long-distance trail networks, such as those proposed along the moraine, the waterfront, and the major river valleys, will attract users from across the bioregion and beyond who will devote a day, a weekend or a short vacation to the greenway as a destination;
- near-urban greenway trails, on the other hand, are more likely to be used on a regular basis by people from the surrounding neighbourhoods. On American greenways, 75 to 80 per cent of recreational users are people who live within an eight-kilometre (five-mile) range of the amenity.

Clearly, as well as the major regional greenways, it is important to create local links into adjacent communities, so that greenways are accessible and useable. These

Most Important Current Waterfront Use



Half of the respondents consider recreation, entertainment or cultural activities to be the most important current use of the waterfront.

Source: Enviro-nics Poll, 1991.

local links might follow tributary streams, or utility corridors, abandoned rail lines or even quiet streets.

The character of local links should be more community-oriented, designed for an evening stroll rather than an all-day cycling trip. While these links are particularly important as part of the urban fabric, they are also an asset in rural communities, especially in those where there has been considerable non-farm residential development.

Greenways located close to home are accessible to all income groups, particularly those who cannot afford the cost of a weekend cottage. To the greatest extent possible, urban greenways should be accessible by public transit, to ensure they remain affordable to all citizens, and to minimize environmental costs associated with car use.

In some cases, development of heavily used recreational trails will conflict with the ecological functions of greenways. Where

such incompatibility arises, the greenway may have to be widened or altered in some other way to allow trails to be routed around wetlands or other sensitive natural environments. Throughout the greenway system, careful design is needed to ensure that recreational uses do not impose unacceptable levels of stress on vulnerable natural areas.

Other design considerations might involve separating recreational uses, so that heavy cycling, for example, does not pose a danger to walkers, or so that horseback riders can use appropriate trails. Users' safety and the security of adjacent communities are also major concerns and must be addressed in the design

of greenways and trails. Especially within urban areas, trails should be designed and patrolled where necessary, so that all users feel physically secure: encouraging frequent use will help maintain safety.

In some places, the popularity of greenways as destinations for visitors and tourists may raise conflicts with local users and this, too, must be considered during design. Particularly in rural municipalities, adequate facilities such as washrooms and parking lots to handle peak periods is essential. Designating suitable parks as recreation nodes is one way of providing these facilities and directing access and levels of use along the greenway.

GREENWAYS BRING ECONOMIC BENEFITS TO COMMUNITIES

Greenways make good economic sense. Living and working in or near a greenway

can enhance the economic prospects of existing businesses and create opportunities for new ventures.

A report by the U.S. National Parks Service (1990), *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors*, cites examples from across that country of documented increases in property values adjacent to protected greenways. Increases in property values range from five to 32 per cent, particularly near greenways that high-

light open space rather than highly developed facilities. Increased local tax revenues, and increased commercial activity in selected areas in greenways (food concessions,

bicycle rentals, etc.) have also been widely reported. Related tourism developments, such as nearby overnight accommodation and restaurants, can also benefit from a greenway system. The San Antonio Riverwalk, for example, is considered the second most important tourist attraction in the State of Texas. In Ontario, the Bruce Trail has been estimated to have a direct economic impact on the province's economy of at least \$30 million per year, even though the trail corridor is mostly through natural landscapes.

Perhaps more significant than these direct economic effects is the overall impact on a community's image. Greenway projects have been used as a spur for urban redevelopment, prompting private investment in adjacent areas. Their presence through the heart of the city is used aggressively by such places as Sacramento, California to attract new business.

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