

**Important ecological connections through the Algonquin to
Adirondacks (A2A) region**



**Canadian Parks and Wilderness Society
Ottawa Valley Chapter**

July 2012



Important ecological connections in the Algonquin to Adirondacks (A2A) Region

The Algonquin to Adirondacks (A2A) region is a key component of a network of ecological connections in eastern North America, as it forms the largest, most intact linkage across the Great Lakes-St. Lawrence River waterway. Protecting the A2A region is vital for maintaining biodiversity in eastern North America. It will assume an increasingly critical role as the climate changes. The Algonquin-Madawaska Highlands and the Adirondack Mountains serve as relatively undeveloped, forest-covered and lightly populated anchors at either end of the A2A region. The area between these anchors is much more fragmented by urban, agricultural and industrial development.

To help identify key ecological connections through the A2A region, a set of four GIS maps has been developed to illustrate important features of the region, including bedrock geology, forest and wetland cover, the road network, and protected areas. These maps are especially important because such data sets are usually produced independently for the U.S. and Canada, and often independently for Ontario and Quebec, using different parameters which make them of limited use for understanding the region as a whole. Important ecological linkages on land and along island chains through the more developed region between the A2A anchors have been identified. In addition, important aquatic connections along the principal waterways throughout the A2A region are described. Together the various terrestrial and aquatic links constitute a web of connections through the A2A region.

Set of four GIS maps illustrating important features of the A2A region:

Map 1: *Bedrock geology*

Map 2: *Forest and wetland cover*

Map 3: *Road network*

Map 4: *Protected areas*

Two maps show major ecological connections through the A2A region:

Map 5: *Terrestrial and island-chain ecological connections* (mapped on a background of forests and lakes)

Map 6: *Aquatic connections* (mapped on a background of rivers and lakes)

Note: The A2A regional boundary and connection boundaries are not considered to be precisely defined lines and hence are dashed on the various maps.

Ecological Connection: Major ecological connections identified on maps 5 and 6 are briefly described below, along with their current status and major threats.

Terrestrial links (see Map 5)

(1) *Frontenac Arch:* The Frontenac Arch is a narrow band of rugged Precambrian crystalline rocks that connects the main portion of the Canadian Shield to the Adirondack Mountains. On either side are younger, flat-lying sedimentary rocks where agricultural development dominates. The Arch is up to 60 km wide, but narrows dramatically as it approaches the St. Lawrence River where it forms a series of islands. The Arch can be considered as the “backbone” of the A2A region. Because of limited soils, most of the Arch is not productive agricultural land. Several relatively small protected areas including Frontenac and Charleston Provincial Parks are located within the Arch. *Status:* Many of the farms that were cleared during the settlement period were abandoned by the early 1900’s and have reverted to forest. In addition, the Arch contains a large number of lakes and ponds compared to adjacent sedimentary areas. As a result of habitat diversity, the Arch serves as a key link for wildlife between the Adirondack Mountains and the Madawaska and Algonquin Highlands. Threats include Highway 401 which crosses the Arch and acts a major barrier to wildlife, a high density of secondary roads, and development associated with the St. Lawrence Seaway which also crosses the Arch. In addition, increasing cottage and residential development, and recreational use are of great concern. The *Frontenac Arch Biosphere Reserve* is active in preserving the Canadian portion of this link.



Species such as the Cerulean Warbler depend on intact forested areas to reproduce.

(2) *Tug Hill Plateau to Adirondack Mountains*: Tug Hill Plateau is a densely forested area on bedrock of tilted sedimentary strata that is located only a short distance west of the Adirondack Mountains. Although there is a substantial area of open agricultural land between the two areas, in the south a forested link still remains. The Tug Hill-Adirondacks link is being promoted by the *Two Countries-One Forest (2C1F) Project*.

(3) *Larose Forest link*: This link connects eastern Adirondack Park to the Canadian Shield east of Ottawa through the densest area of forest and wetland cover between the Frontenac Arch and Montreal. From south to north it incorporates the relatively dense forest between Adirondack Park and the St. Lawrence River (see also the *St. Regis River aquatic link* through the same area, described below), the forested lands west and north of Cornwall, the Larose Forest, and the small protected areas of Alfred Bog, Plaisance Park and La Blanche Forest Ecological Reserve. *Status*: This link is threatened, due to the relatively large amount of agricultural land interspersed with forests and wetlands. It may also be threatened by future residential development in the greater Ottawa area if the city expands eastward. In addition, there is increasing development along both sides of the St. Lawrence River. This connection is traversed by two superhighways in Ontario (#401 and #417), and a third (#50) in Quebec is nearing completion. Unlike most other highways in the region, highway #50 has been designed with a series of wildlife underpasses.

(4) *Marlborough Forest link*: This link connects northeastern Adirondack Park to the Canadian Shield east of Ottawa. Although mostly on the Paleozoic sediments, it has a relatively dense forest cover. It includes the large Marlborough Forest and Richmond Fen south of Ottawa and bifurcates farther north to reach the Canadian Shield south of Renfrew and Gatineau Park via the Carp Ridge, a narrow extension of the Canadian Shield. There is little designated protected land within this link. *Status*: Although relatively forest covered, this major connection and other more tenuous connections near Ottawa-Gatineau are threatened by their proximity to on-going urban expansion. In addition, there is a substantial increase in the number of superhighways that cross this connection. Highway #401 already crosses along the St. Lawrence, and highways #7 and #417 are moving westward from Ottawa across the link.

Island chains (see Map 5)

(1) *Main Duck Island chain*. This island chain extends across the eastern end of Lake Ontario and links Prince Edward Point on the north side of the lake with Stony Point on the south. This is part of a major flyway for birds during spring and fall migrations. Some of the islands contain grassland habitat that is rare in eastern North America. *Status*: The most immediate threat is a number of large wind factory proposals for the points at either end of the chain, as well as for islands or shoals along the chain. These are considered to be detrimental to both birds and bats.

(2) *East End Islands*: The eastern end of the Lake Ontario is ringed by a series of islands and points, which like the Main Duck chain a few kilometres to the west are part of a major flyway for birds in spring and fall. Rare grassland habitat is found on islands such as Wolf and Amherst. *Status*: Once again large wind factory proposals both on the islands and offshore are of great concern. A study of the effect of the wind factory recently installed on Wolfe Island has shown alarmingly high mortality for both birds and bats.

Aquatic links (see Map 6)

(1) *St. Lawrence River*: The St. Lawrence River is a major aquatic link of continental importance, connecting the Great Lakes to the Atlantic Ocean and cutting across the A2A region. The river is a main migration route for a number of species of fish, including designated species at risk such as American Eel and Lake Sturgeon and the route by which such species reach various tributaries of the St. Lawrence and Lake Ontario. *Status*: The river has been highly altered as a result of the development of the St. Lawrence Seaway, with a loss of wetlands, elimination of natural flow cycles and pollution. There are a number of cities and towns along its banks within the A2A region. In addition, tens of millions of people live in cities within the watershed, both upstream (Toronto, Buffalo, Detroit, Cleveland, Chicago, etc.) and downstream (Montreal) of the A2A region. Pollution is related to heavy industry, agriculture and urban development. *Save the River, the Upper St. Lawrence Riverkeeper* is one of the organizations that takes an active interest in protecting the ecological integrity of the St. Lawrence.

(2) *Ottawa River*: The Ottawa River is the second major aquatic link in the A2A region, running along its northern edge. Historically it served as the conduit for species migrating from the lower St. Lawrence to the vast network of tributaries that drain most of the northern portion of the A2A region. *Status*: Over the past century, the Ottawa has been highly altered as a result of hydro-electric development. This has had detrimental effects on many species such as Lake Sturgeon and the American Eel which have great difficulty migrating upstream or down past these facilities. The large Ottawa-Gatineau urban area sits astride the Ottawa River. The *Ottawa Riverkeeper* carries out numerous projects along this waterway.



Shorelines of the Rideau River are relatively intact, even as the river flows through Ottawa

In addition to these main arteries, numerous other smaller rivers form critical links through the A2A region. A number of the larger tributaries are described below.

(3) *Rideau and Cataraqui rivers:* The Rideau River reaches much of the way across the A2A region, flowing north from the Frontenac Arch to the Ottawa River. As part of the Rideau Canal system, its headwaters are connected to those of the Cataraqui River which flows south from the Frontenac Arch into the St. Lawrence at its outlet from Lake Ontario. *Status:* The Rideau Canal has large number of dams and locks and is operated by Parks Canada as a recreational boating route during the summer. The connection is most intact in the upper reaches of the two rivers on the Frontenac Arch where large lakes with forested shorelines form the headwaters. On the other hand, both rivers are highly degraded in their lower reaches due to urban and industrial development. This is especially the case in the Ottawa area where urban development continues to be permitted right up to the river bank.

(4) *Mississippi River:* The Mississippi is an important link from the southern Madawaska Highlands to the Ottawa River. *Status:* There is little protected land along this waterway. Dams and hydro development are an important threat to fish passage and habitat.

(5) *Madawaska River*: The Madawaska is a major link from the Algonquin Highlands through the Madawaska Highlands to the Ottawa River. The headwaters are protected inside Algonquin Park. Two section farther down the river also have protected status and are well-know whitewater canoeing destinations. *Status*: Dams are an important threat, as they block fish passage and destroy habitat for fish and other wildlife. In addition, mining exploration has increased in recent years within the watershed.



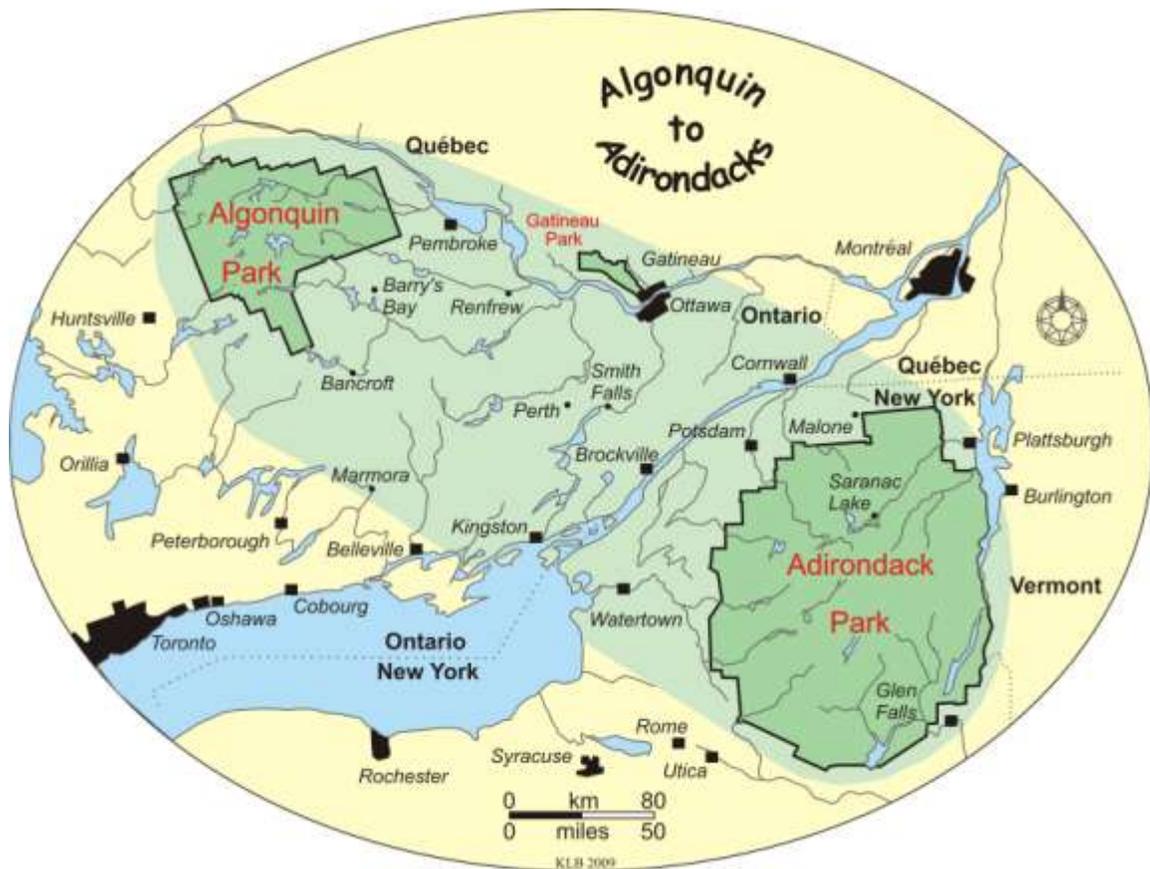
Moose are common in the A2A region, but fragmentation caused by roads can limit their movements

(6) *Moirá River*: This is the largest south-flowing river in the A2A region. It rises on the Canadian Shield near the headwaters of the Mississippi River (see above), before crossing Paleozoic sediments to reach Lake Ontario at Belleville. *Status*: It is heavily forested in its upper reaches on the Canadian Shield. However, there are a number of dams along its length. In addition it crosses agricultural lands in its lower reaches and flows through a large urban area (Belleville) where it enters Lake Ontario.

(7) *St. Regis River*: This is an important link from the Adirondack Mountains to the St. Lawrence River. It overlaps the terrestrial *LaRose Forest* connection (see above). *Status*: Its upper reaches are protected within Adirondack Park. It remains in a natural state along a significant portion of its length outside the Park where some sections are used for whitewater paddling. It is less forested as it approaches the St. Lawrence River. There are several hydro-electric dams along its length, although it is less developed in this respect than other rivers, such as the Raquette, that flow into the St. Lawrence from the Adirondack Mountains.

(8) *Oswegatchie River*: This is a major connection from the Adirondack Mountains to the St. Lawrence River and comprises three important branches. Status: The upper reaches are protected within designated Wilderness in Adirondack State Park. Threats: There are a number of hydro-electric dams which block fish passage along the river. In its lower reaches outside the park there are development pressures as nearby towns continue to grow.

For further information on the strategic importance of the Algonquin to Adirondacks area for ecological connectivity, please visit our website at www.cpaaws-ov-vo.org.



Photos and maps:
CPAWS Ottawa Valley

This project was funded by the Ontario Trillium Foundation

