Thinking Big, Acting Local: The how’s and why’s of an Adirondack to Algonquin corridor

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I. Summary of Case Study

We have composed this case study with the overall intent of creating a document capable of serving as a guide for the reasons necessitating, problems involved with, and plan of attack for the development of an Adirondack to Algonquin corridor. To this end, we explored the history of the concept of an Adirondack Park, New York to Algonquin Park, Ontario ecological corridor. We examined this concept’s feasibility as a means of increasing connectivity and combating the fragmentation of natural habitats; an issue which is one of the major culprits of the modern biodiversity crisis. Comparisons with the Yellowstone to Yukon corridor and the Florida Panther corridor enabled us to develop a plan for the implementation of an actively used A2A corridor. Through extensive literature reviews and personal communications with a number of key proponents of the A2A initiative we identified a number of invested stakeholders on the local level, many of whom had little or no knowledge of the concept of an A2A corridor. These findings made it clear to us that local action coupled with large scope thought and research would be the most effective manner for taking positive steps toward implementing the corridor.

II. Problem Definition

Anthropogenic activities threaten wildlife in many ways and the fate of global biodiversity is not bright based on the degradation that has already occurred. Approximately 83% of Earth’s landscape has been transformed by human activity, 60% of Earth’s ecosystems are considered degraded or unsustainably utilized (Groom et al.
2006) and species-area relationships have provided evidence that the Earth could lose 50% of its species in the next 50 years due to habitat loss (Sih et al. 2000).

Roughly 3% of Earth’s surface is urbanized. Although this seems like an insignificant portion, keep in mind that only 30% of the Earth is terrestrial, and thus 10% of this area is developed in some way by humans (Groome et al 2006). The global need for more urban areas and agricultural land as human populations and consumption rates continue to increase has inevitably resulted in conversion of natural landscapes to satisfy these needs. Facilitating this growing demand has resulted in forests being cut down, wetlands being filled in, and prairies being paved over. In general, habitats are either lost or degraded at the hands of human demands and wildlife is left to suffer the consequences.

Habitat degradation and loss is the most pressing issue of conservation biology today (Anderson et al. 2006, Groom et al 2006, Sih et al. 2000). Habitat degradation seldom occurs in the form of complete conversion of landscapes (although technology is continually making this more possible), but rather in the form of habitat fragmentation. Although there is a range of definitions in the literature (Fahrig 2003), habitat fragmentation could be generally defined as the conversion of large, continuous areas of habitat to smaller blocks that are separate from one another (Anderson et al. 2006). This process is commonly documented as an otherwise unmanipulated landscape is altered over time (time 1-3, Figure 1). The course of fragmentation has four distinct results: 1) a loss of habitat in the overall landscape, 2) a reduction in the size of fragments that remain
Habitat fragmentation decreases the total amount of suitable habitat in the overall landscape. Such a disturbance implies clear ramifications on species within the affected area. Species with large home ranges and dispersal distances such as the Gray Wolf (*Canis lupus*), which has been documented to disperse up to 100,000 km², are significantly affected by habitat loss (Paquet et al. 1999). One of the most famous examples of a species heavily influenced by habitat loss and fragmentation is the Grizzly
Bear (*Ursus arctos*). Grizzly Bear populations have significantly declined due to losses in habitat because of its reliance on large tracts of continuous natural land (Doak 1995).

As fragmentation increases and intensifies over time, the matrix (or the land in between habitat fragments) grows in size, is altered in shape, and thus increasingly isolates each patch of habitat from one another. Such modifications of the landscape affect species on both the population and individual levels. If a given area of continuous habitat is occupied by a population of a particular species, fragmentation tends to break up the population into smaller subpopulations in isolated patches. A major consequence is loss of genetic diversity through genetic drift (or the random loss of genetic diversity due to small population size) and inbreeding depression. Because of disease, environmental change and other factors influencing populations, genetic diversity is an essential adaptive tool for species to persist.

Suitable habitats for the health and viability of wildlife are commonly viewed as one large piece of unaltered land, such as a national park. National parks and other conservation reserves are obviously essential for protecting wildlife, however even large reserves “are becoming increasingly surrounded by intensively modified environments and in the long term appear destined to function as isolated natural ecosystems” (Bennett 2003). And because habitat fragmentation leads to the isolation of small populations (which have higher extinction rates) and a decrease in biological diversity, the push for conservation measures to increase the effective size of populations has grown in recent years (Rosenberg et al. 1997). One of the leading ideas among these strategies has been the development of ecological corridors.
Corridors link protected areas and allow for wildlife movement between fragmented habitats. Linking subpopulations increases the genetic flow between populations (through interbreeding), expands the resource bank available to species and increases overall habitat availability and heterogeneity. More specifically, the biological purposes for linking fragmented habitats are to 1) assist movement of migratory animals through developed landscapes, 2) facilitate dispersal of individual animals between “otherwise-isolated habitats or populations,” 3) enhance continuity of gene flow between fragmented populations, 4) promote what was once a naturally continuous habitat, 5) increase the resilience of populations in response to change and natural disturbances, and 6) provide habitat and continuity for wildlife “in conjunction with other environmental and social benefits” (Bennett 2003). Research has emphasized the importance of linking fragmented habitats. The presence of habitat corridors significantly enhanced rates of interbreeding between vole subpopulations (Aars et al. 1999) and populations of the closed-canopy specialist red-backed vole (Clethrionomys gapperi) benefited significantly through connectivity with corridors present (Mech et al. 2001). Movement behavior of multiple taxa (two butterfly species, the old-field mouse, the hispid cotton rat, 5 plant species and one bee species) are all directed by corridors linking fragmented habitats (Haddad et al. 2003). Such findings suggest that multiple taxa with very different life histories could benefit by linking habitat fragments.

Wildlife conservationists have emphasized the need to link vital habitats for the overall protection of biodiversity. In some cases, linkages are assembled for single species motivations, such as the Florida Panther Corridor initiative by the Nature Conservancy. While this corridor would greatly benefit the critically endangered Florida
Panther (*Puma concolor coryi*), it would also protect and restore watersheds and complex hydrological regimes of Southwestern Florida, including headwaters of several watersheds that flow to coastal estuarine nurseries which support both commercial and sport fisheries (Bennett 2003). Thus, both wildlife and humans can benefit through the establishment of corridors through the linking of fragmented habitats.

An example of an ecological corridor with broader goals is the Yellowstone to Yukon (Y2Y) conservation initiative in the U.S. and Canadian Rocky Mountains. The overall goal of the Y2Y initiative is to “maintain and restore a network of core wilderness areas, buffer zones, and multiple-use management areas to preserve biodiversity and ecosystem integrity, including movement of multiple far-ranging species” (Bennett 2003). Each of these corridors have different specified goals for their implementation; one being focused on a single species while the other is motivated by the overall protection of biodiversity with a slight focus on long-ranging species. Both, however, intend to preserve and protect ecological integrity and the overall health of wildlife.

Although many national and state parks are in close proximity to one another, land use in the matrix (i.e. agriculture, urbanization, roads, etc) keep these systems isolated from each other. Furthermore, national parks can be in close proximity but span across international borders such as the Y2Y corridor. Thus, although there are many opportunities for connectivity, there is a multitude of obstacles when designing and implementing ecological corridors that hinders their success.

The Adirondack to Algonquin (A2A) initiative seeks to create a wide-ranging ecological corridor connecting the Adirondack Park of Central New York with the
Algonquin Provincial Park of Southeastern Ontario (Figure 2). The A2A initiative’s mission is as follows:

The mission of A2A is to restore, enhance and maintain ecological connectivity, ecosystem function and native bio-diversity while respecting sustainable human land uses in the distinctive region of Ontario and New York State that lies between and embraces Algonquin and Adirondack Parks (Directory of Environmental Organizations 2005).

Algonquin Provincial Park consists of 7,725 square kilometers (~1.9 million acres) of forests, lakes and rivers. The park is situated in a transitional zone between deciduous forests (Southern portion of park) and coniferous forests (Northern portion of park) and provides habitat for 53 species of mammals, 272 species of birds, 31 species of reptiles and amphibians, 54 species of fish, 1,000 plus species of both plants and fungi and roughly 7,000 species of insects (www.algonquinpark.on.ca/index.html). The Adirondack State Park is comprised of 6 million acres of forests (deciduous and coniferous), lakes (over 3,000) and rivers (over 30,000 miles). 2.6 million acres of the total land mass is forest preserve and is home to 54 species of mammals (NYSDEC). Many of these species overlap with those of Algonquin Park. Both conservation preserves are similar in species and ecological composition. For such reasons, the A2A corridor would greatly benefit many species including the wide-ranging gray wolf, marten, lynx, and moose and could enhance the overall ecological integrity of the region. The Adirondack Park has been suggested as a potential core habitat for wolf recovery and thus the corridor could potentially facilitate the re-establishment of this species along with others noted above (Quinby et al. 2000). Furthermore, the proposed corridor area, while undefined, is generally understood to run through Frontenac Provincial Park. Frontenac protects a large landmass of the unique Canadian Shield habitat. This habitat consists of bedrock
either occurring at a shallow depth or on the surface and is also characterized by a multitude of small lakes created by glacial movements. Its presence in the corridor area provides a unique natural ecosystem that could be crucial in facilitating the successful movement of species between the two parks.

Figure 2. Map of the Algonquin Park in Southeastern Ontario and the Adirondack Park in Northern New York (map provided by www.a2alnink.org).

The A2A initiative would benefit many species. However, there are serious problems and complexities that must be solved and unraveled before implementation takes place, including the fact that most of the land in the proposed corridor is private property (Brown et al. 2005). The proposed A2A corridor connects two conservation preserves across the United States-Canadian international border. Thus, the creation and
implementation of such a large project requires the cooperation of two nations and many local stakeholders with an overall goal of restoring ecological integrity and protecting wildlife.

III. Human Impact

Human impact is the driving issue necessitating the development of the Adirondack to Algonquin Corridor. Such human induced impacts in the two parks (as well as in the lands that are being proposed for corridor construction) include fragmentation through development, harvesting and extraction practices, and large scale recreational use. It is important to understand and include these human impacts in any discussion of either the parks, or the proposal to connect them.

IIIa. Fragmentation through Development

The first, and perhaps most important aspect of human impact we will discuss is fragmentation of the natural environment through development. This category of human impact consists mainly of residential development, along with resulting development of community infrastructure such as commercial development, road construction, and agricultural practices. Such forms of development serve to fragment natural patches and increase the percentage of land devoted to degraded non-natural matrix areas. Issues of increased fragmentation result in more isolated populations in less connected and smaller habitats. A slew of problems follow including issues of inbreeding, road mortality, stochastic threats to subpopulation survival, increased individual mortality, and an overall decrease in the odds of metapopulation persistence. The two parks and the potential
corridor area experience varying degrees of the negative impacts of habitat loss and fragmentation through development.

The Adirondack Park is particularly impacted by human development because it is composed of a patchwork of public and private lands (The Adirondack Forest Preserve 2007). Since the park’s conception in 1892, both the overall size of the park and the percent of its land set aside by the state as public forest preserve has increased dramatically (Figure 3). However, as of March 2003, 51.66% of the park’s 5,821,184 acres were privately held (Adirondack Park Land Use Area Statistics 2003). Over 130,000 people live within the confines of the park. Therefore, the towns, roads, and overall infrastructure necessary to sustain this population within the Adirondack Park result in a high degree of human disturbance to the natural ecosystem.
In comparison, Algonquin Park has historically been impacted much less by humans since its creation in 1893. The park is designated as ‘Natural Environment’ by the province of Ontario. According to the Ontario National Parks website, this
classification means it has been set aside to “protect the landscapes and special features of the natural region in which they are located, while providing ample opportunities for activities such as swimming and camping” (Provincial Parks and Conservation Reserves Act 2006). Therefore, no lands within the 765,345 hectare park are privately held and only one major public road—Route 60—cuts through the park (Figure 4). There is a provision for leasing of land for private non-commercial use in provincial parks. In this provision the Minister may lease land or issue land use permits and licenses of occupation only in the case of granting an extension for individuals with an existing lease or permit of occupation (General Info on Algonquin Provincial Park 2007). As a result of this provision, there are small numbers of established residents in Algonquin Park, along with corresponding small-scale community infrastructure.
The potential corridor area in New York State has been impacted through development much more than either of the parks or the Canadian corridor area. Evidence of this difference is apparent in the high concentration of roads in Northern New York compared to the other areas (Figure 5) (Quinby et al 1999). Because the proposed corridor has never been defined, it is difficult to make accurate assessments of population
densities in the proposed area. To counter this issue we decided to use road density as an indicator for population density which in turn reflects the overall fragmentation resulting from human development. It also contains a large percent of land use dedicated to agricultural practices (Figure 6). This difference has serious implications on the potential success of the corridor. A potential corridor was established through the combination of a Least Cost Corridor Pathway with the top 5% of potential Eastern Timber Wolf (*Canis lupus*) habitat (the Timber Wolf serves as an umbrella species in this study) (Fig. 7). Within this corridor the road density is 0.31 km/km². Road density and human population is described as sparse in the Canadian land between Algonquin and Adirondack Parks, with the exception of a few small towns and the city of Ottawa (Quinby et al 1999). This city would of course be bypassed by any corridor area. Due to this higher road density and the ensuing higher population density in the New York are of this proposed corridor, it is likely to be the most vulnerable to habitat fragmentation through development. The potential for continuing and increasing human impacts through development (particularly within the currently unprotected potential corridor area) is an ongoing problem that must be continually monitored and considered throughout the process of corridor planning and implementation.
Figure 5. Road types and densities in the Adirondack to Algonquin Region. (Image provided by Quinby et al. 1999).
Figure 6. Land use in the Adirondack Park and the potential New York corridor area. (Image provided by Quinby et al. 1999).
IIIb. Harvesting and Extraction

A second major human impact is harvesting and extractive processes. These are regulated and practiced within both of the parks and in the matrix between the parks. They are important not only because of their direct impact on target species of plants and
animals, but also through their ability to alter population dynamics, ecosystem processes, and habitat types. Our research identified hunting, fishing, logging, and mining as the significant instances of harvest and extraction in the region (The Adirondack Forest Preserve 2007, Algonquin Park Wilderness Park 1997).

Hunting is permitted in the Adirondack Park, and it is regulated by state-wide hunting seasons and take limits, as well as some more strict regulations pertaining to particular areas of public land in the park that are protected to varying degrees such as forest reserve areas and the high peaks region. Other than in these few regions with particular changes to regulations, the hunting practices of the Adirondack Park are comparable to those in Northern New York. Hunting is used as a management practice in the park and throughout New York State to curb species such as white-tailed deer (*Odocoileus virginianus*) and wild turkey (*Meleagris gallopavo*), which are heavily overpopulated in the area. Other hunting seasons allowed in the majority of the park are black bear (*Ursus americanus*), waterfowl, and small game such as squirrels, rabbits, and grouse (The Adirondack Forest Preserve 2007).

In contrast to the Adirondack Park, Ontario Provincial Parks do not permit hunting on park lands with the exception of Algonquin. Algonquin Park does allow hunting in the geographic townships of Bruton and Clyde. These towns are included in the public lands added to the park by section 1 of *The Algonquin Provincial Park Extension Act, 1960-61*. The remainder of the park is hunting restricted (Provincial Parks and Conservation Reserves Act 2006). Hunting practices in the Ontario proposed corridor area are similar in application and practice to those in New York. The only notable difference is that there is also a moose (*Alces alces*) season in the province of
Ontario, and there are some small scale temporal differences in season openings and closings.

Fishing is a human impact through harvesting and extraction. Recreational fishing is practiced on a large scale throughout the Adirondack-Algonquin area and is limited by seasons and catch limits similar to those of hunting. Some target species for recreational fishermen in the freshwater of Eastern North America (including the Adirondack-Algonquin area) are Brook Trout (*Salvelinus fontinalis*), Lake trout (*Salvelinus namaycush*), Smallmouth Bass (*Micropterus dolomieu*), Largemouth Bass (*Micropterus salmoides*), Yellow Perch (*Perca flavescens*), Walleye (*Sander vitreus*), Northern Pike (*Esox lucius*), Muskellunge (*Esox masquinongy*), Atlantic Salmon (*Salmo salar*), and Pacific Salmon (*Oncorhynchus tshawytscha*). The stocking of non-native Pacific Salmon and native Atlantic Salmon and trout throughout the region is a commercial practice with far reaching implications on the area such as: fund usage, establishment of non-natives, food web disruption/change, disease introduction, waste accumulation, nutrient loading through seasonal mortality, and introduction of hatchery bred individuals (which may be less successful than wild individuals but still interbreed) (Baldwin, Ecology of Lakes and Rivers, Fall 2006). The recreational fisheries prevalent in the Adirondack-Algonquin area and the hatcheries operating to support them do have a major impact on recreational use of the areas (which will be mentioned later) and upon the overall aquatic food web.

A more directly extractive practice, Commercial timber harvesting, is allowed (albeit regulated) in both parks and in the corridor area. Within the Adirondack Park, commercial timber harvesting is allowed on private and some public lands, but is heavily
regulated (Adirondack Park Land Use Area Statistics 2003). In Figure 7, the categories of resource management and industrial use in the private sector, and intensive use in the public sector include timber harvest and other extractive processes. Timber harvesters must apply for a permit from the Adirondack Park Agency if their harvest meets any one of a number of criteria. This includes but is not limited to, “clear cutting more than 3 acres of wetland, clear cutting of more than 25 acres in upland areas, construction of wood roads in wetlands and various harvesting activities within designated river, including any cutting or new wood road in or within 100 feet of the mean high water mark of a river, and new bridges (The Adirondack Forest Preserve 2007).” Commercial timber harvesters are held responsible for meeting all regulations as set forward by the Adirondack Park Agency. If they fail to do so they are subject to property loss and fines.
In Ontario, commercial timber harvesting is one of the prohibited practices within provincial parks, again however, with Algonquin as the exception. Timber may be harvested in Algonquin Park if the process is in accordance with the *Algonquin Forestry Authority Act*, the *Algonquin Provincial Park Management Plan*, and the *Crown Forest Sustainability Act of 1994* (Provincial Parks and Conservation Reserves Act 2006).
Nearly two thirds of the park is open to commercial timber harvest under the guidelines set in these documents, producing nearly 400,000 cubic meters of wood each year and requiring over 2,000 kilometers of permanent logging roads. These acts also set forward a number of regulations, limits, and licensing procedures which are heavily enforced in the park area and subject to stiff fines (Algonquin Park Wilderness Park 1997). In areas outside of the two parks, timber harvesting is much less regulated and is widely practiced upon the temperate forests of the regions. This is a large human impact on the area that has important ramifications upon the feasibility of an Adirondack to Algonquin corridor.

Other extractive processes such as mining, quarrying, and natural gas extraction are prohibited (with a few minor exceptions) in Algonquin Park and are heavily regulated and licensed in the Adirondack Park. These practices are not allowed in the Adirondack Park’s publicly held areas (The Adirondack Forest Preserve 2007). In terms of the area between the two parks, all extractive practices must meet with national and state/provincial regulations and must be properly licensed. The licensing process and regulations are specific to the areas and do not generalize across the international border. The impacts of these forms of extraction and harvest may not be crucial to success of an Adirondack to Algonquin corridor, but they certainly should be considered and regulated in a manner that will best support a return to as much natural habitat as popular.

**IIIc. Recreational Use**

Next to fragmentation through development, recreation is perhaps the most important human impact in the Adirondack to Algonquin area. Most public lands in both parks are open to recreational use. The Adirondack Park receives a large array of
recreational tourists including (but not limited to) campers, hikers, fishermen, birdwatchers, boaters, and climbers. This use occurs on both private and public lands in the Adirondack Park. Because waterways in the Adirondacks and the potential New York corridor area have been granted public access, this is one of the main attractions of the park. A number of popular rivers such as the Racquette, the Oswegatchie, and the St. Regis flow through the park. Another major draw is the park’s forty-six high peaks, which experience some of the highest densities of recreational users in the entire state.

Algonquin Park experiences similar high levels of recreation. Of its nearly 770,000 hectares, 529,723 are “recreation-utilization zones”. Over 300 million tourists visit the park each year drawn by recreational pursuits and wildlife viewing opportunities similar to those in the Adirondack Park (Algonquin Park Wilderness Park 1997). Both parks have required payment of fees and permits to enter or camp in specific areas, which is a large source of income that may be put back into park management.

As a result of the large number of recreational users of the park, a large number of roads, trails, campgrounds, and other infrastructure must be created to facilitate recreational visitors and their movement. The Adirondack Park contains over 2,000 miles of hiking trails and over 100 campgrounds (The Adirondack Forest Preserve 2007). In Algonquin Park, many of these campgrounds (and off-shooting trails) are concentrated around the stretch of highway Route 60 which cuts through the Park (Figure 4). The corridor area also entertains a large amount of human recreation and the resulting tourism infrastructure in other public lands such as Frontenac Provincial Park in Canada. Frontenac, which is seated approximately 25 miles north of Kingston Ontario, protects over 5,214 hectares of the important Canadian Shield natural habitat and is a key to
linking the parks (McDuff 2007). Other small natural public areas such as small parks and wildlife refuges are scattered throughout the proposed corridor and experience varying degrees of recreational use. It is likely that, were a corridor established, its value as a recreational destination would rise tremendously, particularly if it had the desired effects on species flow.

IV. Governmental Impact

Government policies and international politics must be considered in any discussion of potential problems and solutions for the Adirondack to Algonquin corridor. The problems arising from creating what is essentially a large scale natural reserve spanning international borders, are significant. Regulations must be comparable, fees must be adjusted for currency conversions, the St. Lawrence River Seaway must be regulated on an international level and even hunting seasons should be synchronized in order to maximize preservation potential. In order to best understand the implications government impact will have upon any corridor effort, it is important to have a brief introduction to the two government’s practices and the current governmental figures’ policies. It is also important to mention some of the ways the governments are capable of helping and hindering the Adirondack to Algonquin Project.

There are two main governmental agencies of concern in New York State. The first is the Adirondack Park Agency, which regulates and manages the Adirondack Park in particular. The second is the New York State Department of Environmental Conservation. The process of instituting this corridor in the United States will be largely handled by the NYSDEC. It is interesting to note that recently the Governor of New
York, Eliot Spitzer, has nominated for DEC commissioner of New York, Pete Grannis who was promptly confirmed by the NYS Senate. Grannis is known as a man with a long history of environmental conservation minded thinking. He has been honored by the Environmental Planning Lobby as Legislator of the Year on three occasions. This is very significant because any attempt at corridor implementation must eventually receive his and the DEC’s support (Pete Grannis 2007). It seems that with Grannis’s environmental experience and track record, it is likely he will support an initiative such as the Adirondack to Algonquin Corridor as much as is possible.

In Ontario, jurisdiction of all provincial parks falls under the Ministry of Natural Resources. The current Minister is David Ramsay who recently released a public message detailing his and the departments intentions for the park. He mentions that the updated Provincial Parks and Conservation Reserves Act (which was introduced in October 2005) has received a Royal Assent. The act must still be further ratified before its implementation, but the Minister expresses his confidence in its success. He mentions that public stakeholders and aboriginal communities in Ontario were consulted extensively in the drafting of the act and that a number of amendments were made at these groups behest. Some of its key points which he mentions are: the creation of laws regarding key policies for planning and management of the parks, grant support for Ontario’s ongoing strategy for maintenance of biodiversity, and position Ontario as the Canadian leader in protected areas legislation (Ramsay 2006). In addition to this act the minister mentions that they have begun to develop a non-legislative policy addressing activities on lands adjacent to provincial parks, in order to combat edge effects. Finally, he states his intent to “continue to support and promote sustainable resource and
community development” and continue consultation of public stakeholders and aboriginal groups in any and all future decisions regarding further progress (Ramsay 2006). It is important to note these environmental views and practices because the Minister of Natural Resources of Ontario will have to be directly involved in any efforts to create this corridor.

There are a number of ways in which the two governments can facilitate and retard the creation of the corridor. Aid can come from tax breaks for landowners who support the corridor creation, the mandating of wildlife crossings, the establishment of eminent domain to acquire important corridor areas, the continuance of policies regarding allowing the St. Lawrence River to freeze around the Thousand Islands during the month of December (to aid in winter crossings by species in the areas), and the introduction of regulations to promote overall migration along the potential corridor route. By the same token, cooperative and independent government action could fail to do any number of these positive actions, or institute more major roadways, or even allow icebreakers to keep the St. Lawrence River open throughout the season (something which was proposed but shot down by landowners in the 1970’s) (Richard Grover personal communication). It is difficult to make any overarching claims regarding which direction governmental issues will move toward, although it seems that both governments have made commitments to work toward maintaining biodiversity. These commitments tend to promote a degree of optimism for the corridor’s potential for governmental aid.
V. Identification of Stakeholders

There are a number of very different stakeholders invested in the creation of an Adirondack to Algonquin corridor. These include wildlife, local landowners, recreational users, business operators in the effected area, aforementioned governments, and impacted tax payers. It is important to understand the unique interests of these groups in order to create a viable corridor.

Obviously, all wildlife present in the two parks and in the proposed corridor area will be impacted by the corridor’s creation and by any resulting changes in use and/or management. However, there are certain species of particular interest for a number of reasons. The main reason is potential as an umbrella species. An umbrella species is defined as a species whose protection facilitates the protection of many other species or entire ecosystems. These species are often large charismatic species with wide ranges (or migration patterns), reliance upon multiple habitats, and potentially an existing designation as endangered (Conservation Biology 2007). This idea regarding the use of umbrella species to promote overall biodiversity is very important to the corridor proposal and has wide ranging impacts on interests of multiple other stakeholders. For the sake of simplicity, we will focus on a few of these potential umbrella species in defining wildlife stakeholders. Examples are Eastern Timber Wolf (*Canis lupus*), Moose (*Alces alces*), and the Canada Lynx (*Lynx canadensis*).

The Eastern Timber Wolf is an endangered subspecies of Gray Wolf that was once spread throughout the Northeastern United States, but can no longer be found in New York State (Figure 8). Many studies exploring the possibility of an Adirondack to Algonquin corridor focus upon this species (Quinby et al. 1999). Viable populations do
exist in Algonquin Park and range south to within a few hundred miles of the NY border. There is a large amount of potential core and dispersal habitat available to the wolves in the Adirondack Park (Figure #). This need for core habitat is important because the Eastern Timber Wolf lives in social groups or packs and often hunts over large ranges (Harrison and Chapin 1997) (Figure 9). If a corridor were established, this endangered species could experience population and gene flow along the Frontenac Axis and across the St. Lawrence River (during the winter freeze period) into New York and eventually disperse and establish populations within the Adirondack Park.

Figure 8. Eastern Timber Wolf (*Canis lupus*),
Moose are also large charismatic mammals, and are held in high regard by the public of Northeastern North America. They are very common to Canada and in particular to Algonquin Park. Moose are also common in Maine, and to a lesser degree New Hampshire and Vermont. With the exception of a few outliers, moose do not currently inhabit New York or the Adirondack Park (Figure 11). Moose would benefit in
a manner very similar to the Eastern Timber Wolf in the instance of viable corridor establishment.

Figure 10. Bull Moose (*Alces alces*).

Figure 11. Moose (*Alces alces*) distribution in North America.
A third potential umbrella species is the Canada Lynx. This species is common throughout much of Canada and has viable populations within Algonquin Park. The Lynx is not currently present in a number significant enough to represent a reproducing population in the Adirondack Park or elsewhere in New York (Figure #). Canada Lynx would also enjoy the ability to make winter crossings of the St. Lawrence and spread through a natural corridor into the Adirondack Park. In the Adirondacks Lynx would likely establish themselves in lowland areas where their main prey species, the snowshoe hair, abounds. All three of these species are potential umbrella species who would benefit greatly from a working wildlife corridor between Adirondack and Algonquin Park. In the hopes of biodiversity maintenance, we would hope that their easily observable success would signal the overall success of the corridor in facilitating movement, gene flow, and metapopulation success for the majority of the food web.

Figure 12. Canada Lynx (Lynx canadensis)
Local landowners are another very important stakeholder in the issue of an Algonquin to Adirondack Corridor. This is particularly true in the proposed corridor area, where residents may either have to be displaced, or may be faced with new restrictions on community development and land use. These potential impositions on local landowners make it necessary to inform them on reasons for ecological corridors, changes they can expect, and ways in which they can help in facilitating an effective corridor. An in depth survey of local landowners in the impacted area of New York found that less than 50% were able to come to a conclusion regarding support or lack thereof. This was a result mainly of lack of knowledge. Indeed, only 17% of surveyed landowners were at all aware of a corridor proposal, explaining the largely undecided proportion (Brown and Harris 2005). Privately held land will be absolutely necessary for
the creation of a corridor, and so land owners throughout the region where a corridor will be implemented are heavily invested in the creation of a corridor both through its implications on their own land uses and rights, and the land uses and rights of their communities.

A third important stakeholder is the aforementioned group of recreational users of the two parks and of other recreation areas within the corridor area. These recreational users and tourists might take slight issue with any limitations and/or alterations on their usage of public areas. For example, they may react adversely to increased park fees and regulations created to support the corridor’s success. However, it is likely that the positives of corridor development would heavily outweigh the negatives in the eyes of recreational users. Some such positives would be increased opportunities for viewing more diverse wildlife, opportunities to view the aforementioned charismatic species in the Adirondacks and New York corridor area, and the possibility for increased opportunities such as hiking, camping, and paddling within the newly public corridor area. Of course, if these changes cause increased recreational use of the parks and the corridor area, they may also create negatively viewed impacts such as overcrowding and overuse. This could, if not properly regulated, have negative impacts on the very wildlife which the corridor is meant to preserve. In contrast, local residents may benefit economically from this increase in ecotourism.

Many other stakeholders are also involved and interconnected with this issue. Governments will be forced to set up management practices and generate capital for corridor implementation. Taxpayers will in turn be asked by the governments to help absorb some of these costs, and local businesses may both benefit from increased tourism
and be hurt by property loss and land regulations. In order to ensure the success of an implemented or proposed corridor it is vastly important to include all of these various stakeholders in the planning process. Such a large scale corridor must have the best interests of as many stakeholders as possible in mind in order to ensure their support, and its long-term success.

VI. Development of Solutions

VIa. Parameters of Solution

The A2A corridor should ideally be designed according to the ecological characteristics of the species that will benefit the most including the Eastern Timber Wolf, moose, and Canada Lynx. Questions to be considered when designing the corridor are how large are the species’ home-ranges or territories? On average, how far do the species of interest move? Are their movements nomadic or seasonal? It is also important to understand the general behavior, habitat requirements, diet and other resources that are essential for the species health to develop the best design of the corridor (Bennett 2003). Although answers to the above questions are most important for the assurance of species survival, it is relatively rare for an opportunity to design an ‘ideal’ corridor due to the complexity of social, political and financial issues. Factors including local land-use, local land owner attitudes, lack of financial support, urbanization and development each hinder the creation of an ‘ideal’ corridor. Stakeholders may not feel an ecological corridor is where most efforts should be placed and thus such a plan may not be on the top of county, state or federal government’s agendas. As a result, the challenge lies in how to “best manage remnant linkages that have survived in heavily disturbed areas, maximize
landscape connectivity by using habitats retained primarily for other purposes and restore connectivity between the vestiges of natural habitats that remain after development” (Bennett 2003).

**VIb. Potential Problems Faced**

The design, implementation and management of ecological corridors are not simple tasks. There are many obstacles to be overcome if a corridor is to be successful. Such issues include, but are not limited to, the compliance of stakeholders (particularly local landowners) affected by the corridor project, financial support from conservation organizations, local, state and federal governments, issues with road density and development, urbanization, and commercial development (pertaining to fragmentation).

Although it is unmapped, most of the land which would comprise the A2A corridor is owned privately. Thus, landowner cooperation is vital if the corridor is to be successfully implemented. The study completed by Brown and Harris (2005), which surveyed households randomly scattered on the U.S. portion of the proposed corridor, is very important when assessing landowner cooperation (Figure 3). The survey included topics such as current knowledge of the A2A proposal, current land-use of the land owner surveyed, preferred level of involvement with the A2A proposal and planning, attitudes towards protecting important ecological and cultural areas, and personal willingness in becoming involved with the A2A proposal. The results of this study indicated “affected
landowners had little knowledge of the proposal and no contact with its advocates” and many of the respondents were farmers who relied on their land for livelihood. Although most were unaware of the A2A proposal, most respondents expressed a willingness to have their land be included in the proposal. The potential for problems to arise with such a lack of communication between the most affected landowners is extremely high. The A2A initiative could face serious obstacles in the future if communications are not well-established with significant stakeholders.

Another significant issue that must be addressed is creating incentives to persuade local landowners to allow their land to become tracts of conservation areas. When asked about the most pressing land use issues in the proposed A2A corridor area, Dr. Rick
Welsh, Professor of Sociology at Clarkson University, strongly emphasized the fact that a minority of landowners and residents in the North Country have an “anti-conservation policy ethic” that is an “imposing hurdle to be overcome” for the success of the corridor (Welsh, personal communication: 30 April). Thus, success of the proposed corridor rests in the hands of local landowners that may not be enthusiastic about the idea of allowing their land to be used as an ecological corridor. Furthermore, because the North Country is a relatively poor region, it may be more enticing for landowners to sell for development due to greater monetary opportunities. Together with the fact that the majority of potentially affected landowners did not know about the A2A proposal (as discussed above) are the factors including some landowners have an “anti-conservation policy ethic” and development may be a more economically practical option. Therefore, these issues pose serious problems to the viability of the corridor project and solutions must be met to satisfy and persuade local landowners of the benefits at conserving their land.

Road density, urbanization and commercial developments are significant problems that will be faced in the development of the A2A corridor. High road densities imply high rates of road mortality as well as the separation and isolation of habitats and populations of species. As discussed above, the North Country is a relatively poor region. Thus, the motivation to sell property is likely to be driven by monetary incentives. Selling to developers for residential and commercial developments monetarily outweigh selling conservation easements and donating land in the name of conservation. Thus, if landowners sell for commercial and residential development, this may also imply the construction of more roads adding to the road density problem that already exists. In fact, there is a proposed four-land highway that would cut across all of Northern New York
from Watertown to Plattsburgh. Supporters of this highway insist on the fact that young people are leaving the North Country due to a lack of jobs and opportunity and believe this highway will alleviate this issue. Ernest J. LaBaff, chairman of the St Lawrence County Economic Development Corridor Working Group, recognizes the fact that young people are migrating from the North Country due to the lack of jobs. When asked about the development of the A2A corridor and the construction of the proposed highway, LaBaff commented, “I’m more worried about building a highway to keep our children here than I am about animals migrating. My major concern is the economy and jobs for our young people” (Guardino 2003). The problems that are faced here are, as stated above, convincing landowners to not sell their land for development but allowing their land to become conservation tracts, creating opportunities or incentives for North Country residents to support the A2A corridor and solving the problems that result from high road density on wildlife.

VIc. Identification and Evaluation of Potential and Feasible Solutions

It is important for any issue at hand to identify and evaluate each potential solution for a better understanding and development of the best possible solution(s). In the case of the A2A corridor there are multiple potential solutions although some are more feasible than others. We will now identify each of the possible solutions that would aid in the design and implementation of the A2A corridor in the overall effort at designing the best possible solution(s) for the success of the project.

One possible solution for the problems faced by the A2A proposal is for New York State (NYS) to acquire all of the proposed land within the A2A corridor using the right of eminent domain. Eminent domain is states and quasi-public organizations
inherent right to acquire privately owned land without the landowners consent. States predominately use eminent domain to acquire land if they feel it is for the public good. Examples include land for roads or highways, shoreline property for construction of hydroelectric facilities and parcels of land for cell phone towers (by quasi-public organizations/corporations) (Harris, personal communication Fall ’06). It is unlikely that NYS would use the right of eminent domain to acquire land for the A2A corridor because this right is rarely used in land acquisition for this purpose. It is also rather clear that North Country residents would create quite a rebellion against such an act by NYS. Thus, this option is not a viable solution for the problems that the A2A proposal faces.

Another potential solution is the use of conservation easements. The purchaser of conservation easements on a given parcel of land acquires the property’s development rights which commonly guarantee that the land will remain undeveloped, or the current land uses will not be altered. Conservation easements vary in terms and conditions. Generally, under a conservation easement, owners continue to use their land and maintain the standing structures however their activities may not increase to convert natural land or make new improvements (Anderson et al. 2006). Such a solution allows for the land owners to maintain ownership and utilization of their land while simultaneously preserving natural habitat and open space. The use of conservation easements is a definite solution to acquiring land for the A2A corridor.

Conservation easements are most commonly purchased by state governments and local land trusts. Landowners who value wildlife have also donated their land to land trusts or state governments in the name of conservation. The acquisition of land by local land trusts is a viable solution to the creation of the A2A corridor. Land trusts are
organizations, commonly formed and operated by local residents, with a central focus on preserving land and open space by acquiring land parcels or conservation easements. If local land trusts in the A2A region are aware of the A2A proposal and incorporate it into their strategy for land acquisition, the A2A initiative could benefit greatly through local land acquisition that fits into the A2A area.

A large issue that has been discussed in this paper is road density, a form of human impact that threatens wildlife severely through direct mortality, fragmentation and isolation of populations. The road density issue is severe on the US side of the proposed A2A corridor and the proposed “superhighway” from Watertown to Plattsburgh could intensify this problem significantly. Increasing development, as discussed earlier, is also a threat that may intensify the problem of road density. Although the overall road density is much lower in the general area of the A2A on the Canadian side, the highly trafficked 401 Highway in Canada bisects the proposed corridor creating issues on the Canadian side (PETRIKS FIGURE). In personal discussions with Emily Conger, the president of the A2A initiative, the issue of animal-car collisions was at the top of her agenda when discussing the problems that the A2A corridor faces. It is obvious that roads are needed for public transportation however there are solutions to this issue. Solutions include wildlife crossing structures that allow for a safe route from one side of the road to the other. Such constructions have been completed in Banff National Park of Canada and have benefited wildlife such as wolf and moose in this area (Figure). Wildlife overpasses are a viable approach at minimizing the affects of roads on wildlife and are definitely a solution that the A2A corridor should use in its implementation.
One of the largest issues that must be overcome is convincing landowners to allow their land to be used for the corridor. Such a task is very complicated and difficult especially since North Country landowners could be more apt at selling their land to development where there is a higher payoff than turning their land over to conservation. A similar situation faced the supporters of the Florida Panther Corridor in Florida that has been discussed throughout this paper.

Stakeholders within the proposed Florida Panther Corridor include numerous private land owners and at least 4 large corporations. The Nature Conservancy (TNC) directly asks landowners in the proposed corridor if they would be interested or willing to sell land or conservation easements to the state. A number of landowners have been
cooperative and said they would be willing to sell their land when they downsize or retire, or to sell conservation easements because they are truly interested in conservation. Although other landowners have not been as excited over the idea, it is vital to make contact with them to either re-develop the corridor plan or the strategy of approaching affected stakeholders. In fact, with persistence, TNC have enticed two major corporate owners to sell key tracts of the proposed corridor to the state (Anderson 2006).

Hendry County, one of the most rural counties in southern Florida with an agricultural based community (similar to St Lawrence County and other Counties of the North Country), initially opposed the purchase of tracts of land by the state for the development of the corridor. However, the state provided incentives including 15% of all timber revenues being provided to the county and state-run organizations set up a program to reimburse any losses to local schools and governments through the loss of property taxes. Opportunities for recreation introduced by the Florida Rails-to-Trails program provided further incentive for local support. Many residents within the Florida Panther Corridor find value in living in a rural part of Florida because of heritage and history and therefore are cooperative with conservation easements due to the fact that they ensure that the lands will remain in their current state. The Nature Conservancy clearly emphasizes to Florida residents of the benefits of conserving land including providing clean water, wildlife and other natural values. The Nature Conservancy also proposed to name the conservation areas after the families that live there which could create a sense of pride and fame to the local residents. In terms of economic reasons, the Florida Panther Corridor has been successful with working with local landowners due to the fact that they pay at or near fair-market value, they are consistent and trustworthy.
with closing deals efficiently and they commonly pay cash in a lump-sum arrangement (Anderson 2006). The A2A proponents should develop the above tactics used in the Florida Panther Corridor by the Nature Conservancy and state organizations in order to convince landowners in Northern New York to allow for their land (or some of their land) to be turned over to the effort at conservation.

The main focus of the A2A corridor is the benefit of wildlife and thus the proliferation of biodiversity. Thus, it is vital that the value of biodiversity be enhanced to stakeholders if they are to cooperate with the proposal and if the corridor is to successfully be implemented (Groom et al. 2003).

**VId. Identification of Best Solution(s)**

The A2A corridor encompasses a multitude of issues from each an ecological, socioeconomic and institutional perspective. The species that are to benefit the most from the implementation of the corridor, the gray wolf, moose and Canadian lynx, should be used as the framework for designing the corridor from an ecological perspective due to their “umbrella” status. In other words, the ecology and behavior of these species should be taken into account when designing the corridor. However, it is unlikely that a corridor that is ideal for each species can be implemented due to the complexities of socioeconomic, institutional and political factors. We must consider the fact that not all landowners will be compliant with the creation of the corridor and there is not enough money nor enough public support and awareness to implement the ideal corridor, thus we must consider the best and most feasible solution(s) that will aid in the development of this initiative. We will now take a look into these solutions in more depth throughout this section.
Conservation easements are a tool that should contribute significantly to the development of the A2A corridor. In conjunction with this solution, the awareness and compliance of local land trusts is the real answer to the situation. In St Lawrence County, the St Lawrence Land Trust (SLLT) is headed by Richard Grover. Although the SLLT is not actively pursuing the A2A initiative, they are “aware and very interested” in its development and that the A2A project could “easily fit into what we’re doing” (Grover, personal communication). The SLLT has a strategy of connecting lands that it acquires in an overall effort at reconnecting fragmented habitats. In fact, the potential for a parcel of land to be connected to another parcel is a major part of the selection criteria that the SLLT uses when acquiring new lands. The SLLT assesses “how it fits into the big picture” of the overall landscape. Grover is well aware of the A2A corridor, as he was heavily involved in meetings with the Wild Lands Project that were focused on the A2A initiative, and takes into consideration whether the acquisition of a parcel of land fits into the A2A potential area.

Not only does Grover and the SLLT have the idea of connecting fragmented habitats, but other land trusts in the North Country, including Tug Hill Tomorrow (THT) which covers much of Jefferson and Lewis County’s and the Indian Rivers Lake Conservancy (IRLC) which covers land between Canton and the Thousand Islands (each significant parcels of the A2A potential area), have this same strategy. In a personal conversation with Grover, he mentioned that he spoke with the president of the IRLC quite recently and although they did not mention the A2A by name, they are actively pursing conservation projects in the Adirondack to Algonquin area that link habitats (Grover, personal communication). Thus, land trusts in the North Country are
communicating with each other when acquiring new lands and if they have the A2A in consideration their plans could fit into the overall proposal. Further facilitation of discussions and ideas among land trusts in the North Country is a definite solution for the creation of the A2A corridor and this could be accomplished by encouraging groups such as the A2A Initiative to actively visit and communicate with potentially supportive land trusts.

It is vital that stakeholders are offered incentives for cooperating with the A2A proposal. There are inherent incentives that should be emphasized such as clean water, wildlife and other natural values but there also realistically needs to be monetary incentives to achieve local landowner support. Incentives that were used in the creation of the Florida Panther Corridor could definitely be applied to the A2A proposal. State-run organizations need to be created to set up programs to reimburse any losses to local schools and governments through the loss of property taxes as seen in the Florida Panther Corridor. If any timber companies or other harvesting organizations move in to harvest from the proposed corridor, towns and counties should receive a certain percentage of revenues.

Fragmentation by roads needs to be overcome by the construction of wildlife crossings. Emily Conger (president of the A2A initiative) hopes to work closely with the Ontario government to construct underpasses along the 401 Highway which would facilitate wildlife movements across this manmade barrier (Figure). The issue of road
density is severe on the New York side of the proposed corridor as discussed throughout this paper. The proposed “superhighway” that would link Watertown, NY with Plattsburgh, NY poses a serious threat to the creation of the A2A corridor. In an interview with the Watertown Times, Roland W. Kays, curator of mammals at the state museum, commented that the proposed path of the highway “cuts across a swath of territory that is a major migratory route between the Adirondack Park and Algonquin Provincial Park” (Guardino 2003). When we mentioned the proposed highway to Richard Grover he expressed a great concern at the issue. He said that he attended public meetings focused on the development of the highway and was able to express his concern with the negative impacts on wildlife, mention the A2A corridor into the discussion, and also propose the construction of wildlife crossings if the highway were to be completed. Thus, the public and the proponents of the highway are now aware of the issue with the effects on wildlife if the highway is created. The creators of the proposed highway must be
informed about the ramifications on wildlife and the possibility that if the highway were created the A2A project may lose much of its potential. Also, wildlife biologists must work with the New York State Department of Transportation to create these crossings in the best possible locations (areas where known migratory routes occur) and with the most affective design. The solution lies with increasing the awareness of the public with the A2A initiative so that it can be taken into consideration when plans like the proposed highway cutting East to West across the entire North Country are at hand. It is also crucial to have scientific research to understand the most affective design and placement of the wildlife crossings.

The next solution rests in the hands of scientific research. When asked about the main challenges that must be addressed to ensure the implementation of a viable ecological corridor, Rick Welsh pointed out that there must be conclusive evidence that species actually use the corridor for it to gain credibility. He emphasized the fact that to achieve this, a substantial research investment is required from a number of people and institutions (Welsh, personal communication). Thus, we propose that a group is started in the North Country that calls for participation by the public, academic institutions (such as St Lawrence University, Clarkson University, SUNY Canton, SUNY Potsdam and any other academic institution) and non-governmental organizations with a central focus of understanding movement patterns of species of concern. After this is achieved, key areas can be identified and prioritized that must be preserved or changed with regards to land use to ensure the health of wildlife and the successful design of the A2A corridor. As of now, such vital information is lacking. In discussions with Richard Grover about the use of the corridor by species of interest, he mentioned the story of Alice the moose. Alice
was spotted in the central region of the Adirondack Park roughly 2 years ago and the sighting raised the eyebrows of scientists and the public alike. She was tranquilized and tagged to monitor her movements in and around the Park. After about 6 months, she began to make significant movements out of the Park coming up through the St Lawrence Valley where she crossed the St Lawrence River around Alexandra Bay. Alice, a young cow moose, was later found dead in Algonquin Park. The cause of her death was deemed natural by wildlife biologists. Grover emphasized the fact that this story gave the notion that “big mammals like moose and presumably other ones like wolves and lynx would move between the parks and gave credibility of A2A as a wildlife corridor.” Grover also mentioned a story of a Canadian Lynx being trapped, tagged and relocated from an area near Ottawa to the Adirondack Park. After a period of time, the lynx actually made its way back to its original habitat outside Ottawa. Alice the moose crossed the St Lawrence River when it was unfrozen whereas the lynx crossed during a period of ice cover. Each story gives credibility to the A2A corridor however we cannot base such a huge project only two examples. Thus, much more research needs to be completed to gain public support and to give the A2A corridor legitimacy.

VII. Ease of Implementation

Perhaps the term “ease” is not the best way to introduce this section. The nature of our thinking big and acting local solution is far from an easy one. However, the costs, in this case seem well worth the rewards when one considers the broad benefits to many of the various stakeholders, not to mention the benefits of maintaining biodiversity, that the Adirondack to Algonquin corridor encompasses. It is simply the nature of localized
pursuit of such a large spectrum project which causes the high levels of cost. The reality is a very high level of capital, effort, passion, and ingenuity will be necessary to complete this project.

The cost in capital of the Adirondack to Algonquin corridor will increase as a result of a number of necessary small scale projects. One such source will be the capital invested in projects to increase awareness in local landowners of the corridor and its value. This would not likely be one of the more major costs, it certainly will be less a drain than that stemming from the success of this phase of the project. Tied in with these efforts will hopefully be the monetary cost of creating and enacting educational programs regarding the corridor in local areas. If local landowners can be convinced of the value of the Adirondack to Algonquin corridor, a secondary and much more significant capital drain will arise from the cost of purchasing conservation easements and of purchasing land through land trusts. Of course, in a perfect world land and easements would come entirely from donations as a result of the vast scope of awareness increase in local landowners, but it is important to remember that St. Lawrence County is one of the poorest in New York State and even if programs were successful in allying local landowners with the cause, it would be very unlikely that all of the land necessary for the corridor would be willingly parted with for no monetary compensation. Obviously the idea of thinking big has its costs as well. Funding research to prove the utility and increase the viability of the corridor will be another major capital expenditure of our proposal.

In addition to the more absolute and definable capital costs of Adirondack to Algonquin corridor implementation, a high level of effort will also be required. The
nature of local action, particularly over the large geographic range of the corridor, necessitates both a large number of very active and involved coordinators of local initiatives, as well as tremendous amounts of intercommunication and coordination between local heads. Further, the simple fact of lack of knowledge in local stakeholders will result in the need for high levels of effort (Brown and Harris 2005). Effort is a factor in ease of implementation that is oft overlooked in initial planning stages of conservation efforts, and we feel compelled to recognize the magnitude of this valuable and intangible commodity that we are and will continue to be asking for in regards to this proposal.

A third expenditure needed to ensure our success is a high level of passion. The need for passionate support is of course tied in with the need for high levels of effort, but we believe it is worth individual attention. It is very likely that, particularly at first, resistance will be met from local stakeholders in regard to the Adirondack to Algonquin corridor. Furthermore, it may be a long time before any visible and notable major successes are made in the project, so discouragement may be a problem for many volunteers on the project. Passionate and consequently persistent individuals working on the local level will be vital in success of the Adirondack to Algonquin corridor in the face of such obstacles.

The fourth and final commodity we identified as necessary for the corridor’s success is ingenuity. This may not be a cost per say, but it will be a crucial required personality trait in those pushing the corridor on the local level. Not only will ingenuity facilitate gaining of support in adverse situations, it may also play an important role in raising the capital needed for the implementation of an Adirondack to Algonquin corridor.
Contingent upon the successful use of all of these costs and requirements of implementation will be high levels of local knowledge. Without necessary connections to local communities it is unlikely that either large amounts of capital, effort, passion or ingenuity will be sufficient to ensure the success of the proposed steps to viable corridor creation which we will describe in the following section.

VII. Plan for Implementation

Implementation of the A2A corridor will not be an easy task, however if it were successfully established it would be an enormous victory in the battle against the loss of biodiversity. Due to the nature of the corridor, which has been discussed extensively throughout this study, we believe the most viable implementation plan will focus on a bottom-up approach in which we must work to gain the respect and support of local landowners and from here move into designing all aspects of the corridor to simultaneously meet the needs of wildlife and benefit the local landowners involved. We believe that the implementation process will involve direct contact with local stakeholders, raising public awareness, acquiring more scientific research, and contacting and working alongside local land trusts in their acquisition of land. The following section will discuss this implementation plan in further detail.

The first step of the implementation plan outlined here is to make direct contact with local stakeholders and create public awareness. Brown and Harris (2005) have already contacted local stakeholders. However, their surveys only served as an initial ‘ice-breaker’ for the A2A proposal. Follow-up surveys need to be conducted by proponents of the A2A on a local scale to further understand landowner feelings toward
the corridor. We need to develop a more in depth idea of 1) how willing landowners are in the proposed A2A area to convert their land to into a conservation area, 2) how involved with the A2A project these landowners would like to be, 3) any strategies or ideas landowners have that will allow for a more successful implementation plan, 4) any problems, feelings or attitudes toward the corridor that they would like to express, 5) how landowners and other stakeholders feel about having species like moose, wolf and lynx introduced to the Adirondack region and other issues that will result from the design and implementation of the corridor. With more conversations with local landowners, we believe a greater trust and level of support will be achieved and thus a facilitation of implementation will occur. Such conversations could occur through A2A proponents dispersing more surveys and offering public hearings to anyone who feels they will be affected or who would like to participate with the A2A proposal. While these public hearings would raise awareness, we feel that actions such as publications in local newspapers like the Watertown Times and the North Country Now could also enhance the knowledge base and involvement of local stakeholders. By publishing articles and notifying citizens about the progress to be made, the ideas at hand and dates and times of public hearings we believe a greater cooperation and involvement of stakeholders could be achieved.

The second step of our implementation plan is focused around creating incentives for local landowners to turn over land in the name of conservation. We would like to implement a plan or laws in local governments that require any new harvesting companies that enter the proposed A2A area (when it is established) to turn over roughly 15% of their revenues to local governments, similar to the Florida Panther Corridor.
We’d also like to create the option that if landowners are willing to donate their land in the name of conservation then these tracts of conservation areas will be named after them. Also, if local landowners are willing to sell their development rights (through conservation easements) they should receive property tax breaks. Such incentives should encourage landowner cooperation and hopefully create a sense of enthusiasm for turning their lands over to conservation. We feel there should be public hearings to develop any more incentives that landowners feel they are entitled to if they are to donate or sell the development rights of their properties. Through such meetings, we believe a better understanding of the demands of stakeholders could be met and catered to.

The third step of our implementation plan involves gaining more scientific research of the study area. As discussed earlier in this paper, we need to have a solid understanding of the movement patterns of species and if they are actually using the corridor area for it to gain credibility. We believe that through scientific research we will discover key areas that serve as the most vital tracts of habitat for the species at hand and these areas will be the main targets of acquisition. Thus, we believe that academic institutions of the North Country should be encouraged by A2A proponents to focus at least some level of research interest into the development of the corridor. Such research has already been occurring. Brown and Harris (2005) conducted their study through the St Lawrence University Department of Environmental Studies on the status of local landowners affected by the A2A corridor and Professors Rick Welsh and Thomas Langen of Clarkson University co-teach a class on the feasibility of the A2A corridor. In fact, a paper created by Clarkson students on the A2A corridor will soon be published and used by legislators as a template for the A2A plan (Lang 2002). It is evident that academic
institutions of the North Country are working to enhance the credibility and strength of
the A2A proposal however we feel that more research is still needed in order to really get
the proposal off the ground. If proponents of the A2A corridor encouraged these
institutions to increase their commitment with the proposal by guaranteeing publications
in scientific journals and giving public credit to the institutions we believe they will be
more willing and enthusiastic about participating due to the recognition they would
receive.

The fourth step in the implementation process is contacting and working with
local land trusts. The importance of local land trusts has been greatly emphasized
throughout the duration of this paper. Land trusts in the North Country, such as SLLT
and IRLC, already have a strategy of acquiring land in an overall effort of connectivity.
Thus, the A2A corridor, although not by name, is currently taking form through the
actions and land acquisitions by local land trusts. In a conversation with Richard Grover
he mentioned the fact that what local land trusts are doing in the North Country could
easily fit into the A2A project and that the opportunities for connectivity are plentiful
(Grover, personal communication). However, we feel that facilitation of discussions
between land trusts that cover different regions of the North Country needs to be
achieved in order to develop cooperation and planning across the entire region. Such an
achievement would most likely result in connecting habitats over a wider area and further
aid in the development of the A2A corridor. This could occur by sending representatives
of the A2A initiative to local land trusts to notify them about the project and encourage
them to consider the A2A when acquiring new lands. If the A2A proposal was in the
agenda of North Country land trusts (as it already is in the SLLT) a wider level of
planning could be established and the A2A corridor could potentially take form at a faster pace.

The fifth step of our implementation plan is developing an affective monitoring program. Beier and Loe (1992) developed a “checklist” for evaluating and designing wildlife corridors and emphasize the fact that a monitoring program is essential in evaluating its functioning and adapting to any changes that need to occur. Understanding the success or failure of corridors at meeting their goals can be achieved by developing a monitoring program allows for continuous assessments. Monitoring should not only be focused on after the corridor is implemented, but it must begin now in order to prove that the corridor has actually enhanced the movement of species between the two parks. Monitoring techniques such as counts of tracks or other signs, photographic documentation, radiotelemetry or measures of gene flow could all be used for the A2A proposal (Beier and Loe 1992). We feel that tracking and photographic documentation could be achieved with the assistance of local landowners. If local landowners would voluntarily monitor their land a given number of times a month valuable data could be gathered in the effort of monitoring the success of the corridor. If they are not willing to voluntarily monitor their land, small monetary incentives could be provided and recognition in publications could also entice landowner cooperation. Radiotelemetry should be completed more rigorously by an organization like the NYSDEC. With the information provided by these monitoring techniques, we could have a much greater understanding of how wildlife is using the A2A corridor.

Our implementation strategy has its complexities, however we feel that if it were successfully established the corridor would work to benefit both wildlife and human
stakeholders. The plan calls to make direct contact with local stakeholders in an effort of cooperation and support, encourage scientific research from local academic institutions, contacting and working with local land trusts and developing an affective monitoring program to assess the success of the corridor and adapt to problems that may be recognized by the data collected. Each step is equally important and must be achieved in order to implement a viable ecological corridor.
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