

# **The Kawartha Barrens Trail Study**

Includes:  
**Final Research Report**  
**Bibliography**

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## **Abstract**

The Kawartha Barrens Trail Study was performed by David Lester during the winter of 2001/2002. The research was performed to identify priority trail features and propose hiking and skiing routes within and around the Kawartha Barrens Enhanced Management Area, located 45 minutes north of Peterborough, Ontario. A resource inventory and map overlay technique was used to determine the sections best suited for trail development within and around the Kawartha Barrens. Fieldwork was also used to physically assess some of the features found within and around the Barrens. The areas that were best suited for trail development are highlighted by various maps and overlays. It was found that the Kawartha Barrens has great potential for establishing a trail network within its borders. Research also found that a trail system within the Barrens could become linked with an existing network of regional trails.

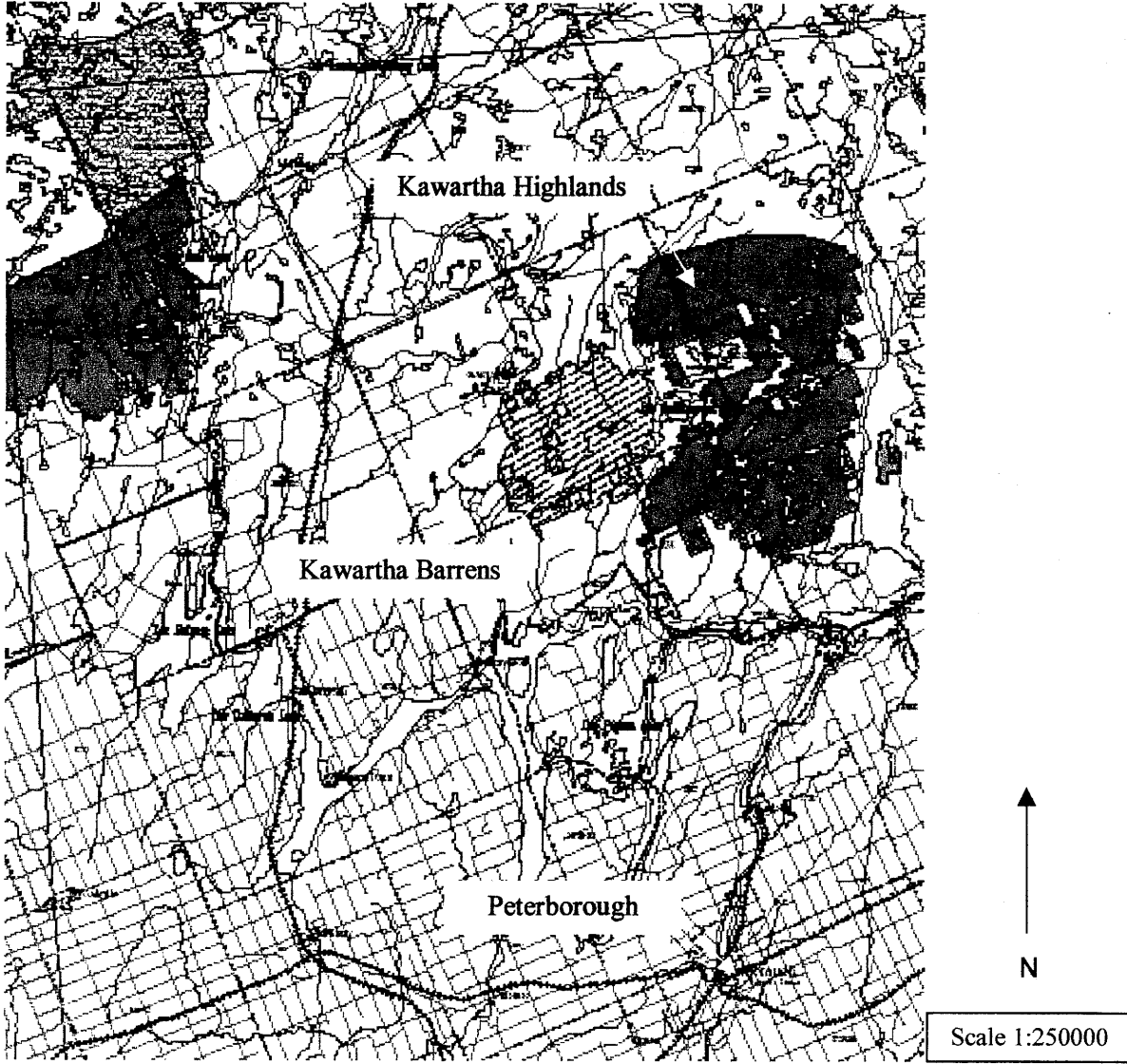
It was concluded that trails within and around the Kawartha Barrens should follow two main corridors, one extending from the southeast to the north and another from the southeast to the west. In addition, trails should be built in the Barrens with the intention of linking them to the existing regional network of trails. Future trail developments in the Kawartha Barrens should follow the areas outlined by this project to maximize the area's potential and avoid its constraints.

## **Introduction**

The purpose of the Kawartha Barrens Trail Study was to identify priority trail features and propose hiking and skiing routes within and around the Kawartha Barrens Enhanced Management Area, Ontario. The focus of the project was the Kawartha Barrens, however the project also considered the potential for linking up trails within the Barrens, to an existing regional network of trails. The study considered various built and natural features that pose as either an opportunity or constraint for trail development. The Kawartha Barrens contains substantial tracts of crown land making it an ideal location for establishing new trails. With the study area's close proximity to the proposed Kawartha Highlands Park new trails could accommodate a potential increase in outdoor recreation activity.

## **Study Area: Background and Description**

The Kawartha Barrens Enhanced Management Area is located west of County Road 507 and the proposed Kawartha Highlands Park (See Figure 1). The area encompasses 11,899 hectares and is characterized as having a shallow relief Canadian Shield topography that is dominated by a mixed forest cover. The Ministry of Natural Resources (MNR) has classified the Kawartha Barrens as a Recreation Enhanced Management Area (EMA) (MNR 1999, 115). Recreation EMAs are areas that have either high recreational use or significant recreation values. Activities that are considered by the MNR as having significant recreation value include angling, hunting, trail use, and canoeing. The goal of Recreation EMAs is to provide the public with low-density, high quality recreation in a natural setting. Within Recreation EMAs industrial activities such as forestry, mining, aggregate extraction, and hydro development are permitted, however only in a way which does not interfere with the wilderness recreation qualities (MNR 1999, 26).



**Figure 1:** Location of the Kawartha Barrens.  
**Source:** Ministry of Natural Resources, Territorial Map Sheets. 1999.

The Kawartha Barrens was designated an EMA through public consultation. The MNR identified two major features that made the Barrens deserving of an EMA designation. The first feature was the area’s “significant recreation values” (MNR 1999, 115). The second feature was the areas “high extractive use values” which include the potential for forestry and aggregate activities (MNR 1999, 115). In particular the Barrens has been identified as having significant aggregate mineral resources. The MNR has stated that within the Barrens they will work with the local aggregate industries to minimize the impact on the recreational and natural resources.

The Kawartha Barrens also has significant lumber resources. However, forest management in the area will occur through the standard crown land forest management planning process (MNR 1999, 115).

The Kawartha Barrens also accommodates numerous recreation activities. Within and around the Kawartha Barrens and the Kawartha Highlands various traditional and contemporary recreational activities occur. Traditional activities are considered activities that have been taking place over at least two generations or 60 years. Some of the more popular traditional activities that are occurring within and around the Barrens and the Highlands include: artistic pursuits, bird watching, camping, canoeing, cross-country skiing, hiking, horseback riding, hunting, sailing, snowshoeing, and fishing. Some of the more contemporary activities that occur within and around the Barrens and Highlands area include: ATV riding, mountain biking, motorized boating, jet ski riding, snowmobiling, and water skiing (Draft Recommendations Report 2001, 8-9). In addition to these activities, the Barrens and Highlands area has been identified as having the potential to accommodate the following activities: war games, dogs sledding, rock climbing, and float plane flying (Draft Recommendations Report 2001, 8-9).

The area within and around the Kawartha Barrens indeed contains numerous recreation opportunities. Recently the Kawartha Highlands, an area immediately east of the Kawartha Barrens has been named as a protected area (either a conservation reserve or Provincial Park). Premature advertising of the Kawartha Highlands has led to a dramatic increase in the number of people visiting the area (Draft Recommendation Report 2001, 3). With the Kawartha Barrens close proximity to the Kawartha Highlands protected area, pressure from increased tourism can perhaps be expected. It is therefore important that trails be established in the Barrens to accommodate the increased traffic, and help minimize environmental impacts.

## **Benefits of Trails**

Nature trails have numerous social and economic benefits. It is beyond the scope of this project to consider in depth, the widespread benefits of nature trails. However a brief discussion of why trails are beneficial is important because it perhaps validates the trail research that has been carried out within the Kawartha Barrens.

There are various social benefits, which can be derived from recreation trails. Trails act as a meeting place for people with common interests, and by providing a meeting place, can help bring a community together. Trails also provide people with a low-cost form of recreation and are ideal for low-income families. Activities such as hiking, cross-country skiing and bicycling are relatively low cost activities, which are supported by trails (Go For Green 1999, 1). The establishment of trails has also fostered health benefits for Canadians. Trails provide people with an opportunity to perform recreational activities that may not be adequately supplied by city streets or roads (Go For Green 1999, 2)

Trails can also provide many economic benefits to a region in which they are located. Trails attract users who often spend money on their outings. Trails can also create jobs and raise the value of real estate in a region. The combination of these factors can often make trails a desirable economic stimulus in any region. One of the most direct economic impacts of the implementation of a trail system is the money spent by the people who use them. In 1995 it was found that walkers and hikers of the Overmountain Victory National Historic Trail, which extends through Virginia, South Carolina and Georgia, spent on average \$49.05 per day on their trips. Various businesses ranging from restaurants to retail stores benefited from the money spent by trail users (Go For Green 1999, 3).



An economic study of the Bruce Trail located in Ontario also found that trails could have positive economic impacts. It was determined that the 410,060 user visits over a period of twelve months generated \$26,084,817 in direct expenditures, and a gross economic spin-off of \$60,255,926 (Schutt 1997, 3). Clearly the economic impacts of trails can be very positive.

Indeed trails have the potential for providing a particular area with numerous social and economic benefits. The establishment of a trail system in the Kawartha Barrens could link up with existing regional trails and provide the region with various economic and social benefits. The positive impacts that other trails have had are encouraging and these examples can only support the establishment of hiking and skiing trails in the Kawartha Barrens.

### **Literature Review**

The methods used in the Kawartha Barrens Trail Study are similar to methods used by various other researchers. The method includes identifying features, summarizing them in tables, weighing their characteristics and mapping them using overlay techniques. This technique has been used extensively by many researchers to determine the suitability of land for numerous activities. One of the seminal examples of assessing the land for a variety of uses, and displaying its attributes in an overlay technique can be found in Ian McHarg's *Design With Nature* (1969). In McHarg's book, methods for determining the suitability for recreation, agriculture, mining, forestry, and urban areas are outlined. The methods used in the Kawartha Barrens Trail Study are quite similar to the methods outlined in McHarg's book.

More recently, the use of Geographic Information Systems (GIS) have put a technological "twist" on the overlay method. In GIS a computer overlays multiple layers of maps and information to highlight areas of opportunity and constraint. A study completed by

Bridgland et al. is a prime example of using GIS technology to determine landscape suitability for hiking trails. The study looked at the natural features in Cape Breton Highlands National Park, overlaid the various themes, and produced a final composite map displaying the areas ranging from poor to good (2002).

Similar methods were also used by Keating to locate a hiking trail route along the Oak Ridges Moraine (1994). In the study a resource inventory was compiled which recorded the various abiotic, biotic and cultural features found within the study area. The various features were then mapped using GIS and layered on top of each other to determine the best route for a trail. Through the study, areas of high, medium, and low constraint were identified within the Oak Ridges Moraine (Keating 1994).

## **Methods**

As mentioned earlier, the primary purpose of the project was to identify priority trail features within and around the Kawartha Barrens and propose hiking and skiing trails. To achieve this, a combination of map analysis and fieldwork were used. The majority of the features were identified through map analysis, however fieldwork was also used to assess the land and check the accuracy of the data that were mapped.

### **Map Analysis**

The majority of the features mapped in the project were identified on existing maps. Features found within and around the Kawartha Barrens were assessed and mapped using the following maps: Canada Department of Energy, Mines and Resources Topographic Maps 31D/9, 31D/10, 31D/15 and 31D/16, Bancroft Minden Management Unit of Term Plan maps 4.1, 4.2 and 4.3, and the Bancroft Snowmobile Club Map. The information collected from these maps

was divided up into four main themes and mapped onto a 1:50,000 scale base map. The main themes included hydrology (Plate 1), land tenure (Plate 2), built features (Plate 3), and natural features (Plate 4).

The Bancroft-Minden Management Plan Maps and the Bancroft Snowmobile Club Map were presented in a scale of 1:100,000. This posed a problem since the base maps are displayed in a scale of 1:50,000. To achieve maximum accuracy the relevant sections of the data maps were scanned and then blown up by 200% to change the scale from 1:100,000 to 1:50,000. The data were then traced from a print of the expanded maps. Because the base maps were photocopied, one could expect a certain level of distortion. To account for the distortion, small sections of the data maps were traced and then realigned for maximum accuracy.

The features were mapped onto four separate theme maps to avoid cluttering of the data and allow for easy interpretation of the main features and constraints. However, to assess all of the features together and determine the ideal location for trails, a composite map was needed. Each of the four theme maps (hydrology, land tenure, built features and natural features) were transferred onto clear overlays. The overlay themes were then overlaid onto a base map, which formed a composite map (Plate 5). Once the composite map was created the next task was to highlight the areas of opportunity versus areas of constraint. It was determined that some of the features would provide an opportunity, a constraint or both. To illustrate the nature of each feature a table was created highlighting the degree of suitability for each individual feature (Table 1).

### Degree of Suitability

<u>Features</u>	<u>Opportunity</u>	<u>Opportunity/Constraint</u>	<u>Constraint</u>
<b>Natural Features</b>			
Scenic View	●		
Nest Site		●	
Camping Site	●		
Sensitive Feature			●
Moose Stratum	●		
Deer Stratum	●		
<b>Built Features</b>			
Restrooms	●		
Parking	●		
Recreation Camps			●
Boat launch	●		
Food	●		
Dam	●		
Aggregate Permit			●
Crown Lease			●
Gas	●		
Highway			●
Gravel Road		●	
Cart Track/Trail	●		
Snowmobile Trail		●	
<b>Land Tenure</b>			
Private Land			●
Crown Land	●		
Provincial Park			
<b>Hydrology</b>			
Lake/Open Water			●
River/Creek		●	
Flooded Area			●
Swamp/Marsh			●
Waterfront	●		

**Table 1:** The degree of suitability for each feature found in the Kawartha Barrens.

As clearly indicated in Table 1 many features posed a constraint, many others an opportunity, while few offered both a constraint and an opportunity. Using Table 1 as a reference the areas of opportunity and constraint were highlighted in a final overlay. Areas that contained no constraints and had an opportunity were considered to have high compatibility. Areas that had no opportunities but also had no constraints were considered compatible. Finally, areas that contained one or more constraints were considered incompatible. A constraint always

outweighed an opportunity. For instance, if a highpoint was located in private land, the land was considered incompatible for trail development.

The final step that was taken was to consider trails in the Kawartha Barrens from a more regional perspective. To achieve this a 1:100,000 scale map of the Haliburton and Minden region was assessed to determine if there were any trails outside of the Barrens that could link with trails within the Barrens (Plate 7, Map A). An additional map of even larger scale was also used to assess the entire region between Lake Ontario and Algonquin Park (Plate 7, Map B). The main goal of the methods was to identify areas or corridors that could accommodate trails rather than identify specific routes.

### **Fieldwork**

Fieldwork was also used to assess some of the features that were identified through map analysis. The fieldwork was performed during November 2001 and March 2002, the locations of the areas visited are outlined in Plate 6. Some of the more remote areas were accessed via the snowmobile trails using an all terrain vehicle. Numerous pictures were taken during the excursions to document some of the landscape found in the Kawartha Barrens. Fieldwork was also used to confirm the accuracy of the data presented in the various maps. The numerous pictures taken during the field excursions are displayed on Plate 8.

### **Results: Feature Interpretation and Map Description**

To gain a better understanding of how the final overlay was composed it is worthwhile to examine each map separately. Each theme and feature displayed on the maps builds towards the final map, which displays areas of opportunity and areas of constraint. Each theme and the

features that pertain to them will be discussed in the following sections. References for each Plate are provided on the Plate.

### **Plate 1: Hydrology**

Plate 1 displays the hydrological features of the Kawartha Barrens. Highlighted on the map are lakes, rivers and creeks, flooded areas and marshlands. Lakes, flooded areas and marshlands pose a constraint for obvious reasons. One cannot have a hiking trail cross through the middle of a flooded area or lake. Marshlands could perhaps become a positive feature if funds were allotted to build a boardwalk, however for the purpose of this study they are considered a constraint. Rivers and creeks were considered both an opportunity and a constraint because they can provide aesthetically pleasing scenery, however they are also a barrier when attempting to place a trail across them. Waterfront was considered a positive feature because it can provide a scenic view. The southeastern quarter of the Kawartha Barrens has considerable amounts of marshland and creeks.

### **Plate 2: Land Tenure**

Plate 2 illustrates the land ownership of the Kawartha Barrens. Private land was considered a constraint because of the difficulties of negotiating a trail through private land. The small section of the Kawartha Highlands Provincial Park displayed on the map was considered a positive feature. However, one must take into account that certain zones of a Provincial Park might be off limits to trail development. Crown land is also a positive feature because it is open for public use. As illustrated by Plate 2 the eastern portions of the Barrens region is largely crown land. In addition, a long portion of crown land extends westward along the southern half of the map. Private land is perhaps the most dominant constraint found in and around the Barrens.

### **Plate 3: Built Features**

Plate 3 displays the various features that do not occur naturally in the landscape.

Aggregate permits and crown leases were considered constraints because they are often sites containing mining and logging operations that are aesthetically degrading and pose a safety hazard to people. Recreation camps were considered a constraint to avoid possible conflicts between camp users and trail users. Gravel roads were considered both a constraint and a benefit. Gravel roads can provide access while at the same time they can be a constraint due to undesirable traffic and aesthetic. Highways were considered a constraint due to undesirable traffic and aesthetics. Snowmobile trails were considered both a constraint and an opportunity. In the summer snowmobile trails could make excellent hiking trails, however in the winter conflicts could occur between snowmobilers and cross-country skiers. In addition, many snowmobile trails cross frozen areas that become extremely saturated during the summer. Restrooms, parking, food and gas were considered positive features because they provide a necessary infrastructure. Boat launches were considered an opportunity because they can provide access to water. Dams were also determined as a positive feature because they can be scenic and provide a potential river crossing point. Finally, existing trails were considered a positive feature because they can be incorporated into a new trail system and reduce the cost of construction.

The Kawartha Barrens has a well-developed infrastructure that could be incorporated into a new trail system. The parking areas located along county road 507 and south of Crystal Lake could be established as access points for a trail system. Hiking and skiing trails could also take advantage of the toilets, dams and boat launches found within and around the Barrens. However,

there are also numerous features within and around the Barrens that should be avoided such as mining operations and recreation camps.

#### **Plate 4: Natural Features**

Plate 4 displays the numerous natural features that can be found in the Kawartha Barrens region. The only natural feature that poses a constraint is the sensitive features found within the Barrens region. Sensitive features are areas that contain rare or sensitive fauna or biota. Trails should avoid these areas to prevent environmental degradation. The numerous nesting sites found in the Kawartha Barrens present both a constraint and an opportunity. The nesting sites are important for rare bird species such as Heron, Osprey, Red Shoulder Hawks and Broadwing hawks. Therefore, the nests should be given a buffer area to avoid disturbing the birds. However, the nests can also offer bird watchers the chance to observe the rare and beautiful bird species, and if observed at a distance nests can be a popular feature for a trail. The moose and deer strata were listed as a positive feature because they may provide an increased chance to observe moose and deer. Camping sites were also listed as a positive feature because they can provide trail users with a place to set up camp or have a picnic. Finally, high points were identified as positive features because they provide the potential for a scenic view. A potential trail could cross the base of a highpoint allowing those who wish to climb the highpoint the opportunity to take a tributary trail up it while those who want to continue without such effort could do so. An on site assessment of each highpoint would be required to determine if they could provide a scenic view.

The Kawartha Barrens has many positive natural features that a hiking and skiing trail could take advantage of. Some of the more prominent features include various highpoints, and



deer and moose strata. Attention should also be paid to the various sensitive features found within the Barrens to avoid environmental degradation.

### **Plate 5: Composite Map**

Plate 5 displays a composite map of the Kawartha Barrens Enhanced Management Area. The map combines the themes of hydrology, land tenure, built and natural features into one composite. The top overlay highlights the areas of opportunity found within and around the Kawartha Barrens. Red displays the areas that contain the greatest opportunity. The red areas contain no restraints and offer one or more positive features. The yellow areas highlight sections of the Barrens that contain no restraints and have no special features. The areas that are left unmarked are sections found in and around the Barrens, which are incompatible for trails, because they have one or more of the constraints outlined in Table 1.

Using the final overlay found in Plate 5, one can observe the areas best suited for hiking and skiing trails. Two main corridors that could accommodate a trail are evident in the Kawartha Barrens. The first main corridor that is evident runs from the east end of the map to the west end along the southern portion of the area. The second main corridor is located on the eastern side of the Barrens and runs from the south to the north. Both these corridors could potentially link up with the Haliburton Rail Trail indicated in Plate 7, Map A. Potential trail routes are also outlined on the final map overlay. The routes follow the main corridors that have been identified.

### **Plate 6: Areas of Opportunity**

The map displayed in Plate 6 is a copy of the final layer shown in Plate 5. The Plate was created to show the areas of opportunity separate from all of the other features. In Plate 6 the areas with the highest compatibility are displayed in black, with compatible areas displayed in

gray and incompatible areas left blank. The areas that were visited during fieldwork are also outlined on Plate 6. The potential trail routes are also outlined in Plate 6.

### **Plate 7: Regional Trails**

Plate 7 displays the potential for trails within the Kawartha Barrens to link up with trails outside of the Barrens. In Plates 5 and 6 two corridors extending east to west and south to north were identified. Trails located in either of these corridors have the potential to link up with the Haliburton Rail Trail indicated in Plate 7, Map A. If one was to consider the parking lot located in the southeastern section of the Barrens beside the 507 highway (See Plate 3 or 5, UTM coordinates 4951500m.N 708900m.E) as a starting point then two trail routes could extend in different directions to link with the Barrens. The potential trail routes are once again outlined on Plate 7.

### **Results: Fieldwork**

Fieldwork was performed to physically assess some of the features found within and around the Kawartha Barrens. The areas that were visited are outlined on Plate 6. In general it was found that the maps were accurate in their interpretation of the Kawartha Barrens Landscape. For instance, the highpoints located at UTM coordinates 703500m.E 4951700m.N and 703800m.E 4952700 were found to have the predicted scenic views. Other features such as washrooms and existing trails were found to be in the locations indicated by the maps. Pictures of the many features located through fieldwork have been presented on Plate 8.

Fieldwork however, has also determined that many features existing in the area were not located on the data maps. For instance, there are many more trails in the area than are outlined on any map. There were also many campsites that could only be located through fieldwork.

Finally, there were numerous bridges found in the Barrens that were not indicated on the maps that were used.

## Requirements

The potential for a trail system within the Kawartha Barrens is great, however before construction begins one must consider the scope of such a project. Establishing a trail system within the Kawartha Barrens will not be an overnight task, and some of the requirements of a hiking and skiing trail within the Barrens should be considered. Distance, private land and creek/river crossing are a few of the obstacles that will need to be addressed in the Barrens.

The standards for hiking and skiing trails have been outlined by various trail organizations. The standards for two of the more prominent organizations have been outlined in Tables 2 and 3.

Organization	Tread Width (m)	Cleared Width (m)	Grade	Height
Parks Canada	--	One way 1.5-2.5 Two way min. 4	General use 10% max Expert use 40% max	2.5 above max snow depth
MTRCA*	2.5	Min 2.5	Desirable 0-10% Max 10%	Min 3.5

**Table 2:** Standards for Cross-Country Skiing Trails. \*(MTRCA= Metropolitan Toronto Region Conservation Authority)  
**Source:** Trent-Fleming Trail Studies Unit.

Organization	Tread Width (m)	Cleared Width (m)	Grade	Height (m)
Parks Canada	0.45-0.5	To degree necessary for safe unimpaired movement	Desirable 1-10% Max 20%	2.5
MTRCA	0.5	Min. 1m	Desirable 1-10% Max 20%	Min. 2.5

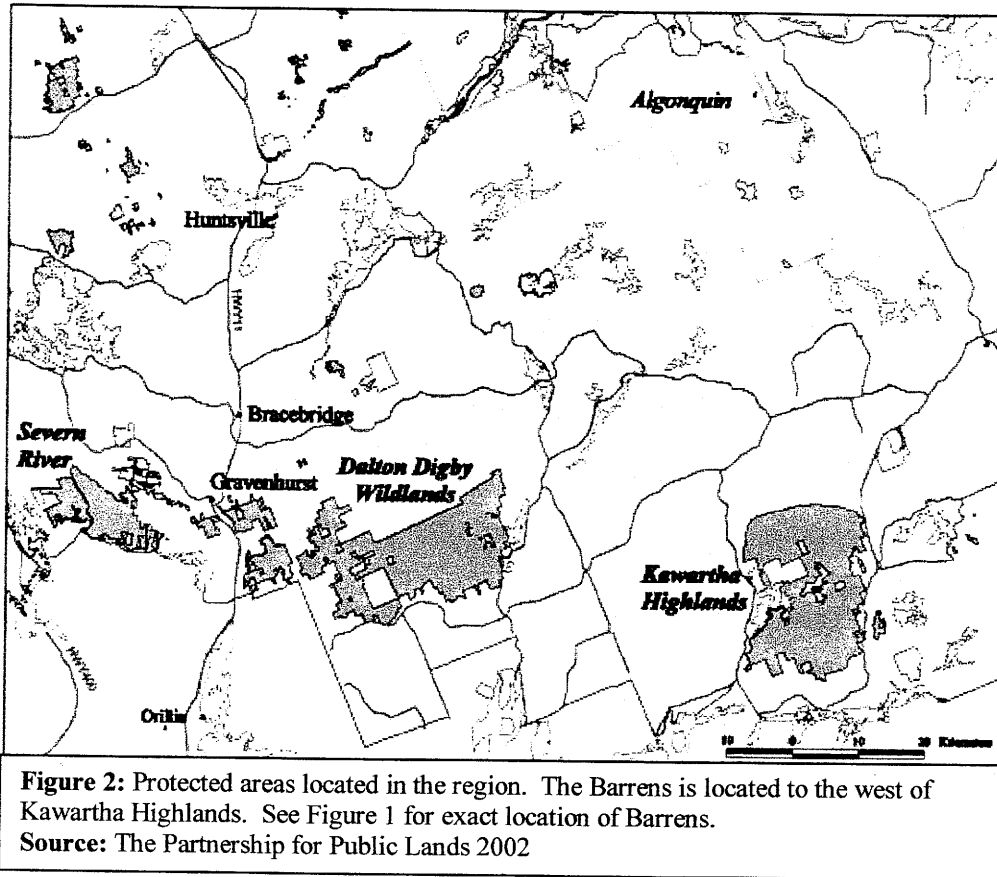
**Table 3:** Standards for Hiking Trails.  
**Source:** Trent-Fleming Trail Studies Unit.

The trail standards are important because one can use them to help predict the cost and extent of work that will be needed to establish the trails. They are also important because trail builders must follow the standards if they intend their trails to be desirable to the public.

As mentioned earlier, two routes, one extending to the north and one to the east would be ideal for the Kawartha Barrens area. However, the distance these trails would span should be considered. The straight-line distance from the parking lot located in the southeastern section of the map (See Plate 3 or 5, UTM coordinates 4951500m.N 708900m.E), east to the Rail Trail is approximately 26 kilometers. A straight-line from the same parking lot heading north to the Rail Trail is approximately 24 kilometers. Trails, however, do not follow a straight line and the actual walking distances would be far greater. Depending on the standards that are used, trails 1m to 4m in width, would have to traverse distances of up to 50 kilometers. Using the same hypothetical trail routes up to 15 creeks/rivers would have to be crossed on the east to west route and up to 13 on the south to north route. In addition, various sections of private land would need to be crossed on both routes if trails within the Barrens were to link with the Rail Trail. However, the number of bridges and the distance of the trails can vary greatly depending on the chosen trail route. For instance, a new trail could follow a route that takes advantage of existing trails and bridges. This could greatly reduce the cost of establishing a new trail system within the Kawartha Barrens.

### **Wildlife Corridor**

As previously stated the purpose of the project was to identify priority trail features within and around the Kawartha Barrens and propose hiking and skiing trail routes. However, research in the area has also found that the Kawartha Barrens could also serve as a wildlife corridor, potentially connecting a number of protected areas found in the region. Figure 2 displays the series of protected areas located in the region.



The Kawartha Barrens could play a major role in connecting protected areas to the west like Dalton Digby Wildlands and Severn River, with the Kawartha Highlands located immediately to the east. Potentially a wildlife corridor could be created that would extend from Severn River east to the Kawartha Highlands. The Kawartha Barrens could play an important role in accomplishing this task.

## **Discussion**

The Kawartha Barrens is an area that provides great potential for hiking and skiing trails. The various features found within and around the Barrens pose both opportunities and constraints for trail development. However, the study has shown that many of the constraints can be avoided while at the same time the opportunities be capitalized upon.

One of the more prominent features found within and around the Kawartha Barrens is the vast network of swamps, lakes, creeks and rivers. These features create a problem because it makes it difficult to navigate a trail system around them. However, the benefits that these features offer, such as scenery and swimming opportunities outweigh their constraints. As indicated in Plates 1 and 5, the various hydrological features can not only be avoided but, in many cases, capitalized on. In addition, if enough funds are available then the area provides an excellent opportunity for the construction of a boardwalk through a marsh area.

The Barrens also has a great deal of crown land available for the development of a trail system. Corridors of crown land running from the southeast to the north and southwest also create an opportunity for trails to link with the Haliburton Rail Trail. In addition, the amount of crown land found within and around the Kawartha Barrens provides an opportunity for the creation of a regional wildlife corridor. One drawback, however, is the extent of private land located to the west and northwest of the Barrens. If trails are to be linked with the Haliburton Rail Trail, then private land will be crossed at some point. However, private land is not an impossible barrier to overcome. In the Bruce Trail many sections of the trail had to cross private lands. Organizers of the Bruce Trail Association implemented a land stewardship program to overcome the private land barrier. Through stewardship programs and conservation easements the Bruce Trail crosses some 90 properties totaling over 4800 acres of land. The Bruce Trail Association works with landowners, maintaining their properties by installing fences and cleaning up garbage. The result has been continued cooperation between private landowners and trail users (Bruce Trail Association 2002).

The various built features also provide great potential with minimal constraints. Ideally many of the washrooms and existing trails could be used to minimize cost and environmental

impacts. The various aggregate and forestry activities do, however, pose a constraint. These operations create an aesthetically unpleasing landscape, are often noisy, and pose a safety hazard. Areas containing these operations should be avoided by great distances.

The many natural features found within and around the Barrens perhaps contain the greatest potential. Trails located within the Barrens should capitalize on features such as scenic views, camping sites and moose and deer strata. Areas that are environmentally sensitive such as the numerous nesting sites should be avoided.

The mapping and overlaying of the features found within and around the Kawartha Barrens has highlighted the area's potential for hiking and skiing trails. It is recommended that a new trail system be located in the areas indicated in Plates 5 and 6. Trails located in the areas outlined in Plates 5 and 6 will take advantage of the area's many positive features while at the same time avoid many of its constraints.

As previously mentioned two separate trails could follow two main corridors. The first trail could extend from the parking lot and head west along the areas highlighted in Plates 5 and 6. The trail would have to be negotiated through a small section of private land and cross highway 649. The trail could then continue through the Agreement Forest and connect with the Rail Trail (Plate 7, Map A). Another trail could begin in the same parking lot and extend northwards to connect with the Rail Trail. Again, sections of private land would have to be crossed if a trail was to extend from the Barrens and connect with the Rail Trail (Plate 7, Map A). Both routes would take advantage of the Kawartha Barrens region while at the same time linking with a regional trail network. Plate 5, 6 and 7 display potential trail routes that follow the two main corridors. The trails take advantage of the Barrens positive features while avoiding constraints. The potential trails outlined in Plates 5, 6 and 7 are for illustrative purposes only.

Before an actual trail route is plotted more fieldwork is needed to assess the many unmapped features found in and around the Barrens.

Once linked with the Haliburton Rail Trail, trails within the Barrens would become a part of a regional network of trails. As displayed in Plate 7, Map B, the Rail Trail is part of an extensive trail system. Once on the Rail Trail one can travel north of the Barrens and end up in Haliburton, which has a whole network of trails, in itself. One can also travel south towards Lindsay and eventually end up on the shores of Lake Ontario. There is also the potential that the Trans Canada Trail will link up with Lindsay and the Rail Trail that extends from there (Plate 7, Map B). If the Trans Canada Trail links up with the Rail Trail, then trails within the Kawartha Barrens would have the potential for becoming a part of a national trail network. Therefore, trails established within the Barrens have huge potential for becoming a part of a regional and national network of trails.

Fieldwork in the area has helped to support the fact that the mapping technique used has accurately conveyed the landscape of the Barrens. The only exception is the many unmarked trails and bridges that are located in the Barrens. Due to the large area covered in the study and the limited time to perform the study, only a small portion of the land could be assessed through fieldwork. Further fieldwork could provide more insight into the area by locating many of the unmarked features such as camping sites, bridges and existing trails.

The greatest potential for creating a regional trail system lies to west and northwest with the Haliburton Rail Trail. However, the Haliburton Highlands located to the west of the Barrens also provides a great opportunity for extending a trail system within the Barrens to the west. Future studies could explore the potential for a trail system within the Kawartha Highlands that could link with a trail system in the Kawartha Barrens.



## **Conclusion**

Nature trails have become increasingly popular and can not only provide recreational opportunities, but also have social and economic benefits. The Kawartha Barrens has great potential for the creation of skiing and hiking trails. The Kawartha Barrens and Highlands area has become increasingly popular for recreational pursuits. A trail system within the Barrens could help facilitate the increase in tourism presently occurring in the area. New hiking and skiing trails located within the Kawartha Barrens should be limited to the areas highlighted by this study. Through this the trails would maximize the area's potential while at the same time avoiding its constraints.

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