

**TRAILS, TRAIL USERS AND THEIR  
MANAGEMENT  
IN NORTHUMBERLAND COUNTY FOREST  
ONTARIO**

**DRAFT REPORT (3)**

**for  
The County of Northumberland**

**by  
John Marsh and Al MacPherson  
Trail Studies Unit  
Trent University  
Peterborough, Ontario  
[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca)**

**January 2008**

**TRAILS, TRAIL USERS AND THEIR MANAGEMENT  
IN NORTHUMBERLAND COUNTY FOREST ONTARIO  
DRAFT REPORT**

**For The County of Northumberland  
By John Marsh and Al MacPherson  
Trail Studies Unit, Trent University, Peterborough, Ontario  
January 2008**

**SUMMARY**

This study was undertaken to produce a comprehensive map of the trails in the Forest, to investigate and reduce the environmental impacts of trail use, to investigate and resolve conflicts between users, and to reduce risks and County liability. The study methods included extensive field inspections from June-December, measurements of trail conditions (282 sites), surveys of trail users (147), hunters (28) and adjacent residents (21), interviews with 13 members of the Forest Advisory Committee and others, photography, and a literature review. The results were used in combination with the following 13 factors to make the recommendations.

1. The Vision of the Forest as stated in the Draft Management Plan, 2003:
2. The Goals of the Forest as stated in the Draft Management Plan, 2003:
3. The Laws Pertaining to the Forest
4. The Environmental Characteristics of the Forest.
5. Past Conditions, Activities and Practices in the Forest.
6. Use of Lands Adjacent to the Forest
7. The Characteristics of Present Users, their Activities, Concerns and Expectations.
8. Risk, Safety, Liability and Insurance Concerns
9. Financial, Staffing and Practical Constraints and Opportunities.
10. Information on Management Issues and Solutions in Comparable Places.
11. Environmental, Recreational, Social and Economic Trends.
12. Wish for Tourism and Economic Development
13. The Ongoing Preparation of the Forest Master Plan

The recommendations, grouped thematically, but not prioritized, are:

### **Zoning**

1. Designate the Beagle Club Road trail area as a non-motorised and no-hunting zone with the exception of an east-west motorised route and emergency/fire access.
2. Designate Lookout Mountain as a non-motorised, no hunting zone.
3. Designate the Fire Ponds as non-motorised zones.
4. Investigate the future use of trails outside these 3 recommended non motorized zones.

### **Specific Routes**

5. The County and Alnwick-Haldimand Township should discuss and decide the future of road allowances in the Forest
6. Provide a non-motorised Oak Ridges Trail from west to east through the Forest.
7. Provide at least one trail accessible to the physically disabled
8. Provide at least three interpretive trails

### **Reducing Trail Degradation**

9. Install and maintain barriers to restrict motorized access to non-motorised zones
10. Restore the most degraded trails and adjacent areas
11. Develop trail standards
12. Implement a trail maintenance program in cooperation with user groups.
13. Develop and implement an ongoing monitoring and research program

### **Facility Development**

14. Implement and maintain a comprehensive signage system.
15. Identify and construct at least three trailheads
16. Use the former ski hill area/facilities for non-motorised activities and a forest center

### **Safety, Risk Assessment and Liability**

17. Develop a risk management programme that would include assessment of trails and hunting in the Forest

### **Event Management**

18. Develop, implement and communicate a policy and permit system for events in the Forest

### **Law Enforcement**

19. Increase policing and trained volunteer patrolling of the Forest.

### **Information, Education and Training**

20. Improve information and education about the Forest and its uses.
21. Arrange training programs related to trails and other aspects of the Forest

### **Tourism**

22. Determine the role of the Forest in tourism in Northumberland County

### **Financing, Staffing and Decision-Making**

23. Do not implement a permit and trail user pays system at this time.
24. Explore new sources of revenue
25. Hire a fulltime professional employee to manage the Forest and its trails.
26. Continue to seek the advice of the FAC

### **Reporting and Planning**

27. Prepare an Annual Report on the State of the Forest and its trails
28. Incorporate the trail management plan into the Forest Master Plan.
29. Integrate the Forest Trail Plan and system with County and Provincial trail plans and systems.

The study also contains a list of references and websites, appendices of survey instruments and record sheets, the latest version of the new trail map, other maps and photographs.

The distribution of this draft report to the County and Forest Advisory Committee (FAC), another FAC workshop and a public open house in January 2008 will provide opportunities to relay concerns and suggestions regarding the recommendations. Some further research on winter trail users, standards and signage will be undertaken in February and March and a final report will be submitted in April 2008.

<b>CONTENTS</b>	<b>Page</b>
List of Appendices	
Acknowledgements	
1. Introduction	1
2. Study Methods	3
3. Results	6
4. Factors Considered in Making Recommendations	20
5. Recommendations	28
6. Further Work	43
7. References	44
8. Websites	50
9. Appendices	50
10. Maps	77
11. Photographs	on CD

## **LIST OF APPENDICES**

1. Survey Questionnaires
2. Comments from Questionnaires
3. Northumberland Forest Trail Monitoring Form
4. Example of Trail Impact Monitoring Form
5. Examples of Trail Standards
6. Form for Developing Trail Standards for the Northumberland Forest
7. Codes of Ethics for Trail Users
8. Trails and Tourism
9. Northumberland County Forest Nature Interpretation Trail

## **ACKNOWLEDGEMENTS**

County staff, especially Mia Frankl, Judy Snider, Bill Pyatt

Trent University student research assistants: Evelyn Runions, Trista Bassett, Peter Kowalski, Clark Richards

Forest Advisory Committee

Robb Ogilvie and his facilitation team

Fenella Community Center

Respondents to public surveys

Scenery Drive Restaurant, CR 45, waitresses help with hunter survey

Ontario Ministry of Natural Resources, especially Natural Heritage Information Centre

The Alderville First Nation

Nature Conservancy of Canada

Cobourg Star and The Independent for coverage of the study

Library and Archives, Cobourg

Trent University for office support

Trent University Geography Department, for GPS units and other equipment, as well as the technical expertise of Miles Ecclestone and Helen Thompson

## 1. INTRODUCTION

The Northumberland Forest has a long history of largely unmanaged recreational use with associated degradation of the environment, conflicts between users, and hazardous behavior. The County has now recognized the need to study these issues as part of preparing a Forest Master Plan, and to resolve them. Therefore, in June 2007, the County contracted the Trail Studies Unit at Trent University, directed by Dr. John Marsh, to undertake a trail study.

The aims of the study were to:

- Map the trails in the Forest using GPS and GIS technology,
- Investigate and recommend means to reduce the environmental impacts of trail use,
- Investigate and recommend means to resolve conflicts between users, and to
- Recommend means to reduce risks and County liability.

At the outset we suggested that three key questions needed answering:

- What trails are needed where?
- For which uses, when?
- Maintained to what standards?

A chronology of the study so far is provided below:

- June 16, 2007 – The consultant participated in a Forest Advisory Committee (FAC) Field Tour involving hikes to the Hogsback and Lookout Mountain. “A lot of good discussion occurred among members relating to recreational issues, erosion, prairie restoration and ecological significance of the forest” (Northumberland, 2007).
- June 30, 2007 - Surveying of trail users began.
- July 16, 2007 - GPS mapping of trails in the Forest began.
- August 7, 2007 - Progress Report #2 submitted.
- September 27, 2007 – Progress report on the study presented at FAC Workshop 2.
- October 25, 2007 – consultant attended FAC Workshop 3: Understanding the implications of the Oak Ridges Moraine Conservation Plan for the Northumberland County Forest.
- November 11, 24, 2007 – Surveying of adjacent residents undertaken.
- November 21, 2007 – Progress report #3 submitted.
- November, 2007 – Surveying of hunters.
- November 29, 2007 – John Marsh and Al MacPherson presented some study results and tentative recommendations to FAC Workshop 4.
- December 19, 2007 – draft study report #1 submitted to County staff.
- January 2, 2008 – draft study report #2 submitted to County staff.

The work to be undertaken in 2008 is outlined in a later section on Further Work.

For the purpose of this study, trails are defined as any route in the Forest intended or used primarily for recreational travel. Other common and legal definitions of trails can be found at the website of the Trail Studies Unit, Trent University. Such routes in the Forest vary from road allowances, to forest access tracks, signed trails, unsigned trails and single track trails. The means of travel used on such trails include hiking, running, orienteering, horseback riding, cycling, skiing, snowshoeing, snowmobiling, dirt-biking, ATVing, 4x4ing, and car/truck driving.

## **2. STUDY METHODS**

### 2.1. Mapping of trails, GPS, computer storage of data, printing of maps

The trails (ranging from unpaved roads, to official trails and unofficial single track trails) in the Forest were mapped with Garmin etrex vista GPS units. Their accuracy ranged from 3-20 metres, and averaged c.8 metres. The accuracy was better on clear days, in open areas and in the Fall when there was less of a leaf canopy. Initially the trails were covered on foot, then, to speed the process, by mountain bike and car.

The GPS data were downloaded into a computer in the County office. Then maps were produced at various scales, with a variety of background information, especially contours and roads. The latest version of the trail map is included in the map section of this report.

About 10% of the known trails remain to be mapped, improved printed maps produced, and field checking of the final map undertaken in 2008.

### 2.2. Measuring environmental conditions of trails

A set of measurements of environmental conditions were made at a sample of points on a sample of trails in the Forest. The measurements comprised: the width of bare earth, the maximum depth of erosion below the normal land level, and the slope along the trail. In a few places, where erosion of the trail was severe, several measurements of the depth of erosion along a transect across the trail were made, as well as measurements of the slope of the sides of the trail. A metre stick, Abney level and 30 metre tape were used for these measurements. Whether roots and rocks were exposed, and water ponded along a section of trail was also noted. A 30 metre tape and pedometer were used to measure distances along the trail between sample points. Most of the trails studied were measured every 100 metres, with a few measured every 10 metres. The sample of trails comprised: all the "ski" trails, the Lookout Mountain trail, a single track trail, and at some locations along trails on road allowances and forest access routes. The data were recorded on a standard sheet (Appendix 4).

The data were then tabulated for each trail to produce average and maximum values of bare width, erosion depth and slope (See Results section).

### 2.3. Survey of summer and fall users of trails

A questionnaire survey of individual trail users was begun on 30 June 2007 and concluded at the end of November. A draft questionnaire was tested on some trail users then revised to make it clearer. Initially trail users were interviewed primarily in the Beagle Club parking lot and in the CR 45/Dunbar parking area. The form used to record interviewee responses is included as Appendix 1. After a kiosk had been installed in the Beagle Club parking lot, a slightly revised questionnaire (Appendix 1) was placed on the windshields of vehicles parked in this parking lot and at the kiosk requesting trail users to

complete and deposit it at the kiosk. A few questionnaires were given to forest users who requested them elsewhere, and a few were sent in by mail.

The questionnaires were collected, analysed and tabulated, to indicate the number of responses to each question, and the number and percentage of respondents answering each reply option to each question. The comments on the questionnaires have also been summarized and included in Appendix 2.

#### 2.4.Survey of hunters

A questionnaire survey was conducted of people hunting in the Forest during the main hunting season from November 5-18, 2007. A draft questionnaire was tested with a few hunters then revised to make it clearer (Appendix 1). Hunters were interviewed at the CR 45/Dunbar parking area and in the Scenery Drive Restaurant south of the Forest on CR 45. Copies of the survey were also left on the windshields of vehicles in the Beagle Club parking lot, to be completed and deposited in the kiosk. The waitresses at the Scenery Drive Restaurant also gave the questionnaire to hunters in the restaurant and collected those completed.

The questionnaires were collected, analysed and tabulated to indicate the number of responses to each question, and the number and percentage of respondents answering each reply option to each question. The comments on the questionnaires have also been summarized in Appendix 2.

#### 2.5.Survey of adjacent residents

A questionnaire was prepared to survey people residing on property adjoining the Forest regarding their uses of the Forest and their attitudes towards its use and management (Appendix 1). A sample of such residents on various sides of the Forest was interviewed using the questionnaire on the weekends of 11 and 24, November 2007.

The questionnaires were collected, analysed and tabulated, to indicate the number of responses to each question, and the number and percentage of respondents answering each reply option to each question. The comments on the questionnaires have also been summarized in Appendix 2.

#### 2.6.Interviews with the FAC

From October to December, individual face-to-face interviews were conducted with as many member of the Forest Advisory Committee as possible. A basic set of topics (see Appendix 1) was used to guide the interviews, most of which lasted at least one hour. Further interviews are intended with members of the FAC not yet interviewed.

## 2.7. Other interviews

Informal discussions were conducted with various other people using or familiar with the Forest, including the manager of an equestrian center, restaurant waitresses, an archivist, and a bakery owner.

## 2.8. Photography

Digital photographs were taken throughout the study period to record the landscape of the Forest, the environmental conditions of trails, the signage in the Forest, various users, garbage and other features relevant to the study. Additional photographs have been taken of the environmental conditions of trails, trail signage, and users in other comparable protected areas, notably the Ganaraska Forest.

## 2.9. Observations of vehicles in parking areas in Forest

Observations were made on various occasions (morning, afternoon, weekday, weekend), from July to December 2007 of the number of vehicles in various parking lots and locations in the Forest. This was done to gain some idea of the volume of recreational use of the Forest, as well as the temporal and spatial patterns of use.

## 2.10 .Participation in relevant events

The lead author participated in a field trip in the Forest in June with some members of the FAC. This revealed the variety of interests and concerns. Participation in a celebration of the protection of the Oak Savanna at Alderville, and in a meeting of the Northumberland Land Trust was also useful. Involvement in the meetings of the Ontario government's Trails Coordinating Committee yielded information on issues and solutions relating to liability issues, ATVs, and provided a chance to make members aware of the Northumberland Forest. Participation in the Ontario Trails Council sponsored meeting on December 14, 2007 yielded information on issues and solutions relating to various aspects of non-motorised trails.

## 2.11. Monitoring

It was intended that representative sites on the trails in the Forest would be selected, identified on the ground with stakes, measured and photographed for monitoring in the future. However, the early snowfall precluded this work, which will have to be done in the Spring 2008.

## 2.12. Review and feedback by FAC

Throughout the study the responses of the FAC (individually and collectively) to the presentations on the study have been valuable in gaining information, identifying conflicts, discovering solutions, and in testing recommendations.

### 3. RESULTS

#### 3.1. Maps of trails, GPS, computer storage of data, printing of maps

It is estimated that about 80% of the trails in the Forest have been mapped with GPS units. The remaining trails will be mapped in the winter and spring, and then the map will be independently tested for completeness, accuracy and public acceptability. Thanks to the growing expertise of Mia Frankl, a variety of ever-more comprehensive maps of the trails in the Forest have been printed. They have been produced at different scales and with various types of background information, such as contours and roads. Further GPS work and more refined printing will result in a comprehensive and accurate map of the trails being available in 2008 for both planning and public information. It will be more useful for planning when it can be downloaded into whatever GIS the County uses for producing the Master Plan. It should be possible to download a version of it to the County Forest website, from where the public could print it, and eventually download to their GPS units. The most recent version of the map is included in the Map section of this report. In future it will be useful to categorise and produce maps of trails according to their characteristics, the standards for them, and their intended uses.

#### 3.2. Environmental Conditions of Trails

The following Tables present the results of measuring the environmental conditions at a sample of points along a selection of trails used by various types of user in the Forest.

##### Orange Trail

Measurements: 22  
Interval: 100 metres  
Average width of bare earth: 131 cm  
Maximum width of bare earth: 390 cm  
Average depth: 8.4 cm  
Maximum depth: 42 cm  
Average slope along trail: 4.4 degrees  
Maximum slope along trail: 12 degrees

##### Red Trail

Measurements: 35  
Interval: 100 metres  
Average width of bare earth: 75 cm  
Maximum width of bare earth: 270 cm  
Average depth: 5.5 cm  
Maximum depth: 12 cm  
Average slope along trail: 3.3 degrees  
Maximum slope along trail: 9.5 degrees

#### Blue Trail

Measurements: 27  
Interval: 100 metres  
Average width of bare earth: 130 cm  
Maximum width of bare earth: 362 cm  
Average depth: 9.4 cm  
Maximum depth: 60 cm  
Average slope along trail: 3.7 degrees  
Maximum slope along trail: 12 degrees

#### Green B Trail, south section via Hogsback

Measurements: 68  
Interval: 100 metres  
Average width of bare earth: 145 cm  
Maximum width of bare earth: 357 cm  
Average depth: 120 cm  
Maximum depth: 390 cm  
Average slope along trail: 3.5 degrees  
Maximum slope along trail: 21 degrees

#### Green B Trail, north section, crossing Dunbar

Measurements: 46  
Interval: 100 metres  
Average width of bare earth: 81.3 cm  
Maximum width of bare earth: 183 cm  
Average depth: 118 cm  
Maximum depth: 350 cm  
Average slope along trail: 3 degrees  
Maximum slope along trail: 12.5 degrees

#### Lookout Mountain Trail

Measurements: 35  
Interval: 100 metres  
Average width of bare earth: 75 cm  
Maximum width of bare earth: 270 cm  
Average depth: 5.5 cm  
Maximum depth: 12 cm  
Average slope along trail: 3.3 degrees  
Maximum slope along trail: 9.5 degrees

Dunbar – CR 45 – Beagle Road, south side  
Measurements: 7  
Interval: 100 metres  
Average width of bare earth: 240 cm  
Maximum width of bare earth: 420 cm  
Average depth: 21.4 cm  
Maximum depth: 160 cm  
Average slope along trail: 4.7 degrees  
Maximum slope along trail: 11 degrees

Dunbar – CR 45 – Beagle Road, north side  
Measurements: 8  
Interval: 100 metres  
Average width of bare earth: 308 cm  
Maximum width of bare earth: 465 cm  
Average depth: 10.2 cm  
Maximum depth: 34.5 cm  
Average slope along trail: 4.5 degrees  
Maximum slope along trail: 7 degrees

Trail north of Dunbar, just east of Beagle Club Road, returning to Dunbar  
Measurements: 14  
Interval: 100 metres  
Average width of bare earth: 81.5 cm  
Maximum width of bare earth: 144 cm  
Average depth: 9.9 cm  
Maximum depth: 19 cm  
Average slope along trail: 3.4 degrees  
Maximum slope along trail: 10 degrees

Trail south of Dunbar, just east of Beagle Club Road  
Measurements: 8  
Interval: 100 metres  
Average width of bare earth: 253 cm  
Maximum width of bare earth: 400 cm

Trail loop from Dunbar past Mudhole  
Measurements 11  
Interval: 100 metres  
Average width of bare earth: 266 cm  
Maximum width of bare earth: 820 cm  
Average depth: 11.2 cm  
Maximum depth: 215 cm  
Average slope along trail: 2.5 degrees  
Maximum slope along trail: 24 degrees

### 3.3. Survey of Summer and Fall Users of Trails

The survey of trail users yielded responses for 147 people over the age of 11 years. Not every respondent replied to all questions, and some questions allowed for multiple answers, so the number of responses to each question varies from 147 as indicated. Percentages have been rounded so they may not always add up to 100%. The responses to each question are given below in the order in which they were asked.

1. Sex: - Responses - 146
- Males - 58%
  - Females - 42%

2. Age: - Responses: - 145
- 11-20 - 10%
  - 21-30 - 19%
  - 31-40 - 17%
  - 41-50 - 30%
  - 51-60 - 13%
  - 61-70 - 8%
  - 71-80 - 3%

3. Place of residence:
- Responses - 142
    - Cobourg - 45%
    - Baltimore - 10%
    - Port Hope - 7%
    - Hamilton Township - 4%
    - Rest of Northumberland County - 16%
    - Other, incl. Toronto, Oakville, St.Catharines, Niagara, U.K.-18%

4. Are you a member of any trail user or environmental group?
- Responses - 141
    - Yes - 20%
    - No - 80%

If “yes”, which group(s)?

- To be added

5. How many times have you visited the Forest in the last 12 months?
- Responses -
    - 1 - 13%
    - 2-5 - 25%
    - 6-10 - 17%
    - 11-20 - 18%
    - 21-30 - 7%
    - 31-40 - 3%
  - 1-20 - 73%

- 41-50 - 4%
- 51-60 - 4%
- 71-80 - .5%
- 91-100 - .5%
- 101+ - 8%
- 21-101+ - 27%

6. How long were you/will you be in the Forest this time?

- Responses - 136
- < 1 hour - 12%
- 1-1.59 - 48%
- 2-2.59 - 28%
- 3-3.59 - 5%
- 4-4.59 - 4%
- 5-5.59 - 1%
- 8+ - 2%
- Under 3 hours - 88%
- Over 3 hours - 12%

7. How are you traveling in the Forest?

- Responses - 147
- Foot - 60%
- Bicycle - 28%
- Motor bike - 8%
- ATV - 3%
- Horse - 1%
- 4X4 - 1%
- Car - 1%
- Other - 0%

8. Which trails have you used/will you use on this visit?

- Responses - 164
- Green - 35%
- Blue - 23%
- Red - 19%
- Orange - 5%
- Others - 18%

9. How would you rate the condition of the trail you used?

- Responses - 136
- Good - 71%
- OK - 21%
- Poor - 8%

If “poor” – explain:

10. How would you rate the signage on the trails in the Forest?

- Responses - 141
- Good - 54%
- OK - 35%
- Poor - 11%

If “poor” – explain:

11. How would you rate the cleanliness of the Forest, garbage etc?

- Responses - 141
- Good - 82%
- OK - 16%
- Poor - 1%

If “poor” – explain:

11a. Did anything detract from your recreational experience in the Forest?

- Responses - 129
- Yes - 33%
- No - 67%

If “yes” – explain

12. Suggest anything that would improve your recreational experience in the Forest:

- Responses -

13. How would you rate the information available on the Forest?

- Responses - 104
- Good - 35%
- OK - 51%
- Poor - 14%

If “poor” – explain:

14. Would you like to be able to obtain a map of the Forest trails?

- Responses - 133
- Yes - 86%
- No - 14%

If “yes”, would you like: a printed map / a map available from a website?

15. Would you be willing to pay to use the trails in the Forest?

- Responses - 126
- Yes - 53%
- No - 47%

If “yes”, how much per visit? Or, per year?

Per visit- \$

Responses - 18

- Average - \$6
- \$1-5 - 78%
- \$10 - 5%
- \$20 - 18%

Per year- \$

Responses - 31

- Average- \$44
- \$20-25 - 39%
- \$30-40 - 22%
- \$50-100- 38%

If “no”, why not?

16. Have you any other comments?

- Responses:

The comments are included in the Appendix 2.

### 3.4. Survey of Hunters

The survey of hunters yielded responses for 28 people over the age of 11 years.

Not every respondent replied to all questions, and some questions allowed for multiple answers, so the number of responses to each question varies from 28 as indicated.

Percentages have been rounded so they may not always add up to 100%. The responses to each question are given below in the order in which they were asked.

1. Sex:

Responses - 27

Male - 96%

Female - 4%

2. Age:

Responses - 28

11-21 - 4%

21-30 - 18%

31-40 - 14%

41-50 - 14%

51-60 - 25%

61-70 - 20%

71-80 - 4%

3. Place of residence:

Responses - 24

- Baltimore - 21%
- Cobourg - 21%
- Rest of Northumberland County - 41%
- Other counties - 17%
- Furthest location – St. Catharines

4. Are you a member of any hunting organisation?

Responses- 26

- Yes - 39%
- No - 61%

If “yes”, which organisation(s)?

Mostly OFAH

5. How many times have you visited the Forest to hunt in the last 12 months?

Responses- 27

- Average - 8.8
- Minimum - 0
- Maximum - 30

6. How long were you/will you be in the Forest this time?

Responses- 18

- Average - 5 hours
- Minimum - 0.5 hour
- Maximum - 12 hours

7. What species are you hunting for?

Responses- 25

- Deer - 100%
- Turkey - 12%
- Grouse - 8%
- Partridge - 4%
- Bear - 4%

8. Are you hunting with a rifle / shotgun / crossbow / bow ?

Responses - 25

- Rifle - 0%
- Shotgun - 100%
- Crossbow - 28%
- Bow - 4%

9. How are you traveling in the Forest?

Responses - 27

Foot	- 59%
4X4	- 44%
ATV	- 19%
Truck	- 4%

10. Which trails/areas of the forest have you used/will you use while hunting today?

Responses - 16  
“No trails”, “all trails”, “off trails”, with specific mention of: Dunbar, Beaver Meadow Road, E108, Morris Road, Centreton to CR 45.

11. Did you encounter any other people on the trails today?

Responses- 24

Yes	- 67%
No	- 33%

If “yes”, were they hunters?

Yes	- 80%
No	- 20%

9. How would you rate the condition of the trails you used?

Responses - 23

Good	- 30%
OK	- 65%
Poor	- 5%

If “poor” – explain:

“Not kept up or repaired.”

10. How would you rate the signage on the trails in the Forest?

Responses - 24

Good	- 42%
OK	- 54%
Poor	- 4%

If “poor” – explain

“Not marked.”

11. Did anything detract from your hunting experience in the Forest?

Responses- 23

Yes	- 13%
No	- 87%

If “yes” – explain: “didn’t get a deer, dirt bike, motor bikes, ATVs, less 4 wheelers and dirt bikers during hunting season.”

12. Suggest anything that would improve your hunting experience in the Forest:

Responses - 14

“More animals, more deer, more deer and keep the Indians out, longer shotgun season, Sunday hunting, everyone where orange, even dog walkers, need pedestrians out during hunting season or wear orange, keep four wheelers and dirt bikes out, the use of motor vehicles.”

13. Would you be willing to pay to use the trails in the Forest for hunting?

Responses - 25

Yes	- 12%
No	- 84%
Maybe	- 4%

If “yes”, how much?

Responses - 1

Per visit?	- \$5
Per year?	- \$25

If “no”, why not?

“I pay taxes, already pay taxes, pay government enough and taxes, I pay taxes in County, pay enough already, pay enough in taxes, pay taxes and fees, fee for licenses would not be used for conservation, used all life – township people shouldn’t pay, trails are multi-use – others don’t pay, all users should pay, this is Crown land, its Crown land, its Crown land for everyone, shouldn’t pay to use Crown land, its public land, might pay if trails maintained, trails not maintained in summer, deer and grouse are renewable resources, 0 animals – over-hunted already, would move to private land, would have to use private land, do not use trails.”

14. Have you any other comments?

Responses - 4

“Confusion over what is public and private land, trespassing on private land, hunters going on private land, need signs, mark Forest property, leave a little for the white man to enjoy.”

### 3.5. Survey of Adjacent Residents

The survey of adjacent residents yielded responses for 21 people over the age of 18 years. Not every respondent replied to all questions, and some questions allowed for multiple answers, so the number of responses to each question varies from 21 as indicated. Percentages have been rounded so they may not always add up to 100%. The responses to each question are given below in the order in which they were asked.

1. How many years have you lived at this address?

Responses - 21

Average - 9 years  
Maximum - 39  
Minimum - <1

2. How many live at this address?

Responses - 21

Adults (18 and over) - av. 2.1  
Households with children - 38%, average number of children - 1.9

3. How many of you have used the trails in the Forest in:

Responses - 21

Used trails in last week - 38%  
Average number of times used trails in last week - 2.4

4. Do you access the trails directly from your property?

Responses - 21

Yes - 76%  
No - 24%

5. How do you travel on trails in the Forest?

Responses - 19

4X4/truck - 5%  
ATV - 29%  
Dirt Bike - 9%  
Walk - 66%  
Mountain Bike- 9%  
Horse - 9%  
Skis - 5%  
Snowmobile - 14%

6. What do you use the Forest trails for?

Responses - 19

- Exercise - 71%
- Dog walking - 33%
- Hunting - 19%
- Birdwatching - 0%
- Photography - 0%
- Other - 43%, e.g. recreating using above means of travel.

7. Does anything detract from your experience on the Forest trails?

Responses - 19

- Yes - 53%
- No - 47%

If "Yes", please specify: garbage 5, noise of ORVs 3, ORVs 3, emissions/dust 1

8. Do users of Forest trails near your property cause any problems for you?

Responses - 21

- Yes - 29%
- No - 71%

If "Yes", please specify: noise 4, reckless ORVs 3, garbage 1, trail damage 1

9. Would you like the Forest trail nearest your property:

Responses - 19

- Closed? Yes - 5%
- No - 95%
- Closed to certain uses? Yes - 25%
- No - 75%

If "Yes", which uses? ORVs 4, hunting 1

- Located further away? Yes - 20%
- No - 80%

10. Do you permit trail users to cross your property?

Responses - 21

- Yes - 24%
- No - 76%

11. Have you posted any of the following signs along the boundary between your property and the Forest?

Responses - 21

- Private property: Yes - 5%
- No - 95%
- No trespassing: Yes - 5%
- No - 95%
- No hunting: Yes - 5%
- No - 95%

Other, please specify: 0

12. Have you any comments?

Responses -

The comments are included in Appendix 2.

### 3.6. Interviews with FAC

Interviews have so far been conducted with 13 members of the FAC. It is anticipated that interviews with the remaining members of the FAC will be conducted early in 2008.

### 3.7. Photography

Over 200 digital photographs were taken throughout the study period to record the landscape of the Forest, the environmental conditions of trails, the signage in the Forest, garbage, various users and other features relevant to the study. Additional photographs have been taken of the environmental conditions of trails, trail signage, and users in other comparable protected areas, notably the Ganaraska Forest. The photographs will be available on a CD.

### 3.8. Observations of Vehicles in Parking Areas in Forest

The random observations made of the number of vehicles in various parking lots in the Forest are summarized below.

#### Beagle Club Road Parking Lot

11 August	-	10.45 a.m.	4 cars, including 3 repeat users
28 August	-	4.30 p.m.	4 cars
3 September	-	11 a.m.	9 vehicles, and 1 horse trailer
3 September	-	12 noon	10 vehicles, and 2 horse trailers
3 September	-	1.45 p.m.	2 cars, 1 truck with trailer
September 10	-	1.20 p.m.	3 vehicles, 1 horse trailer
16 September	-	9.15 a.m.	0 vehicles
16 September	-	10.00 a.m.	2 cars, 1 SUV
16 September	-	12.30 p.m.	5 cars
16 September	-	12.50 p.m.	2 motor bikes went through the lot
16 September	-	1.40 p.m.	2 trucks with dirt bikes
c.3 October	-	11.25 a.m.	1 car, 1 truck
5 October	-	4.30 p.m.	3 cars, 1 truck
9 October	-	12 noon	no vehicles
9 October	-	1.30 p.m.	no vehicles
13 October	-	2 p.m.	4 vehicles
21 October	-	10.15 a.m.	1 truck
30 October	-	1.40 p.m.	1 van
30 October	-	3.30 p.m.	no vehicles
5 November	-	10.30 a.m.	1 car
5 November	-	1.30 p.m.	no vehicles
8 November	-	10 a.m.	1 van

8 November	-	3.40 p.m.	no vehicles
13 November	-	10.30 a.m.	2 trucks
14 November	-	10.30 a.m.	2 trucks (same ones as 13 November)

Dunbar and CR 45:

3 September	-	1.30	1 car, 4 trucks
16 September	-	12.00 noon	4 vehicles with trailers
13 October	-	11 a.m.	no vehicles
13 October	-	1 p.m.	no vehicles
21 October	-	10.25 a.m.	no vehicles
5 November	-	11 a.m.	4 trucks
8 November	-	10.15 a.m.	1 van, 2 pickups
8 November	-	2.15 p.m.	no vehicles
13 November	-	10.50 a.m.	1 truck

In the Beagle Club Road parking lot, at the times of observation, there were rarely more than 10 vehicles. Vehicles with bike racks were commonly observed. Occasionally there was up to 3 horse trailers. Few other vehicles had trailers, and few ATVs or dirt bikes were observed parked there. Many vehicles were observed repeatedly, some almost daily. There tended to be more vehicles in the morning than afternoon, and on weekends. There were fewer vehicles on colder, wetter days, and very few during the two weeks of the gun hunting deer season in November.

The two parking areas off Dunbar Road just east of CR 45 get about equal use, but much less than at the Beagle Club Road parking lot. Trucks with trailers, usually for ATVs or dirt bikes were commonly observed there. No vehicles with bike racks or horse trailers were observed there. There were fewer vehicles on colder, wetter days but more than average during the two weeks of the gun hunting deer season in November.

Other locations in or near the Forest where 1 or 2 parked vehicles were also observed quite frequently were: on the east side of CR 45 opposite Morris Road, at various locations along Dunbar Road, and in the hydro transmission corridor.

#### **4. FACTORS CONSIDERED IN MAKING RECOMMENDATIONS**

##### **1. The Vision of the Forest as stated in the Draft Management Plan, 2003:**

“Conserve and enhance the ecology and functions of the forest, including ground and surface water, soils, vegetation, and wildlife, while providing opportunities for recreation, and other social and economic benefits.”

##### **2. The Goals of the Forest as stated in the Draft Management Plan, 2003:**

1. Forest stewardship
2. Conserve natural heritage ecology and functions
3. Provide opportunities for recreation and tourism where compatible with objectives for conserving natural heritage ecology and functions
4. Sustainable forest management

##### **3. The Laws Pertaining to the Forest**

Numerous laws, by-laws and regulations apply to the Forest, including the following.

In June 2001, the Ontario Ministry of Natural Resources transferred management of the Northumberland Forest to Northumberland County.

In November 2001, the Ontario Ministry of Municipal Affairs and Housing introduced the Oak Ridges Moraine Conservation Plan. The Oak Ridges Moraine Conservation Plan applies to the Forest and designates virtually all of it as a Natural Core Area. Such Areas are to “protect those lands with the greatest concentrations of key natural heritage features which are critical to maintaining the integrity of the Moraine as a whole. Only existing uses and very restricted new resource management, agricultural, low intensity recreational, home businesses, transportation and utility uses are allowed in these areas.”

Minor (passive) recreation permitted in the Natural Core Areas is exemplified by nature parks, hiking trails, and footbridges. Major (active) recreation permitted in Countryside Areas is exemplified by golf courses, ski hills, and playing fields (Ontario, 2001). It is noteworthy that it is land uses rather than activities that are exemplified for each type of area. There is no specific reference to many of the trail activities currently occurring in the Forest or their acceptability or unacceptability in the Natural Core Areas.

“The Moraine is included in The Green Belt Plan (GBP). Under Section 2.1 of the GBP, the requirements of the ORMCP made under the Oak Ridges Moraine Conservation Act continue to apply and the Protected Countryside policies of the GBA do not apply, with the exception of Section 3.3.” (Ogilvie, 2007). These identify broad principles, such as:

- The need to maintain and expand publicly accessible parkland, open space and trails;

- The need for public agencies to plan for park use and activities in a way that maximizes public input and contributions.

The Township of Alnwick/Haldimand has special policies in place, both in their Official Plan and Comprehensive Zoning By-law to address lands that are within the Oak Ridges Moraine. Any future official plan or zoning by-law amendments or the introduction of a County Official Plan will have to conform to the Oak Ridges Moraine legislation.

The Green Belt Act, 2005

The Greenbelt Act and the Greenbelt Plan set out numerous objectives, including:

- establishing a network of countryside and open space areas that supports the Oak Ridges Moraine and the Niagara Escarpment;
- providing protection to the land base needed to maintain, restore and improve ecological and hydrological functions; and
- providing open space and recreational, tourism and cultural heritage opportunities (Environmental Commissioner of Ontario, 2007, 16).

According to publicity for the Green Belt, “The Greenbelt needs ‘stewards,’ people like you who can support efforts to keep it secure and true to its original vision. Politicians on the municipal, regional and provincial levels alike need to honour the Greenbelt’s boundaries and respect its intent, and the legislation needs to be enforced.”

(More information to be added here).

#### 4. The Environmental Characteristics of the Forest.

The Northumberland Forest comprises several sections totaling 2164 hectares (see Map). It lies on the Oak Ridges Moraine, with a depth of up to 1000 metres of sand, gravel, clay and rocks. The sand deposits “may serve as a locally important groundwater recharge zone” (Brownell and Blaney, 1996), but it is unlikely that trails and their use will impair this function. Unlike many areas, the Forest has few streams or wetlands that would be vulnerable to the impact of trails and their use.

The soils of the Forest are a Pontypool sand soil type, though there are loamier and wetter soils on lower slopes and valley floors. The sandy soils, being drier, are relatively resistant to erosion, except when exposed on steep slopes or in large windy areas. The loamier soils, being wetter, are more vulnerable to degradation from trails and their use, especially on steep slopes, where run-off may accelerate erosion.

The topography of the Forest ranges from c.250 metres to a maximum of 358 metres. The surface is rolling with slopes up to 30% in a few places. Slopes over 15% are often considered especially vulnerable to the impacts of trails and their use.

The Forest is highly vegetated with approximately 372 taxa of vascular plants, including 282 native species and 90 non-native species. The woodland has at least 21 tree species but is dominated by conifer plantations (65%), red oak (15%) and aspen (14%) (Silv-Econ and Domtar, 2003, 14). The more-natural mixed forest is probably more appealing

to trail users, less subject to disruptive logging, and of greater ecological value, but as such is an environment where the impacts of trails and their use are of greater concern. Conversely, the plantation forest is probably less appealing to trail users, more subject to disruptive logging and of less ecological value, so the impacts of trails and their use are of lesser concern.

A substantial part of the Forest has been classified by Brownell and Blaney (1996) as of special natural value. They classified some 783 hectares of the central portion of the Forest as a Significant Natural Area due to “the number of rare plants, vegetation communities and fauna that were found.” An additional 300 hectares of the Forest located in the Burnley-Carmel Headwater were also classified as a Significant Natural Area. A small section of the south-west corner of the Forest, along with a much larger section outside the Forest, has been designated as a Provincial Area of Natural and Scientific Interest (See Map).

Three vegetation communities have been detected in the Forest that are provincially rare: namely: dry sand barrens (Forest Compartments 35 and 47), tall grass prairie remnants (Compartment 24), and oak dominated woodlands (Compartments 1,2,6,7, 22-24, 41, 44-46, 66) (See map of Forest Compartments). Five of the plant species detected in the Forest are considered provincially rare. These have been detected in the tall grass prairie areas in Forest Compartment 24. To determine if these rare communities and species are being detrimentally impacted by trails and trail use requires further research.

At least 160 species of birds, of which 106 are probably breeding species have been recorded in the area bounded by County Roads 9 and 29 on the north, County Road 22 on the south, Jakobi Road on the east and County Road 15 on the west, which includes most of the Forest and some adjacent areas. Species include the provincially rare Red-shouldered hawk, and several regionally rare species. Some species are known to be area sensitive and forest interior species. The impact of roads, access tracks, and trails in fragmenting the Forest, the impact of activities along these routes, and the impact of logging, on these species and others is unclear, complex, probably detrimental and deserving of further research.

The Forest has a variety of habitats for various mammals, notably the White-tailed deer. A female bear and cubs were observed repeatedly in the Forest during the summer of 2007. Smaller mammals, such as squirrels, typical of southern Ontario forests are common. Parts of the Forest, such as the shrub habitat near Lookout Mountain, are frequented by the Eastern hognosed snake. It is listed as threatened by the Committee on the Status of Endangered Wildlife in Canada, and vulnerable by the Ontario Ministry of Natural Resources. The impacts of trails and their use on wildlife in the Forest are less obvious than those on soil and vegetation, harder to study, and complicated by hunting, so are not well known, but could be problematic and deserving of study.

The 8 fire ponds and adjacent wet areas in the Forest, while not natural, have probably developed interesting ecological characteristics, and become important for species beyond their borders, for example as water sources. Accordingly, their distinct

characteristics and sensitivity need to be considered when planning, developing and using trails near them.

Some comments by the Metropolitan Toronto Region Conservation Authority regarding nature protection and trails on part of the Oak Ridges Moraine are worth noting. “Natural heritage conservation often closely parallels trail planning not only because trails are a relatively non-consumptive use but also because trails are often the conduit through which we experience our natural heritage. The natural heritage study was used to provide mapping of forest resources, ANSIs, ESAs, wetlands, water bodies, drainage patterns, fisheries, and topography. These resources vary with respect to their compatibility with trails. For example, forestry is a highly significant resource because it provides enclosure and protection from wind. In contrast, resources such as rare, threatened, vulnerable or endangered species are generally considered constraints for routing trails. Because each resource is unique with respect to its significance for trails, one of the first steps in evaluating the natural heritage data is to classify the resources as opportunities or constraints. “Site specific inventories of areas will be required to confirm the degree and type of constraint or opportunity for specific resources” Except for “locations of rare/threatened/endangered species or species of conservation interest,” “natural areas are all potential destinations for trails” (MTRCA, 1994, 7-8).

Unfortunately the MTRCA study did not cover the Oak Ridges Moraine east of the Ganaraska Forest and the site specific inventories suggested have yet to be completed or made available in adequate detail for precise trail planning purposes.

##### 5. Past Conditions, Activities and Practices in the Forest.

During the last 200 years most of the Forest has been modified by logging, cleared for settlement and agriculture, degraded by soil erosion, allowed to revert to bush, reforested, and protected.

“During the pioneering era, many board feet of white pine came from the area, cut down with little thought of the future or of what came to be known as sustained growth. With the removal of the first growth, the region, much too hilly and rocky for farming, became a ‘waste’ land” (United Counties, 1967, 29)

At some date in the 19<sup>th</sup> century, yet to be determined, Dunbar Road was created as an alternative to the less secure route near the shore of Lake Ontario. It persists as a heritage feature in the Forest.

According to a history of Northumberland County, “large tracts of land were purchased by the government to replant forests and control soil erosion. The County of Northumberland Forest is a testament to the reforestation effort required to benefit present and future generations” (County, 2000, 268). The reforestation of the Northumberland County Forest Reserve Reserve involved scientific planting and fire protection. “Within 40 years of the inaugural steps in 1924, the Northumberland Forest

began producing an annual harvest of pulpwood from thinning operations, and poles for various uses” (United Counties, 1967, 29).

In 1954, it was agreed that the Department of Lands and Forests (later MNR) would continue to manage the County Forests for a period of 20 years. In 1965, the agreement was renegotiated for a 20 year period, then again in 1986 for another 20 year period.

In 1981, a Management Plan for the Northumberland County Agreement Forest was prepared to guide the Ministry Lindsay District in managing the Forest for the period 1982-2002. “The Province’s objectives in managing the County Forest were to provide and maintain a high quality, useful and impressive multiple use forest. It was also to produce a sustained yield of high quality wood products, prevent soil erosion, maintain water quality and quantity, provide opportunities for recreation and outdoor education, and to produce suitable wildlife habitat (MNR 1986). The management plan also discouraged or prohibited the recreational use of motorized vehicles, and management practices including indiscriminant clearcutting and high grading operations in logging that could damage or destroy the ecology and productive capacity of the forest” (Silv-Econ and Domtar, 2003, 5).

In 1994, the MNR began to negotiate the termination of the formal agreement with the County, and in 2002 responsibility for managing the Forest was transferred to Northumberland County. In 2003, a Draft Forest Management Plan was prepared by Silv-Econ and Domtar to guide Northumberland County in managing the Forest from 2003-2022.

During the last ten years there has been logging, fire suppression, prescribed burning, spraying of invasive plants, nature protection, trail development, recreation use, hunting, education and interpretation use, and research in the Forest.

## 6. Use of Lands Adjacent to the Forest

The effective conservation of a protected area, and the provision of optimum opportunities for recreation depend to some extent on the use of land around it. This has resulted in planning “great park ecosystems”, the implementation of buffer zones, and committees involving representatives of the protected area and adjacent land owners and users, as in the case of UNESCO Biosphere Reserves. Consideration of the use of land adjacent to the Northumberland Forest is especially crucial because of the enclaves of private land in the Forest, the potential for the use of adjacent land to aid or abet the conservation of species within the Forest, and the existence of trails on adjacent land leading to trails within the Forest.

Peter’s Woods Provincial Park to the north-east of the Forest has long complemented the conservation objectives of the Forest and provided additional trails for non-motorised users. The recent expansion of this park into land between separate parts of the Forest will aid in achieving the conservation and recreation objectives, including the provision of trails, in the Park and the Forest. However, the prohibition of hunting and motorized

vehicles on trails in the additional park area between sections of the Forest may disrupt some of the present trails between these sections of the Forest. This would necessitate the provision of good public information, signage, and careful trail management.

Parts of the Forest in the south and adjacent private lands are traversed by a major hydro-transmission corridor where vegetation is severely controlled, but in many places access is not. The corridor has numerous trails, some across non-Forest land providing access to the Forest or linking trails in the Forest. The trails are used mainly by motorised users. Many are eroded, circuits for racing exist, and garbage is being dumped. However, this corridor, having been cleared, sprayed, built upon and rendered unattractive is of limited natural value and might be regarded as a “sacrifice area.”

There are several active or disused aggregate pits adjacent to the Forest. Some of these have trails besides or through them. Such trails are generally not scenically attractive but do provide access, whether desirable or not, to the Forest.

There are several major enclaves or strips of private land within the Forest. Some are farmed, many left wild, and some have buildings on them. Many are not signed as private or fenced. Hence trails have been developed, with or without permission, through them. Some such trails provide access to the Forest or link trails within the Forest. However, there may be problems associated with these trails on private land.

#### 7. The Characteristics of Present Users, their Activities, Concerns and Expectations.

The characteristics of present users, their activities, concerns and expectations were revealed in the series of surveys and their results described previously.

#### 8. Risk, Safety, Liability and Insurance Concerns

Risk, safety, liability and insurance relating to the use of trails in the Forest have been persistent and growing concerns to the County, as well as groups and individuals maintaining and using trails in the Forest. The use of off-road vehicles and hunting in the Forest heighten these concerns. As many of these concerns have been raised by trail managers, groups and users throughout Ontario, the Ontario Ministry of Health Promotion and the Ontario Trails Council are investigating them and hoping to find means to alleviate them.

#### 9. Financial, Staffing and Practical Constraints and Opportunities.

Most public agencies state that they need more money and staff to fulfill their mandates or be more effective. This has long been the case with agencies responsible for managing natural resources, protected areas and trails. The Environmental Commissioner of Ontario recently stated that “it will be extremely difficult for MNR to adequately administer and enforce the Provincial Parks and Conservation Reserves Act, 2006 unless there are significant increases to its budget” (2006, 106).

Most NGOs, such as trail groups, also lack the funds, staff or volunteers to do all that they would like.

Increasing concern for the environment, climate change, public health, recreation and tourism may lead to bigger budgets and more staff for agencies responsible for protected areas, such as the Forest, but there will always be many competing demands on budgets and staff, so invariably there will be constraints on what both the public sector and private sector can do to manage areas such as the Forest. The money available to manage this Forest and its trails will also depend on the revenue to be obtained from logging operations. It should be emphasized that ultimately it will be elected politicians, especially County Councilors, that will decide whether funding for protected areas, such as the Northumberland Forest and recreation facilities, such as trails, will have a high priority and be adequate or not.

#### 10. Information on Management Issues and Solutions in Comparable Places.

There are many community forests, parks and protected areas in southern Ontario and elsewhere that have similar objectives to the Northumberland County Forest, have trails, face similar problems and have tried various solutions. So much can be learned from them to aid in managing the Forest and its trails. The experiences of the Ganaraska Forest, and the Simcoe County Forests seem especially relevant. Similarly the management of trails such as the Ganaraska Trail and the Kawartha Nordic Ski Trail, and trails in provincial parks, such as Silent Lake, Algonquin, and Kawartha Highlands merits ongoing attention.

#### 11. Environmental, Recreational, Social and Economic Trends.

“Southern Ontario is one of the fastest growing regions in North America. The area is already home to 94 per cent of the province’s population...and the government projects that, by 2031, an additional four million people will settle in the Greater Golden Horseshoe...extending roughly from Niagara Falls to Georgian Bay to Peterborough. This rate of growth is unprecedented in Ontario” (Environmental Commissioner of Ontario, 2007, 15). “The (Oak Ridges) Moraine is near the city of Toronto, one of the fastest growing urban areas in North America. More than 100,000 people move to this part of Ontario every year. This migration puts intense pressure on the Oak Ridges Moraine”

There will be substantial population growth east of the GTA, especially when Highway 407 is extended to Highway 115. Cobourg and Port Hope will continue growing. Rural areas in Northumberland County will undergo suburbanisation, second home development, and resort development, for e.g. besides Rice Lake.

The public will have growing concerns about water, pollution, climate change and loss of nature while at the same time wanting to visit, for an hour, for a get-away weekend or for vacations, parks and recreation areas like the Forest. However recreation is likely to change. Climate change will probably reduce opportunities for snowmobiling and skiing, but may increase the opportunities for ATVing, dirtbiking and non-mechanised

travel on trails. An ageing population may want more easy trails or to use electric bicycles that are increasingly available and affordable. Concerns about obesity and fitness may increase demand to use trails for exercise. The Ontario government, recognizing the need to increase the fitness of Ontarians and reduce health costs, is advocating the development and use of trails (OMHP, 2005). Tourists from ever more crowded and urbanised countries, such as those in Europe, may look more to Canada for trail recreation. The contention that “if you build it, they will come,” especially if you build it well, price it right and promote it, is likely to apply to trails in the Forest.

#### 12. Wish for Tourism and Economic Development

The Government of Ontario, most counties and many municipalities have long expressed a desire to increase tourism, especially ecotourism, as a means for economic development and job creation. The County of Northumberland is no exception. Furthermore it has indicated in its publicity a particular interest in increasing tourism based on the natural environment.

#### 13. The Ongoing Preparation of the Forest Master Plan

The current lack of an approved Master Plan for the Forest to which reference can be made when planning and managing trails and recreation is problematic. This will be resolved when a new Forest Master Plan currently in preparation is completed. However, the aims, priorities and specific recommendations of the new Plan may necessitate revisions to the recommendations of this trail study.

## 5. RECOMMENDATIONS

Each recommendation is stated simply initially. Then there is a rationale for the recommendation and details regarding it. The recommendations are grouped thematically and not in order of priority. Prioritisation requires further consideration, and will depend on various factors including the capital and operating costs of implementation.

### Zoning

#### 5.1. Designate the Beagle Club Road trail area as a non-motorised and no-hunting zone with the exception of an east-west motorized route and emergency/fire access.

This is intended to reduce conflicts between non-motorised and motorised users, between hunters and non-hunters, and to reduce impacts on the trails used frequently and primarily for hiking, mountain biking and skiing. An east-west trail for motorized users, preferably not bisecting the zone, would facilitate motorized travel between areas east and west of this area, and from the snowmobile clubhouse. The potential use of all the “ski trails”, forest access tracks and road allowances in this zone should be examined with a view to increasing the number of trail options and possibly to separate equestrians from mountain bikers, and skiers from hikers. Many motorised trail users and hunters are already avoiding the trails in this zone, except for travel on Dunbar Road, Morris Road and some of the forest access tracks. The present road allowances and some forest access tracks will have to be maintained for emergency, fire and logging access but should be gated to restrict unauthorized motorised access.

#### 5.2. Designate Lookout Mountain as a non-motorised, no hunting zone.

Lookout Mountain is an area with steep slopes, significant woodland, and possibly provincially rare plant and animal species, making it especially vulnerable to the impacts of motorized and horse users. The main access trail is one of the most eroded in the Forest and requires remediation and possibly rerouting to reduce its grade. Fortunately, gates, barriers and signs have already deterred motorised use of most of the trails in the zone. There is the potential for connecting several existing trails in the area to make one or more non-motorised loop trails. The area, especially the top of the “mountain,” offers great potential for nature interpretation.

#### 5.3. Designate the Fire Ponds as non-motorized zones

The Forest has about 10 fire ponds. These were constructed, usually by excavating or damming a small valley, in order to provide water when needed for fire suppression. They may still be needed for this purpose, and, while not natural, they have likely developed distinctive ecological characteristics, possibly serving as important water sources for wildlife. Given the lack of surface water in the Forest, they are also scenically attractive and interesting to Forest visitors. Trails lead to most of them. Unfortunately, the ponds themselves and adjacent areas that are wet are very vulnerable to the impacts of trail users, especially motorized ones. The appropriately named “Mudhole,” just south of

Dunbar Road and west of the former ski area, and accessible from at least four trails, shows the devastation that can result from access, off-trail travel, and intense use particularly by vehicles, to pond areas (see photos). Accordingly, these fire ponds and their immediate surroundings should be designated as non-motorised zones. Even access for non-motorised trail users should be somewhat restricted, probably by fencing and signs, according to the particular ecological value and vulnerability of each pond. Pond environments that have been damaged, as at the Mudhole, should be restored, and some trails rerouted away from vulnerable terrain, or carried over boardwalks. Some of the ponds, such as the Mudhole, have great potential for nature interpretation.

5.4. Investigate the future use of trails outside these 3 recommended non motorized zones.

The future use of trails outside the 3 recommended non motorized zones needs further investigation. Some sections of trails that are severely eroded or unsafe should be closed or rerouted. Likewise, trails found to be having a detrimental impact on rare species of flora and fauna should be closed or rerouted. An east to west route through the multi-use trail zones should be found for The Oak Ridges Trail and be designated for non-motorised use only. Further consideration should be given to having separate trails in this zone for different types of off-road vehicle users. Trucks, 4x4s and cars, given their need for wide trails and potential to cause serious environmental damage, should be excluded from all trails outside the 3 recommended non motorised zones, with the possible exception of road allowances, the status and future use of which remains to be decided. Some road allowances and forest access tracks in this zone will have to be maintained for emergency, fire and logging access but should be gated to restrict unauthorised motorised access.

**Specific Routes**

5.5 The County and Alnwick-Haldimand Township should discuss and decide the future of road allowances in the Forest

Road allowances in the Forest, such as Dunbar and Morris roads, are owned by the Township of Alnwick-Haldimand and so not technically part of the Forest. However, they are used as trails, connect with many trails or bisect trails in the Forest. It is difficult to plan a system of trails for the Forest and designate non-motorised zones if the future potential use of these road allowances is unclear.

5.6. Provide a non-motorised Oak Ridges Trail from west to east through the Forest.

The Oak Ridges Moraine Conservation Plan states that “a recreational trail system shall be established to provide a continuous recreational trail system across the full 160 kilometre length of the Moraine.” In October 2005 the County entered into an agreement with the Oak Ridges Trail Association to extend the trail through the County Forest. A suitable route needs to be located, preferably using existing trails, but possibly with some

new trail. A route over the Hogsback, the former ski hill and Lookout Mountain would be especially attractive.

#### 5.7. Provide at least one trail accessible to the physically disabled

To date there has been no special provision of facilities for people with disabilities wishing to recreate in the forest. This should be rectified, given also that The Oak Ridges Moraine Conservation Plan states that “a recreational trail system shall be established to provide continuous access and travel along the entire Plan Area, accessible to all including persons with disabilities” (Ontario, MMAH, 2002, section 39).

People with disabilities first want to know whether, given their specific disability, they will be able to travel in the forest. Accordingly, a study should be undertaken using an available manual to assess the suitability of some trails in the forest for use by people with disabilities, especially those in wheelchairs. It should be followed by the upgrading of at least one trail to the standards specified for wheelchair access. One of the flatter trails in the Beagle Club Road trail area or the former ski hill area might be suitable.

A substantial amount of information is now available on evaluating the suitability of trails for people with disabilities and the means for improving accessibility (Longmuir and Axelson, 1998).

#### 5.8. Provide at least three interpretive trails

Despite the ecological significance of the Forest, its appeal for recreation, good accessibility and numerous trails, relatively little has been done to interpret the natural and cultural history of the Forest. Exceptions are signs indicating when various sections of forest were planted, some activities at the Scout Camp, and occasional guided hikes in the Forest. However, much more could and should be done for several reasons. Interpretation can enhance the appeal of the Forest. It can contribute to the education of school children. It can raise the public’s concern for the environment in general and the Forest in particular. It can explain and gain support for various, perhaps controversial, management activities, such as restricting access, prescribed burning, controlling exotic species etc.

Our initial appraisal of the Forest suggests three locations where interpretive trails might be developed. First, the Orange Trail, Kiddie Loop, in the Beagle Club Road trail area, has a variety of biological, geological and historical features that could be interpreted. It begins in a readily accessible parking lot, is a relatively flat and easy trail and would take most visitors less than an hour to hike. About 10 numbered posts and an inexpensive brochure indicating what to observe at each, available at the trailhead kiosk, could be the main means of interpretation, perhaps with occasional guided hikes along the route. A draft interpretive brochure for this trail is included in Appendix 8. Secondly the existing one way, or a new looptrail, up Lookout Mountain could be used for interpretation. Again numbered posts and a related brochure could be used, but an exhibit on a deck at the top interpreting the panoramic view might also be provided. Thirdly, there is great potential

for interpretation using one or more of the existing trails in the former ski hill area. An interpretive trail up the hill, which offers the best view in the whole Forest, and down to the Mudhole, with an alternate return route, would be especially appealing. It would enable interpretation not only of various natural features but also of the historic features, such as the old ski tows and fire tower base. It would be particularly well used if the area were developed as a focus for the Forest with a visitor center, and facilities for education and research.

All three of these suggested interpretive trails also provide opportunities to inform the public about management issues and solutions, such as the vulnerability of the forest to recreation impacts, the control of invasive species, the preservation of rare species and fire management. Such initiatives would best be incorporated into an overall strategy and program for interpretation and education in the Forest. Many interpretation activities, such as those on trails, could be undertaken, as exemplified in various parks and conservation areas, through partnerships with environmental NGOs, educational agencies, and expert volunteers

## **Reducing Trail Degradation**

### 5.9. Install and maintain barriers to restrict motorised access to non-motorised zones

The proposed non-motorised zones will be entered by a small proportion of less responsible off-road vehicle users unless barriers are installed at obvious entry points. The barriers can include gates, fences and boulders but they must be strong and properly installed to resist vandalism. Signs should be erected explaining why access has to be restricted. Planting and piling of brush should be undertaken to hide former access points. Barriers and signs that have been vandalized or removed should be replaced as soon as possible. Experience has been gained in the partially successful restriction of motorised access to Lookout Mountain.

### 5.10. Restore the most degraded areas

Some sections of trail and adjacent areas in the Forest have been seriously eroded by motorised activities (see photos and trail measurements). The most problematic areas are the Mudhole, Dirtbike Hill, flooded sections of access roads, some sand barrens and short sections of the “ski” trails. A map and details of these sites will be provided in the final report. These sites need to be restored by various methods including:

- restricting access by installing barriers and signs
- rerouting the trail away from steep slopes and wet areas
- installing culverts, ditches and drainage bars
- dumping fill and leveling
- planting

Earth-moving machinery will be needed to restore some sites, while at others restoration could be undertaken by hand using supervised volunteers. Considerable experience in trail restoration has been gained by trail managers in many protected areas, and there is

an abundant literature on this subject. Trail restoration work should be documented and photographed, and its effectiveness monitored, so as to improve future restoration.

#### 5.11. Develop trail standards

Trail standards should be developed based on requirements for each activity, environmental protection, safety and aesthetics. Examples of standards for trails for various uses are provided in Appendix 5. However, it is recommended that standards specific to the Northumberland Forest, its distinctive environment and use be developed in cooperation with the various trail user groups. A generic form for this purpose is included in Appendix 6. Standards for all types of trail should include the maximum width of bare earth and depth of erosion acceptable.

#### 5.12. Implement a trail maintenance program in cooperation with user groups.

Even well-designed and properly built trails require regular maintenance. Trails should be monitored, conditions compared with standards, and maintenance undertaken as soon as needed. All users of trails should recognize that they have impacts on them and accept some responsibility for ensuring there is monitoring and maintenance. The County will have to undertake major maintenance, or maintenance involving potentially dangerous equipment such as chain saws. However, much maintenance can be undertaken by trail users organized by the groups to which they belong. Various trail users and groups, such as those involved with snowmobiling and skiing, have for years shown a willingness and capability to maintain trails in the Forest. This help needs to be sustained, recognized and coordinated. Maintenance should only be undertaken by trail users given approval and supervision by the County. Throughout Ontario there are trail organizations, trail user groups and protected area managers that have considerable experience with trail maintenance that can be drawn upon, and there is an abundant literature on this topic.

#### 5.13. Develop and implement an ongoing monitoring and research program

Effective management of the Forest and its trails will depend on updated and new information, and this will require research and monitoring. The County should develop a research and monitoring plan for various aspects of the Forest, including trails. An agenda of specific research needs relating to trails should be created, maintained and publicized. For example, the number, characteristics, behavior and satisfaction of trail users should be monitored, as well as the impacts of trail use on the environment. The trail user surveys and trail condition measuring undertaken for this study serve as the basis for future monitoring. High priority should be given to research on the specific location of endangered species and their vulnerability to trails and trail use so as to determine the need for more non-motorized, no-trail, or no access zones in the Forest.

Arrangements should be made with trail user groups, local educational institutions, and colleges and universities to undertake, where appropriate, some of the monitoring and research. Indeed, a requirement to participate in such work might be one condition for having agreements with the County regarding trails, their use, and events.

Many examples exist of the effective use of such groups and institutions to undertake monitoring and research. Parks Canada and the Ontario Ministry of Natural Resources have both developed policies and procedures for securing and administering outside help with research and monitoring. A forthcoming report by the authors will provide guidance in securing help with trail research from colleges and universities (Marsh and MacPherson, 2008). The availability of bunkhouse accommodation and basic research facilities, for example at the former ski area facility, would encourage such research. There are examples of such facilities for researchers in Presquile and Algonquin Provincial Parks, Ontario.

## **Facility Development**

### **5.14. Implement and maintain a comprehensive signage system.**

It is generally acknowledged that signage about the Forest and its trails is inadequate. This likely contributes to:

- a lack of visitors, especially tourists
- trail users getting lost,
- inappropriate use of trails
- conflicts between trail users
- detrimental impacts on the environment
- low education benefits

A hierarchy of signs from highway to trailhead to trail is needed. These are required to:

- guide people to the Forest and trailheads,
- inform visitors of laws and regulations,
- warn visitors about hazards,
- encourage appropriate behavior on trails,
- inform visitors about the trails available,
- enable visitors to follow trails from start to finish in all seasons
- enable trail users in emergencies to say where they are located
- inform trail users about the natural and historical features of the Forest and their vulnerability
- indicate who owns and manages the forest and trails and how they can be contacted

Therefore, the County needs to:

- direct and coordinate the provision of signage,
- develop and maintain a computerized inventory of signs
- require County approval for all signage
- consider using international, national and provincially recognised trail sign symbols
- develop some styles, logos, colours for Forest and trail signage
- investigate which sign materials are most durable, attractive and cost effective
- monitor at least annually the existence and condition of all trail signs

- replace missing and vandalised signs as quickly as possible.
- Remove all old, inaccurate and inappropriate signs in the Forest
- Have a policy on the use of trail signs bearing company names and logos
- Require the posting and removal of signs for special events on trails.
- Partner with trail user groups to provide, maintain and monitor signage

Some Forest trail user groups, such as those involved with snowmobiling and skiing, have already provided some trail signage and are willing to continue to do so.

#### 5.15. Identify and construct at least three trailheads

While the Beagle Club Road parking lot is a recognised trailhead, it needs to be improved and several others provided elsewhere in the Forest. Potential locations include two sites currently used for parking on Dunbar Road just east of CR 45, at the former ski hill facility on CR 45, and next to a paved road at the east end of the Forest. Each trailhead needs an access road, parking lot sufficient for vehicles with trailers, signage, a portable toilet, and obvious access to trails. These trailheads should be of high quality and well maintained year round. Information on the Forest and trails should clearly identify these trailheads. Consideration should be given to closing some undesirable trail access points and to improving others, particularly with signage.

#### 5.16. Use the former ski hill area/facilities for non-motorised activities and a Forest Center

At this County owned location on the east side of CR 45 just south of Dunbar Road, there was a downhill ski facility with a tow, several runs, various buildings and trails. The facility has been leased by the County to the Boy Scouts until the end of December 2008. It is recommended that the County take over management of this facility in 2009, for while Scout use is worthwhile, the location, buildings, trails and surrounding area make it ideal for a much needed Forest Center that would make greater, more varied and public use of the facility. It could comprise an office, maintenance yard, visitor center, research base, education and interpretation facility, and trail head. The surrounding area already has trails suitable as non-motorised, wheelchair and interpretation trails. The trail and hilltop east of the facility provide the best panoramic views in the Forest and have interesting historical artifacts, such as the ski tow and fire tower foundation. There are also trails from here to the Mudhole firepond and Lookout Mountain. This route could be part of the Oak Ridges Trail. Some facilities and areas could probably still be made available for camps by the Scouts or other groups, and thereby generate income.

## **Safety, Risk Assessment and Liability**

### **5.17. Develop a risk management programme that would include assessment of trails, and hunting in the Forest**

A risk assessment and management programme is needed to:

- increase visitor safety and recreation quality;
- reduce liability, so making insurance feasible and cheaper; and
- identify maintenance needs.

This may involve:

- eliminating unsafe trails;
- increasing the safety of trails by improved location, design and maintenance;
- rating the difficulty of trails;
- signage and information regarding risks; and
- education and training to reduce risks

The County should investigate exposure to legal liability from allowing hunting in multi-use zones. Some people feel reluctantly obliged to avoid the Forest during the two week November deer gun-hunting season. There was a noticeable reduction in the number of cars in the Beagle Club Road parking lot at this time and some trail users informed us that they avoided the Forest at this time. However, others are unaware of this hunting season or believe some parts of the forest, such as the Beagle Club trail area, are closed to hunting. Or, they are willing to take risks, so they go on the trails in the forest, especially the Beagle Club Road area trails, where there appears to be less hunting. This situation poses undesirable risks for both hunters and non-hunters, and may expose the County to legal liability. So, it needs to be investigated and action taken to reduce risks and liability. The Ontario Federation of Anglers and Hunters has expertise on this matter that it is willing to share.

One of the criteria used by Simcoe County to judge the acceptability of a recreation activity in its County Forests is that the “activity must not pose significant liability concerns to the County” (County of Simcoe, 2006, 4). Therefore, Simcoe County requires trail user groups to sign a General Use and Indemnity Agreement with the County. Northumberland County could require trail groups using the Forest to sign such an agreement to reduce liability and clarify liability and insurance matters,

## **Event Management**

### **5.18. Develop, implement and communicate a policy and permit system for events in the Forest**

Events that use trails, especially if involving numerous participants and motorized uses can have a substantial negative impact on the environment and the experience of other trail users. They may also raise safety and liability concerns. While the County has in place a procedure for approving events, this has not always been followed, particularly

when groups were unaware of it, or left their application until the last minute. This was the case with Meg's Ride, a worthwhile charity event in September 2007. It is likely that there will be applications to hold many more events on the trails in the Forest, as is the case with the Ganaraska Forest. Therefore, the County should review its policy on events, the procedure for approving them, and the means for making the public and user groups aware of the policy, and the nature, date and location of the event.

Simcoe County requires any organization wishing to hold an event in a County Forest to complete a Use Agreement with the County. An event is defined as "any activity which is advertised or if participants are charged an entry fee, but does not include organized hikes or nature walks" (Simcoe County, 2006, 9). Such "a use agreement is required to protect the County which includes proof of insurance." In considering an application to hold an event, the County considers the environmental impacts associated with the event, the impact on other forest users and compatibility or conflict with forestry operations.

### **Law Enforcement**

#### **5.19. Increase policing and trained volunteer patrolling of the Forest.**

The reduction of conflicts between trail users, impacts on the environment and accidents in the Forest will depend, as elsewhere, not only on planning and management but on law enforcement. The regular police force should be encouraged to patrol the Forest, its roads and trails and enforce the laws applicable to the Forest and trail users. As such patrolling may be infrequent, and known to be so, the present practice of paying for additional policing should be continued and if possible increased. More patrolling at night and on weekends seems necessary.

The official policing of the Forest and trails needs to be supplemented by voluntary patrolling by trail users trained and qualified to enforce some regulations, or at least to report law breakers to the police and County staff. Such training and qualification of voluntary trail wardens has been done, for example, through the Ontario Federation of Snowmobile Clubs' STOP programme, and by a course for voluntary wardens in the Ganaraska Forest offered by staff.

### **Information, Education and Training**

#### **5.20. Improve information and education about the Forest and its uses.**

There is presently a lack of information and education materials on the Forest and its trails. For example, the Northumberland County Map produced by Millhouse Maps in May 2006, mentions Peter's Woods Provincial Nature Reserve, but does not identify Northumberland Forest. Local tourism offices, restaurants, gas stations and other businesses have no brochure specifically on the Forest and its trails to offer the public.

The County should make the County website a major source of information and educational materials on the Forest and its trails for a wide range of people of all ages.

The new trail map when finalized should be on the County Forest website, so it can be downloaded for printing by the public, or to GPS units. It should also be printed, perhaps by a private partner, and made widely available, especially at Forest trailheads. The County should consider preparing a guidebook to the Forest, its natural and historical values, trails and recreation and education opportunities. If the proposed interpretation trails are developed, educational pamphlets should be prepared to promote and describe them. Visitors to the Forest should be informed of the “Ontario Trail User Code of Ethics” or a locally appropriate version of this (see Appendix 7).

The Simcoe County Forests Recreation Policy (2006,12) suggests the following methods to inform and educate users of the County Forests:

- The County website
- Direct contact with all members of the public who commented on the policy
- A news release
- A public open house
- Publication of a new Simcoe Country Forests pamphlet
- Completion of the Simcoe County Forests map book
- Effective and consistent signage
- Displays at events throughout the County (fall fairs).

#### 5.21. Arrange training programs related to trails and other aspects of the Forest

Presently, many people involved with trails in the Forest have received little or no training on the various aspects of trail management. Improved training of those involved with trails should result in better trails, reduced impacts, fewer conflicts, fewer accidents, cost savings and personal satisfaction. Many groups involved with trails internationally, nationally and provincially can provide training that could be offered in the Forest. For example:

- The International Mountain Bicycling Association offers courses on mountain bike trail construction
- Hike Ontario offers a course to train hike leaders
- members of the Trail Studies Unit at Trent University have offered courses or practical workshops on trail construction, trail signage, and monitoring of environmental impacts.

### **Tourism**

#### 5.22 Determine the potential role of the Forest and trails in tourism in Northumberland County

Tourists can be defined as people traveling overnight to a destination for recreation. Our trail user surveys show that very few such tourists visit the Forest.

There seems to be ambivalence, that is probably justified, about the role of the Forest and trails in tourism in Northumberland. The County’s prime publication for tourists, “The Northumberland Experience,” features equestrian trail users on the cover and has two

pages devoted to trail recreation. It urges people to “Take a hike!” but also states that “some of Northumberland’s hiking trails also welcome cyclists, horseback riders and snowmobilers, while others are home to some of the many geocaching sites located throughout the county.” It notes that “Northumberland is home to nearly two dozen trails in a variety of natural settings, including the area’s three provincial parks and three conservation areas,” and identifies some trails individually. However, it does not specifically refer to the Northumberland Forest and its trails (Northumberland Tourism, 2007). If the County intends to promote trail tourism in the Northumberland Forest, such omissions should be rectified.

First, however, the County, relevant partners and the public need to determine the potential role of the Forest and trails in tourism in Northumberland. This means answering questions such as: Should the Forest become a prime destination for tourists? Should the Forest trails be only a secondary attraction for tourists coming to Northumberland primarily for other attractions? Should the Forest and its trails be reserved primarily for local and County residents? Has the Forest and even an improved trail system the potential to attract tourists given there are many other parks and trails in southern Ontario? A checklist for developing a strategy for trails tourism is provided in the Appendix 8.

If the Forest is to become a prime destination for tourists, the trails, facilities, services and marketing will have to be improved considerably by the County and private and NGO partners. Presently, it would be irresponsible and ineffective to market the Forest trails as a tourist attraction. Indeed, the County should consider developing on a partnership basis a whole strategy to encourage trail tourism in the county, and develop the facilities and services for it. Government grants can probably be secured for developing such a strategy. The approach to “Trails and Tours” in Haliburton County, though not always successful, should be investigated.

### **Financing, Staffing and Decision-Making**

#### **5.23. Do not implement a permit and trail user pays system at this time.**

It is tempting to introduce permits and fees for use of Forest trails for the following reasons:

- to generate revenue to help manage the Forest and trails
- about half of the trail users interviewed indicated a willingness to pay something to use the trails
- people who pay for something are said to value it more.

However, we believe the introduction of a permit and pay system at this time would be, problematic, ineffective and premature for the following reasons:

- there are currently so many access points to the Forest that controlling entry is impossible
- there is very limited capability at present due to lack of staff and policing to check for permits and payments

- the cost of administering a permit and pay system would reduce, perhaps exceed the revenue
- half of the trail users surveyed oppose having to pay to use the trails
- given the lack of an office and staff in the Forest, people would have to pay elsewhere which would inconvenience and discourage many
- people who pay for facilities and services generally expect more than those that do not.

The following statement confirms our concern about the cost effectiveness of charging to use Forest trails at this time. “The cost of collecting user fees is an important factor in establishing a pricing policy. Costs associated with the implementation and administration of a user-pays system are called transaction costs. There is no point in charging user fees if the transaction costs are such that they substantially offset the revenue collected. For a protected area with many entrances, the transaction costs associated with establishing numerous fee collection stations would be high. For a protected area with low annual use, the revenue generated would be low” (Lockwood et al, 2006, 345-6).

If a trail user fee were to be introduced, the following collection methods and their advantages (A) and disadvantages (D) could be considered:

- Payment through the mail: A. Administrative convenience, information can be sent. D. Delay for clients.
- Credit card payment by phone: A. Speed, administrative convenience. D. Credit card security, staffing telephone or maintaining automated system.
- Payment over counter at park office: A. Face-to-face staff contact, client briefing and high compliance. D. Costs of office, staff, security of cash transactions.
- Roving rangers: A. Staff contact and compliance. D. Auditing problems, security, time consuming, staff costs.
- Park entry stations: A. Staff contact. D. Costs of construction and staffing, security.
- Self-registration stations: A. Cheap to operate. D. Compliance and enforcement, less staff contact, vandalism.
- Fixed-location automatic payment machines: A. Computerized records, low labour cost, and security. D. As for self-registration stations, plus costs of installation and power supply.

Information on the administration and effectiveness of permit and user-pays trail systems at other parks and recreation areas, for example the Ganaraska Forest and Simcoe County Forests, would be helpful in making a decision on this.

#### 5.24. Explore new sources of revenue

Given that better management of the Forest and its trails will require more money, the County needs a capital and operating budget, business plan, and fund raising strategy for

the Forest and its trails. Examples of business plans for trails include those for the Eastern Ontario Trails Alliance and the Kawartha Lakes section of the Trans Canada Trail.

The financial sustainability of a protected area has been defined as “the ability to secure sufficient, stable and long-term financial resources, and to allocate them in a timely manner and in an appropriate form, to cover the full costs of protected areas and to ensure that they are managed effectively and efficiently with respect to conservation and other objectives” (Emerton et al, 2006).

Obstacles that reduce the flow of funding to protected areas include:

- “insufficient priority allocated to the conservation of nature and associated cultural values against competing budget programmes;
- revenues from tourist income and environmental services provided by protected areas not being earmarked for protected area management;
- inappropriate management structures that fail to channel funding to protected area management;
- lack of mechanisms to encourage donor organizations to participate in supporting protected areas; and limited use of business planning...for specific protected areas” (Lockwood et al, 2006, 328-9).

-

A stable funding base typically includes:

- government funding;
  - private sector funding as payment of access to, and use of, the protected area;
  - local communities’ in-kind contributions;
  - grants from NGOs;
  - endowments and/or trusts; and
  - business enterprises
- (Lockwood et al, 2006, 330).

Revenue to manage the Forest and its trails comes from taxes and sales of forest products, and come from trail use fees. However, revenue can also be increased by donations, grants, and make-work projects and voluntary help that reduce costs. Some of the trail users interviewed in the Forest indicated their willingness to donate to the Forest, especially if the money was used for trails. Donation boxes and signs have been used effectively and securely at trailheads in Algonquin Provincial Park and at the Wildlife Sanctuary, Trent University and could be installed in the Beagle Club parking lot and other trailheads when they are developed.

Sources of funds for trail projects elsewhere in the province have included:

- Ontario Ministry of Health Promotion – Communities in Action Fund
- Ontario Ministry of Health Promotion – Trails for Life grants
- Trillium Foundation
- Community Economic Development grants
- Mountain Equipment Co-op
- The Shimano company

5.25. Hire a fulltime professional employee and seasonal workers to manage the Forest and its trails.

No property the size of this Forest, with the stated objectives, legal obligations and acknowledged conservation and trail management issues can be managed effectively without staff able to devote all their time to dealing with, and being in the Forest. The need for a fulltime professional staff person was the prime recommendation made by the consultant in similar studies to deal with nature protection and recreation issues in the Ganaraska Forest and the Nature Areas at Trent University. Even with such a person, there will be a need for seasonal workers and volunteers to deal with trails. In most years government grants are available to hire students to work on trails in the summer. An application should be made to secure such a grant and student workers to undertake urgent trail maintenance work during the summer of 2008.

5.26. Continue to seek the advice of the FAC

Because difficulty was experienced in making the Forest Users Committee effective, in March 2007, the County Council approved a staff recommendation to form a new 20 member Forest Advisory Committee (FAC), which first met on May 16, 2007. This more broadly representative FAC seems to have the potential, commitment and willingness to cooperate, perhaps especially when meetings are facilitated, to be a useful source of advice regarding the Forest. Its advice should be sought in the ongoing planning and management of trails. A smaller sub-committee of the FAC representing trail user groups might prove useful to deal with more specific and detailed trail matters.

The Simcoe County Forests Recreation Policy implementation strategy states that “uses, activities, and potential conflicts will continue to evolve over time. Maintaining an advisory group to provide recommendations to resolve issues as required will be an important ongoing requirement” (2006, 12).

## **Reporting and Planning**

5.27. Prepare an Annual Report on the State of the Forest

Since the 1960s, there has been an increase in the practice of preparing annual reports on individual protected areas and their uses, such as trail recreation. Such reports should measure progress against stated, preferably quantified objectives, recognize management challenges and suggest actions to resolve them. Such reports should deal with trails, their condition, use and adequacy. The FAC and forest stakeholders could be involved in their preparation. The report should be available to the public and posted on the County website.

5.28. Incorporate the trail management plan into the Forest Master Plan.

In January 2007, Northumberland County Council received presentations on the Forest Master Plan process. The process includes the mapping of trails and planning for their

management. It will be important to integrate the trail planning with that for other aspects of the Forest. For example, the planning and practice of timber harvesting should be integrated with the planning, use and management of trails. The Simcoe County Forests Recreation Policy states explicitly that “forest health, management and associated operations take precedence over recreation activities” and that any recreation “activity must be compatible with forestry operations” (2006, 3).

5.29. Integrate the Forest Trail Plan and system with County and Provincial trail plans and systems

For several decades the Ontario Trails Council has been advocating and planning a trail system for Ontario. Currently it is planning a Trillium Trail Network. Such a system would extend throughout the province and through areas such as the Northumberland Forest. The Ontario Ministry of Health Promotion, through its Ontario Trails Strategy is encouraging the establishment of such a system. Many long distance trails for various uses exist or are planned in Ontario. In particular there is a provincial network of snowmobile trails, and many long hiking trails, such as the partially completed Oak Ridges Trail. At various times there have been proposals for long distance trails for equestrians and for use by ATVs. Plans for the Lake Ontario Waterfront Trail, that passes through Northumberland County, called for it to be linked by trails going north with trails along the Oak Ridges Moraine.

The County should work to ensure that the planning, location and operation of trails within the Forest is integrated with similar endeavours around the Forest, throughout the County and the Province. The development of a County Trail Plan, participation in the recently created trail committee for this region, and communication with the Ontario Trails Council would aid this.

## **6. FURTHER WORK**

In November 2007, the County requested some additional work that was outlined in an Addendum to the original contract. This further work in 2008 will comprise:

January-March

- Surveys of winter trail users, especially skiers and snowmobilers,
- completion of interviews with FAC,
- research on signage and trail standards.
- Testing and revision of trails map.

January 12, 2008 – Participation in a meeting of the FAC to discuss the draft study report.

January 24, 2008 – Participation in an open house and public forum to present the trail study and invite public discussion of it.

February 2008 – Staff presentation to County Council on progress with the Forest Master Plan and Trail Study.

April 2008 – Installation of stakes and photography at trail monitoring sites

April 30, 2008 – Submission of revised and expanded final Trail Study Report.

## 7. REFERENCES

Armitage D., et.al. "Climate Change and National Parks in Ontario: A Screening Level Assessment." In: Pollock-Ellwand, N., Van Osch, K., Nelosn, J.G., Beechey, T., Stephenson, W., and Marsh, J. Parks and Protected Areas Research in Ontario, 1999. Parks Research Forum of Ontario, Waterloo, 2000, 241-249.

Barnett, P.J., Sharpe, D.R., Russell, H.A.J., Brennand, T.A., Gorrell, G., Kenny, F. and Pugin, A. "On the Origin of the Oak Ridges Moraine." Canadian Journal of Earth Sciences, 35, 1998, 1152-1167.

Brdar, C., Grigg, S., and Peets, J. "Research Strategy for South Eastern Zone of Ontario Parks." In: Porter, J., Nelson, J.G., Bazely, D., Beechey, T., Marsh, J., Nudds, T. and Stephenson, W. (Eds.) Ecological Integrity and Protected Areas. Parks Research Forum of Ontario, Waterloo, 2001, 414-416.

Brownell and Blaney, 1996. (Cited in Silv-Econ and Domtar, 2003)

Caring for the Moraine Project. Caring for the Moraine – Ganaraska Hills Project Area, Brochure, 2006.

Clute and Associates. Reducing the Conflicts Associated with Recreational Use of Off-Road Vehicles. Report for the Ontario Trails Coordinating Committee, Toronto, 2007.

County of Northumberland. Rolling Hills of Northumberland – A County History. Cobourg, 2000.

County of Simcoe. Simcoe County Forests – Recreation Policy. The Corporation of the County of Simcoe, 2006.

Dunkin, J. The Environmental History of the Forests of Northumberland County. Unpublished paper, Trent University, Peterborough, 2007.

Emerton, L., Bishop, J. and Thomas, L. Sustainable Financing of Protected Areas: A Global Review of Challenges and Options. IUCN, Gland, 2006.

Environmental Commissioner of Ontario. Reconciling our Priorities – Annual Report 2006-2007. Toronto, 2007.

Fox, M., Jones, R. and Marsh, J.S. The Stewardship Plan for Trent University Nature Areas. Trent University, Peterborough, 2002.

Hendee, J.C., Stankey, G.H. and Lucas, R.C. Wilderness Management. North American Press, Golden, Colorado, 1990.

- Henson, D. Ontario Ministry of Natural Resources Weekly Release: 50 Years of Reforestation – Northumberland and Durham County Forests. Ministry of Natural Resources, Toronto, January 7, 1974.
- Ladley, J. and Chilman, K. Turkey Bay Off-Road Vehicle Area, Kentucky. Department of Forestry, Southern Illinois University, Carbondale, 1984.
- Lockwood, M., Worboys, G.L. and Kothari, A. Managing Protected Areas: A Global Guide. Earthscan, London, 2006.
- Longmuir, P. E., and Axelson, P.W. “Enhancing Trail Access for People with Disabilities.” In: Nelson, J.G., Van Osch, K., Beechey, T.J., Stephenson, W.R. and Marsh, J. (Eds.) Parks and Protected Areas Research in Ontario, 1998. Parks Research Forum of Ontario, Waterloo, 1998, 323-325.
- MacPherson, A., Marsh, J.S. and Challice, D. A Survey of Users of the Victoria Rail Trail, City of Kawartha Lakes. Trail Studies Unit, Trent University, Peterborough, 2007.
- Manning, R.E. Parks and Carrying Capacity – Commons without Tragedy. Island Press, Washington, 2007.
- Manore, J.L. and Miner, D.G. The Culture of Hunting in Canada. UBC Press, Vancouver, 2007.
- Marsh, J.S., McKenna-Neumann, C., Risley, C. and Fisher, J. Impacts of Off-Road Vehicles on the Ganaraska Forest. Trent University, Peterborough, 1989.
- Marsh, J.S. and Bernstein, M. The Potential Economic Benefits of Rail-Trails in the Region of Peterborough, Ontario. Kawartha Rail-Trail, Peterborough, 1993.
- Marsh, J.S., Helleiner, S., Dukart, C., Knowles, J., Kushniruk, I. and Mather, C. Kawartha Rail-Trail Environmental Inventory. Kawartha Rail-Trail, Peterborough, 1993.
- Marsh, J.S. “Information on Trails, and the Trent-Fleming Trail Studies Unit.” In: Marsh, J.S. (Ed.) Rails to Greenways. Frost Centre, Trent University, Peterborough, 1994, 127-129.
- Marsh, J.S. and Bengert, B. Trail Development and Tourism. Ontario Trails Council and Trail Studies Unit, Trent University, Peterborough, 1996.
- Marsh, J.S. The Ganaraska Forest Trails Project: Final Report. Trent University, Peterborough, 1997.
- Marsh, J.S. “View from Trent: Leader of the Pack in Trail Research.” Peterborough Examiner, September 2000.

Marsh, J.S. (Edited with others). Parks and Protected Areas Research in Ontario: 1999. Parks Research Forum of Ontario, Waterloo, 2000.

Marsh, J.S. and Schutt, A. "Marketing Recreational Trails". Proceedings of the Sixth Annual Ecotourism and Adventure Tourism Conference, Fleming College, Haliburton, 2001.

Marsh, J.S. "Trails and Tourism." Proceedings of the Ontario Trails Council Annual Conference, Peterborough, 2004. Ontario Trails Council, Sharbot Lake, 2004.

Marsh, J.S. "Training for Trails: Opportunities, Needs and the Role of the Ontario Trails Council." Proceedings of the Annual Meeting of the Ontario Trails Council, Haliburton, 2005. Ontario Trails Council Sharbot Lake, 2005.

Marsh, J.S. "Heritage Trails." The Heritage Gazette of the Trent Valley, 11 (1), 2006.

Marsh, J.S., MacPherson, A. and Murray, C.D. The Ontario Trail User Code of Ethics. Research report for the Ontario Ministry of Health Promotion. Trail Studies Unit, Trent University, Peterborough, 2006.

Merriam, G. "Ecological Integrity in Parks." In: Porter, J., Nelson, J.G., Bazely, D., Beechey, T., Marsh, J., Nudds, T. and Stephenson, W. (Eds.) Ecological Integrity and Protected Areas. Parks Research Forum of Ontario, Waterloo, 2001, 7-18.

Millhouse Maps. The Northumberland County Map. 2006

Milne, R.J., Ramsay, D., and Braid, A.M. "Building on the ONE Monitoring Programs in Protected Areas on the Central Niagara Escarpment." In: Pollock-Ellwand, N., Van Osch, K., Nelosn, J.G., Beechey, T., Stephenson, W., and Marsh, J. Parks and Protected Areas Research in Ontario, 1999. Parks Research Forum of Ontario, Waterloo, 2000, 283-292.

Mosedale, J. "Mountain Biking in the Canadian Rocky Mountains: A Situational Analysis." In: Porter, J., Nelson, J.G., Bazely, D., Beechey, T., Marsh, J., Nudds, T. and Stephenson, W. (Eds.) Ecological Integrity and Protected Areas. Parks Research Forum of Ontario, Waterloo, 2001, 193-200.

Murphy, J. and Marsh, J. "Trail System Planning, with Specific Reference to Provincial Parks in Ontario." In: Pollock-Ellwand, N., Van Osch, K., Nelosn, J.G., Beechey, T., Stephenson, W., and Marsh, J. Parks and Protected Areas Research in Ontario, 1999. Parks Research Forum of Ontario, Waterloo, 2000, 419-427.

Natural Heritage Information Centre. Provincial status of plants, wildlife and vegetation communities database. Peterborough, 2007.

Nentwig, K. and Rodger, L. "Ontario Tallgrass Prairie and Savanna Association." In: Lemieux, C.J., Nelson, J.G. and Beechey, T. Parks and Protected Areas Research in Ontario, 2002. Parks Research Forum of Ontario, Waterloo, 2003, 313-316.

Northumberland County. County Forest News. Cobourg, 2007

Northumberland Tourism. Northumberland Experience. Northumberland County, Cobourg, 2007.

Ogilvie, Ogilvie and Company. Northumberland County Forest Advisory Committee, Facilitator's Summary, September 27, 2007.

Ogilvie, Ogilvie and Company. Applicability of the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan to the Preparation and Implementation of the Northumberland County Forest Master Plan. 2007.

Ontario Federation of Trail Riders. Recreation Trail Creation Proposal. Presented to the Northumberland Forest Users Committee. Cobourg, 1997.

Ontario Federation of Trail Riders. So, you've just bought a dirt bike! Gooderham, Volume 3, 2007.

Ontario, Government of. Accessibility for Ontarians with Disabilities Act, Toronto, 2005.

Ontario, Government of. The Oak Ridges Moraine Conservation Act. Toronto, 2001.

Ontario, Government of. The Oak Ridges Moraine Conservation Act – Planting the seeds of a legacy for the future. Brochure, Toronto, 2001.

Ontario, Government of. The Greenbelt Act. Toronto, 2005.

Ontario Ministry of Health Promotion. Ontario Trails Strategy. Toronto, 2005.

Ontario Ministry of Municipal Affairs and Housing. Oak Ridges Moraine Conservation Plan. Toronto, 2002.

Ontario Ministry of Natural Resources. Forest Management Plan for Northumberland County Agreement Forest, 1982-2002. Lindsay, 1982.

Ontario Ministry of Natural Resources. Our Sustainable Future. Toronto, 2005.

Ontario Ministry of Natural Resources. Request for Quotation for the Ontario Trails Inventory. Peterborough, 2006.

Ontario Ministry of Natural Resources. 2007 Hunting Regulations Summary. Peterborough, 2007.

Ontario Parks. Peter's Woods – Preliminary Park Management Plan. Peterborough, 2007.

Parent, C., and Weatherhead, P.J. “The Effects of Human Disturbance on Eastern Massasauga Rattlesnakes (*Sistrurus catenatus catenatus*) in Killbear Provincial Park, Ontario.” In: Nelson, J.G., Van Osch, K., Beechey, T.J., Stephenson, W.R. and Marsh, J. (Eds.) Parks and Protected Areas Research in Ontario, 1998. Parks Research Forum of Ontario, Waterloo, 1998, 300-303.

Payne, R.J. and Graham, R. “Visitor Planning and Management in Parks and Protected Areas.” In: Dearden, P. and Rollins, R. (Eds.) Parks and Protected Areas in Canada – Planning and Management. Oxford, 1993, 185-210.

Porter, J., Nelson, J.G., Bazely, D., Beechey, T., Marsh, J., Nudds, T. and Stephenson, W. (Eds.) Ecological Integrity and Protected Areas. Parks Research Forum of Ontario, Waterloo, 2001.

Rasor, R. Five State Approaches to Trailbike Recreation Facilities and their Management. American Motorcyclist Association, Westerville, Ohio, 1977.

Silv-Econ Ltd. and Domtar Forest Resources. Northumberland County Draft Forest Management Plan, 2003-2022. Trenton, 2003.

Stankey, G.H., Cole, D.N., Lucas, R.C., Petersen, M.E. and Frissell, S.S. The Limits of Acceptable Change (LAC) System for Wilderness Planning. U.S. Forest Service, Ogden, 1985.

Suffling, R., and Nelson, J. “The Questico Foundation Summer Research Program.” In: Pollock-Ellwand, N., Van Osch, K., Nelson, J.G., Beechey, T., Stephenson, W., and Marsh, J. Parks and Protected Areas Research in Ontario, 1999. Parks Research Forum of Ontario, Waterloo, 2000, 323-328.

The Bruce Trail Association. Guide for Trail Workers. Hamilton, 2<sup>nd</sup> edition, 1991

The Corporation of the County of Simcoe. Simcoe County Forests – Recreation Policy. 2006.

The Metropolitan Toronto and Region Conservation Authority. Oak Ridges Moraine Trail Study: Phase 1 – Inventory Mapping. Oak Ridges Moraine Technical Working Committee, Maple, 1994.

Thurston, E., and Reader, R.J. “Impacts of Experimental Hiking and Mountain Biking in Deciduous Forest.” In: Pollock-Ellwand, N., Van Osch, K., Nelson, J.G., Beechey, T., Stephenson, W., and Marsh, J. Parks and Protected Areas Research in Ontario, 1999. Parks Research Forum of Ontario, Waterloo, 2000, 429-437.

United Counties Centennial Book Committee. Two Centuries of Change – United Counties of Northumberland and Durham, 1767-1967. Cobourg, 1967.

Wernex, J. Off Highway Motorcycle & ATV Trails Guidelines for Design, Construction, Maintenance and User Satisfaction. American Motorcyclist Association, Pickerington, Ohio, second edition, 1993.

Wiersma, Y.F. and Nudds, T.D. “Footprints in parks: using GIS to measure human impacts in two of Ontario’s national parks.” In: Porter, J., Nelson, J.G., Bazely, D., Beechey, T., Marsh, J., Nudds, T. and Stephenson, W. (Eds.) Ecological Integrity and Protected Areas. Parks Research Forum of Ontario, Waterloo, 2001, 251-260.

Zammit, A.E. “Amphibian and Reptile Conservation in Ontario: Guidelines for Parks and Protected Areas at Long Point, Rondeau and Point Pelee.” In: Nelson, J.G., Van Osch, K., Beechey, T.J., Stephenson, W.R. and Marsh, J. (Eds.) Parks and Protected Areas Research in Ontario, 1998. Parks Research Forum of Ontario, Waterloo, 1998, 252-267.

“4<sup>th</sup> Annual Meg’s Ride.” The Independent, September 12, 2007.

## **8. WEBSITES**

Active Living Resource Centre for Ontarians with a Disability: [www.ala.ca](http://www.ala.ca)

Alderville Black Oak Savanna: [www.aldervillesavanna.ca](http://www.aldervillesavanna.ca)

Canadian All-Terrain Vehicle Distributor's Council: [www.catv.ca](http://www.catv.ca)

Caring for the Moraine Project [www.moraineforlife.org](http://www.moraineforlife.org)

Northumberland County:

[www.northumberlandcounty.ca/departments/countyadministration/countyforest](http://www.northumberlandcounty.ca/departments/countyadministration/countyforest)

Northumberland Trail Riders: [www.oftr.org](http://www.oftr.org)

Ontario Federation of Trail Riders: [www.oftr.org](http://www.oftr.org)

Ontario laws: [www.e-laws.gov.on.ca](http://www.e-laws.gov.on.ca)

Ontario Ministry of Municipal Affairs and Housing: [www.mah.gov.on.ca](http://www.mah.gov.on.ca)

Ontario Ministry of Natural Resources: [www.mnr.gov.on.ca](http://www.mnr.gov.on.ca)

Ontario Ministry of Tourism: [www.tourism.gov.on.ca](http://www.tourism.gov.on.ca)

Ontario Ministry of Transportation: [www.mto.gov.on.ca](http://www.mto.gov.on.ca)

Ontario Trails Council: [www.ontariotrails.on.ca](http://www.ontariotrails.on.ca)

The Ontario Greenbelt Alliance: [www.greenbelt.ca](http://www.greenbelt.ca)

Trail Studies Unit, Trent University: [www.trentu/academic/trailstudies](http://www.trentu/academic/trailstudies)

Tread Lightly! Inc. [www.treadlightly.org](http://www.treadlightly.org)

## **9. APPENDICES**

1. Survey Questionnaires
2. Comments from Questionnaires
3. Northumberland Forest Trail Monitoring Form
4. Example of Trail Impact Monitoring Form
5. Examples of Trail Standards
6. Form for Developing Trail Standards for the Northumberland Forest
7. Proposed Ontario Trail User Code of Ethics
8. Trails and Tourism
9. Northumberland County Forest Nature Interpretation Trail



11a. Did anything detract from your recreational experience in the Forest? Yes / No  
If “yes” – explain: \_\_\_\_\_

12. Suggest anything that would improve your recreational experience in the Forest:  
\_\_\_\_\_

13. How would you rate the information available on the Forest? Good / OK / Poor  
If “poor” – explain: \_\_\_\_\_

14. Would you like to be able to obtain a map of the Forest trails? Yes / No  
If “yes”, would you like: a printed map / a map available from a website?

15. Would you be willing to pay to use the trails in the Forest? Yes / No  
If “yes”, how much per visit? \$ \_\_\_\_\_ Or, per year? \$ \_\_\_\_\_  
If “no”, why not? \_\_\_\_\_

16. Have you any other comments? \_\_\_\_\_

THANK YOU

For more information on the Forest and management plan, please see the County website

Trail Studies Unit, Trent University, Peterborough, [jmarsh@trentu.ca](mailto:jmarsh@trentu.ca), 705-748-1011

## NORTHUMBERLAND COUNTY FOREST TRAIL USER SURVEY

To help prepare a Trail Management Plan for the Forest, we are conducting a survey of trail users. We would appreciate it if you would answer a few questions anonymously and put your survey in the slot in the kiosk in this parking lot.

### Who are you?

1. Sex: male / female (circle) With dog(s)? Yes / No (circle)
2. Age: 11-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 / 81+ (circle)
3. Place of residence: (town/province/country) \_\_\_\_\_
4. Are you a member of any trail user or environmental group? Yes / No (circle)  
If "yes", which group(s) \_\_\_\_\_

### Your Trail Use

5. How many times have you visited the Forest in the last 12 months? \_\_\_\_\_
6. How long were you/will you be in the Forest this time? Hours/minutes: \_\_\_\_\_
7. How are you traveling in the Forest? Foot / Bicycle / Horse / Motor bike / ATV  
4X4 / Car / Other: \_\_\_\_\_ (circle)
8. Which trails have you used/will you use on this visit? \_\_\_\_\_  
\_\_\_\_\_

### Your Views

9. How would you rate the condition of the trail you used? Good / OK / Poor (circle)  
If "poor" – explain: \_\_\_\_\_
10. How would you rate the signage on the trails in the Forest? Good / OK / Poor  
If "poor" – explain: \_\_\_\_\_
11. How would you rate the cleanliness of the Forest, garbage etc? Good / OK / Poor  
If "poor" – explain: \_\_\_\_\_
- 11a. Did anything detract from your recreational experience in the Forest? Yes / No  
If "yes" – explain: \_\_\_\_\_

PLEASE TURN OVER ----

12. Suggest anything that would improve your recreational experience in the Forest:

\_\_\_\_\_

13. How would you rate the information available on the Forest? Good / OK / Poor

If "poor" – please explain: \_\_\_\_\_

14. Would you like to be able to obtain a map of the Forest trails? Yes / No (circle)

If "yes", would you like: a printed map / a map available from a website?

(circle either or both)

15. Would you be willing to pay to use the trails in the Forest? Yes / No (circle)

If "yes", how much? Per visit? \$\_\_\_\_\_ Or, per year? \$\_\_\_\_\_

If "no", why not? \_\_\_\_\_

16. Have you any other comments? \_\_\_\_\_

THANK YOU

Prof. John Marsh,  
Trail Studies Unit, Trent University, Peterborough,  
[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca), 705-748-1011 ext.7419

For more information on the Forest and management plan, please see the  
Northumberland County website

## **NORTHUMBERLAND COUNTY FOREST HUNTER SURVEY - 2007**

To help prepare a Trail and Master Plan for the Forest, we are conducting a survey of hunters. We would appreciate it if you would answer a few questions anonymously and put your survey in the box below, or mail to the address at the end of the survey.

### **Who are you?**

1. Sex: male / female (circle)
2. Age: 11-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 / 81+ (circle)
3. Place of residence: (town/province/country) \_\_\_\_\_
4. Are you a member of any hunting organisation? Yes / No (circle)  
If "yes", which organisation(s) \_\_\_\_\_

### **Your hunting in the Forest**

5. How many times have you visited the Forest to hunt in the last 12 months? \_\_\_\_\_
6. How long were you/will you be in the Forest this time? Hours/minutes: \_\_\_\_\_
7. What species are you hunting for? \_\_\_\_\_
8. Are you hunting with a rifle / shotgun / crossbow / bow ? (circle)
9. How are you traveling in the Forest? Foot / Bicycle / Horse / Motor bike / ATV  
4X4 / Car / Other: \_\_\_\_\_ (circle)
10. Which trails/areas of the forest have you used/will you use while hunting today?  
\_\_\_\_\_
11. Did you encounter any other people on the trails today? Yes / No (circle)  
If "yes", were they hunters? Yes / No (circle)

### **Your Views**

9. How would you rate the condition of the trails you used? Good / OK / Poor (circle)  
If "poor" – explain: \_\_\_\_\_
10. How would you rate the signage on the trails in the Forest? Good / OK / Poor  
If "poor" – explain: \_\_\_\_\_

PLEASE TURN PAGE ----

11. Did anything detract from your hunting experience in the Forest? Yes / No  
If “yes” – explain: \_\_\_\_\_  
\_\_\_\_\_
12. Suggest anything that would improve your hunting experience in the Forest:  
\_\_\_\_\_  
\_\_\_\_\_
13. Would you be willing to pay to use the trails in the Forest for hunting? Yes / No  
If “yes”, how much? Per visit? \$\_\_\_\_\_ Or, per year? \$\_\_\_\_\_  
  
If “no”, why not? \_\_\_\_\_
14. Have you any other comments? \_\_\_\_\_

THANK YOU

Prof. John Marsh,  
Trail Studies Unit, Trent University, Peterborough, Ontario, K9J 7B8  
[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca), 705-748-1011 ext.7419

For more information on the Forest and management plan, please see the  
Northumberland County website

**NORTHUMBERLAND COUNTY FOREST ADJACENT RESIDENT SURVEY**

To assist Northumberland County in preparing a Trail Management Plan for the Forest, the Trail Studies Unit at Trent University is conducting a survey of adjacent residents. We wish to determine the impact of trails and trail users on adjacent residents, and their use of the Forest. Would you please help by answering anonymously a few questions?

Interviewer \_\_\_\_\_ Date \_\_\_\_\_

Adjacent Resident's address \_\_\_\_\_

1. How many years have you lived at this address? \_\_\_\_\_
2. How many live at this address? Adults (18 and over) \_\_\_\_\_ Children \_\_\_\_\_
3. How many of you have used the trails in the Forest in:  
The last 12 months? \_\_\_\_\_ The last month? \_\_\_\_\_ The last week? \_\_\_\_\_
4. Do you access the trails directly from your property? Yes / No (circle)
5. How do you travel on trails in the Forest? (circle any)  
4X4-Truck / ATV / Dirt Bike / Walking / Mountain Biking / Horse  
Skis / Snowmobile
6. What do you use the Forest trails for? (circle any)  
Exercise / Dog walking / Hunting / Birdwatching / Photography  
Other (please specify) \_\_\_\_\_
7. Does anything detract from your experience on the Forest trails? Yes / No  
If "Yes", please specify \_\_\_\_\_
8. Do users of Forest trails near your property cause any problems for you? Yes / No  
If "Yes", please specify \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Would you like the Forest trail nearest your property:  
Closed? Yes / No  
Closed to certain uses? Yes / No If "Yes", which uses? \_\_\_\_\_  
Located further away? Yes / No
10. Do you permit trail users to cross your property? Yes / No

11. Have you posted any of the following signs along the boundary between your property and the Forest?  
Private property: Yes / No    No trespassing: Yes / No    No hunting: Yes / No  
Other, please specify \_\_\_\_\_
12. Have you any comments?

THANK YOU

John Marsh, Emeritus Professor

Trail Studies Unit, Trent University, Peterborough, Ontario, K9J 7B8

[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca). 705-748-1011, ext. 7419. [www.trentu.ca/trailstudies](http://www.trentu.ca/trailstudies)

For more information on the Forest and planning for it, please see the Northumberland County website: [www.northumberlandcounty.ca](http://www.northumberlandcounty.ca)

**NORTHUMBERLAND COUNTY FOREST SKIER SURVEY, 2008 (DRAFT)**

Survey location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Weather: \_\_\_\_\_

**Introduction:**

Hi, I am working on the Trail Management Plan for the Forest. Would you please answer anonymously a few questions to help us with this?

**You**

1. Sex: male / female (*circle*)
2. Age: 11-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 / 80+ (*circle*)
3. Place of residence: (town/province/country) \_\_\_\_\_
4. Are you a member of any trail user or environmental group? Yes / No (*circle*)  
If "yes", which group(s) \_\_\_\_\_

**Your activity**

5. Did you ski here last year? Yes / No (*circle*)  
If "yes", on how many days? \_\_\_\_\_
6. How long were you/will you be skiing in the Forest today? Hours \_\_\_\_\_ Minutes \_\_\_\_\_
7. Which trails have you skied/will you ski on this visit?  
Orange / Red / Green / Blue (*circle any*) Other (*specify*) \_\_\_\_\_
8. While on the ski trails did you meet any of the following?:  
Hiker / dog walker / snowshoer / snowmobiler / ATVer / Other (*circle any*)

**Your evaluations**

9. How would you rate the condition of the trail(s) you used? Good / OK / Poor (*circle*)  
If "poor" – explain: \_\_\_\_\_
10. How would you rate the signage on the ski trails? Good / OK / Poor (*circle*)  
If "poor" – explain: \_\_\_\_\_
11. How would you rate the cleanliness of the Forest, garbage etc? Good / OK / Poor  
If "poor" – explain: \_\_\_\_\_

Please turn over...

12. Did anything detract from your skiing experience in the Forest? Yes / No (*circle*)

If "yes" – explain: \_\_\_\_\_

\_\_\_\_\_

13. Suggest anything that would improve your skiing experience in the Forest:

\_\_\_\_\_

\_\_\_\_\_

14. Would you be willing to pay to ski on the trails in the Forest? Yes / No (*circle*)

If "yes", how much per day? \$\_\_\_\_\_ Or, per year? \$\_\_\_\_\_

If "no", why not? \_\_\_\_\_

\_\_\_\_\_

15. Have you any other comments? \_\_\_\_\_

\_\_\_\_\_

---

THANK YOU

John Marsh, Director, Trail Studies Unit, Trent University, Peterborough,

[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca), 705-748-1011

For more information on the Forest and management plan, please see the County website

[www.northumberlandcounty.ca](http://www.northumberlandcounty.ca)

**NORTHUMBERLAND COUNTY FOREST SNOWMOBILER SURVEY, 2008**  
*(Draft – to be tested/revised)*

Survey location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Weather: \_\_\_\_\_

**Introduction:**

Hi, I am working on the Trail Management Plan for the Forest. Would you please answer anonymously a few questions to help us with this?

**You**

1. Sex: male / female (*circle*)
2. Age: 11-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 / 80+ (*circle*)
3. Place of residence: (town/province/country) \_\_\_\_\_
4. Are you a member of any trail user or environmental group? Yes / No (*circle*)  
If “yes”, which group(s) \_\_\_\_\_

**Your activity**

5. Did you snowmobile in the Northumberland Forest last year? Yes / No (*circle*)  
If “yes”, on how many days? \_\_\_\_\_
6. How long were you/will you be snowmobiling in the Forest today?  
Hours \_\_\_\_\_ Minutes \_\_\_\_\_
7. Where did you enter the Forest? \_\_\_\_\_
8. Which Forest trails have you snowmobiled during this visit?  
\_\_\_\_\_
9. While on the trails in the Forest did you meet any of the following?:  
skier / snowshoer / ATVer / hiker / Other: \_\_\_\_\_ (*circle any*)

**Your evaluations**

10. How would you rate the condition of the trail(s) you used? Good / OK / Poor  
If “poor” – explain: \_\_\_\_\_
11. How would you rate the signage on the trails? Good / OK / Poor  
If “poor” – explain: \_\_\_\_\_
12. How would you rate the cleanliness of the Forest, garbage etc? Good / OK / Poor  
If “poor” – explain: \_\_\_\_\_

Please turn over...

13. Did anything detract from your snowmobiling in the Forest? Yes / No (*circle*)  
If “yes” – explain: \_\_\_\_\_

\_\_\_\_\_

14. Suggest anything that would improve your snowmobiling in the Forest:

\_\_\_\_\_

\_\_\_\_\_

15. Would you be willing to pay to snowmobile on the trails in the Forest? Yes / No  
If “yes”, how much per day? \$\_\_\_\_\_ Or, per year? \$\_\_\_\_\_

If “no”, why not? \_\_\_\_\_

\_\_\_\_\_

16. Have you any other comments? \_\_\_\_\_

\_\_\_\_\_

---

THANK YOU

John Marsh, Director, Trail Studies Unit, Trent University, Peterborough,

[jmarsh@trentu.ca](mailto:jmarsh@trentu.ca), 705-748-1011

For more information on the Forest and management plan, please see the County website

[www.northumberlandcounty.ca](http://www.northumberlandcounty.ca)

## FOREST ADVISORY COMMITTEE INTERVIEW FORM

Date: \_\_\_\_\_ Place: \_\_\_\_\_

Person: \_\_\_\_\_ Group: \_\_\_\_\_

1. Should there be a non-motorized area in the NCF?
  
2. Should road allowances, access roads and hydro rights of way be part of the trail system?
  
3. To what standards should which trails be maintained for year round recreational activities?
  
4. What role should NCF and trails have in eco-tourism?
  
5. How can trail use regulations be enforced?
  
6. Should there be fees to use NCF trails?
  
7. How/by whom can trails be maintained to the agreed standards?
  
8. Where and what kinds of staging areas should be provided to access the trails?

Concerns and suggestions:

## **APPENDIX 2.**

### **COMMENTS FROM QUESTIONNAIRES**

#### **TRAIL USER SURVEY**

- People park on the grass at the Beagle parking lot.
- Might widen bike trails so people can travel side by side or pass
- Don't allow ATVS here, they churn up mud and make trail uneven
- There needs to be areas for different groups, i.e. area for hunting, area for motors, area for non-motors, etc.

More to be added.

#### **HUNTER SURVEY**

- Mark what is forest property. I feel some people are confused as to what is private and what is not.
- Adjoining private land is being entered by hunters using the forest. Signage should be placed on forest borders to keep people off private land where they do not have permission.
- Too many people use the public forest to trespass onto private property. There are no property lines and people just think everything near the forest is public. If the County is going to charge people to access the property, it should be their responsibility to keep them off the private property bordering the forest.
- Longer shotgun season.

#### **ADJACENT RESIDENTS**

- Designate trails, many users.
- Age of users, motorized vehicles, wild riders.
- Equal access to all users, coordinate different activities.
- Continue to be maintained, equal opportunities for all users, 4x4 trucks leave ruts in Spring.
- Generally most motorized users stop for horses, some do not. Some trails (Dunbar Rd.) are heavily rutted in sections.
- Desired to purchase adjacent land to create a buffer. County would not allow this.
- User permits similar to Gararaska.
- Hunting prohibited. Conflict amongst user groups.

#### **SNOWMOBILERS**

- Years of snowmobile usage and hardly any erosion or damage (due to the nature of it being frozen) until 4x4ing and ATVS became popular. I have witnessed this over 35 years.
- No motorized vehicles except snowmobiles from December 1 to May 1.
- Twenty years ago the North Forest was a dump. The snowmobile club has been the main force behind its cleanup. It never received any credit for this.

**APPENDIX 3:  
NORTHUMBERLAND FOREST TRAIL STUDY MONITORING FORM**

John Marsh, Trail Studies Unit, Trent University, 2007

Recorder: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Trail: \_\_\_\_\_ Weather: \_\_\_\_\_

Evidence of: Walking Mtn Biking Horses Motor Biking ATVs 4WD/Car

Location \_\_\_\_\_ Bare Width \_\_\_\_\_ Max. Erosion Depth \_\_\_\_\_ Slope \_\_\_\_\_ Other \_\_\_\_\_



**APPENDIX 5.  
EXAMPLES OF TRAIL STANDARDS**

**HIKING TRAILS**

<u>Reference</u>	<u>Tread width</u>	<u>Cleared width</u>	<u>Cleared height</u>	<u>Grade</u>
	Metres	Metres	Metres	%
Parks Canada	0.45-0.5	as needed for safe, unimpaired movement	2.5	1-10 desirable 20 maximum
MTRCA	0.5	1 minimum	2.5 minimum	1-10 desirable 20 maximum
Bruce Trail	0.6	1.5	2.5	1-10 desirable 20 maximum
Flink et al	3.0	no measure	2.4	no measure
NRPA	0.6	1.2	2.1	10 maximum

**BIKING**

<u>Reference</u>	<u>Tread width</u>	<u>Cleared width</u>	<u>Cleared height</u>	<u>Grade</u>
Parks Canada	2.5 desirable 1.2 minimum	2.5	2.5	0-3% desirable 10% maximum
MTRCA rural	3.0	4 minimum	3.0	0-5% desirable 10% maximum
Flink et al, rural	1.2	-	3.0	3% desirable 8% maximum
NRPA	2.4 desirable 1.5 minimum	-	2.1	8% maximum

## EQUESTRIAN

Reference	Tread width	Cleared width	Cleared height	Grade
Parks Canada	0.45-1	2.5	3	0-10% desirable 20% maximum
MTRCA	2.5	2.5 minimum	3.5 min.	0-10% desirable 15% maximum
Flink et al	1.2	2.4	3.7	5% desirable 10% maximum
NRPA	0.6	1.2	2.1	10% maximum

## SNOWMOBILE

Reference	Tread width	Cleared width	Cleared height	Grade
B.C, Parks	5	-	2.5 above snow	25% maximum sustained
Bombardier	-	3 minimum	2.4	<50%
Fink et al	2.4 one way 3.0 two way	- -	3.0 3	10% desirable 25% maximum

## CROSS-COUNTRY SKI

Reference	Tread width	Cleared width	Cleared height	Grade
Parks Canada	-	1.5-2.5 one way 4 min. two way	2.5 2.5	10% general 40% expert
MTRCA	2.5	2.5 minimum	3.5 min.	0-10% desirable 15% maximum
Fink et.al.	2.4-3.0	-	-	3% desirable 10% maximum

### References:

- B.C. Parks. Park Facility Standards. Victoria, 1993.
- Bombardier Ltd. Guide to the Development and Maintenance of Good Snowmobile Trails. Valcourt, Quebec, 1972.
- Fogg, G.E. Park Planning Guidelines, National Society for Park Resources, National Recreation and Park Association, USA, 1975.
- Flink, C. et al. Trails for the Twenty-First Century – Planning, Design and Management Manual for Multi-Use Trails. Island Press, USA, 1993.

Metropolitan Toronto Region Conservation Authority. Trail Planning and Layout.  
Toronto, 1992.

Parks Canada. Trail Manual. Indian and Northern Affairs, Ottawa, 1978.

Note: The Parks Canada Trail Manual is being revised and will be available shortly.  
Other, more recent standards are being investigated.

**APPENDIX 6.**  
**FORM FOR DEVELOPING TRAIL STANDARDS FOR THE**  
**NORTHUMBERLAND FOREST**

PROPOSED TRAIL STANDARDS FOR THE NORTHUMBERLAND FOREST

Contact person

Trail user organisation

Address

Date

Trail activity/means of travel

Tread width (cms)

Cleared width (cms)

Cleared height (cms)

Maximum gradient along trail (degrees)

Maximum gradient across trail (degrees)

Maximum curvature (degrees over metres)

Maximum depth of erosion tolerable (cms)

Regulation signs needed

Warning signs needed

Information signs needed

Other specifications

References to trail standards for this activity

## **APPENDIX 7. CODES OF ETHICS FOR TRAIL USERS**

### **PROPOSED ONTARIO TRAIL USER CODE OF ETHICS**

- Expect and respect other users
- Know and obey rules and laws
- Stay on the trail
- Do not disturb plants or animals
- Do not litter
- Respect private property and local residents
- Be prepared, to ensure your safety and the safety of others
- Stay on the right, pass on the left
- Slow when approaching other travelers, and yield to the faster traveler
- Be courteous and communicate with other trail users

This code may be supplemented to meet specific local purposes.

(Marsh, J.S., MacPherson, A. and Murray, C. 2006, 2)

### **CODE OF CONDUCT FOR SIMCOE COUNTY FOREST USERS**

#### **General Rules of Etiquette:**

- Expect and respect other trail users
- Keep to the right to allow other users to pass on your left. When stopping for a break, move to the side to allow others room to pass
- Stay on the trail; don't create new trails
- Respect neighboring landowners by staying off private property, and avoid excessive noise
- Leave the trail as you found it; whatever you pack in, pack out. Leave the wildflowers and wildlife for others to enjoy
- Maintain control of your pets. Carry a leash for your dog and be prepared to use it. "Stoop & flick" when waste is on the trail path
- Use trails only according to the permitted uses indicated on the signage. Some trails are user specific i.e. hiking or snowmobile only trails
- Some trails may close seasonally or during forestry operations. Obey trail closure signs.
- Most trails experience problems in the spring. Check the trail conditions. If you are leaving tracks over ½ inch deep, don't use the trail. If there are no signs posted, but weather conditions have been bad, do not use the trail.

More specific rules and advice are provided for walkers and hikers, equestrians, cyclists, X-country skiing and snowmobile and ORMV operators.

(Simcoe County, 2006, Appendix C)

## **APPENDIX 8. TRAILS AND TOURISM**

John Marsh

Trail Studies Unit, Trent University, Peterborough, jmarsh@trentu.ca

### **CONTENTS**

Definitions

Examples of trail tourism

Impacts of trail tourism

Evaluating the potential for trail tourism

Questions for discussion

### **TRAIL**

A narrow linear route primarily intended for recreational travel by walking, backpacking, portaging, running, cycling, horseback riding, wheelchairs, skiing, snowshoeing, snowmobiling, dirt-biking, ATViing

### **TOURISM**

The phenomena associated with people travelling for pleasure away from home for more than one day

### **SUPPLY and DEMAND**

Trail tourism depends on developing and matching supply and demand

The 4 As of Tourism Supply:

Attraction, Access, Accommodation, Advertising

The Demand:

People wishing and able to use trails

Evaluating the Attraction:

- Is the area spectacular, scenic, historic, culturally interesting?
- Does the area already attract tourists?
- Is the weather attractive?
- Is the trail easy, challenging?
- What uses are appropriate on the trail?
- Is the trail well designed and built?
- Is the trail well maintained?
- Is the trail safe?
- Is the trail patrolled and are rules enforced?
- Are there supporting facilities: signs, benches, parking, toilets, garbage containers, etc.?
- Is the trail interpreted?
- Are events held on the trail?
- Is the trail as attractive as others?

#### Evaluating Access:

- Is the trail near major cities?
- Is the trail near major highways?
- Do paved/gravel roads lead to various points on the trail?
- Can the trail be reached in winter?
- Is the trail wheelchair accessible?
- Is there public transport to the trail?
- Is there a fee to use the trail?
- Is it easy to obtain a permit or pay a fee to use the trail?
- Are there businesses arranging trips on the trail?
- Is the trail more or less accessible than other trails

#### Evaluating Accommodation:

- Are there cafes/restaurants near the trail?
- Are there grocery stores nearby?
- Are there toilets nearby?
- Are there hotels, B.&Bs nearby?
- Are hotels providing facilities and services especially for trail users?
- Are there campgrounds at the trailheads or along the trail?
- Are there cabins along the trail?
- Are the facilities as good as those on other trails?

#### Evaluating Advertising:

- Is there a detailed map of the trail for users to take with them?
- Is there a guidebook describing the trail?
- Is the trail described on a website?
- Is the trail described in local, regional and national tourism print and media advertising?
- Is the trail being promoted in articles in newspapers/magazines?
- Have potential user groups been made aware of the trail?
- Are there signs on highways near the trail directing people to it?
- Are there signs at the trail naming the trail, indicating uses, rules, destinations, distances, manager?
- Is the trail as well advertised as others?

#### Evaluating tourist demand for trails:

- What trail activities are increasing/decreasing in popularity locally, nationally, internationally?
- What statistics are available on trail use, and trends in use?
- Do tourists already visit the area?
- Where are tourists from, nearby cities, other provinces, USA, overseas?
- Conduct surveys in potential markets
- Conduct surveys of trail user groups
- Conduct surveys on the trail
- Determine user preferences, concerns, willingness to pay

## **APPENDIX 9**

### **NORTHUMBERLAND COUNTY FOREST**

### **NATURE INTERPRETATION TRAIL**

(Draft 1: John Marsh and Evelyn Runions, September 2007)

Welcome to the Northumberland County Forest and the Nature Interpretation Trail

By following this route along the Orange Trail, you can discover some of the ecological historical and geological features of this forest. You will also appreciate some of the challenges in managing the forest to protect it yet allow appropriate uses.

Stop at the numbered posts along the route and read the information below.

The complete circuit, which is relatively flat and approximately 7 kilometers, usually takes people from 40-60 minutes.

You are welcome to keep this brochure or leave it for others to use.

From the trailhead proceed west along the Orange Trail.

#### 1. Poison Ivy and Dog Strangling Vine:

- How to recognize each
- Avoid poison ivy, can cause an itchy rash
- DSV is an exotic species, i.e. not found in the forest until recently. It is threatening the native vegetation. Steps are being taken to eradicate it, though this may prove impossible.
- Are you aware of any other exotic and problematic species in the Forest?

Be sure to turn left where the Orange Trail diverges from the 7 trail. You will soon (7 metres) come to Location Marker and Map #2. Turn right here and continue to follow the Orange Trail.

#### 2. Red Pine Plantation:

- The conifer trees around you are mostly red pine. The fact that they are all in rows and about the same size indicates they were planted, approximately 7 years ago. This was done to ensure protection of the fragile soils and provide logs and revenue from the forest. There are also some deciduous Black Cherry trees, but this part of the Forest is not as varied as some other parts.
- Can you identify any other trees around you?

#### 3. Old Stone Fence:

- Here you cross a low stone fence, built when the land was cleared of forest, to enable agriculture and delimit field boundaries.

- The first European settlers came to this area in the early 1800s. But many abandoned their lands when they realized the difficulties of clearing and farming them.
- As you progress along the trail you will see to the left and right of you piles of rocks and boulders that also had to be removed to create fields.

#### 4. Big, old maple:

- This large, old, tree is a (type?) maple. It is probably about ? years old but is now dieing. As it decays it will be a source of grubs for birds, such as the ? woodpecker.
- Eventually a few of the small seedlings around it will replace it and another cycle of succession will have been completed.

Shortly after you re-enter the pine plantation you will come to a fork in the trail. Follow the trail to the right marked in Orange “Kiddy Loop”.

#### 5. Big, old pine:

- Before you is a very large old white? Pine. The number of growth rings from its bark to its core have been counted, and they indicated it is ? years old.
- Two hundred years ago there would have been many more such trees, but most were cut and exported to Britain. It is unlikely newly planted pines will ever be allowed to reach this size.

Soon you will reach a much wider track, where you should turn right and follow it.

#### 6. Sandy soils:

- The exposed sandy soils here underlie much of this forest.
- These soils are very permeable which accounts for the lack of surface water in the forest.

#### 7. Opening in the forest:

- At the edge of this open area is a tree with delicate foliage that has been decapitated, probably by a lightning strike.
- The tree is a Larch, and although it is a conifer, its needles turn yellow in the Fall, and drop like those of deciduous trees.
- The open area has been vegetated especially by raspberries which colonise quickly when an area has been opened up and the soil disturbed

#### 8. Erratic Boulder:

- To the left of the trail is a large round boulder, known as an erratic because it is composed of a type of rock different from the underlying bedrock.
- This rock was carried here, along with other material, by an ice sheet that advanced from the north.
- When the ice sheet melted around 10,000 years ago, such rocks, gravel and sand were deposited, thereby creating the Oak Ridges Moraine.

- The Moraine extends from the Niagara Escarpment to just east of here, and gives Northumberland County its attractive, rolling terrain.
- How do you think climate change will affect the Forest environment in future?

A little further along the trail you regain the trail you started out on, and should soon find yourself back at the trailhead.

Five birds that are commonly seen along this trail are:

Butterflies often seen along the trail include:

Other tree species that you can see from the trail include:

We hope you enjoyed your trip along the interpretive trail and learned a little about the ecology, history and geology of the Northumberland County Forest.

For more information on the Forest please check the County website

## **MAPS**

1. Forest Compartments
2. Trails, non-motorised zones and natural areas  
(Other maps will be added in final report)

## **PHOTOGRAPHS (on CD)**

Natural and cultural features of Forest

Variety of trails and conditions

Most degraded locations

Various trail uses

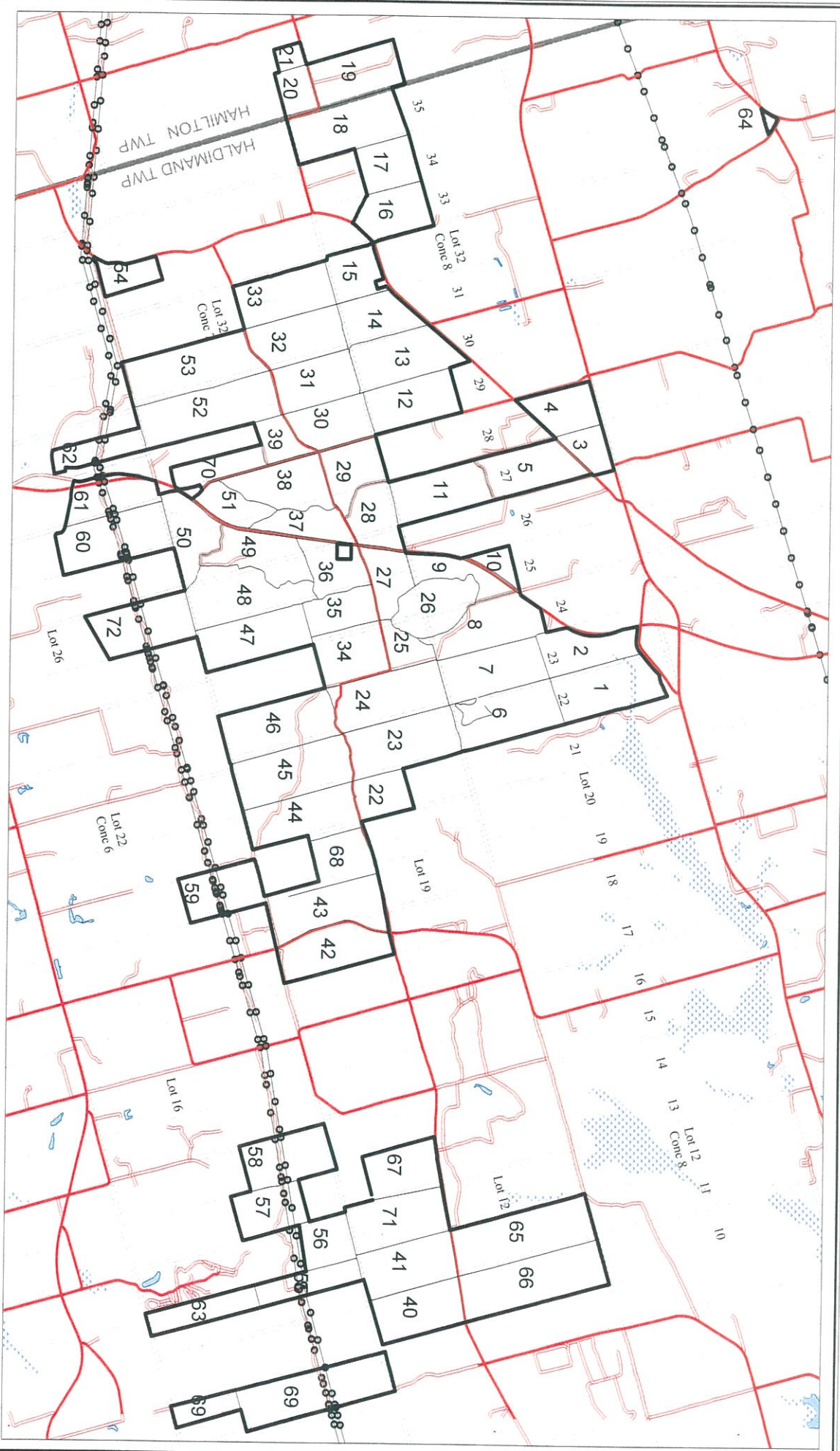
Trail garbage

Present signage

Trails in other protected areas

Signage in other areas, especially Ganaraska

Illustrations of research methods



# Northumberland County Forest

Compartment Boundaries

Map Scale 1: 50 000

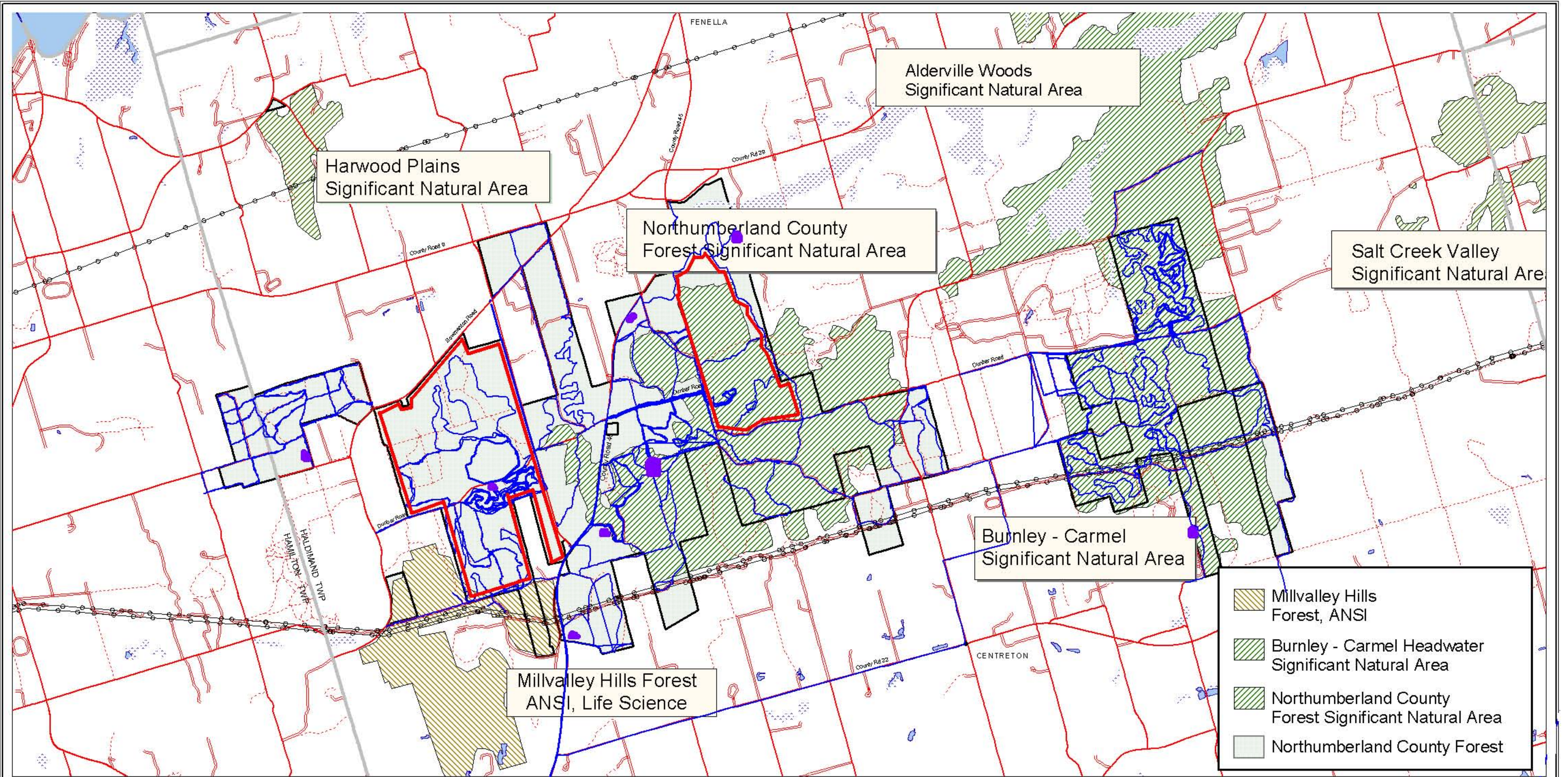
FIGURE 2

Main Road  
 Secondary Road  
 Transmission Line  
 Rail Line - Abandoned  
 Water  
 Wetland

Township Lot / Con - road allowance  
 Northumberland County Forest Property Boundary

Dymitar  
 Northumberland County  
 SINACOM

Prepared September 23, 2003  
 By: G. Lavoie, Geomatics 202  
 and J. Gauthier, Geomatics 202  
 (revisions for 9/23/03)



# Northumberland County Forest ANSI / ESA / Significant Natural Areas

outlines recommended non motorised/non hunting zones  
 outlines recommended non motorised zones