Ontario Boreal Wolverine Project

Status Report to the Ontario Living Legacy Trust: Year 1

Participation by **The Wolverine Foundation, Inc.** in the **"Ontario Boreal Wolverine Project"**
was made possible by a grant through the
Living Legacy Trust

Date:
February 17, 2003

Project Leader:
The Wolverine Foundation, Inc.
(Audrey Magoun, Co-Director)

Partners:
1) *Ontario Ministry of Natural Resources* -
Neil Dawson, Wildlife Assessment Program Leader, Northwest Region;
Catherine Lipsett-Moore, Species at Risk Biologist, Northwest Region Planning Unit;
2) *Ontario Parks* -
Geoff Lipsett-Moore, Zone Ecologist, Northwest Zone;
3) *Wildlife Conservation Society/University of Toronto* -
Justina Ray, Associate Conservation Zoologist/Adjunct Professor.

Project Number:
08-024

Project Name:
Boreal Wolverine: A Focal Species for Land Use Planning in Ontario's Northern Boreal Forest

Project Description:
This project will refine knowledge of wolverine distribution; produce a habitat model for NW Ontario to consider the size, distribution, and connectivity of areas needed for

viable wolverine populations; develop and test tools for the inventory and monitoring of wolverine populations, including the feasibility of using satellite collars; and develop interim management guidelines and recommendations for maintaining or expanding wolverines in areas of timber harvest.

LLT Funding Programs:
7 & 8

Project Duration:
3 Years, beginning in August, 2002.

Reporting Period:
Year 1 (August, 2002 - March 30, 2003).

TABLE OF CONTENTS

S ECTION 1: S UMMARY OF P ROJECT R ATIONALE, G OALS, AND O BJECTIVES

Wolverines (*Gulo gulo*) are considered a Species-At-Risk in Ontario and in Canada at large. In the past, little if any attention was paid to this wide-ranging carnivore in Ontario because harvests were generally low and they occurred primarily north of current forest management activities. Lowland boreal forests characteristic of central and eastern Canada are possibly low quality habitat for wolverines, and may carry the lowest density and least resilient populations of this species in the country. As there is considerable question as to whether viable populations still remain in Québec and Labrador, Ontario is currently responsible for the most easterly viable wolverine population in North America. Along with the new "Threatened" status in Ontario, there is a legal requirement that a recovery strategy and action plan be prepared within two years of listing. The major gap in strategy development is the lack of basic ecological data on the species in the Ontario context. This is a critical time in the future of wolverines along the southern portion of wolverine range in Ontario because timber harvest activities currently occur in the Red Lake area and are proposed to proceed further north as part of the provincial government-led land use planning exercise (Northern Boreal Initiative). Because wolverines have demonstrated sensitivity to human disturbance and development, current activities make this a compelling time to learn more about wolverine ecology in Ontario and the relationship between wolverine habitat use, forest management, protected areas, and other human activities.

The principal goals of this project are to gain a better understanding of the ecology of wolverines inhabiting low elevation boreal and tundra ecosystems of Ontario, and the effects of forest management and increased development on wolverine habitats and populations. The specific objectives of the study are to:

> **A)** Refine our knowledge of wolverine distribution and develop a first-generation spatial habitat model for wolverines in northwestern Ontario;
> **B)** Test the feasibility of using satellite/VHF collars to document home range, movements, habitat selection, and residency status of wolverines in low elevation boreal forests;
> **C)** Develop and test tools for inventory and monitoring of wolverine populations in eastern boreal forest habitats;
> **D)** Develop interim management guidelines and recommendations for maintaining or expanding wolverine populations in northwestern Ontario in areas of timber harvest or potential timber harvest;
> **E)** Establish an action plan for more detailed studies on wolverine ecology, status and distribution, habitat use, and impacts of timber harvest and other activities on wolverines in eastern Canada.

The study area is divided into two units: 1) the Intensive Area is concentrated primarily in a 24,000 km² area in the Red Lake/Ear Falls area, where several survey techniques -- live-trapping, radio-tracking, aerial surveys, hair snaring, and camera trapping -- are being employed simultaneously in logged and unlogged habitats; and 2) the Extensive Area, extending from Ear Falls (south of Red Lake) to Fort Severn, and from the border

with Manitoba to James Bay – where ecological knowledge from First Nations and broad-scale aerial surveys are being conducted to obtain information on the distribution and status of wolverines throughout the rest of the province.

S ECTION 2: P ROJECT A CTIVITIES AND R ESULTS, M ILESTONES, AND D ATES D ELIVERED

1.1 Summary of Year's Results

Since commencement of project activities in August, 2002, milestones and achievements have included: procurement of equipment and preparations for fieldwork, refinements to sampling design and research technology, hiring of project personnel, communications and knowledge transfer, and field data collection. This project is on schedule with respect to the objectives outlined in the original detailed proposal.

The beginning months of the project were spent preparing for field work to begin in November, 2002. All project partners attended a Wolverine Workshop in Monterey, California in November, 2002 sponsored by The Wolverine Foundation, where we met with most of the other wolverine researchers from North America and Scandinavia and discussed our project and the various research methods that are currently being utilized to study wolverines. A base of field operations was established in Red Lake, and all field equipment was purchased or leased and transported there. Field technicians and project partners have been preparing equipment, arranging logistics, collecting trap bait, constructing and deploying log live-traps, camera traps, and hair snares. Preliminary stratification used to inform sampling design in both the intensive and extensive study areas was based on the factors that appeared most important in determining wolverine distribution. Two pilots from Alaska with extensive experience tracking wolverines from the air arrived in Red Lake in early February, were briefed on the survey procedure, and flew the aerial track surveys from February 4-14. In a separately funded but complementary project, we have been conducting interviews in northern FN communities (Sachigo Lake and Sandy Lake) to collect indigenous knowledge regarding wolverine in northern Ontario. Initial contact was made with trappers, FN communities, forest industries, local co-operators, and other individuals interested in the results of this project as part of an informal Ontario Wolverine Information Network. As such, they will be receiving updates from us via regular and electronic mail. Several newspaper articles and radio programs have highlighted the project. Updates on the project are posted on The Wolverine Foundation, Inc. website.

Because the first season of data collection from the field is still in progress and some data analysis is in progress at the time of this writing, there are few concrete results to report at this time. The progress report that will be submitted to Living Legacy Trust in late May will contain such details.

1.2 Milestones, Achievements, and Dates Delivered

Milestone/Achievement 1 : Procurement of Equipment, Permits & Logistic Preparation

for Fieldwork

1) *Equipment purchased/leased* . All necessary field equipment, including: vehicles, snowmobiles, trap materials, immobilization equipment and drugs, field kits, safety equipment etc. were ordered and received.

2) *Satellite radio collars* . Six satellite/VHF collars were ordered and received from SirTrack Wildlife Tracking Systems of New Zealand, and are ready to be deployed. We tested the fit of the new collar on a female wolverine carcass taken by a trapper in the Red Lake District and are currently testing satellite reception of the collars.

3) *Permits* . Animal care and scientific collection permits have been applied for and granted.

4) *Bait collection* . Bait collection has been on-going with participation and assistance from Lakehead University, Dryden district, local butchers and members of the trapping community. Bait have been cut into appropriately-sized pieces and stored in Red Lake.

5) *Live traps* . Materials for building log-cabin live-traps were purchased from a local sawmill owner. Trap building was spearheaded by Phil Dannenmann of Red Lake, and assisted by project partners. He and his fellow builders made design modifications to the log-cabin traps where necessary to deliver the most robust product possible. Ten large log style live-traps were constructed in December and another smaller model was built in January. The traps were located in the intensive study area in areas where there have been recent signs of wolverines. The live-traps were pre-baited beginning in December in preparation for opening in late January early February (see Milestone 8).

6) *Chemical immobilization and veterinary support* . All members of the study team who may be engaged in chemical immobilization of wolverine for fitting of satellite collars have taken or updated previous training with the Chemical Immobilization of Wildlife course put on by OMNR in November. Wildlife Veterinarian - Dr. H. Reid - from southern Ontario is the project veterinarian and will be visiting the site in February. Dr Reid has provided the necessary expertise and materials for medical procedures that will be carried out in event of collaring or capturing wolverine.

7) *Preparations for First Nations community visits* . The following steps were taken by Justina Ray to prepare for the collection of ecological knowledge from residents of three selected First Nation communities in the heart of wolverine range (Sachigo Lake, Sandy Lake, and Fort Severn): a) obtained permission from the Chief and Village Council; b) identified an individual who agreed to act as a liaison from each community to help recruit trappers and elders willing to share information about wolverines and translate during interview sessions; c) informed

trappers and elders of the goals and objectives of the project, and obtained consent for the participation of interested individuals; and d) scheduled a week-long visit to each community, for the purpose of holding discussions with trappers and elders and visiting one or more trap-lines.

8) *Preparations for aerial surveys* . Logistical arrangements were made with the Band Offices of four northern First Nation communities that will serve as stop-over sites during February's aerial surveys. Some aviation fuel was generously donated by OMNR Aviation, Flood, & Fire Management in Dryden and delivered to those communities that had no fuel on hand for purchase.

Milestone/Achievement 2 : Refinements to Design of Research Technology

1) *Log cabin traps* . Catherine Lipsett-Moore did extensive research on trap models utilized by North American and Scandinavian wolverine research projects, and developed a design for this project that included modifications to the latch, as well as the depth of the structure and the heaviness of the lid.

2) *Satellite radio-collars* . Audrey Magoun worked with representatives from SirTrack Wildlife Tracking Systems of New Zealand towards improving the design of a rolled wolverine radio collar that would provide minimum discomfort to the animal.

3) *Hair snares* . Audrey Magoun tested hair-snagging techniques on captive wolverines at a facility near Seattle, Washington. We settled on two methods for snagging hair that will be deployed in this study: 1) at all camera and live-trap sites, pieces of barbed wire will be nailed to the bole of a tree just above the junction of the run-pole. Beaver castor lure will be placed on the run pole at this junction; and 2) open-ended boxes measuring approximately 0.7 m long, 0.7 m high, and 0.5 m wide will be mounted on horizontal poles attached to two trees about 0.5 m from the surface of the snow, with barbed wire placed inside the box on the sides and bottom and at the entrance at both ends and a beaver castor lure in the bottom of the box.

Milestone/Achievement 3 : Hiring of Project Personnel

1) *Field technicians* . Senior Resource Technician, Shannon Walshe and Resource Technician, Richard Klafki commenced working full-time in November and January respectively. They are both stationed in Red Lake, with office support from Ontario Parks. Due to the extensive geography, difficult terrain and extremely demanding nature of the field work, preparations are being made to hire an additional field technician (Tim Carter), effective 24 February.

2) *Survey pilots* . Marty Webb and Rick Swisher -- two experienced pilots with extensive wolverine survey experience from Alaska -- were contracted to conduct surveys during the first three weeks of February.

Milestone/Achievement 4 : Refinements to sampling design

1) *Study Areas precisely defined* . The study is taking place at two scales: within: a) an "intensive" study area, where live-trapping, radio-tracking, hair snaring, camera trapping, and aerial surveys are taking place in a study area centered around Red Lake/Ear Falls, and b) an "extensive" study area situated just north of the 50th parallel, where we are undertaking broad-scale survey efforts, using aerial wolverine track surveys (the first for Ontario) - and systematic gathering of ecological knowledge from elders and trappers in selected First Nations communities.

2) *Placement of detection devices in intensive study area* . The intensive study area was divided into 100 km² hexagons, representing the minimum home range for resident female wolverines. We used these hexagons as a grid system to guide us towards the most systematic placement possible of camera traps and hair snares and to quantify proportional representation of environmental variables in a pre-stratification exercise (see Milestone 5). Selection of hexagons for sampling with such detection devices considered representation of all 27 substrata determined from pre-stratification exercises, accessibility to the sites, and the time necessary to periodically service all the sites.

3) *Placement of aerial survey transects in extensive study area* . The extensive study area was divided into 1000 km² hexagons that approximate male wolverine home range size. A transect approximately 32 km long through a hexagon will comprise a systematic sampling unit. The primary hexagons chosen for sampling consisted of those with the largest percentage of each of the 27 substrata determined from pre-stratification exercises (see below) with at least 4 representatives of each substratum. Flight lines were drawn on a map so that they intersected the primary hexagons. Additional hexagons along the flight paths between primary hexagons were also sampled and will be used for model evaluation and validation. The completed aerial survey will resulted in approximately 6000 km of track transects.

Milestone/Achievement 5 : Development of Conceptual Habitat Models

1) *Pre-stratification of study areas* . Geoff Lipsett-Moore developed a conceptual model of the primary factors thought to influence the distribution of wolverines, which includes ungulate carrion availability, snow cover in April, and ruggedness of terrain. Surrogate variables that were used in the preliminary model are 1) woodland caribou habitat suitability derived from classified LANDSAT images and forest age, 2) the probability of occurrence of snow in April, and 3) ruggedness of the terrain based on digital elevation models (SD of elevation within 1 km radius). Our preliminary stratification of both the extensive study area and the intensive study area is based on these three strata subdivided into three classes each, for a total of 27 substrata.

Each hexagon was scored according to the relative contribution of the surrogate variables detailed above. Based on the scoring, we have established a stratified sampling design that is guiding us in placement of detection devices within the intensive study area, as well as designating flight survey routes over the northern Ontario study area (see Milestone 4). While additional substrata or key features will be incorporated during the final habitat modeling process, this pre-stratification exercise has provided valuable guidance for most effective and efficient sampling of the vast study area.

2) *Expert-derived habitat model* . Audrey Magoun developed a preliminary conceptual model of wolverine habitat based on past wolverine research, constructing a decision-tree designed to identify habitat features that are likely to be important to wolverines in Ontario. She is in the process of soliciting comments from wolverine experts in order to work towards refinement of this model.

3) *Preparation for habitat modeling* . Additional data layers thought to be relevant to wolverine are being obtained gradually. We are also contacting modeling experts for technical advice.

Milestone/Achievement 6 : Knowledge/Technology Transfer

1) *Ontario Wolverine Information Network* . We compiled a list of over 50 names as part of an informal network of individuals and organizations interested in the results of the Boreal Wolverine project. The list is composed of trappers, First Nations communities, forest industry representatives, local co-operators, environmental organizations, wolverine researchers, Ontario government personnel and others. We distributed our first "Ontario Wolverine Project Information Update" in January 2003, with subsequent communications planned for every 8 weeks during peak field season, and every 4-6 months during other seasons.

2) *Wolverine Research Community* . Audrey Magoun organized a 3-hour Wolverine Workshop at the Carnivores 2002 Conference in Monterey, CA in November 2002 that was attended by over 30 wolverine researchers from around the world, as well as all Ontario project partners. At this Workshop, Dr. Magoun presented her preliminary "expert" model of wolverine habitat to the entire group and aspects of the model were discussed (see Milestone 5). We also presented our newly designed wolverine collar to other researchers and have shared the collar design with researchers in Montana and Wyoming. One of the collars was deployed on a wolverine in January in Wyoming. We are awaiting word on how well the collar is functioning. We are continuing discussions with other researchers on improvements on live-trap design, hair snares, and remote camera "traps". Finally, we discussed plans for another workshop in 2004 and made some initial contacts for workshop funding.

3) *Wolverine Recovery Planning* . Clément Fortin, team leader of the Recovery Group for COSEWIC-listed Eastern Canadian wolverines, is participating in the aerial track surveys and will become familiar with live-trapping, hair snagging, and remote camera "trapping" while he is visiting our study area.

4) *Northern Boreal Initiative* . Results and insights from this project are being shared on an on-going basis with the Protected Area Working Group of the OMNR-led Northern Boreal Initiative, of which two project partners, Geoff Lipsett-Moore and Justina Ray are members.

5) *Other* . Results from our aerial track surveys are being shared with the remote communities around which the surveys are being conducted. Many people in the Red Lake/Ear Falls communities, as well as some further north, have shown an interest in the project. We will be discussing project goals and wolverine biology with interested groups in these communities in the near future.

Milestone/Achievement 7 : Communications, Collaborative Arrangements, & Media Relations

1) *Trappers Councils* . All area Trappers Councils (Red Lake Trappers Council, Ear Falls Trappers Council and Native Trappers Council) were contacted by phone by both Catherine Lipsett-Moore and Shannon Walshe; letters were also sent out to each council to discuss the involvement of trappers in the wolverine project. Response has been generally positive and assistance to the project is being provided on an on-going basis by members of all three Trappers Councils.

2) *First Nations* . Grand Council Treaty 3 Natural resources staff members are informed of the project and are interested in observing / participating in the study in the field if they are able to fit it into their schedules. Communications with northern First Nations communities as described in Milestone 1.

3) *DNA analyses* . A collaborative arrangement between the Boreal Wolverine Project and Christopher Kyle (Natural Resources DNA Profiling and Forensic Centre, Trent University) has been developed to ensure the best use of genetic material collected. Chris has provided a detailed sampling protocol for tissue samples that will subsequently be analyzed at their lab.

4) *Media* . Several newspaper articles and radio programs have highlighted the project, including Wawatay Radio and Newspaper, CBC Radio, and local newspapers from Thunder Bay, Kenora, Sioux Lookout, and Red Lake/Ear Falls.

Milestone/Achievement 8 : Field data collection

Note : As of this writing, we are at the peak of the field data collection program which will continue until the end of April. While some preliminary results are described herein, results from the first year of fieldwork will be thoroughly detailed in our progress report, due in late May, 2003.

1) *Live trapping* . Following construction of 11 traps and a 1-2 month pre-baiting period, triggers were set in the first week of February. The traps are being monitored daily. As of this writing, there have been no captures.

2) *Camera traps and hair snares* . Sites have been selected for placement of 39 camera traps and hair snares in relatively remote areas. Placement of these detection devices is occurring simultaneously with live-trap checking; we expect all cameras to be running by the end of February, and remaining open for 1-3 month periods (with battery, bait and film changes occurring every two weeks at each station). For the present, hair snares are being set up at the camera traps only, while preparations are being made for the construction of hair snare boxes (see Milestone 2) with full-scale deployment planned for the next field season.

3) *Aerial surveys* . The aerial transects commenced on February 4 and were completed on February 14. During the surveys the two crews operated from six northern communities: Red Lake, Pickle Lake, Summer Beaver, Peawanuck, Ft. Severn, and Sandy Lake. The survey was very successful, with wolverine and other mammal tracks being readily picked up along the routes, including six sightings of wolverine. About 39% of the survey hexagons had detectable wolverine tracts. Besides wolverine locations, observers recorded information on presence of caribou, moose, lynx, wolves, fisher, human presence, and habitat within each hexagon. Data from the survey are currently being analyzed.

4) *First Nations Community Visits* . As of this writing two of three community visits (Sachigo Lake and Sandy Lake) have been completed, and over 30 comprehensive interviews conducted with elders and trappers. This has resulted in the collection of about 30 precise locations of recently killed or sighted wolverines (within the last six years), as well as valuable information on historical presence and relative abundance of wolverines and other mammals, cultural attitudes regarding wolverines, extent of harvest, use of wolverine pelts, and ecological information. A third visit to Fort Severn is scheduled for early March, and plans are being made to contact three more communities to schedule visits during the second year of the project.

5) *Opportunistic Observations/Trapping Records* . We are continuing to collect reports of wolverine sightings and trapping records. A young female wolverine was trapped near Ear Falls in early January. We took measurements of this specimen and collected samples for DNA analysis.

S ECTION 3: E XTENT TO W HICH P ROJECT O BJECTIVES H AVE B EEN M ET

This project is on schedule with respect to the objectives outlined in the original detailed proposal. Commencement of live trapping was the only activity that experienced a delay. This was due to a combination of factors, including delay in

delivery of collars and immobilization drugs, and the need to prolong the pre-baiting period. Satellite data download has not yet occurred because we have yet to capture a wolverine during the two week period that the traps have been opened.

See Table 1 as copied from our original proposal, with red and green x's indicating successful or unsuccessful on-time completion of task, respectively. Please note that as of this writing, Quarter 1, 2003 is still in progress.

Table 1. Milestones and reporting schedule for Ontario Wolverine Project, as originally proposed.

Category	Task	2002 Quarters				2003 Quarters				2004 Quarters			
		1	2	3	4	1	2	3	4	1	2	3	4
Procurement & Preparation	Planning meeting			x									
	Equipment Purchase/Setup			x	x								
	Bait collection and placement			x	x	x	x	x	x	x			
	Meeting for midcourse adjustment						x						
Data Collection & Analysis	Preparation of the decision tree on habitat variables			x	x								
	Workshop on techniques				x								
	Wolverine Capture				x	x	x		x	x			
	Prepare baseline GIS map			x	x	x							
	Pre-stratification			x	x								
	Aerial track surveys					x				x			
	Hair snagging and camera trapping				x	x	x	x	x	x			
	Validate the model									x			
	Satellite data download and VHF tracking				x	x	x	x	x	x	x	x	x
	Develop mapped layers (indices): abiotic, biotic, human impacts				x	x	x	x	x				
	Multiple logistic regression							x	x	x			
	GAMs modeling								x	x	x		
Reports & Documents	Progress Report						x						
	Final Report									x	x		
	Distribution Map									x			
	Aerial Survey Map					x				x			
	Methodology Report									x			
	Habitat Model									x	x		
	Preliminary Habitat Guidelines									x	x	x	
Knowledge & Technology Transfer	Publish Habitat Model										x	x	x
	Publish survey techniques										x	x	x
	Wolverine Symposium											x	
	Develop and update web page			x	x	x	x	x	x	x	x		
Media Releases	Newspaper, radio, and TV				x	x	x	x	x	x	x		
Follow-up	Action Plan for Continuation									x	x	x	x

S ECTION 4: P ROJECT S TART D ATE AND W HETHER P ROJECT IS O N, A HEAD, OR B EHIND S CHEDULE

The project is currently on schedule.

S ECTION 5: N EXT Y EAR'S W ORK P LAN, P ROJECT A CTIVITIES, M ILESTONES, AND B UDGET

Activities and milestones for the upcoming year include: **1)** completion of the first winter season of fieldwork by end April, 2003, **2)** meeting among project partners for mid-course adjustment, **3)** preliminary data analyses and habitat modeling exercises, **4)** continued communications and knowledge/technology transfer of the nature described in this report, and **5)** preparation for and commencement of second winter season of fieldwork. Tangible deliverables with target dates in the upcoming year include: **1)** Progress Report (5/31/03), **2)** Broad-scale distribution map for wolverine in Ontario (3/31/04), and **3)** Report on methodologies for studying wolverines in lowland boreal forests (3/30/04).

We are not anticipating any appreciable changes to our workplan, schedule of activities, milestones, and deliverables, or budget for Year 2 of the project.

S ECTION 6: P ROJECT I NFORMATION, P UBLICATIONS, AND T RANSFER TO P ARTNERS

Because we are at a very early stage in the project, no publications have been prepared as yet. Preliminary results on First Nations community visits and aerial surveys will be presented at the annual Wildlife Society conference in September 2003.

** Related publication:

Magoun, A. J., J. C. Ray, D. S. Johnson, P. Valkenburg, F. N. Dawson, and J. Bowman. 2007. Modeling Wolverine Occurrence Using Aerial Surveys of Tracks in Snow. Journal of Wildlife Management. 71(7):2221-2229.

Ontario Wolverine Habitat Consideration Action Plan - Jan., 2005
Ontario Boreal Wolverine Project - 2005 Study Plan Summary
Ontario Wolverine Project Report - July, 2004
Ontario Wolverine Project Report Appendix - July, 2004
Capture Updates
MAY, 2003 PROGRESS REPORT

[Original Project Abstract](#)
[Ontario Wolverines: A Model for Wolverine Conservation and Recovery in Eastern Canada](#)
[High School Students Fundraising Efforts Support Project](#)

| [Home](#) | [About TWF](#) | [Wolverine Life History](#) | [Management](#) | [Art](#) |
| **[Current Research](#)** | [Bibliography](#) | [Our Directors](#) | [Donations](#) | [FAQ's](#) | [Kid's Page](#) | [Gift Shop](#) |

THE WOLVERINE FOUNDATION, Inc.

9450 S. Black Cat Road
Kuna, ID 83634-1118 USA

208-922-4746

gulo@wolverinefoundation.org