



**Landscape Thresholds and Response
To Fragmentation By Endangered Newfoundland Marten**

Interim Progress Report

March 31st, 2003

WNMF, Resource Library

Project No: 2-216-001

**Western Newfoundland Model Forest Inc.
Interim Progress Report (IPR)
Year Ending March 31, 2003**

Part A—Project Information

Title: Landscape thresholds and response to fragmentation by endangered Newfoundland marten

Project #:
WNMF02-01

Fiscal year: 2002 - 2003

Multi-year duration: 2002 – 2003
2003 – 2004
2004 – 2005
Project will be completed
By March 2005

Proponent (1): Canadian Forest Service

Proponent (2): WNMF, Newfoundland Wildlife Division
Newfoundland Forest Service
Parks Canada
Abitibi Consolidated
Corner Brook Pulp and Paper

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Please select to corresponding objective (s) that best describes the outcome category:

Specific category of project	Corresponding Objective
<ul style="list-style-type: none"> • <i>Applied Research</i> 	<ol style="list-style-type: none"> 1) To evaluate and define stand- and landscape-scale currencies that are associated with habitat occupancy by individual marten in western Newfoundland. 2) To determine the influence of landscape and fragmentation metrics on area occupancy of marten in western Newfoundland based on a comparison of characteristics within and outside of occupied home ranges of marten. 3) To evaluate how habitat spatial patterns and disturbances (e.g., fragmentation, timber harvests, insect outbreaks, patch size and isolation), spatial processes (habitat selection), and spatial constraints (landscape permeability, connectivity) interact to determine patterns of use and occupancy of landscapes by marten. Determine whether spatial use strategies and responses to fragmentation exhibited by marten (with large home ranges) in Newfoundland differ from processes exhibited by American marten at less extensive (e.g., Maine) spatial scales.
<ul style="list-style-type: none"> • <i>Decision Support</i> 	<ol style="list-style-type: none"> 1) To develop a series of landscape thresholds that can be used as a tool for predicting landscape-scale occupancy of habitat by marten in the Little Grand and Red Indian Lake areas of western Newfoundland and to compare thresholds currently being developed for 259 marten ranges in Maine, where home range areas are a full magnitude smaller than in Newfoundland. Use the thresholds to develop a tool for use in predicting population responses of marten to proposed forest-harvesting scenarios.

Part B—Progress Report on Project Activities

Using the objectives and deliverables indicated in your original proposal, describe the progress made during this fiscal year toward achieving overall project success. Please complete columns 1 and 3 for all future years.

Overall Project Objectives	Progress to date	Deliverables
<p><u>2002 – 2003 fiscal year</u></p> <ul style="list-style-type: none"> • See objective #1 (listed above) and attached proposal 	<p>The project was formally approved by project partners during January 2002. An agreement to transfer funds from WNMNF to CFS was finalized in March 2002. The contractual agreement between CFS and University of Maine was completed in April 2002 and partial funding for year #1 was received at University of Maine in June 2002. Thus the start date of the project was pushed back to 1 June 2002 (originally proposed as 1 October 2001). Transfer of the remainder of year #1 funding from CFS to University of Maine was completed during December 2002.</p> <p>Approval of year #2 funding by WNMNF was received by the principal investigator during August 2002. WNMNF and CFS are currently working to transfer funding to CFS with the expectation that year # 2 (02-03) funding will be received at the University of Maine during winter 2003.</p> <p>Progress on several fronts has been achieved following project inception on 1 June 2002. The Ph.D. student on the project (Angela Fuller) has completed all university requirements to achieve degree candidacy, including completion of coursework, academic proposal preparation and presentation, and successful completion of both written and oral comprehensive examinations. After year #2 funds are received by University of Maine (anticipated February 2003), we will have the necessary resources to hire a full-time GIS analyst who will work with Angela to complete objectives 1 –3 during the following 14 months.</p> <p>Several additional resources from Newfoundland are needed to complete project objectives, including: data input, screening, and home range calculation for approximately 150 years of marten data collected by CFS scientist and co-collaborator B. Hearn; reclassification of the scrub layer in existing forest inventory maps for the Little Grand Lake and Red Indian Lake study areas into meaningful currencies for marten; and updating and integration of the reclassified shrub layer with updated, year-specific forest inventory coverages for the Little Grand and Red Indian Lake study sites. B. Hearn has collaborated with other scientists within Newfoundland on the scrub-layer reclassification project, which was completed during early December 2002. CFS is now working to rectify those coverages with existing forest inventory data for the 2 study areas and will make year-specific coverages available to University of Maine scientists by February 2003.</p> <p>Project scientists from University of Maine traveled to Newfoundland during June 2002 and December 2002 to work with CFS scientists to finalize methodologies for computing testing home range outputs from marten spatial data. Home range analyses were completed during December 2002 and results were presented by B. Hearn at a</p>	<ul style="list-style-type: none"> • Written updates presented to WNMNF in June 2002 and 3 presentations were given to partners and Marten Recovery Team members in Grand Falls, Newfoundland, December 2002. • Results of habitat selection analyses to be presented to partners and members of Marten Recovery Team at April 2003 meeting.

<p>2003 – 2004 fiscal year</p> <ul style="list-style-type: none"> • Completion of objective #1, initiation and completion of objectives #2 and # 4 (listed above) – see attached proposal for 	<p>workshop sponsored by the Marten Recovery Team in Grand Falls. Vertices of those home ranges have been transferred to University of Maine and will be combined with results of habitat selection analyses (ongoing) and with updated GIS coverages (to be completed by CFS collaborators by February 2003) to define spatial currencies most closely associated with home range occupancy by marten. Currencies will be defined by September 2003 and will be presented to project partners and to the Marten Recovery Team during fall 2003.</p> <p>B. Hearn has collaborated with other scientists at CFS (e.g., Joan Luther) to acquire additional funding to develop and test the utility of satellite imagery for classifying the shrub layer throughout the province, and to integrate those findings with efforts to develop a satellite-based provincial forest inventory in raster format. Outputs from that project will allow the models developed to predict and map potential habitat for marten during this study to be applied province-wide. J. Luther (CFS) presented the extensive preliminary results and rapidly progressing status of that shrub-reclassification and satellite mapping project at the recent workshop for project partners and the Marten Recovery Team during December 2002.</p> <p>A post-doctoral scientist, Dr. Jeffrey Hepinstall, (funded by U.S.sources) has continued to work in Dr. Harrison's lab to apply predictive models of marten habitat occupancy developed for 3 study areas in Maine to a statewide satellite-derived, raster database. Reliable (> 75% correct classification) models were developed during fall 2002 and were successfully applied statewide in Maine based on both 1993 and 2000 satellite imagery (change detection). Results were presented to partners and the Marten Recovery Team at the workshop held in December 2002. It is anticipated that those methodologies will be directly transferable to the Newfoundland modeling project.</p> <p>Dr. Hepinstall continues to work with Dr. Harrison to quantitatively evaluate whether marten function as an umbrella species for conserving habitat for other forest-specialized and forest generalist vertebrates. Those results should also be directly applicable to many of the vertebrates in Newfoundland.</p>	
	<ul style="list-style-type: none"> • Completion of objectives 1,2,4 	<ul style="list-style-type: none"> • Results of habitat currency analyses to be presented at workshop in fall 2003. • Predictive model of marten occurrence for Little Grand Lake and Red Indian Lake to be presented during

more information <input type="checkbox"/> N/A		workshop in spring 2004.
2004 – 2005 <u>fiscal year</u> <ul style="list-style-type: none"> • Objective # 3 (listed above) – see attached proposal for additional information <input type="checkbox"/> N/A	<ul style="list-style-type: none"> • Completion of objective 3 	<ul style="list-style-type: none"> • Final results of objective 1,2,4 and applications workshop presented fall 2004. • Final project presentation and final report, and model application packets delivered to partners and the Marten Recovery Team during winter 2005.

Description of modifications and problems incurred: Project approval by partners, interagency agreements between VNMF and CFS, contract negotiations between CFS and University of Maine, and delay in transfer of year #1 and year # 2 funds to University of Maine delayed the proposed start date from October 2001 until June 2002. These factors have moved all timelines forward by 8 months. Within that modified timeline, all activities are proceeding as proposed and are on schedule.

Part C—Financial Report

Using a condensed version of the cost breakdown table in your original application form describe the current budget situation.

Fiscal Year 2002 – 2003 (WNMF Funds Only)	Original Budget	Expenditures to end of fiscal	Balance
Human Resources			
Materials, Supplies, and Equipment	Budget is unchanged from originally approved budget (see attached), with the caveat that all timelines for expenditures have been moved forward 8 months. See <i>Description of modifications and problems incurred</i> section of this report for more details.		
Rental and/or lease			
Transportation			
Communications materials			
Other expenditures			
Total			

Overall Sources of funds - Final budget

	2003-2004		2004-2005		2005-2006	
	Cash	In kind	Cash	In kind	Cash	In kind
WNMF	\$20,000	Transfer \$58,000 from 5 partners to CFS	\$0	Transfer \$5,000 from 1 partner (Parks Canada) to CFS	\$0	\$0
Partner 1		SEE ATTACHED PROPOSAL AND BUDGET FOR 5 PARTNER CONTRIBUTIONS				

Partner Disclosure:

- Partner 1: Newfoundland Forest Service
- Partner 2: Newfoundland/Labrador Wildlife Division
- Partner 3: Corner Brook Pulp and Paper
- Partner 4: Abitibi Consolidated
- Partner 5: Parks Canada