

FII Forest Research Program 2003/04 Annual Progress Report

The purpose of this Annual Progress Report is to communicate progress and achievements of your research project over the funding period and identify impacts or outcomes of the project. Information from this progress report is required to assess the final progress of the project in relation to the Recipient Agreement and to provide information required for FII Ltd. to report on annual achievements and funding investments for the Forest Research Program. Complete the required information in the unshaded text boxes for **Parts A to C**, (text boxes will expand).

Part A: General Project Information

The information provided under Part A will be available for immediate posting on the Internet in a project repository on the Natural Resources Information Network (NRIN) website.

Project No:	R04-059
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Project Title:	Mountain Goat Habitat Supply Modeling: Developing an Operational Tool for Sustainable Forest Management Planning
Final Project Abstract:	This project continued development of an existing mountain goat habitat supply model (Goat HSM; previously funded by FII). We completed preliminary assessments of the effectiveness of Goat HSM as a predictive tool, and evaluated the feasibility and effectiveness of implementing Goat HSM as an operational planning tool. Project design was based on collaboration amongst diverse stakeholders. The results serve resource managers and planners, and provide measurable progress toward a) validation and calibration of the model, b) developing standards for demonstrating due diligence and accountability in Forest Stewardship Plan submissions, and c) developing innovative policies and improved standards for establishing adaptive management strategies that balance timber supply and mountain goat habitat needs. The long-term goal is to develop a useful operational planning tool at the Forest Stewardship Plan level, and contribute toward developing adaptive management strategies that can be applied to other geographic areas.
Keywords:	Mountain goat, habitat supply modeling, integrated resource management, Sustainable Forest Management Plan, policy development, adaptive management, Forest Stewardship Plan

Part B: Project Impacts, Outcomes, Progress, and Extension

Information provided in Part B is used to evaluate and assess the completion of the project in relation to the terms and workplan outlined in the Recipient Agreement and assess the impacts and outcomes of the project.

B1: Workplan and Annual Progress Summary:

Using the table below, describe the extent to which the activities and objectives identified in the workplan (Schedule A Recipient Agreement) were achieved. Indicate any changes from the original plan in bold, and indicate date of approval and brief rationale for the change. Please list extension activities and deliverables in table B5 below (“**Outputs, Deliverables, and Extension**”)

Project Component or Objective	Activities (Tasks)	Extent to Which Activities have been Completed and Objective has been Achieved
Assess the effectiveness of Goat HSM as a predictive tool (evaluate model inputs and results)	a) Peer review of model approach, development, and application b) Data collection to enable field-testing of the model predictions	a) Four consultative, stakeholder workshops were held to facilitate development, review, and application of Goat HSM; preliminary model was run for the Ospika and Osilinka-Lay areas; refined model was run for the Akie/Pesika area. b) Reconnaissance of model-predicted mineral licks was conducted to provide a preliminary assessment of model input data suitability and results; bi-weekly aerial telemetry flights were completed to monitor radio-collared goats.
Evaluate the feasibility and effectiveness of implementing Goat HSM as an operational planning tool	a) Apply the Goat HSM to evaluate forest stewardship planning scenarios b) Use the model as a framework for developing adaptive management strategies	a) Multi-year planning scenarios were run for the Akie/Pesika area (3 scenarios, 8 time steps) using preliminary data to demonstrate the utility of Goat HSM as a planning tool. b) Applications of Goat HSM relative to the development of management strategies was discussed during 4 consultative, stakeholder workshops and synthesized in the Goat HSM documentation.

B2: Research Question:

Restate the research question as per your original proposal and comment on the extent to which your research question has been answered during the current funding period.

Can mountain goat habitat supply models be implemented as effective operational tools to facilitate integrated, efficient, and sustainable management of mountain goats and forest stewardship planning?

We have shown that Goat HSM can predict habitat distribution, enable quantitative evaluations of disturbance impacts on habitat value (spatially and temporally), and facilitate comparisons among alternate development scenarios, thereby addressing the needs identified by resource managers and forest industry planners. The continued support of resource managers and forest industry planners who have participated in development of Goat HSM reflects our success in demonstrating the intent, application and utility of Goat HSM as an operational planning tool.

B3: Impacts and Outcomes:

Describe the impacts and outcomes of the research and how the research has benefited or improved sustainable forest management. Where possible, provide quantifiable outcomes associated with this research (i.e., volume gain in terms of m³; cost savings due to improved access, etc.).

Goat HSM facilitates pro-active and informed forest resource planning and management by enabling quantitative predictions relative to the distribution and value of mountain goat habitats over time. Use of Goat HSM as a planning tool demonstrates due diligence in forest stewardship planning under the BC Forest and Range Practices Act, and promotes the balanced sustainability of mountain goats and timber supply.

B4: Users and Application of Results:

List the user group and describe the realised or expected benefit of your research (eg, researchers, technical experts, planners, foresters, practitioners, regulators, decision makers, public). If results or information derived from the research have been used, provide the name of the individual and organisation and describe how the information has been applied.

User/User Group	Realised/Expected Benefit
Forest industry planners	A decision-support tool that enables pro-active and informed evaluations of proposed forest stewardship planning scenarios, such that the sustainability of timber supply and mountain goat habitat can be optimized

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Government regulators	A decision-support tool that demonstrates due diligence in industry Forest Stewardship Plan submissions
Policy makers and resource managers	A common understanding of timber and non-timber resource values, to aid in adaptive policy development and sustainable management of mountain goat habitat and timber supply
Researchers	Model that incorporates the spatial components of habitat selection and enables informed and testable predictions of mountain goat responses to managed and natural changes (i.e., disturbances)

B5: Outputs, Deliverables, and Extension

List the deliverables or extension products developed from the research during the 2003/04 funding period. Please identify a) the type of deliverable (TYPE), b) the deliverable citation, and c) whether it is (Y) or is not (N) included as part of this Annual Progress Report submission (INCL).

TYPE	CITATION	INCL (Y/N)
TEC	Hengeveld, P.E. 2004. Mountain goat habitat supply modeling: developing an operational tool for sustainable forest management planning. Progress Report. Wildlife Infometrics Inc. Report No. 110. Wildlife Infometrics Inc., Mackenzie, BC. [Note: this report includes several deliverables – technical report, field data, workshop summaries, updated Netica models, poster presentation, oral presentation]	N
TEC	Hengeveld, P.E., M. D. Wood, R. Ellis, R.S. McNay, and R. Lennox. 2004. Mountain goat habitat supply modeling in the Mackenzie Timber Supply Area, north-central British Columbia. Year 2 – March 2004. Wildlife Infometrics Inc. Report No. 109. Wildlife Infometrics Inc., Mackenzie, BC.	N
TEC	McKinley, R.M. Draft. Goat HSM user’s guide. Wildlife Infometrics Inc., Mackenzie, BC.	N

Deliverable Type Legend

TYPE	OUTPUT DESCRIPTION	TYPE	OUTPUT DESCRIPTION
TEC	Technical Report	FGM	Field Guide or Manual
JOU	Peer Reviewed Journal Article	ORA	Oral Presentation
EXT	Extension Note or Newsletter Article	POS	Poster Presentation

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NEW	Newsletter	WEB	Website
BOK	Book or Book Chapter	OTH	Other

Part C: Additional Project Information

Information provided in Part C will be used to report out on the overall investments of the Research Program during the 2003/04 funding period.

C1: Multi-year Projects: If the project is part of a multi-year research initiative, indicate in the statement below where the current funding period (2003/04) lies within the longer term research program:

The 2003/04 fiscal period represents year 2 of a 3 year research program/project.

C2: Research Focus: Select (by placing an X in the preceding box) the primary category that would best categorize the focus of research

<input type="checkbox"/>	Silvicultural Systems - (harvesting systems – shelterwood, clear-cut, etc.)	<input type="checkbox"/>	Natural Disturbance Dynamics (fire, wind, etc.)	<input type="checkbox"/>	Site Rehabilitation and Restoration
<input type="checkbox"/>	Growth and Yield (modeling, site index work)	<input type="checkbox"/>	Ecosystem Dynamics (classification, inventory, PEM, ecosystem research)	<input type="checkbox"/>	Forest Genetics
<input type="checkbox"/>	Biodiversity/Habitat Management (SAR, habitat requirements, habitat supply modeling)	<input type="checkbox"/>	Wood Quality (assessment, wood properties and potential applications)	<input type="checkbox"/>	Other – Please specify
<input type="checkbox"/>	Forest health (pests and pathogens)	<input type="checkbox"/>	Soil Conservation, Health, and Productivity		
<input type="checkbox"/>	Riparian and Aquatic Management (buffers, CWD)	<input checked="" type="checkbox"/>	Integrated Resource Management (land use planning)		

C3: Biogeoclimatic Ecosystem Classification: Identify (by placing an X in the preceding box) the BEC zone(s) to which the research applies.

<input checked="" type="checkbox"/>	Alpine Tundra	<input checked="" type="checkbox"/>	Engelmann Spruce-Subalpine Fir	<input type="checkbox"/>	Ponderosa Pine
<input checked="" type="checkbox"/>	Boreal White and Black Spruce	<input type="checkbox"/>	Interior Cedar-Hemlock	<input checked="" type="checkbox"/>	Spruce-Willow-Birch
<input type="checkbox"/>	Bunchgrass	<input type="checkbox"/>	Interior Douglas-Fir	<input checked="" type="checkbox"/>	Sub-Boreal Spruce
<input type="checkbox"/>	Coastal Douglas-Fir	<input type="checkbox"/>	Montane Spruce	<input type="checkbox"/>	Not applicable
<input type="checkbox"/>	Coastal Western Hemlock	<input type="checkbox"/>	Mountain Hemlock	<input type="checkbox"/>	

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C4: FII's Objectives and Strategies: With respect to FII's objectives and strategies listed below, identify (by placing an X in the preceding box) which of the following strategies best represents the overall objective and approach of your research project.

Objectives and Strategies	
Objective: To support more effective policies, regulations, and guidelines	
X	Support policy, regulatory and guideline development, evaluation and adjustment
X	Enhance quality of decision making through improved knowledge base
X	Empowered decision makers to employ practical adaptive management approaches
X	Support greater certainty in planning and decision making for all forest resources values
Objective: To enhance the value of timber and forest land assets	
	More effective and efficient use of forest resources
	Reducing costs of timber production
	Reducing forest health risks through improved management practices
	Enhancing timber quality and resulting products
	Increasing available volume and value through productivity enhancements, increased utilisation and better realisation of inherent site potential
	Increasing available timber volume through management of access constraints
Objective: To improve stewardship and market acceptability of BC forest practices and forest products	
X	Promoting new or adapted forest practices which give BC an edge in the world forest product marketplace
X	Improving sustainable forestry practices in terms of planning, management, monitoring, analysis, reporting and adjustment
X	Enabling and accelerating certification practices