

B.C. Mountain Goat Workshop, Prince George, BC 2005

Project Title: Mountain goat habitat supply modeling and applications in the Mackenzie Timber Supply Area, north-central BC

- 1. Project Leader(s):** R.Scott McNay, Pamela Hengeveld
- 2. Project Team Members:** Rick Ellis, Mari Wood, Fraser Corbould, Ross Lennox, Doug Heard, Doug Wilson, Bill Arthur, Shelby Lefebvre, Sam Davis, Jeremy Greenfield, Karl Sturmanis, Robert Tomah
- 3. Project contact information:** Phone: 250-997-5700 Scott, 250-997-3496 Pam
Fax: 250-997-5825 Scott, 250-997-3486 Pam

Email: scott.mcnay@wildlifeinfometrics.com pamela@synergyecology.ca
Web page: www.wildlifeinfometrics.com www.synergyecology.ca

- 4. Project location:** Mackenzie Timber Supply Area, north-central BC

Coastal: Transition: Interior:

- 5. Project timeframe:** Start (month/year): Jan 2003 End (month/year, or ongoing): ongoing

- 6. Project status:** Data collection Analysis Write-up Publication

- 7. Project objectives:** (briefly describe the primary objectives of your project)

Project components include mountain goat habitat supply modeling, population inventory and habitat-use data collection (to verify and calibrate the models), and policy development. The results are intended to serve resource managers and planners, and provide measurable progress toward developing innovative policies and improved standards for a) demonstrating due diligence and accountability in Forest Stewardship Plan submissions and Forest Certification programs, and b) establishing adaptive management strategies that balance timber supply and mountain goat habitat needs. The ultimate goal is to develop Goat HSM as a useful operational decision-support tool that allows a transparent, quantitative assessment of disturbance impacts on goat habitats, and contributes to the development of adaptive management strategies that can be applied to other geographical areas.

- 8. Project descriptors** (select all that apply):

Research <input checked="" type="checkbox"/>	Habitat Use: <input checked="" type="checkbox"/>	Forestry Interactions: <input checked="" type="checkbox"/>
Management <input checked="" type="checkbox"/>	VHF collars: <input checked="" type="checkbox"/>	Oil & Gas Interactions: <input type="checkbox"/>
Inventory <input checked="" type="checkbox"/>	GPS collars: <input type="checkbox"/>	Mineral Exploration: <input type="checkbox"/>
Predation: <input checked="" type="checkbox"/>	Harvest: <input checked="" type="checkbox"/>	Aerial Disturbance: <input checked="" type="checkbox"/>
Habitat Modeling: <input checked="" type="checkbox"/>	Population Dynamics: <input checked="" type="checkbox"/>	Human Disturbance: <input checked="" type="checkbox"/>

Other:

- 8. Project description** (provide a brief description of your project including methods and main findings or results to date):

Our approach to mountain goat habitat supply modeling employs Netica to formulate a Bayesian Belief Network concerning the likely state or condition of mountain goat habitats given observed

states or conditions of key ecological factors. To date, predictive models have been developed for mineral licks, lick access trails, summer escape terrain, and winter escape terrain habitats. The key ecological input factors, the influence diagrams, and the choice of conditional probabilities fundamental to each node in the models were all based on a consensus of opinion taken from a variety of professionals experienced in the ecology of mountain goats. Model results express values for habitat capability, habitat preference (capability modified by disturbance impacts), and habitat value (preference modified by predation risk and hunter harvest levels). Collectively, these sub-models are testable hypotheses that represent our understanding of mountain goat ecology and influential management factors.

Trial applications of the models have been conducted in the lower Ospika River drainage, the upper Osilinka / Mesilinka river drainages, and the Truncate Creek area, in the Mackenzie TSA. Multi-year planning scenarios were evaluated for Truncate Creek (3 scenarios, 8 time steps), using preliminary data to demonstrate the model's utility and intended application as a planning tool. Preliminary tests of the mineral lick and escape terrain models were conducted in 2004-2005. All work completed to date is documented in our annual progress reports.

9. Project documentation (provide a list of citations for all progress, final, or published reports)

Hengeveld, P.E., M.D. Wood, R. Ellis, R.S. McNay, and R. Lennox. In Prep (2005). Mountain goat habitat supply modeling in the Mackenzie Timber Supply Area, north-central British Columbia. Version 3.0 – June 2005.

Hengeveld, P. E. and R.S. McNay. 2005. Mountain goat habitat supply modeling: pilot project test results. Report No. SAE005. Synergy Applied Ecology, Mackenzie, BC. 25pp plus appendices.

Hengeveld, P. E. 2005. An ecosystem approach to planning for sustainable management of mountain goats and timber supply: Mountain goat management recommendations for the Mackenzie Timber Supply Area. Report No. SAE006. Synergy Applied Ecology, Mackenzie, BC. 15 plus appendices.

McNay, R.S. and P.E. Hengeveld. 2004. Response to FIA Forest Science Program Call for Proposals 2004/05: An Ecosystem Approach to Planning for Sustainable Management of Mountain Goat Resource Values and Timber Supply (Proposal Number Y051348). Rep. No. 102, Wildlife Infometrics Inc., Mackenzie, BC. 17pp plus appendices.

Hengeveld, P.E. 2004. Mountain goat habitat supply modeling: developing an operational tool for sustainable forest management planning. Wildlife Infometrics Inc. Report No. 110. Wildlife Infometrics Inc., Mackenzie, British Columbia, Canada. 35pp plus appendices.

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. Version 2.0 – March 2004. Wildlife Infometrics Report No. 109. Wildlife Infometrics Inc., Mackenzie, British Columbia. 69 pp.

Hengeveld, P. E. 2003. Mountain Goat Habitat Supply Modeling: Developing an Operational Tool for Sustainable Forest Management Planning. Response to FII RFP FR 2003/04. Wildlife Infometrics Inc. Report No. 116. Wildlife Infometrics Inc., Mackenzie, British Columbia, Canada. 38pp.

Hengeveld, P.E., M. Wood, R. Ellis, and R. Lennox. 2003. Mountain goat habitat supply modeling in the Mackenzie Timber Supply Area, north-central British Columbia, Year 1 – March 2003. Wildlife Infometrics Inc Report No. 46. 47pp plus appendices.

Hengeveld, P.E. 2002. Mountain goat mineral lick habitat supply model, with preliminary application in the Ospika River drainage, north-central B.C.: Response to FII RFP Number FII RFP RES 2002-03. Wildlife Infometrics Inc Report No. 2. 26pp plus appendices.