QuickNotes

Science Summaries from fRI Research

Marten habitat use in a managed boreal landscape

Gord Stenhouse

This three-year research project (Dec 2023–Dec 2025), funded by the Forest Resource Improvement Association of Alberta (FRIAA), was a collaborative effort between:

- Vanderwell Contractors
- Alberta Trappers Association — Slave Lake Local 1190 (through Registered Fur Management Area holders)
- fRI Research

Local trappers were co-investigators who helped develop research questions and served as field technicians conducting monthly camera maintenance and data collection. The habitat-based study design called for 90 motion-activated trail cameras (18 per trapline) across five spatially distinct Registered Fur Management Areas. The cameras produced a total of 3,265 camera-trap nights. The trappers checked SD cards and maintained scent lures monthly, and brought the images to Slave Lake to be processed and entered into a project database.

The primary objective was to investigate pine marten habitat use across a managed forest landscape with a range of stand ages and forest types.

For more information about this research, contact
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Key Findings

- 612 marten detections.
- Detection rates varied among traplines; one trapline contributed ~65% of all images, likely linked to local trapping management and proximity to riparian habitat. Other traplines showed variation but were generally consistent between years.
- There were seasonal trends in detections consistent with marten life history (spring breeding, and juvenile dispersal in fall).
- Marten were active at all hours but showed two activity peaks: morning (06:00–12:00) and evening to late night (17:00–02:00).
- Mature and overmature stands accounted for nearly 70% of detections. However, 21–22% of detections occurred in stands <30 years, indicating some use of early seral habitats.
- Deciduous stands accounted for 91% of detections, mixed stands ~5.7%, and conifer-dominated stands ~3.4% across the three years—highlighting strong use of deciduous habitats in this study area.
- Morphological data from trapped marten (two seasons) showed body lengths and weights consistent with literature values, suggesting local habitat conditions meet nutritional and energetic needs.
- Cameras also recorded multiple other carnivore species, providing broader community context.

Interpretation and implications

- The high use of mature and overmature stands aligns with marten's association with late-successional forest structure (coarse woody debris, hollow trees, complex vertical structure). In this study area, deciduous stands appear to provide many of these critical elements and support healthy marten condition.
- The substantial use of deciduous and riparian areas suggests these habitats are important for marten in some boreal landscapes and should be considered alongside conifer forests in management planning.
- Variation between traplines (notably the one with high detections near riparian zones and reduced trapping pressure) points to the influence of local management and habitat configuration on marten presence.
- While this camera-based study did not estimate home-range sizes, results support continued, complementary work (e.g., radio-telemetry) to address movement and space-use questions.

Next steps

This project demonstrated the value of co-produced research with local trappers and industry, producing data directly relevant to sustainable forest management. Findings can inform improvements to Alberta's marten habitat suitability models used in Forest Management Plans. Additional data collection across other natural subregions and targeted studies (e.g., radio collaring, prey surveys) would strengthen model transferability and refine habitat management recommendations.

Acknowledgement

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