

The 12th North American Caribou Workshop,
Happy Valley/Goose Bay, Labrador, Canada,
4–6 November, 2008.

Relationship between landscape connectivity and gene flow for boreal caribou: clues for conservation

Micheline Manseau^{1,2}, Mark Ball³, Paul Wilson³, & Andrew Fall⁴

¹ Western and Northern Service Centre, Parks Canada, 145 McDermot Ave, Winnipeg, Manitoba. R3B 0R9, Canada (micheline.manseau@pc.gc.ca).

² Natural Resources Institute, University of Manitoba. Winnipeg, Manitoba.

³ Biology Department & Forensic Science Program, Trent University, Peterborough, Ontario.

⁴ Gowlland Inc., Victoria, British Columbia.

In order to ensure the protection of long-ranging species, the composition and configuration of a landscape - which determine landscape connectivity or the degree to which the landscape facilitates or impedes the movement of organisms - must be assessed. Landscape connectivity influences the species' ability to access habitat, avoid predators, move between core parts of a range and between ranges and contribute to gene flow. Knowing that different species experience landscape in scale-dependent ways and that a given landscape might appear connected to some species while fragmented to others, we used telemetry, habitat and genetic data from different caribou ranges in Manitoba and Saskatchewan to assess the importance of landscape connectivity and identify movement thresholds at different spatial scales; telemetry data for the seasonal and home range scales and genetic data for the landscape or meta-population scale. Using these thresholds, it is then possible to identify biologically relevant clusters of habitat, as these areas most contribute to overall landscape connectivity. For management purposes, the identification of these clusters may point to targeted restoration efforts in proximity of small clusters to increase the size of these core areas or the protection of movement corridors to ensure linkages between these core areas. In cases where movement between clusters is limited, each area may correspond to different ecological units or ranges that can then be analyzed or managed separately. These spatial analyses and results offer additional tools to land use and recovery planners, to support the establishment and management of protected areas. They spatially represent the composition and distribution of core habitat areas and as importantly, corridors allowing for movement and gene flow on these vast landscapes.