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## **DENSITY AND ABUNDANCE OF WOLVERINES IN GLACIER NATIONAL PARK, MONTANA, USA**

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Wolverines (*Gulo gulo*) are a rare mustelid carnivore inhabiting the northern US Rocky Mountains. Because they may be closely tied to areas with persistent snow pack, and because these areas may diminish due to climate change, wolverines are a candidate for listing under the U.S. Endangered Species Act. Glacier National Park (GNP) contains over 4,000 km<sup>2</sup> of rugged mountain terrain straddling the Continental Divide immediately south of the U.S./Canada border. Much of this terrain is considered wolverine habitat, and GNP may contain a significant portion of the U.S. wolverine population. GNP, in collaboration with the USDA Forest Service Rocky Mountain Research Station, and following on the heels of a telemetry-based research project conducted in GNP 2003-2008, began a non-invasive DNA-based wolverine population monitoring program in 2009. The objectives of the program were

to identify effective methods of non-invasive monitoring and then use these to estimate population size and density. Using primarily volunteer labor, we began by placing baited hair-snag stations along lakeshores where we felt we might intercept wolverines during winter 2009. This evolved into a systematic survey of the park using a 10 x 10 km sampling grid over putative wolverine habitat during the winters of 2011 and 2012. We then applied a multi-faceted mark-recapture analysis to the accumulated data. Here, we present the findings from this effort, including estimates of population size, density, and trend, and insights concerning wolverine population monitoring.