

Supporting Information for Wildlife Research Permit Application – Wolf Detection Survey and Kill Site Investigations

Detection survey: To derive precise population estimates of low-density wildlife such as wolves, aerial surveys need to incorporate the probability that observers detect wolves and the factors influencing this detection rate (e.g. percent forest cover). Radio-collared wolves provide an opportunity to efficiently estimate detection rates by flying surveys around locations of known wolves and recording whether the wolf was detected as well as the factors influencing this detection. We will use fixed-wing aircraft and an experienced Biologist to navigate to known wolf locations (i.e. collared wolves) without the rear observers knowing the exact location of the wolf. A plot surrounding the collared wolf is immediately selected and transects will be flown with 1km spacing. Only the rear observers are used to survey the plot with the front observer serving as a data recorder and monitoring the radio telemetry equipment to confirm the wolf is within the plot during the survey. Data recorded includes whether the collared wolf was detected by the observers, GPS points taken along the transect when a wolf is seen as well as the actual wolf location, an estimate of forest coverage including photos when possible, and all other wildlife seen within the plot. If the collared wolf is missed during the survey, radio telemetry will be used to locate the wolf, record its location with GPS, and take the same estimates of forest coverage including photos.

Once a plot is completed, the aircraft will fly to the location of the next collared wolf and the process is repeated. It is estimated a single plot will take approximately one hour of flight time including the time to detect the plot the wolf is within and fly the survey. Since collared wolves within the study area are quite spread out, it is anticipated only 1-3 collared wolves can be surveyed per day (approximately 4-6 flight hours per day). We anticipate locating and surveying between 15 and 30 wolves in the last two weeks of March. Wolf locations will likely cover a broad area from north of Wekweeti to Mackay Lake and eastward to Clinton-Colden Lake and include both boreal forest and tundra environments.

Kill site investigation: GNWT has GPS collared wolves that obtain several precise locations per day. For wolves consuming large prey, concentration of locations may reveal kill/feeding sites. However, distinguishing these sites from other behaviours (e.g., resting sites) can be challenging without visiting many clusters to confirm whether or not a cluster contains remains of large prey (e.g., caribou or moose). A small fixed-wing plane will fly to a set of co-ordinates representing a cluster of repeated wolf collar locations to determine if there are remains of a feeding site by wolves in the area. The plane will circle the co-ordinates low level at least 2-3 times to ascertain if carcass remains are present in the area. If a carcass or feeding site is seen, a waypoint will be taken to obtain its exact location. Pictures will be taken of the site to determine prey species and a count of any animals present at the site. The plane will circle the general area within about 500m radius of the co-ordinates to search for any other feeding site or if wolves are resting nearby. A count of wolves and pack size will be taken when observed at any time, whether near a cluster site or in transit. Once a site has been adequately searched and documented, the plane will fly to the next provided cluster site and repeat the same procedure. Cluster sites will likely cover a broad area from north of Wekweeti to Mackay Lake and eastward to Clinton-Colden Lake and include both boreal forest and tundra environments.