Technical Report

To: Yukon Fish and Wildlife Enhancement Trust

From: Todd Mahon, Senior Wildlife Ecologist, LGL Limited
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Date: June 11, 2026

RE: Annual report for SFN wolf monitoring project

1 Project Information

1.1 Background and Purpose

The purpose of this project is to develop a long-term wolf monitoring program within select portions of Selkirk First Nation Traditional Territory. Yukon is one of few jurisdictions in the world where large mammal predator-prey systems persist over large areas. Traditionally, Selkirk First Nation (and other Yukon First Nations) viewed themselves as a part of those predator-prey systems. Selkirk FN is concerned about the changes in the abundance and distribution of moose and caribou within their Traditional Territory. Potential factors causing these changes include habitat changes from wildfires, climate change, licensed hunting, and predation by wolves. Predator-prey dynamics of wolves can play a significant role in the abundance and distribution of caribou and moose in Yukon. However, wolf densities are difficult to monitor, and current population levels and trends in SFNTT are unknown. Recent advances in wildlife acoustic technologies allow researchers to identify individual wolves from audio recordings of howls. This technique, coupled with strategic design of recording sites, can be used to estimate wolf densities and pack sizes, as well as provide coarse measures of home range sizes and movement patterns. SFN is hoping to use this methodology to develop a long-term wolf monitoring program within select portions of their Traditional Territory. 2025 is intended to be a pilot year of the program and results from this year will be used to refine the study design to best support a multi-year monitoring program.

1.2 Project Activities

Project work in 2025/26 consisted of three main activities: (1) literature review, (2) study design, and (3) field surveys.

Purpose of the literature review was to compile and synthesize the state of the science on using bioacoustic methods to monitor wolves. This included an understanding of what information was and was not possible to obtain as well as to understand key considerations and methods associated with study design and data analysis. This work consisted of a traditional literature review including, database search for relevant papers, review of each paper, and summary of findings into a synthesis document.

The purpose of the study design activity was to use the information synthesized in the literature review to develop a specific study design tailored to SFN's objectives and regional environmental factors. This included decisions associated with recording periods, including time of day, seasonal periods, and monitoring duration (i.e., based on pack return periods), distance between recording sites, study area size considerations, and data processing methods. This activity consisted of initial development of a study design and methods by the lead LGL biologist followed by review and discussion with SFN and YG biologists. The results from this activity are documented in a survey plan, including a study area map with pre-selected survey stations.

Late winter was identified as the best time of year for surveys for a combination of reasons— wolves howl frequently, frozen lakes and snow cover are favourable for access, and days are longer and warmer. Monitoring was conducted March 15 to April 21, 2026 (see further discussion about timing below). Surveys consisted of 30 recording stations, spaced 8-10 km apart, across a 60 x 60 km study area east of Pelly Crossing centred on the confluence of the Macmillan and Pelly rivers (large enough to overlap 6-10 wolf packs with approximately 4 stations per pack). Most stations were located in low elevation valley bottoms (winter moose range) where wolves were likely to occur.

The recording data from this spring's surveys is still to be analyzed. However, the logistics associated with ARU deployment and retrieval indicate that the field survey component of the program is suitable for multi-year monitoring. Compared to aerial surveys to count wolves, the traditional approach used by Yukon Government, monitoring with ARUs is much more cost effective and logistically flexible. ARU deployment took two field days (5.9 h helicopter) and retrieval took one day (3.3 h helicopter).

Figure 1. SFN Land Guardian deploying Audio Recording Unit

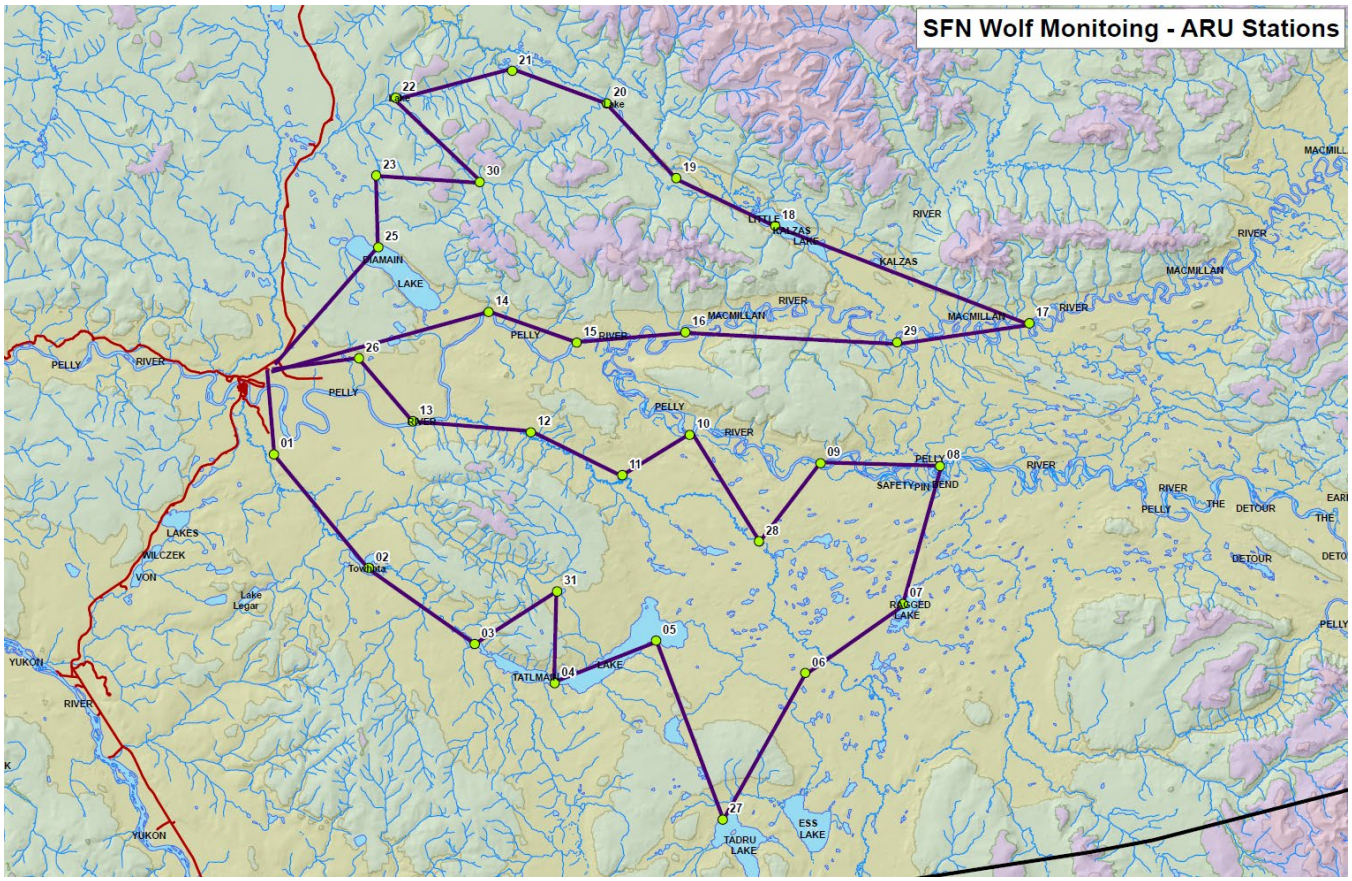

Figure 2. Audio Recording Unit locations, SFN wolf monitoring study, March 2026.

1.3 Work Plan Variances

A variance to our original work plan was the decision to conduct field surveys in March and April. This was later than our originally planned survey window of mid-February to late March. The variance was due to unseasonably cold conditions in late February through most of March. Although the specified operating conditions of the ARUs and batteries were -40°C, some researchers had reported problems with the units in cold temperatures. We attempted to assess this potential issue by conducting trials in January to see how the units performed. Two units (out of twelve) did malfunction when the temperature dropped below -20°C. As a result of this issue, we delayed deploying units as long as we could in March 2026, waiting for temperatures to warm above -20°C. However, we ultimately deployed the ARUs in mid March, with overnight temperatures still consistently below -20°C, due to deadlines with SFN funding and concerns that rates of wolf howling may begin to diminish.

As a result of this delay in field surveys, the data analysis and reporting components of the project have been delayed into 2026/27.

1.4 Lessons Learned

A key lesson learned to date, that we will need to address moving forward with subsequent years of study, is the sensitivity of the ARU's to temperatures below -20°C. Despite our delay in field study to start in mid March, extremely cold temperatures extending to the end of March resulted in the malfunction of some ARUs (i.e., failure to record over the full period). We will be reviewing the data that was obtained over the next few months, including log files generated by the ARUs, and discussing the issue with the manufacturer to understand and resolve the problem. Based on the results of that investigation, we will be reconsidering the time of year for subsequent surveys based on trade-off between wolf ecology, survey logistics, and environmental limitations of the ARUs.

2 Communications and Knowledge Sharing

Using audio recordings of wolf howls to enumerate wolves is a new and evolving technique. To elevate the level of information sharing among interested parties, we formed a small technical working group (TWG) consisting of biologists and managers from SFN, LGL Limited (lead consultant), and Yukon Government. The TWG met three times during the year to discuss project objectives, funding opportunities, methods, and study areas. In the future the TWG may expand to include academic partners and bioacoustic specialists.

2.1 Knowledge Sharing with Local First Nations

To share the results of our study with SFN and other Northern Tutchone First Nations we presented the results of the study to date (i.e., literature review, study design, and field data collection) at the Northern Tutchone May Gathering in 2026. A copy of the presentation is available upon request.

2.2 Reporting

Two interim project reports were produced in 2025/26, a literature review and sample plan. The literature review compiled and synthesized relevant literature on wolves including (i) the state of science on bioacoustic monitoring for wolves and (ii) the ecology of wolves in northern boreal areas. The sample plan considered the information from the literature review, local environmental factors, and logistical constraints in developing survey protocols and site selection. The purpose of having a detailed sample plan was to explicitly document the rational and trade-offs associated with survey methods and to provide a report that members of the TWG could review. Key information in the sample plan includes recording periods, including time of day, seasonal periods, and monitoring duration (i.e., based on pack return periods), distance between recording sites, and study area size considerations. Both reports were previously provided to YFWET.

A final comprehensive report detailing all aspects of the first full year of study (September 2025 to September 2026 will be completed in the 2026/27 fiscal year. That report will be shared with all project partners and made available to the public upon request.

2.3 Funding Acknowledgement

Funding by the YFWET was acknowledged at the Northern Tutchone May Gathering and will be acknowledged in all future reports and presentations.

3 Closure

Thank you for your support of SFN's wolf monitoring project. If you have any questions about this report, or require additional information, please let us know.

Respectfully submitted,

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