2020 Project Summaries
Boreal Ecosystem Recovery & Assessment
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Wildlife Team: Can Songbirds Adapt Their Song in Response Chronic Industrial Noise?

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Photo: Natalia Lifshitz

Project Summary
Songbirds rely on acoustic communication to maintain social interactions. For example, the effective transmission of song and calls are fundamental for territorial defense, female attraction, and prevent predation. Anthropogenic noise is detrimental for song transmission since bird song and industrial noise can overlap in sound frequency. This can mask a birds' song. Whether birds can adapt to noise generated by industrial development is not clear. We investigated the effect of chronic industrial noise on Lincoln's Sparrow songs. For this, we recorded songs of Lincoln's Sparrow males breeding close and far from compressor stations. We coloured banded the individuals and we also deployed autonomous recording units at their preferred singing perch. We recorded birds at 5 compressor stations and at 5 quiet locations in Northern Alberta. Vocal responses we looked at included frequency, bandwidth, and length to see if they varied between quiet and noisy locations.

Management Implications and Lessons Learned
Lincoln's Sparrow is a common species that breeds in a variety of vegetation types across Alberta. It inhabits meadows and shrubs associated with forest edges of conifers, mixed woods, and deciduous forest. Thus, it often is found near sites disturbed by the energy sector. Their song is variable since they can add or delete syllables at the end of the song.. Preliminary results indicate that Lincoln's Sparrow is singing higher frequencies songs and shorter songs close to noisy compressor stations. Therefore, this species seems to be adjusting their song to increase transmission in response to noise. This plasticity or lack of it in other species may explain why some species are capable of living near noisy industrial sites and others are not. It remains unclear whether there is stress associated with noise and if this reflected in the health status or reproductive success as reported for other species (e.g. Ovenbird). Thus, even though a species can be present in areas with noise, there may be indirect effects that reduce habitat quality. Reducing noise from energy sector activities is possible, but can have considerable cost. The data we are collecting on noise impacts will become part of an assessment of the economic cost/ environmental benefit that noise reduction strategies have.

Publication(s)
Sánchez, N.V. and Bayne E.M. Lincoln's Sparrow is changing its songs as a response to industrial noise. (*In prep*)