

Natalie Sánchez, PhD student

University of Alberta, Department of Biological Sciences
sanchezu@ualberta.ca

Research Team:

Erin Bayne, University of Alberta, Department of Biological Sciences



Project summary

Songbirds are sensitive to human-caused noise, since they rely on acoustic cues to maintain social interactions. For example, acoustic communication is fundamental for territorial defense and female attraction. The common responses to noise is the avoidance of the noise source or changing their songs to increase transmission. However, the effect of the disturbance (e.g. land use change) in relation to the noise created by human infrastructure is not clear. In this research, we are testing whether songbirds avoid noisy areas, taking into account the human disturbance in addition to the noise source. For this, we estimated the occupancy of four songbirds breeding in Northern Alberta: Lincoln's Sparrow, White-throated Sparrow, Tennessee Warbler, and Yellow-rumped Warbler. The species were detected using autonomous recording units (Big Grids project) from May to July in 2015. The grids range from low to high levels of human disturbances. Lincoln's Sparrow, White-throated Sparrow, and Tennessee Warbler occupied more sites as the proportion of disturbance increases. Lincoln's Sparrow was highly detected in sites with higher levels of industrial noise. Yellow-rumped Warbler was the only species that seems to avoid noisy areas and disturbed areas. We found the general responses to noise in two of the study species, tolerance and avoidance of noisy areas.

Progress to date

We estimated the occupancy and the probability of detection for four songbirds species using the data collected from Big Grids project. We have incorporated the human-footprint in the analysis by using ABMI data. I will incorporate vegetation data to the occupancy models to have a better understanding of this component and its role on habitat use. We will add to the analysis four more songbird species to explore different responses to industrial noise. These results will be presented in 2019 and submitted to a journal for publication the same year.

Management implications

An acoustic environment with low impact from anthropogenic noise must be incorporated in all the conservation and management programs. The avoidance of noisy areas by wildlife is a widespread phenomenon that has to be considered as important as climate change or biodiversity loss. It is necessary to maintain quiet areas within the boreal ecosystem and incorporate noise-monitoring assessments as the forest recovers from disturbances.

Geographic location Big Grids: Nexen Long Lake 2015, Nexen Kinosis 2015, and Devon Pike 2015.