



Boreal Ecosystem
Recovery & Assessment
An NSERC Collaborative Research & Development Program

ECOLOGICAL TEAM FALL 2017:
***USE OF AN ACOUSTIC LOCATION SYSTEM TO
UNDERSTAND SONGBIRD RESPONSE TO VEGETATION
REGENERATION ON RECLAIMED WELLSITES***

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Project summary

Determining local scale impacts of small disturbances characteristic of energy sector on songbirds in the boreal forest, and how these impacts change with regeneration requires spatially accurate data on use or avoidance of these features. Methods for surveying songbirds in the boreal forest vary in their ability to provide these spatially accurate data. Many bird surveys now utilize bioacoustic approaches. Standard approaches to collect bioacoustic data do not overcome challenges associated with conventional methods for accurate estimation of bird singing locations. However, certain bioacoustic approaches, including the use of an acoustic location system have potential for collecting data with the accuracy to determine where songbirds sing in relation to small boreal disturbances. The purpose of this project was to use an acoustic location system to determine how songbird communities as a whole respond to vegetation regeneration on reclaimed wellsites in the deciduous boreal forests of Alberta, as a measure of ecological recovery. Songbird community similarity between reclaimed wellsites and the adjacent forest increased with vegetation regeneration on the wellsite. Individual songbirds were identified by their songs, and tracked using the acoustic location system. Songbirds would sing from reclaimed wellsites and edges more frequently with increasing canopy cover on the wellsite, and less frequently with presence of conspecifics.

Progress to date

This work was completed as part of a master's thesis completed in September 2017. One thesis chapter was submitted to Restoration Ecology, and the other to Avian Conservation and Ecology. Both papers are currently under review. Future steps include analysis of high resolution data on songbird space use with UAV photogrammetry data.

Management implications

Songbird response to wellsite reclamation efforts in the boreal forest was previously unexamined, despite the abundance of wellsites, frequent use of songbirds to assess ecosystem state, and importance of the boreal forest as breeding habitat for songbirds. Current wellsite reclamation practices result in vegetation recovery which facilitates use of wellsites by songbird communities in upland deciduous boreal forests. This work demonstrates that an acoustic location system can be used to provide precise spatial locations of multiple songbirds concurrently, and can be used as an effective alternative to conventional bird survey methods.

Geographic location

Lac La Biche, Alberta