2020 Project Summaries
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Wildlife Team: ARUs Decrease Costs of Monitoring Wildlife Use of Small-scale Energy Disturbances

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Project Summary

Monitoring the recovery trajectory of Alberta's ~400,000 wellsites is a pressing conservation challenge. Traditionally, bird monitoring has been done by humans in the field. In recent years, however, autonomous acoustic recording units (ARUs) have been recognized as a valuable tool to supplement or supplant human surveys. One limitation of using ARU technology to survey wildlife is that ARUs tend to survey an area much larger than most energy sector disturbances. Consequently, surveys predominantly detect non-target birds singing from the surrounding forest, rather than birds using the disturbance itself. We tackled this problem by measuring the sound level of birds detected on ARUs at the center of wellsites. We showed that with a stringent sound-level threshold, 96% of detected birds were on the wellsite, indicating that this method is useful for excluding non-target individuals while restricting survey effort to the area of interest.

Management Implications and Lessons Learned

Our study serves as a proof-of-concept to show that valuable ecological data can be derived from a single microphone placed at the middle of a wellsite, allowing field labour and equipment to be reduced by a factor of about 25. We envision a monitoring scheme consisting of paired ARU deployments, with one ARU on a wellsite and another in the surrounding forest, to allow comparisons of wellsite bird communities to a relatively undisturbed reference state or other disturbed reference sites (i.e. harvest blocks) that account for differences in the area sampled. This promises to be a highly efficient, cost-effective method of monitoring recovery trajectories of energy sector disturbances now and into the future.

Publication(s)

Hedley, R.W., Wilson, S., Yip, D.A., Li, K. & Bayne, E.M. 2020. Distance truncation via sound level for bioacoustic surveys in patchy habitat. Bioacoustics, in press.