Alberta Conservation Association
2017/18 Project Summary Report

Project Name: Supplemental Ungulate Information – Moose App

Wildlife Program Manager: Doug Manzer

Project Leader: Paul Jones

Primary ACA staff on project: Robert Anderson, Colin Eyo, Paul Jones, Doug Manzer, and Sue Peters

Partnerships

Alberta Environment and Parks

Key Findings

- We analysed and summarized five years of data from a moose hunter app that was created by Mark Boyce at University of Alberta. The report is being published through the ACA report series.
- Across all years and natural regions, moose encounter rates for Wildlife Management Units typically ranged from 0 to 1.2 moose/hour.

Introduction

In Alberta, aerial surveys have historically been the primary method used to estimate the population size, trend, distribution, and herd composition for ungulates (AEP 2016). However, aerial ungulate surveys are intermittent and are prohibitively expensive (averaging about $60,000 per wildlife management unit [WMU]), prompting the need for additional strategies for monitoring populations (Boyce et al. 2012, Boyce and Corrigan 2017). Hunter harvest rate (number of animals killed relative to time spent hunting) has been suggested as a cost-effective alternative that can be used to adjust annual hunting quotas to prevent overharvest (Boyce et al. 2012). Supplemental sources of information beyond hunter harvest rate can improve management decisions. Inspired by the success of hunter moose observation indices in Scandinavia, Mark Boyce initiated Alberta's Moose Hunter Survey app in 2012 (University of Alberta 2017a, 2017b). The survey uses smartphone technology as a less-costly monitoring alternative to aerial surveys (University of Alberta 2017a, 2017b).

We agreed to summarize the data collected from the Moose App. Our primary objectives were to 1) filter and analyse five years of data and publish a report in the ACA report series (see Peters et al. 2017), and 2) provide recommendations for improving the app and its utility moving forward.

Methods

We provided overall summary statistics that highlight the app's use by Alberta hunters from 2012 – 2016 moose hunting seasons. We provided several metrics: the number of submissions, the number of valid submissions after data cleaning, number of hunters participating, average number of hunting trips per hunter, and the average number of hours spent per hunting trip combining all WMUs. For the ACA report we provided detailed summary statistics (moose/hr, demographic rates) at the Natural Region (NR) level, using a subset of the valid data that met a minimum threshold for hunter submissions. Lastly, in the ACA report we calculated detailed summary statistics (moose/hr, demographic rates) at the individual Wildlife Management Unit (WMU) level, using a subset of the valid data that met a minimum threshold for hunter submissions. See Peters et al. (2017) for a complete summary of the five years of data.

Results

From 2012 – 2016, the app recorded moose observations within 145 WMUs, primarily within the Foothills, Northern Boreal, and Parkland natural regions. The app received a total of 14,473 submissions; after data cleaning, 5,926 of these were considered valid. The total number of submissions to the app was very small compared to the yearly moose tag allocation (Figure 1). Across all years and natural regions, moose encounter rates for WMUs typically fell between 0 and 1.2 moose/hour, based on all valid data (Figure 2). The Parkland region had the highest overall moose/hr, whereas the Mountain region had the lowest. The number of moose/hr was lowest in 2014 in Alberta, despite the highest number of valid submissions that year.
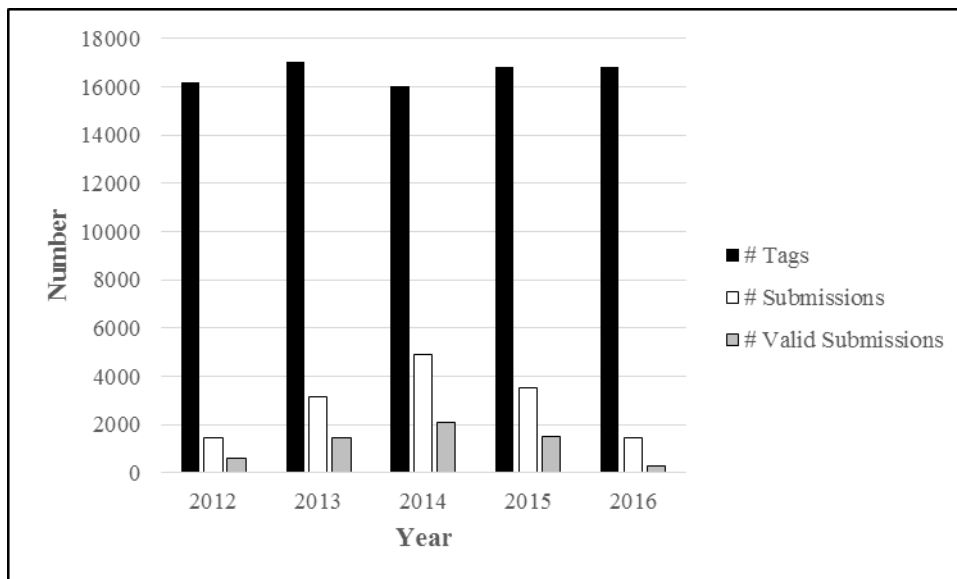

Figure 1. Comparison of the total number of moose tag allocations (antlered, antlerless, and calf), the number of submissions received from hunters to the Alberta Moose Hunter App, and the number of submissions considered valid, from 2012 – 2016.
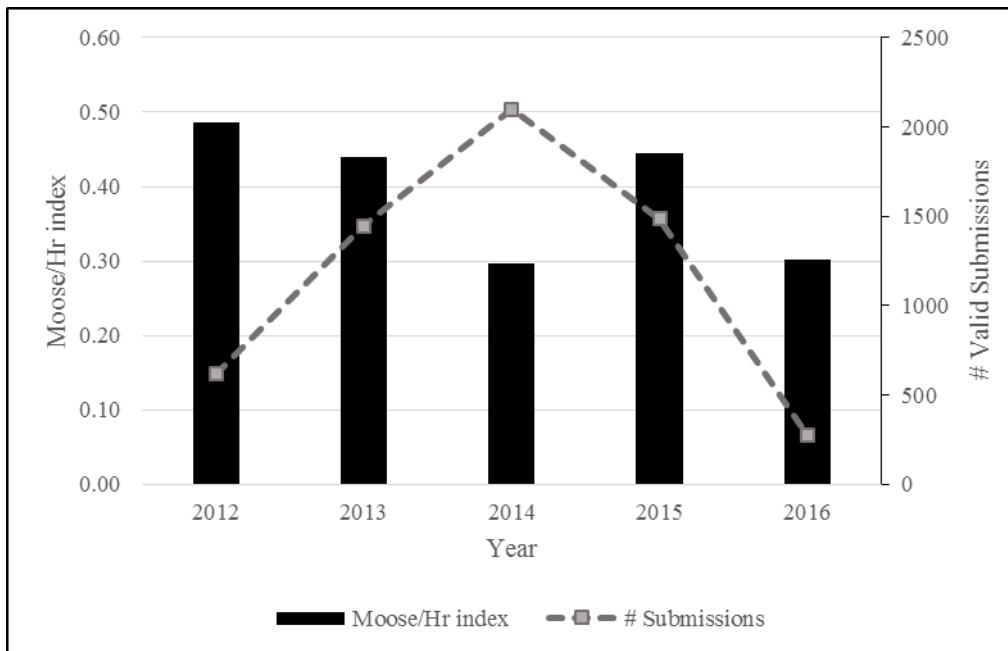
Figure 2.   Number of moose seen per hour by hunters in Alberta across all WMUs and Natural Regions (NR) for each year from 2012 – 2016, based on valid data submitted to the Alberta Moose Hunter App. The moose/hr index is calculated by summing the total number of moose observed and the total number of hours out hunting in all NRs for each year, and then calculating a single moose/hr value for each year. The dashed line shows the yearly number of valid submissions.

Conclusions

Though there are limitations with the data collected so far, they hold promise that the app and the data submitted by hunters in Alberta can be of value to managers to monitor larger population-level issues and conservation concerns related to moose in Alberta. As the program moves forward, we recommend that annual results and trends be summarized and made available online to maintain interest in submitting data. As well, increasing the quality of the data through improvements to the app will further enhance the usefulness of the data as a tool for wildlife managers. Further exploration of the moose app data in relation to aerial survey data will provide confidence in the use of hunter observation data for management purposes.

Communications

Peters, S.H., P.F. Jones, R.A. Anderson. 2017. Assessment of Alberta's Moose Hunter Survey App Data: 2012–2016. Alberta Conservation Association. Sherwood Park, Alberta, Canada. 25 pp + 2 App.

Literature Cited

Alberta Environment and Parks (AEP). 2016. Aerial Wildlife Survey Reports. Available online at: http://aep.alberta.ca/fish-wildlife/fishing-hunting-trapping/aerial-wildlife-survey-reports.aspx [Accessed 5 July 2017].

Boyce, M.S., P.W.J. Baxter, and H.P. Possingham. 2012. Managing moose harvests by the seat of your pants. Theoretical Population Biology 82(4):340–347.

Boyce, M. S., and R. Corrigan. 2017. Moose survey app for population monitoring. Wildlife Society Bulletin 41:125-128.

Peters, S.H., P.F. Jones, R.A. Anderson. 2017. Assessment of Alberta's Moose Hunter Survey App Data: 2012–2016. Alberta Conservation Association. Sherwood Park, Alberta, Canada. 25 pp + 2 App.

University of Alberta. 2017a. Moose Hunter Survey. Department of Biological Sciences, University of Alberta. Available online at: http://www.biology.ualberta.ca/moose/ [Accessed 5 July 2017].

University of Alberta. 2017b. Moose tracking: There's an app for that. Faculty of Science, University of Alberta. Available online at: https://www.ualberta.ca/science/science-news/2017/april/moose-tracking-app-for-population-modeling [Accessed 5 July 2017].