Alberta Conservation Association

2020/21 Project Summary Report

Project Name: Pronghorn Road Crossing Enhancement (Pronghorn Xing)

Wildlife Program Manager: Doug Manzer

Project Leader: Paul Jones

Primary ACA staff on project: Paul Jones

Partnerships

Alberta Environment and Parks
Alberta Transportation
Miistakis Institute
National Wildlife Federation
National Fish and Wildlife Foundation
Nature Conservancy of Canada
Saskatchewan Ministry of Environment and Infrastructure
Saskatchewan Government Insurance

Key Findings

- The *Pronghorn Xing* app is available via the App Store and Google Play and observations were provided by the general public from November 2017 to June 2020.
- Between 2017 – 2020, the four most reported species via the app were pronghorn, mule deer, elk, and white-tailed deer.
- Users of the app were provided three categories to place their observations of wildlife in: 1) crossing the road, 2) beside the road, or 3) dead on the road. For the pronghorn sightings reported via the app, most were of pronghorn being observed beside the road, while the least reported were of dead pronghorn seen on the road.

Abstract

Among the diversity of prairie wildlife, the pronghorn is the most specialized and representative large mammal. Within the Northern Sagebrush Steppe of Alberta, Saskatchewan, and Montana, 55% of collared pronghorn made seasonal migrations from summer ranges to winter ranges. Along the migration pathway, pronghorn must navigate their way across primary and secondary highways that are often fenced on both sides, resulting in pinch points where animals pile up. These pinch points along the migration pathway are a formidable challenge for migrating pronghorn. To address this migration challenge, a citizen science project called *Pronghorn Xing* was initiated in the spring of 2017. *Pronghorn Xing* was developed to ground-truth seasonal movement pinch points identified by connectivity modelling across highways in the Northern Sagebrush Steppe and increase public engagement in pronghorn science and conservation. Information on wildlife sightings collected by the public will enable us to better understand where pronghorn and other wildlife are commonly crossing, involved in collisions, or staging next to the highway. Data collection ended in June 2020, with pronghorn, mule deer, elk, and white-tailed deer being the most reported species via the app. As expected, most observations of pronghorn were beside the road, as animals pile up in key locations and are selective as to when they cross the road. Ultimately, we believe the program will create support in Alberta for the construction of an overpass(es) across Highway 1 and the identification of crossing sites along secondary highways (e.g., Highway 41) where fence modifications can be installed to facilitate easier movement by pronghorn and other ungulates.

Introduction

Among the diversity of prairie wildlife, the pronghorn (*Antilocapra americana*) is the most specialized and representative large mammal. Within the Northern Sagebrush Steppe of Alberta, Saskatchewan, and Montana, 55% of collared pronghorn made seasonal migrations, including the longest recorded migration for the species at 888 km (Jakes et al. 2018). Along the migration pathway, pronghorn must navigate their way across Highway 1, which includes crossing three fences, four lanes of high-speed traffic, and a set of railroad tracks. These pinch points along the migration pathway are a formidable challenge for migrating pronghorn.

To address this migration challenge, a citizen science project called Pronghorn Xing was initiated in the spring of 2017. The Pronghorn Xing project is a collaboration between ACA, Miistakis Institute, Alberta Environment and Parks, Alberta Transportation, Saskatchewan Ministry of Environment, Saskatchewan Government Insurance, the National Wildlife Federation, and Nature Conservancy of Canada. Pronghorn Xing is a citizen science program developed to groundtruth seasonal movement pinch points identified by connectivity modelling across highways in Alberta, Saskatchewan, and Montana and increase public engagement in pronghorn science and conservation. Information on wildlife sightings collected by the public will enable us to better understand where pronghorn and other wildlife are commonly crossing, involved in collisions, or staging next to the highway in anticipation of making a dash across the road. Data collected via the app will ultimately lead to development of tools to reduce wildlife-vehicle collisions while ensuring the safe passage of wildlife across highways. The generated information will be shared with Government agencies in Alberta, Saskatchewan, and Montana.

Primary objectives in 2020/21 are to 1) complete data collection and analyse submitted data to identify crossing pinch points, 2) garner public support and participation, and 3) share our information with our partners, particularly those working to mitigate impediments along key migration routes across highways in Alberta, Saskatchewan, and Montana.

Methods

During the summer of 2017, Miistakis Institute was contracted to develop the *Pronghorn Xing* smartphone app and corresponding website. The app was developed, and beta tested by ACA staff who drove transects throughout the study area and recorded sightings of real and imaginary wildlife along the road. The app was released to the public (App Store and Google Play) and the project website was made live in September 2017, with data collection running from November 2017 to June 2020. During the summer of 2018, the project was expanded to include Montana and now covers the entire Northern Sagebrush Steppe (Figure 1).

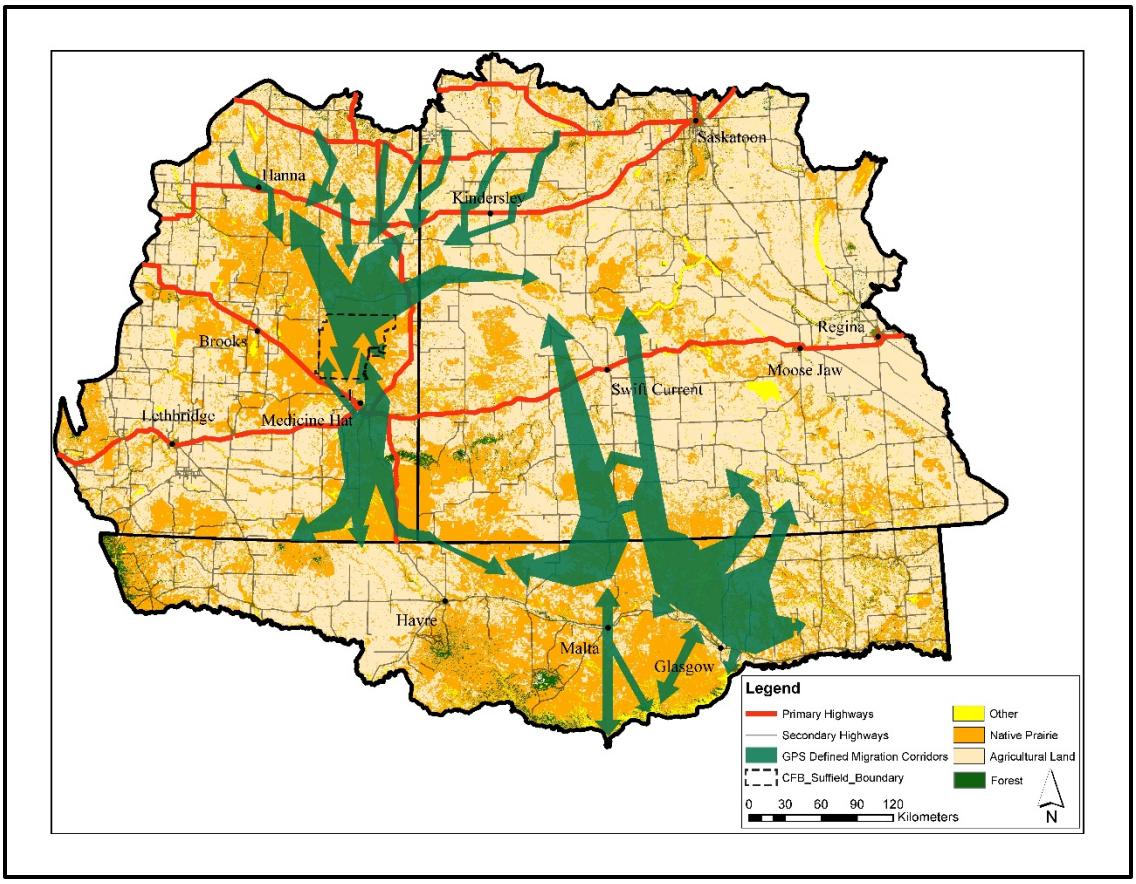

Figure 1. *Pronghorn Xing* study area in southern Alberta, Saskatchewan, and northern Montana. Green lines depict generalized pronghorn migration routes across the Northern Sagebrush Steppe (Jakes 2015).

Results

Between 2017 – 2020 the four most reported species were pronghorn, mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and white-tailed deer (*O. virginianus*), with pronghorn being reported most often (Figure 2). As expected, for the pronghorn sightings reported via the app most were recorded as being beside the road, and observed dead on the side of the road the least reported (Figure 3)

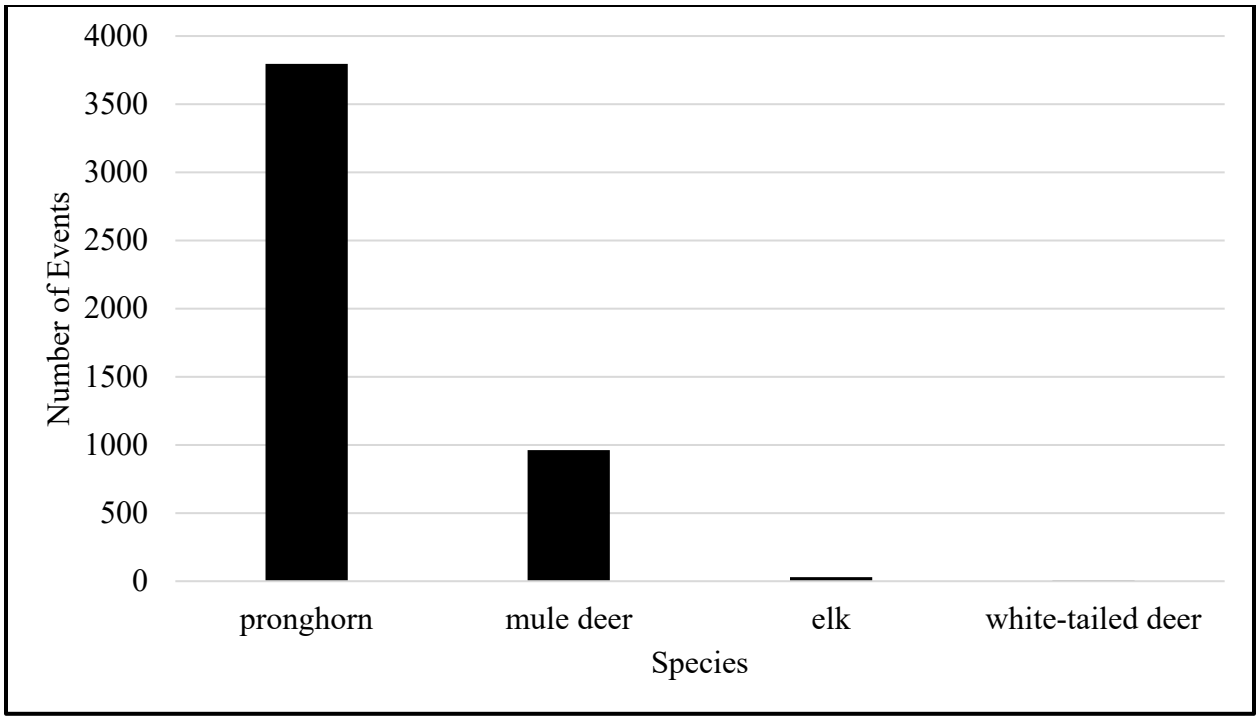

Figure 2. Number of observational events of four ungulates reported through the *Pronghorn Xing* app for southern Alberta and Saskatchewan, and Montana, 2017 – 2020.

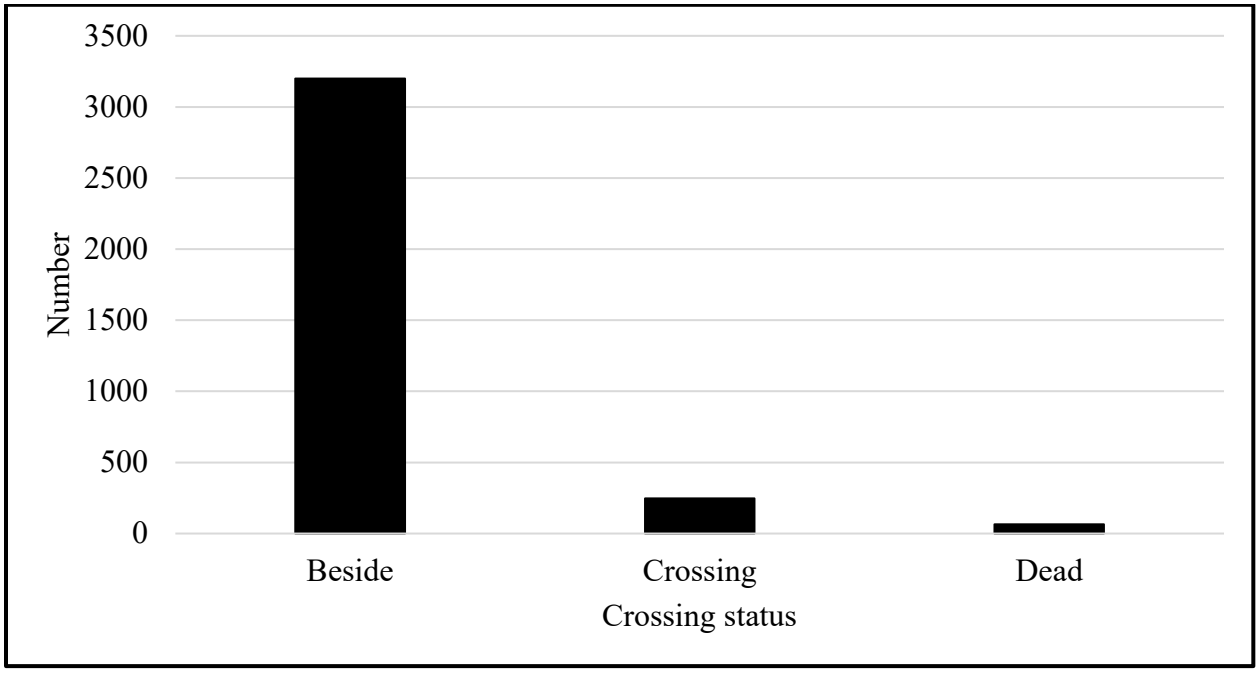

Figure 3. Crossing status in relation to the road for the pronghorn sightings reported via the *Pronghorn Xing* app for southern Alberta, Saskatchewan, and Montana, 2017 – 2020.

Conclusions

Pinch points have been identified along the Canadian highway network where seasonal pronghorn movements are impeded and need to be ground-truthed for the exact crossing location(s). The low number of crossing and dead pronghorn detected to date is not alarming. We expected that most observations of pronghorn would be beside the road as animals pile up in key locations and are selective as to when they cross the road. In addition, public support needs to be built to foster the business case to provincial and state agencies responsible for implementing strategies to improve movement. Ultimately, we believe the program will create support for the construction of an overpass(es) across Highway 1 (four lane east–west highway adjacent to a railroad) and the identification of crossing sites along secondary highways (e.g., Highway 41) where fence modifications can be installed to facilitate easier movement by pronghorn and other ungulates. In 2021, we will hold a wrap-up workshop with stakeholders to present our results and build support for mitigation. Lastly, we will publish our results in a peer-reviewed journal in 2021/22.

Communications

Publications

Lee, T. S., T. G. Creech, A. Martinson, S. E. Neilson, A. F. Jakes, P. F. Jones, K. Sanderson, and A. T. Ford. 2020. Prioritizing human safety and multispecies connectivity across a regional road network. *Conservation Science and Practice* 2020:e327.

Key Contacts

- Andrew Jakes – National Wildlife Federation
- Tracy Lee – Miistakis Institute

Literature Cited

Jakes, A. F. 2015. *Factors influencing seasonal migration of pronghorn across the northern sagebrush steppe.* Dissertation, University of Calgary, Alberta, Canada.

Jakes, A., C.C. Gates, N.J. DeCesare, P.F. Jones, J.F. Goldberg, M. Hebblewhite, and K. Kunkel. 2018. Classifying the migration behaviors of pronghorn on their northern range. *Journal of Wildlife Management* 82:1229-1242.

Photos

Pronghorn doe hit and killed along a highway in southern Alberta. Photo: Brad Downey

Pronghorn buck crossing highway in southern Alberta. Photo: Paul Jones

Group of pronghorn hurriedly cross the fence after successfully running across a highway in southern Alberta. Photo: Amanda MacDonald