Alberta Conservation Association

2019/20 Project Summary Report

Project Name: Pronghorn Road Crossing Enhancement (Pronghorn Xing)

Wildlife Program Manager: Doug Manzer

Project Leader: Paul Jones

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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

- *Pronghorn Xing* app released to the general public via the App Store and Google Play.
- One hundred and thirty-two users have submitted at least one observation, with the mean being 11.5 observations per user. One user has submitted 130 observations.
- Between November 2017 and February 2020, there were 977 total observations of pronghorn reported via the app, of which 11 were of pronghorn dead along roads and 98 were of pronghorn crossing a 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 is a citizen science program 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. To date, 132 individuals have signed up for *Pronghorn Xing* and reported at least one observation via the smart phone 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 ground truth seasonal movement pinch-points identified by connectivity modeling 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. Ultimately this will 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 are to 1) develop a user-friendly app to record the location of pronghorn and other ungulates along highways and roads within the study area, 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. In November 2017, the general public and ACA staff began using the app and reporting observations

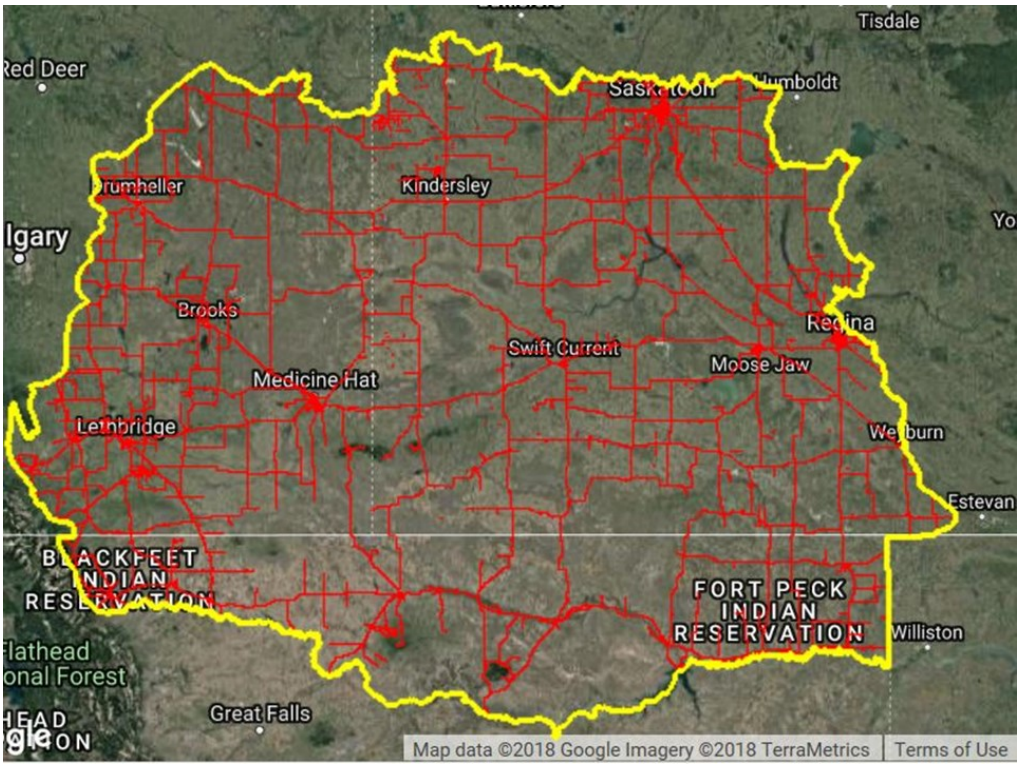


Figure 1. *Pronghorn Xing* study area in southern Alberta, Saskatchewan, and northern Montana.

throughout the study area, collecting data on wildlife species observed on, near, and adjacent to major highways and roads. During the summer of 2018, the project was expanded to include northeastern Montana and now covers the entire Northern Sagebrush Steppe (Figure 1). Plans are underway to expand the program to include the entire state of Montana and to move the app into Texas.

Results

To date, 132 individuals have signed up for *Pronghorn Xing* and reported at least one observation. The number of observations reported per person ranged from 1–130 with a mean = 11.5 ± 2.02 (SE). Pronghorn were the most reported ungulate species, followed by deer and elk (Figure 2). Our preliminary analysis for pronghorn indicates that the data collected by citizen

scientists through the *Pronghorn Xing app* collaborates the finding by Jakes (2015), who identified five major pinch points along Highway 1 (Figure 3).

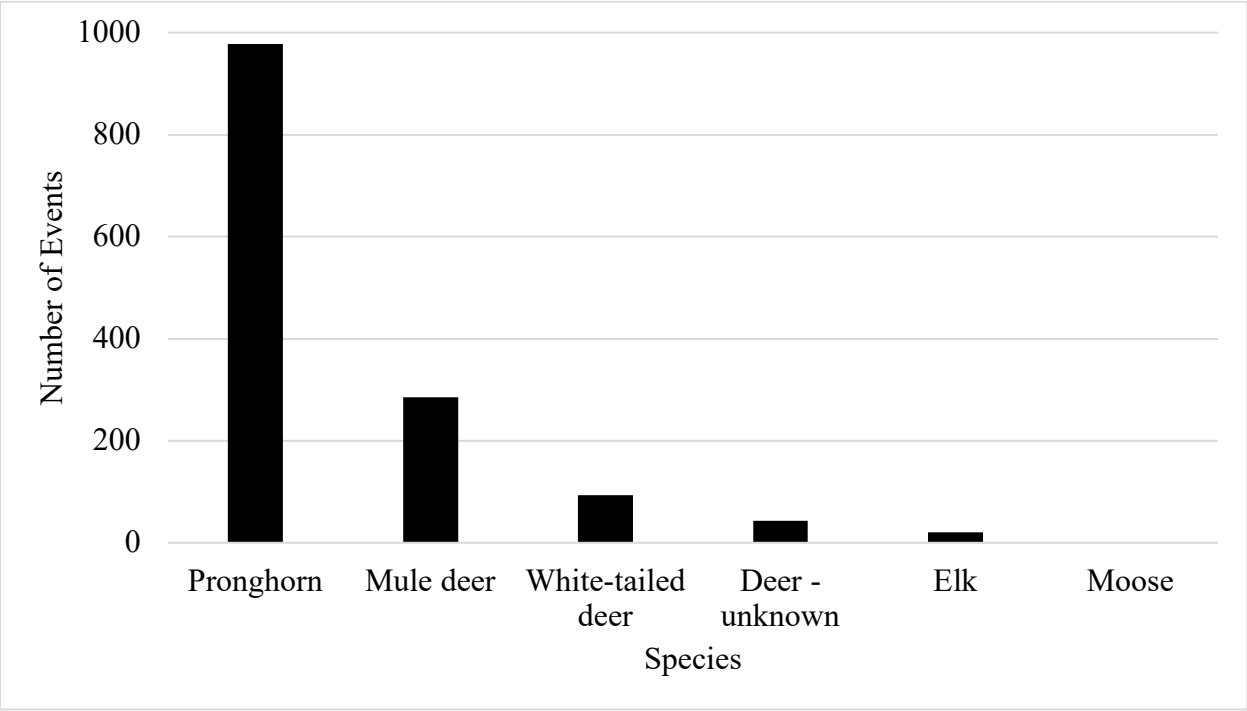


Figure 2. Number of observational events of five ungulates reported through the *Pronghorn Xing* app for southern Alberta, Saskatchewan, and northern Montana, November 2017–February 2020.

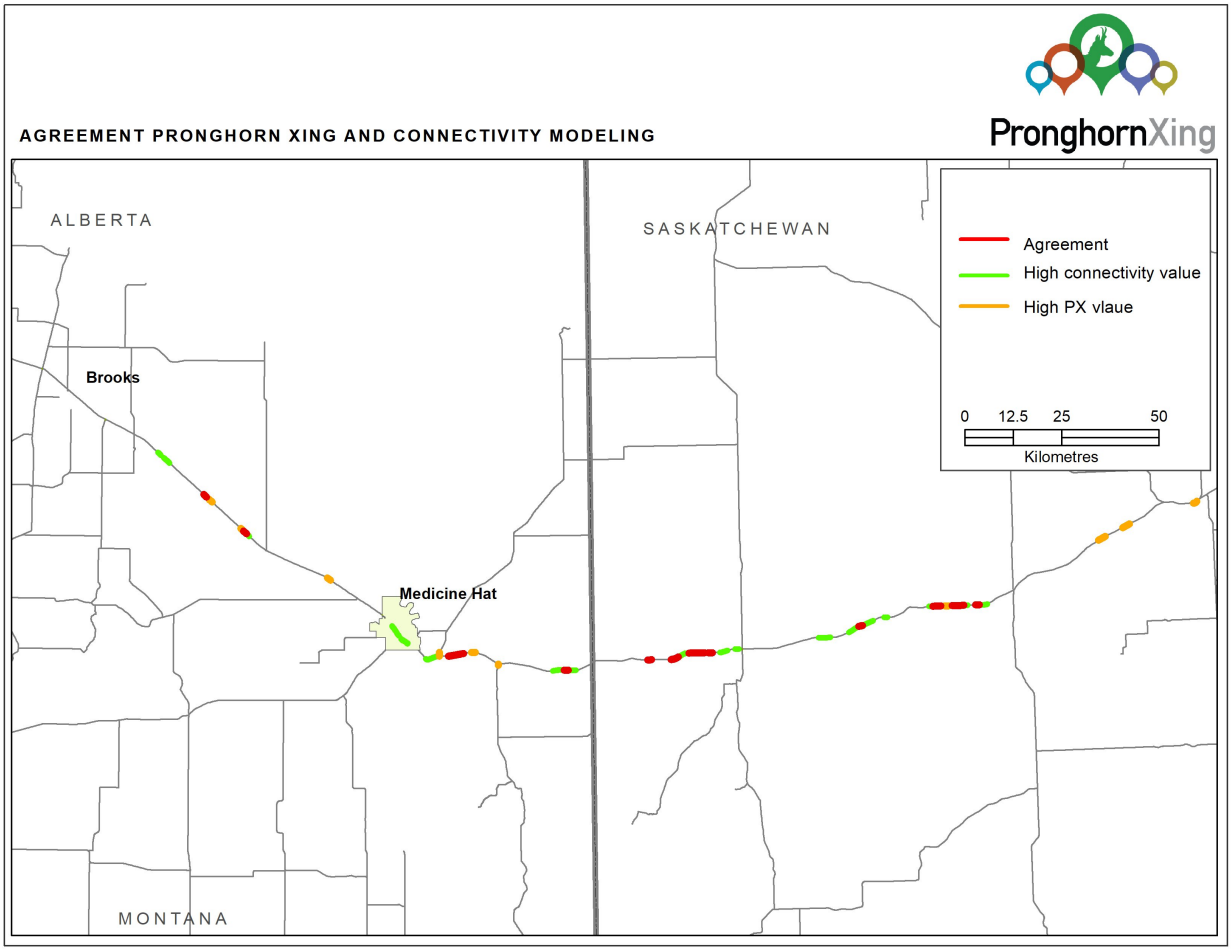


Figure 3. Agreement between pronghorn data reported through the *Pronghorn Xing* app and the connectivity model (Jakes 2015) along Highway 1 in Alberta and Saskatchewan. Red lines indicate overlap between Pronghorn Xing data and Connectivity model; green lines indicate crossing locations identified by the connectivity model; while orange lines indicate crossing locations reported via the *Pronghorn Xing* app.

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.

Communications

Presentations:

- Pronghorn Xing: it's about more than just trying to get to the other side! (P. Jones) – Native Prairie Restoration and Reclamation Workshop and Transboundary Grassland Partnership Workshop, February 25, 2020 (150 people).

Media:

- ACA Facebook media campaign in October 2019 (~8,000 people)

Key Contacts:

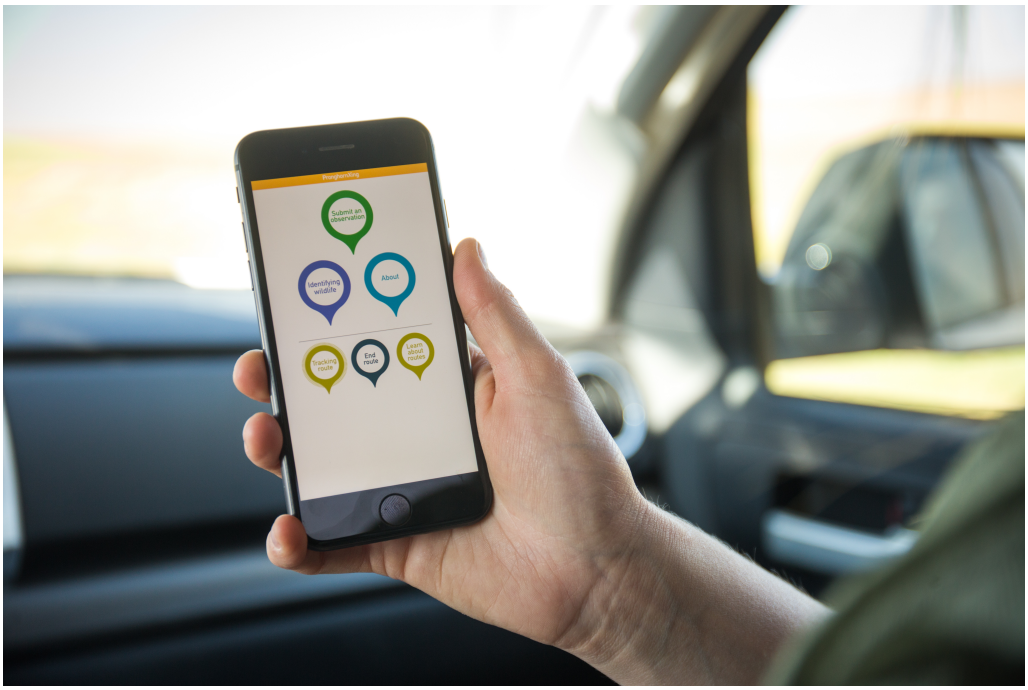
- Tracy Lee – Miistakis Institute
- Andrew Jakes – National Wildlife Federation

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 Xing app in use by passenger during a transect driven in southern Alberta. Photo: Jason Headley

Group of pronghorn staging on the south side of Highway 1 east of Medicine Hat during their spring migration. Photo: Paul Jones

Pronghorn buck crossing the highway just outside of Foremost, Alberta. Photo: Paul Jones