

Alberta Conservation Association (ACA)

Date: 2014-2015

Project Name: Working with Alberta's Trappers to Map Wolverine Distribution and Identify Conservation Risks

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Partnerships

- Alberta Environment and Sustainable Resource Development
- Alberta Trappers' Association
- Animal Damage Control – A Division of Bushman Inc.
- Daishowa-Marubeni International Ltd.
- Environment Canada
- Harvest Operations Corp.
- Shell FuellingChange
- Trapper Gord Homestead & Survival
- University of Alberta

Key Findings

- Wolverines visited 22 of the 47 sites that trappers monitored in the winter of 2013/14, with greater frequency as the winter progressed from December through March.
- We identified 30 individual wolverines from their unique chest patterns using camera images from winter 2013/14.
- Using non-lethal methods, we collected DNA from hair samples from 14 martens, 177 fishers, 23 foxes, 66 lynx, 1 squirrel, 4 weasels and 110 wolverines during winter 2013/14.
- Over the winter, 22 trappers from the Boreal region of the province operated 45 run poles to passively collect wolverine photographs and hair samples. ACA staff operated another 14 run poles.

Introduction

We are partnering with the Alberta Trappers' Association (ATA) to identify where wolverines occur in the province and to determine the major factors influencing their distribution. As the project advances, we hope to better understand gene flow within Alberta and between Alberta and other jurisdictions, which will provide useful information to help conserve this species over the long term. We predict that areas with high human disturbance will have a lower probability of use by wolverines and areas with persistent late spring snow cover will have a higher probability of use (Copeland et al. 2010). We also predict that wolverines in the boreal forest will be more closely related to each other than they are to wolverines in the mountains.

Methods

The field component of the wolverine distribution project is largely focused on a citizen-science approach where ATA members collect wolverine population and distribution data using a run pole (baited hair trap and remote camera) field protocol (Magoun et al. 2011). We tested the method during winter 2011/12 and expanded the field program in 2012/13 to include trappers province-wide who span a variety of habitats. In 2013/14 and 2014/15, we concentrated on the Boreal Natural Region to collect information in an area where very little is known about wolverines. Genetic information (DNA) in hair samples will help us understand genetic relationships of wolverines across the province, and occurrence data (photographs) will provide information on the distribution of wolverines in relation to factors such as human disturbance, landscape features and snow cover.

Results

Sampling was focused on the Boreal region of the province during 2013/14 and 2014/15, within a study area that roughly stretched from Cold Lake to Grande Prairie and north to the Northwest Territories border. Camera images collected in 2013/14 were analyzed during spring and summer of 2014. Photos collected during the winter of 2014/15 will be analyzed during spring and summer of 2015.

Between November 2013 and April 2014, volunteer trappers and ACA staff deployed 47 run-pole camera stations, set up on 30 different Registered Fur Management Areas (traplines), to passively collect wolverine photographs and hair (DNA) samples. Approximately 160,000 photographs of different animals were captured. Wolverines were detected at 22 of the 47 sites (Figure 1); unique markings identified at least 30 different wolverines. Detections increased throughout the season (December: 15, January: 36; February: 74; March: 90), with some sites only ever being visited near the end of the season. Occupancy analysis indicated that the closer a site was to an area of either Lower or Upper Boreal Highlands natural subregion, the more likely it was to have wolverines present (Figure 1). Wolverines were less likely to occur as the road density within the surrounding township increased (Figure 2) or the closer that a site was to a human population centre. We created a GIS layer that approximated the relationship between elevation and latitude that influences ambient temperature. The cooler the relative theoretical temperature within the township, the more likely wolverines were to occupy a given area.

Despite our initial predictions, we did not find a clear relationship between wolverine locations

and areas of persistent spring snow cover in late April to mid-May. We also did not find wolverines more often in areas closer to parks and protected areas, or find a relationship between wolverine locations and seismic line density within the surrounding township.

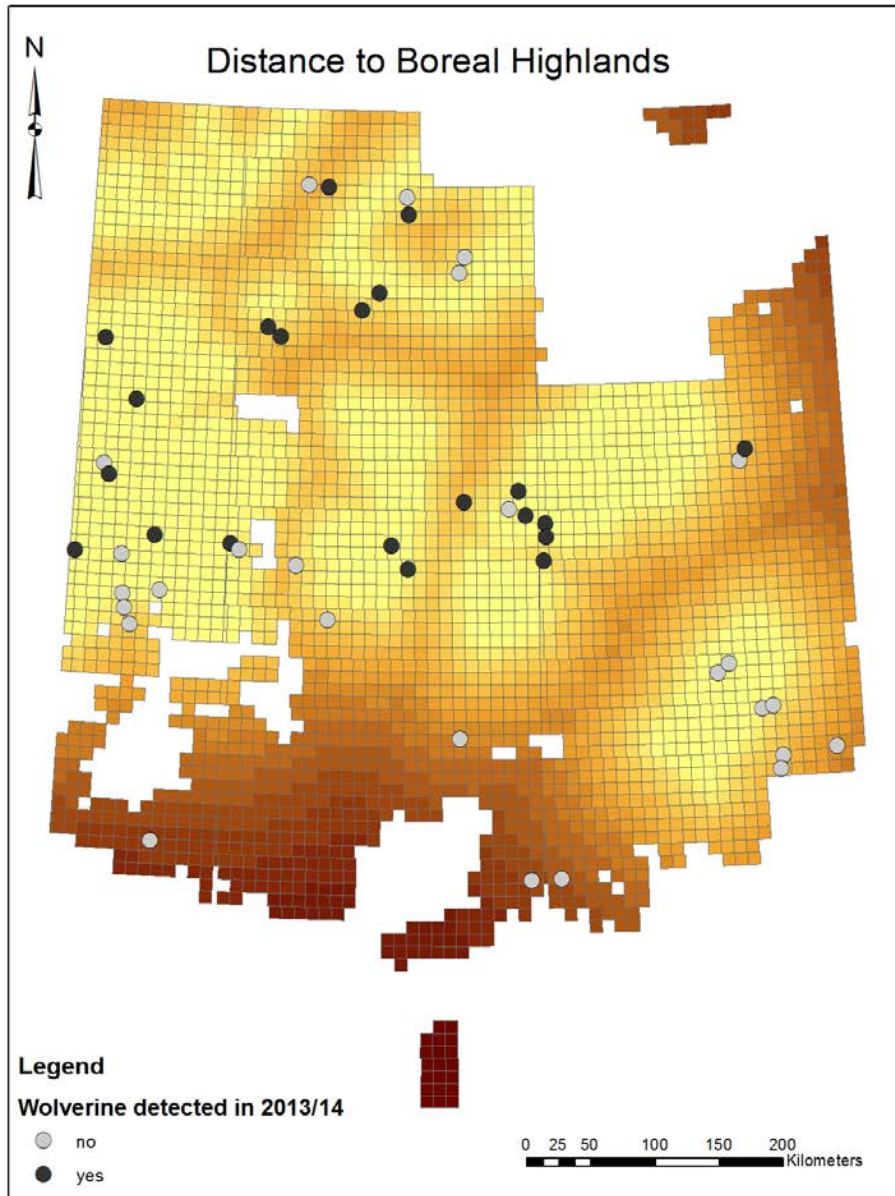


Figure 1. Mirroring our traditional knowledge survey, which suggested that wolverines were most common in the northwest boreal area, data from bait station cameras also showed the greatest concentration of wolverine visits in the northwestern part of the boreal study area. Areas that were closer to the Boreal Highlands Natural Subregions (lighter colours) were more likely to receive a visit than those that were farther away (darker colours)

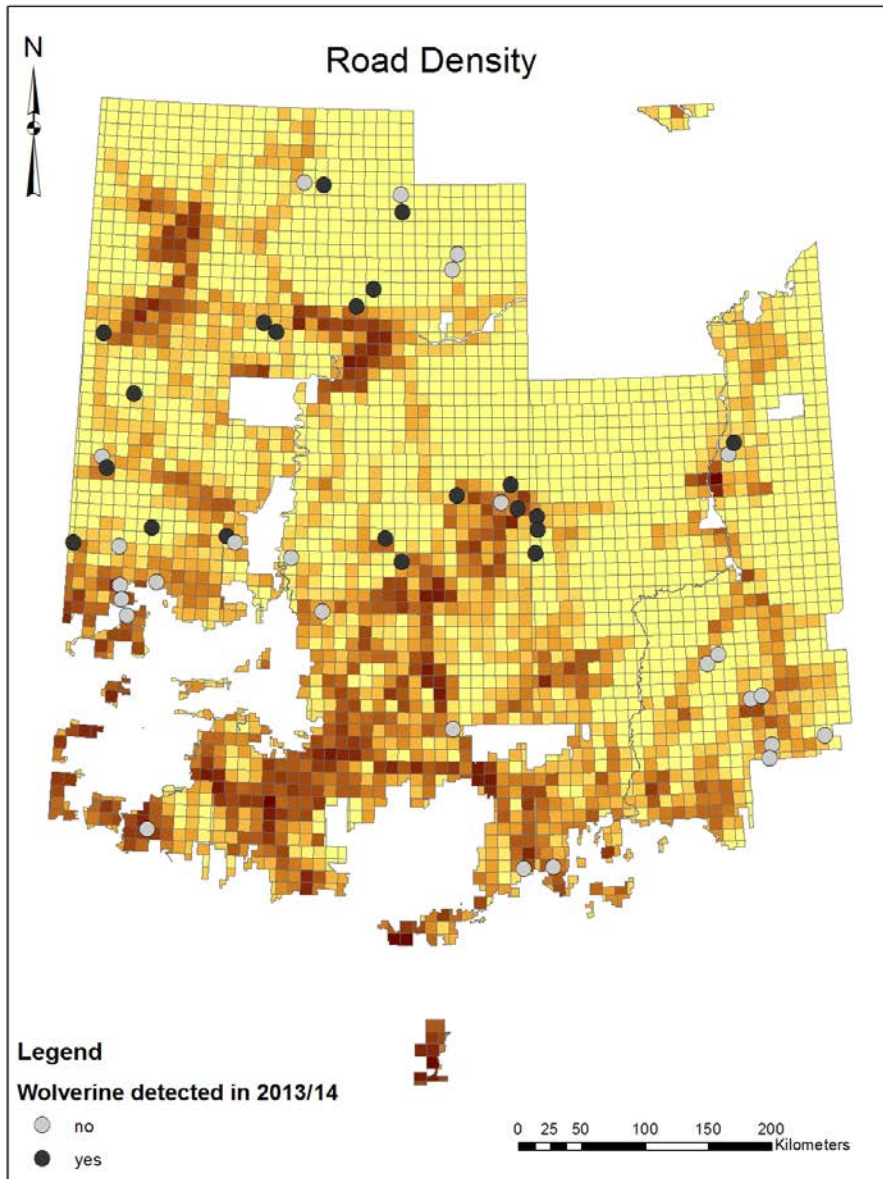


Figure 2. Trappers whose traplines were located in areas of lower road density (lighter colours) were more likely to have a wolverine visit one of their bait and camera sites than traplines located in areas of higher road density (darker colours).

Between November 2014 and March 2015, volunteer trappers and ACA staff deployed 59 run poles to passively collect wolverine photographs and hair (DNA) samples. Sampling was focused on Boreal regions of the province. All camera images and hair samples collected during this period will be analyzed during spring and summer 2015 and will be used to direct future sampling efforts.

Conclusions

Field data collected in partnership between trappers and biologists is starting to shed light on wolverines in an understudied part of their range. At a coarse scale, we are finding that wolverines are more likely to be found in areas close to Boreal Highland Natural Subregions and in areas that have a lower overall road density. Contrary to what we expected, we are not finding boreal wolverines to be associated with the distribution of late spring snow cover. These field results mirror the conclusions of our trapper traditional knowledge survey, which highlights the value of the information that this user group can contribute to discussions regarding long-term species conservation and sustainable management.

Communications

Presentations

- International Martes Symposium, Krakow, Poland, July 2014 – presentations by ACA and ATA
- Alberta Trappers' Association Rendezvous, Drayton Valley, Alberta, July 2014
- Exploring Public Participation in Scientific Research Under Western Skies conference, Calgary Alberta, September 2014 – presentations by ACA and ATA
- Alberta Trappers' Association Annual General Meeting, Westlock, Alberta, September 2014
- ATA Peace River local chapter, Grimshaw, Alberta, September 2014
- ATA Manning local chapter, Manning, Alberta, October 2014
- ATA High Level local chapter, High Level, Alberta, November 2014
- ATA Eureka River local chapter, Worsley, Alberta, November 2014
- ACA Board of Directors, Edmonton, Alberta, December 2014
- Alberta Chapter of the Wildlife Society, Edmonton, Alberta, March 2015
- Alberta Society of Professional Biologists, Canmore, Alberta, March 2015

Other

- Quarterly project newsletter
- Project progress report
- Monthly telephone/e-mail updates with participating trappers
- Monthly team conference call, including ATA representatives
- Annual planning meeting with ATA representatives and University of Alberta, Sherwood Park, Alberta, May 2014
- Updates to the ACA website and Facebook site about wolverine work
- Three articles in *Alberta Trapper* magazine

Literature Cited

Copeland, J.P., K.S. McKelvey, K.B. Aubry, A. Landa, J. Persson, R.M. Inman, J. Krebs, E. Lofroth, H. Golden, J.R. Squires, A. Magoun, M.K. Schwartz, J. Wilmot, C.L. Copeland, R.E. Yates, I. Kojola, and R. May. 2010. The bioclimatic envelope of the wolverine

(*Gulo gulo*): Do climatic constraints limit its geographic distribution. Canadian Journal of Zoology 88: 233–246.

Magoun, A.J., C.D. Long, M.K. Schwartz, K.L. Pilgrim, R.E. Lowell, and P. Valkenburg. 2011. Integrating motion-detection cameras and hair snags for wolverine identification. Journal of Wildlife Management 75: 731–739.

Photos



Like this 100-year-old cabin, many trappers have a long history with a given trap line. Their traditional knowledge about the animals that inhabit that area and the habitats that they use can be a treasure trove of information for biologists seeking to learn about species like wolverines. Photo: Mike Jokinen



You just never know what you're going to find on a remote camera when you look at the images.
Photo: Alberta Conservation Association



Although Alberta Conservation Association biologists such as Amanda Rezansoff look after some of the camera sites, over 90% of the sites are run by volunteer trappers. Photo: Stefanie Fenson



HC600 HYPERFIRE

In addition to working with trapper volunteers, we also work closely with University of Alberta student Matt Scrafford, who is researching wolverines using radio collars. The information gathered by remote cameras over a large area complements the detailed information gathered by radio collars in smaller areas. Photo: Alberta Conservation Association