ABMI Species Profile Series

Moose*

Alces alces

The Moose, the largest member of the deer family, is a wetland-loving resident of northern forests as well as treed river valleys in the mountains and prairies. Moose can be found in every natural region in Alberta.

Conservation Status: Wildlife Act - null

Taxon data collected: 2013 - 2019

Data Summary: Full

Introduction

Over its decade-plus of operations, the ABMI has generated a comprehensive dataset on Alberta's species, their habitats, and the extent and type of human footprint across the province. With this information, the ABMI has developed analyses to predict species' relative abundances and examine species' responses to vegetation and soil types, as well as human footprint in Alberta. These methods have been applied to hundreds of species; this profile provides summary results for one.

There are three main results sections in this species profile. The first section summarizes what vegetation, soil, and human footprint types the species uses in Alberta. Next, the data are used to identify which land use activities have the biggest impact (positive or negative) on the species' relative abundance. Finally, a series of relative abundance maps illustrate the species' predicted distribution under current and reference conditions, and where it's expected to have increased or decreased as a result of human-caused changes to its habitat.

The target audiences for species profiles are resource managers in Alberta. Summary data can be used to support land-use planning and mitigate the risks of development on a species of interest. While developed to support resource management, these species profiles are also of wider interest to anyone wanting information on species that live in Alberta, what habitats they are found in, and how our land use affects their populations.

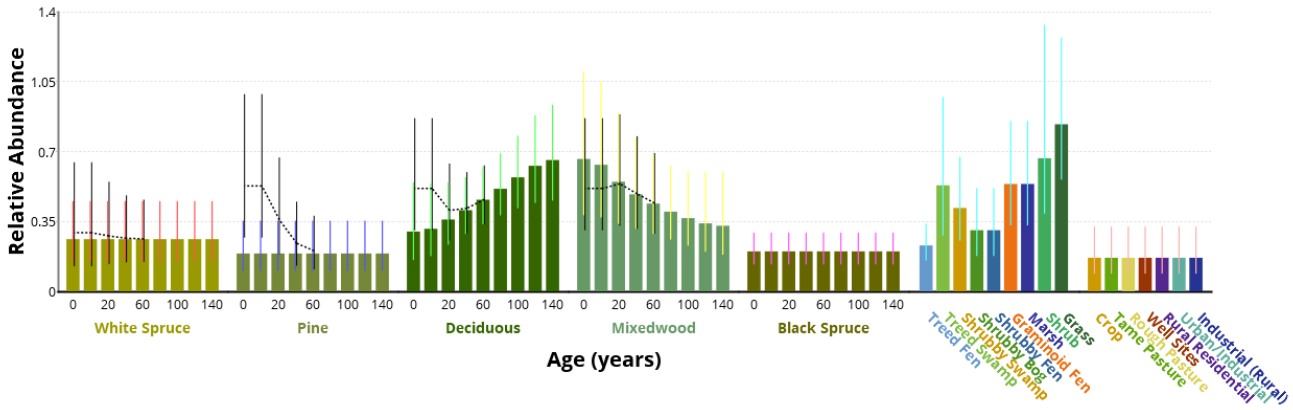
Please note that the results are predictions based on the best available data at the current time. All results must be considered with caution; interpretation caveats are presented with each result. As with any statistical model, our confidence in the modelled outputs will increase as we gather more data and refine our models; to that end we update the summary results annually based on new data. As an internal check, for species with additional information in the literature, we examine whether our models produce ecologically meaningful results. For data-poor species, our predictions are the first contribution towards developing an understanding of the species' ecology.

Please refer to the ABMI Species Website Manual for a complete description of methods and limitations associated with the analyses included in this species profile.

Habitat & Human Footprint Associations

Moose are generalist browsers of woody deciduous shrubs and use a wide variety of open habitats in the summer for foraging, such as burns, harvested areas, riparian areas, and shrublands. These habitats are often in close proximity to forest edges or water to minimize heat stress. Moose also frequent wetlands and lake margins where they forage for salt-rich, submerged vegetation. In the winter, mature/old forests with good snow interception interspersed with open areas with extensive shrub growth jointly provide bedding sites, thermal cover, security cover and foraging habitat.

Species-habitat Associations in the Forested Region

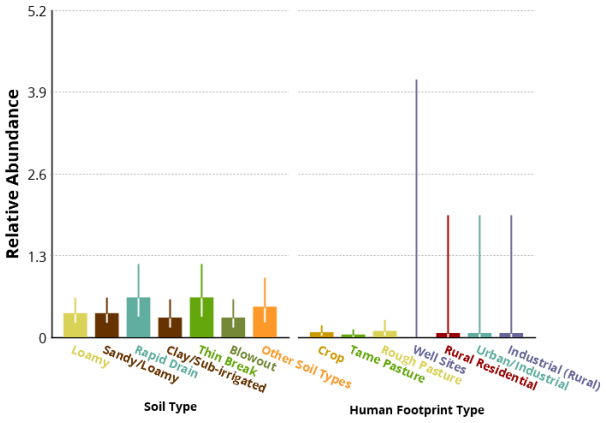


Forested Region - Species Habitat Association Graph: Predicted species relative abundance (bars) as a function of vegetation and human footprint type in the forested region. Dots are added to forest types where harvesting occurs and show the predicted species abundance in harvested stands of various ages. Vertical lines represent 90% confidence intervals.

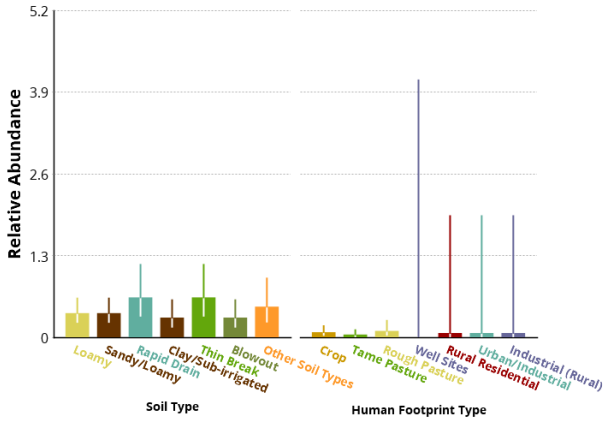
- Based on winter snow-tracking data, Moose occur in all vegetation and human footprint types in the forested region.
- Moose relative abundance is highest in young harvested white spruce, pine, deciduous, and mixedwood stands, and declines with forest age in these harvested stands
- In forested stands originating from natural disturbances, relative abundance increases with forest age in all forest types.

Species-habitat Associations in the Prairie Region

Non-Treed Sites in the Prairie Region



Treed Sites in the Prairie Region

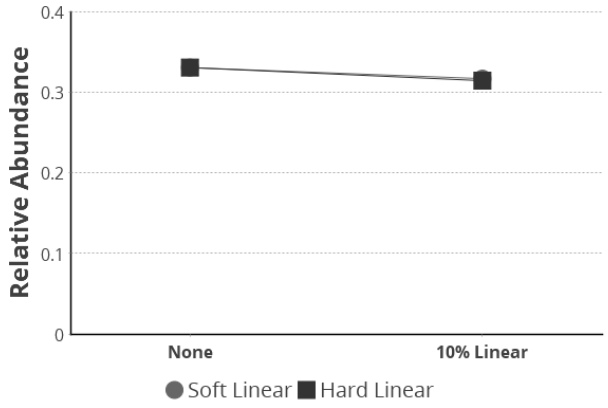


Prairie Region - Species Habitat Association Graph: Predicted species relative abundance (bars) in each soil type and human footprint type in the prairie region. Vertical lines indicate 90% confidence intervals. The presence/absence of trees greatly affects the presence and abundance of many species; therefore, separate figures are presented for treed and non-treed sites in the prairie region.

- Moose relative abundance is slightly greater at treed compared to non-treed sites in the prairie region.
- Moose relative abundance is highest at sites with productive, clay and saline soil types in the prairie region.
- Its relative abundance is very low at sites dominated by urban/industry human footprint.

Relationship to Linear Footprint

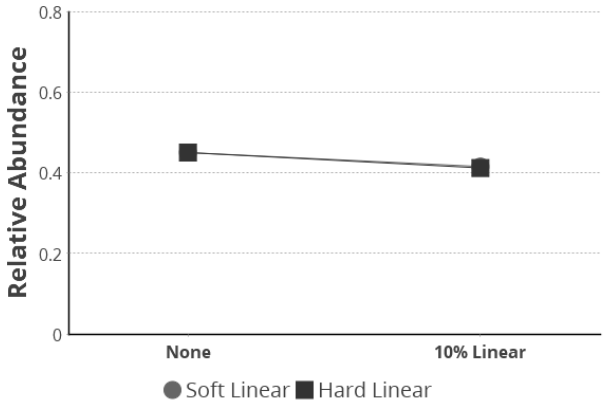
Relationship to Linear Footprint in the Forest Region



Linear Footprint Graph: Species relative abundance predicted for habitat with no human footprint compared to habitat in which 10% of the area is converted to either soft or hard linear footprint.

- Moose relative abundance is predicted to have slight positive relationship with soft linear footprint and a slight, negative relationship with hard linear footprint in the forested region.

Relationship to Linear Footprint in the Prairie Region



Linear Footprint Graph: Species relative abundance predicted for habitat with no human footprint compared to habitat in which 10% of the area is converted to either soft or hard linear footprint.

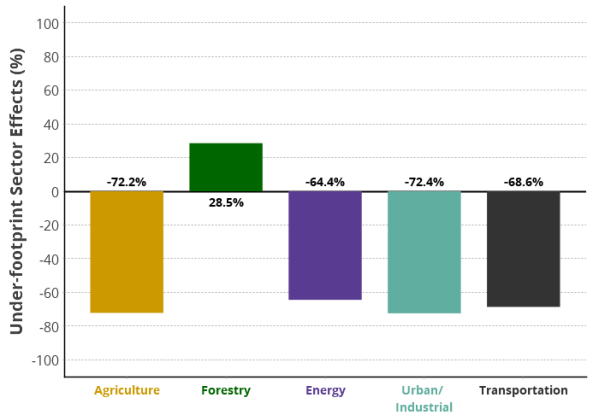
- Moose relative abundance is predicted to have no relationship with soft linear footprint and a slight, negative relationship with hard linear relationship in the prairie region.

Impacts of Human Footprint

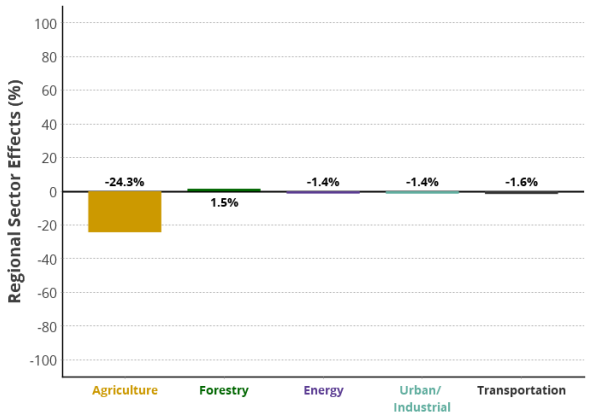
Moose preference for early successional habitat for foraging, and their use of forest edges means that they are positively impacted by development activites that create these habitats, such as forest harvesting.

Human Footprint Effects in the Forested Region

Under-footprint Sector Effect

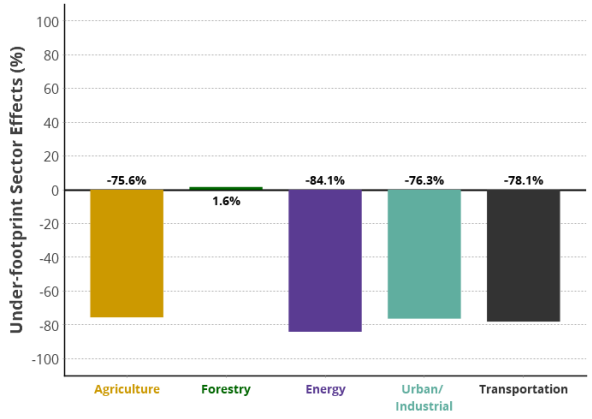


Regional Sector Effect

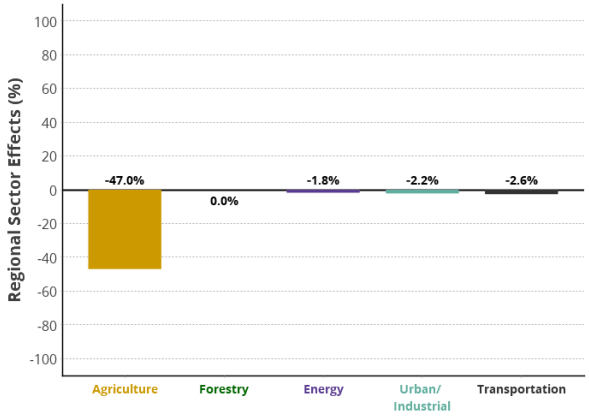


Human Footprint Effects in the Prairie Region

Under-footprint Sector Effect



Regional Sector Effect



Predicted Relative Abundance

Moose are found throughout Alberta but are most common in the Boreal Forest and Foothills Natural Regions.

Reference Conditions

- The reference condition shows the predicted relative abundance of the Moose after all human footprint had been backfilled based on native vegetation in the surrounding area.

Current Conditions

- The current condition is the predicted relative abundance of the Moose taking current human footprint (circa 2012) into account.

Difference Conditions

- Moose relative abundance is predicted to be lower under current conditions compared to reference conditions throughout the Parkland and Grassland Natural Regions and portions of the Boreal Forest and Canadian Shield Natural Region.
- Moose relative abundance is predicted to be higher under current conditions in much of the Foothills Natural Region and parts of the Boreal Forest Natural Region when compared to reference conditions.

References & Credits

References

Alberta Environment and Parks. 2016. Moose http://aep.alberta.ca/fish-wildlife/human-wildlife-conflict/moose.aspx Accessed September 17, 2016.

Belovsky, G. E. 1981. Food plant selection by a generalist herbivore: the moose. Ecology 62(4):1020-1030.

Neumann, W., G. Ericsson, H. Dettki, and V. C. Radeloff. 2013. Behavioural response to infrastructure of wildlife adapted to natural disturbances. Landscape and Urban Planning 114:9-27.

Pattie, D. and C. Fisher. 1999. *Mammals of Alberta.* Lone Pine Publishing, Edmonton, AB.

Data Sources

Data collected by ABMI.

Recommended Citation

Alberta Biodiversity Monitoring Institute. 2020. Moose *(Alces alces).* ABMI Website: abmi.ca/home/data-analytics/biobrowser-home/species-profile?tsn=180703.

Additional ABMI Resources

Alberta Biodiversity Monitoring Institute. 2016. ABMI Species Website Manual, Version: 2016-12-02. Alberta Biodiversity Monitoring Institute, Alberta, Canada. Report available at: abmi.ca.

Alberta Biodiversity Monitoring Institute. 2014. Manual for Species Modeling and Intactness, Version 2014-09-25. Alberta Biodiversity Monitoring Institute, Alberta, Canada. Report available at: abmi.ca.

Alberta Biodiversity Monitoring Institute. 2014. Terrestrial field data collection protocols (abridged version) 2016-05-18. Alberta Biodiversity Monitoring Institute, Alberta, Canada. Report available at: abmi.ca.

Download ABMI Species and Habitat Data.

View ABMI Collaborations.