# Determining Habitat Selection of Polar Bear Day Beds





The Northern region of Wapusk National Park, Manitoba is home to essential polar bear (*Ursus maritimus*) territory. Warmer seasonal temperatures have led to extended ice-free periods in the Hudson Bay region, forcing polar bears inland to use day beds while waiting for the ice to reform. Our study analysed the distribution and habitat selection of coastal polar bear day beds in this location; where limited data currently exists.

We identified 22 day beds and examined key characteristics such as proximity to water, and aspect. Using randomized 1.00m<sup>2</sup> quadrats, vegetation use of each bed was compared to the available species in the environment. Our findings show high frequencies of beds in coastal beach areas facing the prevailing wind, with a clear preference of vegetation species.







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- Location of beds that were not dug into the ground trend along the coastal edge.
- The deepest bed was 0.604m and located inland along with two other beds that were not dug into the ground.
- Aspect of the beds shows directions facing NW or NE, towards bodies of water and the prevailing wind.
- Soil composition is also provided (Table 1), and was found to consist of only gravel, sand, or peat, which vary in particle size and types of supported vegetation.

**Table 1:** Polar bear bed number, coordinates, relative location, distance to water body, depth, aspect, and soil characteristics for 9 day beds in Wapusk National Park.

The most frequently utilized vegetation species was Sea-Lyme Grass, *Elymus arenarius,* which was found within 91% of beds studied, with an average of 25-30% floor coverage. These findings allude to the foreseeable habitat of the polar bear population within the warmer months and should be built upon for future research. The information provided by this study will contribute to regional wildlife management decisions, safety awareness, and the reduction of negative human-bear encounters.

#### **Study Objectives**

- To identify and investigate current polar bear habitat during ice-free seasons in Northern Manitoba.
- To provide baseline predictive data of future polar bear distribution for wildlife management decisions.



#### Results

- Data from 22 Day beds were mapped (Fig. 1) showing higher concentrations along the Hudson Bay Coast.
- 3 beds were located inland, and 19 directly on coastal beach ridges.



Figure 1: Map of polar bear day bed locations within Wapusk National Park, Manitoba.

- Average areas utilised by polar bears for day beds hosted 94.27% percent vegetation coverage.
- Vegetation use for day bed habitat is plotted alongside the

Bed #	Coordinates	Relative Location	Distance to Water Body	Depth	Aspect	Soil
	UTM		(m)	(m)	(°)	
1	15V 0488968E;6503652N	inland	21.00	0.604	51 NE	sand, gravel, peat
2	15V 0489920E;6505771N	inland	1.00	0	298 NW	peat
3	15V 0490490E;6506060N	inland	4.51	0.198	302 NW	gravel
4	15V 0491288E;6505511N	coastal	27.12	0	33 NE	sand, gravel
5	15V 0491468E;6505428N	coastal	25.04	0	56 NE	sand, gravel
6	15V 0491467E;6505421N	coastal	34.46	0	72 NE	sand, gravel
7	15V 0491128E;6505548N	coastal	46.54	0	39 NE	sand, gravel
8	15V 0490657E;6505548N	coastal	75.93	0	75 NE	sand, gravel
14	15V 0490362E;6506791N	coastal	23.80	0	90 E	sand, gravel

### Conclusion

This study was centred on seasonal bedding habits of polar bears along the coastal region of Wapusk National Park, Manitoba. The results of our research clearly indicate preference of habitat of day beds for cooling factors. The majority of beds lie within 100m of a body of water facing the prevailing wind, likely to obtain the benefits of any cooling effects off the water. Polar bears appeared to be selective towards areas with highly vegetated percent cover. *Elymus arenarius* was found within 91% of the studied beds. Bedding hotspots were found within patches of tall *Elymus* arenarius, providing shade, along peaked coastal beach ridges. As a preliminary study on the topic, our research provides basic information on the habitat preference of polar bear day beds in Wapusk National Park. Our habitat selection information can be used to predict hotspots of bear activity, and to aid future researchers in locating bears and studying distribution. This report can also be used for improving safety awareness within the park to reduce conflicts between humans and bears. This research is important as there are potential risks for an extended ice-free season in the future that can influence the duration and use of polar bear day bed habitats.

## **Materials & Methods**

- Data was collected on 22 day beds in Wapusk National Park, MB, summer 2016.
- All beds were analysed for soils, vegetation, aspect, depth, landform, proximity to water bodies, and presence of wildlife.
- Visual percent coverage of vegetation species and bare soil was collected adjacent to the day beds using a 1.00m<sup>2</sup> quadrat (Fig. 3).
- Percent coverage of vegetation was determined using the pin drop method.
- Additional quadrat data was taken 20m away from the day bed to determine surrounding vegetation availability.
- GPS locations of the day beds were recorded to determine map units for the areas studied (Fig. 1).
- Bed depth, width, and length were measured (Fig. 4), along with

corresponding vegetation availability to show contrast (Fig. 2).

#### Average Percent Cover of Vegetation Use Compared to Vegetation Availability for Species Present at Polar Bear Day Beds, Wapusk National Park



Figure 2: Vegetation use compared to vegetation availability at polar bear day bed sites.

- The most frequently used species in day bed selection were *Elymus arenarius, Salix reticulata, Dryas integrifolia,* and *Arctostaphylos rubra* (Fig. 3).
- *Elymus arenarius* was present in 20 out of 22 beds.

Top 4 Vegetation Species used in Polar Bear Day Beds, Wapusk National Park









Figure 3 : Top four vegetation species found in polar bear day beds.

### Acknowledgements

We thank our instructors Ryan Brook and Kristina Hunter for providing insight and expertise that greatly assisted the research.
We would also like to show our gratitude to Brady Highway and Heather MacLeod for sharing their wisdom with us during the course of the research.
This research was supported by Parks Canada and Churchill Northern

Studies Centre.