STAYING CLOSE TO HOME:

LINEAR FEATURES SHRINK WOLF HOME RANGES

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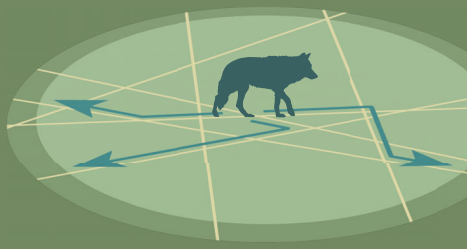
Linear features such as seismic lines, pipelines, and roads enable wolves to travel more efficiently and provide easy access into woodland caribou habitat. It is hypothesized that these changes in wolf behaviour lead them to encounter caribou more frequently, increasing predation pressure on declining caribou.

However, **the effect of increased hunting efficiency on wolf space-use at a larger scale is not well understood.**

Ecological theory tells us that more food on the landscape means individuals need less space to survive. This leads each individual to have a smaller home range, allowing more individuals to share the same landscape.

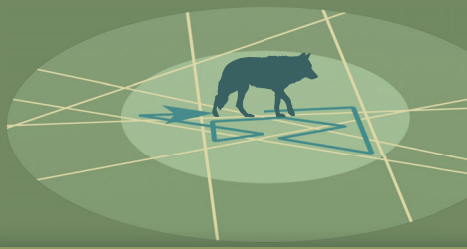
How *access* to a given amount of food influences home range size, however, is unclear:

Does easier travel lead wolves to **search for prey over a wider area,** which would push out other packs?



OR

Does a more efficient search enable wolves to "make do" with less area and **keep their journey close to home?**



METHODS

We tested if wolves' home range size was influenced by how efficiently they could move around the landscape, the density of prey, or the combination of the two.

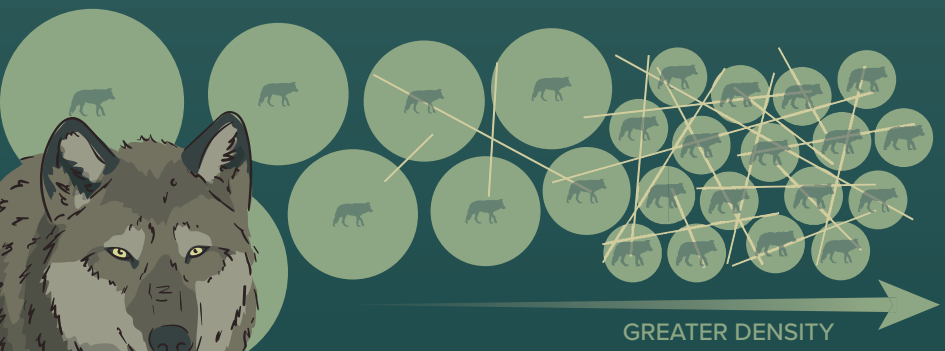
GPS DATA FROM 142 COLLARED WOLVES

DISTRIBUTED OVER >500,000 KM² ACROSS B.C., AB, and SK

PRIMARY PRODUCTIVITY = PROXY FOR MOOSE DENSITY

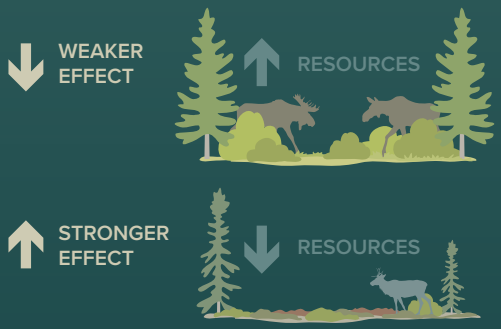
LINEAR FEATURES = PROXY FOR WOLF TRAVEL EFFICIENCY

We found that wolf home range size was influenced by not only prey density, but also how the landscape influenced access to those prey. **Home range size decreased as linear feature density increased.**



This suggests that increased access to prey reduces the space wolves need to meet energetic demands, **allowing wolves to contract their home range and make do with less space.**

Linear features had a more pronounced effect in less productive areas. i.e., areas with fewer moose, like those with vast peatlands.



All else being equal, **smaller home ranges mean that more wolves can "pack" into an area**—increasing regional density.

This study demonstrates how an understanding of animal movement and space use can assist conservation. Linear features not only facilitate wolf travel, but can shrink the area wolves need to survive, especially where resources are scarce. **Previous work suggests that restoration of linear features can reduce wolf hunting efficiency, but our results suggest that restoration can also reduce regional wolf density, especially in less productive areas favoured by caribou.**

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