

Wolves use trails created by humans for convenient hunting and easier access to prey

February 8 2022, by Melanie Dickie



Credit: AI-generated image ([disclaimer](#))

Zoom in and explore the northern boreal forests of [western Canada on Google Earth](#) and you'll see long straight lines making their way through the forest. These lines are cleared trails through the forest to extract resources, creating roads for forestry and [seismic lines](#) searching for underground oil and gas deposits.

Now picture yourself faced with the task of moving across this landscape: Will you push your way through dense trees and underbrush, or will you choose to walk on the trails?

Like humans, wolves often choose the path of least resistance, moving [faster and farther](#) on human-created trails through the forest. Increased wolf movement is believed to play an important role in the decline of the [threatened boreal woodland caribou](#)—an iconic species in Canada (just look at the quarter in your pocket).

When wolves move farther, they [encounter their prey more frequently](#), and [caribou](#) are being [hunted by wolves at rates they cannot sustain](#).

Smaller territories

But now, we've also found that [wolves living in areas that make it easier for them to get around need less space to make a living](#). The relationship is particularly strong when prey are scarce.

We tracked 142 wolves using GPS collars across British Columbia, Alberta and Saskatchewan—spanning over 500,000 square kilometres. The tracked wolves spanned areas with low to high prey density (measured using a metric of [habitat](#) productivity, or how much vegetation there is for species like moose), and had varying access to human-created trails.



A seismic line created by searching for underground oil and gas deposits. Credit: Natasha Crosland/Caribou Monitoring Unit, Author provided

Wolves living in areas with high densities of human-created trails took up an area roughly 20 times smaller than wolves without trails, but only when they lived in areas with low habitat productivity. Comparatively, trails didn't change the area needed for wolves when they lived in areas with high habitat productivity.

Think about picking berries. If the berries are hard to find, you have to go looking far and wide to get enough to fill up your basket. But if something makes it easier for you to find the berries, then you don't have

to look around as much. You can just grab all the ones that you see close to you. The advantage of being able to easily find berries would be less important if there are a lot because you can skip over a few without noticing. But it becomes more important when there are few to begin with, and every last berry counts.

This is exactly what we are seeing with wolves: Instead of choosing to travel far and wide, wolves with access to lots of trails stay close to home and get by with what they have.


The space animals use to carry out their lives is called [a home range, or if defended from conspecifics like in the case of wolves, a territory](#). If animals have smaller home ranges, that means more animals can crowd into a given space, increasing the density of that species. It is well documented that [animals need less space when there is an abundance of food](#) around —and now we know that easier access to that food can also decrease home range size. We found that increasing a wolf's access to their prey, through things like cleared trails through the forest, can decrease their home range size, likely increasing the regional density of wolves.

STAYING CLOSE TO HOME:

LINEAR FEATURES ENABLE WOLVES TO SHRINK THEIR HOME RANGE SIZE


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Theory tells us that home range size decreases with increasing resources (food). But what about accessibility of those resources?



First, we found that home range size was influenced by not only the density of resources available, but also how the landscape influenced access to those resources.

So we tested two competing hypotheses:




DIFFUSION FACILITATION

↑ = ↑ = ↑

FORAGING EFFICIENCY DIFFUSE SPACE USE HOME RANGE SIZE

OR




EXPLOITATION EFFICIENCY

↑ = ↓ = ↓


FORAGING EFFICIENCY SPACE NEEDED HOME RANGE SIZE

Higher linear feature density = smaller home ranges, supporting the **Exploitation Efficiency Hypothesis**, suggesting more linear features = more home ranges.




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





↓ WEAKER EFFECT



↑ STRONGER EFFECT




METHODS

-  142 GPS COLLARED WOLVES
-  DISTRIBUTED OVER >500,000 KM²
-  1st PRODUCTIVITY = PROXY FOR MOOSE DENSITY
-  LINEAR FEATURES = PROXY FOR MOVEMENT CAPACITY

IMPLICATIONS

Linear features can shrink the area wolves need to survive, especially where resources are scarce. These results have implications for caribou habitat management by suggesting restoration can influence not only hunting efficiency, but also regional wolf density.



The territories covered by wolves are changing. Credit: Created by FUSE for Caribou Monitoring Unit/UBC-Okanagan/Regional Industry Caribou Collaboration, Author provided



A remote camera capture of caribou in the boreal forest. Changes in wolf-hunting patterns are threatening the already endangered caribou. Credit: Melanie Dickie/Caribou Monitoring Unit

Habitat restoration

But why do we care about how big wolf home ranges are? One of the biggest conservation challenges in Canada is that of woodland caribou. Caribou live across large areas, overlapping places where the energy and forestry sectors are actively extracting natural resources like oil, gas and timber.

Habitat restoration and protection have been identified as [key steps](#)

[needed to recover declining populations](#). Despite existing efforts and policies, [caribou habitat loss continues to accelerate](#) across much of western Canada.

Habitat restoration is imminently needed, but is [expensive and time consuming](#). Prioritizing [habitat restoration](#) in areas where it will be most beneficial to caribou as soon as possible is necessary for effective caribou management.

Habitat restoration has two main goals: to reduce wolf hunting efficiency by [limiting their use of trails](#) and [slow their movement when on them](#) and to return the forest to caribou habitat. But now we have reason to believe that slowing wolves down can also reduce wolf density on the landscape —forcing individual [wolves](#) to take up more space and push others out —especially in low-productivity peatlands, where the effect on home ranges is stronger.

Effective habitat restoration is going to be important for moving away from [other management actions like wolf management](#) in the long term. But, we have a lot of work ahead of us. There are hundreds of thousands of kilometres of these cleared trails that need to be restored. Our study points us towards prioritizing low-productivity areas to see the biggest effects sooner.

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