390 / ~375

Time: 2:43

In biology, there are many formulas that tell us how we expect animals to behave and move.

We often assume animals living in barren habitats need more space than ones with abundant resources, but we don’t have a general formula that tells us how big of a difference that will be. This is a problem because it prevents informed decisions about where and how big protected areas should be.

Similarly, we assume animals in predictable environments require less space than ones living in unpredictable ones. However, we have little evidence to support this hypothesis and, again, we do not have a formula to help us estimate the location and size of protected areas.

These are two critical gaps, particularly since the federal government has committed to protecting biodiversity by conserving 30% of our land and waters by 2030. This is where my work comes in. The first step was to provide a set of hypotheses for how animals respond to changes in resource abundance and unpredictability. I then tested these hypotheses using simulated movement data, which showed a strong support. However, real-life systems are more complicated than simulations, so the next step is to test these hypotheses using a dataset of over 3,000 animals from more than 85 different mammal species around the world. The resulting models will allow us to know how much space mammals need in different habitats. These models will inform the location and size of protected areas to ensure populations are healthy and resilient over the next century.

The final step of my thesis is to understand how climate change will affect animals’ behavior and spatial needs. By modeling how climate change affects when, where, and how animals move, I will create maps of current and future habitat quality for various mammal species under different climate change scenarios. Through my collaboration with BC Parks, I aim to inform the conservation of mammal species in BC so that, again, we can ensure the habitats we protect will be of high quality for decades and centuries to come.

We all know climate change is a serious threat to both us humans and Nature, but we do not know much about how climate change will affect animal movement. Well-informed predictions of habitat quality are the first step towards providing wildlife a safe place to live long-term.