

## **The Landscape Ecology of Human Health**

Dr. Matthew Wheatley, Fiera Biological Consulting

Human mental and physical health is inextricably linked to environmental condition; however, research enabling human-health predictions based on environmental structure and the underlying spatial relationships between biodiversity, habitat structure, greenspace, and human health remain relatively unexplored in an era of spatially explicit land-use management. The Alberta Government explicitly acknowledges the linkage between environment and health, and states a desired outcome of “overall mental and physical health benefits derived from a healthy environment and ecosystem”; however, the empirical tools required to achieve this outcome require development at municipal and regional scales.

Our project looks to develop these tools by integrating public health with landscape ecology. Specifically, we draw on principles of spatial ecology and use predictive-habitat modelling to identify patterns and linkages between human health and the components of natural and built ecosystems within the province of Alberta, with the ultimate goal of generating evidence-based decision-support tools to better inform municipal and regional planning with a focus on human well-being.

We present our initial findings of this project, and detail our progress at generating spatially explicit relationships between indices of human well-being (e.g., respiratory, cardio-vascular, mental health, and other health metrics) and environmental green space (i.e., composition and spatial configuration of natural and semi-natural spaces) to determine whether human well-being can be predicted by the spatial patterning of landscape features. We also discuss differences in associations for urban versus rural landscapes, and how we are addressing scalar challenges associated with data availability and population density.