Remote Sensing Team: LiDAR Shows Promise for Measuring Understory Vegetation Attributes

Silvia Losada, MSc Student
University of Calgary, Department of Geography
salosada@ucalgary.ca
Research Team:
Greg McDermid, Mustafizur Rahman, Julia Linke, Gustavo Lopez-Queroz
University of Calgary, Department of Geography

Project Summary
Understory vegetation is an important component of the forest that influences important ecosystem processes such as forest regeneration, fire regimes, and wildlife habitat. However, this vegetation layer has been often overlooked in previous remote-sensing studies. My objective are to (1) understand the factors influencing LiDAR's ability to capture understory vegetation structure; (2) develop models for mapping understory vegetation structure over large areas; and (3) examine the value of resulting understory structure maps on wildlife habitat models. Preliminary results show that LiDAR has strong ability to capture key understory attributes such as vegetation height, cover, volume, density, and complexity. However, this ability is influenced by the density of the canopy layer. In cases where the canopy is very dense, LiDAR's capacity to measure understory structure directly is diminished. It is hoped that by understanding these factors, we can develop models to accommodate them.

Management Implications and Lessons Learned
LiDAR's capacity to characterize canopy vegetation is well-established. In this work, I hope to develop the understanding and workflows necessary to extend LiDAR's value to characterizing understory vegetation. Doing so will benefit researchers and managers working on topics of habitat modeling and ecosystem restoration.

Publication(s)
An MSc thesis and companion publication is anticipated by Fall 2020.