LiDAR for Ecosystem Management

A short overview of my MSc research

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What I am going to talk about?

- Why high resolution remote sensing data is important
- LiDAR – How it works
- My project: Modeling marbled murrelet nesting habitat
- How LiDAR can be used to support their management

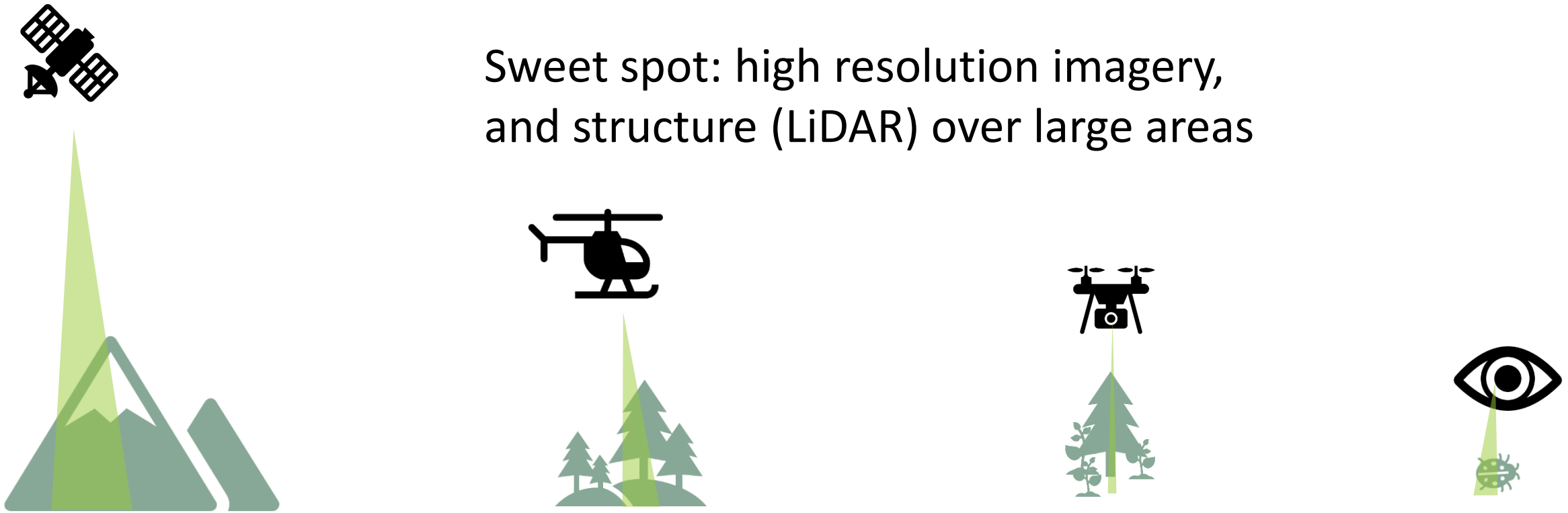
Resolution matters

Satellite images are ‘flat and coarse’ and cannot capture the most relevant ecosystem variables.

This is a problem. We need finer-scale data to observe ecosystems appropriately.

New tech: bridging the data ‘gap’

Sweet spot: high resolution imagery, and structure (LiDAR) over large areas



SPATIAL RESOLUTION

SPATIAL EXTENT

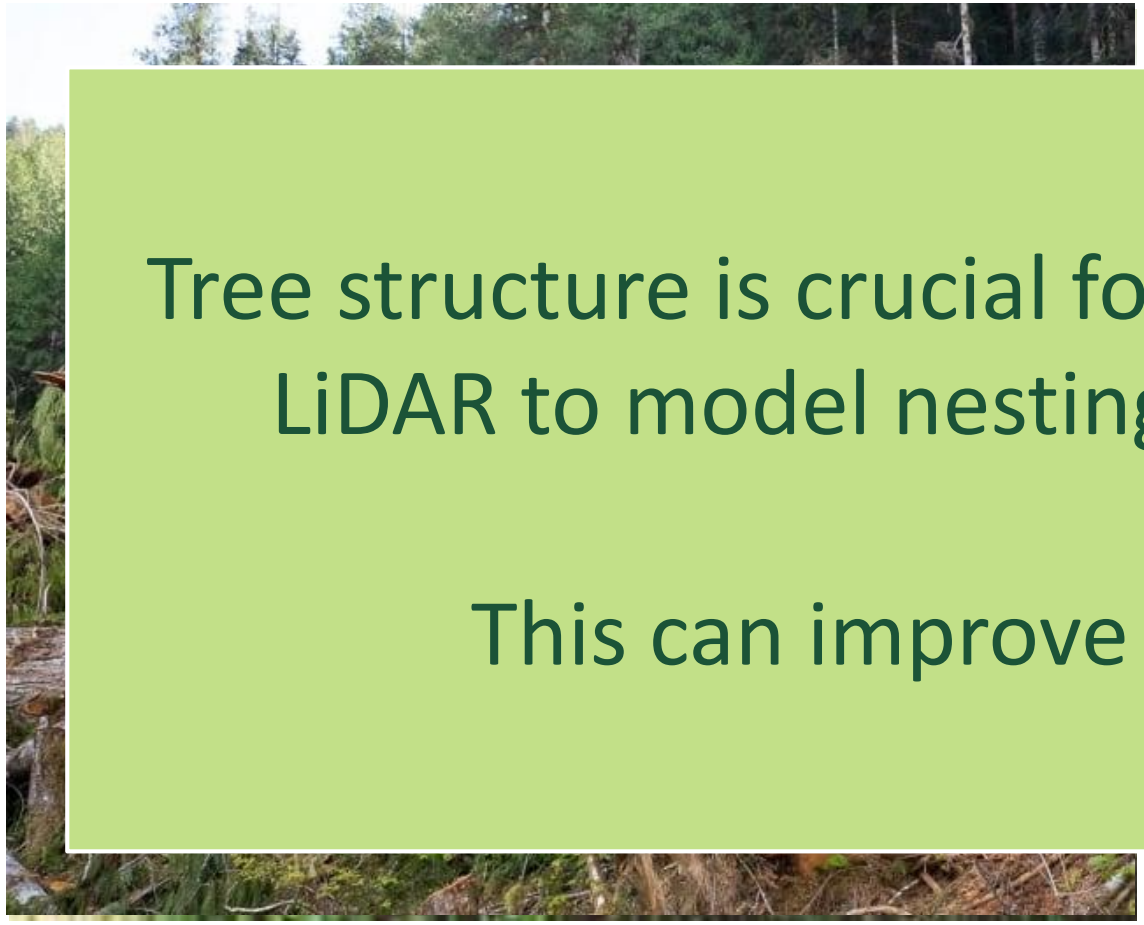
LiDAR – How it works

LiDAR can collect fine-scale structural data. We can now resolve individual trees and their structure over large areas.

But how can it be used for management?

Application: Marbled Murrelets

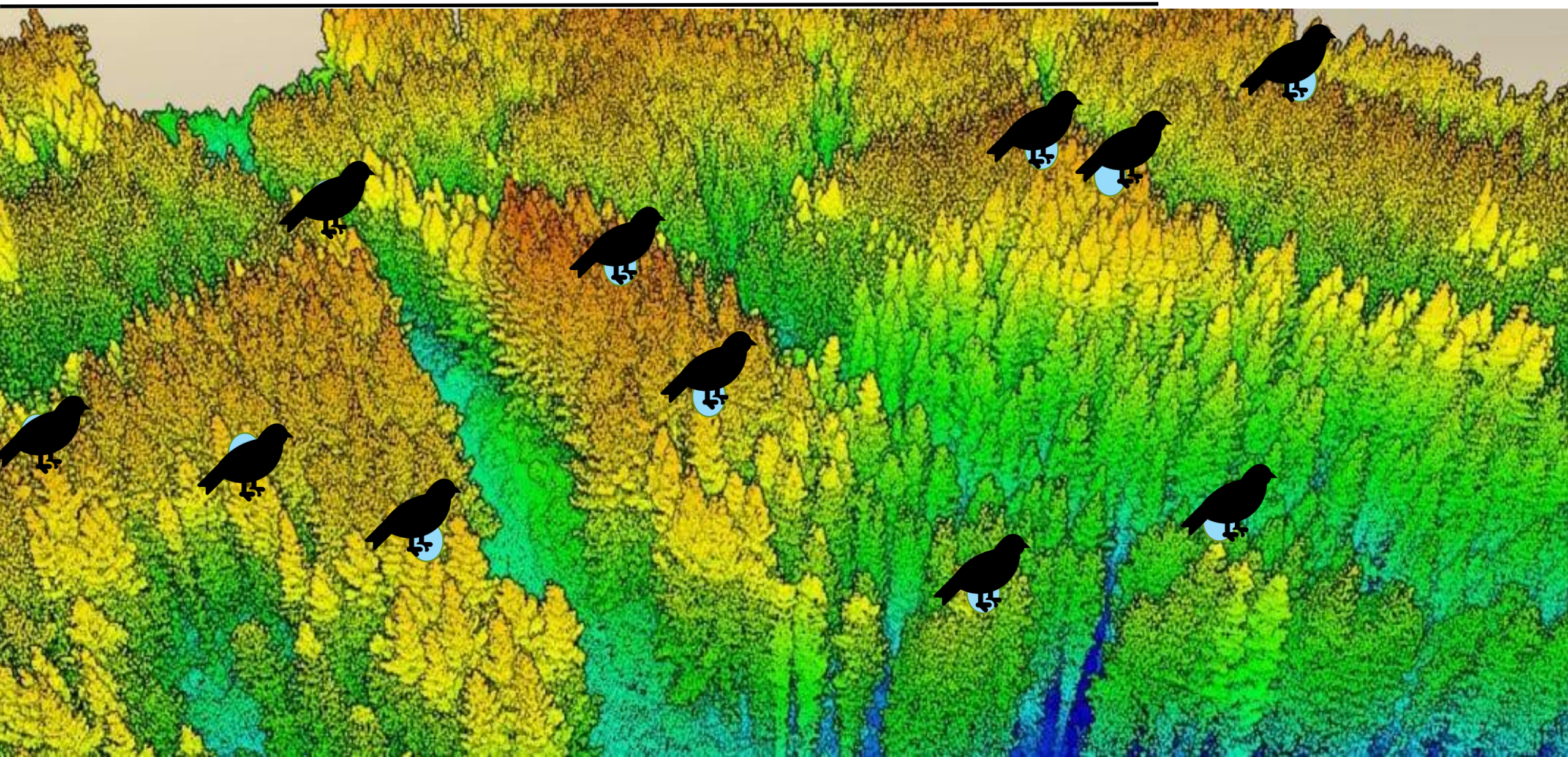
Can we use LiDAR to identify suitable nesting habitat to inform forest management?



Tree structure is crucial for murrelets. We can now use LiDAR to model nesting habitat over large areas.

This can improve forest management.

LiDAR informed habitat model



Hopeful outcomes

Provide a more appropriate and accurate nesting habitat map that can be used for land management decisions.

Provide a baseline to monitor habitat condition and change over time.

Conservation conflict solved? – No, but a good step in the right direction.

To conclude

Fine-scale remote sensing technology like LiDAR can help us model environmentally relevant variables, such as tree structure, over huge areas.

Range of ecosystem management uses, but LiDARS full potential hasn’t been explored.

I am using in in a novel way to help address a conservation conflict.

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