

An aerial photograph of a coastal landscape. In the foreground, there are dark, active dunes with sparse, dry, yellowish-brown grasses. The dunes are separated by shallow channels. In the background, a range of rugged, dark mountains stretches across the horizon under a bright blue sky with scattered white clouds. The overall scene is a natural, somewhat desolate coastal environment.

Characterising the vegetation of active dunes with aerial imagery

Coastal Restoration Trust Conference

Cate Ryan – PhD Candidate, 15 March, 2023

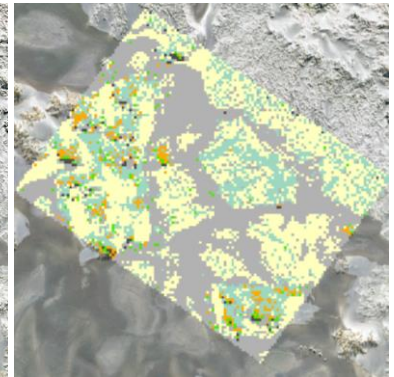
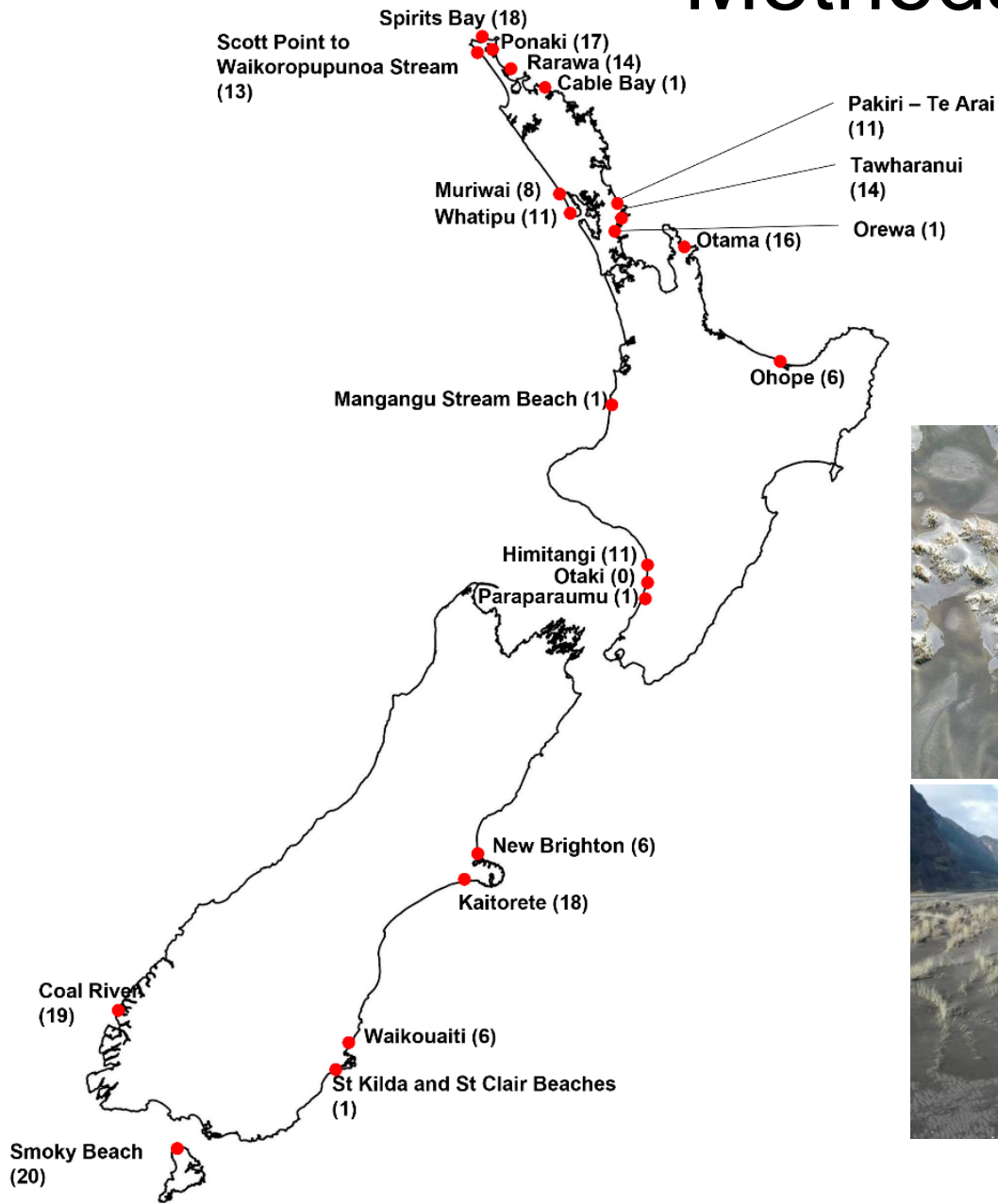
Supervisors: Hannah Buckley; Brad Case and Craig Bishop

A scenic landscape of a black sand beach with dunes and coastal vegetation under a blue sky with scattered clouds. The foreground is dominated by dark, volcanic sand dunes with clumps of tall, golden-brown grasses. In the middle ground, the beach transitions into a coastal area with low-lying green and brown vegetation. The background features dark, forested mountains under a bright blue sky with wispy white clouds. The ocean is visible on the right side of the frame.

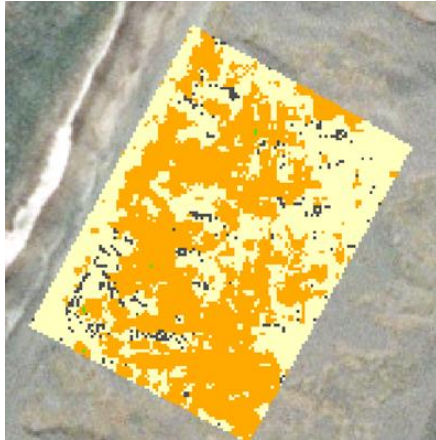
Research question:

Can remotely sensed imagery, such as aerial imagery, be used to monitor dune condition?

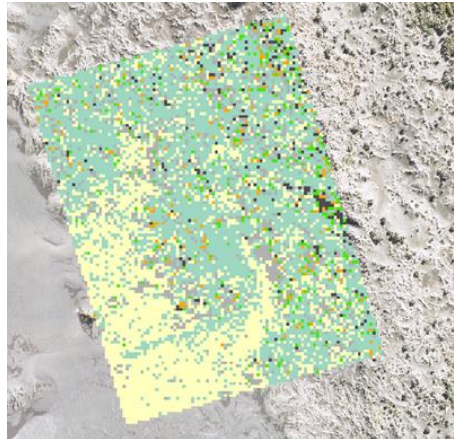
Methods



Characterising vegetation patterns



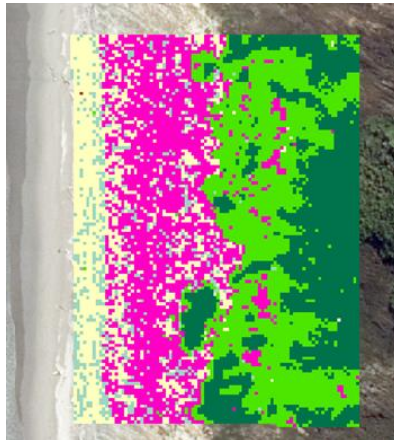
Pingao



Kowhangatara



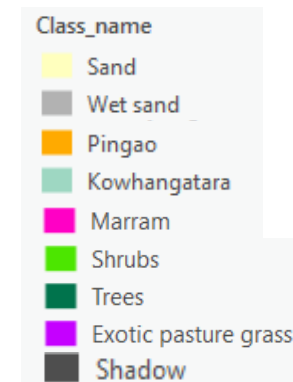
Marram



Marram with kōwhangatara

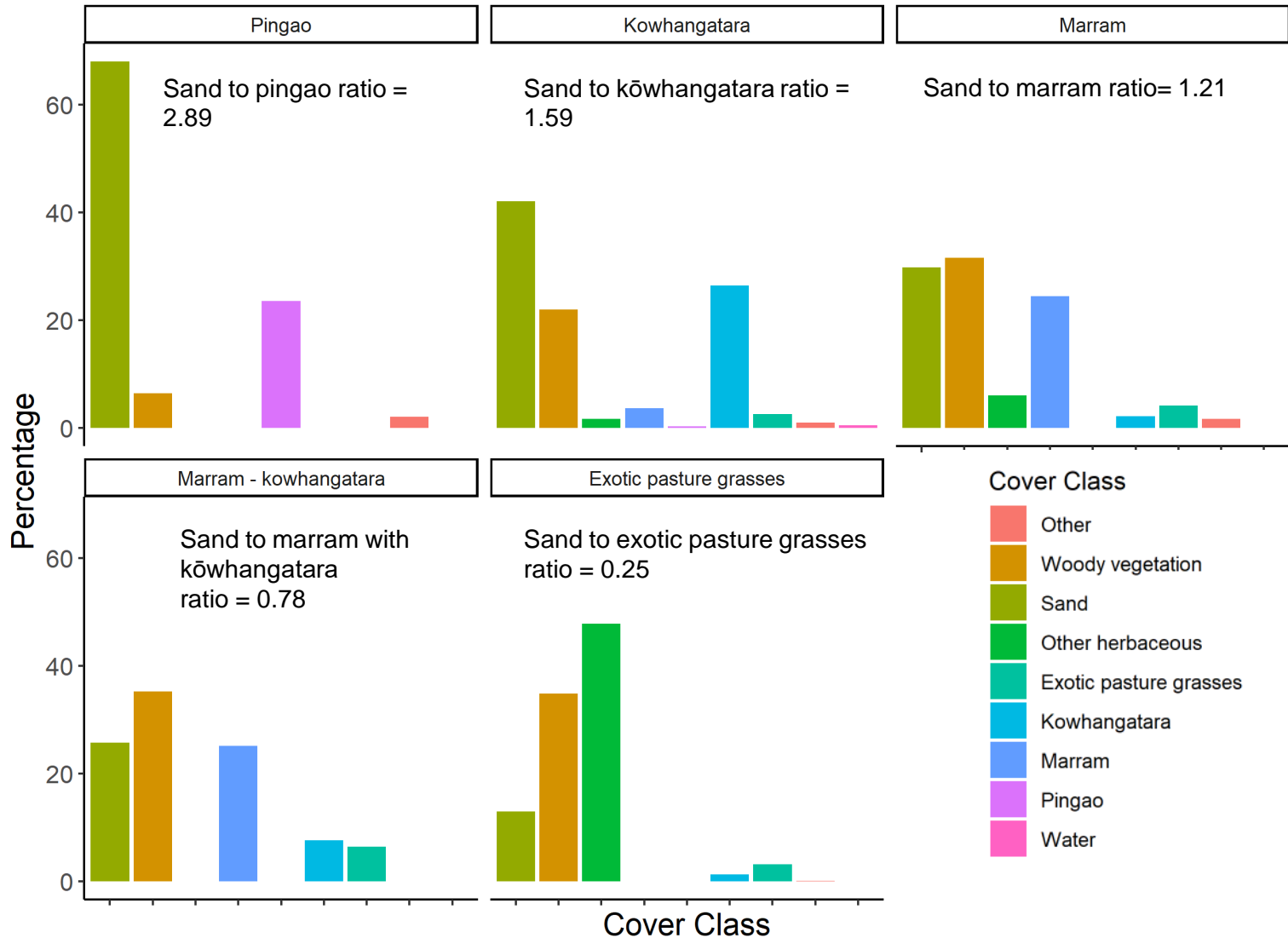


Exotic pasture grasses
with other exotic
herbaceous species



**Five dominant
foredune classes⁴**

Foredunes in native vegetation are more sandy



Summary

- Remote sensing methods are useful for monitoring dune vegetation
- They provides information at large spatial scale about dune condition
- Future applications: Monitor temporal dynamics on dunes, e.g., ecological restoration, natural disturbance