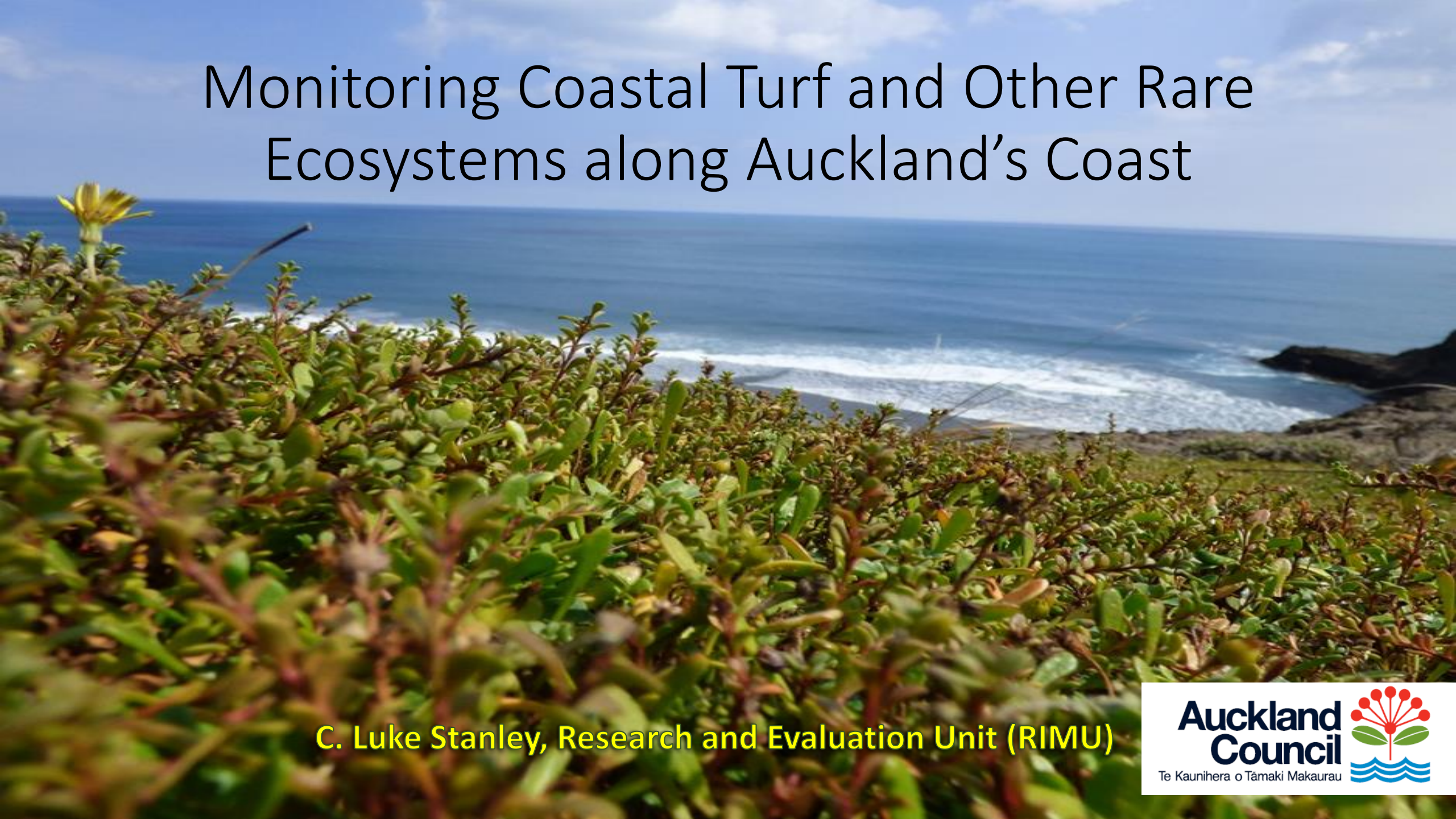
Monitoring Coastal Turf and Other Rare Ecosystems along Auckland's Coast



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Introduction

Critically endangered coastal ecosystems



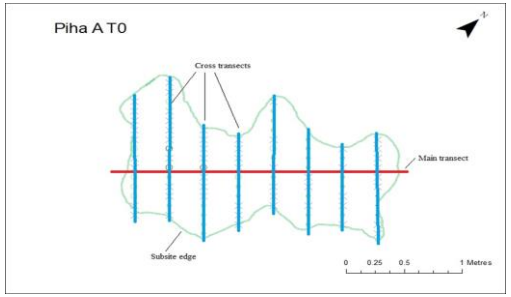


Photos by Jason Hosking, Todd Landers, Alastair Jamieson, Luck Stanley.

Coastal turf



Monitoring


What is a rare ecosystem?

- Small in area
- Geographically distinct
- Uncommon prior to human settlement
- High biodiversity values vs. size
- Often in ‘dynamic’ environments

Approx. area of indigenous coastal ecosystems in Auckland region

Coastal ecosystem type	IUCN threat status	Total area (Ha)
Coastal turf	Critically Endangered	16 (12)
Coastal lakeshore turf	Critically Endangered	20
Iceplant herbfield	Critically Endangered	81
Dune sedgeland	Critically Endangered	281
Shore bindweed	Endangered	55
Dune grassland	Endangered	3400
Coastal broadleaved forest	Endangered	4600
Cliff Pōhutukawa	Vulnerable	2600
Mangrove forest	Least Concern	10500

Dune sedgeland (Oioi, knobby clubrush sedgeland)

- Occupies dune plains behind mobile dunes
- Often found in a mosaic of sedgeland, herbfield, wetland and taller species
- Found at Whatipu and Papakanui spit
- Threats include development and dune stabilisation (e.g. for forestry), weeds, off road vehicles

Whatipū dune plains. Alastair Jamieson.

Iceplant herbfield (Iceplant, glasswort herbfield/loamfield or ‘petrel scrub’)

- Found in places with high salinity, guano and seabird disturbance
- Mosaic of burrows, guano deposits, early succession herbs and disturbance tolerant shrubs
- Main threats are mammalian pests and weeds
- Found near nesting seabirds, now on offshore, predator free islands like the Mokohinau Islands

Iceplant mosaic, Mokohinau Islands. Todd Landers.

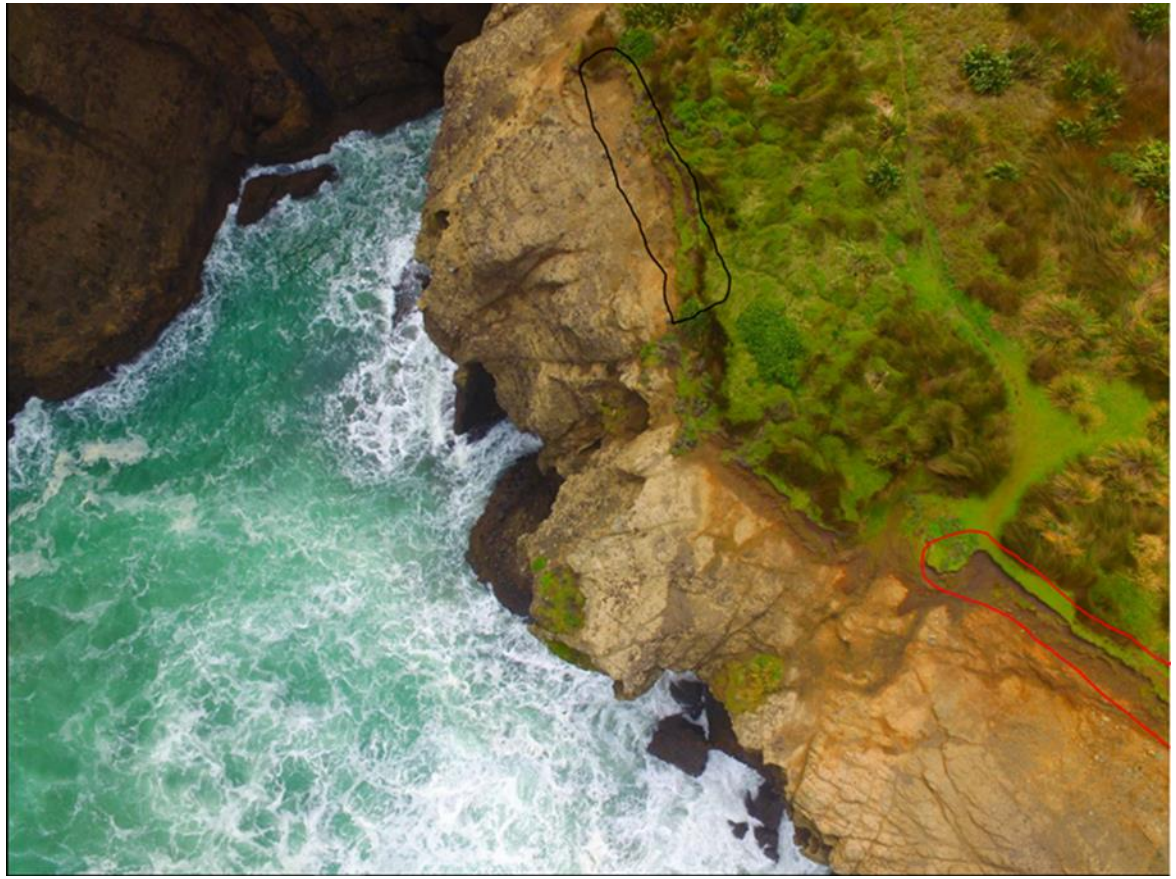
Coastal lakeshore turf

- Variant of lakeshore turf
- Found along a narrow band of fluctuating lake shoreline
- Ephemeral wetland
- Threats are artificial maintenance of lake levels, lake eutrophication, stock access
- Example at Lake Rototoa

Lakeshore turf, Lake Rototoa. Jason Hosking.

Coastal turf (Herbfield)

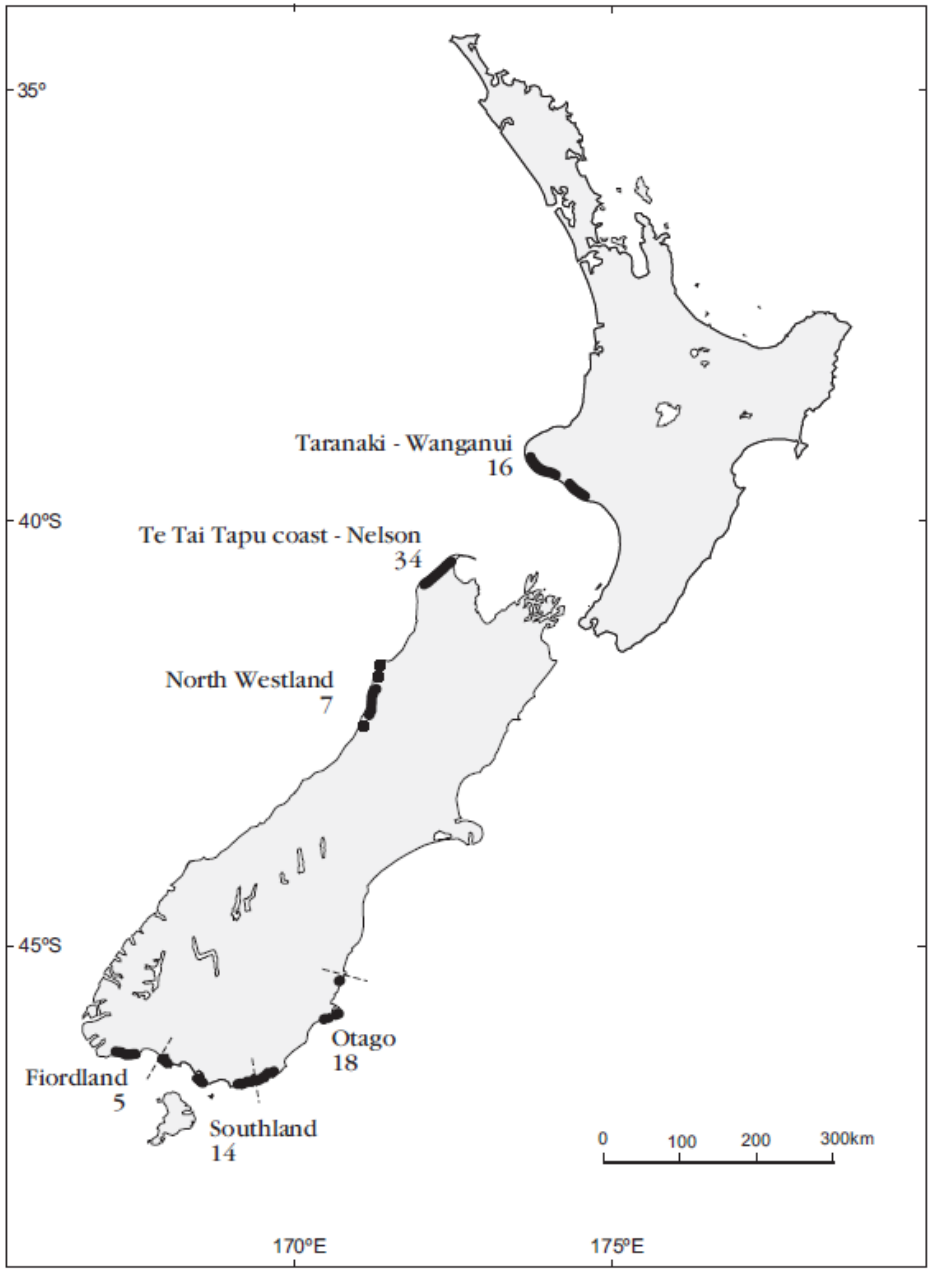
- High salt and high exposure
- Low lying (~50mm), salt tolerant herbs and grasses
- High diversity for small area (139 native plants previously recorded)
- Generally occupies a narrow band between bare rock and other ecosystems
- Patches in Auckland can be very small- table-top to tennis court size



Coastal turf

Distribution

- Nationally:
  - Taranaki, Nelson, Westland, Otago, Southland, Fiordland, Chatham Islands
- Regionally-rare in Auckland
  - Waitakere coastline (Piha, Muriwai etc.)
  - Great Barrier Island and other Hauraki Gulf Islands



Main coastal turf zones of New Zealand (Rogers 1999)

Coastal turf

Species

Auckland has half-star, sea primrose, native spinach, *Zoysia,* iceplant, glasswort, *Dichondra*, shore groundsel, sea spurrey

Coastal turf

History and threats

- Historical fauna disturbance
- Threats include weeds, trampling, excessive grazing and succession

Coastal turf

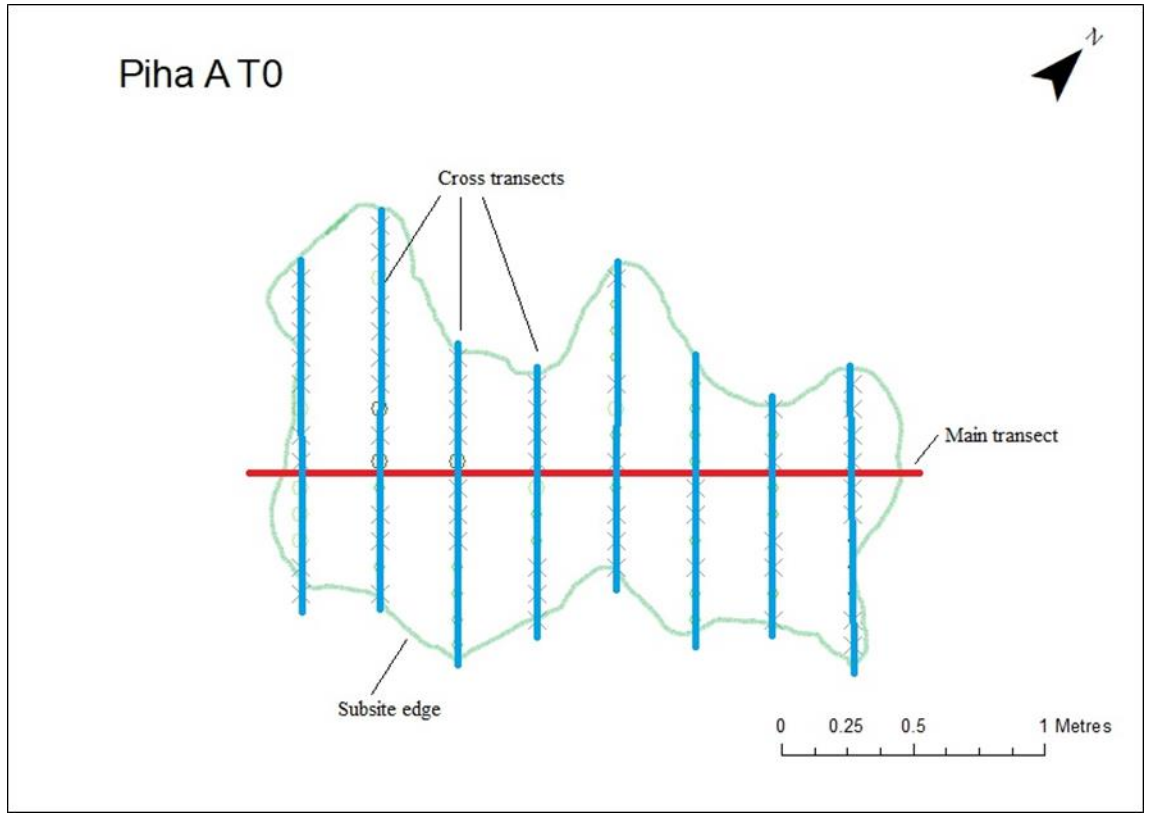
Monitoring

- Limited monitoring currently undertaken on rare ecosystems
- Coastal turf used as a pilot study
- Not a lot is known about coastal turf in Auckland- some sites have been recorded and species identified
- Three sites, each with three subsites

Coastal turf monitoring

How

Used point intercept transect method



Trialled drone photography

Coastal turf monitoring

Results

Indicators used:

- total area
- vegetated area
- native dominance
- exotic dominance

Percentage change in total area and vegetated area between initial and repeat sampling events at each subsite.

Site	Percentage change in area from initial sampling event	
	Total area	Vegetated area
Piha A	+4	+21
Piha B	+2	+14
Piha C	+7	+12
Bryers A	+23	0
Bryers B	+13	+13
Bryers C	+2	+4
Bethells A	+11	-3
Bethells B	+5	0
Bethells C	+7	-4

Coastal turf monitoring

Results

Percentage cover of natives for each subsite at initial (T0) and repeat (T1) sampling events.

Site	% Native biomass cover per sampling event	
	T0	T1
Piha A	41	64
Piha B	59	84
Piha C	87	98
Bryers A	116	119
Bryers B	78	70
Bryers C	57	64
Bethells A	56	56
Bethells B	54	61
Bethells C	64	66

Percentage relative abundance of exotics for each subsite at initial (T0) and repeat (T1) sampling events.

Site	% Exotic Cover per Sampling Event	
	T0	T1
Piha A	0	2
Piha B	1	11
Piha C	5	22
Bryers A	29	32
Bryers B	14	27
Bryers C	11	11
Bethells A	57	56
Bethells B	54	49
Bethells C	42	37

Coastal turf monitoring

Discussion

- We can tell change in area, native dominance and exotic dominance
- Vegetation tended to increase from winter to summer, and weeds more so
- Longer term monitoring can detect longer term trends

Coastal turf

Monitoring and management

With monitoring we can see if management is necessary, and if it is effective

Thank you, any questions?

- Rare coastal ecosystems
- Coastal turf
- Monitoring and management

References

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