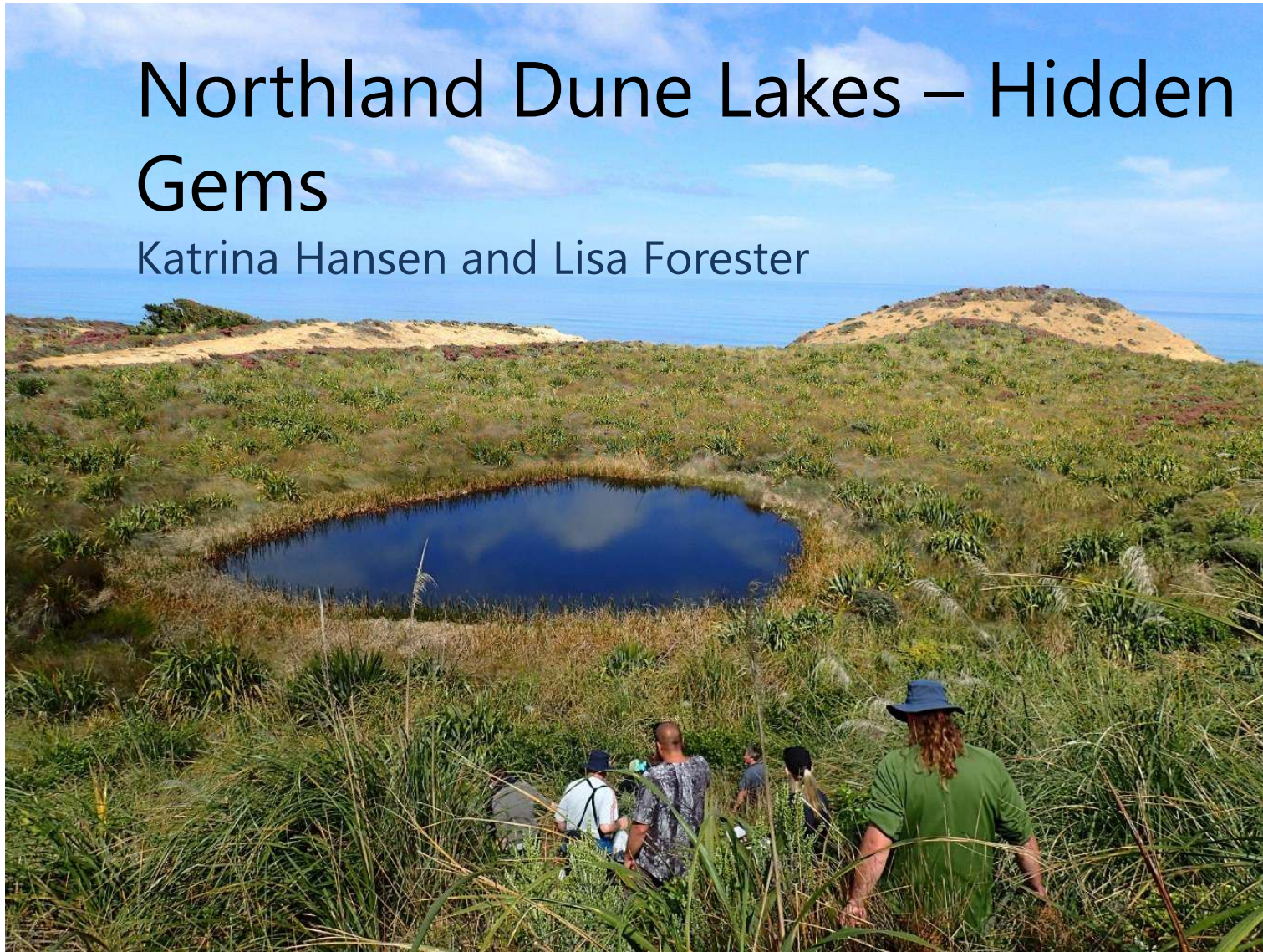


Northland Dune Lakes – Hidden Gems

Katrina Hansen and Lisa Forester



Man made



Alluvial



Volcanic



Northland lakes

Coastal dune



- Over 400
- Most small, shallow dune lake
- Concentrated on west coast
- Most surrounded by forest or farms
- Largely unfenced, nutrient inputs an issue

What is a coastal dune lake?

- Wind sculptured dunes in high rainfall coastal areas create freshwater wetlands
- Dune lakes form in many ways and keep evolving:
 - Sand hollows (deflation zones)
 - Blocked water courses
 - Between parallel dunes

Dune lake types



6. Marine Contact



1. Frontal dune ponds



2. Deflation hollows



5. Window



4. Perched



3. Dune contact/barrage

Global situation

- Rare – occur in few places in the world
- Oligotrophic (low nutrient) lakes like Kai Iwi Lakes are now critically rare in every country
- Intact plant and animal communities rare
- Nutrient inputs are a problem

Northland dune lakes

- NZ probably has the most. Northland has 350 > 0.5ha
- Cover full range of six classes
- Recent to 50,000 years old (most around 5,000 years)
- Most lakes are productive and diverse
- Represent a large proportion of lowland NZ lakes still with relatively good water quality and limited pest impacts
- Many still in good condition but trend is one of decline
- Most shallow < 15m

Northland dune lakes

- Deepest lake – Taharoa 37 m
 - Also the deepest vegetation 27.5 m (deepest in NI)
- Largest lake – Ōmāpere 12 km²
- Clearest lake – Taharoa, Te Kahika
 - Secchi depth exceeding 11 m
- Well buffered – many lakes have a complete margin of emergent and other indigenous vegetation
- Highest aquatic plant diversity – Humuhumu 26 spp.



Submerged Plant Index – Lake SPI

- 35 of highest ranked lakes monitored
- Measures composition and depth of native and exotic vegetation
- Scores how “pristine” a lake is: >85% is excellent whilst <25% is poor
- Repeated every 5 years so can detect changes over time and between lakes





Un-named farm dune lake – small, shallow and grazed to the edge



Lake Kanono, Pouto –
outstanding dune lake



Lake Taharoa – Kai Iwi Lakes

East coast dune lakes

Mangawhai dune lake



Trithuria inconspicua

Biodiversity values – unique and
threatened

Biodiversity values – aquatic plants



Biodiversity values – lake edge plants



Centrolepis strigosa



Gratiola pedunculata

Self introduced from Australia and regarded as native



Biodiversity values – freshwater fish

- Long-fin eels
- Inanga, bully species
- Dune lake galaxiids



Biodiversity values – birds



NZ scaup
(*Aythya novaeseelandiae*)



Little black shag
(*Phalacrocorax sulcirostris*)



NZ dabchick
(*Poliiocephalus rufopectus*)



Australasian bittern
(*Botaurus poiciloptilus*)

Issues

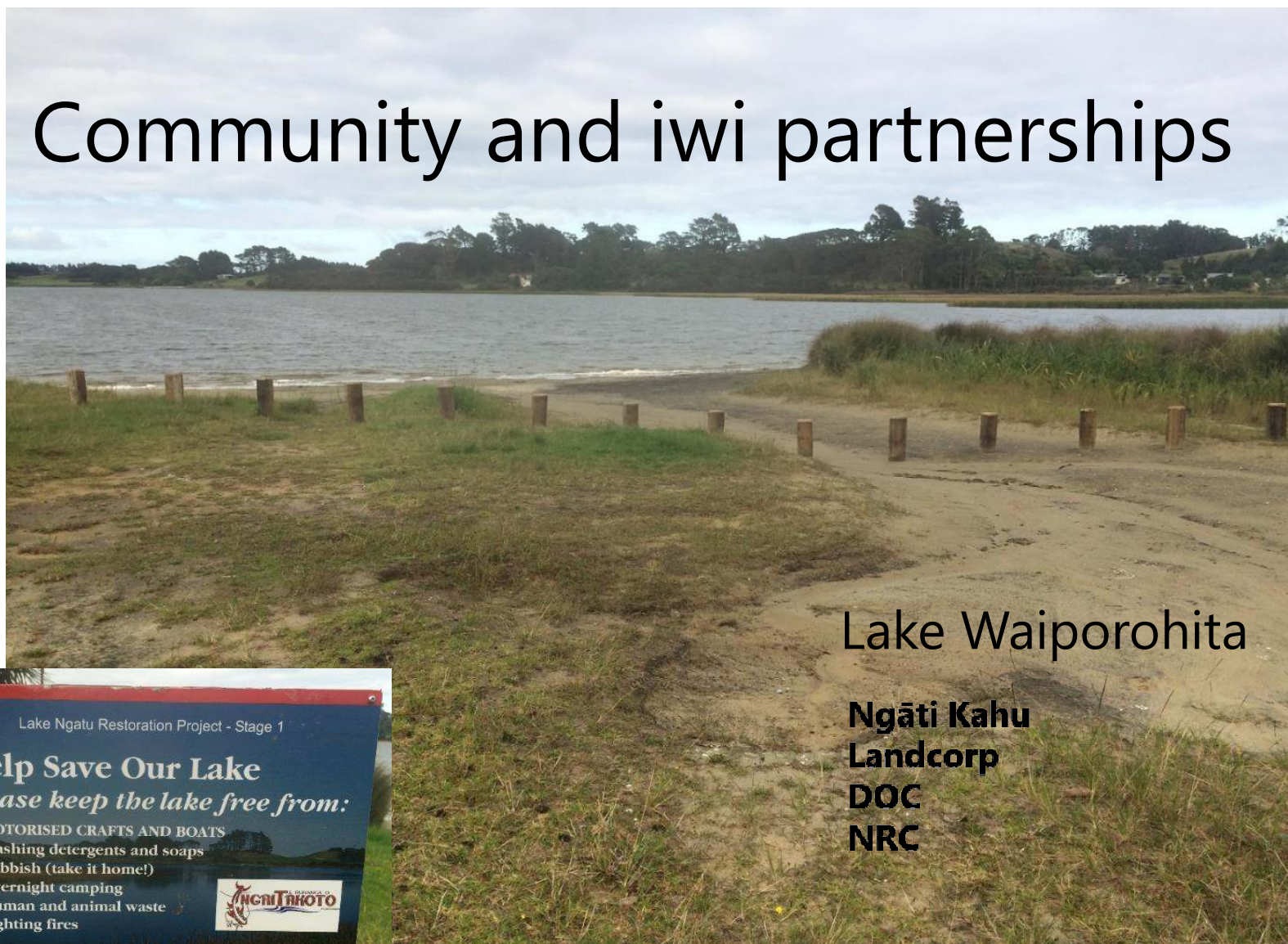
- Eutrophication – stock, run off, fertiliser, earthworks, septic tanks, recreational use
- Pest fish and weeds
- Canada geese
- Land use changes
- Intensification
- Dewatering (pines, climate)



What we're doing

- Continue monitoring the lakes
 - water quality, ecological condition, weed surveillance
- Protect lakes from spread of invasive weeds
- Assist and encourage fencing of lake margins from stock
 - FIF dune lakes project and Environment Funding
- Work with communities, landowners and iwi using a catchment approach
- Northland Lakes Strategy has been produced
- Lake Management Plans for 20 outstanding lakes to direct work

Community and iwi partnerships



Lake Waiporohita

Ngāti Kahu
Landcorp
DOC
NRC



What we've learnt so far

- Unique, threatened species and ecosystem
- Each dune lake is an individual though the issues are common
- Shallow sand lakes are sensitive
- Sand soils are highly transportable
- Shallow lakes can improve
- Community partnerships lead to enduring actions



Thank you

Hidden Gems videos - Northland's Dune Lakes

Hidden Gems –a three part, 25 minute documentary on the Northland's very special coastal dune lakes

- <https://www.nrc.govt.nz/hiddengems>