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*Te Whare Wānaka o Aoraki*  
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# The state of Wildlife at Te Waihora/Lake Ellesmere 2013

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New Zealand's specialist land-based university

# What I will cover

- Birds
- Lizards
- Invertebrates
  - Terrestrial
  - Aquatic
- Recommendations

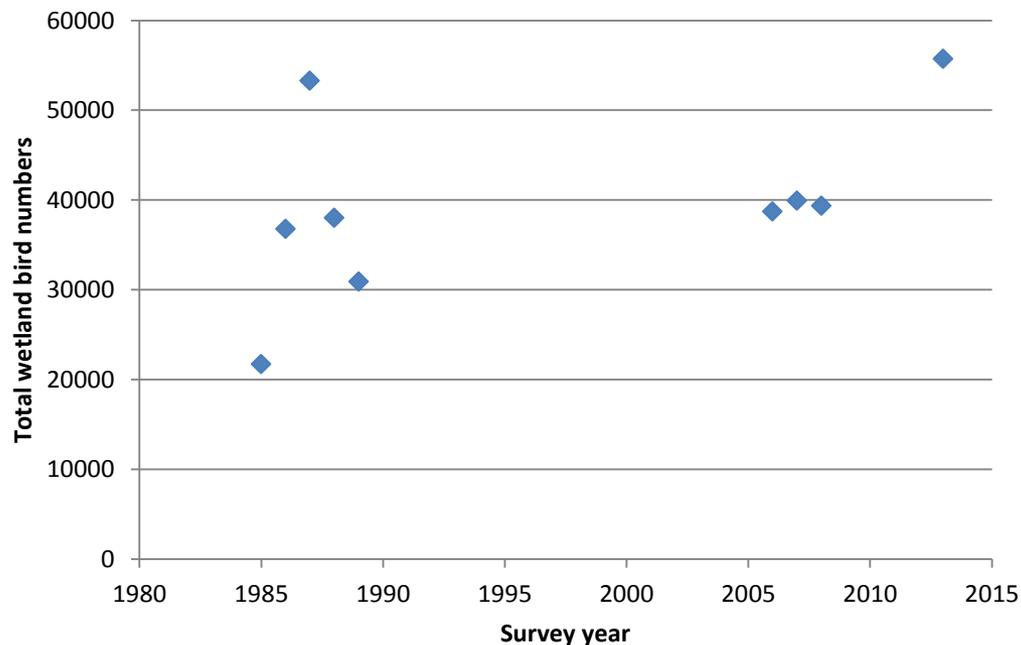
# Birds - context

- Te Waihora of international standing for its birdlife – the single most diverse bird habitat in New Zealand
- Monitoring record – mixed, but there has been February ‘total’ bird counts in many years between 1985 and now, and we have agreed to continue these into the future
- So, we know quite a lot about the state of birds, but we know little about many of the pressures, and while there is some predator control work we don’t know much about the effectiveness of the responses, or the gaps
- So ...

# Birds – State: selecting a core set of indicator species

Indicator species	Links to other levels of monitoring, i.e., wrybill is used by MfE for national level monitoring	At least one from each guild, apart from riparian which is seen as ubiquitous	At least three nationally threatened or at risk species	One game bird species	One species important to the tangata whenua as a mahinga kai resource	One species that migrates internationally and for which the lake provides the major NZ over-wintering location
Australasian crested grebe		Open water diver				
Black cormorant		Open water diver				
Pied stilt		Deep water wader				
Wrybill		Shallow water wader				
Red-necked stint		Shallow water wader				
Black swan		Dabbling waterfowl				
Australasian shoveler		Dabbling waterfowl				
Caspian tern		Aerial hunting gull or tern				
Australasian bittern		Swamp specialist				

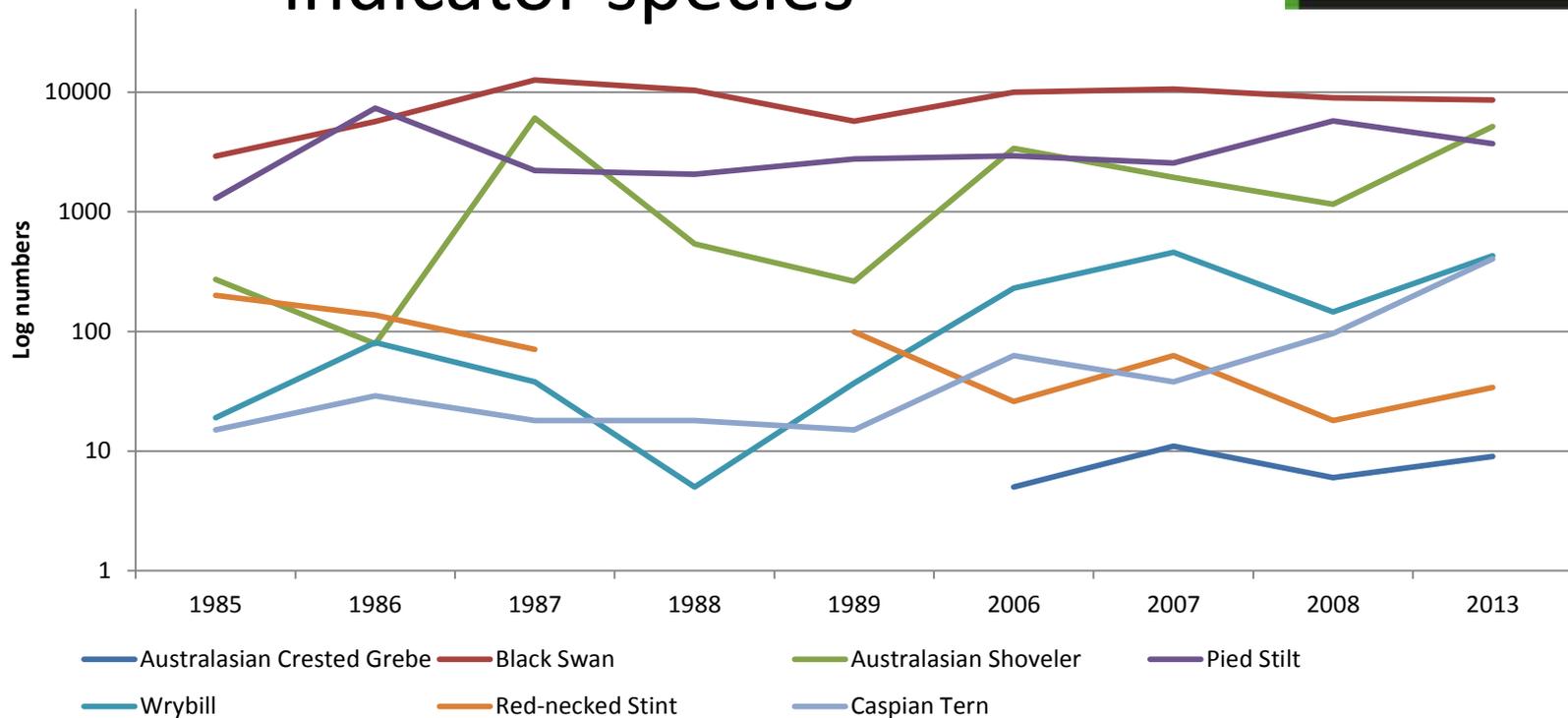
# State of birds – overall numbers



## Points to note:

- Many years when no 'total' bird counts, esp in the 1990s-early 2000s: this is not good!
- Large variation in numbers, from low 20,000s to mid 50,000s – need more monitoring to see if there are any lake level type issues here?
- Some species make up a large proportion of these numbers

# Birds – State: Trend data for 7 indicator species



## Points to note:

- Only since 2005 have breeding grebes been regularly sighted year round
- Since the 1980s Caspian tern (breeding) and wrybill (migration stopover) numbers have increased
- Stint numbers may have declined but data are limited
- Data gaps indicate '0' recorded for that species in that survey

# Birds - Pressures

- Predation – refer to DOC presentation, but overall little information available
- Wetland habitat loss:
  - Land use intensification: see ‘land use and land cover’ section
  - Invasion by exotic plants, e.g., willows: see ‘vegetation’ section
- Lake opening and closing regime
- Disturbance from recreational users – see ‘Recreation’ section esp re Canada goose hunting

# Birds - Responses

- DOC and CCC predator control work at Kaituna Lagoon and on Kaitorete Spit – little understanding of ‘state’ effectiveness
- Willow control work on western shore – little understanding of ‘state’ effectiveness
- Lake opening protocol – open discussions now occurring
- Disturbance – no action yet taken

# Birds – Pressure State Response traffic light assessment

<p>State of birds</p>	<p>Total numbers remaining high, diversity remaining high, key indicator species generally static</p>		<p>Bittern unknown</p>
<p>Pressures on birds – understanding</p>	<p>Willows</p>	<p>Lake level management; Disturbance</p>	<p>Predation</p>
<p>Response to pressures</p>	<p>Lake level management; Willows; Predation</p>		<p>Disturbance</p>

# Lizards – Pressure State Response traffic light assessment

- 4 species; most work on dunelands of Kaitorete Spit
- General lack of knowledge about rest of lake shore

State of lizards – Kaitorete Spit	Canterbury gecko; McCann's skink; Common skink	Spotted skink
State of lizards – Edge of lake	Little to no quantitative knowledge	
Pressures on lizards – understanding	Predation - assumptions	
Response to pressures	Predation – ongoing work on Kaitorete but response not yet clear in terms of change to state	

# Terrestrial invertebrates – Pressure State Response traffic light assessment

- Much known of invertebrates of Kaitorete Spit, esp flightless moths
- General lack of knowledge about rest of lake shore

State of terrestrial invertebrates – Kaitorete Spit	A very mixed bag but relatively little known about trends
State of terrestrial invertebrates – Edge of lake	Little to no quantitative knowledge
Pressures on terrestrial invertebrates – understanding	Predation - assumptions
Response to pressures	Predation – ongoing work on Kaitorete but response not yet clear in terms of change to state

# Aquatic invertebrates – Pressure State Response traffic light assessment

- Much known of invertebrates of Kaitorete Spit, esp flightless moths
- General lack of knowledge about rest of lake shore

State of aquatic invertebrates	Lake flies, maybe?	Little to no quantitative knowledge about other key groups, etc
Pressures on aquatic invertebrates – understanding	Poor water quality Sedimentation Lake level management	
Response to pressures	Processes in place re improving water quality but unknown potential outcomes	

# Recommendations

## Birds:

- Undertake, as agreed in the bird monitoring protocol, annual bittern monitoring
- Record and report all data by total counts and also by survey areas
- Set up indicators for predator levels that are related to significant concern levels
- Develop and implement a plan for bittern conservation efforts with appropriate response indicators included

## Lizards:

- Survey the lake margins for lizards
- Develop and implement ongoing lizard monitoring protocols, especially for Kaitorete Spit

## Terrestrial invertebrates:

- Survey the lake margins for terrestrial invertebrates
- Develop and implement ongoing invertebrate monitoring protocols, especially for Kaitorete Spit, but for any key species or communities identified above

## Aquatic invertebrates:

- Develop and implement a monitoring protocol for lake flies around the lake