

# Valuing Indigenous Biodiversity

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# Case Study #1

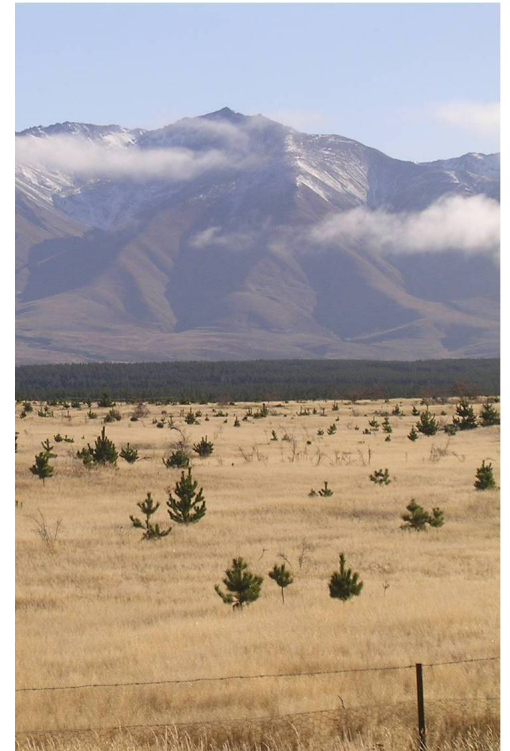
- Wilding Pines, Mackenzie Basin

- Effects


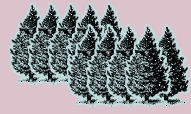


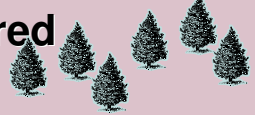
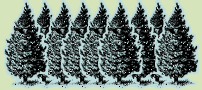




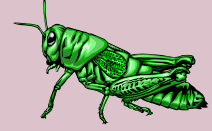

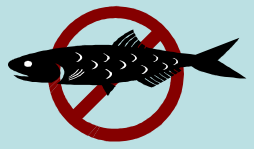



- *Galaxias macronasus*, *Brachaspis robustus*, *Hebe cupressoides*, Aesthetics
- Values of species extinctions
- Differences in values between species
- Aesthetics versus species

- Communities

- Twizel, Fairlie, Timaru, Christchurch



# Wilding Pines Choice Example

Outcomes In Twenty Years	Outcome Scenario A	Outcome Scenario B	Outcome Scenario C
<b>Wilding Pine Coverage</b>	5% 	10% 	2% 
<b>Predominant Pattern</b>	Large areas 	Scattered 	Large areas 
<b>Hebe cupressoides</b>	Locally Extinct 	Same as now 	Locally extinct 
<b>Robust grasshopper</b>	Extinct 	Same as now 	Extinct 
<b>Bignose galaxias</b>	Extinct 	Same as now 	Extinct 
<b>Cost to your household each year for the next 5 years</b>	None	None	\$100 

# Results

Households were willing to pay \$95 per year for 5 years to prevent the Robust Grasshopper (*B. robustus*) becoming extinct in 20 years

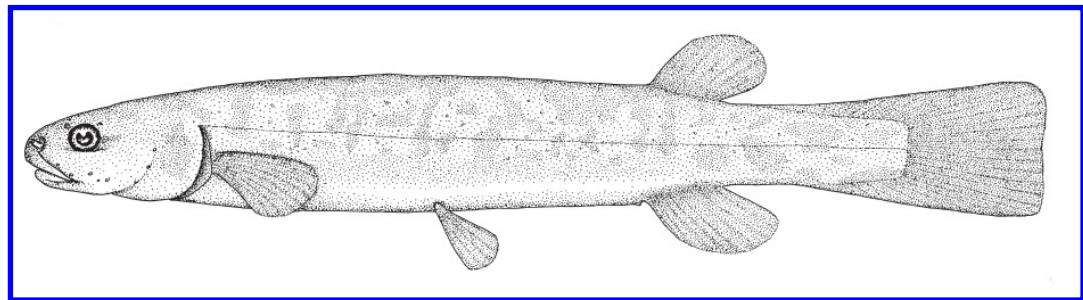
95% confidence interval =  
\$81 - \$111



# Results

Households were willing to pay \$110 per year for 5 years to prevent Bignose Galaxias (*G. macronasus*) becoming extinct in 20 years

95% confidence interval = \$95 - \$126



# Results

Households were willing to pay \$58 per year for 5 years to prevent *Hebe cupressoides* becoming locally extinct in 20 years

95% confidence interval = \$47 - \$72



# Results

Households were willing to pay \$60 per year for 5 years to prevent large blocks of wilding pines rather than scattered plots over the next 20 years

95% confidence interval = \$46 - \$76



# Relative values

	95% confidence intervals
Extinction of Bignose galaxias	<b>\$95 - \$126</b>
Extinction of Robust grasshopper	<b>\$81 - \$111</b>
Local extinction of hebe cupressoides	<b>\$47 - \$72</b>
Large blocks of wilding pines	<b>\$46 - \$76</b>

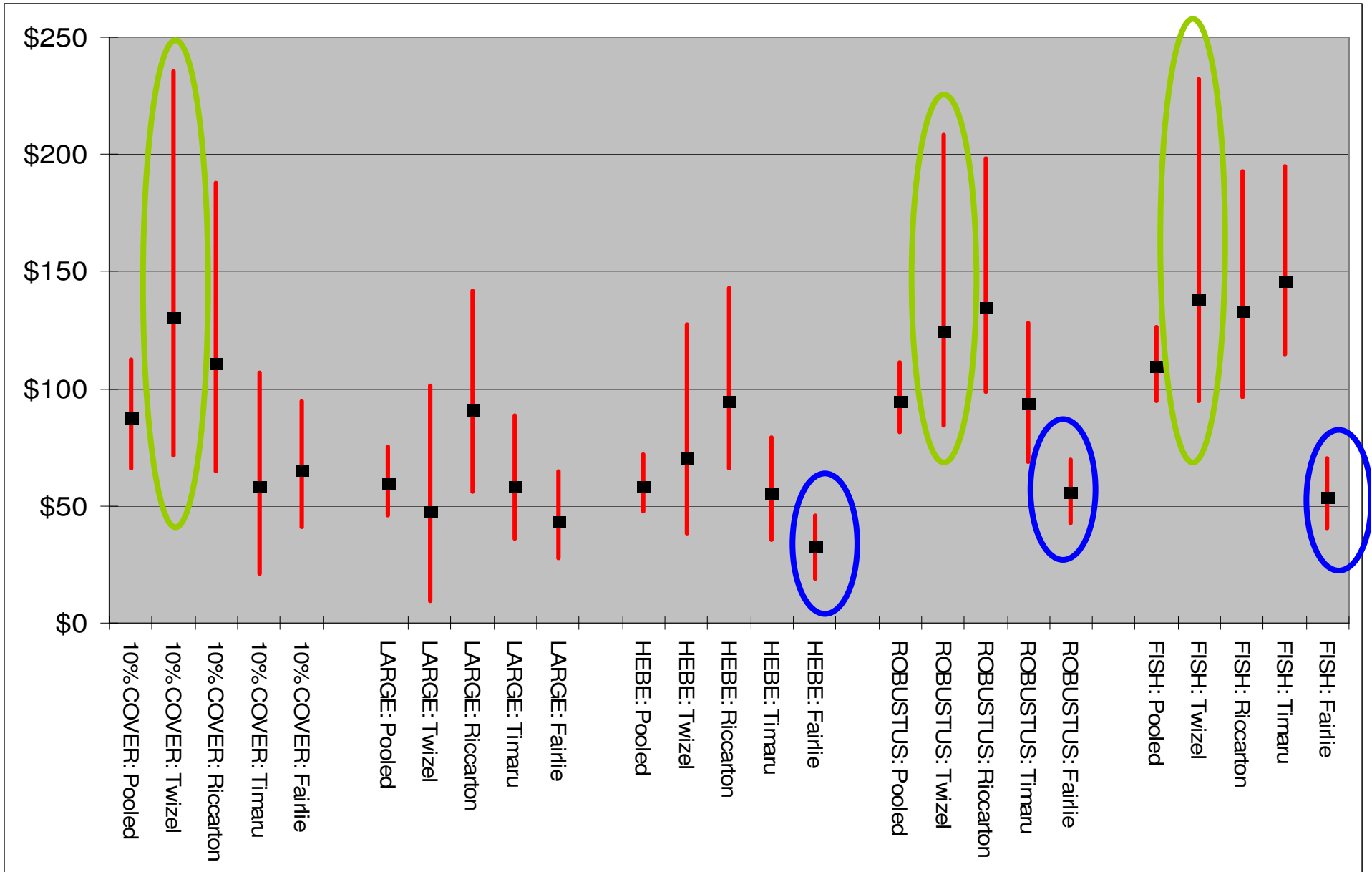


# But ...

There were differences

- between locations
- between individuals

# MNL Model: Wildings



# Case Study #2

- Wasps, Lake Rotoiti, Nelson
  - Effects
    - Birds, Insects, Recreation
    - Values of abundance
    - Differences in values between insects and birds
    - Humans versus nature
  - Communities
    - Nelson, Christchurch

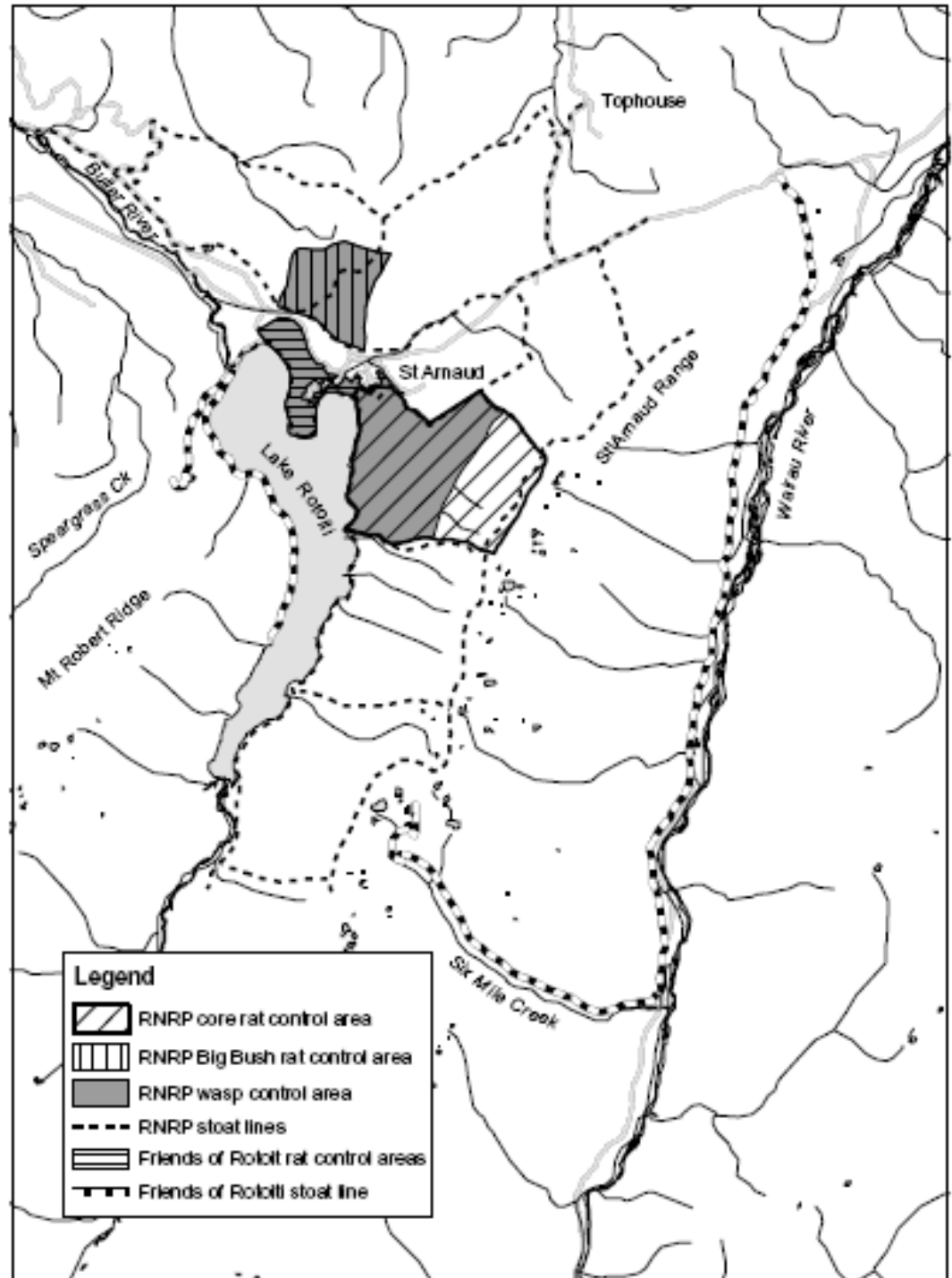


# Nelson Lakes National Park














# Rotoiti Nature Recovery Project

- Wasp control is undertaken in the grey shaded area
- There is more widespread control of other species, particularly stoats and rats over a broader area around Lake Rotoiti



# Wasps Choice Example

Outcomes	Outcome Scenario A	Outcome Scenario B	Outcome Scenario C
<b>Recreation</b> Chance of getting stung			
<b>Birds</b>			
<b>Insects</b>			
<b>Cost to your household each year for the next 5 years</b>	None	\$250 	\$50  <b>Nimmo-Bell</b> & COMPANY LTD

# Results

Nelson households were willing to pay \$5.25 per year to prevent a 1% increase in the probability of wasp stings

95% confidence interval =  
\$4.64 - \$5.86



# Results

Nelson households were willing to pay \$325 per year to avoid “Native birds [becoming] virtually absent from Lake Rotoiti”

95% confidence interval =  
\$273 - \$376

Base = Low numbers of native birds at Lake Rotoiti



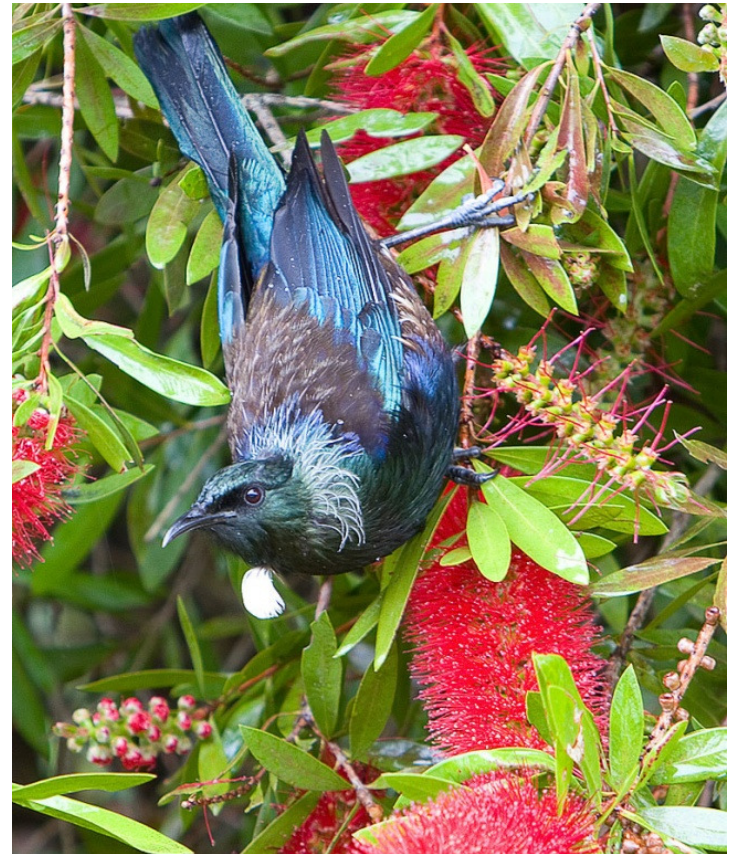


# Results

Nelson households were willing to pay \$125 per year for a “Very healthy native bird population at Lake Rotoiti”

95% confidence interval = \$98 - \$152

Base = Low numbers of native birds at Lake Rotoiti

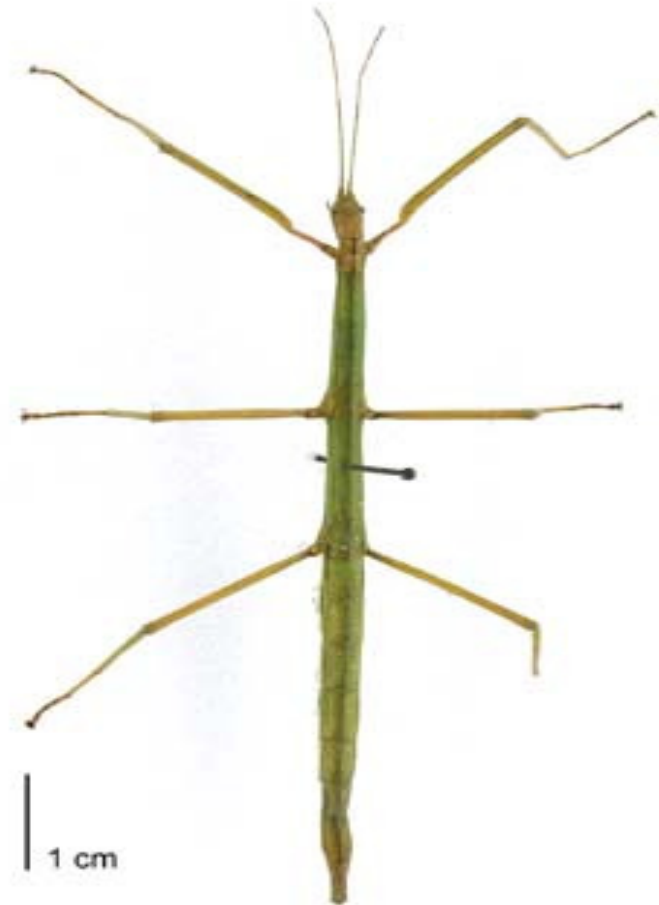


# Results

Nelson households were willing to pay \$198 per year to avoid “Insects [becoming] virtually absent from Lake Rotoiti”

95% confidence interval = \$170 - \$226

Base = Low numbers of insects at Lake Rotoiti



# Results

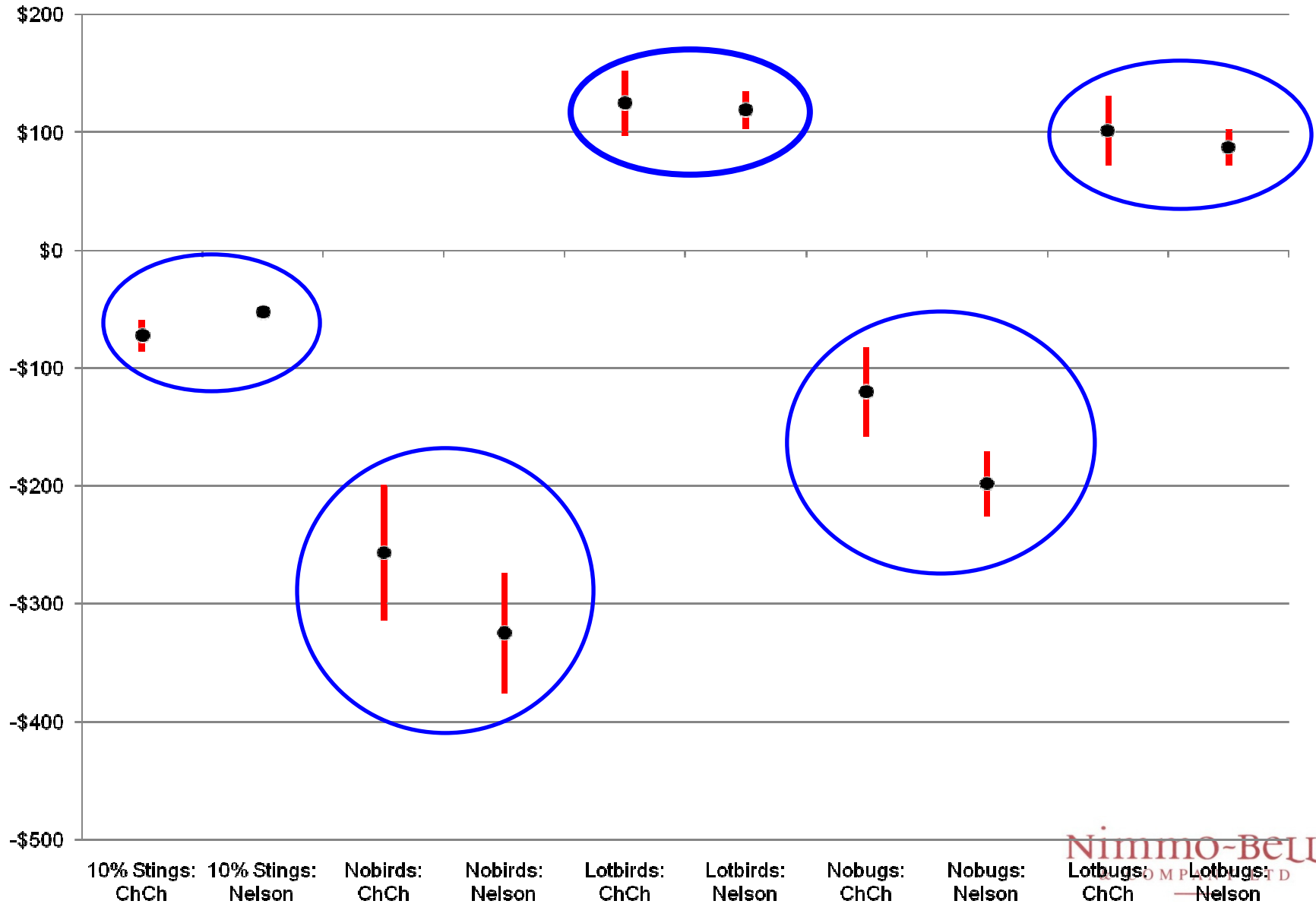
Nelson households were willing to pay \$87 per year for a “Very healthy insect population at Lake Rotoiti”

95% confidence interval =  
\$72 - \$102

Base = Low numbers of insects at Lake Rotoiti



# Similar values at both locations



# Conclusions

- The choice experiments worked well
- Long gestation periods
- Responses from “informed citizens”
  - not representative of the community at large
- The community
  - values native species
  - values aesthetics
  - values prevention of stings
- Differences between communities
- Differences within communities
- Relative values can be identified