POPULATION TRENDS OF BLACK-BILLED GULLS (*LARUS BULLERI*) ON SOUTH ISLAND RIVERS 1962-2014

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Black-billed gulls (*Larus bulleri*)

- Threatened-Nationally Critical
- Based on a predicted decline of 70% within three decades
- Most threatened gull in the world - IUCN
- Based on declines observed in Southland (*c*.70% of national population)

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Objectives

To review the threat classification by analysing counts from 30 South Island rivers collected over 52 years.

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Methods

- Analyses were limited to rivers, or stretches of rivers, for which at least five counts had been undertaken over at least 20 years.
- Data were analysed used Generalised Linear models (negative binomial).
- Models considering year, location, year+location, year*location were ranked using AIC.
- Top-ranked models were used to make 30 year predictions.

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River Covariates

The following river covariates were modelled against the median count for each river:

- Mean river flow
- River area (ha)
- Mean survey length
- Percent exotic vegetation cover on riverbed
- Average annual water deficit within a 5 km buffer of the river
- Percent high producing grassland within a 5 km buffer of the river

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Results

- Counts varied from zero to 82,733 (30 rivers, 52 years)
- Top model all rivers = year+location (AIC weight = 1): Predicts 77% decline across all sites over 30 years.
- Top model Southland rivers = year (AIC weight = 0.71): Predicts a 90% reduction over 30 years.
- Top model non-Southland rivers = year+location (AIC=1): Predicts a 75% decline over 30 years.

NB: Year*location model failed to converge for the analysis of all rivers and non-Southland rivers

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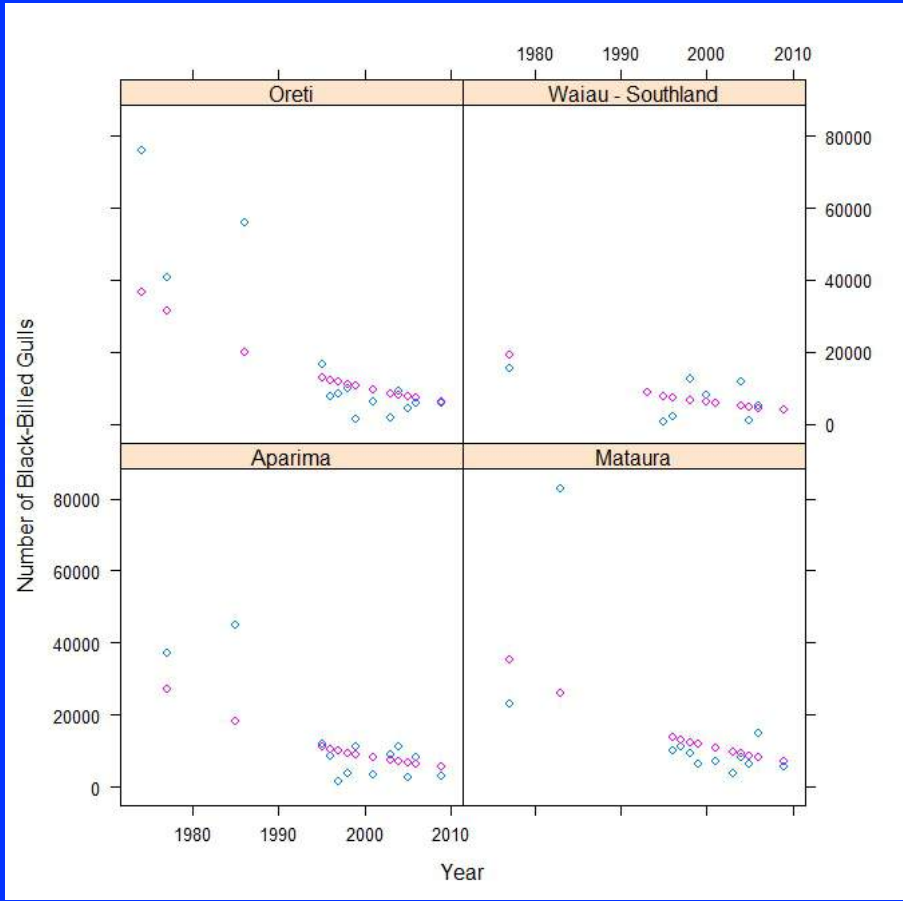
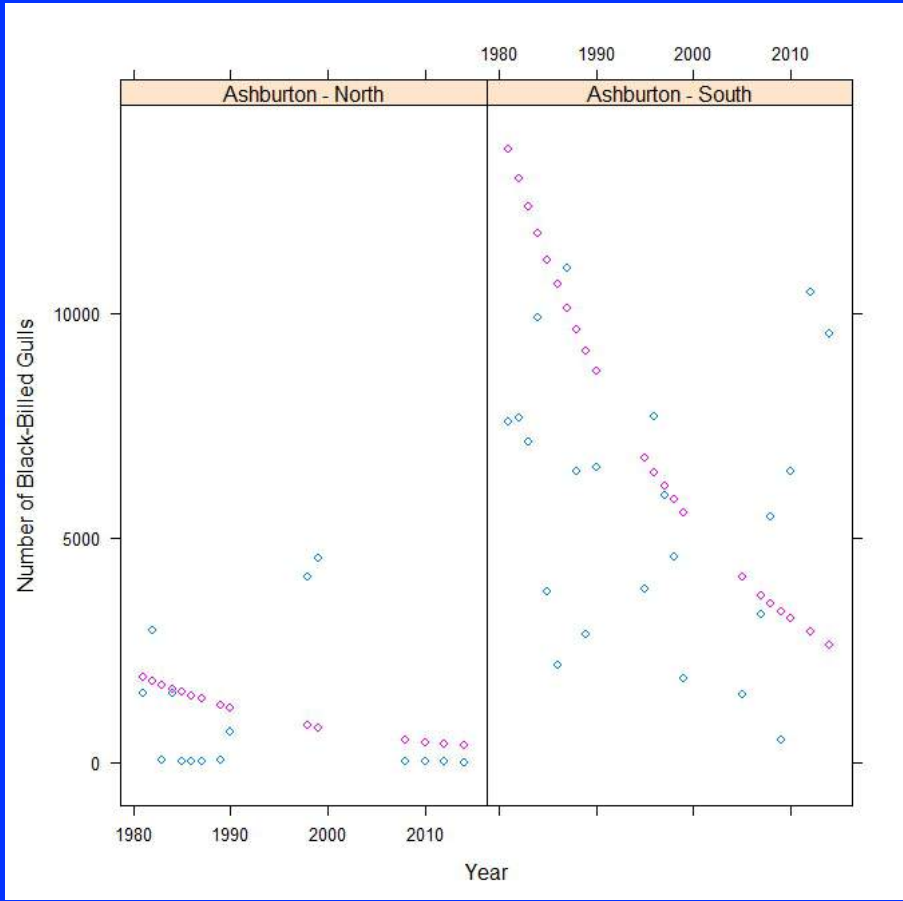
Results

Southland counts (blue diamonds)
Fitted values (purple diamonds)



Ashburton counts (blue diamonds)
Fitted values (purple diamonds)



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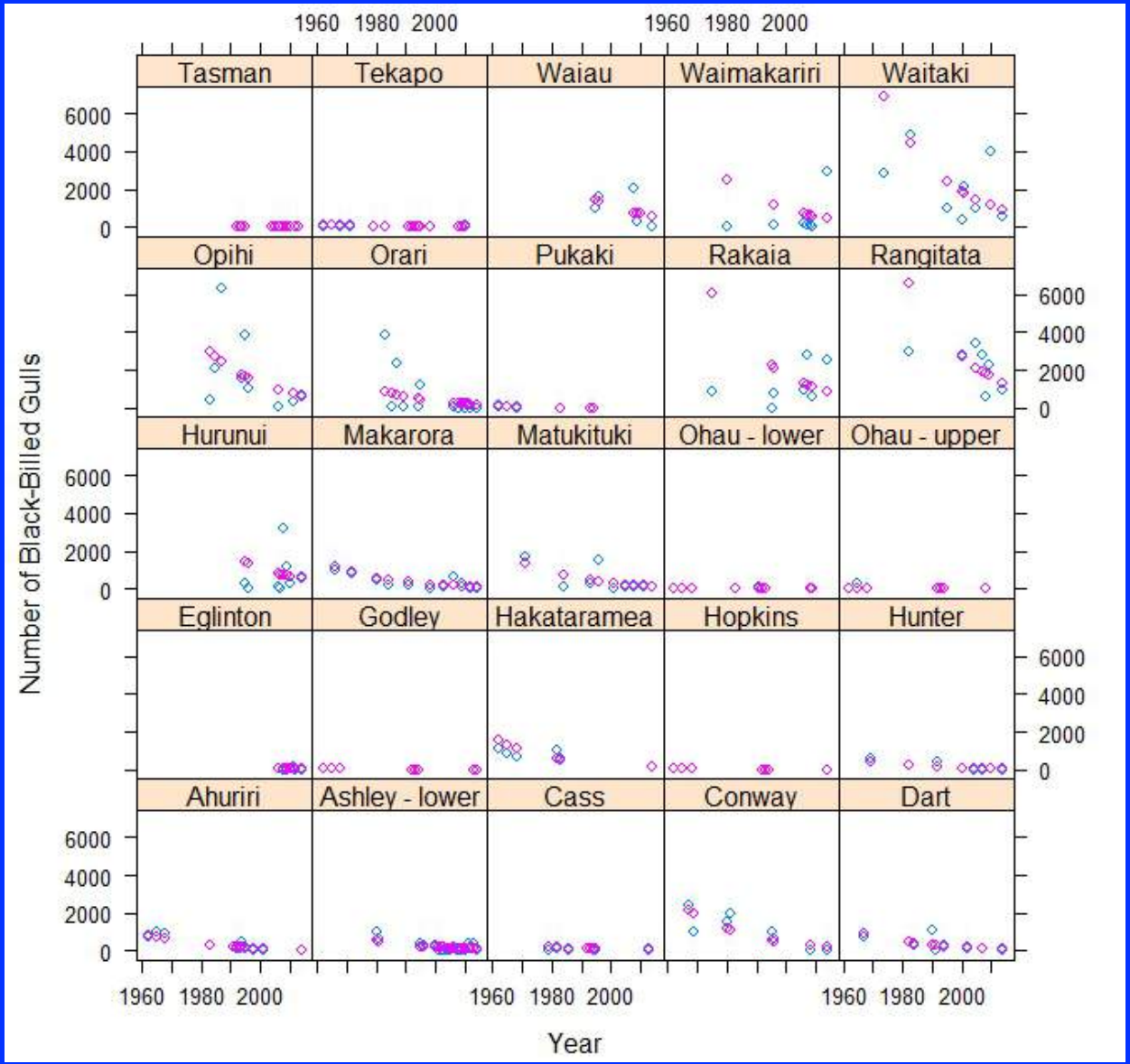
Results - Other South Island Rivers



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Results - River Covariates

- Top model included:
  - % high producing grassland
  - Average annual water deficit
  - Survey length

- % exotic cover was modelled separately (missing values)
  - Significant (p=1.8e-06)
  - Coefficient (0.07, SE=0.015)

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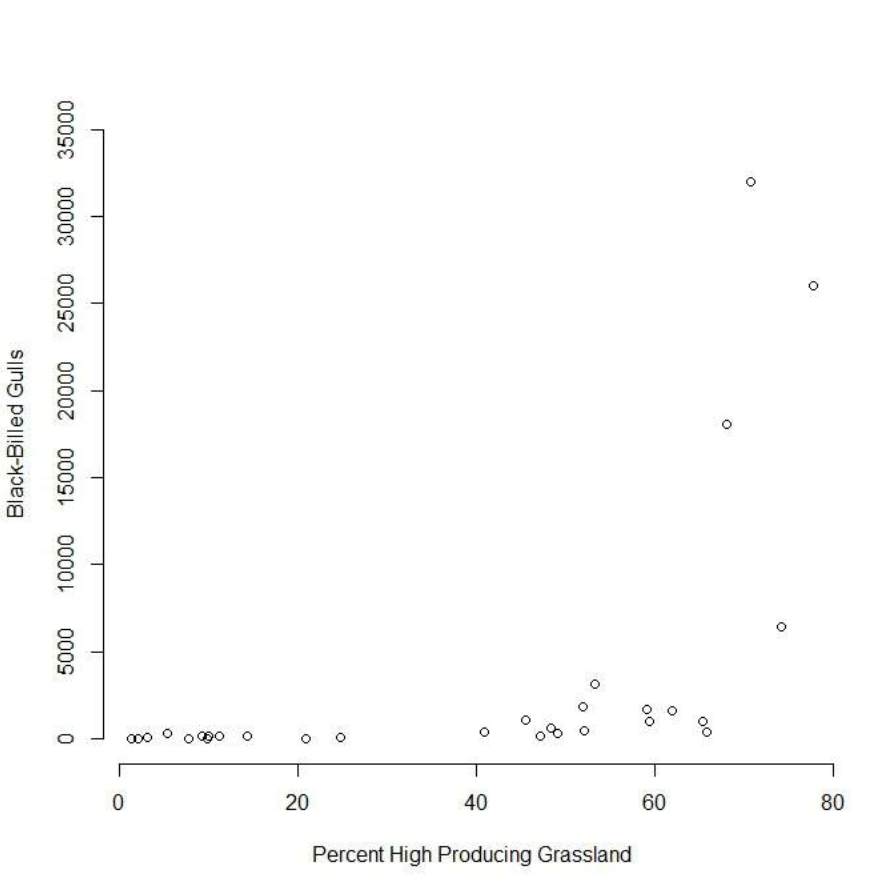
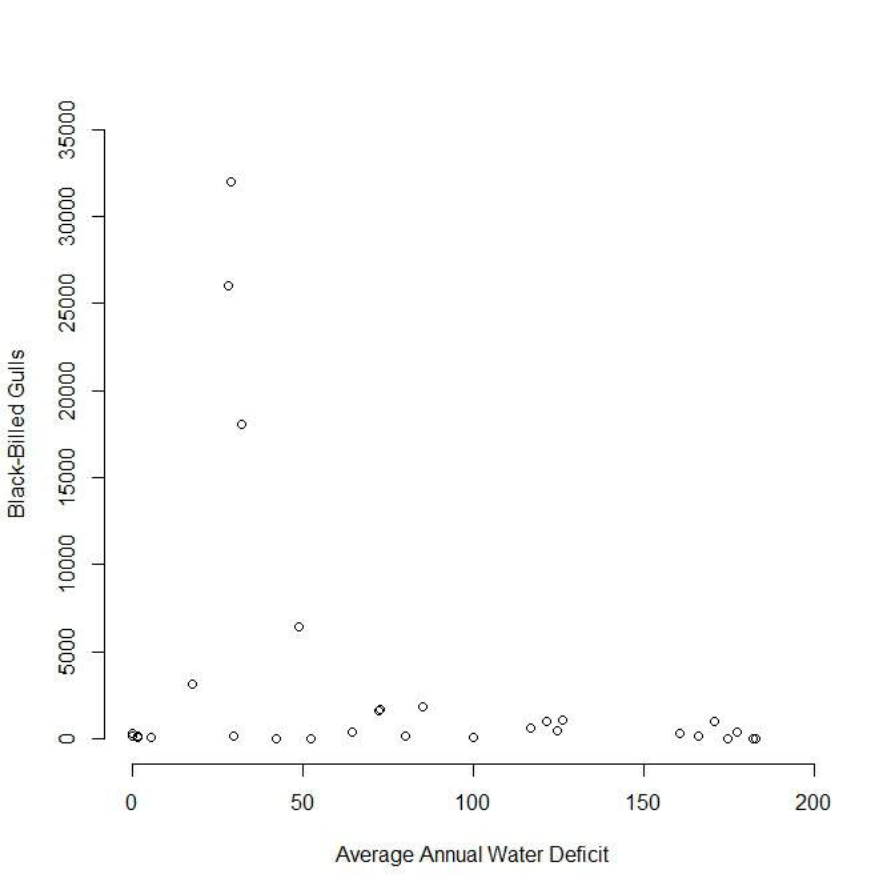
Influence of River Covariates on Median Counts





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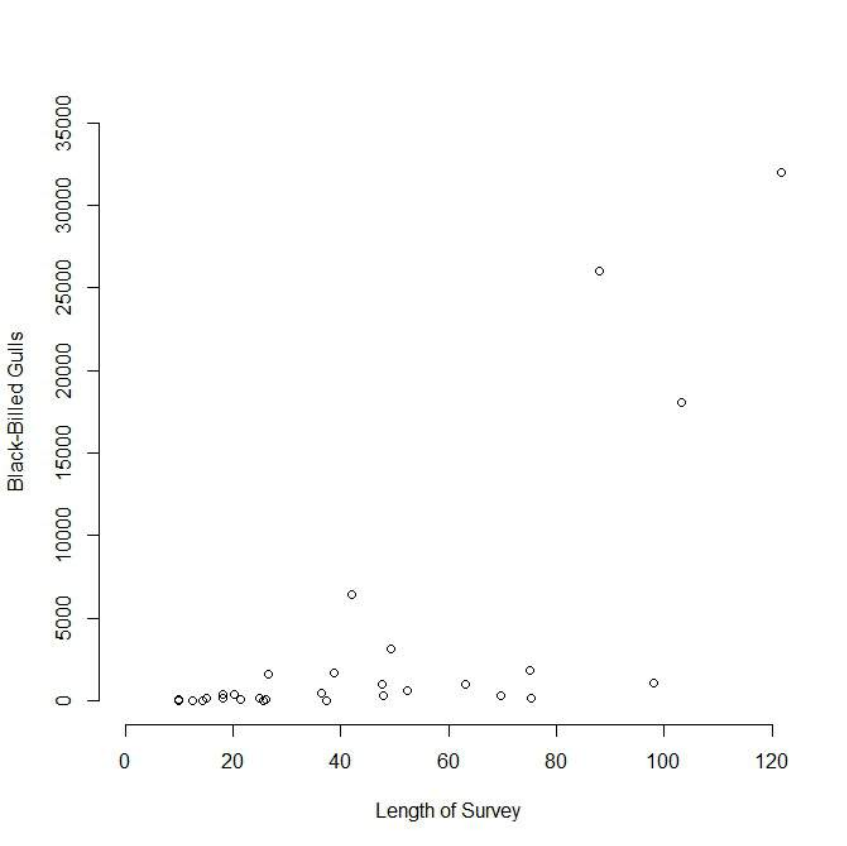
Influence of River Covariates on Median Counts



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Conclusion

- Current classification of Nationally Critical is appropriate.
- International classification should be upgraded to Critically Endangered.
- Insufficient data available to gauge whether population trends are worse on some rivers than others (outside of Southland), i.e. no interaction model.
- Black-billed gulls appear to prosper in rivers with adjacent high quality pasture and low water deficit, i.e. Southland.
- Survey length should be appropriate to the extent of available habitat.

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