Key factors determining the costs of New Zealand threatened species programmes

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Introduction

- In 2002, 603 “Acutely Threatened” NZ species; total expenditure NZ$35.8 million.
- NZBS - extra NZ$26.5 million over 5 years, incl. NZ$10 million for kiwi sanctuaries.
- Unclear why some threatened species programmes have high costs?
- Research aim was to use economic analysis to improve formal understanding of costs.
Blue skies research

• Cost function - Swanson’s (1994) model of species extinction and biodiversity loss.
• Annual cost: costs of base natural resources + costs of managing threats.
• Total cost: stream of annual costs, extant population and recovery rate.
• Survey of NZDoC Recovery Group Leaders for 11 NZ threatened species programmes.
PV of annual costs 2003-2012

$\text{PV (6\%)}$ of total annual cost (NZ$ millions)

y = 0.01x^{2.8372}

Threatened species programmes

Beetle  Frog  Daisy  P. patulum  Teal  Snail  Kakapo  Mohua  Bat  Black Stilt  Kokako
Cost versus funding 2003-2012

PV (6%) of total annual funding (NZ$ millions)

Threatened species programmes

Beetle  Frog  Daisy  P. patulum  Teal  Snail  Kakapo  Mohua  Bat  Black Stilt  Kokako
Type of threat

PV (6%) of total annual cost (NZ$ millions)
PV of cost per unit 2003-2012

PV (6%) of total annual cost / unit (NZ$ millions)
K-selection

Threatened bird programmes

PV (6%) of total annual cost / unit (NZ$ thousands)

Campbell Island Teal
North Island Kokako
Mohua
Black Stilt
Kakapo
Projected total costs

Projected total costs (NZ$ millions)

Threatened species programmes

Beetle 13
Daisy 12
P. patulum 11
Teal 12
Frog 64
Flax Snail 13
Kokako 12
Mohua 25
Black Stilt 31
Kakapo 100+
Bat
PV of projected total costs

PV (6%) of projected total cost (NZ$ millions)

Threatened species programmes

- Beetle
- Daisy
- P. patulum
- Teal
- Frog
- Flax Snail
- Kokako
- Mohua
- Black Stilt
- Kakapo
- Bat
Conclusions

• Habitat area and taxon are key factors.
• Other factors - level of existing knowledge?
• A statistically estimated model.
• Include estimates of cost and recovery rate in species recovery plans.
• Cost information - funding applications, allocation of funding, and cost-effectiveness analysis.