

Origins and outcomes of habitat management strategies for yellow-eyed penguins



Chris Lalas

Reason for my talk

Yellow-eyed Penguin Stock-Take Report

The current Plan is no longer fit-for-purpose for the future

Never was fit-for-purpose

No substantial changes through 30 years

Relevant research has been ignored

Establish and maintain an adaptive management framework

Done for 30 years by Penguin Rescue

The continued success of Penguin Rescue is under threat

- Bureaucracy – DOC is writing us a management plan
- We're broke – Need substantial funding to progress

Structure of my talk

- Context – my involvement with yellow-eyed penguins
- Chronology – three management plans
- Coastal forest – not the optimal nesting habitat
- Recommended minimum habitat area – too large
- Rank grass – destroys the viability of colonies

- A successful strategy – Penguin Rescue at Moeraki
- Research – no new data needed to explain YEP decline
- No new threats have occurred in the last 20+ years (except sea lions)

My start – Handling permit, November 1979



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Mr C. Lales,
Department of Zoology,
University of Otago,
P.O. Box 56,
DUNEDIN,

is hereby authorised to catch, handle and release:

White-flippered Penguins (*Eudyptula albosignata*)
Yellow-eyed Penguins (*Megadyptes antipodes*)
Fiordland Crested Penguins (*Eudyptes pachyrhynchus*
pachyrhynchus)

**MANAGEMENT STRATEGY
FOR THE CONSERVATION OF
YELLOW-EYED PENGUINS
IN OTAGO RESERVES**

Chris Latta
Dunedin

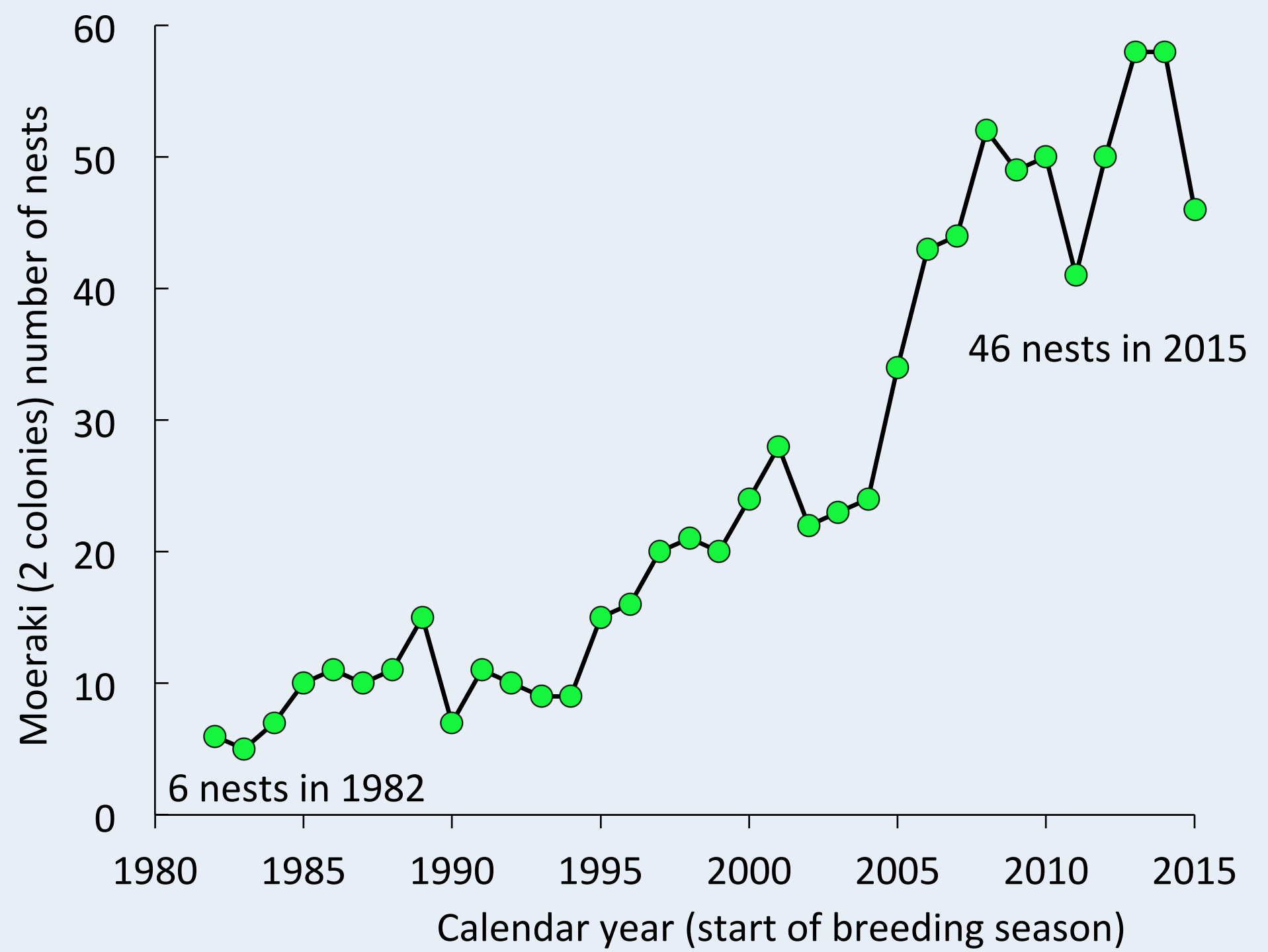


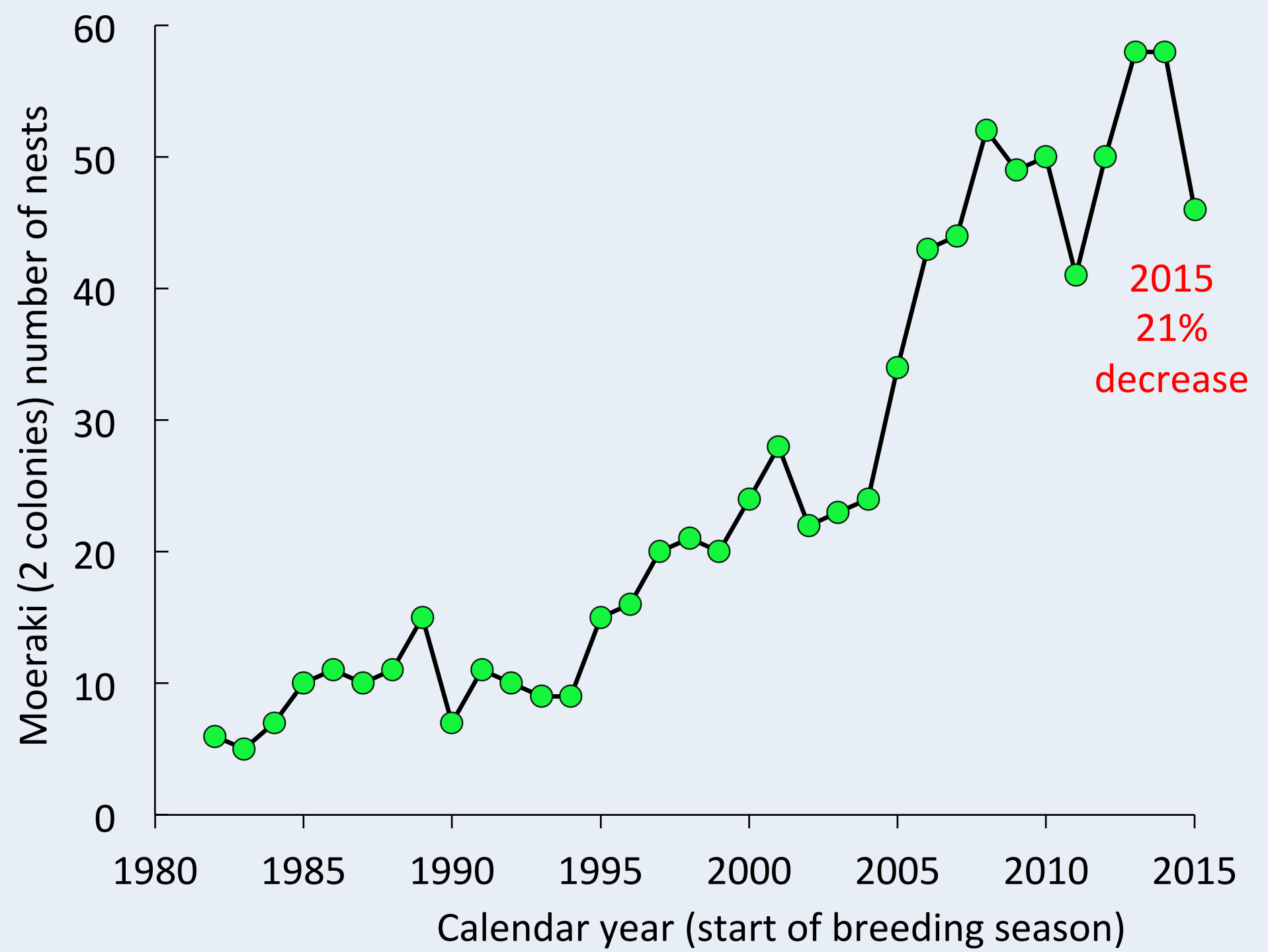
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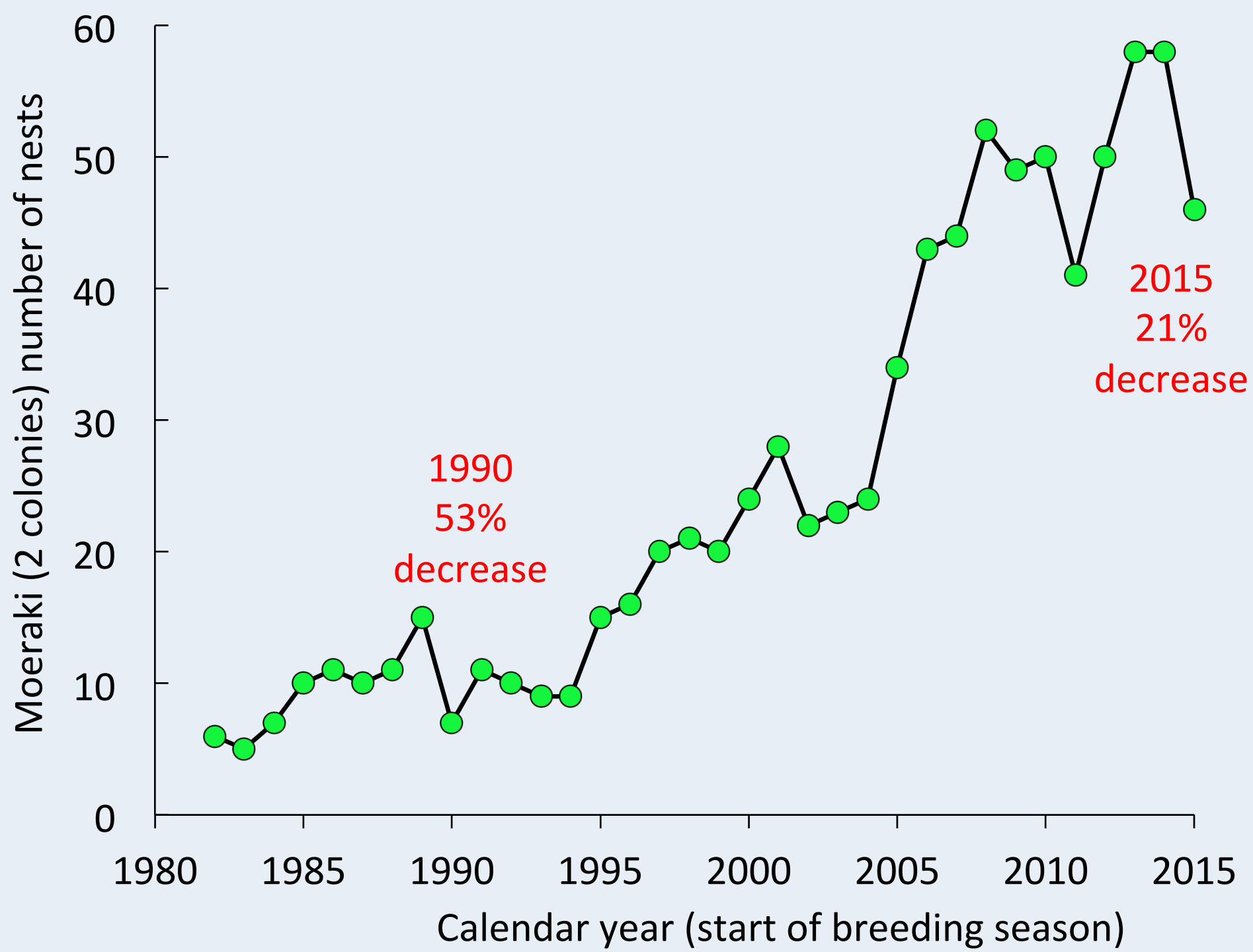


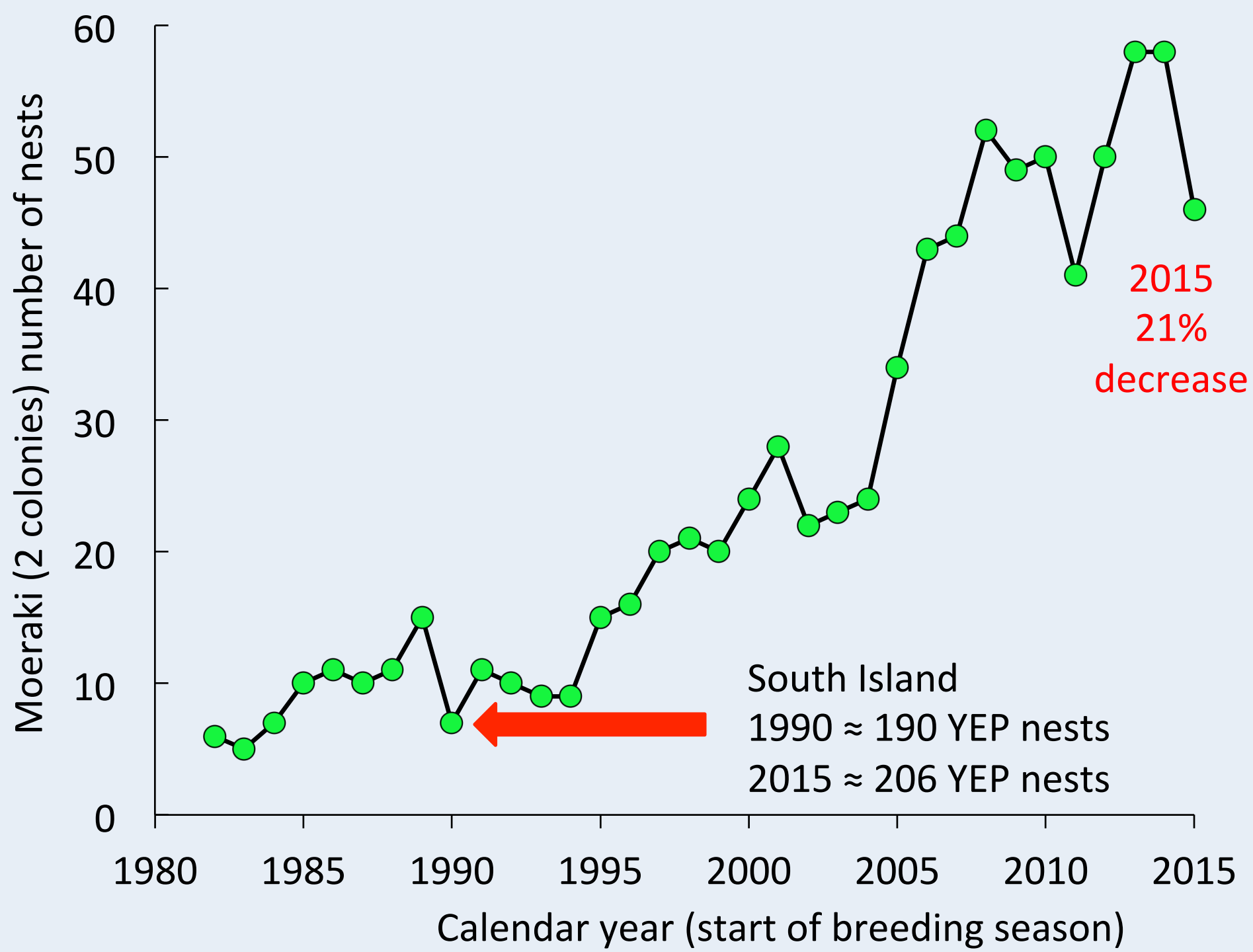
Department of Lands and Survey
Dunedin

Lands and Survey
Scientist
1983 - 1985









Long-term increase in nest numbers:
achieved only through **intensive management**

Intensive management:

Protection – mitigate detrimental anthropogenic effects
(e.g. re-vegetation; predator control) and

Enhancement - maximise survival and productivity
(e.g. nest boxes; rehabilitation)

ECOLOGICAL ECONOMICS 68 (2009) 762–776



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ANALYSIS

Effectiveness and cost-effectiveness of yellow-eyed penguin recovery

Jonah Busch^{a,*}, Ross Cullen^b

“..the average cost of producing an additional yellow-eyed penguin nest through intensive management is NZ\$68,600.”

Additional 40 nests through intensive management at Moeraki
= 40 X \$68,600 = \$2,744,000 in 2009\$
≈ \$3,100,000 in 2016\$

ECOLOGICAL ECONOMICS 68 (2009) 762–776



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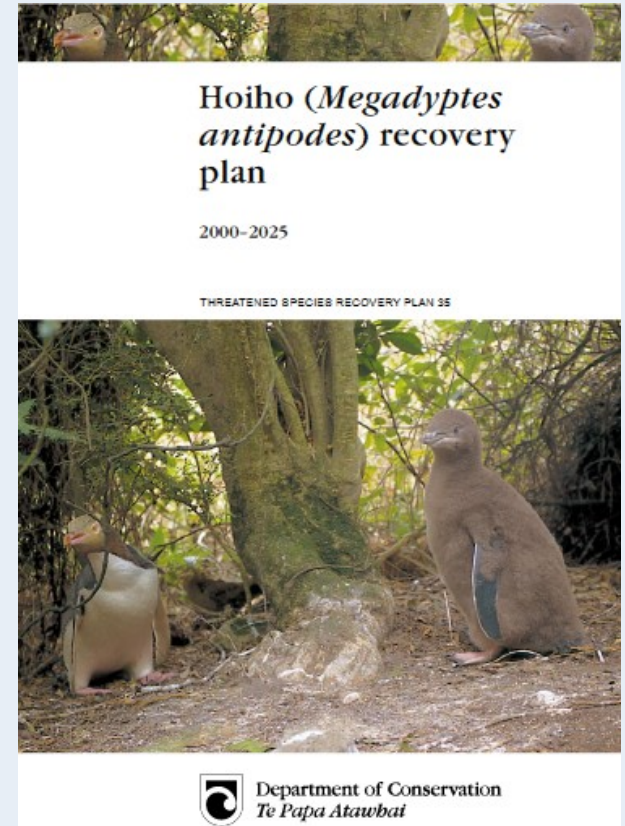
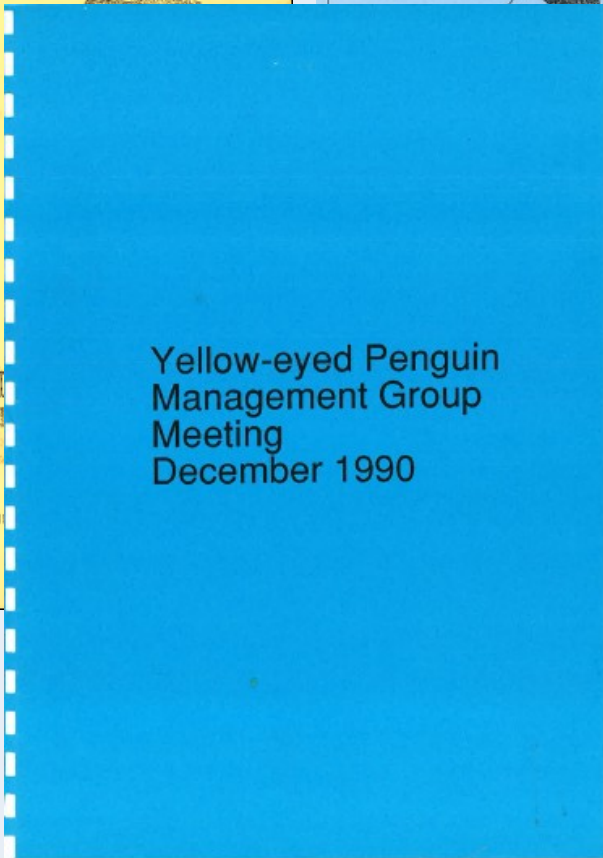
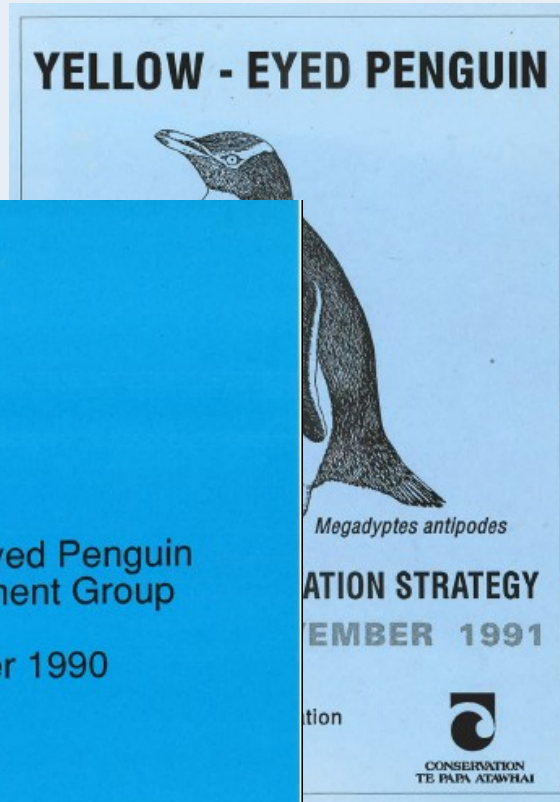


ANALYSIS

Effectiveness and cost-effectiveness of yellow-eyed penguin recovery

Jonah Busch^{a,*}, Ross Cullen^b

Three management plans



A POPULATION
STUDY OF
PENGUINS

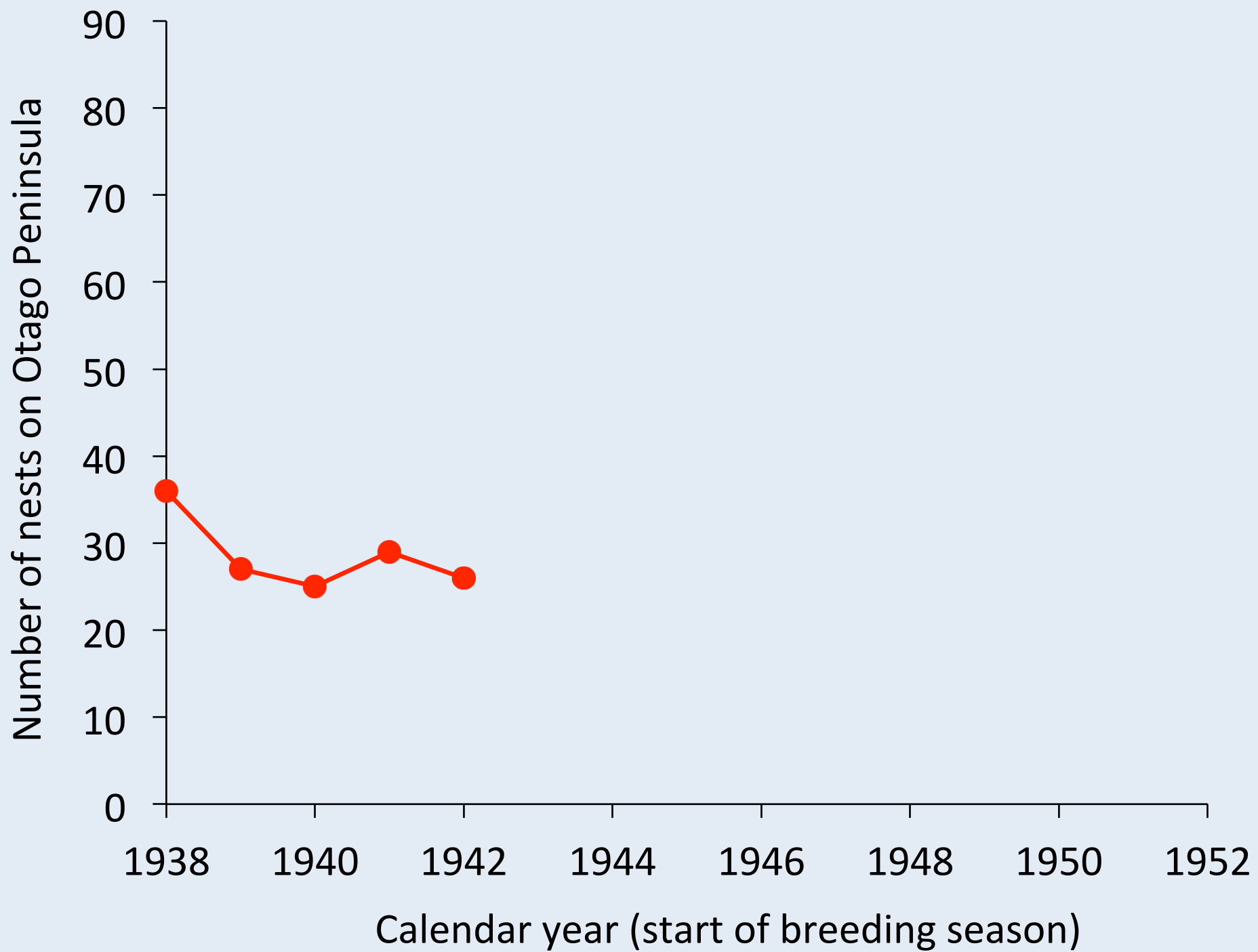
L. E. RICHDALE, F.R.S.N.Z.

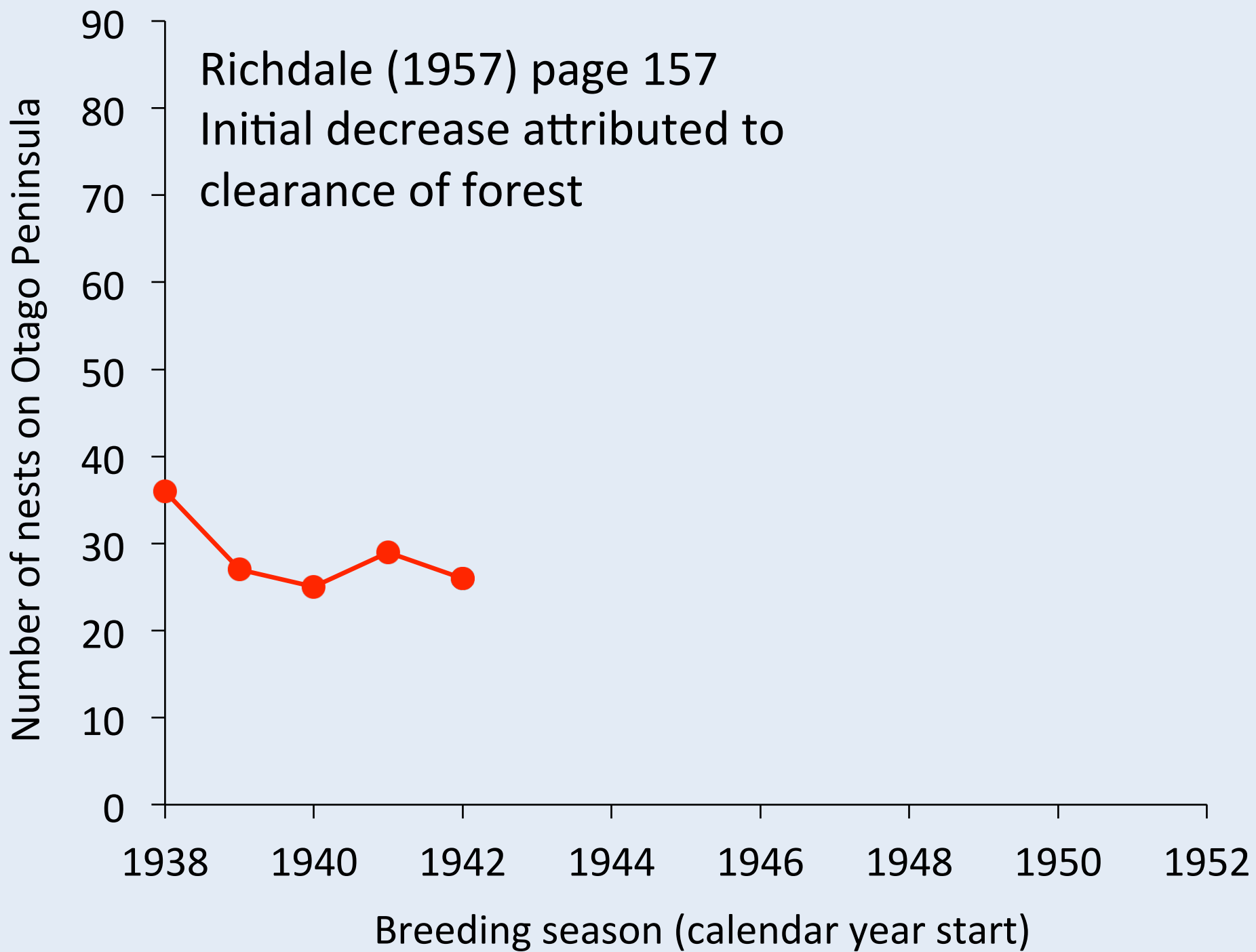
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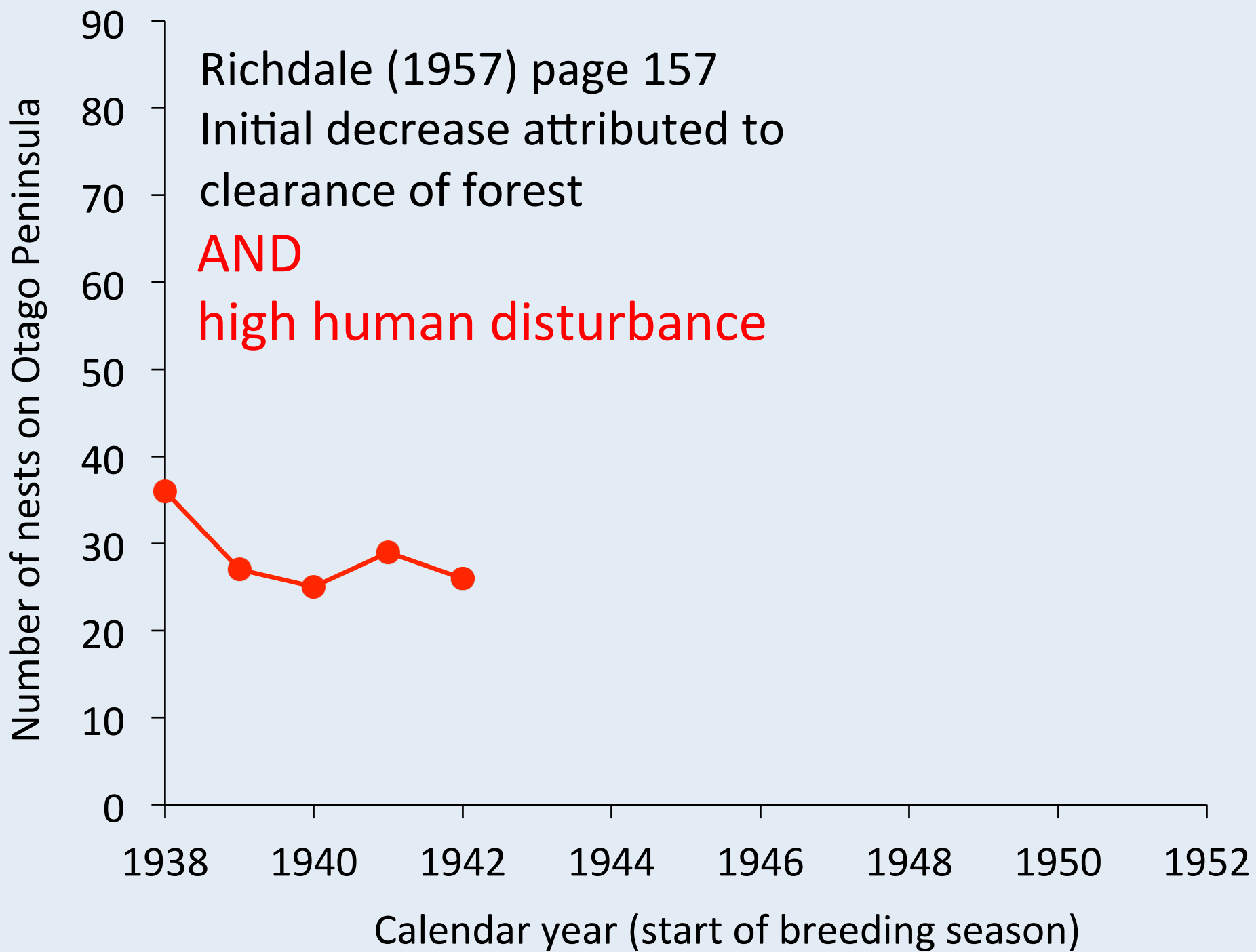
Richdale (1957)

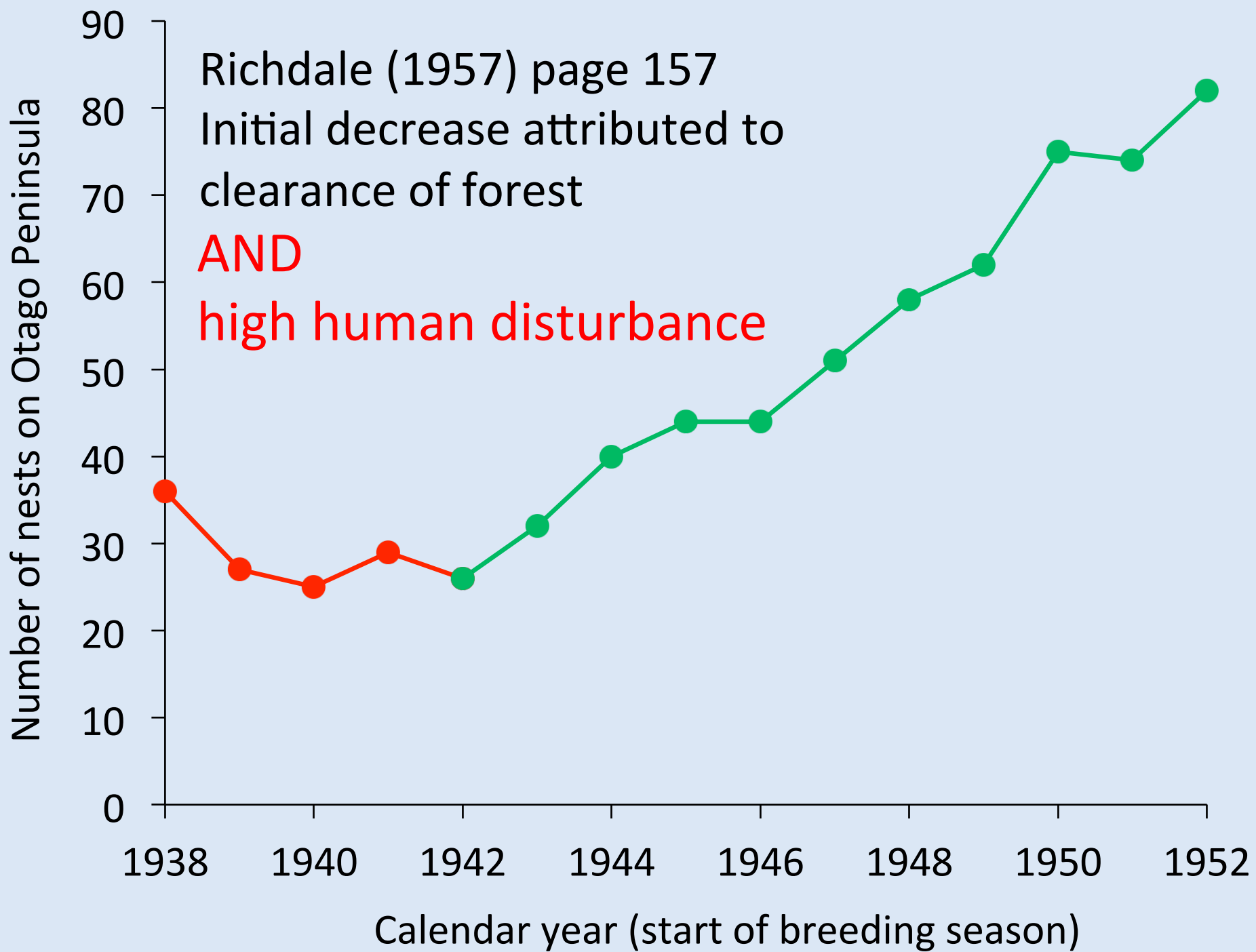
Comprehensive study of
yellow-eyed penguins on
Otago Peninsula

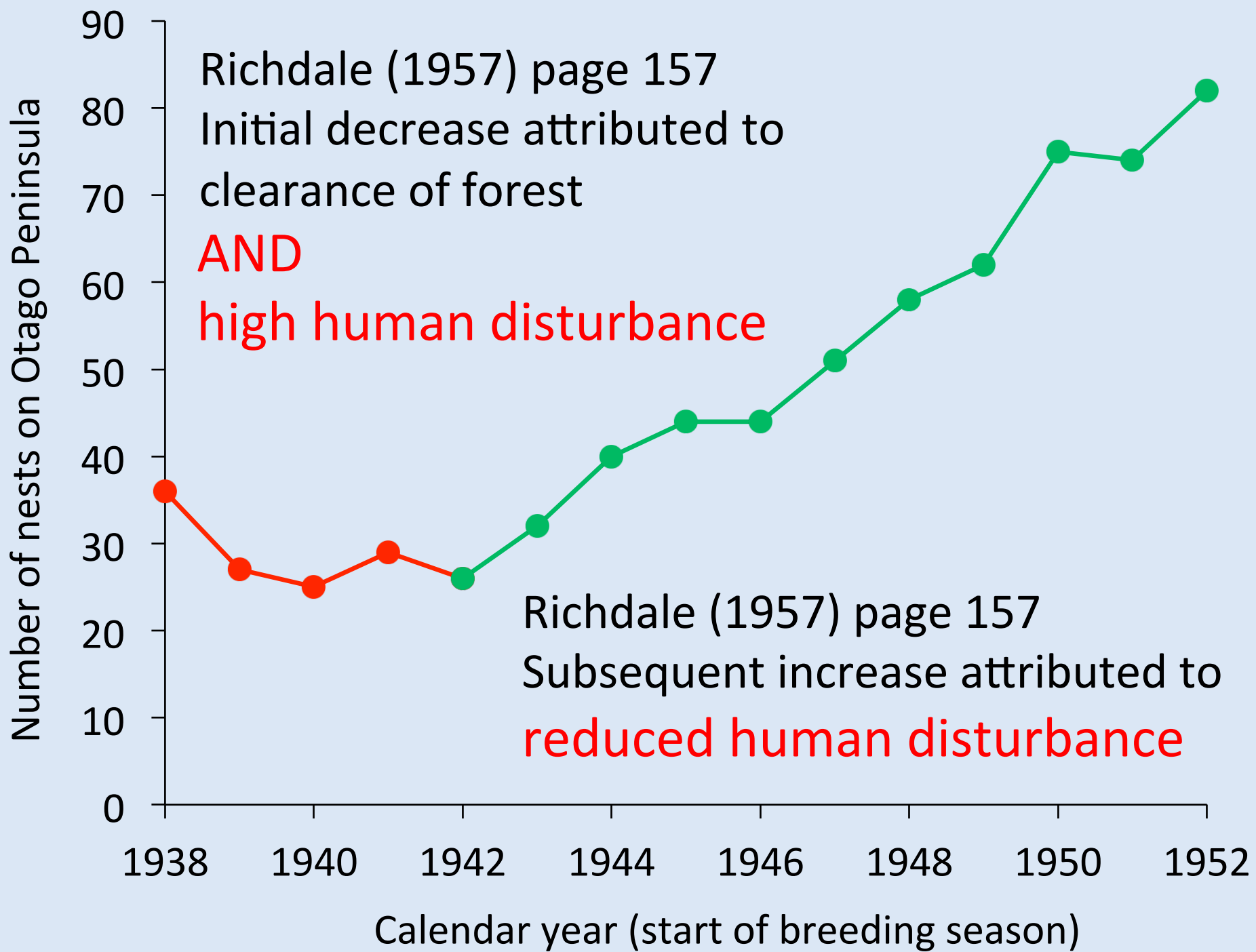
- Studied for 18 seasons
- Nest numbers for 15 seasons
- 9 seasons from this book and 6 seasons from Moore (2001)



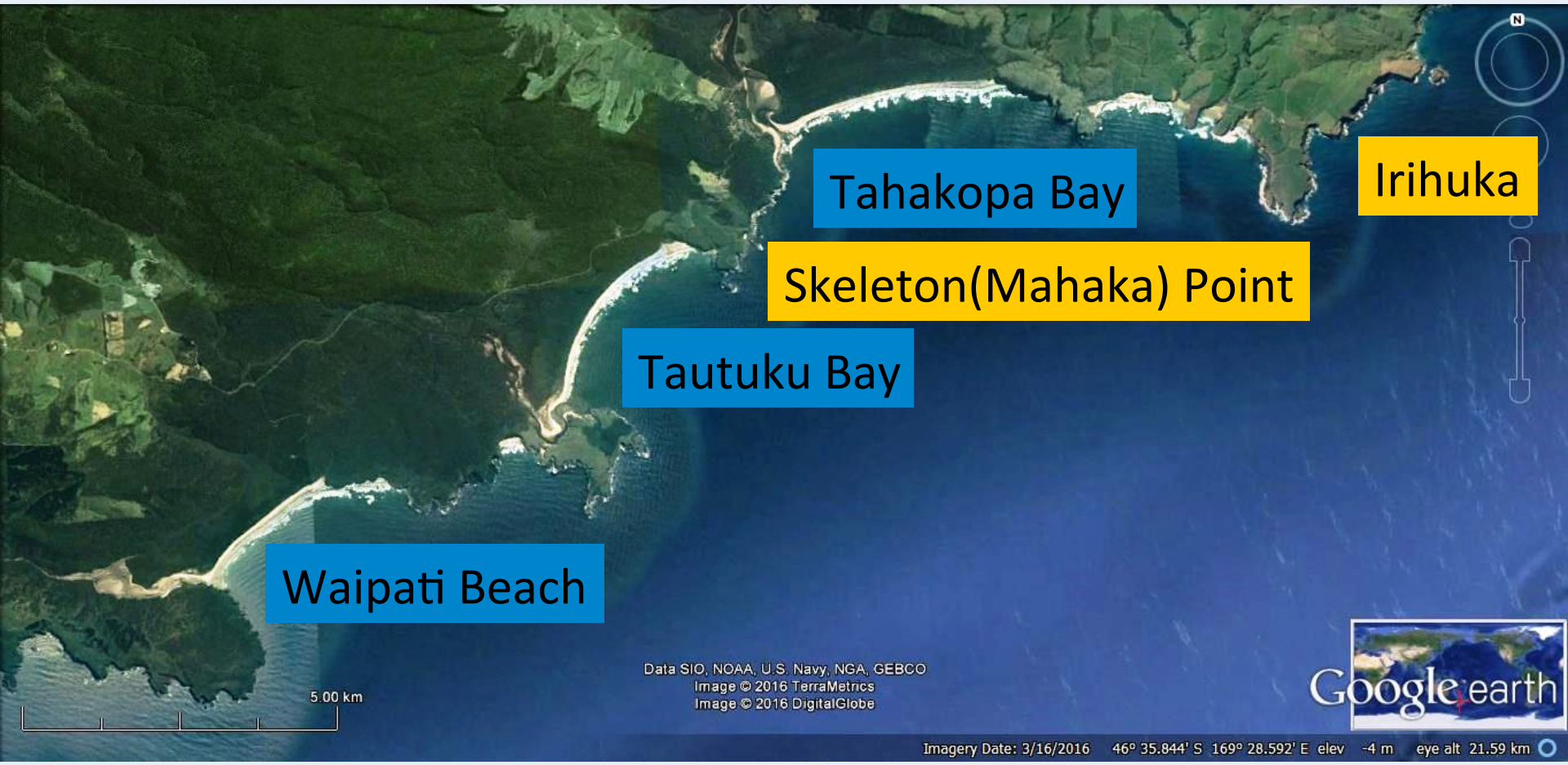








The Catlins coast – old-growth forest to sea level Irihuka (Long Point) to Makati (Chaslands Mistake)



Tahakopa Bay

Irihuka

Skeleton (Mahaka) Point

Tautuku Bay

Waipati Beach

5.00 km

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2016 TerraMetrics
Image © 2016 DigitalGlobe




Imagery Date: 3/16/2016 46° 35.844' S 169° 28.592' E elev -4 m eye alt 21.59 km

Penguins need trees?

Penguins need forests?

Impossible to judge effectiveness of restoring coastal forest

 *Landscape Ecology* **16**: 501–521, 2001.
© 2001 Kluwer Academic Publishers. Printed in the Netherlands.

501

Research Article

Forest reconstruction and past climatic estimates for a deforested region of south-eastern New Zealand

G. M. J. Hall* & M. S. McGlone

The Catlins – takes 500 years to achieve restoration

Minimum recommended reserve size

YEP Stock-Take Report page 45:

“There is no clear demonstration of the relationship between the minimum recommended reserve size of 25 ha and what this means for hoiho.”

Origin of 25 ha minimum reserve size?

Not justified in any of the 3 management plans

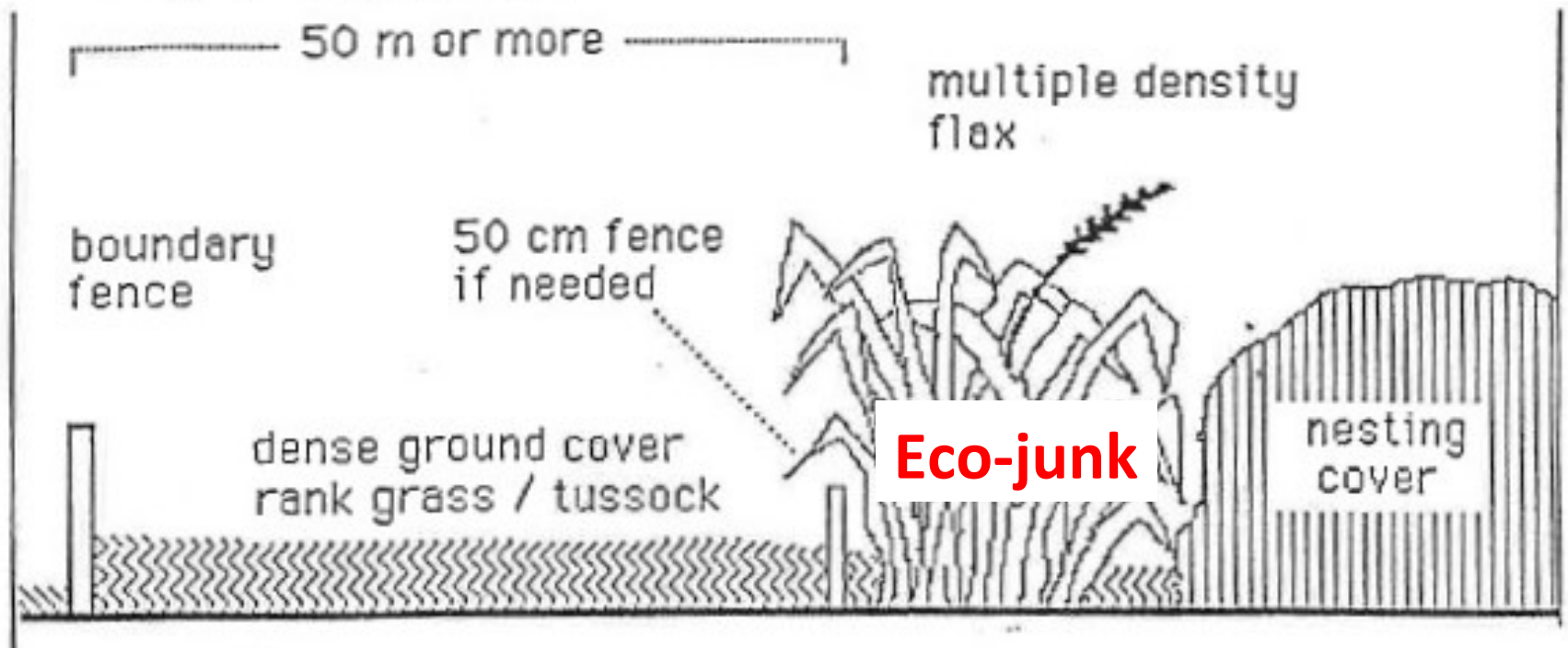
Closest I can find is in 1986 Species Recovery Plan page 59:

“Average size of mainland areas occupied by 30 or more penguins is 22.6 hectares.”


Buffer Zones and the outcome of 25 ha minimum reserve size

From 1991 Species Conservation Strategy page 26

Buffer Zone Design : A suggested Model



Outcome – rank grass restricts penguin access and discourages recruitment

A person wearing a blue jacket and dark pants is using a brushcutter to clear rank grass in a field. The field is filled with tall, dry grass and several trees. The background shows a dense forest of trees.

Control of rank grass is a prerequisite for sustained breeding by yellow-eyed penguins on retired farmland and destocked reserves

- * Penguin access to nest sites
- * Open socialising areas visible from sea
- * Reduced density of rodents and mustelids



Okakau Point
2015

Forest
planted
1987-1991

Google Earth image

Okahau Point Nests in early to mid 1980s

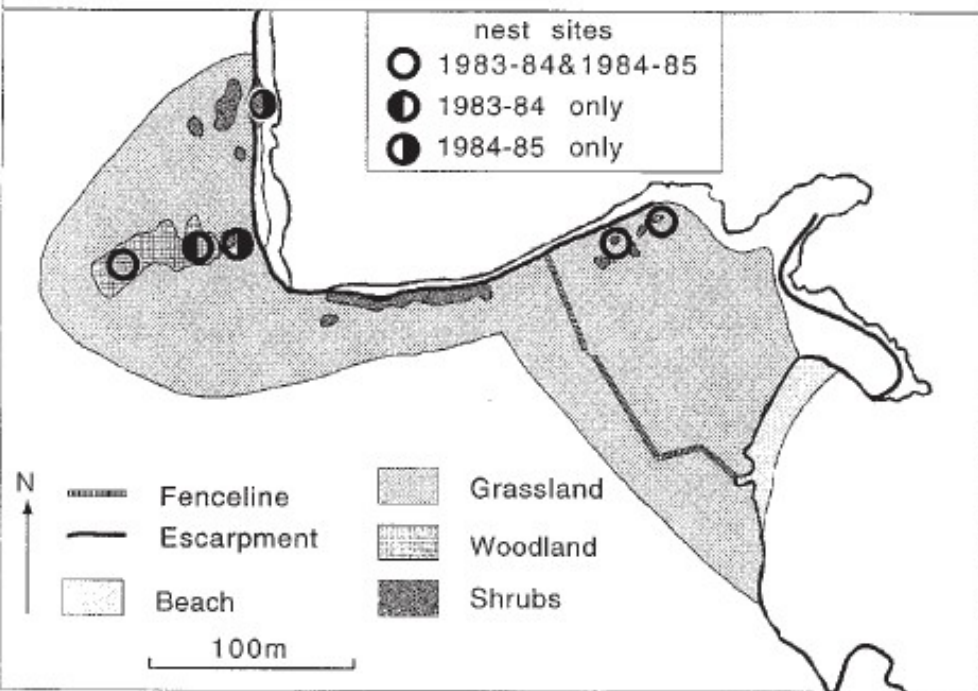


Fig. 2. Nest sites and breeding habitat of the Yellow-eyed Penguin at Okahau Point, North Otago, South Island, New Zealand.

THE DESIGN AND USE OF A NEST BOX FOR YELLOW-EYED PENGUINS *MEGADYPTES ANTIPODES* – A RESPONSE TO A CONSERVATION NEED

C. LALAS¹, P.R. JONES² & J. JONES²

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(penguins@xtra.co.nz)

²Moeraki 2RD, Palmerston, Otago, New Zealand

SUMMARY

LALAS, C., JONES, P.R. & JONES, J. 1999. The design and use of a nest box for Yellow-eyed Penguins *Megadyptes antipodes* – a response to a conservation need. *Marine Ornithology* 27: 199–204.





Okahau Point
2015/16
80 nest boxes

300 m



Okahau Point
2015/16
80 nest boxes
= 20 nests (red)
& 60 empty



Forest versus grazed pasture

Yellow-eyed penguins prefer to nest in grazed pasture

NEST-SITE SELECTION BY YELLOW-EYED PENGUINS *MEGADYPTES ANTIPODES* ON GRAZED FARMLAND

ROD McKAY¹, CHRIS LALAS², DAVID McKAY¹ & SHAUN McCONKEY³

¹ *Cape Saunders, 2RD Dunedin, New Zealand*

² *PO Box 31, Portobello, Dunedin, New Zealand*

(penguins@xtra.co.nz)

³ *Department of Marine Science, University of Otago, PO Box 56, Dunedin, New Zealand*

SUMMARY

McKAY, R., LALAS, C., McKAY, D. & McCONKEY, S. 1999. Nest-site selection by Yellow-eyed Penguins *Megadyptes antipodes* on grazed farmland. *Marine Ornithology* 27: 29–35.

Forest versus shrubland

Yellow-eyed penguins prefer to nest in shrubland

Effects of habitat and introduced mammalian predators on the breeding success of Yellow-eyed Penguins *Megadyptes antipodes*, South Island, New Zealand

Hiltrun Ratz and Brian Murphy

Pacific Conservation Biology 5(1) 16 - 27

Published: 1999

Nest site habitat

Yellow-eyed penguins prefer to nest at the edge of planting

Effects of habitat and introduced mammalian predators on the breeding success of Yellow-eyed Penguins *Megadyptes antipodes*, South Island, New Zealand

Hiltrun Ratz and Brian Murphy

Pacific Conservation Biology 5(1) 16 - 27

Published: 1999



Okahau Point
2015/16
80 nest boxes



No new threats have occurred in the last 20+ years

3 examples

Climate change – no – exposed nests do just fine

Barracouta bites – no – first reported in 1986
(Janice Jones letter to Wildlife Service)

Diphtheria – no – first diagnosed in 2002
but same pattern of chick death \leq 1997
(Chris Lalas presentation 2005)

No new threats have occurred in the last 20+ years

Except predation by New Zealand sea lions

BIOLOGICAL CONSERVATION 135 (2007) 235–246



available at www.sciencedirect.com



journal homepage: www.elsevier.com/locate/biocon



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Predation by New Zealand sea lions (*Phocarctos hookeri*) as a threat to the viability of yellow-eyed penguins (*Megadyptes antipodes*) at Otago Peninsula, New Zealand

Chris Lalas^a, Hiltrun Ratz^{b,*}, Kirsty McEwan^c, Shaun D. McConkey^d

