

Numbat Recovery in Dryandra



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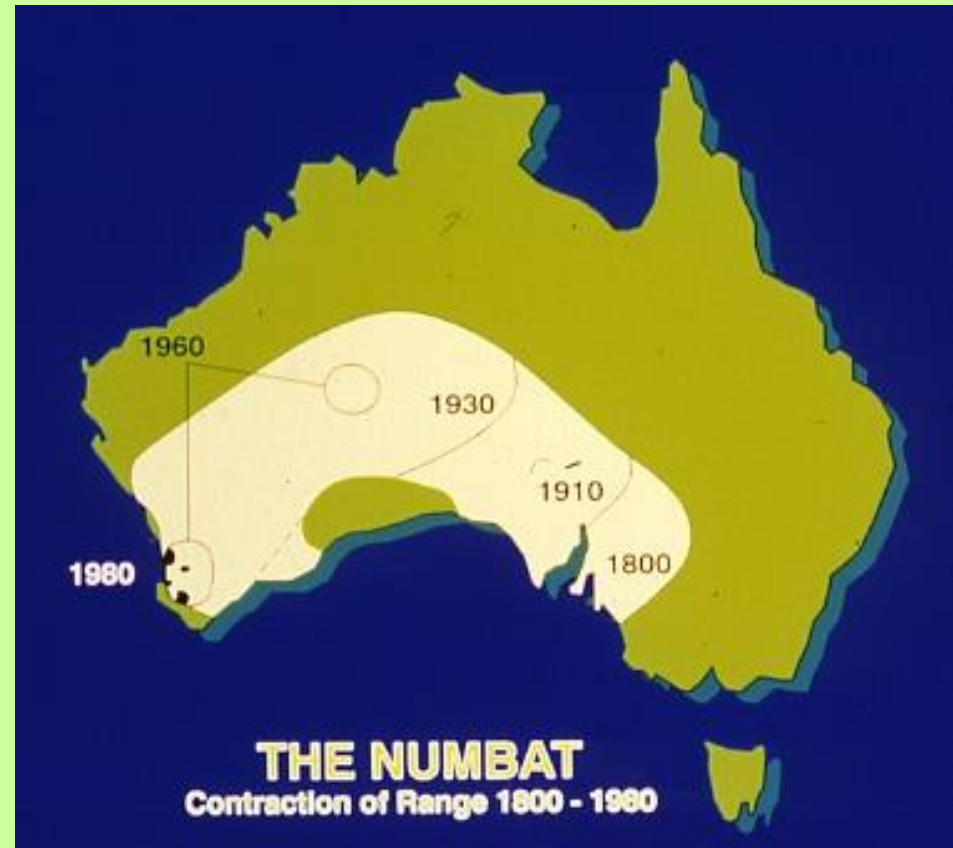


**Biodiversity and
Conservation Science**



Status of the Numbat

- Once widespread across Australia
- Dramatic range contraction corresponds with red fox invasion
- By mid 1980s, only two populations remained in southwest WA
- ~1976 Endangered



The Numbat – at its lowest

- ❑ Survived only at Dryandra and Perup by 1985
- ❑ Wandoo woodland at Dryandra
- ❑ Jarrah forest at Perup
- ❑ Both populations declined from mid-1970s
- ❑ Research carried out at Dryandra in 1980s to understand why



Suggested causes of numbat decline in 1970s-1980s

▣ Food limitations

- Due to fire regimes
- Due to drought
 - ▣ However low fire occurrence in Dryandra, all animals healthy and breeding

▣ Predation by foxes

- ▣ Fox numbers increased during the 1970s



Fox control experiment at Dryandra 1981-1984



- ❑ 1080 poison used
- ❑ Native fauna tolerant, introduced animals susceptible
- ❑ One-shot oat baits inserted into fresh kangaroo meat

Experimental results

- Within 13,000 ha main block of Dryandra, 2000 ha baited monthly for three years, rest unbaited
- Driven surveys inside and outside baited area, before and after
- Strong indication of positive effect of fox control on numbat numbers
- Fox control expanded 1989
- *Western Shield* 1996

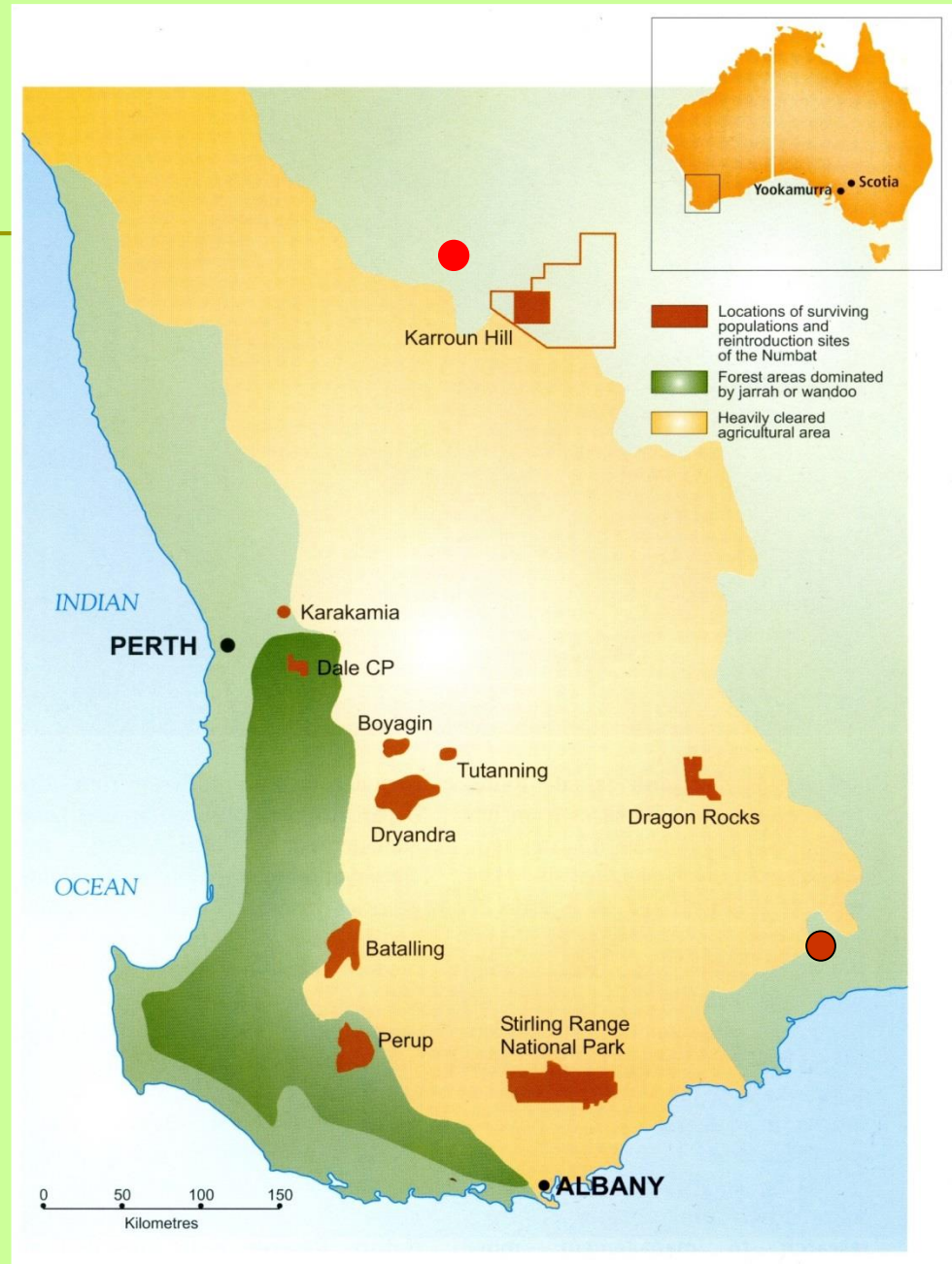


Numbats bred in captivity

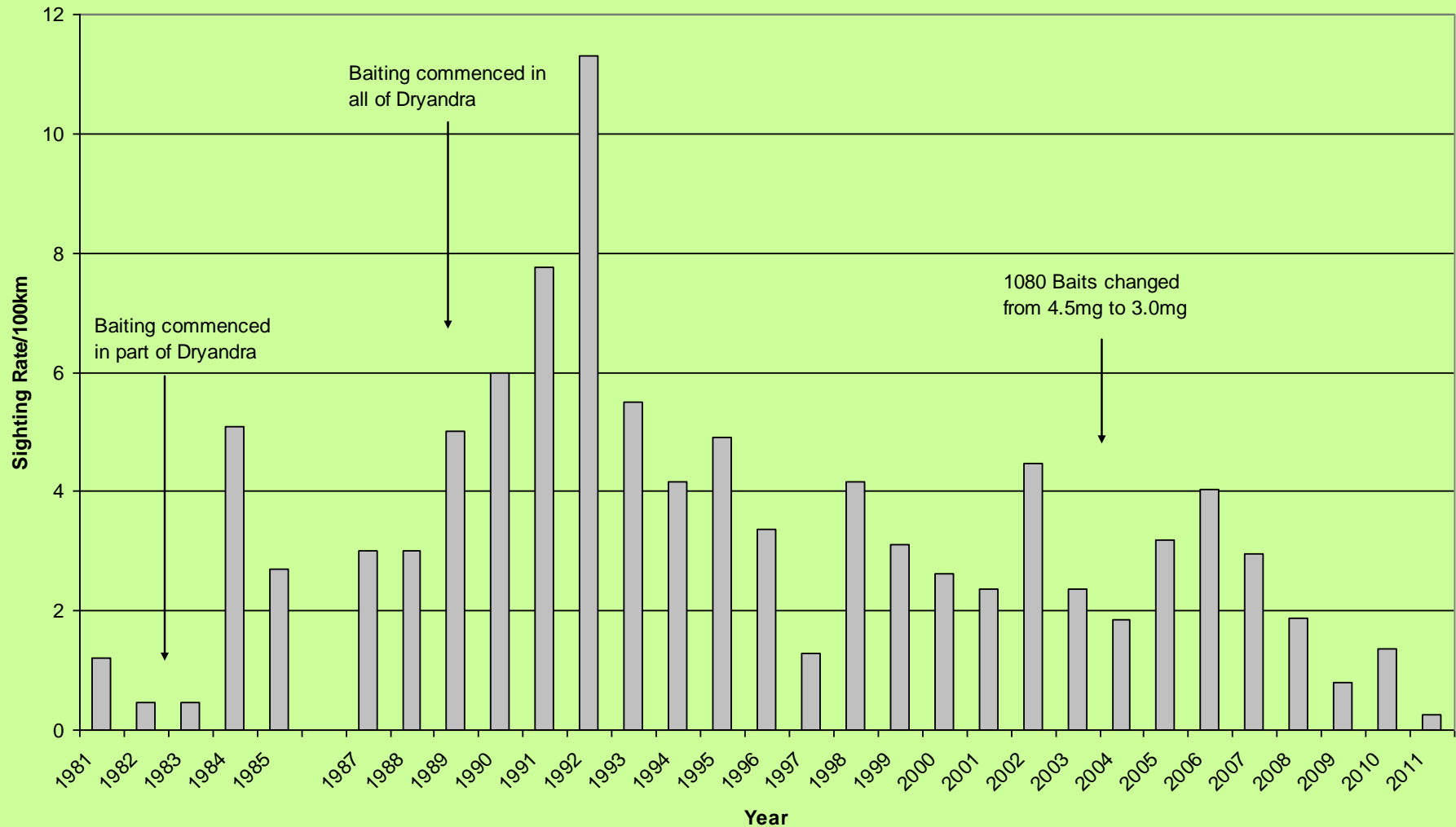
- ❑ Research project by Dept Fisheries and Wildlife at Woodvale Wildlife Research Centre 1983-1985
- ❑ Dick Whitford developed artificial diet, husbandry and captive breeding techniques
- ❑ Numbats first bred in 1984
- ❑ Perth Zoo started breeding program with Dick in 1993

Translocations

- Boyagin NR 1985
- Karroun Hill NR 1986
- Tutanning NR 1991
- Batalling 1992
- Yookamurra Sanctuary, SA 1994 (ESL, now AWC)
- Karakamia 1994 (AWC)
- Dragon Rocks NR 1995
- Dale Cons Park 1996
- Stirling Range NP 1998
- Scotia Sanctuary, NSW 2000 (ESL, now AWC)
- Cocanarup 2006 ●
- Mt Gibson 2015 (AWC) ●

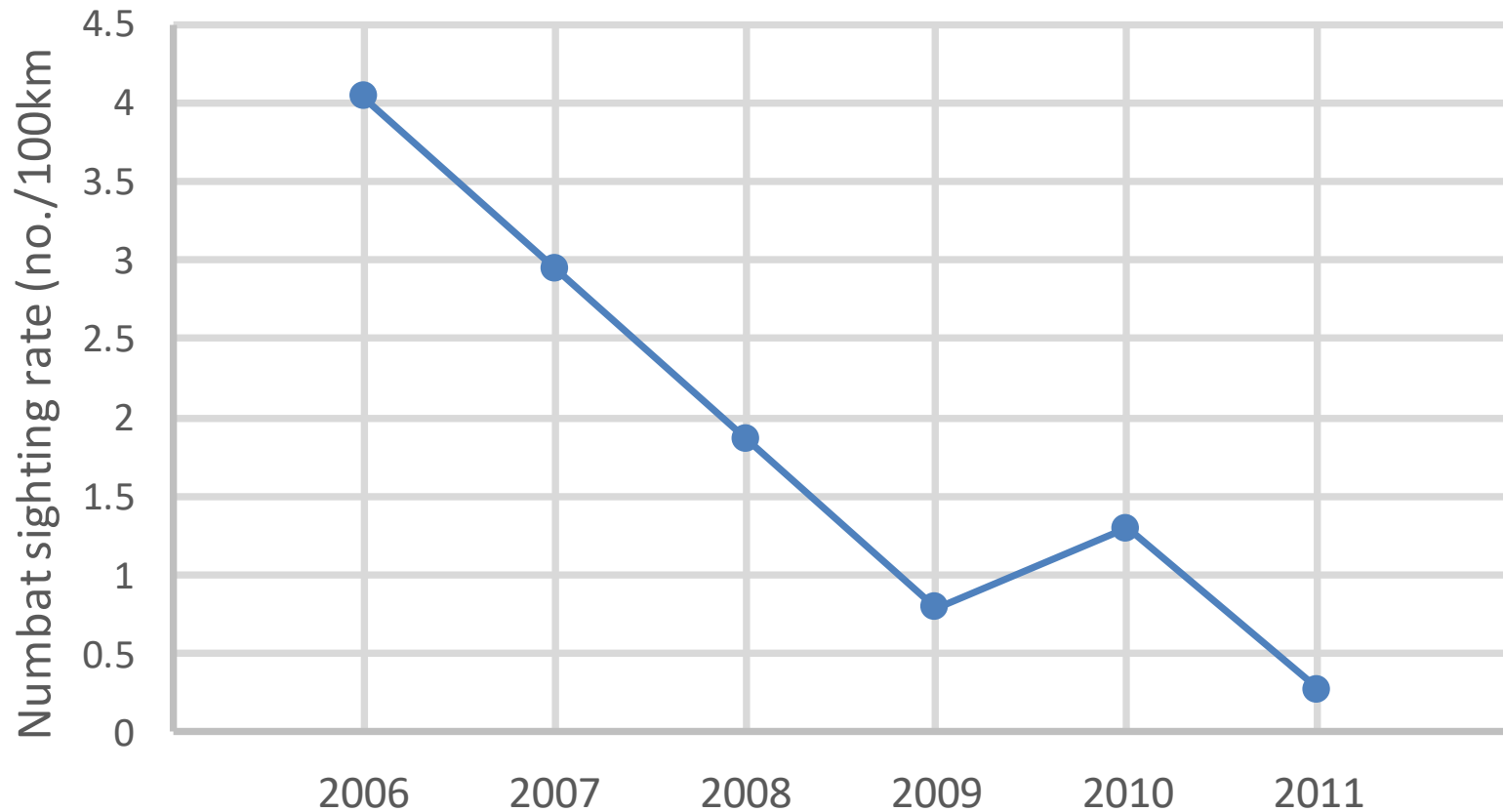


At Dryandra, numbers rose..... then fell



By 2011 things looked bad!

November sighting rate



Cats in Dryandra

- ❑ Monitoring radio-collared numbats in Dryandra showed unmistakable evidence of cat predation on numbats after 2007
 - Two instances of multiple numbat deaths at cat dens (large hollow logs) in 2008 and 2009
- ❑ Meso-predator study at Dryandra 2006-2009 (Nicky Marlow)
 - Showed with sand-plotting that cat numbers higher in Dryandra main block (monthly fox baiting) than in Quinns and Highbury (no fox baiting)
 - Also showed cats responsible for 60% of woylie deaths over that period **using DNA analysis of collar swabs**
- ❑ Cats apparently favoured by fox removal
 - Strong evidence from other areas (Gibson Desert, Shark Bay) supporting this

Cat predation on Dryandra numbats

- ▣ Predators of 14 radio-collared numbats (2011-2013) from forensic evidence including **DNA from collar swabs** (this study)

- Cat - 7
- Python - 2
- Raptor - 2
- Chuditch - 1
- Fox - 1
- Unknown - 1



- ▣ Cats were then the most important predators of numbats at Dryandra
 - Cat control required to assist numbat recovery

How can we control feral cats?

□ Spotighting/shooting

- Possible in farmland, difficult in forest/woodland
 - 20 hours spotlighting in Dryandra, 3 cat sightings, when cats were responsible for 60% of woylie deaths

□ Trapping

- Difficult in Woodland with leg-hold traps as native mammals at risk (possum, woylie, quenda, brush wallaby, western grey, chuditch), so use raised platforms
- Cage trapping around farm buildings

□ Baiting

- Cats won't eat fox bait, special cat baits developed
 - Eradicat®, Curiosity®
 - Need to establish safe to use with native animals

□ Dogs/shooting?

- Trials funded by National Landcare Program and FAME

Eradicat[®] baits

- ❑ Smaller and softer than Probait fox baits
- ❑ Flavour enhancers
- ❑ Fat leaks out when thawed
- ❑ More attractive than Probait to a range of native mammals
- ❑ 1080 in matrix (not encapsulated)
- ❑ Higher 1080 concentration than fox baits
- ❑ Dropped from aircraft in clusters of 50 at 1km spacing or single baits at 100m intervals on tracks



Do native mammals survive toxic baiting?

- ❑ Native mammals collared before baiting
 - ❑ 4 chuditch
 - ❑ 4 red-tailed phascogales
 - ❑ 2 mardos
 - ❑ 30 woylies
 - ❑ 16 numbats
- ❑ Aerial and ground baiting carried out on 1st May 2012
 - 3400 baits in 68 drops over 13,000 ha



All collared animals
survived baiting

Results of toxic baiting trial

- ❑ 5 cats collared at Dryandra
- ❑ One cat found dead the day after baiting
 - Stomach empty, but evidence of violent vomiting
- ❑ The other four survived.



Dryandra cat locations

Legend

- Female 1
- Male 1
- Male 2
- Male 3



1:100,000 (A4)

0 0.5 1 2 3 4
Kilometres

Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94



Produced by the
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Graticule shown at 5 minutes intervals
Grid shown at 5000 metre intervals

The Dept. of Environment and Conservation does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

Roads and tracks on land managed by DEC may contain unmarked hazards and their surface condition is variable. Exercise caution and drive to conditions on all roads.

Produced at 12:10pm, on July 8, 2013

So how can we control feral cats in reserves like these?

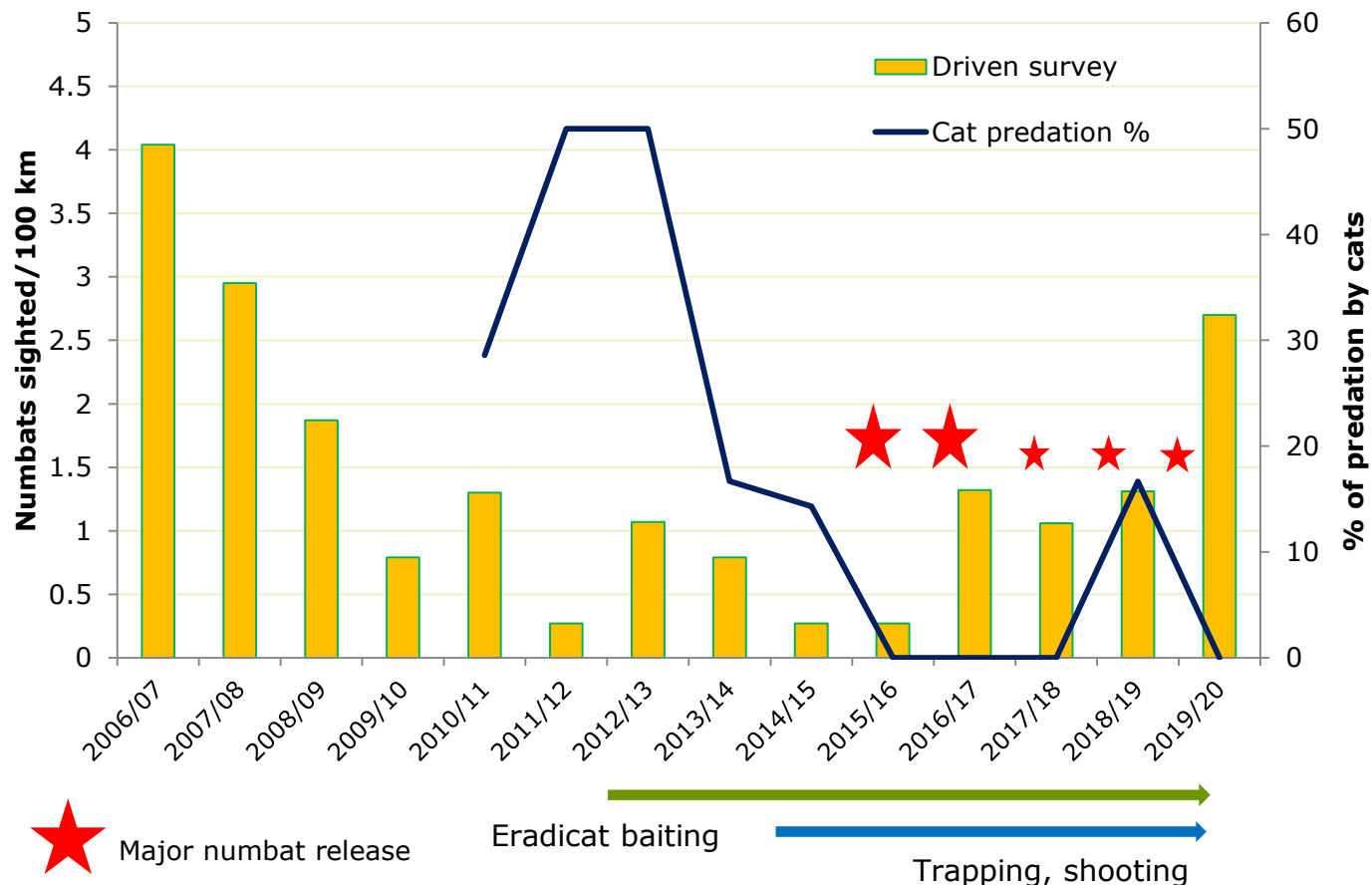
- ❑ Baiting
 - Low uptake by cats
 - Cats spend considerable time in farmland
 - Reduced availability of baits to cats by non-target fauna
- ❑ Spotlighting/shooting
 - Dryandra is well-used by public
 - May be feasible on less popular reserves (Tutanning)
 - Seek help from reserve neighbours to shoot cats on farmland
- ❑ Trapping
 - Labour intensive but effective if non-target issues resolved (raised platforms, cage traps)
- ❑ Hunting with detector dogs
 - Project funded by National Landcare Program and FAME

Cat control now under way in Dryandra

- Eradicat® baiting experimentally since 2012, operationally since bait registered in 2015
- Willing neighbours participating by trapping and shooting cats on their land (CATALOGUE)

Dryandra numbat response to cat control and top-up translocations

Numbat sightings and cat predation at Dryandra



Where to now?

- ❑ Keep controlling cats and foxes
- ❑ Maintain monitoring programs
- ❑ Restore genetic links between populations

Acknowledgements

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- ▣ Special thanks are due to Brian Macmahon, Neil Thomas, Rob Hill, Dick Whitford, Rob McLean, John Lawson and Corey Mosen
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Thank you!

