

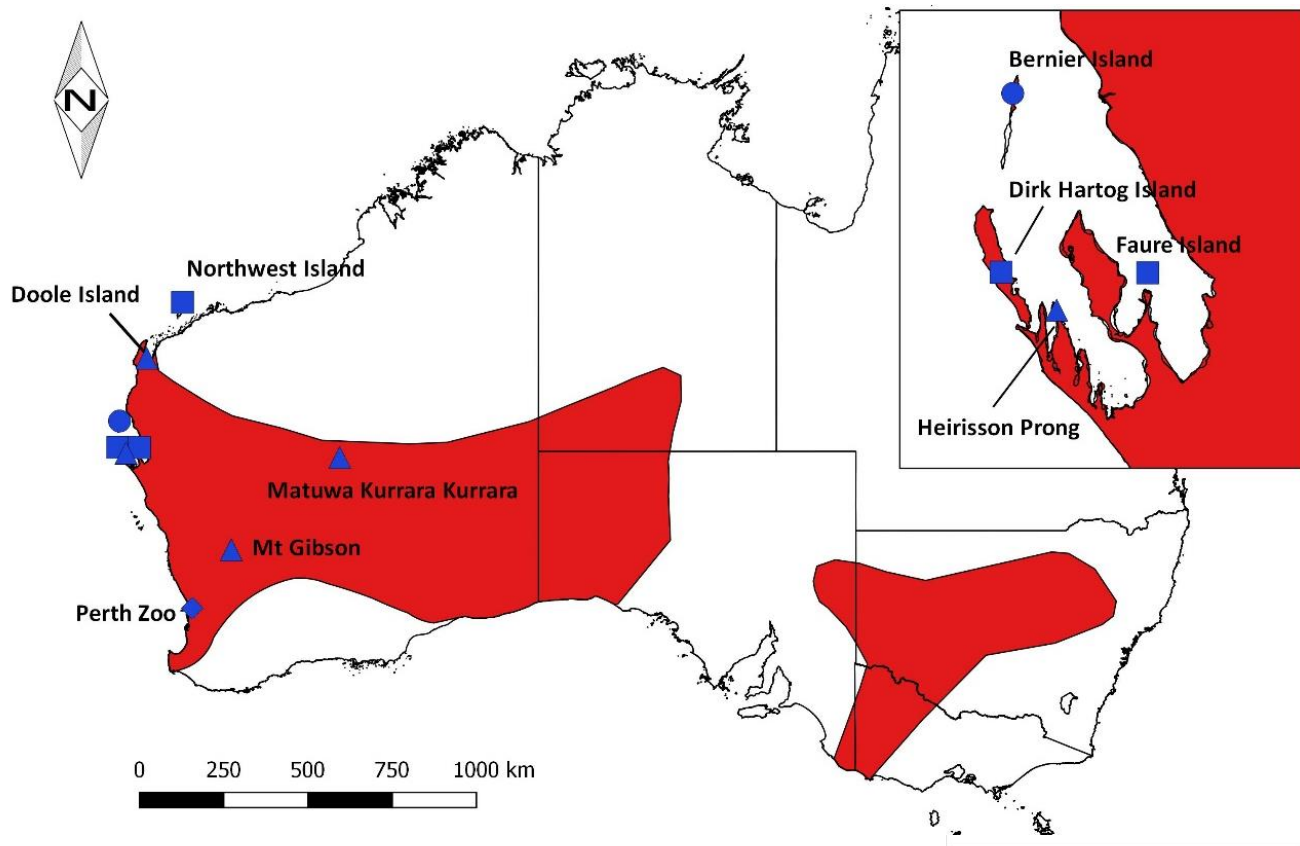
# Review of the translocation history of Shark Bay mouse (*Pseudomys gouldii*)

Saul Cowen, Kelly Rayner, Bryony Palmer, Colleen Sims and Peter Speldewinde



Rebecca Quah/DBCA





# Extinction

- After European colonisation, species appears to have declined rapidly
- Among lowest genetic diversity of any Australian rodent (Roycroft et al. 2021)
- Reasons for decline not well understood
  - Fire?
  - Habitat degradation/loss?
  - Trampling by stock?
  - Non-native predators?
- Unclear why this species (and others) have declined when other similar species (e.g. ash-grey mouse) have not





Kelly Rayner/DBCA

Research article

Captive breeding of the Shark Bay mouse *Pseudomys fieldi* to facilitate species recovery in the wild

Cathy Lambert<sup>1\*</sup>, Vicki Power<sup>1</sup> and Glen Gaikhorst<sup>1,2</sup>

# Initial

1991 - Recovery Team and draft Recovery Plan established  
- Initiated research project on Bernier Island

1993 - First conservation translocation (introduction) took place  
from Bernier to Doole Island in Exmouth Gulf

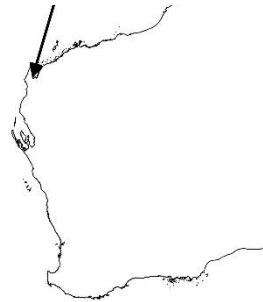
1996 - Captive breeding commences at Perth Zoo  
- Three pairs initially, supplemented by 17 1999-2001  
- 329 individuals bred for release between 1997 and 2002  
- See Lambert et al. (2016)

RESEARCH ARTICLE

# Two species, one island: Retrospective analysis of threatened fauna translocations with divergent outcomes

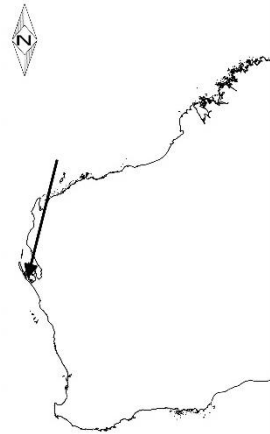
Kelly Rayner<sup>1\*</sup>, Cheryl A. Lohr<sup>1</sup>, Sean Garretson<sup>1</sup>, Peter Speldewinde<sup>2</sup>

- 258ha
- Conservation introduction
- ~77 translocated from Bernier Island 1993-1995
- 146 translocated from Perth Zoo 1997-2001
- Total of 6 translocations over 9 years (>200)
- Reasons for failure investigated using population viability analysis (Rayner et al. 2021)
- Shortage of appropriate habitat
  - 20ha *Spinifex*
- Predation by monitors
- Impact of cyclonic storm-surges???



# Heirisson Prong

- 1,200ha (enclosure)
- ~33 translocated from Bernier Island 1994
- Soft-release in 1ha, 0.9m enclosure
- Predation by monitors
- Intraspecific aggression (in enclosure)
- Escaped from release enclosure

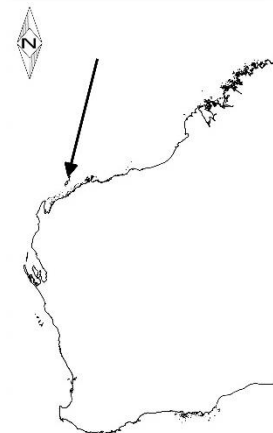


**FAILED**






# Northwest Island

- 118ha
- Conservation introduction
- ~115 translocated in total from Perth Zoo in 1999 and 2000
- Predation by monitors
- Last monitored in 2022
- Estimated abundance of 1,281 (95% 725 – 2,262) (Sims et al. 2023)





## Not so fussy after all: Shark Bay mouse (*Pseudomys gouldii*) recorded using a range of habitat types on Faure Island

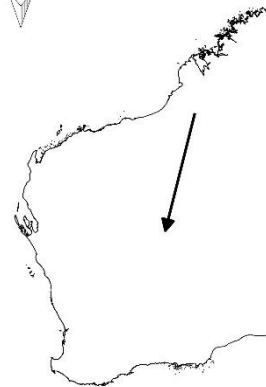
Bryony Joan Palmer<sup>A,\*</sup> , Saul Jesse Cowen<sup>B,C</sup>  and Amanda Ruth Bourne<sup>A</sup> 

- 4,553ha
- 114 translocated from Perth Zoo in 2002
- Predation by monitors and owls
- Last monitoring in 2024
- Population estimates difficult to assess
- Remains widespread and frequently detected
- No clear habitat preferences across island
- See Palmer et al. (2024)



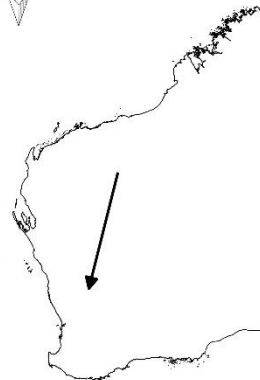
# Matuwa Kurrara-Kurrara

- 1,100ha (enclosure)
- 88 translocated in total from Northwest Island in 2011 and 2012
- Predation by mulgara
- Habitat?
  - Released in *Triodia*
  - Tracked to mulga
- Monitoring issues



**FAILED**

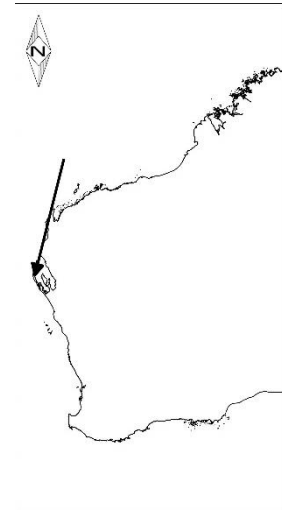
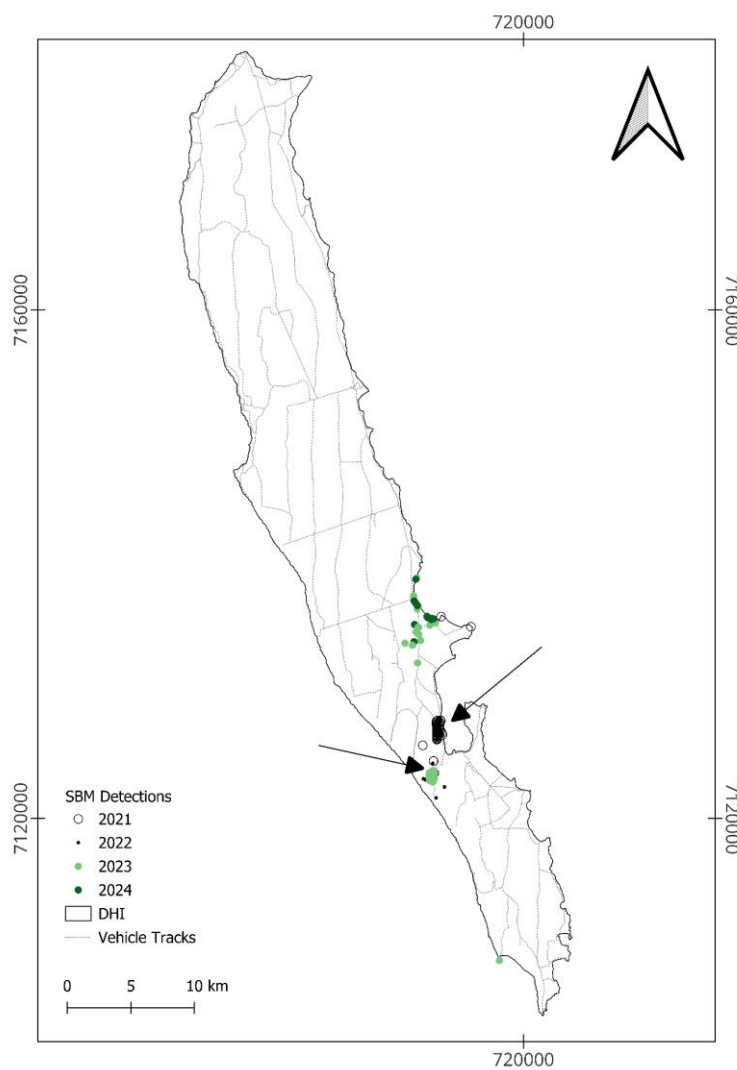
# Mount Gibson Sanctuary



- 7,800ha (enclosure)
- 46 translocated from Northwest Island in 2017
- 6 translocated from Faure Island in 2017 and 2018
- Used supplementary feeding stations (12 days)
- Monitoring issues
- No detections since 2018 despite major effort
- Predators?

**FAILED**

- 63,300ha
- 80 translocation
- 50 translocation
- Predation
- Translocation analysis -
- Use of aerial
- Outcome



# Key findings

- Causes of failure are not well-understood
- Predation by monitors widely reported but had no apparent bearing on success
- Predation also noted by other reptiles, birds and mulgara
- All three mainland translocations failed
- Link between success and presence of extensive *Spinifex*
- Link between success and high numbers of founders (>100 in first two years)



# Challenges

- Sourcing large numbers of individuals, particularly from Bernier
- Post-release monitoring, especially radio-tracking
- Potential risks around stress-related mortalities (e.g. DHI)
- Uncertainty around habitat requirements (Smith et al. 2024)
  - Soft substrates?
  - Floristic diversity?



# *Spinifex*

and with Shark Bay mouse  
from Bernier Island

*Spinifex* in a >20 yr old

- Example of shifting bas
- May be valuable as init
- More work required to requirements of Shark burrowing



# Recommendations

- Translocations to more sites, including mainland locations, are needed to reduce extinction risk
- More work is required to better understand the ecological requirements of the Shark Bay mouse
- The focus on large tracts of *Spinifex* is misleading
- Predation by reptiles is common but not a critical factor
  - consider translocations during autumn and winter
- Translocation success correlated with high numbers of founders – supported by PVA

# Thank you



Kelly Rayner/DBCA