Biosecurity risk from introduced wildlife for Pilbara islands

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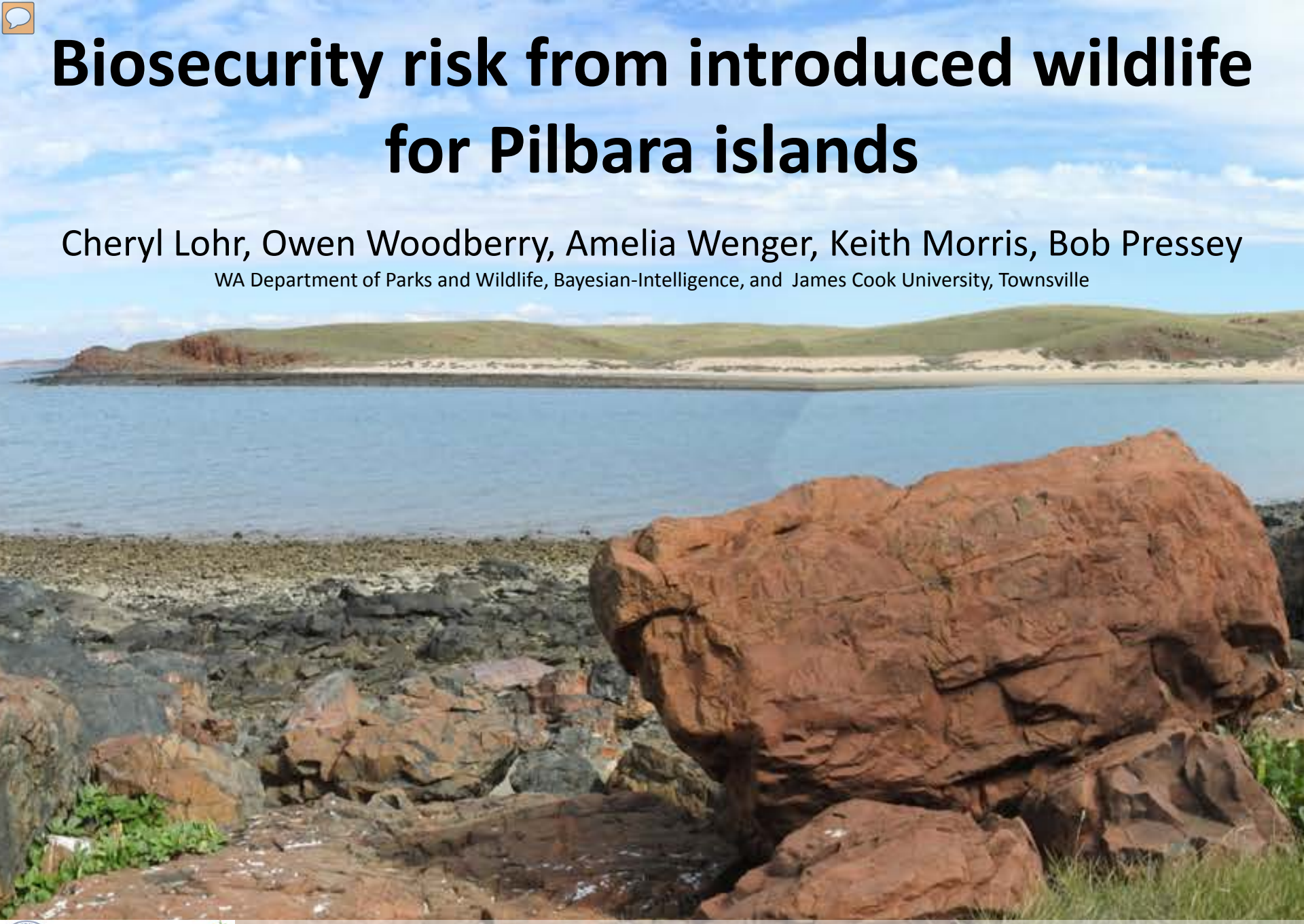


Department of Parks and Wildlife

Gorgon Barrow Island Net Conservation Benefits Funded Project

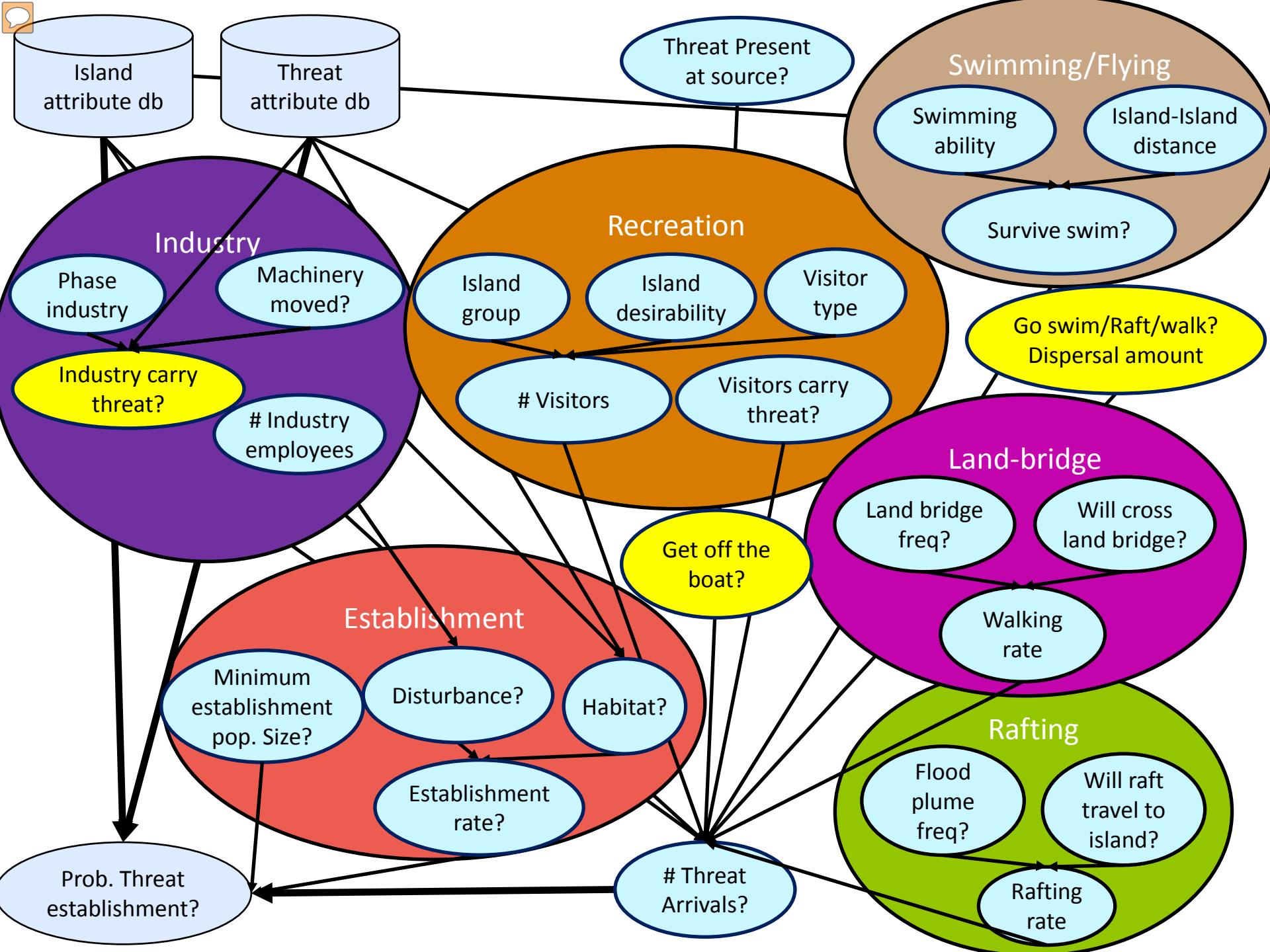
Island surveillance

Goal: Detect NIS on Pilbara islands before establish large uncontrollable population

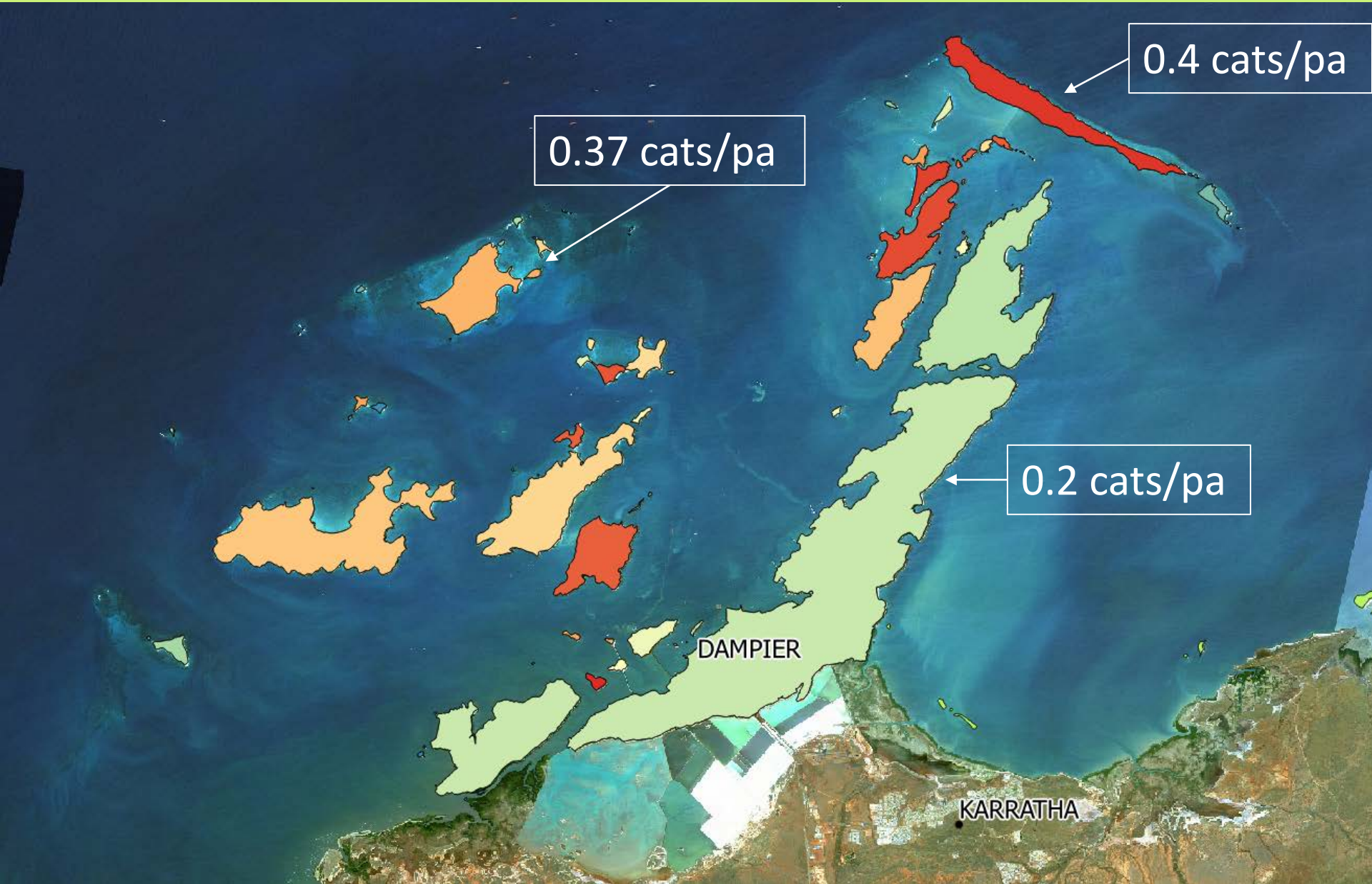
PROBLEM

- ~600 islands
- Dozen+ fauna NIS
- At least 5 dispersal pathways
  - Swim, raft, walk, hitchhike with recreational boaters or industry

- High-risk NIS? High-risk islands?
- Limited data


Island attribute db
Threat attribute db
Threat Present at source?
Swimming/Flying
Swimming ability
Island-Island distance
Survive swim?
Industry
Phase industry
Machinery moved?
Industry carry threat?
Industry employees
Recreation
Island group
Island desirability
Visitor type
Visitors
Visitors carry threat?
Go swim/Raft/walk? Dispersal amount
Land-bridge
Land bridge freq?
Will cross land bridge?
Walking rate
Get off the boat?
Establishment
Minimum establishment pop. Size?
Disturbance?
Habitat?
Establishment rate?
Rafting
Flood plume freq?
Will raft travel to island?
Rafting rate
Prob. Threat establishment?
Threat Arrivals?

Number of cats arriving per annum



What's next? Model validation!

- Garbage in – garbage out!
- Vague inputs for dispersal by industry
- What is the propagule pressure out of existing populations?
- Compare results against reality.

How does this help managers?

- Resource limited
- Identify high-risk NIS
- Predict the contribution of each pathway
- Identify high-risk islands priority for surveillance

Do you have any data, anecdotes, knowledge I can use?

Thank you to Owen Woodberry, Amelia Wenger, Keith Morris, Bob Pressey and the MANY experts that have already answered my strange questions.

Swim/fly/raft/flood input

LATIN	COMMON	Flood plume - WOULD go rafting	Land bridge - WOULD use when present	Swim - WOULD go swim	Short swim (m)	Swim - COULD SWIM short distance	Long swim (m)	Swim - COULD SWIM long distance	Max swim (m)	Swim - COULD SWIM max distance
Bos taurus	Cow	0.001	0.001	0.01	0-500	0.9	500-3000	0.3	>3000	0.01
Canis familiaris	Dog	0.001	0.9	0.1	0-500	0.9	500-2000	0.46	>2000	0.01
Equus caballus	Horse	0.001	0.001	0.01	0-1000	0.9	1000-3000	0.3	>3000	0.01
Felis catus	Cat	0.001	0.01	0						
Mus musculus	Mouse	0.05	0.1	0.01	0-20	0.9	20-50	0.5	>50	0.01
Oryctolagus cuniculus	Rabbit	0.1	0.1	0						
Rattus rattus	Black rat	0.05	0.9	0.1	0-500	0.72	500-1000	0.4	>1000	0.03
Vulpes vulpes	Red fox	0.001	0.9	0.1	0-500	0.9	500-2000	0.46	>2000	0.01
Rhinella marina	Cane toad	0.9	0.9	0.5	0-2000	0.7	2000-5000	0.4	>5000	0.01
Pheidole megacephala	ABHA	0.01	0	0						
Columba livia	Pigeon	0	0	0						
Hemidactylus frenatus	Asian house gecko	0.1	0	0						

Land bridge dispersal

Neap 30% probability

Spring 9% probability

King 2% probability

Land bridge from Burrup to Dolphin ~11% probability