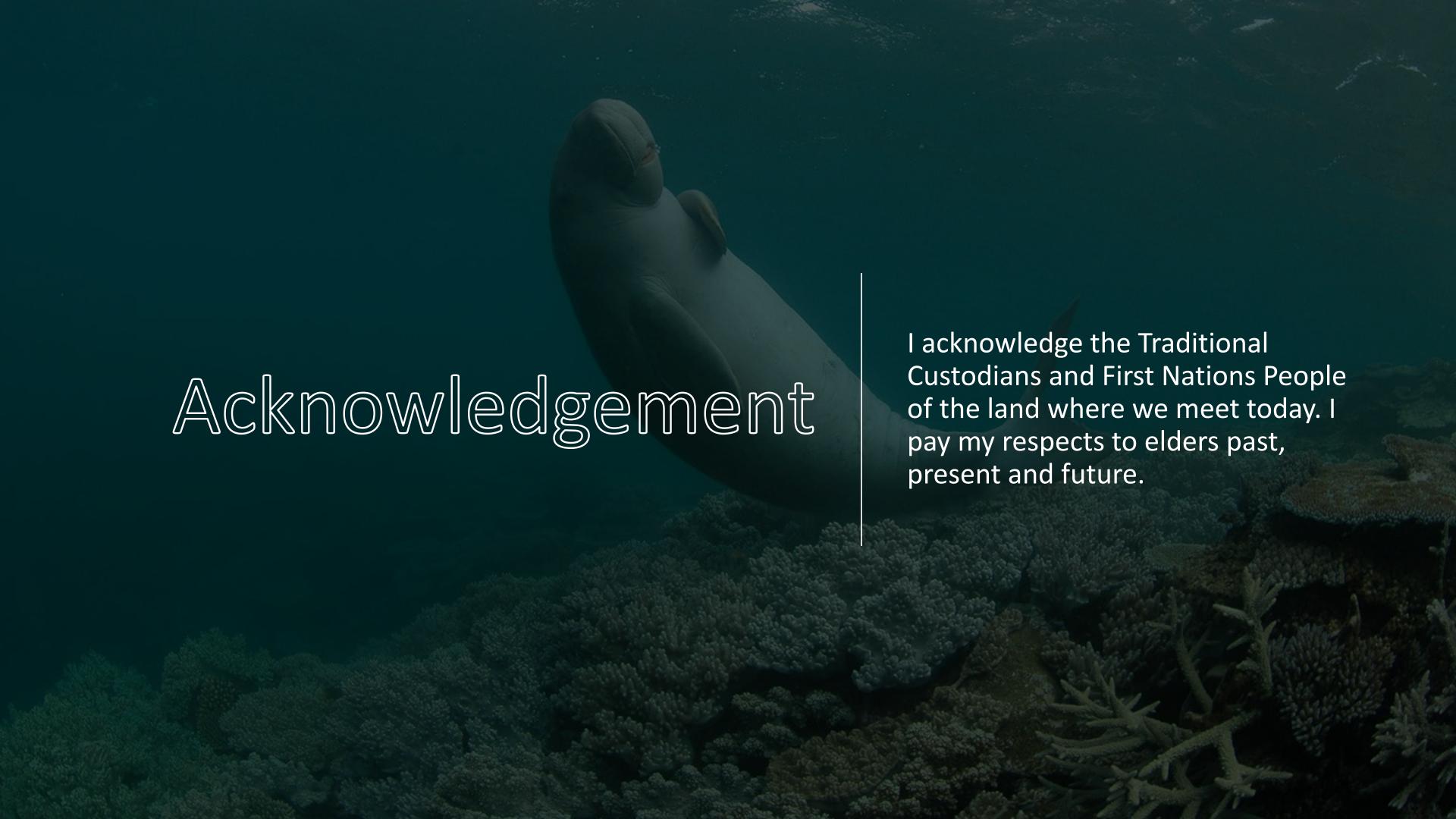


Reshaping dugong monitoring in northern Australia

Chris Cleguer, Holly Raudino, Rachel GRoom JCU, DBCA, CDU











Great Barrier Reef Foundation



Australian Government

Department of Climate Change, Energy, the Environment and Water





Department of Environment and Science





Funding support



Huge cultural value Matter of National Environmental Significance

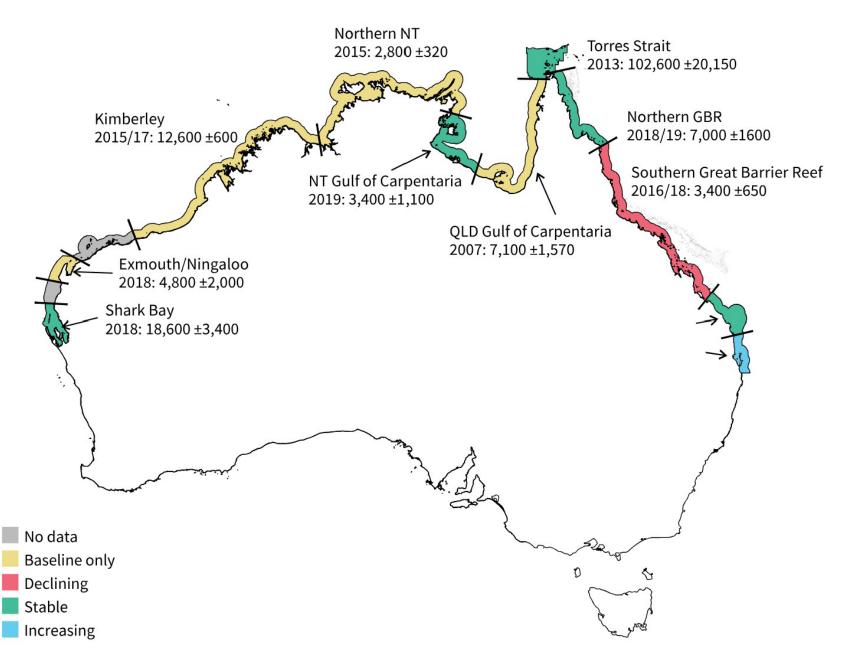
Outstanding Universal Value
of the Great Barrier Reef
World Heritage Area
(GBRWHA)

Best looking animal

Protected under the EPBC Act as a listed migratory and marine species

The status of dugongs in Australia





- The conservation status of the dugong across Australia is variable
- To date: management heavily relying on data collected from time series of large-scale standardised aerial surveys conducted across Northern Australia

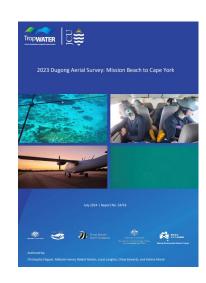


Dugong aerial surveys supported by NESP



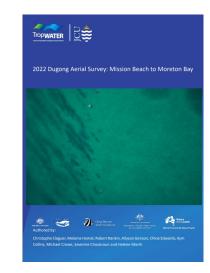


- Continued time-series of aerial surveys through NESP
 - Shark Bay Ningaloo Exmouth Gulf (NESP 3.1)
 - Eastern QLD (NESP 3.1, GBRF, DCCEEW)
 - Gulf of Carpentaria (NESP 4.2)
- First published reports



Cleguer et al (2024)

Dugongs thriving in far north QLD



Cleguer et al (2023)

Dugongs in decline in the southern GBR

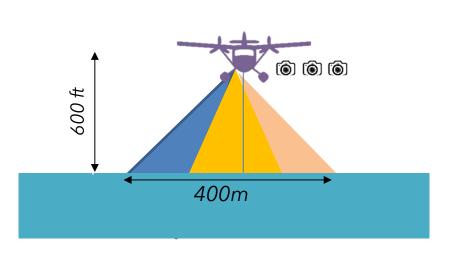
Dugong aerial imagery survey and AI research

supported by NESP

- Replacing aerial observers
 with high resolution cameras
 and AI in the future
- RnD on most adequate imagery systems / image quality
- Al developed at TropWATER
 & compared to existing
 models (Jahanbakht et al.
 2024)







Training sea rangers in the use of small drones for local marine megafauna mapping







NESP funded
GBRF funded

E.g., Pryor et al. (2024) Girringun

lead dugong seagrass work

Population genomics of dugongs in northern Australia,



supported by NESP



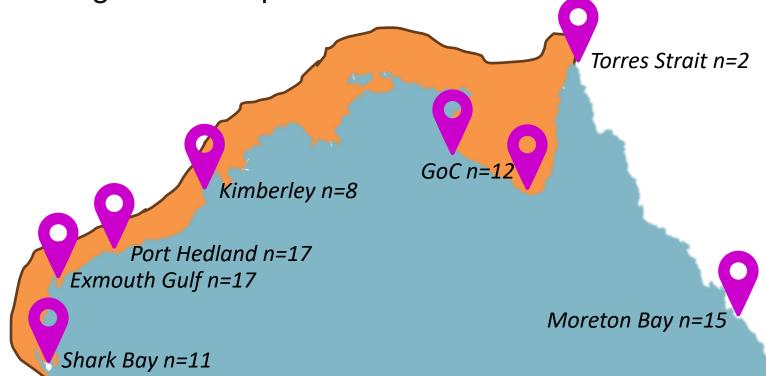
- WHAT CAN WE LEARN?

 CLCAC meeting 2023

PhD student Eva Paulus

 Supervisors: Prof Jan Strugnell, Ira Cooke and Chris Cleguer)

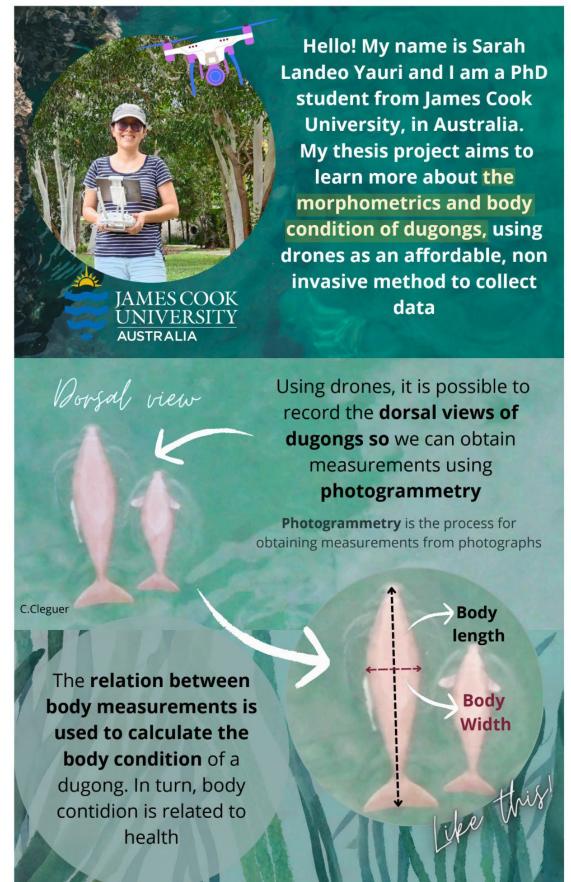
- Genetic diversity, connectivity, historical change in population size
- JCU-NESP PhD Scholarships
- Population genomics and Ancient DNA
- Traditional Owner participation, stranding, tagging
- Receiving samples from Africa (Mozambique) and New Caledonia (outgroups)
- 90 samples whole genome sequences in Feb 2025



Dugong health: body condition assessment using drones,

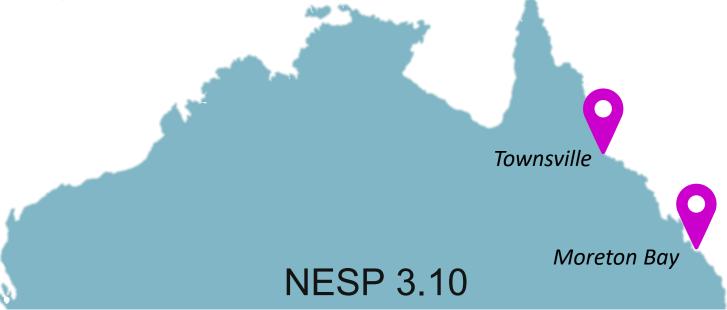


supported by NESP



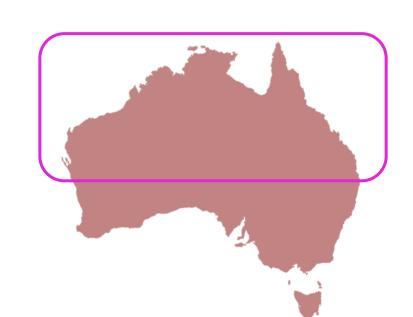
- JCU-NESP PhD Scholarships
- Pioneer work: never attempted on dugongs
 - Method development
 - Seasonal variation in body condition at difrerent latitudes (see map)
 - Do dugongs look the same everywhere? Morphometrics study across 30+ countries in the dugong range
- Currently collecting data in Townsville and Moreton Bay and testing measurements
- Collaborating with SeaWorld Abu Dhabi + Sydney aquariums to run tests on captive animals
- Traditional Owner/ranger/citizen science participation

- PhD student Sarah Landeo
- Supervisors: Dr Chris Cleguer & Dr Fredrik Christiansen



Dugong movement and diving behaviour supported by NESP

- Movements and habitat use
 - Satellite and new generation minidiary tag
 - E.g. Inform cultural policy in Yawuru country
- Opportunistic health assessments
 - Testing new approaches for blood samples & contaminants





Yagarrajalajalan nagula buru

We all care for saltwater Country



Adrian Gleiss 1, Dean Mathews 2

Lloyd Pigram ³, Jenna Hounslow ¹, Halina Kobryn ¹, Michael Hughes ¹, Rochelle Steven ¹, Heather Bray ⁴, Joanna Pearce ⁵, Wil Bennett ⁶, Jason Richardson ⁶, Todd Quartermaine ⁷, Luke Puertollano ⁶, Sabrina Fossette ⁷, Scott Whiting ⁷, Kevin Crook ⁷, Holly Raudino ⁷, Kelly Waples ⁷, Harriett Davies ⁸, Christophe Cleguer ⁹, Melissa Marshall ³





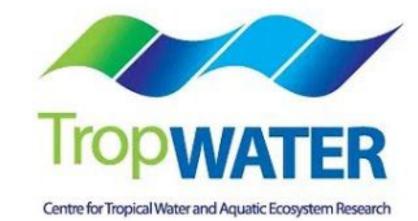
Murdoch University Harry Butler Institute





The University of Notre Dame Australia









Department of Biodiversity, **Conservation and Attractions**

















United Nations Decade of Ocean Science for Sustainable Development



Government of Western Australia Department of Jobs, Tourism, Science and Innovation

All dugong projects funded by NESP have an international

Australia

reach

MoU

Cleguer i

Dugong I

All new le

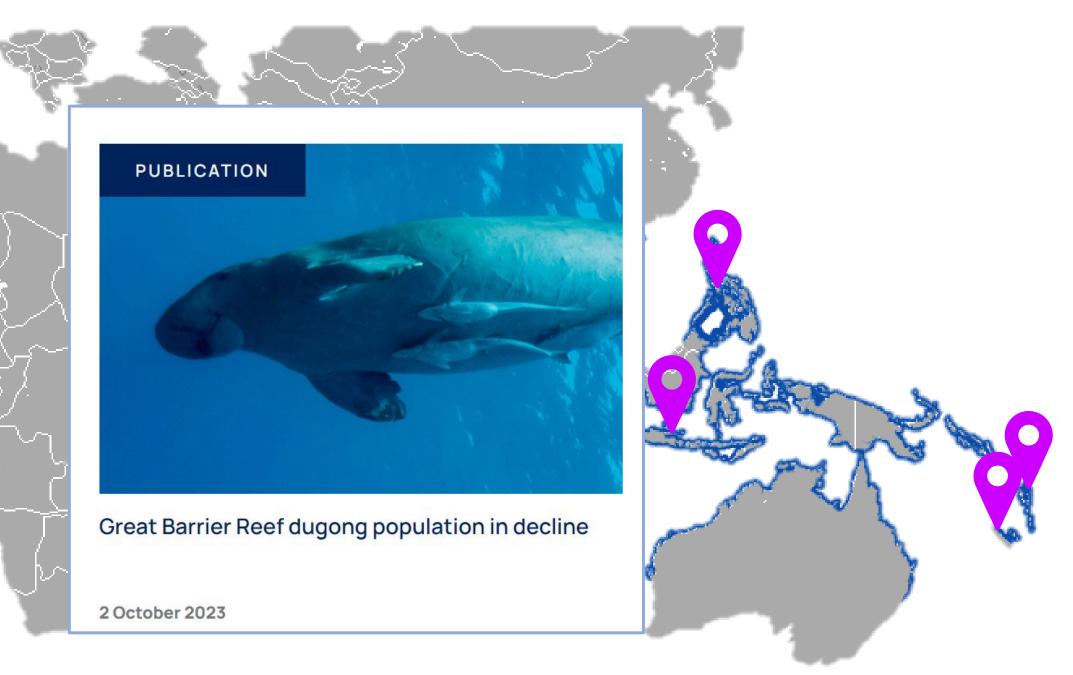
channels

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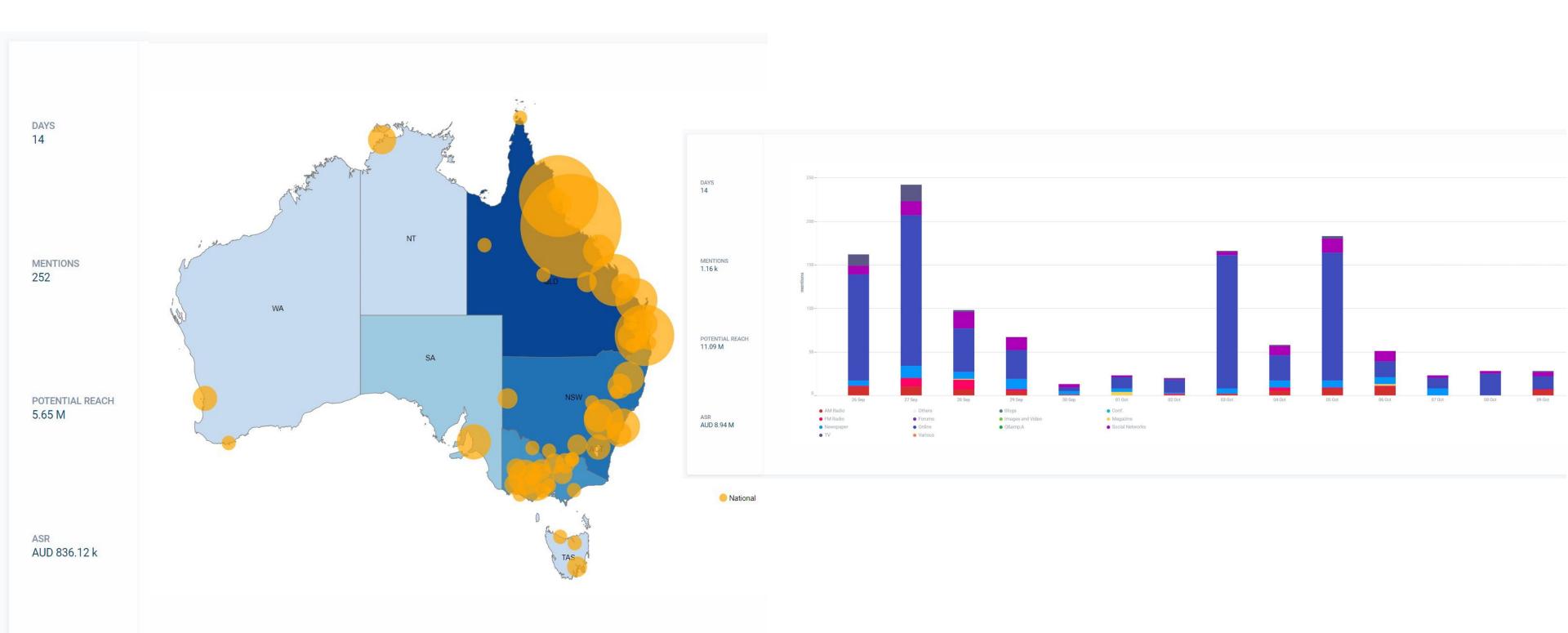
15 May 2023



Current **JCU involvement** in international dugong research projects



Effective and powerful media strategy



Consistent high reach (e.g, national media, AAP - ABC multimedia)





Dugongs connect people

All our NESP projects have a huge engagement component

Dugong NESP budget, cash contributions, and link to other large projects

NESP 3.10 cash contribution: \$599K

NESP 4.2 cash contribution: \$500K

NESP 4.6 cash contribution: \$500K

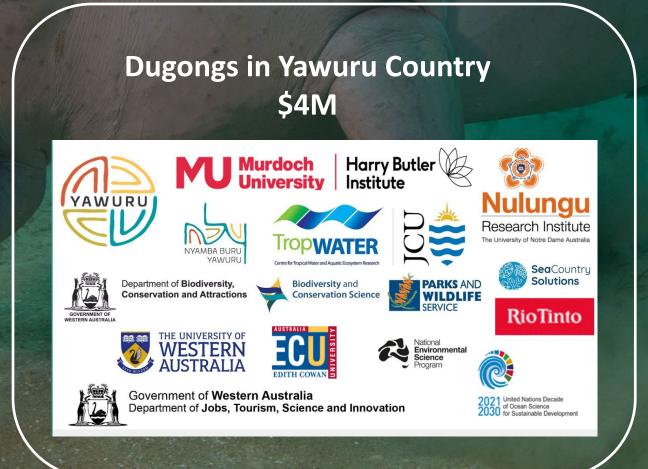
Contributing organisation	Cash	
Contributing organisation	(\$ GST excl.)	
James Cook University	\$159,000	
DBCA	\$ 45,000	
Murdoch University	3,659	
Charles Darwin University	3,639	
DCCEEW	\$ 200,000	

Contributing organisation	Cash	
Contributing organisation	(\$ GST excl.)	
Charles Darwin University	42,378	
James Cook University	32,261	

Contributing organisation Cash (\$ GST excl.) **ISWAG** inkind **DBCA** 7,430 **Murdoch University** 13,950 James Cook University 19,659

Each NESP 3.1 PhD students have secured \$+10K in student fundings





Dugongs and dolphins in the Gulf of Carpentaria \$100K



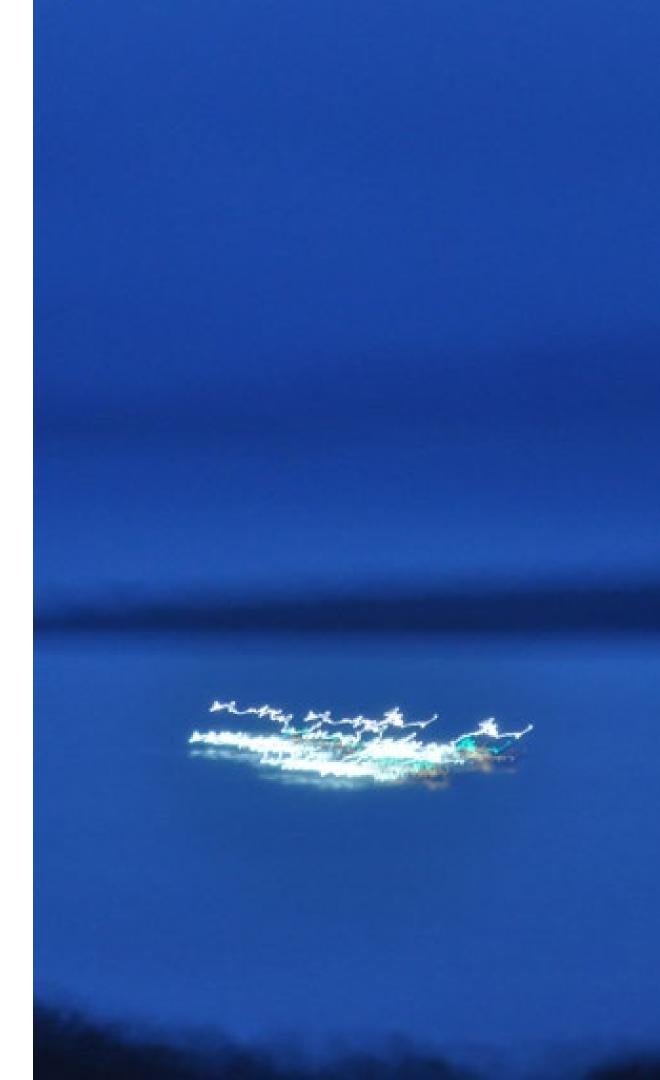
Department of Environment and Science

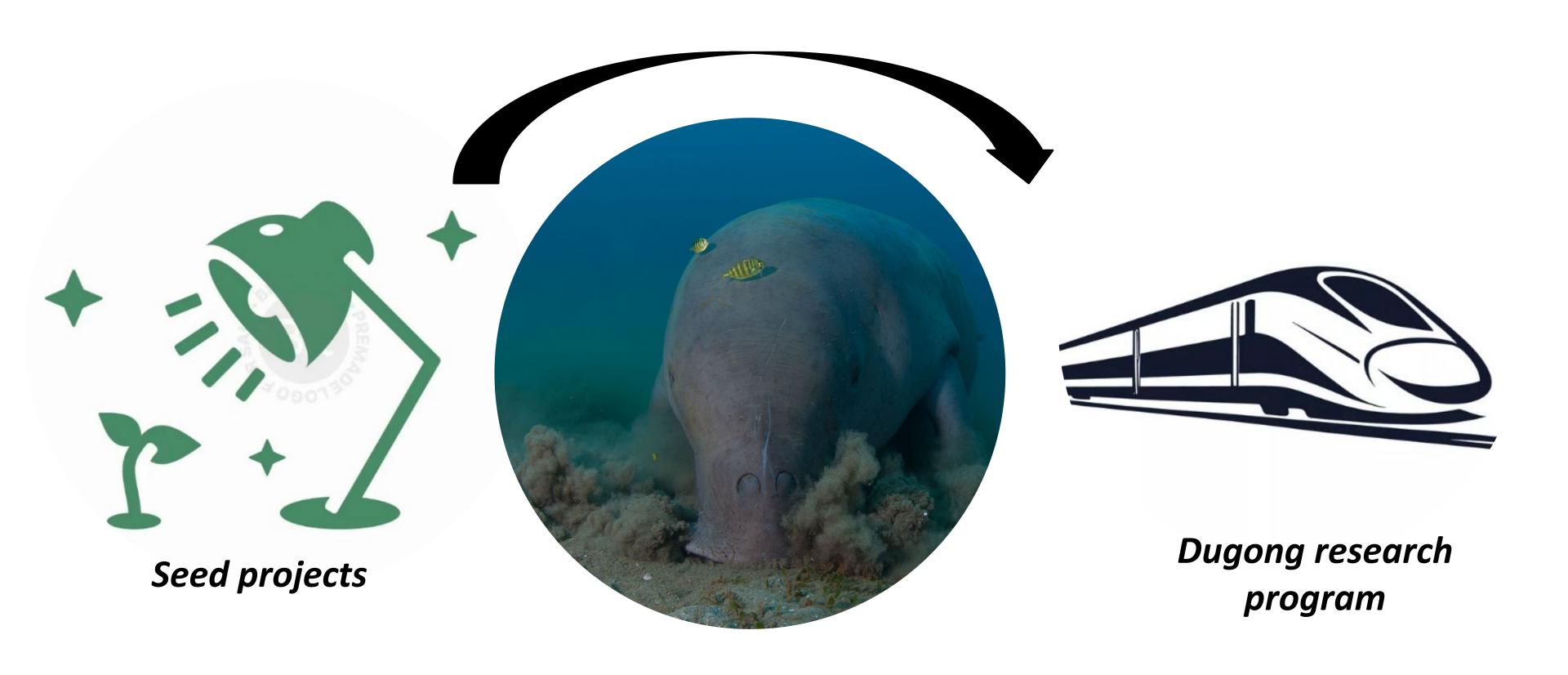


Thank you

Contact: Christophe.cleguer@jcu.edu.au





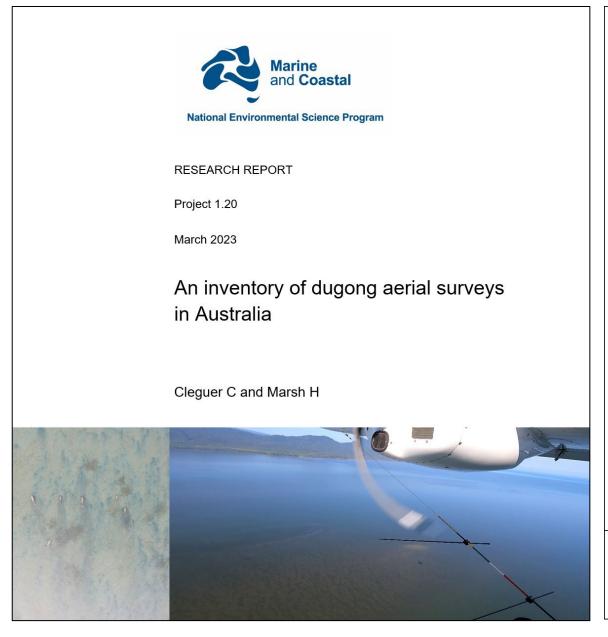


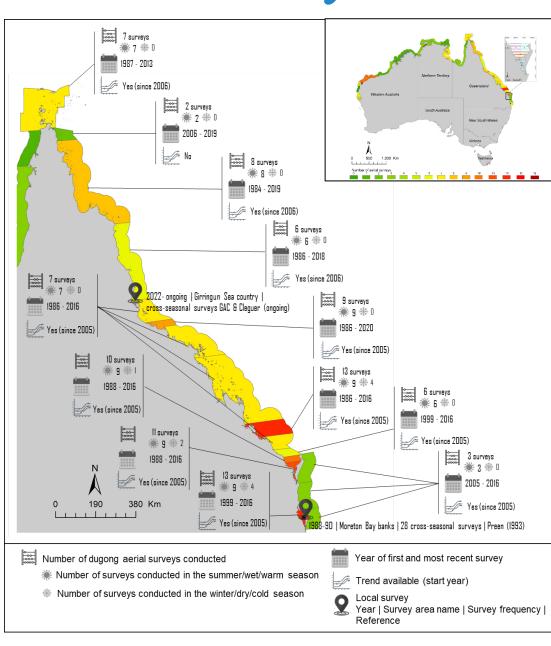
Thank you

NESP 2.1: Dugong survey inventory and review



of methods and data availability



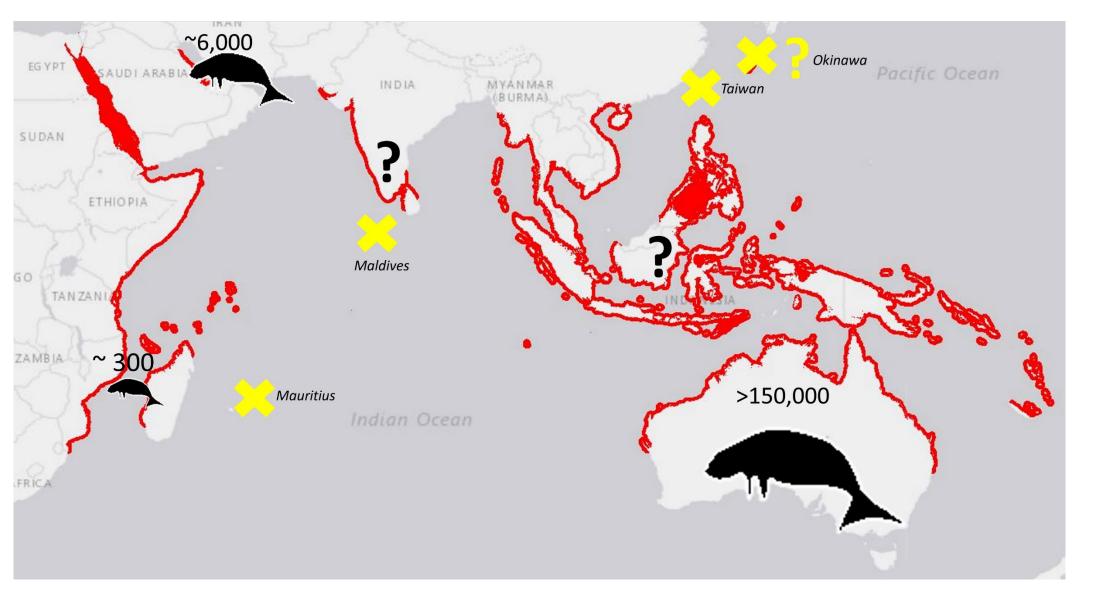


- All dugong aerial surveys ever conducted in Australia
- Identify methods that need to be harmonised
- Identify where additional/continuing survey effort is needed



The status of dugongs in Australia





- Vulnerable on the IUCN Red List
- Australia is the dugong stronghold globally
- But..

