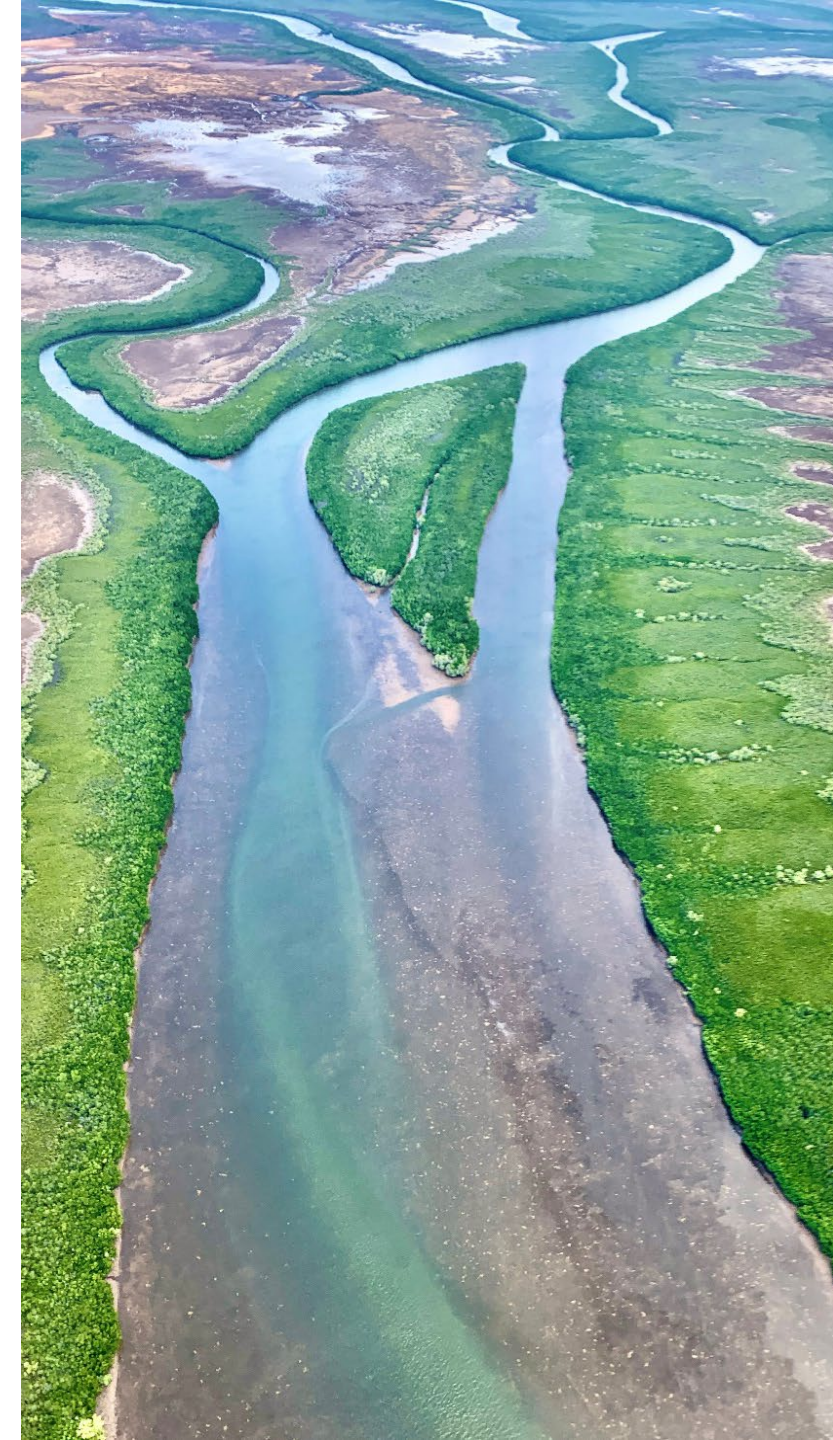


Northern Australia synthesis, mapping and monitoring of seagrass

Alex Carter, Catherine Collier, Rachel Groom, Kathryn McMahon



Collaborators, Contributors and Funders

National Environmental Science Programme (NESP) - Tropical Water Quality Hub Projects 3.1, 3.5, 3.2.1, 5.4 and Marine and Coastal Hub Projects, 1.12, 1.13, 1.14, 3.5, 4.1, 4.20, 5.1, 5.2)

Universities - TropWATER James Cook University, Northern Institute Charles Darwin University, Edith Cowen University

Ranger Groups – Girringun Rangers, Torres Strait Land and Sea Rangers, li-Anthawirriyarra Rangers, Marranbala Rangers, Numbulwar Numburindi Rangers, Yugul Mangi Rangers, Tiwi Rangers, Karajarri Rangers

Aboriginal and Torres Strait Islander Bodies – Girringun Aboriginal Corporation, Torres Strait Regional Authority, Seven Rivers Aboriginal Corporation, Mabunji Aboriginal Resources Indigenous Corporation, Namultja Aboriginal Corporation, Northern Land Council, Tiwi Resources, Karajarri Traditional Lands Association

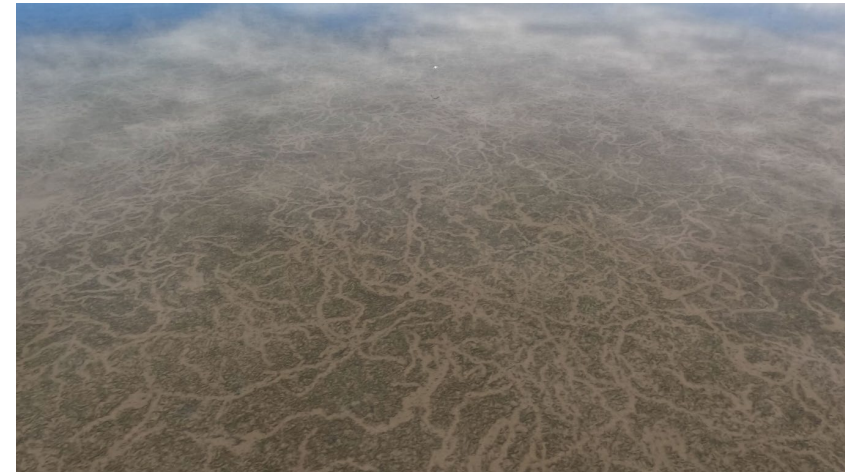
DCCEEW – Parks Australia, Migratory Species, Indigenous Protected Areas

Others: Northern Territory Government, Queensland Government, Great Barrier Reef Foundation, CSIRO, Ports North, Gladstone Ports Corporation, North Queensland Bulk Ports, Port of Townsville

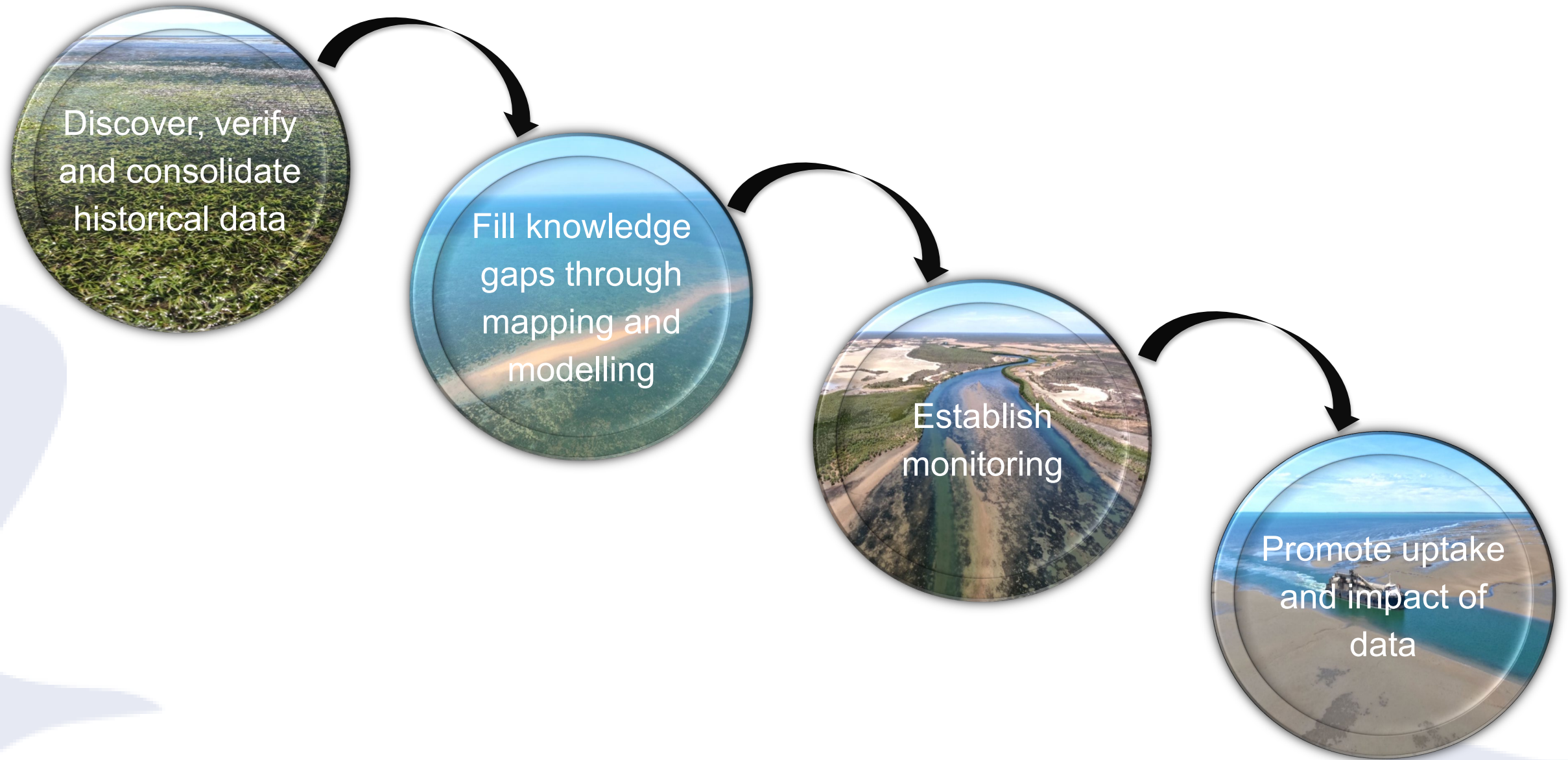


Why seagrass in northern Australia?

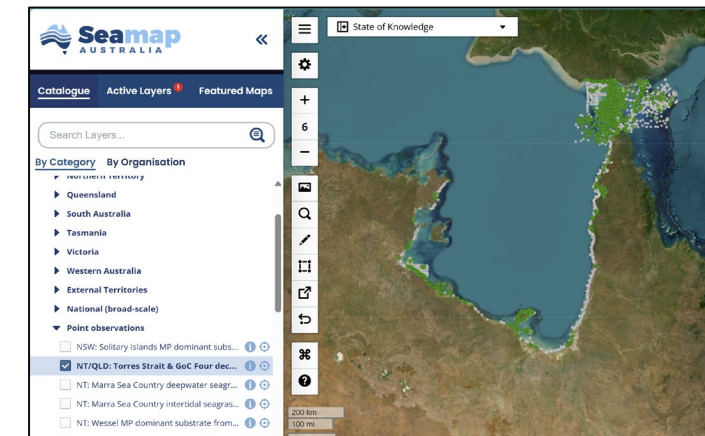
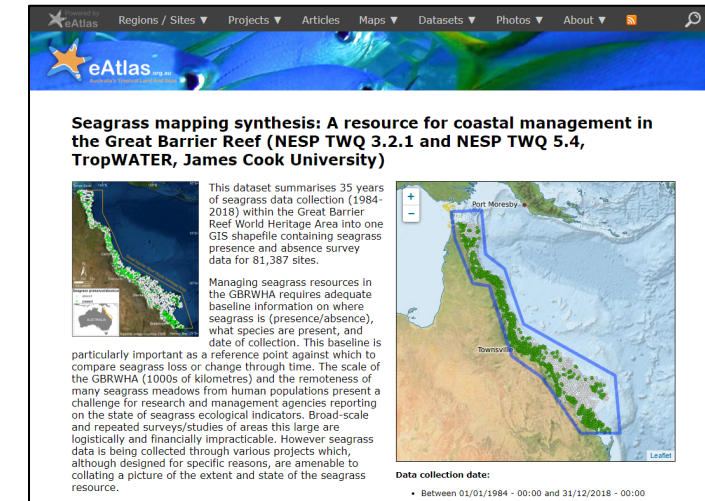
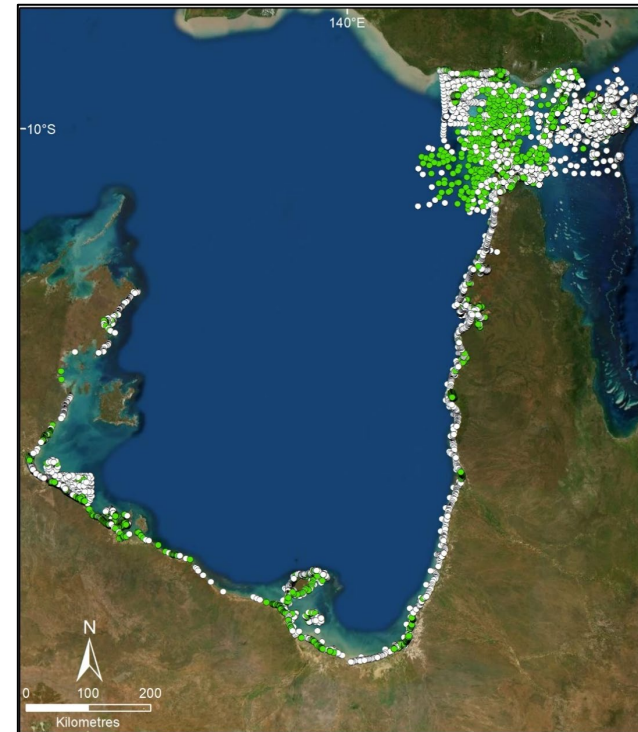
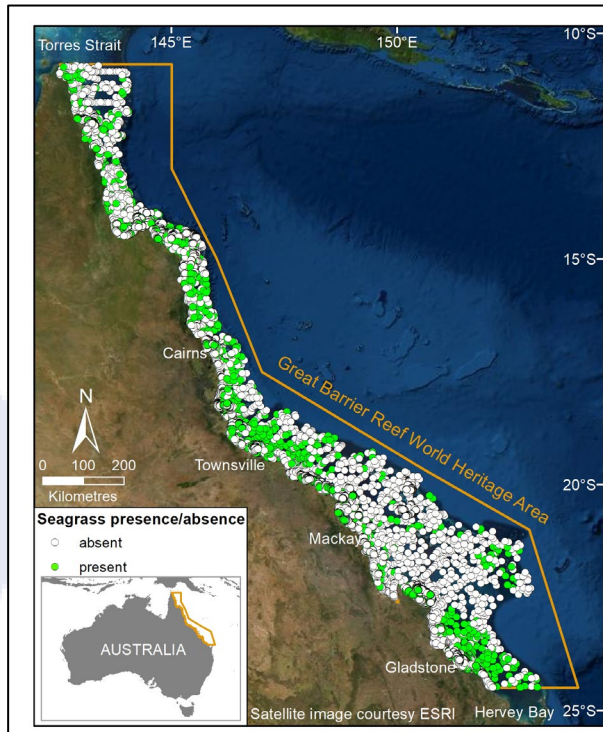
- Key habitat - ecological, cultural, economic importance
- Features in planning and development decisions that affect marine ecosystems
- Need for better data at regional scales
 - Distribution, condition, diversity
- Hub Outcome - Supporting Regional Planning
 - Establish a benchmark of seagrass habitats
- Hub Outcome - Improving Indigenous Capability and Futures
- Hub Outcome - Innovation in Monitoring



Building our seagrass knowledge



Discover, verify and consolidate historical data: Seagrass data synthesis



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DATA ARTICLE

Synthesizing 35 years of seagrass spatial data from the Great Barrier Reef World Heritage Area, Queensland, Australia

Alex B. Carter¹,^{*} Skye A. McKenna¹, Michael A. Rasheed¹, Catherine Collier¹, Len McKenzie¹, Roland Pitcher², Rob Coles¹

¹Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER), James Cook University, Cairns, Queensland;
²Commonwealth Scientific and Industrial Research Organization (CSIRO), St Lucia, Queensland

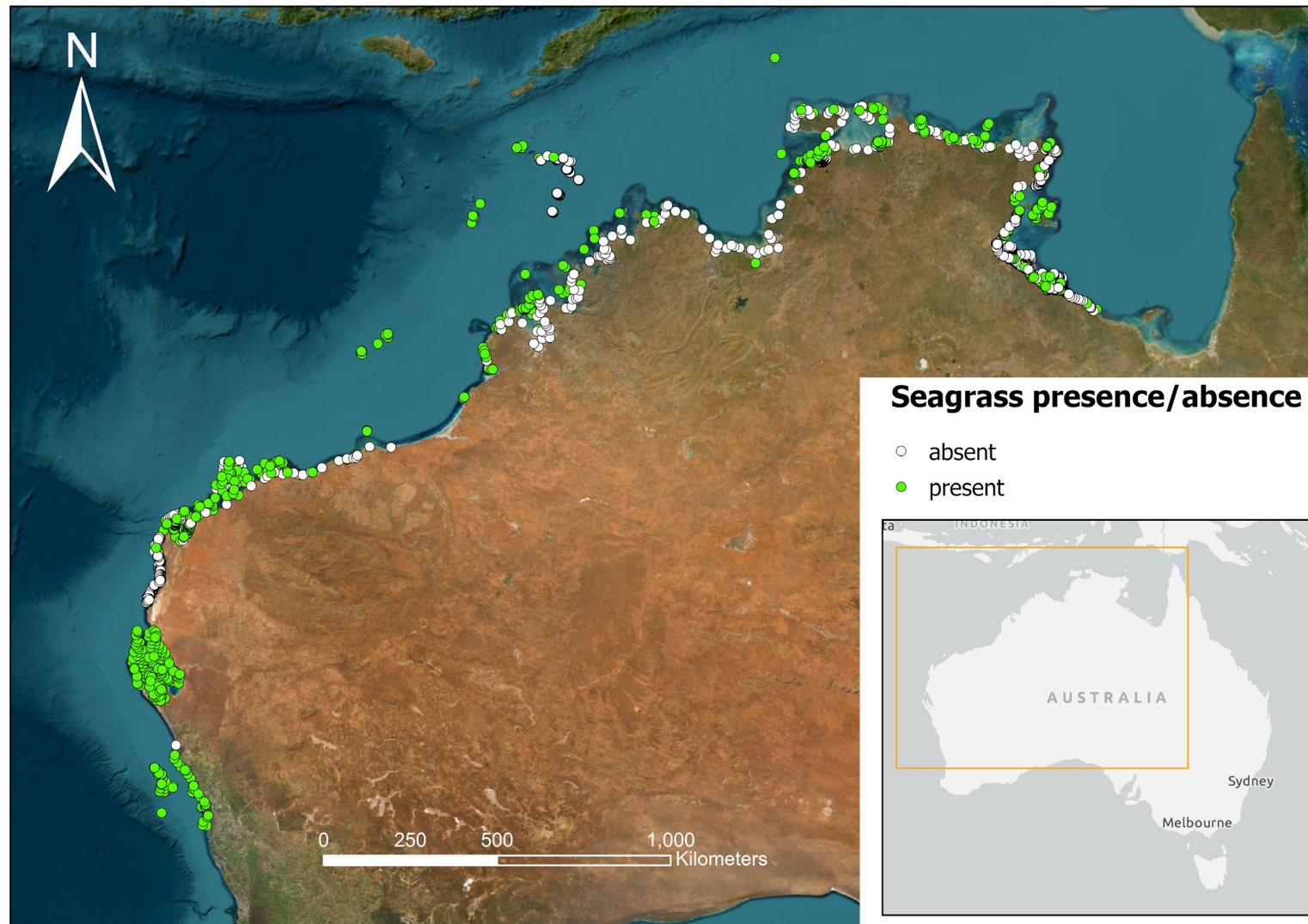
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Data Article | [Open Access](#) | [CC](#) | [i](#)

Seagrass spatial data synthesis from north-east Australia, Torres Strait and Gulf of Carpentaria, 1983 to 2022

A Carter[✉], S McKenna, MA Rasheed, H Taylor, C van de Wetering, K Chartrand, C Reason, C Collier, L Shepherd, J Mellors, L McKenzie, NC Duke, A Roelofs, N Smit, R Groom, D Barrett ... [See all authors](#)

Discover, verify and consolidate historical data: Seagrass data synthesis



SEAGRASS DATA SYNTHESIS

We need your help!

1. What is it?
A NESP-funded synthesis of spatial data on seagrass distribution between Cape Arnhem (NT) and Ningaloo Reef (WA).
<https://www.nespmarinecoastal.edu.au/project-3-5/>

2. Has this been done before?
Yes. Previous data syntheses include Torres Strait and the Gulf of Carpentaria (1983-2022) and the Great Barrier Reef (1984-2018). Data are publicly available on eAtlas. You can check it out/ download here:
Great Barrier Reef: <https://doi.org/10.1002/10.210193>
Torres Strait/Gulf: <https://doi.org/10.26274/2CR2-1K51>

3. Why bother?
Historical data is important for understanding seagrass distribution, condition, and change. Bringing data together and making it public empowers government, industry, Traditional Owners, researchers and consultants to make informed decisions. It also archives old data to make sure it isn't lost.

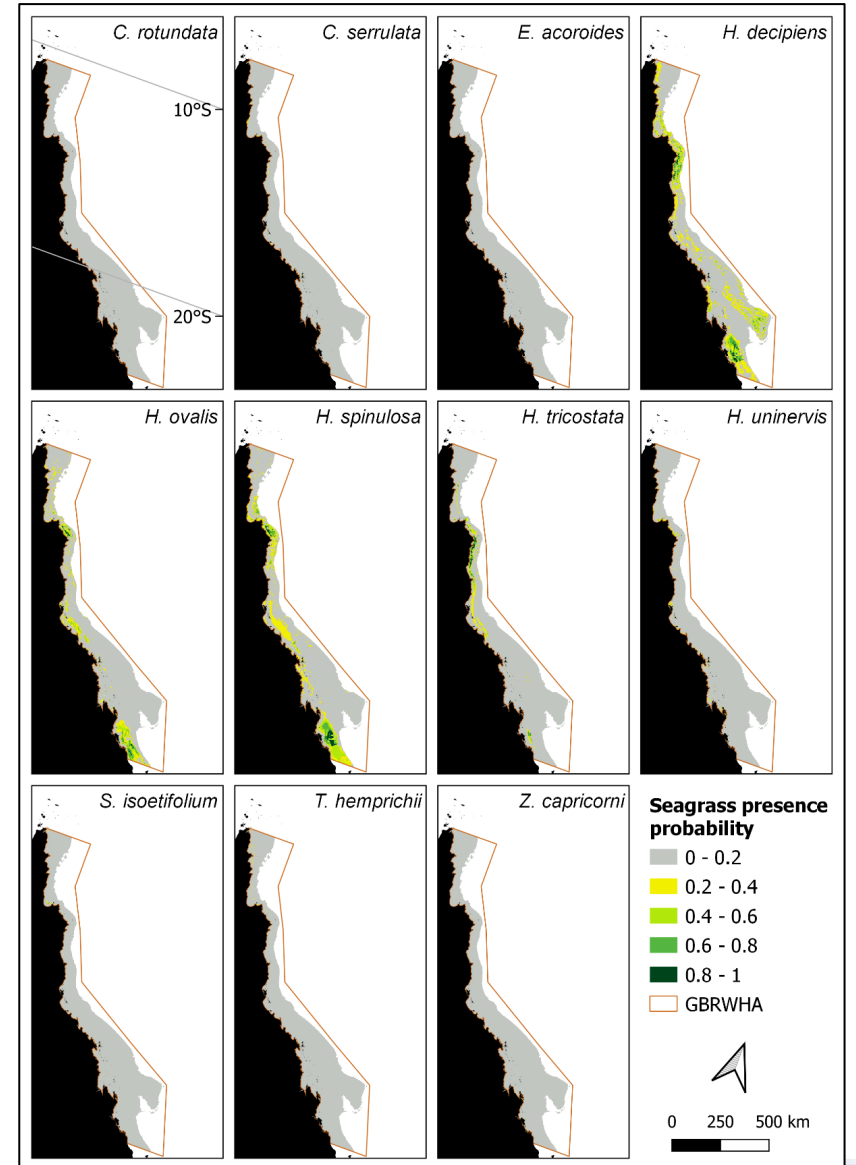
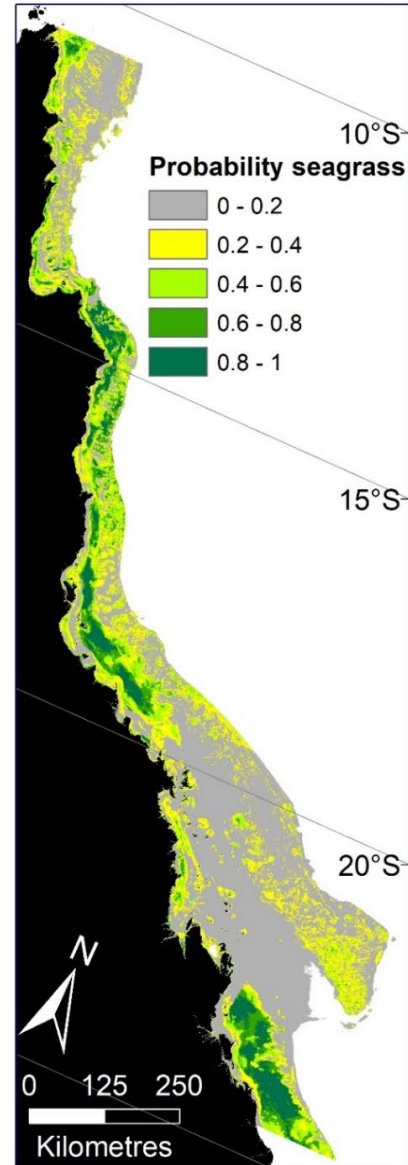
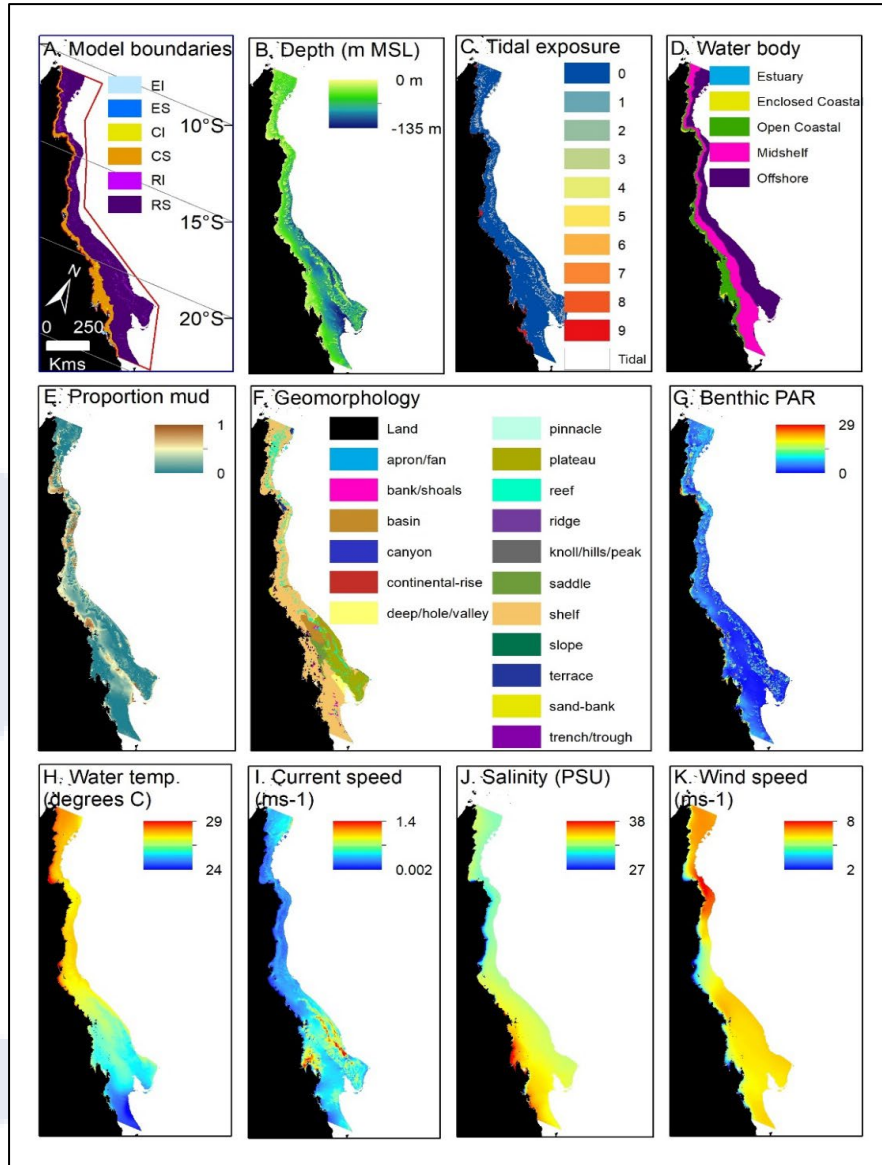
4. What data is useful?
Data should be site (point) or area (polygon) with a spatial reference. Seagrass presence/absence and species data are most valuable. All benthic habitat data is useful, even if no seagrass was found (zeros matter!).

5. What about authorship?
The data synthesis will list the data custodian(s)/owner(s) for each data entry (if they wish). Co-authorship of reports/papers is offered to data custodians/owners that contribute data.

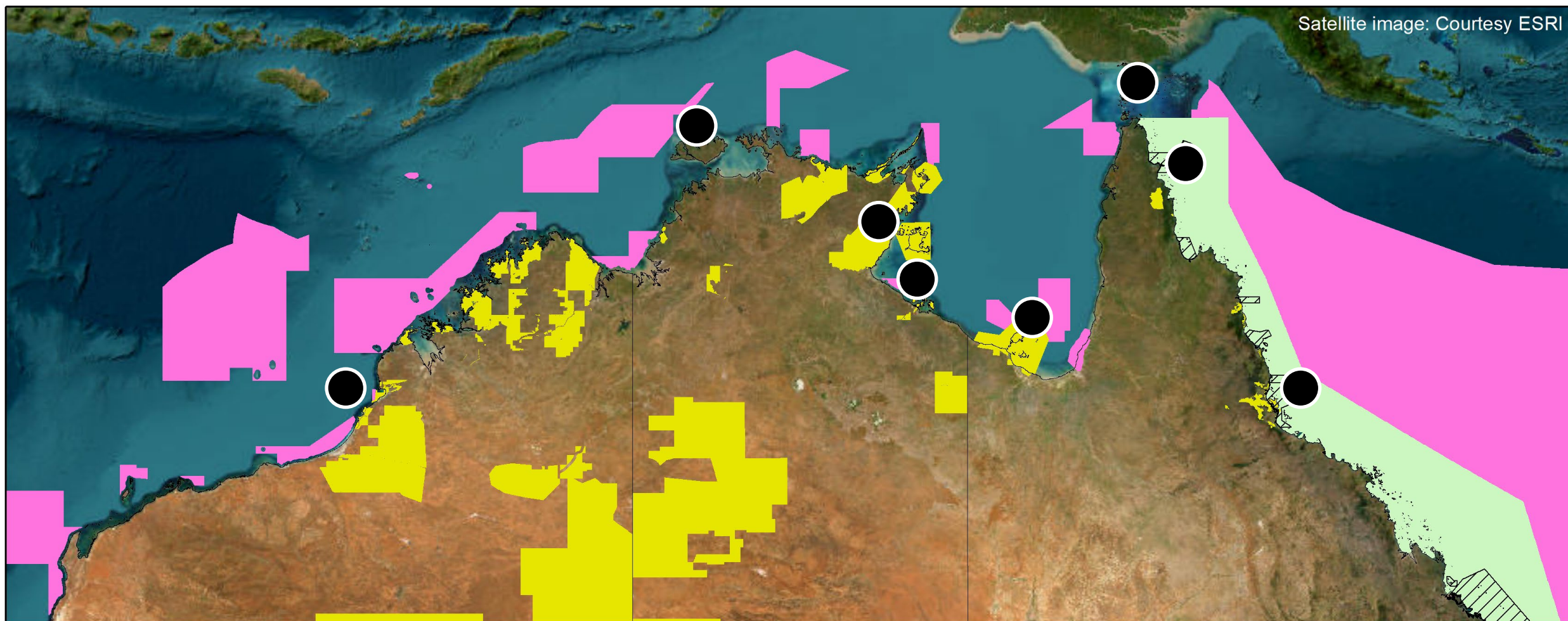
6. How do I get involved?
Contact alexandra.carter@jcu.edu.au for more details

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JAMES COOK UNIVERSITY

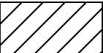


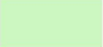

Fill knowledge gaps through modelling

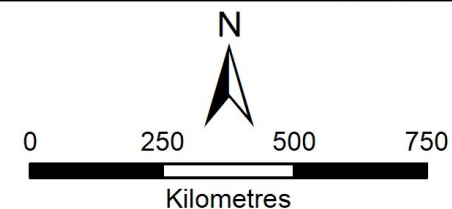


Fill knowledge gaps through mapping



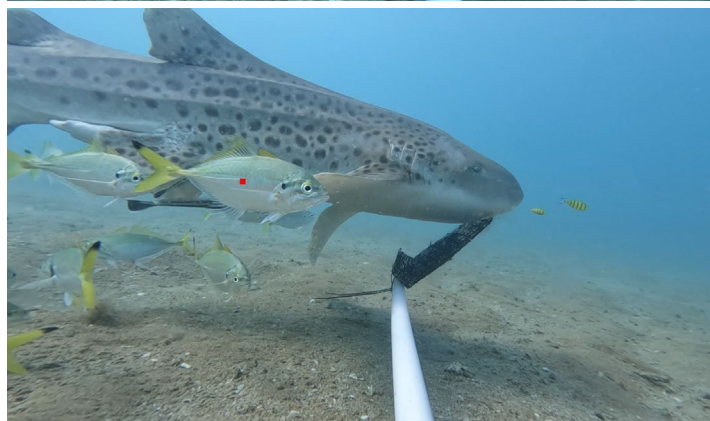
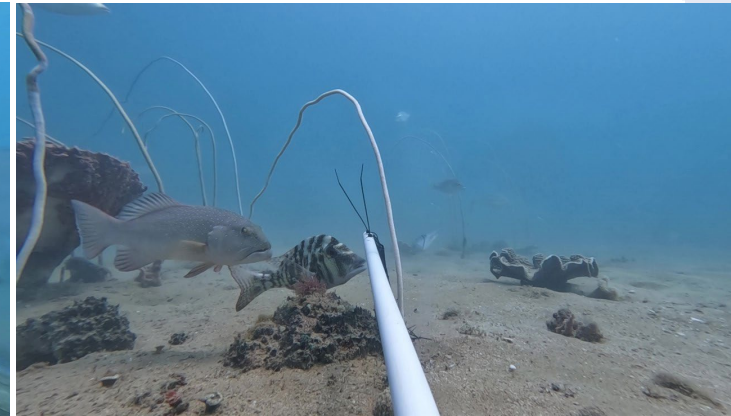
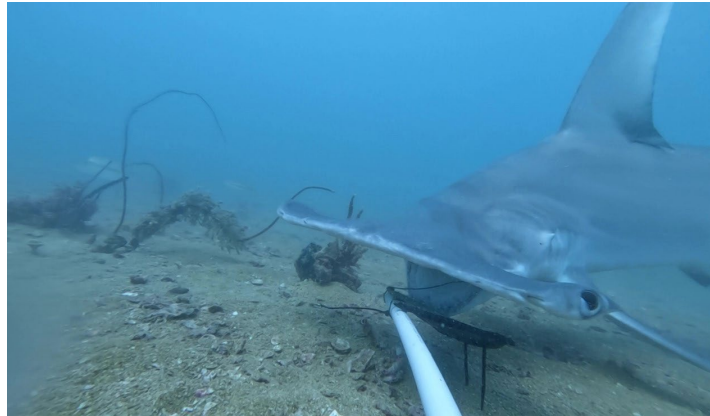
Legend

- | | | | | | |
|--|-----------------------|---|---------------------------|---|-------------------------|
|  | TUMRA areas |  | Indigenous Protected Area |  | State/Territory borders |
|  | Great Barrier Reef MP |  | Australian Marine Park | | |



Fill knowledge gaps through mapping

- Diverse coral communities
- Fish and sharks

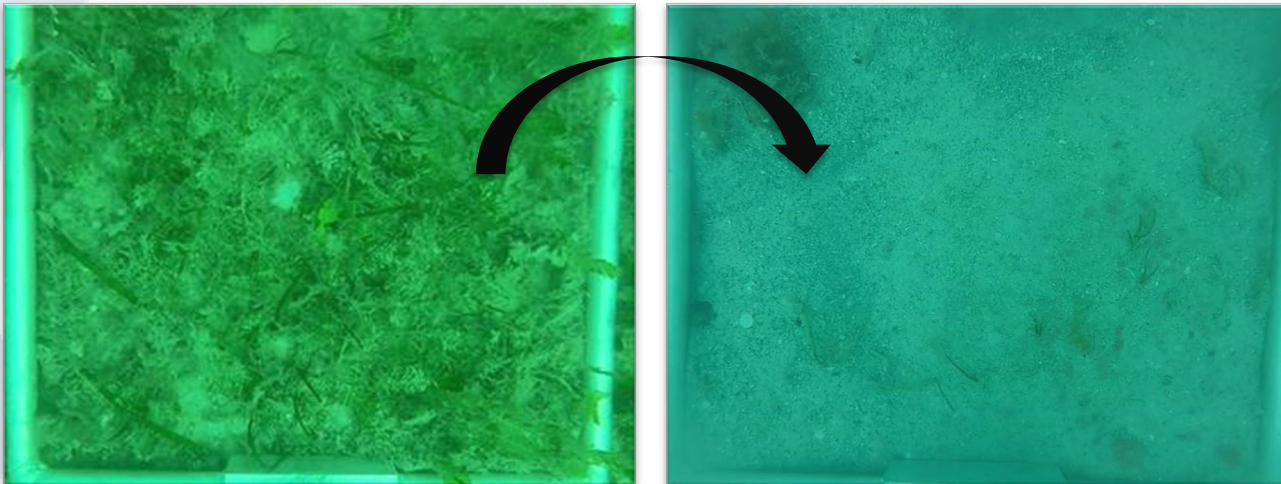


Establish monitoring

- Seagrass can change dramatically over time
 - “*You can’t manage what you don’t measure*” - Peter Drucker



Cairns - intertidal seagrass decline detected using aerial surveys

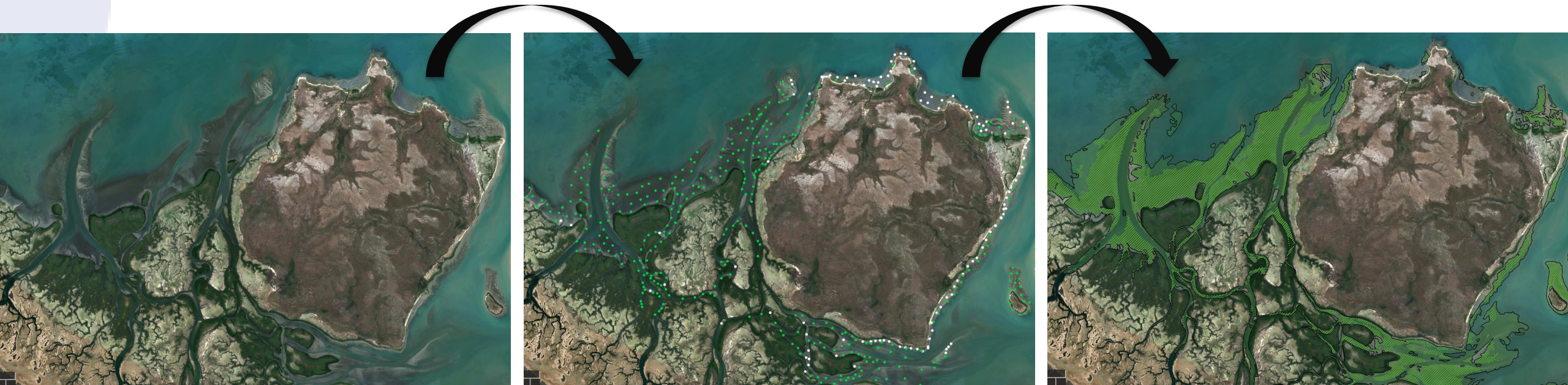


Torres Strait – subtidal seagrass decline detected using underwater camera

Establish monitoring

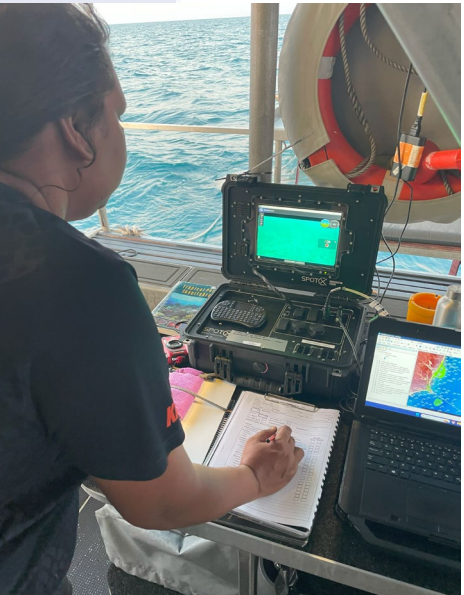
New tools to fill the gaps

- Hub Outcome - Improved Monitoring Capability
 - Trial new technology – remote sensing
 - Satellite imagery and survey data to model and hindcast seagrass distribution and establish a baseline



Establish monitoring New tools to fill the gaps

- Hub Outcome – Innovation in Monitoring
- Hub Outcome - Improving Indigenous Capability and Futures
 - Trial new technology – drones – intertidal monitoring
 - Establish subtidal camera monitoring
 - Data management, GIS and mapping training
 - NESP 5.2 – Ranger training material and decision framework



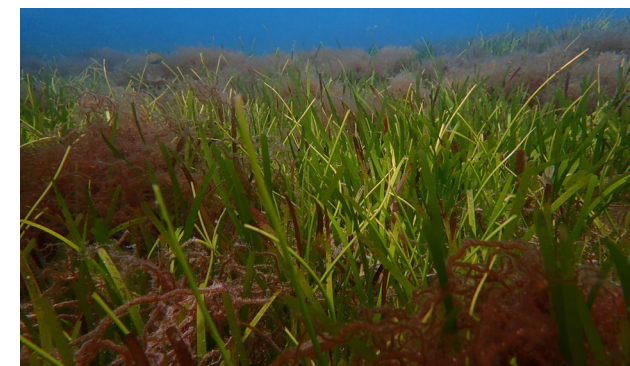
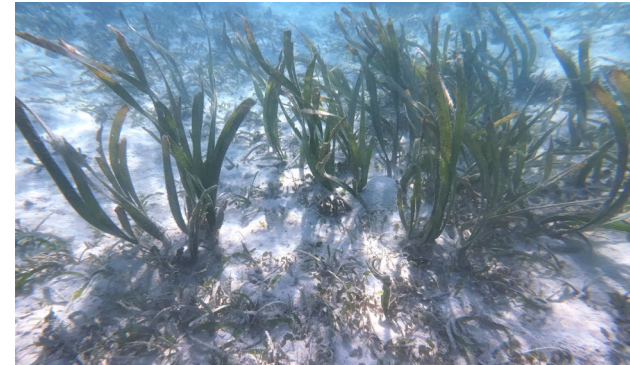
Promote data uptake and impact

- Hub Outcome - Improving Indigenous Capability and Futures
 - Indigenous-led sea country planning
 - Empower Traditional Owners in decision-making in local resource use
 - Protect culturally and ecologically important sites and species
 - Engage in blue carbon discussions
 - Plan for long-term change, e.g. sea level rise, marine heat waves, cyclones



Promote data uptake and impact

- Hub Outcome - Supporting Regional Planning
 - Publicly available and comparable data sets
 - Monitoring design
 - Marine Parks
 - Indigenous Protected Areas
 - Reef 2050 Integrated Monitoring and Reporting Program (RIMREP)
 - Defining seagrass desired state
 - Model seagrass distribution and communities
 - Model climate impacts, risk, dispersal, connectivity
 - Marine protected area planning
 - 30% protected by 2030
 - Commonwealth Marine Parks review 2026
 - GBR seagrass restoration roadmap
 - Developing a National Ocean Account in Australia
 - Blue carbon ecosystems





National Environmental Science Program

Thank you

Contact: Alex Carter alexandra.carter@jcu.edu.au
Catherine Collier catherine.collier@jcu.edu.au
Rachel Groom rachel.groom@cdu.edu.au
Kathryn McMahon k.mcmahon@ecu.edu.au



www.nespmarinecoastal.edu.au

