Marine and Coastal

National Environmental Science Program

Northern Australia synthesis, mapping and monitoring of seagrass

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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, Ii-Anthawirriyarra Rangers, Marranbala Rangers, Numbulwar Numburindi Rangers, Yugul Mangi Rangers, Tiwi Rangers, Karajarri Rangers

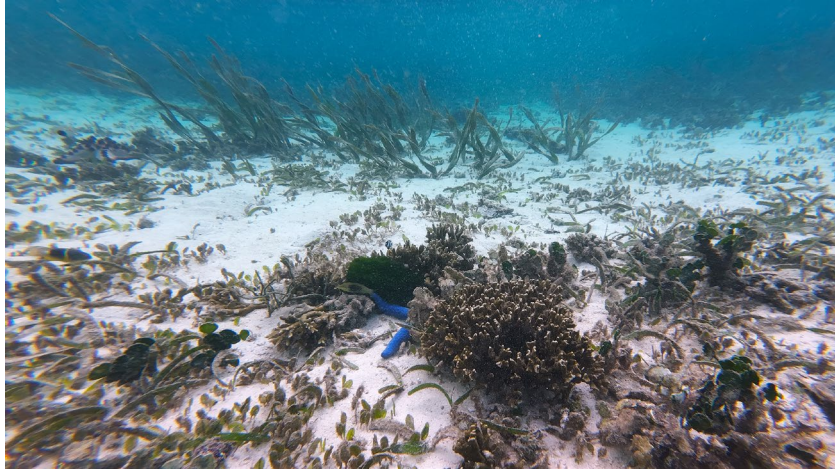
Aboriginal and Torres Strait Islander Bodies – Girringun Aboriginal Corporation, Torres Strait Regional Authority, Seven Rivers Aboriginal Corporation, Mabunji Aboriginal Resources Indigenous Corporation, Namultja Aboriginal Corporation, Northern Land Council, Tiwi Resources, Karajarri Traditional Lands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

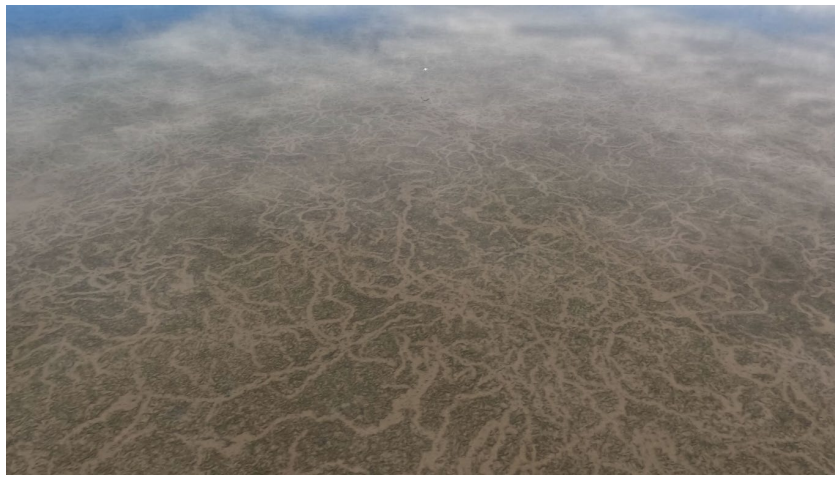
DCCEEW – Parks Australia, Migratory Species, Indigenous Protected Areas

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

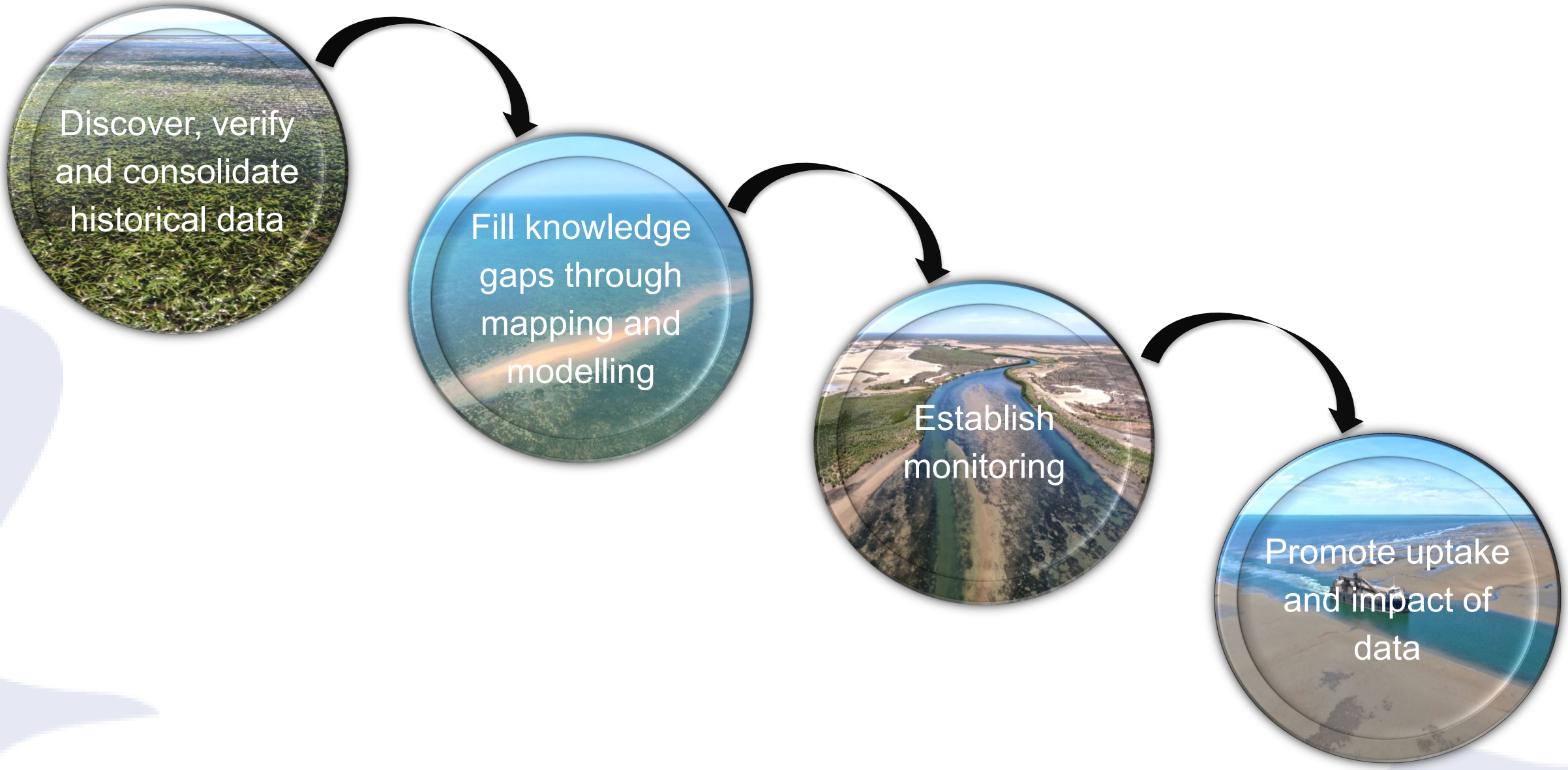
Why seagrass in northern Australia?

- 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

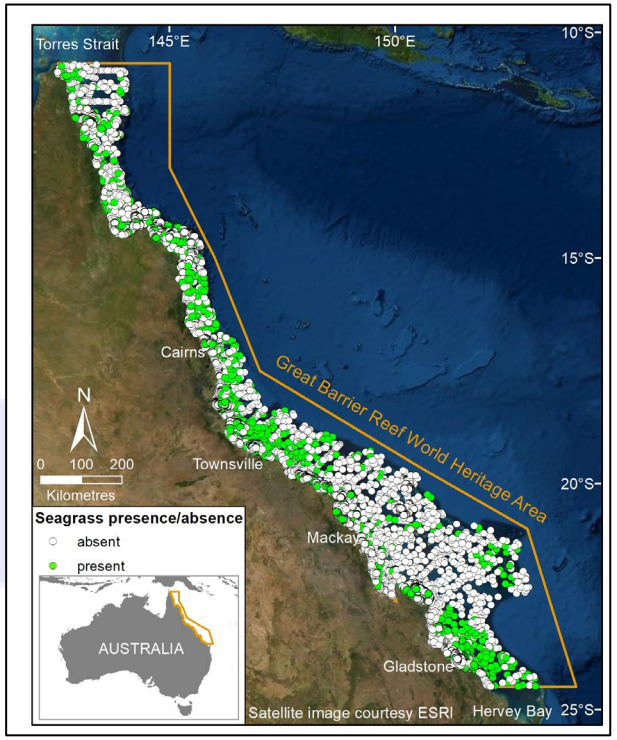


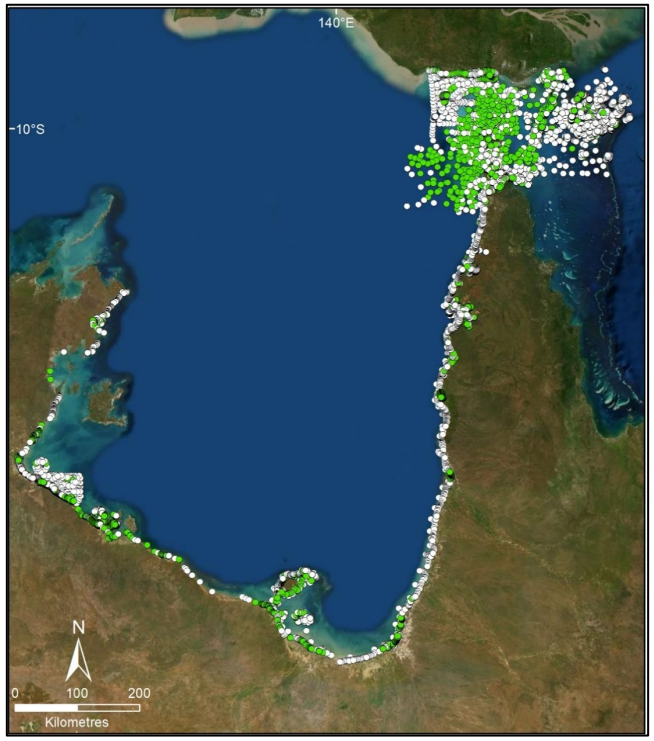


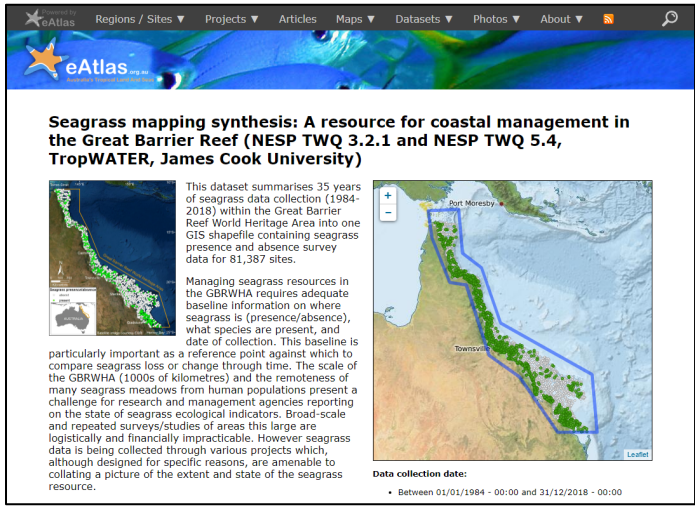
Building our seagrass knowledge

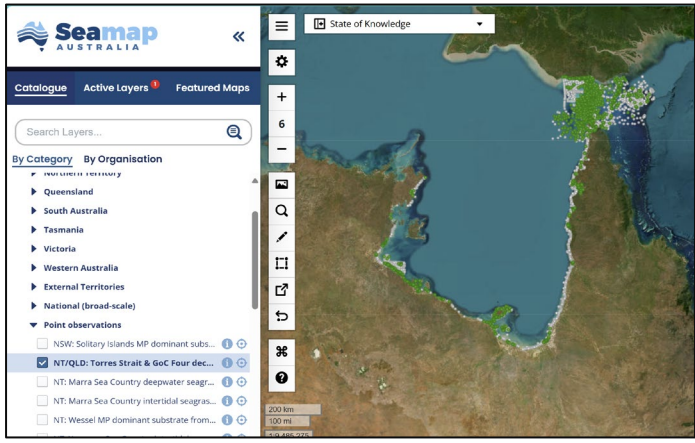


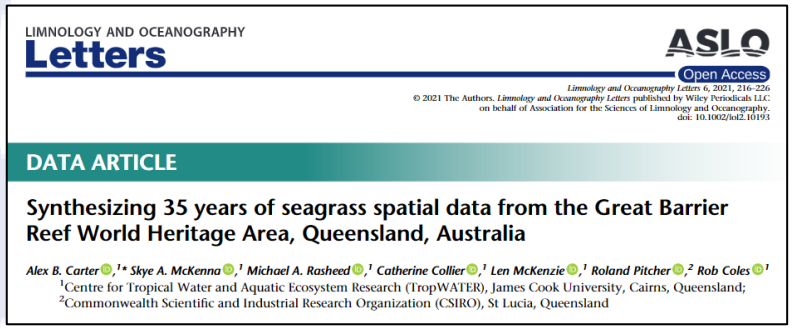
Discover, verify and consolidate historical data: Seagrass data synthesis







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DATA ARTICLE

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

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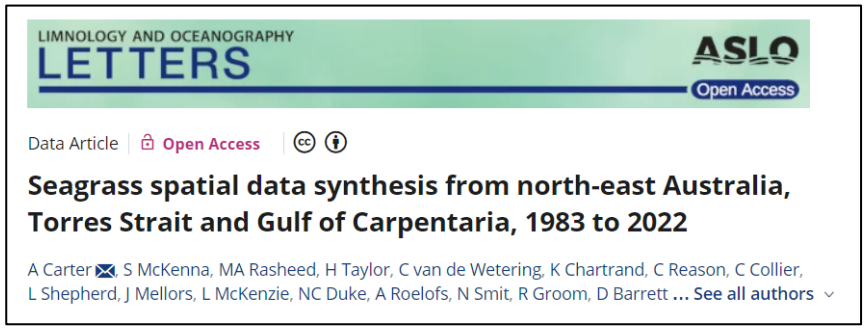
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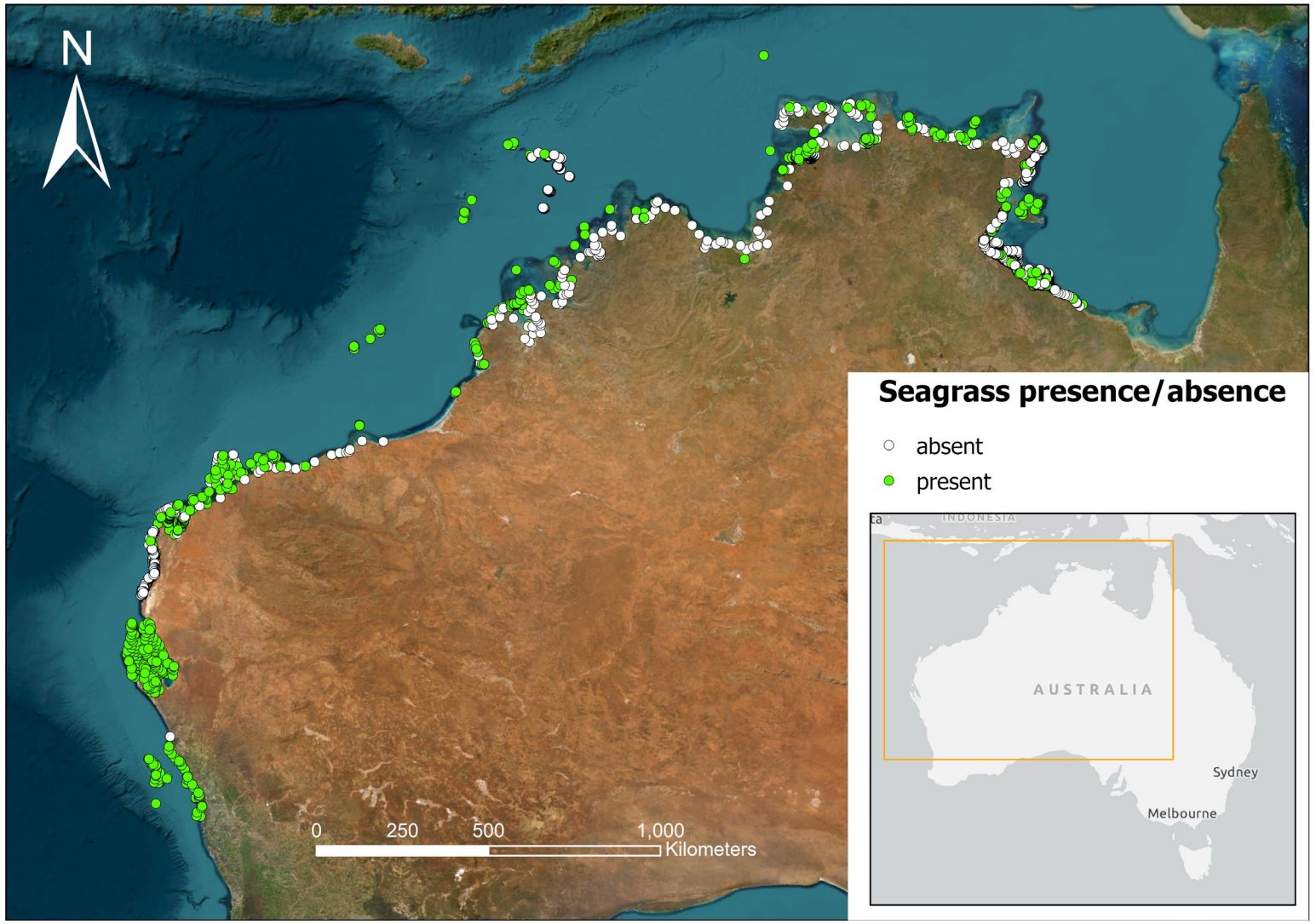
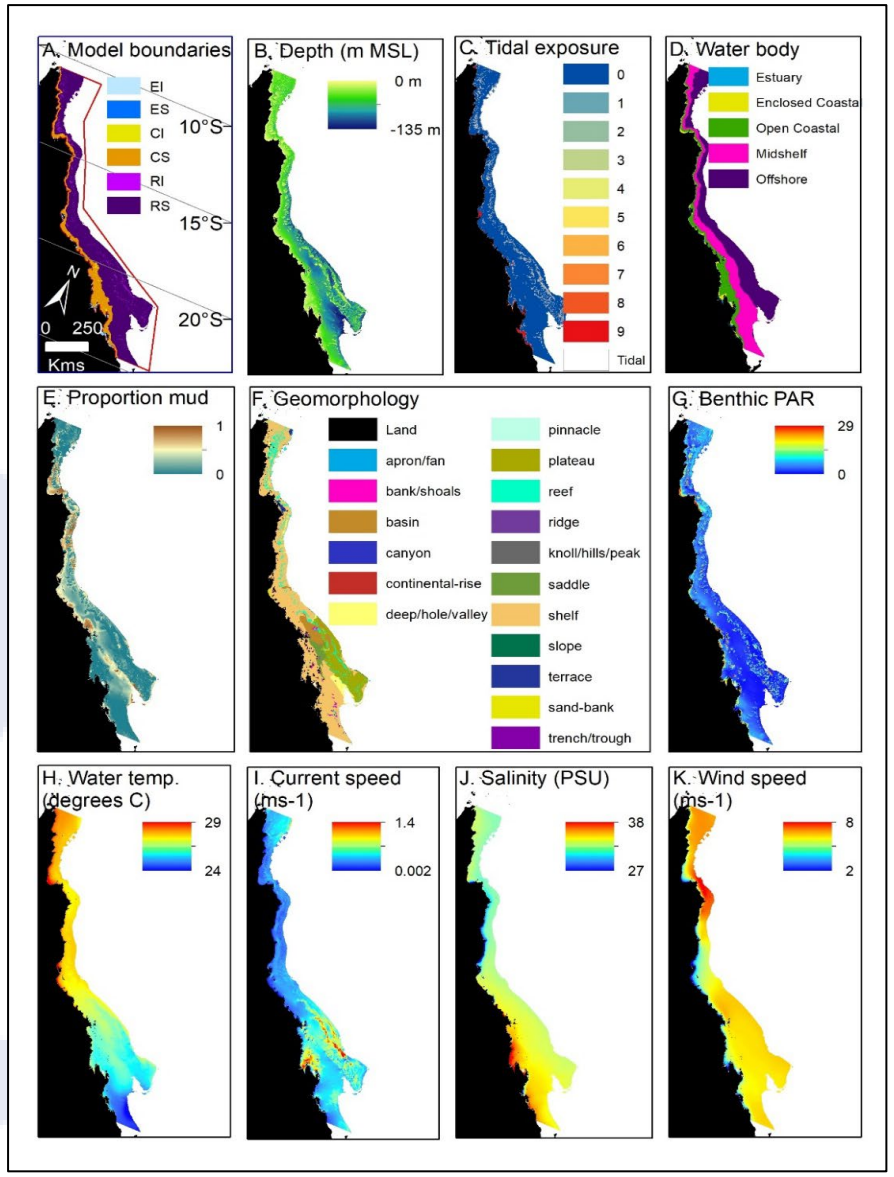
Seagrass spatial data synthesis from north-east Australia, Torres Strait and Gulf of Carpentaria, 1983 to 2022

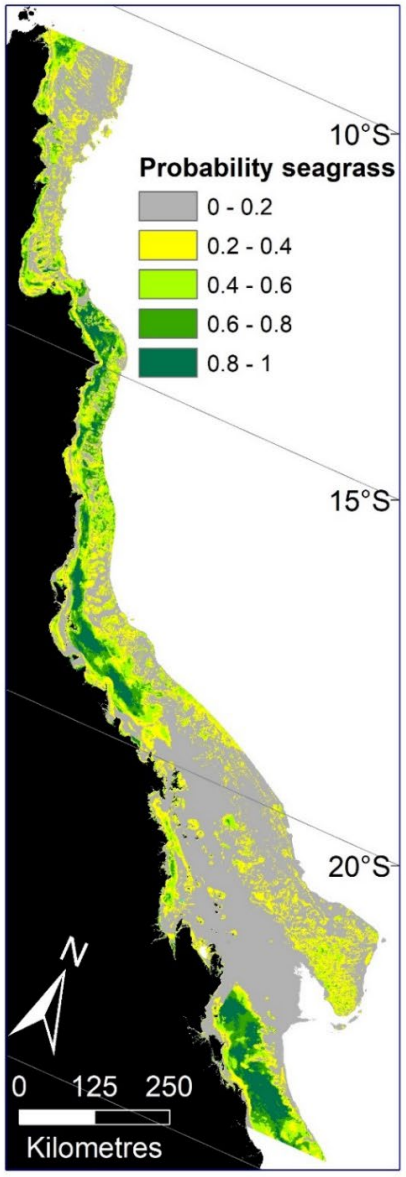
A Carter, S McKenna, MA Rasheed, H Taylor, C van de Wetering, K Chartrand, C Reason, C Collier, L Shepherd, J Mellors, L McKenzie, NC Duke, A Roelofs, N Smit, R Groom, D Barrett ... See all authors

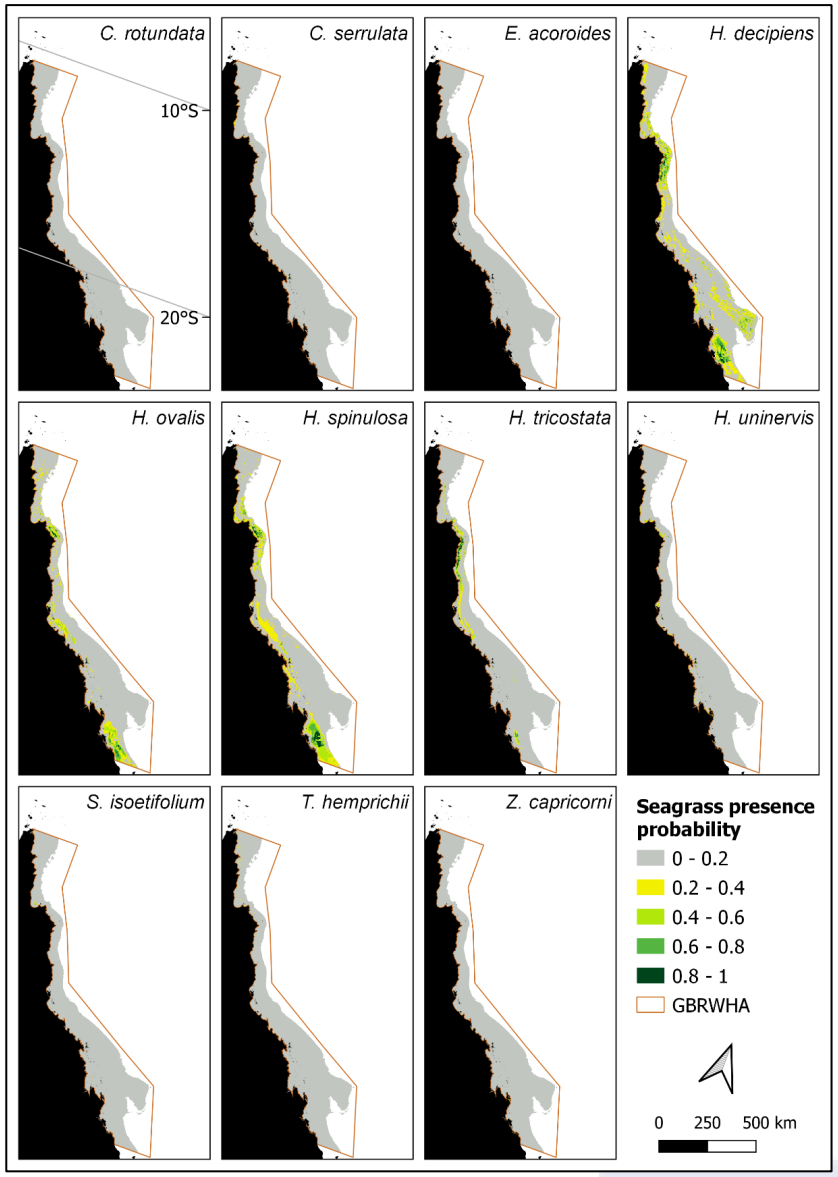
Discover, verify and consolidate historical data: Seagrass data synthesis



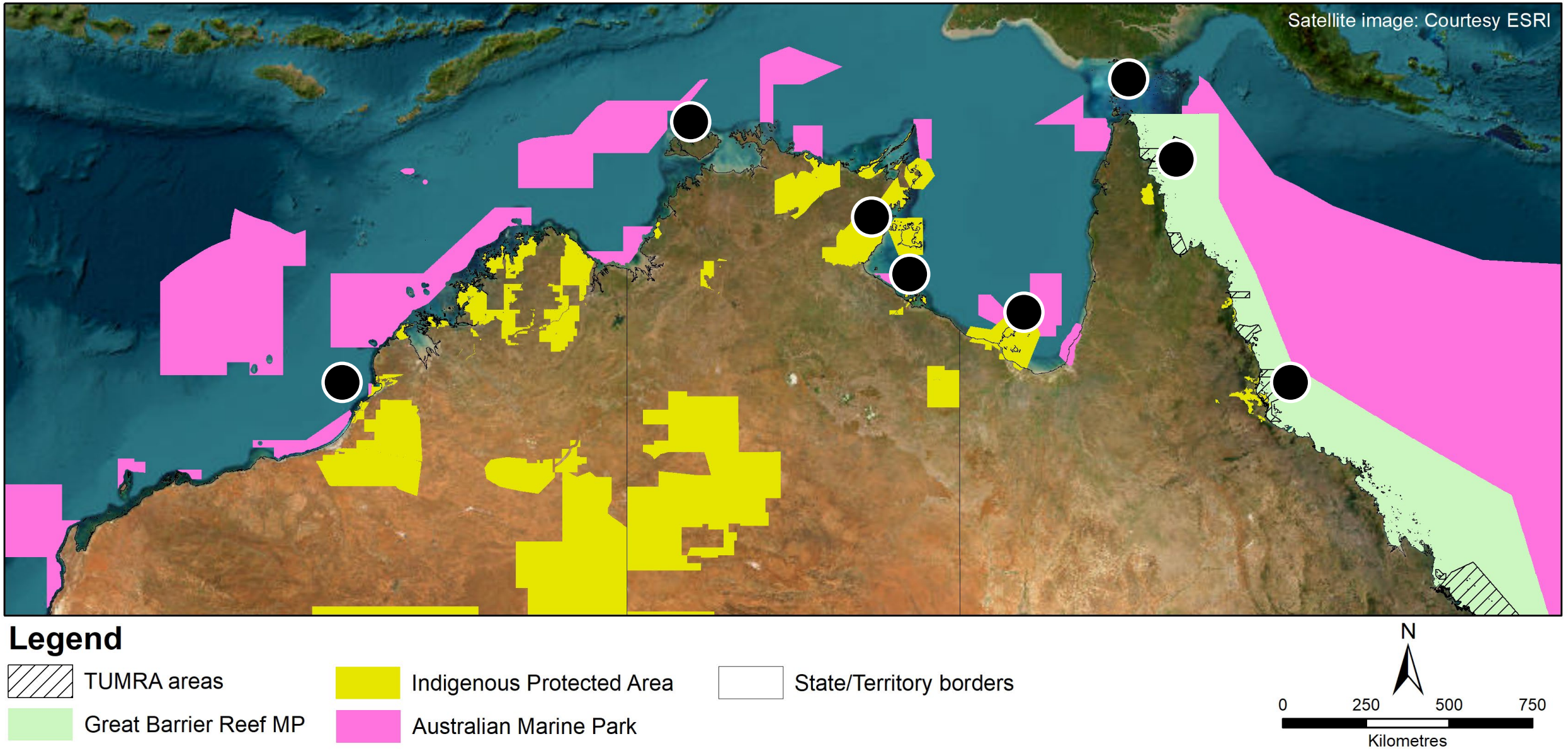
Fill knowledge gaps through modelling





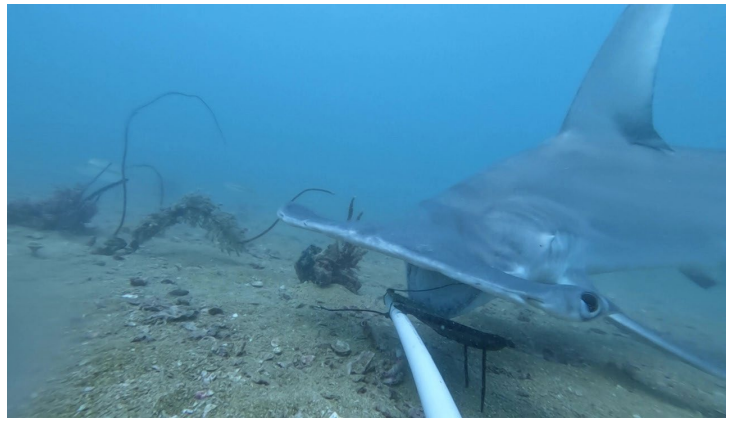
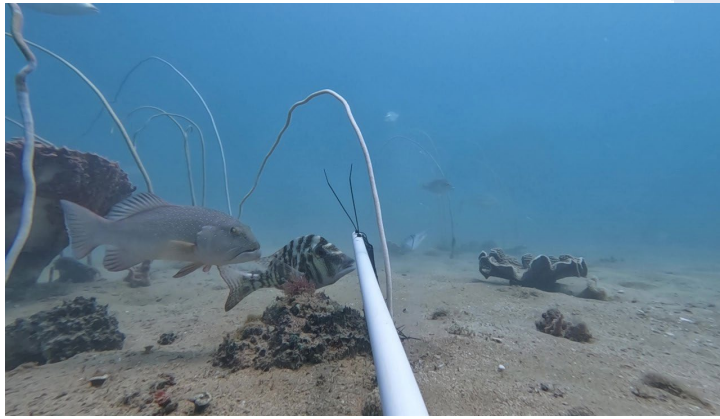
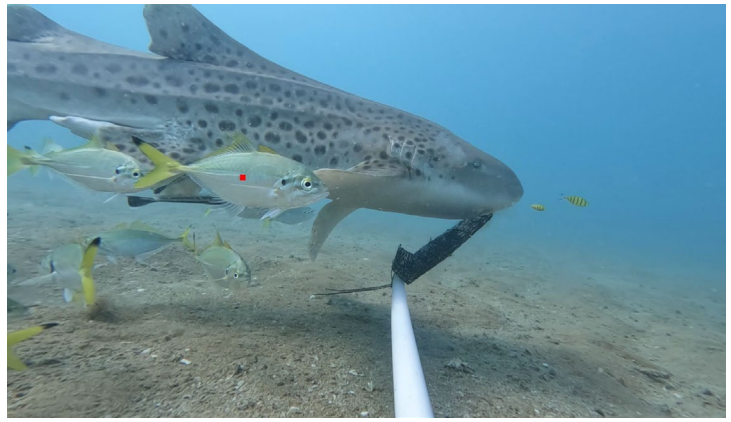


Fill knowledge gaps through mapping



Fill knowledge gaps through mapping

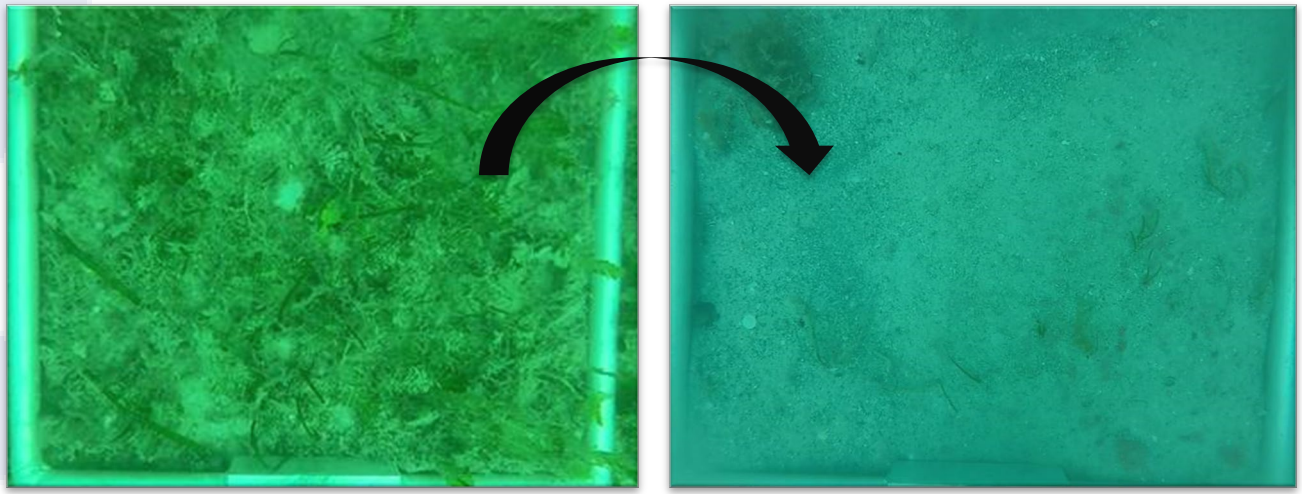
- Diverse coral communities
- Fish and sharks


Establish monitoring

- Seagrass can change dramatically over time
  - "*You can't manage what you don't measure*" - Peter Drucker

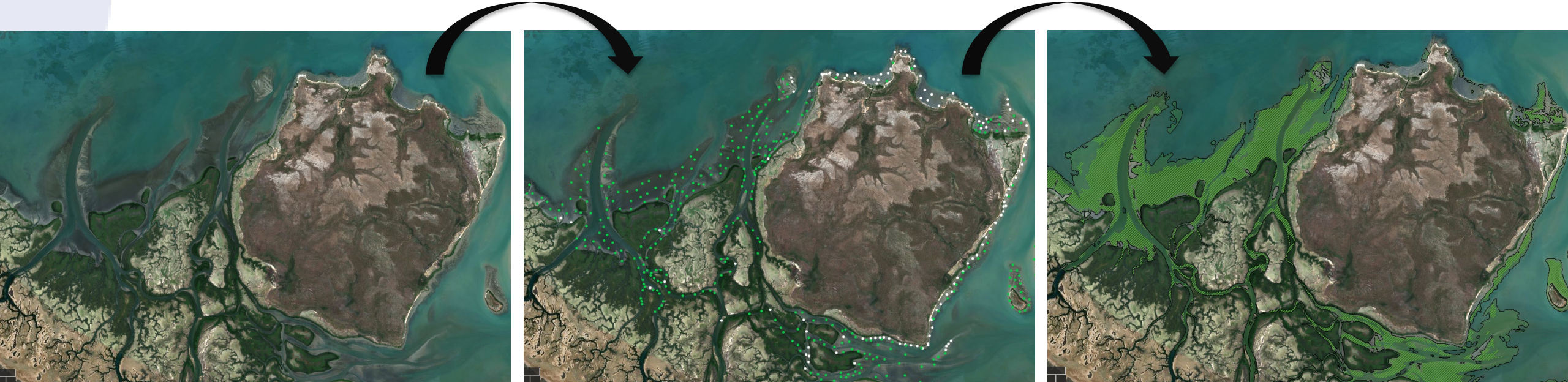
Cairns - intertidal seagrass decline detected using aerial surveys



Torres Strait – subtidal seagrass decline detected using underwater camera

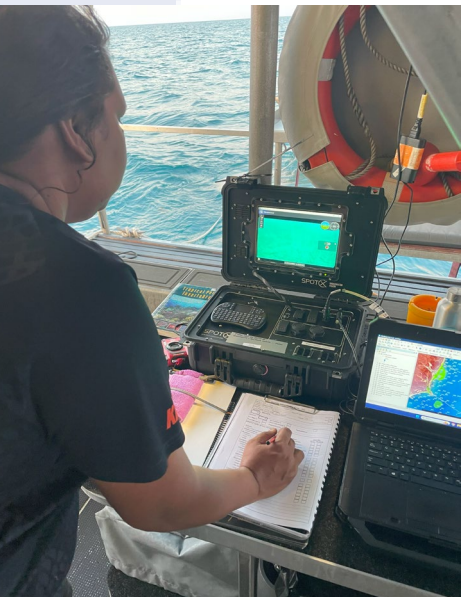
Establish monitoring
New tools to fill the gaps

- 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

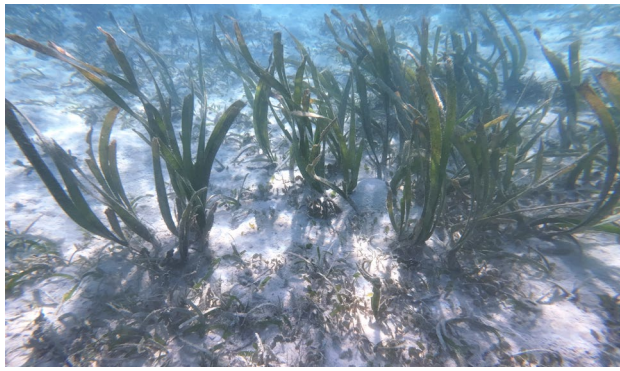
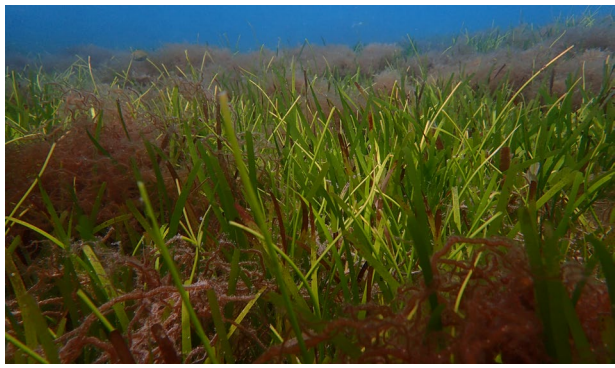


Promote data uptake and impact

- 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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Thank you

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