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Our Future.

The Australian Bureau of Statistics acknowledges the Traditional Owners and Custodians of Country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respects to their cultures and Elders, past and present.

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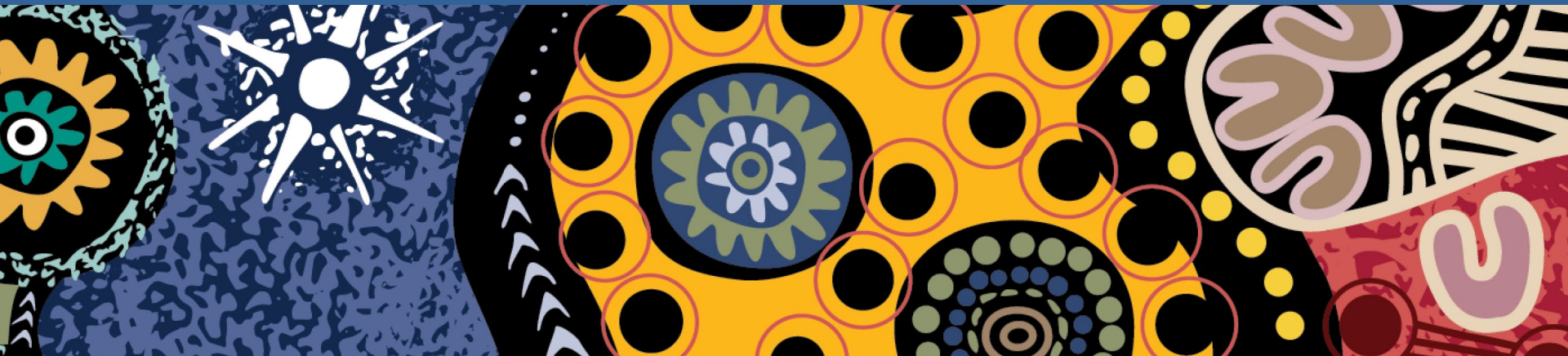
Working with blue carbon ecosystem accounts: value of coastal ecosystems in alleviating impacts of climate change

Peter Meadows, Centre of Environmental and Satellite Accounts, ABS

Based on work by Dastagir Mir, Centre of Environmental and Satellite Accounts , ABS (research leader)

'Our Story. Our Future.' was created by proud Wiradjuri, Wotjobaluk, Yuin and Gumbaynggirr artist **Luke Penrith** and Maluililgal people, Badu Island artist **Naseli Tamwoy**.



The Challenge

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- Coastal flooding resulting from storm surge is expected to be exacerbated with the increasing frequency and intensity of storms over this century.

- This poses a risk to coastal communities, infrastructure and economically valuable land within the coastal zone.

- Recent studies have found that coastal ecosystems like mangroves and saltmarshes could decrease flood depths and save millions of dollars in flood damages.

Designing Environmental Ecosystem Accounts from a user perspective

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Some of the questions Environmental Ecosystem accounts can address are:

- How much of the ecosystem resources are left?
- Is the ecosystem health improving?
- What services do ecosystem provide?
- What are the impacts of development on coastal resources?
- What are the measures that can lead to a balanced discussion on trade offs?
- **Can use these questions to help solve many data problems: climate change, economic growth through ecosystems, financing for nature.**

Australia's first National Ocean Account

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Partnership between ABS and Environment ministry

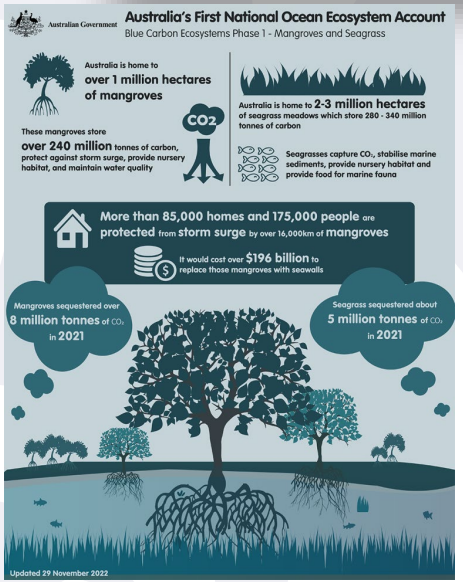
Climate mitigation and resilience focus.

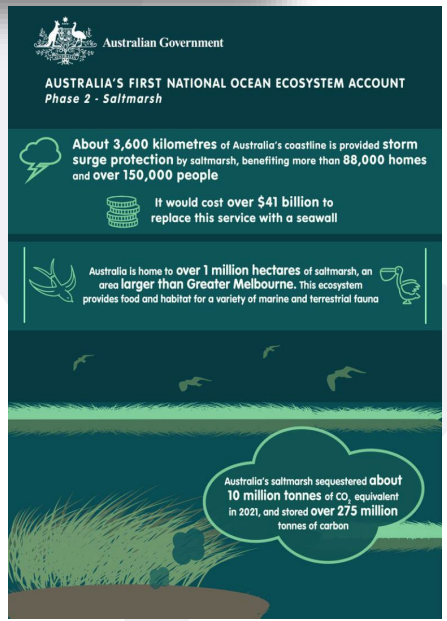
Included only 'blue carbon' ecosystems –

Mangroves

Saltmarsh

Seagrass





Coastal Protection Ecosystem Service

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- **Answering the challenge: What is the value and protection that coastal ecosystems provide for us?**
- The National Ocean Account looked at measuring coastal protection services offered by mangroves and saltmarsh ecosystems.
- A coastal protection model was developed by the ABS to measure coastal protection ecosystem service.

- The aim of the model was to identify:
  - length of Australia's coastline,
  - number of people and dwellings
  - that were likely to be offered coastal protection from storm surge through these ecosystems.

- Model used represents a first attempt to consolidate the available information on coastal protection services and is limited by data sources available at the national scale.

Coastal Protection Model

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- Assumptions

- Saltmarsh and mangroves that met the following requirements were assumed to provide coastal protection services:

- Located within 200m of the coastline, and
- had a defined belt width (perpendicular to the coast) of at least 40m for saltmarsh and at least 90m for mangroves.

- The protection afforded by these ecosystems was considered to be up to 1km from the coastline.

Coastal Protection Model

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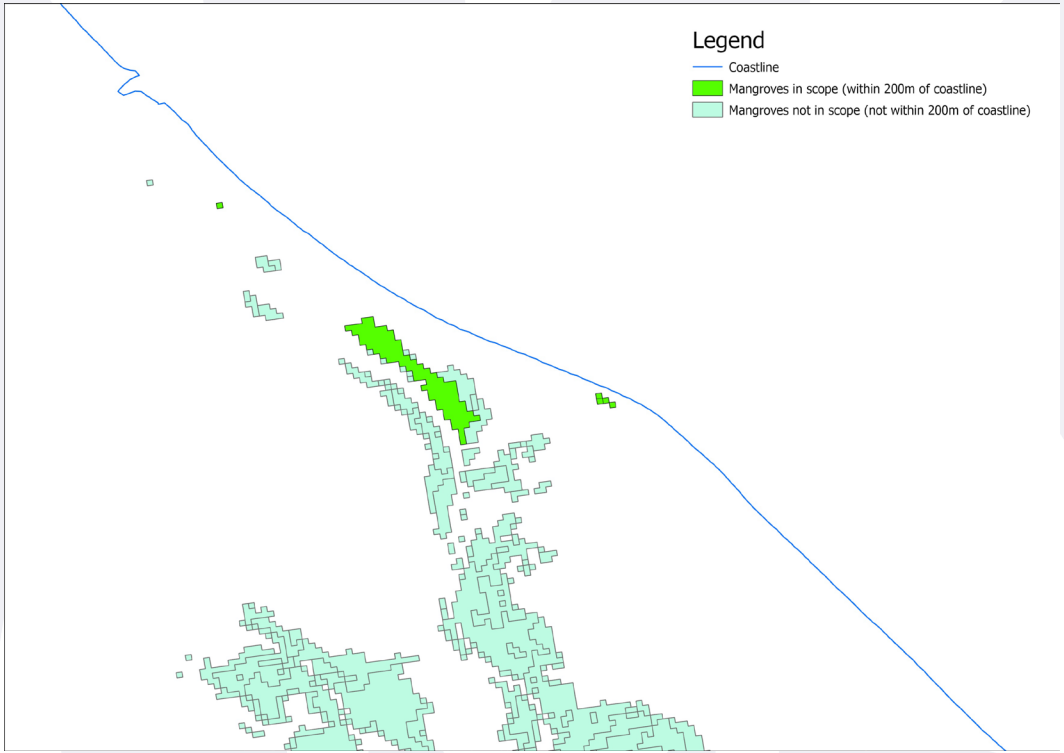
– Step 1: Identify saltmarsh and mangroves that are within 200m of the coastline.



Coastal Protection Model

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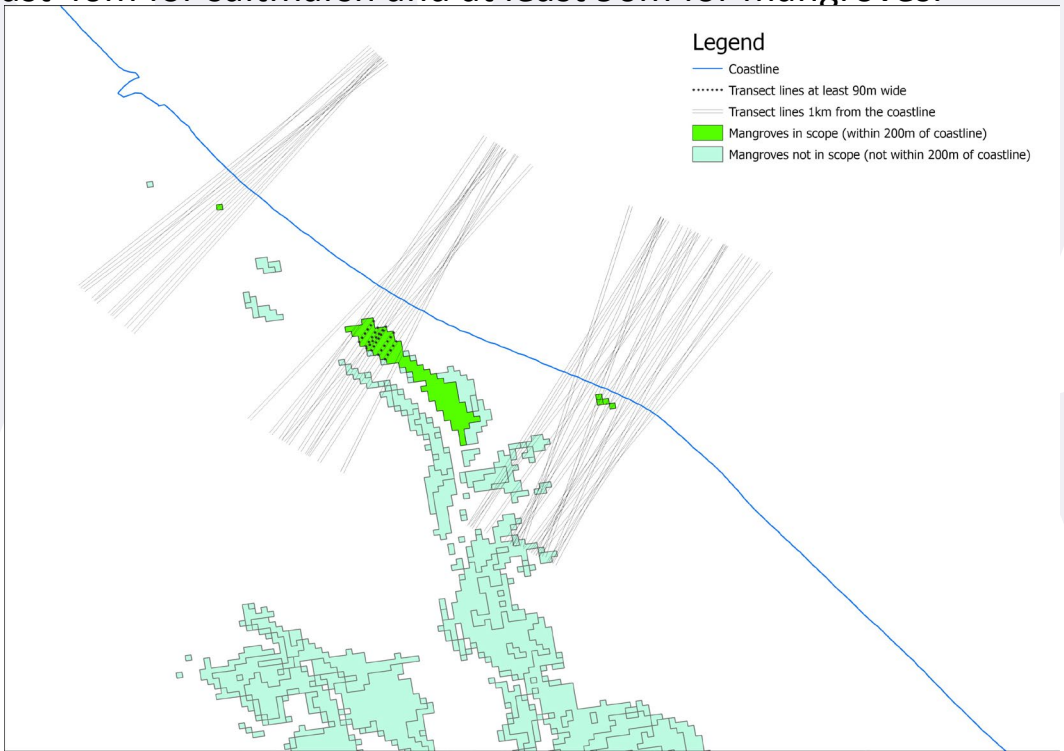
– Step 2: Identify saltmarsh and mangroves that have a defined belt width (perpendicular to the coastline) of at least 40m for saltmarsh and at least 90m for mangroves.



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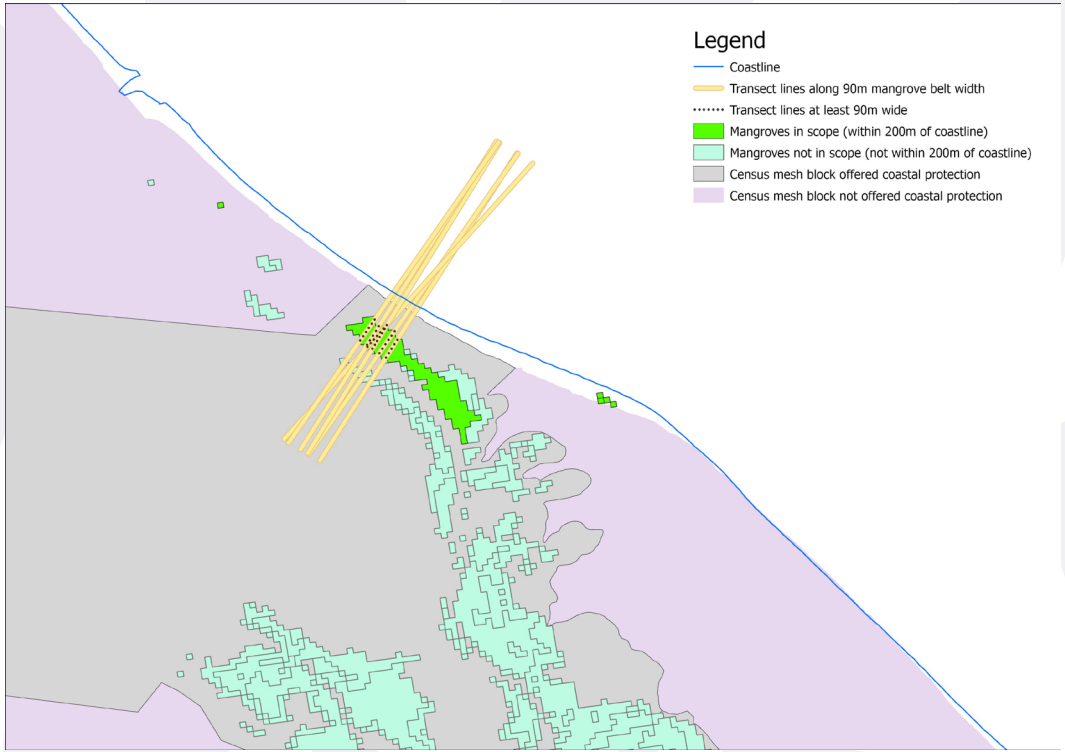
– Step 3: Identify population and dwellings offered protection by saltmarsh and mangroves.



Coastal Protection Model

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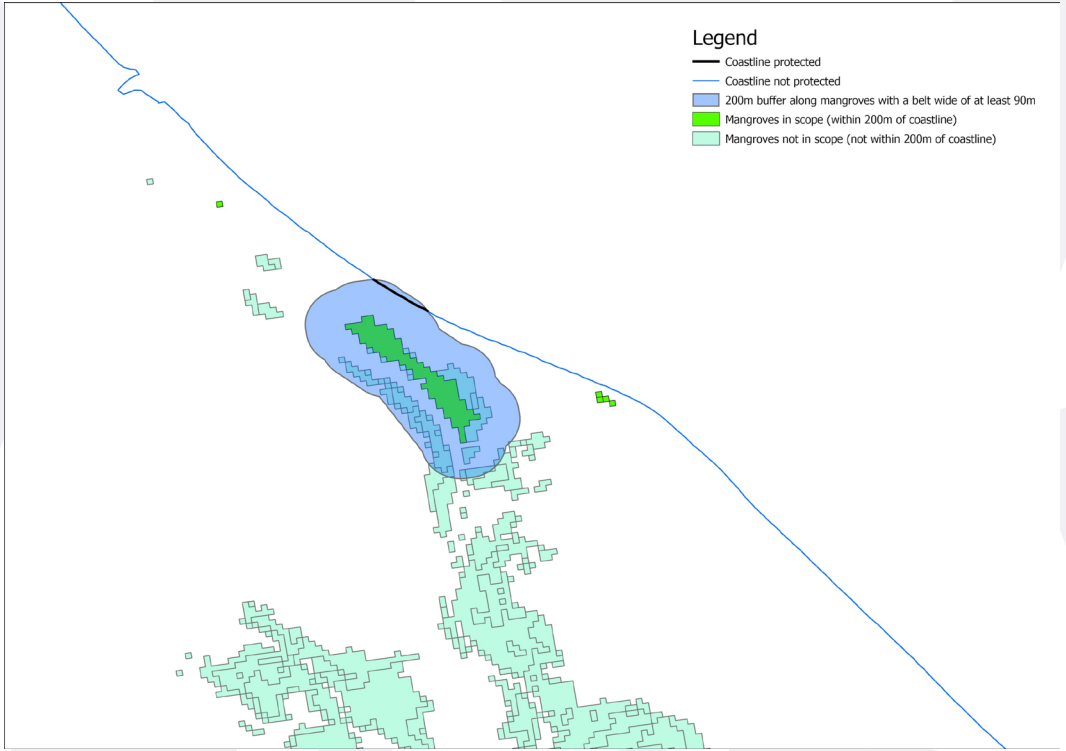
– Step 4: Identify length of coastline offered protection by saltmarsh and mangroves.



Results – social

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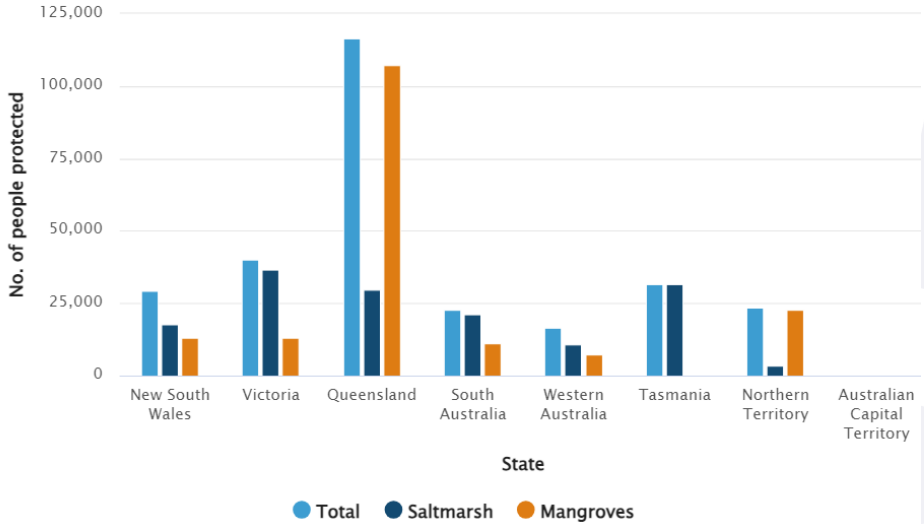
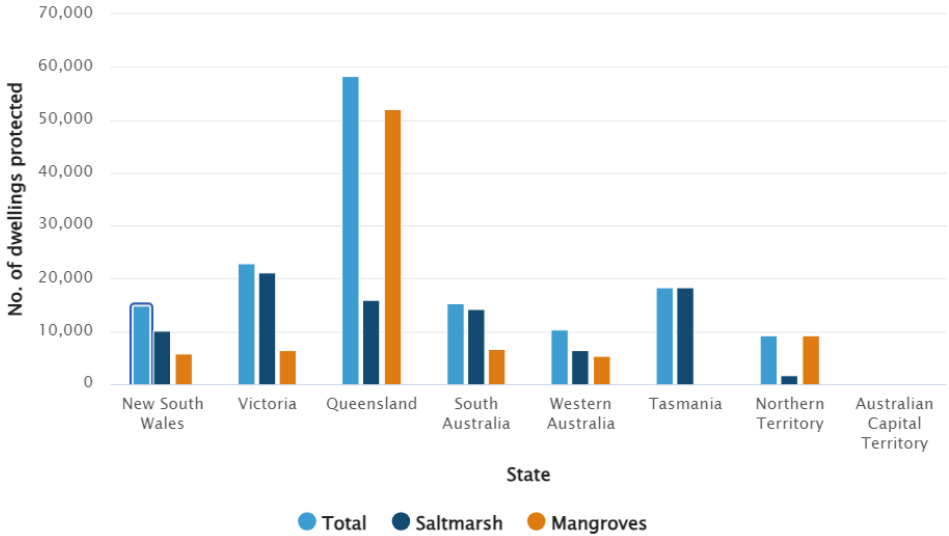
- In 2021, 150 thousand dwellings were offered coastal protection by either saltmarsh, mangroves, or both.
- In 2021, 280 thousand people received coastal protection services from either saltmarsh, mangroves, or both.

Coastal protection services (mangroves and saltmarsh); people protected, 2021



Coastal protection services (mangroves and saltmarsh); dwellings protected, 2021

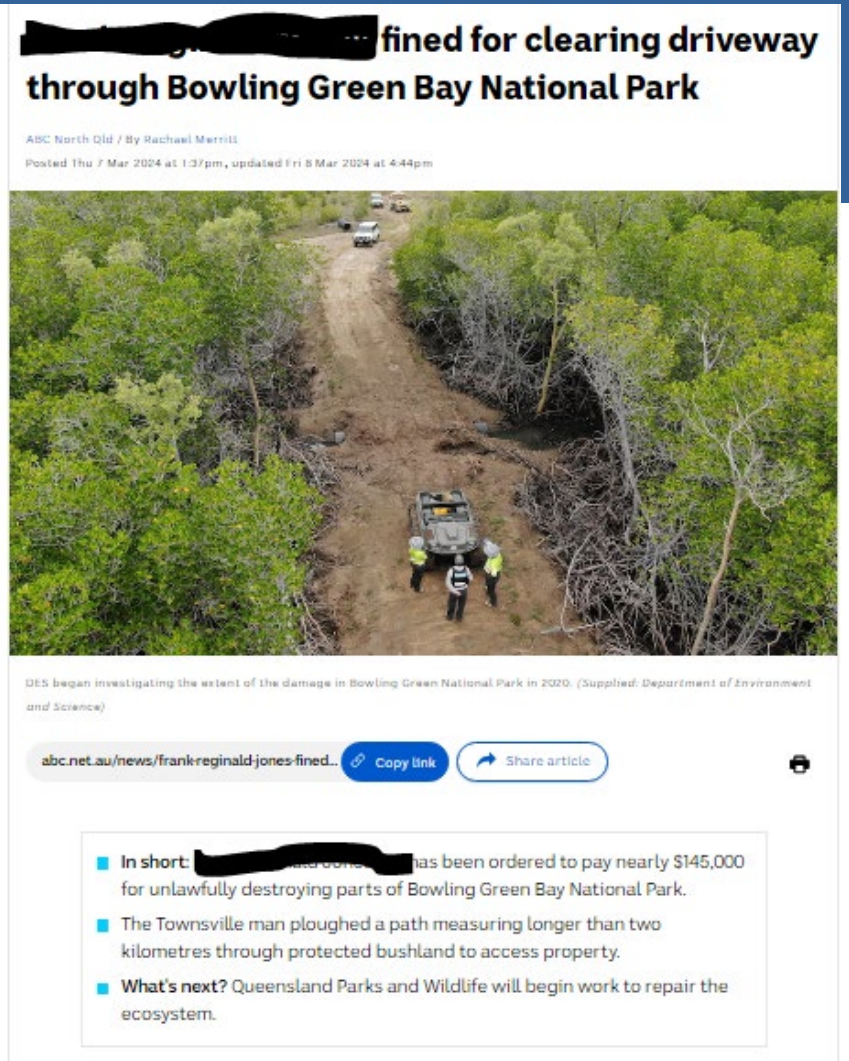


Results – economic

Ecosystem Asset value contribution
- Investment cost (2021)
- $41.6 billion (USD$29.4 billion) for saltmarsh.
- $196 billion (USD$139 billion) for mangroves.

Proxy Ecosystem Service value
- Replacement cost per annum (2021 currency)
- $0.4bn to $1.7bn (USD$0.3bn to $1.2bn) saltmarsh.
- $2.0bn to $7.8bn (USD$1.4bn to $5.5bn) mangroves.

- Replacement cost method (replace with seawalls)
- Or is it $72k (USD$51k) per hectare (see picture)



[redacted] fined for clearing driveway through Bowling Green Bay National Park

ABC North Qld / By Rachael Merritt

Posted Thu 7 Mar 2024 at 1:37pm, updated Fri 8 Mar 2024 at 4:44pm

DES began investigating the extent of the damage in Bowling Green National Park in 2020. (Supplied: Department of Environment and Science)

abc.net.au/news/frank-reginald-jones-fined... Copy link Share article

- **In short:** [redacted] has been ordered to pay nearly $145,000 for unlawfully destroying parts of Bowling Green Bay National Park.
- The Townsville man ploughed a path measuring longer than two kilometres through protected bushland to access property.
- **What's next?** Queensland Parks and Wildlife will begin work to repair the ecosystem.

Lessons for adapting to climate change

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- 40m of saltmarsh or 90m of mangroves can attenuate wave action and reduce coastal erosion (as well as other biodiversity and species nursery benefits)
- Alternative is to move settlements (very expensive) or build seawalls (expensive). We are looking closely at Indonesia and Philippines as comparisons.
- We still need to develop estimates where the area of ecosystems protects agricultural or other economic production activities from climate impacts.
- There is interest in incorporating these estimates or methods into disaster management.

Lessons from Australia

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- For a first account, don't be afraid to narrow the range of accounts needed
- Work with relevant agencies and peak bodies to clarify what needs to change and how they use data
- Work towards as close a solution as possible, but staying close to the SEEA standard
- Enjoy the discussions afterwards (our oceans accounts have won 4 awards so far…)