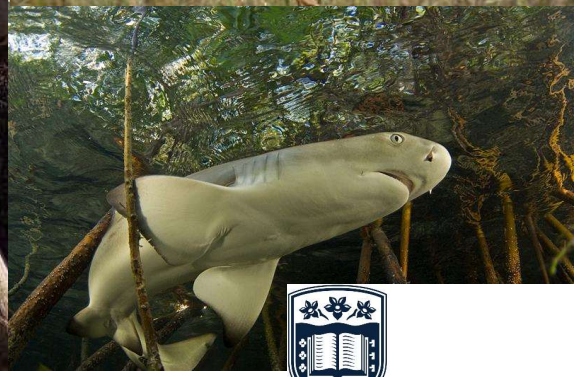
Coastal wetlands are awesome!

(and their role in climate mitigation and adaptation)



Jeff Kelleway

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School of Earth, Atmospheric and Life Sciences

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UNIVERSITY OF WOLLONGONG AUSTRALIA

Coastal wetlands & climate change

Coastal wetlands are already responding to:

- Sea-level rise
- Warming temperatures
- Precipitation shifts
- CO_2 enrichment
- (among other stressors)

Coastal wetlands can have play roles in:

Adaptation

&

Mitigation

Valuable Ecosystems

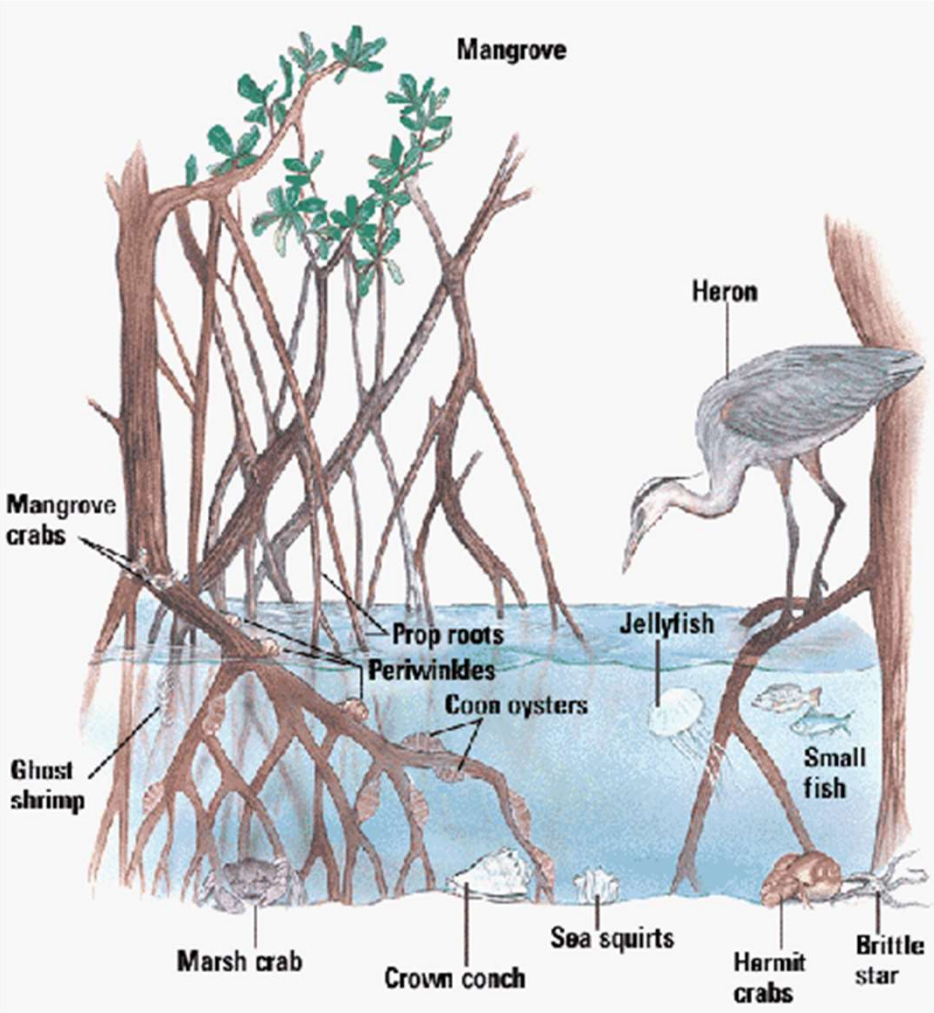
Annual supply of services from mangrove + tidal marsh:

US$24.8 trillion

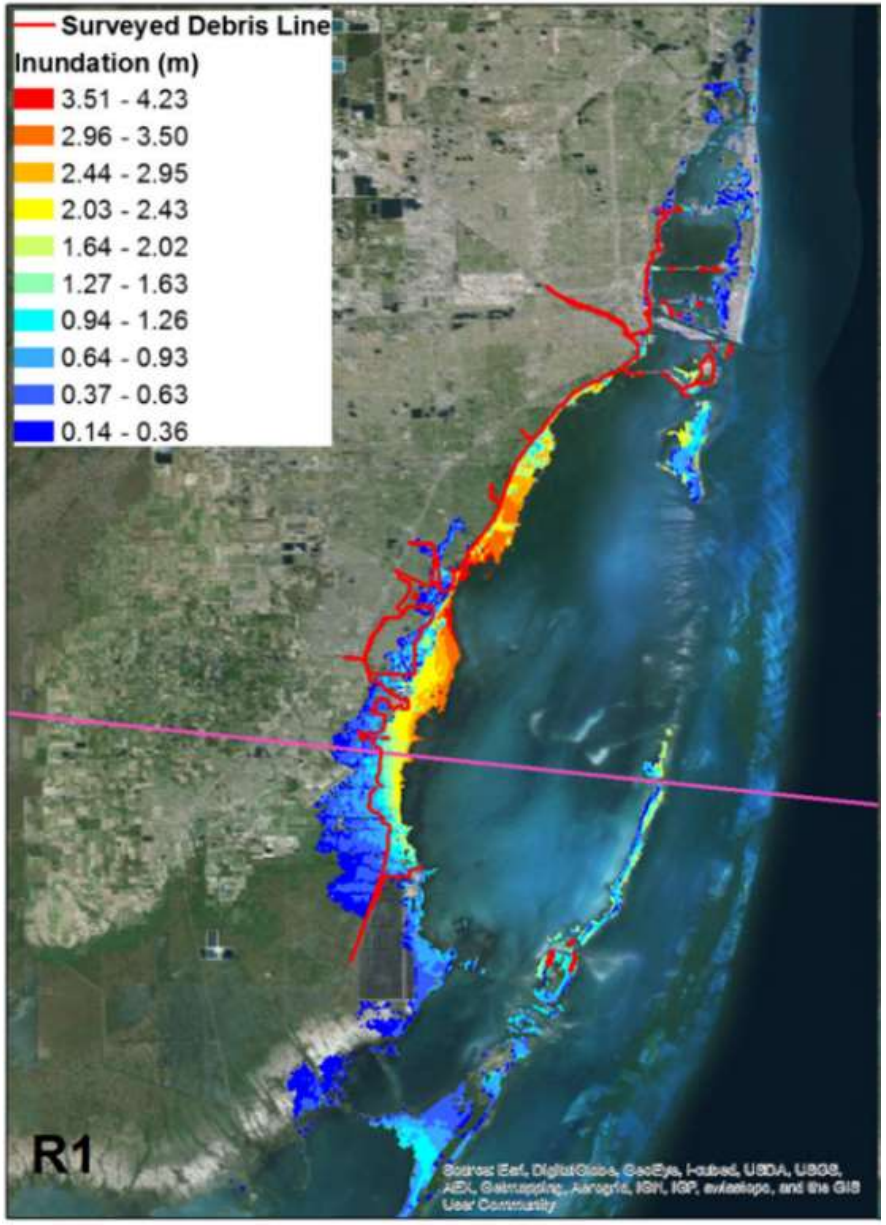
(de Groot *et al.*, 2012, Costanza *et al.*, 2014).

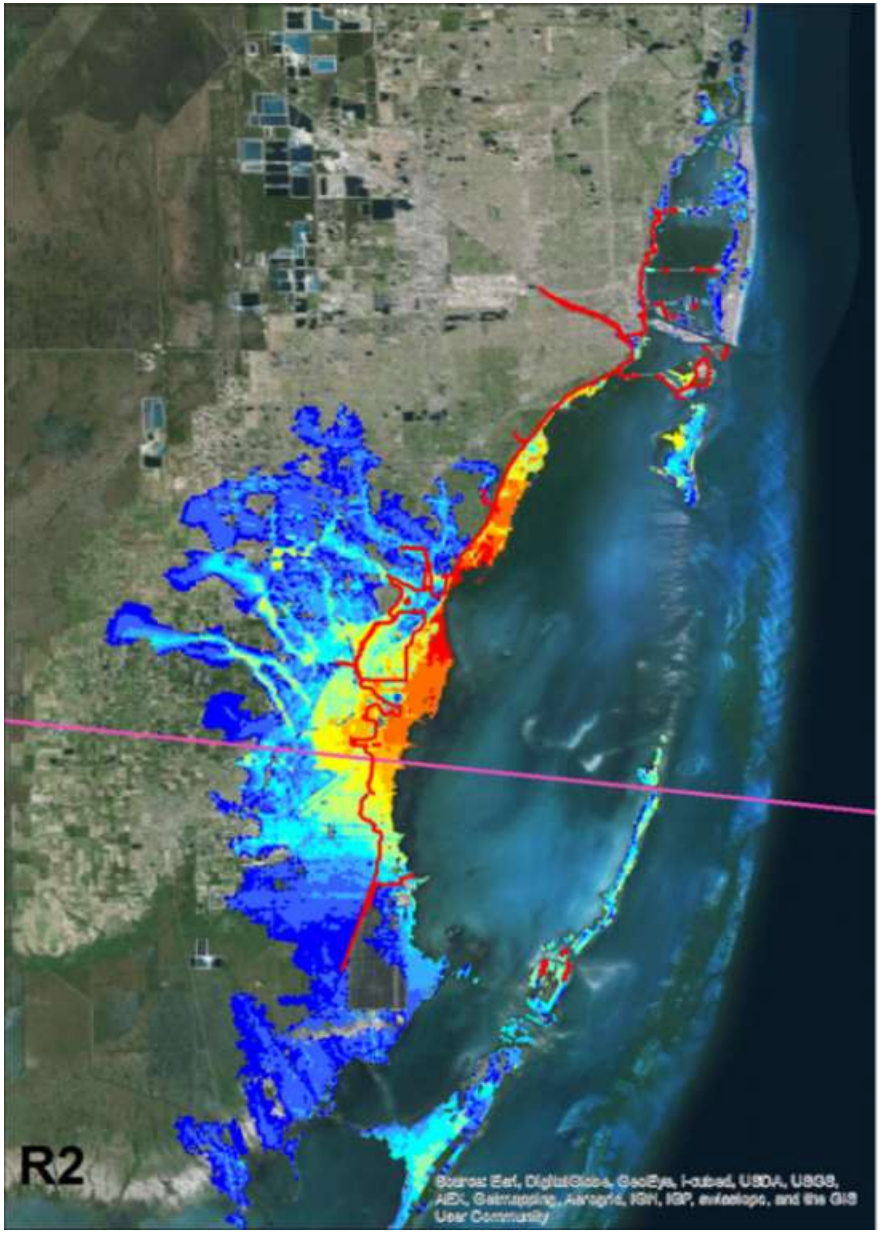
$24,800,000,000,000

Habitat

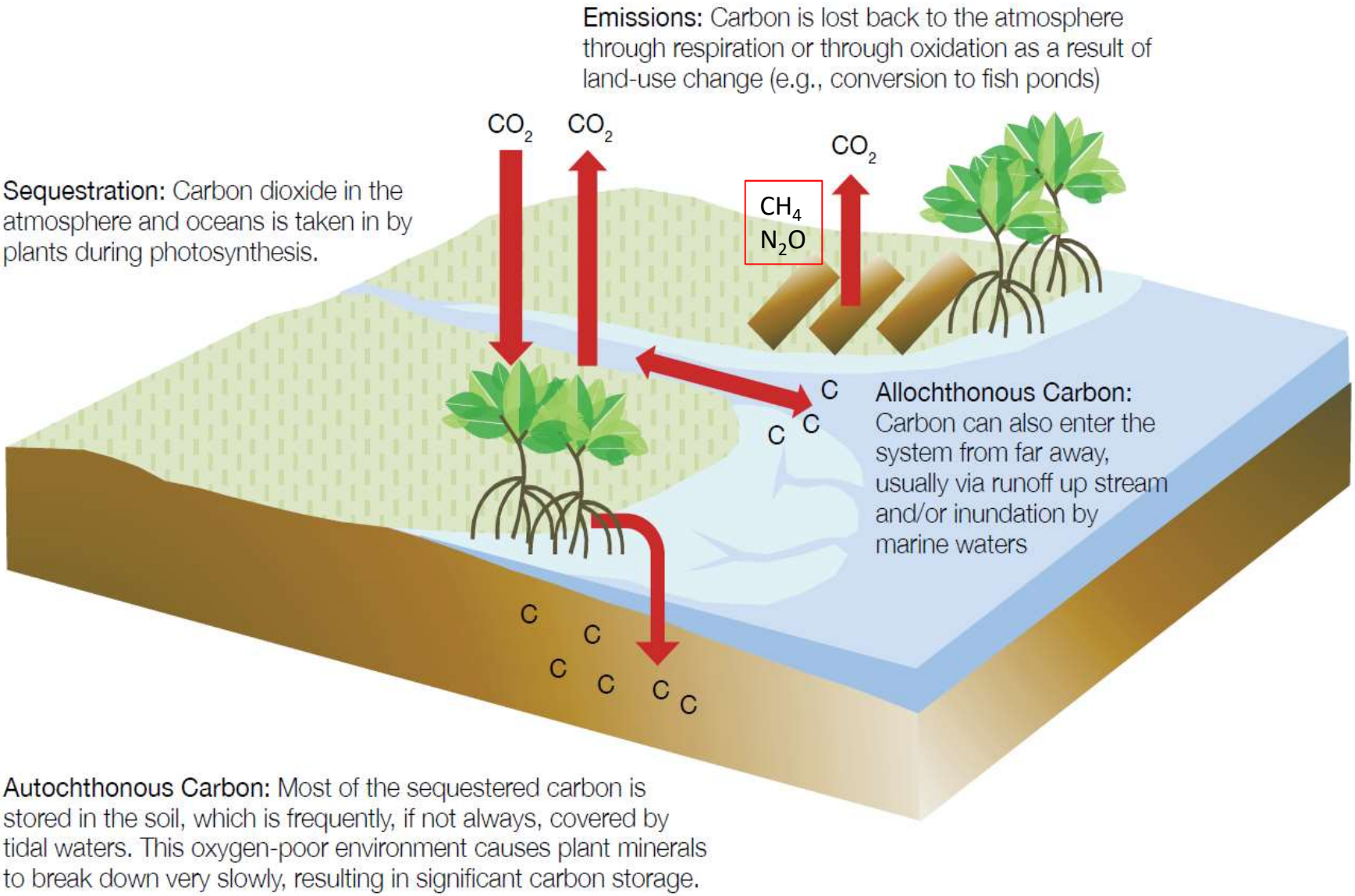

Mangrove
Heron
Mangrove crabs
Prop roots
Periwinkles
Coon oysters
Jellyfish
Small fish
Ghost shrimp
Marsh crab
Crown conch
Sea squirts
Hermit crabs
Brittle star

Coastal protection





Carbon sequestration – ‘Blue Carbon’

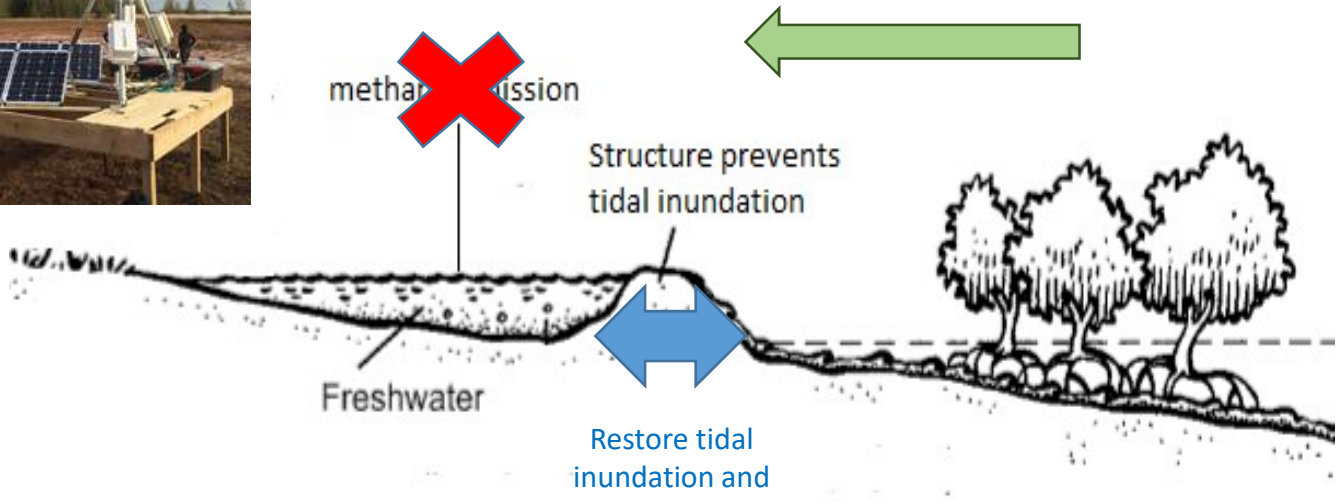


Source: Conservation International (2013)

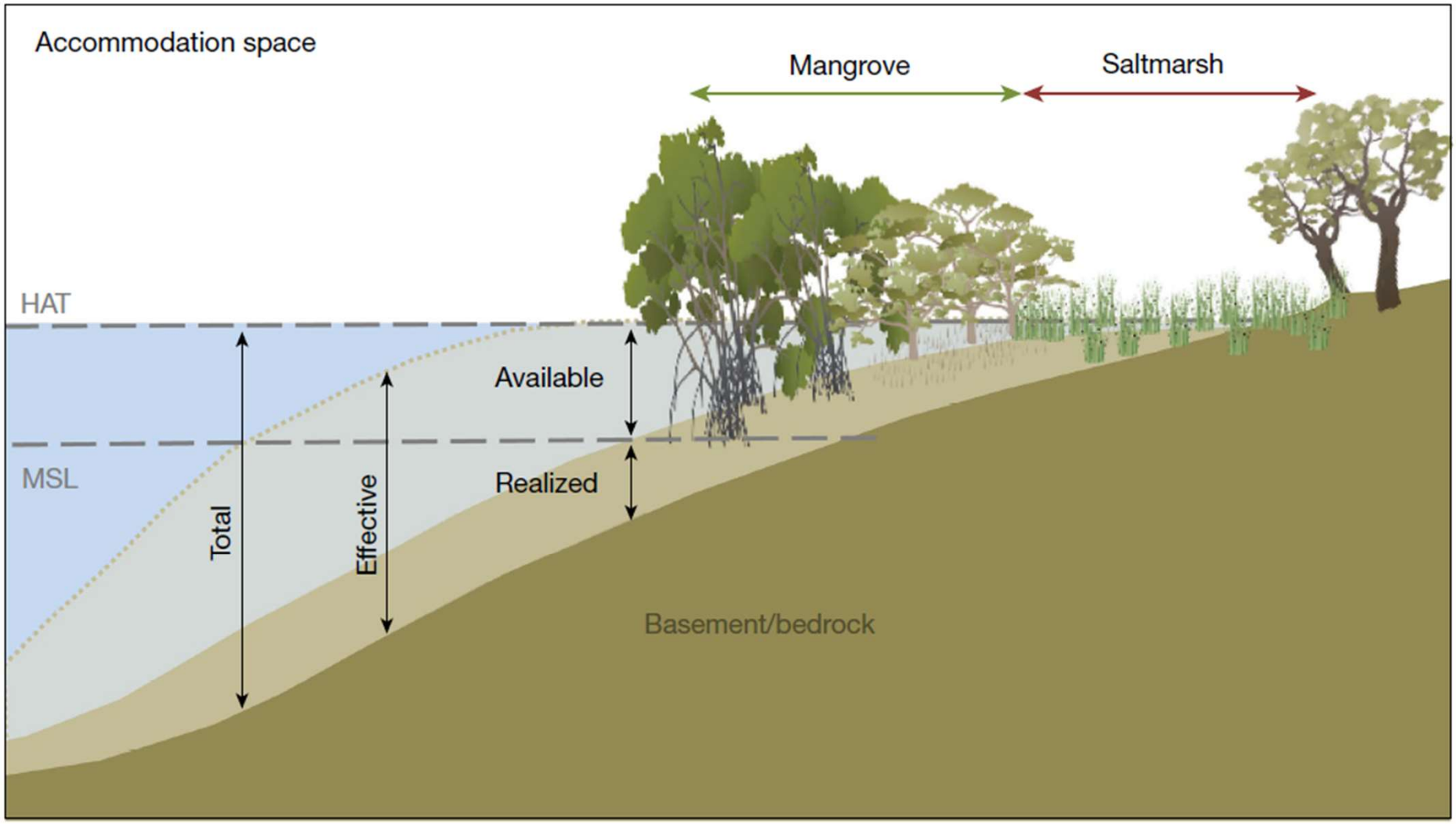
E.g. Restoration of tidal flow

1. Avoided emissions

2. Carbon removals (sequestration)



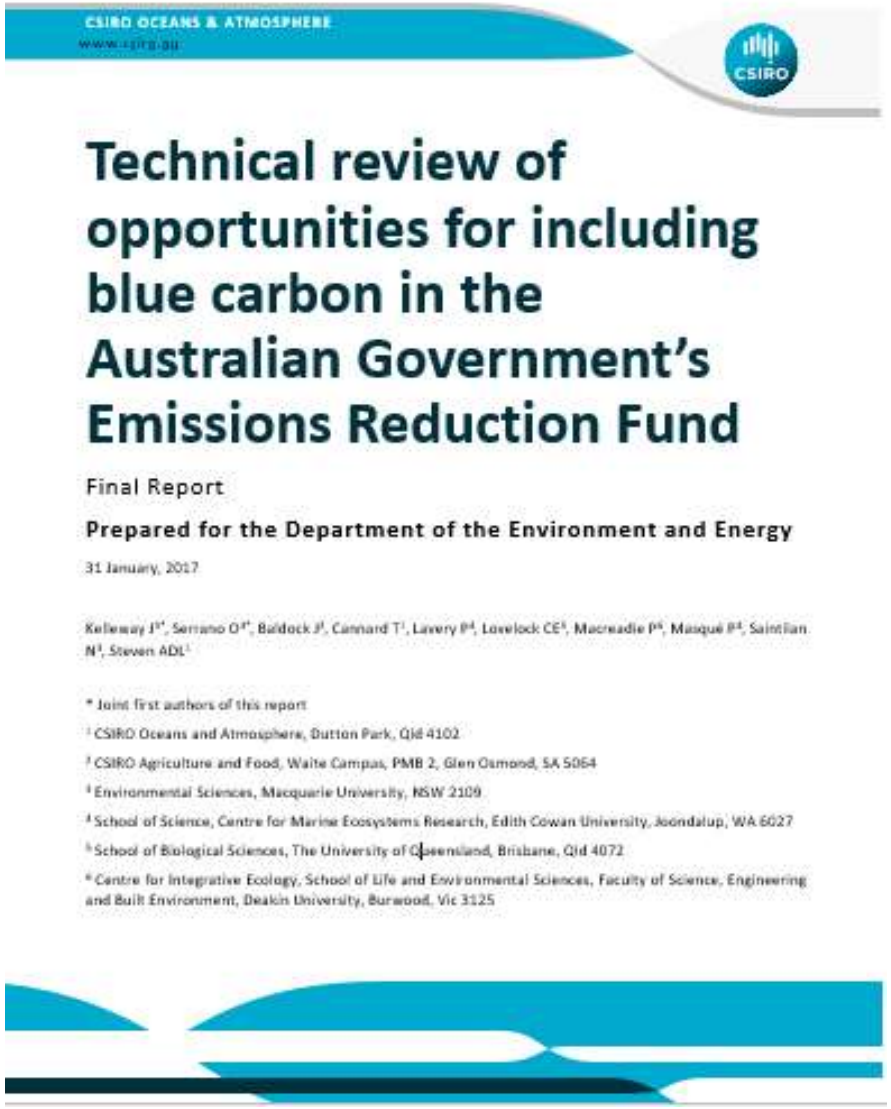
Sea-level rise = more carbon sequestration!



(Rogers et al 2019)

Blue Carbon Credits

GOVERNMENT:



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www.csiro.au

Technical review of opportunities for including blue carbon in the Australian Government's Emissions Reduction Fund

Final Report

Prepared for the Department of the Environment and Energy

31 January, 2017

Kelleway J[a*], Serrano O[a*], Baldock J[b], Cannard T[c], Lavery P[d], Lovelock CE[e], Macreadie P[d], Masqué P[d], Saintilan N[f], Steven ADL[c]

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Kelleway et al. 2017

VOLUNTARY MARKETS:

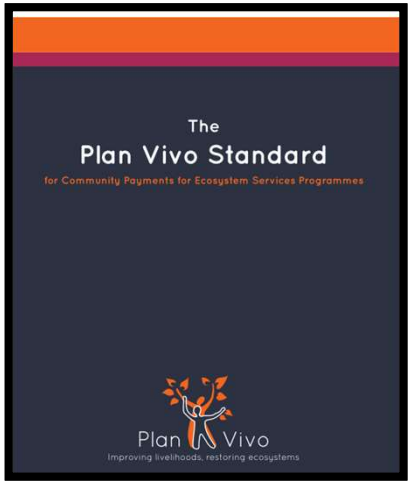
VCS VERIFIED CARBON STANDARD

A Global Benchmark for Carbon

VCS Methodology

VM0033

Methodology for Tidal Wetland and Seagrass Restoration



The Plan Vivo Standard

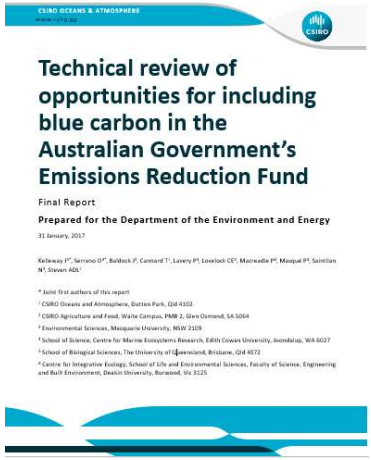
for Community Payments for Ecosystem Services Programmes

Plan Vivo

Improving livelihoods, restoring ecosystems

Gold Standard for the Global Goals

Progressing Blue Carbon Credits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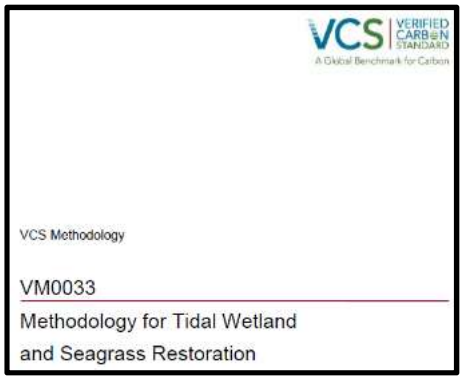
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VCS Methodology

VM0033

Methodology for Tidal Wetland and Seagrass Restoration

Commonwealth: ERF = Climate Solutions Fund

→ **2019:** Blue Carbon *Methodology* working group

States: QLD and SA leading the way

Private sector has substantial interest

<u>Blue Carbon Credits:</u>

- Policy and science constraints
- **Additionality** is crucial
- **Scale** will be a factor (accounting costs $$$)
- **Demonstration** is needed