EXPERIMENTAL SALTMARSH RESTORATION IN THE HUNTER RIVER: VEGETATION FINDINGS TWO YEARS ON

NSW Coastal Conference presentation – Caleb Rankin

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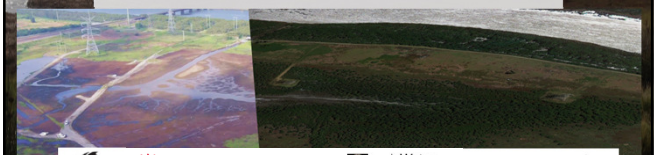

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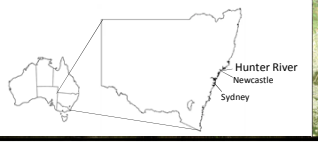
Saltmarsh Loss

- Sea Level Rise and Mangrove invasion (SE Australia)
- Loss of Habitat and Food
- Protected Areas (Ramsar, National Parks)
- Endangered Ecological Community, NSW (Environment Protection and Biodiversity Conservation Act 1999)
- Restoration, various scales and methods
- Reverse SLR, remove mangroves?

Study Location – Area E, Hunter River estuary

- Hunter River estuary
  - Internationally important saltmarsh
  - Highly modified
  - Mangrove encroachment
  - Numerous saltmarsh restoration projects
  - Area E – New experimental restoration



Area E Restoration – 2016

- 17ha Saltmarsh invaded by mangroves
  - Reduced shorebird habitat
- Mangroves removed
  - NCIG and OEH
  - Heavy Machinery and hand removal
  - Follow-up hand removal by Volunteers

Area E Restoration – 2016

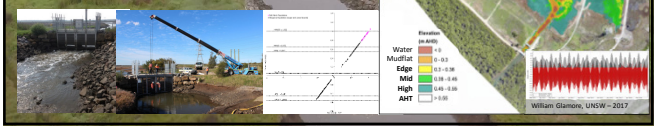
- Remnant Saltmarsh, bare ground, and Mudflats
- Mangrove Seedlings
  - Tidal Control and Mangrove Exclusion

Caleb Rankin – March 2018

Caleb Rankin – October 2017

Smart Gates

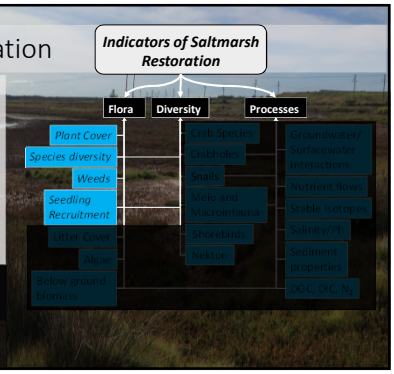
- Net to stop propagules
- Smart Gates installed 2017 (UNSW)
  - Lower Tidal Regime
  - Promote saltmarsh, discourage mangroves



William Glamore, UNSW – 2017

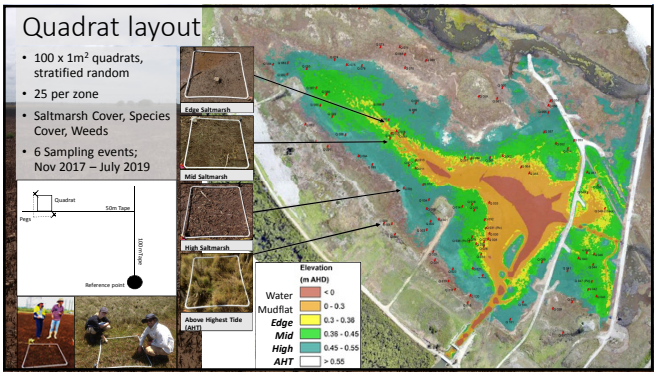
Indicators of Restoration

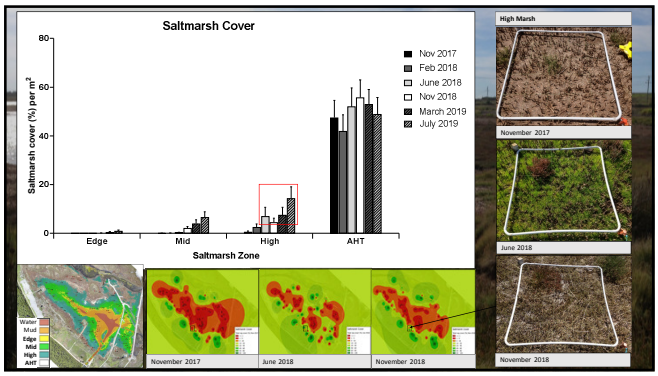
- Is this restoration method effective?
- Various indicators are being measured
- Early findings of flora indicators
- How quickly is the saltmarsh restoring?
- Will the lowered tidal regime affect weed cover?

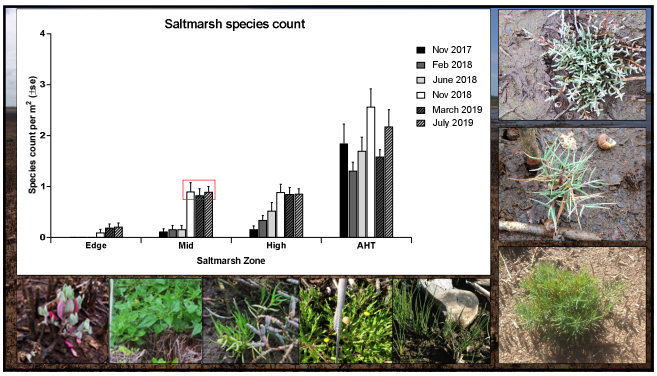


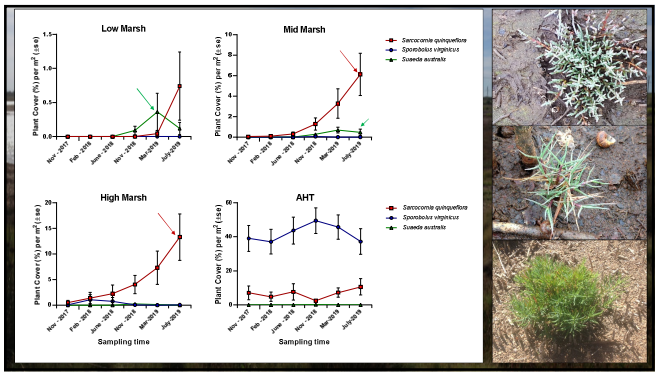
Quadrat layout

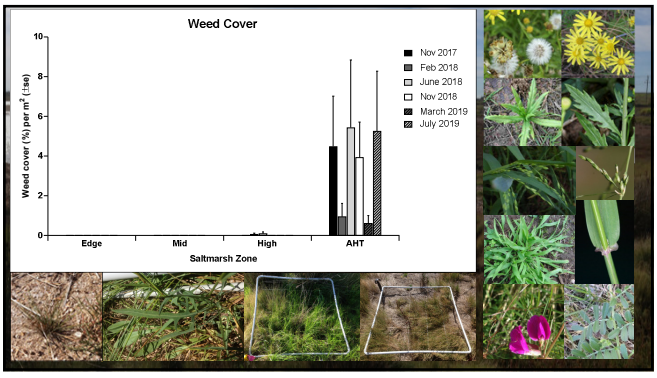
- 100 x 1m² quadrats, stratified random
- 25 per zone
- Saltmarsh Cover, Species Cover, Weeds
- 6 Sampling events; Nov 2017 – July 2019




Saltmarsh Cover
Saltmarsh cover (%) per m²
Edge
Mid
High
AHT
Saltmarsh Zone
Nov 2017
Feb 2018
June 2018
Nov 2018
March 2019
July 2019
High Marsh
November 2017
June 2018
November 2018
Water
Mud
Edge
Mid
High
AHT


Saltmarsh species count
Species count per m² (±se)
Edge
Mid
High
AHT
Saltmarsh Zone
Nov 2017
Feb 2018
June 2018
Nov 2018
March 2019
July 2019


Low Marsh
Mid Marsh
High Marsh
AHT
Plant Cover (%) per m² (±se)
Sampling time
Sarcocornia quinqueflora
Sporobolus virginicus
Suaeda australis


Weed Cover
Weed cover (%) per m² (±se)
Edge
Mid
High
AHT
Saltmarsh Zone
Nov 2017
Feb 2018
June 2018
Nov 2018
March 2019
July 2019

Conclusions

- *S. quiniflora* is restoring fastest (Winning & MacFarlane, 2010)
- Lowered tide not impacting weed cover
- Saltmarsh cover is on track to restore within 10 years (Craft, 2019)