Water Quality, Healthy Riparian Zones and Livestock

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Water Quality, Healthy Riparian Zones and Livestock

1. How can production impact water quality?

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Water Quality, Healthy Riparian Zones and Livestock

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Water Quality, Healthy Riparian Zones and Livestock

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2. How can water quality impact production?

3. What is the water quality on DRPL farms?

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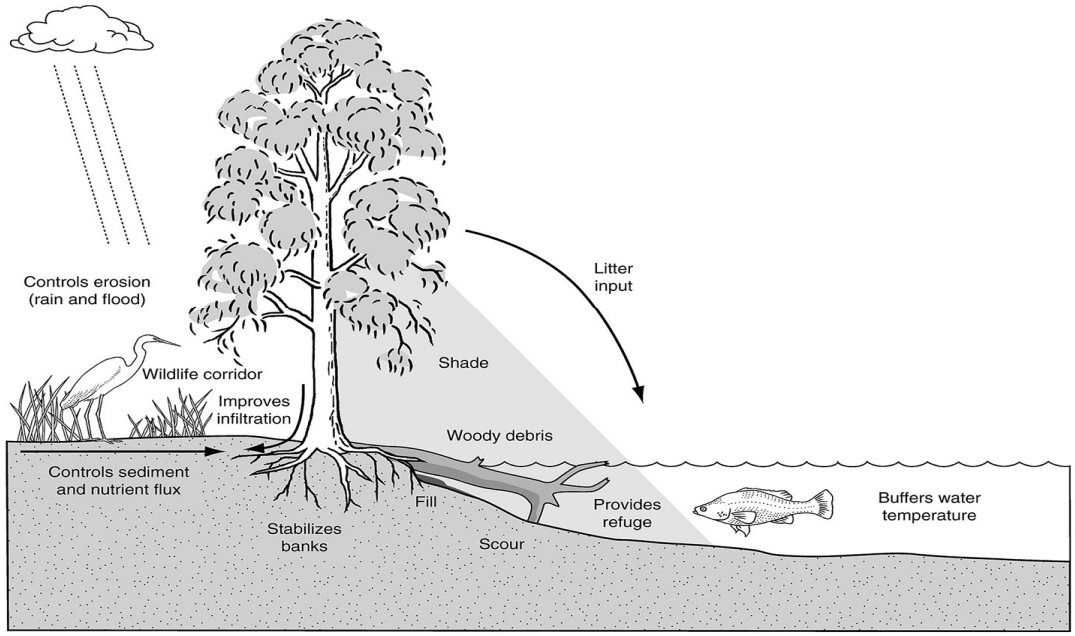
Quick introduction to riparian zones

Land adjacent to waterways, wetlands and dams

Periodically inundated



Importance = Ecological, social and economic

Functions:

- maintains water quality
- buffers and filters terrestrial nutrient loads
- provides bank stability and decreases rates of soil erosion
- provides habitat and resources that supports high levels of biodiversity

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1. How can livestock impact water quality?

- Cattle behaviour
  - 2-3% time spent instream
  - 7-12% time spent in riparian zone
  - Time increased with air temperature

Bond et al. 2012, Livestock Science 146

  - Cows standing in water defecated 5 times more frequently than on land
  - 33 cattle deposited 8.4t of faeces into 770m of river in 7 months

Kay et al. 2018, Water Research 143

- loss of riparian vegetation
- erosion
- sedimentation
  - turbidity
  - loss of habitat
- nutrients
- faecal pathogens

Photo: Jillian Staton, www.stockandwaterways.com.au

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2. How can water quality impact livestock?

Benefits of excluding stock from riparian zone and using off-stream watering

Clean water

- Reduce faecal-oral transmission of diseases
  - Leptospirosis
  - Cryptosporidiosis
  - Mastitis
- Cows drink more water from clean trough than instream
  - Clean water encourages higher consumption of dry matter
  - Resulted in weight gain of 5% compared to instream drinking for beef cattle (www.potomacriverkeepernetwork.org)
- Reduces risk of toxic algae

Reduced livestock losses

- Reduced deaths from steep, eroding banks
- Reduced deaths from flooding
- Reduced biosecurity risks from stock wandering off property

Photo: Stuart Naylor, www.stockandwaterways.com.au

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2. How can water quality impact livestock?

Benefits of excluding stock from riparian zone and using off-stream watering

Healthy riparian vegetation

- Retention of topsoil
- Retention of nutrients increases productivity and biodiversity
- Improved shade and shelter for stock
  - Improved fertility and conception rates
  - Improved survival during lambing and calving
  - Improved wool, meat and milk production
  - Improved pest control and pollination
- Reduced erosion

- Carbon sequestration
  - 120.8 tC/ha in Condamine riparian zones compared with 76 tC/ha in nearby eucalypt forests

Fensham and Cuymer (2009), Maraseni and Mitchell (2015)

Photo: Timbarra (Rocky) River, S. Mika

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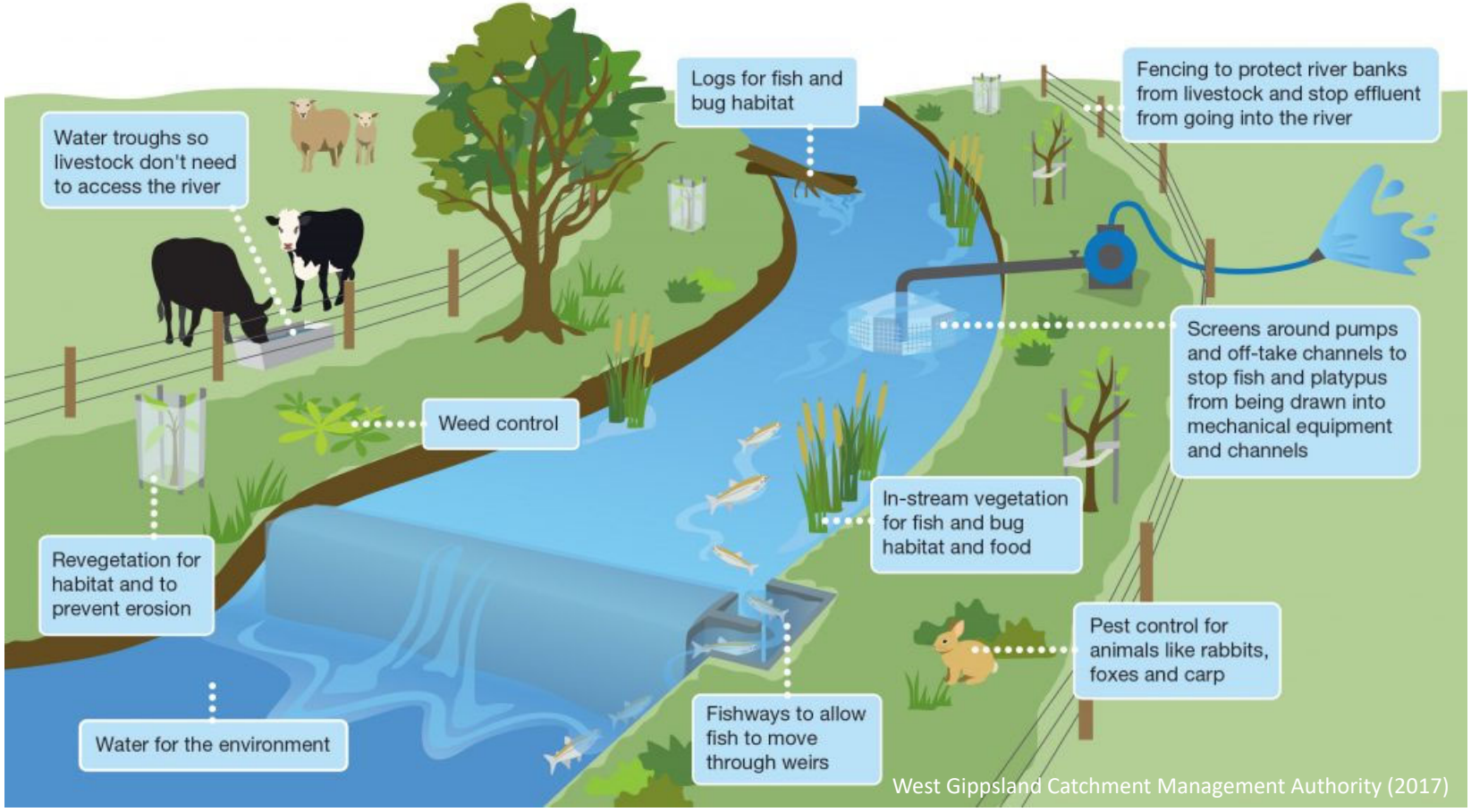
2. How do we improve riparian zones?

A well managed riparian zone can add around 10% to the capital value of a property.



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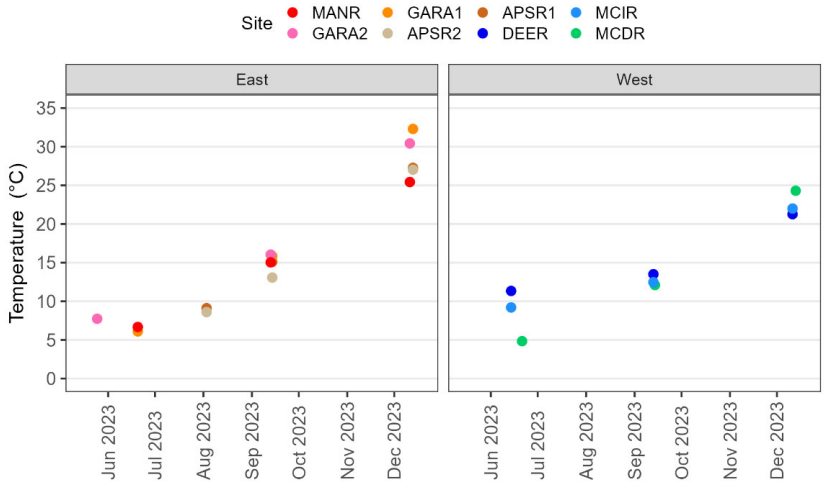
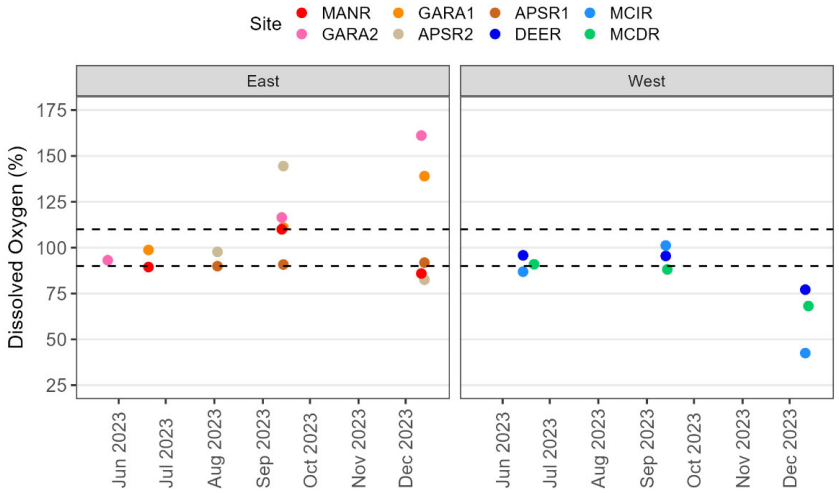
3. What is the water quality on DRPL farms?



Water temperatures above 30°C harms aquatic ecosystems



Low dissolved oxygen harms fish and invertebrates

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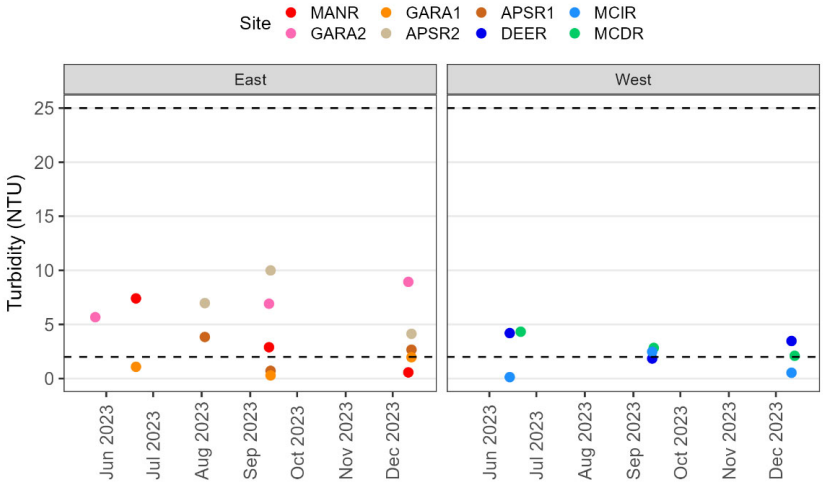

Turbidity was good; well below ANZECC guidelines

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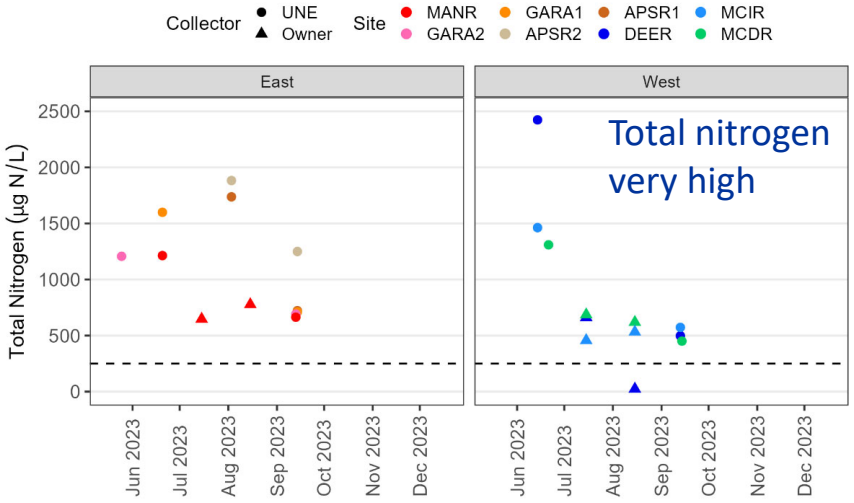

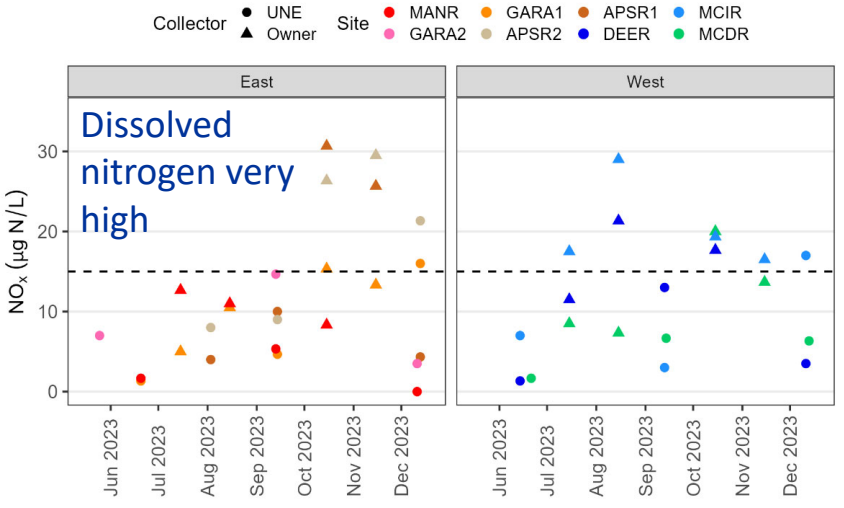

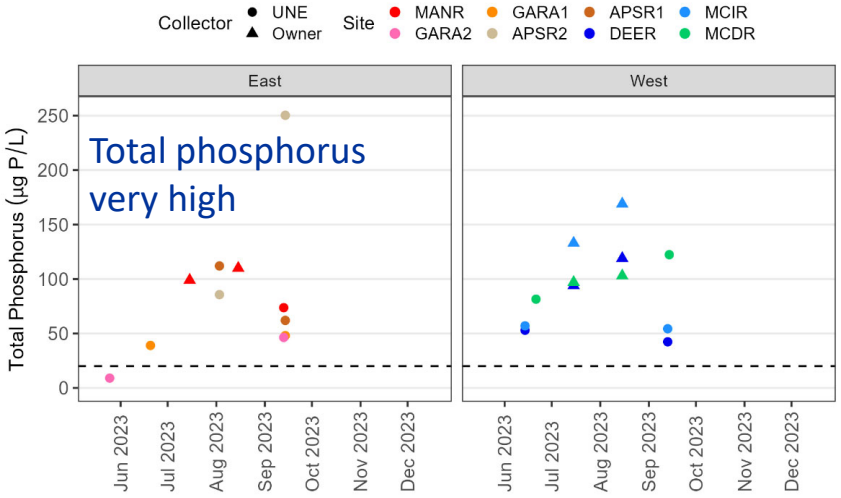

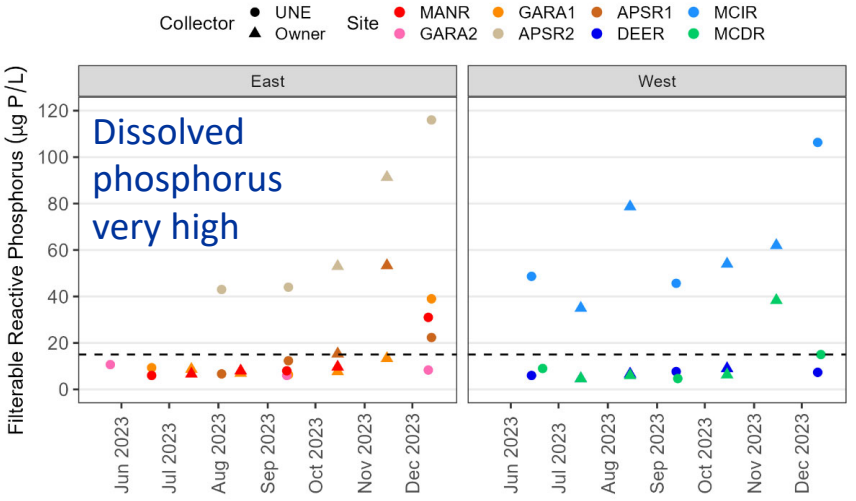

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