

# Lower Lakes, Goolwa Channel, & Coorong zooplankton: Oct 2011-Apr 2012



Feb 01, 2013

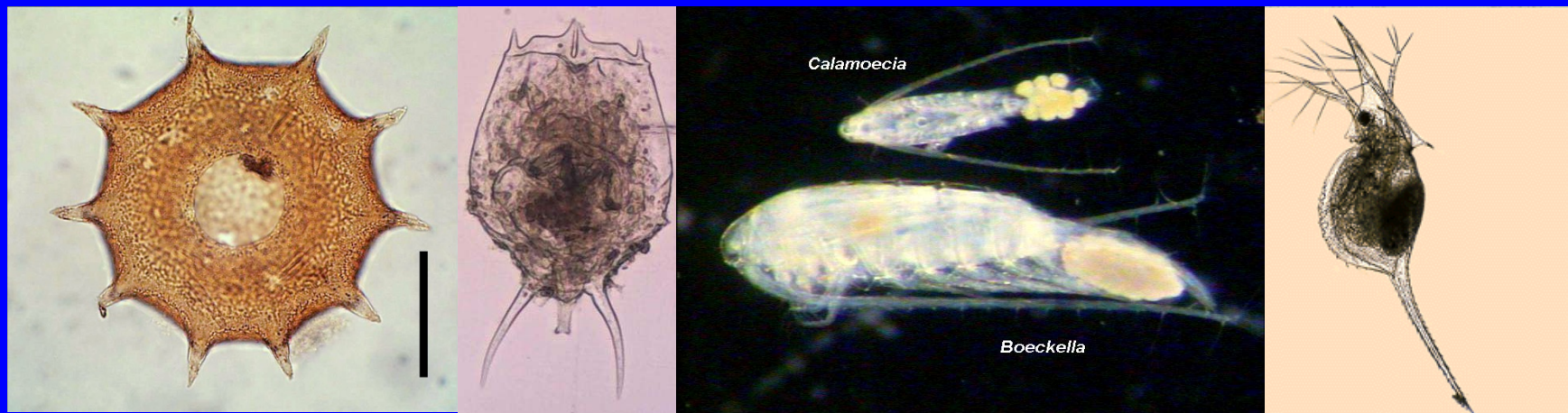
Russ Shiel & Lor-Wai Tan, Univ. of Adelaide  
Sorell Lock, Dept of Env't, Water & Nat.  
Resources.

➤ the objective of the study was to document changes in the zooplankton community in the Lower Lakes, Goolwa Channel and Nth Lagoon of the Coorong following the 2010-2011 floods

➤ persistence of freshwater species and responses of estuarine species were of particular interest

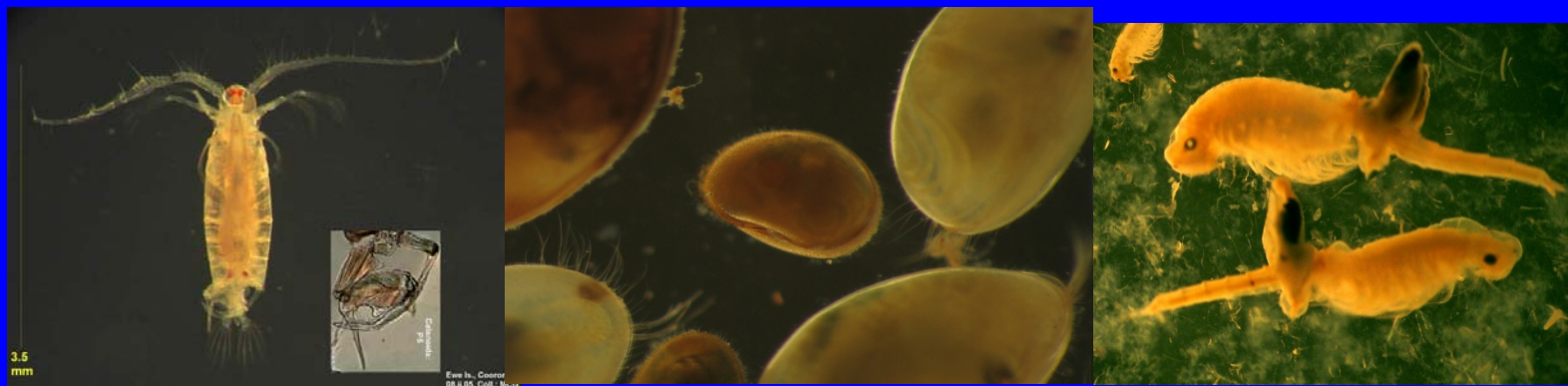
# Freshwater zooplankton

➤ Consists primarily of protists, rotifers, microcrustaceans (copepods, cladocerans, ostracods) and occasionally, smaller macroinvertebrates (dipteran larvae, water mites)



# Estuarine zooplankton

- Consists of halotolerant or halophile copepods, ostracods, occasional rotifers, brine shrimps, crab larvae, barnacle larvae, polychaete larvae





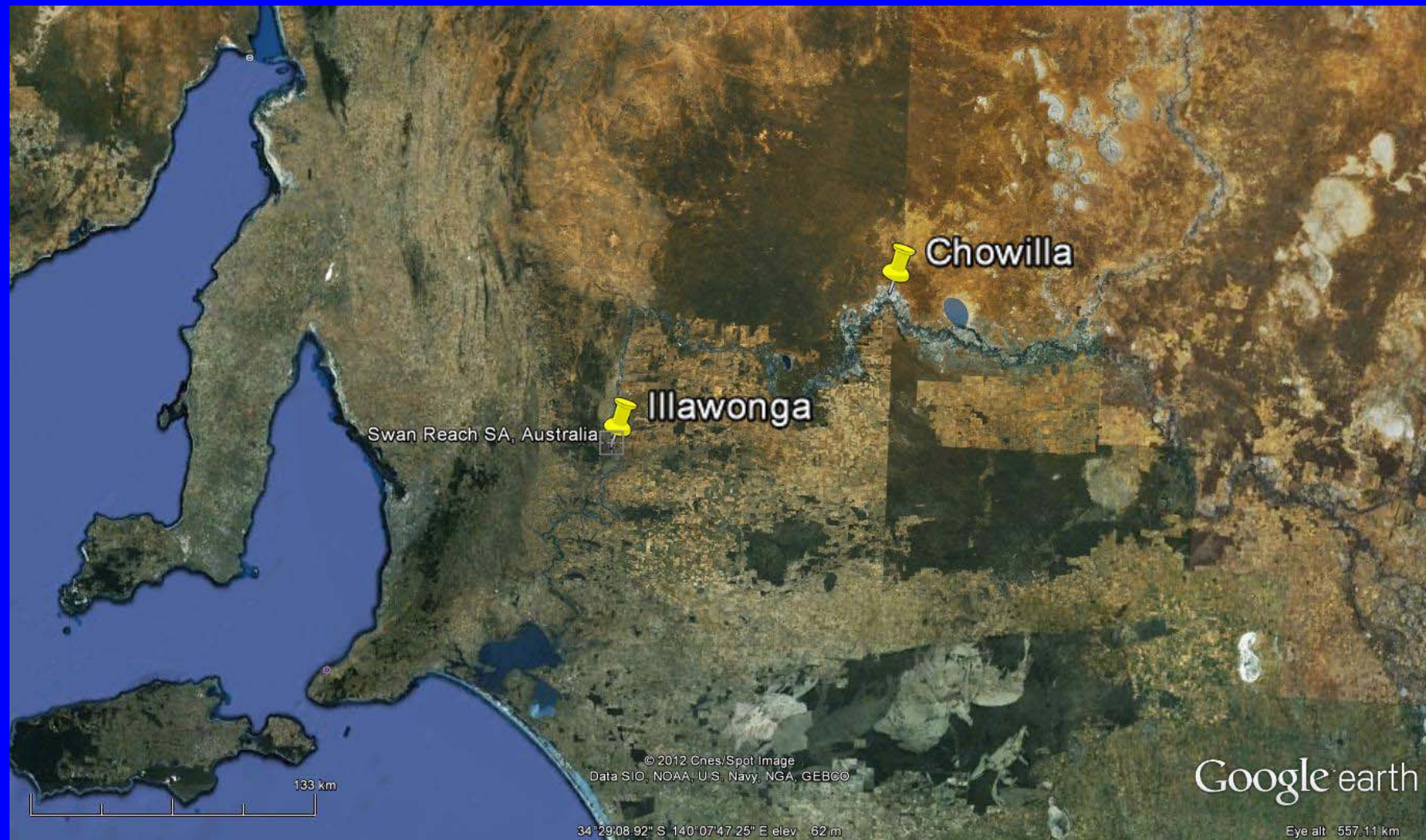


➤ DENR staff  
sampled 15 sites  
in Lakes Albert &  
Alexandrina, the  
Goolwa Channel  
& Coorong Nth  
Lagoon [5 trips,  
Oct '11-Apr '12]





Upstream plankton collections also were taken during 2011 from Illawonga (Swan Reach) and Chowilla



# Coorong sampling sites 2010 study.

Only C-7, C-10, C-11 and an extra site C-12 (Long Point), were sampled in 2011-12

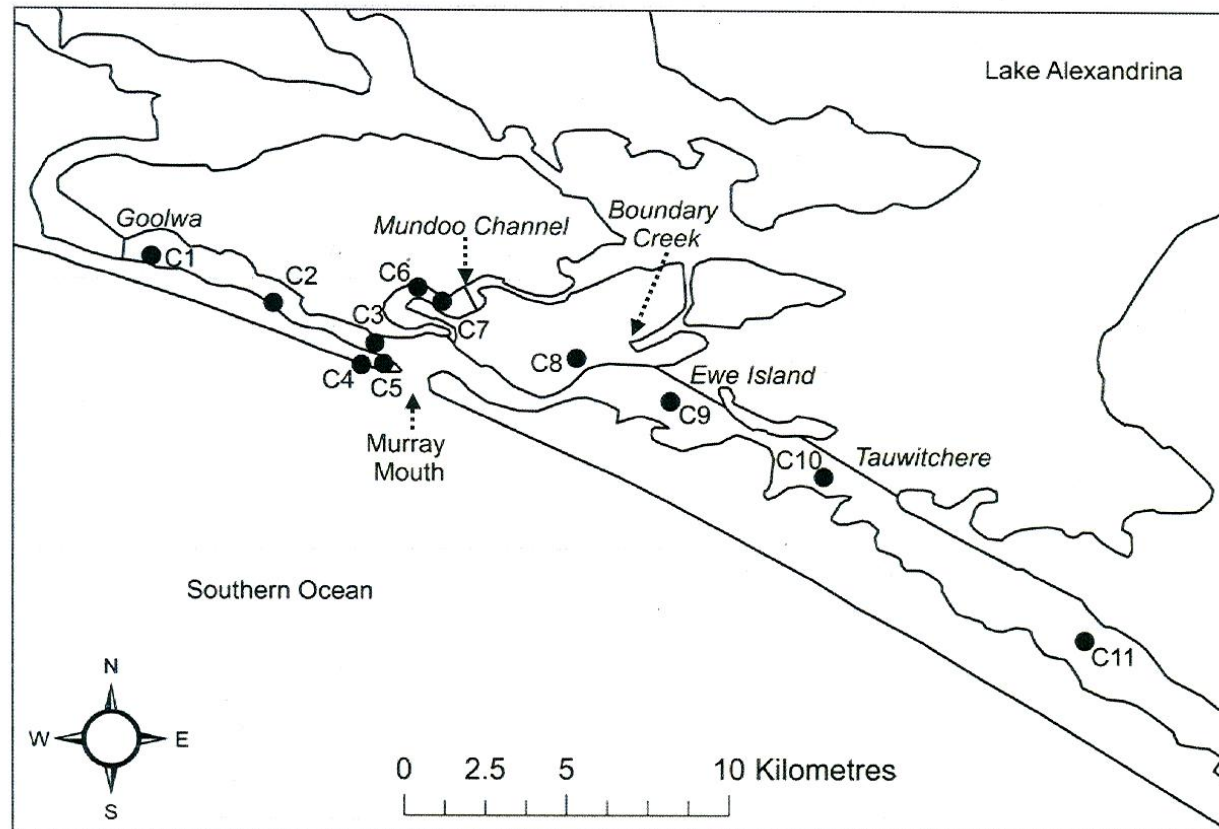


Figure 2. Map of sampling locations in the North Lagoon of the Coorong and Murray Mouth region. C1 – Goolwa Barrage Downstream; C2 – Half Way; C3 – Sugar's Beach; C4 – Southern Ocean; C5 – Murray Mouth; C6 – Hunter's Creek; C7 – Mundoo Channel; C8 – Boundary Creek; C9 – Ewe Island; C10 – Tauwitchere; C11 – Mark Point. Labelled in *italics* are barrages.



All sites were sampled at wader depth from the shore. Sampling dates reported here were 27 October 2011, 24 November 2011, 28 December 2011, 02 February 2012, 27 February 2012 and 02 April 2012.



A zooplanktologist in its native habitat



## 2010-2011 cf. 2011-2012 results

Total zooplankton across the study area:  
187 taxa cf. 207 taxa]

- L. Alexandrina 144 cf. 159
- L. Albert 50 cf. 72
- Goolwa Channel 109 cf. 134
- Murray Mouth/North Lagoon 97 cf. 118



➤ 90% of zooplankton taxa recorded from Lake Alexandrina and the Goolwa Channel in 2011-12 were freshwater in habit, with <10% halotolerant

➤ ca. 20% of L. Albert zooplankton was halotolerant or halophile

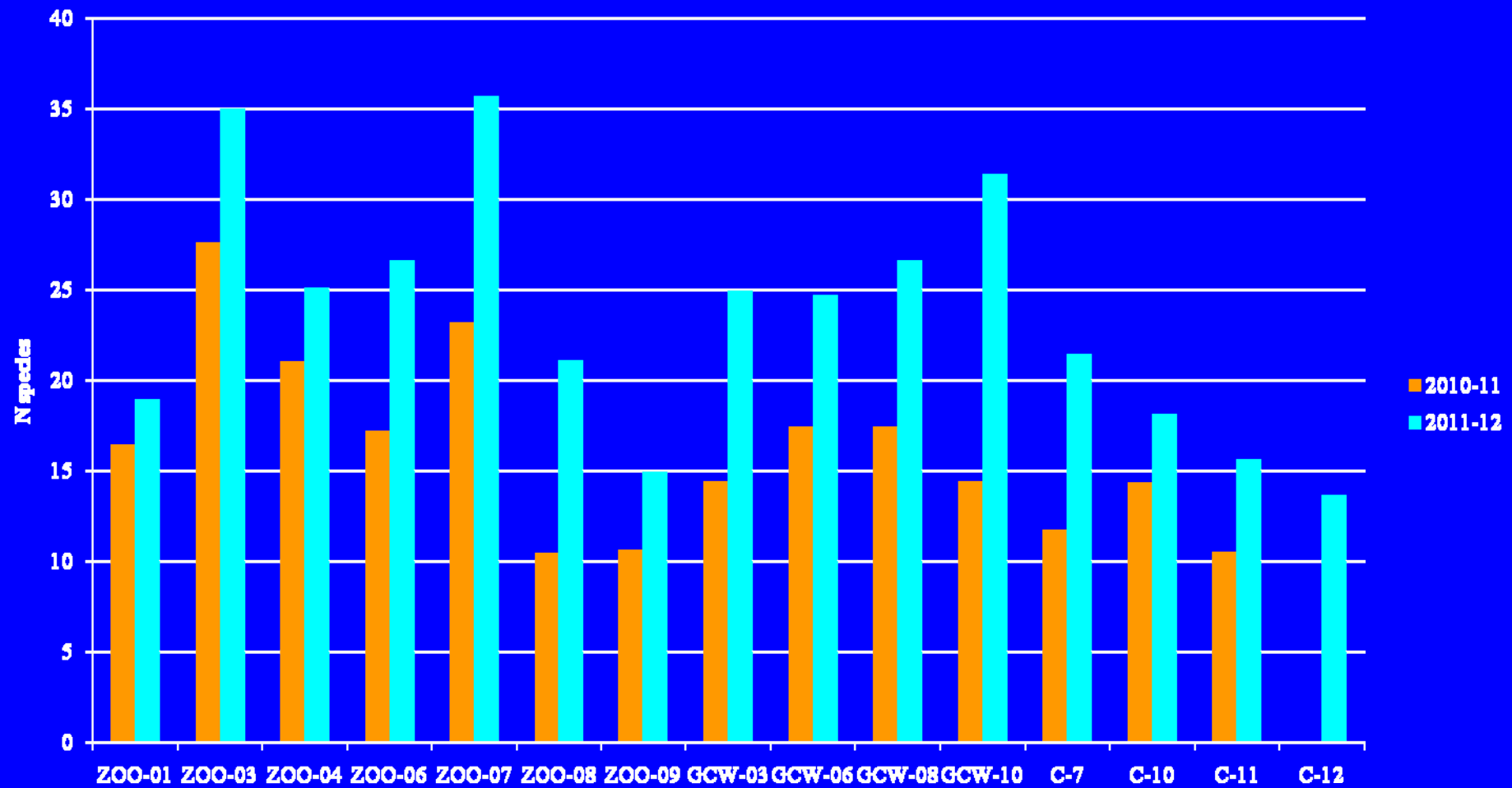
➤ ca. 17% of Coorong Nth Lagoon zooplankton was halotolerant or halophile

As for 2010-2011, the 2011-2012 samples were dominated by freshwater taxa. Only 10% of taxa across both sample series could be considered halotolerant or halophile

The range extensions of freshwater taxa into the North Lagoon of the Coorong have been maintained, but are subject to tidal influences

Notably, more species were recorded at all sites in the 2011-2012 series.

# 2010-2012 results

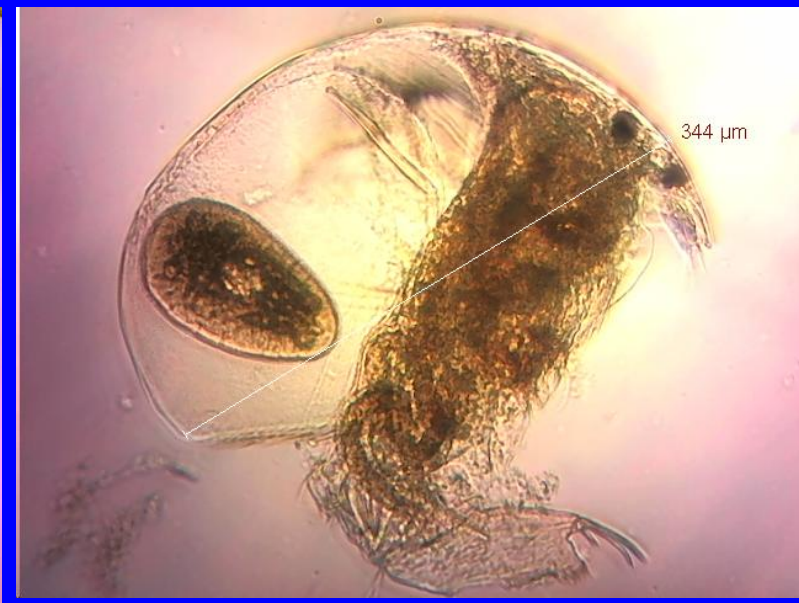
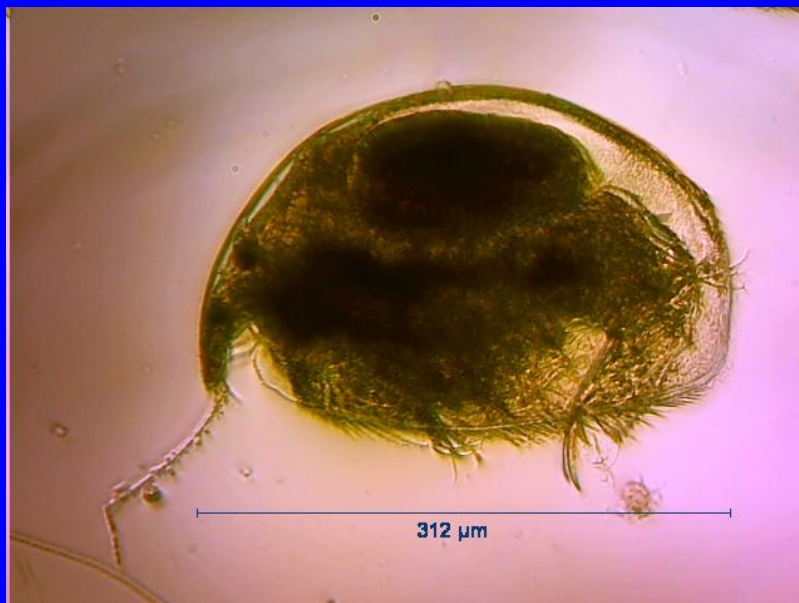




# Undescribed species

- Novel species recorded in 2010-11 were found again in 2011-12, and are likely now resident in the study area





# New records

- ▶ Several rotifers, including *Eosphora thoides*, *Synchaeta cecilia*, *Synchaeta triophthalma* and *Testudinella obscura* recorded in 2011-12 are new records for Sth Australia.
- ▶ The estuarine cladoceran *Podon polyphemoides* was recorded for the first time [C-10]
- ▶ The coastal calanoid *Acartia* sp. also was a new record [C-11/C-12]



# Conclusions

- Microcrustacean assemblages persisting through Spring 2011 were flushed from Goolwa Channel/L. Alexandrina by upstream releases carrying a riverine rotifer-dominated zooplankton [?mid-Jan. 2012]
- Subsequent samples suggest increasing heterogeneity of inocula from barrage releases, with estuarine/marine components likely reflecting tidal surges

In terms of the objectives:

- Barrage releases maintained a freshwater assemblage into the Murray Mouth and North Lagoon, however tidal influences are likely, evident from periodical catches of estuarine zooplankters
- Persistence of the microbiota suggests importance of the propagule egg bank in reconstituting the zooplankton assemblage after perturbation events
- Significant increases in secondary productivity are a likely consequence of the prolonged flooding, with flow-on effects up food chains.

## Acknowledgements

Research presented in this report was commissioned and funded by the Department of Environment, Water and Natural Resources, S.A.

Thanks to Deb Furst (Univ. Adelaide) for plotting sampling sites on the aerial view from Google Earth.