

Fish movement and recruitment in the Coorong and Lower Lakes 2006-2011



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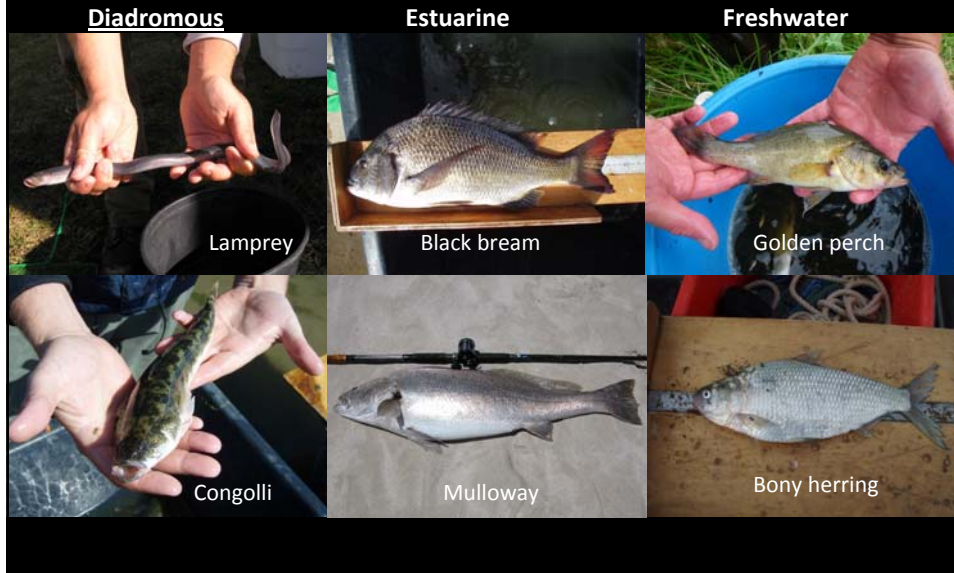


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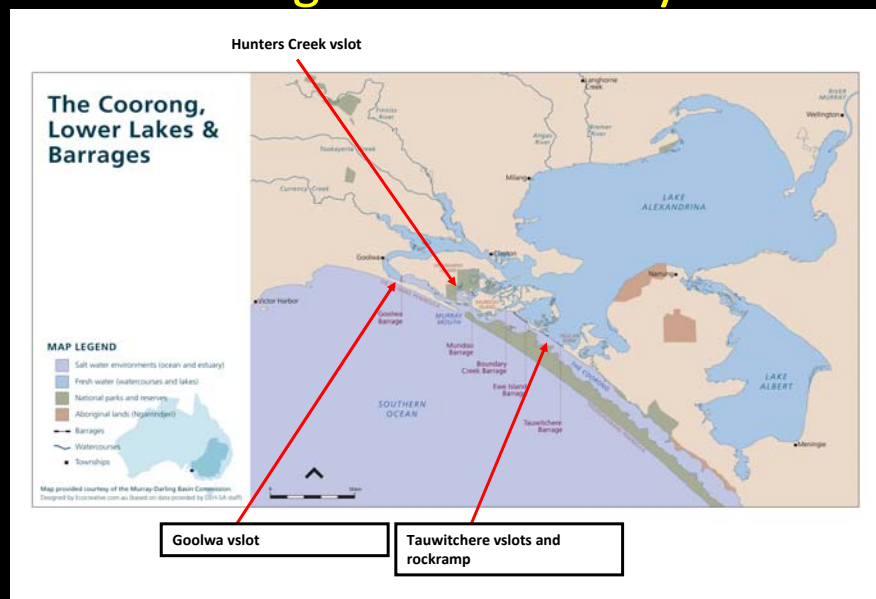
- Project background/history 2006-2011
 - Fish community, barrages and fishways
- Methods
- Environmental conditions
- Results 2006-2010
- Results 2010-11
- Conclusions



Fish community



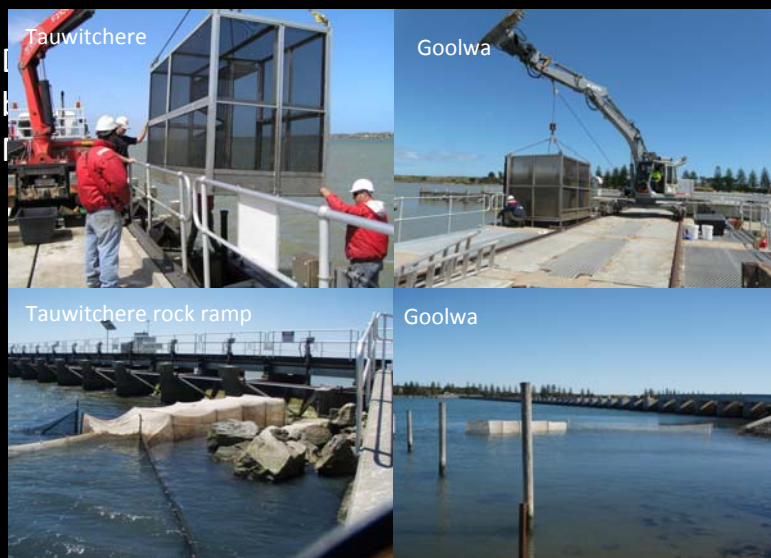
Barrages and Fishways



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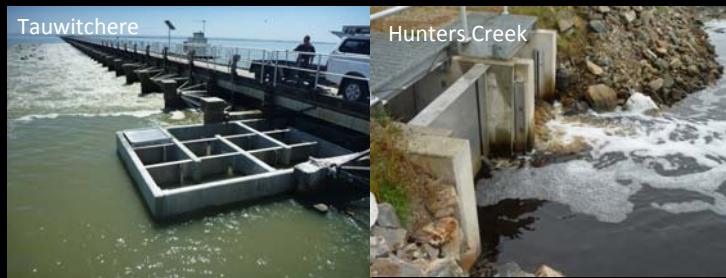
- 2006-2011
 - Determine spatio-temporal variation in fish assemblages (species composition and abundance) using fishways as a sampling tool and sampling accumulations below barrages
 - Investigate ecological response (i.e. spawning and recruitment) of diadromous fish species to varying inflows and connectivity
 - Utilise data to inform barrage gate and fishway operation, including timing and location of freshwater releases

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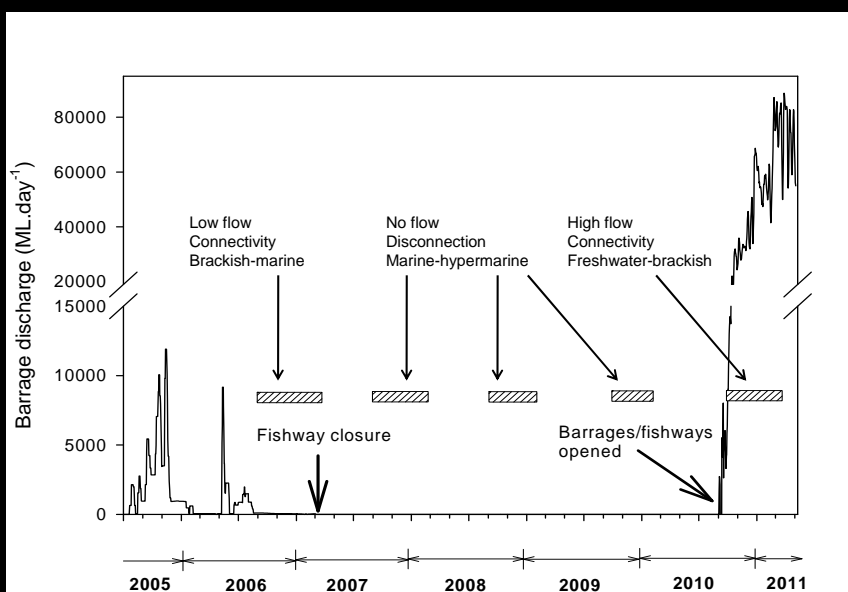


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- 2010/11 two additional fishways
 - Tauwitchere small-bodied fish vertical-slot
 - Hunters Creek vertical-slot



Flows and connectivity



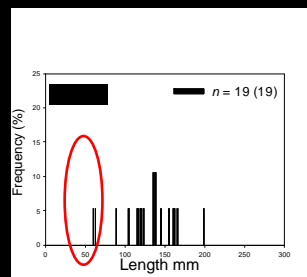
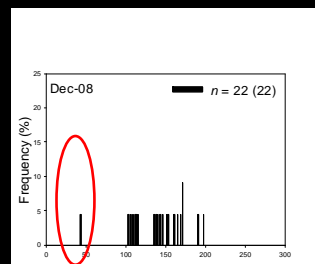
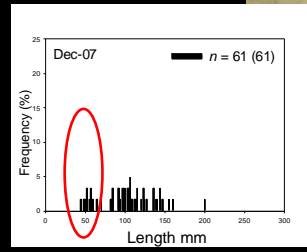
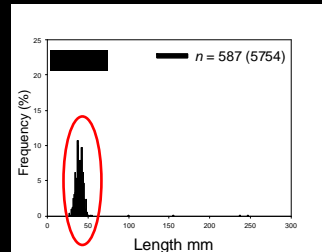


Diadromous species 2006/07 – 2009/10

- Congolli and common galaxias – catadromous
 - 2006/07: highly abundant
 - Peak migration Oct – Dec and Dec – Jan



Congolli

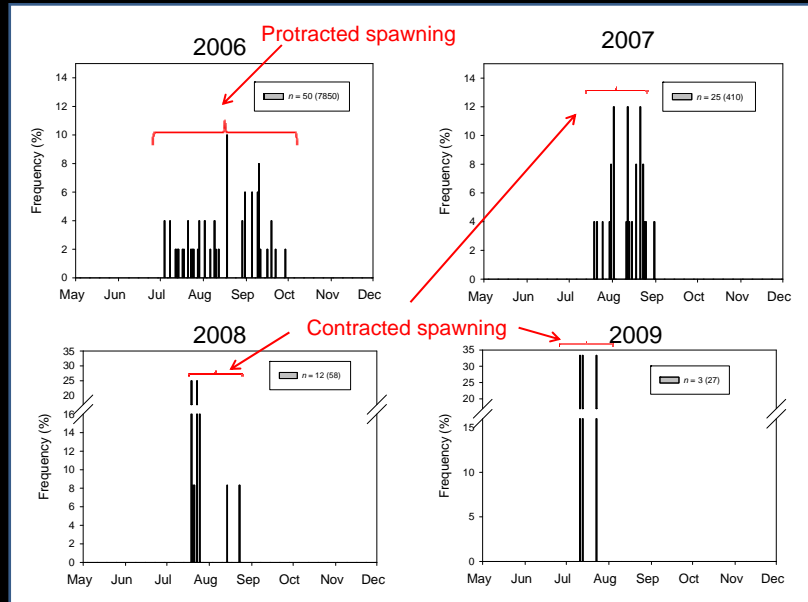


Diadromous species 2006/07 – 2009/10

- Short-headed and pouched lamprey – anadromous
 - 2006/07: low numbers ($n = 40$ & 1)
 - 2007/08 – 2009/10: No individuals sampled



Diadromous species spawning and recruitment

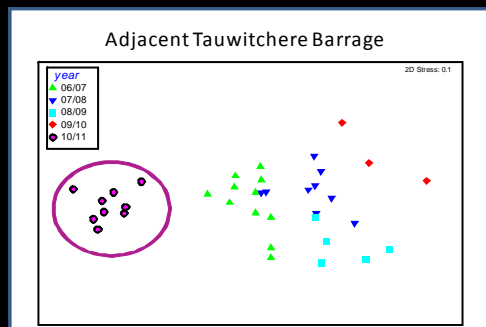


Summary impacts 2007-2010

- No inflow, no connectivity, increased salinity
- Decrease in species richness and diversity
- Fish assemblage increasingly dominated by marine species – Coorong resembles marine embayment
- Diadromous species: significant contraction in spawning season, recruitment and abundance
 - Obstruction of adult spawning migrations
 - Loss of conditions suitable for recruitment
 - Loss of migratory cues (freshwater signatures)

Fish assemblages 2010/11

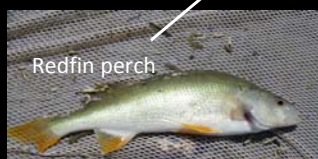
- Diverse assemblage (32 spp)
 - Freshwater, diadromous, estuarine
 - extreme abundances (total fish > 1.5 million)
 - Assemblages significantly different from previous years at all locations



Fish assemblages 2010/11

'Freshwater'

>50% of the total catch!!!



Redfin perch



Australian smelt



Bony herring



Flat-headed gudgeon

'Estuarine'



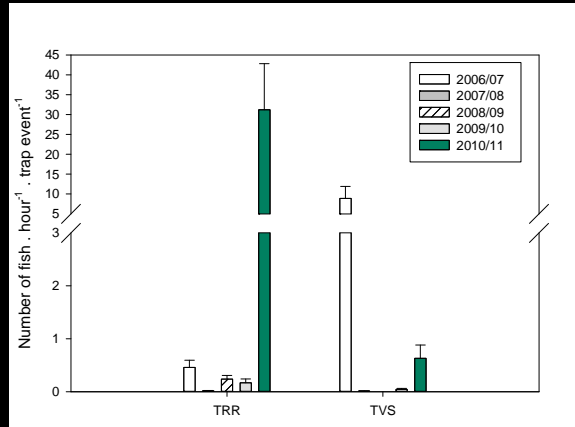
Sandy sprat



Lagoon goby

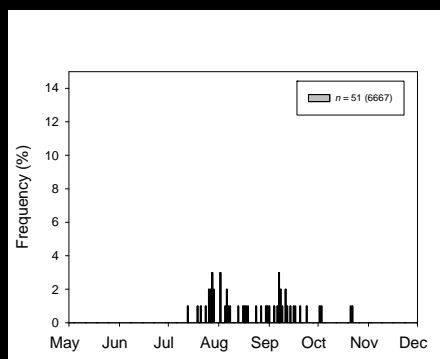
Diadromous species 2010/11

- Increased recruitment and abundance of congolli and common galaxias from preceding years



Diadromous species 2010/11

- Increased abundance of congolli and common galaxias from preceding years
- Protracted spawning similar to 2006/07



Diadromous species 2010/11

- Lamprey, none sampled 2010 however.....
 - Several individuals sampled in winter 2011



Conclusions

- Fish assemblages in the Coorong highly dynamic
 - Salinity and connectivity primary drivers
 - 2007-2010 – river regulation, water abstraction, drought but naturally.....
 - Estuarine ecosystems not static (inter-annual & intra-annual)
- Freshwater inflows promote diversity in estuarine fish assemblages
- Re-instatement of inflows and connectivity
 - Facilitate migration, spawning and recruitment
 - Increased abundance of congolli and common galaxias
 - Return of pouched lamprey

Conclusions

- Recovery hard to define in dynamic systems
 - Assemblages may differ at any point in time
 - Large flows represent short-term disturbance?
 - May take several years
 - Robust, long-term data required
 - Needed to inform management



Thank you

