Department of Primary Industries

Mapping the distribution of snapper across Greater Sydney's coastline

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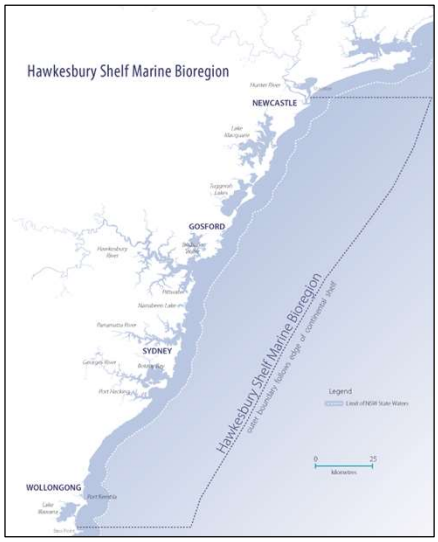
Greater Sydney Region Biodiversity Project



- Major perceived threats to biodiversity
- Need monitoring and data to assess importance of these threats
- Evidence-based decision making

Sweeney Report 2014 – NSW Marine Estate

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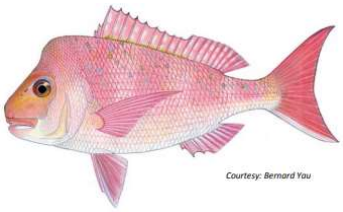
Objectives

- Undertake a systematic assessment of rocky reef fish assemblages (20 – 40 m) throughout the bioregion
- Produce species distribution models to assist managers with decision making
  - Juvenile and adult snapper
- Evidence of impacts from human threats



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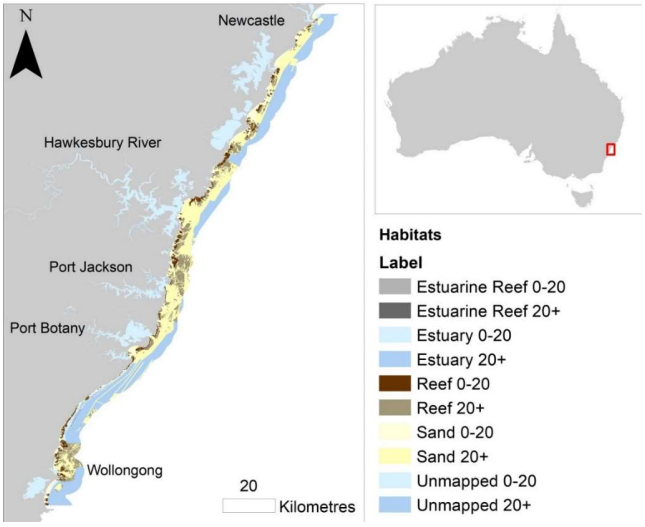

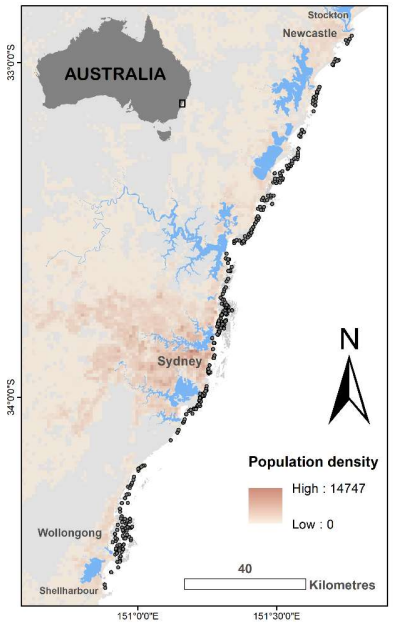

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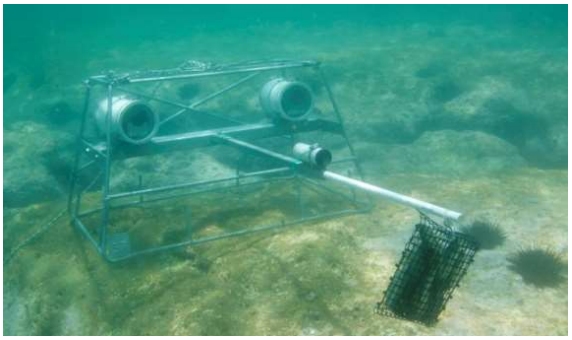
Stereo baited remote underwater video



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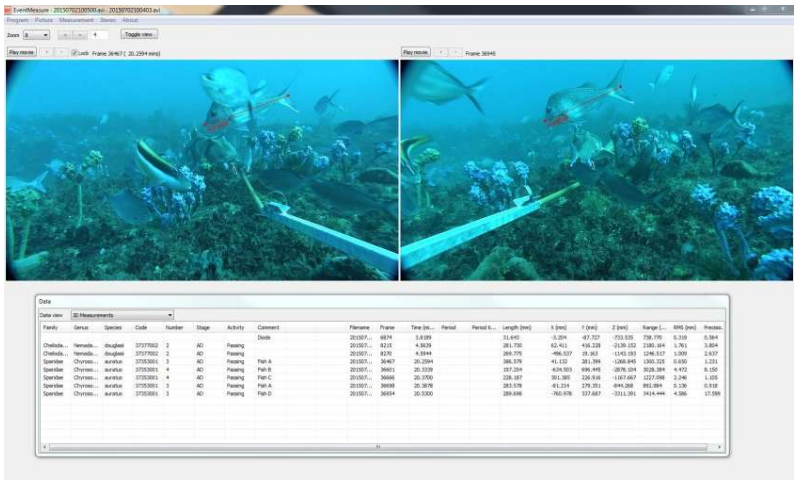
Stereo baited remote underwater video



- Juvenile snapper (<25 cm TL)
- Adult snapper (>32 cm TL)

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Predictors for distribution model

Variable	Scale	Calculation
Depth (m)	BRUV	Sounder
Reef area (m^2)	Buffers < 500 m < 200 m < 100 m < 50 m	Habitat mapping/ArcGIS
Habitat (%) - Reef - Sand - Macroalgae - Sponges	BRUV	BRUV footage/Transect Measure (SeaGIS)
Relief (0 – 5)	BRUV	BRUV footage/Transect Measure (SeaGIS)
Surrounding estuary area	Buffers < 20 km < 10 km	Zonal statistics/R
Human population density	Buffers < 20 km < 10 km	Zonal statistics/R

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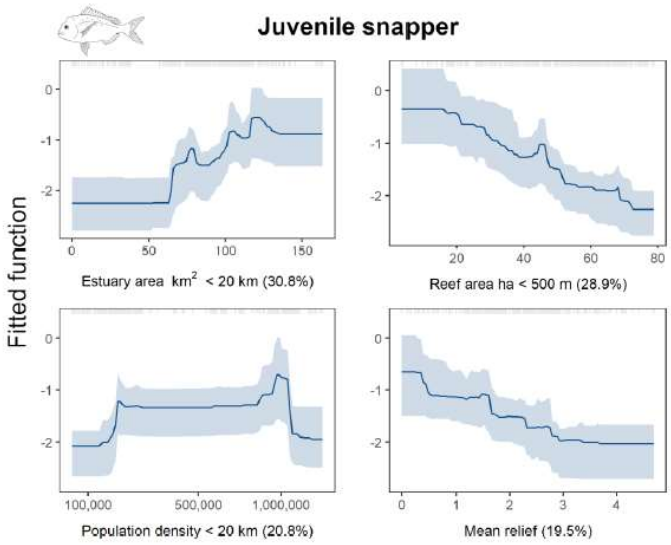
Juvenile snapper



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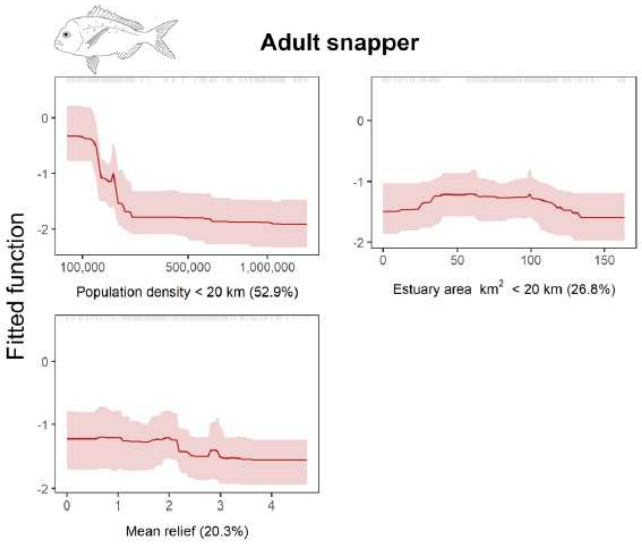
Adult snapper



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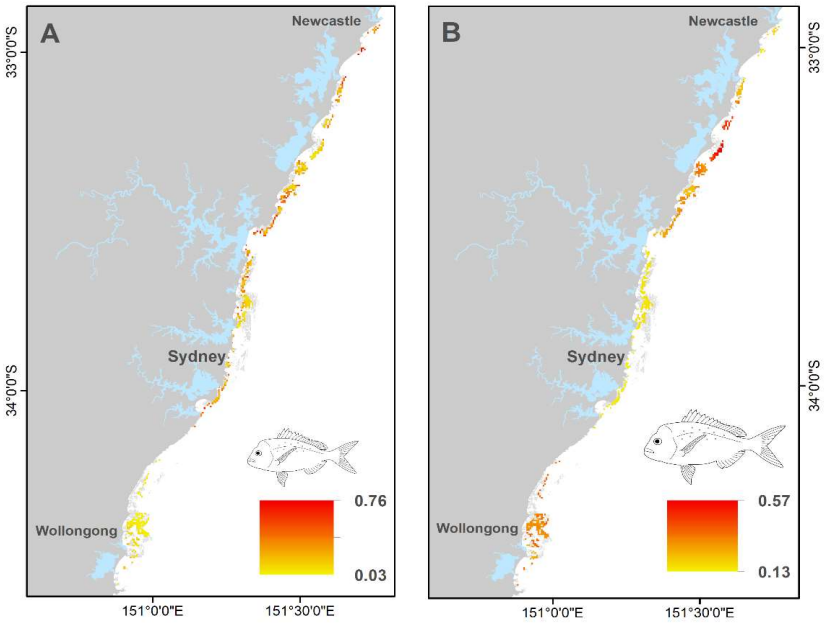

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Conclusions

First comprehensive and standardised survey of the region's rocky reef fish assemblages (20-40 m)

Juvenile snapper: small patch reefs of low relief adjacent to large estuaries

Adult snapper: negatively associated with human population density

Results will assist ongoing and future ecosystem-based fisheries management.

Highlight the importance of estuaries as nurseries for juvenile snapper.

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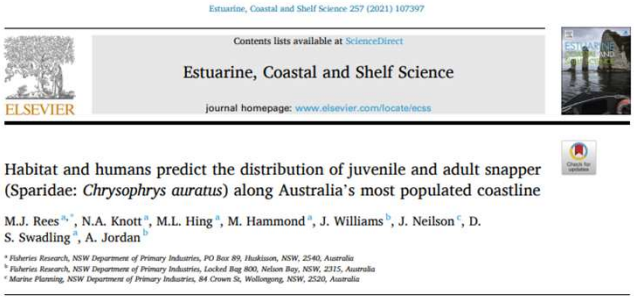
Future work

- Repeat sampling in 2022.
- Additional species explored

- Assessing multiple stressors on estuary fishes in Greater Sydney (underway in Pittwater) as part of MEMS.



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Habitat and humans predict the distribution of juvenile and adult snapper (Sparidae: *Chrysophrys auratus*) along Australia's most populated coastline

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