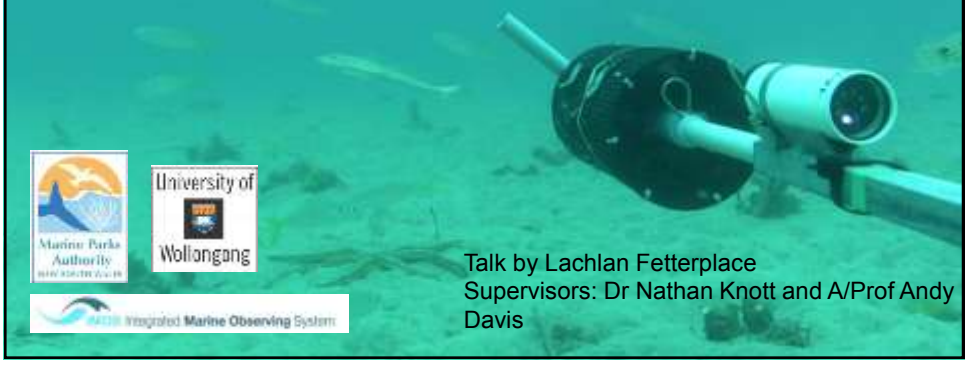
Marine Protected Areas: Conservation of fish diversity on soft sediments



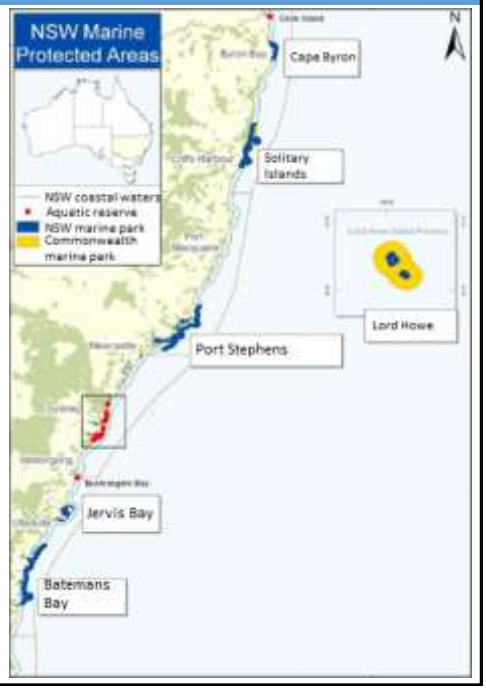
Talk by Lachlan Fetterplace
Supervisors: Dr Nathan Knott and A/Prof Andy Davis

Why Marine Protected Areas (MPAs)?

3

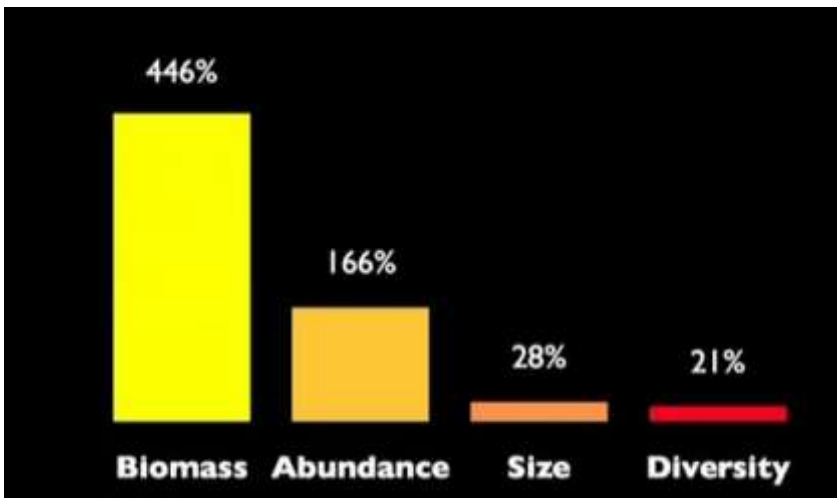
MPAs

- Marine Parks intended to provide representative protection of habitats and species
- Some benefits to fisheries
- Network of zones in each park



4

Do MPAs work?



Source: Lester et al.(2009)MEPS.

5

MPAs – Some Issues

- Positive results not universal.
- Caveats- Size of reserve, length of protection and enforcement.

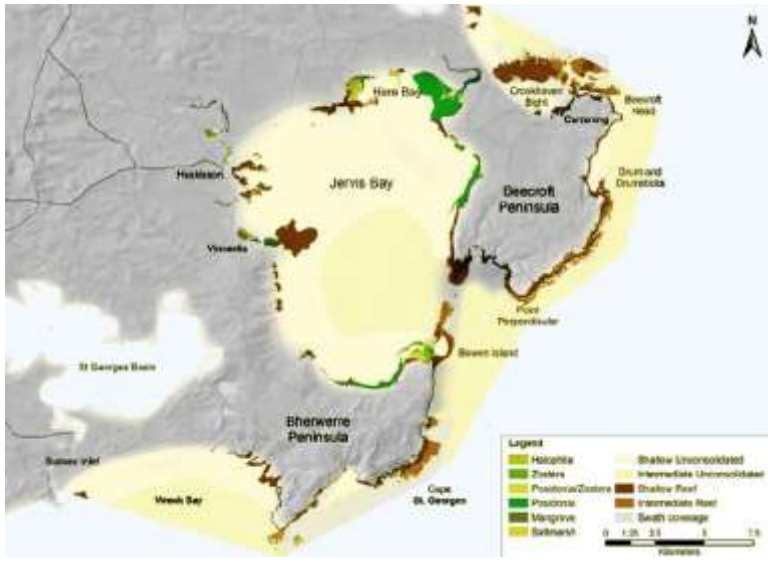
- Soft sediments > vast system > largely ignored

6

Where to now

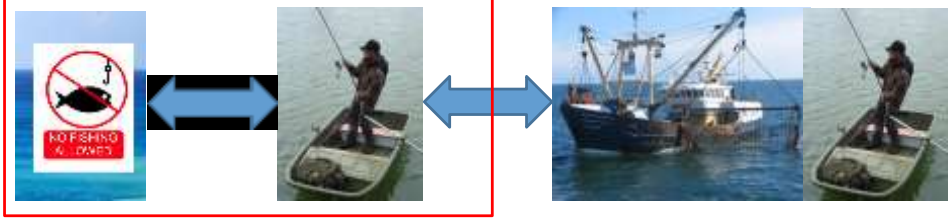
- Getting the go ahead for an MPA is just the beginning!
- To effectively design and manage MPAs a thorough understanding of fish population parameters is required.
- Rare that baseline data available.
- Continuous assessment of MPAs over time- habitat and populations.

My Research: Soft- sediments

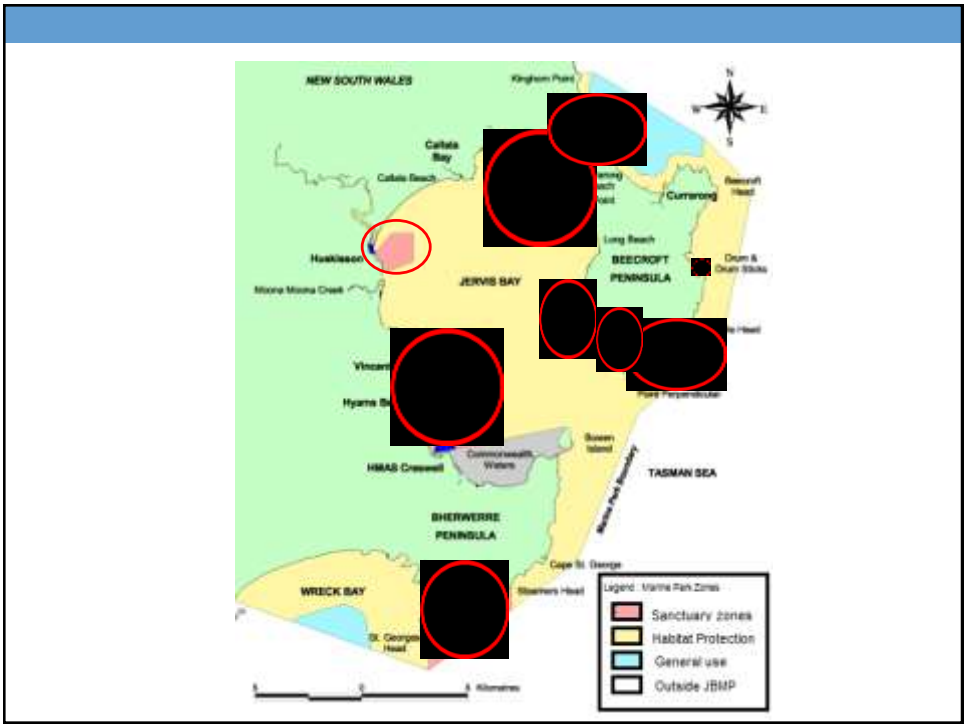


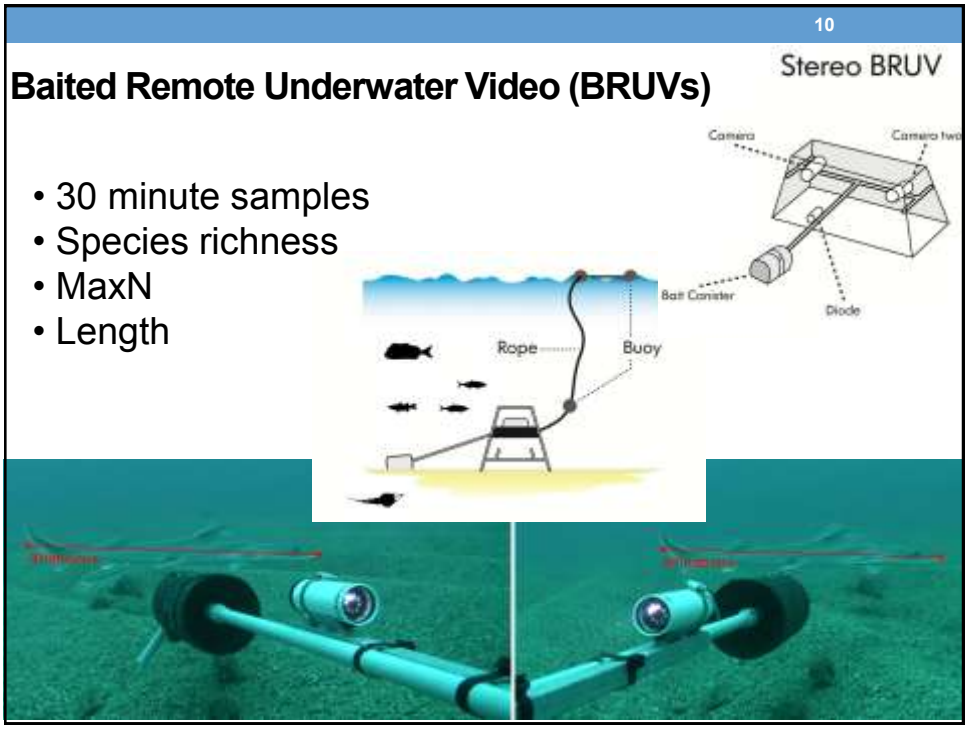
AIMS

- Baseline data on diversity and abundance
- Assessment of fish assemblages across a gradient of fishing pressure
- No-take <> Rec fishing <> Commercial + Rec fishing



- Assessment of movement patterns of fish in the MPA

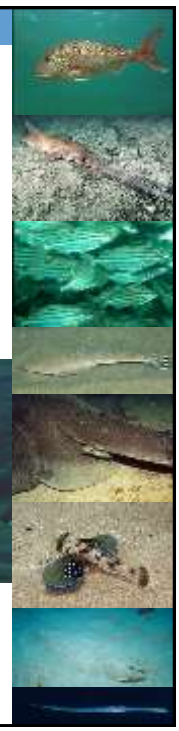

NEW SOUTH WALES
Callala Bay
Currarong
Long Beach
BEECROFT PENINSULA
JERVIS BAY
HMAS Creswell
TASMAN SEA
BHERWERRE PENINSULA
WRECK BAY
Legend: Marine Park Zones
Sanctuary zones
Habitat Protection
General use
Outside JBMP


10
Baited Remote Underwater Video (BRUVs)
• 30 minute samples
• Species richness
• MaxN
• Length
Stereo BRUV
Camera
Camera two
Bait Canister
Diode
Rope
Buoy

General assemblage overview

- 35 species
- 2073 fish counted
- Over 1000 fish measured

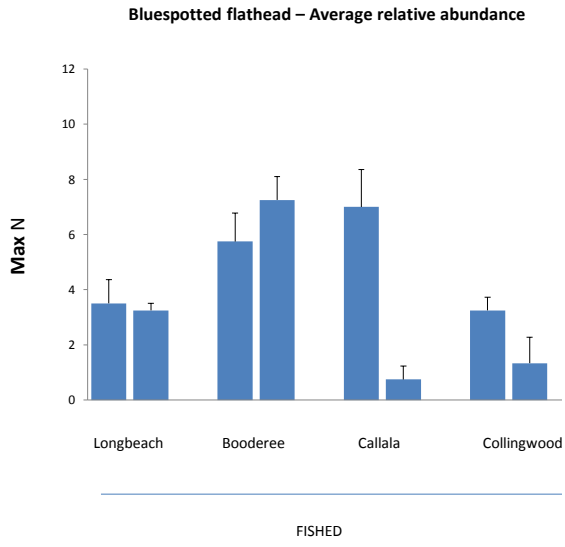


Results – Assemblage comparison

nMDS showing assemblage comparison across zones in Jervis Bay MPA. n = 48. Pink = Sanctuary zones, Blue = Recreationally fished zones. Multivariate PERMANOVA confirms no significant difference.

Results – Individual species



15

Results

- **Main results = No difference in fish assemblages.**

Some possible explanations

- Recreational fishing effort low.

- Length of protection.

- Reserve size.

Fish movement – Pilot Study

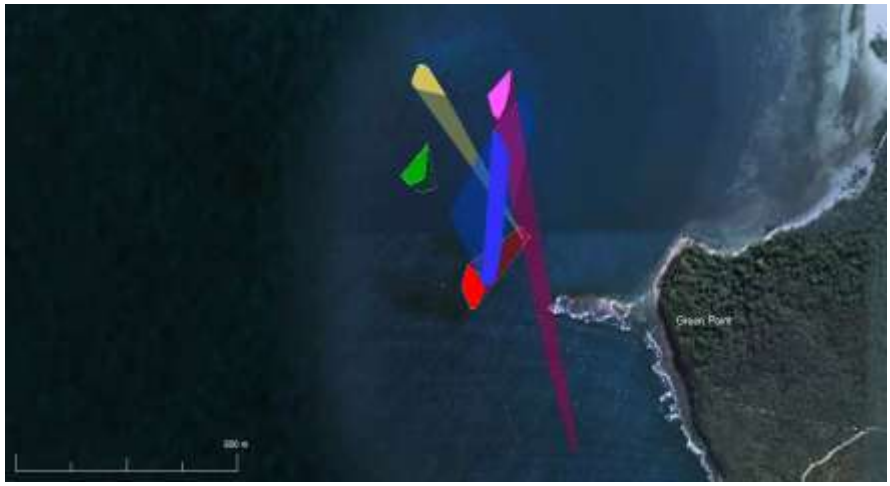
- Movement patterns of fish in the assemblage.
- Blue-spotted flathead (*Platycephalus caeruleopunctatus*)

17

Release locations

Fish one Fish two Fish three Fish four Fish five .

18



Fish one Fish two Fish three Fish four Fish five .

Initial Tracking Results

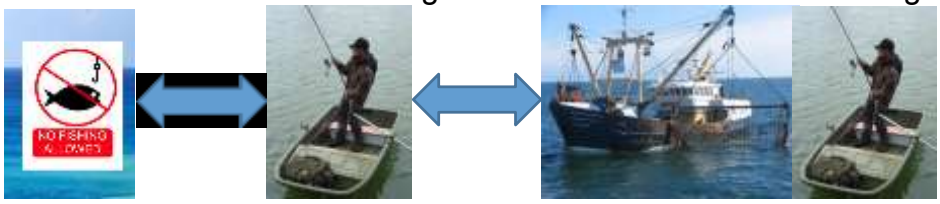
- Fish thought to show little site attachment over homogenous habitat types.
- Preliminary research on Blue-spotted flathead contradicts this.
- However spawning and migration movements possible.

Summary

- Two main conclusions from my research thus far
- No difference in fish assemblages.
- Short term movements suggest no take zones adequate size.
- More research needed.

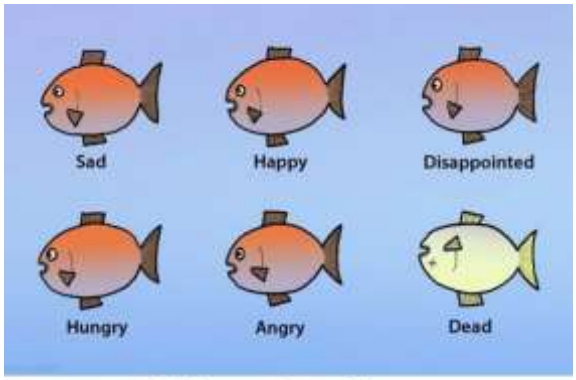
Future Research

- Baseline data on deeper areas.
- Assessment of fish assemblages across a gradient of fishing pressure.
- No-take <> Rec fishing <> Commercial + Rec fishing



- Long term movement patterns of fish within the assemblage.

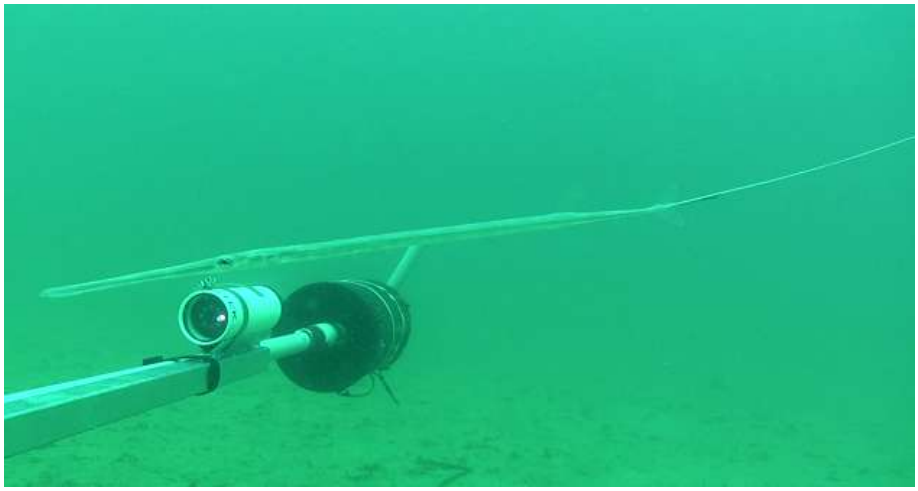
Questions.....



Feel free to contact me with questions or suggestions

Lachlan Fetterplace: **lcf775@uowmail.edu.au**

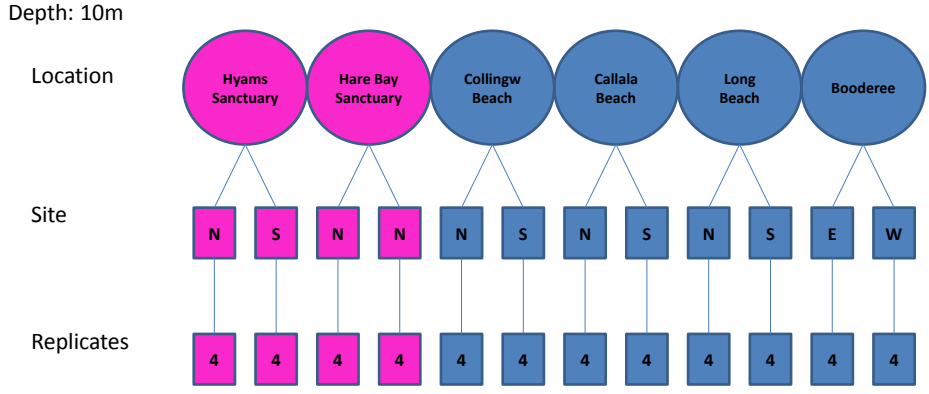
23



24

Experimental Design

Depth: 10m



Pink= Sanctuary no take zones
Blue = Habitat protection zones (fished)
48 replicates