



National Environmental  
Research Program

# SOME EFFECTS OF PROTECTION FROM FISHING ON OFFSHORE REEFS OF THE GBRWHA

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## PROJECT SCOPE

### WHAT DO WE SEEK TO KNOW AND WHY? - 1

## BACKGROUND

- Closing areas to various human activities (notably fishing) is almost universally promoted as a way to manage marine resources and biodiversity
- The GBRMP is one of the largest networks of Marine Protected Areas in the World
- The zoning plan was implemented to protect the biodiversity of the GBR in 2004
  - ... how is it working after 10 years?



## METHODS

- Surveys of pairs of matched reefs (matched by size, distance from shore, underwater topography)
- Under new zoning plan (2003):
  - Reef 1: open  $\Rightarrow$  no-take
  - Reef 2: open  $\Rightarrow$  open
- Survey reefs clustered in different regions near population centres (regional differences in fish abundance)
- Survey methods are the same as LTMP: standard habitat, 3 sites, UVC, photo-transects for benthos, manta tow
- Survey in alternate years

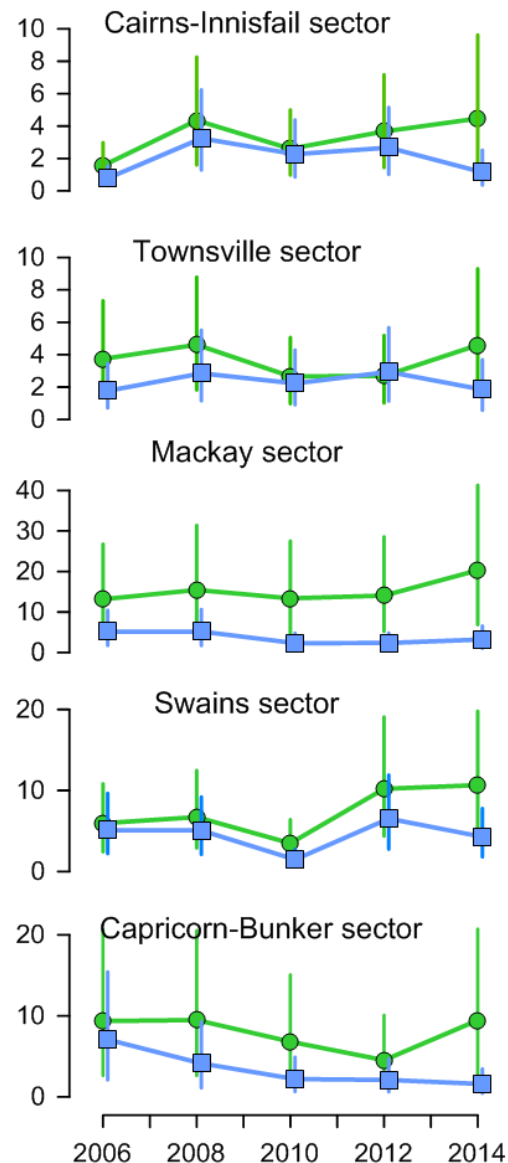




# CORAL TROUT - BIOMASS

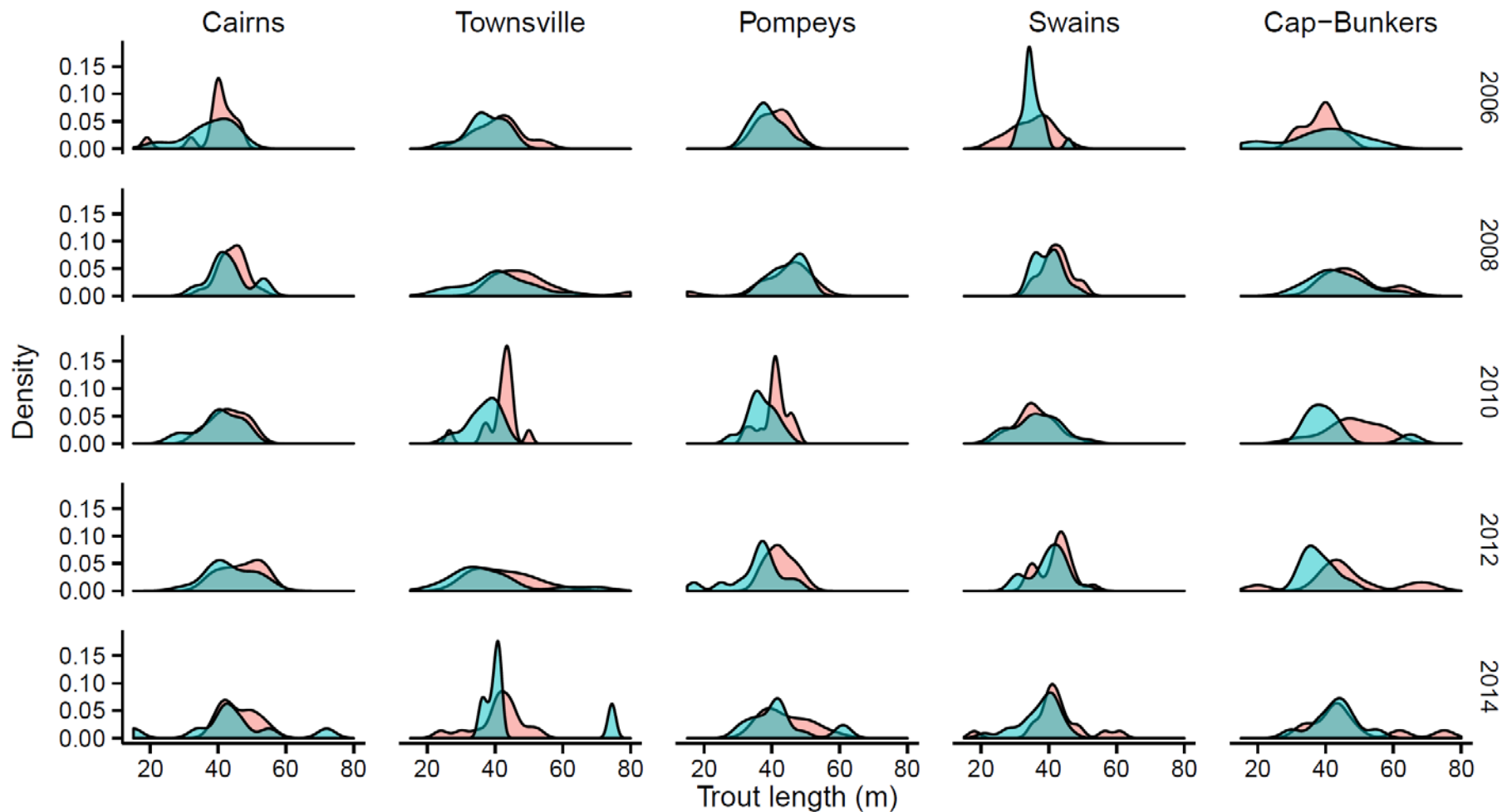


## Biomass of coral trout (all spp.)





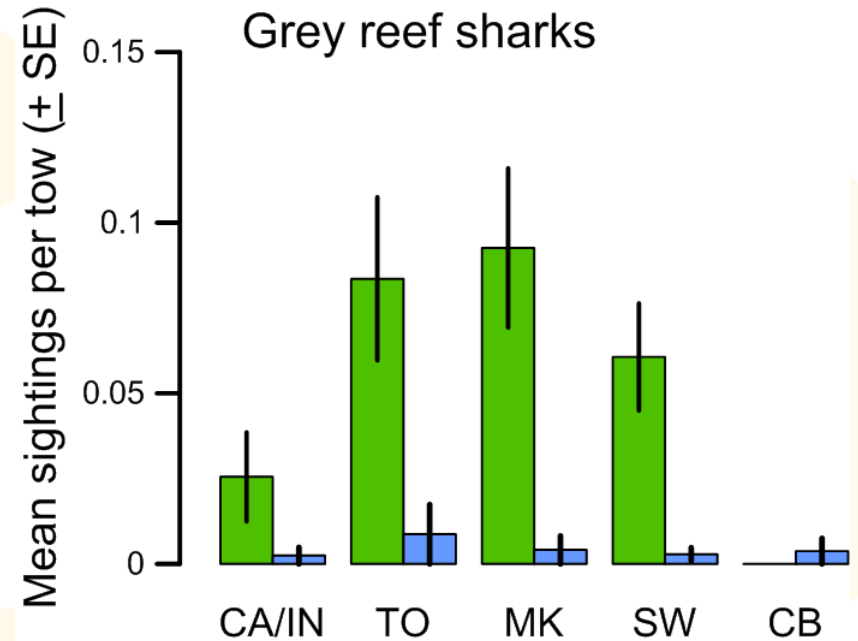
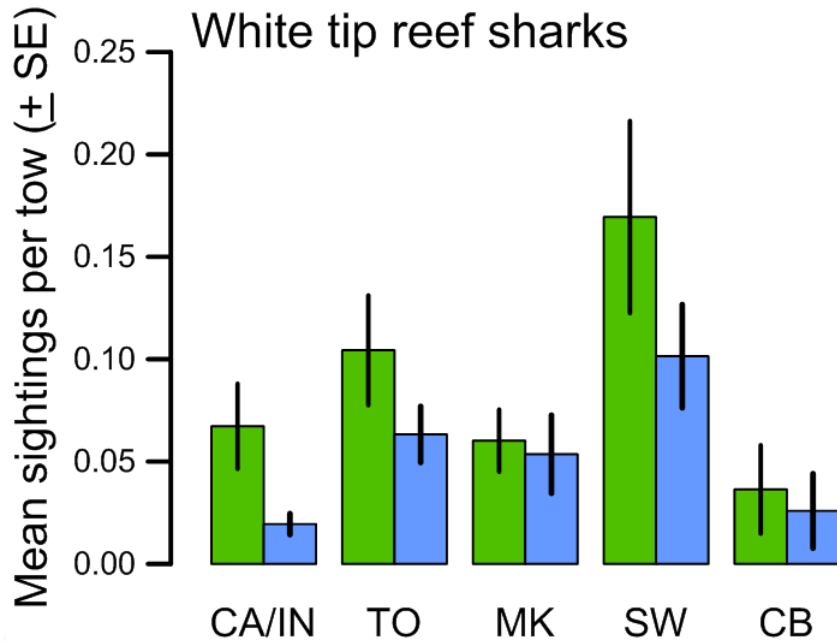
# CORAL TROUT – LENGTHS





## REEF SHARKS

Sharks seen during manta tows

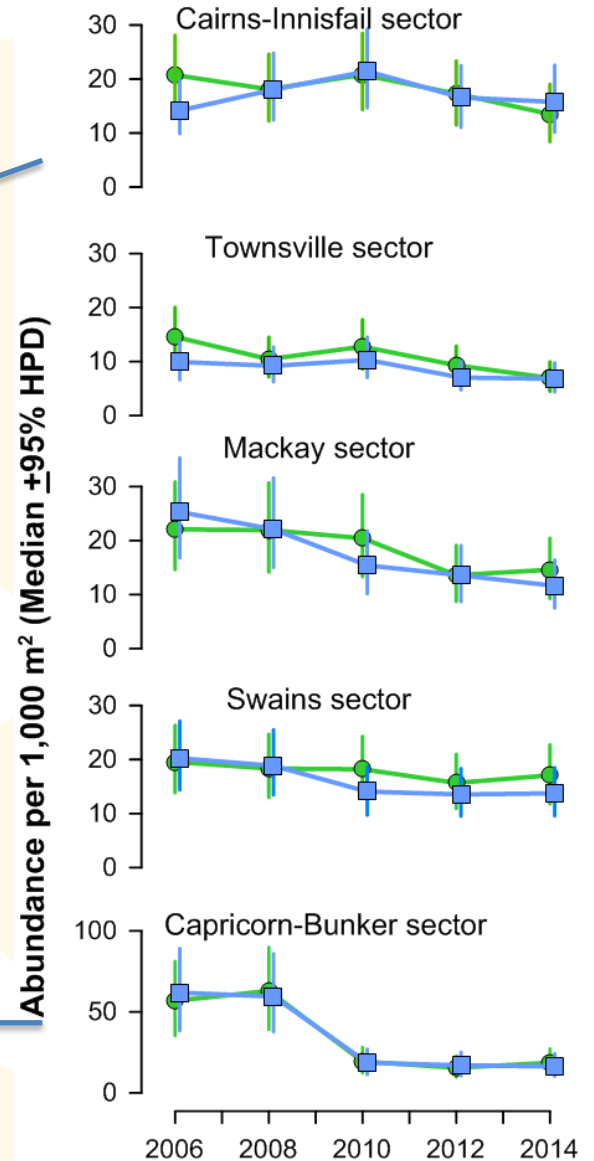




# NON-TARGETS – BUTTERFLY FISHES



## Abundance of butterfly fishes (all spp.)





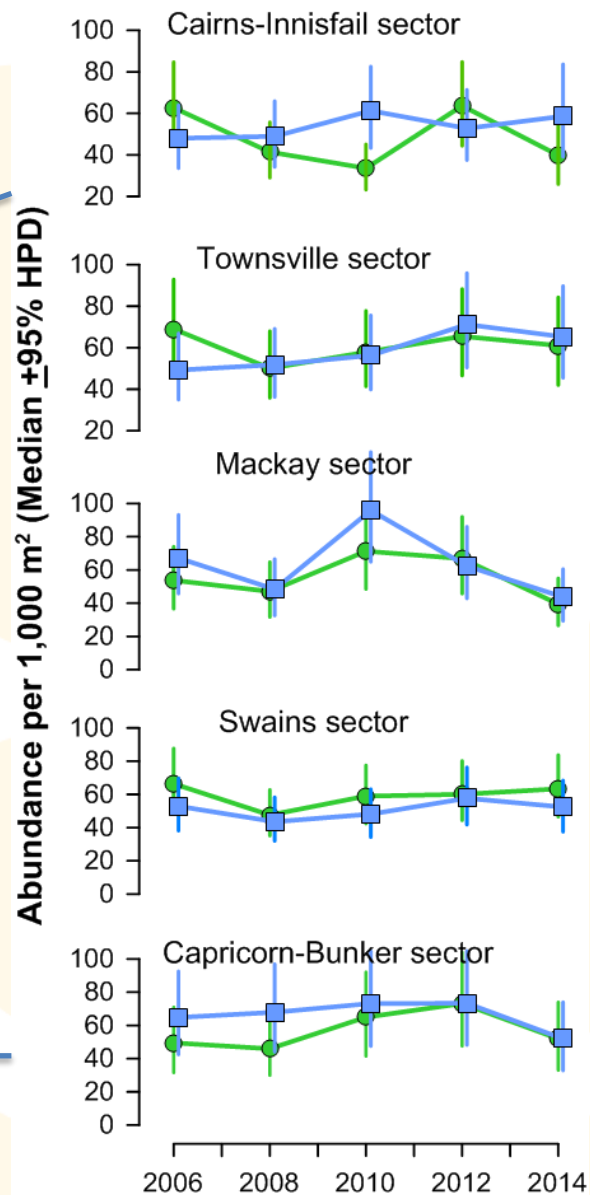
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# SCRAPERS



## Abundance of "Scraper" herbivores







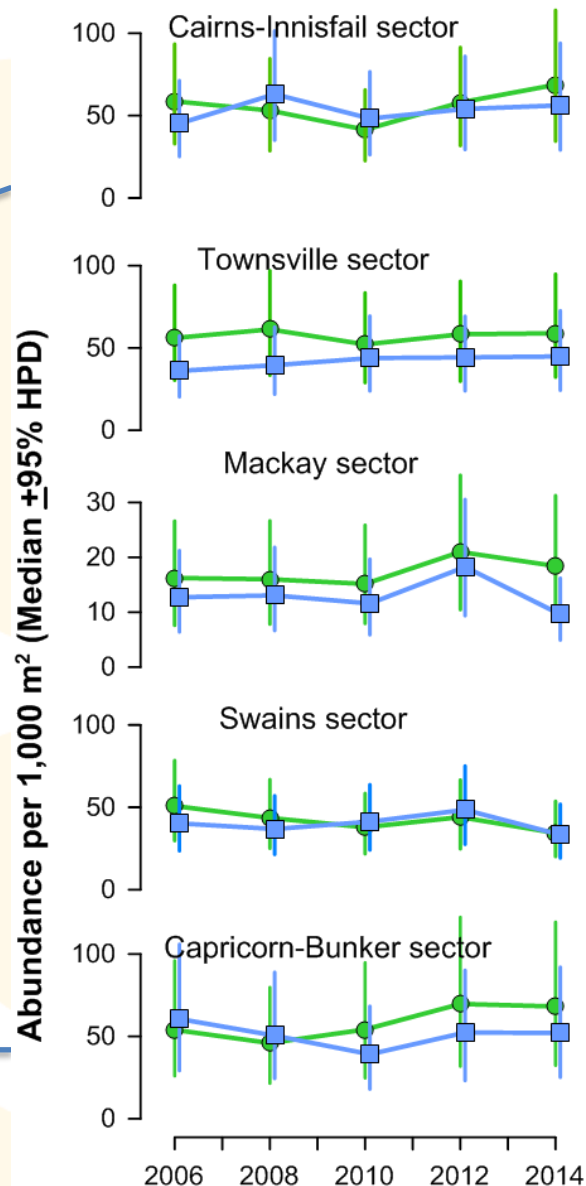
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# CROPPERS



## Abundance of "cropper" herbivores

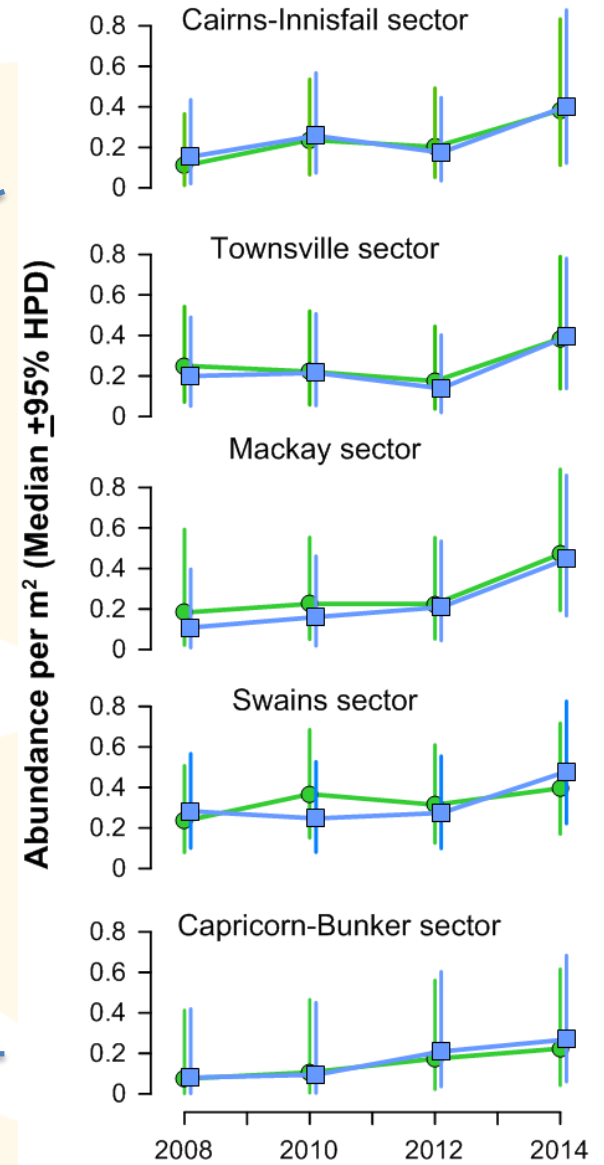




# CORAL JUVENILES (<5 cm)



## Abundance of juvenile corals

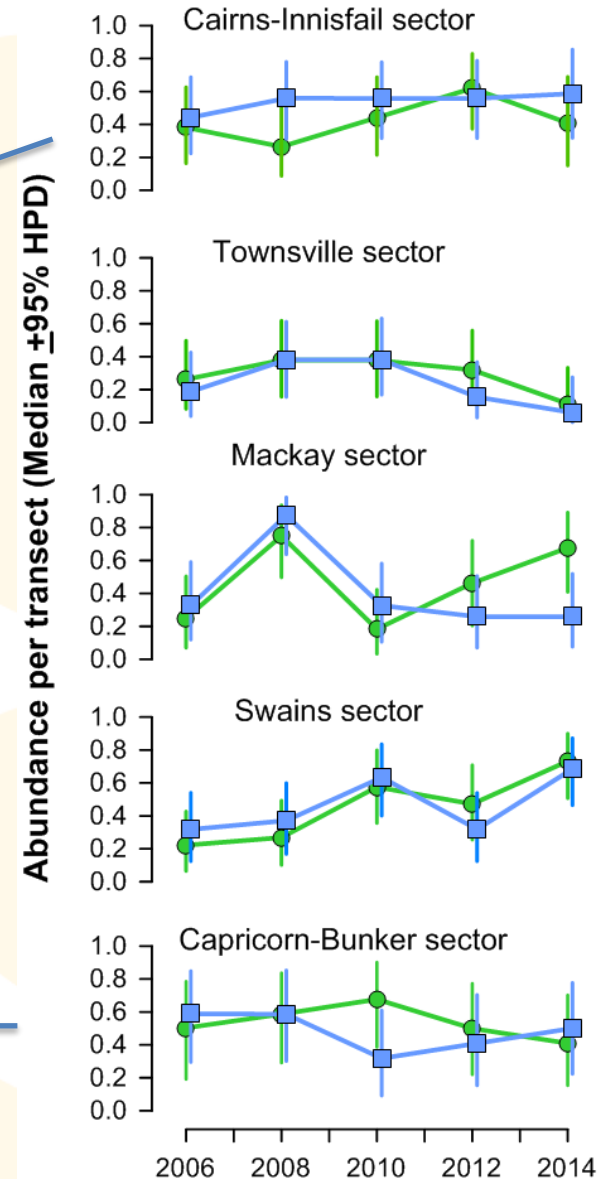




# CORAL DISEASE – “White syndrome”



## Occurrence of coral disease (“white syndrome”)

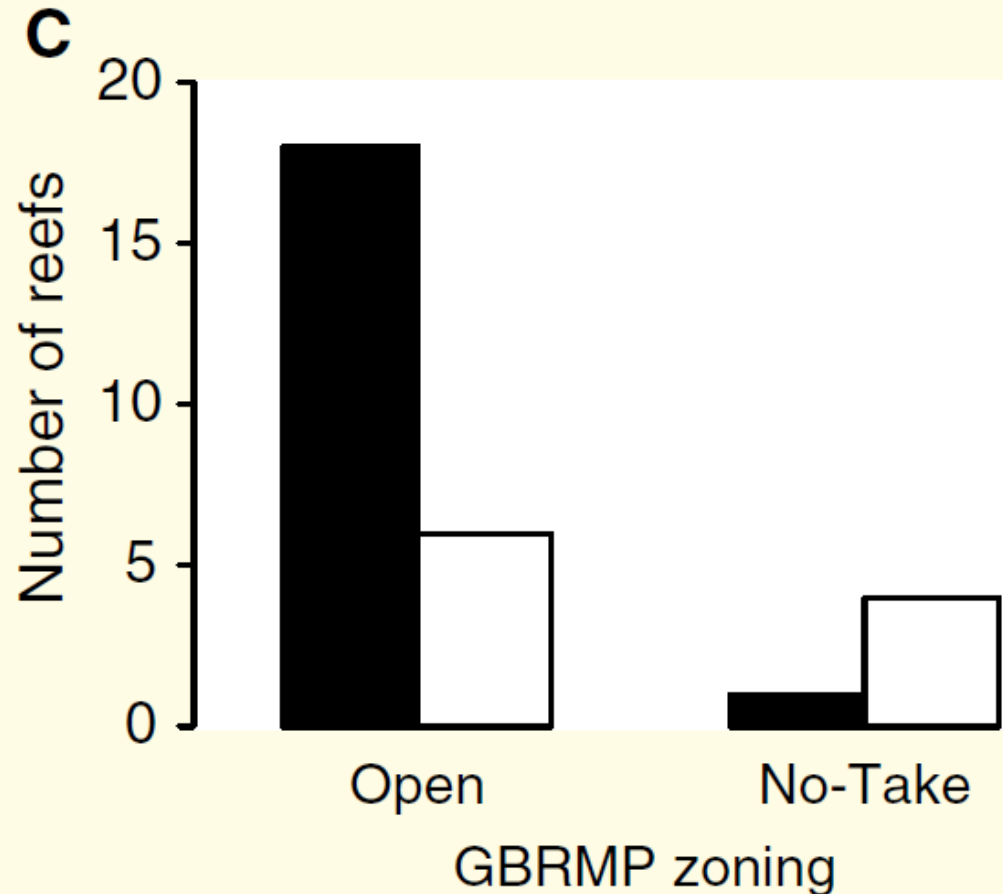




## OTHER ECOSYSTEM EFFECTS:

*Acanthaster*

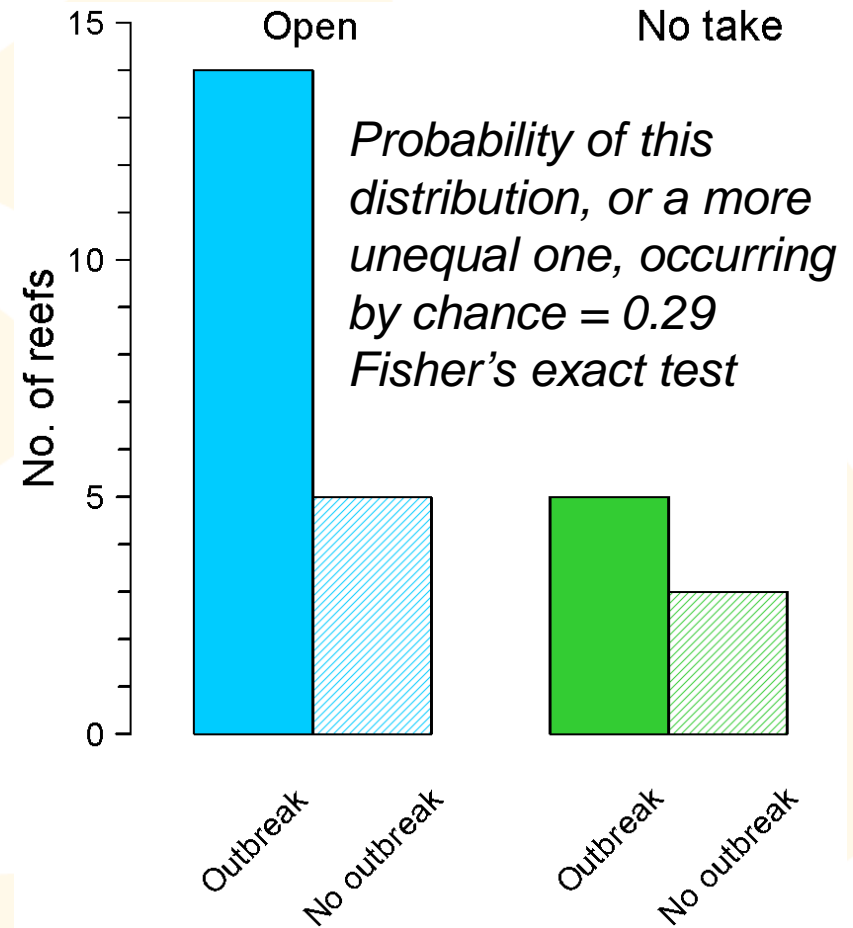
1994 - 2004





## OTHER ECOSYSTEM EFFECTS: *Acanthaster* 2014

- AIMS manta tow data
- Reefs N of Pt Douglas
- Only reefs < 25km from observed outbreak
- No outer shelf reefs





# Performance of no-take marine reserves on the Great Barrier Reef

Michael J Emslie<sup>1</sup>, Murray Logan<sup>1</sup>, David H Williamson<sup>2</sup>, Tony Ayling<sup>3</sup>,  
M. Aaron MacNeil<sup>1</sup>, Daniela Ceccarelli<sup>4</sup>, Alistair J Cheal<sup>1</sup>, Richard  
Evans<sup>5,6</sup>, Kerryn A Johns<sup>1</sup>, Michelle J Jonker<sup>1</sup>, Ian R Miller<sup>1</sup>, Kate  
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