

The Dark Side of Temperate and Tropical Reefs

presented by:

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Introduction

How do reef communities change across day and night?

 Is the entire community similarly influence?



Vertebrates (i.e., fishes)



Invertebrates (i.e., Urchins & Sea Cucumbers)



Diel niche partitioning

 Is this community shift consistent across ecological realms?

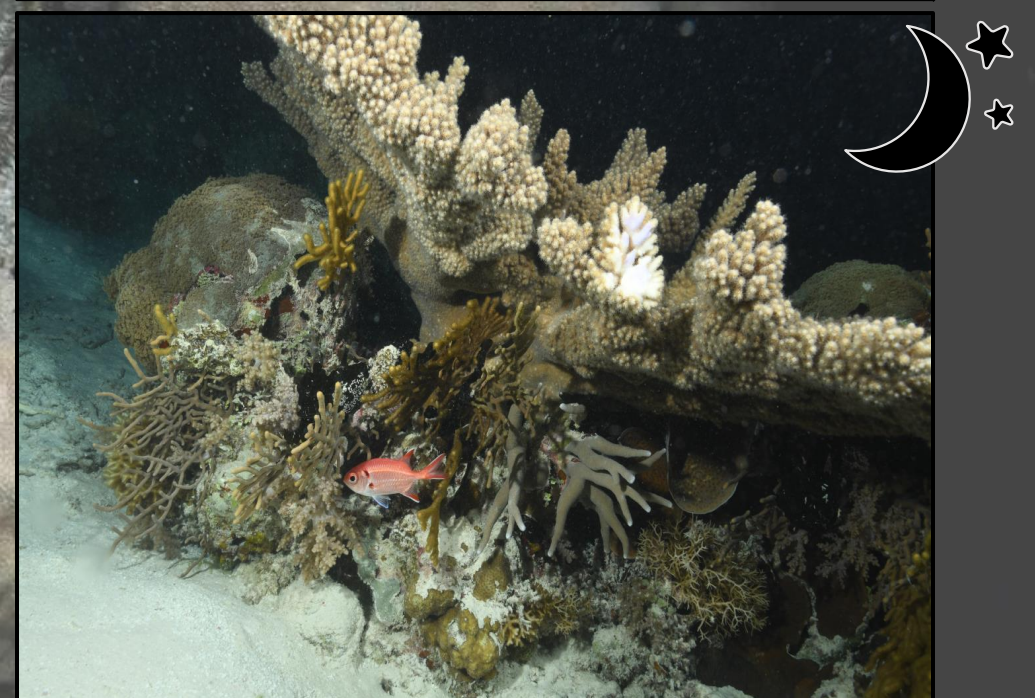
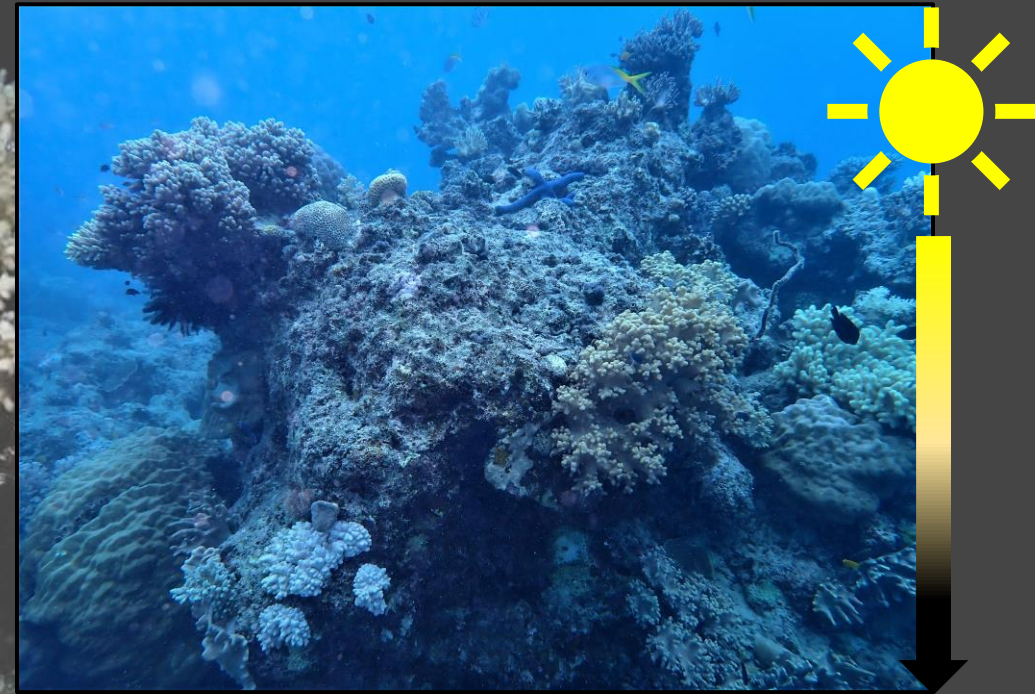


Temperate




Tropical

 How may this change with 'topicalization'?



Methodology

 Standardised Underwater Visual Census (UVC)

 Two sampling methods

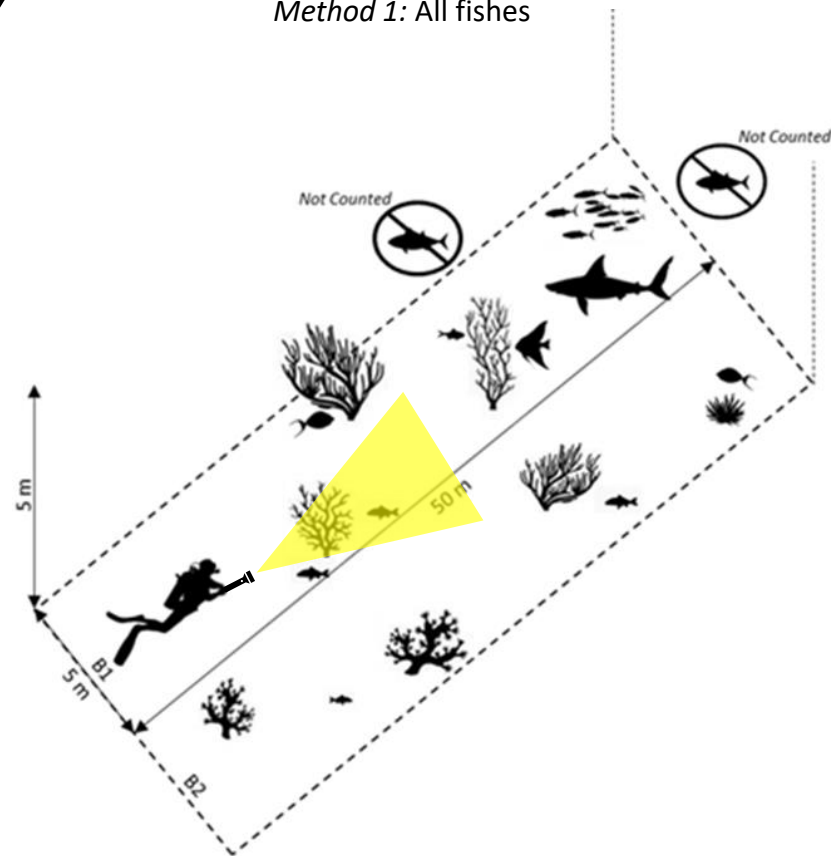
 Data recorded:

- Presence
- Abundance
- Size classes

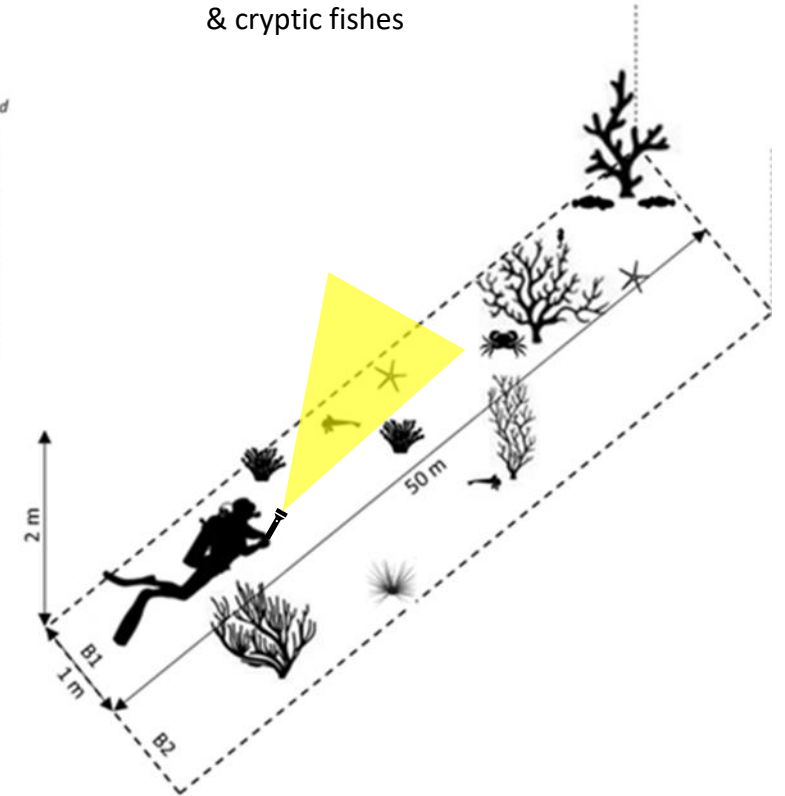
 Replicated day & night



Method 1: All fishes



Method 2: Large mobile invertebrates & cryptic fishes



Not to Scale

Methodology

Site distribution



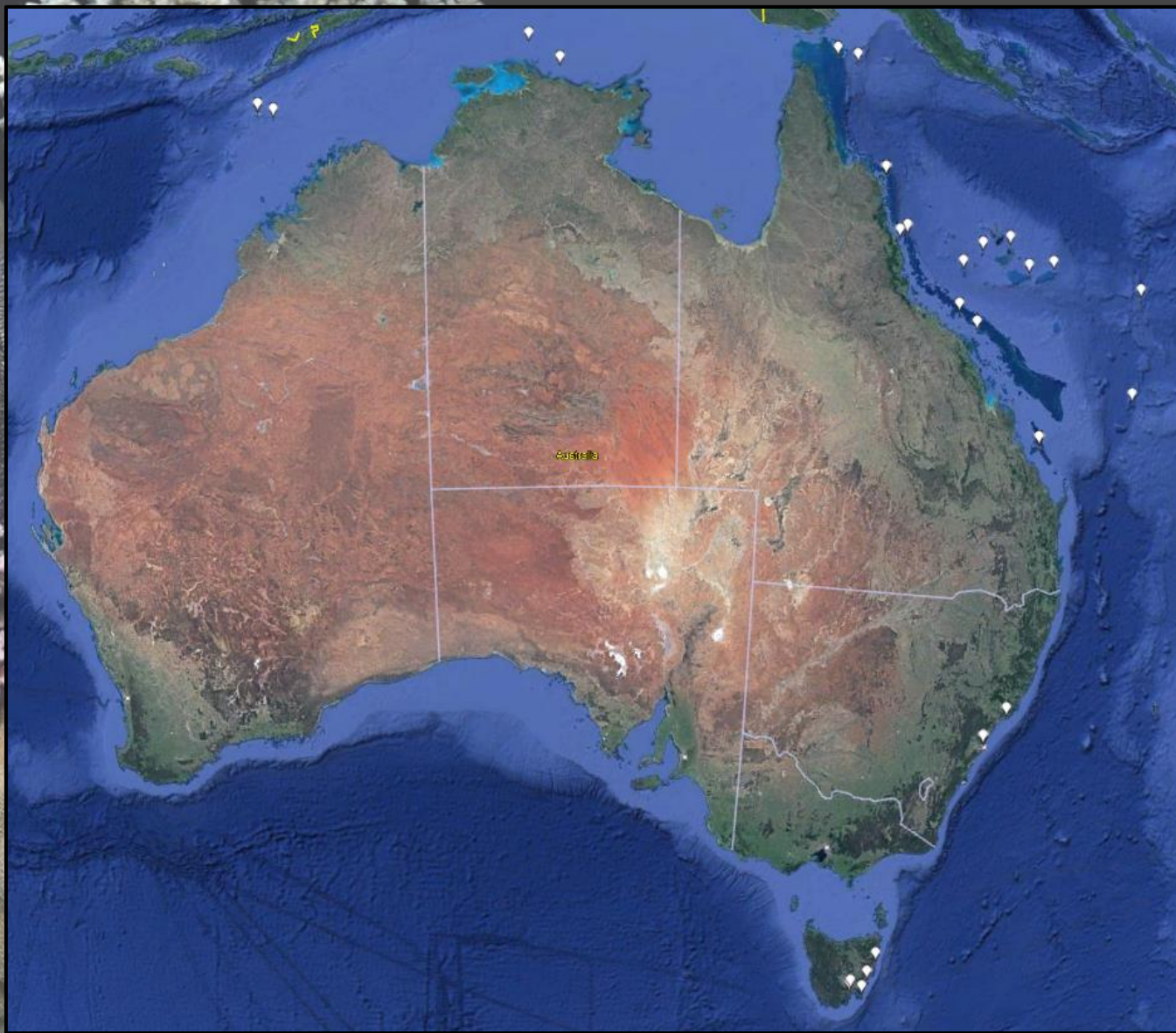
Total of 35 sites

- 10 temperate
- 25 tropical



Total 70 dives

- 35 day
- 35 night



Results

Obtained data

Utilised data

- 106,155 individuals recorded
- 893 species



- 657 fish species
- 94,326 individuals



- 236 invertebrates
- 11,829 individuals



Results

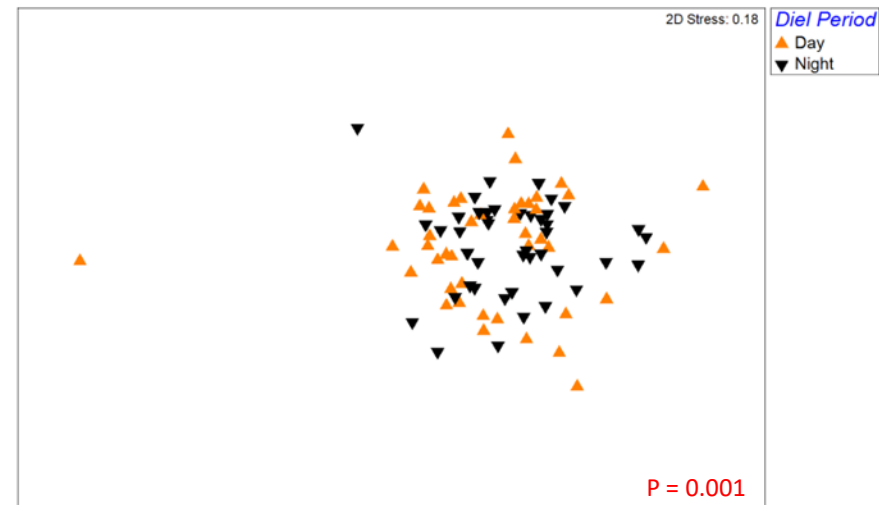
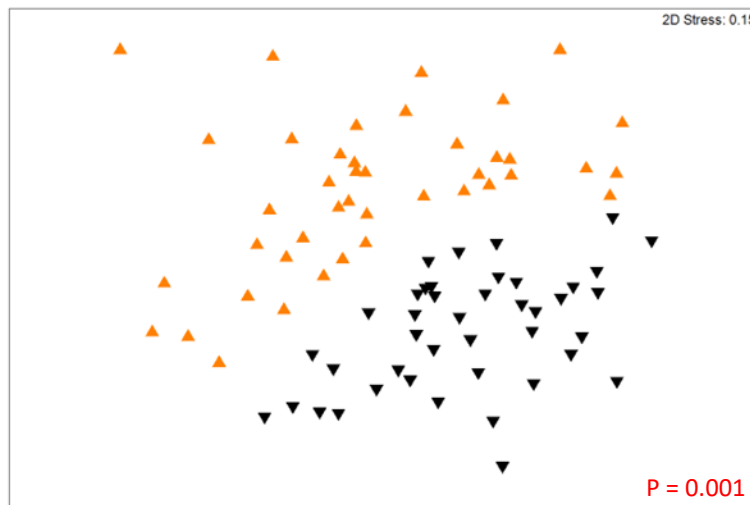
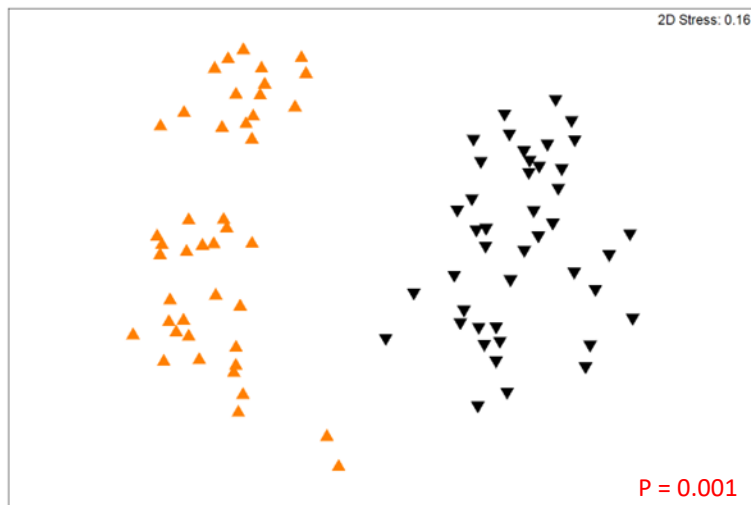
Community assemblage

Fishes (all)

Cryptic fishes

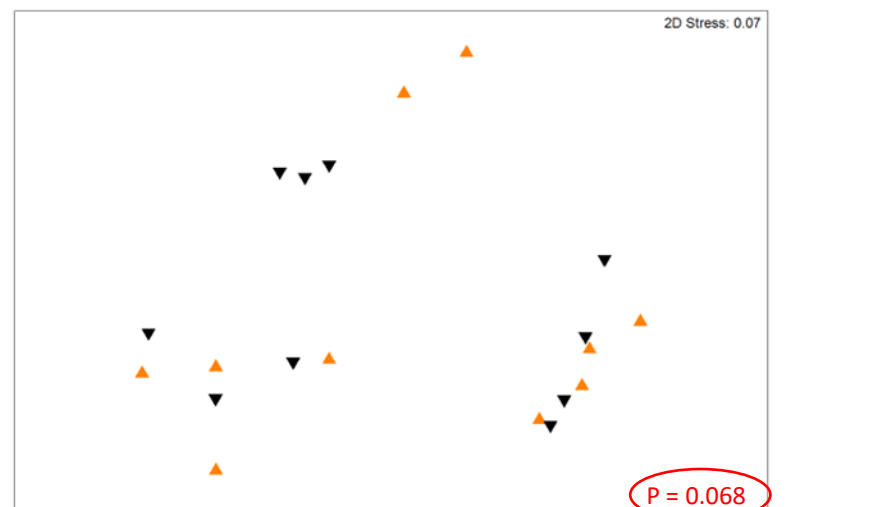
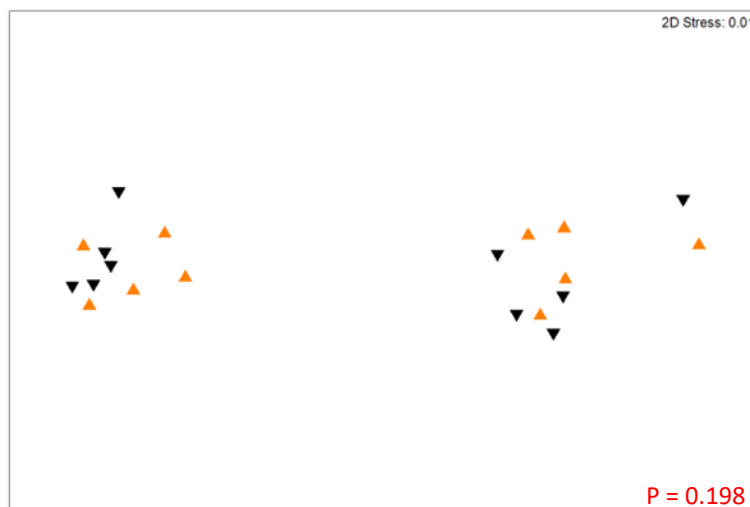
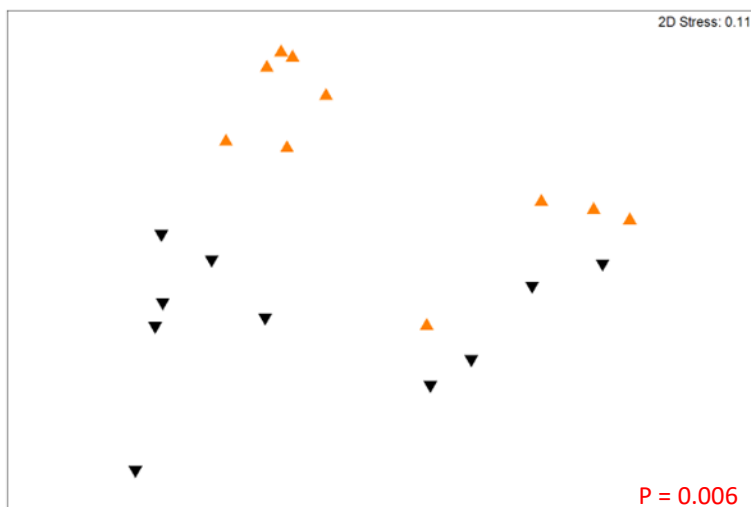
Invertebrates

Tropical



Diel Period
▲ Day
▼ Night

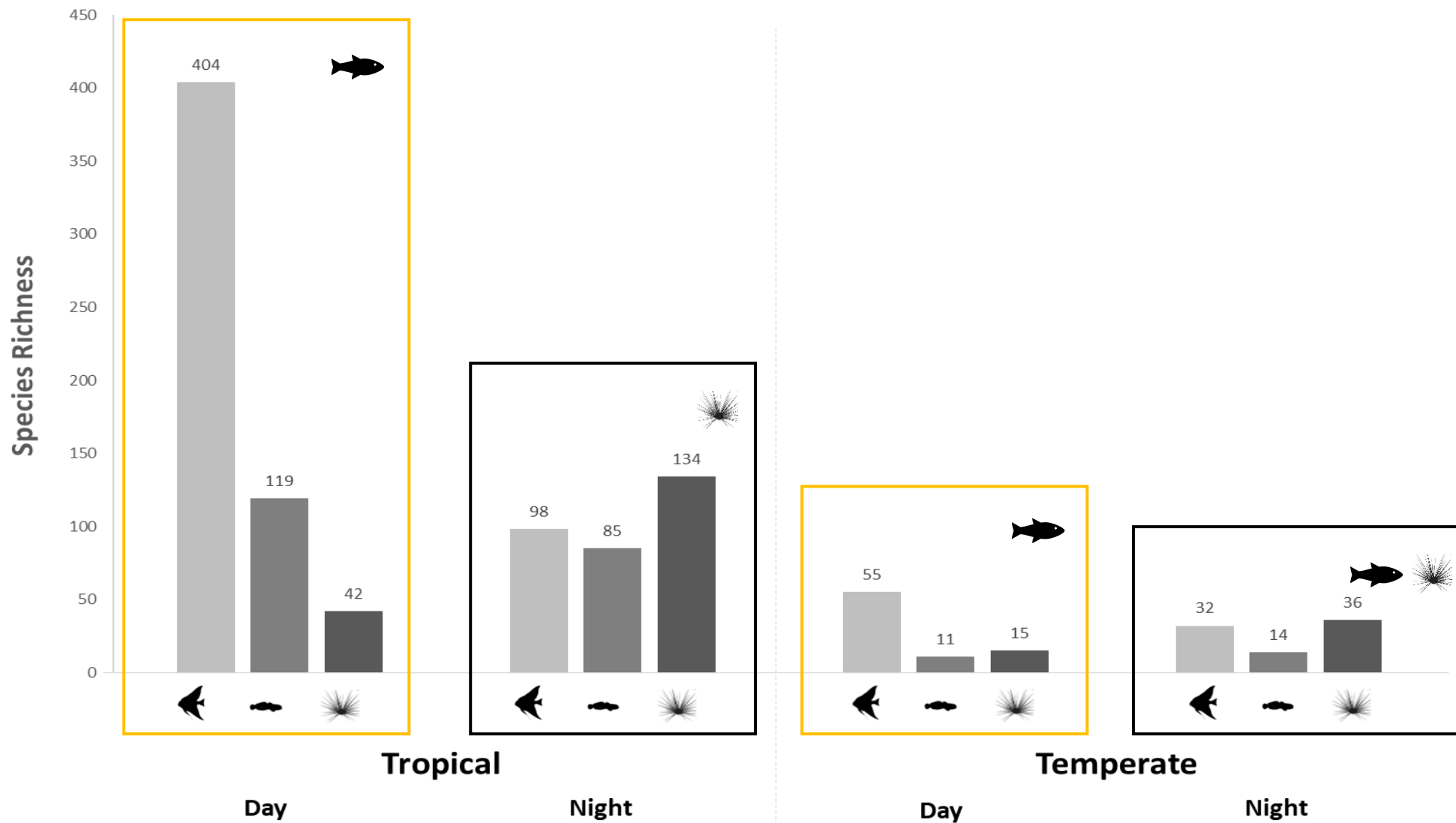
Temperate



P = 0.068

Results

Diel niche partitioning



Key findings

Influence of the Diel Cycle

Tropical Reefs

Entire community structure significantly modified by diel cycle:

☀ Dominated by fishes

☾ Dominated by invertebrates

- 🌿 Increased invertebrates emergence may be in response to:
- Increased resource availability
 - Decreased predation pressure (reduced fish presence)

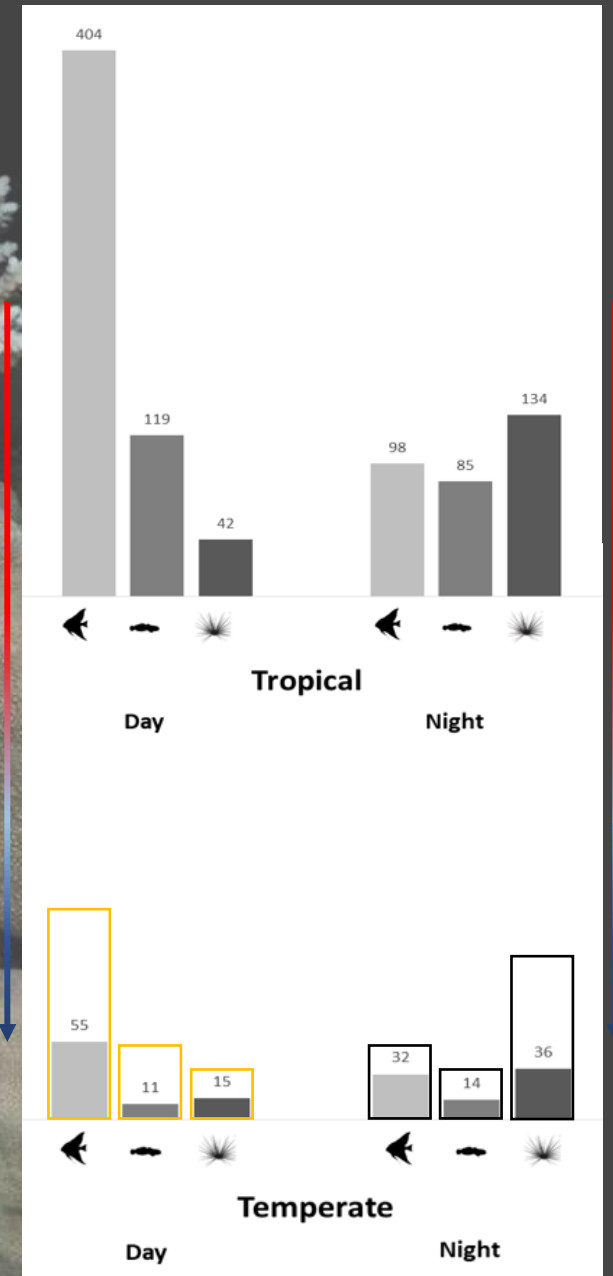
Temperate Reefs

Only fish community structure significantly modified by diel cycle:

🌿 Not statistically significant

- Reduced diel niche partitioning potentially due to:
 - Reduction or absence of predatory species

Tropicalization



What's next?

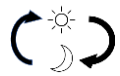


Increased temperate reef representation

- 10 sites → minimum 25 sites



Greater spatial distribution



Interrogate more complex community metrics

- Functional groups
- Food web dynamics



Image: Graham Edgar

Acknowledgments

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**Holsworth Wildlife
Research Endowment**



Australian
Marine Parks



REEF LIFE
SURVEY

An underwater photograph of a coral reef. The scene is dominated by several types of coral. In the foreground, there is a large, rounded, brownish coral with a textured surface. To its left is a large, branching coral with a pinkish-brown hue. In the background, there is a white, branching coral. The water is dark, and the overall lighting is focused on the coral structures.

Questions?

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