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Fisheries restrictions and their cascading effects on herbivore abundance and macroalgae removal at Kenyan coral reefs

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Background

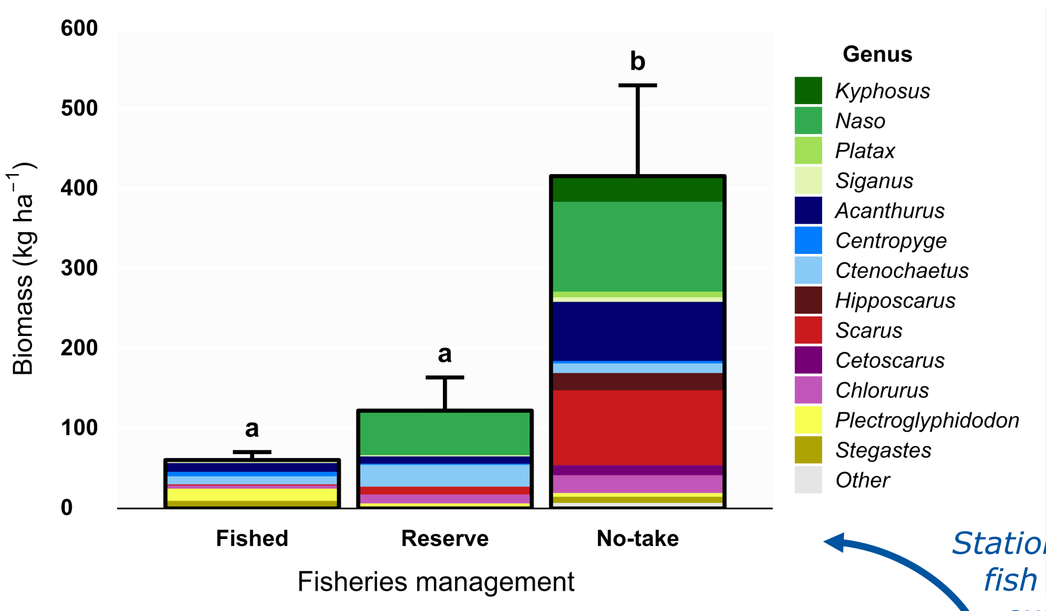
- An increase of macroalgae at degraded coral reefs hinders reef recovery
- Species removing macroalgae (browsers) largely unknown at Kenyan reefs
- Role of fisheries management in stimulating browsing remains debated

Methods

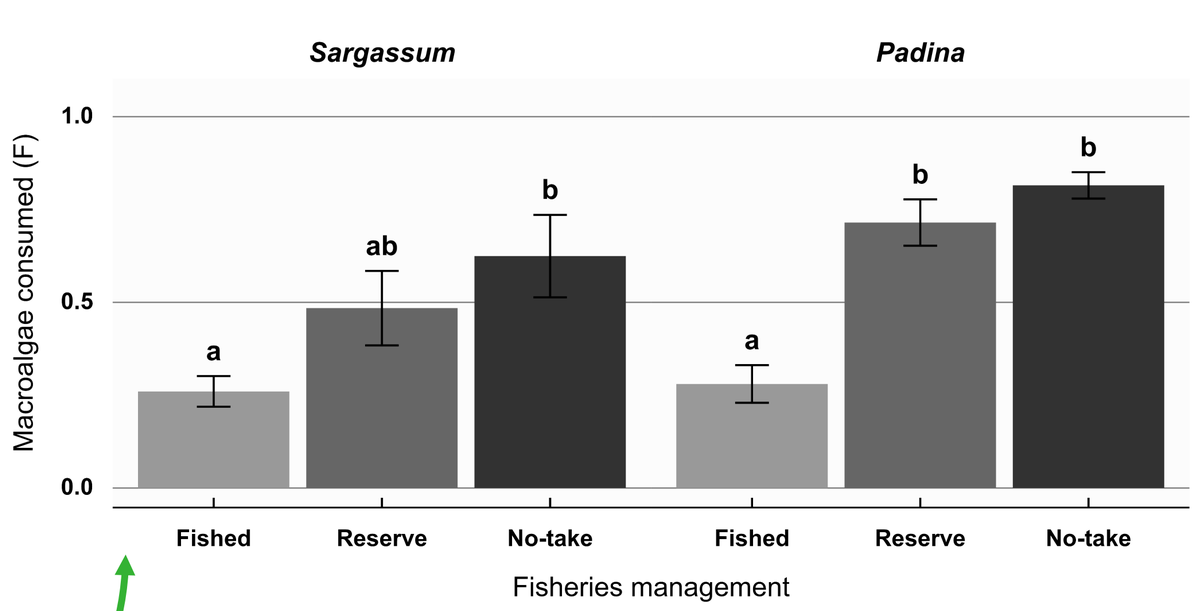
- 6 reefs with different fisheries management
- 24-h buffet assays of 2 macroalgae species
- Video recordings and fish & benthic surveys

Objective: Determine how the herbivore community and browsing pressure are influenced by fisheries management at Kenyan reefs

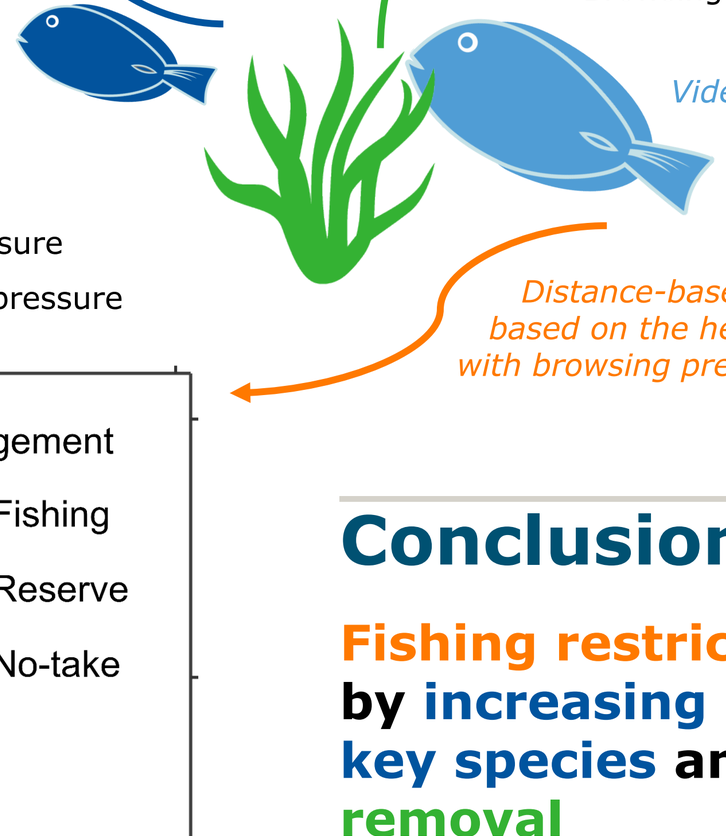
Results



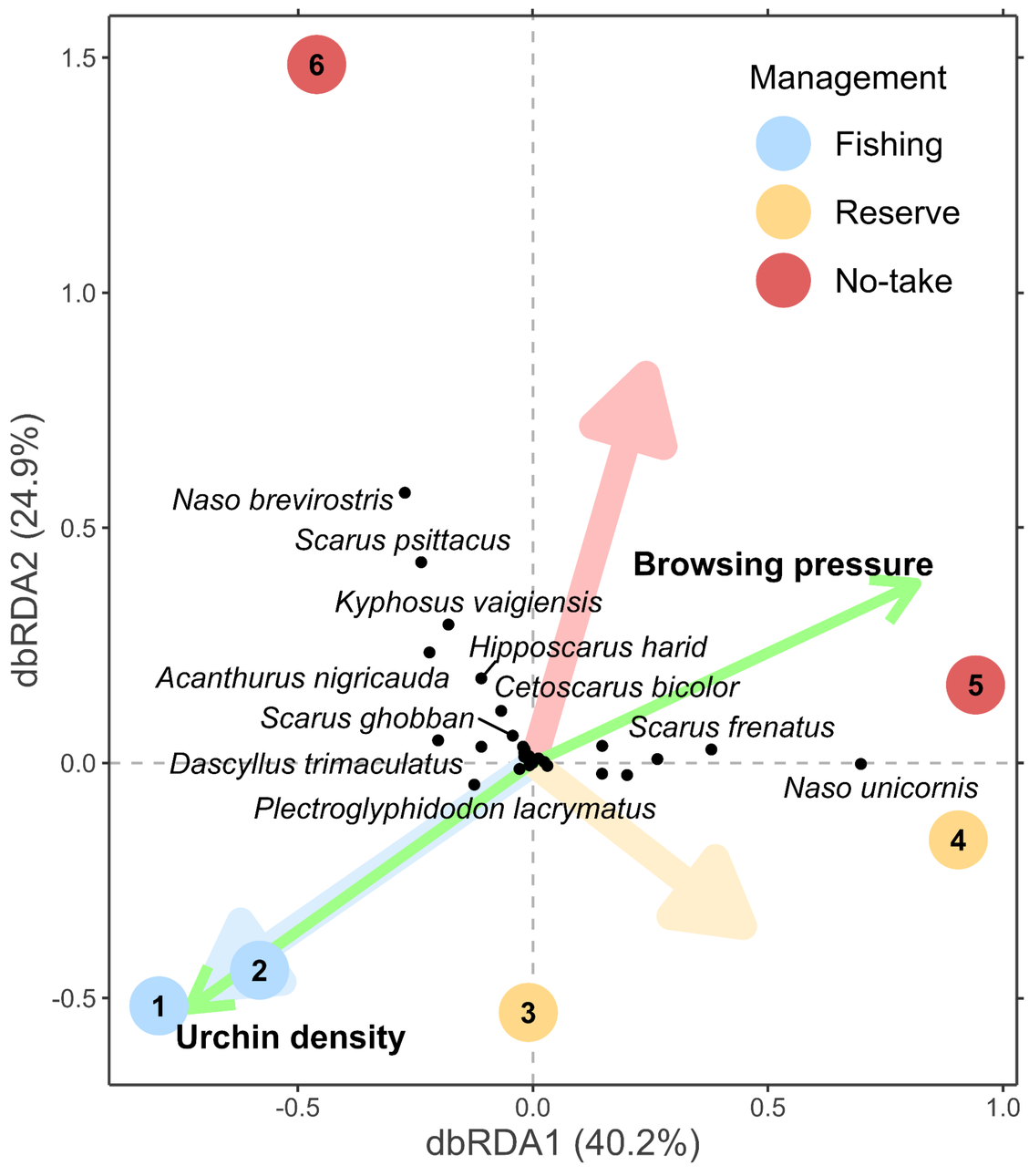
- **Herbivorous fish biomass** highest in no-take zones
- *Naso* spp. unicornfish common in protected areas
- Browsing fish not observed in fished zones
- Damselfish & sea urchins common in fished zones



- **Browsing pressure** up to 3-fold higher in protected areas
- *Padina* consumed more than *Sargassum*
- Browsing & scraping fish mostly recorded browsing



- **Protected areas** related to higher browsing pressure
- Browsers & scrapers associated with high browsing pressure
- Sea urchins & damselfish associated with low browsing pressure



Conclusions

Fishing restrictions support reef resilience by increasing herbivorous fish biomass of key species and promoting macroalgae removal

Especially large-bodied and functionally important fishes benefit from fisheries restrictions

Alternative browsers common in fished areas such as sea urchins can contribute to reef erosion

Acknowledgments

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