

Reef fish' behavioral responses to elevated CO₂

Frida Aalerud, Gunvor Einevoll Fimreite, Gwenaëlle Noally, Christina Schröter

Background

- The ocean absorbs over **30%** of our CO₂ emissions.
- It results in an ocean **chemistry change** and acidification.
- **Higher CO₂ levels** have shown to have **direct negative impacts on fishes'** physiology and behavior.
- We aim to find if fish behavioral responses (**foraging**, **habitat** and **predation**) to elevated CO₂ differ depending on **their maximum length and/or depth range**.

Methods

- We used a dataset consisting on **multiple trait-mediated responses** of fish to ocean acidification (Cattano et al., 2018).
- We extracted relevant data and completed it with fish traits from a **fish database**.
- We processed the data on **R version 4.2.1** and ran anova tests.

Results

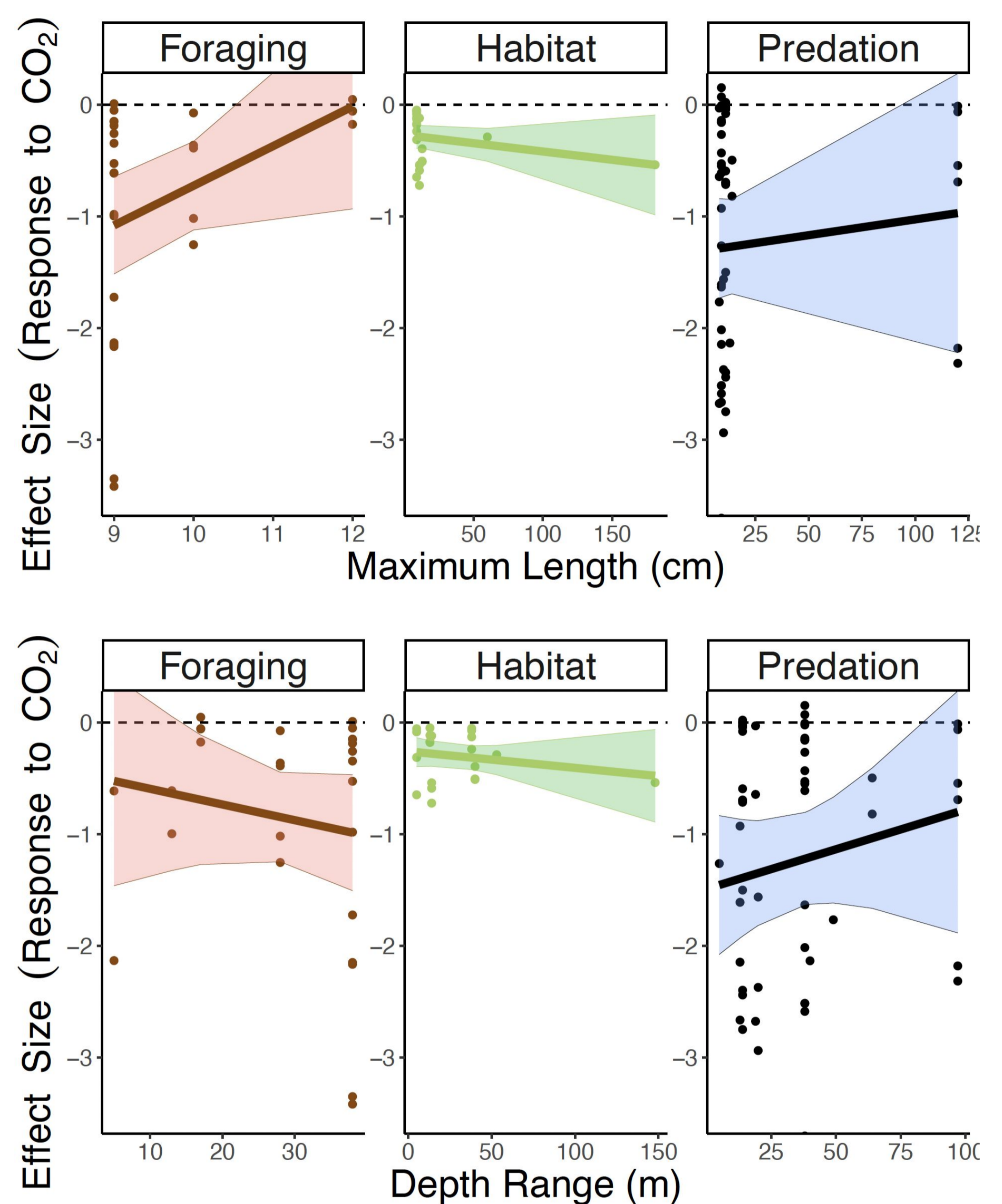


Figure 1: Effect of elevated CO₂ levels on ecological processes (foraging, habitat choice, predation risk) against the **maximum length (cm)** and **depth range (m)** of different fish species.

- The figures illustrate a **negative effect** of elevated CO₂ levels on fish.
- There is a **significant positive relationship** between maximum length and the effect size regarding **foraging behaviour**.

Conclusions

Our results revealed a **significant linear relationship** between maximum body length and **foraging behaviour**.



Reference:

- Cattano, C., Claudet, J., Domenici, P., & Milazzo, M. (2018). Living in a high CO₂ world: A global meta-analysis shows multiple trait-mediated fish responses to ocean acidification. *Ecological Monographs*, 88(3), 320–335. <https://www.fishbase.se/search.php>

