



Corallivorous butterflyfish grazing on parrotfish grazing scars

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Introduction

- Corallivores are organisms that feed on coral tissue.
- This behavior can destroy the coral tissue (Bruckner & Bruckner, 1998).
- Parrotfish infrequently take bites on corals, such as *Orbicella annularis*, and sometimes leave scars (Roff et al. 2011).
- While *Chaetodon capistratus* (foureye butterflyfish), tend to prefer gorgonian tissue, they do sometimes graze on hard coral (Gore 1984).
- We conducted foraging observations of *C. capistratus* to investigate the question: do *C. capistratus* preferentially forage on scars left by parrotfishes on *O. annularis*?



Above: A photo of a foureye butterflyfish taking a bite of scar tissue on *O. annularis*.



Above: A photo of a foureye butterflyfish nipping at a gorgonian.

Methods

- Collected twenty 15-minute videos of butterflyfish grazing over the course of a week and a half.
- Analyzed videos in the behavioral analysis software.
- Recorded all bites taken by focal butterflyfish, and noted the substrate targeted (e.g. live coral, gorgonian, etc.).
- For bites on live coral, we identified the coral to species and whether the bite was taken on a parrotfish grazing scar (for *O. annularis*).
- Explored trends in the data using the statistical software RStudio.

Results

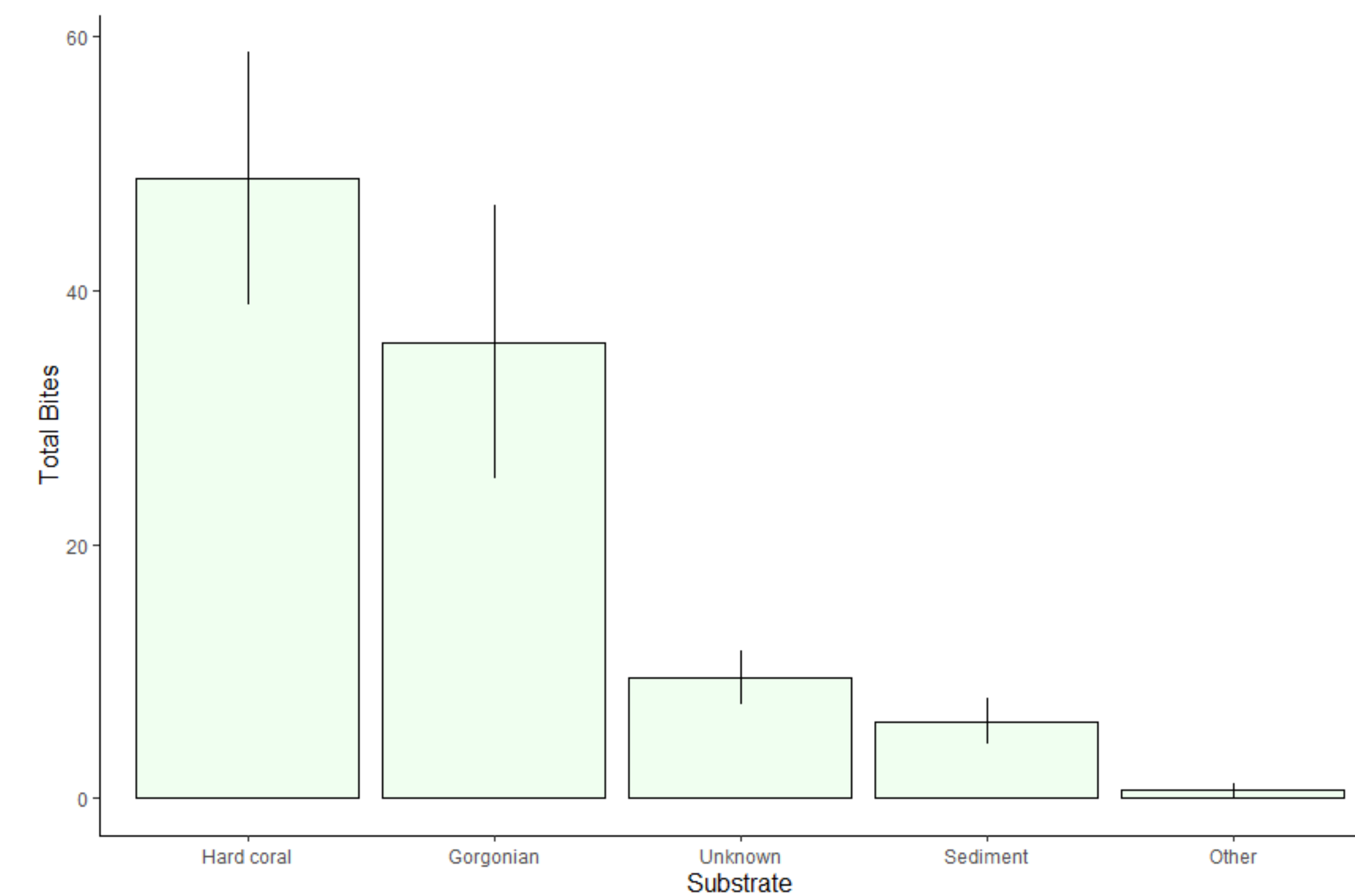


Figure 1: Butterflyfish bites on five most common substrates. The highest bite counts occur on hard coral substrate, while the second highest occurs on gorgonians. This suggests that foureye butterflyfish feed primarily on hard corals.

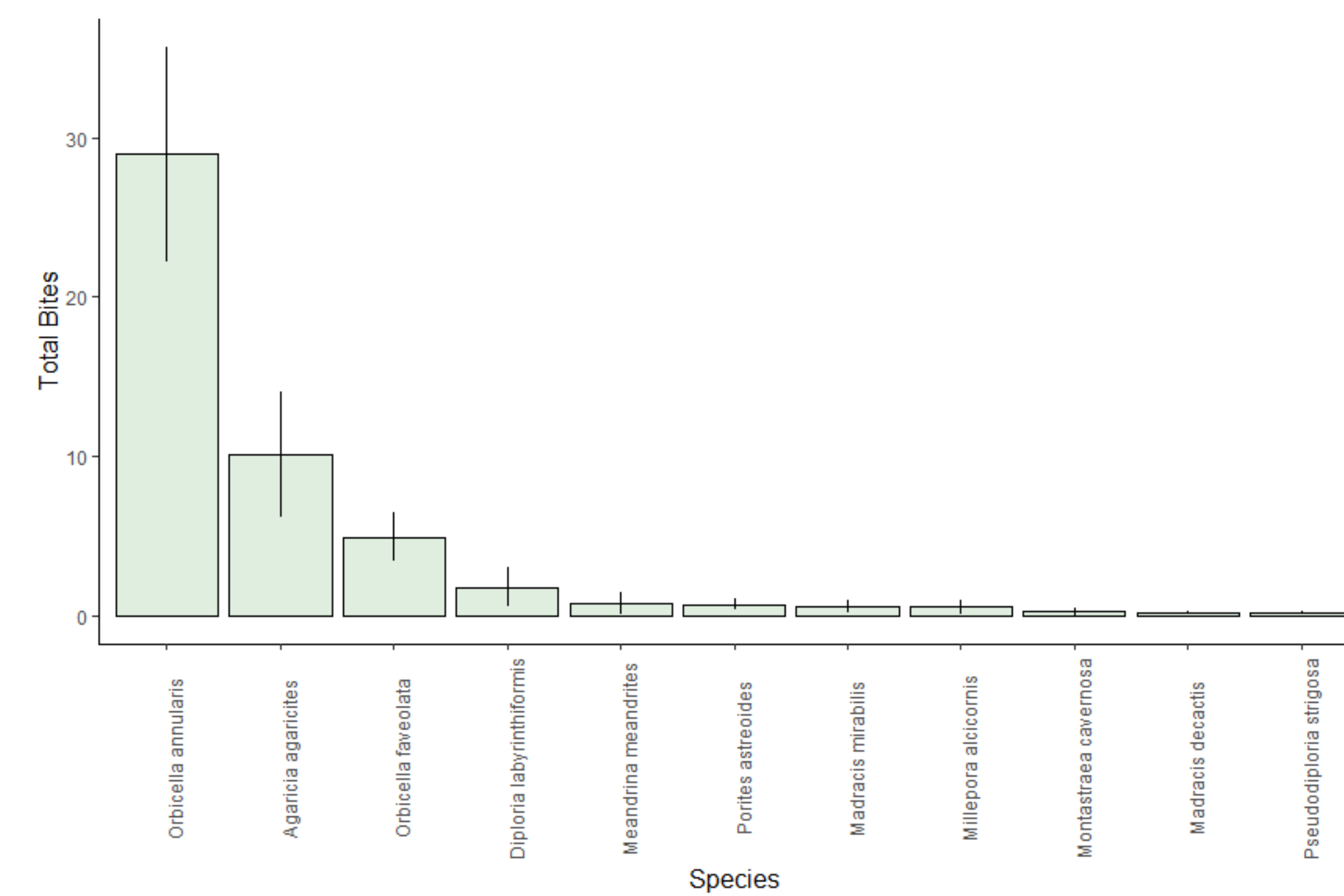


Figure 2: Coral species grazed on by the foureye butterflyfish. Within the hard coral category, the greatest number of bites were taken on *O. annularis*.

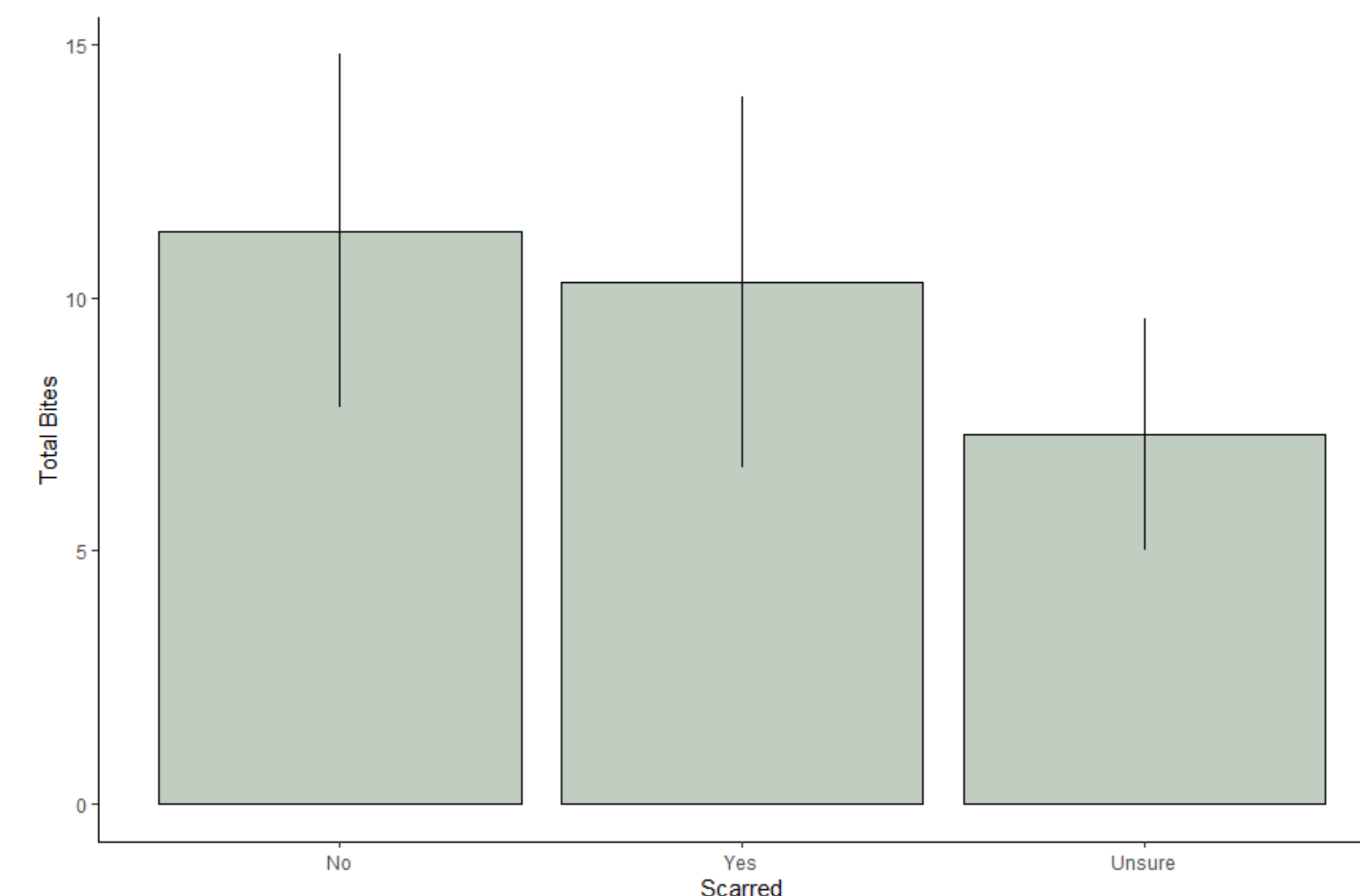


Figure 3: Frequency of bites taken on or off scar tissue on *O. annularis*. Similar numbers of bites were taken on and off scar tissue. This suggests that foureye butterflyfish feed on both substrates.

Results

- Most bites were taken on live coral and gorgonians.
- *O. annularis* was the most bitten live coral in our observations.
- There does not appear to be a preference for previously scarred *O. annularis* tissue, but we will be further investigating this using benthic data.



Left: This photo is an example of a foureye butterflyfish grazing on unscarred coral tissue. The white patch to the right may look like a scar, but it is not. Typically, scarred tissue occurs at the top of the coral lobe.

Discussion

- When butterflyfish take bites on corals, they can make the corals more susceptible to disease, such as stony coral tissue loss disease (SCTLD). Foureye butterflyfish may even prefer diseased tissue and help with its spread (Noonan & Childress 2020).

Future Directions

- We will be expanding on this methodology to include an analysis of benthic data.
- This is important for furthering this work because the butterflyfish bites on scar tissue may be more significant if there is a smaller spread of scar tissue.

References

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