

Comparative evaluation of the feeding habits of sea anemones (Cnidaria; Actiniaria)

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INTRODUCTION & AIM

The behavioral patterns and feeding strategies of marine organisms represent significant aspects when comprehending the ecology, evolution, and dynamics of species. However, although individuals of the phylum Cnidaria have different life cycles and present a widespread distribution, studies of feeding behavior in anthozoans are scarce¹. In this study, 42 individuals comprising three species of sea anemones, *Actinia bermudensis* (16), *Anemonia sargassensis* (16) and *Bunodosoma caissarum* (10), were analyzed using DNA metabarcoding techniques in order to identify and compare their feeding patterns.

METHOD

Morphological analysis of the gastrovascular cavity²

Sample collection for molecular analysis

DNA extraction and amplification (mtCOI)

Sample sequencing (Illumina)

Bioinformatics tools for data compilation and analysis (Geneious)³

RESULTS & DISCUSSION

The partial identification of the fragments found in the gastrovascular cavity of the individuals (Figure 1), although limited, revealed a large ingestion of small crustaceans, such as from the Amphipoda order. The sequencing of the genetic material provided an extensive and diverse portion of the organisms ingested by the specimens (Figure 2). The most representative phyla were: Annelida; Mollusca; Arthropoda, including the subphylum Crustacea, Chelicerata and Hexapoda; Cnidaria, comprising the classes Scyphozoa and Hydrozoa; Ochrophyta; and others, covering bacteria, fungi, zooplankton, ciliated and amoeboid protozoa, sponges, rotifers, ctenophores, rhodophytes, and individuals from the phylum Chordata.

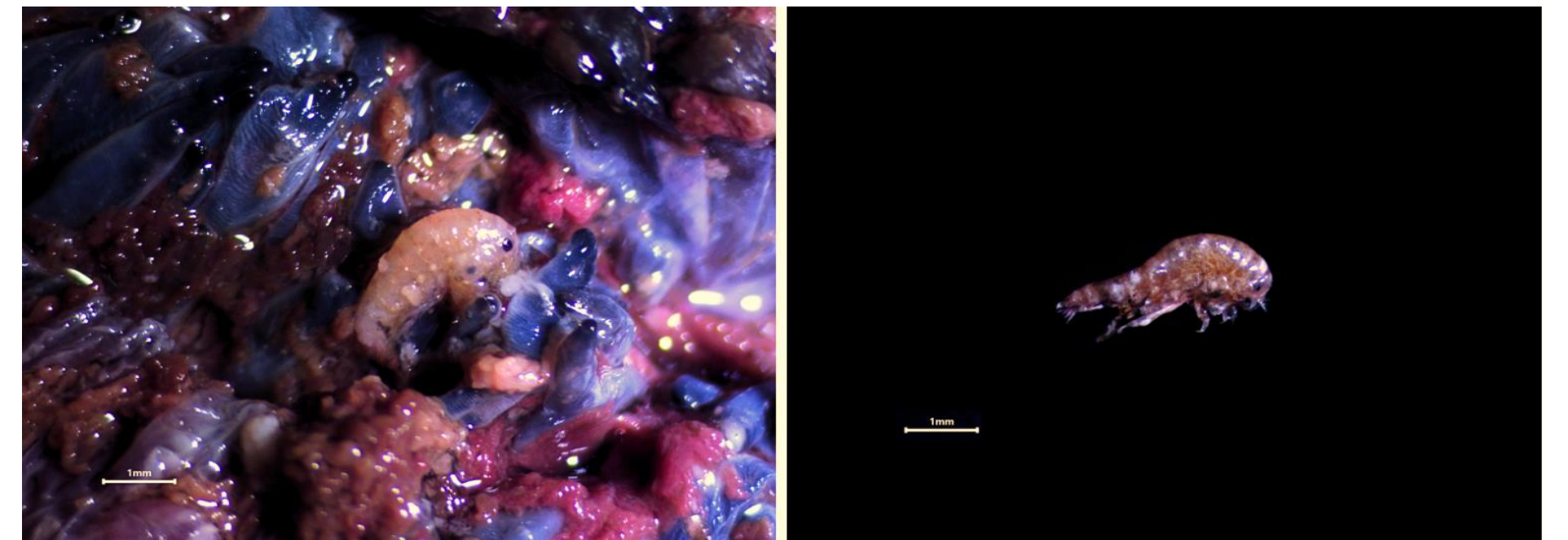


Figure 1 – Overview of a fragment found in *B. caissarum*

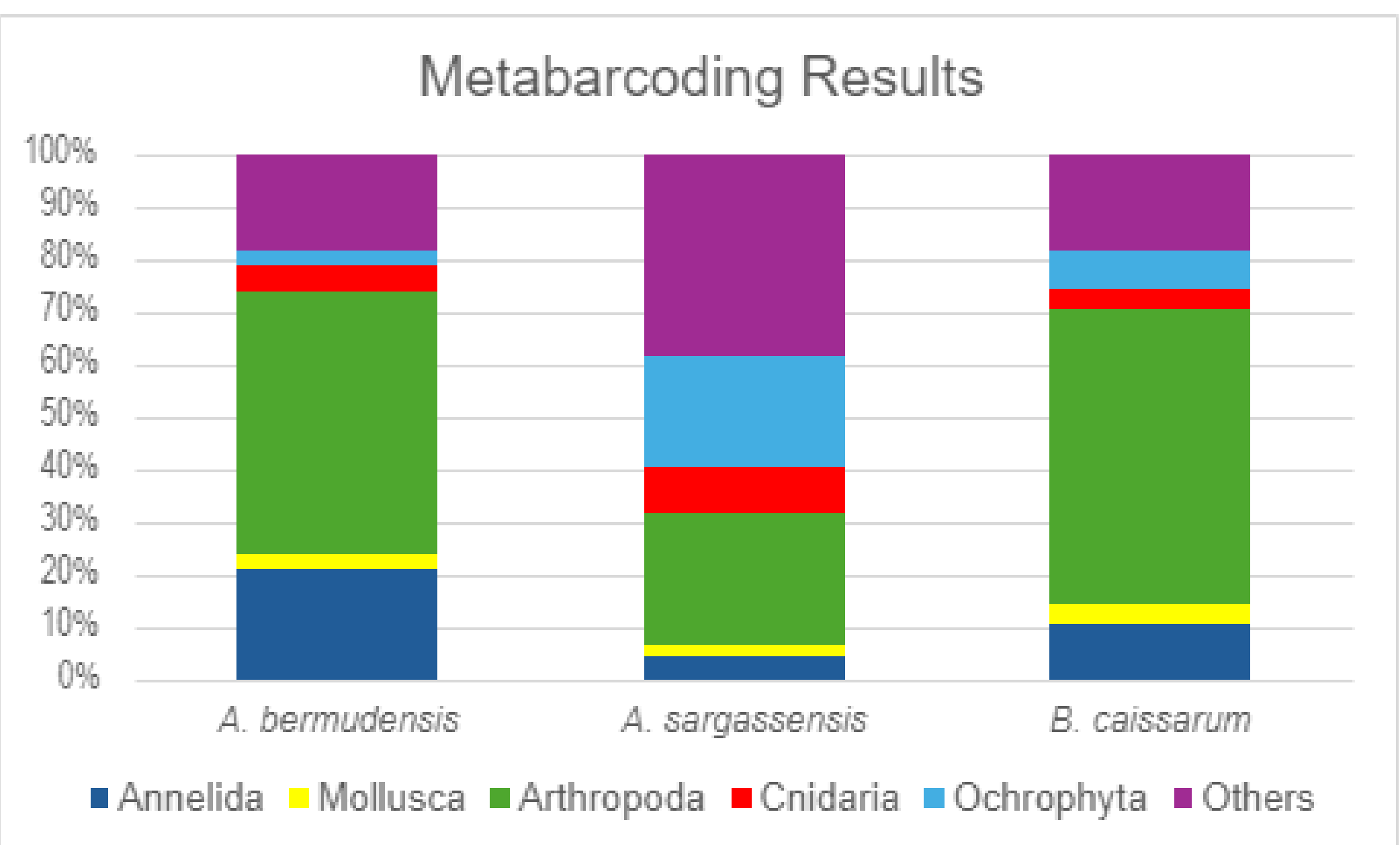


Figure 2 – Metabarcoding results of the gastrovascular content of *A. bermudensis*, *A. sargassensis*, *B. caissarum*

CONCLUSION

This research constituted an important step towards understanding the feeding habits of sea anemones, corroborating the hypothesis that individuals have a wide and varied diet. One of the most notable results is the 20% composition of plant material in one of the species, rejecting the widespread categorical proposal that the group is exclusively carnivorous. Statistical analyses are necessary for a subsequent numerical comparison between the groups.

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