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Diversity analysis and trophic structure of a recently invaded tropical rocky shore.

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INTRODUCTION & AIM

There is little information in the literature about the biology and ecology of zooxanthellate coral *Latissimia ningalooensis*, especially about its feeding habits and possible predators [1,2,3].

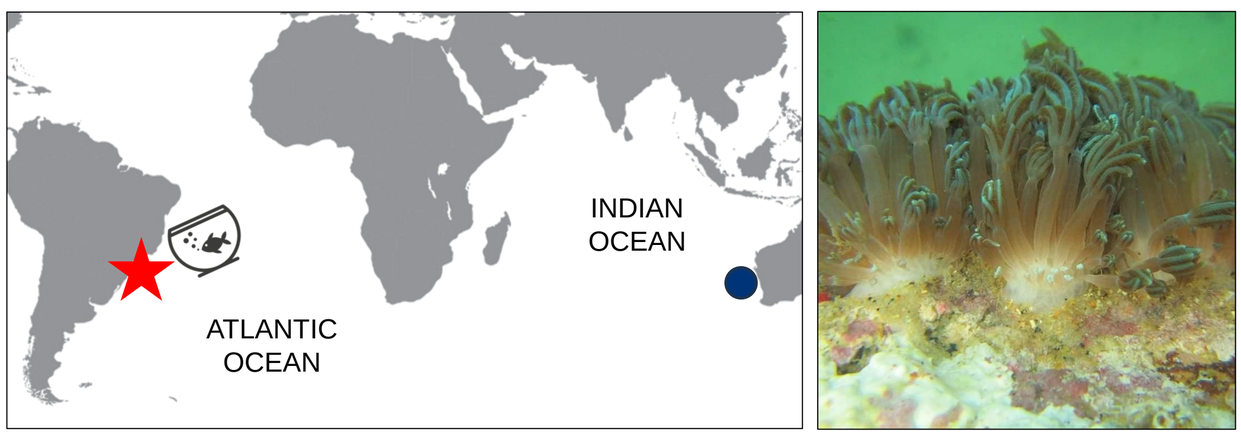

Figure 1: (A) Presumably origin of the coral *Latissimia ningalooensis* highlighted in blue dot and place of introduction in Brazil, due to release by an aquarist, highlighted with a red star. (B) The blue soft coral *L. ningalooensis*

In this study we:

- Investigate whether there is a difference in communities between invaded and control areas without this invasive specie.
- Provide a trophic characterization of the food web on the recently invaded rocky reefs.

METHOD

This study was carried out at Praia Vermelha (PV), located in Angra dos Reis, in the inner part of the Ilha Grande Bay, southwest Atlantic (23°01'34''S, 44°30'05‘’W). For the survey of the benthic community:

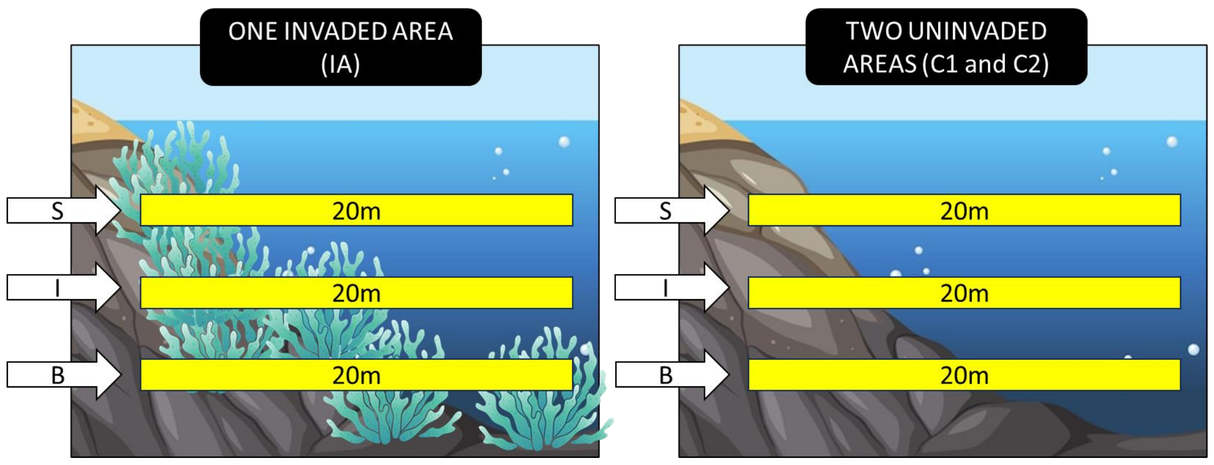

Figure 2: Sampling was carried out in three 20m transects placed parallel to the rocky shore at three depths: (S) shallow (~ 1–1.9 m), (I) intermediate (~ 2–2.9 m) and at the (B) sandy bottom / rocky interface - bottom (~ 5–7 m), along an extension of approximately 20m invaded by *L. ningalooensis* and in two control areas with the same extension in which *L. ningalooensis* was naturally absent.

To describe the food web of the invaded area:

Sampled the most abundant primary producers and consumers. → All samples were frozen immediately after collection and sent for screening and preparation in the laboratory. → The samples were then inserted into tin capsules, weighed on a digital balance and analyzed for $\delta^{13}C$ and $\delta^{15}N$.

RESULTS & DISCUSSION

Communities in invaded areas and control areas have been changed by the invasive species and are different in terms of species composition, as well over different depths (Figure 3).

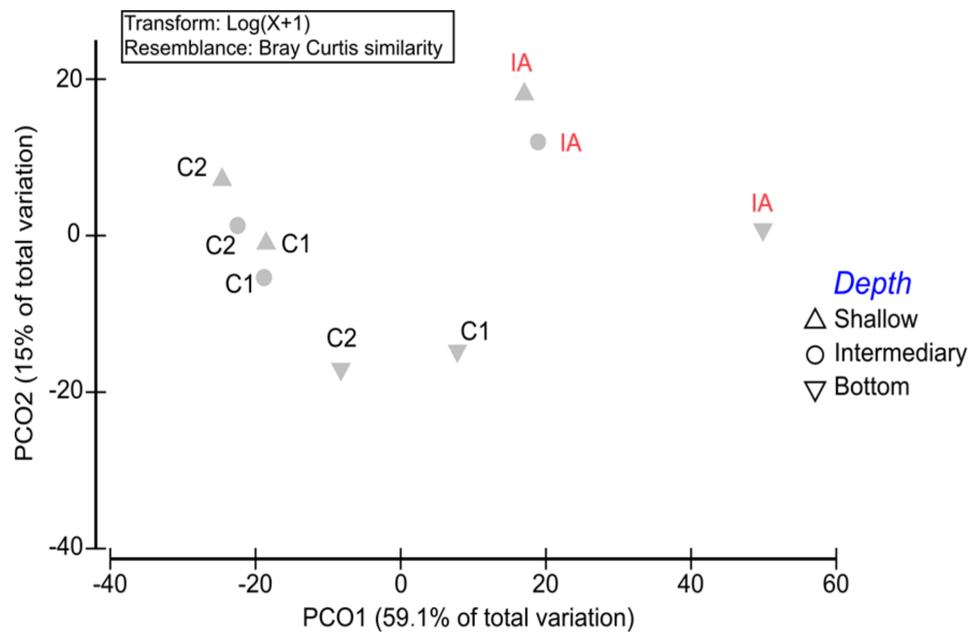

Figure 3: Variation in community composition between areas (IA, C1 and C2), and depth (shallow, intermediate and bottom).

The resource Rhodophyta were more assimilated by the *L. ningalooensis*, probably captured as fragments suspended in the seston after breakage nearby by waves and/or herbivore activity. In addition to the isotopic analyses presented, during the fieldwork the arrow crab *S. seticornis* was observed apparently eating the retracted *L. ningalooensis* (Table 1).

Consumer	Resource groups	mean	sd	Consumer	Resource groups	mean	sd
L. ningalooensis	*J. adhaerens*	0.08	0.07	*S. seticornis*	Algae	0.32	0.11
	Plankton	0.08	0.07		*L. ningalooensis*	0.05	0.05
	Rhodophyta	0.40	0.10		*P. caribaeorum*	0.04	0.05
	Phaeophyceae	0.44	0.11		Invertebrates	0.60	0.12
	sd[$d^{13}C$]	2.14	2.11		sd[$d^{13}C$]	19.425	16.948
	sd[$d^{15}N$]	2.37	1.61		sd[$d^{15}N$]	18.44	16.95

Table 1: Results of mixing model for consumers *Latissimia ningalooensis* and *Stenorhynchus seticornis.*

CONCLUSION

- The rocky shore community at different depths was altered after the introduction of *L. ningalooensis*, which is expanding its distribution to other favorable locations.
- Although we identified trophic relationships between NNS, a potential consumer and possible resources, these relationships apparently do not provide strong enough predation pressure to contain the expansion of the invader.

FUTURE WORK / REFERENCES

[1] Manteletto MC et al. (2018) Invasion of aquarium origin soft corals on a tropical rocky reef in the southwest Atlantic, Brazil. Marine pollution bulletin. 130: 84-94.

[2] Benayahu Y et al. (2022) On some encrusting Xeniidae (Octocorallia): Re-examination of the type material of Sansibia flava (May, 1898) and a description of new taxa. Zootaxa. 5093(4).

[3] Carvalho-Junior L et al. (2023) Long-term changes in benthic communities following the invasion by an alien octocoral in the Southwest Atlantic, Brazil. Marine Pollution Bulletin. 186:114386.