S1 Appendix. Reference site selection.

Reference sites were selected to have as similar environmental conditions to each of the marine protected areas (MPAs) as possible. Given the off-shore location of both MPAs, reference sites were also chosen from locations off-shore from Unguja island. From the few available locations, the reference sites were then chosen based on the presence of *Thalassodendron ciliatum* beds and their similarity to their respective MPA sites in terms of wave exposure and distance to coral reefs, factors known to affect seagrass-associated fish assemblages [1-3].

To assess the possible differences between sites, we measured the exposure and distance to coral reef from each of the four sampling sites (Table 1). Distance to the nearest coral reef from each sampling site was estimated using Google Earth pro (version 7.1) from satellite images taken from 2014 to 2015. Exposure was calculated in terms of effective fetch (in km). The distance from each site to land was measured for 14 different directions (in 6° intervals to either side from the perpendicular to the shore), and effective fetch was calculated as [4]:

$$\text{Effective fetch} = \frac{\sum x_i \cos y_i}{\sum \cos y_i}$$

where *yi* is the angle of a given direction and *xi* is the distance to land in that direction.

We then compared the measured variables between MPAs and fished sites using a two-sample paired t-test (`'t.test'` in `{stats}`) [5]. Differences between MPAs and reference sites were not significant for either exposure or distance to coral reef (P = 0.23 and P = 0.38, respectively).

Table 1. Sampling site characteristics.

Site	Protection	Exposure (km)	Distance to reef (m)
Changuu	None	38.8	54
Chumbe	MPA	27.2	45
Mnemba MPA	MPA	13.0	583
Mnemba reef	None	7.9	630

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