1. Reef herbivores and corallivores and their relationship with juvenile coral density and survival in reefs of Unguja Island, Zanzibar

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Information on herbivores and corallivores and their influence to juvenile corals is vital in ecosystem-based coral reef management. This study assessed the diversity and density of reef herbivores in the permanent and supplement quadrats for invertebrate herbivores and corallivores, and by using visual sensor method for corallivorous and herbivorous fishes on three reef sites; Chumbe, Changuu, and Mnemba, and those estimates were related to density and survival of juvenile corals in 2012. Changuu was the most diverse in sea urchin (H' = 0.38), than Chumbe (H' = 0.34), and Mnemba (H' = 0.27). Changuu recorded the highest sea urchin density (5 m-2) than Mnemba (3 m-2) and Chumbe (0.6 m-2). The highest herbivorous fish diversity (H') was at Chumbe (1.3), followed by Mnemba (1.1) and Changuu (0.8). Mnemba recorded the highest herbivorous fish density (#/m²) (53), than Chumbe (39), and Changuu (29). The invertebrate corallivore densities (#/m²), varied between 0.0313 at Chumbe and 0.0174 at Mnemba. The corallivorous fishes were equally diverse among reef sites. The corallivorous fish densities (#/m²) were comparable between Chumbe (8 fish) and Mnemba reefs (9 fish), and were almost twice to that of Changuu (4 fish). The sea urchin density negatively related to juvenile coral density and survival rate at Changuu and Mnemba. The herbivorous fish density negatively related to juvenile coral density at Mnemba, and was positively related at Chumbe. Algae negatively related to juvenile coral density and survival rate at Mnemba. The results show that reef sites are differently influenced by herbivory and corallivory, with herbivorous sea urchins and algal cover having more negative impact to juvenile corals than herbivorous fishes and corallivores. This suggests that management approaches to reef systems should be implemented differently at local scales rather taking the generic approach across a region. This information will facilitate the implementation of ecosystem approach to management of coral reefs in Zanzibar.