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TITLE: Constraining species-size class variability in rates of parrotfish bioerosion on Maldivian coral reefs: implications for regional-scale bioerosion estimates

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ABSTRACT:

MEPS Marine Ecology Progress Series Contact the journal Facebook Twitter RSS Mailing List Subscribe to our mailing list via Mailchimp HomeLatest VolumeAbout the JournalEditorsTheme Sections MEPS 590:155-169 (2018) - DOI: https://doi.org/10.3354/meps12480 Constraining species-size class variability in rates of parrotfish bioerosion on Maldivian coral reefs: implications for regional-scale bioerosion estimates Robert T. Yarlett1,*, Chris T. Perry1, Rod W. Wilson2, Kate E. Philpot3 1Geography, College of Life and Environmental Sciences, University of Exeter, Exeter EX4 4RJ, UK 2Biosciences, College of Life and Environmental Sciences, University of Exeter, Exeter EX4 4QD, UK 3Ecology by Design Ltd, Unit 16, Hampden House, Monument Park, Chalgrove, Oxfordshire OX44 7RW, UK *Corresponding author: yarlett.r@gmail.com ABSTRACT: Parrotfish are important bioeroders on coral reefs, and thus influence reef carbonate budgets and generate large volumes of carbonate sand that contribute to local beach and reef island maintenance. However, despite the importance of this process, there is a paucity of data with which variations in bioerosion rates as a function of species, feeding modes, and body size of parrotfish can be constrained. There is, in addition, limited knowledge regarding how resultant rates may vary within and between reef-building regions. Here, direct estimates of parrotfish bioerosion rates were quantified across different size classes of 6 common species of Maldivian parrotfish. These species comprise both ?scraper? and ?excavator? taxa, and our data indicate marked variations in mean bioerosion rates among these species. We also note that all species exhibited an apparent bimodal feeding cycle, with peaks in the late morning and early afternoon. Highest bioerosion rates were found in the ?excavator? Chlorurus strongylocephalus (~460 kg ind.-1 yr-1), nearly 130 times greater than rates calculated for comparably sized (>45 cm) ?scraper? species. Our data provide metrics that can be used in conjunction with parrotfish biomass or density data to improve estimates of parrotfish bioerosion on central Indian Ocean reefs, a region of high parrotfish density, but from which only limited metrics exist. We emphasise the importance of obtaining sub-regional scale process data to better inform estimates of reef bioerosion, especially to support attempts to model the impacts of fishing pressure, which commonly results in removal of high-rate bioeroding taxa. KEY WORDS: Parrotfish · Bioerosion · Maldives · Coral reefs Full text in pdf format PreviousNextCite this article as: Yarlett RT, Perry CT, Wilson RW, Philpot KE (2018) Constraining species-size class variability in rates of parrotfish bioerosion on Maldivian coral reefs: implications for regional-scale bioerosion estimates. Mar Ecol Prog Ser 590:155-169. https://doi.org/10.3354/meps12480 Export citation RSS - Facebook - Tweet - linkedIn Cited by Published in MEPS Vol. 590. Online publication date: March 12, 2018 Print ISSN: 0171-8630; Online ISSN: 1616-1599 

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