Diversity and structure of parrotfish assemblages across the northern Great Barrier Reef

Garrett B. Johnson, Brett M. Taylor, William D. Robbins, Erik C. Franklin, Rob Toonen, Brian Bowen, J. Howard Choat
Corresponding author: Brett M. Taylor, e-mail: b.taylor@aims.gov.au

Supplemental material

Table S1. Zoning regulations for sites surveyed across the northern Great Barrier Reef, modified from the 2003 GBR Marine Park Zoning Plan (Day 2002).

Zoning Plans and Regulations	**General Use Zone**	**Marine National Park Zone**	**Preservation Zone**
Protection zone factor	***Fishing allowed***	***No fishing***	***No entry***
Aquaculture	Permit	×	×
Bait netting	✓	×	×
Boating, diving, photography	✓	✓	×
Crabbing (trapping)	✓	×	×
Harvest fishing for aquarium fish, coral and beachworm	Permit	×	×
Harvest fishing for sea cucumber, trochus, tropical rock lobster	Permit	×	×
Limited collecting	✓*	×	×
Limited spearfishing (snorkel only)	✓	×	×
Line fishing	✓**	×	×
Netting (other than baiting)	✓	×	×
Research (other than limited impact research)	Permit	Permit	Permit
Shipping (other than in designated shipping area)	✓	Permit	×
Tourism program	Permit	Permit	×
Traditional use of marine resources	✓***	✓***	×
Trawling	✓	×	×
Trolling	✓**	×	×

Activities labelled 'Permit' require prior permitting through application. Activities labelled ✓ individuals are free to undertake within legal limits and restrictions. * By hand or hand-held implement and generally no more than five of a species. ** Maximum of 3 lines/rods per person, with a maximum combined total of 6 hooks per person. *** Apart from traditional use of marine resources in accordance with s.211 of the *Native Title Act 1993*, an accredited Traditional Use of Marine Resources Agreement or permit is required.

Table S2. Parsimoniously selected optimal redundancy analysis models for parrotfish assemblage structure based on patterns of abundance and biomass. Significance levels based on permutation tests are indicated for individual explanatory variables and for models (*** $p < 0.001$).

Response	Optimal Model Components	Variance Explained (%)	Significance Level
Abundance	Shelf position	33.4	***
	Sea surface temperature	18.2	***
	Latitude	9.0	***
	Reef slope	14.7	***
	Total variance explained	**42.5**	***
Biomass	Shelf position	23.0	***
	Sea surface temperature	11.8	***
	Latitude	6.6	***
	Reef slope	11.1	***
	Total variance explained	**29.8**	***

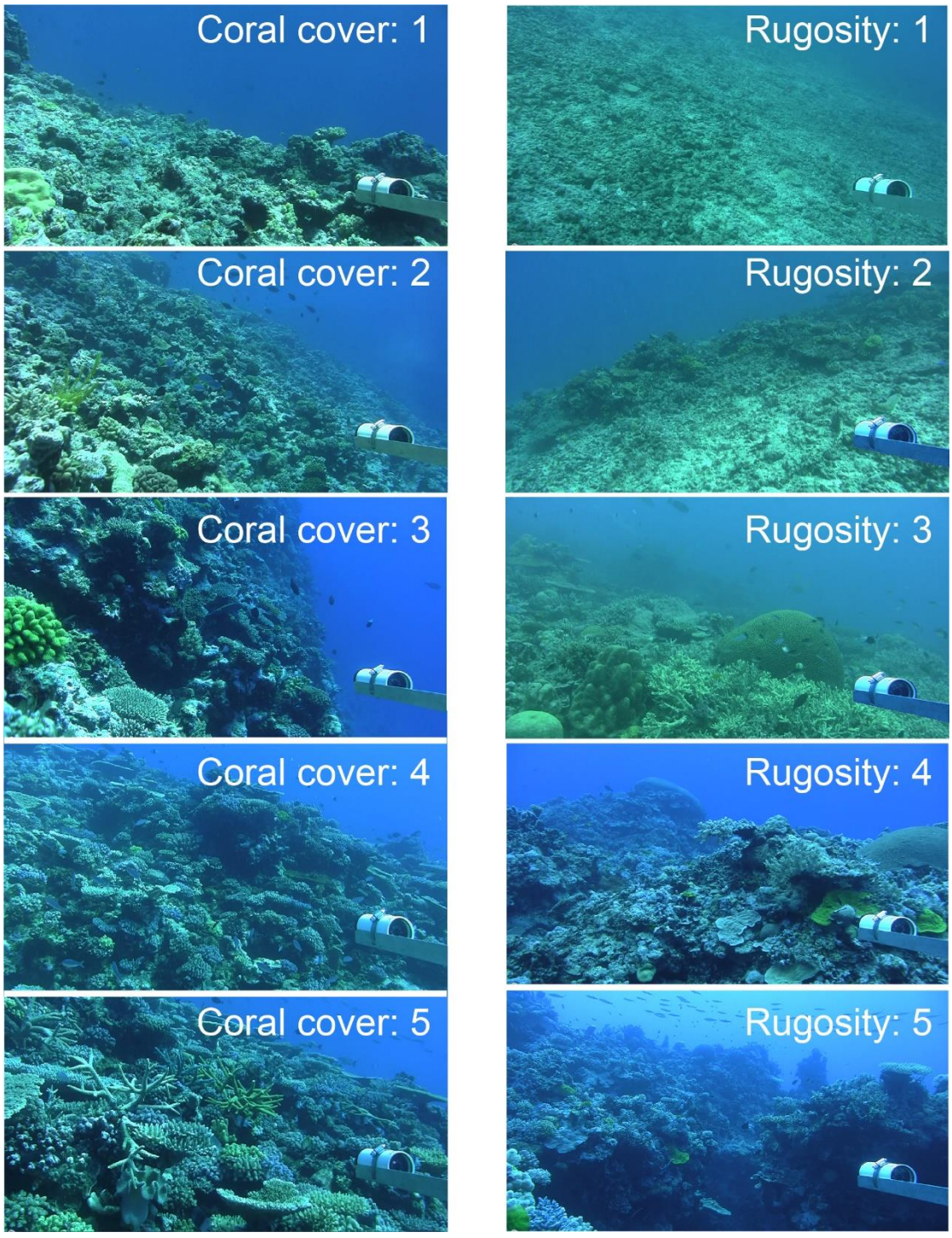

Figure S1. Examples of individual coral cover and rugosity measurements taken from diver-operated stereo video frames during surveys of the northern Great Barrier Reef.

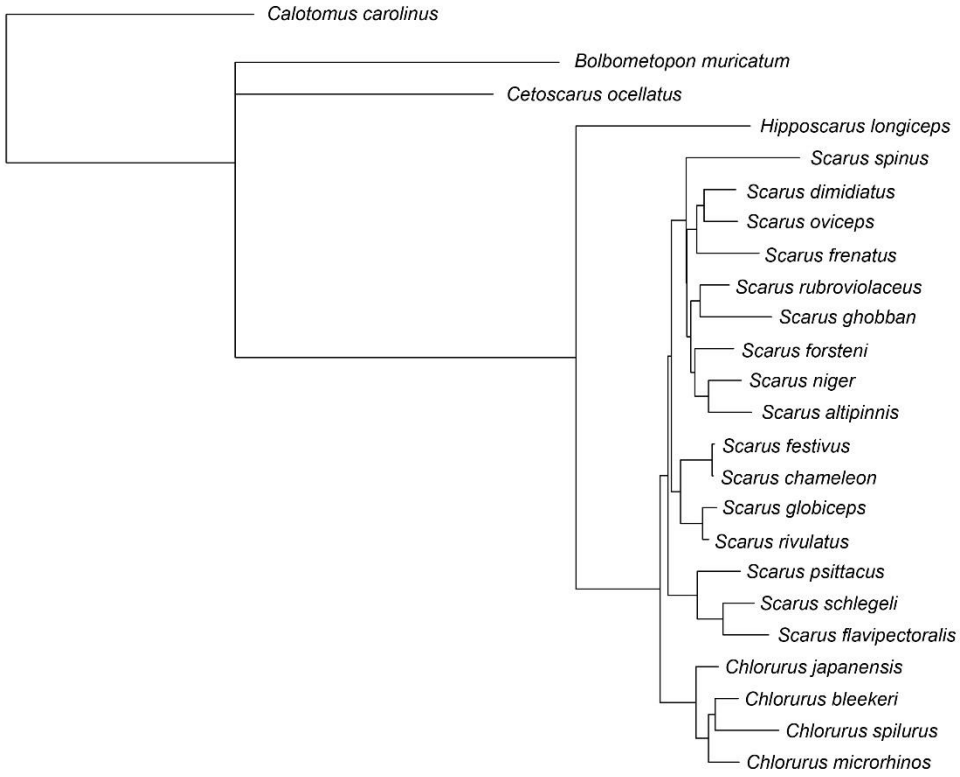

Figure S2. Phylogenetic tree including 24 parrotfish species surveyed across the northern Great Barrier Reef, pruned from Choat et al. (2012; using both mitochondrial and nuclear gene sequences) and used in calculations of phylogenetic diversity.

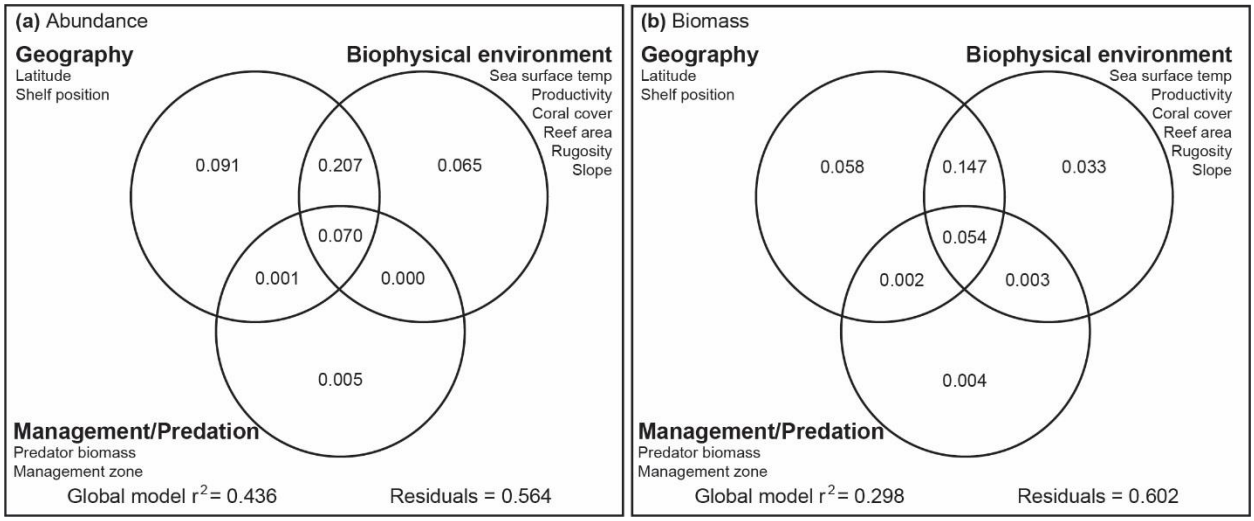

Figure S3. Venn diagram demonstrating partitioning of variance across explanatory variable subsets for both (**a**) abundance and (**b**) biomass patterns of parrotfish communities across 82 sites spanning 31 reefs of the northern Great Barrier Reef. Values indicate proportions of variance explained independently or shared variance with other factor subsets.

References

1 Choat, J.H.; Klanten, O.S.; van Herwerden, L.; Robertson, D.R.; Clements, K.D. Patterns and processes in the evolutionary history of parrotfishes (Family Labridae). *Biol. J. Linn. Soc.* **2012**, *107*, 529-557, 10.1111/j.1095-8312.2012.01959.x.

2 Day, J. C. Zoning-lessons from the Great Barrier Reef Marine Park. *Ocean Coast. Manage.* **2002**, *45*, 139-156, 10.1016/S0964-5691(02)00052-2.

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