

# Inter-habitat variability in parrotfish bioerosion rates and grazing pressure on an Indian Ocean reef platform

## Electronic Supplementary Information

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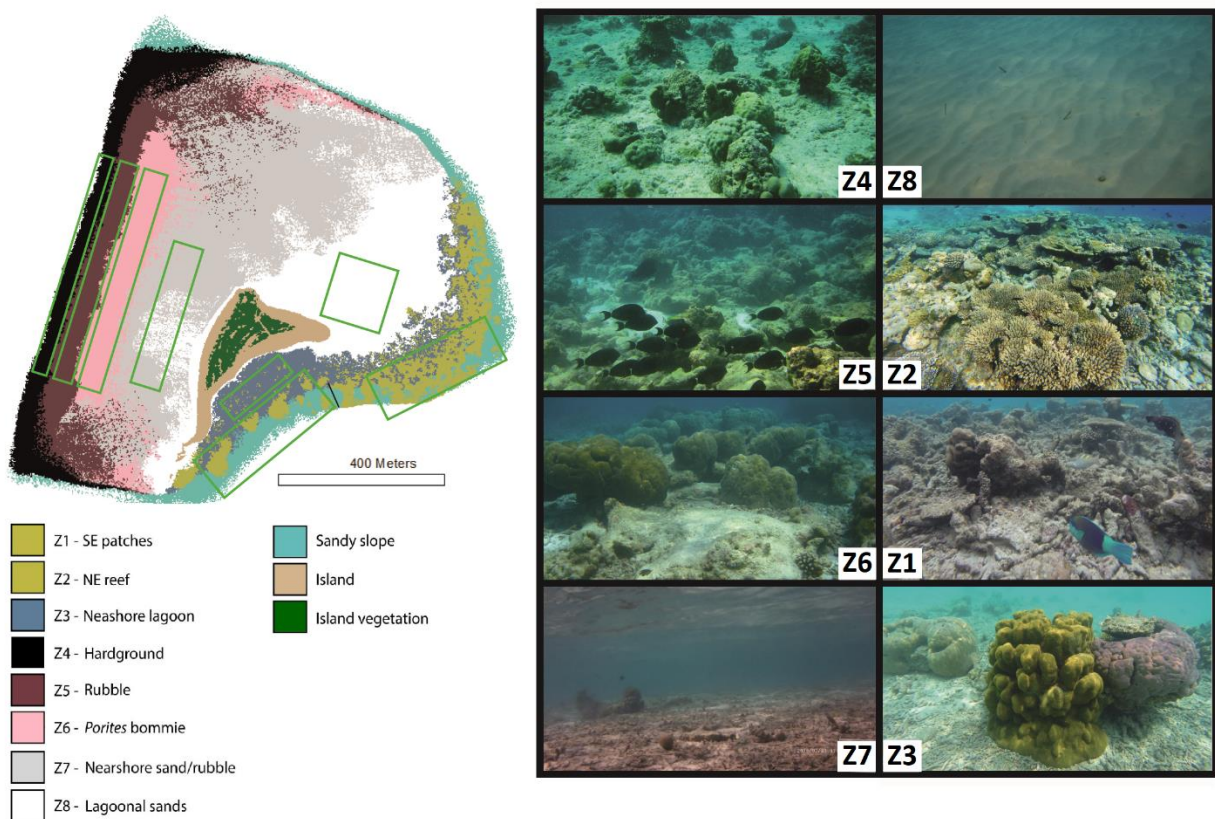


Fig. S1: Example images from the eight distinct Vavvaru marine habitats. Green boxes represent main survey areas.

Table. S1: Summary of environmental variables defining the six delineated habitats that supported parrotfish populations on the Vavvaru platform collected in February 2015 (Perry et al. 2017). Values are averages of 5 replicate transects per habitat. Rugosity is presented as a ratio index of straight line to topographic distance. All other variables are presented as average cm cover of transects. Complex corals = branching and table morphotypes, Massive corals = *Porites* spp. and other massive species, Other corals = encrusting species and other uncommon growth forms. SCP = secondary carbonate producers (e.g. *Halimeda* spp. and calcareous algae). Hardground = limestone pavement.

Habitat	Rugosity Index	Complex Corals	<i>Pocillopora</i>	Massive Corals	Other Corals
Hardground	1.34	5.0	23.4	150.4	65.6
Rubble	1.66	1.8	47.6	58.2	26.8
<i>Porites</i> bommie	1.34	11.8	23.0	113.4	18.0
NE reef	1.98	385.4	14.4	52.8	76.0
SE patches	2.23	127.2	42	202.4	150.4
Nearshore lagoon	1.09	6.2	1.6	6.4	1.2

	SCP	Other	Turf	Rubble	Hardground	Sand
Hardground	119	0.0	201.4	131.2	557.2	184.4
Rubble	257.8	5.4	1088.8	899.8	0.0	98.8
<i>Porites</i> bommie	196.4	14.0	594.6	513.0	0.0	291.4
NE reef	826.4	129.2	460.8	608.0	0.0	62.4
SE patches	764	7.0	727.0	367.4	0.0	166.4
Nearshore lagoon	6.8	0.0	121.0	129.8	0.0	904.0

## Error Propagation

To calculate the cumulative errors associated with multiplying and adding variables with their own associated standard errors, the following rules for error propagation were used (where  $v$  = calculated value,  $x$  = variable 1 and  $y$  = variable 2, SE = standard error). For multiplication:

$$SEv = \sqrt{\left(\frac{SEx}{\bar{x}}\right)^2 + \left(\frac{SEy}{\bar{y}}\right)^2} \times \bar{v}$$

For addition:

$$SEv = \sqrt{(SEx1)^2 + (SEx2)^2 + \dots + (SExn)^2}$$

Life phase has been shown to have no additive effect on bioerosion rate in six of the species studied in detail at this site (Yarlett et al. 2018), so initial and terminal phase data were pooled and presented as fish size. The density of initial and terminal phase parrotfish in each habitat are presented in Tables S(2-7).

Table. S2: Rate of parrotfish occurrence in Hardground habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

<b>Hardground</b>				
<b>Initial Phase</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<b>Chlorurus sordidus</b>	7.01112E-05 ± 5.25387E-05	0.003303 ± 0.00096	0	0 0.000171348 ±
<b>Chlorurus strongylocephalus</b>	0	0	0.000299 ± 0.000182	9.48622E-05
<b>Chlorurus enneacanthus</b>	0	2.06E-05 ± 2.06E-05	0	0
<b>Scarus frenatus</b>	0	0.002667 ± 0.001591	0	0
<b>Scarus rubroviolaceus</b>	0.000541331 ± 0.000289921	0.002662 ± 0.000774	0.001024 ± 0.00032	0
<b>Scarus psittacus</b>	0.008991669 ± 0.005048645	0.006134 ± 0.00173	0	0
<b>Scarus niger</b>	0	0	0	0
<b>Scarus tricolor</b>	0	0.00305 ± 0.000739	0.000344 ± 0.000236	0
<b>Scarus scaber</b>	0	0	0	0 0.000120289 ±
<b>Scarus prasiognathos</b>	0	0	0	0.000120289
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0.001864 ± 0.000867	0.000142 ± 9.71E-05	0
<b>Hipposcarus harid</b>	0	0	0	0 3.23172E-05 ±
<b>Cetoscarus ocellatus</b>	0	0	0	3.23172E-05
<b>Calotomus carolinus</b>	2.01189E-05 ± 2.01189E-05	0.001258 ± 0.000275	0	0
<b>Terminal Phase</b>				
<b>Chlorurus sordidus</b>	0	0.000989 ± 0.000173	0.00152 ± 0.000652	0 0.000816565 ±
<b>Chlorurus strongylocephalus</b>	0	0	8.58E-05 ± 6.05E-05	0.000370648
<b>Chlorurus enneacanthus</b>	0	0	0	0 0.000295479 ±
<b>Scarus frenatus</b>	0	0	0.000494 ± 0.000228	0.000255277 0.001120075
<b>Scarus rubroviolaceus</b>	0	0	0.000144 ± 6.29E-05	± 0.000514395
<b>Scarus psittacus</b>	0	0.002241 ± 0.000978	0	0
<b>Scarus niger</b>	0	2.06E-05 ± 1.93E-05	0	0
<b>Scarus tricolor</b>	0	6.84E-05 ± 3.45E-05	0.002217 ± 0.000723	0
<b>Scarus scaber</b>	0	7.06E-05 ± 4.93E-05	0.00031 ± 0.000148	0 0.001430848 ±
<b>Scarus prasiognathos</b>	0	0	0	0.000644693
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0	0.000243 ± 0.000126	0 0.000204151 ±
<b>Hipposcarus harid</b>	0	0	0.000152 ± 8.35E-05	0.000105725
<b>Cetoscarus ocellatus</b>	0	0	0	0
<b>Calotomus carolinus</b>	0	7.19E-05 ± 4.97E-05	0	0
<b>Juveniles</b>				
<b>All juveniles</b>	2.01189E-05 ± 2.01189E-05	0	0	0

Table. S3: Rate of parrotfish occurrence in Rubble habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

<b>Rubble</b>				
<b>Initial</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<b>Chlorurus sordidus</b>	0.001933 ± 0.001424	0.006262 ± 0.002681	0 0.003147 ± 0.001687	0 0.001384 ± 0.00128
<b>Chlorurus strongylocephalus</b>	0	0		
<b>Chlorurus enneacanthus</b>	0	0.00012 ± 0.000116	0	0
<b>Scarus frenatus</b>	0.000193 ± 0.000106	0.003034 ± 0.001023	0.000713 ± 0.000631	0
<b>Scarus rubroviolaceus</b>	0.000524 ± 0.000507	0.00183 ± 0.000706	0.000251 ± 0.000145	0
<b>Scarus psittacus</b>	0.004505 ± 0.002444	0.004161 ± 0.002121	0	0
<b>Scarus niger</b>	0	0.000328 ± 0.000243	0	0
<b>Scarus tricolor</b>	0	9.05E-05 ± 8.76E-05	0	0
<b>Scarus scaber</b>	0	0.001622 ± 0.000837	5.98E-05 ± 5.79E-05	0
<b>Scarus prasiognathos</b>	0	6.02E-05 ± 5.83E-05	0	0
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	0	6.02E-05 ± 5.83E-05	0
<b>Cetoscarus ocellatus</b>	0	0	0	0.000445 ± 0.000328
<b>Calotomus carolinus</b>	0	0.001601 ± 0.001498	0	0
<b>Terminal</b>				
<b>Chlorurus sordidus</b>	0	0.000181 ± 0.000101	0.000866 ± 0.00072	0 0.000582 ±
<b>Chlorurus strongylocephalus</b>	0	0	8.51E-05 9.05E-05 ±	0.000238
<b>Chlorurus enneacanthus</b>	0	0	9.05E-05	0
<b>Scarus frenatus</b>	0	6.89E-05 ± 6.89E-05	0.002545 ± 0.001125	0.001421 ± 0.001056
<b>Scarus rubroviolaceus</b>	0	0	0.000181 ± 0.000181	0.001244 ± 0.000337
<b>Scarus psittacus</b>	0	0.000803 ± 0.000803	0	0
<b>Scarus niger</b>	0	0.000161 ± 0.000161	0.000251 ± 0.000179	0
<b>Scarus tricolor</b>	0	0.000468 ± 0.000223	0.000147 ± 0.000102	0
<b>Scarus scaber</b>	0	0	0.001724 ± 0.000665	0
<b>Scarus prasiognathos</b>	0	0	8.03E-05 ± 8.03E-05	0.001083 ± 0.000837
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	0	6.02E-05 ± 6.02E-05	0.000181 ± 0.000181
<b>Cetoscarus ocellatus</b>	0	0	0	0
<b>Calotomus carolinus</b>	0	0	0	0
<b>Juveniles</b>				
<b>All juveniles</b>	0.000178 ± 0.000121	0	0	0

Table. S4: Rate of parrotfish occurrence in *Porites* bommie habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

<i>Porites</i> bommie				
Initial	1 to 15 cm	16 to 30 cm	31 to 45 cm	46 to 60 cm
<b>Chlorurus sordidus</b>	0.002411 ± 0.001214	0.009447 ± 0.002705	0	0
<b>Chlorurus strongylocephalus</b>	0	0	0	0
<b>Chlorurus enneacanthus</b>	0.001923 ± 0.001574	0.009119 ± 0.003646	0.000197 ± 0.000106	0
<b>Scarus frenatus</b>	0	0.001402 ± 0.000455	0.00017 ± 0.000117	0
<b>Scarus rubroviolaceus</b>	0.001204 ± 0.000576	0.00968 ± 0.003658	0.002262 ± 0.000509	4.57E-05 ± 4.57E-05
<b>Scarus psittacus</b>	0.027027 ± 0.007021	0.015601 ± 0.004209	0.000469 ± 0.000469	0
<b>Scarus niger</b>	0	0	0	0
<b>Scarus tricolor</b>	0	0.001951 ± 0.000682	0.000116 ± 0.000116	0
<b>Scarus scaber</b>	6.28E-05 ± 6.28E-05	0.002749 ± 0.000703	5.78E-05 ± 5.78E-05	0
<b>Scarus prasiognathos</b>	0	0.000292 ± 0.00019	0.000654 ± 0.000309	0
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	4.62E-05 ± 4.62E-05	0	0
<b>Cetoscarus ocellatus</b>	0	0	0	0
<b>Calotomus carolinus</b>	0	0.000104 ± 7.11E-05	0	0
Terminal				
<b>Chlorurus sordidus</b>	0	0.000379 ± 0.000264	0.000439 ± 0.000309	0
<b>Chlorurus strongylocephalus</b>	0	0	0	0
<b>Chlorurus enneacanthus</b>	0	0.002462 ± 0.001306	0.003622 ± 0.001779	0
<b>Scarus frenatus</b>	0	0	0.000521 ± 0.000196	0.000163 ± 0.000111
<b>Scarus rubroviolaceus</b>	0	0	0.000265 ± 0.000153	0.0007 ± 0.00036
<b>Scarus psittacus</b>	0	0.001027 ± 0.000254	0	0
<b>Scarus niger</b>	0	0	0	0
<b>Scarus tricolor</b>	0	0.000131 ± 9.41E-05	0.000762 ± 0.000583	0
<b>Scarus scaber</b>	0	8.88E-05 ± 8.88E-05	0.001191 ± 0.000337	0.000153 ± 0.000153
<b>Scarus prasiognathos</b>	0	0	0.000137 ± 0.000137	0.000212 ± 0.000115
<b>Scarus viridifucatus</b>	0	0	4.57E-05 ± 4.57E-05	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	0	9.39E-05 ± 9.39E-05	0.00039 ± 0.000343
<b>Cetoscarus ocellatus</b>	0	0	0	0
<b>Calotomus carolinus</b>	0	0	4.57E-05 ± 4.57E-05	0
Juveniles				
<b>All juveniles</b>	0.037039 ± 0.022613			

Table. S5: Rate of parrotfish occurrence in Nearshore Lagoon habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

Nearshore				
Initial	1 to 15 cm	16 to 30 cm	31 to 45 cm	46 to 60 cm
Chlorurus sordidus	5.27973E-05 ± 5.27973E-05	0.000274 ± 0.000239	0	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0	0	0	0
Scarus frenatus	0	0	0	0
Scarus rubroviolaceus	0	0.00078 ± 0.000432	0.000566 ± 0.000367	0
Scarus psittacus	0	0.000183 ± 0.000126	0	0
Scarus niger	0	7.96E-05 ± 7.96E-05	0	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	0	0	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	0	0	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	0	0	0
Cetoscarus ocellatus	0	0	0	0
Calotomus carolinus	0	0	0	0
Terminal				
Chlorurus sordidus	0	0.000756 ± 0.000342	0	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0	0	0	0
Scarus frenatus	0	0	0	0
Scarus rubroviolaceus	0	0	0.001502 ± 0.000537	3.5E-05 ± 3.5E-05
Scarus psittacus	0	0.000478 ± 0.00031	0	0
Scarus niger	0	0.000822 ± 0.000507	0	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	0	0.000732 ± 0.000357	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	0	0	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	0	3.9E-05 ± 3.9E-05	7.96E-05 ± 7.96E-05
Cetoscarus ocellatus	0	0	0	0
Calotomus carolinus	0	0	0	0
Juveniles				
All juveniles	0	0	0	0

Table. S6: Rate of parrotfish occurrence in NE reef habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

North East reef				
Initial	1 to 15 cm	16 to 30 cm	31 to 45 cm	46 to 60 cm
<i>Chlorurus sordidus</i>	0.034167 ± 0.006628	0.08008 ± 0.014443	0	0
<i>Chlorurus strongylocephalus</i>	0	5.32E-05 ± 5.32E-05	0.000127 ± 8.84E-05	0
<i>Chlorurus enneacanthus</i>	0	0	0	0
<i>Scarus frenatus</i>	0.002328 ± 0.001507	0.000928 ± 0.000466	0	0
<i>Scarus rubroviolaceus</i>	0	5.18E-05 ± 5.18E-05	5.32E-05 ± 5.32E-05	0
<i>Scarus psittacus</i>	0.017306 ± 0.00681	0.006746 ± 0.002988	0	0
<i>Scarus niger</i>	0.005756 ± 0.001458	0.015681 ± 0.002525	0	0
<i>Scarus tricolor</i>	0	5.32E-05 ± 5.32E-05	0	0
<i>Scarus scaber</i>	0.000254 ± 0.000127	0.001227 ± 0.000491	0	0
<i>Scarus prasiognathos</i>	4.08E-05 ± 4.08E-05	0.001642 ± 0.000883	0	0
<i>Scarus viridifucatus</i>	0	0	0	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	0	0
<i>Cetoscarus ocellatus</i>	0	0	0.000112 ± 8.17E-05	0.000738 ± 0.000391
<i>Calotomus carolinus</i>	0	0.000713 ± 0.00036	0	0
Terminal				
<i>Chlorurus sordidus</i>	0	0.014284 ± 0.002098	0.00526 ± 0.001321	0
<i>Chlorurus strongylocephalus</i>	0	0	0.000117 ± 8E-05	0.000175 ± 9.7E-05
<i>Chlorurus enneacanthus</i>	0	0	0	0
<i>Scarus frenatus</i>	0	0	0.001068 ± 0.000653	4.08E-05 ± 4.08E-05
<i>Scarus rubroviolaceus</i>	0	0	0.000115 ± 8.49E-05	0.000105 ± 0.000105
<i>Scarus psittacus</i>	0	0.005002 ± 0.002149	0	0
<i>Scarus niger</i>	0	0.009781 ± 0.003061	0.002033 ± 0.000989	0
<i>Scarus tricolor</i>	0	0	0	0
<i>Scarus scaber</i>	0	5.32E-05 ± 5.32E-05	0.000342 ± 0.000266	0
<i>Scarus prasiognathos</i>	0	0	0	0
<i>Scarus viridifucatus</i>	0	0.001781 ± 0.000448	3.49E-05 ± 3.49E-05	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	0	7.06E-05 ± 4.81E-05
<i>Cetoscarus ocellatus</i>	0	0	0	0.000282 ± 0.000129
<i>Calotomus carolinus</i>	0	7.53E-05 ± 5.14E-05	5.32E-05 ± 5.32E-05	0
Juveniles				
All juveniles	0.016191 ± 0.008185	0	0	0



Table. S7: Rate of parrotfish occurrence in SE reef habitat (individuals m<sup>-2</sup> min<sup>-1</sup>)

<b>South East patch reefs</b>				
<b>Initial</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<b>Chlorurus sordidus</b>	0.004624 ± 0.00204	0.02342 ± 0.007534 0.001045 ±	0 0.000642 ±	0
<b>Chlorurus strongylocephalus</b>	0	0.000835 0.000129 ±	0.000516	0
<b>Chlorurus enneacanthus</b>	0	9.48E-05	0	0
<b>Scarus frenatus</b>	0.008069 ± 0.002406	0.005091 ± 0.002232	0.000161 ± 0.000111	0
<b>Scarus rubroviolaceus</b>	0	0.000309 ± 0.000139	0.000526 ± 0.000195	0
<b>Scarus psittacus</b>	0.002993 ± 0.001649	0.002203 ± 0.000997	0	0
<b>Scarus niger</b>	0.00195 ± 0.000829	0.00484 ± 0.002482	0	0
<b>Scarus tricolor</b>	0	0	0	0
<b>Scarus scaber</b>	0	0.001528 ± 0.00099	0	0
<b>Scarus prasiognathos</b>	0	0	0	0
<b>Scarus viridifucatus</b>	0	0	0	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	8.18E-05 ± 5.58E-05	0.000341 ± 0.0003	0 0.000219 ±
<b>Cetoscarus ocellatus</b>	0	0	0.000187	0.000108
<b>Calotomus carolinus</b>	0	0.000436 ± 0.000345	0	0
<b>Terminal</b>				
<b>Chlorurus sordidus</b>	0	0.01153 ± 0.003237	0.00544 ± 0.001242	0
<b>Chlorurus strongylocephalus</b>	0	0	0.001093 ± 0.000415	0.00086 ± 0.000277
<b>Chlorurus enneacanthus</b>	0	0.000265 ± 0.000216	3.98E-05 ± 3.85E-05	0
<b>Scarus frenatus</b>	0	0	0.005813 ± 0.000959	0.00095 ± 0.000427
<b>Scarus rubroviolaceus</b>	0	0	0.000199 ± 0.00012	0.0015 ± 0.000298
<b>Scarus psittacus</b>	0	0.002311 ± 0.001431	0	0
<b>Scarus niger</b>	0	0.004541 ± 0.001268	0.001057 ± 0.000522	0
<b>Scarus tricolor</b>	0	0	0	0
<b>Scarus scaber</b>	0	0.000244 ± 0.000138	0.025026 ± 0.023828	0
<b>Scarus prasiognathos</b>	0	0	0	0
<b>Scarus viridifucatus</b>	0	0.000319 ± 0.000239	3.98E-05 ± 3.85E-05	0
<b>Scarus russelii</b>	0	0	0	0
<b>Hipposcarus harid</b>	0	0	8.18E-05 ± 5.4E-05	0.000156 ± 0.000104
<b>Cetoscarus ocellatus</b>	0	0	0	0.000112 ± 7.73E-05
<b>Calotomus carolinus</b>	0	0	0	0
<b>Juveniles</b>				
<b>All juveniles</b>	0.001417 ± 0.00057			

Table. S8: Number of parrotfish species and total parrotfish occurrence in videos in each habitat. Z1-8 refers to reef zones marked out in the habitat map (Fig. 1).

	<b>Z1</b>	<b>Z2</b>	<b>Z3</b>	<b>Z4</b>	<b>Z5</b>	<b>Z6</b>	<b>Z7</b>	<b>Z8</b>
<b>No. species</b>	12	13	6	14	13	11	0	0
<b>Total parrotfish occurrence in videos (No. indiv. m<sup>-2</sup> min<sup>-1</sup>)</b>	0.244 ±	0.450 ±	0.013 ±	0.090 ±	0.090 ±	0.273 ±	0	0
	0.050	0.050	0.003	0.012	0.024	0.057		

Table. S9: Overall parrotfish bioerosion rates in the Hardground habitat ( $\text{kg m}^{-2} \text{yr}^{-1}$ ) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	3.06798E-05	0.009771	0.019758	0
<i>Chlorurus strongylocephalus</i>	0	0	0.100465	0.319932
<i>Chlorurus enneacanthus</i>	0	4.43E-05	0	0
<i>Scarus frenatus</i>	0	0.000552	0.000572	0.00025
<i>Scarus rubroviolaceus</i>	1.62218E-05	0.000143	0.003081	0.001968
<i>Scarus psittacus</i>	0.001609686	0.009939	0	0
<i>Scarus niger</i>	0	2.22E-05	0	0
<i>Scarus tricolor</i>	0	0.002865	0.002918	0
<i>Scarus scaber</i>	0	1.5E-05	0.000472	0
<i>Scarus prasiognathos</i>	0	0	0	0.001584
<i>Scarus viridifucatus</i>	0	0	0	0
<i>Scarus russelii</i>	0	0.000649	0.000438	0
<i>Hipposcarus harid</i>	0	0	0.000134	0.000316
<i>Cetoscarus bicolor</i>	0	0	0	0.018949
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	5.74978E-07	0	0	0

<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	1.05249E-05	0.003345	0.002504	0
<i>Chlorurus strongylocephalus</i>	0	0	0.025563	0.106775
<i>Chlorurus enneacanthus</i>	0	2.19E-05	0	0
<i>Scarus frenatus</i>	0	0.000194	0.000128	6.6E-05
<i>Scarus rubroviolaceus</i>	8.04951E-06	4.09E-05	0.00093	0.000548
<i>Scarus psittacus</i>	0.000383682	0.002	0	0
<i>Scarus niger</i>	0	7.22E-06	0	0
<i>Scarus tricolor</i>	0	0.000486	0.000721	0
<i>Scarus scaber</i>	0	3.97E-06	0.000176	0
<i>Scarus prasiognathos</i>	0	0	0	0.000338
<i>Scarus viridifucatus</i>	0	0	0	0
<i>Scarus russelii</i>	0	0.000251	6.76E-05	0
<i>Hipposcarus harid</i>	0	0	3.77E-05	6.53E-05
<i>Cetoscarus bicolor</i>	0	0	0	0.01564
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	4.96077E-07	0	0	0

Table. S10: Overall parrotfish bioerosion rates in the Rubble habitat ( $\text{kg m}^{-2} \text{yr}^{-1}$ ) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	0.000581	0.00626	0.008428	0
<i>Chlorurus strongylocephalus</i>	0	0	0.346907	0.371986
<i>Chlorurus enneacanthus</i>	0	0.0001	0.000927	0
<i>Scarus frenatus</i>	3.99E-06	0.000506	0.00234	0.001083
<i>Scarus rubroviolaceus</i>	1.21E-05	4.77E-05	0.000517	0.001292
<i>Scarus psittacus</i>	0.00045	0.003231	0	0
<i>Scarus niger</i>	0	0.000258	0.00021	0
<i>Scarus tricolor</i>	0	0.000282	0.000103	0
<i>Scarus scaber</i>	0	0.000283	0.001389	0
<i>Scarus prasiognathos</i>	0	8.75E-06	6.4E-05	0.000823
<i>Scarus viridifucatus</i>	0	0	0	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	9.11E-05	0.000137
<i>Cetoscarus bicolor</i>	0	0	0	0.086943
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	4.09E-06	0	0	0

<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	0.000221	0.002605	0.005617	0
<i>Chlorurus strongylocephalus</i>	0	0	0.075186	0.086176
<i>Chlorurus enneacanthus</i>	0	4.95E-05	0.000703	0
<i>Scarus frenatus</i>	2.07E-06	9.38E-05	0.000485	0.000266
<i>Scarus rubroviolaceus</i>	1.75E-05	2.25E-05	0.000248	0.000402
<i>Scarus psittacus</i>	0.000209	0.001139	0	0
<i>Scarus niger</i>	0	0.000166	0.000107	0
<i>Scarus tricolor</i>	0	0.000121	5.18E-05	0
<i>Scarus scaber</i>	0	0.000117	0.000295	0
<i>Scarus prasiognathos</i>	0	3.29E-06	3.71E-05	0.000205
<i>Scarus viridifucatus</i>	0	0	0	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	2.84E-05	4.27E-05
<i>Cetoscarus bicolor</i>	0	0	0	0.013984
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	4.21E-06	0	0	0

Table. S11: Overall parrotfish bioerosion rates in the *Porites* bommie habitat (kg m<sup>-2</sup> yr<sup>-1</sup>) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
Chlorurus sordidus	0.000722	0.010088	0.00432	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0.000579	0.01014	0.031311	0
Scarus frenatus	0	0.000253	0.000478	0.000106
Scarus rubroviolaceus	1.72E-05	0.000252	0.003252	0.000863
Scarus psittacus	0.002351	0.009383	0	0
Scarus niger	0	0	0	0
Scarus tricolor	0	0.000935	0.00046	0
Scarus scaber	9.2E-07	0.000466	0.000944	0.000122
Scarus prasiognathos	0	5.61E-05	0.000562	0.000141
Scarus viridifucatus	0	0	3.65E-05	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	9.47E-06	7.49E-05	0.000297
Cetoscarus bicolor	0	0	0	0
Calotomus carolinus	0	0	0	0
Juveniles	0.000427	0	0	0
<b>Standard Error</b>				
Chlorurus sordidus	0.000199	0.003063	0.002446	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0.000234	0.002381	0.008385	0
Scarus frenatus	0	6.56E-05	9.57E-05	3.62E-05
Scarus rubroviolaceus	9.95E-06	8.05E-05	0.000793	0.000314
Scarus psittacus	0.00057	0.00166	0	0
Scarus niger	0	0	0	0
Scarus tricolor	0	0.000184	0.000132	0
Scarus scaber	5.64E-07	8.84E-05	0.000157	7.07E-05
Scarus prasiognathos	0	2.75E-05	0.000125	2.29E-05
Scarus viridifucatus	0	0	2.12E-05	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	6.68E-06	4.34E-05	8.39E-05
Cetoscarus bicolor	0	0	0	0
Calotomus carolinus	0	0	0	0
Juveniles	0.000232	0	0	0

Table. S12: Overall parrotfish bioerosion rates in the NE reef habitat ( $\text{kg m}^{-2} \text{yr}^{-1}$ ) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	0.011054	0.094009	0.046182	0
<i>Chlorurus strongylocephalus</i>	0	0.001728	0.026641	0.03638
<i>Chlorurus enneacanthus</i>	0	0	0	0
<i>Scarus frenatus</i>	5.34E-05	0.000168	0.000675	3.09E-05
<i>Scarus rubroviolaceus</i>	0	2.15E-06	0.000224	5.9E-05
<i>Scarus psittacus</i>	0.001634	0.007479	0	0
<i>Scarus niger</i>	0.000305	0.011807	0.001118	0
<i>Scarus tricolor</i>	0	2.81E-05	0	0
<i>Scarus scaber</i>	4.31E-06	0.00024	0.00027	0
<i>Scarus prasiognathos</i>	5.98E-07	0.000252	0	0
<i>Scarus viridifucatus</i>	0	0.0003	2.64E-05	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	0	5.34E-05
<i>Cetoscarus bicolor</i>	0	0	0.011069	0.210251
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	0.000297	0	0	0
<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	0.001885	0.020755	0.009867	0
<i>Chlorurus strongylocephalus</i>	0	0.00144	0.00814	0.011703
<i>Chlorurus enneacanthus</i>	0	0	0	0
<i>Scarus frenatus</i>	1.66E-05	4.64E-05	0.000137	9.65E-06
<i>Scarus rubroviolaceus</i>	0	2.55E-06	8.69E-05	2.86E-05
<i>Scarus psittacus</i>	0.000358	0.001851	0	0
<i>Scarus niger</i>	7.52E-05	0.002429	0.000233	0
<i>Scarus tricolor</i>	0	2.15E-05	0	0
<i>Scarus scaber</i>	2.55E-06	8.03E-05	0.000124	0
<i>Scarus prasiognathos</i>	3.67E-07	5.89E-05	0	0
<i>Scarus viridifucatus</i>	0	6.4E-05	8.25E-06	0
<i>Scarus russelii</i>	0	0	0	0
<i>Hipposcarus harid</i>	0	0	0	1.18E-05
<i>Cetoscarus bicolor</i>	0	0	0.00228	0.059874
<i>Calotomus carolinus</i>	0	0	0	0
Juveniles	0.00025	0	0	0

Table. S13: Overall parrotfish bioerosion rates in the SE patch reef habitat ( $\text{kg m}^{-2} \text{yr}^{-1}$ ) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
Chlorurus sordidus	0.001699	0.037381	0.050959	0
Chlorurus strongylocephalus	0	0.032893	0.144797	0.176862
Chlorurus enneacanthus	0	0.00033	0.000408	0
Scarus frenatus	0.000137	0.00084	0.004244	0.00067
Scarus rubroviolaceus	0	9.26E-06	0.000942	0.00246
Scarus psittacus	0.000267	0.0031	0	0
Scarus niger	0.000131	0.004482	0.00073	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	0.000308	0.000624	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	6.21E-05	3.18E-05	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	1.19E-05	0.000332	0.000121
Cetoscarus bicolor	0	0	0.043232	0.070064
Calotomus carolinus	0	0	0	0
Juveniles	2.08E-05	0	0	0
<b>Standard Error</b>				
Chlorurus sordidus	0.000325	0.010437	0.013205	0
Chlorurus strongylocephalus	0	0.022817	0.038753	0.049764
Chlorurus enneacanthus	0	0.000131	0.000309	0
Scarus frenatus	5.05E-05	0.000105	0.00055	0.000175
Scarus rubroviolaceus	0	4.27E-06	0.000286	0.000717
Scarus psittacus	0.000119	0.001139	0	0
Scarus niger	2.09E-05	0.001454	0.000305	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	5.38E-05	0.000137	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	3.46E-05	1.84E-05	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	3.16E-06	0.00014	3.76E-05
Cetoscarus bicolor	0	0	0.010317	0.022438
Calotomus carolinus	0	0	0	0
Juveniles	1.23E-05	0	0	0

Table. S14: Overall parrotfish bioerosion rates in the Nearshore Lagoon habitat (kg m<sup>-2</sup> yr<sup>-1</sup>) and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
Chlorurus sordidus	1.42E-05	0.000989	0	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0	0	0	0
Scarus frenatus	0	0	0	0
Scarus rubroviolaceus	0	2.29E-05	0.002723	1.97E-05
Scarus psittacus	0	0.000372	0	0
Scarus niger	0	0.000378	0	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	0	0.00053	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	0	0	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	0	2.95E-05	6.02E-05
Cetoscarus bicolor	0	0	0	0
Calotomus carolinus	0	0	0	0
Juveniles	0	0	0	0
<b>Standard Error</b>				
Chlorurus sordidus	1.48E-05	0.000182	0	0
Chlorurus strongylocephalus	0	0	0	0
Chlorurus enneacanthus	0	0	0	0
Scarus frenatus	0	0	0	0
Scarus rubroviolaceus	0	1.6E-05	0.00089	9.58E-06
Scarus psittacus	0	0.000105	0	0
Scarus niger	0	7.6E-05	0	0
Scarus tricolor	0	0	0	0
Scarus scaber	0	0	9.02E-05	0
Scarus prasiognathos	0	0	0	0
Scarus viridifucatus	0	0	0	0
Scarus russelii	0	0	0	0
Hipposcarus harid	0	0	9.22E-06	1.88E-05
Cetoscarus bicolor	0	0	0	0
Calotomus carolinus	0	0	0	0
Juveniles	0	0	0	0



Table. S15: Overall parrotfish grazing pressure ( $m^{-2} yr^{-1}$ ) in the Hardground habitat and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	43.31	6053.85	4992.18	0.00
<i>Chlorurus strongylocephalus</i>	0.00	0.00	2836.46	9117.14
<i>Chlorurus enneacanthus</i>	0.00	27.43	0.00	0.00
<i>Scarus frenatus</i>	0.00	1270.85	873.28	380.73
<i>Scarus rubroviolaceus</i>	77.12	517.34	1930.35	1024.95
<i>Scarus psittacus</i>	5698.63	19265.66	0.00	0.00
<i>Scarus niger</i>	0.00	42.99	0.00	0.00
<i>Scarus tricolor</i>	0.00	5553.81	7785.77	0.00
<i>Scarus scaber</i>	0.00	34.45	719.77	0.00
<i>Scarus prasiognathos</i>	0.00	0.00	0.00	2417.36
<i>Scarus viridifucatus</i>	0.00	0.00	0.00	0.00
<i>Scarus russelii</i>	0.00	1494.21	668.01	0.00
<i>Hipposcarus harid</i>	0.00	0.00	204.19	481.77
<i>Cetoscarus bicolor</i>	0.00	0.00	0.00	540.00
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	2.73	0.00	0.00	0.00
<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	11.38	1038.10	618.91	0.00
<i>Chlorurus strongylocephalus</i>	0.00	0.00	576.65	2814.78
<i>Chlorurus enneacanthus</i>	0.00	7.01	0.00	0.00
<i>Scarus frenatus</i>	0.00	351.04	170.27	88.81
<i>Scarus rubroviolaceus</i>	31.28	137.57	550.02	282.94
<i>Scarus psittacus</i>	929.15	3589.16	0.00	0.00
<i>Scarus niger</i>	0.00	12.05	0.00	0.00
<i>Scarus tricolor</i>	0.00	897.37	1557.87	0.00
<i>Scarus scaber</i>	0.00	7.37	232.87	0.00
<i>Scarus prasiognathos</i>	0.00	0.00	0.00	447.73
<i>Scarus viridifucatus</i>	0.00	0.00	0.00	0.00
<i>Scarus russelii</i>	0.00	456.10	108.99	0.00
<i>Hipposcarus harid</i>	0.00	0.00	52.03	89.05
<i>Cetoscarus bicolor</i>	0.00	0.00	0.00	412.44
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	1.93	0.00	0.00	0.00

Table. S16: Overall parrotfish grazing pressure ( $\text{m}^{-2} \text{yr}^{-1}$ ) in the Rubble habitat and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	1149.04	5435.18	2984.28	0.00
<i>Chlorurus strongylocephalus</i>	0.00	0.00	13726.75	14856.70
<i>Chlorurus enneacanthus</i>	0.00	86.96	328.39	0.00
<i>Scarus frenatus</i>	38.95	1633.19	5003.66	2314.97
<i>Scarus rubroviolaceus</i>	80.36	242.12	454.20	942.97
<i>Scarus psittacus</i>	2233.32	8778.35	0.00	0.00
<i>Scarus niger</i>	0.00	701.42	784.52	0.00
<i>Scarus tricolor</i>	0.00	766.74	386.42	0.00
<i>Scarus scaber</i>	0.00	912.20	2970.53	0.00
<i>Scarus prasiognathos</i>	0.00	28.24	136.88	1759.90
<i>Scarus viridifucatus</i>	0.00	0.00	0.00	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	0.00	194.78	292.17
<i>Cetoscarus bicolor</i>	0.00	0.00	0.00	3472.42
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	27.28	0.00	0.00	0.00
<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	334.83	1125.07	1413.10	0.00
<i>Chlorurus strongylocephalus</i>	0.00	0.00	2719.63	3031.90
<i>Chlorurus enneacanthus</i>	0.00	22.24	176.79	0.00
<i>Scarus frenatus</i>	12.43	247.48	928.00	500.90
<i>Scarus rubroviolaceus</i>	90.79	107.18	207.90	273.58
<i>Scarus psittacus</i>	675.00	2656.03	0.00	0.00
<i>Scarus niger</i>	0.00	401.78	323.40	0.00
<i>Scarus tricolor</i>	0.00	292.44	156.92	0.00
<i>Scarus scaber</i>	0.00	295.83	548.87	0.00
<i>Scarus prasiognathos</i>	0.00	8.55	68.81	385.89
<i>Scarus viridifucatus</i>	0.00	0.00	0.00	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	0.00	53.64	80.47
<i>Cetoscarus bicolor</i>	0.00	0.00	0.00	919.21
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	21.79	0.00	0.00	0.00

Table. S17: Overall parrotfish grazing pressure ( $\text{m}^{-2} \text{yr}^{-1}$ ) in the *Porites* bommie habitat and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
Chlorurus sordidus	1196.52	7339.63	1281.62	0.00
Chlorurus strongylocephalus	0.00	0.00	0.00	0.00
Chlorurus enneacanthus	959.81	7377.65	9289.92	0.00
Scarus frenatus	0.00	683.59	857.12	189.73
Scarus rubroviolaceus	95.86	1071.53	2392.11	528.00
Scarus psittacus	9774.05	21357.39	0.00	0.00
Scarus niger	0.00	0.00	0.00	0.00
Scarus tricolor	0.00	2129.42	1442.41	0.00
Scarus scaber	7.53	1258.94	1691.49	218.51
Scarus prasiognathos	0.00	151.69	1007.35	252.35
Scarus viridifucatus	0.00	0.00	65.36	0.00
Scarus russelii	0.00	0.00	0.00	0.00
Hipposcarus harid	0.00	25.60	134.18	531.66
Cetoscarus bicolor	0.00	0.00	0.00	0.00
Calotomus carolinus	0.00	0.00	0.00	0.00
Juveniles	2385.10	0.00	0.00	0.00
<b>Standard Error</b>				
Chlorurus sordidus	253.35	1108.93	515.66	0.00
Chlorurus strongylocephalus	0.00	0.00	0.00	0.00
Chlorurus enneacanthus	297.64	891.42	1799.46	0.00
Scarus frenatus	0.00	139.35	156.30	60.49
Scarus rubroviolaceus	43.96	317.01	547.34	178.89
Scarus psittacus	1575.05	3432.77	0.00	0.00
Scarus niger	0.00	0.00	0.00	0.00
Scarus tricolor	0.00	370.44	340.43	0.00
Scarus scaber	2.88	190.82	246.87	109.85
Scarus prasiognathos	0.00	58.26	201.06	41.98
Scarus viridifucatus	0.00	0.00	32.86	0.00
Scarus russelii	0.00	0.00	0.00	0.00
Hipposcarus harid	0.00	14.14	67.45	132.47
Cetoscarus bicolor	0.00	0.00	0.00	0.00
Calotomus carolinus	0.00	0.00	0.00	0.00
Juveniles	1062.99	0.00	0.00	0.00

Table. S18: Overall parrotfish grazing pressure ( $\text{m}^{-2} \text{yr}^{-1}$ ) in the NE reef habitat and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	11716.20	43730.87	8760.88	0.00
<i>Chlorurus strongylocephalus</i>	0.00	59.12	564.74	778.40
<i>Chlorurus enneacanthus</i>	0.00	0.00	0.00	0.00
<i>Scarus frenatus</i>	279.66	290.47	773.56	35.40
<i>Scarus rubroviolaceus</i>	0.00	5.84	105.40	23.07
<i>Scarus psittacus</i>	4343.53	10884.53	0.00	0.00
<i>Scarus niger</i>	810.09	17184.39	2239.37	0.00
<i>Scarus tricolor</i>	0.00	40.90	0.00	0.00
<i>Scarus scaber</i>	22.53	414.89	309.34	0.00
<i>Scarus prasiognathos</i>	3.13	436.37	0.00	0.00
<i>Scarus viridifucatus</i>	0.00	518.56	30.25	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	0.00	0.00	61.22
<i>Cetoscarus bicolor</i>	0.00	0.00	234.65	4498.63
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	1061.88	0.00	0.00	0.00

<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	1780.72	4893.60	1367.93	0.00
<i>Chlorurus strongylocephalus</i>	0.00	36.35	132.09	255.41
<i>Chlorurus enneacanthus</i>	0.00	0.00	0.00	0.00
<i>Scarus frenatus</i>	76.11	69.09	171.32	9.75
<i>Scarus rubroviolaceus</i>	0.00	6.47	38.11	10.51
<i>Scarus psittacus</i>	724.72	2332.47	0.00	0.00
<i>Scarus niger</i>	163.78	3154.29	382.74	0.00
<i>Scarus tricolor</i>	0.00	27.88	0.00	0.00
<i>Scarus scaber</i>	7.60	110.16	122.84	0.00
<i>Scarus prasiognathos</i>	1.20	81.57	0.00	0.00
<i>Scarus viridifucatus</i>	0.00	88.23	8.33	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	0.00	0.00	11.92
<i>Cetoscarus bicolor</i>	0.00	0.00	57.30	1177.89
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	695.03	0.00	0.00	0.00

Table. S19: Overall parrotfish grazing pressure ( $m^{-2} yr^{-1}$ ) in the SE patch reef habitats and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
<i>Chlorurus sordidus</i>	507.58	4900.52	2724.40	0.00
<i>Chlorurus strongylocephalus</i>	0.00	317.25	865.02	1066.46
<i>Chlorurus enneacanthus</i>	0.00	43.27	21.80	0.00
<i>Scarus frenatus</i>	201.35	408.91	1369.90	216.27
<i>Scarus rubroviolaceus</i>	0.00	7.09	124.84	271.13
<i>Scarus psittacus</i>	200.20	1271.44	0.00	0.00
<i>Scarus niger</i>	98.29	1838.45	412.31	0.00
<i>Scarus tricolor</i>	0.00	0.00	0.00	0.00
<i>Scarus scaber</i>	0.00	150.10	201.36	0.00
<i>Scarus prasiognathos</i>	0.00	0.00	0.00	0.00
<i>Scarus viridifucatus</i>	0.00	30.25	10.25	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	5.80	107.33	39.07
<i>Cetoscarus bicolor</i>	0.00	0.00	258.27	422.48
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	20.88	0.00	0.00	0.00
<b>Standard Error</b>				
<i>Chlorurus sordidus</i>	109.70	695.69	505.32	0.00
<i>Chlorurus strongylocephalus</i>	0.00	162.46	172.03	277.12
<i>Chlorurus enneacanthus</i>	0.00	8.88	11.74	0.00
<i>Scarus frenatus</i>	42.87	62.05	160.75	50.81
<i>Scarus rubroviolaceus</i>	0.00	3.05	35.46	75.84
<i>Scarus psittacus</i>	58.38	399.81	0.00	0.00
<i>Scarus niger</i>	18.25	534.44	140.73	0.00
<i>Scarus tricolor</i>	0.00	0.00	0.00	0.00
<i>Scarus scaber</i>	0.00	28.82	38.62	0.00
<i>Scarus prasiognathos</i>	0.00	0.00	0.00	0.00
<i>Scarus viridifucatus</i>	0.00	13.31	5.15	0.00
<i>Scarus russelii</i>	0.00	0.00	0.00	0.00
<i>Hipposcarus harid</i>	0.00	1.24	39.29	10.58
<i>Cetoscarus bicolor</i>	0.00	0.00	49.81	124.79
<i>Calotomus carolinus</i>	0.00	0.00	0.00	0.00
Juveniles	9.82	0.00	0.00	0.00

Table. S20: Overall parrotfish grazing pressure ( $m^{-2} yr^{-1}$ ) in the Nearshore Lagoon habitat and standard error (SE)

<b>Averages</b>	<b>1 to 15 cm</b>	<b>16 to 30 cm</b>	<b>31 to 45 cm</b>	<b>46 to 60 cm</b>
Chlorurus sordidus	15.87	485.44	0.00	0.00
Chlorurus strongylocephalus	0.00	0.00	0.00	0.00
Chlorurus enneacanthus	0.00	0.00	0.00	0.00
Scarus frenatus	0.00	0.00	0.00	0.00
Scarus rubroviolaceus	0.00	65.75	1351.18	8.14
Scarus psittacus	0.00	570.69	0.00	0.00
Scarus niger	0.00	580.54	0.00	0.00
Scarus tricolor	0.00	0.00	0.00	0.00
Scarus scaber	0.00	0.00	640.27	0.00
Scarus prasiognathos	0.00	0.00	0.00	0.00
Scarus viridifucatus	0.00	0.00	0.00	0.00
Scarus russelii	0.00	0.00	0.00	0.00
Hipposcarus harid	0.00	0.00	35.67	72.80
Cetoscarus bicolor	0.00	0.00	0.00	0.00
Calotomus carolinus	0.00	0.00	0.00	0.00
Juveniles	0.00	0.00	0.00	0.00
<b>Standard Error</b>				
Chlorurus sordidus	12.98	53.89	0.00	0.00
Chlorurus strongylocephalus	0.00	0.00	0.00	0.00
Chlorurus enneacanthus	0.00	0.00	0.00	0.00
Scarus frenatus	0.00	0.00	0.00	0.00
Scarus rubroviolaceus	0.00	42.69	412.05	3.71
Scarus psittacus	0.00	146.36	0.00	0.00
Scarus niger	0.00	100.60	0.00	0.00
Scarus tricolor	0.00	0.00	0.00	0.00
Scarus scaber	0.00	0.00	97.75	0.00
Scarus prasiognathos	0.00	0.00	0.00	0.00
Scarus viridifucatus	0.00	0.00	0.00	0.00
Scarus russelii	0.00	0.00	0.00	0.00
Hipposcarus harid	0.00	0.00	9.82	20.05
Cetoscarus bicolor	0.00	0.00	0.00	0.00
Calotomus carolinus	0.00	0.00	0.00	0.00
Juveniles	0.00	0.00	0.00	0.00

Table. S21: Average “morning” bites per minute for representative parrotfish species. Yellow boxes highlight where assumptions at the most comparable size class were made.

Average bites/min		Fish size (cm)			
Species	Feeding Mode	1 to 15	16 to 30	31 to 45	45 to 60
<i>Chlorurus sordidus</i>	Excavator	17.17	14.09	13.55	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	9.21	9.21	7.87	8.57
<i>Scarus rubroviolaceus</i>	Scraper	5.91	6.23	15.41	2.70
<i>Scarus frenatus</i>	Scraper	6.11	11.95	16.27	16.27
<i>Scarus niger</i>	Scraper	16.34	20.93	24.63	N/A
<i>Scarus psittacus</i>	Scraper	22.30	21.95	N/A	N/A
<b>Standard Error</b>					
<i>Chlorurus sordidus</i>	Excavator	3.06	2.26	2.17	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	3.28	3.28	2.23	1.46
<i>Scarus rubroviolaceus</i>	Scraper	4.00	2.55	2.85	0.96
<i>Scarus frenatus</i>	Scraper	1.69	2.44	3.08	3.08
<i>Scarus niger</i>	Scraper	9.50	2.21	2.77	N/A
<i>Scarus psittacus</i>	Scraper	3.65	9.50	N/A	N/A

Table. S22: Average “midday” bites per minute for representative parrotfish species. Yellow boxes highlight where assumptions at the most comparable size class were made.

Average bites/min		Fish size (cm)			
Species	Feeding Mode	1 to 15	16 to 30	31 to 45	45 to 60
<i>Chlorurus sordidus</i>	Excavator	25.79	18.99	17.80	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	9.98	9.98	6.29	8.96
<i>Scarus rubroviolaceus</i>	Scraper	4.95	5.39	10.63	9.02
<i>Scarus frenatus</i>	Scraper	10.44	13.41	11.21	11.21
<i>Scarus niger</i>	Scraper	28.04	17.67	24.22	N/A
<i>Scarus psittacus</i>	Scraper	31.79	35.57	N/A	N/A
<b>Standard Error</b>					
<i>Chlorurus sordidus</i>	Excavator	2.12	1.60	1.76	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	1.19	1.19	1.65	2.53
<i>Scarus rubroviolaceus</i>	Scraper	3.77	1.47	2.71	3.83
<i>Scarus frenatus</i>	Scraper	2.31	2.46	2.73	2.73
<i>Scarus niger</i>	Scraper	6.27	4.00	3.37	N/A
<i>Scarus psittacus</i>	Scraper	5.26	7.16	N/A	N/A

Table. S23: Average “afternoon” bites per minute for representative parrotfish species. Yellow boxes highlight where assumptions at the most comparable size class were made.

Average bites/min Species	Feeding Mode	Fish size (cm)			
		1 to 15	16 to 30	31 to 45	45 to 60
<i>Chlorurus sordidus</i>	Excavator	15.29	19.64	19.44	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	12.38	12.38	8.02	10.35
<i>Scarus rubroviolaceus</i>	Scraper	12.21	12.21	15.13	10.88
<i>Scarus frenatus</i>	Scraper	8.42	16.85	17.15	17.15
<i>Scarus niger</i>	Scraper	20.26	26.38	40.58	N/A
<i>Scarus psittacus</i>	Scraper	38.41	38.71	N/A	N/A
<b>Standard Error</b>					
<i>Chlorurus sordidus</i>	Excavator	3.78	2.60	1.73	N/A
<i>Chlorurus strongylocephalus</i>	Excavator	2.84	2.84	1.24	3.36
<i>Scarus rubroviolaceus</i>	Scraper	6.44	6.44	2.16	2.60
<i>Scarus frenatus</i>	Scraper	1.47	2.73	2.61	2.61
<i>Scarus niger</i>	Scraper	3.95	5.82	2.40	N/A
<i>Scarus psittacus</i>	Scraper	4.57	2.09	N/A	N/A