

Ecology

Appendix S1: Site details

Priority effects in coral–macroalgae interactions can drive alternate community paths in the absence of top-down control

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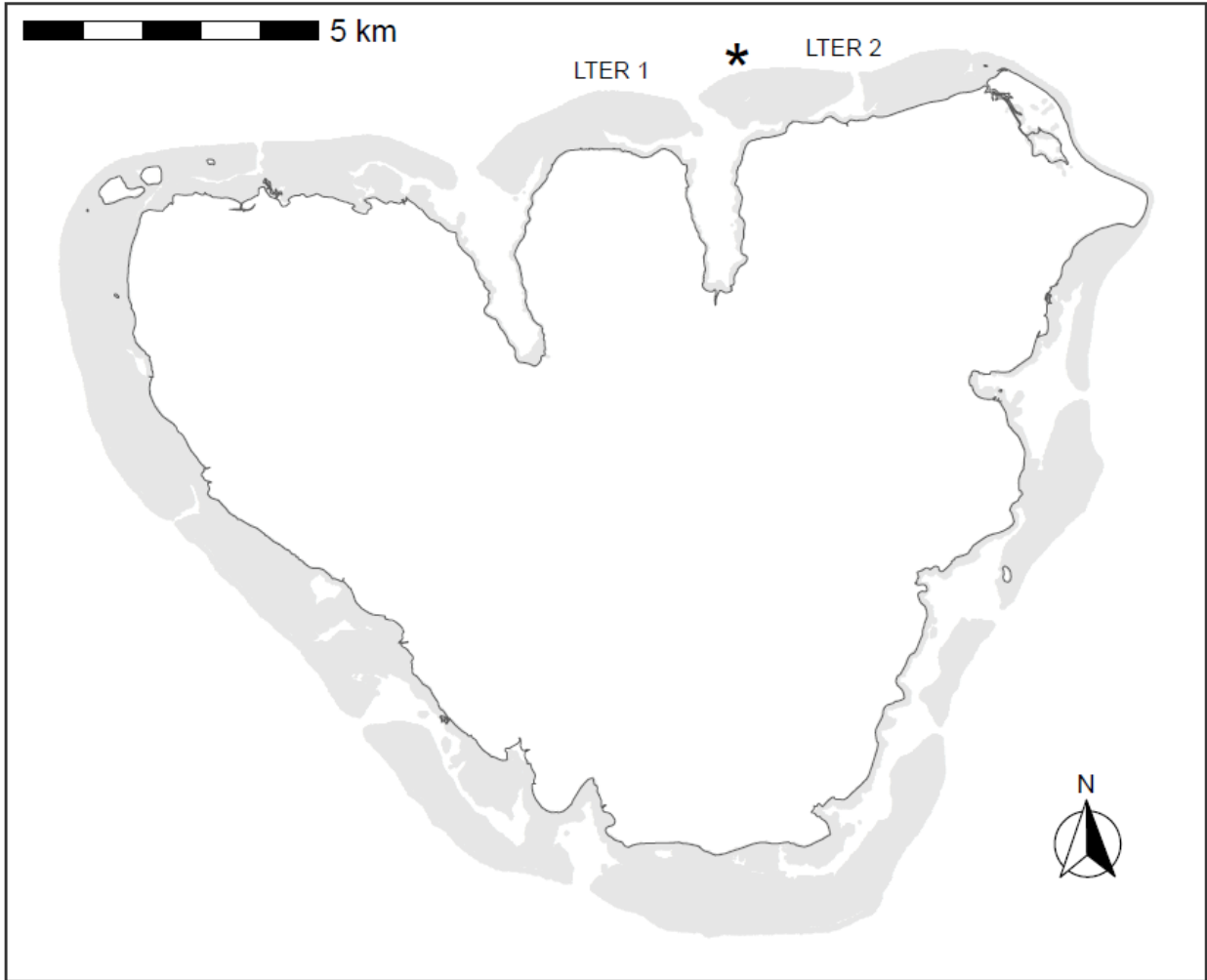


Figure S1. Map showing approximate locations of the experimental study site (marked with *) and the two Moorea Coral Reef Long Term Ecological Research sites on the north shore fore reef of Moorea.

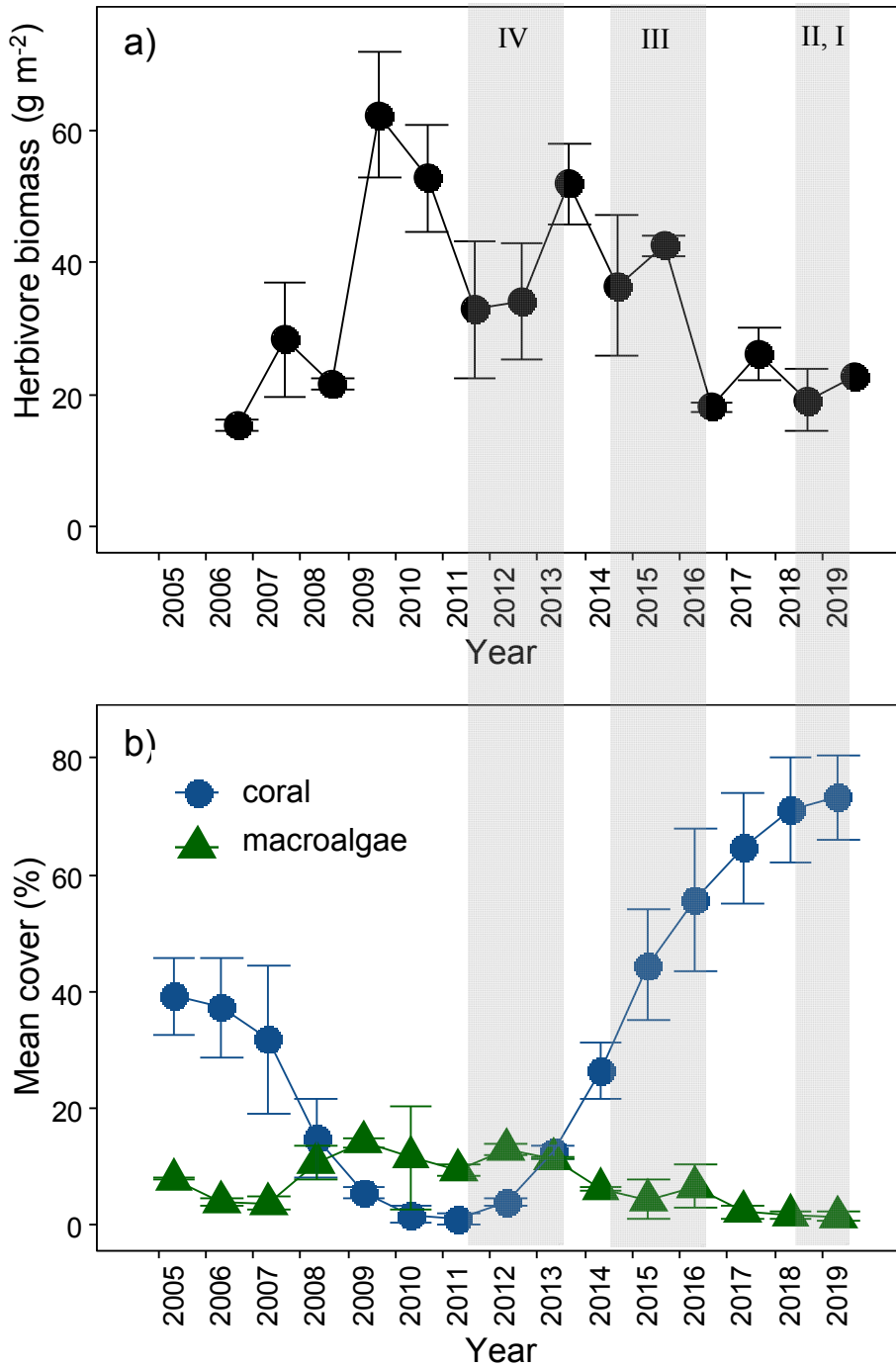


Figure S2. Time series of (a) herbivore biomass (mean \pm SE) and (b) cover of coral and macroalgae (mean \pm SE) at \sim 10 m depth at LTER 1 and LTER 2 on the north shore fore reef of Moorea. The approximate time frames of the four experiments (I, II, III, and IV) are indicated with vertical gray bars. Data are from the Moorea Coral Reef Long Term Ecological Research Site core time series (Brooks 2021, Edmunds 2020).

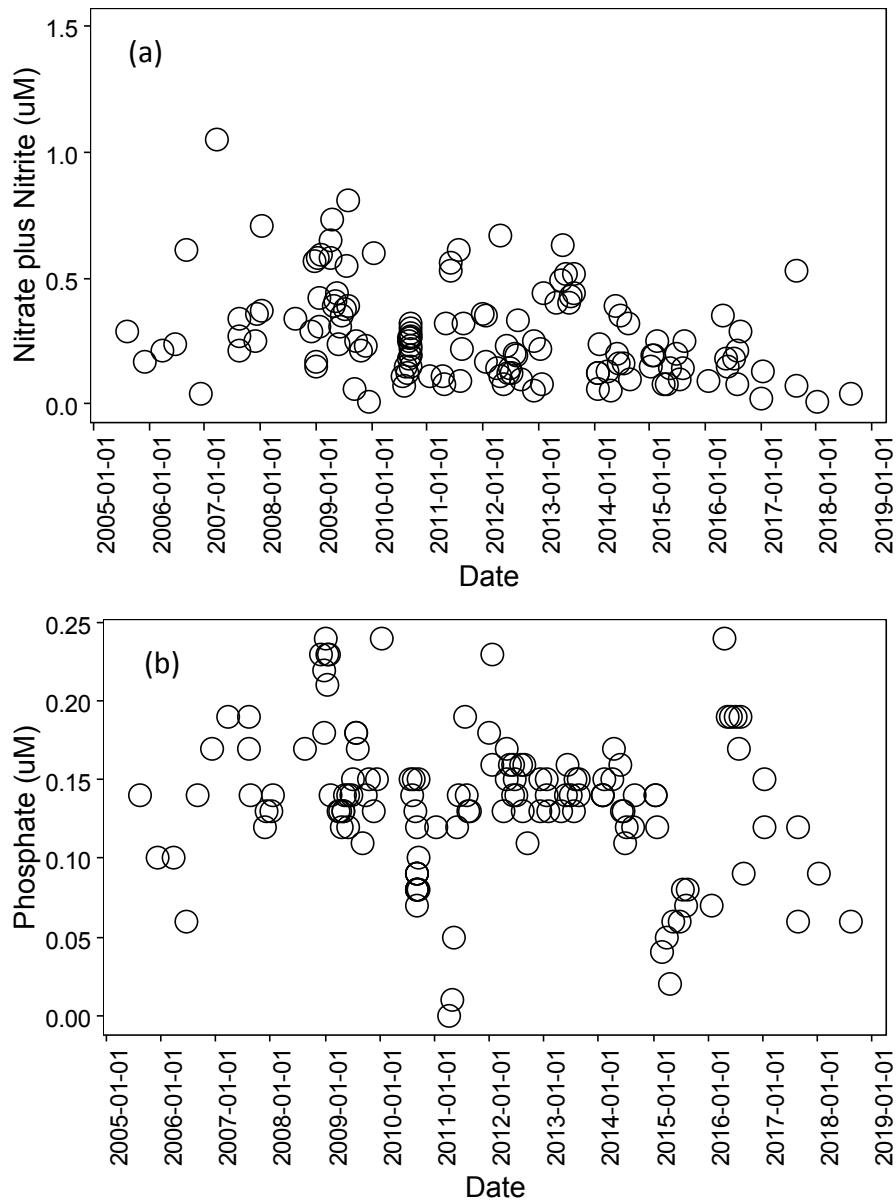


Figure S3. Water column concentrations of (a) nitrogen and (b) phosphorous measured near LTER 1 fore reef between 2006 and 2019. Data are from the Moorea Coral Reef Long Term Ecological Research Site core time series (Allredge 2019).

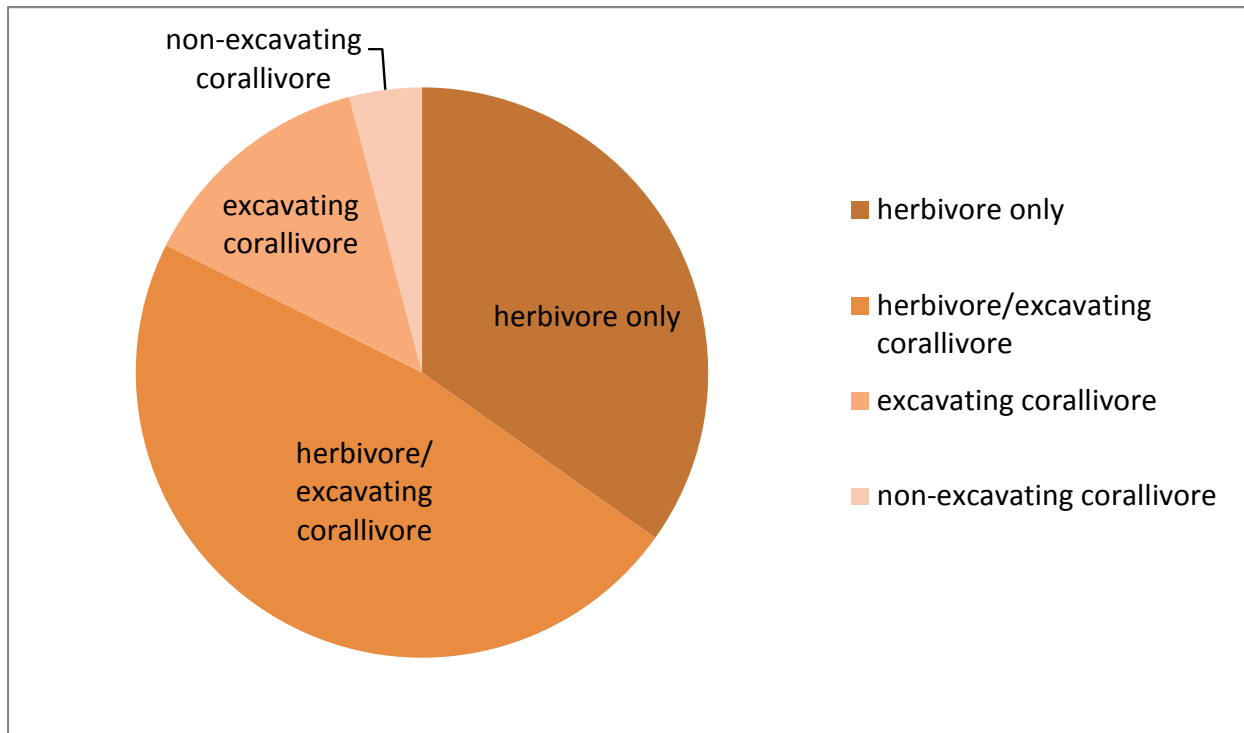


Figure S4. Pie chart showing the relative biomass of fish that feed exclusively on algae and detritus but are not known corallivores (herbivore only), fish that are primarily herbivores but which also may sometimes feed on corals (herbivores/excavating corallivore), non-herbivorous fishes that are known to feed on corals (excavating corallivore), and fishes that feed on coral polyps and mucus without damaging coral skeletons (non-excavating corallivore). Data are from LTER 1 and LTER 2 and averaged over the entire time series shown in Figure S2 (2006 to 2019). Note that most excavating corallivores on the north shore fore reef of Moorea are herbivorous parrotfishes (see Table S1).

Table S1. Species list showing the relative biomass of each herbivore and corallivore species at LTER 1 and LTER 2.

Species	Proportional biomass	Group
<i>Chlorurus spilurus</i>	0.187	Herbivore and excavating corallivore
<i>Scarus psittacus</i>	0.144	Herbivore and excavating corallivore
<i>Ctenochaetus striatus</i>	0.141	Herbivore only
<i>Odonus niger</i>	0.081	Excavating corallivore
<i>Zebrasoma scopas</i>	0.067	Herbivore only
<i>Scarus oviceps</i>	0.041	Herbivore and excavating corallivore
<i>Balistoides viridescens</i>	0.037	Excavating corallivore
<i>Melichthys niger</i>	0.036	Herbivore and excavating corallivore
<i>Acanthurus olivaceus</i>	0.035	Herbivore only
<i>Naso lituratus</i>	0.034	Herbivore only
<i>Melichthys vidua</i>	0.030	Herbivore and excavating corallivore
<i>Acanthurus nigrofuscus</i>	0.028	Herbivore only
<i>Balistapus undulatus</i>	0.015	Excavating corallivore
<i>Scarus rubroviolaceus</i>	0.014	Herbivore and excavating corallivore
<i>Acanthurus nigricauda</i>	0.012	Herbivore only
<i>Acanthurus pyroferus</i>	0.012	Herbivore only
<i>Scarus forsteni</i>	0.010	Herbivore and excavating corallivore
<i>Chaetodon ornatissimus</i>	0.009	Corallivore
<i>Chaetodon reticulatus</i>	0.008	Corallivore
<i>Ctenochaetus flavicauda</i>	0.007	Herbivore only
<i>Acanthurus nigricans</i>	0.006	Herbivore only
<i>Scarus globiceps</i>	0.005	Herbivore and excavating corallivore
<i>Forcipiger flavissimus</i>	0.005	Corallivore
<i>Chaetodon pelewensis</i>	0.004	Corallivore
<i>Chaetodon quadrimaculatus</i>	0.004	Corallivore
<i>Chaetodon vagabundus</i>	0.004	Corallivore
<i>Ctenochaetus binotatus</i>	0.003	Herbivore only
<i>Cantherhines sandwichiensis</i>	0.002	Herbivore and excavating corallivore
<i>Chaetodon unimaculatus</i>	0.002	Corallivore
<i>Zebrasoma velifer</i>	0.002	Herbivore only
<i>Scarus frenatus</i>	0.002	Herbivore and excavating corallivore
<i>Heniochus chrysostomus</i>	0.002	Corallivore
<i>Forcipiger longirostris</i>	0.001	Corallivore
<i>Arothron meleagris</i>	0.001	Excavating_corallivore
<i>Chaetodon lunula</i>	0.001	Corallivore
<i>Cantherhines dumerilii</i>	0.001	Herbivore and excavating corallivore
<i>Canthigaster solandri</i>	0.001	Excavating corallivore
<i>Amanses scopas</i>	0.001	Excavating corallivore
<i>Scarus schlegeli</i>	0.001	Herbivore and excavating corallivore
<i>Scarus niger</i>	0.001	Herbivore and excavating corallivore
<i>Acanthurus lineatus</i>	<0.001	Herbivore only

<i>Acanthurus guttatus</i>	<0.001	Herbivore only
<i>Chaetodon auriga</i>	<0.001	Corallivore
<i>Chaetodon ulietensis</i>	<0.001	Corallivore
<i>Chaetodon lunulatus</i>	<0.001	Corallivore
<i>Siganus argenteus</i>	<0.001	Herbivore only
<i>Cetoscarus ocellatus</i>	<0.001	Herbivore and excavating corallivore
<i>Naso unicornis</i>	<0.001	Herbivore only
<i>Chaetodon ephippium</i>	<0.001	Corallivore
<i>Exallias brevis</i>	<0.001	Corallivore
<i>Scarus altipinnis</i>	<0.001	Herbivore and excavating corallivore
<i>Acanthurus blochii</i>	<0.001	Herbivore only
<i>Scarus tricolor</i>	<0.001	Herbivore and excavating corallivore
<i>Chlorurus microrhinos</i>	<0.001	Herbivore and excavating corallivore
<i>Acanthurus nigros</i>	<0.001	Herbivore only
<i>Chaetodon bennetti</i>	<0.001	Corallivore
<i>Canthigaster sp.</i>	<0.001	Excavating corallivore
<i>Acanthurus achilles</i>	<0.001	Herbivore only
<i>Chaetodon citrinellus</i>	<0.001	Corallivore
<i>Zebrasoma flavescens</i>	<0.001	Herbivore only
<i>Ostracion cubicus</i>	<0.001	Herbivore and excavating corallivore

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