|  |  |
| --- | --- |
|  |  |
| Croppers | *Acanthurus auranticavus, Acanthurus blochii,* ***Acanthurus dussumieri****, Acanthurus leucocheilus, Acanthurus leucosternon, Acanthurus lineatus, Acanthurus nigricans, Acanthurus nigricauda,* ***Acanthurus nigrofuscus****, Acanthurus nigroris,* ***Acanthurus olivaceus****, Acanthurus tennenti, Acanthurus tennentii, Acanthurus triostegus, Acanthurus tristis, Centropyge bicolor, Centropyge bispinosa, Centropyge vrolikii, Chrysiptera biocellata, Ctenochaetus binotatus,* ***Ctenochaetus striatus****, Ctenochaetus truncatus, Dischistodus melanotus, Dischistodus perspicillatus, Dischistodus prosopotaenia, Dischistodus pseudochrysopoecilus,* ***Melichthys niger****, Plectroglyphidodon lacrymatus, Plectroglyphidodon leucozonus, Plectroglyphidodon phoenixensis, Pomacentrus amboinensis, Pomacentrus bankanensis, Pomacentrus indicus, Pomacentrus nagasakiensis, Pomacentrus trilineatus, Pomacentrus wardi,* ***Siganus corallinus****,* ***Siganus doliatus****, Siganus puelloides, Siganus puellus, Siganus punctatus, Siganus spinus, Siganus stellatus, Siganus vulpinus, Stegastes apicalis, Stegastes fasciolatus, Stegastes lividus, Stegastes nigricans, Zebrasoma desjardinii,* ***Zebrasoma scopas****,* ***Zebrasoma veliferum*** | |
| Scrapers | ***Cetoscarus bicolor****,**Chlorurus atrilunula,* ***Chlorurus bleekeri****,* ***Chlorurus capistratoides****, Chlorurus enneacanthus,* ***Chlorurus microrhinos****,* ***Chlorurus sordidus****,**Chlorurus stronglycephalus,* ***Hipposcarus harid****,* ***Hipposcarus longiceps****,* ***Scarus altipinnis****,**Scarus capistratoides, Scarus caudofasciatus,* ***Scarus chameleon****,* ***Scarus dimidiatus****,**Scarus falcipinnis,* ***Scarus flavipectoralis****,* ***Scarus forsteni****,* ***Scarus frenatus****,* ***Scarus ghobban****,* ***Scarus globiceps****,* ***Scarus niger****,* ***Scarus oviceps****, Scarus prasiognathos,* ***Scarus psittacus****,* ***Scarus rivulatus****,* ***Scarus rubroviolaceus****,* ***Scarus scaber****,* ***Scarus schlegeli****,* ***Scarus spinus****,* ***Scarus tricolor****,* ***Scarus viridifucatus*** | |

**Table S1** | Nominal cropping and scraping herbivores surveyed in UVC. Species with feeding observations are indicated in bold.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Parameter | Prior | Mean | Lower 89% | Upper 89% | Effective samples |  |
| Cropping bite rate | X | *N*(3.43, 10) | 3.346 | 2.655 | 4.080 | 357 | 1.00 |
|  | *Exp*(2) | 4.937 | 4.546 | 5.239 | 1500 | 1.00 |
| species | *N*(0, ) | 0.414 | 0.172 | 0.622 | 486 | 1.00 |
| genus | *N*(0, ) | 0.453 | 0.004 | 0.839 | 188 | 1.03 |
| region | *N*(0, ) | 0.372 | 0.004 | 0.753 | 356 | 1.00 |
|  |  | *Cauchy*(0, 1) |  |  |  |  |  |
| Scraping bite rate | A | *N*(3.10, 10) | 3.161 | 2.491 | 3.794 | 718 | 1.00 |
| B | *N*(0, 5) | -0.028 | -0.031 | -0.025 | 3500 | 1.00 |
|  | *Exp*(1) | 1.624 | 1.512 | 1.733 | 2708 | 1.00 |
| species | *N*(0, ) | 0.408 | 0.302 | 0.501 | 1872 | 1.00 |
| genus | *N*(0, ) | 0.650 | 0.184 | 1.085 | 830 | 1.00 |
| region | *N*(0, ) | 0.282 | 0.049 | 0.532 | 737 | 1.00 |
|  |  | *Cauchy*(0, 1) |  |  |  |  |  |
| Scraping bite area | A | *N*(4.45, 5) | 2.459 | 2.354 | 2.568 | 1182 | 1.00 |
| B | *N*(0, 2) | 0.060 | 0.057 | 0.062 | 1052 | 1.00 |

**Table S2** | Bayesian priors and model convergence indicators for feeding rate models (Eqs 1,2, 4-7). Priors are weakly informative, except for intercept priors which were set at the mean bite rate or bite area (on a log scale). Parameter symbols are defined in Eqs. 4 – 7, and is the scale parameter for the Gamma distribution. *N*(0, 10) is a normal distribution with mean = 0 and standard deviation = 10, *Cauchy*(0, 1) is a Cauchy distribution with location = 0 and scale = 1. Estimates for random effect variances not shown.