

## Appendix S1 Island characteristics

Table S1.1 Geographic and environmental attributes of the 23 remote islands and atolls surveyed for reef fishes. Values for measurements made at the site scale represent island scale means. See Appendix S7 for variable descriptions.

| Region              | Island              | Latitude | Longitude | Biogeographic Province | Island type | Reef area (km <sup>2</sup> ) | Bathymetric slope (°) | Benthic complexity (m) | Depth (m) | Coral cover (%) | NPP (mg C m <sup>-2</sup> day <sup>-1</sup> ) | SST (°C) |
|---------------------|---------------------|----------|-----------|------------------------|-------------|------------------------------|-----------------------|------------------------|-----------|-----------------|---|----------|
| North Mariana       | Farallon de Pajaros | 20.542   | 144.90    | Central Pacific        | Island      | 5.1                          | 10.1                  | 0.76                   | 16.9      | 17.2            | 322.2   | 24.7     |
|                     | Maug                | 20.023   | 145.22    | Central Pacific        | Island      | 9.0                          | 6.9                   | 0.60                   | 14.9      | 30.4            | 323.6   | 25.1     |
|                     | Asuncion            | 19.693   | 145.40    | Central Pacific        | Island      | 7.0                          | 9.3                   | 0.67                   | 15.5      | 23.4            | 313.3   | 25.2     |
|                     | Agrihan             | 18.775   | 145.67    | Central Pacific        | Island      | 15.7                         | 10.6                  | 0.64                   | 16.8      | 19.6            | 300.8   | 25.6     |
|                     | Pagan               | 18.105   | 145.76    | Central Pacific        | Island      | 21.9                         | 8.4                   | 0.71                   | 16.5      | 15.8            | 300.2   | 25.7     |
|                     | Sarigan             | 16.704   | 145.78    | Central Pacific        | Island      | 17.0                         | 11.8                  | 0.72                   | 16.4      | 15.1            | 303.0   | 25.8     |
|                     | Guguan              | 17.307   | 145.84    | Central Pacific        | Island      | 12.0                         | 7.7                   | 0.71                   | 15.2      | 17.2            | 303.3   | 25.9     |
|                     | Alamagan            | 17.603   | 145.83    | Central Pacific        | Island      | 18.8                         | 9.5                   | 0.67                   | 14.5      | 17.2            | 311.1   | 25.8     |
| NW Hawaiian Islands | Kure                | 28.413   | -178.34   | Hawaiian               | Atoll       | 83.1                         | 1.0                   | 0.70                   | 14.0      | 15.0            | 587.2   | 18.7     |
|                     | Midway              | 28.235   | -177.37   | Hawaiian               | Atoll       | 123.7                        | 0.8                   | 0.72                   | 13.7      | 1.8             | 571.3   | 19.0     |
|                     | Pearl & Hermes      | 27.876   | -175.80   | Hawaiian               | Atoll       | 484.6                        | 1.5                   | 0.63                   | 14.4      | 5.5             | 617.3   | 19.2     |
|                     | Lisianski           | 26.016   | -173.94   | Hawaiian               | Atoll       | 1505.6                       | 0.3                   | 0.80                   | 13.9      | 31.5            | 570.9   | 20.9     |
|                     | Laysan              | 25.773   | -171.73   | Hawaiian               | Island      | 634.4                        | 0.3                   | 0.58                   | 11.0      | 12.9            | 539.1   | 21.1     |
|                     | Maro                | 25.401   | -170.56   | Hawaiian               | Atoll       | 1653.0                       | 0.1                   | 0.94                   | 12.4      | 21.8            | 640.1   | 21.3     |
|                     | French Frigate      | 23.767   | -166.23   | Hawaiian               | Atoll       | 835.4                        | 1.2                   | 0.60                   | 13.3      | 21.4            | 578.9   | 22.3     |
| Pacific Remote      | Wake                | 19.299   | 166.63    | Central Pacific        | Atoll       | 27.7                         | 15.3                  | 0.56                   | 15.1      | 29.0            | 313.8   | 25.1     |

|                   |          |         |         |                    |        |       |      |      |      |      |       |      |
|-------------------|----------|---------|---------|--------------------|--------|-------|------|------|------|------|-------|------|
| Islands<br>Areas  | Johnston | 16.746  | -169.51 | Hawaiian           | Atoll  | 202.3 | 9.1  | 0.53 | 16.6 | 10.3 | 426.8 | 24.6 |
|                   | Kingman  | 6.405   | -162.41 | Central<br>Pacific | Atoll  | 127.7 | 12.3 | 0.46 | 15.2 | 28.4 | 659.2 | 26.3 |
|                   | Palmyra  | 5.877   | -162.09 | Central<br>Pacific | Atoll  | 125.0 | 11.2 | 0.53 | 15.2 | 23.8 | 682.4 | 26.3 |
|                   | Howland  | 0.807   | -176.62 | Central<br>Pacific | Island | 10.2  | 11.0 | 0.56 | 13.6 | 27.8 | 893.2 | 26.3 |
|                   | Baker    | 0.194   | -176.47 | Central<br>Pacific | Island | 10.2  | 11.9 | 0.62 | 13.7 | 31.5 | 885.3 | 26.3 |
|                   | Jarvis   | -0.374  | -159.99 | Central<br>Pacific | Island | 6.6   | 9.0  | 0.48 | 11.5 | 19.8 | 990.9 | 25.1 |
| American<br>Samoa | Rose     | -14.543 | -168.16 | Central<br>Pacific | Atoll  | 8.0   | 21.1 | 0.68 | 14.4 | 18.4 | 374.5 | 26.5 |