

**APPENDIX L.** Results of GLMs for each host–parasite combination for the **within-island dataset**. Z = standardized regression coefficient or z-score for the effect of each parameter on parasite abundance. P-values were corrected for multiple comparisons by the FDR method (Benjamini and Hochberg 1995). Gradient = gradient value. Asterisks (\*) indicate parameters that were run in separate models because a single model including both parameters would not converge due to limited degrees of freedom.

| Host species                | Parasite group | Parasite taxon                             | Parasite abundance analysis |                          |                         |     |                     |                          |                       |
|-----------------------------|----------------|--|-----------------------------|--------------------------|-------------------------|-----|---------------------|--------------------------|-----------------------|
|                             |                |  | parameter                   | estimate                 | SE                      | n   | Z                   | raw p                    | corrected p for chl-a |
| <i>Cephalopholis argus</i>  | Crustacea      | Caligid sp.                                | gradient<br>TL              | 15.4637<br>0.1961        | 11.4720<br>0.0752       | 164 | 1.44<br>2.61        | 0.1513<br>0.0091         | 0.50                  |
| <i>Cephalopholis argus</i>  | Crustacea      | <i>Sagum epinepheli</i>                    | <b>gradient</b><br>TL       | <b>40.6141</b><br>0.1032 | <b>9.4838</b><br>0.0532 | 164 | <b>4.28</b><br>1.94 | <b>1.8e-5</b><br>0.0530  | <b>4.2e-4</b>         |
| <i>Cephalopholis argus</i>  | Monogenea      | Capsalid sp.                               | gradient<br>TL              | -0.1929<br>-0.0510       | 13.8000<br>0.0766       | 164 | -0.01<br>-0.67      | 0.99<br>0.51             | 0.99                  |
| <i>Cephalopholis argus</i>  | Trematoda      | gill metacercariae                         | gradient<br>TL              | 10.265<br>-0.259         | 14.5230<br>0.1060       | 164 | 0.71<br>-2.44       | 0.48<br>0.0140           | 0.71                  |
| <i>Cephalopholis argus</i>  | Trematoda      | <i>Proisorhynchus</i><br>sp.               | gradient<br>TL              | 1.1465<br>0.0560         | 6.0437<br>0.0407        | 164 | 0.19<br>1.37        | 0.85<br>0.17             | 0.99                  |
| <i>Cephalopholis argus</i>  | Cestoda        | Phyllobothriid sp.                         | gradient<br>TL              | 11.1661<br>0.0423        | 6.8150<br>0.0493        | 71  | 1.64<br>0.86        | 0.10<br>0.39             | 0.47                  |
| <i>Cephalopholis argus</i>  | Nematoda       | larval nematodes                           | gradient<br>TL              | 9.4415<br>0.2820         | 11.2130<br>0.0666       | 164 | 0.84<br>4.23        | 0.40<br>2.3e-5           | 0.69                  |
| <i>Cephalopholis argus</i>  | Nematoda       | <i>Spirocamallanus</i><br><i>monotaxis</i> | gradient<br>TL              | -17.7480<br>0.0417       | 21.2570<br>0.1116       | 164 | -0.83<br>0.37       | 0.40<br>0.71             | 0.69                  |
| <i>Cephalopholis argus</i>  | Nematoda       | Cucullanid sp.                             | gradient<br>TL              | -42.0187<br>-0.1143      | 38.2260<br>0.0827       | 164 | -1.10<br>-1.38      | 0.27<br>0.17             | 0.62                  |
| <i>Acanthurus nigricans</i> | Trematoda      | fin metacercariae                          | gradient<br>TL              | 2.3419<br>0.1076         | 3.9450<br>0.0362        | 183 | 0.59<br>2.97        | 0.55<br>0.0030           | 0.74                  |
| <i>Acanthurus nigricans</i> | Trematoda      | gill metacercariae                         | <b>gradient</b><br>TL       | <b>25.2819</b><br>0.2275 | <b>4.5492</b><br>0.0334 | 178 | <b>5.56</b><br>6.81 | <b>2.7e-8</b><br>9.5e-12 | <b>1.27e-6</b>        |
| <i>Acanthurus nigricans</i> | Trematoda      | eye metacercariae                          | gradient<br>TL              | 28.128<br>-0.3700        | 17.5740<br>0.2000       | 177 | 1.60<br>-1.85       | 0.1090<br>0.0640         | 0.47                  |

| Host species                 | Parasite group | Parasite taxon              | Parasite abundance analysis |                           |                          |     |                      |                         |                       |
|------------------------------|----------------|-----------------------------|-----------------------------|---------------------------|--------------------------|-----|----------------------|-------------------------|-----------------------|
|                              |                |                             | parameter                   | estimate                  | SE                       | n   | Z                    | raw p                   | corrected p for chl-a |
| <i>Acanthurus nigricans</i>  | Trematoda      | <i>Stephanostomum</i> sp.   | gradient<br>TL              | 3.2540<br>-0.1130         | 28.4340<br>0.2080        | 177 | 0.11<br>-0.54        | 0.91<br>0.59            | 0.99                  |
| <i>Acanthurus nigricans</i>  | Trematoda      | Microscaphiid sp.           | <b>gradient</b><br>TL       | <b>12.5604</b><br>0.1194  | <b>5.1615</b><br>0.0355  | 181 | <b>2.43</b><br>3.36  | <b>0.0150</b><br>7.8e-4 | 0.1007                |
| <i>Acanthurus nigricans</i>  | Cestoda        | Tetraphyllidean sp.         | gradient<br>TL              | 5.5472<br>0.0647          | 7.1651<br>0.0668         | 183 | 0.77<br>0.97         | 0.44<br>0.33            | 0.69                  |
| <i>Acanthurus nigricans</i>  | Nematode       | larval nematodes            | gradient<br>TL              | -5.2740<br>-0.4790        | 49.0200<br>0.3000        | 138 | -0.11<br>-1.60       | 0.91<br>0.11            | 0.99                  |
| <i>Acanthurus nigricans</i>  | Nematoda       | Cucullanid sp.              | gradient<br>TL              | -5.5495<br>0.1610         | 7.7421<br>0.0574         | 177 | -0.72<br>2.81        | 0.47<br>0.0050          | 0.71                  |
| <i>Acanthurus nigricans</i>  | Nematode       | unknown nematode            | gradient<br>TL              | -25.9810<br>-0.1370       | 22.9480<br>0.1260        | 177 | -1.13<br>-1.09       | 0.26<br>0.27            | 0.62                  |
| <i>Acanthurus nigricans</i>  | Acanthocephala | Acanthocephalan sp.         | <b>gradient</b><br>TL       | <b>-44.5546</b><br>0.3087 | <b>12.1010</b><br>0.0713 | 176 | <b>-3.68</b><br>4.33 | <b>2.3e-4</b><br>1.4e-5 | <b>3.6e-3</b>         |
| <i>Paracirrhites arcatus</i> | Trematoda      | fin metacercariae           | gradient<br>TL              | 5.8885<br>0.0122          | 6.6624<br>0.0130         | 175 | 0.88<br>0.94         | 0.38<br>0.35            | 0.69                  |
| <i>Paracirrhites arcatus</i> | Trematoda      | gill metacercariae          | gradient<br>TL              | 5.6124<br>0.0568          | 11.1010<br>0.0153        | 175 | 0.51<br>3.71         | 0.61<br>2.1e-4          | 0.80                  |
| <i>Paracirrhites arcatus</i> | Trematoda      | <i>Stephanostomum</i> sp. 1 | gradient<br>TL              | 1.1777<br>0.0239          | 10.4630<br>0.0141        | 175 | 0.11<br>1.69         | 0.91<br>0.0910          | 0.99                  |
| <i>Paracirrhites arcatus</i> | Trematoda      | <i>Stephanostomum</i> sp. 2 | gradient<br>TL              | -63.2626<br>-0.0070       | 40.7050<br>0.0210        | 175 | -1.55<br>-0.33       | 0.12<br>0.74            | 0.47                  |
| <i>Paracirrhites arcatus</i> | Trematoda      | Hemiurid sp.                | gradient<br>TL              | 39.4597<br>0.0041         | 27.7400<br>0.0398        | 175 | 1.42<br>0.10         | 0.15<br>0.92            | 0.50                  |
| <i>Paracirrhites arcatus</i> | Trematoda      | Bucephalid sp.              | gradient<br>TL              | -19.0642<br>0.0430        | 31.7660<br>0.0303        | 175 | -0.60<br>1.42        | 0.55<br>0.16            | 0.74                  |
| <i>Paracirrhites arcatus</i> | Cestoda        | Tetraphyllidean sp.         | gradient<br>TL              | -18.5249<br>0.0405        | 15.6990<br>0.0164        | 175 | -1.18<br>2.46        | 0.24<br>0.0140          | 0.62                  |
| <i>Paracirrhites arcatus</i> | Nematoda       | larval nematode             | gradient<br>TL              | -13.6575<br>0.0452        | 11.0440<br>0.0150        | 175 | -1.24<br>2.99        | 0.22<br>0.0028          | 0.61                  |

| Host species                     | Parasite group | Parasite taxon              | Parasite abundance analysis |                            |                          |     |                       |                       |                       |
|----------------------------------|----------------|-----------------------------|-----------------------------|----------------------------|--------------------------|-----|-----------------------|-----------------------|-----------------------|
|                                  |                |                             | parameter                   | estimate                   | SE                       | n   | Z                     | raw p                 | corrected p for chl-a |
| <i>Paracirrhites arcatus</i>     | Nematoda       | <i>Spirocamallanus</i> sp.  | gradient<br>TL              | 3.7918<br>0.0500           | 28.7910<br>0.0307        | 175 | 0.13<br>1.63          | 0.90<br>0.10          | 0.99                  |
| <i>Plectroglyphidodon dickii</i> | Crustacea      | Grandiunguid sp. 1          | gradient<br>TL              | -70.3549<br>-0.0110        | 51.8380<br>0.0273        | 185 | -1.36<br>-0.40        | 0.17<br>0.69          | 0.50                  |
| <i>Plectroglyphidodon dickii</i> | Crustacea      | Grandiunguid sp. 2          | gradient<br>TL              | 50.1593<br>0.0043          | 29.7800<br>0.0197        | 185 | 1.68<br>0.22          | 0.0920<br>0.83        | 0.47                  |
| <i>Plectroglyphidodon dickii</i> | Crustacea      | Grandiunguid sp. 3          | gradient*<br>TL*            | 1.5700<br>0.0396           | 31.1200<br>0.0227        | 185 | 0.05<br>1.74          | 0.96<br>0.0810        | 0.99                  |
| <i>Plectroglyphidodon dickii</i> | Monogenea      | Ancyrocephalid sp.          | gradient<br>TL              | 11.8852<br>-0.0051         | 15.4270<br>0.0158        | 185 | 0.77<br>-0.32         | 0.44<br>0.75          | 0.69                  |
| <i>Plectroglyphidodon dickii</i> | Trematoda      | fin metacercariae           | gradient<br>TL              | -1.4546<br>-0.0036         | 9.9230<br>0.0172         | 165 | -0.15<br>-0.21        | 0.88<br>0.84          | 0.99                  |
| <i>Plectroglyphidodon dickii</i> | Trematoda      | <i>Stephanostomum</i> sp.   | gradient<br>TL              | 0.6842<br>0.0153           | 14.3940<br>0.0126        | 186 | 0.05<br>1.22          | 0.96<br>0.22          | 0.99                  |
| <i>Plectroglyphidodon dickii</i> | Nematoda       | larval nematodes            | gradient<br>TL              | -14.1447<br>0.0464         | 13.8500<br>0.0010        | 177 | -1.02<br>4.66         | 0.31<br>3.2e-6        | 0.63                  |
| <i>Plectroglyphidodon dickii</i> | Nematoda       | <i>Spirocamallanus</i> sp.  | gradient<br>TL              | -22.6693<br>-0.0113        | 50.2270<br>0.0389        | 177 | -0.45<br>-0.29        | 0.65<br>0.77          | 0.83                  |
| <i>Plectroglyphidodon dickii</i> | Acanthocephala | Acanthocephalan sp.         | gradient<br>TL              | <b>-85.7274</b><br>-0.0011 | <b>28.8080</b><br>0.0253 | 177 | <b>-2.98</b><br>-0.04 | <b>0.0029</b><br>0.97 | <b>0.0341</b>         |
| <i>Chromis margaritifer</i>      | Crustacea      | Grandiunguid sp. 1          | gradient<br>TL              | -10.5000<br>-1.8800        | 9.6400<br>0.4300         | 184 | -1.09<br>-4.38        | 0.28<br>1.2e-5        | 0.62                  |
| <i>Chromis margaritifer</i>      | Crustacea      | Grandiunguid sp. 2          | gradient<br>TL              | 27.0100<br>-5.2900         | 29.0500<br>1.8900        | 184 | 0.93<br>-2.80         | 0.35<br>0.0051        | 0.69                  |
| <i>Chromis margaritifer</i>      | Trematoda      | gill metacercariae          | gradient<br>TL              | 16.3480<br>-0.5820         | 11.9580<br>0.4950        | 184 | 1.37<br>-1.18         | 0.17<br>0.24          | 0.50                  |
| <i>Chromis margaritifer</i>      | Trematoda      | muscle metacercariae        | gradient<br>TL              | -14.9740<br>-0.3940        | 24.5610<br>0.5640        | 185 | -0.61<br>-0.70        | 0.54<br>0.49          | 0.74                  |
| <i>Chromis margaritifer</i>      | Trematoda      | <i>Stephanostomum</i> sp. 1 | gradient<br>TL              | 11.3110<br>-0.6990         | 10.7870<br>0.5200        | 185 | 1.05<br>-1.34         | 0.29<br>0.18          | 0.62                  |

| Host species                | Parasite group | Parasite taxon              | Parasite abundance analysis |                            |                          |     |                       |                         |                       |
|-----------------------------|----------------|-----------------------------|-----------------------------|----------------------------|--------------------------|-----|-----------------------|-------------------------|-----------------------|
|                             |                |                             | parameter                   | estimate                   | SE                       | n   | Z                     | raw p                   | corrected p for chl-a |
| <i>Chromis margaritifer</i> | Trematoda      | <i>Stephanostomum</i> sp. 2 | <b>gradient</b><br>TL       | <b>-32.5610</b><br>0.3650  | <b>15.4720</b><br>0.4490 | 147 | <b>-2.10</b><br>0.81  | <b>0.035</b><br>0.42    | 0.21                  |
| <i>Chromis margaritifer</i> | Trematoda      | <i>Stephanostomum</i> sp. 3 | <b>gradient</b><br>TL       | <b>-29.3180</b><br>0.6760  | <b>11.6840</b><br>0.3530 | 185 | <b>-2.51</b><br>1.91  | <b>0.0120</b><br>0.0560 | 0.0940                |
| <i>Chromis margaritifer</i> | Trematoda      | Hemiurid sp.                | gradient<br>TL              | 10.2580<br>-0.7490         | 13.0010<br>0.5940        | 184 | 0.79<br>-1.26         | 0.43<br>0.21            | 0.69                  |
| <i>Chromis margaritifer</i> | Nematoda       | unidentified nematode       | gradient<br>TL              | -0.5060<br>0.7950          | 15.1850<br>0.6880        | 185 | -0.03<br>1.16         | 0.97<br>0.25            | 0.99                  |
| <i>Chromis margaritifer</i> | Acanthocephala | Acanthocephalan sp.         | <b>gradient</b><br>TL       | <b>-18.1410</b><br>-1.5340 | <b>6.6920</b><br>0.2560  | 185 | <b>-2.71</b><br>-5.98 | <b>0.0067</b><br>2.2e-9 | 0.0630                |