

## Article

# Error Distribution Model to Standardize LPUE, CPUE and Survey-Derived Catch Rates of Target and Non-Target Species

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**Table S3.** Deviance analysis table of explanatory variables for GLM formulations for thornback ray *Raja clavate* (RJC), blackbelly rosefish *Helicolenus dactylopterus* (BRF), and common mora *Mora moro* (RIB) catch rates (RPN; ind. 10<sup>-3</sup> hooks) from the Azorean bottom longline survey. Significant ( $P < 0.05$ ) factors and interaction that accounted for 5% or more of the variability are in bold.

|  | RJC  |         |         |             |         | BRF  |         |        |             |         | RIB  |         |         |             |         |
|--|------|---------|---------|-------------|---------|------|---------|--------|-------------|---------|------|---------|---------|-------------|---------|
|  | d.f. | Res Dev | Δ Dev.  | % Dev.      | p-value | d.f. | Res Dev | Δ Dev. | % Dev.      | p-value | d.f. | Res Dev | Δ Dev.  | % Dev.      | p-value |
| <b>Gamma (RPN + c)</b>   |      |         |         |             |         |      |         |        |             |         |      |         |         |             |         |
| Null   |      | 26804.7 |         |             |         |      | 17075.7 |        |             |         |      | 22157.7 |         |             |         |
| Year   | 18   | 24675.9 | 2128.8  | <b>10.9</b> | < 0.001 | 18   | 16038.9 | 1036.9 | <b>10.2</b> | < 0.001 | 18   | 19575.5 | 2582.2  | <b>15.3</b> | < 0.001 |
| Year Month   | 4    | 24347.3 | 328.6   | 1.7         | < 0.001 | 4    | 15943.3 | 95.5   | 0.9         | < 0.001 | 4    | 19360.8 | 214.8   | 1.3         | < 0.001 |
| Year Month Moon  | 3    | 24159.4 | 187.9   | 1.0         | < 0.001 | 3    | 15917.0 | 26.3   | 0.3         | < 0.001 | 3    | 19202.9 | 157.9   | 0.9         | < 0.001 |
| Year Month Moon Area   | 9    | 20149.0 | 4010.4  | <b>20.5</b> | < 0.001 | 9    | 11735.2 | 4181.9 | <b>41.1</b> | < 0.001 | 9    | 17523.1 | 1679.8  | <b>10.0</b> | < 0.001 |
| Year Month Moon Area Depth   | 23   | 9775.6  | 10373.4 | <b>52.9</b> | < 0.001 | 23   | 8088.9  | 3646.2 | <b>35.8</b> | < 0.001 | 23   | 6827.0  | 10696.1 | <b>63.4</b> | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 9723.3  | 52.3    | 0.3         | 0.004   | 6    | 8059.9  | 29.1   | 0.3         | 0.002   | 6    | 6783.2  | 43.8    | 0.3         | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month  | 33   | 9277.5  | 445.8   | 2.3         | < 0.001 | 33   | 7857.4  | 202.5  | 2.0         | < 0.001 | 33   | 6479.8  | 303.4   | 1.8         | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon                              | 54   | 8760.1  | 517.4   | 2.6         | < 0.001 | 53   | 7607.0  | 250.4  | 2.5         | < 0.001 | 54   | 6143.0  | 336.8   | 2.0         | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon Year × Area                  | 143  | 7514.8  | 1245.3  | <b>6.4</b>  | < 0.001 | 140  | 7113.1  | 493.9  | <b>4.9</b>  | < 0.001 | 140  | 5490.9  | 652.1   | 3.9         | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon Year × Area Year × Soak time | 78   | 7211.9  | 302.9   | 1.5         | 0.008   | 76   | 6901.6  | 211.5  | 2.1         | < 0.001 | 77   | 5279.4  | 211.5   | 1.3         | < 0.001 |
| <b>Gamma (RPN + 1)</b>   |      |         |         |             |         |      |         |        |             |         |      |         |         |             |         |
| Null   |      | 367.5   |         |             |         |      | 5111.1  |        |             |         |      | 4373.9  |         |             |         |
| Year   | 18   | 348.7   | 18.8    | <b>10.3</b> | < 0.001 | 18   | 4742.2  | 368.8  | <b>12.1</b> | < 0.001 | 18   | 3843.3  | 530.6   | <b>17.6</b> | < 0.001 |
| Year Month   | 4    | 347.8   | 0.9     | 0.5         | < 0.001 | 4    | 4692.5  | 49.8   | 1.6         | < 0.001 | 4    | 3802.3  | 40.9    | 1.4         | < 0.001 |



|  | RJC  |         |               |        |         | BRF  |         |               |        |         | RIB  |         |               |        |         |
|--|------|---------|---------------|--------|---------|------|---------|---------------|--------|---------|------|---------|---------------|--------|---------|
|  | d.f. | Res Dev | $\Delta$ Dev. | % Dev. | p-value | d.f. | Res Dev | $\Delta$ Dev. | % Dev. | p-value | d.f. | Res Dev | $\Delta$ Dev. | % Dev. | p-value |
| Year Month Moon  | 3    | 346.6   | 1.2           | 0.7    | < 0.001 | 3    | 4682.4  | 10.1          | 0.3    | < 0.001 | 3    | 3769.4  | 33.0          | 1.1    | < 0.001 |
| Year Month Moon Area   | 9    | 333.8   | 12.8          | 7.0    | < 0.001 | 9    | 3348.7  | 1333.6        | 43.8   | < 0.001 | 9    | 3440.4  | 329.0         | 10.9   | < 0.001 |
| Year Month Moon Area Depth   | 23   | 243.7   | 90.0          | 49.5   | < 0.001 | 23   | 2524.8  | 823.9         | 27.1   | < 0.001 | 23   | 1749.6  | 1690.7        | 56.1   | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 241.1   | 2.6           | 1.5    | < 0.001 | 6    | 2514.9  | 9.9           | 0.3    | 0.003   | 6    | 1736.5  | 13.2          | 0.4    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month   | 33   | 233.8   | 7.3           | 4.0    | < 0.001 | 34   | 2436.4  | 78.6          | 2.6    | < 0.001 | 34   | 1652.4  | 84.1          | 2.8    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon  | 54   | 220.2   | 13.7          | 7.5    | < 0.001 | 53   | 2328.9  | 107.5         | 3.5    | < 0.001 | 54   | 1568.8  | 83.6          | 2.8    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area                         | 143  | 194.8   | 25.4          | 14.0   | < 0.001 | 140  | 2145.0  | 183.9         | 6.0    | < 0.001 | 144  | 1424.5  | 144.2         | 4.8    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area Year $\times$ Soak time | 78   | 185.6   | 9.1           | 5.0    | < 0.001 | 80   | 2068.1  | 76.9          | 2.5    | < 0.001 | 81   | 1358.7  | 65.8          | 2.2    | < 0.001 |
| <b>Lognormal (RPN + c)</b>   |      |         |               |        |         |      |         |               |        |         |      |         |               |        |         |
| Null   |      | 8432.6  |               |        |         |      | 12471.1 |               |        |         |      | 11899.6 |               |        |         |
| Year   | 18   | 8330.6  | 102.0         | 3.7    | < 0.001 | 18   | 12091.3 | 379.8         | 7.0    | < 0.001 | 18   | 11439.4 | 460.2         | 7.2    | < 0.001 |
| Year Month   | 4    | 8310.5  | 20.0          | 0.7    | < 0.001 | 4    | 12041.9 | 49.4          | 0.9    | < 0.001 | 4    | 11428.4 | 11.1          | 0.2    | 0.015   |
| Year Month Moon  | 3    | 8305.7  | 4.8           | 0.2    | 0.153   | 3    | 12032.1 | 9.8           | 0.2    | 0.037   | 3    | 11382.5 | 45.9          | 0.7    | < 0.001 |
| Year Month Moon Area   | 9    | 8134.0  | 171.7         | 6.2    | < 0.001 | 9    | 10562.9 | 1469.2        | 27.0   | < 0.001 | 9    | 11237.2 | 145.3         | 2.3    | < 0.001 |
| Year Month Moon Area Depth   | 23   | 6309.8  | 1824.1        | 66.3   | < 0.001 | 23   | 8018.9  | 2544.0        | 46.8   | < 0.001 | 23   | 6555.9  | 4681.3        | 73.7   | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 6290.8  | 19.0          | 0.7    | 0.002   | 6    | 7984.8  | 34.1          | 0.6    | 0.001   | 6    | 6508.4  | 47.5          | 0.7    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month   | 33   | 6241.9  | 49.0          | 1.8    | 0.014   | 34   | 7834.9  | 150.0         | 2.8    | < 0.001 | 33   | 6355.6  | 152.8         | 2.4    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon  | 54   | 6150.6  | 91.3          | 3.3    | < 0.001 | 53   | 7618.7  | 216.2         | 4.0    | < 0.001 | 54   | 6175.6  | 180.0         | 2.8    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area                         | 138  | 5798.6  | 352.0         | 12.8   | < 0.001 | 140  | 7197.1  | 421.6         | 7.8    | < 0.001 | 143  | 5759.7  | 415.8         | 6.5    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area Year $\times$ Soak time | 76   | 5681.0  | 117.6         | 4.3    | < 0.001 | 80   | 7031.4  | 165.7         | 3.0    | < 0.001 | 78   | 5548.3  | 211.5         | 3.3    | < 0.001 |
| <b>Lognormal (RPN + 1)</b>   |      |         |               |        |         |      |         |               |        |         |      |         |               |        |         |
| Null   |      | 214.2   |               |        |         |      | 3149.8  |               |        |         |      | 2290.9  |               |        |         |
| Year   | 18   | 211.2   | 3.0           | 4.7    | < 0.001 | 18   | 3048.8  | 101.0         | 7.6    | < 0.001 | 18   | 2199.8  | 91.1          | 8.2    | < 0.001 |
| Year Month   | 4    | 210.8   | 0.4           | 0.6    | 0.002   | 4    | 3033.8  | 15.1          | 1.1    | < 0.001 | 4    | 2196.2  | 3.6           | 0.3    | < 0.001 |
| Year Month Moon  | 3    | 210.6   | 0.2           | 0.3    | 0.072   | 3    | 3030.8  | 3.0           | 0.2    | 0.019   | 3    | 2188.4  | 7.8           | 0.7    | < 0.001 |
| Year Month Moon Area   | 9    | 206.8   | 3.8           | 5.9    | < 0.001 | 9    | 2613.4  | 417.4         | 31.3   | < 0.001 | 9    | 2141.2  | 47.2          | 4.3    | < 0.001 |
| Year Month Moon Area Depth   | 23   | 173.0   | 33.8          | 52.7   | < 0.001 | 23   | 2099.4  | 514.0         | 38.5   | < 0.001 | 23   | 1403.3  | 737.9         | 66.7   | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 172.4   | 0.6           | 0.9    | < 0.001 | 6    | 2092.7  | 6.7           | 0.5    | < 0.001 | 6    | 1393.9  | 9.4           | 0.8    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month   | 33   | 170.6   | 1.8           | 2.8    | < 0.001 | 34   | 2052.9  | 39.7          | 3.0    | < 0.001 | 33   | 1354.1  | 39.8          | 3.6    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon  | 54   | 166.4   | 4.2           | 6.6    | < 0.001 | 53   | 1989.3  | 63.6          | 4.8    | < 0.001 | 54   | 1312.7  | 41.4          | 3.7    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area                         | 143  | 154.9   | 11.5          | 18.0   | < 0.001 | 140  | 1867.1  | 122.2         | 9.2    | < 0.001 | 138  | 1230.8  | 81.9          | 7.4    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month Year $\times$ Moon Year $\times$ Area Year $\times$ Soak time | 78   | 150.0   | 4.8           | 7.5    | < 0.001 | 80   | 1814.7  | 52.4          | 3.9    | < 0.001 | 76   | 1184.5  | 46.3          | 4.2    | < 0.001 |
| <b>Tweedie</b>   |      |         |               |        |         |      |         |               |        |         |      |         |               |        |         |
| Null   |      | 14808.9 |               |        |         |      | 26253.7 |               |        |         |      | 28908.4 |               |        |         |
| Year   | 18   | 14108.9 | 700.0         | 6.3    | < 0.001 | 18   | 24825.5 | 1428.3        | 9.1    | < 0.001 | 18   | 26290.6 | 2617.8        | 11.5   | < 0.001 |
| Year Month   | 4    | 14000.1 | 108.8         | 1.0    | < 0.001 | 4    | 24592.4 | 233.1         | 1.5    | < 0.001 | 4    | 26037.9 | 252.7         | 1.1    | < 0.001 |
| Year Month Moon  | 3    | 13923.5 | 76.6          | 0.7    | < 0.001 | 3    | 24551.9 | 40.5          | 0.3    | 0.057   | 3    | 25872.5 | 165.4         | 0.7    | < 0.001 |
| Year Month Moon Area   | 9    | 12013.9 | 1909.6        | 17.3   | < 0.001 | 9    | 18812.6 | 5739.3        | 36.6   | < 0.001 | 9    | 23848.3 | 2024.2        | 8.9    | < 0.001 |
| Year Month Moon Area Depth   | 23   | 6097.9  | 5916.0        | 53.5   | < 0.001 | 23   | 12335.4 | 6477.1        | 41.3   | < 0.001 | 23   | 9146.5  | 14701.8       | 64.3   | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 6030.1  | 67.8          | 0.6    | < 0.001 | 6    | 12272.5 | 62.9          | 0.4    | 0.070   | 6    | 9017.0  | 129.5         | 0.6    | < 0.001 |
| Year Month Moon Area Depth Soak time Year $\times$ Month   | 33   | 5699.1  | 331.0         | 3.0    | < 0.001 | 35   | 11827.4 | 445.1         | 2.8    | < 0.001 | 35   | 8431.3  | 585.7         | 2.6    | < 0.001 |



|  | RJC  |          |          |             |         | BRF  |          |         |             |         | RIB  |         |        |             |         |
|--|------|----------|----------|-------------|---------|------|----------|---------|-------------|---------|------|---------|--------|-------------|---------|
|  | d.f. | Res Dev  | Δ Dev.   | % Dev.      | p-value | d.f. | Res Dev  | Δ Dev.  | % Dev.      | p-value | d.f. | Res Dev | Δ Dev. | % Dev.      | p-value |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon  | 54   | 5384.0   | 315.1    | 2.9         | < 0.001 | 52   | 11385.8  | 441.6   | 2.8         | 0.005   | 53   | 7700.5  | 730.8  | 3.2         | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon Year × Area                            | 136  | 4192.0   | 1192.0   | <b>10.8</b> | < 0.001 | 138  | 10559.0  | 826.8   | 5.3         | 0.179   | 145  | 6593.1  | 1107.3 | <b>4.8</b>  | < 0.001 |
| Year Month Moon Area Depth Soak time Year × Month Year × Moon Year × Area Year × Soak time           | 79   | 3754.6   | 437.4    | 4.0         | < 0.001 | 77   | 39497.7  | 0.0     | 0.0         | 1.000   | 81   | 6049.4  | 543.8  | 2.4         | < 0.001 |
| <b>Binomial (proportion of positive catches)</b>   |      |          |          |             |         |      |          |         |             |         |      |         |        |             |         |
| Null   |      | 3738.3   |          |             |         |      | 8780.6   |         |             |         |      | 6467.0  |        |             |         |
| Year   | 18   | 3673.3   | 64.9     | 0.0         | < 0.001 | 18   | 8648.2   | 132.4   | 0.4         | < 0.001 | 18   | 6258.5  | 208.5  | <b>5.3</b>  | < 0.001 |
| Year Month   | 4    | 3660.3   | 13.0     | 0.0         | 0.011   | 4    | 8638.5   | 9.7     | 0.0         | 0.045   | 4    | 6254.6  | 3.9    | 0.1         | 0.417   |
| Year Month Moon  | 3    | 3657.2   | 3.1      | 0.0         | 0.378   | 3    | 8633.4   | 5.1     | 0.0         | 0.164   | 3    | 6226.4  | 28.2   | 0.7         | < 0.001 |
| Year Month Moon Area   | 9    | 3534.2   | 123.0    | 0.1         | < 0.001 | 9    | 8187.8   | 445.5   | 1.3         | < 0.001 | 9    | 6201.1  | 25.3   | 0.6         | 0.003   |
| Year Month Moon Area Depth   | 23   | 2348.2   | 1186.0   | 0.7         | < 0.001 | 23   | 6220.9   | 1966.9  | <b>5.6</b>  | < 0.001 | 23   | 3223.1  | 2978.0 | <b>75.8</b> | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 2325.6   | 22.6     | 0.0         | < 0.001 | 6    | 6190.9   | 30.0    | 0.1         | < 0.001 | 6    | 3169.9  | 53.2   | 1.4         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month  | 35   | 2289.3   | 36.3     | 0.0         | 0.406   | 35   | 6110.9   | 80.1    | 0.2         | 0.037   | 35   | 3066.2  | 103.8  | 2.6         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon                              | 53   | 199085.6 | 0.0      | 0.0         | 1.000   | 53   | 14622.2  | 0.0     | 0.0         | 1.000   | 55   | 2919.9  | 146.3  | 3.7         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon Year × Area                  | 144  | 38134.2  | 160951.4 | <b>97.0</b> | < 0.001 | 146  | 172747.5 | 0.0     | 0.0         | 1.000   | 144  | 2537.1  | 382.8  | <b>9.7</b>  | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon Year × Area Year × Soak time | 81   | 34529.8  | 3604.4   | 2.2         | < 0.001 | 78   | 140354.0 | 32393.5 | <b>92.4</b> | < 0.001 | 79   | 49307.7 | 0.0    | 0.0         | 1.000   |
| <b>Gamma (positive catches)</b>  |      |          |          |             |         |      |          |         |             |         |      |         |        |             |         |
| Null   |      | 1005.3   |          |             |         |      | 4983.7   |         |             |         |      | 1952.2  |        |             |         |
| Year   | 17   | 881.2    | 124.1    | <b>16.0</b> | < 0.001 | 18   | 4703.1   | 280.6   | <b>9.8</b>  | < 0.001 | 18   | 1741.8  | 210.4  | <b>16.2</b> | < 0.001 |
| Year Month   | 4    | 863.7    | 17.5     | 2.3         | < 0.001 | 4    | 4659.4   | 43.7    | 1.5         | < 0.001 | 4    | 1708.9  | 32.9   | 2.5         | < 0.001 |
| Year Month Moon  | 3    | 849.4    | 14.3     | 1.8         | < 0.001 | 3    | 4646.4   | 13.0    | 0.5         | 0.002   | 3    | 1697.9  | 11.0   | 0.8         | < 0.001 |
| Year Month Moon Area   | 9    | 587.8    | 261.6    | <b>33.7</b> | < 0.001 | 9    | 3363.8   | 1282.7  | <b>44.6</b> | < 0.001 | 9    | 1233.0  | 464.9  | <b>35.7</b> | < 0.001 |
| Year Month Moon Area Depth   | 11   | 512.1    | 75.7     | <b>9.8</b>  | < 0.001 | 19   | 2643.8   | 719.9   | <b>25.1</b> | < 0.001 | 17   | 1008.7  | 224.3  | <b>17.2</b> | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 497.7    | 14.3     | 1.8         | 0.001   | 6    | 2635.7   | 8.1     | 0.3         | 0.150   | 6    | 988.3   | 20.4   | 1.6         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month  | 31   | 448.6    | 49.1     | <b>6.3</b>  | < 0.001 | 32   | 2534.3   | 101.4   | 3.5         | < 0.001 | 31   | 928.6   | 59.7   | <b>4.6</b>  | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon                              | 47   | 373.9    | 74.8     | <b>9.6</b>  | < 0.001 | 51   | 2424.2   | 110.1   | 3.8         | < 0.001 | 48   | 816.0   | 112.6  | <b>8.7</b>  | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon Year × Area                  | 78   | 270.6    | 103.3    | <b>13.3</b> | < 0.001 | 122  | 2228.5   | 195.7   | <b>6.8</b>  | < 0.001 | 92   | 696.6   | 119.4  | <b>9.2</b>  | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon Year × Area Year × Soak time | 45   | 229.5    | 41.1     | <b>5.3</b>  | 0.050   | 63   | 2110.7   | 117.8   | 4.1         | < 0.001 | 54   | 650.7   | 45.9   | 3.5         | 0.090   |
| <b>Lognormal (positive catches)</b>  |      |          |          |             |         |      |          |         |             |         |      |         |        |             |         |
| Null   |      | 1125.1   |          |             |         |      | 5466.7   |         |             |         |      | 2027.1  |        |             |         |
| Year   | 17   | 1026.6   | 98.4     | <b>11.4</b> | < 0.001 | 18   | 5232.9   | 233.7   | <b>7.7</b>  | < 0.001 | 18   | 1872.6  | 154.5  | <b>11.5</b> | < 0.001 |
| Year Month   | 4    | 1000.5   | 26.2     | 3.0         | < 0.001 | 4    | 5180.1   | 52.9    | 1.7         | < 0.001 | 4    | 1853.7  | 18.9   | 1.4         | < 0.001 |
| Year Month Moon  | 3    | 990.5    | 9.9      | 1.1         | 0.015   | 3    | 5155.4   | 24.6    | 0.8         | < 0.001 | 3    | 1840.1  | 13.6   | 1.0         | < 0.001 |
| Year Month Moon Area   | 9    | 591.1    | 399.4    | <b>46.2</b> | < 0.001 | 9    | 4261.2   | 894.2   | <b>29.4</b> | < 0.001 | 9    | 1355.0  | 485.1  | <b>36.3</b> | < 0.001 |
| Year Month Moon Area Depth   | 11   | 541.3    | 49.9     | <b>5.8</b>  | < 0.001 | 19   | 2986.8   | 1274.4  | <b>42.0</b> | < 0.001 | 17   | 1047.0  | 308.0  | <b>23.0</b> | < 0.001 |
| Year Month Moon Area Depth Soak time   | 6    | 531.5    | 9.7      | 1.1         | 0.111   | 6    | 2967.8   | 19.0    | 0.6         | 0.006   | 6    | 1020.0  | 27.1   | 2.0         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month  | 29   | 488.1    | 43.4     | <b>5.0</b>  | 0.023   | 32   | 2883.2   | 84.7    | 2.8         | < 0.001 | 31   | 969.2   | 50.8   | 3.8         | < 0.001 |
| Year Month Moon Area Depth Soak time Substrate Year × Month Year × Moon                              | 47   | 416.2    | 71.9     | <b>8.3</b>  | 0.004   | 49   | 2785.5   | 97.6    | 3.2         | < 0.001 | 48   | 879.2   | 89.9   | <b>6.7</b>  | < 0.001 |

|  | RJC  |         |               |             |                 | BRF  |         |               |            |                 | RIB  |         |               |             |                 |
|--|------|---------|---------------|-------------|-----------------|------|---------|---------------|------------|-----------------|------|---------|---------------|-------------|-----------------|
|  | d.f. | Res Dev | $\Delta$ Dev. | % Dev.      | <i>p</i> -value | d.f. | Res Dev | $\Delta$ Dev. | % Dev.     | <i>p</i> -value | d.f. | Res Dev | $\Delta$ Dev. | % Dev.      | <i>p</i> -value |
| Year Month Moon Area Depth Soak time Substrate Year $\times$ Month Year $\times$ Moon Year $\times$ Area                         | 80   | 318.3   | 97.9          | <b>11.3</b> | 0.037           | 121  | 2562.6  | 222.9         | <b>7.3</b> | < 0.001         | 93   | 745.0   | 134.2         | <b>10.0</b> | < 0.001         |
| Year Month Moon Area Depth Soak time Substrate Year $\times$ Month Year $\times$ Moon Year $\times$ Area Year $\times$ Soak time | 46   | 260.0   | 58.4          | 6.7         | 0.058           | 64   | 2429.4  | 133.2         | 4.4        | < 0.001         | 56   | 689.0   | 56.0          | 4.2         | 0.022           |

c: 10% of the mean catch rate; d.f.: degrees of freedom; Res. Dev.: residual deviance;  $\Delta$  Dev.: change in deviance; % Dev.: percent of deviance explained; *p*-value: based on chi-squared ( $\chi^2$ ) distribution and used to determine the explanatory variables that contributed significantly ( $p < 0.05$ ) to the deviance explained.