Supporting Information for “**A spatial point process model to estimate individual centers of activity from passive acoustic telemetry data”**

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**Supporting Tables**

**Table S1.** Estimated probability of detection at each detecting receiver in each time step resulting from fitting a spatial point process model allowing for receiver- and time-varying detection probabilities to detections from a stationary test tag. Estimates represent the median of the posterior distribution for *p0* for each receiver in each time step. Station and test tag locations are depicted in Figure 1 in the main text; the distance from each receiver to the test tag is indicated in parentheses.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Probability of detection | | | | | | | |
| Hour of Deployment | **SB12 (200 m)** | **SB13 (474 m)** | **SB7 (499 m)** | **SB14 (558 m)** | **SB6 (599 m)** | **SB15 (723 m)** | **SB11 (801 m)** |
| 1 | 0.17 | 0.49 | 0.96 | 0.02 | 0.98 | 0.03 | 0.03 |
| 2 | 0.51 | 0.58 | 0.97 | 0.02 | 0.98 | 0.03 | 0.03 |
| 3 | 0.30 | 0.37 | 0.98 | 0.86 | 0.24 | 0.87 | 0.04 |
| 4 | 0.24 | 0.14 | 0.93 | 0.74 | 0.02 | 0.03 | 0.03 |
| 5 | 0.21 | 0.07 | 0.97 | 0.11 | 0.02 | 0.03 | 0.03 |
| 6 | 0.41 | 0.30 | 0.32 | 0.02 | 0.02 | 0.02 | 0.03 |
| 7 | 0.25 | 0.46 | 0.98 | 0.24 | 0.02 | 0.03 | 0.97 |
| 8 | 0.20 | 0.53 | 0.98 | 0.02 | 0.07 | 0.03 | 0.98 |
| 9 | 0.24 | 0.31 | 0.93 | 0.18 | 0.02 | 0.31 | 0.98 |
| 10 | 0.12 | 0.39 | 0.50 | 0.20 | 0.10 | 0.22 | 0.03 |
| 11 | 0.04 | 0.02 | 0.07 | 0.02 | 0.08 | 0.03 | 0.03 |
| 12 | 0.24 | 0.48 | 0.72 | 0.02 | 0.10 | 0.03 | 0.03 |
| 13 | 0.16 | 0.46 | 0.92 | 0.02 | 0.02 | 0.03 | 0.03 |
| 14 | 0.20 | 0.31 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 |
| 15 | 0.32 | 0.14 | 0.84 | 0.43 | 0.02 | 0.20 | 0.03 |
| 16 | 0.08 | 0.14 | 0.93 | 0.33 | 0.02 | 0.79 | 0.03 |
| 17 | 0.21 | 0.22 | 0.98 | 0.11 | 0.02 | 0.60 | 0.53 |
| 18 | 0.16 | 0.07 | 0.24 | 0.09 | 0.34 | 0.03 | 0.79 |
| 19 | 0.40 | 0.22 | 0.52 | 0.31 | 0.02 | 0.02 | 0.03 |
| 20 | 0.13 | 0.07 | 0.07 | 0.02 | 0.02 | 0.03 | 0.03 |
| 21 | 0.08 | 0.07 | 0.02 | 0.08 | 0.82 | 0.03 | 0.03 |
| 22 | 0.24 | 0.15 | 0.50 | 0.02 | 0.35 | 0.03 | 0.03 |
| 23 | 0.43 | 0.38 | 0.74 | 0.19 | 0.50 | 0.02 | 0.03 |
| 24 | 0.25 | 0.02 | 0.96 | 0.02 | 0.31 | 0.03 | 0.03 |
| 25 | 0.33 | 0.02 | 0.96 | 0.10 | 0.02 | 0.03 | 0.03 |
| 26 | 0.21 | 0.07 | 0.23 | 0.02 | 0.02 | 0.03 | 0.03 |
| 27 | 0.21 | 0.02 | 0.07 | 0.02 | 0.02 | 0.03 | 0.03 |
| 28 | 0.34 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 29 | 0.17 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 30 | 0.25 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 31 | 0.37 | 0.22 | 0.16 | 0.02 | 0.02 | 0.03 | 0.03 |
| 32 | 0.45 | 0.02 | 0.53 | 0.02 | 0.02 | 0.03 | 0.03 |
| 33 | 0.33 | 0.02 | 0.63 | 0.02 | 0.02 | 0.03 | 0.03 |
| 34 | 0.38 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 35 | 0.45 | 0.15 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 |
| 36 | 0.59 | 0.48 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 |
| 37 | 0.48 | 0.31 | 0.02 | 0.08 | 0.02 | 0.02 | 0.03 |
| 38 | 0.28 | 0.22 | 0.42 | 0.09 | 0.02 | 0.03 | 0.03 |
| 39 | 0.28 | 0.07 | 0.34 | 0.31 | 0.02 | 0.02 | 0.03 |
| 40 | 0.33 | 0.02 | 0.95 | 0.22 | 0.02 | 0.03 | 0.03 |
| 41 | 0.08 | 0.02 | 0.89 | 0.02 | 0.02 | 0.03 | 0.03 |
| 42 | 0.25 | 0.02 | 0.62 | 0.02 | 0.02 | 0.03 | 0.03 |
| 43 | 0.25 | 0.02 | 0.52 | 0.02 | 0.02 | 0.03 | 0.03 |
| 44 | 0.21 | 0.02 | 0.96 | 0.02 | 0.02 | 0.03 | 0.03 |
| 45 | 0.18 | 0.02 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 46 | 0.39 | 0.14 | 0.98 | 0.11 | 0.02 | 0.03 | 0.04 |
| 47 | 0.31 | 0.85 | 0.98 | 0.42 | 0.02 | 0.03 | 0.04 |
| 48 | 0.21 | 0.29 | 0.97 | 0.36 | 0.02 | 0.03 | 0.03 |
| 49 | 0.32 | 0.37 | 0.93 | 0.44 | 0.02 | 0.03 | 0.03 |
| 50 | 0.40 | 0.56 | 0.98 | 0.59 | 0.02 | 0.03 | 0.04 |
| 51 | 0.33 | 0.46 | 0.97 | 0.37 | 0.02 | 0.03 | 0.03 |
| 52 | 0.08 | 0.07 | 0.97 | 0.38 | 0.02 | 0.03 | 0.04 |
| 53 | 0.22 | 0.38 | 0.98 | 0.56 | 0.02 | 0.25 | 0.04 |
| 54 | 0.27 | 0.39 | 0.98 | 0.28 | 0.02 | 0.03 | 0.04 |
| 55 | 0.35 | 0.56 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 56 | 0.17 | 0.23 | 0.98 | 0.41 | 0.10 | 0.03 | 0.04 |
| 57 | 0.08 | 0.22 | 0.97 | 0.23 | 0.02 | 0.03 | 0.03 |
| 58 | 0.22 | 0.31 | 0.98 | 0.40 | 0.10 | 0.03 | 0.04 |
| 59 | 0.21 | 0.37 | 0.98 | 0.55 | 0.02 | 0.24 | 0.04 |
| 60 | 0.26 | 0.46 | 0.98 | 0.73 | 0.02 | 0.61 | 0.04 |
| 61 | 0.36 | 0.64 | 0.97 | 0.34 | 0.35 | 0.23 | 0.03 |
| 62 | 0.28 | 0.22 | 0.51 | 0.09 | 0.68 | 0.02 | 0.03 |
| 63 | 0.44 | 0.93 | 0.52 | 0.32 | 0.98 | 0.95 | 0.03 |
| 64 | 0.21 | 0.66 | 0.43 | 0.39 | 0.98 | 0.03 | 0.03 |
| 65 | 0.04 | 0.07 | 0.52 | 0.21 | 0.10 | 0.03 | 0.03 |
| 66 | 0.11 | 0.25 | 0.83 | 0.20 | 0.97 | 0.63 | 0.03 |
| 67 | 0.20 | 0.30 | 0.96 | 0.59 | 0.50 | 0.22 | 0.84 |
| 68 | 0.09 | 0.10 | 0.66 | 0.26 | 0.98 | 0.03 | 0.03 |
| 69 | 0.23 | 0.30 | 0.89 | 0.02 | 0.82 | 0.20 | 0.03 |
| 70 | 0.28 | 0.52 | 0.98 | 0.66 | 0.98 | 0.03 | 0.03 |
| 71 | 0.29 | 0.56 | 0.98 | 0.81 | 0.97 | 0.96 | 0.03 |
| 72 | 0.20 | 0.07 | 0.84 | 0.09 | 0.21 | 0.03 | 0.03 |
| 73 | 0.28 | 0.55 | 0.96 | 0.87 | 0.35 | 0.22 | 0.03 |
| 74 | 0.16 | 0.14 | 0.98 | 0.90 | 0.94 | 0.24 | 0.03 |
| 75 | 0.40 | 0.84 | 0.98 | 0.97 | 0.54 | 0.03 | 0.04 |
| 76 | 0.28 | 0.56 | 0.90 | 0.43 | 0.02 | 0.02 | 0.03 |
| 77 | 0.24 | 0.39 | 0.95 | 0.10 | 0.10 | 0.03 | 0.03 |
| 78 | 0.28 | 0.38 | 0.33 | 0.09 | 0.02 | 0.02 | 0.03 |
| 79 | 0.28 | 0.30 | 0.33 | 0.09 | 0.02 | 0.02 | 0.03 |
| 80 | 0.40 | 0.57 | 0.02 | 0.53 | 0.02 | 0.02 | 0.03 |
| 81 | 0.28 | 0.58 | 0.61 | 0.83 | 0.10 | 0.03 | 0.03 |
| 82 | 0.32 | 0.38 | 0.24 | 0.09 | 0.52 | 0.03 | 0.03 |
| 83 | 0.36 | 0.22 | 0.02 | 0.08 | 0.02 | 0.19 | 0.03 |
| 84 | 0.36 | 0.07 | 0.43 | 0.31 | 0.02 | 0.02 | 0.03 |
| 85 | 0.37 | 0.53 | 0.97 | 0.63 | 0.02 | 0.03 | 0.97 |
| 86 | 0.34 | 0.90 | 0.98 | 0.97 | 0.24 | 0.25 | 0.04 |
| 87 | 0.41 | 0.77 | 0.98 | 0.96 | 0.96 | 0.03 | 0.03 |
| 88 | 0.37 | 0.44 | 0.98 | 0.97 | 0.24 | 0.03 | 0.03 |
| 89 | 0.28 | 0.57 | 0.89 | 0.84 | 0.21 | 0.03 | 0.03 |
| 90 | 0.40 | 0.48 | 0.32 | 0.72 | 0.22 | 0.03 | 0.03 |
| 91 | 0.24 | 0.48 | 0.93 | 0.85 | 0.21 | 0.55 | 0.03 |
| 92 | 0.49 | 0.90 | 0.68 | 0.97 | 0.23 | 0.02 | 0.03 |
| 93 | 0.31 | 0.75 | 0.84 | 0.93 | 0.79 | 0.03 | 0.03 |
| 94 | 0.27 | 0.55 | 0.60 | 0.81 | 0.80 | 0.02 | 0.03 |
| 95 | 0.23 | 0.31 | 0.24 | 0.90 | 0.89 | 0.54 | 0.03 |
| 96 | 0.56 | 0.27 | 0.98 | 0.98 | 0.02 | 0.02 | 0.51 |
| 97 | 0.56 | 0.35 | 0.98 | 0.98 | 0.39 | 0.02 | 0.03 |
| 98 | 0.38 | 0.07 | 0.98 | 0.85 | 0.23 | 0.03 | 0.04 |
| 99 | 0.26 | 0.52 | 0.98 | 0.42 | 0.97 | 0.03 | 0.04 |
| 100 | 0.40 | 0.70 | 0.98 | 0.27 | 0.96 | 0.03 | 0.04 |
| 101 | 0.47 | 0.91 | 0.98 | 0.02 | 0.97 | 0.03 | 0.03 |
| 102 | 0.29 | 0.37 | 0.98 | 0.24 | 0.52 | 0.23 | 0.04 |
| 103 | 0.43 | 0.76 | 0.81 | 0.68 | 0.63 | 0.82 | 0.03 |
| 104 | 0.20 | 0.38 | 0.23 | 0.02 | 0.02 | 0.03 | 0.03 |
| 105 | 0.47 | 0.95 | 0.15 | 0.30 | 0.02 | 0.02 | 0.03 |
| 106 | 0.49 | 0.73 | 0.97 | 0.79 | 0.65 | 0.84 | 0.03 |
| 107 | 0.46 | 0.85 | 0.98 | 0.97 | 0.98 | 0.97 | 0.03 |
| 108 | 0.16 | 0.23 | 0.97 | 0.77 | 0.95 | 0.24 | 0.03 |
| 109 | 0.46 | 0.58 | 0.98 | 0.95 | 0.97 | 0.03 | 0.03 |
| 110 | 0.37 | 0.55 | 0.97 | 0.89 | 0.02 | 0.03 | 0.03 |
| 111 | 0.36 | 0.45 | 0.97 | 0.77 | 0.81 | 0.54 | 0.03 |
| 112 | 0.33 | 0.46 | 0.97 | 0.10 | 0.23 | 0.85 | 0.03 |
| 113 | 0.38 | 0.69 | 0.98 | 0.39 | 0.98 | 0.03 | 0.03 |
| 114 | 0.21 | 0.76 | 0.96 | 0.70 | 0.98 | 0.78 | 0.03 |
| 115 | 0.33 | 0.38 | 0.97 | 0.23 | 0.10 | 0.03 | 0.03 |
| 116 | 0.62 | 0.88 | 0.99 | 0.97 | 0.96 | 0.03 | 0.04 |
| 117 | 0.39 | 0.75 | 0.98 | 0.74 | 0.83 | 0.03 | 0.04 |
| 118 | 0.36 | 0.56 | 0.07 | 0.19 | 0.02 | 0.02 | 0.03 |
| 119 | 0.36 | 0.31 | 0.33 | 0.43 | 0.10 | 0.03 | 0.03 |
| 120 | 0.43 | 0.02 | 0.98 | 0.11 | 0.67 | 0.25 | 0.04 |
| 121 | 0.49 | 0.08 | 0.99 | 0.02 | 0.97 | 0.03 | 0.04 |
| 122 | 0.36 | 0.39 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 123 | 0.71 | 0.31 | 0.98 | 0.12 | 0.02 | 0.03 | 0.04 |
| 124 | 0.45 | 0.55 | 0.97 | 0.10 | 0.02 | 0.23 | 0.03 |
| 125 | 0.17 | 0.14 | 0.98 | 0.12 | 0.02 | 0.03 | 0.04 |
| 126 | 0.32 | 0.30 | 0.84 | 0.20 | 0.02 | 0.02 | 0.03 |
| 127 | 0.65 | 0.86 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 128 | 0.31 | 0.15 | 0.98 | 0.12 | 0.36 | 0.03 | 0.04 |
| 129 | 0.49 | 0.16 | 0.98 | 0.94 | 0.97 | 0.03 | 0.04 |
| 130 | 0.36 | 0.47 | 0.02 | 0.08 | 0.02 | 0.02 | 0.03 |
| 131 | 0.29 | 0.22 | 0.24 | 0.02 | 0.02 | 0.02 | 0.03 |
| 132 | 0.08 | 0.02 | 0.97 | 0.02 | 0.92 | 0.03 | 0.03 |
| 133 | 0.22 | 0.02 | 0.98 | 0.02 | 0.09 | 0.03 | 0.03 |
| 134 | 0.65 | 0.02 | 0.99 | 0.02 | 0.02 | 0.03 | 0.04 |
| 135 | 0.75 | 0.34 | 0.99 | 0.31 | 0.02 | 0.03 | 0.04 |
| 136 | 0.70 | 0.16 | 0.99 | 0.02 | 0.02 | 0.03 | 0.04 |
| 137 | 0.64 | 0.07 | 0.99 | 0.29 | 0.02 | 0.03 | 0.04 |
| 138 | 0.99 | 0.87 | 0.99 | 0.02 | 0.02 | 0.03 | 0.04 |
| 139 | 0.62 | 0.15 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 140 | 0.61 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 141 | 0.33 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 |
| 142 | 0.61 | 0.02 | 0.76 | 0.02 | 0.02 | 0.03 | 0.03 |
| 143 | 0.52 | 0.02 | 0.98 | 0.02 | 0.22 | 0.03 | 0.04 |
| 144 | 0.28 | 0.32 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 145 | 0.36 | 0.31 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 146 | 0.50 | 0.17 | 0.99 | 0.02 | 0.02 | 0.03 | 0.04 |
| 147 | 0.67 | 0.92 | 0.98 | 0.02 | 0.02 | 0.03 | 0.04 |
| 148 | 0.53 | 0.70 | 0.99 | 0.02 | 0.02 | 0.92 | 0.04 |
| 149 | 0.66 | 0.45 | 0.98 | 0.12 | 0.02 | 0.94 | 0.04 |
| 150 | 0.61 | 0.93 | 0.98 | 0.12 | 0.02 | 0.94 | 0.04 |
| 151 | 0.64 | 0.96 | 0.99 | 0.02 | 0.02 | 0.95 | 0.04 |
| 152 | 0.39 | 0.65 | 0.98 | 0.02 | 0.02 | 0.64 | 0.04 |
| 153 | 0.23 | 0.97 | 0.80 | 0.02 | 0.02 | 0.02 | 0.03 |

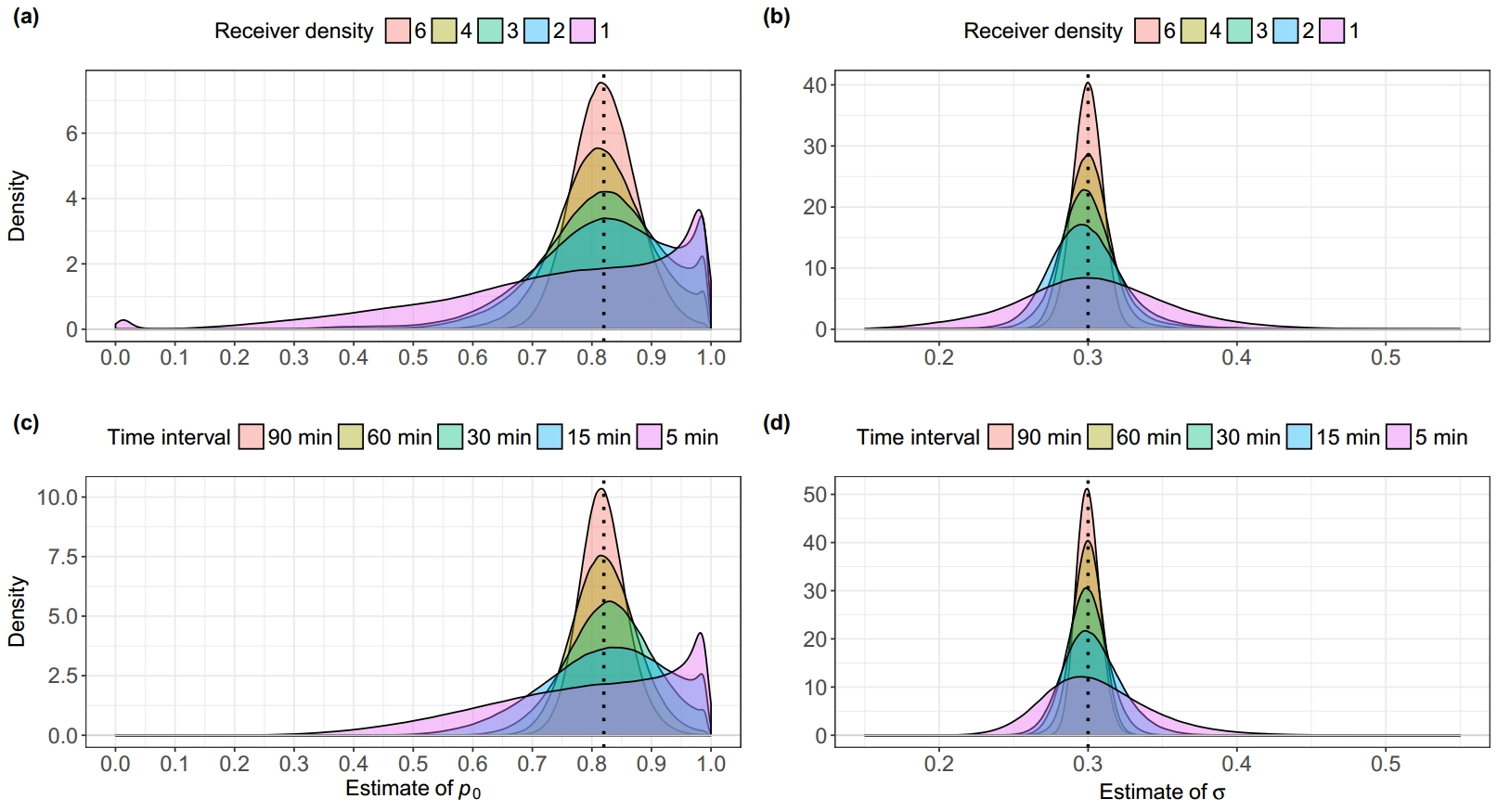
**Table S2.** Number of detections logged from a 366 mm tagged black sea bass on each of 9 detecting receivers over a 153-hour period. Station locations are indicated in Figure 1 in the main text.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Receiver | | | | | | | | | | |
| Hour | **SB12** | **SB13** | **SB14** | **SB15** | **SB16** | **SB17** | **SB20** | **SB21** | **SB22** |
| 1 | 7 | 6 | 9 | 9 | 1 | 0 | 1 | 0 | 0 |
| 2 | 5 | 6 | 6 | 6 | 1 | 0 | 0 | 0 | 0 |
| 3 | 5 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 4 | 3 | 4 | 7 | 3 | 0 | 0 | 0 | 0 | 0 |
| 5 | 5 | 3 | 6 | 3 | 0 | 0 | 0 | 0 | 0 |
| 6 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 7 | 6 | 7 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 8 | 8 | 6 | 7 | 3 | 0 | 0 | 0 | 0 | 0 |
| 9 | 3 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 10 | 3 | 3 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| 11 | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 |
| 13 | 10 | 11 | 11 | 10 | 0 | 0 | 0 | 0 | 0 |
| 14 | 2 | 2 | 8 | 1 | 0 | 0 | 0 | 0 | 0 |
| 15 | 3 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 |
| 16 | 5 | 4 | 8 | 3 | 0 | 0 | 0 | 0 | 0 |
| 17 | 7 | 6 | 7 | 9 | 0 | 0 | 0 | 0 | 0 |
| 18 | 7 | 9 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 19 | 4 | 6 | 5 | 4 | 0 | 0 | 0 | 0 | 0 |
| 20 | 6 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 4 | 4 | 6 | 2 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| 23 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 24 | 8 | 6 | 9 | 6 | 0 | 0 | 0 | 0 | 0 |
| 25 | 7 | 6 | 6 | 4 | 0 | 0 | 0 | 0 | 0 |
| 26 | 6 | 11 | 7 | 11 | 0 | 0 | 0 | 0 | 0 |
| 27 | 5 | 8 | 7 | 8 | 0 | 0 | 0 | 0 | 0 |
| 28 | 6 | 4 | 3 | 4 | 0 | 0 | 0 | 0 | 0 |
| 29 | 4 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 30 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | 8 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 33 | 13 | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 34 | 6 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 37 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 39 | 1 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 |
| 40 | 2 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 |
| 41 | 7 | 2 | 6 | 2 | 0 | 0 | 0 | 0 | 0 |
| 42 | 4 | 3 | 5 | 8 | 0 | 0 | 0 | 0 | 0 |
| 43 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 9 | 6 | 8 | 6 | 0 | 0 | 0 | 0 | 0 |
| 45 | 5 | 5 | 4 | 7 | 0 | 0 | 0 | 0 | 0 |
| 46 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| 47 | 6 | 3 | 7 | 5 | 0 | 0 | 0 | 0 | 0 |
| 48 | 7 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 49 | 4 | 3 | 4 | 6 | 0 | 0 | 0 | 0 | 0 |
| 50 | 7 | 8 | 9 | 8 | 0 | 0 | 0 | 0 | 0 |
| 51 | 8 | 8 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 52 | 6 | 3 | 5 | 2 | 0 | 0 | 0 | 0 | 0 |
| 53 | 7 | 8 | 8 | 7 | 0 | 0 | 0 | 0 | 0 |
| 54 | 4 | 4 | 4 | 7 | 0 | 0 | 0 | 0 | 0 |
| 55 | 5 | 6 | 4 | 5 | 0 | 0 | 0 | 0 | 0 |
| 56 | 10 | 8 | 10 | 6 | 0 | 0 | 0 | 0 | 0 |
| 57 | 11 | 7 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 58 | 14 | 10 | 12 | 12 | 0 | 0 | 0 | 0 | 0 |
| 59 | 6 | 5 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 60 | 4 | 4 | 5 | 8 | 0 | 0 | 0 | 0 | 0 |
| 61 | 3 | 5 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 62 | 7 | 5 | 6 | 2 | 0 | 0 | 0 | 0 | 0 |
| 63 | 10 | 6 | 6 | 8 | 0 | 0 | 0 | 0 | 0 |
| 64 | 8 | 7 | 9 | 4 | 0 | 0 | 0 | 0 | 0 |
| 65 | 7 | 6 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 66 | 5 | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| 67 | 8 | 7 | 6 | 7 | 0 | 0 | 0 | 0 | 0 |
| 68 | 5 | 5 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 69 | 1 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| 70 | 7 | 8 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 71 | 7 | 6 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 72 | 5 | 5 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 73 | 2 | 5 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 74 | 7 | 8 | 9 | 6 | 0 | 0 | 0 | 0 | 0 |
| 75 | 6 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 76 | 6 | 5 | 6 | 4 | 0 | 0 | 0 | 0 | 0 |
| 77 | 7 | 9 | 9 | 7 | 0 | 0 | 0 | 0 | 0 |
| 78 | 6 | 5 | 8 | 5 | 0 | 0 | 0 | 0 | 0 |
| 79 | 7 | 9 | 9 | 7 | 0 | 0 | 0 | 0 | 0 |
| 80 | 7 | 7 | 7 | 8 | 0 | 0 | 0 | 0 | 0 |
| 81 | 8 | 9 | 8 | 4 | 0 | 0 | 0 | 0 | 0 |
| 82 | 3 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 83 | 4 | 3 | 5 | 1 | 0 | 0 | 0 | 0 | 0 |
| 84 | 2 | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| 85 | 9 | 8 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 86 | 12 | 9 | 12 | 8 | 0 | 0 | 0 | 0 | 0 |
| 87 | 6 | 9 | 10 | 8 | 0 | 0 | 0 | 0 | 0 |
| 88 | 12 | 9 | 11 | 9 | 0 | 0 | 0 | 0 | 0 |
| 89 | 4 | 3 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 90 | 7 | 7 | 7 | 9 | 0 | 0 | 0 | 0 | 0 |
| 91 | 8 | 5 | 9 | 4 | 0 | 0 | 0 | 0 | 0 |
| 92 | 5 | 5 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| 93 | 11 | 11 | 8 | 10 | 0 | 0 | 0 | 0 | 0 |
| 94 | 11 | 8 | 10 | 7 | 0 | 0 | 0 | 0 | 0 |
| 95 | 5 | 5 | 4 | 5 | 0 | 0 | 0 | 0 | 0 |
| 96 | 9 | 9 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 97 | 6 | 10 | 5 | 6 | 0 | 0 | 0 | 0 | 0 |
| 98 | 0 | 4 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| 99 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 100 | 2 | 4 | 4 | 5 | 0 | 0 | 0 | 0 | 0 |
| 101 | 3 | 7 | 8 | 8 | 0 | 0 | 0 | 0 | 0 |
| 102 | 7 | 13 | 12 | 13 | 0 | 0 | 0 | 0 | 0 |
| 103 | 6 | 4 | 5 | 7 | 0 | 0 | 0 | 0 | 0 |
| 104 | 7 | 8 | 4 | 9 | 0 | 0 | 0 | 0 | 0 |
| 105 | 6 | 8 | 4 | 8 | 0 | 0 | 0 | 0 | 0 |
| 106 | 4 | 3 | 3 | 4 | 0 | 0 | 0 | 0 | 0 |
| 107 | 8 | 8 | 9 | 8 | 0 | 0 | 0 | 0 | 0 |
| 108 | 10 | 10 | 10 | 11 | 0 | 0 | 0 | 0 | 0 |
| 109 | 6 | 8 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 110 | 4 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| 111 | 1 | 5 | 6 | 5 | 0 | 0 | 0 | 0 | 0 |
| 112 | 4 | 6 | 5 | 8 | 0 | 0 | 0 | 0 | 0 |
| 113 | 4 | 7 | 9 | 10 | 0 | 0 | 0 | 0 | 0 |
| 114 | 10 | 11 | 9 | 6 | 0 | 0 | 0 | 0 | 0 |
| 115 | 3 | 10 | 7 | 4 | 0 | 0 | 0 | 0 | 0 |
| 116 | 6 | 7 | 5 | 9 | 0 | 0 | 0 | 0 | 0 |
| 117 | 4 | 6 | 10 | 9 | 0 | 0 | 0 | 0 | 0 |
| 118 | 4 | 5 | 6 | 6 | 0 | 0 | 0 | 0 | 0 |
| 119 | 6 | 10 | 7 | 7 | 0 | 0 | 0 | 0 | 0 |
| 120 | 7 | 3 | 2 | 4 | 0 | 0 | 0 | 0 | 0 |
| 121 | 8 | 10 | 5 | 9 | 0 | 0 | 0 | 0 | 0 |
| 122 | 1 | 8 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| 123 | 0 | 11 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| 124 | 1 | 10 | 7 | 12 | 0 | 0 | 0 | 0 | 0 |
| 125 | 1 | 11 | 2 | 9 | 0 | 0 | 0 | 0 | 0 |
| 126 | 0 | 6 | 2 | 6 | 0 | 0 | 0 | 0 | 0 |
| 127 | 1 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| 128 | 0 | 3 | 3 | 7 | 0 | 0 | 0 | 0 | 0 |
| 129 | 4 | 7 | 3 | 6 | 0 | 0 | 0 | 0 | 0 |
| 130 | 5 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 131 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 137 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 140 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 142 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 143 | 2 | 5 | 11 | 21 | 0 | 0 | 0 | 0 | 0 |
| 144 | 1 | 4 | 3 | 22 | 0 | 0 | 0 | 0 | 0 |
| 145 | 0 | 4 | 0 | 21 | 0 | 0 | 0 | 0 | 0 |
| 146 | 0 | 1 | 0 | 15 | 1 | 0 | 0 | 3 | 0 |
| 147 | 0 | 0 | 0 | 4 | 6 | 0 | 0 | 10 | 0 |
| 148 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| 149 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 151 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 152 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 |
| 153 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 |

**Supporting Figures**

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**Figure S1.** Gaussian detection probability function used to simulate detection histories of tagged individuals.



**Figure S2.** Posterior distributions for model parameters estimated from the spatial point process model integrated across simulations for each simulation scenario. Panels (a) and (c) correspond to the posterior distributions for *p0* over varying receiver densities and time intervals. Panels (b) and (d) correspond to those for *σ*. Dashed lines indicate the true value for each parameter. Receiver density in panels (a) and (b) refers to the number of receivers per km2 for each scenario.



**Figure S3.** Number of hourly transmissions from a stationary reference test transmitter logged at seven acoustic receivers over the first 153 hours of deployment. Station names and distance of receivers from the test tag (in m) are indicated in each panel header.



**Figure S4.** Sequential sixty-minute center of activity estimates (inverted triangles), from applying (a) the mean-weighted center of activity algorithm, (b) the spatial point process model assuming constant detection probabilities, and (c) the test tag-integrated spatial point process model accounting for receiver- and time-specific probabilities to ten hours of detection data from a stationary reference transmitter. For the spatial point process models, the posterior distributions are also presented. Red points indicate the location of the test tag, aquamarine points the detecting receivers, and black points the receivers not detecting the test tag in that hour.