Supplementary materials

Table S2. Summary of summer staging sites, movements, and distances to the nearest village/navigable river for the fifteen EPLWFG in 2017-2020, total of 23 summer records. Site status: st=staging; br=breeding; mo=moulting; br\_mo=breeding and moulting. Bird status: NB =non-breeder; FB=failure breeder; SB=successful breeder.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | bird ID, status | site status | period stay | Lon | Lat | #days at the site | # sites per sum-mer | distance between sites1, km | sum of movements between sites, km | distance to sattlement, km |
| 2017 | BFUL041 | st | 31.5-12.6 | 149.97418 | 67.42832 | 12 | 4 | 0 | 1781.3 | 112 |
| 2017 | NB | mo | 24.6-11.8 | 143.80556 | 72.09962 | 48 |  | 1244.6 |  | 141 |
| 2017 |  | st | 15.8-20.8 | 144.43340 | 71.33479 | 6 |  | 106.7 |  | 89 |
| 2017 |  | st | 20.8-22.9 | 146.99821 | 70.82262 | 33 |  | 206.0 |  | 40 |
| 2017 | BFUL044 | st | 30.5-7.6 | 148.70873 | 68.70338 | 7 | 5 | 0 | 1516.4 | 67 |
| 2017 | NB | st | 21.6-26.6 | 148.09239 | 68.73299 | 5 |  | 864.1 |  | 80 |
| 2017 |  | mo | 27.6-14.8 | 143.55418 | 72.25600 | 47 |  | 474.9 |  | 138 |
| 2017 |  | st | 15.8-1.9 | 144.69682 | 71.56277 | 16 |  | 83 |  | 114 |
| 2017 |  | st | 1.9-27.9 | 145.87618 | 70.88199 | 27 |  | 94.4 |  | 59 |
| 2017 | BFUL050 | br | 6.6-10.7 | 141.78306 | 70.35166 | 34 | 3 | 0 | 296.4 | 160 |
| 2017 | FB | mo | 15.7-19.8 | 141.44843 | 71.78763 | 35 |  | 209 |  | 56 |
| 2017 |  | st | 21.8-22.9 | 141.03751 | 71.14642 | 32 |  | 87.4 |  | 82 |
| 2017 | BFUL051 | br | 19.5-23.6 | 149.90532 | 67.17127 | 35 | 5 | 0 | 1466.1 | 96 |
| 2017 | FB | mo | 27.6-15.8 | 143.68736 | 72.11787 | 49 |  | 977.3 |  | 138 |
| 2017 |  | st | 15.8-1.9 | 144.44122 | 71.16573 | 16 |  | 96.2 |  | 71 |
| 2017 |  | st | 1.9-6.9 | 144.84357 | 70.74917 | 5 |  | 46.5 |  | 24 |
| 2017 |  | st | 7.9-1.10 | 146.09311 | 67.70303 | 24 |  | 346 |  | 42 |
| 2017 | BFUL0572 | mo | 10.7-10.9 | 126.18952 | 73.48012 | 62 | 2 | 427 | 544.0 | 169 |
| 2017 | NB | st | 11.9-18.9 | 128.41763 | 73.30483 | 7 |  | 117 |  | 147 |
| 2017 | BFUL059\* | br | 18.5-19.6 | 157.27092 | 64.08287 | 32 | 4 | 0 | 1364.8 | 200 |
| 2017 | FB | mo | 28.6-14.8 | 143.87555 | 72.18348 | 47 |  | 1240 |  | 146 |
| 2017 |  | st | 15.8-14.9 | 147.35072 | 71.4397 | 30 |  | 124.4 |  | 77 |
| 2017 | BFUL061\* | br | 18.5-19.6 | 157.27092 | 64.08287 | 32 | 4 | 0 | 1364.8 | 200 |
| 2017 | FB | mo | 28.6-14.8 | 143.86734 | 72.18413 | 47 |  | 1240 |  | 146 |
| 2017 |  | st | 15.8-14.9 | 147.35565 | 71.46187 | 30 |  | 124.4 |  | 77 |
| 2017 | BFUL062 | br | 7.6-25.6 | 137.93828 | 70.44067 | 20 | 5 | 0 | 679.5 | 58 |
| 2017 | FB | mo | 30.6-8.8 | 142.62907 | 72.15652 | 39 |  | 269 |  | 104 |
| 2017 |  | st | 11.8-4.9 | 139.19835 | 71.44574 | 24 |  | 144.9 |  | 43 |
| 2017 |  | st | 6.9-14.9 | 138.08054 | 71.104 | 8 |  | 53.1 |  | 60 |
| 2017 |  | st | 23.9-1.10 | 138.43683 | 70.8315 | 7 |  | 212.5 |  | 31 |
| 2017 | BFUL065 | br\_mo | 29.5-28.8 | 143.42567 | 69.21709 | 91 | 2 | 0 | 152 | 101 |
| 2017 | SB | st | 29.8-nd | 144.89885 | 70.39343 | 6+ |  | 152 |  | 115 |
| 2017 | BFUL068 | st | 2.6-6.6 | 142.77257 | 60.71722 | 5 | 4 | 0 | 1648.9 |  |
| 2017 | NB | mo | 26.6-27.8 | 143.67754 | 72.11861 | 62 |  | 1022 |  | 96 |
| 2017 |  | st | 1.9-23.9 | 151.59421 | 70.71585 | 22 |  | 345.5 |  | 18 |
| 2017 |  | st | 23.9-1.10 | 151.59213 | 68.20238 | 7 |  | 281.5 |  | 139 |
| 2017 | BFUL074 | br | 25.5-24.6 | 170.99282 | 66.45467 | 30 | 4 | 0 | 2127.7 | 77 |
| 2017 | FB | mo | 27.6-14.8 | 144.04825 | 72.17364 | 47 |  | 1330 |  | 151 |
| 2017 |  | st | 16.8-26.8 | 152.50731 | 69.24902 | 10 |  | 572.3 |  | 69 |
| 2017 |  | st | 29.8-29.9 | 152.32874 | 68.5559 | 31 |  | 225.4 |  | 22 |
| 2018 | BFUL051 | br | 20.5-24.6 | 149.90507 | 67.17478 | 35 | 5 | 0 | 864.5 | 96 |
| 2018 | FB | mo | 26.6-11.8 | 143.42484 | 72.10284 | 46 |  | 627.8 |  | 127 |
| 2018 |  | st | 15.8-27.8 | 143.97899 | 71.55866 | 12 |  | 76.7 |  | 117 |
| 2018 |  | st | 28.8-12.9 | 144.09372 | 70.93246 | 15 |  | 123 |  | 50 |
| 2018 |  | st | 12.9-25.9 | 144.82095 | 70.74279 | 13 |  | 37 |  | 24 |
| 2018 | BFUL061 | br | 22.5-3.7 | 157.30523 | 64.0491 | 42 | 4 | 0 | 998.5 | 200 |
| 2018 | FB | mo | 5.7-11.8 | 155.2758 | 65.02602 | 37 |  | 185.5 |  | 218 |
| 2018 |  | st | 19.8-19.9 | 156.33081 | 67.67036 | 31 |  | 576.1 |  | 67 |
| 2018 |  | st | 20.9-3.10 | 151.625493 | 66.60400 | 13 |  | 237 |  | 100 |
| 2018 | BFUL062 | br\_mo | 27.5-18.8 | 138.06198 | 70.40972 | 83 | 2 | 0 | 72.8 | 56.8 |
| 2018 | SB | st | 22.8-26.9 | 138.48387 | 70.95029 | 35 |  | 72.8 |  | 38 |
| 2019 | BFUL062 | br | 23.5-19.6 | 138.0352 | 70.4003 | 27 | 3 | 0 | 645 | 57 |
| 2019 | FB | mo | 26.6-6.8 | 142.85280 | 72.28665 | 42 |  | 420.4 |  | 118 |
| 2019 |  | st | 8.8-27.9 | 138.42004 | 70.95199 | 48 |  | 224.6 |  | 37 |
| 2018 | Lwfg02 | mo | nd-17.8 | 167.67001 | 68.79764 | NA | 2 | 0 | 73 | 123 |
| 2018 | SB | st | 17.8-9.10 | 168.18939 | 69.25693 | 53 |  | 73 |  | 74 |
| 2018 | Lwfg03 | mo | nd-16.8 | 167.76797 | 68.80264 | NA | NA | 0 | 80 | 123 |
| 2018 | FB | st | 16.8-8.10 | 167.29787 | 69.44787 | 53 |  | 80 |  | 59 |
| 2019 | Lwfg03 | br | nd-28.6 | 167.26483 | 69.38217 | >34 | 3 | 0 | 1947 | 107 |
| 2019 | FB | mo | 2.7-19.8 | 143.60185 | 72.18374 | 48 |  | 927 |  | 146 |
| 2019 |  | st | 21.8-27.9 | 167.31566 | 69. 38516 | 37 |  | 1020 |  | 66 |
| 2020 | Lwfg03 | br | nd-19.6 | 167.75528 | 68.54807 | >25 | 4 | 0 | 2090 | 102 |
| 2020 | FB | mo | 26.6-7.8 | 143.64939 | 72.22625 | 42 |  | 1057 |  | 146 |
| 2020 |  | st | 11.8-16.8 | 161.00932 | 69.66243 | 5 |  | 781 |  | 39 |
| 2020 |  | st | 16.8-2.10 | 167.29787 | 69.44787 | 47 |  | 252 |  | 59 |
| 2018 | Lwfg04 | mo | nd-21.8 | 167.76902 | 68.59594 | NA | 2 | 0 |  | 108 |
| 2018 | SB | st | 21.8-9.10 | 167.29787 | 69.44787 | 49 |  | 108 |  | 59 |
| 2018 | Lwfg05 | mo | nd-16.8 | 167.64820 | 68.81205 | NA | 2 | 0 | 101 | 125 |
| 2018 | SB | st | 16.8-6.10 | 167.29813 | 69.40790 | 51 |  | 101 |  | 63 |
| 2018 | Lwfg06 | mo | nd-19.8 | 167.70202 | 68.81569 | NA | 2 | 0 | 73 | 121 |
|  | SB | st | 19.8-9.10 | 167.33656 | 69.44292 | 51 |  | 73 |  | 60 |
| 2019 | Lwfg06 | br | 26.5-28.6 | 167.67001 | 68.79764 | 33 | 3 | 0 | 867 | 98 |
|  | FB | mo | 29.6-18.8 | 155.55871 | 70.67115 | 50 |  | 583 |  | 272 |
|  |  | st | 19.8-23.9 | 160.88050 | 69.61817 | 35 |  | 284 |  | 72 |
| 2020 | Lwfg06 | st | 18.6-2.7 | 167.67001 | 68.79764 | 14 | 4 | 0 | 779 | 98 |
|  | NB | mo | 2.7-15.8 | 155.55871 | 70.67115 | 44 |  | 580 |  | 272 |
|  |  | st | 15.8-24.9 | 159.85537 | 69.75813 | 40 |  |  |  |  |
|  |  | st | 24.9-4.10 | 155.95869 | 67.84668 | 10 |  |  |  |  |
| 2018 | Lwfg07 | mo | nd-23.8 | 167.70217 | 68.81537 | NA | 2 | 0 | 80 | 97 |
|  | SB | st | 23.8-9.10 | 167.23136 | 69.47897 | 47 |  | 80 |  | 59 |
| 2019 | Lwfg07 | br | 28.5-22.6 | 167.86562 | 68.57527 | 25 | 4 | 0 | 1135 | 84 |
|  | FB | mo | 23.6-18.8 | 155.63102 | 70.88086 | 56 |  | 604 |  | 322 |
|  |  | st | 19.8-24.8 | 160.301206 | 69.68569 | 5 |  |  |  |  |
|  |  | st | 24.8-27.9 | 167.22336 | 69.47961 | 34 |  |  |  |  |
| 2018 | Lwfg08 | mo | nd-19.8 | 167.36017 | 69.01176 | NA | 2 | 0 | 34 | 106 |
|  | SB | st | 19.8-3.10 | 167.36708 | 69.361523 | 45 |  | 34 |  | 62 |
| 2019 | Lwfg08 | br | nd-25.6 | 167.52269 | 68.93039 | >31 | 4 | 0 | 2174 | 113 |
|  | FB | mo | 26.6-16.8 | 144.01901 | 72.16813 | 51 |  | 1006 |  | 151 |
|  |  | st | 16.8-24.8 | 144.50655 | 71.72599 | 8 |  | 59 |  | 163 |
|  |  | st | 27.8-26.9 | 167.36708 | 69.361523 | 30 |  | 1109 |  | 67 |
| 2018 | Lwfg09 | mo | nd-23.8 | 167.10148 | 69.13610 | NA | 2 | 0 | 48 | 91 |
|  | SB | st | 23.8-9.10 | 167.29357 | 69.42641 | 47 |  | 48 |  | 63 |
| 2018 | Lwfg10 | mo | nd-nd | 167.18739 | 69.14440 | NA | 2 | 0 | 36 | 92 |
|  | SB | st | nd-nd | 167.25852 | 69.39372 | NA |  | 36 |  | 65 |

1 distance along the bird route and including the movement between arrival to summering range and arrival to the first stopover site

2 No of >4-days staging sites prior arrival to the moulting site is ignored

3 Measured if a site is nearby the river with regular boat/vessel navigation

4NA means the distance >200 km

\*A pair