# Supporting Information for:

**Complex plumages spur rapid color diversification in kingfishers (Aves: Alcedinidae)**

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## Supplementary Tables

**Supplementary file 1a. Evolutionary model fits using multivariate color data sets.** Models compared were a Brownian motion (BM) model and Pagel's λ model. Models were fit separately for each sex, as well as using chromatic and achromatic variables (i.e., luminance). Generalized information criteria (GIC) scores were calculated using function in the RPANDA R package.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sex** | **Data type** | **GIC BM** | **GIC λ** | **GIC wt.** | **Pagel's λ** |
| Both | Chromatic | 13253 | 12027 | 1.00 | 0.24 |
|  | Achromatic | 9295 | 8844 | 1.00 | 0.37 |
| Male | Chromatic | 12881 | 11636 | 1.00 | 0.21 |
|  | Achromatic | 8488 | 8079 | 1.00 | 0.33 |
| Female | Chromatic | 14028 | 12585 | 1.00 | 0.15 |
|  | Achromatic | 9096 | 8586 | 1.00 | 0.29 |

**Supplementary file 1b. Predictors of rates of color evolution when analyzing males and females separately.** Models were fit using PGLS in the phylolm R package, with species-specific evolutionary rates as the response variable and complexity metrics (c1, c2, c3), island-dwelling, natural log body mass, and number of sympatric species as predictors. The best-fitting models were determined using a stepwise AIC-based procedure (i.e., using the phylostep function). Significant predictors in the most parsimonious models are indicated in bold.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sex** | **Response** | **Predictor** | **β** | **P** | **R2** | **Signal** |
| Male | **Chromatic rate** | **Color volume (c2)** | **0.27 ± 0.13** | **0.03** | 0.46 | 0.00 |
|  |  | **# unique patches (c3)** | **0.46 ± 0.13** | **<0.01** |  |  |
|  | **Achromatic rate** | **Interpatch dist. (c1)** | **0.37 ± 0.13** | **<0.01** | 0.17 | 0.00 |
|  |  | # unique patches (c3) | -0.18 ± 0.13 | 0.15 |  |  |
|  |  | ln mass | 0.21 ± 0.19 | 0.09 |  |  |
| Female | **Chromatic rate** | **Interpatch dist. (c1)** | **0.46 ± 0.16** | **<0.01** | 0.59 | 0.00 |
|  |  | Color volume (c2) | 0.29 ± 0.16 | 0.08 |  |  |
|  |  | **Insularity** | **0.49 ± 0.17** | **<0.01** |  |  |
|  | **Achromatic rate** | **Lightness range (c2)** | **0.37 ± 0.11** | **<0.01** | 0.14 | 0.02 |

**Supplementary file 1c. Evolutionary rates tests using discrete plumage complexity scores.** Results of fitting rate ratio tests in compare.evol.rates using binary complexity scores (i.e., low versus high) obtained with kmeans clustering. Significant tests (P < 0.05) indicated in bold.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sex** | **Data type** | **Complexity metric** |  |  | **P** | **N** |
| Both | Chromatic | **Mean interpatch distance (c1)** | **0.13** | **0.21** | **0.04** | **72** |
|  |  | **Color volume (c2)** | **0.11** | **0.29** | **<0.01** | **72** |
|  |  | **# unique patches (c3)** | **0.09** | **0.22** | **<0.01** | **72** |
|  | Achromatic | Mean interpatch distance (c1) | 0.76 | 1.06 | 0.11 | 72 |
|  |  | **Lightness range (c2)** | **0.67** | **1.05** | **0.03** | **72** |
|  |  | # unique patches (c3) | 1.09 | 0.79 | 0.22 | 72 |
| Male | Chromatic | **Mean interpatch distance (c1)** | **0.13** | **0.21** | **0.02** | **63** |
|  |  | **Color volume (c2)** | **0.15** | **0.35** | **0.01** | **63** |
|  |  | **# unique patches (c3)** | **0.10** | **0.22** | **<0.01** | **63** |
|  | Achromatic | Mean interpatch distance (c1) | 0.91 | 1.17 | 0.23 | 63 |
|  |  | Lightness range (c2) | 0.82 | 1.16 | 0.1 | 63 |
|  |  | # unique patches (c3) | 1.00 | 1.04 | 0.87 | 63 |
| Female | Chromatic | **Mean interpatch distance (c1)** | **0.13** | **0.24** | **<0.01** | **68** |
|  |  | **Color volume (c2)** | **0.14** | **0.44** | **<0.01** | **68** |
|  |  | **# unique patches (c3)** | **0.06** | **0.21** | **<0.01** | **68** |
|  | Achromatic | Mean interpatch distance (c1) | 0.75 | 1.10 | 0.05 | 68 |
|  |  | **Lightness range (c2)** | **0.67** | **1.03** | **0.02** | **68** |
|  |  | # unique patches (c3) | 0.83 | 0.91 | 0.61 | 68 |

**Supplementary file 1d. Predictors of plumage complexity for males and females analyzed separately.** Models were fit for both chromatic (i.e., hue and saturation) and achromatic variables (i.e., lightness) using PGLS in the phylolm R package. Different complexity metrics were set as the response variable, and island-dwelling, body mass (ln mass), and number of sympatric species were used as predictors. The best-fitting models were determined using a stepwise AIC-based procedure (i.e., using the phylostep function). Significant predictors are indicated in bold. See Table 2 for sex-specific results.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sex** | **Data type** | **Response** | **Predictor** | **Effect** | **P** |
| Male | Chromatic | Interpatch dist.(c1) | ln mass | -0.29 ± 0.15 | 0.06 |
|  |  | **# unique patches (c3)** | **ln mass** | **-0.31 ± 0.15** | **0.05** |
|  | Achromatic | Lightness range (c2) | # symp. species | -0.23 ± 0.12 | 0.08 |
| Female | Chromatic | **Interpatch dist. (c1)** | **ln mass** | **-0.38 ± 0.14** | **<0.01** |
|  |  | **Color volume (c2)** | **ln mass** | **-0.36 ± 0.14** | **0.01** |
|  |  | **# unique patches (c3)** | **ln mass** | **-0.33 ± 0.15** | **0.04** |
|  | Achromatic | Interpatch dist. (c1) | islands1 | -0.41 ± 0.28 | 0.15 |
|  |  | Interpatch dist. (c1) | # symp. species | -0.18 ± 0.13 | 0.17 |
|  |  | **Interpatch dist. (c1)** | **ln mass** | **-0.28 ± 0.12** | **0.02** |
|  |  | **Lightness range (c2)** | **Insularity** | **-0.61 ± 0.27** | **0.03** |
|  |  | **Lightness range (c2)** | **# symp. species** | **-0.36 ± 0.13** | **<0.01** |
|  |  | # unique patches (c3) | ln mass | -0.27 ± 0.18 | 0.14 |

**Supplementary file 1e. Testing predictors of shifts in average plumage hue and brightness.** Results of multivariate distance-based d-PGLS tests testing for convergence in overall plumage coloration on islands. P values were calculated with a permutation approach using 999 iterations. Significant predictors shown in bold.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sex** | **Response** | **Predictor** | **F** | **P** | **Ntraits** | **Nspecies** |
| Male | Multivariate color | **Islands** | **2.44** | **0.03** | **66** | **63** |
|  |  | # sympatric species | 0.72 | 0.61 | 66 | 63 |
|  |  | ln body mass | 1.10 | 0.30 | 66 | 63 |
|  | Multivariate lightness | Islands | 1.18 | 0.26 | 22 | 63 |
|  |  | # sympatric species | 0.97 | 0.41 | 22 | 63 |
|  |  | ln body mass | 1.08 | 0.34 | 22 | 63 |
| Female | Multivariate color | Islands | 1.18 | 0.27 | 66 | 68 |
|  |  | # sympatric species | 0.58 | 0.73 | 66 | 68 |
|  |  | ln body mass | 1.58 | 0.15 | 66 | 68 |
|  | Multivariate lightness | Islands | 0.95 | 0.44 | 22 | 68 |
|  |  | # sympatric species | 1.76 | 0.08 | 22 | 68 |
|  |  | ln body mass | 1.79 | 0.07 | 22 | 68 |

**Supplementary file 1f. Full PGLS regression results for predictors of chromatic rate variation.** Models were fit using PGLS in the phylolm R package, with species-specific evolutionary rates as the response variable and complexity metrics (c1, c2, c3), island-dwelling, natural log body mass, and number of sympatric species as predictors. Estimates ± 1 std. error are shown in columns 2-7. Cells for predictors not in that specific model are left blank. Models are sorted by increasing AIC scores, with the best models at the top of the list.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **model** | **Intercept** | **c1** | **c2** | **c3** | **insularity** | **# symp. spp.** | **ln mass** | **AIC** | **ΔAIC** | **λ** | **σ2** |
| 26 | -0.14 ± 0.11 | 0.41 ± 0.13 |  | 0.24 ± 0.2 | 0.49 ± 0.11 |  |  | 171.97 | 0 | 0.00 | 0.01 |
| 42 | -0.14 ± 0.11 | 0.27 ± 0.17 | 0.18 ± 0.15 | 0.23 ± 0.13 | 0.48 ± 0.2 |  |  | 172.52 | 0.55 | 0.00 | 0.01 |
| 49 | -0.13 ± 0.11 | 0.35 ± 0.14 |  | 0.23 ± 0.21 | 0.46 ± 0.11 |  | -0.11 ± 0.14 | 172.9 | 0.93 | 0.00 | 0.01 |
| 32 | -0.13 ± 0.11 |  | 0.34 ± 0.12 | 0.33 ± 0.2 | 0.44 ± 0.11 |  |  | 173.16 | 1.19 | 0.00 | 0.01 |
| 48 | -0.12 ± 0.11 | 0.4 ± 0.13 |  | 0.26 ± 0.23 | 0.41 ± 0.1 | -0.08 ± 0.11 |  | 173.25 | 1.28 | 0.00 | 0.01 |
| 53 | -0.12 ± 0.11 |  | 0.29 ± 0.12 | 0.3 ± 0.2 | 0.42 ± 0.11 |  | -0.14 ± 0.12 | 173.35 | 1.38 | 0.00 | 0.01 |
| 9 | -0.17 ± 0.11 | 0.57 ± 0.09 |  |  | 0.59 ± 0.09 |  |  | 173.48 | 1.51 | 0.00 | 0.02 |
| 58 | -0.13 ± 0.11 | 0.23 ± 0.18 | 0.17 ± 0.15 | 0.22 ± 0.13 | 0.46 ± 0.21 |  | -0.1 ± 0.11 | 173.6 | 1.63 | 0.00 | 0.01 |
| 23 | -0.17 ± 0.11 | 0.42 ± 0.15 | 0.19 ± 0.15 |  | 0.58 ± 0.11 |  |  | 173.84 | 1.87 | 0.00 | 0.01 |
| 57 | -0.12 ± 0.11 | 0.27 ± 0.17 | 0.17 ± 0.15 | 0.25 ± 0.13 | 0.41 ± 0.23 | -0.08 ± 0.1 |  | 173.87 | 1.9 | 0.00 | 0.01 |
| 30 | -0.16 ± 0.11 | 0.5 ± 0.11 |  |  | 0.55 ± 0.11 |  | -0.13 ± 0.2 | 174.14 | 2.17 | 0.00 | 0.01 |
| 61 | -0.11 ± 0.11 | 0.34 ± 0.14 |  | 0.25 ± 0.23 | 0.38 ± 0.1 | -0.08 ± 0.11 | -0.11 ± 0.11 | 174.18 | 2.21 | 0.00 | 0.01 |
| 52 | -0.11 ± 0.11 |  | 0.33 ± 0.12 | 0.35 ± 0.23 | 0.36 ± 0.1 | -0.08 ± 0.11 |  | 174.44 | 2.47 | 0.00 | 0.01 |
| 27 | 0 ± 0.09 | 0.36 ± 0.13 |  | 0.34 ± 0.09 |  | -0.16 ± 0.13 |  | 174.63 | 2.66 | 0.00 | 0.01 |
| 62 | -0.1 ± 0.11 |  | 0.28 ± 0.12 | 0.32 ± 0.23 | 0.34 ± 0.1 | -0.08 ± 0.11 | -0.14 ± 0.11 | 174.64 | 2.67 | 0.00 | 0.01 |
| 46 | -0.16 ± 0.11 | 0.36 ± 0.16 | 0.18 ± 0.15 |  | 0.55 ± 0.11 |  | -0.12 ± 0.16 | 174.69 | 2.72 | 0.00 | 0.01 |
| 63 | -0.11 ± 0.11 | 0.22 ± 0.18 | 0.16 ± 0.15 | 0.24 ± 0.13 | 0.38 ± 0.23 | -0.08 ± 0.1 | -0.1 ± 0.11 | 174.94 | 2.97 | 0.00 | 0.01 |
| 54 | 0 ± 0.09 |  | 0.26 ± 0.12 | 0.37 ± 0.09 |  | -0.15 ± 0.09 | -0.15 ± 0.12 | 175.04 | 3.07 | 0.00 | 0.01 |
| 33 | 0 ± 0.09 |  | 0.31 ± 0.11 | 0.41 ± 0.09 |  | -0.15 ± 0.11 |  | 175.13 | 3.16 | 0.00 | 0.02 |
| 50 | 0 ± 0.09 | 0.3 ± 0.14 |  | 0.32 ± 0.09 |  | -0.15 ± 0.09 | -0.13 ± 0.14 | 175.15 | 3.18 | 0.00 | 0.01 |
| 43 | 0 ± 0.09 | 0.23 ± 0.17 | 0.17 ± 0.15 | 0.33 ± 0.13 |  | -0.16 ± 0.09 |  | 175.29 | 3.32 | 0.00 | 0.01 |
| 29 | -0.16 ± 0.11 | 0.58 ± 0.09 |  |  | 0.55 ± 0.11 | -0.04 ± 0.09 |  | 175.3 | 3.33 | 0.00 | 0.02 |
| 45 | -0.16 ± 0.11 | 0.42 ± 0.16 | 0.19 ± 0.16 |  | 0.55 ± 0.1 | -0.04 ± 0.11 |  | 175.68 | 3.71 | 0.00 | 0.01 |
| 34 | 0 ± 0.09 |  | 0.26 ± 0.12 | 0.35 ± 0.11 |  |  | -0.16 ± 0.12 | 175.73 | 3.76 | 0.00 | 0.02 |
| 8 | 0 ± 0.09 | 0.37 ± 0.13 |  | 0.33 ± 0.09 |  |  |  | 175.81 | 3.84 | 0.00 | 0.02 |
| 51 | -0.15 ± 0.11 | 0.51 ± 0.11 |  |  | 0.52 ± 0.11 | -0.04 ± 0.11 | -0.13 ± 0.11 | 175.95 | 3.98 | 0.00 | 0.01 |
| 59 | 0 ± 0.09 | 0.18 ± 0.18 | 0.16 ± 0.16 | 0.32 ± 0.13 |  | -0.15 ± 0.11 | -0.12 ± 0.09 | 175.98 | 4.01 | 0.00 | 0.01 |
| 12 | 0 ± 0.09 |  | 0.32 ± 0.12 | 0.39 ± 0.09 |  |  |  | 175.99 | 4.02 | 0.00 | 0.02 |
| 28 | 0 ± 0.09 | 0.3 ± 0.14 |  | 0.31 ± 0.11 |  |  | -0.14 ± 0.13 | 176.11 | 4.14 | 0.00 | 0.02 |
| 22 | 0 ± 0.09 | 0.22 ± 0.18 | 0.19 ± 0.16 | 0.31 ± 0.13 |  |  |  | 176.34 | 4.37 | 0.00 | 0.02 |
| 60 | -0.15 ± 0.11 | 0.37 ± 0.16 | 0.18 ± 0.16 |  | 0.51 ± 0.1 | -0.04 ± 0.11 | -0.12 ± 0.11 | 176.52 | 4.55 | 0.00 | 0.01 |
| 44 | 0 ± 0.09 | 0.17 ± 0.18 | 0.17 ± 0.16 | 0.3 ± 0.13 |  |  | -0.14 ± 0.18 | 176.83 | 4.86 | 0.00 | 0.01 |
| 39 | -0.11 ± 0.11 |  |  | 0.43 ± 0.11 | 0.37 ± 0.11 |  | -0.23 ± 0.21 | 177.49 | 5.52 | 0.00 | 0.02 |
| 36 | -0.15 ± 0.11 |  | 0.43 ± 0.21 |  | 0.53 ± 0.11 |  | -0.2 ± 0.21 | 177.8 | 5.83 | 0.00 | 0.02 |
| 40 | 0 ± 0.09 |  |  | 0.49 ± 0.11 |  | -0.15 ± 0.11 | -0.23 ± 0.09 | 177.96 | 5.99 | 0.00 | 0.02 |
| 13 | -0.22 ± 0.25 |  | 0.43 ± 0.21 |  | 0.49 ± 0.11 |  |  | 178.1 | 6.13 | 0.33 | 0.02 |
| 56 | -0.08 ± 0.11 |  |  | 0.46 ± 0.1 | 0.27 ± 0.11 | -0.1 ± 0.11 | -0.22 ± 0.11 | 178.51 | 6.54 | 0.00 | 0.02 |
| 18 | 0 ± 0.09 |  |  | 0.47 ± 0.09 |  |  | -0.24 ± 0.09 | 178.64 | 6.67 | 0.00 | 0.02 |
| 31 | 0 ± 0.09 | 0.5 ± 0.12 |  |  |  | -0.14 ± 0.12 | -0.17 ± 0.09 | 179.6 | 7.63 | 0.00 | 0.02 |
| 35 | -0.22 ± 0.27 |  | 0.43 ± 0.25 |  | 0.41 ± 0.27 | -0.07 ± 0.11 |  | 179.63 | 7.66 | 0.36 | 0.02 |
| 11 | 0 ± 0.09 | 0.49 ± 0.12 |  |  |  |  | -0.18 ± 0.09 | 179.72 | 7.75 | 0.00 | 0.02 |
| 55 | -0.15 ± 0.11 |  | 0.43 ± 0.23 |  | 0.51 ± 0.11 | -0.02 ± 0.11 | -0.2 ± 0.11 | 179.74 | 7.77 | 0.00 | 0.02 |
| 10 | 0 ± 0.09 | 0.6 ± 0.1 |  |  |  | -0.14 ± 0.1 |  | 179.77 | 7.8 | 0.00 | 0.02 |
| 16 | -0.11 ± 0.14 |  |  | 0.49 ± 0.14 | 0.38 ± 0.1 |  |  | 179.78 | 7.81 | 0.05 | 0.02 |
| 17 | -0.02 ± 0.15 |  |  | 0.52 ± 0.15 |  | -0.16 ± 0.1 |  | 180.04 | 8.07 | 0.09 | 0.02 |
| 1 | 0 ± 0.1 | 0.59 ± 0.1 |  |  |  |  |  | 180.06 | 8.09 | 0.00 | 0.02 |
| 24 | 0 ± 0.09 | 0.44 ± 0.16 | 0.2 ± 0.16 |  |  | -0.14 ± 0.16 |  | 180.12 | 8.15 | 0.00 | 0.02 |
| 47 | 0 ± 0.09 | 0.36 ± 0.17 | 0.18 ± 0.16 |  |  | -0.13 ± 0.09 | -0.16 ± 0.17 | 180.19 | 8.22 | 0.00 | 0.02 |
| 25 | 0 ± 0.09 | 0.34 ± 0.17 | 0.19 ± 0.16 |  |  |  | -0.16 ± 0.16 | 180.21 | 8.24 | 0.00 | 0.02 |
| 7 | 0 ± 0.1 | 0.42 ± 0.16 | 0.21 ± 0.16 |  |  |  |  | 180.3 | 8.33 | 0.00 | 0.02 |
| 14 | -0.14 ± 0.29 |  | 0.41 ± 0.09 |  |  | -0.16 ± 0.09 |  | 180.4 | 8.43 | 0.44 | 0.02 |
| 38 | -0.09 ± 0.15 |  |  | 0.51 ± 0.11 | 0.27 ± 0.15 | -0.11 ± 0.11 |  | 180.74 | 8.77 | 0.05 | 0.02 |
| 3 | -0.01 ± 0.14 |  |  | 0.51 ± 0.11 |  |  |  | 180.95 | 8.98 | 0.07 | 0.02 |
| 2 | -0.12 ± 0.27 |  | 0.41 ± 0.27 |  |  |  |  | 181.52 | 9.55 | 0.37 | 0.02 |
| 37 | -0.12 ± 0.24 |  | 0.39 ± 0.09 |  |  | -0.16 ± 0.11 | -0.15 ± 0.09 | 181.56 | 9.59 | 0.30 | 0.02 |
| 15 | 0 ± 0.1 |  | 0.43 ± 0.11 |  |  |  | -0.24 ± 0.1 | 182.36 | 10.39 | 0.00 | 0.02 |
| 20 | -0.21 ± 0.22 |  |  |  | 0.45 ± 0.23 |  | -0.3 ± 0.22 | 190.06 | 18.09 | 0.21 | 0.02 |
| 4 | -0.25 ± 0.33 |  |  |  | 0.41 ± 0.33 |  |  | 190.96 | 18.99 | 0.45 | 0.03 |
| 5 | -0.18 ± 0.35 |  |  |  |  | -0.16 ± 0.1 |  | 191.44 | 19.47 | 0.51 | 0.03 |
| 21 | -0.14 ± 0.27 |  |  |  |  | -0.15 ± 0.15 | -0.25 ± 0.27 | 191.55 | 19.58 | 0.34 | 0.02 |
| 41 | -0.2 ± 0.24 |  |  |  | 0.37 ± 0.24 | -0.07 ± 0.26 | -0.28 ± 0.11 | 191.69 | 19.72 | 0.25 | 0.02 |
| 6 | -0.11 ± 0.25 |  |  |  |  |  | -0.28 ± 0.25 | 191.88 | 19.91 | 0.27 | 0.02 |
| 19 | -0.24 ± 0.34 |  |  |  | 0.29 ± 0.27 | -0.1 ± 0.12 |  | 192.26 | 20.29 | 0.47 | 0.03 |

**Supplementary file 1g. Full PGLS regression results for predictors of achromatic rate variation.** Models were fit using PGLS in the phylolm R package, with species-specific evolutionary rates as the response variable and complexity metrics (c1, c2, c3), island-dwelling, natural log body mass, and number of sympatric species as predictors. Estimates ± 1 std. error are shown in columns 2-7. Cells for predictors not in that specific model are left blank. Models are sorted by increasing AIC scores, with the best models at the top of the list.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **model** | **Intercept** | **c1** | **c2** | **c3** | **insularity** | **# symp. spp.** | **ln mass** | **AIC** | **ΔAIC** | **λ** | **σ2** |
| 15 | 0 ± 0.11 |  | 0.31 ± 0.11 |  |  |  | 0.23 ± 0.11 | 202.49 | 0 | 0.00 | 0.02 |
| 34 | 0 ± 0.11 |  | 0.35 ± 0.11 | -0.16 ± 0.11 |  |  | 0.22 ± 0.11 | 202.51 | 0.02 | 0.00 | 0.02 |
| 12 | -0.06 ± 0.19 |  | 0.35 ± 0.11 | -0.18 ± 0.19 |  |  |  | 202.71 | 0.22 | 0.11 | 0.02 |
| 28 | 0 ± 0.11 | 0.35 ± 0.12 |  | -0.18 ± 0.11 |  |  | 0.24 ± 0.12 | 203.22 | 0.73 | 0.00 | 0.02 |
| 2 | -0.04 ± 0.17 |  | 0.31 ± 0.17 |  |  |  |  | 203.28 | 0.79 | 0.08 | 0.02 |
| 44 | 0 ± 0.11 | 0.18 ± 0.17 | 0.22 ± 0.17 | -0.18 ± 0.12 |  |  | 0.23 ± 0.17 | 203.42 | 0.93 | 0.00 | 0.02 |
| 11 | 0 ± 0.11 | 0.29 ± 0.11 |  |  |  |  | 0.25 ± 0.11 | 203.73 | 1.24 | 0.00 | 0.02 |
| 36 | -0.06 ± 0.13 |  | 0.33 ± 0.25 |  | 0.2 ± 0.13 |  | 0.24 ± 0.25 | 203.84 | 1.35 | 0.00 | 0.02 |
| 25 | 0 ± 0.11 | 0.12 ± 0.17 | 0.22 ± 0.17 |  |  |  | 0.24 ± 0.17 | 203.96 | 1.47 | 0.00 | 0.02 |
| 54 | 0 ± 0.11 |  | 0.37 ± 0.12 | -0.17 ± 0.11 |  | 0.07 ± 0.11 | 0.22 ± 0.12 | 204.08 | 1.59 | 0.00 | 0.02 |
| 53 | -0.04 ± 0.13 |  | 0.36 ± 0.12 | -0.15 ± 0.25 | 0.15 ± 0.11 |  | 0.23 ± 0.12 | 204.13 | 1.64 | 0.00 | 0.02 |
| 37 | 0 ± 0.11 |  | 0.33 ± 0.11 |  |  | 0.05 ± 0.12 | 0.23 ± 0.11 | 204.26 | 1.77 | 0.00 | 0.02 |
| 22 | -0.05 ± 0.18 | 0.1 ± 0.17 | 0.28 ± 0.17 | -0.19 ± 0.12 |  |  |  | 204.38 | 1.89 | 0.09 | 0.02 |
| 32 | -0.1 ± 0.2 |  | 0.36 ± 0.12 | -0.18 ± 0.26 | 0.12 ± 0.2 |  |  | 204.47 | 1.98 | 0.12 | 0.02 |
| 33 | -0.05 ± 0.18 |  | 0.36 ± 0.12 | -0.19 ± 0.11 |  | 0.05 ± 0.12 |  | 204.55 | 2.06 | 0.10 | 0.02 |
| 13 | -0.09 ± 0.19 |  | 0.32 ± 0.25 |  | 0.17 ± 0.11 |  |  | 204.81 | 2.32 | 0.09 | 0.02 |
| 55 | -0.09 ± 0.14 |  | 0.36 ± 0.28 |  | 0.31 ± 0.11 | 0.12 ± 0.14 | 0.25 ± 0.12 | 204.94 | 2.45 | 0.00 | 0.02 |
| 8 | -0.03 ± 0.16 | 0.31 ± 0.12 |  | -0.19 ± 0.16 |  |  |  | 204.99 | 2.5 | 0.06 | 0.02 |
| 49 | -0.03 ± 0.13 | 0.35 ± 0.12 |  | -0.17 ± 0.25 | 0.12 ± 0.12 |  | 0.25 ± 0.12 | 205 | 2.51 | 0.00 | 0.02 |
| 58 | -0.04 ± 0.13 | 0.18 ± 0.18 | 0.23 ± 0.17 | -0.17 ± 0.12 | 0.15 ± 0.25 |  | 0.25 ± 0.13 | 205.04 | 2.55 | 0.00 | 0.02 |
| 62 | -0.08 ± 0.14 |  | 0.39 ± 0.12 | -0.15 ± 0.28 | 0.27 ± 0.13 | 0.13 ± 0.11 | 0.24 ± 0.14 | 205.04 | 2.55 | 0.00 | 0.02 |
| 59 | 0 ± 0.11 | 0.16 ± 0.18 | 0.24 ± 0.18 | -0.18 ± 0.12 |  | 0.05 ± 0.11 | 0.23 ± 0.11 | 205.19 | 2.7 | 0.00 | 0.02 |
| 14 | -0.04 ± 0.17 |  | 0.31 ± 0.12 |  |  | 0.03 ± 0.12 |  | 205.2 | 2.71 | 0.07 | 0.02 |
| 7 | -0.04 ± 0.17 | 0.05 ± 0.17 | 0.27 ± 0.17 |  |  |  |  | 205.21 | 2.72 | 0.07 | 0.02 |
| 50 | 0 ± 0.11 | 0.35 ± 0.12 |  | -0.18 ± 0.11 |  | 0.01 ± 0.11 | 0.24 ± 0.12 | 205.22 | 2.73 | 0.00 | 0.02 |
| 30 | -0.05 ± 0.13 | 0.3 ± 0.12 |  |  | 0.17 ± 0.13 |  | 0.26 ± 0.25 | 205.26 | 2.77 | 0.00 | 0.02 |
| 46 | -0.06 ± 0.13 | 0.13 ± 0.17 | 0.24 ± 0.17 |  | 0.2 ± 0.12 |  | 0.26 ± 0.17 | 205.28 | 2.79 | 0.00 | 0.02 |
| 1 | -0.02 ± 0.16 | 0.25 ± 0.11 |  |  |  |  |  | 205.66 | 3.17 | 0.05 | 0.02 |
| 31 | 0 ± 0.11 | 0.29 ± 0.11 |  |  |  | -0.01 ± 0.11 | 0.25 ± 0.11 | 205.73 | 3.24 | 0.00 | 0.02 |
| 47 | 0 ± 0.11 | 0.11 ± 0.18 | 0.24 ± 0.18 |  |  | 0.04 ± 0.11 | 0.24 ± 0.18 | 205.85 | 3.36 | 0.00 | 0.02 |
| 52 | -0.11 ± 0.2 |  | 0.38 ± 0.12 | -0.18 ± 0.29 | 0.21 ± 0.13 | 0.09 ± 0.2 |  | 205.97 | 3.48 | 0.11 | 0.02 |
| 42 | -0.09 ± 0.2 | 0.09 ± 0.17 | 0.28 ± 0.17 | -0.19 ± 0.12 | 0.12 ± 0.26 |  |  | 206.17 | 3.68 | 0.11 | 0.02 |
| 43 | -0.05 ± 0.18 | 0.09 ± 0.18 | 0.29 ± 0.18 | -0.2 ± 0.12 |  | 0.04 ± 0.18 |  | 206.28 | 3.79 | 0.09 | 0.02 |
| 63 | -0.07 ± 0.14 | 0.14 ± 0.18 | 0.28 ± 0.18 | -0.17 ± 0.12 | 0.25 ± 0.28 | 0.11 ± 0.13 | 0.25 ± 0.12 | 206.33 | 3.84 | 0.00 | 0.02 |
| 35 | -0.11 ± 0.19 |  | 0.34 ± 0.29 |  | 0.26 ± 0.19 | 0.09 ± 0.12 |  | 206.35 | 3.86 | 0.09 | 0.02 |
| 60 | -0.09 ± 0.14 | 0.09 ± 0.18 | 0.29 ± 0.19 |  | 0.3 ± 0.13 | 0.1 ± 0.12 | 0.26 ± 0.14 | 206.64 | 4.15 | 0.00 | 0.02 |
| 23 | -0.09 ± 0.19 | 0.05 ± 0.17 | 0.28 ± 0.17 |  | 0.17 ± 0.19 |  |  | 206.74 | 4.25 | 0.09 | 0.02 |
| 26 | -0.05 ± 0.18 | 0.31 ± 0.12 |  | -0.19 ± 0.26 | 0.07 ± 0.18 |  |  | 206.91 | 4.42 | 0.07 | 0.02 |
| 61 | -0.04 ± 0.14 | 0.35 ± 0.12 |  | -0.17 ± 0.28 | 0.14 ± 0.12 | 0.03 ± 0.12 | 0.26 ± 0.14 | 206.93 | 4.44 | 0.00 | 0.02 |
| 27 | -0.03 ± 0.16 | 0.31 ± 0.12 |  | -0.19 ± 0.11 |  | -0.01 ± 0.12 |  | 206.98 | 4.49 | 0.06 | 0.02 |
| 24 | -0.04 ± 0.17 | 0.04 ± 0.18 | 0.28 ± 0.18 |  |  | 0.03 ± 0.18 |  | 207.15 | 4.66 | 0.07 | 0.02 |
| 51 | -0.06 ± 0.14 | 0.3 ± 0.12 |  |  | 0.19 ± 0.12 | 0.03 ± 0.14 | 0.27 ± 0.12 | 207.21 | 4.72 | 0.00 | 0.02 |
| 9 | -0.06 ± 0.18 | 0.26 ± 0.11 |  |  | 0.13 ± 0.11 |  |  | 207.42 | 4.93 | 0.06 | 0.02 |
| 10 | -0.03 ± 0.16 | 0.25 ± 0.11 |  |  |  | -0.02 ± 0.12 |  | 207.63 | 5.14 | 0.05 | 0.02 |
| 57 | -0.1 ± 0.2 | 0.08 ± 0.18 | 0.32 ± 0.18 | -0.19 ± 0.12 | 0.2 ± 0.29 | 0.08 ± 0.13 |  | 207.79 | 5.3 | 0.10 | 0.02 |
| 6 | 0 ± 0.12 |  |  |  |  |  | 0.2 ± 0.12 | 208.29 | 5.8 | 0.00 | 0.03 |
| 45 | -0.11 ± 0.19 | 0.02 ± 0.18 | 0.32 ± 0.19 |  | 0.26 ± 0.14 | 0.08 ± 0.19 |  | 208.34 | 5.85 | 0.09 | 0.02 |
| 48 | -0.06 ± 0.18 | 0.31 ± 0.12 |  | -0.19 ± 0.29 | 0.07 ± 0.13 | 0 ± 0.18 |  | 208.91 | 6.42 | 0.07 | 0.02 |
| 29 | -0.06 ± 0.18 | 0.26 ± 0.12 |  |  | 0.13 ± 0.18 | 0 ± 0.12 |  | 209.42 | 6.93 | 0.06 | 0.02 |
| 18 | 0 ± 0.12 |  |  | -0.08 ± 0.12 |  |  | 0.2 ± 0.12 | 209.78 | 7.29 | 0.00 | 0.02 |
| 3 | -0.03 ± 0.17 |  |  | -0.1 ± 0.12 |  |  |  | 209.84 | 7.35 | 0.06 | 0.03 |
| 20 | -0.02 ± 0.14 |  |  |  | 0.08 ± 0.26 |  | 0.21 ± 0.14 | 210.19 | 7.7 | 0.00 | 0.03 |
| 21 | 0 ± 0.12 |  |  |  |  | -0.02 ± 0.12 | 0.2 ± 0.12 | 210.27 | 7.78 | 0.00 | 0.03 |
| 5 | -0.03 ± 0.16 |  |  |  |  | -0.03 ± 0.12 |  | 210.5 | 8.01 | 0.06 | 0.03 |
| 4 | -0.04 ± 0.18 |  |  |  | 0.06 ± 0.18 |  |  | 210.52 | 8.03 | 0.06 | 0.03 |
| 39 | -0.01 ± 0.14 |  |  | -0.08 ± 0.12 | 0.05 ± 0.14 |  | 0.2 ± 0.27 | 211.74 | 9.25 | 0.00 | 0.02 |
| 40 | 0 ± 0.12 |  |  | -0.08 ± 0.12 |  | -0.01 ± 0.12 | 0.2 ± 0.12 | 211.77 | 9.28 | 0.00 | 0.02 |
| 17 | -0.04 ± 0.17 |  |  | -0.1 ± 0.17 |  | -0.03 ± 0.12 |  | 211.79 | 9.3 | 0.06 | 0.03 |
| 16 | -0.04 ± 0.18 |  |  | -0.1 ± 0.18 | 0.02 ± 0.12 |  |  | 211.83 | 9.34 | 0.06 | 0.03 |
| 41 | -0.02 ± 0.14 |  |  |  | 0.08 ± 0.14 | 0 ± 0.29 | 0.21 ± 0.13 | 212.19 | 9.7 | 0.00 | 0.03 |
| 19 | -0.04 ± 0.18 |  |  |  | 0.04 ± 0.29 | -0.02 ± 0.13 |  | 212.49 | 10 | 0.06 | 0.03 |
| 56 | -0.01 ± 0.15 |  |  | -0.08 ± 0.13 | 0.05 ± 0.12 | 0 ± 0.15 | 0.2 ± 0.12 | 213.74 | 11.25 | 0.00 | 0.02 |
| 38 | -0.04 ± 0.19 |  |  | -0.1 ± 0.13 | 0 ± 0.19 | -0.03 ± 0.12 |  | 213.79 | 11.3 | 0.06 | 0.03 |