

Supplementary material

Appendix 1

Table A1. Separate linear mixed models of the length of the feathers of different order in relation to sex, age and their interaction. Individual was included as a random effect.

| | | F | df | P |
|----|-----------|-------|-------|--------|
| P1 | Sex | 46.94 | 1,313 | <0.001 |
| | Age | 40.45 | 1,313 | <0.001 |
| | Sex × Age | 0.90 | 1,313 | 0.343 |
| P2 | Sex | 30.90 | 1,313 | <0.001 |
| | Age | 42.16 | 1,313 | <0.001 |
| | Sex × Age | 0.27 | 1,313 | 0.604 |
| P3 | Sex | 27.16 | 1,313 | <0.001 |
| | Age | 94.66 | 1,313 | <0.001 |
| | Sex × Age | 0.03 | 1,313 | 0.862 |
| P4 | Sex | 11.17 | 1,313 | <0.001 |
| | Age | 19.71 | 1,313 | <0.001 |
| | Sex × Age | 0.13 | 1,313 | 0.720 |
| P5 | Sex | 9.33 | 1,313 | 0.002 |
| | Age | 21.05 | 1,313 | <0.001 |
| | Sex × Age | 0.02 | 1,313 | 0.895 |
| P6 | Sex | 2.40 | 1,313 | 0.122 |
| | Age | 7.77 | 1,313 | 0.006 |
| | Sex × Age | 1.35 | 1,313 | 0.246 |
| P7 | Sex | 0.00 | 1,313 | 0.953 |
| | Age | 2.12 | 1,313 | 0.146 |
| | Sex × Age | 0.15 | 1,313 | 0.703 |
| P8 | Sex | 1.59 | 1,313 | 0.208 |
| | Age | 2.12 | 1,313 | 0.146 |
| | Sex × Age | 0.01 | 1,313 | 0.933 |
| P9 | Sex | 2.82 | 1,313 | 0.094 |
| | Age | 3.30 | 1,313 | 0.070 |
| | Sex × Age | 0.72 | 1,313 | 0.395 |

Table A2. Variance explained (%) by the principal components extracted from the feather length data for each sex and age class separately ($PC_{s \times a}$) and loadings of the primary wing feathers (P1-P9) on $PC_{s \times a}$.

| | Yearling males | | | Older males | | |
|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | $PC1_{s \times a}$ | $PC2_{s \times a}$ | $PC3_{s \times a}$ | $PC1_{s \times a}$ | $PC2_{s \times a}$ | $PC3_{s \times a}$ |
| Variance explained (%) | 79.2 | 9.0 | 4.2 | 75.4 | 10.9 | 4.8 |
| P1 | 0.83 | -0.37 | 0.31 | 0.78 | -0.42 | 0.36 |
| P2 | 0.89 | -0.37 | 0.11 | 0.84 | -0.45 | 0.10 |
| P3 | 0.91 | -0.29 | -0.07 | 0.91 | -0.29 | -0.05 |
| P4 | 0.93 | -0.19 | -0.15 | 0.92 | -0.13 | -0.20 |
| P5 | 0.92 | -0.02 | -0.25 | 0.95 | -0.01 | -0.22 |
| P6 | 0.93 | 0.16 | -0.23 | 0.93 | 0.15 | -0.24 |
| P7 | 0.90 | 0.32 | -0.10 | 0.90 | 0.29 | -0.10 |
| P8 | 0.87 | 0.40 | 0.13 | 0.80 | 0.45 | 0.16 |
| P9 | 0.83 | 0.37 | 0.32 | 0.76 | 0.44 | 0.33 |

| | Yearling females | | | Older females | | |
|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | $PC1_{s \times a}$ | $PC2_{s \times a}$ | $PC3_{s \times a}$ | $PC1_{s \times a}$ | $PC2_{s \times a}$ | $PC3_{s \times a}$ |
| Variance explained (%) | 78.2 | 10.2 | 4.3 | 76.8 | 9.7 | 4.2 |
| P1 | 0.80 | -0.46 | 0.26 | 0.82 | -0.43 | 0.19 |
| P2 | 0.88 | -0.38 | 0.10 | 0.89 | -0.38 | 0.09 |
| P3 | 0.91 | -0.28 | -0.02 | 0.91 | -0.30 | -0.04 |
| P4 | 0.93 | -0.16 | -0.15 | 0.88 | -0.21 | -0.16 |
| P5 | 0.94 | 0.01 | -0.24 | 0.93 | 0.08 | -0.22 |
| P6 | 0.93 | 0.15 | -0.26 | 0.92 | 0.23 | -0.21 |
| P7 | 0.90 | 0.31 | -0.09 | 0.89 | 0.34 | -0.14 |
| P8 | 0.85 | 0.44 | 0.14 | 0.83 | 0.39 | 0.16 |
| P9 | 0.81 | 0.38 | 0.36 | 0.81 | 0.29 | 0.41 |