Supplementary File:

***Phenotypic divergence in two sibling species of shorebird: common snipe and Wilson's snipe (Charadriiformes: Scolopacidae)***

**Table S2.** Most measurements were highly repeatable. Measurement repeatability and respective 95% CI, estimated as the intraclass correlation coefficient (ICC) of three non-consecutive measurements. The percentage of measurement error can be determined as (1-ICC) × 100. Primaries are numbered from proximal to distal (from the body towing tip) secondaries are numbered from distal to proximal (i.e. toward the body).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Skeletal variables** | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | N |  | ICC | | | | | |  | | |  | |  |  |  | |  | |
| *Cranium* |  | | | | 24 |  | 1.000 | | | | | |  | | |  | |  |  |  | |  | |
| *Premaxilla* |  | | | | 27 |  | 0.984 (0.970 – 0.992) | | | | | |  | | |  | |  |  |  | |  | |
| *Sternum* |  | | | | 28 |  | 1.000 | | | | | |  | | |  | |  |  |  | |  | |
| *Keel Length* |  | | | | 28 |  | 0.941 (0.893 - 0.970) | | | | | |  | | |  | |  |  |  | |  | |
| *Keel Depth* |  | | | | 28 |  | 0.986 (0.975 - 0.993) | | | | | |  | | |  | |  |  |  | |  | |
|  |  |  |  | Left | | | |  |  | |  | Right | | | | | | | | |  | |  |
|  |  | N |  | ICC | | | |  | N | |  | ICC | | | | | | | | |  | |  |
| *Coracoid* |  | 22 |  | 1.000 | | | |  | 26 | |  | 0.999 (0.999 - 1.000) | | | | | | | | |  | |  |
| *Humerus* |  | 25 |  | 1.000 | | | |  | 19 | |  | 1.000 | | | | | | | | |  | |  |
| *Radius* |  | 20 |  | 0.997 (0.994 - 0.999) | | | |  | 20 | |  | 0.999 (0.998 - 1.000) | | | | | | | | |  | |  |
| *Ulna* |  | 22 |  | 1.000 | | | |  | 22 | |  | 1.000 | | | | | | | | |  | |  |
| *Carpometacarpus* |  | 24 |  | 0.998 (0.996 - 0.999) | | | |  | 24 | |  | 0.998 (0.996 - 0.999) | | | | | | | | |  | |  |
| *Phalanx 1* |  | 21 |  | 0.998 (0.996 - 0.999) | | | |  | 19 | |  | 0.998 (0.995 - 0.999) | | | | | | | | |  | |  |
| *Ischial Length* |  | 26 |  | 0.995 (0.990 - 0.997) | | | |  | 26 | |  | 0.998 (0.996 - 0.999) | | | | | | | | |  | |  |
| *Ischial Depth* |  | 26 |  | 0.999 (0.999 - 1.000) | | | |  | 27 | |  | 0.777 (0.629 - 0.882) | | | | | | | | |  | |  |
| *Femur* |  | 26 |  | 0.999 (0.999 - 1.000) | | | |  | 24 | |  | 0.999 (0.998 - 1.000) | | | | | | | | |  | |  |
| *Tibiotarsus* |  | 24 |  | 0.999 (0.999 - 1.000) | | | |  | 23 | |  | 0.998 (0.996 - 0.999 | | | | | | | | |  | |  |
| *Tarsometatarsus* |  | 23 |  | 0.999 (0.998 - 1.000) | | | |  | 25 | |  | 0.999 (0.998 - 0.999) | | | | | | | | |  | |  |
| **Study skins: External body-size-related variables** | | | | | | | |  | | **Study skins: Non-primary plumage variables** | | | | | | | | | | | | | |
|  |  | N |  | ICC | | | |  | | Outermost rectrix | | | | | | | | | | | | | |
| *Bill* |  | 54 |  | 0.994 (0.990 - 0.996) | | | |  | |  | | |  | N |  | | ICC | | | | | | |
| *Tarsus* |  | 53 |  | 0.920 (0.878 - 0.950) | | | |  | | *Vane Length* | | |  | 51 |  | | 0.978 (0.965 - 0.987) | | | | | | |
| *Wing* |  | 39 |  | 0.923 (0.873 - 0.956) | | | |  | | *Vane Width* | | |  | 51 |  | | 0.986 (0.978 - 0.992) | | | | | | |
| *Tail* |  | 53 |  | 0.853 (0.781 - 0.907) | | | |  | |  | | |  |  |  | |  | | | | | | |
| **Study skins: Primary variables** | | | | | | | |  | | White in the Secondaries | | | | | | | | | | | | | |
|  |  | N |  | ICC | | | |  | |  | | |  | N |  | | ICC | | | | | | |
| P10 |  | 30 |  | 0.956 (0.922 - 0.977) | | | |  | | S1 | | |  | 53 |  | | 0.962 (0.941 - 0.977) | | | | | | |
| P9 |  | 30 |  | 0.931 (0.879 - 0.964) | | | |  | | S2 | | |  | 53 |  | | 0.979 (0.968 - 0.987) | | | | | | |
| P8 |  | 30 |  | 0.871 (0.780 - 0.931) | | | |  | | S3 | | |  | 53 |  | | 0.985 (0.977 - 0.991) | | | | | | |
| P7 |  | 30 |  | 0.871 (0.780 - 0.931) | | | |  | | S4 | | |  | 51 |  | | 0.989 (0.983 - 0.993) | | | | | | |
| P6 |  | 30 |  | 0.913 (0.849 - 0.954) | | | |  | | S5 | | |  | 53 |  | | 0.990 (0.984 - 0.994) | | | | | | |
| P5 |  | 30 |  | 0.877 (0.791 - 0.935) | | | |  | | S6 | | |  | 53 |  | | 0.994 (0.990 - 0.996) | | | | | | |
| P4 |  | 29 |  | 0.731 (0.570 - 0.851) | | | |  | | S7 | | |  | 53 |  | | 0.992 (0.987 - 0.995) | | | | | | |
| P3 |  | 29 |  | 0.880 (0.793 - 0.937) | | | |  | | S8 | | |  | 49 |  | | 0.988 (0.981 - 0.993) | | | | | | |
| P2 |  | 29 |  | 0.889 (0.807 - 0.942) | | | |  | | S9 | | |  | 49 |  | | 0.981 (0.970 - 0.989) | | | | | | |
| P1 |  | 27 |  | 0.893 (0.811 - 0.946) | | | |  | | S10 | | |  | 44 |  | | 0.973 (0.956 - 0.984) | | | | | | |

**Table S3.** Little variance explained by the last principal components (PC) of principal components analyses (PCA) on residuals’ variance-covariance matrices. PC scores of analyses of traits measured on skeletons and study skins of Common Snipe *Gallinago gallinago* and Wilson’s Snipe *G. delicata*.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Skeletal variables** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | PC1 | PC2 | PC3 | PC4 | PC5 | PC6 | PC7 | PC8 | PC9 | PC10 | PC11 | PC12 | PC13 | PC14 | PC15 |
| *Premaxilla* | -0.083 | 0.009 | -0.116 | -0.327 | -0.753 | -0.225 | 0.038 | 0.240 | -0.147 | -0.059 | 0.139 | -0.098 | -0.045 | 0.231 | -0.296 |
| *Braincase* | 0.007 | 0.029 | 0.287 | 0.501 | 0.026 | 0.203 | 0.539 | 0.017 | -0.116 | 0.106 | 0.203 | -0.170 | -0.124 | 0.253 | -0.400 |
| *Sternum* | -0.021 | 0.056 | 0.356 | -0.195 | 0.249 | -0.367 | -0.015 | -0.075 | -0.067 | -0.065 | 0.089 | -0.124 | 0.723 | 0.063 | -0.263 |
| *Keel Length* | -0.030 | 0.066 | 0.379 | -0.106 | 0.285 | -0.566 | -0.075 | 0.161 | -0.062 | -0.083 | -0.108 | 0.029 | -0.612 | 0.079 | -0.051 |
| *Keel Depth* | -0.032 | 0.075 | 0.316 | -0.708 | 0.081 | 0.409 | 0.378 | -0.113 | -0.081 | 0.094 | 0.076 | 0.041 | -0.120 | -0.015 | 0.158 |
| *Coracoid* | -0.072 | -0.124 | -0.053 | -0.074 | 0.226 | 0.390 | -0.494 | -0.017 | -0.537 | -0.279 | 0.019 | -0.192 | -0.103 | 0.194 | -0.267 |
| *Humerus* | -0.049 | -0.098 | -0.153 | -0.130 | 0.137 | 0.069 | 0.012 | -0.015 | 0.254 | -0.111 | 0.170 | 0.515 | -0.092 | -0.349 | -0.650 |
| *Radius* | -0.028 | -0.209 | -0.170 | -0.111 | 0.204 | 0.026 | -0.058 | 0.129 | 0.176 | 0.408 | -0.152 | 0.321 | 0.071 | 0.721 | -0.046 |
| *Carpometacarpus* | -0.048 | -0.273 | -0.112 | -0.131 | 0.167 | -0.018 | -0.121 | 0.272 | 0.142 | 0.551 | 0.242 | -0.540 | -0.078 | -0.288 | -0.115 |
| *Phalanx 1* | -0.131 | -0.829 | 0.400 | 0.083 | -0.184 | 0.050 | 0.007 | 0.094 | 0.054 | -0.184 | -0.079 | 0.108 | 0.058 | -0.075 | 0.139 |
| *Ischial Length* | -0.098 | -0.132 | 0.061 | 0.004 | -0.176 | -0.153 | -0.175 | -0.870 | 0.021 | 0.270 | 0.107 | -0.050 | -0.165 | 0.067 | -0.088 |
| *Ischial Depth* | -0.963 | 0.202 | 0.031 | 0.086 | 0.008 | 0.057 | -0.023 | 0.061 | 0.067 | 0.032 | -0.068 | 0.013 | 0.036 | -0.030 | 0.048 |
| *Femur* | -0.077 | -0.107 | -0.232 | -0.085 | 0.185 | -0.056 | 0.113 | -0.095 | 0.427 | -0.514 | 0.478 | -0.262 | -0.082 | 0.295 | 0.156 |
| *Tibiotarsus* | -0.039 | -0.150 | -0.273 | -0.134 | 0.083 | -0.048 | 0.332 | -0.159 | 0.095 | -0.171 | -0.714 | -0.358 | -0.021 | -0.028 | -0.248 |
| *Tarsometatarsus* | -0.133 | -0.249 | -0.417 | -0.005 | 0.193 | -0.305 | 0.379 | -0.052 | -0.588 | 0.055 | 0.206 | 0.189 | 0.031 | -0.100 | 0.177 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eigenvalue | 2.7E-08 | 4.0E-09 | 7.2E-10 | 5.9E-10 | 3.9E-10 | 1.9E-10 | 1.3E-10 | 1.2E-10 | 6.5E-11 | 2.5E-11 | 2.0E-11 | 9.2E-12 | 6.7E-12 | 2.9E-12 | 3.8E-42 |
| % variance | 81.309 | 11.910 | 2.144 | 1.775 | 1.152 | 0.571 | 0.398 | 0.360 | 0.195 | 0.076 | 0.059 | 0.027 | 0.020 | 0.009 | 0.000 |
| **External variables** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | PC1 | PC2 | PC3 | PC4 |  |  |  |  |  |  |  |  |  |  |  |
| *Bill* | -0.447 | 0.893 | -0.031 | -0.050 |  |  |  |  |  |  |  |  |  |  |  |
| *Tarsus* | -0.569 | -0.317 | -0.751 | -0.106 |  |  |  |  |  |  |  |  |  |  |  |
| *Tail* | 0.689 | 0.319 | -0.648 | -0.062 |  |  |  |  |  |  |  |  |  |  |  |
| *Wing* | 0.040 | -0.031 | 0.123 | -0.991 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eigenvalue | 8.2E-09 | 2.0E-09 | 1.2E-09 | 6.0E-42 |  |  |  |  |  |  |  |  |  |  |  |
| % variance | 72.260 | 17.270 | 10.470 | 0.000 |  |  |  |  |  |  |  |  |  |  |  |
| **Primary lengths** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | PC1 | PC2 | PC3 | PC4 | PC5 | PC6 | PC7 | PC8 | PC9 | PC10 |  |  |  |  |  |
| *P10* | -0.067 | -0.071 | 0.077 | -0.457 | 0.263 | 0.317 | -0.533 | -0.284 | 0.462 | -0.169 |  |  |  |  |  |
| *P9* | -0.088 | -0.100 | 0.116 | -0.164 | 0.083 | -0.068 | -0.138 | -0.038 | -0.650 | -0.699 |  |  |  |  |  |
| *P8* | -0.117 | -0.142 | 0.231 | 0.117 | -0.138 | -0.395 | 0.327 | 0.010 | 0.576 | -0.534 |  |  |  |  |  |
| *P7* | -0.134 | -0.268 | 0.369 | 0.378 | -0.112 | -0.325 | -0.355 | -0.554 | -0.118 | 0.256 |  |  |  |  |  |
| *P6* | -0.194 | -0.332 | 0.303 | 0.379 | 0.081 | 0.295 | -0.300 | 0.656 | 0.051 | -0.009 |  |  |  |  |  |
| *P5* | -0.275 | -0.354 | 0.220 | -0.052 | 0.346 | 0.409 | 0.604 | -0.275 | -0.090 | 0.114 |  |  |  |  |  |
| *P4* | -0.371 | -0.310 | 0.050 | -0.623 | -0.150 | -0.409 | -0.002 | 0.281 | -0.071 | 0.318 |  |  |  |  |  |
| *P3* | -0.427 | -0.148 | -0.408 | 0.082 | -0.670 | 0.362 | -0.033 | -0.158 | 0.016 | -0.126 |  |  |  |  |  |
| *P2* | -0.490 | 0.034 | -0.559 | 0.258 | 0.540 | -0.276 | -0.091 | -0.007 | 0.045 | -0.029 |  |  |  |  |  |
| *P1* | -0.531 | 0.734 | 0.411 | -0.017 | -0.051 | 0.070 | 0.016 | 0.019 | -0.025 | 0.040 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eigenvalue | 5.6E-10 | 2.5E-11 | 4.1E-12 | 1.2E-12 | 7.4E-13 | 4.5E-13 | 1.8E-13 | 1.1E-13 | 2.9E-14 | 7.8E-43 |  |  |  |  |  |
| % variance | 94.610 | 4.255 | 0.688 | 0.195 | 0.125 | 0.076 | 0.030 | 0.019 | 0.005 | 0.000 |  |  |  |  |  |
| **Plumage variables** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | PC1 | PC2 | PC3 | PC4 | PC5 |  |  |  |  |  |  |  |  |  |  |
| *Outer rectrix vane length* | -0.001 | 0.008 | -0.036 | -0.492 | -0.870 |  |  |  |  |  |  |  |  |  |  |
| *Outer rectrix vane width* | -0.009 | 0.016 | 0.984 | 0.133 | -0.116 |  |  |  |  |  |  |  |  |  |  |
| *White in the secondaries* | -0.987 | -0.160 | -0.006 | -0.001 | 0.001 |  |  |  |  |  |  |  |  |  |  |
| *White in the axillaries* | 0.160 | -0.987 | 0.016 | 0.005 | -0.013 |  |  |  |  |  |  |  |  |  |  |
| *Number of rectrices* | -0.002 | 0.008 | -0.173 | 0.860 | -0.479 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eigenvalue | 3.7E-02 | 2.8E-04 | 3.2E-07 | 2.3E-08 | 3.7E-39 |  |  |  |  |  |  |  |  |  |  |
| % variance | 99.260 | 0.742 | 0.001 | 0.000 | 0.000 |  |  |  |  |  |  |  |  |  |  |