**MODELS TRHEE TREATMENTS BIRD LISTS – TAXONOMIC UNCERTAINTY METRIC**

> model ALL LISTS

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = aves)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-1.4655 -0.8309 0.3454 0.8337 1.3768

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.645665473 0.029676895 -55.453 < 0.0000000000000002 \*\*\*

Mass -0.000014013 0.000005457 -2.568 0.0102 \*

Range -0.006225915 0.001462197 -4.258 0.00002063 \*\*\*

ED -0.009421960 0.002199558 -4.284 0.00001839 \*\*\*

Forest 0.039526274 0.026693971 1.481 0.1387

Water 0.086250026 0.042672617 2.021 0.0433 \*

IUCNDD 0.347695412 0.185721190 1.872 0.0612 .

IUCNTR 0.163742164 0.034073151 4.806 0.00000154 \*\*\*

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.81462 0.02857 63.5 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 1.614e+04 on 9 Df

Pseudo R-squared: 0.01144

Number of iterations: 31 (BFGS) + 1 (Fisher scoring)

vif model ALL LISTS

GVIF Df GVIF^(1/(2\*Df))

Mass 1.044369 1 1.021944

Range 1.131759 1 1.063842

ED 1.055318 1 1.027287

Habitat 1.157186 2 1.037172

IUCN 1.017284 2 1.004293

> model MOST USED LISTS

Call:

betareg(formula = TaxUnc\_mostused ~ Mass + Range + ED + Habitat + IUCN, data = aves)

Deviance residuals:

Min 1Q Median 3Q Max

-2.2659 -2.2627 -2.2616 -2.2611 4.0707

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -3.2342807560 0.0304034828 -106.379 <0.0000000000000002 \*\*\*

Mass -0.0000006776 0.0000052553 -0.129 0.897

Range -0.0015401703 0.0013611611 -1.132 0.258

ED -0.0022818387 0.0020235739 -1.128 0.259

Forest 0.0217818637 0.0244062081 0.892 0.372

Water -0.0252294380 0.0390112319 -0.647 0.518

IUCNDD 0.1944855793 0.1668558651 1.166 0.244

IUCNTR 0.0215319928 0.0309581649 0.696 0.487

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 6.0709 0.1308 46.42 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 3.646e+04 on 9 Df

Pseudo R-squared: 0.005451

Number of iterations: 39 (BFGS) + 2 (Fisher scoring)

vif model MOST USED LISTS

GVIF Df GVIF^(1/(2\*Df))

Mass 1.044293 1 1.021907

Range 1.129567 1 1.062811

ED 1.053400 1 1.026353

Habitat 1.155426 2 1.036777

IUCN 1.017282 2 1.004293

> model OTHER LISTS

Call:

betareg(formula = TaxUnc-otherlists~ Mass + Range + ED + Habitat + IUCN, data = aves)

Deviance residuals:

Min 1Q Median 3Q Max

-2.7114 -2.6478 -2.6313 1.0558 1.9942

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.519715012 0.031759285 -47.851 < 0.0000000000000002 \*\*\*

Mass -0.000008795 0.000005658 -1.554 0.120077

Range -0.008289692 0.001659144 -4.996 0.000000584 \*\*\*

ED -0.008667776 0.002336288 -3.710 0.000207 \*\*\*

Habitat2 0.033016188 0.028833794 1.145 0.252188

Habitat3 0.027870786 0.046864872 0.595 0.552041

IUCN1 0.393063705 0.201042125 1.955 0.050568 .

IUCN3 0.192567105 0.037255783 5.169 0.000000236 \*\*\*

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.43577 0.02333 61.53 <0.0000000000000002 \*\*\*

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 1.576e+04 on 9 Df

Pseudo R-squared: 0.01546

Number of iterations: 31 (BFGS) + 2 (Fisher scoring) Pseudo R-squared: 0.01162

Number of iterations: 32 (BFGS) + 2 (Fisher scoring)

vif OTHER LISTS

GVIF Df GVIF^(1/(2\*Df))

Mass 1.046233 1 1.022855

Range 1.129243 1 1.062659

ED 1.053822 1 1.026559

Habitat 1.150334 2 1.035633

IUCN 1.019023 2 1.004722

**MODELS BIRD ORDERS – TAXONOMIC UNCERTAINTY METRIC**

> model Accipitriformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Acc)

Deviance residuals:

Min 1Q Median 3Q Max

-2.6116 -2.5325 -1.9903 0.9576 1.6914

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.60902879 0.22254326 -7.230 0.000000000000482 \*\*\*

Mass -0.00005567 0.00004662 -1.194 0.2324

Range -0.02032518 0.01066737 -1.905 0.0567 .

ED -0.03258499 0.01709443 -1.906 0.0566 .

Forest 0.35784307 0.17616123 2.031 0.0422 \*

Water -0.05561759 0.30989012 -0.179 0.8576

IUCNDD 1.22421388 1.10526991 1.108 0.2680

IUCNTR 0.43949551 0.18230894 2.411 0.0159 \*

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.0272 0.2026 10.01 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 417 on 9 Df

Pseudo R-squared: 0.1463

Number of iterations: 33 (BFGS) + 2 (Fisher scoring)

> model Caprimulgiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Cap)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-2.7760 -0.9220 0.4356 0.8229 1.3296

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.700003 0.122943 -13.828 <0.0000000000000002 \*\*\*

Mass 0.001163 0.001295 0.898 0.3690

Range -0.030814 0.016214 -1.901 0.0574 .

ED -0.014820 0.009906 -1.496 0.1346

Forest 0.074498 0.111204 0.670 0.5029

Water -0.038080 0.767745 -0.050 0.9604

IUCNDD 0.900866 0.395044 2.280 0.0226 \*

IUCNTR 0.230871 0.173451 1.331 0.1832

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.1143 0.1483 14.26 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 813.9 on 9 Df

Pseudo R-squared: 0.03672

Number of iterations: 20 (BFGS) + 2 (Fisher scoring)

> model Charadriiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Cha)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-1.9031 -1.0614 0.5027 0.7812 1.8026

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.1260613 0.1879582 -5.991 0.00000000209 \*\*\*

Mass -0.0010304 0.0002285 -4.510 0.00000649316 \*\*\*

Range -0.0054706 0.0096757 -0.565 0.5718

ED -0.0182430 0.0097404 -1.873 0.0611 .

Forest -0.0043512 0.3016766 -0.014 0.9885

Water 0.1311401 0.1447219 0.906 0.3649

IUCNDD -0.1090438 0.7802578 -0.140 0.8889

IUCNTR -0.0111772 0.1844649 -0.061 0.9517

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.9875 0.1589 12.51 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 403.2 on 9 Df

Pseudo R-squared: 0.06233

Number of iterations: 19 (BFGS) + 2 (Fisher scoring)

> model Coraciiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Cor)

Deviance residuals:

Min 1Q Median 3Q Max

-2.5692 -2.2588 0.3958 0.8105 2.0408

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.010651 0.268519 -0.040 0.9684

Mass -0.002568 0.001299 -1.978 0.0480 \*

Range -0.035959 0.019441 -1.850 0.0644 .

ED -0.081772 0.016785 -4.872 0.00000111 \*\*\*

Forest -0.533294 0.246075 -2.167 0.0302 \*

Water -0.743237 0.290356 -2.560 0.0105 \*

IUCNDD -1.485245 1.057174 -1.405 0.1600

IUCNTR 0.208983 0.305696 0.684 0.4942

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.3358 0.2543 9.184 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 206.2 on 9 Df

Pseudo R-squared: 0.2238

Number of iterations: 20 (BFGS) + 4 (Fisher scoring)

> model Cuculiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Cuc)

Deviance residuals:

Min 1Q Median 3Q Max

-2.5871 -2.5432 -2.4202 1.0403 1.6911

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.7717462 0.3914965 -4.526 0.00000602 \*\*\*

Mass -0.0016708 0.0007215 -2.316 0.0206 \*

Range -0.0453761 0.0185707 -2.443 0.0145 \*

ED 0.0043986 0.0163130 0.270 0.7874

Forest 0.2446941 0.2621745 0.933 0.3507

Water -0.0730827 0.5924087 -0.123 0.9018

IUCNTR -0.0353376 0.3432033 -0.103 0.9180

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.2003 0.3175 6.931 0.00000000000418 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 275.8 on 8 Df

Pseudo R-squared: 0.1394

Number of iterations: 35 (BFGS) + 1 (Fisher scoring)

> model Galiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Gal)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-1.2446 -0.8406 0.0118 0.8118 1.2639

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.36520556 0.17891311 -7.631 0.0000000000000234 \*\*\*

Mass -0.00011023 0.00007538 -1.462 0.14362

Range -0.02304414 0.02269675 -1.015 0.30996

ED -0.04705887 0.01766048 -2.665 0.00771 \*\*

Forest -0.05826311 0.14904647 -0.391 0.69587

IUCNTR -0.05530873 0.15752887 -0.351 0.72551

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.1108 0.2013 10.49 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 515.9 on 7 Df

Pseudo R-squared: 0.05725

Number of iterations: 26 (BFGS) + 1 (Fisher scoring)

> model Musophagiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Mus)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-3.0445 -0.3143 -0.0648 0.9719 1.3277

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -4.285302 1.546809 -2.770 0.005599 \*\*

Mass -0.006953 0.002006 -3.466 0.000528 \*\*\*

Range -0.112058 0.232142 -0.483 0.629300

ED 0.262013 0.060859 4.305 0.0000167 \*\*\*

Forest -1.282734 1.037309 -1.237 0.216236

IUCNTR 0.980201 0.865416 1.133 0.257367

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 5.903 2.287 2.582 0.00984 \*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 26.85 on 7 Df

Pseudo R-squared: 0.5843

Number of iterations: 29 (BFGS) + 3 (Fisher scoring)

> model Passeriformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Pas)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-1.2706 -0.8661 0.3815 0.8279 1.3752

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.5852913 0.0403513 -39.287 < 0.0000000000000002 \*\*\*

Mass -0.0013623 0.0002474 -5.506 0.00000003676302 \*\*\*

Range -0.0301774 0.0044066 -6.848 0.00000000000747 \*\*\*

ED -0.0026215 0.0041034 -0.639 0.52291

Forest 0.0361061 0.0327254 1.103 0.26990

Water 0.0615010 0.0837602 0.734 0.46280

IUCNDD 0.1450845 0.2694327 0.538 0.59024

IUCNTR 0.1463908 0.0499920 2.928 0.00341 \*\*

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.79277 0.03612 49.64 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 9693 on 9 Df

Pseudo R-squared: 0.02582

Number of iterations: 32 (BFGS) + 2 (Fisher scoring)

> model Piciformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Pic)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-1.7113 -0.9015 0.3010 0.7923 Inf

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.888479 0.225071 -3.948 0.000078952 \*\*\*

Mass -0.001549 0.000633 -2.446 0.0144 \*

Range -0.013287 0.016994 -0.782 0.4343

ED -0.090556 0.017766 -5.097 0.000000345 \*\*\*

Forest -0.035298 0.197927 -0.178 0.8585

Water 0.885364 1.148836 0.771 0.4409

IUCNDD 1.951657 1.140283 1.712 0.0870 .

IUCNTR -0.130983 0.277065 -0.473 0.6364

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.7765 0.1346 13.2 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 648.6 on 9 Df

Pseudo R-squared: 0.1083

Number of iterations: 30 (BFGS) + 2 (Fisher scoring)

> model Procellariiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Pro)

Standardized weighted residuals 2:

Min 1Q Median 3Q Max

-2.2569 -0.8947 0.4036 0.8345 1.2237

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.91753083 0.86163825 -1.065 0.287

Mass 0.00001512 0.00005945 0.254 0.799

Range -0.00271467 0.00274338 -0.990 0.322

ED -0.00145844 0.01757386 -0.083 0.934

Water -0.53928394 0.81922777 -0.658 0.510

IUCNDD -0.18848430 0.80262034 -0.235 0.814

IUCNTR 0.54653018 0.21742964 2.514 0.012 \*

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 1.7672 0.2131 8.291 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 144.5 on 8 Df

Pseudo R-squared: 0.08122

Number of iterations: 18 (BFGS) + 3 (Fisher scoring)

> model Strigiformes

Call:

betareg(formula = TaxUnc\_all ~ Mass + Range + ED + Habitat + IUCN, data = Str)

Deviance residuals:

Min 1Q Median 3Q Max

-2.5617 -2.2123 -0.3300 0.9152 1.8067

Coefficients (mean model with logit link):

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.9549922 0.3450503 -2.768 0.00565 \*\*

Mass -0.0003504 0.0002134 -1.642 0.10063

Range -0.0283339 0.0115869 -2.445 0.01447 \*

ED -0.0543933 0.0251034 -2.167 0.03025 \*

Forest -0.0749737 0.2563730 -0.292 0.76995

Water 1.0729395 0.5679972 1.889 0.05889 .

IUCNDD -0.8746716 1.0544513 -0.830 0.40682

IUCNTR 0.2607866 0.2067417 1.261 0.20716

Phi coefficients (precision model with identity link):

Estimate Std. Error z value Pr(>|z|)

(phi) 2.3947 0.2468 9.704 <0.0000000000000002 \*\*\*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Type of estimator: ML (maximum likelihood)

Log-likelihood: 243.9 on 9 Df

Pseudo R-squared: 0.1535

Number of iterations: 32 (BFGS) + 1 (Fisher scoring)