**Appendix**

**Mobbing response to different tracks**

To describe mobbing behaviour during flocking, we conducted experiments with a stuffed mount of the Austral pygmy Owl (*Glaucidium nana*), and emission of two different acoustic stimuli: playbacks of the owl (i.e., owl-trials, four different tracks) and playbacks of the Rayadito (i.e., rayadito-trials, three different tracks). We did not analyze the mobbing response to the different tracks in rayadito-trials because, in only one of the 17 trials, rayaditos did not mob the predator; therefore, there was no variation to test the performance of the three tracks and to calculate the confidence intervals. We assessed whether the probability of observing a mobbing display by rayaditos depended on the identity of each track in owl-trials, using generalized linear models in R, with a binomial distribution of errors (presence/absence of mobbing) with a logit link function (Bolker, 2008). We did not find convincing statistical support for a consistent difference in the probability of response of rayaditos when confronted the four different tracks (Table A1).

**Table A1.**

Raw parameter estimates and their lower (LCL) and upper (UCL) 95% confidence levels estimated in a generalized linear model for the probability of mobbing response of Thorn-tailed Rayadito when confronted with four different tracks of the owl vocalization.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Estimate | 95% Confidence Interval | | *z*-value | *p*-value |
| LCL | UCL |
| Owl-trials | Intercept | 1.38 | -0.52 | 4.36 | 1.24 | 0.215 |
| Track 2\* | -9.63e-16 | -3.46 | 3.46 | 0.00 | 1.000 |
| Track 3\* | -9.81e01 | -4.33 | 1.78 | -0.68 | 0.497 |
| Track 4\* | -1.39 | -4.67 | 1.16 | -1.00 | 0.317 |

\* Parameter estimates are calculated relative to the track 1.

**Table A2.**

Bird species and the percentage (*N* = 30) of their participation during the mobbing of Thorn-tailed Rayadito’s winter flocks in response to a stuffed decoy of the Austral pygmy Owl.

|  |  |  |
| --- | --- | --- |
| Species | Common name | Participation in rayadito mobbing (%) |
| *Aphrastura spinicauda* | Thorn-tailed Rayadito | 100 |
| *Pygarrhichas albogularis* | White-throated Treerunner | 33.3 |
| *Silviorthorrhynchus desmursii* | Des Murs’s Wiretail | 13.3 |
| *Leptasthenura aegithaloides* | Plain-mantled Tit-Spinetail | 6.7 |
| *Dryobates lignarius* | Striped Woodpecker | 13.3 |
| *Sephanoides sephaniodes* | Green-backed Firecrown | 13.3 |
| *Anairetes parulus* | Tufted Tit-Tyrant | 36.7 |
| *Pyrope pyrope* | Fire-eyed Diucon | 3.3 |
| *Colorhamphus parvirostris* | Patagonian Tyrant | 3.3 |
| *Scelorchilus rubecula* | Chucao Tapaculo | 6.7 |
| *Pteroptochos tarnii* | Black-throated Huet-huet | 3.3 |
| *Phrygilus patagonicus* | Patagonian Sierra Finch | 20.0 |
| *Spinus barbatus* | Black-chinned Siskin | 6.7 |
| *Troglodytes aedon* | House Wren | 3.3 |

**Table A3.**

Raw parameter estimates and their lower (LCL) and upper (UCL) 95% confidence levels estimated using linear models for the minimum distance between the stuffed owl and the (a) number of mobbers and (b) number of species during the mobbing of Thorn-tailed Rayadito’s winter flocks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Estimate | 95% Confidence Intervals | | *t*-value | *p*-value |
| LCL | UCL |
| Number of mobbers | Intercept | -1.80 | -6.81 | 3.21 | -0.74 | 0.467 |
|  | Number of individuals | -0.08 | -0.19 | 0.03 | -1.50 | 0.145 |
|  | Minimum temperature | 0.0008 | -0.11 | 0.12 | 0.01 | 0.989 |
|  | Time | 0.17 | -0.21 | 0.55 | 0.92 | 0.368 |
| Number of species | Intercept | -0.45 | -5.15 | 4.25 | -0.20 | 0.846 |
|  | Number of species | -0.43 | -0.77 | -0.09 | -2.59 | 0.016 |
|  | Minimum temperature | -0.02 | -0.12 | 0.08 | -0.40 | 0.696 |
|  | Time | 0.09 | -0.27 | 0.45 | 0.50 | 0.622 |

**Table A4.**

Pairwise genetic relatedness estimates (*r*), estimated with the triadic likelihood estimator) of members of 16 winter flocks of Thorn-tailed Rayadito.

|  |  |  |  |
| --- | --- | --- | --- |
| Individual 1 | Individual 2 | Flock | trioML |
| AA\_BA01 | AA\_BA02 | 1 | 0.000 |
| *AA\_BA01* | *AA\_BA03* | *1* | *0.609* |
| AA\_BA01 | AA\_BA04 | 1 | 0.076 |
| AA\_BA02 | AA\_BA03 | 1 | 0.000 |
| AA\_BA02 | AA\_BA04 | 1 | 0.000 |
| AA\_BA03 | AA\_BA04 | 1 | 0.000 |
| BB\_BA05 | BB\_BA06 | 2 | 0.000 |
| *BB\_BA05* | *BB\_BA07* | *2* | *0.162* |
| BB\_BA05 | BB\_BA08 | 2 | 0.055 |
| BB\_BA06 | BB\_BA07 | 2 | 0.000 |
| BB\_BA06 | BB\_BA08 | 2 | 0.001 |
| *BB\_BA07* | *BB\_BA08* | *2* | *0.322* |
| CC\_BA09 | CC\_BA10 | 3 | 0.000 |
| DD\_BA11 | DD\_BA12 | 4 | 0.001 |
| *DD\_BA11* | *DD\_BA13* | *4* | *0.163* |
| DD\_BA11 | DD\_BA14 | 4 | 0.000 |
| DD\_BA11 | DD\_BA15 | 4 | 0.000 |
| DD\_BA12 | DD\_BA13 | 4 | 0.000 |
| *DD\_BA12* | *DD\_BA14* | *4* | *0.126* |
| DD\_BA12 | DD\_BA15 | 4 | 0.000 |
| DD\_BA13 | DD\_BA14 | 4 | 0.075 |
| DD\_BA13 | DD\_BA15 | 4 | 0.010 |
| DD\_BA14 | DD\_BA15 | 4 | 0.000 |
| EE\_BA16 | EE\_BA17 | 5 | 0.000 |
| EE\_BA16 | EE\_BA18 | 5 | 0.000 |
| EE\_BA16 | EE\_BA19 | 5 | 0.000 |
| EE\_BA16 | EE\_BA20 | 5 | 0.108 |
| EE\_BA17 | EE\_BA18 | 5 | 0.000 |
| EE\_BA17 | EE\_BA19 | 5 | 0.000 |
| EE\_BA17 | EE\_BA20 | 5 | 0.098 |
| EE\_BA18 | EE\_BA19 | 5 | 0.000 |
| EE\_BA18 | EE\_BA20 | 5 | 0.000 |
| EE\_BA19 | EE\_BA20 | 5 | 0.007 |
| FF\_BA21 | FF\_BA22 | 6 | 0.000 |
| *FF\_BA21* | *FF\_BA23* | *6* | *0.170* |
| FF\_BA22 | FF\_BA23 | 6 | 0.000 |
| *GG\_BA24* | *GG\_BA25* | *7* | *0.134* |
| GG\_BA24 | GG\_BA26 | 7 | 0.000 |
| GG\_BA25 | GG\_BA26 | 7 | 0.091 |
| *HH\_BA27* | *HH\_BA28* | *8* | *0.143* |
| *HH\_BA27* | *HH\_BA29* | *8* | *0.212* |
| HH\_BA28 | HH\_BA29 | 8 | 0.030 |
| II\_BA30 | II\_BA31 | 9 | 0.000 |
| II\_BA30 | II\_BA32 | 9 | 0.000 |
| II\_BA30 | II\_BA33 | 9 | 0.061 |
| II\_BA31 | II\_BA32 | 9 | 0.093 |
| II\_BA31 | II\_BA33 | 9 | 0.000 |
| *II\_BA32* | *II\_BA33* | *9* | *0.128* |
| JJ\_BA34 | JJ\_BA35 | 10 | 0.029 |
| *JJ\_BA34* | *JJ\_BA36* | *10* | *0.196* |
| JJ\_BA34 | JJ\_BA37 | 10 | 0.010 |
| JJ\_BA34 | JJ\_BA38 | 10 | 0.000 |
| JJ\_BA35 | JJ\_BA36 | 10 | 0.083 |
| JJ\_BA35 | JJ\_BA37 | 10 | 0.046 |
| JJ\_BA35 | JJ\_BA38 | 10 | 0.080 |
| JJ\_BA36 | JJ\_BA37 | 10 | 0.023 |
| JJ\_BA36 | JJ\_BA38 | 10 | 0.075 |
| JJ\_BA37 | JJ\_BA38 | 10 | 0.000 |
| KK\_BA39 | KK\_BA40 | 11 | 0.000 |
| *KK\_BA39* | *KK\_BA41* | *11* | *0.143* |
| KK\_BA40 | KK\_BA41 | 11 | 0.057 |
| LL\_BA42 | LL\_BA43 | 12 | 0.000 |
| LL\_BA42 | LL\_BA44 | 12 | 0.000 |
| LL\_BA42 | LL\_BA45 | 12 | 0.000 |
| LL\_BA42 | LL\_BA46 | 12 | 0.000 |
| LL\_BA42 | LL\_BA47 | 12 | 0.042 |
| LL\_BA43 | LL\_BA44 | 12 | 0.000 |
| LL\_BA43 | LL\_BA45 | 12 | 0.062 |
| *LL\_BA43* | *LL\_BA46* | *12* | *0.304* |
| LL\_BA43 | LL\_BA47 | 12 | 0.023 |
| LL\_BA44 | LL\_BA45 | 12 | 0.000 |
| LL\_BA44 | LL\_BA46 | 12 | 0.000 |
| LL\_BA44 | LL\_BA47 | 12 | 0.061 |
| LL\_BA45 | LL\_BA46 | 12 | 0.102 |
| LL\_BA45 | LL\_BA47 | 12 | 0.010 |
| LL\_BA46 | LL\_BA47 | 12 | 0.000 |
| MM\_BA48 | MM\_BA49 | 13 | 0.071 |
| *MM\_BA48* | *MM\_BA50* | *13* | *0.176* |
| *MM\_BA49* | *MM\_BA50* | *13* | *0.156* |
| *NN\_BA51* | *NN\_BA52* | *14* | *0.276* |
| NN\_BA51 | NN\_BA53 | 14 | 0.068 |
| NN\_BA51 | NN\_BA54 | 14 | 0.037 |
| *NN\_BA51* | *NN\_BA55* | *14* | *0.284* |
| NN\_BA52 | NN\_BA53 | 14 | 0.004 |
| NN\_BA52 | NN\_BA54 | 14 | 0.038 |
| NN\_BA52 | NN\_BA55 | 14 | 0.070 |
| NN\_BA53 | NN\_BA54 | 14 | 0.000 |
| *NN\_BA53* | *NN\_BA55* | *14* | *0.138* |
| NN\_BA54 | NN\_BA55 | 14 | 0.042 |
| OO\_BA56 | OO\_BA57 | 15 | 0.065 |
| *OO\_BA56* | *OO\_BA58* | *15* | *0.237* |
| OO\_BA57 | OO\_BA58 | 15 | 0.000 |
| PP\_BA59 | PP\_BA60 | 16 | 0.000 |
| PP\_BA59 | PP\_BA61 | 16 | 0.036 |
| PP\_BA60 | PP\_BA61 | 16 | 0.000 |

All relatives (*r* ≥ 0.125) are noted in italics.



**Figure A1.**

Variation in the minimum distance between the mobbers and the stuffed owl as a function of the number of (a) individuals and (b) species participating in the mobbing of Thorn-tailed rayadito’s winter flocks. Data points represent a single observation for each trial. Shown are predicted values with 95% confidence intervals (solid line and shaded area) obtained from a general linear model.



**Figure A2.**

Frequency distribution of the mean value for the genetic relatedness coefficient (*r*, estimated with the triadic likelihood estimator) in winter flocks of Thorn-tailed rayadito (*N* = 16 flocks). The *r* values range from 0 to 1 (negative values can be interpreted as zero values).