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Appendix 1

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1. Lizard capture statistics

Lizard capture and recaptures vary by year. While lizard numbers appear variable, some of that variation stems from restricted sampling effort in 2008, 2013, and 2014. The other years display more similar total lizard numbers (Table A1). 53 percent of lizards were captured in more than one year (Table A2).

Table A1. Lizard capture statistics and behaviour data availability by year. OT and BB refer to observer threat and banana boldness behaviour scores, respectively.

	2008	2009	2010	2011	2013	2014	2015	2016	2017
Number lizards captured within a year	48	61	61	77	44	49	76	76	73
Number of lizards from the previous year	NA	34	43	52	22	35	28	39	52
Number of lizards from any previous year	NA	34	43	56	22	38	39	52	66
Cumulative number of unique lizards captured	48	75	93	114	136	147	184	208	215
OT and BB data available	No	No	Yes	No	No	Yes	Yes	Yes	Yes

Table A2. Number of lizards captured in given number of years

	One	Two	Three	Four	Five	Six	Seven	Eight	Nine
<i>Number of Lizards in XX years</i>	100	35	25	17	11	7	9	7	4
<i>Numbers of Lizards in XX or more years</i>	215	115	80	55	38	27	20	11	4

2. Tick variables and count statistics

In Table A3, we present additional tick variables that we analysed.

Table A3. Additional outcome variables used in analyses.

	Description
1) Both species larvae – subset	For all years, data was restricted such that individual lizard tick counts were separated by at least 28 days. Using this “subset” data, we calculated the sum of larvae from both tick species at each count.
2) Both species nymphs – subset	For all years, data was restricted such that individual lizard tick counts were separated by at least 28 days. Using this “subset” data, we calculated the sum of nymphs from both tick species at each count.
3) <i>B. hydrosauri</i> adult female – removal	In 2010, 2011, and 2017, <i>B. hydrosauri</i> females were removed after each tick count. Thus, there was no need to restrict the data to avoid double-counting and we used all counts for this tick stage for these years. Tick count data from other years were excluded.
4) <i>A. limbatum</i> adult female – removal	In 2010, <i>A. limbatum</i> females were removed after each tick count. Thus, there was no need to restrict the data to avoid double-counting and we used all counts for this tick stage for this year. Tick count data from other years were excluded.
5) <i>B. hydrosauri</i> adult male – removal	As for <i>B. hydrosauri</i> females, males were removed at each tick count in 2010, 2011, and 2017. We therefore used all counts for these three years; counts from other years were excluded.
6) <i>A. limbatum</i> adult male – removal	As for <i>A. limbatum</i> females, in 2010 males were removed after each tick count. We therefore used all counts for this tick stage for this year; counts from other years were excluded.

In Table A4, we present abundance and prevalence data for the five tick variables analysed in the main text.

Table A4. Abundance and prevalence data for tick counts. Abundance refers to the number of ticks per lizard, including counts with zero ticks (averaged across all lizards). Prevalence refers to the proportion of lizards, within a year, that ever had ticks (averaged across years). We report mean \pm 1 SD (range).

	Abundance	Prevalence
Both species larvae + nymph – 28 days subset	2.6 \pm 6.5 (0 – 84)	0.66 \pm 0.12 (0.45 – 0.86)
<i>B. hydrosauri</i> adult female – 28 days subset-removal	0.15 \pm 0.49 (0 – 5)	0.32 \pm 0.08 (0.23 – 0.43)
<i>A. limbatum</i> adult female – 28 days subset-removal	0.17 \pm 0.49 (0 – 4)	0.32 \pm 0.16 (0.10 – 0.58)
<i>B. hydrosauri</i> adult male – averaged within year	0.90 \pm 1.1 (0 – 6.5)	0.74 \pm 0.08 (0.62 – 0.91)
<i>A. limbatum</i> adult male – averaged within year	0.62 \pm 0.91 (0 – 6.2)	0.61 \pm 0.15 (0.40 – 0.87)

3. Repeatability

3.1 Repeatability model formulae

In Table A5, we provide the formulae of models used to derive repeatability estimates. Note that, with a few exceptions, these models did not contain fixed effects.

Table A5. Formulae used in Poisson or Gaussian models (indicated by ‘Outcome column’) to calculate repeatability, shown for each tick variable and overall vs. among-year repeatability. Note that for the Poisson outcomes, we also calculated binomial repeatability, whose corresponding models differed from Poisson only by excluding the observation level random effect (olre). Model formulae follow standard R syntax (i.e. 1|term indicates a random effect by ‘term’, and 1 + indicates a grand mean intercept).

	Overall	Among	Outcome
Both species larvae – 28 days subset	1 + 1 Lizard + 1 year + 1 olre	1 + 1 Lizard + 1 year + 1 olre	Poisson
Both species nymph – 28 days subset	1 + 1 Lizard + 1 year + 1 olre	1 + 1 Lizard + 1 year + 1 olre	Poisson
Both species larvae + nymph – 28 days subset	1 + 1 Lizard + 1 year + 1 olre	1 + 1 Lizard + 1 year + 1 olre	Poisson
<i>B. hydrosauri</i> adult female – 2010, 2011, & 2017 removal*	1 + 1 Lizard + 1 olre	1 + 1 Lizard + year + 1 olre	Poisson
<i>B. hydrosauri</i> adult female – 28 days subset-removal	1 + 1 Lizard + 1 year + 1 olre	1 + 1 Lizard + 1 year + 1 olre	Poisson
<i>A. limbatum</i> adult female – 2010 removal	1 + 1 Lizard + 1 olre	--	Poisson
<i>A. limbatum</i> adult female – 28 days subset-removal	1 + 1 Lizard + 1 year + 1 olre	1 + 1 Lizard + 1 year + 1 olre	Poisson
<i>B. hydrosauri</i> adult male – 2010, 2011, & 2017 removal*	1 + 1 Lizard + 1 olre	1 + 1 Lizard + year + 1 olre	Poisson
<i>A. limbatum</i> adult male – 2010 removal	1 + 1 Lizard + 1 olre	--	Poisson
<i>B. hydrosauri</i> adult male – averaged	--	1 + 1 Lizard	Gaussian
<i>A. limbatum</i> adult male – averaged	--	1 + 1 Lizard	Gaussian

*Year included as a fixed factor (no other predictors), as there were too few years to estimate a random effect.

3.2 Binomial repeatability

Following Nakagawa et al. (2017), we calculated binary (i.e. Bernoulli) repeatability using Eq. A3:

$$R_{Binom} = \frac{V_{\alpha}}{V_{\alpha} + V_Y + \frac{1}{p(1-p)}} \quad (A3)$$

where V_{α} is the variance of the individual level random intercept (the among-individual variance), V_Y is the variance of the year random intercept, and p is the probability of success from the data. Note that Eq. A3 assumes a logit link. For models that included both individual and year varying intercepts, the year varying intercept variance may or may not be included in the denominator (Nakagawa and Schielzeth 2010). To calculate overall repeatability, we excluded the year variance from the denominator. To obtain among-year repeatability, we included the year random effect variance in the denominator. We specify in text whether our repeatability includes the V_Y component. For both repeatability estimates, we present the mean along with 95% HPDI credible intervals (highest posterior density intervals, calculated using the rethinking package, McElreath 2015).

3.2.1 Overall repeatability

Table A6 shows binomial repeatability (from the intercept-only model) that compensates for the among year variance by excluding it from the denominator in Eq. A3. In datasets where there were two few years to include a year random intercept, we report results from a model without year. While binomial repeatability estimates differed from Poisson (which is provided for comparison), the qualitative pattern was the same (e.g. higher repeatability in larvae + nymph, and lower repeatability for the adult stages).

Table A6. Mean repeatability estimates from an intercept-only Poisson versus Binomial model, calculated via Eq. 1a (main text) and A3 respectively, but excluding V_Y from the denominator. 95% HPDI in parentheses. Relevant sample size (n) also shown. Values whose credible intervals do not include zero are in bold.

	Poisson	Binomial	n
Both species larvae – 28 days subset	0.34 (0.24 – 0.44)	0.20 (0.13 – 0.28)	1488
Both species nymph – 28 days subset	0.26 (0.17 – 0.35)	0.13 (0.07 – 0.19)	1488
Both species larvae + nymph – 28 days subset	0.43 (0.34 – 0.52)	0.28 (0.19 – 0.37)	1488
<i>B. hydrosauri</i> adult female – 2010, 2011, & 2017 removal*	0.03 (0.00 – 0.10)	0.01 (0.00 – 0.03)	1057
<i>B. hydrosauri</i> adult female – 28 days subset-removal	0.11 (0.04 – 0.19)	0.04 (0.01 – 0.07)	2107
<i>A. limbatum</i> adult female – 2010 removal*	0.16 (0.00 – 0.36)	0.04 (0.00 – 0.10)	591
<i>A. limbatum</i> adult female – 28 days subset-removal	0.23 (0.13 – 0.32)	0.09 (0.05 – 0.14)	2006
<i>B. hydrosauri</i> adult male – 2010, 2011, & 2017 removal*	0.04 (0.00 – 0.10)	0.01 (0.00 – 0.03)	1057
<i>A. limbatum</i> adult male – 2010 removal*	0.12 (0.00 – 0.27)	0.05 (0.00 – 0.11)	591

*Year random intercept excluded from model

3.2.2 Among-year repeatability

Table A7 shows among-year repeatability (i.e. repeatability calculated with Eq. A3, but including the year random effect variance in the denominator) for the same datasets as Table A6, except that the data had been restricted to lizards observed in multiple years. Regarding results, while the quantitative estimates for among-year repeatability differed between the Poisson and binomial models, the qualitative pattern remained the same, as for overall repeatability.

Table A7. Mean Poisson versus Binomial among-year repeatability calculated via Eq. 1b (main text) and A3 respectively; V_Y (year random intercept variance) included in denominator (except for *). 95% HPDI in parentheses. Models run on data restricted to lizards observed in multiple years. Relevant sample size (n) also shown. Values whose credible intervals do not include zero are in bold.

	Poisson	Binomial	n
Both species larvae – 28 days subset	0.26 (0.17 – 0.37)	0.16 (0.09 – 0.23)	1230
Both species nymph – 28 days subset	0.21 (0.12 – 0.30)	0.11 (0.05 – 0.16)	1230
Both species larvae + nymph – 28 days subset	0.32 (0.22 – 0.42)	0.19 (0.12 – 0.27)	1230
<i>B. hydrosauri</i> adult female – 2010, 2011, & 2017 removal*	0.05 (0.00 – 0.14)	0.02 (0.00 – 0.05)	775
<i>B. hydrosauri</i> adult female – 28 days subset-removal	0.09 (0.03 – 0.17)	0.03 (0.00 – 0.06)	1830

<i>A. limbatum</i> adult female – 2010 removal	--	--	--
<i>A. limbatum</i> adult female – 28 days subset-removal	0.17 (0.08 – 0.26)	0.07 (0.03 – 0.11)	1728
<i>B. hydrosauri</i> adult male – 2010, 2011, & 2017 removal*	0.05 (0.00 – 0.12)	0.02 (0.00 – 0.05)	775
<i>A. limbatum</i> adult male – 2010 removal	--	--	--

*Year included as a fixed factor (no other predictors); fixed effect variance included in the denominator

4. Correlations among tick variables

Below, we present Kendall’s tau correlations among tick variables (Table A8). These correlations were derived using the full, rather than within-season averaged, tick counts, except that counts had been restricted using the 28-day criterion (successive counts were separated by at least 28 days).

Table A8. Kendall correlations among tick variables that have been restricted using the 28-day criterion. Adjusted p-value in parentheses. Values with p-value < 0.05 are in bold.

	Both larva	Both nymph	<i>B. hydrosauri</i> female	<i>A. limbatum</i> female	<i>B. hydrosauri</i> male
Both nymph	0.23 (0.00)				
<i>B. hydrosauri</i> female	0.08 (0.00)	0.11 (0.00)			
<i>A. limbatum</i> female	0.01 (1.00)	0.03 (1.00)	-0.01 (1.00)		
<i>B. hydrosauri</i> male	0.10 (0.00)	0.08 (0.00)	0.05 (0.18)	0.00 (1.00)	
<i>A. limbatum</i> male	-0.06 (0.10)	-0.05 (0.18)	-0.01 (1.00)	0.10 (0.00)	0.03 (0.96)

5. Predicting tick count averages

Below, we present model comparison tables for our analyses predicting within-year tick averages. Then, we provide model parameter estimates of the top or a limited selection of tested models.

5.1 Model comparison

The model comparison tables in the following sections show WAIC, pWAIC (an estimate of the number of parameters included in the model, including random intercepts), dWAIC (the WAIC score difference between the focal model and model with the lowest WAIC score), and model weight (Akaike weight, Symonds and Moussalli (2011) page 16, for the equation). Models are shown according to their structure (following common modelling syntax in R, e.g. ‘*’ indicates an interaction between the given terms and implies that the model also included the non-interacting versions of the given parameters) and organized in order of increasing WAIC score. Parameters ending with ‘_z’ were standardized. n indicates sample size.

Table A9. Model comparison for the analysis of both larvae. n = 280.

Model structure	WAIC	pWAIC	dWAIC	weight
1 + (1 Lizard) + Year + Sex + Road distance_z	800.42	31.50	0.00	0.93
1 + (1 Lizard)	807.00	23.56	6.58	0.03
1 + (1 Lizard) + Sex + Road distance_z	808.10	24.65	7.69	0.02
1 + (1 Lizard) + Year + Sex + Mass_z + OT_z × BB_z + Road distance_z	809.44	34.27	9.02	0.01
1	810.26	13.40	9.85	0.01

Table A10. Model comparison for the analysis of both nymphs. n = 280.

Model structure	WAIC	pWAIC	dWAIC	weight
1 + (1 Lizard) + Year + Road distance_z	832.51	50.76	0.00	0.99
1 + (1 Lizard) + Road distance_z	842.71	48.80	10.20	0.01
1 + (1 Lizard)	844.39	50.40	11.88	0.00
1	846.28	38.81	13.77	0.00
1 + (1 Lizard) + Year + Sex + Mass_z + OT_z × BB_z + Road distance_z	853.40	56.09	20.89	0.00

Table A11. Model comparison for the analysis of both larvae + nymphs. n = 280.

Model structure	WAIC	pWAIC	dWAIC	weight
1 + (1 Lizard) + year + Sex + Road distance_z	807.74	36.12	0.00	0.68
1 + (1 Lizard) + Road distance_z	809.82	28.48	2.08	0.24
1 + (1 Lizard) + year + Sex + Mass_z + OT_z × BB_z + Road distance_z	814.37	38.09	6.63	0.02
1 + (1 Lizard) + Sex + Road distance_z	814.38	29.99	6.64	0.02
1 + (1 Lizard)	814.48	29.66	6.74	0.02
1	816.27	18.00	8.53	0.01

Table A12. Model comparison for the analysis of *A. limbatum* females. n = 317.

Model structure	WAIC	pWAIC	dWAIC	weight
1+ (1 Lizard) + Mass_z	900.64	46.16	0.00	0.54
1+ (1 Lizard) + Year + Mass_z	901.89	44.27	1.25	0.29
1+ (1 Lizard) + Year + Mass_z + Road distance_z	904.27	45.65	3.63	0.09
1 + (1 Lizard)	904.76	47.65	4.12	0.07
1 + (1 Lizard) + Year + Sex + Mass_z + OT_z × BB_z + Road distance_z	908.08	48.43	7.45	0.01
1	910.07	9.01	9.44	0.00

Table A13. Model comparison for the analysis of *B. hydrosauri* females. n = 317.

Model structure	WAIC	pWAIC	dWAIC	weight
1+ (1 Lizard) + Sex + OT_z * BB_z + Road distance_z	898.02	24.21	0.00	0.69
1+ (1 Lizard) + Year + Sex + OT_z × BB_z + Road distance_z	900.41	27.74	2.39	0.21
1 + (1 Lizard) + Year + Sex + Mass_z + OT_z × BB_z + Road distance_z	902.58	28.94	4.55	0.07
1 + (1 Lizard)	904.72	24.50	6.69	0.02
1	907.80	6.83	9.77	0.01

Table A14. Model comparison for the analysis of *A. limbatum* males. n = 317.

Model structure	WAIC	pWAIC	dWAIC	weight
1 + (1 Lizard) + Sex + Mass_z	841.53	76.91	0.00	0.48
1 + (1 Lizard)	842.87	74.69	1.34	0.25
1 + (1 Lizard) + Sex + Mass_z + Road distance_z	843.66	75.54	2.13	0.17
1 + (1 Lizard) + Sex + Road distance_z	845.02	74.40	3.48	0.08
1 + (1 Lizard) + Sex + Mass_z + OT_z × BB_z + Road distance_z	847.50	77.52	5.97	0.02
1	901.73	5.01	60.20	0.00

Table A15. Model comparison for the analysis of *B. hydrosauri* males. n = 317.

Model structure	WAIC	pWAIC	dWAIC	weight
(1 Lizard) + Sex + Mass_z	793.96	71.79	0.00	0.48
(1 Lizard) + Sex + Mass_z + Road distance_z	794.39	67.58	0.43	0.39
1 + (1 Lizard) + Sex + Mass_z + OT_z × BB_z + Road distance_z	797.37	68.60	3.41	0.09
1 + (1 Lizard)	798.82	74.04	4.85	0.04
1	898.93	2.33	104.96	0.00

5.2 Model predictions

Below, we present parameter estimates from the top model (i.e., the one with the lowest WAIC score) or a limited selection of tested models for each tick variable, as well as some limited model predictions. In parameter estimate tables, we show posterior means ('Est. Mu'), standard deviations ('Est. SD'), and 95% credible interval (lower boundary: 'l-95% CI'; upper boundary: 'u-95% CI').

Predicting both larvae averages

For both larvae, our model comparison did not favour the model containing the behavioural type variables. The behavioural type model was 9.02 WAIC units greater than the top model, which included only sex, road distance, and year (Table A16). Moreover, the effects of sex, mass, and the behavioural types variables overlapped zero in their respective model (Table A17).

Table A16. For the analysis of both larvae, parameter estimates from the top model (i.e. the model with the lowest WAIC score).

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	0.18	0.15	-0.11	0.47
Year2014	-0.31	0.20	-0.70	0.09
Year2015	-0.40	0.18	-0.74	-0.05
Year2016	0.24	0.19	-0.13	0.60
Year2017	-0.07	0.19	-0.43	0.30
Sex ²	-0.15	0.12	-0.39	0.09
Road distance_z	-0.12	0.06	-0.23	0.01

¹Default year: 2010. ²Default sex: female.

Table A17. For the analysis of both larvae, parameter estimates from the best model that included behavioural type variables.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	0.17	0.15	-0.12	0.48
Year2014	-0.31	0.21	-0.71	0.09
Year2015	-0.38	0.18	-0.73	-0.02
Year2016	0.26	0.19	-0.12	0.63
Year2017	-0.05	0.19	-0.42	0.33
Sex ²	-0.17	0.12	-0.41	0.07
Mass_z	0.00	0.06	-0.13	0.13
OT_z	-0.02	0.06	-0.14	0.10
BB_z	0.07	0.06	-0.05	0.19
Road distance_z	-0.12	0.06	-0.24	0.01
OT_z:BB_z	0.07	0.07	-0.06	0.21

¹Default year: 2010. ²Default sex: female.

Predicting both nymph averages

For both nymphs, as for both larvae, our model comparison did not favour a model with the behavioural type variables (20.89 WAIC units greater than the top model, which included only year and road distance, Table A18). In addition, the BT effects were small and overlapped zero in the best model in which they were included (Table A19).

Table A18. For the analysis of both nymphs, parameter estimates from the top model.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	0.09	0.14	-0.18	0.37
Year2014	0.12	0.21	-0.28	0.52
Year2015	-0.33	0.18	-0.69	0.02
Year2016	0.06	0.19	-0.31	0.44
Year2017	-0.20	0.19	-0.57	0.18
Road distance_z	-0.11	0.06	-0.23	0.01

¹Default year: 2010.

Table A19. For the analysis of both nymphs, parameter estimates from the best model that included behavioural type variables.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	0.06	0.16	-0.25	0.36
Year2014	0.16	0.21	-0.25	0.57
Year2015	-0.32	0.18	-0.68	0.04
Year2016	0.06	0.19	-0.32	0.44
Year2017	-0.20	0.20	-0.59	0.19
Sex ²	0.05	0.12	-0.19	0.30
Mass_z	0.04	0.06	-0.09	0.17
OT_z	-0.05	0.06	-0.17	0.07
BB_z	0.00	0.06	-0.12	0.12
Road distance_z	-0.10	0.06	-0.23	0.03
OT_z:BB_z	-0.01	0.07	-0.15	0.13

¹Default year: 2010. ²Default sex: female.

Predicting both larvae plus nymph averages

For both larvae plus nymphs, our model comparison did not favour the model containing the behavioural type variables (6.6 WAIC units greater than the top model, which included only sex, road distance, and year). In the top model, most of the year effects overlapped zero, as did sex (Table A20). Road distance had a marginally significant effect, and the effect of road distance was the same in all models that included it.

Table A20. For the analysis of both larvae + nymphs, parameter estimates from the top model.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	0.16	0.15	-0.13	0.46
year2014	-0.20	0.20	-0.60	0.20
year2015	-0.43	0.18	-0.79	-0.07
year2016	0.21	0.19	-0.16	0.59
year2017	-0.12	0.19	-0.50	0.24
Sex ²	-0.10	0.12	-0.34	0.15
Road distance_z	-0.13	0.06	-0.25	-0.01

¹Default year: 2010. ²Default sex: female.

Predicting A. limbatum adult female averages

For *A. limbatum* adult females, our model comparison favoured two models: one with just average mass, and another with year and average mass (the former was 1.25 WAIC units lower than the latter; the third top model was more than two units away from the first). Because the effect of mass was quantitatively similar between the top two models (-0.14 versus -0.12; see Fig. A1 for the effect of mass), we present results from only the best of the two models (Table A21). The model with the behavioural variables was 7.45 WAIC units greater than the top model, and the behaviour effects were small and overlapped zero (Table A22).

Table A21. For the analysis of *A. limbatum* females, parameter estimates from the top model.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	0.00	0.06	-0.12	0.12
Mass_z	-0.14	0.06	-0.26	-0.02

Table A22. For the analysis of *A. limbatum* females, parameter estimates from the best model including the behavioural variables.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept ¹	-0.14	0.14	-0.41	0.14
Year2014	0.25	0.20	-0.13	0.65
Year2015	0.05	0.17	-0.28	0.39
Year2016	0.38	0.17	0.04	0.72
Year2017	0.17	0.18	-0.17	0.51
Sex ²	-0.07	0.12	-0.31	0.18
Mass_z	-0.11	0.06	-0.23	0.01
OT_z	-0.05	0.06	-0.17	0.07
BB_z	0.05	0.06	-0.06	0.17
Road distance_z	0.05	0.06	-0.07	0.17
OT z:BB z	0.05	0.06	-0.08	0.17

¹Default year: 2010. ²Default sex: female.

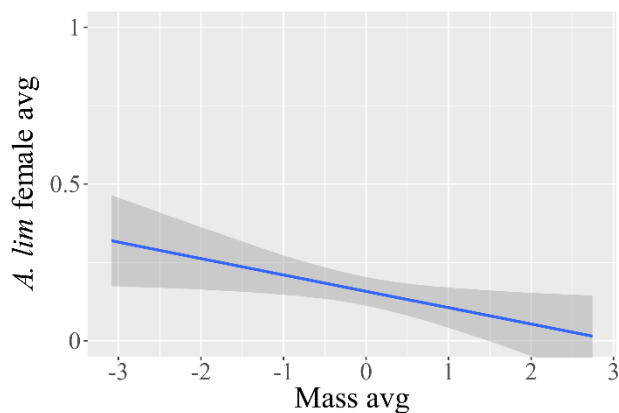


Figure A1. Plot shows the model-predicted relationship between *A. limbatum* female averages and lizard mass. Note that the y-axis is shown on the *non-standardized* scale, the range for which is based on the 95% HPDI of observed values (e.g. avg female counts > 1 were rare, < 5% of observations; thus we do not show the axis based on the full range of possible values).

Predicting *B. hydrosauri* adult female averages

For *B. hydrosauri* adult females, our model comparison favoured a model with sex, observer threat, banana boldness, road distance, and the interaction between the BT variables (2.39 units lower WAIC than the next top model). The interaction was distinct, but the other effects were generally either weak or overlapped zero (Table A23).

Table A23. For the analysis of *B. hydrosauri* females, parameter estimates from the top model.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	-0.07	0.08	-0.23	0.09
Sex ¹	0.16	0.12	-0.07	0.39
OT_z	-0.09	0.06	-0.20	0.02
BB_z	0.04	0.06	-0.07	0.16
Road distance_z	-0.12	0.06	-0.23	-0.01
OT_z:BB_z	-0.16	0.06	-0.29	-0.04

¹Default sex: female.

Predicting A. limbatum adult male averages

For *A. limbatum* adult males, our model comparison favoured two models: one with sex and mass (Table A24), the other with no predictors (the former was 1.34 WAIC units lower than the latter). Model comparison did not favour a model with the behaviour predictors, and their effects overlapped zero in the relevant model (Table A25).

Table A24. For the analysis of *A. limbatum* males, parameter estimates from the top model.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	-0.11	0.10	-0.29	0.08
Sex ¹	0.25	0.14	-0.03	0.53
Mass_z	-0.05	0.06	-0.18	0.07

¹Default sex: female.

Table A25. For the analysis of *A. limbatum* adult males, parameter estimates from the best model including the behaviour variables.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	-0.10	0.10	-0.29	0.09
Sex ¹	0.22	0.14	-0.06	0.50
Mass_z	-0.04	0.07	-0.17	0.09
OT_z	0.02	0.06	-0.09	0.13
BB_z	0.06	0.06	-0.05	0.18
Road distance_z	0.06	0.07	-0.07	0.19
OT_z:BB_z	0.01	0.06	-0.10	0.13

¹Default sex: female.

Predicting B. hydrosauri adult male averages

For *B. hydrosauri* adult males, our model comparison favoured a model with sex and mass (Table A26), and a model with sex, mass, and road distance (WAIC of the latter 0.43 units greater than the former). We present results of the latter (Table A27, Fig. A2, A3), as the shared parameters were quantitatively similar between the models and the WAIC difference was so marginal. Effects are somewhat difficult to interpret. They are small on an absolute scale, but given that lizards acquire so few total male ticks, percentage changes are quite large (Fig. A2, A3).

Table A26. The top model for *B. hydrosauri* adult males.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	0.03	0.09	-0.16	0.21
Sex ¹	-0.22	0.14	-0.48	0.06
Mass_z	0.20	0.06	0.09	0.32

¹Default sex: female.

Table A27. The second top model for *B. hydrosauri* adult males.

	Est. Mu	Est. SD	l-95% CI	u-95% CI
Intercept	0.04	0.09	-0.14	0.22
Sex ¹	-0.19	0.13	-0.44	0.07
Mass_z	0.16	0.06	0.04	0.28
Road distance_z	-0.19	0.06	-0.31	-0.08

¹Default sex: female.

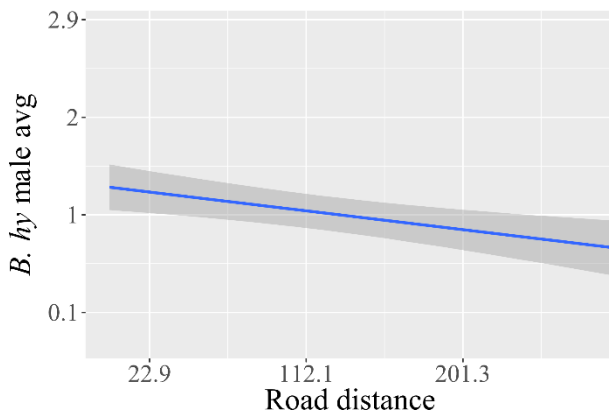


Figure A2. Plot shows the model-predicted relationship between *B. hydrosauri* male averages and distance from the road. Sex set to female and mass set to zero (the standardized mean value). Note that both axes are shown on the *non-standardized* scale. Axis ranges are based on the 95% HPDI of observed values. However, as *B. hydrosauri* male ticks were standardized within year, y-axis values were derived with: standardized male tick count * mean (of the yearly sds for the male tick counts) + (mean of the yearly mean male tick counts).

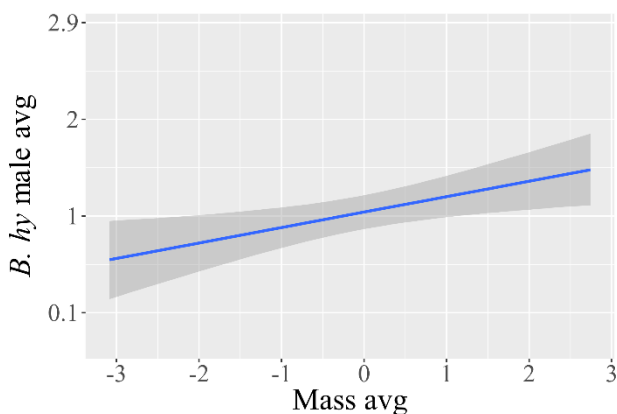


Figure A3. Plot shows the model-predicted relationship between *B. hydrosauri* male averages and lizard average mass. Sex set to female and road distance set to zero (the standardized mean value). Note that both axes are shown on the *non-standardized* scale. Axis ranges are based on the 95% HPDI of observed values. However, as *B. hydrosauri* male ticks were standardized within year, y-axis values were derived with: standardized male tick count * mean (of the yearly sds for the male tick counts) + (mean of the yearly mean male tick counts).

6. References

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