Slow life history leaves endangered snake vulnerable to illegal poaching

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Electronic Supplementary Information

Because good estimates of parameter uncertainty are necessary to construct informative stochastic demographic models, we used program MARK to obtain estimates of environmental (process) variation around survival rates. We did this using the variance components subroutine in MARK (appendix D, MARK Book v 19, see[1]. For this analysis, we used the mark-recapture data set for the gated population, with two groups (juveniles and adults). We then ran CJS models to determine the best supported model from the data. The data showed some over dispersion (bootstrap GOF test, $p = 0.05$, 1000 replicates) so we used c-hat = 1.27 to adjust our candidate model set in MARK. From this analysis, the best supported model was $S\,(group)\,p\,(time)$, indicating that survival rates differed between adults and juveniles (Table S1). We then used the variance components subroutine in program MARK to estimate annual variation around survival rates for each age class separately. For this analysis we used the model $S\,(group \times time)\,p\,(constant)$. This yielded estimates of annual survival for adults and juveniles of 0.89 and 0.61 respectively. The standard deviations for these estimates were calculated from the estimates of sigma, and were 0.057 and 0.108 for adults and juveniles respectively.

22   **Table S1.** Results of Cormack-Jolly-Seber analyses in MARK that was used to model rates of survival (S) and

23   recapture (p) of broad-headed snakes from the gated population. Each snake was assigned to one of two groups

24   depending on its size at first capture (sub-adults and adults, or juveniles).Table shows AIC values and associated

25   AIC weights, model likelihood, number of parameters (N), and model deviance. The best-supported model is

26   shown in bold font.

Model	AICc	Delta AICc	AICc weight	Model Likelihood	N	Deviance
S (*group*) *p* (*time*)	**297.9946**	**0.00**	**0.59**	**1.00**	**14**	**122.06**
S (*group*) *p* (*constant*)	299.6107	1.62	0.27	0.45	3	147.76
S (*group*) *p* (*group*)	301.2301	3.24	0.12	0.20	4	147.30
S (*constant*) *p* (*group*)	306.0114	8.02	0.01	0.02	3	154.17
S (*constant*) *p* (*time*)	306.5289	8.53	0.01	0.01	13	132.90
S (*constant*) *p* (*constant*)	308.5055	10.51	0.00	0.01	2	158.72
S (*time*) *p* (*group*)	317.2972	19.30	0.00	0.00	14	141.36
S (*time*) *p* (*constant*)	319.8637	21.87	0.00	0.00	13	146.23
S (*group*) *p* (*group x time*)	320.6342	22.64	0.00	0.00	26	115.02
S (*time*) *p* (*time*)	325.4935	27.50	0.00	0.00	23	127.67
S (*constant*) *p* (*group x time*)	325.5252	27.53	0.00	0.00	25	122.54
S (*group x time*) *p* (*constant*)	332.3954	34.40	0.00	0.00	25	129.41

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28 **References**

29 1. Cooch, E. & White, G. *Using MARK—a gentle introduction.* (Cornell University, 2001).

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