ELECTRONIC APPENDIX

This is the Electronic Appendix to the article

Impact of UV-B exposure on amphibian embryos; linking species physiology and oviposition behavior

by

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Solar phototron experiments, details by species.

Species	Start date	Stage[1]	Duration (days)	UV-B dose treatments (kJ·m^{-2})					Collection area
Rana cascadae	July 19	8-10	3 *	0	119	204	264	426	Olympic National Park, WA
Pseudacris regilla	March 20	5-7	3 *	0	120	205	265	428	N. Cascade Mountains, WA
Ambystoma gracile	March 18	8-10	1	0	40	69	89	143	N. Cascade Mountains, WA
Ambystoma macrodactylum	July 17	10-13	1	0	50	86	111	179	Olympic National Park, WA

Notes: All phototron experiments were carried out at 15° C under a 12:12 photoperiod. Stage refers to the level of embryonic development at the start of the experiment. In addition to the 3-day exposure experiments reported here, preliminary one day experiments were carried out for both frog species (*), where no mortality was observed. Subsequent experiments for all species were designed to run until near 100% mortality was observed in the most UV-B exposed treatments. For each species at each level of UV-B exposure except 0 (dark control), we had treatments with and without photoreactivating radiation (PRR), resulting in 9 treatments per experiment. Differences in total UV-B dose are the result of different configurations of stainless-steel mesh, lamp outputs, and experiment duration. For comparison, the integrated daily dose of UV-B received at Olympic National Park (WA) during the summer solstice (June 21, 2000) at 1525 m was 129.7 kJ·m^{-2}.

[1] *R. cascadae* and *P. regilla* staged according to: Gosner, K.L. 1960. A simplified table for staging anuran embryos and larvae with notes on identification. Herpetologica.**16**,183-190. *A. gracile* and *A. macrodactylum* staged according to: Harrison, R.G.1969. *In* Organization and Development of the Embryo. Yale University Press. Pp. 44-66.

Non-linear model estimates of solar phototron experiments

Species	Photorepair	r^2	LD_{50} ($kJ \cdot m^{-2}$)	Steepness (*a*)
Rana cascadae	+ PRR	0.89	350 ±29	8.7 ±3.2
	- PRR	0.91	124 ±17	3.6 ±2.2
Pseudacris regilla	+ PRR	0.83	285 ±31	6.4 ±4.0
	- PRR	0.76	108 ±9	13.0 ±0
Ambystoma gracile	+ PRR	0.91	95 ±8	4.2 ±1.6
	- PRR	0.90	2 ±83	0.1 ±3.1
Ambystoma macrodactylum	+ PRR	0.87	100 ±6	7.6 ±3.3
	- PRR	0.92	24 ±58	1.0 ±3.3

Notes: Data are mean-corrected r^2 and parameter estimates (±SD), lethal dose corresponding to 50% survival (LD_{50}) and steepness (*a*), of Gauss-Newton non-linear least squares model fits for treatments with (+PRR) and without (-PRR) photorepair radiation.

Field survey details by species.

Species	Sites surveyed	Eggs/site	K_d (m^{-1})	Depth (cm)	% eggs shaded
Rana cascadae	30	3.8*	-0.223	5.5*	3.7
Ambystoma gracile	11	3.9*	-0.168	34.0*	0
Ambystoma macrodactylum	21	478	-0.136	18.2	51.0

Notes: Summary of amphibian egg surveys. Data are averages across breeding sites for the number of eggs or egg masses (*) per site, the diffuse attenuation coefficient (K_d, m^{-1}), and depth (cm) of eggs.