

## Supplementary Material for:

### Alpine newts (*Ichthyosaura alpestris*) avoid habitats previously used by parasite-exposed conspecifics

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R code for all analyses and figures are available upon request. Please email Dave Daversa ([ddaversa@gmail.com](mailto:ddaversa@gmail.com)) for the R file.

## Results

### *Time-to-event analysis*

The time that newts first entered aquatic habitat on Day 1 was not influenced by conspecific cues generally or by cues of *Bd*-exposed conspecifics specifically (Table S1). Further, none of the cues encountered on either day influenced the time that newts first entered aquatic habitat on day 2 (Table S1).

Day 1			
Factor	$X^2$	df	p
<i>Bd</i> cue - Day 1	1.66	1	0.20
conspecific cue - Day 1	0.00	1	0.99
Day 2			
Factor	$X^2$	df	p
<i>Bd</i> cue - Day 1	2.18	1	0.14
conspecific cue - Day 1	0.66	1	0.41
<i>Bd</i> cue - Day 2	0.21	1	0.65
conspecific cue - Day 2	0.25	1	0.61

**Table S1:** Results of likelihood ratio tests of Cox proportional hazard models predicting the time that newts first entered aquatic habitat on day 1 and day 2, as a function of the cues experienced in the aquatic habitat on either day 1 or day 2. *Bd* cue = aquatic habitat was previously used by a *Bd*-exposed conspecific; conspecific cue = aquatic habitat was previously used by any conspecific regardless of their infection status.

*Redo of Day 2 analyses after omitting data from the newt that remained fully terrestrial on Day 1 (and therefore may not have experienced the treatment cues)*

None of the cues encountered on Day 1 or Day 2 influenced the time that newts first entered aquatic habitat on day 2 (Table S2). These results are qualitatively the same as the analysis reported in the main text (Table S1). Also similarly to the results of the main analysis, newts that experienced water previously used by *Bd*-exposed conspecifics on Day 1 reduced the amount of time they spent aquatic on day 2 (Table S3), and they made slightly fewer transitions as well (Table S3). None of the cues experienced on Day 1 or Day 2 influenced their average length of stay in aquatic habitats before moving back to land (Table S3).

<b>Day 2</b>			
<b>Factor</b>	<b>X2</b>	<b>df</b>	<b>p</b>
<i>Bd</i> cue - Day 1	1.84	1	0.18
conspecific cue - Day 1	0.42	1	0.52
<i>Bd</i> cue - Day 2	0.10	1	0.75
conspecific cue - Day 2	0.47	1	0.49

**Table S2:** Results of likelihood ratio tests of Cox proportional hazard models predicting the time that newts first entered aquatic habitat on day 1 and day 2, as a function of the cues experienced in the aquatic habitat on either day 1 or day 2. *Bd* cue = aquatic habitat was previously used by a *Bd*-exposed conspecific; conspecific cue = aquatic habitat was previously used by any conspecific regardless of their infection status.

proportion of time aquatic								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	ΔAICc	weight
-0.24				3	6.36	-4.50	0.00	0.44
-0.20		-0.10		4	6.88	-1.80	2.80	0.11
				2	3.29	-1.60	2.97	0.10
		-0.19		3	4.87	-1.60	2.98	0.10
-0.23			0.04	4	6.44	-0.90	3.66	0.07
-0.24	-0.01			4	6.37	-0.70	3.81	0.07
			0.09	3	3.61	1.00	5.51	0.03
	0.06			3	3.45	1.30	5.84	0.02
	0.04	-0.19		4	4.95	2.10	6.64	0.02
		-0.18	0.02	4	4.90	2.20	6.76	0.02
-0.20	-0.01	-0.10		5	6.88	2.90	7.45	0.01
-0.20		-0.10	0.01	5	6.88	2.90	7.45	0.01
-0.24	-0.03		0.05	5	6.50	3.70	8.22	0.01
	0.02		0.08	4	3.63	4.70	9.29	0.00
	0.04	-0.19	0.00	5	4.95	6.80	11.31	0.00
-0.20	-0.02	-0.10	0.02	6	6.90	8.70	13.25	0.00
number of transitions								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	ΔAICc	weight
-1.964				3	-64.714	137.6	0	0.389
				2	-66.999	139	1.39	0.194
		-1.028		3	-66.223	140.6	3.02	0.086
-1.699		-0.5641		4	-64.487	141	3.36	0.072
-2.022			0.3047	4	-64.644	141.3	3.68	0.062
-1.977	0.146			4	-64.693	141.4	3.78	0.059
	0.04879			3	-66.997	142.2	4.57	0.04
			0.03175	3	-66.998	142.2	4.57	0.04
		-1.322	-0.6614	4	-65.95	143.9	6.29	0.017
	-0.0894	-1.041		4	-66.217	144.4	6.82	0.013
-1.714	0.08409	-0.5506		5	-64.48	145.6	8.02	0.007
-1.689		-0.5769	-0.02192	5	-64.487	145.6	8.03	0.007
-2.022	0.03058		0.2879	5	-64.643	146	8.34	0.006
	0.04594		0.006431	4	-66.997	146	8.38	0.006
	0.3846	-1.416	-0.9225	5	-65.86	148.4	10.78	0.002
-1.665	0.1273	-0.6116	-0.113	6	-64.475	151.4	13.84	0
Average length of stay in aquatic habitat								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	ΔAICc	weight

				2	-6.008	17	0	0.429
-0.1867				3	-5.548	19.3	2.26	0.138
		-0.166		3	-5.691	19.6	2.55	0.12
	0.09452			3	-5.883	19.9	2.93	0.099
			0.02438	3	-6.001	20.2	3.17	0.088
-0.1471		-0.09908		4	-5.452	22.9	5.89	0.023
-0.1728	0.04652			4	-5.519	23	6.02	0.021
-0.1905			-0.01892	4	-5.544	23.1	6.07	0.021
	0.07725	-0.1554		4	-5.606	23.2	6.2	0.019
		-0.181	-0.04145	4	-5.674	23.3	6.33	0.018
	0.1105		-0.03587	4	-5.872	23.7	6.73	0.015
-0.1332	0.04652	-0.09908		5	-5.422	27.5	10.5	0.002
-0.1506		-0.1165	-0.0522	5	-5.423	27.5	10.5	0.002
-0.1767	0.06924		-0.05354	5	-5.493	27.7	10.64	0.002
	0.1231	-0.1898	-0.1118	5	-5.507	27.7	10.67	0.002
-0.127	0.0897	-0.133	-0.1018	6	-5.338	33.2	16.16	0

**Table S3: Factors influencing newt habitat use on Day 2 – alternative analysis.** We re-analyzed the habitat use data, omitting data from the newt that never entered aquatic habitat on the first day of the experiment. We performed this analysis due to the possibility that this newt never experienced the treatment conditions administered in the aquatic portion of their container. ‘Conspecific cues’ denotes containers with aquatic habitats that were previously occupied by conspecifics, regardless of their *Bd* exposure. ‘Bd cues’ denotes containers with aquatic habitats that were previously occupied specifically by *Bd*-exposed conspecifics. Models are listed in order of their Akaike’s Information Criteria (AICc) ranking, with the first listed model being the best performing one. Values listed in the factor columns are the model coefficients. Only models within 6 AICc values of the best performing model are shown. Df = degrees of freedom. logLike = Log likelihood.

proportion of time aquatic								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	ΔAICc	weight
-0.26				3	6.64	-5.30	0.00	0.40
-0.20		-0.13		4	7.56	-3.50	1.81	0.16
		-0.22		3	5.49	-3.00	2.31	0.13
-0.26	-0.03			4	6.72	-1.80	3.48	0.07
-0.26			-0.01	4	6.65	-1.70	3.62	0.07
				2	3.12	-1.30	3.97	0.06
	0.02	-0.22		4	5.52	0.60	5.89	0.02
		-0.22	-0.01	4	5.50	0.60	5.93	0.02
-0.21	-0.02	-0.12		5	7.60	0.80	6.08	0.02
-0.20		-0.13	-0.02	5	7.60	0.80	6.09	0.02
	0.03			3	3.16	1.70	6.97	0.01
			0.02	3	3.14	1.70	7.00	0.01
-0.26	-0.04		0.01	5	6.73	2.50	7.83	0.01
	0.04	-0.22	-0.03	5	5.57	4.90	10.16	0.00
	0.02		0.01	4	3.16	5.30	10.60	0.00
-0.20	-0.02	-0.13	-0.02	6	7.61	6.10	11.39	0.00
number of transitions								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	ΔAICc	weight
-1.89				3	-68.81	145.60	0.00	0.38
				2	-71.02	147.00	1.36	0.19
-1.99			0.47	4	-68.61	148.90	3.24	0.08
		-0.83		3	-70.44	148.90	3.26	0.07
-1.70		-0.37		4	-68.70	149.00	3.42	0.07
-1.91	0.23			4	-68.75	149.10	3.53	0.07
			0.20	3	-71.00	150.00	4.38	0.04
	0.13			3	-71.01	150.00	4.41	0.04
		-0.98	-0.32	4	-70.37	152.40	6.76	0.01
	0.03	-0.83		4	-70.44	152.50	6.89	0.01
-1.91		-0.13	0.40	5	-68.60	153.20	7.59	0.01
-1.99	0.03		0.45	5	-68.61	153.20	7.61	0.01
-1.73	0.19	-0.34		5	-68.66	153.30	7.70	0.01
	0.05		0.17	4	-70.99	153.60	8.01	0.01
	0.30	-1.05	-0.52	5	-70.32	156.60	11.02	0.00
-1.90	0.05	-0.14	0.36	6	-68.60	158.50	12.92	0.00

Average length of stay in aquatic habitat								
Bd cue - Day 1	Bd cue - Day 2	Conspecific cue - Day 1	Conspecific cue - day 2	df	logLik	AICc	$\Delta$ AICc	weight
				2.00	-8.99	22.90	0.00	0.29
		-0.34		3.00	-7.80	23.60	0.70	0.20
-0.27				3.00	-8.26	24.50	1.61	0.13
			-0.18	3.00	-8.68	25.40	2.46	0.08
		-0.38	-0.24	4.00	-7.16	25.90	3.04	0.06
	-0.01			3.00	-8.99	26.00	3.08	0.06
-0.15		-0.27		4.00	-7.61	26.90	3.95	0.04
-0.30			-0.22	4.00	-7.76	27.20	4.25	0.03
	-0.02	-0.34		4.00	-7.80	27.20	4.32	0.03
-0.29	-0.08			4.00	-8.19	28.00	5.12	0.02
	0.11		-0.24	4.00	-8.59	28.80	5.90	0.02
-0.16		-0.31	-0.25	5.00	-6.90	29.80	6.89	0.01
	0.14	-0.39	-0.32	5.00	-6.98	30.00	7.05	0.01
-0.16	-0.06	-0.27		5.00	-7.57	31.10	8.24	0.01
-0.29	0.04		-0.24	5.00	-7.75	31.50	8.58	0.00
-0.14	0.10	-0.32	-0.30	6.00	-6.81	34.90	12.04	0.00

**Table S4: Factors influencing newt habitat use on Day 2 – Full list.** Extended from Table 3 in the main text, above is the full list of outputs of multi-model inference testing the factors that influence three measures of newt habitat use on the second day of the experiment: the time that individuals first entered aquatic habitat, the proportion of time individuals spent in aquatic habitat, and the number of transitions made between aquatic and terrestrial habitats. ‘Conspecific cues’ denotes containers with aquatic habitats that were previously occupied by conspecifics, regardless of their *Bd* exposure. ‘Bd cues’ denotes containers with aquatic habitats that were previously occupied by *Bd*-exposed conspecifics. Models are listed in order of their Akaike’s Information Criteria (AICc) ranking, with the first listed model being the best performing one. Values listed in the factor columns are the model coefficients. Only models within 6 AICc values of the best performing model are shown. Df = degrees of freedom. logLike = Log likelihood.