

**Appendix S2: Supplemental Tables and Figures**

**Table S1.** Results of pairwise comparisons from generalized linear mixed models comparing relative Rainbow Trout density among ALAN treatments (0%, 25%, 50%, and 100% intensity) within riverbanks and between riverbanks within treatments. Note that contrast estimates are on the log link not the response scale and standard error (*SE*), *z*, and *p* values are reported. Significant *p* values (< 0.05) are denoted with an asterisk (\*).

<b>Contrast</b>	<b>Estimate</b>	<b>SE</b>	<b>z</b>	<b>p</b>
<i>Within Riverbanks</i>				
<i>River Right (RR)</i>				
0 - 25	-0.832	0.221	-3.768	0.001*
0 - 50	-0.575	0.222	-2.596	0.046*
0 - 100	-0.704	0.221	-3.179	0.008*
25 - 50	0.257	0.221	1.163	0.650
25 - 100	0.128	0.221	0.582	0.938
50 - 100	-0.128	0.222	-0.580	0.938
<i>River Left (RL)</i>				
0 - 25	-0.380	0.693	-0.548	0.947
0 - 50	0.472	0.666	0.709	0.894
0 - 100	0.712	0.666	1.069	0.708
25 - 50	0.852	0.666	1.280	0.576
25 - 100	1.092	0.666	1.641	0.356
50 - 100	0.240	0.620	0.387	0.980
<i>Between Riverbank RR - RL</i>				
0	0.584	0.496	-1.179	0.238
25	1.028	0.494	-2.080	0.038*
50	1.609	0.464	-3.470	0.001*
100	1.976	0.464	-4.260	< 0.001*

**Table S2.** Corrected Akaike information criteria values (AICc) of segmented models run with 0, 1, 2, or 3 breakpoints for each light treatment within riverbanks. The best fitting models are denoted with an asterisk (\*) and NB indicates that breakpoints could not be estimated for a particular model.

Light Treatments	Number of Breakpoints			
	0	1	2	3
<i>River Right</i>				
0	24.841	-45.837	-78.158*	NB
25	318.216	157.311	128.191*	133.36
50	203.721	67.462	53.02*	NB
100	303.31	171.625	156.083*	159.4882
<i>River Left</i>				
0	-12.488	-39.751*	-36.322	-32.219
25	17.946	-41.269*	-43.08	NB
50	-146.968	-166.244*	-162.879	-158.714
100	-194.266	-230.032*	-227.62	NB

**Table S3.** Breakpoints (minutes past sunset), parameter estimates, and lower (LCI) and upper (UCI) 95% confidence intervals for the best fitting segmented models at each light treatment (LT) on river right. Slope 1 is the relationship of relative Rainbow Trout density with time prior to breakpoint 1, slope 2 is the relationship between breakpoints 1 and 2, and slope 3 is the relationship after breakpoint 2. Note that parameter estimates are on the log link not the response scale.

<b>Breakpoints / Parameters</b>	<b>Estimate</b>	<b>LCI</b>	<b>UCI</b>
<b>LT = 0</b>			
Breakpoint 1	5.3646	-5.8401	16.5692
Breakpoint 2	57.0673	45.2296	68.9051
Intercept	-3.0478	-3.4463	-2.6493
Slope 1	-0.0118	-0.0250	0.0013
Slope 2	0.0488	0.0314	0.0662
Slope 3	0.0003	-0.0010	0.0016
<b>LT = 25</b>			
Breakpoint 1	-10.0000	-21.5969	1.5969
Breakpoint 2	55.1806	47.6742	62.6870
Intercept	-3.3823	-4.2829	-2.4817
Slope 1	-0.0107	-0.0372	0.0158
Slope 2	0.0525	0.0437	0.0613
Slope 3	0.0007	-0.0004	0.0018
<b>LT = 50</b>			
Breakpoint 1	-0.0134	-15.4547	15.4280
Breakpoint 2	64.6028	54.8571	74.3485
Intercept	-2.6041	-3.0572	-2.1510
Slope 1	0.0035	-0.0101	0.0172
Slope 2	0.0387	0.0306	0.0469
Slope 3	0.0009	-0.0002	0.0020
<b>LT = 100</b>			
Breakpoint 1	12.8459	-0.7080	26.3999
Breakpoint 2	51.6589	43.3428	59.9751
Intercept	-2.7149	-3.0441	-2.3857
Slope 1	0.0110	-0.0008	0.0228
Slope 2	0.0692	0.0432	0.0952
Slope 3	0.0004	-0.0010	0.0017

**Table S4.** Breakpoints (minutes past sunset), parameter estimates, and lower (LCI) and upper (UCI) 95% confidence intervals for the best fitting segmented models at each light treatment (LT) on river left. The slopes are the relationships of relative Rainbow Trout density with time on either side of breakpoint 1. Note that parameter estimates are on the log link not the response scale.

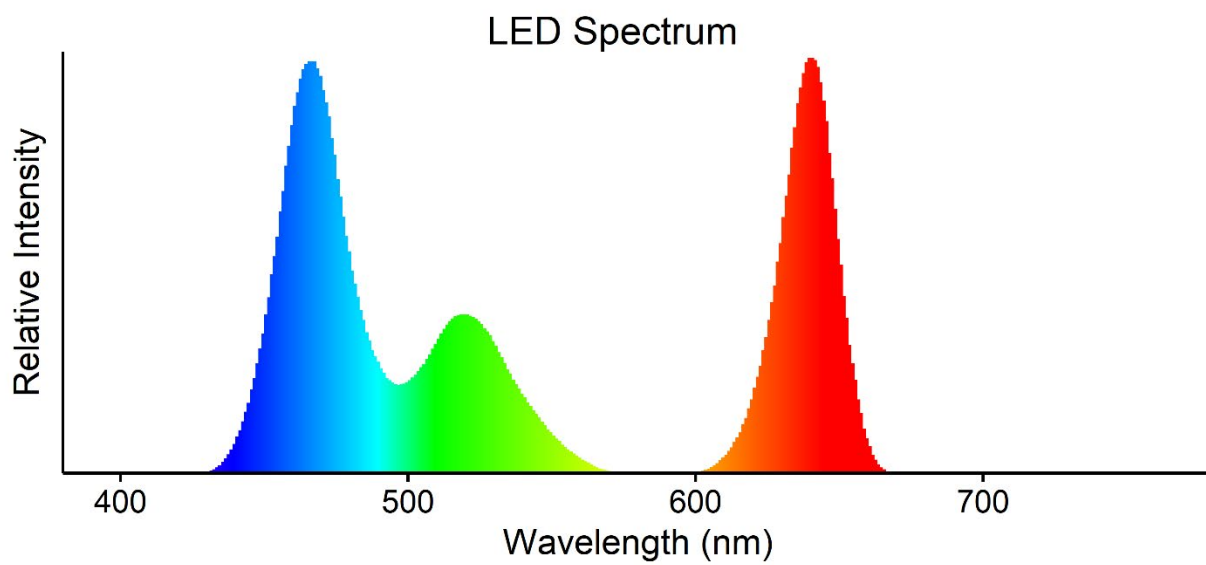
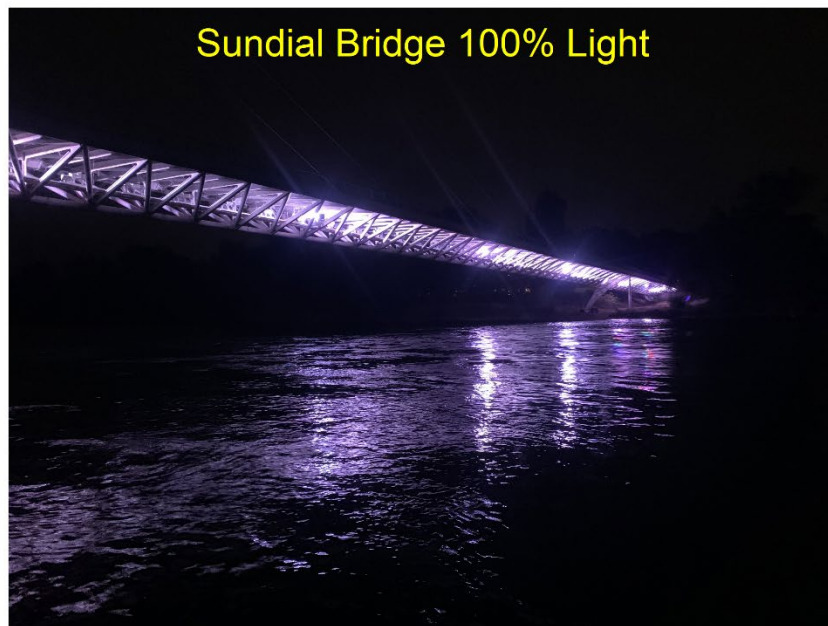
<b>Breakpoints / Parameters</b>	<b>Estimate</b>	<b>LCI</b>	<b>UCI</b>
<b>LT = 0</b>			
Breakpoint 1	71.1670	51.9216	90.4125
Intercept	-3.0574	-3.3134	-2.8015
Slope 1	0.0282	0.0217	0.0347
Slope 2	0.0029	0.0011	0.0047
<b>LT = 25</b>			
Breakpoint 1	70.0000	54.7509	85.2490
Intercept	-2.4967	-2.7341	-2.2592
Slope 1	0.0284	0.0213	0.0356
Slope 2	-0.0015	-0.0030	-0.0001
<b>LT = 50</b>			
Breakpoint 1	34.8951	15.3488	54.4415
Intercept	-2.4710	-2.7418	-2.2001
Slope 1	0.0315	0.0203	0.0427
Slope 2	0.0014	-0.0002	0.0030
<b>LT = 100</b>			
Breakpoint 1	55.9989	36.3001	75.6977
Intercept	-2.7016	-2.9478	-2.4554
Slope 1	0.0268	0.0187	0.0350
Slope 2	-0.0012	-0.0029	0.0005

**Table S5.** Corrected Akaike information criteria values (AICc) of within night segmented models run with 0, 1, 2, or 3 breakpoints for the 0%, 25%, and 100% light intensity treatments. The best fitting models are denoted with an asterisk (\*). The 50% light intensity treatment was not included in this analysis due to due to lack of continued sampling after the end of that experimental treatment.

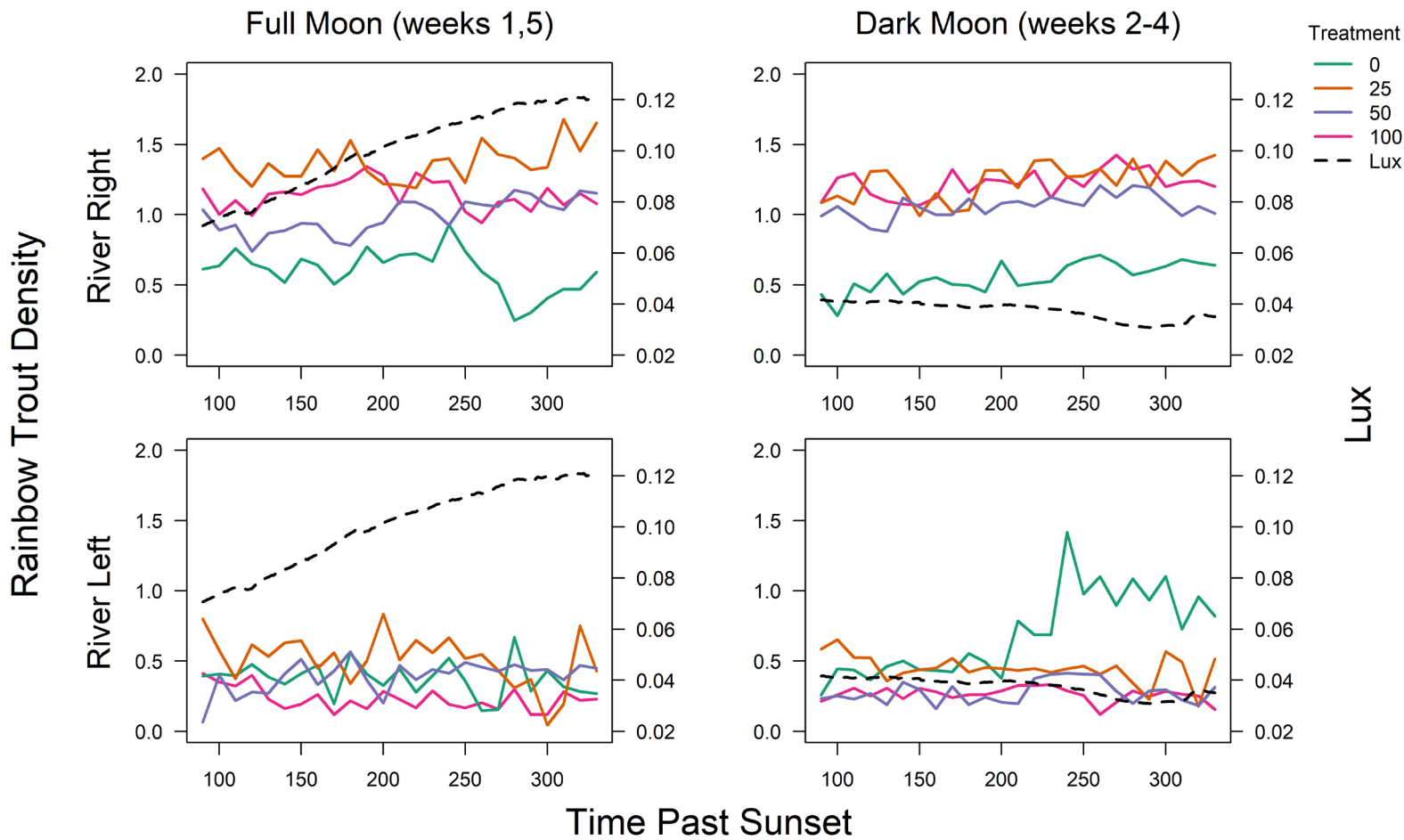
<b>Light Treatments</b>	<b>Number of Breakpoints</b>			
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
0	-5.358	-28.117	-32.087*	-26.841
25	-38.24*	-38.229	-33.146	-31.707
100	-10.953	-19.876*	-16.256	-11.814

**Table S6.** Breakpoints (minutes past sunset), parameter estimates, and lower (LCI) and upper (UCI) 95% confidence intervals for the best fitting within night segmented models across respective light treatments (LT). For LT = 25, slope is the relationship of relative Rainbow Trout density with time for the entire model and for LT = 100 the slopes are the relationship on either side of breakpoint 1. For LT = 0, slope 1 is the relationship prior to breakpoint 1, slope 2 is the relationship between breakpoints 1 and 2, and slope 3 is the relationship after breakpoint 2. Note that parameter estimates are on the log link not the response scale. The 50% light intensity treatment was not included in this analysis due to lack of continued sampling after the end of that experimental treatment.

<b>Breakpoints / Parameters</b>	<b>Estimate</b>	<b>LCI</b>	<b>UCI</b>
<b>LT = 0</b>			
Breakpoint 1	359.955	318.901	401.010
Breakpoint 2	510.001	451.748	568.254
Intercept	-0.78411	-1.25165	-0.31658
Slope 1	-0.00198	-0.00399	0.00002
Slope 2	0.01058	0.00618	0.01498
Slope 3	-0.00054	-0.00732	0.00624
<b>LT = 25</b>			
Intercept	0.26557	0.15437	0.37867
Slope 1	-0.00094	-0.00122	-0.00065
<b>LT = 100</b>			
Breakpoint 1	140.000	116.971	163.029
Intercept	-3.42306	-4.90595	-1.94017
Slope 1	0.01978	0.00702	0.03253
Slope 2	0.00127	0.00074	0.00181

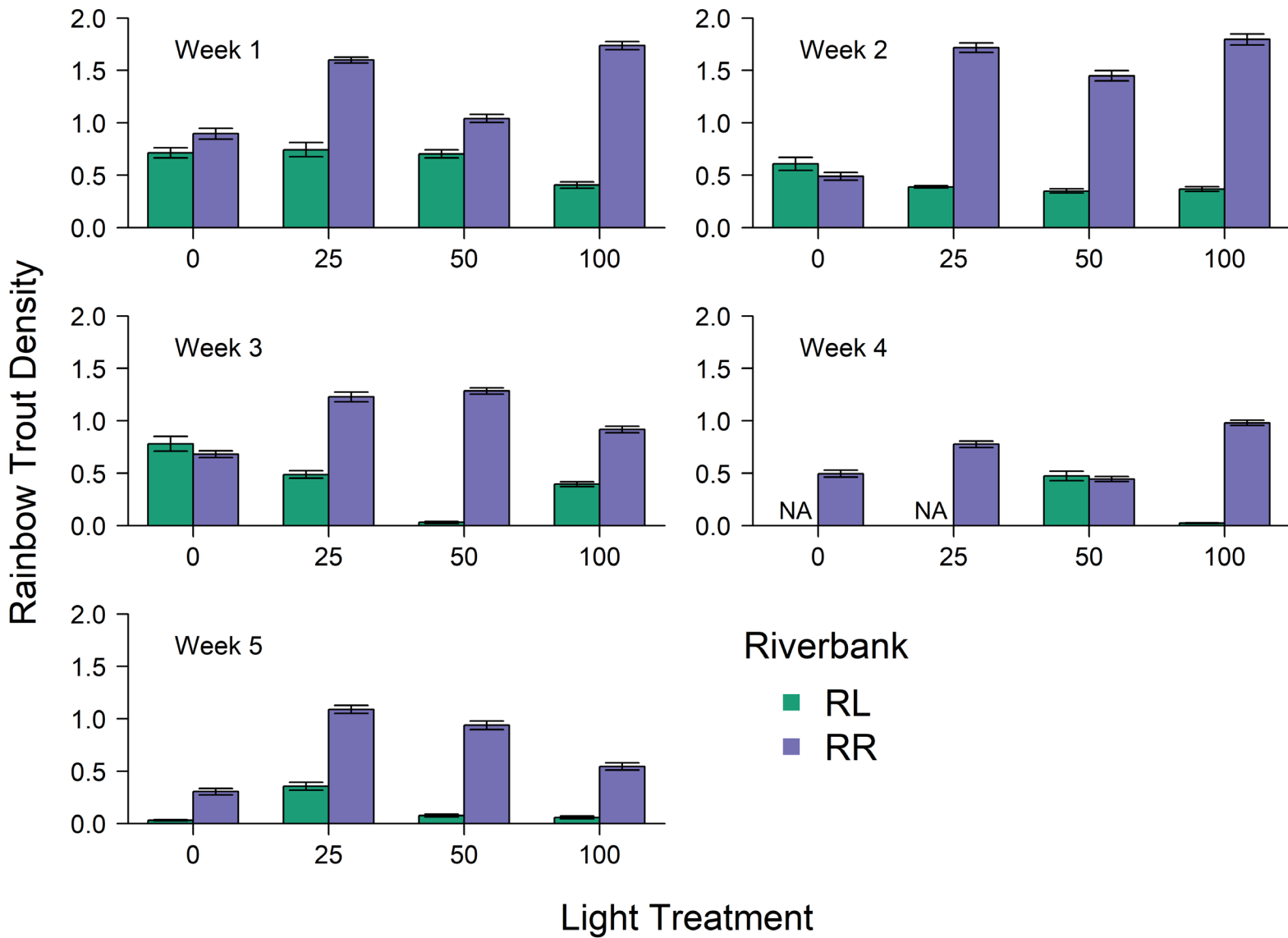


**Figure S1.** Image of the Sundial Bridge 100% light intensity treatment and the light spectrum emitted from the bridge under all light treatments.

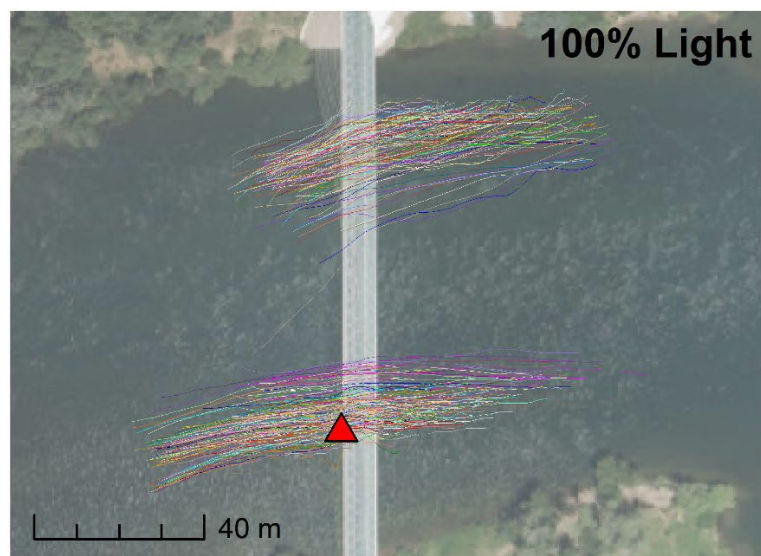
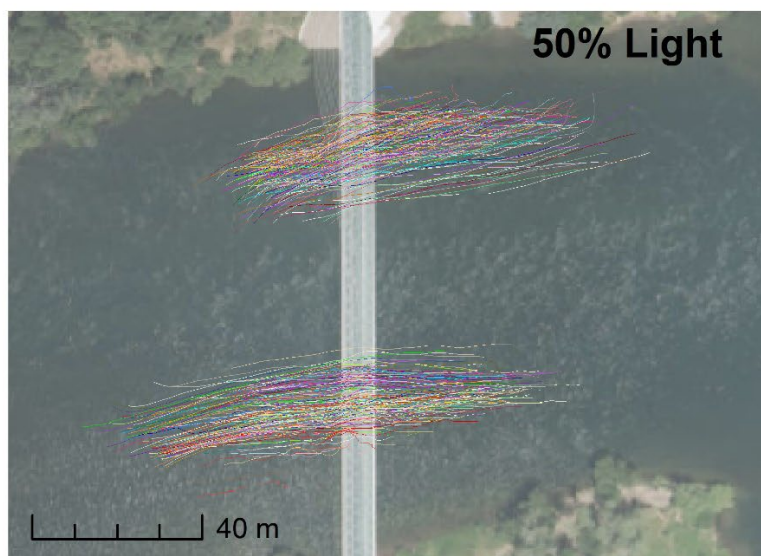
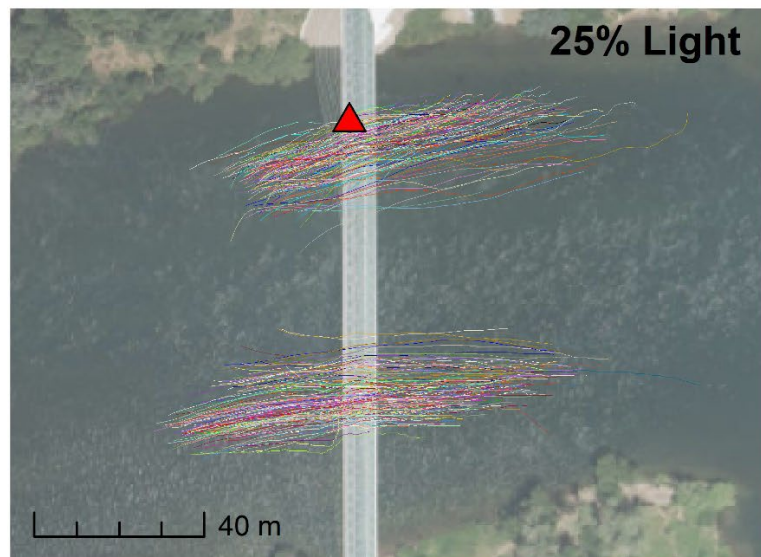
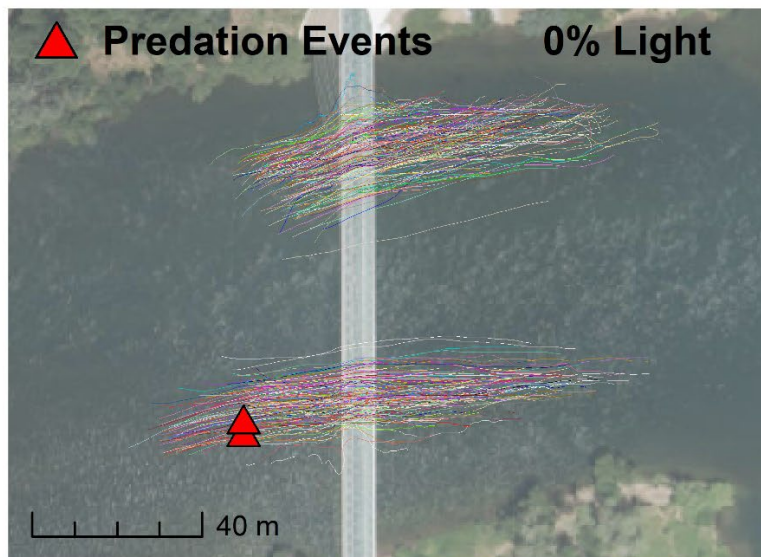


**Figure S2.** Mean relative Rainbow Trout density throughout the night (90 – 330 minutes past sunset) on river right (top row) and left (bottom row), for each ALAN treatment (0%, 25%, 50%, 100% intensity) across full (moon stage  $\geq 90\%$ , left column) and dark moon weeks (right column). The dashed line is the mean ambient lux recorded down river out of the influence of Sundial Bridge ALAN, during these weeks.





**Figure S3.** Mean nightly ( $\pm 1$  Standard Error) relative Rainbow Trout density for each ALAN treatment (0%, 25%, 50%, 100% intensity) across all five weeks of study. Left (RL) and right (RR) riverbanks are denoted with separate colors in the legend. The NAs during week 4 represent nights when an ARIS malfunctioned and we did not obtain fish density on RL.



**Figure S4.** Every micro predation event recorder (mPER) deployment across ALAN treatments (0%, 25%, 50%, 100% intensity) for the entire study. Within each panel, each line represents a unique deployment and predation events are denoted with a triangle.