



Fig. S1. Greenhouse and minimum photon flux for behavioral tests. (A) Downwelling irradiance in testing arena used for vertical distribution behavioral tests, in greenhouse for reared animals. (B) Lowest stimulus intensity used in behavioral response index trials

Pool ID	Pool coordinates, determined by GPS	Deepest point of each pool, coordinates determined by GPS
C AZ1	33.670, -111.464	33.6699, -111.4641
C AZ2	33.720, -111.806	33.7197, -111.8059
C AZ3	33.759, -111.877	33.7588, -111.8773
SE AZ1	32.230, -109.819	32.2300, -109.8186
SE AZ2	32.229, -109.821	32.2290, -109.8210
SE AZ3	32.221, -109.827	32.2208, -109.8271

Table S1 GPS coordinates of ephemeral pool light environments presented in Fig.4. Filled areas were 100 m² or greater.

Water type	Wavelength (nm)															
	310	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700
Median ephemeral pool attenuation (cm^{-1})	NA	5.89	2.00	1.21	0.923	0.758	0.631	0.549	0.483	0.430	0.373	0.323	0.293	0.270	0.251	0.242
I (cm^{-1})	1.50 $\times 10^{-4}$	6.20 $\times 10^{-5}$	3.80 $\times 10^{-5}$	2.80 $\times 10^{-5}$	2.20 $\times 10^{-5}$	1.90 $\times 10^{-5}$	1.80 $\times 10^{-5}$	2.70 $\times 10^{-5}$	4.30 $\times 10^{-5}$	6.30 $\times 10^{-5}$	8.90 $\times 10^{-5}$	2.35 $\times 10^{-4}$	3.05 $\times 10^{-4}$	3.60 $\times 10^{-4}$	4.20 $\times 10^{-4}$	5.60 $\times 10^{-4}$
IA (cm^{-1})	1.80 $\times 10^{-4}$	7.80 $\times 10^{-5}$	5.20 $\times 10^{-5}$	3.80 $\times 10^{-5}$	3.10 $\times 10^{-5}$	2.60 $\times 10^{-5}$	2.50 $\times 10^{-5}$	3.20 $\times 10^{-5}$	4.80 $\times 10^{-5}$	6.70 $\times 10^{-5}$	9.40 $\times 10^{-5}$	2.40 $\times 10^{-4}$	3.10 $\times 10^{-4}$	3.70 $\times 10^{-4}$	4.30 $\times 10^{-4}$	5.70 $\times 10^{-4}$
IB (cm^{-1})	2.20E $\times 10^{-4}$	1.00 $\times 10^{-4}$	6.60 $\times 10^{-5}$	5.10 $\times 10^{-5}$	4.20 $\times 10^{-5}$	3.60 $\times 10^{-5}$	3.30 $\times 10^{-5}$	4.20 $\times 10^{-5}$	5.40 $\times 10^{-5}$	7.20 $\times 10^{-5}$	9.90 $\times 10^{-5}$	2.45 $\times 10^{-4}$	3.15 $\times 10^{-4}$	3.75 $\times 10^{-4}$	4.35 $\times 10^{-4}$	5.80 $\times 10^{-4}$
II (cm^{-1})	3.70 $\times 10^{-4}$	1.75 $\times 10^{-4}$	1.22 $\times 10^{-4}$	9.60 $\times 10^{-5}$	8.10 $\times 10^{-5}$	6.80 $\times 10^{-5}$	6.25 $\times 10^{-5}$	7.00 $\times 10^{-5}$	7.60 $\times 10^{-5}$	8.90 $\times 10^{-5}$	1.15 $\times 10^{-4}$	2.60 $\times 10^{-4}$	3.35 $\times 10^{-4}$	4.00 $\times 10^{-4}$	4.65 $\times 10^{-4}$	6.10 $\times 10^{-4}$
1 (cm^{-1})	1.80 $\times 10^{-3}$	1.20 $\times 10^{-3}$	8.00 $\times 10^{-4}$	5.10 $\times 10^{-4}$	3.60 $\times 10^{-4}$	2.50 $\times 10^{-4}$	1.70 $\times 10^{-4}$	1.40 $\times 10^{-4}$	1.30 $\times 10^{-4}$	1.20 $\times 10^{-4}$	1.50 $\times 10^{-4}$	3.00 $\times 10^{-4}$	3.70 $\times 10^{-4}$	4.50 $\times 10^{-4}$	5.10 $\times 10^{-4}$	6.50 $\times 10^{-4}$
3 (cm^{-1})	2.40 $\times 10^{-3}$	1.70 $\times 10^{-3}$	1.10 $\times 10^{-3}$	7.80 $\times 10^{-4}$	5.40 $\times 10^{-4}$	3.90 $\times 10^{-4}$	2.90 $\times 10^{-4}$	2.20 $\times 10^{-4}$	2.00 $\times 10^{-4}$	1.90 $\times 10^{-4}$	2.10 $\times 10^{-4}$	3.30 $\times 10^{-4}$	4.00 $\times 10^{-4}$	4.60 $\times 10^{-4}$	5.60 $\times 10^{-4}$	7.20 $\times 10^{-4}$
5 (cm^{-1})	3.50 $\times 10^{-3}$	2.30 $\times 10^{-3}$	1.60 $\times 10^{-3}$	1.10 $\times 10^{-3}$	7.80 $\times 10^{-4}$	5.60 $\times 10^{-4}$	4.30 $\times 10^{-4}$	3.60 $\times 10^{-4}$	3.10 $\times 10^{-4}$	3.00 $\times 10^{-4}$	3.30 $\times 10^{-4}$	4.00 $\times 10^{-4}$	4.80 $\times 10^{-4}$	5.40 $\times 10^{-4}$	6.50 $\times 10^{-4}$	8.00 $\times 10^{-4}$
7 (cm^{-1})	NA $\times 10^{-3}$	3.00 $\times 10^{-3}$	2.10 $\times 10^{-3}$	1.60 $\times 10^{-3}$	1.20 $\times 10^{-3}$	8.90 $\times 10^{-4}$	7.10 $\times 10^{-4}$	5.80 $\times 10^{-4}$	4.90 $\times 10^{-4}$	4.60 $\times 10^{-4}$	4.60 $\times 10^{-4}$	4.80 $\times 10^{-4}$	5.40 $\times 10^{-4}$	6.30 $\times 10^{-4}$	7.80 $\times 10^{-4}$	9.20 $\times 10^{-4}$
9 (cm^{-1})	NA $\times 10^{-3}$	3.90 $\times 10^{-3}$	3.00 $\times 10^{-3}$	2.40 $\times 10^{-3}$	1.90 $\times 10^{-3}$	1.60 $\times 10^{-3}$	1.23 $\times 10^{-3}$	9.90 $\times 10^{-4}$	7.80 $\times 10^{-4}$	6.30 $\times 10^{-4}$	5.80 $\times 10^{-4}$	6.00 $\times 10^{-4}$	6.50 $\times 10^{-4}$	7.60 $\times 10^{-4}$	9.20 $\times 10^{-4}$	1.10 $\times 10^{-3}$

Table S2 Diffuse attenuation coefficients of downward irradiance, shown here for comparison to other bodies of water using the Jerlov Scale. The first row presents median attenuation coefficients at 1.0cm for ephemeral pools in Arizona, measured at 1nm intervals, and binned here to 25 nm intervals for comparison with values reproduced from (Jerlov, 1976). Note that (Jerlov, 1976) used attenuation in the upper 10 meters of the water column, per 1cm. These values are displayed graphically in figure 1C in the main text. These bodies of water range from the clearest (type I) to coastal and heavily attenuating (type 9).

References

Jerlov, N. G. (1976). *Marine Optics*. Amsterdam: Elsevier.