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Figure S1 Two additional silver carp trials (n = 2) conducted using new fish and sound alone. Sound did not have a significant effect on passage rate ($p > 0.05$) and high base activity levels were seen again .

Table S1 Generalized linear mixed model (GLMM) results for Bighead Carp

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment	-0.3750	0.1619	-2.315	-1.3701	0.1707
Control					
Test EBC vs No Treatment	-2.5149	0.1956	-12.857	-7.6077	<0.0001
Control					
Test Sound vs No Treatment	-1.9864	0.1817	-10.929	-6.4669	<0.0001
Control					
Pre-Test Sound vs No Treatment	-0.3116	0.1617	-1.927	-1.1402	0.2543
Control					
GLMM Fits					
No Treatment Control					
Linear	0.0497	0.0064	7.798	4.8738	<0.0001
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-2.7296	0.4204	-6.491	-3.8402	0.0005
Pre-Test vs Test Trial 2	-1.6992	0.2633	-6.454	-3.8189	0.0001

Pre-Test vs Test Trial 3	-1.4990	0.2302	-6.512	-3.8533	0.0001
Pre-Test vs Test Trial 4	-1.6957	0.2428	-6.984	-4.1325	<0.0001
Pre-Test vs Test Trial 5	-1.4663	0.2416	-6.058	-3.5846	0.0003
Pre-Test vs Test Trial 6	-1.2786	0.2406	-5.313	-3.1438	0.0016
Pre-Test vs Test Trial 7	-1.3373	0.2447	-5.465	-3.2337	0.0012
Pre-Test vs Test Trial 8	-1.6917	0.2903	-5.828	-3.4467	0.0006

EBC

Pre-Test vs Test Trial 1	-2.2535	0.3817	-5.904	-3.4935	0.0004
Pre-Test vs Test Trial 2	-1.8967	0.3340	-5.679	-3.3604	0.0008
Pre-Test vs Test Trial 3	-2.2610	0.3653	-6.189	-3.6621	0.0003
Pre-Test vs Test Trial 4	-2.2222	0.3519	-6.314	-3.7361	0.0002
Pre-Test vs Test Trial 5	-2.3605	0.3996	-5.908	-3.4959	0.0005
Pre-Test vs Test Trial 6	-2.2192	0.4017	-5.525	-3.2692	0.0011
Pre-Test vs Test Trial 7	-2.2312	0.4014	-5.559	-3.3077	0.0009
Pre-Test vs Test Trial 8	-2.1802	0.4022	-5.420	-3.2071	0.0013

Table S2 Generalized linear mixed model (GLMM) results for Silver Carp

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment Control	-0.38369	0.04591	-8.356	-3.61731	0.0002
Test EBC vs No Treatment Control	-3.55947	0.12312	-28.910	-12.51515	<0.0001
Test Sound vs No Treatment Control	-0.37220	0.04313	-8.630	-3.61905	0.0002
Pre-Test Sound vs No Treatment Control	-0.23037	0.04253	-5.417	-2.34502	0.0095
GLMM Fits					
No Treatment Control					
Linear	0.04971	0.006375	7.798	3.37576	0.0004
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-0.46446	0.08117	-5.722	-2.47706	0.0066
Pre-Test vs Test Trial 2	-0.22134	0.07466	-2.965	-1.28355	0.0998

Pre-Test vs Test Trial 3	-0.04147	0.07197	-0.576	-0.24935	0.4017
Pre-Test vs Test Trial 4	-0.07821	0.07096	-1.102	-0.47706	0.3167
Pre-Test vs Test Trial 5	-0.13626	0.07046	-1.934	-0.83723	0.2013
Pre-Test vs Test Trial 6	-0.11869	0.07270	-1.633	-0.70693	0.2401
Pre-Test vs Test Trial 7	-0.03219	0.07331	-0.439	-0.19004	0.4247
Pre-Test vs Test Trial 8	-0.04225	0.07274	-0.581	-0.25152	0.4009

EBC

Pre-Test vs Test Trial 1	-4.61929	0.58026	-7.961	-3.44632	0.0003
Pre-Test vs Test Trial 2	-3.03461	0.26489	-11.456	-4.95931	<0.0001
Pre-Test vs Test Trial 3	-3.52313	0.33861	-10.405	-4.50433	<0.0001
Pre-Test vs Test Trial 4	-3.20251	0.28349	-11.297	-4.89048	<0.0001
Pre-Test vs Test Trial 5	-3.17326	0.27343	-11.605	-5.02381	<0.0001
Pre-Test vs Test Trial 6	-3.10102	0.27374	-11.328	-4.90390	<0.0001
Pre-Test vs Test Trial 7	-3.11356	0.28386	-10.969	-4.74848	<0.0001
Pre-Test vs Test Trial 8	-2.86611	0.24988	-11.470	-4.96537	<0.0001

Table S3 Generalized linear mixed model (GLMM) results for Common Carp

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	0.01657	0.05406	0.31	.21651	.82859
Test EBC vs No Treatment					
Control	-2.90613	0.14418	-20.15	-14.07337	< 0.0001
Test Sound vs No Treatment					
Control	-1.75450	0.08743	-20.07	-14.01750	<0.0001
Pre-Test Sound vs No Treatment					
Control	-0.14807	0.05626	-2.63	-1.83687	0.0663
GLMM Fits					
No Treatment Control					
Linear	-0.01088	0.00871	-1.25	-0.87304	0.3827
Post-hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-1.47010	0.17517	-8.39	-5.85983	<0.0001
Pre-Test vs Test Trial 2	-1.88607	0.22860	-8.25	-5.76205	<0.0001

Pre-Test vs Test Trial 3	-1.62308	0.20298	-8.00	-5.58744	<0.0001
Pre-Test vs Test Trial 4	-1.42335	0.19371	-7.35	-5.13346	<0.0001
Pre-Test vs Test Trial 5	-1.47441	0.21301	-6.92	-4.83314	<0.0001
Pre-Test vs Test Trial 6	-1.26610	0.24116	-5.25	-3.66680	0.0003
Pre-Test vs Test Trial 7	-1.65822	0.27251	-6.09	-4.25344	<0.0001
Pre-Test vs Test Trial 8	-2.05088	0.29442	-6.97	-4.86810	<0.0001

EBC

Pre-Test vs Test Trial 1	-2.56067	0.28060	-9.13	-6.37667	<0.0001
Pre-Test vs Test Trial 2	-3.40840	0.45632	-7.47	-5.21727	< 0.0001
Pre-Test vs Test Trial 3	-2.19806	0.25927	-8.48	-5.92269	< 0.0001
Pre-Test vs Test Trial 4	-3.16950	0.41883	-7.57	-5.28711	< 0.0001
Pre-Test vs Test Trial 5	-2.03878	0.26936	-7.57	-5.28711	< 0.0001
Pre-Test vs Test Trial 6	-2.60590	0.42522	-6.13	-4.28137	<0.0001
Pre-Test vs Test Trial 7	-2.52587	0.39527	-6.39	-4.46297	<0.0001
Pre-Test vs Test Trial 8	-3.55778	0.58679	-6.06	-4.23250	<0.0001

Table S4 Generalized linear mixed model (GLMM) results for Grass Carp

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	-0.1427	0.0325	-4.39		<0.0001
Test EBC vs No Treatment					
Control	-3.0722	0.0787	-39.00		<0.0001
Test Sound vs No Treatment					
Control	-0.2374	0.0328	-7.24		<0.0001
Pre-Test Sound vs No Treatment					
Control	0.0505	0.0315	1.60		0.1092
GLMM Fits					
No Treatment Control					
Linear	0.0165	0.0050	3.58		0.0004
Post-hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-0.7781	0.0767	-10.15		<0.0001

Pre-Test vs Test Trial 2	-0.4599	0.0699	-6.58	<0.0001
Pre-Test vs Test Trial 3	-0.2533	0.0637	-3.97	<0.0001
Pre-Test vs Test Trial 4	-0.2453	0.0613	-4.00	<0.0001
Pre-Test vs Test Trial 5	-0.2117	0.0617	-3.43	0.0006
Pre-Test vs Test Trial 6	-1.289	-0.0591	-2.18	0.0291
Pre-Test vs Test Trial 7	-0.1691	0.0580	-2.92	0.0036
Pre-Test vs Test Trial 8	-0.0567	0.0570	-1.00	0.3192

EBC

Pre-Test vs Test Trial 1	-3.7750	0.2930	-12.89	<0.0001
Pre-Test vs Test Trial 2	-3.2947	0.2349	-14.03	<0.0001
Pre-Test vs Test Trial 3	-3.0433	0.2022	-15.05	<0.0001
Pre-Test vs Test Trial 4	-2.6391	0.1616	-16.33	<0.0001
Pre-Test vs Test Trial 5	-2.8169	0.1783	-15.80	<0.0001
Pre-Test vs Test Trial 6	-3.1270	0.2019	-15.49	<0.0001
Pre-Test vs Test Trial 7	-3.5531	0.2403	-14.79	<0.0001
Pre-Test vs Test Trial 8	-2.7330	0.1651	-16.56	<0.0001

Table S5 Generalized linear mixed model (GLMM) results for Golden Shiners

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	-0.2367	0.0425	-5.57		<0.0001
Test EBC vs No Treatment					
Control	-2.2434	0.1188	-17.08		<0.0001
Test Sound vs No Treatment					
Control	-1.4754	0.0864	-17.08		<0.0001
Pre-Test Sound vs No Treatment Control					
	-0.2442	0.0639	-3.82		0.0001
GLMM Fits					
No Treatment Control					
Linear	-0.0115	0.0106	-1.08		0.2809
Post-hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-1.1681	0.1880	-6.21		<0.0001
Pre-Test vs Test Trial 2	-1.2566	0.1861	-6.75		<0.0001

Pre-Test vs Test Trial 3	-1.2067	0.1847	-6.53	<0.0001
Pre-Test vs Test Trial 4	-1.5200	0.2406	-6.32	<0.0001
Pre-Test vs Test Trial 5	-1.3516	0.2389	-5.66	<0.0001
Pre-Test vs Test Trial 6	-1.3179	0.2580	-5.11	<0.0001
Pre-Test vs Test Trial 7	-0.8382	0.2113	-3.97	<0.0001
Pre-Test vs Test Trial 8	-1.1894	0.2489	-4.78	<0.0001

EBC

Pre-Test vs Test Trial 1	-2.3431	0.3319	-7.06	<0.0001
Pre-Test vs Test Trial 2	-2.3365	0.3169	-7.37	<0.0001
Pre-Test vs Test Trial 3	-2.4083	0.3311	-7.27	<0.0001
Pre-Test vs Test Trial 4	-1.9461	0.3091	-6.30	<0.0001
Pre-Test vs Test Trial 5	-1.9114	0.3232	-5.91	<0.0001
Pre-Test vs Test Trial 6	-1.5639	0.3047	-5.13	<0.0001
Pre-Test vs Test Trial 7	-1.6858	0.3141	-5.37	<0.0001
Pre-Test vs Test Trial 8	-1.7982	0.3409	-5.27	<0.0001

Table S6 Generalized linear mixed model (GLMM) results for Channel Catfish

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment Control	0.5064	0.0503	10.07		<0.0001
Test EBC vs No Treatment Control	-0.2046	0.0565	-3.62		0.0003
Test Sound vs No Treatment Control	0.4654	0.0503	9.25		<0.0001
Pre-Test Sound vs No Treatment Control	0.1295	0.0528	2.45		0.0143
GLMM Fits					
No Treatment Control					
Linear	-0.0416	0.0107	-3.89		<0.0001
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	0.3551	0.1090	3.26		0.0011

Pre-Test vs Test Trial 2	0.3856	0.1119	3.44	0.0006
Pre-Test vs Test Trial 3	0.2777	0.1081	2.57	0.0103
Pre-Test vs Test Trial 4	0.2931	0.1150	2.55	0.0101
Pre-Test vs Test Trial 5	0.3651	0.1088	3.36	0.0008
Pre-Test vs Test Trial 6	0.4836	0.1165	4.15	<0.0001
Pre-Test vs Test Trial 7	0.1552	0.1190	1.30	0.1919
Pre-Test vs Test Trial 8	0.3721	0.1176	-3.79	0.0002

EBC

Pre-Test vs Test Trial 1	-0.5387	0.1422	-3.79	0.0002
Pre-Test vs Test Trial 2	-0.1387	0.1314	-1.06	0.2911
Pre-Test vs Test Trial 3	-0.3047	0.1301	-2.34	0.0192
Pre-Test vs Test Trial 4	-0.1327	0.1321	-1.00	0.3151
Pre-Test vs Test Trial 5	-0.3521	0.1348	-2.61	0.0090
Pre-Test vs Test Trial 6	-0.2740	0.1438	-1.89	0.0018
Pre-Test vs Test Trial 7	-0.4510	0.1444	-3.12	0.0018
Pre-Test vs Test Trial 8	-0.4811	0.1501	-3.19	0.0014

Table S7 Generalized linear mixed model (GLMM) results for Largemouth Bass

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	-0.0637	0.0781	-0.816		0.4145
Test EBC vs No Treatment					
Control	-2.1319	0.1607	13.266	-	<0.0001
Test Sound vs No Treatment					
Control	-0.4168	0.0904	-4.611		<0.0001
Pre-Test Sound vs No Treatment Control					
Treatment Control	0.3990	0.0753	5.297		<0.0001
GLMM fits					
No Treatment Control					
Linear	-0.1080	0.0110	-9.838		<0.0001
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-1.5341	0.2346	-6.538		<0.0001

Pre-Test vs Test Trial 2	-1.6212	0.2649	-6.119	<0.0001
Pre-Test vs Test Trial 3	-0.9318	0.2311	-4.032	<0.0001
Pre-Test vs Test Trial 4	-0.8112	0.1999	-4.057	<0.0001
Pre-Test vs Test Trial 5	0.0573	0.1949	0.294	0.7687
Pre-Test vs Test Trial 6	-0.4736	0.2214	-2.140	0.0324
Pre-Test vs Test Trial 7	-0.7247	0.2184	-3.318	0.0009
Pre-Test vs Test Trial 8	-0.4852	0.2243	-2.164	0.0305

EBC

Pre-Test vs Test Trial 1	-1.9078	0.2626	-7.266	<0.0001
Pre-Test vs Test Trial 2	-3.2420	0.5142	-6.304	<0.0001
Pre-Test vs Test Trial 3	-2.4172	0.4015	-6.021	<0.0001
Pre-Test vs Test Trial 4	-3.1818	0.5149	-6.180	<0.0001
Pre-Test vs Test Trial 5	-1.9082	0.3662	-5.211	<0.0001
Pre-Test vs Test Trial 6	-1.8401	0.3500	-5.265	<0.0001
Pre-Test vs Test Trial 7	-3.2334	0.5927	-5.455	<0.0001
Pre-Test vs Test Trial 8	-2.5147	0.4713	-5.336	<0.0001

Table S8 Generalized linear mixed model (GLMM) results for Bluegill Sunfish

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	0.4754	0.0605	7.86		<0.0001
Test EBC vs No Treatment					
Control	-1.7923	0.1045	-17.16		<0.0001
Test Sound vs No Treatment					
Control	-0.9151	0.0800	-11.50		<0.0001
Pre-Test Sound vs No Treatment					
Control	0.0995	0.0624	1.59		0.1112
GLMM Fits					
No Treatment Control					
Linear	-0.0471	0.01190	-3.95		<0.0001
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-1.3975	0.2379	-5.87		<0.0001
Pre-Test vs Test Trial 2	-1.322	0.2125	-6.22		<0.0001

Pre-Test vs Test Trial 3	-0.8512	0.1936	-4.40	<0.0001
Pre-Test vs Test Trial 4	-0.7267	0.1935	-3.96	<0.0001
Pre-Test vs Test Trial 5	-0.8858	0.1877	-4.72	<0.0001
Pre-Test vs Test Trial 6	-0.8473	0.1990	-4.26	<0.0001
Pre-Test vs Test Trial 7	-1.2000	0.2042	-5.97	<0.0001
Pre-Test vs Test Trial 8	-0.8664	0.1958	-4.43	<0.0001

EBC

Pre-Test vs Test Trial 1	-2.153	0.3101	-6.93	<0.0001
Pre-Test vs Test Trial 2	-1.859	0.2531	-7.34	<0.0001
Pre-Test vs Test Trial 3	-2.153	0.3105	-6.93	<0.0001
Pre-Test vs Test Trial 4	-2.2623	0.3221	-7.02	<0.0001
Pre-Test vs Test Trial 5	-1.3919	0.2190	-6.36	<0.0001
Pre-Test vs Test Trial 6	-1.4448	0.2394	-6.04	<0.0001
Pre-Test vs Test Trial 7	-2.2385	0.2972	-7.53	<0.0001
Pre-Test vs Test Trial 8	-1.6311	0.2515	-6.48	<0.0001

Table S9 Generalized linear mixed model (GLMM) results for Rainbow Trout

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment					
Control	0.0578	0.0887	0.652		0.5141
Test EBC vs No Treatment					
Control	-1.6707	0.1326	-12.596		<0.0001
Test Sound vs No Treatment					
Control	-0.5945	0.0869	-6.844		<0.0001
Pre-Test Sound vs No Treatment					
Control	-0.1922	0.0817	-2.353		0.0186
GLMM Fits					
No Treatment Control					
Linear	-0.0047	0.0128	-0.367		0.7140
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-0.6391	0.2002	-3.192		0.0014
Pre-Test vs Test Trial 2	-0.5680	0.1750	-3.245		0.0012

Pre-Test vs Test Trial 3	-0.3893	0.2000	-1.951	0.0510
Pre-Test vs Test Trial 4	-0.4875	0.1934	-2.520	0.0117
Pre-Test vs Test Trial 5	-0.3471	0.1792	-1.937	0.0527
Pre-Test vs Test Trial 6	-0.5954	0.1896	-3.140	0.0017
Pre-Test vs Test Trial 7	0.0771	0.1960	0.393	0.6942
Pre-Test vs Test Trial 8	-0.2683	0.1645	-1.631	0.1029

EBC

Pre-Test vs Test Trial 1	-1.4605	0.3300	-4.426	<0.0001
Pre-Test vs Test Trial 2	-1.5169	0.3037	-4.994	<0.0001
Pre-Test vs Test Trial 3	-1.5117	0.3623	-4.173	<0.0001
Pre-Test vs Test Trial 4	-1.4325	0.3306	-4.333	<0.0001
Pre-Test vs Test Trial 5	-1.1913	0.2903	-4.104	<0.0001
Pre-Test vs Test Trial 6	-1.5405	0.3284	-4.691	<0.0001
Pre-Test vs Test Trial 7	-1.5478	0.4083	-3.791	0.0001
Pre-Test vs Test Trial 8	-1.6266	0.3268	-4.977	<0.0001

Table S10 Generalized linear mixed model (GLMM) results for Lake Sturgeon exposed to sound and EBC.

Fixed Effects	Estimate	Std. Error	Z value	Z value (corrected)	Pr (> z)
Does exposure to sound or EBC reduce mean passage of fish?					
Pre-Test EBC vs No Treatment Control	.234942	0.065215	3.58		0.0003
Test EBC vs No Treatment Control	-1.84733	0.126411	-14.61		< 0.0001
Test Sound vs No Treatment Control	-0.62878	0.07617	-8.26		<0.0001
Pre-Test Sound vs No Treatment Control	-0.15922	0.068695	-2.32		0.0205
GLMM Fits					
No Treatment Control					
Linear	-0.03598	0.010293	-3.50		0.0005
Post hoc Comparisons					
Sound					
Pre-Test vs Test Trial 1	-0.5510	0.1376	-4.003		<0.0001

Pre-Test vs Test Trial 2	-0.4720	0.1670	-2.825	0.0047
Pre-Test vs Test Trial 3	-0.4276	0.1914	-2.235	0.0254
Pre-Test vs Test Trial 4	-0.4754	0.1975	-2.536	0.0112
Pre-Test vs Test Trial 5	-0.5108	0.2022	-2.525	0.0116
Pre-Test vs Test Trial 6	-0.6267	0.2222	-2.820	0.0048
Pre-Test vs Test Trial 7	-0.454	0.2039	-1.989	0.0467
Pre-Test vs Test Trial 8	-0.2878	0.2412	-1.193	0.2327

EBC

Pre-Test vs Test Trial 1	-2.1695	0.2758	-7.866	<0.0001
Pre-Test vs Test Trial 2	-1.0797	0.1372	- 7.8690	< 0.0001
Pre-Test vs Test Trial 3	-2.2432	0.3524	-6.365	< 0.0001
Pre-Test vs Test Trial 4	-1.7445	0.2528	-4.628	< 0.0001
Pre-Test vs Test Trial 5	-1.1919	0.2710	-4.399	< 0.0001
Pre-Test vs Test Trial 6	-2.8696	0.5934	-4.836	< 0.0001
Pre-Test vs Test Trial 7	-1.2296	0.2857	-4.304	<0.0001
Pre-Test vs Test Trial 8	-0.8889	0.3067	-2.898	0.0037
