

735 Table S1: Overview of sound exposures in Vinjefjorden 21-23 November 2017. Type of exposure: *Transect* means that the airgun was towed 11 m behind the
 736 boat at 4 m depth at a speed of 8.1–8.5 km h⁻¹, with a shooting sequence of 1 shoot per 10 s. *Towing of airgun, no shooting* means that the airgun was towed
 737 from the last position of the active shooting transect to the mooring location. Boat speed and airgun depth were similar to those used during the *transects*.
 738 *Stationary* means that the boat was moored during the shooting sequence. Time and bar pressure of first and last shooting of the sound exposures are also
 739 given.

Date	Exposure number	Type of sound exposure	First shoot (UTC and bar pressure of airgun)	Last shoot (UTC and bar pressure of airgun)	Times of towing of airgun, no shooting (UTC)
21.11.2017	1	Transect	12:07 = 138 bar	13:13 = 138 bar	
21.11.2017	2	Towing of airgun, no shooting	NA	NA	14:07-14:35
21.11.2017	3	Stationary	14:37 = 125 bar	14:43 = 100 bar	
22.11.2017	4	Transect	09:29 = 135 bar	10:29 = 135 bar	
22.11.2017	5	Towing of airgun, no shooting	NA	NA	10:33-10:40
22.11.2017	6	Stationary	13:17 = 130 bar	13:27 = 125 bar	
23.11.2017	7	Transect	11:24 = 138 bar	12:26 = 138 bar	
23.11.2017	8	Towing of airgun, no shooting	NA	NA	12:28-12:40
23.11.2017	9	Stationary	13:53 = 138 bar	14:03 = 138 bar	

741 Table S2. Definitions of equations from the ISO 18405 standard that were used for the different
742 calculations related to the sound pressure and particle acceleration analysis.

ISO 18405 Chapter	Definition	Abbreviation	Unit
3.2.1.9	Sound Exposure Spectral Density	Sound ESD	dB re 1 $\mu\text{Pa}^2 \cdot \text{s}/\text{Hz}$
3.2.1.5	Sound Exposure Level	$\text{SEL}_{\text{sp/cum}}$	dB re 1 $\mu\text{Pa}^2 \cdot \text{s}$
3.2.2.1	Zero to Peak Sound Pressure Level	$P_{0\text{-pk}}$	dB re 1 μPa
-	Acceleration Exposure Spectral Density level	Acceleration ESD	dB re 1 $(\mu\text{m}/\text{s}^2)^2 \cdot \text{s}/\text{Hz}$
-	Acceleration Exposure Level	$\text{AEL}_{\text{sp/cum}}$	dB re 1 $(\mu\text{m}/\text{s}^2)^2 \cdot \text{s}$
-	Zero to Peak Acceleration Level	$A_{0\text{-pk}}$	dB re 1 $\mu\text{m}/\text{s}^2$

743

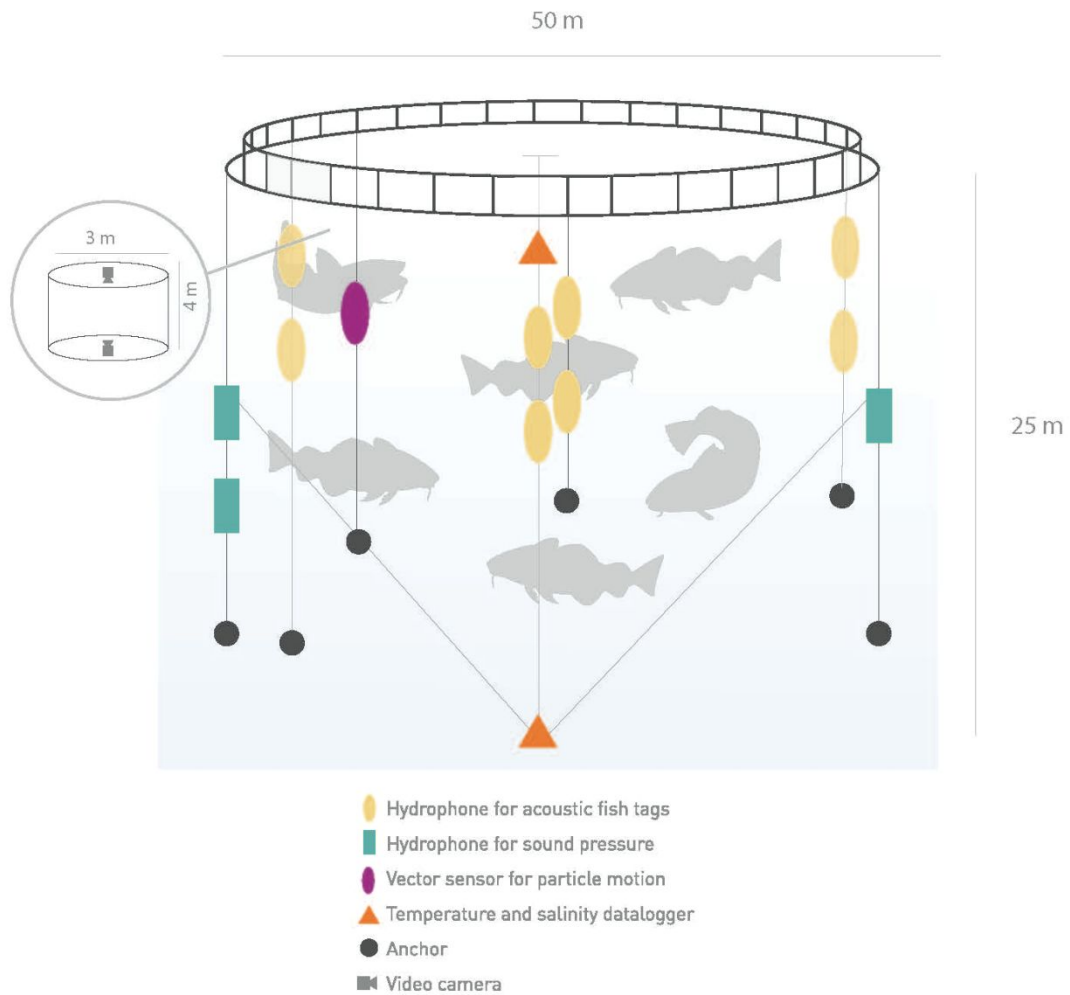
744

745

746 Table S3. Daily resting heart rate (beats per minute) for each individual. Resting heart rate was
747 calculated as the mean of the lowest 10% heart rate values recorded each day.

748

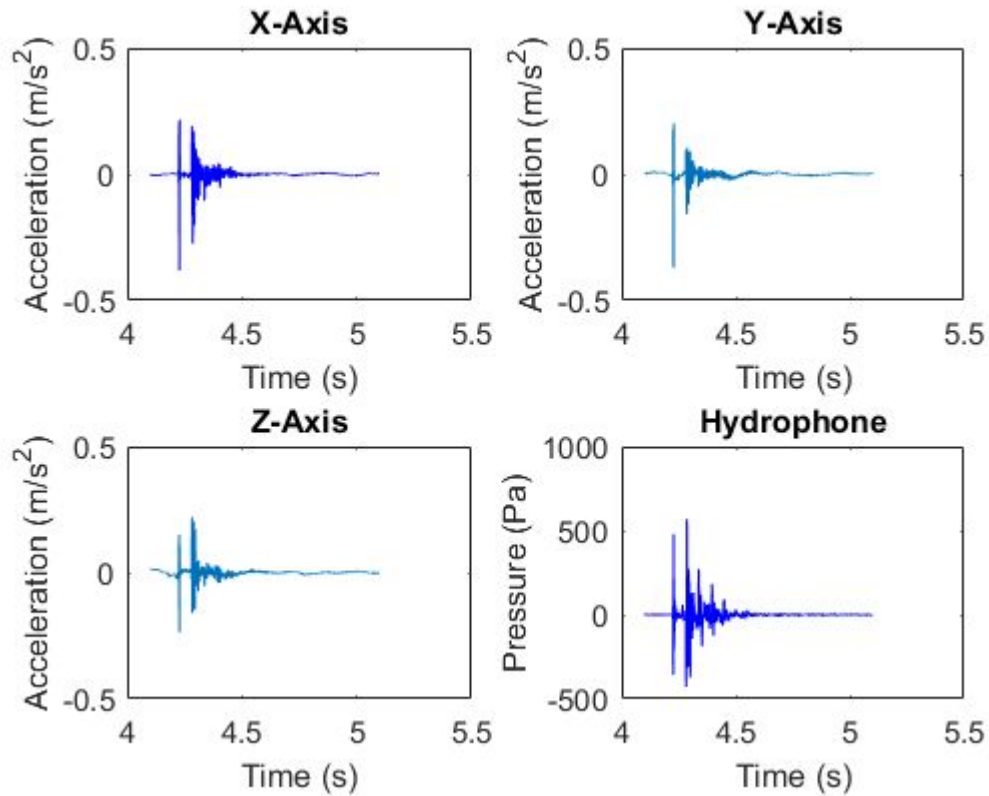
Fish ID	2017-11-20	2017-11-21	2017-11-22	2017-11-23	2017-11-24	Mean
1	15	14.54167	14.15278	15.30556	15.44444	14.83333
2	27.06944	25.29167	22.15278	22.51389	24.68056	23.29398
3	16.40278	16.72222	15.27778	18.34722	16.36111	16.32407
4	16.52778	15.91667	14.20833	16.38889	16.47222	15.55556
5	21.05556	21.95833	19.19444	19.79167	19.47222	19.2662
6	19.13889	19.09722	18.30556	16.73611	17.51389	17.71991
7	22.84722	22.88889	21.01389	22.68056	22.31944	21.90972
8	24.25	25.98611	28.69444	36.44444	39.88889	25.26852
9	17.51389	16.66667	17.04167	17.31944	16.77778	17.21296
10	20.25	20.22222	19.79167	21.30556	20.59722	20.51157
11	NA	NA	NA	NA	NA	NA
12	14.94444	14.80556	13.19444	14.22222	14.22222	14.18981
13	34.11111	30.73611	29.93056	30.375	35.66667	31.07176
14	27.98611	28.93056	27.73611	28.54167	29.70833	28.36574
15	26.79167	30.06944	27.54167	27.875	32.63889	27.72685
16	NA	NA	NA	NA	NA	NA
17	NA	NA	NA	NA	NA	NA
18	NA	NA	NA	NA	NA	NA
19	NA	NA	NA	NA	NA	NA
20	NA	NA	NA	NA	NA	NA
21	NA	NA	NA	NA	NA	NA
22	NA	NA	NA	NA	NA	NA
23	15.66667	18.18056	17.05556	18.25	18.56944	16.31481
24	NA	NA	NA	NA	NA	NA
25	19.06944	20.97222	18.95833	18.55556	20.93056	18.12731
26	NA	NA	NA	NA	NA	NA
27	22.88889	20.15278	19.20833	18.77778	18.83333	19.19192
28	26.44444	22.25	20.45833	19.36364	NA	20.50761
29	26.77778	22.66667	18.84722	18	20.47222	19.09091
30	34.11111	22.86111	23.26389	25.02778	24.59722	23.78114



749

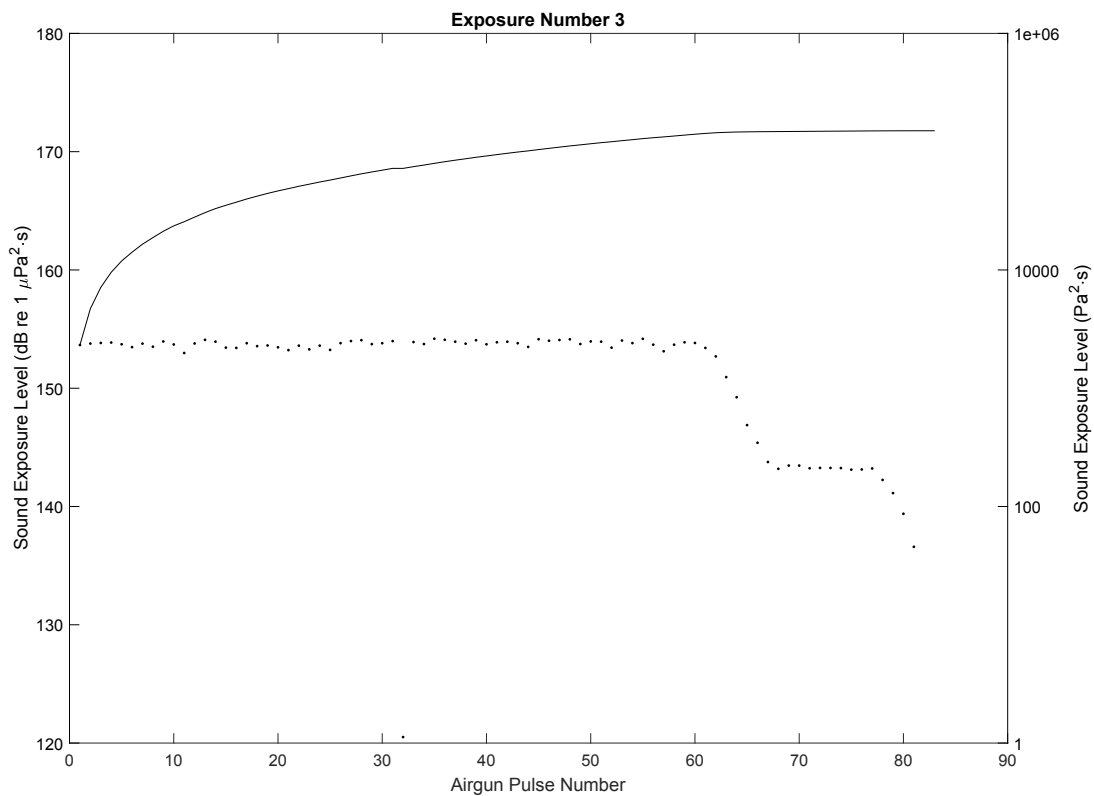
750 Figure S1: Location of various sensors in the sea cage during the sound exposure experiment. The
 751 boat towing the airgun arrived from what is shown as the left side of the pen in the figure, passed
 752 around the sea cage, first on the front side and then on the back side of the pen, and then exited on the
 753 left side. The small net pen indicated by the insert on the left side was equipped with a video
 754 monitoring system and placed on the western (left) side of the large sea cage.

755



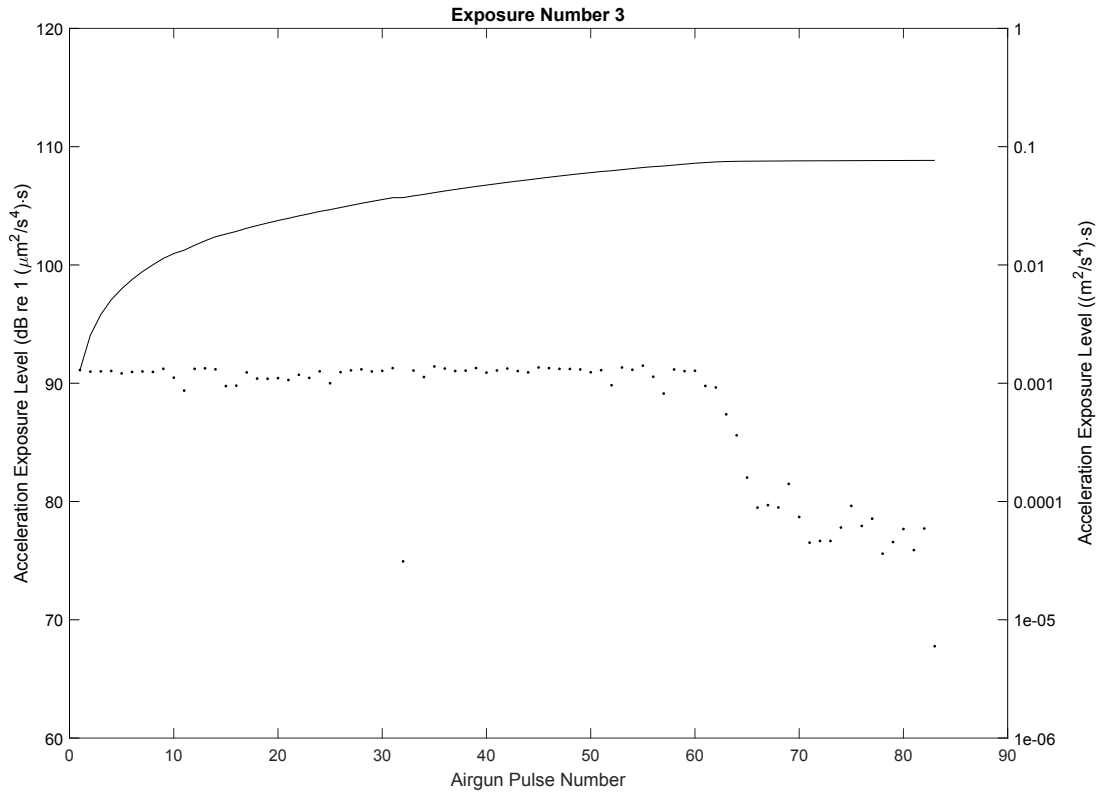
756

757 Figure S2. Time series of an airgun pulse when the airgun was stationary 200 m away, showing the
758 acceleration at the sea cage for the three axes and the hydrophone output.



759
 760 Figure S3. Sound exposure level (single pulse and cumulative) when the airgun was stationary 200
 761 away from the sea cage during exposure 3 on day 1. The dots represent the SEL_{sp} and the curve the
 762 SEL_{cum}.

763



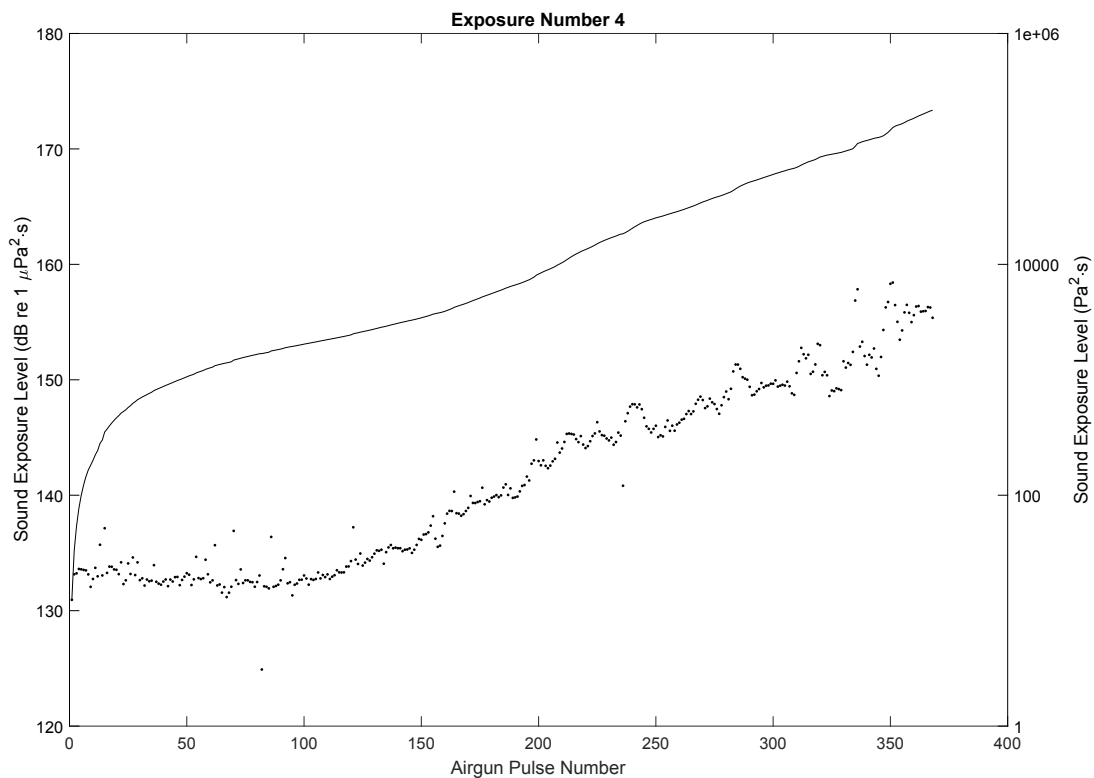
764

765 Figure S4. Acceleration exposure level (single pulse and cumulative) when the airgun was stationary,
 766 exposure number 3 (day 1), 200 away from the sea cage. The dots represent the AEL_{sp} and the curve
 767 the AEL_{cum} .

768

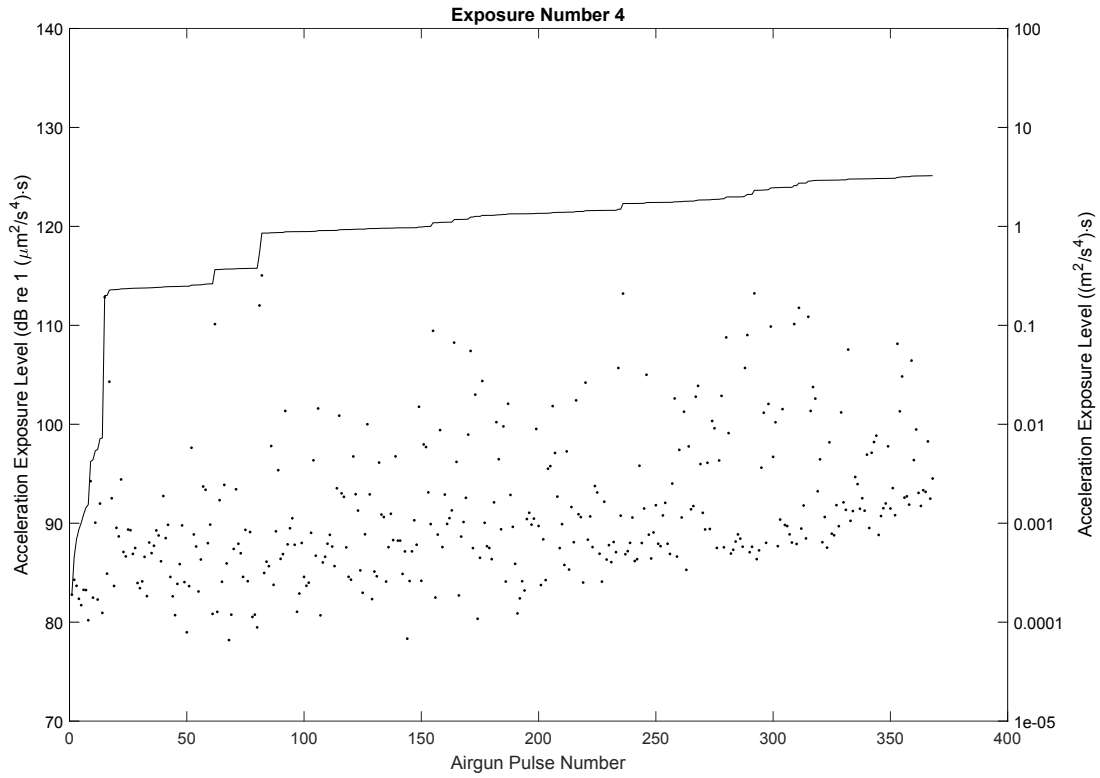
769

770



771
 772 Figure S5. Sound exposure level (single pulse and cumulative) when the airgun was moving 100-6700
 773 m away from the sea cage during exposure 4 on day 2. The dots represent the SEL_{sp} and the curve the
 774 SEL_{cum}.

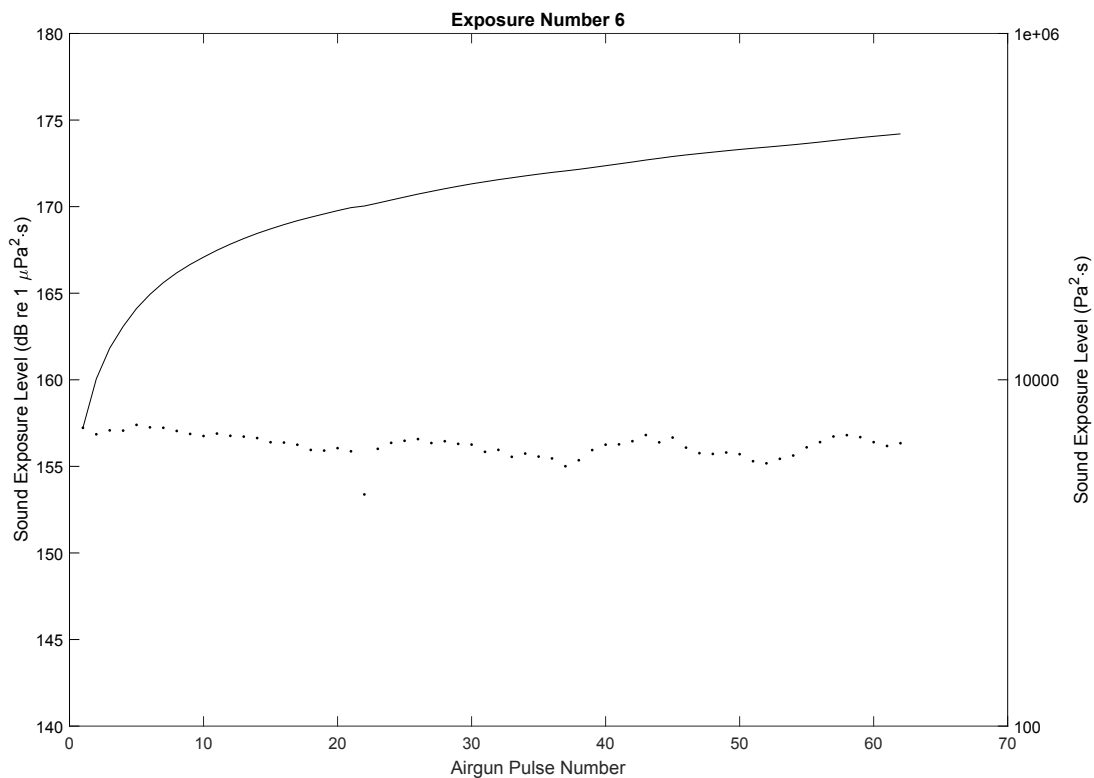
775
 776



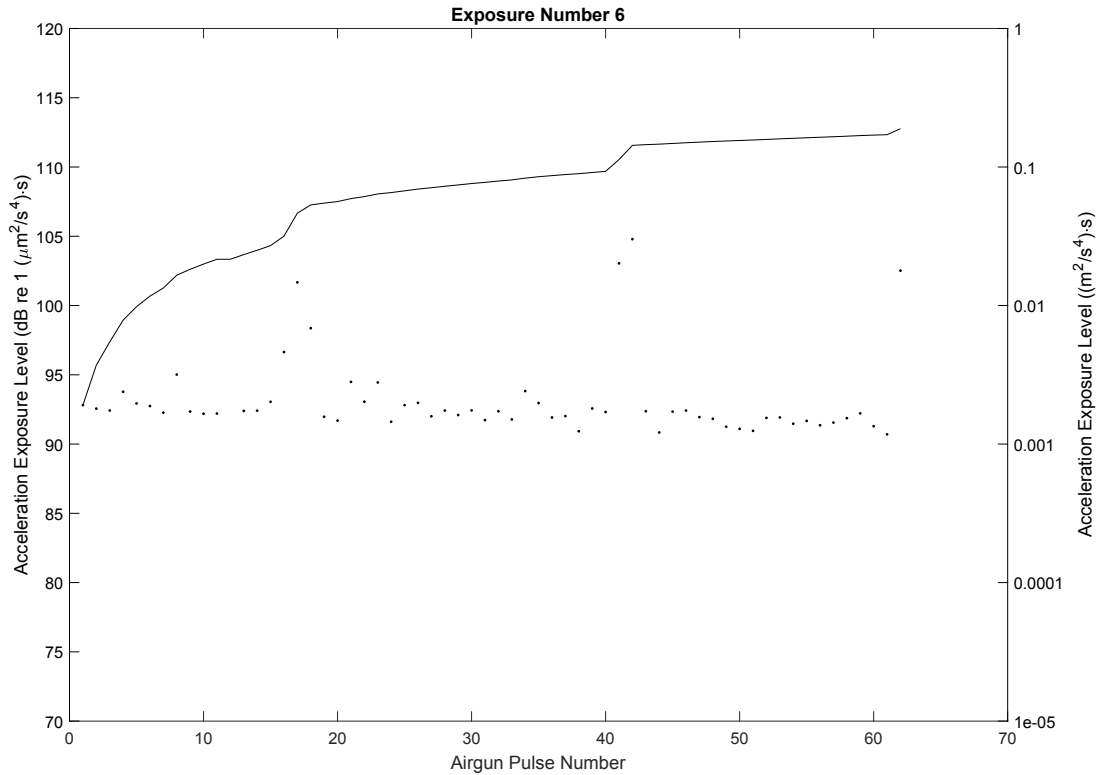
777

778 Figure S6. Acceleration exposure level (single pulse and cumulative) when the airgun was moving

779 100-6700 m away from the sea cage during exposure number 4 on day 2. The dots represent the AEL_{sp} 780 and the curve the AEL_{cum} .

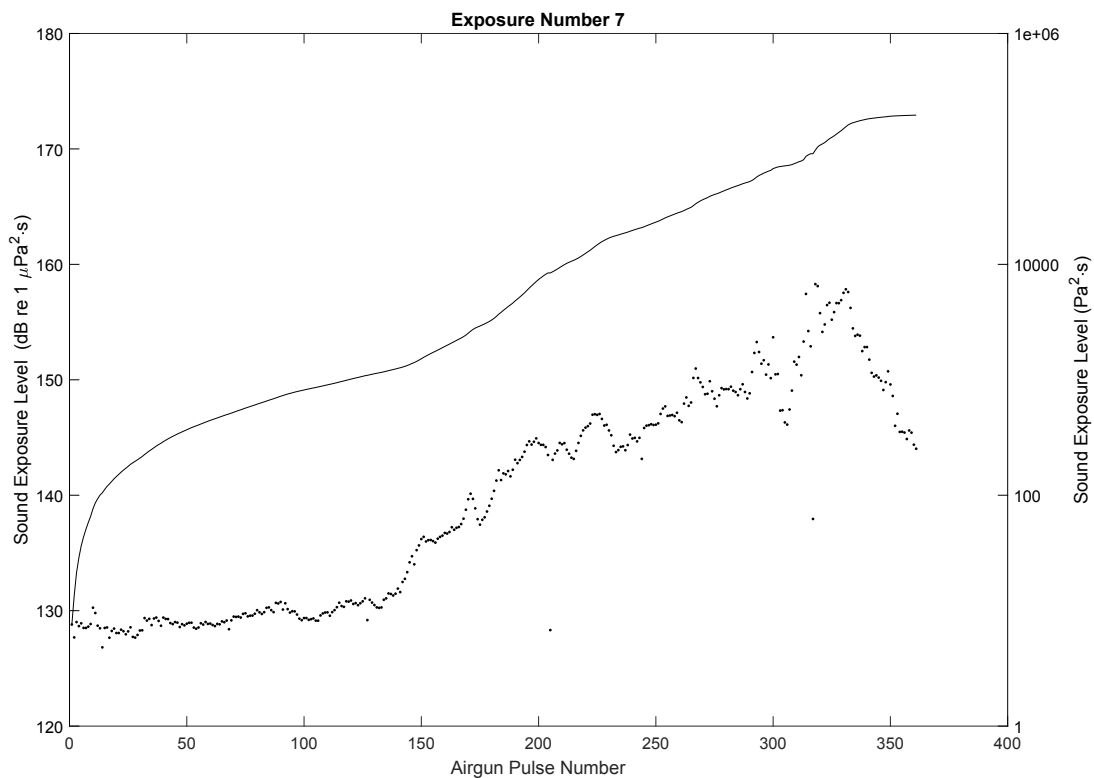


781
 782 Figure S7. Sound Exposure Level (single pulse and cumulative) when the airgun was stationary 200 m
 783 away from the sea cage during exposure 6 on day 2. The dots represent the SEL_{sp} and the curve the
 784 SEL_{cum} .

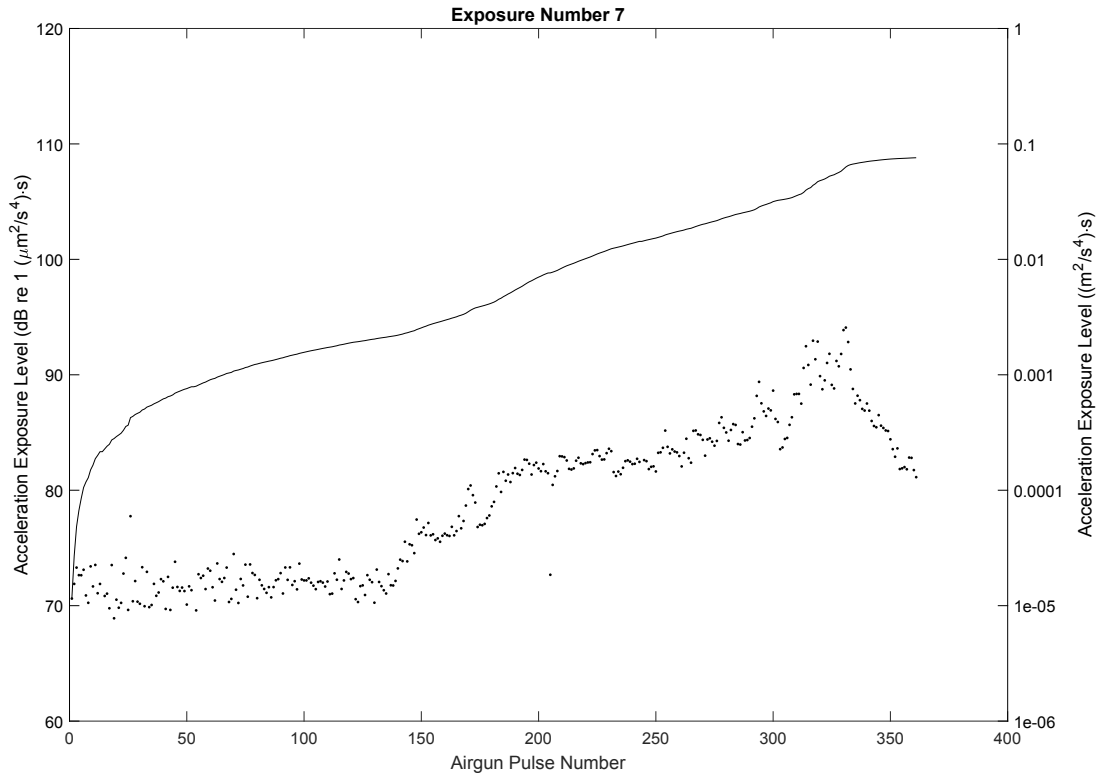


785

786 Figure S8. Acceleration Exposure Level (single pulse and cumulative) when the airgun was stationary
 787 200 m away from the sea cage during exposure 6 on day 2. The dots represent the AEL_{sp} and the curve
 788 the AEL_{cum} .



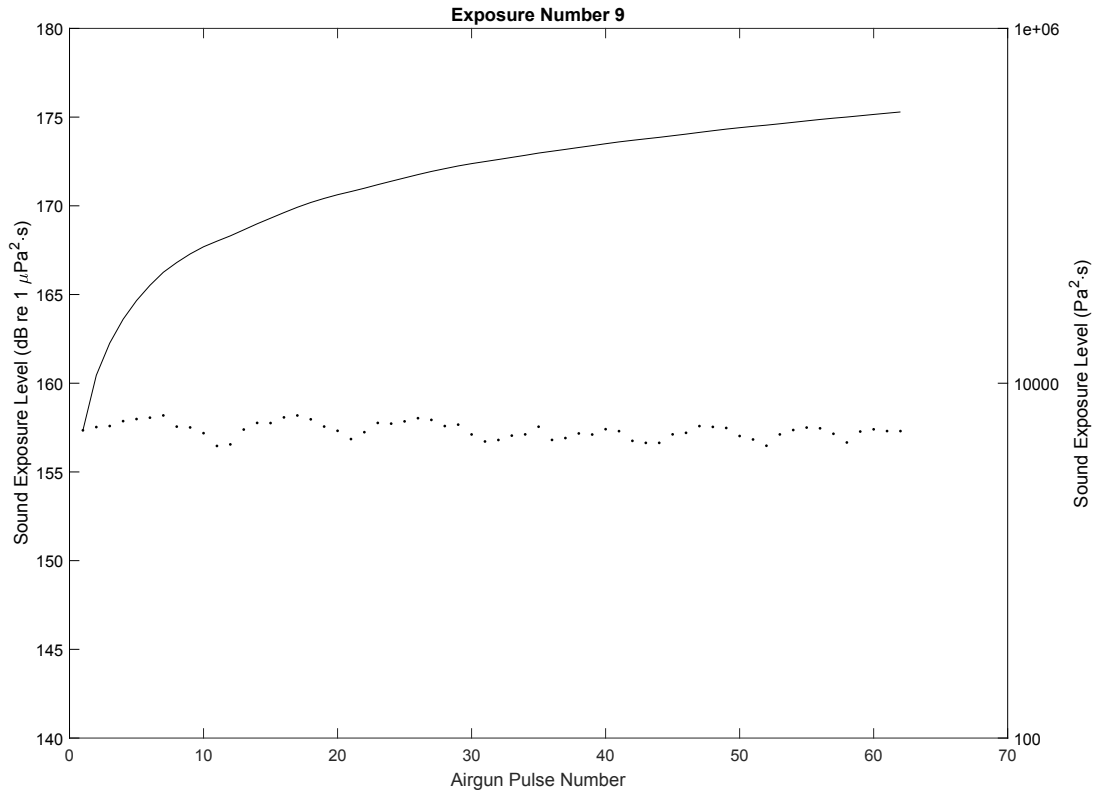
789
 790 Figure S9. Sound Exposure Level (single pulse and cumulative) when the airgun was moving 100-
 791 6700 m away from the sea cage during exposure 7 on day 3. The dots represent the SEL_{sp} and the
 792 curve the SEL_{cum} .



793

794 Figure S10. Acceleration Exposure Level (single pulse and cumulative) when the airgun was moving
 795 100-6700 m away from the sea cage during exposure 7 on day 3. The dots represent the AEL_{sp} and the
 796 curve the AEL_{cum} .

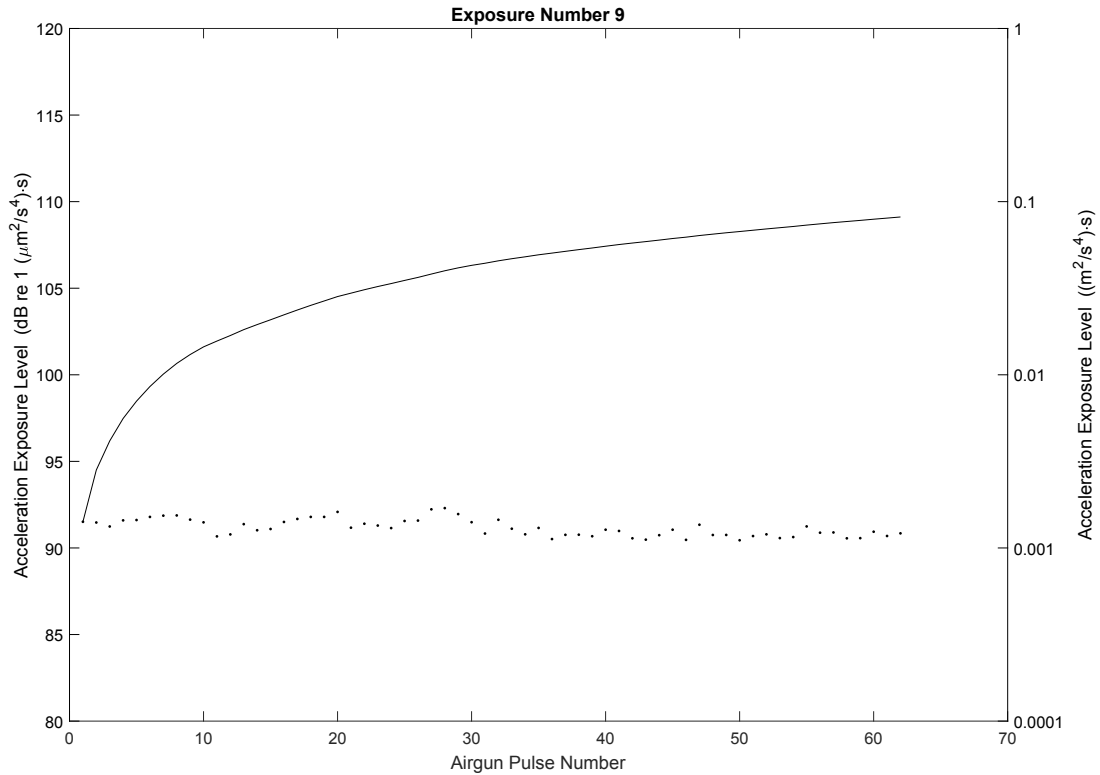
797



798

799 Figure S11. Sound Exposure Level (single pulse and cumulative) when the airgun was stationary 200
 800 m away from the sea cage during exposure 9 on day 3. The dots represent the SEL_{sp} and the curve the
 801 SEL_{cum}.

Manuscript Only

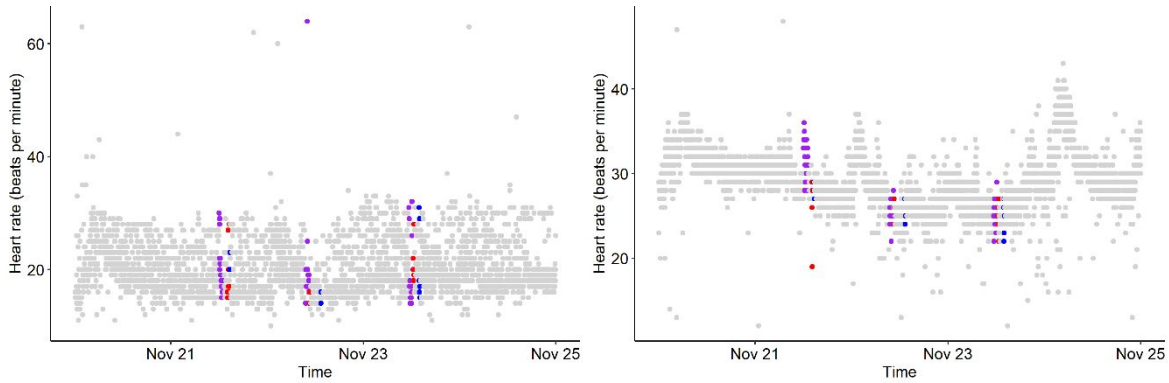


802

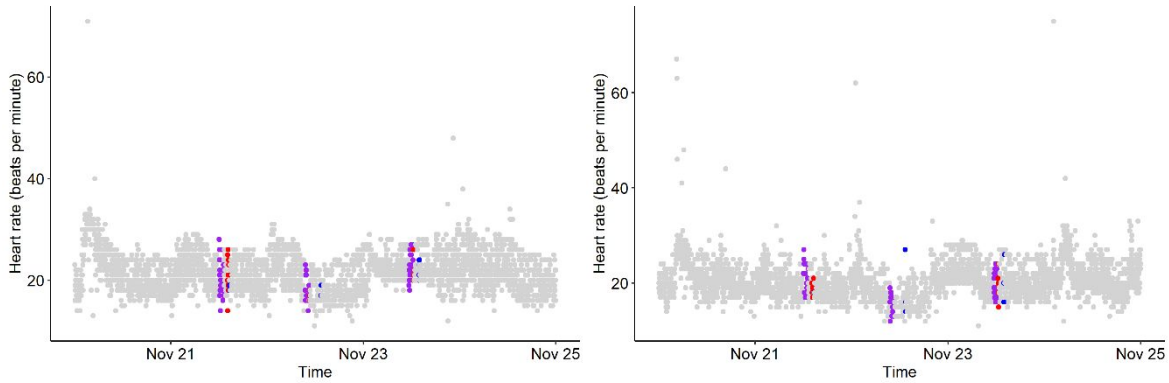
803 Figure S12. Acceleration Exposure Level (single pulse and cumulative) when the airgun was
 804 stationary 200 m away from the sea cage during exposure 9 on day 3. The dots represent the AEL_{sp}
 805 and the curve the AEL_{cum}.

806

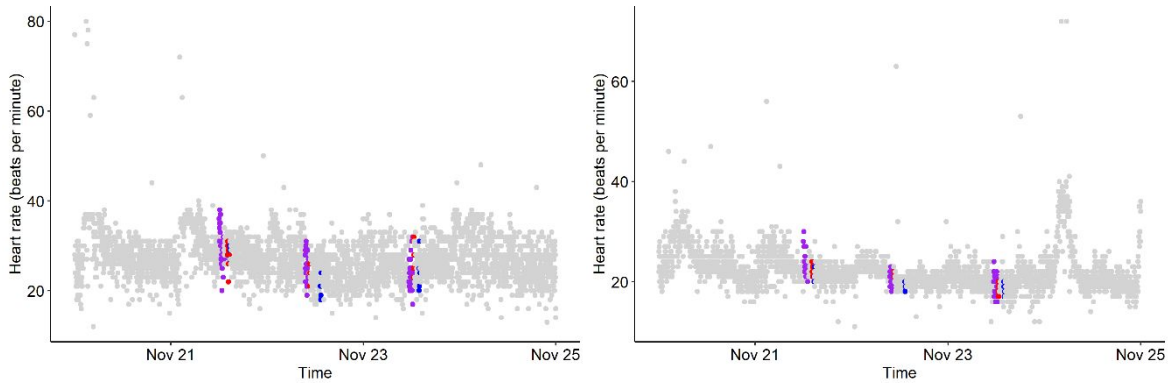
807



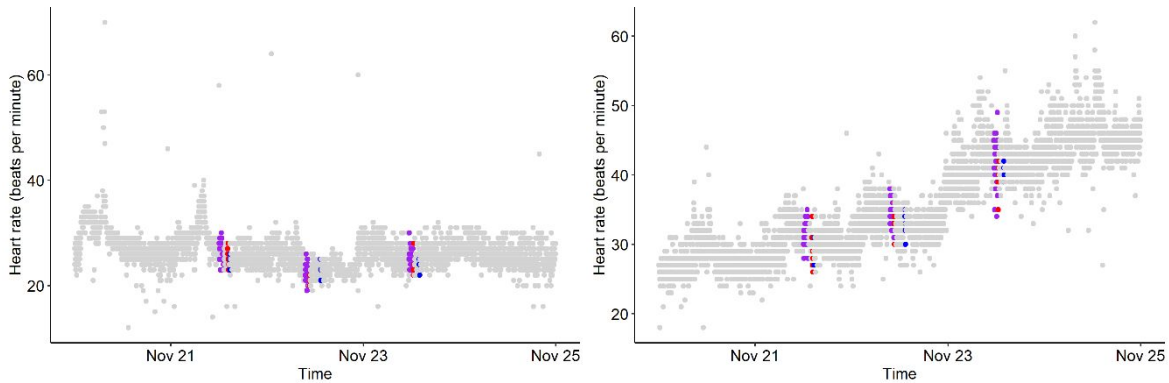
808



809

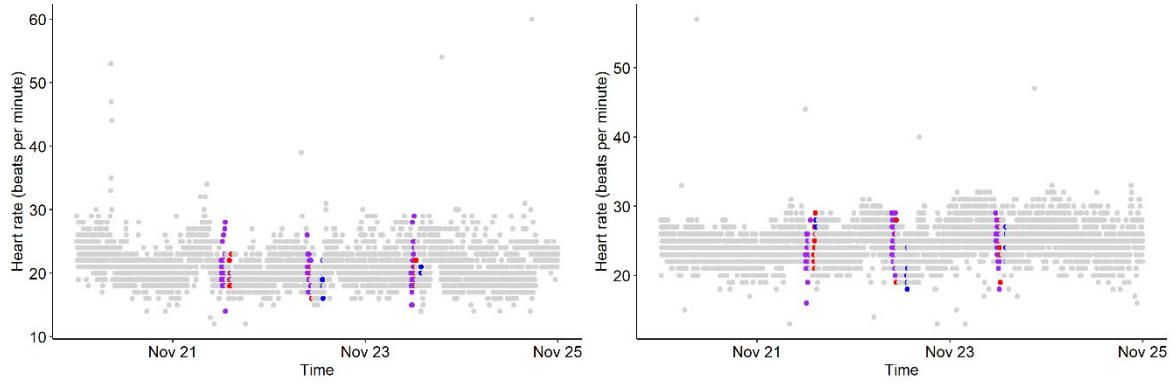


810

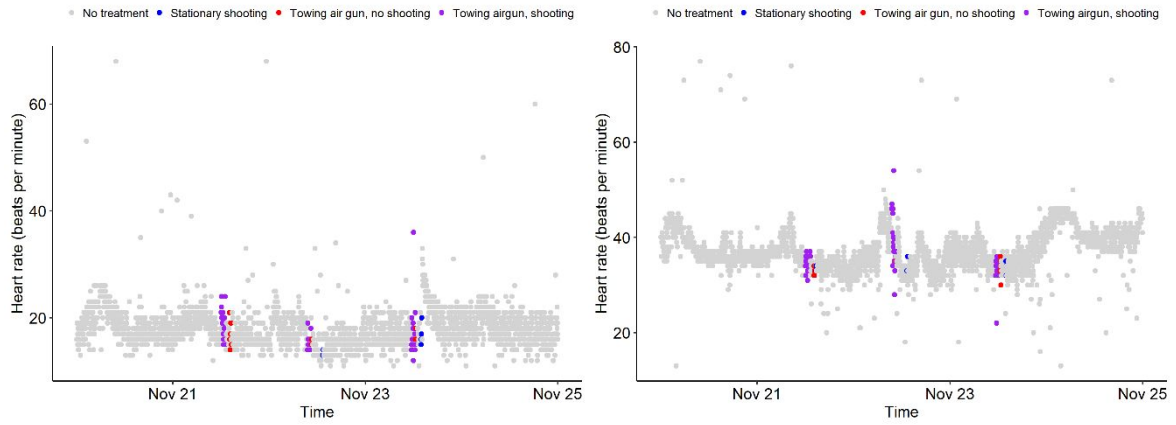


811

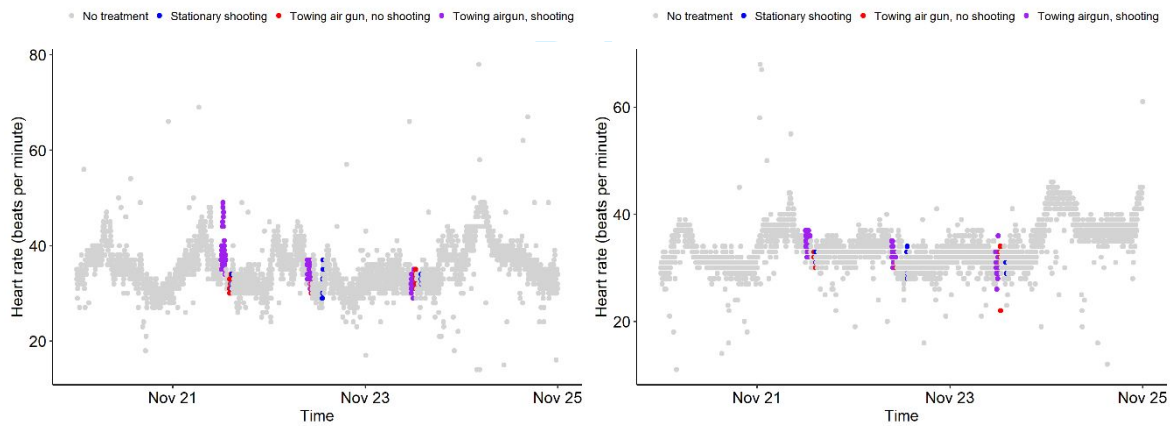




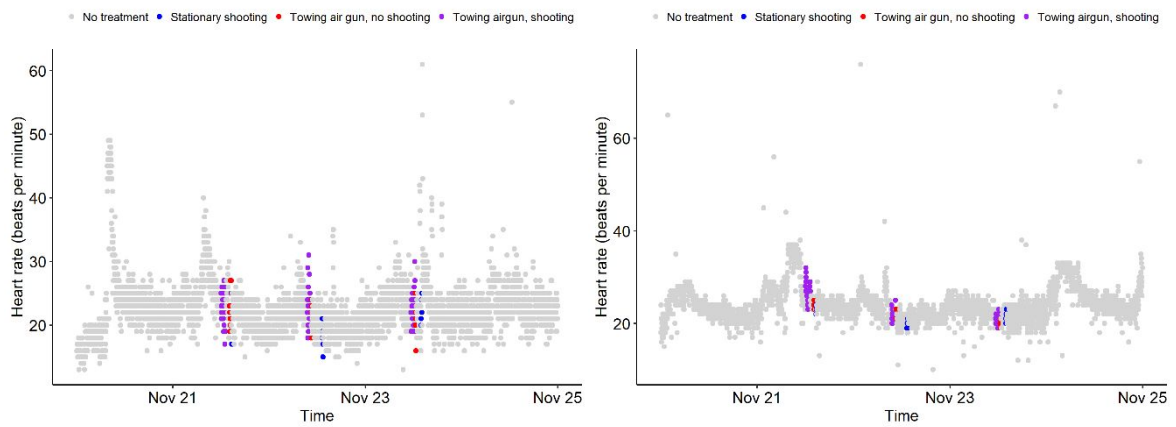
812



813

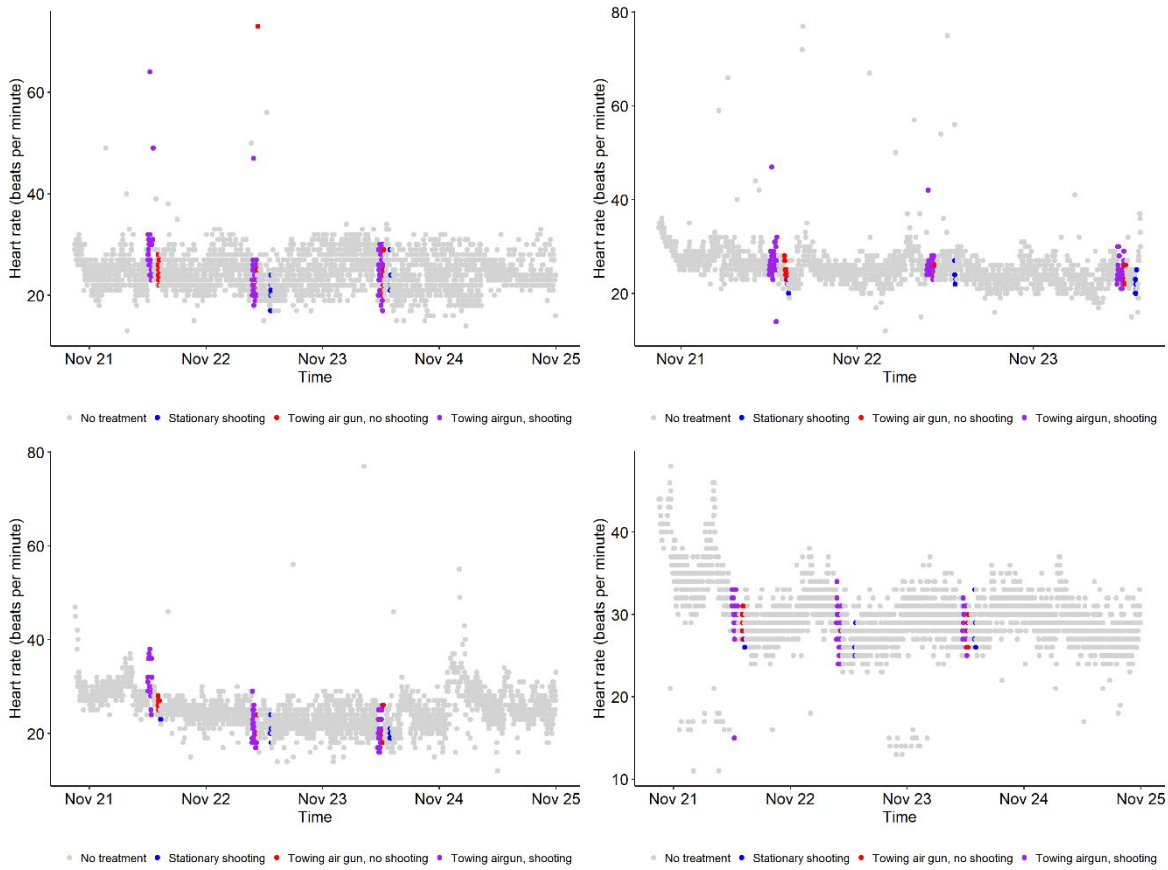


814



815





816

817

818 Figure S13. Heart rate traces of individual fish during the experimental period. Heart rate
 819 traces start November 20, 2017 a midnight and end November 25, 2017 a midnight.