

Supplementary materials

The following is the Supplementary data:

TABLES

Table S1 The physic-chemical measurement of water

Parameters/value	Amount	Device/model
Temperature (°C)	26±1	Mercury thermometer
Light intensity (Lux)	113.8±2	Lux meter (model: Digital Lux Meter-GM1010)
TDS (ppm)	160±1	TDS meter (model: TDS-3)
pH	7.2±2	pH meter (model: SANA SL-901)
NO ₃ ⁻ (mg/l)	<0.2	Bante321-NO ₃ ⁻ Portable Nitrate Ion Meter
NO ₂ ⁻ (mg/l)	0	JBL Nitrite Test Kit
NH ₄ ⁺ (mg/l)	0.21	Bante321-NH ₄ ⁺ Portable Ammonium Ion Meter

Table S2. Description of behavioural activities by the Red cherry shrimp (*Neocaridina davidi*) assessed during the experimental tests, based on video playbacks visualizations.

Behaviour	Description	Unit	Application test
Movement speed	Mean distance moved by the center point of the subject per unit time	Centimetres/seconds	Single
Spatial distribution	The mean attendance of individuals in a specific area	Seconds & Centimetres	Single
Food-finding	Number of individuals that succeed to find the food source	Number of individuals	Single
Feeding latency	Mean time to find the food source	Seconds	Single
Number of revisiting	Number of revisiting to food source for a certain period of time	Number of individuals	Single
Feeding distraction	Number of individuals were complete freezing and movement away from the food after sound playback	Number of individuals	Single

FIGURES

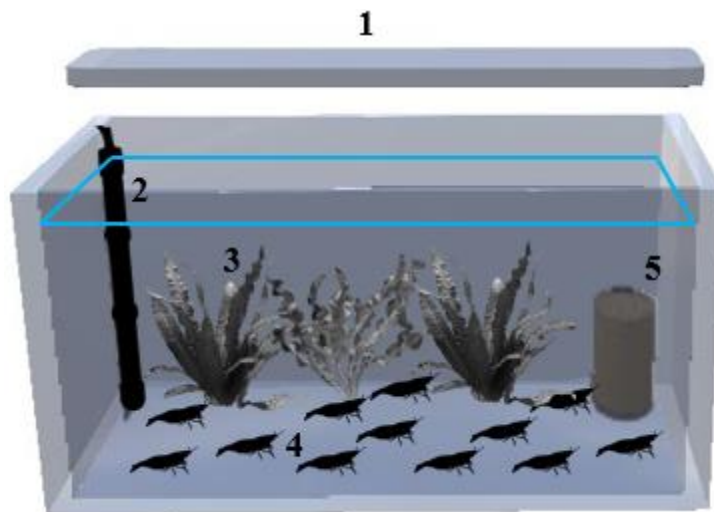


Figure S1. Experimental configuration to maintain *Neocaridina davidi* in the holding aquarium. Set up of the holding tank: $48 \times 28 \times 32$ cm and 4 mm wall thickness. 1) LED; 2) heater; 3) aquatic plant; 4) shrimps, and 5) sponge filter.

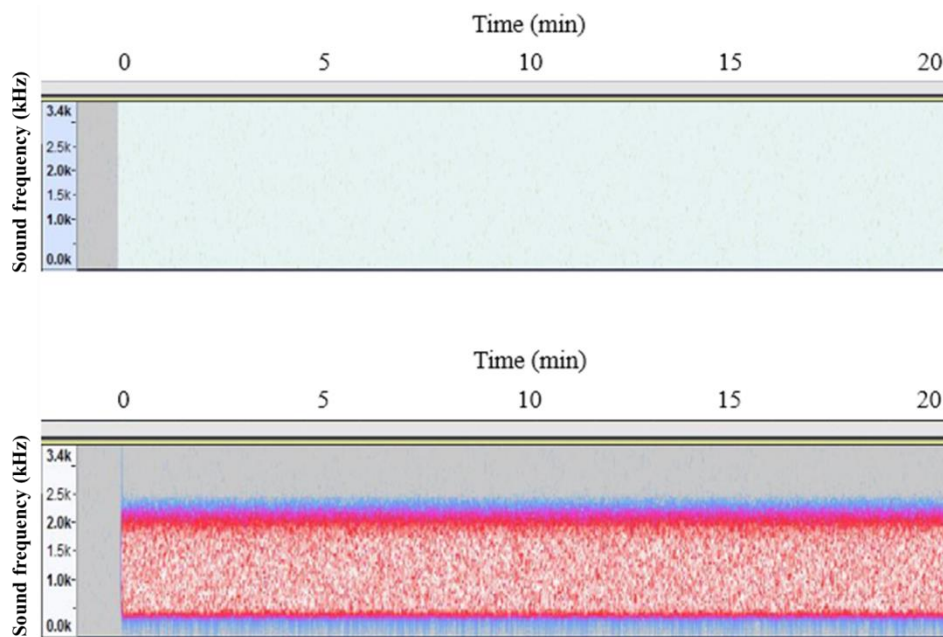


Figure S2. Spectrogram (for 20 s time slot) magnification of A) Control and B) Sound wave (Sound treatments) used in the experiment: frequency (kHz) vs. time (min). The intensity is reflected by the colour scale (dB re 1 lPa²/Hz). We used Audacity software to visualize these figures.

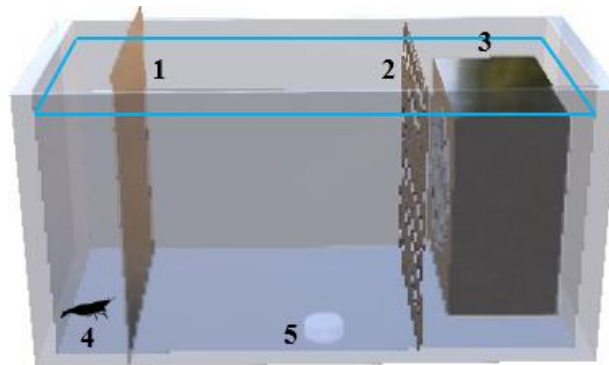


Figure S 3. First experiment set up ($40 \times 30 \times 30$ cm), 1) divider, 2) speaker holder, 3) underwater speaker, 4) the shrimp, 5) food source.

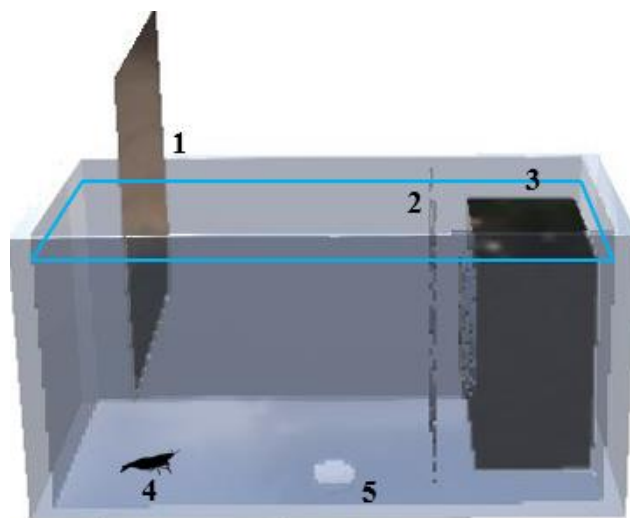


Figure S 4. Second experiment set up ($40 \times 30 \times 30$ cm). 1) divider, 2) speaker holder, 3) underwater speaker, 4) the shrimp, 5) food source.

Acoustic Stimuli validity for invertebrates

The red cherry shrimps were exposed to a 400-2000 Hz acoustic stimulus mimicking a frequency bandwidth range that they can detect and which represents the frequencies produced by human activities that shrimps are exposed to in their natural habitats and at rearing facilities (Lovell et al., 2005; Slater et al., 2020). The continuous sound with this frequency range was chosen due to its similarity to the sound of motor boats, aeration pumps, and filtration systems that are commonly used on farms (Peng et al., 2015).

Lovell, J. M., Findlay, M. M., Moate, R. M., Yan, H. Y., 2005. The hearing abilities of the prawn *Palaemon serratus*. Comp. Biochem. Physiol. A Mol. Integr. Physiol. 140(1), 89-100. <https://doi.org/10.1016/J.CBPB.2004.11.003>.

Peng, C., Zhao, X., Lio, G., 2015. Noise in the sea and its impact on marine organisms, International Int. J. Environ. Res. Public Health, 12, 12304-12323. <https://doi.org/10.3390/ijerph121012304>

Slater, M., Fricke, E., Weiss, M., Rebelein, A., Bögner, M., Preece, M., Radford, C., 2020. The impact of aquaculture soundscapes on whiteleg shrimp *Litopenaeus vannamei* and Atlantic salmon *Salmo salar*. Aquac. Environ. Interact. 12, 167-177. <https://doi.org/10.3354/AEI00355>