Fig. S1 Blueprints for the construction of brain coolers. The brain coolers were CNC milled out of solid aluminium blocks according to the blueprints. The water path was drilled with a 1.5 and a 2 mm drill, and the 2 mm drill entry point was plugged. All measurements are in mm.
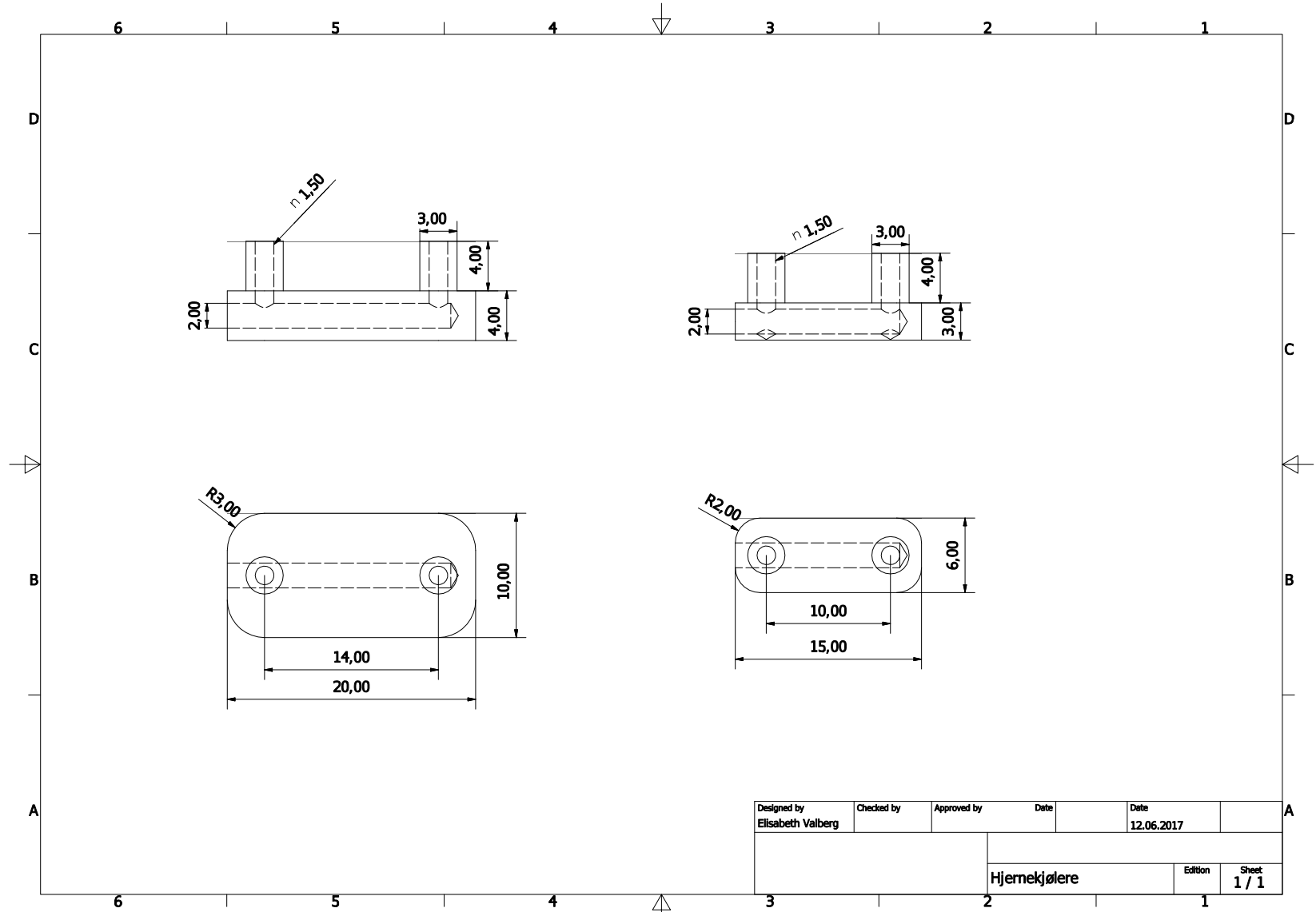
Fig. S2 Thermal ramping profiles of Atlantic cod subjected to an acute upper thermal tolerance challenge. Note that data are missing for cods 24-27 and the beginning of the trials for cods 21-23 (the thermocouple thermometer was erroneously turned off at the start of these trials). The raw data are available here: https://doi.org/10.6084/m9.figshare.8199374
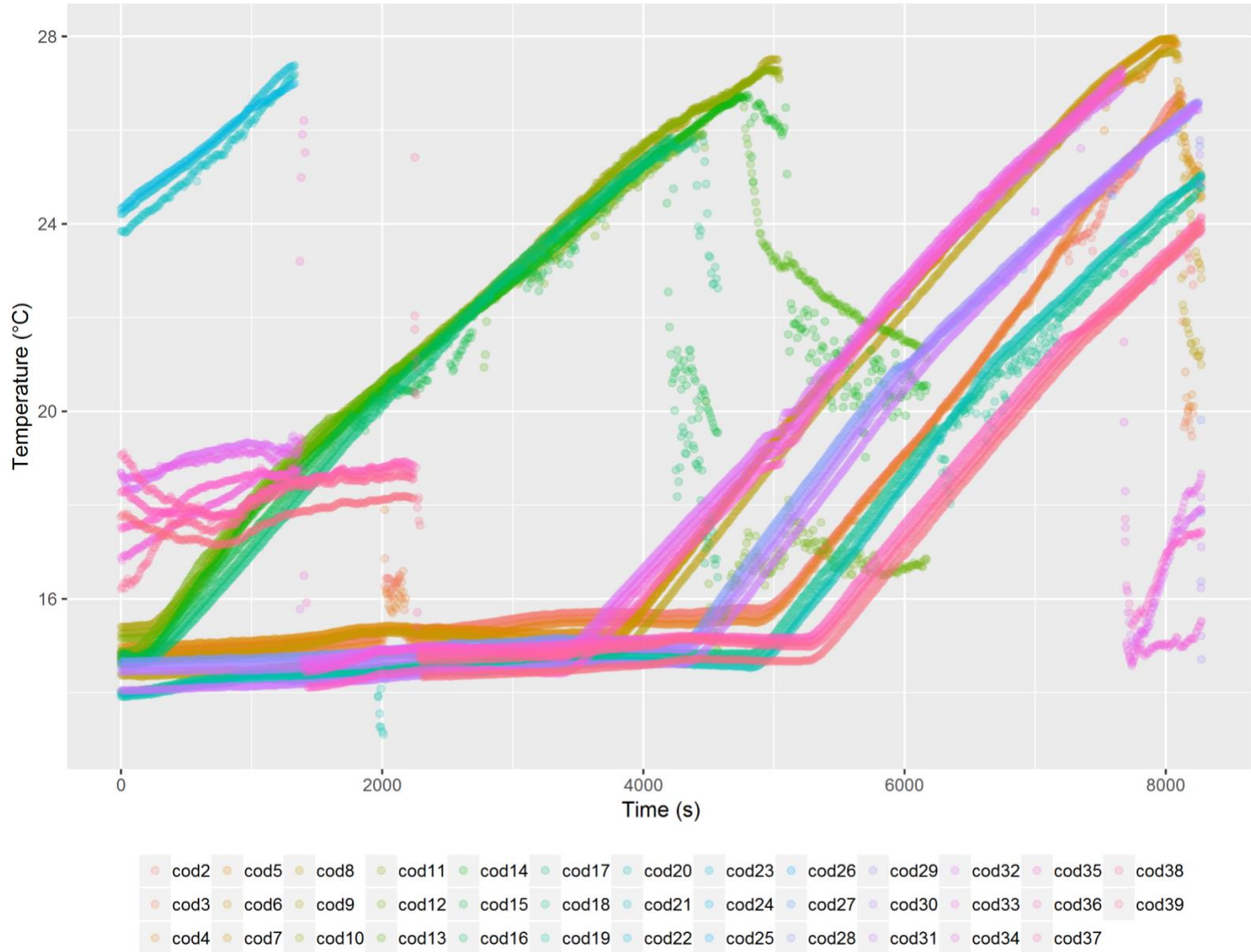
Fig. S3 Acute upper thermal tolerance of Atlantic cod *after removal of two statistical outliers (one in the control group [23.4°C] and one in the instrumented control group [24.7°C]).* (A) Temperatures at loss of equilibrium (LOE, °C) of the control group are shown in blue, the instrumented control group in orange, and the brain-cooled group in red. Vertical bars indicate the standard deviation around the group mean (shown as a gap). (B) Cumming estimation plots (Ho et al., 2018) showing the mean differences in the temperature at LOE among the three groups (i.e., effect sizes; black dots), the distribution of these effect sizes obtained through nonparametric bootstrap resampling (5,000 samples), and their 95% confidence intervals (black bars). Note that raw data for each group appear twice to display pairwise group comparisons corresponding to calculated mean differences.