QCL WATER SCIENCE

University of Glasgow

PyroScience FireSting

Effects of Temperature Variations on the Metabolic Rate and Aerobic Capacity of Fish

In our lab we are examining the effects of acute temperature fluctuations on the metabolic rate and aerobic capacity of various marine and freshwater fish species.

As part of this work, fish are subjected to acute temperature fluctuations similar to what they would experience on a daily basis in the wild. FireSting oxygen sensors and meters are ideal for these kinds of experiments because they offer temperature compensation for changes in water oxygen saturation.

This allows us to obtain real-time measures of animal oxygen consumption in respirometry chambers during shifts in temperature.

Figure 1: A 4-channel oxygen meter FireSting O2 connected to a PC with cables running to oxygen and temperature sensors in an experimental tank

Figure 2: Close-up view of respirometry chambers with minnows inside. Robust oxygen miniprobes are inserted into the chambers through sealable valves and can measure the drop in water oxygen concentration as oxygen is used by the fish

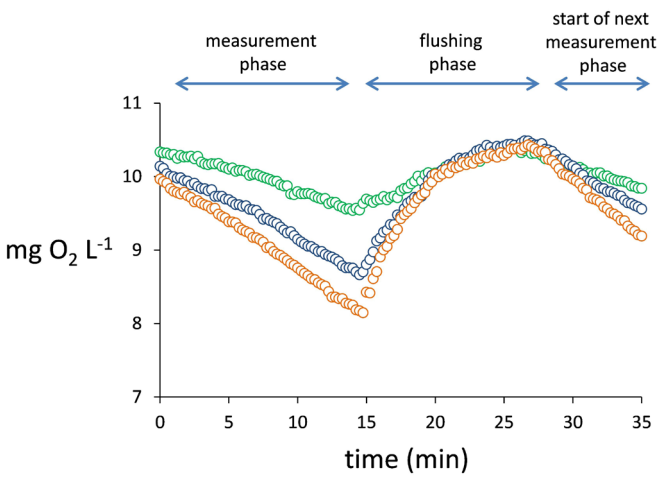

Figure 3: Example of dissolved oxygen concentration versus time for three respirometers, each containing one European minnow. During the measurement phase, the respirometry chambers are sealed and the rate of oxygen decrease can be measured

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