

Assessment of Larval Sturgeon Energy Allocation Using Respirometry

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A recent study on juvenile lake sturgeon (*Acipenser fulvescens*) demonstrated that temperatures between 15-21 °C does not affect overall growth rate during rearing. However, no information is available regarding the energy budget of yolk-dependent larvae or the impacts of differences within this environmentally-relevant temperature range on maintenance cost. Therefore, this project investigated how differences in feeding and temperature during rearing impacts the resting metabolic rate of larval lake sturgeon. Larvae were reared at 15 °C and then measured at 15, 18, and 21 °C. Within those temperature groups, fish (n = 26) were measured during the endogenous feeding stage (6-15 dph) when nutritional energy is available only via the yolk, and after the transition to exogenous feeding (16-26 dph) (n=23). The larvae were tested for oxygen consumption using intermittent-flow respirometry. Raw data were utilized for mathematical analysis yielding the mass-specific resting metabolic rate of each individual larva. The larvae from both feeding groups reared at the higher temperature of 21 °C expended more energy than at 15 or 18 °C. There is a significant difference in the fish reared at 15 °C dependent on feeding type, but not for 18 or 21 °C, suggesting that metabolic response to temperature variation is a substantial fraction of required energy required for maintenance, but not growth, in *A. fulvescens*.