

Olin Fellowship Progress Report (Brendan Galloway, UNBSJ)

“The influence of acclimation temperature on the post-exercise metabolic disturbance in juvenile Atlantic salmon”

Research Overview

My research investigates the effect of temperature on recovery from exhaustive exercise in juvenile Atlantic salmon (*Salmo salar*) that have been acclimated to environmental temperatures (e.g., 6, 12, and 18°C). These studies are important to carry out because temperature fluctuations often occur under natural conditions when, for example, Atlantic salmon, move between water bodies to spawn or feed. Thus, I have been examining the influence of temperature changes on acid-base, metabolite, and ion regulation in white muscle and plasma of juvenile Atlantic salmon following exhaustive exercise.

Presently, I have completed a large portion of the temperature acclimation experiment. All fish acclimated to 12°C and 18°C have been sampled and tissues processed. However, levels of white muscle glycogen have not been determined in fish acclimated to 18°C. I expect to have this assay complete by December 20, 1998. The final experiment (e.g., 6°C acclimated fish) will proceed as soon as the water chilling unit becomes available (approximately 1 month). I am expecting to have all the 6°C acclimated fish sampled by January 31, 1999. These tissues will be processed and assayed for metabolites by March 31, 1999. Once all of the 6°C fish have been sampled and tissues processed I will proceed with statistical analyses. Together, the metabolite data on fish acclimated to 6, 12, and 18°C will provide important information on how acclimation temperature influences post-exercise metabolic status. In addition to the

work above, I have completed an experiment to determine the influence of tissue extraction time on muscle metabolites.

The data from my project will certainly complement my supervisor's (Dr. Jim Kieffer) work. My acclimation data and Dr. Kieffer's acute temperature data will make positive contributions to the understanding of the thermal biology of this important species. Finally, once all the data has been collected and analyzed, I will submit a final report of my results to the Atlantic Salmon Federation.