

The Ecology of Stress in Wild Fish: Fundamental and Applied Perspectives

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Stress is highly relevant to ecology as it plays a fundamental role in our understanding of organismal distribution and abundance. The neuro-endocrine stress axis in fish can be activated acutely or chronically in response to natural (e.g., predators, starvation) and anthropogenic (e.g., climate change, disturbance, fisheries interactions) stressors. Although there has been great effort devoted to characterizing the physiological consequences of stress on fish held in laboratory environments, there is much less known about how fish in the wild respond to stressors.

From a demographic perspective, it is necessary to understand how the behaviour, physiology and fitness of fish are influenced by various stressors and the extent to which that response varies among individuals, populations and species. I will provide examples spanning our interests in understanding fundamental ecological processes (e.g., study of carry-over effects and mechanistic basis of fish mortality) to more applied projects (e.g., hydropower interactions, recreational fisheries) where we aim to provide evidence needed to support decision making. I will also briefly discuss the development of the nascent discipline of conservation physiology and emphasize the inherent multi-disciplinary approach needed to address complex environmental problems.