Stress in Fish

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PREFACE

In both the natural and aquaculture environments, fish are subjected to stimuli that can have profound negative effects on their health, reproduction, growth and survival. These stressors can induce a range of biological effects in fish, from rapid molecular and biochemical responses (e.g., heat shock proteins, hormonal changes) to long term organismic and population changes (e.g., immune and reproductive dysfunction). Fundamental research on stress
physiology has been indispensable in efforts to enhance fish health and well-being. Fisheries managers, for example, have been able to identify early signs of environmental deterioration by measuring changes in specific physiological endpoints in resident fish populations. Aquaculturists have developed improved, low-stress management practices by documenting the physiological responses of fish to alternative culture methods, and are creating improved strains of fish by selecting and breeding stress-resistant individuals.

The development of an integrated understanding of the complex biological phenomenon of stress in fish, and the overall advancement of the field, and will require a multi-disciplinary, multi-species approach. The present symposium, which brings together basic and applied researchers studying a diverse phylogenetic range of species, was organized as a step towards achieving this objective. The 17 papers comprising this symposium cover the entire range of biological organization from molecules to ecosystems, and include work on species from chondrosteans to advanced percids. Following the first paper which presents a theoretical overview of stress in fish, the papers were loosely organized according to the level of biological organization as follows: (1) molecular biology, biochemistry and cell biology, (2) endocrinology and physiology, and (3) population biology and ecology. Considerable overlap exists among these topics, however, reflecting the current move towards multidisciplinary research on stress in fish.

We wish to sincerely thank all of the investigators who contributed to this symposium, and hope that your participation will encourage you to pursue new collaborations and lines of research. We also hope that the research reported here will inspire other scientists to begin pursuing some of the many intriguing questions that remain to be answered about stress in fish.

Symposium Organizers:
Terence Barry  Bruce Barton  Don MacKinlay
Univ. of Wisconsin  Univ. of South Dakota  Fisheries Canada

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Don MacKinlay
Congress Chair
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