
Preface

St. John's, with its historical associations in the Newfoundland fishery, has been a stimulating location in which to develop an overview of fish biology. Since the arrival of Europeans in Newfoundland in the fifteenth century, fishing has been a major economic activity in the province. More recently St. John's has become an important centre in the Northern Hemisphere for the study of fish biology and fisheries science. These studies involve a number of university departments and institutions as well as Newfoundland and Canadian government research units. This has produced a diversity of teaching and research programmes in fish biology, fisheries and aquaculture, attracting undergraduate and graduate students from within the province and internationally.

The aim of this book is to provide an introductory overview of the functional biology of fish and how it may be influenced by the contrasting habitat conditions within the aquatic environment. The book includes advances in comparative animal physiology made since the mid-twentieth century, which have greatly influenced our understanding of fish function or have generated questions on this subject, still to be resolved. Fish taxa represent the largest number of vertebrates, with over 30,000 extant species. Much of our knowledge, apart from taxonomy and habitat descriptions, has been based on relatively few of these species, usually those which live in fresh water and/or are of commercial interest. Unfortunately there has also been a tendency to base interpretation of fish physiology on that of mammalian systems, as well as to rely on a few type species of fish. We have attempted to redress the balance by using examples of fish from a wide range of species and habitats, emphasizing diversity as well as recognizing shared attributes with other vertebrates.

We have limited this book to a single volume appropriate to an introduction to the subject. We have also avoided a partitioning of chapters between a large number of specialist authors which has been a trend in the case of fish physiology texts. Although such 'sectionalized' books can be advantageous to advanced readers, students new to the subject can benefit from a more concise and consistent approach, written by fewer authors. Our objective is to provide a comprehensive introduction to each topic, together with detailed references leading to the roots of current knowledge. To provide useful background some topics are prefaced by a brief account of basic aspects of relevant more general cellular, anatomical or physiological biology. The book will be suitable for undergraduate and graduate students in fish biology, fisheries and aquaculture, as well as for more general readers interested in fish.

In a world in which security of food supplies will become an increasingly important issue, a sound development of aquaculture and sustainability of fisheries will be integral to planning. This implies a comprehensive understanding of factors influencing fish survival, including their basic physiology in their natural habitats and in captivity.

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