

Preface

In the compass of this small book it is impossible to cover all aspects of fish biology. Even at a fairly low level, such an herculean task, would require a very much larger book. Instead, we have chosen to look in more detail at topics that are most interesting to us, some of which are not too well treated in other texts. Our aim is to explain such topics as oxygen acquisition or feeding mechanisms in sufficient detail that the reader will be able to understand research papers on these topics. We have tried to give a sufficiently wide-ranging bibliography that the reader can begin to grasp those topics not covered, and to enjoy making further forays into those that are.

A variety of replies may be given to people who ask why study fish? One kind of reply might mention that commercial and sport fisheries are of great economic importance, often of political interest where stocks have to be shared and hunting limited, and fish farming continues to become increasingly important. These are cogent reasons for studying fish, and, as they are, after all, mainly protein, fish should play a significant role in feeding protein-poor populations.

Quite a different reply might be given by physiologists, who are always interested in special cases that may assist understanding of a general process. The classic example of such a special case is the giant axon of the squid, (at 1–1.5 mm, the largest diameter nerve fiber known) with which axon potential generation was first understood. This book, chiefly about fish as remarkably efficient machines for coping with the many problems that life in water entails, looks at many such special cases. It is immensely fascinating to see how life in habitats ranging from transient puddles to the abyssal depths of the sea has produced unique adaptations to deal with particular problems such as the acquisition of oxygen, locomotion, and sensory awareness. For instance, some fish have eyes that are adapted for vision in air, others have eyes adapted to see at wavelengths invisible to other fish around them. Again, it is obvious that some fish live in water almost of distilled purity, others in the sea or saline lakes, yet they both have to obtain oxygen at the gills where the blood must be very close to such different fluids.

This is the third edition of a book originally published in 1982 and revised in 1995. Prof. Richard Moore joins Dr Quentin Bone for this new edition, which is much altered from the previous editions to make it easier to use. A new chapter on immunology has been added, and in all chapters a serious attempt has been made to take account of the enormous increase in scientific studies of fish each year and to give up-to-date references.

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