



**Bacteria from Fish and  
Other Aquatic Animals:  
A Practical Identification Manual**

**N.B. Buller**

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# **Bacteria from Fish and Other Aquatic Animals**

**A Practical Identification Manual**

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CABI Publishing

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Photographic section after p. xiv



# Foreword

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While aquatic animal diseases have been a concern for centuries, a profusion of marine and freshwater aquaculture and environmental concerns across the globe in the last 75 years has prompted increased interest in these diseases, particularly those caused by bacteria. As aquaculture continues to become more intensive and expands into new frontiers, fish health problems are likely to become more significant. No group of marine or freshwater animals, including mammals, fish, birds, molluscs, shellfish, reptiles and amphibians, have escaped the effects of bacterial diseases. Hundreds of bacterial species can be either pathogenic to wild and cultured aquatic animals or pose a potential disease threat under favourable conditions. Furthermore, the costs incurred by governments, private aquaculture and the public, due to bacterial-related diseases and attempts to control them, totals millions of dollars annually as a result of lost aquatic resources. In order to successfully cope with these disease-producing microbes in a cost-effective manner, prompt and accurate identification is essential.

Until now there has been no single source available for use in identifying bacterial microbes from so many diverse marine and freshwater animals. However, *Bacteria from Fish and Other Aquatic Animals: a Practical Identification Manual* now provides just such a source with global application. This practical, user-friendly identification manual will be of great value to inexperienced and experienced bacteriologists, microbiology teachers and/or students, aquatic animal health researchers or diagnosticians, as well as to workers in public health facilities or medical laboratories who work with marine and freshwater fish, birds, mammals, molluscs, shellfish, reptiles or amphibians. Aided by numerous tables and colour figures the author discusses conventional bacterial identification procedures, commercially available data-based identification kits, molecularly based PCR and 16S rDNA sequencing, thus providing utility to a broad scientific sector. In this single volume one can find biochemical, biophysical and molecular characteristics of nearly 400 species of aquatic bacteria, media on which they are cultured and a brief discussion of many diseases with which they are associated. Assembling this manual was a monumental task and its author, Nicky B. Buller, is to be highly commended for providing this invaluable addition to aquatic microbiology.

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The photograph of *Renibacterium salmoninarum* was obtained from the Animal Health Laboratory (AHL) archives. There was no documentation as to the source of this photograph and thus I am unable to acknowledge the origin. The rest of the photographs were taken by the author and were of cultures obtained as diagnostic submissions at AHL, type strains, or from Dr A. Thomas. The photographs of *Flavobacterium columnare* adhering to gill tissue are courtesy of Dr Brian Jones.

A great many microbiologists and other scientists have been responsible over the years for developing and refining the media and techniques used for isolation and identification of bacteria. The media quoted from the literature in this book are referenced to include the originator and refiners of those media. My apologies if I am remiss in leaving anybody out.

Due to the expense of producing the photographic plates, assistance towards their cost was achieved through sponsorship from the following organizations. Their assistance is gratefully acknowledged.