

PREFACE

The first edition of the *Handbook of the Marine Fauna of North-West Europe* was published in 1995, and it is perhaps a measure of its usefulness that it has been reprinted in almost every year since. It evolved from a two-volume predecessor, *The Marine Fauna of the British Isles and North-West Europe* (Clarendon Press, 1990), which had originated as a manual intended to aid the identification of the most familiar and widely distributed species of fish and benthic macrofauna of the coastal waters of Britain and Ireland, and the adjacent coasts of Europe. Prior to then, marine biologists, amateur and professional, had perforce to rely upon a range of field guides, monographs, and specialist publications for the identification of coastal marine animals. The *Handbook* was a more compact work, with fewer species and rather less detail than was included in its progenitor, but it was not simply an abridgement. While the total number of species treated was reduced, a small number of additional species was included, and recent taxonomic revisions were incorporated.

The wider application of, in particular, molecular genetic techniques for the characterization of individual species has resulted in substantial changes in the understanding of the systematics and phylogeny of practically all marine animal groups. Phylogenetic analyses have revealed previously unsuspected relationships, demanding reappraisal of traditional classifications and involving considerable modification of taxonomic nomenclature. While relatively few entirely new species of macrofauna have been revealed, the marine communities of the north-west European shelf have changed. The sources of change are various. In a period of rising concern for the health of the natural environment, there has been an increase in the extent of monitoring and recording of marine species and communities; one consequence of this is that some species formerly considered to be uncommon, and infrequently encountered, are now seen to be quite widely distributed within the region. The application of more selective sampling techniques also allows the occurrence of delicate or deep-burrowing infaunal animals to be more accurately recorded. Anthropogenic disturbance is another significant source of change; benthic fishing gear, and dredges employed in aggregate extraction, may result in the decline of some components of the benthic community, and the spread of others. Environmental change is also a significant factor driving change in the marine benthic communities of north-west Europe. The geographical distributions of, for example, south-western, warm-water species are spreading northwards as sea temperatures rise, while the ranges of northern, cold-water species may be expected to contract. Exotic, invasive species are an especially conspicuous new element in the marine fauna of north-west Europe, and the number of newly occurring species is likely to continue to increase, partly as a consequence of sea water warming, but also as a direct result of anthropogenic introductions, as part of the ship-borne fouling community, and as associates of translocated oyster stock. The spread of such species is further facilitated by coastal leisure craft and the development of marinas, allowing stepping-stone dispersal through the region.

The primary purpose of this book is to provide swift and simple identifications of the animal species likely to be encountered during shore-based and coastal marine field studies, and during the

course of inshore survey and monitoring work. The selection of animals included varies between the different groups. The coverage of molluscs and decapods is still extensive, as these tend to be among the ecologically more important components of the benthos and attract the eye more readily than hydroids, small worms, or copepods. Some groups requiring specialist techniques for collection, examination, and identification have been excluded entirely, for example, Protozoa, Pogonophora, and Tardigrada. The selection of fish is limited to intertidal and coastal species, as are those of sponges, amphipods, and mysids. The taxonomy and classification of each animal group have been updated. A few species described in *Marine Fauna* but excluded from the first edition of the *Handbook* have been restored in this second edition, as result of new information on their distribution and occurrence, and a number of new, exotic species are added to the original selection.

We are confident that this book will serve its purpose, allowing student, amateur, and professional biologists to identify with accuracy the preponderance of animal species encountered between the tidemarks and in the shallow subtidal around the British Isles and neighbouring coasts of mainland Europe. Inevitably, rare animals are occasionally encountered and will not be identifiable using this text. In such cases, reference should be made to the specialist texts indicated for each animal group; wherever possible, the confirmatory notes for each family covered include estimates of its total taxonomic diversity in the region. With the exception of the ctenophores and large pelagic scyphozoans, which frequently beach on sandy shores, all of the invertebrate animals included belong to the benthos. The plankton and the meiofauna, although interesting and abundant, and certainly deserving of attention, are too numerous and diverse for even a representative selection to be included here. Together with sea birds and marine mammals, they have an extensive literature of their own.

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