

PREFACE

In Volume 1 of this series, we asked the authors to examine the diverse array of body morphologies exhibited by crustaceans and to provide insight into the development and function of the various parts of the crustacean body. In this volume, we are taking the functional studies of crustacean morphology one step further by examining the relationship between the diversity of body designs and the life habits of the animals.

All animals are functionally constrained to varying extents by their body morphology. These constraints determine where and how a species can live. Burrowers, for example, need to have not only the appendage design required to move sediment particles, but also the appendages required for moving water through the burrow in order to keep the burrow well-oxygenated. Alternatively, the burrower would need to have a respiratory system that allows the animal to live anaerobically, at least for a period of time. Similarly, adaptations for swimming (or perhaps more accurately, for flotation) are critical for plankton dwellers. Such adaptations may comprise of structures that create sufficient drag so that the animal doesn't sink when it is not propelling itself forward or the ability to alter its metabolism and store lipids so that buoyancy can be maintained.

This volume is aimed at providing a broad view of crustacean lifestyles, and, from this vantage point, increasing our understanding of the significance of features of crustacean morphology. Crustaceans are probably the most diverse of all invertebrate groups, whether insects are included or not. As a result, it would seem that crustaceans should make ideal target organisms for studies of evolutionary development, physiology, or evolutionary ecology and not just phylogeny, as has often been the case in the past. The chapters included here summarize the main ecological details of crustacean lifestyles in all habitat types that crustaceans occupy. In that sense, it is also a modern natural history book, and we hope the stories included will be of interest to crustacean biologists who would like to know more about the animals they study, especially if that study occurs primarily in the laboratory.