

PREFACE

Ecophysiology, or physiological ecology, is a biological discipline that studies the adaptation of an organism's physiology to environmental conditions. It is closely related to comparative physiology and evolutionary physiology. The study of physiological ecology begins with an understanding of the influence of ambient temperatures. Temperature is one of the most ecologically significant factors, and also one of the most relevant in the face of global climatic change. Organisms have evolved a multitude of mechanisms for regulating the temperature of their bodies in order to flourish in their particular environment. A high metabolic rate helps supply heat. An efficient circulatory system conducts and distributes heat around the body. Hibernation enables animals to survive long periods of cold. Water availability is another major focus in physiological ecology. The bodies of all organisms contain water, and organisms in all environments expend energy to maintain their internal pool of water and dissolved substrates. Water availability is particularly critical for desert dwelling organisms, and many ecologists studying the importance of water in biological systems focus their research on desert species.

Content Coverage

Chapter One introduces about the vertebrate ecophysiology. Vertebrates are also interesting because they are easy to find. Many other groups of organisms cannot be seen with the naked eye or reside in places inhospitable to humans, like the sea floor. *Chapter Two* focuses on homeostasis. These reactions include a range of responses, from the release of hormones to regulate internal imbalances to sweating to lower body temperature. *Chapter Three* reveals about the structure and physiology of chordates. Some familiar chordates include fish and eels, including jawless fish such as lampreys, sharks, rays and skates, amphibians, reptiles, birds, and mammals, including humans. *Chapter Four* discusses about the vertebrates survival in deserts. Animals of tropical desert regions are surviving in harsh environment and developed adaptability to face all ecological conditions *Chapter Five* discovers about the ecophysiology of marine vertebrates. The vertebrates in the ocean include fishes, reptiles, birds, and mammals, with the fishes being the most successful in terms of numbers of species and numbers of individuals *Chapter Six* explores the diversity of vertebrates. Several theories have been proposed to explain this difference, some of

which are based on differences in abiotic factors such as ecological and evolutionary time, productivity, area, climate, geometric constraints, and Rapoport's rule.

The following are the salient features of the book:

- This book presents the comprehensive introduction to the study of vertebrate eco-physiology for undergraduate students.
- Topics are logically arranged according to the course outline of the subject.
- The use of simple language to facilitate a better understanding of each chapter.
- Illustrative examples of varying difficulties, wherever needed, are presented to enhance the interest of students.
- The provision of knowledge check test for each chapter is given at the end of chapter to strengthen the learning process of students.
- Case Study, Role Model, Keywords, and Examples are also provided to enrich the knowledge of students.