BOOK REVIEW


Imagine a species that migrates thousands of kilometers from diffuse populations covering millions of hectares, crossing a continent and wintering in a small area in the mountains of Mexico. Imagine that each year the same migration paths are followed and that the very same trees are used for winter rest. Imagine that an individual never makes the journey twice and that the migrants are three generations removed from each other. Now imagine a butterfly, weighing less than one gram and seemingly delicate, fragile and showy making this tremendous journey through storms and strong winds. This incredible story is not a figment of the imagination; it is a miracle of nature. It is the threatened phenomenon (designated by IUCN) of the migratory monarch butterfly. Monarchs are important to study so that we can preserve this fascinating biological phenomenon.

The Monarch Butterfly: Biology and Conservation is a concise text that explores this natural marvel. As in any good scientific writing, the book’s authors acknowledge which research topics are lacking study, recognize the limitations of their studies and offer guidance for future research. Although the book includes 46 contributors from three continents, the articles flow easily and authors appropriately cite each other. This connectivity likely follows from the book’s origin: the 2001 Monarch Population Dynamics Conference, which aimed “to understand the annual dynamics of a migratory insect with a continental distribution.”

The authors wrote the articles in scientific format, making the book appropriate for current and aspiring monarch biologists, entomologists in general and any scientist with an interest in butterflies. However, the editors and many contributors to the book emphasize the necessity of “citizen scientists” in monarch research and this book should appeal to interested lay people. Books with broad appeal can have large social impact, and this book could have benefited from an introductory chapter covering essential features of the monarch such as its global distribution and the effectiveness of its predator avoidance due to assimilated cardenolides and coloration. On the other hand, the summary of a conference is not necessarily meant as a sole monarch butterfly reference text.

The book is divided into four sections: Breeding, Migration, Overwintering and Integrated Biology. Each section includes a chapter written by one of the editors discussing the following chapters. The purpose is to introduce the topic and provide the reader with insight to the studies conducted and the findings. To explore elements of specific studies (such as methods and discussions) the reader must delve further, but an individual with a peripheral or potential interest in monarchs could benefit by simply reading the summary chapters.

The book is a strong effort in promoting a continued interest in the biology and conservation of the monarch butterfly by compiling the work of many researchers. However, it leaves the reader wanting for further results and answers. For such a highly studied species, I am surprised that more is not known. The book includes preliminary studies, such as Davis and Garland’s chapter on stopover ecology (Chapter 12). Other chapters lack complete discussions. For example, Jesse and Obrycki (Chapter 9) argue that Bt corn pollen and anthers may represent a threat to monarch larval survival, but they do not test it against non-Bt corn grown with blanket pesticide treatments. Does monarch survival differ between Bt and the most likely alternative of crops sprayed with pesticides? Additionally, the goal of the book is to understand monarch dynamics, but the editors missed the opportunity to develop a strong argument for the monarch as a model organism, providing a general understanding of organismal responses to global threats.

Scientists appear to clearly understand breeding biology in monarchs, but key questions about which factors are essential to determining population success remain unanswered. Larval survival biology would be an appropriate description for the first section of the book since the goal of most chapters was to understand survival, not breeding (though all studies took place in the breeding range during the breeding season). Predation by ants seems to be a major factor reducing populations for monarch eggs, but this has only been tested regionally (one site in upper Midwest). Even less is known about the importance of wasp predation, overall effects of invasive fire ants, host plant cardenolide concentration and agricultural practices. The studies in these chapters address the major potential threats to monarch