

Preface

The more the merrier; everybody has heard that maxim. This book is about its equivalent in ecology: the Allee effect. This effect is simply a causal positive relationship between the number of individuals in a population and their fitness. The more individuals there are (up to a point), the better they fare. One may think that this simple concept is a minor detail in theoretical population dynamics, but in fact it has a surprising number of ramifications in different branches of ecology: population, and community dynamics, behavioural ecology, biodiversity conservation, epidemiology, evolution, and population management.

The Allee effect is an ecological concept with roots that go back at least to the 1920s, and fifty years have elapsed since the last edition of a book by W.C. Allee, the "father" of this process. Throughout this period, hardly a single mention of this process could be found in ecological textbooks. The concept lurked on the margin of ecological theory, overshadowed by the idea of negative density dependence and competition. The situation has appeared to change dramatically in the last decade or so, however, and we now find an ever-increasing number of studies from an ever-increasing range of disciplines devoted to or at least considering the Allee effect. It was only natural that this boom would sooner or later require a monograph that presents this concept and its implications, and we hope that we have produced a fair synthesis.

The book aims to take an overarching view of all of the branches of ecology which nowadays embrace the Allee effect, including the empirical search for Allee effects, theoretical implications for long-term population dynamics, its role in genetics and evolution and its consequences for conservation and management of plant and animal populations. This diversity means that the book is (we hope) of interest to empiricists, theoreticians and applied ecologists, as well as to students of ecology and biodiversity and to conservation managers. Such a diverse potential audience inevitably means that we cannot suit everyone perfectly as to form and content. Any of these three aspects of Allee effects (the empirical, the theoretical, the applied) could probably fill a volume the same length as this book, so tradeoffs were necessary to avoid scaring readers with a monstrously huge volume. We chose to address all relevant aspects of Allee effects while

trying to maintain a balance between conciseness and comprehensiveness. We recognize that our diverse readers will have diverse interests and needs, so we have chosen to present distinct chapters on each topic, confining, for example, all mathematical equations to one chapter and all genetic and evolutionary discussions to another. Our goals have been to present the Allee effect concept to the reader with clarity, to demonstrate its ubiquity, its diversity and its importance in plant and animal species, and finally to help researchers in specific branches of ecology to look into each others' kitchens.

Another aim has been to produce a book that requires little background knowledge, aside from curiosity and some basic notions of ecology. Of course, the book is not an elementary text in ecology, genetics, evolution, or mathematical modeling of population dynamics, so that the reader who handles the basics of these disciplines will profit most from the book. But we have tried to explain concepts in clear language, and where ecological jargon becomes necessary, we provide a glossary to carry the reader through the relevant chapter. We hope that this first book on the Allee effect for fifty years achieves these aims, and mostly that you enjoy it.