

Preface

This book developed over more than a decade from a manual for a short course presented as part of a postgraduate program in conservation biology. Students arrived from various university backgrounds, generally with little or no prior experience in modeling, joined by some professional scientists seeking further training in the use of this information technology. The introductory course was aimed at providing those attending with the foundation from which to develop their own models, for applications that they might encounter later in their professional careers. The emphasis is not on mathematical formulae, but on the potential opened by computers and the software they may contain to explore, improve understanding, and contribute toward solving applied problems in wildlife conservation and resource management. My approach is to convey how dynamic equations generate patterns of change over time, subject to various influences, which can be viewed and comprehended in the graphical output. Through being inducted into the mind-expanding potential opened by modeling relationships, students should gain an appreciation of the heuristic value of modeling as an aid to learning, and hopefully also realize that developing a formula using a computer can be a fun activity.

My approach toward modeling has been strongly influenced by my first mentor, Tony Starfield; in particular his adage to keep models simple, if they are to serve effectively as a learning tool, perhaps discarding the model once it has achieved this aim. I was originally spurred to develop this teaching module after attending a short course presented by Michael Gilpin to induct South African conservation biologists into population models. He noted that conservationists need models more crucially than theoretical ecologists because they have to make decisions based on the best knowledge available to them at the time, without the opportunity for more research to resolve the uncertainties. The most defensible and transparent basis for such decisions is a formal synthesis of current knowledge and understanding, which is what a model represents. Through being exposed to criticism

and subsequent improvement, the model contributes to improved, or at least shared, understanding.

The book benefited greatly from the critical feedback received from the many students and professionals who attended the biennial short courses over 14 years between 1992 and 2006. They cannot take responsibility for the additional chapters added, at the request of reviewers of the book manuscript.

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