PREFACE

This edition of *Mathematical Bioeconomics*, a major revision of the second edition, departs from studying the mathematical niceties of resource models, emphasizing instead what I hope are more practical concerns. Techniques of formulating and analyzing mathematical models of biological resource systems are still featured, but so are the potential pitfalls. Good models can lead to revealing explanations of otherwise mysterious observations. When used for predictive purposes, however, models can be seriously misleading, especially if the underlying assumptions of the model are not clearly recognized.

Other topics that receive expanded coverage in this edition include: models of individual harvester behavior and economic incentives; the response of individual harvesters to various kinds of harvesting regulations; reasons underlying the existence of excess harvesting capacity (especially in commercial fisheries), and for the persistent failure of governmental attempts to eliminate excess capacity; the prevalence of externalities in resource harvesting industries, particularly the loss of biodiversity. The discussion of uncertainty in biological resource management has also been greatly expanded, including a section on "decision analysis." This method is increasingly being applied in various areas (including environmental management), but is only beginning to be used in biological resource management.

Mathematical prerequisites for reading this book are fairly minimal; some readers may need to refresh their understanding of elementary calculus (e.g., integration by parts) or probability theory (e.g., conditional probability).

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