

Preface

This book is an outgrowth of a symposium held on September 5, 2008 at Princeton University to mark the occasion of our formal retirement from teaching. Dan Rubenstein, chairman of our Department of Ecology and Evolutionary Biology, generously gave us carte blanche to choose the theme and the contributors. The theme we chose is the title of this book. It exemplifies our research. The theme is not a discipline, such as ecology, and not a subject, such as insect migration, but a process of scientific discovery, a search for the causes of phenomena that cannot be fully understood when first observed. The symposium participants approach their research much as we do, and attempt to answer evolutionary questions with whatever tools are available.

Evolution touches all aspects of biology. We wanted to convey the excitement of current research and understanding across the breadth of the subject, without attempting to be comprehensive. This meant picking topics selectively, and ignoring others. The chapters are organized in four, interconnected, groups, with brief introductions to each of them. The first touches on some highlights of evolution in the past, from the origin of life to recent evolutionary history. Once the sole domain of paleontology, this field now encompasses biogeochemistry and molecular biology. The second group displays the power of molecular genetics to identify the mechanisms responsible for the development of structural diversity. The third group has a focus on behavior, and the fourth can be loosely described as ecological. We have been fortunate to add one extra chapter to each of the four sections of this book, written by people who would have been part of the symposium if more time had been available.

We thank many people for making this volume possible, starting with the contributors. David Wake introduced the symposium, and his remarks are reproduced in the final chapter. Reviewers have helped to improve the quality of the chapters. Alison Kalett of Princeton University Press gave us essential guidance and support, like a ship's navigator.