Preface

The interactions between consumers and their resources, which can be a major determinant of patterns in nature, are strongly influenced by resource availabilities and by the foraging behavior of the consumers. Although it is common to think of the foraging behavior of animals, multicellular plants also have "foraging behaviors." A plant's ability to garner resources is strongly influenced by its morphology. Plant physiology and morphology interact to determine how growth depends on resource availabilities. A major advantage of plants, in addition to Harper's (1977) observation that they sit and wait to be counted, is that their above-ground morphology, and thus a major component of their foraging behavior, is visually obvious. Unfortunately, below-ground foraging effort is more difficult to observe. Plants have evolved a wondrous array of morphologies and life histories, and plant communities have many repeatable spatial and dynamic patterns. My desire to understand these was a major factor motivating this book. I started exploring these ideas more than two years ago with little idea where they would lead. I did start with the usual complement of prejudices and preconceptions, several of them highly cherished at the time, and found that some were reinforced and some rejected as I explored the logical implications of the mechanisms of competition for soil resources and light among size-structured plant populations.

Writing a book is a long, often tiring, and at times intellectually frightening journey, for there are many face-to-face encounters with the vast unknowns of our science. However, there are also exhilarating moments when disparate ideas coalesce, when patterns emerge from chaos. In
looking back on the results of the past two years, I know that there is much more to be done. But the journey has produced insights into some of the fundamental processes, constraints, and tradeoffs that may have led to the broad, general patterns we see in the vegetation of the earth. I share these with you in this book. I do so in the spirit of one who knows that we have far to go before we truly understand nature. I hope that the ideas presented here may help guide you toward a better understanding of the forces shaping the evolution of plant traits and the structure and dynamics of plant communities.

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