Preface

Sometime in the 1970s, Sylvia Sharnoff and I visited a local California museum. We stood in front of a diorama of the alpine Sierra Nevada, a carefully detailed model of rugged mountains with a foreground of large granite boulders, enlivened by a furry stuffed marmot perched on a rock and a large bird poised in flight overhead. It was not some generic reconstruction but a view of an actual place to which we had often backpacked, Little Lakes Valley. Yet something was deeply wrong—why did the scene look dull and unnatural? It took some time to figure it out: they forgot the lichens! Without the colors and textures that lichens add, the rocks could have been on the moon rather than part of our living planet. Lichens are a visible and important component of the landscape, yet they are often taken for granted or assumed to be intrinsic to what they grow on, not perceived as lifeforms in their own right. This book provides an introduction to these remarkable and diverse organisms in California.

Since the publication in 1988 of *Lichens of California* (see Bibliography for citations), there have been many changes in lichen taxonomy and many new species recognized for the state. The most recent checklist, compiled by Shirley C. Tucker and Bruce D. Ryan in 2006, lists 1,575 taxa (including 65 subspecies, varieties, and forms), and the number continues to grow with no end in sight. *Lichens of North America* (2001) includes many California species, and the 2007 publication of *Lichen Flora of the Greater Sonoran Desert Region*, as well as numerous journal articles, have greatly enlarged our understanding of lichens in California. These sources are too bulky for most people to take into the field, however, and many have felt the need for a new guidebook, one that would reflect recent name changes, have good color illustrations, and include more crustose species.

The present book includes most of the "macrolichens" (larger li-

chens, not crusts) that one is likely to encounter in the state, plus a substantial sampling of the more common and distinctive crustose species. I have not provided keys or extensive descriptions of microscopic characteristics, choosing instead to use the space to include more species. Readers who wish to confidently identify most of the crustose lichens will need to consult primary sources, starting with *Lichens of North America* and the *Lichen Flora of the Greater Sonoran Desert Region*. Updated and expanded keys for *Lichens of North America* are being prepared by Irwin Brodo and will be published by Yale University Press; they will include most of the common or conspicuous lichens of California. Lichens evolve slowly, but lichen nomenclature is changing rapidly as scientists continue to unravel evolutionary relationships; scientific journals and online resources will enable the reader to keep up.

In addition to their decorative contributions to the visual environment, lichens have important roles in many ecosystems. They provide food, nesting material, and camouflage for a wide variety of wildlife. They are also a significant source of fixed atmospheric nitrogen, a critical resource for plants, in the temperate rainforests of the Pacific Northwest and in many desert environments. In arid parts of the American West they are key elements in preventing soil erosion, forming microbiotic soil crusts wherever livestock grazing or other impacts have not destroyed them.

Lichens are used by scientists and resource managers in a number of ways. They are sensitive indicators of air quality and are studied by scientists responsible for monitoring air pollution, especially by the USDA Forest Service. Certain species grow mostly on the bark of ancient trees, and have been used as indicators of old-growth forest stands. Some rare species of lichens have been factors in the reconsideration of planned timber sales in California.

The images in this book are drawn mostly from those we took for *Lichens of North America*, and in some cases I have had to reuse a photo that appeared in that volume. Those photos were all taken as 35 mm slides. Since then, after Sylvia passed away, I added more California photos as digital originals, both on my own and during trips taken with Mariette Cole and others. Most recently, with the assistance of Kerry Knudsen, I took additional photos specifically for this book, resulting in about seventy new images that appear in these pages.

For me, lichens are an essential part of the landscape. I began to notice them in 1973, when Sylvia Sharnoff and I started to photograph them as a hobby. I can't remember anymore what I thought all those

patches of color on trees and rocks were, before I had ever heard the word "lichen." Without a name or a concept they just seemed part of the texture of things. But learning to recognize them as distinct life forms, and beginning to distinguish one from the other, was a revelation, a powerful invitation to find out more. I invite the reader to go on a similar journey.

This book would never have been possible without enormous assistance and encouragement from many people. Without Sylvia's initiative, it is unlikely I would have become involved with lichens at all, and many of the images in this book are hers. Starting in the late 1980s we worked as a team with Dr. Irwin M. Brodo, of the Canadian Museum of Nature, on *Lichens of North America*. Ernie's deep knowledge and guidance were absolutely central to our involvement with lichens, and the information in *Lichens of North America* has been my primary source. He corrected innumerable errors in the draft text for this book and made many suggestions for changes that improved the manuscript; my debt to him is greater than I can possibly express. I am enormously indebted as well to Kerry Knudsen, Curator of the Lichen Herbarium at the University of California, Riverside, who helped the project along from its beginning to its final stages, identifying specimens from recent field trips and answering endless questions with patience and skill; without his help, and his expertise about California lichens, the book would have been much impoverished and much less accurate.

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