Flora of the Gran Desierto and Río Colorado of Northwestern Mexico. Richard Stephen Felger. The University of Arizona Press, Tucson, Arizona. Pp. xi; 673, 2 maps, 19 B/W photographs, ca. 400 line drawings of plants, gazetteer, six appendices, bibliography, index. US$75.00 (hardcover). ISBN: 0-8165-2044-5.

Richard Felger's beautiful new flora—the latest volume in the University of Arizona's Southwest Center series—is a comprehensive and engaging account of plants and environments in the heart of the Sonoran desert and in the adjacent remnant wetlands of the Río Colorado delta. The area the book covers stretches from the U.S. border on the north to the Gulf of California on the south, and from the delta of the Río Colorado and the Mexican portion of the river on the west to about Mexico Highway 8 on the east. The roughly 15,000 square kilometers of desert plains, volcanic fields, granitic mountains, sand dunes, desert oases, small rivers, and wetlands within the flora area include some of the hottest and driest places on the North American continent. The area nevertheless supports a rather diverse flora of 589 species in 327 genera and 85 families. Of these, eight are pteridophytes, two are gymnosperms, and seventy-nine are non-native angiosperms, the latter confined mainly to disturbed urban and agricultural habitats. The rest are native angiosperms, with dicot species outnumbering monocots by about five to one. Felger's flora describes all 589 species, and provides keys and illustrations that should allow even the novice botanist to correctly identify the vast majority.

The extensive and excellent line drawings by noted botanical artists, and Felger's highly accessible morphological descriptions and keys, are reason enough to purchase his flora and plan a "botanizing" trip to the Gran Desierto. But the book is much more than a tool for identifying desert plants. It is instead a comprehensive introduction and guidebook to the plants, vegetation, and natural and human environments of a unique region that has fascinated Felger for over 25 years and which his book almost dares us to not also find compelling. The massive undertaking that produced *The Flora of the Gran Desierto* provided Felger the opportunity to share not only his extensive botanical expertise and genuine interest in plants, but also his interest and knowledge and enthusiasm for natural history, human history, and human-plant interactions in the Sonoran region. Readers familiar with Felger's earlier publications (Felger and Moser 1985; Felger et al. 1992) will expect to find ample information related to ethnobiology, and will not be disappointed.

The broad context of Felger's flora is established in a 36-page opening section ("Part I: The Environment and Human Interactions") covering paleoclimate, present climate, major habitats, history and human influences, growth forms, and botanical history. The focus on geography, habitat diversity, and human history established in Part I continues in Part II ("The Flora"), in which entries for individual taxa describe not just morphology but also geographical patterns in distribution, characteristic habitats and vegetation associations, and where relevant, aspects of human interaction with taxa and historical information on first recorded observations of introduced species. The gazetteer and six appendices that follow the floristic treatment offer further insight on the physical environment and human history of the flora area, as well as on the plants themselves. The gazetteer

of place names and locations (with latitude and longitude accurate to the nearest second) includes information on, for example, the depths of natural bedrock waterholes, the ages and compositions of lava flows and the origins of their names, the early history of Mexican settlements, and the dates for the construction and paving of different roads in the flora area. The appendices include tables on growth forms and distributions of species (Appendix A); habitats of plant species in a volcanic crater (data for Syke's crater, but probably extrapolatable to others; Appendix B); commonly cultivated trees and shrubs, focusing on three settlements (Sonoyta, San Luis, Puerto Peñasco; Appendix C); non-native plants and habitats (ruderal, disturbed, natural; Appendix D); and the relative abundance and dependence on human disturbance (Appendix E) and geographic distributions (Appendix F) of grasses in the flora area.

This volume is a treasure that belongs in the library of every ethnobiologist, geographer, anthropologist, botanist, and ecologist working in North American deserts. Why then, does perusing this book bring me sorrow as well as delight? For the simple reason that I wonder how much longer books like this will be written. Are we training and encouraging and rewarding students of botany to have the depth and breadth of knowledge of plants and their environments that Richard Felger brought to bear in this splendid monograph? In a recent commentary in *Systematic Botany*, Lammers (1999) wondered about the direction the systematic community is headed, with more and more of its practioners involved solely in "cladistic analysis of gene sequences." He asked,

> "Will the 'taxonomist' of the coming century be someone who doesn't know plants as living organisms integrated in their environment? Will a diverse community schooled in multiple disciplines give way to a cadre of lab technicians . . . who know their plants only as extracts in a glass tube? Will no one be left who can write a Latin diagnosis, count chromosomes, perform experimental hybridizations, or use (much less write) a dichotomous key?"

Richard Felger's magnificent *Flora of the Gran Desierto and Río Colorado of Northwestern Mexico* is a potent argument that we should not—must not—let this happen. Buy it, read it, use it, and share it with your graduate students and with foundation and funding officers. Our understanding of biological diversity and ability to conserve and manage it depends on our ability to answer basic questions about the identity of plant species, how they differ from each other, and where they grow (Lammers, 1999). Our need for information on plants and their environments and interactions with human society will only grow in the more crowded world of the future. We need more, not fewer, books like this one, and we need to be training and supporting now the students who will someday write them.

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