that should be essential reading for any agriculturist who is interested in the utilization and conservation of agrobiodiversity.

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PLANT MICROEVOLUTION AND CONSERVATION IN HUMAN-INFLUENCED ECOSYSTEMS.

By David Briggs. Cambridge and New York: Cambridge University Press. $150.00 (hardcover); $75.00 (paper). xix + 598 p.; ill.; index. ISBN: 978-0-521-81835-3 (hc); 978-0-521-52154-3 (pb). 2009.

This new book speaks to an increasing interest and concern of the enduring consequences that anthropogenic changes will have on the natural world. Recognizing the paradigm that "as humans are part of the natural world, logically anything humans do is natural" (p. 87), Briggs sets aside romanticized notions of wilderness to examine the evidence of human influences on the evolution of plant species and plant communities.

The volume begins with defining what evolutionary change is and examining familiar terms that are often confining within a biological context, such as wild, weedy, invasive, feral, and endangered. Briggs then draws from a wide variety of sources to examine what evolutionary changes have been documented in plant species and communities that are attributable to human activity. Examples include the early ecosystem shifts associated with the first arrival of humans to "virgin" landscapes, to the winners and losers in the increasing industrialization of land-use practices, including grazing, harvesting, and cultivation. He then examines the indirect effects and byproducts of human habitation, such as pollution and introductions of new species. The latter half of the book then addresses the evolutionary impacts of recent attempts to reduce, minimize and/or reverse anthropogenic changes through ex situ and in situ conservation, restoration, and reintroduction, ending with the potential changes we might expect with climate change given our current state of knowledge.

This volume meets its ambitious aims, covering the theoretical and known microevolutionary changes to plant species from a wide spectrum of human activities, drawing examples from across the globe. With the increasing awareness of the lack of scientific studies that include urbanized landscapes, and with the growth of conservation and restoration sciences, this is a timely book that will be an invaluable resource for students and researchers from a wide variety of fields, including conservation biology, urban planning, and anthropology, as well as general biology. As this volume so clearly illustrates, all natural areas have been and are still being influenced by human activity, what is also apparent is that this "influence" will have an evolutionary legacy.

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MULTIPLICITY IN UNITY: PLANT SUBINDIVIDUAL VARIATION AND INTERACTIONS WITH ANIMALS. *Interspecific Interactions.*

By Carlos M. Herrera. Chicago (Illinois): University of Chicago Press. $110.00 (hardcover); $40.00 (paper). x + 437 p.; ill.; index. ISBN: 978-0-226-32793-8 (hc); 978-0-226-32794-5 (pb). 2009.

How can a biologist capture the essence of such highly reiterated structures as leaves, flowers, or fruits with measurements of central tendency? What new insights might arise if we were to examine within-plant phenotypic variation with fresh eyes and a new set of analytical tools? Carlos Herrera's ambitious book begins with these sentiments and progresses through a series of arguments supporting his thesis that within-plant variance merits the statistical treatment and conceptual attention accorded to populations.

The author casts his scholarly net back over a century to resuscitate Pearson's convention of within-plant coefficients of variance (CV) and, like Darwin, to mine the plant breeding literature for exemplars from long-forgotten studies. The critical components of his arguments are that within-plant phenotypic variation is rampant and intrinsically interesting, can be captured and compared using scaled and partitioned measures of within-plant CV, is better explained by organ-specific phenotypic plasticity (e.g., due to plant architecture) than by genetic mosaicism, occurs in organs that directly interface with animal mutualists and antagonists, and impacts plant fitness through the behavioral responses of these animals (e.g., risk aversion) to variation in leaf, flower, or fruit quality. The author builds his case not only by drawing upon his extensive working knowledge of pollination and frugivory (often using reanalyzed data sets), but also through consideration of spatial and temporal variation in leaf, floral, and fruit secondary metabolism. In his concluding chapter, Herrera modifies the Lande-Arnold model of phenotypic selection to include within-plant CV for single and multiple measurement plant traits, and discusses its utility in the face of different causes of phenotypic plasticity.

This book should bring a smile to the face of any biologist who has questioned their sanity after measuring nectar (or its absence) from hundreds of flowers per plant and wondering how traditional statistical measures could do justice to such a trait. The structure and pacing of its chapters are well suited to the teaching of advanced undergraduate or

graduate seminar courses, as much for their exploration of alternative hypotheses as for the specific themes developed therein.

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New Flora of the British Isles. *Third Edition. By Clive Stace; with illustrations by Hilli Thompson and Margaret Stace. Cambridge and New York: Cambridge University Press.* $90.00 (plastic cover). xxxiv + 1232 p.; ill.; index. ISBN: 978-0-521-70772-5. 2010.

The *New Flora* has been the standard work for those wishing to identify a plant growing in the wild in the British Isles ever since the first edition appeared in 1991. It is a concise Flora, so that it gives just sufficient information to distinguish 4800 taxa. Those who wish for a detailed (critical) Flora should see Sell and Murrell's *Flora of Great Britain and Ireland* (1996-2009. Cambridge (UK): Cambridge University Press).

This volume includes the more frequently occurring aliens and commonly cultivated plants, as well as the rapidly increasing numbers of naturalized garden escapes. Descriptions were prepared from live plants, and keys are subdivided to avoid excessive length. Identification will usually require a flowering specimen; for vegetative keys, see Poland and Clement's *The Vegetative Key to the British Flora: A New Approach to Plant Identification* (2009. Devon (UK): Botanical Society of the British Isles). The author claims that he has avoided technical terms when possible, but they are widely used nonetheless, and this is valuable because it improves accuracy. Generally, the seasons of flowering and fruiting are not given, in spite of demand. Chromosome numbers from British material are provided.

The main change in the third edition is the rearrangement of the classification according to the Angiosperm Phylogeny Group, version III. One major family, the *Scrophulariaceae*, has been split up, but otherwise the main effect on the average British botanist is only name changes. Not all modern ideas on classification have been uncritically adopted (as, for example, the genus *Sorbus* has been retained). Illustrations have been added and improved, and the distribution data was updated with Preston et al.'s *New Atlas of the British and Irish Flora: An Atlas of the Vascular Plants of Britain, Ireland, The Isle of Man and the Channel Islands* (2002. Oxford (UK): Oxford University Press).

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Manual of Leaf Architecture. *By Beth Ellis, Douglas C. Daly, Leo J. Hickey, Kirk R. Johnson, John D. Mitchell, Peter Wilf, and Scott L. Wing. Comstock Publishing. Published by Cornell University Press, Ithaca (New York), in association with The New York Botanical Garden Press, New York.* $29.95 (paper). vii + 190 p.; ill.; index. ISBN: 978-0-8014-7518-4. 2009.

This is a detailed and comprehensive treatment of general leaf morphology, vein pattern, and margin toothing found commonly on leaves within the flowering plants (angiosperms). The title of this book is misleading in that it does not reflect its myriad of potential research applications in areas such as plant paleoecology, evolution, anatomy, morphology, systematics, functional ecology, and ecophysiology, just to name a few. All of these possible applications require, first and foremost, a precise characterization and categorization of leaf traits. More specifically, this remarkably thorough analysis of leaf traits also provides an easy-to-follow methodology for a valuable, but neglected, approach in systematic botany—the use of leaf rather than floral traits for establishing evolutionary relationships. This lack of interest is despite the abundance of leaf fossils compared to fossil flowers.

Identification of plant-environment relationships using leaf fossils can also address climate change issues from a long-term historical perspective. For any researcher interested in functional leaf structure and plant adaptation to the environment, this manual provides an instant data source and idea-generating cornucopia. Identification of taxa that share leaf traits, or the convergence of these traits according to habitat type, is a common link to recognizing functional, evolutionary importance. As another application, differences in leaf shape can influence leaf temperature and transpiration, surface water retention, and sunlight absorption and penetration into leaf crowns and canopies. Leaf toothing has been associated with exudation of intercellular water from the mesophyll, important for increased internal CO_2 absorption and photosynthesis. Vein architecture is now receiving considerable attention due its adaptive importance in xylem hydraulic conductance, water transport, and plant water status.

For the first time, this manual provides the analytical methodology for determining not only systematic relationships, but the functional importance of these easily measured leaf traits in this dominant group of the plant kingdom, both past and present. Besides research, this volume could also provide the basis for a variety of teaching applications in high school through university courses in the botanical sciences.

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