

**Seedlings of Barro Colorado Island and the Neotropics.** Garwood, Nancy C. 2009. ISBN 978-0-8014-4753-2 (Cloth US\$99.95) 656 pp. A Comstock Book, Cornell University Press, Sage House, 512 East State Street, Ithaca, NY 14850.

I could not wait to open this long-awaited book, the compilation of years of work that began with the doctoral research of tropical biologist Nancy Garwood, and continued through subsequent stages of her career. The author warmly acknowledges all her collaborators and influences, especially her technicians in Panama, fellow researchers, and colleagues at STRI and NMH. It is wonderful to see this long project brought to fruition, and it was worth the wait.

Robin Foster, the legendary tropical botanist who was her PhD mentor at the University of Chicago, provides enthusiastic praise in the Foreword, commenting that while there are few field guides for New World tropical plants, guides to juveniles are rarer still. This is the first comprehensive guide to juvenile plants of the American tropics. It is a large-format book, for use in the lab or field station, not as a field guide; it is sure to find a place on the desk of every tropical botanist, ecologist, and forester, working around the world (not only Panama and Central America), as well as horticulturalists, gardeners, and others.

Juvenile plants are by definition sterile, and sterile specimens are often not determinable. A book like this can be of enormous help, and the need for many biologists to determine sterile specimens argues for keeping non-reproductive specimens in herbaria. The flora of Barro Colorado Island is one of the best known in the tropics, and accessible through Tom Croat's Flora of BCI; Garwood's book is a companion seedling guide, building on the previous knowledge accrued by Standley, Croat, and Foster, full of data gathered meticulously over years, lavishly illustrated with beautiful drawings by Margaret Tebbs, and also updated with current classification by the Angiosperm Phylogeny Group. It certainly is an essential reference and guide for ecologists!

The illustrations are simple, beautiful, line drawings, and very informative. They all have a cm bar scale to indicate size, the scale

shrinking as the plant grows. They all focus on the initial or youngest stage, young plants that retain the initial photosynthetic organs. Each illustration then progresses to the juveniles, where those initial photosynthetic structures have been lost. While photos of seeds, per se, are not included, in many species the seed is visible, still attached to the young plants. Garwood's methods were to either 1) grow seedlings from seeds (in sun vs. shade, where possible); 2) collect seedlings in the field, and grow them larger in captivity; or 3) field collect seedlings. The longer the process, the more complete the picture of the species.

In large plant groups, one would expect it to be harder to distinguish species at the earliest stages. Garwood conducted an experiment with her data, and found that some genera that can readily be distinguished at the earliest stages (larger seeded species, like *Inga*, for example); there are more problems with smaller-seeded species, such as *Miconia*, *Piper*, or *Cecropia*, in which some species can only be distinguished as juveniles. It is possible to identify seedlings of most species at one locale based on morphology alone, with so many genera easily distinguished that ecologists could focus on these first!

Though this work is intensive, one-site information, Garwood provides a review of Neotropical seedlings, with a wide scope and clear presentation. She developed a shorthand to describe the diversity of morphology encountered, and spends Chapter 4 on elucidating the words and abbreviations with an illustrated glossary. In Chapter 5, the diversity of SMGs (seedling morphology groups) encountered in each family and genus is enumerated, using APG classifications. Fortunately, older family names are retained for indexing purposes! She also gives the number of seedlings illustrated for the family, and relevant references. Each family account ends with a narrative seedling description for the family, with specific examples given. Chapter 6 is the keys to seedlings, taking us to families, then individual species or species groups.

Since my travel budget to aid in the writing of this review is equal to the remuneration for the writing of the review (a nice round sum: 0!), a fieldtrip to Panama to test out the keys was not possible. I took a close look at families I know well (Fabaceae, and other represented in Costa

Rican and south Florida pine rocklands and hardwood forests).

Many examples of *Inga*, easy to tell with their winged petioles, are all distinct, and discernable to species from the youngest stage. The details are well done, with extrafloral nectaries depicted in close-up squares, as well as type of indumenta (pubescence). The legume family is huge, and Garwood treats the three subfamilies separately, with many genera for each.

The Rubiaceae have some genera in common with south Florida, and the *Guettarda* species illustrated has multiple seedlings per 'seed', just as do *Guettarda scabra* and *G. elliptica* from the Everglades. Numerous *Psychotria* species eclipse the single *P. nervosa* species native to Florida, but that species is also included, as is *Hamelia patens*. Many other families have species similar or shared with our Florida species, and I noticed great attention to detail, such as pellucid dots, stipule shape, and seed coat texture. The keys are very helpful, but I love the illustrations, which make up the largest part of the book. The plates are done by family, and illustrations packed in to maximize the number represented in the smallest space.

Robin Foster said this will become the model, the standard to which all subsequent works aspire. It truly is the gold standard, and maximally useful for this well-known tropical forest community, as well as for other similar and more distant tropical communities. I hope that its depth and quality will not deter others from trying to document their knowledge, but rather inspire those who have done seedbank/seedling community studies to write the best guides we can, as any published documentation of new knowledge acquired can prevent its loss with the demise of the scientist. This book is a treasure, and I recommend its acquisition to anyone who likes seeds and seedlings, as well as all motivated to figure out what juvenile plants they have encountered in their tropical forest plots.

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**If a Tree Falls: Rediscovering the Great American Chestnut.** Buege, Douglas J. 2008. SBN13: 978-1-4363-1609-5 (Cloth US\$29.99) 186 pp. Xlibris Corporation, International Plaza II, Suite 410, Philadelphia, PA 19113-1513

If a Tree Falls by Douglas Buege presents provides a generally-well written account of the history of the Chestnut Blight and the disappearance of the American Chestnut from our Eastern forests. The author obviously has a deep connection with the living world (the dust jacket proclaims the author to be a vocal and active supporter of non-humans) though sentences like "The rest of the biotic world needed champions; humans would survive without my support..." smacks of messianic hubris.

That attitude mars an otherwise interesting account of the rise of Chestnut Blight on both sides of the Atlantic and the different results—devastation in Italian chestnut orchards was followed after several years by revival, while the species that had provided one-quarter of the trees in the Eastern woodlands of the US virtually disappeared. The author also spends considerable time examining current efforts to save the few remaining chestnuts and to select resistant American trees with which to begin reestablishment efforts in the US.

One does wonder why the author would bother trying to warn or motivate his fellow humans when he says over and over what a horror we are. If we're so bad, why would we ever listen to him? Especially as he's one of us. That puzzlement is compounded when he cites, on the topic of ethics, people like the truly monstrous Peter Singer of Princeton, a man on a par with the Nazis in some of the practices he promotes (though as far as I am aware, Singer is far more an advocate of bestiality than any of the Nazis).

While If a Tree Falls might be useful in particular for its history of the disappearance of the American Chestnut from our forests, it is so fraught with pretension and pseudo-scientific ramblings as to be unfit for students. Some might want to buy it for the history, but this reviewer would not recommend it. There are, by far, better sources of information in this area.

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