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New Guide to Tropical Seedlings: Essential to Climate Change Research

The enormous trees forming rainforest canopies bear little resemblance to their seedlings, many described for the first time in the new field guide, “Seedlings of Barro Colorado Island and the Neotropics,” published in July 2009 by Cornell University Press. Author Nancy Garwood, professor of plant biology at the University of Southern Illinois in Carbondale, began the daunting task of describing seedling stages of tropical plants 25 years ago at the Smithsonian Tropical Research Institute in Panama.

Garwood’s guide greatly simplifies the process of identifying seedlings, which lack brightly colored flowers, fruit and other distinguishing adult characteristics. Richly illustrated by Margaret Tebbs, the guide includes descriptions of nearly 3,000 species in 1,243 genera representing 229 families.

“Exact description of plants and animals at all life stages underlies profound ecological insight,” said Ira Rubinoff, staff scientist and director emeritus of the institute, who gave the go-ahead for the establishment of a novel, large scale forest-monitoring plot on Barro Colorado Island in 1980. Botanists are in the midst of their 16th annual seedling census, enabled by Garwood’s pioneering work to identify seedlings there.

The forest-dynamics plot in Panama was the first of 34 such plots in a multi-institutional network coordinated by the Center for Tropical Forest Science–Smithsonian Global Earth Observatories project. Garwood and collaborators head up comparative studies at the forest dynamics plots in Yasuni, Ecuador, and in the Luquillo plot in Puerto Rico aimed at understanding the role of different life-history stages in different tropical communities and their responses to environmental change.

“Seed and seedling survival, perhaps the most vulnerable stages in the life of a plant, define the outcomes of climate change, carbon cycling and biodiversity evolution on a very local scale and across

the globe,” said Rubinoff. “This first guide to tropical forest seedlings will be an essential handbook as we continue long-term monitoring of forests in this hemisphere.”

STRI, headquartered in Panama City, Panama, is a unit of the Smithsonian Institution. The institute furthers the understanding of tropical nature and its importance to human welfare, trains students to conduct research in the tropics and promotes conservation by increasing public awareness of the beauty and importance of tropical ecosystems. Web site: www.stri.org.

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Ref. Nancy C. Garwood, Margaret Tebbs (illustrator), Robin Foster (forward). Seedlings of Barro Colorado Island and the Neotropics. 2009. Cornell University Press. 656 pp. ISBN 978-0-8014-4753-2 http://www.cornellpress.cornell.edu/cup_detail.taf?ti_id=5282

Photos:

Robin Foster BCI.jpg

Robin Foster (left), now at The Field Museum in Chicago, was co-founder of the tropical forest dynamics plot on Barro Colorado Island and wrote the forward to this guide.

Credit: Marcos Guerra, STRI

Mosannona garwoodii.jpg

Mosannona garwoodii seedling from Barro Colorado Island

Credit: Rolando Perez, STRI