Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies, Volume 1

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BOOK REVIEWS

Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies, Volume 1. Hao Zheng, Yun Wu, Jianqing Ding, Denise Binion, Weidong Fu, and Richard Reardon. vi + 147 pp. Chinese Academy of Agricultural Sciences Institute of Biological Control, Beijing, 100081 P. R. China. USDA Forest Service, Forest Health Enterprise Team. Morgantown, WV 26505, U.S.A. 2004. Sept. 2004. No cost. United States Department of Agriculture Forest Service-FHTET 2004–05. Paperback.

One of the greatest challenges for land managers and restorationists is the control of invasive plant species. Introduced plants, which lack natural predators, can sometimes proliferate extensively, displace native species, and hinder forest regeneration. *Invasive Plants of Asian Origin Established in the United States and their Natural Enemies, Volume I* describes over forty plant species originating in Asia, and introduced into the United States either purposefully or inadvertently. It adds a great deal of new information about the natural enemies of each plant that was formerly available only from scattered sources and mostly in Chinese.

The book defines an invasive plant as one that is able to ''establish in a new ecosystem in which they proliferate, spread and persist to cause detrimental impact to the economy, environment or human health''. ''Invasive non-native plants comprise from eight to forty seven percent of the total flora of most states.'' This definition is, presumably, approved by the USDA, which published the book.

Each entry includes at least one color photograph of the plant, a map of its native range in China and a small map of its range in the United States. The text describes the plant, its habitat, distribution, economic importance in China and lists related species in table form. The focus of the book, however, is the tables listing all the known natural enemies of each plant, both arthropods and fungi.

These extensive lists of natural enemies may serve as a first step in the biological control of some of our worst invasive plants. In many cases, past biological control projects have had more negative than positive effects, and so it is critical to have a thorough knowledge of the ecology of both the target organism and the predator. As the authors point out, there has been relatively little study of Asian invasives in their ecosystems of origin. Thus, this is an important addition to the literature that can serve as the starting point for more studies.

The plants are arranged in alphabetical order by Genus from *Abutilon theophrasti* to *Phellodendron amurense*. A second volume is in production that will, we assume, cover genera from ''Quercus'' to ''Zelkova.''

In a sense, it is unfortunate that ''Invasive Plants of Asian Origin'' is being given away without charge, because the printing is very limited. A small fee might ensure a larger run for this important book. I certainly look forward to Volume II and hope funding will permit another printing of Volume I.—MARGARET B. GARGIULLO, City of New York, Parks and Recreation, Natural Resources Group, 1234 Fifth Avenue, New York, NY 10029.

Biodiversity of Fungi: Inventory and Monitoring Methods. Edited by Greg Mueller, Mercedes Foster, and Gerald Bills. xviii + 777 pp. Elsevier Academic Press, Boston, MA. 2004. US $99.95. ISBN: 0-12-509551-1. Hardcover.

At present, only 5% of the estimated 1,500,000 species of fungi on Earth have been described. With the advent of the global project aimed at describing all life on Earth, emphasis has been placed on establishing standardized protocols for species inventories. A collaboration of 88 mycologists, *Biodiversity of Fungi: Inventory and Monitoring Methods* provides an important first step in this direction as a well-rounded text aimed at standardizing biodiversity sampling of fungi and fungus-like organisms. Approaching biodiversity surveys from the perspective of habitat and/or ecological niche rather than by taxonomics, this text takes much of the intimidation and mystery out of the process of fungal studies.

There are three main parts to this volume. Part I deals with ''General Issues.'' Within this section, chapter 1, ''Fungi and their allies,'' provides an overview of the current classification of fungi and fungus-like organisms, including Kingdom Fungi; Kingdom Straminipila (oomycetes and hyphochytriomycetes); and slime

molds. Chapter 2, ''Preparation, preservation, and use of fungal specimens in herbaria,'' reviews all pertinent details for establishing and maintaining an herbarium. Chapter 3, ''Preservation and distribution of fungal cultures,'' includes methods for preserving cultures, as well as permits and regulations needed for shipping cultures. Chapter 4, ''Electronic information resources,'' provides a template for setting up a specimen database. Lastly, Chapter 5, ''Fungal biodiversity patterns,'' includes analytical approaches and ecological considerations for characterizing biodiversity.

Standardized protocols are provided in the next part of the text. Part IIA includes ''Direct collecting and isolating protocols for macrofungi and microfungi on soil, wood, leaves, lichens, and other substrata.'' Included here are protocols for the rusts, smuts, mildews, fleshy fungi, lichens, and sequestrate fungi. Protocols for macrofungi sampling also include considerations for determining adequate sampling area for inventories, as well as annotation sheets to be used for agaric and bolete collections. Part IIB provides ''Isolation protocols for readily culturable microfungi associated with fungi.'' Included in this section are microfungi associated with wood and plant litter, endophytes, saprobic fungi in soil, fungi in stressful habitats, arbuscular mycorrhizal fungi, yeasts, and fungi growing on other fungi. Part IIC, ''Collecting and isolation protocols for fungi associated with animals,'' includes fungal parasites and predators, symbiotic fungi, pathogenic fungi, coprophilous fungi, and anaerobic rumen fungi. Part IID, ''Collecting and isolation protocols for aquatic fungi and Protoctistans formerly treated as fungi,'' provides protocols for freshwater fungi, marine fungi, slime molds, and aquatic pathogenic fungi.

Part III of the book is comprised of appendices, an illustrated glossary to help with the often confusing terminology used in mycology, and an extensive literature cited section. Appendix I reviews moist chamber techniques for various groups of fungi; Appendix II includes recipes for media, stains, antibiotics, and fixatives needed for inventory surveys; Appendix III provides a list of fungal herbaria throughout the world as well as fungus-related websites; and Appendix IV provides a list of vendors for all field and laboratory equipment and supplies used in listed protocols.

The overall layout of this text makes it easily accessible as a reference, with illustrations and stunning color photographs supplementing the text where needed. The only drawback to this volume is the absence of protocols for examining plant roots for ectomycorrhizal fungi, ericoid mycorrhizal fungi, and other specialized mycorrhizal fungi. However, the comprehensiveness of this text makes it a must-have reference for mycologists, ecologists, plant pathologists, fungal pathologists, and anyone else interested in fungal biodiversity.—DAWN R. BLACK, Department of Environmental & Plant Biology, Ohio University, Athens, OH 45701.