Plants in Samoan Culture. The Ethnobotany of Samoa

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Book Reviews

Daniel F. Austin, Book Review Editor

Culinary Herbs for Short-Season Gardeners. Ernest Small and Grace Deutsch. 2001. NRC Research Press and Ismant Associates Peony Press, Canada. 181 pp. $24.95. ISBN 0-660-17785-4.

This book is a collaborative effort on multiple levels: between a scientist and an avid gardener as authors, and between a government ministry and a commercial firm as publishers. As such it is a book with identity issues, reflected throughout in the blending of styles, organization of information, and even the design of the text. The subject matter is fascinating and the authors are to be commended for writing a book for those who live and garden in extremely cold climates in North America. Sadly, not everything in this graft chimaera works.

The introductory 15 pages or so describe methods for garden design and horticultural techniques suited to a climate where trapping and conserving heat, as well as making optimal use of the short growing season, is crucial to success. Cloches, cold frames, hot beds, and water jackets are all clearly explained and nicely illustrated. So far, so good.

The main body of the book, comprising 145 pages, catalogs herbs that can be grown successfully under hard-winter conditions; these are keyed to a plant hardiness zone map that emphasizes the continental North America. The main entries are ordered by common name, with scientific name, plant family, and alternative common names provided. The total number of species covered is elusive; a number of taxa are mentioned in passing under some main entries, for example 3 cultivars and 3 additional species of *Salvia* are mentioned in the account of garden sage. Because there is no index it is impossible to access information about these herb taxa unless you remember what main entry they are described under. The lack of an index to all names used in the text is a serious shortcoming for a book organized in this way.

However, once one gets oriented in the text, there is a great deal here to delight. The species accounts are organized in a logical sequence, filled with interesting information organized as bulleted points rather than prose. Selected bits of (usually historical) information have been set off in tinted boxes inserted in the text. The illustrations are set in the text, with lines of text often varying in length so they abut the artworks. These design features I found visually distracting, even irksome.

The use of botanical art reproduced from 18th and 19th century works is unusual. The sources, however, are not identified, which precludes access to the information originally published with these historical artworks. A few species have been illustrated with original artwork that imitates the older style; these have been credited to the artists that created them.

All in all *Culinary Herbs for Short-Season Gardeners* is a mixed bag. The authors have created an authoritative text, which fills a niche not addressed in the herb gardening literature. However, the amateurish design and layout do not serve the text well. For those avid herb growers and fanciers living in hard winter areas, the book is worth having. But it will require taking the time to become thoroughly familiar with it in order to use it effectively. This is not a book one can pick up to quickly answer a particular question, but rather one to sit and browse through by the fire on a long dark winter's night.

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Coastally Restricted Forests. Aimelee D. Laderman, ed. 1997. Oxford University Press, 198 Madison Avenue, New York, NY, 10016. xviii + 334 pp. (hardcover). $ 85.00. ISBN 0-19-507567-6.

This is a welcome addition toward understanding widespread, though often spatially restricted and overlooked, coastal freshwater forest ecosystems. 'Coastally restricted forests' are typically dominated by coniferous species, often with a tendency to thrive under suboptimal conditions. These occur exclusively within 250 km of a marine shore in the Northern Hemisphere. This superb volume provides valuable insights into these essentially maritime forests. It elucidates paleo- and neo-endemism, and the paradox of sclerophylly in perpetually moist environments, among other topics. Moreover, the papers collectively highlight ecosystems under threat and/or with previously unrecognized potential.

The 21 chapters authored by 34 individuals are grouped into two sections: *Chamaecyparis* research, and Systems with diverse dominants. The lead chapter by Laderman introduces some of the key research directives and characteristics of coastal forest communities, summarizing their biogeography and general nature.

Part I includes eleven contributions on different aspects of *Chamaecyparis* growth, ecology, and forest management. Zobel provides a synthetic perspective

Economic Botany 56(1) pp. 95–106. 2002

on *Chamaecyparis* forests, including modern range, associated flora, and typical environmental and habitat characteristics. Succeeding chapters examine individual stands and regional systems in Japan, and from Alaska to the Atlantic coast of the USA. Among these Dunsworth, Greenup, Hennon et al., and Yamamoto examine factors intrinsically related to the regeneration ecology, long-term health, and decline of forests along the Pacific. Sheffield et al. provide a synthesis of forests in the Atlantic and Gulf coastal regions, with emphasis on commercial potential. Chapters by Russell and Eckert consider the genecology and population genetics of *C. nootkatensis* and *C. thyoides*. Two others, along with Eckert's, draw on paleobotanical (McWeeney) and/or historical (Phillips et al.) records to provide important time depth. Long-term extraction pressure on natural regeneration and range reduction is further emphasized by Stoltzfus and Good. They draw from island biogeographic theory to examine the effects of clearing and fragmentation on the structure and diversity of different-aged stands of *C. thyoides.*

Part 2 begins with five papers that focus on particular ecosystems dominated by specific taxa or species associates. The subjects include *Alnus japonica* and *Pinus pumilia* forests found in Japan (Fujita) and northeastern Asia (Khomentovsky), *Sequoia sempervirens* forests of the US Pacific coast (Ornduff), freshwater coastal forests of the Yucatán peninsula (Olmsted and Durán García), and *Taxodium-Nyssa* forests of the Southeastern U.S. coastal plain (McWilliams et al.). This section closes with three chapters dealing with broader themes: the impact of catastrophic storms (Connor), the effects of Holocene sea level rise (Connor and Day), and the ecophysiological implications of wetland tree root aeration (Grosse et al.). The final chapter by Laderman and Donnette brings together many salient points from throughout the book. The chapter draws on some of the unique and shared aspects of these ecosystems, and using the common themes to pinpoint directions for future research, implications for conservation initiatives, ecosystem management, and more. Useful appendices provide metric conversion factors and a glossary.

Forest managers, ecologists, and stewards of natural areas in coastal regions (and elsewhere) will find this volume offers considerable application and useful insights, both in theory and practice. As emphasized throughout, coastal forests—restricted in range to begin with—are increasingly cut over and reduced to smaller areas throughout the world. Thus, many are threatened and in imminent danger of elimination. This volume calls attention to the forest's unique nature, and provides critical insights into the dynamics and requirements for the sustainment of coastal forested ecosystems. However, the book also has relevance to understanding general problems of evolutionary and conservation biology.

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The Green Phoenix. A History of Genetically Modified Plants. Paul E. Lurquin. 2001. Columbia University Press, xii + 173pp. Cloth $50.00, paperback $25.00 ISBN 0-231-12262-4.

The objective of this book is to present a complete history of the scientific ideas and experiments that ultimately led to genetic transformation in plants. The title, *The Green Phoenix,* refers to the rebirth of the field after early efforts at plant genetic transformation proved artifactual. The history of the field is engrossing due to false starts, wrong turns, competition, and the ultimate triumph of *Agrobacterium* and direct transformation systems. The author, Paul Lurquin, has contributed critical research throughout the development of the field and his first hand perspective adds to the book.

Lurquin takes great pains to present an equitable representation of controversial events. The book consists of five chapters, the first two, ''Where It All Began,'' and ''Genetic Experiments,'' detail the false start of the field, beginning with misinterpreted evidence from cesium chloride gradients for gene incorporation to misinterpretation of ambiguous results from genetic crosses. These are extremely valuable chapters; they lay out the pitfalls of technical artifacts, contamination, and biased interpretation of data, which together led researchers to believe that DNA could be incorporated simply by incubating pollen or seeds in foreign DNA solutions. Anyone who works in a lab will draw valuable lessons from this history.

The third chapter does a splendid job of discussing the research on crown gall, which ultimately led to a highly successful method of plant transformation that has altered the course of agriculture in the United States. This chapters is highly informative, easy to read, and would make an excellent supplement to class materials. Other methods of gene transfer are discussed in chapter four.

The final chapter is somewhat disappointing. Here some of the current controversies surrounding biotechnology and agriculture are mentioned in a small section of only eight pages. This brief discussion must necessarily present an incomplete picture of complicated issues that, in its brevity, can be misleading. For example, the terminator technology, which prevents seed set in genetically transformed crops, has a history more complicated than just Monsanto Corporation and the prevention of farmers saving seed for next year's crop.

Overall, this is a useful book that provides a very good scientific background and history to one of the major scientific discoveries of the past two decades. This book would be challenging for the lay public, but is accessible to readers familiar with a basic knowledge of molecular biology. *The Green Phoenix* is interesting and enjoyable reading.

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Untersuchungen zum Heilpflanzenhandel in Deutschland. Ein Beitrag zum internationalen Artenschutz. Dagmar Lange. 1996. Bundesamt für Naturschutz, Landwirtschaftsverlag, Münster, Germany. 130 + 33 pp (paperback). DM 19.80. ISBN 3-89624-604-6.

This is a useful little book that investigates the trade of medicinal plants in Germany during the first half of the 1990s. The text represent one of several studies commissioned by the German Federal Agency for Nature Conservation (Bundasamt for Naturschutz, BfN).

The German market of medicinal plants is the most important in Western countries. An overview of the mechanisms and data for that market is interesting—especially for those who deal with medicinal plant research and economic botany of medicinal and aromatic species.

In the first chapter, the author defines the terminology and gives a few data about the origin of the dried medicinal plant material traded in Germany. Both cultivated plants and those gathered from the wild are treated. Chapter 2 summarises briefly how the German medicinal plant market is organised. This topic is completed in the fifth chapter, where a short description of the German regulations is given for plants having medicinal, food, and/or cosmetic uses.

In the fourth chapter exact import and export data of a few of the most important medicinal and aromatic plants traded in Germany are presented and discussed (e.g., *Panax ginseng, Glycyrrhza glabra, Cinchona* spp., *Salvia officinalis, Tilia cordata,* and *Thymus vulgaris*).

The author summarizes then in chapters 6 and 7 the situation of endangered medicinal species. Also given is a useful table reporting the protection status of endangered medicinal species. A complete set and an integration of data covered in this book is available now in the new on-line service WISIA (http://www.wisia.de/index_en.htm), maintained by the same German agency (BfN). WISIA-online holds information about the legal status of both animal and plant species under national or international protection. The site covers those species to which special or strict protection status has been assigned by the German Federal Nature Conservation Act (Bundesnaturschutzgesetz), and legal provisions concerning their import and/or possession.

All in all, the little volume presents data which are not at present completely up-to-date (the book was printed in 1996, and most of the data refer to early 1990s). Still, this is a useful information source about the trade of medicinal plants in Germany and Europe.

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The Useful Wild Plants of Texas, The Southeastern and Southwestern United States, the Southern Plains, and Northern Mexico. Volume 2. Scooter Cheatham, Marshall C. Johnston with Lynn Marshall and contributions from Jesse Sublett. 2000. Useful Wild Plants, Inc., 2612 Sweeney Lane, Austin, TX 78723. xxiii + 599 pp. (hardcover). $135.00. ISBN 1-887292-02-0.

In my review of the first volume of *The Useful Wild Plants of Texas* (Economic Botany 51:333, 1997) I used ''extraordinary,'' ''a work unequaled anywhere,'' ''the publication is a botanical gem of the century'' and similar comments to describe that monumental accomplishment. These were not overstatements. One might even argue the inadequacy of such words to convey the remarkable value and content of Volume 1.

How then can one adequately review the equally exciting second volume, covering *Asclepias* through *Canavalia*? The same accolades clearly apply, except that it now becomes the first botanical gem of the 21st century. I thought improvements unlikely, but the authors prove me wrong. They have included, for instance, synonyms for botanical names, records of tree sizes, and the origin of botanical names. Also, the economic botany text now incorporates data from web site research following careful evaluation and the results of many more informant interviews.

One way to obtain an overview of these volumes is to select a genus and to outline its coverage. I have chosen the first in Volume 2, *Asclepias* (milkweeds, pp. 1–76), a widely distributed and diverse genus in the Americas, with a few species in Africa. The treatment begins with a concise generic description. Thus, ''The flowers, which appear in spring, summer, or fall depending on the species, are borne in umbels, that is, clusters in which all the individual flower stalks appear to rise from the same central point. Each flower produces both pollen and seed, and in most species the flowers are 6–10 mm (0.24–0.4'') across.'' Easy language to follow. Plants most commonly confused with

the milkweeds (*Euphorbia, Apocynum*) are noted and their distinguishing features described, and a discussion confirming that bees are the main pollinators, rather than butterflies. I was also intrigued by a purely morphological statement that "All milkweeds included here are perennial herbs, with the exception of plants of *Asclepias curassavica,* which are annuals." Years ago, while working on the Flora of Panama, I too noted the annual habit of this pantropical weed, but an eminent botanist of the day did not agree. Only after a somewhat heated exchange was his manuscript rewritten to reflect annual not perennial habit, and so I was pleased to read this unequivocal statement regarding *A. curassavica.*

Thirty-two species of ca. 36 found in Texas are described. Each is mapped using up to three colors defining frequency, with at least one superb photograph often showing flowering and fruiting stages sufficient for determinations. Following are 48 pages of economic uses given in a form convenient to use by providing a word or phrase in bold in separate columns adjacent the text. For example, uses begin with **Milkweed Toxicity**, and an adjacent paragraph describes toxicity appropriately referenced. This is followed by the heading **Toxicity Research**, also with its descriptive paragraph. The convenience of this technique becomes obvious when so much diverse information is provided. Toxicity alone is described in three additional parts followed logically by milkweeds as Food. The food section is followed by descriptions of dyes, including dye tests by the authors. The last is divided into many parts, including a host of reported uses, ranging from cardiac properties to venereal disease. These data summarize and interpret a massive and diverse array of economic uses of milkweeds dating from early periods in the Americas and elsewhere to the most recent research efforts, all brought together with clarity and deduction. Imagine this information for 78 additional genera constituting Volume 2.

If an economic botanist, ethnobotanist, or anyone else interested in applied plant science were to purchase only one book a year, this volume would be it—followed by subsequent ones in future years. Unquestionably the series is the ultimate reference for researchers and educators who wish to know how the plants of the southern United States and northern Mexico impact our lives.

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Plants in Samoan Culture. The Ethnobotany of Samoa. W. A. Whistler. 2000. Isle Botanica, 2814 Kalawao St., Honolulu, Hawaii 96822, USA. (paperback) U.S. $27.50. ISBN 0-9645426-6-8.

Plants in Samoan Culture is the first full volume devoted to the ethnobotany of Samoa. Written by a Pacific studies veteran and author of the similar book, *The Ethnobotany of Tonga,* this volume will surely be useful for those of us interested in this part of the world and ethnobotany in general. The loss of traditional knowledge and biodiversity in Samoa motivated the research and publication of this book and serves as a crucial step in its preservation.

The book comes in 10 chapters followed by footnotes, bibliography, a checklist of Samoan plant names, a checklist of unsubstantiated plant names, and indices to Samoan, English, and scientific plant names. The first chapter introduces Samoa: its ethnobotany, geography, climate, history, linguistics, and flora. Chapters two and three are devoted to foodstuffs, staple and secondary foods respectively. Chapters four through seven look at mats and clothing, fibers, bark cloth, and timber and carving. Chapter eight is devoted to traditional medicine and covers the causation of illnesses, the use of herbal medicine, healers, preparations and treatments, and a list of medicinal plants. Plants for adornment and decoration are the focus of chapter nine, while chapter 10 covers miscellaneous economic plant uses, such as: dyes, fish poisons, and musical instruments.

This is a must-have for anyone interested in south Pacific ethnobotany. It covers the subject exhaustively, is well written, and a valuable resource for students and professionals. It would work well in classes on Pacific Island ethnobotany and stand on its own as a reference book for Samoan ethnobiology.

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Fundamentos de Agrotecnología de Cultivo de Plantas Medicinales Iberoamericanas. José Vicente Martínez A., Henry Yesid Bernal, and Armando Cáceres. 2000. Convenio Andrés Bello (CAB), Programa Iberoamericana de ciencia y tecnología para el Desarollo (CYTED), Ministerio de Educación y Cultura de España, Avenida 13 No. 85-60, Apartado Aereo 53465, Santafé de Bogota, D.C., Colombia. Xii + 524 pp. (hardcover). $U.S. 50.00. ISBN 958-698-023-5.

Fundamentos de Agrotecnología de Cultivo de Plantas Medicinales Iberoamericanas is a book that should attract the attention of *Economic Botany* readers and society members active in Latin America studies. This edition offers educators and students an excellent source of information on the cultivation of medicinal plants and the ramifications associated with their conservation and intellectual property rights.

The book begins with an introduction on the cultivation, utilization, and conservation of medicinal plants, followed by two chapters covering agricultural technology and the production of phytotherapeutics. These latter two chapters offer excellent discussion and commentary on ethnobotany, systematic botany, the importance of herbaria, and the propagation of medicinal plants.

The following section, the monograph of species and their cultivation, comprises the bulk of the book. Over 30 medicinal taxa are covered including the following information for each: taxonomic aspects, geographic distribution and ecology, uses and potential economic value, and cultivation methods. Within this thorough discussion of each taxon the authors pay close attention to the conservation and traditional uses of medicinal plants, as well as exploring relevant intellectual property issues. Each chapter devoted to a specific taxon comes with two color photos and is followed by its own comprehensive bibliography. The selection of taxa, all common to Latin America, is also quite pleasing. For those familiar with the ethno-pharmacopoeia of Latin America most of these taxa are not surprising (e.g., *Aloe vera, Baccharis trimera, Capsicum* spp., *Cecropia glazioui, Rosmarinus officinalis, Zingiber officinale*); however, some are quite interesting (e.g., *Neurolaena lobata, Psychotria ipecacuanha, Rhizophora mangle*). Finally, a glossary and indices for scientific names, common names, tables, and figures close the book.

I would recommend this book to all Latin American academic institutions that support agronomy and botany programs focused on conservation and sustainability of local flora. It is suitable for classes and individual research projects for university level students. Those interested in ethnobotany and potential non-timber forest products will find this book helpful in designing strategies to promote local sustainability and conservation practices.

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The Pharmacology of Chinese Herbs, second edition. Kee Chang Huang. 1999. CRC Press, 2000 Corporate Blvd. NW, Boca Raton, Fl. 33431-9868. xxi + 518 pp. (hardcover) $149.95 (list). $79.95 (textbook). ISBN 0-8493-1665-0.

This book is so badly edited that one hopes it will never be used in a classroom except as a dreadful example of scientific writing. The meager citations are randomly numbered in the text, which is merely amusing. Their meagerness is not amusing. Japanese scientists have examined Chinese herbs for many years. Failure to cite any of this enormous literature is peculiar indeed.

The author has grouped his herbs under their various uses in Western Medicine. Nowhere does he explain that Traditional Chinese Medicine (TCM) does not use Western categories and he does not explain TCMs categories, merely gives a few examples. He might have cited some of the excellent texts that do explain TCM.

Since the back cover of the book recommends it for toxicologists this reviewer will approach it from that point of view.

A few entries have a bold face section: **Toxicity.** However, not every herb has a section. (Note to editors: One does not omit a Toxicity section because there is none. One enters: Toxicity: None.) But omission is not the only problem.

Glycyrrhiza uralensis, (licorice) is one of the most commonly prescribed Chinese herbs. It is also an herb with several adverse effects, some extremely serious. This information is buried in various parts of the text describing the herbs' uses.

On p. 16 the author gives us a glimpse of the reasons toxicologists are so wary of Chinese medications. He mentions (without citation) a Canadian report that many commercially packaged Chinese teas contain digoxin-like factors that can interact with prescription medicines. He does not give the names of these herbs, or the products in which they may be found, but merely remarks that emergency physicians should be aware of this possibility.

This is only the tip of an iceberg. There is much less quality control in Chinese herbal preparations than in the herbal remedies made in this country (which are more likely to be inert rather than toxic). Often dried herbs are identified by sight, smell, and/or taste only. Many are adulterated with prescription drugs that also have serious adverse effects. Frequent warnings about Chinese preparations are circulated in the medical literature. One preparation containing *Aristolochia debilis* caused several deaths. Of this herb, which is both carcinogenic and nephrotoxic, the author merely says, ''Toxicity is low'' (p. 80).

Why are there two entries (p. 330 & 417) in a book on Chinese herbs for *Larrea tridentata (*sic!, correctly *L. divaricata),* a Western American desert plant? Yet he devotes only three and one-half pages and one citation to *Corydalis*. This important genus which contains many species used in TCM, has 17 pages, 76 references and almost as many chemical structures in a more authoritative book on Chinese herbs. Finally, one wonders what governed the choice of the particular chemical structures that are illustrated and who drew them. Of Bulbocarpine (p. 177) we can be certain it is not plagiarized from Mercks.

There are some very fine books on Chinese herbs in English. This is not one of them.

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Indians, Markets, & Rainforests. Theory, Methods, Analysis. Ricardo A. Godoy. 2001. Columbia University Press, 61 West 62nd Street, New York, NY 10023. xx + 256 pp. (paperback). U.S. $25.00. ISBN 0-231-11785-X.

The aim of this book is to answer the question: ''What are the effects of markets on the welfare of lowland indigenous people and the conservation of tropical rainforests?'' Within three sections and 12 chapters the author concludes that the effects are too often unclear and benign. The book as a whole analyzes this question in terms of anthropological theory and public policy.

Part one, ''The Question, the Research Design, and the People,'' compares the approaches of development and political economists and anthropologists, discusses the framework for research and provides ethnographic sketches of five lowland indigenous groups in Bolivia, Nicaragua, and Honduras. Part two, ''The Findings,'' is the largest portion of the book and tackles forest clearance models, game consumption, demography, econometric approaches to work and leisure, human health, the growth and loss of indigenous knowledge, and social inequality. This section of the book is a bit cumbersome, but ultimately rewarding. The book closes with Part three, ''What Have We Learned?'' where the author summarizes the book and discusses its contribution to anthropological theory and methods and public policy.

Most of the book is founded in multivariate analysis of theories and models relevant to the subject matter. This is the strength of the book and certainly what most students will benefit from reading. The writing is clear and direct and while econometrics will help in understanding the quantitative analysis, the logic behind the arguments will be accessible to most any reader.

I would strongly recommend this book to any anthropologist or ethnobotanist concerned with substantive techniques for measuring the effects of market economies on indigenous peoples. Perfect for any graduate level course on the same or similar topic(s), *Indians, Markets, & Rainforests* is a landmark publication in the development of quantitative methods for analyzing traditional culture under the threat of acculturation. This inexpensive text should also attract readership for those interested in international policy making.

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The Green Republic. A Conservation History of Costa Rica. Sterling Evans. 1999. University of Texas Press, P.O. Box 7819, Austin, TX 78713-7819. xviii + 317 pp. (paperback). Price 40.00, hardcover, $19.95, paperback. ISBN 0-292-72100-5 hardcover, ISBN 0-292-72101-3 paperback.

I first went to Costa Rica in 1972 as a Ph.D. candidate to participate in an OTA 2 month summer course entitled ''Human Impact on the Tropical Ecosystems of Costa Rica.'' At that time this small but environmentally diverse Central American country still had 50% of its native forests left more or less intact. When I next returned in 1995, only 25% was left undisturbed. Although this 50% loss over a quarter of a century is depressing for those of us interested in preserving what is left of the natural environment, Costa Rica stands out as world leader in conservation. The author of *The Green Republic* does a thorough and excellent job of documenting how Costa Ricans altered their environment over the last few hundred years. Evans goes into great detail discussing such changes during the last century, with special emphasis on the cadre of expatriate conservationists that played a crucial role.

Basically the environmental history of Costa Rica is one of a succession of boom and bust economic trends. These resource exploitation activities have resulted in the removal of huge areas of tropical lowland, montane and cloud forest. First it was for sugar cane production, then for banana plantations, cattle and coffee. As a microcosmic example, this history of Costa Rica represents how humans with their commercial economies have drastically altered the tropical habitats of the planet.

This book is remarkably well documented. It will help historians, environmentalists, and hopefully resource managers understand the roots of our destructive long-term effects. Moreover, one can only hope that this book will serve as a model for other scholars to document how we have reduced the world's biodiversity for selective economic gain, as well as inspire other persons, organizations and governments to balance business with ecological integrity.

Although this book is to be lauded for its literary and scholarly merits, its impact could have been greater with more and better illustrations. Perhaps a future edition (revised as needed) will address this issue and provide influential and other readers with an even more powerful history of the rise and relative success of the conservation movement in Costa Rica.

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Grass Pea. *Lathyrus sativus* L. Promoting the conservation and use of underutilized and neglected

crops, Vol. 18. Clayton G. Campbell. 1997. Joachim Heller, Jan Engels, and Karl Hammer, series editors. Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute (IPGRI), Via delle Sette Chiese 142, 00145 Rome, Italy. 92 pp. (paperback) Gratis. ISBN 92-9043-341-8.

The grass pea (*Lathyrus sativus*) is the only widely grown food crop of a genus whose other members include the ornamental, sweet pea (*L. odoratus*). Several other species are minor food or forage crops, such as subterranean vetch (*L. amphicarpus*). As part of this IPGRI series on underutilized crops, Clayton Campbell, a Canadian researcher with grass pea, has provided a good review volume.

Grass pea has been a human food crop since Neolithic times in the Balkans, followed by either independent domestication or early diffusion throughout the Middle East, Central Asia and south to the Ethiopian region. A closely related and interfertile species, *L. cicera,* was also domesticated early in France, Spain and Portugal.

Lathyrus sativus is a survivor, tolerating drought, flooding and poor soil. As a legume, grass pea adds nitrogen to the soil and the seeds are a good source of protein. Most production currently occurs in India, Pakistan, Bangladesh, China, Ethiopia and Eritrea. Its cultivation and use in Europe, the Mediterranean region and the Middle East has declined in the past 50 years.

Why don't we all eat grass peas? One reason has been the presence of a serious toxin. Lathyrism is a syndrome involving irreversible paralysis of the lower limbs by an amino acid derivative that affects motor neurons. Presently, several states in India and Nepal ban the sale of grass peas for this reason. The syndrome is associated with famine conditions, when grass peas are more likely to play too large a role in the diet. With low toxin varieties or as a minor part of the diet, the syndrome appears to be avoidable. The toxin is present in all parts of the plant, and can thus also affect cattle or horses fed grass pea forage. Plant breeding has focused on low-neurotoxin levels. Current and promising results from this work in a number of countries—such as release of safer varieties—are presented. I would have liked to see more details on what is currently known about lathyrism per se, but references on the physiology are provided. Grass peas also possess antinutritional factors in the form of tannins, phenolics, and a trypsin inhibitor, which are also reviewed.

The value of this review volume is greatest as a reference related to research on grass pea. Important aspects of the plant's botany, agronomy, genetic variation and techniques for plant breeding are well covered, including good illustrations. Out of 92 pages, there are 13 single-spaced pages of references, and 19 pages of research contacts around the world. There is also a good list of research needs.

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Floristics in the New Millenium: Proceedings of the Flora of the Southeast US Symposium. Barney L. Lipscomb, John J. Pipoly III, and Roger W. Sanders, eds. 2000. Sida. Botanical Miscellany No. 18. Botanical Research Institute of Texas, 509 Pecan Street, Ft. Worth, Texas 76012-4060. x + 136 pp. (paperback). $20.00. ISBN 1-889878-04-9.

From an ethnographer's point of view, this book is extremely useful. It provides a wealth of information in an easily accessible form. The papers published in this collection were presented at a 1998 symposium on Southeastern floristics organized by the Botanical Research Institute of Texas. They cover a wide range of topics, ranging from the prehistoric evolution of the flora (Dilcher), through informatics (Skinner and Peterson, Kartesz, Webster), to the discussion of theoretical differences among botanists (Sanders and Judd).

Papers also touch on pertinent and specialized subjects such as aquatic flora (Haynes), medicinal plants (Croom), the status of the herbaria of the region (Funk and Morin), and the Flora of North America project (Morin, Barkley). All authors provide extensive bibliographic and internet resources. All papers are written with a minimum of specialized terminology, making the wealth of information available to researchers from a variety of disciplines.

Whether for the established ethnographer researching people and plant relationships, or for the student, the papers in this collection provide a great deal of background information that facilitates contextualization of Southeastern cultures in relation to their environmental adaptations. It would make a good text for courses in Southeastern ethnobotany, anthropology, or folkloristics.

Weaknesses in the collection for ethnographic and ethnobotanical purposes include an unwritten assumption that having correct taxonomic, geographic, and phtyochemical knowledge about plants is equivalent to having an understanding of how the plants are used in human cultures. An anthropological understanding of plants includes, in addition to the above, an understanding of the symbolic and aesthetic roles of plants in a cultural system; traditional patterns of transmission of plant-related knowledge; migration and subsistence patterns; folk taxonomies; in short a comprehensive view of how plants are integrated into the total way of life of human communities. In particular,

Haynes' article on the aquatic flora and Croom's article on medicinal plants could have been enriched by more of these types of data.

The entire collection could have been enriched by the inclusion of an article on human cultural adaptations in the major floristic environments of the Southeastern U.S. Its weaknesses notwithstanding, this book is enjoyable reading and an excellent resource for locating accurate botanical information. It fills a gap in our knowledge about the Southeast. I would recomend it to anyone interested in this geographic region.

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Flora Malesiana. Series I-Seed Plants, Myristicacae, Vol. 14. W.J.J.O. de Wilde. 2000. Publications Department, Rijksherbarium/Hortus Botanicus, P.O. Box 9514, 2300 RA Leiden, The Netherlands. 634 pp. (paperback). Dfl 150.00, Euro 86.00. ISBN 90-71236-47-1.

This is a classical flora book in the best sense of that term. *Flora Malesiana* has for many years been the prime example of classical taxonomic treatments of large groups of tropical plants, and this treatment of the Nutmeg family (Myristicaceae) is no exception. The book has a 28 page introduction giving generalities about the family in SE Asia, and the remainder of the 634 pages are dedicated to meticulous keys, descriptions, illustrations and notes on the six genera and 350 species of Myristicaceae that occur in the Malesian region.

For the readers of *Economic Botany* the distance between the cocktails may be a bit long. Even if the family is renown for the spicy seeds of *Myristica fragrans*, it has several other uses. Many Myristicaceae are used locally as medicinal and ritual plants, and others are used as timber trees. There is a one-page section on uses and six pages on phytochemistry and chemotaxonomy. These both contain interesting information concerning ethnobotanical and economic uses. The wood is said to be of limited commercial importance due to its softness and species of the family are therefore rarely used in silviculture. A few species are ornamental, e.g., *Horsfieldia iryaghedhi*. The section on phytochemistry reviews available literature on Myristicaceae essential oils, lignans, flavonoids, seed fats, alkaloids, meroterpenoids, and diterpenes and discusses the importance of chemical characters for the taxonomy of the family and for the uses of its species. Under the taxonomic treatment of the species there are a limited amount of notes on their uses.

In conclusion, this book is a high quality taxonomic treatment of the SE Asian members of the Nutmeg family which will serve as a reference for the identification and naming of these species for many years to come. Hence it will be important for any ethnobotanical or economic botany study that involves Myristicaceae in SE Asia, even if it—in itself—does not provide much information in these fields.

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Consequence of Cultivar Diffusion. Leonard Plotnicov and Richard Scaglion, eds. 1999. Ethnology Monographs No. 17, Department of Anthropology, University of Pittsburgh, Pittsburgh, PA 15260. 151 pp. (paperback). $15.00. ISBN 0-945428-11-1.

Emerging from presentations at the 1998 American Anthropological Association Annual Meeting session on the consequences of cultivar diffusion, this book addresses the "profound social and historical consequences following the relocation of domesticates." The book reflects on two questions that preoccupy economic botanists: the reciprocal influence of the impact of domesticates on people, and the human hand in creating domesticates. That session was reviewed by anthropologist Jonathan Benthall in *Anthropology Today* as "apparently the first comparative examination of the subject . . ." although we economic botanists have a long history of employing these lenses.

The contents include the following titles: Incorporation of Maize in Africa; European and Samburu Perspectives on Cultivar Diffusion; Miskito Foods, Miskito Forests: Crop Adoption and the Alteration of an Indigenous Landscape; The Root and the Problem: Cassava Toxicity and Diffusion to Africa. Sweet Interloper [includes a variety of sources]; Capsicums in Old World Culinary Structures; The Perilous Potato and the Terrifying Tomato; European Tobacco in Colonial New Guinea; Tuber Transformations: Impact of the Sweet Potato in the Indo-Pacific; and Coffee: Mechanism of Transition to a Money Economy. The contents emphasize New World crops that were transferred to the Old World. The case studies include many of the major crops in the world economy: potato, tomato, peppers, coffee, sugars. These botanical examples are classic, and the authors of each article flesh out their selected topic in depth.

Significantly, there are slants that distinguish this work from others. The unfortunate case study presented by Jon Holtzman about cultivation imposed upon Samburu herders by the British administrators in Kenya early this century offers an unusual viewpoint, rarely presented in other books of this kind. Samburu are a people ideologically opposed to farming, preferring

their pastoralism. Plotnicov's introduction observes: ''One wonders how knowledgeable and (presumably) well-intentioned colonial officers could induce Samburu to attempt cultivating in areas which the officers knew were suited for little beyond pasturage.''

Food symbolism is another way of scrutinizing useful plants here. Weismantel and Mintz suggest that ''old-fashioned'' foods became ''symbols of resistance to the pressures to assimilate,'' and other commodities, such as soft drinks, create a ''symbolic identification . . . with the foreign . . . and powerful.'' Most of the articles consider the speed and strength of reception of an introduced cultivar.

This book would be of interest to faculty teaching an upper-division or graduate course in Economic Botany, as a supplementary reader to be used in conjunction with a textbook. It could also be used as a source book for a seminar series. It is an easy read, packed with information. The price is affordable for students, and there is a comprehensive bibliography at the end of the book.

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Carrots and Related Umbelliferae. V. E. Rubatzky, C. F. Quiros, and P. W. Simon. 1999. CABI Publishing, 10 E 40th Street, Suite 3203, New York, NY 10016. 294 pp. (softcover). $50.00 ISBN 0-85199-129-7.

This is volume 10 of the ''Crop Production Science in Horticulture'' series. Other volumes have dealt with the Cucurbits, Onions and Other Vegetable Alliums, and Lettuce, Endive and Chicory—to name a few. The series, and this work in particular, are notable contributions to the fields of Economic Botany, Ethnobotany, and Horticulture.

The authors' intent was to ''bring together background information relating to the history, descriptions, production and uses of carrots, celery, and other umbelliferous vegetables.'' Even a glance at the Table of Contents reveals that they cover a broad range of subject matter—some of it ethnobotanical, some of it production horticulture.

There is a distinct bias toward carrots throughout, although celery receives considerable attention. However, the book attempts to include some of the lesser-known Umbellifers. For example, Cow Parsnip (*Heracleum lanatum*) and Yampah (*Perideridia gairdneri*)—two with a long history of Native American exploitation. Also briefly discussed are important regional Umbelliferae—Arracacha (*Arracacia xanthorrhiza*), Asafetida (*Ferula assafoetida*), and Culantro (*Eryngium foetidum*).

The first chapter [Introduction: Geographic Origins and World Importance] does a fine job of introducing umbellifers. A table presents common names, botanical names, uses, and portion used for nearly 100 plants from around the world. This alone should be of interest to economic botanists and horticulturists. Included in the table and chapter are many used as herbs and spices. While the focus of the volume is clearly on vegetable plants, no work on the Umbelliferae would be complete without a mention of related taxa. This is especially true where the distinction between herbs/spices and vegetables is ambiguous, e.g., parsley, dill, fennel.

The second chapter serves as an excellent primer to botany and taxonomy. Included are diagrams of important taxonomic characteristics, along with splendid photographs of seeds and anatomical curiosities. There are also recent cladograms given for the genera *Daucus* and *Apium*, highlighting important systematic findings.

Chapters 3–7 take a more horticultural bent and will be of more interest to horticulturists. In keeping with the general format, all of these chapters provide an introduction to each subject. The illustrations and photographs are well chosen to illustrate important aspects of each topic. As one involved in vegetable crop research, I found the chapter 5, on production, to be an especially concise and useful introduction to Umbellifer horticulture—well suited for use in a University course on vegetable crops.

Umbellifer Utilization and Composition [Chapter 8] will be of interest to all. While the chapter is brief, perhaps too brief, it manages to cover a great deal of nutritional, culinary, and medicinal uses. Included in the chapter are more of the excellent tables that make this volume so useful.

In publishing this series, CABI has done the plant sciences a great service by providing these books. Volume 10 is a welcome addition and should be of interest to a broad range of researchers and educators. My only criticism is that it is simply too short, and is perhaps too focused on carrots and celery. Nevertheless, the authors of this work should be congratulated for producing a work that serves as an excellent introduction to such an important taxonomic group of plants.

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Buckwheat. *Fagopyrum esculentum* Moench. Promoting the conservation and use of underutilized and neglected crops, Vol. 19. Clayton G. Campbell. 1997. Joachim Heller, Jan Engels, and Karl Hammer, series editors. Institute of Plant Ge-

netics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute (IPGRI), Via delle Sette Chiese 142, 00145 Rome, Italy. 93 pp. (paperback) Gratis. ISBN 92-9043-341-8.

Buckwheat (*Fagopyrum esculentum* Moench), and rhubarb (*Rheum rhapoticum* L.) are the only widely cultivated members of the Polygonaceae. Clayton Campbell, a buckwheat researcher in Manitoba, has produced a useful review on buckwheat and related species.

Based on his review of historical records, buckwheat is a relatively new crop in most places. Although cultivated in Japan perhaps as early as 3000 years ago, buckwheat was cultivated in China not much earlier than the 2nd Century B.C., and only reached India, Russia and Europe during the late Middle Ages or later. Tartary buckwheat (*F. tartaricum* (L.) Gaertn.) possesses frost tolerance that buckwheat lacks, and has long been an important local crop at high elevations in Eurasia, despite a bitter taste. Based on data in this book, in several Eurasian countries, including Russia and the Ukraine, more than 3% of cultivated land is in buckwheat: more than 7% in Bhutan. Buckwheat is a good potential crop in any cool, temperate area. For example, some years ago I heard from Martin Price at ECHO (www.echonet.org) that introduced buckwheat thrived and was quickly adopted as a new food in the Ethiopian highlands. Martin, who grew up eating sourdough buckwheat pancakes in rural Ohio, agrees with Campbell that this is an underutilized crop, although he has observed that some people find his buckwheat recipes an acquired taste. Perhaps the fact that Ethiopians already had sourdough traditions helped.

Consistent with this series, this nicely written review will be of greatest value as a reference and directory for buckwheat research, with extensive data summaries on morphological and chemical traits, as well as aspects of agronomy and techniques for plant breeding. A quarter of the book lists research contacts, including the size of genetic collections and research foci, as well as a good set of references. There is relatively little in this review about medicinal effects; there also is no mention that buckwheat pollen, although producing a premium honey, is also a known bronchial allergen. I learned that buckwheat grows *too* well on rich soil and tends to lodge: it's a better crop for acidic or poor soils, although it lacks drought tolerance. It has a short to very short growing season, and can be planted densely to successfully smother weeds. Buckwheat is a high lysine food, and most varieties contain more than 10% protein. It also contains rutin, a flavonoid with demonstrated vasoprotection, (such as reducing leg edema caused by capillary leakage).

Campbell documents how genetic erosion is occurring in *Fagopyrum.* Because of self-incompatibility, most populations carry high genetic loads. The expense and difficulty in growing out sufficient numbers of each accession without outcrossing contributes to current genetic erosion. In addition, many collections are poorly stored, new varieties are replacing old landraces and, in general, cultivation of buckwheat has declined. The synopsis of current taxonomic understanding of the 14 *Fagopyrum* spp., many of these endangered endemics, includes their compatibility (where known) with *F. esculentum,* and their possible breeding applications. The book closes with a plan of action for research and genetic conservation of buckwheat worldwide.

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Responding to Bioprospecting: From biodiversity in the South to medicines in the North. Hanne Svarstad and Shivcharn S. Dhillion, eds. 2000. Spartacus Forlag As. P.O. Box 2587 Solli, N-0203 Oslo, Norway, post@spartacus.no, 220 pp. paperback. 248 NOK (approx. US $29). ISBN 82-430-0163-8.

Proponents of bioprospecting and opponents of biopiracy unite?! Not exactly, but according to some authors in this book, these two distinct and often antagonistic discourses do converge over concerns for the well-being of humans and the environment in developing countries. This anthology is a result of research within the University of Oslo's Centre for Development and the Environment project ''From Plants in the South to Medicines in the North,'' sponsored by the Norwegian Research Council and the Council for Environmental Research.

The publication's primary attribute is that it combines an unusual selection of perspectives on bioprospecting. Voices include academics from the natural sciences (biology), social sciences (sociology) and humanities (philosophy, law), as well as the private sector, government and non-governmental organizations. Many of the authors and their discourses on the pros and cons of bioprospecting/biopiracy, benefit sharing, compensation and capacity-building are familiar to readers that have followed this area over the last few years, as are many of the examples cited (e.g., Shaman Pharmaceuticals, INBio). While not novel contributions individually, the chapters combined do contribute to a fairly balanced and interesting product on the whole.

The book contains three sections: an introduction to bioprospecting, challenges from bioprospecting, and legal questions related to bioprospecting. The first section begins with Svarstad's 'discourse analysis', which is one of the more original contributions of the book. The remaining authors in this section provide interesting, informative and in certain cases somewhat biased

information and opinions on various bioprospecting issues and activities. Mooney's opinion piece describes the coining of the term 'biopiracy' by the Rural Advancement Foundation International (RAFI); Mateo offers a comprehensive description of the Instituto Nacional de Biodiversidad (INBio)'s bioprospecting and conservation activities in Costa Rica; Dhillion and Ampornpan provide an overview of activities and issues in Thailand; King et al. highlight the biological and cultural impacts of commercialization of plants within the botanical medicine industry (rather than the pharmaceutical industry) and suggest this industry's impact is inconsistent with guidelines set out by the Convention on Biodiversity; and Laird generalizes the differences between benefit-sharing practices of the pharmaceutical and botanical medicine industries.

The second section begins with a chapter by Dhillion and Amundsen on the scarcity of data on the ecological impacts and species biology of plants collected for drug discovery or phytomedicines. Subtle errors and outdated information detract from this chapter, e.g., ''the estimated worldwide 25 000 species [of plants]'' (p. 105) should read 250 000; the Pacific yew (*Taxus brevifolia* long maturation time) ''debarked to extract taxol'' (p. 119) ought to mention that semisynthetic methods using chemical precursors found in needles replaced taxol extraction from bark a few years ago, and most commercial taxol production is currently from other species of *Taxus*, which are typically farmed rather than wild. Diallo and Paulsen outline benefit-sharing and biodiversity management strategies in Mali to foster closer collaboration between practitioners of traditional and conventional medicine, and sustainability of biodiversity. Svarstad offers an important look at the social impacts of bioprospecting, following up on a case study of Shaman Pharmaceuticals in Tanzania by interviewing local traditional healers about their experiences and expectations in the project. Ariansen offers an excellent, and too often missing, philosophical perspective on the political nature of science in general and bioprospecting in particular, and deliberates the accountability of scientists in this controversial field.

The third and final section falls short of its ambitious claim to address the Convention on Biodiversity, national legislation and patents. Bugge and Tvedt offer helpful interpretations and analyses of Article 15 of the Convention as a legal framework for national legislation. Natarajan and Iyer contribute an opinion piece that advocates corporate accountability to civil society. In the final chapter, Mugabe provides an overview and analysis of bioprospecting regulation efforts on Africa.

Overall, this book does well with the difficult task of combining diverse voices into a coherent volume. While the editors state that there are no shared conclusions, and readers are encouraged to make their own responses to bioprospecting, the book would have been enriched by a concluding chapter. Some chapters certainly would have benefited from more careful editing, but all make a contribution at one level or another to the ongoing debate on bioprospecting, and the biological and cultural impacts and ethical issues raised by such practices.

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The Root Causes of Biodiversity Loss. Alexander Wood, Pamela Stedman-Edwards, and Johanna Mang, eds. 2000. Earthscan Publications Ltd., 120 Pentonville Road, London, N1 9JN, UK; distributed in USA by Earthscan Publications, 22883 Quicksilver Drive, Sterling, VA 20166-2012. xiv + 399 pp. (paperback). US$29.95. ISBN 1-85383-699-0.

This is an important book reporting on a World Wildlife Fund project of the same name, carried out by the Macroeconomics for Sustainable Development Program. It is important for two reasons: it attempts, and generally succeeds, to identify the causal chain of responsibility for biodiversity loss that extends from the 3rd world, where much of it happens, to the 1st world, where the political economy that runs the planet is planned and executed; it puts a major international environmental NGO on record as identifying the responsibility of the 1st world's political-economic policymakers for the current state of affairs (although it fails to name names!), rather than blaming the peasants who wield the machetes and shotguns and do the actual killing. It could go much further with its analysis (in fact, many case study authors do), but it is still a significant advance for a major NGO.

The book contains 15 chapters, 10 of which are case studies from around the 2nd and 3rd worlds. Curiously no 1st world countries were included here; could it be that they are qualitatively different or don't suffer biodiversity loss? This curious lack is never adequately explained.

The introduction explains that there is an emerging consensus that biodiversity loss is caused by our global political economic system, rather than by peasants. This consensus has been emerging for decades now, e.g., Meadows et al. (1972, 1992), but United States environmentalists seem to be adverse to the logical conclusion: the system needs changing! The lack of success at slowing biodiversity loss is due to non-willingness to make the necessary changes.

The chapter on the project's methodology is the weakest, in that it is not as clearly and concisely written as other chapters. The methodology itself, however, appears to be quite adequate, since the 10 case studies

had no difficulty in applying it and generating clear conclusions.

The two chapters on the main findings and conclusions, and recommendations for action, are well written but less radical than some of the case studies. This is perhaps understandable, given that a major audience is the 1st world's environmental community, many of whom contribute to running the political economy during the week and to environmental causes on the weekend. Consequently, some of the recommendations are band-aid-like rather than addressing the root issues of affecting real change in the system.

The selection of case studies is wide ranging, covering most of the variations on political and economic systems found in the world over the last 50 years, with cases involving slowly capitalizing command economies (e.g., Vietnam and China), more rapidly capitalizing command economies (e.g., Slovakia and Bulgaria), slowly opening economies (e.g., India), and recently opened economies (e.g., Mexico). Unfortunately, no long standing market economies are examined that might show how free markets effect biodiversity loss. Likewise, the range of focus is wide, with cases involving components (e.g., bushmeat in Cameroon), specific ecosystems (e.g., two cases on mangroves—Pakistan and Tanzania), and whole biomes (e.g., Brazil's Cerrado).

The book is well worth the price, since it provides numerous useful examples of how to expand the analysis from the particular to the general. The case studies also provide numerous details that enrich the analyses. More work like this needs to be done and published in each national language, so that local politicians and elite can also identify how their own actions contribute to the problem of biodiversity loss.

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