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Messages From the Gods: A Guide to the Useful Plants of Belize. Balick, Michael and Arvigo, Rosita, 2015. Oxford University Press, NY and the New York Botanical Garden, NY. xii + 539 pp (softcover). USD 49.00. ISBN-978-0-19-996576-2.

Over the past 25 years few, if any, ethnobotanists have made as significant a contribution to documenting the use of Central American economic and medicinal plants as have these two authors. Michael Balick is a renowned ethnobotanist, author and educator who has traveled the world helping to preserve indigenous plant knowledge. Rosita Arvigo is a naprapathic physician who apprenticed with a Maya healer considered a Belizean national treasure. Together they have collaborated on several books and projects such as the Ix Chel Tropical Research Foundation, helping to preserve the traditional wisdom of the various ethnic groups living in Belize (Yucatec Maya, Mopan Maya, Q'eqchi Maya, Creole, Garinagu, Mestizos and East Indians).

Belize was formerly a British colony known as British Honduras. The original native population was joined in the 17th and 18th centuries by British and Scottish colonists, many pirates known as Baymen. Over time they turned from piracy to logging, primarily harvesting logwood used to dye British wool, and imported black slaves to do this dangerous, backbreaking labor. Their descendants are known today as Creoles. Over the past 150 years, other groups including Maya and Mestizos from surrounding countries, Chinese laborers and merchants, German speaking Mennonites, Arabs, Europeans and North Americans have settled in this ethnically diverse country (Twig 2006). Although Belize's land mass is small (approximately 8800

square miles), so is its human population, and 60% of its land is still forested (Cherrington et al. 2010). The combination of diverse cultures, the continued use of traditional medicine and a rich tropical flora has created an astounding trove of ethnobotanical knowledge. Balick and Arvigo have worked for almost 30 years with local healers to document the uses, history and stories of Belize's plant kingdom. A book like this helps to preserve this rich botanical/medical lore not only for future generations in Belize, but also for the greater world. As many ethnobotanists have noted, we cannot know where the next discovery of an invaluable plant-based medicine will come from, but it will most likely be a plant already used as medicine.

Messages From the Gods is a handsome book, full of clear color photographs as well as botanical line drawings. The book is easy to use, divided into non-flowering (Ferns and Fern Allies, Gymnosperms) and flowering plants (Monocotyledons and Dicotyledons) and further categorized by plant families. Most species are accompanied by photographs as well as Spanish, Mayan and English names. Each entry contains detailed information on the part of the plant used, its use or uses for food, economic purposes or medicine and in many cases the traditional methods for properly preparing these remedies.

I found the biographies of the local healers to be fascinating and useful. Knowing who the information came from, their training and specialties and ethnic background, gave the book additional gravitas and allowed the usually anonymous "informants" to truly become co-authors.

I have never been to Belize and as a North American herbalist and ethnobotanist I must admit I am unfamiliar with many of the plants in this book. Despite this, I have no doubt that this text is deserving of a place in my or your library. Not only is it a superb example of a scholarly, yet truly accessible and usable ethnobotanical study, there are a significant number of plants included that any ethnobotanical researcher, herbalist, anthropologist or plant lover would be familiar with. Well-known medicinal plants and foods include turmeric (*Curcuma longa*), ginger (*Zingiber officinale*), mango (*Mangifera indica*), bayberry (*Myrica cerifera*), coffee (*Coffea arabica*), hibiscus (*Hibiscus rosa-sinensis*), aloe (*Aloe vera*), rue (*Ruta graveolens*) and chocolate (*Theobroma cacao*). Even though each of these is "well-known", by reading this book I can almost guarantee you will discover new information about each one. When you add in common cultivars (basil, rice, sugarcane, cotton) and the introduced weedy plants found

from temperate zones to tropics (purslane, prickly poppy, plantain, eucalyptus), you begin to realize the flora of Belize is less foreign than you might expect. Knowing how other cultures use these familiar plants can open up new avenues of research, help confirm traditional uses from other parts of the world, and inspire us to study the genius of the plant kingdom. This book is a message from the gods, reminding us that we are surrounded by gifts of food and healing and of the importance of paying attention to those people and cultures who have spent lifetimes learning to listen to these messages.

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Innovative Strategies for Teaching in the Plant Sciences. Quave, Cassandra L., ed. 2014. Springer, New York, NY. xxvi +312 pp. (hardcover) USD 79.99. ISBN 978-1-4939-0422-8.

Teaching plant science for more than fifty years at various institutions home and abroad makes me realize how much I have to learn. The title of this book looked like it could help. My frustration with the book centers on the words innovative and plant—as a plant-centered ethnobotanist (no more legitimate than a social science-based ethnobotanist) I would like to have seen more plants, and as a teacher more innovation.

Many of the chapters in this compendium read like course syllabi along with a lot of material that I considered superfluous—descriptions of gardens, history of courses at several institutions, personal anecdotes, and more. There are several color pictures with captions; remarkable for this volume, most lack scientific names.

The book is replete with buzz words and concepts in higher education today—service learning, critical thinking, K-12, student driven, interdisciplinary, writing across the disciplines, low stakes writing assignments, and undergraduate research. In that respect the work is more reflective than

innovative. Perhaps this is because ethnobotany is itself a diffuse discipline uneasily melding plant science and social science.

Five parts comprise the volume: Part I is Defining the Needs of Educators and Students, Part II Introducing Fundamental Skills, Part III Connecting Students to Plants, Part IV Teaching through Field Experiences, and Part V Integrating Technology.

The four chapters of Part I make it clear that this volume descends from the much discussed Vision and Change in Undergraduate Biology Education project and the establishment of the Open Science Network. Content also reflects the current promulgation of ethnobiology so the writers deal more with processes and strategies than plant pedagogy. While this provides interesting insight into the book's *raison d'être* the information could have been condensed. A theme in Part I—and throughout the book—is the justifiable lament at the loss of botany courses and botany programs, but I don't think replacing them with ethnobiology offerings is the solution.

Part II was the most appealing to me as it deals with practical teaching and learning skills. These include explications of common practices in the field; most identification courses I know have practiced the recommendations for many years. Some additional material, such as the two-page list of descriptive terms, is of little use to an experienced scholar.

Part III is the largest and most diffuse section with real-life examples by botany teachers. Like other portions of the book, this section suffers from the inclusion of information that many readers will consider irrelevant, such as the history of plant taxonomy and lots of history of ethnobotany and gardens in Hawaii.

As a field botanist, I was drawn to the next section on field experiences, my favorite platform for teaching because it trains students to read nature in the language in which it was written. The approach in these chapters includes personal experiences involving native markets and hands-on interactions with food plants.

Concluding the book, appropriately for a volume with “innovative” in its title, are two chapters treating of technology in teaching. But this field is changing so rapidly that little truly innovative material is presented.

Two of the concepts I consider most important in teaching plants were merely hinted at. These are enthusiasm and the development of skills of observation.

While I was writing this report, a student asked about studying for an oral exam. During our discussion he said that his course in ethnobotany (he is not a botany student) was the most effective way he had experienced to learn principles and concepts about