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Reviews

Echinacea: Herbal Medicine with a Wild History. Edited by Kelly Kindscher. 2016. Springer International Publishing, Switzerland. 238 pp.

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This edited volume is biocultural in scope, as it elucidates links between cultural beliefs and values, traditional knowledge, economics, and bioactivity associated with the botanical genus *Echinacea*. Editor Kelly Kindscher is particularly well-qualified to write about *Echinacea* given his career-long study of the genus, and his work in Kansas and the Great Plains, where *Echinacea* grows ubiquitously. This book arrives at a time when wild *Echinacea* populations are threatened due to extensive harvesting and perceived economic values of selected species within the genus. Growing supply and demand for *Echinacea*, primarily as a medicinal resource, is associated with its excessive exploitation. This book represents a benchmark volume committed to the importance of *Echinacea* conservation. It is an accumulation of scientific discoveries and wisdom aimed to promote understanding of *Echinacea* conservation, bioactivity, and cultural relevance. The volume aims to distribute information and knowledge regarding these factors, and while over-arching theoretical perspectives are not apparent at first, significant conclusions regarding biocultural diversity conservation can be derived from its pages.

Kindscher's first chapter conveys how *Echinacea* maintained its role as a culturally salient botanical genus for millennia in Native America. In Plains societies, *Echinacea* is widely known and revered as a panacea. In these tribes, knowledge was perpetuated by belief in *Echinacea's* spiritual power, and its myriad associated healing properties. Contact between indigenous peoples and European settlers dramatically changed the dynamics of traditional wild plant knowledge. However, anthropologists are presently recovering and documenting ancient Native herbal remedies and their connections with Western biomedical studies of plants and their impact on human health. Native peoples kept their use and traditions alive and often taught anthropologists about herbal remedies, informing Western studies of plant bioactivity. Historic ecological knowledge serves as an effective platform for the stepwise rediscovery of biochemically active plant resources. Over centuries, Native Americans developed their pharmacopeia of botanical resources through knowledge transmission, trial-and-error, and by virtue of the perceptual salience or obviousness of ambient taxa in surrounding environs. Throughout this volume, the authors clearly acknowledge the survival of medicinal plant knowledge among Native Americans depended largely on efficacy. Thus, one can conclude that notions of Western science as the only mechanism revealing accurate knowledge are shortsighted.

Herein lies Kindscher's assertion that it is essential to preserve traditional ecological knowledge. Traditional ecological knowledge transmits time-tested, accurate information about the utility of specific plant resources such as *Echinacea*, and therefore illustrates why biological and cultural conservation are essential for the survivorship and wellbeing of humankind. Botanical resources such as *Echinacea* can be bioactive or hold symbolic meaning in ritual and religious contexts. In either case, the authors make it clear that *Echinacea* is important for the continued survival of people and their ways of life.

The authors perhaps overlooked an opportunity to describe the most common system through which human knowledge is transmitted—language. In the

chapter co-authored by Kindscher and Wittenberg, Linnaean binomials of *Echinacea* taxonomy are shown to reflect genetic phylogenies and thereby reveal species commonly used and collected for medicine. Kindscher and Wittenberg correctly assess how Linnaean binomials distinguish which species are important for medical researchers. However, Linnaean binomials reveal little (with certain exceptions) about non-Western cultural use patterns and associated knowledge of botanicals. The work, while useful and significant, neglects the relevance of common Native and folk names for *Echinacea* among human cultures. Linguistic data may reveal functional properties of plant domains and their associated cultural relevance.

As the work points out, one of the greatest threats to wild *Echinacea* populations is overharvesting, discussed in chapters co-authored by Price, Riggs, Craft, and Klein. When *Echinacea* demand is high, collectors tend to prefer wild plants over cultivated ones. Wild specimens have not undergone intensive domestication and therefore contain more bioactive alkaloids, rendering them economically valuable. Monetary value leads to illegal harvesting, which negatively impacts the biological and ecological status of *Echinacea* as a genus. With data like these, Kindscher and other co-authors do a masterful job of illustrating the importance of *Echinacea* conservation and go on to suggest several viable and creative conservation methods and approaches, including the advancement of ethnobotanical research. No doubt these data will be essential for extending awareness of how traditional knowledge promotes accurate conclusions about the guardianship of botanical resources essential to human livelihood and survival.

Chapters in the volume addressing medical effects of *Echinacea* on human physiology hold special relevance for medical ethnobotanists and others interested in the interaction of botany and human health. The essays co-authored with Cao and Drisko present luminous materials regarding recent biochemical properties and medical discoveries about *Echinacea*. They effectively inform how cultural and medical resources converge with biochemistry to explain the efficacy of this genus in healing pathways generally. Through repeated success and failures, curiosity and experimentation, humans have arrived at effective conclusions that have been synthesized into ethnomedical beliefs pertaining to human health overall.

Certainly, this book's relevance to ethnobiology rests in its illustration of how humans are biocultural beings with behaviors and resources under constant modification by biological factors and constraints. Cultural beliefs reveal how bioactive resources must be consciously conserved if future generations of humans are to flourish. Non-Western ecological knowledge should never be viewed as simplistic or ineffective, but crucial for biocultural conservation. Anthropologists, ecologists, and others will enjoy this book's consideration of important knowledge embodied in Native worldviews, seen here to inform health, diet, nutrition, and disease-prevention.

An optimistic view reveals that most threats to *Echinacea* are created by human behavior, which is potentially easier to reverse than ecological variables currently impacting human wellbeing more broadly. As Kindscher and others reveal so persuasively here, humans can be cognizant of their impact on *Echinacea* populations, and therefore act to preserve it. By considering *Echinacea's* history, cultural and economic value, as Kindscher and his colleagues have done so ably in this volume, ethnobotanists may advance their efforts to understand the implications and advantages of safeguarding valuable flora for the benefit of present and future generations.