

Climate Change and Ethnobiology

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CLIMATE CHANGE AND ETHNOBIOLOGY

Steve Wolverton¹, Kimberlee J. Chambers² and James R. Veteto³

The literature on climate change has grown immensely during the last several decades, ranging from physical science to social science and the arts and humanities (e.g., see the journal *Climate Change* and recent special issues of the journals *Anthropocene* and *Ecology and Society*). It is unequivocal among scholars from many backgrounds that anthropogenic impacts on ecosystems contribute to global warming and climate change (IPCC 2013). The effects of changing climate are now experienced by people across cultures, worldwide. The impacts of environmental change on culture are most transparent at local scales, and ethnobiologists, as students of human-biota interactions at various times and in many places, are well positioned (and perhaps obliged) to compile, record, interpret, and share vignettes about these interactions during this period of accelerated global environmental change. In this context, a special issue on climate change and ethnobiology is timely and socially relevant.

An ethnobiological perspective is holistic, combining biology, anthropology, geography, and ecology, intermingling with local and traditional knowledge within and across cultures (Albuquerque and Medeiros 2012, 2013; Anderson 2010; Wolverton et al. 2014). Unlike the pure social scientist, the solitary poet, the experimental physical scientist, or the historian, the ethnobiologist blends perspectives from many seemingly disparate scholarly and cultural backgrounds (Nabhan 2013; Nabhan et al. 2011; Saslis-Lagoudakis and Clarke 2013; Wolverton 2013). Ethnobiologists share a deep and abiding concern for nature, outdoor places, and living things—such as people, plants, animals, and fungi. However, the ethnobiological perspective is more far-ranging than the natural sciences because although there are vertical warps and horizontal wefts of time and space in biota, culture is recognized as cross-woven through the tapestry of life. Thus, this special issue is not simply a compilation of anthropological studies of climate change impacts. Nor is any study presented here purely an ecological assessment of shifts in biotic composition and patterns in biogeography. Some of the studies lean towards biology, others lean toward ethnoecology, and some are inherently geographic; but each study also engages local people in places where they experience environmental change. In addition, this collection of articles represents, to various degrees, collaborations that engage members of local

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communities and, in many cases, help communities actualize responses to climate change impacts.

Throughout the special issue, authors assign distinctive meanings to three related terms: climate change, climate variability, and weather. Weather refers to short-term fluctuations in atmospheric conditions on the temporal scale of days to multiple years, and long-term weather patterns may last a decade or longer. Climate refers to long-term average weather conditions on broad spatial scales (e.g., large portions of continents or oceans) and long temporal scales (e.g., fifty years or greater). These definitions are not intended to be precise and rigid, but the authors distinguish weather from climate mainly in terms of weather being the atmospheric conditions experienced and recognized from day to day by local people, whereas climate in a region tends to be the general expectation of what weather should occur from season to season and year to year. Climate variability refers to ongoing shifts in climate over long spans of time during earth's history. Climate change simply refers to fluctuations in climate caused by human impacts (see Orlove 2005 for more discussion of climate variability and climate change). Studying peoples' experience of climate change is inherently difficult for one simple reason—climate change and ongoing natural climate variability do not typically change at the temporal scale of human experience even though the impacts of climate change are perceived and experienced with increasing urgency. Thus, much of what is being recorded by ethnobiologists includes *perceptions* of environmental change, which is either attributed to global climate change impacts, to local weather patterns, or simply unrecognized as impactful.

The papers in this special issue span a number of topics from biogeographic shifts in flora in the Himalayas and related elements of Traditional Ecological Knowledge (TEK), to local environmental monitoring that focuses on integration of TEK/LEK (Local Ecological Knowledge) with Western science-based climate data (see papers by Gill et al., Salick et al., and Shaffer). Other papers focus on the front end of mitigating climate-change impacts in local communities (papers by Gill et al., Reid et al., and Shaffer). Many of the studies document the ability of local peoples to blend their traditions with new practices to ameliorate the impacts of rapid environmental changes that clearly relate to climate change impacts (see papers by Gill et al., McClatchey et al., Postigo, and Shaffer). The two papers focusing on apple orchards capture many of the aforementioned themes, but one focuses on perceptions and impacts of environmental change (Veteto and Carlson), while the other documents management systems cross-culturally that promote adaptive responses to climate change impacts (McClatchey et al.). All of the studies in this special issue document the potential for loss of TEK/LEK in the face of the global maelstrom of environmental and cultural change.

Collectively, these papers represent examples of the holism that ethnobiology has to offer a world experiencing accelerated change. Our hope as guest editors is that these ethnobiological studies can help connect global environmental debates to local contexts. It is also our hope that case studies from diverse local contexts will contribute to growing environmental awareness in Western societies, such as the United States, and help achieve the goals of reducing climate change impacts

and strengthening horizontal ties (sensu Anderson 2010) of appreciation across and within cultures.

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