History of Ethnobiology

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Abstract The history of ethnobiology has been addressed by different authors to portray the development of the discipline, its main authors, and its theoretical and methodological approaches, challenges, gaps, and perspectives. At first, ethnobiological studies were characterized by more descriptive approaches and by the documentation of the uses of plants and animals. Currently, it is considered that ethnobiology is in its interdisciplinary stage, where a greater cooperation among researchers from different areas is sought in order to handle more complex problems that can affect biological and cultural diversity. In this chapter, we briefly review the history of ethnobiology starting with the characterization of its stages, its main authors, and prospects for the future.

It is not an easy task to describe the history of a science, especially with regard to a science that is complex in nature and that, throughout its history, has received (and still receives) the influence of different areas of knowledge. The history of ethnobiology has been addressed by different authors, who often rely on the historiography proposed by Clément (1998), who divides its development into preclassical, classic, and postclassical periods. This chapter discusses, as an introduction, the history of ethnobiology, presenting the roles of different authors and highlighting for each period the main events that contributed to the development of this science.

Preclassical Period

Ethnobiology's preclassical period was characterized, in the late nineteenth century, by studies that aimed to understand the knowledge of different peoples and cultures regarding plants and animals. There was a great interest from European

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scholars at that time regarding the uses of natural resources of the New World; that is, attention was focused on documentation of the uses of plants and animals, especially those uses that could become profitable for settlers. In this context, it is worth highlighting the work carried out by naturalists and European settlers who, between the fifteenth and nineteenth centuries, wrote descriptive works that contained rich descriptions of the physical environment, the fauna and the flora found in the new continents, and the use of living beings by native peoples (D'Ambrosio 2014; Medeiros and Albuquerque 2014). Additionally, according to D'Ambrosio (2014), this period corresponds to ethnobiology's colonial or preclassical period.

This descriptive approach, though it focused primarily on utilitarian interests for natural resources, was important to prepare the path for future studies, not only regarding the natural environment but also the different cultures of the New World (Clément 1998).

Additionally, in the preclassical period, between the late nineteenth century and the 1940s, the first studies of subdisciplines that can currently be considered as the basis of ethnobiology appeared: ethnobotany and ethnozoology. Studies of the interrelations between biota, especially plants, and human populations began to take shape from Harshberger's work, which presented the first definition for the term ethnobotany in 1896 (Clément 1998). In 1935, Edward Castetter coined the term ethnobiology (D'Ambrosio 2014). Importantly, in the preclassical period, the work of European and American researchers, mostly anthropologists, prevailed (Anderson 2011).

In addition to Clément (1998), Eugene Hunn (2007) also contributed to characterizing the historical evolution of ethnobiology, and he divided it in four phases. To Hunn (2007), the first phase had the same preclassical period characteristics as described by Clément. For both authors, the preclassical ethnobiology phase is marked by a descriptive approach to plants and animals.

Classical Period

The classical period of ethnobiology began in the first half of the twentieth century. For Clément (1998), this period is marked by the pursuit of indigenous knowledge as a means to understand how humans make sense of their environment. In this regard, studies by Harold C. Conklin contributed substantially to the development of ethnobiology and are considered a turning point in the history of ethnobiology (Hunn 2007). The work conducted by Conklin in 1954 on nomenclature and the botanical classification of Hanunóo inaugurated the phase of studies guided in a consciously comparative and theoretical position; that is, the studies shifted from an essentially descriptive approach to another approach considering meticulous documentation and appreciation of emic[1] or indigenous perspectives, with careful

[1] The emic perspective represents the worldview of indigenous/traditional peoples regarding natural resources (e.g., names and descriptions of species and natural phenomena), as opposed to the ethical perspective, which is the researchers' interpretation of these phenomena. To learn more about the emic/ethic distinction, see Batalha (1998).

attention to local language uses (names, descriptive conventions, etc.) (Hunn 2007). This phase is known as cognitive ethnobiology, which in the 1970s saw the contribution of authors such as Brent Berlin, Peter H. Raven, Roy Ellen, Eugene Hunn, and Nancy Turner (D'Ambrosio 2014; Hunn 2007).

In his research, Conklin tried to understand how the process of appropriation of natural resources by human beings occurred. This involves understanding not only how people relate to the biota (plants and animals) but also how the biota relates in full to all physical (soil, water, topography, climate, etc.) and biological factors, as well as the perceptions and uses that different cultures have for these different elements (Toledo and Alarcón-Cháires 2012).

In addition to Conklin, Brent Berlin and William Balée are also considered important contributors to this cognitive phase of ethnobiology, with strong links to cognitive psychology and linguistics (Hunn 2007).

During the 1970s and 1980s, studies with an ecological focus were intensified, forming what Hunn (2007) considered the third phase of ethnobiology. This period is marked by the contributions of the Mexican researcher Victor Toledo. The approach proposed by Toledo and his collaborators was a response to what they considered a gap in the ethnobiology then practiced, i.e., a response to the lack of a more holistic view on the broader ecological context in which interrelations between values and beliefs of traditional peoples' systems, knowledge possessed regarding natural resources, and management practices of these resources occurred (Hunn 2007). To address these interrelations, Toledo developed the model known as *kosmos-corpus-praxis* or the k-c-p matrix (for more on the k-c-p matrix, please see Barrera-Bassols and Toledo 2005).

Postclassical Period

For Clément (1998), the 1990s represented a very important period for ethnobiology known as the postclassical period or phase four of ethnobiology in Hunn's classification (Wolverton et al. 2014b). We can emphasize at this point the contribution from the anthropologist Darrell Posey who, for more than a decade, conducted studies on the ecological knowledge of the Kayapó Indians in northern Brazil, specifically in the fields of ethnoentomology and ethnoecology.

Darrell Posey was a founder of the International Society of Ethnobiology, created in 1988. In the same year, Posey organized the first International Congress of Ethnobiology in Belém, Pará, Brazil. One of the main results of this congress was the preparation of the "Declaration of Belém," a document that recognizes the importance of indigenous and traditional nonindigenous peoples, as well as their knowledge and management practices for the conservation of biological diversity and natural resources, essential for the maintenance of well-being (ISE 2014). Another important contribution of this declaration is the definition of the role of ethnobiologists in the awareness of indigenous peoples regarding their own knowledge and the disclosure or return of the results of their research in native languages (ISE 2014).

As Hunn (2007) highlighted, perhaps equally or more important than Posey's studies was his contribution to making ethnobiology consider the importance of fighting for the preservation of the knowledge of indigenous peoples and the defense of their intellectual property rights regarding traditional knowledge. This attitude, an ethnobiology more observant to the needs of local communities, marked the fourth stage of the development of ethnobiology (Hunn 2007).

In this historical process of the consolidation of ethnobiology, it is important to highlight the role that ethnobotany has played over the past 20 years. This area of study, inserted into the broader scope of ethnobiology dealing with the study of the interrelations between people and plants, today comprises most publications and includes different approaches (Albuquerque et al. 2013). Different approaches vary from a descriptive approach, which aims to record the relationships between people and plants through descriptions regarding their uses, to quantitative approaches that, by including statistical tools commonly used in ecology (Begossi 1996), allow the testing of hypotheses regarding the factors that motivate people to use certain plants and the reasons for their use (Phillips and Gentry 1993). Another aspect we should highlight is the importance of historical ethnobotany, which introduces the study of the relationships between people and plants in the context of changes in historical, social, and cultural dynamics of different cultures over time (Medeiros and Albuquerque 2012; Medeiros 2014).

Currently, ecological and evolutionary approaches have been incorporated into ethnobiological studies with the objective of increasing scientific knowledge regarding the interrelations between people and the biota, considering that these dynamic interactions occur in different ecosystems and, therefore, are established in time and space. Evolutionary ethnobiology considers it necessary to understand which factors shape the current behaviors of cultures and knowledge of plants, animals, and other biological resources (Albuquerque and Medeiros 2013).

The Fifth Phase of Ethnobiology

In addition to the historical periods of ethnobiology described thus far, Wolverton (2013) believes that we are experiencing a contemporary phase of ethnobiology's developmental history, i.e., the fifth phase. He emphasizes the interdisciplinary nature that ethnobiology should have regarding its objects of study and reaffirms the importance of ethnobiological research in the context of complex environmental and cultural changes. In this context, Wolverton et al. (2014a) emphasize that studies of the impact of global climate change and the effects of these changes on humans and their cultures are urgent and important issues for ethnobiologists now and in the future.

One of the striking features of this phase, a challenge to contemporary ethnobiologists, is the need to expand the borders of this area through the incorporation of scholars from other fields of knowledge in addition to anthropology and biology,

whence most ethnobiologists come from, through a greater dialogue with other applied research areas such as environmental management, conservation biology, environmental ethics, and others (Hidayati et al. 2015; D'Ambrosio 2014; Wolverton 2013; Wolverton et al. 2014b). Another important aspect is the expansion of ethnobiological research in southern hemisphere countries. In fact, this expansion has been occurring since the 1960s, as shown by the work of Albuquerque et al. (2013) and Hidayati et al. (2015) regarding the increase in publications in Latin America and Asia, respectively. Currently, countries such as Brazil, Mexico, India, and China and Southeast Asian countries have increased their contribution to the diversification of ethnobiology in terms of the range of study subjects and approaches used (theoretical and applied) and in the increase in authors who contribute to the development and consolidation of ethnobiology worldwide (Hidayati et al. 2015; D'Ambrosio 2014) (Table 1).

According to Wolverton (2013), ethnobiology can (and should) be configured as a discipline that provides a more propitious environment to address biocultural conservation, environmental comanagement, environmental ethics, respect for the intellectual property rights of indigenous and local peoples, and other relevant issues, such as climate change, to solve modern local, regional, and global environmental and cultural issues.

Table 1 Number of works by region and country (Latin America and Asia) from the 1960s to the present

Region	Countries	Total number of works	Total works (%)
Latin America	Brazil	289	41
	Mexico	153	22
	Peru	61	9
	Argentina	58	8
	Bolivia	45	6
	Other Latin American[a] countries	97	14
		Total: 703	
Asia	Indonesia	93	25
	Thailand	68	19
	Malaysia	58	16
	Philippines	42	12
	Vietnam	31	9
	Laos	29	8
	Other Southeast Asian[b] countries	44	12
		Total: 365	

[a]Chile, Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Venezuela

[b]Brunei, Cambodia, East Timor, Myanmar, Singapore

Source: adapted from Albuquerque et al. (2013) and Hidayati et al. (2015)

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