ETHNOBIOLOGY AND CONSERVATION

RESEARCH ARTICLE

Ethnobiology and Conservation 2014, 3:4 (12 June 2014)
DOI 101545/ec2014-6-3.4-1-12
ISSN 2238-4782 ethnobioconservation.com

Historical ethnobotany: an overview of selected studies

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ABSTRACT

Historical Ethnobotany is an area of research responsible for understanding past interrelationships between people and plant using written records and iconography. The literature on this topic is scattered, and many of these studies are not recognised as such; therefore, it is difficult to compile historical ethnobotanical data. Accordingly, this study attempted to draw a general picture of the publications in this field. The Scopus, ISI Web of Knowledge and Scirus databases were used to search for articles with such keywords as "Ethnobotany + History" and "Historical Ethnobotany" among others. After the studies were selected, information was extracted that included the continents addressed and historical ages. Most studies encompassed a time frame that began in the Modern Age (54.7%), and 46% of the studies were focused on the American continent. With regard to the nature of the source, 98% of the studies included written records, and publications that used the documental analysis as a secondary data in their scope of research were among the most frequent types of studies that were found. In respect to iconographic sources, paintings were used in 6% of the studies. A total of 66% of the studies involved a species or species group as the study object. Our survey revealed the vast scope of these Historical Ethnobotany studies. We believe that this scientific field has great potential for future development and that its findings will only grow in importance considering the current ethnobotanical debate.

Keywords: *Ethnobiology, Ethnobotany, historical documents, human populations, literature review, plant use.*

INTRODUCTION

The use of historical documents is of utmost importance for the accession of information that highlights the past relationships between human beings and their environment. Discovering or obtaining information that is found in manuscripts, books or other sources promotes a chronological view of evolving plant uses, for example, on the question of the concepts of diseases and forms of cultivation (Barbera et al. 1992; Pardo-de-Santayana et al. 2006; Zepeda and White 2008; Bussmann and Sharon 2009). The chronological analysis of all disease concepts throughout history can help to clarify our current conceptions. However, extracting, analysing and interpreting these types of data represents a challenge, as it requires itself

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knowledge from different areas, such as History, Anthropology and Biology.

The scientific field that addresses these different aspects and that is responsible for understanding part of these interrelationships by focusing on the dynamics established between humans and plants is called Ethnobotany. Within this field, one of the research approaches concerning the past interrelationships through the use of written records and iconography is known as Historical Ethnobotany (Medeiros et al. 2010). Historical Ethnobotany differs from Paleoethnobotany or Archeobotany by including archaeological records and aims to understand the interrelationships between humans and plants (Ford 1979). Despite having similar subjects of study, the differences between Paleoethnobotany and Historical Ethnobotany are based on methodology. Such research is of great relevance because it aids in the reconstruction of historical facts that guide future studies aimed at novel plant-derived discoveries (Giorgetti and Rodrigues 2007; Burns 2008) to verify changes in vegetation cover and species distribution (Oudijk and Jansen 2000; Smith et al. 2003), to assist in understanding the process of plant species domestication (Raghavan and Baruah 1958; Negbi 1992; Prohens et al. 1996), to show temporal changes in plant use and to describe the history of cultivation and the economic importance of certain plants (Goor 1965; Porterfield 2008).

In addition, it should be noted that this scientific field allows for the reconstruction of cultural identities, from small human groups to large civilizations, through the retrospective review of different historical plant uses, such as food, wood, magical/religious purposes and medicinal and fibre applications (Norton 1981; Leal and Amaya 1991; Bedigian 2004; De Natale et al 2009). There are several articles that have already been published using these approaches. However, the literature on this topic is scattered, and it is therefore difficult to categorize these studies because they are not recognised as Historical Ethnobotanical studies.

Therefore, the present study represents one of the first efforts to compile and classify these studies and aims to outline an overview of selected published articles in this field. Accordingly, the aim of the present study was to compose a general profile of the research related to Historical Ethnobotany and to identify gaps and future perspectives in this field of research.

METHODS

This study involved the review of published articles that used written records, iconography and/or secondary data to access specific historical aspects of plant resources. Although this study aimed to provide an extensive literature review of how Historical Ethnobotany studies have been presented, it is not intended to be an exhaustive review all of materials on this subject.

To search for articles, were queried the Scopus (www.scopus.com), ISI Web of Knowledge (www.isiknowledge.com) and Scirus (www.scirus.org) databases using the following search terms: "Ethnobotany + History", "Historical Ethnobotany", "Ethnohistory + Plants" and "Ethnobotany + Ancient Documents". To broaden the search criteria, direct surveys were performed on the websites of journals specialising in Ethnobotany (i.e., *Economic Botany*, *Journal of Ethnopharmacology*, *Journal of Ethnobiology*, *Journal of Ethnobiology* and *Ethnomedicine and Ethnobotany Research and Application*) using the search term "History". These search criteria yielded both ethnobotanical studies and also related but differentially labelled works; the latter were also included in this review. Studies of an archaeological nature were disregarded because they are classified under Paleoethnobotany (Albuquerque 1997), and studies with archaeological approaches were only included when they employed mixed approaches for archaeological or historical data and documentation. It was not possible to access to the entire wealth of publications on the subject.

After selecting reports for inclusion in our study, we extracted information regarding the following aspects of the select studies: (1) the continents addressed, (2) historical ages, (3) nature of the source, (4) types of sources used, (5) approaches, (6) use categories covered and (7) the existence of a counterpoint to the current literature on the subject.

Some studies provided information on more than one continent, used more than one source type, involved more than one approach or involved more than one use category. Therefore, the sum of the frequencies of these study aspects could be greater than 100%. Mixed-nature studies, including archaeological and documentary information, were considered by dating the proper historical sources, excluding the dating of archaeological evidence.

The nature of the sources was classified as written or iconographic. The iconographic sources included paintings, illustrations, sculptures, ceramics and other objects. In terms of mediation, the sources were classified as primary when they provided direct information about the object of study without mediation (Dalton and Charnigo 2004), regardless of whether the original records or the transcripts were primary or secondary. The types of primary written sources were classified as official documents (e.g., issued by former government agencies, kingdoms), manuscripts (e.g., codices, written literature, religious books and diaries and writings of travellers, naturalists and historians) and letters (unofficial writing directed to others) and prescriptions (medical or cooking prescriptions). Secondary sources included publications (recent works published in journals or books including historical information).

We used the following three categories for the analysis of the study object (Medeiros et al. 2009): (1) the focus was the analysis of a document source, (2) the focus was the species or species group and (3) the idea was derived from a study subject. Studies conflicting with the current literature were classified when they conformed to at least one of the following two criteria: (1) performing comparisons among the use, trade, cultivation or spread of plants in the past and present; or (2) following up the historical development of the cultivation, use, trade or distribution of a specific plant or a plant group. We did not refine our analysis in relation to the correct botanical nomenclature of the plants found in the works because, as mentioned above, our focus was solely to determine whether plants were the main focus of the research.

RESULTS AND DISCUSSION

After filtering the relevant works, the search criteria identified 103 studies for inclusion (Table 2). Due to limited journal access or restricted content, the searches yielded a greater amount of recent works compared to past works. In total, 103 articles and reviews published between 1949 and 2012 were considered. Most of the studies occurred over a time frame that began in the Modern age (54.7%) or Contemporary age (25%), followed by Antiquity (21%) and the Middle Age (7%). However, 8% of the studies did not clearly delineate the specific contextual time frame encompassed, providing only such descriptions as “since ancient times” or “long ago”. The frequent lack of a specific contextual time frame is attributed to the difficulty in knowing the exact or approximate date of the source and may represent a lack of sufficient attention when dealing with historical data.

A total of 51% of the studies provided historical information regarding the American continent, whereas 46%, 36%, 18% and 6% of the studies provided information related to Europe, Asia, Africa and Oceania, respectively. Our results indicated that the modern age represents the majority of early records and that the American continent is the main focus of historical ethnobotanical research. This finding can be explained by the following two factors: (1) an abundance of historical records about the colonization of the New World, including letters, diaries and manuscripts of naturalists and travellers who documented the previously unknown richness of flora and fauna of the Americas and their pre-Columbian applications; and (2) a great interest by researchers to collect historical information on the use of plant resources in the pre-colonial and early colonial periods (Table 2).

One example is a study on the indigenous usage of plants during the Hispanic colonization of Mexico (Zepeda and White 2008). This study was based on the mural paintings by indigenous artists from the convent of the Divine Saviour of Malinalco, which, in addition to illustrating various aspects of Catholic beliefs, also incorporated elements of the local fauna and flora. The plants depicted in the paintings were identified, and their uses were assessed from codices of that period to

derive information about the pre-Hispanic uses of local plant species.

When comparing the different regions of the American continent, both North and South America exhibited the same percentage of studies, 18.3% each, whereas Central America exhibited 16% coverage, despite this continent be much smaller than the others cited. This average of studies developed in Central America could be justified by the fact that the researches made on this geographical region were focused on key-species that are distributed along this area and key-species that have an expressive economic importance for the world, like "vanilla" (see Correll 1953).

Regarding the nature of the sources, 98% of the studies extrapolated information from written records, which is expected because this type of record is the main form of overall historical research. Indeed, the emergence of writing itself has classically represented a watershed between prehistorical and subsequent historical periods (Rai 2010). Iconographic sources have rarely been used in historical ethnobotanical studies and were found in only 14.0% of all of the papers analysed and were generally associated with the analysis of written records.

Among the most frequent types of written records were publications that used this kind of documentation as a secondary data in their analysis (and not as original source of informations). The adoption of documentary analysis by the authors of these studies was to achieve a more complete coverage of historical aspects on the topics covered in the survey. Considering the written records used as primary or secondary sources, these included: manuscripts, letters, diaries, prescriptions, old books; beyond official documents from governments, kingdoms or related organisations (Table 1).

Table 1. The main source types found in 103 historical ethnobotanical publications.

Source nature		Type of source	
Writing	(98%)	Publications	(77%)
		Manuscripts	(52%)
		Official documents	(22.1%)
		Prescriptions	(4.7%)
		Others	(3.1%)
Iconographic	(12.0%)	Paintings	(5%)
		Illustrations	(2.2%)
		Artefacts	(1.1%)
		Others	(4.4%)

With regard to iconographic sources, paintings were used in 6% of all studies, with different source forms, including murals, paintings and ceramics; iconographic sources including illustrations and artefacts were less informative (Table 1). Some illustrations of domesticated plants such as wheat and corn observed in the work of Zeven and Brandenburg (1986), important in festivities plants were found, such as grape (Vitis vinifera L.) used for the manufacture of wine and illustrated by people of antiquity (see Goor 1965), medicinal plants as illustrated in a convent wall from Mexico (Zepeda and White 2008) and others. There were also works in which it was not possible to identify the nature of their iconographic sources; these works were therefore included in the "others" category.

Some codices have served as a source for various studies, and such writings represent significant historical significance for their respective countries or regions of origin in terms of a pioneering character or an exemplary compilation.

Among the most used codices as source by these analysed publications, it is highlighted the *Florentine Codex* (Zepeda and White 2008;

Terraciano 2010), which represents the most detailed chronicle of pre-Hispanic culture and a large graphic plurality of the Mexican colonial period (Zárate 1997), and *De Materia Medica* of Dioscorides (Negbi 1992; De Natale et al. 2009; Leonti et al. 2009; Leonti et al. 2010).

No works analysed thus far have used photographs as a data source, whereas photographic records have been commonly used to only illustrate species encompassed by the respective study or to represent sculptures, illustrations and other curios, which are iconographic sources themselves. Perhaps the fact that photographic resources are relatively recent entities compared to other iconographic features has limited their usage in historical ethnobotanical studies. The "Others" category included other types of written and iconographic sources, such as cave paintings, and was present in 6.5% of all publications.

The paths that the authors use in the design of the survey were mainly in three ways, called by Medeiros (2009) as "species-document", "document-species" and "theme-document-species" (Table 2). Sixty-seven percent of all studies were performed on a single species or species group defined as the study object, which was queried to locate historical records regarding the aspects of human relationships with the study object ("species-document" – e.g., uses, harvesting methods). Other topic-specific ("theme-document-species" – e.g., poisonous plants) studies either used related records (17%) or historical documents (16%, e.g., recipes or codices) for information about the plants that were studied ("document-species").

Table 2. Main information extracted from 103 publications related to historical ethnobotany.

REFERENCES	AGE OF DOCUMENT	PLACE OF DOCUMENT ORIGIN	NATURE OF THE SOURCE	SEARCH PATH
ABRAMS and NOWACKI 2008	Timeframe unclear	North America	Writing	Document-species
ADERKAS 1984	Modern age	North America	Writing	Species-document
ALENCAR ET AL 2010	Modern age	South America	Writing	Document-species
ARGOUNOVA-LOW 2009	Contemporary age	Asia	Writing	Document-species
AUSTIN 2007	Modern age	Africa; Central America; North America; South America; Asia; Oceania	Writing	Species-document
AUSTIN 2008	Modern age	Africa; Central America; South America; Asia; Europe	Writing	Species-document
AUSTIN and FELGER 2008	Modern age	Africa; Asia; Europe	Writing	Species-document
BARBERA ET AL 1992	Modern age	Europe	Writing	Species-document
BEDIGIAN 2004	Antiquity	Africa; Asia	Writing; Iconographic	Species-document
BRANDÃO ET AL 2008	Modern age	South America	Writing	Document-species
BRANDÃO ET AL 2009	Contemporary age	South America	Writing	Document-species
BRENDLER and WYK 2008	Modern age	Africa; Europe	Writing	Species-document
BUCKLES 1995	Contemporary age	Central America; North America	Writing	Species-document
BURNS 2008	Contemporary age	Asia	Writing	Species-document
BURTON and COX 1998	Contemporary age	North America	Writing	Species-document
BUSSMAN and SHARON 2009	Modern age	South America	Writing; Iconographic	Theme-document-species
CHADWICK ET AL 1993	Antiquity	Asia	Writing	Species-document

REFERENCES	AGE OF DOCUMENT	PLACE OF DOCUMENT ORIGIN	NATURE OF THE SOURCE	SEARCH PATH
CHARNEY and BASBOUS 1978	Antiquity	Asia	Writing; Iconographic	Species-document
COLLINS 1949	Modern age	South America	Writing	Species-document
CORREL 1953	Modern age	Central America	Writing	Species-document
DAFNI ET AL 2005	Antiquity	Asia	Writing	Species-document
DE NATALE ET AL 2009	Modern age	Europe	Writing	Document-species
DELYSER and KASPER 1994	Mean age	North America; Asia; Europe	Writing	Species-document
DOVE 1997	Modern age	Asia	Writing	Species-document
EDWARSON 1952	Mean age	Europe	Writing	Species-document
ERWIN 1950	Modern age	Central America; South America; Europe	Writing	Species-document
FULLING 1953	Modern age	Central America	Writing	Species-document
GENTRY ET AL 1958	Modern age	Central America	Writing	Species-document
GIORGETTI and RODRIGUES 2007	Modern age	South America	Writing	Theme-document-species
GOOR 1965	Antiquity	Asia	Writing	Species-document
GOOR 1966a	Antiquity	Asia	Writing; Iconographic	Species-document
GOOR 1966b	Antiquity	Asia	Writing; Iconographic	Species-document
GOOR 1967a	Antiquity	Asia	Writing; Iconographic	Species-document
GOOR 1967b	Antiquity	Asia	Writing; Iconographic	Species-document
GUARINO ET AL 2000	Modern age	Europe	Writing; Iconographic	Species-document
HALLER JR. 1990	Modern age	Africa; North America, Asia; Europe	Writing	Species-document
HEINRICH ET AL 2006	Contemporary age	Central America	Writing	Theme-document-species
HERNANDEZ and GARCIA 1998	Mean age	Europe	Writing	Document-species
HSU 2006	Antiquity	Asia	Writing	Species-document
HU 1967	Contemporary age	Asia	Writing	Species-document
HYMOWITZ and HARLAN 1983	Modern age	North America	Writing; Iconographic	Species-document
JOUBERT ET AL 2008	Contemporary age	Africa	Writing	Species-document
KINGSBURY 1961	Antiquity; Contemporary age	Europe; North America	Writing	Theme-document-species
KITAGAWA ET AL 2008	Contemporary age	Asia	Writing	Species-document
KROCHMAL and GRIERSON 1961	Modern age	North America	Writing	Species-document
LEAL E AMAYA 1991	Modern age	South America	Writing	Species-document
LEONTI ET AL 2009	Antiquity	Europe	Writing	Document-species
LEONTI ET AL 2010	Modern age	Europe	Writing	Document-species
LOCHER and CURRIE 2010	Modern age	Europe; Oceania	Writing	Theme-document-species
LUCZAJ 2008	Contemporary age	Europe	Writing	Document-species
LUCZAJ 2009a	Modern age	Europe	Writing	Document-species
LUCZAJ 2009b	Modern age	Europe	Writing	Species-document

REFERENCES	AGE OF DOCUMENT	PLACE OF DOCUMENT ORIGIN	NATURE OF THE SOURCE	SEARCH PATH
LUCZAJ 2010a	Contemporary age	Europe	Writing	Theme-document-species
LUCZAJ 2010b	Modern age	Europe	Writing	Document-species
LUCZAJ 2010c	Modern age	Europe	Writing	Document-species
LUCZAJ 2012	Modern age	Europe	Writing; Iconographic	Species-document
LUCZAJ ET AL 2012	Modern age	Europe	Writing	Species-document
MARTIN 1970	Mean age	South America	Writing; Iconographic	Species-document
MEDEIROS ET AL 2010	Modern age	South America	Writing	Document-species
MEDERIOS ET AL 2007	Contemporary age	South America	Writing	Species-document
MERLIN 2000	Modern age	Oceania	Writing	Theme-document-species
MONACHINO 1954	Modern age	Asia	Writing	Species-document
MOOLLA and VILJOEN 2008	Modern age	Africa	Writing	Species-document
MULLER ET AL 2010	Modern age	North America	Writing	Species-document
NEGBI 1992	Antiquity	Africa; Europe	Writing	Species-document
NICHOLSON 1958	Antiquity	Africa	Writing	Species-document
NORTON 1979	Modern age	North America	Writing	Species-document
NORTON 1981	Modern age	North America	Writing	Document-species
OUDIJK and JANSEN 2000	Modern age	Central America	Iconographic	Theme-document-species
PALMER 1985	Modern age	Europe	Writing	Document-species
PARDO DE SANTANAYA ET AL 2006	Modern age	Europe	Writing	Document-species
POLATA and SATIL 2012	Modern age	Europe	Writing	Species-document
POLLIO ET AL 2008	Antiquity	Europe	Writing	Species-document
PORTERFELD 2008	Modern age	Central America	Writing	Species-document
PROHENS ET AL 1996	Modern age	Central America	Writing	Species-document
RAGHAVAN and BARUAH 1958	Antiquity	Asia	Writing	Species-document
RAGONE ET AL 2001	Modern age	Asia	Writing	Document-species
RAMON-LACA 2003	Modern age	Europe	Writing	Species-document
RAZA 2006	Antiquity	Africa; South America	Writing	Theme-documents
RIVERA ET AL 1994	Antiquity	Africa; Asia; Europe	Writing	Species-document
RUSSO 1998	Contemporary age	North America; Asia; Europe	Writing	Species-document
SALICK ET AL 2006	Contemporary age	Asia	Writing	Theme-document-species
SMITH E PERINO 1981	Contemporary age	North America	Writing	Species-documents
SMITH ET AL 2003	Contemporary age	Oceania	Writing	Theme-documents
SPENCER 1984	Modern age	North America	Writing	Species-documents
STÅHLBERG and SVANBERG 2010	Modern age	Asia	Writing	Document-species
SWENSON ET AL 1997	Modern age	South America	Writing	Theme-document-species
TICKTIN 2002	Modern age	Central America	Writing	Species-documents

REFERENCES	AGE OF DOCUMENT	PLACE OF DOCUMENT ORIGIN	NATURE OF THE SOURCE	SEARCH PATH
WEIL 1965	Timeframe unclear	Africa; North America; South America; Asia; Europe	Writing	Species-documents
WIDRLECHNER 1981	Antiquity	Africa; Asia; Europe	Writing	Species-documents
WYK 2008	Timeframe unclear	Africa	Writing	Theme-document-species
YESILADA 2005	Timeframe unclear	Asia	Writing	Theme-document-species
YONOS ET AL 2005	Timeframe unclear	Asia	Writing	Species-documents
ZÁRATE 1997	Modern age	Central America	Writing	Species-documents
ZEPEDA and WHITE 2008	Modern age	Central America	Writing; Iconographic	Document-species; others
ZEVEN and BRANDENBURG 1986	Modern age	Europe	Iconographic	Theme-document-species

Most studies (40.0%) reflected a contrast between the historical records and the current status of plant cultivation or usage, either by direct comparison (Zepeda and White 2008; Leonti et al. 2010) or by evaluating the historical evolution of human relationships with the specific plant resources addressed (Bedigian 2004; Aderkas 1984; Buckles 1995). Regarding the types of use discussed in the publications, the medical category predominated in 54% of all of the works that were assessed. This pattern is also found in conventional ethnobotanical studies and reflects a growing interest among researchers to investigate this usage category (Oliveira et al 2009). However, both recent documents and old manuscripts generally contain a greater degree of medicinal usage-related detail; thus, the interest in these sources is not simply restricted to modern researchers but extends to historical naturalists. The use of plants for food purposes was addressed in 46% of the studies, whereas the "Other" categories of plant usage were present in less than 6.5% of all the studies that were assessed (Table 3).

Table 3. The use categories and their frequency of occurrence in 103 publications related to historical ethnobotany.

Use categorY	Publication frequency (%)
Medical	54
Food	46
General	12.5
Ornamental	6.5
Spice	5
Fibres	3.2
Wood	3.2
Magic	3.2
Aromatic	2.2
Forage	2.2
Technological	2.2
Poison	2,2
Hallucinogen	1.1
Fuel	1.1

FINAL CONSIDERATIONS

The present study has highlighted specific key features of historical ethnobotanical studies. However it should be considered that some information diluted or deleted in articles hampered the search and analysis of information. One of the difficulties hampering the analysis of these works was the clarification of the temporal framework; for example, some authors accessed historical documents but did not indicate the period in which these sources were generated. Notably, archaeological and paleobotanical data were frequently convoluted with written and iconographic records, without a clear correspondence between the information and sources; for example, in some cases, the studies showed results without reference to the type of source used, that is, written, iconographic or archaeological.

Two other aspects may result in the analytical difficulty that is associated with the primary sources used in these works. The first aspect relates to where the works were deposited, particularly when authors do not emphasise or specify the place where the documents were found. This information is important because it allows other researchers who intend to perform similar studies to know exactly where to locate the documents that were mentioned. The second aspect relates to the access level of the documents used in the analyses; in some cases, it is unclear whether the authors used an original source, a transcript or works that analysed or interpreted an original source. As an example, this was the case for a work that cited the use of plants during the colonial period, although the authors did not clearly reference the document they accessed to generate their findings.

Finally, our study revealed the vast scope of historical ethnobotanical studies, both in relation to geographical areas of study and to the diversity of approaches, demonstrating the interest of many researchers in this subject. This finding is important because, through these investigations, one can better understand the past relationships between people and plants and also contribute to the understanding of the current state and future of these relationships. Therefore, we believe that this scientific field exhibits great potential for development, and its findings continue to impact the importance of current ethnobotanical debates.

ACKNOWLEDGEMENTS

We would like to thank the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes) for the PhD scholarship granted to Taline Cristina da Silva, the CNPq for the Masters scholarship granted to Alejandro Lozano Balcázar and the postdoctoral fellowship awarded to Maria Franco Trindade Medeiros, the Fundação de Amparo à Ciência e Tecnologia de Pernambuco (Facepe) for the PhD scholarship granted to Thiago Antonio de Sousa Araújo and the Instituto de Botánica del Nordeste UNNE-CONICET (Corrientes -Argentina) for the PhD scholarship granted to Analia Pirondo.

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Received: 01 February 2014
Accepted: 29 April 2014
Published: 12 June 2014