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Aaron M. Lampman
Washington College

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How Folk Classification Interacts with Ethnoecological Knowledge: A Case Study from Chiapas, Mexico



AARON M. LAMPMAN

ABSTRACT

Folk taxonomies play a role in expanding or contracting the larger domain of ethnoecological knowledge that influences when and how cultural groups use living things. This paper demonstrates that ethnomycological classification is limited by utilitarian concerns and examines how Tzeltal Maya ethnoecological knowledge, although detailed and sophisticated, is heavily influenced by the structure of the folk classification system. Data were collected through 12 months of semi-structured and structured interviews, including freelists (n=100), mushroom collection with collaborators (n=5), open-ended interviewing (n=50), structured responses to photos (n=30), structured responses to mushroom specimens (n=15), and sentence frame substitutions (n=20). These interviews were focused on Tzeltal perceptions of mushroom ecology. Results indicate that knowledge of habit, substrate, development and seasonality of mushrooms influences mushroom hunting strategies, informs individuals when to hunt mushrooms, and serves as an indicator of how habitat changes are affecting mushroom diversity and abundance. Ethnoecological knowledge is, however, limited to those species that are recognized and classified – which in turn are limited to those species that are edible, medicinal, physiologically salient, or extremely poisonous. Ultimately these data suggest that the ethnoecological knowledge associated with ethnobiological domains is sometimes severely limited by the size, shape and structure of the folk taxonomy.

INTRODUCTION

For the latter half of the 20th century, the primary vehicle for examining general patterns of thought in ethnobiological and cognitive research was categorization (Atran 1990; Berlin 1992; Conklin 1954; D'Andrade 1995; Kay 1971; Rosch and Lloyd 1978). Categorization is thought to be a basic human quality, deriving from experience with the world, and allowing for structured order within which people can describe and interpret reality. Categorization defines and expresses relationships among living things, aids in learning and communication, serves as cognitive

and semantic devices for storing and retrieving information, reflects evolutionary relationships (Berlin 1992), and illuminates what is important to specific groups of people (Ellen 1993; Ellen and Reason 1979; Hunn 1982). There is much debate about the form and structure of folk systems of classification. The crux of these debates centers around the universality of human patterns of thought.

Led by the work of Berlin, Breedlove and Raven (1974), Berlin (1992), and Atran (1990), the intellec-

tualist tradition argues that natural continuities and discontinuities arising from patterns of evolutionary divergence are, for all practical purposes, inescapable to the mind of the human observer. Traditional systems of classification are thought to develop from a basic human tendency to recognize "information chunks," or groups of living things that are imposed by nature. In other words, cultures name and classify living things independently of practical value. Cross-cultural studies tend to support the intellectualist position, consistently showing that folk categorization follows highly similar patterns in different cultures and that in most cases folk genera correspond with those of western science.

Major proponents of the utilitarianist position argue that the human mind constructs reality, essentially imposing an arbitrarily defined order on the natural world (Ellen 1993; Ellen and Reason 1979; Hunn 1982). Rather than recognizing objective natural patterns, systems of folk classification are thought to develop from the unique history and culturally defined beliefs, behaviors and preferences of a particular group. Folk categories are viewed as unstable and shifting; subject to idiosyncratic variation; and patterned according to variables such as gender, age, or social context. In other words, cultural groups name and classify living things based on local history, experience, and primarily practical value. Support for the utilitarian position derives from numerous studies of variability in folk categories and cross-cultural studies of special cases of folk categories that deviate from the idealized intellectualist model.

Although Tzeltal ethnomycological classification has been discussed in detail elsewhere (Lampman 2004, 2007b; Shepard and Arora 1992; Shepard et al. 2008), the larger debate has not been fully addressed within the domain of fungi. By far the majority of studies in ethnomycology focus on cultural and economic uses of fungi (Buswell and Chang 1993; Palm and Chapela 1997), use of fungi in medicine (Esquivel 1998; Lampman 2007a; Prance 1984; Saar 1991a, 1991b), and use as hallucinogens (Schultes 1939; Singer 1958; Wasson 1962). Others report

broad cultural attitudes towards fungi such as "mycophilia" and "mycophobia," (Wasson 1980), and folk-classification of fungi (Hunn et al. 2003; Mapes et al. 1981; Morris 1984). What has been lacking, by and large, is a more holistic look into "the totality of the physical, biological and social factors" (Gragson and Blount 1999:vii) that influence how individuals and groups understand, gain meaning from, and decide to use fungi as resources in the activities of their everyday lives (Alcorn 1984; Ford 1978).

This paper examines how domains of ethnoecological knowledge are deeply influenced by the size and structure of the folk ethnomycological classification system, and how this ethnoecological knowledge, in turn, informs how people choose to interact with wild mushrooms on a daily basis. I argue that whereas the Tzeltal Maya ethnomycological system of classification follows Berlin's (1992) general principles of classification in large part, the size and structure of mushroom categories are highly limited by practical concerns such as edibility, salience, avoidance of toxic species, and other cultural uses of mushrooms. This classificatory limitation extends to other domains of knowledge about wild mushrooms. Ethnoecological knowledge of named and classified species is highly detailed and sophisticated, whereas ethnoecological knowledge of culturally useless species is shallow, idiosyncratic or non-existent. Essentially, utilitarian concerns are deeply integrated and overlap with the basic intellectualist perceptual taxonomic model for the mushroom domain.

Overall, this paper deals with the ways in which the Tzeltal Maya of highland Chiapas, Mexico incorporate macrofungi within their broader worldview, and how the widely shared and highly detailed body of ethnomycological knowledge influences mushroom use. The taxonomic system is briefly described, with a focus on how the structure of folk classification deeply influences overall ethnoecological knowledge of the mushroom domain. The intersection of folk classification systems with other domains of knowledge is explored through discussion of ethnoecological knowledge of habitat and

substrate requirements, seasonality, and ecological relationships with the plant community.

STUDY AREA AND METHODS

Chiapas, Mexico is a land of rich biological diversity with as many as 6,000 species of vascular plants, 1,100 vertebrates, and nearly 300 documented species of macrofungi (Breedlove 1981; Moreno Fuentes and Montoya 1999; Rzedowski 1993). The Tzeltal Maya communities in which research was conducted are located on the Central Plateau at elevations that range from 900 m to 2,900 m (Hunn 1977; Rzedowski 1993). This range in elevation leads to a number of distinctive types of vegetation that include Evergreen Cloud Forest, Pine-Oak and Pine-Oak-Liquidambar Forests at higher elevations, and Seasonal Evergreen Forest and Tropical Deciduous Forests at lower elevations (Breedlove and Laughlin 2000). Although precipitation varies from year to year, the wet season from the months of May and December tends to lend itself to high mushroom productivity.

The Tzeltal Maya are one of five Mayan-speaking groups in Chiapas. There are approximately 300,000 Tzeltal Maya (INEGI 2000) living in small communities scattered around the Central Plateau, many of which have little access to running water and electricity. Most people engage in swidden agriculture of corn, beans and squash, and they supplement their diet with other activities such as coffee production, wage labor, and collection of wild plants and animals for home and the markets. Although there are many other sites in Mexico that might have served as well, this research site was ideal for a number of reasons. First, the author speaks Spanish and Tzeltal Maya, second, research into the specific domain of mushrooms could easily be compared with thirty years of prior research into the domains of plants and animals, and third, the abundance and diversity of mushroom species in the region are high.

The research for this paper was carried out in two phases. Phase One included working in the fields

and forests with five Tzeltal elders to collect, identify, and preserve mushroom specimens for use in ethnographic fieldwork. Specimens were identified and are housed in the herbarium at El Colegio de la Frontera Sur. Phase Two included unstructured, semi-structured and structured interviews with Tzeltal collaborators. The goal was to focus on generalized ethnoecological knowledge that is widely shared and distributed throughout the population, and because the participants were rural agriculturalists who work all day in the fields and regularly migrate for wage labor in the lowlands, a random sample was impractical. As a result, I attempted to follow a non-random stratified sampling strategy that consisted of gathering data from equal numbers of male and female participants living in the local community and ranging in age from 18 to 70.

I began Phase Two by conducting 100 freelists ($n=50$ women over the age of 18, $n=50$ men over the age of 18). Freelist was designed to elicit a basic outline of the total domain of mushrooms as perceived by the individual and shared by the group. The lists ranged from as few as five to as many as 40 mushrooms. Once a basic list was developed, the participant was asked to elaborate about season, substrate, habitat, use and any myths or stories relating to the species. The next step was to ask a total of 45 collaborators to respond to a standardized set of visual stimuli including mushroom specimens ($n=15$ men over the age of 18) and photographs ($n=15$ women over the age of 18, and $n=15$ men over the age of 18). Photos replaced actual specimens in later stages of research due to extreme changes in color, texture, size and shape that occur when mushrooms are dried. This elicitation procedure asked informants to name and describe uses for wild mushrooms. All 45 collaborators were then asked to respond to a standardized set of questions concerning habitat, substrate, seasonality and ecological relationships of wild mushrooms. These informants were also asked to identify mushroom parts, discuss mushroom life-cycles, discuss mushroom nutritional and medicinal value, and describe the value and sale of mushrooms in local markets.

Another 20 collaborators ($n=10$ women over 18, $n=10$ men over 18) were asked to respond to sentence frame substitutions focused on mushroom use and ecology. In this method, 15 different mushroom photos were paired with an identical set of 65 statements made about mushrooms collected during freelists and interviews. Informants responded true or false when matching each mushroom with each of the 65 statements. Finally, each day in the late afternoons after field-collections and formal interviews were complete, several men from the community would visit the home of my host, view the freshly collected mushrooms, and begin to actively debate and discuss the ecology, fruiting habits and uses of the species gathered. Overall, approximately 50 open-ended interviews were conducted in this way. This research was essential to the development of an understanding of Maya perceptions and uses of mushrooms.

RESULTS

FOLK CLASSIFICATION

There is little doubt that the Tzeltal Maya widely share a large body of ethnoecological knowledge of the mushroom domain. Although participant responses varied in small detail at the individual, family, or community levels of analysis, a number of striking patterns emerge from the interviews and collected discourse concerning beliefs about macrofungi. Pile sorts conducted with collaborators show that Tzeltal ethnomycological classification generally follows Berlin's (1992) general principles of classification (Lampman 2007b), but there is a pronounced pattern of culturally dividing the mushroom domain into two groups based upon cultural utility (Lampman 2007a; Shepard et al. 2008), and this division profoundly affects other domains of ethnoecological knowledge.

Analysis of the freelist data ($n=50$) illuminates importance of utility in the mushroom domain. The average size of an individual freelist was 11.5 items, with a range from 7 to 16 items. A total of 25 different species of mushroom were mentioned by at least

two informants. The top 15 species mentioned were recalled by at least 13 informants, and one mushroom was mentioned by 48 informants. Every one of the top 25 mushroom species found on these freelists was considered edible or medicinal. In order to test the degree of agreement and determine whether these species form a salient domain in a statistical sense, a respondent-by-item matrix was derived from collaborator responses and submitted to consensus analysis in ANTHROPAC (Borgatti 1994). The first and second eigenvalues (29.6 and 3.2) account for 98.7 percent of the variability in the sample and give a ratio of better than 9:1 indicating that these edible species make up a coherent, culturally recognized domain. This division of the mushroom domain into species that are culturally useful, and species that are considered useless, leads to differential knowledge about the ethnoecological characteristics of the mushrooms in each group.

ETHNOECOLOGICAL KNOWLEDGE

Data from elicitation responses and sentence substitution surveys were tallied in matrices to reveal frequency of respondent agreement concerning ethnoecological characteristics associated with mushroom species. Sixty-five ethnoecological and utilization questions were asked concerning 15 different species of culturally important mushrooms taken from the freelist task. The agreement about details concerning ecological characteristics such as seasonality, growth habit, substrate and habitat generally ran between 55 percent and 100 percent. Similarly, agreement about cultural utility such as how a species is identified, collected, prepared and eaten was generally above 75 percent.

Nomenclature also provides clues to ethnoecological knowledge, and only culturally useful species receive consistent linguistic designations. Although by no means required by convention, the names of these mushrooms often code for ethnoecological categories, and of approximately 139 linguistic designations collected for 70 macrofungal species, approximately 21 percent included a term referencing substrate.

In addition, habitat categorizations consistently appeared in discourse concerning the habitats in which mushrooms develop and, in fact, of 139 linguistic designations collected for 70 species of macrofungi, approximately 12 percent included a term referencing habitat.

Because species that are not used are either not named, or named idiosyncratically, there is no consistent encoding of ethnoecological knowledge for such species. In fact, almost every response to an ethnoecological question about culturally unused species corresponds to some iteration of “I don’t know”. In this way, the folk classification system appears to interact with the domain of ethnoecological knowledge, limiting knowledge associated with useless species, and expanding the breadth, depth and detail of ethnoecological knowledge associated with useful species.

These data suggest that the culturally determined structural features of the special purpose folk taxonomy (Hays 1982), as opposed to the general purpose taxonomy (Berlin 1992), essentially serve to reflect, constrain, and reinforce patterns of knowledge about biological characteristics and cultural uses of linguistically recognized species (Ellen 1993; Hunn 1982; Lampman 2004). Those species that are widely considered edible or useful have names. More to the point, those species that are culturally useful also have a widely shared and highly detailed body of ethnoecological knowledge associated with them. The same is not true for the large number of species that are not named or classified.

CULTURALLY USEFUL SPECIES AND PATTERNS OF ETHNOECOLOGICAL KNOWLEDGE

As with any ubiquitous aspect of the natural or cultural environment, the Tzeltal have developed an extensive body of knowledge of the key ecological features associated with culturally important macrofungi, and utilize these features to inform their

collection and use of mushrooms. Mushrooms are a prevalent and obvious aspect of the environment, and hundreds of species appear on a seasonal cycle, year after year, scattered throughout the forests, fields and pathways. The sophistication of Maya ethnoecological knowledge, then, is related to a long history of observation and utilization of mushrooms in the local environment. The following sections are a detailed exploration of Tzeltal ethnoecological knowledge of substrate preferences, habitat preferences, and seasonality with the goal of illuminating how this ethnoecological knowledge interacts with folk classification to influence mushroom use.

SUBSTRATE

The Tzeltal are thoroughly acquainted with the types of habitats and substrates in which different species of macrofungi fruit. An awareness of the habitat and substrate in which particular species develop not only provides a useful context for identifying mushrooms, it also serves to inform the Tzeltal of where to search for particular species when harvesting. When hunting for puffballs to heal wounds or cure young children of bedwetting, they search in the earth of newly fallow **milpas** (‘cornfields’), open fields and pastures. They claim that **k'an chay** (*Lactarius deliciosus* [L.] Gray) and **yaxal ti'bal** (*L. indigo* [Schwein.] Fr.), each a species of milk cap, only fruit in the earth of mid- to secondary-growth pine forests. They seek out **k'an tsu**, the prized species *Amanita caesarea* (Scop.) Pers., in the mountains under mixed-oak forests. If a species tends to grow in areas that have recently been burned, this fact is also often mentioned, and they recognize that a few poisonous or hallucinogenic species of macrofungi grow in pastures in the dung of cows and horses.

During freelists, 100 collaborators were asked to list the substrates within which each species mentioned was found. Figure 1 represents the percentages of species believed to fruit in the substrates that were most often mentioned.

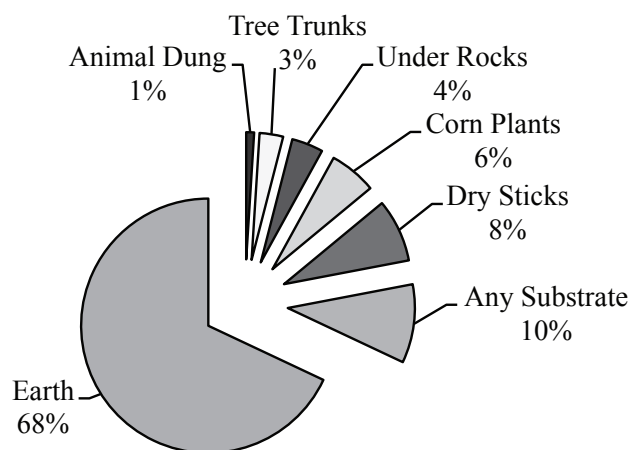


FIGURE 1: Percentage of species fruiting in seven types of substrate.

Substrate also plays a role in categorization. The Tzeltal split the entire domain of macrofungi by lumping all mushrooms into two categories, possibly folk life-forms, based on substrate: those that grow in dry or rotting wood, and those that grow in the earth. When questioned about these categories, a fairly typical response is “Some grow in wood, some in earth. They are all still family, still the same mushrooms. They are equal in all ways except where they grow” (ALL).

Those species of mushrooms that grow in wood are generally considered a kind of **chikin te'**, which can be glossed as ‘tree ear’. This grouping includes any macrofungus that grows in sticks, logs, rotting tree trunks, living trees, roots, and even human made artifacts of wood (Lampman 2007b). Those species that grow on the earth are generally considered a kind of **chejchew**, which loosely translates as ‘any mushroom’, but can also be used to refer specifically to ground-dwelling macrofungi. This grouping also includes species that develop in pine straw, green or dry soil, dung, and rotting leaves.

HABITAT

In addition to knowledge of the substrate preferences of macrofungi, respondents had a well-developed understanding of the biological communities or habitats within which particular mushroom species develop. One of the most prominent beliefs that emerged from discussions about habitat is that culturally useful mushrooms tend to fruit in stages of mature or old growth forest, respectively called **tojol k'in al** and **ja'mal** (see Figure 2). As one of my collaborators claimed, “They grow in ja'mal and **te'tikil** [‘secondary forest’]. They don't grow in the milpa. I don't collect around here because there are not enough that grow in the milpas” (JEG). This belief indicates that the Tzeltal pay attention to significant restrictions on growth patterns of macrofungi. It also implicitly suggests that loss of mature forests will lead to lower production and abundance of culturally important species. This knowledge informs harvesting strategies, and when the rainy season arrives, the Tzeltal make special trips to the more remote locations of the mountains in which mature forest is found in order to seek out abundant and diverse species that are highly prized.

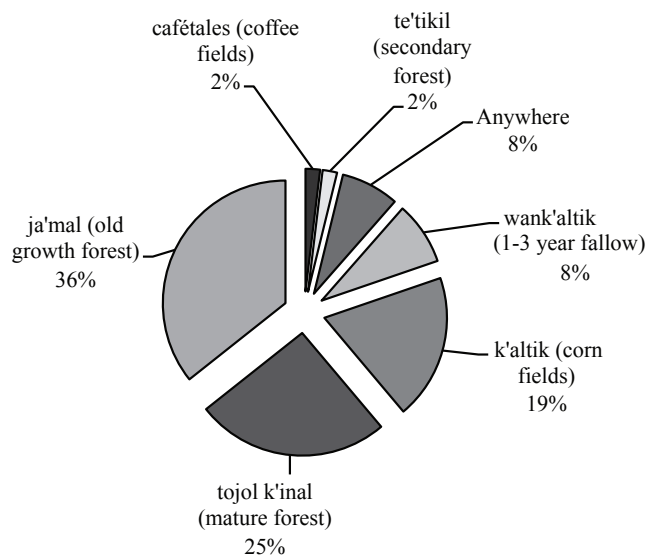


FIGURE 2: Percentage of species reported in seven types of habitat (N=70).

ECOLOGICAL RELATIONSHIPS

Tzeltal knowledge of mushroom ecology also includes reference to important ecological relationships. Whereas my collaborators never discussed the ecological role of macrofungi as decomposers, they had detailed knowledge of the role of fungi as parasites on cultivars and wild plant species. Respondents did not explicitly recognize the existence of a symbiotic relationship between species of trees and macrofungi and in fact deny that any necessary and mutually beneficial relationship exists. They did, however, quite clearly recognize that some species of mushrooms consistently fruit near certain species of trees or plants and mention that many species have a narrow range of ecological requirements.

For example, one of my collaborators explained that “some types grow near trees. Like k'an tsu grows under oaks. *Tsajal ti'bal* [an alternative name for *L. deliciousus*] grows in pine forests. The reason they grow there is that they like the earth under trees. The trees offer green humid earth and the shade. They only grow in the old forest with many trees and green earth” (ALL). In fact, most of my collaborators throughout the highlands agreed that species of *Amanita* are known to grow exclusively in stands of oak trees, whereas species of *Lactarius* are thought to grow exclusively near pine trees. This knowledge is widespread and shared across communities, and the common explanation for this association is that mushrooms prefer the shade, humidity, and moist earth provided by their host tree.

Knowledge of such ecological associations serves the Tzeltal well when they search for particular species of prized macrofungi. Rather than searching blindly or harvesting opportunistically, the Tzeltal travel directly to habitats within which associated tree species exist. And this knowledge of associations serves as an ecological indicator. Mayan elders spoke at length about how deforestation, whether by natural or human causes, has led to detrimental effects on the macrofungal population. The elders lament the loss of old-growth forest noting, “Before, when there were many trees, many mushrooms appeared. In my

lifetime, there have been fewer and fewer trees, and thus fewer mushrooms” (MGI).

The Tzeltal also believe that, like any living species, mushrooms sequester nutrition from some environmental source. There is a clear understanding that unlike plants, macrofungi do not benefit from sunlight, and numerous collaborators noted that exposure to the sun leads to the death of the fruiting body. Instead, the nutritional requirements of mushrooms are closely linked to substrate preference and ecological niche. In fact, there is a widespread belief that different species of mushrooms sequester nutrients from specific types of soil that are linked to the types of trees under which they fruit. For example, as one collaborator said, “Some will only grow under certain trees. K'an tsu likes to grow near large oaks. The mushroom likes the soil and nutrition given by the oak” (MGI).

The Tzeltal have an impressive understanding of many of the ecological requirements of culturally useful macrofungi. This knowledge is highly important to the process of making decisions about the use of mushrooms as a resource. Knowledge of seasonality, substrate and habitat is widespread and relatively uniform, and is often highly detailed for culturally important species of mushrooms. The awareness of macrofungal habitats and substrates serves a number of cultural and cognitive functions, aiding in identification and harvesting strategy, and serving as a key feature of classification.

SEASONALITY

In the highlands of Chiapas, the mushroom season advances in late June or early July, and extends as late as February. These months parallel the times of heavy rain and light snow or ice in the region. On average, the highlands receive from 100–200 mm of rain per month throughout the rainy season, producing conditions that are highly favorable to mushroom fruiting. Throughout this season literally hundreds of different macrofungi appear in various microhabitats and ecological niches throughout the highlands.

The Tzeltal recognize a relationship between season, abundance of rainfall and periods of mushroom abundance and diversity. They also believe that seasonal patterns of mushroom development differ dramatically between species. Much like amateur mushroom hunters throughout the world, the Tzeltal know the specific range of months in which their favorite species develop, and they utilize this knowledge to inform their mushroom hunting strategies.

More than 90 percent of my collaborators noted that the majority of mushrooms exclusively appear during the rainy season, from the months of June to December. This widespread understanding of mushroom seasonality is further supported by the explicit belief that few, if any macrofungi fruit during the dry months from late January to early May. If this knowledge can be considered an ethnoecological model of seasonality, then rain is thought to be the key contributor, a necessary component, to the process of mushroom formation. When asked why mushrooms fruit after a rain, the common response was, “that is just the way it is,” or “*ya sk’anik ja’al*,” “they [the mushrooms] like the rain.”

In addition to the general acknowledgement that most species of mushroom fruit during the rainy season, respondents claimed that each species fruits at a special time, consisting of only a few weeks or months during the year. In fact, almost every Tzeltal informant voluntarily described the range of months in which prized mushrooms develop throughout the year. This level of detailed knowledge, however, is generally restricted to culturally important species.

The most common explanations for the seasonal and monthly preferences of different mushroom species include the beliefs that “it is just their time,” that “God made it that way,” or that “there is a month or two when each mushroom grows.” The belief that each species has a unique seasonal pattern of development reveals, to my mind, an implicit understanding of the specialized temperature, moisture, and habitat requirements of macrofungal species, as well as recognition of life-cycle patterns.

Figure 3 represents the perceived seasonal abundance of macrofungi as measured by the number

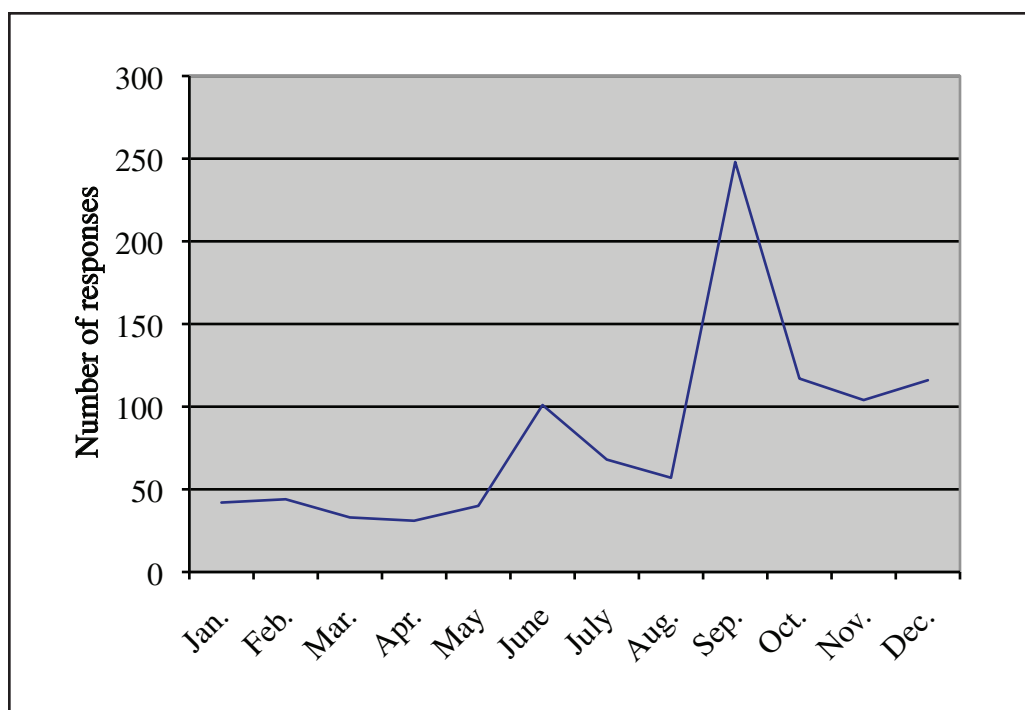


FIGURE 3: Monthly abundance of macrofungi in Tzeltal region as measured by recall.

of informants who recalled that a given species fruits during a specific month. One of the most interesting features of this chart is that it shows a significant increase in mushroom abundance during the rainy season, from June through December, a fact first reported by Brent and Elois Ann Berlin (1996). These seasonal growth trends are similar to those found in North America, and are likely to be supported by long term collections of macrofungi in the future.

Knowledge concerning the seasonality of species in the useless category was inconsistent, vague and incomplete, and it is clear that the people of the highlands do not keep track of when useless species develop. A few collaborators suggested that useless mushrooms grow throughout the year, or that perhaps they have specific seasons of growth that are unknown. There was not, however, a rich and detailed body of knowledge of the specific months in which these culturally useless species develop. This pattern supports the notion that ethnoecological knowledge associated with the culturally useful mushrooms is much more detailed than knowledge associated with useless species. Many collaborators were explicit about this, stating that “Those that we can eat grow only in very specific times” (JGJ) and that “Other kinds that I don’t know or eat grow all year long” (ASG).

In summary, the Tzeltal have a complex and shared understanding of the seasonality of macrofungi in general. This knowledge is more finely detailed, however, for those species that are culturally important and collected on a regular basis. The Tzeltal not only believe that the majority of mushroom species appear during the rainy months, but are capable of describing the specific months in which their favorite species develop. Given this focus on the seasonal fruiting habits of culturally important species, it should be clear that the Tzeltal have a relatively sophisticated and shared body of knowledge about culturally important mushrooms. In contrast, they have very little detailed knowledge about those species that are lumped together as useless.

CONCLUSION

The data presented in this paper illuminate Tzeltal Maya ethnoecological knowledge of macrofungal ecology and how these beliefs are interwoven with the structure of the folk ethnomycological classification system. The Tzeltal name and classify only culturally useful and highly salient species of mushrooms. In turn, the ethnoecological knowledge associated with named species is detailed and sophisticated. The Tzeltal ignore useless and indistinct mushrooms, and the ethnoecological knowledge associated with such species is ill-defined or nonexistent.

In other words, a classification system, once developed and passed on from generation to generation, acts like a filter for ethnoecological knowledge. This filter limits entire realms of knowledge about the portion of the living domain that is not named or classified. It simultaneously enriches the depth and breadth of knowledge of the small part of the domain of living things that is named and classified. In this way, ethnoecological knowledge and ethnobiological classification are deeply interwoven.

The resulting body of ethnoecological knowledge associated with culturally important species is specific and detailed, and includes an in-depth understanding of life cycles, seasonality, habitat and substrate preferences, generalized morphological patterns, and nutritional, hallucinogenic or toxic properties. Knowledge associated with unknown or indistinct species is limited in scope and highly idiosyncratic, and there is little interest among the Tzeltal in discussing where, when, how or why such species develop.

The ethnoecological knowledge associated with named species derives from accumulated experience passed down from generations past, and despite the introduction of Spanish-language schools in the highlands, ethnomycological knowledge continues to be transmitted from parent to child in traditional ways. This process ensures that the unique ways in which the Maya view the macrofungi of the highlands remain intact.

The detailed nature of this ethnoecological and ethnomycological knowledge serves to inform the use of macrofungi by the Tzeltal. If a species is unknown, it is ignored. For those species that are known and utilized, a detailed understanding of seasonality, and habitat and substrate preference allow the Tzeltal to seek out specific types of macrofungi at appropriate locations and times. Extensive knowledge of the morphology of culturally recognized species facilitates quick and accurate identification, and once a species has been identified, the Tzeltal have well-developed cultural models of edibility, preparation and use.

Building upon the work of Berlin (1992), Ellen and Reason (1979), Hunn (1982) and others, this paper uses ethnographic data to go beyond linguistic analysis of nomenclature in order to clearly link depth and breadth of ethnoecological knowledge with the structure of a folk classification system. These findings may, in fact, apply to other systems of ethnoecological knowledge and ethnobiological classification. Whereas it has been shown that nomenclatural systems reveal cultural importance of a species and incorporate ecological knowledge (Nabhan 2000), we have only scratched the surface of how folk classification systems relate to our entire cognitive models of the world. In the case presented above, I suggest that entire realms of knowledge, in this case knowledge of ecological features, may expand and contract according to which species, out of the entire domain of species available in a given environment, are named and classified.

Aaron M. Lampman, *Department of Anthropology, Washington College*, alampman2@washcoll.edu

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