# 23rd Annual Conference of the Society of Ethnobiology
# Ann Arbor, MI, March 29 April 1, 2000

*edited by Richard I. Ford and Elizabeth J. Bridges*

## SYMPOSIA ABSTRACTS

**Pre-Conference Roundtable: Indigenous Intellectual and Natural Resource Property Rights**
**Facilitator: Kelly Bannister (University of British Columbia)**
Intellectual property rights is one of the most important professional and ethical issues facing ethnobiologists. Who owns knowledge, who controls access to it, and what outsiders can do with it are all questions that continue to constrain research as it has traditionally been conducted. Similarly, how has access to natural resources and what can be done with them requires resolution for effective research to be conducted in the future. The purpose of this roundtable consisting of indigenous elders, leaders, and community recognized authorities is to discuss these issues and to help redefine protocols for ethnobiological research in the future. The outcome should be the creation of dialogues that reflect the negotiations that are essential for further ethnobiological investigations.

**Presidents' Symposium: Ethnobiology at the Millennium**
**Organized by Richard I. Ford (University of Michigan)**
A new millennium is a culturally defined time to reflect on the past and future of ethnobiology. In just over 100 years the disciplines that constitute ethnobiology have gained popularity and importance to the public and in academic circles. Individually the fields have witnessed pioneering research, methodological expectations and changes, and theoretical advances. The pace of these changes suggests that more are coming at an accelerated rate. Who better to take stock of the progress of the individual disciplines and their future needs and directions that the intellectual and leaders of or each as represented by the past presidents of the Society of Ethnobiology. Our past presidents will reflect upon their disciplines and orient us to the future.

**Symposium: From Faunal Remains to Human Behavior**
**Organized by Richard W. Redding (University of Michigan)**
Zooarchaeology has witnessed changes in its objectives from animal species identifications of archaeological bones to cultural patterns of utilization.  Along the way the methodology has evolved from comparative anatomy, to morphometric assessments, to statistical analyses of faunal collections, to evidence of human manipulation of the animals to current trends in assessing human behavior toward animal reproduction, life stages, and cultural processing and distribution.  While all the advances have been cumulative, the most recent  human behavior  requires further demonstration and discussion.  The objective of this symposium is to review recent research trends in this area of zooarchaeology and to discuss future directions.

**Symposium: Too Close for Comfort? Doing Ethnobiology in Our Own Backyard**
**Organized by Virginia D. Nazarea (University of Georgia)**
Traditionally in the United States ethnobiology has been regarded as an activity that requires foreign travel and certainly residence in other cultures. Intellectually and theoretically there is no reason why it cannot be practiced in any culture or society, including our own. New theories are not required, although some may result. New methodologies are not necessary. Yet new insights about our society and prejudices we have about ourselves certainly will result from this studies. This symposium will take a detailed look at the ethnobiology of selected segments of American culture.

**PAPER AND POSTER ABSTRACTS**

**Adams, Karen (Crow Canyon Archaeological Center)**
**Looking Back Through Time: Contributions of Southwestern U.S. Archaeobotany to Ethnobiology**
Archaeobotany in the American Southwest offers ethnobiologists a time machine peek into past relations of humans with plants and landscapes. We are aided by superb preservation, increased scale of excavation, and collaborative colleagues. Through the record of burned and broken plant remains, including pollen and other tiny specimens, we have learned a great deal about how ancient people lived daily lives as foragers and farmers. We have looked back through time at some examples of anthropogenic ecology. This presentation surveys the accomplishments of Southwestern archaeobotany over the past few decades, highlighting both substantive and methodological contributions, and pointing out areas of potential future research.

**Alessio, Julie (TESC)**
**Hands-On Community Environmental Education:**
**The Case for an Ethnobotanical Trail in Olympia, Washington**
An ethnobotanical trail in the community of Olympia, Washington will encourage and strengthen connections between people and the land. Protecting biological and cultural diversity necessitates being aware of other species living in a community. Knowing the names of the living organisms in our communities and their unique stories establishes other species as characters within human cultures. In a growing community such as Olympia, where there are currently strong relationships between people and the environment, as well as supportive institutions, public ethnobotanical educational tools will cultivate and protect people-plant relationships.

**Anderson, E. N. (University of California Riverside)**
**Disenchantment and Deforestation Revisited**
Four societies I have studied – Chinese, Maya, Northwest Coast Native, and Celtic use religion to save trees. They invoke religious sanctions to save groves or to manage whole forests. Their methods work to varying degrees. Analysis of the reasons for success and failure is important in this period, since countries such as Thailand and Cambodia are actively using religion for tree protection. Religion seems to work best in the service of modest, economically reasonable goals.

**Anschuetz, Kurt F. (Rio Grande Foundation) and**
**Louie Hena (Picuris Environmental Department, Picuris Pueblo)**
**Living on the Edge: Pueblo Agricultural Traditions for Sustaining Biodiversity and Community**
Archaeological study of late pre-Columbian and early Historical period (A.D. 1250-1750) Pueblo fields in New Mexico's northern Rio Grande Valley has identified the farmers' integration of diverse agricultural technologies. These studies emphasize how farmers designed their fieldworks to harvest and conserve water for crop production. Further examination of these archaeological traces by Pueblo environmentalists has resulted in the identification of methods now used by permaculturalists today. These approaches emphasize how the farmers enhanced biodiversity in and around their planting areas. By combining these perspectives, we consider how earlier Pueblo generations created and manipulated ecological edge effects to sustain their communities.

**Atran, Scott (CNRS, University of Michigan)**
**The Spirit of the Commons: Ecological Rationality and Emergent Cultures in Mayaland**
Three groups living off the same rainforest habitat manifest strikingly distinctive behaviors, cognitions and social relationships relative to the forest. Only the area's last native Maya reveal systematic awareness of ecological complexity involving animals, plants and people, and practices clearly favoring forest regeneration. Spanish-speaking immigrants prove closer to native Maya in thought, action and social networking than do immigrant Maya. There is no overriding "local," "Indian" or "immigrant" relationship to the environment. Results indicate that exclusive concern with rational self-interest and institutional constraints do not sufficiently account for commons behavior, and that cultural patterning of cognition and access to relevant information are significant predictors. Unlike traditional accounts of relations between culture, cognition and behavior, the models offered are not synthetic interpretations of people's thoughts and behaviors, but emergent cultural patterns derived statistically from measurements of individual cognitions and behaviors.

**Baker, Jonathan (Arizona State University)**
**Imaginary Groups, Real Effects:**
**Theoretical Perspectives on Consumerism and the Health and Harvest Impacts of St. John's Wort Use**
St. John's Wort (*Hypericum perforatum* L.) is one of the most popular herbal medicines in the US. However, St. John's Wort consumption does not define a social group. Instead, St. John's Wort consumers are a category of people who share a behavior, but who do not necessarily interact socially. Nevertheless, the collective behavior of St. John's Wort consumers has important effects on consumers' health, and consumer demand indirectly affects the environments from which plants are harvested. Ethnobiologists need to examine the real health effects of such "imaginary" groups in order to understand the health and harvest impacts of herbal product use.

**Bannister, Kelly P. (University of British Columbia)**
**All Dried Up And Safer? Tracking the Allergins in Leaves of Balsamroot When Processed for Secwepemc (Shuswap) Medicine**
*Balsamorhiza sagittata* (Pursh) Nutt. (Asteraceae), commonly called balsamroot, is known by the Secwepemc (Shuswap) and other by Aboriginal peoples as a traditionally important food and medicine. Both the roots and leaves of balsamroot are still important medicines today. The medicinal properties may be partly linked to anti-bacterial compounds produced by the plant, such as sesquiterpene lactones that have been reported in the leaves. However, sesquiterpene lactones can also trigger an allergic hypersensitivity reaction (i.e., allergic eczematous contact dermatitis). Therefore, their presence raises the concern that medicinal uses of leaves may cause potentially serious allergies. This paper describes chemical research, using gas chromatography-mass spectroscopy (GC-MS) analysis, undertaken in collaboration with the Secwepemc (Shuswap) First Nation to address this concern.

**Bigelow, Lauren (Northwestern University)**
**Zooarchaeological Investigations into Late Chalcolithic Herding Economy at Hacinebi Tepe, Turkey**
A number of zooarchaeological studies have demonstrated that animal bone can advance our understanding of complex societies. In addition to providing valuable information about diet and subsistence practices, faunal analysis can be an effective method of studying both economic and social organization. This paper focuses on the fauna from Hacinebi, a Late Chalcolithic site in southeastern Turkey where excavations span occupational periods before and during Uruk contact. This provides an opportunity to examine the development of Anatolian herding practices as well as the impact of Uruk colonial expansion on the subsistence base and the socio-economic development of the local settlement.

**Bonhage-Freund, Mary Theresa (Alma College)**
**Maize and More: A New View of Early Historic Subsistence Patterns in Southeastern North America**
Conventional wisdom asserts that early historic Eastern American Indian subsistence centered on riverine maize agriculture. This study challenges that assertion. Analysis of three late prehistoric trash pits suggest the paradigm is too rigid. In the Oconee Region of Georgia it is observed that (1) a mixed economy was the norm; (2) agriculture was practiced in both uplands and river bottoms; and (3) maize was but one of several important components of a complex subsistence system. This research compares the assemblage of a previously unreported Bell phase trash pit to two parallel upland features. Unique upland and bottomland subsistence strategies vary according to the local ecology.

**Brown, Cecil (Northern Illinois University)**
**Linguistic Ethnobiology**
Linguistic ethnobiology refers to the relationship of people to plants and animals as mediated by language. This paper will review significant research findings in the area that have accumulated over the past thirty-five years or so. Many of these findings involve a

comparative perspective whereby linguistic labels for biological entities have been compared across languages and cultures. Prospects for development in linguistic ethnobiology are discussed.

**Cahill, Joseph (University of California Riverside)**
**Ethnobiology of Chia, *Salvia hispanica* L.**
The mesoamerican medicinal plant species *Salvia hispanica* L. has been cultivated since pre-Hispanic times for numerous purposes. A review of ethnobotanical uses was conducted in order to determine how uses have changed over time. Uses recorded in the 16th century codices of Mexico and those from subsequent publications were tabulated and subjected to statistical comparisons. Results indicate several changes in use over time, leading to the formation of hypotheses regarding the original use(s) for this species. To test the hypotheses, ethnobotanical data has been collected in highland Guatemala and western Mexico to examine the ethnobotany of wild type *Salvia hispanica* L.

**Campbell, Brian (University of Georgia)**
**Afro-American Gastronomy and Agricultural Biodiversity: A Market for Soul?**
I conducted research in Central and Coastal Georgia, exploring the connections between "Soul Food" and agricultural biodiversity. "Soul Food" requires the use of fresh, locally grown vegetables. It originated in the domestic realm, but has recently permeated the public sector. The horticultural prerequisites inherent in "Soul Food" create both a public and private impetus for cultivating vegetables locally. A number of "Southern" restaurants have begun, however, to use processed vegetables in their meals, a process which opposes traditional Southern cooking values. It is within this specific context that I examine the existing market for "Soul Food" and juxtapose this strict culinary tradition with other "Southern" cuisines. I address the question of whether or not Afro-American restaurants that retain traditional culinary methods can provide commercial incentives for conserving horticultural practices, and concomitantly, agricultural biodiversity.

**Campbell, H. Russell (Ohio University)**
**Characterization of *In Situ* Cassava Diversity Among the Amuesha, Peruvian Upper Amazon**
Cassava *(Manihot esculenta)* is a dietary staple and major carbohydrate source for millions of people in the tropical world. In 1999 we collected cassava varieties from the same Amuesha households that Salick et al. (1997) collected from in 1986. Results from t-tests and ordination analyses or morphological data indicate no significant difference. The varieties of cassava have changed but are equally diverse. Most of the diversity is managed by elders and an ancient shaman. Crop diversity is a foundation of sustainable agriculture and understanding its generation, maintenance, and change is indispensable for continued agricultural stability and resilience.

**Chambers, Kimberlee (University of Victoria)**
**Past Uses and Future Potential of Arrow-Leaved Balsamroot**
Recent studies in British Columbia have indicated that Arrow-leaved balsamroot *(Balsamorhiza sagittata)* has a variety of potential economic and ecological applications. Unless we understand how to produce a crop of Arrow-leaved balsamroot, we will not be able

to utilize this plant as a commercial product or for restoration. Experiments are being conducted treating the seeds with ethylene to increase germination rates and direct sowing in the field will be compared with seedlings started in plugs in the greenhouse and transplanted to the field. Supporting ecological studies will be conducted to assist in an understanding of the data obtained from agronomic studies.

**Chandler-Ezell, Karol (University of Missouri Columbia) and**
**Shawn K. Collins (Univ. of Missouri Columbia)**
**Decking the Halls: Ethnobiologicals Americans Associate with the Christmas Holidays**
Since plants and animals have important symbolic meaning in most cultures, we investigated ethnobiological associations of the Christmas holiday in the central United States. The sample population included 36 Anglo-Americans aged three to 96. Successive freelisting was used to elicit names of plants, animals, and use/meaning self-categorization of each. Analysis revealed wide variation in the lists' length and content, and that salient categories related to activity participation. Age and familial status influenced lists. As a result, children and parents focused more on folklore from songs and books while non-parental adults and teenagers focused on ritual foods, activities, and decorations.

**Cocksedge, Wendy (University of Victoria)**
**Sustainable Harvesting Potential of Salal *(Gaultheria shallon)*: Case Study of a Non-Timber Forest (poster not presented)**
Non-timber forest products (NTFPs) potentially include all forest plant materials excluding commercial timber. The quickly growing awareness of these products is leading to increased strain on the species and their ecosystems. Very little is known about most NTFPs, including habitat requirements and regeneration ability after harvesting. One example is the floral greenery, salal *(Gaultheria shallon)*. Research is therefore being initiated on Vancouver Island, using commercially viable salal plots to compare 1) the average biomass of woody and leafy material harvested in one year, to that which salal produces; and 2) the above-ground regeneration of salal in harvested versus non-harvested areas.

**Crane, Todd (University of Georgia)**
**Small Farmer Cognition of Folk Crop Varieties: Definitions, Values and Motivations**
This paper is divided into three sections. The first compares farmers' definitions of heirloom with the definitions found in popular publications. The second examines why farmers are interested in heirloom varieties and the third asks why they choose to save their own seeds rather than buying all of their seed supply through commercial channels. Findings show that the growers' definitions of heirloom vary significantly from definitions found in popular media, indicating that heirloom is a fuzzy, dynamic and even contested category. Other findings reveal that multiple factors contribute to growers' decisions regarding crop selection and seed saving. These range from practical, material reasons to abstract, ideological reasons.

**Cummings, Linda Scott (Paleo Research)**
**Starches in the Archaeological Record**
Recovery and identification of starch granules is becoming an important part of archaeobotany. Starch granules can be (and are) preserved in sediments, as well as some residues

and even some charred remains. Starch granules have been recovered successfully as part of pollen and phytolith extraction procedures, and through chemical digestion of charred remains. We have used identification of starch granules to identify the presence of wild potatoes *(Solanum jamesii* or *S. fendleri)* in sediments and as a charred tuber. Starch granules representing the processing of other tubers and starchy seeds also are present and can be interpreted from archaeobotanic records. This presentation will review methods for collection, and examples of types of starch granules recovered from a wide variety of archaeological samples from North America, Central America, and the Pacific Islands.

**Currey, Robin (University of Michigan)**
**A Call to Quantify: A Landscape Ecology Approach and Hunter-Gatherer Land Use Patterns**
The inclusion of landscape analyses in anthropological studies can elicit more thorough understandings of the influences that contribute to hunter-gatherer settlement and land-use patterns. A landscape ecology approach provides tools for visually representing land and permits quantitative analysis of spatial structures and patterns of landscapes. It also provides a template grounded in physical structure and ecological functioning for reconstructing past landscapes. Here I will (i) briefly summarize the concept of landscape elements; (ii) highlight landscape ecology principles that are most relevant to archaeologists; and (iii) suggest how a landscape ecology approach can compliment current approaches to hunter-gatherer land-use studies.

**Dean, Rebecca (University of Arizona)**
**The Use of Age and Sex Ratios to Identify Ungulate Domestication in the Archaeological Record**
Age and sex ratios are often used in southwest Asia to identify the earliest domestic sheep and goats in lieu of distinctive morphological features. This paper details the expectations for differences in age and sex ratios between hunted and herded populations, and suggests that the structure of faunal assemblages should not be very different across the Epi-Paleolithic/Neolithic boundary, a suggestion collaborated by a survey of archaeofaunas from across southwest Asia. The behavioral traits of sheep and goats, and the limitations of human hunters may explain why age and sex ratios are a poor indicator of domestic status for these animals.

**de la Portilla, Elizabeth (University of Michigan)**
**La Planta es la Vida: The Cultural Life of Plants in Curanderismo**
Plants used in the practice of curanderismo are well documented. However, their study often centers on which plants are used to cure physical and psychological ailments. This paper examines why particular plants are chosen to cure certain illnesses and what their significance is in terms of cultural practice. The plants discussed in this paper have dual purposes as treatment for physical and/or emotional/psychological ailments. This work based in San Antonio, Texas, focuses on networks, real and conceptual, which link healers and their practice with plants and their symbolic and material uses and what this means for the curandero/as and their clients.

**Ehrlich, Celia**
**The Efficacy of Ti, a Healing Plant**
Healers have used *Cordyline fruticosa* (L.) A. Chev., of which a green variety is well-known "Hawaiian ti," in parts of Island Southeast Asia, Melanesia and Oceania to treat diverse, unrelated afflictions. The plant has not been thoroughly tested for pharmaceutical ingedients, but few of the treatments with it entail consumption or physical contact. The efficacy of the species clearly depends upon traditional supernatural beliefs. These make it a legitimate tool for healers, for emotional support if not for medicine.

**Emshwiller, Eve (The Field Museum of Natural History)**
**History and Dispersal of the Andean Tuber Crop *Oxalis tuberosa***
Molecular systematic studies of the origins of octoploid cultigen "oca," *Oxalis tuberosa* Molina, have identified two wild tuber-bearing *Oxalis* taxa found in Bolivia and Southern Peru as possible progenitors of the crop. As a complement to these studies, information on the crop's history and dispersal is reviewed from published and unpublished archaeological, ethnohistorical and other sources. This information is compared with ethnobotanical field data to infer changes in the patterns of oca's use and importance. Although oca is cited as having potential for cultivation beyond its Andean homeland, having already been introduced to Mexico and New Zealand, its cultivation appears to be declining in some areas of the Andes and some traditional methods of preparation may be disappearing.

**Fediuk, Karen (McGill University) and Harriet Kuhnlein (McGill University)**
**Vitamin C Sources of Contemporary Inuit**
Traditional Inuit food was analyzed for levels of vitamin C, and dietary data for Qikiqtarjuaq women aged 20-40 were analyzed with respect to daily intake of vitamin C. Although there are rich sources of vitamin C in traditional food, these are generally consumed infrequently by this group. The traditional food frequently eaten has low levels of vitamin C; however historically consumption of these foods would have provided substantial levels of vitamin C given the quantity assumed eaten. Today these foods provide less than 15 mg of daily vitamin C, whereas fortified market food contributes more than half of total average daily intake. Traditional Inuit food is an important natural source of Vitamin C.

**Fernandes, Luci (University of Connecticut)**
**Wild Plants Bearing Fleshy Fruits Used By Indigenous Cultures in Southern New England During Contact and Colonial Times**
Some 53 species of plants, both native and introduced, with fleshy fruits, were important to Native peoples in southern New England, primarily for food, medicines, and dyes. Through colonial history the availability of these fleshy fruits was influenced by European settlement and changes in land use. An increase in cultivation to more than 80% of the arable land in southern New England led to a dramatic decrease in the land available for the growth of wild plants (Foster 1992). Native peoples, over time, adopted a more sedentary lifestyle, which involved intensive agriculture and included the incorporation of European orchard fruits into their subsistence practices, replacing many of the wild fruits that were once exploited.

**Fowler, Catherine S. (University of Nevada Reno)**
**In the Field With People, Plants and Animals: A Look at Methods**
Through the years, field workers interested in utilitarian, cognitive and ecological approaches to ethnobiology have gathered their data in partnership with local community members in various ways, most often involving some form of field collecting and interviewing. Yet methods are rarely explicitly stated or covered in much detail, leaving readers and evaluators of the data to wonder just how they were elicited. With the attempts in the 1960s and 1970s at "ethnoscience," a good deal of this changed, but was it really enough to provide a firm basis for understanding results? These, as well as past and more recent attempts at developing ethnobiological field methods are reviewed and explored.

**Glew, Christopher D. (University of Michigan) and Jeffrey D. Sommer (University of Michigan)**
**Late Intermediate Subsistence Strategies at Cerro Azul, Peru**
This paper presents the preliminary results of the analysis of faunal resources from the site of Cerro Azul, a specialized fishing community on the central Peruvian Coast. Analysis of the fish remains indicate that over 20 species of fish were procured. The distribution of these species at the site indicates differential utilization between the elite and commoner inhabitants. Llamas and guinea pigs dominate the mammal assemblage, which also includes sea mammals and dogs. The distribution of llama elements suggests that llamas were not being raised at the site. Rather, llama meat was acquired primarily in the form of dried meat.

**Gonella, Michael (Proyecto Ak' Tenamit)**
**Agriculture and Homegardens of the Q'eqchi' Maya**
The focus of this project was to help the Q'eqchi' Maya of Eastern Guatemala improve their lives after the end of a 36-year civil war, through regaining culturally relevant, sustainable farming skills. Through interviews with local farmers and literature research, ancient and traditional methods of Q'eqchi' and Mayan farming were unearthed. These methods were tested at a demonstration garden and shared with other Q'eqchi' farmers through workshops and off-site homegarden installations.

**Gorham, L. Dillon (Texas A&M University)**
**Preliminary Analyses of Archaeobotanical Materials From the Ninth-century A.D. Shipwrecks of Bozburun, Turkey and Tantura Lagoon, Israel**
Two shipwrecks in the eastern Mediterranean basin excavated by the Institute of Nautical Archaeology contain botanical materials that identify: 1) plants used to make ropes and baskets, 2) plant-derived cargoes, and 3) the possible geographical origins and/or travel routes for the ships and cargoes. Plant materials recovered include fruits, seeds, pollen, silica-bodies (phytoliths), and epidermal tissues. Preliminary analyses indicate that these botanical assemblages are significant and valuable for the interpretation of human activity in the contexts of ninth-century A.D. subsistence, trade, and economy in the eastern Mediterranean basin.

**Graham, James (University of Illinois Chicago)**
**Miban Junikuin: Ethnobotany and the Conservation of Traditional Knowledge**
Among the Peruvian Cashinahua, the local effects of a global trend toward cultural homogenization have tended to increase valuation of outside goods and technology while decreasing the valuation of the traditional knowledge base. In order to address this increasing loss of cultural traditions, we need to look for novel ways to promote the valuation of traditional knowledge and to foster cultural conservation at the grassroots level. Miban Junikuin (Plants of the Cashinahua) is a compilation of traditional plant and plant-use information which aims to promote cultural conservation and forge a living link between past and future generations of Cashinahua.

**Hamlin, Catherine (Ohio University) and Jan Salick (Ohio University)**
**Change in Amuesha Agriculture in the Upper Peruvian Amazon**
The Amuesha of the upper Peruvian Amazon traditionally practice multifaceted swidden agriculture. In the Palcazu Valley, though, Amuesha cropping practices are changing after the arrival of a new road and other events. We inventoried useful species in yard gardens, measured architecture and species composition of Amuesha fields, and interviewed Amuesha agriculturalists about cropping practices and household histories. Field statistics were described with univariate statistics, and were compared to data from 1983-86 with multivariate paired t tests and polar ordination. Results indicate deceased crop diversity, less cultivation of rice, more agroforestry, and more commercial cropping.

**Hines, Erin (Ohio University) and Jan Salick (Ohio University)**
**Ethnoecology of Fire: An Experimental Approach in the Ohio Valley**
Historical evidence suggests that Native Americans intentionally set fire to encourage growth of useful, fire-adapted species. Data from a prescribed fire study (using a split-plot block design) in Southeastern Ohio were used to track changes in useful plant abundance under specific burning regimes (frequent, intermediate, and no burn). Results suggest that while useful species richness is not affected by fire, species composition is significantly altered (e.g. *Lireodendron tulipifera, Erechtites hieracifolia, Rubus* spp. and *Vitis* spp. are more common after fire). Alternative to the theory of widespread conflagration, we support the importance of fire in maintaining habitat patches of both fire-adapted and multi-seral vegetation.

**Hudson, Jean (University of Wisconsin – Milwaukee)**
**Ethnohistoric and Ethnographic Models for Marine Mammal and Bird Utilization in the Americas**
The contribution of marine fish to coastal adaptations has long been recognized. There is a growing body of archaeological evidence that marine mammals and marine birds also played important roles in coastal subsistence in many pre-contact cultures of the Americas. This presentation provides a review of some of the relevant ethnohistoric and ethnographic literature. Key themes include documentation of capture techniques, butchering patterns, and preparation for consumption and trade, as well as representation and interpretation of emic perspectives on the value of these resources, both in terms of nutrition and in terms of attached symbolism.

**Hunn, Eugene (University of Washington)**
**Ethnozoology as Second Fiddle**
Ethnozoology was not recognized as an academic discipline until 20 years after ethnobotany. The volume of scholarly effort devoted to ethnozoological topics remains but a small fraction of that devoted to ethnobotany, with most ethnozoological data subsumed with an undifferentiated ethnobiology. This despite the fact that animals would seem far more salient psychologically than plants. I explore the possible reasons for this ethnobiological asymmetry and consider whether we should seek to correct this imbalance. I consider as well to what extent plants and animals share a common cognitve psychological basis. Are we dealing with one domain or two? Finally, I raise the question: where do fungi fit?

**Hunn, Eugene (University of Washington)**
**Where Do Fungi Fit?**
Current theories of ethnobiological classification ignore fungi. Data from San Juan Mixtepec, a Zapotec-speaking community in Oaxaca, Mexico raise interesting questions about the validity of the largely taken-for-granted division of living kind taxonomies into two domains, plants and animals. I will suggest that "native" theories of living things may agree with current Western scientific opinion in treating fungi as separate from both plants and animals. I show that a relationship between animals and fungi is implicit in Zapotec nomenclature, but the nature of fungi as animal or plant is deeply ambiguous. As fungi are rarely accorded the same degree of refined attention as is accorded plants and animals in most folk biological taxonomies, I propose that fungi are best treated as a folkbiological life-form unaffiliated with either the plant or animal kingdoms.

**Johnson, Leslie Main (University of Alberta)**
**"Frog Jumps On It" Cultural Association of Plants With Animals**
I examine the significance of association of plants with animals in several indigenous languages of northwestern Canada. Cultural associations of plants with animals are often revealed by naming. Animal names may encode inedibility, danger or power. Such names may also indicate ecological associations, such as food plants of mammals or birds. Animals may also be invoked as metaphorical descriptions of plant morphology or habitat. Medicinal plants may be named by animal association; sometimes the name is associated with powerful animals or birds, as with the consistent association of common juniper with "crow" among several distinct Athapaskan languages.

**Landon, David (Michigan Technological University) and Joanne Bowen**
**Zooarchaeological Evidence for Seasonal Husbandry Cycles in the Colonial Chesapeake**
We use cattle tooth microstructure analysis to determine seasonal slaughter patterns for cattle, and compare patterns across sites to help characterize and understand regional dietary variability. Current evidence suggests that the seasonal use of wild animal foods by white planters was extremely important in the 17th century, but less important in the 18th century. As part of this trend, domestic animals, especially cattle, become more important in the regional diet through time. Like other domestic mammals, the slaughter cycle of cattle and the availability of beef followed a seasonal agricultural cycle.

**Lantz, Trevor C. (University of Victoria)**
**Sustainable Management of Devil's Club *(Oplopanax horridus)* in British Columbia**
Wild-harvesting of devil's club *(Oplopanax horridus)* as a medicinal non-timber forest product is increasing dramatically in British Columbia. Since this may eradicate populations and erode genetic variation, research examining the impact of the present and potential harvest must be conducted immediately. A paucity of information about the ecology of this plant, coupled with its significance to B. C. First Peoples, makes it vital that an examination of the demography, distribution and abundance of devil's club be used, in conjunction with ethnographic data on traditional harvesting methods, to establish a long term impact assessment and develop culturally and ecologically sound harvesting guidelines.

**Lepofsky, Dana (Simon Fraser University), Emily Heyerdahl, David Schaepe, Ken Lertzman,**
**Robert Mierendorf**
**Archaeology, Fire and the Historical Synamics of Chittenden Meadow, Southwestern British Columbia (paper not presented)**
We explored the ecological and cultural history of fires in maintaining a small (5ha), ecologically unique meadow containing a disjunct population of ponderosa pine. The Sts:lo people traditionally used fire as a management tool and have a long history of using the region. Recently, trees have invaded the meadow and we hypothesized that it was maintained in the past by relatively frequent, small, anthropogenic fires. We used archaeological survey and excavation, analyses of charcoal, and tree age, species and location to explore this hypothesis. There is evidence of past fires in the meadow and for several millennia of human use, including short-term encampments and sites for drying berries. The recent invasion of trees was likely facilitated by the cessation of burning, probably early in the 20th century, combined with low spring snowpacks since the late 1970s. Reintroduction of fire to the meadow is needed if the meadow is to be maintained.

**Litzinger, William J. (Prescott College)**
**The Biology of Native Weeds in the North American Southwest**
By virtue of their biological characteristics and their record of prehistoric, historic and present-day occurrence, a native weed flora is identified which has evolved over thousands of years in relation to the development of aboriginal agriculture in Southwestern North America. These plants have been and continue to be extensively encouraged or manipulated by aboriginal Southwestern agriculturalists. However, field observations show that the native weed species are uncommon in today's environment. The native weeds also differ from the non-native weed flora in important biological characteristics, which may reflect their roles within the aboriginal agroecosystem. Based on observations and measurements of present-day populations, this continuing study has found that, over time, humans have influenced these plants' morphological and ecological characteristics. A second phase of the study is planned which will involve growing trials to assess the desirability of native weeds for use in modern Southwestern gardening and farming.

**Lomaomvaya, Micah (The Hopi Tribe, Office of Resource Management)**
**Hopi Ethnobotany: Moving Beyond Economic Botany to Interpreting Archaeobotanical Remains and Involvement in Natural Resource Management (paper not presented)**
Historic ethnobotanical research conducted on many Native American Tribes had mostly explored the economic value of various plants and their roles in subsistence and possible medical benefits. Most often this research provides limited insight into the "ethno" or cultural lenses through which these various tribes interpret their environment and consequently their basis of interaction with it. In order to further ethnobotanical research we must support knowledgeable indigenous scholars who will provide a venue for establishing accurate interpretation of these cultural lenses and the ability to describe their comparable scientific frameworks. Private and government research at Hopi is now adding to the store of information which builds on past literature and now explores Hopi plant taxonomy and in-depth cultural analysis. This approach to ethnobotanical research is currently underway at The Hopi Tribal Government in cultural and natural resources management projects. This research is being applied to interpretation of archaeobotanical remains to further cultural affiliation studies of archaeological sites and their remains. In-depth analysis documents information on optimal environments, cultural landscapes, and current religious uses in providing a Hopi voice of concern in local and regional natural resources management. The need for this type of research and documentation is of primary concern to Hopi elders who understand the imminent loss of botanical knowledge in an age of modern conveniences and ever-changing technology. In this paper we will examine the current and future application of this research which explores Hopi botany to further Hopi natural resources stewardship.

**Lotz, Kristina R. (University of Missouri Columbia) and**
**Karol Chandler-Ezell (Univ. of Missouri Columbia)**
**Knowledge from the Weeds: A Cross-Cultural Comparison of Herbal Medicine in Missouri Circa the Early 1800s**
Comparison of a cultural subsystem among different groups often reveals much about their overall relationship. In this study, we compared and contrasted a synchronic, overlapping set of 19 medicinal plants of African-, Native-, and European-Americans in central Missouri circa 1800. To determine if and how herbal medicine might be reflected in the intricate social interactions among these groups, we compared plant names, uses, symptoms, and preparations. Ethnohistoric data was gathered by literary review; interviews and oral history supplemented the African-American data. Comparison revealed that while the 3 herbal systems were distinct, interesting patterns in symptomatic application are demonstrated.

**Lyon, Linda (Washington State University)**
**Antanosy Odyssey:**
**Local Perspectives of Natural Resource Management Practices in Southern Madagascar**
Madagascar is winning the race to become the most environmentally degraded country in the world. The local Antanosy people are seeking ways to reduce rainforest destruction. This project sought to gain an understanding of the Anantosy villagers' forest practices to aid in the creation of a village-based conservation project. Villagers were aware that

their natural resource management techniques, mostly agricultural, were degrading the environment. When questioned about alternative techniques of agriculture, such as agroforestry, villagers appeared interested. Villagers did not see forest products as becoming scarce and were not interested in cultivating forest plants due to land tenure constraints.

**Marr, Ken (University of Michigan)**
**Domestication and Ethnobotany of Four Asian Cucurbits**
Genetic markers and morphology of *Momordica charantia, Benincasa hispida,* and *Luffa aegyptica,* used for food/medicine, throughout Asia, were assessed to understand their domestication. Samples were collected from putative places of domestication: Nepal (to represent India), Yunnan, China and N. Laos. Genetic markers of *Momordica* and *Luffa* indicate a single place of domestication, but do not clarify which place. Domestication resulted in loss *(Luffa)* or reduction *(Momordica)* in bitterness. Morphology of *Benincasa* is greatest from Yunnan and N. Laos. Nutritional content of old varieties of *Benincasa* is higher than new varieties. *Benincasa* is prominent in some post-flood mythologies from China/SE Asia.

**McCune, Letitia M. (CINE, McGill University) and Timothy Johns (CINE, McGill University)**
**Potential Antidiabetic Plants of Canada: Selection and Use in Relation to Antioxidant Activity**
Thirty-five medicinal plant species used for symptoms of diabetes or its complications were identified based upon the use of a species for 3 or more symptoms by the Indigenous Peoples of the boreal forest of Canada. As oxidative stress is implicated in many of the symptoms of diabetes and its etiology, we analyzed these plant remedies for antioxidant activity. Activity was higher in those species used for more than 5 symptoms, for certain symptoms and combinations of symptoms. These results are support for the use of traditional medicines and provide insights into their selection in relation to antioxidant activity.

**McKenney, Christine (University of Georgia)**
**How Does Your Garden Grow? Cultural vs. Biological Diversity (paper not presented)**
A direct relationship has been established in many cases between cultural diversity and biological diversity. This has fostered the belief that the preservation of cultural diversity can encourage the preservation of biodiversity. In many cases this is true. In this paper, however, I examine an instance where, due to the commercialization of agriculture in the US, one group of individuals is preserving cultural traditions and another is preserving biodiversity. One group continues a family tradition of growing vegetables in backyard gardens for consumption but has adopted modern cultivation techniques and seed varieties. The other group of individuals has researched and adopted traditional cultivation methods and seed varieties even though gardening/growing is not necessarily a part of their traditional culture.

**Minnis, Paul (University of Oklahoma)**
**One Possible Future for Paleoethnobotany**
Prehistoric ethnobotanists in North America have expanded their vision over the past one hundred years. About forty years ago, paleoethnobotanists increasingly embraced human ecology with studies of how interactions between prehistoric humans and their botanical environment shaped diet and settlement organization over the landscape. More recently, many prehistoric ethnobotanists have once again enlarged their scope to include issues of agency, ideology, dialectics of change, gender, and power within and between populations. Post-modern approaches consciously recognize that scholarly research has political and ethical implications. If paleoethnobotanists did not recognize this theoretically, they did in practice have to deal with NAGPRA. Thus, we now understand that our research has implications for indigenous peoples whose ancestors created the prehistoric ethnobotanical record that we study. Lost in this discussion, in my opinion, is the fact that prehistoric ethnobotany has value for many groups, not just researchers and local indigenous peoples. Here I argue that prehistoric ethnobotany has much benefit to constituencies beyond those commonly considered.

**Nazarea, Virginia D. (University of Georgia)**
**Just Because I Like 'Em: Seed Savers as Discordant Notes**
Personal stories and memories of seedsavers around the American South give us a glimpse of why they save, exchange, and pass on favorites: plumgranny, watermelons, cucumbers, greens, and others. Embedded as they are in modern agricultural and market systems, what keeps them going? Drawing on metaphors of Bloch's colporteurs and McClintock's jumping genes, this paper proposes that it may be the benign and innocuous nature of seed savers that account for their effectiveness and significance as a countervailing force to the monoculture of fields and spirits that is currently undermining cultural and biological diversity in the modern world.

**Pai, Aswini (Ohio University), Pravat Sutar (Ohio University) and Jan Salick (Ohio University)**
**Survey of *Terminalia chebula* in Central India**
Myrobalans (fruit of *Terminalia chebula*) are used in preparing vegetable tanned leather. Indigenous communities collect it extensively from deciduous forests in India. We conducted a survey of *T. chebula* in Madhya Pradesh, central India, in both agricultural and forest lands from where it is harvested. Rapid rural appraisal was conducted with local communities on collection patterns. Vegetation plots were used to sample *T. chebula* trees in agricultural fields and forest lands. Results indicate that *T. chebula* occurs more frequently along agricultural field bunds than in forests. Population structure both in forest and agricultural land shows lack of regeneration and recruitment of seedlings.

**Peacock, Sandra (Simon Fraser University) and Dana Lepofsky (Simon Fraser University)**
**Black Holes and Paleoethnobotany on the Canadian Plateau**
Earth ovens are known as the "black holes" of Plateau archaeology due to the quantities of carbonized botanical materials they contain. Yet surprisingly few have been the subject of paleoethnobotanical analysis. We present the results of a study of archaeobotanical

assemblages from six earth ovens, dated between 1830 ± 60 BP and 160 ± 60 BP, from British Columbia's southern interior. Analysis reveals assemblages dominated by charcoal of woody taxa used as fuel and little else. These findings are consistent with ethnographic expectations, supporting the contention that earth ovens were not multi-purpose features, but functioned specifically as root processing facilities.

**Pearsall, Deborah (University of Missouri Columbia)**
**The Nature and Status of Paleoethnobotany: A View from the Tropics**
No abstract submitted.

**Redding, Richard W. (University of Michigan)**
**The Pig and the Chicken: A Parable on Modeling Human Subsistence Behavior**
The role of the pig in the subsistence system of ancient Egypt and Mesopotamia was as a household protein resource. The pig is abundant at archaeological sites in both areas yet is rarely mentioned in any texts, while the use of cattle, sheep, and goats is extensively documented. Sometime in the middle of the second millennium BC the chicken was introduced into both areas. Like the pig, it is rarely mentioned in the texts. It is argued that the chicken replaces the pig in the subsistence system of both areas. Implications of this replacement are examined.

**Ross, Norbert (Northwestern University) and Douglas Medin (Northwestern University)**
**Menominee Aquatic Folkecology**
This paper reports ongoing cross-cultural research about aquatic folkecological models of Menominee and Majority culture fish-experts in Northern Wisconsin. Cognitive experiments based on informal interviews were used to elicit individual mental models about (a) taxonomic order, (b) similarity judgments, (c) fish-fish interactions as well as (d) fish-habit sharing. Although we have found significant differences in all the tasks analyzed, we only report here on (c), the fish-fish interactions. With the help of statistical tools the existence of cultural models as well as a model embracing members of both groups were tested. Data show (1) a common model for both groups as well as (2) individual submodels for each of the two cultural groups. This suggests that knowledge of fish experts is not only a function of their empirical expertise (observation), but is also informed by the culture of an informant.

**Salick, Jan (Ohio University), Alim Biun, Gary Martin, Ludi Apin, and Reed Beaman**
**Useful Plants of the Dusun and Biodiversity on Mt. Kinabalu, Borneo**
Traditionally, the Dusun of Borneo consider Mt. Kinabalu the home of spirits, and they are loathe to climb the summit without propitiation. In apparent accordance with these beliefs, Dusun collectors within Projek Etnobotani Kinabalu have recorded few useful plants at high elevations on Mt. Kinabalu. Why is this? Here, data on useful plants were collected for dominant and indicator plant species (168 spp.) among 16 ecological vegetation types over an elevational gradient. Results indicate that useful species are a function of overall biodiversity and that poor edaphic conditions are associated with reduced proportions of useful species.

**Salmón, Enrique (Ft. Lewis College) and Julia Bennett**
**The Southern Ute Ethnobotany Project (paper not presented)**
The Southern Ute Ethnobotany Project was the brainchild of Everett Burch, Ute elder and Tribal Historic Preservation Officer. His concept was to preserve Ute plant knowledge and to make it available to Ute youngsters. With funding from the Colorado Commission for Higher Education, the Department of Anthropology at Fort Lewis College and the Baca Institute of Ethnobotany have initiated a three-year study of Southern Ute Ethnobotany. Ute junior and senior high school students have been recruited to interview Ute elders. The project will culminate in a CD-ROM curriculum package that will be used by school teachers on the Ute Reservation.

**Seares, Jessica (University of Georgia)**
**You Will Be Assimilated: Fighting for Diversity in the Context of Globalization**
This paper explores the role of the grassroots movement to preserve cultural and agricultural diversity. Factors that emerge from and contribute to grassroots globalization, such as marginalization, privilege, and the breakdown of categories, will be explored. A personal account of the events that unfolded during the "Battle of Seattle" World Trade Organization (WTO) talks will be used to examine these issues. The tactics of organizations and activists who protested in Seattle will be evaluated, and parallels will be drawn to the North/South dynamic that exists within the WTO. Finally, problems inherent in analyzing this movement from within will be addressed.

**Sharma, G. K. (University of Tennessee Martin)**
**Folklore and Ecotypic Variation in *Cannabis* in the Himalayas**
*Cannabis sativa*, a native of the Himalayas, displays great scotypic plasticy in the wild. The plant ranges in height from ½ meter to 5 meters in a wide variety of habitats. Leaf size and growth form exhibit great variation. The plant has a rather long history in the region and the folklore has its origin in the ancient scriptures of the area. Both the male and female plants are used for numerous purposes. In spite of its recent induction into modern medicine, the folklore is the emporium of knowledge pertaining to its rich and varied economic and undocumented medicinal properties.

**Speth, John D. (University of Michigan) and Eitan Tchernov (Hebrew University)**
**Neanderthal Hunting: The Kebara Cave Evidence**
This paper examines the fauna from the Mousterian site of Kebara Cave (Israel), in order to better understand Neanderthal use of animal resources, and the changing function of Kebara as a settlement. This analysis shows that: (1) Neanderthals hunted the ungulates found at Kebara, including prime adults of large, dangerous species; (2) Kebara's function as a settlement changed from an ephemeral hunting camp early in the sequence, to an intensively occupied cool-season basecamp, then back to an ephemeral hunting camp toward the end of the Mousterian; and (3) while the cave was used as a basecamp, a large midden accumulated along the edge of the habitation area. Our analyses reveal nothing to suggest that Neanderthal use of animal resources differed in any fundamental way from the foraging behavior of their anatomically more modern-looking quasi-contemporaries of the Middle Paleolithic from their Upper Paleolithic successors in the region.

**Standifer, Marie Scott (Louisiana State University Baton Rouge), Jenna Tedrick Kutruff (Louisiana State University Baton Rouge), and Shirley Cotter Tucker (University of California – Santa Barbara)**
***Eryngium yuccifolium* Michx. as a Source Plant in Textiles from Arnold Research Cave, Missouri**
Fibers, fabrics, and footwear, recovered from Arnold Research Cave (23CY64) have recently been analyzed. The studies determined that unprocessed leaves of *Eryngium yuccifolium* Michx. (rattelsnake master) were used in their construction. Using light and scanning electron microscopy, the source plant was identified from the bristle-like, marginal hairs and the arrangement of collenchyma strands within the leaf. Radiocarbon dates for the oldest footwear date from 6265 BC to AD 1080, making them among the oldest sandals east of the Rocky Mountains and indicating that this plant had been used in textile construction for at least 5000 years.

**Standifer, Marie Scott (Louisiana State University Baton Rouge) and Mark H. Mayfield (Louisiana State University – Baton Rouge)**
**Floral Remains from a Mid-nineteenth Century Coffin**
Among the artifacts recovered from an iron, Fisk coffin (1953) in Thibodaux, Louisiana, were 3 floral offerings: two woody stems with leaves and floral/fruiting structures and a single blossom. These were identified as swamp bay (*Persea palustris* (Raf.) Sarg.), night blooming jessamine (*Cestrum nocturnum* L.), and gardenia (*Gardenia angusta* (L.) Merr.). For curation, the specimens were dried, and stored under controlled conditions. Whether symbolism can be attached or not, these are the only known floral offerings from the 1850s and indicate formerly unknown burial customs in Louisiana.

**Stepp, John R. (University of Georgia)**
**Weeds in Traditional and Western Medicine**
Primary forest is often considered to be the most significant habitat for traditional peoples to gather medicinal plants and pharmaceutical companies to discover new drugs. This paper argues that the role of weeds, commonly found in disturbed areas, in both traditional and modern medicinal floras has been overlooked. Fieldwork with the Tzeltal Maya in Highland Chiapas, Mexico demonstrates the significance of weeds in traditional medicinal floras. Data are then presented showing the global significance of weeds for plant-derived pharmaceuticals. The frequency with which weeds appear in both traditional and modern pharmacopeias is significantly larger ($p<.001$) than what would be predicted by the frequency of weed species in general. Explanations based on human ecology and biochemical ecology are presented in an attempt to build generalizations in medical ethnobiology.

**Stijfhoorn, Eirik (Ohio University) and Jan Salick (Ohio University)**
**Ethnobotanical Knowledge, Use and Management of Species and Secondary Forests, Pucallpa, Peruvian Amazon (poster not presented)**
Inter- and Intra-demographic ethnobotanical knowledge (vernacular/scientific naming and use/management information) among mestizos, Shipibo and inventory professionals is compared for 196 informants. Semi-structured interviews address socio-economic

value, availability, management, and preference ranking of useful species known by the informants. Structured interviews on species knowledge and use were then conducted on 70 pre-selected, naturally growing species, and on land use and management preferences of 6 ecotones in secondary and residual forests. Uni- and multivariate statistical analyses were used. Preliminary results indicate that there are differences in naming and use among age, gender, and ethnic groups.

**Storm, Linda (University of Washington and EPA)**
**Anthropogenic Form and Functions of Mima Mound Prairies? Links to Indigenous Landscape Management and Root Food Production**
This paper synthesizes compelling evidence for potential long-term anthropogenic management of Mima mound prairies. Existing competing hypotheses of mound formation will be presented and compared with an analysis of ecological, ethnohistorical, ethnobotanical, archaeological and other evidence for traditional ecological management of these landscapes. This synthesis indicates potential active and intensive human management of Mima mound prairies of South Puget Sound, Washington. No previous study has seriously evaluated the people-plant interactions that may have facilitated Mima mound formation, resulting in beneficial functions for the production of important root foods. The evidence suggests this may, indeed, have been the case.

**Strand, Jennifer G.**
**The Identification of Ritual Fauna Using Life-history Models and the Homol'ovi Fauna**
The identification of faunal remains used in rituals or in ritual paraphernalia is a major component of reconstructing past ritual behaviors and thus social dynamics. In the archaeological literature ritual fauna has been identified based on the presence of specific taxa. However, ethnographically almost any animal or portion of animal could be used in a ritual context, making the identification of the full complement of ritual fauna at a site difficult. In this paper life-history models for ritual fauna are presented and then tested using the fauna from the four Homol'ovi sites.

**Talbot, Jennifer (University of Michigan)**
**The Conservation of Medicinal Plants:**
**A Common Goal for Local and Global People in Benin, West Africa**
Local and global people often face challenges when working together on conservation and development projects because they lack common underlying objectives. An ethnobotanical study of medicinal plants with traditional healers from the Itcha and Ife groups in the Agoua National Forest in Benin, West Africa shows that the conservation of medicinal plants can serve as a common objective and thus helps both groups to reach their goals. Local and global people value medicinal plants for health and economic reasons and they are therefore both interested in their conservation.

**Thomas, Winifred (The American College Madrai, INDIA),**
**Ghate Utkarsh (Indian Institute of Science—Bangalore, INDIA),**
**Abdul Kareem (Foundation for Revitalization of Local Health Tradition—Bangalore, INDIA)**
**Community Biodiversity Register: A Document Designed to Assist Natural Resource Management**
Panchayat Raj (village cluster level administration) in India have become increasingly powerful in recent years. Accordingly, decisions regarding natural resources management are potentially more than ever subject to influence by local leaders acting on behalf of their rural constituencies. On the other hand, both the local resource and the knowledge about traditional practices related to agriculture and the use of indigenous biota is vanishing from the local communities. This coincidence of need and opportunity has prompted coordinated efforts by certain academics and NGOs to work with the local residents in biodiversity rich areas to formulate documents call "Community Biodiversity Registers" (CBRs). This document is designed to assist local leaders to deal with conflicts of interests involving public, state, private and international entities. A fully developed CBR contains technical and less formal information from local knowledgeable persons about key personalities and local natural resources including maps, the identification and rights of user groups, and other information germane to the history and current social, legal and economic status of the refereed region. It also includes local community recommendations and protocols for land use practices suitable for preserving and restoring local biodiversity. We hope the CBR will soon be adopted as a recognized legal document. The authors of this paper spent five years in the Paliyan a hill tribe living in Western Ghats at Sathuragiri, Rajapalyam, Tamilnadu to develop a CBR. The problems encountered during this effort will be discussed.

**Ticktin, Tamara (McGill University) and Timothy Johns (CINE, McGill University)**
**Management of Ixtle by the Chinanteco: Implications for TEK and TRM in Management Plants**
Through a case study of traditional management systems of ixtle *(Aechmea magdalenae)* among the Chinanteco of Mexico, we examine how traditional ecological knowledge (TEK) and traditional resource management (TRM) may be best incorporated into resource management plans. We quantitatively evaluate TRM and TEK for ixtle among two differeing Chinanteco groups. By comparing the Chinateco systems to each other and to a science-based management plan we illustrate: (1) the importance of quantitatively evaluating TRM; (2) the implications of not taking TRM into account in management plans; and (3) some specific ways in which science and TEK may be best combined.

**Turner, Christian (University of Georgia)**
**An Emerging Trend of Using Native Plants in Constructed Landscapes: Complications for Traditional Ethnobiology**
Native plants, species indigenous to a region, and their uses by local cultures are mainstays of ethnobiological inquiries, with the focus traditionally on food and medicinal resources. Constructed landscapes have garnered less attention, but examinations of the cultural significance of some landscapes, most notably English and Japanese, have been

attempted. An emerging trend of using native plants in constructed landscapes in the United States presents complications for traditional ethnobiology. Conventional categorization of participating individuals and their motivations are problematic and fuzzy; involvement ranges from fanatic to casual, motivation from ideological to practical, yet all are considered a part of the same marginal movement. This is an attempt to explicate the significant difficulties in applying the structures and practices traditionally used by anthropologists in faraway places to a movement deeply embedded in scientific, commercial, and cultural contexts here in the United States.

**Turner, Nancy J. (University of Victoria)**
**Pieces Into Patterns: Botany of British Columbia Cultures and Influences of Society of Ethnobiology Members**
Studies of temporate region ethnobotany have not been as numerous as those of tropical and subtropical regions. In British Columbia, much of my own research in ethnobotany has been strongly influenced by discussions with and papers and publications of members of the Society of Ethnobiology since its inception. Research themes, ranging from ethnoscience and folk biological classification to nutrition and food systems, traditional healing, archaeobotany, ethnoecology and traditional management systems, and biological conservation, have all been enriched and developed in British Columbia by interactions with major researchers in these areas, all past or continuing members of the Society.

**Walshaw, Sarah (Washington University – St. Louis)**
**Examination of Phytoliths from Human Dental Calculus: A Case Study From Tell Leilan, Syria**
Phytoliths from the dental calculus of 17 human skeletons from Tell Leilan (Syria) were examined to determine if a change in botanical dietary resources accompanied site abandonment at 2200 BC. No pattern among short-celled phytoliths could be discerned; however, silica skeletons (multi-celled phytoliths) were larger and more abundant in Period III (3000–2400 BC) individuals than in Period IV (5000–4100 BC) and Period II (2400–2200 BC) individuals. Multicelled phytoliths occur in cereals as a result of wetter growing conditions, and the paucity of multicelled phytoliths from Period II samples indicates that arid conditions prevailed prior to site abandonment.

**Weber, Steve (Washington State University)**
**Ancient Seeds: Their Role in Understanding the Past**
Plant remains from archaeological sites provide crucial clues to the understanding of past societies. In South Asia, paleoethnobotany is an increasingly important source of information in our understanding of prehistoric agriculture, ecology and culture change. This paper will use the historical development of archaeobotany in South Asia to explore the significance and future promise of this avenue of research.

**Weinstein, Stephanie (University of Florida)**
**Traditional Management of the Açai Palm in the Amazon Estuary, Brazil:**
**The Role of Markets on Ribeirinho Land Use Decisions**
The açai palm (*Euterpe oleracea* Mart.) is a dominant species in the Amazon estuary and its fruits and palm heart are essential as a source of food and income to the rural inhabit-

ants, Ribeirinhos. Although açai fruit is vital for Ribeirinho subsistence and income, the intensity of palm heart harvest, which is destructive to the tree, differed in the five communities surveyed. Regardless of the magnitude of palm heart extraction, all Ribeirinho forest areas had similar densities of açai palms and were greatly altered from natural forests. This study challenges the notion that markets for non-timber forest products can protect forest biodiversity.

**Wing, Elizabeth S. (Florida Museum of Natural History)**
**Potentials of Zooarchaeology for Better Understanding of the Human Past**
Zooarchaeology has developed rapidly during the last fifty years. Important progress has been made in documenting prehistoric subsistence and understanding of the place of people in the environment. This comes as a result of the combined research efforts of more people working in this sub-field. Careful recovery and research strategies, better understanding of taphonomy, expanded taxonomic scope, and more rigorous application of biological principles have also contributed. Future directions can build on the progress of the past. One approach is more holistic integrating different types of data. Another approach is to return to old collections with carefully designed projects.

**Zeder, Melinda (Smithsonian Institution)**
**New Perspectives on Goat Domestication in the Eastern Fertile Crescent**
Initial goat domestication is documented in the highlands of western Iran at 10,000 calibrated calendar years ago. Metrical analyses of patterns of sexual dimorphism in modern wild goat skeletons (Capra hirus aegargus) allows sex-specific age curves to be computed for archaeofaunal assemblages. A distinct shift to selective harvesting of sub-adult males marks initial human management and the transition from hunting to herding of the species. Direct AMS radiocarbon dates on skeletal elements provide tight temporal context for the transition.