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Art and Soul: Celebrating Indigenous Artisans

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Abstracts

Adams, Karen R. (Crow Canyon Archaeological Center, Arizona)

Rocky Mountain Beeweed (*Cleome serrulata* Pursh) in the American Southwest: Ethnographic Data, Archeological Record, and Elemental Composition

The Rocky Mountain beeweed plant (*Cleome serrulata* Pursh) in the caper family has had a variety of uses by Native Americans in the American Southwest from ancient times to the present. This paper reviews the scientific taxonomy, common nomenclature, ethnographic uses, and archaeological occurrences of beeweed, including its preparation as an organic pottery paint. Elemental analysis of boiled-down beeweed contributes to a growing body of nutritional data on wild plants.

Elda Miriam Aldasoro (University of Washington, Seattle) and **Zarza Heliot** (Universidad Nacional Autonoma de Mexico-UNAM)

Animals With Magical and Medicinal Uses in Markets of the State of Mexico

Few works have focused on the importance of animals as resources with magical and medicinal uses in urban settings. In the present work the use of animals was recorded through the study of the different kinds that are sold in markets of the State of Mexico. Markets of 40 municipalities were visited, and sellers of traditional medicine were queried in open-ended interviews. Fifteen different kinds of animals and/or animal products were found. It is necessary to know more about the current uses of animals and some of the cultural, legal and economic implications of these uses.

E. N. Anderson (University of California, Riverside)

The Failure of Game Management in Quintana Roo

The Maya interior of Quintana Roo was exceedingly rich in game within living memory. Today, game is almost gone, and will soon be entirely gone unless desperate measures are taken. This is almost entirely due to subsistence hunting, in spite of extremely precise and full local ecological knowledge, and in spite of a strong tradition of conservation and selective, theoretically sustainable cropping. By contrast, forest and logging management is locally quite successful. The root problem is institutional failure, caused by the lack on interest on the part of wider government agencies and the inability of the Maya to organize on their own. In a few cases, this problem has been overcome. These cases show that traditional ecological knowledge and wisdom can be adequate for conservation-but only if they receive support from the wider society that, in the end, has the enforcement power.

Julio Martinez Betancourt and Marco Vasquez Davila (Instituto Tecnológico Agropecuario de Oaxaca, Mexico)

**Mas que puro aceite: uso multiple de plantas oleaginosas in Cuba
(More Than Pure Oil: Multiple Uses of Oleaginous Plants in Cuba)**

La población cubana (urbana y rural) emplea 13 especies de plantas como fuente de aceite. De ellas, destacan por ser nativas y endémicas: *Gastrococos crispera*, *Quercus cubana* y *Roystonea regia*. Siete especies son arbóreas, 2 arbustivas, y 4 herbáceas. Las especies más utilizadas: *Helianthus annuus*, *Glycine max*, *Cocos nucifera*, *Arachis hypogaea* y *Sesamum orientale*. Estas plantas oleaginosas también se usan de otras formas: medicinales (12 especies), comestibles por el hombre (11), comestibles por otros animales (8), rituales (8), ornamentales (7), industrial (7), artesanía (5), sombra (4), textiles (3), cercas vivas (2), melíferas (2), maderables (2), lena (2), y tintoreo (1). Las especies con mayor número de usos son: *Roystonea regia* (10 usos), *Cocos nucifera* (8) y *Helianthus annuus* (7).

The people of Cuba (urban and rural) employ 13 species of plants as a source for oil. Of those, several are emphasized as being native and endemic: *Gastrococos crispera*, *Quercus cubana* y *Roystonea regia*. Seven species are trees, two are bushes, and four are herbaceous. The species which have the most uses are: *Helianthus annuus*, *Glycine max*, *Cocos nucifera*, *Arachis hypogaea* y *Sesamum orientale*. These oleaginous plants also are used for other purposes: medicinals (12), food for humans (11), food for animals (8), rituals (8), ornaments (7), industrial (7), handicrafts (5), shade (4), textiles (3), living fences (2), sweeteners (2), wood (2), firewood (2), and dyes (1). The species with the largest number of uses are: *Roystonea regia* (10 uses), *Cocos nucifera* (8), and *Helianthus annuus* (7).

James S. Boster, Margaret Rubega, and Casey Kempton
(University of Connecticut, Storrs)

What Do Students Learn about Birds When They Study Ornithology?

Undergraduates, at the beginning and the end of an introductory course in ornithology, were asked to judge the similarity of bird pictures, to free list bird names, and to identify pictures of birds. For similarity judgments, there were no stable differences in expertise and no greater agreement at the end of the semester. For the free lists, there were stable differences in the numbers of birds listed, but no tendency to give longer lists at the end. For the identification task, there were both stable differences in expertise and greater agreement on the identifications at the end. The implications of these findings are explored.

Leslie A. Brownrigg (Statistical Research Division, Census, US Department of Commerce, Takoma Park, Maryland)

Inca Bird Rank

Incan social organization used featherwork to communicate the rank of individuals and ethnic polities. Attribution of species sources for fine feathers is often based solely on their colors and textures in pre-Columbian artifacts. However, birds' diet, behavior, habitat, flight patterns, and mythological-cosmological attributes endowed bird species and their plumage with symbolic meanings. The hierarchical position of certain birds was so well understood anciently that the birds' Quechua names are translated as the rank terms

they represented. Starting at the ancient top, this paper details why which birds contributed regalia to mark the apical unique Inca, the Cuzco Incan elite, curaca ethnic lords, and members of subordinated ethnicities. The colonial use of feathers by “noble Indians not taxed” and highland Andeans modern ceremonial feathers costuming to display relative social position is also briefly mentioned.

Homero Merlmm Camacho and Marco A. Vasquez Davila

(Instituto Tecnolsgico Agropecuario de Oaxaca, Mexico)

Mariposas nocturnas (Lepidoptera: Noctuidae) y la predicción de la muerte en Oaxaca, Mexico

(Nocturnal Butterflies [Lepidoptera: Noctuidae] and the Prediction of Death in Oaxaca, Mexico)

El numero cuatro es importante en Mésoamerica por su relación con los rumbos cardinales (este, oeste, norte, sur). En las tumbas prehispanicas de Zaachila, en los Valles Centrales de Oaxaca, México, se encontraron numerosas representaciones relacionadas con el inframundo de los antiguos zapotecos. Destacan dos lechuzas (*Tito alba*) relacionadas con la predicción de la muerte y cuatro mariposas nocturnas (una en cada pata de las lechuzas). En Santa Lucia, otro pueblo de los Valles Centrales de Oaxaca, se afirma que si la mariposa negra (*Ascalapha odorata*, Noctuidae) se posa en cada uno de las cuatro paredes de una habitación (imagen del microcosmos), la persona que esti en ella morira. Esta mariposa fue conocida entre los mexicas como Micpapalotl, mariposa de la muerte. En Mésoamirica, desde la ipoca prehispanica hasta la actualidad se ha relacionado a las mariposas nocturnas con la muerte y el numero cuatro.

The number four is important in Mesoamerica because of its relationship with the four cardinal directions (east, west, north and south). In the prehispanic tombs of Zaachila, in the Central Valley of Oaxaca, Mexico numerous representations associated with the underworld of the ancient Zapotecs have been found. The representations emphasize two owls (*Tito alba*) associated with the prediction of death and four butterflies (one on each leg of the owls). In Santa Lucia, another town of the Central Valley of Oaxaca, they affirm that if the black butterfly (*Ascalapha odorata*, Noctuidae) lights on each one of the four walls of a room (image of the microcosmos), the person who is there will die. This butterfly was known among the Mexicans as Micpapalotl, the butterfly of death. In Mesoamerica, from the prehispanic era until the present time nocturnal butterflies have been associated with death and the number four.

Eugene R. Chung (New York Botanical Garden, Bronx, New York)

Biodiversity on a Single Plate: The Ethnobotany of Pepian and the Moles

The indigenous Mesoamerican civilization, including the various living Mayan cultures, distinctively exhibits the widespread tropical ethnobotanical tendency to incorporate a biodiversity of ingredients into ceremonial and feast dishes. The Mesoamerican cuisines uniquely and best express this tendency in the form of the moles, including pepian. These dishes involve an unusually sophisticated employment of the infraspecific biodiversity of *Capsicum annuum* L. var. *annuum*, a Mesoamerican domesticate. The extensive toasting and grinding of ingredients further adds to the distinctiveness of this Mesoameri-

can expression. These findings arise from the presenter's fieldwork conducted while living among the Kaqchikel Mayan language speakers of southern Guatemala.

Darron A. Collins (World Wildlife Fund, Washington D.C.)

A Bamboo for the Masses: *Guadua angustifolia* (Kunth) as Conservation Tool and Housing Resource

Opportunity-poor migrants from Ecuador's rural countryside have colonized the outskirts of Guyaquil in recent years, forming a massive informal settlement ripe for a seismically related disaster. In order to attenuate that social crisis and help restore the degraded river valleys of the country's north coast, The World Wildlife Fund has helped initiate an interdisciplinary conservation project centered around the bamboo species *Guadua angustifolia*. This paper documents the initial stages of the project's progress, exploring the development of forest landscape restoration and nursery facilities as well as the architectural and aesthetic challenges associated with a bamboo-based housing design.

Melissa Darby (Lower Columbia Archaeology & Historical Research, Portland, Oregon)

Wapato for the People: Lessons Learned from the Lower Columbia River

Sagittaria latifolia is a wetland plant that produces starchy tubers known as *wapato*. *Wapato* was noted as an essential food staple and trade commodity for the Chinookan people who lived in the broad freshwater tidal zone of the lower Columbia River. This plant is highly productive in part because it grows monoculturally, in large *wapato* wetlands. This research describes the lower Columbia model of the Native American use of *wapato*, and applies the model to the late Pleistocene and early Holocene in North America.

Richard David (Mohawk Council of Akwesasne, Rooseveltown, New York)

Black Ash, from Standing Tree to Finished Basket

Basket making, using the fiber of Black Ash, as an art form and as a utilitarian textile product has and currently is practiced by many First Nations. Basket making in its simplest form has provided containers used for storage, food preparation, transportation, fish and eel traps, and trade. A slide presentation shows how Black Ash (*Fraxinus nigra* Marsh.) is cut and prepared for basket-making.

Robert Dewar (Anthropology Department, University of Connecticut)

The Geographical Patterning of Rainfall Variability and Subsistence Systems in Southeast Asia and the Western Pacific

There is a west-to-east geographical patterning of subsistence systems in insular Southeast Asia and the western Pacific: from west to east, grain crops drop out of farmers' plantings, root crops and tree crops become progressively more important, and south of the Torres Straits, no crops are grown. Previous explanations for these patterns have assumed either a historical cause (the expansion of root and tree crops before grain crops) or else some form of environmental "filter." Paralleling the agricultural pattern is a west-to-east pattern of progressively greater variability in inter-annual rainfall. I propose that increasing variability limited the utility of annual crops, and increased the reliance on long-lived plants whose food production averages across longer periods. The range of responses of farmers to these difficult conditions is illustrated by discussion of the anomalies represented by the unique qualities of the agricultural regimes of Botel Tobago and eastern Melanesia,

and by the distribution of crops and subsistence systems across the Torres Straits.

Robert R. Dunn and **Monica C. Sanchez** (Department of Ecology and Evolutionary Biology, University of Connecticut, Willimantic)

Keeping the Queen Healthy: the Use of Social Insects as Medicine

Until very recently the medical uses of insects had been largely ignored by ethnobiologists and anthropologists. Interviewees were seldom even asked if they used insects as treatments. When uses of insects were reported, the insect species were typically described as “the black ant” or the “red ant” and not collected. Recent research and a re-analysis of historical literature suggests that insects, particularly social insects, were and continue to be commonly used as medicine. We argue that the use of social insects as medicine is related to two separate phenomena. First, the social behavior of insects reflects or resonates with the social behavior of humans and so social insects are often seen as models of human societies. Second, the social nature of social insects means that like humans they are susceptible to pathogens of various types, such that social insects, particularly ants and termites, have evolved the use of various antibiotics and fungicides that can be directly used by humans.

Marja Eloheimo (University of Washington/The Evergreen State College, Olympia)

Starting a Collaborative (Tribal-Academic) Medicinal Plant Project

“Sayuyay” means “medicine of the plant people” in the Twana language of western Washington’s Skokomish Indian Tribe. Over the last two years, members of the tribe and students at The Evergreen State College have been collaboratively establishing the Sayuyay Plant Project. The project aims to improve tribal access to and enhance use of local medicinal plants. This paper describes aspects of the efforts to begin the project, particularly 1) creating an educational garden and educational resources, 2) selecting and documenting harvest sites, 3) developing business entities, and 4) navigating liability issues related to medicine-making and use.

George F. Estabrook (The University of Michigan, Ann Arbor)

Color and Age in Portuguese 19C Ex-Votos: Analysis of Contingency Tables Using Simulation (ACTUS)

The garment color of 52 women depicted in small paintings made in nineteenth-century Portugal by untrained peasants to commemorate the miracles of saints, and the age of each garment wearer, approximated as baby, girl, teenager, woman, or old woman were hypothesized to be unrelated. Predictions were made using the computer program ACTUS (Analysis of Contingency Tables Using Simulation) downloadable in WINDOWS or DOS versions from <http://www-personal.umich.edu/~gfred/>. Comparisons with observed data suggest: teenagers avoid black, children tend to wear yellow, women tend to wear blue, and old women tend to wear black.

Mary W. Eubanks (Duke University, Durham, North Carolina)

Ancient Artisans and the Evolution of Maize

The history of maize (*Zea mays* L.), one of three cereals that make up the cornerstone of our global food supply, is particularly fascinating because its biological evolution is tightly intertwined with the story of cultural evolution. One of the most challenging aspects of

studying maize is its biodiversity (249 Latin American land races) and genetic variability. Precolumbian workers in clay left us a unique window into maize evolution on ancient pots. A special molding technique was used to adorn pottery vessels with botanical facsimiles of maize ears. These ceramic models are so true to life that they can be used to classify the indigenous races of maize that were present by A.D. 500. An interdisciplinary archaeological-botanical study of these maize depictions is the subject of the book *Corn in Clay: Maize Paleoethnobotany in Pre-Columbian Art*. This paper will describe the molding technique and the ancient artisans who employed it. Then the ceramic models will be discussed in the context of their contribution to our understanding of the biocultural evolutionary history of maize.

Patricia J. Fay (Florida Gulf Coast University, Estero)

Creole Clay: Cultural Transfer and Evolution in the Functional Pottery Traditions of the Commonwealth Caribbean

Within the continuously evolving culture of the Caribbean, 'indigenous' is a fluid concept. During the colonial period the genocide of Amerindian groups was followed by the forced introduction of slave and indentured laborers, who brought with them craft traditions from Africa, India, and Europe. Today, production methods and firing technologies used by potters in Jamaica, St. Lucia, Trinidad and Barbados demonstrate clear links to these traditions. Accompanied by extensive slide documentation, this paper will provide an introduction to four 'indigenous' Caribbean ceramic communities.

Luci Latina Fernandes (University of Connecticut, Storrs)

Pita, Production, and Promise: Some Uses of *Aechmea strobilaceae* Among Kichwa Artisans in Ecuador

Pita (*Aechmea strobilaceae*), Bromeliad, is a native Amazon herbaceous plant found in the lowland tropics of Ecuador and is an important fiber plant used by Kichwa people. This strong, durable fiber has several uses such as in the manufacture of fishing nets, woven bags, and jewelry. Six Quichua women from three communities along the upper Napo River were interviewed to elucidate information regarding the growing, harvesting and processing of pita for nets and handcrafts. Further investigation is necessary to understand both the practical and economic value of pita.

Catherine S. Fowler, Pauline Esteves, Bill Helmer, and Ken Watterson

(University of Nevada, Reno)

Caring for the Trees: The Timbisha Shoshone Tribe's Mesquite and Pinyon Management Program

The Timbisha Shoshone Tribe recently acquired the rights to co-manage the Furnace Creek mesquite grove and pinyon resources in Death Valley National Park, California. In former times, tribal members trimmed the lower branches of the trees, cleaned and cleared debris from under them, and generally saw to their care by treating them and their associated plant and animal life with respect. In 2001, the Tribe began a small long-term program with the mesquites and pinyons to bring back traditional care. The paper describes the methods that are being used, as well as some of the other difficulties being faced in returning the trees to their former condition and productivity.

Krisa Fredrickson (University of California, Berkeley)

The Consumption of Aloeswood and the Incense Culture of Japan

The aromatic resin that can be produced by aloeswood (*Aquilaria agallocha*, *A. malaccensis*, *A. crassna*) is native to the forests of Southeast Asia. It is highly valued in Japanese incense, where it has both religious and cultural significance. Will the recent “revival” of the incense ceremony (koh-do) and increasing consumption in other regions such as the Middle East further impact the rapidly depleting forests? This aloeswood case study examines the interplay between aesthetic practices, supply and environmental issues in an attempt to promote more ecologically sound production and consumption practices.

Neli Garcia, Angelina Caballero, and Marco Vasquez Davila

(Instituto Tecnológico, Oaxaca)

Gender and Agrodiversity Mixteca in Huitepec, Oaxaca, Mexico

In the mountain lands of the Mixtecs of San Antonio Huitepec (in Zaachila, Oaxaca) four aspects of the agrodiversity use and management may be emphasized: 1) the importance of women’s roles in the sowing, harvesting, preparing and selection of *Zea mays* (which is the main crop), *Phaseolus* spp., *Cucurbita* spp., and other vegetable species; 2) the dichotomous classification of the agricultural environment as cold land (from 2000 m to 2400 m) and warm land (from 1700 m to 2000 m). Depending on the agrohabitat, different techniques, sowing seasons, and multiple plant races are used; 3) the agrodiversity of corn which is sown in Huitepec comprises three races (Cónico, Bolita and Chalque-o), one subrace (Elote c—nico), and two crosses (Bolita x conico; celaya x bolita), in close relationship with the multiple use of the plant as food, fodder and fertilizer; 4) the continuity of the use of wooden rectangular storage boxes made of *Pinus* spp., which is seen in Mixtec codices of the sixteenth century. En los terrenos monta—osos de los mixtecos de San Antonio Huitepec (en Zaachila, Oaxaca), destacan cuatro aspectos del uso y manejo de la agrodiversidad: 1) El importante papel de la mujer en la siembra, cosecha, preparaci—n y selecci—n de *Zea mays* L. (que es el principal cultivo), *Phaseolus* spp., *Cucurbita* spp. y otras especies vegetales. 2) La clasificaci—n dicot—mica del ambiente agr’cola en tierra fr’a (de 2000 a 2400 msnm) y tierra caliente (de 1700 a 2000 msnm). Dependiendo del agroh†bitat, tienen diferentes tŁcnicas, Žpocas de siembra y moŁtiples razas de plantas. 3) La agrodiversidad del ma’z (nuni kuiji, nuni tnuu, nuni latuva, nuni ndo’o, nini jua’an, nuni pintu y Tata yuku) que siembran en Huitepec corresponden a tres razas (C—nico, Bolita y Chalque-o), una subraza (Elote c—nico) y dos cruza (Bolita x conico; Celaya x bolita), en estrecha relaci—n con el uso moŁltiple de la planta como alimento, forraje y abono. 4) La continuidad en el uso de trojes (almacenes) rectangulares de madera de *Pinus* sp. cuya antigŁedad se observa en los cŁdices mixtecos del siglo XVI.

Bethe Hagens (Union Institute and University)

Bullroarers and Seeds

Bullroarers are flat, fish-shaped pieces of wood six to twenty-seven inches in length. When swung from the end of a string, they produce a buzzing sound known to induce a specific altered state of consciousness. Bullroarers have been made everywhere. During initiation ceremonies, whole groups of elders will swing them to simulate the menacing sound of a swallowing sky deity. Dionysus was given one to amuse himself before being ritually mur-

dered by the Titans. An overlapping set of liminal initiation symbols (thunder, lightning, Orion, seeds), ovo-rhombic shape representations (fish, canoe, vesica piscis, genitalia), and linguistic coincidences links bullroarers across cultures.

Eugene S. Hunn (University of Washington, Seattle)

Precocious Acquisition of Ethnobotanical Knowledge: Evidence from a Plant Trail Study in the Zapotec-speaking Village of San Juan Mixtepec, Oaxaca, Mexico

Children here master a large vocabulary of plant terms at an early age. To more systematically assess what village children know and when they know it I laid out a 1-km plant trail within the village, marking 55 different plants along the trail. I walked the trail in the company of one adult and 23 children (ages 6-14), recording for each Zapotec names, and for a 10% sample, details on use. Children named 25 (45%) to 51 (93%) of the plants (mean = 42.4, 77%). The plants represented a wide range of life-forms, degrees of cultural salience, and size.

Leslie Main Johnson (Athabasca University and University of Alberta)

Cranberries, Moose Licks and Trails - Reflections on Kaska "Kinds of Place" and Ethnoecology

The picture of Kaska ethnoecology I present is garnered from a experiences travelling on and talking about land with Kaska women and men in the southeast Yukon Territory, in northwestern Canada. The story of the land that emerges is rich: a medley of sloughs and overlooks, old trails, camps and places of power, places of past stories, moose licks and fish lakes, edible and medicinal plants, and berry patches. Ethnoecology is complex, as it links many aspects of a people's life. My research combines insights from Kaska and English terminology, narrative, and practice.

Jami Leibowitz (University of Connecticut, Storrs)

The Traditional Use of Plant Material for Reproductive Control in Romania

In Romania, from 1966 to 1989, Decree 770 officially outlawed abortion while also unofficially) greatly restricting the availability of modern forms of contraceptives. To maintain desired family size, women often resorted to self induced abortions. In addition to a number of mechanical means taken to end unwanted pregnancies, women also used a variety of plant materials in the forms of infusions and vaginal inserts to induce spontaneous abortions. Today in Romania, abortion is legal and modern forms of contraception are available, but women from rural areas still regularly resort to traditional reproductive control methods. This poster will describe some of the plant-based methods still used to control fertility

Jean I. Linville (Union Institute and University, Briarcliff Manor, New York)

Amongst the Trees: an Artistic Response to Time and Place

Can spending time with trees serve as a catalyst for change in my artistic perception and artistic response? I am returning to the roots of indigenous artists and responding to my immediate surroundings in an effort to answer this question. The artworks presented focus on the extraordinariness of the ordinary and are inspired by the trees that live within the Rockefeller State Park Preserve. The trees are not of biological note due to their size, age or species, but are noteworthy because of their role as interpreters of the natural

world and its rhythms.

Heather Lloyd (University of Connecticut, Storrs)

Callari: The Kichwa Handcraft Cooperative

Many artisans living along the Upper Napo River in the Ecuadorian Amazon participate in a sustainable handcraft cooperative called Callari (a Kichwa word meaning ancient). We interviewed some 30 artisans to find out their perspective on how the cooperative provides economic benefits, and sustains the rainforest. The artisans make a variety of non-timber forest products, including jewelry, baskets, handbags, hammocks, place mats, along with wooden bowls and trays. With the assistance of Fundacion Jatun Sacha, a non-profit conservation agency, the crafts are exported to and sold in North America and Western Europe.

Neil Logan (Fort Lewis College, Durango, Colorado)

Ethnobotany Database at Fort Lewis College

The ethnobotany relational database at Fort Lewis College in Durango, Colorado is being used to store and share ethnobotanical information and preserve oral history in a recallable format accessible to a wide audience on the Internet. The primary function of the database is as a research tool for students and community members in the Greater Southwest bioregion. In its current form the database includes the topics of art, chemistry, common names, cognition, herbarium, interviews, literature, medicine, organizations, people, plants, photos, pollinators, resources, taxonomies, textiles, traditional ecological knowledge (TEK), and uses. The database is in both searchable and browseable formats.

Kevin A. McBride (University of Connecticut, Storrs)

Transformation by Degree: Seventeenth and Eighteenth-century Native American Land Use

This paper examines seventeenth- and eighteenth-century Native American land use and subsistence practices in southeastern Connecticut within the context of Colonial population expansion and Native American responses to a shrinking land base. Although Colonial agricultural technologies and land use practices were inherently incompatible with traditional Native American subsistence strategies, the Mashantucket Pequots were able to maintain traditional subsistence strategies through the mid-eighteenth century. Historical records indicate a dramatic change in Mashantucket Pequot land use practices in the mid-eighteenth century which included the adoption of European domesticated animals and Euro-American agricultural technologies. However, archaeological evidence suggests the transition was much more gradual and the Mashantucket Pequots continued to rely on a wide variety of indigenous plants and animals through the eighteenth century.

Jason R. Mancini

(Mashantucket Pequot Museum and Research Center, Pawcatuck, Connecticut)

An Ethnobotanical History of Southern New England and Coastal New York: Developing and Applying a New Methodology

The ethnobotany of the southern New England and coastal New York tribes has received little attention from scholars in this region. As a result, there has been no attempt to organize and synthesize the available ethnobotanical literature pertaining to these tribes.

A new multidimensional approach seeks to remedy this shortcoming by using: 1) archaeobotanical data 2) 17th-, 18th-, and 19th-century primary source documents, 3) early to mid-20th-century ethnological reports, 4) ethnographic collections, 5) archival photographs, 6) oral histories, 7) collaborative research projects with members of these Native communities, and 8) remnant vegetation studies at historic archaeological sites on tribal reservations. This approach has yielded significant information essential to understanding patterns of change and continuity in Native lifeways (in this region) from the Paleoindian period to the present time.

Laurie N. Monti (Northern Arizona University)

Sounds of the Sea: Seri Indian Traditional Navigational Knowledge of the Sea of Cortez Embedded in Ritual Song-cycle; the Human Dimensions of Arid Coastal Biogeography

This study examines a ritual song-cycle of navigational songs that convey a linguistically encoded navigational map that guides Seri Indian seafarers safely through highly variable sea conditions on their voyage between two islands in the midriff region of the Sea of Cortez (Gulf of California). The Canticles of San Esteban, a sequence of song-poems illustrate how a native people learned and conveyed important and enduring ethno-geographic knowledge, unique to their culture and region. Linked together, they form a seascape, revealing the unique characteristics of the sea and islands of the midriff region of the Sea of Cortez. The musical aspects of the songs offer insight into ways that an aurally-centered culture manipulate song and sound to shape conditions of their local environment, and how in turn, the nature of the sea and desert shapes the identity of a people.

Anna Muselius (Memorial University of Newfoundland, St. John's)

Folk Taxonomy of New Foundland Names for Fish

Folk taxonomy is a means of preserving traditional Newfoundland names for fish in a culture which is experiencing a rapid erosion of its fishing industry and the unique lexicon associated with it. The semantic properties of the taxonyms are examined using the nomenclatural principles outlined by Berlin (1992). This study replicates the methodology used in similar ethnoichthyological studies (Palomares, Garilao and Pauly 1997; Paz and Begossi 1996; Clement 1995). Folk names are characterized by the inclusion of metaphorical references that allude primarily to the fish's gross physical morphology, followed by cultural allusions relevant to Newfoundland society, fish behaviour and the ecology of the fish. The remaining types of metaphorical references designate salient commercial qualities associated with methods of fish processing.

Gary P. Nabhan (Center for Sustainable Environments, Flagstaff, Arizona)

Assisting Indigenous Artisans with Sustainable Harvest Marketing of Native Crafts

One of the most direct means by which ethnobiologists can support indigenous peoples is by assisting them with their marketing and rights protection relating to native crafts, foods or medicines. Ethnobiologists can document whether or not plant materials are sustainably harvested, help shift harvesting methods toward sustainability, or serve as third-party certifiers that harvests are indeed sustainable. In addition, ethnobiologists can assist tribal crafts collectives with marketing strategies which celebrate traditional ecological knowledge as a "value-added" component of native crafts. The Comcaac (or Seri)

communities of Sonora, Mexico began selling to tourists ironwood (*Olneya tesota*) carvings of animals in the 1960s, but only a tenth of their artisans could make a living selling their crafts by 1990, due to price-undercutting by non-Indian artisans. At the same time, clandestine cutting of ironwood by non-Indian artisans and “mesquite” charcoal makers reduced Seri access to this wood and caused considerable destruction of the ironwood habitats utilized by wildlife species featured in the carvings. After 70 Seri signed a petition requesting assistance from conservationists in protecting their collective rights to ironwood designs and protecting ironwood habitat as well, the Ironwood Alliance of Mexican and U.S. activists, researchers and educators formed to deal with these issues. The Seri not only regained “marca colectiva” rights for five of their crafts traditions, they also began innovating and diversifying their crafts repertoire, including reviving ancient stone carvings which now have a larger market for them than does ironwood carvings. In addition, Seri para-ecologists learned how to monitor ironwood population status in harvested and unharvested stands, played active roles in getting ironwood special protection status in Mexico (including a ban on all ironwood use in charcoal) and were integral members of a binational research team which advanced the designation of the Ironwood Forest National Monument in southern Arizona. The Sustainable Harvests Initiative at NAU’s Center for Sustainable Environments is now building on this success to work with other tribes’ artisans, including basketweavers and katsina carvers. In short, participatory, community-based research can be used to support native peoples’ concerns to advance their cultural and economic well-being, rather than further disenfranchising them.

Nabhan is author of the recently-released book, *Coming Home to Eat: The Politics and Pleasures of Local Foods* (W.W. Norton) as well as the forthcoming *Singing the Turtles to Sea: the Comcaac Art and Science of Reptiles* (University of California Press). He has been an active participant in the Society of Ethnobiology since its first meeting in Arizona.

Ailele Patrick Okpogie (Alaka Gallery of Edo Arts and Craft, Benin City, Nigeria)

Artisans as Healers: The Spiritual Dimension of Edo Arts and Craft

The Edo-speaking people are the indigenous people of western Africa, in the Benin region of southern Nigeria. Although they are historically noted for their artistic skills and appreciation of the divinity of nature, the healing and spiritual dimension of Edo art is less known to the western world. In this poster presentation, I draw attention to some of art works of the Edo people. I interpret the spiritual meaning of these works and explain their healing dimensions. I also highlight the contributions of Edo art to world history while at the same time underscoring the pitfalls of a post-modern neglect of the role of the artisan in both neo-colonial African and modern medicine.

Margaret T. Ordonez (University of Rhode Island, Kingston)

Nineteenth Century Seamless Weft-twined Bags

The skill that makers of seamless weft-twined bags exhibited in the nineteenth century is amazing, yet much published literature on twined bags examines their iconography more than their construction techniques. The Mashantucket Pequot Museum and Research Center has a collection of spaced weft-twined bags from Great Lakes area tribes that represent a variety of decorative techniques incorporated by their makers to provide

individuality and meaning to their products. A recent analysis of thirteen of these bags reveals the technical skill required to construct the yarns and to twine the bags. Even the simplest bags, both small and large, have decorative features created by manipulating the warp yarns. The ultimate transpositioning of warp yarns resulted in panel bags with motifs in vertical panels.

Working with free-hanging warps, the makers-traditionally women-controlled the unrestrained elements to make personal and utility bags of basswood, dogbane, buffalo hair, and eventually commercially available wool and cotton yarns. By the end of the nineteenth century, few weavers made bags of native materials in the time-honored method. Bag-making evolved as weavers used different techniques and commercial materials, and the bags, although based on the earlier prototype, became a very different product. Fortunately the names of a few late nineteenth-century panel bag makers have survived with their bags. These artisans and those who came before deserve recognition for their specialized skills which included shaping the bags, reinforcing weak basswood warps, finishing what would become the top of the bag as well as creating decorative features from the bag's basic elements.

Deane R. Osterman (Kalispel Tribe of Indians)

Spokane Ethnoichthyology

The Spokane people, members of the Salish language family, have a terminological and classification system for the greater part of the ichthyofauna present in the Spokane and upper Columbia River drainages. The system consists of 23 generic taxa, two apparently covert taxa and a single domain encompassing life-form taxon. Most ichthyonyms are based on morphological characteristics of the referent; however, some are based on behavior or onomatopoeia. The classification system is bifurcated on an anadromous/non-anadromous basis. This dichotomy reinforces the significant role that fish, particularly anadromous fish, play in the cultural and dietary lives of the Spokane Indian people.

Aswini Pai (Department of Environmental and Plant Biology, Ohio University, Athens)

A Survey of Leaf Cup Making Activity Using *Butea Monosperma* Leaves in Madhya Pradesh, Central India

Leaves of *Butea monosperma* are used by the Chamar community in Madhya Pradesh, central India to make crude leafcups. The leaf cups are sold to nearby markets and are a source of income to the households making them. Information on this activity was gathered using participatory rural appraisal and household surveys at thirty households in a village in Madhya Pradesh. The study indicated a variation in leaf availability, leaf cup price and extraction intensity through the year. Price of the leaf cup also varied depending on whether it was marketed directly by the leaf cup makers or through a middle person.

Usha Palaniswamy (University of Connecticut, Storrs)

Emerging Nutraceuticals of Asian Origin and Culture

Nutraceuticals is an emerging sphere of therapy in North America closely linked to the high costs of modern biomedical health care, elevated interest in preventive health, and

the mounting scientific evidence in the health benefits of plant based diets in prevention and better management of major diseases and chronic conditions including cancers and heart disease. This paper presents a review of the plant species of Asian origin and culture that are currently being studied for their nutraceutical and functional properties by the biomedical and agricultural researchers and discusses the strategies for successful cultivation of these “green immigrants” in North America.

Christian T. Palmer (Brigham Young University-Hawaii, Laie)

The Substitution of Alien Species for Native Plants in the Hawaiian Medical Ethnobotanical Tradition

This paper discusses the substitution of alien species for native plants in the Hawaiian medical ethnobotanical tradition. The substitutions examined are the switch from the native *Bidens* spp. and the more ubiquitous *Bidens pilosa* and the switch from *Peperomia* spp. to *Plantago major*. Anti-microbial properties of both native and introduced species are compared using the Kirby-Bauer method. Interviews and literature searches also examine potential reasons for these adaptations, including the increased degradation of native ecosystems and cultural change. With global environmental degradation it is increasingly important to study the process of adaptation of native cultures to changing ecosystems.

David Perry and Brian Jones

(Mashantucket Museum and Research Center, Pawcatuck, Connecticut)

A Synopsis of Recent Identifications of Soft Plant Tissues from Prehistoric Contexts at Mashantucket

Recent identifications of charred vegetative plant tissues from prehistoric sites at the Mashantucket Pequot Reservation are likely to change our understanding of Native foodways in southern New England. Twenty-two radiocarbon-dated samples have been examined from Paleoindian through Late Woodland period features (ca. 9000 to 900 years ago). All examined hearth features from the Reservation contain identifiable carbonized parenchymatous tissues. The most common among these are those of cattail, water plantain, water lily and bulrush. This new data suggests that wetland plants played a consistent and significant role in the diet of the Native population of southern New England.

Ram Prasad, P.C. Kotwal, and Manish Mishra (Indian Institute of Forest Management, Nehru Nagar, Bhopal)

Studies on Sustainable Harvesting of Medicinal Plants: A Case of Safed Musli in Madhya Pradesh

Due to the rapid industrialization in the country and population growth, the pharmaceutical industries need a large amount of raw materials as crude drugs. Recently it has been observed that the pharmaceutical industries are finding it extremely difficult to obtain raw materials in the form of medicinal plants. This is because of indiscriminate exploitation of plants of medicinal value without any planning conservation. Increase in export of these crude drugs also accelerated the exploitation process.

India has one of the oldest, richest and most diverse cultural traditions associated with the use of medicinal and aromatic plants. The remarkable fact is that it is still a living

tradition. This is borne out by the fact that there still exists around a million traditional, village based carriers of herbal medicine traditions in the form of traditional birth attendants, bone setters, herbal healers, traditional priests and wandering monks. Apart from these specialized carriers there are millions of women who have traditional knowledge of herbal home-remedies and of foods and nutrition.

Medicinal plants like *Safed musli* (*Cholorophytum* spp.) are a significant source of subsistence, income and employment to tribal people in and around forests of Panna and Satna districts, Madhya Pradesh. A large population of tribal and other forest dwellers depend on various medicinal and aromatic plants, which have great socioeconomic significance in the context of employment and income generation for very large population, especially weaker sections of the society including tribal peoples.

Carlos R. Ramirez-Sosa & Dwight Kincaid (St. Lawrence University)

Tree Diversity in an Abandoned Coffee Plantation in El Salvador

A floristic inventory was conducted in an abandoned coffee plantation in El Salvador, C.A. It is located within the limits of El Imposible National Park. Eight permanent quadrats (20m x 50m, 2.8 ha) were established and all stems ≥ 5 cm DBH, except for lianas, were included in the study. A total of 110 species belonging to 38 families and to 100 genera were identified. The top five dominant species in this forest are *Alstonia longifolia* (Apocynaceae), *Cecropia obtusifolia* (Cecropiaceae), and *Dussia cuscatlanica* (Fabaceae), *Clethra lanata* (Rocoseae) and *Brosimum alicastrum* (Moraceae).

Carlos R. Ramirez-Sosa, Elsa Rengifo, & Kadir Zevallos Morey (St. Lawrence University)

Market Medicinal Plants in Iquitos, Peru, and Apopa, El Salvador

A comparative study was done between medicinal plants sold in the markets in Iquitos, Peru and in Apopa, El Salvador to determine the similarities and differences in both cities. In Iquitos, most plants come from the nearby forests or from home gardens (chacras) and in Apopa their origin is difficult to establish. A total of 98 species (50 families, 11 undetermined) were identified in Iquitos and 65 species (41 families, 7 undetermined) in Apopa. Two differences between the markets are a) in Iquitos fresh plants are commonly sold b) in Apopa many species are imported from other Mesoamerican countries.

Trudie Lamb Richmond, Schaghticoke Elder (Mashantucket Museum and Research Center, Mashantucket, Connecticut)

An Elder's View of Honoring the Plant World

Traditionally, the plant community was an integral part of Native people's lives. Plants enabled human life to nurture itself, heal itself, to fashion tools and to communicate with the spirit world. Understanding a people's relationship to the land reveals the understanding of how nature works as a whole. Plants and animals do not exist independently. They are our relatives. My presentation will focus on some of the plant life on the Schaghticoke homelands and emphasize that human life can and must act as harmonious relatives of the natural world community. Native people must continue to acknowledge and give thanks and recognize the plant world with ceremonies: Strawberry Celebration, Green Corn, Maple Sugar and Green Corn. We must not forget these teachings that our "culture is in the land and our land is our culture."

Enrique Salmón (Fort Lewis College, Durango, Colorado)

Beer, Corn, and Wrestling With the Devil: Raramuri Performance Art and TEK

Raramuri verbal and non-verbal performance enacts ecological perceptions evident in the Sierra Madres of Chihuahua, Mexico. Symbols, idioms, and the sequence of events converge during performances to afford ecological messages and to ritually construct an interconnecting environment. Contextualized ritual language found in the songs contains references to plants, revealing a Raramuri perception that people and plants cannot co-exist without a healthy ecological system. Beer, corn, and other elements contribute as well to a healthy landscape and human population. The songs recognize the links to nature and in their performance acknowledge the Raramuri responsibility in its sustenance.

Archana Sambandan and Usha Palaniswamy (University of Connecticut, Storrs)

Artistic Representation of Environmental Responses and Anatomy of Two Plant Species in Thirukkural, a Book of Code of Ethics Written by the Ancient Tamil Sage Thiruvalluvar

The Thirukkural is a book of code of ethics written by the ancient Tamil sage Thiruvalluvar in the period between the first and third centuries BC. This oil painting depicts the two plant species that Thiruvalluvar cites in his book, *Anagallis* sp. and *Cassia javanica*. The soft petals of *Anagallis* come together and close as a response to the bright sun light and heat; the unkindly, unwelcoming look or words of a host will produce a similar response in a guest (Thirukkural, 90). *C. javanica* has bright orange flowers that can hide the flaw or darkness which may lie within; this floral structural anatomy is similar to the extreme goodness of some people on the exterior, that can hide their interior evil intentions (Thirukkural, No. 277).

Daniela J. Shebitz & Robin Kimmerer (SUNY)

Re-establishing Roots of a Mohawk Community and a Culturally Significant Plant: Sweetgrass, *Hierochloa odorata* (L.) Beauv.

This study integrates traditional ecological knowledge with a field experiment conducted in the Mohawk Community of Kanatsiohareke. The aim of the study was to evaluate the restoration potential of sweetgrass and to find an effective means to establish it in garden-size plots and within a landscape. Sweetgrass growth and reproduction were greatest in plots that were weeded to eliminate competition and in plots with hairy vetch as a cover crop. A cover crop of annual ryegrass resulted in reduced sweetgrass success. By finding an effective means to reestablish sweetgrass, the opportunity to use the plant in the traditions of basketry and ceremony continues.

Richard Sosis (University of Connecticut, Storrs)

Patch Choice Decisions among Ifaluk Fishers

Studies of patch choice decisions among human foragers have failed to explain why foragers do not exclusively exploit the patch with the highest mean profitability. One possible explanation is that profitability rankings are likely to vary daily, but this instability is not captured when profitabilities are calculated as a sampled average over a longer time span. Here I present data on the patch choice decisions of Ifaluk fishers to evaluate whether men are responding to daily variation in the profitability of their primary fishing

patch. Results show that men choose to fish most frequently in the patch with the highest mean profitability. Men fish in alternative patches (alternative from the most profitable patch) when on that morning, or the previous day, return rates in the most profitable patch are lower than the overall mean per capita return rate of alternative patches. Results also indicate that when fishers pursue alternative patches after fishing in the patch with the highest profitability, their mean per capita return rates are generally higher in the alternative patches exploited. However, variance in the profitability of the most profitable patch cannot explain why men exploit two patches, the 9-mile reef and the dog-toothed tuna patch.

Michael K. Steinberg (University of Southern Maine, Peaks Island)

The Persistence of Maize Diversity under Conditions of Social and Political Change in Highland Guatemala

This presentation compares the current state of maize diversity in six highland Guatemalan villages with studies conducted earlier this century. Although preliminary, it appears that a significant number of maize varieties are no longer grown compared with data collected earlier this century. The author believes this decline is related to the recently concluded (1996) Guatemalan civil war, and the associated poor socioeconomic conditions in which most rural Guatemalans exist. This presentation makes the case that the maintenance of crop diversity is directly linked to the political and economic atmosphere/security in peasant farming landscapes.

Linda A. Swift and Paul J. Godfrey (Hartwick College, Oneonta, New York)

Medicinal Zingiberaceae Biodiversity and Conservation by the Akha on Pakha Mountain, Northern Thailand

The Akha hill tribe people, traditionally forest dwellers, gather about 20% of their medicines from the forest, while in the past they depended on the forest for all their medicines. This ethnobotanical field study analyzes medicinal plant biodiversity of Zingibers (gingers) in two forests: a community forest, and an unharvested sacred forest. Results indicate that medicinal gingers were equally diverse and dense in both forests. Sorenson's Coefficient was 0.82 indicating a high similarity of species composition between forests. This suggests that the Akha have not caused a decline of the medicinal plant biodiversity, instead they have managed their forest resources prudently.

William H. Thomas (Department of Social and Cultural Sciences, Marquette University)

Beyond Inventories: Using Indigenous Knowledge to Develop Dynamic Programs for Biodiversity Conservation

Although Indigenous Knowledge (IK) has been recognized as a valuable tool for species identification, it is often described by conservation professionals as "weak" with regard to the illumination of environmental processes. This paper presents a research methodology, developed in cooperation with the traditional residents of Papua New Guinea's Central Range, that has the potential to remedy this situation. Using birds as an indicator species, IK of bird behavior can be used to reveal the dynamic relationship between traditional human activities and biodiversity. Since birds are one of the best known and most studied organisms in the world, species information for many environments can be

accessed through field guides. Field guides help to identify indigenous informants whose knowledge is on a par with the western experts. They also give ethno-scientists a common source of reference with their western counterparts. Field guides enable non-expert researchers to tap this indigenous knowledge base while avoiding some common IK pitfalls, such as the practice of lumping species into a single indigenous category. By identifying the web of interactions underlying this environmental mosaic, this project indicates that IK can provide an insight into the relationship between cultural and biological diversity. More importantly, once the connection between biological and cultural diversity is understood, this methodology can provide a solid basis for conservation.

Jan Timbrook (Santa Barbara Museum of Natural History, Santa Barbara, California)

Sukinanik'oy: a Chumash Ethnobotanical Garden

Chumash Indian people are working with the Santa Barbara Museum of Natural History to preserve and share traditional plant knowledge through the creation of an ethnobotanical garden they have named Sukinanik'oy—"bringing back to life" in the Barbareqo Chumash language. The garden, located on the museum grounds, currently includes over 60 species of plants used by Chumash people, past and present. Interpretive labels include botanical, English, Chumashan, and Spanish names, and information on Chumash uses. As plants become established, Chumash people will be able to harvest materials for basketry, fiberwork and other uses. Suninanik'oy Garden enriches the museum experience and provides an important service to the Chumash community.

Nancy J. Turner

(University of Victoria, School of Environmental Studies, British Columbia)

The Sandbar Willow Syndrome: Environmental Loss and Cultural Loss

Conservation biologists, ecologists and environmentalists have been increasingly concerned with the loss of biological diversity in all its forms from the global "biosphere". Indigenous peoples, anthropologists, linguists and others have been similarly concerned with an erosion of diversity in human cultural traditions and languages-within the arena of what ethnobotanist Wade Davis has recently termed "ethnosphere." The relationships between biosphere and ethnosphere diversity are less well recognized. In fact, the impacts of ecological deterioration on human cultures are profound and accelerating. It is a simple equation: cultural knowledge, wisdom, practice and language are inextricably linked to habitat and place. When habitat and place are altered, associated cultural elements are likewise impacted. This is certainly the case for art in its many forms. Basketry, woodworking, sculpture and other indigenous arts that depend upon materials from particular places and habitats in the natural world are profoundly impacted, and the skills and knowledge associated with these arts deeply imperiled if the habitats deteriorate or disappear. Ethnobiology is a key discipline that can help us to understand the enduring connection between art and habitat. In this paper, I discuss the implications of this link, which I have called "the sandbar willow syndrome," drawing on a recent symbolic example.