

THE ENERGY OF PEOPLE, PLACES, AND LIFE



2014 JOINT CONFERENCE
MAY 11 - 14
CHEROKEE, NORTH CAROLINA

CONFERENCE PROGRAM

SOCIETY OF ETHNOBIOLOGY 37TH ANNUAL MEETING
SOCIETY FOR ECONOMIC BOTANY 55TH ANNUAL MEETING

MAY 11-14, 2014
CHEROKEE, NORTH CAROLINA, USA

ACKNOWLEDGMENTS

We are delighted to be hosting the 37th annual Society of Ethnobiology and the 55th annual Society for Economic Botany conference in Cherokee, North Carolina, at Harrah's Cherokee Casino and Resort. We are excited to hold our first joint conference and feel that the synergy of meeting together will invigorate both societies and serve to forge new relationships. And we especially appreciate holding our conference on Cherokee territory in a beautiful place and among people who have given us so much. We hope you agree that the extra planning involved in traveling to this special place was well worth the effort.

Every conference demands months of preparation and planning (we began in earnest in February of 2013), and we could not have accomplished what we have without the guidance and help of many individuals and organizations. The fact that representatives of the two societies began by agreeing on a joint conference philosophy has stood us in good stead in resolving issues as they have arisen in our conference planning: somehow, tasks seemed to divide themselves up and we coordinated beautifully.

The proposal to hold the conference in Cherokee originated with Karen Hall. Our conference logo, beautifully designed by Johanne Stogran, combines our society logos with the Cherokee recycle symbol so graciously lent for our use by Sky Kanott and the Cherokee Youth Council. Our conference theme came about through talks with our respective Council and Board members.

Our hands-on workshops on Teaching Tuesday, a concept for emphasizing teaching that originated at the 2012 SEB conference in Frostburg, Maryland, were organized by Karen Hall and Sunshine Brosi representing the Open Science Network (OSN), who also organized an OSN reception for Tuesday evening at the Mountain Heritage Center at Western Carolina University in nearby Cullowhee, North Carolina.

We thank our field trip leaders for their willingness to go above and beyond in showcasing unique aspects of the southern Appalachian Mountains to conference participants: Jillian de Gezelle who laid the groundwork for all our field trips, and leaders TJ Holland, David Cozzo, Cissy Fowler, Jeanine Davis and staff, Joe-Ann McCoy and staff, Karen Hall, and Dan Pittillo. Our gratitude is furthermore extended to those who organized judging the student contestants, Trish Flaster and Liz Olson. And to those who agreed to act as session chairs – thank you for helping to keep our complex schedule ON SCHEDULE!

A number of people were instrumental behind the scenes in posting our web pages, coordinating societal tasks, organizing registration, and generally getting this conference up and off the ground. Kudos to Heather Cacanindin, William Dahl, Denise Glover, Wanda Lovan, Johanne Stogran, and Cheryl Takahashi! Our student representatives devoted a lot of time to imaginatively creating wonderful conference experiences for our student attendees: please thank Janelle Baker, Alexandra Towns, and Annie Virnig. They, in turn, would like to thank the mentors who volunteered to chat with students over lunch: Eugene Anderson, Eve Emshwiller, Will McClatchey, Rachel Meyer, Heike Vibrans, Edelmira Linares, Cassie Quave, Nancy Turner, and Gail Wagner. Likewise, we hope you join us in extending thanks to our student volunteers who are helping throughout the conference.

We thank representatives at the Cherokee Museum and Oconaluftee Indian Village, Eddie Swimmer and Mike Lambert, for facilitating our Cherokee Heritage Experience. Likewise, we were helped immensely by Allan Oocumma and Albert Arch who facilitated bus transportation with the Cherokee Boys Club, and Donna Edmonds who facilitated bus transportation with Young Transportation. And our conference coordinator at Harrah's Cherokee Casino and Resort, Margaret Wiegel, has been an upbeat and enthusiastic supporter and facilitator for this conference.

We invite you to explore the town of Cherokee and environs, including Great Smoky Mountain National Park, while you are here at the conference, and hope that you enjoy meeting with your colleagues and making new friends as much as we do!

-The Organizing Committee: Denise Glover, Gail Wagner, Sunshine Brosi, David Cozzo, Jillian De Gezelle, Cissy Fowler, Scott Herron, Liz Olson, Rick Stepp, and our Student Representatives.

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SOCIETY FOR ECONOMIC BOTANY PRESIDENT'S WELCOME LETTER

Dear fellow members of the Society for Economic Botany and colleagues of the Society of Ethnobiology,

The Society for Economic Botany celebrates its 55th Annual Meeting as an historical joint conference with the 37th Annual Meeting of the Society of Ethnobiology. With our venue set in Cherokee, North Carolina, we have the privilege of being in the home of the Cherokee Nation. Not only do we share our academic experiences emphasizing the relationships between peoples and other living beings in this energizing natural environment but also we are inspired by the vibrant strength of the Cherokee Nation in the sustaining southern Appalachian Mountains.

Our integrated program offers a number of prospects that will contextualize our individual and collective advancements as well as our dreams. Members of Society for Economic Botany, who focus more on the living beings of the plant and fungi kingdoms, will encounter an innovative experience with the additional studies from the animal kingdom.

This first encounter of the two Societies may appear novel as we explore mutually interesting enclaves between our organizations. More importantly, all the members a common platform upon which we exchange ideas and open new doors of opportunity. Over the years, the Council of the Society for Economic Botany has discussed the relationships between economic botany and ethnobotany? Are the terms synonymous? Do we need to distinguish between them? Is one a subset of the other? What scientific and cultural foundations do they share? After this meeting, our Societies may reexamine their mission and vision statements.

The crucial year for the Society of Ethnobiology was 1978. A number of us gathered in the energizing environment at Prescott College (Prescott, Arizona). Some (as members of Society for Economic Botany) brought to the meeting the useful plant perspective of plant-people relationships. Most of us were either recently graduated from or still in a university with its academic curricula constrained into such disciplines as anthropology, botany, zoology, geography, sociology and history. Economic botany courses provided an alternative creative release and, as one of the consequences, ethnobiology was gaining recognition. We sought further meaning and responsibility of humans' interactions with Nature and Humankind. Our Societies provided the framework for our professional and personal development. For we the veterans as well as for our younger members who are joining our quest, this joint conference in Cherokee will be another milestone in the history of our discipline and of our societies.

We thank the hard working committee and staff members of the Society for Economic Botany and of the Society of Ethnobiology who have developed a stimulating and productive program. In particular, special thank you goes to Gail Wagner and Denise Glover, whose dedication has made this historical meeting a reality, and to their team of local organizers.

Welcome to "The Energy of People, Places, and Life."

Sincerely,

Robert Bye, President, Society for Economic Botany
Mexico, Distrito Federal, Mexico



SOCIETY OF ETHNOBIOLOGY

SOCIETY OF ETHNOBIOLOGY PRESIDENT'S WELCOME LETTER

Dear Members of these two Distinguished Societies,

I am delighted to welcome all of you to a first, joint meeting of the Society of Ethnobiology and Society for Economic Botany. We find ourselves in a congenial and relevant setting, Cherokee, North Carolina, among Cherokee friends, supporters, and colleagues. Our two societies have affinities to one another, illustrated partly in the significant crossover in membership, and to the Cherokee people.

According to a study by Felice Wyndham and colleagues in the Spring/Summer 2011 issue of *Journal of Ethnobiology*, Society for Economic Botany is the larger of the two societies; 11% of its members are also members of the Society of Ethnobiology. The same study showed that 25% of Society of Ethnobiology's members are also members of the Society for Economic Botany. These indexes of relationship are one measure of similarity. In my view, the two societies exhibit compatibility as well in terms of understanding of each other's research and professionalism, an understanding that has matured deeply over years of conferences and publications in our respective journals. These similarities today have come a long way since the founding of the two societies (1959 for the Society for Economic Botany; 1982 for the Society of Ethnobiology).

For the ethnobotanists among us, indeed, the idea of ethnobotany as different from economic botany, or vice-versa is a largely defunct paradigmatic distinction. Although ethnobotany was once, of course, about listing of economic plants utilized by indigenous North American societies--an approach shared by the first generation of economic botanists--the two groups grew apart after about the mid-1950s, with ethnobotanists and ethnozoologists forming a subfield of ethnoscience, cognitive anthropology, and the new ethnography. Economic botanists continued to produce work on lists of utilitarian plants across the globe, and they complemented this work with significant contributions to systematics. Today, however, at least as far as those interested in plants is concerned, economic botanists and ethnobotanists are virtually indistinguishable. Partly for that reason, the meeting of our two societies on the same ground in the same landscape speaks to common threads of scholarship and colleague-ship. Both societies ultimately are bonded to the ethnozoologists in the Society of Ethnobiology, since we are all concerned with living things, and ultimately, whatever relationships they might have to us.

This common legacy of vital membership, landscape, and research is well suited to the conference theme of "Energy of People, Places, and Life." I would like, in conclusion, to now acknowledge with sincere appreciation the original dreamers who have helped to bring us together, thanks to their shared insights and dedicated efforts, namely, Denise Glover for the Society of Ethnobiology and Gail Wagner for the Society for Economic Botany.

Most cordially yours,
William Balée, President
Society of Ethnobiology

DISTINGUISHED ETHNOBIOLOGIST & ECONOMIC BOTANIST



SOCIETY OF ETHNOBIOLOGY

DR. EUGENE HUNN

WHAT A LONG, STRANGE TRIP IT'S BEEN:
GENE HUNN'S ETHNOBIOLOGICAL JOURNEY

Dr. Eugene S. Hunn is Professor Emeritus of Anthropology at the University of Washington. As PI of at least four National Science Foundation grants and a Fellow in both the American Anthropological Association as well as the American Association for the Advancement of Science, Dr. Hunn's research has spanned the length of the North American continent, from Mexico to Alaska. His long-term work in the Oaxaca region of Mexico, as well as with Sahaptin speakers in eastern Washington State, is witness to his enduring commitment to ethnobiology, anthropology, and to the particular communities with whom he has worked. His monograph *Nch'i-Wána*, "The Big River" won the Governor's Writers Award in 1992 and is a key ethnography focusing on the ethnoecology of Columbia Plateau Sahaptin speakers. His innovative *A Zapotec Natural History* won the Association of American Publishers Prose Award for excellence in Archaeology and Anthropology in 2008. Dr. Hunn has made outstanding contributions to theory and method in ethnobiology, and has worked tirelessly to contribute his expertise to the benefit of the communities with whom he has carried out pioneering fieldwork of the highest caliber. In addition to his noted professional contributions, as anthropologist and ethnobiologist, Professor Hunn has earned the reputation of birder par excellence. He has also been teacher and mentor to several ethnobiologists of the current generation; and as a member of the Society since its earliest days, he has also provided inestimable service to it in numerous capacities, including host of the annual conference (two times), editor of the *Journal of Ethnobiology*, and President of the Society of Ethnobiology.

SOCIETY FOR ECONOMIC BOTANY

DR. JAN SALICK

PARADIGMS LOST AND GAINED:

DON'T TRUST ANYONE, ESPECIALLY YOURSELF



Jan Salick, Ph.D. is the *Alice H. Brown Curator of Ethnobotany* for the *William L. Brown Center* of the *Missouri Botanical Gardens*. She has held numerous visiting scholar fellowships around the world including the University of Oxford, Ethnobotany Fellowship. After earning a Ph.D. from Cornell University working on ecology and systematics, she was a post-doctoral researcher at The New York Botanical Garden where she focused on Amazonian ethnobotany. Since then, she has steadily served as a leader in ethnobotany with global field studies and training many students. Her research has steadily driven to improve the quality of science in ethnobotany with her high quality publications (e.g., *Economic Botany*, *PNAS*, *Global Environmental Change*, *AJB*) and grants (e.g., NSF, Ford Foundation, National Geographic Society) providing peer-reviewed evidence of her success. Early projects involved study of cassava and indigenous agriculture, more recent work has been on climate change in Tibetan communities, and now she is shifting her focus to examine impacts of climate change on Native American communities. She has been particularly active as an international representative for the science of ethnobotany within committees of the International Union of Biological Sciences, CGIAR, United Plant Savers, and People and Plants International. She founded and has developed the Biocultural Collections Network that has just released a new handbook on Curating Biocultural Collections. Most importantly, she is a past president of the Society for Economic Botany and a long-standing member and supporter of our society. (Photo by Molly Krohe)

CONFERENCE ENRICHMENTS

CHILD CARE

A drop-in child care facility is adjacent to the Casino and Conference Center. Contact Kids Zone at (828)497-6868 and read about their facilities and charges at <http://kidzonedropin.com/>

PECHA KUCHA

Sunday, May 11th, 6:00-7:30 pm; Oak-Conference Center

Searching for a non-traditional way to convey your overall research goals? Looking to showcase some aspect of your work in an impactful way? Want to recruit graduate students or inspire your colleagues to study something? Have a compelling and innovative teaching method or content area that you'd like to share? If so, come join us for the second SEB (first SoE) **Pecha Kucha session**, held on Sunday evening, May 11th, from 6:00-7:30 pm in the Oak room in the Conference Center.

What is Pecha Kucha? Pecha Kuchas are short, inspiring and innovative presentations that consist of 20 images (slides in PowerPoint) for 20 seconds each for a total of 6.6 minutes. Pecha Kucha sessions, devised by architects in 2003, are held with an intentional atmosphere of informality, as a way to encourage conversation and thinking. (If you are thinking of a Prezi presentation, we cannot guarantee internet connectivity during presentations.)

To participate, simply look for the sign-up sheet as you enter the room. Bring your presentation on a thumb drive! Because only a limited number of slots are available, we encourage you to come early for sign up and bring a clearly inspirational and innovative (but concise) presentation! Please DO stick to the format (20 slides with 20 seconds on each slide) – there will be a timekeeper!! Organizer: Karen Hall

DISPLAYS

Please visit our displays in the pre-function area!

- Appalachian Mountain Books, <http://www.appalachianbooks.com/>
- NC Alternative Crops and Organics, Mountain Horticultural Crops Research and Extension Center, Mills River, NC,; <http://www.ces.ncsu.edu/fletcher/programs/herbs/bloodroot/index.html>
- Plants and Healers International, www.plantsandhealers.org
- Springer Press, www.springer.com
- University of Arizona Press, www.uapress.arizona.edu

Additionally, find literature at the Registration table for

- LLOYD Library and Museum, Cincinnati, www.lloydlibrary.org
- New York Botanical Garden Press, <http://www.nybgpress.org/>

FIELD TRIPS

Field trips, by pre-registration only, are offered both before and after the conference. The following is a list of the field trips offered at the 2014 conference.

Sunday, May 11:

- Plant Walk, led by Karen Hall, Dan Pittillo, Cissy Fowler

Thursday, May 15:

- CH1 Cherokee Cosmography, led by TJ Holland
- CH2 Appalachian Ethnobotany, led by David Cozzo
- ASH3 Blue Ridge Mountain Ecology, led by Cissy Fowler
- ASH4 Asheville Botanical Gardens tour **still has spaces available**: sign up at Registration!

CHEROKEE HERITAGE EXPERIENCE

Monday, May 12 1:00-5:00 pm.

Admittance to venues is by group only, no individuals. Meet in Bus Lounge at Casino Parking Garage by 12:50 for two waves of buses: first set of buses leaves at 1:00 and the second at approximately 1:15 pm. BE THERE 10 minutes before departure!

Everyone will be bused in two main waves from the Casino to downtown Cherokee, half going to Oconaluftee Village and half going to the Museum of the Cherokee Indian and Qualla Arts & Crafts. You may need to wait about 15 minutes to catch the second wave of buses. At 2:45 the Museum group will move to the Village, and at 3:40 the Village group will move to the Museum.

Gift stores are available at the Museum and Qualla Arts and Crafts. Picnic box lunches (available for purchase from Harrah's Casino-ask food personnel the day before) may be eaten at the Village at one of their picnic areas.

Cherokee heritage craft demonstrations are held at the Village, and following the tour participants may spend time talking with the demonstrators. A Cherokee dance exhibition will be held from 3:00-3:30.

Following the dance demonstration, those who began at Oconaluftee Village will be transported to the Museum of the Cherokee Indian, with Qualla Arts and Crafts across the street. At 5:00, all participants will be returned to Harrah's Cherokee Casino, again in two waves of buses.

EDUCATIONAL OPPORTUNITIES

The Open Science Network (OSN), an educational initiative adopted by both societies, organized a series of hands-on workshops for Teaching Tuesday. These are ticketed events filled during pre-registration. Enquire at Registration whether any are still open.

Additionally, OSN is hosting a ticketed reception with activities at the Mountain Heritage Center at Western Carolina University in nearby Cullowhee, NC, on Tuesday evening, May 13, from 6:30-9:00 pm. Board the buses at 6:30 pm in the Bus Lounge at Casino Parking Garage.

STUDENT EVENTS

Students from both societies joined together to create special events for students. These include mentoring activities, a student business meeting, and a student social.

Mentoring

Students who were assigned a mentor should meet for orientation with their mentors on Sunday night from 7:30-8:00 pm in Hickory. This is for those who have signed up for this opportunity. The mentor lunch (by registration) is scheduled for Tuesday 11:50-1:30 in Ash.

Student Business Meeting

Open to all students! Student representatives from both societies will be present to explain student events in detail, gauge student needs and interests for the conference, and see what resources would be useful for students in the year to come. This is a great chance to meet other students and to provide input on how shape the society student resources to be as useful as possible! Bring your own lunch. (Please note that students are also invited to attend the business meetings of both societies.) In Ash from 11:30-12:30 on Monday May 12th.

Student Social

The student social will be held on Monday, May 12th, from 7:30 to 10 pm in the Events Center. This year, the student social will be an open mic night! Be sure to bring your instruments, story-telling skills, dancing shoes, and sense of humor for a fun-filled night of meeting students from both societies and networking with other members who are young-at-heart. Everyone is welcome! Light snacks and a coupon for the margarita/mojito bar will be provided for all students (lemonade will be offered for those under 21). A cash bar will also be open for the event. Please remember to wear your nametags!

CONFERENCE SPECIFICS

INFORMATION FOR PRESENTERS

POSTERS will be on display for the duration of the conference along the walls of the pre-function area, and, if necessary for overflow, on the walls in Beech. Posters will be mounted using Command Strips and thus may be mounted and taken off the walls only by our trained staff to avoid damage to the walls. Please legibly print your name on the top left-hand side on the back of your poster, and give your poster to staff at the Registration table on Sunday if possible, or Monday morning before 8:00 am. Posters will be removed from the walls on Wednesday between 2:00-4:00 pm, for picking up from the Registration table during the afternoon break. If you need your poster returned sooner, please contact the Registration table in advance to schedule a take-down.

The **Poster Session** will take place on Wednesday, May 14th, 10:30-12:30 in the pre-function area. If you are presenting a poster, you should be prepared to stand by your poster for the **entire** poster session.

Audio-Visual Information

All contributed papers will be in the Conference Center. In the interest of keeping on schedule, you may not use your own computer but instead need to have pre-loaded your presentation online OR bring your presentation (labeled with SessionName_yourlastname) on a thumb drive or DVD to the Registration table on Sunday for loading by Walter (BJ) Clifford. Rooms will have podium with microphone, laptop PC computer, PowerPoint software and projection capabilities, DVD drive and video software, as well as internet access.

Presenter Instructions

Presenters who followed instructions in labeling their presentations and pre-loading them will find that their PowerPoint files are pre-loaded on the in-room computers. Files can be found on the desktop in a folder with the session title. Participants who did not load their presentations online before the conference, or who made last-minute revisions, are expected to bring their thumb drives to the Registration table for loading at least by the early morning (before 8:00 am) before their scheduled presentation time. Do NOT expect to insert your thumb drive during your talk or just minutes before your talk!

Session Chairs have been instructed to **cut off all talks at 20 minutes**. Be considerate and plan to end your talk in 15 minutes, allowing 5 minutes for questions or discussion. It is vital that each session remain on schedule. If a presentation is missing, wait until the scheduled time before beginning the next presentation!

INFORMATION FOR ATTENDEES

Registration Area Hours

On-site registration, pickup of registrations materials for those who have pre-registered, and late purchases of event tickets will be handled at the Registration Area located in the pre-function area.

Sunday, May 11th 1:00-3:30 pm 5:30-8:30 pm
Monday, May 12th 7:00 am – 4:00 pm
Tuesday, May 13th 7:00 am – 4:00 pm
Wednesday, May 14th 7:30 am – noon

SPECIAL SERVICES

If you require special assistance or service, please leave a message at the Registration Desk in the pre-function area.

COFFEE BREAKS AND LUNCH

Complementary beverage breaks will be held in the mornings in the pre-function area, and complementary snack and beverage breaks will be held in the afternoon on Tuesday and Wednesday. Unless you are in a special ticketed or invited lunch, lunch is on your own. You can choose to eat at one of the many restaurants within Harrah's, across the street at Socco's Diner, or other restaurants are at nearby hotels or in downtown Cherokee.

SHUTTLE SCHEDULE

Shuttle service is available by pre-registration ticketing at \$20 per one-way. Arrival or departure shuttles at any time other than those listed below are by pre-arrangement only, before the beginning of the conference.

Arrival shuttles pick up at the Asheville airport and deliver (1.5 hours later) to Harrah's

Saturday, May 10th	8:15 pm	This shuttle takes people to their hotels in Cherokee
Sunday, May 11th	1:00 pm	This and all other arrival shuttles take people to Harrah's
"	4:15 pm	
"	6:30 pm	
"	9:15 pm	
Monday, May 12th		morning, time to be arranged

Departure shuttles pick up from the Bus Lounge in the Casino Parking Garage and deliver to the Asheville airport (1.5 hours later). Please be in the Bus Lounge 10 minutes before your scheduled departure.

Wednesday, May 14th	3:30 pm
Thursday, May 15th	7:00 am
"	4:15 pm

Sunday morning shuttle from Cherokee hotels to Harrah's, for the special convenience of Board and Council meeting attendees: bus will stop at all hotels where Board/Council members are known to be registered between 7:30-8:00 am, for transport to Harrah's. Look for a schoolbus! Even if you are not attending the Council or Board meetings, you are welcome to use this shuttle to transfer yourself and your belongings to Harrah's.

THE ENERGY OF PEOPLE, PLACES, AND LIFE



2014 JOINT CONFERENCE
MAY 11 - 14
CHEROKEE, NORTH CAROLINA

THE CONFERENCE LOGO AND THEME

The logo for the joint Society of Ethnobiology 37th annual and Society for Economic Botany 55th annual conference has been generously shared with us by the Cherokee Youth Council, whose Go Green Team worked with the late Walker Calhoun to identify a traditional Cherokee symbol associated with the concept “endless” and apply it as a Cherokee brand to the contemporary concept of recycling. We feel this symbol, found on southeastern pottery vessels beginning in the mid-thirteenth century, is especially appropriate to brand the 2014 conference, “The Energy of People, Places, and Life,” held at Cherokee, North Carolina.



FREEMAN OWLE CHEROKEE STORYTELLER

Freeman Owle, who speaks at the Opening Welcome Reception on Sunday night, tells traditional Cherokee stories, carves wood and stone, and talks about Cherokee culture and history. He has told stories and presented programs on Cherokee history and culture throughout the Southeast for more than ten years. Well known in the Cherokee community, Freeman Owle serves on the board of directors of the Qualla Arts and Crafts Mutual. He is one of the featured storytellers in the book *Living Stories of the Cherokee*, and he appears in the video documentary *The Principal People*, which aired on public television in North Carolina, South Carolina, and Kentucky. He also relates Cherokee stories in the 2001 film, *Plants and the Cherokee*. He recently served as Elder-in-Residence at Western Carolina University.

<http://www.blueridgeheritage.com/traditional-artist-directory/freeman-owle>

(Photo from website: <http://okakapassa.org/images.html>)

CONFERENCE PROGRAM
SOCIETY OF ETHNOBIOLOGY 37TH ANNUAL MEETING
SOCIETY FOR ECONOMIC BOTANY 55TH ANNUAL MEETING
MAY 11-14, 2014 - CHEROKEE, NORTH CAROLINA, USA

SUNDAY - 11 MAY

AFTERNOON

- 1:00-3:30 REGISTRATION**
- 3:00-5:30 PLANT WALK**
by pre-registration, led by Karen Hall and Dan Pittillo, with help from Cissy Fowler
Meet in Bus Lounge at Casino Parking Garage

EVENING

- 5:30-8:30 REGISTRATION**
- 6:00-7:30 PECHA KUCHA** **CONFERENCE CENTER OAK ROOM**
- 8:00-10:00 OPENING WELCOME RECEPTION – Hors d'oeuvres and Cash Bar**
FEATURING FREEMAN OWLE, CHEROKEE STORYTELLER **EVENTS CENTER**

MONDAY - 12 MAY

MORNING

- 7:00-8:30 REGISTRATION** **CONFERENCE CENTER**
- 8:00-8:20 WELCOME** **EVENTS CENTER**
Presidents' welcome: Robert Bye (SEB) and William Balée (SoE)
Denise Glover, University of Puget Sound and SoE Organizer
Gail Wagner, University of South Carolina and SEB Organizer
- 8:20-8:40 Full Circle Philanthropy: The Cherokee Preservation Foundation's Approach to Culturally
Appropriate Environmental Preservation and Sustainability**
CLAPSADDLE, ANNETTE SAUNOOKE - Executive Director, Cherokee Preservation Foundation

Session 1: Caribbean Ethnobotany **MAPLE – CONFERENCE CENTER**
Chair: Sonia Peter- Organized by SEB Caribbean Chapter

8:50-9:10 From Bush Tea to Herbal Tea: Current Trends in the Medicinal Plant Trade in Trinidad and Tobago
BULLARD-ROBERTS, ANGELLE, and BRADLEY BENNETT

9:10-9:30 Dominica: Examining Culture through Medicinal Plant Use
MEYER, MAUREEN

9:30-9:50 Mangoes: From Seed to Table
TAYLOR, GIA GASPARD

9:50-10:10 BREAK

10:10-10:30 Ethnomedicine of Menstruation in Rural Dominica, West Indies
FLORES, KATHERINE E., and MARSHA B. QUINLAN

10:30-10:50 Cleansing and Detoxification in Ethnomedicine – Myth or Reality
PETER, SONIA

10:50-11:10 Sword Plants and the Spirits in African and American Graveyards
RICHARDS, PETER C.

11:10-11:30 The Baobab Culture of Barbados
RASHFORD, JOHN, and ANTHONY RICHARD

11:30-1:00 LUNCH

Session 2: Cherokee Heritage Plants **OAK – CONFERENCE CENTER**
Chair: Elizabeth Horton

8:50-9:10 The Ethnohistory of Nixtamalization in the Southeastern United States
BRIGGS, RACHAEL V.

9:10-9:30 William Holland Thomas and the Ginseng Trade
COZZO, DAVID

9:30-9:50 Cane Breakthroughs
PETERS, THOMAS

9:50-10:10 BREAK

10:10-10:30 Cane Cultures: Investigating the Archeological Record of Rivercane Use in the Pre-Columbian Southeastern United States
HORTON, ELIZABETH T.

10:30-10:50 Growing Bloodroot at Home: Empowering Cherokee Basket Makers to Grow Their Own Bloodroot for Dye (FILM: 15 minutes)
BLOOMQUIST, MARGARET and ALISON DRESSLER

10:50-11:20 Plants and the Cherokee (FILM: 26 minutes) 2001
Available for sale at Museum of the Cherokee

11:20-1:00 LUNCH

Session 3: PreColonial & Colonial Southeastern United States

HICKORY-CONFERENCE CENTER

Chair: Jane Mt. Pleasant

8:50-9:10 People, Plants, and Caves: Discerning Plant and Cave Use from the Late Archaic/Early Woodland to Historic Time Periods at Mammoth Cave, Kentucky
BONZANI, RENEE

9:10-9:30 Woodland Period Horticulturalists in East Tennessee
HOLLENBACK, KANDACE

9:30-9:50 Plant Remains from the Smokemont Site in the Appalachian Mountains of North Carolina
PURCELL, GABRIEL

9:50-10:10 BREAK

10:10-10:30 Foodways in the Yazoo: Integrating Faunal and Floral Analyses at Parchman Place
PELES, ASHLEY, MALLORY A. MELTON, and ERIN NELSON

10:30-10:50 Rethinking Indigenous Agriculture in Pre-Columbian North America
MT. PLEASANT, JANE

10:50-11:10 New Perspectives on Foodways of Enslaved People in the Lower Southeast: A View from Site 9CH1205
BONHAGE-FREUND, MARY THERESA, LESLIE E. BRANCH-RAYMER, and BRAD BOTWICK

11:10-11:30 17th and 18th Century Chickasaw Plant Use and Subsistence
CLIFFORD IV, WALTER A., and KIMBERLY A. WESCOTT

11:30-1:00 LUNCH

Session 4: Medicinal Chemistry

LOCUST-CONFERENCE CENTER

Chair: Gail Mahady

8:50-9:10 An Ethnobotanical Approach to Medicinal Plant Research in the Lowland Wet Forests of Costa Rica
SHEBITZ, DANIELA, SANA BAIG, and DIEGO MORALES

9:10-9:30 The Ethnobotany of Pistacia eurycarpa in Iraqi-Kurdistan: Its Chemical Composition and Anti-Microbial Activity
SCHAFFRAN, PETER, SAMAN AHMAD, and LYTTON MUSSELMAN

9:30-9:50 Anti-HER2/neu Activities of Brassica oleracea var. L. (Collard greens) Used by the Lumbee Tribe of North Carolina
MAHADY, GAIL B., TRACIE D. LOCKLEAR, UDESHI PATEL, and RENE WILLIAMS

- 9:50-10:10 BREAK
- 10:10-10:30 Studies on Bacterial Efflux Pump Inhibitors and Their Distribution in Land Plants
BROWN, ADAM, and NADJA CECH
- 10:30-10:50 Antimicrobial Efficacy of the Phytochemical Constituents of *Phyllanthus amarus* Schumach., A Wonder Herb in Indian System of Medicine
JEYACHANDRAN, ROBERT
- 11:30-1:00 LUNCH
- 11:30-12:30 Student Business meeting, all students invited to bring their lunch and talk business **ASH**
- 11:30-12:50 SEB Global Chapters Lunch (by invitation only) **BEECH**

AFTERNOON

- 1:00-5:15 Cherokee Heritage Experience**
Buses leave in two waves, admittance to destinations only to group and not individuals. Meet in Bus Lounge at Casino Parking Garage at 12:50. First set of buses LEAVE at 1:00. Second set at 1:15 pm.

EVENING

- 5:30-6:15 SEB Business Meeting** **EVENTS CENTER**
- 6:15-7:15 2014 Distinguished Economic Botanist (SEB) Talk**
JAN SALICK
Paradigms Lost and Gained: Don't trust anyone, especially not yourself
All Are Invited
- 7:30-10:00 Student Social and Cash Bar** **EVENTS CENTER**
Students bring your musical instruments and come meet other students. Wear your nametag!

TUESDAY - 13 MAY

7:00-4:30 **REGISTRATION**

CONFERENCE CENTER

TEACHING TUESDAY WORKSHOPS

Note: Workshops are a ticketed event, available by pre-registration. Workshops are organized by the Open Science Network – All are in the CONFERENCE CENTER

- M1 Mobile Discovery:
LOCUST
Engaging Students & Indigenous Communities in Global Health Research
KOMARNYTSKY, SLAVKO
limit: 36**
- M2 Caribbean Medicinal Teas & Bush Baths
ASH
PETER, SONIA
limit: 20**
- M3 Breeder Seed to the Grocery Shelf: GMOs and Consumer Products
BEECH
EUBANKS, MARY
limit: 20**
- M4 Grocery Store Botany
BIRCH
THOMPSON, LAURA
limit: 11**

Session 5: Resource Management & Conservation MAPLE – CONFERENCE CENTER
Chair: Kelly Kindscher

- 8:20-8:40 Linking Sustainable Use of a Threatened Species to its Conservation Status: A Policy Perspective for the Palm *Euterpe edulis* in the Atlantic Forest Hotspot
BALL, ALAINE A., and PEDRO H. S. BRANCALION
- 8:40-9:00 Moving Beyond the Sacred: The Role of Traditional Spiritual Values in Plant Conservation Planning
QUIROZ, DIANA, and TINDE VAN ANDEL
- 9:00-9:20 The Traditional Harvesting of Pipsisewa (*Chimaphila umbellata*) by the Nisqually Tribe within Mount Rainer National Park and Its Ecological Effects
HOOPER, DAVID A.
- 9:20-9:40 Taking It with Them: Early Human-Assisted Plant Dissemination in Northwestern North America
TURNER, NANCY J., and CECIL H. BROWN

- 9:40-10:00 Community-Based Aguaje (*Mauritia flexuosa*) Management and Restoration in Maijuna Indigenous Communities in the Peruvian Amazon
GILMORE, MICHAEL P., CHRISTA M. HORN, and BRYAN A. ENDRESS
- 10:00-10:30 BREAK
- 10:30-10:50 The Response to Harvest of Osha, *Ligusticum porteri*, an Important Medicinal Plant of the Southwest U.S.
KINDSCHER, KELLY, LEANNE MARTIN, and JESSICA LACKEY
- 10:50-11:10 World Park – Travels Through Northern Europe Documenting Good Examples of Original Ecosystems Containing Medicinal Plants with Potential for Helping Restore our Planet Back into a Healthy Global Ecosystem
SIGSTEDT, SHAWN V.
- 11:10-11:30 Does Medicinal Plant Collection Provide Incentives to Conserve Forests?
VIBRANS, HEIKE, MÓNICA PÉREZ-NICOLÁS, ANGÉLICA ROMERO, and RALAE LIRA
- 11:30-11:50 Explaining Edible Plant Diversity in Home Gardens of the Kyrgyz Republic, Central Asia
CURREY, ROBIN C. C.
- 11:50-1:30 LUNCH

Session 6: Ethnomedicine, Part I

OAK – CONFERENCE CENTER

Chair: E. N. Anderson

- 8:20-8:40 Further Explorations of Herbal Medicine Transfer Across Medieval Central Asia
ANDERSON, E. N.
- 8:40-9:00 Exploration of the Knowledge of the Tribals, Who Are Using Specific Herbs for the Treatment of Diseases in their Community
PRIYADARSHNI, MEENAKSHI, and L. N. SHUKLA
- 9:00-9:20 An Inventory of Ethnobotanicals Used in the Management of Sickle Cell Disease in Oyo State, Nigeria
GBADAMOSI, IDAYAT
- 9:20-9:40 Foods for Health, Food for Medicine: A Comparative Study of Health Strategies Used by Chinese and Taiwanese Immigrants in Metro-Atlanta
JIANG, SANDY, and CASSANDRA QUAVE
- 9:40-10:00 World Park – Zoopharmacognosy and Biomimicry Where Black Bears (*Ursus americanus*) are Using Osha (*Ligusticum porteri*) for Medicine with Beneficial Cultural and Biological Consequences
SIGSTEDT, SHAWN V.
- 10:00-10:30 BREAK

Session 7: Domestication**OAK – CONFERENCE CENTER**

Chair: Raymond Pierotti

- 10:30-10:50 The Thin Gray Line: Wolves, Dogs and Human Perceptions
PIEROTTI, RAYMOND
- 10:50-11:10 Seed Size in the Archaeobotanical Record
BLUMLER, MARK
- 11:10-11:30 Weeds for Thought: Towards a Cultural Model of Plant Domestication in the Southeastern United States
ROBINSON, DANIEL

Session 8: Culture & Chemical Life of a Genus**HICKORY - CONFERENCE CENTER**

Chair: Donald Hazlett

- 8:00-8:20 Zarsaparilla (Smilax) Exploitation in Honduras: Research to Estimate Plants Needed for 1857 Export Amounts
HAZLETT, DONALD, LILIAN FERRUFINO, and LUIS BEJERRANO
- 8:20-8:40 Economic Botany and Ethnobotany of Jimsonweeds (or Toloaches) [*Datura* (Solanaceae)] in MegaMexico
BYE, ROBERT, and MARIO LUNA
- 8:40-9:00 Ancient Use of Ephedra Species in Central and Eastern Eurasia
MERLIN, MARK
- 9:00-9:20 Copal of *Bursera* (Burseraceae): Extraction and Marketing Chain in Central México
LINARES, EDELMIRA, and ROBERT BYE
- 9:20-9:40 A Modern View of the Genus *Capsicum* (Chili Peppers)
ESHBAUGH, W. HARDY
- 9:40-10:00 Uses and Socio-economic Significance of *Pentaclethra microphyllum* Benth. (Fabaceae) in the Lives of the Agrarian Communities of Southern Nigeria
NNAMANI, CATHERINE V., and MICHAEL ITAM
- 10:00-10:30 BREAK
- 10:30-10:50 Nutritional Analysis of Wild Yam (*Dioscorea divaricata* Blanco), A Culturally Important Species to the Magbukun Ayta of Kanawan, Morong, Bataan, Philippines
TONGCO, MA. DOLORES; MERCEDES CAYETANO, EMILITA RESTUM, JOSE RESTUM, JOSEFINA ALEJO, and WILL MCCLATCHEY
- 10:50-11:10 Tuber Oxalic Acid Content and Ploidy Levels in Oca (*Oxalis tuberosa*) Use-Categories
BRADBURY, E. JANE, ROLLIN REINART, ELIZABETH KEBBECUS, FRANCISCO VIVANCO, and EVE EMSHWILLER
- 11:10-11:30 A Comparison of Maori and Commercial Sweetpotato (*Ipomoea batatas*) Crop Establishment Methods in New Zealand
ROSKRUGE, NICHOLAS RAHIRI, and CHRISTOPHER DONATO

11:30-11:50 An Integrated Archaeogenomic View of Squash and Gourd (*Cucurbita* spp.) Natural History, Biogeography, and Domestication
KISTLER, LOGAN, LEE A. NEWSOM, and GEORGE H. PERRY

11:50-1:30 LUNCH

11:50-1:20 STUDENT MENTOR LUNCH
By registration or invitation ONLY

ASH- CONFERENCE CENTER

AFTERNOON

TEACHING TUESDAY WORKSHOPS

Note: Workshops are a ticketed event, available by pre-registration. Workshops are organized by the Open Science Network – All are in the CONFERENCE CENTER

A5 DYEING TO LEARN OBJECTIVES: USING A NATURAL DYES **LOCUST**
ACTIVITY TO DEVELOP LEARNING OBJECTIVES
Karen Hall and Sunshine Brosi
limit: 20

A6 EXPLORING THE GENETICS, EVOLUTION AND ETHNOBOTANY **ASH**
OF TASTE: AN ORGANOLEPTIC APPROACH TO OUR RELATIONSHIP WITH PLANTS
Ashley DuVal and Rachael Meyer
limit: 20

A7 FIBERS OF LIFE: CREATIONS FROM PLANT FIBERS **BEECH**
Heidi Bohan
limit: 18

A8 BLADES FROM ROCKS: AN INTRODUCTION TO FLINTKNAPPING
Meet at Conference Registration Table to walk out to Picnic Pavilion. Remember to wear jeans and closed-toe shoes.
Cyrus Harp
limit: 10

Session 9: Farming **MAPLE – CONFERENCE CENTER**
Chair: Rachel Meyer

1:30-1:50 Rice Insect Pests in the Uplands of Sarangani Province, Philippines and Indigenous Methods for their Control
LASALITA-ZAPICO, FLORENCE, CATHERINE HAZEL AGUILAR,
FREDELYN EVE CATUBIG, and ANGELIE ABISTANO

1:50-2:10 Genome-Wide Patterning in African Rice (*Oryza glaberrima*) Land-races Helps to Explain Adaptation to Saline Landscapes and the Historic Coevolution Between Plants and Human Agroecological Practices
MEYER, RACHEL S., JONATHAN FLOWERS, ANNIE BARRETTO, JUNREY AMAS, ANNE PLESSIS,
JESS LASKY, GLENN GREGORIO, and MICHAEL PERUGGANAN

- 2:10-2:30 Medicinal and Wild Food Plants as Emerging New Crop Opportunity for Poverty Alleviation in Africa
MOTLHANKA, DANIEL
- 2:30-2:50 Dissecting Factors that Affect Traditional Crop Diversity, Using Oca (*Oxalis tuberosus*) as a Model
MOSCOE, LAUREN, and EVE EMSHWILLER
- 2:50-3:10 Stalking the Wild Tomato: The Economic Botany of Genetically Modified Cotton Farms in Telangana, India
FLACHS, ANDREW
- 3:10-3:30 Unearthing the Social History of Terrace Agriculture Near Puno, Peru
LANGLIE, BRIEANNA
- 3:50-4:20 BREAK

Session 10: New Perspectives in Ethnobiology **OAK – CONFERENCE CENTER**
Chair: Nicholas Kawa

- 1:30-1:50 Ethnobiology and the Anthropocene: A View from Amazonia
KAWA, NICHOLAS C.
- 1:50-2:10 Fish Flows and Transformations: Coastal Livelihood Adaptation Through the Lens of Design Ethnobiology
IDROBO, C. JULIÁN
- 2:10-2:30 Biosemiotics and Ethnoecology: Prospective Synergies and Ethical Potentialities
LECOMPTE-MASTENBROOK, JOYCE
- 2:30-2:50 Designing Biocultural Revival Through Gourmet Culture in the Central Valley of Tarija, Bolivia: Considering Sustainability Within Design Ethnobiology
TURNER, KATHERINE
- 2:50-3:10 Synchronomimesis: A Post-Darwinian Model of Human Thought and Action
REYNOLDS, PETER C.
- 3:50-4:20 BREAK

Session 11: Historical Ethnobiology **HICKORY – CONFERENCE CENTER**
Chair: David Lentz

- 1:30-1:50 Reshaping the Colonial Landscape: A Palynological Study of Environmental Change in Colonial New Mexico
EDWARDS, KYLE W.
- 1:50-2:10 Envisioning the Class Period Taskscape of K'axob, Belize, Through Paleoethnobotany
DEDRICK, MAIA, and PATRICIA MCANANY

- 2:10-2:30 Shedding Light on the Nightshades (Solanaceae) Used by the Ancient Maya: New Archaeobotanical Evidence from Archaeological Sites in Northwestern Petén, Guatemala
CAGNATO, CLARISSA
- 2:30-2:50 Agriculture and Forest Management at the Ancient Maya City of Tikal
LENTZ, DAVID L. and KIM THOMPSON
- 2:50-3:10 Re-Assessing the Botanical Identity of the Supposed 'Maize God' in May Iconography
MCDONALD, J.
- 3:10-3:30 Mercury and Stable Isotope Analysis of Human Bone from a Late Neolithic/Chalcolithic Ditched Enclosure at Perdigões, Portugal
EMSLIE, STEVEN D., REBECCA BRASSO, WILLIAM P. PATTERSON, ANA MARIA SILVA, and ANTÓNIO CARLOS VALERA
- 3:30-3:50 The Management of Grizzly Bears by Native Californians
PRESTON, WILLIAM
- 3:50-4:20 BREAK

4:30-5:30 SoE Business Meeting **EVENTS CENTER**

5:30-6:15 2014 Distinguished Ethnobiologist (SoE) Talk **EVENTS CENTER**
EUGENE S. HUNN
 What a Long Strange Trip It's Been: Gene Hunn's Ethnobiological Journey
All Are Invited

EVENING

6:30-10:00 Open Science Network Reception
 Mountain Heritage Center at Western Carolina University, Cullowhee, NC
 By registration ONLY – Meet in Bus Lounge at Casino Parking Garage

WEDNESDAY - 14 MAY

7:00 -12:00 **REGISTRATION** **CONFERENCE CENTER**

Session 12: Forest Management **MAPLE-CONFERENCE CENTER**
Chair: Allen Matthews

8:30-8:50 Trees, Forests and Maize: Management Practices of Timber Trees by Nahua Campesinos in the Sierra de Zongolica, Mexico
LOPEZ BINNQUIST, CITLALLI, ROSALINDA HIDALGO LEDESMA, PATRICIA NEGREROS CASTILLO, and FORTUNATA PANZO PANZO

8:50-9:10 Forest-Grown Shitakes
MATTHEWS, ALLAN

9:10-9:30 Health Status of Butternut (*Juglans cinerea*) in Maryland
BOWER, JUSTIN, SCOTT SCHLARBAUM, EAGLE BROSI, and SUNSHINE BROSI

9:30-9:50 Seedling Establishment of American Chestnut, *Castanea dentata*, in Pennsylvania
MCCAMPBELL, MICHAEL, SUNSHINE BROSI, THOMAS HALL, ARNOLD SAXTON, and SCOTT SCHLARBAUM

9:50-10:10 Continental patterns in the human-mediated diaspora of Brazil nut (*Bertholletia excelsa* Bonpl.) across the Amazon Basin
THOMAS, EVERT, CAROLINA ALCAZAR CAICEDO, and JUDY, LOO

10:10-10:30 BREAK

Session 13: TEK, Part I **OAK - CONFERENCE CENTER**
Chair: Nicholas Roskruge

8:30-8:50 A Tale of Ethnic Minorities, Rhododendron, and Conservation in Yunnan Province, China
GEORGIAN, ELIZABETH, and EVE EMSHWILLER

8:50-9:10 Local Ecological Knowledge of Native Atlantic Forest Medicinal Plants on an Agricultural Settlement in Pernambuco, Brazil
MAXWELL, WILLIAM

9:10-9:30 Tasting and Testing: Addressing Aboriginal Concepts of Berry Contamination in Alberta's Oil Sands Region
BAKER, JANELLE MARIE

9:30-9:50 Tahuri Whenua - Capturing Traditional Knowledge for a Contemporary Opportunity
ROSKRUGE, NICHOLAS RAHIRI

9:50-10:10 Reinforcement and Revitalization of Culture and Tribal Knowledge System in the Eastern and Western Ghats Regions in Tamil Nadu in India
DE BRITTO, ALEXIS JOHN

10:10-10:30 BREAK

Session 14: Education

HICKORY – CONFERENCE CENTER

Chair: Ryan Huish

- 8:30-8:50 Cherokee Collaborative Field School: Teaching Core Concepts & Competencies in Ethnobiology Through the Lens of Cherokee Artisan Resources
BROSI, SUNSHINE, and RYAN HUISH
- 8:50-9:10 Student-Centered Learning and Ethnobotanical Connections in Plant Identification Curriculum: Engaging Students in Broader Scientific Competencies
HUISH, RYAN D., and SUNSHINE BROSI
- 9:10-9:30 “The Hunger Games, A Game to Introduce Ethnobotanical Diversity”: Using Popular Culture in the Teaching and Learning of Ethnobotany for Liberal Arts Students
GAMBIER, ROSA M., and JENNIFER L. CARLSON
- 9:30-9:50 Contextual Photography (FILM: 17.5 minutes)
BRIDGES, KIM
- 9:50-10:10 Harnessing the Power of Plant Foods During Cancer Treatment and Recovery
OFFRINGA, LISA, FREDI KRONENBERG, and REBECCA KATZ
- 10:10-10:30 BREAK

Session 15: Indigenous Perspectives on Ethnobiology LOCUST – CONFERENCE CENTER

Chair: Raymond Pierotti

SoE and SEB CO-SPONSORED SESSION

- 8:30-8:50 ‘Wolf Man’ and Wolf Knowledge in Native American Hunting Traditions
HERNANDEZ, NIMACHIA
- 8:50-9:10 Traditional agricultural practices in a contemporary context
STEVENS, Lois
- 9:10-9:30 Anishinaabek revitalization of ethnomycology, from Keewaydinoquay’s 1998 Puhpohwee for the People to the present, what has emerged from the ground?
HERRON, SCOTT
- 9:30-9:50 Heyókħa Medicine: Uses of Plant and Animals by the Clowns of the Lakota
DIFFERENT-CLOUD JONES, LINDA
- 9:50-10:10 Scale and Social Complexity: Knowledge Systems and Effective Conservation
PIEROTTI, RAYMOND
- 10:10-10:30 Discussant
JANE MT. PLEASANT

10:30-12:30 Poster Session

PRE-FUNCTION AREA, CONFERENCE CENTER

Student contestants should stand by their posters to answer questions from judges

12:30-2:00 LUNCH

AFTERNOON

Session 16: People and Place

MAPLE-CONFERENCE CENTER

Co-Chairs: Marianne Ignace and Maria Fadiman

- 2:00-2:20 A community-designed study of the effects of mining dust on traditional plants of the Nlaka'pamux people of central-interior British Columbia
GARIBALDI, ANN, SHANTI BERRYMAN, KEVAN BERG, and NANCY TURNER
- 2:20-2:40 Secwepemc Cultural and Spiritual Presence in Mid-Elevation Grasslands
IGNACE, MARIANNE, MIKE ANDERSON, and CHIEF RON IGNACE
- 2:40-3:00 Landscapes of Water
BROWNE, RIBEIRO, and ABIGAIL BUFFINGTON
- 3:00-3:20 Human Impact and the St. Johns River: Exploring the Relationship Between People and Place
BOLFING, CHRISTOPHER B.
- 3:20-3:40 Participatory Mapping: Gaining "Sense of Place" for Forest Conservation in the Manaslu Conservation Area, Nepal
SHRESTHA, SUSHMA
- 3:40-4:00 Coontie Tubers and Bottle Gourds: Archaic Use in the Florida Panhandle
SCOTT CUMMINGS, LINDA
- 4:00-4:30 BREAK
- 4:30-4:50 Historical Ecology of a Major Superfund Site: Onondaga Lake, NY
LANDIS, CATHERINE, DONALD J. LEOPOLD, and ROBIN W. KIMMERER
- 4:50-5:10 The Human Need for Green Space: Urban Parks in Shanghai, China
FADIMAN, MARIA
- 5:10-5:30 Seeing the Forest or the Trees? How Rural Southerners Talk About Trees and Forests in the United States
SCHELHAS, JOHN, SARAH HITCHNER, and PETE BROSIUS
- 5:30-5:50 Reciprocal Antecedents in Ethnobotany: Exchange of Plant Knowledge Among Florida's African, Indigenous and Pioneer Populations
BENNETT, BRADLEY

Session 17: TEK, Part II**OAK-CONFERENCE CENTER**

Chair: Cassandra Quave

- 2:00-2:20 In Creation and Idle No More: Heeding Onkwehonwe Prophecies of Earth Changes as Environmental Knowledge
DOLAN, JESSICA M.
- 2:20-2:40 Traditional Ecological Knowledge in Chile: State of the Discipline Toward the Improvement of Management and Conservation of Nature
GUERRERO, MATIAS, MARIA ISABEL MUJICA, MARIA FERNANDA VIOGARAY, STEFAN GELCICH, and JUAN ARMESTO
- 2:40-3:00 Ethnozymology and TEK of the Environmental Microbiome
QUAVE, CASSANDRA, and ANDREA PIERONI
- 3:00-3:20 Traditional Climatic Knowledge in the Nearctic and Neotropic Ecoregions
SAVO, VALENTINA, DANA LEPOFSKY, JORDAN BENNER, and KEN LERTZMAN
- 3:20-3:40 Ethnobotany of the Weed Vegetation of Chol Farmers in the Candelaria Region of Campeche, Mexico
VIBRANS, HEIKE, MARÍA ASUNCIÓN GUILLERMO-GÓMEZ, JOSÉ ANTONIO LÓPEZ-SANDOVAL, and EDMUNDO GARCIA-MOYA
- 3:40-4:00 Working on Moosehide, A Participatory Video Project with the Kaska Nation, Yukon, Canada (FILM: 17.5 minutes)
JOHNSON, LESLIE MAIN, AILEEN REILLY, LINDA MCDONALD KASKA, and MIDA DONNESSEY KASKA
- 4:00-4:30 BREAK

Session 18: Ethnomedicine, Part II**OAK-CONFERENCE CENTER**

Chair: Elizabeth Olson

- 4:30-4:50 “Agüitas y Sopitas”: Mothers’ Knowledge, Perceptions, and Practices of Traditional Home Remedies and Medicinal Foods in the Northern Andes
HAMMER, MICHAELA
- 4:50-5:10 Mothers’ Medicinal Plant Knowledge, Folk Illnesses, and Treatment Preferences for Childcare in Two Pluralistic Healthcare Settings
TOWNS, ALEXANDRA M., and TINDE VAN ANDEL
- 5:10-5:30 Dit Da Jow: Iron Hit Wine in Traditional Chinese Medicine
BOUDELL, JERE, JOSEPH M. MIKULA, and SIFU WAYNE D. BELONOHA
- 5:30-5:50 Conceptual Connections Across People and Places: Some Observation on the Practice of Homeopathy in Contemporary Rural Mexico
OLSON, ELIZABETH A.

Session 19: Food and Beyond Food

HICKORY-CONFERENCE CENTER

Chair: Nanci Ross

- 2:00-2:20 When is a Snack? (And Answers to Other Questions You Were Afraid to Ask)
WAGNER, GAIL E.
- 2:20-2:40 Plants for Play/Snack: Andean Children's Knowledge and Exploration of Play/Snack Plants
BORIOS, STEPHANIE
- 2:40-3:00 From Embalming Fluids to Biofuels: The Evolution of Non-Food Uses of Crop Plants
DUVAL, ASHLEY, RACHEL MEYER, and HELEN JENSEN
- 3:00-3:20 Chenghi, The Unique Hair Care Lotion Used by the Meitei Community of Manipur (India)
SHARMA, H., H. RAJANIKANTA, MANORANJAN SHARMA, and A. RADHAPYARI DEVI
- 3:20-3:40 An Inventory of Wild Seed Oil Plants of Botswana: An Untapped Economic Resource
MOTLHANKA, D. M. T., T. SELEBATSO, S. W. MAKHABU, B. SEBOLAI, and M. SETLALEKGOMO
- 4:00-4:30 BREAK
- 4:30-4:50 The Spiritual and Physical Benefits of Preserving Endangered Recipes in Southwest Alaska
JERNIGAN, KEVIN, and DARLENE ORR
- 4:50-5:10 Traditional Uses of *Schoenoplectus lacustris* (L. Pal)la and *Schoenoplectus mucronatus* (L.) Palla
by the Meitei Community of Manipur (India)
SHARMA, H., H. RAJANIKANTA, MANORANJAN SHARMA, and A. RADHAPYARI DEVI
- 5:10-5:30 Rediscovering the "fruit of the gods": investigating the biogeography of *Diospyros virginiana*
ROSS, NANCI

Session 20: Ethnoornithology

LOCUST - CONFERENCE CENTER

Chair: Robert Gosford

- 2:00-2:20 John Gilbert, The First Australian Ethnoornithologist
GOSFORD, ROBERT
- 2:20-2:40 Andean Condors in Relationship to Place and Others in a Cycle of Transformation
SAULT, NICOLE
- 2:40-3:00 The Ethno-ornithology World Archive (EWA): An Open-Science Database for Bird and
Biocultural Conservation
WYNDHAM, FELICE S, KAREN E. PARK, ADA M. GRADOWSKA-ZHANG, HEIDI FLETCHER, and
ANDREW G. GOSLER
- 3:00-3:20 The Ethnobiology of Pre-Globalization Hawaiian Feather Cloaks and Capes
CHOCK, AL KEALI'I
- 3:20-3:40 Towards a Cherokee Ornithorium - Realising the Value of Historical and Contemporary Bird
Knowledge
GOSFORD, ROBERT
- 4:00-4:30 BREAK

Session 21: Taxonomy – Classification

LOCUST-CONFERENCE CENTER

Chair: Tinde Van Andel

- 4:30-4:50 Local Plant Names Tell Us How Enslaved Africans Familiarized Themselves with the New World Flora
VAN ANDEL, TINDE, CHARLOTTE VAN 'T KLOOSTER, DIANA QUIROZ, ALEXANDRA TOWNS, and SOFIE RUYSSCHAERT
- 4:50-5:10 Machiguenga Ethnoichthyology: Taxonomy as the Intersection of Alternative Systems of Identification
BROWNRIGG, LESLIE
- 5:10-5:30 Analysis of the Nomenclature and Classification of Hymenoptera in Yoloxóchitl Mixtec, An Endangered Language from Southwest Mexico
AMITH, JONATHAN

Session 22: Film Premier

ASH-CONFERENCE CENTER

- 2:00-3:15 Mezcals from Western Mexico and Pre-Hispanic Distilling
(Documentary, 55 minutes)
COLUNGA-GARCIAMARIN, PATRICIA, DANIEL ZIZUMBO- VILLARREAL, FERNANDO GONZÁLEZ-ZOZAYA, PASCUAL, ALDANA-YÁÑEZ, DANIEL ALDANA-YÁÑEZ, and ALBERTO, FUENTES-CHÁVEZ
- 4:00-4:30 BREAK

EVENING

**7:00-7:20 Awards
Open to all**

EVENTS CENTER

7:20-10:00 Banquet and Cash Bar
Ticket from pre-registration required

THURSDAY - 15 MAY

7:00	SHUTTLE (ticketed event by pre-registration) to Asheville airport	BUS LOUNGE in Casino Parking Garage
7:00	ASH3 Blue Ridge Mountain Ecology Field Trip leaves. Cissy Fowler, leader	BUS LOUNGE in Casino Parking Garage
7:30	ASH4 Asheville Botanical Gardens Field Trip leaves.	BUS LOUNGE in Casino Parking Garage
9:00	CH1 Cherokee Cosmography (Holland) CH2 Appalachian Ethnobotany (Cozzo) field trips leave	BUS LOUNGE in Casino Parking Garage
3:00	CH1 field trip returns to Harrah's	
4:00	CH2 field trip returns to Harrah's	
4:15	SHUTTLE (ticketed event by pre-registration) to Asheville airport	BUS LOUNGE in Casino Parking Garage

POSTERS

A. MEDICINAL PLANTS AND PHYTOCHEMISTRY

1. **ANEKE, Janessa** - Phytochemical profiling of plants based on different ethnobotanical use categories
2. **DE BRITTO, Alexis John** - Molecular and Chemical Fingerprinting of Anti-Cancer Drug Yielding Plants--Conservation Genetics Approach
3. **DE RUS, Jacquet, Rupa Subedi, Suresh K. Ghimire, and Jean-Christophe Rochet** - Neuroprotective activities of Nepalese traditional medicine in Parkinson's Disease models
4. **DORIAN, Matthew, Effrosyni Seitaridou, and Cassandra Quave** - Using diffusion coefficients as a means of analyzing the impact of medicinal plant extracts on biofilm growth and structural integrity
5. **JEYACHANDRAN, Robert** - In Vitro conservation strategies and ethnopharmacological analysis of *Cayratia pedata* Lam.- An endangered medicinal plant of South India
6. **LYLES, James, Paula Tyler, Kevin Spelman, Stephanie Pierce, Carl Brown, and Cassandra Quave**- Comparative Phytochemical Analysis of Chinese and American Starvine by HPTLC and HPLC
7. **MAHADY, Gail B., Hong Ma, Ye Lu, and Daniel Lu** - The safety and mechanism of action of a traditional Chinese medicine formula for the management of menopause
8. **MOTLHANKA, Daniel** - Total Phenolic Content and Free Radical Scavenging Activity of *Hypoxis hemerocallideae* from Botswana
9. **MOTLHANKA, Daniel, B. Sebolai and T. Kotlhao** - Phytochemical Screening, Antioxidant and Heavy Metal Analysis of Medicinal Plants Sold by Street Vendors in Gaborone, Botswana
10. **MOTLHANKA, Daniel, B. Sebolai and B. Seru** - Comparative Antioxidant and Total Phenolic Analysis of Four Indigenous Herbal Teas of Botswana
11. **SUBBURAMAN, Senthilkumar** - Studies on documentation of traditional medicinal plants knowledge and Histochemical studies: some medicinal plants from Eastern Ghats, India.

B. EDIBLE PLANTS AND AGRICULTURE

1. **ARMSTRONG, Chelsea Geralda D.** - Hazelnut (*Corylus cornuta*) on the Northwest Coast: An Ethnobiological Profile
2. **AUCOIN, Martin and Matthew Fry** - Perceptions of Place and Community in the Dallas Local Foods Movement
3. **LASCURAIN, Maite, Sergio Avendano, and Citlalli López-Binnqüist** - Diversity of leaves used for Tamales in Veracruz, Mexico
4. **LUPTON, Darach, Abdulrahman Al Hinai, and Thuraiya Al Jabri** - Documenting traditional agricultural weights and measures systems in the Al Hajar Mountains, Northern Oman

5. **MAPES, Cristina, Basurto Francisco, Peralta Lorena, and Díaz Araceli** - Diversity of "quintoniles" (*Amaranthus* spp.) in the Sierra Norte of Puebla, Mexico

6. **MCALVAY, Alex** - Traditional non-crop management of the Wixáritari (Huichol) of western Mexico

7. **MUELLER, Natalie G.** - Developing Domestication Criteria for Crops with Knotty Morphologies: *Polygonum* in the Eastern Woodlands

C. GARDENS

1. **GLENN, Ashley** - Sacred Seeds: supporting communities supporting biodiversity

2. **PAI, Aswini, Lydia Horne, and Houston Judd** - Agrobiodiversity as a means of supporting pollinator diversity: a study of wild bee species in the kitchen gardens of St. Lawrence County, New York

3. **SEMOTIUK, Andrew and Exequiel Ezcurra** - Yoreme-Mayo healers counter wild medicinal plant resource commercial harvesting with creation of closed botanical gardens

D. PALMS

1. **DA SILVA, Carolina, Nilo Sander, Joari Arruda** - Cultural importance of palms for Quilombolas in the Amazon, Brazil

2. **ROMULO, Chelsie and Michael P. Gilmore** - Working to conserve and sustainably manage the ecologically, culturally, and economically important palm tree *Mauritia flexuosa* (aguaje) in the Peruvian Amazon

3. **SANDER, Nilo, Carolina Da Silva, and Joari Arruda** - Traditional ecological knowledge versus the use of Buriti (*Mauritia flexuosa* L.) in Quilombolas communities in the Amazon, Brazil

E. TEK AND HISTORICAL ECOLOGY

1. **HALL, Mitch, J.B. Churchill, and Sunshine Brosi** - Prioritizing Management Strategies in Washington DC Urban Forests

2. **HARWELL, Alexandra** - The Restoration of Sweet Grass (*Shoenoplectus pungens*) in the Nisqually Delta: An Ethnobiological Restoration Effort

3. **JACKLEY, Julia, Dana Lepofsky, Jennifer Carpenter, and Nancy Turner** - Mountain Top to Ocean Floor: The Eco-cultural History of Hauyat

4. **KACHKO, Liza** - Changing Landscapes: Impacts of Environmental Change on Knowledge and Use of Medicinal and Edible Wild Plants in the Communities of Point au Chien and Isle de Jean Charles in Southern Louisiana

5. **SANDERS, Wyatt, Jillian De Gezelle, and Alexander Krings** - Culturally Significant Plants of the Piedmont Prairies along a Native American Trading Route

6. **VIRAPONGSE, Arika, Hank Loescher, and Lindsay Powers** - National Ecological Observatory Network (NEON): Building community and seeking innovative approaches for understanding human-environmental systems.

7. **VIRNIG, Anne Lucy, Ina Vandebroek, Julián Perdomo, Paola Pedraza, and Amy Litt** - Cultural importance and classification of queremes (Vaccinieae, Ericaceae) in El Queremal, Colombia

F. CHEROKEE ETHNOBOTANY

1. **ECHEVERRI, Gabriel, Ian Cheek, Benjamin Brown, Scott E. Schlarbaum, Ami M. Sharp, and Sunshine L. Brosi** - Rivercane as a companion for cultural resource butternut plantings

2. **MESSICK, Kerry A., Megan E. Carr, Michael McCampbell, Matthew D. Tillett, Ami M. Sharp, Scott E. Schlarbaum and Sunshine L. Brosi** - Establishment of white oak, *Quercus alba*, seedlings for Cherokee basketry material

3. **NGOFA, Sedia, Juliana M. Hong, Laura G. Smith, Scott E. Schlarbaum, Ami M. Sharp, and Sunshine L. Brosi** - Increasing the Availability of Butternut for Traditional Cherokee Dye

G. PALEOETHNOBOTANY

1. **NAGAOKA, Lisa, Steve Wolverton, and Feifei Pan** - Modeling Crop Failure Potential in Late Pueblo III Mesa Verde Villages

2. **SCARRY, Margaret C., Ashley Peles and Brett Riggs** - Acorn Processing at the Ashe Ferry Site in the Carolina Piedmont

3. **Slotten, Venicia and David Lentz** - Analysis of Paleoethnobotanical Remains Associated with the Ceremonial Sacbe at the Ancient Maya Village of Cerén

H. ZOOARCHAEOLOGY

1. **BARKER, Andrew, Jonathan Dombrosky, Dale Chaput, Steve Wolverton, Barney Venables, Stanley M. Stevens Jr.** - Blood from Bones: Protein Residues from Zooarchaeological Remains at Goodman Point Pueblo

2. **DOMBROSKY, Jonathan, Lisa Nagaoka and Steve Wolverton** - Large Game Abundance and Source-Sink Dynamics in the Northern Rio Grande and Mesa Verde regions ca. AD 1300

3. **OTAOLA, Clara and Miguel Giardina** - A Taphonomic Perspective on Intensification of Animal Resource Use in Central-Western Argentina

4. **POPEJOY, Traci, Charles R. Randklev, and Steve Wolverton** - Zooarchaeology and Conservation Biology of the Late Holocene Freshwater Mussel Community in the Leon River Basin of Central Texas

5. **WINSTEAD, Christy, Amy Hoffman, and Laura Ellyson** - Domesticated Animal vs. Wild Prey Use in an Ancestral Puebloan Community in Southwestern Colorado

6. **WOLVERTON, Steve, Miguel Giardina, Clara Otaola, Matthew Fry, and Gustavo Neme** - Zooarchaeology of Contemporary Goat Ranching Among Puesteros of Western Argentina

I. ETHNOZOOLOGY

1. **HARP, Cyrus** - Edible insect use by California Indians

2. **PRADO, Helbert Medeiros, Rui Sérgio Sereni Murrieta, Cristina Adams, and Eduardo Sonnewend Brondizio** - Quilombola and scientific knowledge about large mammals in Brazilian Atlantic Forest: a comparative approach

3. **QUINLAN, Robert, Marsha Quinlan, and Douglas Call** - Medical Syncretism and Maasai Ethnoveterinary Practices

ABSTRACTS

Indigenous Perspectives on Ethnobiology Special Session Co-Sponsored by SoE and SEB

One of the most important aspects of research in Ethnobiology is investigating the scientific understanding and knowledge of indigenous peoples. As SOE moves into the 21st century it will build its reputation through outreach towards and inclusion of scholars who represent Indigenous knowledge and cultural traditions. This symposium represents both of these goals through having Indigenous scholars present their ideas to the society as part of its annual meeting. The papers presented in this symposium include *'Wolf Man' and Wolf Knowledge in Native American Hunting Traditions* by Nimachia Hernandez, a scholar of Blackfoot and Anishinaabe heritage who examines the scientific content of traditional stories. Scott Herron will present on *Anishinaabek revitalization of ethnomycology, from Keewaydinoquay's 1998 Puhpohwee for the People to the present, what has emerged from the ground?* Linda Different-Cloud Jones (Catawba Nation) will present on *Heyókha Medicine: Uses of Plant and Animals by the Clowns of the Lakota*. Lois Stevens, an Oneida graduate student, will present upon her research into *Traditional agricultural practices in a contemporary context*. Heidi Bohan will present material on her work in Ethnobotany with tribes in the Pacific Northwest. Finally, Raymond Pierotti, the only faculty member in the US to hold a joint appointment in Indigenous Nations Studies and Ecology and Evolutionary Biology, will present *Scale and Social Complexity: Knowledge Systems and Effective Conservation*, which addresses why Indigenous knowledge traditions may be superior at the local level, because operating at smaller (local) scales creates increased knowledge of species dynamics, leading to more effective conservation tactics. Jane Mt. Pleasant, a Tuscarora scholar who has been an active member of SOE for an extensive time, will provide an overview summary that places the papers presented in the overall context of Ethnobiological scholarly traditions.

AMITH, Jonathan D. - Dept. of Anthropology, Gettysburg College; Dept. of Anthropology, National Museum of Natural History, Smithsonian Institution

Analysis of the nomenclature and classification of Hymenoptera in Yoloxóchitl Mixtec, an endangered language from southwest Mexico

Yoloxóchitl Mixtec (YM), spoken on the Pacific Coast of Guerrero, is one of 52 Mixtec languages listed by Ethnologue. Over the past five years, extensive work on YM language documentation (corpus development, grammar, and lexicography) included collection of over 1000 arthropods named and categorized by four YM collaborators and then identified in Western binomial nomenclature by approximately 75 specialized taxonomists.

This presentation analyzes YM knowledge of Hymenoptera (principally Apidae, Crabronidae, Formicidae, Mutillidae, Pompilidae, Sphecidae, Vespidae). Although a Western phylogenetic category, Hymenoptera have been chosen as a case study because of the large numbers of morphologically and behavioristically distinct species in relatively few families. This pool of over seventy referents offers an excellent opportunity to study cognitive processes in YM: the nomenclature and classification of the natural environment. The results demonstrate that strategies for assigning names to taxa (morphology, habitat, behavior) influence the saliency, boundaries, and internal structure of native categories.

ANDERSON, E. N. - University of California, Riverside

Further Explorations of Herbal Medicine Transfer across Medieval Central Asia

In several previous conferences I have described the Huihui Yaofang, a 14th-century medical encyclopedia of Near Eastern medicine compiled for the Chinese under the Mongols, and its herbal, animal and mineral drugs, including some 416 taxa. Further comparative research with historical materials has disclosed more information about the history, context, and background of this text and about the remedies it lists. The present paper

discusses the Central Asian (and, ultimately, West Asian) background of this work and adds findings on current Mongolian ethnobiology as observed on a brief research trip in spring of 2013. Central Asian and Mongolian cultural groups proved very accepting to new and foreign medical influences, because of traditionally broad and accepting attitudes toward knowledge in general. China ultimately rejected the new western ideas. Later Chinese sources on food and medicine show a return to earlier Chinese norms.

ANEKE, Janessa - Emory University, and Samir Hussaini - Emory University

Phytochemical profiling of plants based on different ethnobotanical use categories

Medicinal plants associated with strong antibacterial activity often share the common feature of a chemistry rich in polyphenolics and tannins. However, is this trait unique to anti-infective plants? Are the general chemical profiles of medicinal plants fundamentally different from those not used for medicinal purposes? In this study, we addressed these questions through phytochemical profiling of medicinal plants used in the treatment of infectious disease, and compared these findings with a random sample of plants with no reported medicinal use in the literature. Crude MeOH extracts from 50 species were evaluated using spectrophotometric techniques for the quantification total tannins and phenolics, and also for antioxidant activity. Specifically, we employed the Folin-Denis method for assessment of tannins, Folin-Ciocalteu for polyphenolics, and the DPPH assay for antioxidant activity. Here, we discuss how ethnobotanical use corresponds to plant chemistry on a broad scale.

ARMSTRONG, Chelsey Geralda D. - Simon Fraser University

Hazelnut (*Corylus cornuta*) on the Northwest Coast: An Ethnobiological Profile

Traditionally, wild and managed plants were central to Pacific Northwest Coast peoples diet, technology and worldviews. However, shifting lifeways imposed by colonialism has changed the way plants are perceived and remembered. By focusing on *Corylus cornuta* this research will integrate various ethnobiological sub-disciplines to better understand the cultural and ecological significance of hazelnut on the Northern Northwest Coast.

There is a weak ethnographic record of hazelnut in British Columbia, however shell remnants are ubiquitous archaeologically. Furthermore, linguistic evidence supports the hypothesis that a disjunct population of hazelnut in the Gitksan and Wet-suet'en region of British Columbia was brought from the Salish region and potentially managed for food and fuel by Northern peoples. Combining this evidence with modern and ancient genetics, archaeological surveys, and ethnoecological studies, we will gain insights into the multi-dimensional ways in which peoples interacted with and related to their natural world.

Arruda, Joari - University of the State of Mato Grosso, Da Silva, Carolina - University of the State of Mato Grosso, and Sander, Nilo - University of the State of Mato Grosso

Traditional ecological knowledge and use of Babaçu (*Attalea speciosa* Mart.ex Spreng.), in Quilombolas communities in the Amazon, Brazil

This paper studies the knowledge and use of babaçu palm (*Attalea speciosa* Mart.ex Spreng.) through Informant diversity value (IDV) and Sørensen similarity index (SSI) to compare the knowledge of three quilombola communities in the Amazon, involving 32 respondents. The IDV of knowledge was 11 of 32 and of use was 8.63. Significant values when compared to other communities that use this palm. The lowest comparison value of ISS between the community was 0,875, high value, explained by the geographical proximity between communities, high degree of kinship and familiarity. The results show a decrease in the use of babaçu compared to the knowledge, explained by the improvement in the economy of the communities, which facilitates the acquisition of industrial products, the lack of knowledge transmission and the new generations disinterest in learning, which can lead the loss of knowledge and utilization of babaçu by these Quilombolas communities.

AUCOIN, Martin - University of North Texas, and Matthew FRY - University of North Texas

Perceptions of Place and Community in the Dallas Local Foods Movement

Increased interest in local food production and its associated qualities has re-awakened a sense of the local community in many parts of the industrial world. This thesis examines the spatial distribution of local food in the Dallas/Fort Worth (DFW) Metroplex and the farmers' markets as nodal localities for local foods systems, around which producers and consumers create place and community. Research methods include informal interviews with farmers and farmers' market coordinators, collection of data on local farms, ranches and dairies and a GIS analysis of the spatial distribution of food in DFW. This study revealed that place and community are formed largely around the nodal farmers' markets, as opposed to other centers of local food, and that community is particularly important to the identity of the local foods movement. We propose that the local food in DFW is a movement based on reconstructing senses of community and place.

BAKER, Janelle eMari and Fort McKay Berry Focus Group

Tasting and Testing: Addressing Aboriginal Concepts of Berry Contamination in Alberta's Oil Sands Region

Fort McKay is a Cree, Dené and Métis community in the heart of the oil sands in northern Alberta, Canada. In partnership with the Wood Buffalo Environmental Association, Fort McKay designed a long-term research project where they visit intact berry patches to share stories and TEK. The research team also observes berry health and quality and records perspectives on contamination. Many local berry patches have been disturbed and people do not trust berries that grow near oil sands developments, so people are now traveling greater distances to harvest. In 2013 the research team introduced scientific testing into the project by setting up passive air monitors in berry patches and sending berries to laboratories for testing. We will discuss the results from the testing, while contemplating the implications of verifying traditional knowledge with science in a context where expert knowledge, government regulations, and environmental impact assessments are driven by profit.

BALL, Alaine A. - Yale University MacMillan Center for International and Area Studies; Department of Forest Sciences, Escola Superior de Agricultura "Luiz de Queiroz", University of São Paulo, and Pedro H.S. BRANCALION - Department of Forest Sciences, Escola Superior de Agricultura "Luiz de Queiroz", University of São Paulo

Linking sustainable use of a threatened species to its conservation status: A policy perspective for the palm *Euterpe edulis* in the Atlantic Forest Hotspot

Throughout Southern Brazil, conservation practitioners and non-governmental organizations are encouraging the use of the fruits of the endangered palm *Euterpe edulis* to produce a juice similar to that of açai (*Euterpe oleracea*) as a more sustainable income source than heart of palm extraction. Projects that address both conservation and development objectives present opportunities for more socially just conservation but face complexities beyond those of development and conservation alone.

This article examines fruit pulp development projects in São Paulo State to assess the potential to increase conservation of *E. edulis* through management on smallholder properties. Research relied on qualitative methods, including semi-structured interviews, participant observation, and document review. We did not observe a direct relationship between conservation and management, but engagement with pulp production and *E. edulis* restoration projects links farmers with sustainable agricultural concepts and with networks, changing their perceptions of conservation and enhancing ability to benefit from improved policy.

Barker, Andrew, Dombrosky, Jonathan, Chaput, Dale, Wolverson, Steve, Venables, Barney, and Stevens, Stanley M., Jr.

Blood from Bones: Protein Residues from Zooarchaeological Remains at Goodman Point Pueblo

A growing body of scientific literature highlights that protein residues can be extracted from prehistoric artifacts and bones and identified to varying levels of taxonomic specificity. Little research has been done to assess which proteins and which peptides tend to preserve within particular archaeological contexts. Protein residues were extracted from zooarchaeological bones identified to Leporidae (jackrabbit), Sciuridae (squirrel), and *Meleagris gallopavo* (turkey). The bones are from Pueblo

sites in southwestern Colorado occupied from roughly AD 1000 to 1300. Our results corroborate the propensity of protein residues to survive sufficiently well enough to be identified to taxon and tissues. In some cases, even blood protein residues can be identified. In addition, our results indicate that some peptides of collagen, which commonly preserves, exhibit substantial homology but others are comparatively taxon-specific and might have potential to be targeted in archaeological residue analysis.

BENNETT, Bradley - Department of Biological Sciences, Florida International University

Reciprocal antecedents in ethnobotany: Exchange of plant knowledge among Florida's African, indigenous and pioneer populations

From the late 18th through the early 20th century, Florida was settled by populations from Africa, Europe, and North America. These populations replaced the state's original inhabitants who succumbed to warfare and introduced diseases by the late 1700s. Native Americans from the southeastern U.S., pioneers of European ancestry and enslaved Africans (and escapees) migrated into Florida. As they moved farther south along the peninsula, they encountered an ever-increasing number of novel, tropical plant species. Exchange of information about these new plants allowed the immigrant populations to adapt to Florida's subtropical and subtropical flora. In many cases, linguistic and historical data can determine the donor and recipient populations regarding the knowledge about a plant species. For example, sugarcane and came from Europeans; coontie from Native Americans; and wiregrass from Africans. The tripartite diffusion of knowledge has enriched the ethnofloras of each of the groups and it persists today.

BHANDARY JAYAKARA M. Associate Professor of Botany, Government Degree College, Karwar - 581301, Karnataka, India, and CHANDRASHEKAR KR, Professor of Applied Botany, Mangalore University, Karnataka, India

Indigenous knowledge of medicinal plants and practices of coastal Karnataka, India

A study was undertaken in Coastal Karnataka of India to document and analyse the ethnomedicinal practices and plants of the area. Information on disease concepts, treatment methods and plants used is collected from herbal healers and knowledgeable elders of indigenous communities using standard ethnobotanical methods of questionnaire-based personal interviews in the field. This study resulted in the documentation of 917 methods of herbal treatment for 42 various health problems which involves 342 species of plants belonging to 34 families. Number of plants used in these methods range between 1 and 17. Major categories of diseases treated are: skin diseases (22%), pains and swellings (20%), gastro-intestinal and urino-genital (15% each). Among the plants used, 30% are herbs, 27% trees, 25% climbers and 18% shrubs. Bark of the stem is the predominantly used part (30%), followed by leaves (22%), roots (16%), fruits or seeds (12%) and entire plants (11%). The dominant families of ethnomedicinal plants were: Fabaceae with 38 species, Euphorbiaceae (22 species), Rubiaceae (11 species), Acanthaceae, Asteraceae, Apocynaceae and Rutaceae (10 species each). Cross-cultural analysis and comparison with similar literature from other areas provided indirect supportive evidences for many of the medicinal claims recorded during the present study.

BHANDARY JAYAKARA M. Associate Professor of Botany, Government Degree College, Karwar - 581301, Karnataka, India, and CHANDRASHEKAR KR, Professor of Applied Botany, Mangalore University, Karnataka, India

***Alstonia scholaris* (L.) R. Br. in the ethnomedicinal tradition of Coastal Karnataka**

Alstonia scholaris (L.) R. Br. (Apocynaceae) is an important plant in the cultural and ethnomedicinal traditions of Coastal Karnataka, India. It is associated with Lord 'Mahabali' and worshipped during the festival of 'Deepavali' (festival of light). The tribal and non-tribal indigenous communities of the study area use this plant in the treatment of various ailments such as fever, asthma, leucorrhoea, eczema, indigestion and also to heal spider bites. An annual health-related ritual of mass drinking of a bitter juice or decoction of the stem bark of this tree on the new moon (amavasya) day of 'aati' month of the traditional 'tulu' calendar is popularly followed in the study area, especially by the rural families. The underlying belief is that this drink keeps away all ailments and ensures wellbeing. The recorded ethnomedicinal uses and the traditional practice of mass drinking of the bitter juice appears to be scientifically meaningful when interpreted on the background of the ayurvedic uses

and the wide range of curative properties of this plant many of which have been confirmed by pharmacological studies.

BLOOMQUIST, Margaret, Alison DRESSLER, Research Assistants, NC State University
Growing Bloodroot at Home: Empowering Cherokee Basket Makers to Grow Their Own Bloodroot for Dye

Traditional Cherokee basket makers use bloodroot (*Sanguinaria canadensis*) to make dye. They reported that has become difficult to find bloodroot growing naturally in the woods. This project was designed to assist the basket makers to grow bloodroot at their homes by providing bloodroot growing kits and training in 2013. Working through the Qualla Arts and Crafts Mutual, Inc. we provide training and knowledge exchange with its members, the high school basketry classes, and the Oconaluftee Institute for Cultural Arts, funded by the Revitalization for Traditional Cherokee Artisan Resources.

BLUMLER, Mark - SUNY-Binghamton
Seed Size in the Archaeobotanical Record

Seed size increase in the archaeobotanical record is frequently taken as an indicator of domestication. Here, I offer some precautionary comments, based on research I carried out on wild emmer wheat (*Triticum dicoccoides*). In wild emmer there is pronounced interpopulation genotypic differentiation for seed size, associated with differences in site productivity; while within population the genotypically coded seed size is reduced phenotypically when conditions are less than optimum (e.g., shallow soil microsites). Similar patterns occur in domesticated plants, as agronomist Sinnott showed 90 years ago.

Seed size increase in the archaeobotanical record may be either phenotypic or genetic. If the former, it may reflect cultivation, but not domestication. Or even if genetic, it could reflect selection of the larger seeded wild genotypes under the high fertility of the cultivated field.

BOLFING, Christopher B. - University of Arkansas
Human Impact and the St Johns River: Exploring the Relationship between People and Place

This paper explores the relationships between people and their environment, presenting an account of the impact that various social and economic interests have upon the St. Johns River watershed in Florida. This impact comes in the form of residential, commercial, and corporate consumption, extraction, and pollution of the waterways, which leads to a complex interplay between local and transnational interests regarding the roles people should play in the St. Johns River Water Management Area. The paper pays particular attention to the role of social media in disseminating local ecological interests to transnational audiences and provides a discussion on the implications and effects of deregulation and unfettered economic growth, which is often detrimental to the environment and at odds with the residential populations' desire to maintain their way of life. Ethnographic inquiry inspired this work, which has expanded to include ethnoecological and political studies to better frame and contextualize the research.

Bonhage-Freund, Mary Theresa - Alma College, Leslie E. Branch-Raymer - Paleobot Consulting, and
Brad Botwick - New South Associates
New Perspectives on Foodways of Enslaved People in the Lower Southeast

Foraging is not normally associated with the lifestyle of nineteenth century enslaved African-Americans. Nevertheless, over a decade of archaeobotanical research based on sites across the lower Southeast, document that African American populations consumed a wide variety of domesticated and wild plants. This case study focuses on food plant use among the enslaved community of site 9CH1205 during distinct Ante-Bellum and Post Bellum occupations circa AD 1825-1880. Archaeobotanical data from 54 flotation samples, representing 22 features, indicate that collected resources supplemented a diet based upon Native American crops and European cereals. The recovery of native North American domesticates, imported European crop plants, both native and imported domesticated fruit taxa, and gathered, naturally occurring North American herbs and fruits, offers evidence of the richness of the enslaved residents' diet and the complexity of knowledge acquisition of both domesticated and gathered foodstuffs by the enslaved inhabitants of Site 9CH1205.

BONZANI, Renee, Department of Anthropology, University of Kentucky

People, Plants, and Caves: Discerning Plant and Cave Use from the Late Archaic/Early Woodland to Historic Time Periods at Mammoth Cave, Kentucky

Mammoth Cave has played an important part in Kentucky's prehistory and history and in the cosmologies of indigenous peoples for at least 3,000 years since the Late Archaic/Early Woodland time period up to the present. Recent excavations in Mammoth Cave have uncovered macrobotanical remains which allow for the analysis of the use of plants in both prehistoric through historic time periods. This paper presents a comparison of vegetation of the area in the Early Woodland and Historic time periods to modern day vegetative patterns. The variable use or activities conducted and non-use of certain areas within Mammoth Cave is also addressed with the analysis of the recovered botanical remains. A comparison of these remains with those recovered from other cave/rockshelter sites reveals a common pattern of specific plant exploitation over relatively wide areas of the Midwestern United States.

BORIOS, Stephanie - Department of Anthropology, University of Florida

Plants for Play/Snack: Andean Children's Knowledge and Exploration of Play/Snack Plants

Here I examine Andean children's knowledge of plants that they use to play and/or as snacks and contrast it with adults' knowledge. I also look at how children's expertise results from their exploration of space and is located in everyday routine. Going on an errand or herding on the hillsides, children are drawn to wander. They take the time to explore their environment, stopping to play and chew flowers or other parts of the plants. Data were collected using participant observation and ethnographic interviews in a Peruvian high-altitude community. Results show the importance of considering children as competent and autonomous botanical informants with expertise in specialized domains (e.g., play/snack plants) that adults do not have (anymore). It also demonstrates that despite their low nutritive value, plants used as snacks have to be taken into account when studying food plants, especially as a child's delicacy.

BOUDELL, Jere -Department of Natural Sciences, Clayton State University, Joseph M. MIKULA -

Department of Natural Sciences, Clayton State University, and Sifu Wayne D. BELONHA -Wai's Kung Fu

Dit Da Jow: Iron hit wine in Traditional Chinese medicine

Iron Hit Wine (Dit Da Jow) is a traditional herbal liniment common in Chinese households and martial arts. It contains a variety of Chinese herbs, fungi, and insects and is used to treat many ailments such as bruises and arthritis pain. The closely guarded recipes are typically passed down through families. We determined the chemical composition of a traditional liniment aged one and five years and a commercial formulation using gas chromatography-mass spectrometry. Results indicate that all formulations contain bioactive compounds with analgesic, antiseptic, and anti-inflammatory properties. The younger preparation and the commercial formulation contained fewer bioactive compounds than the older, traditionally prepared liniment. The older liniment contained compounds involved in skin elasticity, cell-signaling, and preventing osteoporosis. Our results support the traditional knowledge that Dit Da Jow contains bioactive compounds that are beneficial for treating impact trauma. We will discuss the history and application of Dit Da Jow and study results.

BOWER, Justin - Frostburg State University, Scott SCHLARBAUM - University of Tennessee, Eagle

BROSI - Frostburg State University, and Sunshine BROSI - Frostburg State University

Health Status of Butternut (*Juglans cinerea*) in Maryland

Butternut (*Juglans cinerea*) is an eastern North American hardwood valued for its large, edible nut mast and dyes derived from the bark, roots, and seed husks. The Cherokee rely on these nuts as a source of food and dye for woven baskets. Once widespread, butternut populations are in decline due to an exotic fungus (*Ophiognomonia clavigignenti-juglandacearum*) that promotes lethal canker growth. In this study I evaluated 80 trees in Western Maryland and related crown health conditions to the severity of the canker disease and varying environmental conditions. The canker was present on 94% of butternuts surveyed. Severity of the disease condition was associated with increasing crown dieback, foliage transparency, DBH, and south bark fissure depth. The results of

this project will help forest managers to identify healthy individuals, to find suitable habitat for future regeneration, and to sustain further cultural use.

BRADBURY, E. Jane - University of Wisconsin-Madison, Rollin Reinart - University of California, Davis, Elizabeth Kebbekus - University of Wisconsin-Madison, Francisco Vivanco - International Potato Center, and Eve Emshwiller - University of Wisconsin-Madison

Tuber Oxalic Acid Content and Ploidy Levels in Oca (*Oxalis tuberosa*) Use-Categories

Oxalis tuberosa Molina ("oca") is a tuber crop cultivated for subsistence in the Andean region. Oca is an octoploid ($2n = 8x = 64$; $x = 8$) with an incompletely resolved evolutionary history. Oca is divided into two folk use-categories: those that are eaten baked or boiled after post-harvest "sweetening" in the sun and those that are reserved for processing into a storable dried food product called khaya. To test a potential biochemical basis for the cultural use-categories, we quantified oxalic acid in tubers from each use-category from both Quechua- and Aymara-speaking communities. Surprisingly, only a small proportion of the ocas reserved for khaya have significantly higher concentrations of oxalic acid, and these comprised some, but not all, ocas of a single folk cultivar, called p'osqo, apparently endemic to Cusco Department, Peru. Flow cytometry and SSR genotyping revealed that the ocas with elevated levels of oxalic acid are tetraploid.

BRIDGES, Kim

Contextual Photography

The documentation of our field conditions is a forest versus trees problem. We tend to focus our attention on the details ("trees"). The result is that our photographs highlight the flowers, people, structures and other specific attributes of our study sites. We rarely step back and document the larger context in which these details are found. New photographic devices and software are providing relatively straight forward ways to capture the "forest" view. We need to explore these alternatives from the perspectives of better documenting the context of our research, how this affects our research protocols, and the concerns for preserving and dispersing this new kind of information.

BRIGGS, Rachel V., University of Alabama

The Ethnohistory of Nixtamalization in the Southeastern United States

Hominy has long been recognized as an important dish among many Southeastern Native American groups. While still made today, hominy production has undergone several production changes, usually in the form of step substitutions. In particular, one step that is largely skipped today but was prolific during the historic period involved soaking maize in a solution of wood ashes or lye. This paper explores this process, known as nixtamalization or alkaline cooking, by using ethnohistoric sources to not only sketch the general hominy foodway, but to outline the form nixtamalization took among various groups. Ultimately, it surveys the various methods used to accomplish nixtamalization during and throughout the historic period.

BROSI, Sunshine L., Assistant Professor, Frostburg State University, Frostburg, MD USA, and HUIISH, Ryan, Assistant Professor, Hollins University, Roanoke, VA USA

Cherokee Collaborative Field School: Teaching Core Concepts & Competencies in Ethnobiology Through the Lens of Cherokee Artisan Resources

Drs. Sunshine Brosi and Ryan Huish teach a collaborative field school that uses Cherokee Artisan resources as the basis for learning ethnobiology. The course occurs during the January term at Frostburg State University and Hollins University with both ethnobotany majors and non-majors. The course focuses on developing research and field skills through applied conservation projects on the sustainability of artisan materials. The instructors incorporate strategies outlined in the AAAS/NSF Vision & Change in Undergraduate Biology Education (Brewer, 2009), The Open Science Network's Vision & Change in Ethnobiology Education (McClatchey 2013), and the Partnership for Undergraduate Life Sciences Education (PULSE) Vision and Change Rubrics for course development and implementation. Course- and module-level activities and assessments are linked with specific core competencies and concepts and learning objectives shared with students. The Research on the Integrated

Science Curriculum (RISC) survey is used as an external assessment of student gains.

BROWN, Adam - University of North Carolina Greensboro, and Nadja Cech - University of North Carolina Greensboro

Studies on bacterial efflux pump inhibitors and their distribution in land plants

Multiple plants have been identified in the literature that inhibit bacterial toxic compound efflux pumps, thus synergising the activity of antimicrobial compounds. This phenomenon is relevant to the study of traditional botanical medicine, adding explanatory information to the use of plants in combination remedies and to observations of antibacterial medicinal plant extracts being more active than antimicrobials purified from them. This study sought to develop improved methods for the study of this phenomenon, and to determine its prevalence in land plant lineages. Two improved assays were developed, including a mass spectrometry-based protocol which was successful in quantifying the efflux pump inhibitory activity of a wide array of plant extracts and pure compounds. These data showed that the production of efflux pump inhibitors is more widely distributed in land plants than the previous literature suggests; further, this prevalence is linked in part to the presence of flavonoids.

BROWNE RIBEIRO, Anna - Museu Paraense Emílio Goeldi, and Abigail BUFFINGTON - The Ohio State University

Landscapes of Water

Anthropological studies about water are underdeveloped, customarily policy-driven and health-focused, while archaeological studies often attend to agriculture. But water is more than a necessary fluid that sustains bodies or a vector for disease. Water connects the system of the human body to other systems – biological systems, like plants and soils, and sociopolitical systems, like trade and migratory networks – and develops these, also. To address the significance and role of water in human existence, we expand the dimensions of the study of water to include landscapes that are political and social, ontological and magical, in addition to being physical and economical. We review the often mechanistic archaeological frameworks and particularistic applied research on water abundance/quality/access. Highlighting geographical, political, and historical processes we propose ways to examine health and demography in the Near East and Amazonia, contrasting landscapes that are, nonetheless, made internally coherent and subject to transformation through movement of water.

BROWNRIGG, Leslie - EcoRico Anqa

Machiguenga ethnoichthyology: taxonomy as the intersection of alternative systems of identification

The Machiguenga consider all true fish emerged from the same mother so constitute a domain separate from terrestrial, avian and other aquatic life forms. They identify fish by classes (genus-style taxa each named for one illustrative species), by behavioral categories and by descriptors indicative only in the context of a class and/or category of fishes. Key behavioral categories feature fish-human interactions and parse classes to exclude some fish anatomically similar to the archetype while including others as dissimilar as catfish, characins and needlefishes. Their Amazonian logic of alternative identification systems accurately "point" to hundreds of fish species, few of which are assigned only one unique reserved "name". Analysis is based on recent fieldwork among Machiguenga in the Urubamba basin in north Cuzco and south Ucayali Regions, Peru.

BULLARD-ROBERTS, Angelle - Department of Biological Sciences, Florida International University, Miami Florida, 33199, and Bradley BENNETT - Department of Biological Sciences, Florida International University, Miami Florida, 33199

From Bush Tea to Herbal Tea: Current Trends in the Medicinal Plant Trade in Trinidad and Tobago

The market demand for complementary and alternative medicines, including plant-based remedies, has increased globally. In Trinidad and Tobago (T&T), a high-income developing country in the Caribbean, there is a thriving trade in botanicals and botanically-derived formulations. Interviews conducted with herbalists and herb suppliers across the twin-island republic revealed a demand for "herbs" to treat dozens of conditions and complaints including diabetes, infertility, arthritis, and constipation. The majority of the interviewees claimed to

supply over 100 different herbs or herbal formulations. Yet only one in every three herbalists indicated that they supplied or recommended locally available plant-based remedies, which are traditionally termed “bush-medicine”. This presentation will address some of the likely reasons for this and other related trends. We will also discuss concerns and implications for the retention and transmission of T&T’s traditional knowledge of local remedies.

BYE, Robert - Jardín Botánico del Instituto de Biología, Universidad Nacional Autónoma de México, Cd. México, DF, México, and Mario LUNA - Rama Botánica, Colegio de Postgraduados, Montecillo, Estado de México, México

Economic botany and ethnobotany of jimsonweeds (or toloaches) [*Datura* (Solanaceae)] in MegaMexico

Because *Datura* has played an important cultural role in North America, reinterpretation of relationships and interactions between humans and *Datura* is necessary in light of recent taxonomic studies. Phenetic and phylogenetic analyses of morphological and molecular data established species limits and relationships. Multivariate analyses of taxonomic, geographic, and climatic data defined distribution patterns. Derived diagnostic features and quantitative data were applied to archaeological reports, historical documents, literature and specimens in order to update the taxonomic determination. MegaMexico is the center of origin and diversification of *Datura* with 13 species. Various species are ornamentals, have medicinal applications, are valued as entheogens by Native Americas, and cause poisonings. Geographic patterns are explained by altitude, precipitation, and temperature. Migration of Mesoamerican agricultural migration and of expansion of transportation networks account for its geographic expansion. The ornamental, therapeutic, and toxic properties of *Datura* have been appreciated in MegaMexico since preHispanic times and are exploited by the modern world.

CAGNATO, Clarissa- Washington University in St. Louis

Shedding light on the nightshades (Solanaceae family) used by the ancient Maya: New archaeobotanical evidence from archaeological sites in northwestern Petén, Guatemala.

Today, plants in the Solanaceae family are economically important to a large number of people around the world. However, in places such as Central America where the diversity of nightshades is especially high, the ancient use of species within this family is not well documented. Particularly, nightshade plant use by the ancient Maya is poorly understood. In this paper, I present new archaeobotanical data in the form of macrobotanical remains and starch grains recovered from Classic period (AD 250-900) ancient Maya archaeological sites in northwestern Petén, Guatemala. These data indicate that the ancient Maya used a variety of nightshades in both domestic and ritual contexts. Insights garnered from this research may provide botanists with new insights regarding the distribution and diversity of the Solanaceae family within this specific geographical area.

CHOCK, Al Keali'i, Botany Department, University of Hawai'i at Mānoa

The Ethnobiology of Pre-globalization Hawaiian Feather Cloaks and Capes

The Hawaiian feather cloaks were a distinctive, pre-contact artifact, a symbol of rank.. Although untold labor and thousands of bird feathers were involved, they were freely given as a mark of respect to the voyage leaders, beginning with Captain Cook in 1778. Voyage logs, native Hawaiian papers, and biological literature were examined for my Hawaiian Ethnobotany course, and another project. The bird specialists went into forests, wearing kī leaves rain capes as camouflage. Sticks smeared with plant “bird lime” snared the birds. The yellow feathers found under the wings of the ‘ō‘ō and mamo were plucked, the feet washed with kukui nut oil and released. The ‘iwi and ‘apapane bodies were completely covered with red feathers, so were killed. The birds were packed for the trip down in banana petiole sheaths, skinned, and then cooked and eaten. The endemic olonā’s fiber were processed to make the garments’ netting

CLIFFORD IV, Walter A. - University of South Carolina, and Kimberly A. WESCOTT - University of South Carolina

17th and 18th Century Chickasaw Plant Use and Subsistence

This paper explores 17th and 18th century Chickasaw edible plant use and the incorporation of old and new plants into traditional subsistence practices. Using a holistic approach, we incorporate methods from ethnobotany and ethnohistory to analyze plant remains from three house sites located near present-day Tupelo, Mississippi. The integration of these data demonstrate the ways in which historical Chickasaw households and communities negotiated identity, social relationships, and the ever-changing environment through strategic subsistence practices.

COLUNGA-GARCIAMARIN, Patricia - Centro de Investigación Científica de Yucatán, Zizumbo-Villarreal, Daniel, González-Zozaya, Fernando, Aldana-Yáñez, Pascual, Aldana-Yáñez, Daniel, and Fuentes-Chávez, Alberto

Documentary "Mezcal from Western Mexico and Pre-Hispanic Distilling"

Traditional agave spirit (mezcal) producers living around the Colima volcanoes are the successors of a tradition born probably 9,000 BCE, when their ancestors incorporated the cooked "hearts" of the maguey plant into their alimentary culture. Today, they are the heirs of the varieties, knowledge and techniques involved in elaborating mezcal, almost all of which are of pre-Hispanic origin: over 20 traditional varieties, cooking of maguey in underground ovens, extraction of its juice over rocks, and fermenting the must in rock-lined wells with large capacity (1000 liters). The actual distiller, however, is of Asian origin, introduced at least 400 years ago and made of easily available, rustic materials. The results of 10 years of research in the region are shown in this documentary, including successful experiments using replicas of pre-Hispanic vessels which suggests that the distillation process may have been known in this area as long as 3500 years ago. DVD 55 min long.

COZZO, David - North Carolina State University

William Holland Thomas and the Ginseng Trade

After the removal of Native Americans from the eastern United States in 1838, about 60 Cherokee families struggled to remain in the mountains of western North Carolina. As a boy, William Holland Thomas was adopted by the Cherokee chief Yonaguska and later became a merchant, politician, Confederate officer, and, after removal, the white chief of the remaining Cherokee. Holland had commercial experience and limited knowledge of the law, which aided him in helping the Cherokee purchase their lands. He also represented them in their negotiations in their struggles to remain in their homeland. With very few resources available for commercial trade, one of the few products of value in the North Carolina mountains at that time was ginseng. This paper will explore the role played by ginseng in the purchase of Cherokee lands and William Holland Thomas' activities as a middleman in the commercial botanical trade.

CURREY, Robin C.D. - Green Mountain College

Explaining edible plant diversity in home gardens of the Kyrgyz Republic, Central Asia

Little is known about the role of home gardens in the conservation of agrobiodiversity in Kyrgyzstan, but they could be important given the number of different crop relatives, especially fruit tree crops, that grow wild providing residents with the opportunity to introduce these species into their gardens. I surveyed edible plant species diversity by using interviews, structured survey instruments, and full agroecosystem mapping. Temperate home gardens in Kyrgyzstan are diverse with an average of 24 edible plant species per home garden and plant material received from others (relatives and neighbors) and number of additional plots owned were the best predictors of the diversity status of cultivated plants. Gender and ethnicity of the gardener matters, but the relationship of explanatory variables to mapped fruit species diversity important to explaining home garden diversity in other parts of the world do not apply or have inverted relationships in the Kyrgyz context.

DA SILVA, Carolina - University of the State of Mato Grosso, Nilo SANDER - University of the State of Mato Grosso, and Joari ARRUDA - University of the State of Mato Grosso
Cultural importance of palms for Quilombolas in the Amazon, Brazil

This research was conducted with Quilombolas communities in the Amazon region, biological boundary between Amazon rainforest and Cerrado, Mato Grosso, Brazil. We interviewed 32 residents, in three communities, to verify the species of palm known and used by them. We calculated the Cultural Significance Index (CSI), the Shannon Diversity (H') and Equitability. The Quilombolas know 18 palm species and use 17 of them. The palm with highest values of CSI were: babaçu, 256; açaí, 144 and Buriti, 96. The babaçu achieved first place for having the largest number of uses (16) to 3 parts of the plant; açaí had 5 uses to 4 parts and Buriti 5 uses to 3 parts of the palm. The H' was 2.61, and the equitability 0.90. The results indicate the importance of these cultural palm trees in the communities, due to the everyday uses of some of them, in food, medicine, ornamentation and craftsmanship.

DE BRITTO, Alexis John – St. Xavier's College (autonomous), Palayamkottai, India
Molecular and chemical fingerprinting of anti cancer drug yielding plants - a conservation genetics approach

Studies were performed to investigate the selection of superior genotypes based on intra-specific variations, caused by phytogeographical, climatic, edaphic parameters and phytochemical parameters of three anti cancer drug yielding plants (*Abrus precatorius* L., *Caesalpinia bonducella* (L.) Fleming and *Nothapodytes nimmoniana* Graham) using DNA (RAPD & ISSR) and phytochemical (TLC, HPTLC & HPLC) markers. The plants were collected from five different geographical locations of the Western Ghats of south India. RAPD and ISSR analysis was performed in each species. Genetic heterozygosity, Nei's gene diversity, Shannon's information index and Percentage of polymorphism between the populations were calculated using POPGENE software. Cluster analysis was performed using UPGMA algorithm. AMOVA and correlations between genetic diversity and soil factors were analyzed. Chemoprofiling of each species was done using TLC and HPTLC analysis. The active principles were quantified through HPLC. Combining both molecular and phytochemical data of the species *A. precatorius*, *C. bonducella* and *N. nimmoniana* collected from the respective locations Karaiyar, Marunthuvazhmalai and Nilgiri hills considered as superior genotypes. Concerning the conserving management of these superior genotypes, we suggested that in situ conservation be an important and practical measure for maintaining the genetic diversity and that a possibly maximum number of populations be conserved.

DE BRITTO, Alexis John - St. Xavier's College (autonomous), Palayamkottai, India
Reinforcement and revitalization of culture and Tribal Knowledge System in the Eastern and Western Ghats regions in Tamil Nadu in India

The Eastern and Western Ghats regions in Tamil Nadu in India are considered to be one of the hot spots, rich in biodiversity and endemic species of plants. Many tribal groups inhabit in these areas and their contribution to the conservation of biodiversity of these areas is remarkable. These communities use diverse strategies that have enabled them to keep the people-biodiversity links active. The effectiveness is based on the relationships that exist between people of diverse cultures and the other elements of biodiversity in their respective areas. This investigation aimed to study the holistic nature of traditional knowledge systems in its cultural context and how this knowledge is distributed in these communities, and who benefits from it, to understand the culture, practices, and beliefs regarding the use of locally available natural resources, the efficacy of medicinal plants used by them, cultural knowledge, the transmission of Traditional Knowledge among these tribals, ethnoclassification, or folk taxonomy, perception on environment and health. A systematic and scientific investigation was done using variety of qualitative research tools such as structured and semi-structured interviews. This will change our attitudes and actions from ignoring, belittling and neglecting local traditional knowledge and the interlinking culture and reinforce and complement the local capacities which would further strengthen people-biodiversity links.

DE RUS Jacquet, Aurélie-Purdue University Department of Medicinal Chemistry and Molecular Pharmacology, West Lafayette, IN, Rupa SUBEDI-Tribhuvan University, Central department of botany, Kathmandu, Nepal, Suresh K. GHIMIRE-Tribhuvan University, Central department of botany, Kathmandu, Nepal, and Jean-Christophe ROCHET-Purdue University Department of Medicinal Chemistry and Molecular Pharmacology, West Lafayette, IN

Neuroprotective activities of Nepalese traditional medicine in Parkinson's Disease models

Nepal has a tremendous diversity of ecosystems and a blend of various traditional medicinal practices. The aim of the study is to identify and characterize medicinal plants used to treat symptoms related to Parkinson's disease (PD) in Nepal. Three study areas were chosen for their ecological and cultural diversity, and two of these are included in conservation programs. We interviewed 56 participants and conducted open-ended interviews. We determined the informant consensus factor and the importance of specific plant species. We report the local uses of 35 plant species and identify a total of 8 plant species that were used similarly in all three research areas. *Tinospora sinensis*, a climber used to treat paralysis in two areas of study, shows exceptional neuroprotective activities in our cell culture models of PD. The ethanolic extract is able to rescue neuronal death triggered by environmental toxins and modulate the cellular antioxidant response.

DEDRICK, Maia - University of North Carolina at Chapel Hill, and Patricia McANANY - University of North Carolina at Chapel Hill

Envisioning the Classic Period Taskscape of K'axob, Belize, through Paleoethnobotany

Disparities in structure size within Maya sites have been used to argue for hierarchical relationships among residents. We compare flotation samples from two Late Classic hearths within two structures at the site of K'axob, Belize, which have been referred to as adjacent households. One structure was larger, with a longer occupation history than the other. The larger structure's hearth contained tobacco (*Nicotiana tabacum*) and hogplum (*Spondias* sp.), with a high ratio of charred wood to seeds. The hearth from the smaller structure included seeds from numerous species, wild and cultivated, that require processing prior to use. Considering this evidence in conjunction with mollusk, ceramic, and burial information, we argue for a revised understanding of K'axob's taskscape. Rather than representing separate households of unequal rank, the two structures likely featured distinct areas dedicated to ritual and plant-processing activities for one social group utilizing a wider expanse of the settlement.

DIFFERENT CLOUD-JONES, Linda (Catawba Nation)- Sitting Bull College

Heyókhǎ Medicine: Uses of Plant and Animals by the Clowns of the Lakota

Many cultures around the world have a "clown" tradition in which a person is known to be a trickster or a backwards speaker, acting in a way that is contrary to what is expected. The *heyókhǎ* (clown or contrary person in the Lakota language) is widely considered to be one of the of the most powerful medicine people of the Lakota. *Heyókhǎ* ceremonies are known as some of the most important and the most vital to staying mentally, emotionally, and physically balanced. Both male and female *heyókhǎ*s have a number of plants and animals that assist them in ceremonies. Today, the Lakota have found *heyókhǎ* knowledge to be useful in a wider context, using the same plants and animals as medicine in everyday life. This paper will discuss the *heyókhǎ* way of life, and the ways in which "*heyókhǎ* medicine" continues to play an all-important role in health and healing.

DOLAN, Jessica - Department of Anthropology, McGill University and Assistant Director, Center for Native Peoples and the Environment at SUNY ESF

In Creation and Idle No More: Heeding Onkwehonwe Prophecies of Earth Changes as Environmental Knowledge

This paper will explore Indigenous philosophies of climate change. Drawing from interviews and conversations with Onkwehonwe (Indigenous people) at Six Nations of the Grand River, and other places over the last several years, I will offer reflections on predicted and observed socio-environmental changes that some interpret as part of the prophecies of their oral tradition. Interestingly, aspects of those prophecies have even been fulfilled

through the energy of the ongoing Idle No More movement for Indigenous rights and protection of Mother Earth. Through examples I ponder: to what extent do human narratives about scenarios of destruction in the climate of earth's environmental future influence human actions in the present? How might predictions of changing socio-environmental climates, be they transmitted through oral or written, informal or institutional pathways, determine whether those changes will or won't come to pass? Do humans create self-fulfilling environmental prophecies? Can we consider Western science alongside Haudenosaunee (Iroquois) environmental knowledge as two forms of Creation narrative, both of which warn humans to attend to their responsibilities as stewards of the earth whose actions can influence the outcome of environmental futures?

DOMBROSKY, Jonathan - University of North Texas, Department of Geography, Lisa NAGAOKA - University of North Texas, Department of Geography, and Steve WOLVERTON - University of North Texas, Department of Geography

Large Game Abundance and Source-Sink Dynamics in the Northern Rio Grande and Mesa Verde regions ca. AD 1300

Abandonment of the Mesa Verde region (ca. A.D. 1300) has fascinated archaeologists for decades. The Northern Rio Grande (NRG) region of New Mexico is one area Ancestral Puebloan people may have migrated to, as evidenced by an increase in population density in the area after A.D. 1300. Several pull factors may have drawn Mesa Verde people to the NRG, including abundant large game. To address this as a potential pull factor, we assess hunting efficiency using zooarchaeological data from three Mesa Verde Pueblo I-III (A.D. 750 – 1300) sites and two NRG sites (ca. A.D. 1300 – 1600). If the Mesa Verde region had become a faunal sink, then large game abundance should have been substantially higher in the Northern Rio Grande after AD 1300.

DORIAN, Matthew – Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA, Effrosyni SEITARIDOU - Department of Physics, Oxford College of Emory University, and Cassandra QUAVE - Department of Dermatology, Emory University School of Medicine and Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA

Using diffusion coefficients as a means of analyzing the impact of medicinal plant extracts on biofilm growth and structural integrity

Understanding the rate of biofilm growth is essential for providing insight into how biofilm inhibitors work, and allows for examination of how plant extracts impact gene expression within the biofilm structure. In previous work, the diffusion coefficient (D) of polystyrene microspheres was used to quantify biofilm growth rates of *Sinorhizobia meliloti* within microfluidic devices. In this study, we extended this technology to models of *Staphylococcus aureus* biofilm formation to examine the activity of extract 220D-F2, isolated from a medicinal plant (*Rubus ulmifolius*), on biofilm structural integrity. Here, we discuss how fluorescence microscopy and a particle tracking algorithm in Matlab can be used to measure the D values of microspheres within the biofilms. The study outcomes include development of further insights into the structure of biofilms and the mechanisms by which these inhibitors take effect – all within a microfluidic device that allows experiments to be handled on a small scale.

DUVAL, Ashley - Yale School of Forestry and Environmental Studies, and MEYER, Rachel - New York University; JENSEN, Helen - McGill University

From embalming fluids to biofuels: the evolution of non-food uses of crop plants

Many of our staple crops originally came under cultivation for non-food purposes, such as sources of medicine, dye, and even toxin. Today diverse social needs and technological approaches continue to divert food crops towards new uses, that range from second generation biofuels to sources of biodegradable plastic. Drawing upon a comprehensive review of over 200 major and minor crop plants in various stages of domestication from around the world, this presentation examines the evolution of non-food uses for crop plants, including their applications in rituals, medicine, construction, textiles, fodder and alcohol, and their cultural contributions throughout history. Case studies and quantitative trends will be used in considering the past, present and future non-food uses of crop plants, and in

exploring the ways in which emerging technologies, novel applications and emerging markets continue to change the provisioning role of plants.

ECHEVERRI, Gabriel, Frostburg State University, BROWN, Benjamin, Frostburg State University, CHEEK, Ian, Frostburg State University, SCHLARBAUM, Scott E. - Tree Improvement Program, University of Tennessee, SHARP, Ami M. - Tree Improvement Program, University of Tennessee, and BROSI, Sunshine L- Frostburg State University

Rivercane as a companion for cultural resource butternut plantings

The Eastern Band of the Cherokee Nation use rivercane, *Arundinaria gigantea* (Walter) Muhl., for a variety of culturally significant applications including baskets, arrow shafts, wattle and daub building, mats, blow-guns, and flutes. Overgrazing, development of lowlands and invasive species have all led to the decline of rivercane for Cherokee artisans. Rivercane is also a sister or companion plant with butternut, *J. cinerea* L., a tree species also facing declines. This project will present eight year results collected by students from Frostburg State University of planting butternuts within an established cane stand and at a control site. In 2006 over 350 butternut seedlings were planted at the Kituwah site to determine the impact of rivercane on seedling establishment in conjunction with the University of Tennessee and RTCAR (Revitalization of Traditional Cherokee Artisan Resources). This project will guide future plantings of butternut to determine the feasibility of establishment within existing rivercane stands.

EDWARDS, Kyle W. - University of Virginia, University of Massachusetts, Boston

Reshaping the Colonial Landscape: A Palynological Study of Environmental Change in Colonial New Mexico

As a region, the Rio Grande Valley has a long established history of complex agricultural regimes beginning with the introduction of maize in the 10th century BC. These systems reached their peak in the Puebloan societies of the Southwest, who relied on maize as a staple crop and integrated agriculture as a central component of ritual life. With the beginning of Spanish settlement in the 17th century, the indigenous system of agriculture began to exist in contrast to Hispanic modes of land use, which were imposed as part of colonial expansion. This study utilizes palynological data from a single soil core obtained in the vicinity of known Puebloan and Hispanic archaeological sites to examine how changing agricultural practices affected local plant communities. The data illustrates the persistence of localized maize agriculture, the expansion of animal husbandry, and alteration to lowland tree and shrub communities between the Prehispanic and Colonial periods.

EMSLIE, Steven D. - University of North Carolina Wilmington, Brasso, Rebecka - University of North Carolina Wilmington, Patterson, William P. - University of Saskatchewan, Canada, Silva, Ana Maria - University of Coimbra, Portugal, and Valera, António Carlos - ERA Arqueologica, S.A., Portugal

Mercury and Stable Isotope Analysis of Human Bone from a Late Neolithic/Chalcolithic Ditched Enclosure at Perdigões, Portugal

Numerous ditched enclosures of late Neolithic and Chalcolithic ages have been documented throughout Europe including the Iberian Peninsula. The large enclosure at Perdigões, south-central Portugal, includes at least eight funerary features (pits, ditches and tholoi tombs). Here, 21 samples of human bone were analyzed for total mercury and produced a high variation in mercury content, ranging from 0.057 to 115.62 ppm. The most likely explanation for high mercury levels is from diet with individuals feeding at higher trophic levels being more exposed via biomagnification. However, stable isotope analysis ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) of the same 21 bone samples revealed a weak negative relationship with $\delta^{15}\text{N}$. Mercury was lowest in individuals with the highest $\delta^{15}\text{N}$ values indicating no relationship with a high trophic diet. Instead, these results imply a possible age and/or sex bias in exposure to mercury, possibly through the use of cinnabar as a pigment or for other cultural uses.

ESHBAUGH, W. Hardy - Miami University
A modern view of the genus *Capsicum* (chili peppers)

Capsicum, an endemic genus to the Americas in pre-Colombian times, spread to the Old World gaining an importance that in many ways exceeded its significance in the New World. Chili peppers transformed the diet of the world and continue to do so. People of Africa and Asia do not believe that hot peppers have a history of fewer than 500 years in the Old World. Linnaeus named several species of *Capsicum* in the 18th century. In the 19th century the size of *Capsicum* increased exponentially with the naming of more than 150 taxa. Today we recognize at least 36 species with as many as five new species still to be named and described from Peru, Brazil and Bolivia. The domesticated taxa have been assigned to as few as three and as many as five taxa. More than 200 cultivars exist world-wide with two of the best known being Jalapeno and Habanero.

FADIMAN, Maria
The Human Need for Green Space: Urban Parks in Shanghai, China.

An increasing awareness of the human need for nature and nature-like places is growing as more people move to urban areas. The issue is of particular importance in polluted areas, such as Shanghai, China. This study addresses the human/nature intersection within metropolitan green spaces in Shanghai. The researcher collected observational data in fifteen urban parks regarding design, flora and citizen utilization. The study focuses on: 1) Globalization in relation to park structure and function; such as lawns, flowers, and water features serving as intersections of Western and Asian landscapes, and 2) Different generations' activities in these public green spaces; specifically, exercise, dance, matchmaking, music, and games. The results show that although western and Asian traditions intertwine in planting and park layout, cultural differences remain for park use. Furthermore, while parks are still central for older people and young children, the middle generations are becoming less connected to these green spaces.

FLACHS, Andrew - Washington University
Stalking the Wild Tomato: The Economic Botany of Genetically Modified Cotton Farms in Telangana, India.

Genetically modified (GM) crops may threaten biodiversity, both because their genetic material could escape into and subsequently alter non-GM species, and because GM crops encourage farmers along the path of input-intensive monocultures. But because of the need for home vegetables and medicines, small farms in the Warangal district of Telangana, India also contain over 100 semi-managed vegetables, trees, and wild plants belonging to 40 families. While farmers continue to plant poorly understood, deceptively labelled Bt cotton seeds, they also maintain an average of seventeen other plants on their farms for regular economic use. This paper draws on surveys, field interviews, and ethnography conducted among randomly sampled Bt cotton farmers to show the full range of economic plants normally used on Indian GM farms. In doing so, it argues that some farmers have been able to preserve a measure of agrobiodiversity despite the pressures of GM cash cropping, and highlights the destructive potential of agricultural technology designed for 'cotton' fields on non-target useful plants.

FLORES, Katherine E.- Dept. of Anthropology, Washington State University, and Marsha B. QUINLAN -
Dept. of Anthropology, Washington State University
Ethnomedicine of Menstruation in Rural Dominica, West Indies

In Bwa Mawego, a village on Dominica's east coast, dysmenorrhea, delayed menses, and menorrhagia are prevalent menstrual troubles that may require herbal medicine. We hypothesize that cultural agreement on ethnobotanical treatments (1) reflects their locally perceived ethnophysiological efficacy, and that (2) salient plants contain bioactive compounds appropriate for the menstrual conditions for which Dominicans employ the plants. Participant-observation, focus groups, and unstructured interviews provided qualitative data regarding

explanatory models of menstrual conditions and their treatments. Quantitative ethnobotanical data came from freelist tasks with fifty-four adults. Mean salience values calculated from freelisted data reveal that *Cinnamomum verum* (Lauraceae), *Mentha suaveolens* (Lamiaceae), *Pimenta racemosa* (Myrtaceae) and *Sphagneticola trilobata* (Asteraceae) are used to treat dysmenorrhea and delayed menses. The only remedy reported for menorrhagia was *S. trilobata*. All four plants contain analgesic, anti-nociceptive, and anti-inflammatory properties. In Dominican menstrual problems there is correspondence between cultural consensus, bioactivity, and ethnophysiology including humoral theory.

GAMBIER, Rosa M. - Suffolk County Community College, State University of New York., and Jennifer L. CARLSON - Suffolk County Community College, State University of New York

“The Hunger Games, A Game to Introduce Ethnobotanical Diversity” . Using Popular Culture in the Teaching and Learning of Ethnobotany for Liberal Arts Students

The use of popular culture as a teaching tool is commonly integrated in K-12 and introductory college courses as a means to motivate and engage students. This is especially evident with (non-science major) biology students at the community college level who represent a demographic group that are challenging to engage because of the level of disinterest and indifference that these students experience with traditional biology teaching and learning methods. At SCCC, we address this problem by integrating popular culture into the curriculum of an Ethnobotany course. In an effort to engage students, we designed a semester long game-activity based on the popular book series “The Hunger Games” by Suzanne Collings. During this activity, students not only revisit concepts of basic botany and taxonomy but they learn about cultural and biodiversity, geography, ethnobotany, phytochemistry, and how to investigate the historical, cultural and ethnical roots of a culture different from their own. While playing a competitive, engaging and entertaining classroom game/activity, the students develop communication, critical thinking and collaborative skills and gain an understanding of the implications of Ethnobotany for today’s society. Such context provides a foundation upon which further learning can be facilitated and achieved and reduces the difficulties that many liberal arts students have in a biology course.

GARIBALDI, Ann - IEG, Victoria, Canada, Shanti BERRYMAN – IEG, Victoria, Canada, Kevan BERG – IEG, Victoria, Canada, and Nancy TURNER - University of Victoria

A community-designed study of the effects of mining dust on traditional plants of the Nlaka’pamux people of central-interior British Columbia

People of the Nlaka’pamux Nation have subsisted and thrived on the southern plateau in central-interior British Columbia since time immemorial, including on lands currently occupied by a copper and molybdenum mine operated by Teck Highland Valley Copper Partnership (THVCP). Nlaka’pamux communities have concerns about dust from mining operations and its potential impact on local ecosystems and traditional foods. In response, THVCP initiated a study in collaboration with 12 First Nations, facilitated by IEG, to assess these impacts. Through extensive dialogue on the land and in workshops, IEG and community representatives co-developed a meaningful study to address community concerns. Here, we present the participatory approach used, bringing traditional and scientific knowledge together to address a complex social-ecological challenge. The study focus is on the effects of dust deposition to leaves and berries of soapberry (*Shepherdia canadensis*), a plant that is ubiquitous on the landscape and of immense cultural value.

GBADAMOSI, Idayat - Department of Botany, University of Ibadan, Nigeria

An inventory of ethnobotanicals used in the management of sickle cell disease in Oyo State, Nigeria

In view of the prevalence of Sickle Cell Disease (SCD) in Nigeria, this paper reports the findings of a survey of ethnobotanicals used in the management of SCD. Twenty herbalists with vast knowledge in the management of the disease in Oyo State were interviewed in Yoruba language. The age-range of respondents was between 30 and 85 years. Twenty recipes are used as anti-sickling remedies, as well as for the treatment of rheumatism, anaemia, swollen limbs and ulcers associated with SCD. Some of the 53 plants with therapeutic values in SCD are *Calotropis precera*, *Phyllanthus amarus*, *Harungana madagascariensis*, *Tetracera potatoria*, *Telfaria occidentalis*, *Perquatina nigrescence*, *Waltheria indica*, and *Aframomum melegueta*. Also recorded was the use of animal parts such as chicken and cattle bones in regimen. The modes of administration were compresses, powdered ash

residue and charring of animal bones. The paper provides basis for future research on the documented medicinal plants.

GEORGIAN, Elizabeth - University of Wisconsin-Madison, and EMSHWILLER, Eve - University of Wisconsin-Madison

A Tale of Ethnic Minorities, Rhododendron, and Conservation in Yunnan Province, China

We investigated the uses of rhododendrons by eight ethnic groups from northwest Yunnan Province, China in order to determine the extent of sharing of ethnobotanical knowledge among these ethnic groups. Approximately 200 interviews were conducted with members of the Bai, Dulong, Han, Lisu, Naxi, Nu, Tibetan, and Yi ethnic groups. Using cluster analyses, comparisons were made of the interview responses to questions about rhododendron to discern the extent of sharing of ethnobotanical knowledge for each ethnic group. The Naxi, Tibetan, and Yi had separate ethnobotanical knowledge of rhododendron, while the Bai, Dulong, Han, Lisu, and Nu ethnic groups had variable and shared ethnobotanical knowledge of rhododendron. All of the eight ethnic groups knew uses for rhododendron, especially uses such as food and handicrafts.

GILMORE, Michael P. - New Century College, George Mason University, Christa M. Horn - Division of Applied Plant Ecology, Institute for Conservation Research, San Diego Zoo Global, and Bryan A.

**Endress - Division of Applied Plant Ecology, Institute for Conservation Research, San Diego Zoo Global
Community-based aguaje (*Mauritia flexuosa*) management and restoration in Maijuna indigenous communities in the Peruvian Amazon**

Fruit from the palm *Mauritia flexuosa* (aguaje) is harvested throughout the Peruvian Amazon for commercial and subsistence purposes. The vast majority of this fruit is harvested by felling and killing adult female aguaje trees, resulting in serious over-exploitation and degradation of naturally occurring *M. flexuosa* palm swamps (aguajales). Like many indigenous communities in the region, the Maijuna are interested in developing aguaje management and restoration plans. We used interdisciplinary methods to understand past and present aguaje use and its impacts in Maijuna communities in order to develop plans that account for the multiple cultural and economic needs of the Maijuna. Community-based initiatives targeting the management and restoration of aguaje and aguajales in Maijuna lands will be detailed, including training people how to climb instead of cut aguaje and incorporating aguaje into agroforestry systems. Lessons learned will be explored providing insights into community-based resource management and restoration projects in general.

GLENN, Ashley - the William L. Brown Center at the Missouri Botanical Garden

Sacred Seeds: supporting communities supporting biodiversity

What does it take to support biological and biocultural diversity? It takes the collective effort of thousands of people in thousands of ecosystems. In our increasingly connected world, we find ourselves dependent on and rooting for people across the globe. How do we support communities from afar, without imposing undue burdens? Sacred Seeds is actively working with communities to address species and knowledge loss on a local level, with local community members driving the conversation. With over two dozen garden partners on six continents, Sacred Seeds reflects the global diversity of ecosystems, cultures, and conservation approaches. Learn about our garden partners and explore our approaches and successes in assisting communities to protect their traditions and useful plants species.

GOSFORD, Robert - Ethnoornithology Research and Study Group

John Gilbert: The first Australian ethnoornithologist

John Gilbert collected bird, mammal and plant specimens in Australia for the eminent British ornithologist John Gould between 1838 and the time of his untimely death in 1845. One as yet unappreciated aspect of Gilbert's time in Australia is his work with Aboriginal people around the small colonial settlements of Swan River and King George's Sound in Western Australia, at various locations in New South Wales and South Australia and around the small military outpost of Port Essington in the Northern Territory. Gilbert recorded the local Aboriginal names and information about many bird species. Much of that information was later published in

Gould's seven volume "The Birds of Australia", which remains to this day the most comprehensive record of Australia-wide Aboriginal bird knowledge. I will examine Gilbert's two volume "Ornithological Notes", the unpublished personal record of his work in Australia, and other published and unpublished sources recording Gilbert's work and his influence on Australian ornithology and the potential for further research on Gilbert's contribution as the first Australian ethnoornithologist.

GOSFORD, Robert - Ethnoornithology Research and Study Group

Towards a Cherokee ornithorium - realising the value of historical and contemporary bird knowledge

The recognition and application of traditional knowledge of birds is increasingly appreciated as a valuable tool for contemporary societies to re-engage with the knowledge of past generations and to provide opportunities to inform modern land and species management for the benefit of species, landscapes and societies. Across the world, local language and cultural groups are recognising the value of ethnoornithology and ethnobiological methodologies, including as tools for inter-generational transfer of knowledge and engaging mainstream land managers with indigenous cultures and societies. In this presentation i will discuss Cherokee bird knowledge and examine available research material, including historical sources and more recent research. I will discuss tools and techniques used to collect and collate historical and contemporary bird knowledge, future prospects and opportunities for early and mid-career ethnobiologists looking to work in this area and the application of ethnoornithology at local and regional scales. I will present the results of my own research to date and make some tentative recommendations for future research.

GUERRERO, Matias - Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Maria Isabel MUJICA - Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Maria Fernanda VIO-GARAY - Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile; Instituto de Ecología y Biodiversidad (IEB), Stefan GELCICH - Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Centro de Conservación Marina & Laboratorio Internacional en Cambio Global, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, and Juan ARMESTO - Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Instituto de Ecología y Biodiversidad (IEB)

Traditional ecological knowledge in Chile. State of the art and potential contribution to improve management and conservation of nature

In the last decades, studies of traditional ecological knowledge (TEK) have become increasingly important because of their potential value to improve sustainable management and conservation. In Chile, research on TEK, has not been evaluated. Our objective was to assess the recent progress of research on TEK in Chile through a literature search in national and international journals. We evaluated a total of 35 scientific articles published between 1955 and 2012; the majority of them (78%) focused on indigenous communities. Studies were generally based on species lists and provided limited information on management practices. More studies were focused on terrestrial ecosystems than on marine ecosystems and more on plants than on animals. While there is a growing body of knowledge about TEK in Chile, information is still limited and fragmented. We propose that strengthening this kind of research could supplement data from scientific knowledge to support management and conservation decisions.

HALL, Mitch - Frostburg State University, J.B. Churchill - Frostburg State University, and Sunshine Brosi - Frostburg State University

Prioritizing Management Strategies in Washington DC Urban Forests

Urban areas occupy 3% of the land area across the United States and 82% of the US population lives within these regions. As these cities grow, a greater understanding of the ecological and cultural value of urban vegetation is needed to foster effective management and protection guided by science rather than socioeconomic factors. Data collected by Washington DC urban foresters was used to identify patterns of pest/disease vulnerability and street tree diversity in regions of the District for the optimization of management decisions. An assessment of

localized pest vulnerability, genus and species diversity, and patterns of overabundance of individual genera or species was conducted at two spatial scales. Also, an overall assessment of the District and its wards was completed. The results indicated localized pest vulnerability and street tree data provide a useful way to illustrate areas of the District's pest and host vulnerabilities to optimize urban forester managerial decisions.

HAMMER, Michaela - Oregon State University

"Agüitas y sopitas": Mothers' knowledge, perceptions, and practices of traditional home remedies and medicinal foods in the northern Andes

Populations in the northern Ecuadorian highlands have experienced profound nutritional, economic, medical, and agricultural change in the past several decades. Little is known about what traditional knowledge and practices are being lost as the nation pursues a "citizen revolution" of progress and development based on expert knowledge. This ethnographic study explores mothers' knowledge and perceptions of local home remedies in a rural village in the province of Carchi. Participant observation, semi-structured interviews, and free listing provide evidence of a wide breadth of local and commercial medicinal plants and foods used by mothers in the home. Mothers take a pluralistic approach to health care, treating at home with available remedies, visiting specialized indigenous healers, and, if those prove ineffective and resources allow, consulting medical doctors. Interventions based on these results will focus on empowering local women to maintain positive nutritional and medical practices in the home.

HARP, Cyrus - University of California, Berkeley

Edible insect use by California Indians

Insects are an essential food source for hunter-gatherers since they are ubiquitous, abundant, nutritious, and easily caught. American Indian ethnographies often mention insects used for food, but there are few in-depth studies of ethnoentomology. In this study, literature was exhaustively reviewed to compile a list of all known species of insects and other terrestrial arthropods used as food by California Indians. The nutritional composition of these species, where available, was also compiled from the literature. Based on literature review, productive insect hunting and cooking methods are described and illustrated. This study is important since insects are a neglected yet energy-efficient meat source with potential to alleviate global crises of food shortages and greenhouse gas emissions.

HAZLETT, Donald - Denver Botanic Gardens, CO, Lilian FERRUFINO - Escuela Agrícola Panamericana & Universidad Nacional Autónoma de Honduras, HN, and Luis BEJERRANO - Escuela Nacional de Ciencias Forestales, HN

Zarsaparilla (Smilax) Exploitation in Honduras: Research to Estimate Plants Needed for 1857 Export Amounts

Smilax has a long history of use in both hemispheres. Traditional New World uses were overshadowed in the mid-1800s by the demand for Smilax to treat syphilis. Wells recorded that about 22,700 kg of zarsaparilla rhizomes were exported from Honduras in 1857, but the species and number of plants exported were not known. Our research objective was to conduct field work to estimate the number of Smilax plants needed to obtain this export amount. In Honduras (July, 2012) we excavated the rhizomes of 4 individual plants from 3 Smilax species. The rhizome dry-weights for 1 *S. febrifuga* (cuculmecha blanca), 1 *S. officinalis* (zarsaparilla), and 2 *Smilax domingensis* (cuculmecha) plants were, respectively, 3.00, 0.52, 2.32 and 25.49 kg. Doctoral work on Smilax by co-author Ferrufino (2010) enabled accurate identifications. Rhizome amounts varied with species and among individuals, but 1-8 thousand plants were estimated as needed to obtain 1857 export amounts.

HERNANDEZ, Nimachia - Independent Scholar

'Wolf Man' and Wolf Knowledge in Native American Hunting Traditions

This presentation focuses on traditional stories of the Blackfoot (Native American) Wolf Man, credited with being a purveyor of Wolf knowledge following direct instruction by Wolves. This research is an in-depth analysis of Native American Peoples' hunting traditions regarding how Wolf teaches people to be hunters. The Blackfoot

retain traditions stemming from Wolf Man, an ancient story that deals with direct instruction and teachings Wolves gave humans, some regarding Wolf behavior and social structure in general, while others are specific to hunting practices. Wolf Man outlines specific protocols, limitations, and expectations of human behavior. Originated in a hunting context, they are integrated into Blackfoot social and spiritual life representing Blackfoot philosophy and life. To the Blackfoot, Wolf's teachings are foundational to development and character of personhood (called humanity) since they are considered in the context of environmental degradation and sustainability where there is little separation between spiritual and material realms.

HERRON, Scott - Department of Biology, Ferris State University, Big Rapids, Michigan and University of Michigan Biological Station, Pellston, Michigan
Anishinaabek revitalization of ethnomycology, from Keewaydinoquay's 1998 Puhpohwee for the People to the present, what has emerged from the ground?

Ethnobiological scholars long claimed that the Anishinaabek tribes (Ojibwe, Ottawa, Potawatomi, Menomini) did not use fungi traditionally as food and medicine (Smith 1923, 1932, 1933; Densmore 1928, 1974, Gilmore 1932). This claim was not refuted until Keewaydinoquay Peschel published her Narrative Account of Some Uses of Fungi Among the Anishinaubeg (1978). As an Anishinaabe woman who grew up in a traditional family in the Beaver Island archipelago, immersed in the Midewiwin Medicine Society during the 1920s, she retained cultural knowledge lost on the mainland of Michigan. During her life, "Kee" as she was known to her inner circle, went on to earn degrees from Wayne State University and was a school teacher in the public schools of northern Michigan before returning to study ethnobotany under Dr. Richard Ford at the University of Michigan. Since her book was published as a second edition in 1998 with a forward by Dr. Ford, it gained some attention among Anishinaabek and others. During the past 11 years, this seminal work has been used at the University of Michigan Biological Station to introduce ethnobotany students to emic knowledge about fungal use in food, medicine, fire starting and transfer across place. Recently, the tribal communities of Michigan have begun to revitalize their use of fungi, by broadening their knowledge base, using both western scientific and traditional knowledge systems (Schultz 2013). An account of this reclaiming of ethnomycology by the tribal communities across Michigan, and the role an ethnobotany class and its professors (Herron and Ford) had on its reemergence will be detailed.

HOLLENBACH, Kandace - University of Tennessee, Knoxville
Woodland Period Horticulturalists in East Tennessee

Expanding on the cultivation efforts of their Late Archaic predecessors, Early (3000-2200 BP) and Middle Woodland (2200-1400 BP) groups in East Tennessee left a larger imprint in the region, with increasing numbers of sites demonstrating greater intensity of occupation. This paper pulls together paleoethnobotanical data from a series of sites in the Ridge and Valley region and compares shifts (or lack thereof) in plant use to changes in site use through time.

HOOPER, David A.- Department of Anthropology, The University of Montana
The traditional harvesting of pipsissewa (*Chimaphila umbellata*) by the Nisqually Tribe within Mount Rainier National Park and its ecological effects.

One of the sources of pipsissewa (*Chimaphila umbellata*), a medicinal plant utilized by members of the Nisqually Tribe, is Mount Rainier National Park. In order to fulfill its treaty obligations while ensuring its main missions of providing recreation and conserving natural resources Mount Rainier wanted two questions answered; how is pipsissewa harvested, and does harvesting affect the plant's ecology? To address the first question I observe members of the Nisqually Tribe harvesting pipsissewa and interview the harvesters about their relationship to this plant. The second question was addressed by measuring plant species frequency, percent ground cover, and pipsissewa stem density in harvested and control plots. The Nisqually harvest pipsissewa by breaking non-flowering stems at ground level. If there are no flowering stems at least three stems are left in a patch. This approach to harvesting does not produce a change in the metrics I measured.

HORTON, Elizabeth T. - Arkansas Archeological Survey

Cane Cultures: Investigating the Archeological Record of Rivercane Use in the Pre-Columbian Southeastern United States.

This paper examines archaeological evidence for the deep-time importance of rivercane, *Arundinaria* sp., in the Southeastern United States through the lens of the well-preserved perishable assemblage of the Ozark Plateau in Arkansas. While we have long assumed that cane and canebrakes were critical for pre-Columbian societies in the Southeast, these archaeological data offer a new means of both quantifying that relationship and examining the ways in which we model the role of human activity in the now nearly extirpated massive canebrakes of the Southeast. I focus on the evidence for, and chronology of, both intensity and diversity of cane use in the Ozark Plateau with a look outward across the broader Southeast. In addition, I briefly examine assumptions about, and models of, pre-Columbian plant and landscape management as they relate to the canebrakes of the Southeastern United States.

HUIISH, Ryan D. - Hollins University, and Sunshine L. BROSI - Frostburg State University

Student-centered learning and ethnobotanical connections in plant identification curriculum: engaging students in broader scientific competencies

Many students within plant identification courses are disengaged due to the heavy emphasis on rote memorization. We propose a shift of learning objectives in plant identification curricula from content knowledge to emphasize broader scientific competencies within the framework of interactive student-centered learning and ethnobotanical connections. We describe sample activities and learning objectives aligned with disciplinary standards and methods to promote student interest and success. We present examples of student-centered activities such as student-led field presentation of plants, applying the process of science, and service-learning projects. We also present some platforms for introduction and review including interactive problem-solving and games, interdisciplinary and sensory connections, and online tools. These approaches can increase student responsibility, improve accessibility to information, facilitate long-term memorization, and diversify modes of instruction and assessment.

IDROBO, C. Julián - Natural Resources Institute, University of Manitoba

Fish Flows and Transformations: Coastal Livelihood Adaptation through the Lens of Design Ethnobiology

The Atlantic Forest Coast of Brazil and its rural inhabitants have experienced multiple economic cycles that have changed their ecosystems and the ways they interact with them. Fish has been at the centre of many of these changes. Using the case of the Ponta Negra coastal village, we employ a design ethnobiology lens to examine how fish flows and transformations, including associated knowledges and practices, have adapted to the vagaries of the regional fishing economy. We place special emphasis on the role of fish as a key material in the economic transition from fishing to tourism. This story allows us to consider the role of individual creativity as well as trade networks and environmental policy, to enable and hinder the sustainability of human and environment relations and the knowledges associated with them within a changing landscape.

IGNACE, Marianne - Simon Fraser University, Mike ANDERSON - Skeetchestn Indian Band, and Chief Ron IGNACE - Skeetchestn Indian Band & Simon Fraser University

Secwepemc Cultural and Spiritual Presence in Mid-Elevation Grasslands

The homeland of the Secwepemc people in the South Central Interior of British Columbia features unique mid-altitude grasslands which for thousands of years were a crucially important part of the seasonal round of the Secwepemc. With “belly high” bluebunch wheatgrass (*Agropyron spicatum*) until the mid-eighteen hundreds, these grasslands provided prolific root gathering areas, featuring balsamroot (*Balsamorhiza sagittata*), large fruited desert parsley (*Lomatium macrocarpum*), nodding onion (*Allium cernuum*), bitterroot (*Lewisia rediviva*) and others. Some one hundred plants known as food and medicinal plants are associated with such habitats. Aside from providing large biodiversity of small mammals, birds, reptiles, these grasslands were associated with large herds of elk, with evidence that they were selectively hunted with the help of hunting

blinds and game fences. Upland lakes provided trout (*Onchorhynchus* and *Salvelinus* spp.) habitat, also selectively harvested with a variety of methods. Spiritual associations, stories and named places, and the scant physical evidence they leave further allow us to “read” the human past. For the past one hundred years, cattle range, homesteading, and more recently mining development have changed, and continue to threaten the very existence of these areas. This poster will address past and ongoing Secwepemc knowledge, presence and connections to such grasslands in the area south of Kamloops.

JACKLEY, Julia - Simon Fraser University, Dana LEPOFSKY - Simon Fraser University, Jennifer CARPENTER - Heiltsuk Integrated Resource Management Department, and Nancy TURNER - University of Victoria

Mountain Top to Ocean Floor: The Eco-cultural History of Hauyat

The Mountain Top to Ocean Floor Project is a collaborative undertaking by the Heiltsuk First Nation, Simon Fraser University, and University of Victoria, that seeks to document and explore the unique cultural and ecological history of Hauyat, a landscape in Heiltsuk traditional territory on the Central Coast of British Columbia. Over the millennia Hauyat has been transformed by a complex web of relationships between people, plants, animals and ecosystems. The rich and deep history of this place is known through Heiltsuk oral history and is also reflected in the number and diversity of archaeological sites and eco-cultural features. Ranging from the lower intertidal to the subalpine, the landscape has been modified to include clam gardens, fish traps, root gardens, berry patches, orchards, settlements, rock art, and defensive sites. These features are suggestive of long-term resource management systems that likely worked together to provide food, materials, and medicines for past communities.

JERNIGAN, Kevin - Ethnobotany program, University of Alaska, Fairbanks, and Darlene ORR - Ethnobotany program, University of Alaska, Fairbanks

The Spiritual and Physical Benefits of Preserving Endangered Recipes in Southwest Alaska

The authors worked from 2008-2013 with elders from 14 villages in the Yukon-Kuskokwim region of Alaska. Within the larger themes of preserving traditional subsistence and diet for the continued well-being of local people, we focus on “endangered recipes,” food preparations that are no longer often made. Local elders emphasized the spiritual aspects of preserving such knowledge, including: 1) the importance of eating traditional foods for maintaining Yup’ik identity; 2) relationship with the land and how to properly harvest plants; 3) dietary abstentions during pregnancy and other significant life events and 4) plants with specific uses for purification. They underlined the need to maintain knowledge of diverse plant and animal resources to guard against the possibility of future hard times. We also examine why some forms of knowledge may be more readily lost than others and reasons that various stakeholders have for wanting to more actively try to preserve recipes.

JEYACHANDRAN, Robert - St. Joseph’s College, Tiruchirappalli, India

In Vitro conservation strategies and ethno pharmacological analysis of *Cayratia pedata* Lam.- An endangered medicinal plant of South India

Traditional medicine plays a vital role for primary health care in India. *Cayratia pedata* is a reputed remedy for cough, bronchitis, asthma, joint pain, hysteria, ulcer and diarrhea. The leaf decoction of this plant was used in the treatment of chickunguniya by folklore medicine. But this was not scientifically explored. Hence a study was initiated to assess the pharmacological importance of the leaf extract along with In Vitro conservation strategies to prevent the extinction of this valuable germplasm. A quick and reliable protocol for the micropropagation of *Cayratia pedata* Lam., a miracle herb and boon to medical science has been developed. MS medium supplemented with BAP (0.2 mg/l) induced maximum number of multiple shoots using nodal explant. A maximum number of multiple shoots induced was about 50. Multiple shoots were subjected to root induction on MS medium fortified with IBA (0.2 mg/l). The rooted plantlets were hardened and transplanted to the field for micropropagation. The survival rate was found to be 90%. Phytochemical analysis of this wonder herb reveals the presence of bioactive constituents such as alkaloids, tannins, steroids, glycosides, saponins, phenols, flavonoids and carbohydrates and their presence is supported by FTIR spectral features. In Vitro antimicrobial activity of the above secondary metabolites were validated using disc diffusion method against selected disease

causing pathogens such as *Staphylococcus aureus*, *Vibrio cholerae*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhi*. Ethanolic leaf extract exhibited highest activity against *Staphylococcus aureus* whereas methanolic leaf extract showed highest activity against *Vibrio cholerae*. FTIR studies revealed the presence of amines, alkenes, aromatic compounds, alcohols, aldehydes, carboxylic acids, amides and phosphine oxides. This systematic study reveals the presence of valuable phytoconstituents not hitherto reported and enables the conservation of this valuable herbal drug.

JEYACHANDRAN, Robert - St. Joseph's College, Tiruchirappalli, India

Antimicrobial efficacy of the phytochemical constituents of *Phyllanthus amarus* Schumach., a wonder herb in Indian system of medicine

Phyllanthus amarus is a traditional ayurvedic herb used in Southern India for the treatment of jaundice. Aerial parts of this plant species were found to possess antiviral, hepatoprotective and hypoglycemic properties. The principal constituents isolated from the leaves were Phyllanthin (bitter constituent) and hypophyllantin (a non-bitter compound). The alcohol extract of the whole plant has anticancer activity whereas the aqueous extract of the whole plant has hypoglycaemic activity. Because of the importance of *P.amarus* in Siddha drugs and lack of adequate information regarding the phytochemical constituents, a study was undertaken to find out the presence of steroids, triterpenoids, alkaloids, phenolic compounds, catechine, flavonoids, saponins, tannins and anthroquinone using solvents such as ethanol, petroleum ether, chloroform, acetone and water. The whole plant extract of *P.amarus* was tested for its In Vitro antimicrobial activity using disc diffusion method and it exhibited remarkable antibacterial activity against selected pathogens such as *Staphylococcus aureus*, *Vibrio cholerae*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhi*. Based on this investigation, it could be highlighted that *Phyllanthus amarus* is a chemical gold mine for the synthesis of valuable drugs.

JIANG, Sandy – Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA, and QUAVE, Cassandra - Department of Dermatology, Emory University School of Medicine and Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA

Foods for health, foods for medicine: A comparative study of health strategies used by Chinese and Taiwanese immigrants in metro-Atlanta

Ethnobotanical studies concerning the use of plants by migrant populations are of great relevance to public health. Traditional health strategies, which incorporate plants as medicines, foods, or both – can play an important role in individual well-being. In this study, we examined medicinal food and health strategies used by Chinese and Taiwanese immigrants in metro-Atlanta. We used snowball sampling techniques to recruit 100 informants who were interviewed about their preference for and usage of the yin/yang system, Chinese herbs and medicinal foods, Eastern and Western medicines, and gardening for medicinal foods. Comparison of the two groups demonstrated a remarkable difference in health strategies concerning medicinal plant use, including statistically significant differences in beliefs concerning yin and yang, uses of Eastern versus Western medicine, and gardening for medicinal foods. Domestic health strategies in the form of medicinal foods played an important role in local health practices, especially among the Taiwanese participants.

JOHNSON, Leslie Main - Athabasca University, Aileen REILLY University of Alberta, Linda MCDONALD Kaska Nation, and Mida Donnessey Kaska Nation

Working on Moosehide, a Participatory Video Project with the Kaska Nation, Yukon, Canada

Our project sought to document the complete step-by-step processing of Kaska moosehide through experiential learning and participatory video. Processing of hides is a key Dene woman's skill. As Subarctic hunting peoples, the ability to prepare hides so they can be used for footwear, clothing and other purposes was crucial to Dene survival. Traditional smoke-tanned moosehide is a unique substance, remarkably supple and durable, and unlike commercially tanned products. The tremendous skill and labour required to successfully tan hides means that few still have the ability or knowledge to do this. Our Elder was 84 years old at the time of our project in August 2012, which lent recording her knowledge a certain urgency. Our approach combined traditional knowledge and language research with ethnoarchaeology. This 17.5 minute video is a distillation of the steps in traditional tanning of a moosehide.

KACHKO, Liza - University of Kent

Changing Landscapes: Impacts of Environmental Change on Knowledge and Use of Medicinal and Edible Wild Plants in the Communities of Point au Chien and Isle de Jean Charles in Southern Louisiana.

Coastal erosion is altering the ecosystem of coastal Louisiana, including its human communities, through massive land loss and encroaching salinity. These natural and human-initiated processes are threatening communities' ability to remain in the places where they have lived for generations. This study examines changes in medicinal and edible wild plant knowledge and use in two Native American communities in southern Louisiana in the context of rapid environmental change. Twenty semi-structured interviews were conducted with community members in order to access individual knowledge of medicinal and wild edible plant species. Subsequently, recorded information was compared to historical records on plant use to gauge how use and knowledge have changed in the region. The study found a considerable decline in plant use and associated knowledge. Furthermore, this study records local peoples' perceptions of the causes of decline in use of medicinal and edible plants, along with their experiences of coastal erosion.

KAWA, Nicholas C. - Ball State University

Ethnobiology and the Anthropocene: A View from Amazonia

In recognition of humanity's increased capacity to alter the Earth's climate and bio-physical environment, the Nobel prize-winning atmospheric chemist Paul Crutzen has declared that we now live in a new geological epoch: the Anthropocene. Ironically, Crutzen's declaration occurs at a time when many environmental social scientists have grown concerned about the latent anthropocentrism that dominates much of modern thought. This presentation, which draws from ethnographic and ethnobiological research in Central Amazonia, discusses how rural Amazonian views of human-environmental relations can offer important counterpoints to modern anthropocentrism. Specifically, it examines the ways that rural Amazonian folklore grants agency to plants and animals, and thus underscores the importance of situating human lives within broad networks of relations with other beings and forces. To conclude, this presentation considers the ways that ethnobiological research can cultivate a more inclusive vision of ecology during this time of environmental crisis.

KINDSCHER, Kelly - Kansas Biological Survey, University of Kansas, Leanne MARTIN - Kansas

Biological Survey, University of Kansas, and Jessica LACKEY - Kansas Biological Survey, University of Kansas

The Response to Harvest of Osha, *Ligusticum porteri*, an important medicinal plant of the Southwest U.S.

Osha is an important medicinal plant to Native Americans and Hispanics in the Southwest and Mexico. There are concerns about its over-harvest, as the roots are used for medicine and this plant only occurs in moist, high elevation habitats below tree line in the Rocky and Sierra Madre Mountains. Our team conducted research to locate larger populations in Colorado and New Mexico, and we conducted detailed plot sampling to estimate populations and understand its response to harvest in the Rio Grande National Forest in Colorado. We found substantial populations, many of several hectares. Our data also indicated that forest and meadow sites differed in population sizes and root production, and that over 65% of holes with harvested roots produced re-sprouts. Harvest patterns and future demand of this herbal product remain important considerations for future sustainability of harvest, particularly because this species is difficult to propagate and cultivate on any scale.

KISTLER, Logan - Departments of Anthropology and Biology, Penn State University, NEWSOM, Lee A. -

Department of Anthropology, Penn State University, and PERRY, George H. - Departments of Anthropology and Biology, Penn State University

An integrated archaeogenomic view of squash and gourd (*Cucurbita* spp.) natural history, biogeography, and domestication

Squashes, pumpkins, and various gourds in the genus *Cucurbita* were domesticated on at least six independent occasions throughout the Americas, beginning ~10,000 years ago in southern Mesoamerica. They came to play major roles in prehistoric food production systems throughout North, Central, and South America, and are now

produced at both subsistence and commercial scales worldwide. We present genome-scale DNA sequence data from diverse modern and archaeological specimens aimed at questions of natural history and domestication in the Cucurbita. We securely confirm eastern North America as an independent Cucurbita pepo domestication center; we suggest a widespread, protracted pattern for C. moschata throughout the circum-Caribbean zone; and, we identify a possible cultigen from northern Mexico that is previously unrecognized and now extinct. Finally, wild Cucurbita populations have declined dramatically during the Holocene. We attribute this decline to rapid ecological shifts, including climate change and the extinction of the wild plants' megafaunal dispersers.

LANDIS, Catherine - SUNY College of Environmental Science and Forestry, LEOPOLD, Donald J. - SUNY College of Environmental Science and Forestry, and KIMMERER, Robin W. - SUNY College of Environmental Science and Forestry

Historical Ecology of a Major Superfund Site: Onondaga Lake, NY

The goal of this project is to elucidate the historical ecology of Onondaga Lake, one of the most severely degraded lakes in the country and site of the founding of the Haudenosaunee Confederacy. The project has three components: to characterize plant communities around Onondaga Lake before major industrialization (1825); to examine cultural practices that shaped those communities during this time; and, finally, to draw on this ecocultural history to inform and guide current restoration actions. We researched old maps, texts, herbarium records, newspapers, floras, ethnographic literature and other materials to reconstruct species lists and a historical narrative of human-plant relationships. Using these and other historical materials, we developed a series of 14 plant community templates for use in restoring sites around Onondaga Lake. We have also prepared outreach materials (historical ecology website, classroom lesson plans) to begin to shift community perception of the lake from industrial to ecocultural landscape.

LANGLIE, BrieAnna - Washington University in Saint Louis

Unearthing the Social History of Terrace Agriculture near Puno, Peru

Environmental sustainability is inherent in the architectural design of agricultural terraces, a landscape modification strategy independently developed by cultures around the world. In the southern Peruvian Andes of South America, farmers' consistent use of terraces through time also points to the adaptability of terrace agriculture to a variety of social situations. Specifically, recent archaeological excavations of terrace fields adjacent to Ayawiri, a large hilltop habitation site near Puno, indicate the logistical value in this agricultural strategy. To Ayawiri farmers, terraces were defensible during periods of war, productive during drought, and were a successful means of producing surplus crops. These data indicate that over millennia terrace agriculture was foundational to the lifeways and economy of inhabitants of the region. Although threatened by mechanical tractor farming encroaching nearby communities, many ancient terrace field complexes near Puno are maintained, continuously modified, and intensively cultivated by indigenous populations that still inhabit the region.

LASALITA-ZAPICO Florence, Mindanao State University-General Santos City, The Philippines, Catherine Hazel Aguilar- Mindanao State University-General Santos City, The Philippines, Fredelyn Eve Catubig- Mindanao State University-General Santos City, The Philippines, and Angelie Abistano- Mindanao State University-General Santos City, The Philippines

Rice Insect Pests in the Uplands of Sarangani Province, Philippines and Indigenous Methods for their Control

Sarangani, a newly created province in Mindanao island, Philippines, has mostly mountainous terrain that is home to the various tribal groups such as Blaans, Tbolis and Tagakaulos. Owing to factors such as inaccessibility and ethnic conflicts in remotest areas of the province, studies relating to tribal agricultural practices and pest control methods are completely non-existent. Surveys of rice insect pests and interviews with tribal farmers were carried out to determine incidence of insect pests in the farms and to document indigenous control methods used by farmers. A total of 83 species was documented comprising 2 classes and 13 orders. Of the total number of arthropods recorded, 43 were predaceous insects and arachnids whose preponderance in the upland farms can potentially be exploited for biological control of rice insect pests. Moreover, interviews with farmers

revealed preferential use of noise and foul odors from decomposing animals to drive insect pests away. In a few sitios (villages), however, insect pests were given free rein to infest the crops and farmers settled with whatever is left. This practice of leaving everything in the hands of deity and faith has resulted in rampant poverty and hunger in these areas. For majority of the sitios, many farmers no longer adhered to traditional methods of farming while others signified intention of shifting to synthetic pesticide use. These findings do not bode well for the future of upland farmers in the Sarangani uplands as well as for the perpetuation of traditional knowledge systems in the area. It is therefore imperative that productivity in the farms will be increased using sustainable and culture-friendly technologies for pest control. This coupling of scientific knowledge and traditional knowledge is therefore essential for managing insect pests while preserving the culture of the tribes in Sarangani Province.

LASCURAIN, Maite, Instituto de Ecología, A.C., Sergio Avendano, Instituto de Ecología, A.C., and Citlalli López-Binnquist, Centro de Investigaciones Tropicales, Universidad Veracruzana
Diversity of leaves used for Tamales in Veracruz, Mexico

The tamalli is one of the most famous indigenous Mexican foods are part of festive and ceremonials events. Tamal in Nahuatl language it means wrapping. This study was conducted in three regions of Veracruz, Mexico: Totonacapan (north), Sierra de Zongolica (center) and the Los Tuxtlas (south). Using 85 semistructured interviews, a literature review, consultation floristic data bases and field work we gathered 10 species. The results show that most leaves are used in green manner through half roasted and half roasted with steam. With the exception of *Musa paradisiaca*, all species are native or American origin. The leaves are gathered from the forests, cultivated in home gardens and only three are commercially cultivated. Some leaves have other uses, for instance: ornamental, livestock feed, food, wrap food.

LECOMPTE-MASTENBROOK, Joyce - University of Washington Department of Anthropology
Biosemiotics and Ethnoecology: Prospective Synergies and Ethical Potentialities

Inspired by Eduardo Kohn's formulations of an "anthropology beyond the human," (2013:7), this paper explores potential productive synergies between the emergent field of biosemiotics and ethnoecology. Using empirical data from ethnographic research with and about the mountain huckleberry, I discuss how an ethnographic sensibility and methodology may be productively applied to the study of non-human selves – in this case, plants. Building on this argument, the paper then explores the ethical potentialities regarding questions of knowledge integration (specifically TEK and LEK) in the context of environmental justice. Specifically, I ask how the "more than human" turn, by moving beyond the dualisms of "indigenous" and so-called "western" scientific knowledge, might be put to work in the active and practical pursuit of decolonization of people and the land.

LENTZ, David L.- University of Cincinnati, and Kim THOMPSON - University of Cincinnati
Agriculture and Forest Management at the Ancient Maya City of Tikal

This paper focuses on the agricultural and forestry practices of the Precolumbian Maya of Tikal. The main points of discussion will be: 1) the potential of the landscape to supply the needed food, fuel and structural material for the polity at the height of its population; and 2) the impact of Terminal Classic drying trends, which may have been anthropogenically influenced, on cultural developments in the region. Our results show that the Tikal Maya relied on a complex agricultural system involving orchards, house gardens, terraces, irrigation and extensive fields planted with annual crops and root crops. Forests were managed as fixed plot woodlots, similar to pāk'al or sacred groves. This study is significant because it advances our understanding of the fundamental resource base that allowed the Tikal Maya to support a large population and complex social order during their zenith in the Late Classic period. Moreover, it leads to a more complete understanding of the basic economic underpinnings of one of the major Maya polities and how its support system may have been overwhelmed by demographic, political and climatic trends in the late 9th century A.D.

LINARES, Edelmira - Jardín Botánico del Instituto de Biología, Universidad Nacional Autónoma de México, Cd. México, DF, México, and Robert BYE - Jardín Botánico del Instituto de Biología, Universidad Nacional Autónoma de México, Cd. México, DF, México

Copal of Bursera (Burseraceae): extraction and marketing chain in central México

The fragrant copal is a resin extracted from various species of Bursera in several Mexican states. Since pre-Hispanic times, various cultures employed it in their rituals. Today copal continues to be a part of civil and religious ceremonies. Regional markets were sampled in the southern state of Mexico and adjacent Morelos; major attention was given to Ozumba market. Open interviews were conducted with collectors and vendors in order to determine: antiquity of their activities, market chains, and uses. We found 8 types of natural copal as well as 2 synthetic resins. The market chain is based upon personal relationships between the collectors and traders that have developed over 100 years at annual fairs, where the wholesale price is fixed each year. Five classes of copal traders are present in Ozumba. Copal extraction requires urgent attention. Copal collectors cite decreased production due principally to diminishing number of productive trees.

LOPEZ BINNQUIST, Citlalli - Centro de Investigaciones Tropicales, Universidad Veracruzana, Rosalinda Hidalgo Ledesma - Universidad Autonoma Metropolitana / PPI, Patricia Negreros Castillo - Instituto de Investigaciones Forestales, Universidad Veracruzana, and Fortunata Panzo Panzo - People and Plants International

Trees, Forests and Maize: management practices of timber trees by nahua campesinos in the Sierra de Zongolica, Mexico

Understanding landscape changes and adaptation is key for biocultural conservation, particularly in mountainous regions. In the Sierra de Zongolica government forestry programs promote tree plantations for timber production. We analyze how external forestry initiatives have been largely incorporated by nahua campesinos into their diversified livelihood strategies and the mixed impacts of reforestation processes at household and landscape levels. Through field walks and semi-structured interviews we document diverse uses/values and a range of timber tree management practices within agroforestry and agricultural plots dedicated mainly to milpa (combined cultivation of maize, squash and pumpkin) and coffee production in the lower areas of Zongolica. This study forms part of an interdisciplinary and intercultural forest management project carried out by Nahua undergraduate students and researchers of the Universidad Veracruzana and People and Plants International.

LUPTON, Darach - Oman Botanic Garden, AL HINAI, Abdulrahman - Oman Botanic Garden, and AL JABRI, Thuraiya - Oman Botanic Garden

Documenting traditional agricultural weights and measures systems in the Al Hajar Mountains, Northern Oman

Oman lies on the South Eastern coast of the Arabian Peninsula. It is a country rich in plant heritage. The nascent ethnobotany department at Oman Botanic Garden are working hard to record and conserve much of Oman's largely undocumented ethnobotanical heritage. In 2013 the team began investigating and documenting for the first time the range of traditional agricultural weighing and measuring systems used in Oman's Northern Mountains. Consent from the village elders permits the documentation of data from all interviews, including photos, videos and audio recordings. Local names, materials and uses for each traditional weighing apparatus is documented. 35 different devices and methods have been recorded thus far. Devices are largely constructed from locally collected wood (*Olea euopea* and *Acacia* spp.), stone and metal (often historic coins). The team has visited 12 villages to date and research will continue through 2014.

LYLES, James T. - Bent Creek Institute, Asheville, NC, Paula TYLER - Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA, Kevin SPELMAN - Health, Education and Research in Botanical Medicines, Ashland, OR, Stephanie T. PIERCE - Department of Environmental Studies, Emory College of Arts and Sciences, Atlanta, GA, Carl BROWN - Department of Environmental Studies, Emory College of Arts and Sciences, Atlanta, GA, and Cassandra QUAVE - Department of Dermatology, Emory University School of Medicine and Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA

Comparative Phytochemical Analysis of Chinese and American Starvine by HPTLC and HPLC

A comparative HPTLC and HPLC-PDA analysis was performed on alcoholic extracts of *Schisandra chinensis* (Turcz.) Baill. (Chinese Starvine, CS) and *Schisandra glabra* (Brickell) Rehder (American Starvine, AS) fruits. Endemic to the Southeastern United States, it is suspected that AS was significant to indigenous Native American populations. Although there is little information concerning the uses of AS, CS has a long and well-documented ethnobotanical history. In this study, we investigated schisandrol A, schisandrol B, schisandrin A, schisandrin C, γ -schisandrin and schisantherin A in both species and quantified four compounds using standards. CS had much higher levels of schisandrol A (7.3% of total crude extract) than AS (0.26%), AS had higher levels of schisandrol B (6.7% vs. 1.6% in CS) and schisandrin A (4% vs. 2.1%), and roughly equal levels of γ -schisandrin (1.6% vs. 2.0%). This analysis represents an important step in assessing the future significance of AS for traditional medicine and conservation initiatives.

MAHADY, Gail B- University of Illinois at Chicago, Ma, Hong -Nanjing University of Chinese Traditional Medicine, Nanjing, People's Republic of China, Lu, Ye -Nanjing University of Chinese Traditional Medicine, Nanjing, People's Republic of China, and Liu, Daniel - University of Illinois at Chicago,
The safety and mechanism of action of a traditional Chinese medicine formula for the management of menopause

The effect of a TCM formula on safety parameters and granulosa-cell (GC) apoptosis in aged female rats was investigated. Naturally aged female SD rats were grouped into negative controls, MPG1 (162 mg/kg body weight), MPG2 (324 mg/kg), MPG3 (648 mg/kg) and positive controls (Estradiol) group (0.18 mg/kg, p.o.). After sacrifice, bilateral ovaries and uterus were removed, and wet weight recorded. One bilateral ovary was used for electron microscopy and flow cytometry (FCM) analysis, and another was used for the TUNEL and immunohistochemical tests. Administration of Menoprogen for 8 weeks increased plasma estrogen levels and the weight of both ovarian and uterine tissues. Flow cytometric (FCM) analysis of the GCs showed reductions in the G0/G1 ratio and apoptotic peaks and TdT-mediated dUTP nick end-labeling (TUNEL) test revealed a reduction of GC apoptosis. Menoprogen showed no signs of toxicity and inhibited GC apoptosis in female rats, indicating a new mechanism of action.

MAHADY, Gail B- University of Illinois at Chicago, Locklear, Tracie D. -Center for Learning Healthcare, Duke Cancer Research Institute, Durham, NC, Patel, Udeshi - University of Illinois at Chicago, Jones Tristesse-University of Illinois at Chicago, and Williams, Rene- University of Illinois at Chicago
Anti-HER2/neu activities of *Brassica oleracea* var. *acephala* L. (Collard greens) used by the Lumbee Tribe of North Carolina

Among the vegetable-containing plant families with proven anti-carcinogenic properties, the genus *Brassica* (cabbage family) has been determined to be effective at reducing the risk of cancer. Collard greens, a common food in Lumbee cuisine were collected in North Carolina and extracted with hot water or methanol of the dried plant materials. The MeOH extract was partitioned into four parts: hexane, ethyl acetate, n-butanol and water. The ethyl acetate partition reduced MCF-7 cell proliferation by 50% at 50 mg/ml. The extract and partitions were tested in a HER2/neu and EGF tyrosine kinase assays (96-well plates, high throughput). The methanol extract was active with an IC50 of 10mg/ml, and the aqueous methanol (1:1) and ethyl acetate partitions of the methanol extract strongly inhibited the activity of protein tyrosine kinase HER2/neu, with an IC50 of 5.5 mg/ml and 12.5 mg/ml, respectively. The extract also down-regulated the expression of the HER2/neu gene.

MAPES Cristina. Jardín Botánico, Instituto de Biología. Universidad Nacional Autónoma de México (UNAM), Basurto Francisco. Jardín Botánico. Instituto de Biología. Universidad Nacional Autónoma de México (UNAM), Peralta Lorena. Jardín botánico. instituto de Biología. Universidad Nacional Autónoma de México (UNAM), and Díaz Araceli. Jardín Botánico. Instituto de Biología. Universidad Nacional Autónoma de México (UNAM)

Diversity of "quintoniles" (*Amaranthus* spp.) in the Sierra Norte of Puebla, Mexico

Amaranths (*Amaranthus* spp.) used as edible greens in Mexico are called quintoniles, these being among other classes of quelites, a concept including all herbs of which young leaves are consumed. The Sierra Norte of Puebla region is one of the highly interesting regions for studying the knowledge, use and management of amaranths as edible green. We have made extensive collecting of germplasm (seeds) and herbarium specimens of quintoniles throughout the Sierra Norte of Puebla region, described the management of the plants by different communities, made physicochemical analysis of mineral and vitamins contents of ten different accesions, and characterized the germplasm of amaranths present in the study region. The germplasm of amaranths used as edible greens in the Sierra Norte of Puebla displays high morphological variation. The most important characters were related to different aspects of leaves, lateral branching and form of inflorescence. Also, we have created trptychs, booklets, and posters for sensitizing the populations about amaranths.

MATTHEWS, Allen - School of Sustainability and the Environment, Chatham University

Forest-Grown Shiitakes

Forest farming of shiitake mushrooms diversifies available farm income for small farmers. These mushrooms grow on logs acquired through sustainable woodland management, producing crops after one year. Our research offered essential hands-on skills to farmers in Northeastern USA on growing, harvesting and marketing shiitakes on their own woodland. As a result, over 20 farmers have developed a sustainable forest management plan, felling suitable trees for inoculating with a projected harvest of 400 to 500 pounds of shiitakes after 5 years. Woodlot owners involved are from VT/NY/MA/ME/NH/NJ/PA/WV/NH. Research objectives: (1) the indicators and attributes for profitable shiitake enterprise, (2) the most productive species and means of growing shiitakes in northeastern forests. Participants inoculated 660 *Acer saccharum*, 480 *Quercus rubra*, 400 *Fagus granifolia*, 180 *Carpinus caroliniana*, and 140 *Quercus alba* bolts. In total more than 2,400 bolts were inoculated with shiitake spawn in the 2nd year of this 4 year research trial.

MAXWELL, William - The University of North Carolina at Chapel Hill

Local ecological knowledge of native Atlantic Forest medicinal plants on an agricultural settlement in Pernambuco, Brazil

Ethnobotanical research methods can contribute to agrarian political economy studies. I used an ethnobotanical survey to assess the extent of settlers' local ecological knowledge on the Frei Gondim diversified agriculture settlement in the heart of the sugar monoculture zone of Pernambuco in Northeast Brazil. I conducted the ethnobotanical survey (n=5) in conjunction with a larger agrarian study (n=20) that used a model derived from the work of Robert Netting to assess the economic and ecological sustainability of peasant agriculture operations. I found that settlers have strong ecological knowledge of native Atlantic Rainforest medicinal plants on the settlement. Of 35 plants I collected, I identified 26: Ten, or nearly half the identified medicinal plants, were native to the Atlantic Rainforest. According to the Netting Model, peasant agriculture encourages techniques of stewardship and resource conservation. My study showed that the Frei Gondim settlers possess the necessary ecological knowledge to practice these techniques.

MCALVAY, Alex - University of Wisconsin-Madison

Traditional non-crop management of the Wixáritari (Huichol) of western Mexico

A potentially large pool of biodiversity generated through traditional plant management may be overlooked due to researchers' biases toward familiar patterns of plant manipulation. Various non-agricultural plant management practices which favor certain phenotypes during weeding, transplanting, protecting, or encouraging of wild plants have been demonstrated to drive divergence between wild and managed populations. The Wixárika, an indigenous group in the Sierra Madre Occidental mountains of Mexico, carry out a number of management regimes with the potential consequence of altering frequencies of preferred traits in non-agricultural populations. Examples include transporting propagules from non-bitter-seeded *Pithecellobium dulce* trees to villages, sparing from weeding *Oxalis hernandezii* individuals with favored characteristics, and transporting especially productive fruit trees to springs in order to provide food for water carriers. Documenting these practices is the first part of a broader study that will also quantify divergences between wild plants and populations managed by the Wixárika.

MCCAMPBELL, Michael - Frostburg State University, Sunshine BROSIE - Frostburg State University, Thomas HALL - Pennsylvania Department of Natural Resources and Conservation, Arnold SAXTON - University of Tennessee, and Scott SCHLARBAUM - University of Tennessee

Seedling Establishment of American chestnut, *Castanea dentata*, in Pennsylvania

American chestnut [*Castanea dentata* (Marsh.) Borkh.] dominated forests throughout eastern North America prior to the introduction of chestnut blight [*Cryphonectria parasitica* (Murrill) Barr], which effectively removed the species from its native range. Long valued as both food and medicine by Native Americans, the tree provided American settlers with materials to expand a growing nation and develop a unique Appalachian culture. Restoration of American chestnut is anticipated through progress on numerous fronts combating chestnut blight. Artificial regeneration using disease-resistant stock, however, is still challenged with obstacles facing seedling establishment on species where plantings have been extremely limited. We used pure American chestnut seedlings to evaluate the effects of site characteristics, genetics and seedling quality on seedling performance over 13 years. Thirteen-year survival ranged from 2% at the poorest site to 71% at the richest site, with larger seedlings generally outperforming smaller stock in terms of survival and overall height.

MCDONALD, J. Andrew - University of Texas – Pan American

Re-assessing the Botanical Identity of the Supposed 'Maize God' in Maya Iconography

Human societies throughout the world have traditionally paid homage to deities that represent the origin and annual rejuvenation of staple crops. Historians attribute such roles to an anthropomorphic Maya divinity on Classic and pre-Classic ceramics ('god E') whose jade skirt and shaved, elongate head are thought to represent maize vegetation and a cranial corn ear. A systematic survey of this god's portraiture on ceramics, codices and stelae reveals, however, that god E is born from the cranium of the 'water lily monster' (30% of ceramics) or maw of the 'water lily serpent' (30%) and pertains in mythical settings to the Maya watery netherworld (73%). Only five of 191 pre-Columbian ceramics investigated portray plant features that might arguably be construed as either a corn cob or maize plant. This finding urges an explanation for the dominant role of an aquatic plant in Maya cosmology and iconography.

MERLIN, Mark - Botany Department, University of Hawai'i at Manoa

Ancient use of *Ephedra* species in Central and Eastern Eurasia

Ephedra species have an ancient history of use in Eurasia, especially but not entirely in the arid areas of this huge region. More recently, archaeological and archaeobotanical evidence, along with deeper understanding of relevant written records, have provided us with additional insight into the traditional utilization of this of genus of unusual plants with very special alkaloids. *Ephedra* plants have long served as a stimulant and therapeutic medicine for people, producing many tonic benefits because of their ability to serve as bronchodilator and decongestant in addition to other significant effects on the central nervous system. Furthermore, given the

appropriate set and setting, Ephedra combined with other substances in the past, as perhaps in the case of haoma and/or soma, can have potent psychoactive and physiological effects. Some of the more challenging hypotheses relating to the ancient uses of Ephedra species in Eurasia are analyzed in this paper.

MESSICK, Kerry A - Frostburg State University, McCAMPBELL, Michael- Applied Ecology & Conservation Biology, Frostburg State University, TILLET, Matthew D. - Applied Ecology & Conservation Biology, Frostburg State University, CARR, Megan E.- Frostburg State University, SHARP, Ami M. - Tree Improvement Program, University of Tennessee, SCHLARBAUM, Scott E. - Tree Improvement Program, University of Tennessee, and BROSI, Sunshine L. - Frostburg State University
Establishment of white oak, *Quercus alba*, seedlings for Cherokee basketry material

Cherokee basketry depends upon availability of material from straight-grained white oak, *Quercus alba* L., trees. Plantations of high-quality seedlings in large tree shelters would increase material for basketry, reducing environmental and economic cost of this art. Experimental plantations were established on the Kituwah site in cooperation with the Eastern Band of Cherokee Indians. Acorns were collected in western North Carolina and kept separate by individual parent tree, and planted by the University of Tennessee in 2006. Over 316 seedlings were planted to study interactions among seedling quality, genetics, and shelter height (1.5, 1.8, 2.3, or 3m), determining the combination producing the most optimal material for basketry. Pedigree was maintained to quantify genetic components of growth and interaction with shelters and site. Eight year results will be presented on seedlings now reaching 6.1m by students from Frostburg State University. Results will aid in future determining establishment protocols specifically for basketry materials.

MEYER, Maureen - University of New Mexico
Dominica: Examining Culture through Medicinal Plant Use

This paper focuses on medicinal plant use in the Commonwealth of Dominica, a Caribbean island in the Lesser Antilles. The purpose of this research was to understand cultural and environmental factors associated with medicinal plant use. Qualitative methods in the form of semi-structured interviews were used to ascertain knowledge surrounding medicinal plants. From these interviews plant lists were generated to compare and analyze species importance, spatial distribution, and use. Comparisons of species knowledge among interviewees was noted. This research found that many species used for medicinal purposes are pan-tropical weedy species that thrive in disturbed landscapes. The results indicate how cultural adaptations regarding medicinal plant use have been influenced by spatial proximity to particular species. Furthermore, the research highlights the similarities of adaptations between plants and cultures to thrive and overcome the disruptions of ecosystems as well as human disruption (i.e. migration, slavery, indentured labor) in non-native environments.

MEYER, Rachel S. - New York University, Jonathan FLOWERS, Annie BARRETTO - International Rice Research Institute, Junrey AMAS - International Rice Research Institute, Anne PLESSIS, Jesse LASKY, Glenn GREGORIO, and Michael PURUGGANAN
Genome-wide patterning in African rice (*Oryza glaberrima*) landraces helps to explain adaptation to saline landscapes and the historic coevolution between plants and human agroecological practices

African rice (*Oryza glaberrima* Steud.), domesticated in the Niger river delta, was brought into coastal saline environments where conscious selection for salt tolerance has been reported. West African farmers also minimize salt stress through indigenous technologies. Because high salinity affects 50% of global irrigated land, we chose to trace this evolutionary interaction between agronomic strategy and the genome under selection. The alleles underlying tolerance and adaptation to new environments while undergoing selection to meet human food preferences, were previously unknown. 102 landraces were phenotyped and whole genome resequenced at >10x nuclear coverage. DNA variants were analyzed for population structure and regions under selection. Phenotypes and sequences were correlated with each other and with both geographic origin and climatic data. We found strong salt tolerance in 20% of the landraces. Genome-wide patterns found relevant to domestication, landscape changes, and salt tolerance, reveal the unique evolution of African rice under human selection.

MOSCOE, Lauren - University of Wisconsin-Madison, and Eve EMSWILLER - University of Wisconsin-Madison

Dissecting factors that affect traditional crop diversity, using oca (*Oxalis tuberosa*) as a model

Traditional crops contribute to food security and agroecological sustainability, but their diversity is threatened by economic, environmental, and sociocultural change. Many authors suggest that increased access to agronomic and dietary resources decreases farmer demand for traditional crops, and is thus incompatible with diversity conservation. We use a case study of the Andean tuber crop oca (*Oxalis tuberosa*; Oxalidaceae), in Pisac District, Cusco, Peru, to ask questions about the practicality of in situ conservation in the modern context. Using a qualitative research approach based on participant observation, interviews, and focus groups, we examine motivations for, and threats to, oca diversity. Farmers reveal that decreased oca diversity in Pisac is not due to decreased valuation of the crop, but rather to decreased ability to maintain robust germplasm. We call for increased research emphasis on traditional crops to minimize preventable barriers to in situ conservation, especially when demand is not compromised.

MOTLHANKA, D.M.T - Botswana College of Agriculture, T. Selebatso - Botswana College of Agriculture, S.W. Makhabu - Botswana College of Agriculture, B. Sebolai - Botswana College of Agriculture, and M. Setlalekgomo - Botswana College of Agriculture

An Inventory of Wild Seed Oil Plants of Botswana: An Untapped Economic Resource

Botswana host a rich diversity of many edible wild plants. Many of this rich floral diversity have served as mainstay sources of nutrition and medicines for many years. The majority of these forest resources serve as sources of vitamins and important micronutrients. Some local trees have gained immense popularity as sources of both nutritious and medicinal oils. Quite recently, there has been intense interest in the harvesting of wild seeds for extraction of their vital oils. In Botswana the following seed plants are harvested by the local communities as important sources of edible and medicinally active oils: *Tylosema esculentum*; *Sterculia africana*; *Hyphaene petersiana*; *Ximenia americana*; *Sclerocarya birrea* and *Croton gratissimus*. The seeds of these plants represent some of the commodities sold by street vendors and local shops in Botswana. The potential economic value represents an important area of economic diversification and social upliftment in Botswana.

MOTLHANKA, Daniel - Botswana College of Agriculture

Medicinal And Wild Food Plants As Emerging New Crop Opportunity For Poverty Alleviation In Africa

Plants have been used in treating human diseases and animal diseases for thousands of years. The use of plants as sources of health improving remedies and as source of nutrients is not just a custom of the distant past, as 80% of the world's population still relies completely on new herbs and unrefined extracts for food and medicines. Domestic and foreign markets for medicinal plants are growing rapidly and provide opportunities for the development and diversification of African Agricultural enterprises. Phytomedicines and phytonutrients represent new crop opportunities for the future. Their cultivation offers the possibility of not only preserving economically important wild plants in their natural habitats, but also providing farmers with new crops. Of growing concern, is the extinction of medicinal and food plant species in the wild habitats. Given the growing demand for these botanicals and current problems in unsustainable collection methods, it is quite likely that some of these plants will be overharvested to depletion. When cultivated they will be rated speciality crops that could provide profitable growing opportunities for small farmers. Growing medicinal and wild food plants in botanical gardens is also an emerging area of eco-tourism. Many of the indigenous herbs of Africa are exported to the Western markets, where they represent fast growing market for natural products industry. More so, people are losing confidence in using orthodox clinical drugs because of their adverse side effects, and turning more and more to prevention and wellness programmes. As this trend develops, phytomedicines could become an important new alternative crop.

MOTLHANKA, Daniel - Botswana College of Agriculture, B. SEBOLAI - Botswana College of Agriculture, and T. KOTLHAO - Botswana College of Agriculture
Phytochemical Screening, Antioxidant And Heavy Metal Analysis Of Medicinal Plants Sold By Street Vendors In Gaborone, Botswana

The aim of this study was to screen for the various medicinally important phyto-active compounds and investigate the total phenolic content, free radical scavenging activity and heavy metal content of three herbal formulations [Motsosa (believed to be treat erectile dysfunction); Thatswamadi (believed to remove toxins from blood and alleviate fatigue), and HBP(believed to alleviate discomfort associated with increased blood pressure)] sold by street vendors in Gaborone. Qualitative phytochemical analysis revealed presence of saponins, flavonoids, phytosterols, steroids, phenols, cardiac glycosides and terpenoids. There is strong evidence from the literature that these phytochemicals play a role as health improving remedies. All samples were obtained from local traditional healers and extracted by cold maceration in methanol for five days with periodic vigorous agitation. Total phenolic contents (TPC) measured by Folin-Ciocalteu varied from 1231.3 to 752.4mg/l GAE. The order TPC was HBP>Thatswamadi>Motsosa. The antioxidant activity as determined by the DPPH radical scavenging assay, revealed that, at all tested concentrations, HBP and Thatswamadi showed equal scavenging potencies (90%) similar to control Quercetin, whilst Motsosa exhibited lower than 60% scavenging power. Heavy metal analysis by Flame Atomic Absorption Spectroscopy showed non-detectable levels of Nickel, Copper, Cadmium, Lead, and Chromium. This work has validated the use of these formulations as health improving remedies. However, analysis of microbial contamination and structural elucidation of bioactive constituents should be carried out.

MOTLHANKA, Daniel - Botswana College of Agriculture, B. SEBOLAI - Botswana College of Agriculture, and B. SERU - Botswana College of Agriculture
Comparative Antioxidant And Total Phenolic Analysis Of Four Indigenous Herbal Tea Plants Of Botswana

As they say "several cups of tea a day keeps the doctor away!" but is this true or merely sheer fiction? And is one type of tea any better than the other? There is strong evidence from the literature that herbal tea plants have health improving properties. One of the reasons for reputed properties of teas is related to the levels of antioxidants they contain. In this work, the antioxidant profiles of four herbal tea plants indigenous in Botswana (*Artemisia afra*, *Lippia javanica*, *Lippia scaberima* and *Combretum hereroense*) were compared with commercial teas (Chinese Green Tea, Rooibos, and Five Roses). Free radical scavenging Activity (FRSA) of the teas was evaluated spectrophotometrically as maximum fading power of 1,1-Diphenyl-2-picrylhydrazyl (DPPH) at 525nm. The total phenolic content of methanolic extracts was determined using the Folin-Ciocalteu method. At all tested concentrations, the scavenging power of *C. hereroense* (90%) fruit extract was higher than of all the other indigenous herbal teas and comparable to both Chinese green tea (90%) and Control quercetin (91%). Between 100 and 200µg/ml, all tested extracts had scavenging potencies (≥90%) comparable to quercetin and Chinese Green tea. The total phenolic content of *C. hereroense* (10 680 mg/l GAE) was tenfold greater than that of commercial teas. The other three tested indigenous herbal teas showed total phenolic contents (1000 to 2000mg/l GAE) comparable to the commercial teas including Chinese Green tea. These results demonstrate that these indigenous tea plants have a positive role in human health. The results also support the long history of use of these traditional teas as health improving remedies and support their use in combating diseases associated with oxidative damage.

MOTLHANKA, Daniel - Botswana College of Agriculture
Total phenolic content and free radical scavenging activity of hypoxis hemerocallideae from Botswana

Methanolic and chloroform extracts of *Hypoxis hemerocallideae* were screened for antioxidant activity. The total phenolic content (TPC) of the extracts was compared with their radical scavenging activities (RSA). *H. hemerocallideae* has extensive reputable use as a remedy for hypertension, diabetes and general body discomfort. A clear relation between the total phenolic content (Figure 1) and % free radical scavenging power (Figure 2) was found. Methanolic extracts exhibited greater scavenging activity (≥80%) similar to quercetin (control), than chloroform extracts. There was also no significant difference between the scavenging powers of the root and shoot (leaf) extract. These extracts may be exploited as remedies for oxidative stress.

MT. PLEASANT, Jane - Cornell University

Rethinking Indigenous Agriculture in Pre-Columbian North America

Many scholars have claimed that indigenous farmers in North America were shifting cultivators who produced marginal yields and often sowed the seeds of their own downfall through their negative impacts on the environment. I use an agronomic analysis to deconstruct this argument, focusing on agronomic characteristics that shape cropping systems. I conclude that indigenous cropping systems were mostly permanent and intensive, rather than fallow-based. Furthermore, this agriculture, primarily maize-based was highly productive and stable, with little negative impact on the environment, because indigenous farmers had access to fertile soils and because they didn't use plows.

MUELLER, Natalie G. - Washington University

Developing Domestication Criteria for Crops with Knotty Morphologies: Polygonum in the Eastern Woodlands

By developing morphological criteria for recognizing domesticated plants, archaeologists are able to find direct, datable evidence of past agricultural practices. Annual seed crops often exhibit a straightforward domestication syndrome in response to human selection that includes larger seeds, reduced germination inhibitors (seed and fruit coats), synchronized fruiting, decrease in mechanisms for seed dispersal, and a more erect growth habit. Despite these well-established indicators, some crops continue to elude our efforts to develop criteria for domestication. I present preliminary results from my attempts to establish morphological criteria for domestication for one such crop, knotweed (*Polygonum* sp.) that was cultivated for at least 2000 years in the Eastern North America. In order to establish domestication criteria for this extinct crop with complicated seed morphology, I am employing morphometrics and texture analysis coupled with experimental cultivation and observations of modern plants. This study also has the potential to enrich our understanding of the dynamics of domestication through agricultural practice in general

NAGAOKA, Lisa - University of North Texas, Steve WOLVERTON - University of North Texas, and Feifei PAN - University of North Texas

Modeling Crop Failure Potential in Late Pueblo III Mesa Verde Villages

Dry farming was common prehistorically and continues to be important for small-scale farming in many areas of the world today. Archaeologists have tried to understand the factors involved in crop productivity to get at population size and growth, as well as collapse. Water, particularly in arid environments, is the most important limiting factor. Archaeological models have focused on surface water availability and its impact on crop productivity at the scale of watersheds. Based on modern agrohydrological research, we are developing a model that will incorporate subsurface water movement and storage at sub-watershed scales to model crop failure that we will apply in the Mesa Verde region of the Southwest U.S. The three-dimensional approach will allow us to look at long term water availability over a growing season, while focusing on crop failure instead of crop productivity simplifies the model to provide the amount of land that would successfully produce crops.

NGOFA, Sedia - Frostburg State University, SMITH, Laura G. - Frostburg State University, BOWER, Justin - Applied Ecology & Conservation Biology, Frostburg State University, SCHLARBAUM, Scott E. - Tree Improvement Program, University of Tennessee, SHARP, Ami M. - Tree Improvement Program, University of Tennessee, and BROSI, Sunshine L- Frostburg State University

Increasing the Availability of Butternut for Traditional Cherokee Dye

The bark, roots, and seed hull of the butternut, *Juglans cinerea* L., have been used for generations by members of the Eastern Band of the Cherokee Nation as a dye to create striking patterns in woven rivercane baskets. Butternut is impacted by an exotic canker disease causing the decline of nearly 80% of the trees in North Carolina. Efforts have been made to increase the availability of butternut material for dye. In collaboration with The University of Tennessee, a cultural resource planting was established at the Kituwah site with over 300 seedlings in 2006 from 5 genetic families. A butternut orchard was also established at Holmes Educational State Forest with over 200 seedlings from 8 genetically families. Students from Frostburg State University collected

eight year results on the planting establishment. The goal of this project is to insure a sustainable supply of butternut for ecological and cultural uses.

NNAMANI Catherine V. Ebonyi State University, Abakaliki, Nigeria, and Itam, Michael. O.Ebonyi State University, Abakaliki, Nigeria

Uses and Socio-economic Significance of *Pentaclethra microphyllum* Benth. (Fabaceae) in the lives of the Agrarian Communities of Southern Nigeria.

The agrarian local communities of Southern Nigeria depend on ecosystem services to supplement farming and petty trading. *Pentaclethra microphyllum* is a wild multipurpose species, valued for its medicinal, socio-economic, cultural and religious values. Objective: The major aims were to document the ethnobotanical data on the interactions and impact of products from this plant in the livelihood options of these people. Methods: Several ethnobotanical and sociological methods were employed such as oral interviews, semi-structured questionnaires, participating observation in the field, market survey and visits to local restaurant and fast food joints. Results: Investigation revealed that the boiled and fermented seeds after slicing are used for many highly cherished delicacies, as condiment for soup; stew and as spice in many dishes. Ashes are used as salt substitute and mordant while bark decoction enhances healing and lactogenicity in lactating mothers. It is a sacred tree and young shoots are used in chieftaincy coronation. Plant is vastly utilized for apiculture farmers. They attract insects whose larvae metamorphosed into special portentous caterpillars (Wewee or Kpeee) highly cherished. Wood is best for construction of kitchen utensils. Income extractable from seeds rang from ₦8 for a rapped bundle to ₦75 per kg. About 47% of dishes are found to incorporating sliced seeds as spice or seasoning. Conclusion: Fully documented and discussed are the various socio-economic impart and it religious values.

OFFRINGA, Lisa - Stanford Prevention Research Center, Stanford University School of Medicine, Kronenberg, Fredi - Department of Anesthesiology, Stanford University School of Medicine, and Katz, Rebecca - Healing Kitchens Institute at Commonweal

Harnessing the Power of Plant Foods During Cancer Treatment and Recovery

Chronic diseases like cancer may be partially preventable by incorporating plant foods with health related properties into the diet. For cancer patients, maintaining a nutrient rich diet can be challenging because of the taste changes that occur during chemotherapy. Many cancer patients and their caregivers are not knowledgeable about specifically which plants contain these helpful phytochemicals, nor how to prepare them in a manner that is palatable during cancer treatment. Furthermore, health care providers learned little about nutrition in their formal training, are not knowledgeable about the growing body of research on nutrient rich plant foods, and are unable to offer much needed nutritional guidance. Fifty health care practitioners attended a seminar explaining the current research on phytochemicals in specific plant foods, and their affect on cancer. This presentation was followed by a demonstration of how to incorporate these plant foods into the everyday diet through simple cooking methods. Pre- and Post-survey methodology was used to elicit their level of understanding of these topics before and after the seminars. Before the seminar, 70% of the health practitioners reported that they did not know or think there was sufficient scientific evidence to recommend that cancer patients eat specific foods. At the end of the program, 90% reported that they did not know or think there was sufficient scientific evidence to recommend that cancer patients eat specific foods. At the end of the program, 90% reported they felt better about the evidence on diet and cancer such that 75% said they would be more likely now to recommend that cancer patients eat, or refrain from eating specific foods. In the Post-survey, 48% of the respondents reported that they could better communicate this information to patients - less in medical/health terms and more in terms of diet and cooking recommendations. Sixty one percent of the respondents had a better understanding of how cancer-fighting foods can be translated to the plate. The vast majority of those attending said they would support their patients to incorporate these plant foods/phytochemicals into their daily diet. Health care practitioners educated about medicinal plant foods are more likely to recommend eating them to their patients. Understanding the phytochemicals contained in these foods, and appreciating the rapidly growing body of data supporting their health benefits, provided them with the knowledge needed to confidently make these recommendations.

OLSON, Elizabeth A. - Allegheny College

Conceptual Connections Across People and Places: Some Observations on the Practice of Homeopathy in Contemporary Rural Mexico

Anthropologists have long studied cultural diffusion, sharing, or borrowing since the pioneering studies of Boas and later Kroeber. Globalization, being ideological, political, economic, cultural, and even physical, has pushed us to revamp our understandings of intercultural dynamics and knowledge transmission. This paper discusses ethnomedical pluralism in our globalized world by examining preliminary data from Western Europe and west-central Mexico. How is homeopathy being practiced in rural southwest Mexico? This research provokes questions about the relationships between ethnobotanical and medicinal plant usage in non-biomedical health therapies in disparate settings. The paper presents suggestions for in-depth study of medicinal plant usage by practitioners who share knowledge through globalized information networks, but who practice health therapies in distinct locations with distinct clientele.

OTAOLA, Clara - CONICET-Museo de Historia Natural de San Rafael, Mendoza, Argentina, and Miguel

GIARDINA - Museo de Historia Natural de San Rafael, Mendoza, Argentina

A Taphonomic Perspective on Intensification of Animal Resource Use in Central-Western Argentina

Hunter gatherers in western Argentina are thought to have intensified use of animal resources during the mid to late Holocene in southern Mendoza, Argentina. Intensification is visible in the zooarchaeological record in several ways: an increase in diet breadth incorporating greater use of small game, a decrease in the availability of large game, and an apparent demographic shift in guanaco populations from sustained harvest. A problem is that these shifts have been observed with little attention to taphonomic processes that could also account for patterns in data. The heterogeneous landscape of southern Mendoza likely produced variability in microenvironmental variables, such as soils, precipitation, and temperature that influence potential for bone preservation and thus taxonomic composition represented in faunal data. This research takes these taphonomic effects into account for analysis of composition of zooarchaeological assemblages from four ecoregions in southern Mendoza: the mountains, piedmont, volcanic environments, and the lowlands.

PAI, Aswini, Horne, Lydia, and Judd, Houston

Agrobiodiversity as a means of supporting pollinator diversity: a study of wild bee species in the kitchen gardens of St. Lawrence County, New York

Kitchen gardens exhibit high agrobiodiversity with respect to crop species and floral resources. We hypothesized that kitchen gardens foster greater pollinator diversity as compared to larger monocultural cropfields. We sampled wild bee communities using pan traps in 22 polycultural kitchen gardens and 6 monocultural forage cropfields in rural upstate New York through one growing season. We recorded 26 genera and 64 species of wild bees. ANOVA indicated that there was significantly greater bee species richness ($p < 0.05$) in kitchen gardens as compared to forage crop fields. Though total wild bee abundance was consistent through the growing season, some genera fluctuated in numbers. Bee abundance could be influenced by both floral diversity and floral resource density. Further, additional parameters such as availability of nesting sites may also determine wild bee diversity. This study has implications for long term management of wild pollinators and crop diversity in the region.

PELES, Ashley - UNC Chapel Hill, Mallory A. MELTON - UNC Chapel Hill, and Erin NELSON - UNC Chapel Hill

Foodways in the Yazoo: Integrating Faunal and Floral Analyses at Parchman Place

Parchman Place is a Mississippi period mound site in the Yazoo Basin region of Mississippi. Archaeological excavations at this site have revealed a series of neighborhoods with unusually good preservation of faunal and floral remains. In order to interpret these deposits, we combine faunal and floral analyses to reach a more holistic understanding of the foodways of the people who lived at Parchman. As analysis is ongoing, we limit our scope to remains from a large midden that was a part of Neighborhood 1. This midden contains multiple

dumping episodes, a number of which are sealed by occupational floors. The discrete nature of these stratigraphic units gives us the opportunity to perform fine-grained analyses, through which we examine both seasonal patterns and patterns occurring vertically through time.

PETER, Sonia - Barbados Community College

Cleansing and Detoxification in Ethnomedicine – Myth or Reality

Plant families of major significance in the practice of detoxification and cleansing in Barbados were identified and theoretically assessed for their preventative phytochemical value. The families of plants used for purging, blood purification, postnatal cleansing and general cleansing ritual were extracted from a survey of plants used for medicinal applications in rural communities in Barbados. The classes of phytochemicals produced by the representative species were identified and their detoxifying capacity analysed. Twenty-two species, representing nine families, were found useful in this tradition. Three families featured prominently, Poaceae, three species, Apiaceae, three species, and Lamiaceae with four species. Prominent phytochemicals present in the leaves of all of the cleansing plants included polyphenols, flavonoids, saponins and tannins. Polyphenols and flavonoids are potent antioxidants, scavengers of free radicals and possess the potential to form conjugates with toxins. The teas of these plants likely augment natural detoxification systems, hindering diseased states and promoting good health and longevity.

PETERS, Thomas

Cane Breakthroughs

Despite the ecological and cultural significance of rivercane (*Arundinaria* sp.), it has remained largely unavailable in the nursery industry; a limiting factor to restoration efforts. This is largely due to a void in appropriate propagation methodology. Thomas Peters has provided significant advancement in this area with nursery and field propagation trials. Peters is one of the few researchers having success propagating this plant. By staying in close communication and forging personal relationships with the few other researchers involved with rivercane, Peters has quickly gained national recognition. Beyond academia, Thomas has found applications to his research on actual sites throughout the Southeast. His work has included several restoration plantings locally in Athens, GA. He has distributed rivercane to the Eastern Band of Cherokee Indians in North Carolina as well as the Cherokee Nation in northeastern Oklahoma in attempt to alleviate resource scarcity for Native artisans. Thomas has lived and breathed for restoring this rare and vital cultural ecosystem. By overcoming propagation barriers, his research has had tremendous positive impact on southeastern Indigenous Nations, riparian ecology and the field of floodplain restoration. His hard work and passion for the advancement of rivercane knowledge has pushed the science to the verge of an incredible breakthrough. He has deftly and accurately navigated the common ground between scientific research, personal involvement and professional application. The presentation will be an overview of the cultural and environmental significance of canebrake ecosystems. It will also include an update of the presenter's cutting edge research and advancements in propagation and management methodology. Canebrake has been steadily reduced in the southeast by improper management practices and anthropogenic disturbance of natural hydrology for the purposes of agriculture and development. Allopatry and a lack of public knowledge concerning rivercane biology and canebrake ecology threaten the continued degradation of canebrake resources in the state of Georgia and the Southeast. Educating the public about the value of this irreplaceable ecosystem is an essential step towards improving water quality and riparian habitat across the region.

PIEROTTI, Raymond – University of Kansas

The Thin Gray Line: Wolves, Dogs and Human Perceptions

Debate exists concerning early relationships between humans and wolves. Knowledge from Indigenous Peoples is not employed in scholarly examinations of “domestic dog” origins. Tribes describe wolves as guides, protectors, or entities that showed humans how to hunt. and always argue against wolf-killing by Europeans, up to the present. Although “dogs” anatomically different from wolves have appeared as long ago as 30,000 ybp, this does not mean that peoples holding to hunter-gatherer traditions did not continue to maintain positive social relationships with wolves until recent times. This reciprocal relationship involves both species providing food,

which is important because some scholars from the Eurocentric tradition argue that wolves associated with humans to scavenge or hang around waiting for scraps and were dominated by humans. I argue for a co-evolutionary reciprocal relationship that may have existed for as long as 100,000 years and continues to this day in some cultures.

PIEROTTI, Raymond – University of Kansas

Scale and Social Complexity: Knowledge Systems and Effective Conservation

Allegedly “primitive” societies are simpler in both size and environmental impact, i.e. they have a less complex network of social and economic interactions within humans. Such societies deal with economic and ecological reality in more “hands-on” fashion. They make the interaction among species and other factors more personal, and discuss their world and their scientific knowledge in terms of relationships rather than in the context of models and theoretical constructs that generalize about nature. Lacking complex infrastructure renders smaller societies more functional at an ecological level, because knowledge is based upon personal experience. As ecologists, we attempt to construct theories emerging from knowledge traditions that have no need for formal theory, because they are locally based the entities involved interact regularly. To generalize these findings strips them of this personal meaning. Attempts to draw place-based societies into “global economies” destroy connections and relationships, damaging effective conservation efforts.

POPEJOY, Traci - University of North Texas, Department of Geography, RANDKLEV, Charles R. - Texas A&M Institute of Renewable Natural Resources, and WOLVERTON, Steve - University of North Texas, Department of Geography

Zooarchaeology and Conservation Biology of the Late Holocene Freshwater Mussel Community in the Leon River Basin of Central Texas

Freshwater Mussels (Unionidae) are sedentary filter-feeders that have experienced population declines throughout North America due to anthropogenic effects on rivers. The Leon River in Central Texas contains sixteen unionid species, two of which are endemic and that are candidates for federal endangered species listing. The Leon River is impacted by impoundments, agricultural runoff, and decreased dissolved oxygen levels. Conservation biologists are attempting to amass evidence to protect mussels in Texas. There is a limited historical record for this river basin and a single recent survey completed in 2012; zooarchaeological analysis of mussel remains from the late Holocene assemblage from 41HM61 adds new data to support conservation efforts. Anomalies in species abundance within the modern community can either be attributed to species rarity or declines due to environmental degradation.

PRADO, Helbert Medeiros - Laboratory of Human Evolutionary Studies, Department of Genetics and Evolutionary Biology, Biosciences Institute, University of São Paulo, Rui Sérgio Sereni MURRIETA - Laboratory of Human Evolutionary Studies, Department of Genetics and Evolutionary Biology, Biosciences Institute, University of São Paulo, Cristina ADAMS - Laboratory of Human Ecology and Center for Interdisciplinary Research on Complex Systems (NISC-USP), University of São Paulo, and Eduardo Sonnewend BRONDIZIO - Department of Anthropology, Anthropological Center for Training and Research on Global Environmental Change, Indiana University

Quilombola and scientific knowledge about large mammals in Brazilian Atlantic Forest: a comparative approach

In this study, we compared the knowledge of a Brazilian quilombola population regarding the habitat use and life habits of large mammals with in situ recordings of the species. We also tested the hypothesis that quilombola LEK has a special focus on the anthropogenic portion of the landscape. The habitats investigated were anthropogenic secondary forests and mature forests in the Ribeira Valley (SE Brazil). We conducted the faunal survey using the camera-trap method. For the ethnoecological recording, we used informal, semi-structured and structured interviews. We present two principal results: (1) In the study area, the secondary forests resulting from shifting cultivation were as attractive to the species as the mature forests; (2) The LEK has a special focus on the more anthropogenic portion of the landscape studied. Finally, we argue that this environmental focus in LEK is part of what makes it different from scientific knowledge and unique.

PRESTON, William - Department of Geography, California Polytechnic University, San Luis Obispo
The Management of Grizzly Bears by Native Californians

Grizzly bears are conventionally considered to have been the top predator in California prior to the Colonial period. Moreover, the native peoples are considered to have been ecologically subsidiary to these bears and accommodated them through ritual, subservience, and avoidance. This interpretation is grounded for the most part in Euroamerican observations made after 1769. This paper takes exception to the legitimacy of the specified evidence and argues that prior to the Columbian landfall Native Californians were the top predators and had long since vanquished their chief competitor, the Grizzly bear, from their primary resource environments. Indeed, the Colonial period reflected profound foreign disruptions and is, therefore, an inaccurate template for determining the traditional relationships between the Native Californians and their physical settings. These assertions will be supported by historical, archaeological, and biological evidence.

PRIYADARSHNI, MEENAKSHI, and L.N.SHUKLA – Plant Biotechnology Department, Bihar University
Exploration of the knowledge of the tribals , who are using specific herbs for the treatment of diseases in their community

Medicinal herbs are in use by the ancient people for the treatment of different diseases. Along with the advent of allopathic medicine, people in general forgot the application of these medicinal herbs but even today, certain ethnic groups totally depend on the herbal treatment of all kinds of disease. In the present study the “Tharu” of West Champaran district were consulted and after several rounds of discussion they were taken in confidence to explain some of the mystery about their traditional method of treatment of different diseases. They revealed some extraordinary properties and applications of such wild species which are totally neglected and destroyed as weeds. These plants are Boerhaavia, Achyranthes, Bacopa, Phyllanthus niruri, Lipia nudiflora, Cyprus rotundus, Cassia tora, C. occidentalis, Trypanthema, Acternanthera, Heliotropium. They utilize these plants for birth control, abortion, improvement of sperms and in curing impotency, malarial fever, jaundice, vision defects, to cure disordered menstrual cycle, hair growth, all types of skin diseases, digestive problem, cough and colds, rheumatism, bronchitis, longevity, menopause, memory loss, asthma, dysentery, diarrhoea, to cure joint pain, tonsillitis, night blindness, snake bites and insect stings etc. These informations are of immense value because we do not get all these mentioned elsewhere.

PURCELL, Gabrielle - University of North Carolina at Chapel Hill
Plant Remains from the Smokemont Site in the Appalachian Mountains of North Carolina

Smokemont is a multicomponent site consisting of deposits from Woodland, Mississippian, Cherokee, and Euro-American occupations. Located in the Smoky Mountains in western North Carolina, two structures have been identified at Smokemont, one as a Mississippian Pisgah phase house, and the other a Contact period Qualla phase house. Beneath the Pisgah house are several Woodland period pit features. Floral analysis of Early and Middle Woodland features indicate some horticultural activity, with wild plants remaining important but supplementary to maize agriculture during the Mississippian and Cherokee occupations. This paper is an analysis of the plant remains collected from Woodland, Pisgah, and Qualla context, and a comparison of how site function and plant use change through time at this location. Finally, activities at Smokemont will be compared to other sites in the Appalachian Summit to determine if the settlements at Smokemont share trends in plant use found throughout the region.

QUAVE, Cassandra - Department of Dermatology, Emory University School of Medicine and Center for the Study of Human Health, Emory College of Arts and Sciences, Atlanta, GA, and PIERONI, Andrea - University of Gastronomic Sciences, Pollenzo/Bra, (Cuneo), Italy
Ethnozymbology and TEK of the Environmental Microbiome

An underrepresented aspect of Traditional Ecological Knowledge (TEK) in the ethnobiological literature concerns the knowledge and use of microbiota found in different ecological niches. We use the term ethnozymbology here to describe this unique set of TEK, which encompasses traditional fermentation practices involving the autochthonous microbiota found on the plant ingredients and from other natural sources for the

transformation of raw materials into value-added products. In this talk, we will explore the important role of microbiota to human health through use of a case study (based on a 2012 field study in NE Albania) on fermented food and medicinal products considered to be healthy by the Gorani. Lastly, we will discuss local practices concerning healthy fruit “sodas” made from wild fruits (e.g., *Prunus* spp.), lacto-fermented vegetables (e.g., *Lycopersicon esculentum*) and an assortment of fermented dairy products, in which specific plants (e.g., *Urtica dioica* roots) are used for the starter culture.

QUINLAN, Robert - Washington State University, Marsha QUINLAN - Washington State University, and Douglas CALL - Washington State University

Medical Syncretism and Maasai Ethnoveterinary Practices

Livestock health is of paramount importance to the wellbeing of Maasai pastoralists. Ethoveterinary skills, including diagnosis and treatment, are crucial elements of cultural knowledge to insure livestock and human survival, which is interrelated. Research among 170 Maasai households in Tanzania’s Serengeti ecosystem investigates treatment availability, accessibility, acceptability and adaptability. Data comes from participant-observation, household surveys, and ethnographic interviews with Maasai people, Tanzanian agricultural extension workers, and drug shop personnel. Bovine-caprine herd composition is associated with market integration and veterinary antibiotic use. Local diagnosis is based on live and post-mortem necropsy observations. Antibiotics are integrated into the ethno-diagnosis through a step-wise process that involves response to antimicrobial medications. This research illuminates antibiotic and botanical medicine use relevant to ecosystem preservation and risks.

QUIROZ, Diana - Naturalis Biodiversity Center / Wageningen University, and Tinde van Anandel - Naturalis Biodiversity Center

Moving beyond the sacred: the role of traditional spiritual values in plant conservation planning

Plant use in the context of traditional spiritual values can provide valuable data for conservation planning e.g. by providing baseline data on possibly threatened species. We documented two different restrictions (taboos and ritual sacrifices) related to the use of ritual plants in Benin (West Africa) and Gabon (Central Africa). We wanted to see if these restrictions reflected plant scarcity from an etic (official threat status) and an emic (perceived scarcity) viewpoint. Restricted plants were twice as often officially threatened or perceived as scarce than non-restricted plants in Benin. In Gabon, the most forested of the two countries, only plants that were perceived as scarce were significantly related to restrictions. These results suggest a form of adaptive management where restrictions related to ritual plant use are more prevalent in compromised landscapes.

RASHFORD, John College of Charleston, and Anthony Richards Food and Biotechnology consultant

The baobab culture of Barbados

This paper discusses the ethnobotany of the baobab in Barbados as part of an ongoing effort to document the cultural importance of this species in the Caribbean. Based on published accounts and interviews, all the baobabs of Barbados were identified, measured, photographed and mapped and their production of leaves, flowers and fruits recorded. Barbados is home to two of the largest and most well-known baobab trees in the Americas. They date back to the island’s early history as the first important British sugar colony in the Caribbean that was completely dependent on African labor. A total of 33 trees were identified and the results of interviews indicate that the species is of great historical and symbolic importance in Barbados. The fruits are eaten, especially by those who live in the vicinity of fruiting trees. The African baobab is more widespread and cultural significant in the Americas than is generally recognized and the baobab culture of Barbados is a case in point.

REYNOLDS, Peter C.- Sally Glean Center

Synchromimesis: a post-Darwinian model of human thought and action

Now that sociobiology has foundered on its own misinterpretation of the gene, it is time for the social sciences to reclaim human evolution. Human behavior has much in common with nonhuman primates, but there are also strong discontinuities that are obscured by Darwinian premises. I argue that humans differ from other primates

by forming societies based on shared memories of past events, whether or not the events have been experienced by anyone now living. Thus, a human level of social life presupposes both language and art to convey invisible events. These capabilities in turn are based on a socially-mediated form of expression that I term synchronomimesis (“imitation at the same time”). This hypothesis makes art and language essential to the human story instead of evolutionary afterthoughts.

RICHARDS, Anthony - CARICOM Regional Organisation for Standards & Quality, Barbados

Sword plants and the spirits in African and American graveyards

Scant regard has been given to questions of the contribution of the African genius to the ritual landscapes of the New World. The archaeological literature suggests that African Americans in the southeastern USA employed Yucca (Spanish bayonet) and lilies as grave markers in 19th-20th century cemeteries. The phrase “pushing up yucca” has been coined to describe these graveyards, and there was a Gullah belief that spiny plants restricted the movement of the spirits of the dead. Recent surveys of 50 cemeteries in 10 Eastern Caribbean countries found that yuccas were not common grave markers. However, other plants with lance-like leaves are prominent. Sanseiviera sp (Dracaenaceae) are ubiquitous. Cordyline fruticosa (Dracaenaceae) dominates cemeteries in the south, while amaryllids such Hymenocallis littoralis are more common in the northeastern islands. These preferences are compared with published descriptions of the widespread traditional use of Dracaena arborea as a grave marker in West Africa.

ROBINSON, Daniel - University of Florida

Weeds for Thought: Towards a Cultural Model of Plant Domestication in the Southeastern United States

The development of agriculture among the indigenous populations of the Southeastern United States was firmly rooted in the domestication of native plant species. The process of the domestication of these “weedy” plant species has been considered an ecological necessity and a social inevitability. However, by emphasizing agricultural utility over models of cultural practice and change, current theories of Southeastern plant domestication overlook the holistic nature of plant use. The broad range of known historic and contemporary plant usage by indigenous groups demonstrates the wide variety of alternative aspects that drive plant use. By synthesizing archaeological, ethnographic, and phytochemical evidence, traditional perspectives of agricultural development will be reevaluated to show that alternative uses of plants, such as medicine, ritual, and preservation, were likely the dominant factors stimulating the early and continued human-plant interaction in the Southeast that led to plant domestication and the development of agriculturally reliant societies within the region.

ROMULO, Chelsie - Smithsonian-Mason Doctoral Fellow in Conservation, George Mason University, and Michael P. Gilmore - New Century College, George Mason University

Working to conserve and sustainably manage the ecologically, culturally, and economically important palm tree *Mauritia flexuosa* (aguaje) in the Peruvian Amazon

Mauritia flexuosa (aguaje) is a long-lived, arborescent, and dioecious palm found throughout wetland and swamp habitats of the Amazon Basin. Fruit from aguaje is an important food source for a wide range of wildlife and it is also collected by local people throughout the Peruvian Amazon for commercial and subsistence purposes. As the dominant species of the aguajal ecosystem that covers approximately 10 percent of the Peruvian Amazon, the management of this species is critical to maintaining the biodiversity of the region. Even though the timber is not used, harvesters cut down female trees to harvest the fruit which is both ecologically and economically unsustainable. This project seeks to understand the market chain of aguaje fruit, document the distribution of aguajals throughout the Peruvian Amazon via remote sensing, and use this information to work toward a sustainable harvest regime for the conservation of this threatened palm and its ecosystem.

ROSKRUGE, Nicholas Rahiri - Massey University, Palmerston North, New Zealand, and DONATO, Christopher, Massey University

A comparison of Maori and commercial sweetpotato (*Ipomoea batatas*) crop establishment methods in New Zealand

Kūmara (sweetpotato, *Ipomoea batatas* (L.)), introduced by Māori to New Zealand as early as 600-700 ybp, is cultivated exclusively by vegetative means in all systems in the country's temperate climate. Tipu (root sprouts) are raised from storage roots and planted directly into the ground for cultivation. Traditional Māori methods pull the tipu from the parent root while modern commercial methods rely on tipu cut from the parent kūmara and planted directly. An experiment using the cultivar Owairaka Red was undertaken to determine the differences between methods in plant establishment 30 days after transplanting. Tipu with pre-rooting were found to have a significantly higher leaf area, fresh and dry root and shoot weights, and lower shoot to root ratios ($p < 0.001$). Furthermore, it can be postulated that traditionally cultivated tipu produce plants with greater drought resistance as well as a competitive ability against weeds in the critical stages of early establishment. In consideration of climate change, plants adaptive to marginal regions and resilient to diverse conditions are likely to be an important long term benefit to traditional Māori agricultural systems.

ROSKRUGE, Nicholas Rahiri - Massey University, Palmerston North, New Zealand

Tahuri Whenua - capturing traditional knowledge for contemporary opportunity

Maori are the indigenous people of New Zealand. They are of Polynesian origin sharing much in common with other Pacific Island communities. Prior to colonisation in the early 1800s survival was reliant on a relatively limited suite of wild and cultivated horticultural crops supported by fishing and bird snaring. Much of the traditional Maori knowledge relative to the horticultural crops has now been lost due to processes of assimilation and urbanisation. In 2001 a national collective - Tahuri Whenua, meaning 'returning to the land' - was established to halt the loss of knowledge and assist families and tribes to recapture both matauranga or traditional knowledge and tikanga or traditional practices so they can be carried on through future generations. The process has involved traditional hui or gatherings where each group or tribe has been instrumental in gathering their experts to interact with other tribes or people for mutual benefit. This knowledge is now being made available in various formats for future access and utility.

ROSS, Nanci - Drake University

Rediscovering the "fruit of the gods": investigating the biogeography of *Diospyros virginiana*

Diospyros (gr.) translates as "fruit of the gods" and the use and popularity of several species worldwide attest to this name. Yet, in the U.S., persimmon is nearly a forgotten fruit. The American persimmon (*D. virginiana*) has a broad distribution throughout the SE United States. American persimmon historically was used and managed by Native Americans and is regularly found in archaeobotanical remains. Despite this long history of use and cultivation, as European settlers expanded throughout its range, management of persimmon was essentially abandoned, the selective pressure on the fruits released. One might imagine that the centuries since the extensive use and selection of American persimmon may have obscured any signal of human influence; however, unusual and tantalizing discontinuities in the genetics and reproduction of American persimmon may be the result of just such an echo. GIS was utilized to investigate potential correlations between sex, environmental variables, archaeobotanical remains, and genetics.

SANDER, Nilo - University of the State of Mato Grosso, Da Silva, Carolina - University of the State of Mato Grosso, and Arruda, Joari - University of the State of Mato Grosso

Traditional ecological knowledge versus the use of Buriti (*Mauritia flexuosa* L.) in Quilombolas communities in the Amazon, Brazil

The research explores the difference in the values of knowledge and the use of Buriti Palm (*Mauritia flexuosa* L.) by Quilombolas in the Amazon, through the Informant diversity value. The participation of 23 Quilombolas in the research occurred by applying, with previous allowance, structured and semi-structured interviews. The

Informant diversity value of the knowledge is 4.65 of 23 and the use is 0.76. The values are low when compared to other communities that use Buriti and other palms. The Quilombolas explain that the decrease of uses stems from the facility in acquiring industrial materials that replace the handcrafted and lack of interest in learning and willingness of those who know, to teach. The difference between knowledge and current use of Buriti indicates that this knowledge may be being lost locally, that can derail income alternatives and decrease the value of Buritizal in maintaining biodiversity.

SANDERS, Wyatt – North Carolina State University, Alexander KRINGS – North Carolina State University, and Jillian DE GEZELLE – North Carolina State University
Culturally Significant Plants of the Piedmont Prairies along a Native American Trading Route

Prairies and open woodlands were once common throughout the Piedmont region of the Southeast, but are now predominantly extant in mowed roadsides and power-line cuts. It has been widely posited that pre-colonial land management practices – including the use of fire – played a crucial role in the maintenance of these habitats. However, to date this has not been shown quantitatively. To that end, we used published work identifying the location of the historic Indian Trading Path (a major Native American thoroughfare through the Carolina Piedmont in pre-colonial times), and georeferenced herbarium accession data for a suite of Piedmont prairie indicator species with Native American cultural value. We seek to quantify spatial correlation between the distribution of prairie species and the pre-colonial spread of Native American habitation. If anthropogenic management practice had a habitat effect, we expect to see significant correlation between the locations of species accessions and the Trading Path.

SAULT, Nicole - Sally Glean Center for the Avian Arts
Andean Condors in Relationship to Place and Others in a Cycle of Transformation

The dynamic nature of the condor challenges our assumptions and understandings about the Andes. This is because the meaning of the condor varies by time and place, and because the condor is so much more than an isolated thing or being. The condor above all represents relationship with other beings, places, and qualities in a cycle of transformations. To break apart the condor from relationship is to destroy its integrity and remove it from the sacred, to be manipulated for political purposes and economic benefit with no associated responsibilities. This paper will discuss condor history and meanings as a condensed symbol, a central point that connects with the main aspects of Andean cultures, even as these meanings change. The focus is on Peru, but evidence from other countries will also be considered in the discussion, which is based on contemporary anthropological research as well as historical and archeological data.

SAVO, Valentina - Hakai Network for Coastal People, Ecosystems and Management, Simon Fraser University, Burnaby, BC, Canada, Dana LEPOFSKY - Department of Archeology, Simon Fraser University, Burnaby, BC, Canada, Jordan BENNER - School of Resource and Environmental Management, Simon Fraser University, BC, Canada, and Ken LERTZMAN - School of Resource and Environmental Management, Simon Fraser University, BC, Canada
Traditional Climatic Knowledge in the Nearctic and Neotropical ecoregions

The Nearctic and Neotropical ecoregions host a variety of ecosystems and cultures that are being impacted by climate change. We conducted a review of grey and peer reviewed literature reporting local observations and adaptations to climate change made by subsistence-oriented communities. We collected about 1800 observations of changes in plants, animals, weather, and physical conditions from 339 localities, with a predominance in the northern hemisphere. The most cited change is an increase in temperature (~ 64% of localities). Changes in rainfall patterns and crop production are primarily reported in the Neotropics, while a reduction of snowfall and changes in animal behaviors are most often reported in Nearctic communities. Differences in adaptations in the two regions include a predominance of pooling strategies and increased time spent obtaining food resources in the Nearctic, and an increased use of species adapted to new climatic conditions in the Neotropic.

SCARRY, C. Margaret - University of North Carolina at Chapel Hill, Ashley Peles - University of North Carolina at Chapel Hill, and Brett Riggs - University of North Carolina at Chapel Hill
Acorn Processing at the Ashe Ferry Site in the Carolina Piedmont

Whether Indians in the ancient American South were foragers or farmers, they routinely collected, processed and consumed acorns. Acorn remains are ubiquitous and sometimes abundant in southeastern plant assemblages attesting to their dietary importance. Nonetheless, we have sparse archaeological and ethnohistoric evidence for processing acorns. Ashe Ferry (38YK533) a Late Woodland period nut processing camp in the Carolina Piedmont provides an opportunity to examine the equipment, facilities and practices involved in preparing acorns for consumption and storage. The camp is situated close to prime oak habitat on a riverbank levee that provides access to ample water as well as highly permeable sandy soils appropriate for nut leaching and storage. Rock-lined hearths containing abundant acorn debris and deep storage/leaching pits provide evidence for parching and leaching the nutmeats. We combine these multiple sources of archaeological evidence with brief ethnohistoric references to acorn processing to model the activities at Ashe Ferry.

SCHAFFRAN, Peter - Old Dominion University, Saman AHMAD - University of Sulaimani, and Lytton MUSSELMAN - Old Dominion University

The ethnobotany of *Pistacia eurycarpa* in Iraqi-Kurdistan: its chemical composition and anti-microbial activity

For generations, the Kurds in the Zagros Mountains have used *Pistacia eurycarpa*, known locally as qazwan or daraban. Different products are harvested, providing a nearly year-round source of income for rural people. Collected only from wild trees, fruits are sold as a food, and leaves are used to brew a medicinal tea. A resin exuded from the tree's trunk is taken to combat an array of maladies, such as skin infections and duodenal ulcers. This resin is also cooked into a chewing gum. Fruits are drilled to create worry-beads. Ethanol solutions of resin had no in vitro efficacy against *Staphylococcus aureus*, *Streptococcus sanguis*, or *Escherichia coli* bacteria. Gas chromatography/mass spectrometry analyses of the resin showed it is composed of α -pinene (98.2%), β -pinene (1.2%), camphene (0.3%), and several other minor compounds.

SCHELHAS, John - Southern Research Station, USDA Forest Service, Sarah HITCHNER - Center for Integrative Conservation, University of Georgia, and Pete BROSIUS - Center for Integrative Conservation, University of Georgia

Seeing the Forest or the Trees? How Rural Southerners Talk about Trees and Forests in the United States

Rural Southerners have complex relationships with trees and forests rooted in a long history of forest use, forest-based rural economies, and social and land use change. While economic and utilitarian valuations of forests are stronger in the South than in other regions of the U.S., forests are deeply valued for aesthetics, recreation, wildlife (game and non-game), family history, and community heritage. Our analysis will examine cultural models of trees and forests using interview and field notes from ethnographic fieldwork on wood-based bioenergy in two communities in Georgia and one in Mississippi. We discuss three main ideas: (1) the multiple, complex, and sometimes competing values ascribed to southern forests; (2) the ways that landowners talk about and ascribe meaning to hardwoods vs. softwoods; and (3) the ways that rural Southerners discuss and value different types of pine trees: loblolly pine (*Pinus taeda*), slash pine (*Pinus elliottii*), and longleaf pine (*Pinus palustris*).

SCOTT CUMMINGS, Linda - PaleoResearch Institute

Coontie Tubers and Bottle Gourds: Archaic Use in the Florida Panhandle

A Late Archaic (4210-3710 BP) occupation along a salt water bayou in the Florida panhandle left a baked clay griddle fragment similar to griddles from the Caribbean. Food residue yielded a phytolith from a bottle gourd (*Lagenaria*), which has an 8000 year record of use in Florida, beginning with the Windover site. This phytolith was heat altered, suggesting using the gourd for cooking on the griddle. A distinctive starch recovered from the food residue indicated cooking conti or coontie (*Zamia*) tubers, which are large (over 1 foot diameter) and contain hydrocyanic acid (cyanide, a central nervous system toxin). Historic descriptions of processing include

washing after grinding or grating to remove toxins, further suggesting ceramic graters might be present in antiquity. Historic references suggest improper processing (intentional?) contributed to the death of at least one of DeSoto's men and some Union soldiers in the Civil War.

SEMOTIUK, Andrew - University of California Riverside, J Giles WAINES - University of California Riverside, and Exequiel EZCURRA - University of California Riverside

Yoreme-Mayo healers counter wild medicinal plant resource commercial harvesting with creation of closed botanical gardens

Yoreme-Mayo healers of Southern Sonora, Mexico, require a supply of traditional medicinal plants. In the area surrounding Navojoa, Sonora, three healers report pirating and scarcity of medicinal resources on communal lands. We hypothesize that commercial harvesting of medicinal plant capital influence gathering practices of local healers. Recently, botanical gardens have been started to combat these shortages of wild plants. The effect of the gardens on healers' traditions is yet to be seen since wildcrafting is currently the predominant method in the region and little payment is accepted for health care consultations and treatment. Continued study of the incorporation of cultivated medicinal plants to the pharmacopeia of Yoreme-Mayo healers offers great promise for promoting ethnobotanical resource management strategies that actively and positively sustain their respective cultures.

SHARMA, H. Rajanikanta - Indian Institute of Science Education and Research, Mohali, India, H. Manoranjan SHARMA - Department of Botany, Thoubal College, Thoubal, India, and A. Radhapyari DEVI - P.G. Department of Botany, D.M. College of Science, Imphal, India

Traditional uses of *Schoenoplectus lacustris* (Linn.) Palla and *Schoenoplectus mucronatus* (Linn.) Palla (local name-Kouna) by the Meitei Community of Manipur(India)

This paper deals with the ethnobotanical investigation of two species of matting rush/water rush/club rush i.e. *Schoenoplectus lacustris* (Linn.) Palla and *Schoenoplectus mucronatus* (Linn.) Palla belonging to the family Cyperaceae. Both species are locally known as Kouna in Manipur and are closely associated with the tradition and culture of the Meitei Community of Manipur. The Meitei are the dominant community of Manipur. These two aquatic plants grows wild as well as cultivated in the wetlands of Imphal Valley mainly in Imphal East, Imphal West, Thoubal and Bishnupur Districts of Manipur. Since time immemorial, Kouna was used for making different types of mats only. The ethnobotanical use of water rush in mat making is closely associated with the legendary divine snake God "Nongda Lairen Pakhangba" who ascended the throne of Manipur in 33 AD. But in recent years the items manufactured from Kouna are diversified to include items like lady's hand bags, pen stands, tea coasters, wall hangings, hats, stools, chappals, cushions, chairs etc. The products of Kouna are in great demand not only in Local markets but also in international markets as well. Thus in recent years the products of Kouna have become a good source of income for many of the Meitei households. Several cottage industries are being established solely based on Kouna.

SHARMA, H. Rajanikanta - Indian Institute of Science Education and Research, Mohali, India, H. Manoranjan SHARMA - Department of Botany, Thoubal College, Thoubal, India, and A. Radhapyari DEVI - P.G. Department of Botany, D.M. College of Science, Imphal, India

Chenghi, the unique hair care lotion used by the Meitei Community of Manipur (India)

The Meitei Community of Manipur (India) belong to the Indo-Mongoloid Group speaking the Tibeto-Burman Language. The womenfolk of Meitei Community of Manipur (India) have an age old tradition of keeping their hairs well groomed, long and black and have been using a traditional hair care lotion known locally as Chenghi since time immemorial. The traditional use of hair care lotion (Chenghi) by the womenfolk of the Meitei community of Manipur was among the earliest information to be recorded and passed along from generation to generations till now. Chenghi is prepared locally which is a concoction of a wide variety of plant ingredients prepared with the milk of rice. Different plant ingredients are used for specific hair problems like removal of dandruff, long black and silky hair, killing of lice, dizziness, prevention of hair fall, blood purification, cooling effect, untimely greying etc. During the present investigation 76 plant species belonging to 70 genera that are distributed over 40 families are found to be used by the womenfolk during the preparation of this unique hair

lotion. Some of the species are *Ageratum conyzoides* L., *Allium tuberosum* Rottl. ex Sprengel, *Alocasia macrorrhiza* (L.) G. Don, *Artemisia maritima* L., *Commelina benghalensis* L., *Cymbopogon nardus* (L.) Rendl., *Phyllanthus emblica* L., *Rhus hookerii* Sahni & Bahadur and *Vitex negundo* L.

SHEBITZ, Daniela - Kean University School of Environmental and Sustainability Science, Sana BAIG - Kean University, and Diego MORALES - Kean University

An Ethnobotanical Approach to Medicinal Plant Research in the Lowland Wet Forests of Costa Rica

Tropical wet lowland forests of Costa Rica's Maquenque National Wildlife Refuge (MNWLR) provide habitat to numerous medicinal plants, yet few have been documented. By virtue of its proximity to Nicaragua, this biologically diverse area has a blending of Nicaraguan and Costa Rican cultures. Objectives of this research were to: (1) document commonly used medicinal plants in the MNWLR based on local knowledge and (2) determine if extracts of plants used to treat infection show antifungal and antibacterial properties. Semi-structured, open-ended interviews were conducted with people locally recognized for their knowledge of medicinal plants. Uses and preparations were discussed for 60 species. Fifteen commonly cited plants were gathered with local informants. Alcohol and aqueous extracts were made of the specified plant parts and were screened against *Escherichia coli*, *Bacillus subtilis*, and *Candida albicans*. Preliminary results indicate some plants do indeed have efficacy in-vitro, with *Vismia ferruginea* having the strongest effects.

SHRESTHA Sushma- Miami University Ohio

Participatory Mapping: Gaining "Sense of Place" for Forest Conservation in the Manaslu Conservation Area, Nepal

Participatory mapping has emerged as a popular method in ethnobiological studies but has rarely been integrated with satellite mapping for more inclusive measure of landscape diversity. This study examines how participatory "ethnoecological" mapping can contribute to land-cover analyses derived from satellite "ecological" data of landscapes in the Manaslu Conservation Area (MCA), Nepal. Participants were asked to map their home territory as they perceive and interact with it. Local landscape knowledge was then transferred to classified satellite images to create a composite image of landscape diversity for the region. The final map linked local knowledge of landscape diversity with empirical classification of land cover types and enhanced understanding of the MCA as a "place" with symbolical and cultural meaning and use. This integrative analysis promotes collaborative learning about local places and local peoples' perspectives on landscape which directly contribute towards landscape management and forest conservation in the MCA.

SIGSTEDT, Shawn V. - Colorado Mountain College and World Park Educational Institute

World Park - Zoopharmacognosy and Biomimicry where Black Bears *Ursus americanus* are using *Osha Ligusticum porteri* for medicine with beneficial cultural and biological consequences

Legends of Native Americans tell how bears originally taught humans how to use Osha for medicine in the Rocky Mountains. This presentation explores sympatric Native American stories about interactions among Osha *Ligusticum porteri* and Black Bears *Ursus americanus*. Results clearly confirm a biological basis to these legends. Data collected and analyzed from films of captive bears are compared with wild bear observations in camera traps. Stories of these biologically beneficial plant-animal interactions are now deeply embedded within Native American traditions as innovative technologies for helping maintain Osha and Bears within their natural ecosystems in a healthy condition. A new discovery for Osha cultivation is now taking pressure off of wild populations and greatly reduces the need for sustainable harvest in the wild.

SIGSTEDT, Shawn V. - Colorado Mountain College and World Park Educational Institute

World Park - Travels through Northern Europe documenting good examples of original ecosystems containing medicinal plants with potential for helping restore our planet back into a healthy global ecosystem

This presentation documents my travels through England, Wales, Ireland, Scotland, Sweden, and Iceland searching for projects in nature conservation that are good examples of people protecting and restoring natural

areas hosting native medicinal plants. Specifically, I was looking for original primary ecosystems and projects that had potential for gradually helping restore our planet back into a healthy condition. One week was spent in each country while visiting and documenting as many locations and projects within each country as possible. First principles of the Theory of Island Biogeography were used to interpret the data and project outcomes. Special attention was paid to native species with ethnobiological interest, pharmacological potential, and economic history. The results are that 100s of people in nearly every country are reaching out to protect and restore nature and their native medicinal plants in all these locations, and serve as good models for helping with global nature restoration worldwide.

SLOTTEN, Venicia - University of Cincinnati, and David LENTZ - University of Cincinnati
Analysis of Paleoethnobotanical Remains Associated with the Ceremonial Sacbe at the Ancient Maya Village of Cerén.

Archaeological research conducted during the 2013 field season at Joya de Cerén in El Salvador focused on the analysis of paleoethnobotanical remains found on the surface and associated features of an ancient Maya sacbe (causeway) protected beneath five meters of tephra by the volcanic eruption of Loma Caldera around AD 600. Plant remains were retrieved from the sacbe surface, adjacent drainage canals, and agricultural fields on either side of the sacbe. Because the plant remains found in association with this sacbe were well preserved, a rare occurrence in Mesoamerica, the data recovered from Cerén are quite significant and unique to the study of Maya plant use activities. The project collected 61 macrobotanical samples and 160 flotation samples processed in a water flotation tank. Prominently represented in these samples are *Spilanthes* cf. *acmella* achenes, *Zea mays* cob fragments, *Phaseolus* sp. cotyledons and abundant charcoal remains.

STEVENS, Lois - Indigenous Studies Program, University of Kansas
Traditional agricultural practices in a contemporary context

I explore the world of traditional, Indigenous horticultural practices, and examine how these traditional practices of small community-style gardens can help various populations of modern Indigenous people become self-sufficient in today's struggling economy, while at the same time contributing to the betterment of Mother Earth. I will show the connection these foodways have to the cultural and linguistic practices of Indigenous Peoples and how they can be used to not only preserve these practices, but revitalize them as well. As a living example, I explain how the influence of reclamation of their indigenous foods has helped my own tribe, the Oneida Tribe of Indians of Wisconsin, revitalize their culture. Finally, I will be using Environmental Psychology to demonstrate how these traditional practices can be modeled to fit the contemporary societal setting.

SUBBURAMAN Senthilkumar - Department of Botany, School of Biological Sciences, St. Joseph's College
Studies on documentation of traditional medicinal plants knowledge and Histochemical studies some medicinal plants from Eastern Ghat's. India

That all plants are potential sources of medicine has been recognized in Indian literature thousands of years ago. It is estimated that 70-80% people worldwide rely on traditional, largely herbal medicine to meet their primary health care needs. Because of their sustained and strategic utility to a large section of people, medicinal plants have become an important national and global resource. The Eastern Ghats of India located between 77° 22' - 85° 20' E and 11° 30' - 20° 0' N, are an assemblage of discontinuous ranges, hill plateaus and gorges adjoining the plains along the Eastern Ghats. We made an extensive survey of the tribal dominated hills of the Eastern Ghats and the ethno medicinal information was collected. Despite a well-documented rich tradition of medicinal plant use in the country, their histochemical studies are still poorly known. The methods employed in the present study are well established by several workers for their specificity and even superior over many biochemical methods. The methods also combine protocols of cytological, histological and analytical biochemical procedures and an in situ qualitative localization of various cellular chemicals through specific colour reactions: the intensity of colour developed being proportional to the amount of substance present. For this, we choose three species viz. *Acampe pramorsa* (Roxb.) Blatt & McCann, *Cymbidium aloifolium* (L.) SW. and *Calanthe triplicate* (Willem.) Ames used in folk medicine to determine their histochemical investigation. In general, these plants are used in folk medicine in the treatment of wound healing stomachache, Anti-inflammatory, Paralysis, joining fractured bones,

fewer, weakness of eyes, chronic illness, burns, sores etc. For histochemical studies the free hand sections of leaves and bulb were taken and treated with the respective reagent to localize components, viz. starch, protein, tannin, saponin, phenols, glucosides and alkaloids in the tissues. These features are compared with those of species, and their possible significance is discussed.

TAYLOR, Gia Gaspard

Mangoes "FROM Seed to TABLE"

The above mentioned network (NRWPTT) began the exploitation of mangoes five years ago by hosting the now very popular national event the "Mango Festival" and "Mango Conference" in both events we network closely with our partners, the University of the West Indies (UWI) Inter-American Institute for Corporation on Agriculture (IICA) Ministry of Food Production (MFP) and the Tourism Development Company (TDC). In 2009 the NRWPTT hosted the first Mango Festival as it was seen as a solution to address the problem of poverty, limited markets and business opportunities for our rural women and to fulfil our objective to "Enhance the social and financial well-being of Rural Women." The impact of the training is evident at the mango festival where members offer a wide range of high quality products made from mangoes such as pastries, jams, wines and other condiments, but most important are the non-edible products as we study the Health Benefits of Mangoes. Inclusive of the outer body products handcrafted soaps, body creams, beauty products and more items made from the fruit. Eating the fruit provides additional benefits as it improves Digestion, Lower Cholesterol, High Iron for Women, treatment for Acne, Improves Concentration and Memory Power, mango is slowly gaining new acclaim as diabetes fighter, no longer a myth, and the lists go on and on.

THOMAS, Evert - Bioversity International, Regional office for the Americas, Cali, Colombia, Carolina

ALCAZAR CAICEDO, - Bioversity International, Regional office for the Americas, Cali, Colombia, and

Judy, LOO - Bioversity International, Headquarters, Rome, Italy

Continental patterns in the human-mediated diaspora of Brazil nut (*Bertholletia excelsa* Bonpl.) across the Amazon Basin

Brazil nut has been important for human livelihoods and regional economies ever since the peopling of the Amazon basin more than 12,000 years ago. A meta-analysis of literature data suggests that pre-Columbian humans not only influenced the distribution of the species, but also the abundance, and in some cases the demography of Brazil nut populations. However, the footprints of human influences do not seem to be distributed randomly, but respond to a continental pattern with increasing human influences from southwestern to central and eastern Amazonia. We hypothesize that in the southwestern Amazon, natural regeneration of Brazil nut is controlled predominantly by natural processes, whereas in central and eastern Amazonia, anthropogenic disturbance has been more important since pre-Columbian times. We provide support for this hypothesis by relating it to differences in (i) human occupation and livelihood strategies, (ii) disturbance regimes, and (iii) ecological processes between southwestern and central and eastern Amazonia.

TONGCO, Ma. Dolores - Institute of Biology, University of the Philippines, Diliman, Quezon City,

Philippines; Department of Botany, University of Hawaii at Manoa, CAYETANO, Mercedes - Magbukuna

Ayta Community, Kanawan, Morong, Bataan, Philippines, RESTUM, Emilita - Magbukuna Ayta

Community, Kanawan, Morong, Bataan, Philippines, RESTUM, Jose - Magbukuna Ayta Community,

Kanawan, Morong, Bataan, Philippines, ALEJO, Josefina - Magbukuna Ayta Community, Kanawan,

Morong, Bataan, Philippines, and McCLATCHEY, Will - Botanical Research Institute of Texas

Nutritional analysis of wild yam (*Dioscorea divaricata* Blanco), a culturally important species to the Magbukun Ayta of Kanawan, Morong, Bataan, Philippines

Dioscorea divaricata Blanco (local name: buloy), a wild-harvested yam, is part of the traditional diet and a culturally important plant of the Magbukun Aytas in the Philippines. The nutritional content of the tubers was thus analyzed and compared to other yams, root crops, and rice (as the Ayta diet has shifted from buloy to rice as a staple food). Ranges of values (in %) from proximate analysis of boiled tubers were: moisture (69.3-76.4), crude protein (2.0-2.4), crude fat (0.2-0.6), crude fiber (0.9-2.1) and ash (0.6-0.7). Total dietary fiber, total sugar, starch, fatty acids, and minerals were also determined. Compared with other yams, buloy had relatively higher

crude protein and ash content. Compared to rice, buloy had higher dietary fiber, calcium, and ash. Rice, on the other hand, had higher phosphorus content. Thus, the shift from buloy to rice compromises additional nutritional benefits such as dietary fiber, calcium and ash.

TOWNS, Alexandra M.- Naturalis Biodiversity Center / Leiden University, and Tinde VAN ANDEL-
Naturalis Biodiversity Center

Mothers' medicinal plant knowledge, folk illnesses, and treatment preferences for childcare in two pluralistic healthcare settings

Little information is known on mothers' knowledge of medicinal plants for childcare in Africa. We aimed to identify which infant illnesses mothers knew to treat with plants and for which illnesses they sought biomedical care or traditional healers. We conducted 81 questionnaires in Bénin and Gabon and made 800 botanical specimens. Mothers from both countries were most knowledgeable on plants to treat respiratory illnesses, malaria, and diarrhea. They also cited recipes to encourage children to walk early, to monitor the closure of fontanels, and for herbal enemas. Traditional healers were reported to have specialized knowledge of folk illnesses while advanced malaria was cited as an illness to directly seek biomedicine. Folk illnesses give insight into local healthcare treatments and may reveal important neglected diseases. African mothers' knowledge of medicinal plants serves as an entry point to understanding local health concepts, treatments, and healthcare preferences.

TURNER, Katherine - Natural Resources Institute, University of Manitoba

Designing biocultural revival through gourmet culture in the Central Valley of Tarija, Bolivia: Considering sustainability within design ethnobiology

The promotion of regional gastronomy alongside selected local and regional foods is an important component of the rural territorial development model that has come into vogue across Latin America over the last decade. I use examples from the Central Valley of Tarija, Bolivia, to examine some of the questions and challenges raised by such development initiatives with respect to biocultural sustainability and implications for design ethnobiology. Designing new regimes of value for local and regional food products is most often seen as a win-win development intervention. Biocultural diversity is promoted and rural economies are revitalized through new markets for biocultural materials that encourage small-scale producer participation. However, redesigning the values surrounding biocultural materials is not consequence free. My findings point to some of the potential ecological and social pitfalls that new value regimes can engender and I conclude by discussing what such insights bring to the development of design ethnobiology. (Please note that I request this paper to be considered for inclusion in the Design Ethnobiology Session.)

TURNER, Nancy J. - University of Victoria, and Cecil H. BROWN - Northern Illinois University

Taking it with them: Early human assisted plant dissemination in northwestern North America

Active plant resource management by northwestern North American Indigenous Peoples is increasingly recognized. Evidence of plant management – more than just “gathering” – has been provided by landscape burning, culturally modified trees, estuarine root gardens and berry gardens. Less studied are human roles in disseminating plants through translocation. Transplanting has been a common practice from the past century or so, as described by contemporary elders. Evidence of earlier human-assisted plant dissemination is more difficult to identify and verify. DNA analysis may be useful but does not confirm human involvement nor reflect small-scale translocation. Linguistic evidence – the borrowing or sharing of names that often accompanies distribution of products into the receiving language groups – is another tool that can be applied to identify potential botanical candidates of human dissemination. Evidence from all of these areas is building a convincing case of widespread and long-standing human assisted plant dissemination, including across major geographic regions.

VAN ANDEL, Tinde - Naturalis Biodiversity Center, Charlotte VAN 'T KLOOSTER - University of Amsterdam, Diana QUIROZ- Wageningen University, Alexandra TOWNS - Naturalis Biodiversity Center, and Sofie RUYSSCHAERT - WWF Guianas

Local plant names tell us how enslaved Africans familiarized themselves with the New World flora

How did the forced migration of nearly 11 million Africans to the Americas influence their knowledge and use of plants? Vernacular plant names illustrate the process of recognition, acquisition of new knowledge, and replacement that must have taken place since the first Africans set foot on Neotropical soil. This study traces the origin of Afro-Surinamese plant names to those of local Amerindians, Europeans, and related groups in Western Africa, by means of literature, herbarium collections, and recent fieldwork in Suriname, Ghana, Benin, and Gabon. Half of the Afro-Surinamese plant names were derived from European lexical items, 10% came from Amerindian languages and 17% (Dutch Creole) and 30% (Maroon languages) could be linked to African plant names. Our study shows that enslaved Africans must have recognized a substantial part of the Neotropical flora on all taxonomic levels, which confirms their role as significant agents of environmental knowledge in the New World.

VIBRANS, Heike - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, María Asunción Guillermo-Gómez - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, José Antonio López-Sandoval - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, and Edmundo García-Moya - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico

Ethnobotany of the weed vegetation of Chol farmers in the Candelaria region of Campeche, Mexico

Chol Maya, immigrants from other parts of Campeche and Chiapas, live in several settlements in the Candelaria, Campeche, region. As part of a study comparing pasture and maize field vegetation of these farmers, we documented the proportions of useful plants in these two vegetation types, and the knowledge of the farmers. We sampled the vegetation in 12 pairs (maize/pasture) of study plots in 4 settlements. The 13 owners of these plots and 1 key informant in each village were interviewed - all men over 30, and Chol speakers, except for one Mennonite. We found no significant differences in proportions of useful plants between vegetation types. Knowledge of plants was distributed relatively evenly, with no or weak relationships to education, age, origin, and rurality of the farmer or to plant life form or showy plant traits. The strongest relationship was between the number of total species/Chol names and uses known.

VIBRANS, Heike - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, Mónica Pérez-Nicolás - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, Angélica Romero - Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico, and Rafael Lira - Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México, Distrito Federal, Mexico

Does medicinal plant collection provide incentives to conserve forests?

We tried to answer the title question for Santiago Camotlán, a Zapotec village in the Sierra de Juárez, Oaxaca, Mexico, with primary and secondary vegetation. Medicinal plants are commonly gathered and used, but not commercially. Participative mapping and a field survey resulted in a vegetation map. Interviews with medicinal plant specialists and the general population, as well as systematic plant collection, contributed data on the habitat of medicinal species, and for a weighted importance index based on frequency of mention, frequency of use and perception of importance. Of the 9 vegetation types, home gardens, fields and ruderal habitats provide the largest number of and the most important medicinal species. Primary vegetation contains mainly species used by specialists. People would like to cultivate some of these plants, but would not conserve forests to maintain them. For the study area, the answer to the title question is no.

VIRAPONGSE, Arika - National Ecological Observatory Network (NEON), Hank LOESCHER - National Ecological Observatory Network (NEON), and Lindsay POWERS - National Ecological Observatory Network (NEON)

National Ecological Observatory Network (NEON): Building community and seeking innovative approaches for understanding human-environmental systems

The National Ecological Observatory Network (NEON Inc.) is designed to collect long-term environmental data through airborne remote sensing, in-situ sensor measurements, and field sampling at a continental scale (106 terrestrial and aquatic sites located across the US). The goal of the observatory is to provide free and publically accessible data that can be applied towards improved decision-making of natural resource management. Completion of the observatory is projected to be in 2017. To ensure that environmental data produced by the observatory is usable and relevant to society, strategic development of NEON includes partnership and collaboration with diverse institutions. Current approaches are 1. Training of underrepresented groups in science, 2. International networking and information interoperability, 3. Development of satellite collection sites, and 4. Inclusion of the social dimension into an ecological monitoring framework. NEON seeks to explore new approaches and engagements with different academic and non-academic communities.

VIRNIG, Annie - CUNY & NY Botanical Garden, Ina Vandebroek - The New York Botanical Garden, Institute of Economic Botany, Julián PERDOMO, Universidad del Valle, Cali, Valle Del Cauca, Colombia, Paola PEDRAZA - The New York Botanical Garden, Institute of Systematic Botany, and Amy Litt - The New York Botanical Garden

Cultural importance and classification of queremes (Vaccinieae, Ericaceae) in El Queremal, Colombia

The Colombian Andes are a biodiversity hotspot for queremes, a local term that refers to at minimum 15 species of the blueberry tribe (Vaccinieae, Ericaceae). Queremes represent culturally important species appreciated for social, medicinal, and food uses of their flowers and berries. They likewise are of considerable scientific interest as close relatives of the temperate Vaccinieae – including blueberries, cranberries, and lingonberries – known for antioxidant rich fruit. The results of preliminary fieldwork in El Queremal, Colombia were identification of: (a) 15 species spanning six genera named in the local vernacular; (b) higher level ethnotaxonomic classification into macho [male] and hembra [female]; (c) historical and present cultural uses of queremes; (d) tension between local conservation ethics and practice. The intended overall project goal is to understand the dual role of genetic and environmental factors in regulating antioxidant capacity in queremes, an investigation with implications for local economic development and conservation.

WAGNER, Gail E. - Department of Anthropology, University of South Carolina

When is a Snack? (And Answers to Other Questions You Were Afraid to Ask)

In Fall 2013, I taught an undergraduate Food and Culture course for the first time. In conjunction with a class at another university, students conceived of a 15-minute standardized oral interview on snacks and, following certification for human subject research and IRB permission, collected data from over 200 adults. Previous research on snacks focuses under the topic of obesity. In this paper I summarize snack definitions, as well as compare snacking preferences by gender and age. Although my analysis of the data collected is just beginning, I can say that the majority of people interviewed choose snacks for taste, followed by access/convenience, and thus not surprisingly most of their favorite snacks are processed rather than unprocessed foods.

WINSTEAD, Christy, HOFFMAN, Amy, and ELLYSON, Laura – University of North Texas

Domesticated Animal vs. Wild Prey Use in an Ancestral Puebloan Community in Southwestern Colorado

The Ancestral Puebloan people relied heavily on domesticated resources, such as corn and turkey. However, throughout their occupation of the Mesa Verde region they continued to incorporate wild plants and animals into their diet. We investigate how the ratio of domesticated versus wild fauna changed from Pueblo II (A.D. 900-1150) to terminal Pueblo III (A.D. 1280-1300) in the Goodman Point community of southwestern Colorado. Taxonomic abundance of faunal data indicates that either turkey (*Meleagris gallopavo*) or cottontail (*Sylvilagus*

sp.) dominated each assemblage. Therefore, turkey and cottontail were used as proxies for domesticated and wild prey. Our results from the turkey-cottontail index suggest that the Goodman Point occupants' reliance on domesticated animals peaked prior to terminal Pueblo III.

WOLVERTON, Steve - University of North Texas, Department of Geography, Denton, Texas, GIARDINA, Miguel - Museo de Historia Natural de San Rafael, Mendoza, Argentina, OTAOLA, Clara - CONICET-Museo de Historia Natural de San Rafael, Mendoza, Argentina, FRY, Matthew - University of North Texas, Department of Geography, Denton, Texas, and NEME, Gustavo - CONICET-Museo de Historia Natural de San Rafael, Mendoza, Argentina

Zooarchaeology of Contemporary Goat Ranching Among Puesteros of Western Argentina

The puesteros of western Argentina are traditional ranchers who live in the plains and foothills of the Andes. In Mendoza province, puesteros live in areas that cross several environmental gradients and subcultural groups, such as differences in residential mobility related to elevation, plant phenology, and livestock range condition as well as varying degrees of interaction with urban economies. Puesterero herding practices vary from sedentary small ranches (with large ranges for mobility of grazing goat and cattle herds) to seasonal transhumance (to take advantage of shifting plant phenology from low to high elevation). Puesteros also hunt, gather, and cultivate home gardens. Puesterero settlements are often occupied for decades and have primary and secondary midden deposits surrounding ranch houses. Analysis of faunal remains from these deposits can provide spatial and temporal records of puestero diets, herd composition, and game species dynamics. Here we present findings from a preliminary study of puestero zooarchaeology.

WYNDHAM, Felice S. - University of Oxford, Karen E. PARK - University of Oxford, Ada M. GRABOWSKA-ZHANG - University of Oxford, Heidi FLETCHER - University of Oxford, and Andrew G. GOSLER - University of Oxford

The Ethno-ornithology World Archive (EWA): an open-science database for bird and biocultural conservation

The EWA project seeks to engage indigenous and local peoples, members of the public and private sector, community leaders, and researchers in bird—and more generally, biocultural—conservation, through the recording, researching, dissemination and application of ethno-ornithological knowledge world-wide. Presently in early stages of development, we outline four areas of the EWA user-created online database to open discussion and invite feedback from the ethnobiology community: 1) conservation priorities; 2) intellectual and cultural heritage issues including ethical considerations; 3) comparative and collaborative research; 4) tools for teaching and learning. With this compilation of culturally relevant knowledge of birds, we aim for more robust partnerships between conservationists and local people, and greater understanding of the cultures of all stakeholders. In so doing, we explore and implement best-practices for building reciprocal, respectful relationships between communities of knowledge-origin and outsider researchers in digital environments. The potential for comparative ethno-ornithological research using the EWA database is great, and it is envisioned as a rich resource for transformational teaching and active learning.

INDEX OF PRESENTERS

Last Name, First Name	Affiliation	Session	Email Address
AMITH, Jonathan D.	Dept. of Anthropology, Gettysburg College; Dept. of Anthropology, National Museum of Natural History, Smithsonian Institution	21	jonamith@gmail.com
ANDERSON, E. N.	University of California, Riverside	6	gene@ucr.edu
ANEKE, Janessa	Emory University	poster	janeke@emory.edu
ARMSTRONG, Chelsey Geralda D.	Simon Fraser University	poster	cdageralda@gmail.com
Arruda, Joari	University of the State of Mato Grosso	poster	nilosander@gmail.com
AUCOIN, Martin	University of North Texas	poster	mja.ypsilon@gmail.com
BAKER, Janelle Marie	McGill University	13	janelle.baker@mail.mcgill.ca
BALL, Alaine A.	Yale University MacMillan Center for International and Area Studies; Department of Forest Sciences, Escola Superior de Agricultura "Luiz de Queiroz", University of São Paulo	5	alaine.ball@gmail.com
BARKER, Andrew	University of North Texas	poster	andrewbarker@my.unt.edu
BENNETT, Bradley	Department of Biological Sciences, Florida International University	16	bennett@fiu.edu
BLUMLER, Mark	SUNY-Binghamton	7	mablum@binghamton.edu
BLOOMQUIST, Margaret	NC State University	2	Margaret_Bloomquist@ncsu.edu
BOHAN, Heidi	Snoqualmie Tribe, Washington State	A7	hbohan@peoplepc.com
BOLFING, Christopher B.	University of Arkansas	16	cbbolfin@uark.edu
BONHAGE-FREUND, Mary Theresa	Alma College	3	freund@alma.edu
BONZANI, Renee	Department of Anthropology, University of Kentucky	3	renee.bonzani@uky.edu
BORIOS, Stephanie	Department of Anthropology, University of Florida	19	sborios@ufl.edu
BOUDELL, Jere	Department of Natural Sciences, Clayton State University	18	jboudell@clayton.edu
BOWER, Justin	Frostburg State University	12	jbower@frostburg.edu
BRADBURY, E. Jane	University of Wisconsin-Madison	8	ebradbury@wisc.edu
BRIDGES, Kim		14	kim@hawaii.edu
BRIGGS, Rachel V.	University of Alabama	2	rvbriggs@crimson.ua.edu
BROSI, Sunshine L.	Frostburg State University	14, A5	slbrosi@frostburg.edu
BROWN, Adam	University of North Carolina Greensboro	4	
BROWNE RIBEIRO, Anna	Museu Paraense Emílio Goeldi	16	abrowneribeiro@gmail.com
BROWNRIGG, Leslie	EcoRico Anqa	21	leslieabrownrigg@yahoo.com
BULLARD-ROBERTS, Angelle	Department of Biological Sciences, Florida International University	1	abull005@fiu.edu

BYE, Robert	Jardín Botánico del Instituto de Biología, Universidad Nacional Autónoma de México	8	bye.robert@gmail.com
CAGNATO, Clarissa	Washington University	11	ccagnato@wustl.edu
CHOCK, Al Keali'i	Botany Department, University of Hawai'i at Mānoa	20	alchock@hawaii.edu
CLIFFORD IV, Walter A.	University of South Carolina	3	wacliffordiv@gmail.com
COLUNGA-GARCIAMARIN, Patricia	Centro de Investigación Científica de Yucatán	22	patricia.colunga@gmail.com
COZZO, David	North Carolina State University	2	rtcar2004@gmail.com
CURREY, Robin C.D.	Green Mountain College	5	robin.currey@gmail.com
DA SILVA, Carolina	University of the State of Mato Grosso	poster	nilosander@gmail.com
DE BRITTO, Alexis John	St.Xavier's College, India	13; poster	bjohnde@yahoo.co.in
de RUS Jacquet, Aurélie	Purdue University Department of Medicinal Chemistry and Molecular Pharmacology	poster	aderusep@purdue.edu
DEDRICK, Maia	University of North Carolina at Chapel Hill	11	maia.dedrick@gmail.com
DIFFERENT-CLOUD JONES, Linda	Sitting Bull College and Catawba Nation	15	lindaj@sbc.edu
DOLAN, Jessica M.	Department of Anthropology, McGill University and Center for Native Peoples and the Environment at SUNY ESF	17	jdolan@esf.edu
DOMBROSKY, Jonathan	University of North Texas, Department of Geography	poster	jwdombrosky@gmail.com
DORIAN, Matthew	Center for the Study of Human Health, Emory College of Arts and Science	Poster	mdorian@emory.edu
DUVAL, Ashley	Yale School of Forestry and Environmental Studies	19; A6	ashley.duval@yale.edu
ECHEVERRI, Gabriel	Ethnobotany Undergraduate Student, Frostburg State University	poster	slbrosi@frostburg.edu
EDWARDS, Kyle W.	University of Virginia, University of Massachusetts, Boston	11	kwedw2@gmail.com
EMSLIE, Steven D.	University of North Carolina Wilmington	11	emslies@uncw.edu
ESHBAUGH, W. Hardy	Miami University	8	eshbauwh@miamioh.edu
EUBANKS, Mary	Retired – Duke University	M3	eubanks@duke.edu
FADIMAN, Maria		16	mfadiman@fau.edu
FLACHS, Andrew	Washington University	9	aflachs@gmail.com
FLORES, Katherine E.	Department of Anthropology, Washington State University	1	katherine.e.flores@email.wsu.edu
GAMBIER, Rosa M.	Suffolk County Community College, State University of New York	14	gambier@sunysuffolk.edu
GARIBALDI, Ann	IEG, Victoria, Canada	16	agaribaldi@integralecologygroup.com
GBADAMOSI, Idayat	Department of Botany, University of Ibadan, Nigeria	6	gita4me2004@yahoo.com
GEORGIAN, Elizabeth	University of Wisconsin-Madison	13	egeorgian@gmail.com

GILMORE, Michael P.	New Century College, George Mason University		mgilmor1@gmu.edu
GLENN, Ashley	the William L. Brown Center at the Missouri Botanical Garden	poster	ashley.glenn@mobot.org
GOSFORD, Robert	Ethnoornithology Research and Study Group	20	bgosford@gmail.com
GUERRERO, Matias	Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile	17	mdguerre@uc.cl
HALL, Karen	Botanical Research Institute of Texas	A5	
HALL, Mitch	Frostburg State University	poster, A5	mitchdehaven@gmail.com
HAMMER, Michaela	Oregon State University	18	michaela.hammer@gmail.com
HARP, Cyrus	University of California, Berkeley	Poster, A8	cyrusharp@berkeley.edu
HAZLETT, Donald	Denver Botanic Gardens	8	newworldplants@gmail.com
HERNANDEZ, Nimachia	Independent Scholar	15	nimahernandez@gmail.com
HERRON, Scott	Department of Biology, Ferris State University and University of Michigan Biological Station	15	
HOLLENBACH, Kandace	University of Tennessee, Knoxville	3	kdh@utk.edu
HOOPER, David A.	Department of Anthropology, University of Montana	5	david1.hooper@umontana.edu
HORTON, Elizabeth T.	Arkansas Archeological Survey	2	ethorton@uark.edu
HUIISH, Ryan D.	Hollins University	14	rhuish@gmail.com
IDROBO, C. Julián	Natural Resources Institute, University of Manitoba	10	umidrobo@myumanitoba.ca
IGNACE, Marianne	Simon Fraser University	16	ignace@sfu.ca
JACKLEY, Julia	Simon Fraser University	poster	jaj8@sfu.ca
JERNIGAN, Kevin	Ethnobotany program, University of Alaska, Fairbanks	19	kjernigan@alaska.edu
JEYACHANDRAN, Robert	St. Joseph's College, Tiruchirappalli, India	4; poster	jeyachandranrobert@gmail.com
JIANG, Sandy	Center for the Study of Human Health, Emory College of Arts and Sciences	6	jiangsandy@gmail.com
JOHNSON, Leslie Main	Athabasca University	17	lmainjohnson@gmail.com
KAWA, Nicholas C.	Ball State University	10	nckawa@gmail.com
KINDSCHER, Kelly	Kansas Biological Survey, University of Kansas	5	kindscher@ku.edu
KISTLER, Logan	Departments of Anthropology and Biology, Penn State University	8	ljk187@psu.edu
KOMARNYTSKY, Slavko	North Carolina State University	M1	komarnytsky@ncsu.edu
LANDIS, Catherine	SUNY College of Environmental Science and Forestry	16	wrenlandis@gmail.com
LANGLIE, BrieAnna	Washington University in Saint Louis	9	blanglie@wustl.edu
LASALITA-ZAPICO, Florence	Mindanao State University-General Santos City, The Philippines	9	florence.zapico@gmail.com
LASCURAIN, Maite	Instituto de Ecología, A.C	poster	maite.lascurain@inecol.mx

LECOMPTE-MASTENBROOK, Joyce -	University of Washington Department of Anthropology	10	
LENTZ, David L.	University of Cincinnati	11	david.lentz@uc.edu
LINARES, Edelmira	Jardín Botánico del Instituto de Biología, Universidad Nacional Autónoma de México	8	bye.robert@gmail.com
LOPEZ BINNQUIST, Citlalli	Centro de Investigaciones Tropicales, Universidad Veracruzana	12	citlalli_lb@yahoo.com
LUPTON, Darach	Oman Botanic Garden	poster	dluptonian@gmail.com
LYLES, James T.	Bent Creek Institute	poster	james@lyljlabs.com
MAHADY, Gail B.	University of Illinois at Chicago	4; poster	gail.mahady@gmail.com
MAPES, Cristina	Jardín Botánico, Instituto de Biología. Universidad Nacional Autónoma de México	poster	crismapes@hotmail.com
MATTHEWS, Allen	School of Sustainability and the Environment, Chatham University	12	amatthews1@chatham.edu
MAXWELL, William	University of North Carolina at Chapel Hill	13	willmax@live.unc.edu
MCALVAY, Alex	University of Wisconsin-Madison	poster	alexmcavay@gmail.com
MCCAMPBELL, Michael	Frostburg State University	12	mrmccampbell@frostburg.edu
MCDONALD, J. Andrew	University of Texas – Pan American	11	amcdonald@utpa.edu
MERLIN, Mark	Botany Department, University of Hawai'i at Manoa	8	merlin@hawaii.edu
MESSICK, Kerry A	Frostburg State University	poster	slbrosi@frostburg.edu
MEYER, Maureen	University of New Mexico	1	msmeyer1@unm.edu
MEYER, Rachel S.	New York University	9, A6	rm181@nyu.edu
MOSCOE, Lauren	University of Wisconsin-Madison	9	moscoe@wisc.edu
MOTLHANKA, Daniel	Botswana College of Agriculture	9; 19; poster	dmotlhan@bca.bw
MT. PLEASANT, Jane	Cornell University	3; 15	jm21@cornell.edu
MUELLER, Natalie G.	Washington University	poster	ngmueller@gmail.com
NAGAOKA, Lisa	University of North Texas	poster	lnagaoka@unt.edu
NGOFA, Sedia	Frostburg State University	poster	slbrosi@frostburg.edu
NNAMANI, Catherine V.	Ebonyi State University, Abakaliki, Nigeria	8	drnnamanikate@gmail.com
OFFRINGA, Lisa	Stanford Prevention Research Center, Stanford University School of Medicine	14	loffringa@gc.cuny.edu
OLSON, Elizabeth A.	Allegheny College	18	elizabetholson@gmail.com
OTAOLA, Clara	CONICET-Museo de Historia Natural de San Rafael, Mendoza, Argentina,	poster	claraotaola@yahoo.com.ar
PAI, Aswini	Department of Biology, St. Lawrence University	poster	apai@stlawu.edu
PELES, Ashley	UNC Chapel Hill	3	apeles@live.unc.edu
PETER, Sonia	Barbados Community College	1, M2	sonia.peter2007@gmail.com
PETERS, Thomas		2	trpeters@uga.edu
PIEROTTI, Raymond	University of Kansas	7; 15	pierotti@ku.edu
POPEJOY, Traci	University of North Texas	poster	thepopenjay@gmail.com
PRADO, Helbert Medeiros	Laboratory of Human Evolutionary Studies, Department	poster	helbertmedeiros@yahoo.com.br

	of Genetics and Evolutionary Biology, Biosciences Institute, University of São Paulo		
PRESTON, William	California Polytechnic University, San Luis Obispo	11	wpreston@calpoly.edu
PRIYADARSHNI, Meenakshi	Plant Biotechnology Department, Bihar University	6	meenakshi.botany111@gmail.com
PURCELL, Gabrielle	University of North Carolina at Chapel Hill	3	gpurcell@live.unc.edu
QUAVE, Cassandra	Department of Dermatology, Emory University School of Medicine and Center for the Study of Human Health, Emory College of Arts and Sciences	17	cassandra.leah.quave@emory.edu
QUINLAN, Robert	Washington State University	poster	mquinlan@wsu.edu
QUIROZ, Diana	Naturalis Biodiversity Center / Wageningen University	5	diana.quiruz@naturalis.nl
RASHFORD, John	College of Charleston	1	rashfordj@cofc.edu
REYNOLDS, Peter C.	Sally Glean Center	10	pcr@sallyglean.org
RICHARDS, Anthony	CARICOM Regional Organisation for Standards & Quality, Barbados	1	anthony.richards@crosq.org
ROBINSON, Daniel	University of Florida	7	dsrobinso@gmail.com
ROMULO, Chelsie	George Mason University	poster	chelsie.romulo@gmail.com
ROSKRUGE, Nicholas	Rahiri - Massey University, Palmerston North, New Zealand	8; 13	n.roskruge@massey.ac.nz
ROSS, Nanci	Drake University	19	nanciorama@gmail.com
SANDER, Nilo	University of the State of Mato Grosso	poster	nilosander@gmail.com
SANDERS, Wyatt	North Carolina State University	poster	rwsander@ncsu.edu
SAULT, Nicole	Sally Glean Center for the Avian Arts	20	nicole@sallyglean.org
SAVO, Valentina	Hakai Network for Coastal People, Ecosystems and Management, Simon Fraser University	17	vsavo@uniroma3.it
SCARRY, C. Margaret	University of North Carolina at Chapel Hill	poster	scarry@email.unc.edu
SCHAFFRAN, Peter	Old Dominion University, Saman AHMAD	4	pscha005@odu.edu
SCHELHAS, John	Southern Research Station, USDA Forest Service	16	jschelhas@fs.fed.us
SCOTT CUMMINGS, Linda	PaleoResearch Institute	16	linda@paleoresearch.com
SEMOTIUK, Andrew	University of California Riverside	poster	andrewsemotiuk@gmail.com
SHARMA, H. Rajanikanta	Indian Institute of Science Education and Research, Mohali, India	19	rajsharmahanja23@gmail.com
SHEBITZ, Daniela	Kean University School of Environmental and Sustainability Science	4	dshebitz@kean.edu
SHRESTHA, Sushma	Miami University Ohio	16	shrests@miamioh.edu
SIGSTEDT, Shawn V.	Colorado Mountain College and World Park Educational Institute	5; 6	nature@worldpark.org
SLOTTEN, Venicia	University of Cincinnati	poster	slottevm@mail.uc.edu
STEVENS, Lois	Indigenous Studies Program, University of Kansas	15	lois.stevens25@gmail.com

SUBBURAMAN, Senthilkumar	Department of Botany, School of Biological Sciences, St. Joseph's College	poster	senkumar68@gmail.com
TAYLOR, Gia Gaspard		1	nrwptt@gmail.com
THOMAS, Evert	Bioversity International, Regional office for the Americas, Cali, Colombia	12	e.thomas@cgiar.org
THOMPSON, Laura	Furman University	M4	laura.thompson@furman.edu
TONGCO, Ma. Dolores	Institute of Biology, University of the Philippines, Diliman, Quezon City, Philippines; Department of Botany, University of Hawaii at Manoa	8	mdctongco@gmail.com
TOWNS, Alexandra M.	Naturalis Biodiversity Center / Leiden University	18	alexandra.towns@naturalis.nl
TURNER, Katherine	Natural Resources Institute, University of Manitoba	10	katelturner@gmail.com
TURNER, Nancy J.	University of Victoria	5	nturner@uvic.ca
VAN ANDEL, Tinde	Naturalis Biodiversity Center	21	tinde.vanandel@naturalis.nl
Vibrans, Heike	Postgrado en Botánica, Colegio de Postgraduados, Texcoco, Mexico	5; 17	heike@colpos.mx
VIRAPONGSE, Arika	National Ecological Observatory Network (NEON)	poster	avirapongse@neoninc.org
VIRNIG, Annie	CUNY & NY Botanical Garden	poster	avirnig@nybg.org
WAGNER, Gail E.	Department of Anthropology, University of South Carolina	19	gail.wagner@sc.edu
WINSTEAD, Christy	University of North Texas	poster	christywinstead@my.unt.edu
WOLVERTON, Steve	University of North Texas, Department of Geography	poster	wolverton@unt.edu
WYNDHAM, Felice S.	University of Oxford	20	felice.wyndham@gmail.com

SCHEDULE-AT-A-GLANCE - SUNDAY, MAY 11TH

MORNING	Pre-function area	Oak	Hickory	Ash	Beech	Birch	Event Center
8:30-9:00	-	-	-	SEB Council meeting 8:30-5:30	-	-	-
9:00-11:00	-	-	-	"	-	SoE Board meeting 9:00-3:30	-
11:00-1:00	11:00 registration and display setup and preparation	-	-	"	Board/Council LUNCH 12:45-1:45 invitation only	"	-
1:00-3:00	REGISTRATION	-	-	"	"	"	-
3:00 - 5:30	1:00-3:30	PLANT WALK (ticketed event) – Meet in Bus Lounge at Casino Parking Garage					
6:00 - 7:30	and 5:30-8:30 pm	Pecha Kucha open presentations	-	-	-	"	-
7:30-8:00		-	Student MENTOR and MENTEE orientation	-	-	-	-
8:00 - 10:00		-	-	-	-	-	Opening Welcome Reception Freeman Owle, Cherokee storyteller

SCHEDULE-AT-A-GLANCE - MONDAY, MAY 12TH

MORNING	Maple	Oak	Hickory	Locust	Ash	Beech	Birch	Events Center
8:00-8:20	-	-	-	-	-	-	-	Welcome
8:20-8:40	-	-	-	-	-	-	-	Clapsaddle
8:50-9:10	1. CARIBB Bullard-R XO	2. CHEROKEE Briggs	3. PRE- SE US Bonzani	4. MED CHEM Shebitz	-	-	-	-
9:10-9:30	M Meyer XO	Cozzo	Hollenbach	Schafran	-	-	-	-
9:30-9:50	Taylor O	Peters	Purcell	Mahady	-	-	-	-
9:50-10:10	BREAK							
10:10-10:30	Flores X	Horton	Peles	Brown O	-	-	-	-
10:30-10:50	Peter	FILM Cherokee Bloodroot Project	Mt. Pleasant	Jeyachandran XO	-	-	-	-
10:50-11:10	Richards	FILM Plants & the Cherokee	Bonhage-Freund	-	-	-	-	-
11:10-11:30	Rashford		Clifford XO	-	-	-	-	-
11:30-1:00	Lunch on your own							
1:00-5:00	Cherokee Heritage Experience: meet in Bus Lounge at Casino Parking Garage by 12:50; board in two waves, 1:00 and 1:15 pm; entrance at venues only in group, not individually							
5:30-6:15	-	-	-	-	-	-	-	SEB Business meeting
6:15-7:15	-	-	-	-	-	-	-	SEB DEB talk OPEN to ALL
7:30-10:00	-	-	-	-	-	-	-	Student Social

O = SEB Fulfilling Award contender; **X** = SoE Lawrence Award contender

REGISTRATION in pre-function area, 7:00-4:30

SCHEDULE-AT-A-GLANCE - TUESDAY, MAY 13TH

MORNING	Maple	Oak	Hickory	Locust	Ash	Beech	Birch	Events Center
8:00-8:20	5. RES MNGMT CONSERVA	6. ETHNOMED Pt I	8. GENUS Hazlett	Wkshp M1 Komarnytsky: Health Meas.	Wkshp M2 Peter: Caribb teas	Wkshp M3 Eubanks: GMO	Wkshp M4 Thompson: Grocery Botany	-
8:20-8:40	Ball O	Anderson	Bye	"	"	"	"	-
8:40-9:00	Quiroz O	Priyadarshni	Merlin	"	"	"	"	-
9:00-9:20	Hooper X O	Gbadamosi	Linares	"	"	"	"	-
9:20-9:40	Turner N	Jiang O	Eshbaugh	"	"	"	"	-
9:40-10:00	Gilmore	Sigstedt	Nnamani O	"	"	"	"	-
10:00-10:30	BREAK							
10:30-10:50	Kindscher	7. DOMESTIC Pierotti	Tongco O	"	"	"	-	-
10:50-11:10	Sigstedt	Blumler	Bradbury X O	"	"	"	-	-
11:10-11:30	Vibrans	Robinson O	Roskruge	"	"	"	-	-
11:30-11:50	Currey	-	Kistler O	"	"	"	-	-
11:50-1:30	Lunch on your own							
1:30-1:50	9. FARMING Lasalito-Zapico	10. NEW PERSPECTIVES Kawa	11. HIST EBIOL Edwards X	Wkshp A5 Hall, Brosi: Dyes	Wkshp A6 DuVall, Meyer: Taste	Wkshp A7 Bohan: Fibers	Lunch on your own	-
1:50-2:10	R Meyer	Idrobo O	Dedrick	"	"	"	-	-
2:10-2:30	Mothanka	LeCompte-M X	Cagnato O	"	"	"	-	-
2:30-2:50	Moscoe O	Turner K X	Lentz	"	"	"	-	-
2:50-3:10	Flachs X O	Reynolds	McDonald	"	"	"	-	-
3:10-3:30	Langlie X	-	Emslie	"	"	"	-	-
3:30-3:50	-	-	Preston	"	"	"	-	-
3:50-4:20	BREAK							
4:30-5:30	-	-	-	-	-	-	-	SoE Business mtg
5:30-6:15	-	-	-	-	-	-	-	SoE DEB TALK OPEN to ALL
6:30-9:00	OSN Reception WCU (ticketed event) Meet in Bus Lounge at Casino Parking Garage at 6:30							

O = SEB Fulling Award contender; X = SoE Lawrence Award contender

REGISTRATION in pre-function area 7:00-4:30

SCHEDULE-AT-A-GLANCE - WEDNESDAY, MAY 14TH

MORNING	Maple	Oak	Hickory	Locust	Ash	Beech	Birch	Events Center
8:30-8:50	12. FOREST MNGMT Lopez	13. TEK, Pt I Georgian X O	14. EDUCATION Brosi	15. INDIGENOUS PERSPECTIVES Hernandez	-	-	-	-
8:50-9:10	Mathews	Maxwell O	Huish	Stevens	-	-	-	-
9:10-9:30	Bower O	Baker X	Gambier	Herron	-	-	-	-
9:30-9:50	McC Campbell O	Roskrug	Bridges FILM	Different Cloud-Jones	-	-	-	-
9:50-10:10	Thomas	de Britto	Offringa O	Pierotti	-	-	Ethnobiology Letters editors meet 10-11	-
10:10-10:30	Break			Mt. Pleasant (discussant)	Break			
10:30-12:30	Poster Presentations in pre-function area							
12:30-2:00	Lunch on your own							
2:00-2:20	16. PEOPLE & PLACE Garibaldi	17. TEK, Pt II Dolan X	19. FOOD & BEYOND FOOD Wagner	20. ETH-ORNITHO Gosford	22. FILM Mescal (COLUNGA-GARCIAMARIN et al)	-	-	-
2:20-2:40	Ignace	Guerrero	Borios O	Sault	"	-	-	-
2:40-3:00	Browne	Quave	Duval O	Wyndham	"	-	-	-
3:00-3:20	Bolfing	Savo	Sharma X	Chock	"	"	"	"
3:20-3:40	Shrestha X O	Vibrans	Mothanka	Gosford	-	"	"	"
3:40-4:00	Scott-Cummings	Johnson FILM	-	-	-	"	"	"
4:00-4:30	BREAK							
4:30-4:50	Landis	18. ETHNO MED, Pt II Hammer X	Jernigan	21. TAXONOMY Van Andel	BREAK			
4:50-5:10	Fadiman	Towns O	Sharma X	Brownrigg	BREAK			
5:10-5:30	Scheilhas	Boudell	Ross	Amith	SEB judges meet	SoE judges meet	"	"
5:30-5:50	Bennett	Olson	-	-	-	-	-	"
7:00-7:20	-	-	-	-	-	-	-	Awards OPEN to ALL
7:20-9:30	-	-	-	-	-	-	-	Banquet (ticketed)

O = SEB Filling Award contender; **X** = SoE Lawrence Award contender

REGISTRATION in pre-function area, 7:30-12:00 pm; SHUTTLE to Asheville airport leaves 3:30 pm from Bus Lounge at Casino Parking Garage: be there by 3:20 pm.

SCHEDULE-AT-A-GLANCE - THURSDAY, MAY 15TH

MORNING	Bus Lounge at Casino Parking Garage
7:00	Shuttle LEAVES for Asheville airport. Be in Bus Lounge at Casino Parking Garage by 6:50 am. Ticketed event by pre-registration Field Trip ASH3 LEAVES, with endpoint at Asheville airport by 1:00 pm. Be in Bus Lounge at Casino Parking Garage by 6:50 am. Bring personal water, dress for hiking outdoors. Ticketed event by pre-registration
7:30	Field Trip ASH4 LEAVES, with endpoint at Asheville airport by 3:30 pm, or optionally downtown around 4:00 pm. Be in Bus Lounge at Casino Garage by 7:20 am. Bring personal water, dress for walking outdoors. Ticketed event by pre-registration
9:00	Field Trips CH1 and CH2 depart. Be in Bus Lounge by 8:50 am. Dress for walking/hiking outdoors and bring personal water. Ticketed events
AFTERNOON	
3:00	Field Trip CH1 returns to Harrah's
4:00	Field Trip CH2 returns to Harrah's
4:15	Shuttle LEAVES for Asheville airport. Meet in Bus Lounge at Casino Parking Garage by 4:05 pm. Ticketed event by pre-registration

NOTE: Off-schedule shuttles from Cherokee to Asheville airport may leave from a different pick-up point: please check with Registration at least half a day before your ride.

HARRAH'S CONFERENCE CENTER FLOOR PLAN

