
Ninth Biennial Conference of Research on the Colorado Plateau

du Bois Center, Northern Arizona University

29 October – 1 November 2007

Program of Presented Papers and Posters

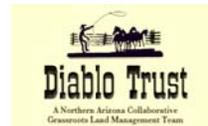


Sponsored by:

**USGS Southwest Biological Science Center
USGS Colorado Plateau Research Station
Ecological Monitoring & Assessment Program & Foundation
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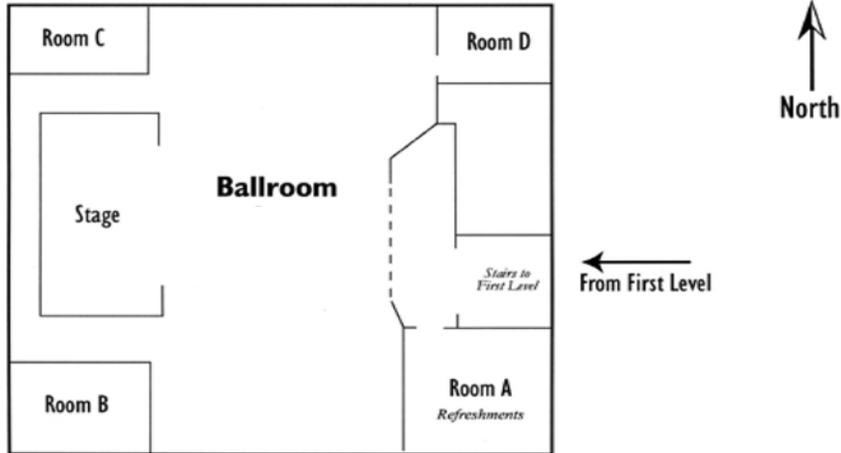
**NORTHERN
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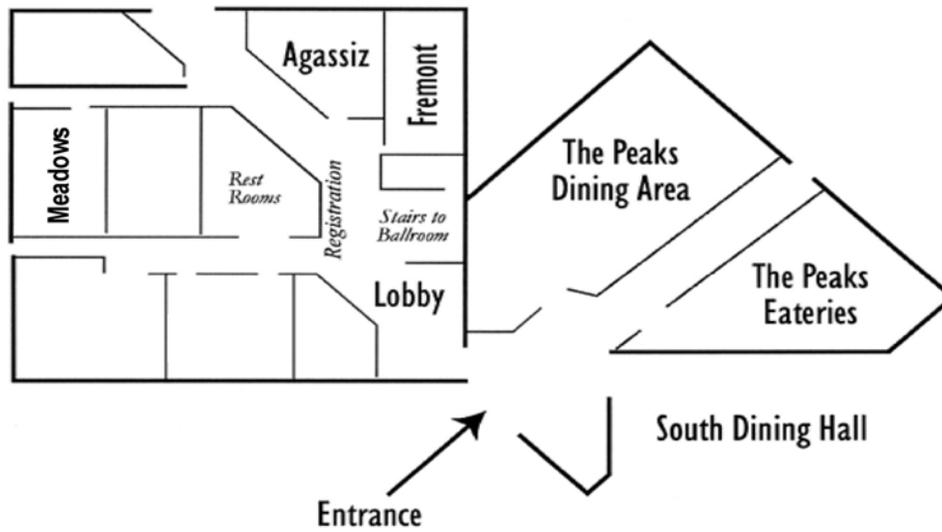
Colorado Plateau Cooperative Ecosystem Studies Unit

duBois Conference Center Floor Plan

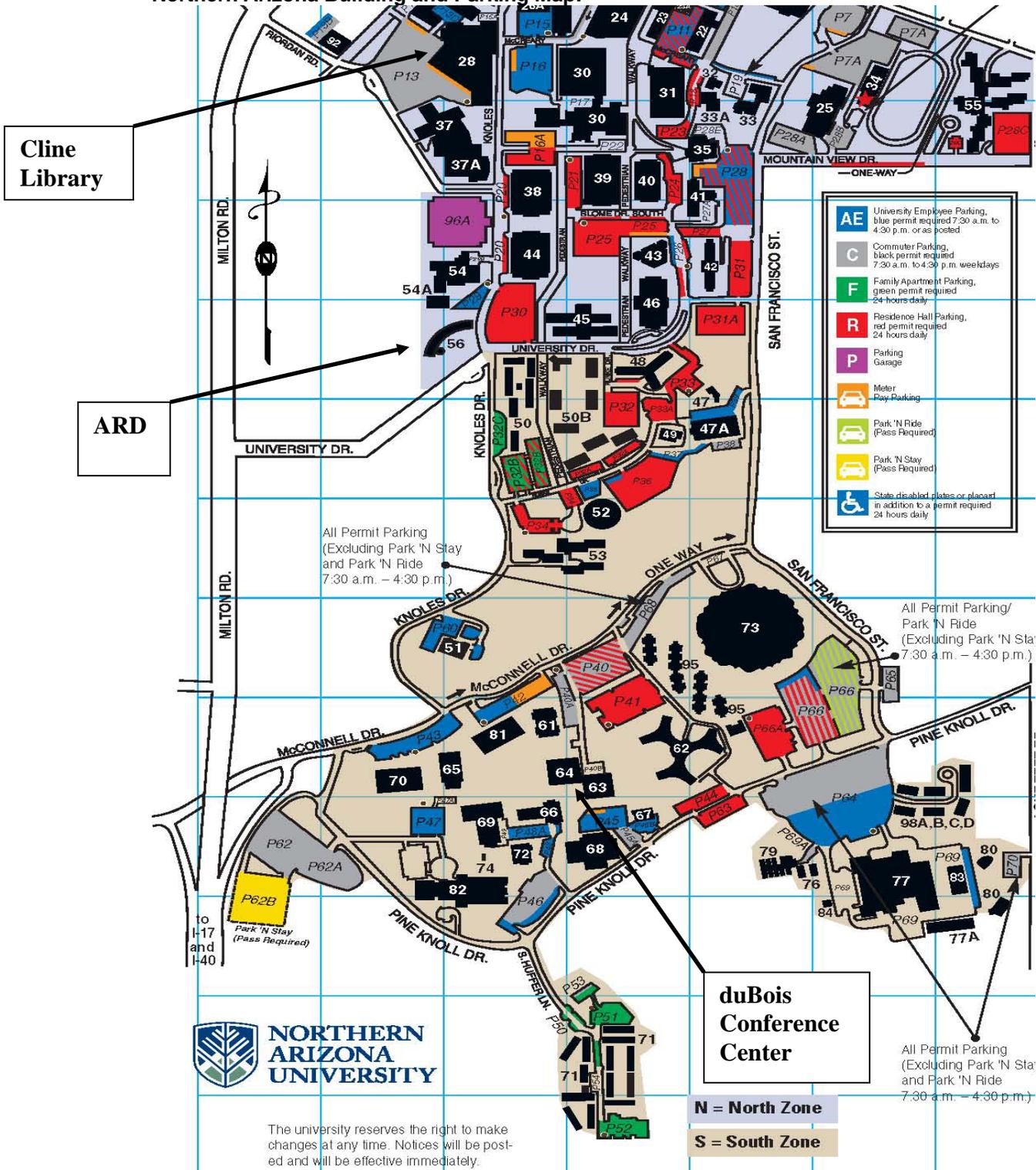
Second Level



First Level



Northern Arizona Building and Parking Map:



Biennial Conference: duBois Conference Center, 64

Parking: Lots P40 and P66 (no permit needed at any time)

A River Reborn Documentary: Cline Library, 28

Parking: Lot P13 (no permit needed after 4:30 p.m.)

Poster Session: Applied Research & Development Building (ARD) 56

Parking: Garage Lot P96A (no permit needed after 4:30 p.m.)

Conference Coordinators

Conference Chairs	Scott Durst and Mark Sogge
Program Chairs	Scott Durst and Mark Sogge
Registration Managers	Marie Saul and Sparrow Adson
Food and Promotion	Scott Durst
Audio-Visual	Chris Calvo
Information Technology	Chris Taesali
Poster Session Chair	Matthew Johnson

Special Session Developers

Cave Research in the Western United States	J. Judson Wynne
Climate Change and Ecosystem Impacts	Neil Cobb, Kirsten Ironside and Ken Cole
Colorado Plateau Cooperative Ecosystems Studies Unit Facilitation of Cross-boundary Research and Management on the Colorado Plateau	Ron Hiebert
The Legacy and Future Visions of Conservation Biology on the Colorado Plateau	Matthew Johnson and the Colorado Plateau Chapter of the Society for Conservation Biology
Native Plant Production and Seed Increase	Judy Springer and Susan Nyoka
Restoration and Conservation at the Landscape Scale: The Kane 2 Mile Ranch Project	Tom Sisk and Eli Bernstein
The Restoration of Fossil Creek: Result of Research and Monitoring	Michele James
Tribal Lands of the Colorado Plateau: Scientific Assessment of Climate Change Impacts to Landscapes and Ecosystems	Diana Anderson and Amy Whipple
Using Native Plants in Ecological Restoration	Judy Springer and Susan Nyoka

REGISTRATION

Registration and information tables, located in the lobby of the du Bois Conference Center, will be open at the following times:

1:00 p.m. – 5:00 p.m.	Monday, October 29th
7:30 a.m. – 4:00 p.m.	Tuesday, October 30th
7:30 a.m. – 4:00 p.m.	Wednesday October 31st
7:30 a.m. – 9:00 a.m.	Thursday, November 1st

GENERAL INFORMATION

Messages: Telephone messages will be posted on a message board near the registration table as they are received from the du Bois Conference Center Information Desk (928-523-1594).

Dining: Meals are available at several locations at the du Bois Conference Center or at nearby off-campus restaurants.

Conference Parking: Follow the posted signs to Biennial Conference parking. Conference participants can use Parking Lots 40 and 66 (north and northeast, respectively, of the duBois Center. Refer to the NAU Campus map in the registration folder or program. Permits will not be necessary to park in these two lots. However, cars parked in metered spots must "feed the meter." Restricted space (e.g. handicapped) regulations will be enforced. Cars parked in lots other than these will be cited.

Poster Session Parking: Parking is available in the Parking Garage Lot (P96Q) ½ block to the north of the the ARD (B56) building after 4:30 p.m. (no permit needed).

Submissions for the Proceedings of the 9th Biennial Conference of Research on the Colorado Plateau

We invite interested individuals to publish research presented at the 9th Biennial Conference of Research on the Colorado Plateau in the 9th volume of the Biennial Conference Proceedings Series. The paper would be refereed and peer reviewed. University of Arizona Press will publish the Proceedings as a book. The previous eight volumes of the Biennial Conference Proceedings have gained international recognition, being reviewed and summarized in journals such as *Conservation Biology*, *Ecology*, and the *Southwest Naturalist*. Many of the Proceedings Chapters are frequently cited by fellow professionals and documented by Science Citation Index.

AUTHOR INSTRUCTIONS can be found at:

http://sbsc.wr.usgs.gov/cprs/news_info/meetings/biennial/2007/authorsguide.asp

Questions can be directed to the editors of the 8th volume: Dr. Charles van Riper (520-626-7027; charles_van_riper@usgs.gov) or Mark Sogge (928-556-7194; mark_sogge@usgs.gov)

DEADLINE FOR SUBMISSIONS: 15 December 2007

SUBMIT PAPERS TO: Dr. Charles van Riper, USGS Sonoran Desert Research Station, 125 Biological Sciences East, The University of Arizona, Tucson, AZ 85721.

8th volume of the Biennial Conference Proceedings Series

A proceedings of the 8th Biennial Conference of Research on the Colorado Plateau has been published as a book, entitled "The Colorado Plateau III: Conservation of Resources through Integrating Research into Resources Management", by The University of Arizona Press. UA Press will be present and taking orders for the book at the 9th Biennial Conference.

CONFERENCE SCHEDULE

Rooms				
Time	<i>BALLROOM</i>	<i>FREMONT</i>	<i>MEADOWS</i>	<i>AGASSIZ</i>
<i>Tuesday Morning</i>	OFFICIAL INTRODUCTION Climate Change and Ecosystem Impacts I	CPCESU Facilitation of Cross-boundary Research and Management on the Colorado Plateau	Animal Ecology I	
<i>Tuesday Afternoon</i>	Climate Change and Ecosystem Impacts II	The Legacy and Future Visions of Conservation Biology on the Colorado Plateau	The Restoration of Fossil Creek: Result of Research and Monitoring	
<i>ARD Atrium</i>				
<i>Tuesday Evening</i>	Poster Session at the Applied Research and Development Building, NAU			
	<i>BALLROOM</i>	<i>FREMONT</i>	<i>MEADOWS</i>	<i>AGASSIZ</i>
<i>Wednesday Morning</i>	Conservation, Management, and Planning	Tribal Lands of the Colorado Plateau: Scientific Assessment of Climate Change Impacts to Landscapes and Ecosystems	Ecosystems and Communities; Aquatic Resources	Using Native Plants in Ecological Restoration Native Plant Production and Seed Increase I
<i>Wednesday Afternoon</i>	Drought and Climate	Cave Research in the Western United States	Restoration and Preservation	Native Plant Production and Seed Increase II
<i>MNA</i>				
<i>Wednesday Evening</i>	Social at the Museum of Northern Arizona			
	<i>BALLROOM</i>	<i>FREMONT</i>	<i>MEADOWS</i>	<i>AGASSIZ</i>
<i>Thursday Morning</i>	Forests and Fire Ecology	Animal Ecology II	Invasives	Restoration and Conservation at the Landscape Scale: The Kane 2 Mile Ranch Project

PROGRAM SYNOPSIS

MONDAY, 29 October 2007

Side-Meetings

- 10:00 -12:30 Colorado Plateau All Taxa Biodiversity Inventory Program
- 1:30 – 5:30 Colorado Plateau All Taxa Biodiversity Inventory Program (Continued)
- 1:00 – 4:00 Developing Research Collaborations with Tribal Colleges
- 1:00 – 5:00 Cross Boundary Major Colorado Plateau Issue
- 7:00 – 9:00 Colorado Plateau Cooperative Ecosystem Studies Unit Mixer
(by Invitation)
- 7:00 – 9:00 A River Reborn Documentary (Cline Library, NAU)

TUESDAY, 30 October 2007

- 8:00 – 8:15 **Official Introduction**
- 8:15 – 12:00 Climate Change and Ecosystem Impacts I (**Special Session**)
- 8:20 – 12:00 CPCEU Facilitation of Cross-boundary Research and Management on the Colorado Plateau (**Special Session**)
- 8:20 – 12:00 Animal Ecology I (**General Session**)
- 12:00 – 1:00 Lunch
- 1:00 – 5:00 Climate Change and Ecosystem Impacts II (**Special Session**)
- 1:00 – 4:40 The Legacy and Future Visions of Conservation Biology on the Colorado Plateau (**Special Session**)
- 1:20 – 4:40 The Restoration of Fossil Creek: Result of Research and Monitoring (**Special Session**)
- 5:00 – 6:00 Society of Conservation Biology Members Meeting – Applied Research and Development (Building 56) Large Pod
- 7:00 – 9:00 Poster Session – Applied Research and Development (Building 56) Atrium

PROGRAM SYNOPSIS (Continued)

WEDNESDAY, 31 October 2007

- 8:00 – 12:00 Conservation, Management, and Planning (**General Session**)
- 8:00 – 12:00 Tribal Lands of the Colorado Plateau: Scientific Assessment of Climate Change Impacts to Landscapes and Ecosystems (**Special Session**)
- 8:00 – 12:00 Ecosystems and Communities; Aquatic Resources (**General Session**)
- 8:00 -10:00 Using Native Plants in Ecological Restoration (**Special Session**)
- 10:20 -12:00 Native Plant Production and Seed Increase I (**Special Session**)
- 12:00 – 1:00 Lunch
- 1:00 – 4:40 Drought and Climate (**General Session**)
- 1:00 – 4:40 Cave Research in the Western United States (**Special Session**)
- 1:00 – 5:00 Restoration and Preservation (**General Session**)
- 1:00 – 2:00 Native Plant Production and Seed Increase II (**Special Session**)
- 2:00– 2:40 Native Plant Production and Seed Increase – Roundtable Discussion
- 3:00 – 5:00 Colorado Plateau Native Plant Initiative/Northern Arizona Native Seed Alliance Meeting
- 7:00 – 9:00 Mixer/ Social at the Museum of Northern Arizona

THURSDAY, 1 November 2007

- 8:00– 12:00 Forest and Fire Ecology (**General Session**)
- 8:00 – 12:00 Animal Ecology II (**General Session**)
- 8:00 – 12:00 Invasives (**General Session**)
- 8:00 – 12:00 Integrating Restoration and Conservation at the Landscape Scale: The Kane 2 Mile Ranch Project (**Special Session**)

SIDE MEETINGS – Monday October 29th

- 10:00 – 12:30 Colorado Plateau All Taxa Biodiversity Inventory Program
Ecological Networks
AGASSIZ ROOM
Organizer: Neil Cobb
- 1:30 – 5:30 Colorado Plateau All Taxa Biodiversity Inventory Program (Continued)
Ecological Networks
AGASSIZ ROOM
Organizer: Neil Cobb
- 1:00 – 4:00 Developing Research Collaborations with Tribal Colleges
FREMONT ROOM
Organizer: Amy Whipple, Diana Anderson, Marnie Carroll and Barb Cline
- 1:00 – 5:00 Cross Boundary Major Colorado Plateau Issue
HUMPHREYS ROOM
Organizer: Dave Ostergren
- 7:00 – 9:00 Colorado Plateau Cooperative Ecosystem Studies Unit Mixer / Social
(by invitation only)

ZANE GREY BALLROOM at the Weatherford Hotel
in historic downtown Flagstaff (23 N. Leroux)
Organizers: Dave Ostergren and Ron Hiebert
- 7:00 – 9:00 A River Reborn Documentary

CLINE LIBRARY, Northern Arizona University

DETAILED SCHEDULE

Official Welcome & Introduction

Tuesday Morning 8:00-8:15 a.m.
BALLROOM

- 8:00-8:05 SCOTT DURST, *Biologist, USGS Southwest Biological Science Center* – Conference Chair Welcome
- 8:05-8:10 LAURA HUENNEKE, *Dean, College of Engineering and Natural Sciences* – Northern Arizona University Welcome
- 8:10-8:15 ANDREA ALPINE, *Center Director, Southwest Biological Science Center* – USGS Welcome

Climate Change and Ecosystem Impacts I

Tuesday Morning 8:20 a.m.-12:00 p.m.
BALLROOM

Moderator: Neil Cobb, *Merriam Powell Center for Environmental Research, Northern Arizona University* and Mark Miller, *USGS, Southwest Biological Science Center, Colorado Plateau Research Center*

- 8:15-8:20 INTRODUCTION, Ken Cole
- 8:20-8:40 SHIFTING LANDSCAPES IN MOUNTAIN ENVIRONMENTS: HOW CLIMATE CHANGE HAS INFLUENCED GLACIER NATIONAL PARK. **FAGRE**, DANIEL B.
- 8:40-9:00 CLIMATE MODELING AND PROJECTION IN SUPPORT OF SOCIETAL IMPACTS ASSESSMENTS **DUFFY**, PHILIP B.
- 9:00-9:20 FINE-SCALE PROCESSES REGULATE THE RESPONSE OF EXTREME EVENTS TO GLOBAL CLIMATE CHANGE. **DIFFENBAUGH**, NOAH S., Jeremy S. Pal, Robert J. Trapp and Filippo Giorgi
- 9:20-9:40 POTENTIAL IMPACTS OF CLIMATE CHANGE ON THE COLORADO PLATEAU. **NEILSON**, R.P., R. Drapek and J.M. Lenihan
- 9:40-10:00 SIMULATED VEGETATION RESPONSE TO FUTURE CLIMATE CHANGE IN THE WESTERN UNITED STATES. **SHAFER**, SARAH L. and Patrick J. Bartlein
- 10:00-10:20 BREAK
- 10:20-10:40 DOWNSCALED CLIMATE CHANGE PROJECTIONS FOR THE SOUTHERN COLORADO PLATEAU. **GARFIN**, GREGG M. and Jon K. Eischeid
- 10:40-11:00 VEGETATION CHANGE ON THE COLORADO PLATEAU FOLLOWING PAST CLIMATE WARMING EVENTS: AN ANALOG FOR THE PRESENT AND FUTURE. **COLE**, KENNETH L.

Climate Change and Ecosystem Impacts I - continued

- 11:00-11:20 EXPLORING MODELING APPROACHES FOR PREDICTING CLIMATE CHANGE IMPACTS ON DOMINANT PLANTS; EXTREMES VS. MEANS AND COMMUNITIES VS. SPECIES. **IRNSIDE**, KIRSTEN E., Kenneth L. Cole and Neil S. Cobb
- 11:20-11:40 MODELING THE IMPACTS OF CLIMATE CHANGE – CHANGES MADE IN A SPECIES SPECIFIC MODELING SYSTEM. **CHEW**, JIMMIE, Kirk Moeller and Kirsten Ironside
- 11:40-12:00 CONCEPTUAL MODELING OF CLIMATIC INFLUENCES ON UPPER-ELEVATION PLANT COMMUNITIES ON THE COLORADO PLATEAU. **VANKAT**, JOHN L.

CPCESU Facilitation of Cross-boundary Research and Management on the Colorado Plateau

Tuesday Morning 8:20 a.m.-12:00 p.m.

FREMONT

Moderator: Ron Hiebert, *National Park Service, Colorado Plateau Cooperative Ecosystem Studies Unit, Northern Arizona University*

- 8:20-8:40 WATERSHED RESTORATION ON THE COLORADO PLATEAU: A META-ANALYSIS OF PROJECTS AND EVALUATION PROCEDURES. **HENN**, AVI, David M. Ostergren and Ron Hiebert
- 8:40-9:00 NATIVE PLANT RESTORATION ACTIVITIES ON THE COLORADO PLATEAU. **SMITH**, VERLIN and Ronald B. Bolander
- 9:00-9:20 DEVELOPMENT OF NATIVE PLANT MATERIALS FOR NATIONAL PARKS: AN INTERAGENCY PLANT MATERIALS PROGRAM. **HAAS**, RUSSELL J. and Sarah Wynn
- 9:20-9:40 RESTORATION IN THE NATIONAL PARK SERVICE; PROGRAMS, FUNDING, AND ASSESSMENT. **HIEBERT**, RON
- 9:40-10:00 RESTORATION OF TAMARIX-DOMINATED XERIC RIPARIAN AREAS. **BEAUCHAMP**, VANESSA B.
- 10:00-10:20 BREAK
- 10:20-10:40 STREAM RESTORATION ON THE COLORADO PLATEAU: CHALLENGES AND OPPORTUNITIES. **MOODY**, TOM O.
- 10:40-11:00 RIPARIAN RESTORATION WITHIN A CULTURAL LANDSCAPE AT HUBBELL TRADING POST NHS. **WORTHINGTON**, ANNE
- 11:00-12:00 PANEL DISCUSSION

Animal Ecology I

Tuesday Morning 8:20-11:40 a.m.

MEADOWS

Moderator: T. J. Fontaine, *USGS, Sonoran Desert Research Station, University of Arizona*

- 8:20-8:40 IMPORTANCE OF JUNIPER (*JUNIPERUS OSTEOSPERMA*) TO BIRDS NESTING IN PIÑON-JUNIPER WOODLANDS IN NORTHWEST NEW MEXICO. **FRANCIS**, CLINTON D., Catherine P. Ortega and John Hansen
- 8:40-9:00 EFFECTS OF GAS WELL COMPRESSOR NOISE ON NESTING BIRDS IN PIÑON-JUNIPER (*PINUS EDULIS-JUNIPERUS OSTEOSPERMA*) WOODLANDS OF RATTLESNAKE CANYON MANAGEMENT AREA (BLM) IN NORTHWEST NEW MEXICO. **ORTEGA**, CATHERINE P., Clinton D. Franacis, Ryan I. Kennedy, Peter J. Nylander, and John Hansen
- 9:00-9:20 SURVIVORSHIP ACROSS THE ANNUAL CYCLE OF A MIGRATORY PASSERINE: CONSERVATION IMPLICATIONS FOR THE WILLOW FLYCATCHER. **PAXTON**, EBEN H., Scott L. Durst, Mark K. Sogge and Thomas J. Koronkiewicz
- 9:20-9:40 IMPLICATIONS OF MICROCLIMATE ON NEST PREDATION OF THE SOUTHWESTERN WILLOW FLYCATCHER. **STUMPF**, KATIE J., Tad C. Theimer, Mary Anne McLeod and Tom J. Koronkiewicz
- 9:40-10:00 USING ECOSYSTEM PRODUCTION BUDGETS TO ASSESS RESOURCE LIMITATION OF NATIVE AND NON-NATIVE FISHES IN COLORADO RIVER, GRAND CANYON. **CROSS**, WYATT F., Colden V. Baxter, Robert O. Hall Jr., Theodore A. Kennedy, Scott Rogers, Emma J. Rosi-Marshall and Michael D. Yard
- 10:00-10:20 **BREAK**
- 10:20-10:40 YELLOW-BILLED CUCKOO DISTRIBUTION, BREEDING STATUS AND HABATAT USE ALONG THE LOWER COLORADO RIVER. **STEWART**, LAURA, R., Matthew J. Johnson, Christopher M. Calvo and Geoffrey Bland
- 10:40-11:00 PEREGRINE FALCON (*FALCO PEREGRINUS*) A SUMMERY OF NESTING / OCCUPANCY SURVEYS ON THE COLORADO PLATEAU 1991-2007 FOR THE NATIONAL PARK SERVICE AFTER THE PEREGRINES RECOVERY. **HETZLER**, BRENT C.
- 11:00-11:20 NEST SITE SELECTION OF THE COMMON BLACK-HAWK (*BUTEOGALLUS ANTHRACINUS*): CONSERVATION IMPLICATIONS. **ETZEL**, KENNETH E., Matthew Johnson and Thomas G. Whitham
- 11:20-11:40 A CASE STUDY WITH BIRDS AT PETRIFIED FOREST NATIONAL PARK: IMPLEMENTING RESOURCE MANAGEMENT DECISIONS FROM SCIENTIFIC FINDINGS. **VAN RIPER**, CHARLES III

Climate Change and Ecosystem Impacts II

Tuesday Afternoon 1:00-5:00 p.m.

BALLROOM

Moderator: Neil Cobb, *Merriam Powell Center for Environmental Research, Northern Arizona University* and Mark Miller, *USGS, Southwest Biological Science Center, Colorado Plateau Research Center*

- 1:00-1:20 CLIMATE CHANGE AND DUST: WHAT DOES THE FUTURE HOLD? **BELNAP**, JAYNE, Richard L. Reynolds, Jason C. Neff, Thomas H. Painter and Marith Reheis
- 1:20-1:40 RESPONSES OF COLORADO PLATEAU DRYLANDS TO CLIMATE CHANGE: VARIABILITY DUE TO LAND USE AND SOIL-GEOMORPHIC HETEROGENEITY. **MILLER**, MARK E. and Jayne Belnap
- 1:40-2:00 THE ROLE OF CLIMATE AND LAND USE IN PINYON PINE RECRUITMENT AND GROWTH. **BARGER**, NICHOLE, Henry Adams and Connie Woodhouse
- 2:00-2:20 DISSECTING THE CAUSES AND EFFECTS OF A CLIMATE-INDUCED REGIONAL-SCALE TREE MORTALITY EVENT. **WHITE**, AMANDA B., Donatella Pasqualini, Paul M. Rich and David D. Breshears
- 2:20-2:40 CARBON DIOXIDE AND ENERGY EXCHANGE IN DISTURBED SOUTHWESTERN PONDEROSA PINE FORESTS. **KOLB**, THOMAS E., Sabina Dore, Mario Montes-Helu, Benjamin W. Sullivan, Wesley W. Winslow, Steve C. Hart, Jason P. Kaye, George W. Koch and Bruce A. Hungate
- 2:40-3:00 **BREAK**
- 3:00-3:20 SIGNATURES OF VEGETATION CHANGE IN A STRATEGIC INVENTORY AND MONITORING SYSTEM. **SHAW**, JOHN D.
- 3:20-3:40 INSTITUTING THE HYDROCLIMATIC INDEX IN MONITORING DROUGHT ACROSS THE COLORADO RIVER BASIN. **ELLIS**, ANDREW W.
- 3:40-4:00 WHAT'S DYING IN SOUTHERN CALIFORNIA'S MOUNTAINS: REPEAT SURVEYS AND MICROMETEOROLOGICAL MEASUREMENTS ALONG AN ELEVATION GRADIENT. **GOULDEN**, MICHAEL L., Anne Kelly, Gregory Winston and Aaron Fellows
- 4:00-4:20 CLIMATE-RELATED TRENDS IN NORTHERN NEW MEXICO ECOSYSTEMS: LONG-TERM MONITORING, THRESHOLD EFFECTS, AND DISTURBANCE INTERACTIONS. **ALLEN**, CRAIG D., Kay L. Beeley and Rebecca Oertel
- 4:20-4:40 A CLIMATE CHANGE VULNERABILITY ASSESSMENT FOR BIODIVERSITY IN NEW MEXICO: RECENT CLIMATE DEPARTURES & CONSERVATION IMPLICATIONS. **ENQUIST**, CAROLYN A.F.
- 4:40-5:00 A CURRENT PERSPECTIVE ON OUR DEVELOPING UNDERSTANDING OF DROUGHT-INDUCED DIE-OFF AND ITS CONSEQUENCES. **BRESHEARS**, DAVID D.

The Legacy and Future Visions of Conservation Biology on the Colorado Plateau

Tuesday Afternoon 1:00-5:00 p.m.

FREMONT

Moderator: Tad Theimer, *Department of Biology, Northern Arizona University* and Matthew Johnson, *USGS, Southwest Biological Science Center, Colorado Plateau Research Center*

- 1:00-2:40 **PANEL DISCUSSION:** To begin, we will educate ourselves on historical conservation efforts across the Plateau, addressing what strategies have forwarded or hindered the protection of structural, compositional, and functional biodiversity. Panel Members: Jan Balsom, Paul Beier, Jim Catlin and Charles van Riper III
- 2:40-3:00 **BREAK**
- 3:00-5:00 **PANEL DISCUSSION:** In this session we will travel forward in time to develop visions of a future for conservation biology within the context of challenges such as a changing climate, and shifting human demands for natural resources. Special emphasis will be paid to “the passing of the torch”, as seminal thinkers in the field help us explore what skills the future leaders of conservation on the Plateau will require to face these challenges. Panel Members: Ethan Aumack, Jayne Belnap, Tom Fleischner, Ed Grumbine and Dave Mattson

The Restoration of Fossil Creek: Result of Research and Monitoring

Tuesday Afternoon 1:20-4:40 p.m.

MEADOWS

Moderator: Jane Marks, *Department of Biology, Northern Arizona University*

- 1:20-1:40 **NATIVE FISH POPULATION INCREASE FOLLOWING FLOW RESTORATION AND EXOTIC FISH REMOVAL IN FOSSIL CREEK, ARIZONA.** O'Neill, Matthew W., CINNAMON M. **PACE**, G. Allen Haden and Jane C. Marks
- 1:40-2:00 **NATIVE FISH REBOUND IN FOSSIL CREEK.** **STEFFERUD**, SALLY E., Jerome A. Stefferud, Paul C. Marsh and Robert W. Clarkson
- 2:00-2:20 **STOCKING THREATENED AND ENDANGERED NATIVE FISHES INTO FOSSIL CREEK.** **CARTER**, CODEY
- 2:20-2:40 **TRACKING THE VERTICAL GROWTH OF TRAVERTINE DAMS FOLLOWING THE RESTORATION OF FLOW TO FOSSIL CREEK, ARIZONA.** **FULLER**, BRIAN M., Leonard S. Sklar, Zacchaeus G. Compson, Kenneth J. Adams and Jane C. Marks
- 2:40-3:00 **BREAK**
- 3:00-3:20 **DEVELOPMENT OF A COLLABORATIVE RESEARCH MODEL TO FACILITATE INTERDISCIPLINARY RESEARCH ON DAM DECOMMISSIONING PROJECTS.** Schott, Nathan D. and RODERIC A. **PARNELL**

The Restoration of Fossil Creek: Result of Research and Monitoring - continued

- 3:40-4:00 IMPLEMENTATION OF AN ADAPTIVE MANAGEMENT STRATEGY FOR SPECIAL STATUS SPECIES: LOWLAND LEOPARD FROGS IN FOSSIL CREEK. **HEDWALL**, SHAULA J., Janie Agyagos, Cecelia Overby and Susan MacVean
- 4:00-4:20 FOSSIL CREEK: FOSTERING STEWARDSHIP AND ENGAGING LOCAL RESIDENTS AS PARTNERS. **HANCOCK**, PAUL and Marty Lee
- 4:20-4:40 TRAVERTINE DAMS INCREASE PRODUCTIVITY AND NUTRIENT RETENTION: IMPLICATIONS FOR RIVER RECOVERY. **MARKS**, JANE, Leonard Sklar, Cathy Gibson and Jeff Muehlbauer

Poster Session

Tuesday Evening 7:00-9:00 p.m.

APPLIED RESEARCH AND DEVELOPMENT ATRIUM, NAU Posters are listed in order of their location.

(Posters will be available for viewing in the Ballroom at the duBois Center on Wednesday and Thursday of the conference)

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- 1 BIOSPHERE 2: TESTING THE INFLUENCE OF GLOBAL CHANGE DYNAMICS ON KEY INTERACTIONS BETWEEN PLANTS AND WATER. **ADAMS**, HENRY D., Juan C. Villegas, David D. Breshears, Maite Guardiola-Claramonte, Chris B. Zou, Greg A. Barron-Gafford, Travis E. Huxman
 - 2 REPRESENTATIVENESS OF THE OLDEST PERMANENT PLOTS IN NORTHERN ARIZONA PONDEROSA PINE FORESTS. Bell, David M., PABLO F. **PARYSOW**, Margaret M. Moore
 - 3 HISTORICAL STEM-MAPPED PERMANENT PLOTS INCREASE PRECISION OF RECONSTRUCTED REFERENCE CONDITIONS IN PONDEROSA PINE FORESTS OF NORTHERN ARIZONA. Sánchez Meador, Andrew J., PABLO F. **PARYSOW**, Margaret M. Moore
 - 4 FIRE REHABILITATION EFFECTS ON BIRDS AND HABITAT IN A BURNED PINYON-JUNIPER WOODLAND. **CLEMENTS**, AMANDA, Kelly Hutton
 - 5 DECLINE OF NORTHERN LEOPARD FROGS IN NORTHERN ARIZONA. **DROST**, CHARLES A., Lisa Gelczis, Karen E. Mock, Michael J. Sredl, Susan R. MacVean, Tad Theimer
 - 6 FACTORS INFLUENCING EXOTIC SPECIES RICHNESS AND ABUNDANCE WITHIN PONDEROSA PINE FORESTS NEAR FLAGSTAFF, ARIZONA. **ENGEL**, E. CAYENNE, Scott R. Abella
 - 7 INCORPORATING GENETIC DIVERSITY INTO RIPARIAN RESTORATION: THE IMPORTANCE OF MERGING RESTORATION WITH LANDSCAPE LEVEL EXPERIMENTS. **FERRIER**, SHARON M., Randy K. Bangert, Gerard J. Allan, Laura E. Hagenauer, Karla Kennedy, Carri Leroy, Dylan Fischer, Eric Lonsdorf, Tom G. Whitham
 - 8 BUNCHGRASS TRANSPLANTS FOR SOUTHWESTERN PONDEROSA PINE UNDERSTORY COMMUNITIES. **FOWLER**, JAMES F., Carolyn Hull Sieg
 - 9 EFFECTIVENESS OF LITTER REMOVAL IN PREVENTING MORTALITY OF YELLOW BARKED PONDEROSA PINE IN NORTHERN ARIZONA. **FOWLER**, JAMES F., Carolyn Hull Sieg, Linda Wadleigh, Sally Haase
 - 10 EFFECTS OF SPACING AND IRRIGATION ON SEED PRODUCTION OF NATIVE PERENNIALS. **GODIN**, RON, Steve Monsen, Kim Schultz
 - 11 VEHICLES IN STREAMS: EFFECTS OF DRIVING THROUGH POOLS ON *BUFO WOODHOUSII* (WOODHOUSE TOAD) EGG SURVIVAL. **GRAHAM**, TIM B.
 - 12 DEVELOPMENT OF NATIVE PLANT MATERIALS FOR NATIONAL PARKS: AN INTERAGENCY PLANT MATERIALS PROGRAM. **HAAS**, RUSSELL J., Sarah Wynn
 - 13 CONSERVATION AND RESTORATION RESEARCH AT THE ARBORETUM AT FLAGSTAFF. Haskins, Kristin E., SHEILA **MURRAY**

Poster Session - continued

- 14 ORAIBI WASH ARROYO CUTTING — THE ROLE OF CLIMATE VARIABILITY AND EFFECTS ON CULTURE. **HEREFORD**, RICHARD, Sharon Masek Lopez
- 15 PEREGRINE FALCON (*FALCO PEREGRINUS*) A METHOD OF USING DIGITAL RECORDING EQUIPMENT AND VIDEO CAMERAS FOR EARLY CONFIRMATION OF EYRIE LOCATIONS AND TO RELIEVE LONG OBSERVATIONS BY OBSERVERS. **HETZLER**, BRENT C.
- 16 IMPLICATIONS OF EPISODIC DEFOLIATION OF TAMARISK BY THE SALT CEDAR LEAF BEETLE ON THE COLORADO PLATEAU. **HULTINE**, KEVIN R., Pamela L. Nagler, Jason B. West, James R. Ehleringer
- 17 DOES RIPARIAN VEGETATION INFLUENCE TAMARISK ESTABLISHMENT? **JOHNSON**, TYLER D., Kolb, Tom E., Medina, Alvin L.
- 18 TREE MORTALITY FOLLOWING THE EXTREME 2002 DROUGHT AT THE PONDEROSA PINE/PINYON-JUNIPER ECOTONE IN NORTHERN ARIZONA: BIOTIC AND ABIOTIC INFLUENCES. **KOEPKE**, DAN F., Thomas E. Kolb
- 19 TASSEL-EARED SQUIRREL USE OF RESTORATION TREATED FOREST MOSAICS. **LOBERGER**, CHAD D., Catherine S. Wightman
- 20 EVALUATION OF THINNING TECHNIQUES IN A PINYON-JUNIPER ENCROACHED SHRUBLAND. **MATCHETT**, J. R., Matt Brooks, Curt Deuser, Helen Smith
- 21 A COMPARATIVE STUDY OF PLANT NICHES AT ZION NATIONAL PARK. **OTT**, JEFFREY E.
- 22 COMPARING TRAPPING METHODS FOR SAMPLING BEETLE DIVERSITY AND MONITORING EFFECTS OF OFF-ROAD VEHICLES IN SALT CREEK CANYON, CANYONLANDS NATIONAL PARK, UT. **PECH**, LOUIS L. Tim B. Graham
- 23 VARIATION IN NEAR-GROUND SOLAR RADIATION AS A FUNCTION OF TREE COVER: A PRELIMINARY ASSESSMENT ALONG A WOODLAND GRADIENT. **ROYER**, PATRICK D., David D. Breshears, Chris B. Zou, Neil S. Cobb
- 24 IDENTIFICATION AND CHARACTERIZATION OF ARIZONA HERITAGE WATERS. Springer, Abe, Lawrence Stevens, Robert Glennon, Gary Paul Nabhan, Carl Olson, Laura Monti, Everett Shock, JANET C. **LYNN**, Catherine Woodwell
- 25 A NEW COLORADO PLATEAU RIPARIAN HEALTH ASSESSMENT METHOD: THE *RAPID STREAM-RIPARIAN ASSESSMENT* (RSRA) PROTOCOL. **STACEY**, PETER B., Taylor Jones, Allison Jones
- 26 EFFECTS OF ECOLOGICAL RESTORATION TREATMENTS ON THE HOME RANGE SIZES OF TASSEL-EARED SQUIRRELS (*SCIURUS ABERTI*) WITHIN THE WILDLAND URBAN INTERFACE SURROUNDING FLAGSTAFF, ARIZONA. **STEFFEN**, NIKI, Kristen Pearson, Catherine Wightman, Chad Loberger
- 27 POTENTIAL SPREAD OF A NON-NATIVE BARK BEETLE: ECOLOGICAL AND ECONOMIC CONSEQUENCES. **WARING**, KRISTEN M., Danielle M. Reboletti, Lauren A. Mork, Richard Hofstetter, Amanda M. Garcia, Peter Z. Fulé, T.S. Davis
- 28 THE EFFECTS OF GRAZING REGIME ON THE ABUNDANCE OF NATIVE WILLOW SPECIES. **WATKINS**, SENSAL., Cynthia E. Dott, Ben D. Wolcott
- 29 CLIMATE AND PHENOLOGY DURING THE 1950S AND 2000S DROUGHTS IN THE SOUTHWESTERN U.S.A. **WEISS**, JEREMY L. Jonathan T. Overpeck
- 30 CULTURAL RESOURCES PRESERVATION USING HYDROLOGIC MONITORING AND GIS AT AZTEC RUINS NATIONAL MONUMENT, NEW MEXICO. **WHITE**, W. SCOTT, Heather J. Hormell, Colleen Filippone, Larry Martin
- 31 WESTERN BLUEBIRDS COMPENSATE FOR INFLATED ECTOPARASITE INFESTATIONS IN A RESTORATION-TREATED FOREST. **WIGHTMAN**, CATHERINE S., Maria L. Wessel
- 32 THE SECRET LIFE OF A VELVET ANT (HYMENOPTERA: MUTILLIDAE): CRYPTIC PATTERNS OF DIVERSITY ON THE COLORADO PLATEAU. **WILSON**, JOSEPH S., James P. Pitts
- 33 IS INVASIVE SPECIES ABUNDANCE AFFECTED BY GRAZING INTENSITY? **WOLCOTT**, BEN D., Cynthia E. Dott, Sensal. Watkins
- 34 TEMPORAL RESPONSES OF MULE DEER TO PONDEROSA PINE FOREST RESTORATION TREATMENTS. **YARBOROUGH**, R. FENNER, Catherine S. Wightman, Steven S. Rosenstock
- 35 EFFECTS OF TOPOGRAPHY AND WOODY PLANT CANOPY COVER ON NEAR-GROUND SOLAR RADIATION: IMPLICATIONS FOR VEGETATION GRADIENTS AND DYNAMICS ON THE COLORADO PLATEAU. **ZOU**, CHRIS B., Greg A. Barron-Gafford, David D. Breshears

Conservation, Management, and Planning

Wednesday Morning 8:00 a.m.-12:00 p.m.

BALLROOM

Moderator: Charles van Riper III, *USGS, Southwest Biological Science Center, Sonoran Desert Research Station*

- 8:00-8:20 PRACTICAL ASPECTS AND IMPLICATIONS OF SELECTING SITES FOR LONG-TERM MONITORING OF SOILS AND VEGETATION AT NATIONAL PARKS. **LAUVER**, CHRIS, Jodi Norris, Lisa Thomas and Jim DeCoster
- 8:20-8:40 MAPPING ECOLOGICAL SITES FOR LONG-TERM MONITORING IN NATIONAL PARKS. **GARMAN**, STEVEN L., Dana Witwicki and Aneth Wight
- 8:40-9:00 RESULTS AND MANAGEMENT IMPLICATIONS FROM WATER QUALITY MONITORING IN NORTHERN COLORADO PLATEAU PARKS. **THOMA**, DAVID and Dustin Perkins
- 9:00-9:20 TREE-RING SAMPLING OF HISTORIC NATIVE AMERICAN WOODEN STRUCTURES, GRAND CANYON NATIONAL PARK, AZ. **HOUGH**, IAN and Tom Windes
- 9:20-9:40 50 YEARS OF SCIENTIFIC RESEARCH PERMITTING AT GRAND CANYON NATIONAL PARK: WHAT HAVE WE LEARNED? **BENENATI**, EMMA and Diana Pennington
- 9:40-10:00 FINDING GAPS IN THE PROTECTED AREA NETWORK IN THE COLORADO PLATEAU: A CASE STUDY USING VASCULAR PLANT TAXA IN UTAH. **FERTIG**, WALTER F.
- 10:00-10:20 BREAK
- 10:20-10:40 BUILDING AGREEMENT ON AND ESTIMATING THE SUPPLY OF RESTORATION-BASED SOURCES OF SMALL DIAMETER WOOD IN NORTHERN ARIZONA. **HAMPTON**, HAYDEE, M., Steven E. Sesnie, Brett G. Dickson, Jill M. Rundall, Gary B. Snider, John D. Bailey, Thomas D. Sisk
- 10:40-11:00 DESIGN, LOCATION AND TRAFFIC VOLUME: A CONCEPTUAL MODEL OF HIGHWAY EFFECTS ON WILDLIFE. Gagon J., N. Dodd and T. **THEIMER**
- 11:00-11:20 FIELD-TO-DESKTOP: BUILDING WIRELESS CYBERINFRASTRUCTURE FOR ENVIRONMENTAL MONITORING. **YAMAMOTO**, KENJI, Yuxin He, Paul Heinrich, Alex Orange, Bill Ruggeri, Holland Wilberger and Paul Flikkema
- 11:20-11:40 THE CHALLENGE OF BUILDING NEW CITIES IN MOHAVE COUNTY WITHOUT A RENEWABLE WATER RESOURCE. **DAVIDSON**, KEVIN A.
- 11:40-12:00 REDEFINING THE WILDLAND-URBAN INTERFACE AS AN ECOLOGICAL CONCEPT. **DRUM**, RYAN G., Tom Sisk, John Prather and Greg Aplet

Tribal Lands of the Colorado Plateau: Scientific Assessment of Climate Change Impacts to Landscapes and Ecosystems

Wednesday Morning 8:00 a.m.-12:00 p.m.

FREMONT

Moderator: Diana Anderson, *Environmental Sciences, Northern Arizona University*

- 8:00-9:00 HUMAN-ENVIRONMENT INTERACTION ON THE SOUTHERN COLORADO PLATEAU DURING THE LAST TWO MILLENNIA. **DEAN**, JEFF
- 9:00-10:00 PROJECTED CLIMATE CHANGES AND THEIR POTENTIAL IMPACTS ON NATIVE AMERICAN LANDS OF THE SOUTHERN COLORADO PLATEAU. **GARFIN**, GREGG M., Rachael Novak and Jeremy Weiss
- 10:00-10:20 BREAK
- 10:20-10:40 LISTENING TO THE LAND: GEOARCHAEOLOGICAL RESEARCH ON THE NAVAJO NATION. **ANDERSON**, KIRK C.
- 10:40-11:00 IMPACTS OF CLIMATE CHANGE AND LAND USE ON THE NAVAJO NATION IN THE SOUTHWESTERN UNITED STATES. **HIZA REDSTEER**, MARGARET
- 11:00-11:20 CLIMATE CHANGE AND VARIABILITY ON THE DEFIANCE PLATEAU: IMPACTS AND THE INTERSECTIONS OF WESTERN SCIENCE AND TRADITIONAL KNOWLEDGE. **NOVAK**, RACHAEL
- 11:20-11:40 SPATIAL DISTRIBUTION OF PRECIPITATION ON THE NAVAJO NATION AND GAUGE DENSITY. **SELOVER**, NANCY J.
- 11:40-12:00 THE STATE OF STREAM FLOW MEASUREMENT, DATA QUALITY AND ADEQUACY IN THE NAVAJO NATION. **TECLE**, AREGAI, Greg Garfin, Michael Crimmins, Nancy Selover, Andrew Ellis, Diana Anderson, Neil Cobb, Paul Heinrich, Elisabeth Alden, John Leeper, Jolene Tallsalt-Robertson and Teresa Showa

Ecosystems and Communities; Aquatic Resources

Wednesday Morning 8:00 - 10:00 a.m.

MEADOWS

Moderator: John Hamill, *USGS, Southwest Biological Science Center, Grand Canyon Monitoring and Research Center*

- 8:00-8:20 COVARIANCE BETWEEN ECOSYSTEM PROCESSES AND SOIL MICROBIAL COMMUNITY STRUCTURE ALONG THREE MILLION YEARS OF ECOSYSTEM DEVELOPMENT IN NORTHERN ARIZONA. **HART**, STEPHEN C., Gregory S. Newman, Paul C. Selmants, Karen L. Adair, Egbert Schwartz, Kristin Haskins, and Andrew Kowler
- 8:20-8:40 N MINERALIZATION INCREASES MICROBIAL 15N ENRICHMENT IN INCUBATED GRASSLAND SOILS. **LAVIOLETTE**, CORINNE M., Paul Dijkstra, Stephen C. Hart, Egbert Schwartz, Richard R. Doucett and Bruce A. Hungate

Ecosystems and Communities: Aquatic Resources - continued

- 8:40-9:00 DIFFERENT COTTONWOOD GENOTYPES SUPPORT DIFFERENT ABOVEGROUND FUNGAL COMMUNITIES. **LAMIT**, L.J., C.A. Gehring, S.C. Wooley, C.M. Stultz, N. Lojewski, R.L. Lindroth and T.G. Whitham
- 9:00-9:20 DIFFERENT AGED STANDS INCREASE LANDSCAPE HETEROGENEITY AND SUPPORT GREATER BIODIVERSITY. **HAGENUER**, LAURA E. and Thomas G. Whitham
- 9:20-9:40 COMMUNITY STRUCTURE OF FLIES IN THE GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT: DIFFERENCES IN OCCURRENCE AND ABUNDANCE AT TWO SITES, SPRING 2000 AND SPRING 2005. **GRAHAM**, TIM B. and Sarah J. Foltz
- 9:40-10:00 ALLOCHTHONOUS ORGANIC MATTER FROM TRIBUTARY FLOODS DOMINATES ORGANIC MATTER INPUTS OF THE COLORADO RIVER IN GRAND CANYON. **KENNEDY**, THEODORE A., Emma Rosi-Marshall, Robert O. Hall Jr., Wyatt Cross, Barbara Ralston
- 10:00-10:20 BREAK

Using Native Plants in Ecological Restoration

Wednesday Morning 8:00 - 10:00 a.m.

AGASSIZ

Moderator: Janet Lynn, *Ecological Monitoring & Assessment Program & Foundation, Northern Arizona University*

- 8:00-8:20 A SYSTEMATIC REVIEW OF SPECIES SELECTION AND TREATMENT EFFECTIVENESS FOR REVEGETATION IN THE MOJAVE DESERT, USA. **ABELLA**, SCOTT R. and Alice C. Newton
- 8:20-8:40 SPECIES SELECTION AND THE OUTCOME OF A 28-SPECIES REVEGETATION SEEDING ON A SONORAN DESERT BURN. **GUNN**, JOHN, Scott R. Abella, Mark L. Daniels, Judith D. Springer and Susan E. Nyoka
- 8:40-9:00 A REGIONAL PERSPECTIVE ON REHABILITATING BURNED DESERT TORTOISE HABITAT IN THE MOJAVE DESERT. **SCOLES**, SARA, Lesley DeFalco, Kathleen Harcksen, Christina Lund, Karen Prentice, Aaron Wilkerson, Todd Esque
- 9:00-9:20 AN OVERVIEW OF GYPSIFEROUS SOILS RESEARCH AND RESTORATION AT LAKE MEAD NATIONAL RECREATION AREA. **NEWTON**, A.C. and E. Cayenne Engel
- 9:20-9:40 POST FIRE REFORESTATION EFFORTS ON LANDS OF WHITE MOUNTAIN APACHE TRIBE. **KESSAY**, DANIEL
- 9:40-10:00 TO SEED OR NOT TO SEED? DISCUSSION ON RECENT WHITE MOUNTAIN APACHE TRIBAL BAER REVEGETATION PROJECTS. **STUEVER**, MARY
- 10:00-10:20 BREAK

Native Plant Production and Seed Increase I

Wednesday Morning 10:20 a.m.- 12:00 p.m.

AGASSIZ

Moderator: Janet Lynn, *Ecological Monitoring & Assessment Program & Foundation, Northern Arizona University*

- 10:20-11:20 FACTORS TO CONSIDER IN THE DEVELOPMENT AND MANAGEMENT OF REGIONAL NATIVE PLANT PROGRAMS AND NATIVE PLANT PRODUCTION FROM SEED COLLECTION TO COMMERCIAL PRODUCTION. **MONSEN**, STEPHEN B. and Kelly Memmot
- 11:20-11:40 NATIVE PLANT MATERIALS AND RESTORATION TECHNOLOGY FOR THE GREAT BASIN. **JENSEN**, SCOTT and Nancy Shaw
- 11:40-12:00 BUREAU OF LAND MANAGEMENT NATIVE SEED AND PLANT PROGRAM AND THE COLORADO PLATEAU. **LAMBERT**, SCOTT M.

Drought and Climate

Wednesday Afternoon 1:00-4:40 p.m.

BALLROOM

Moderator: Ken Cole, *USGS, Southwest Biological Science Center, Colorado Plateau Research Station*

- 1:00-1:20 CLIMATIC CHANGE TREATMENTS ALTER SOIL CO₂, CH₄, & N₂O FLUXES IN MULTIPLE ECOSYSTEMS. **BROWN**, JAMIE R., Paul Dijkstra and Bruce A. Hungate
- 1:20-1:40 RUINS PRESERVATION STRATEGIES AT FLAGSTAFF AREA NATIONAL MONUMENTS: CONTENDING WITH FUTURE CLIMATE CHANGE. **STARK**, J.T., Lisa Baldwin, Jessica Bland and Walter Gosart
- 1:40-2:00 LAND SURFACE ALBEDO CHANGES OVER A FIRE CHRONOSEQUENCE IN PONDEROSA PINE FORESTS: IMPLICATIONS FOR CLIMATIC FEEDBACKS. **JONES**, KYLE, Isaac Bickford, Bruce Hungate and George Koch
- 2:00-2:20 A PALEOCLIMATIC RECORD 2600 TO 950 CAL YRS B.P. FROM LITTLE GREEN VALLEY, CENTRAL ARIZONA. **SMITH**, SUSAN J., R. Scott Anderson and Sarah Herr
- 2:20-2:40 IMPACT OF THE NORTHERN ANNULAR MODE ON COOL SEASON CLIMATE PATTERNS IN THE SOUTHWEST. **MCAFEE**, STEPHANIE and Joellen Russell
- 2:40-3:00 BREAK
- 3:00-3:20 PATTERNS OF DROUGHT INDUCED TREE MORTALITY IN PINYON-JUNIPER WOODLANDS. **CLIFFORD**, MICHAEL J., Neil S. Cobb and Paulette L. Ford
- 3:20-3:40 VEGETATION CHARACTERISTICS UNDER THREE TREE TYPES WITHIN PINYON-JUNIPER WOODLANDS EFFECTED BY DROUGHT RELATED MORTALITY. **VESPI**, JESSICA A., Michael J. Clifford and Neil S. Cobb
- 3:40-4:00 THE IMPACT OF PINYON MORTALITY ON GROUND-DWELLING ARTHROPODS. **DELPH**, ROBERT J., Michael J. Clifford, Neil S. Cobb and Paulette Ford
- 4:00-4:20 CHANGES IN PRECIPITATION AND RUNOFF IN THE CHEVELON CREEK WATERSHED OF ARIZONA. **HOENIG**, MICHAEL and Aregai Teclé
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Cave Research in the Western United States

Wednesday Afternoon 1:00-4:40 p.m.

FREMONT

Moderator: J. Judson Wynne, *USGS Southwest Biological Science Center, Colorado Plateau Research Station, Northern Arizona University*

- 1:00-1:20 DIFFERENTIATING KARSTS FROM PSEUDOKARSTS IN THE AMERICAN SOUTHWEST. **HALLIDAY**, WILLIAM R.
- 1:20-1:40 FOSSIL SALAMANDERS AND THE CAVE PALEONTOLOGY OF SEQUOIA NATIONAL PARK CAVES. **SCHAAF**, LISA N, Jim I Mead and Joel Despain
- 1:40-2:00 A COMPARISON OF CAVE-DWELLING INVERTEBRATE COMMUNITIES FROM THE NORTH RIM AND THE INTERIOR GRAND CANYON. **WYNNE**, J. JUDSON
- 2:00-2:20 VERTEBRATE SPECIES IN DESERT CAVES AND MINES – A COMPARISON BETWEEN THE CHIHUAHUAN AND SONORAN DESERTS. **STRONG**, THOMAS R.
- 2:20-2:40 PRELIMINARY RESULTS OF A CAVE BIOINVENTORY AT GREAT BASIN NATIONAL PARK. **TAYLOR**, STEVEN J., Jean K. Krejca and Michael E. Slay
- 2:40-3:00 **BREAK**
- 3:00-3:20 ASSESSING BIOLOGICAL RESOURCES OF CAVES IN LAVA BEDS NATIONAL MONUMENT, CALIFORNIA. **TAYLOR**, STEVEN J., Jean K. Krejca, and JoAnn Jacoby
- 3:20-3:40 UPDATE ON THE SYSTEMATIC INVENTORY AND SURVEY OF THE CAVES IN GRAND CANYON – PARASHANT NATIONAL MONUMENT, ARIZONA. **VOYLES**, KYLE D. and J. Judson Wynne
- 3:40-4:00 INEXPENSIVE LINEAMENT ANALYSIS FOR DISCOVERING INGRESS NEXUS (ILADIN). **MCDONOUGH**, FRANK
- 4:00-4:20 THERMAL BEHAVIOR OF SOUTHWESTERN U.S. CAVES AND PIT CRATERS ON ARSIA MONS, MARS. **WYNNE**, J. JUDSON, Glen E. Cushing, Timothy N. Titus, Charles A. Drost, Rickard S. Toomey III, Murzy Jhabvala, Penelope J. Boston, Knutt Peterson and Russell Harter
- 4:20-4:40 DIFFERENTIATING SKYLIGHTS OF INTERPLANETARY LAVA TUBE CAVES FROM NON-TARGET SITES FOR EXPLORATION. **WYNNE**, J. JUDSON and William R. Halliday

Restoration and Preservation

Wednesday Afternoon 1:00-5:00 p.m.

MEADOWS

Moderator: Gary Deason, *Center for Sustainable Environments, Northern Arizona University*

- 1:00-1:20 RESTORATION ECOLOGY IN THE AGE OF GENETIC INFORMATION: USING GENETIC TOOLS TO GUIDE RESTORATION SUCCESS. **ALLAN**, GERARD J., Randy K. Bangert, Sharon M. Ferrier and Thomas G. Whitham
- 1:20-1:40 TESTING REVEGETATION METHODS FOLLOWING EXOTIC GRASS REMOVAL TO IMPROVE RESTORATION PLANNING AT ZION NATIONAL PARK. **DELA CRUZ**, MICHELLE P., Cheryl Decker, Ron Hiebert and Tom Sisk
- 1:40-2:00 REVISITING TRENDS IN VEGETATION RECOVERY FOLLOWING PROTECTION FROM GRAZING, CHACO CULTURE NATIONAL HISTORIC PARK (CCNHP). **FLOYD**, M. LISA, David D. Hanna, Thomas L. Fleischner and Brad Shattuck
- 2:00-2:20 RIPARIAN VEGETATION RESPONSES TO UNGULATE GRAZING IN SEMI-PERMANET WETLANDS: THE SCIENCE BEHIND CURRENT GRAZING MANAGEMENT IN NORTHERN ARIZONA. **VESPI**, JESSICA A., Thomas Sisk, Richard Miller, Mike Hanneman and Jacqueline Vaughn
- 2:20-2:40 USING A RAPID FUNCTIONAL CONDITION ASSESSMENT PROTOCOL (RSRA) TO HELP ENCOURAGE COMMUNITY INVOLVEMENT IN THE CONSERVATION AND RESTORATION OF STREAM-RIPARIAN ECOSYSTEMS IN THE AMERICAN SOUTHWEST. **STACEY**, PETER B., Allison Jones, James E. Catlin and Mary O'Brien
- 2:40-3:00 **BREAK**
- 3:00-3:20 USING ORAL HISTORIES TO DOCUMENT ENVIRONMENTAL CHANGE IN NORTHERN ARIZONA. **FRIEDERICI**, PETER G., Michele A. James and George W. Lubick
- 3:20-3:40 STATUS OF TWO G2 ENDEMIC PLANTS ON THE KAIBAB PLATEAU, ARIZONA. **SPENCE**, JOHN R.
- 3:40-4:00 GENETIC DIVERSITY OF HISTORIC APPLE TREES ON THE COLORADO PLATEAU AND IMPLICATIONS FOR THEIR PRESERVATION. **ROUTSON**, KANIN and Gary Paul Nabhan
- 4:00-4:20 IDENTIFICATION AND CHARACTERIZATION OF ARIZONA HERITAGE WATERS. Springer, Abe, Lawrence Stevens, Robert Glennon, Gary Paul Nabhan, Carl Olson, Laura Monti, Everett Shock, Janet C. Lynn, CATHERINE **WOODWELL**
- 4:20-4:40 WILDERNESS AREAS AND FIRE RESTORATION: PUBLIC PERCEPTIONS AND PREFERENCES FOR WILDERNESS MANAGEMENT. **OSTERGREN**, DAVID and Megan Triplett
- 4:40-5:00 STEALING OR "JUST LOOKING:" CONCLUSIONS ON VISITOR AND RESOURCE INCIDENCE AT PETRIFIED FOREST NATIONAL PARK, ARIZONA. **HOSPODARSKY**, DENVER, Martha E. Lee and Kathleen McBride

Native Plant Production and Seed Increase II

Wednesday Afternoon 1:00-5:00 p.m.

AGASSIZ

Moderator: Janet Lynn, *Ecological Monitoring & Assessment Program & Foundation, Northern Arizona University*

- 1:00-1:20 THE NORTHERN ARIZONA NATIVE SEED ALLIANCE: WORKING TOWARDS A SUSTAINABLE MARKET. **LYNN**, JANET A.
- 1:20-1:40 THE UNCOMPAHGRE PLATEAU PROJECT – RESTORATION AND COLLABORATION IN WESTERN COLORADO. **MOTLEY**, PAM
- 1:40-2:00 TREES FOR THE RIM. **BLAKE**, BRAD
- 2:00-2:40 ROUNDTABLE DISCUSSION
- 2:40-3:00 BREAK
- 3:00-5:00 COLORADO PLATEAU NATIVE PLANT INITIATIVE/NORTHERN ARIZONA NATIVE SEED ALLIANCE MEETING

Social at the Museum of Northern Arizona (handout available with map & directions)

Wednesday Evening 7:00-9:00 p.m.

Forests and Fire Ecology

Thursday Morning 8:00 a.m.-12:00 p.m.

BALLROOM

Moderator: Bill Block, *US Forest Service, Rocky Mountain Research Station, Northern Arizona University*

- 8:00-8:20 FEMALE ELK (*CERVUS ELAPHUS*) HABITAT USE AFTER THE CATASTROPHIC RODEO CHEDESKI FIRE IN NORTHEAST ARIZONA. **BRISTOW**, KIRBY D. and Stan C. Cunningham
- 8:20-8:40 BRINS FIRE: ONE YEAR POST WILDFIRE, AQUATIC COMMUNITY RESPONSE IN OAK CREEK, AZ. **BERN**, MITCHELL D., Emma L. Benenati and Joseph P. Shannon
- 8:40-9:00 SUSTAINED EFFECT OF A WILDFIRE ON STREAM BENTHOS; KANAB CREEK, GRAND CANYON NATIONAL PARK. **BENENATI**, EMMA L., Nichols Ballew, Talise Dow and Joseph Shannon
- 9:00-9:20 RESPONSE OF HERPETOFAUNA TO PONDEROSA PINE FOREST TREATMENTS PRESCRIBED BY THE NATIONAL FIRE AND FIRE SURROGATE STUDY. **BLOCK**, JEAN L. and Kiisa Nishikawa

Forests and Fire Ecology - continued

- 9:20-9:40 TASSEL-EARED SQUIRREL RESPONSES TO FOREST TREATMENTS: MOSAICS MATTER. **WIGHTMAN**, CATHERINE S. and Steven S. Rosenstock
- 9:40-10:00 FIRE AND FIRE SURROGATE TREATMENT IMPACTS ON SOIL MOISTURE CONDITION IN SOUTHWESTERN PONDEROSA PINE FORESTS. **POFF**, BORIS, Daniel G. Neary and Aregai Teclé
- 10:00-10:20 BREAK
- 10:20-10:40 ANALYSIS OF CURRENT AND HISTORICAL SURFACE FLOWS AND HYDROLOGIC RESPONSE TO RESTORATION TREATMENTS IN THE UPPER LAKE MARY WATERSHED, ARIZONA. **MILLER**, CORY A., David G. Brewer and W. Wallace Covington
- 10:40-11:00 THE EFFECTS OF A RESTORATION THINNING ON CARBON STOCKS IN A NORTHERN ARIZONA PONDEROSA PINE FOREST. **FINKRAL**, ALEX J. and Alexander M. Evans
- 11:00-11:20 THINNING REDUCES CARBON DIOXIDE, BUT NOT METHANE, FLUXES IN SOUTHWEST PONDEROSA PINE FOREST SOIL. **SULLIVAN**, B. W., Thomas E. Kolb and Stephen C. Hart
- 11:20-11:40 50 YEARS OF CHANGE IN FOREST UNDERSTORY VEGETATION AT BRYCE CANYON NATIONAL PARK. Ironside, Kirsten E., Dana H. Ikeda and JOHN R. **SPENCE**
- 11:40-12:00 A 50-YEAR FOREST SUCCESSION STUDY AT BRYCE CANYON NATIONAL PARK, UTAH. **IKEDA**, DANA H. and Kirsten E. Ironside

Animal Ecology II

Thursday Morning 9:00 a.m.-12:00 p.m.

FREMONT

Moderator: Charles Drost, *USGS, Southwest Biological Science Center, Colorado Plateau Research Station*

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- 9:00-9:20 ASPECTS OF THE ECOLOGY OF SONORA MUD TURTLES AT MONTEZUMA WELL. **LOVICH**, JEFF, Charles Drost, Dennis Casper and A.J. Monatesti
- 9:20-9:40 MILKSNAKES AT PETRIFIED FOREST NATIONAL PARK: IMPLICATIONS FOR MONITORING RARE VERTEBRATES. **NOWAK**, ERIKA M.
- 9:40-10:00 ROOSTS OF ALLEN'S LAPPET-BROWED BAT IN NORTHERN ARIZONA. **SOLVESKY**, B.G. and Carol L. Chambers
- 10:00-10:20 BREAK
- 10:20-10:40 MULE DEER ANTLER GROWTH AND HUNTING MANAGEMENT ON THE NORTH KAIBAB, ARIZONA. **WAKELING**, BRIAN F.

Animal Ecology II - continued

- 10:40-11:00 SCENT-STATION SURVEYS: INDEXING RELATIVE ABUNDANCE OF MESOPREDATORS IN ARIZONA. **MCKINNEY**, TED and Thorry W. Smith
- 11:00-11:20 MOUNTAIN LION DEPREDATION HARVESTS IN ARIZONA. **MCKINNEY**, TED and Brian F. Wakeling
- 11:20-11:40 LIONS ON THE COLORADO PLATEAU: RESEARCH PROGRAM HIGHLIGHTS FROM 2003-2007. **HART**, JAN, Eric York, David J. Mattson, Terrence R. Arundel, RV Ward, Emily A. Garding, Elaine F. Leslie, Diane Miller, Mike Miller, Paul Whitefield, Claire Crow, Brent Hetzler and David Worthington
- 11:40-12:00 MANAGING FOR HUMAN SAFETY IN MOUNTAIN LION RANGE. **MATTSON**, DAVID, Kenneth Logan and Linda Sweanor

Invasives

Thursday Morning 9:00 a.m.-12:00 p.m.

MEADOWS

Moderator: Mark Miller, *USGS, Southwest Biological Science Center, Colorado Plateau Research Station*

- 9:00-9:20 GLEN CANYON NRA RESPONSE TO WESTERN QUAGGA MUSSELS. **ANDERSON**, MARK and Jesse Granet
- 9:20-9:40 HABITAT RELATIONS AND EFFECTS OF INVASIVE EXOTIC PLANTS ON THE FEDERALLY ENDANGERED SHIVWITS MILK-VETCH (*ASTRAGALUS AMPULLARIOIDES*), WASHINGTON COUNTY, UTAH. Miller, Mark E., REBECCA K. **MANN**, Harland Goldstein and James D. Yount
- 9:40-10:00 PREDICTING ALIEN PLANT DISTRIBUTIONS IN NATURAL LANDSCAPES FOLLOWING DISTURBANCE REMOVAL. **DOW**, S.T., R. D. Hiebert and K. McEachern
- 10:00-10:20 BREAK
- 10:20-10:40 CONTROLLING BROME GRASSES IN ZION CANYON USING IMAZAPIC (PLATEAU®) HERBICIDE. **MATCHETT**, J. R., Aviva O'Neill, Matt Brooks, Cheryl Decker, and Jennifer Vollmer
- 10:40-11:00 EFFECTIVENESS OF NATIVE SEEDING AND LANDSCAPE SCALE HERBICIDE APPLICATIONS FOR CONTROLLING CHEATGRASS IN ZION NP. **THODE**, ANDREA and Karen L. Weber
- 11:00-11:20 WHY SALT CEDAR MATTERS AS BIRD HABITAT IN THE SOUTHWEST. **SOGGE**, MARK K., Susan J. Sferra and Eben H. Paxton
- 11:20-11:40 INVASION BY EXOTIC PLANT SPECIES OF NORTHERN ARIZONA RIPARIAN AREAS AND POSSIBLE SOLUTIONS. **ALDEN**, ELISABETH A and Aregai Teclé
- 11:40-12:00 TAMARIX: PASSENGER OR DRIVER OF ECOSYSTEM CHANGE IN RIPARIAN AREAS OF THE SOUTHWEST? **JOHNSON**, TYLER D.

Restoration and Conservation at the Landscape Scale: The Kane 2 Mile Ranch Project

Thursday Morning 9:00 a.m.-12:00 p.m.

AGASSIZ

Moderator: Tom Sisk, *Center for Environmental Sciences and Merriam-Powell Center for Environmental Research, Northern Arizona University*

- 8:55-9:00 INTRODUCTION, Tom Sisk
- 9:00-9:20 IMPLEMENTING AN ADAPTIVE, MULTI-SCALE RESTORATION PROGRAM FOR THE KANE AND TWO-MILE RANCHES IN NORTHERN ARIZONA. **AUMACK**, ETHAN
- 9:20-9:40 THE WARM FIRE'S EFFECTS ON UNDERSTORY VEGETATION, PONDEROSA PINE CROWN MORTALITY, AND FUELS: IMPLICATIONS FOR POST-FIRE MANAGEMENT. **MCMASTER**, MELISSA and Andrea Thode
- 9:40-10:00 MODELING CHEATGRASS OCCURRENCE TO TARGET RESTORATION PRIORITIES ON THE KANE AND TWO-MILE RANCHES, NORTHERN ARIZONA. **ALBANO**, CHRISTINE, Brett G. Dickson, Ethan Aumack, Thomas D. Sisk and Steve Fluck
- 10:00-10:20 BREAK
- 10:20-10:40 MULE DEER HABITAT IMPROVEMENT ON THE KAIBAB NATIONAL FOREST. **ROGERS**, ANDI S., Ron Sieg and Todd Buck
- 10:40-11:00 PUBLIC RANGELAND RESTORATION ON THE PLATEAU: MAKING INFORMED DECISIONS IN A CONFLICTED LANDSCAPE. **BERNSTEIN**, ELI J., Thomas Sisk, Tim Crews, Steve Rosenstock, David Schlosberg and Ethan Aumack
- 11:00-11:20 RESEARCH AND MONITORING TO GUIDE MANAGEMENT: K2M AS A CASE STUDY FOR PUBLIC LANDS STEWARDSHIP. **SISK**, THOMAS D.