
Eighth Biennial Conference of Research on the Colorado Plateau

du Bois Center, Northern Arizona University

7 - 10 November 2005

Program and Abstracts of Presented Papers and Posters
(Version 2.0)



Sponsored by:
USGS Southwest Biological Science Center
NAU Center for Sustainable Environments
NAU Merriam-Powell Center for Environmental Research
Colorado Plateau Cooperative Ecosystems Studies Unit
Bureau of Land Management
National Park Service
Diablo Trust

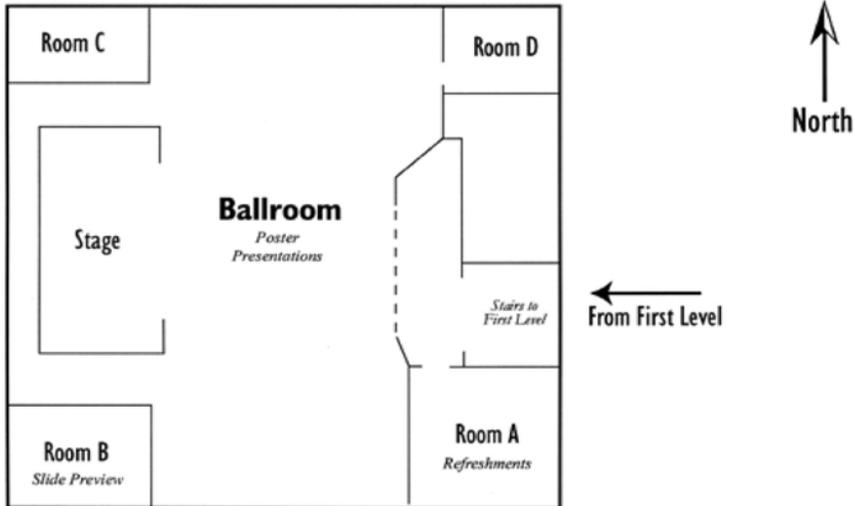


Colorado Plateau Cooperative Ecosystem Studies Unit

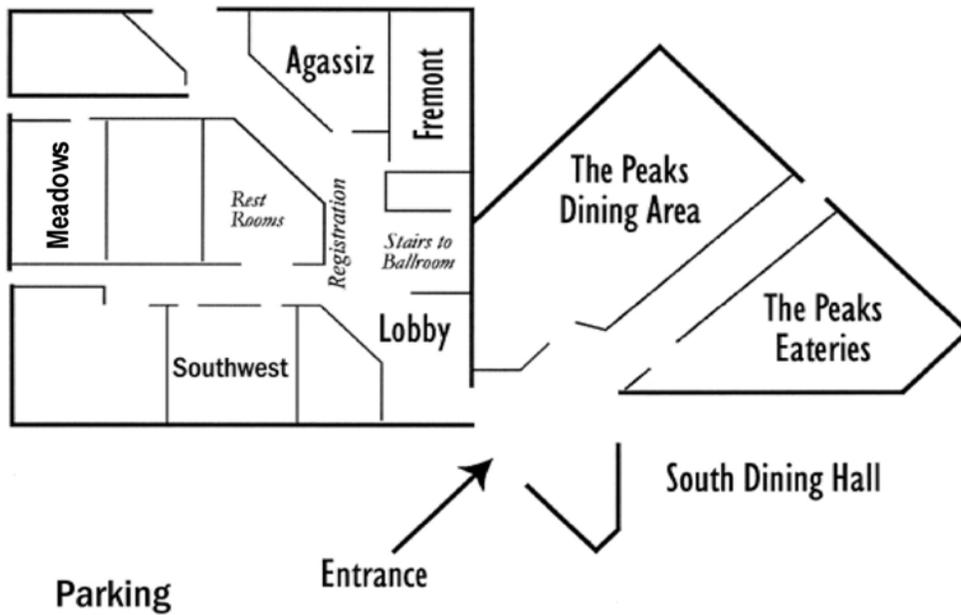


duBois Conference Center Floor Plan

Second Level



First Level



Conference Coordinators

Conference Chair	Mark Sogge
Program Chair	Mark Sogge
Registration Manager	Julye Evans and Marie Saul
Food and Promotion	Julye Evans
Audio-Visual	Kristina Ecton
Information Technology	Ryan Stevens
Poster Session Chair	Terry Arundel

Session Developers

Cave Resource Management	J. Judson Wynne
Colorado Plateau Cooperative Ecosystems Studies Unit	Rod Parnell and Ron Hiebert
Social/Meeting Sponsor	
Conservation Science, Policy and Practice	Paul Beier
Creating Successful Partnerships for RangeLand	Michele James and
Conservation	Karan English
Demystifying Mycorrhizae	Bala Chaudhary
Ecological Networks and Long-term Research on the	Neil Cobb
Colorado Plateau	
Ecology and Management of Biological Soil Crusts	Matt Bowker
Ecology, Management and Restoration of Riparian	Gery Allen
Habitats	
Ecosystem Responses to Fuel Management Treatments	John Bailey
in Ponderosa Pine Forests	
Fossil Creek: An opportunity to Restore Diverse Native	Michele James and Allen Haden
Fishery and Study the Effects of Return of Full Flows	
Integrating Science with Resource Management Through	Neil Cobb and Tom Sisk
Collaborative Approaches and Adaptive Modeling	
Systems	
Invasive Plant Ecology	Chris McGlone
Past, Present, and Future Climate Variation and	Neil Cobb
Ecological Impacts	
Southwest Regional GAP Analysis: the Colorado Plateau	Kathryn Thomas
Status of the Colorado River Ecosystem	Ted Melis

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. – 4:00 p.m.	Monday, November 7th
7:30 a.m. – 4:00 p.m.	Tuesday, November 8th
7:30 a.m. – 4:00 p.m.	Wednesday, November 9th
7:30 a.m. – 12:00 p.m.	Thursday, November 10th

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).

Email service will be available in Room B of the du Bois Conference Center Ballroom.

Dining: Meals are available at several locations at the du Bois Conference Center or at nearby off-campus restaurants. Please see the Flagstaff Travel Guide available at the registration desk for a list of eating establishments (p. 42) and a city map (back inside cover).

Parking: Follow the posted signs to Biennial Conference parking. Conference participants can use Lots 40 and 66 (north and northeast, respectively, of the duBois Center. Refer to the NAU Campus map in the registration folder. 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.

Submissions for the Proceedings of the 8th Biennial Conference of Research on the Colorado Plateau

We invite interested individuals to publish research presented at the 8th Biennial conference of Research on the Colorado Plateau in the 8th 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 seven 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://www.usgs.nau.edu/conf2005/authorsguide.htm>

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: 06 January 2006

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

7th volume of the Biennial Conference Proceedings Series

A proceedings of the 7th Biennial Conference of Research on the Colorado Plateau has been published as a book, entitled "The Colorado Plateau II", by The University of Arizona Press. UA Press will be present and taking orders for the book at the 8th Biennial Conference.

CONFERENCE SCHEDULE

Rooms				
Time	<i>BALLROOM</i>	<i>AGASSIZ</i>	<i>FREMONT</i>	<i>SOUTHWEST</i>
<i>Tuesday Morning</i>	OFFICIAL INTRODUCTION Fire Treatments and Restoration	Integrating Science with Resources Management Through Collaborative Approaches and Adaptive Modeling Systems	Southwestern Regional GAP Analysis: The Colorado Plateau	
<i>Tuesday Afternoon</i>	Ecology, Management and Restoration of Riparian Habitats	Human Dimensions in Resource Management	Ecosystems Responses to Fuel Management Treatments in Ponderosa Pine Forests	
<i>Tuesday Evening</i>	Poster Session			
<i>Wednesday Morning</i>	Conservation Science, Policy and Practice I	Demystifying Mycorrhizae Ecology and Management of Biological Soil Crusts	Cave Resource Management	Modeling and Classification Resource History and Assessment
<i>Wednesday Afternoon</i>	Conservation Science, Policy and Practice II	Ecological Effects of Past, Present and Future Climate Change on Southwestern Forests and Woodlands	Cave Resource Management	Animal Ecology I Vegetation Ecology
<i>Thursday Morning</i>	Invasive Plant Ecology	Ecological Networks and Long-term Research on the Colorado Plateau	Fossil Creek: An Opportunity to Restore Diverse Native Fishery and Study the Effects of Return of Full Flows	
<i>Thursday Afternoon</i>	Status of the Colorado River Ecosystem	Animal Ecology II	Creating Successful Partnerships for Rangeland Conservation	

PROGRAM SYNOPSIS

MONDAY, 7 November 2005

Side-Meetings

- 9:00 – 1:00 Ecological Networks
1:00 – 2:30 NBII (National Biological Information Infrastructure) Southwest Information Node
1:00 – 5:00 Restoration Research Opportunities at Grand Staircase-Escalante National Monument
2:00 – 5:00 Restoration of Ponderosa Pine Ecosystems in Wilderness Areas and National Park Service Backcountry
2:45 – 5:00 National Park Service All-taxa Biodiversity Inventory
7:00 – 9:00 Colorado Plateau Cooperative Ecosystem Studies Unit Mixer

TUESDAY, 8 November 2005

- 8:30 – 9:00 **Official Introduction**
9:00 – 11:20 Integrating Science with Resource Management through Collaborative Approaches and Adaptive Modeling Systems (*Special Session*)
9:00 – 12:00 Fire treatment and Restoration (*General Session*)
9:00 – 11:20 Southwest Regional GAP Analysis: the Colorado Plateau (*General Session*)
12:00 – 1:00 Lunch
1:00 – 3:00 Ecology, Management and Restoration of Riparian Habitats (*Special Session*)
1:30 – 3:00 Ecosystem Responses to Fuel Management Treatments in Ponderosa Pine Forests (*Special Session*)
1:00 – 4:20 Human Dimensions in Resource Management (*General Session*)
7:00 – 9:00 **Poster Session**

WEDNESDAY, 9 November 2005

- 8:00 – 9:30 Demystifying Miccorrhizae (*Special Session*)
8:00 – 12:00 Conservation Science, Policy and Practice I (*Special Session*)
8:00 – 9:40 Modeling and Classification (*General Session*)
8:00 – 12:00 Cave Resource Management I (*Special Session*)
9:30 – 11:50 Ecology and Management of Biological Soil Crusts (*Special Session*)
10:20 – 12:00 Resource History and Assessment (*General Session*)

WEDNESDAY, 9 November 2005 - continued

- 12:00 – 1:00 Lunch
- 1:00 – 3:00 Animal Ecology I (*General Session*)
- 1:00 – 3:00 Cave Resource Management II (*Special Session*)
- 1:00 – 5:00 Conservation Science, Policy and Practice II (*Special Session*)
- 1:00 – 4:20 Ecological Effects of Past, Present and Future Climate Variation on Southwest Forests and Woodlands (*Special Session*)
- 3:00– 5:00 Colorado Plateau Cave Resources Managers Meeting
- 3:20 – 5:00 Vegetation Ecology (*General Session*)
- 7:00 – 9:00 Mixer/ Social at the Museum of Northern Arizona

THURSDAY, 10 November 2005

- 8:20– 12:00 Ecological Networks and Long-term Research on the Colorado Plateau (*Special Session*)
- 8:20 – 11:20 Fossil Creek: An Opportunity to Restore Diverse Native Fishery and Study the Effects of Return of Full Flows (*Special Session*)
- 8:20 – 11:20 Invasive Plant Ecology (*Special Session*)
- 8:00 – 10:00 Colorado Plateau Cave Resources Managers Meeting
- 12:00 – 1:00 Lunch
- 1:00– 4:20 Animal Ecology II (*General Session*)
- 1:00 – 3:00 Creating Successful Partnerships for Rangeland Conservation (*Special Session – Panel Discussion*)
- 1:00 – 4:20 Status of the Colorado River Ecosystem (*Special Session*)

SIDE MEETINGS – Monday November 7th

- 9:00 – 1:00 Ecological Networks
SOUTHWEST ROOM
Organizer: Neil Cobb
- 1:00 – 2:30 NBII (National Biological Information Infrastructure) Southwest
Information Node
SOUTHWEST ROOM
Organizer: Neil Cobb
- 1:00 – 5:00 Restoration Research Opportunities at Grand Staircase-Escalante
National Monument
HUMPHREYS ROOM
Organizer: Marietta Eaton
- 2:00 – 5:00 Restoration of Ponderosa Pine Ecosystems in Wilderness Areas and
National Park Service Backcountry
AGASSIZ ROOM
Organizer: David Ostergren
- 2:45 – 5:00 National Park Service All-taxa Biodiversity Inventory
SOUTHWEST ROOM
Organizer: Neil Cobb
- 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: Rod Parnell and Ron Hiebert

DETAILED SCHEDULE

Official Welcome & Introduction

Tuesday Morning 8:30-9:00 a.m.
BALLROOM

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| 8:30-8:35 | MARK SOGGE, <i>Supervisory Ecologist, USGS Southwest Biological Science Center</i> – Conference Chair Welcome |
| 8:35-8:45 | LAURA HUENNEKE, <i>Dean, College of Engineering and Natural Sciences</i> – Northern Arizona University Welcome |
| 8:45-8:55 | Dennis Fenn, <i>Center Director, Southwest Biological Science Center</i> – USGS Welcome |

Fire Treatment and Restoration

Tuesday Morning 9:00 a.m.-12:00 p.m.
BALLROOM

Moderator: Matt Johnson, *USGS Southwest Biological Science Center, Colorado Plateau Research Station, Northern Arizona University*

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| 9:00-9:20 | RESTORATION OF SOUTHWESTERN PONDEROSA PINE FORESTS: IMPLICATIONS AND OPPORTUNITIES FOR WILDLIFE. WIGHTMAN , CATHERINE S., Steven S. Rosenstock |
| 9:20-9:40 | LANDSCAPE-SCALE CHANGES IN CANOPY FUELS AND POTENTIAL FIRE BEHAVIOR FOLLOWING PONDEROSA PINE RESTORATION TREATMENTS. ROCCAFORTE , JOHN PAUL, Fulé, Peter Z. Covington, W. Wallace |
| 9:40-10:00 | PRE-FIRE TREATMENT EFFECTS AND POST-FIRE FOREST DYNAMICS ON WHITE MOUNTAIN APACHE TRIBE LANDS WITHIN THE RODEO-CHEDISKI BURN AREA, ARIZONA. STROM , BARBARA A., Peter Fule |
| 10:00-10:20 | BREAK |
| 10:20-10:40 | EVALUATE TREATMENTS TO REDUCE HAZARDOUS FINE FUELS CREATED BY NON-NATIVE PLANTS IN ZION CANYON. DECKER , CHERYL, Matthew Brooks, Curt Deuser, J.R. Matchett, Aviva O'Neil and Jennifer Vollmer |
| 10:40-11:00 | EFFECTS OF PRESCRIBED FIRE ON BARK BEETLE COLONIZATION IN SOUTHWEST PONDEROSA PINE FORESTS. BREECE , CAROLYN R., Thomas E. Kolb, Karen M. Clancy, Joel D. McMillin, Brett G. Dickson |
| 11:00-11:20 | EVALUATING POSTFIRE SEEDING TREATMENTS TO SUPPRESS CHEATGRASS (<i>BROMUS TECTORUM</i>) IN PONDEROSAL PINE FORESTS ON THE SHIVWITS PLATEAU. LAIR , BRIDGET, Matt Brooks, Curt Deuser |
| 11:20-11:40 | RESPONSE OF FUELBED CHARACTERISTICS TO RESTORATION TREATMENTS IN PIÑON-JUNIPER-ENCROACHED SHRUBLANDS ON THE SHIVWITS PLATEAU, ARIZONA. SMITH , HELEN Y., Sharon Hood, Matt Brooks, JR Matchett, Curt Deuser |
| 11:40-12:00 | FIVE YEARS OF VEGETATION CHANGE FOLLOWING HIGH-SEVERITY FIRE AND FIRE-FIGHTING ACTIVITIES IN GRAND CANYON NATIONAL PARK. CRAWFORD , JULIE, Niki Juarez-Cummings |

Integrating Science with Resource Management Through Collaborative Approaches and Adaptive Modeling Systems

Tuesday Morning 9:00-11:20 a.m.

AGASSIZ

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

- 9:00-9:20 PROJECT FRAME (FRAMING RESEARCH FOR ADAPTIVE MANAGEMENT OF ECOSYSTEMS): USING COLLABORATIVE MODELING APPROACHES TO LINK SCIENCE TO RESOURCE MANAGEMENT NEEDS. **TURNER**, CHRISTINE, Richard Zirbes, George Leavesley
- 9:20-9:40 SPATIALLY EXPLICIT MODELING OF COLORADO PLATEAU LANDSCAPES FROM CONCEPTUAL MODELS TO A COMPUTER SYSTEM. **CHEW**, JIMMIE D., Kirk Moeller, Chris Stalling
- 9:40-10:00 A MODULAR MODELING APPROACH TO INTEGRATING ADAPTIVE MODELING SYSTEMS WITH RESOURCE MANAGEMENT IN THE FRAME PROJECT. **LEAVESLEY**, GEORGE, Roland Viger, Jim Chew, Christine Turner, Richard Zirbes, William Romme, Mark Miller, George San Miguel, Neil Cobb, and Lisa Floyd-Hanna
- 10:00-10:20 BREAK
- 10:20-10:40 MANAGEMENT GOALS DRIVE THE DEVELOPMENT OF ADAPTIVE MODELS FOR FOREST CONSERVATION AND WILDLAND FIRE PLANNING AT MESA VERDE. **SAN MIGUEL**, GEORGE L.
- 10:40-11:00 MODELING EDGE EFFECTS INCREASES RELEVANCE OF FIELD RESEARCH IN HABITAT MANAGEMENT. **SISK**, TOM, Haydee Hampton, Leslie Ries, Arriana Brand
- 11:00-11:20 INTEGRATED SPATIAL MODELS INFORM LANDSCAPE-LEVEL PLANNING FOR FOREST RESTORATION AND TREATMENTS. **DICKSON**, BRETT G., Haydee M. Hampton, John W. Prather, Thomas D. Sisk, Yaguang Xu

Southwest Regional GAP Analysis: the Colorado Plateau

Tuesday Morning 9:00-11:20 a.m.

FREMONT

Moderator: Katherine Thomas, *USGS Southwest Biological Science Center, Sonoran Desert Research Station, University of Arizona*

- 9:00-9:20 KEEPING COMMON SPECIES COMMON. **PRIOR-MAGEE**, JULIE S., John Lowry, Ken Boykin, Andrea Ernst
- 9:20-9:40 ECOLOGICAL SYSTEMS OF THE COLORADO PLATEAU. **THOMAS**, KATHRYN, Keith Schulz, John H. Lowry
- 9:40-10:00 VERTEBRATE SPECIES OF THE COLORADO PLATEAU. **BOYKIN**, KENNETH G., Charles A. Drost, J. Judson Wynne
- 10:00-10:20 BREAK
- 10:20-10:40 LAND STEWARDSHIP AND THE GAP ANALYSIS. **ERNST**, ANDREA E., Julie S. Prior-Magee
- 10:40-11:00 CONSERVATION OPPORTUNITIES ON THE COLORADO PLATEAU: LAND COVER. **LANGS**, LISA A., Kathryn A. Thomas, John H. Lowry, Keith Schulz
- 11:00-11:20 VERTEBRATE GAP ANALYSIS ON THE COLORADO PLATEAU USING SOUTHWEST REGIONAL GAP (SWReGAP) DATA. **WYNNE**, J. JUDSON, Charles A. Drost, Kenneth G. Boykin

Ecology, Management and Restoration of Riparian Habitats

Tuesday Afternoon 1:00-3:00 p.m.

BALLROOM

Moderator: Gery Allan, *Department Of Biological Sciences And Environmental Genetics And Genomics Research Laboratory, Northern Arizona University*

- 1:00-1:20 RETURNING NATURAL FLOW INTO THE OXBOW: RESTORATION OF A 40 YEAR-OLD DIVERSION IN CAPITOL REEF NATIONAL PARK, UTAH. **WORTHINGTON**, DAVID
- 1:20-1:40 LINKAGES AMONG TERRESTRIAL RIPARIAN COMPONENTS IN THE COLORADO RIVER CORRIDOR OF GRAND CANYON NATIONAL PARK. **KEARSLEY**, M., D. Lightfoot, S. Brantley, J. Frey, G. Carpenter, H. Yard, N. Cobb
- 1:40-2:00 CONSEQUENCES OF THE INVASION OF EXOTIC SALT CEDAR: AN ARTHROPOD PERSPECTIVE. Durst, Scott L., Tad C. Theimer, EBEN H. **PAXTON**, Mark K. Sogge, Marlyse C. Waskiewicz
- 2:00-2:20 PATTERNS OF DROUGHT MORTALITY IN A DOMINANT RIPARIAN TREE. **GITLIN**, ALICYN R., Thomas G. Whitham
- 2:20-2:40 PLANT GENES LINK FORESTS AND STREAMS. **LEROY**, CARRI J., Thomas G. Whitham, Paul Keim, Jane C. Marks
- 2:40-3:00 ECOLOGICAL GENETICS OF COTTONWOOD HYBRID ZONES. **ALLAN**, GERY J., Randy Bangert, Thomas C. Whitham, Paul Keim

Human Dimensions in Resource Management

Tuesday Afternoon 1:00-4:20 p.m.

AGASSIZ

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

- 1:00-1:20 HUMAN DIMENSIONS OF MOUNTAIN LION MANAGEMENT: VALUE ORIENTATIONS AND POLICY PREFERENCES OF NORTHERN ARIZONA RESIDENTS. **RUTHER**, ELIZABETH J., David M. Ostergren, David J. Mattson
- 1:20-1:40 STEALING OR "JUST LOOKING:" STUDIES OF VISITORS AND RESOURCE INCIDENCE AT PETRIFIED FOREST NATIONAL PARK, ARIZONA. **HOSPODARSKY**, DENVER, Martha E. Lee, Kathleen McBride
- 1:40-2:00 SAFETY AND PREPAREDNESS OF DAY HIKERS AT GRAND CANYON. **STEWART**, William, Erik Backlund, Cary McDonald
- 2:00-2:20 USER DISCRETIONARY TIME: A MODEL TO ESTIMATE OPPORTUNITIES FOR VISITOR EXPERIENCE. **BOWMAN**, CARL B.
- 2:20-2:40 HYBRID POPLAR PRODUCTION FOR MULTIPLE BENEFITS IN THE SEMI-ARID SOUTHWEST. **HEYDUCK**, ROB, Mick O'Neill, Kevin Lombard, Dan Smeal, Rick Arnold
- 2:40-3:00 CANYONS, CONSERVATION AND A COMMUNITY CORP: AN INTEGRATED APPROACH TO CULTURAL AND NATURAL RESOURCE PRESERVATION AT CANYON DE CHELLY NATIONAL MONUMENT. **LESLIE**, F. ELAINE, Travis Scott

Human Dimensions in Resource Management - continued

- 3:00-3:20 BREAK
- 3:20-3:40 PROTECTING NORTHERN ARIZONA'S NATIONAL MONUMENTS: THE CHALLENGE OF TRANSPORTATION MANAGEMENT. Hartley, Dawn, Janice L. Thomson, JILL **OZARSKI**, Karen Murray, Nada Wolff Culver
- 3:40-4:00 RECREATIONAL IMPACTS RELATED TO THE IMPLEMENTATION OF A TRANSPORTATION SYSTEM: A CASE STUDY OF ZION NATIONAL PARK. **FOTI**, PAM, Jeff Bradybaugh
- 4:00-4:20 MOTIVATION FOR OFF-HIGHWAY VEHICLE RECREATION AND PERCEPTIONS OF MANAGEMENT STRATEGIES AND PROPOSED POLICIES OF OFF-HIGHWAY VEHICLE RIDERS AND FOREST SERVICE MANAGERS. **TOMCZAK**, L.M., M. E. Lee

Ecosystem Responses to Fuel Management Treatment in Ponderosa Pine Forests

Tuesday Afternoon 1:00-4:50 p.m.

FREMONT

Moderator: John Bailey, *School of Forestry and Merriam Powell Center for Environmental Research, Northern Arizona University*

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- 1:30-2:10 FIRE AND FIRE SURROGATE RESEARCH: PROGRAM OVERVIEW AND OVERSTORY VEGETATION DYNAMICS IN ARIZONA. **BAILEY**, JOHN D., Carl Edminster
- 2:10-2:35 FIRE-FIRE SURROGATE STUDIES ON THE SOUTHWEST PLATEAU: INITIAL IMPACTS ON SOILS. **SULLIVAN**, BENJAMIN W., Stephen C. Hart, Steven T. Overby, Dan Guido, Dana Erickson, Dan Neary, Carl Edminster
- 2:35-3:00 UNDERSTORY VEGETATION RESPONSES TO GROUP SELECTION THINNING AND PRESCRIBED FIRE AT THE ARIZONA FIRE AND FIRE SURROGATE SITES. **SPEER**, ROBERT K., Carolyn Hull Sieg
- 3:00-3:20 BREAK
- 3:20-3:45 SMALL MAMMAL POPULATION RESPONSES TO FOREST FUEL REDUCTION TREATMENTS AT THE SOUTHWEST PLATEAU FIRE AND FIRE SURROGATE PROJECT. **CONVERSE**, SARAH J., William M. Block, Gary C. White
- 3:45-4:10 AVIAN COMMUNITY RESPONSES TO FOREST THINNING AND PRESCRIBED SURFACE FIRE, ALONE AND IN COMBINATION. **REED**, SARAH, Thomas D. Sisk, William M. Block, Brett G. Dickson
- 4:10-4:50 PANEL DISCUSSION

Poster Session

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

BALLROOM

Posters are listed in order of their location.

- 1 GEOLOGIC MAPPING OF THE GREATER GRAND CANYON REGION, NORTHWESTERN ARIZONA. **PRIEST**, SUSAN S., Tracey J. Felger, George H. Billingsley
- 2 PUMA ECOLOGY AND MOVEMENTS IN THE GRAND CANYON REGION. **GARDING**, EMILY, Elaine F. Leslie, R.V. Ward, Eric C. York
- 3 CLIMATE CHANGE, ECOSYSTEM IMPACTS, FOREST MANAGEMENT AND EXTENSION EDUCATION. **JONES**, CHRISTOPHER, Gregg Garfin, Thomas DeGomez, Alix Rogstad, Melanie Lenart, Katharine Jacobs, Michael Crimmins
- 4 A TALE OF TWO DROUGHTS: CHANGING TEMPERATURES & SOUTHWESTERN DROUGHTS. **GARFIN**, GREGG, Jean Morrill, Andrew Comrie, Jeremy Weiss
- 5 REMOTELY SENSED ECOSYSTEM IMPACTS OF DROUGHT AT C. HART MERRIAM TRANSECT. **KIM**, YOUNGWOOK, Alfredo R. Huete
- 6 EXPLORATORY ANALYSES OF CONTEMPORARY HUMAN ACTIVITY AT PREHISTORIC SITES IN SOUTHWEST COLORADO. **HARTLEY**, RALPH J., Anne M. Wolley Vawser
- 7 YOUTH FARMING AND RESTORATION PROJECT AT WEPO SPRINGS. **KELLEY**, Shawn R., Louella Nahsonhoya, Brandon Nahsonhoya, Andrew Lewis
- 8 THE EFFECTS OF TRAVERTINE DAMS ON LEAF LITTER RETENTION IN FOSSIL CREEK, AZ. **MIER**, MEAD, Zacccheaus, Compson
- 9 HAIRY WOODPECKER WINTER ROOST CHARACTERISTICS IN BURNED PONDEROSA PINE FOREST. **COVERT-BRATLAND**, KRISTIN A., Tad C. Theimer, William M. Block
- 10 DOES PRESCRIBED FIRE AFFECT BARK-FORAGING BIRD DENSITY IN WINTER? **POPE**, THERESA L., William M. Block, and Paul Beier
- 11 PROSPECTS FOR TROUT TO SURVIVE WILDFIRES IN THE WHITE MOUNTAINS OF ARIZONA. **LONG**, JONATHAN, Codey Carter, John Rinne
- 12 GEOLOGY MEDIATES LONG-TERM RESPONSE TO THE DUDE FIRE. **LEONARD**, JACKSON M., Alvin L. Medina, and Jonathan W. Long
- 13 EFFECTS OF FUELS REDUCTION EFFORTS IN THE FLAGSTAFF URBAN-WILDLAND INTERFACE ON POTENTIAL FIRE BEHAVIOR: IS VARIETY THE SPICE OF FIRE? **SMITH**, EDWARD BENNETT, Pat Hall
- 14 ANALYSIS OF UNDERSTORY VEGETATION RECOVERY ON THE RODEO-CHEDISKI FIRE. **KUENZI**, AMANDA M., Pete Z. Fule, Carolyn H. Sieg
- 15 ANT COMMUNITIES OF THE COLORADO PLATEAU AND GREAT BASIN: COMPARISONS OF STRUCTURE IN SPACE AND TIME USING GENUS AND FUNCTIONAL GROUP CLASSIFICATIONS. **GRAHAM**, TIM B., Wyatt I. Williams
- 16 COMPARISON OF ORTHOPTERA COMMUNITIES IN SALT CREEK, CANYONLANDS NATIONAL PARK: FLUCTUATIONS OVER TIME IN OPEN-, CLOSED-, AND NO-ROAD PARTS OF THE CANYON. **GRAHAM**, TIM B., Kelly N. Wilson
- 17 COLEOPTERA AND HYMENOPTERA DIVERSITY IN SALT CREEK CANYON, CANYONLANDS NATIONAL PARK, UT. **PECH**, LOUIS L., Tim B. Graham
- 18 INVESTIGATING EFFECTS OF THE NOVEMBER 2004 HIGH-FLOW RELEASE FROM GLEN CANYON DAM ON AEOLIAN SAND-TRANSPORT RATES IN THE COLORADO RIVER CORRIDOR, GRAND CANYON, ARIZONA. **DRAUT**, AMY E., Rubin, David M.
- 19 UPPER STREAM VS LOWER STREAM WATER QUALITY OF EIGHT SOUTHERN UTAH STREAMS. **ORNES**, HAROLD
- 20 DECLINE OF NORTHERN LEOPARD FROGS (RANA PIPIENS) ON THE SOUTHERN COLORADO PLATEAU. **DROST**, CHARLES, Lisa Gelczis, Jay Baker, Karen Mock

Poster Session - continued

- 21 INDIRECT EFFECTS OF UNGULATE BROWSING ON INSECT COMMUNITY STRUCTURE. **PEARSON, KRISTEN M.**, Sanjeev Pandey, David W. Huffman, Daniel C. Laughlin
- 22 EFFECTIVENESS OF LITTER REMOVAL IN PREVENTING MORTALITY OF YELLOW BARKED PONDEROSA PINE TREES IN NORTHERN ARIZONA. **FOWLER, JAMES F.**, Carolyn Hull Sieg, Linda Wadleigh, Sally Haas
- 23 ALLOCATION OF WOODY AND HERBACEOUS BIOMASS IN PONDEROSA PINE STANDS VARYING IN STAND STRUCTURE AND BURN HISTORY. **SABO, KYLA**, Carolyn, Hull Sieg, John Duff Bailey, Stephen C. Hart
- 24 EXOTIC PLANT SPECIES RICHNESS AT TWO PONDEROSA PINE SITES IN NORTHERN ARIZONA. **FOWLER, JAMES F.**, Carolyn Hull Sieg, Brett G. Dickson
- 25 SWEMP: DOCUMENTING INVASIVE NON-NATIVE PLANT OCCURRENCES REGIONALLY. **THOMAS, KATHRYN**
- 26 VEGETATION COMMUNITIES OF SUNSET CRATER, WALNUT CANYON, AND WUPATKI NATIONAL MONUMENTS. **HANSEN, MONICA**, Kathryn Thomas
- 27 HANGING GARDEN VEGETATION ASSOCIATIONS. **FOWLER, JAMES F.**, N. L. Stanton, Ronald L. Hartman
- 28 A MULTI-SCALE ASSESSMENT OF THE EXTENT AND CONDITION OF GRASSLANDS IN ARIZONA: CONSIDERATIONS FOR CONSERVATION, RESTORATION, AND FIRE. **SCHUSSMAN, HEATHER**, Dave Gori, Carolyn Enquist
- 29 WARM DRY MIXED CONIFER PLANT COMMUNITY DIVERSITY IN SOUTHWESTERN COLORADO. **KORB, JULIE E.**, Mark L. Daniels, Daniel C. Laughlin, Peter Z. Fule
- 30 DISTURBANCE-FOCUSED CONCEPTUAL MODELS OF MONTANE TERRESTRIAL ECOSYSTEMS ON THE COLORADO PLATEAU. **VANKAT, JOHN L.**, Lisa Thomas, Mark Miller
- 31 ECOLOGICAL RESTORATION DEMONSTRATION TREATMENTS: A STARTING POINT FOR LOCAL ECOLOGICAL MONITORING AND ADAPTIVE MANAGEMENT. **TUTEN, MATT C.**, W. Walker Chancellor, H.B. Doc Smith, Dennis Lund
- 32 A HOLISTIC APPROACH TO MONITORING: THE POET MODEL. **MOTTEK-LUCAS, ANNE L.**
- 33 IDENTIFYING THE IRRIGATION REQUIREMENTS OF NATIVE-PLANT LANDSCAPES ON THE COLORADO PLATEAU. **WILLIAMS, ZACHARY**, Daniel Smeal, Michael K. O'Neill, Margaret West, Richard N. Arnold
- 34 MYCORRHIZAL FUNGI ABUNDANCE ACROSS FLOOD INUNDATION GRADIENTS, VIRGIN RIVER, UTAH. **SHORROCK, DONNA**, Stutz, Jean, Stromberg, Julie
- 35 RESTORING ROADS WITH FUNGI: EVALUATING THE USE OF FUNGAL INOCULUM AND WOOD MULCH APPLICATION IN AN ARIZONA PONDEROSA PINE FOREST. **TRUDEAU, JOSEPH M.**
- 36 THE IMPACTS OF SAGEBRUSH ECOTYPE TREATMENTS ON THE PYGMY RABBIT AND OTHER WILDLIFE. **ALSTON, JACKEE**, Jerran T. Flinders
- 37 RELATIONSHIP BETWEEN MEASURED HABITAT QUALITY AND FIRST YEAR SURVIVAL FOR TRANSPLANTED BIGHORN SHEEP IN ARIZONA. **WAKELING, BRIAN F.**
- 38 ARIZONA WILDLIFE LINKAGES. **NORDHAUGEN, SIOBHAN E.**, Evelyn Erlandsen, Paul Beier, Bruce Eilerts, Ray Schweinsburg, Terry Brennan, Ted Cordery, Norris Dodd, Melissa G. E. Maiefski, Janice Przbyl, Steve Thomas, and Kim Vacariu
- 39 SAFE HAVENS, SAFE PASSAGES: THE GRAND CANYON ECOREGION WILDLANDS NETWORK DESIGN. **CRUMBO, KIM**
- 40 REMOVAL OF PINYON-JUNIPER WOODLANDS ON THE COLORADO PLATEAU. **MIER, MEAD**, Michael Peters, Neil Cobb

Conservation Science, Policy and Practice

Wednesday Morning 8:00-5:00 p.m.

BALLROOM

Moderator: Paul Beier, *School of Forestry, Northern Arizona University*

SESSION I

- 8:00-8:20 WILDLIFE WATER DEVELOPMENTS AND THE SOCIAL CONSTRUCTION OF CONSERVATION CONFLICT. **MATTSON**, DAVID, Nina Chambers
- 8:20-8:40 WILDERNESS RESTORATION: LEGAL AND POLITICAL CONSIDERATIONS FOR WILDERNESS AREAS AND NATIONAL PARK SERVICE LANDS IN NORTHERN ARIZONA. **OSTERGREN**, DAVID
- 8:40-9:00 RESTORING TRADITIONAL ECOLOGICAL KNOWLEDGE OF THE APACHE. **LONG**, JONATHAN, Judy DeHose
- 9:00-9:20 IMPENDING CONGRESSIONAL ACTION ON THE ENDANGERED SPECIES ACT. **JOHNSON**, SCOTTY
- 9:20-9:40 IS SALT CEDAR HABITAT ALWAYS BAD FOR BIRDS? LESSONS FROM STUDIES OF THE SOUTHWESTERN WILLOW FLYCATCHER. **SOGGE**, MARK K., Eben H. Paxton
- 9:40-10:00 THE FLYCATCHER AND THE PHOENIX: RIPARIAN HABITAT CREATION AND DESTRUCTION IN A FLUCTUATING RESERVOIR. **PAXTON**, EBEN H.
- 10:00-10:20 BREAK
- 10:20-10:40 ARIZONA'S STATE LAND REFORM INITIATIVE. **FOX**, EDWARD
- 10:40-11:00 SELECTING CONSERVATION LANDS FOR ARIZONA'S STATE TRUST LAND REFORM INITIATIVE. **GRAHAM**, PATRICK
- 11:00-11:20 REFORMING STATE TRUST LAND THROUGHOUT THE WEST. **LAURENZI**, ANDY
- 11:20-11:40 PANEL DISCUSSION ON CONSERVATION OF STATE LANDS
- 11:40-12:00 AN EVALUATION OF STATE-SPONSORED PROPERTY TAX INCENTIVE PROGRAMS FOR PRIVATE FOREST LANDOWNERS IN THE WESTERN UNITED STATES. **ECKHOFF**, MIKE, Kurt Mackes, Tim Reader
- 12:00-1:00 LUNCH

SESSION II

- 1:00-1:20 DECOMMISSIONING THE CHILDS-IRVING HYDROELECTRIC FACILITIES. **SMITHERS**, PHIL
- 1:20-1:40 THE RETURN OF FLOWS TO FOSSIL CREEK, AN IDEA WHOSE TIME HAD COME. **STEFFERUD**, JEROME A.
- 1:40-2:00 CHALLENGES AND REWARDS OF COLLABORATION TO RESTORE FOSSIL CREEK. **OVERBY**, CECELIA, Janie Agyagos
- 2:00-2:20 BUREAU OF RECLAMATION ROLE IN RESTORING NATIVE FISH TO FOSSIL CREEK. **CLARKSON**, ROBERT W.

Conservation Science, Policy and Practice - continued

- 2:20-2:40 PRACTICAL LESSONS LEARNED: STRATEGIC APPROACHES OF THE FOSSIL CREEK ENVIRONMENTAL PARTNERS. **SCHLIMGEN-WILSON**, MINDY
- 2:40-3:00 PANEL DISCUSSION ON RESTORATION OF FOSSIL CREEK
- 3:00-3:20 BREAK
- 3:20-3:40 A LONG TERM ASSESSMENT OF PRONGHORN MANAGEMENT ON ANDERSON MESA: MISCALCULATIONS AND REMEDIES. **BROWN**, DAVID E., HENRY PROVENCIO
- 3:40-4:00 ~~TACTICAL PLANNING OF VEGETATION MANAGEMENT IN SUPPORT OF PRONGHORN HABITAT ENHANCEMENT ON ANDERSON MESA, AZ. **CLARK**, MATTHEW (CANCELLED)~~
- 4:00-4:20 GRASSLAND HABITAT RESTORATION IN NORTHERN ARIZONA. **DEVOS**, JAMES C., Jr., David Belitsky, Richard Miller, Steven S. Rosenstock
- 4:20-4:40 PROACTIVE EFFORTS TO REDUCE CALIFORNIA CONDOR LEAD EXPOSURE IN ARIZONA. **SIEG**, RON, Kathy Sullivan
- 4:40-5:00 VEGETATION AND SEED BANKS OF THE ZION RIVER RIPARIAN CORRIDOR (UTAH): IMPLICATIONS FOR RESTORATION. **SHORROCK**, DONNA, Stromberg, Julie

Cave Resource Management

Wednesday Morning 8:00 a.m.-3:00 p.m.

FREMONT

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

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- 8:00-8:10 INTRODUCTION – **WYNN, J. JUDSON**
- 8:10-8:40 CAVES – EXPANDING BEYOND THE HOLLOW PLACES. **KERBO**, RONAL C.
- 8:40-9:00 CAVE RESOURCE MANAGEMENT - NOW IS THE TIME TO STANDARDIZE. **TROUT**, JERRY
- 9:00-9:20 THE DRAFT CAVE, KARST AND MINE MANAGEMENT PLAN, AND THE RAPID CAVE ASSESSMENT AND CLASSIFICATION SYSTEM, GRAND CANYON NATIONAL PARK. **RIHS**, JOHN
- 9:20-9:40 RESTORATION OF BLOOMINGTON CAVE, SOUTHERN UTAH. **VOYLES**, KYLE, Jon Jasper
- 9:40-10:00 A HISTORY OF THE DISCOVERY AND EXPLORATION OF THE CAVES OF HORSESHOE MESA, GRAND CANYON NATIONAL PARK. **BUECHER**, ROBERT H.
- 10:00-10:20 BREAK

Cave Resource Management - continued

- 10:20-10:40 STATUS ON THE NEWLY PROTECTED CATHEDRAL CAVES PRIVATE PRESERVE, NORTHERN ARIZONA. **BILLINGS**, DOUG, Tom O. Gilleland, John Norman, Robert Winkler
- 10:40-11:00 BIOLOGY OF STREAM CAVES IN GRAND CANYON NATIONAL PARK. **DROST**, CHARLES A.
- 11:00-11:20 CAVES AS REFUGIA FOR NON-TROGLOBITIC ORGANISMS DURING PERIODS OF DROUGHT, IMPLICATIONS FOR THE SOUTHWEST. **PRATHER**, JOHN W., Jeffrey T. Briggler, J. Judson Wynne
- 11:20-11:40 ROOSTING SITES OF SPOTTED BATS (*EUDERMA MACULATUM*) IN NORTHERN ARIZONA. **HERDER**, MICHAEL J., Carol L. Chambers, R. Jason M. Corbett, John W. Prather
- 11:40-12:00 CAVE ECOLOGY ON THE ARIZONA STRIP. **WYNNE**, J. JUDSON, Kyle Voyles, Charles A. Drost, Benjamin G. Solvesky, Michael J. Herder
- 12:00-1:00 LUNCH
- 1:00-1:20 AN OVERVIEW OF THE ARIZONA CAVE SURVEY. **GILLELAND**, TOM O.
- 1:20-1:40 RESURRECTION OF CRUCIFIXION CAVE - A PHOTOMONITORING GIS ANALYSIS TO EVALUATE VISITOR IMPACTS IN THE LAST 15 YEARS. **SAINSBURY**, BENJAMIN N.
- 1:40-2:00 ~~DIGGING IN THE DARK: CULTURAL RESOURCE MANAGEMENT IN GRAND CANYON'S CAVES.~~ **HORN**, AMY (CANCELLED)
- 2:00-2:20 FOSSIL PLANT REMAINS IN COLORADO PLATEAU CAVES. **COLE**, KENNETH, Owen K. Davis
- 2:20-2:40 DRY PRESERVATION OF ICE AGE ORGANIC REMAINS AND THE UNIQUE RECORD OF VERTEBRATE FAUNA OF COLORADO PLATEAU CAVES. **MEAD**, JIM I.
- 2:40-3:00 LONG-TERM CAVE ROOSTING AND DIET OF SPOTTED BATS (*EUDERMA MACULATUM*) IN NORTHERN ARIZONA AS INDICATED BY STABLE ISOTOPES FROM MUMMIFIED REMAINS AND LIVE BATS. **CHAMBERS**, CAROL L., Richard Doucett, David G. Mikesic

Colorado Plateau Cave Resource Managers Meeting / Breakout I

Wednesday Afternoon 3:20 a.m.-5:00 p.m.

HUMPHREYS

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

This special session will mark the first opportunity for Colorado Plateau cave researchers and land managers to meet in a forum where they can share their research and ideas, discuss management issues, and identify research needs. In light of this great opportunity, we also will hold a breakout session either the day before or after the special session. The objective of the breakout session will be to identify key resource management issues facing Colorado Plateau caves, discuss site-specific management concerns, identify research needs, and begin to strategize how these issues and concerns may be addressed.

Demystifying Mycorrhizae

Wednesday Morning 8:00 a.m.-9:30 a.m.

AGASSIZ

Moderator: Bala Chaudhary, *Northern Arizona University*

- 8:00-8:15 INTRODUCTION. **CHAUDHARY**, V. BALA
- 8:15-8:30 IS SOIL STABILITY LINKED TO MYCORRHIZAL FUNGI? UNTANGLING THE ARID ECOLOGY OF FUNGAL MUTUALISTS. **CHAUDHARY**, V. BALA, Thomas O'Dell, Andrea Redman, Matthias Rillig, Nancy Johnson
- 8:30-8:45 ORV DISTURBANCE IN A RIPARIAN HABITAT: NEGATIVE IMPACTS AND MANAGEMENT IMPLICATIONS FOR PLANT AND ARBUSCULAR MYCORRHIZAL COMMUNITIES. **ANTONINKA**, ANITA, Suzy Neal, Robin Rauch
- 8:45-9:00 MECHANICAL MASTICATION VS. SLASH BURNING TREATMENTS IN A PINYON-JUNIPER ECOSYSTEM: EFFECTS ON UNDERSTORY PLANT COMMUNITIES AND THEIR ARBUSCULAR MYCORRHIZAL ASSOCIATIONS. **NEAL**, SUZY, Carolyn Hull Sieg, Catherine Gehring, Nancy Collins Johnson
- 9:00-9:15 HYBRIDIZING AND DOMINANT RIPARIAN TREES SUPPORT UNIQUE ECTOMYCORRHIZAL COMMUNITIES. **KOVACS**, ZSUZSI I., Catherine A. Gehring, Tom G. Whitham
- 9:15-9:30 ECTOMYCORRHIZAL DIVERSITY OF STRESSED PINYON PINES. **HUBERT**, NATE, Kristin Haskins, Rebecca Mueller

Ecology and Management of Biological Soil Crusts

Wednesday Morning 9:30-11:50 a.m.

AGASSIZ

Moderator: Matt Bowker, *Department of Biological Sciences, Northern Arizona University*

- 9:30-9:45 INTRODUCTION. **BOWKER**, MATTHEW A.
- 9:45-10:00 HOW OLD ARE BIOLOGICAL SOIL CRUSTS? **BERALDI-CAMPESI**, HUGO, Ferran Garcia-Pichel
- 10:00-10:20 BREAK
- 10:20-10:35 BIOLOGICAL SOIL CRUSTS AND WHY THEY ARE DISAPPEARING. **ROSENRETER**, ROGER
- 10:35-10:50 EFFECTS OF SUMMER PRECIPITATION ON BIOLOGICAL SOIL CRUSTS. **BELNAP**, JAYNE, Stan Smith, Dave Housman, Jeff Zimpfer
- 10:50-11:05 BIOLOGICAL SOIL CRUST RESTORATION IN THEORY AND PRACTICE: AN UNDEREXPLOITED OPPORTUNITY? **BOWKER**, MATTHEW A.
- 11:05-11:20 PHOSPHOROUS CONTROLS ON SOIL NITROGEN CONCENTRATIONS AND N-FIXATION RATES OF A RECOVERING SEMI-ARID PRAIRIE. **REED**, S. C., T. R. Seastedt, C. Mann, A. R. Townsend
- 11:20-11:35 BIOLOGICAL CRUSTS AND THE PUSUIT OF NOVEL FUNGAL DIVERSITY. **BATES**, SCOTT T.
- 11:35-11:50 SCALING ISSUES AND THE ECOLOGY OF DESERT SOIL CRUST BRYOPHYTES. **BRINDA**, JOHN C.

Modeling and Classification

Wednesday Morning 8:00a.m.-9:40 p.m.

SOUTHWEST

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

- 8:00-8:20 MODELING POST WILDFIRE HYDROLOGIC EVENTS USING THE FULLY DISTRIBUTED MODEL MIKE SHE. **POFF**, BORIS, Daniel Neary
- 8:20-8:40 SELECTING SAMPLE LOCATIONS FOR NATURAL AMBIENT SOUND CHARACTERIZATION IN A DIFFICULT ENVIRONMENT. **FALZARANO**, SARAH, Ken McMullen
- 8:40-9:00 DISTURBANCE-FOCUSED CONCEPTUAL MODELS OF MONTANE TERRESTRIAL ECOSYSTEMS ON THE COLORADO PLATEAU. I. MODEL DEVELOPMENT AND PINYON-JUNIPER AND PONDEROSA PINE ECOSYSTEMS. **VANKAT**, JOHN L., Lisa Thomas, Mark Miller
- 9:00-9:20 DISTURBANCE-FOCUSED CONCEPTUAL MODELS OF MONTANE TERRESTRIAL ECOSYSTEMS ON THE COLORADO PLATEAU. II. MIXED CONIFER, SPRUCE-FIR, GRASSLAND, AND SHRUBLAND ECOSYSTEMS. **VANKAT**, JOHN L. Lisa Thomas
- 9:20-9:40 COMPARING CONCEPTUAL AND EMPIRICAL RANGE VEGETATION CLASSIFICATION SYSTEMS FOR THE NORTHERN COLORADO PLATEAU. **ADAIR**, WILLIAM A., R. Douglas Ramsey, John Lowry

Resource History and Assessment

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

SOUTHWEST

Moderator: Charles van Riper, *Southwest Biological Science Center, Sonoran Desert Research Station, University of Arizona*

- 10:20-10:40 FIRE HISTORY IN PIÑON-JUNIPER WOODLANDS, KAIPAROWITS PLATEAU, GLEN CANYON NATIONAL RECREATION AREA. **FLOYD**, M. LISA, David Hanna, William H. Romme, Mark Winterowd, Dustin Hanna
- 10:40-11:00 THE ASSESSMENT OF SAND DUNE MOBILITY FROM 1980 THROUGH 2004 ON THE COALMINE MESA CHAPTER AREA OF THE NAVAJO NATION. **THORNBRUGH**, CASEY T., Margaret Hiza-Redsteer
- 11:00-11:20 DEVELOPMENT OF A RESTORATION RAPID ASSESSMENT TOOL. **HIEBERT**, Ron, Amy Richey, Talise Dow
- 11:20-11:40 CONDUCTING A RAPID LANDSCAPE-SCALE ECOLOGICAL ASSESSMENT OF THE KANE AND TWO MILE RANCHES IN NORTHERN ARIZONA. **AUMACK**, ETHAN N.
- 11:40-12:00 FROM TREES TO GRASSES: UNDERSTANDING COMMUNITY GENETICS WITH GEOGRAPHY AND CLIMATE. **ZHANG**, HUARONG, Laura E. DeWald, Steven E. Smith

Ecological Effects of Past, Present and Future Climate Variation on Southwestern Forests and Woodlands

Wednesday Afternoon 1:00-4:20 p.m.

AGASSIZ

Moderator: Neil Cobb, *Merriam Powell Center for Environmental Research, Northern Arizona University*

- 1:00-1:20 A BRIEF HISTORY OF SOUTHWEST CLIMATE CHANGES AND A GLIMPSE AT THE FUTURE. **GARFIN**, GREGG M., Michael A. Crimmins, Jeremy L. Weiss
- 1:20-1:40 GROWTH RESPONSES OF NORTHERN ARIZONA FORESTS TO CLIMATIC VARIATION. **KOLB**, T.E.
- 1:40-2:00 EVIDENCE FOR CLIMATE FORCING OF HISTORIC STAND-REPLACING FIRE OCCURRENCE IN UPPER MONTANE FORESTS OF THE SOUTHWESTERN UNITED STATES. **MARGOLIS**, E. Q., T.W. Swetnam, C.D. Allen
- 2:00-2:20 IMPACTS OF DROUGHT, BEETLES, AND MANAGEMENT TREATMENTS ON FIRE BEHAVIOR IN PINYON/JUNIPER WOODLANDS. **ROCCA**, MONIQUE, Neil Cobb, Kirsten Ironside, Bill Romme
- 2:20-2:40 GLOBAL WARMING AND INSECT OUTBREAKS IN SOUTHWESTERN FORESTS. **LYNCH**, Ann
- 2:40-3:00 EXPLORING PAST, PRESENT, AND FUTURE CLIMATE CHANGE IMPACTS ON THE DISTRIBUTION OF ONE-SEEDED JUNIPER, *JUNIPERUS MONOSPERMA*, AT WUPATKI NATIONAL MONUMENT. **IRONSIDE**, KIRSTEN E., Kenneth L. Cole, Cynthia Parker
- 3:00-3:20 **BREAK**
- 3:20-3:40 REGIONAL VEGETATION DIE-OFF IN RESPONSE TO GLOBAL-CHANGE TYPE DROUGHT. **BRESHEARS**, DAVID D. , Neil S. Cobb, Paul M. Rich, Kevin P. Price, Craig D. Allen, Randy G. Balice, William H. Romme, Jude H. Kastens, M. Lisa Floyd, Jayne Belnap, Jesse J. Anderson, Orrin B. Myers, Clifton W. Meyer
- 3:40-4:00 PLANT PRODUCTION AND DIVERSITY IN A PONDEROSA PINE FOREST: THE IMPORTANCE OF INTER-ANNUAL CLIMATIC VARIABILITY. **LAUGHLIN**, DANIEL C., Margaret M. Moore
- 4:00-4:20 ASSESSING CLIMATE CHANGE IMPACTS ON SOUTHWEST FORESTS AND WOODLANDS: IMPLICATIONS FOR POLICY AND MANAGEMENT. **SWETNAM**, TOM

Animal Ecology I

Wednesday Afternoon 1:00-3:00 p.m.

SOUTHWEST

Moderator: Erika Nowak, *USGS Southwest Biological Science Center, Colorado Plateau Research Station, Northern Arizona University*

- 1:00-1:20 COLORADO PLATEAU AQUATIC INSECT COMMUNITY CLASSIFICATION. **MOLINE**, ANGELA B., N. LeRoy Poff
- 1:20-1:40 GENETIC VARIATION AMONG AND WITHIN THREE IMPORTANT BARK BEETLE SPECIES FOUND IN PONDEROSA PINE FORESTS OF ARIZONA. **ALLENDER**, CHRISTOPHER J., Karen M. Clancy, Joel D. McMillin, Thomas E. DeGomez, Paul Keim, David M. Wagner
- 1:40-2:00 THE BEES OF GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT: DYNAMICS, DISTRIBUTIONS, AND DIVERSITY. **MESSINGER**, OLIVIA J., Terry Griswold
- 2:00-2:20 DISPERSAL OF NONNATIVE FISHES AND PARASITES IN THE LITTLE COLORADO RIVER, ARIZONA. **STONE**, DENNIS M., David R. Van Haverbeke, David L. Ward
- 2:20-2:40 FORAGING ECOLOGY OF PEREGRINE FALCONS ALONG THE DAM-REGULATED COLORADO RIVER, GRAND CANYON, ARIZONA. **STEVENS**, LAWRENCE E., Bryan T. Brown, Kirsten Rowell
- 2:40-3:00 SUMMARY OF THE 1996-2000 GCMRC BIRD MONITORING PROGRAM ALONG THE COLORADO RIVER. **SPENCE**, JOHN R.

Vegetation Ecology

Wednesday Afternoon 3:20-5:00 p.m.

SOUTHWEST

Moderator: Kathryn Thomas, *Southwest Biological Science Center, Sonoran Desert Research Station, University of Arizona*

- 3:20-3:40 DROUGHT INDUCED IMPACTS ON VEGETATION DYNAMICS OF THE COLORADO PLATEAU: DERIVED FROM SATELLITE-BASED MODIS VEGETATION INDEX OBSERVATIONS. **DIDAN**, KAMEL, Alfredo Huete
- 3:40-4:00 MORPHOLOGICAL VARIATION IN PINYON NEEDLES OF THE VERDE VALLEY AND THEIR RELATIONSHIP TO ANNUAL PRECIPITATION. **COLE**, KENNETH, Jessica Fisher, Sandra Swift
- 4:00-4:20 PATTERNS OF WOODY PLANT MORTALITY FOLLOWING DROUGHT AT THE PONDEROSA PINE/PINYON-JUNIPER ECOTONE. **KOEPKE**, Dan F., Thomas E. Kolb, Christopher P. Bickford
- 4:20-4:40 DYNAMICS OF JUNIPER INVADDED GRASSLANDS AND OLD-GROWTH WOODLANDS IN AND NEAR WUPATKI NATIONAL MONUMENT, NORTHERN ARIZONA, USA. **HASSLER**, F.C., J. D. Bailey
- 4:40-5:00 COMPARISON OF THINNING TECHNIQUES FOR PINYON-JUNIPER ENCROACHED SHRUBLANDS ON THE SHIVWITS PLATEAU, ARIZONA. **MATCHETT**, J.R., Matt Brooks, Curt Deuser, Helen Smith, Henry Bastian

Social at the Museum of Northern Arizona

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

MUSEUM OF NORTHERN ARIZONA

Invasive Plant Ecology

Thursday Morning 8:20 a.m.-11:20 a.m.

BALLROOM

Moderator: Chris McGlone, *Northern Arizona University*

- 8:20-8:40 EXOTIC INVASIVE PLANTS OF SOUTHWESTERN PONDEROSA PINE FORESTS: MANAGEMENT AND RESEARCH PRIORITIES. **SIEG**, CAROLYN HULL, James F. Fowler, Barb Satink Wolfson
- 8:40-9:00 PREDICTING ALIEN PLANT DISTRIBUTIONS IN NATURAL LANDSCAPES FOLLOWING DISTURBANCE REMOVAL. **DOW**, S. TALISE, Ron Hiebert, Kathryn McEachern
- 9:00-9:20 INTEGRATING WEED CONTROL AND RESTORATION ON WESTERN RANGELANDS. **LANDMESSER**, JACOB, Kim Allcock, Robert S. Nowak
- 9:20-9:40 SFPWMA: PARTNERS IN INVASIVE WEED STRATEGIES. **ALBRECHT**, WADE
- 9:40-10:00 MANAGING LIVESTOCK GRAZING TO INHIBIT CHEATGRASS SPREAD. **LOESER**, MATTHEW R., AMY E. **RICHEY**, Vanessa L. Humphreys, Tischa A. Muñoz-Erickson, Thomas D. Sisk, Timothy E. Crews
- 10:00-10:20 BREAK
- 10:20-10:40 SOIL AND CLIMATE CONTROLS ON THE DISTRIBUTION OF EXOTIC ANNUAL GRASSES IN THE WESTERN UNITED STATES. **BELNAP**, JAYNE
- 10:40-11:00 THE DISTRIBUTION AND OCCURRENCE OF CHEATGRASS (BROMUS TECTORUM) POPULATIONS ON THE UNCOMPAHGRE PLATEAU. **MONSEN**, STEPHEN B., ALLAN R. **STEVENS**
- 11:00-11:20 DIFFUSE AND SPOTTED KNAPWEEDS: REAL THREATS. **WOLFSON**, BARB SATINK, Carolyn Hull Sieg, James F. Fowler

Colorado Plateau Cave Resource Managers Meeting / Breakout II

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

HUMPHREYS

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

This is a continuation of the breakout session that began on Wednesday afternoon.

Cathedral Caverns Speological Preserve Field Trip

THURSDAY MORNING 10:00 A.M.- LATE AFTERNOON

Preserve owner Doug Billings and USGS wildlife ecologist J. Judson Wynne will lead a half-day field trip to Cathedral Caverns near Ash Fork, Arizona. Van limited to 12 people. Contact J. Judson Wynne to participate.

Ecological Networks and Long-term Monitoring on the Colorado Plateau

Thursday Morning 8:20-12:00 p.m.

AGASSIZ

Moderator: Neil Cobb, *Merriam Powell Center for Environmental Research, Northern Arizona University*

- 8:20-8:40 OPPORTUNITIES FOR LONG-TERM ECOLOGICAL RESEARCH AND MONITORING IN GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT. **MILLER**, Mark E., Marietta Eaton
- 8:40-9:00 HISTORICAL STUDIES ON THE COLORADO PLATEAU: AN OVERVIEW. **BAKKER**, JONATHAN D., Margaret M. Moore, Andrew J. Sánchez Meador
- 9:00-9:20 HISTORICAL STUDIES ON THE COLORADO PLATEAU: RESULTS FROM TWO LONG-TERM DATA SETS. **SÁNCHEZ MEADOR**, ANDREW J., Margaret M. Moore, Jonathan D. Bakker
- 9:20-9:40 INVASIVE SPECIES NETWORKS: CHALLENGES FOR THE COLORADO PLATEAU. **THOMAS**, KATHRYN
- 9:40-10:00 ESTIMATING LAND SURFACE PHENOLOGY FROM SATELLITE IMAGERY. **REED**, BRADLEY C.
- 10:00-10:20 BREAK
- 10:20-10:40 INTERIOR WEST FOREST INVENTORY AND ANALYSIS: A DESCRIPTION OF THE PROGRAM AND OPPORTUNITIES FOR COLLABORATION. **SHAW**, JOHN D.
- 10:40-11:00 INTEGRATING DATA ON HISTORIC VEGETATION CHANGE BETWEEN THE SAN FRANCISCO PEAKS AND GRAND CANYON. **COLE**, KENNETH
- 11:00-11:20 A SYNTHESIS OF RIPARIAN RESEARCH AND MONITORING ON PUBLIC LANDS OF THE COLORADO PLATEAU. **SHANNON**, JOSEPH, Emma Benenati
- 11:20-11:40 THE NATIONAL BIOLOGICAL INFORMATION INFRASTRUCTURE – SOUTHWEST INFORMATION NODE: A PORTAL TO BIOLOGICAL INFORMATION FOR THE COLORADO PLATEAU. **PRIOR-MAGEE**, JULIE S., Leanne Hanson, Sean Finn
- 11:40-12:00 DEVELOPING A MONITORING PLAN FOR THE NATIONAL PARK UNITS ACROSS THE COLORADO PLATEAU. **THOMAS**, LISA, Thomas O'Dell, Chris Lauver, Steve Garman

Fossil Creek: An Opportunity to Restore Diverse Native Fishery and Study the Effects of Return of Full Flows

Thursday Morning 8:20-11:20 p.m.

FREMONT

Moderator: Allen Haden, *Environmental Monitoring and Assessment Program & Foundation, Northern Arizona University*

- 8:20-8:40 PHYSICAL AND BIOLOGICAL RESTORATION OF FOSSIL CREEK, ARIZONA: SUCCESSFUL COLLABORATION ACROSS ORGANIZATIONS AND INDIVIDUALS. **HEDWALL**, SHAULA, Pam Sponholtz, David Weedman, Amy Unthank, Ian Reid, Allen Haden
- 8:40-9:00 CHEMICAL RENOVATION OF FOSSIL CREEK, ARIZONA. **WEEDMAN**, DAVID A.
- 9:00-9:20 THE RELATIVE EFFECTS OF FLOW DIVERSION AND NONNATIVE INVASIVE FISH ON THE NATIVE FISH COMMUNITY OF FOSSIL CREEK. **HADEN**, ALLEN, Jane. C. Marks
- 9:20-9:40 CHANGING POPULATION STRUCTURE OF A NON-NATIVE CRAYFISH INVADER DURING STREAM RESTORATION. **ADAMS**, KENNETH J., Jane C. Marks
- 9:40-10:00 INFLUENCES OF TRAVERTINE DAM FORMATION ON LEAF LITTER DECOMPOSITION AND ALGAL ACCRUAL IN FOSSIL CREEK, ARIZONA. **CARTER**, CODY D., Jane Marks
- 10:00-10:20 **BREAK**
- 10:20-10:40 RECREATION MONITORING ON FOSSIL CREEK, **HANCOCK**, PAUL, Matt Jedra, Marty Lee
- 10:40-11:00 THE EFFECTS OF TRAVERTINE DAMS ON LEAF LITTER RETENTION IN FOSSIL CREEK, ARIZONA. **COMPSON**, ZACCHAEUS G., Mead Z. Mier, Jane. C. Marks
- 11:00-11:20 MICROBIAL COMMUNITY CHARACTERIZATION: WHO IS DECOMPOSING LEAF LITTER IN FOSSIL CREEK? **HARROP**, BRENDA L., Mary E. Watwood, Jane C. Marks, Rebekka M. Rieder

Status of the Colorado River Ecosystem

Thursday Afternoon 1:00-4:20 p.m.

BALLROOM

Moderator: Ted Melis, *USGS Southwest Biological Science Center, Grand Canyon Monitoring and Research Center, Flagstaff, AZ*

- 1:00-1:20 INFLUENCE OF GLEN CANYON DAM OPERATIONS ON DOWNSTREAM SAND RESOURCES OF THE COLORADO RIVER IN GRAND CANYON. **WRIGHT**, SCOTT, Ted Melis, David Topping, Rubin
- 1:20-1:40 FISHES OF THE GRAND CANYON. Coggins, Lewis, **STEVEN GLOSS**
- 1:40-2:00 WATER QUALITY IN LAKE POWELL AND THE COLORADO RIVER. **VERNIEU**, WILLIAM, Susan Hueftle, Steven Gloss
- 2:00-2:20 AQUATIC ECOLOGY: THE ROLE OF ORGANIC MATTER AND INVERTEBRATES. **KENNEDY**, THEODORE, Steven Gloss
- 2:20-2:40 RIPARIAN VEGETATION AND ASSOCIATED WILDLIFE. **RALSTON**, BARBARA
- 2:40-3:00 BIRDS OF THE COLORADO RIVER IN GRAND CANYON: A SYNTHESIS OF STATUS, TRENDS, AND DAM OPERATION EFFECTS. Holmes, Jennifer, John Spence, **MARK SOGGE**
- 3:00-3:20 **BREAK**
- 3:20-3:40 CULTURAL RESOURCES IN THE COLORADO RIVER CORRIDOR. **FAIRLEY**, HELEN
- 3:40-4:00 RECREATIONAL VALUES AND CAMPSITES IN THE COLORADO RIVER ECOSYSTEM. **KAPLINSKI**, MATTHEW, Jeff Behan, Joseph Hazel, Roderic Parnell, Helen Fairley
- 4:00-4:20 THE STATE OF THE CO RIVER ECOSYSTEM IN GRAND CANYON OR SCORE REPORT: LESSONS FROM 10 YEARS OF ADAPTIVE MANAGEMENT IN GRAND CANYON. **LOVICH**, JEFFREY E., Ted Melis, Steve Gloss

Animal Ecology II

Thursday Afternoon 1:00-4:20 p.m.

AGASSIZ

Moderator: Eben Paxton, *USGS Southwest Biological Science Center, Colorado Plateau Research Station, Northern Arizona University*

- 1:00-1:20 FIRE EFFECTS ON FISHES AND AQUATIC ECOSYSTEMS IN THE SOUTHWEST: CASE STUDIES, LAB INQUIRES AND LANDSCAPE PERSPECTIVES. **CARTER**, CODY D., John Rinne, Jonathan Long
- 1:20-1:40 WOODPECKER RESPONSE TO PRESCRIBED FIRE IN SOUTHWESTERN PONDEROSA PINE FORESTS. **GWINN**, NATHAN, Brett G. Dickson, Stephanie Jentsch, William M. Block
- 1:40-2:00 PRELIMINARY HOME RANGE AND LIFE HISTORY FROM RADIO TELEMTRY OF *CROTALUS OREGANUS CERBERUS*, THE ARIZONA BLACK RATTLESNAKE. **SCHOFER**, JUSTIN
- 2:00-2:20 **AN ACOUSTIC SURVEY FOR BATS ALONG THE COLORADO RIVER CORRIDOR. BUECHER, DEBBIE C.**
- 2:20-2:40 FORAGING AREAS FOR FEMALE AND MALE SPOTTED BATS (*EUDERMA MACULATUM*), NORTHERN ARIZONA. **CHAMBERS**, CAROL L., Michael J. Herder, R. Jason M. Corbett
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Animal Ecology II - continued

- 2:40-3:00 FORAGING PATTERNS AND ROOST SITES FOR FEMALE BIG FREE-TAILED BATS (*NYCTINOMOPS MACROTIS*) IN NORTHERN ARIZONA. **CORBETT**, R. JASON M., Carol L. Chambers, Michael J. Herder, Elaine F. Leslie
- 3:00-3:20 BREAK
- 3:20-3:40 RADIOISOTOPIC ANALYSES OF POTENTIAL SOURCES OF LEAD CONTAMINATION IN CALIFORNIA CONDORS. **CHESLEY**, JOHN, Peter Reinthal, Tim Corley, Chris Parrish, Joaquin Ruiz
- 3:40-4:00 THE ECOLOGICAL EFFECTS OF ARTIFICIAL WATER SOURCES IN A CHANGING HYDROLOGIC REGIME. **HOLTON**, P. BRANDON, David J. Mattson
- 4:00-4:20 PREDATION BY COUGARS IN THE FLAGSTAFF UPLANDS 2003-2005. **MATTSON**, DAVID, Jan Hart, Terry Arundel

Creating Successful Partnerships for Rangeland Conservation

Thursday Afternoon 1:00-3:00 p.m.

FREMONT

Moderator: Karan English, *Environmental Monitoring and Assessment Program & Foundation, Northern Arizona University*

Panel Discussion

The focus of this panel discussion will be on the components and challenges inherent in forming successful partnerships for rangeland conservation. The panel members will bring their experience and perspectives on the ingredients for successful community-based collaboratives. Specifically, panel members will discuss working with public land permittees, public lands grassbanking in northern New Mexico, preserving the tradition of grazing while improving rangelands, working within multi-party landscapes, and collaborating with community-based organizations such as the Malpais Borderlands Group and the Diablo Trust. The goal of the panel discussion is ultimately to apply the lessons and experiences of the panel members to the conservation of grasslands on the Colorado Plateau.

Panel Members:

Whitney Tilt, Project Manager for Resources for Community Collaboration (RCC). Sonoran Institute, Northwest Office, Bozeman, MT.

Craig Conley, Director, Rowe Mesa Grassbank. Quivira Coalition, Santa Fe, NM.

Peter Warren, Grassland Conservation Program Manager. The Nature Conservancy, Arizona Chapter, Tucson, AZ.

Tom Sisk or Tischa Munoz-Erickson. The Sisk Lab, Northern Arizona University, Flagstaff, AZ.