



Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism and Spirit

SEPTEMBER 7 - 12, 2014 ★ YMCA OF THE ROCKIES ★ ESTES PARK, COLORADO

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Welcome!

Welcome Congress Participants!

We are likely here because wildlife and conservation values are important personally and to society. On private and communal lands, wildlife is not equally important to everyone and conservation might not be in the immediate best interests of persons who think first about their livelihoods. How do we unleash the spirit and actions for managing wildlife on private and communal lands?

Wildlife does not know about ownership boundaries. They do respond to how the land is managed. Are incentives sufficient to motivate positive private actions to manage abundant and imperiled species? If not, the consequences of negative actions are undesirable.



If the spirit of public and private cooperation was great, we would not have the need for our gathering or to constantly clarify authority and responsibility, itemize needed actions, and to celebrate positive outcomes. Fortunately, there are striking examples locally and from around the world showing how wildlife and livelihoods can exist on private and communal lands. Some private examples are better than public examples of conservation.

To celebrate successes and to stimulate a better future, our Congress features challenging plenary presentations, topical and important symposia on a variety of relevant themes, contributed information, field experiences, with discussions and workshops for you to convert your interests into actions.

Symposia topics that you will want to read abstracts about or to see include:

- *The Business of Conservation and role of private land owners: with contributions from western US to Africa featuring the Texas Wildlife Association, Western Landowners Alliance, and the North American Grouse Partnership.*
- *Working with landowners to provide biodiversity and to protect imperiled species, such as rare plants in Colorado, Panthers in Florida, Tigers in Asia, and ranch wildlife on the Chile-Argentina border or Flint Hills of Kansas, will be addressed through the Colorado Natural Heritage Program, Nature Conservancy, and NatureServe.*
- *Using wild meats, raising elk and deer in captive settings with help from: North American Elk Breeders Association, North American Deer Farmer's Association, and supply chain insights from Africa.*

- *Private land management programs and the work of private land biologists sponsored by Colorado Parks and Wildlife (CPW): featuring persons with interrelated ties to Natural Resources Conservation Service, Rocky Mountain Bird Observatory, Pheasants Forever, US Fish and Wildlife Service, CPW, local landowners, boards, and cooperating agencies and organizations.*
- *Human and Wildlife Conflicts sponsored by the National Wildlife Research Center with a special day-long session about managing feral pigs organized by Texas A&M Extension and other professionals from Fort Collins to Southern US. Europe is having their own conference on pig problems and solutions so they are occupied closer to home.*
- *Climate issues facing environments that landowners must consider for their livelihoods and wildlife: addressed by US Climate Science Center professionals from CSU and CU.*
- *Energy developments have potentials to change livelihoods, landscapes, wildlife, and conservation: the High Lonesome Ranch in Colorado provides examples of research and practices that show how energy, wildlife, and landowners can live more compatibly.*
- *Benefits, barriers, and examples around the world are reviewed in the Community Conservation Symposium.*
- *For those who have outstanding problem solving skills, learn about approaches to tackle the huge issues of poaching and conservation of elephants and rhino with help from Wildlife Protection Solutions, the WILD organization, and perhaps using drones.*
- *Educators will want to see if we are training students well enough to work on private land issues; and how to use stories, websites, and creative ideas--such as puppets and emotions--to instill a positive spirit for learning, using information, and taking actions.*

The basic question of “why should I manage for wildlife or human access to my lands when they do not add value to my interests and livelihood?” is a constant battle. The last event of this type was held in South Africa where I learned the phrase “if it pays, it stays!” Our job is to make wildlife valuable so it can stay forever!

Toward helping persons to help themselves,

Dr. Delwin E. Benson

Congress Chairman

Professor and Extension Wildlife Specialist

Department of Fish, Wildlife and Conservation Biology, Colorado State University

Fort Collins, Colorado USA

Welcome From Senator Mark Udall

Dear Fellow Coloradans and Congress Attendees,

As a fifth-generation Westerner, avid outdoorsman, and Chairman of the U.S. Senate Subcommittee on National Parks, I understand the need to approach land and wildlife management in a balanced and collaborative way. I want to commend the organizers and attendees of this 8th International Congress for Wildlife and Livelihoods on Private and Communal Lands for bringing together a broad array of stakeholders and providing a place for them to discuss the pressing issues of our time.

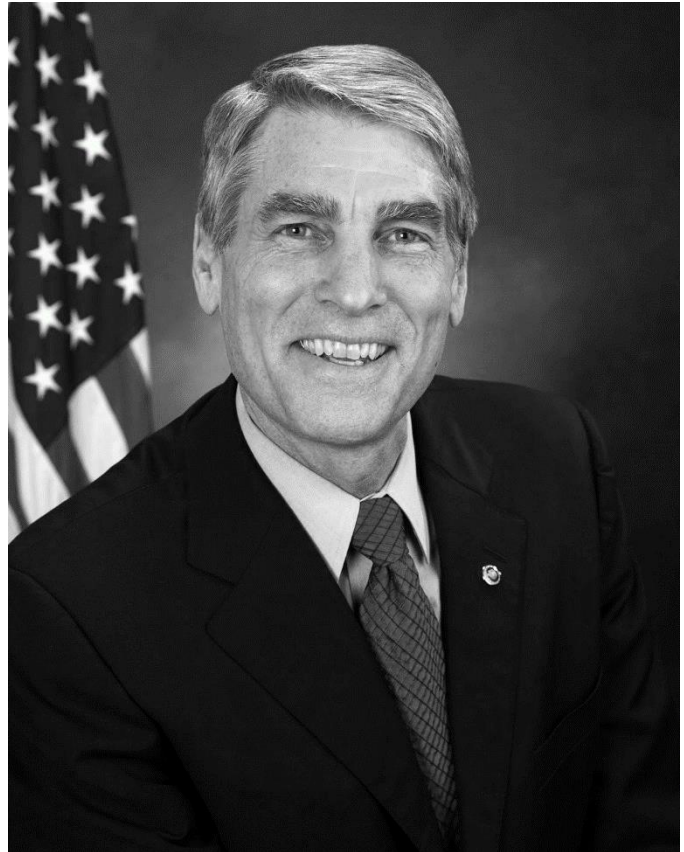
As Colorado's senior Senator, I have traveled all over the state and had conversations with local Coloradans on issues ranging everywhere from economic development to environmental conservation. The one thing that always stands out from these conversations is the broad consensus that Colorado provides a special way of life, one whose backbone is our pristine natural landscapes, abundant resource endowments and good people. We need to encourage policies that respect and protect our treasured landscapes while at the same time providing good-paying job opportunities in the state.

These days it is easy for even small issues to become politicized, but I believe that the best policies are created from local, community-driven dialogue. I remain strongly committed to ensuring the country we leave to our children is better than the one given to us by our parents. This commitment requires us to be good stewards of our communities and the environment, so I applaud the organizers of this event for providing a forum for people to share ideas and find common ground.

Sincerely,



Mark Udall
U.S. Senator



Acknowledgements

SCIENTIFIC COMMITTEE FOR PLANNING & SYMPOSIA DEVELOPMENT:

Lesli Allison • *Western Landowners Alliance*
David Anderson • *Colorado Natural Heritage Program*
Steve Belinda • *The High Lonesome Ranch*
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John Calderazzo • *Colorado State University*
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Gert Dry • *Wildlife Ranching South Africa*
Billy Higginbotham • *Texas A&M AgriLife Extension Service*
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Ken Morgan • *Colorado Parks and Wildlife*
Jeffrey Morissette • *North Central Climate Science Center*
Terry Riley • *The Grouse Partnership*
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Martha Sullins • *Colorado State University Extension*
Craig Taggart • *Western Landowners Alliance*
Dawn Thilmany • *Colorado State University Extension*
Wouter van Hoven • *Wildlife Protection Solutions*

FIELD TRIPS:

David Armstrong • *Sylvan Dale Ranch*
Ryan Boggs • *LightHawk Flights*
Brett Davidson • *Blue Valley Ranch*
Mark DeGregorio • *Rocky Mountain National Park Collaboration*
Perry Handyside • *Buffalo Roam Resources*
Therese Johnson • *Rocky Mountain National Park Collaboration*
John Kossler • *Western Meridian Resources*

Ken Morgan • *MacGregor Ranch*
Katie Phillips • *Rocky Mountain National Park Collaboration*
Shannon Rochelle • *LightHawk Flights*
Dave Smith • *Rocky Mountain National Park Collaboration*
Sher Steuben • *Blue Valley Ranch*
Volunteer Pilots • *LightHawk Flights*

TECHNICAL AND PROMOTIONAL ASSISTANCE:

Chad Bishop, Ken Morgan & Windi Padia • *Colorado Parks and Wildlife*
Peder Halseide & Donald Schrupp • *www.LandHelp.info*
Jon Haufler, Lisa Moore, & Winifred Kessler • *The Wildlife Society*
Allison Level & Jocelyn Boice • *Colorado State University – CSU Library Archives*
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Ron Regan • *Association of Fish and Wildlife Agencies*
Cheryl Riley • *Pheasants and Quail Forever*
Donald Schrupp, Melinda Laituri & David Ramsay • *Colorado State University – Google Liquid Galaxy*
David Stratton & Jeri Griego – *Jed's Corner*
Donna Weyer – *Abstract Review*

EVENT PLANNING COORDINATION:

Delaney Meeting & Event Management
Emily Herman & Staff • *YMCA of the Rockies*
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Congress Volunteers

PAST INTERNATIONAL WILDLIFE RANCHING SYMPOSIUM ORGANIZERS & ADVISORS:

Philippe Chardonnet – *France*
Andrey Conroy & Wouter van Hoven - *South Africa*
Yves Lecocq • *International Union of Game Biologists - Belgium*

Lyle Renecker - *Canada*
Raul Valdez - *New Mexico, USA*

Historical Context, Visions and Outcomes

The 8th International Wildlife Ranching Symposium (IWRS) held in Estes Park Colorado September 7-12, 2014 was called the **Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism, and Spirit** to encourage actions toward issues and opportunities involving private lands, their owners/operators, and cooperating public and private agencies, organizations, and businesses.

Previous IWRS were held about every three years since 1988: the first and last in the United States of America; Africa three times; Canada twice; and France. Most were organized by academic institutions with assistance from their networks of scholars, managers, and practitioners: the first by New Mexico State University and the current one by Colorado State University with a key private ranching and business sponsor; two events by University of Pretoria, South Africa; and two by Canadian universities. The university model changed for the 6th IWRS in Paris with leadership by an NGO (IGF Foundation) and the 7th event in South Africa was organized by a private initiative and generously funded by the Northern Cape Department of Economic Development and Tourism. The 8th Congress, leading into the 9th event, seeks to rectify the lack of a consistent international home, leadership, and administrative system for IWRS by encouraging long-term leadership and administration to surface from existing organizations or for a new entrepreneurial spirit and plan to arise. We intend to maintain the revolving international offerings, but seek a foundation from which to expand both locally and internationally.

All IWRS reflect how wildlife contributes to agricultural management, conservation, economies, ecosystem functions, and healthy societies. Private lands are often subject to expectations by society without commensurate and clear authority, responsibility, funding, and infrastructure unlike publicly managed resources, where governmental agencies and staff tend to have a clearer legal mandate and operating systems of various qualities. Recreational interests and uses are important catalysts for private actions in many parts of the world.

For wildlife to be managed on the majority of lands in Colorado, the USA or the world, which are private or communal, we need clear and effective mandates, incentives, tools, the spirit of cooperation, and the dedication to take and improve actions. The 8th Congress has deliverables to expand beyond the minutes, hours, weeks, and years spent to plan and to conduct the event.

1. The vision of finding a permanent home and broader leadership for subsequent IWRS meetings and interim actions was explained and is highlighted first. Without this important step, future events could be in jeopardy.
2. The new LandHelp website, www.LandHelp.info, will electronically house the program, abstracts and videos created by expert scholars as will Colorado State University Libraries, and other portals. These can be retrieved for use in the future both locally and internationally.
3. LandHelp is also offered as a resource for persons around the world to deposit and to retrieve electronic links to information that is created and offered by agencies, organizations, businesses, institutions of learning, and by private leaders and managers. Users can then retrieve useful information in one location provided by the best experts in the world.
4. Videos from the Congress will be created and made available to attendees and others after the event who will be asked to share them within their networks to immediately multiply the valuable inputs and outcomes from the Congress with the goal of prompting similar positive actions as those demonstrated here.

Jed's Corner

Stop by Jed's Corner in the Exhibit Area to exchange stories and view more videos of the Congress environs.

Jed's Corner was created to kindle your spirit about working positively with private and communal lands and to use the Congress as a tool for better communications. Jed is a puppet. Jed isn't real. Jed cannot do anything on his own...similar to our work...and that is why I asked him to help me! My hope is that Jed's light-hearted approach to generating interest and communications will also serve as a reminder that education is not only about standard writing and speaking about the facts. Communication is about appealing to the spirit, the heart, the emotions, and to the intellect. If we have not reached into the human spirit, then we will not likely have a willing receiver of our messages. Enjoy Jed's recorded insights and what he has to say while at the Congress. He just might help to expand your sense of wonder that has been limited during all of these years. If Jed is not successful, then perhaps our more standard approaches to change will not be successful either.



LandHelp

Make LandHelp (www.LandHelp.info) your world class resource to store and retrieve your work!

Good thoughts, words, and deeds need a life beyond normal media outlets and the Congress and to reach into the hearts and actions of people around the world. The world is filled with information. The trick is finding it. The ultimate objective is to put information into action. LandHelp was developed and used over two decades by professionals and consumers to easily store and retrieve web-based links to manage land, wildlife and people under a common brand name. Developed as a first-stop-shop, LandHelp organizes existing useful information from credible sources that might otherwise go unnoticed, not accessed, or not heeded. We will post Congress abstracts and visuals into LandHelp then you can access that and more to reach out to your audiences. Other of your works, and networks, can be linked into LandHelp into the future.

LandHelp started when a network of professionals were seeking management information for landowners and found that significant written information existed from a variety of sources and formats, but it often was pulled from print without notice. As the web emerged as a commonly-used, dynamic and editable information resource, LandHelp was created for community outreach. A recent renovation of LandHelp resulted in an improved, second generation content management system including the original 5000+ web-based links and/or PDF documents that now uses a dynamic, data-based approach. This provides for more opportunities to collaborate in its development from the conservation communities that include natural resources professionals, agriculturalists, and resource users.

You can provide interactive feedback and input and submit content to LandHelp for monitored posting. We will present an overview of LandHelp's layout and capabilities in a technical session and encourage Wildlife Congress participants to visit LandHelp to and take it for a test drive. The ideal outcome is for all states, provinces, and countries to have approved contributors to LandHelp, then inputs can be accessed and shared with others. Ultimately, LandHelp will only be as good as the information that is shared therein.

To become a 'Contributor' to the LandHelp.info website, visit the site (www.landhelp.info) and click on the 'Submit Listing' option on the 'Main Menu'. If don't already have login privileges to contribute content, an opportunity will be provided you to request such a login. Once you have 'Contributor' privileges you will be guided through a process to submit your content for listing. This will include selection of an appropriate topic 'Category' and provision for submitting a paragraph or more of content. Once you 'Submit' your listing, it will go to a 'queue' for review by the 'Editors' for LandHelp.info (LH). Once the listing has been approved by the editors, it will be published to the LH web site. This process is also documented in the PDF available from the web site via the link: <http://www.landhelp.info/submitting-a-contributor-listing-for-landhelp>.

Planning Hexagon

The Planning Hexagon provides reminders that problem solving requires holistic thinking with interdisciplinary understanding and actions.

To connect with the land, one must first connect in spirit and actions with landowners: their families, aspirations, reasons for hard work, and relate to their lives and livelihoods. Landowners, and all in society, make decisions from an array of interrelated parameters that has been organized into a Planning Hexagon to more broadly identify problems and then to make holistic decisions with interdisciplinary solutions.



General Information

CONGRESS REGISTRATION DESK

Visit the congress registration desk for information, messages, or to post a job opening or resume. Refer to the Congress Agenda for hours of operation. Attendees can sign up here for field trips or make changes to activities.

BUSINESS CENTER



The Business Center is located in the Administration Building and features complimentary wi-fi and the ability to check email, make copies or print.

INTERNET ACCESS

Wi-fi is free and available in all guest rooms and public spaces throughout the YMCA.

PARKING

Parking is free but you are required to park your vehicle outside of the lodge you are assigned to.

SHUTTLE SERVICE

The YMCA does not offer complimentary shuttle service. Recommended shuttle service is the Estes Park Shuttle. You can call and reserve a pick up time by calling (970) 586-5151 or you can make a reservation by going to www.estesparkshuttle.com.

SPONSOR, EXHIBITOR & POSTER AREA

Displays will be set up starting on Monday, September 8th at 8:00 a.m. through Thursday, September 11th at 3:30 p.m. Please take the time to visit with these organizations, and network with your peers during the coffee breaks and when meetings are not in session.

ALCOHOL & MEALS



The YMCA does not sell or serve alcoholic beverages and alcohol is not allowed in common areas. You may bring your own and consume in your lodge room, cabin or meeting room only. YMCA Guests: meals are included with overnight room rate and will be included starting on Sunday evening through Friday afternoon. Non-YMCA Guests: meals are included in Congress registration fee and will be included starting on Sunday evening through Friday afternoon. Nametag will be required for entry.

Field Trips

**** Buses Depart Hyde Chapel Parking Lot**

Tuesday, September 9th

Rocky Mountain National Park Elk Viewing

Time: Departs YMCA – 5:00 p.m.; Returns YMCA – 8:00 p.m.

Cost: \$50, includes a bag dinner / **Difficulty Level:** Easy

Take an evening adventure into Rocky Mountain National Park watching and listening to elk bugle and spar in preparation for mating. The trip also reveals urban wildlife conflicts with elk that are just as likely to be seen in the town of Estes Park as in the National Park. Watching humans who are watching wildlife can also become a spectacle as masses of people line the roads and even incorrectly decide to get a little too close for the comfort of elk and their own safety. Staff with Rocky Mountain National Park will interpret the evening and help you to learn more about wildlife, habitats and people of the Park.



Wednesday, September 10th

Blue Valley Ranch

Time: Departs YMCA – 7:00 a.m.; Returns YMCA – 6:00 p.m.

Cost: \$100, includes BBQ lunch at ranch / **Difficulty Level:** Easy, some walking at bus stops

This all day excursion will be a combination of walking and shuttle tour of Blue Valley Ranch. It will include stops highlighting its habitat improvement and agricultural programs with discussion of management methods and monitoring results. Blue Valley Ranch is a 25,000 acre conservation property located in Grand and Summit Counties in north-central Colorado. The ranch supports a diversity of mountain vegetation communities, beginning in the Blue River corridor at 7,400 ft (2,250 m), and rising in elevation through mountain meadows and shrublands, aspen, lodgepole and other mixed conifer ecosystems to over 9,000 ft (2,740 m). As a working ranch, Blue Valley also produces hay, cattle and bison and supports a diversity of wildlife species.



Conservation Fly Over

Time: Departs YMCA – 6:00 a.m.; Returns YMCA – 11:00 a.m.

Cost: \$100, includes a bag breakfast / **Difficulty Level:** Easy

In partnership with LightHawk, we are proud to offer a special opportunity to a select few participants. This opportunity will be to fly over parts of Colorado with a LightHawk Volunteer Pilot to see some of the different issues surrounding wildlife management on private and public lands. All flights will originate at the Fort Collins-Loveland Airport. Please note that these trips are weather contingent and may be cancelled due to unsafe or uncomfortable flying conditions.



Colorado Grasslands-Challenges and Solutions:

This trip will head east onto the Plains of Colorado. Participants should expect to see the impacts of oil and gas development, wind energy development, wildlife conservation projects on working lands, and use of Land Trusts and Conservation Easements to help protect landscapes, corridors and biodiversity. Experts will be on hand to show points of interest along the way.

Elk Management Cooperatives in Colorado:

This trip will head west into the mountains of Colorado to see elk management issues and cooperative programs on private and communal lands. Animals that use public lands such as Rocky Mountain National Park also migrate onto Forest Service and Bureau of Land Management Lands, then spend winter on private lands in mountain lowlands. Animals have no boundaries; Management programs are used to mitigate public values of elk and private livelihoods of agricultural producers. We will also discover rare plant sites that are protected on private lands.

Congress Agenda

Sunday, September 7th

Congress Registration Desk Open

12:00 p.m. – 6:00 p.m.

Longs Peak Upper Lobby

Sponsor, Exhibitor & Poster Set-Up

12:00 p.m. – 6:00 p.m.

Longs Peak Lower Lobby

U.S. Land Designations & Wildlife Ownership

Gene Decker, Colorado State University

4:00 p.m. – 5:00 p.m.

Diamond East

Welcome Social & Entertainment

Enjoy heavy hors d'oeuvres, bar service, conversations and live Cowboy Music by "Yer Neighbors" featuring Amy Brackenburg and Lars Larson

6:00 p.m. – 10:00 p.m.

Longs Peak Lower Lobby

Monday, September 8th

Congress Registration Desk Open

7:00 a.m. – 7:00 p.m.

Longs Peak Upper Lobby

Breakfast

7:00 a.m. – 8:00 a.m.

Aspen Dining Hall

Sponsor, Exhibitor & Poster Area Open

During breaks and when group is not in session

Longs Peak Lower Lobby

Welcome Remarks & Plenary Session I

8:00 a.m. – 10:00 a.m.

Diamond East/West

- Introductions of Congress & Important Issues - **Delwin E. Benson**, *Colorado State University*
- Conservation in the 21st Century – Thinking Big, The Public Good and Private Lands - **John Hayes**, *Warner College of Natural Resources, Colorado State University*
- **Bob Broscheid**, *Colorado Parks and Wildlife*
- Large-Scale Conservation: Engaging Agencies, Organizations, Landowners and Funders - **Robert Manes**, *The Nature Conservancy of Kansas*

Coffee Break & Exhibit Area Discussions

10:00 a.m. – 10:30 a.m.

Longs Peak Lower Lobby

Plenary Session II***Diamond East/West***

10:30 a.m. – 12:30 p.m.

- Environmental Knowledge Learned from the Park - **John Mack**, *Rocky Mountain National Park*
- USDA Hubs and the Long Term Agro Research Network - **Justin Derner**, *USDA-Agricultural Research Service*
- Using Storytelling Techniques to Communicate Science - **John Calderazzo**, *Colorado State University*

Lunch***Aspen Dining Hall***

12:30 p.m. – 1:30 p.m.

Exhibit Area Discussions***Longs Peak Lower Lobby***

12:30 p.m. – 1:30 p.m.

Plenary Session III***Diamond East/West***

1:30 p.m. – 3:00 p.m.

- Introduction to Land and Animal Ownership – **Delwin E. Benson**, *Colorado State University*
- Managing the Public's Resource on Private Lands: A Landowner's Perspective - **Greg Simons**, *Texas Wildlife Association*
- Public Values of Wildlife: What Are They? - **Don Steinbach**, *Stonebrook Conservation Consulting Services*
- Role of Ecosystem Services in Private Lands Conservation: An Investors Perspective - **Terry Anderson**, *Advanced Ecology*

Refreshment Break & Exhibit Area Discussions***Longs Peak Lower Lobby***

3:00 p.m. – 3:30 p.m.

Concurrent Technical Sessions & Symposia

3:30 p.m. – 5:30 p.m.

Track 1: Climate***Diamond East/West****Moderator: Jeffrey Morissette, North Central Climate Science Center*

- JOINT SESSION
 - Climate Change in the U.S. Great Plains, Implication for Private and Communal Lands - **Dennis Ojima**, *Colorado State University*
 - Drought Risk and Adaptation in the Interior - **Shannon McNeeley**, *North Central Climate Science Center*
- JOINT SESSION
 - Wind Power from Tribal Lands – **Bob Gough**, *Intertribal Council On Utility Policy*
 - Hard Decisions in a Changing Climate – **William Travis**, *University of Colorado*
- PANEL PRESENTATION: **Justin Derner, Dennis Ojima, Bob Gough, and William Travis**

- Collaborative Climate Change Adaptation: A Natural Community Focus – **Patrick Comer**, *NatureServe*

Track 2: Ideas to Enrich Communications About Conservation

Chasm Lake

*Moderator: **John Calderazzo**, Colorado State University*

- Training Wildlife Biologists for Work on Private Lands – **Jennifer Smith**, *University of Nebraska-Lincoln*
- LandHelp.info II: Providing Collaborative Web Services to the World – **Don Schrupp**, *Retired, Colorado Division of Wildlife*
- The Puppet: Communication to Promote Understanding and Conservation – **Jeri Griego**, *StoryTime Adventures* and **David Stratton**, *StoryTime Adventures*
- How Teaching Ethics Can Be the Most Persuasive Method for Preserving Our Hunting and Conservation Heritage – **Michael Sabbeth**, *Esq.*

Sponsor, Exhibitor & Poster Social

Longs Peak Lower Lobby

Visit with exhibitors and authors of contributed posters. Snacks and cash bar available.

5:00 p.m. – 6:30 p.m.

Dinner

Aspen Dining Hall

6:30 p.m. – 7:30 p.m.

Tuesday, September 9th

Congress Registration Desk Open

Longs Peak Upper Lobby

7:00 a.m. – 7:00 p.m.

Breakfast

Aspen Dining Hall

7:00 a.m. – 8:00 a.m.

Exhibit Area Discussions

Longs Peak Lower Lobby

7:00 a.m. – 8:00 a.m.

Plenary Session IV

Diamond East/West

8:00 a.m. – 10:00 a.m.

- **Bob Broscheid**, *Colorado Parks and Wildlife*
- Wild Pigs in North America: History, Distribution, Ecology and Challenges– **Jack Mayer**, *Savannah River National Laboratory*
- Wildlife Ranching Industry: The South African Flagship of a Sustainable Green Economy – **Gert Dry**, *Wildlife Ranching South Africa*

Coffee Break & Exhibit Area Discussions

Longs Peak Lower Lobby

10:00 a.m. – 10:30 a.m.

Concurrent Technical Sessions & Symposia

10:30 a.m. – 12:30 p.m.

Track 1: Private Work with Wildlife and People in the United States

Chasm Lake

Moderator: **Ken Morgan**, Colorado Parks and Wildlife

- An Overview of Private Lands Programs, Past and Present – **Ken Morgan**, Colorado Parks and Wildlife
- The Partners for Fish and Wildlife Program is the U.S. Fish and Wildlife Service's Lands Program – **Bill Noonan**, Colorado Partners for Fish and Wildlife
- The Habitat Partnership Program – **Pat Tucker**, Colorado Parks and Wildlife
- Rocky Mountain Bird Observatory Stewardship Program – **Seth Gallagher**, Rocky Mountain Bird Observatory

Track 2: Wild and Feral Pigs

Boulder Field

Moderator: **Billy Higginbotham**, Texas A&M AgriLife Extension Service

- Wild Pig Damage and Conflicts – **Bronson Strickland**, Mississippi State University
- Wild Pig Diseases: Current Issues and Potential Concerns – **Skip Jack**, Mississippi State College of Veterinary Medicine
- Control Methods for Wild Pigs in the United States: Best Management Practices – **Michael Bodenchuk**, USDA-APHIS-Wildlife Services
- Traditional and Emerging Methodology to Educate the Public About Wild Pigs – **James Cathey**, Texas A&M AgriLife Extension Service

Track 3: The Business of Conservation

Diamond East/West

Moderator: **Wouter van Hoven**, Wildlife Protection Solutions

- Game Ranching in South Africa: Biodiversity Conservation or Agriculture – **Brian Reilly**, Tshwane University of Technology
- Transaction Cost Measurement for the Regulations of Live Wildlife Trade in South Africa – **Philippus Cloete**, North-West University
- Internal Audit and Wildlife Ranching: Friend or Foe? – **Yvonne Reilly**, University of Pretoria
- What Makes a Hunting Experience Memorable? – **Petrus van der Merwe**, North-West University

Track 4: Landscapes & Grouse

Granite Pass

Moderator: **Terry Riley**, The Grouse Partnership

- Development and Implementation of the Lesser Prairie Chicken Range-Wide Conservation Plan – **David Klute**, Colorado Parks and Wildlife
- Conservation of Greater Sage-grouse: Challenges Managing a Landscape Scale Species – **San Stiver**, Western Association of Fish and Wildlife Agencies
- Native Grasslands of the Great Plains of North America: Using Prairie Grouse as Flagship Species for Restoration – **Jonathan Haufler**, Ecosystem Management Research Institute

Track 5: Community Conservation**Keyhole***Moderator: Margit Hentschel, Colorado State University, Institute for Learning and Teaching*

- Importance of Landscape and Global Change for Rabbits and Hares in Semiarid Environments in Mexico – **Daniel Jiminez-Garcia**, Benemirita University Autinoma de Puebla
- De-Constructing a Partnership in the Mara Conservancies, Kenya: A Win-Win Conservation and Development Story – **Connor Jandreau**, Natural Resources Institute, University of Manitoba
- Communities and Wildlife Conservation: A Participatory Approach to Measuring Human Well-being Impacts – **Jessica Musengezi**, The Nature Conservancy

Attendee Lunch**Aspen Dining Hall**

12:30 p.m. – 1:30 p.m.

Exhibit Area Discussions**Longs Peak Lower Lobby**

12:30 p.m. – 1:30 p.m.

Concurrent Technical Sessions & Symposia

1:30 p.m. – 3:00 p.m.

Track 1: Private Work with Wildlife and People in the United States**Chasm Lake***Moderator: Ken Morgan, Colorado Parks and Wildlife*

- Colorado Habitat Exchange – **Terry Fankhauser**, Colorado Cattlemen's Association
- Rancher's Perspectives – **Russell Davis**
- Incentives and Outcomes of Black Footed Ferret Introductions in Colorado on Private Lands – **John Hughes**, U.S. Fish and Wildlife Service

Track 2: Wild and Feral Pigs**Boulder Field***Moderator: Billy Higginbotham, Texas A&M AgriLife Extension Service*

- Examining the Risk and Rewards for the Anthropogenic Spread of Wild Hogs – **Joe Caudell**, Murray State University
- A Case History of a Politically Charged Issue – Wild Pigs in Tennessee – **Charles Yoest**, Tennessee Wildlife Resources Agency
- Toxicants and Contraceptives for Feral Swine in the U.S. – **Kurt VerCauteren**, USDA-APHIS-Wildlife Services National Wildlife Research Center

Track 3: The Business of Conservation**Diamond East/West***Moderator: Wouter van Hoven, Wildlife Protection Solutions*

- Zooming in on Trophy Hunters Spending in South Africa – **Meville Saayman**, North-West University
- National Insurance Fund in Mexico Supports Carnivore Conservation in Private Land – **Almira Hoogesteijn**, Cinvestav Unidad Mérida

Track 4: Landscapes & Grouse**Granite Pass****Moderator: Terry Riley, The Grouse Partnership**

- An Ecological Conundrum: Just What Makes a Good Lesser Prairie-Chicken Habitat? – **Steve Olson, USDA Forest Service**
- Landscape Conservation Takes Money: How Conservation Easements are Revolutionizing Habitat Protection and Management in the U.S. - **Stephanie Manes, Common Ground Capital, LLC**

Refreshment Break & Exhibit Area Discussions**Longs Peak Lower Lobby**

3:00 p.m. – 3:30 p.m.

Concurrent Technical Sessions & Symposia

3:30 p.m. – 5:30 p.m.

Track 1: Private Work with Wildlife and People in the United States**Chasm Lake****Moderator: Ken Morgan, Colorado Parks and Wildlife**

- Three Rivers Alliance Sessions – **Don Andrews and Troy Schneider, Three Rivers Alliance**
- Building Connections to Wild Places with Remote Viewing Technologies – **Phil Ramsey, MPG Ranch**
- Using Bird Populations to Evaluate Activities, Promote Ecological Awareness and Prompt Action on Private Lands – **Kate Stone, MPG Ranch**

Track 2: Wild and Feral Pigs**Boulder Field****Moderator: Billy Higginbotham, Texas A&M AgriLife Extension Service**

- APHIS National Feral Swine Damage Management Program – **Dale Nolte, USDA-APHIS-Wildlife Services**
- Mechanical Control of Wild Boar (*Sus scrofa*) Population – **Irfan Ashraf, The Islamia University of Bahawalpur**
- Landowner Attitudes Toward Wild Pigs – **Erin Harper, Illinois Natural History Survey**

Track 3: The Business of Conservation**Diamond East/West****Moderator: Wouter van Hoven, Wildlife Protection Solutions**

- A New Era of Harvest on Private Lands in the USA: When Should We Manage Pheasants Like Fish? – **Larkin Powell, University of Nebraska - Lincoln**
- How Does Land Use Affect the Relative Abundance of Two Mesopredators in the Eastern Cape South Africa? – **Armand Kok, Rhodes University**
- Tourist Influx Variation Based on Wet and Dry Seasons in Okomu National Park – **Oghenetejiri Digun-Aweto, University of Ibadan**

Track 4: Landscapes & Grouse**Granite Pass****Moderator: Terry Riley, The Grouse Partnership**

- Conservation Policy Needs for Privately Owned Grasslands – **Robert Manes, The Nature Conservancy of Kansas**

- Oil and Natural Gas Industry Conservation Measures to Protect the Greater Sage-Grouse – **Brian Meinhart**, *Western Energy Alliance*
- Grouse Management Planning Workshop Discussions

Track 5: Elk and Deer Farming in Enclosed Systems

Keyhole

Moderators: **Shawn Schafer**, *North American Deer Farmers Association*

- Fawn/Calf Care – **Douglas Wagner**, *Newport Labs*
- Cervid Medicine and Surgery – **Douglas Wagner**, *Newport Labs*

Rocky Mountain National Park Elk Viewing

Depart from Hyde Chapel

Pre-registration required. Space is limited. Includes a bag dinner.

5:00 p.m. – 8:00 p.m.

Dinner

Aspen Dining Hall

6:30 p.m. – 7:30 p.m.

Wednesday, September 10th

Congress Registration Desk Open

Longs Peak Upper Lobby

7:00 a.m. – 7:00 p.m.

Breakfast

Aspen Dining Hall

7:00 a.m. – 8:00 a.m.

Exhibit Area Discussions

Longs Peak Lower Lobby

7:00 a.m. – 8:00 a.m.

Workshop

Diamond East

8:00 a.m. – 12:00 p.m.

Chemical Immobilization and Handling of Wildlife in Colorado – **Lisa Wolfe and Michael Miller**, *Colorado Parks and Wildlife*

Field Trips

Depart from Hyde Chapel

Pre-registration and additional fee required

- Blue Valley Ranch - 7:00 a.m. – 6:00 p.m.
- Conservation Fly Overs - 6:00 a.m. – 11:00 a.m.

Attendee Lunch

Aspen Dining Hall

12:30 p.m. – 1:30 p.m.

Dinner

Aspen Dining Hall

6:30 p.m. – 8:00 p.m.

Thursday, September 11th

Congress Registration Desk Open

7:00 a.m. – 7:00 p.m.

Longs Peak Upper Lobby

Breakfast

7:00 a.m. – 8:00 a.m.

Aspen Dining Hall

Exhibit Area Discussions

7:00 a.m. – 8:00 a.m.

Longs Peak Lower Lobby

Plenary Session V

8:00 a.m. – 10:00 a.m.

Diamond East/West

- U.S. Department of Interior – Policies for Energy Development and Wildlife Management that Impact Private Lands and Communities – **Jim Lyons**, *Beartooth Strategies*
- Human and Wildlife Conflicts – **Larry Clark**, *National Wildlife Research Center*
- Increasing Scale and Effectiveness of Private Land Conservation – **Chris Pague**, *The Nature Conservancy*

Coffee Break & Exhibit Area Discussions

10:00 a.m. – 10:30 a.m.

Longs Peak Lower Lobby

Concurrent Technical Sessions & Symposia

10:30 a.m. – 12:30 p.m.

Track 1: Biodiversity, Threatened and Imperiled Species

Keyhole

Moderator: **David Anderson**, *Colorado Natural Heritage Program, Colorado State University*

- Supporting Landscape – Scale Planning with Decision Support Toolkits – **Patrick Crist**, *NatureServe*
- Wetland Condition Assessments on Colorado Private Lands: A Joint Effort by the Colorado Natural Heritage Program and Colorado Parks and Wildlife – **Joanna Lemly**, *Colorado Natural Heritage Program, State University*
- Colorado Rare Plant Conservation Initiative – **Susan Panjabi**, *Colorado State University*
- Linking Sustainable Forest Management with Habitat Conservation for the Amur Tiger (*Panthera tigris altaica*) – **Xuemei Han**, *NatureServe*

Track 2: Energy

Boulder Field

Moderator: **Steve Belinda**, *The High Lonesome Ranch*

- Balancing Energy Development with Fish and Wildlife – **Ed Arnett**, *Theodore Roosevelt Conservation Partnership*
- The High Lonesome Ranch: A Model for Responsible Energy Development at the Landscape Level – **Scott Stewart**, *The High Lonesome Ranch*

- Private Landowner Involvement – Making a Difference in Energy Development Outcomes – **Craig Taggart**, *Western Landowners Alliance*
- Colorado's Prairie Future: Projected Impacts of Oil and Gas to Wildlife and Voluntary Solutions – **Megan Kram**, *The Nature Conservancy of Kansas*

Track 3: Business of Conservation

Diamond East/West

Moderator: **Gert Dry**, *Wildlife Ranching South Africa*

- Financial Incentives for Private Land Conservation in the United States – **Jordan Vana**, *Colorado Open Lands*
- Is Intensive Breeding of Colour Variations in Game Achieving Triple Bottom Line Profits for All? – **Lizanne Nel**, *South African Hunters and Game Conservation Association*

Track 4: Human and Wildlife Conflicts

Chasm Lake

Moderator: **Stewart Breck**, *USDA-APHIS National Wildlife Research Center*

- Opposition to Opportunity: Managing Prairie Dogs in Southern Utah – **Shandra Nicole Frey**, *Utah State University Extension*
- An Innovative Chili Dispenser to Establish Memory Fence Dynamics at Crop-Wildlife Interfaces for Effective Long Term Human-Elephant Conflict Mitigation – **Sebastian Le Bel**, *CIRAD*
- The Efforts of the USDA's National Rabies Management Program for Controlling Rabies on Private Land – **Kurt VerCauteren**, *USDA-APHIS-Wildlife Services National Wildlife Research Center*
- Balancing the Act: Dilemmas Associated with the Eradication of *Acacia Mearnsii* from the Golden Gate Highlands National Park, South Africa – **Geoffrey Mukwada**, *University of the Free State*

Attendee Lunch

Aspen Dining Hall

12:30 p.m. – 1:30 p.m.

Exhibit Area Discussions

Longs Peak Lower Lobby

12:30 p.m. – 1:30 p.m.

Concurrent Technical Sessions & Symposia

1:30 p.m. – 3:00 p.m.

Track 1: Biodiversity Threatened and Imperiled Species

Keyhole

Moderator: **David Anderson**, *Natural Heritage Program, Colorado State University*

- State of Colorado's Biodiversity - **David Anderson**, *Natural Heritage Program, Colorado State University*
- Private Lands for Public Access: The Sutter Buttes of California – **Walt Anderson**, *Prescott College*
- Biodiversity Indicators Dashboard: Monitoring Biodiversity Trend and Conservation Performance – **Xuemei Han**, *NatureServe*

Track 2: Energy**Boulder Field****Moderator: Steve Belinda, The High Lonesome Ranch**

- You Have a Voice – **Steve Belinda**, *Beartooth Strategies*
- Workshop Reports/Recommendations – **Steve Belinda**, *Beartooth Strategies*

Track 3: Poaching – Rhino and Elephant Conservation**Diamond East/West****Moderator: Wouter van Hoven, Wildlife Protection Solutions**

- Unmanned Aerial Systems to Fight Rhino Poaching – **Jean Koster**, *University of Colorado, Boulder*
- The Potential of Rhino and Other Wildlife to Improve the Living Standards and Food Security in Rural Africa – **Wouter van Hoven**, *Wildlife Protection Solutions*
- Saving Mali's Desert Elephants from War and Poaching: A Successful Model of National and Community Engagement – **Vance Martin**, *WILD Foundation*

Track 4: Human and Wildlife Conflicts**Chasm Lake****Moderator: Stewart Breck, USDA-APHIS National Wildlife Research Center**

- Livestock Management for Coexistence with Large Carnivores, Healthy Land and Productive Ranches: A Viewpoint – **Matthew Barnes**, *Keystone Conservation*
- SYSMAS: A Handy Software to Manage by SMS and Web Interface Notifications on Human and Wildlife Conflicts and Other Wildlife Related Events – **Sebastien Le Bel**, *CIRAD*
- Understanding People's Willingness to Implement Measures to Manage Human-Bear Conflict in Florida – **Elizabeth Pienaar**, *University of Florida*

Refreshment Break & Exhibit Area Discussions**Longs Peak Lower Lobby**

3:00 p.m. – 3:30 p.m.

Concurrent Technical Sessions & Symposia

3:30 p.m. – 5:30 p.m.

Track 1: Biodiversity Threatened and Imperiled Species**Keyhole****Moderator: David Anderson, Colorado Natural Heritage Program, Colorado State University**

- Evaluating Wetland Condition in Urban Denver – **Bernadette Kuhn**, *Colorado State University*
- Biodiversity Conservation on Private and Communal Lands – **David Anderson**, *Colorado State University*
- Protecting the Florida Panther and Panther Habitat on Private Lands: Conflicts and Management Options – **Elizabeth Pienaar**, *University of Florida*
- Critical Ecosystem Profile for the Tropical Andes - Engaging Civil Society to Conserve a Biodiversity Hotspot – **Patrick Comer**, *NatureServe*

Track 2: Building The Great Movement with Private Lands

Boulder Field

Moderator: **Lesli Allison, Craig Taggart and Rick Danvir**, Western Landowners Alliance

- The Great Movement: Landowners and Wildlife Conservation in the American West – **Lesli Allison**, Western Landowners Alliance
- No Good Deed Goes Unpublished: *Removing Barriers to Wildlife Conservation on Private Lands* – **Rick Danvir**, Western Landowners Alliance Advisory Council
- Private Working Lands: Important Settings for Conserving Imperiled Species – **Mike Phillips**, Turner Endangered Species Fund

Track 3: Poaching – Rhino and Elephant Conservation

Diamond East/West

Moderator: **Wouter van Hoven**, Wildlife Protection Solutions

- The Approach of Wildlife Protection Solutions to Saving Rhinos Particularly in Asia – **Eric Schmidt**, Wildlife Protection Solutions
- Current Scenario of Rhino Reintroduction Programme After Completing Thirty Years (1984-2014) in Dudhwa NP/Tiger Reserve, Kheri District, Uttar Pradesh, India - **Satya Priya Sinha**, Wildlife Institute of India HNOIV Chandrabani

Track 4: Role of Wild Meats in Society

Chasm Lake

Moderator: **Lyle Renecker**, Renecker & Associates Inc.

- The Perception of the Millennial Generation (Y-Generation) Consumer of Game (Wildlife) Meat and Game Meat Safety – **Leon Bekker**, Tshwane University of Technology
- Solving the Food Insecurity, Education and Economic Paradigm in Africa and the Arctic: A Partner in Wildlife Sustainability – **Lyle Renecker**, Renecker & Associates Inc.
- Game (Wildlife) Meat Safety - Understanding the Game Meat Supply Chain and the Roles of Role-Players in a Multifaceted Control Environment – **Leon Bekker**, Tshwane University of Technology
- Economic Prospects of Game Meat Production in South Africa – **Maratha van der Merwe**, Wildlife Ranching South Africa

Banquet

Diamond East/West

6:30 p.m. – 8:00 p.m.

Friday, September 12th

Breakfast

Aspen Dining Hall

7:00 a.m. – 8:00 a.m.

Congress Registration Desk Open

Longs Peak Upper Lobby

7:00 a.m. – 12:00 p.m.

Concurrent Workshop & Business Meeting

8:00 a.m. – 10:00 a.m.

Workshop: Individual and Community Planning for Agriculture and Natural Resources on Private and Communal Lands: What Experiences Do Consumers Really Want and What are they Willing to Pay?

Chasm Lake

Business Meeting – Future Events and Administrative Home Planning Considerations from Previous IWRS Chairpersons

Diamond East/West

- Andrew Conroy - South Africa
- Delwin Benson - USA
- Interests from the Audience
- Proposals for International Home
- Proposals for Next Venue and Date

Coffee Break

10:00 a.m. – 10:20 a.m.

Longs Peak Lower Lobby

Closing Ceremonies and Celebration of Outcomes

10:30 a.m. – 12:00 p.m.

Diamond East/West

- What We Accomplished Here
- Visual Overviews
- What We Can Accomplish Next
- Next Venue
- International Home
- Use of LandHelp for Conservation Communications and Home for Congress Proceedings
- Placement and Access of Abstracts in CSU Library Archives
- Video Production and Uses

Lunch

12:00 p.m. – 1:00 p.m.

Aspen Dining Hall

Congress Adjourns

1:00 p.m.

Plenary, Technical Sessions & Symposia Abstracts

Monday, September 8th · 8:00 a.m. – 10:00 a.m.

Plenary Session I

Meeting Room: Diamond East/West

Conservation in the 21st Century – Thinking Big, The Public Good, and Private Lands

John Hayes, Warner College of Natural Resources, Colorado State University

Conservation and stewardship of our natural resources have been fundamental to the missions of a number of our public agencies in the United States since their inception. However, as important as public lands have been for conservation in the United States, most of the nation's land is in private ownership. The amount, distribution, and characteristics of private lands, combined with the spatial scales at which ecological systems operate, create a special and critical conservation role for private lands. While many of the strategies for conservation on public lands are also effective on private lands, private lands present special opportunities for conservation, as well as special challenges. As is true in many regions, conservation on private lands has played a critical role in sustaining wildlife, biodiversity, and ecosystems in Northern Colorado. Examples of innovative conservation partnerships and efforts focused on conservation of private lands in the region are presented. Lessons learned from these case studies and the shifting dynamics facing our natural systems suggest a number of lessons and future directions in conservation, education, and research.

Large-Scale Conservation: Engaging Agencies, Organizations, Landowners and Funders

Robert Manes, The Nature Conservancy of Kansas

The concept of affecting conservation at large scales is relatively simple: If strategies can be applied across traditional boundaries, then fragmenting effects of development and land management can be ameliorated for species that rely on large and intact habitats. The challenge, however, is that landscapes have multiple ownerships and land uses, and conservation entities often are insular. Individual organizations and agencies often lack resources, expertise, authority, and relationships essential to success. Agencies, non-government organizations, and landowners may exist in the same geographies without developing cooperative relationships necessary for large-scale conservation. Three case studies illustrate how this can be overcome. Common success factors include strong partnerships between government, non-government organizations, and landowners; and building broad recognition of the projects' merit. The case studies examined here include Montana's Rocky Mountain Front, Fortin Chacabuco Ranch near the Argentina-Chile border, and eastern Kansas' Flint Hills. In each case, the need for large-scale conservation is illuminated by one or more wide-ranging non-migratory species, and by a still-intact ecosystem that is significantly diminished across its former geographic expression. Also, in each case, conservation success resulted from either purposeful, or initially chance, cooperation between government agencies, NGOs, funders, and private landowners. This cooperation precipitated support for the projects, but also understanding among diverse and sometimes opposing interests. The purpose of this presentation is to strengthen the conservation community's ability to strategically and purposefully form and deploy the alliances necessary to achieve lasting large-scale conservation.

Monday, September 8th · 10:30 a.m. – 12:30 p.m.

Plenary Session II

Meeting Room: Diamond East/West

Environmental Knowledge Learned from the Park

John Mack, Rocky Mountain National Park

With continued and increasing human development or alteration of natural environments and ecosystems, parks and protected areas have become increasingly valuable as natural areas, not only for public enjoyment and experiences, but also as important, dynamic laboratories for demonstrating international, regional, and local connections and the importance of stewardship across or without boundaries. From an international perspective, I will discuss how a preliminary migratory bird research project may broaden our perspective of how vastly distant and different habitats are important to species. From a regional perspective, air quality issues can not only protect park habitats but I will illustrate how other industries are attempting to contribute to solutions. On a landscape scale, Rocky Mountain National Park's elk and vegetation management plan is an example of implementing habitat restoration and being a springboard for multi-agency collaboration of habitat use, wildlife disease study, and management of elk that is important to local economies.

USDA Hubs and the Long Term Agro Research Network

Justin Derner, USDA-Agricultural Research Service

Formation of Long-Term Agro-ecosystem Research (LTAR) networks in 2012 and the USDA Regional Climate Hubs in 2014 provide networks to address climate change and agriculture. Eighteen sites in the LTAR network address, through replicated experimental designs, common problems of how to "Sustain or Enhance Productivity, Profitability, and Ecosystem Services in Agro-ecosystems and Agricultural Landscapes" for "business as usual" and "aspirational agriculture" management strategies. Common core measurements will be taken (e.g., productivity; carbon, water and energy fluxes; greenhouse gas measurements; wind and water erosion) and used for cross-site comparisons, meta-analyses with other network data (e.g., National Ecological Observatory Network, NEON; Long-Term Ecological Research, LTER), and in model simulations/projections for predicted climate scenarios. Data will feed into 7 USDA Regional Climate Hubs, tasked with enhancing decisions by agricultural producers on the ground to reduce enterprise risk, increase resilience of lands, improve soil health, and increase efficiency of production (e.g., more crop per drop) in a changing climate, including more frequent extreme events. Climate-smart decisions, such as matching stocking/grazing decisions to improved predictions of seasonal weather (precipitation and temperature) or matching appropriate crops to predicted growing seasons (including earlier onset of growing season and increased frost free days), are reliant on development and transfer of science-based, region-specific information and technologies through coordinated efforts with local and regional partners in Federal and state agencies, NGO's, private companies, and Tribes. Information transfer can include: trusted sources of Extension, state climatologists; modification of existing conservation programs through NRCS or others; and peer-to-peer communications through social media.

Using Storytelling Techniques to Communicate Science

John Calderazzo, Colorado State University

"Science is the greatest of all adventure stories," says physicist Brian Greene, author of *The Elegant Universe*. "It's been unfolding for thousands of years as we have sought to understand ourselves and our surroundings . . . and needs to be communicated in a manner that captures this drama." Carl Sagan and Neil deGrasse Tyson, the old and new storytelling hosts of *Cosmos*, would agree. So would Rachel Carson, who used one of the oldest and simplest of all story forms, the fable, to coax her readers into a complicated tale of pesticides, chemistry, and ecological succession. *Silent Spring* may well be the most influential science book of the last fifty years. More than ever, scientists need to communicate clearly and passionately to the public, the media, and decision-makers. Not everyone can be as articulate as a Jane Goodall or Alan Rabinowitz. But humans across every culture are storytelling animals, and recent communications research suggests that information conveyed in story form activates more parts of the brain than when it is conveyed by bullet point or other non-narrative ways. Even a shy and retiring researcher can learn techniques to find common ground with an audience who will not forget the message. My talk will explore how some of the above media stars have used these sometimes-buried communication strategies--and how you can, too.

Monday, September 8th · 1:30 p.m. – 3:00 p.m.

Plenary Session III

Meeting Room: Diamond East/West

Introduction to Land and Animal Ownership - Delwin E. Benson, Colorado State University

Private lands are used for wildlife and livelihoods on 2/3rds of the US including Colorado. Eastern US and Colorado is more private and the West more public. In Colorado, private lands dominate the eastern short grass prairies, western sagebrush steppes, hills, and mountain valleys. High elevation alpine, forests and range lands are often public, managed by government agencies. National, state, county, and city parks, wildlife areas, and two of 36 sections in townships, called state land trust lands are intermixed with private lands fragmenting ownership, uses, and management. In Colorado, wildlife has seasonal movements north and south, up and down elevations, and to and from private and public lands. Wildlife tends to be on private lands for transitional uses and wintering while on public lands during summers based on food and shelter needs, with exceptions. Hunters come to the West to hunt with open access on abundant and no cost public lands, but prefer private lands when access is granted and if the costs are within budgets. Public lands can become overused in space, time and resources. Access to private lands is appealing to users because animal numbers and recreational experiences can be of higher quality with more private control. Charging access fees is increasing on private lands. Wildlife in the US belongs to the people in custodial jurisdiction of state wildlife agencies with federal responsibilities for migratory and endangered species, and all wildlife while on their lands. Those with wildlife on their lands can have positive or negative influences.

Managing the Public's Resource on Private Lands: A Landowner's Perspective

Greg Simons, Texas Wildlife Association

History of wildlife in the United States is one that witnessed remarkable recovery of many species of wildlife during the 20th century, after a major collapse during the preceding century. The North American Model of Wildlife Conservation articulates principles that reflect the basis for recovery and continued success of wildlife in the U.S., with wildlife as a public trust resource often being described as the foundation tenet of this conservation model. Public ownership of wildlife has roots which perhaps date back to ancient English and Roman common law, with such ownership premises in the U.S. dating back to 1842 where *Martin v. Waddell* affirmed this ownership. When considering that over 60% of land in this country is privately owned, there is potential for what some may consider a conflict in the relationship of managing and conserving the publicly owned wildlife that is found on private land. It must also be recognized that in many areas of most states, private lands stewardship is the driver of ensuring sustainable wildlife habitats on those lands. It is the author's opinion, based on observation, that incentivizing private landowners as caretakers of wildlife, should be part of this relationship equation. One component of such incentivizing should be encouraging wildlife markets, while also protecting ownership principles of public trust. Further, relationship building between private landowners and natural resource agencies is crucial in maintaining conservation success in private lands regions, and part of such relationship building is providing landowners with a regulatory framework that is friendly toward the needs and goals of those landowners, while also maintaining balance that encourages wise use of the resource.

Public Values of Wildlife: What Are They? - Don Steinbach, Stonebrook Conservation Consulting Services

In analyzing public values of wildlife, one must define the segments of the public that you want to access values regarding wildlife. Teel, T. L., et al (*Wildlife Values in the West*) defined publics who value wildlife. They describe these wildlife orientations in the western U.S. along several distinct dimensions. Utilitarians hold a philosophy that wildlife is for human use, and these individuals are strongly positive toward hunting and fishing. Mutualists are those who consider wildlife as part of an extended family and believe in an ideal world where people and wildlife live side-by-side without fear. Teel further describes that persons in western states vary greatly in these value orientations associated strongly with differences in state-level income, education, and urbanization. Value orientations differ on a variety of descriptive variables and their attitudes toward wildlife management issues. There is a diverse value-set associated with wildlife that may be grouped into categories including financial, recreational, social, biologic, ecologic, emotional and spiritual. Many of these values or products are quantifiable, some which create financial opportunities for landowners, thus incentivizing stewardship. There are some wildlife-related products on private lands which possess esoteric qualities with immeasurable values. Publics relate to wildlife in different ways creating a diverse relevance for wildlife and by society. Some public values which are found on private lands, such as water, appeal to both utilitarian and mutualistic publics, but those values are not necessarily perceived by those publics as a product of stewardship practices associated with land and wildlife.

Role of Ecosystem Services in Private Lands Conservation: An Investor's Perspective

Terry Anderson, Advanced Ecology

The concept of ecosystem services has evolved from society's earliest basic needs of obtaining food and shelter to today's complex ecological paradigms that include social, cultural, and economic and conservation objectives. While scientists and environmentalists have discussed ecosystem services implicitly for decades, the current nomenclature began to refine significantly in the 1990s and 2000s. Correspondingly, during this same period, the idea of private sector/investment driven/conservation finance began to take form in an arena long dominated by public finance and philanthropy. Thus, the opportunity of the day: How do we better define effective formulas that match ecological opportunity with available private capital? Refining, or in many cases, developing the value chain between the worlds of conservation and financial investment is a major part of the solution. Financial advisors and investors must become as comfortable evaluating ecosystem services, like aquifer recharge and water quality credits, as with evaluating commodity pricing for minerals or agricultural products. Equally, the conservation world will improve its track record greatly by learning to conduct rigorous project diligence and selection processes similar to those applied in more traditional investment contexts. While, significant progress has occurred, particularly in the more advanced markets of wetland, stream or species banking, there remains the challenge of effectively leveraging these early gains into the numerous larger, yet less developed, ecosystem markets.

Monday, September 8th · 3:30 p.m. – 5:30 p.m.

Track 1: Climate

Meeting Room: Diamond East/West

Climate Change in the U.S. Great Plains, Implication for Private and Communal Lands

Dennis Ojima, Colorado State University

Drought is a frequent feature in climate dynamics of the Great Plains. The manner in which drought has impacted various communities and livelihoods differ across the region and historically as drought intensity and changes in land and water resource management has changed over time. Recent assessments of drought impacts and response strategies have been completed for the Great Plains as part of the National Climate Assessment and will be presented in the context of private and communal land implications.

Drought Risk and Adaptation in the Interior

Shannon McNeeley, North Central Climate Science Center

Drought is part of the normal climate variability in the Great Plains and Intermountain Western United States, but recent severe droughts along with climate change projections have increased the interest and need for better understanding of drought science and decision making. The purpose of this study is to understand how the U.S. Department of the Interior's (DOI) federal land and resource managers and their stakeholders (i.e., National Park Service, Bureau of Land Management, Fish and Wildlife Service, Bureau of Reclamation, Bureau of Indian Affairs and tribes, among others) are experiencing and dealing with drought in their landscapes. The Drought Risk and Adaptation in the Interior (DRAI) project is part of a DOI-sponsored North Central Climate Science Center (NC CSC) crosscutting science initiative on drought across the Center's three foundational science areas: 1. physical climate, 2. ecosystems impacts and responses, and 3. human adaptation and decision making. The overarching goal is to learn more about drought within the DOI public lands and resource management in order to contribute to both the NC CSC regional science as well as providing managers and other decision makers with the most salient, credible, and legitimate research to support land and resource management decisions. Here we will present the project approach along with some initial insights (with a focus on grazing lands and related DOI/tribal resource management) learned from the research to date along with its utility for climate adaptation.

Wind Power from Tribal Lands - Bob Gough, Intertribal Council On Utility Policy

In the midst of accelerating climatic change and observed weather extremes due to long-term natural variation, as well as our more recent and all-too-efficient anthropogenic transfer of carbon from the earth to the atmosphere, Great Plains Indian Tribes see tremendous clean energy and economic development opportunities on the horizon for mitigation and adaptation literally blowing in the wind. Our centralized electrical energy generation capacity is highly water dependent and our transmission and distribution infrastructure, built over the last half-century, is strung out and exposed across the volatile Upper Great Plains. They are extremely vulnerable and highly susceptible to changes in precipitation and other weather variabilities over both the short and long-term. Our electrical generating capacity inextricably relies upon the surface water resources throughout the Missouri River basin to fuel the federal hydropower generators, and to spin and cool the conventional coal and nuclear thermal plants throughout the region. Our rural transmission and distribution systems that deliver electricity are exposed across vast distances and are extremely vulnerable to a variety of weather related disruptions. American Indian Reservations are also spread across this vast expanse where wind, one of America's most abundant renewable energy resources, can be readily tapped through both community-sized, and large, utility-scaled, distributed generation projects. The economic integration of this variable but abundant resource into the coal and hydropower dominated electrical system can benefit from better planning and forecasting in both the short and long term. This paper examines some critical planning and forecasting issues raised in this context.

Hard Decisions in a Changing Climate - William Travis, University of Colorado

Land managers make decisions under great uncertainty, subject to climate variability, extreme events, and underlying climate change. Two cases are briefly described: A northern Great Plains wheat farmer expects value in switching from spring wheat to winter wheat because it pays more and offers better game bird habitat, but the switch depends on reduced chances of winter kill as the climate slowly warms. When does it pay to make the switch? Second, a rancher has to decide during the first year of drought whether to cull the herd or hold on, hoping that next year is better, a decision that involves contingent market conditions, feed prices, and effects on forage quality for the cattle and wildlife. The farmer faces a classic expected utility problem, with the added challenge that average conditions are not a good guide to the cost/loss prospects. The rangeland drought is a game theory problem because the rancher must consider not just the probability of drought next year, but also the actions of other ranchers this year, which affect both prices now and the potential costs of feed in the future. What information and decision support tools would help these land managers make choices under climate uncertainty?

Collaborative Climate Change Adaptation: A Natural Community Focus - Patrick Comer, NatureServe

Land managers need a better understanding of factors that contribute to climate change (CC) vulnerability of the natural resources they manage in order to formulate adaptation strategies. They also need more opportunities to collaborate with neighboring managers and stakeholders to develop common adaptation strategies. Analysis of natural communities shared across land ownerships provides one mechanism for this collaboration. NatureServe worked with public and private partners in the U.S. and Mexico to conduct CC vulnerability assessments of major upland and aquatic community types in the Mojave and Sonoran deserts. This project piloted a new Habitat Climate Change Vulnerability Index (HCCVI), drawing on data from other research efforts. The HCCVI aims to implement a series of measures addressing climate change exposure and ecological resilience for each community type for its distribution within a given ecoregion. The combined relative scores for exposure and resilience determine the categorical estimate of climate change vulnerability by the year 2060 (i.e., 50 years into the future) for a community type. While the overall index score should be useful for regional and national priority-setting and reporting, the results of these individual analyses also provide insight for local managers for climate change adaptation. In this pilot effort, field specialists were gathered in a workshop setting to refine the assessments, clarify their thinking on CC scenarios and stressors, and document potential strategies along a continuum from immediate 'no regrets' actions to 'anticipated' or 'wait and watch' actions to monitor. By focusing on major natural community types, pragmatic strategies were identified.

Monday, September 8th · 3:30 p.m. – 5:30 p.m.

Track 2: Ideas to Enrich Communications About Conservation

Meeting Room: Chasm Lake

Training Wildlife Biologists for Work on Private Lands

Jennifer Smith, University of Nebraska-Lincoln

Conservation and management of wildlife on private lands in the United States is a critical component of the wildlife profession, although university curricula focus on public lands management. Wildlife biologists working on private lands are faced with a mutable landscape and pressures of alternative land uses that shift with changes in economics, regulatory regimes, and societal or cultural values. Loss of biodiversity can be lessened if wildlife biologists are better prepared to work in this challenging landscape. Colleges and universities are faced with training wildlife biologists to work on both public and private lands. Unfortunately, however, wildlife training programs often fail to integrate the management techniques, policy, economics, human dimensions, problem solving, and communication skills required by private lands professionals. Of 14 leading undergraduate wildlife programs that we identified, 36% required a policy class, 36% required a human dimensions class and 7% required an economics class; although most universities did offer interdisciplinary courses, participation was seldom mandatory. We suggest that students and current professionals need to be trained in the skills necessary to protect wildlife when working on privately owned lands. We highlight tools needed for effective private lands conservation such as economic incentives, education, and outreach, and we suggest ways in which they can be taught through modifications to current curriculum, short-courses, continuing education credits, certificate programs, internships, externships, and involvement of agency personnel in the classroom.

LandHelp.info II: Providing Collaborative Web Services to the World

Don Schrupp, Retired - Colorado Division of Wildlife

LandHelp (www.LandHelp.info) was developed and used over two decades by professionals and consumers to easily store and retrieve web-based links to manage land, wildlife and people under a common brand name. LandHelp was developed as a first-stop-shop to evaluate, organize and provide access to existing useful information from credible sources that might otherwise go unnoticed, not accessed, or not heeded. LandHelp started when a network of organization professionals were seeking management information for landowners and found that significant written information existed, from a variety of sources and formats, but it often was pulled from print without notice. The web emerged as a commonly-used, dynamic and editable, information resource; consequently LandHelp was created for outreach. A recent evaluation, resulted in an improved, second generation content management system including the original > 5000 web-based links and/or PDF documents and it now uses a dynamic, data-based approach providing for more opportunities to collaborate in its development from the conservation communities that include natural resources professionals, agriculturalists, and resource users. Regular visitors to the site can become registered users, which allows them to provide interactive feedback on LandHelp content, and if so inspired, to submit content themselves for monitored posting at the site. We will present an overview of LandHelp's layout and capabilities. We encourage Wildlife Congress participants to visit LandHelp and take it for a test drive. The ideal outcome is for all states, provinces, and countries to have approved contributors to LandHelp; then, your inputs can be accessed and shared with others.

The Puppet: Communication to Promote Understanding and Conservation

Jeri Griego & David Stratton, StoryTime Adventures

Baba Dioum, an African environmental champion said: "In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught." How do we teach, help persons to understand, and to practice conservation? Puppetry is a communication and art form from many regions of the world including eastern and western cultures, Native Americans, and on Sesame Street. Radical puppets are used with adults for social change. Puppets entertain, communicate, and people relate to them with less intimidation. Puppet Jedediah Johnston, a historical mountain man, tells stories of the Congress and area bridging history, the present, and future together better than humans because he has no temporal or spatial limits. He can discuss balancing wildlife management and landowner livelihoods without biases that could be associated with humans. Children build unique relationships with puppets and communicate through them. Through the use of puppets and role-playing, children express points of view that are not necessarily their own. This process develops a deeper understanding of their issues, provides an opportunity for reasoning rather than recall, and allows learners to share authority and to assume responsibility for their learning. Research indicates puppets have positive effects on children's motivation and engagement in learning. This offers hope that children and adults can be motivated to develop environmental values and to become stewards who will manage the diversity and wonders of nature. Puppets are tools to broaden understanding. With understanding, there can be more effective actions.

How Teaching Ethics Can Be the Most Persuasive Method for Preserving Our Hunting and Conservation Heritage

Michael Sabbeth, Esq.

Our Land Ethic and our conservation and hunting traditions cannot defend or advance themselves. Such achievements require rhetorical skill, wisdom, confidence, moral clarity and hard work. Skillful persuasion that appeals to ethics and character can most effectively sustain and strengthen our conservations and hunting traditions. Rhetorical skills can be used to re-frame and refute the moral and factual foundations of uninformed or bad-faith arguments that attack hunting and conservation models. It is effective to craft the most effective arguments that justify hunting and conservation as virtuous qualities of the American character and which are necessary for wildlife's survival. Three levels of ethical obligations link us to future generations: duties to the animals and the land; duties to self and duties to society. We cannot preserve for the future if we fail to preserve what we have today. Relationships need to be established among information, wisdom, character, consequences, and persuasion; and how each affects the future of hunting and conservation in our current and evolving culture. We cannot win elections, we cannot win funding, and we cannot win the popular culture unless we first persuasively win the arguments based on ethics and facts. Learn how to win arguments to secure the future of hunting and the land ethic we value.

Tuesday, September 9th · 8:00 a.m. – 10:00 a.m.

Plenary Session IV

Meeting Room: Diamond East/West

Wild Pigs in North America: History, Distribution, Ecology, and Challenges

Jack Mayer, Savannah River National Laboratory

Wild pigs belonging to the species *Sus scrofa* are not native to the Western Hemisphere. In spite of having had a fairly stable presence in North America during most of the 20th Century, wild pigs on this continent have undergone an explosive increase in both numbers and distribution since 1990. At present these animals are established in 36 US states, four Canadian provinces and a number of Mexican states. Similar to the original introduction from the Old World, this more recent continental increase has been largely man-made. A major part of the reason for the success of this invasive species is that wild pigs are the ultimate survivors, being highly adaptable in many aspects of their biological make-up. Given adequate seasonally-available forage resources and daily access to well-distributed water, shade and escape cover on a year-round basis, these animals are able to live in almost any habitat between the northern boreal forests of Canadian down to the tropical wet jungles of Mexico. Wild pigs have a very high reproductive rate. Finally, with respect to their diet, wild pigs are classified as an opportunistic omnivore, which effectively means that these animals will consume just about anything. Since no viable control mechanisms for pigs currently exist, this situation is only expected to get worse with time. Two future control options currently being investigated include pig-specific toxins and contraceptives. This invasive wild pig crisis has been described as one of the greatest emerging wildlife management challenges facing this continent in the 21st Century.

Wildlife Ranching Industry: The South African Flagship of a Sustainable Green Economy

Gert Dry, Wildlife Ranching South Africa

Unlike American wildlife culture which is based on the belief that making money out of wildlife is immoral; the South African wildlife culture is based upon sustainable use and or commercialisation. It is trite knowledge that the value placed on game, the wildlife industry has not only restored wildlife to the land but has also enhanced and restored the genetic quality of our wildlife. The wildlife industry has grown positively, predominantly as a result of the legal trade, the exclusivity of wildlife and the hunting and tourism industry. Currently 16,8% marginal, uneconomic, semi desert agricultural land has been converted into a sustainable land use option. All private game ranches are marginal farms in economic terms that have been converted from domestic stock/crop farms into effective land-use options. These farms are not, and never have been conservation land. The South African Department of Environmental Affairs (DEA) has been highly successful with their conservation and preservation mandate with regard to national- and provincial owned parks but the implementation of a newly proposed legislative regime will seriously cripple the wildlife industry as the 'flagship' of South Africa's Green Economy. The wildlife industry proposes the development of enabling legislation that will give the wildlife industry room to grow and prosper and to be regulated as a "national competency" for the governance of the wildlife industry. The wildlife industry can assist the national growth agenda to ensure real progress. The sustainable use of South African wildlife can gain traction given evidence based research reported in various pieces of research, Macro Economic indicators for game ranching in South Africa and some specific game ranching growth initiatives.

Tuesday, September 9th · 10:30 a.m. – 12:30 p.m.

Track 1: Private Work with Wildlife and People in the United States

Meeting Room: Chasm Lake

An Overview of Private Lands Programs, Past and Present

Ken Morgan, Colorado Parks and Wildlife

Since the inception of the Colorado Division of Wildlife over 100 years ago (now Colorado Parks and Wildlife), wildlife managers have depended on developing and maintaining working relationships with private landowners to assist with the management of the state's wildlife resources. Over the past 50 years, there has been an exponential increase in population in the state, which has created more demand on the resources. Additionally, Congress has created more regulations through various legislative initiatives i.e. the Endangered Species Act, the Clean Water Act, etc. These factors have hampered the ability of state wildlife managers to work cooperatively with private landowners. In many cases these issues became very contentious. It was evident that programmatic approaches to working with private landowners needed to be addressed and changed. This session will give a brief overview of some of the more successful initiatives as well as serving as a basis of the presentations which will follow.

The Partners for Fish and Wildlife Program is the U.S. Fish and Wildlife Lands Program

Bill Noonan, Colorado Partners for Fish and Wildlife

The Partners program, since the mid-1980's, has been developing and maintaining positive working relationships with landowners to benefit fish and wildlife resources. Such activities have resulted in tremendous on-the-ground habitat restoration and enhancement accomplishments that contribute to the Service's federal trust resource mission and instill in our partners an even greater appreciation for fish, wildlife and the habitats upon which they depend. All of this is being accomplished in a voluntary manner. The program provides both technical and financial assistance to private landowners to achieve on-the-ground habitat restoration projects.

The Habitat Partnership Program

Pat Tucker, Colorado Parks and Wildlife

The Habitat Partnership Program, since the early 1990's has been utilizing local committees to reduce wildlife conflicts, particularly those associated with forage and fences to assist the Colorado Parks and Wildlife (CPW) in meeting game management goals. The program develops partnerships between landowners, land managers, sportsmen, the public and CPW. Local committees are made up from local representatives from the livestock and crop producer community, a sportsman representative, an employee from each of the following agencies; U.S Forest Service, Bureau of Land Management, Colorado Parks and Wildlife, and other local specialists. HPP is authorized by the Colorado State Legislature and the Colorado Parks and Wildlife Commission.

Rocky Mountain Bird Observatory Stewardship Program

Seth Gallagher, Rocky Mountain Bird Observatory

Originating in 1999 as Prairie Partners, the program was to address declining bird trends on a landscape used for agricultural production. Private landowners own or manage a considerable percentage of this land. Their involvement in conservation efforts is essential to the future of grassland and sagebrush birds. The mission of the program is to coordinate voluntary, cooperative partnerships with landowners to address the management of declining bird species and other resource conservation issues. In 2003 Stewardship began working with landowners and resource agencies to implement on-the-ground habitat projects. These projects include stream-bank restoration, shallow water restoration, woody-invasive species control, prescribed burning, restoration of native vegetation, fence marking and rotational grazing.

Tuesday, September 9th · 10:30 a.m. – 12:30 p.m.

Track 2: Wild and Feral Pigs

Meeting Room: Boulder Field

Wild Pig Damage and Conflicts

Bronson Strickland, Mississippi State University

In North America, wild pigs have been a source of conflict since their introduction in the 1500's. The destructive foraging behavior, combined with a diverse omnivorous diet and prodigious reproductive capacity make the wild pig one of the most costly invasive species in North America. Wild pigs directly impact row-crop agriculture, pasture, forest regeneration, and water quality and even depredate juvenile livestock. Wild pigs also cause extensive environmental damage by competing with native wildlife for food, and by depredation of herpetofauna, small mammals, ground-nesting birds, and opportunistically, the young of large mammals. Wild pigs have been linked to the spread of invasive plants and may be changing the species composition of some forests by selective consumption of seeds and seedlings. In many areas, wild pigs are now common in suburban areas causing damage to lawns, landscaping and golf courses. The first step in dealing with a problem is recognizing there is a problem. This presentation will provide the framework and justification for the symposium, and segue to subsequent presentations on proactive techniques landowners and organizations are taking to control this pest. Unfortunately, as wild pig populations continue to expand throughout the U.S. damage and conflict will only increase. This symposium aims to inform the audience of the dangers of ignoring the emerging problem of wild pigs in the U.S. and will propose solutions for stemming their spread.

Wild Pig Diseases: Current Issues and Potential Concerns

Skip Jack, Mississippi State College of Veterinary Medicine

Swine have been around for many millennia, present in North America about one-half of one. They continue to expand their home ranges and unfortunately, they share several infectious diseases with our domestic animals and many zoonotic diseases with humans (e.g. TB, brucellosis, leptospirosis, pseudorabies, etc.). As home ranges (human, wildlife, and domestic animals) expand there will be ever-increasing interactions and opportunities for disease spread. Disease surveillance reports indicate that there are various agents and prevalence around the US. But, apparently management strategies and disease control measures have not yet proven effective. A survey is underway to ascertain the efficacy of various measures. We are meeting this week, an indication that problems persist and continue to expand. Do we need to rethink or expand control strategies for swine and/or disease control (rhetorical question!)? The true question is WHEN we will change our strategies for this control. Will we wait for a crisis?

Control Methods for Wild Pigs in the United States: Best Management Practices

Michael Bodenchuk, USDA-APHIS-Wildlife Services

Wild pigs (*Sus scrofa*) are widespread throughout the continental United States and significant efforts have been initiated to contain population spread. Removal of wild pigs in the United States is currently limited to mechanical capture methods. The Texas Cooperative Wildlife Services program implements an integrated wild pig damage management program and has investigated all current removal methods. This presentation will discuss aerial shooting, cage and corral trapping, snaring, shooting (including night shooting) and the use of dogs as control methods. The relative costs for each method implemented will be discussed in the context of a large metapopulation where additional pigs are available to replace removed animals. Costs, represented on a per pig removed basis, are lowest for turbine helicopter aerial shooting (\$18.27 per pig removed), piston helicopter aerial shooting (\$21.11/pig) and night shooting (\$25.06) followed closely by fixed-wing aerial shooting (\$26.63/pig) and daytime shooting (\$29.92 /pig). Corral trapping (\$46.95/pig) was more expensive than aerial or night shooting, but cost less than snaring (\$62.51/pig) or drop nets (\$64.91/pig). The practical application of specific methods is critical to method selection. For example, while aerial shooting may be comparatively the most cost effective method costs will be much higher when small numbers of pigs are expected and flying may not be possible in many areas due to terrain and vegetative cover. Because wild pigs in Texas exist in a large meta-population, costs for control are exacerbated by source/sink population dynamics. The removal of wild pigs in such environments requires return visits which significantly increase costs.

Traditional and Emerging Methodology to Educate the Public About Wild Pigs

James Cathey, Texas A&M AgriLife Extension Service

The wild pig population in Texas is estimated at 2.6 million animals and damage to agronomic enterprises is conservatively estimated at \$52 million annually. In response to this damage, the Texas A&M AgriLife Extension Service increased educational efforts and direct control of wild pigs via Wildlife Services. Recently social media has been employed to reach clientele who may not come to traditional Extension programming. From 2006 -2013, grant funds from the Texas State Legislature via the Texas Department of Agriculture were used to develop and deploy an integrated strategy of landowner education via traditional one-on-one contacts, group meetings, demonstrations, and publications. From 2010 to present, with funding from the Environmental Protection Agency via Texas State Soil and Water Conservation Board and the National eXtension, we incorporated the use of internet-based tools and iPhone applications in addition to 45 face-to-face programs, to deliver information on wild pigs. Many of these tools are linked with the eXtension.org Feral Hog Community of Practice and benefit from the collaborative effort from 23 states. We dramatically increased information delivery and audience engagement. The Feral Hogs CoP Facebook has 1820 'likes' and a reach of over 7,000 on some posts. Articles on Wild Wonderings Blog have a total of 49,215 views and the wild pig videos on the WFSCAgrilife YouTube channel have a combined 35,626 views. As wild pig populations continue to increase the need for rapid and widespread distribution of information will become a vital component to improve the public's knowledge of this exotic species.

Tuesday, September 9th · 10:30 a.m. – 12:30 p.m.

Track 3: The Business of Conservation

Meeting Room: Diamond East/West

Game Ranching in South Africa: Biodiversity Conservation or Agriculture

Brian Reilly, Tshwane University of Technology

South Africa is unique in having created an extensive game ranching industry across a wide range of indigenous ungulates to pachyderms and even large predators. From small beginnings by a handful of private landowners and forward thinking conservationists this industry now encompasses approximately 17% of the country's land surface area and herds may number as many as 20 million ungulates. The industry has an annual turnover exceeding a billion USD and is a significant contributor to the burgeoning green economy that includes ecotourism, hunting and many allied industries such as fencing, infrastructure and equipment as well as a host of consultants and practitioners from veterinarians, translocators, ecologists and other professionals. The industry has contributed significantly to the conservation of a number of species such as white rhino, black wildebeest, sable and roan antelope and a number of meta-populations are now biased towards private land more than in official protected areas. The industry has now reached a crossroads in terms of its divergence into more specialized intensive breeding of species for specific traits such as trophy size and colour variation and a departure in many instances from the official conservation objectives of the country. This paper will discuss the current status and position of the industry in relation to the official conservation stance and unbuckle the contributory factors to the threatening conflict between the conservation fraternity and game ranching industry. The paper will further propose potential ways forward in dealing with this unique state of affairs in South Africa considering that communal lands and many commercial farmers consider wildlife a viable option for the future.

Transaction Cost Measurement for the Regulations of Live Wildlife Trade in South Africa

Philippus Cloete, North-West University

Although South Africa has in theory, an economic comparative advantage in the production of indigenous wildlife, the ability to capitalize on this advantage was originally initiated by an incisive policy that entrusted ownership of wildlife to private landowners. Since 1991, wildlife ranchers have continued to transform marginal land into thriving operations despite a largely unreceptive policy environment. Discrepancies that exist between provincial permit-award procedures, the conservation status of many indigenous species, and the degree to which translocation can occur not only generates uncertainty; it also raises concerns amongst wildlife ranchers with regards to the cost of doing business. This status quo suggests that the current regulatory environment is not organized in such a way that transaction cost are minimized. Hence, the regulatory environment is not an efficiency-inducing administrative instrument that facilitates exchanges between economic agents. The paper addresses the latter; reviewing policy-induced transaction cost associated with the live trade of wildlife species. It is argued that the implicit costs force consideration of externalities that would otherwise be ignored when market forced act in their own best interest. Results revealed significant implicit cost which confirms that the current regulatory environment is not efficient. This research not only indicates the need for legislation that is standardized across provinces, it also reveals the importance of transaction cost considerations when biodiversity or environmental policies are developed or amended.

Internal Audit and Wildlife Ranching: Friend or Foe?

Yvonne Reilly, University of Pretoria

South Africa is unique in world terms having spawned a significant wildlife industry. This industry encompasses some 17% of the land surface area in which private and corporate landowners extensively ranch between 16 and 20 million indigenous animals, mostly ungulates. The economic value of the industry annually exceeds 1 billion USD. The enormous amount of time, money and other resources that are invested in the wildlife ranching industry of South Africa presents serious challenges for the future; if this industry wants to ensure that its current status quo remains intact. This sector fulfills a pivotal role in the economy of S.A and therefore to ensure that this role is maintained in the future, the assistance of internal auditing is crucial. This discipline developed by addressing all the needs of different stakeholders. The internal audit is defined as: An independent objective assurance and consulting activity designed to add value and improve an entity's operation. It assists an organization accomplish its objectives by bringing a systematic disciplined approach to evaluate and improve the effectiveness at risk management, control and governance processes (IIA2009). This paper examines the wider management issues of wildlife ranching by reviewing whether all the stated objectives are achieved effectively, efficiently and economically. The three spheres that form the extent of internal audit, that of risk management, control and governance are applied on different wildlife ranching issues. Examples of corporate governance perspective where a balance must be created between performance and conformance to achieve objectives, are applied on issues such as ethics of lion hunting, ivory trading and trophy hunting control. Risk management techniques are explored by applying various techniques on important wildlife ranching issues e.g. monitoring of wildlife. This paper further aims to ensure that wildlife ranching will in future rely on internal audits to make recommendations. It will assist them to achieve their objectives more efficiently, effectively and economically, as well as adding value in a consulting perspective as and if needed. Integrity, openness/transparency and accountability must prevail intact in the wildlife ranching industry if this industry wants to persist and grow, particularly in the light of future community potential stakeholder status and official interest in the governance within the industry. Internal audits can thus drive sustainability and add to the success of this, an important industry in a green economy worldwide, in particular the region and South Africa.

What Makes a Hunting Experience Memorable?

Petrus van der Merwe, North-West University

Growth in the number of game farms and hunting lodges (operators) in Southern Africa has created fierce competition amongst these hunting operations. In order to remain competitive it is important to determine what hunters regard as important in order to have a memorable experience. The literature review revealed that different markets (hunters) have different expectations and needs and for that reason the purpose of this paper is to determine the aspects that contribute to a memorable experience of foreign (trophy) hunters who hunted in South Africa in 2013. In addition the paper will also determine which socio demographic and behavioural variables influence memorability. This was achieved by conducting a structured questionnaire survey and the results are of high importance to hunting operators and product developers alike. It is also the first time that such a study is conducted amongst South African international hunters. Keywords: hunting tourism, trophybiltong hunting, memorable experience, socio-demographic variables, hunting behaviour.

Tuesday, September 9th · 10:30 a.m. – 12:30 p.m.

Track 4: Landscapes & Grouse

Meeting Room: Granite Pass

Development and Implementation of the Lesser Prairie Chicken Range-Wide Conservation Plan

David Klute, Colorado Parks and Wildlife

The lesser prairie-chicken (*Tympanuchus pallidicinctus*) is a prairie grouse endemic to the southern Great Plains where it occurs primarily on private land. In March 2014 the U.S. Fish and Wildlife Service determined the lesser prairie-chicken warranted listing as a Threatened species under the Endangered Species Act. The Western Association of Fish and Wildlife Agencies (WAFWA) developed the Lesser Prairie-chicken Range-wide Conservation Plan (range-wide plan) to set population and habitat goals, identify focal areas and connectivity zones required to sustain and expand lesser-prairie-chicken populations, and encourage coordination of habitat management activities both prior to and after the ESA listing. A novel aspect of the range-wide plan is a voluntary mitigation framework which (1) financially incentivizes avoidance and minimization of impacts from industry at broad and local spatial scales and (2) financially incentivizes the implementation of beneficial conservation practices by private landowners to offset impacts through the use of both short-term management contracts and permanent conservation easements. With the implementation of the Threatened listing, a special 4(d) rule provides incidental take coverage for activities conducted by participants in the range-wide plan. As of May 2014 over 6.2 million acres have been enrolled in the range-wide plan and associated Candidate Conservation Agreement with Assurances (CCAA). Enrollment fees of over \$43 million have been committed to fund mitigation offsets in perpetuity for future impacts on enrolled acres. Contracts on private land in high-quality lesser prairie-chicken habitat are being implemented to offset impacts anticipated in 2014.

Conservation of Greater Sage-grouse: Challenges Managing a Landscape Scale Species

San Stiver, Western Association of Fish and Wildlife Agencies

Greater Sage-grouse are a western North American plains grouse that had a potential pre-European settlement distribution of approximately 1,200,483 km², spanning 12 US states and three Canadian provinces. That distribution has declined to < 668,412 km² in 11 states and two Canadian provinces. The Greater Sage-grouse was determined by the U.S. Fish and Wildlife Service in 2010 to warrant protection under the Endangered Species Act, but were precluded because of higher conservation priorities. Concern for the species, by a host of conservation entities lead to a comprehensive range-wide conservation strategy which includes conservation efforts, monitoring, adaptive management, research and technology, communication and funding components. The strategy was based upon the need to manage Greater Sage-grouse from a range-wide perspective, spanning multiple jurisdictions and coordinating conservation efforts on a landscape scale. We will explore the biological, economic, temporal, and political challenges of managing this species and the sagebrush biome. Sage-grouse are a sagebrush obligate species; depending upon the plant for many of its life functions. Sage-grouse as individuals or populations require large tracts of sagebrush, often spanning jurisdictions and land ownership to meet their needs. Sagebrush is a very slow growing shrub that is vulnerable to wildfire and disturbance. Some species of sagebrush require decades to reach a preferred age class for sage-grouse. Resources important to Western States will necessarily be impacted by an ESA listing and the prospect of an ESA listing has the attention of politicians from the Administration, the Senate and House, Governors, State Legislatures and County Commissions.

Native Grasslands of the Great Plains of North America: Using Prairie Grouse as Flagship Species for Restoration

Jonathan Haufler, Ecosystem Management Research Institute

The grasslands of the Great Plains of North America historically covered over 240 million hectares and supported a wide diversity of ecosystems and wildlife species. Today, many of these ecosystems are among those at greatest risk and many of the species they support are in serious decline. While some public lands exist, the Great Plains are predominantly in private ownership. This means that conservation efforts must first recognize what private landowners require from their lands, and then make conservation initiatives compatible with and workable within landowner requirements. Maintaining and restoring native grassland ecosystems is essential if maintaining the wildlife and biodiversity of the Great Plains is a goal. Prairie grouse (lesser and greater prairie-chickens and sharp-tailed grouse) are effective flagship species for emphasizing the need for grassland restoration and indicators of the sizes and distributions of needed grassland areas. Prairie Grouse Partners, a collaborative effort of the Ecosystem Management Research Institute, North American Grouse Partnership, Pheasants Forever, Theodore Roosevelt Conservation Partnership, American Bird Conservancy, and the Mule Deer Foundation, have launched an initiative to restore native grasslands using prairie grouse as flagship species. Initial projects have engaged willing landowners in the application of treatments to restore grasslands. Management practices including prescribed burning, prescribed grazing, seeding of native species, chemical control of invasive species, and mechanical control of invading woody species have been applied and monitored to determine their effectiveness across different types of grassland sites. Initial results are promising, but larger coordinated efforts are needed to meet this conservation challenge.

Tuesday, September 9th · 10:30 a.m. – 12:30 p.m.

Track 5: Community Conservation

Meeting Room: Keyhole

Importance of Landscape and Global Change for Rabbits and Hares in Semiarid Environments in Mexico

Daniel Jiminez-Garcia, Benemirita Universidad Autinoma de Puebla

Landscape composition is an important element of habitat requirements for a lot species in the semiarid regions. Lagomorphs have an important role in the ecology in a lot species. Lagomorphs are used as prey for canivorian species in arid and semiarid environments. Rabbits and hares are keystone species in extreme environments because they provide biomass to another species. Our work tries to describe the importance of the landscape elements and composition in the rabbit and hare distribution in the central part of Mexico. We evaluate the global change impact on the lagomorphs distribution. We select the typical arid environment, composed by *Opuntia* sp. and another vegetation association as *Jatropha* sp., *Acacia* sp. and wild grass. We realise a Multicriterion Evaluation (GIS) to discriminate the areas without elements which describe the arid environments. We build niche models for rabbit and hare distribution to determine the changes in habitat use. Our results show strong relationships between the landscape composition (*Opuntia* sp.) and an increase of ecological niche in some scenarios.

De-Constructing a Partnership in the Mara Conservancies, Kenya: A Win-Win Conservation and Development Story

Connor Jandreau, Natural Resources Institute, University of Manitoba

Kenya's Maasai Mara ecosystem is a particularly contested landscape when it concerns conservation and development interests. In recent years, private conservancies have emerged, redefining the relationships between conservation, tourism and local Maasai pastoralists. The partnership forged between ecotourism operators and Maasai landowners is crowned in a community-based conservation model, bringing together a win for wildlife, and a win for livelihoods. Despite this, there are inherent trade-offs being made by various stakeholders, not least pastoralists who now have to navigate an extended network of protected area boundaries with their livestock. The conservancy is quick to point to the successes, but sufficient attention has not yet been paid to the winners and losers in the process. My research took place over the months of January to August 2013 where I explored the interface between conservation and pastoral interests. I conducted semi-structured interviews, focus groups and other qualitative research methods as a way to gauge various stakeholder positions in relation to the conservancy format. Initial findings suggest the conservancies have made strong progress in alleviating some of the historical failures inherent in East Africa's well-preserved fortress conservation story. The conservancies are beginning to fashion compatibility between tourism and livestock, where wildlife benefit. Yet the future of the conservancies remains unclear, in large part due to community concerns for livestock, resource access, and rights to self-determination. The conservancy format in Maasailand needs to consider greater efforts in fashioning a true partnership before it can consider itself a win-win enterprise.

Communities and Wildlife Conservation: A Participatory Approach to Measuring Human Well-being Impacts

Jessica Musengezi, The Nature Conservancy

Community-based natural resource management (CBNRM) approaches have often been criticized for their lack of evidence on the benefits for people who live within these communities. The success of CBNRM rests on the premise that communities derive benefits from conservation, which creates incentives to change resource use patterns and ultimately ensure the survival of these resources on communal lands. Benefits can be both financial (tourism revenues and wages) and non-financial (improved skills, physical security and social cohesion). However, despite the proliferation of CBNRM activities at many sites in Africa and across the globe, few projects attempt to measure the extent or importance of human well-being impacts at the individual or household level. This presentation describes a framework for incorporating a holistic view of human well-being into conservation strategies. This includes mapping conservation project activities to specific human well-being outcomes, identifying and selecting human-wellbeing indicators, and making an informed decision on a monitoring design. The presentation will describe a case study application of this framework in community conservancies in the rangelands of northern Kenya. Here, indigenous pastoralist communities aim to manage rangelands sustainably for livestock and wildlife. Social data complements wildlife and vegetation monitoring data, and is essential to understanding whether and how an intervention meets human-wellbeing objectives. In addition, integrating social considerations into project activities can assist practitioners to avoid or mitigate potential social risks that can undermine the success of community conservation.

Tuesday, September 9th · 1:30 p.m. – 3:00 p.m.

Track 1: Private Work with Wildlife and People in the United States

Meeting Room: Chasm Lake

Colorado Habitat Exchange

Terry Fankhauser, Colorado Cattlemen's Association

The Colorado Habitat Exchange gives ranchers a new return on investment for stewarding wildlife and land resources. To address the issue of moving toward energy security without doing irreparable damage to wildlife and the landscapes on which they depend, the Colorado Habitat Exchange will create the incentives needed for all parties to act now and avoid the need to list wildlife species. The program enables those who impact habitat to create financial opportunities for those who can provide or improve habitat. The Colorado Habitat Exchange establishes a structured, transparent infrastructure for those types of habitat exchanges to work. The objectives are to provide a standardized set of tools and protocols to quantify habitat and species benefits from restoration activities provide a registry that tracks benefits and reports on progress towards achieving permit requirements and conservation goals, establish a trading platform for credits and to provide regulatory assurances for participating private landowners and development interests.

Rancher's Perspectives

Russell Davis

Russell Davis, a rancher, has been at the forefront of private lands wildlife conservation for the past 12 years, beginning with his involvement in mountain plover research and continuing with short grass prairie conservation. His family was awarded the Landowner of the Year Award from Colorado Parks and Wildlife and the Sand County Foundation Leopold Stewardship Award. Russell will be discussing his involvement with Colorado programs and his involvement with Partners for Conservation. Partners for Conservation is a private landowner organization which communicates and collaborates on conservation partnerships for working landscapes to benefit present and future generations. To date, the organization has 90 partners, representing 18 states and has hosted six Annual Private Lands/Partners Day conferences bringing together landowners and agency partners.

Incentives and Outcomes of Black Footed Ferret Introductions in Colorado on Private Lands

John Hughes, U.S. Fish and Wildlife Service

Despite a successful captive propagation and reintroduction program, the black-footed ferret (*Mustela nigripes*) remains one the most endangered mammals in North America due to widespread lethal control of prairie dogs (*Cynomys* spp.), diseases such as sylvatic plague and canine distemper, and conversion of rangeland to row crop agriculture. Black-footed ferrets have been reintroduced at 22 separate sites throughout the Great Plains and Intermountain West, primarily on public lands. Private rangelands throughout the Great Plains, the historic core of black-footed ferret range, represent a unique opportunity to recover the species, provided that regulatory concerns, financial incentives, disease management, and prairie dog management issues can be addressed to the satisfaction of private landowners, agricultural producer groups, and local governments. We provide an update on the implementation of the Black-footed Ferret Programmatic Safe Harbor Agreement in the Great Plains, its potential future use, and an update on ongoing challenges to black-footed ferret recovery rangewide.

Tuesday, September 9th · 1:30 p.m. – 3:00 p.m.

Track 2: Wild and Feral Pigs

Meeting Room: Boulder Field

Examining the Risk and Rewards for the Anthropogenic Spread of Wild Hogs

Joe Caudell, Murray State University

Wild hogs (*Sus scrofa*) are an invasive, exotic species that have spread through much of the US through anthropogenic means. Many states have laws and regulations with the intent of reducing the illegal importation, introduction, and establishment of wild swine populations. However, in many cases, these laws have been ineffectual for stopping the anthropogenic spread of wild swine. To assess the risk for moving wild hogs, we examined various wild hog-related laws throughout the US and assessed the potential reward for their illegal movement. We found that fines ranged from 0 to > \$10,000, with the mean minimum fine of \$497 a mean maximum fine of \$2578. The average number of years in jail for the release or possession of wild hogs was .65 years. The mean cost of a single-day hunting trip was \$500; however, this varied widely among states. In many cases, the potential rewards for releasing wild hogs far outweighed the monetary risk from getting caught. States with few or no wild hogs and weak laws and/or fine are at a substantial risk for the illegal importation of wild hogs. In many cases, the risk of getting caught and having to pay a low fine is far outweighed by the money and opportunity costs saved by being able to hunt hogs in their own state. To reduce the potential for the spread of wild hogs, agencies should concentrate on increasing monetary fines or increasing the perceptions that this illegal activity will be successfully prosecuted.

A Case History of a Politically Charged Issue-Wild Pigs in Tennessee

Charles Yoest, Tennessee Wildlife Resources Agency

In 2010 the Tennessee Wildlife Resources Agency (TWRA) acknowledged the failure of harvest-based management to control wild hog (*Sus scrofa*) populations and the need to shift focus to a more aggressive statewide wild hog eradication program. Recognizing the problem was beyond the scope of the TWRA, organizations were invited to partner in the future of Tennessee's wild hog management. This nascent group focused on proven methods used in states with much smaller hog populations based on three tenets: 1) eliminating incentives to illegally transport and release wild hogs, 2) increasing opportunities for landowners to control wild hogs, 3) and outreach. Following these tenets, wild hog populations have been lowered and some disjunction pockets eliminated across the state. These accomplishments would not be possible by any entity (e.g., TWRA) acting alone. Success is due to the partnership known as the Wild Hog Eradication Action Team (WHEAT) which grew from four partners to a 24 member organization leading wild hog management in Tennessee. WHEAT brings great value to statewide implementation of the three tenets through development of hog management regulations, collaborative outreach, and lobbying. Program success is due to the diversity of partnerships and the ability to guide efforts, remove obstacles, and educate. Recent shifts in Tennessee's wild hog management likely would have failed without the contributions of WHEAT. As a result, we recommend any agencies considering major shifts in wild hog management: 1) do not implement a harvest-based program; 2) adopt the three tenets; and 3) develop an overarching, guiding partnership.

Toxicants and Contraceptives for Feral Swine in the U.S.

Kurt VerCauteren, USDA-APHIS-Wildlife Services/National Wildlife Research Center

With partners, we and others are working to develop and register toxicants and contraceptives for feral swine in the US. Our toxicant efforts are focused on using sodium nitrite (SN) as the active ingredient. We are assessing and comparing the palatability, lethality, and general potential of promising formulations of SN in controlled, captive settings. We are also trialing a variety of swine-specific feeders. In this presentation we will provide an update and present our findings to date. We also lay out our path going forward toward the US and Australian registration of a SN-based toxicant for the control of feral swine. In a parallel effort we are also working to develop a species-specific contraceptive reagent for feral swine that can be delivered as a bait and cause permanent sterility. An update on this line of endeavor will also be provided.

Tuesday, September 9th · 1:30 p.m. – 3:00 p.m.

Track 3: The Business of Conservation

Meeting Room: Diamond East/West

Zooming in on Trophy Hunters Spending in South Africa

Meville Saayman, North-West University

The purpose of this paper is to determine the determinants of trophy (international) hunters spending in South Africa. Hunters in South Africa can be divided into two categories namely biltong (primarily local hunters) and trophy (primarily foreign hunters) and hunting makes a significant contribution to the tourism industry and the economy in general. One of the key contributors or ingredients of economic impact studies is tourists (hunters) spending, and the 9000 international hunters spend approximately R1.2 billion in 2013 which can still be increased. The reason being that hunting lodges and game farmers are mostly located in rural provinces with high rates of unemployment. Therefore this research can help practitioners and marketers alike to focus their marketing and development activities and resources on these variables. The research was conducted by means of a structured web based questionnaire survey and this is the first time that the determinants have been identified in South Africa which has a vibrant hunting industry.

National Insurance Fund in Mexico Supports Carnivore Conservation in Private Land

Almira Hoogesteijn, Cinvestav Unidad Mérida

In Mexico, predation events elicit the urge to eliminate predators. Retaliation and habitat loss are the most pressing aspects affecting feline conservation. Shortcomings of Protected Natural Areas (PNA), land tenure and hunting impunity aggravate the situation. Ninety-one percent of jaguars' current distribution is outside protected areas, conservation plans are forced to include ranchers and private landowners. Coexistence can be encouraged by financial incentives paid to those negatively affected by the carnivore's presence. An Insurance Fund, created by the Mexican Confederation of Livestock Organizations, covers stock (cattle, sheep, goats) predation by carnivores, including jaguar. Our study analyzed 335 cattle predation cases from 2011 to 2014, concentrated in nine states. Jaguars caused most claims (36%), followed by coyotes (19%), pumas (17%), domestic dogs (7%), bears (2%) and wolves (2%), and 15% of the claims were unspecified. Most episodes occurred in cattle younger than 6 months (60%). Expenses paid by the Fund totaled \$39,297.79 US dollars. Ninety-one percent of landowners exceed their land carrying capacity, letting stock pasture elsewhere which facilitates predation. These analysis aid a goal oriented conservation agenda which should include husbandry programs aimed to increase productivity and reduce human-carnivore conflicts. Resources should be targeted to heavily affected areas. Compensation schemes have been severely criticized, however, most episodes happened to marginalized pastoralists, for whom livestock assets are the primary form of savings. The program has an important educational impact. The compensations system is supported by multiple stakeholders (government, Fund, insured ranchers), losses are spread and therefore sustainable.

Tuesday, September 9th · 1:30 p.m. – 3:00 p.m.

Track 4: Landscapes & Grouse

Meeting Room: Granite Pass

An Ecological Conundrum: Just What Makes a Good Lesser Prairie-Chicken Habitat?

Steven Olson, USDA Forest Service

The Lesser Prairie-Chicken is native to the prairie shrubland ecosystems of Colorado, Kansas, New Mexico, Oklahoma, and Texas. Dramatic population declines, combined with existing and perceived future threats, were the impetus for listing the chicken as 'Threatened' under the Endangered Species Act. On the Cimarron and Comanche National Grasslands the decline has been evident since the mid-1990s, but has been particularly severe over the past decade. Between 2012 and 2013, prairie-chicken numbers fell 50 percent across the species range. These concerns led to the development of the Cimarron-Comanche National Grasslands Lesser Prairie-Chicken Management Plan. As we developed our plan, it became evident that defining 'quality' prairie-chicken habitat was not a simple task. The prairie-chicken evolved in an area of sand prairie with tall grasses accounting for up to 90 percent of the vegetation, thus providing ample lekking, nesting, and brood rearing habitat for the birds. That habitat was forever altered by European settlement and disturbance of native prairie. Despite broad changes in the vegetation, the sand prairie still appears to be capable of producing more tall grasses and fewer shrubs. Our strategy includes a thorough inventory of existing conditions, an intense monitoring plan, and an experimental approach to answer the question: 'Just what makes good Lesser Prairie-Chicken habitat?' The answer to that question on the national grasslands will be the same for private lands in the vicinity, leading to cooperative management of Lesser Prairie-Chicken among land owners across the species range.

Landscape Conservation Takes Money: How Conservation Easements are Revolutionizing Habitat Protection and Management in the U.S.

Stephanie Manes, Common Ground Capital, LLC

When land is privately or communally-owned, the self-interests of the property owners dictate the fate of the land. For some, generating money is the top priority; for others, keeping the land intact for future generations drives all decisions. One tool serves both needs while preserving private property rights, communal sovereignty and the ability for landowners to generate income from hunting, eco-tourism and compatible agricultural production. Voluntary legal extinguishment of development rights (Conservation Easements), either purchased or charitably-donated, create the financial incentives necessary to achieve lasting protection and management of habitat at large scale in perpetuity. Discussed is a brief history of conservation easements in the United States, the legal and regulatory framework necessary for success, and a summary of the dramatic increase in the use of conservation easements to achieve federal, state, local and endangered species conservation objectives.

Tuesday, September 9th · 3:30 p.m. – 5:30 p.m.

Track 1: Private Work with Wildlife and People in the United States

Meeting Room: Chasm Lake

Three Rivers Alliance Sessions

Don Andrews and Troy Schneider, Three Rivers Alliance

The Three Rivers Alliance (TRA) was formed on July 9, 2008 as a Colorado non-profit corporation by landowners in the Republican River basin of Colorado. The goal of the organization is to preserve and strengthen the local ecosystems and the agricultural viability of their community. TRA advocates for landowners on the Republican River basin to help them gain access to resources to remove invasive species, replant vegetation, and protect wildlife on riparian and range land areas. In addition, TRA is demonstrating its ability to convene important discussions and to get people to pull together in the same direction on the same issues: to agree on problems and to seek ways to pursue constructive solutions; to find common ground; and to proceed to solve difficult issues facing the Republican River system.

Building Connections to Wild Places with Remote Viewing Technologies

Phil Ramsey, MPG Ranch

Remote viewing technologies allow new ways to maintain connections between people and wild places. In this presentation we will discuss a suite of technologies that enable viewers to learn about conservation efforts and research underway at MPG Ranch, near Florence, Montana. MPG Ranch is a conservation philanthropy devoted to improving restoration practice and developing ecological knowledge. Web interfaces, live view cameras, and motion sensing cameras are used to share the information we learn and gain insights into the habits of wildlife.

Using Bird Populations to Evaluate Activities, Promote Ecological Awareness and Prompt Action on Private Lands - Kate Stone, MPG Ranch

Private landowners allocate significant resources towards restoration activities, yet have few ways to demonstrate the ecological effectiveness of their actions. As a group, birds are well suited to serve as response variables to management actions due to their abundance, relatively small territories, association with specific vegetative features, and our ability to passively monitor them. The MPG Ranch studies bird populations using a variety of methods, including: point counts, direct observations of target species, fine-scale mapping of bird occurrence, and tracking devices. The information gathered allows us to evaluate the success of restoration projects, including large-scale activities such as landscape conversion and small-scale activities such as building enclosures and shrubby draw enhancement. Our studies also allow us to document basic distribution and life history information on little-known species. We share data with local conservation groups, our state's Natural Heritage Program, and national bird monitoring efforts such as "eBird", "HawkCount", and "Hummingbirds at Home." Though our main goal is to apply data towards our own on-the-ground restoration activities, collaborative and community outreach efforts broaden its application to larger topics, including regional land-use planning efforts and setting management guidelines for species of concern. Our hope is that our research will prompt other private landowners to invest in formal and/or informal bird monitoring efforts on their properties.

Tuesday, September 9th · 3:30 p.m. – 5:30 p.m.

Track 2: Wild and Feral Pigs

Meeting Room: Boulder Field

APHIS National Feral Swine Damage Management Program - Dale Nolte, USDA/APHIS Wildlife Services

United States department of Agriculture, Animal Plant Health Inspection Service (APHIS) is serving as the lead federal agency in a cooperative effort with other federal, state, tribal, and local entities that share a common interest in reducing or eliminating problems caused by feral swine. APHIS' goal in conducting the National Feral Swine Damage Management Program is to reduce damage and risks to agriculture, natural resources, property, animal health, and human health and safety in the United States by reducing or eliminating feral swine populations, in cooperation with states, tribes, other federal agencies, organizations, and others. APHIS' strategy is to provide resources and expertise at a national level, while allowing flexibility to manage operational activities from a local or state perspective. APHIS will implement activities to reduce problems associated with feral swine in most states where they are present. In states where feral swine are emerging or populations are low, APHIS is cooperating with local and state agencies to implement strategies to eliminate them. National projects have been implemented to enable comprehensive coverage of disease monitoring, risk analysis, and economic analysis, along with other research activities on feral swine. Wildlife Services has established a baseline capacity through Wildlife Services State Programs in states with feral swine to address damage. Wildlife Services also has funded additional projects identified by Wildlife Services State Directors, along with cooperators, to address specific feral swine issues. APHIS will seek partners in all aspects of feral swine damage management.

Mechanical Control of Wild Boar (*Sus scrofa*) Population - Irfan Ashraf, The Islamia University of Bahawalpur

This project was to explore ways to control the exploding population of wild boar in the area of Islamabad, capital of the Islamic Republic of Pakistan. Due to dense human population and security reasons, gun shooting has been prohibited here by law. The use of poison baiting may create problems for friendly wildlife species, therefore mechanical methods were tried as control for the numbers of boar in the area. In this research, three types of the traps, Panel Traps, Double Spike Snare Traps and Loop Traps were used at several locations in Pakistan to assess the wild boar capturing efficacy of each device. Dog flushing and trail counting methods were adapted to assess the population. Fifteen sets of the three traps were installed within each study site and trapping data collected. Different attractant materials were used to attract the wild boars toward the trapping devices taking into account the seasonal variation and availability of the attractants in the adjoining croplands. This activity was also helpful to test the usefulness of a particular attractant. A total of 529 animals were captured, 430 mature animals and 99 piglets. 180 animals were captured in Panel traps, Double Spike Snare Traps caught 70 animals while Loop Traps caught the least with 50 animals in year one. Similar trends were found in the second year with 145, 61, and 23 animals respectively. Final results of this study have shown that the Panel Trap was the most effective device for trapping wild boar.

Landowner Attitudes Toward Wild Pigs - Erin Harper, Illinois Natural History Survey

Wild pigs were first found in western Illinois in the 1990s. Since this time pig presence has been confirmed in 23 of Illinois' 102 counties and persistent populations exist in four counties. Problems associated with these animals include transfer of infectious diseases (e.g., pseudorabies) to domestic livestock, habitat destruction, and an absence of natural predators. In response to the spread of the wild pig population throughout the state, the Illinois Department of Natural Resources (IDNR) is working to find the best management approaches for population control. To better understand landowner attitudes toward wild pigs and preferences for management approaches, we conducted a mail survey of 5,320 landowners who possess greater than one acre (.4 ha) of land from the 23 counties in which feral hogs had previously been reported to the IDNR and an additional 22 counties within close proximity to these counties. We received 3,061 (58%) usable questionnaires. Survey participants were asked attitudinal questions in relation to wild pigs and wild pig management. Responses were analyzed using Chi-squared tests, logistic regressions, and potential for conflict index (PCI2). We found significant differences ($p < 0.001$) between landowner type and targeted sharpshooting for both in the county where the respondents' land is located and on the respondents' land specifically. Discussion will focus on preferences for management based on personal attributes and attitudes, and potential for conflict index and what that means for the future management of wild pigs in Illinois.

Tuesday, September 9th · 3:30 p.m. – 5:30 p.m.

Track 3: The Business of Conservation

Meeting Room: Diamond East/West

A New Era of Harvest on Private Lands in the USA: When Should We Manage Pheasants Like Fish?

Larkin Powell, University of Nebraska-Lincoln

Hunters on public and private lands in the USA are regulated by harvest and possession limits. Wildlife managers rarely design spatially-explicit regulations or quotas for individual properties. Two policies on private lands could affect local harvest dynamics: fee hunting and guided hunting on private lands, and payments by states to private landowners to obtain Open Access rights for public use. These could result in higher levels of harvest on specific parcels of privately owned land, suggesting the need for new methods to prevent over-harvest. A third dynamic may have synergistic effects: fragmentation of private forests, wetlands, and grasslands has increased to the point that dispersal of game animals could be affected. I used spatial simulations to show how animals such as northern bobwhite, deer, and ring-necked pheasants can be legally over-harvested when multiple parties hunt the same parcel of land. During scenarios based on observed rates of use on Open Access-type lands in Nebraska, male pheasants were not predicted to survive the hunting season, and over 85% of female pheasants were illegally harvested when error rates were 1% per hunting party. Spatial modeling suggests that the level of fragmentation in eastern Nebraska does not allow the dispersal of pheasants to repopulate depleted areas. Shorter hunting seasons and state-supported monitoring should be implemented on Open Access lands that have high use potential. Also, landowners who engage in fee hunting should have their lands monitored to establish suggested harvest levels or quotas to protect the public resource.

How Does Land Use Affect the Relative Abundance of Two Mesopredators in the Eastern Cape South Africa?

Armand Kok, Rhodes University

Livestock pastoralism and game ranching are the two dominant land use types in the Eastern Cape, South Africa and conflict between humans and medium sized carnivores is widespread. In this study, we used 12 spatially explicit (3 x 3) trail camera grids (3600ha), to assess the relative abundance indices (RAI) of two common predators; black-backed jackals (*Canis mesomelas*) and caracals (*Caracal caracal*). Camera grids were equally distributed across the two land use types. Over 19121 trap nights, 726 photographs of black-backed jackals and 81 photographs of caracals were taken. The RAI of jackals was significantly higher on game ranches than livestock farms ($U = 109$; $df = 1$; $p < 0.05$). In contrast, the RAI of caracals was similar on the two land use types ($U = 73$; $df = 1$; $p > 0.05$). While the two mesopredators are actively removed by managers on both land-use types, removal rates are higher on livestock farms than game ranches. Thus, monogamous, pair-bonded black-backed jackals may be more sensitive to the effects of predator control than solitary caracals. The merits of predator removal as a conflict mitigation strategy are discussed.

Tourist Influx Variation Based on Wet and Dry Seasons in Okomu National Park

Oghenetajiri Digun-Aweto, University of Ibadan

Okomu National park is the smallest park in Nigeria, Founded in 1991, it is home to the endangered white throated monkey (*Cercopithecus eruthrogaster*), the endangered African Forest Elephant (*Loxodonta africana cyclotis*) and has many endemic plant species. The National Park is about 60km North West of Benin City. It lies between latitudes 6°15' and 6°25'N and longitudes 5°09' and 5°23'E. Nigeria's climate consists majorly of two seasons: the wet and dry seasons. Mean annual rainfall in Okomu is about 2,100mm with most falling between February and November, peaking in June, July and September. The driest months of the year are December and January, while the mean monthly temperature is 30.2°C and Relative Humidity is about 65% during the afternoons throughout the year. It is usually suggested that tourists visit in the dry season because of increased visibility of wildlife but tourists still visit in the wet season. Hence this study is aimed at investigating the effect of wet and dry seasons on tourist's visits to the park. Data on tourist's influx was gathered from Park records and by the researcher while data on rainfall was gotten from park records. The results showed that there was no direct relationship between seasonality and tourist's influx. Also, tourist visits is on the decline due to recent unrest in the community; kidnapping of expatriates and more recently, the paramount monarch of the town. To increase the amount of tourist visits, safety is a paramount concern that has to be guaranteed.

Tuesday, September 9th · 3:30 p.m. – 5:30 p.m.

Track 4: Landscapes & Grouse

Meeting Room: Granite Pass

Conservation Policy Needs for Privately Owned Grasslands

Robert Manes, The Nature Conservancy of Kansas

The concept of affecting conservation at large scales is relatively simple: If strategies can be applied across traditional boundaries, then fragmenting effects of development and land management can be ameliorated for species that rely on large and intact habitats. The challenge, however, is that landscapes have multiple ownerships and land uses, and conservation entities often are insular. Individual organizations and agencies often lack resources, expertise, authority, and relationships essential to success. Agencies, non-government organizations, and landowners may exist in the same geographies without developing cooperative relationships necessary for large-scale conservation. Three case studies illustrate how this can be overcome. Common success factors include strong partnerships between government, non-government organizations, and landowners; and building broad recognition of the projects' merit. The case studies examined here include Montana's Rocky Mountain Front, Fortin Chacabuco Ranch near the Argentina-Chile border, and eastern Kansas' Flint Hills. In each case, the need for large-scale conservation is illuminated by one or more wide-ranging non-migratory species, and by a still-intact ecosystem that is significantly diminished across its former geographic expression. Also, in each case, conservation success resulted from either purposeful, or initially chance, cooperation between government agencies, NGOs, funders, and private landowners. This cooperation precipitated support for the projects, but also understanding among diverse and sometimes opposing interests. The purpose of this presentation is to strengthen the conservation community's ability to strategically and purposefully form and deploy the alliances necessary to achieve lasting large-scale conservation.

Oil and Natural Gas Industry Conservation Measures to Protect the Greater Sage-Grouse

Brian Meinhardt, Western Energy Alliance

The potential listing of the Greater Sage-Grouse under the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (the Service) is a major cause for concern for communities throughout the West. As the species inhabits 53 million acres in eleven western states, a listing of the sage-grouse would significantly impact a number of public land uses including agriculture, mining, recreation, and oil and natural gas exploration and production. These uses are not only important to the modern economic viability of western communities, but are part of the historic fabric of the West and a key component of our heritage. The Service has repeatedly stressed its preference for mandatory conservation measures, which it states will provide the regulatory certainty needed to ensure that protective measures actually occur. The oil and natural gas industry has for years committed to a wide range of mandatory efforts to avoid, minimize, and mitigate impacts to the Greater Sage-Grouse and its habitat on public lands. These commitments are identified during the National Environmental Policy Act (NEPA) process, and specify the terms under which an oil and natural gas project may move forward, thereby providing the regulatory certainty that the Service is looking for. Our presentation at the Wildlife Congress will feature a recent study by SWCA Environmental Consultants for Western Energy Alliance, which documents and quantifies these conservation measures. Specifically, the study shows that the existing NEPA process provides a robust regulatory mechanism for the protection of the sage-grouse, illustrates the effectiveness of those measures, and posits that oil and natural gas development and the conservation of the Greater Sage-Grouse in the West are mutually achievable goals. We hope this information will prove useful to the Service in the listing decision process, and along with other stakeholder-driven conservation efforts, demonstrate that the species and the western way of life can both thrive without the necessity of an ESA listing.

Tuesday, September 9th · 3:30 p.m. – 5:30 p.m.

Track 5: Elk and Deer Farming in Enclosed Systems

Meeting Room: Keyhole

Fawn/ Calf Care

Douglas Wagner, Newport Labs

Fawn/ Calf Care will focus on early detection and intervention when disease is affecting neonates. When disease affects neonatal Cervids, death can follow quickly due to their lack of body reserves. Due to this lack of body reserves, early detection of disease and determining which body systems are affected is of critical importance. There are few veterinary professionals who express an interest in the Cervid industry and many producers are without the proper guidance and assistance when dealing with disease on their farms. One of the goals of this lecture will be to instruct the attendee on how to perform a thorough Physical Exam on a neonatal Cervid showing clinical signs of disease. Once the attendee has a better understanding of the information that can be attained by performing a Physical Exam, the knowledge gained from the Physical Exam will be used in standardized approaches to determining which body systems are affected and what treatments are most appropriate to stabilize a critical neonate. If the producer can identify problems and provide treatment to stabilize the neonate while professional help is being sought the chances of the neonate surviving increase. The most common diseases which affect neonatal Cervids are: enteric, respiratory, necrobacillosis and parasitism. Common pathogens which cause these diseases will be identified. Case scenarios will be presented with the goal of having the attendees work through cases of neonatal disease and form treatment plans.

Cervid Medicine and Surgery

Douglas Wagner, Newport Labs

Farmed Cervids present a challenge to manage and treat when disease is present. While these animals are in a farmed situation they are not domesticated and the stress placed upon them to handle and treat them when disease is present, is a factor that must be taken into consideration at all times. Cervids can show signs of Capture Myopathy and be clinically affected in as little as two minutes of a hard chase. The most common diseases that affect farmed Cervids are: Epizootic hemorrhagic disease (EHD), Pneumonia, Enteric, Necrobacillosis and Parasitism. The common pathogens causing these diseases will be discussed and treatment options that have been used successfully for these pathogens. Surgery will discuss and focus on issues where surgical intervention is needed, the most common reasons for surgical intervention are: Orthopedic (fractured long bones), Antler infection/removal, Soft tissue (traumatic injury repair, neonatal hernia, Ophthalmic (enucleation)). Both Medicine and Surgery topics will focus on practical approaches to identify problems early and treating them while minimizing stress. There are many different Chemical Immobilization protocols that have been used in the Cervid industry, none of these protocols have been standardized and there are no established labeled drugs for Chemical immobilization at this time. Advantages and disadvantages to each protocol will be discussed focusing on which protocols have been most effective dealing with compromised cervids.

Thursday, September 11th · 8:00 a.m. – 10:00 a.m.

Plenary Session V

Meeting Room: Diamond East/West

U.S. Department of Interior - Policies for Energy Development and Wildlife Management that Impact Private Lands and Communities

Jim Lyons, Beartooth Strategies

The Department of Interior manages the federally owned minerals and other energy development on lands administered by the Bureau of Land Management and other federal agencies. Policies for resource extraction affect more than public lands and DOI and BLM have specific policies that address impacts to private lands and community values. In addition DOI and BLM actively engage stakeholders and communities during the planning and implementation phase to reduce conflict, address major concerns, and cooperate with actions to mitigate impacts. I will address the major policies DOI and BLM use for these efforts and discuss how private landowners and community's voices are being heard.

Increasing Scale and Effectiveness of Private Land Conservation

Chris Pague, The Nature Conservancy

The importance of private lands for conservation is increasingly apparent. Private landowners and wildlife managers face many challenges as they work to maintain the ecological, economic and social integrity of these lands. For many years The Nature Conservancy conserved private lands by purchasing them and then establishing nature preserves or transferring lands to public agencies. During the past two decades, conservation easements have become firmly established as the transactional tool of choice for conserving private lands. These tools for land protection remain valuable, yet they are insufficient, in part because the cost of buying land or easements far outstrips the availability of funding sources. There is substantial need and opportunity to develop financial and management tools and techniques that advance agricultural, economic, and conservation outcomes on private lands at a scale that effectively conserves whole landscapes and the species they contain. The Nature Conservancy is investing in several novel approaches, including multi-part transactions that incorporate much greater acreages than traditional transactions, enhancing both economic opportunity and conservation outcomes; increasingly sophisticated conservation easements that foster negotiations with energy developers; market-based sustainable grazing agreements between agricultural producers and buyers; and community-based land management programs that enhance both conservation and economic returns. Working in collaboration with private landowners, state and federal agencies, and academic researchers, we are analyzing vulnerabilities of private lands and demonstrating adaptation strategies that may increase resilience of socio-ecological systems including private lands.

Thursday, September 11th · 10:30 a.m. – 12:30 p.m.

Track 1: Biodiversity, Threatened and Imperiled Species

Meeting Room: Keyhole

Supporting Landscape-Scale Planning with Decision Support Toolkits

Patrick Crist, NatureServe

Conservation decisions often come down to actions by individual private landowners, whether it be acquisition of easements, land or development rights; outreach and education, assistance with restoration, etc. To target the locations that will offer the most conservation benefit, it is useful to put decisions into a larger landscape context. A broader context can help identify areas that can conserve the most valuable areas with least conflicts and perhaps lower cost; in other words, a larger context provides more options. However, there is often a disconnect between conservation plans developed at broad scales of landscapes or ecoregions and implementation that must happen at the site scale. This disconnect can happen for many reasons, one being that broad-scale plans are often developed using coarser data or planning units that may not be informative to site-level decision making. This presentation will illustrate with real-world examples the application of decision support toolkits that are able to support both landscape-scale assessment and prioritization, and site-level decision making. This is accomplished through the use of a framework planning tool, NatureServe Vista that, unlike many conservation tools, retains data in its source resolution. Vista can facilitate cumulative effects assessment and landscape prioritization; then be used to explore, assess, and plan actions for individual sites. In this presentation we will illustrate the multi-scale application for both coastal and inland areas.

Wetland Condition Assessments on Colorado Private Lands: A Joint Effort by the Colorado Natural Heritage Program and Colorado Parks and Wildlife

Joanna Lemly, Colorado Natural Heritage Program, Colorado State University

Wetlands are recognized as vital ecosystems to protect at all levels because of their importance in many ecological roles, including wildlife habitat. In Colorado they occupy approximately 2% of the state's area, yet provide habitat for over 75% of species in the state. A vast majority of Colorado's land is privately owned, making wetlands on private lands and collaborations with those private landowners an integral part of the protection and management of wetlands. Recognizing this fact, Colorado Parks and Wildlife (CPW) awards up to \$1.5 million annually for habitat improvement projects in wetlands, much of which occurs on private lands. To assist with their endeavor, the Colorado Natural Heritage Program (CNHP) has partnered with CPW to assess the condition and habitat value of wetlands in Colorado. The information gathered from these projects helps CPW target locations and wetland types most in need of restoration or habitat enhancement. To date, four major river basins have been assessed: the Rio Grande Headwaters, North Platte Watershed, South Platte Watershed, and the Lower Arkansas River Watershed. CNHP also strives to make the information from these studies available and useful for private landowners. Working with private landowners often necessitates a heightened awareness of data sensitivity, as landowners are concerned about who might have access to information about their land. CNHP takes these issues very seriously and takes several steps to protect private data, which has led to greater access to private lands around the state for data collection.

Colorado Rare Plant Conservation Initiative

Susan Panjabi, Colorado State University

The Colorado Rare Plant Conservation Initiative (RPCI) is a diverse partnership of public agencies, private organizations and academic institutions. The overall goal of the RPCI is to conserve Colorado's most imperiled native plants (122 plant species at significant risk of extinction) and their habitats through collaborative partnerships for the preservation of our natural heritage and the benefit of future generations. This partnership has produced a strategy for Colorado's imperiled plants and their habitats that represents a collective vision for plant conservation in Colorado, emphasizing a proactive approach to ensure the long-term stewardship and viability of Colorado's rarest plants. The strategy identifies six objectives for the next ten years: 1) secure on-the-ground, site-specific habitat protection, 2) minimize the impacts of specific land uses, 3) improve scientific understanding through inventory, research and monitoring, 4) develop and implement a state program and policies, 5) facilitate stewardship through education and outreach, and 6) adopt measures for off-site conservation. The implementation of this strategy is supporting a systematic and meaningful advance in plant conservation in Colorado, with the aim of avoiding the need for federal listings. The efforts of RPCI, including Conservation Action Planning workshops, legislative initiatives, research projects, and the development of Best Management Practices, have already led to significant progress for rare plant conservation in Colorado with respect to policy, on-the-ground action, and awareness of rare plants. The strategy has become a model for collaborative plant conservation, and this approach is now being implemented and expanded to other states and internationally.

Linking Sustainable Forest Management with Habitat Conservation for the Amur Tiger (*Panthera tigris altaica*) - Xuemei Han, NatureServe

The critically endangered wild cat, Amur tiger (*Panthera tigris altaica*), has experienced a serious shrinking of its range and a significant population decline during the past century in Northeastern China and Russian Far East. This study demonstrates a multi-disciplinary approach to conserve the Amur tiger habitat through sustainable forest management. The forests habitat was evaluated from a dynamic perspective. By applying multiple metrological silvicultural methods, innovative habitat mapping based on the remote sensed data, and the computer model, Landscape Management System, a design of sustainable forest management plan was suggested to keep a diversified stand structures is critical to conserve Amur tigers in Northeast China.

Thursday, September 11th · 10:30 a.m. – 12:30 p.m.

Track 2: Energy

Meeting Room: Boulder Field

Balancing Energy Development with Fish and Wildlife

Ed Arnett, Theodore Roosevelt Conservation Partnership

Increased energy development such as oil, gas, solar, wind and geothermal are threatening public-lands hunting and fishing opportunities across the country. In the past 15 years, more than 40 million acres of the West have been leased for development. Recently, demands for renewable energy production have drastically compounded the issue by creating a "land rush" on areas available for development. Unfortunately, many locations pressured for energy development also hold some of the nation's best hunting for mule deer, elk, pronghorn and sage grouse, in addition to blue-ribbon fishing for trout. Hastily developed energy projects can dramatically affect fish and game populations, as seen in the Atlantic Rim region of Wyoming. The Theodore Roosevelt Conservation Partnership (TRCP) supports responsible energy development and has worked to ensure development proceeds in a way that sustains and conserves fish and wildlife populations and sustainable opportunities for hunting and fishing for future generations. The TRCP and our conservation partners are actively engaged in policy debates, seeking solutions for domestic energy development by participating in all levels of policy development. Here, we present policy and management solutions to balance energy development with fish and wildlife. Notably, we highlight the need for better pre-development planning and landscape-scale approaches to mitigation. By working both the local and national levels, sportsmen are able to ensure fish and wildlife are adequately managed during energy development.

The High Lonesome Ranch: A Model for Responsible Energy Development at the Landscape Level

Scott Stewart, The High Lonesome Ranch

The High Lonesome Ranch (HLR) is a privately owned ranch of 38,000 deed acres and an additional 205,000 acres of leased public land in western Colorado. In 2011 the HLR and the Theodore Roosevelt Conservation Partnership (TRCP) entered into an agreement to work together towards a model approach to how energy development can be planned and implemented at landscape level to achieve a better balance between energy and other values. Though the implementation of the TRCP's 'FACTS for Fish and Wildlife' recommendations and working with stakeholders under a process that identifies and plans for current and future needs for everyone, we believe that the conflict that exists in many other areas can be reduced or eliminated. Plans are developed and implemented for landscapes not projects or individual wells and through mitigation (Avoidance, minimization and compensation) a 'net conservation benefit' can be achieved while producing energy resources. HLR is also employing the use of conservation tools through federal and state agencies for the management of focal species (sage grouse, mule deer) and be the first ranch in Colorado to have a Candidate Conservation Agreement with Assurances for greater sage grouse that addresses all threats to the species. HLR believes it is their responsibility to manage energy and wildlife to benefit all current and future needs with a proactive approach that prevents conflict on the entire 400 square mile landscape.

Private Landowner Involvement - Making a Difference in Energy Development Outcomes

Craig Taggart, Western Landowners Alliance

This session will showcase two examples of success landowners have had in constructively addressing energy development on private and leased public lands. These project examples illustrate tools and models that can be employed to assist in protecting the wildlife and other natural values of your lands. The first example is a demonstration project that was developed and employed by members of the Chama Peak Land Alliance in southern Colorado when faced with impending energy development. This planning tool was successful in identifying sensitive wildlife and environmental conditions from the perspective of the private landowner community, providing leverage for protection. This tool is a straight-forward model that can be widely adapted to your local conditions. The second illustrates a range of best management practices (BMPs) employed by a landowner to protect the sensitive wildlife and natural resource values that he stewards on his land. These are a collection of techniques that focus on minimizing disturbance and visibility in this state-of-the-art development that has been widely acclaimed by private landowners, as well as government and industry representatives.

Colorado's Prairie Future: Projected Impacts of Oil and Gas to Wildlife and Voluntary Solutions

Megan Kram, The Nature Conservancy of Kansas

This project is designed to inspire conversations among oil and gas companies and government agencies about how best to achieve goals for wildlife conservation and oil and gas development across eastern Colorado's vast prairie grasslands. The Nature Conservancy (TNC) developed this project based on its "Development by Design" methodology (<http://www.nature.org/ourinitiatives/urgentissues/smart-development/>) and with input from a variety of external partners. The project spans all of eastern Colorado (30 million acres) and includes three components: A forecast of oil and gas development, potential risk to wildlife, and an assessment of "Available Practices for Wildlife." Project results may be used to avoid, minimize, and mitigate potential impacts to wildlife through site-specific oil and gas drilling plans, the use of best management practices, etc. Those interested in this project may include oil and gas companies; landowners; and local, state, and federal government agencies within and outside of Colorado.

Thursday, September 11th · 10:30 a.m. – 12:30 p.m.

Track 3: The Business of Conservation

Meeting Room: Diamond East/West

Financial Incentives for Private Land Conservation in the United States

Jordan Vana, Colorado Open Lands

Americans have supported private land conservation for more than 30 years. In that time, the nation's 1,700 land trusts have helped landowners conserve more than 47 million acres of farm and ranch land, wildlife habitat, and open space around the country, including more than 1.2 million acres in Colorado. Financial incentives play a critical role in these efforts. This session will provide an overview of these incentives, including federal, state and local tax benefits available to conservation-minded landowners, as well as government and private funding options. This session is not intended to provide legal, financial or accounting advice. Rather, it will give participants a working knowledge of the financial incentives available for conservation in the United States, with a particular focus on Colorado.

Is Intensive Breeding of Colour Variations in Game Achieving Triple Bottom Line Profits for All?

Lizanne Nel, South African Hunters and Game Conservation Association

Private landowners in South Africa have, for decades, derived sustainable income from the use of indigenous biodiversity through ecotourism and hunting. These benefits provide incentives to conserve biodiversity and private landowners "protect" more than double the area of proclaimed protected areas and they contribute substantially to achievement of national conservation targets. Recent trends in wildlife ranching however include selective breeding of indigenous game species to produce extraordinary trophy animals based on either unusual colour variations or trophy quality. These animals are sold either as breeding stock or directly for trophy hunting. Breeding is generally done in intensive or semi-extensive environments to facilitate selective breeding and to reduce production risks. Financial returns on certain atypical wildlife species have been exceptionally high and they run the risk of becoming a financial commodity. Conservation agencies and certain groups within the wildlife industry have raised concerns about the potential negative impacts that this commercialisation of wildlife can have on biodiversity integrity and associated industries. Another view is however that these activities contribute to the development of a sustainable green economy. Mainstream sustainable development thinking dictates that activities only have a long-term value to humanity if their benefits continuously outweigh the social and environmental costs of generating that value. This paper discusses intensive and selective breeding of indigenous wildlife, in terms of economic, environmental and social sustainability to guide our thinking in a complex, multi-disciplinary reality in order to determine the benefits and/or risks to current and future generations as wildlife is a common heritage of the people of South Africa.

Thursday, September 11th · 10:30 a.m. – 12:30 p.m.

Track 4: Human and Wildlife Conflicts

Meeting Room: Chasm Lake

Opposition to Opportunity: Managing Prairie Dogs in Southern Utah

Shandra Nicole Frey, Utah State University Extension

Utah Prairie Dogs (*Cynomys parvidens*) have been listed, first as an endangered, then as a threatened species, under the Endangered Species Act since its inception in 1973. The species exists only in southern Utah, where approximately 75% of the land is managed by the Federal Government; however, it is estimated that 75% of the species' population occurs on private lands. Unfortunately, humans have had direct conflict with Utah prairie dogs since they first began agricultural practices in the area. We must find ways to create a benefit from Utah prairie dogs on private lands, in order to alleviate conflicts, to encourage species conservation, and to recover the species. One program, the Utah Prairie Dog Habitat Credit Exchange (HCE) has done just that. Created by a collaboration of experts working in wildlife biology, sociology, finance, and policy the HCE works with landowners to create conservation easement on parcels of their property where prairie dogs can do little harm. In return, landowners can manage prairie dogs elsewhere on their property AND receive monetary credit for their efforts. These credits are then sold to developers that need 'take' for their property in order to develop their land. With this system, landowners have a bit of control over Utah prairie dogs on their land, get monetary compensation for protecting Utah prairie dogs on their land, the local towns have an avenue to continue to develop their land, and 'the ultimate goal' more Utah prairie dogs are protected across the landscape.

An Innovative Chili Dispenser to Establish Memory Fence Dynamics at Crop-Wildlife Interfaces for Effective Long Term Human-Elephant Conflict Mitigation

Sebastien Le Bel, CIRAD

With elephant populations in southern Africa increasing at 5% per annum, local communities living in marginal land adjacent to protected areas are faced with increasing occurrences of human-elephant conflict. If this situation is not addressed, elephant populations will have to be reduced and condemned to survive in fenced protected areas while the negative attitudes of humans towards wildlife impact becomes engrained in the minds of many people. Recent mitigation strategies were developed aiming at enhancing existing traditional approaches and improving upon their effectiveness. An innovative chili pepper dispenser was developed to apply pepper directly at the offending elephant, teaching them to respect passive repellents. This concept mimics interactions between animal species to form an effective form of a virtual fence. The advanced chili applicator, developed in a hand held version, is the 'Mhiripiribomba' and the ambush version is the 'Ambushchilibomba'. They fire ping pong balls, filled with a concentrated chili liquid, at speeds of 250ft/sec that burst on contact on or near the elephant, atomizing the concentrate into a fine spray, and creating a deterrent. After hundreds of tests in southern Africa, the industrial version of the 'Mhiripiribomber' offers an opportunity to disseminate this tool at low cost. Combined with sustainable revenues from wildlife, the improvement of mitigation measures with this chili dispenser will increase the wildlife acceptance capacity that the human community is willing to tolerate. Through the creation of memory fences, it will facilitate elephants respecting human activities and aid the acceptance of wildlife corridor in crop land.

The Efforts of the USDA's National Rabies Management Program for Controlling Rabies on Private Land

Kurt VerCauteren, USDA-APHIS-Wildlife Services/National Wildlife Research Center

Management of rabies in wildlife populations is complex and provides unique challenges for wildlife managers: one of the largest is the majority of land in the US where rabies occurs in wildlife is private. Rabies virus infects nervous systems of mammals, is transmitted through the bite of infected animals, and is invariably fatal. Though human disease risk is largely mitigated in the US through preemptive vaccination of pets and human post-exposure prophylaxis, wildlife pose a continuous threat. Raccoons are the primary wildlife host of rabies, followed by skunks, bats, foxes, and coyotes. Timely administration of post-exposure prophylaxis has proven nearly 100% successful in preventing rabies deaths in humans. However, the financial cost of living with wildlife rabies in the US is conservatively estimated to exceed \$300 million/year. Associated impacts such as anxiety, fear, and trauma are difficult to quantify, but often manifest with rabies. Since the late-1990s, Wildlife Services (WS) has coordinated wildlife rabies management with oral rabies vaccination (ORV) as the central tactic targeting terrestrial hosts focused primarily on private land. Significant progress has been achieved through long-term interdisciplinary and interagency cooperation from local to continental scales. The need for effective coordination has mandated the establishment of frameworks that bring together multiple jurisdictions and disciplines from municipal, county, state, federal and international agencies; universities; and the private sector to ensure collaborative, science-based approaches to rabies management on a landscape scale. We will update the status of rabies management in the US and how we effectively work on private land.

Balancing the Act: Dilemmas Associated with the Eradication of *Acacia Mearnsii* from the Golden Gate Highlands National Park, South Africa

Geofrey Mukwada, University of the Free State

Despite the huge investment that has been made in the control and eradication of *Acacia mearnsii* there is little evidence to show that the spread of this species will be reversed within the foreseeable future. In South Africa, *Acacia mearnsii* is considered to be one of the most problematic invasive species in wildlife conservation areas, where it is displacing native species and altering habitats and threatening the balance of ecosystems. This paper assesses the major challenges associated with different approaches of managing *Acacia mearnsii* invasion around the Golden Gate Highlands National Park in South Africa. The study used remote sensing data to investigate the state of vegetation cover in the northern flanks of the park and adjacent communal grazing areas to determine if invasion by *Acacia mearnsii* leads to deleterious environmental change, as well as a questionnaire survey to check if the control of the species causes livelihood disruptions within local communities. The study also employed discriminant analysis to assess the differences between the survey responses that were given by park officials and local communities, regarding their perceptions about the environmental impacts of *Acacia mearnsii* invasion, how the species spreads and how the invasion can be controlled. The paper argues and concludes that though the complete eradication of *Acacia mearnsii* is not always socially and environmentally desirable, due to the unintended environmental disturbances and livelihood disruptions it leads to, it is crucial for the park's environmental integrity and for the sustained flow of ecosystem services and benefits.

Thursday, September 11th · 1:30 p.m. – 3:00 p.m.

Track 1: Biodiversity, Threatened and Imperiled Species

Meeting Room: Keyhole

State of Colorado's Biodiversity

David Anderson, Natural Heritage Program, Colorado State University

Private and communal lands are an essential part of the Wildlife Management puzzle if we are to meet conservation objectives for biodiversity. For many of the rarest and most imperiled species, the key habitats and the best opportunities for conservation exist on private and communal lands. The owners and key stakeholders of these lands have great opportunities and responsibilities, and must balance these with the need to sustain livelihoods while being good stewards of the land. Successful conservation on private and communal lands requires communication and creative approaches to identifying shared values and opportunities. In this symposium, we will explore a diverse set of tools for assessing biodiversity status and priorities and examine the ways in which these are being utilized to advance conservation of biodiversity across all scales, with a focus on the role of private lands in these efforts. The tools we'll examine include landscape conservation design through spatial analysis, ecological integrity assessment to understand wetland quality, assessing the vulnerability of habitats to climate change, conservation exchanges, and metrics for measuring the status of biodiversity at state, regional, and national scales. We will examine several examples of how these tools are being utilized to create opportunities and incentives for conservation, as well as how biodiversity conservation priorities are being integrated into programs that benefit the general public and private land owners in other ways.

Private Lands for Public Access: The Sutter Buttes of California

Walt Anderson, Prescott College

The Sutter Buttes, the only mountain range in California's Central Valley, rise from an intensely cultivated, highly altered landscape. Fences divide the land by property ownership, keeping livestock in and trespassers out. It was inevitable in urbanizing California that the general public would want to get beyond fences to hike, explore, and take photographs. Pressure for a state park mounted, creating a polarized division between private landowners and access-demanding public. Out of conflict arose innovation: a program of public access and interpretation was developed on one ranch property; later the author expanded the concept to about 40 properties in the range. Landowners were compensated for public access, allowing traditional uses (cattle and sheep ranching) to co-exist with hikes and workshops covering geology, natural and cultural history, and environmental education. At the same time, sensitive areas (e.g., eagle eyries, bat colonies) could be protected. From a private enterprise company (Sutter Buttes Naturalists) evolved the Middle Mountain Foundation, now the Sutter Buttes Regional Land Trust. Landowners and "outsiders" together are active in land management, conservation, and education issues, demonstrating that local communities can achieve desired goals without the need for government involvement. The evolving model met its founder's goals of achieving a "positive spirit of constructive collaboration"; new issues are dealt with as they arise. Non-destructive public use has led to economic development, conservation of natural resources, and changes in attitudes and cultural perceptions. Thousands are exposed to the model and landscape at an Oakland Museum exhibit.

Biodiversity Indicators Dashboard: Monitoring Biodiversity Trend and Conservation Performance

Xuemei Han, NatureServe

Recognizing the imperiled status of biodiversity and its benefit to human well-being, the world's governments committed in 2010 to take effective and urgent action to halt biodiversity loss through the Strategic Plan for Biodiversity 2011-2020 and its 'Aichi Targets'. These targets, and many other conservation programs, require monitoring to assess progress toward specific goals. However, comprehensive and easily understood information on biodiversity trends at appropriate spatial scales is often not available to the policy makers, managers, and scientists who require it. We surveyed conservation stakeholders in three geographically diverse regions of critical biodiversity concern (the Tropical Andes, the African Great Lakes, and the Greater Mekong) and found high demand for biodiversity indicator information but uneven availability. To begin to address this need, we envision a biodiversity 'dashboard', a visualization of biodiversity indicators designed to enable tracking of biodiversity and conservation performance data in a clear, user-friendly format. We structured around the Pressure-State-Response-Benefit framework, selecting four indicators to measure pressure on biodiversity (deforestation rate), state of species (Red List Index), conservation response (protection of key biodiversity areas), and benefits to human populations (freshwater provision). Disaggregating global data, we present dashboard maps and graphics for the three regions surveyed and their component countries. These visualizations provide charts showing regional and national trends and lay the foundation for a web-enabled, interactive biodiversity indicators dashboard. This should be able to help track progress toward the Aichi Targets, support national monitoring and reporting, and inform outcome-based policy-making for the protection of natural resources.

Thursday, September 11th · 1:30 p.m. – 3:00 p.m.

Track 2: Energy

Meeting Room: Boulder Field

You Have a Voice - Steve Belinda, Beartooth Strategies

While holding potential benefits for private land owners, energy development can also be destructive of lands, resources, heritage, and even livelihoods when poorly planned and executed. To address this issue Western Landowners Alliance has convened an Energy Council composed of members with knowledge and experience with energy development on private lands. Its objective is to identify the challenges inherent in energy development on private lands as well as the solutions were others have had success. These keys to success will form the basis for landowner outreach and assistance as we empower others with this knowledge. Ultimately, it will provide the basis for real change through WLA's advocacy arm to influence both policy and industry standards. This will be your chance to play a role in affecting real change by lending your voice in this facilitated workshop. We invite you to share your knowledge through examples of both the challenges and successes of private landowners facing energy development. This forum represents one of the most significant opportunities you may ever have for your voice to be heard in behalf of private land conservation values potentially impacted by energy development. This is your chance to help craft a message that has the real potential to influence meaningful change in behalf of wildlife and the habitat they depend upon.

Thursday, September 11th · 1:30 p.m. – 3:00 p.m.

Track 3: Poaching - Rhino and Elephant Conservation

Meeting Room: Diamond East/West

Unmanned Aerial Systems to Fight Rhino Poaching - Jean Koster, University of Colorado Boulder

Rampant Rhino poaching is a key concern for Africa and specifically for Kruger National Park. Many conservation organizations concluded that to combat poaching new technology helps – such as GPS collars and unmanned aerial vehicles (UAV). The result has been disappointing so far; as the poaching increased exponentially. Rangers need additional help; and an unmanned aircraft system (UAS) may provide a solution. Using UAS to fight poaching is a daunting task. First, places like Kruger have to be considered "harsh environments". Most UAV that people promote for the commercial market do not meet such requirements. Military UAS who could handle harsh environments are too costly. This presentation discusses the opportunities and systems engineering of how UAS may support the rangers in the war against poaching; and help protect rhinos and rangers. The systems engineering includes common UAV technologies, additional technologies, and concepts of operations, risks, and ancillary helpful actions. There are 2 key UAS that could be operated by rangers: 1) A centrally controlled sector aircraft. 2) A field deployable aircraft. Both could be either fixed wing aircraft or helicopter type aircraft; both have their specific applications and system requirements. In addition to these architectures there are other systems that are needed to increase success rate: for example ground systems. This presentation will discuss opportunities and concerns about using UAS in the fight against poaching of rhinos and other wildlife.

**The Potential of Rhino and Other Wildlife to Improve the Living Standards of Food Security in Rural Africa
Wouter van Hoven, Wildlife Protection Solutions**

Poaching, unsustainable wildlife utilization practices and the bush meat trade has cleared wildlife out of many of their former natural habitats in Africa. Based on the success of reintroducing wildlife into the Quicama National Park in Angola in cooperation with the local community, all wildlife that have been settled in the wildlife sterile landscape has flourished, multiplied and not one was lost to poaching over the past 12 years. The community is benefitting now from the Park through amongst others employment and the tourist camp is permanently fully booked. Amongst others, the 34 elephants that were airlifted there in family groups have increased to 120. South Africa has experienced a forty fold increase in its wildlife numbers over a period of 50 years due to the private sector and communities taking custodianship of wildlife on private lands. Based on these experiences and successes in starting new nodes of wildlife in Angola, wildlife can be established in other parts of Africa where civil war and over-utilization like in the bush meat trade has wiped wildlife out. The clearest successes in promoting wildlife conservation outside of protected areas in Africa have been achieved where authority to manage and utilize wildlife has been devolved to the landholder level.

Saving Mali's Desert Elephants from War and Poaching: A Successful Model of National and Community Engagement - Vance Martin, WILD Foundation

Do poor villagers need elephants? The local people of Central Mali (West Africa) -- many ethnicities and clans -- know that elephants attract the attention (and therefore the assistance) of the wider community -- national, and international -- and are proud of that. As they say, "If the elephants disappear, our area will no longer be special." They also view elephants as an indicator of a healthy ecosystem and they know that their livelihoods depend on a healthy ecosystem. They also know from direct experience that elephants are important as seed dispersers and in forest regeneration. Elephants knock down otherwise inaccessible fruits and seeds from high branches that are gathered by the women for food and sometimes sale. Fruits and leaves are also eaten by livestock. Dung is valued to help conjunctivitis, a widespread problem in these environments. Over 12 years, The WILD Foundation and its many partners developed the Mali Elephant Project (MEP) as a very successful model of CBNRM. With engagement from local communities to the head of state, MEP has brought attention, action, and protection to this unique herd of elephants (the northern most in Africa, desert-adapted, and with the longest recorded elephant migration). It is now "war-tested" with only 2 elephants poached during the Tuareg rebellion and jihadist invasion of 2013. Yet local bandits remain, and the single biggest poaching incident in Mali's history occurred on the full moon night of the 13th/14th May 2014. But the local communities and the army solved it!

Thursday, September 11th · 1:30 p.m. – 3:00 p.m.

Track 4: Human and Wildlife Conflicts

Meeting Room: Chasm Lake

Livestock Management for Coexistence with Large Carnivores, Healthy Land and Productive Ranches: A Viewpoint

Matthew Barnes, Keystone Conservation

Livestock – large carnivore coexistence occurs within a broader context of social-ecological systems, specifically ranches and rural communities. Coexistence practitioners can be more effective by expanding from a direct focus on carnivores and predation-prevention tools to livestock management context. Ranchers can apply many of the same approaches that work for rangeland health and livestock production to reduce conflicts with large carnivores. The central anti-predator behavior of wild grazing animals is to form large, dense herds that then move around the landscape to seek fresh forage, avoid fouled areas, and escape predators. They also have their young in short, synchronized birthing seasons (predator satiation). Grazing management involving high stocking density and frequent movement, such as rotational grazing and herding with low-stress livestock handling, can improve rangeland health and livestock production, by managing the distribution of grazing across time, space, and plant species. Short calving seasons can increase livestock production and reduce labor inputs, especially when timed to coincide with peak availability of forage quality. Livestock management approaches based on anti-predator behaviors of wild ungulates, including grazing management and synchronized calving, may directly and synergistically reduce predation risk—while simultaneously establishing a management context in which other predation-prevention practices and tools can be used more effectively. Pilot projects on summer cattle range in the U.S. Northern Rockies involving increased stocking density through intensification of existing grazing rotations with herding suggest methods that can be used to improve grazing distribution and prevent depredations.

SYSMAS: A Handy Software to Manage by SMS and Web Interface Notifications on Human and Wildlife Conflicts and other Wildlife Related Events

Sebastien Le Bel, CIRAD

Human-wildlife conflicts have drastically increased around conservation areas in Africa in recent decades, thus undermining the peaceful cohabitation of wildlife populations and rural human settlements. Mitigation packages include various reporting forms, which are often ineffective since the information conveyed is generally scattered and useless. The booming mobile phone sector and the popular use of text messages (SMS) have provided an opportunity to assess the impact of real-time communication systems in human-wildlife conflict mitigation strategies. After preliminary tests conducted in Mozambique and Zimbabwe with FrontlineSMS, we improved the recording and transfer of raw information generated at field level with the development of an integrated system called SYSMAS. Apart from improving the quality of wildlife based information, SYSMAS was developed as a handy management tool informing in real time decision makers and easy to upload even without specific computer skills. This paper details how easy any human-wildlife conflict incident or wildlife event can be translated into a set of explanatory variables and captured on mobile phones with ad-hoc SMS models. According to local communication facilities, real-time sharing of the information could be achieved directly through a Web interface or via SMS; this last been more handy in remote African farmland. Once adopted, such a human-wildlife conflict early warning system could be deployed at low cost. The same approach could be promoted for the establishment of reporting systems on wildlife disease outbreaks.

Understanding People's Willingness to Implement Measures to Manage Human-Bear Conflict in Florida

Elizabeth Pienaar, University of Florida

In 2009 the Florida Fish and Wildlife Conservation Commission (FWC) began surveying individuals who reported human-bear conflicts. The purpose of this survey is to assess whether individuals take actions recommended by the FWC to reduce or eliminate conflicts. Using this data set, we determined which factors influence the likelihood that surveyed individuals will follow the advice provided by the FWC for managing human-bear conflicts. We find outreach efforts by the FWC increase the probability that people who report conflicts to the agency adopt recommended measures to reduce these conflicts. Our results suggest that outreach efforts by wildlife agencies increase the likelihood that people will alter their behavior to reduce human-bear conflicts.

Thursday, September 11th · 3:30 p.m. – 5:30 p.m.

Track 1: Biodiversity, Threatened and Imperiled Species

Meeting Room: Keyhole

Evaluating Wetland Condition in Urban Denver - Bernadette Kuhn, Colorado State University

Denver's urban wetlands are poorly mapped, understudied as critical wildlife habitat, and perpetually subject to frequent anthropogenic disturbance. As Denver County continues to lead the state in population growth, current information on the location and status of these wetlands is needed for city planners, land managers, and the public to prioritize conservation and restoration efforts. Our team conducted field-based wetland assessments at 27 sites within Denver County, as well as 4 several locations in Denver's Mountain Parks. We used NatureServe's Environmental Integrity Assessment framework, a multi-metric index based on four major scoring categories: landscape context, biotic condition, hydrologic condition, and physiochemical condition. In addition, we used 2010 color infrared imagery to create an updated National Wetland Inventory GIS layer of wetlands in Denver County. NWI maps have not been updated for the County since 1985. We used our results to create a list of prioritized wetlands for conservation and restoration. Despite the poor ecological condition of most sites, our team identified urban wetlands with high plant diversity, rare plant species, and even a rare amphibian occurrence. Our results suggest that although the majority of these wetlands are highly disturbed, they provide critical refuges for wildlife and plant diversity in an otherwise developed landscape.

Biodiversity Conservation on Private and Communal Lands

David Anderson, Colorado State University

How are we doing in conserving Colorado's Biodiversity? How much of it is left? Are there landscapes in Colorado where we still have the basic fabric intact to conserve entire systems? Are there hotspots where actions are more urgent than others? Are there species and places that we've successfully conserved through our actions? What role might private lands play in the big picture for conserving Colorado's biodiversity, now and in the future? What strategies are most likely to be effective given what remains? These are some of the many big questions that The Nature Conservancy (TNC) and the Colorado Natural Heritage Program (CNHP) have worked to answer collaboratively. Our efforts, which culminated in the publication of the State of Colorado's Biodiversity, began as a way to support TNC's Measures of Success Program, but we soon realized that answering these questions would benefit leaders, managers, decision makers, as well as the general public and the private landowners in whose hands so much of our sustainable future rests. With an emphasis on private lands, we will share the results of this work, examine how it is being implemented broadly to support conservation statewide, and how it is serving as a model for other such efforts.

Protecting the Florida Panther and Panther Habitat on Private Lands: Conflicts and Management Options

Elizabeth Pienaar, University of Florida

Although it is protected by the Endangered Species Act, both management and recovery of the Florida panther is contingent on habitat conservation on private lands as well as landowner support for panther conservation efforts. Conflict over cattle depredation by the Florida panther and mitigation for incidental take of the panther has contributed to the formation of the Florida Panther Recovery Implementation Team by the US Fish and Wildlife Service (USFWS). This Team consists of representatives of the USFWS, the National Park Service, the Florida Fish and Wildlife Conservation Commission (FWC), environmental NGOs and private landowners, with a mandate to facilitate the recovery of the Florida panther, in part by addressing the human dimensions of panther recovery. One of the key challenges that agencies face is how to engage stakeholders (in particular landowners) in panther management, which is particularly difficult when there is a history of distrust between agencies and stakeholders. To assist in these efforts, I conducted interviews and focus group meetings with a variety of stakeholders to assess their opinions about human-panther conflict, options for managing the Florida panther on private lands, habitat conservation incentives, and the role of agencies in mitigating human-panther conflicts. I will present a synthesis of these discussions and I will highlight the key areas of contention and conflict between various stakeholder groups that must be addressed in order to attain panther recovery.

Critical Ecosystem Profile for the Tropical Andes - Engaging Civil Society to Conserve a Biodiversity Hotspot

Patrick Comer, NatureServe

The Tropical Andes is among the top of the list of worldwide hotspots for endemic species. This region also supports exceptional cultural diversity and large populations of indigenous peoples. Home to some of the earliest recorded human civilizations, the Andes are also where numerous crops, including potatoes, beans, quinoa, amaranth, tobacco, and coca were first domesticated. Indigenous populations today play important roles in economic activities, politics, and land use and stewardship, and therefore can be important allies in biodiversity conservation. This biodiversity hotspot is identified as one of the most severely threatened areas in the tropics. The numerous threats to the tropical Andes' biodiversity have been compounded in recent years by the manifold impacts of climate change. A Critical Ecosystem Partnership Fund (CEPF) aims to ensure that civil society is engaged in efforts to conserve biodiversity in the hotspots, and to this end, CEPF provides civil society with an agile and flexible funding mechanism complementing funding currently available to government agencies. In 2013, CEPF began exploring an investment program in the Tropical Andes Hotspot, extending from Venezuela to northern Argentina. NatureServe led a team to delineate Key Biodiversity Areas (KBAs) areas in most critical need of protection to limit species extinction. Regional threats analyses and workshops were conducted, documenting strategies for civil society to pursue around each KBA. CEPF promotes working alliances among community-based organizations (CBOs), nongovernmental organizations (NGOs), government, academic institutions and the private sector, combining unique capacities and eliminating duplicative efforts for a comprehensive approach to conservation.

Thursday, September 11th · 3:30 p.m. – 5:30 p.m.

Track 2: Building The Great Movement with Private Lands

Meeting Room: Boulder Field

The Great Movement: Landowners and Wildlife Conservation in the American West

Lesli Allison, Western Landowners Alliance

Major transformations in land ownership and management have been underway in the Western United States for several decades with enormous implications for wildlife, conservation and working lands. The Western Landowners Alliance, representing the experience and voice of conservation-oriented landowners and managers, has emerged to address both the resulting opportunities and challenges at a west-wide scale. Deeply embedded in their communities, landowners constitute a major social, economic and political influence. They also manage the West's most biologically diverse lands. Working together through organizations like the Western Landowners Alliance, the Chama Peak Land Alliance, the Malpai Borderlands, the Quivira Coalition and the Blackfoot Challenge, among others, landowners are collectively generating a 'culture of conservation'. The era of entrenched warfare between environmental and agricultural organizations is winding to a close, replaced by the rise of what Arizona rancher and Malpai Borderlands founder, Bill McDonald, coined the 'radical center'. This shift represents a significant advance and new opportunities for wildlife conservation but requires new awareness, thinking and communication strategies on the part of environmental organizations, the scientific community, policy makers and funders.

No Good Deed Goes Unpunished: Removing Barriers to Wildlife Conservation on Private Lands

Rick Danvir, Western Landowners Alliance Advisory Council

Contrary to common perception, many private landowners across the West have a strong conservation ethic and an interest in helping to advance species recovery, including threatened and endangered species. Conservation efforts by private landowners are essential to the management, restoration and preservation of key wildlife movement corridors and habitats across the West. Unfortunately, many landowners fail to realize their desired conservation and economic goals. On occasion, their efforts can best be summed up as "No good deed goes unpunished." State and local agricultural tax policies, inflexible public-lands grazing policies on comingled private-public grazing allotments, inflexible and incompatible forest management practices on public-private land interfaces, lawsuits and appeals from environmental groups, and liability concerns from neighboring landowners are a few of the challenges impeding landowner participation and success in wildlife management and species recovery efforts. Case studies from private ranches in the western U.S. provide examples where county, state and federal policies and perceptions (water, tax, planning and endangered species policies) at times stifle creativity and hinder landowner-initiated efforts to improve management of livestock, rangelands, forests, wildlife and habitat. By reviewing these case studies, we hope to highlight how some policies (such as water laws, grazing and logging-tax requirements) act as barriers or disincentives to voluntary landowner conservation. Our goal is develop policies that facilitate, incentivize and reward voluntary conservation by landowners.

Private Working Lands: Important Settings for Conserving Imperiled Species

Mike Phillips, Turner Endangered Species Fund

Over 60% of the United States is held in private ownership. These holdings include some of the country's most productive lands and are often managed as working landscapes. Notably, the security of over 80% of the nation's imperiled species depends wholly or in part on private land. Private landowners have, however, been somewhat reluctant to support efforts on behalf of imperiled species based on myriad concerns, especially perceived regulatory restrictions related to the Endangered Species Act. In 1997 the Turner Endangered Species Fund and Turner Biodiversity Divisions were launched to conserve nature by ensuring the persistence of imperiled species and their habitats with an emphasis on private working lands owned by R. E. Turner. Since inception the Fund and the Divisions have been involved in a number of successful conservation efforts, including controversial reintroduction projects that aimed to restore viable populations of imperiled plants, birds, fishes, mammals, reptiles, and amphibians. We are currently developing a conservation effort on behalf of a critically imperiled invertebrate. The organizations now stand as the most important private efforts in the world to arrest the extinction crisis. Our work has generated easily understood outcomes that stand as irrefutable evidence that private working landscapes can be used to advance the prospects of rare and vanishing species.

Thursday, September 11th · 3:30 p.m. – 5:30 p.m.

Track 3: Poaching - Rhino and Elephant Conservation

Meeting Room: Diamond East/West

The Approach of Wildlife Protection Solutions to Saving Rhinos Particularly in Asia

Eric Schmidt, Wildlife Protection Solutions

Wildlife Protection Solutions (WPS) is an international non-profit group dedicated to the conservation of endangered species. Our current focus is on the five species of rhinos, with a special emphasis on creating habitat and breeding programs that will allow rhino populations to grow faster than they are being poached. We relocate rhinos and then combine proven field methods with the latest remote sensing and drone technologies to protect endangered species.

Current Scenario of Rhino Reintroduction Programme After Completing Thirty Years (1984-2014) in Dudhwa NP/Tiger Reserve, Kheri District, Uttar Pradesh, India

Satya Priya Sinha, Wildlife Institute of India HNOIV Chandrabani

Rhino Reintroduction Programme in Dudhwa National Park /Tiger Reserve, in 2014, is going to celebrate its 30 years of successful reintroduction in the field of wildlife conservation and management. For the first time in India reintroduction of rhinos from Pabitora Wildlife Sanctuary, Assam and Royal Chitwan National Park, Nepal, rhinos reintroduced into former range of its distribution in Dudhwa NP. To establishment of additional Rhino population in India and total nine rhinos were re-introduced in Dudhwa Tiger Reserve, U.P. in the year 1984 and then in 1985 in two batches. Last rhino in terai area in Pilibhit district which close to Dudhwa NP was killed in 1878. Main object of preparing the paper covering management of reintroduced rhino population includes birth and mortality took place during last thirty years (1984-2014), the setbacks and success of the rhino reintroduction programme.

Thursday, September 11th · 3:30 p.m. – 5:30 p.m.

Track 4: The Role of Wild Meats in Society

Meeting Room: Chasm Lake

The Perception of the Millennial Generation (Y-Generation) Consumer of Game (Wildlife) Meat and Game Meat Safety - Leon Bekker, Tshwane University of Technology

As in other parts of the world, one of the options for conservationists and game farmers is to channel the meat as a result of harvesting or hunting activities into the local and international food markets. Game meat is however foreign to many, especially urbanised consumers and therefore they tend not to try it as an alternative source of meat. On the other hand, younger consumers such as the millennial generation (Y generation) are seeking for healthier meat products that are free from hormones and other substances and that are more "natural". Game meat mostly provides for these requirements. According to most reports, Generation Y (Gen Y) was born between 1977 and 1994. This timeframe identifies millennial consumers between 19 and 36 years old in 2013. The millennial generation is expected to be as large and influential as the Baby Boomers, which was the generation prior to Gen Y. Information regarding the study was obtained through a desk top study and analysis of questionnaire responses from young South African meat consumers (millennials) with regards to the abovementioned topics. Millennials are the current and future consumer and have a role to play in meat choices. They are however more informed due to higher exposure to media. The research looked for insights in the millennial generations perception about hunting and the use of the meat as a source of meat and concerns regarding meat safety issues such as zoonotic diseases, microbiological contamination and meat inspection practices. The research revealed that consumers do have concerns, especially with regards to animal welfare, hunting practices, exposure to zoonotic diseases, and contamination of the meat by microorganisms and other biological, chemical and physical matter that may cause harm to the consumer. Millennials (Generation Y) are young meat consumers who are especially important for the industry because they offer an opportunity for growth in the industry. If their experience with game meat is positive, these younger consumers will develop a taste for game meat that are likely to last as over years. These younger consumers care more about brand name, quality (including safety) and will typically spend more money to purchase it. It is therefore important to understand their concerns and to use it to the benefit of the wildlife industry.

Solving the Food Insecurity, Education and Economic Paradigm in Africa and the Arctic:

A Partner in Wildlife Sustainability - Lyle Renecker, Renecker & Associates Inc.

Healthy biosystems imply management of animal resources that are in synchrony with food supply. In the long-term, this translates into biological resources that have both economic and ecological sustainability and balance. Both, Nunavut, Canada and Namibia, Africa have an abundance of natural food resources. Food insecurity among aboriginal communities in these same regions is well documented. The World Health Organization defines food security when all people have access to good food to maintain life. In Canada, an Inuit Health Survey determined that about 68-69% of preschool children lived in food insecure homes and the same range of adults was also food insecure in Nunavut during 2007-08. Aboriginal people of Namibia, like other African countries, lack refrigeration to maintain meat food over extensive periods of time in this hot climate and also inadequate in daily protein consumption. Development of value-added, shelf-stable country foods in these for aboriginal peoples in these extreme climatic regions will have several long-term benefits. These include: job creation, resource sustainability, economic development, training and education, empower women through job training and education, better nutrition and food security, and create self-reliance. This paper explores the problems of both communities and how the developments are viewed and impacting the respective regions.

Game (Wildlife) Meat Safety - Understanding the Game Meat Supply Chain and the Roles of Role-Players in a Multifaceted Control Environment

Leon Bekker, Tshwane University of Technology

As in other parts of the world, the South African game industry is expanding and game meat is finding its way in the local and international food supply chain. In order to do effective game meat control, one must have an understanding of the game meat supply chain and the stakeholders therein. The term 'food supply chain' refers to the total supply process from agricultural production, harvest / slaughter, through processing and handling of a food and its ingredients, storage and distribution up to consumption. In the case of game meat, the supply chain will include the relevant food and meat control authorities, primary producers (farmers), suppliers of feed and veterinary drugs to farmers, hunters, abattoirs, small and large scale processors, wholesale and retail, suppliers of processing materials, import and export agencies, transport and the consumer. From this it is clear that several role-players are involved, which leads to a multifaceted and fragmented food control environment. It was necessary to determine the control points essential for meat safety and the responsibilities of the role-players for the execution of these control points along the game meat supply chain. Information regarding the study was obtained through a desk top study and analysis of questionnaire responses from game farmers, hunters and national, provincial and municipal control authorities. Game meat is often entering the supply chain in an uncontrolled manner while there is a lack of a single formal framework for its operation amongst the stakeholders. To address this issue, the research looked for insight into the game meat supply chain; the differences between the game meat supply chain and the conventional meat supply chain; the respective role-players in the supply chain; and the essential meat safety control points along the supply chain. The crucial meat safety link between the supply chain and the roles of stakeholders in ensuring that safe meat is supplied to the consumer is often vague. The introduction of a mechanism to reduce the indistinctness is essential for this growing industry. The mechanism suggested relates to the establishment of a game meat safety forum whereby all role-players are involved.

Economic Prospects of Game Meat Production in South Africa

Maretha van der Merwe, Wildlife Ranching South Africa

Over 10,000 privately owned fenced wildlife ranches with 16 million head of game have transformed 25 million ha of marginal agricultural land with limited water into thriving operations with far greater economic output than from cattle livestock enterprises (total head only 14 million). A commercial game ranch generates an economic output of about \$31/ha compared to \$11/ha for livestock farming and creates better paid jobs for a skilled workforce. Meat production and processing on these ranches offers a practical route to improved food security and economic sustainability while maintaining biodiversity. In the past game ranchers had limited options with regards to the utilization of game meat but this scenario changed when a market demand emerged for organic, natural and healthier protein food. A pro-active initiative from Wildlife Ranching South Africa (WRSA), the official mouthpiece of game ranchers in South Africa produced the Game Meat Scheme that was, only after nine years finally successfully negotiated with SA government in a bid to practically guide the legal provision of safe game meat to the local market. The greatest benefit is the fact that the Scheme places the full financial benefits of game meat into the hands of the game rancher. The required registration of the facility on the farm and the rancher as the game meat examiner (meat inspection) will ensure that safe quality meat is produced and will ensure the SA Game Industry to grow from strength to strength and provide the answer to the escalating protein food shortage.

Poster Abstracts

Game Ranching and Domestication: A Measure of Sustainable Livelihood to Neighbouring Communities Around Kainji Lake National Park, Nigeria

Oluwakemi Taiwo, Wildlife and Ecotourism Department, University of Ibadan, Nigeria

*In Nigeria as well as many other parts of the world wild animals have economic values that derive from their direct usefulness to man as a source of food and income. The value is so high that the future of many species is threatened. This research was carried out to determine the significant role game ranching and domestication in conservation of several species that are endangered in the wild. A set of questionnaire were used to collect data on reason for hunting, skill acquired that can be developed, willingness to undergo training and workshop and willingness to embrace game ranching and domestication. Empirical field research was also carried out on the practical, operational and policy implication of adopting a sustainable livelihood approach through game ranching and domestication as well as linking socio economic and ecological consideration in a cohesive structure. Data collected were analyzed using percentage, descriptive and chi-square statistics. The result shows that game ranching and domestication can be used to build healthy wildlife population as well as improving community dwellers standard of living. This research has help to trained many interested community dwellers on domestication of cane rat (*Thryonomis swinderianus*) game ranching of certain species like common Duiker (*Sylvicapra grimmia*), Kob (*Kobus kob*). Animals with flexible diet, reasonable growth rate, ability to breed in captivity, pleasant disposition, and modifiable social hierarchy are said to be easily raised in captivity in other to supplement the wild animals hunt by the community dwellers which in turns help to conserve wildlife species and increase meat production in the nation.*

Influence of 2013 Great Flood on Wild Animals in the Far East Russia

Aleksandr Senchik, Far East State Agrarian University

In summer and fall of 2013, the Russian Far East was seriously flooded. A huge area of the Amurkaya, Evreyskaya and Khabarovsk regions went under water. More than 150 cities and villages, and over 6 million hectares of hunting territories were flooded. Many natural reserves were affected by the flood and heavy rains. The most affected were Muravyevsky, Blagoveshchensky, Berezovsky, Amursky ? 80 percent of their territories was under water. That is over 5 million hectares of their field hunting grounds were affected. Vast areas of wildlife habitats were under water from June to November in 2013. Food supplies and animal shelters were destroyed during this very long period. Most of the young animals were killed, because they were unable to migrate. As a result, the numbers of young roe deer, red deer, elk, wild boar, badger, raccoon dog and pheasant significantly decreased. Many adult animals migrated to other areas. Some wild animals have been isolated on the small islands of dry land, formed during the flood. They could not swim across a large area and suffered lack of food. Poachers used this situation for illegal killing of wild animals. Many small animals occurred in a vulnerable situation, becoming easy prey for predators. Wolves managed to keep the breed, their number considerably grew. Another negative consequence of the flood in the Amur region is classical plague of pigs, cases of which were recorded among wild boars. Seventeen tests out of 179 showed the presence of classical plague of pigs causative agent.

Management Implications of African Elephants' Seasonal Dietary Selection in South African Mesic Savannas

Michael Panagos, Tshwane University of Technology

*Many studies on elephant herbivory have focused on selection preferences at a broad level of growth forms and failed to define selection at a plant species level. This has resulted in incorrectly assigning certain responses in the environment to elephants. To evaluate the dynamics of elephant herbivory, we assessed seasonal preferences for woody plants by African elephant breeding herds in the south -eastern part of Kruger National Park (KNP) between 2002 and 2005. Breeding herds had access to 98 woody plant species recorded in the elephant's feeding areas of which 63 species were utilized by observed animals. Data were recorded at 948 circular feeding sites during wet and dry seasons. Seasonal preference was measured by comparing the selection of woody species in proportion to their estimated availability and then ranked. Animals demonstrated a selection preference in feeding on woody vegetation in the early and late dry seasons and *Grewia hexamita*, *G. bicolor*, *G. flavescens* and *G. monticola* were selected consistently over all seasons. In addition, our results indicate that elephant herds have a low feeding preference for some of the woody species prone to extirpation and that feeding preferences for woody plants do not account for the association of elephants and riparian fringe habitat. Identifying and recording feeding behavior of woody plants at a species level can assist conservation managers to assess the impact of elephants' feeding behavior, especially when choosing actions to negate the possible consequences of high densities of elephants in small private reserves.*

Sustainable Livestock and Range Management in Namibia: A Myriad of Benefits Achieved Via Value-Added Meat Production and Marketing

Lyle A. Renecker, Indian Valley International

More than 1.8 million head of wild herbivores and 2.4 million head of beef cattle are raised either on private or communal rangelands of Namibia. In order for the livestock industry to be sustainable, animal numbers must be in ecological balance with food resources. However, the majority of the game and beef slaughtered/harvested are sold as carcasses or sold live to be later slaughtered in South Africa. The value-added processing is completed outside of Namibia and as a result, Namibia does not reap benefits in terms of jobs, training, economics, and marketing. Value-added game and beef meat product development and marketing is markedly underdeveloped in Namibia and does not apply modern shelf-stable product techniques. In recent years, inadequate rainfalls have created drought conditions and placed even more grazing pressure on rangelands and forced the price of meat lower due to the need to reduce stocking rates. The scenario that evolves is that economic advantage and sustainability is exported outside of Namibia. The solution to this Namibian imbalance is in value-added meat processing. Modern shelf-stable techniques will restructure game meat and beef meat into products that will provide economic and social well-being to rural populations in Namibia. Some products will be sold domestically, but primary sales would be in other regions of Africa and worldwide. This poster will lay out a model of projected benefits to social, education, rangeland ecology, economic, meat marketing sectors of Namibia.

The Factors that Influence the Population of Wild Ungulates in the Amur Region of Russia

Aleksandr Senchik, Far East State Agrarian University

*The main factors, influencing the population of wild ungulates in the Amur region are: disturbance from humans, construction of roads and railway roads, building oil and gas pipelines, intensive deforestation, forest fires, periodic high snow, poaching, predators. Deforestation and forest fires destroy fodder territories and cause young animals to die. Industrial deforestation is the most significant factor in reducing the number of game animals. The main factor in the spread of wild animals in the Amur region is snow depth. Poor regulation of wolves (*Canis lupus*) population leads to its increase. Wolves exert a significant influence upon the population of siberian roe deer (*Capreolus pygargus*), red deer (*Cervus elaphus*), elk (*Alces alces*) and wild boar (*Sus scrofa*). Wolves kill mostly young or weakened by long and snowy winter animals. The main large predators in the Amur region are wolves, bears, lynx, wolverines, the Amur tigers. Unauthorized hunting and poaching bring extensive damage to the population of wild ungulates, their age and sex structure. A unique population of migrating Siberian roe deer inhabits the Amur region. Their migration distance come up to 700 kilometers to south-east in the fall and to north-west in the spring. Two operating hydroelectric stations and construction of a third one on the region's territory make a significant impact on the migration routes of Siberian roe in the Amur region.*

The State of Zeya-Bureya Plain of Russian Amur Region

Aleksandr Senchik, Far East State Agrarian University

*Zeya-Bureya plain is located in the southeastern part of the Amur region. Its area is about 2 325 000 hectares (16 percent of the Amur region's total area). The area of agricultural land of the plain is 1 350 000 hectares. During last hundred years, the amount of forest on the territory of the plain decreased from 15-20 percent to 1-2 percent. The number of wild animal species and plants had been dramatically reduced. Many species like elk (*Alces alces*), red deer (*Cervus elaphus*), wild boar (*Sus scrofa*), bustard (*Otis tarda*) no longer live in the area. Among wild ungulates only Siberian roe deer (*Capreolus pygargus*) survived. Among birds - common pheasant (*Phasianus colchicus*) did. The region is experiencing a long-time anthropogenic impact. The forested area in southern Zeya-Bureya plain continues to decrease due to fires and illegal tree felling. Protective conditions for wild animals are very poor. Loss of soil fertility due to windy land erosion is defined at the area of 200 000 hectares. The specific character of the area's natural conditions along with the analysis of forests' state prove the necessity of growing protective forests in the area. The increase of wooded areas, forest ecosystem resilience and increment of wild animals and plants biodiversity need to be created through using mixed forest cultures, development of protective forest belts and green spaces in cities.*

About The Presenters

Lesli Allison, Western Landowners Alliance
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Lesli Allison is executive director for Western Landowners Alliance. She is also a founding member of the Chama Peak Land Alliance in Colorado and New Mexico. Through both organizations, Lesli works with private landowners and multiple stakeholders to advance conservation, sustain working lands and support rural communities. Prior to her work with these organizations, Lesli managed 34,000 acres of private land in the southern San Juan Mountains of Colorado. During her 16-year tenure, Lesli implemented progressive conservation management through award-winning programs in restoration forestry, prescribed fire, grazing, stream restoration, native trout recovery, hunting and wildlife management, and scientific research and monitoring. Lesli holds a B.A. in English from Columbia University and an M.A. in Liberal Education from St. John's College.

David Anderson, CSU/Colorado Natural Heritage Program
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David Anderson has over 20 years of experience conducting biological research, with an emphasis on the monitoring and management of natural resources. Mr. Anderson is the chief scientist and director of the Colorado Natural Heritage Program, Warner College of Natural Resources, Colorado State University. In his current role he works with a broad range of stakeholders throughout Colorado and elsewhere to address conservation challenges through collaborative development and the application of data and tools to biodiversity conservation priority setting.

Terry Anderson, Advanced Ecology
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Terry Anderson is President and Co-Owner of Advanced Ecology, Ltd. Since the firm was established in 1994, Mr. Anderson has worked to develop a business that merges traditional natural resource management with emerging ecological markets, in the process creating one of the most diversified programs in the industry. At this time, Terry devotes a majority of his time to developing integrated conservation and ecological strategies. Project lands are managed to maximize revenue from ecological opportunities as well as timber and wildlife management, often significantly exceeding traditional industry standards in applicable fields. Terry received his B.S. in Forestry with an emphasis in Wildlife Management from Stephen F. Austin State University in 1991. Postgraduate training has included numerous courses from the Wetlands Training Institute, as well as many other wildlife and natural resource related seminars. Terry has been involved as a Director with Texas Wildlife Association for several years, and recently became an Executive Director. Mr. Anderson is a strong advocate of private lands conservation and related activities such as entrepreneurial mitigation banking. He has worked diligently in developing and expanding private markets in the southeastern United States.

Walt Anderson, Prescott College
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*Walt Anderson founded Sutter Buttes Naturalists (a private-enterprise approach to open private lands to the public for interpretation of natural and cultural history), which evolved over time into the Middle Mountain Foundation, then Sutter Buttes Regional Land Trust. He authored and illustrated *The Sutter Buttes: A Naturalist's View* (1983) and *Inland Island: The Sutter Buttes* (2004). Walt teaches ecology, natural history, various resource management classes, and interpreting nature through art & photography at Prescott College in Arizona. He also leads natural history and photography expeditions around the world and is involved in conservation and ecotourism in East Africa. His personal website is www.geolobo.com.*

Don Andrews, Three Rivers Alliance
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Don Andrews is a board member of Three Rivers Alliance, which is a non-profit organization made up of land owners and managers in the Republican River Basin. Don is currently actively involved in farming and ranching and have a vested interest in the sustainability of the overall landscape in the Basin.

Ed Arnett, Theodore Roosevelt Conservation Partnership
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Matthew Barnes, Keystone Conservation
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Matt Barnes is Field Director at Keystone Conservation, where he runs the Rangeland Stewardship program to develop practical solutions for people, land, and wildlife. The program is a network of partnerships with land owners and managers in the ranching community to improve rangeland health and the capacity of land-based people to thrive alongside native wildlife, especially large carnivores. Matt is an applied rangeland scientist and conservationist, whose work has focused on grazing management, especially resolving the long-standing debate over rotational grazing. He organized and edited the recent special issue of Rangelands that re-examined grazing management in the context of complex creative systems. Matt serves on the editorial board of Rangelands and is Past President of the Colorado Section Society for Range Management. Prior to joining Keystone, Matt ran a holistically managed custom grazing operation at the Howell Ranch in western Colorado, developed conservation and grazing plans in the USDA Natural Resources Conservation Service, planned and organized prescribed burns in the USDI Bureau of Indian Affairs, prevented and mitigated human-bear conflict with the USDI National Park Service, and trapped grizzly bears for the Idaho Department of Fish and Game. He is a Certified Professional in Rangeland Management, and holds an MS in Range Science from Utah State University and a BS in Wildlife Ecology from the University of Arizona.

Leon Bekker, Tshwane University of Technology
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Dr. Leon Bekker is currently employed by the Tshwane University of Technology, located in Pretoria, South Africa. He is a Principal Lecturer in the Department of Environmental Health where he is responsible for teaching undergraduate students on food hygiene and safety management as well as research supervision of post graduate students. He holds a Doctorate degree in Environmental Health with the thesis title "A food safety plan for game meat in South Africa". He specialises in food hygiene and safety, with specific reference to meat hygiene and safety as well as the establishment and implementation of food safety management systems. The food industry, from farm to fork, including game farming and conservation, has always been something that he admire, as it is it is dynamic; it is challenging; it is ever needed; we all need it.

Steve Belinda, Beartooth Strategies
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Delwin Benson, Congress Chairman
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Dr. Benson is Professor and Extension Wildlife Specialist in the Department of Fish, Wildlife, and Conservation Biology at Colorado State University since 1975 and between 2007 and 2013 was Chairman for the Center of Conservation Education and Advisor to the Max McGraw Wildlife Foundation in Illinois. Education, research and outreach about nature and outdoor activities are part of his offerings. He worked for the provincial wildlife agency in Ontario Canada (1973-1975), studied in Africa where he has consulted and led tours, and did professional work in Australia, South America and Europe associated with hunting and nature conservation on private lands. His approach to education is to encourage stewardship of nature by multiplying his efforts through community action, workshops, courses, presentations, publications, conservation organization development, and most recently via the Internet: <http://www.LandHelp.info>. Courses have been taught at Colorado State University for upper level students about public relations in natural resources, leadership, wildlife policy, and field wildlife studies. Freshman students learned about "Science, Society and the Environment." He has 8 distance education courses that are available anywhere in the world taught via correspondence study about policy, communications, leadership, wildlife habitat management, Aldo Leopold, hunter and habitat education for instructors, and personal and institutional action for sustainable behavior. In each course, students study independently and complete practical projects with many involving service learning with cooperators applying knowledge, skills and attitudes that were gained from books, Internet, and study guides to real-life situations. Dr. Benson's work received awards from The Wildlife Society (5), Rocky Mountain Center on the Environment, Colorado Wildlife Federation, CSU Cooperative Extension, and CSU Service Learning, for his educational programs, presentations, publications, and citizen-based organizational activities. He was inducted into the Hunter Education Hall of Fame by the International Hunter Education Association in 1987. His most recent book "Wildlife Stewardship and Recreation on Private Lands" won the education award from The Wildlife Society in 2000. For long-term commitments toward the Wildlife Society mission, he received the Distinguished Service Award in 2012. He is chairman of the 8th International Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism, and Spirit, Sept 7-12, 2014, Estes Park Colorado.

Michael Bodenchuk, USDA-APHIS-Wildlife Services
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Mike Bodenchuk is currently the State Director for the Texas Wildlife Services Program. He also served as the State Director for Wildlife Services in Utah from 1996 to 2006 and as a District Supervisor in several western states. Mike attended New Mexico State University and graduated in 1979 with a degree in Wildlife Sciences. Mike has worked with WS in several western States in the development of predation management programs for wildlife protection. He has also taught trapping and lectured on trapping impacts and techniques across the US, Australia and in Spain. His professional interests include predation and feral hog impacts and management. He lives in Dunlay, TX with his wife Debby.

Stewart Breck, USDA-APHIS National Wildlife Research Center

Bob Broscheid, Colorado Parks and Wildlife
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Bob Broscheid is an avid outdoorsman who loves Colorado and its abundant natural and recreational resources. He holds a bachelor's degree in Wildlife Management from Arizona State University and is a graduate of the National Conservation Leadership Institute. Prior to becoming Director of Colorado Parks and Wildlife, Broscheid was a biologist, Habitat Branch Chief and Deputy Director of the Arizona Game and Fish Department. Bob has a strong background in strategic and operational planning as well as a solid emphasis on fostering partnerships for the protection and benefit of the resource and outdoor enthusiasts. His work has kept him primarily in the west, but he has also worked regionally, nationally and internationally.

John Calderazzo, Colorado State University
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John Calderazzo is Professor of English at Colorado State University and a 1998 "Best CSU Teacher". He co-founded and co-directs Changing Climates @ CSU, a multidisciplinary education and outreach program that has hosted more than 100 talks on climate change from experts in 28 CSU departments. He consults widely on science communication and writes a blog for the American Geophysical Union's "Plainspoken Scientist." His nonfiction writing includes a book, Rising Fire: Volcanoes and Our Inner Lives, and hundreds of articles and essays in magazines and anthologies such as Audubon, Orion, and Reader's Digest American Nature. His work has been cited in Best American Essays and Best American Nature Writing.

James Cathey, Texas A&M AgriLife Extension Service
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Jim Cathey is the Associate Department Head, Associate Professor and Extension Wildlife Specialist for Texas A&M AgriLife Extension Service within the Department of Wildlife and Fisheries Sciences. Jim started hunting at a very early age with his family and he shaped his passion into his occupation. Jim earned a Bachelor and Master of Science degree in Wildlife Management at Texas A&M University and his Ph.D. from Texas Tech University. Jim and his wife Carol are parents of 16-year old triplets, who enjoy the outdoors as well. He has authored 50 extension and research publications and fostered the development social media outlets. He provides expertise to AgriLife Extension personnel in 72 counties in central and southern Texas. Recent programming revolves around grassland restoration, feral hogs, Rio Grande wild turkey, and urban deer. Jim is a member of the Wildlife Society, a member and Past President of the Texas Wildlife Society. He provided service to TPWD as Co-Chairman of the Education Committee for Texas Children in Nature and currently serves on the Upland Game Bird Advisory Committee. He is a member and committee chairman of Trinity Waters, and a member of the Texas Outdoor Partners Steering Committee. Jim has been a Texas Wildlife Association Director since 2008 and has served as an instructor for education events within the Conservation Legacy program (Women of the Land, Wildlife for Lunch, L.A.N.D.S., and Texas Brigades). In December 2012, Governor Rick Perry appointed Jim to the Texas Farm and Ranch Lands Conservation Council, which advises and assists the Texas land commissioner with administration of the Farm and Ranch Lands Conservation Program.

Joe Caudell, Murray State University
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Dr. Joe Caudell is an Assistant Professor in Wildlife Biology at Murray State University in Kentucky. Joe obtained his B.S.F.R. from the Warnell School of Forest Resources at the University of Georgia and his M.S. and Ph.D. from Utah State University. Previously, Dr. Joe worked for USDA Wildlife Services for 10 years, and before that he worked for the University of Georgia Cooperative Extension Service as an Education Specialists for 8 years. He has worked with wildlife disease, exotic species, and wildlife damage issues in the US and abroad. Dr. Caudell teaches and

conducts research in wildlife management, wildlife policy, and wildlife techniques at Murray State University. Dr. Joe is also the 3-time 9th runner-up in the Ima County, Indiana, okra pickling contest.

Larry Clark, National Wildlife Research Center

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Dr. Philippus Cloete is an agricultural economist who distinguished himself in several fields. Since March 2010, he held's a position as Senior Lecturer in the School of Environmental Science and Management, Potchefstroom Campus of the North West University. In 2010 he obtained his PhD in Agricultural Economics at the University of the Free State. Amongst other, 15 scientific and 3 book contributions came from his pen. He is also the author of 33 popular papers as well as 28 published and unpublished research reports and delivered over 30 local and international conferences papers since 2006. As native of the Northern Cape in South Africa he likes spending his leisure periods on the family farm.

Patrick Comer, NatureServe

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Patrick Comer directs the Ecology Department of NatureServe (www.natureserve.org). He completed undergraduate and graduate work in Natural Resources and Forest & Landscape Ecology at the University of Michigan, Ann Arbor. He then spent several years with the U.S. Peace Corps in Costa Rica, Central America, working on what became the first substantial 'socio-bosque' project with rural cooperatives in Latin America. Upon returning to the United States in 1991, Pat worked as an ecologist with the Michigan Natural Features Inventory (then part of The Nature Conservancy). There he focused on systematic field inventory of forest, savanna, and wetland ecosystems. He also advanced environmental impact assessment, conservation planning, ecological monitoring, and professional training activities throughout the state and Great Lakes region, supporting state government, federal agencies, and first nations. From 1998-2002, Pat served as Senior Regional Ecologist for The Nature Conservancy, with responsibilities to programs across western North America. He advanced applications of ecosystem classification and use of spatial analysis methods and software tools in ecoregional assessment and planning. Pat moved to NatureServe in 2002 and was appointed Chief Ecologist in 2003. Today he continues his work to advance methods for ecological assessment with the public agencies and the private sector in projects located across the Americas. Some current projects include piloting the 'Red List of Ecosystems' with IUCN, completing a 'critical ecosystem profile' to identify key biodiversity areas in the Tropical Andes, and developing ecosystem-based adaptation strategies for a changing climate.

Patrick Crist, NatureServe

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Patrick J. Crist is Director of Conservation Planning for NatureServe, an international non-profit organization specializing in the conservation of biodiversity (www.natureserve.org). Dr. Crist oversees a variety of programs including conservation planning, the EBM Tools Network, and the NatureServe Vista decision support software. His work includes development of methods and toolkits to fit organizations planning needs and working with clients and partners to conduct ecological assessments and integrated planning for areas ranging from local government jurisdictions to large regions. From 1995-2001 he was the National Program Coordinator for the USGS Gap Analysis Program (GAP); a nationwide biodiversity assessment program. He began his GAP career as the New Mexico GAP coordinator. He has a B.S. in landscape architecture from California Polytechnic (1984), an M.L.A. in landscape architecture and regional planning from the University of Pennsylvania (1992), and Ph.D. in Natural Resources (2003) from the University of Idaho.

Rick Danvir, Western Landowners Alliance Advisory Council

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Rick Danvir received an Associates Degree in Fish and Wildlife Management from the State University of New York at Cobleskill in 1975. After working as a wildlife research technician for several years with the New York Dept. of Environmental Conservation, the Colorado Division of Wildlife and the Utah Division of Wildlife Resources, Rick received a Bachelors degree in Wildlife Science from Utah State University in 1982. He began his career as a wildlife biologist at Deseret Land and Livestock ranch in 1983, and has been the wildlife manager since 1990. His wildlife research experience includes studies of black bear, prairie dog, cougar, mule deer, elk, pronghorn and greater sage grouse ecology. He has managed wildlife on ranches and reservations throughout the Intermountain West, the Great Plains, Maine, Florida, Alberta and Argentina. Rick has served as a Utah Fish and Game Commissioner, on the Utah Habitat Council, as a board member of the Utah Cooperative Wildlife Management Unit Association, the Utah Foundation for Quality Resource Management, BLM Wild Horse and Burros Advisory Board and the BEHAVE

project. His principle management interest is integrating agricultural production and wildlife management for ecological and economic sustainability. He continues his ranch-wildlife management work with the Western Landowner's Alliance and Basin Wildlife Consulting.

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Justin Derner, USDA-Agricultural Research Service
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Justin Derner was born and raised on a cattle ranch in the eastern part of the Nebraska Sand Hills that was homesteaded in 1878. He received his B.S. degree from the University of Nebraska-Lincoln in 1991, a M.S. degree from Oklahoma State University in 1993 and a Ph.D. degree in Rangeland Ecology and Management from Texas A&M University in 1996. Upon graduating, he joined ARS as a Rangeland Scientist with the Grassland, Soil and Water Research Laboratory in Temple, Texas. In 2002, Dr. Derner moved to the Rangeland Resources Research Unit in Cheyenne, Wyoming and Fort Collins, Colorado, and he has served as the Research Leader since February 2010. Currently, Dr. Derner's research focuses on management practices addressing the interface of contemporary production-conservation issues on western US rangelands by evaluating the influences of grazing, prescribed burning, prairie dogs and their interactions on ecosystem goods and services, and adaptation strategies for land managers regarding increasing climatic variability. Dr. Derner received the "Early Career Scientist of the Year Award" for the Northern Plains Area of ARS in 2006, the "Outstanding Young Range Professional Award" from the Society for Range Management in 2002, and the "Outstanding Achievement Award" from the Society for Range Management in 2006. Dr. Derner is a lead PI on the Long-Term Agro-ecosystem Research (LTAR) project with the Central Plains Experimental Range (started 2012) and is the Director of the USDA Northern Plains Regional Climate Hub (announced February 2014). He is an affiliate faculty member in the Department of Ecosystem Science and Management at the University of Wyoming, and in the Forest and Rangeland Stewardship Department at Colorado State University.

Oghenetejiri Digun-Aweto, Department of Wildlife and Ecotourism, University of Ibadan
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Tejiri Aweto is currently a Doctoral candidate at the Department of Wildlife and Ecotourism, University of Ibadan. His current research is on Community participation in conservation of natural resources in Okomu National Park and ecotourism development. He Holds a B.Sc and an M.Sc from the premier University in Nigeria, University of Ibadan. In 2013 he was invited by the RSA and the European Union to attend the Open Day master Class in Brussels, Belgium. Tejiri is a member of the Regional Studies association and also the British Ecological Society.

Gert Dry, Wildlife Ranching South Africa
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Dr. G.C. Dry started his corporate career with Eskom (Electrical Supply Company South Africa) where he spent 19 years of his working life. His career started in industrial engineering and he was promoted through the ranks to Engineering Projects Executive, responsible for building power stations, transmission lines, substations, facilities and life-extension projects. In 1991, he joined Amalgamated Banks of South Africa, (Absa) as Group Executive and retired from the Absa Group as Managing Executive: Real Estate Management in October 2004. He served two terms as the President of the Wildlife Ranching South Africa (WRSA), was the Director of Diluculo Investments and Chairman of Absa DevCo, and served as a Board Member for the SA National Parks Board and University of Pretoria Veterinary Faculty. Dr Dry is a Wildlife Rancher in the Vaalwater district, Limpopo Province, South Africa.

Terry Fankhauser, Colorado Cattlemen's Association
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Terry Fankhauser was named Executive Vice President of the Colorado Cattlemen's Association (CCA) in October of 2001. Terry serves as the senior staff officer of the association where he is charged with national and state legislative and regulatory issues along with day-to-day oversight of the association and member programs. Terry also serves as a board member and executive director of Partners for Western Conservation. The organization, founded by CCA, seeks to implement market-based conservation and ecosystems services to benefit wildlife, the environment, landowners, and the regulated community. Prior to his tenure at CCA, Terry worked as a ruminant nutrition consultant throughout Kansas, Wyoming and Colorado. While working on his Masters of Science curriculum in Ruminant Nutrition and Management at Kansas State University, Terry managed the Kansas Bull Test and served as an extension assistant to the state's cooperative extension service. Terry also received a B.S degree in Animal Sciences from Kansas State University. A native Kansan, Terry grew up on a cow-calf operation in the Flint Hills. Terry and his wife Hidi, and three children are actively involved in the fifth generation business. "I take great pride in

the beef industry and making my livelihood from it. The beef industry is not only a business, but a provider of food to the world. Organizations like CCA ensure that this food supply will persevere and that the beef producer's voice will be heard," said Fankhauser.

Shandra Nicole Frey, Utah State University Extension
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Nicki Frey works for the Utah State University Extension as an Assistant Extension Professor in the field of Wildlife Biology; stationed at Cedar City in southern Utah. She worked as Extension Specialist in the field of Wildlife Biology from 2004-2012 at USU as well as the Berryman Institute as the National Continuing Education Coordinator from 2006-2012. She received her undergraduate degree in Wildlife Management at West Virginia University and her Master's and PhD in Wildlife Biology at Utah State University, studying medium-sized carnivore ecology and management. She has a special interest in the field of Human-Wildlife Conflicts.

Seth Gallagher, Rocky Mountain Bird Observatory
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Seth Gallagher has been in Colorado since 2004 working for the Rocky Mountain Bird Observatory and is currently their Stewardship Director overseeing the Private Lands Wildlife Biologist Program with 11 partner biologist with NRCS and State game and fish agencies in Colorado, Wyoming and Nebraska. He obtained Wildlife Management degrees from Minot State University- Bottineau, Bottineau, ND (AS, '97) and Lincoln Memorial University, Harrogate, TN (BS, '00) and conducted graduate research on Red-shouldered Hawks through Central Michigan University. He is dedicated to finding collaborative solutions to maintaining sustainable bird populations and healthy rural, agricultural communities. He currently serves as Chairman of the Board for the Missouri River Bird Observatory, Co-chairs the Intermountain West Joint Venture Colorado State Conservation Partnership, and is an active member and past board member of the Colorado Chapter of the Wildlife Society. When not traveling the west for work, and loving every minute of it, you can find him at home in Ft. Collins with wife Christin, son Will and 2 dogs tending to his vegetable garden and chickens, or (insert standard wildlifer hobbies) out birding, fishing or hunting.

Bob Gough, Intertribal Council On Utility Policy
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Jeri Griego, StoryTime Adventures
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Jeri Griego is Vice President and Director of StoryTime Adventures, a 501(c)3 educational not-for-profit organization. Jeri has over twenty years of teaching experience in the areas of accounting, management and business at a local community college. She integrates a variety of teaching methodologies in the classroom, leading to student success. Jeri has been honored with several teaching awards for her dedication to students and innovation in the classroom. She is the Coordinator for the college's Service Learning Program which includes supervision of a Community Garden and Food Pantry. She also coordinates the service learning activities of other faculty members using this teaching technique. This involves a high degree of coordination with local community non-profit organizations. Jeri served as Family Program Coordinator for the Wyoming Air National Guard and represented seven states on a national advisory council. Her professional experience includes three years as Vice-President of Operations in a local bank and another three years as an Internal Auditor in a multi-bank holding company. Jeri serves as a Board member on a variety of local boards and is involved in several community and professional organizations. She has significant coursework completed toward a PhD in Adult Education and Technology. Jeri has a Master's of Business Administration (MBA) with emphasis in Marketing and a Bachelor of Science in Accounting. Jeri is a native of Wyoming with generations of cattle ranchers and big game hunters in her family. She has grown up listening to the discussions of finding the balance between wildlife and livelihoods.

Xuemei Han, NatureServe
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Xuemei Han was born in China, she studied Biology and Ecology at Beijing Normal University and earned her Ph.D. in Forestry and Environmental Studies from Yale University in 2011. Dr. Han has been with NatureServe since 2011. She leads the "dashboard" project that builds the assessment and visualization system with biodiversity monitoring indicators across a "press-state-response-benefits" framework in Tropical Andes, Africa Great Lakes region, and Greater Mekong region, with downscaled global biodiversity indicators, gradually engaging regional partners and local-generated indicators, promoting national capacity building of monitoring programs in support of the CBD 2020 Mission and Aichi Biodiversity Targets, and understanding the conservation impact. Prior to NatureServe, she had working and research experiences in biodiversity conservation in China, North America, Nepal, Bhutan, and Russia. Her study fields include biodiversity monitoring, wildlife and habitat conservation, invasive species and natural

resource management. Her technical specialties include spatial mapping, spatial analysis with GIS, Remote Sensing, forest landscape modeling, and causal inference analysis for conservation impact. Her past work includes studies to enhance the tiger habitat in Northeast China and Russian Far East through innovative satellite image mapping and sustainable forest management, invasive species ecology in North American tall grass prairie, and designing the multi-user institutional level Geographic Information System and Geo-database for Ministry of Agriculture in Bhutan.

Erin Harper, Illinois Natural History Survey
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Erin Harper is a first year Master's student at Colorado State University working with the USDA APHIS Economic Group looking at the Impact of Wild Pigs in the United States. The data she will be presenting is from research conducted during her undergraduate at the University of Illinois at Urbana-Champaign while working for the Human Dimensions Research Lab of the Illinois Natural History Survey, Prairie Research Institute in conjunction with the Illinois Department of Natural Resources.

Jonathan Haufler, Ecosystem Management Research Institute
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Jon Haufler is the Executive Director of the Ecosystem Management Research Institute and President of The Wildlife Society. Previous positions have included Manager of Wildlife and Ecology Programs for Boise Cascade Corporation and Professor of Wildlife Ecology at Michigan State University. Jon has his B.S. from the University of New Hampshire, M.S. from Virginia Tech, and a Ph.D. from Colorado State University, all in wildlife biology. Jon's work focuses on applications of wildlife conservation planning using an ecosystem-based approach.

John Hayes, Warner College of Natural Resources, Colorado State University

Margit Hentschel, Colorado State University, Institute for Learning and Teaching

Billy Higginbotham, Texas A&M AgriLife Extension Service
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Billy Higginbotham is a Regent's Fellow, Professor and Extension Wildlife and Fisheries Specialist with the Texas A&M AgriLife Extension Service and Department of Wildlife and Fisheries Sciences-Texas A&M University System. He has been headquartered at the Texas A&M AgriLife Research and Extension Center at Overton, Texas for the past 33 years. His expertise is in Natural Resources Curriculum Enrichment for use in schools, management of private impoundments for improved fishing, managing white-tailed deer through the use of supplemental forages and public education on wild pigs and abating the damage they cause to agricultural systems.

Almira Hoogesteijn, Cinvestav Unidad Merida
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Almira Hoogesteijn obtained her D.V.M. degree from the College of Veterinary Medicine, Central University of Venezuela, in 1989. She continued her studies in Germany (Friedrich Alexander University in Nuremberg), United Kingdom where she obtained a Master's Degree in Wildlife Health (University of London), and the United States (Cornell University, College of Veterinary Medicine) where she obtained a PhD in Wildlife Health and Environmental Toxicology. She is a member of the Wildlife Health Specialist Group, IUCN since 1998. She has worked on wildlife conservation projects for more than 20 years with different species in the Americas and Europe. She currently works as a full professor and researcher at the Center for Research and Advanced Studies of the National Polytechnic Institute, Mexico. Her main areas of research focus on the impact of pesticides and heavy metals on human and animal health and stock management strategies to decrease predation.

John Hughes, U.S. Fish and Wildlife Service
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John Hughes is a wildlife biologist for the U.S. Fish and Wildlife Service's National Black-footed Ferret Conservation Center in Wellington, Colorado. John has worked for the U.S. Fish and Wildlife Service for 14 years, and his professional interests include rangeland ecology, conservation and management of endangered species, and conservation of wildlife on private lands. John has a bachelor's degree in wildlife biology from the University of Montana, and a master's degree in biology from Kansas State University. John is a member of The Wildlife Society and The Society for Range Management, and is a lifelong hunter and birder.

Skip Jack, Mississippi State College of Veterinary Medicine
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S. W. Jack ("Skip" to friends) was born and raised in Maryland, USA (suburban Washington, D.C.), educated at University of Maryland (B.S. Dairy Science & M.S. Veterinary Science: Environmental Physiology), Ohio State University (D.V.M.) and Purdue University (Ph.D. Veterinary Pathology). He joined the faculty of Mississippi State University College of Veterinary Medicine (Starkville, MS) in 1989 and has achieved the rank of full professor. For several years he held a joint appointment in Veterinary medicine and the College of Forest Resources, Department of Wildlife, Fisheries, and Aquaculture. He is married and the father of two grown children. He is heavily involved in teaching veterinary students (histology, fish medicine, and preventive medicine), graduate students (zoonotic and wildlife diseases, emergency preparedness) and is adjunct faculty at Agricultural University of Mongolia (UlanBataar) where he teaches the general pathology portion of a graduate level veterinary pathology course via distance education. For several years, his teaching has involved outreach to wildlife professionals concerning immobilization, euthanasia, diagnostic medicine and zoonotic diseases. This has included international teaching assignments, including Brazil, Haiti, Indonesia, Mongolia, Nicaragua, Nigeria, and Uganda. His research interests include wildlife diseases, preventive medicine, international development, transboundary diseases, and veterinary medical education.

Connor Jandreau, Natural Resources Institute, University of Manitoba
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Connor Jandreau is currently a Masters Candidate at the Natural Resources Institute at the University of Manitoba, Canada. His research is partly funded by the United States Fulbright Grant Program and the Canada Research Chair's Center for Community-Based Resource Management under Dr. Fikret Berkes. His work looks at the nexus of conservation and livelihood development in East Africa, exploring new avenues for bridging the myriad needs of people and ecosystems of which we are a part. Previously he received a B.S. in Fish, Wildlife and Conservation Biology at Colorado State University (CSU), and a B.A. in Studio Arts, also at CSU. He has a diverse array of field experiences, working for state and federal agencies and academic institutions, all in the interests of exploring a way to reconsider how we, as humans, position ourselves in the larger web of life. Assuming he receives his Masters Degree this fall, Connor will continue to explore how to combine an interest in land stewardship, social justice and the arts, or perhaps he will simply become a farmer?

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David Klute, Colorado Parks and Wildlife
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David Klute is currently the Bird Conservation Coordinator with Colorado Parks and Wildlife. He is a member of the Lesser Prairie-chicken Interstate Working Group and co-author of the Lesser Prairie-chicken Range-wide Conservation Plan. David additionally works on a variety of issues affecting threatened and endangered, declining, and nongame birds in Colorado. He has worked on issues related to energy development (oil and gas, wind power), conservation planning, and population monitoring at local, state, and regional scales. He frequently collaborates on multi-state and regional bird conservation issues and is a member of the Playa Lakes Joint Venture Science Advisory Team and the Central Flyway Nongame Technical Committee. David holds degrees from the University of Missouri (B.S.), Kansas State University (M.S.) and the Pennsylvania State University (Ph.D.).

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Jean Koster, University of Colorado Boulder
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Jean Koster graduated from University of Karlsruhe Germany in Mechanical Engineering. After graduation he spent a post-doc time in USA. In 1984 he joined NASA Lewis Research Center (now Glenn RC) in Cleveland Ohio, to work on microgravity sciences. Jean is Professor of Aerospace Engineering Sciences, University of Colorado Boulder. Jean was Associate Director for International Collaborations for the NASA sponsored Center for Low-gravity Fluid Mechanics and Transport Phenomena. In 2010 he founded Tigon Enertec Inc to commercialize hybrid propulsion systems for aircraft. He has 2 patents pending. In 2013 Tigon was reorganized with new leadership under the name HELIOS Torque Fusion Inc. Jean received several awards such as: "Inventor of the Year 2010" award, University of Colorado Office of Technology Transfer; and the "Educator of the Year 2011" award, American Institute of

Aeronautics and Astronautics. In 2013 he joined the Wildlife Conservation UAV Challenge Leadership team <http://www.wcuavc.com> as adviser to assist wildlife rangers in their fight against the cruel poaching of rhinos and elephants. He leads the global team AREND composed of 4 international university teams (Colorado-Helsinki-Pretoria-Stuttgart) that designs a special sensor aircraft for detecting humans and animals during day and night.

Megan Kram, The Nature Conservancy of Kansas
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Megan Kram is the Energy Projects Director for The Nature Conservancy (TNC) in Colorado. Though policy and land use planning efforts, she works with willing surface and mineral owners and/or lessees to avoid, minimize, and mitigate the impacts of energy development. She has expertise in land use planning and the management of government-owned lands, and has contributed to land conservation efforts abroad in Europe, China, and Mongolia. Prior to joining TNC in 2005, Megan worked with the U.S. Bureau of Land Management as a Presidential Management Fellow, the U.S. Environmental Protection Agency, Ernst & Young LLP (a global management consulting firm), and AmeriCorps National Civilian Community Corps. She holds a B.A. in Economics from DePauw University (Greencastle, IN) and an M.S. in Natural Resource Policy & Planning from the University of Michigan's School of Natural Resources & Environment, where she was a Doris Duke Conservation Fellow (Ann Arbor, MI).

Bernadette Kuhn, Colorado State University
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Bernadette Kuhn is a botanist at the Colorado Natural Heritage Program. She has a decade of experience working in Colorado, Wyoming, New Mexico and Kansas. Bernadette's primary objective is to support conservation with accurate data on plant species and plant communities. At CNHP, she conducts rare plant surveys and monitoring, wildlife habitat vegetation monitoring, climate change monitoring in alpine plant communities, and wetland assessments. Bernadette regularly collaborates with agency partners from the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, and the U.S. Forest Service. She is currently working on an EPA-funded study of urban wetlands in Denver.

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Joanna Lemly, CSU/Colorado Natural Heritage Program
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Joanna Lemly is a Wetland Ecologist at the Colorado Natural Heritage Program (CNHP) at Colorado State University, where she oversees CNHP's work on wetland mapping and assessment. In this capacity, she and the CNHP Wetlands Team have worked with state and federal partners to complete the first digital map of wetlands for the state. CNHP has also conducted three major river basin-scale assessments of wetland condition, along with a handful of assessments in smaller project areas. These projects assess the general condition and habitat quality of randomly selected wetlands on both public and private lands in order to guide conservation and restoration priorities. She has also been involved in the development of both online and printed educational resources for wetlands. Joanna has worked in various aspects of plant ecology for over 10 years, with a particular emphasis on wetland ecology. She holds an M.S. in Ecology from Colorado State University, a Certificate in Wetland Science and Management from the University of Washington, and a B.A. in Environmental Science from the Colorado College.

Jim Lyons, Beartooth Strategies

John Mack, Rocky Mountain National Park

Robert Manes, The Nature Conservancy of Kansas
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Rob Manes is a Kansan, whose growing-up years are rooted in Pratt and Ellsworth counties. He now lives in rural Wabaunsee County, Kansas with his wife Stephanie and two small children, Daniel and Evie; two grown children, Lauren and Aubrey, and son-in-law Ross are pursuing careers and education on the West Coast. A career-long conservation professional, Rob serves as Director of The Nature Conservancy of Kansas. Prior to his role with TNC, Rob's career included five years with the Wildlife Management Institute and nearly 20 years with the Kansas Department of Wildlife and Parks, where he began as a minimum-wage fisheries technician and spent his last five years as the department's Assistant Secretary for Operations during Governor Bill Graves' administration. He holds a MS in Environmental Science from Friends University and a bachelor's degree from Kansas State. Rob's career path has also included work as a musician, a passion that has taken him to Nashville and Los Angeles. In addition to what he terms "a mercifully forgettable career as a performer", he has written jingles and background music for advertising.

His studio experiences include work as a session guitar player, a guitar instructor, and a songwriter. Rob's other interests include livestock, fishing, hunting, and camping with his children. He also engages a life-process approach to physical fitness, as well as local church and community life.

Stephanie Manes, Common Ground Capital, LLC.
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Stephanie Manes is the Principal and Senior Scientist of Grassland Conservation Services, LLC and works with Common Ground Capital on a consulting basis to develop private conservation banks for the Lesser Prairie-chicken. She holds undergraduate and master's degrees in Wildlife Ecology and Management and Rangeland Ecology from Oklahoma State University (1999), and has been a professional member of The Wildlife Society and Society for Range Management for 20 years. Between 1999 and 2007, she was employed by the US Fish and Wildlife Service as the lead biologist overseeing the national status of the Lesser Prairie-chicken. She has extensive experience negotiating and delivering financial incentives to private ranchers to implement grazing management and prescribed burning plans, and has delivered habitat restoration plans for over 30,000 acres in Oklahoma and Kansas. In addition to co-authoring and collaborating on research papers on eastern wild turkeys, white-tailed deer, wood stork, wolverine, and prairie-chicken, Stephanie has also been instrumental in the development of the North American Grouse Partnership, the first national non-profit organization to specifically address grouse conservation. Since 2007, Stephanie has been employed by the Ranchland Trust of Kansas, Inc. as the coordinator of the first voluntary conservation offset project for a wind energy facility in the nation. This 26,000-acre project, funded by EDP Renewables (formerly Horizon Wind Energy), is located in the Smoky Hills of Central Kansas.

Vance Martin, WILD Foundation
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Vance Martin has been President of The WILD Foundation since 1983, a US-based conservation NGO that was originally established in Africa by Ian Player. He has lived and worked in many countries during his career, and has a special working experience and affinity with Africa and South/Central Asia. His focus is primarily on project-related or fundraising travel, implementing WILD's global conservation vision of Nature Needs Half™ while connecting between the headquarters in Colorado with WILD projects and affiliated organizations throughout North America and overseas --- including as International Director for the World Wilderness Congress. Working with leaders in government, business, communications, and the arts -- in both "western" and traditional cultures -- he is committed to a collaborative approach in crafting positive and effective conservation solutions for wilderness, wildlife and people.

John (Jack) Mayer, Savannah River National Laboratory
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Dr. Jack Mayer received both his B.A. in biology and Ph.D. in zoology from the University of Connecticut. He is currently a research scientist and manager of the Environmental Sciences Group at the Savannah River National Laboratory located in Aiken, South Carolina. Dr. Mayer has been conducting research on wild pigs for over 41 years. This work has variously included research on wild pigs in the areas of morphology, behavior, population biology, reproductive biology, damage, and control techniques. He is the senior author of "Wild Pigs in the United States." Dr. Mayer's work with wild pigs has spanned three continents and included over 20,000 specimens examined/measured. He was also one of the National Geographic Society team of scientists who were unearthened and examined the legendary, or perhaps infamous, "Hogzilla."

Shannon McNeeley, North Central Climate Science Center
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Dr. Shannon McNeeley received her doctoral degree in Environmental Change and Sustainability Science (ecological anthropology, ecology, climatology) from the University of Alaska Fairbanks (UAF) in the interdisciplinary Resilience and Adaptation Program as an NSF IGERT Fellow then as an NSF Graduate Research Fellow. Her doctoral research focused on climate variability and change impacts, vulnerabilities, and adaptive capacity of indigenous people (Athabascan Indians) in the remote, rural Interior region of Alaska. This was in close collaboration with tribes, state, and federal agency partners. She first began working for the National Center for Atmospheric Research (NCAR) in 2000 as an associate scientist before starting her doctoral degree in the fall of 2004. Her work is interdisciplinary and cross-cultural incorporating the social and natural sciences in order to understand human-environment relationships and how people are impacted by and respond to environmental change. She has been involved in climate change education and research for over 16 years. Most recently, as a postdoctoral fellow at NCAR, her research focused on water scarcity and sustainability in the context of climate variability and change and the Yampa/White Basins region of northwest Colorado. Then as a research fellow at the School of Natural Resources and Environment the University of Michigan, Dr. McNeeley co-wrote the Adaptation chapter of the upcoming U.S. National Climate Assessment and led research on climate adaptation actions implemented across the globe through the Global Environmental Facility

financing mechanisms for developing and Least Developed Countries. She is currently a postdoctoral fellow at the DOI-sponsored North Central Climate Science Center at Colorado State University. In addition to continuing research on vulnerability and adaptation in water resource management, this will also entail working to build the capacity of the NCCSC to conduct and support regional assessment on climate change adaptive capacity and decision making.

Brian Meinhart, North Central Climate Science Center
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Brian J. Meinhart joined Western Energy Alliance in January 2013 as a Policy Analyst to strengthen the alliance's public lands advocacy and community outreach efforts. He has extensive experience working with the federal government, including service as a congressional aide to both U.S. Senator Wayne Allard and U.S. Representative Scott Tipton, and in roles at the U.S. Department of Commerce and U.S. Department of State. He holds a B.A. in Political Science and a B.A. in History from Colorado Mesa University. A native of Western Colorado, Brian grew up with a deep connection to the outdoors and to the land. Whether through many camping, fishing, and hunting excursions with friends and family, or spending time working on the family cattle ranch, Brian understands the conservation ethic and the role that landowners play in protecting wildlife and habitats. He strongly believes that the rich natural resources of the West can be developed to the benefit of the nation while protecting the wildlife and landscapes that we all hold dear.

Ken Morgan, Colorado Parks and Wildlife
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Ken Morgan is the Private Lands Program Manager for Colorado Parks and Wildlife. In that position, he manages and coordinates species conservation programs across CPW as they relate to private lands habitat. He coordinates with CPW species conservation specialists to facilitate and implement species conservation priorities with private landowners and state agricultural organizations. In addition, he serves as the official CPW Farm Bill Program representative to public and private interests at the local, state, and national levels. He provides expertise to Colorado NRCS, FSA, and CPW staffs regarding policy and implementation of Farm Bill Programs to maximize conservation benefits for wildlife resources. Ken serves as a member of the NRCS State Technical Committee, is chair of the wildlife sub-committee of the State Technical Committee and assists with the development of systems, guidelines, budgets and plans for Colorado Farm Bill programs and practices. He represents the CPW in Farm Bill policy development regionally and nationally through membership and participation in the Western Association of Fish and Wildlife Agencies Access and Private Lands Working Group, and the Association of Fish and Wildlife Agencies Agricultural Conservation Policy Analyst position in Washington D.C. Ken also serves as program manager for the Colorado Division of Wildlife/ NRCS Private Lands Wildlife Biologist Program to insure potential USDA program benefits for wildlife and agreement obligations are met. The Private Lands Wildlife Biologist Program (PLWB) is a successful partnership initiated in 2003 between the Natural Resources Conservation Service (NRCS), and Colorado Parks and Wildlife (CPW), to provide wildlife expertise and technical assistance to landowners, agencies, and conservation partners developing, implementing or utilizing USDA Farm Bill conservation programs.

Jeffrey Morisette, North Central Climate Science Center

Geofrey Mukwada, University of the Free State
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Geofrey Mukwada is a Senior Lecturer in the Department of Geography at the University of the Free State in South Africa. He was born in Zimbabwe and obtained most of his tertiary level qualifications there. After obtaining his Masters in Environmental Policy & Planning at the University of Zimbabwe in 1996 he joined the same university as a lecturer and later moved to Bindura University of Science Education (BUSE), where he served as a lecturer between 1998 and 2003. He was instrumental in founding the Department of Environmental Science at BUSE, which he chaired between 1999 and early 2003, following which he moved to South Africa. He obtained his PhD at the University of the Witwatersrand, in South Africa, in 2006 and worked as a postdoctoral research fellow in the Department of Geography and Postgraduate Research Division at the University of the Western Cape. Geoffrey's research primarily revolves around natural resource management, climate change and rural livelihoods. One of his more recent contributions to the analysis of the link between natural resource management and rural livelihoods is the Capacity Continuum – Multiple Drivers (CC-MD) Model, which he coined to explain the choices that rural households make regarding individual and group interests.

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Lizanne Nel, South African Hunters and Game Conservation Association
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Lizanne Nel was until recently the Head of Biodiversity Management in the Limpopo Department of Economic Development, Environment and Tourism (LEDET) and has been working in the field of conservation for more than 24 years, providing strategic direction on biodiversity management at provincial and national level through her representation on various professional forums. She also represented South Africa as a member of several international delegations in dealing with South Africa's commitment to international biodiversity related conventions and agreements. She was one of the first women ever allowed to complete an Honours degree in Wildlife Management at University of Pretoria and passed with Cum laude in 1988 and started her career as the first women Nature Conservation Scientist in the former Transvaal Provincial Administration. Lizanne pioneered the importance of qualified professional decision support in conservation in Limpopo and played a leading role in organisational development in support of operationalising conservation mandates. Considering the specific socio economic challenges Africa and South Africa in particular is facing and the role biodiversity can play in sustainable economic development, she completed an MBA at the University of Pretoria in 2005 to augment her biodiversity knowledge with a qualification in economics and business administration. This is critical for the drive to ensure that triple bottom line profits underpin growth in the Green Economy. In October 2013 she joined the South African Hunters and Game Conservation Association, the largest hunting and conservation association in South Africa with more than 37 000 members in 73 branches across South Africa. As Manager Conservation, she encourages an integrated and sensible approach to biodiversity conservation, mindful of its role as a cornerstone for economic growth and sustainable rural development. Wildlife conservation and its responsible use is promoted as mutually dependent and inseparable components of the broader conservation landscape in a developing country with huge socio-economic challenges. It is further emphasized that biodiversity is the common heritage of all citizens, and responsible use thereof should benefit the broader public and future generations.

Dale Nolte, USDA/APHIS Wildlife Services
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Dr. Dale Nolte is the Program Manager for the APHIS National Feral Swine Damage Management Program. Dale began his career with USDA/APHIS, Wildlife Services (WS) as a research scientist developing methods and approaches to deter wildlife damage to timber resources. He then became the Mammal Research Program Manager for the WS National Wildlife Research Center. Later, as an Assistant Coordinator for the WS National Wildlife Disease Program, he coordinated Wildlife Services' international activities for several years. He also oversaw the WS Emergency Response Program and managed the feral swine disease monitoring project. In 2012, Dale was assigned to the WS Deputy Administrator's Office to develop a national program to address feral swine issues. Subsequently, he accepted his current role to implement and manage the program.

Bill Noonan, Colorado Partners for Fish and Wildlife
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Bill Noonan received a B.S. in Animal Ecology in 1980 from Iowa State University, started employment with the U.S. Fish and Wildlife Service in 1983 as a seasonal biologist in Grand Junction, Colorado and been with the Service since. Mr. Noonan also worked within the Service's Ecological Services program from 1985 to 1995 in Grand Junction and Lakewood, Colorado. The role of Colorado Partners for Fish and Wildlife Coordinator was assigned to him in 1992, became a full time position in 1995 within which he continues to serve. In this capacity Mr. Noonan is responsible for supervision of 5 field biologists, creating and fostering statewide partnerships, program budgeting, quality control, reporting, and accountability.

Dennis Ojima, Colorado State University
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Steve Olson, USDA Forest Service
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Steve Olson received a BA in Zoology from Southern Illinois University, after which he spent just over a year with Natural Land Institute in Southern Illinois with a couple of excursions to Northern Illinois and Southeastern Indiana. Steve then spent three years with the Indiana Department of Natural Resources working on rare plant surveys on the Hoosier NF. For the next 11 years, Steve worked as the Hoosier National Forest's botanist. He has been a forest botanist for nearly 12 years for the Pike-San Isabel National Forests and Cimarron-Comanche National Grasslands.

Chris Pague, The Nature Conservancy
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Chris Pague has always had an interest in wildlife conservation. It stems from his experiences birding and exploring national parks and seashores in Virginia and North Carolina at a young age led him to pursue degrees in Biology and Zoology. He served as a zoologist with the Virginia Natural Heritage Program and later re-started the Colorado Natural Heritage Program (his first Conservancy employment). His familiarity with fauna and flora cemented his interest and participation in conservation planning at regional, state, and local scales. With more than 36 years of on-the-ground experience, Chris leads the science team for The Nature Conservancy in Colorado, providing science leadership and support for conservation efforts, and assisting in the development and actions of the Center for Conservation Science and Strategy. Key areas of focus for Chris' work include grassland bird conservation, landscape conservation, sustainable/conservation grazing, bison restoration planning, development of new conservation tools, and endangered species recovery planning. In addition, much of Chris' time over the past few years has been dedicated to the development of innovative statewide measures of conservation status and progress. Chris also leads the program's international science participation, having traveled to more than 15 countries to provide assistance in conservation planning. Current international work focuses on the eastern steppe of Mongolia and the Patagonian grasslands of Argentina. Combined with extensive work in the prairies of Colorado, this experience has proven valuable for developing conservation strategies for future success.

Michael Panagos, Tshwane University of Technology
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Michael Panagos lives and works in Pretoria, South Africa. He studied at Natal University and holds a MSc Agric specializing in rangeland management and botanical surveying. Previously worked at the Botanical Research Institute and the Range and Forage Institute (ARC). Currently employed as a lecturer at the Tshwane University of Technology in Pretoria.

Susan Panjabi, Colorado State University
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Susan Spackman Panjabi is a Botanist with the Colorado Natural Heritage Program at Colorado State University. She has focused her research on the rare plants of Colorado for the past 20 years and is the principal author of the Colorado Rare Plant Guide. Susan is currently working with a state-wide team of botanists on the Colorado Rare Plant Conservation Initiative, which aims to boost the effectiveness of rare plant conservation efforts across Colorado.

Mike Phillips, Turner Endangered Species Fund
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Mike Phillips has served as the Executive Director of the Turner Endangered Species Fund (TESF) and Turner Biodiversity Divisions (TBD) since Ted Turner founded both in 1997. They now stand as the world's most significant private effort to conserve biological diversity. Prior to TEF and TBD Mike worked for the U.S. Fish and Wildlife Service leading the historic effort to restore red wolves to the southeastern US and the National Park Service leading the historic effort to restore gray wolves to the Greater Yellowstone Ecosystem. He was elected to the Montana legislature in 2006 and will serve as a state senator through at least December 2016. In 2009 Mike was invited by the White House to work with the administration and the US Senate on energy and climate change legislation.

Elizabeth Pienaar, University of Florida
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Larkin Powell, University of Nebraska-Lincoln
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Larkin Powell is a wildlife ecologist whose research has focused on private lands in the Nebraska Sandhills and other Great Plains grassland systems for 13 years. His research lab has supported 21 graduate students and three postdoctoral associates in collaboration with a broad group of range and wildlife colleagues. His research has addressed habitats of songbirds, greater prairie-chickens, sandhill cranes, waterfowl, ring-necked pheasants, and many other wildlife species. He is a Fulbright Scholar and currently collaborates with colleagues on wildlife-related projects in Namibia and Thailand. Larkin's research focus has been on the effects of habitat management on the survival, reproduction, and movement of wildlife, and he works with his collaborators to translate research into useful information for landowners or public agencies. He is currently writing a book about the history of Nebraska's landscapes and wildlife. Powell has been on the faculty of the UNL School of Natural Resources since 2001. He has a B.S. from Graceland University in Iowa, M.S. in Ecology and Evolutionary Biology from Iowa State University, and Ph.D. in Ecology from the University of Georgia.

Phil Ramsey, MPG Ranch
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Philip W. Ramsey, Ph. D. moved to Missoula the day after graduating from high school and never left. He is committed to protecting, preserving, and restoring western ecosystems. Philip studied ecology at the University of Montana as an undergraduate. He received a fellowship from the Inland Northwest Research Alliance's Subsurface Science Program to attend graduate school. In that program, he received training from professors all over the northwest in soil science and restoration. Philip earned a Ph.D. in Microbiology in 2006 for a dissertation on the relationship between mine waste contamination and ecosystem functioning in the Clark Fork River Valley upstream of Missoula. As a graduate student, Philip also published on the influence of management practices on forest soils, factors allowing for the spread of invasive weeds in grasslands, and nutrient flow between rivers and floodplain forests. After graduate school Philip became an assistant professor in the Division of Biological Sciences at the University of Montana where he continued research on ecosystem processes. He also started a consulting company that sought to apply the best ecosystem research to restoration practice and to monitor restoration projects for the purpose of advancing our knowledge of ecosystem function. Philip's work was supported by the philanthropy of the owner of a conservation property in the Swan Valley, who in 2009 purchased the Ranch and expanded their conservation goals. This brought about a unique opportunity for Philip; he left teaching to manage these conservation properties full time and now oversees the operations and management of more than 8,500 acres of conservation property in Western Montana. Academia aside, Philip believes that the patient observation of nature is the most valuable tool a scientist and restoration practitioner can develop. So, in his hours off you will find him with his family fishing, hunting, hiking, or maybe in the river flipping rocks to see what's underneath.

Brian Reilly, Tshwane University of Technology
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Brian Reilly is an ecologist, wildlife biologist, academic and consultant. He holds a PhD in Nature Conservation from Stellenbosch University and a Master's in Wildlife Management from the University of Pretoria. Brian is widely published as a biologist with over 80 authorships and co-authorships in scientific Journals and other media. He has served or currently serves on 11 National and International specialist bodies and associations related to conservation and wildlife management and past president of the Southern African Wildlife Management Association. Brian's fields of expertise include large ungulate management, best management practice in wildlife ranching, specialist environmental impacts, corporate governance and sustainability. To date 17 postgraduates have completed studies under his supervision, a number of which have attained their degrees cum laude. Brian is currently Associate Professor and Head of Department, Department of Nature Conservation, Tshwane University of Technology, Pretoria and Adjunct Associate Professor, Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota. He is also a qualified professional hunter and safari outfitter, lifelong hunter, hand loader and gun collector and serving council member and contributor to many hunting organizations in South Africa. Brian has been a member of SA Hunters and Game Conservation Association since 1994 (currently Vice President Conservation. Shares concerns with many hunters and conservationists on the sustainability of outdoor activities in the face of onslaughts of urban masses on rural lifestyle activities including hunting and has a lifelong commitment to the fostering and the maintenance of man's relationship to the land and the wise, ethical and sustainable use of resources.

Terry Riley, The Grouse Partnership

Yvonne Reilly, University of Pretoria
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Yvonne Reilly holds a Masters Commerci degree in Accounting Sciences from the University of South Africa and is a Certified Internal Auditor (CIA). During 1986, after completing her audit articles, she took up a post as lecturer in the Department of Auditing at the University of South Africa (UNISA). From 1996 to 2007 she was actively involved in the development of internal audit modules for the specialised degree in Internal Auditing. During this period she was a member of the academic team which received IAEP status from the Institute of Internal Auditors (IIA) for their course material presented. She represented the Department of Auditing on the Faculty's Non-Formal as well as Formal Tuition Committees. She has a wide experience in lecturing in a distance education environment in the fields of both external and internal auditing over a period of 20 years. She left UNISA at the end of 2007 to contribute time and effort to corporate governance in the public sector. She served as an audit committee member on the audit committee of the National Department of Human Settlements of South Africa under Ministerial leadership and assisted to steer the department onto the route of best practice in corporate governance. She presented Internal Audit Technician training modules for the Institute for Internal Auditors of South Africa, assisting them in their initiative of learnerships for candidates who are starting out in internal auditing or those desirous improving their internal audit skills. She joined the Department of Auditing at the University of Pretoria in June 2011 as a full time senior lecturer,

presenting various under-graduate, post-graduate and MPhil Internal Auditing courses. Her areas of interest are integrated /sustainability reporting and corporate governance in the public sector. She has published on these topics in various publications over the years.

Lyle Renecker, Renecker & Associates Inc.
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Dr. Lyle A. Renecker is a wildlife biologist/animal scientist who received a Ph.D. in Animal Science (Wildlife Productivity and Management) from the University of Alberta, Edmonton, Alberta, Canada. Dr. Renecker was Associate Professor at the University of Alaska Fairbanks in the 1990's and director of the reindeer and Game Farm Research Program. Later he became Adjunct Professor in the Department of Biology, Laurentian University, Sudbury, Ontario. Dr. Renecker has interacted and worked directly with the commercial elk farm industry for more than 30 years. Dr. Renecker's expertise in comparative nutrition, meat quality and carcass composition, antemortem nutritional therapy, wildlife biology/ecology, habitat requirements, feeding programs and management and research and publication are well-documented. Dr. Renecker has also had vast experience with sustainable and diversified management practices for agriculture and game and their vertical integration and application. Dr. Renecker is a well-published biologist in professional, extension, and consultant publications. Currently, Dr. Renecker is co-operator of a farm in southern Ontario, Canada and a co-consultant with Mr. Doug Drum of Indian Valley International, Alaska. His endeavors have been to assist people in Namibia, Africa and the Canadian arctic to develop their game and sea food resources respectively, as ecologically and economically sustainable, to value-add game meat resources so to make shelf-stable food stuffs, provide training and education in meat processing, empower women, assist marketing and development of meat products, and to improve local food security.

Meville Saayman, North-West University
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Professor Melville Saayman is currently director of the research focus area TREES (Tourism Research in Economic Environs and Society) formerly known as the Institute for Tourism and Leisure Studies, at the North-West University (Potchefstroom Campus) in South Africa. TREES is a leading Tourism research entity in Africa. Until March 2009, he had also been head of the tourism programme at the same university for a period of 17 years. He served on several boards as a director, including the South African Tourism Board (SATOUR), North-West Parks and Tourism Board, Institute of Environment and Recreation Management, National Zoological Council, South African National Recreation Council (SANREC), North-West Recreation Council (PROREC-NW) and North West Development Corporation. At an international level, he is a member of the executive committee of the Association of International Experts in Tourism (AIEST) and also serves on the World Tourism Organisation's panel of experts. He became the first South African to be nominated as resource editor of the leading tourism journal, Annals of Tourism Research. He also serves on various other editorial boards and has published in most of the major national and international tourism journals. Currently he is active in the field of tourism and leisure economics and development. He became the first National Research Foundation (NRF) rated researcher in tourism in South Africa. From his pen, numerous leisure and tourism books (20), scientific articles (120), technical reports (300) and in-service training manuals (8) have been published. He was study leader and promoter to 85 master's and doctoral students and he has also presented 90 papers at international conferences. In 2011 and 2012 he received the award for the most productive researcher at North-West University. He is married to Andrea and they have two daughters – Dominique and Anaïs.

Michael Sabbeth Esq.
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Michael Sabbeth is a lawyer in Denver. He lectures to bar associations on and writes about ethics, rhetoric and advanced advocacy skills. He lectures also on estate planning and estate administration issues relevant to firearms ownership, use and possession. For over twenty years he has taught classes on ethics to young children in Denver-area public and private schools. He has been a lecturer at Master Hunter Education programs, is an NRA-certified instructor in shotgun disciplines, a Boy Scout merit badge counselor in the shotgun discipline, consults for the United States Shooting Association on media relations and writes for many prominent hunting and shooting magazines. He was a lecturer at the 2014 Dallas Safari Club and Safari Club International Conventions. He has written the book, The Good, The Bad and The Difference: How to Talk with Children About Values, which is a guide for parents and other adults on how to talk with children about moral reasoning. He is now writing a book on how to make the best arguments to preserve and advance hunting and the shooting sports heritages. Mr. Sabbeth graduated from Williams College with an Honors degree in Political Economy in 1969 and from the University of Denver Law School in 1973. He is married and has three children.

Shawn Schafer, North American Deer Farmers Association

Eric Schmidt, Wildlife Protection Solutions
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Eric Schmidt graduated Summa Cum Laude from the University of Colorado, Boulder with an accelerated Bachelor's and Master's degree in Environmental, Population, and Organism Biology. During his tenure at the University of Colorado, Eric conducted wildlife management studies for the National Renewable Energy Lab, City of Boulder, and Boulder County focusing primarily on grassland flora and fauna, as well as large mammals. Eric has also been heavily involved with technology, managing digital equipment deployments to museums, zoos and aquariums, as well as providing digital signage solutions for major enterprise clients. For the past two years Eric has applied this technology expertise to conservation in order to create innovative methods of monitoring field efforts in real time.

Troy Schneider, Three Rivers Alliance

Troy Schneider is a board member of Three Rivers Alliance, which is a non-profit organization made up of land owners and managers in the Republican River Basin. Troy is currently actively involved in farming and ranching and have a vested interest in the sustainability of the overall landscape in the Basin.

Don Schrupp, Retired - Colorado Division of Wildlife

Donald L. Schrupp was an ecologist for the Colorado Division of Wildlife for 32+ years, before retiring in 2006. He was educated at Colorado State University, receiving a B.S. in Wildlife Biology ('72) and a M.S ('89') also in Wildlife Biology. He was instrumental in setting up the Division's Wildlife Resource Information System (WRIS), providing geographic information system and remote sensing capabilities for mapping wildlife habitats and assessing land management impacts on those habitats. He was Principal Investigator for Colorado's Gap Analysis Project and later responsible as PI for the 'Colorado Ecological Component of the Southwest Regional Gap Analysis Project'. Currently, he stays active professionally through the Organization of Fish and Wildlife Managers, the American Society of Photogrammetry and Remote Sensing and as a Research Associate for Dr. Del Benson in the Conservation, Fisheries and Wildlife Biology Department, Warner College of Natural Resources, Colorado State University. In his leisure time he enjoys hiking, fishing and hunting, bluegrass festivals, and realizing the benefits of open source software for geospatial and website projects.

Aleksandr Senchik, Far East State Agrarian University
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Professor Alexander Senchik was born January 6, 1978 in the Russian Federation (Kirov region). In 2000 he graduated from the Faculty of Biology of hunting and the Far East State Agrarian University (Amur region). Alexander received a degree as a Game Biologists. In 2004 he defended a scientific thesis "The habitat and ecological peculiarities of the Siberian roe in the Amur region of Russia." From 2004 to 2011, he was the Deputy Dean of the Faculty of natural resources and from 2011 to present he is the Dean of Faculty of Nature at Far East State Agrarian University.

Greg Simons, Texas Wildlife Association
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Greg Simons graduated with a bachelor's degree in Wildlife and Fisheries Sciences from Texas A&M University in 1987, with emphasis on wildlife ecology. After graduation, Greg immediately formed Wildlife Systems, Inc., which is a company he still owns and operates today. This company currently operates hunting and wildlife programs on over 800,000 acres of private land in Texas, scattered over many different properties across the state. This company was named Dodge Outfitter of the Year in 2003 from a cast of over 450 hunting operations in North America. He has also worked with various hunting programs in several other states including Colorado, New Mexico, Oklahoma, and Utah, and various foreign countries, including South Africa, Zimbabwe, Zambia, New Zealand, Canada, and Mexico. Greg is also a partner in Wildlife Consultants, LLC, a company specializing in providing technical assistance for wildlife and land-related needs to landowners, bank trust groups, and others. Greg is a past President of Student Chapter of The Wildlife Society (TAMU), past officer in the Texas Chapter TWS, current President of Texas Wildlife Association, serves on the White-tailed Deer Advisory Committee for the State of Texas, is currently on the Board of Directors for the San Angelo Chamber of Commerce, is the past San Angelo CVB Board Chairman, serves on the Legacy Advisory Committee for Wildlife and Fisheries Sciences Department at Texas A&M University, and has served on many other appointed committees.

Satya Priya Sinha, Wildlife Institute of India HNOIV Chandrabani
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Jennifer Smith, University of Nebraska-Lincoln
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Dr. Jennifer A. Smith's research focuses on the effects of landscape management decisions on avian populations, specifically those of conservation concern. In particular she is interested in the mechanisms that drive changes in spatial ecology, breeding performance, and survival that may manifest through changes in habitat availability, predation risk, and food availability. Her goal is to conduct rigorous research whose results can be used in management decisions to aid in the conservation of imperiled species. In recent years, Jennifer has conducted her research primarily on private lands in Florida where her research focused on the effects of land conversion on Northern Crested Caracaras (Caracara cheriway), and in Nebraska where her research focuses on the effects of wind farms on Greater Prairie-Chickens (Tympanuchus cuipido). Through these projects she has been exposed to the challenges of working on, and promoting conservation on private lands. Because much of the land on our planet is privately owned, it is essential that we, as scientists, learn to work in this challenging landscape. Some of my more recent research focuses on these challenges, and how we can overcome them to promote biodiversity on private lands. Jennifer completed her BSc in Zoology (1st Class Honors) from the University of Cardiff, Wales in 2005, and received her PhD in 2011 from the University of Birmingham, UK in which her research focused on the effects of supplementary feeding on the reproductive behavior of birds. Jennifer's first postdoctoral position was held at Virginia Tech where she studied the effects of land conversion on Crested Caracaras. She is currently a Postdoctoral Research Associate at the University of Nebraska-Lincoln.

Don Steinbach, Stonebrook Conservation Consulting Services
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Dr. Don W. Steinbach is Professor Emeritus at the Department Wildlife and Fisheries Sciences, Texas A & M University. He was the Associate Department Head and Extension Program Leader and Professor at the Wildlife and Fisheries Sciences Department, Texas Agricultural Extension, Texas A&M University System. His educational background includes a PhD from the Wildlife and Fisheries Sciences (1988) Texas A&M University, College Station, TX. With a dissertation titled The Economics and operational characteristics of recreational leasing in the Edwards Plateau and Rio Grande Plains of Texas. And a M.S. from the Wildlife and Fisheries Sciences Department in (1977) Texas A&M University, College Station, TX. , and a B.S. –degree from the Wildlife and Fisheries Sciences Dept. (1967). Texas A&M University, College Station, TX. He is Certified Wildlife biologist and Member of The Wildlife Society. He is a charter member of the Texas Wildlife Association and currently serves on the executive board, board member of the Texas Agricultural Land Trust, past board member of the Texas Outdoor Writers Association, past Vice President of the Texas Wildlife Association and Chairman of the Education Committee, past-President of the Texas Chapter of The Wildlife Society, past-President of the Texas Chapter of the American Fisheries Society. Dr. Steinbach received the Conservation Education Award, for the book Wildlife Stewardship and Recreation on Private Lands, from The Wildlife Society, in 2000.

Scott Stewart, The High Lonesome Ranch
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Scott is currently the President of The High Lonesome Ranch, De Beque, CO, he leads a stakeholder group that is addressing Responsible Energy Development on a Landscape Scale: working with industry, NGO's, State and Federal agencies to address planning on a landscape scale prior to development to address long term approaches, access, species and habitats plans and continuous improvement of all practices that lead to overall betterment of public, private, and industry interest. Scott currently serves as Vice Chair of the Garfield County Energy Advisory Board. As President of The High Lonesome Ranch, Scott is also tasked with the management of over 32K owned acreage and additional 230K of federal grazing and SRP lands, as well as operating a working cattle ranch, on nearly 400 square miles of permitted and deeded land. The High Lonesome Ranch is also an integral part of scientific research in Western Colorado, participating in research by universities from all over America, ranging from predator/prey studies to aspen ecology. Keystone project include wetlands and major water resource restoration projects that can be models for engineering approaches around the world. Scott's history in tourism involvement includes: 35 years in Hospitality and development business. Currently operates a Dude Ranch, and guest ranch that has commercial interest in upland bird hunting, fly fishing, big game, and numerous outdoor recreational experiences. Scott promotes usage of critical state and federal tools to create and implement long lasting solutions as example: near completion of first Candidate Conservation Agreement with Assurance for Greater Sage Grouse. Reviewing usage of CRC 404 for geographical area plan (GAP).

San Stiver, Western Association of Fish and Wildlife Agencies
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San J. Stiver retired from the Nevada Department of Wildlife after 30 years of service in 2003. Upon retiring from state service, he began working for the Western Association of Fish and Wildlife Agencies as a sage-grouse

specialist. He has focused much of his work for the past 33 years on sage-grouse conservation in Nevada and across the range. In his current position, he serves the Sage-grouse Executive Oversight Committee as their Secretary and WAFWA as their Sage-grouse Coordinator. San received his B.S. from the University of Montana. He has been a member of the Wildlife Society since 1971 and was a member of the Western Sage and Columbian Sharp-tailed Grouse Technical Committee from 1981-2003. San has worked on international wildlife conservation issues from Bhutan to Egypt since 1985.

Kate Stone, MPG Ranch
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Kate Stone, M.S. graduated from Middlebury College with a B.A. in Environmental Studies and Conservation Biology in 2000. She pursued a M.S. in Forestry at the University of Montana where her thesis focused on the habitat associations of snowshoe hares on U.S. National Forest land in Western Montana. After completing her M.S. degree in 2003, Kate alternated between various field biology jobs in the summer and writing for the U.S. Forest Service in the winter. Her fieldwork included projects on small mammal response to weed invasions, the response of bird communities to bark beetle outbreaks and targeted surveys for species of concern like the black-backed woodpecker and the Northern goshawk. Writing topics ranged from the ecology and management of western larch to the impacts of fuels reduction on riparian areas. Kate coordinates bird-related research at the MPG Ranch. She is involved in both original research and facilitating the use of the Ranch as a study site for outside researchers. Additionally, Kate is the field trip coordinator and website manager for the Bitterroot Audubon Society. She also enjoys gardening and biking in her spare time.

David Stratton
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Dave Stratton is President and Director of StoryTime Adventures, a 501(c)3 educational not-for-profit organization. The business has engaged in the local school district to develop a curriculum that enhances the reading, writing and leadership skills of students. The creative strategies have achieved documented success. Dave developed the BanRuppet style of puppetry, which is a combination of full-bodied puppetry and ventriloquism. He employs a broad range of presentation styles in a variety of venues utilizing music, drama, activities and puppetry. Dave has thirty five years in ministry serving in Pastoral leadership of several churches. He served in leadership positions at Davis Hospice Center and Cheyenne Regional Medical Center. Dave has also served as the Children's Program Development Coordinator developing tools for children and teens dealing with death, grief and loss. In his position as Hospice Chaplain, he created a philosophy of transdisciplinary Chaplaincy. He practiced this through simple acts such as filling birdfeeders outside the windows of Hospice patient's rooms and setting up beds in Hospice patient's homes while ministering to their spiritual needs. Dave earned a Master of Divinity with emphasis in Pastoral Ministry and Local Church Ministry, a Masters of Arts in Christian Education (M.A.C.E.) with emphasis in Children, Youth and Adult Christian Education and a Bachelor of Arts with emphasis in Human Relations. He is involved in several community and professional organizations. He and his family have enjoyed countless activities in nature since moving to the Rocky Mountain area.

Bronson Strickland, Mississippi State University
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Bronson Strickland was born and raised in Athens, GA where he fell in love with the outdoors at an early age and decided wildlife biology was his career path. He received a bachelor's degree in Forest Resources from the University of Georgia in 1995 and then pursued a master's degree from Texas A&M University-Kingsville where his research involved estimating white-tailed deer carrying capacity southern Texas rangelands. After graduating in 1998, Bronson moved to Starkville, MS to work as a research associate at Mississippi State University. In 2000 he began work on a doctorate degree where he continued research on the ecology and management of white-tailed deer populations. Upon graduation, Bronson worked as a research wildlife biologist with the National Wildlife Research Center in Mississippi where he developed and directed research related to the understanding and minimization of wildlife damage caused by fish-eating birds at aquaculture facilities, natural fisheries, and sensitive habitats. In 2006, Bronson joined the faculty at Mississippi State as the Extension Wildlife Specialist where he works with landowners and natural resource professionals to solve wildlife management problems. Since 2007 Bronson has been working with Extension Agents and natural resource professionals to educate landowners about wild pig management. Bronson is currently an Associate Extension Professor and the Associate Director for Extension and Outreach at Mississippi State University's Center for Resolving Human Wildlife Conflicts.

Craig Taggart, Western Landowners Alliance
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Craig Taggart received a B.S. degree in Zoology from Northern Arizona University in 1970 and a Masters in Landscape Architecture from Iowa State University in 1974. His work experience began with three years of government service as a landscape architect for both the Bureau of Land Management and the Corps of Engineers. This was followed by 25 years of consulting as an environmental planner involving a range of project work with a significant focus on energy development. For the past 10 years Craig has served as the Environmental Manager for the Tercio and Trinchera Ranches in southern Colorado. At the Tercio Ranch he was given the assignment to develop an environmentally sound CBM project. The resulting 41-well field has won wide acclaim as being state-of-the-art in its sensitivity to the significant environmental values present there.

Oluwakemi Taiwo, Wildlife and ecotourism department
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William Travis, University of Colorado
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William Travis is Associate Professor of Geography at the University of Colorado-Boulder. His teaching and research focus on human behavior in the environment, including studies of the human dimensions of climate change, land use, and the interaction of people and ecosystems. His current projects apply risk and decision analysis to the adaptation process, examining especially the role of extreme events in driving adaptation or mal-adaptation in agriculture and infrastructure systems. His web page is at: <http://www.colorado.edu/ibs/es/travisw>.

Pat Tucker, Colorado Parks and Wildlife
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Pat Tucker grew up outside of Cooperstown New York. He attended SUNY Cobleskill from 1977-79 receiving an AAS degree in Fisheries/Wildlife Technology. He transferred to Colorado State University in Fort Collins and was awarded a BS degree in Wildlife Management. The Colorado Division of Wildlife selected Pat to be a District Wildlife Manager (multi purpose field officer) in 1986. After training, Pat was stationed in the Denver north area and in 1992 moved to Durango. After a short special assignment in Denver working out of the Director's office on the Division's TABOR effort, Pat was promoted to Area Wildlife Manager in Glenwood Springs. In 2006, Pat became the state program manager for the Habitat Partnership Program.

Maretha van der Merwe, Wildlife Ranching South Africa
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Maretha Van der Merwe is a self-willed and self-motivated Strategist and Scientist with a wide range of experience in food hygiene and production, community health, animal production units, abattoirs, early learning centers, environmental pollution and environmental health related hazards. Maretha was born and raised in Pretoria in South Africa and has one son that qualified as a chiropractor two years ago. Her parents are role models in her life as she was raised in a Christian house with an elder sister and late younger brother. She matriculated in 1983 and started her professional studies at the age of 17. Her diploma qualification as an Environmental Health Practitioner was followed up with an honors degree, a master's degree on TB in buffalo and kudu and a doctorate degree in 2012 on a Game Scheme for game meat in South Africa. Maretha has been affiliated with Wildlife Ranching South Africa since 2004 and is currently doing consultation work for them. Her passion for South African Wildlife was her driving force to conduct research to enable WRSA to counter the numerous impractical and overregulating legislation that were, and are, imposed on the Game Industry. In her opinion the efforts and inputs of game ranchers in South Africa are the only reason for the successes of the thriving game industry in South Africa.

Petrus van der Merwe, North-West University
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Professor Peet van der Merwe was born in Kuruman, South Africa in 1973 and is currently living in Potchefstroom South Africa. He is a senior lecturer and researcher in tourism management at North-West University: Potchefstroom Campus, School for Business Management. As researcher he also forms part of the NRF research unit TREES (Tourism Research in Economic, Environs and Society). Peet obtained his degree in 1994, honours degree in 1995 and master's degree in 1999. He completed his PhD (2004) in tourism management and in 2010 he was promoted to associate professor and in 2014 to full professor. His field of expertise lies in wildlife tourism, hunting tourism and ecotourism (sustainable tourism). Peet is involved in a number of research projects namely, visitors profile and marketing segmentation for SANParks, socio-economic impact studies of SANParks, socio-economic impact studies of hunting, spending of hunters and hunters profiles, marine tourists, spending and travel motives (specially scuba diving) diving, develop ecotourism plan for Tongaat Hulett and conducted numerous other projects in wildlife tourism.

Wouter van Hoven, Wildlife Protection Solutions
vanhoven@ecolife.co.za

Wouter van Hoven recently retired as Head of the Center for Wildlife Management at the University of Pretoria and holds a Marsh Professorship at the University of Vermont, USA. He has been a guest lecturer for many courses internationally including Nutritional Ecology/Wildlife Nutrition, Nature Reserve Planning, and Environmental Impacts on natural areas. Wouter van Hoven is a recognized leader in the field of wildlife management. He has presented papers at over fifty international meetings, appeared on 15 televised documentaries, provided ten chapters in various textbooks, has over seventy scientific publications, and has completed over two-hundred community outreach and/or consultancy projects, also as a team leader. He is a member or serves on the board of a variety of national and international organizations. He has recently been appointed as Technical Director to the international board of Wildlife Protection Solutions (USA), and heads the research on rhino ranching and security in South Africa. He served for 10 years as vice-president of the International Council for Wildlife Conservation. He was elected as founder president of the Kissama Foundation in Angola which brought wildlife, including elephant, back to a wildlife-sterile landscape.

Jordan Vana, Colorado Open Lands
jvana@coloradoopenlands.org

Jordan Vana joined Colorado Open Lands in 2013 as a result of COL's merger with Colorado Conservation Trust. At CCT, Jordan helped Colorado land trusts and public open space programs improve the pace, quality and permanence of their work through CCT's core programs. Prior to joining CCT, Jordan spent 7 years as Director of Conservation for the Wyoming Land Trust, where he worked directly with landowners to complete conservation projects that utilized a variety of federal, state and local financial incentives. Before that, Jordan was an attorney in Billings, Montana, where his practice focused on real estate, commercial transactions and estate planning.

Kurt VerCauteren, USDA/APHIS/Wildlife Services/National Wildlife Research Center
Kurt.C.Vercauteren@APHIS.USDA.GOV

Kurt VerCauteren, Ph.D. leads the "Management of Ungulate Disease and Damage" and "Rabies Management" projects at the National Wildlife Research Center of the United States Department of Agriculture/Animal Plant and Health Inspection Service/Wildlife Services (NWRRC). He obtained his BS from the University of Wisconsin-Stevens Point and MS and PhD from the University of Nebraska – Lincoln, all in Wildlife. While in Lincoln he started up a wildlife damage management branch of a pest control business. After completing his PhD he eagerly accepted a position with NWRRC, where he has been for past 15 years. His research focusses on human-wildlife conflict relative to wildlife damage management and diseases of wildlife that impact humans and livestock. Specifically, his current efforts focus on rabies in terrestrial wildlife, diseases associated with deer and elk, and methods to reduce the multitude of damage caused by overabundant deer, elk, and feral swine. He is the past Chair the Wildlife Damage Management Working Group of TWS and past President of the Nebraska Chapter of TWS.

Douglas Wagner, Newport Labs
dwagner@newportlabs.com

Dr. Douglas Wagner graduated from VMRCM in 2003 and entered a mixed animal practice. The practice was designed for all practitioners to routinely service dairy, equine, small ruminants and small animals. Dr. Wagner became involved in the cervid industry in 2003 and realized the lack of veterinary education available to both veterinarians and producers. To address this void he began giving educational meetings on cervid medicine in his clinic. These meetings lead to speaking engagements at state organizations for producers and an opportunity to provide Continuing Education at the state and national level for veterinarians. Dr. Wagner's main focus in practice was cervid and dairy. He left private practice in 2012 and accepted a position at Newport Laboratories as a Technical Service veterinarian. He is the case coordinator for all Dairy and Cervid submissions to Newport Labs.

Charles Yoest, Tennessee Wildlife Resources Agency
chuck.yoest@tn.gov

Chuck has served as a wildlife population biologist for the Tennessee Wildlife Resources Agency, since September 2011, where he provides oversight on the management of white-tailed deer, elk and wild hogs. Prior to becoming a statewide biologist, Chuck was a Wildlife Officer in several Tennessee counties. Chuck's educational background includes a B.S. in wildlife and fisheries at the University of Tennessee-Knoxville. Presently, Chuck is earning an MBA with a leadership concentration from Lipscomb University. Chuck is an active member of several organizations including: Hatcher Family Dairy, the University Of Tennessee Institute Of Agriculture Advisory Council, the Williamson County Farm Bureau Board of Directors, Alpha Gamma Rho Fraternity, Young Farmers and Ranchers and the Tennessee Wildlife Society.

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Colorado Parks and Wildlife

Chad Bishop, Windi Padia & Ken Morgan
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The mission of Colorado Parks and Wildlife (CPW) is to perpetuate the wildlife resources of the state, to provide a quality state parks system, and to provide enjoyable and sustainable outdoor recreation opportunities that educate and inspire current and future generations to serve as active stewards of Colorado's natural resources. CPW is a nationally recognized leader in conservation, outdoor recreation and wildlife management. The agency manages 42 state parks, all of Colorado's wildlife, more than 300 state wildlife areas and a host of recreational programs including the state's trail program and registration of boats, snowmobiles, off-highway vehicles and river outfitters.

Colorado State University-School of Global Environmental Sustainability

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Colorado State University's School of Global Environmental Sustainability is an umbrella organization encompassing all research and education that deals with the complex environmental, economic, and societal issues of sustainability.

Colorado State University-Department of Fish and Wildlife Conservation Biology

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Colorado State University - Department of Fish, Wildlife, and Conservation Biology
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Colorado State University- International Office Support

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Max McGraw Wildlife Foundation

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It was said of Max McGraw that he was at his best when taking the measure of a man or a piece of land. And Max's legacy lives on today through the Max McGraw Wildlife Foundation, now celebrating a half-century of land stewardship, wildlife research and innumerable fishing and hunting trips and sporting clay shooting; which is not to leave out the tens of thousands of youngsters who have earned their outdoors chops through hunter education courses, fishing excursions and general conservation education. Now simply known as McGraw, the Foundation sits on 1200 acres of hardwoods, prairies, lakes, gravel pits and streams, hard on the Fox River in Dundee, IL. McGraw has stayed true to its founder's mission. There is no finer escape from the hustle and hassle of modern civilization. Equally important, the Members of McGraw are a special breed. They believe in the heritage and importance of the sporting life, and passing it on to their heirs. And that's what makes them different and deserving of being part of the McGraw purpose.

Pheasants Forever and Quail Forever

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Pheasants Forever and Quail Forever combine to form the nation's largest non-profit conservation organization focused on upland wildlife habitat. While our organization is focused on the improvement of habitat for sustainable and huntable populations of pheasants and quail, our efforts also extend into habitat improvements for sage grouse, prairie chickens, and sharp-tailed grouse.

Resources First Foundation

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Web: www.resourcesfirstfoundation.org

Resources First Foundation develops portfolios of national, state, regional, and programmatic problem-solving web tools to address the needs of rural America in a free market format. In the past years, RFF has built ten websites to support the conservation needs of the private landowner. We serve as the U.S. foundation for Wilderness Wildlife Trust.

The High Lonesome Ranch

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The High Lonesome Ranch sits along the spine of the continent on the western slope of the Colorado Rockies. Its National Park-sized landscape is home to many ecosystems of wildlife and habitat that we've taken on as our mission to enhance, restore and preserve while using the land in a sustainable mix of ways - primarily ranching, recreation, and research.

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USDA –APHIS Wildlife Services National Wildlife Research Center

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The mission of the USDA-APHIS Wildlife Services (WS) program is to provide Federal leadership and expertise in managing wildlife conflicts that threaten public health and safety, natural resources, and agriculture.

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